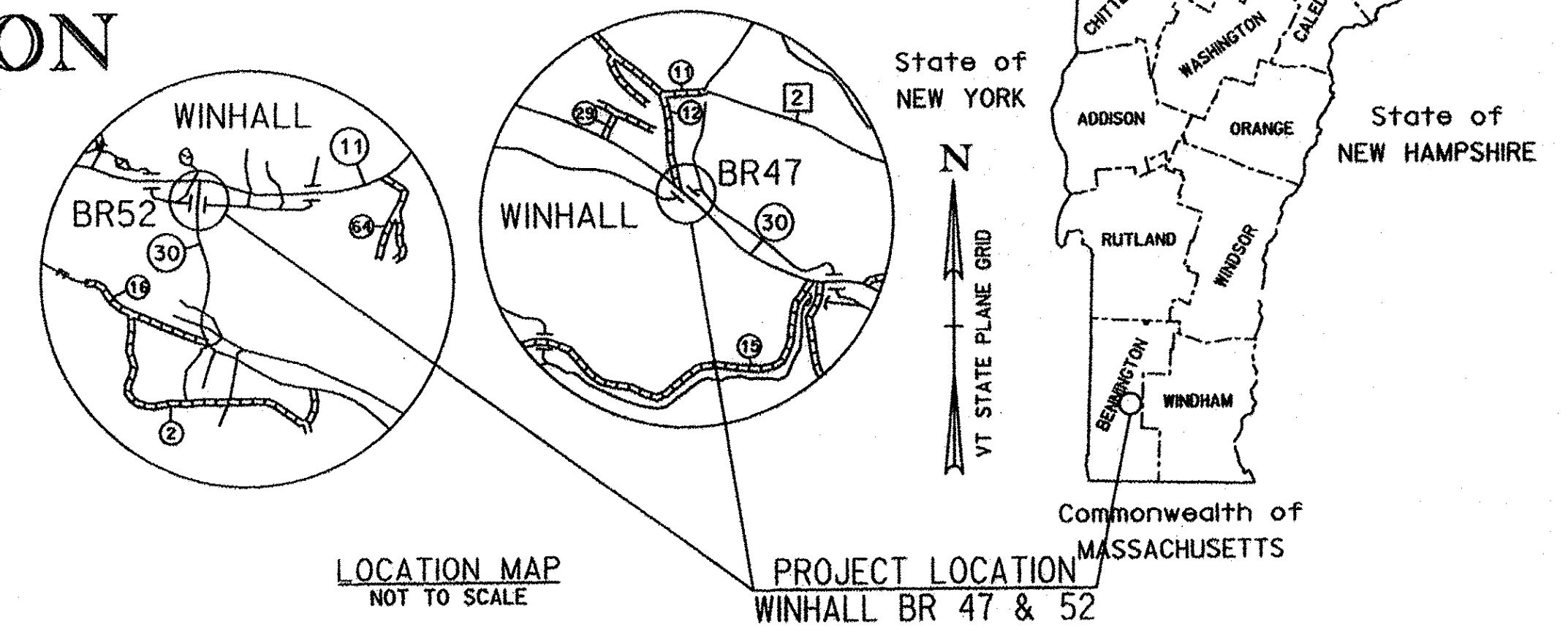


STATE OF VERMONT AGENCY OF TRANSPORTATION



PROPOSED IMPROVEMENT BRIDGE PROJECT TOWN OF WINHALL COUNTY OF BENNINGTON VT ROUTE 30 (MAJOR COLLECTOR) BRIDGE NUMBERS 47 AND 52

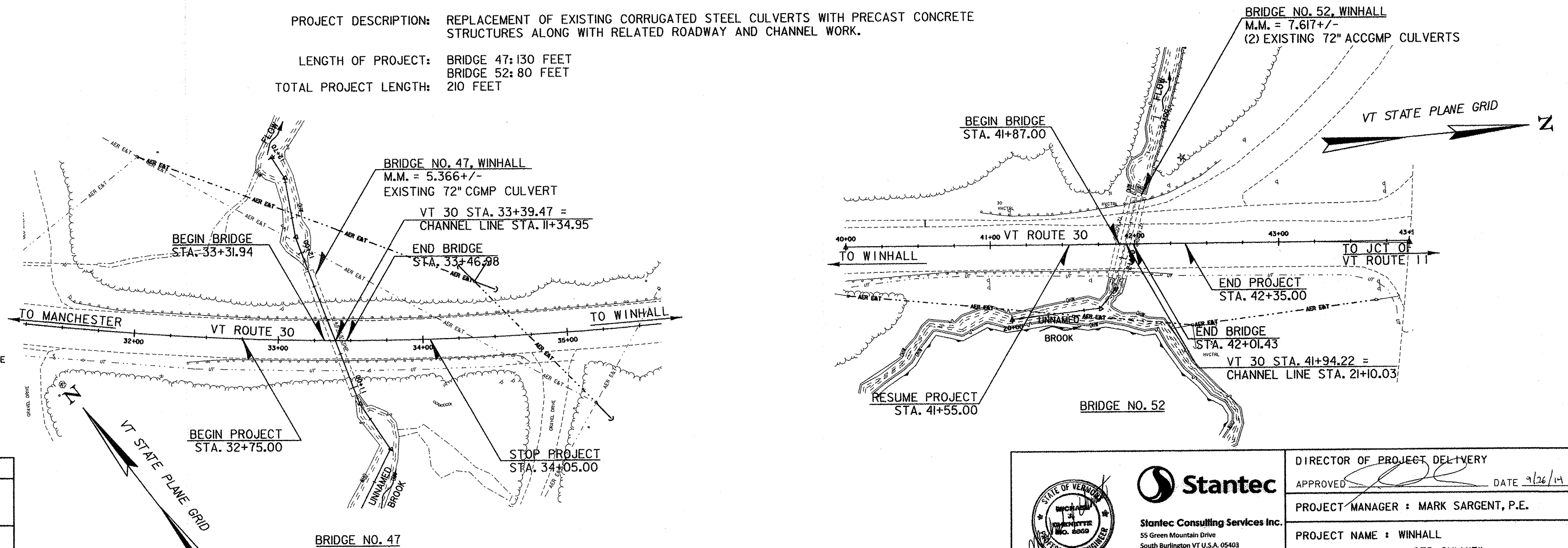


RECORD PLANS	
CONTRACTOR:	RENAUD BROTHERS, INC. - VERNON, VT
RESIDENT ENGINEER:	RON LEMAIRE
CONSTRUCTION BEGAN:	MAY 12, 2015
CONSTRUCTION COMPLETE:	OCTOBER 8, 2015
RECORD PLANS BY:	RON LEMAIRE & AARON JAMES
I HEREBY CERTIFY THAT ALL THE CONSTRUCTION REQUIRED BY THIS SET OF DRAWINGS HAS BEEN ACCOMPLISHED AS INDICATED HEREIN.	
BY:	RESIDENT ENGINEER
DATE: 9/20/16	
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.	

PROJECT LOCATION: BRIDGE NO. 47 IS LOCATED ON VERMONT ROUTE 30, 2.3 MILES SOUTH OF THE JUNCTION WITH VERMONT ROUTE II.
BRIDGE NO. 52 IS LOCATED ON VERMONT ROUTE 30, 0.05 MILES SOUTH OF THE JUNCTION WITH VERMONT ROUTE II.

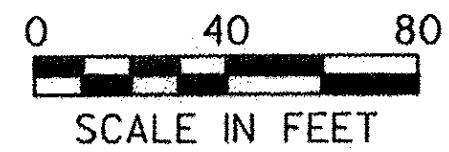
PROJECT DESCRIPTION: REPLACEMENT OF EXISTING CORRUGATED STEEL CULVERTS WITH PRECAST CONCRETE STRUCTURES ALONG WITH RELATED ROADWAY AND CHANNEL WORK.

LENGTH OF PROJECT: BRIDGE 47: 130 FEET
BRIDGE 52: 80 FEET
TOTAL PROJECT LENGTH: 210 FEET



CONSTRUCTION IS TO BE CARRIED ON IN ACCORDANCE WITH THESE PLANS AND THE STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 2011, AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION ON JULY 20, 2011 FOR USE ON THIS PROJECT, INCLUDING ALL SUBSEQUENT REVISIONS AND SUCH REVISED SPECIFICATIONS AND SPECIAL PROVISIONS AS ARE INCORPORATED IN THESE PLANS.

QUALITY ASSURANCE PROGRAM : LEVEL 2
SURVEYED BY : VTRANS
SURVEYED DATE : 02/01/2012
DATUM
VERTICAL NAVD88
HORIZONTAL NAD 83 (07)



	<p>Stantec Consulting Services Inc. 55 Green Mountain Drive South Burlington VT U.S.A. 05403 Phone: (802) 864-0223 Fax: (802) 864-0165 www.stantec.com</p>	DIRECTOR OF PROJECT DELIVERY
		APPROVED: DATE 9/26/14
		PROJECT MANAGER : MARK SARGENT, P.E.
		PROJECT NAME : WINHALL PROJECT NUMBER : STP CULV(30)
SHEET 1 OF 60 SHEETS		

PRELIMINARY INFORMATION SHEET (BRIDGE)

LRFD

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FINAL HYDRAULIC REPORT

PLAN SHEETS

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HYDROLOGIC DATA		Date:	July 2013
DRAINAGE AREA:	0.8 sq. mi.		
CHARACTER OF TERRAIN:	Hilly to mountainous, mostly forested		
STREAM CHARACTERISTICS:	Perennial, sinuous, alluvial with low relief to floodplains		
NATURE OF STREAMBED:	Mostly gravel and cobbles		

PEAK FLOW DATA			
Q 2.33 =	60 cfs	Q 50 =	215 cfs
Q 10 =	145 cfs	Q 100 =	250 cfs
Q 25 =	180 cfs	Q 500 =	350 cfs

DATE OF FLOOD OF RECORD	unknown
ESTIMATED DISCHARGE:	unknown
WATER SURFACE ELEV.:	unknown
NATURAL STREAM VELOCITY:	@ Q50 = 11.6 fps
ICE CONDITIONS:	Moderate
DEBRIS:	Moderate
DOES THE STREAM REACH MAXIMUM HIGH-WATER 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:	CGMPP
YEAR BUILT:	1957
CLEAR SPAN(NORMAL TO STREAM):	6.0'
VERTICAL CLEARANCE ABOVE STREAMBED:	6.0'
WATERWAY OF FULL OPENING:	28 sq. ft.
DISPOSITION OF STRUCTURE:	Remove
TYPE OF MATERIAL UNDER SUBSTRUCTURE:	unknown

WATER SURFACE ELEVATIONS AT:	
Q2.33 =	1626.0'
Q10 =	1627.9'
Q25 =	1628.7'
Q50 =	1629.6'
Q100 =	1630.6'

LONG TERM STREAMBED CHANGES: About 4' of stream degradation downstream, based on comparison with record plans.

IS THE ROADWAY OVERTOPPED BELOW Q100:	No
FREQUENCY:	Above Q100
RELIEF ELEVATION:	1637.1'
DISCHARGE OVER ROAD @Q100:	None

UPSTREAM STRUCTURE	
TOWN:	None
HIGHWAY #:	
CLEAR SPAN:	
YEAR BUILT:	
STRUCTURE TYPE:	

DOWNSTREAM STRUCTURE	
TOWN:	Not Applicable - Confluence
HIGHWAY #:	
CLEAR SPAN:	
YEAR BUILT:	
STRUCTURE TYPE:	

LRFR LOAD RATING FACTORS							
LOADING LEVELS	TRUCK						
	H-20	HL-93	3S2	6 AXLE	3A STR.	4A STR.	5A SEM
TONNAGE	20	36	36	66	30	34.5	38
INVENTORY							
POSTING							
OPERATING							
COMMENTS:							

PROPOSED STRUCTURE	
STRUCTURE TYPE:	Precast concrete box
CLEAR SPAN(NORMAL TO STREAM):	12'
VERTICAL CLEARANCE ABOVE STREAMBED:	5'
WATERWAY OF FULL OPENING:	60 sq. ft.

WATER SURFACE ELEVATIONS AT:			
Q2.33 =	1624.4'	VELOCITY=	8.1 fps
Q10 =	1625.5'		11.3 fps
Q25 =	1625.8'		12.3 fps
Q50 =	1626.2'		13.1 fps
Q100 =	1626.5'		13.8 fps

IS THE ROADWAY OVERTOPPED BELOW Q100:	No
FREQUENCY:	Above Q100
RELIEF ELEVATION:	1637.3'
DISCHARGE OVER ROAD @Q100:	none

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE:	1628.1' at inlet
VERTICAL CLEARANCE:	@ Q50 = 1.9' at inlet

SCOUR:	Not applicable for a box
REQUIRED CHANNEL PROTECTION:	Stone Fill, Type III

PERMIT INFORMATION			
AVERAGE DAILY FLOW:	2 cfs	DEPTH OR ELEVATION:	
ORDINARY LOW WATER:	1 cfs	Depth = 0.5'	
ORDINARY HIGH WATER:	25 cfs	Depth = 1.0'	

TEMPORARY BRIDGE REQUIREMENTS	
STRUCTURE TYPE:	Not required - Traffic will be maintained with phased construction
CLEAR SPAN (NORMAL TO STREAM):	
VERTICAL CLEARANCE ABOVE STREAMBED:	
WATERWAY AREA OF FULL OPENING:	

ADDITIONAL INFORMATION	

TRAFFIC MAINTENANCE NOTES	
1. MAINTAIN ONE-WAY TRAFFIC UNDER PHASED CONSTRUCTION	
2. INSTALL AND MAINTAIN TRAFFIC SIGNALS.	
3. SIDEWALKS ARE NOT NECESSARY	

DESIGN VALUES	
1. DESIGN LIVE LOAD	HL-93
2. FUTURE PAVEMENT	d _p : 3.0 INCH
3. DESIGN SPAN	L: 12.00 FT

4. MIN. MID-SPAN POS. CAMBER @ RELEASE (PRESTRESSED UNITS)	Δ: ---
5. PRESTRESSING STRAND	f _y : ---
6. PRESTRESSED CONCRETE STRENGTH	f' _c : ---
7. PRESTRESSED CONCRETE RELEASE STRENGTH	f' _{cr} : ---
8. CONCRETE, HIGH PERFORMANCE CLASS AA	f' _c : ---
9. CONCRETE, HIGH PERFORMANCE CLASS A	f' _c : ---
10. CONCRETE, HIGH PERFORMANCE CLASS B	f' _c : 3.5 KSI
11. CONCRETE, CLASS C	f' _c : ---
12. REINFORCING STEEL	f _y : 60 KSI
13. STRUCTURAL STEEL AASHTO M270	f _y : ---
14. SOIL UNIT WEIGHT	γ: 0.140 KCF
15. NOMINAL BEARING RESISTANCE OF SOIL	q _n : 6.0 KSF
16. SOIL BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	φ: 0.45
17. NOMINAL BEARING RESISTANCE OF ROCK	q _n 10 KSF - F
18. ROCK BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	φ: ---
19. NOMINAL AXIAL PILE RESISTANCE	q _p : ---
20. PILE YIELD STRENGTH ASTM A572	f _y : ---
21. PILE SIZE	---
22. EST. PILE LENGTH	L _p : ---
23. PILE RESISTANCE FACTOR	φ: ---
24. LATERAL PILE DEFLECTION	Δ: ---
25. BASIC WIND SPEED	V _{3s} : ---
26. MINIMUM GROUND SNOW LOAD	p _g : ---
27. SEISMIC DATA	PGA: --- S ₁ : ---

PROJECT NAME:	WINHALL		
PROJECT NUMBER:	STP CULV(31)		
FILE NAME:	z_winhall_br47_pi.xls	PLOT DATE:	10/9/2014
PROJECT LEADER:	M. CHENETTE	DRAWN BY:	L. BUXTON
DESIGNED BY:	VTRANS	CHECKED BY:	M. CHENETTE
PRELIMINARY INFORMATION SHEET - BR47		SHEET 2 OF 60	

TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT	10 year ESAL for flexible pavement from 2013 to 2023	20 year ESAL for flexible pavement from 2013 to 2033
2013	3000	450	51	11.4	300	753000	1751000
2033	3200	480	51	14.8	420		

AS BUILT "REBAR" DETAIL		
LEVEL I	LEVEL II	LEVEL III
TYPE:	TYPE:	TYPE:
GRADE:	GRADE:	GRADE:

Design Speed : 50 mph

PRELIMINARY INFORMATION SHEET (BRIDGE)

LRFD

INDEX OF SHEETS

PLAN SHEETS

SEE SHEET 2

STANDARDS LIST

FINAL HYDRAULIC REPORT BRIDGE NO. 52

HYDROLOGIC DATA

Date: August 2013

DRAINAGE AREA: 0.7 sq. mi.
 CHARACTER OF TERRAIN: Hilly to mountainous, mostly forested
 STREAM CHARACTERISTICS: Sinuous, alluvial, wide floodplain upstream
 NATURE OF STREAMBED: Silt, sand and gravel

PEAK FLOW DATA

Q 2.33 = 40 cfs Q 50 = 150 cfs
 Q 10 = 100 cfs Q 100 = 175 cfs
 Q 25 = 130 cfs Q 500 = 250 cfs

DATE OF FLOOD OF RECORD: Unknown
 ESTIMATED DISCHARGE: Unknown
 WATER SURFACE ELEV.: Unknown
 NATURAL STREAM VELOCITY: @ Q50 = 6.4 fps
 ICE CONDITIONS: Slight to moderate
 DEBRIS: Slight
 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: Twin 6.0' CMP's
 YEAR BUILT: 1948
 CLEAR SPAN(NORMAL TO STREAM): 6.0' + 6.0'
 VERTICAL CLEARANCE ABOVE STREAMBED: 6.0'
 WATERWAY OF FULL OPENING: 56.6 sq. ft. total
 DISPOSITION OF STRUCTURE: Remove and replace
 TYPE OF MATERIAL UNDER SUBSTRUCTURE: See boring logs

WATER SURFACE ELEVATIONS AT:

Q2.33 = 1925.7' VELOCITY = 5.9 fps
 Q10 = 1926.7' " 7.8 fps
 Q25 = 1927.1' " 8.4 fps
 Q50 = 1927.4' " 8.8 fps
 Q100 = 1927.7' " 9.1 fps

LONG TERM STREAMBED CHANGES: None noted

IS THE ROADWAY OVERTOPPED BELOW Q100: No
 FREQUENCY: Above Q100
 RELIEF ELEVATION: 1933.6'
 DISCHARGE OVER ROAD @Q100: None

UPSTREAM STRUCTURE

TOWN: NA, stream divides DISTANCE:
 HIGHWAY #: STRUCTURE #:
 CLEAR SPAN: CLEAR HEIGHT:
 YEAR BUILT: FULL WATERWAY:
 STRUCTURE TYPE:

DOWNSTREAM STRUCTURE

TOWN: Winhall DISTANCE: 400'
 HIGHWAY #: VT 11 STRUCTURE #: 12
 CLEAR SPAN: 10' CLEAR HEIGHT: 6'
 YEAR BUILT: 1948 FULL WATERWAY: 60 sq. ft.
 STRUCTURE TYPE: R. C. Box

LRFR LOAD RATING FACTORS

LOADING LEVELS	TRUCK						
	H-20	HL-93	3S2	6 AXLE	3A STR.	4A STR.	5A SEM
TONNAGE	20	36	36	66	30	34.5	38
INVENTORY							
POSTING							
OPERATING							
COMMENTS:							

AS BUILT "REBAR" DETAIL		
LEVEL I	LEVEL II	LEVEL III
TYPE:	TYPE:	TYPE:
GRADE:	GRADE:	GRADE:

PROPOSED STRUCTURE

STRUCTURE TYPE: Precast concrete box
 CLEAR SPAN(NORMAL TO STREAM): 12.0'
 VERTICAL CLEARANCE ABOVE STREAMBED: 5.0'
 WATERWAY OF FULL OPENING: 60 sq. ft.

WATER SURFACE ELEVATIONS AT:

Q2.33 = 1923.3' VELOCITY = 2.2 fps
 Q10 = 1923.9' " 3.3 fps
 Q25 = 1924.2' " 3.6 fps
 Q50 = 1924.4' " 3.9 fps
 Q100 = 1924.6' " 4.1 fps

IS THE ROADWAY OVERTOPPED BELOW Q100: No
 FREQUENCY: Above Q100
 RELIEF ELEVATION: 1933.6'
 DISCHARGE OVER ROAD @Q100: None

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 1927.5' at inlet
 VERTICAL CLEARANCE: @ Q50 = 3.1'

SCOUR: Not applicable for a box structure.

REQUIRED CHANNEL PROTECTION: Stone Fill, Type II

PERMIT INFORMATION

AVERAGE DAILY FLOW: 2 cfs DEPTH OR ELEVATION:
 ORDINARY LOW WATER: 1 cfs Depth = 0.5'
 ORDINARY HIGH WATER: 20 cfs Depth = 2'

TEMPORARY BRIDGE REQUIREMENTS

STRUCTURE TYPE: No temporary needed. Use phased construction.
 CLEAR SPAN (NORMAL TO STREAM):
 VERTICAL CLEARANCE ABOVE STREAMBED:
 WATERWAY AREA OF FULL OPENING:

ADDITIONAL INFORMATION

TRAFFIC MAINTENANCE NOTES

1. MAINTAIN TWO-WAY TRAFFIC UNDER PHASED CONSTRUCTION.
2. TRAFFIC SIGNALS ARE NOT NECESSARY.
3. SIDEWALKS ARE NOT NECESSARY.

DESIGN VALUES

1. DESIGN LIVE LOAD	HL-93
2. FUTURE PAVEMENT	d _p : 3.0 INCH
3. DESIGN SPAN	L: 12.00 FT
4. MIN. MID-SPAN POS. CAMBER @ RELEASE (PRESTRESSED UNITS)	Δ: ---
5. PRESTRESSING STRAND	f _y : ---
6. PRESTRESSED CONCRETE STRENGTH	f'c: ---
7. PRESTRESSED CONCRETE RELEASE STRENGTH	f'cl: ---
8. CONCRETE, HIGH PERFORMANCE CLASS AA	f'c: ---
9. CONCRETE, HIGH PERFORMANCE CLASS A	f'c: ---
10. CONCRETE, HIGH PERFORMANCE CLASS B	f'c: 3.5 KSI
11. CONCRETE, CLASS C	f'c: ---
12. REINFORCING STEEL	f _y : 60 KSI
13. STRUCTURAL STEEL AASHTO M270	f _y : ---
14. SOIL UNIT WEIGHT	γ: 0.140 KCF
15. NOMINAL BEARING RESISTANCE OF SOIL	q _n : 6.0 KSF
16. SOIL BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	φ: 0.45
17. NOMINAL BEARING RESISTANCE OF ROCK	q _n : 10.0 KSF
18. ROCK BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	φ: ---
19. NOMINAL AXIAL PILE RESISTANCE	q _p : ---
20. PILE YIELD STRENGTH ASTM A572	f _y : ---
21. PILE SIZE	---
22. EST. PILE LENGTH	L _p : ---
23. PILE RESISTANCE FACTOR	φ: ---
24. LATERAL PILE DEFLECTION	Δ: ---
25. BASIC WIND SPEED	V _{3s} : ---
26. MINIMUM GROUND SNOWLOAD	p _g : ---
27. SEISMIC DATA	PGA: --- S ₁ : ---

PROJECT NAME: WINHALL
 PROJECT NUMBER: STP CULV (31)

FILE NAME: z_winhall_br52_pi.xls PLOT DATE: 10/9/2014
 PROJECT LEADER: M. CHENETTE DRAWN BY: L. BUXTON
 DESIGNED BY: VTRANS CHECKED BY: M. CHENETTE
 PRELIMINARY INFORMATION SHEET - BR52 SHEET 3 OF 60

TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT	10 year ESAL for flexible pavement from 2013 to 2023 : 753000
2013	3000	450	51	11.4	300	20 year ESAL for flexible pavement from 2013 to 2033 : 1751000 Design Speed : 50 mph
2023	3000	480	51	14.8	420	

PROJECT NOTES

GENERAL

1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE STATE OF VERMONT AGENCY OF TRANSPORTATION 2011 STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION AND ITS LATEST REVISIONS AND THE 5TH EDITION OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATION AND ITS LATEST REVISIONS.
2. THE CONTRACTOR SHALL ENSURE ACCESS TO ALL DRIVES AND SIDE ROADS AT ALL TIMES DURING CONSTRUCTION.
3. ALL DIMENSIONS SHOWN IN THE PLANS ARE HORIZONTAL OR VERTICAL AND ARE GIVEN AT 68°F.
4. IN-STREAM CONSTRUCTION SHALL OCCUR ONLY WITHIN THE TIMEFRAME SPECIFIED IN THE PROJECT PERMITS, INCLUDED IN THE CONTRACT DOCUMENTS. IF THE CONTRACTOR PROPOSES TO PERFORM IN-STREAM WORK OUTSIDE OF THESE TIMEFRAMES, THE CONTRACTOR SHALL OBTAIN WRITTEN APPROVAL FROM THE APPROPRIATE REGULATING ENTITIES PRIOR TO PERFORMING THE WORK.

PRECAST CONCRETE BOX CULVERTS AND WINGWALLS

1. THE BOX CULVERT INCLUDING SILLS, HEADWALLS, CUT-OFF WALLS, AND WINGWALLS WILL BE PAID FOR UNDER THE APPROPRIATE SECTION 540 CONTRACT ITEM.
2. THE BOX CULVERT INCLUDING THE SILLS, HEADWALLS AND WINGWALL STEMS SHALL BE PRECAST. THE CUT-OFF-WALL AND WINGWALL FOOTINGS MAY BE EITHER PRECAST OR CAST IN PLACE. THE DESIGN OF THESE CULVERTS SHALL BE THE RESPONSIBILITY OF THE FABRICATOR. CULVERT SHALL BE DESIGNED FOR AN HL-93 LIVE LOAD. CAST-IN-PLACE CONCRETE SHALL MEET THE REQUIREMENTS OF SECTION 501 FOR CONCRETE, HIGH PERFORMANCE CLASS B.
3. THE CONTRACTOR SHALL SUBMIT FABRICATION DRAWINGS FOR THE BOX CULVERTS AND ALL ASSOCIATED DETAILS IN ACCORDANCE WITH SUBSECTION 105.03.
4. THE BOX CULVERT TYPICAL SECTIONS SHOWN IN THE DRAWINGS ARE FOR SCHEMATIC PURPOSES ONLY. THE ACTUAL SHAPE OF THE BOX CULVERT AND ITS COMPONENTS WILL BE DEPENDENT ON THE FABRICATOR.
5. ALL BOX CULVERT JOINTS SHALL BE STRENGTHENED WITH PERMANENT CLOSURE HARDWARE. ALL HARDWARE COMPONENTS SHALL BE GALVANIZED IN ACCORDANCE WITH SUBSECTION 726.08.
6. ALL REINFORCING TO BE LEVEL I (UNCOATED). PAYMENT FOR REINFORCING WILL BE INCLUDED UNDER THE APPROPRIATE SECTION 540 CONTRACT ITEM.
7. AFTER BOX CULVERT SECTIONS HAVE BEEN SET IN THEIR FINAL POSITION, THE EXTERIOR (TOP AND SIDES) AND INTERIOR (SIDES AND BOTTOM) OF ALL BOX CULVERT JOINTS, AND ALL LIFTING HOLES, SHALL BE GROUTED WITH MORTAR, TYPE IV. PRIOR TO THE APPLICATION OF ANY WATERPROOFING, ALL MORTAR SHALL BE WET CURED A MINIMUM OF 12 HOURS OR UNTIL THE COMPRESSIVE STRENGTH HAS REACHED 2000 psi. APPROVED CURING COMPOUNDS MAY BE USED ON INTERIOR SURFACES IN LIEU OF WET CURING.
8. A TWO FOOT WIDE STRIP OF SHEET MEMBRANE WATERPROOFING SHALL BE APPLIED AT EACH SIDE JOINT IN ACCORDANCE WITH SUBSECTION 540.10. THE MEMBRANE SHALL BE CENTERED ON THE JOINT AND SHALL RUN THE ENTIRE HEIGHT OF THE JOINT. THE ENTIRE TOP OF THE BOX CULVERT SHALL THEN BE COVERED WITH TORCH APPLIED MEMBRANE. TORCH APPLIED MEMBRANE WILL BE PAID SEPARATELY UNDER CONTRACT ITEM 519.20. THE MEMBRANE SHEETS SHALL OVERLAP THE EDGES OF THE CULVERT BY ONE FOOT ON EACH SIDE AS SHOWN IN THE PLANS.
9. WATER REPELLENT IN ACCORDANCE WITH ITEM 514.10 SHALL BE APPLIED TO ALL EXPOSED SURFACES EXCEPT THE INSIDE OF THE BOX.

SIMULATED STREAM BED

1. BED MATERIAL TO BE PLACED IN THE RECONSTRUCTED CHANNEL AND BOX CULVERT IS INTENDED TO MIMIC THE NATIVE CHANNEL. THE MATERIAL SHALL BE STONE FILL TYPE II SUPPLEMENTED WITH THE TAILINGS OF A TOPSOIL SCREENING OPERATION WITH GRADATION ADJUSTED TO CONFORM TO THE FOLLOWING TABLE:

STONE/SIEVE SIZE	% FINER, BY WEIGHT
36"	100
12"	30-85
#4	4-30
#200	4-12

2. INSTALLATION OF THE BED MATERIAL MAY REQUIRE INDIVIDUAL PLACEMENT OF LARGE STONES AT SPECIFIC LOCATIONS, AS DIRECTED BY THE ENGINEER. THE MATERIAL ACCEPTANCE AND PLACEMENT WILL BE PER THE STREAM ALTERATIONS ENGINEER, AND WILL BE IN ACCORDANCE WITH ITEM 900.608, SPECIAL PROVISION (STONE FILL, CULVERT LINING).

UTILITY COORDINATION

1. SEE THE LAYOUT SHEETS AND UTILITY SPECIAL PROVISIONS FOR INFORMATION AND REQUIREMENTS RELATED TO UTILITY COORDINATION.

TRAFFIC CONTROL

1. THE TRAFFIC CONTROL PLANS ARE SCHEMATIC ONLY AND SHOULD BE USED AS A REFERENCE. THE CONTRACTOR SHALL DEVELOP AND IMPLEMENT A SITE SPECIFIC TRAFFIC CONTROL PLAN FOR ONE LANE CLOSURES PER THE LATEST VERSION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD). THE CONTRACTOR SHALL ALLOW THE ENGINEER 14 CALENDAR DAYS TO REVIEW AND ACCEPT THE PROPOSED PLANS BEFORE THEY ARE TO BE IMPLEMENTED. NO WORK SHALL COMMENCE UNTIL THE TRAFFIC CONTROL PLAN HAS BEEN APPROVED. DEVELOPMENT AND IMPLEMENTATION OF TRAFFIC CONTROL PLAN SHALL BE IN ACCORDANCE WITH TRAFFIC CONTROL OF SECTION 900.
2. SIGNS SHALL BE INSTALLED SO AS NOT TO OBSTRUCT EXISTING SIGNS OR CORNER SIGHT DISTANCE FROM HIGHWAYS OR DRIVES.
3. ALL SIGNS SHALL BE IN ACCORDANCE WITH THE CURRENT EDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD) PUBLISHED BY THE FEDERAL HIGHWAY ADMINISTRATION (FHWA).
4. ORANGE SOLID SUBSTRATE CONSTRUCTION SIGNS SHALL HAVE RETROREFLECTIVE SHEETING EQUAL TO OR EXCEEDING "AMERICAN SOCIETY FOR TESTING AND MATERIALS" (ASTM) D 4956 TYPE VII, VIII OR IX REQUIREMENTS, UNLESS OTHERWISE NOTED.
5. ROLL UP SIGNS SHALL HAVE RETROREFLECTIVE SHEETING EQUAL TO OR EXCEEDING ASTM D 4956 TYPE VI.
6. SIGNS SHALL BE ERECTED BEFORE THE START OF ANY WORK AND SHALL BE COVERED UNTIL WORK COMMENCES, DURING PERIODS OF INACTIVITY OR UPON COMPLETION OF THE WORK. EACH SIGN SHALL BE ERECTED IN A NEAT AND WORKMANLIKE MANNER. SIGNS SHALL BE REMOVED UPON COMPLETION OF THE WORK AT THE DISCRETION OF THE ENGINEER.
7. FIXED SIGNS SHALL BE IN COMPLIANCE WITH VAOT CONSTRUCTION STANDARD E-121.
8. PORTABLE SIGNS SHALL BE PLACED ON THE EDGE OF ROADWAY AT A ONE FOOT MINIMUM ABOVE TRAVELED WAY. ALL VEGETATION THAT INTERFERES WITH VISIBILITY OF THE SIGNS SHALL BE REMOVED. WHEN PLACED BEHIND GUARDRAIL, THE BOTTOM OF THE SIGN FACE SHALL BE ABOVE THE TOP OF THE GUARDRAIL.
9. WHERE SIGN INSTALLATIONS ARE NOT PROTECTED BY GUARDRAIL OR OTHER APPROVED TRAFFIC BARRIERS, ALL SIGN STANDS AND POST INSTALLATIONS SHALL BE "NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM" (NCHRP) REPORT 350 COMPLIANT. NO SIGN POSTS SHALL EXTEND OVER THE TOP OF THE SIGN INSTALLED ON SAID POST(S). WHEN ANCHORS ARE INSTALLED, STUB SHALL NOT BE GREATER THAN FOUR INCHES ABOVE EXISTING GROUND.
10. THE NUMBER OF CHANNELIZING DEVICES AND OTHER TRAFFIC CONTROL DEVICES SHOWN ON THE TRAFFIC CONTROL PLANS ARE FOR ILLUSTRATIVE PURPOSES ONLY. THE ACTUAL NUMBER REQUIRED IS TO BE DETERMINED BASED ON INDIVIDUAL DETOUR CONDITIONS (TAPERS, SPEED LIMITS, LENGTH OF DETOUR, CURVE, ETC.).
11. PORTABLE CHANGEABLE MESSAGE SIGNS (PCMS) SHALL BE USED AT THE DISCRETION OF THE ENGINEER AND IN ACCORDANCE WITH SECTION 6F.60 OF THE MUTCD.
12. TRAVEL LANES SHALL BE A MINIMUM OF 12 FEET WIDE WITH 1 FOOT MINIMUM WIDTH SHOULDERS.
13. THE CONTRACTOR SHALL SHIFT TRAFFIC IN ACCORDANCE WITH AN APPROVED TRAFFIC CONTROL PLAN. ALL EQUIPMENT SHALL BE MOVED TO A LOCATION OUTSIDE OF THE CONSTRUCTION CLEAR ZONE (15') DURING NON-WORK PERIODS IF POSSIBLE. IF NOT POSSIBLE, EQUIPMENT SHALL BE OFF ROADWAY AND MARKED WITH CHANNELIZING DEVICES.

TEMPORARY TRAFFIC SIGNALS:

1. TEMPORARY TRAFFIC SIGNAL SYSTEM SHALL BE PAID AS PART OF ITEM 900.645 SPECIAL PROVISION (TRAFFIC CONTROL ALL-INCLUSIVE)
2. DESIGN OF THE SIGNAL SUPPORTS AND ANY REQUIRED GUYING IS THE RESPONSIBILITY OF THE CONTRACTOR.
3. SIGNAL PHASING/TIMING ADJUSTMENTS REQUESTED BY THE ENGINEER SHALL BE ACCOMPLISHED WITHIN A 48 HOUR PERIOD.
4. SIGNAL FACES SHALL BE LED AND CONSIST OF 12" LENSES. (RED, YELLOW, AND GREEN)
5. THE BOTTOM OF THE HOUSING OF A SIGNAL FACE SUSPENDED OVER A ROADWAY SHALL NOT BE LESS THAN 16.5 FEET NOR MORE THAN 19 FEET ABOVE THE PAVEMENT GRADE AT THE CENTER OF THE ROADWAY. THE BOTTOM OF A SIGNAL FACE NOT MOUNTED OVER A ROADWAY SHALL NOT BE LESS THAN 8 FEET NOR MORE THAN 15 FEET ABOVE THE GROUND. CAUTION SHOULD BE USED TO ENSURE COMPLIANCE WITH THE HEIGHT REQUIREMENTS IN THE EVENT THE NEW APPROACH GRADES DIFFER SIGNIFICANTLY FROM THE OLD ROAD GRADE.
6. SIGNAL FACES FOR ANY ONE APPROACH SHALL NOT BE LESS THAN 8 FEET APART MEASURED HORIZONTALLY BETWEEN CENTER FACES.
7. SIGNAL HEADS MAY BE HUNG ON A SPAN WIRE OR ON A CANTILEVER MAST ARM. HOWEVER, THE USE OF PORTABLE SIGNALS IS ENCOURAGED. AT LEAST ONE SIGNAL HEAD SHALL BE UNMISTAKABLY IN LINE WITH THE CENTER OF APPROACHING TRAFFIC AT ALL TIMES. THE SECOND SIGNAL HEAD MAY BE POST MOUNTED, LOCATED AT A DISTANCE OF NO GREATER THAN 14.5 FEET FROM THE CENTER OF THE APPROACH LANE WHEN THE STOP BAR IS 40 FEET FROM THE SIGNAL HEAD. CONSULT THE CURRENT EDITION OF THE MUTCD FOR ADDITIONAL INFORMATION CONCERNING SIGNAL PLACEMENT.
8. SIGNAL HEAD PLACEMENT IS CRITICAL. HEADS SHALL BE ADJUSTED TO REFLECT LANE LOCATION CHANGES.
9. THE SIGNAL SYSTEM SHALL CONSIST OF POLES, SIGNS AND POSTS, WARNING SIGNS, FLASHING BEACONS, ASSOCIATED PAVEMENT MARKINGS, AND SIGNAL EQUIPMENT TO PROVIDE FOR AN ADEQUATE DESIGN. IT ALSO INCLUDES PERMITS AND COSTS ASSOCIATED WITH PROVIDING ELECTRICAL POWER.
10. INSTALL WIRING BETWEEN SIGNAL POLES TO PROVIDE FOR A SAFE INSTALLATION. ATTACHMENT TO UTILITY POLES TO BE COORDINATED BY THE CONTRACTOR WITH THE UTILITY COMPANY.
11. PLACE TEMPORARY POLES BEHIND GUARDRAIL OR OUTSIDE OF THE CLEAR ZONE.
12. POLES SUPPORTING SPAN WIRES AND/OR MAST ARMS SHALL BE ADEQUATELY BRACED OR GUYED AND SHALL NOT BE PLACED SO AS TO CREATE A HAZARD TO THE TRAVELING PUBLIC.
13. ALL TEMPORARY SIGNAL EQUIPMENT, SIGNS, ETC., SHALL BELONG TO THE CONTRACTOR AT THE END OF THE PROJECT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THEIR REMOVAL INCLUDING ANY TEMPORARY PAVEMENT MARKINGS, UTILITY POLES, WIRES, ETC.
14. A 250 WATT MER/150 WATT HPS LUMINAIRE AND MAST ARM SHALL BE PROVIDED ON A POLE ON EACH APPROACH AT A MOUNTING HEIGHT OF 30 FEET ABOVE ROADWAY CENTERLINE. THE INTENT IS TO ILLUMINATE THE AREA AROUND THE SIGNAL HEADS AND STOP BAR FOR INCREASED VISIBILITY. THE ENGINEER SHALL DETERMINE THE ADEQUACY OF THE LIGHTING AND DIRECT CHANGES IF THE LIGHTING IS INSUFFICIENT.
15. SEE STD. E-121 FOR SIGN PLACEMENT. SEE STDS. E-171A AND E-172 FOR ADDITIONAL INFORMATION ON SIGNALS.
16. ALL ELECTRICAL WORK SHALL MEET THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE.
17. ALL STOP SIGNS AND ANY TRAFFIC SIGNS MADE IRRELEVANT DUE TO THE TEMPORARY SIGNAL SHALL BE COMPLETELY COVERED DURING OPERATION OF THE TEMPORARY SIGNAL OR AT THE DISCRETION OF THE ENGINEER.
18. CONSTRUCTION APPROACH SIGNS SHALL BE PROVIDED ON EACH APPROACH PER THE "TRAFFIC CONTROL APPROACH SIGN PACKAGE" SHOWN ON THE TRAFFIC CONTROL PLAN SHEETS. ADDITIONAL CONSTRUCTION APPROACH SIGNS SHALL BE INSTALLED AS REQUIRED BY THE ENGINEER PER STANDARDS T-1, T-10 AND T-17.
19. THE SIGNAL SYSTEM SHALL UTILIZE VEHICLE DETECTION AND BE PROGRAMMED TO DWELL ON RED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING SIGNAL PHASING AND TIMING. THE CONTRACTOR SHALL SUBMIT A PHASING DIAGRAM TO THE ENGINEER FOR APPROVAL. THE CONTRACTOR SHALL MAKE SIGNALS OPERATIONAL ONLY AFTER RECEIVING APPROVAL OF THE PHASING DIAGRAM BY THE ENGINEER.

PROJECT NAME: WINHALL
PROJECT NUMBER: STP CULV(31)

FILE NAME: z1lb268frm.dgn PLOT DATE: 9/25/2014
PROJECT LEADER: M. CHENETTE DRAWN BY: L. BUXTON
DESIGNED BY: J. HUNGERFORD CHECKED BY: M. CHENETTE
PROJECT NOTES SHEET 4 OF 60



QUANTITY SHEET 1

SUMMARY OF ESTIMATED QUANTITIES										TOTALS		DESCRIPTIONS				DETAILED SUMMARY OF QUANTITIES		
					ROADWAY	EROSION CONTROL	BRIDGE NO. 47	BRIDGE NO. 52	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 (VT 30 - BRIDGE NO. 47)	201.10				
					1					1		LS	CLEARING AND GRUBBING, INCLUDING INDIVIDUAL TREES AND STUMPS (VT 30 - BRIDGE NO. 52)	201.10				
					1420					1420		CY	COMMON EXCAVATION	203.15				
							800	140		940		CY	UNCLASSIFIED CHANNEL EXCAVATION	203.27				
					1					1		CY	TRENCH EXCAVATION OF EARTH, EXPLORATORY (N.A.B.I.)	204.22				
							1490	920		2410		CY	STRUCTURE EXCAVATION	204.25				
							930	490		1420		CY	GRANULAR BACKFILL FOR STRUCTURES	204.30				
					1610					1610		SY	COLD PLANING, BITUMINOUS PAVEMENT	210.10				
					1030					1030		CY	SUBBASE OF DENSE GRADED CRUSHED STONE	301.35				
					24					24		CWT	EMULSIFIED ASPHALT	404.65				
					1					1		LU	PRICE ADJUSTMENT, ASPHALT CEMENT (N.A.B.I.)	406.50				
							5	5		10		GAL	WATER REPELLENT, SILANE	514.10				
							210	170		380		SY	SHEET MEMBRANE WATERPROOFING, TORCH APPLIED	519.20				
								1		1		EACH	REMOVAL OF STRUCTURE (2 EA. 72" DIA. ACCGMP)	529.15				
							1			1		EACH	REMOVAL OF STRUCTURE (72" DIA. X 92' CGMP)	529.15				
								1		1		LS	PRECAST CONCRETE STRUCTURE (12'-0" X 7'-0" X 72'-0" BOX)	540.10				
							1			1		LS	PRECAST CONCRETE STRUCTURE (12'-0" X 7'-0" X 90'-0" BOX)	540.10				
					1					1		MGAL	DUST CONTROL WITH WATER	609.10				
					1					1		TON	DUST AND ICE CONTROL WITH CALCIUM CHLORIDE	609.15				
								110		110		CY	STONE FILL, TYPE II	613.11				
							260			260		CY	STONE FILL, TYPE III	613.12				
					437					437		LF	STEEL BEAM GUARDRAIL, GALVANIZED	621.20				
					613					613		LF	STEEL BEAM GUARDRAIL, GALVANIZED W/8 FEET POSTS	621.205				
					7					7		EACH	ANCHOR FOR STEEL BEAM RAIL	621.60				
					963					963		LF	REMOVAL AND DISPOSAL OF GUARDRAIL	621.80				
							160	130		290		TON	CRUSHED STONE BEDDING	629.54				
					20					20		HR	UNIFORMED TRAFFIC OFFICERS	630.10				
					160					160		HR	FLAGGERS	630.15				
									1	1		LS	FIELD OFFICE, ENGINEERS	631.10				
									1	1		LS	TESTING EQUIPMENT, BITUMINOUS	631.17				
									3000	3000		DL	FIELD OFFICE TELEPHONE (N.A.B.I.)	631.26				
					1					1		LS	MOBILIZATION/DEMobilIZATION	635.11				
					1810					1810		LF	DURABLE 4 INCH WHITE LINE	646.400				
					1340					1340		LF	DURABLE 4 INCH YELLOWLINE	646.410				
							80	60		140		SY	GEOTEXTILE FOR ROADBED SEPARATOR	649.11				
							410	270		680		SY	GEOTEXTILE UNDER STONE FILL	649.31				
						120				120		SY	GEOTEXTILE FOR SILT FENCE	649.51				
					40					40		LB	SEED	651.15				
					240					240		LB	FERTILIZER	651.18				

NOTE: FOR DETAILED BREAKDOWN OF QUANTITIES BETWEEN BR47 AND BR52 SEE BR47 AND BR52 QUANTITY SHEETS

PROJECT NAME: WINHALL
PROJECT NUMBER: STP CULV(3I)

FILE NAME: z1lb268frm.dgn
PROJECT LEADER: M. CHENETTE
DESIGNED BY: J. HUNGERFORD
QUANTITY SHEET 1 - QSI

PLOT DATE: 9/25/2014
DRAWN BY: L. BUXTON
CHECKED BY: M. CHENETTE
SHEET 5 OF 60



QUANTITY SHEET 2

SUMMARY OF ESTIMATED QUANTITIES						TOTALS		DESCRIPTIONS				DETAILED SUMMARY OF QUANTITIES						
					ROADWAY	EROSION CONTROL	BRIDGE NO. 47	BRIDGE NO. 52	FULL C.E. ITEMS	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND	QUANTITIES	UNIT	ITEMS
					2					2		TON	AGRICULTURAL LIMESTONE	651.20				
					2					2		TON	HAY MULCH	651.25				
					160					160		CY	TOPSOIL	651.35				
					370					370		SY	GRUBBING MATERIAL	651.40				
						1				1		LS	EPSC PLAN (VT 30 - BRIDGE NO. 47)	652.10				
						1				1		LS	EPSC PLAN (VT 30 - BRIDGE NO. 52)	652.10				
						80				80		HR	MONITORING EPSC PLAN	652.20				
						1				1		LU	MAINTENANCE OF EPSC PLAN (N.A.B.I.) (VT 30 - BRIDGE NO. 47)	652.30				
						1				1		LU	MAINTENANCE OF EPSC PLAN (N.A.B.I.) (VT 30 - BRIDGE NO.52)	652.30				
						2350				2350		SY	TEMPORARY EROSION MATTING	653.20				
						20				20		CY	TEMPORARY STONE CHECK DAM, TYPE I	653.25				
						60				60		CY	VEHICLE TRACKING PAD	653.35				
						4				4		EACH	FILTER BAG	653.45				
						1190				1190		LF	PROJECT DEMARCATION FENCE	653.55				
						2				2		SF	TRAFFIC SIGNS, TYPE A	675.20				
						60				60		LF	SQUARE TUBE SIGN POST AND ANCHOR	675.341				
						1				1		LU	PRICE ADJUSTMENT, FUEL (N.A.B.I.)	690.50				
							270	130		400		CY	SPECIAL PROVISION (STONE FILL, CULVERT LINING)	900.608				
							1			1		LS	SPECIAL PROVISION (TEMPORARY RELOCATION OF STREAM) (VT 30 - BRIDGE NO. 47)	900.645				
								1		1		LS	SPECIAL PROVISION (TEMPORARY RELOCATION OF STREAM) (VT 30 - BRIDGE NO. 52)	900.645				
						1				1		LS	SPECIAL PROVISION (TRAFFIC CONTROL, ALL-INCLUSIVE) (VT 30 - BRIDGE NO. 47)	900.645				
						1				1		LS	SPECIAL PROVISION (TRAFFIC CONTROL, ALL-INCLUSIVE)(VT 30 - BRIDGE NO. 52)	900.645				
						2				2		LU	SPECIAL PROVISION (MAT DENSITY PAY ADJUSTMENT, SMALL QUANTITY)(N.A.B.I.)	900.650				
						2				2		LU	SPECIAL PROVISION (MIXTURE PAY ADJUSTMENT)(N.A.B.I.)	900.650				
						1080				1080		TON	SPECIAL PROVISION (BITUMINOUS CONCRETE PAVEMENT, SMALL QUANTITY)	900.680				

NOTE: FOR DETAILED BREAKDOWN OF QUANTITIES BETWEEN BR47 AND BR52 SEE BR47 AND BR52 QUANTITY SHEETS

PROJECT NAME: WINHALL
PROJECT NUMBER: STP CULV(3I)

FILE NAME: z1lb268frm.dgn
PROJECT LEADER: M. CHENETTE
DESIGNED BY: J. HUNGERFORD
QUANTITY SHEET 2 - 052

PLOT DATE: 9/25/2014
DRAWN BY: L. BUXTON
CHECKED BY: M. CHENETTE
SHEET 6 OF 60



BR47 QUANTITY SHEET I

SUMMARY OF ESTIMATED QUANTITIES										TOTALS		DESCRIPTIONS				DETAILED SUMMARY OF QUANTITIES		
						ROADWAY	EROSION CONTROL	BRIDGE NO.47	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 (VT 30 - BRIDGE NO. 47)	201.10				
						740				740		CY	COMMON EXCAVATION	203.15				
								800		800		CY	UNCLASSIFIED CHANNEL EXCAVATION	203.27				
						0.5				0.5		CY	TRENCH EXCAVATION OF EARTH, EXPLORATORY (N.A.B.I.)	204.22				
								1490		1490		CY	STRUCTURE EXCAVATION	204.25				
								930		930		CY	GRANULAR BACKFILL FOR STRUCTURES	204.30				
						320				320		SY	COLD PLANING, BITUMINOUS PAVEMENT	210.10				
						540				540		CY	SUBBASE OF DENSE GRADED CRUSHED STONE	301.35				
						9				9		CWT	EMULSIFIED ASPHALT	404.65				
						0.5				0.5		LU	PRICE ADJUSTMENT, ASPHALT CEMENT (N.A.B.I.)	406.50				
								5		5		GAL	WATER REPELLENT, SILANE	514.10				
								210		210		SY	SHEET MEMBRANE WATERPROOFING, TORCH APPLIED	519.20				
								1		1		EACH	REMOVAL OF STRUCTURE (72" DIA. X 92' CGMP)	529.15				
								1		1		LS	PRECAST CONCRETE STRUCTURE (12'-0" X 7'-0" X 90'-0" BOX)	540.10				
						0.5				0.5		MGAL	DUST CONTROL WITH WATER	609.10				
						0.5				0.5		TON	DUST AND ICE CONTROL WITH CALCIUM CHLORIDE	609.15				
								260		260		CY	STONE FILL, TYPE III	613.12				
						108				108		LF	STEEL BEAM GUARDRAIL, GALVANIZED	621.20				
						613				613		LF	STEEL BEAM GUARDRAIL, GALVANIZED W/8 FEET POSTS	621.205				
						4				4		EACH	ANCHOR FOR STEEL BEAM RAIL	621.60				
						663				663		LF	REMOVAL AND DISPOSAL OF GUARDRAIL	621.80				
								160		160		TON	CRUSHED STONE BEDDING	629.54				
						10				10		HR	UNIFORMED TRAFFIC OFFICERS	630.10				
						80				80		HR	FLAGGERS	630.15				
									0.5	0.5		LS	FIELD OFFICE, ENGINEERS	631.10				
									0.5	0.5		LS	TESTING EQUIPMENT, BITUMINOUS	631.17				
									1500	1500		DL	FIELD OFFICE TELEPHONE (N.A.B.I.)	631.26				
						0.5				0.5		LS	MOBILIZATION/DEMobilIZATION	635.11				
						660				660		LF	DURABLE 4 INCH WHITE LINE	646.400				
						660				660		LF	DURABLE 4 INCH YELLOW LINE	646.410				
								80		80		SY	GEOTEXTILE FOR ROADBED SEPARATOR	649.11				
								410		410		SY	GEOTEXTILE UNDER STONE FILL	649.31				
							60			60		SY	GEOTEXTILE FOR SILT FENCE	649.51				
						30				30		LB	SEED	651.15				
						180				180		LB	FERTILIZER	651.18				
						1				1		TON	AGRICULTURAL LIMESTONE	651.20				
						1				1		TON	HAY MULCH	651.25				
						120				120		CY	TOPSOIL	651.35				
						230				230		SY	GRUBBING MATERIAL	651.40				
							1			1		LS	EPSC PLAN (VT 30 - BRIDGE NO. 47)	652.10				

PROJECT NAME: WINHALL	
PROJECT NUMBER: STP CULV(3I)	
FILE NAME: z1lb268frm.dgn	PLOT DATE: 9/25/2014
PROJECT LEADER: M. CHENETTE	DRAWN BY: L. BUXTON
DESIGNED BY: J. HUNGERFORD	CHECKED BY: J. HUNGERFORD
BR47 QUANTITY SHEET I	SHEET 7 OF 60



BR47 QUANTITY SHEET 2

SUMMARY OF ESTIMATED QUANTITIES										TOTALS		DESCRIPTIONS				DETAILED SUMMARY OF QUANTITIES			
							ROADWAY	EROSION CONTROL	BRIDGE NO.47	FULL C.E. ITEMS	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND	QUANTITIES	UNIT	ITEMS
								40			40		HR	MONITORING EPSC PLAN	652.20				
								1			1		LU	MAINTENANCE OF EPSC PLAN (N.A.B.I.) (VT 30 - BRIDGE NO. 47)	652.30				
								1760			1760		SY	TEMPORARY EROSION MATTING	653.20				
								10			10		CY	TEMPORARY STONE CHECK DAM, TYPE I	653.25				
								30			30		CY	VEHICLE TRACKING PAD	653.35				
								2			2		EACH	FILTER BAG	653.45				
								660			660		LF	PROJECT DEMARCATION FENCE	653.55				
							1				1		SF	TRAFFIC SIGNS, TYPE A	675.20				
							30				30		LF	SQUARE TUBE SIGN POST AND ANCHOR	675.341				
							0.5				0.5		LU	PRICE ADJUSTMENT, FUEL (N.A.B.I.)	690.50				
									270		270		CY	SPECIAL PROVISION (STONE FILL, CULVERT LINING)	900.608				
									1		1		LS	SPECIAL PROVISION (TEMPORARY RELOCATION OF STREAM) (VT 30 - BRIDGE NO. 47)	900.645				
							1				1		LS	SPECIAL PROVISION (TRAFFIC CONTROL, ALL-INCLUSIVE) (VT 30 - BRIDGE NO. 47)	900.645				
							1				1		LU	SPECIAL PROVISION (MAT DENSITY PAY ADJUSTMENT, SMALL QUANTITY)(N.A.B.I.)	900.650				
							1				1		LU	SPECIAL PROVISION (MIXTURE PAY ADJUSTMENT)(N.A.B.I.)	900.650				
							450				450		TON	SPECIAL PROVISION (BITUMINOUS CONCRETE PAVEMENT, SMALL QUANTITY)	900.680				

PROJECT NAME: WINHALL	PLOT DATE: 9/25/2014
PROJECT NUMBER: STP CULV(3I)	DRAWN BY: L. BUXTON
FILE NAME: z1lb268frm.dgn	CHECKED BY: M. CHENETTE
PROJECT LEADER: M. CHENETTE	SHEET 8 OF 60
DESIGNED BY: J. HUNGERFORD	
BR47 QUANTITY SHEET 2	



BR52 QUANTITY SHEET 1

SUMMARY OF ESTIMATED QUANTITIES										TOTALS		DESCRIPTIONS				DETAILED SUMMARY OF QUANTITIES		
						ROADWAY	EROSION CONTROL	BRIDGE	FULL C.E. ITEMS	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND	QUANTITIES	UNIT	ITEMS
						1				1		LS	CLEARING AND GRUBBING, INCLUDING INDIVIDUAL TREES AND STUMPS (VT 30 - BRIDGE NO. 52)	201.10				
						680				680		CY	COMMON EXCAVATION	203.15				
								140		140		CY	UNCLASSIFIED CHANNEL EXCAVATION	203.27				
						0.5				0.5		CY	TRENCH EXCAVATION OF EARTH, EXPLORATORY (N.A.B.I.)	204.22				
								920		920		CY	STRUCTURE EXCAVATION	204.25				
								490		490		CY	GRANULAR BACKFILL FOR STRUCTURES	204.30				
						1290				1290		SY	COLD PLANING, BITUMINOUS PAVEMENT	210.10				
						490				490		CY	SUBBASE OF DENSE GRADED CRUSHED STONE	301.35				
						15				15		CWT	EMULSIFIED ASPHALT	404.65				
						0.5				0.5		LU	PRICE ADJUSTMENT, ASPHALT CEMENT (N.A.B.I.)	406.50				
								5		5		GAL	WATER REPELLENT, SILANE	514.10				
								170		170		SY	SHEET MEMBRANE WATERPROOFING, TORCH APPLIED	519.20				
								1		1		EACH	REMOVAL OF STRUCTURE (2 EA. 72" DIA. CGMP)	529.15				
								1		1		LS	PRECAST CONCRETE STRUCTURE (12'-0" X 7'-0" X 72'-0" BOX)	540.10				
						0.5				0.5		MGAL	DUST CONTROL WITH WATER	609.10				
						0.5				0.5		TON	DUST AND ICE CONTROL WITH CALCIUM CHLORIDE	609.15				
								110		110		CY	STONE FILL, TYPE II	613.11				
						329				329		LF	STEEL BEAM GUARDRAIL, GALVANIZED	621.20				
						3				3		EACH	ANCHOR FOR STEEL BEAM RAIL	621.60				
						300				300		LF	REMOVAL AND DISPOSAL OF GUARDRAIL	621.80				
								130		130		TON	CRUSHED STONE BEDDING	629.54				
						10				10		HR	UNIFORMED TRAFFIC OFFICERS	630.10				
						80				80		HR	FLAGGERS	630.15				
									0.5	0.5		LS	FIELD OFFICE, ENGINEERS	631.10				
									0.5	0.5		LS	TESTING EQUIPMENT, BITUMINOUS	631.17				
									1500	1500		DL	FIELD OFFICE TELEPHONE (N.A.B.I.)	631.26				
						0.5				0.5		LS	MOBILIZATION/DEMobilIZATION	635.11				
						1150				1150		LF	DURABLE 4 INCH WHITE LINE	646.400				
						680				680		LF	DURABLE 4 INCH YELLOWLINE	646.410				
								60		60		SY	GEOTEXTILE FOR ROADBED SEPARATOR	649.11				
								270		270		SY	GEOTEXTILE UNDER STONE FILL	649.31				
							60			60		SY	GEOTEXTILE FOR SILT FENCE	649.51				
						10				10		LB	SEED	651.15				
						60				60		LB	FERTILIZER	651.18				
						1				1		TON	AGRICULTURAL LIMESTONE	651.20				
						1				1		TON	HAY MULCH	651.25				
						40				40		CY	TOPSOIL	651.35				
						140				140		SY	GRUBBING MATERIAL	651.40				
							1			1		LS	EPSC PLAN (VT 30 - BRIDGE NO. 52)	652.10				
							40			40		HR	MONITORING EPSC PLAN	652.20				

PROJECT NAME: WINHALL
 PROJECT NUMBER: STP CULV(3I)
 FILE NAME: z1lb268frm.dgn
 PROJECT LEADER: M. CHENETTE
 DESIGNED BY: J. HUNGERFORD
 BR52 QUANTITY SHEET 1
 PLOT DATE: 9/25/2014
 DRAWN BY: L. BUXTON
 CHECKED BY: J. HUNGERFORD
 SHEET 9 OF 60



BR52 QUANTITY SHEET 2

SUMMARY OF ESTIMATED QUANTITIES										TOTALS		DESCRIPTIONS				DETAILED SUMMARY OF QUANTITIES			
							ROADWAY	EROSION CONTROL	BRIDGE	FULL C.E. ITEMS	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND	QUANTITIES	UNIT	ITEMS
								1			1		LU	MAINTENANCE OF EPSC PLAN (N.A.B.I.) (VT 30 - BRIDGE NO. 52)	652.30				
								590			590		SY	TEMPORARY EROSION MATTING	653.20				
								10			10		CY	TEMPORARY STONE CHECK DAM, TYPE I	653.25				
								30			30		CY	VEHICLE TRACKING PAD	653.35				
								2			2		EACH	FILTER BAG	653.45				
								530			530		LF	PROJECT DEMARCATION FENCE	653.55				
							1				1		SF	TRAFFIC SIGNS, TYPE A	675.20				
							30				30		LF	SQUARE TUBE SIGN POST AND ANCHOR	675.341				
							0.5				0.5		LU	PRICE ADJUSTMENT, FUEL (N.A.B.I.)	690.50				
									130		130		CY	SPECIAL PROVISION (STONE FILL, CULVERT LINING)	900.608				
									1		1		LS	SPECIAL PROVISION (TEMPORARY RELOCATION OF STREAM) (VT 30 - BRIDGE NO. 52)	900.645				
							1				1		LS	SPECIAL PROVISION (TRAFFIC CONTROL, ALL-INCLUSIVE) (VT 30 - BRIDGE NO. 52)	900.645				
							1				1		LU	SPECIAL PROVISION (MAT DENSITY PAY ADJUSTMENT, SMALL QUANTITY)(N.A.B.I.)	900.650				
							1				1		LU	SPECIAL PROVISION (MIXTURE PAY ADJUSTMENT)(N.A.B.I.)	900.650				
							630				630		TON	SPECIAL PROVISION (BITUMINOUS CONCRETE PAVEMENT, SMALL QUANTITY)	900.680				

PROJECT NAME: WINHALL
 PROJECT NUMBER: STP CULV(3I)
 FILE NAME: z1lb268frm.dgn
 PROJECT LEADER: M. CHENETTE
 DESIGNED BY: J. HUNGERFORD
 BR52 QUANTITY SHEET 2

PLOT DATE: 9/25/2014
 DRAWN BY: L. BUXTON
 CHECKED BY: M. CHENETTE
 SHEET 10 OF 60



GENERAL INFORMATION

SYMBOLY LEGEND NOTE

THE SYMBOLY ON THIS SHEET IS INTENDED TO COVER STANDARD CONVENTIONAL SYMBOLY. THE SYMBOLY IS USED FOR EXISTING & PROPOSED FEATURES WITH HEAVIER LINEWEIGHT, IN COMBINATION WITH PROJECT ANNOTATION, AS NOTED ON PROJECT PLAN SHEETS. THIS LEGEND SHEET COVERS THE BASICS. SYMBOLY ON PLANS MAY VARY, PLAN ANNOTATIONS AND NOTES SHOULD BE USED TO CLARIFY AS NEEDED.

R. O. W. ABBREVIATIONS (CODES) & SYMBOLS

POINT CODE	DESCRIPTION
CH	CHANNEL EASEMENT
CONST	CONSTRUCTION EASEMENT
CUL	CULVERT EASEMENT
D&C	DISCONNECT & CONNECT
DIT	DITCH EASEMENT
DR	DRAINAGE EASEMENT
DRIVE	DRIVEWAY EASEMENT
EC	EROSION CONTROL
HWY	HIGHWAY EASEMENT
I&M	INSTALL & MAINTAIN EASEMENT
LAND	LANDSCAPE EASEMENT
R&RES	REMOVE & RESET
R&REP	REMOVE & REPLACE
SR	SLOPE RIGHT
UE	UTILITY EASEMENT
(P)	PERMANENT EASEMENT
(T)	TEMPORARY EASEMENT
■	BNDNS BOUND SET
▣	BNDNS BOUND TO BE SET
●	IPNS IRON PIN SET
⊙	IPNS IRON PIN TO BE SET
⊠	CALC EXISTING ROW POINT
○	PROW PROPOSED ROW POINT
[LENGTH]	LENGTH CARRIED ON NEXT SHEET

COMMON TOPOGRAPHIC POINT SYMBOLS

POINT CODE	DESCRIPTION
#	APL BOUND APPARENT LOCATION
□	BM BENCHMARK
▣	BND BOUND
▣	CB CATCH BASIN
⊕	COMB COMBINATION POLE
▣	DITHR DROP INLET THROATED DNC
⊕	EL ELECTRIC POWER POLE
○	FPOLE FLAGPOLE
○	GASFIL GAS FILLER
○	GP GUIDE POST
*	GSO GAS SHUT OFF
○	GUY GUY POLE
○	GUYW GUY WIRE
*	GV GATE VALVE
⊗	H TREE HARDWOOD
△	HCTRL CONTROL HORIZONTAL
▲	HVCTRL CONTROL HORIZ. & VERTICAL
◇	HYD HYDRANT
●	IP IRON PIN
●	IPIPE IRON PIPE
⊕	LI LIGHT - STREET OR YARD
♫	MB MAILBOX
○	MH MANHOLE (MH)
▣	MM MILE MARKER
●	PM PARKING METER
▣	PMK PROJECT MARKER
○	POST POST STONE/WOOD
⊗	RRSIG RAILROAD SIGNAL
⊕	RRSL RAILROAD SWITCH LEVER
⊗	S TREE SOFTWOOD
⊕	SAT SATELLITE DISH
⊗	SHRUB SHRUB
⊕	SIGN SIGN
♫	STUMP STUMP
⊕	TEL TELEPHONE POLE
○	TIE TIE
⊕	TSIGN SIGN W/DOUBLE POST
⊕	VCTRL CONTROL VERTICAL
○	WELL WELL
*	WSO WATER SHUT OFF

THESE ARE COMMON VAOT SURVEY POINT SYMBOLS FOR EXISTING FEATURES, ALSO USED FOR PROPOSED FEATURES WITH HEAVIER LINEWEIGHT, IN COMBINATION WITH PROPOSED ANNOTATION.

PROPOSED GEOMETRY CODES

CODE	DESCRIPTION
PC	POINT OF CURVATURE
PI	POINT OF INTERSECTION
CC	CENTER OF CURVE
PT	POINT OF TANGENCY
PCC	POINT OF COMPOUND CURVE
PRC	POINT OF REVERSE CURVE
POB	POINT OF BEGINNING
POE	POINT OF ENDING
STA	STATION PREFIX
AH	AHEAD STATION SUFFIX
BK	BACK STATION SUFFIX
D	CURVE DEGREE OF (100FT)
R	CURVE RADUIS OF
T	CURVE TANGENT LENGTH
L	CURVE LENGTH OF
E	CURVE EXTERNAL DISTANCE

UTILITY SYMBOLY

UNDERGROUND UTILITIES

— UGU —	UTILITY (GENERIC-UNKNOWN)
— UT —	TELEPHONE
— UE —	ELECTRIC
— UC —	CABLE (TV)
— UEC —	ELECTRIC+CABLE
— UET —	ELECTRIC+TELEPHONE
— UCT —	CABLE+TELEPHONE
— UECT —	ELECTRIC+CABLE+TELEP.
— G —	GAS LINE
— W —	WATER LINE
— S —	SANITARY SEWER (SEPTIC)

ABOVE GROUND UTILITIES (AERIAL)

— AGU —	UTILITY (GENERIC-UNKNOWN)
— T —	TELEPHONE
— E —	ELECTRIC
— C —	CABLE (TV)
— EC —	ELECTRIC+CABLE
— ET —	ELECTRIC+TELEPHONE
— AER E&T —	ELECTRIC+TELEPHONE
— CT —	CABLE+TELEPHONE
— ECT —	ELECTRIC+CABLE+TELEP.
—	UTILITY POLE GUY WIRE

PROJECT CONSTRUCTION SYMBOLY

PROJECT DESIGN & LAYOUT SYMBOLY

— CZ —	CLEAR ZONE
—	PLAN LAYOUT MATCHLINE

PROJECT CONSTRUCTION FEATURES

▲	TOP OF CUT SLOPE
○	TOE OF FILL SLOPE
⊗	STONE FILL
⊕	BOTTOM OF DITCH
---	CULVERT PROPOSED
---	STRUCTURE SUBSURFACE
PDF	PROJECT DEMARCATION FENCE
BF	BARRIER FENCE
⊗	TREE PROTECTION ZONE (TPZ)
///	STRIPING LINE REMOVAL
~~~~~	SHEET PILES

**CONVENTIONAL BOUNDARY SYMBOLY**

**BOUNDARY LINES**

— TOWN LINE —	TOWN BOUNDARY LINE
— COUNTY LINE —	COUNTY BOUNDARY LINE
— STATE LINE —	STATE BOUNDARY LINE
—	PROPOSED STATE R.O.W. (LIMITED ACCESS)
—	PROPOSED STATE R.O.W.
—	STATE ROW (LIMITED ACCESS)
—	STATE ROW
—	TOWN ROW
—	PERMANENT EASEMENT LINE (P)
—	TEMPORARY EASEMENT LINE (T)
+	SURVEY LINE
P/L	PROPERTY LINE (P/L)
SR	SLOPE RIGHTS
6f	6F PROPERTY BOUNDARY
4f	4F PROPERTY BOUNDARY
HAZ	HAZARDOUS WASTE

**EPSC LAYOUT PLAN SYMBOLY**

**EPSC MEASURES**

ONNOONNOONNO	FILTER CURTAIN
—	SILT FENCE
—	SILT FENCE WOVEN WIRE
—	CHECK DAM
■	DISTURBED AREAS REQUIRING RE-VEGETATION
⊗	EROSION MATTING

**ENVIRONMENTAL RESOURCES**

—	WETLAND BOUNDARY
—	RIPARIAN BUFFER ZONE
—	WETLAND BUFFER ZONE
—	SOIL TYPE BOUNDARY
T&E	THREATENED & ENDANGERED SPECIES
HAZ	HAZARDOUS WASTE AREA
AG	AGRICULTURAL LAND
HABITAT	FISH & WILDLIFE HABITAT
FLOOD PLAN	FLOOD PLAIN
OHW	ORDINARY HIGH WATER (OHW)
—	STORM WATER
—	USDA FOREST SERVICE LANDS
—	WILDLIFE HABITAT SUIT/CONN

**ARCHEOLOGICAL & HISTORIC**

— ARCH —	ARCHEOLOGICAL BOUNDARY
— HISTORIC DIST —	HISTORIC DISTRICT BOUNDARY
— HISTORIC —	HISTORIC AREA
(H)	HISTORIC STRUCTURE

**CONVENTIONAL TOPOGRAPHIC SYMBOLY**

**EXISTING FEATURES**

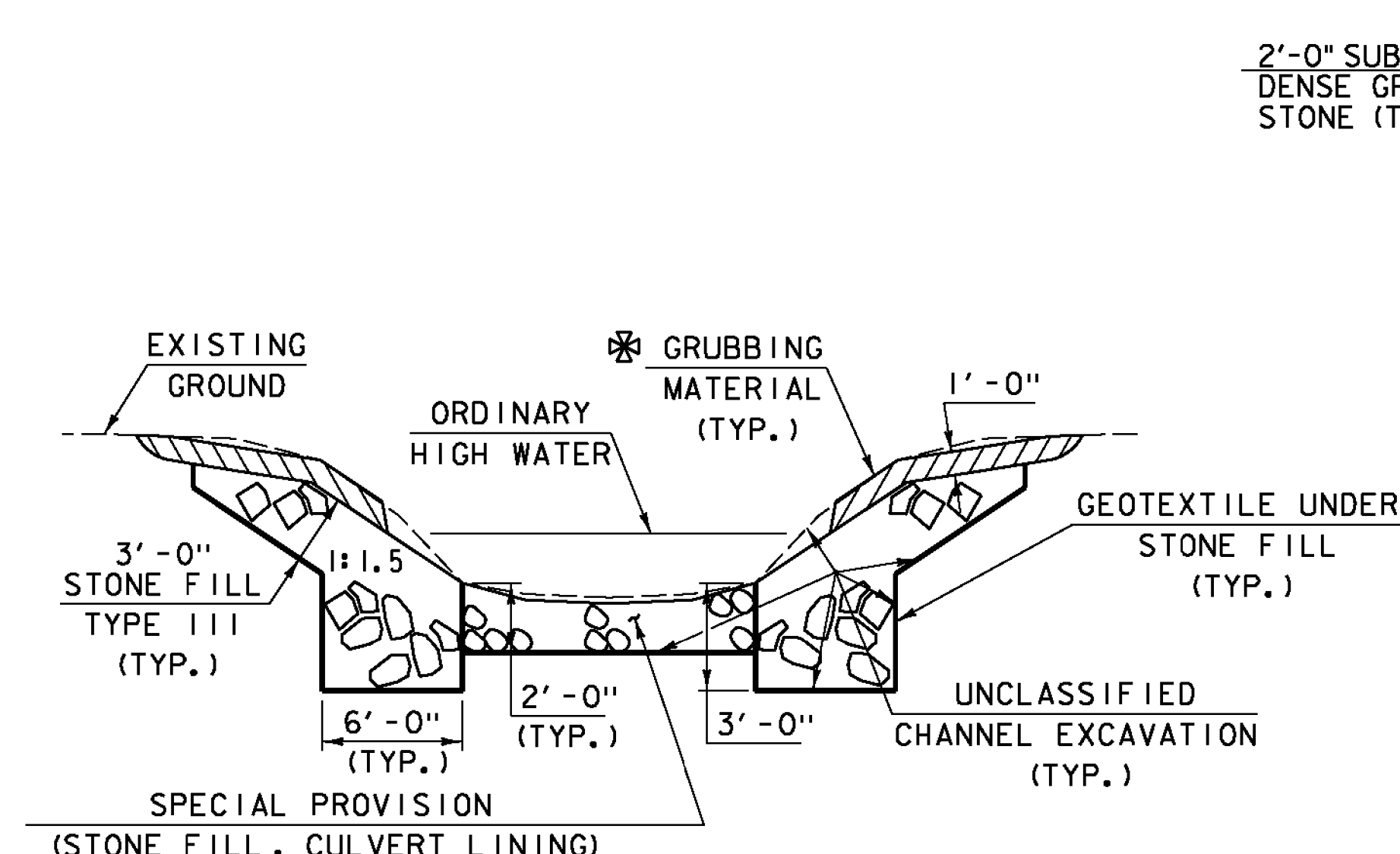
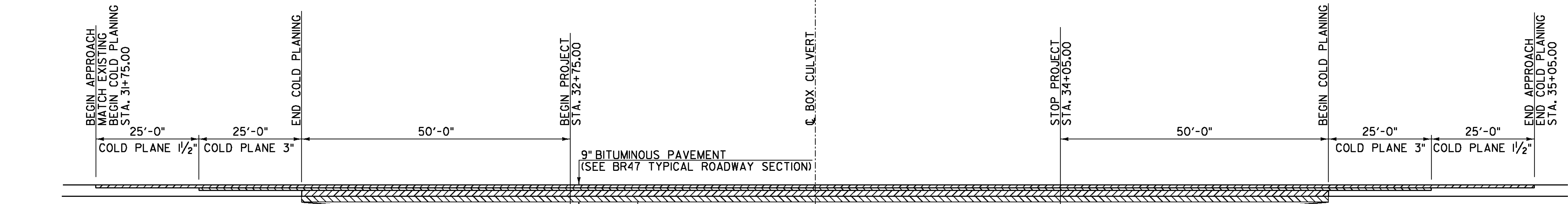
---	ROAD EDGE PAVEMENT
---	ROAD EDGE GRAVEL
---	DRIVEWAY EDGE
---	DITCH
---	FOUNDATION
x-x-x-x	FENCE (EXISTING)
□-□-□-□	FENCE WOOD POST
○-○-○-○	FENCE STEEL POST
~~~~~	GARDEN
o-o-o-o	ROAD GUARDRAIL
	RAILROAD TRACKS
---	CULVERT (EXISTING)
---	STONE WALL
---	WALL
~~~~~	WOOD LINE
~~~~~	BRUSH LINE
~~~~~	HEDGE
~~~~~	BODY OF WATER EDGE
~~~~~	LEDGE EXPOSED

PROJECT NAME: WINHALL  
PROJECT NUMBER: STP CULV(31)

FILE NAME: z1lb268legend.dgn  
PROJECT LEADER: M. CHENETTE  
DESIGNED BY: VTRANS  
CONVENTIONAL SYMBOLY LEGEND

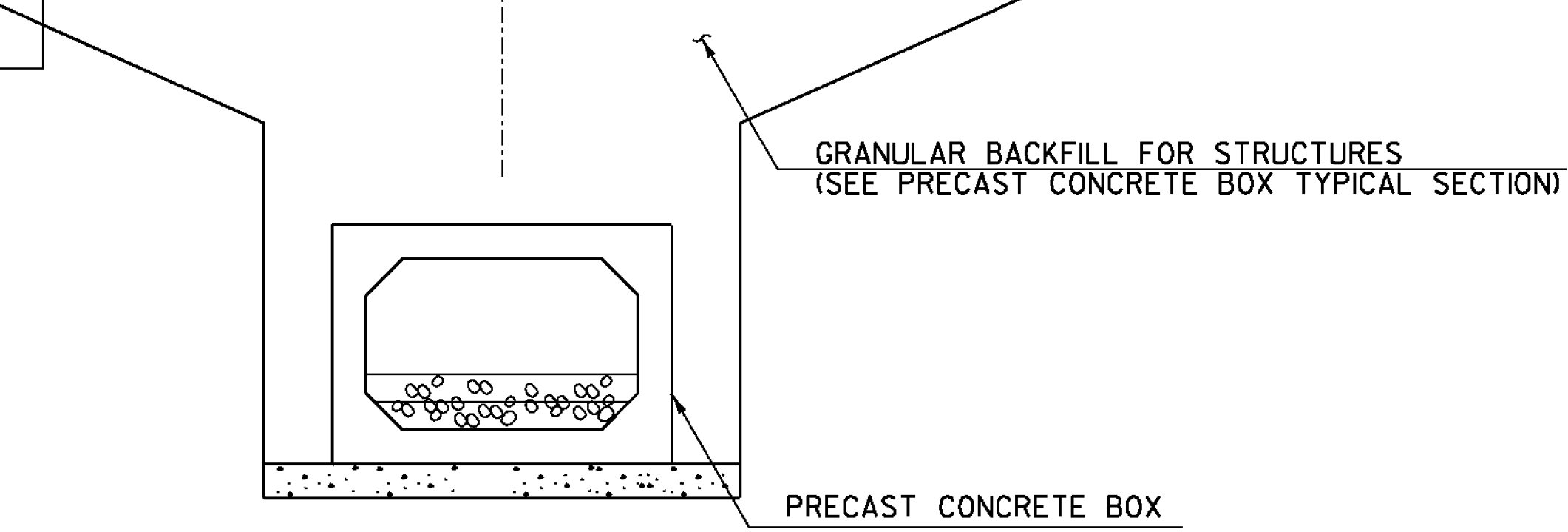
PLOT DATE: 9/25/2014  
DRAWN BY: VTRANS  
CHECKED BY: VTRANS  
SHEET II OF 60



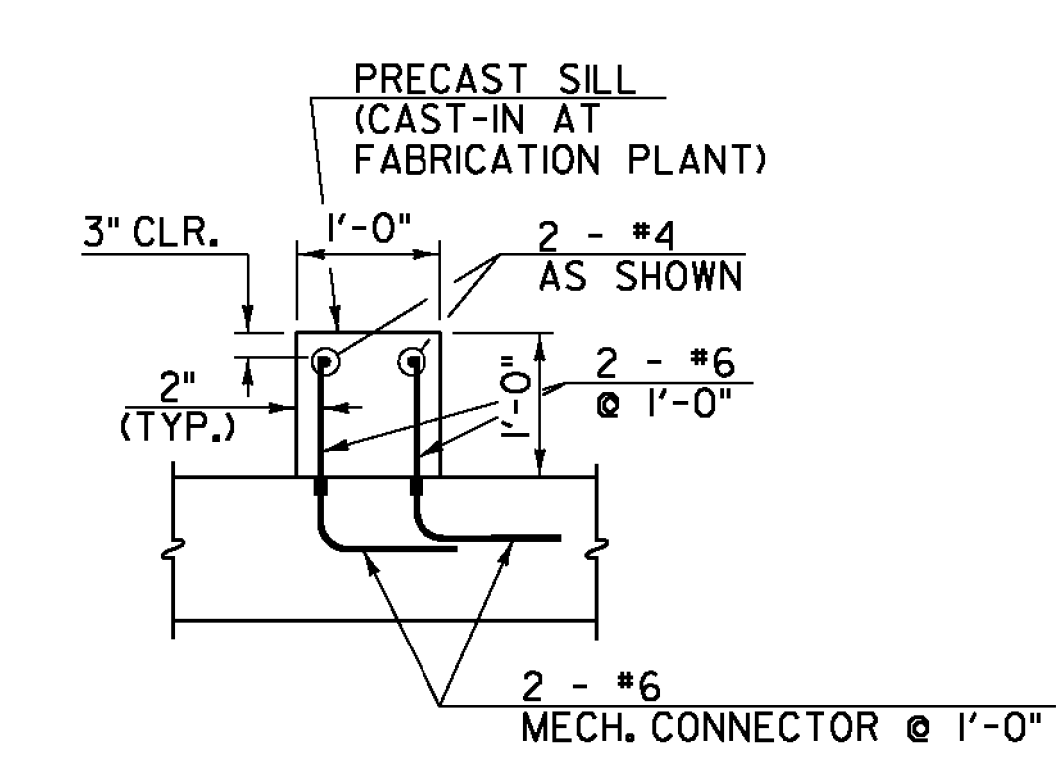


CHANNEL TYPICAL SECTION  
NOT TO SCALE

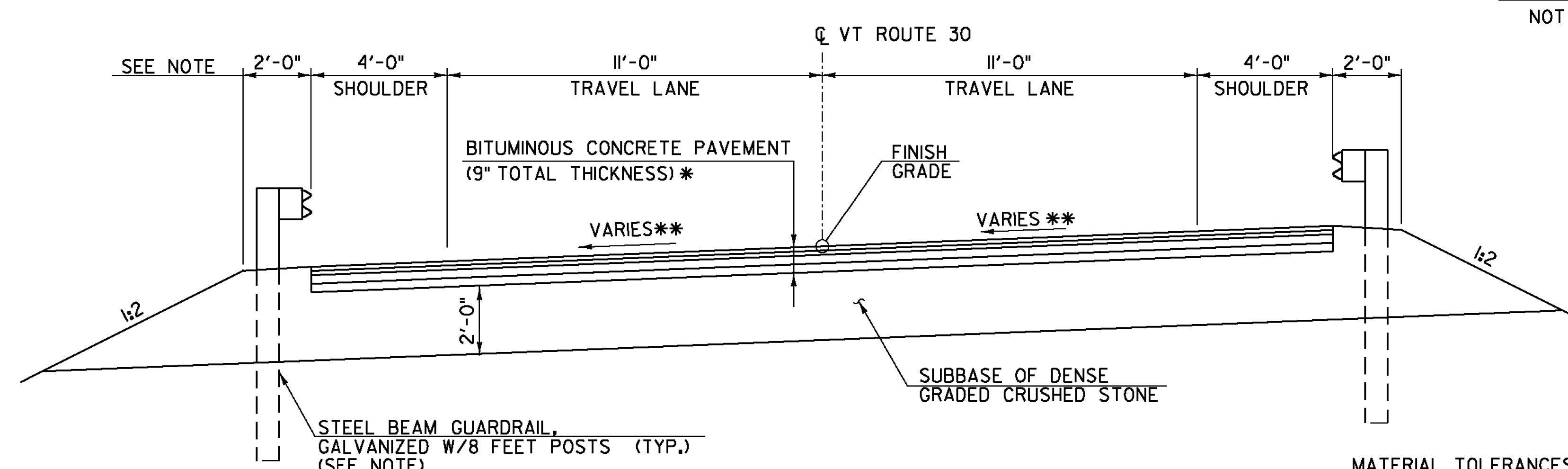
⊗ WHENEVER CHANNEL SLOPE INTERSECTS ROADWAY SUBBASE, GRUBBING MATERIAL SHALL BEGIN AT THE BOTTOM OF SUBBASE.



TYPICAL APPROACH SECTION - BR47  
NOT TO SCALE



SECTION A-A  
NOT TO SCALE



BR47 TYPICAL ROADWAY SECTION  
SCALE 3/8" = 1'-0"

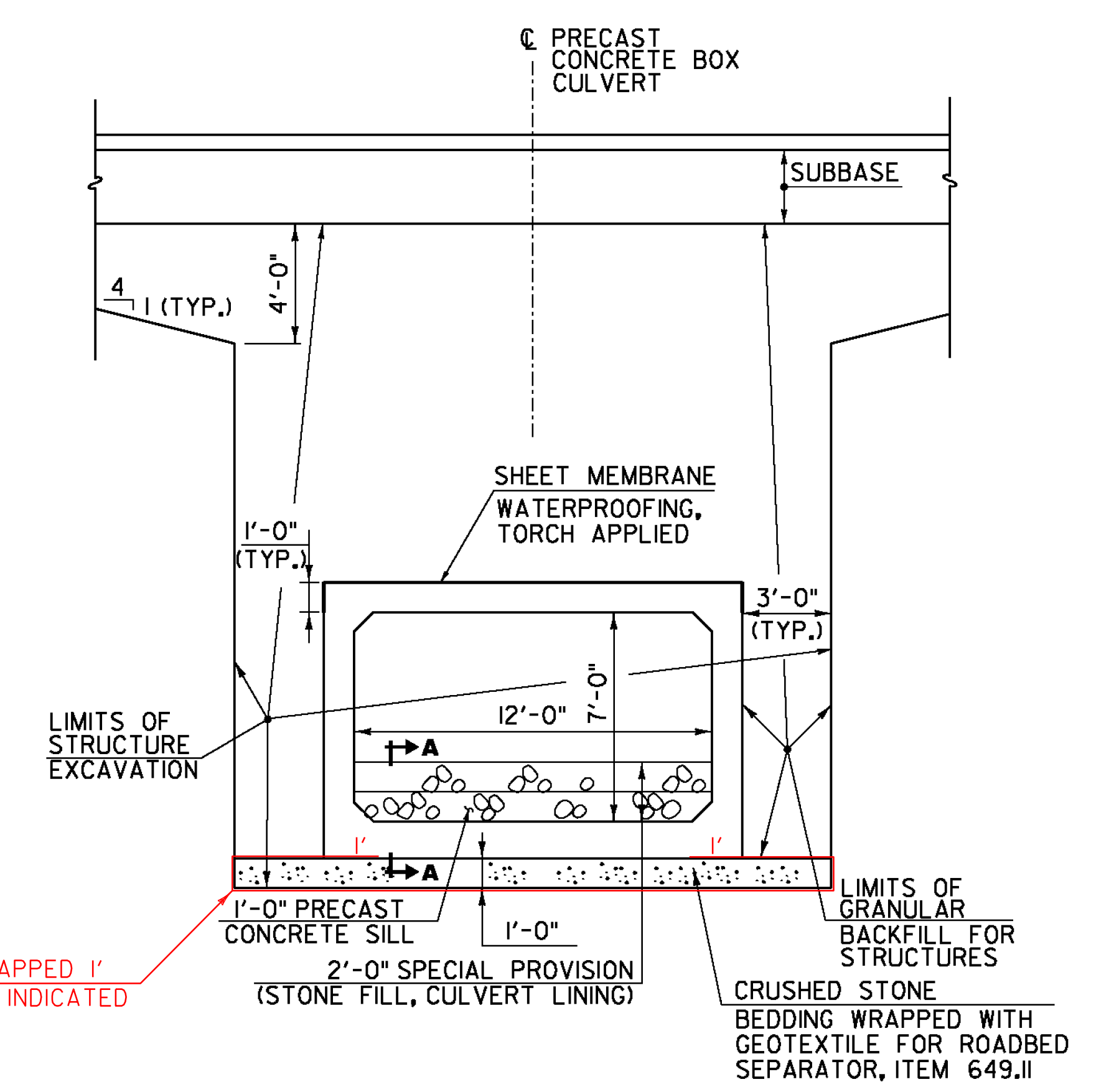
* BITUMINOUS CONCRETE PAVEMENT:  
1/2" TYPE IVS OVER  
1/2" TYPE IVS OVER  
3" TYPE IIS OVER  
3" TYPE IIS

NOTE:  
GUARDRAIL END TERMINALS REQUIRE STEEL BEAM GUARDRAIL GALVANIZED AND SHALL HAVE 3'-7" BACKING. SEE STANDARD GI-D

** SEE BANKING DIAGRAM ON SHEET 15, MATCH EXISTING CROSS SLOPE ON APPROACHES.

MATERIAL TOLERANCES  
(IF USED ON PROJECT)

SURFACE	
- PAVEMENT (TOTAL THICKNESS)	+/- 1/4"
- AGGREGATE SURFACE COARSE	+/- 1/2"
SUBBASE	+/- 1"
SAND BORROW	+/- 1"



PRECAST CONCRETE BOX TYPICAL SECTION - BR47  
SCALE: 1/4" = 1'-0"

GEOTEXTILE WRAPPED 1' UNDER BOX AS INDICATED

PROJECT NAME:	WINHALL	PLOT DATE:	9/25/2014
PROJECT NUMBER:	STP CULV(31)	DRAWN BY:	L. BUXTON
FILE NAME:	zlib268typsec.dgn	DESIGNED BY:	J. HUNGERFORD
PROJECT LEADER:	M. CHENETTE	CHECKED BY:	M. CHENETTE
TYPICAL SECTIONS - BR47		SHEET	12 OF 60



GPS CONTROL POINTS

HVCTRL #99  
 CAPEN AZ MK  
 NORTH = 246963.618  
 EAST = 1526709.369  
 ELEV. = 1732.175

HVCTRL #1  
 CAPEN  
 NORTH = 248458.391  
 EAST = 1525985.758  
 ELEV. = 1726.643

CAPEN AZ MK  
 SURVEY NAIL SET ABOUT 500 METERS SOUTHEAST OF CAPEN ON EAST SIDE OF ROUTE 30. IT IS ABOUT 2 FEET WEST OF FENCE POST WITH FLAGGING.

GENERAL LOCATION, WINHALL, VT. OWNERSHIP, LYNN CAPEN, CAPEN ROAD, WINHALL, VT.  
 TO REACH FROM THE INTERSECTION OF VT ROUTES 11 AND 30 IN WINHALL GO SOUTHEAST ALONG VT ROUTE 30 FOR 2.7 MI (4.3 KM) TO THE INTERSECTION OF CAPEN ROAD RIGHT. TURN RIGHT AND GO SOUTH ALONG CAPEN ROAD FOR 0.1 MI (0.2 KM) TO THE SITE OF THE MARK ON THE LEFT. THE MARK IS SET IN THE TOP OF A 1.0 M (3.3 FT) X 3.5 M (11.5 FT) ROCK OUTCROP WHICH PROJECTS 0.7 M (2.3 FT) ABOVE GROUND SURFACE ON THE EAST SIDE. IT IS 26.6 M (87.3 FT) EAST OF AND ABOUT 5 M (16.4 FT) LOWER THAN THE CENTERLINE OF CAPEN ROAD, 9.3 M (30.5 FT) EAST NORTHEAST OF THE NORTHEAST CORNER OF A BARN, 21.0 M (68.9 FT) WEST OF A WIRE FENCE LINE, AND 45.0 M (147.6 FT) SOUTH OF POLE NO 140X.

TRAVERSE TIES

HVCTRL #2  
 NORTH = 247643.658  
 EAST = 1526444.175  
 ELEV. = 1708.489

NOT TIED

HVCTRL #3  
 NORTH = 248629.576  
 EAST = 1526068.875  
 ELEV. = 1714.528

NOT TIED

HVCTRL #4  
 NORTH = 249101.753  
 EAST = 1525704.617  
 ELEV. = 1704.344

HVCTRL #5  
 NORTH = 249889.118  
 EAST = 1524507.793  
 ELEV. = 1638.409

NORTH =  
 EAST =  
 ELEV. =

* MAIN TRAVERSE COMPLETED 2/1/2012 BY L. ORVIS P.C. & G. HITCHCOCK & H. MCGOWAN

ALIGNMENT TIES

PC, STA. 30+00.00  
 NORTH = 249994.336  
 EAST = 1524447.733  
 ELEV. =

VT30, STA. 33+39.47  
 NORTH = 249763.728  
 EAST = 1524696.352  
 ELEV. =

PT, STA. 35+72.89  
 NORTH = 249629.555  
 EAST = 1524887.220  
 ELEV. =

NORTH =  
 EAST =  
 ELEV. =

NORTH =  
 EAST =  
 ELEV. =

DATUM	
VERTICAL	NAVD 88
HORIZONTAL	NAD 83(07)
ADJUSTMENT	COMPASS



PROJECT NAME:	WINHALL	FILE NAME:	z1lb268+1e_br47.dgn	PLOT DATE:	9/25/2014
PROJECT NUMBER:	STP CULV(31)	PROJECT LEADER:	M. CHENETTE	DRAWN BY:	L. BUXTON
		DESIGNED BY:	J. HUNGERFORD	CHECKED BY:	M. CHENETTE
		SURVEY CONTROL AND TIES - BR47		SHEET	13 OF 60

621.20 - STEEL BEAM GUARDRAIL, GALVANIZED  
 STA. 31+50.30, LT. TO STA. 31+75.30, LT.  
 STA. 32+00.00, RT. TO STA. 32+25.00, RT.  
 STA. 34+50.00, RT. TO STA. 34+75.00, RT.  
 STA. 35+50.30, LT. TO STA. 35+75.30, LT.

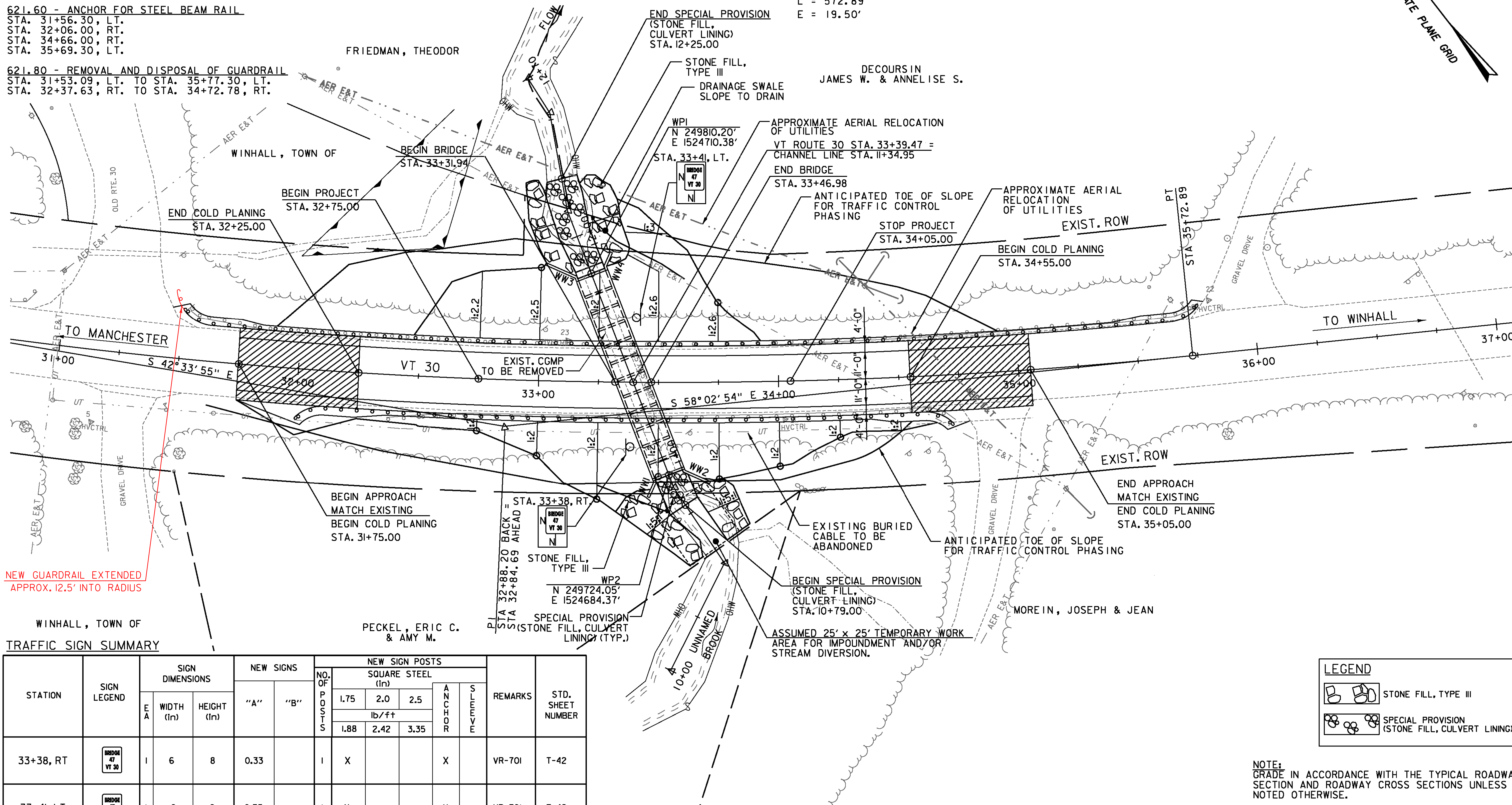
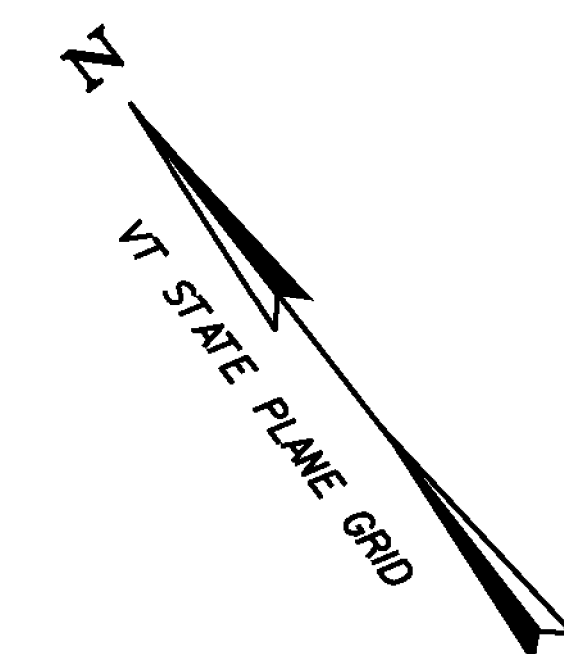
621.205 - STEEL BEAM GUARDRAIL, GALVANIZED W/8 FEET POSTS  
 STA. 31+75.30, LT. TO STA. 35+50.30, LT.  
 STA. 32+25.00, RT. TO STA. 34+50.00, RT.

621.60 - ANCHOR FOR STEEL BEAM RAIL  
 STA. 31+56.30, LT.  
 STA. 32+06.00, RT.  
 STA. 34+66.00, RT.  
 STA. 35+69.30, LT.

621.80 - REMOVAL AND DISPOSAL OF GUARDRAIL  
 STA. 31+53.09, LT. TO STA. 35+77.30, LT.  
 STA. 32+37.63, RT. TO STA. 34+72.78, RT.

646.400 - DURABLE 4 INCH WHITE LINE  
 STA. 31+75.00, RT. TO STA. 35+05.00, RT.  
 STA. 31+75.00, LT. TO STA. 35+05.00, LT.  
 646.410 - DURABLE 4 INCH YELLOW LINE  
 STA. 31+75.00, CL. TO STA. 35+05.05, CL. (DYCL)

CURVE DATA  
 PC = 30+00.00  
 Δ = 15°28'59.44"  
 D = 2°42'09.47"  
 R = 2120.00'  
 T = 288.20'  
 L = 572.89'  
 E = 19.50'

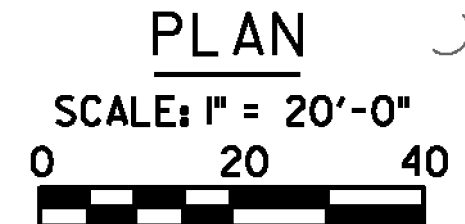


NEW GUARDRAIL EXTENDED  
 APPROX. 12.5' INTO RADIUS

WINHALL, TOWN OF  
 TRAFFIC SIGN SUMMARY

STATION	SIGN LEGEND	SIGN DIMENSIONS		NEW SIGNS		NO. OF POSTS	NEW SIGN POSTS			REMARKS	STD. SHEET NUMBER	
		E	WIDTH (in)	HEIGHT (in)	"A"		"B"	SQUARE STEEL (in)				
								1.75	2.0			2.5
33+38, RT		1	6	8	0.33	1	X		X	VR-701	T-42	
33+41, LT		1	6	8	0.33	1	X		X	VR-701	T-42	
<b>TOTALS</b>				SF	SF			FT				
				0.66				30				

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



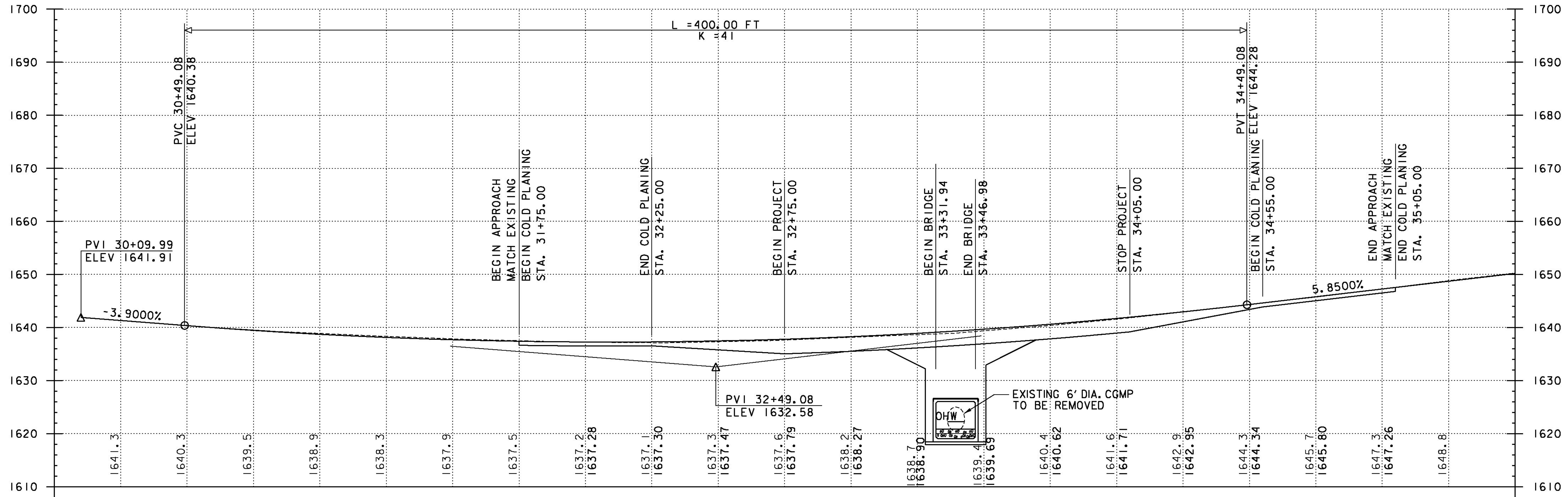
**LEGEND**

	STONE FILL, TYPE III
	SPECIAL PROVISION (STONE FILL, CULVERT LINING)

NOTE: GRADE IN ACCORDANCE WITH THE TYPICAL ROADWAY SECTION AND ROADWAY CROSS SECTIONS UNLESS NOTED OTHERWISE.

PROJECT NAME: WINHALL  
 PROJECT NUMBER: STP CULV(31)  
 FILE NAME: z1b268bdr_br47.dgn  
 PROJECT LEADER: M. CHENETTE  
 DESIGNED BY: J. HUNGERFORD  
 PLAN LAYOUT SHEET - BR47  
 PLOT DATE: 10/9/2014  
 DRAWN BY: L. BUXTON  
 CHECKED BY: M. CHENETTE  
 SHEET 14 OF 60





NOTE:  
ELEVATIONS SHOWN TO THE NEAREST TENTH ARE EXISTING GROUND ALONG PROPOSED CENTERLINE.

ELEVATIONS SHOW TO THE NEAREST HUNDRETH ARE FINISHED GRADE ALONG PROPOSED CENTERLINE.

PROFILE ALONG VT ROUTE 30

HORIZONTAL SCALE: 1' = 20' VERTICAL SCALE: 1" = 10'

+0.060  
+0.040  
+0.020  
LEVEL  
-0.020  
-0.040  
-0.060

STA. 31+75.00  
MATCH EXISTING  
CROSS SLOPE  
LT e = -5.7%  
RT e = 4.1%

STA. 32+00.00  
LT e = -4.7%  
RT e = 4.7%

RT e = 4.7%

STA. 34+75.00  
LT e = -4.7%  
RT e = 4.7%

STA. 34+55.00  
MATCH EXISTING  
CROSS SLOPE  
LT e = -4.4%  
RT e = 2.5%

+0.060  
+0.040  
+0.020  
LEVEL  
-0.020  
-0.040  
-0.060

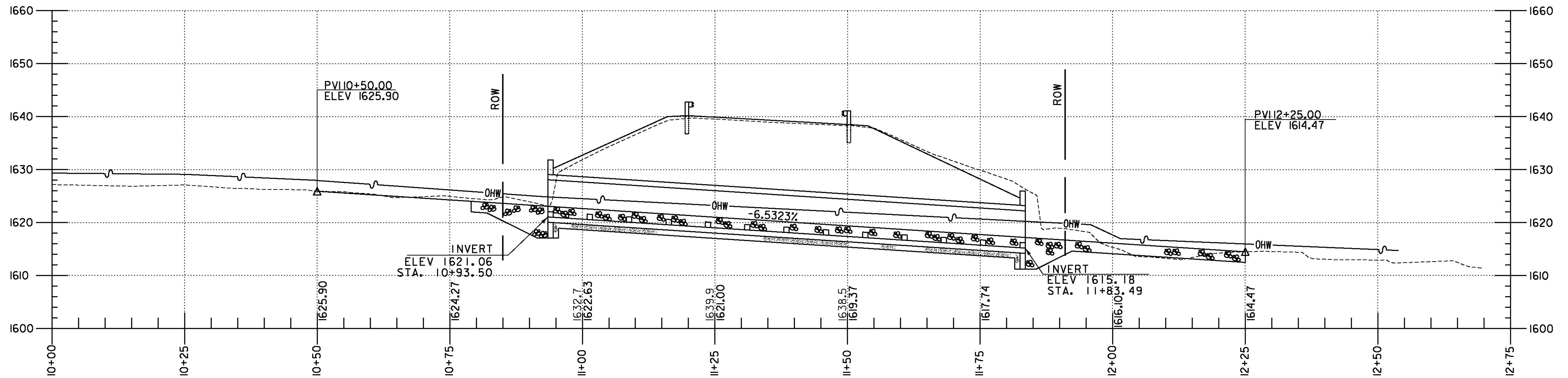
BANKING DIAGRAM

HORIZONTAL SCALE: 1' = 20' VERTICAL SCALE: N.T.S.

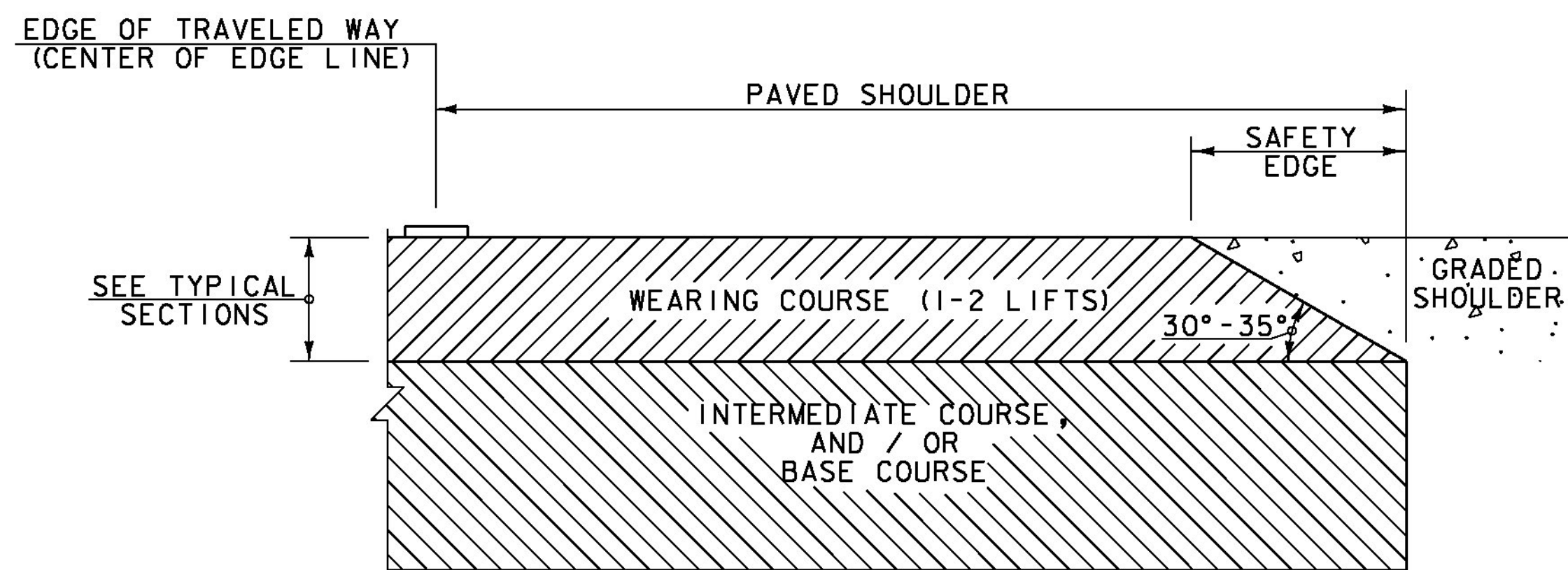
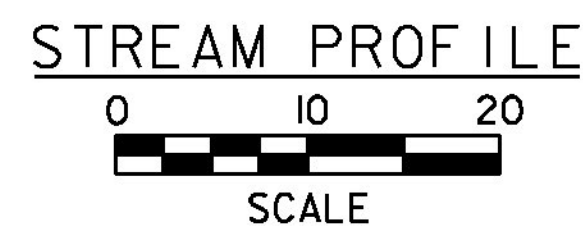
NOTE:  
STATIONING IN FEET AND SUPERELEVATIONS IN PERCENTAGES

PROJECT NAME: WINHALL	PLOT DATE: 9/25/2014
PROJECT NUMBER: STP CULV(3I)	DRAWN BY: L. BUXTON
FILE NAME: z1lb268pro.dgn	CHECKED BY: M. CHENETTE
PROJECT LEADER: M. CHENETTE	SHEET 15 OF 60
DESIGNED BY: J. HUNGERFORD	
ROADWAY PROFILE - BR47	





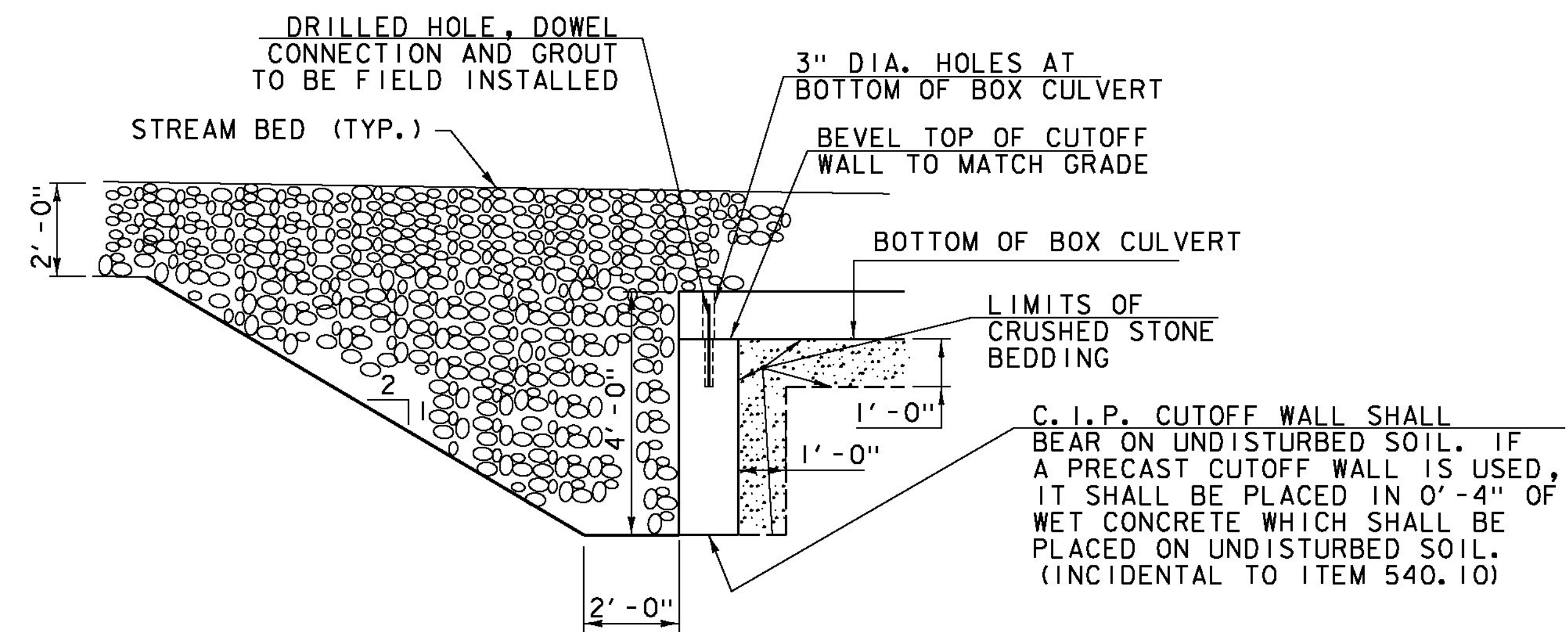
**NOTE:**  
 ELEVATIONS SHOWN TO THE NEAREST TENTH ARE EXISTING GROUND ALONG PROPOSED CENTERLINE.  
 ELEVATIONS SHOW TO THE NEAREST HUNDREDTH ARE FINISHED GRADE ALONG PROPOSED CENTERLINE.



**SAFETY EDGE DETAIL**  
 NOT TO SCALE

**NOTES:**

1. THE EDGE OF PAVEMENT SHALL BE FORMED IN SUCH A WAY THAT THE BITUMINOUS CONCRETE PAVEMENT IS EXTRUDED OR COMPRESSED TO FORM THE 30 TO 35 DEGREE ANGLE. DEVICES THAT SIMPLY STRIKE-OFF THE MIX WITHOUT PROVIDING ANY COMPACTIVE EFFORT WILL NOT BE ALLOWED.
2. THE PAVED SHOULDER EXTENDS FROM THE EDGE OF TRAVELED WAY TO THE EDGE OF THE WEARING COURSE, INCLUDING THE "SAFETY EDGE".



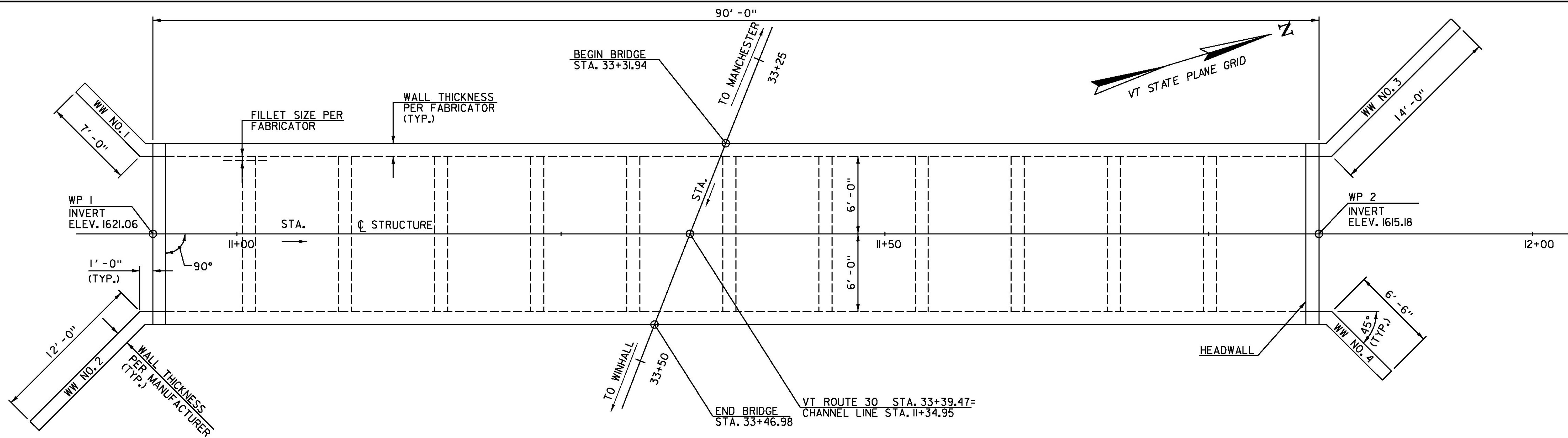
**CUTOFF WALL DETAIL**  
 NOT TO SCALE

PROJECT NAME: WINHALL  
 PROJECT NUMBER: STP CULV(3I)

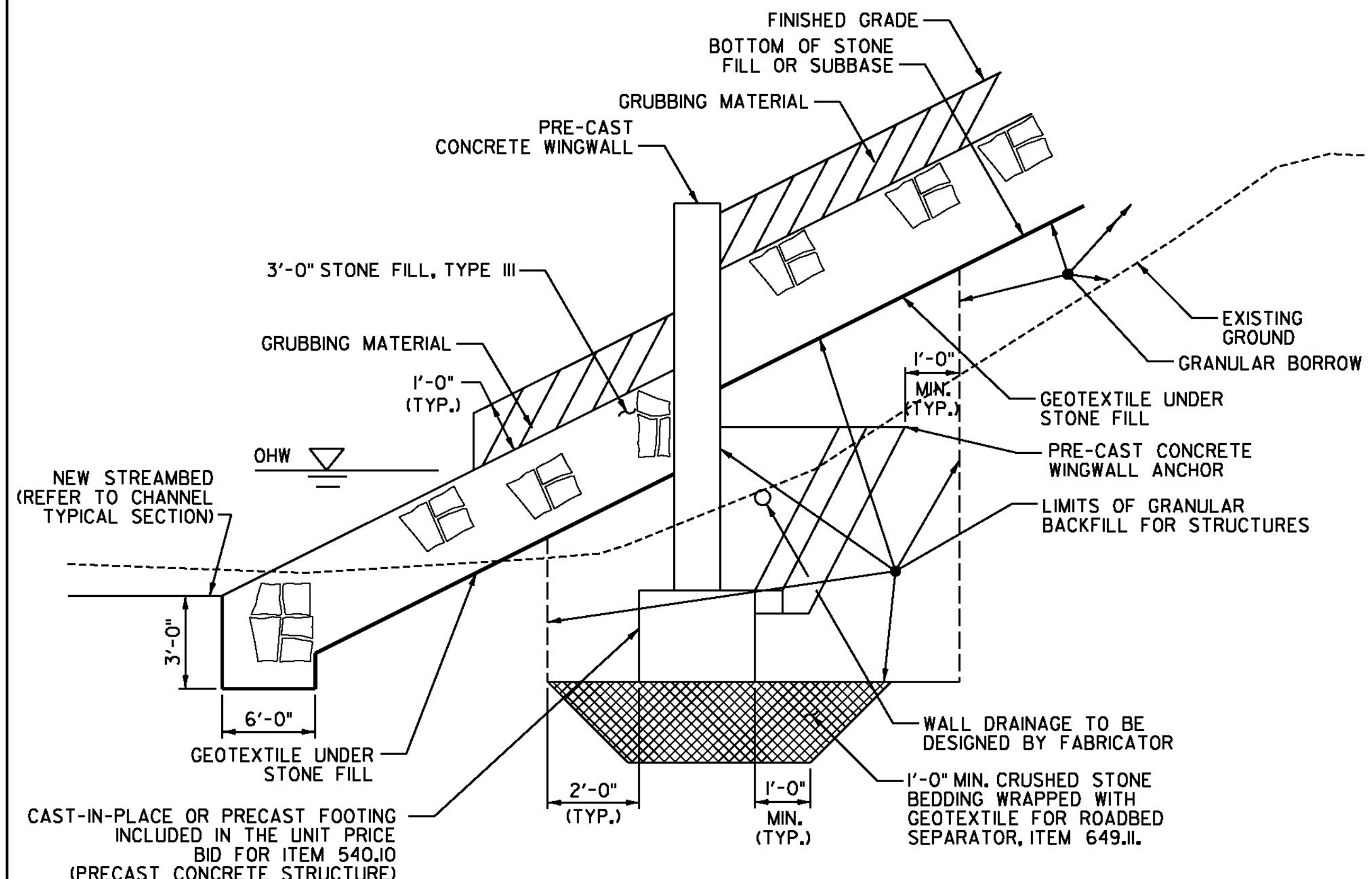
FILE NAME: z11b268strm_pro.dgn  
 PROJECT LEADER: M. CHENETTE  
 DESIGNED BY: J. HUNGERFORD  
 STREAM PROFILE - BR47

PLOT DATE: 10/9/2014  
 DRAWN BY: L. BUXTON  
 CHECKED BY: M. CHENETTE  
 SHEET 16 OF 60



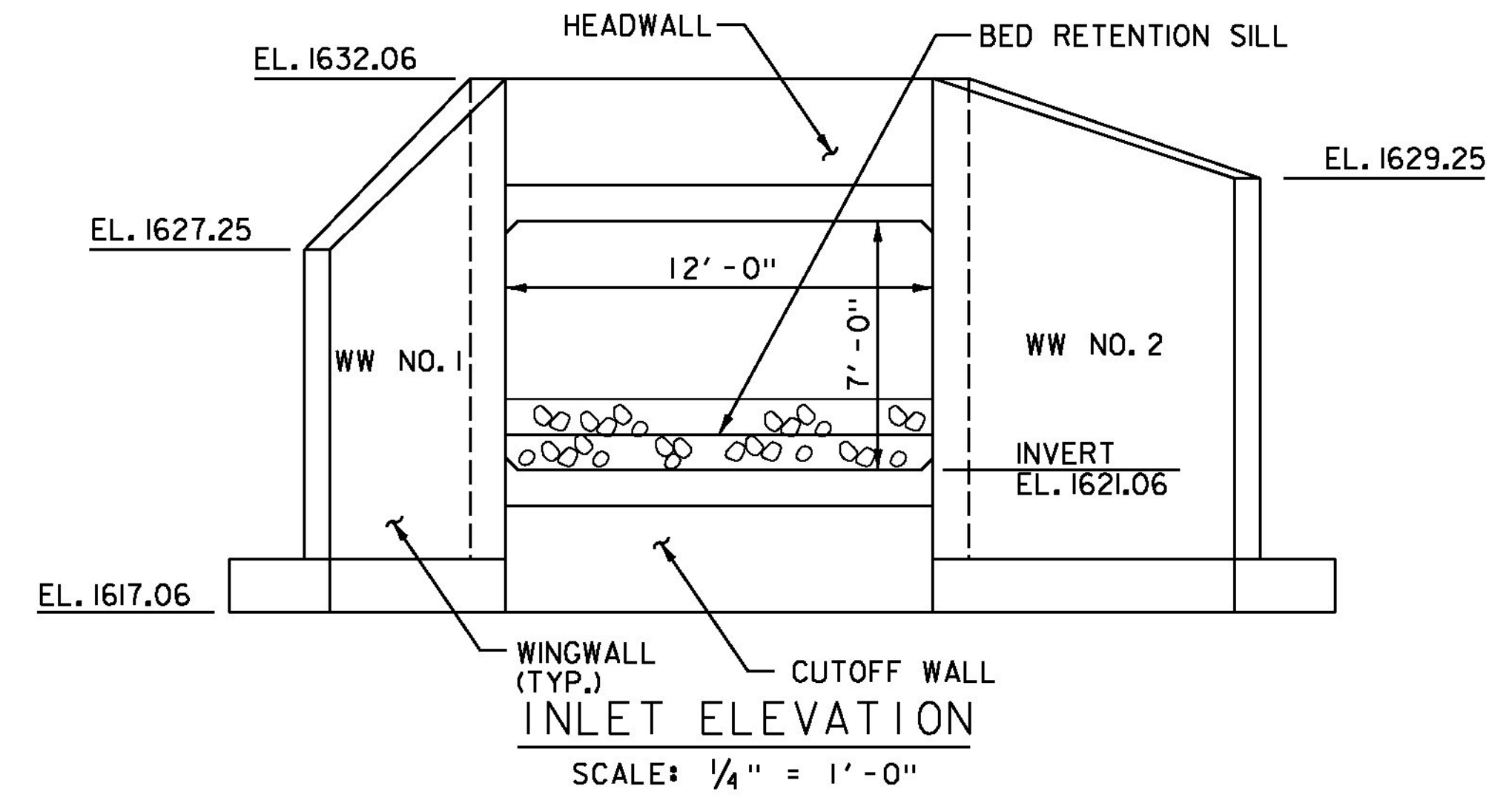


PRECAST CONCRETE STRUCTURE PLAN  
SCALE: 1/4" = 1'-0"

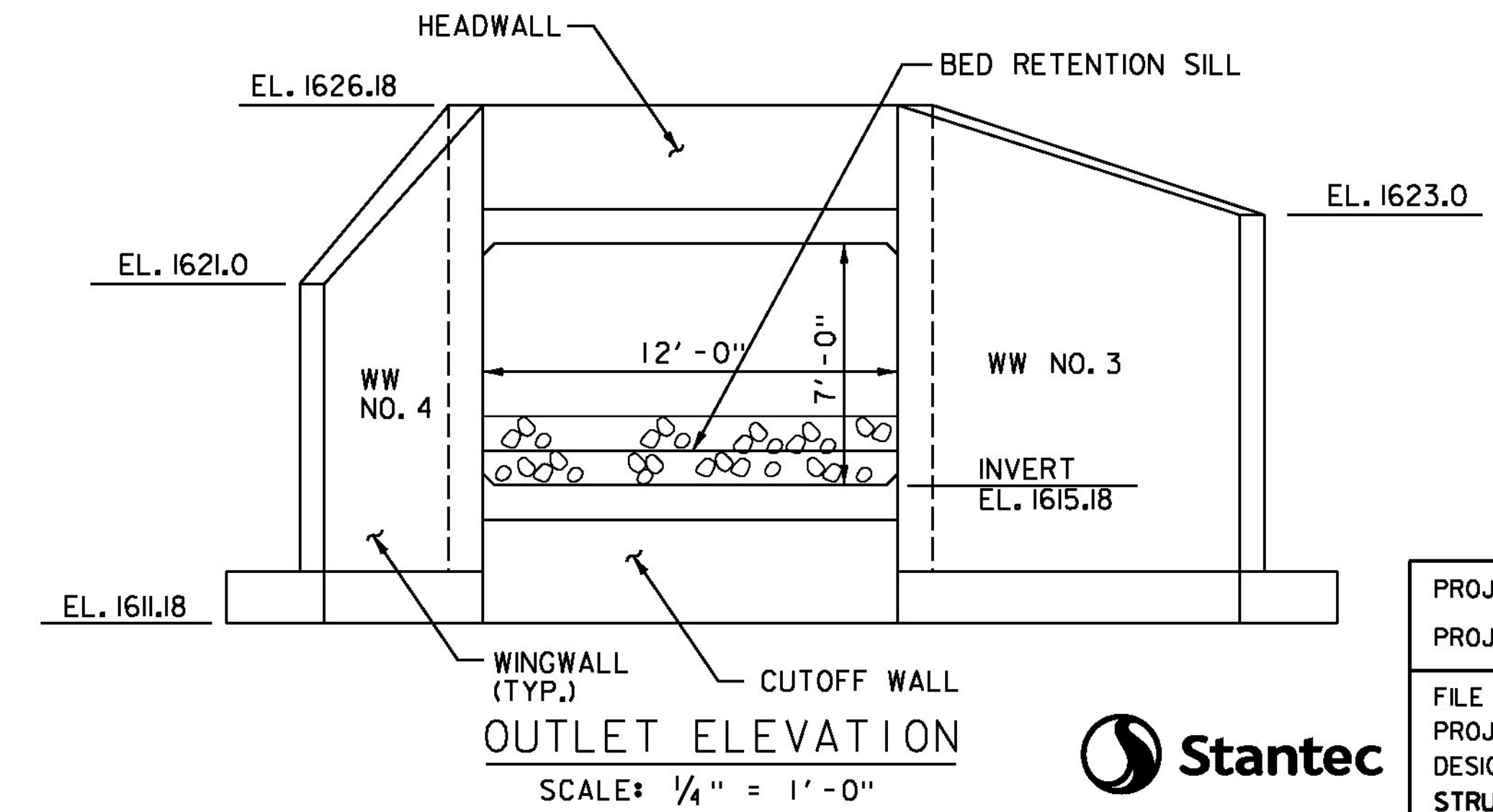


- NOTES:**
- ANCHOR TYPE WALLS SHOWN, OTHER APPROVED WALL SYSTEM MAY BE USED, SEE SPECIAL PROVISIONS.
  - FOR PURPOSES OF ESTIMATING EARTHWORK QUANTITIES, THE LIMITS OF STRUCTURE EXCAVATION HAVE BEEN ASSUMED AS SHOWN ABOVE. ONLY THE EXCAVATION INCLUDED WITHIN THESE LIMITS SHALL BE PAID FOR UNDER ITEM 204.25, "STRUCTURE EXCAVATION". THE CONTRACTOR SHALL DETERMINE THE ACTUAL LIMITS OF STRUCTURE EXCAVATION, PER PRECAST WINGWALL DESIGN.

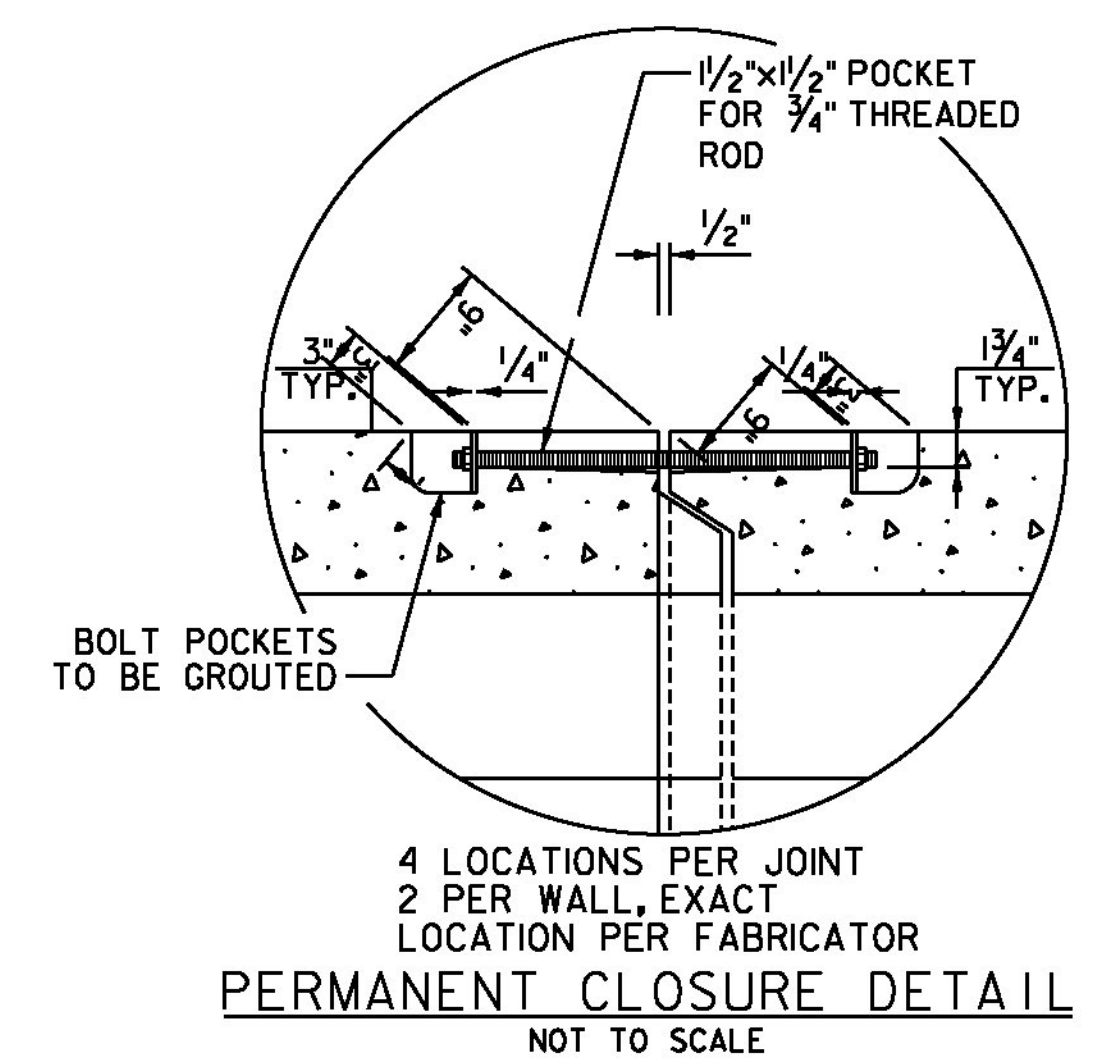
WINGWALL EARTHWORK SECTION  
NOT TO SCALE



INLET ELEVATION  
SCALE: 1/4" = 1'-0"



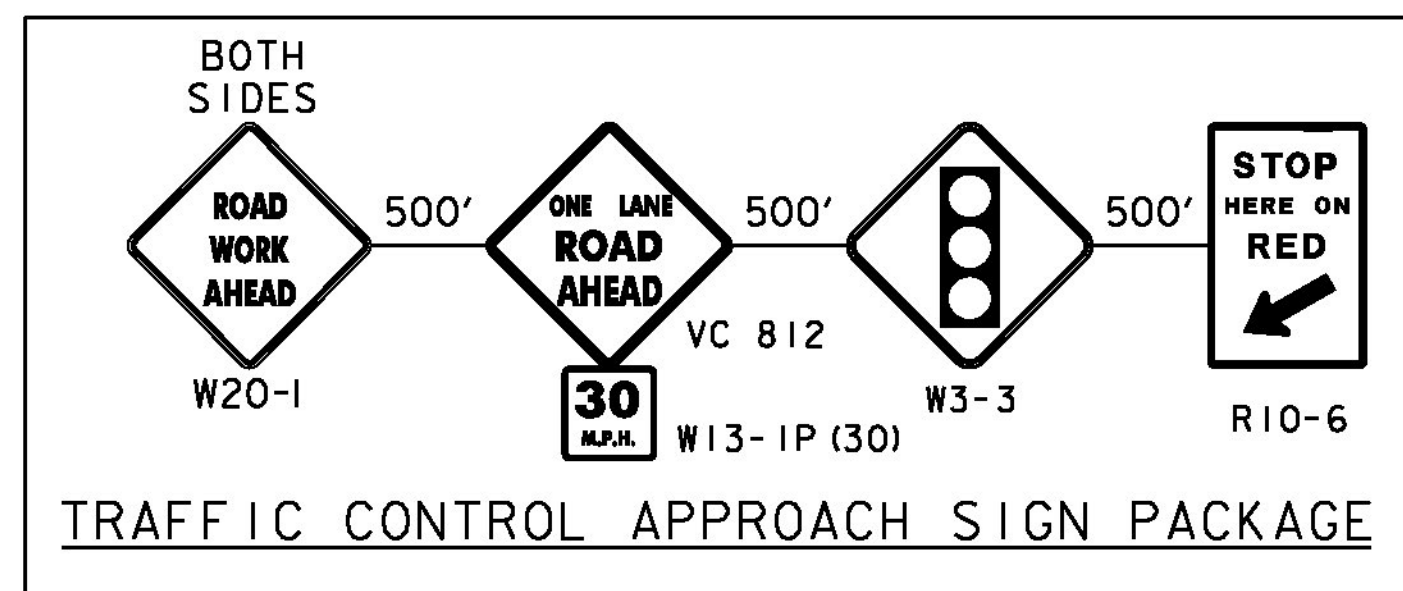
OUTLET ELEVATION  
SCALE: 1/4" = 1'-0"



PERMANENT CLOSURE DETAIL  
NOT TO SCALE

PROJECT NAME: WINHALL	PROJECT NUMBER: STP CULV(31)
FILE NAME: z1lb268strpl.br47.dgn	PLOT DATE: 9/25/2014
PROJECT LEADER: M. CHENETTE	DRAWN BY: L. BUXTON
DESIGNED BY: J. HUNGERFORD	CHECKED BY: M. CHENETTE
STRUCTURAL PLAN AND DETAILS - BR47	SHEET 17 OF 60

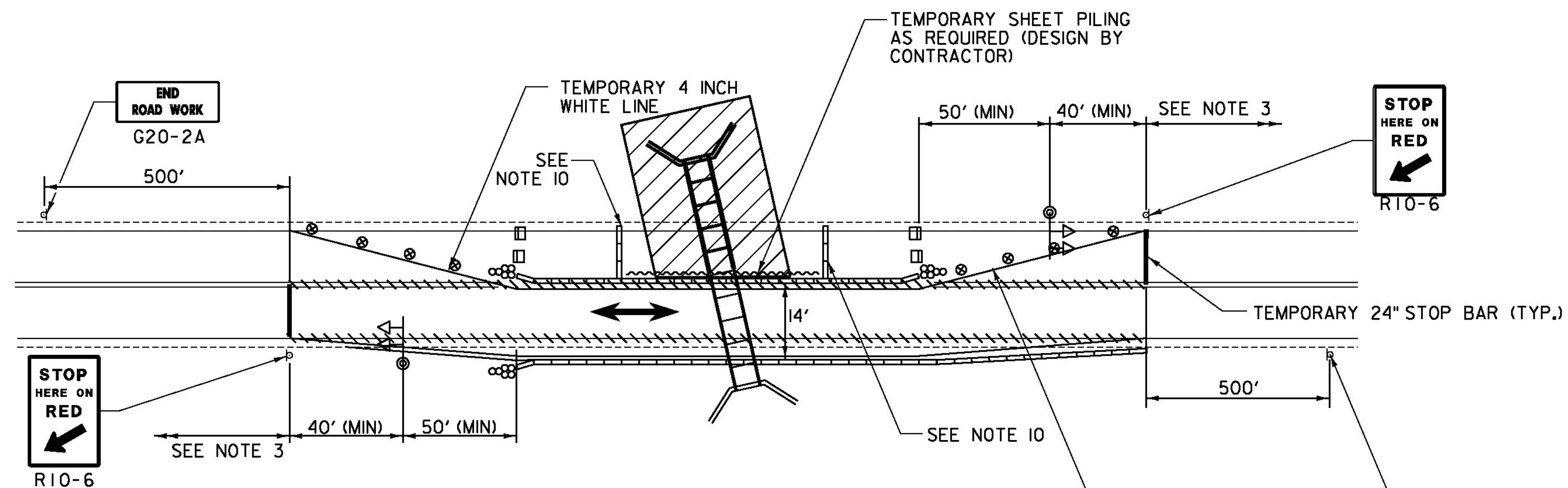
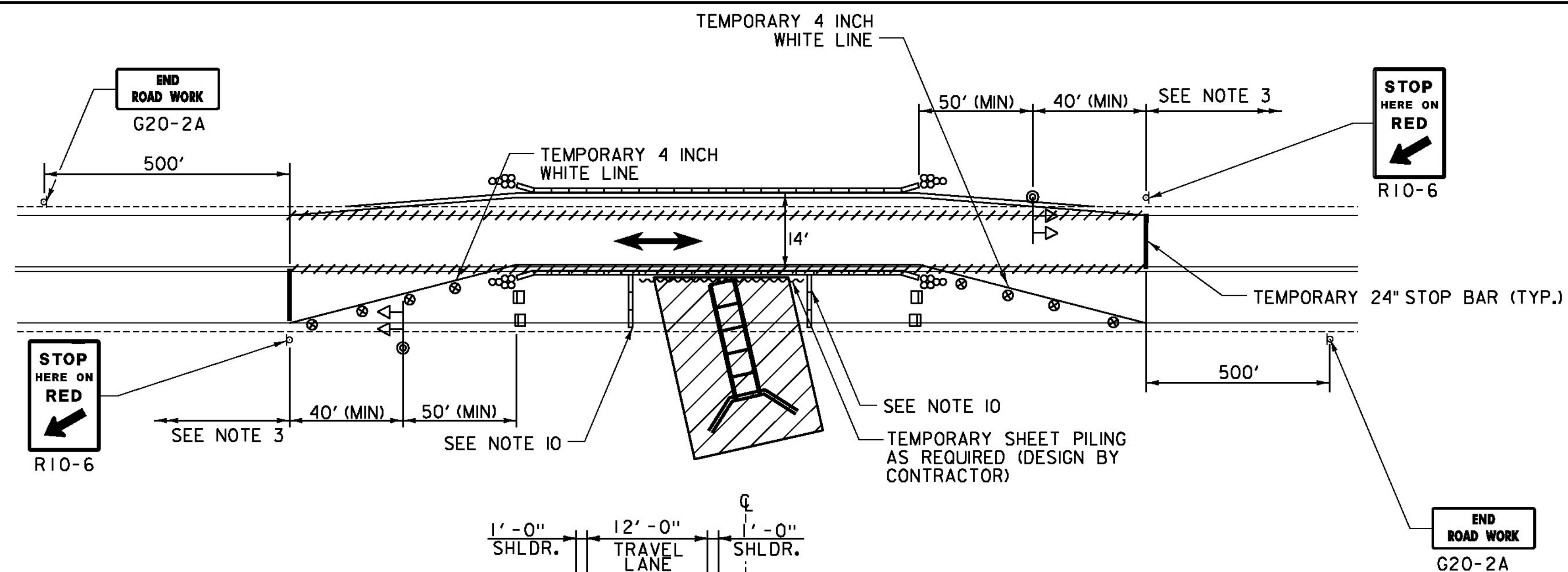




NOTES:

- SEE SHEET 4 FOR GENERAL TRAFFIC CONTROL NOTES.
- REFER TO STANDARD T-10 FOR CONSTRUCTION APPROACH SIGNS CRITERIA.
- REFER TO "TRAFFIC CONTROL APPROACH SIGN PACKAGE".
- CHANNELIZING DEVICE SPACING  
TANGENT SECTIONS: 60 FT. (2X DESIGN SPEED LIMIT)  
TAPER SECTIONS: 30 FT. (1X DESIGN SPEED LIMIT)  
DESIGN SPEED THROUGH CONSTRUCTION ZONE = 30MPH
- ACCESS TO ALL EXISTING SIDE ROADS, DRIVES, AND PARKING AREAS SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION.
- TRAFFIC CONTROL SHALL ALLOW FOR A WB-67 DESIGN VEHICLE.
- ATTENUATORS SHALL BE DESIGNED FOR POSTED SPEED OF 50 MPH.
- CHANNELIZING DEVICES LEFT OVERNIGHT SHALL BE DRUMS.
- REMOVED CENTERLINE TO BE REPLACED WITH DURABLE 4 INCH YELLOW LINE.
- TEMPORARY TRAFFIC BARRIER TO BE IN PLACE WHILE EXCAVATION IS OPEN AND WORK IS NOT ACTIVE OR AT THE DISCRETION OF THE ENGINEER.
- TEMPORARY WIDENING TO BE PAID AS PART OF ITEM 900.645 SPECIAL PROVISION (TRAFFIC CONTROL ALL-INCLUSIVE)

LEGEND	
	UNDER CONSTRUCTION
	ALTERNATING ONE WAY TRAFFIC
	TEMPORARY TRAFFIC BARRIER
	CHANNELIZING DEVICE
	ENERGY ABSORPTION ATTENUATOR
	TYPE III BARRIER
	CONSTRUCTION SIGN
	TEMPORARY TRAFFIC SIGNAL
	FLASHING BEACON
	REMOVE OR MASK PAVEMENT MARKINGS



PROJECT NAME: WINHALL	PLOT DATE: 9/25/2014
PROJECT NUMBER: STP CULV(31)	DRAWN BY: L. BUXTON
FILE NAME: z1lb268+c.dgn	DESIGNED BY: I. MAYNARD
PROJECT LEADER: M. CHENETTE	CHECKED BY: M. CHENETTE
TRAFFIC CONTROL PLAN - BR47	SHEET 18 OF 60



**SOIL CLASSIFICATION**

AASHTO

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

**ROCK QUALITY DESIGNATION**

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

**SHEAR STRENGTH**

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

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

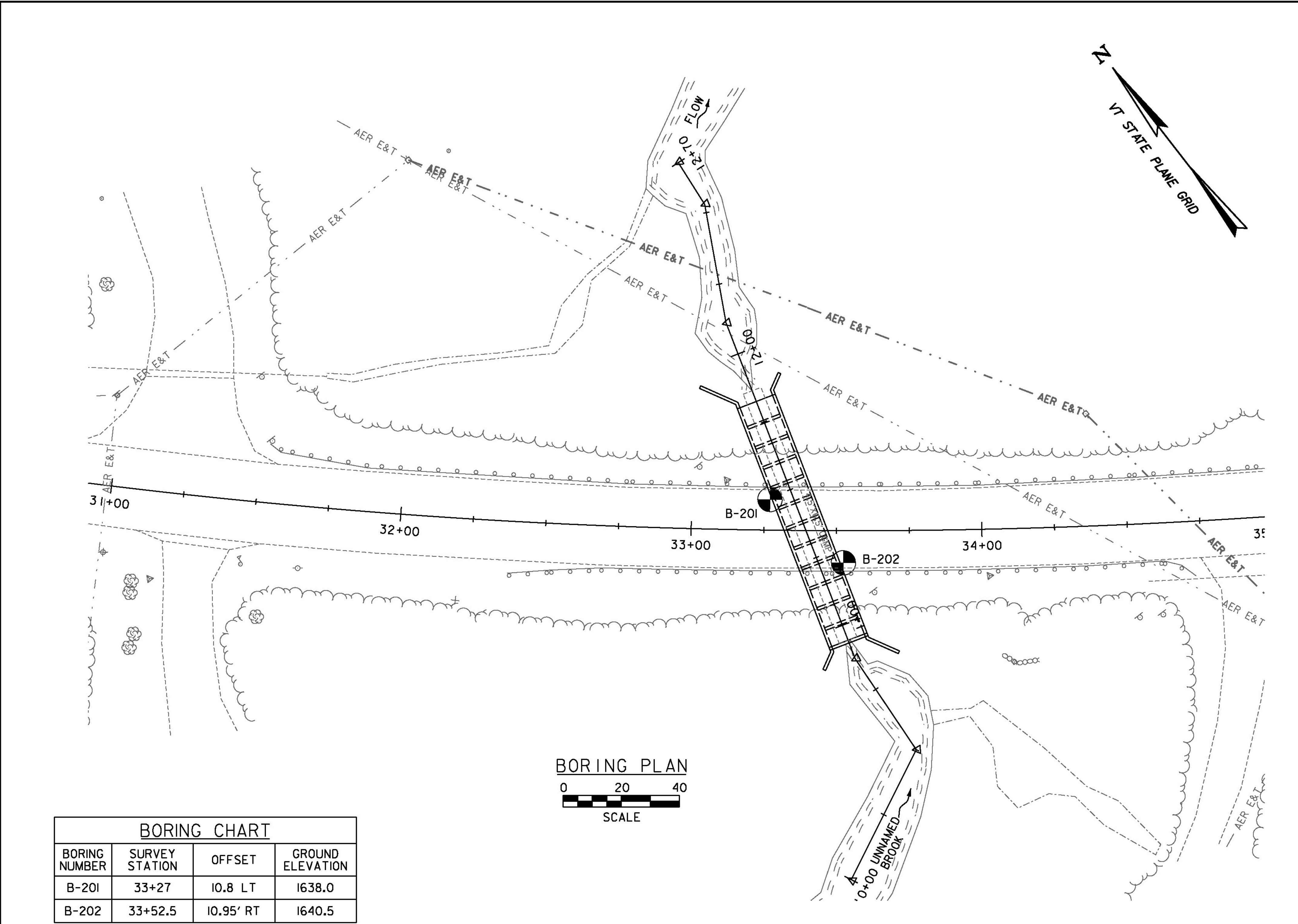
DENSITY (GRANULAR SOILS)		CONSISTENCY (COHESIVE SOILS)	
N	DESCRIPTIVE TERM	N	DESCRIPTIVE TERM
<5	Very Loose	<2	Very Soft
5-10	Loose	2-4	Soft
11-24	Med. Dense	5-8	Med. Stiff
25-50	Dense	9-15	Stiff
>50	Very Dense	16-30	Very Stiff
		31-60	Hard
		>60	Very Hard

**COMMONLY USED SYMBOLS**

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

**COLOR**

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



**BORING CHART**

BORING NUMBER	SURVEY STATION	OFFSET	GROUND ELEVATION
B-201	33+27	10.8 LT	1638.0
B-202	33+52.5	10.95' RT	1640.5

**DEFINITIONS (AASHTO)**

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

**BOULDER** - A rock fragment with an average dimension > 12 inches.

**COBBLE** - Rock fragments with an average dimension between 3 and 12 inches.

**GRAVEL** - Rounded particles of rock < 3" and > 0.075" (#10 sieve).

**SAND** - Particles of rock < 0.075" (#10 sieve) and > 0.0029" (#200 sieve).

**SILT** - Soil < 0.0029" (#200 sieve), non or slightly plastic and exhibits no strength when air-dried.

**CLAY** - Fine grained soil, exhibits plasticity when moist and considerable strength when air-dried.

**VARVED** - Alternate layers of silt and clay.

**HARDPAN** - Extremely dense soil, cemented layer, not softened when wet.

**MUCK** - Soft organic soil (containing > 10% organic material).

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

**FLOWING SAND** - Granular soil so saturated (loose) that it flows into drill casing during extraction of wash rod.

**STRIKE** - Angle from magnetic north to line of intersection of bed with a horizontal plane.

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

**GENERAL NOTES**

- The subsurface explorations shown herein were made on Oct. 25, 2012 by N.H. Boring.
- Soil and rock classifications, properties and descriptions are based on engineering interpretation from available subsurface information and may not necessarily reflect actual variations in subsurface conditions that may be encountered between individual boring or sample locations.
- Observed water levels and/or conditions indicated are as recorded at the time of exploration and may vary according to the prevailing rainfall, methods of exploration and other factors.
- Engineering judgement was exercised in preparing the subsurface information presented herein. Analysis and interpretation of subsurface data was performed and interpreted for Agency design and estimating purposes. Presentation of the information in the Contract is intended to provide the Contractor access to the same data available to the Agency. The subsurface information is presented in good faith and is not intended as a substitute for personal investigation, independent interpretation, independent analysis or judgement by the Contractor.
- Pictorial structure details shown on the boring plan layout or soils profile are for illustrative purposes only and may not accurately portray final contract details.
- Terminology used on boring logs to describe the hardness, degree of weathering, and spacing of fractures, joints and other discontinuities in the bedrock is defined in the AASHTO Manual on Subsurface Investigations, 1988.

**LEGEND:**

⊕ BRIDGE BORING

PROJECT NAME: WINHALL  
PROJECT NUMBER: STP CULV(31)

FILE NAME: z11b268bdr_bor_pl_br47.dgn  
PROJECT LEADER: M. CHENETTE  
DESIGNED BY: J. HUNGERFORD  
BORING PLAN - BR47

PLOT DATE: 9/25/2014  
DRAWN BY: L. BUXTON  
CHECKED BY: M. CHENETTE  
SHEET 19 OF 60



STATE OF VERMONT AGENCY OF TRANSPORTATION MATERIALS & RESEARCH SECTION SUBSURFACE INFORMATION		BORING LOG		Boring No.: B-201			
WINHALL STP CULV (31) Bridge 47		Page No.: 1 of 2		Pin No.: 11b268			
Checked By: J. MacGregor		Date		Notes			
Boring Crew: J. Leonhardt, K. Owens		Casing Sampler		Groundwater Observations			
Date Started: 9/20/12 Date Finished: 9/20/12		Type: WASH BORE SS	Date	Depth (ft)	Notes		
VTSPG NAD83: N 249779.94 ft E 1524692.89 ft		L.D.: 4 in 1.38 in	09/20/12	14.0			
Station: 33+27 Offset: 10.8N		Hammer Wt: 140 lb. 140 lb.					
Ground Elevation: 1638.0 ft		Hammer Fall: 30 in. 30 in.					
		Hammer/Rod Type: Auto/NW					
		Rig: CME 75 ATV Mounted CE = 1.4					
Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
0.0		0.0 ft - 1.0 ft, Augered through asphalt pavement.					
2.5	x x x	A-2-4, f.m.c. SAND, Some Silt, Some f.c. Gravel, medium compact, brown, Moist, Rec. = 1.1 ft, Fill	13-15-14-16 (29)	6.8	31.1	43.3	25.6
5.0	x x x	A-2-4, f.m.c. SAND, Some Silt, little f.c. gravel, compact, brown, MTW, Rec. = 0.8 ft, Fill	13-16-15-15 (31)				
7.5	x x x	A-2-4, becomes medium compact, Rec. = 1.0 ft, Fill	11-13-10-22 (23)				
10.0	x x x	A-2-4, f.m.c. SAND, little silt, little f. gravel, loose, brown, Wet, Rec. = 0.2 ft, Fill	4-3-2-2 (5)				
12.5	x x x	A-2-4, becomes very loose, Rec. = 0.3 ft, Fill	2-1-2-4 (3)				
15.0	x x x	A-2-4, becomes very compact, Rec. = 0.5 ft, Fill	17-20-51-17 (71)				
20.0		A-2-4, f.m.c. Sand, Some clayey Silt, Some f.c. Gravel, very compact, brown, Moist, Rec. = 1.6 ft, Glacial Till, Zones of weathered gravel fragments in sample.	20-23-27-40 (50)	12.8	26.9	41.5	31.6
22.5		A-2-4, Similar Soil, Rec. = 1.8 ft, Zones of weathered gravel/cobble/boulder fragments in bottom 2' of sample.	30-33-32-38				
Notes: 1. Stratification lines represent approximate boundary between material types. Transition may be gradual. 2. N Values have not been corrected for hammer energy. CE is the hammer energy correction factor. 3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.							

BOTTOM OF CULVERT  
APPROX. EL. 1617.5

2010 COPY, BRIDGE 47 LOGS.GPJ, VERMONT AOT, 4/30/13

STATE OF VERMONT AGENCY OF TRANSPORTATION MATERIALS & RESEARCH SECTION SUBSURFACE INFORMATION		BORING LOG		Boring No.: B-201			
WINHALL STP CULV (31) Bridge 47		Page No.: 2 of 2		Pin No.: 11b268			
Checked By: J. MacGregor		Date		Notes			
Boring Crew: J. Leonhardt, K. Owens		Casing Sampler		Groundwater Observations			
Date Started: 9/20/12 Date Finished: 9/20/12		Type: WASH BORE SS	Date	Depth (ft)	Notes		
VTSPG NAD83: N 249779.94 ft E 1524692.89 ft		L.D.: 4 in 1.38 in	09/20/12	14.0			
Station: 33+27 Offset: 10.8N		Hammer Wt: 140 lb. 140 lb.					
Ground Elevation: 1638.0 ft		Hammer Fall: 30 in. 30 in.					
		Hammer/Rod Type: Auto/NW					
		Rig: CME 75 ATV Mounted CE = 1.4					
Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
27.5		A-2-4, Similar Soil, Rec. = 1.7 ft	(65)				
30.0		A-2-4, Similar Soil, Rec. = 1.6 ft	30-52-47-55 (99)				
35.0		A-2-4, Similar Soil, Rec. = 1.6 ft	25-40-51-42 (91)				
40.0		A-2-4, Similar Soil, Rec. = 1.8 ft	23-34-44-57 (78)				
41.0		Hole stopped @ 41.0 ft					
Remarks: Groundwater observations made during drilling may not represent static conditions. Difficult rollerbit from 12'-13'. Very difficult drilling 20' to boring completion.							
Notes: 1. Stratification lines represent approximate boundary between material types. Transition may be gradual. 2. N Values have not been corrected for hammer energy. CE is the hammer energy correction factor. 3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.							

2010 COPY, BRIDGE 47 LOGS.GPJ, VERMONT AOT, 4/30/13

PROJECT NAME: WINHALL  
PROJECT NUMBER: STP CULV(31)

FILE NAME: z11b268bor_log_br47.dgn PLOT DATE: 9/25/2014  
PROJECT LEADER: M. CHENETTE DRAWN BY: L. BUXTON  
DESIGNED BY: VTRANS CHECKED BY: VTRANS  
BORING LOG I- BR47 SHEET 20 OF 60



STATE OF VERMONT AGENCY OF TRANSPORTATION MATERIALS & RESEARCH SECTION SUBSURFACE INFORMATION		BORING LOG		Boring No.: B-202						
WINHALL STP CULV (31) Bridge 47		Page No.: 1 of 2		Pin No.: 11b268						
Checked By: J. MacGregor		Boring Crew: J. Leonhardt, K. Owens		Casing Sampler						
Date Started: 9/19/12 Date Finished: 9/20/12		Type: WASH BORE SS		Groundwater Observations						
VTSPG NAD83: N 249746.50 ft E 1524704.41 ft		I.D.: 4 in 1.38 in		Date	Depth (ft)					
Station: 33+52.5 Offset: 10.9S		Hammer Wt: 140 lb. 140 lb.		09/19/12	16.0					
Ground Elevation: 1640.5 ft		Hammer Fall: 30 in. 30 in.								
		Hammer/Rod Type: Auto/NW								
		Rig: CME 75 ATV Mounted CE = 1.4								
Depth (ft)	Strata (1)	Run (Dip deg.)	Core Rec. (RCD %)	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %	LL %	PI %
0.0	0.0 ft - 1.0 ft, Augered through asphalt pavement.									
2.5	A-1-b, f.m.c. SAND, Some f.c. Gravel, little silt, very compact, Light brown, Moist, Rec. = 1.4 ft, Fill			27-27-32-33 (59)						
5.0	A-4, f.m.c. SAND, AND SILT, little f.c. gravel, very compact, brown/red, Moist, Rec. = 0.6 ft, Fill			24-29-28-25 (57)	13.1	17.3	43.0	39.7		
10.0	A-4, SILT, Some f.m.c. Sand, little f.c. gravel, medium compact, brown, MTW, Rec. = 0.4 ft, Fill			9-10-8-7 (18)						
15.0	A-2-4, f.m.c. SAND, Some Silt, little f.c. gravel, very compact, brown, Wet, Rec. = 0.5 ft, Fill			10-6-50/5* (R)						
17.5	A-1-b, f.m.c. SAND, Some f.c. Gravel, little silt, medium compact, Dark brown, Wet, Rec. = 0.5 ft, Fill			10-12-12-8 (24)	22.8	31.8	49.8	18.4		
20.0	A-1-b, becomes very compact, Rec. = 0.2 ft, Fill Cobbles/Boulders, 18.5 ft - 20.2 ft, Fill			9-50/1* (R)						
20.0	20.0 ft - 20.2 ft, Gray, Marble, Boulder fragment recovered in R-1. NXDC	R-1	100	12-16-19-22 (35)						
22.5	A-4, Clayey SILT, Some f.m.c. Sand, hard, brown, Moist, Rec. = 1.3 ft, Glacial Till			17-31-52-	15.6	15.9	38.7	45.4	20	2
	A-4, Clayey SILT, AND f.m.c. SAND, little f.c. gravel, hard, brown, Moist, Rec. = 1.7 ft, Glacial Till									

BOTTOM OF CULVERT  
APPROX. EL. 1619.0

2010 COPY, BRIDGE 47 LOGS.GPJ, VERMONT AGT/BJT 4/20/13

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

STATE OF VERMONT AGENCY OF TRANSPORTATION MATERIALS & RESEARCH SECTION SUBSURFACE INFORMATION		BORING LOG		Boring No.: B-202						
WINHALL STP CULV (31) Bridge 47		Page No.: 2 of 2		Pin No.: 11b268						
Checked By: J. MacGregor		Boring Crew: J. Leonhardt, K. Owens		Casing Sampler						
Date Started: 9/19/12 Date Finished: 9/20/12		Type: WASH BORE SS		Groundwater Observations						
VTSPG NAD83: N 249746.50 ft E 1524704.41 ft		I.D.: 4 in 1.38 in		Date	Depth (ft)					
Station: 33+52.5 Offset: 10.9S		Hammer Wt: 140 lb. 140 lb.		09/19/12	16.0					
Ground Elevation: 1640.5 ft		Hammer Fall: 30 in. 30 in.								
		Hammer/Rod Type: Auto/NW								
		Rig: CME 75 ATV Mounted CE = 1.4								
Depth (ft)	Strata (1)	Run (Dip deg.)	Core Rec. (RCD %)	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %	LL %	PI %
27.5				50/3* (83)						
30.0	A-4, becomes medium compact, Rec. = 1.7 ft, Zones of weathered gravel/cobble/boulder in bottom 5" of sample.			12-11-16-31 (27)						
35.0	A-4, Clayey SILT, Some f.m.c. Sand, little f.c. gravel, hard, brown/white, Moist, Rec. = 1.5 ft, Glacial Till, Zones of weathered gravel/cobbles/boulders in sample.			24-48-64-60 (112)						
40.0	A-4, Clayey SILT, Some f.m.c. Sand, trace f. gravel, hard, brown, Moist, Rec. = 1.5 ft, Glacial Till			15-27-33-40 (60)						
41.0	Hole stopped @ 41.0 ft									
42.5	Remarks: Groundwater observations made during drilling may not represent static conditions. Gravel fragments recovered in sample at 1' are likely from cobble/boulder. Coarse gravel fragment blocking shoe of spoon of sample at 14'. Roller bit grinding 18.5'-20'. Roller bit grinding 28.5'-30'. Hard drilling at 30'.									

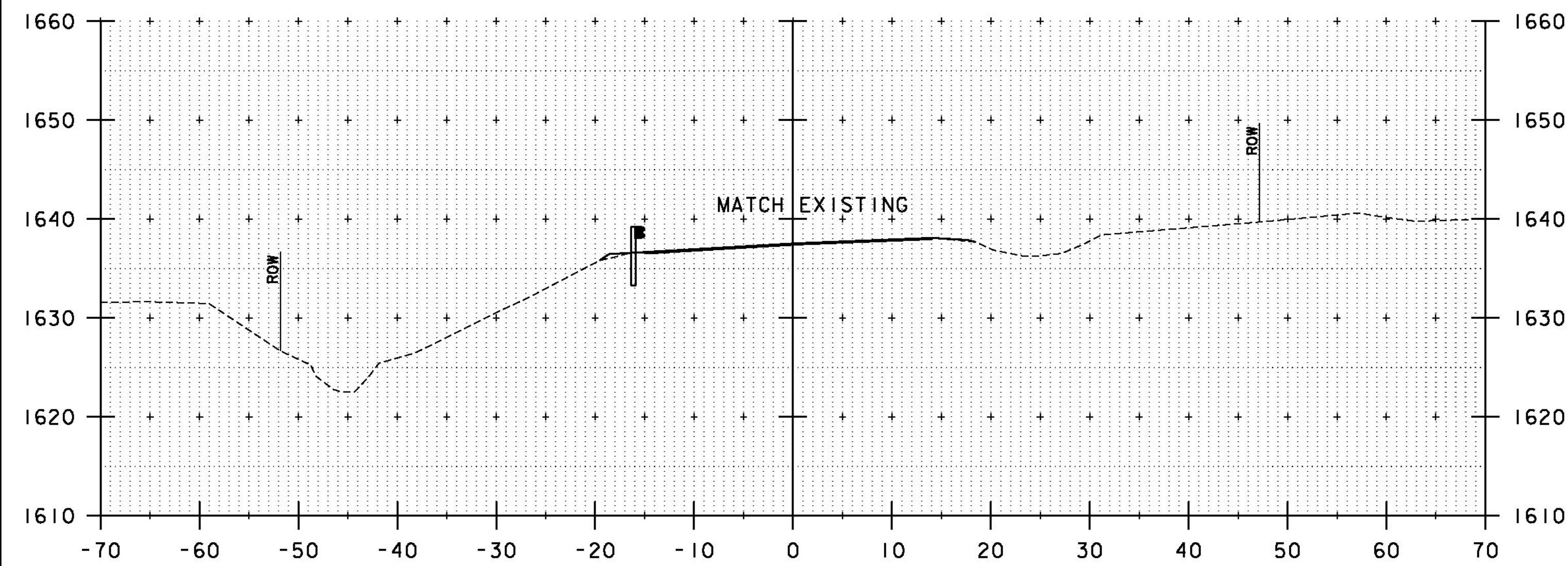
2010 COPY, BRIDGE 47 LOGS.GPJ, VERMONT AGT/BJT 4/20/13

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

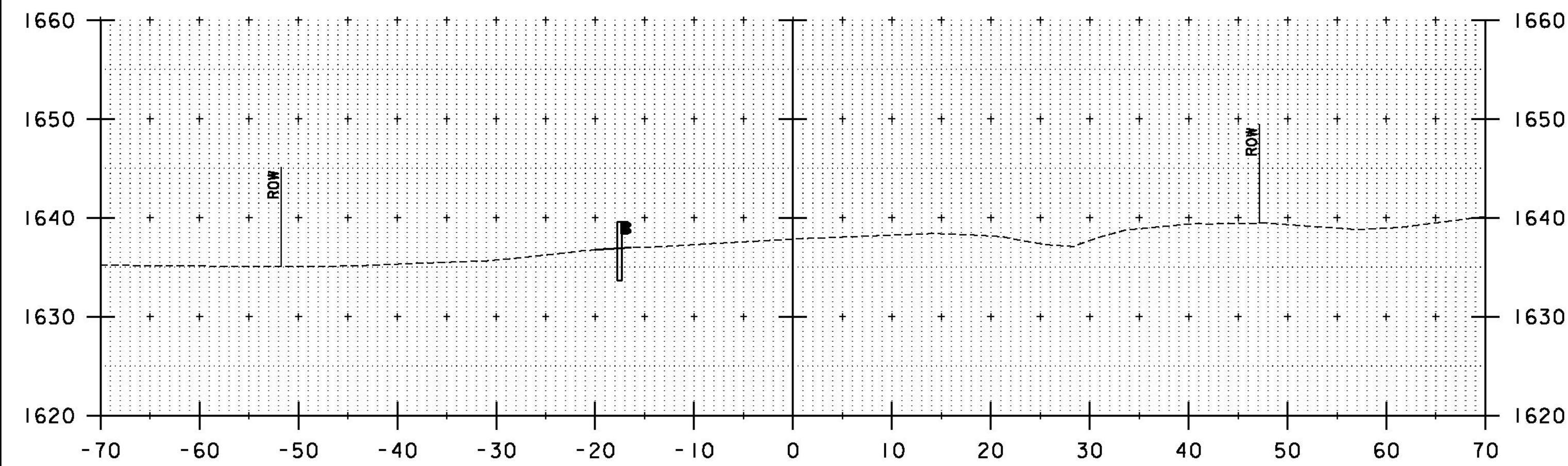
PROJECT NAME: WINHALL  
PROJECT NUMBER: STP CULV(31)

FILE NAME: z11b268bor_log_br47.dgn PLOT DATE: 9/25/2014  
PROJECT LEADER: M. CHENETTE DRAWN BY: L. BUXTON  
DESIGNED BY: VTRANS CHECKED BY: VTRANS  
BORING LOG 2 - BR47 SHEET 21 OF 60

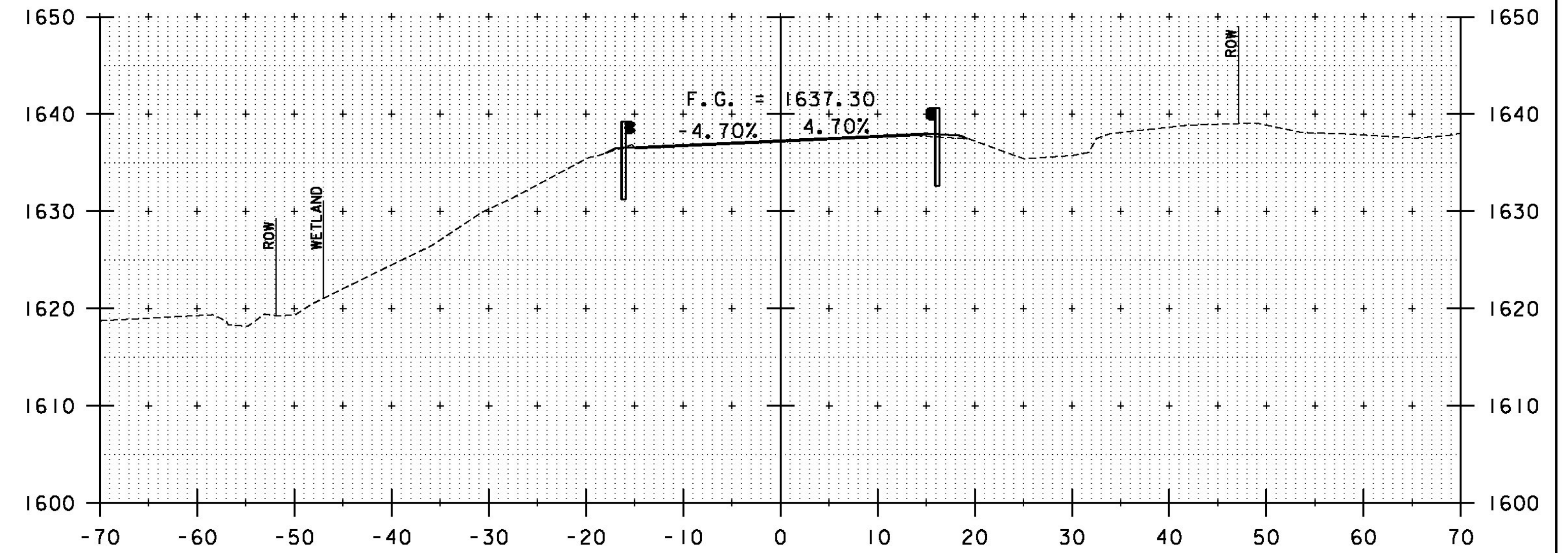




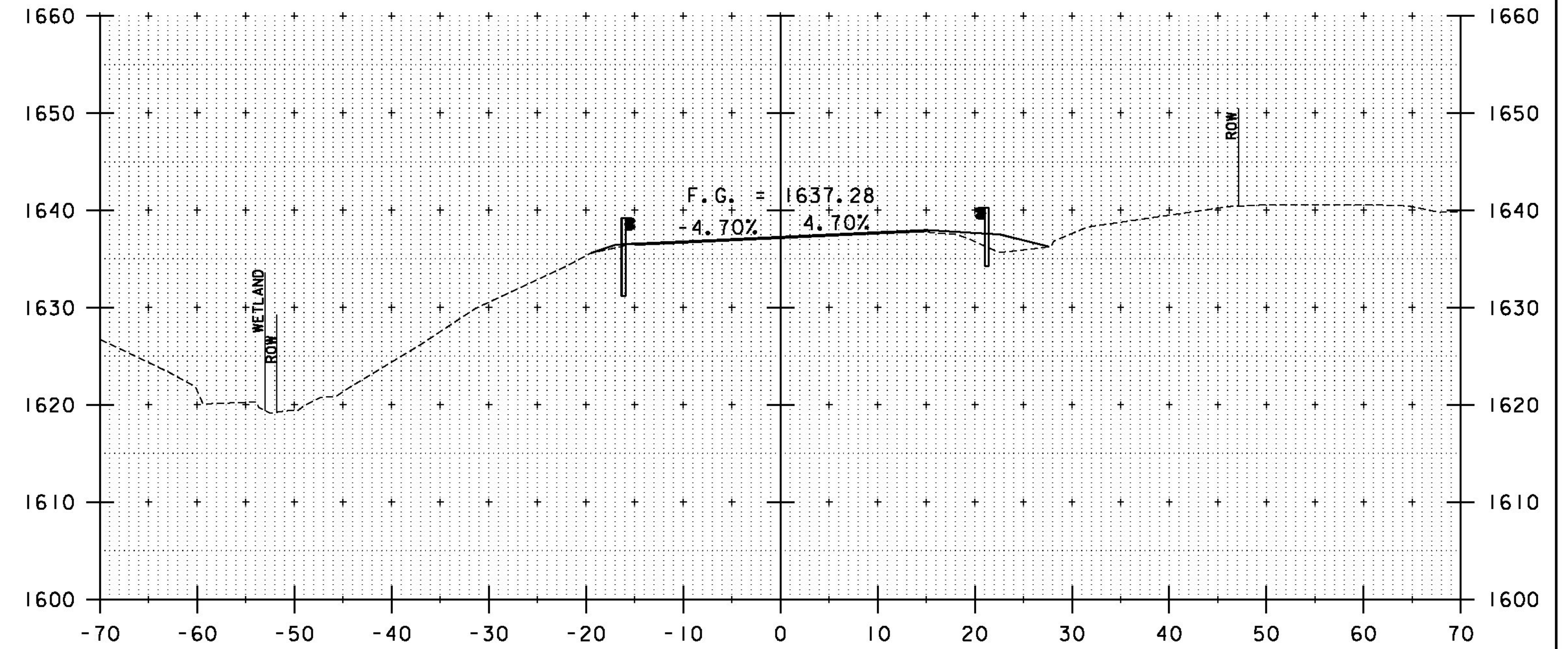
BEGIN APPROACH  
31+75



31+50



32+25



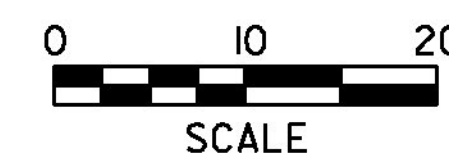
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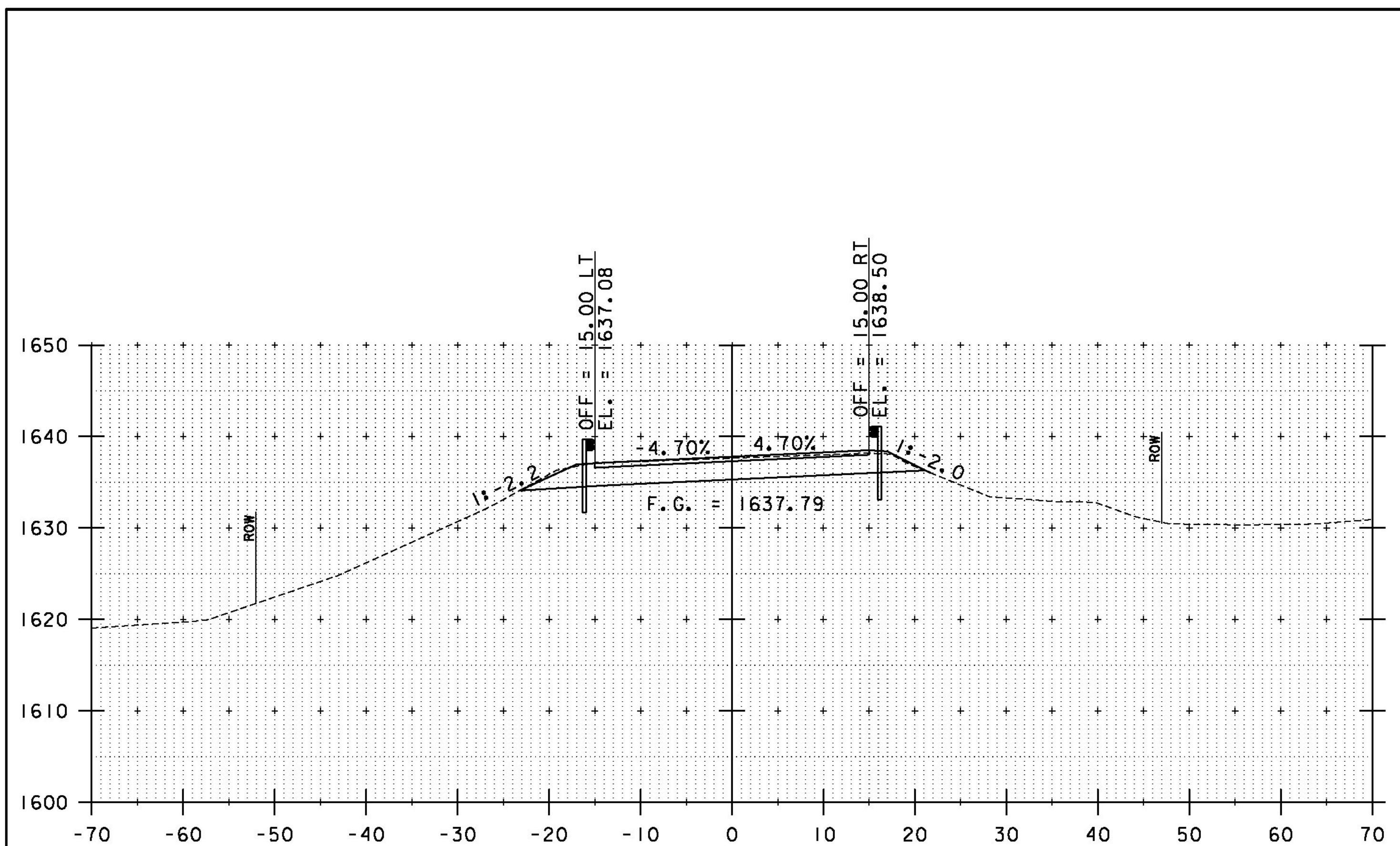
STA. 31+50 TO STA. 32+25

PROJECT NAME: WINHALL  
PROJECT NUMBER: STP CULV(3I)

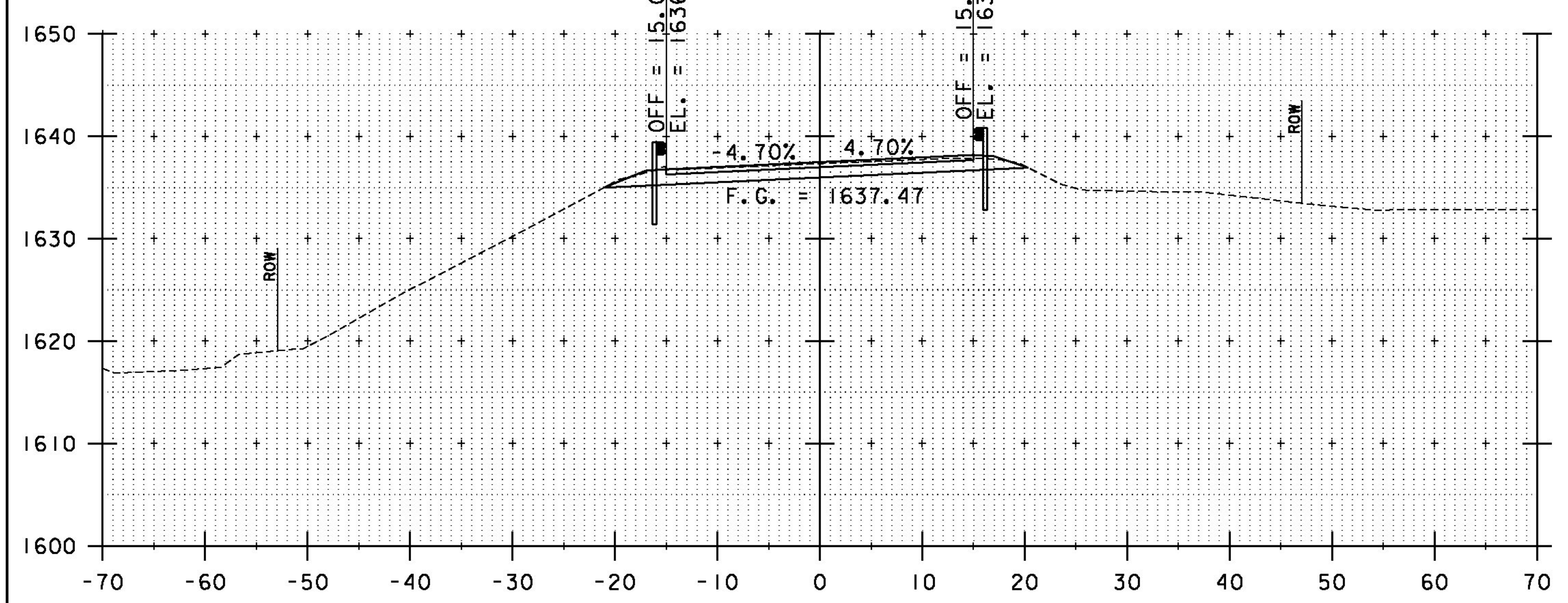
FILE NAME: z1lb268xs_br47.dgn  
PROJECT LEADER: M. CHENETTE  
DESIGNED BY: J. HUNGERFORD  
ROADWAY CROSS SECTIONS - RXSI - BR47

PLOT DATE: 9/25/2014  
DRAWN BY: L. BUXTON  
CHECKED BY: M. CHENETTE  
SHEET 22 OF 60

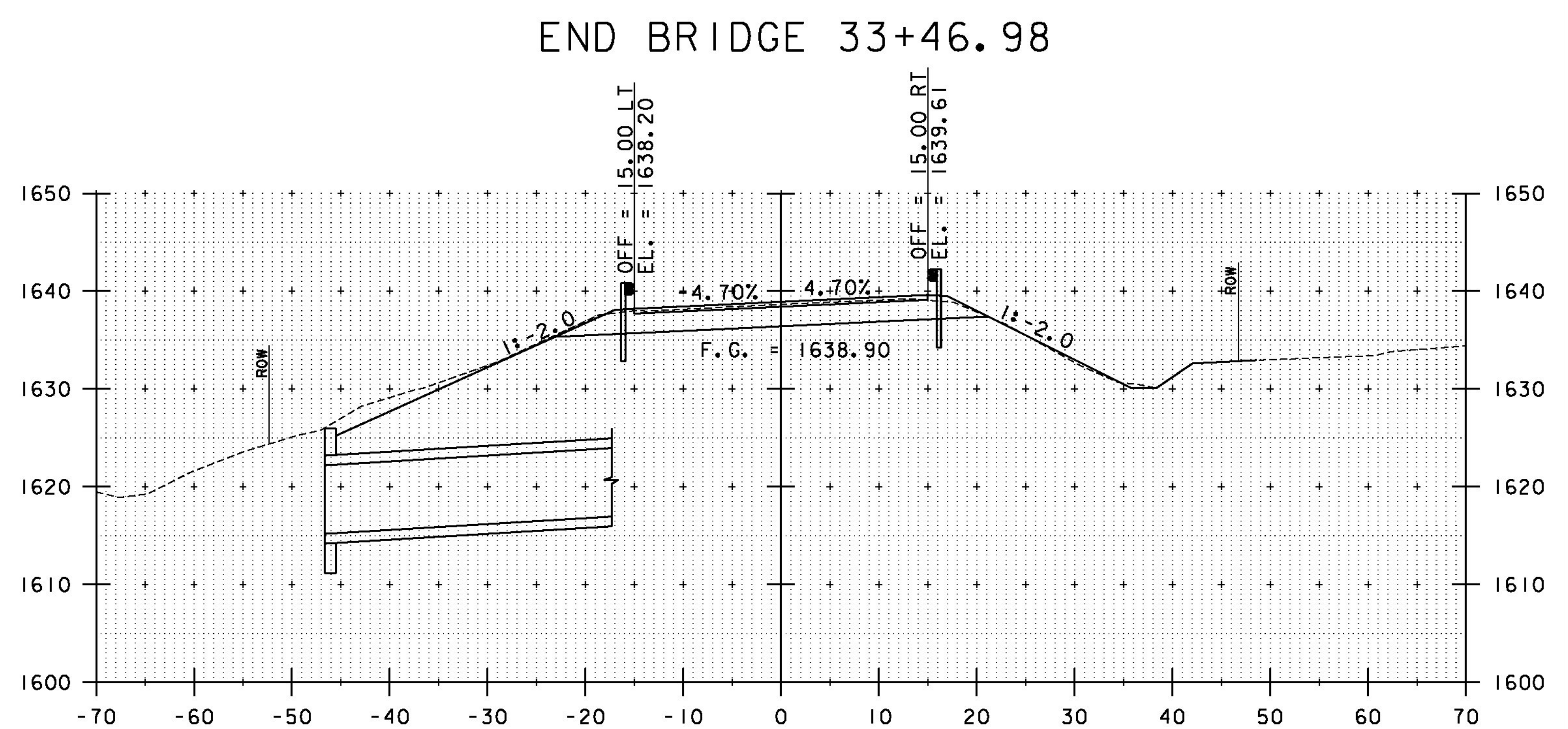




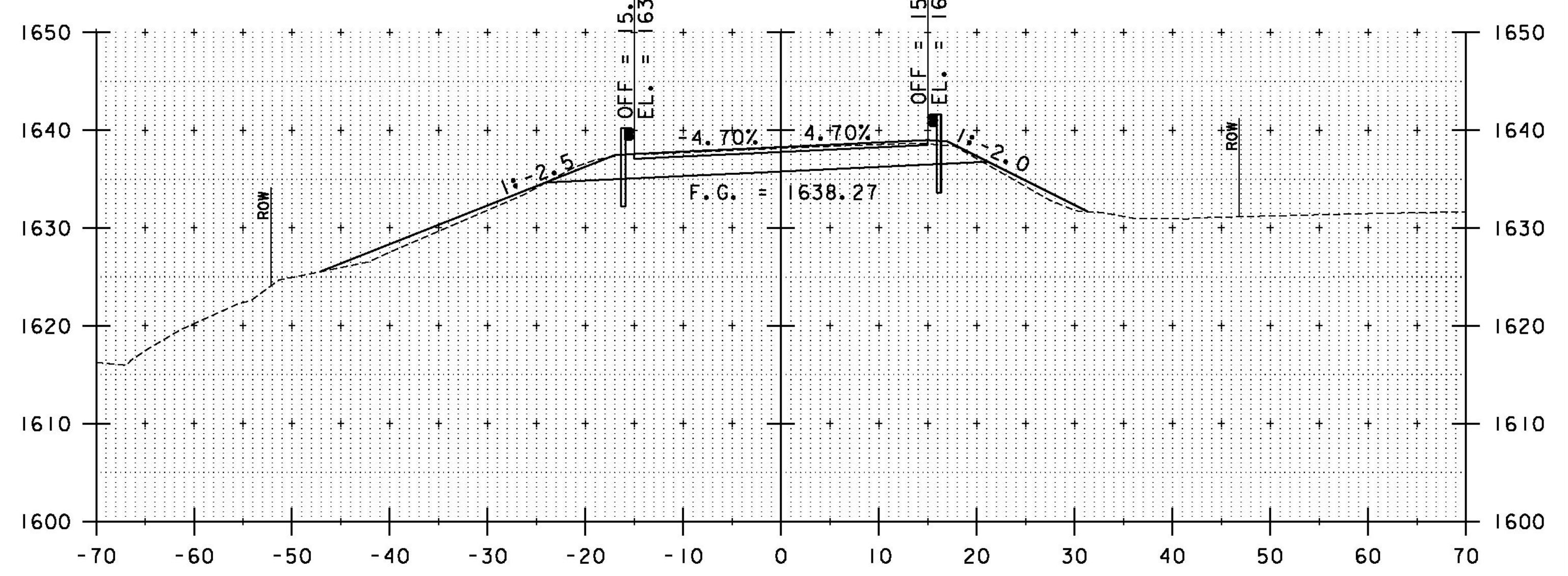
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32+50



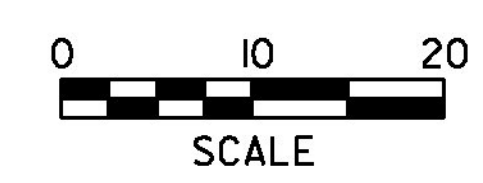
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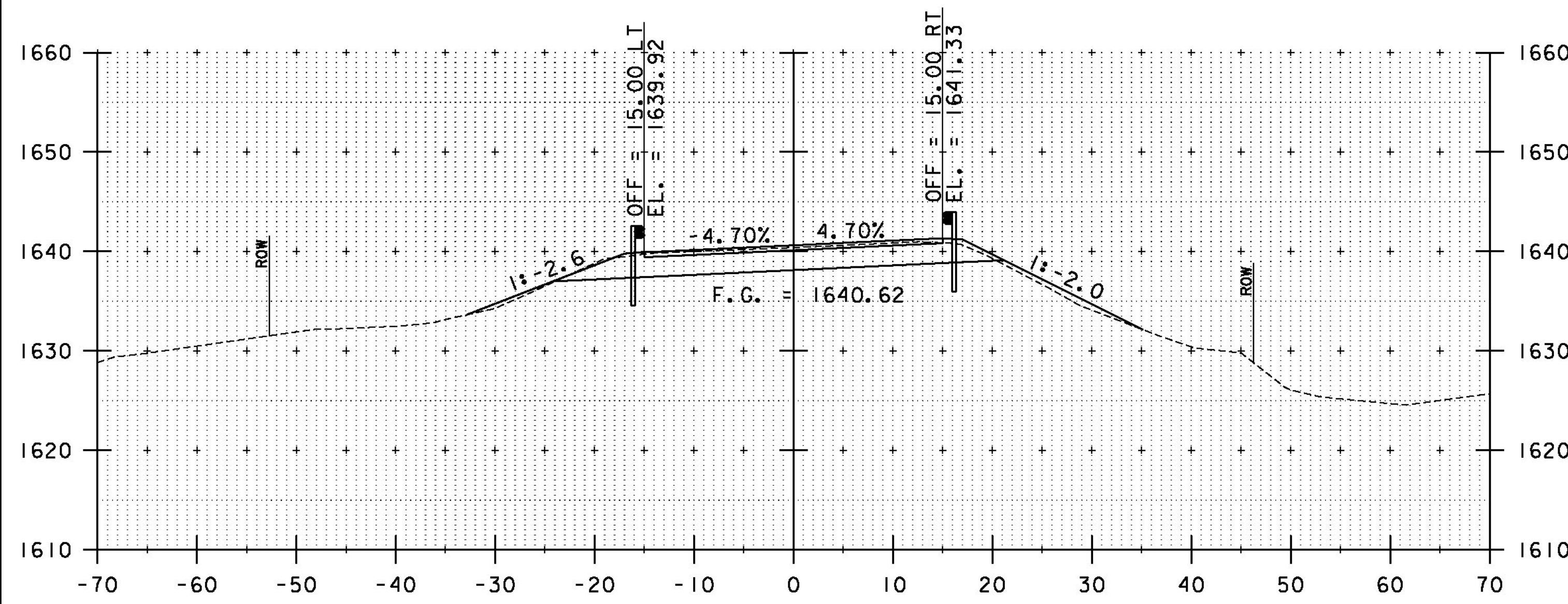


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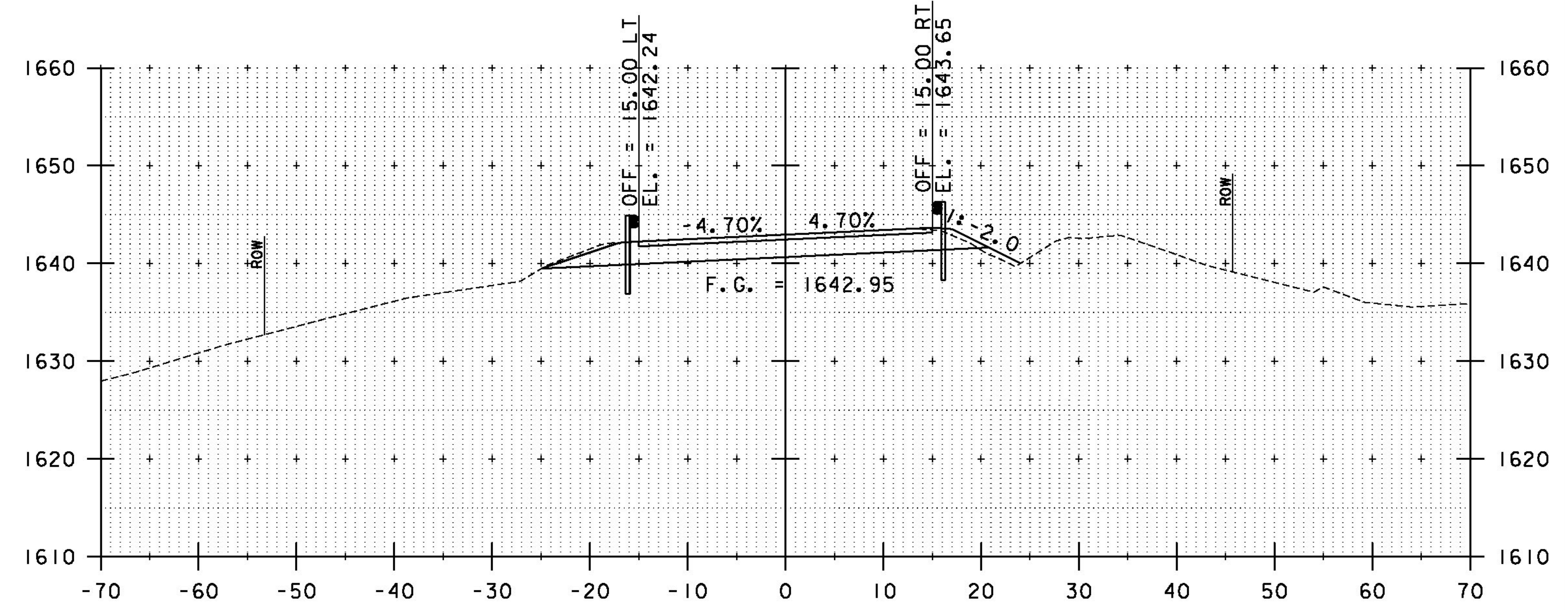
STA. 32+50 TO STA. 33+25

PROJECT NAME:	WINHALL	PLOT DATE:	9/25/2014
PROJECT NUMBER:	STP CULV(3I)	DRAWN BY:	L. BUXTON
FILE NAME:	z11b268xs_br47.dgn	CHECKED BY:	M. CHENETTE
PROJECT LEADER:	M. CHENETTE	ROADWAY CROSS SECTIONS - RXS2 - BR47	SHEET 23 OF 60
DESIGNED BY:	J. HUNGERFORD		

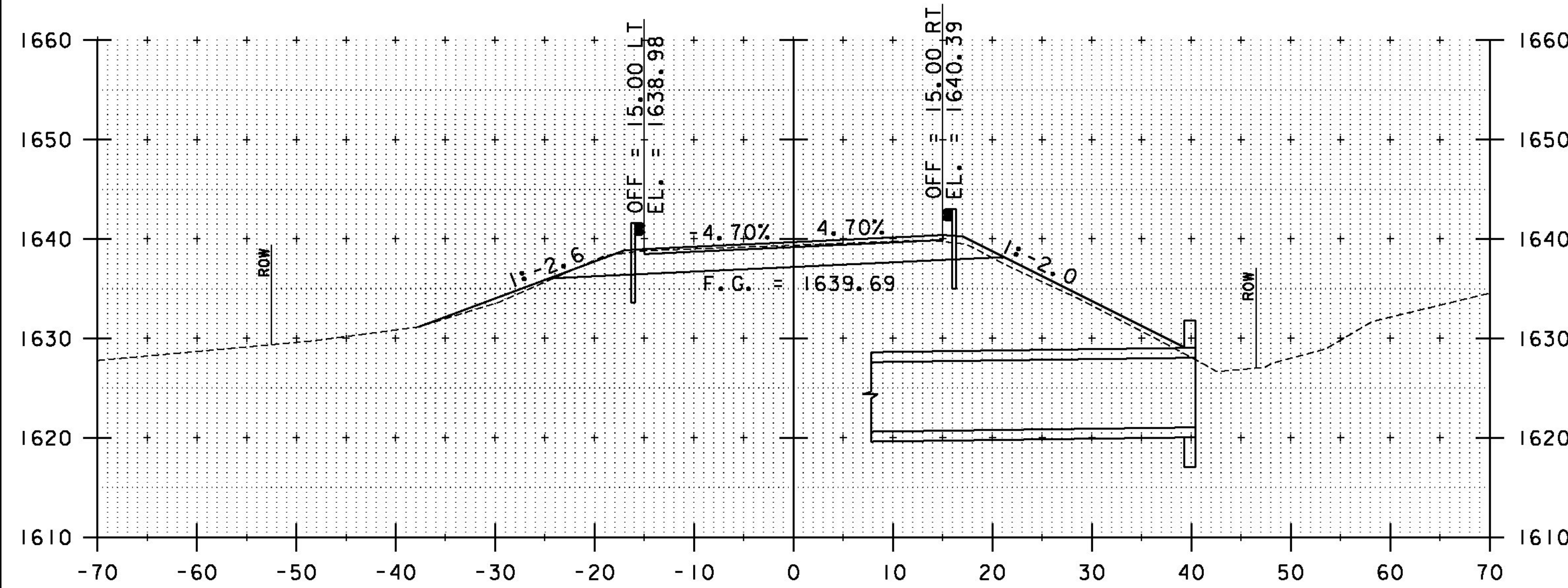




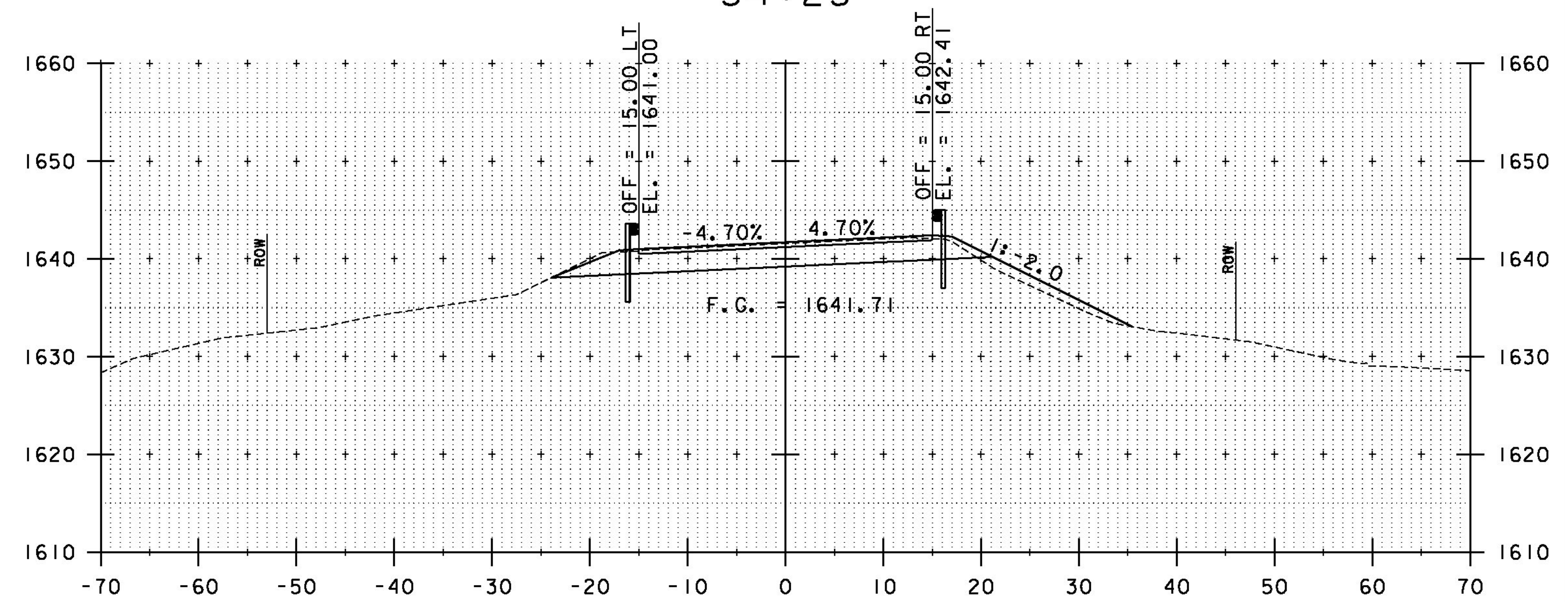
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34+25



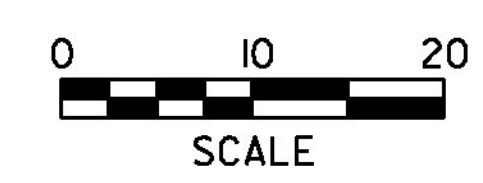
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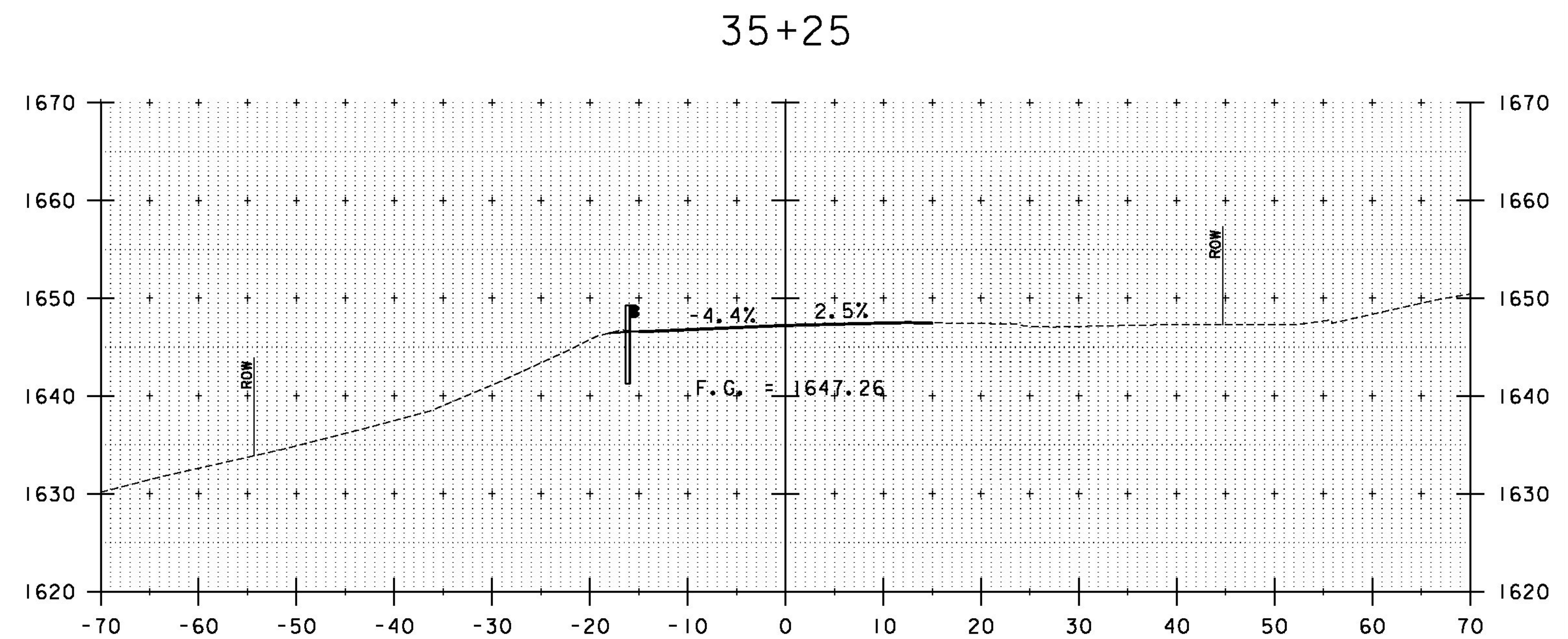
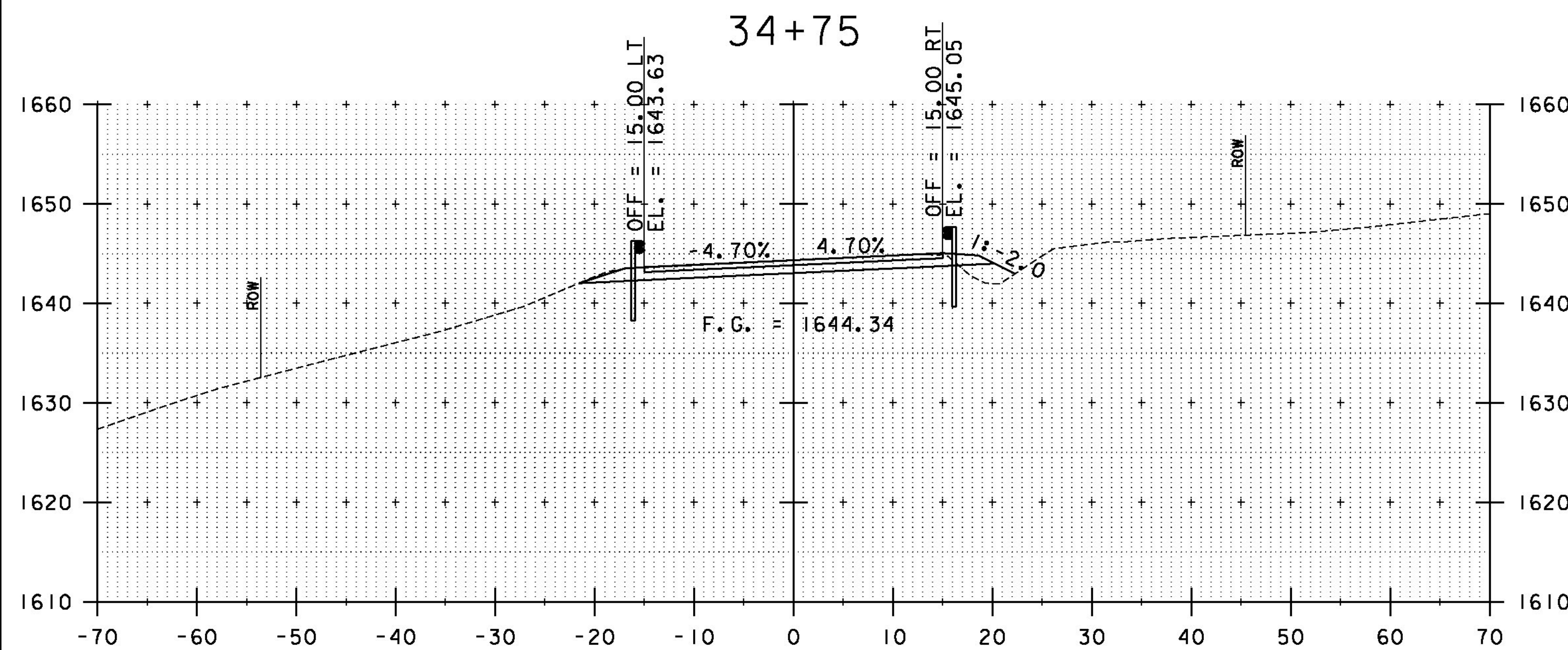
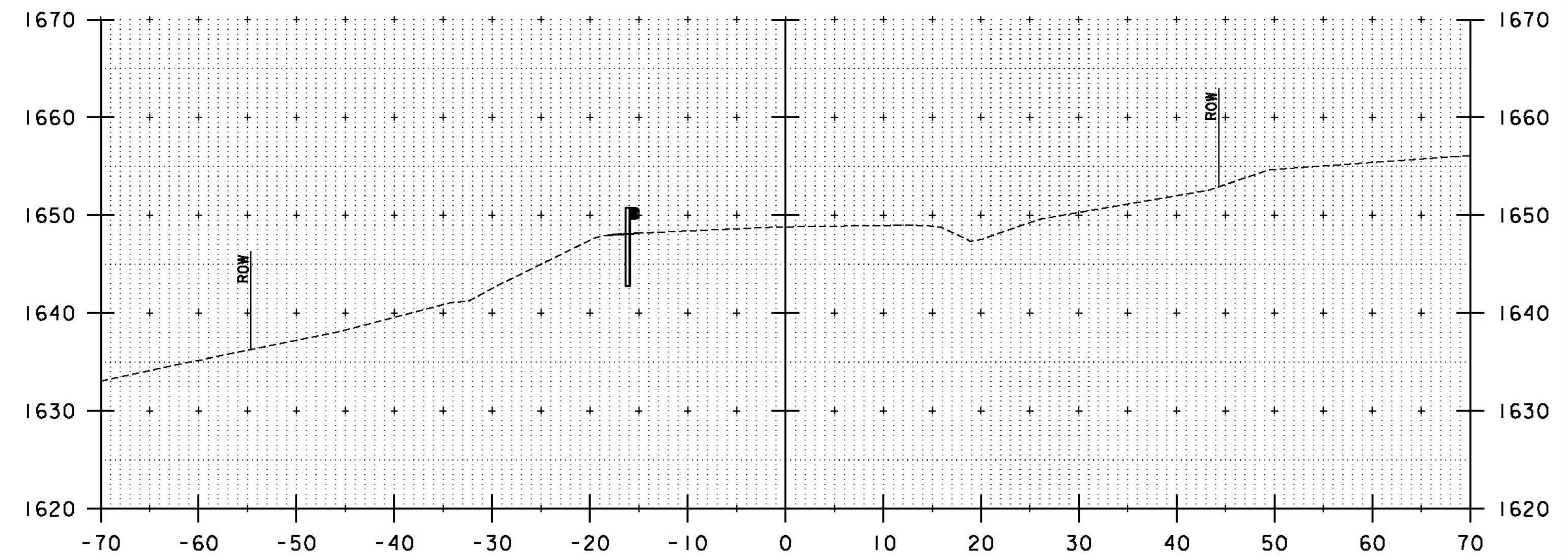
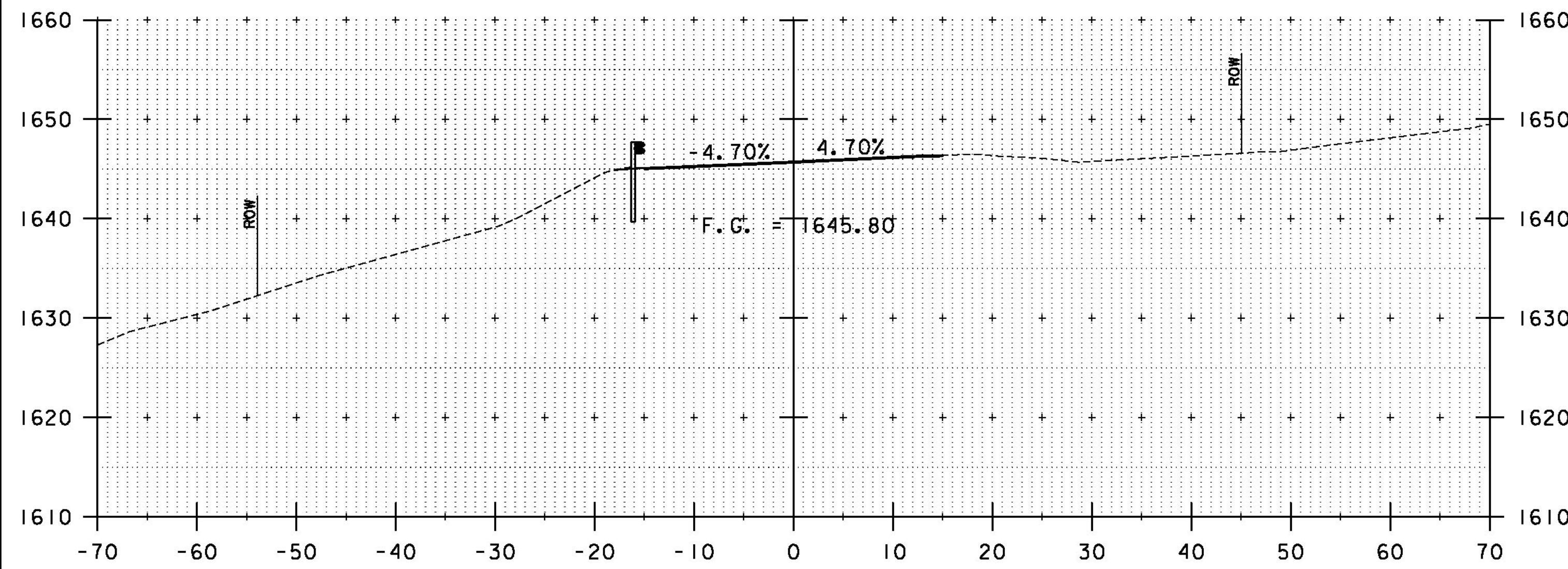


34+05  
END PROJECT  
34+00

STA. 33+50 TO STA. 34+25

PROJECT NAME:	WINHALL	FILE NAME:	z1lb268xs_br47.dgn	PLOT DATE:	9/25/2014
PROJECT NUMBER:	STP CULV(31)	PROJECT LEADER:	M. CHENETTE	DRAWN BY:	L. BUXTON
		DESIGNED BY:	J. HUNGERFORD	CHECKED BY:	M. CHENETTE
		ROADWAY CROSS SECTIONS - RXS3 - BR47		SHEET	24 OF 60





34+75

35+25

34+50

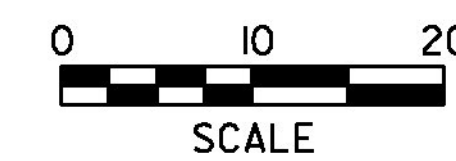
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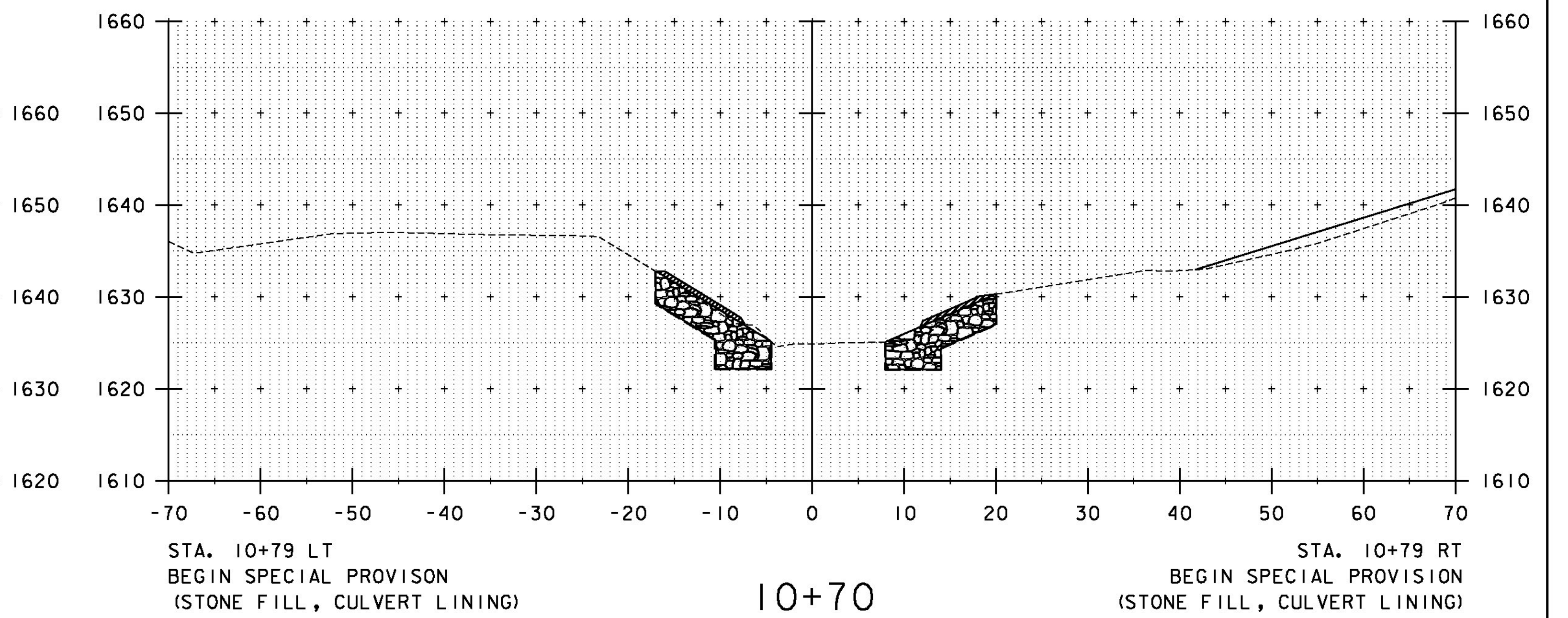
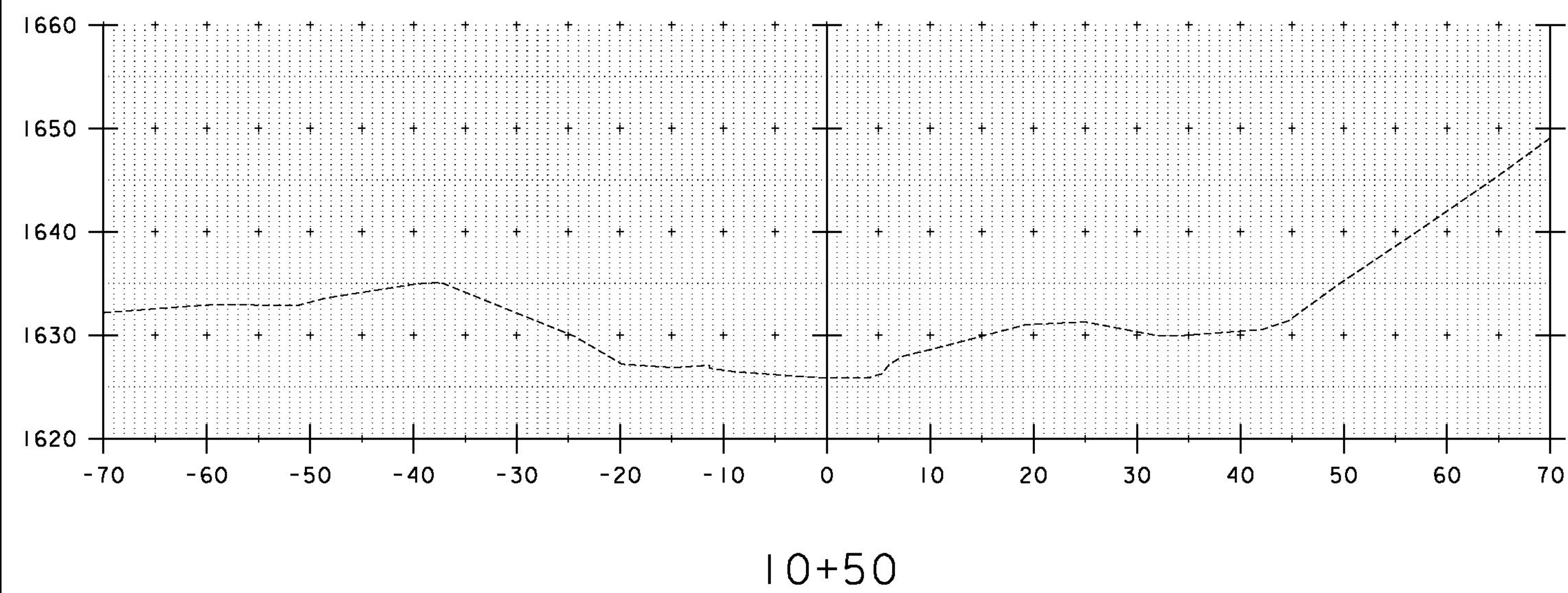
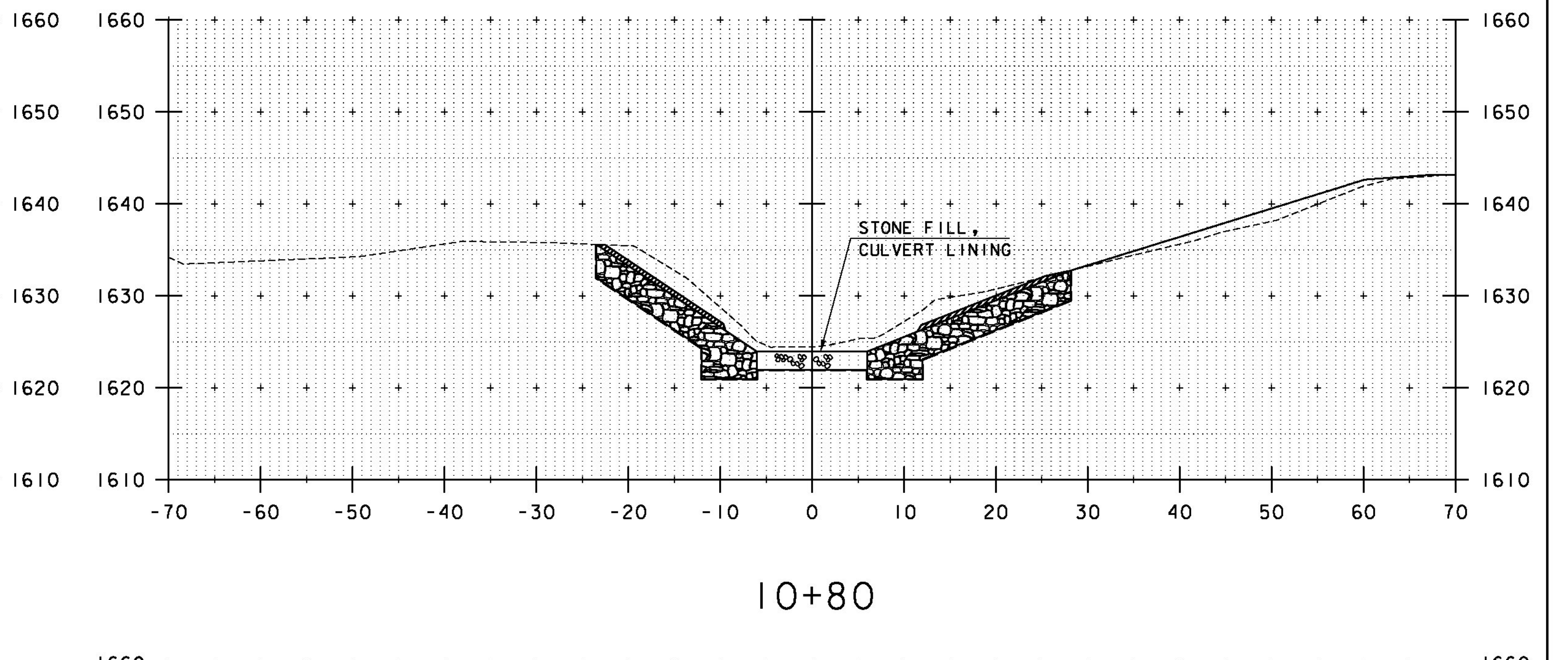
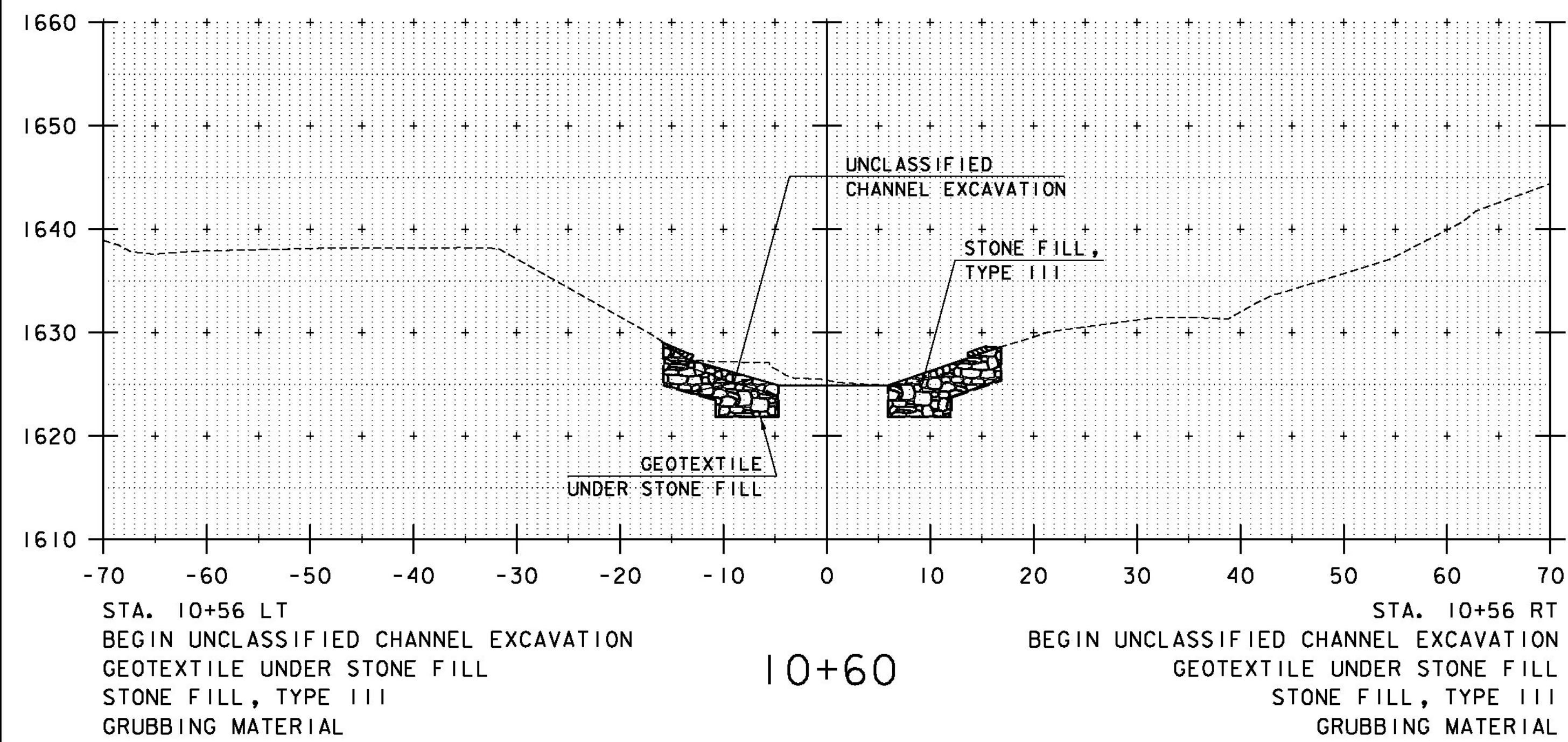
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PROJECT NAME: WINHALL  
PROJECT NUMBER: STP CULV(3I)

FILE NAME: z1lb268xs_br47.dgn  
PROJECT LEADER: M. CHENETTE  
DESIGNED BY: J. HUNGERFORD  
ROADWAY CROSS SECTIONS - RXS4 - BR47

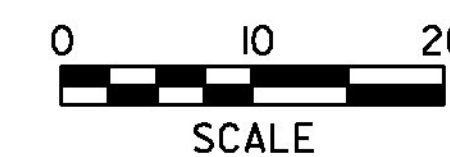
PLOT DATE: 9/25/2014  
DRAWN BY: L. BUXTON  
CHECKED BY: M. CHENETTE  
SHEET 25 OF 60

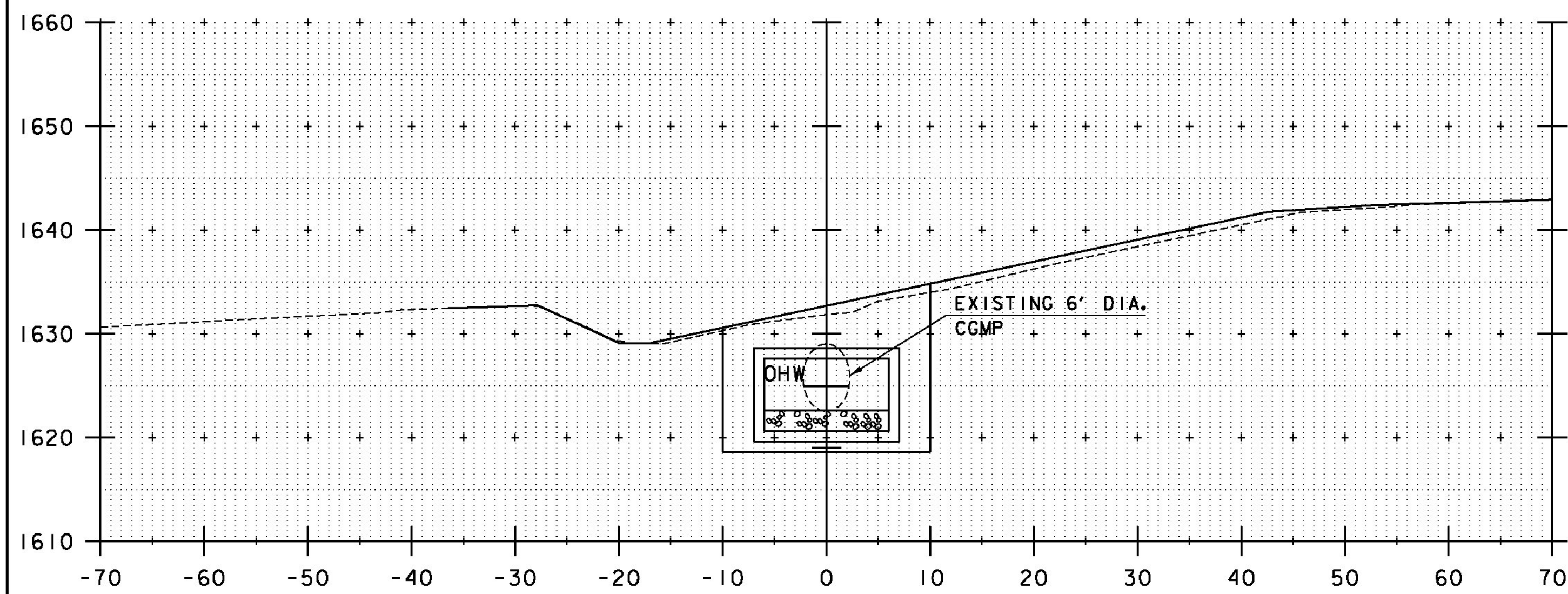




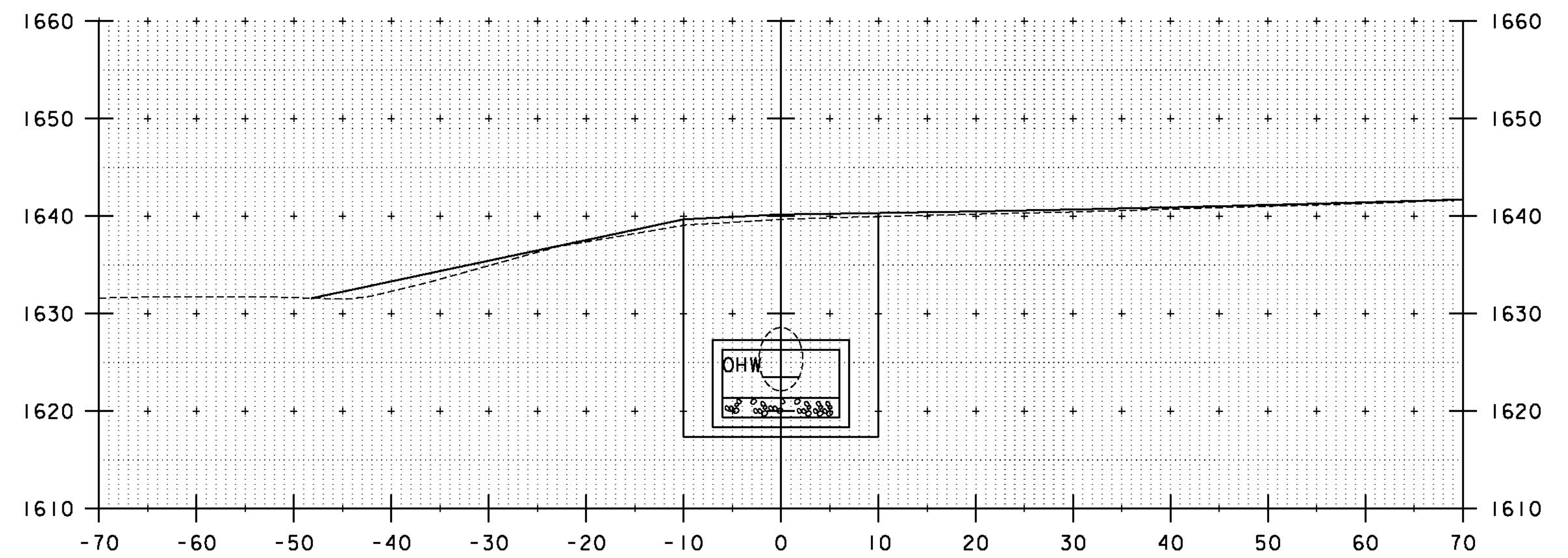
STA. 10+50 TO STA. 10+80

PROJECT NAME:	WINHALL	FILE NAME:	zlib268xs_br47.dgn	PLOT DATE:	9/25/2014
PROJECT NUMBER:	STP CULV(3I)	PROJECT LEADER:	M. CHENETTE	DRAWN BY:	L. BUXTON
		DESIGNED BY:	J. HUNGERFORD	CHECKED BY:	M. CHENETTE
		CHANNEL CROSS SECTIONS - CXSI - BR47		SHEET	26 OF 60

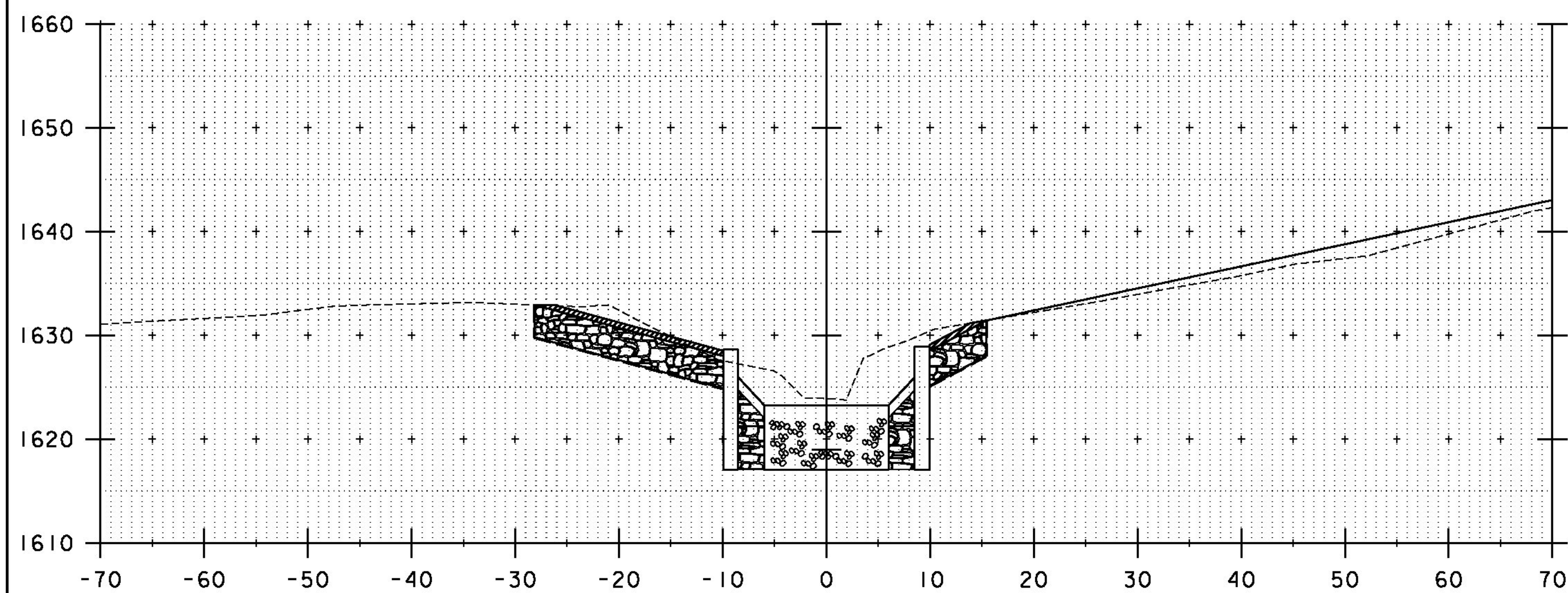




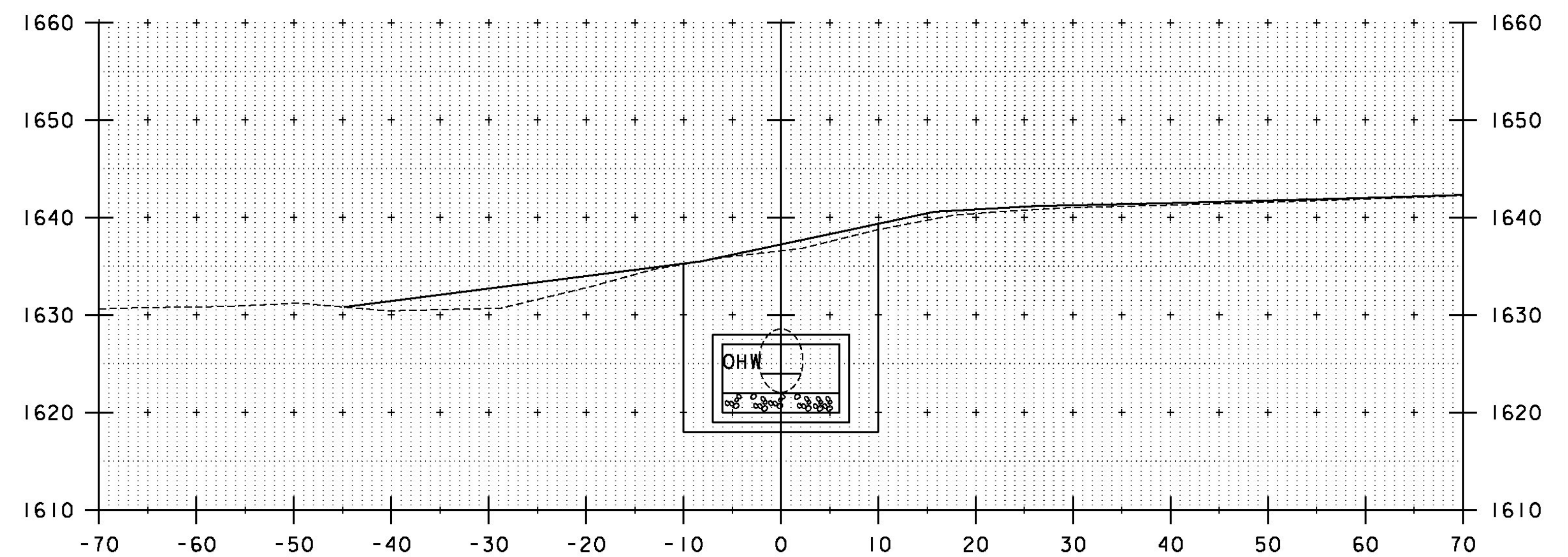
11+00



11+20



10+90



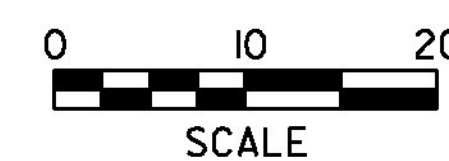
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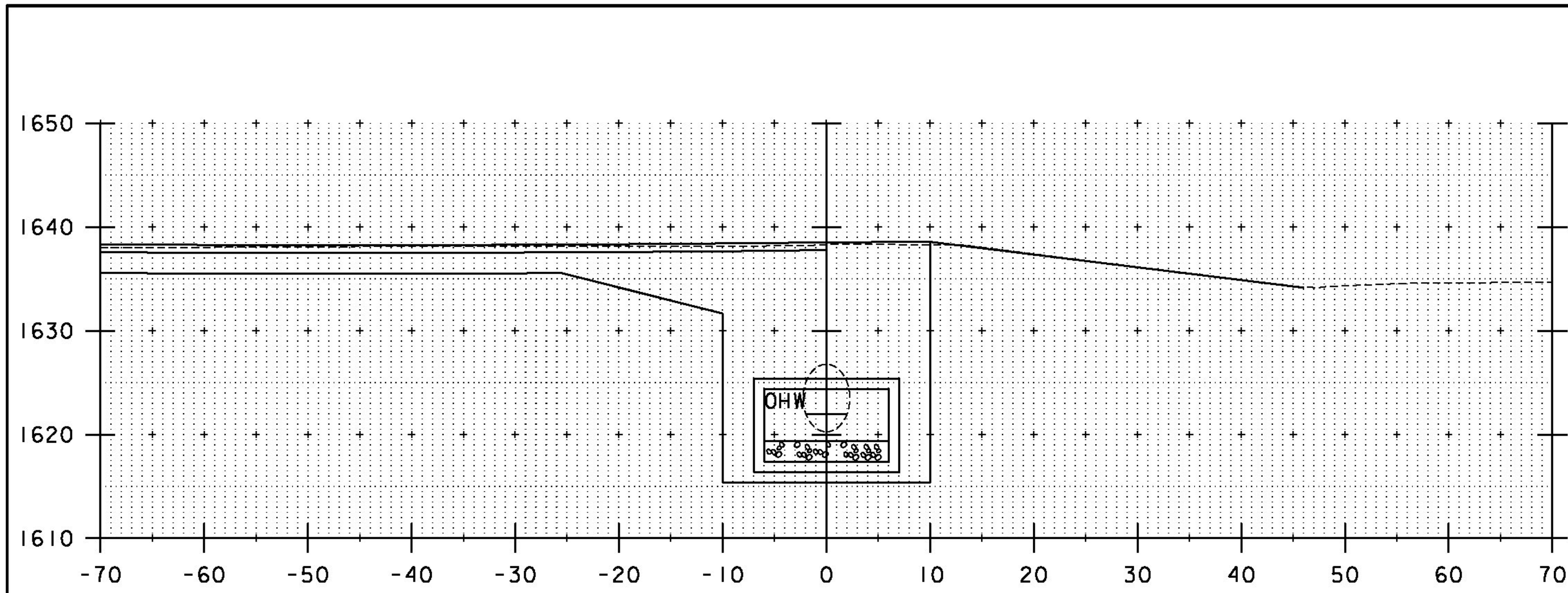
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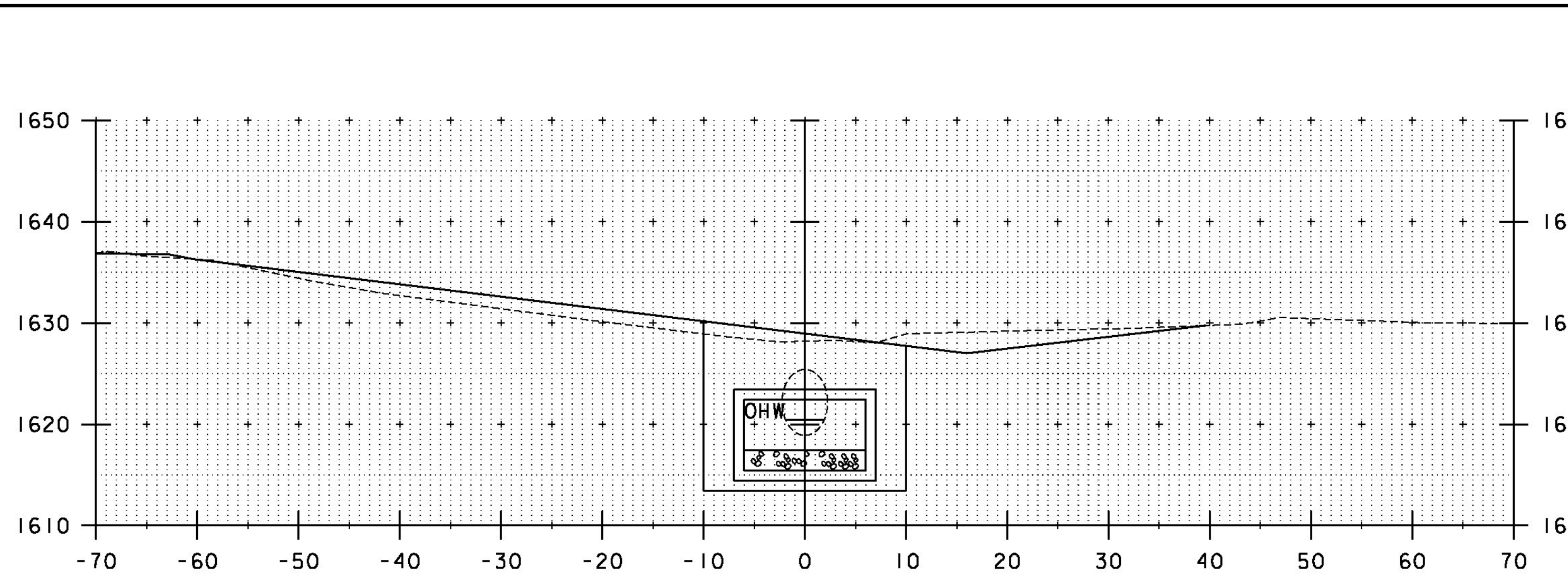
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PROJECT LEADER: M. CHENETTE  
DESIGNED BY: J. HUNGERFORD  
CHANNEL CROSS SECTIONS - CXS2 - BR47

PLOT DATE: 10/9/2014  
DRAWN BY: L. BUXTON  
CHECKED BY: M. CHENETTE  
SHEET 27 OF 60

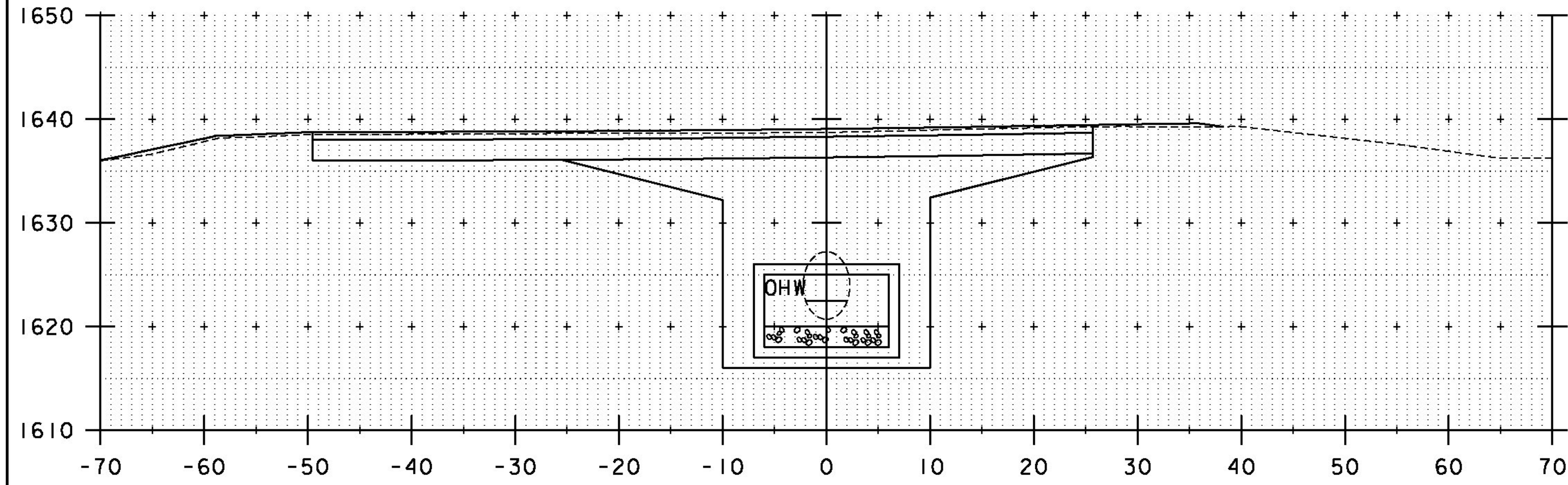




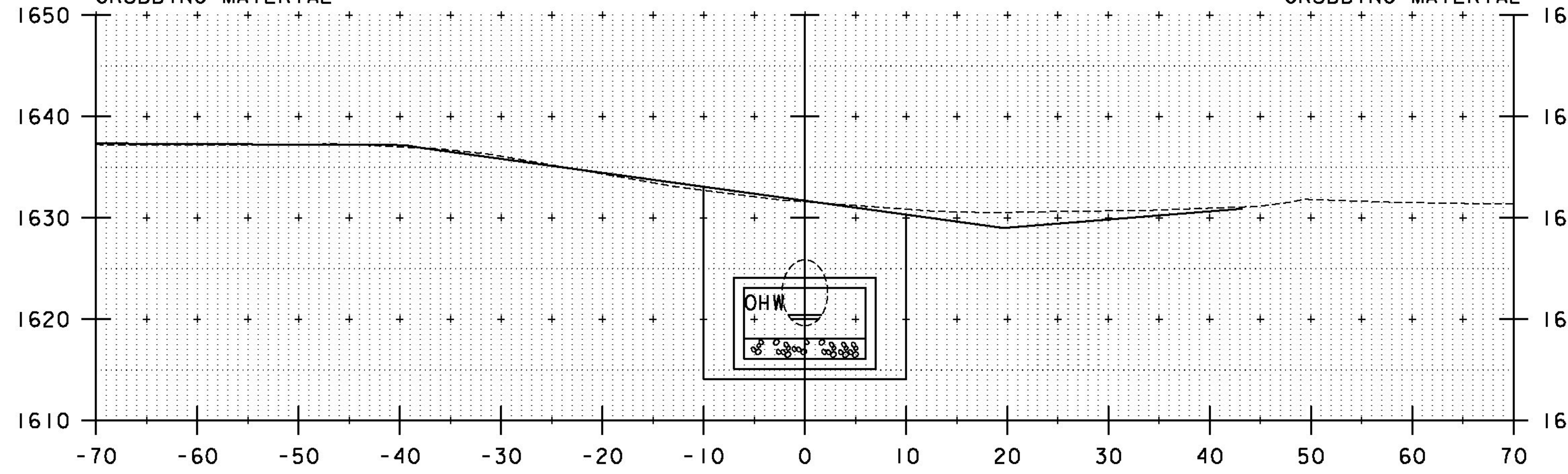
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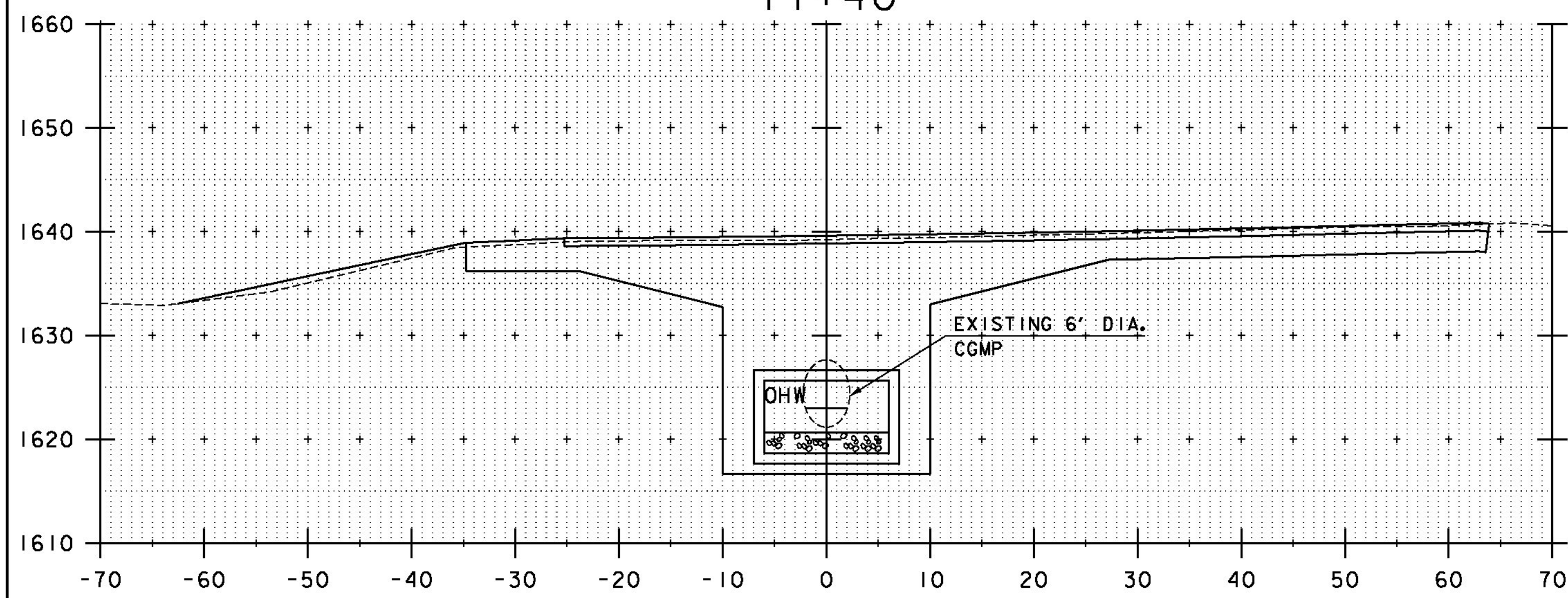
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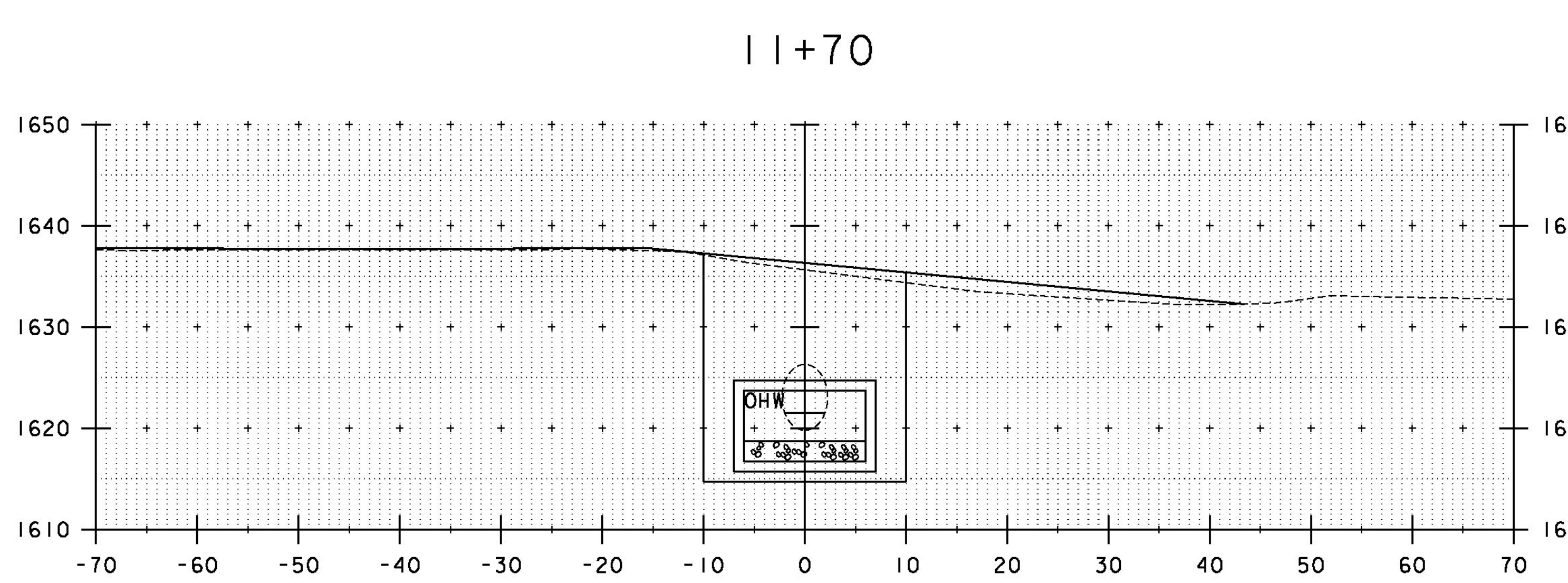
11+40



11+70



11+30



11+60

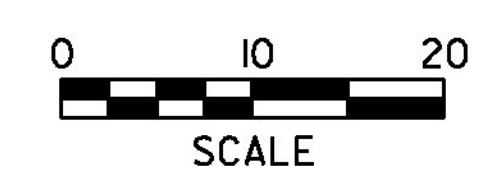
STA. 11+83 LT  
RESUME UNCLASSIFIED CHANNEL EXCAVATION  
GEOTEXTILE UNDER STONE FILL  
STONE FILL, TYPE III  
GRUBBING MATERIAL

STA. 11+83 RT  
RESUME UNCLASSIFIED CHANNEL EXCAVATION  
GEOTEXTILE UNDER STONE FILL  
STONE FILL, TYPE III  
GRUBBING MATERIAL

STA. 11+30 TO STA. 11+80

PROJECT NAME: WINHALL  
PROJECT NUMBER: STP CULV(3I)  
FILE NAME: z11b268xs_br47.dgn  
PROJECT LEADER: M. CHENETTE  
DESIGNED BY: J. HUNGERFORD  
CHANNEL CROSS SECTIONS - CXS3 - BR47

PLOT DATE: 9/25/2014  
DRAWN BY: L. BUXTON  
CHECKED BY: M. CHENETTE  
SHEET 28 OF 60





## EPSC PLAN NARRATIVE

### 1.1 PROJECT DESCRIPTION

THIS PROJECT INVOLVES THE REPLACEMENT OF BRIDGE #47, RELATED CHANNEL WORK AND INCIDENTALS. BRIDGE #47 IS AN EXISTING 72" CORRUGATED METAL PLATE PIPE CULVERT, WHICH WILL BE REPLACED WITH A 12' SPAN PRECAST CONCRETE BOX CULVERT TO CONVEY THE UNNAMED BROOK BENEATH VT ROUTE 30. BRIDGE #47 IS LOCATED IN THE TOWN OF WINHALL ON VT ROUTE 30, 2.3 MILES SOUTH OF THE JUNCTION WITH VERMONT ROUTE 11.

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

TOTAL AREA OF DISTURBANCE AS SHOWN ON THE ATTACHED EPSC PLAN IS APPROXIMATELY 0.65 ACRES.

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

### 1.2 SITE INVENTORY

#### 1.2.1 TOPOGRAPHY

THE TOPOGRAPHY OF THE PROJECT SITE IS WOODED MOUNTAINOUS TERRAIN. VT ROUTE 30 IS WITHIN THE PROJECT SITE. THERE ARE GRAVEL DRIVES ON FOUR SIDES OF THE PROJECT. THERE ARE OVERHEAD UTILITIES THAT WILL BE RELOCATED PRIOR TO THE START OF THE PROJECT.

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

THE WATER SOURCE ON THE PROJECT SITE IS AN UNNAMED BROOK. THE PROJECT IS IN THE CONNETTICUT RIVER - BELLOWS FALLS TO VERNON DAM DRAINAGE BASIN. THE TOTAL CONTRIBUTING DRAINAGE AREA IS 0.8 SQ. MI. THERE IS A POND APPROXIMATELY 1000 FT UPSTREAM. DUE TO THE NATURE OF THE SURROUNDING ROADWAY TERRAIN THE PROJECT SITE COULD RECEIVE RUNOFF FROM THE SURROUNDING SLOPES, ROADWAY DITCHES AND THE ROADWAY OVER TOP OF CULVERT. THERE ARE CLASS II WETLANDS ON THE NORTH SIDE OF THE PROJECT AT THE OUTLET. SEE THE PROJECT IMPACTS PLANS.

#### 1.2.3 VEGETATION

THE VEGETATION IN THE PROJECT AREA CONSISTS OF OPEN WOODLAND, WITH MOSSY UNDERGROWTH ON THE BANKS OF THE BROOK. THE IMPACT TO VEGETATION WILL BE LIMITED TO THAT WHICH IS RELATED TO THE EXCAVATION REQUIRED FOR THE INSTALLATION OF THE CULVERT, HEADWALLS, WINGWALLS, STONE FILL, AND TEMPORARY ACCESS. UPON PROJECT COMPLETION, THE CHANNEL AND DISTURBED AREAS WITH SLOPES GREATER THAN 2:1 WILL BE ARMORED WITH STONE FILL TYPE III AS SPECIFIED ON THE PLANS. DISTURBED VEGETATION WILL BE REESTABLISHED WITH STANDARD SEED AND MULCH PRACTICES.

#### 1.2.4 SOILS

ALL SOIL DATA CAME FROM THE U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE FOR THE COUNTY OF ORLEANS, VERMONT. SOILS ON THE PROJECT SITE ARE MONADNOCK FINE SANDY LOAM, "K FACTOR" = 0.20. THE SOIL IS CONSIDERED LOW EROSION POTENTIAL DUE TO K-VALUE. THE SOIL "K FACTOR" FOR THE EXACT PROJECT LOCATION WAS NOT AVAILABLE; THEREFORE THE ADJACENT SOIL "K FACTOR" WAS USED.

NOTE: K-VALUES GENERALLY INDICATE THE FOLLOWING:

0.0-0.23 = LOW EROSION POTENTIAL  
0.24-0.36 = MODERATE EROSION POTENTIAL  
0.37 AND HIGHER = HIGH EROSION POTENTIAL

#### 1.2.5 SENSITIVE RESOURCE AREAS

CRITICAL HABITATS: NO  
HISTORICAL OR ARCHEOLOGICAL AREAS: NO  
PRIME AGRICULTURAL LAND: NO  
THREATENED AND ENDANGERED SPECIES: NO  
WATER RESOURCE: UNNAMED BROOK  
WETLANDS: THERE ARE WETLANDS AT THE OUTLET OF THE STRUCTURE. SEE THE PROJECT IMPACTS PLANS.

### 1.3 RISK EVALUATION

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

### 1.4 EROSION PREVENTION AND SEDIMENT CONTROL

THE EROSION CONTROL PLANS ARE MEANT AS A GUIDELINE FOR PREVENTING EROSION AND CONTROLLING SEDIMENT TRANSPORT. THE PRINCIPLES OUTLINED IN THIS NARRATIVE CONSIST OF APPLYING MEASURES THROUGHOUT CONSTRUCTION OF THE PROJECT IN ORDER TO MINIMIZE SEDIMENT TRANSPORT TO THE RECEIVING WATERS. THE MEASURES INCLUDE STABILIZATION AND STRUCTURAL PRACTICES, STORM WATER CONTROLS AND OTHER POLLUTION PREVENTION PRACTICES. THEY HAVE BEEN PROPOSED BY THE DESIGNER AS A BASIS FOR PROTECTING RESOURCES AND WILL NEED TO BE BUILT UPON BASED ON THE SPECIFIC MEANS AND METHODS OF THE CONTRACTOR. REFER TO THE LOW RISK SITE HANDBOOK AND APPROPRIATE DETAIL SHEETS FOR SPECIFIC GUIDANCE AND CONSTRUCTION DETAILING. THE CONTRACTOR IS RESPONSIBLE FOR DEVELOPING AND SUBMITTING AN EPSC PLAN IN ACCORDANCE WITH SECTION 652 OF THE SPECIAL PROVISIONS.

IN ADDITION, THE CONTRACTOR SHALL DESIGN AND IMPLEMENT A TEMPORARY STREAM DIVERSION, INCLUDING EPSC MEASURES IN ACCORDANCE WITH ITEM 900.645, SPECIAL PROVISION (TEMPORARY RELOCATION OF STREAM).

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

#### 1.4.1 MARK SITE BOUNDARIES

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

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

#### 1.4.2 LIMIT DISTURBANCE AREA

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

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

#### 1.4.3 SITE ENTRANCE/EXIT STABILIZATION

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

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

#### 1.4.4 INSTALL SEDIMENT BARRIERS

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

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

#### 1.4.5 DIVERT UPLAND RUNOFF

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

THE PROJECT AREA IS RELATIVELY FLAT AROUND THE ROADWAY WITH MINIMAL OFF-SITE RUNOFF FLOWING THROUGH THE SITE. THEREFORE DIVERSION MEASURES WILL NOT BE NECESSARY.

#### 1.4.6 SLOW DOWN CHANNELIZED RUNOFF

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

STONE CHECK DAMS WILL BE INSTALLED AS NEEDED AND AS DIRECTED BY THE ENGINEER.

#### 1.4.7 CONSTRUCT PERMANENT CONTROLS

THERE ARE NO PERMANENT STORMWATER TREATMENT DEVICES TO BE INSTALLED WITH THIS PROJECT.

#### 1.4.8 STABILIZE EXPOSED SOILS DURING CONSTRUCTION

ALL AREAS OF DISTURBANCE MUST HAVE TEMPORARY STABILIZATION IN PLACE WITHIN 48 HOURS OF DISTURBANCE OR IN ACCORDANCE WITH THE CONSTRUCTION GENERAL PERMIT 3-9020 AUTHORIZATION.

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

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

#### 1.4.9 WINTER STABILIZATION

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

#### 1.4.10 STABILIZE SOIL AT FINAL GRADE

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

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

#### 1.4.11 DE-WATERING ACTIVITIES

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

SEDIMENT CONTAINMENT BAGS (FILTER BAGS) FOR HEADWALL WORK SHALL BE USED AS NECESSARY AND AS DIRECTED BY THE ENGINEER. SEE SHEET 33 FOR DETAIL.

#### 1.4.12 INSPECT YOUR SITE

INSPECT THE PROJECT SITE BASED ON SPECIAL PROVISION REQUIREMENTS.

### 1.5 SEQUENCE AND STAGING

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

#### 1.5.1 OFF-SITE ACTIVITIES

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

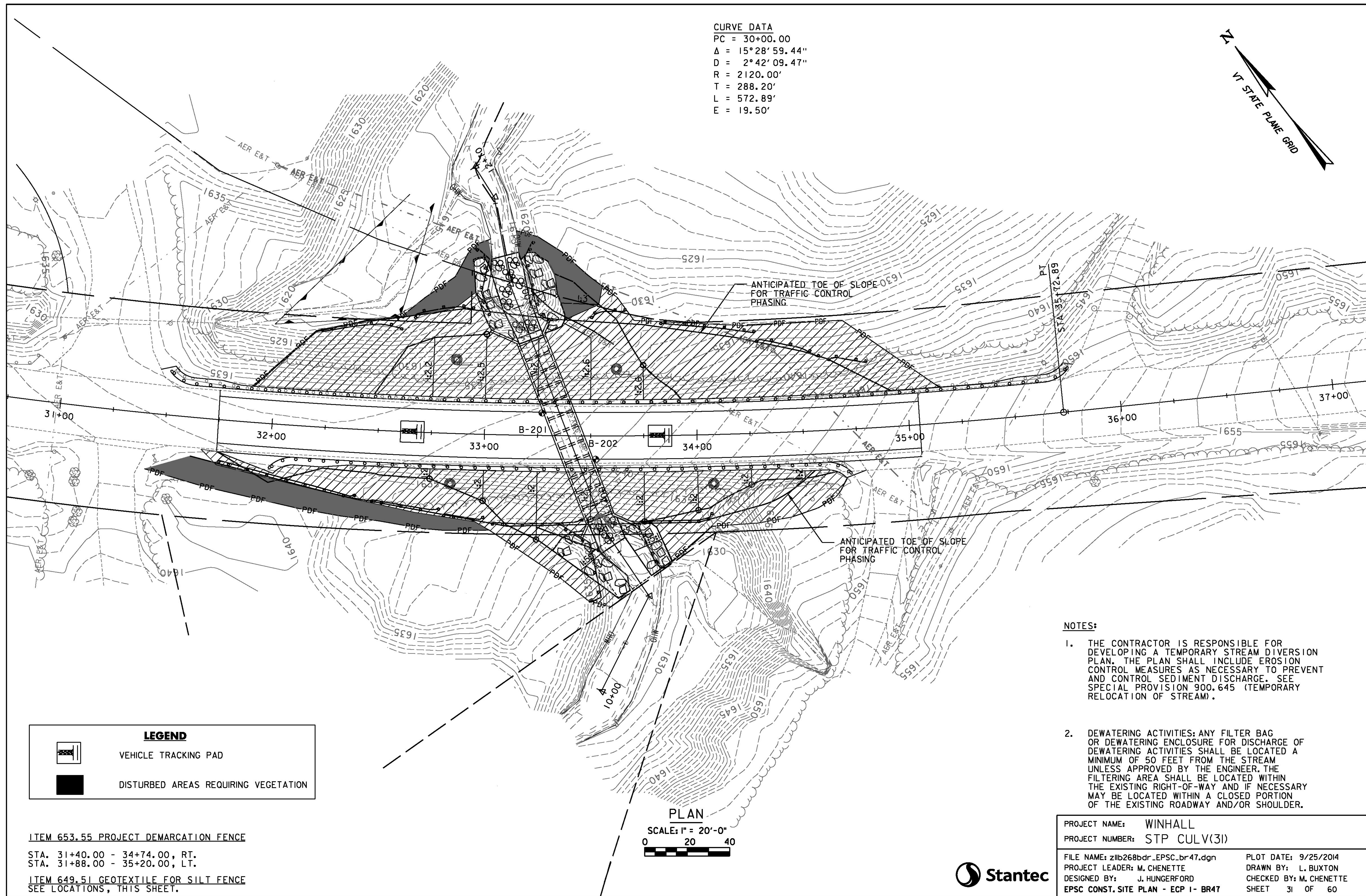
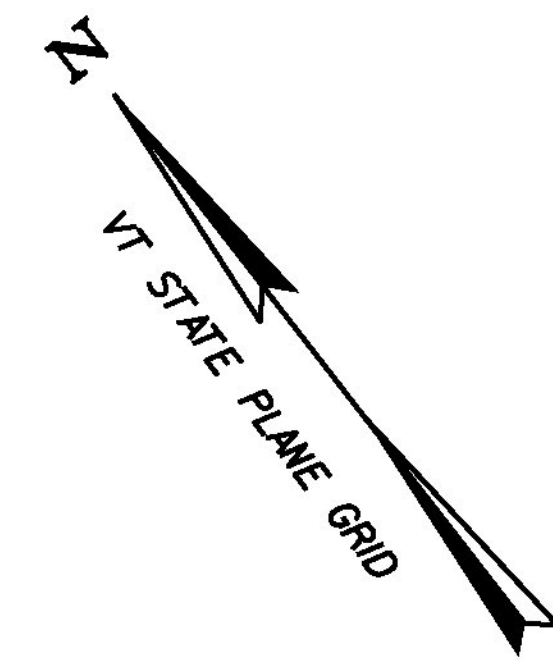
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PROJECT NUMBER: STP_CULV(31)

FILE NAME: zllb268ero_narr_BR47.dgn  
PROJECT LEADER: M. CHENETTE  
DESIGNED BY: J. HUNGERFORD  
EPSC NARRATIVE - ECN 1- BR47

PLOT DATE: 9/25/2014  
DRAWN BY: L. BUXTON  
CHECKED BY: M. CHENETTE  
SHEET 30 OF 60



**CURVE DATA**  
 PC = 30+00.00  
 $\Delta = 15^\circ 28' 59.44''$   
 D = 2° 42' 09.47"  
 R = 2120.00'  
 T = 288.20'  
 L = 572.89'  
 E = 19.50'



**NOTES:**

1. THE CONTRACTOR IS RESPONSIBLE FOR DEVELOPING A TEMPORARY STREAM DIVERSION PLAN. THE PLAN SHALL INCLUDE EROSION CONTROL MEASURES AS NECESSARY TO PREVENT AND CONTROL SEDIMENT DISCHARGE. SEE SPECIAL PROVISION 900.645 (TEMPORARY RELOCATION OF STREAM).
2. DEWATERING ACTIVITIES: ANY FILTER BAG OR DEWATERING ENCLOSURE FOR DISCHARGE OF DEWATERING ACTIVITIES SHALL BE LOCATED A MINIMUM OF 50 FEET FROM THE STREAM UNLESS APPROVED BY THE ENGINEER. THE FILTERING AREA SHALL BE LOCATED WITHIN THE EXISTING RIGHT-OF-WAY AND IF NECESSARY MAY BE LOCATED WITHIN A CLOSED PORTION OF THE EXISTING ROADWAY AND/OR SHOULDER.

**LEGEND**

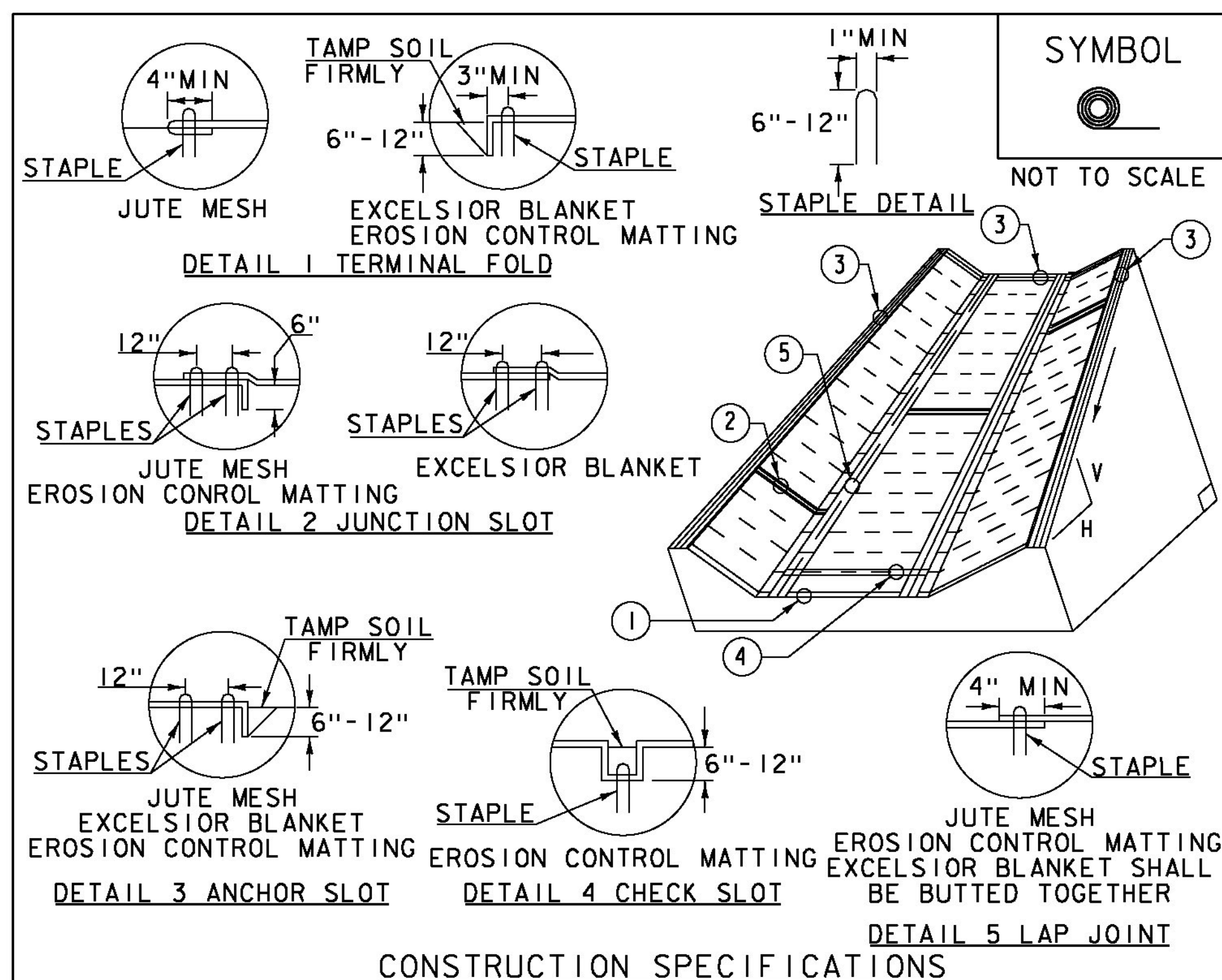
	VEHICLE TRACKING PAD
	DISTURBED AREAS REQUIRING VEGETATION

**ITEM 653.55 PROJECT DEMARCATION FENCE**  
 STA. 31+40.00 - 34+74.00, RT.  
 STA. 31+88.00 - 35+20.00, LT.  
**ITEM 649.51 GEOTEXTILE FOR SILT FENCE**  
 SEE LOCATIONS, THIS SHEET.

**PLAN**  
 SCALE: 1" = 20'-0"  
 0 20 40

PROJECT NAME: WINHALL	PLOT DATE: 9/25/2014
PROJECT NUMBER: STP CULV(31)	DRAWN BY: L. BUXTON
FILE NAME: z1lb268bdr_EPSC_br47.dgn	CHECKED BY: M. CHENETTE
PROJECT LEADER: M. CHENETTE	EPSC CONST. SITE PLAN - ECP 1- BR47
DESIGNED BY: J. HUNGERFORD	SHEET 31 OF 60





**CONSTRUCTION SPECIFICATIONS**

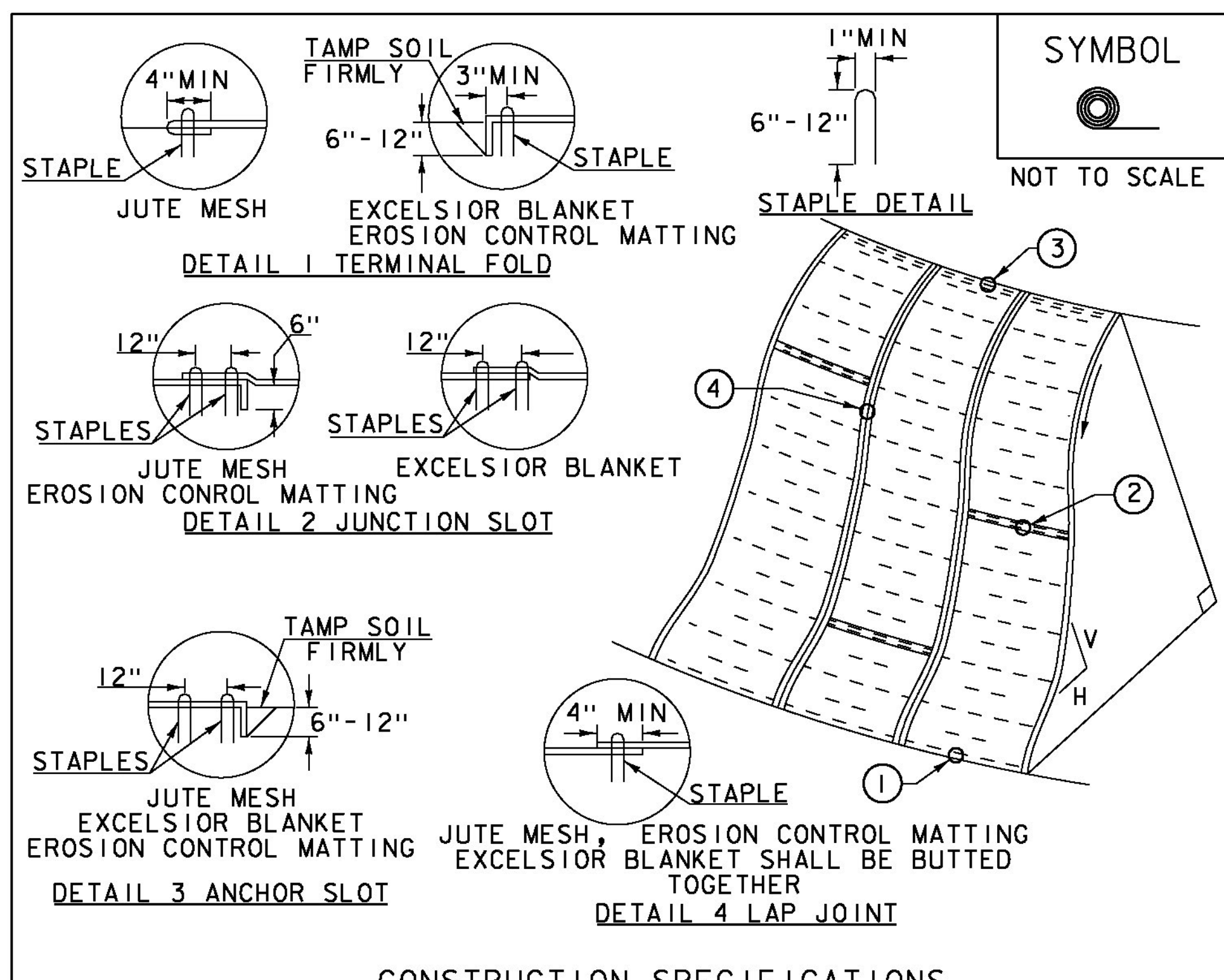
1. EROSION MATTING, CHECK SLOTS, SHALL BE SPACED IN DITCH CHANNEL SO THAT ONE OCCURS WITHIN EACH 50' ON SLOPES OF MORE THAN 4% AND LESS THAN 6%. ON SLOPES OF 6% OR MORE, THEY SHALL BE SPACED SO THAT ONE OCCURS WITHIN EACH 25'.
2. APPLY FERTILIZER, LIME SEED PRIOR TO PLACING MATTING.
3. STAPLES ARE TO BE PLACED ALTERNATELY, IN COLUMNS APPROXIMATELY 2' APART AND IN ROWS APPROXIMATELY 3' APART. APPROXIMATELY 175 STAPLES ARE REQUIRED PER 4' X 225' ROLL OF MATERIAL AND 125 STAPLES ARE REQUIRED PER 4' X 150' ROLL OF MATERIAL.
4. DISTURBED AREAS SHALL BE SMOOTHLY GRADED. EROSION CONTROL MATERIAL SHALL BE PLACED LOOSELY OVER GROUND SURFACE. DO NOT STRETCH.
5. ALL TERMINAL ENDS AND TRANSVERSE LAPS SHALL BE STAPLED AT APPROXIMATELY 12" INTERVALS.

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

**ROLLED EROSION CONTROL PRODUCT (RECP) DITCH**

NOTES:  
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- "FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.  
THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 653 AND AS SHOWN IN THE PLANS FOR TEMPORARY EROSION MATTING (PAY ITEM 653.20) OR PERMANENT EROSION MATTING (PAY ITEM 653.21).

REVISIONS		
MARCH 8, 2007	JMF	
APRIL 16, 2007	WHF	
JANUARY 13, 2009	WHF	



**CONSTRUCTION SPECIFICATIONS**

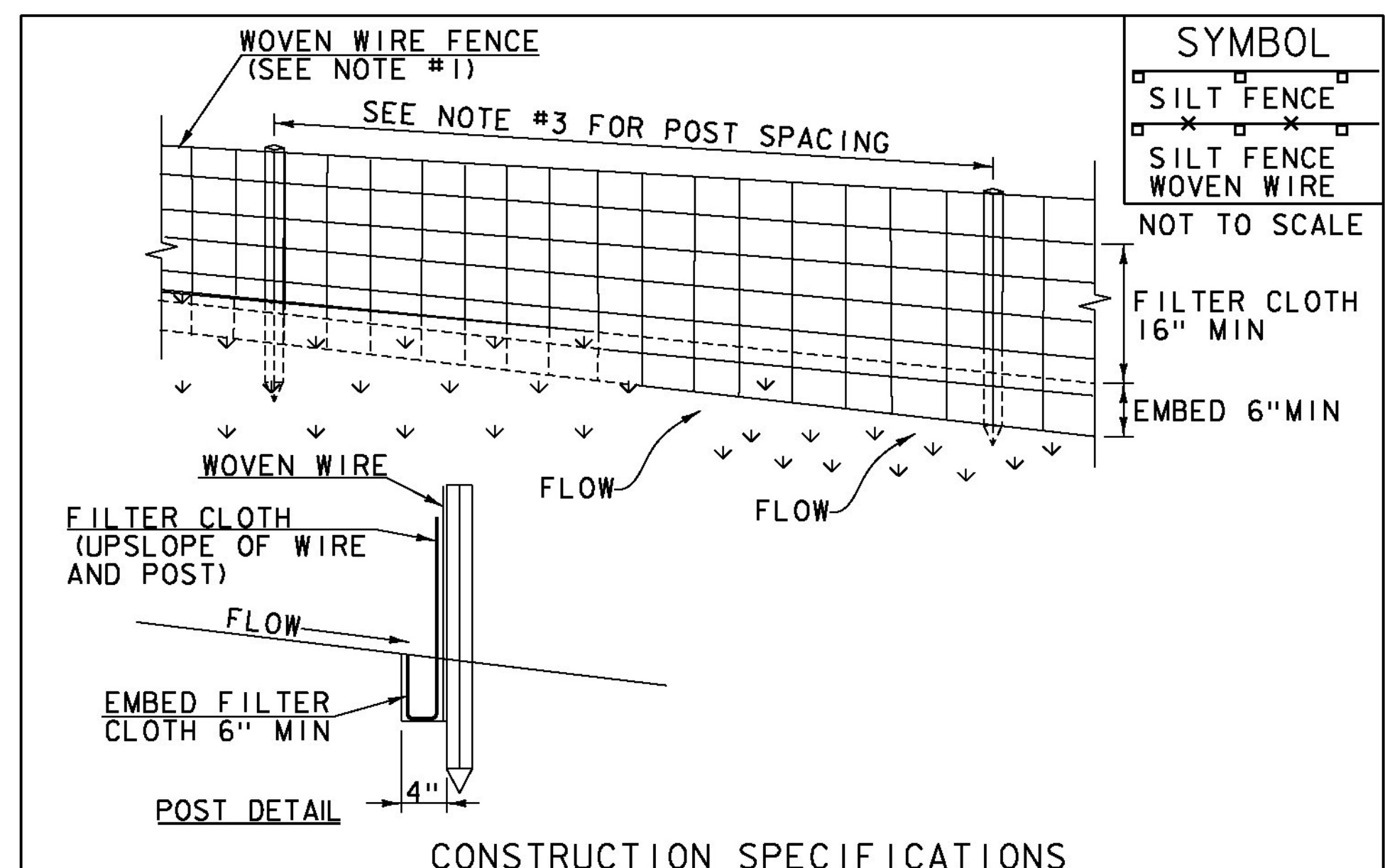
1. APPLY TO SLOPES GREATER THAN 3H:1V OR WHERE NECESSARY TO AID IN ESTABLISHING VEGETATION.
2. APPLY FERTILIZER, LIME SEED PRIOR TO PLACING MATTING.
3. STAPLES ARE TO BE PLACED ALTERNATELY, IN COLUMNS APPROXIMATELY 2' APART AND IN ROWS APPROXIMATELY 3' APART. APPROXIMATELY 175 STAPLES ARE REQUIRED PER 4' X 225' ROLL OF MATERIAL AND 125 STAPLES ARE REQUIRED PER 4' X 150' ROLL OF MATERIAL.
4. DISTURBED AREAS SHALL BE SMOOTHLY GRADED. EROSION CONTROL MATERIAL SHALL BE PLACED LOOSELY OVER GROUND SURFACE. DO NOT STRETCH.
5. ALL TERMINAL ENDS AND TRANSVERSE LAPS SHALL BE STAPLED AT APPROXIMATELY 12" INTERVALS.

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

**ROLLED EROSION CONTROL PRODUCT (RECP) SIDE SLOPE**

NOTES:  
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- "FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.  
THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 653 AND AS SHOWN IN THE PLANS FOR TEMPORARY EROSION MATTING (PAY ITEM 653.20) OR PERMANENT EROSION MATTING (PAY ITEM 653.21).

REVISIONS		
APRIL 16, 2007	JMF	
JANUARY 13, 2009	WHF	



**CONSTRUCTION SPECIFICATIONS**

1. WOVEN WIRE REINFORCED FENCE IS REQUIRED WITHIN 100' UPSLOPE OF RECEIVING WATERS WHEN THE PROJECT FALLS UNDER A CONSTRUCTION STORMWATER PERMIT. WOVEN WIRE SHALL BE A MIN. 14 GAUGE WITH A 6" MAX. MESH OPENING.
2. FILTER CLOTH SHALL BE EITHER FILTER X, MIRAF1100X, STABILINKA T140N OR APPROVED EQUIVALENT.
3. POST SPACING FOR WIRE-BACKED FENCE SHALL BE 10' MAXIMUM. FOR FILTER-CLOTH FENCE, WHEN ELONGATION IS >50%, POST SPACING SHALL NOT EXCEED 4' AND WHEN ELONGATION IS <50%, POST SPACING SHALL NOT EXCEED 6'.
4. WOVEN WIRE FENCE IS TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES. FILTER CLOTH IS TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION.
5. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVER-LAPPED BY 6" AND FOLDED.
6. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN SEDIMENT REACHES HALF OF FABRIC HEIGHT.

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

**SILT FENCE**

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

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

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

PROJECT NAME: WINHALL  
PROJECT NUMBER: STP CULV(31)

FILE NAME: z1lb268epsc det_br47.dgn PLOT DATE: 9/25/2014  
PROJECT LEADER: M. CHENETTE DRAWN BY: L. BUXTON  
DESIGNED BY: J. HUNGERFORD CHECKED BY: M. CHENETTE  
EROSION CONTROL DETAILS - ECD 1- BR47 SHEET 32 OF 60



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

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

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

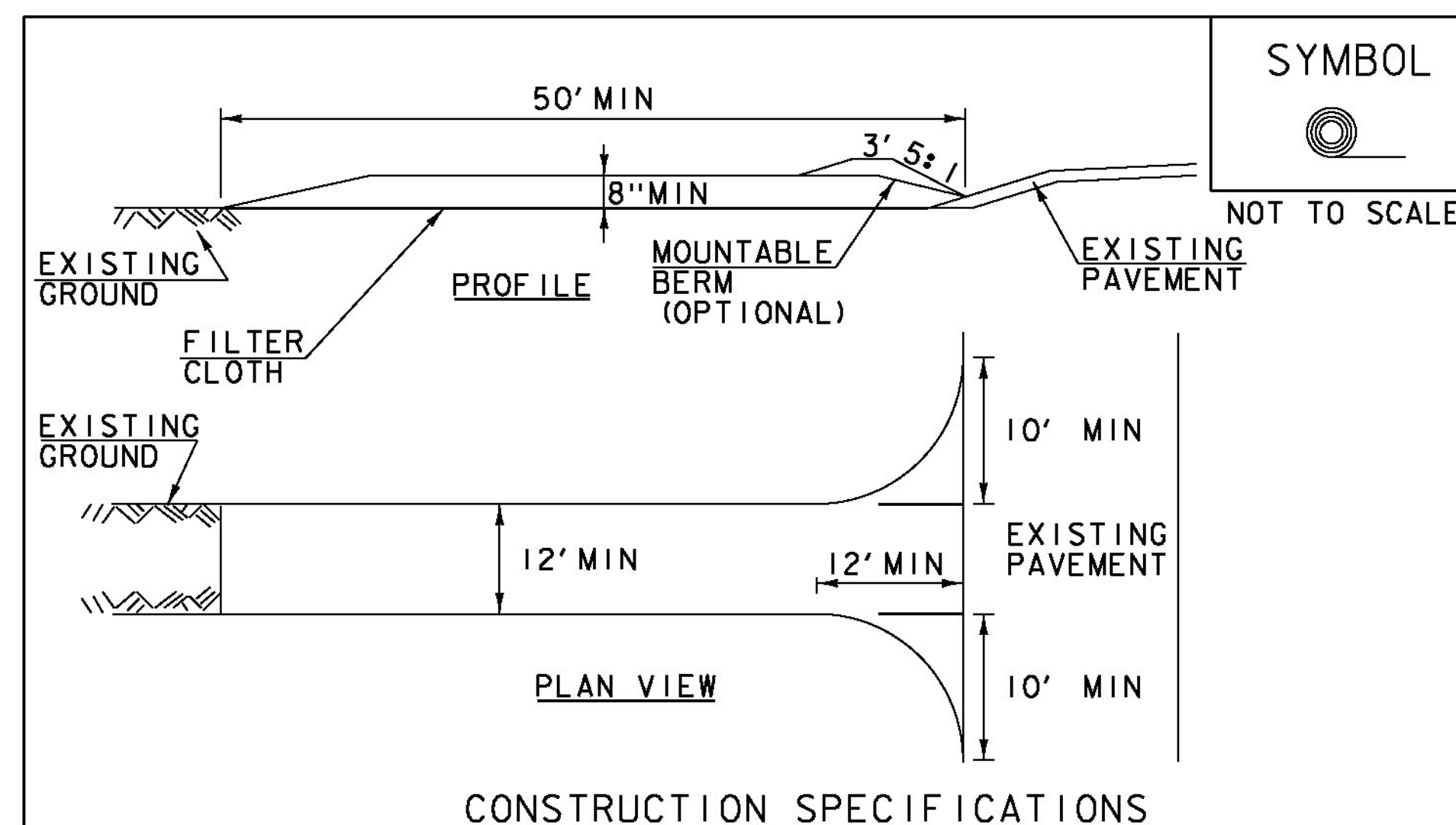
**CONSTRUCTION GUIDANCE**

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

ADAPTED FROM VTRANS TECHNICAL LANDSCAPE MANUAL FOR ROADWAYS AND TRANSPORTATION FACILITIES

**TURF ESTABLISHMENT**

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



**CONSTRUCTION SPECIFICATIONS**

- STONE SIZE- USE 1-4" STONE, RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
- LENGTH- NOT LESS THAN 50' (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30' MINIMUM LENGTH APPLIES).
- THICKNESS- NOT LESS THAN 8".
- WIDTH- 12' MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. 24' IF SINGLE ENTRANCE TO SITE.
- GEOTEXTILE MUST BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING STONE.
- 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.
- 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.
- WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
- PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED ACCORDING TO PERMIT REQUIREMENTS.

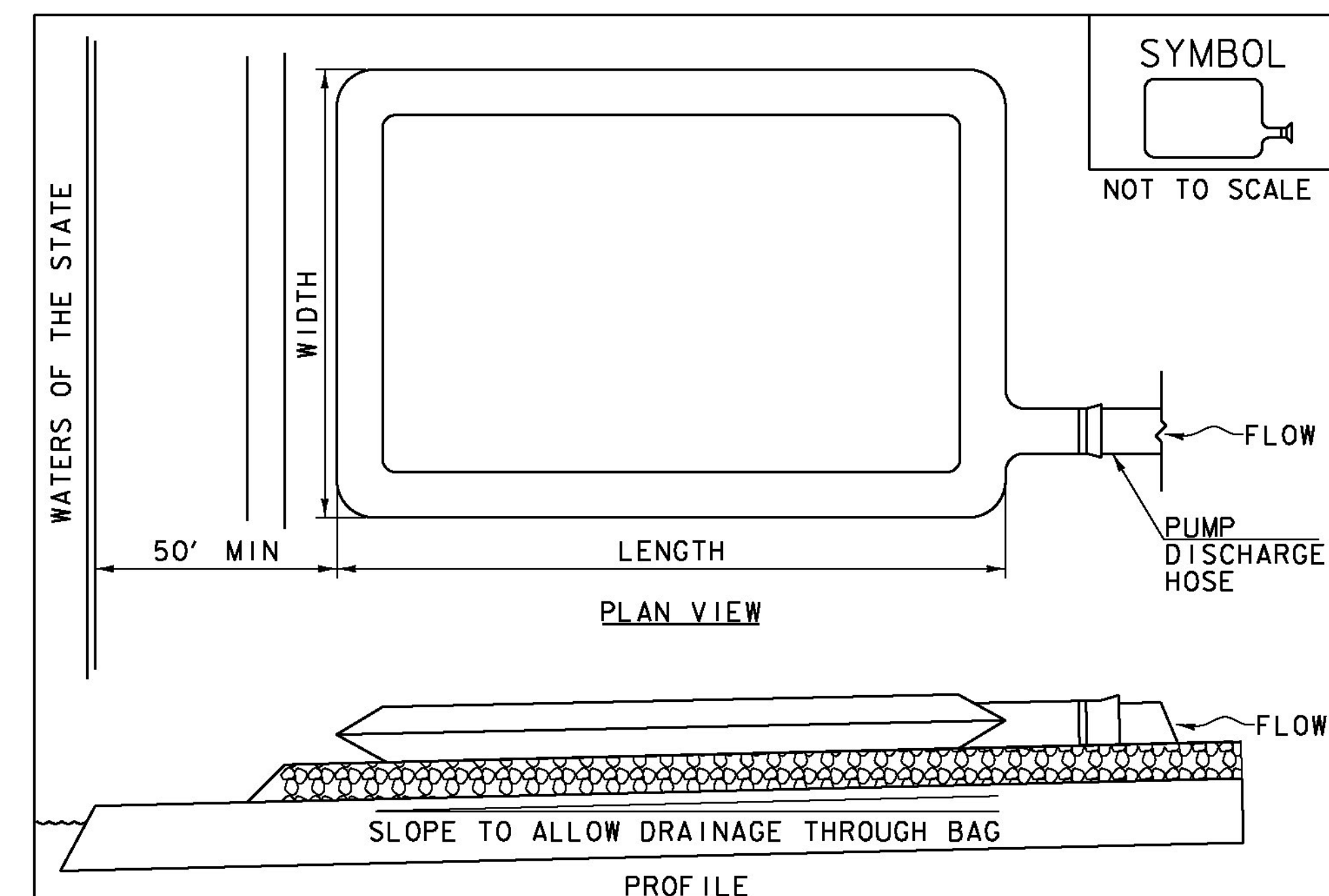
ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC  
ORIGINALLY DEVELOPED BY USDA-NRCS  
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

**STABILIZED CONSTRUCTION ENTRANCE**

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

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

REVISIONS		
MARCH 24, 2008	WHF	
JANUARY 13, 2009	WHF	



**CONSTRUCTION SPECIFICATIONS**

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

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

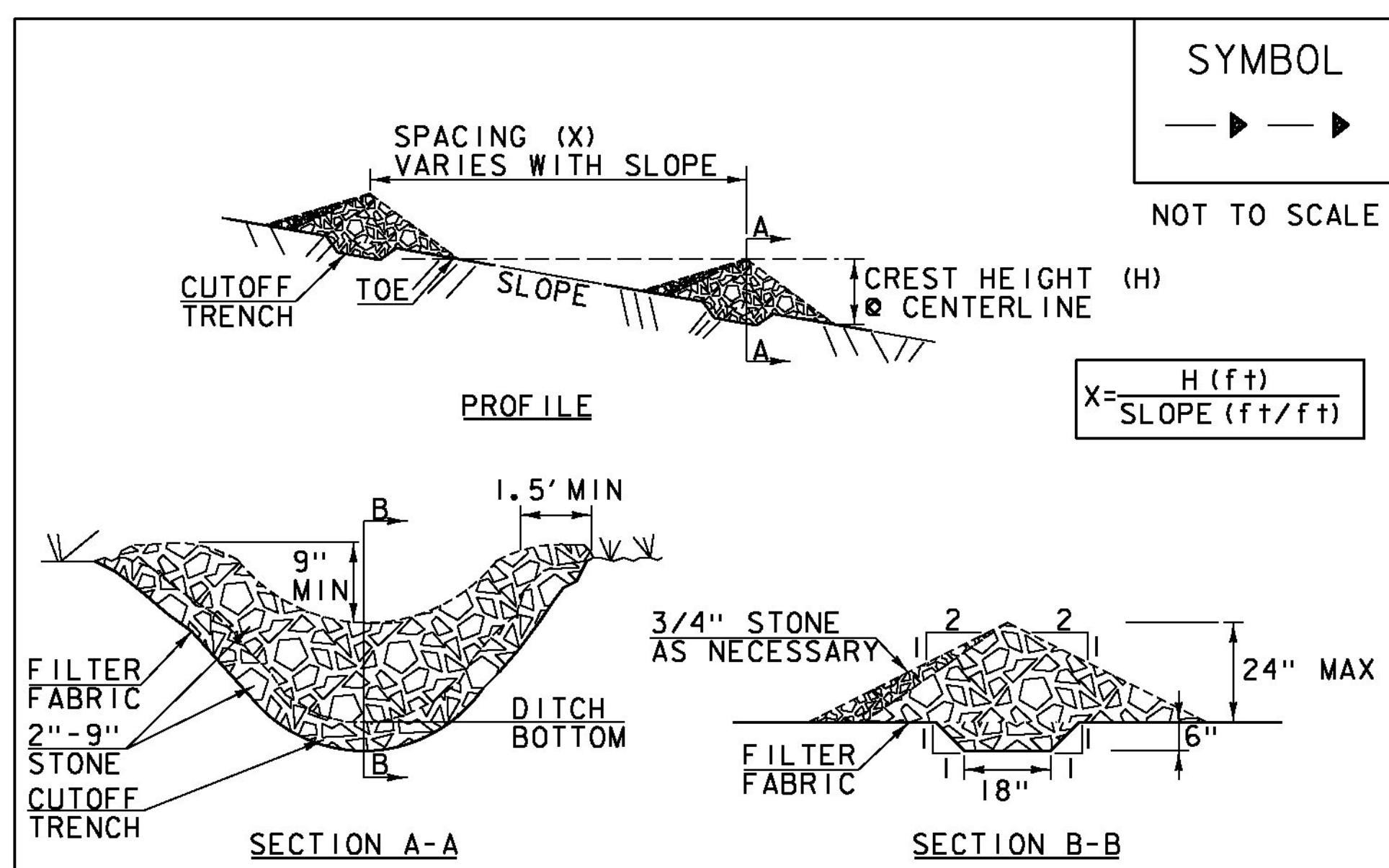
THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 653 FOR FILTER BAG (PAY ITEM 653.45) AND AS SPECIFIED IN THE CONTRACT.

REVISIONS		
MARCH 24, 2008	WHF	
JANUARY 13, 2009	WHF	

PROJECT NAME: WINHALL  
PROJECT NUMBER: STP CULV(3I)

FILE NAME: zllb268epsc det_br47.dgn PLOT DATE: 9/25/2014  
PROJECT LEADER: M. CHENETTE DRAWN BY: L. BUXTON  
DESIGNED BY: J. HUNGERFORD CHECKED BY: M. CHENETTE  
EROSION CONTROL DETAILS - ECD 2 - BR47 SHEET 33 OF 60





**CONSTRUCTION SPECIFICATIONS**

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

ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC ORIGINALLY DEVELOPED BY USDA-NRCS VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION	<b>CHECK DAM</b>
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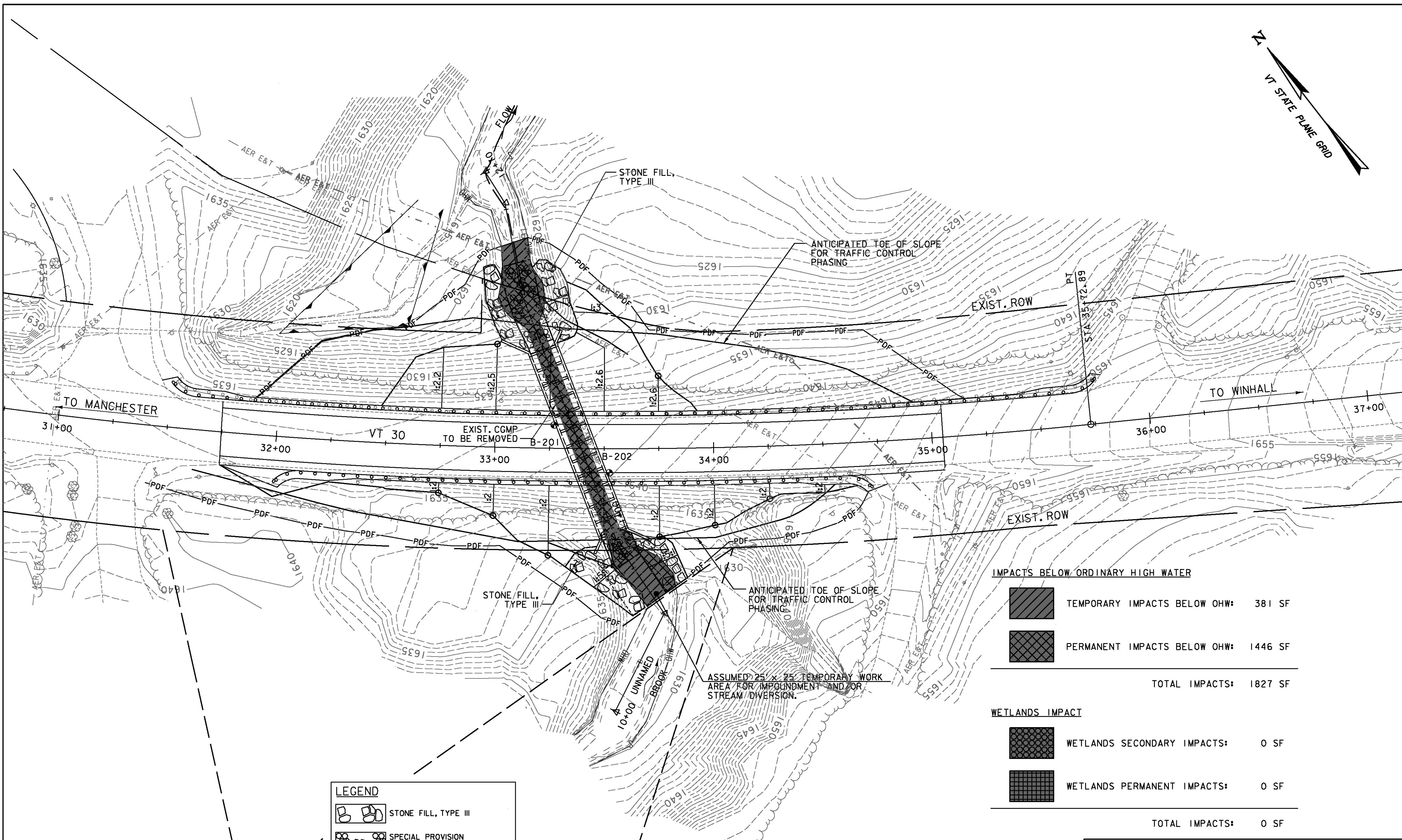
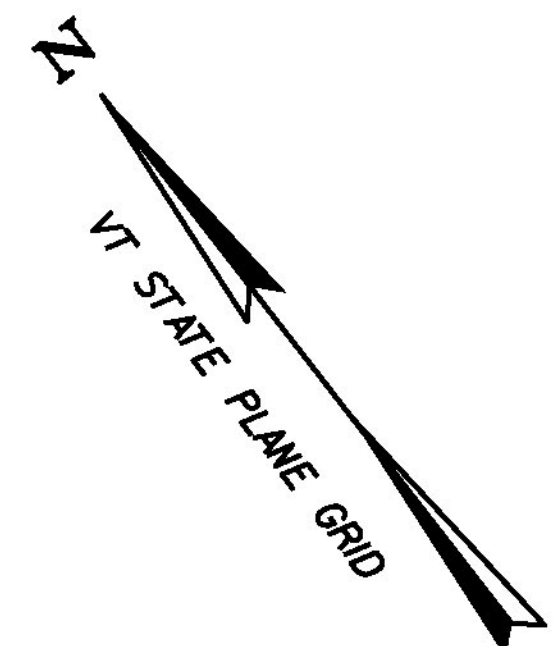
NOTES:  
 REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006-" FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.


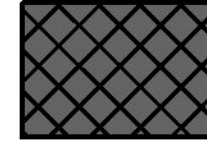

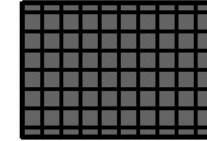
THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 653 FOR TEMPORARY STONE CHECK DAM, TYPE 1(PAY ITEM 653.25)



REVISIONS	
MARCH 21, 2008	WHF
JANUARY 8, 2009	WHF

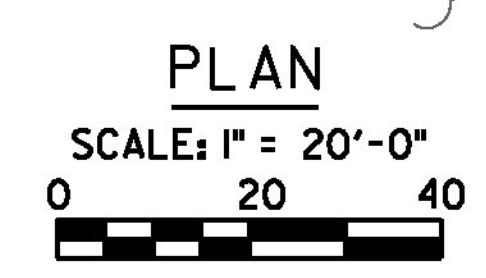
PROJECT NAME: WINHALL	PLOT DATE: 9/25/2014
PROJECT NUMBER: STP CULV(31)	DRAWN BY: L. BUXTON
FILE NAME: z1lb268epsc det_br47.dgn	DESIGNED BY: J. HUNGERFORD
PROJECT LEADER: M. CHENETTE	CHECKED BY: M. CHENETTE
EROSION CONTROL DETAILS - ECD 3 - BR47 SHEET 34 OF 60	





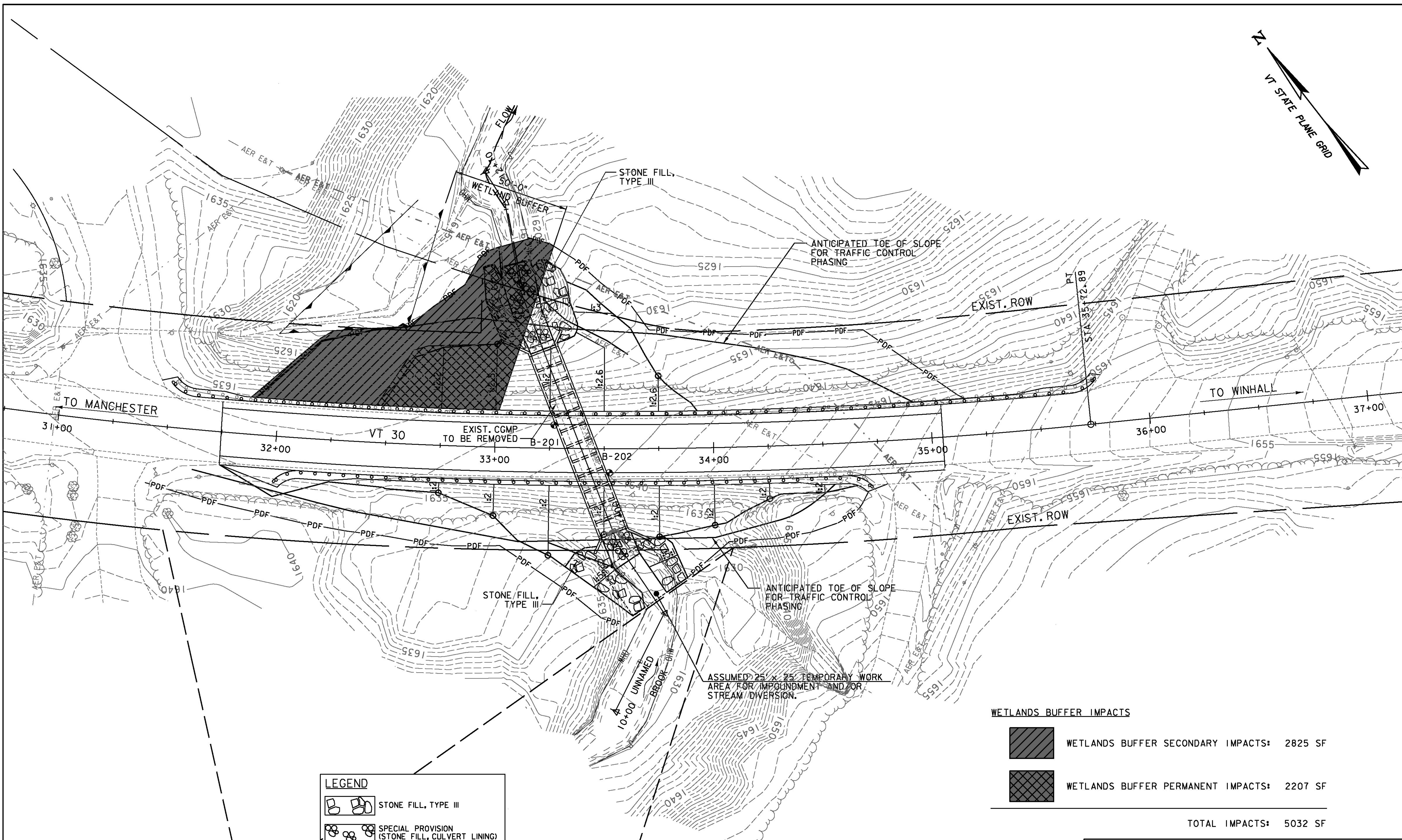
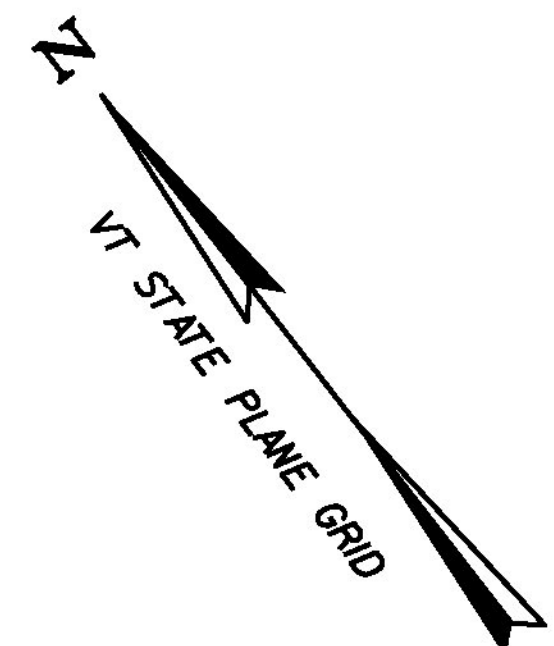
IMPACTS BELOW ORDINARY HIGH WATER	
	TEMPORARY IMPACTS BELOW OHW: 381 SF
	PERMANENT IMPACTS BELOW OHW: 1446 SF
TOTAL IMPACTS: 1827 SF	
WETLANDS IMPACT	
	WETLANDS SECONDARY IMPACTS: 0 SF
	WETLANDS PERMANENT IMPACTS: 0 SF
TOTAL IMPACTS: 0 SF	

LEGEND	
	STONE FILL, TYPE III
	SPECIAL PROVISION (STONE FILL, CULVERT LINING)



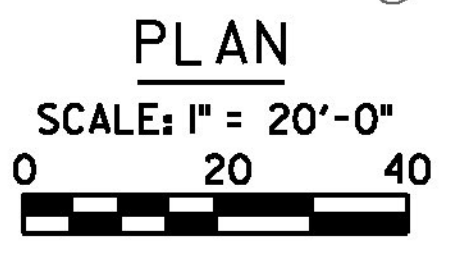
PROJECT NAME:	WINHALL	FILE NAME:	z11b268bdr_impact_br47.l.dgn	PLOT DATE:	9/25/2014
PROJECT NUMBER:	STP CULV(31)	PROJECT LEADER:	M. CHENETTE	DRAWN BY:	L. BUXTON
		DESIGNED BY:	J. HUNGERFORD	CHECKED BY:	M. CHENETTE
		PROJECT IMPACTS PLAN I- BR47		SHEET	35 OF 60





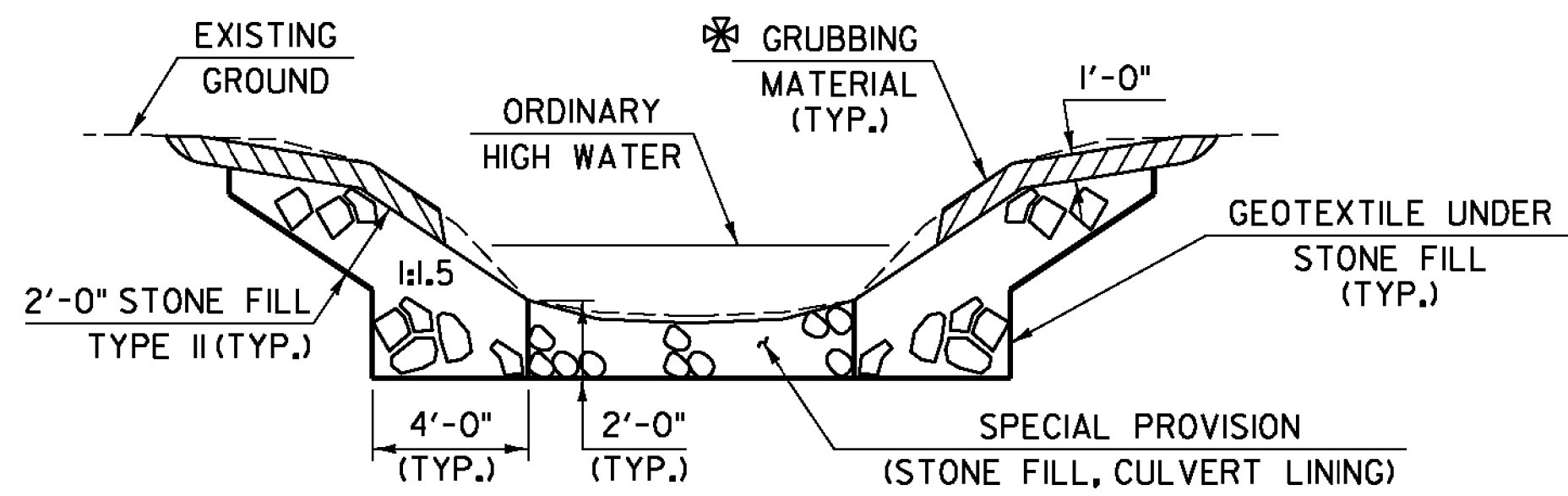
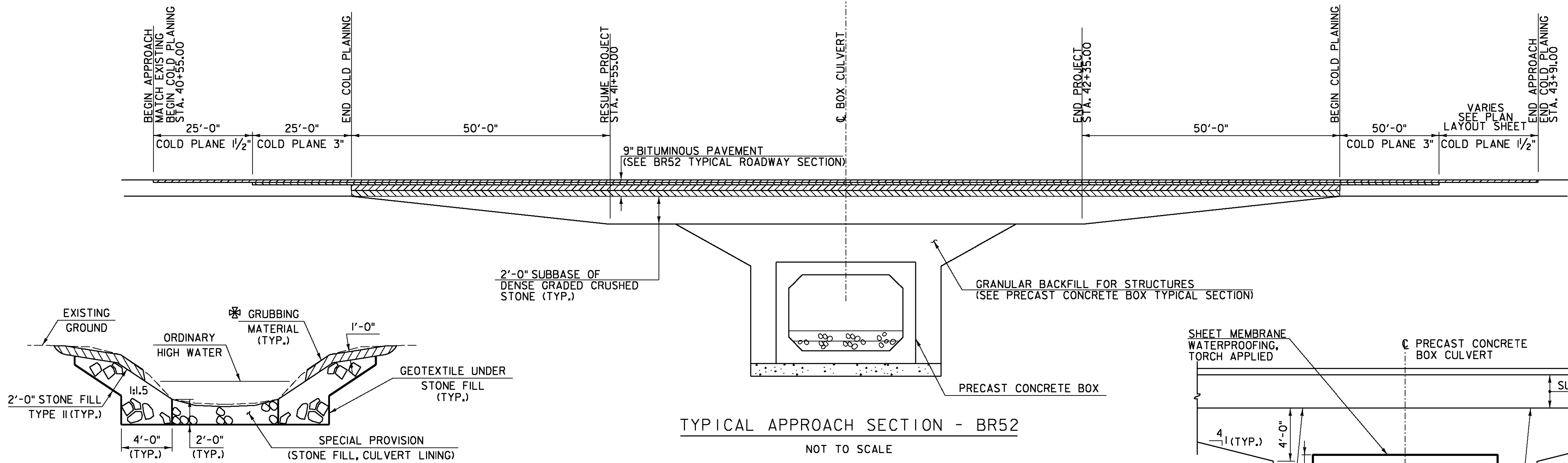
LEGEND	
	STONE FILL, TYPE III
	SPECIAL PROVISION (STONE FILL, CULVERT LINING)

WETLANDS BUFFER IMPACTS	
	WETLANDS BUFFER SECONDARY IMPACTS: 2825 SF
	WETLANDS BUFFER PERMANENT IMPACTS: 2207 SF
TOTAL IMPACTS: 5032 SF	



PROJECT NAME:	WINHALL	FILE NAME:	zlib268bdr_impact_br47.2.dgn	PLOT DATE:	9/25/2014
PROJECT NUMBER:	STP CULV(31)	PROJECT LEADER:	M. CHENETTE	DRAWN BY:	L. BUXTON
DESIGNED BY:	J. HUNGERFORD	CHECKED BY:	M. CHENETTE		
PROJECT IMPACTS PLAN 2 - BR47			SHEET 36 OF 60		

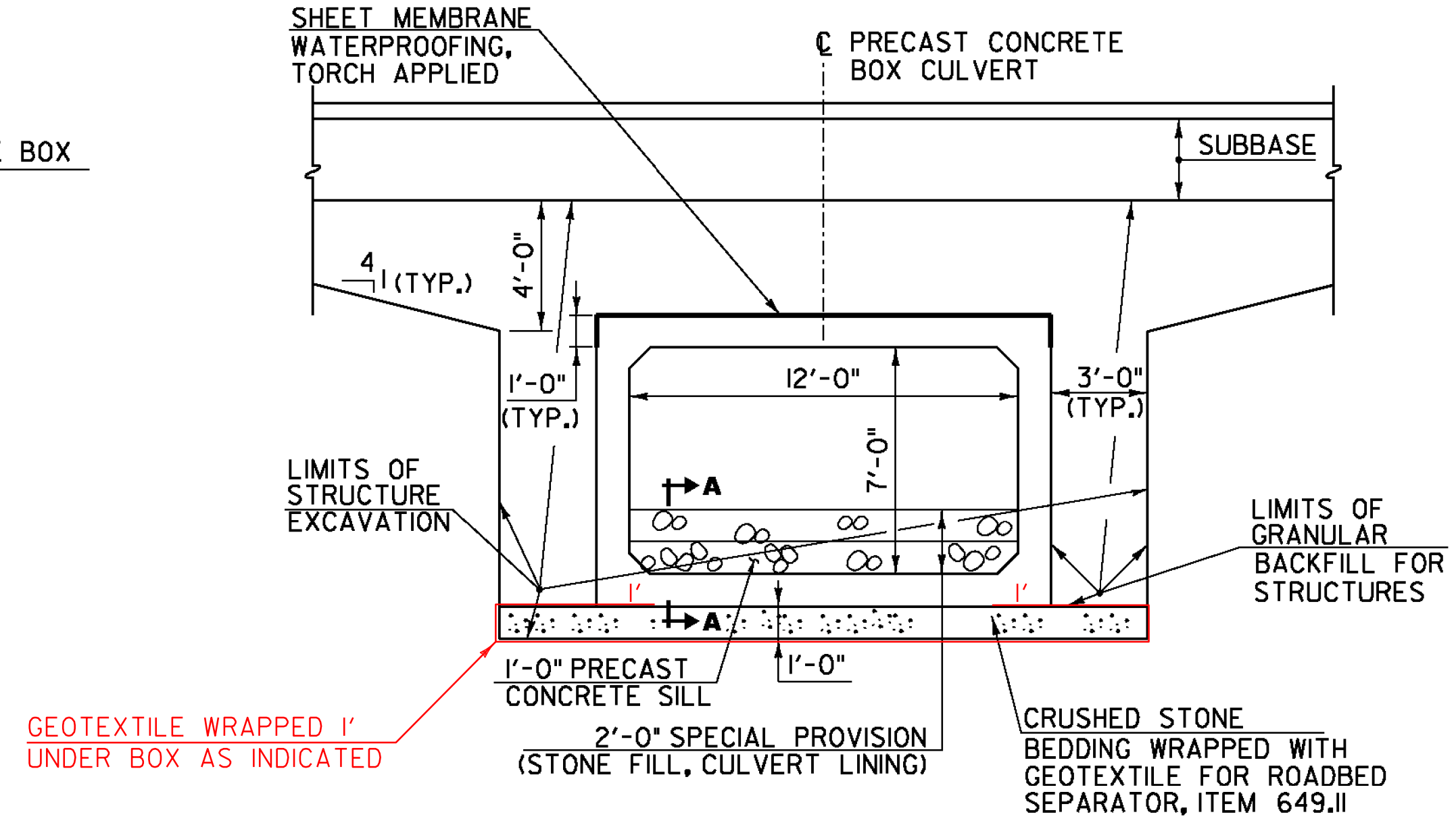




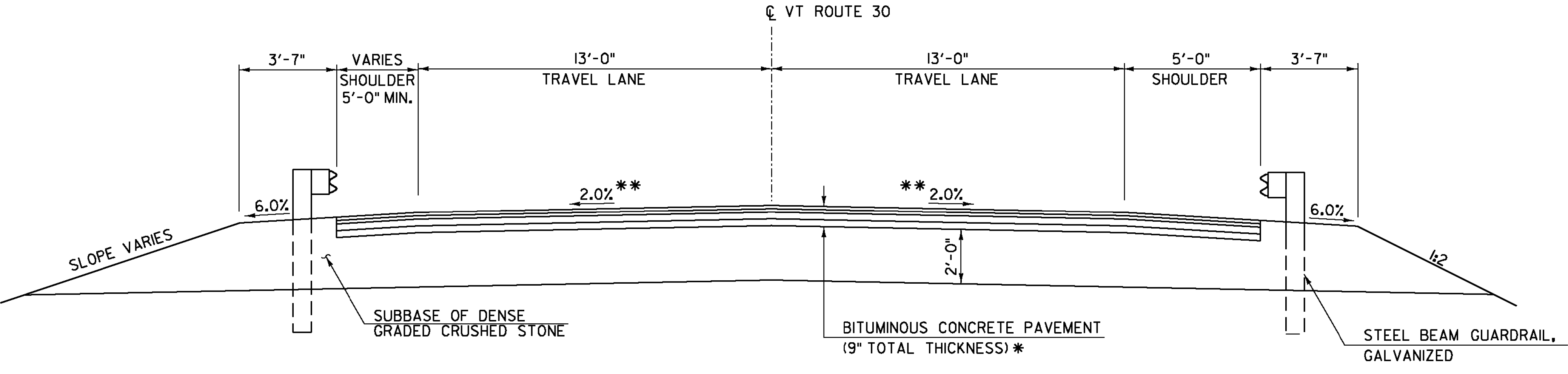
CHANNEL TYPICAL SECTION  
NOT TO SCALE

✱ WHENEVER CHANNEL SLOPE INTERSECTS ROADWAY SUBBASE, GRUBBING MATERIAL SHALL BEGIN AT THE BOTTOM OF SUBBASE.

TYPICAL APPROACH SECTION - BR52  
NOT TO SCALE



PRECAST CONCRETE BOX TYPICAL SECTION - BR52  
SCALE: 1/4" = 1'-0"



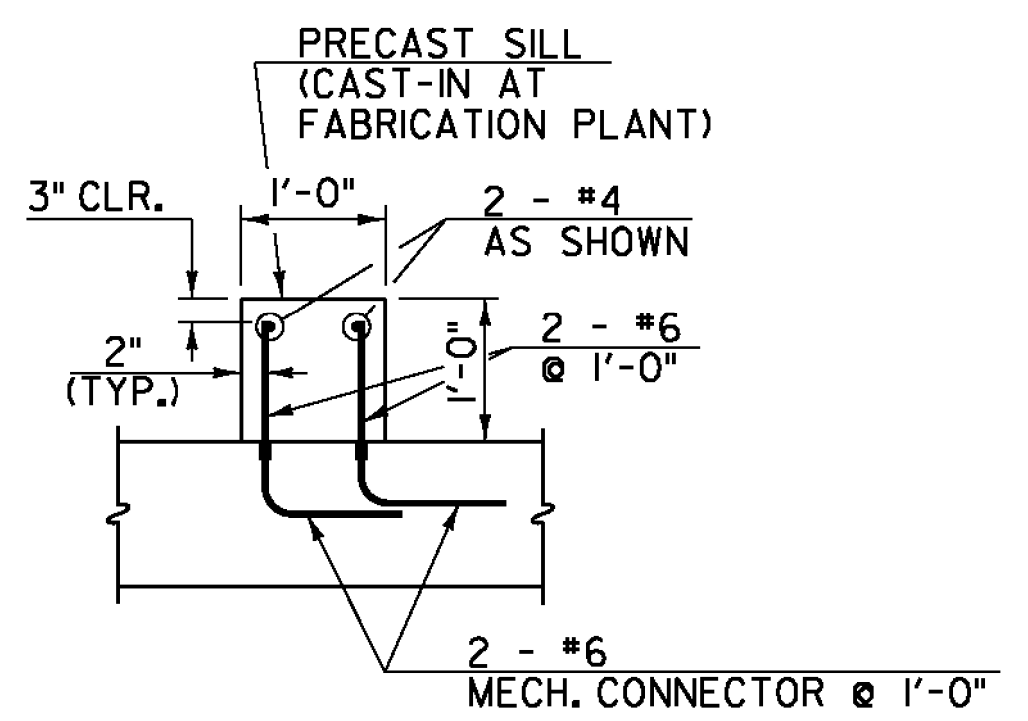
BR52 TYPICAL ROADWAY SECTION  
SCALE 3/8" = 1'-0"

* BITUMINOUS CONCRETE PAVEMENT:  
1/2" TYPE IVS OVER  
1/2" TYPE IVS OVER  
3" TYPE IIS OVER  
3" TYPE IIS

MATERIAL TOLERANCES  
(IF USED ON PROJECT)

SURFACE	
- PAVEMENT (TOTAL THICKNESS)	+/- 1/4"
- AGGREGATE SURFACE COARSE	+/- 1/2"
SUBBASE	+/- 1"
SAND BORROW	+/- 1"

** MATCH EXISTING IN APPROACHES



SECTION A-A  
NOT TO SCALE

PROJECT NAME: WINHALL  
PROJECT NUMBER: STP CULV(31)  
FILE NAME: zlb268typsec.dgn  
PROJECT LEADER: M. CHENETTE  
DESIGNED BY: J. HUNGERFORD  
TYPICAL SECTIONS - BR52  
PLOT DATE: 9/25/2014  
DRAWN BY: L. BUXTON  
CHECKED BY: M. CHENETTE  
SHEET 37 OF 60



GPS CONTROL POINTS

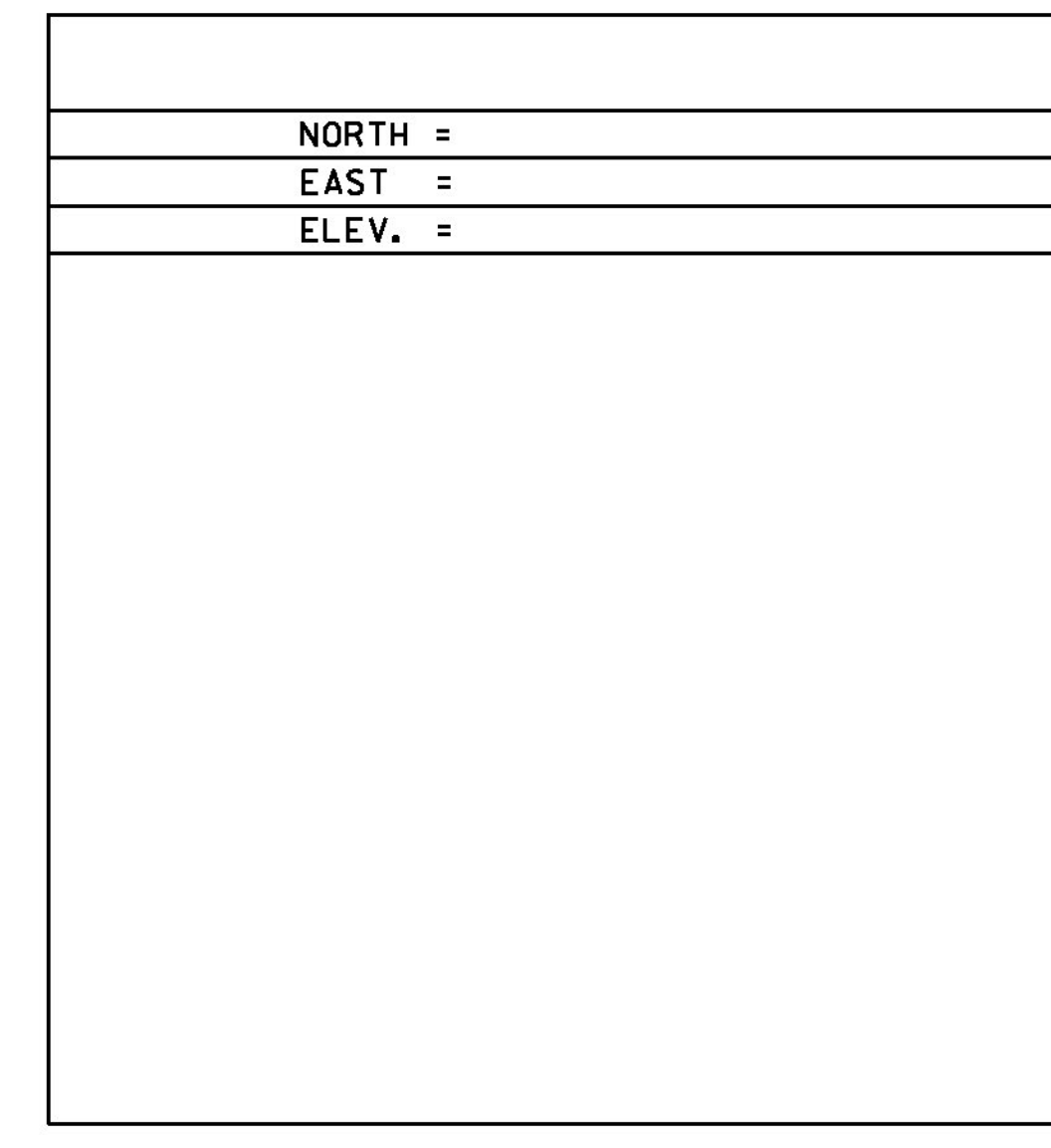
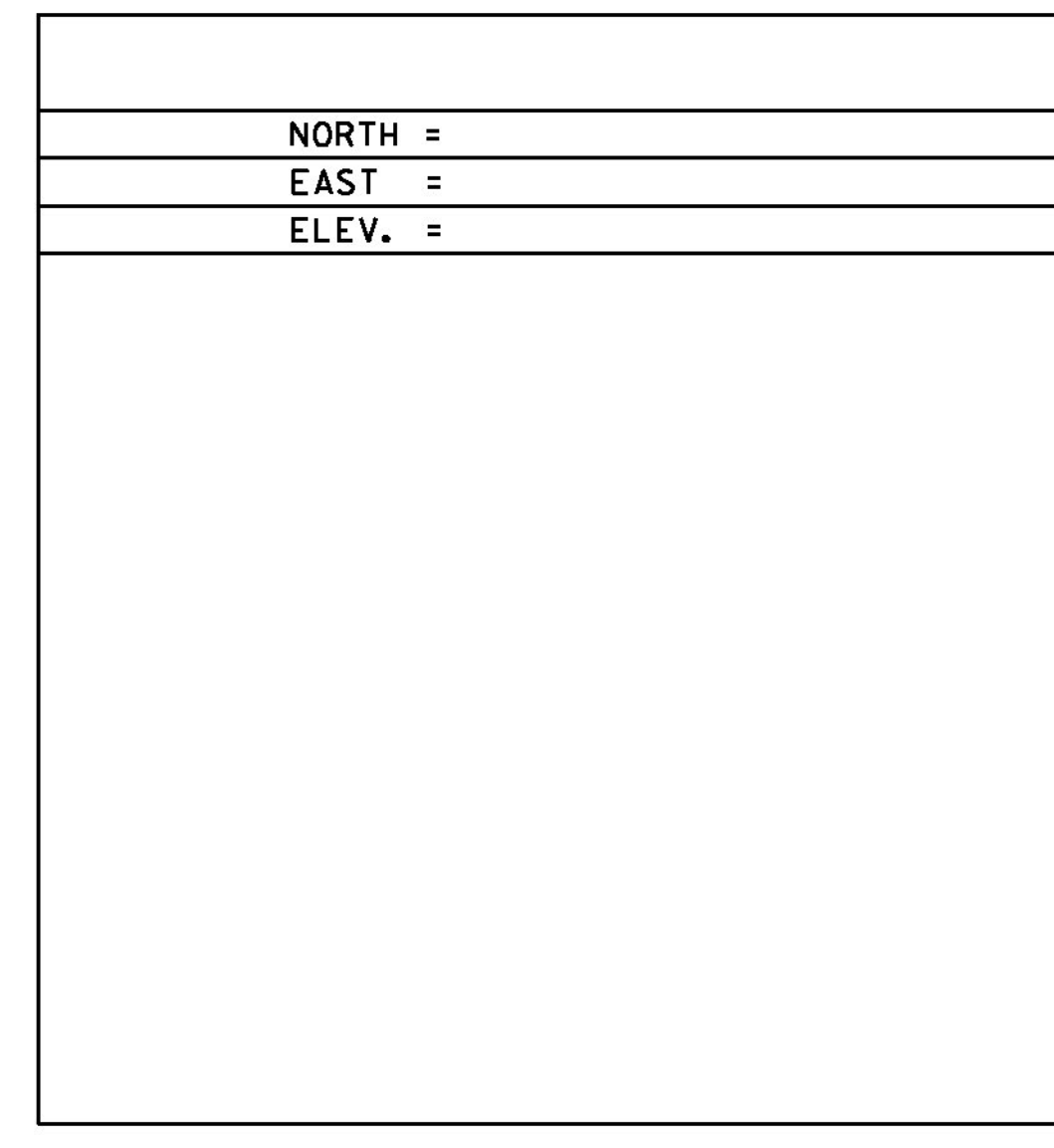
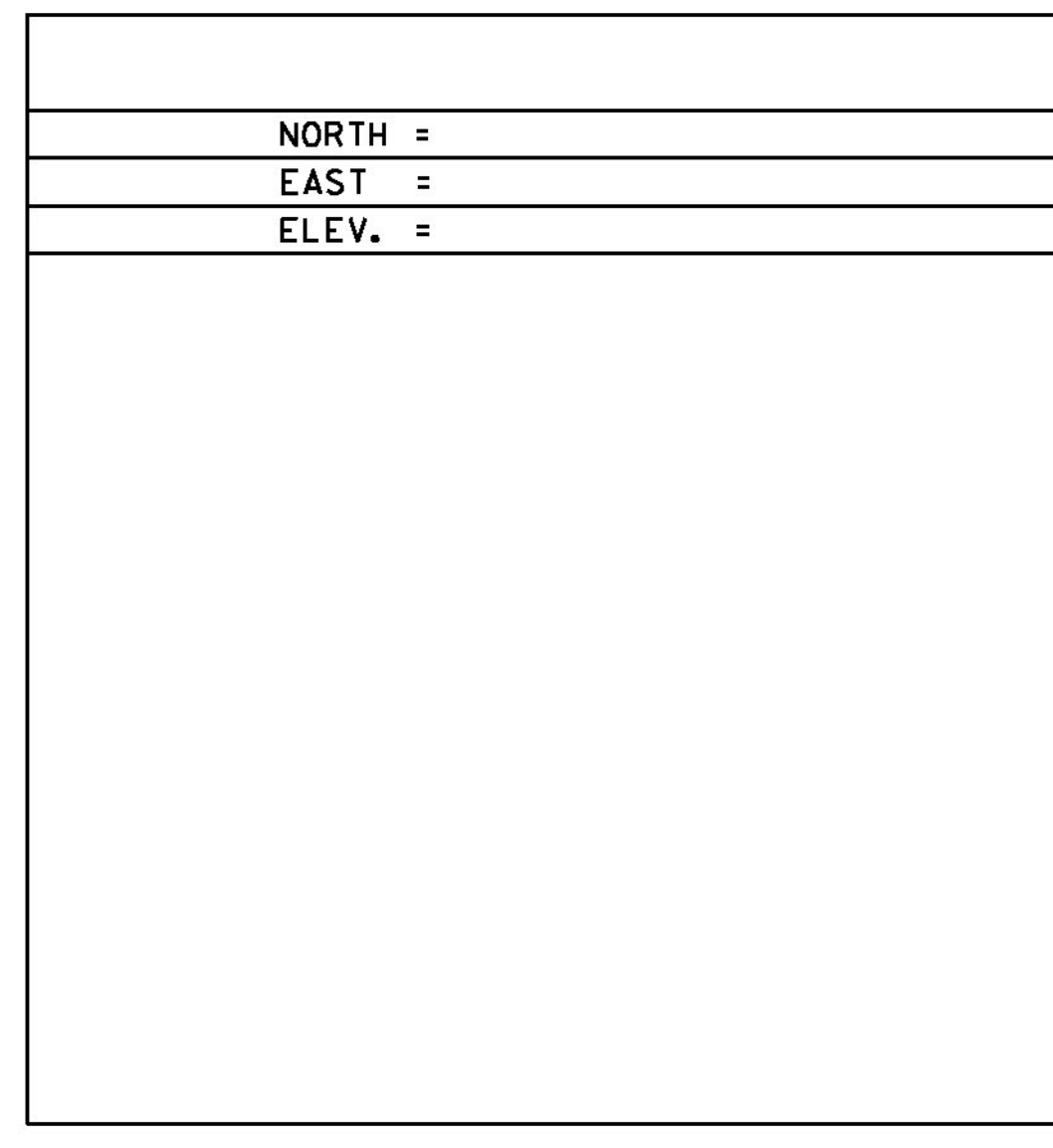
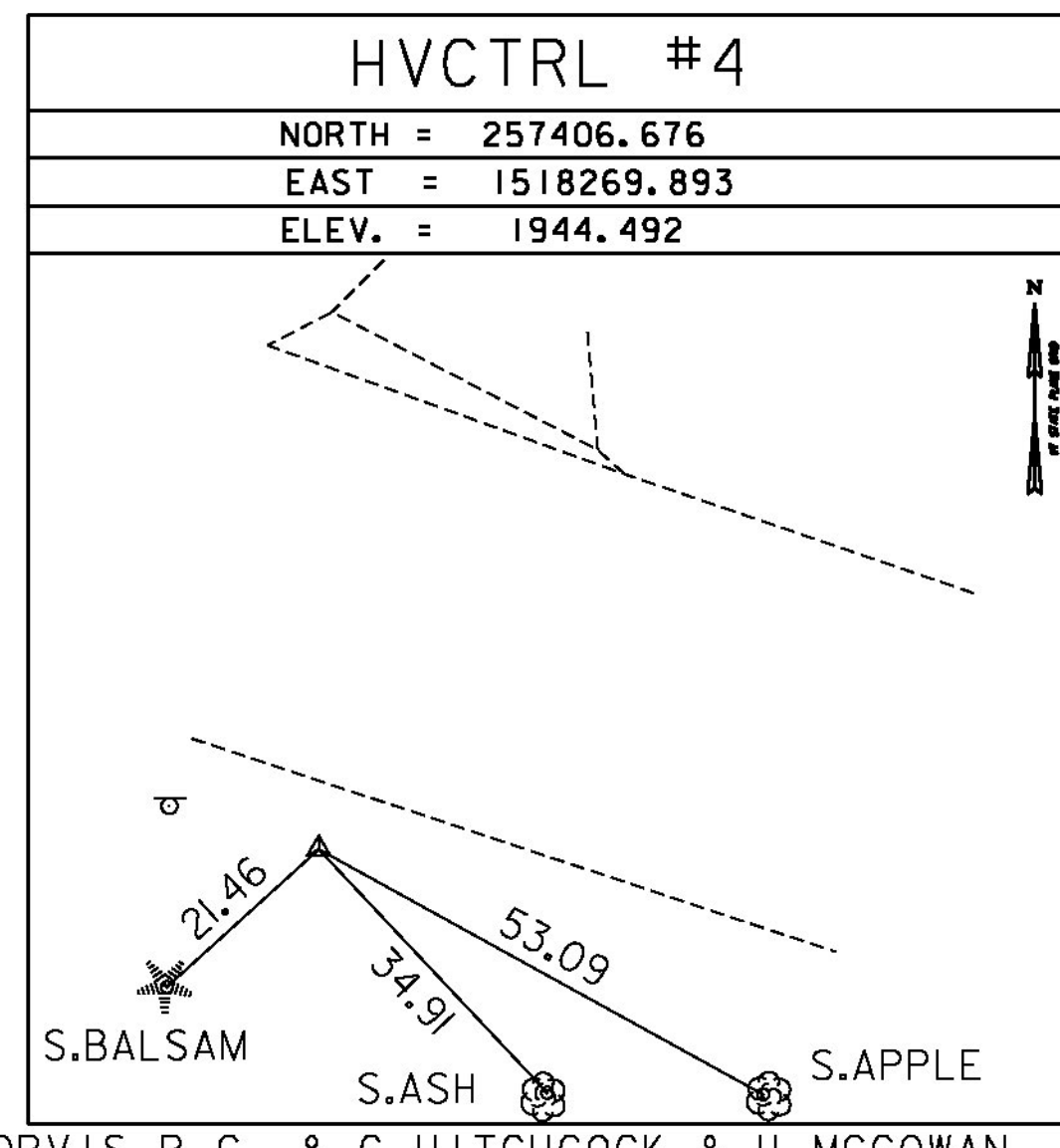
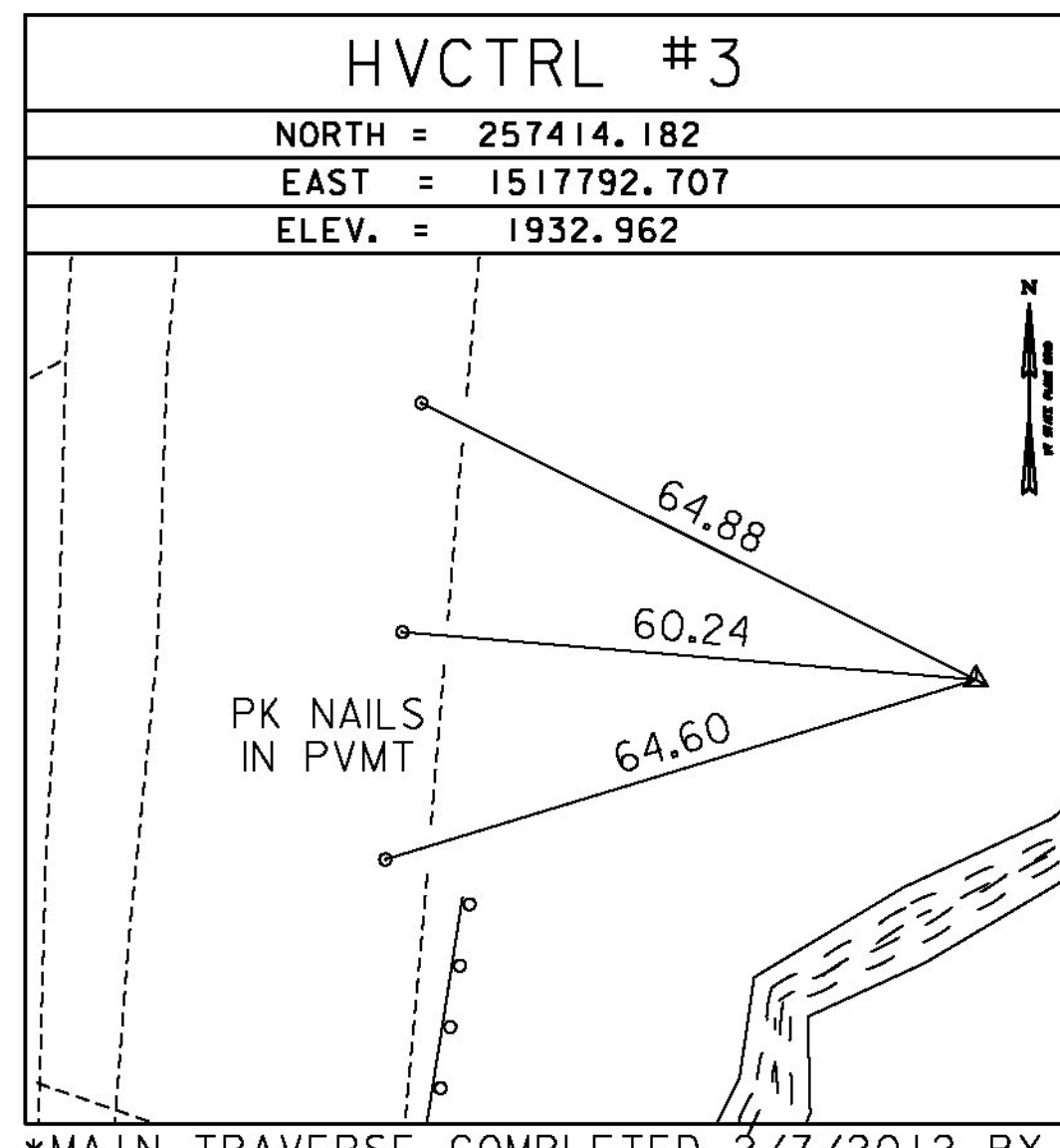
HVCTRL #1  
 KANDAHAR  
 NORTH = 257168.933  
 EAST = 1519322.268  
 ELEV. = 1973.695

GENERAL LOCATION, WINHALL, VT.  
 TO REACH FROM THE INTERSECTION OF VT ROUTES 30 AND 11 IN WINHALL GO EAST ALONG VT ROUTE 11 FOR 0.3 MILE (0.5 KM) TO THE SITE OF THE MARK ON THE RIGHT AT A SMALL PULLOUT. IT IS BENEATH A STEEL BEAM GUARD RAIL. THE MARK IS SET 10 CM BELOW GROUND SURFACE IN THE TOP OF A 30 CM DIAMETER CONCRETE MONUMENT POURED 0.9 M (3.0 FT) DEEP. IT IS 9.8 M (32.2 FT) SOUTH OF AND ABOUT LEVEL WITH THE CENTERLINE OF VT ROUTE 11, 36.4 M (119.4 FT) WEST OF THE CENTER OF THE SOUTH END OF A CONCRETE BOX CULVERT, AND 3.4 M (11.2 FT) NORTH OF A FIBERGLASS WITNESS POST.

HVCTRL #2  
 KANDAHAR AZ MK  
 NORTH = 257661.084  
 EAST = 1517400.380  
 ELEV. = 1936.681

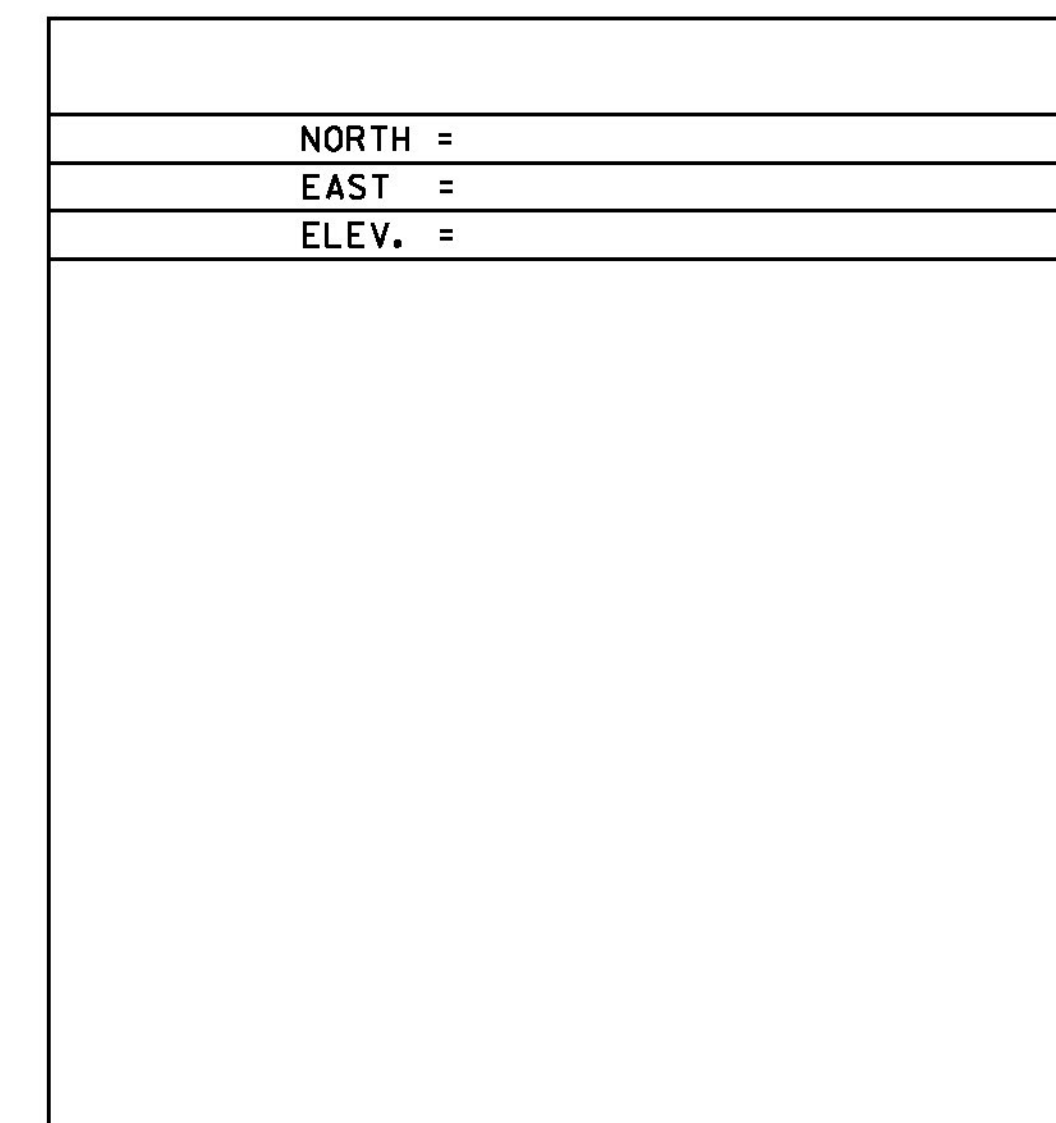
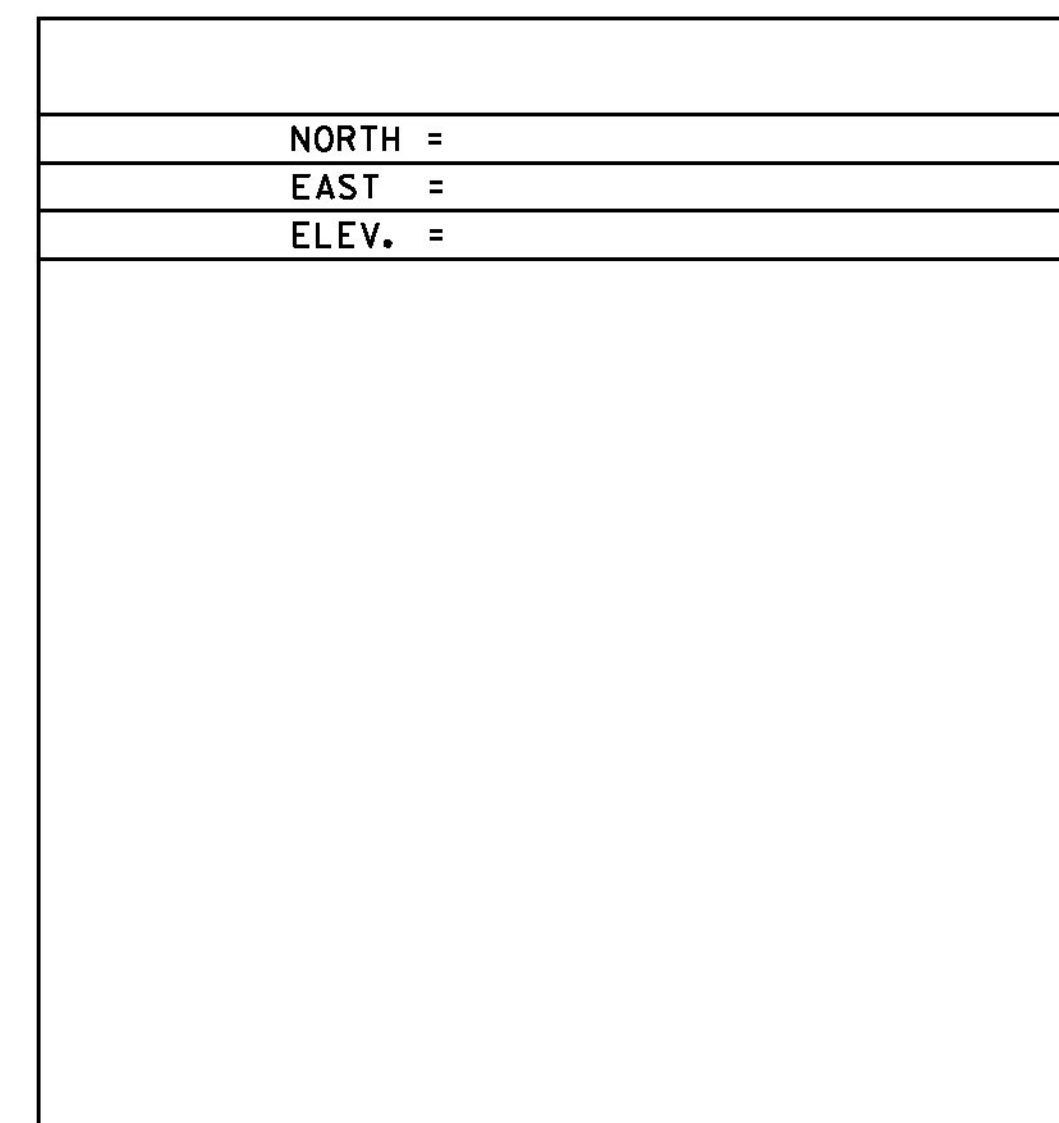
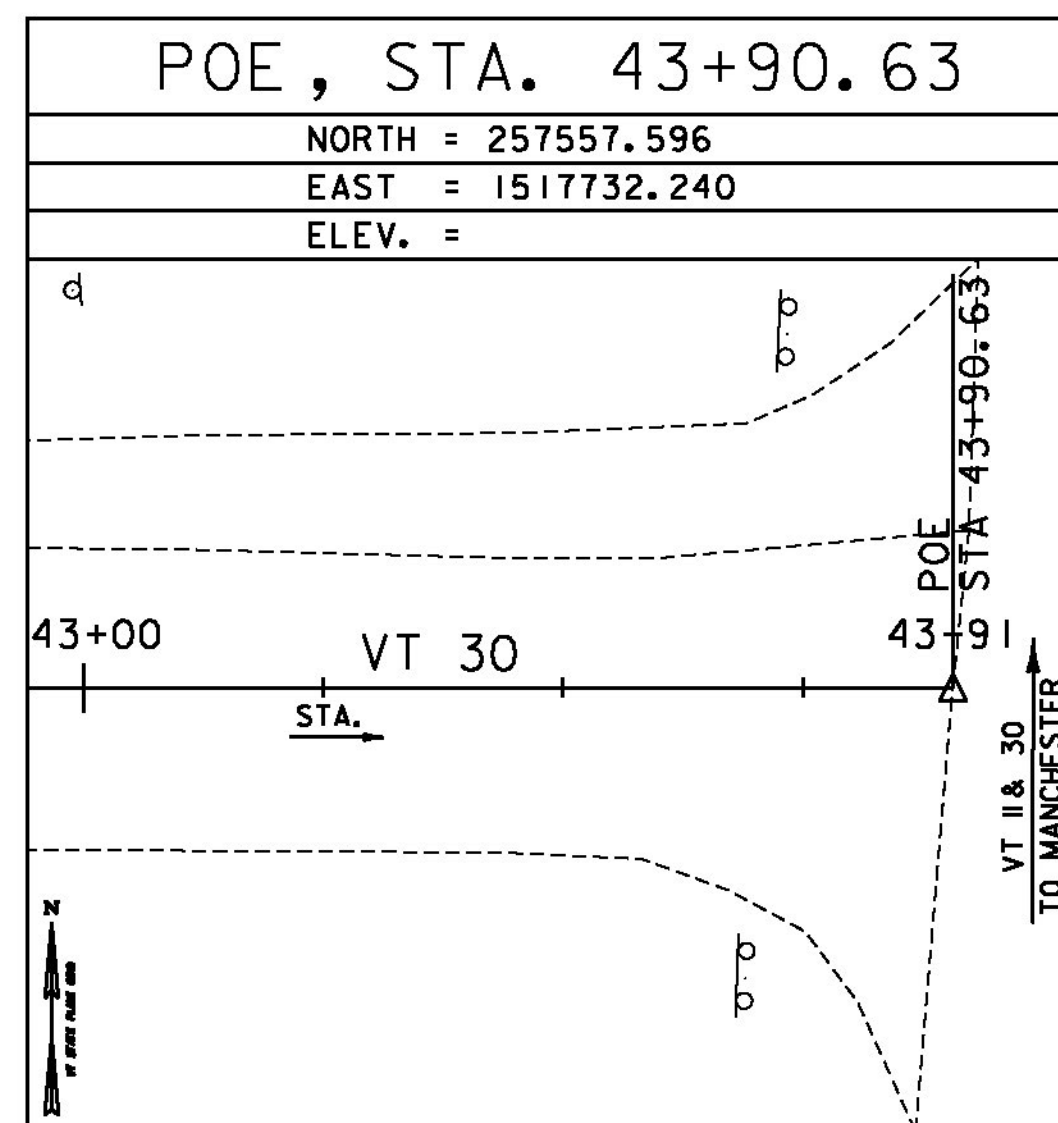
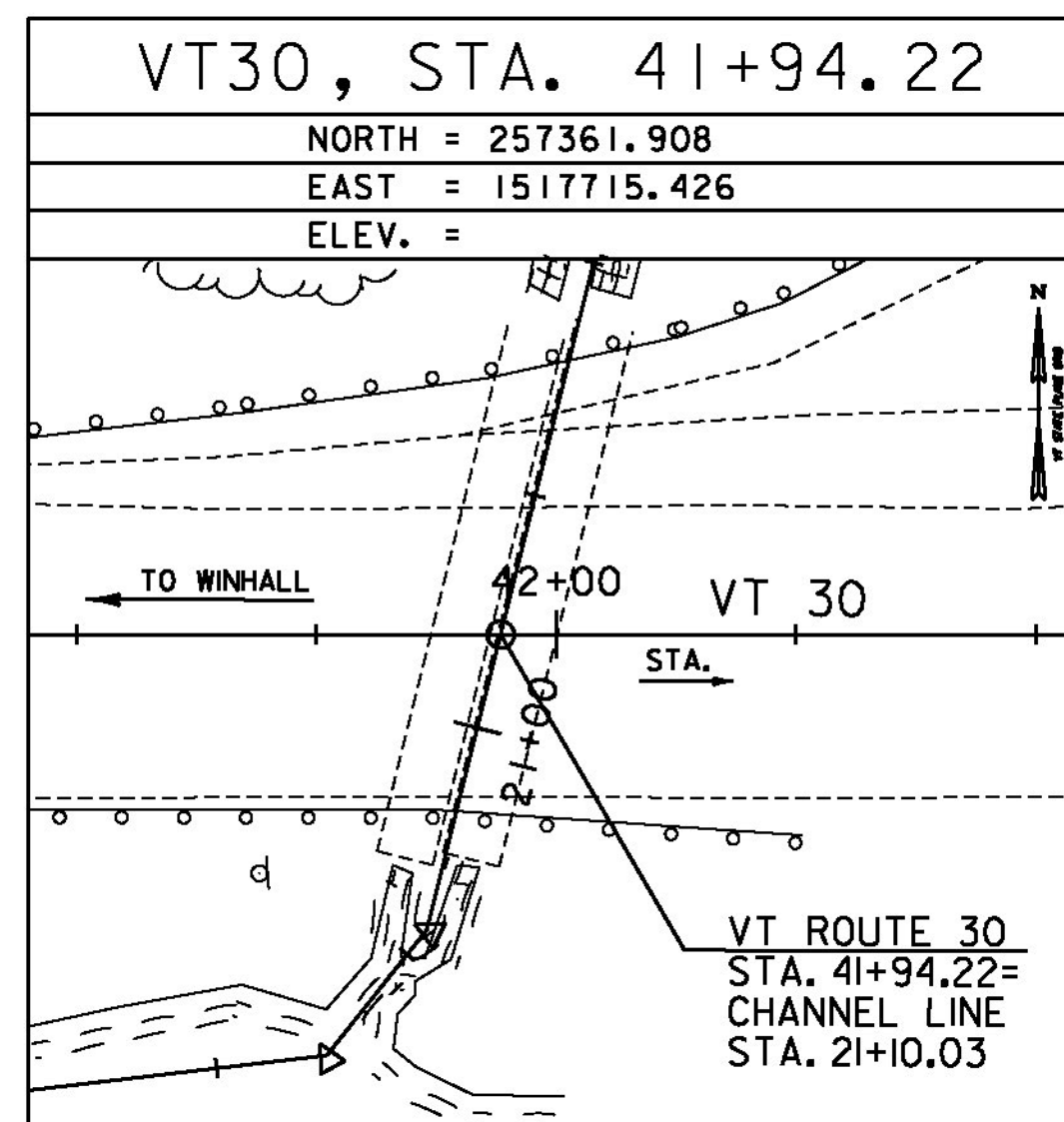
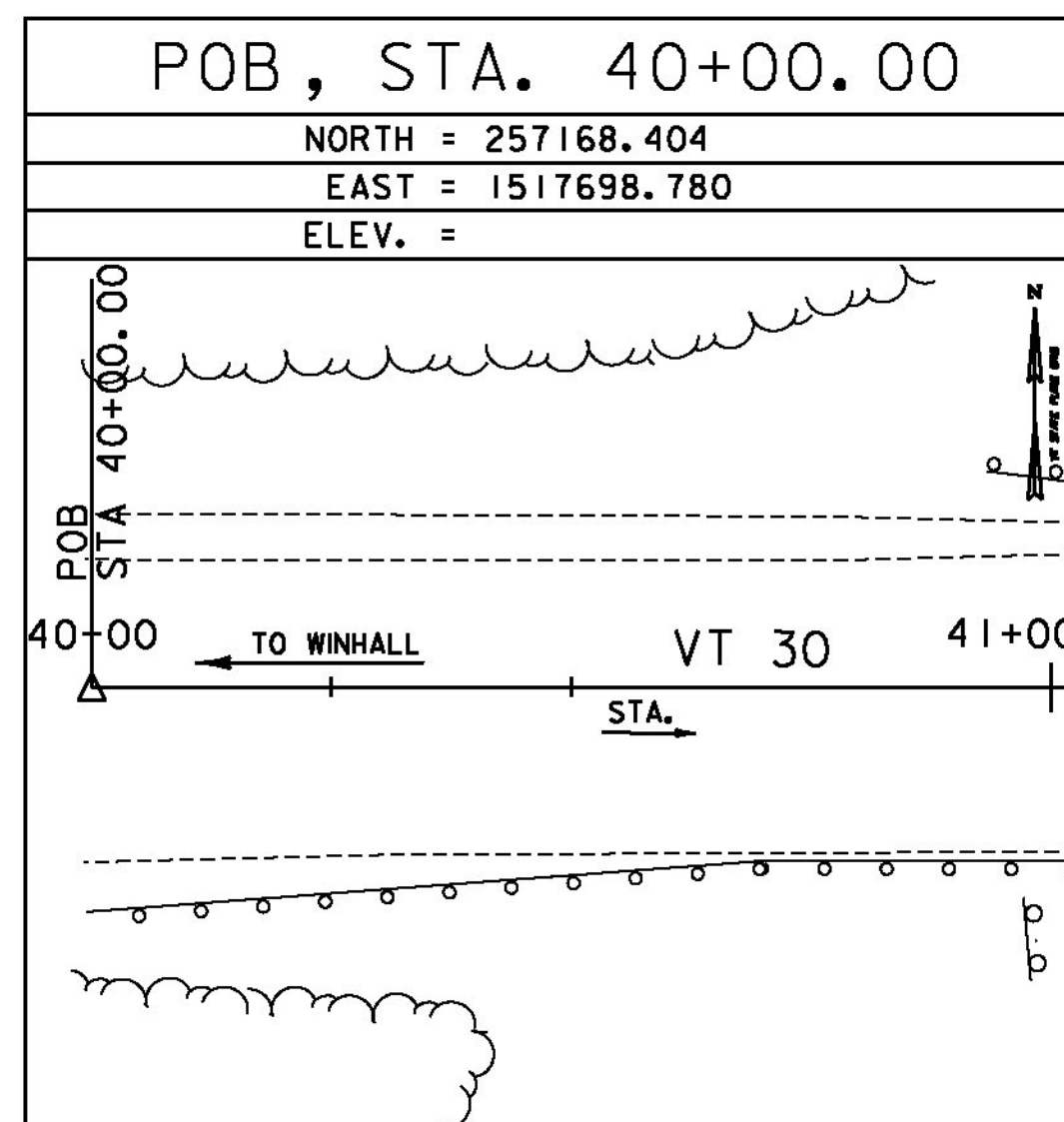
GENERAL LOCATION, WINHALL, VT.  
 THE MARK IS AT THE PINNACLE SUN AND SKI LODGE AT THE INTERSECTION OF VT ROUTES 11 AND 30 IN WINHALL. THE MARK IS A USFS CADASTRAL DISK SET IN THE TOP OF A 15 CM SQUARE MARBLE MONUMENT WHICH PROJECTS ABOUT 12 CM ABOVE GROUND SURFACE. IT IS 13.5 M (44.3 FT) SOUTH OF SOUTH FACE OF THE PINNACLE SUN AND SKI LODGE, 5.8 M (19.0 FT) NORTHWEST OF THE SOUTHWEST CORNER OF A WOOD CRIB RETAINING WALL, 16.5 M (54.1 FT) NORTH OF THE SOUTH END OF A CONCRETE BOX CULVERT, AND 3.4 M (11.2 FT) NORTH OF A FIBERGLASS WITNESS POST.

TRAVERSE TIES



*MAIN TRAVERSE COMPLETED 2/7/2012 BY L. ORVIS P.C. & G. HITCHCOCK & H. MCGOWAN

ALIGNMENT TIES



DATUM	
VERTICAL	NAVD 88
HORIZONTAL	NAD83(07)
ADJUSTMENT	COMPASS

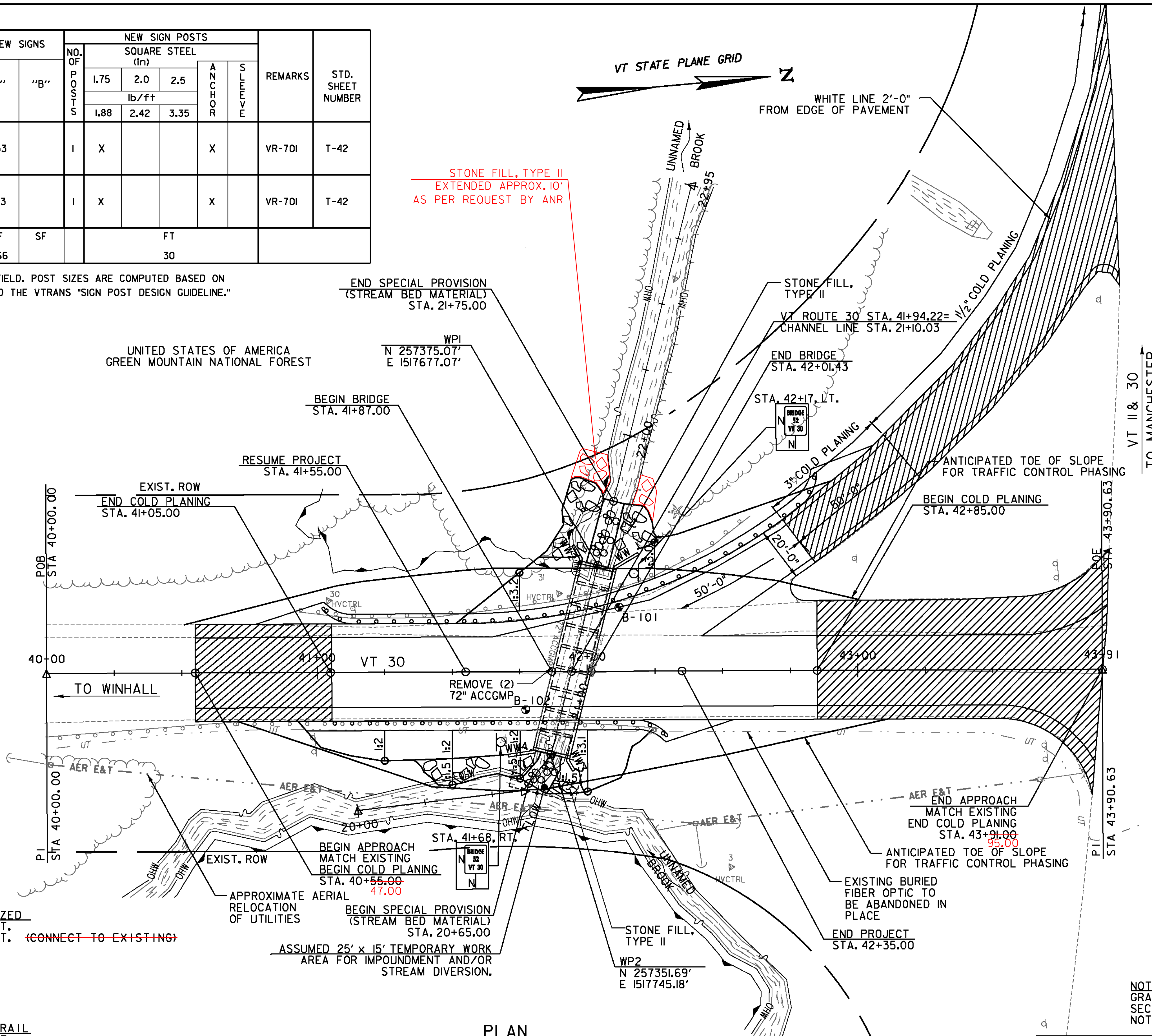


PROJECT NAME:	WINHALL	FILE NAME:	z1lb268+1e_br52.dgn	PROJECT LEADER:	M. CHENETTE	DESIGNED BY:	J. HUNGERFORD	PLOT DATE:	9/25/2014
PROJECT NUMBER:	STP CULV(3I)							DRAWN BY:	L. BUXTON
								CHECKED BY:	M. CHENETTE
								SURVEY CONTROL AND TIES - BR52	SHEET 38 OF 60

TRAFFIC SIGN SUMMARY

STATION	SIGN LEGEND	SIGN DIMENSIONS		NEW SIGNS		NO. OF POSTS	NEW SIGN POSTS			REMARKS	STD. SHEET NUMBER		
		E A	WIDTH (in)	HEIGHT (in)	"A"		"B"	SQUARE STEEL (in)					
								1.75	2.0			2.5	
							lb/ft						
							1.88	2.42	3.35	ANCHOR	SPALL		
41+68, RT		I	6	8	0.33	I	X		X		VR-70I	T-42	
42+17, LT		I	6	8	0.33	I	X		X		VR-70I	T-42	
<b>TOTALS</b>				SF	SF			FT					
				0.66				30					

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



GUARDRAIL REMOVAL & NEW GUARDRAIL EXTENDED BACK TO STA. 40+05 RT. EXISTING RAIL WAS DAMAGED.

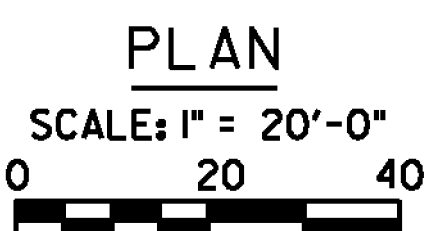
621.20 - STEEL BEAM GUARDRAIL, GALVANIZED  
 STA. 41+02.00, LT. TO STA. 42+85.00, LT.  
 STA. 41+05.00, RT. TO STA. 42+30.00, RT. (CONNECT TO EXISTING)  
 40+05.00

621.60 - ANCHOR FOR STEEL BEAM RAIL  
 STA. 41+08.00, LT.  
 STA. 41+11.00, RT. STA. 40+11.00, RT.  
 STA. 42+24.00, RT.  
 STA. 42+79.00, LT.

621.80 - REMOVAL AND DISPOSAL OF GUARDRAIL  
 STA. 40+93.32, LT. TO STA. 42+60.44, LT.  
 STA. 41+05.00, RT. TO STA. 42+25.66, RT.  
 40+05.00

646.400 - DURABLE 4 INCH WHITE LINE  
 STA. 40+55.00, RT. TO STA. 43+91.00, RT.  
 STA. 40+55.00, LT. TO STA. 43+91.00, LT.

646.410 - DURABLE 4 INCH YELLOW LINE  
 STA. 40+55.00, CL. TO STA. 43+91.00, CL. (DYCL)



PROJECT NAME: WINHALL  
 PROJECT NUMBER: STP CULV(31)

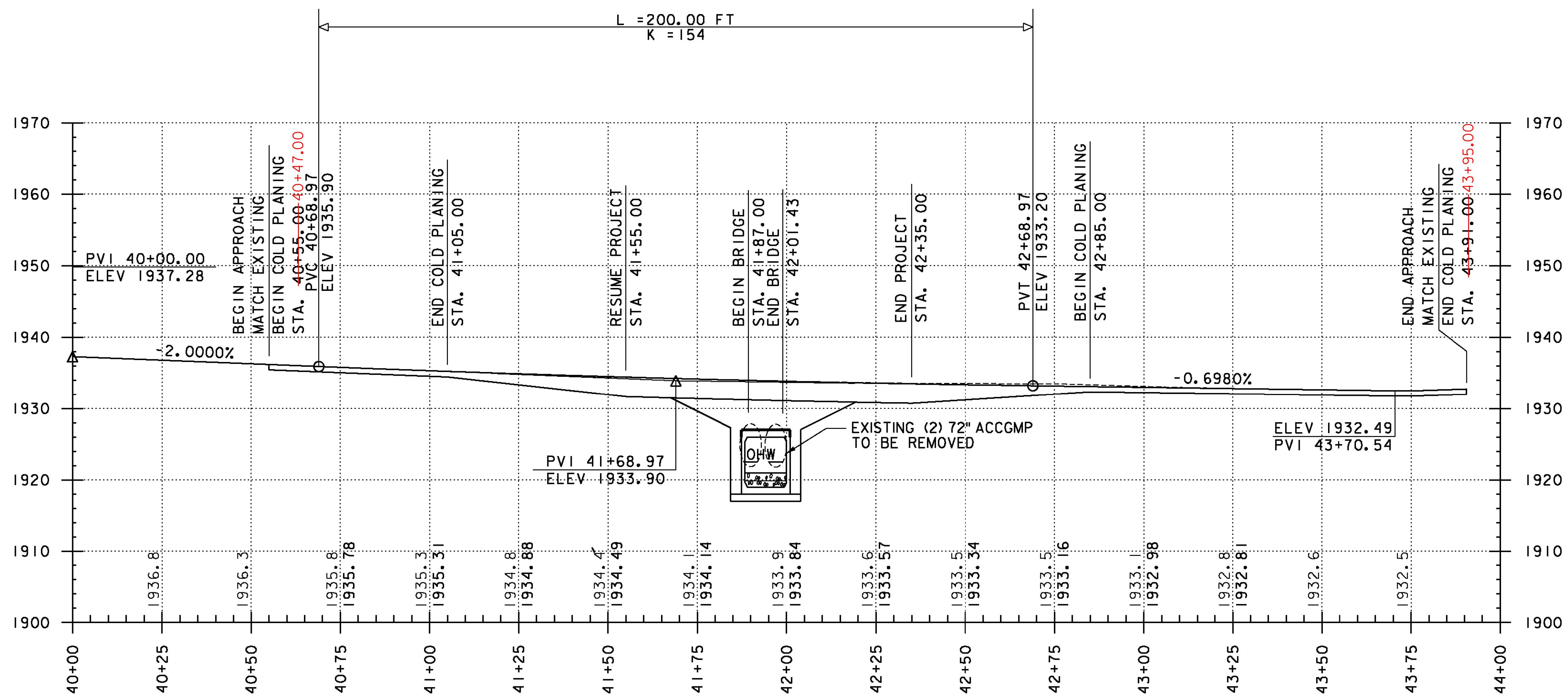
FILE NAME: z1lb268bdr_br52.dgn  
 PROJECT LEADER: M. CHENETTE  
 DESIGNED BY: J. HUNGERFORD  
 PLAN LAYOUT SHEET - BR52

PLOT DATE: 10/9/2014  
 DRAWN BY: L. BUXTON  
 CHECKED BY: M. CHENETTE  
 SHEET 39 OF 60



NOTE: GRADE IN ACCORDANCE WITH TYPICAL ROADWAY SECTION AND ROADWAY CROSS SECTIONS UNLESS NOTED OTHERWISE.

LEGEND	
	STONE FILL, TYPE II
	SPECIAL PROVISION (STONE FILL, CULVERT LINING)



NOTE:  
 ELEVATIONS SHOWN TO THE NEAREST TENTH ARE EXISTING GROUND ALONG PROPOSED CENTERLINE.

ELEVATIONS SHOW TO THE NEAREST HUNDREDTH ARE FINISHED GRADE ALONG PROPOSED CENTERLINE.

**PROFILE ALONG VT ROUTE 30**

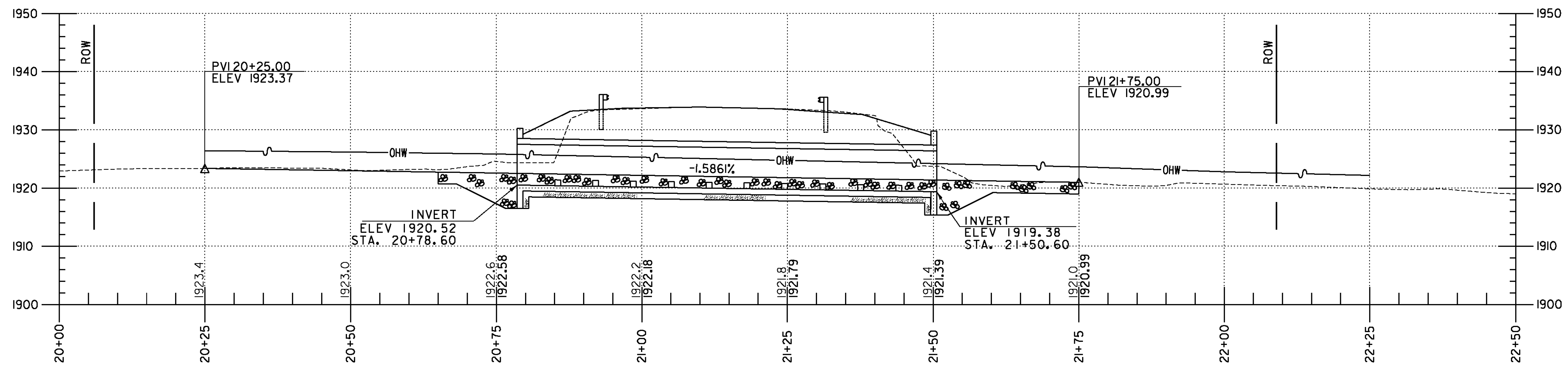
HORIZONTAL SCALE: 1" = 20'      VERTICAL SCALE: 1" = 10'

PROJECT NAME: WINHALL  
 PROJECT NUMBER: STP CULV(31)

FILE NAME: zlb268pro.dgn  
 PROJECT LEADER: M. CHENETTE  
 DESIGNED BY: J. HUNGERFORD  
 ROADWAY PROFILE - BR52

PLOT DATE: 9/25/2014  
 DRAWN BY: L. BUXTON  
 CHECKED BY: M. CHENETTE  
 SHEET 40 OF 60

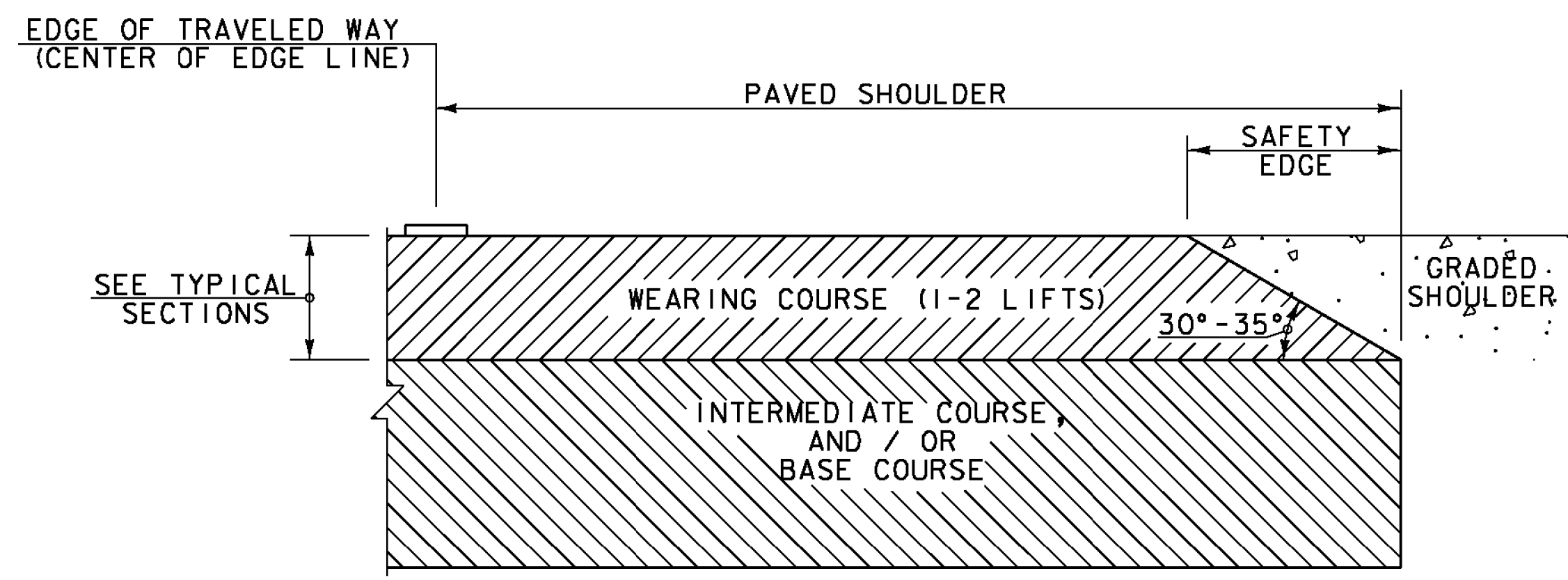




NOTE:  
 ELEVATIONS SHOWN TO THE NEAREST TENTH ARE EXISTING GROUND ALONG PROPOSED CENTERLINE.  
 ELEVATIONS SHOW TO THE NEAREST HUNDREDTH ARE FINISHED GRADE ALONG PROPOSED CENTERLINE.

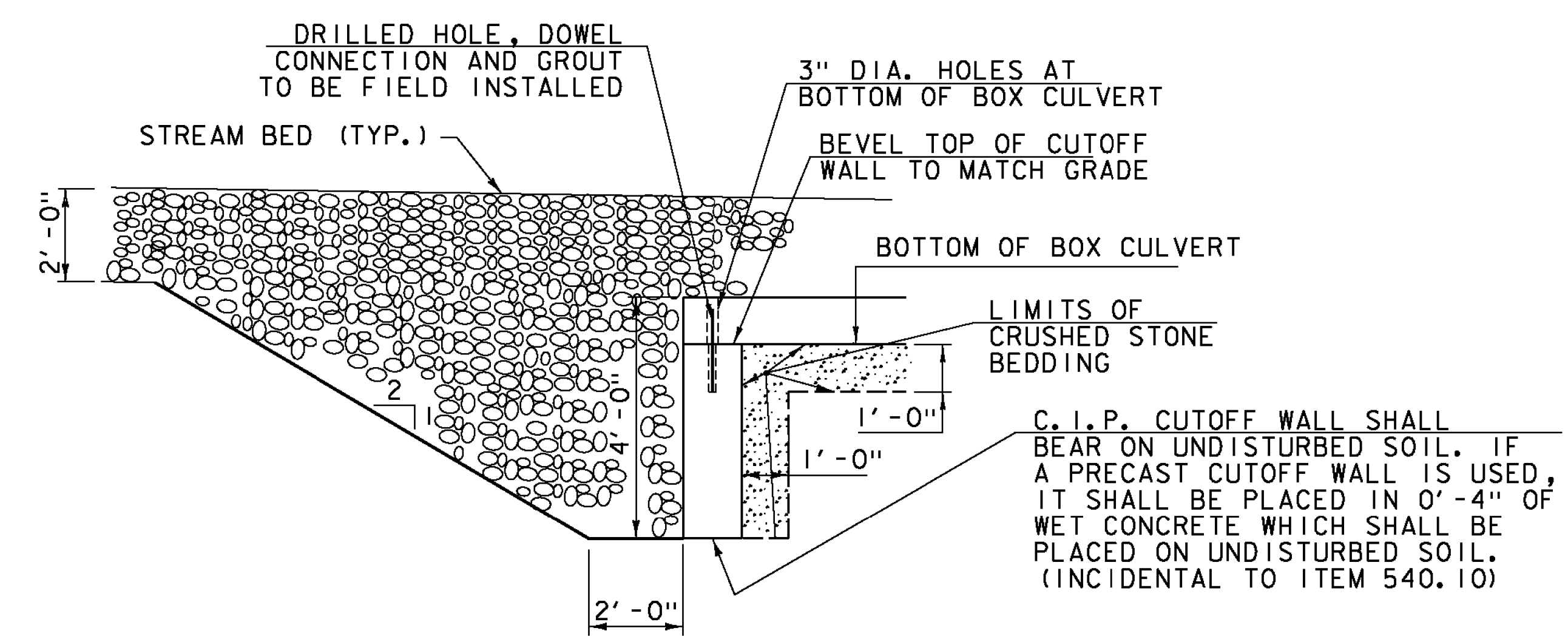
STREAM PROFILE  
 0 10 20  
 SCALE

PRECAST CUTOFF WALL USED.  
 SET ON GRAD AS PER RE-  
 NO CONCRETE USED.



SAFETY EDGE DETAIL  
 NOT TO SCALE

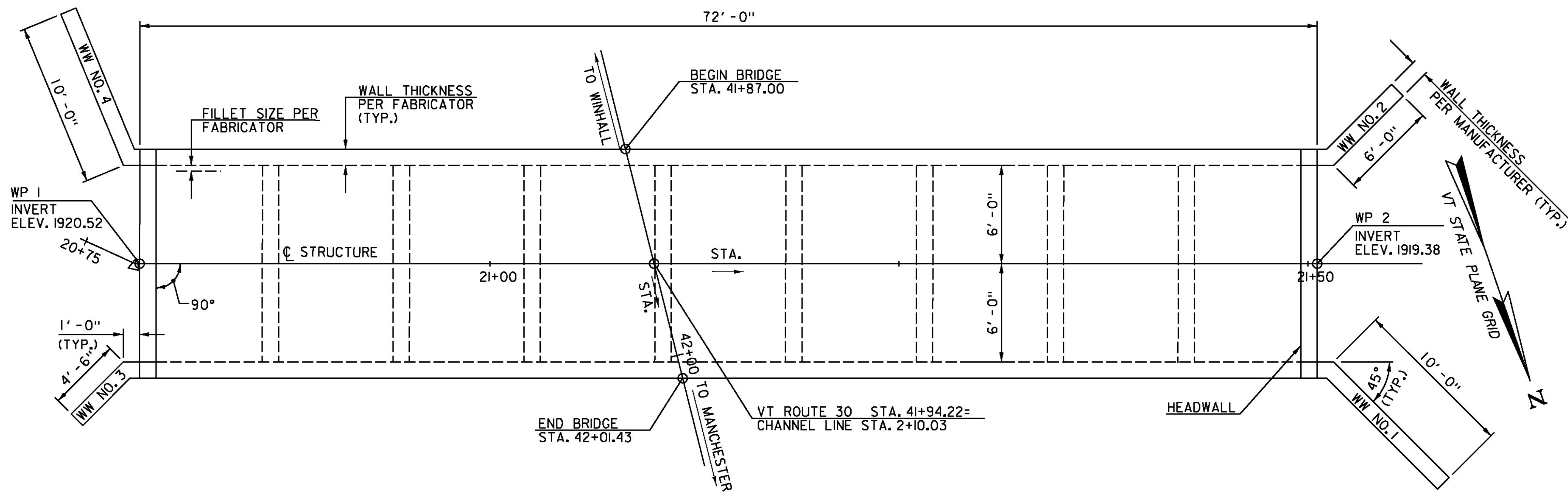
- NOTES:
1. THE EDGE OF PAVEMENT SHALL BE FORMED IN SUCH A WAY THAT THE BITUMINOUS CONCRETE PAVEMENT IS EXTRUDED OR COMPRESSED TO FORM THE 30 TO 35 DEGREE ANGLE. DEVICES THAT SIMPLY STRIKE-OFF THE MIX WITHOUT PROVIDING ANY COMPACTIVE EFFORT WILL NOT BE ALLOWED.
  2. THE PAVED SHOULDER EXTENDS FROM THE EDGE OF TRAVELED WAY TO THE EDGE OF THE WEARING COURSE, INCLUDING THE "SAFETY EDGE".



CUTOFF WALL DETAIL  
 NOT TO SCALE

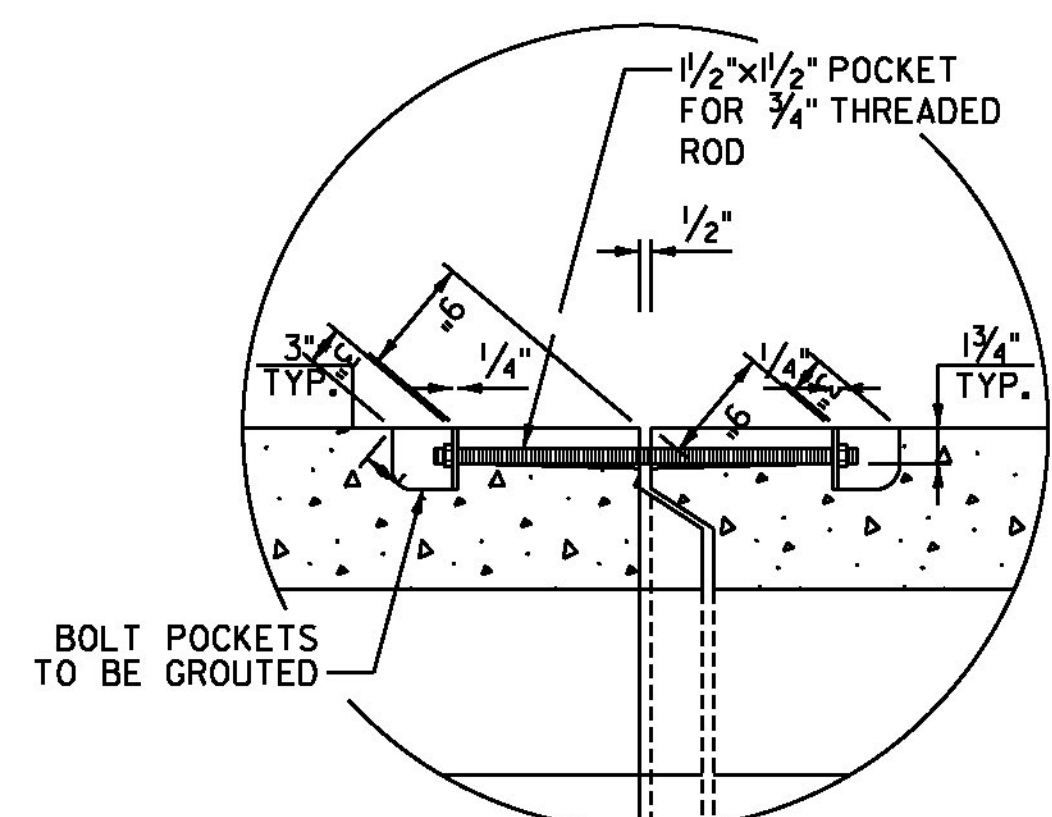
PROJECT NAME:	WINHALL	PLOT DATE:	10/9/2014
PROJECT NUMBER:	STP CULV(3I)	DRAWN BY:	L. BUXTON
FILE NAME:	zlb268strm_pro.dgn	DESIGNED BY:	J. HUNGERFORD
PROJECT LEADER:	M. CHENETTE	CHECKED BY:	M. CHENETTE
STREAM PROFILE - BR52			SHEET 41 OF 60



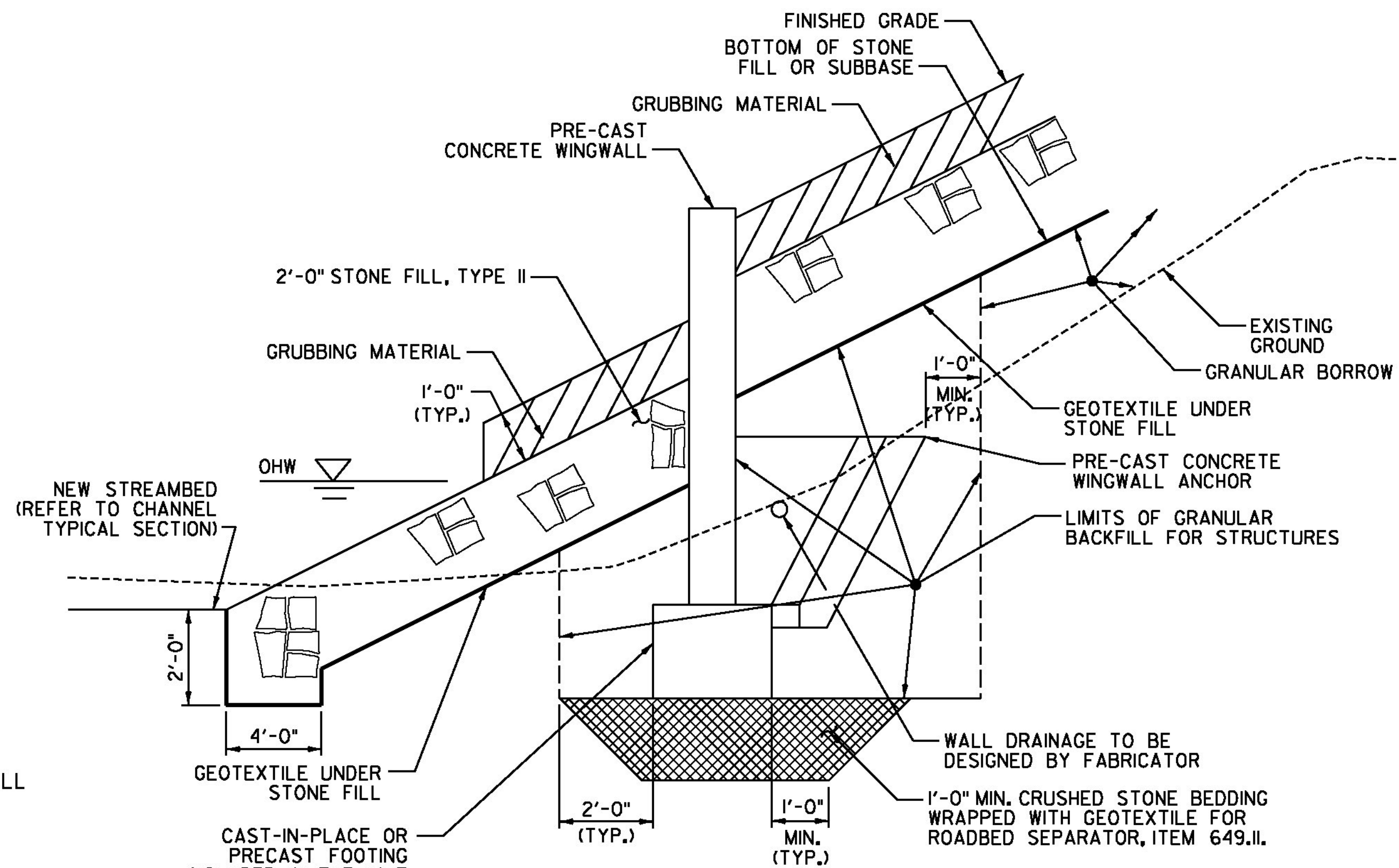


PRECAST CONCRETE STRUCTURE PLAN

SCALE: 1/4" = 1'-0"

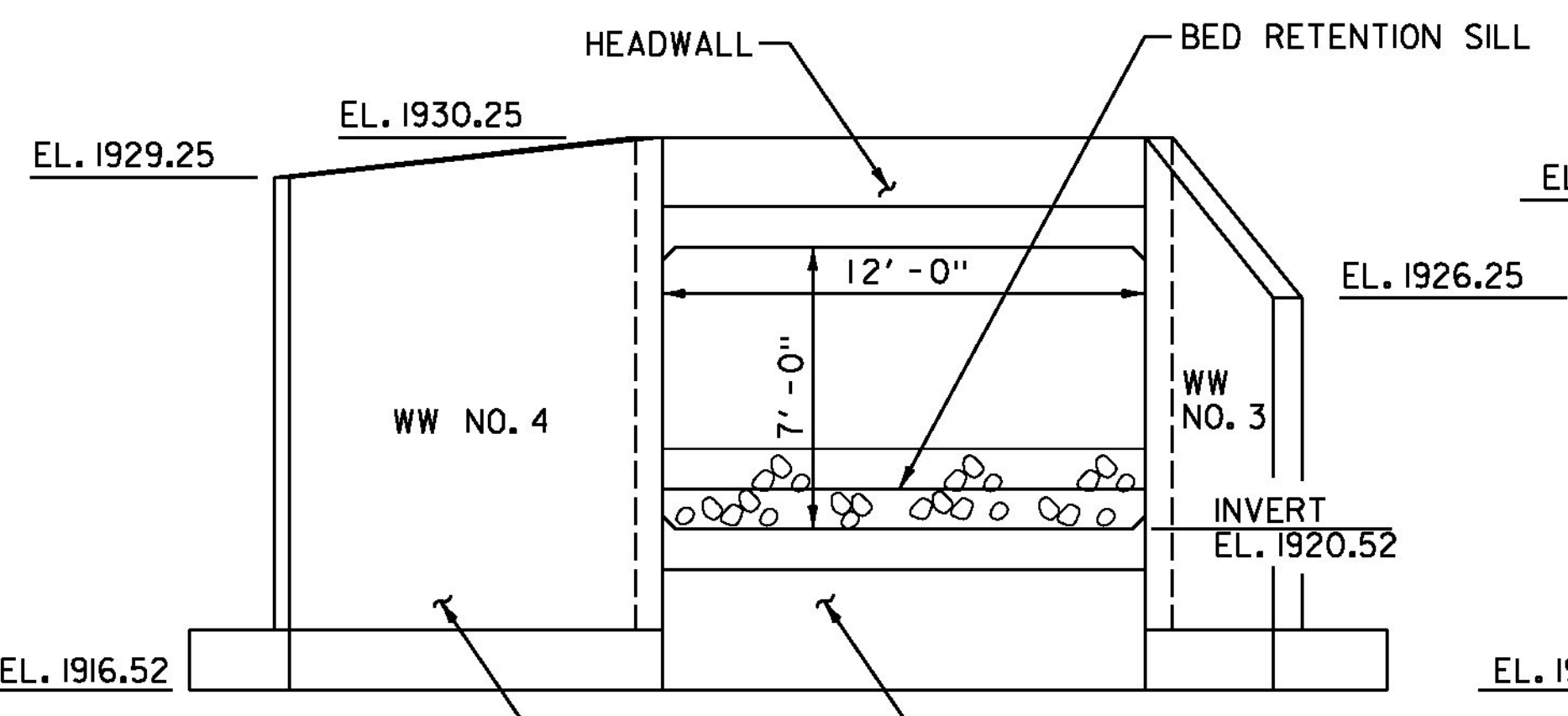


PERMANENT CLOSURE DETAIL  
NOT TO SCALE

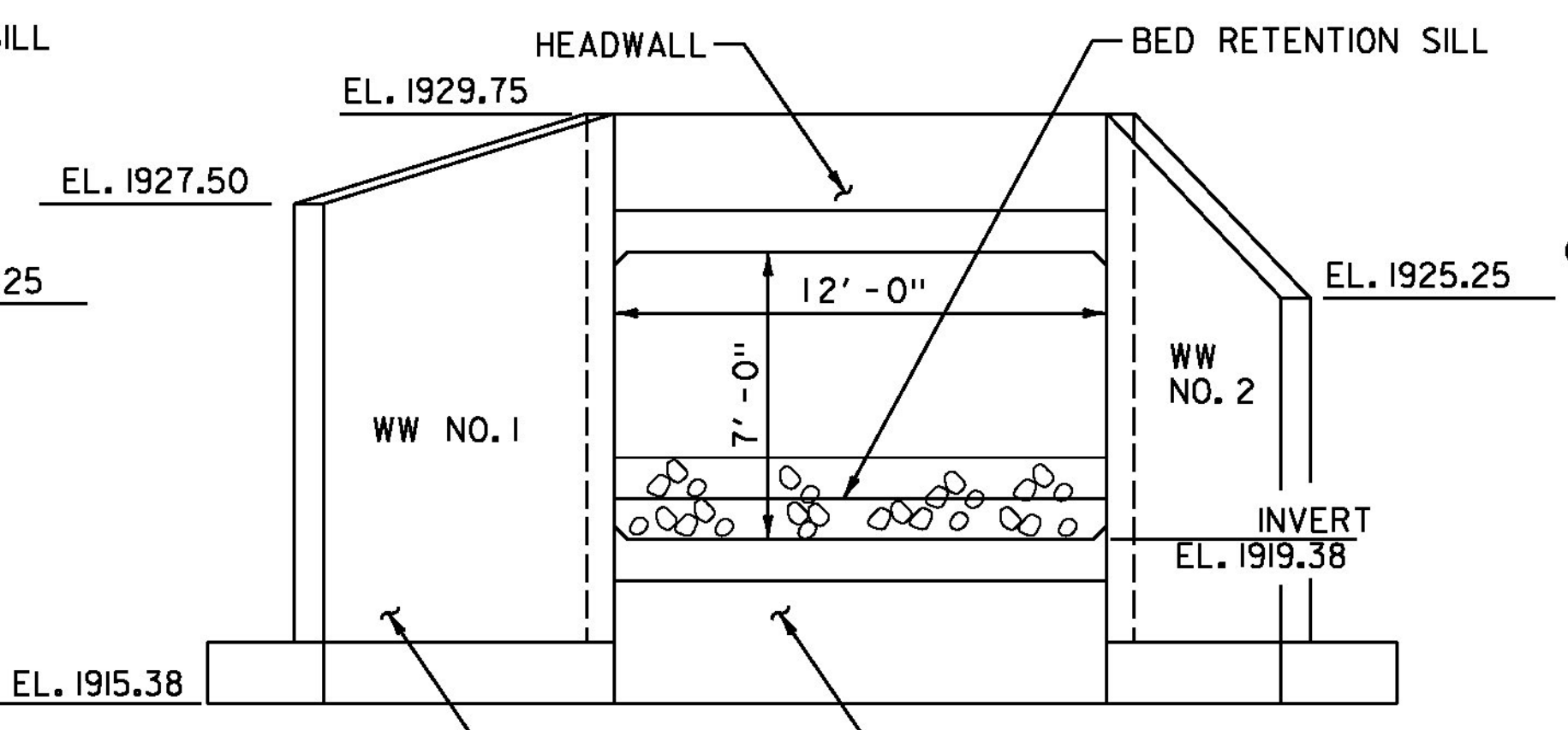


- NOTES:
- ANCHOR TYPE WALLS SHOWN, OTHER APPROVED WALL SYSTEM MAY BE USED, SEE SPECIAL PROVISIONS.
  - FOR PURPOSES OF ESTIMATING EARTHWORK QUANTITIES, THE LIMITS OF STRUCTURE EXCAVATION HAVE BEEN ASSUMED AS SHOWN ABOVE. ONLY THE EXCAVATION INCLUDED WITHIN THESE LIMITS SHALL BE PAID FOR UNDER ITEM 204.25, "STRUCTURE EXCAVATION". THE CONTRACTOR SHALL DETERMINE THE ACTUAL LIMITS OF STRUCTURE EXCAVATION, PER PRECAST WINGWALL DESIGN.

WINGWALL EARTHWORK SECTION  
NOT TO SCALE



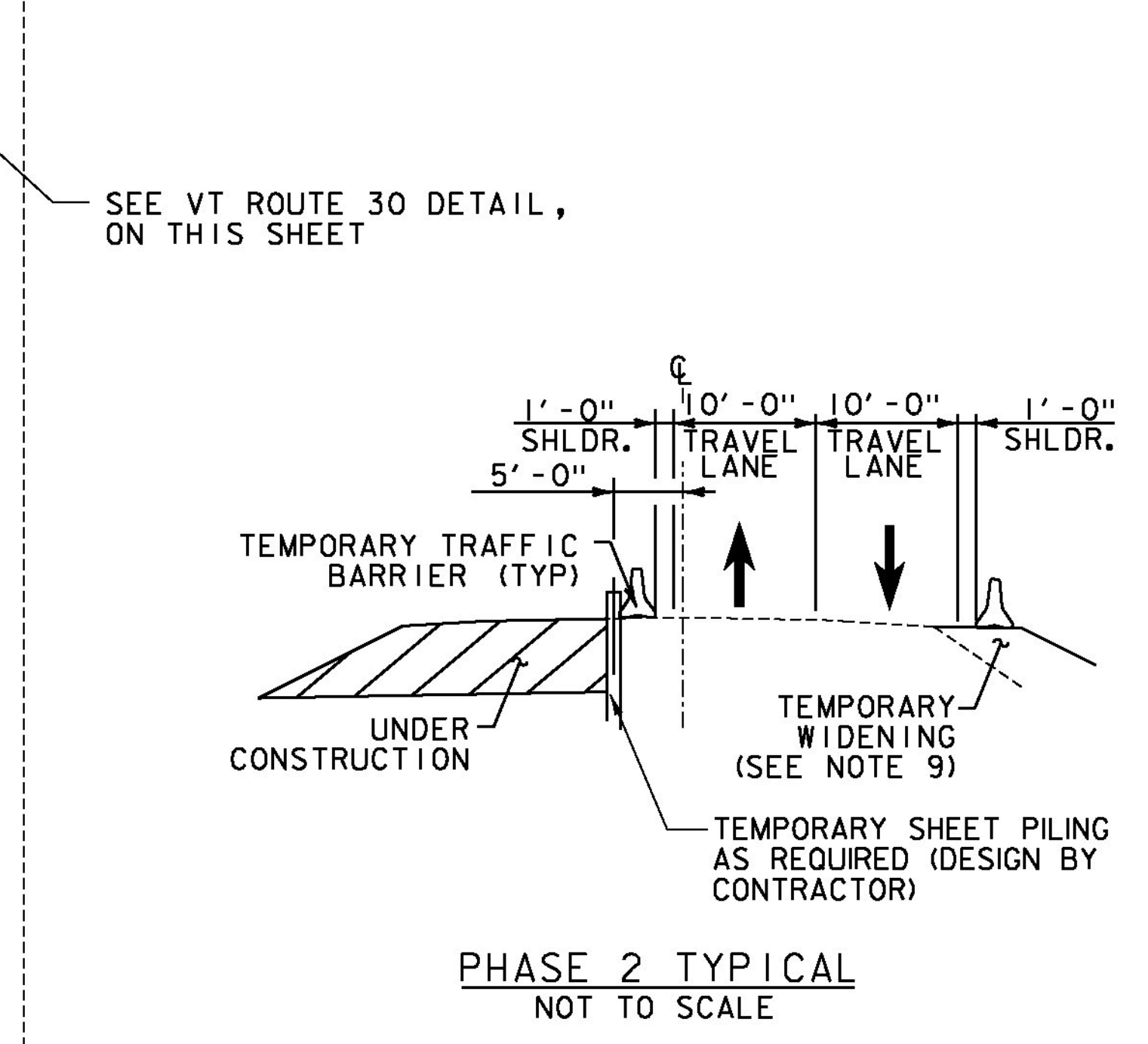
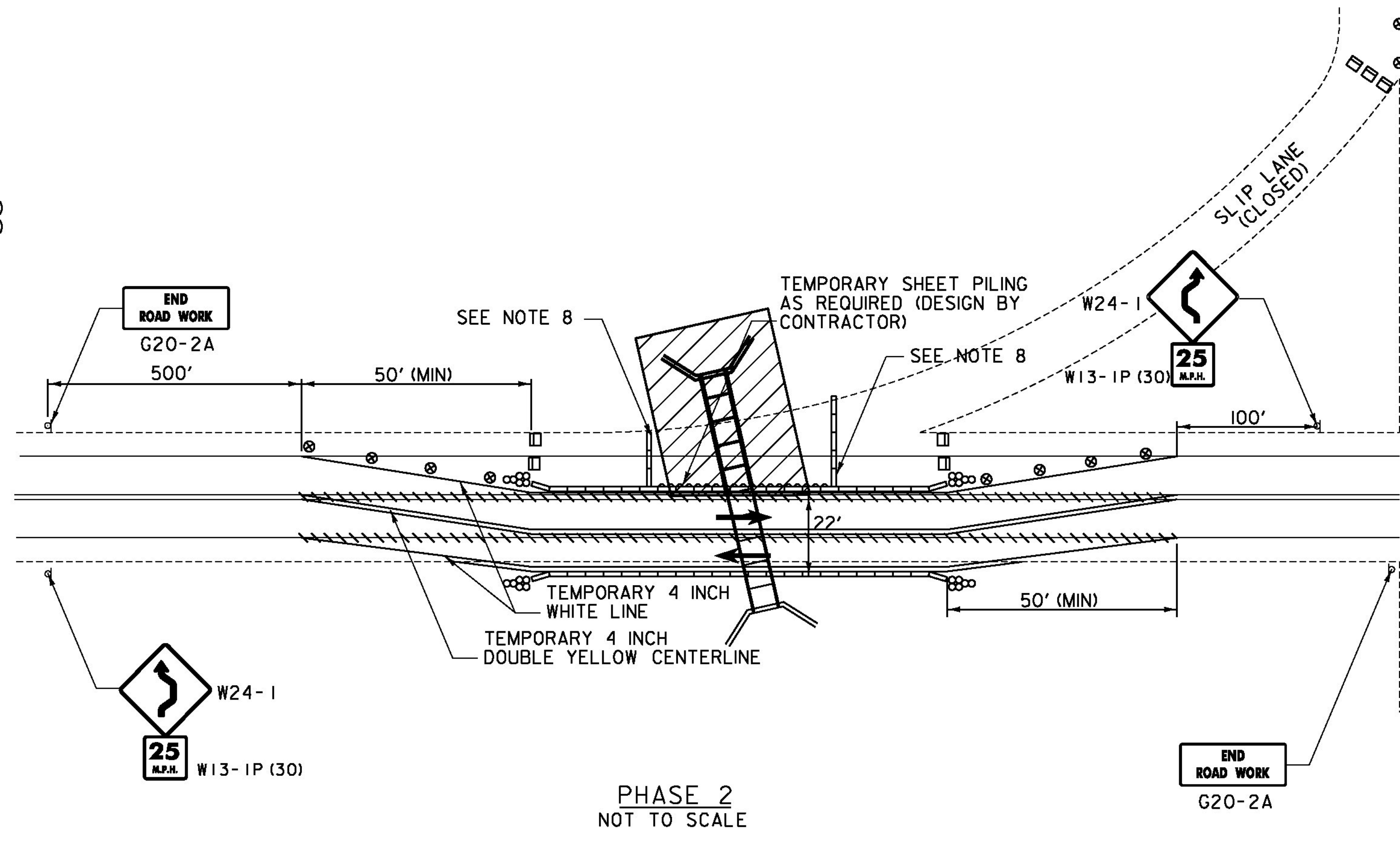
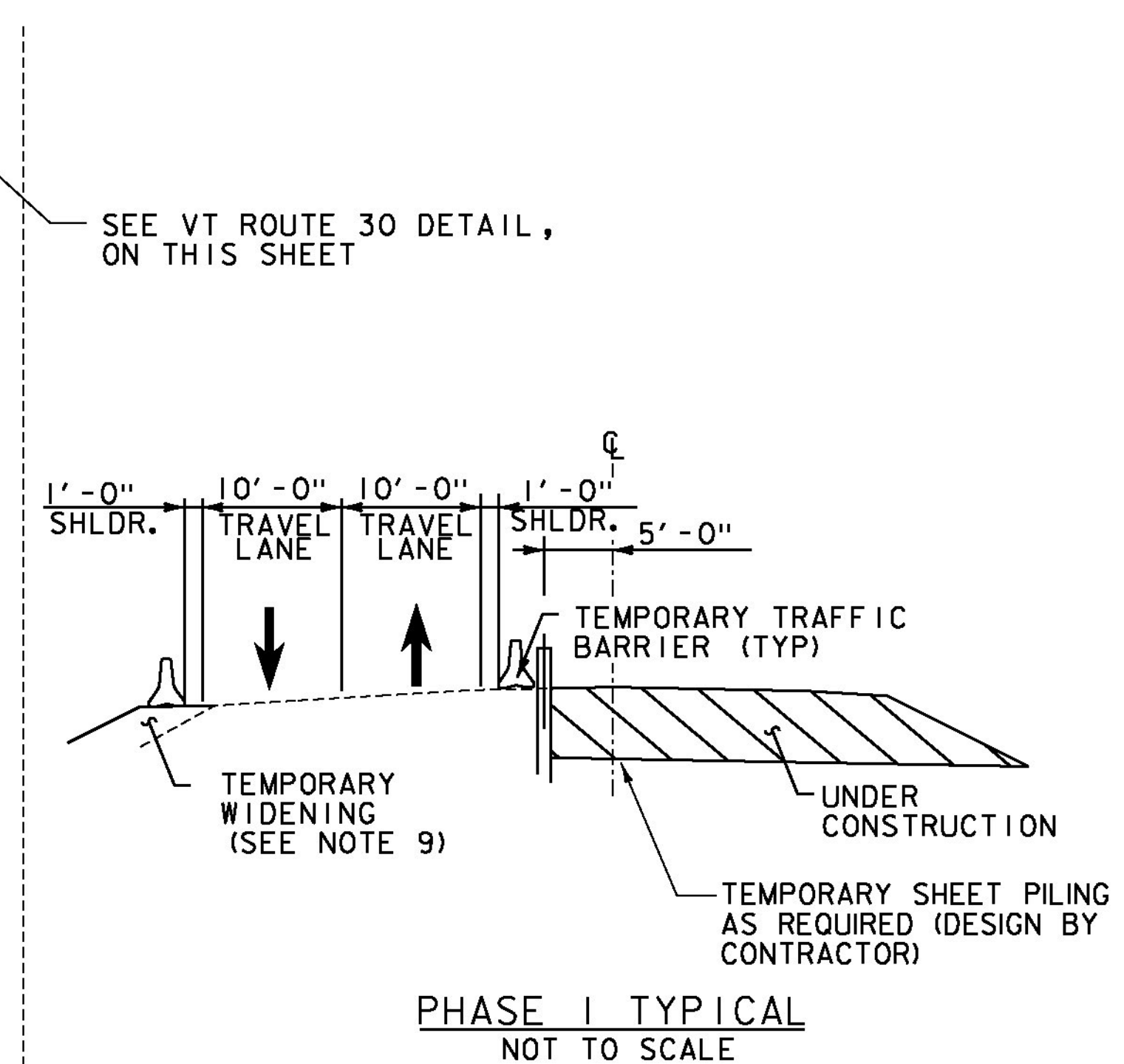
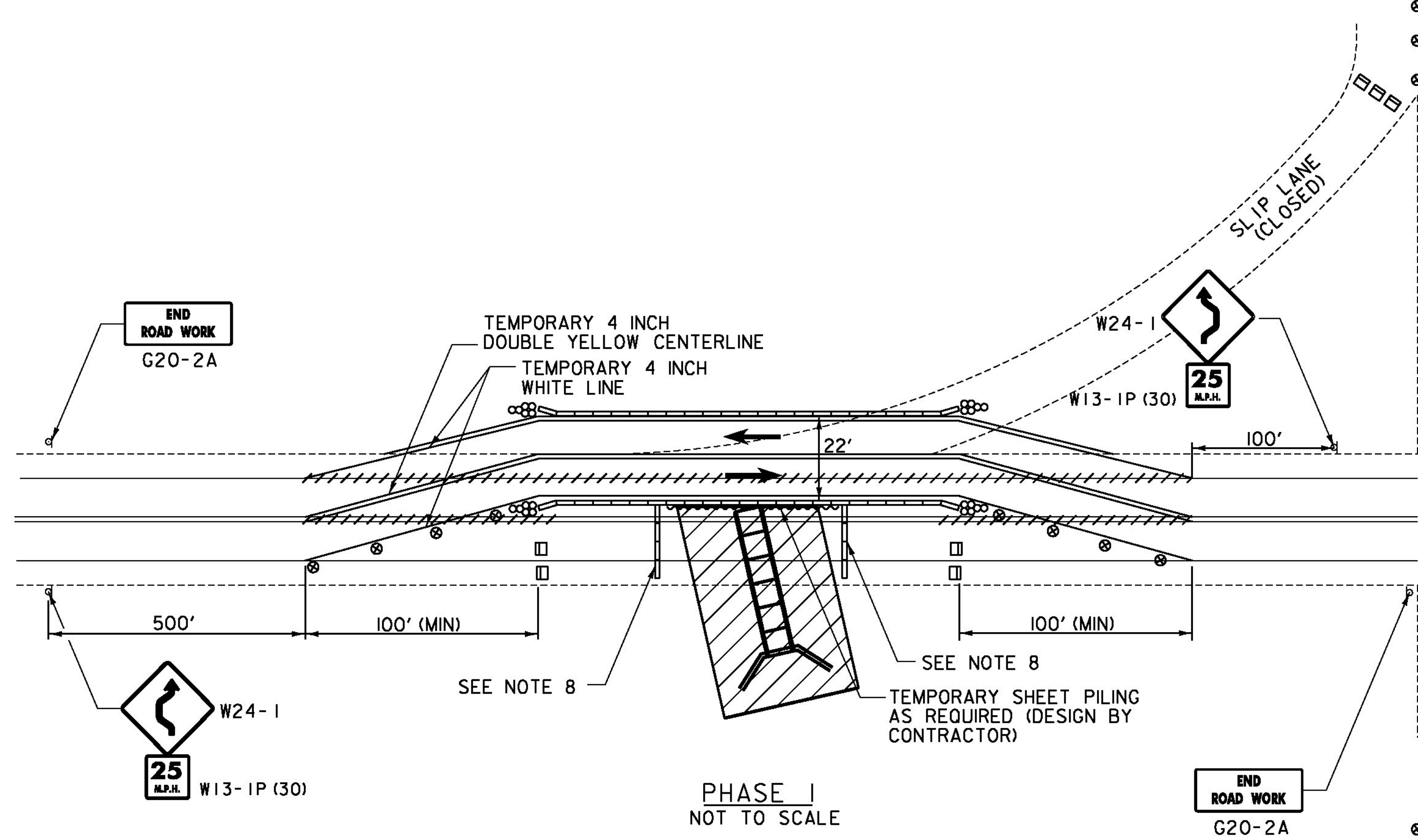
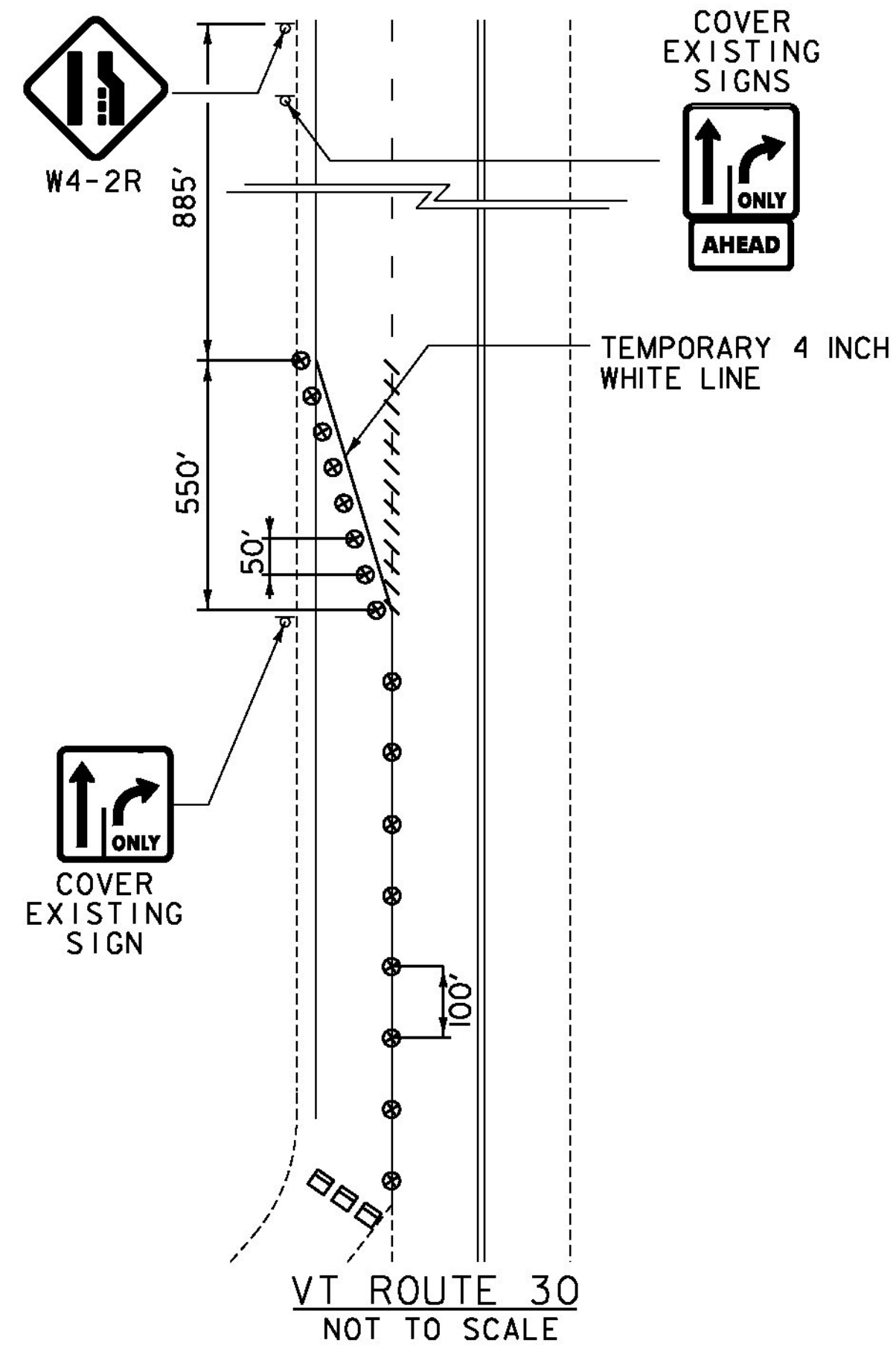
INLET ELEVATION  
SCALE: 1/4" = 1'-0"



OUTLET ELEVATION  
SCALE: 1/4" = 1'-0"



PROJECT NAME:	WINHALL	FILE NAME:	zlib268strpl_br52.dgn	PLOT DATE:	9/25/2014
PROJECT NUMBER:	STP CULV(31)	PROJECT LEADER:	M. CHENETTE	DRAWN BY:	L. BUXTON
		DESIGNED BY:	J. HUNGERFORD	CHECKED BY:	M. CHENETTE
		STRUCTURAL PLAN AND DETAILS - BR52			SHEET 42 OF 60



- NOTES:
- SEE SHEET 4 FOR GENERAL TRAFFIC CONTROL NOTES.
  - REFER TO STANDARD T-10 FOR CONSTRUCTION APPROACH SIGNS CRITERIA.
  - CHANNELIZING DEVICE SPACING  
TANGENT SECTIONS: 50 FT. (2X DESIGN SPEED LIMIT)  
TAPER SECTIONS: 25 FT. (1X DESIGN SPEED LIMIT)  
DESIGN SPEED THROUGH CONSTRUCTION ZONE = 25MPH
  - TRAFFIC CONTROL SHALL ALLOW FOR A WB-67 DESIGN VEHICLE WITH ENCRoACHMENT.
  - ATTENUATORS SHALL BE DESIGNED FOR POSTED SPEED OF 50 MPH.
  - CHANNELIZING DEVICES LEFT OVERNIGHT SHALL BE DRUMS.
  - REMOVED CENTERLINE TO BE REPLACED WITH DURABLE 4 INCH YELLOW LINE.
  - TEMPORARY TRAFFIC BARRIER TO BE IN PLACE WHILE EXCAVATION IS OPEN AND WORK IS NOT ACTIVE OR AT THE DISCRETION OF THE ENGINEER.
  - TEMPORARY WIDENING TO BE PAID AS PART OF ITEM 900.645 SPECIAL PROVISION (TRAFFIC CONTROL ALL-INCLUSIVE)

LEGEND	
	UNDER CONSTRUCTION
	TRAFFIC DIRECTION
	TEMPORARY TRAFFIC BARRIER
	CHANNELIZING DEVICE
	ENERGY ABSORPTION ATTENUATOR
	TYPE III BARRIER WITH ROAD CLOSED SIGN
	CONSTRUCTION SIGN
	REMOVE OR MASK PAVEMENT MARKINGS

PROJECT NAME: WINHALL	PLOT DATE: 9/25/2014
PROJECT NUMBER: STP CULV(31)	DRAWN BY: L. BUXTON
FILE NAME: z1lb268+c.dgn	DESIGNED BY: I. MAYNARD
PROJECT LEADER: M. CHENETTE	CHECKED BY: M. CHENETTE
TRAFFIC CONTROL PLAN - BR52	SHEET 43 OF 60



**SOIL CLASSIFICATION**

AASHTO

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

**ROCK QUALITY DESIGNATION**

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

**SHEAR STRENGTH**

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

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

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

**COMMONLY USED SYMBOLS**

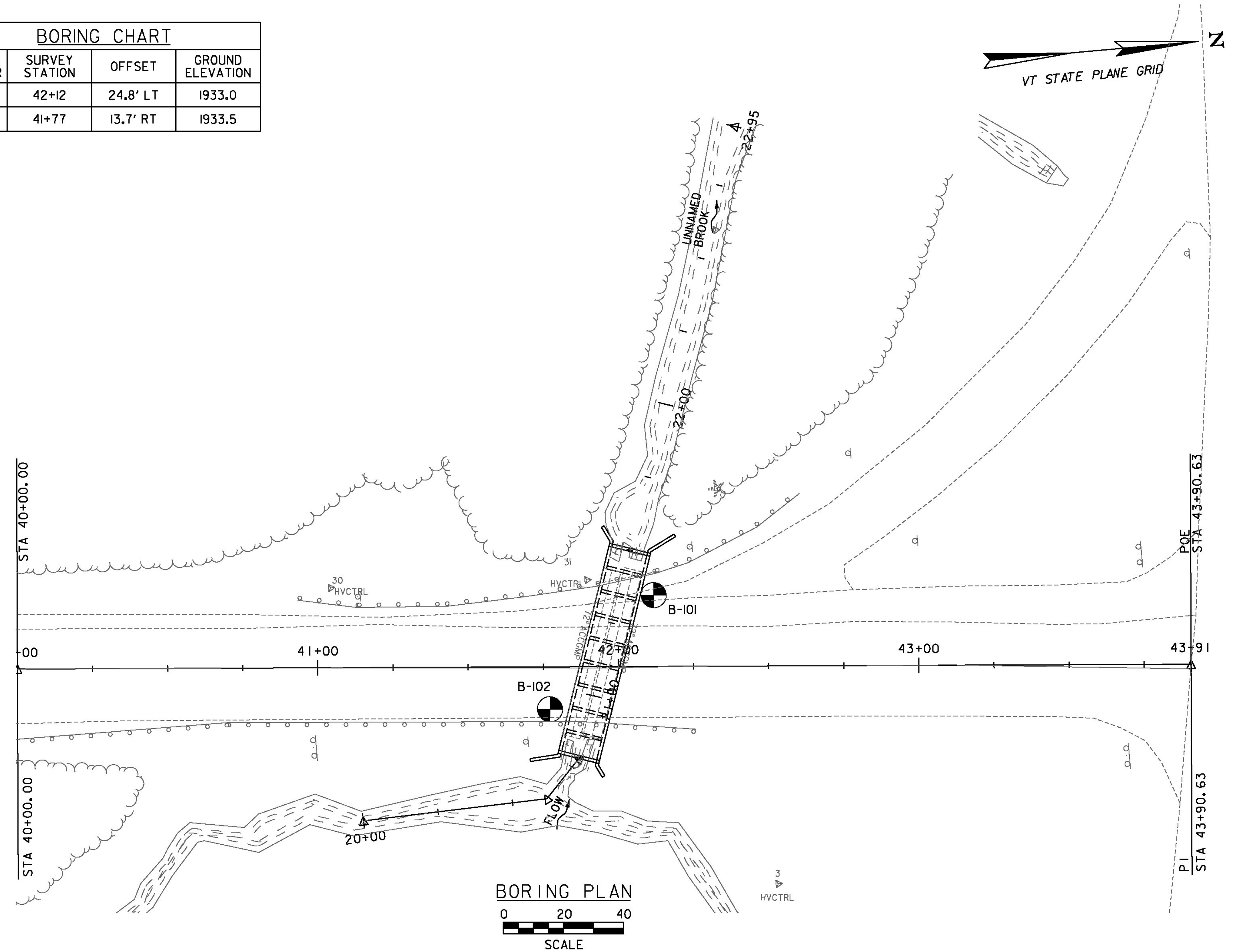
▼	Water Elevation
⊕	Standard Penetration Boring
⊗	Auger Boring
⊙	Rod Sounding
S	Sample
N	Standard Penetration Test Blow Count Per Foot For: 2" O.D. Sampler 1 3/8" I.D. Sampler Hammer Weight Of 140 Lbs. Hammer Fall Of 30"
VS	Field Vane Shear Test
US	Undisturbed Soil Sample
B	Blast
DC	Diamond Core
MD	Mud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

**COLOR**

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

**BORING CHART**

BORING NUMBER	SURVEY STATION	OFFSET	GROUND ELEVATION
B-101	42+12	24.8' LT	1933.0
B-102	41+77	13.7' RT	1933.5



**DEFINITIONS (AASHTO)**

<b>BEDROCK (LEDGE)</b> - Rock in its native location of indefinite thickness.	<b>VARVED</b> - Alternate layers of silt and clay.
<b>BOULDER</b> - A rock fragment with an average dimension > 12 inches.	<b>HARDPAN</b> - Extremely dense soil, cemented layer, not softened when wet.
<b>COBBLE</b> - Rock fragments with an average dimension between 3 and 12 inches.	<b>MUCK</b> - Soft organic soil (containing > 10% organic material).
<b>GRAVEL</b> - Rounded particles of rock < 3" and > 0.075" (#10 sieve).	<b>MOISTURE CONTENT</b> - Weight of water divided by dry weight of soil.
<b>SAND</b> - Particles of rock < 0.075" (#10 sieve) and > 0.0029" (#200 sieve).	<b>FLOWING SAND</b> - Granular soil so saturated (loose) that it flows into drill casing during extraction of wash rod.
<b>SILT</b> - Soil < 0.0029" (#200 sieve), non or slightly plastic and exhibits no strength when air-dried.	<b>STRIKE</b> - Angle from magnetic north to line of intersection of bed with a horizontal plane.
<b>CLAY</b> - Fine grained soil, exhibits plasticity when moist and considerable strength when air-dried.	<b>DIP</b> - Inclination of bed with a horizontal plane.

- GENERAL NOTES**
- The subsurface explorations shown herein were made on Oct. 25, 2012 by N.H. Boring.
  - Soil and rock classifications, properties and descriptions are based on engineering interpretation from available subsurface information and may not necessarily reflect actual variations in subsurface conditions that may be encountered between individual boring or sample locations.
  - Observed water levels and/or conditions indicated are as recorded at the time of exploration and may vary according to the prevailing rainfall, methods of exploration and other factors.
  - Engineering judgement was exercised in preparing the subsurface information presented herein. Analysis and interpretation of subsurface data was performed and interpreted for Agency design and estimating purposes. Presentation of the information in the Contract is intended to provide the Contractor access to the same data available to the Agency. The subsurface information is presented in good faith and is not intended as a substitute for personal investigation, independent interpretation, independent analysis or judgement by the Contractor.
  - Pictorial structure details shown on the boring plan layout or soils profile are for illustrative purposes only and may not accurately portray final contract details.
  - Terminology used on boring logs to describe the hardness, degree of weathering, and spacing of fractures, joints and other discontinuities in the bedrock is defined in the AASHTO Manual on Subsurface Investigations, 1988.

**LEGEND:**

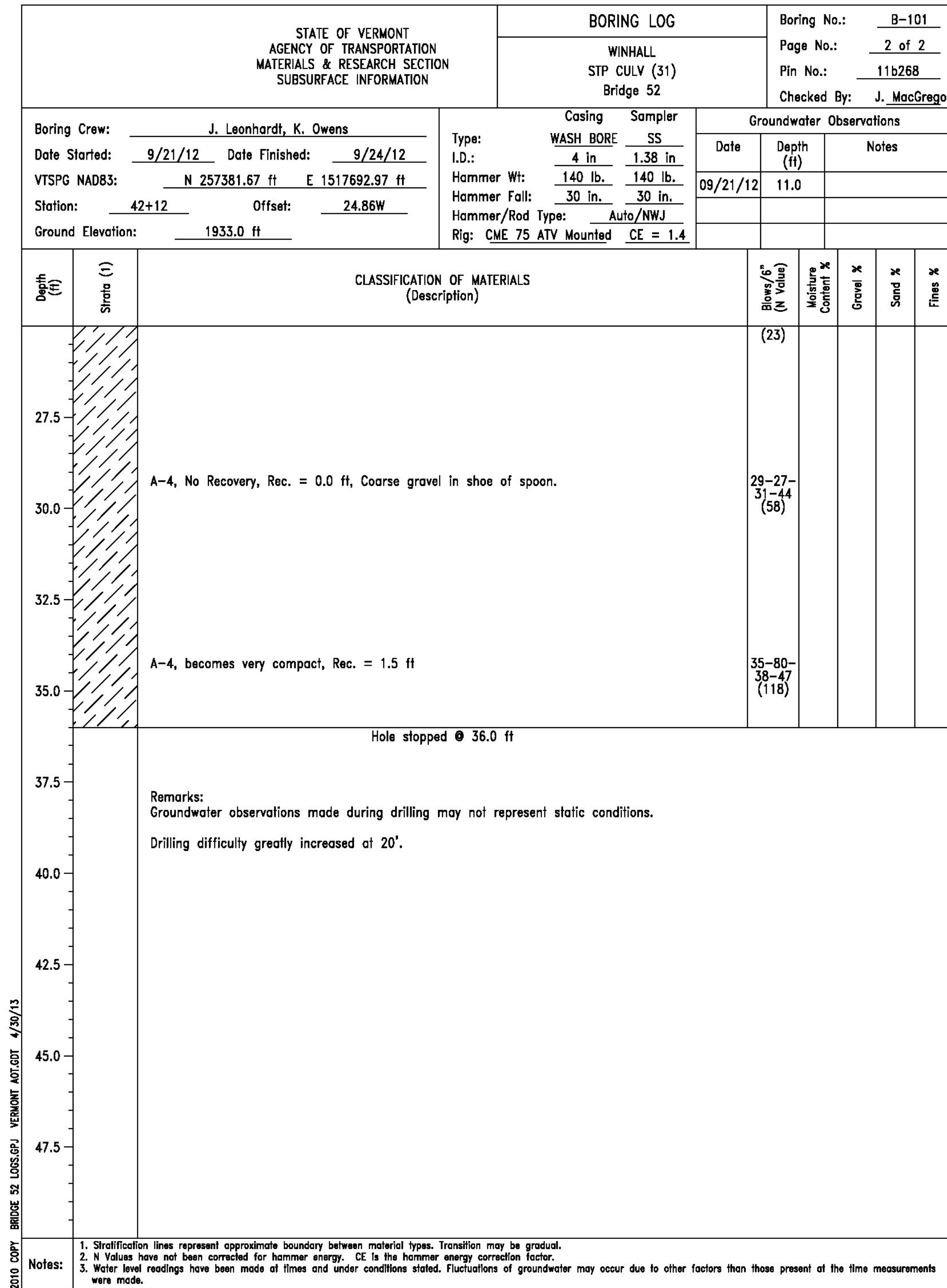
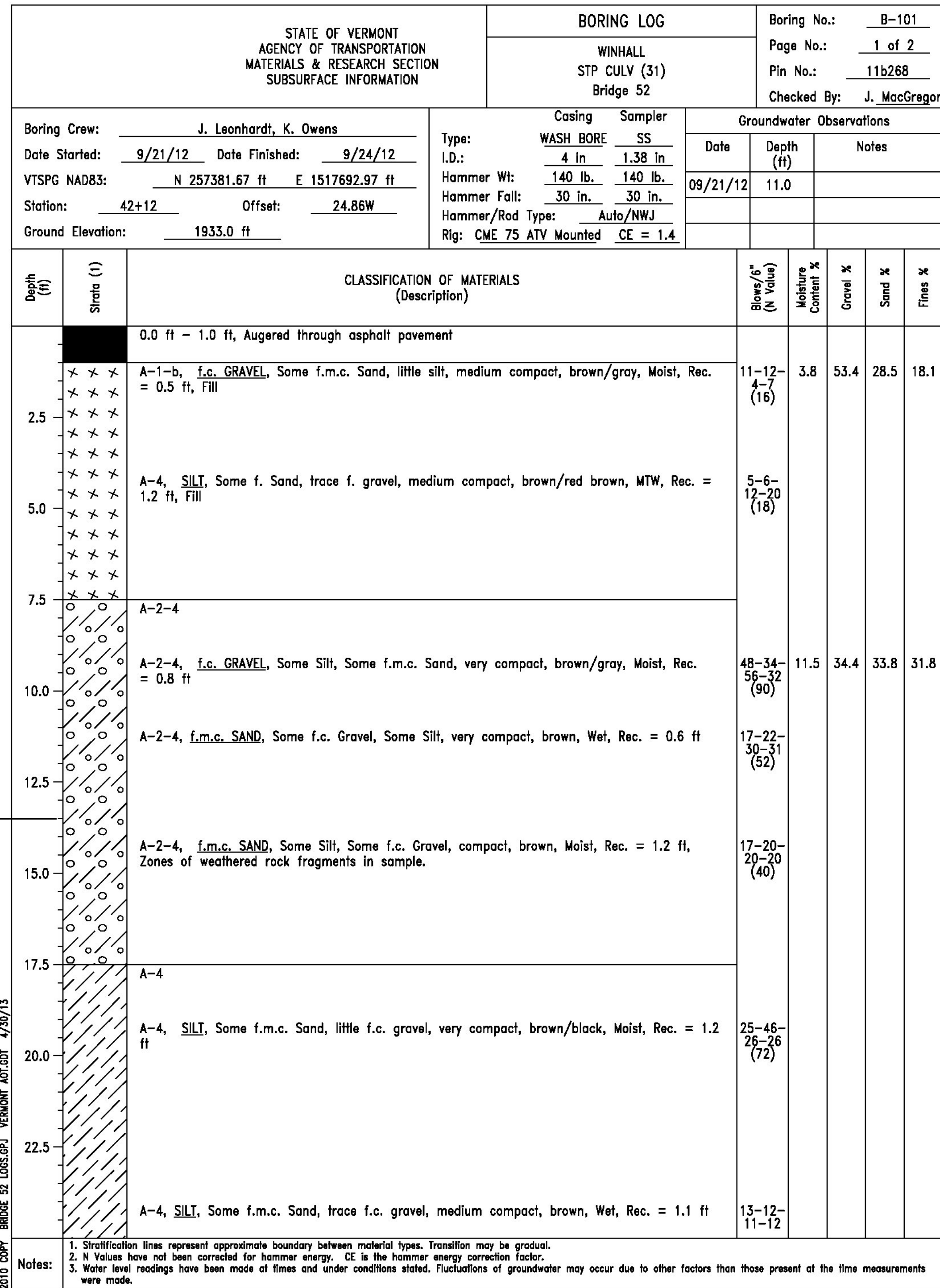
⊕ BRIDGE BORING

PROJECT NAME: WINHALL  
PROJECT NUMBER: STP CULV(31)

FILE NAME: zllb268bdr_bor_pl_br52.dgn  
PROJECT LEADER: M. CHENETTE  
DESIGNED BY: J. HUNGERFORD  
BORING PLAN - BR52

PLOT DATE: 9/25/2014  
DRAWN BY: L. BUXTON  
CHECKED BY: M. CHENETTE  
SHEET 44 OF 60





PROJECT NAME: WINHALL  
 PROJECT NUMBER: STP CULV(31)

FILE NAME: z11b268bor_log_br52.dgn PLOT DATE: 9/25/2014  
 PROJECT LEADER: M. CHENETTE DRAWN BY: L. BUXTON  
 DESIGNED BY: VTRANS CHECKED BY: VTRANS  
 BORING LOG I- BR52 SHEET 45 OF 60



STATE OF VERMONT AGENCY OF TRANSPORTATION MATERIALS & RESEARCH SECTION SUBSURFACE INFORMATION		BORING LOG		Boring No.: B-102			
		WINHALL STP CULV (31) Bridge 52		Page No.: 1 of 2			
				Pin No.: 11b268			
				Checked By: J. MacGregor			
Boring Crew: J. Leonhardt, K. Owens		Casing Sampler		Groundwater Observations			
Date Started: 9/21/12 Date Finished: 9/21/12		Type: WASH BORE SS		Date Depth Notes			
VTSPG NAD83: N 257343.66 ft E 1517727.78 ft		I.D.: 4 in 1.38 in		09/21/12 11.0			
Station: 41+77 Offset: 13.7E		Hammer Wt: 140 lb. 140 lb.					
Ground Elevation: 1933.5 ft		Hammer Fall: 30 in. 30 in.					
		Hammer/Rod Type: Auto/NWJ					
		Rig: CME 75 ATV Mounted CE = 1.4					
Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
0.0		0.0 ft - 0.5 ft, Augered through asphalt pavement.					
2.5		A-1-b, f.m.c. SAND, Some f.c. Gravel, trace silt, compact, brown/gray, Moist, Rec. = 0.4 ft, Fill	11-16-18 (34)				
5.0		A-2-4, f.m.c. SAND, Some Silt, Some f.c. Gravel, medium compact, Dark brown, MTW, Rec. = 0.5 ft, Fill	7-6-8-9 (14)	14.3	29.7	36.8	33.5
10.0		A-4, SILT, Some f.m.c. Sand, little f.c. gravel, trace organics, stiff, brown/gray, MTW, Rec. = 0.4 ft, Fill	6-2-12-4 (14)				
12.5		A-2-4, f.m.c. SAND, Some Silt, Some f.c. Gravel, trace f. gravel, compact, gray, Wet, Rec. = 1.3 ft	11-15-19-39 (34)	12.0	28.4	36.9	34.7
15.0		A-2-4, Similar Soil, Rec. = 1.1 ft	26-24-24-24 (48)	12.5	35.4	40.1	24.5
20.0		A-2-4, Similar Soil, Rec. = 6.0 ft	32-26-20-15 (46)				
22.5		A-2-4, f.m.c. SAND, Some Silt, little f.c. gravel, very compact, brown, Wet, Rec. = 0.6 ft	36-37-27-21				
Notes: 1. Stratification lines represent approximate boundary between material types. Transition may be gradual. 2. N Values have not been corrected for hammer energy. CE is the hammer energy correction factor. 3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.							

BOTTOM OF CULVERT  
APPROX. EL. 1920.25

2010 COPY, BRIDGE 52 LOGS.GPJ, VERMONT AOT/EDT 4/29/13

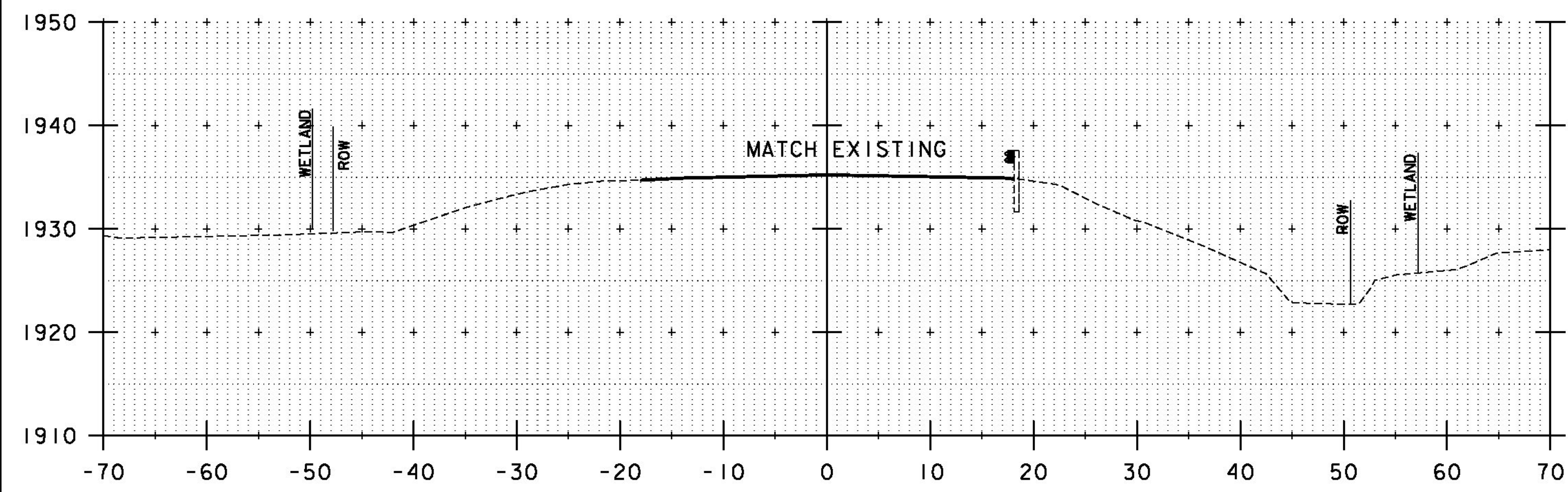
STATE OF VERMONT AGENCY OF TRANSPORTATION MATERIALS & RESEARCH SECTION SUBSURFACE INFORMATION		BORING LOG		Boring No.: B-102			
		WINHALL STP CULV (31) Bridge 52		Page No.: 2 of 2			
				Pin No.: 11b268			
				Checked By: J. MacGregor			
Boring Crew: J. Leonhardt, K. Owens		Casing Sampler		Groundwater Observations			
Date Started: 9/21/12 Date Finished: 9/21/12		Type: WASH BORE SS		Date Depth Notes			
VTSPG NAD83: N 257343.66 ft E 1517727.78 ft		I.D.: 4 in 1.38 in		09/21/12 11.0			
Station: 41+77 Offset: 13.7E		Hammer Wt: 140 lb. 140 lb.					
Ground Elevation: 1933.5 ft		Hammer Fall: 30 in. 30 in.					
		Hammer/Rod Type: Auto/NWJ					
		Rig: CME 75 ATV Mounted CE = 1.4					
Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
27.5			(64)				
30.0		A-2-4, becomes compact, Rec. = 0.9 ft	26-19-21-54 (40)				
32.5							
35.0		A-2-4, becomes very compact, Rec. = 1.0 ft	86-100-60-64 (160)				
35.0		A-4, SILT, little f.m.c. sand, very compact, brown, Wet					
Hole stopped @ 36.0 ft							
Remarks: Groundwater observations made during drilling may not represent static conditions. Rollerbit grinding at 3'. Hard difficult drilling 14' to completion.							
Notes: 1. Stratification lines represent approximate boundary between material types. Transition may be gradual. 2. N Values have not been corrected for hammer energy. CE is the hammer energy correction factor. 3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.							

2010 COPY, BRIDGE 52 LOGS.GPJ, VERMONT AOT/EDT 4/29/13

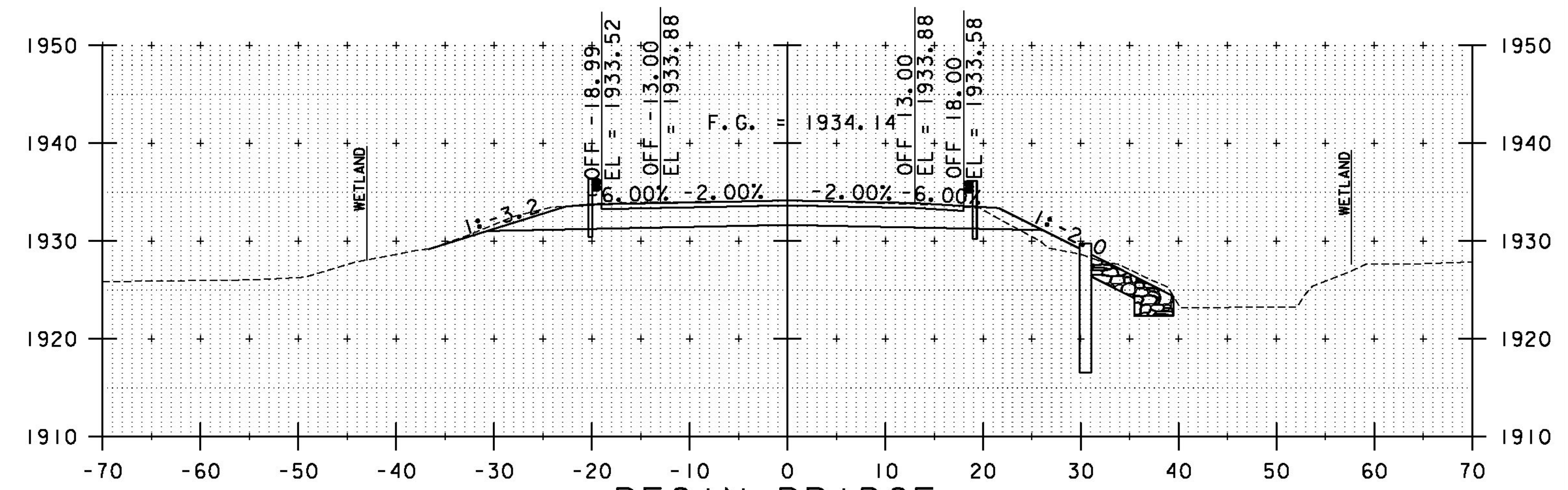
PROJECT NAME: WINHALL  
PROJECT NUMBER: STP CULV(31)

FILE NAME: z11b268bor_log_br52.dgn PLOT DATE: 9/25/2014  
PROJECT LEADER: M. CHENETTE DRAWN BY: L. BUXTON  
DESIGNED BY: VTRANS CHECKED BY: VTRANS  
BORING LOG 2 - BR52 SHEET 46 OF 60

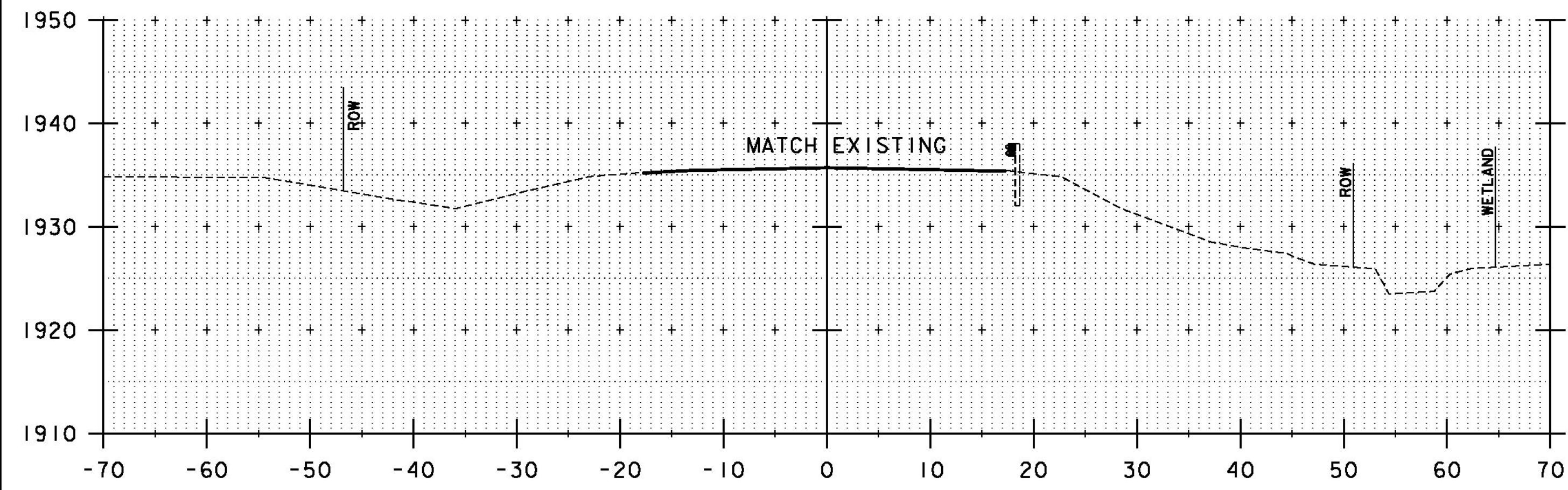




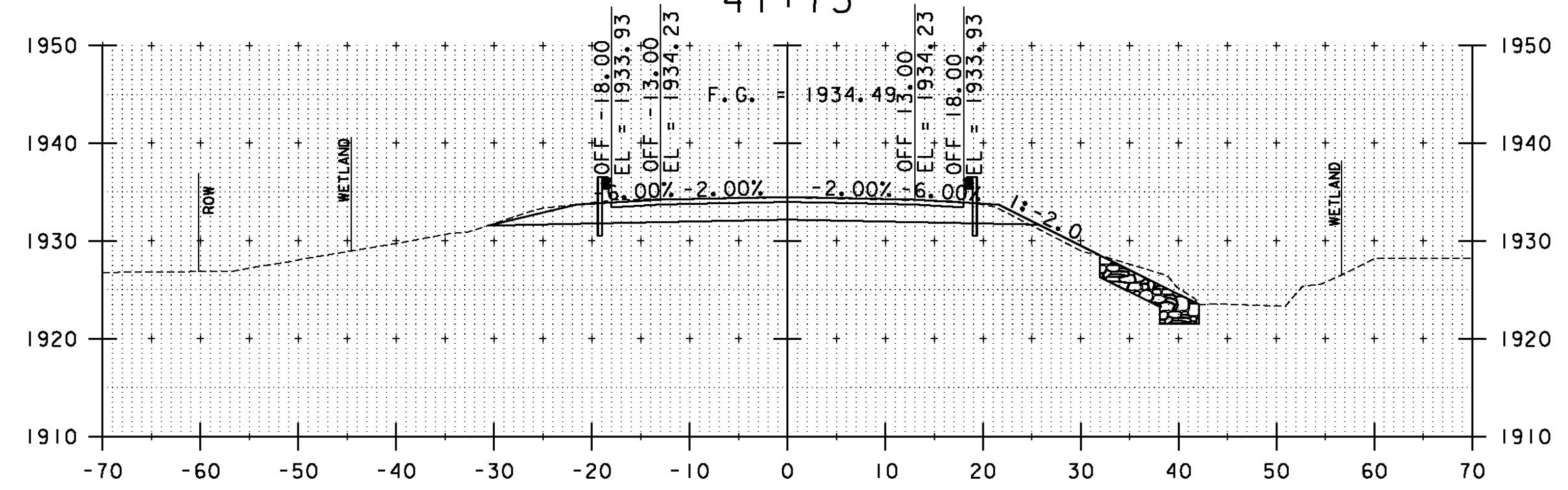
41+00



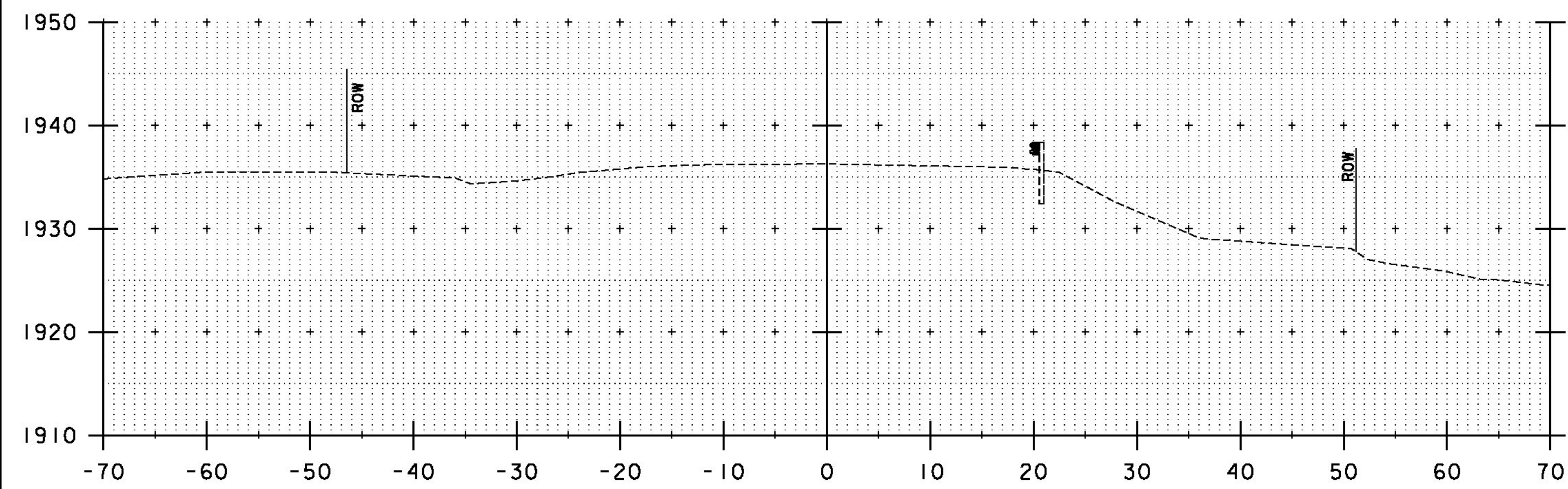
BEGIN BRIDGE  
41+87  
41+75



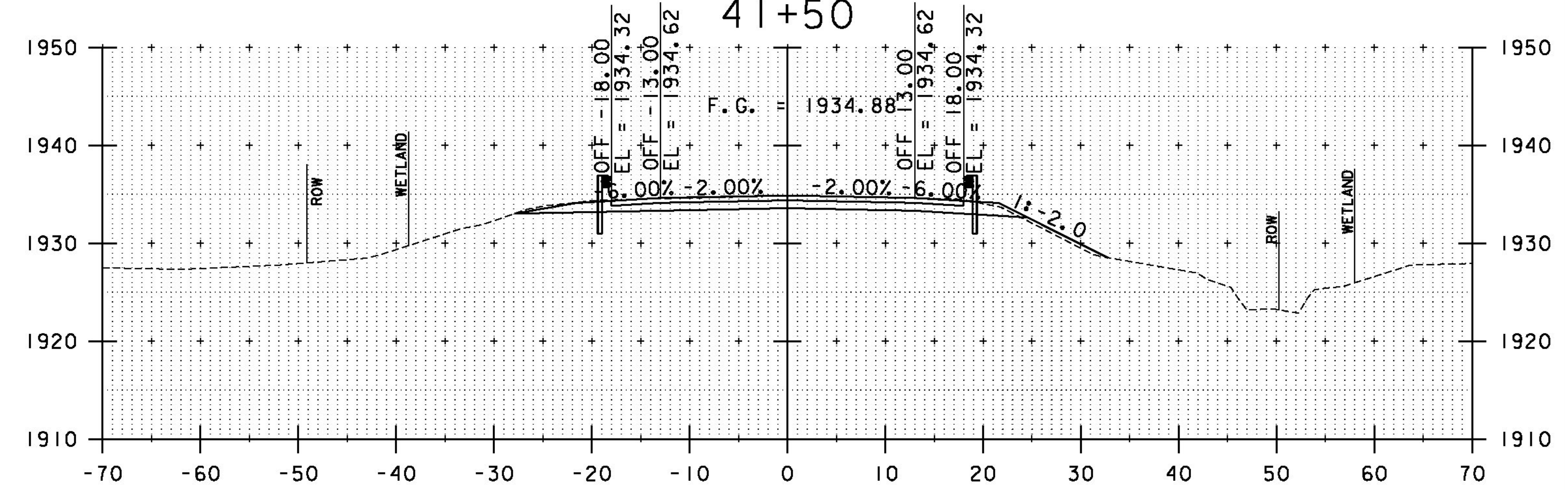
40+75



RESUME PROJECT  
41+55  
41+50



BEGIN APPROACH  
40+55  
40+50



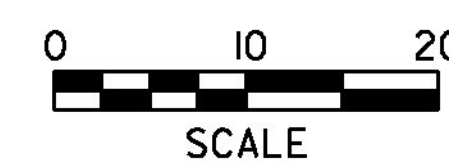
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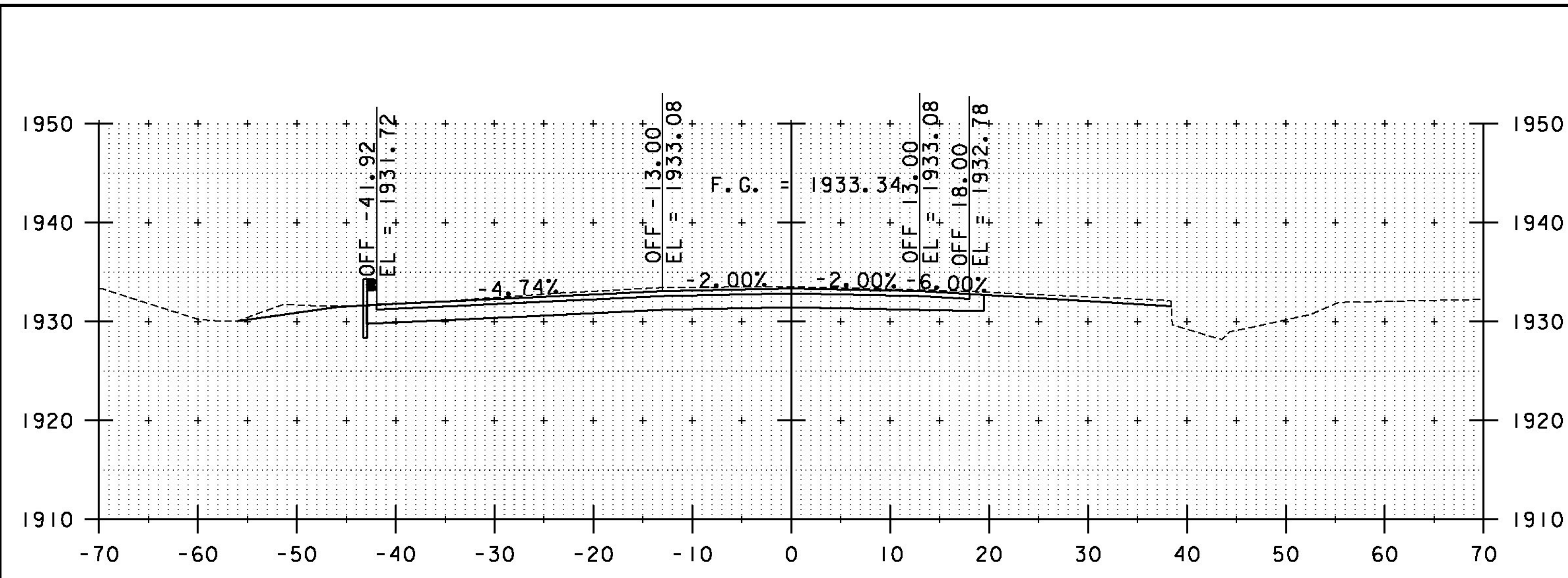
STA. 40+50 TO STA. 41+75

PROJECT NAME: WINHALL  
PROJECT NUMBER: STP CULV(3I)

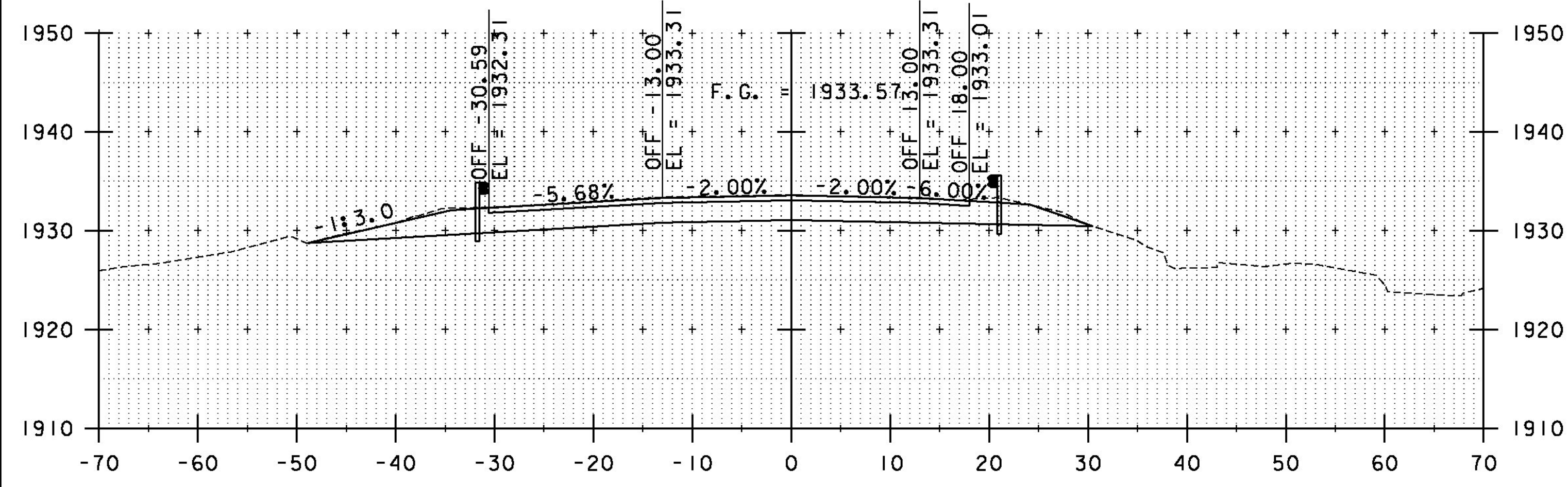
FILE NAME: z1lb268xs_br52.dgn  
PROJECT LEADER: M. CHENETTE  
DESIGNED BY: J. HUNGERFORD  
ROADWAY CROSS SECTIONS - RXSI - BR52

PLOT DATE: 9/25/2014  
DRAWN BY: L. BUXTON  
CHECKED BY: M. CHENETTE  
SHEET 47 OF 60

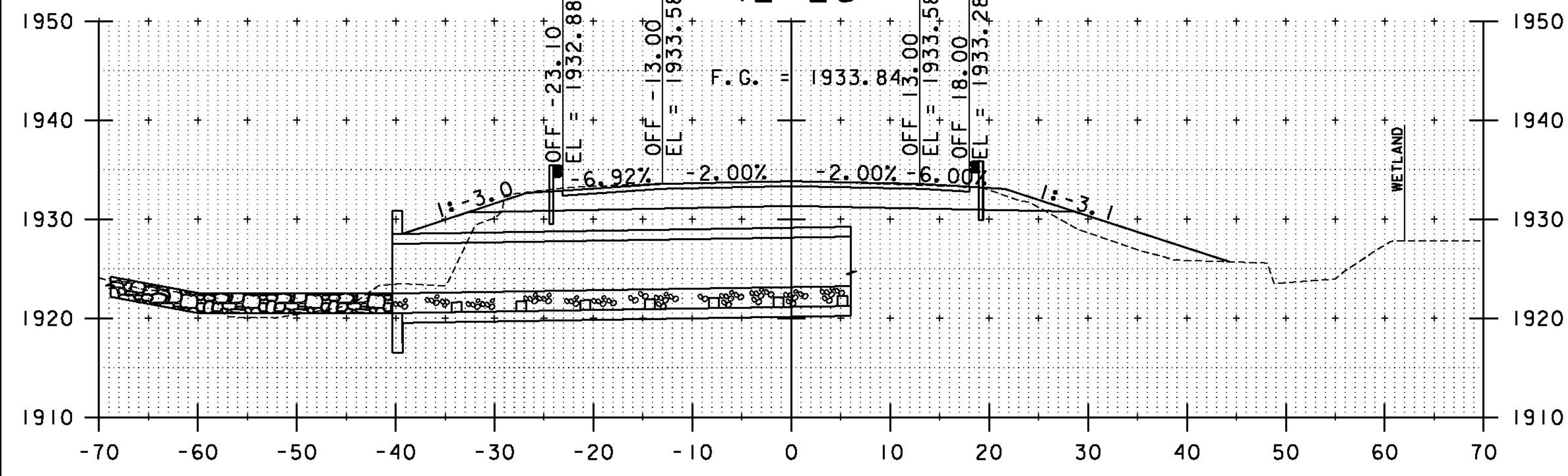




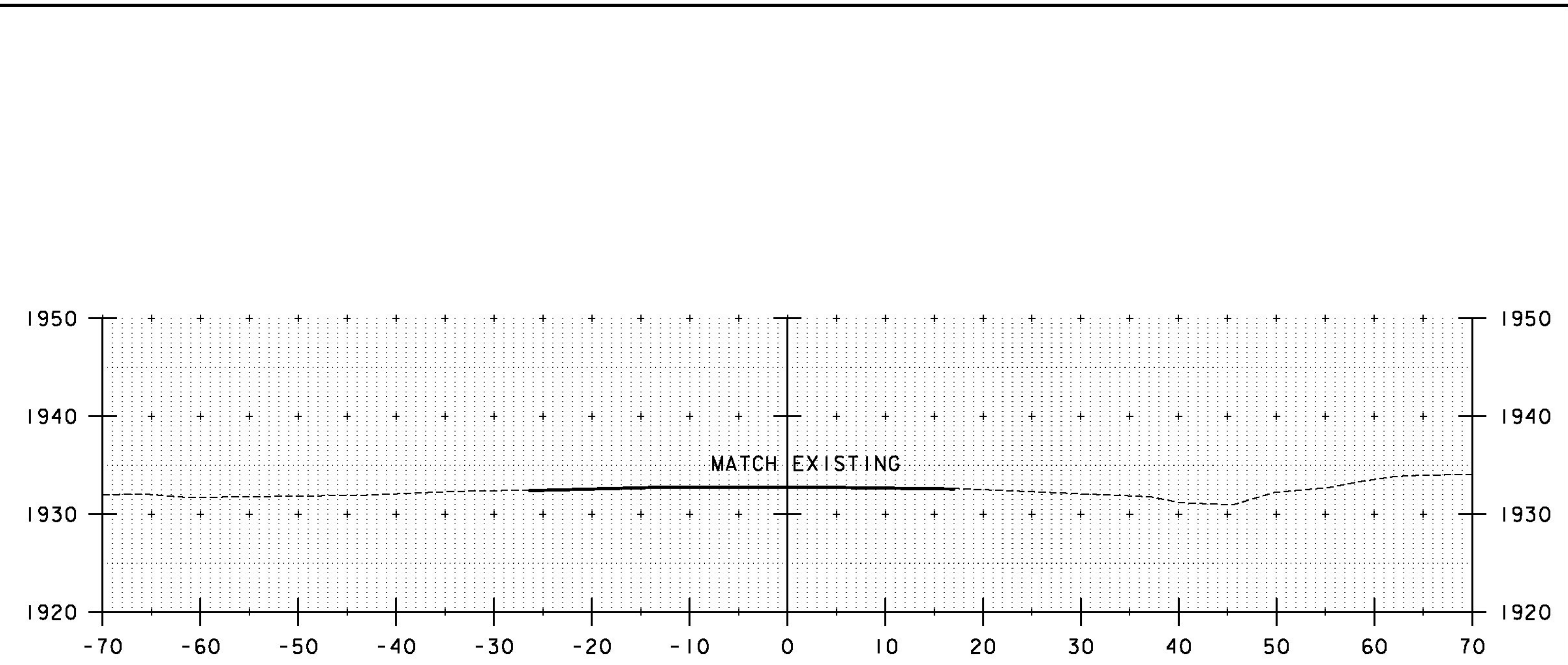
42+50



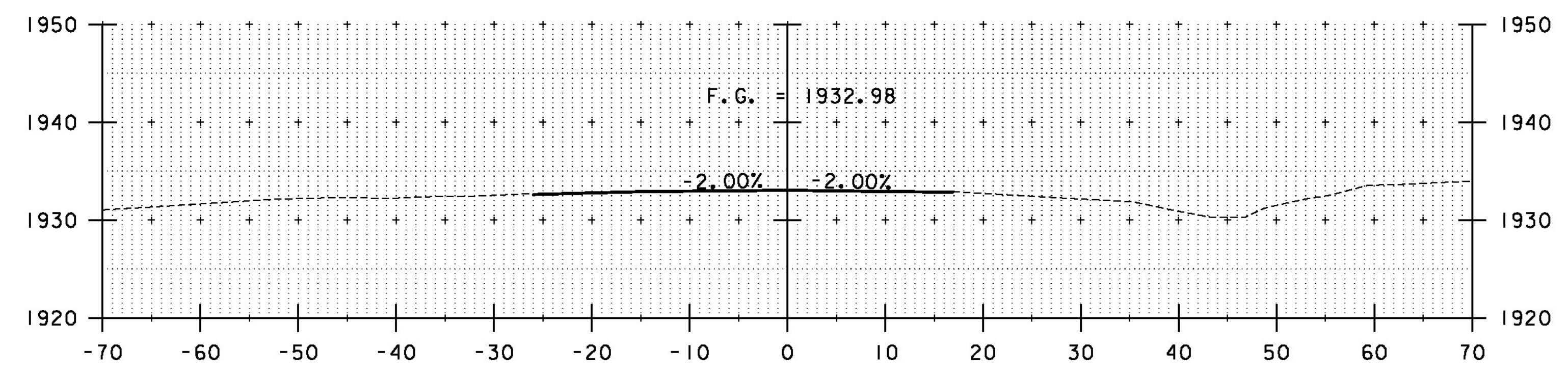
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42+35  
42+25



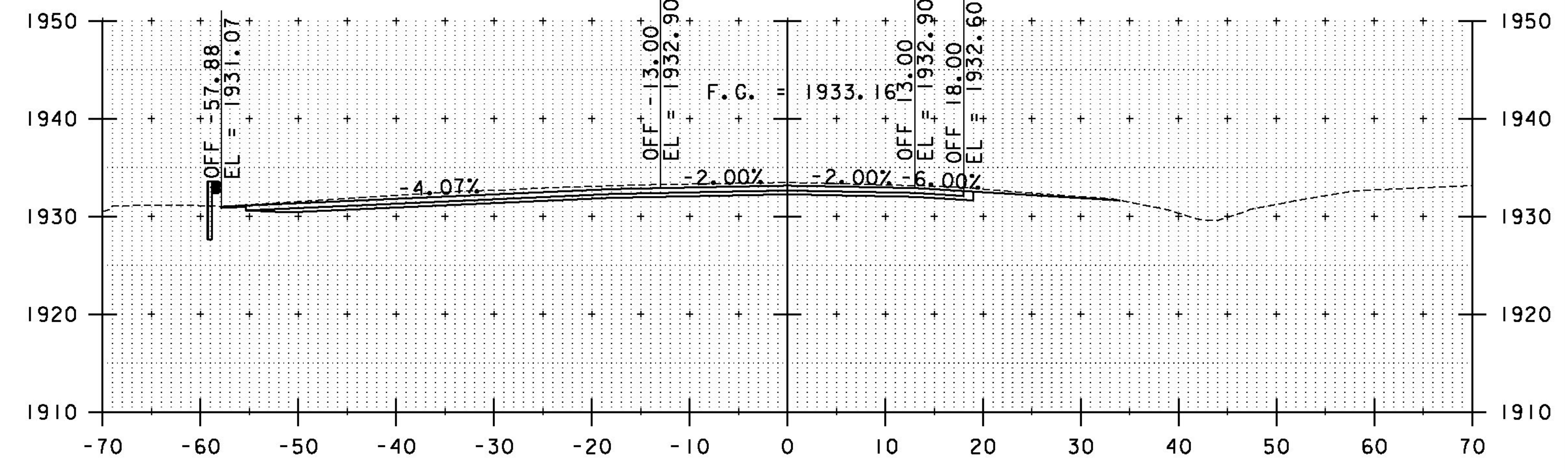
END BRIDGE  
42+01.43  
42+00



END APPROACH  
43+91



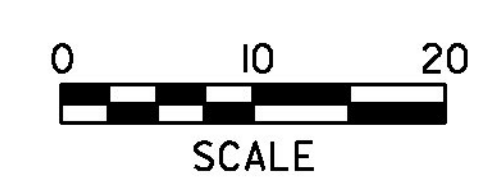
43+00



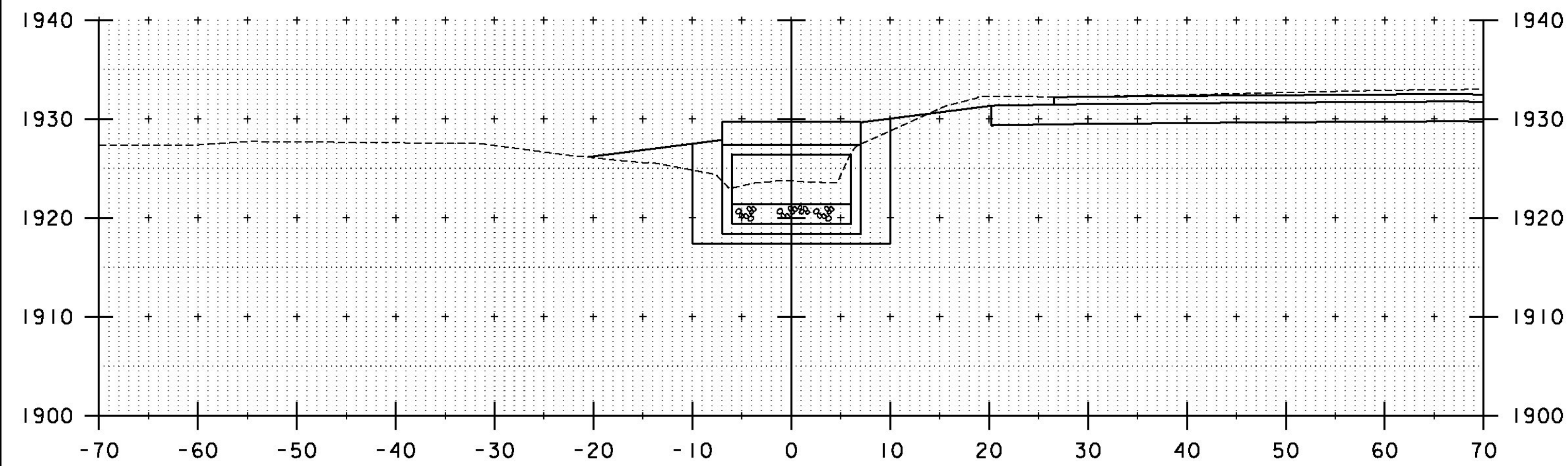
42+75

STA. 42+00 TO STA. 43+91

PROJECT NAME:	WINHALL	PLOT DATE:	9/25/2014
PROJECT NUMBER:	STP CULV(31)	DRAWN BY:	L. BUXTON
FILE NAME:	zlib268xs_br52.dgn	CHECKED BY:	M. CHENETTE
PROJECT LEADER:	M. CHENETTE	ROADWAY CROSS SECTIONS -	RXS2 - BR52
DESIGNED BY:	J. HUNGERFORD	SHEET	48 OF 60



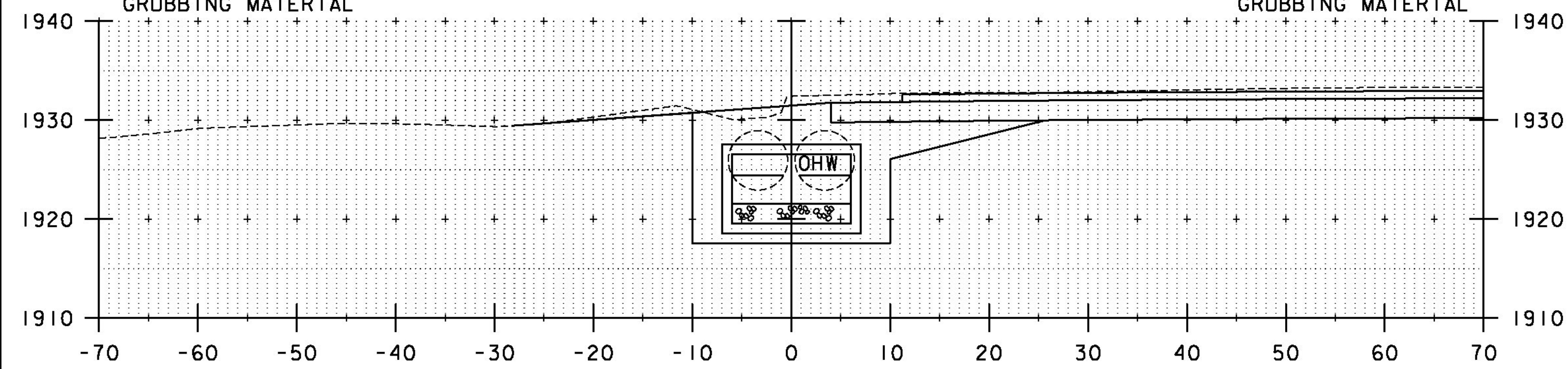




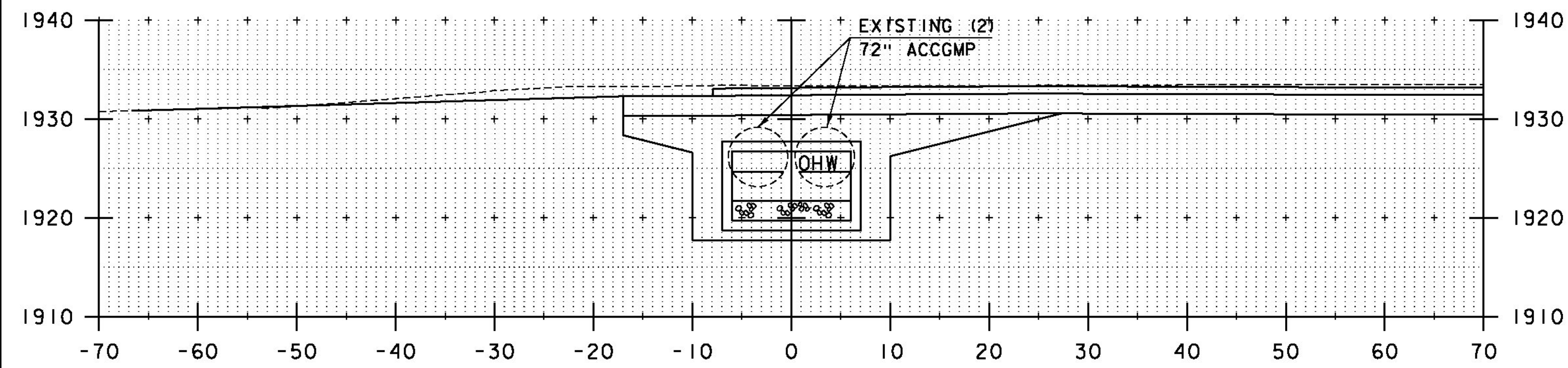
STA. 21+50 LT  
 RESUME UNCLASSIFIED CHANNEL EXCAVATION  
 GEOTEXTILE UNDER STONE FILL  
 STONE FILL, TYPE II  
 GRUBBING MATERIAL

21+50

STA. 21+50 RT  
 RESUME UNCLASSIFIED CHANNEL EXCAVATION  
 GEOTEXTILE UNDER STONE FILL  
 STONE FILL, TYPE II  
 GRUBBING MATERIAL

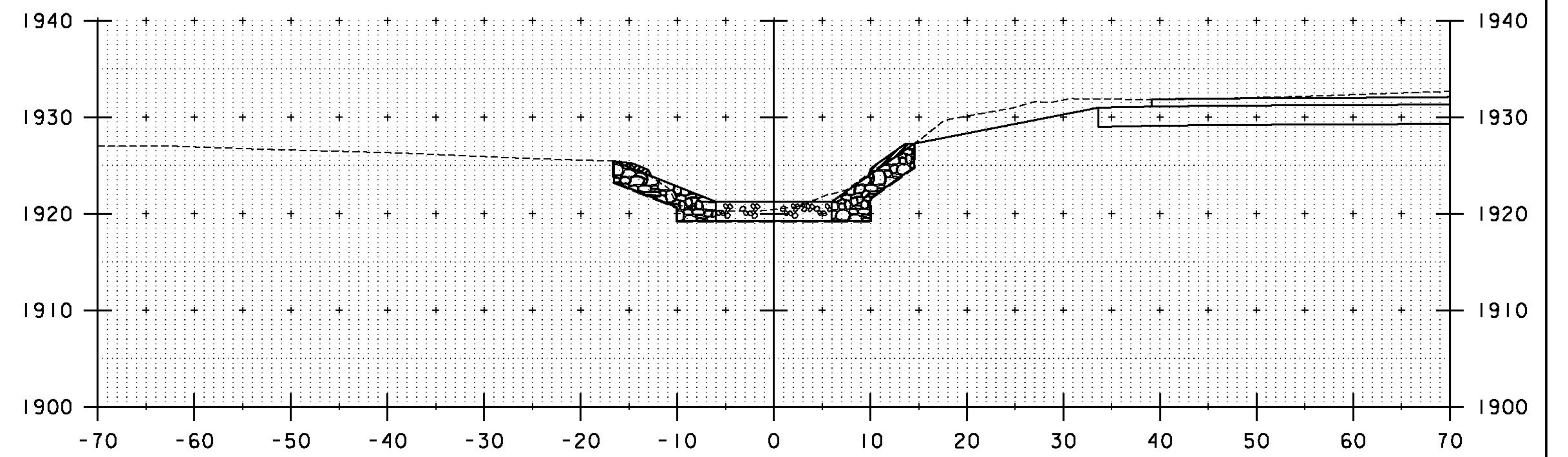


21+40



21+30

EXISTING (2)  
 72" ACCGMP



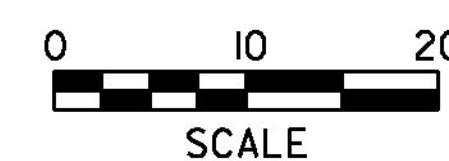
21+60

STA. 21+30 TO STA. 21+60

PROJECT NAME: WINHALL  
 PROJECT NUMBER: STP CULV(31)

FILE NAME: z11b268xs_br52.dgn  
 PROJECT LEADER: M. CHENETTE  
 DESIGNED BY: J. HUNGERFORD  
 CHANNEL CROSS SECTIONS - CXS2 - BR52

PLOT DATE: 9/25/2014  
 DRAWN BY: L. BUXTON  
 CHECKED BY: M. CHENETTE  
 SHEET 50 OF 60





## EPSC PLAN NARRATIVE

### 1.1 PROJECT DESCRIPTION

THIS PROJECT INVOLVES THE REPLACEMENT OF BRIDGE #52, RELATED CHANNEL WORK AND INCIDENTALS. BRIDGE #52 CONSISTS OF 2 EACH EXISTING 72" CORRUGATED STEEL CULVERTS, WHICH WILL BE REPLACED WITH A 12' SPAN PRECAST CONCRETE BOX CULVERT TO CONVEY AN UNNAMED TRIBUTARY BENEATH VT ROUTE 30. BRIDGE #52 IS LOCATED IN THE TOWN OF WINHALL ON VT ROUTE 30, 0.05 MILES SOUTH OF THE JUNCTION WITH VERMONT ROUTE 11.

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

TOTAL AREA OF DISTURBANCE AS SHOWN ON THE ATTACHED EPSC PLAN IS APPROXIMATELY 0.50 ACRES.

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

### 1.2 SITE INVENTORY

#### 1.2.1 TOPOGRAPHY

THE TOPOGRAPHY OF THE AREA IS A MOUNTAIN DRAINAGE BASIN THAT IS MOSTLY FORESTED WITH A FEW SMALL PONDS. VT ROUTE 30 AND THE ACCESS ROAD TO VT ROUTE 11 ARE WITHIN THE PROJECT SITE. THERE ARE OVERHEAD UTILITIES THAT WILL BE RELOCATED TO NOT IMPACT THE PROJECT.

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

THE WATER SOURCE ON THE PROJECT IS AN UNNAMED TRIBUTARY. THE TOTAL CONTRIBUTING DRAINAGE AREA IS 0.7 SQ. MI. DUE TO THE NATURE OF THE SURROUNDING TERRAIN THE PROJECT SITE COULD RECEIVE RUNOFF FROM THE SURROUNDING SLOPES, ROADWAY DITCHES, AND THE ROADWAY OVER TOP OF THE CULVERT. THERE ARE CLASS II WETLANDS ON THE EAST AND WEST SIDES OF THE PROJECT AT THE INLET AND OUTLET. SEE THE PROJECT IMPACTS PLANS.

#### 1.2.3 VEGETATION

THE VEGETATION IN THE PROJECT AREA CONSISTS OF FOREST LAND WITH SMALL TREES AND BRUSH ON THE BANKS OF THE STREAM. THE IMPACT TO VEGETATION WILL BE LIMITED TO THAT WHICH IS RELATED TO THE EXCAVATION REQUIRED FOR THE INSTALLATION OF THE CULVERT, HEADWALLS, WINGWALLS, STONE FILL, AND TEMPORARY ACCESS. UPON PROJECT COMPLETION, THE CHANNEL AND DISTURBED AREAS WITH SLOPES GREATER THAN 2:1 WILL BE ARMORED WITH STONE FILL TYPE II AT THE INLET AND AT THE OUTLET AS SPECIFIED ON THE PLANS. DISTURBED VEGETATION WILL BE REESTABLISHED WITH STANDARD SEED AND MULCH PRACTICES.

#### 1.2.4 SOILS

ALL SOIL DATA CAME FROM THE U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE FOR THE COUNTY OF ORLEANS, VERMONT. SOILS ON THE PROJECT SITE ARE ADRIAN AND SACO SOILS, 0 TO 2 PERCENT SLOPES, "K FACTOR" = 0.15. THE SOIL IS CONSIDERED LOW EROSION POTENTIAL DUE TO THE K-VALUE.

NOTE: K-VALUES GENERALLY INDICATE THE FOLLOWING:

0.0-0.23 = LOW EROSION POTENTIAL  
0.24-0.36 = MODERATE EROSION POTENTIAL  
0.37 AND HIGHER = HIGH EROSION POTENTIAL

#### 1.2.5 SENSITIVE RESOURCE AREAS

CRITICAL HABITATS: NO  
HISTORICAL OR ARCHEOLOGICAL AREAS: NO  
PRIME AGRICULTURAL LAND: NO  
THREATENED AND ENDANGERED SPECIES: NO  
WATER RESOURCE: UNNAMED TRIBUTARY  
WETLANDS: THERE ARE WETLANDS AT THE INLET AND OUTLET OF THE STRUCTURE. SEE THE PROJECT IMPACTS PLANS.

### 1.3 RISK EVALUATION

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

### 1.4 EROSION PREVENTION AND SEDIMENT CONTROL

THE EROSION CONTROL PLANS ARE MEANT AS A GUIDELINE FOR PREVENTING EROSION AND CONTROLLING SEDIMENT TRANSPORT. THE PRINCIPLES OUTLINED IN THIS NARRATIVE CONSIST OF APPLYING MEASURES THROUGHOUT CONSTRUCTION OF THE PROJECT IN ORDER TO MINIMIZE SEDIMENT TRANSPORT TO THE RECEIVING WATERS. THE MEASURES INCLUDE STABILIZATION AND STRUCTURAL PRACTICES, STORM WATER CONTROLS AND OTHER POLLUTION PREVENTION PRACTICES. THEY HAVE BEEN PROPOSED BY THE DESIGNER AS A BASIS FOR PROTECTING RESOURCES AND WILL NEED TO BE BUILT UPON BASED ON THE SPECIFIC MEANS AND METHODS OF THE CONTRACTOR. REFER TO THE LOW RISK SITE HANDBOOK AND APPROPRIATE DETAIL SHEETS FOR SPECIFIC GUIDANCE AND CONSTRUCTION DETAILING. THE CONTRACTOR IS RESPONSIBLE FOR DEVELOPING AND SUBMITTING AN EPSC PLAN IN ACCORDANCE WITH SECTION 652 OF THE SPECIAL PROVISIONS.

IN ADDITION, THE CONTRACTOR SHALL DESIGN AND IMPLEMENT A TEMPORARY STREAM DIVERSION, INCLUDING EPSC MEASURES IN ACCORDANCE WITH ITEM 900.645, SPECIAL PROVISION (TEMPORARY RELOCATION OF STREAM).

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

#### 1.4.1 MARK SITE BOUNDARIES

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

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

#### 1.4.2 LIMIT DISTURBANCE AREA

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

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

#### 1.4.3 SITE ENTRANCE/EXIT STABILIZATION

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

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

#### 1.4.4 INSTALL SEDIMENT BARRIERS

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

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

#### 1.4.5 DIVERT UPLAND RUNOFF

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

THE PROJECT AREA IS RELATIVELY FLAT WITH MINIMAL OFF-SITE RUNOFF FLOWING THROUGH THE SITE. THEREFORE DIVERSION MEASURES WILL NOT BE NECESSARY.

#### 1.4.6 SLOW DOWN CHANNELIZED RUNOFF

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

STONE CHECK DAMS WILL BE INSTALLED AS NEEDED AND AS DIRECTED BY THE ENGINEER.

#### 1.4.7 CONSTRUCT PERMANENT CONTROLS

THERE ARE NO PERMANENT STORMWATER TREATMENT DEVICES TO BE INSTALLED WITH THIS PROJECT.

#### 1.4.8 STABILIZE EXPOSED SOILS DURING CONSTRUCTION

ALL AREAS OF DISTURBANCE MUST HAVE TEMPORARY STABILIZATION IN PLACE WITHIN 48 HOURS OF DISTURBANCE OR IN ACCORDANCE WITH THE CONSTRUCTION GENERAL PERMIT 3-9020 AUTHORIZATION.

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

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

#### 1.4.9 WINTER STABILIZATION

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

#### 1.4.10 STABILIZE SOIL AT FINAL GRADE

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

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

#### 1.4.11 DE-WATERING ACTIVITIES

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

SEDIMENT CONTAINMENT BAGS (FILTER BAGS) FOR HEADWALL WORK SHALL BE USED AS NECESSARY AND AS DIRECTED BY THE ENGINEER. SEE SHEET 55 FOR DETAIL.

#### 1.4.12 INSPECT YOUR SITE

INSPECT THE PROJECT SITE BASED ON SPECIAL PROVISION REQUIREMENTS.

### 1.5 SEQUENCE AND STAGING

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

#### 1.5.1 OFF-SITE ACTIVITIES



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

PROJECT NAME: WINHALL  
PROJECT NUMBER: STP_CULV(31)

FILE NAME: z11b268ero_narr_BR52.dgn  
PROJECT LEADER: M. CHENETTE  
DESIGNED BY: J. HUNGERFORD  
EPSC NARRATIVE - ECN 1 - BR52

PLOT DATE: 9/25/2014  
DRAWN BY: L. BUXTON  
CHECKED BY: M. CHENETTE  
SHEET 52 OF 60



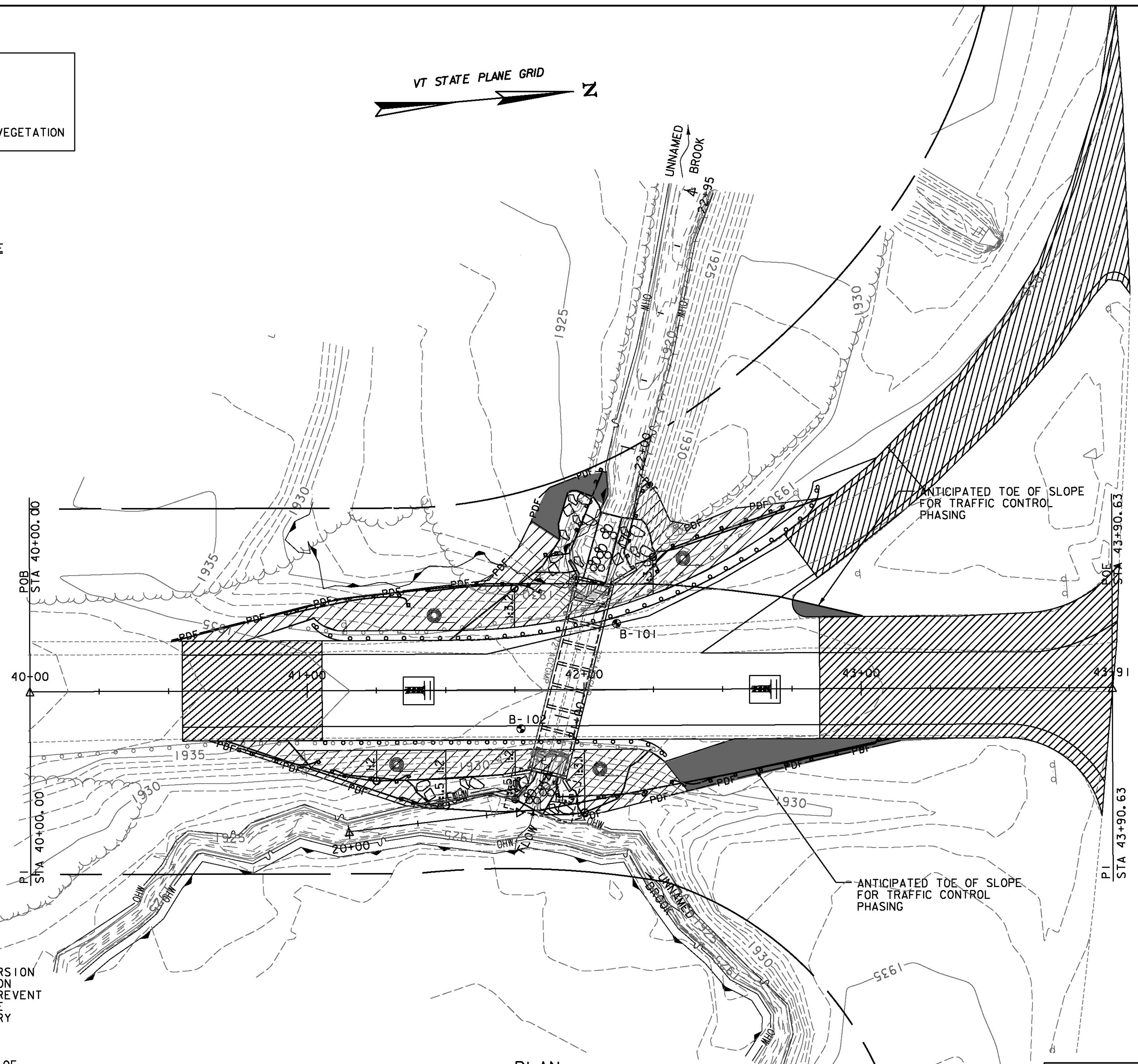
LEGEND	
	VEHICLE TRACKING PAD
	DISTURBED AREAS REQUIRING VEGETATION

**ITEM 653.55 PROJECT DEMARCATION FENCE**

STA. 40+54.00 - 43+35.00, RT.  
 STA. 40+70.00 - 42+85.00, LT.

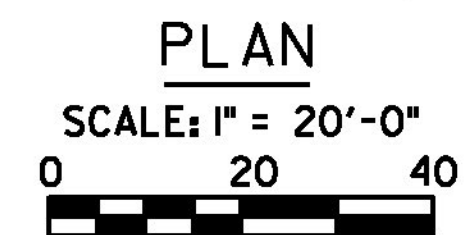
**ITEM 649.515 GEOTEXTILE FOR SILT FENCE**

SEE LOCATIONS, THIS SHEET.



**NOTES:**

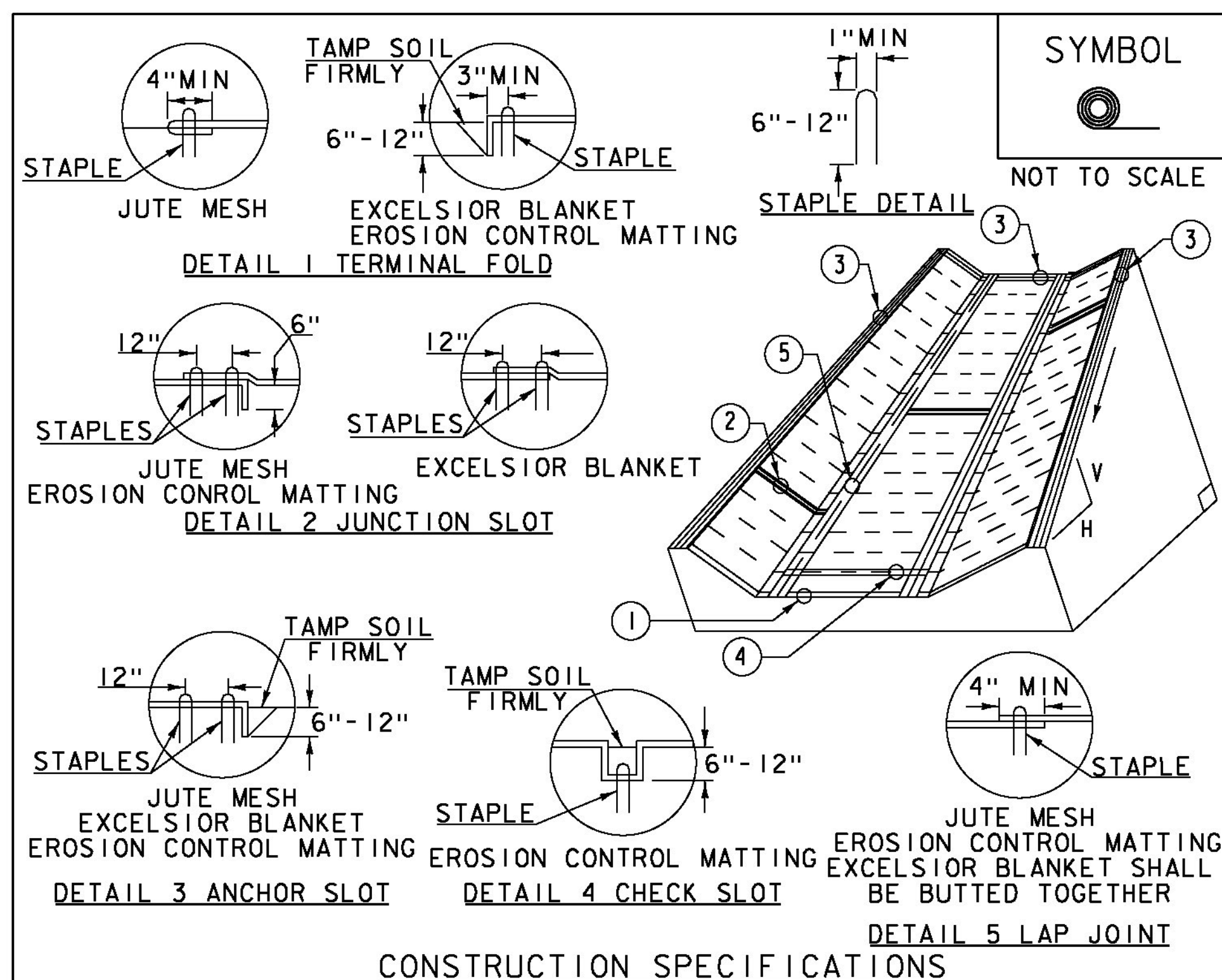
1. THE CONTRACTOR IS RESPONSIBLE FOR DEVELOPING A TEMPORARY STREAM DIVERSION PLAN. THE PLAN SHALL INCLUDE EROSION CONTROL MEASURES AS NECESSARY TO PREVENT AND CONTROL SEDIMENT DISCHARGE. SEE SPECIAL PROVISION 900.645 (TEMPORARY RELOCATION OF STREAM).
2. DEWATERING ACTIVITIES: ANY FILTER BAG OR DEWATERING ENCLOSURE FOR DISCHARGE OF DEWATERING ACTIVITIES SHALL BE LOCATED A MINIMUM OF 50 FEET FROM THE STREAM UNLESS APPROVED BY THE ENGINEER. THE FILTERING AREA SHALL BE LOCATED WITHIN THE EXISTING RIGHT-OF-WAY AND IF NECESSARY MAY BE LOCATED WITHIN A CLOSED PORTION OF THE EXISTING ROADWAY AND/OR SHOULDER.



PROJECT NAME: WINHALL  
 PROJECT NUMBER: STP CULV(31)

FILE NAME: zllb268bdr_EPSC_br52.dgn  
 PROJECT LEADER: M. CHENETTE  
 DESIGNED BY: J. HUNGERFORD  
 EPSC CONST. SITE PLAN - ECPI - BR52

PLOT DATE: 9/25/2014  
 DRAWN BY: L. BUXTON  
 CHECKED BY: M. CHENETTE  
 SHEET 53 OF 60



**CONSTRUCTION SPECIFICATIONS**

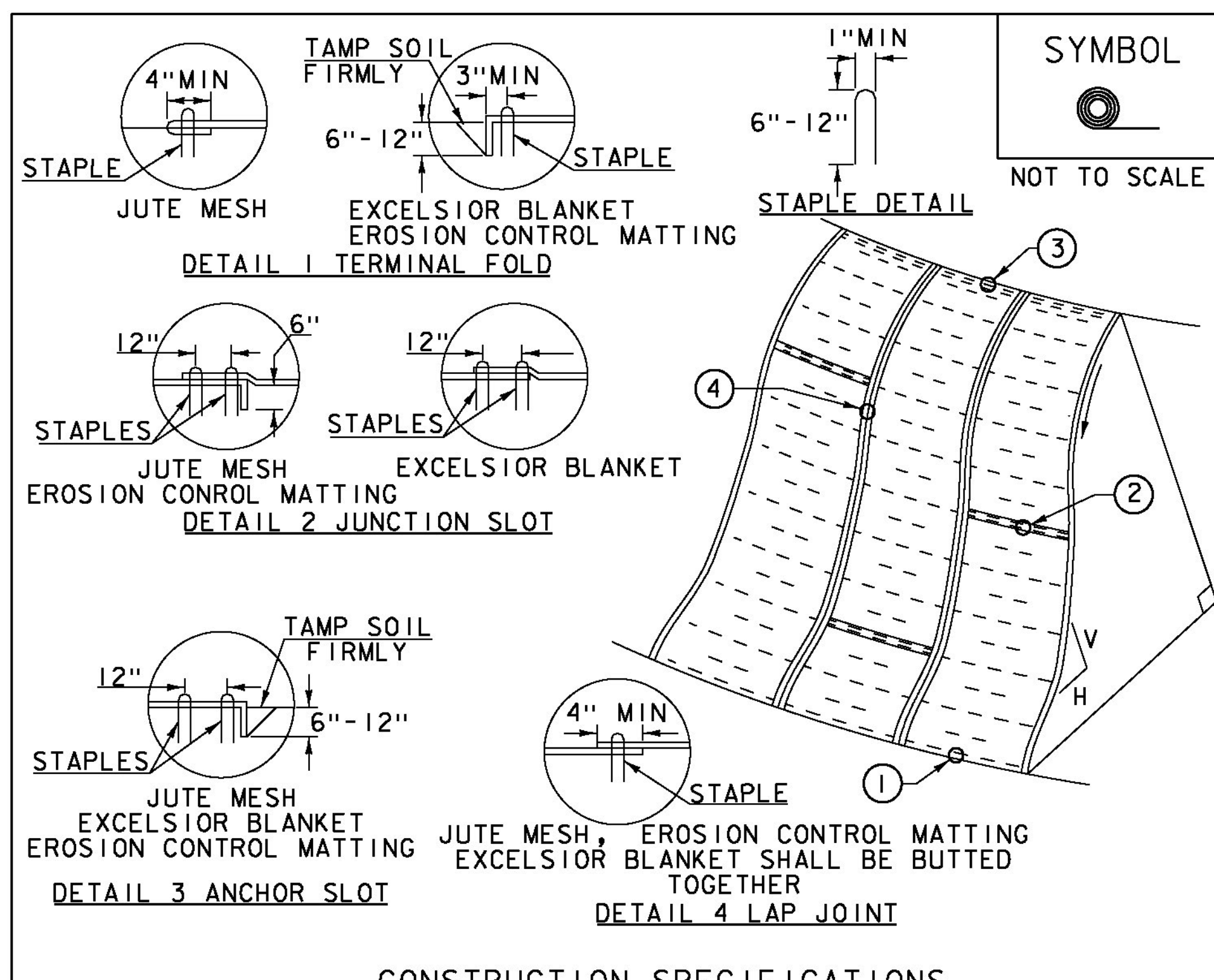
1. EROSION MATTING, CHECK SLOTS, SHALL BE SPACED IN DITCH CHANNEL SO THAT ONE OCCURS WITHIN EACH 50' ON SLOPES OF MORE THAN 4% AND LESS THAN 6%. ON SLOPES OF 6% OR MORE, THEY SHALL BE SPACED SO THAT ONE OCCURS WITHIN EACH 25'.
2. APPLY FERTILIZER, LIME SEED PRIOR TO PLACING MATTING.
3. STAPLES ARE TO BE PLACED ALTERNATELY, IN COLUMNS APPROXIMATELY 2' APART AND IN ROWS APPROXIMATELY 3' APART. APPROXIMATELY 175 STAPLES ARE REQUIRED PER 4' X 225' ROLL OF MATERIAL AND 125 STAPLES ARE REQUIRED PER 4' X 150' ROLL OF MATERIAL.
4. DISTURBED AREAS SHALL BE SMOOTHLY GRADED. EROSION CONTROL MATERIAL SHALL BE PLACED LOOSELY OVER GROUND SURFACE. DO NOT STRETCH.
5. ALL TERMINAL ENDS AND TRANSVERSE LAPS SHALL BE STAPLED AT APPROXIMATELY 12" INTERVALS.

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

**ROLLED EROSION CONTROL PRODUCT (RECP) DITCH**

NOTES:  
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- "FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.  
THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 653 AND AS SHOWN IN THE PLANS FOR TEMPORARY EROSION MATTING (PAY ITEM 653.20) OR PERMANENT EROSION MATTING (PAY ITEM 653.21).

REVISIONS		
MARCH 8, 2007	JMF	
APRIL 16, 2007	WHF	
JANUARY 13, 2009	WHF	



**CONSTRUCTION SPECIFICATIONS**

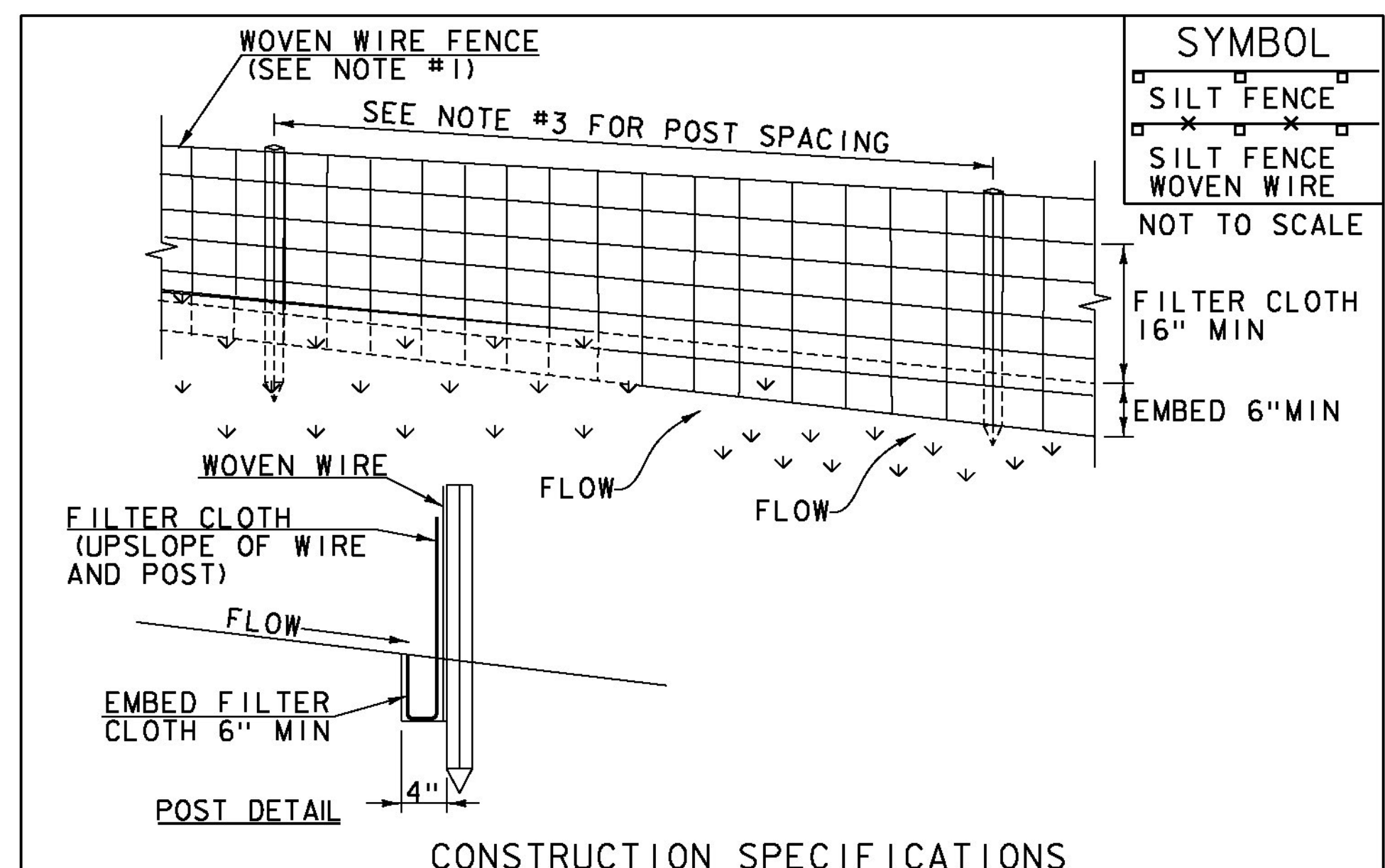
1. APPLY TO SLOPES GREATER THAN 3H:1V OR WHERE NECESSARY TO AID IN ESTABLISHING VEGETATION.
2. APPLY FERTILIZER, LIME SEED PRIOR TO PLACING MATTING.
3. STAPLES ARE TO BE PLACED ALTERNATELY, IN COLUMNS APPROXIMATELY 2' APART AND IN ROWS APPROXIMATELY 3' APART. APPROXIMATELY 175 STAPLES ARE REQUIRED PER 4' X 225' ROLL OF MATERIAL AND 125 STAPLES ARE REQUIRED PER 4' X 150' ROLL OF MATERIAL.
4. DISTURBED AREAS SHALL BE SMOOTHLY GRADED. EROSION CONTROL MATERIAL SHALL BE PLACED LOOSELY OVER GROUND SURFACE. DO NOT STRETCH.
5. ALL TERMINAL ENDS AND TRANSVERSE LAPS SHALL BE STAPLED AT APPROXIMATELY 12" INTERVALS.

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

**ROLLED EROSION CONTROL PRODUCT (RECP) SIDE SLOPE**

NOTES:  
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- "FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.  
THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 653 AND AS SHOWN IN THE PLANS FOR TEMPORARY EROSION MATTING (PAY ITEM 653.20) OR PERMANENT EROSION MATTING (PAY ITEM 653.21).

REVISIONS		
APRIL 16, 2007	JMF	
JANUARY 13, 2009	WHF	



**CONSTRUCTION SPECIFICATIONS**

1. WOVEN WIRE REINFORCED FENCE IS REQUIRED WITHIN 100' UPSLOPE OF RECEIVING WATERS WHEN THE PROJECT FALLS UNDER A CONSTRUCTION STORMWATER PERMIT. WOVEN WIRE SHALL BE A MIN. 14 GAUGE WITH A 6" MAX. MESH OPENING.
2. FILTER CLOTH SHALL BE EITHER FILTER X, MIRAF1100X, STABILINKA T140N OR APPROVED EQUIVALENT.
3. POST SPACING FOR WIRE-BACKED FENCE SHALL BE 10' MAXIMUM. FOR FILTER-CLOTH FENCE, WHEN ELONGATION IS >50%, POST SPACING SHALL NOT EXCEED 4' AND WHEN ELONGATION IS <50%, POST SPACING SHALL NOT EXCEED 6'.
4. WOVEN WIRE FENCE IS TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES. FILTER CLOTH IS TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION.
5. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVER-LAPPED BY 6" AND FOLDED.
6. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN SEDIMENT REACHES HALF OF FABRIC HEIGHT.

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

**SILT FENCE**

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

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

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

PROJECT NAME: WINHALL  
PROJECT NUMBER: STP CULV(31)

FILE NAME: z1lb268epsc det_br52.dgn PLOT DATE: 9/25/2014  
PROJECT LEADER: M. CHENETTE DRAWN BY: L. BUXTON  
DESIGNED BY: J. HUNGERFORD CHECKED BY: M. CHENETTE  
EROSION CONTROL DETAILS - ECD 1- BR52 SHEET 54 OF 60



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

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

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

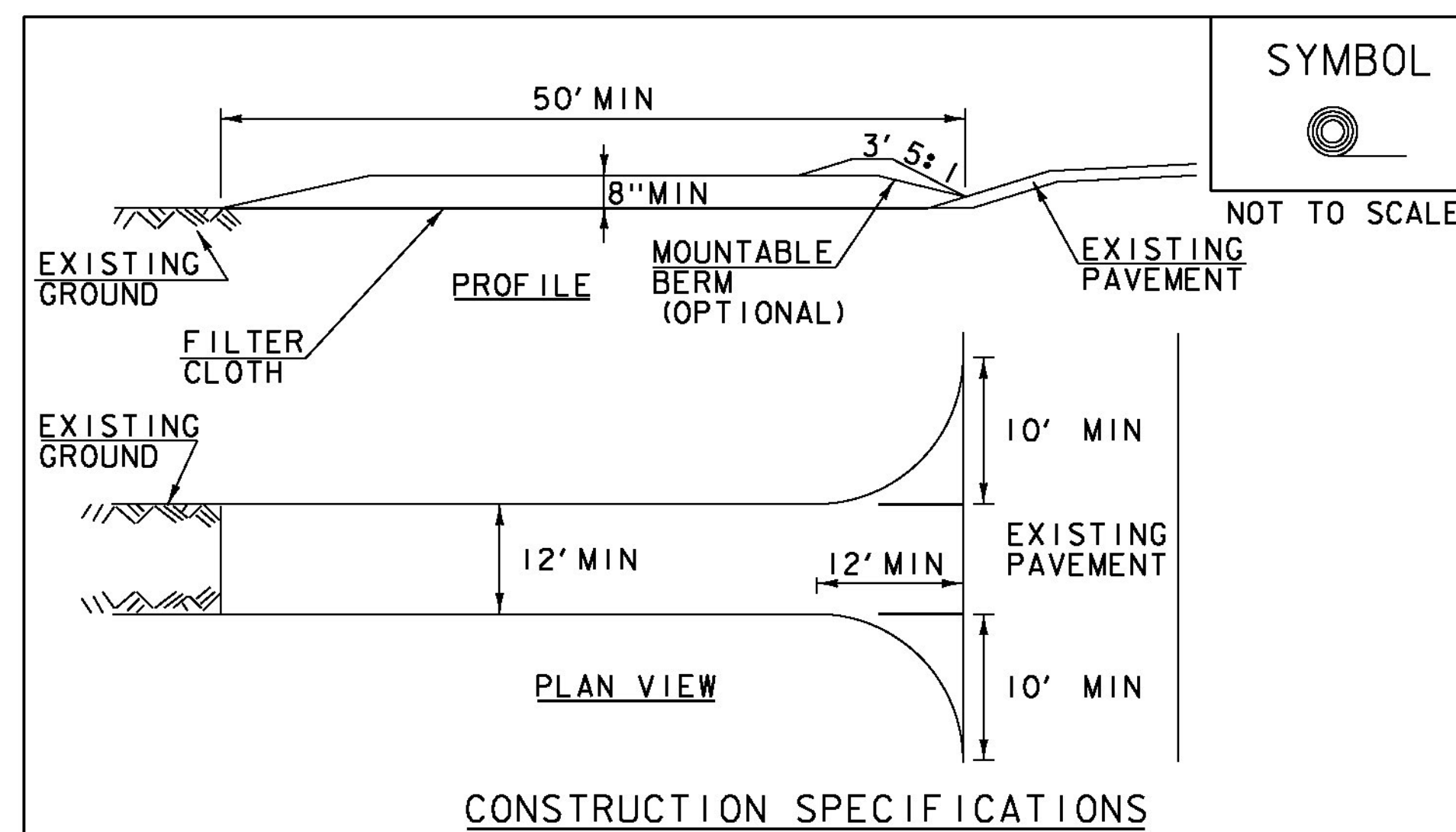
**CONSTRUCTION GUIDANCE**

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

ADAPTED FROM VTRANS TECHNICAL LANDSCAPE MANUAL FOR ROADWAYS AND TRANSPORTATION FACILITIES

**TURF ESTABLISHMENT**

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



**CONSTRUCTION SPECIFICATIONS**

- STONE SIZE- USE 1-4" STONE, RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
- LENGTH- NOT LESS THAN 50' (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30' MINIMUM LENGTH APPLIES).
- THICKNESS- NOT LESS THAN 8".
- WIDTH- 12' MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. 24' IF SINGLE ENTRANCE TO SITE.
- GEOTEXTILE MUST BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING STONE.
- 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.
- 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.
- WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
- PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED ACCORDING TO PERMIT REQUIREMENTS.

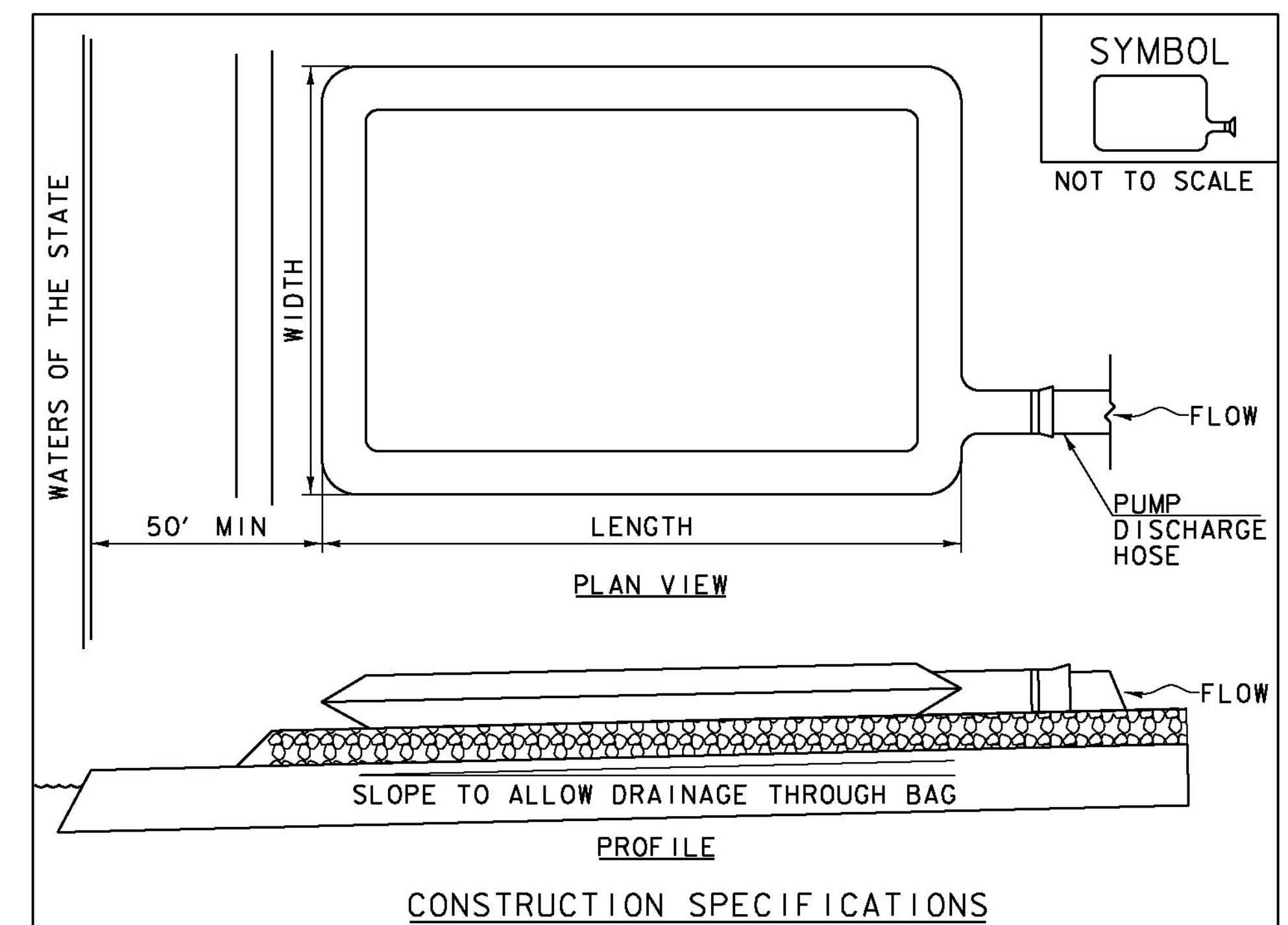
ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC  
ORIGINALLY DEVELOPED BY USDA-NRCS  
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

**STABILIZED CONSTRUCTION ENTRANCE**

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

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

REVISIONS		
MARCH 24, 2008	WHF	
JANUARY 13, 2009	WHF	



**CONSTRUCTION SPECIFICATIONS**

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

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

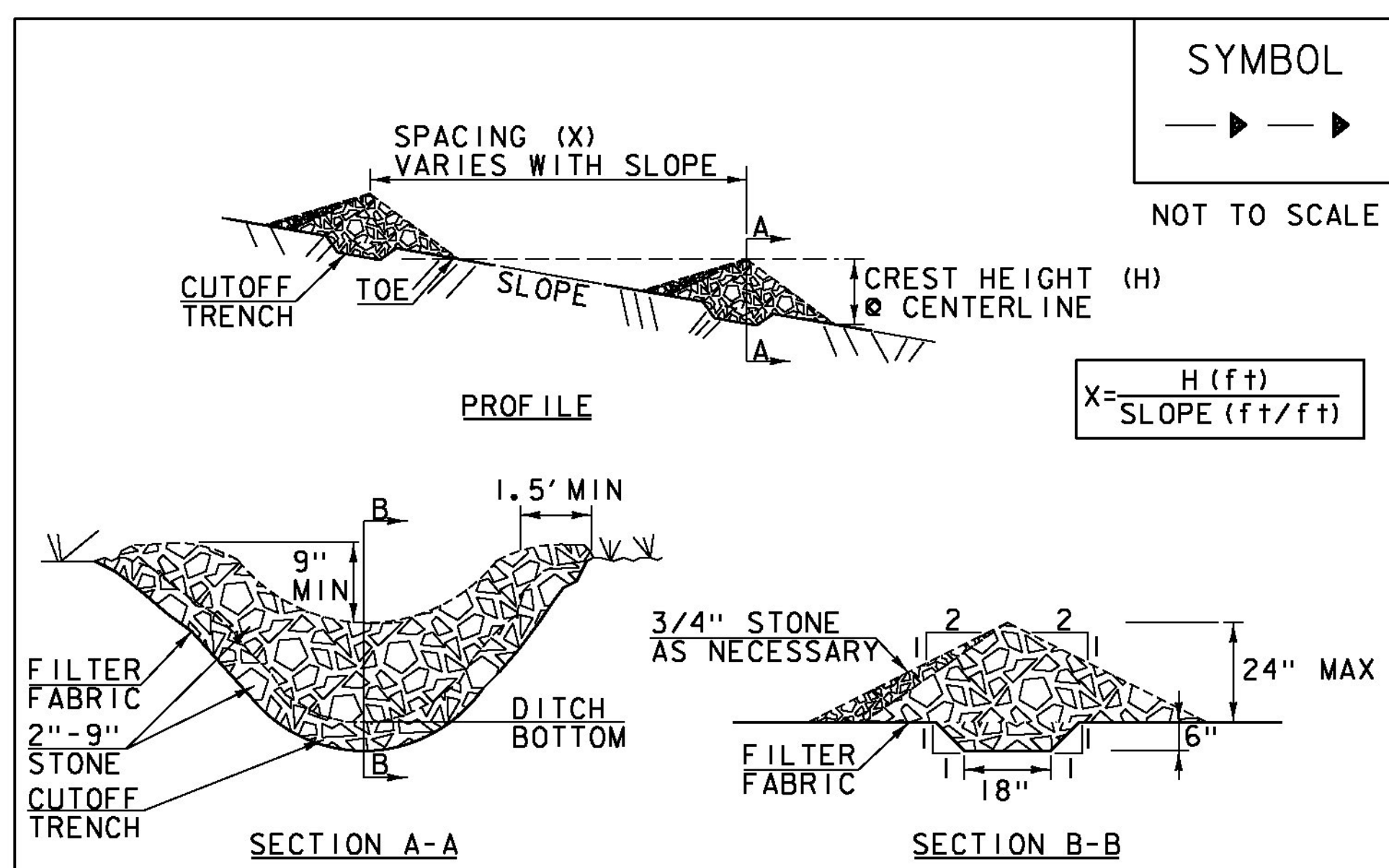
THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 653 FOR FILTER BAG (PAY ITEM 653.45) AND AS SPECIFIED IN THE CONTRACT.

REVISIONS		
MARCH 24, 2008	WHF	
JANUARY 13, 2009	WHF	

PROJECT NAME: WINHALL  
PROJECT NUMBER: STP CULV(3I)

FILE NAME: zllb268epsc det_br52.dgn PLOT DATE: 9/25/2014  
PROJECT LEADER: M. CHENETTE DRAWN BY: L. BUXTON  
DESIGNED BY: J. HUNGERFORD CHECKED BY: M. CHENETTE  
EROSION CONTROL DETAILS - ECD 2 - BR52 SHEET 55 OF 60





**CONSTRUCTION SPECIFICATIONS**

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

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

**CHECK DAM**

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



THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 653 FOR TEMPORARY STONE CHECK DAM, TYPE 1(PAY ITEM 653.25)

REVISIONS	
MARCH 21, 2008	WHF
JANUARY 8, 2009	WHF

PROJECT NAME: WINHALL	FILE NAME: z1lb268epsc det_br52.dgn	PLOT DATE: 9/25/2014
PROJECT NUMBER: STP CULV(31)	PROJECT LEADER: M. CHENETTE	DRAWN BY: L. BUXTON
DESIGNED BY: J. HUNGERFORD	CHECKED BY: M. CHENETTE	EROSION CONTROL DETAILS - ECD 3 - BR52
SHEET 56 OF 60		


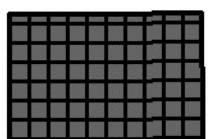


**IMPACTS BELOW ORDINARY HIGH WATER**

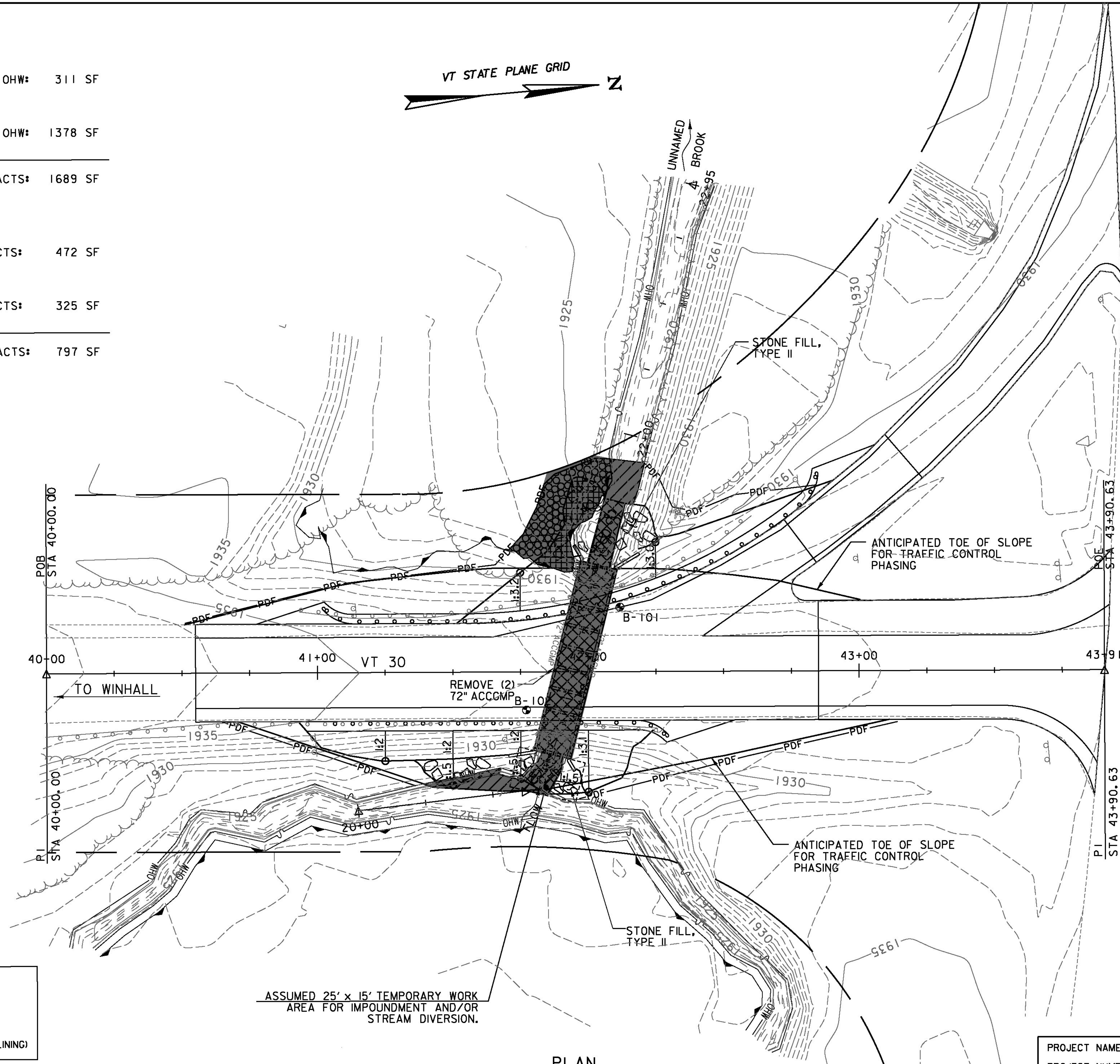
	TEMPORARY IMPACTS BELOW OHW:	311 SF
	PERMANENT IMPACTS BELOW OHW:	1378 SF

TOTAL IMPACTS: 1689 SF



**WETLANDS IMPACT**

	WETLANDS SECONDARY IMPACTS:	472 SF
	WETLANDS PERMANENT IMPACTS:	325 SF

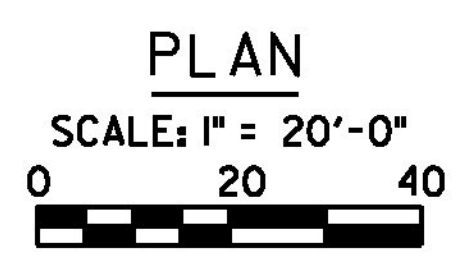
TOTAL IMPACTS: 797 SF



VT II & 30  
TO MANCHESTER

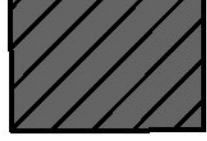
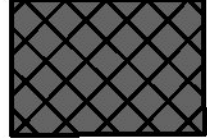
LEGEND	
	STONE FILL, TYPE II
	SPECIAL PROVISION (STONE FILL, CULVERT LINING)

ASSUMED 25' x 15' TEMPORARY WORK AREA FOR IMPOUNDMENT AND/OR STREAM DIVERSION.

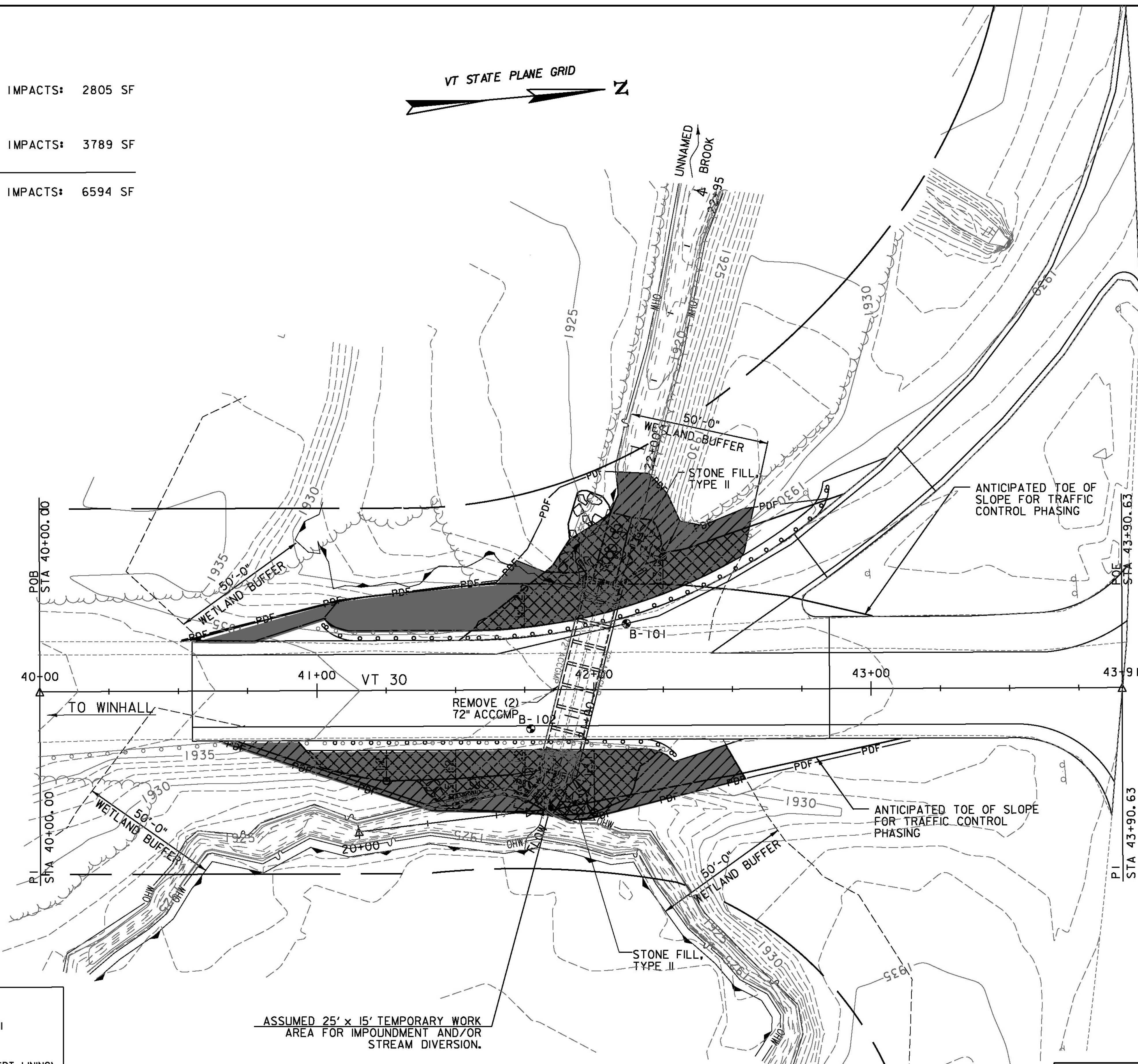
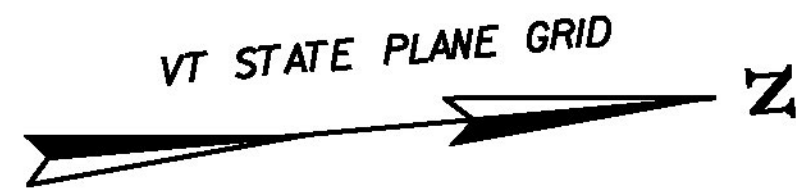



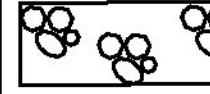
PROJECT NAME:	WINHALL	PLOT DATE:	9/25/2014
PROJECT NUMBER:	STP CULV(31)	DRAWN BY:	L. BUXTON
FILE NAME:	zlib268bdr_impact_br52.l.dgn	CHECKED BY:	M. CHENETTE
PROJECT LEADER:	M. CHENETTE	SHEET	57 OF 60
DESIGNED BY:	J. HUNGERFORD		
PROJECT IMPACTS PLAN I - BR52			

WETLANDS BUFFER IMPACTS

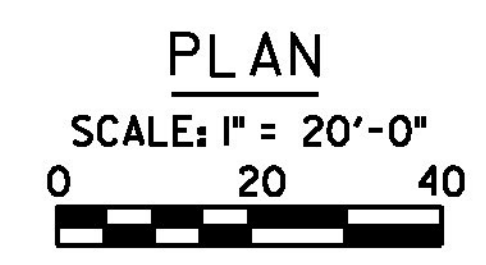
	WETLANDS BUFFER SECONDARY IMPACTS: 2805 SF
	WETLANDS BUFFER PERMANENT IMPACTS: 3789 SF

TOTAL IMPACTS: 6594 SF



LEGEND	
	STONE FILL, TYPE II
	SPECIAL PROVISION (STONE FILL, CULVERT LINING)

ASSUMED 25' x 15' TEMPORARY WORK AREA FOR IMPOUNDMENT AND/OR STREAM DIVERSION.



PROJECT NAME: WINHALL	PLOT DATE: 9/25/2014
PROJECT NUMBER: STP CULV(3I)	DRAWN BY: L. BUXTON
FILE NAME: zllb268bdr_impact_br52.2.dgn	CHECKED BY: M. CHENETTE
PROJECT LEADER: M. CHENETTE	SHEET 58 OF 60
DESIGNED BY: J. HUNGERFORD	
PROJECT IMPACTS PLAN 2 - BR52	



VT II & 30  
TO MANCHESTER

TO WINHALL

# RIGHT - OF - WAY DETAIL SHEET

TABLE OF PROPERTY ACQUISITION

PARCEL NO.	PROPERTY OWNER	ROW LAYOUT NO.	BEGINNING STATION	ENDING STATION	TAKE	REMAINDER	RIGHT			RECORDING DATA				REMARKS	
					AREA±	AREA±	TYPE	T / P	AREA ±	TITLE	DATE	TOWN / CITY	BOOK		PAGE
1	TOWN OF WINHALL	1	32+38 LT	32+92 LT			CONSTRUCTION	T	386 SF	GTR	07/29/14	WINHALL	203	295-296	INCL. EC & PDF
			32+47 LT	32+92 LT			DETOUR	T	253 SF						
2	FRIEDMAN, THEODOR H.	1	31+89 LT	33+11 LT			UTILITY	P	3,187 SF	WDOE	08/12/14	WINHALL	203	344-345	INCL. EC & PDF
			32+86 LT	33+08 LT			CONSTRUCTION	T	91 SF						
			32+91.90 LT	33+11.44 LT			HIGHWAY	P	227 SF						
3	DECOURSIN, JAMES W. & ANNEISE S.	1	33+04 LT	34+41 LT			UTILITY	P	2,623 SF	WDE	07/29/14	WINHALL	203	299-300	INCL. EC & PDF
			33+06 LT	33+69 LT			CONSTRUCTION	T	379 SF						
			33+07.75 LT	33+61.14 LT			HIGHWAY	P	676 SF						
4	PECKEL, ERIK C. & AMY M.	1	33+06 RT	33+64 RT			CONSTRUCTION	T	426 SF					INCL. EC & PDF	
			33+19.24 RT	34+02.95 RT			HIGHWAY	P	1,367 SF						
5	MOREIN, JOSEPH	1	35+16 RT	35+27 RT			INSTALL & MAINTAIN	P		WDOE	08/12/14	WINHALL	203	346	GUY WIRE
6	GREEN MOUNTAIN POWER CORPORATION														UTILITY
7	TELEPHONE OPERATING COMPANY OF VERMONT, LLC														UTILITY
8	SOVERNAT, INC.														UTILITY
9	COMCAST OF CONNECTICUT/GEORGIA/ MASSACHUSETTS/NEW HAMPSHIRE/ NEW YORK/NORTH CAROLINA/ VERMONT, LLC														UTILITY

TABLE OF REVISIONS

REVISION NO.	ROW SET SHEET #	DESCRIPTION	DATE
1	3, 4, 5	PARCEL 1, TOWN OF WINHALL - COMBINE SR(P) INTO DETOUR (T); REMOVE SR(P) FROM DETAIL SHEET; CORRECT VERBIAGE UNDER 'TRAFFIC MAINTENANCE NOTES' ON PI SHEET. BY: MT C.O. 9871 APPR BY: RC	04/18/14
2	3, 4	PARCEL 2, FRIEDMAN - COMBINE UTILITY EASEMENTS INTO ONE 30' WIDE STRIP. REVISE BEGIN AND END STATIONS FOR HWY(P). BY: MT C.O. 9874 APPR BY: RC	04/18/14
3	3, 4	PARCEL 3, DECOURSIN - REVISE AREA OF UTILITY EASEMENT; REVISE BEGIN & END STATIONS OF HWY(P). BY: MT C.O. 9875 APPR BY: RC	04/18/14
4	3, 4	PARCEL 4, PECKEL - REVISE STATION/ OFFSET LABELS FOR HWY(P). BY: MT C.O. 9876 APPR BY: RC	04/18/14

APPROVED: RYAN CLOUTIER DATE: 04-02-14  
CHIEF, PLANS & TITLES

PROJECT NAME: **WINHALL**  
PROJECT NUMBER: **STP CULV(31)**  
FILE NAME: **r11b268detail.xls** PLOT DATE: **09-SEP-2014**  
PROJECT LEADER: **M. SARGENT** DRAWN BY: **M. TROTTIER**  
DESIGNED BY: **R. WHITE** CHECKED BY: **A. EGZI**  
**R.O.W. DETAIL SHEET #1** SHEET 59 OF 60

621.20 - STEEL BEAM GUARDRAIL, GALVANIZED  
 STA. 31+50.30, LT. TO STA. 31+75.30, LT.  
 STA. 32+00.00, RT. TO STA. 32+25.00, RT.  
 STA. 34+50.00, RT. TO STA. 34+75.00, RT.  
 STA. 35+50.30, LT. TO STA. 35+75.30, LT

621.205 - STEEL BEAM GUARDRAIL, GALVANIZED W/8 FEET POSTS  
 STA. 31+75.30, LT. TO STA. 35+50.30, LT.  
 STA. 32+25.00, RT. TO STA. 34+50.00, RT.

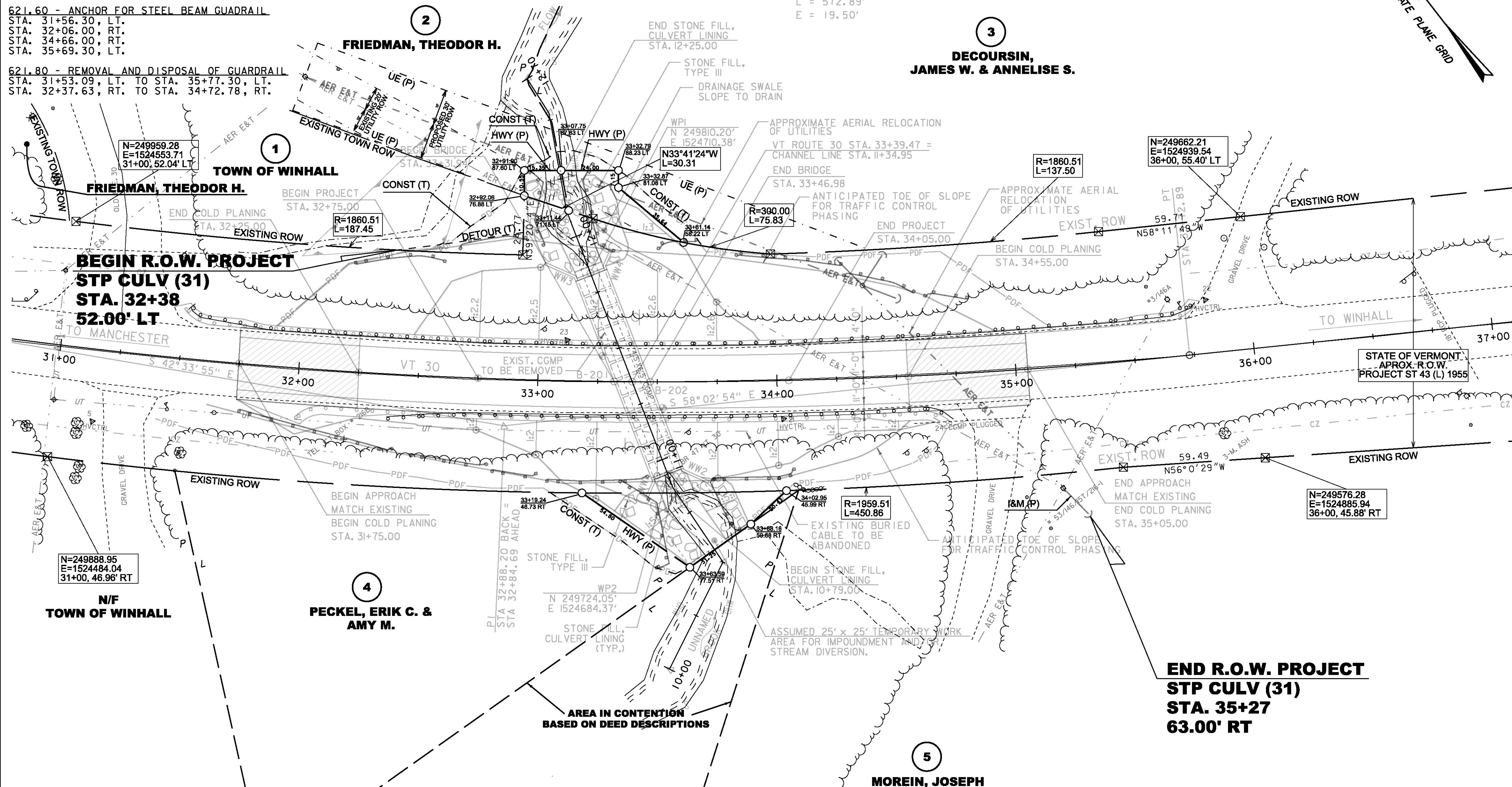
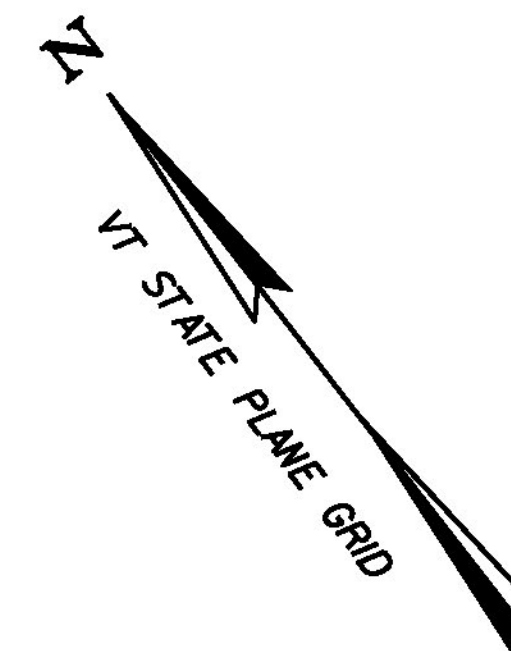
621.60 - ANCHOR FOR STEEL BEAM GUADRAIL  
 STA. 31+56.30, LT.  
 STA. 32+06.00, RT.  
 STA. 34+66.00, RT.  
 STA. 35+69.30, LT.

621.80 - REMOVAL AND DISPOSAL OF GUARDRAIL  
 STA. 31+53.09, LT. TO STA. 35+77.30, LT.  
 STA. 32+37.63, RT. TO STA. 34+72.78, RT.

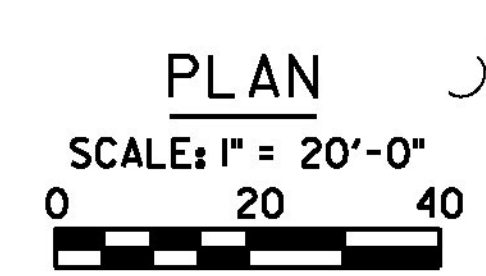
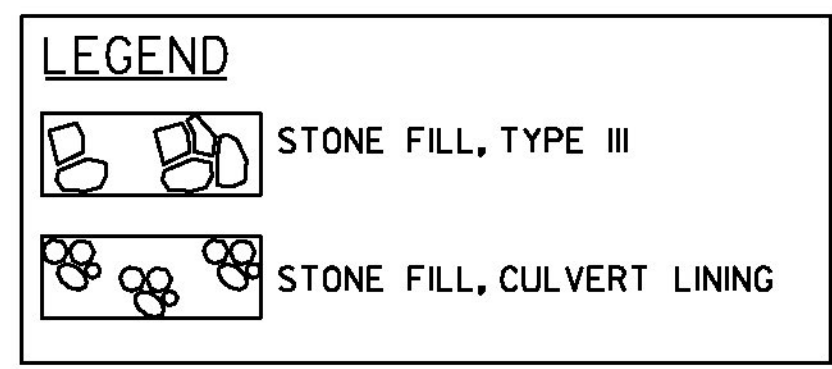
646.400 - DURABLE 4 INCH WHITE LINE  
 STA. 31+75.00, RT. TO STA. 35+05.00, RT.  
 STA. 31+75.00, LT. TO STA. 35+05.00, LT.

646.410 - DURABLE 4 INCH YELLOW LINE  
 STA. 31+75.00, CL. TO STA. 35+05.05, CL. (DYCL)

CURVE DATA  
 PC = 30+00.00  
 Δ = 15°28'59.44"  
 D = 2°42'09.47"  
 R = 2120.00'  
 T = 288.20'  
 L = 572.89'  
 E = 19.50'



NOTES:  
 1. GRADE IN ACCORDANCE WITH THE TYPICAL ROADWAY SECTION AND ROADWAY CROSS SECTIONS UNLESS NOTED OTHERWISE.

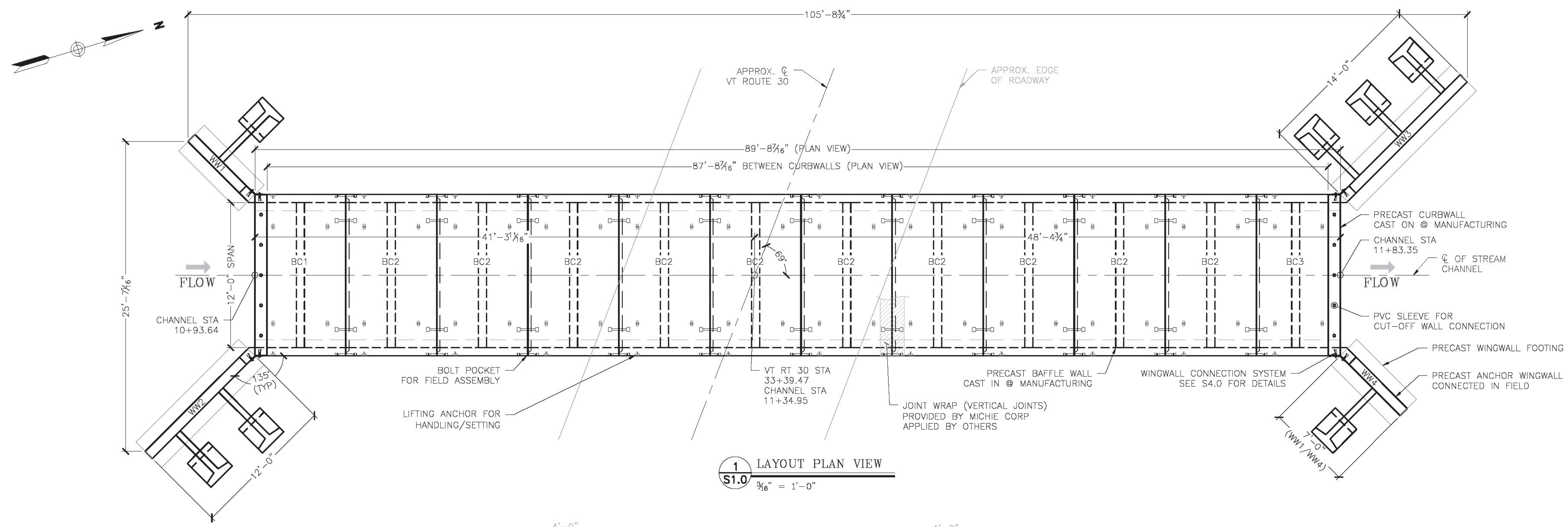


FOR R.O.W. USE ONLY

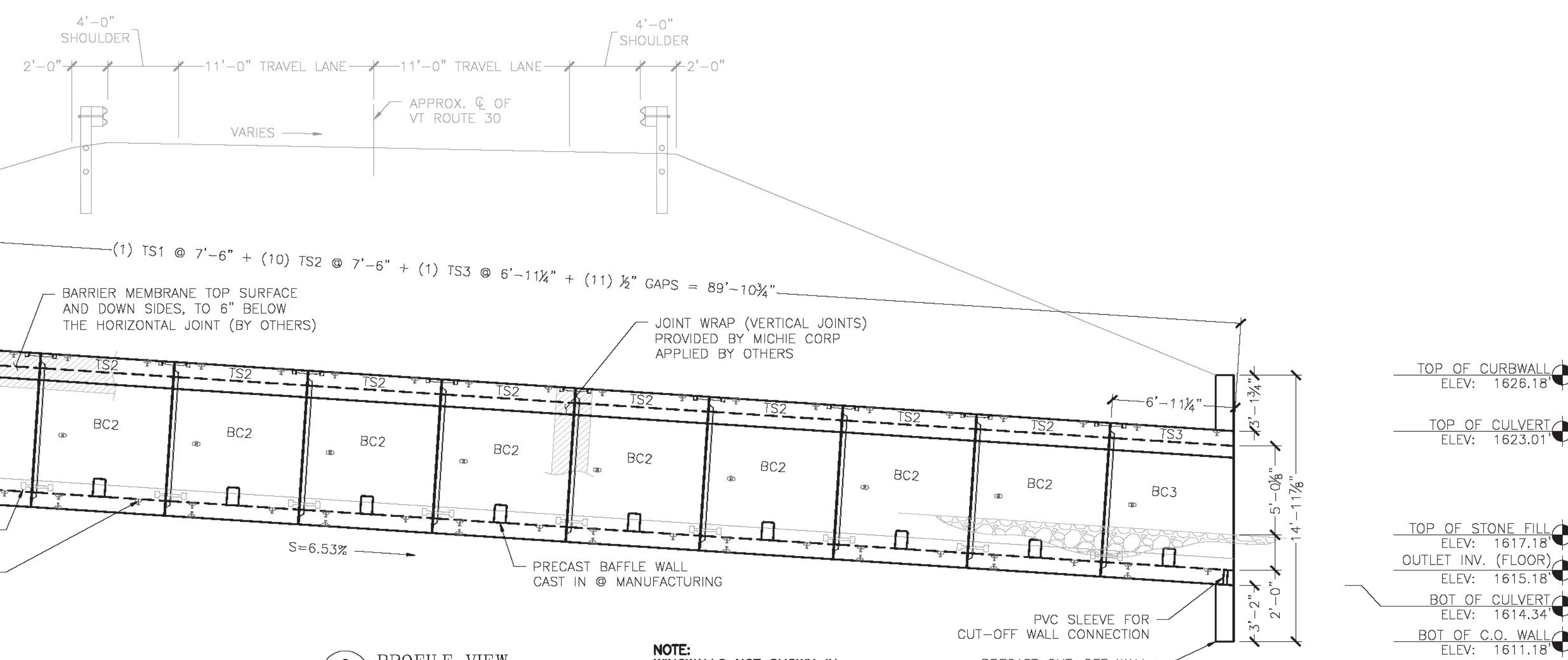
LINES SHOWN ON THIS PLAN AS EXISTING PROPERTY LINES P/L ARE BELIEVED TO BE ACCURATE BUT SHOULD NOT BE RELIED UPON FOR PURPOSES UNRELATED TO THE STATE OF VERMONT'S ACQUISITION OF LAND AND RIGHTS FOR THIS PROJECT.

PROJECT NAME: WINHALL  
 PROJECT NUMBER: STP CULV(31)  
 FILE NAME: r11b2681ay.dgn  
 PROJECT LEADER: M. SARGENT  
 DESIGNED BY: STANTEC  
 R.O.W. LAYOUT SHEET 1 OF 1  
 PLOT DATE: 18-APR-2014  
 DRAWN BY: A. EGZI  
 CHECKED BY: R. CLOUTIER  
 SHEET 60 OF 60

DATE: 2015.09.01



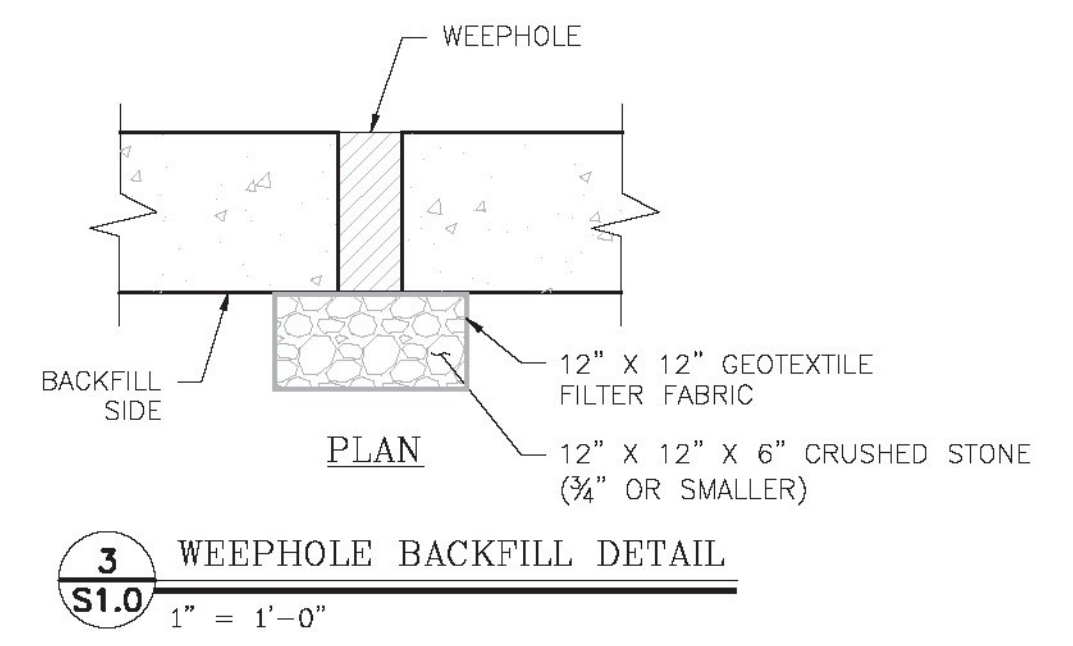
**1 LAYOUT PLAN VIEW**  
 S1.0 3/8" = 1'-0"



**2 PROFILE VIEW**  
 S1.0 3/8" = 1'-0"

NOTE: WINGWALLS NOT SHOWN IN THIS VIEW FOR CLARITY

BILL OF MATERIALS			
QTY	DESCRIPTION	IN STOCK	ORDERED FROM
148	RL-24 4TON X 3.5\"/>		



**3 WEEPHOLE BACKFILL DETAIL**  
 S1.0 1" = 1'-0"

**GENERAL NOTES:**

- THE PLANS ARE INTENDED TO BE DRAWN TO SCALE. HOWEVER, IF A CRITICAL DIMENSION IS NOT PROVIDED, MICHE CORPORATION SHOULD BE CONTACTED FOR VERIFICATION.
  - IF ANY OF THE WORK TO BE DONE AS SHOWN ON THE DRAWINGS DOES NOT CORRESPOND WITH THE EXISTING FIELD CONDITIONS, CONTACT THE ENGINEER PRIOR TO PROCEEDING WITH THE WORK IN QUESTION.
  - FIELD-VERIFY ALL ELEVATIONS PRIOR TO THE START OF CONSTRUCTION. IF THERE ARE ANY DISCREPANCIES, CONSULT THE ENGINEER PRIOR TO PROCEEDING WITH THE WORK IN QUESTION.
  - MAINTAIN MINIMUM 60 DEGREE SLING ANGLE WHEN HANDLING PRECAST COMPONENTS.
  - PRECAST COMPONENTS SHALL REACH A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI PRIOR TO STRIPPING, AND THE MINIMUM DESIGN COMPRESSIVE STRENGTH PRIOR TO SHIPPING, UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
  - ALL JOINTS AND VOIDS SHALL BE FILLED WITH NON-SHRINK GROUT. VERTICAL SURFACE VOIDS MAY BE FILLED WITH FOAM SEALANT.
  - SHOP DRAWINGS WERE DEVELOPED USING THE FOLLOWING RESOURCES FOR THE CONTRACT:
    - "PROPOSED IMPROVEMENT BRIDGE PROJECT, TOWN OF WINHALL, VT ROUTE 30, BRIDGE NUMBERS 47 AND 52", PAGES 1-60 OF 60, PREPARED BY STANTEC CONSULTING SERVICES, INC. OF SOUTH BURLINGTON, VT. DATED 9/25/2014 WITH NO REVISION DATE.
  - IF THERE IS ADDITIONAL INFORMATION PERTINENT TO THE FABRICATION AND INSTALLATION OF THESE UNITS THAT IS NOT CONTAINED WITHIN THE RESOURCES LISTED ABOVE IT SHALL BE BROUGHT TO THE ATTENTION OF MICHE CORPORATION. FAILURE TO MAKE SUCH ADDITIONAL INFORMATION AVAILABLE SHALL RELIEVE MICHE CORPORATION OF ALL LIABILITIES ARISING FROM ERRORS OR OMISSIONS RELATED TO THE OMITTED INFORMATION.
- PRECAST CONCRETE FOOTING NOTES:**
- FOOTING CONCRETE SHALL BE SELF-CONSOLIDATING CONFORMING TO ASTM C260 WITH A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 4,000 PSI. AGGREGATE SHALL CONFORM TO ASTM C-33 WITH A MAXIMUM DIAMETER OF 3/4". CEMENT SHALL CONFORM TO ASTM C150.
  - REINFORCING SHALL BE GRADE 60 DEFORMED BLACK BARS CONFORMING TO ASTM A-615. ALL BARS SHALL BE BENT COLD.
  - ALL EXPOSED EDGES EXCEPT WHERE NOTED SHALL BE CHAMFERED 3/4".
  - SUBGRADE PREPARATION FOR WINGWALL FOOTINGS SHALL CONFORM TO VTRANS 204.07 BEDDING FOR STRUCTURES. FOOTINGS SHALL BE PLACED AT ELEVATIONS SHOWN ON A MINIMUM OF 1'-0" OF CRUSHED STONE CONFORMING TO VTRANS 704.05(A). ALL TOPSOIL, LOOSE FILL, AND DELETERIOUS MATERIALS SHALL BE REMOVED BEFORE PLACING BACKFILL. SUBGRADE PREPARATION FOR CUT-OFF WALLS PER DETAIL ON SHEET 16 OF THE CONTRACT PLANS.

**BOX CULVERT NOTES:**

- BOX CULVERT SECTIONS ARE DESIGNED IN ACCORDANCE WITH
  - AASHTO "LRFD BRIDGE DESIGN SPECIFICATIONS", 6TH EDITION,
  - VTRANS 2011 "STANDARD SPECIFICATIONS FOR CONSTRUCTION".
- THE FOLLOWING CRITERIA WAS USED FOR DESIGN:
  - LIVE LOAD: N/A (DEPTH OF FILL)
  - EARTH COVER: 13 FEET
  - BACKFILL SOIL UNIT WEIGHT: 140 PCF
  - BACKFILL SOIL FRICTION ANGLE: 34 DEGREES
  - CONCRETE STRENGTH: 5,000 PSI
  - STEEL YIELD STRENGTH: 60,000 PSI
- BOX CULVERT AND CURBWall CONCRETE SHALL BE SELF-CONSOLIDATING CONFORMING TO ASTM C260 WITH A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 5,000 PSI. AGGREGATE SHALL CONFORM TO ASTM C-33 WITH A MAXIMUM DIAMETER OF 3/4". CEMENT SHALL CONFORM TO ASTM C150.
- REINFORCING SHALL BE GRADE 60 DEFORMED BLACK BARS CONFORMING TO ASTM A-615. ALL BARS SHALL BE BENT COLD.
- ALL EXPOSED EDGES EXCEPT WHERE NOTED SHALL BE CHAMFERED 3/4".
- SUBGRADE PREPARATION SHALL CONFORM TO VTRANS 204.07 BEDDING FOR STRUCTURES. FOOTINGS SHALL BE PLACED AT ELEVATIONS SHOWN ON A MINIMUM OF 1'-0" OF CRUSHED STONE CONFORMING TO VTRANS 704.05(A). ALL TOPSOIL, LOOSE FILL, AND DELETERIOUS MATERIALS SHALL BE REMOVED BEFORE PLACING MATERIAL.
- BACKFILL MATERIAL SHALL CONFORM TO VTRANS SECTION 704.08 GRANULAR BACKFILL FOR STRUCTURES. BACKFILL SHALL EXTEND FOR A MINIMUM DISTANCE OF 3'-0" BEYOND THE HORIZONTAL LIMITS OF THE STRUCTURE. PLACEMENT SHALL CONFORM TO VTRANS SECTION 204.08.
- EXPOSED SURFACES SHOULD BE COATED WITH VTRANS APPROVED WATER REPELLENT (SUPPLIED BY OTHERS).
- EACH SECTION SHALL BE PROVIDED WITH BOLT POCKETS FOR ATTACHMENT TO ADJACENT SECTIONS. 7/8" DIA. GALV. THREADED ROD, WASHERS AND NUTS SHALL BE PROVIDED FOR ASSEMBLY IN THE FIELD. CLOSED-CELL NEOPRENE JOINT SEALANT SHALL BE USED IN ALL JOINTS UNLESS NOTED OTHERWISE.
- 2FT WIDE ROYSTON JOINT WRAP WITH ADHESIVE PROVIDED BY MICHE CORP, INSTALLED BY OTHERS, CENTER ON JOINT AFTER GROUTING. BARRIER MEMBRANE PROVIDED AND INSTALLED BY OTHERS OVER TOP OF STRUCTURE, AND DOWN SIDES TO 6" BELOW HORIZONTAL JOINT.

**WING WALL NOTES:**

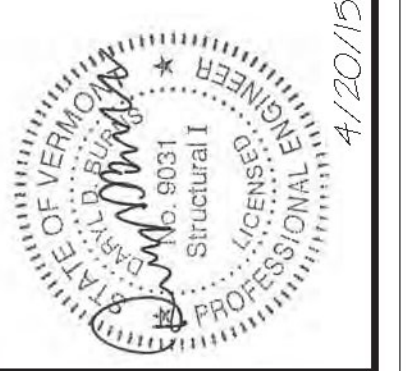
- SECTIONS ARE DESIGNED IN ACCORDANCE WITH
  - AASHTO "LRFD BRIDGE DESIGN SPECIFICATIONS", 6TH EDITION
  - VTRANS 2011 "STANDARD SPECIFICATIONS FOR CONSTRUCTION".
- THE FOLLOWING SOIL PROPERTIES WERE USED IN THE DESIGN:
 

SOIL WEIGHT [PCF]	FRICTION ANGLE [DEG]
RETAINED SOIL 140	34
FOUNDATION SOIL 140	40

  - LIVE LOAD SURCHARGE = N/A
  - BACKSLOPE ANGLE: ±2:1
  - FACTORED BEARING RESISTANCE = 6000PSF (SERVICE), 15400PSF (STRENGTH)
- CONCRETE SHALL BE SELF-CONSOLIDATING CONFORMING TO ASTM C260 WITH A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 5,000 PSI. AGGREGATE SHALL CONFORM TO ASTM C-33 WITH A MAXIMUM DIAMETER OF 3/4". CEMENT SHALL CONFORM TO ASTM C150.
- REINFORCING SHALL BE GRADE 60 DEFORMED BLACK BARS CONFORMING TO ASTM A-615. ALL BARS SHALL BE BENT COLD.
- BACKFILL MATERIAL SHALL CONFORM TO VTRANS SECTION 704.08 GRANULAR BACKFILL FOR STRUCTURES. PLACEMENT SHALL CONFORM TO VTRANS SECTION 204.08.
- ALL EXPOSED EDGES OF CONCRETE SHALL BE COATED WITH A VTRANS APPROVED WATER REPELLANT (BY OTHERS).
- SUBGRADE PREPARATION SHALL CONFORM TO VTRANS 204.07 BEDDING FOR STRUCTURES. FOOTINGS SHALL BE PLACED AT ELEVATIONS SHOWN ON A MINIMUM OF 1'-0" OF CRUSHED STONE CONFORMING TO VTRANS 704.05(A). ALL TOPSOIL, LOOSE FILL, AND DELETERIOUS MATERIALS SHALL BE REMOVED BEFORE PLACING BACKFILL.

**LIST OF SHEETS:**

- S1.0 LAYOUT & PROFILE VIEW
- S2.0 FOOTING LAYOUT, END ELEVATIONS & DETAILS
- S3.0 BOX CULVERT DETAILS
- S4.0 WINGWALL DETAILS
- S5.0 ANCHOR DETAILS

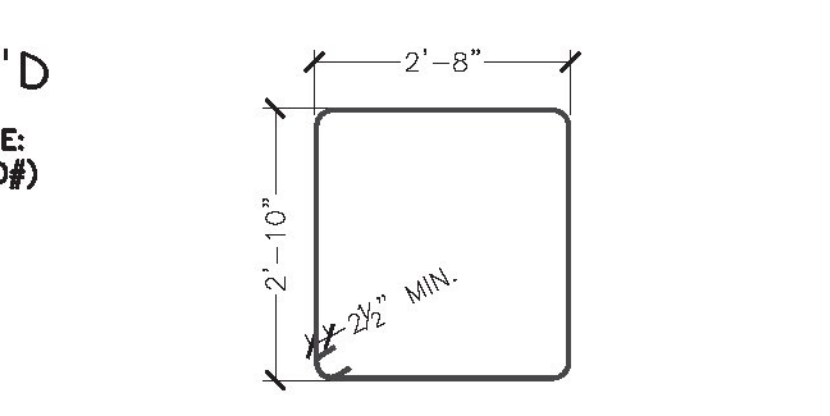
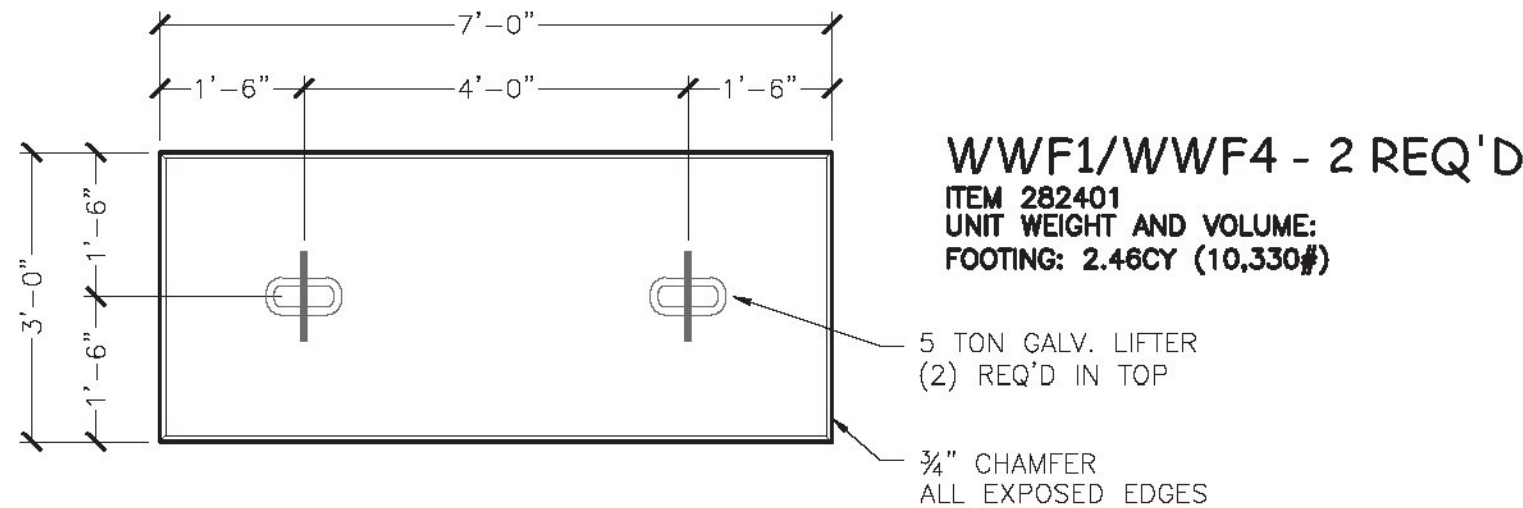
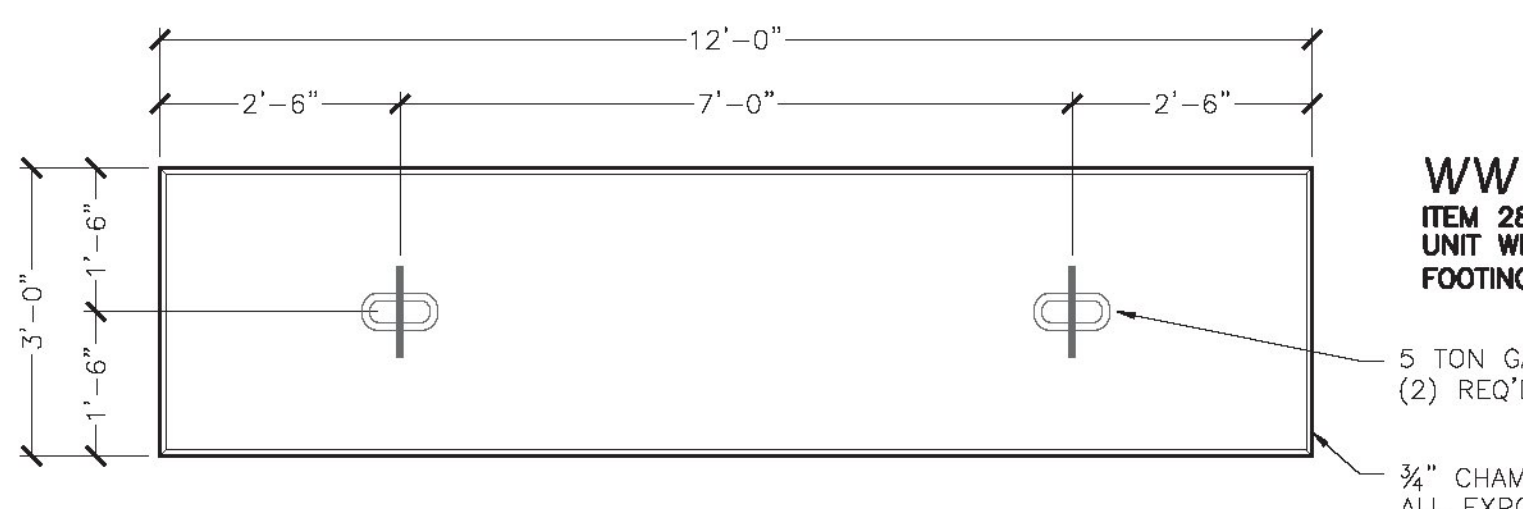
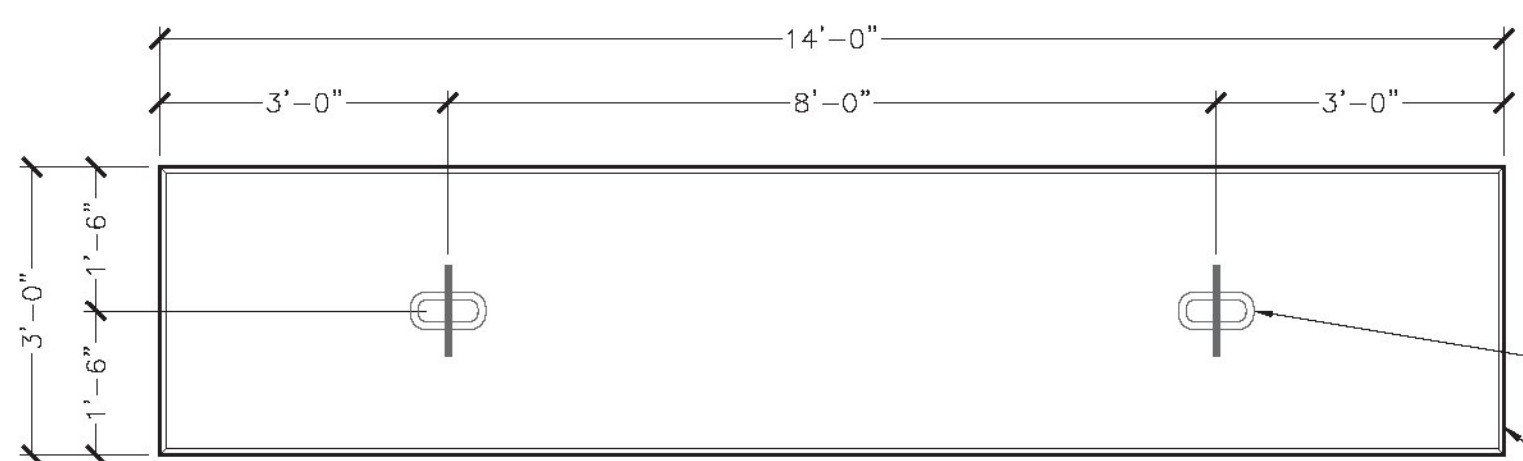
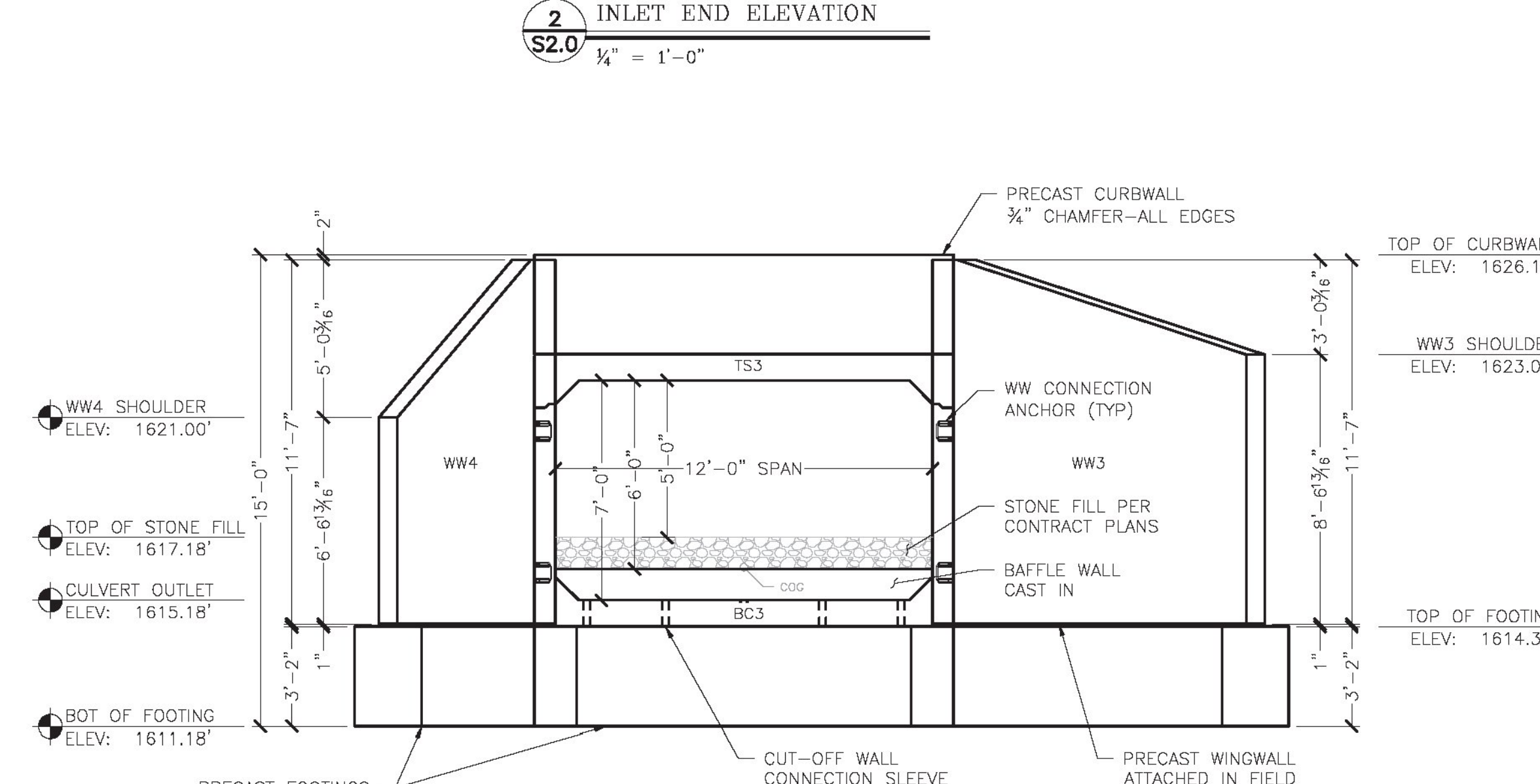
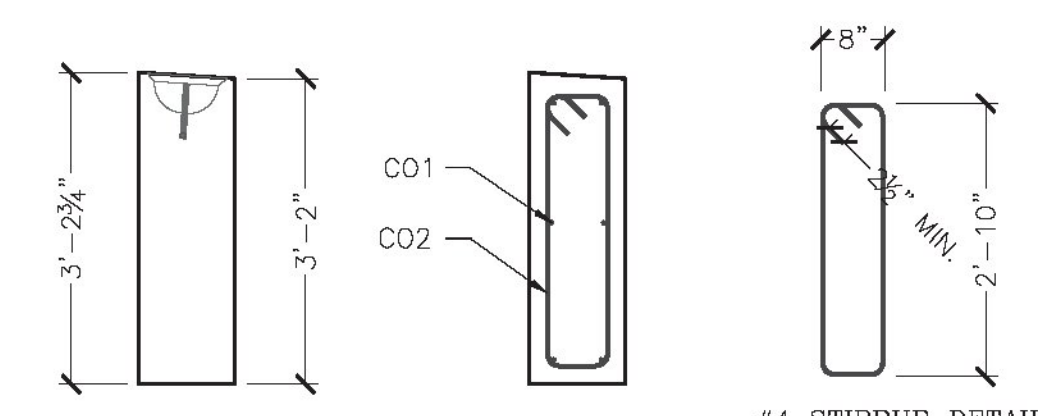
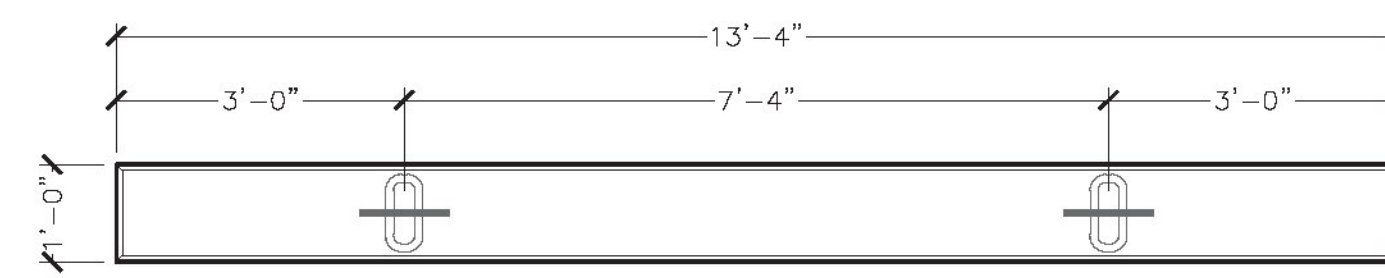
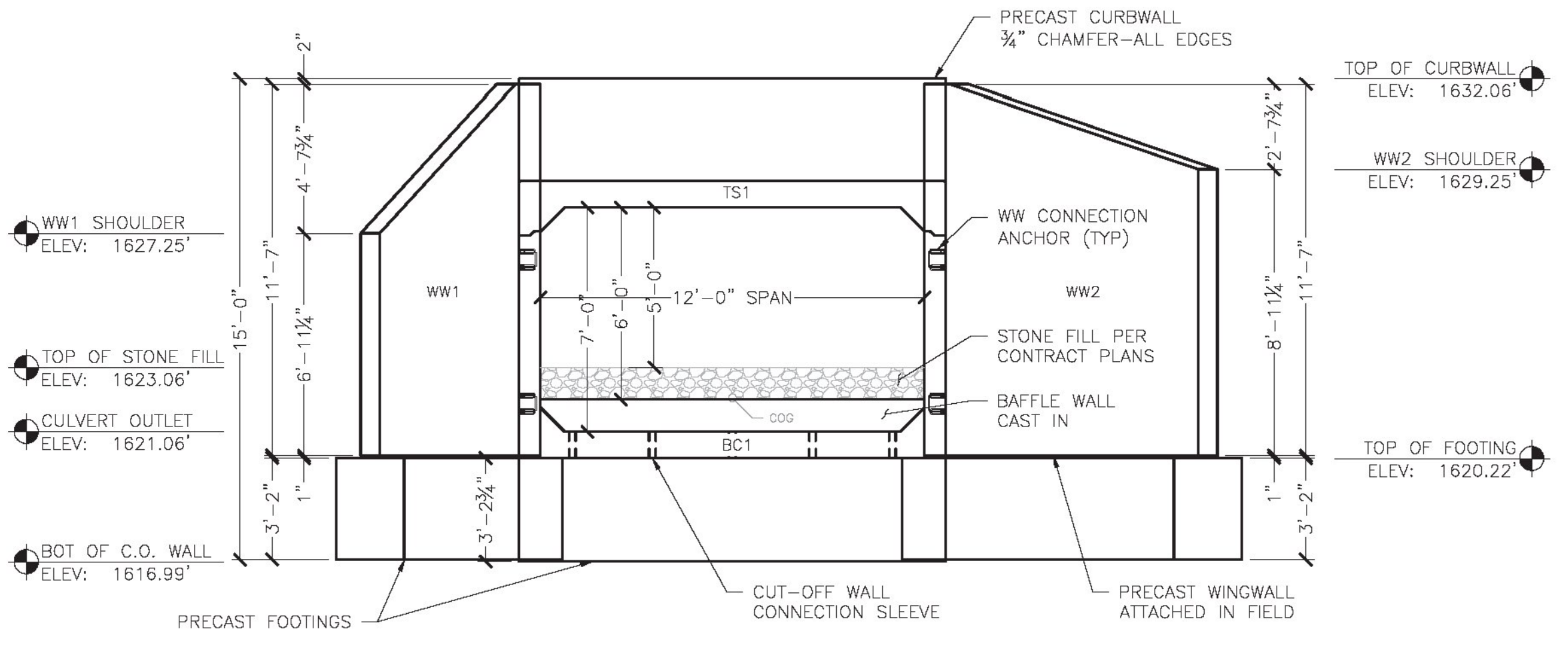
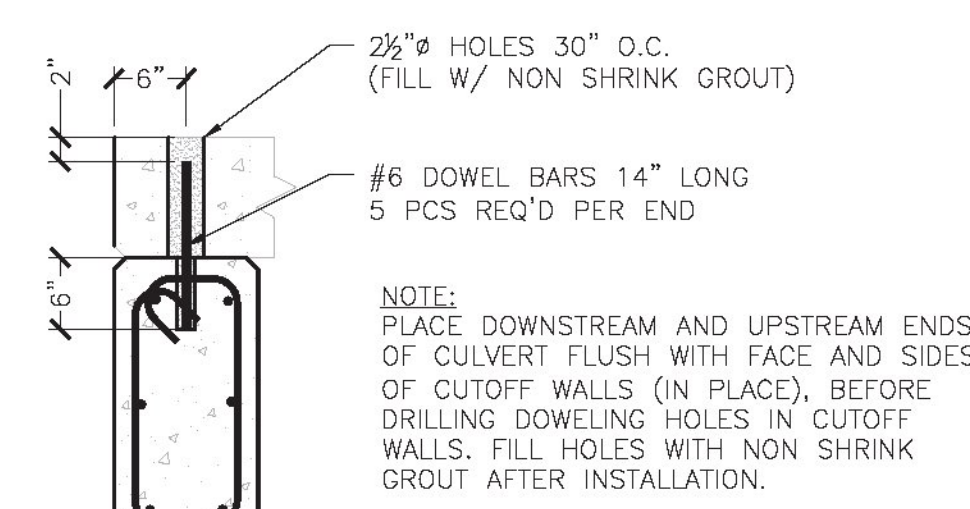
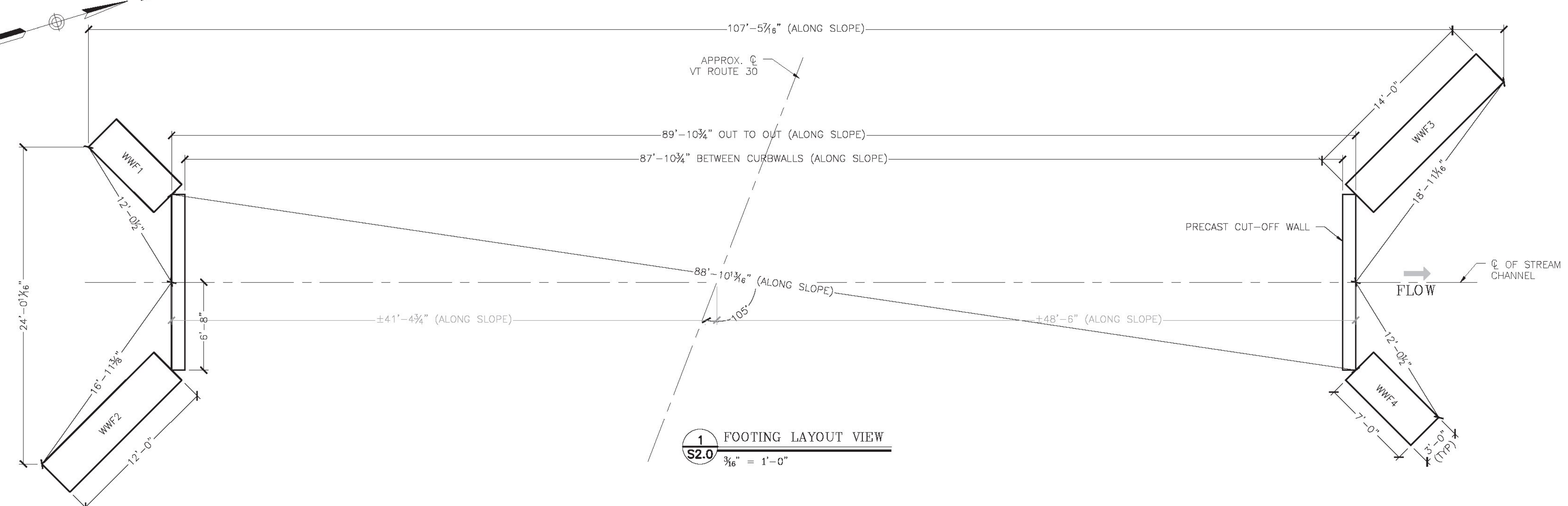
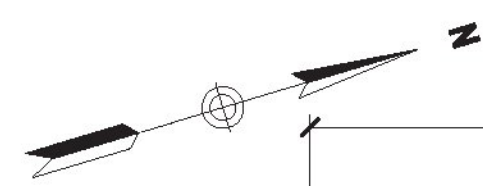


**MICHE CORPORATION**  
 173 BUXTON INDUSTRIAL DRIVE - PO BOX 870  
 HENNIKER, NH 03242  
 PHONE: 603-428-3218  
 WWW.MICHECORP.COM

**Bridge 47 - Route 30 - VAOT STP Culv(31)**  
**Winhall, VT**  
**12'x7' Open Top Box Culvert - Layout and Profile View**  
 Project No. 5779  
 Date: 2/26/2015  
 Designed by: PDL/CFP  
 Drawn by: CFP  
 Scale: AS SHOWN  
 Checked by: PDL

Prepared for:  
**Renaud Brothers, Inc.**  
**283 Fort Bridgeman Rd #2**  
**Vernon, VT 05354**

DWG NO.  
**S1.0**



WWF1/WWF4 REINFORCING (COUNTS REPRESENT 1 UNIT)						
LOCATION	MARK	QTY	SIZE	SPACING	TYPF	CUT LENGTH
FOOTING	FS1	10	#5	AS SHOWN	STRAIGHT	6'-8"
FOOTING	FS2	7	#4	12" O.C.	STIRRUP	11'-3"

WWF2 REINFORCING (COUNTS REPRESENT 1 UNIT)						
LOCATION	MARK	QTY	SIZE	SPACING	TYPF	CUT LENGTH
FOOTING	FS1	10	#5	AS SHOWN	STRAIGHT	11'-8"
FOOTING	FS2	12	#4	12" O.C.	STIRRUP	11'-3"

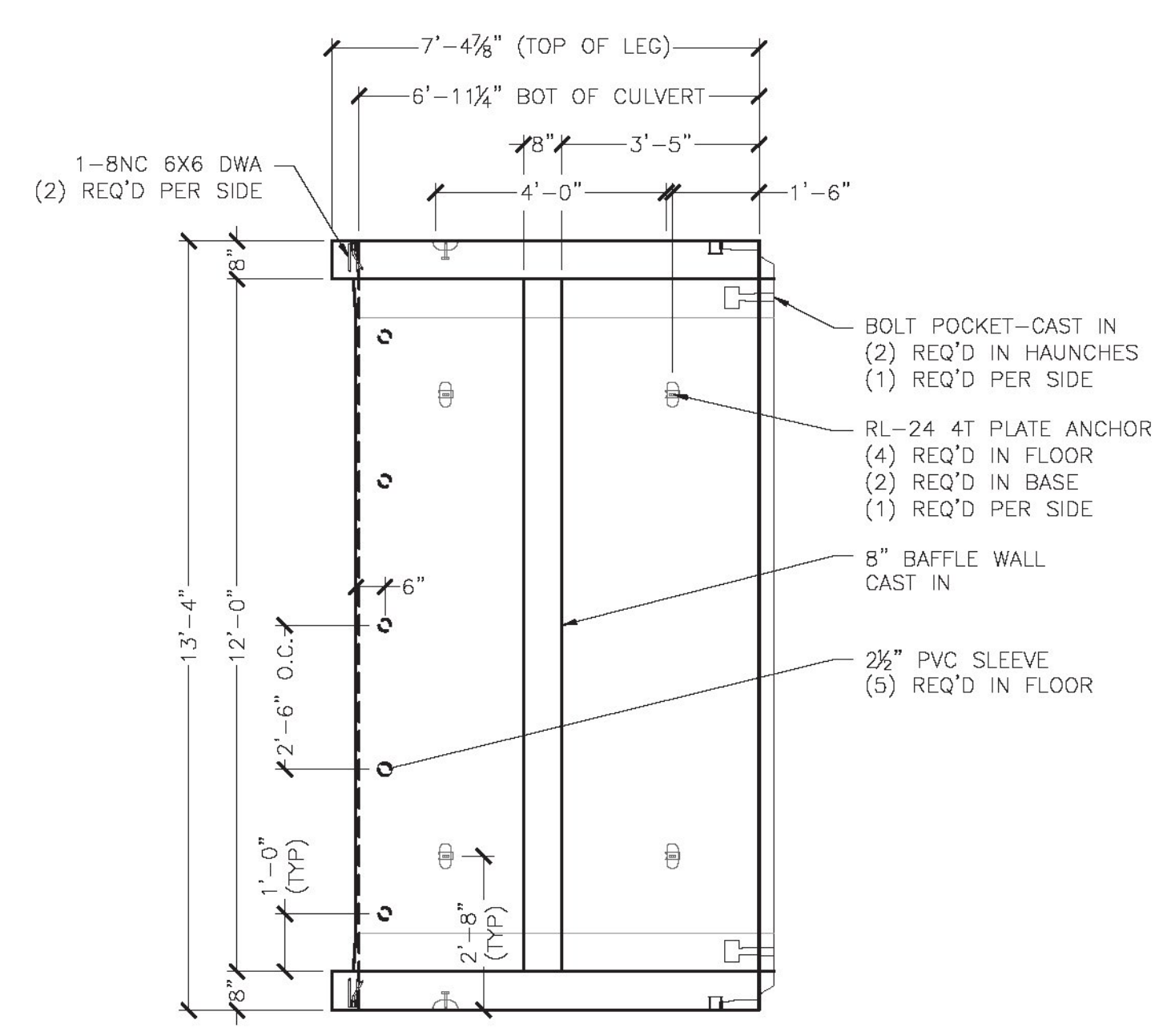
WWF3 REINFORCING (COUNTS REPRESENT 1 UNIT)						
LOCATION	MARK	QTY	SIZE	SPACING	TYPE	CUT LENGTH
FOOTING	FS1	10	#5	AS SHOWN	STRAIGHT	13'-8"
FOOTING	FS2	14	#4	12" O.C.	STIRRUP	11'-3"

No.	Date	Revision
XXX		By
XXXXXX		XX
XXXXXX		XX
XXXXXX		XX

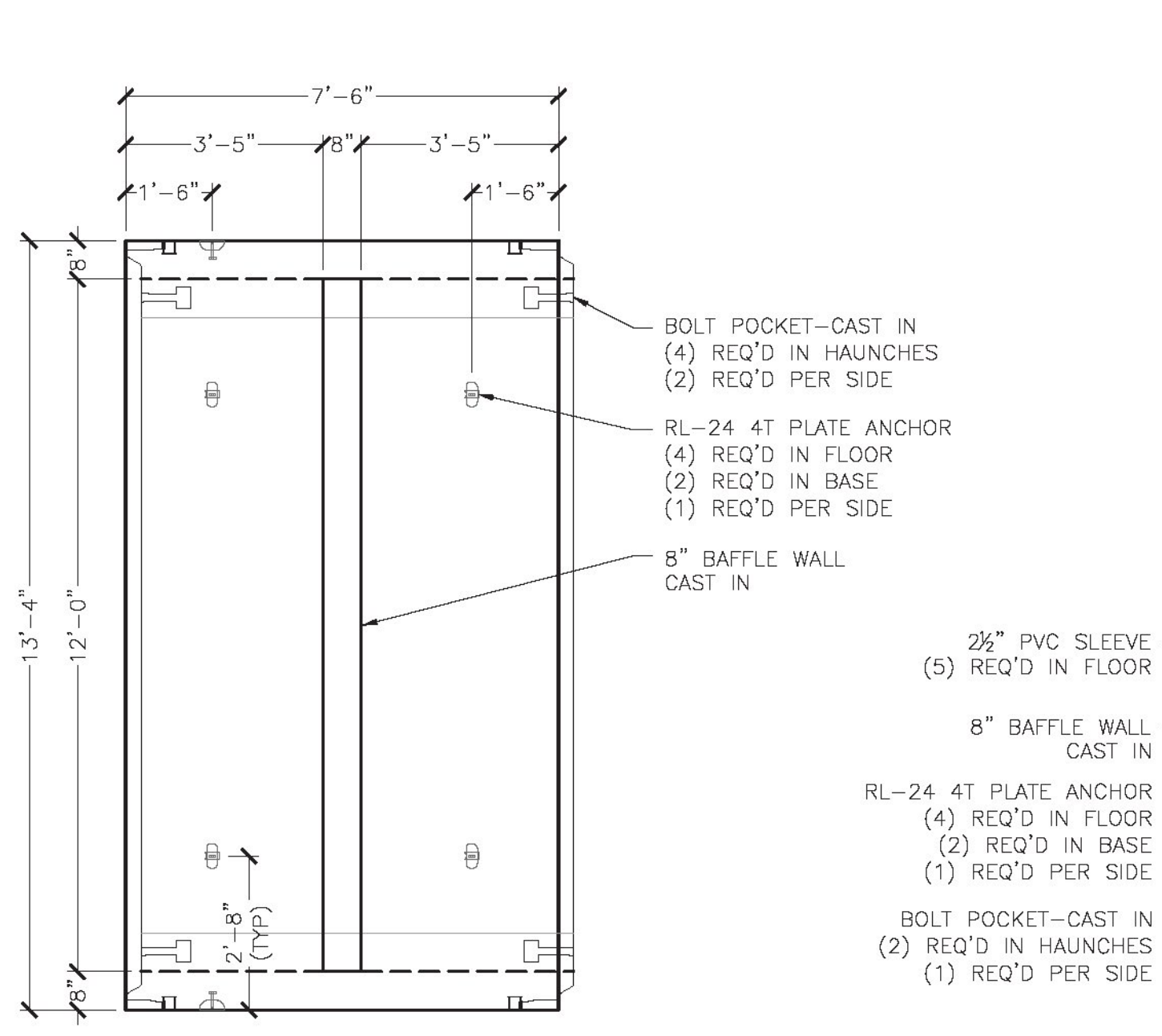
**MICHIE**  
 CONSULTING ENGINEERS  
 173 BUXTON INDUSTRIAL DRIVE - PO BOX 870  
 HENNIKER, NH 03242  
 PHONE: 603-428-3218  
 WWW.MICHIECORP.COM

**Bridge 47 - Route 30 - VAOT STP Culv(31)**  
**Winhall, VT**  
 12' x 7' Open Top Box Culvert - Footing Layout and Elevations  
 Scale: AS SHOWN  
 Checked by: PTL  
 Drawn by: CFP  
 Project No. 5779  
 Date: 2/26/2015

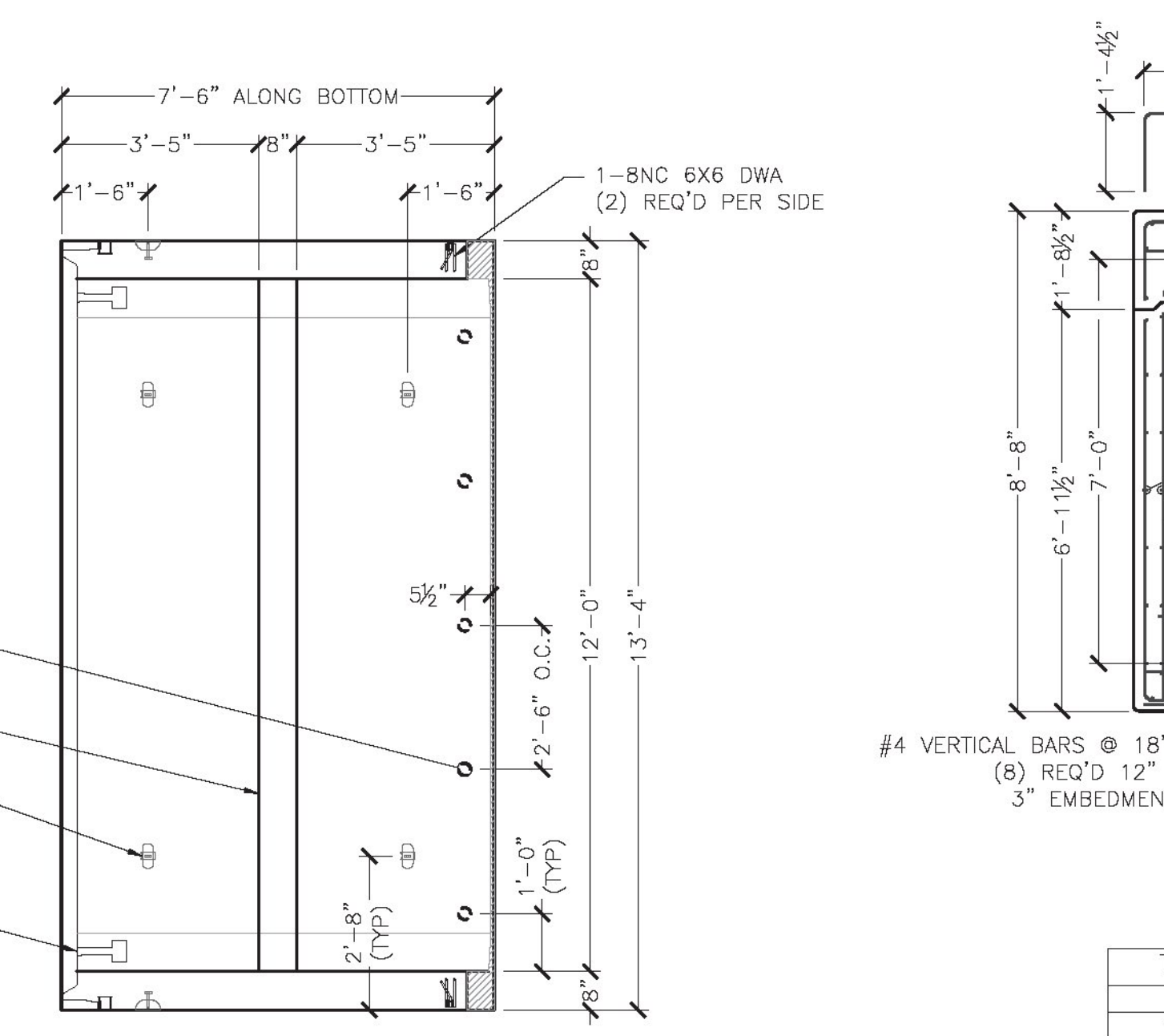
Prepared for:  
**Renaud Brothers, Inc.**  
 283 Fort Bridgeman Rd #2  
 Vernon, VT 05354



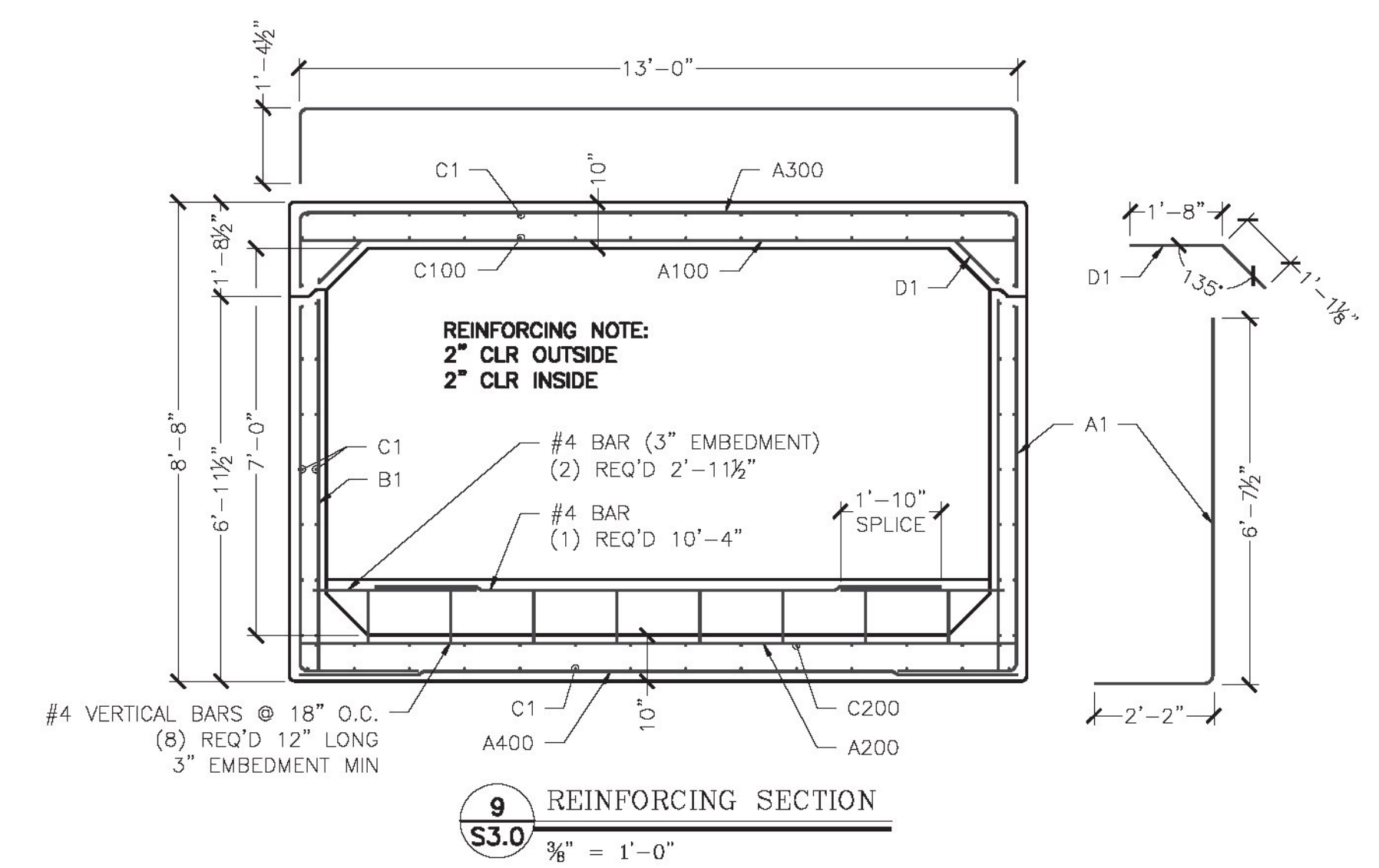
**BC1 - 1 REQ'D**  
ITEM 281207  
UNIT WEIGHT AND VOLUME:  
CULVERT: 5.40CY (22,680#)  
BAFFLE WALL: .28CY (1,180#)  
TOTAL WEIGHT: 23,860#



**BC2 - 10 REQ'D**  
ITEM 281207  
UNIT WEIGHT AND VOLUME:  
CULVERT: 5.53CY (23,220#)  
BAFFLE WALL: .28CY (1,180#)  
TOTAL WEIGHT: 24,780#



**BC3 - 1 REQ'D**  
ITEM 281207  
UNIT WEIGHT AND VOLUME:  
CULVERT: 5.40CY (22,680#)  
BAFFLE WALL: .28CY (1,180#)  
TOTAL WEIGHT: 23,860#



**9 REINFORCING SECTION**  
S3.0 3/8" = 1'-0"

TS2/BC2 REINFORCING SCHEDULE (COUNTS REFLECT 1 UNIT)

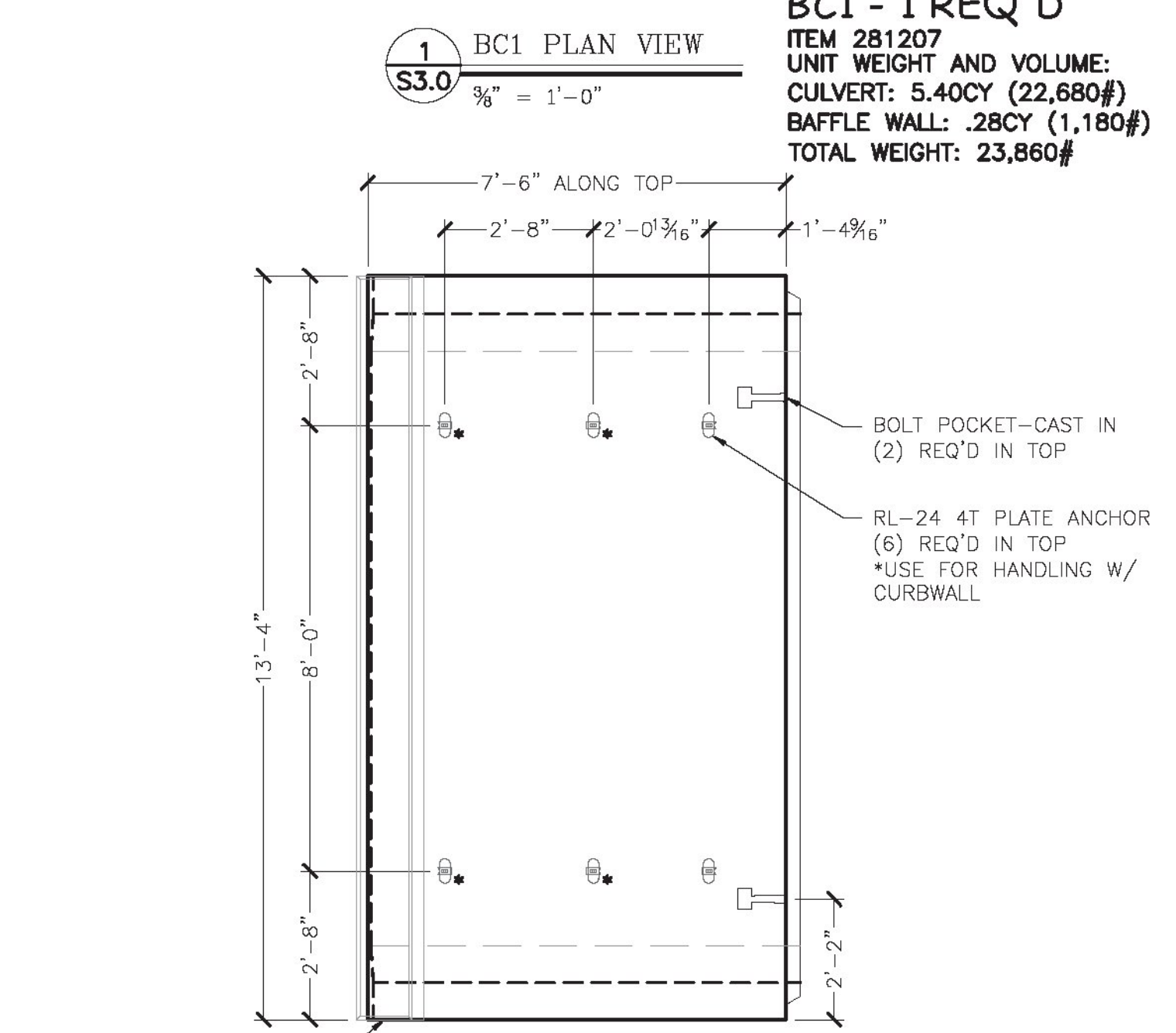
LOCATION	MARK	QTY	SIZE	SPACING	TYPE	CUT LENGTH
TOP SLAB (INT)	A100	14	#9	6"	STRAIGHT	13'-0"
BOT. SLAB (INT)	A200	10	#5	9"	STRAIGHT	13'-0"
TOP SLAB (EXT)	A300	8	#4	12"	"U" BAR	15'-6 1/2"
BOT. SLAB (EXT)	A400	13	#6	7"	STRAIGHT	13'-0"
WALL (EXT)	A1	26	#6	7"	"L" BAR	8'-8 1/2"
WALL (INT)	B1	20	#4	9"	STRAIGHT	6'-9"
LONGIT. TOP (EXT)	C1	14	#4	12"	STRAIGHT	7'-2"
LONGIT. TOP (INT)	C100	14	#4	12"	STRAIGHT	7'-2"
LONGIT. BOT. (INT)	C200	14	#4	12"	STRAIGHT	7'-2"
LONGIT. BOT. (EXT)	C1	14	#4	12"	STRAIGHT	7'-2"
LONGIT. WALL (EXT)	C1	14	#4	12"	STRAIGHT	7'-2"
LONGIT. WALL (INT)	C1	14	#4	12"	STRAIGHT	7'-2"
TOP SLAB (HAUNCH)	D1	26	#4	7"	BENT BARS	2'-9 1/2"

TS1/BC1 REINFORCING SCHEDULE (COUNTS REFLECT 1 UNIT)

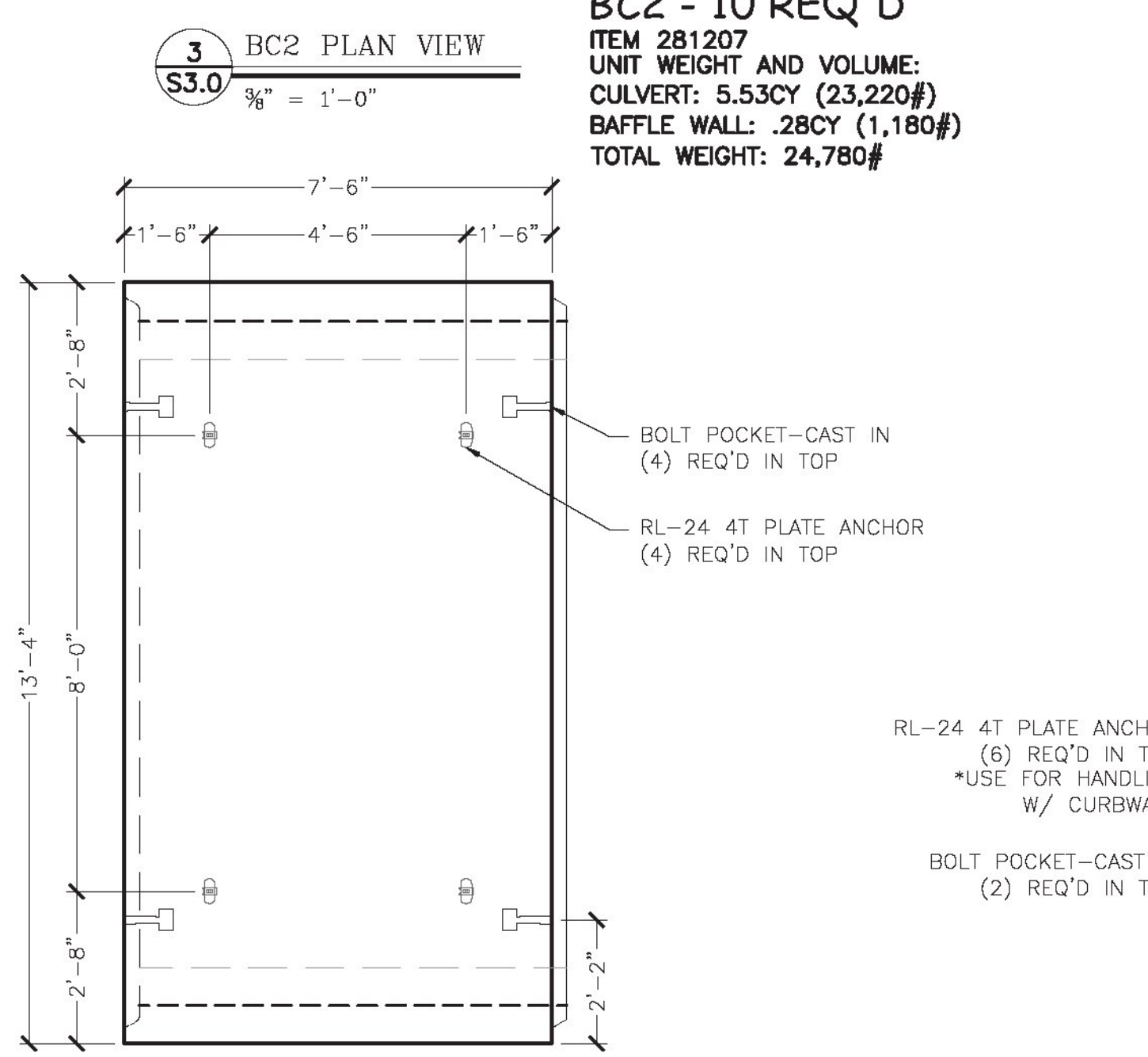
LOCATION	MARK	QTY	SIZE	SPACING	TYPE	CUT LENGTH
TOP SLAB (INT)	A100	14	#9	6"	STRAIGHT	13'-0"
BOT. SLAB (INT)	A200	10	#5	9"	STRAIGHT	13'-0"
TOP SLAB (EXT)	A300	8	#4	12"	"U" BAR	15'-6 1/2"
BOT. SLAB (EXT)	A400	13	#6	7"	STRAIGHT	13'-0"
WALL (EXT)	A1	26	#6	7"	"L" BAR	8'-8 1/2"
WALL (INT)	B1	18	#4	9"	STRAIGHT	6'-9"
LONGIT. TOP (EXT)	C1	14	#4	12"	STRAIGHT	7'-2"
LONGIT. TOP (INT)	C100	14	#4	12"	STRAIGHT	7'-4 1/2"
LONGIT. BOT. (INT)	C200	14	#4	12"	STRAIGHT	6'-11"
LONGIT. BOT. (EXT)	C1	14	#4	12"	STRAIGHT	6'-7 1/2"
LONGIT. WALL (EXT)	C1	14	#4	12"	STRAIGHT	7'-1" TO 6'-7 1/2"
LONGIT. WALL (INT)	C1	14	#4	12"	STRAIGHT	7'-4" TO 6'-11"
TOP SLAB (HAUNCH)	D1	26	#4	7"	BENT BARS	2'-9 1/2"
TOP SLAB	DBS1	7	#4	24"	"L" DOWELS	2'-0"
CURB WALL	DBS2	14	#4	12"	"L" DOWELS	2'-0"
CURB WALL	DBI1	14/7	#4	24"/12"	STRAIGHT	3'-0"
CURB WALL	CWS1	8	#4	AS SHOWN	STRAIGHT	13'-0"

TS3/BC3 REINFORCING SCHEDULE (COUNTS REFLECT 1 UNIT)

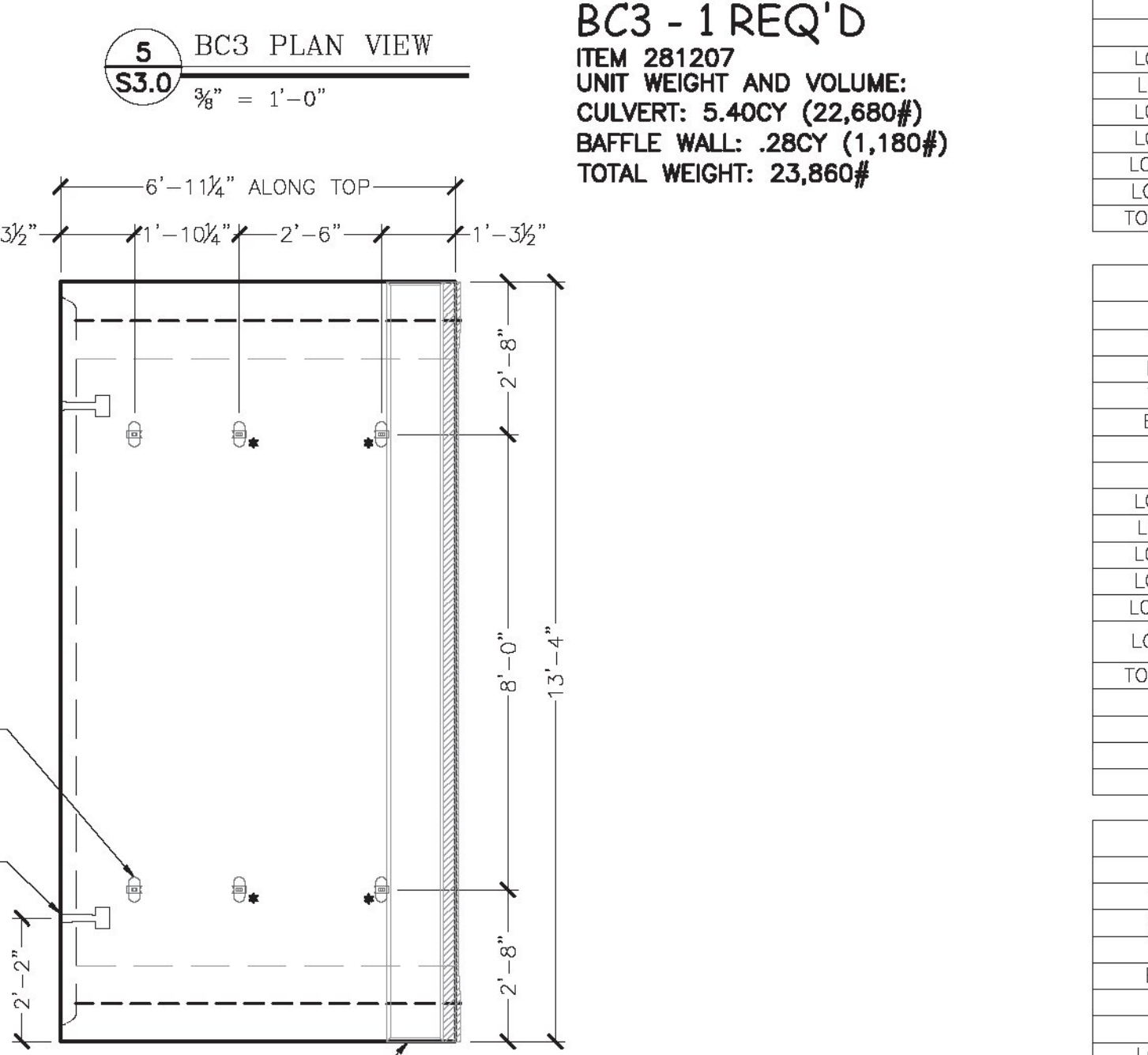
LOCATION	MARK	QTY	SIZE	SPACING	TYPE	CUT LENGTH
TOP SLAB (INT)	A100	14	#9	6"	STRAIGHT	13'-0"
BOT. SLAB (INT)	A200	10	#5	9"	STRAIGHT	13'-0"
TOP SLAB (EXT)	A300	7	#4	12"	"U" BAR	15'-6 1/2"
BOT. SLAB (EXT)	A400	13	#6	7"	STRAIGHT	13'-0"
WALL (EXT)	A1	26	#6	7"	"L" BAR	8'-8 1/2"
WALL (INT)	B1	20	#4	9"	STRAIGHT	6'-9"
LONGIT. TOP (EXT)	C1	14	#4	12"	STRAIGHT	6'-7"
LONGIT. TOP (INT)	C100	14	#4	12"	STRAIGHT	6'-4 1/2"
LONGIT. BOT. (INT)	C200	14	#4	12"	STRAIGHT	6'-10"
LONGIT. BOT. (EXT)	C1	14	#4	12"	STRAIGHT	7'-2"
LONGIT. WALL (EXT)	C1	14	#4	12"	STRAIGHT	7'-2" TO 6'-8 1/2"
LONGIT. WALL (INT)	C1	14	#4	12"	STRAIGHT	6'-11" TO 6'-5 1/4"
TOP SLAB (HAUNCH)	D1	24	#4	7"	BENT BARS	2'-9 1/2"
TOP SLAB	DBS1	7	#4	24"	"L" DOWELS	2'-0"
CURB WALL	DBS2	14	#4	12"	"L" DOWELS	2'-0"
CURB WALL	DBI1	14/7	#4	24"/12"	STRAIGHT	3'-0"
CURB WALL	CWS1	8	#4	AS SHOWN	STRAIGHT	13'-0"



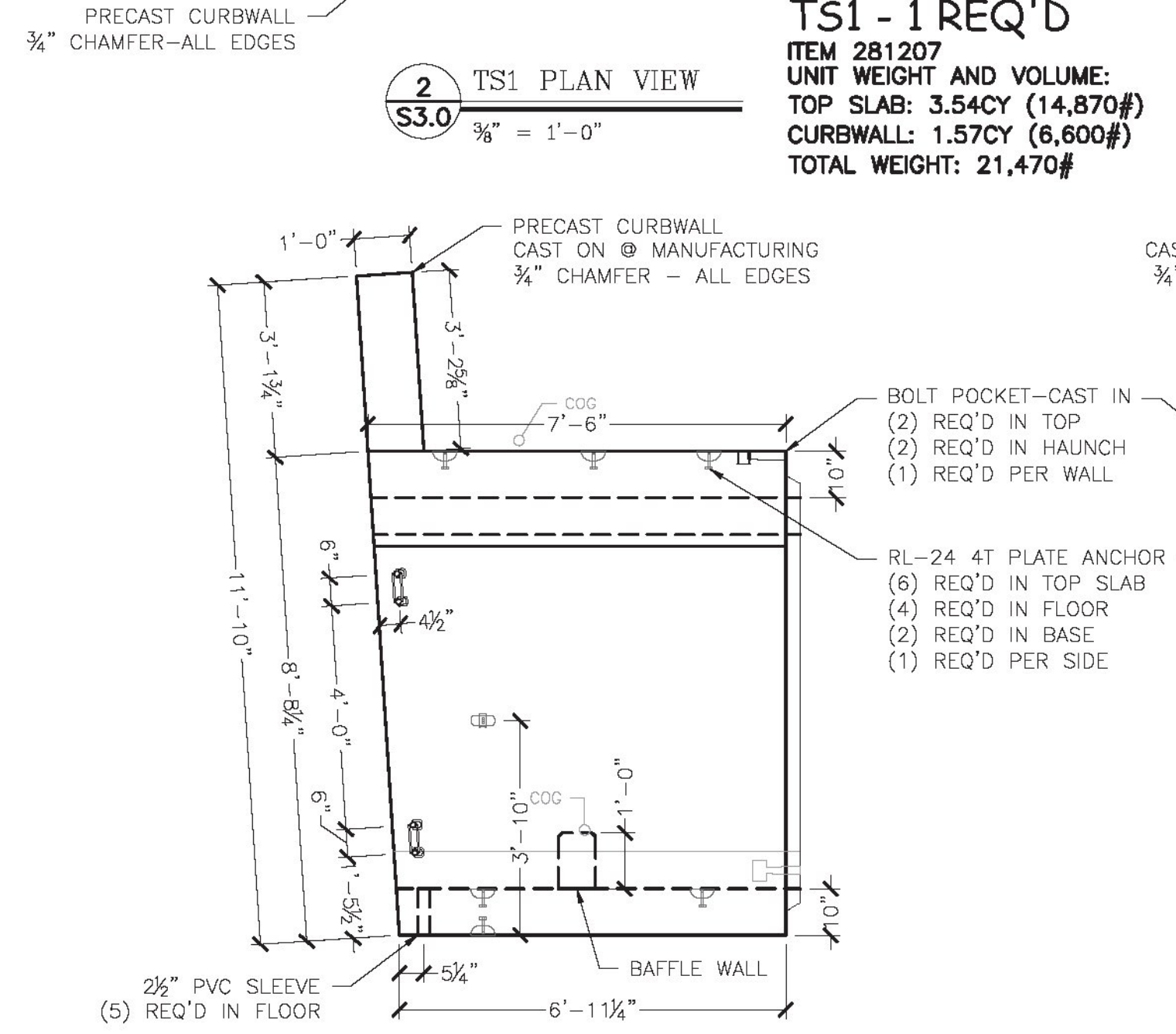
**TS1 - 1 REQ'D**  
ITEM 281207  
UNIT WEIGHT AND VOLUME:  
TOP SLAB: 3.54CY (14,870#)  
CURB WALL: 1.57CY (6,600#)  
TOTAL WEIGHT: 21,470#



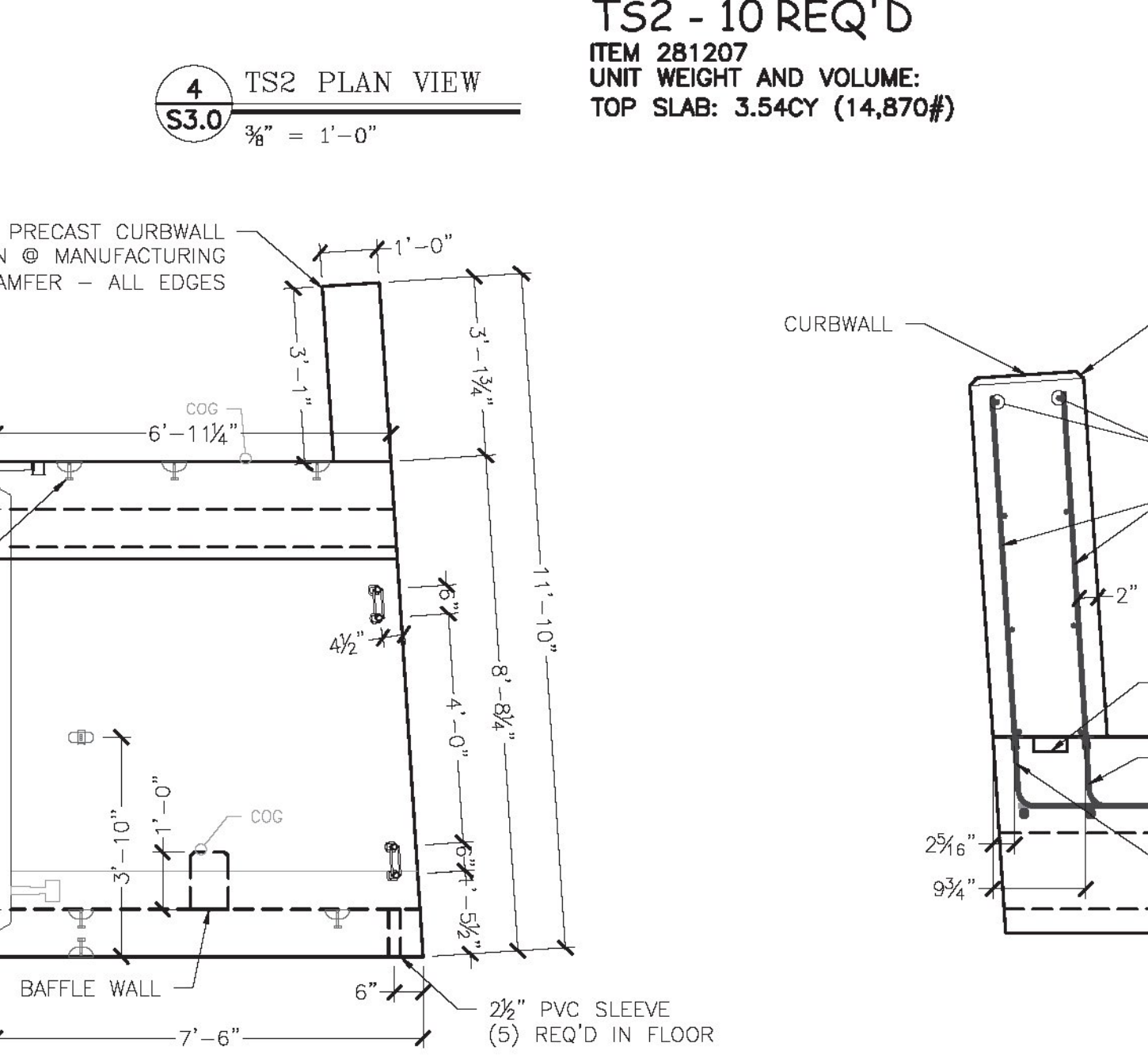
**TS2 - 10 REQ'D**  
ITEM 281207  
UNIT WEIGHT AND VOLUME:  
TOP SLAB: 3.54CY (14,870#)



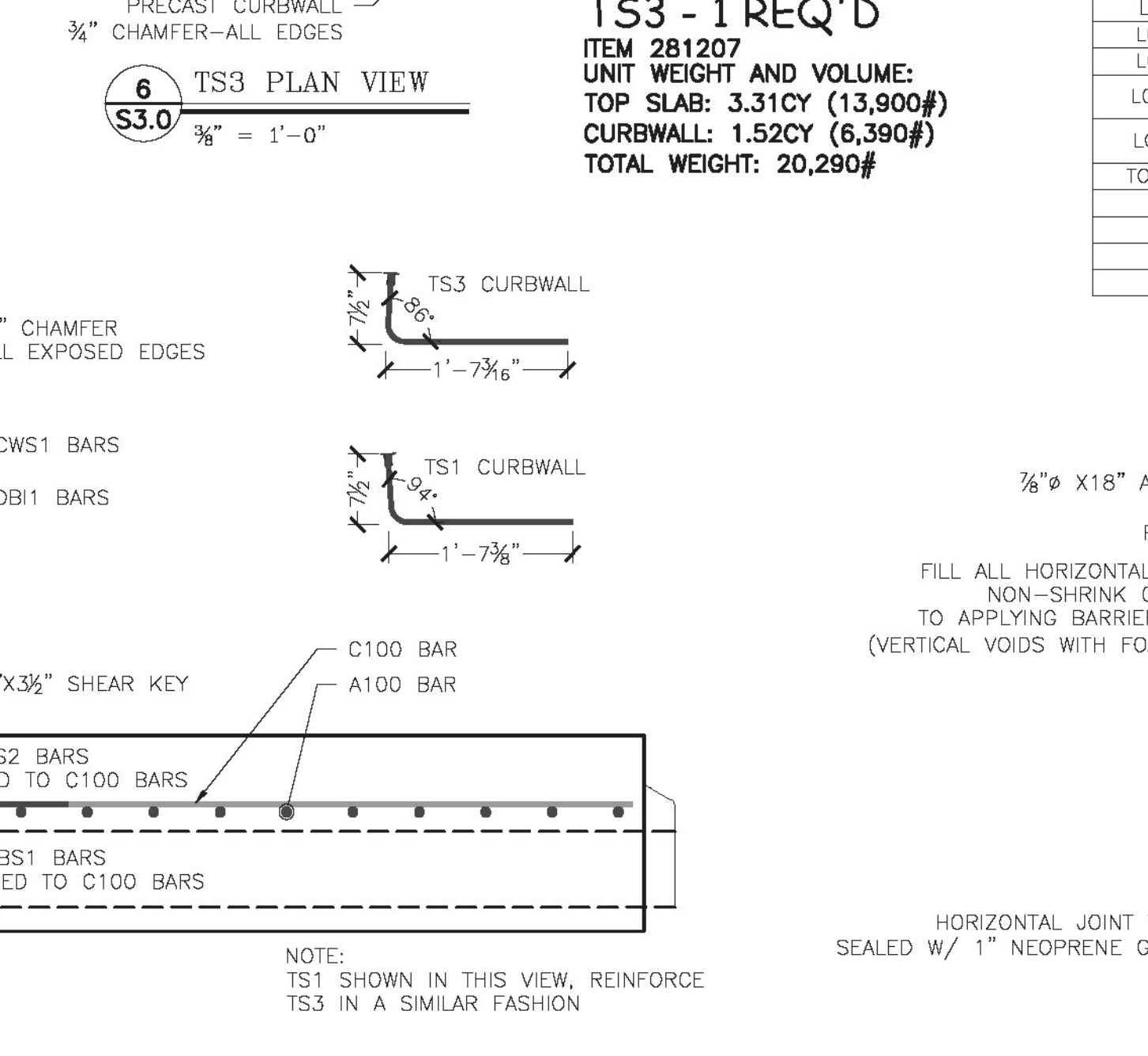
**TS3 - 1 REQ'D**  
ITEM 281207  
UNIT WEIGHT AND VOLUME:  
TOP SLAB: 3.31CY (13,900#)  
CURB WALL: 1.52CY (6,390#)  
TOTAL WEIGHT: 20,290#



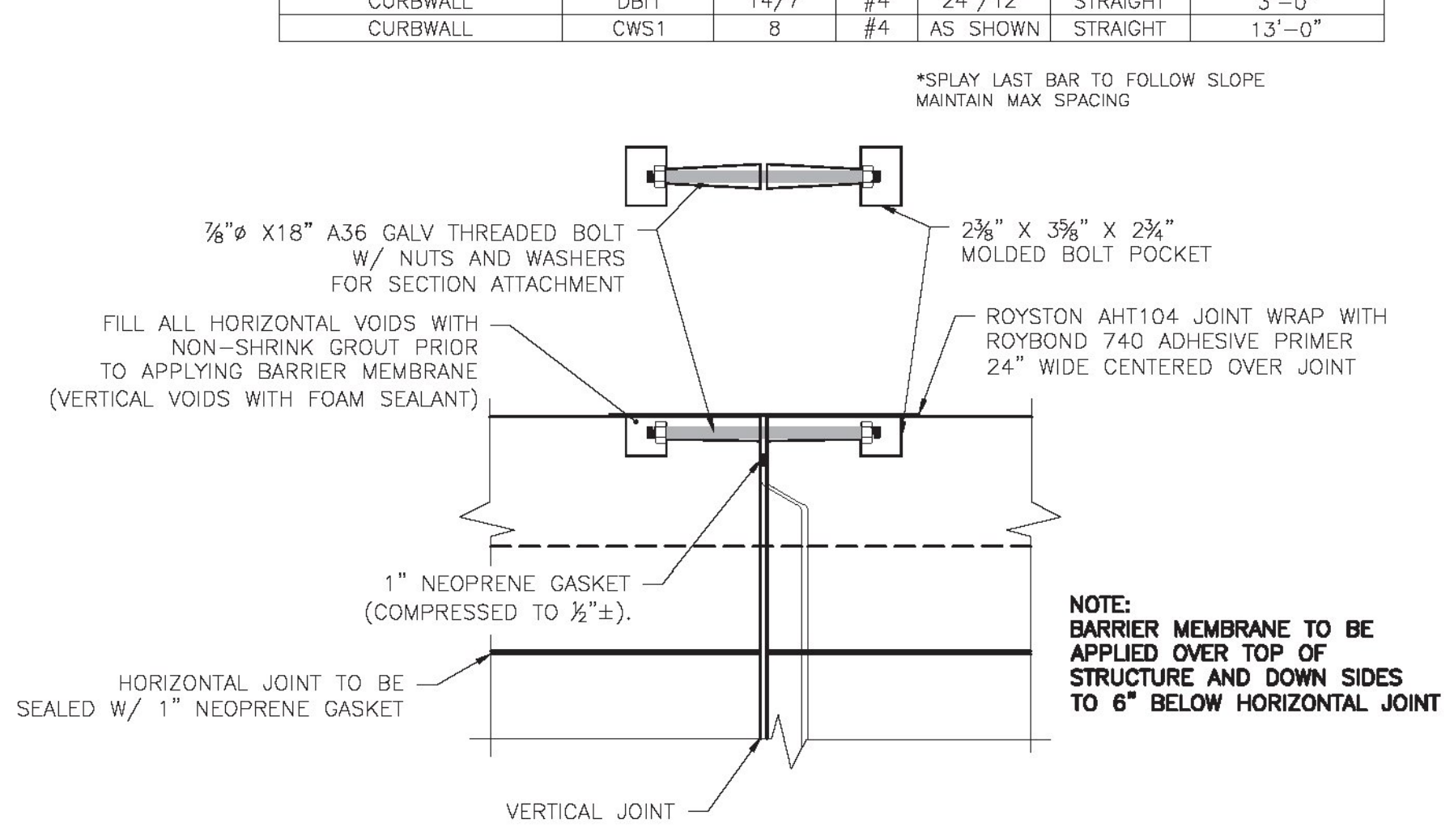
**7 BC1/TS1 ELEV. VIEW**  
S3.0 3/8" = 1'-0"



**8 BC3/TS3 ELEV. VIEW**  
S3.0 3/8" = 1'-0"



**10 CURB WALL REINFORCING SECTION**  
S3.0 3/8" = 1'-0"



**11 BOX CULVERT JOINT CONNECTION DETAIL**  
S3.0 1" = 1'-0"

Project No. 5779  
Date: 2/26/2015  
Designed by: PTL/CFP  
Drawn by: CFP  
Checked by: PTL  
Scale: AS SHOWN

**Bridge 47 - Route 30 - VAOT STP Culv(31)**  
**Winhall, VT**

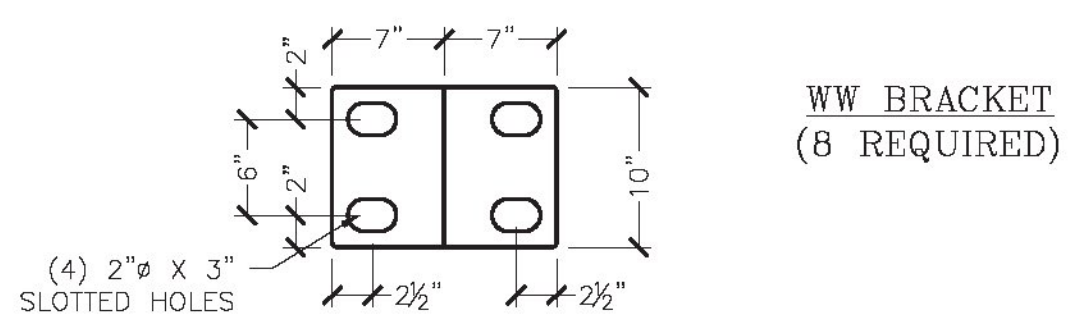
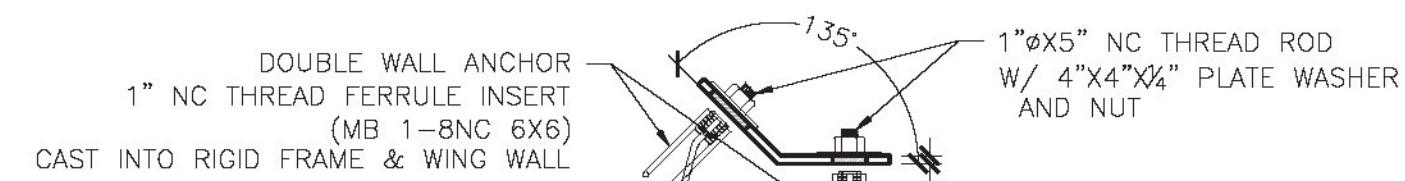
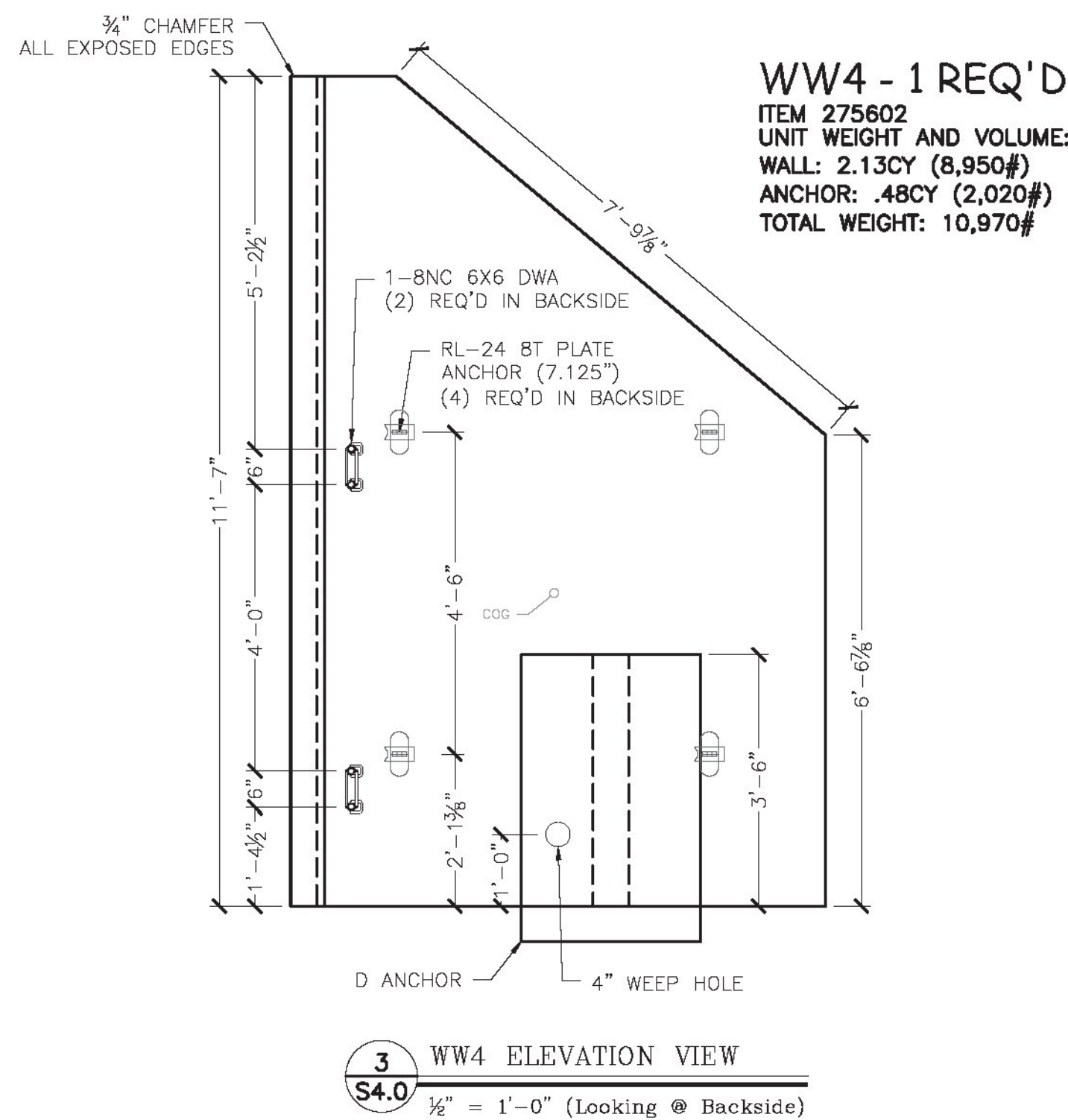
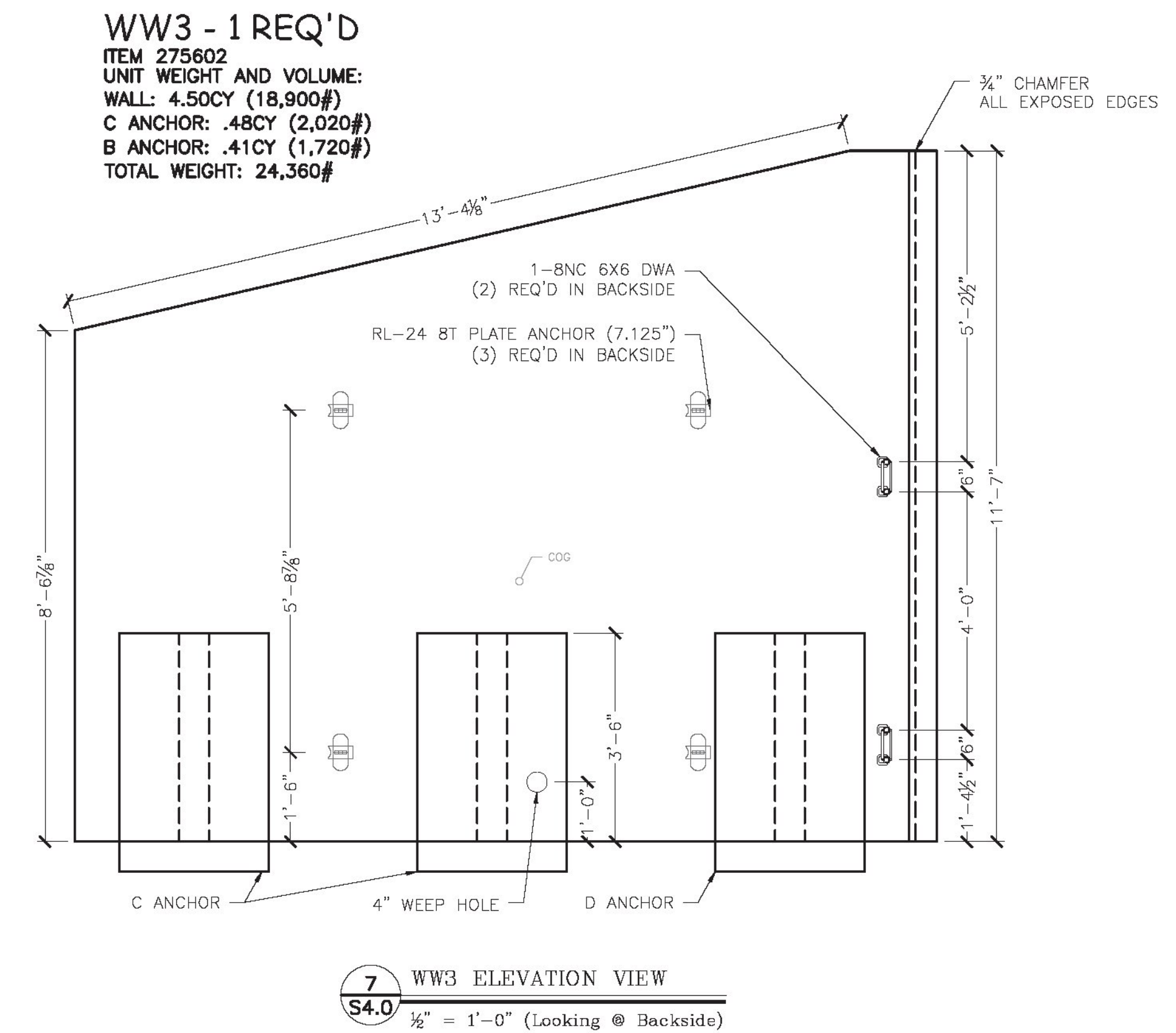
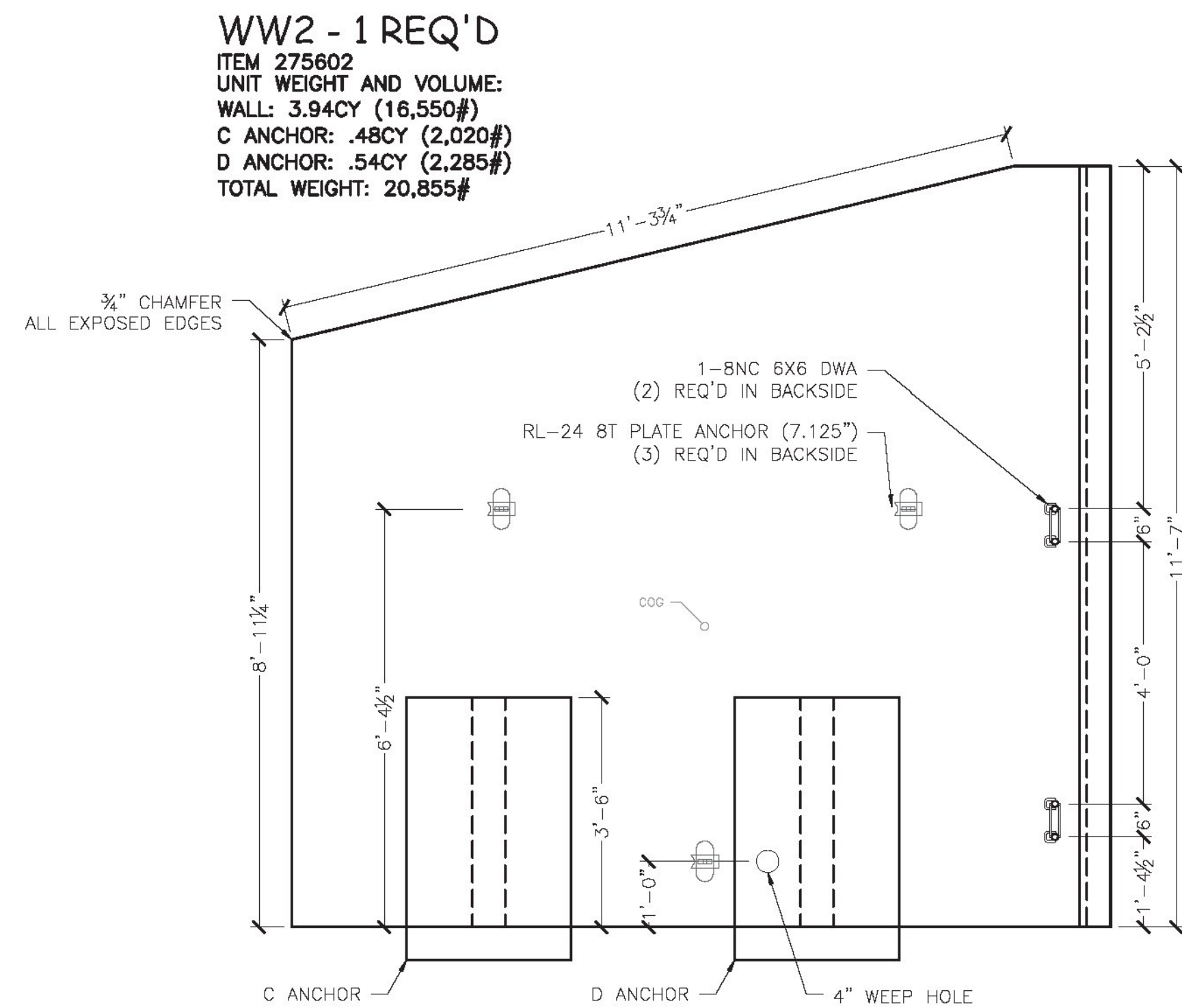
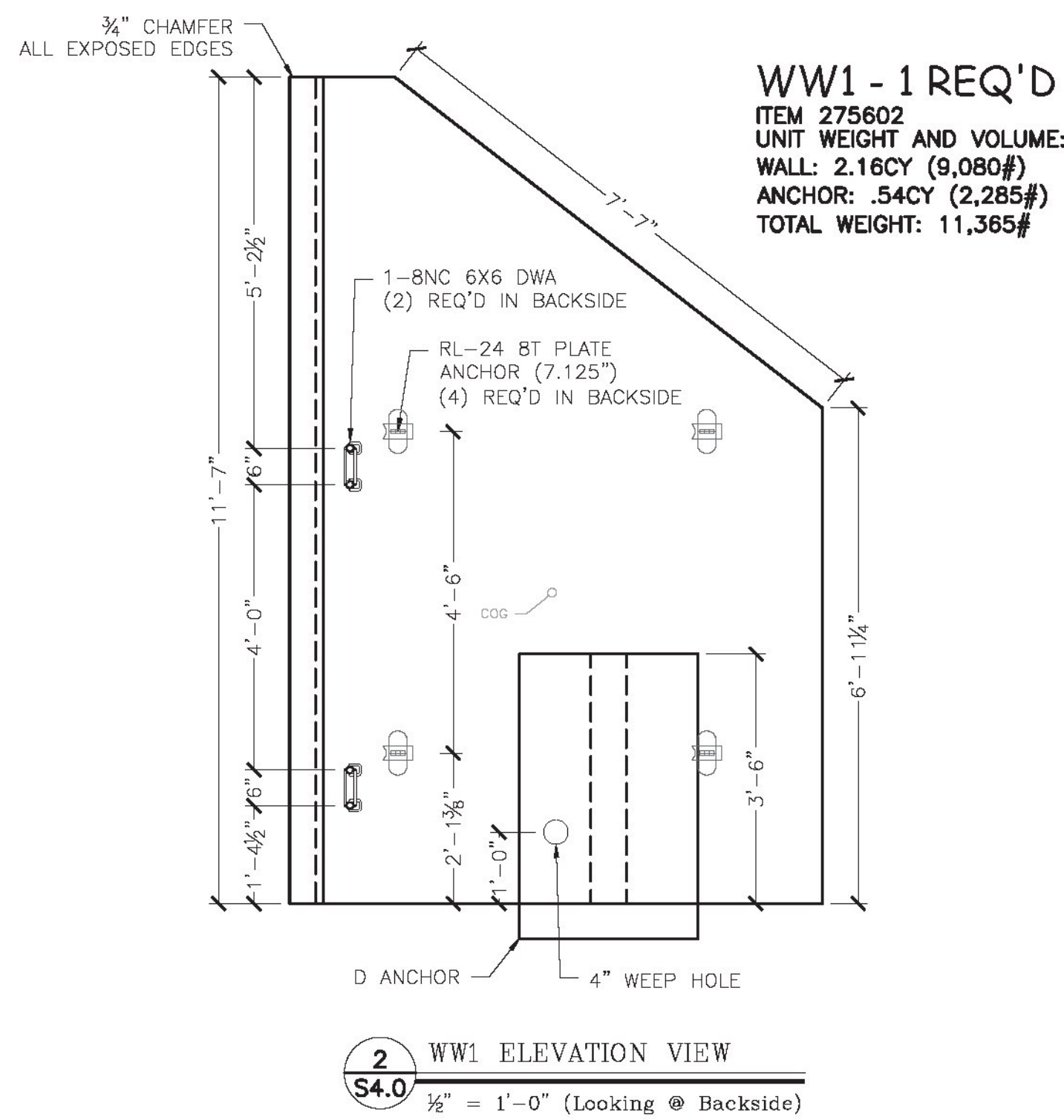
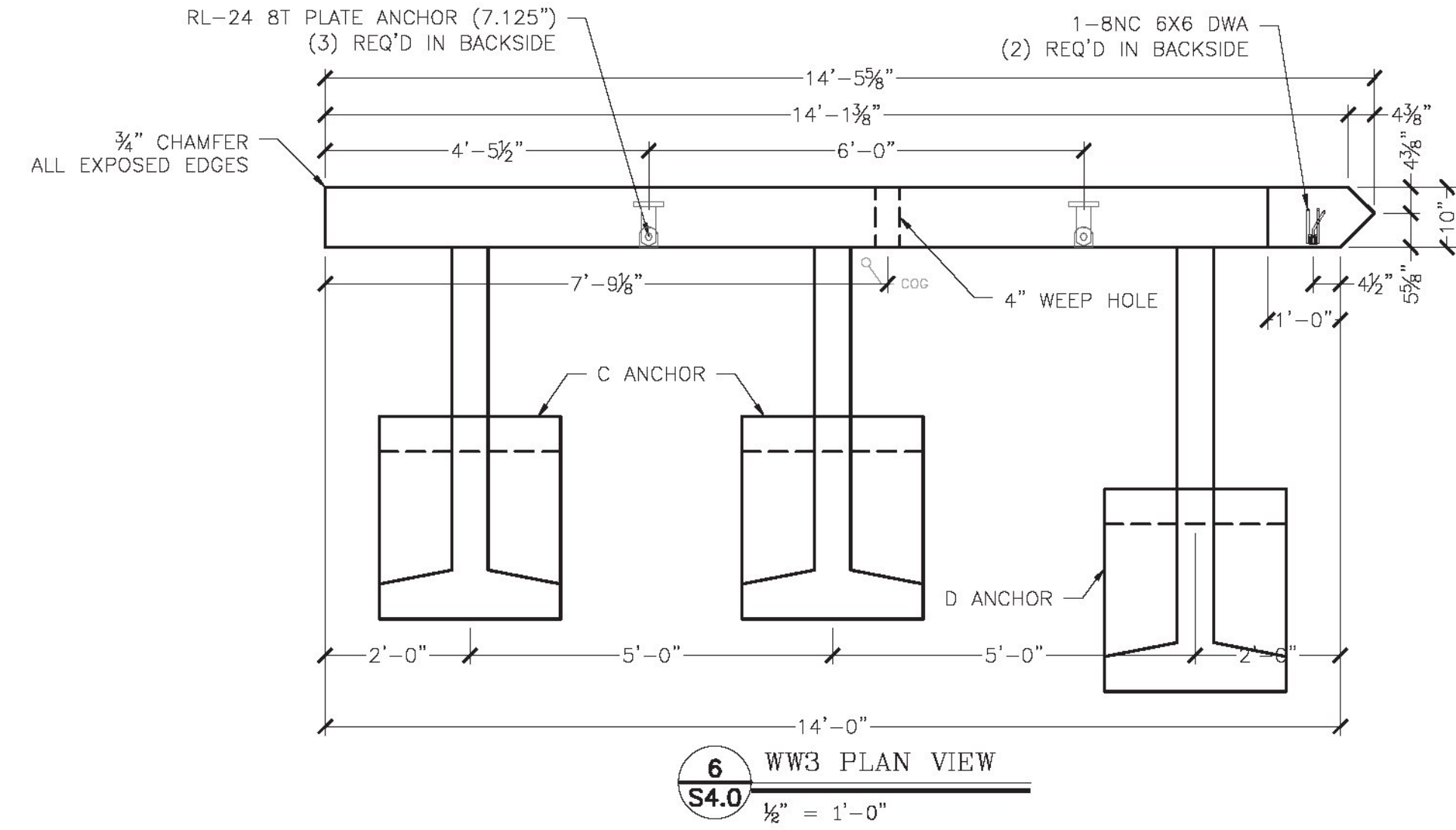
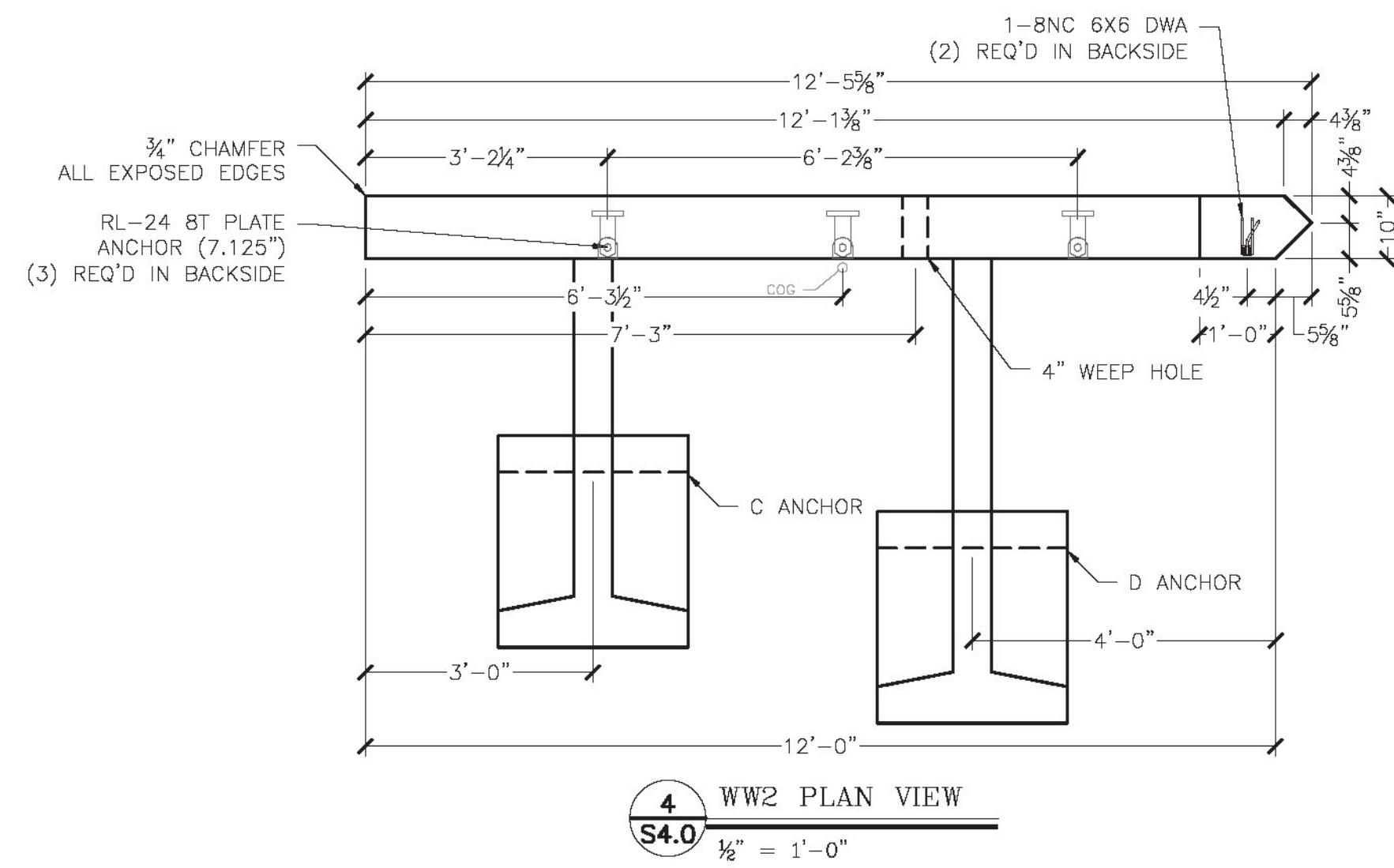
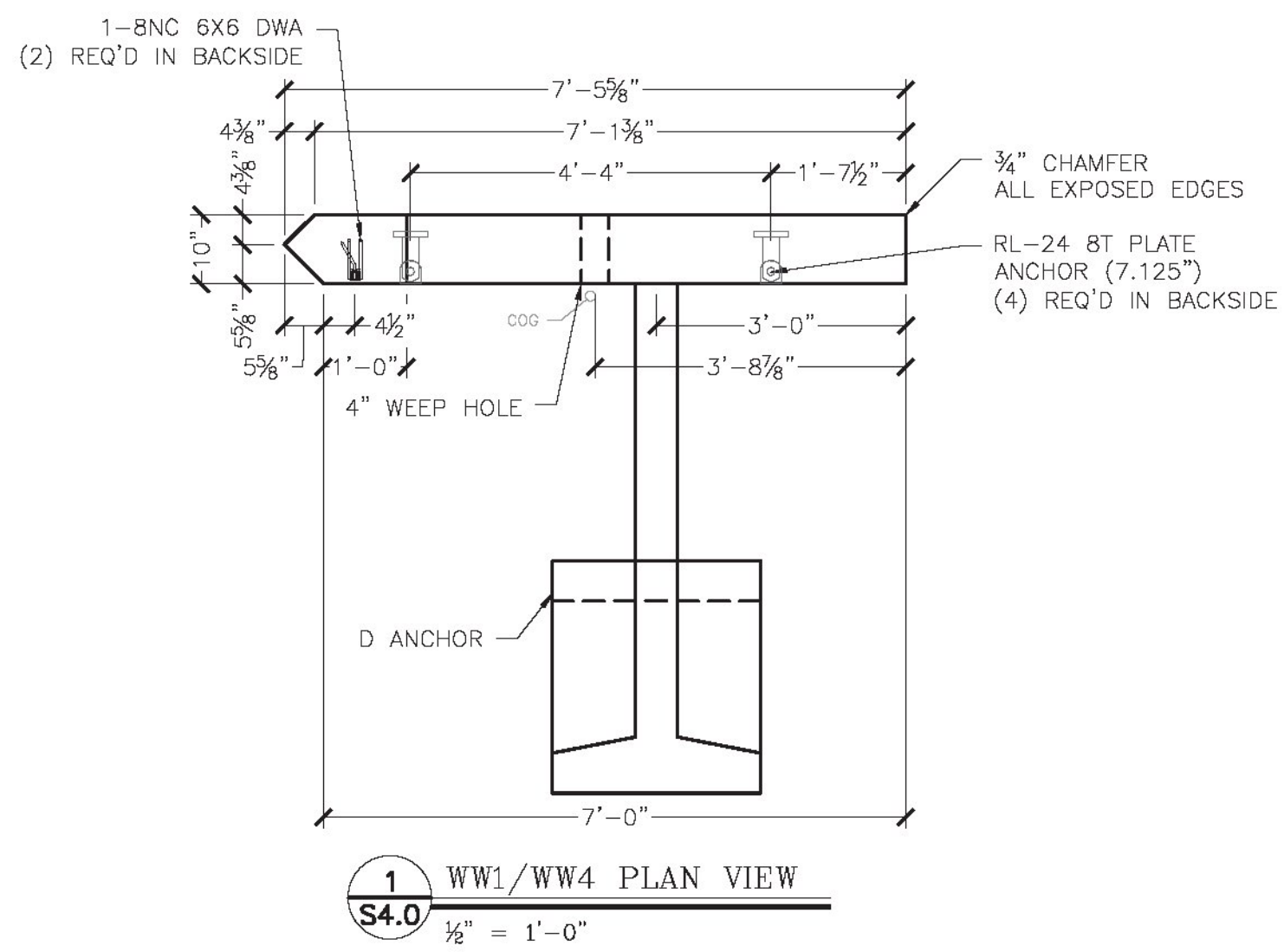
**12'x7' Open Top Box Culvert - Culvert Section Details**

Prepared for:  
**Renaud Brothers, Inc.**  
283 Fort Bridgeman Rd #2  
Vernon, VT 05354

173 BUXTON INDUSTRIAL DRIVE - PO BOX 870  
HENNIKER, NH 03242  
PHONE: 603-498-3218  
WWW.MICHIECORP.COM

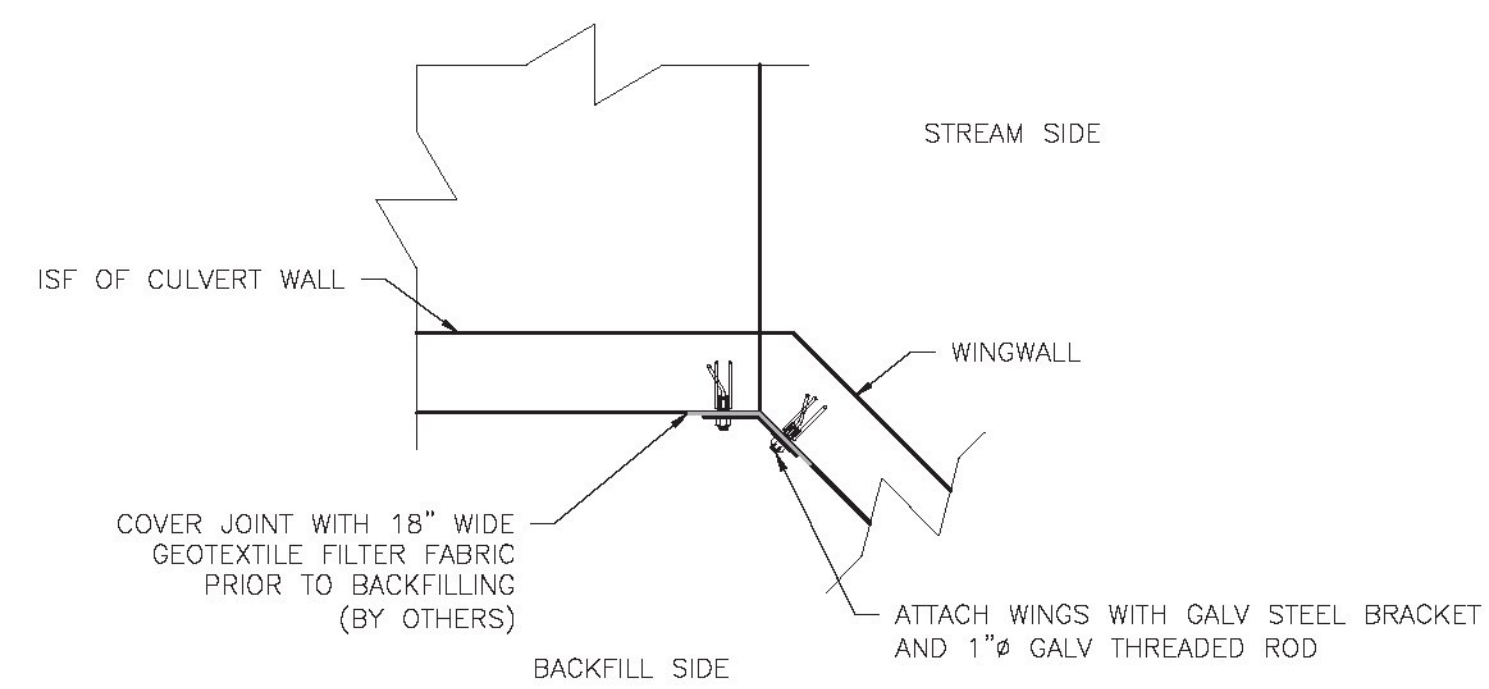
**MICHIE**  
CORPORATION  
Structural I  
LICENSED PROFESSIONAL ENGINEER  
No. 8031  
4/20/15

No.	Date	Revision
XXX		By

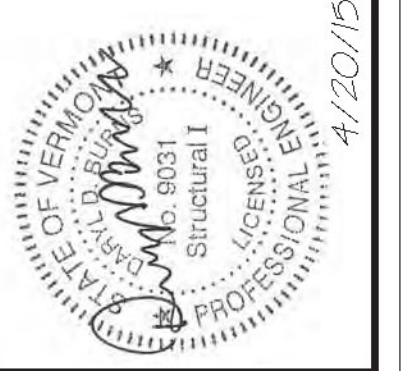


PLATES TO BE MADE OF 3/4" MILD STEEL, PLASMA CUT, AND BENT AS REQUIRED. (HOT DIPPED GALVANIZED AFTER BENDING)

**8** WINGWALL BRACKET DETAIL  
S4.0 1" = 1'-0"



**9** BRIDGE TO WW JOINT DETAIL  
S4.0 1/2" = 1'-0"



**MICHIE**  
CONSTRUCTION  
173 BUXTON INDUSTRIAL DRIVE - PO BOX 870  
HENNIKER, NH 03242  
PHONE: 603-498-3218  
WWW.MICHIECORP.COM

**Bridge 47 - Route 30 - VAOT STP Culv(31)**  
**Winhall, VT**

12'x7' Open Top Box Culvert - Wingwall Details

Project No. 5779  
Date: 2/26/2015  
Designed by: PDL/CFP  
Drawn by: CFP  
Scale: AS SHOWN  
Checked by: PDL

Prepared for:  
**Renaud Brothers, Inc.**  
283 Fort Bridgeman Rd #2  
Vernon, VT 05354

NOTE: BAR COUNTS REPRESENT 1 UNIT.

WW1 REINFORCING SCHEDULE					
BAR MARK	LOCATION	TYPE	SIZE/SPACING	CUT LENGTH	# OF PCS
VERTICAL	OSF	STRAIGHT	#4 @ 12"	11'-3" TO 6'-7 1/2"	7
VERTICAL	ISF	STRAIGHT	#6 @ 10"	11'-3" TO 6'-7 1/2"	9
HORIZONTAL	OSF	STRAIGHT	#4 @ 12"	6'-11 1/2"	12
HORIZONTAL	ISF	STRAIGHT	#4 @ 12"	6'-10 1/2"	12
DIAGONAL	FOLLOW SLOPE	STRAIGHT	#4	7'-3"	2

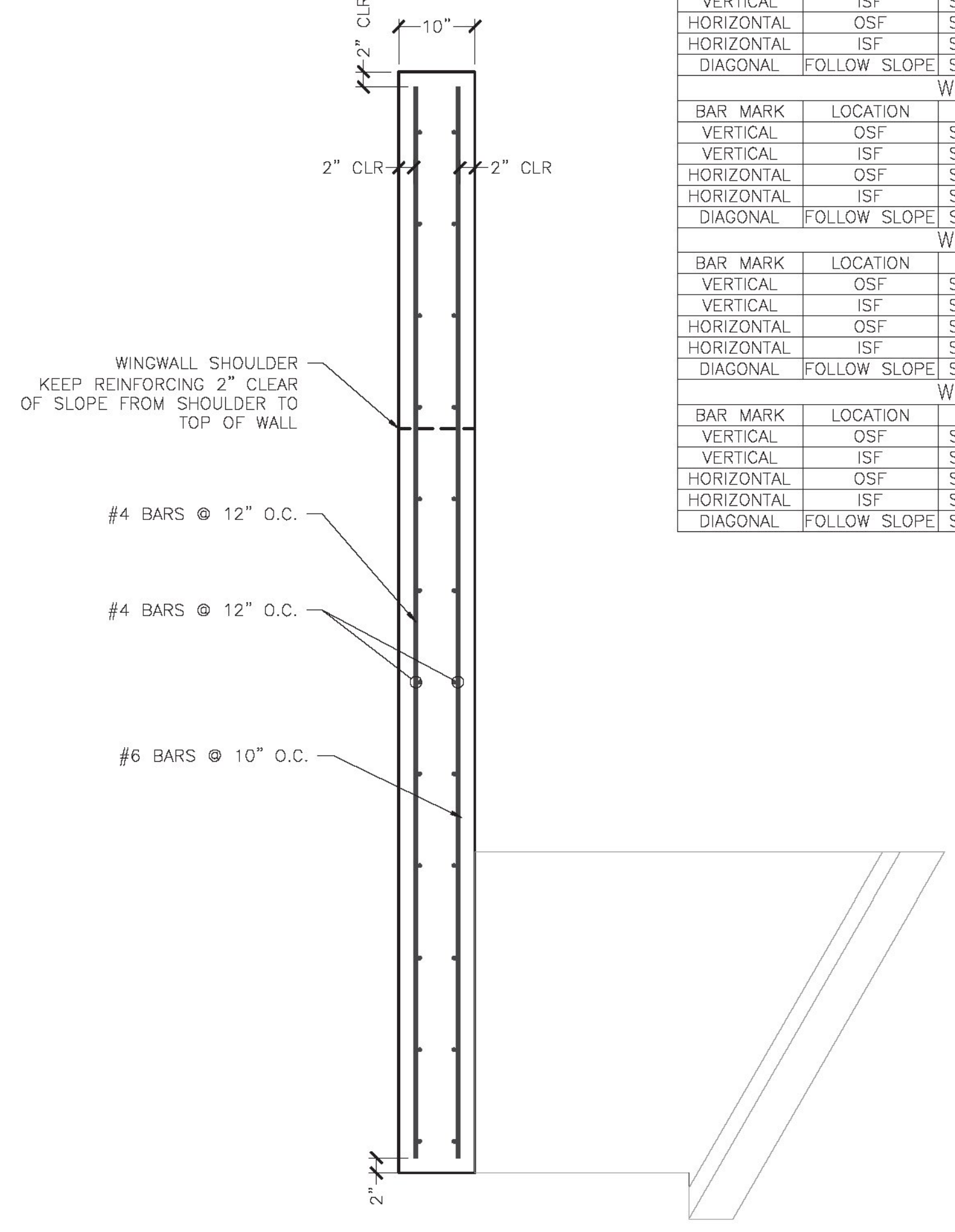
WW4 REINFORCING SCHEDULE					
BAR MARK	LOCATION	TYPE	SIZE/SPACING	CUT LENGTH	# OF PCS
VERTICAL	OSF	STRAIGHT	#4 @ 12"	11'-3" TO 6'-2 1/2"	7
VERTICAL	ISF	STRAIGHT	#6 @ 10"	11'-3" TO 6'-2 1/2"	9
HORIZONTAL	OSF	STRAIGHT	#4 @ 12"	6'-11 1/2"	12
HORIZONTAL	ISF	STRAIGHT	#4 @ 12"	6'-10 1/2"	12
DIAGONAL	FOLLOW SLOPE	STRAIGHT	#4	7'-3"	2

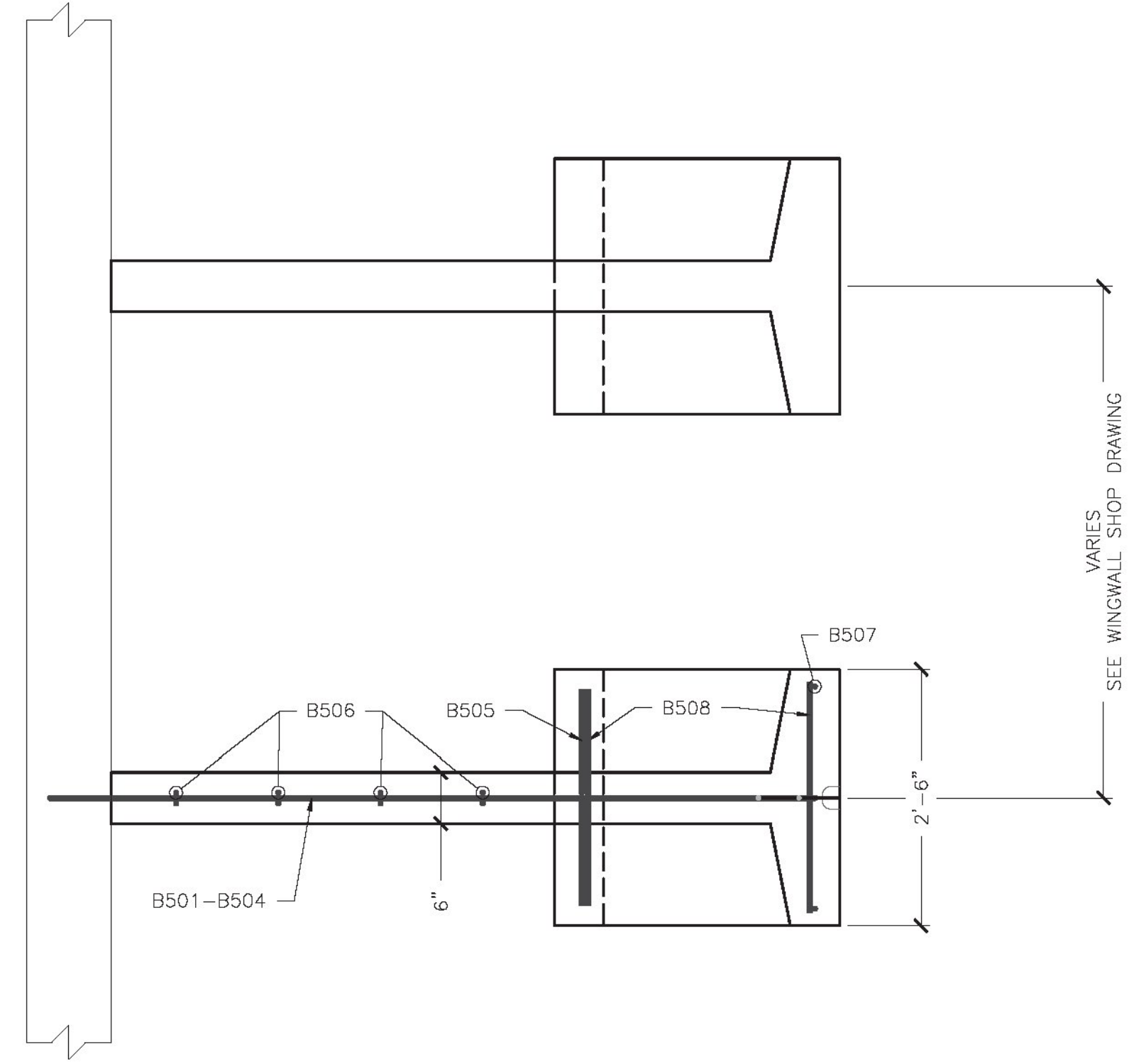
WW2 REINFORCING SCHEDULE					
BAR MARK	LOCATION	TYPE	SIZE/SPACING	CUT LENGTH	# OF PCS
VERTICAL	OSF	STRAIGHT	#4 @ 12"	11'-3" TO 8'-7 1/2"	12
VERTICAL	ISF	STRAIGHT	#6 @ 10"	11'-3" TO 8'-7 1/2"	15
HORIZONTAL	OSF	STRAIGHT	#4 @ 12"	11'-11 1/2"	12
HORIZONTAL	ISF	STRAIGHT	#4 @ 12"	11'-10 1/2"	12
DIAGONAL	FOLLOW SLOPE	STRAIGHT	#4	11'-0"	2

WW3 REINFORCING SCHEDULE					
BAR MARK	LOCATION	TYPE	SIZE/SPACING	CUT LENGTH	# OF PCS
VERTICAL	OSF	STRAIGHT	#4 @ 12"	11'-3" TO 8'-2 1/2"	14
VERTICAL	ISF	STRAIGHT	#6 @ 10"	11'-3" TO 8'-2 1/2"	17
HORIZONTAL	OSF	STRAIGHT	#4 @ 12"	13'-11 1/2"	12
HORIZONTAL	ISF	STRAIGHT	#4 @ 12"	13'-10 1/2"	12
DIAGONAL	FOLLOW SLOPE	STRAIGHT	#4	13'-0"	2

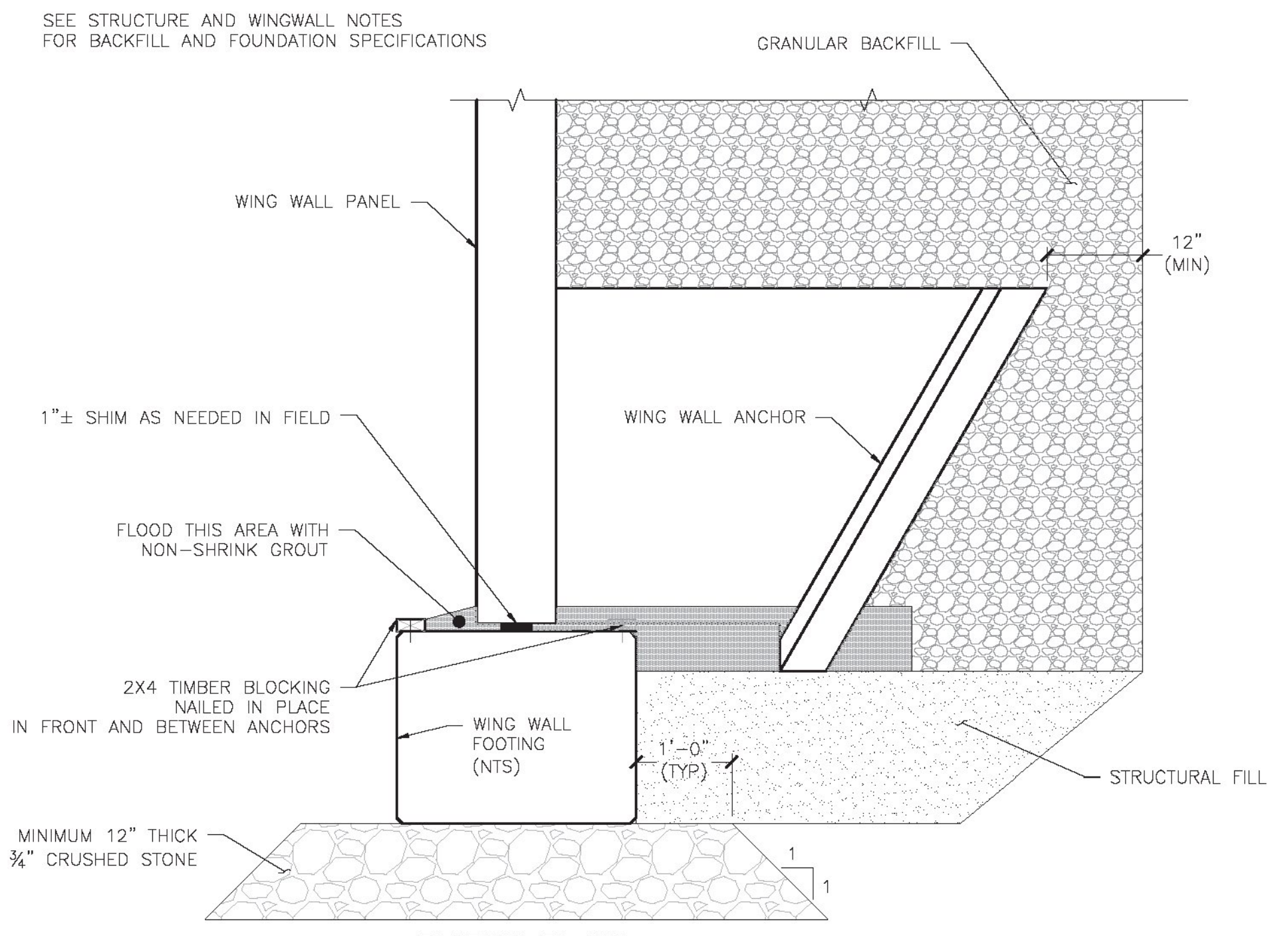


1 WINGWALL REINFORCING (TYP)  
3/4" = 1'-0"

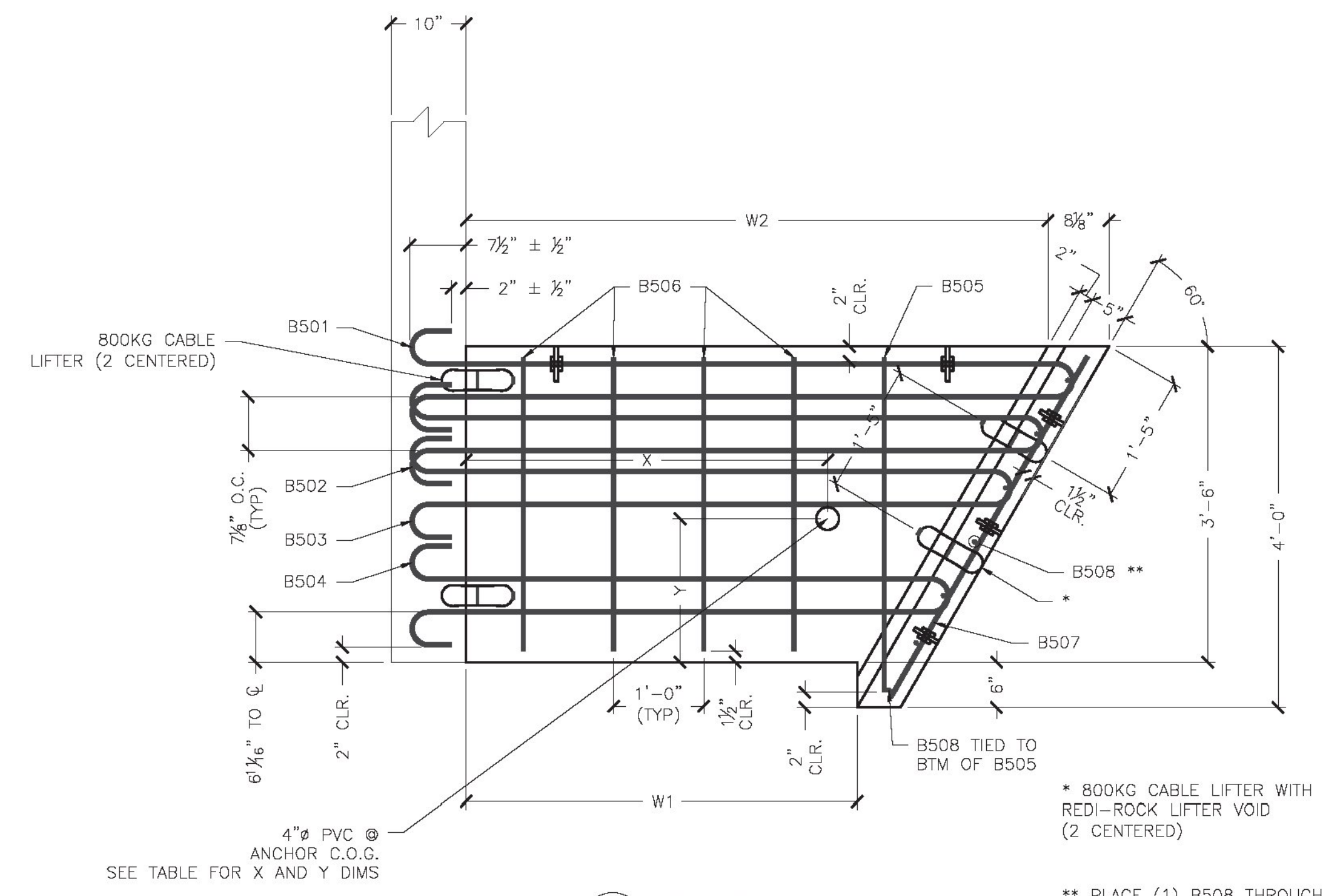


NOTE: REINFORCING SHOWN REPRESENTS "E" ANCHOR  
OTHER ANCHOR REINFORCING SIMILAR

3 REQ'D  
4 REQ'D



2 FOOTING TO WW ATTACHMENT DETAIL  
3/4" = 1'-0"



3 ANCHOR DETAIL  
3/4" = 1'-0"

ANCHOR TYPE "B"	
CONCRETE QUANTITY	0.41 CY
WEIGHT	1740 LB
W1	1'-4"
W2	3'-5 1/2"
X = 2'-2 1/2"	Y = 1'-8 3/4"

MARK	QTY	SIZE	L	TYPE	LENGTH
B501	1	#5	4'-4 1/2"	1	10'-1 1/2"
B502	1	#5	4'-0 1/2"	1	9'-5"
B503	1	#5	3'-8 1/2"	1	8'-9"
B504	1	#5	3'-0"	1	7'-4 1/2"
B505	2	#5	3'-8 1/2"	2	4'-7"
B506	2	#5	-----	Str.	3'-3"
B507	4	#5	-----	Str.	4'-4 1/2"
B508	7	#5	-----	Str.	2'-3"

ANCHOR TYPE "C"	
CONCRETE QUANTITY	0.48 CY
WEIGHT	2010 LB
W1	2'-4"
W2	4'-5 1/2"
X = 2'-8 3/4"	Y = 1'-8 1/2"

MARK	QTY	SIZE	L	TYPE	LENGTH
B501	1	#5	5'-4 1/2"	1	12'-1 1/2"
B502	1	#5	5'-0 1/2"	1	11'-5"
B503	1	#5	4'-8 1/2"	1	10'-9"
B504	1	#5	4'-0"	1	9'-4 1/2"
B505	2	#5	3'-8 1/2"	2	4'-7"
B506	4	#5	-----	Str.	3'-3"
B507	4	#5	-----	Str.	4'-4 1/2"
B508	7	#5	-----	Str.	2'-3"

ANCHOR TYPE "D"	
CONCRETE QUANTITY	0.54 CY
WEIGHT	2285 LB
W1	3'-4"
W2	5'-5 1/2"
X = 3'-5 1/2"	Y = 1'-8 1/2"

MARK	QTY	SIZE	L	TYPE	LENGTH
B501	1	#5	6'-4 1/2"	1	14'-1 1/2"
B502	1	#5	6'-0 1/2"	1	13'-5"
B503	1	#5	5'-8 1/2"	1	12'-9"
B504	1	#5	5'-0"	1	11'-4 1/2"
B505	2	#5	3'-8 1/2"	2	4'-7"
B506	6	#5	-----	Str.	3'-3"
B507	4	#5	-----	Str.	4'-4 1/2"
B508	7	#5	-----	Str.	2'-3"

ANCHOR TYPE "E"	
CONCRETE QUANTITY	0.61 CY
WEIGHT	2550 LB
W1	4'-4"
W2	6'-5 1/2"
X = 4'-0"	Y = 1'-8 1/2"

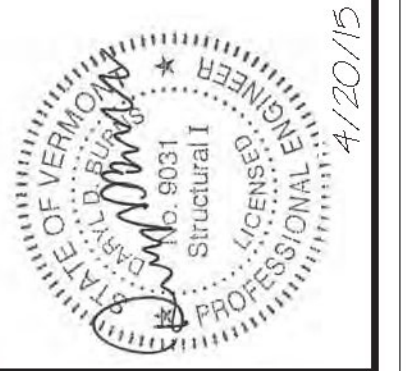
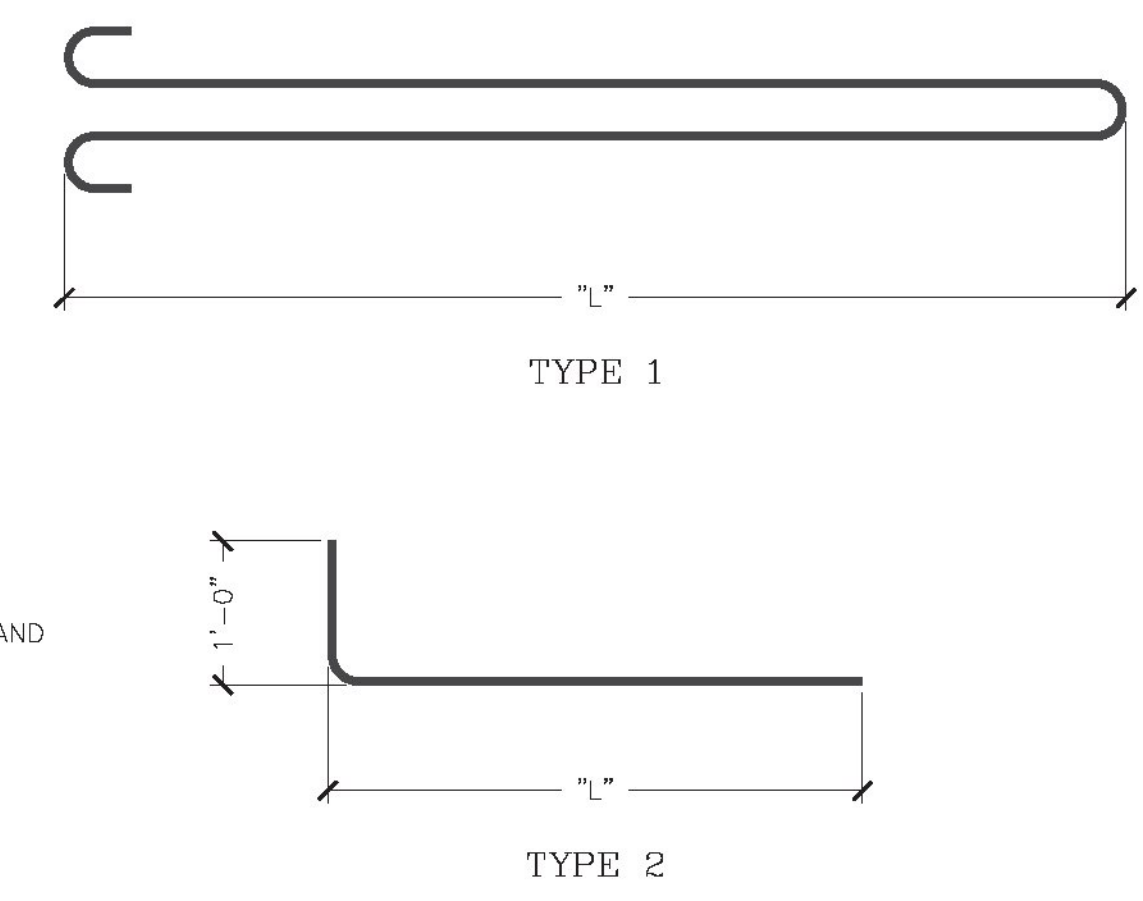
MARK	QTY	SIZE	L	TYPE	LENGTH
B501	1	#5	7'-4 1/2"	1	16'-1 1/2"
B502	1	#5	7'-0 1/2"	1	15'-5"
B503	1	#5	6'-8 1/2"	1	14'-9"
B504	1	#5	6'-0"	1	13'-4 1/2"
B505	2	#5	3'-8 1/2"	2	4'-7"
B506	8	#5	-----	Str.	3'-3"
B507	4	#5	-----	Str.	4'-4 1/2"
B508	7	#5	-----	Str.	2'-3"

ANCHOR TYPE "F"	
CONCRETE QUANTITY	0.68 CY
WEIGHT	2860 LB
W1	5'-4"
W2	7'-5 1/2"
X = 4'-7 1/2"	Y = 1'-8 1/2"

MARK	QTY	SIZE	L	TYPE	LENGTH
B501	1	#5	8'-4 1/2"	1	18'-1 1/2"
B502	1	#5	8'-0 1/2"	1	17'-5"
B503	1	#5	7'-8 1/2"	1	16'-9"
B504	1	#5	7'-0"	1	15'-4 1/2"
B505	2	#5	3'-8 1/2"	2	4'-7"
B506	10	#5	-----	Str.	3'-3"
B507	4	#5	-----	Str.	4'-4 1/2"
B508	7	#5	-----	Str.	2'-3"



**MICHIE**  
CONSTRUCTION

173 BUXTON INDUSTRIAL DRIVE - PO BOX 870  
HENNIKER, NH 03242  
PHONE: 603-498-3218  
WWW.MICHIECORP.COM

Bridge 47 - Route 30 - VAOT STP Culv(31)  
Winhall, VT

12' x 7' Open Top Box Culvert - Anchor WW Details

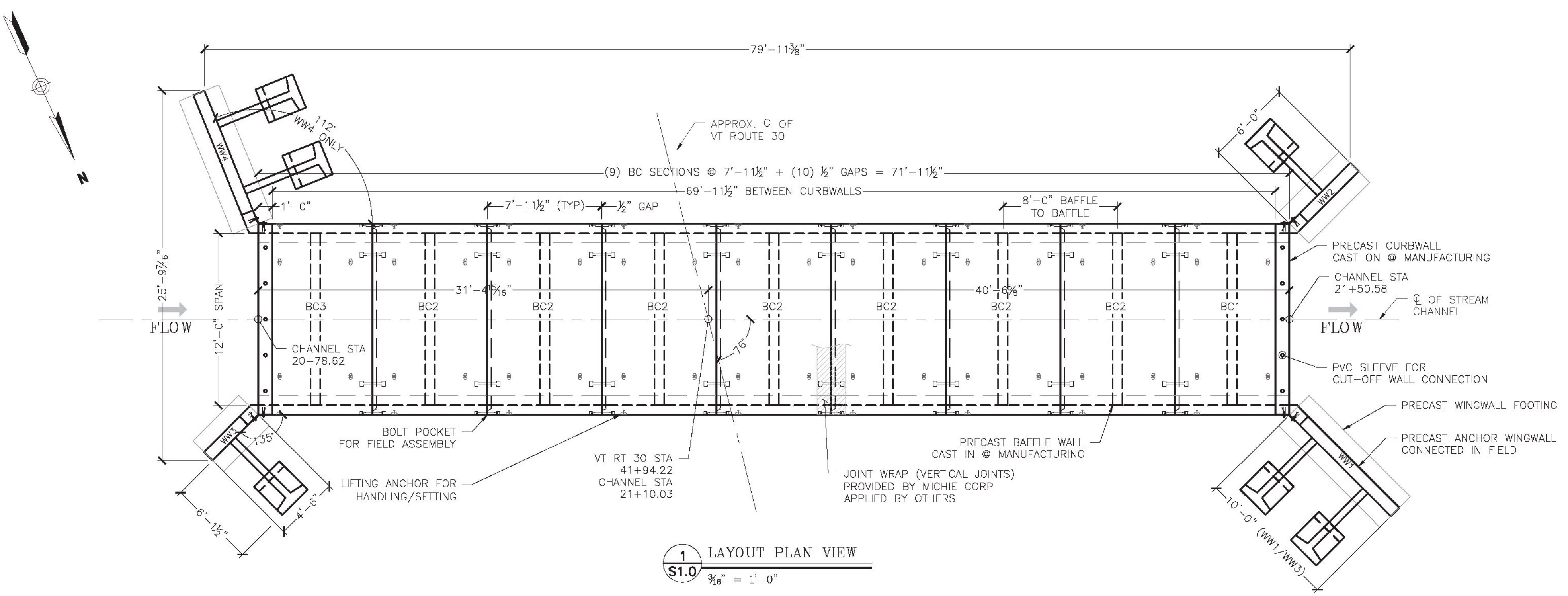
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Designed by: PDL/CFP  
Drawn by: CFP  
Project No. 5779  
Date: 2/26/2015

Prepared for:  
**Renaud Brothers, Inc.**  
283 Fort Bridgeman Rd #2  
Vernon, VT 05354

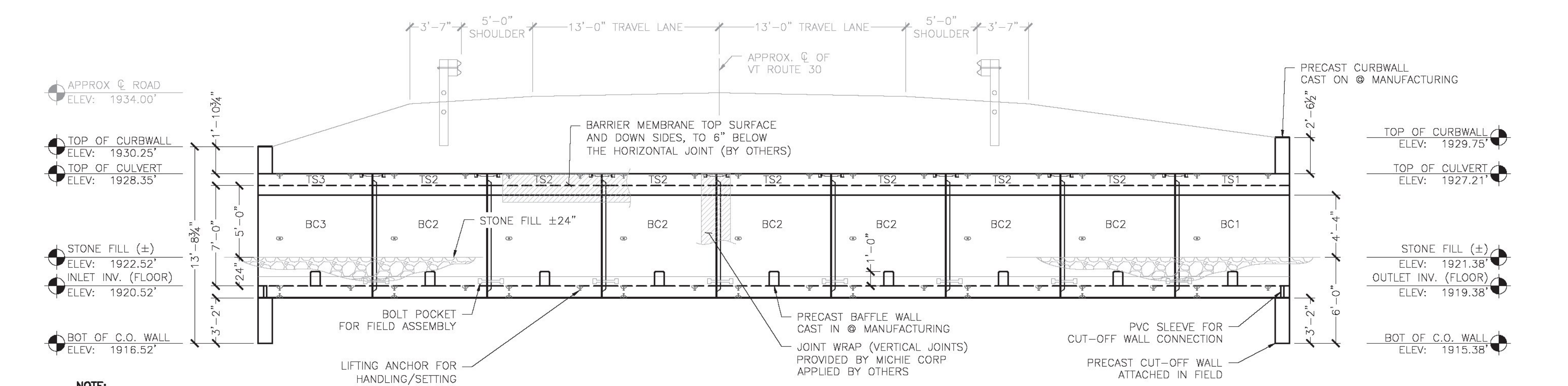
DWG NO. S5.0

No.	Date	Revision
XXX		By
XX		XX
XX		XX

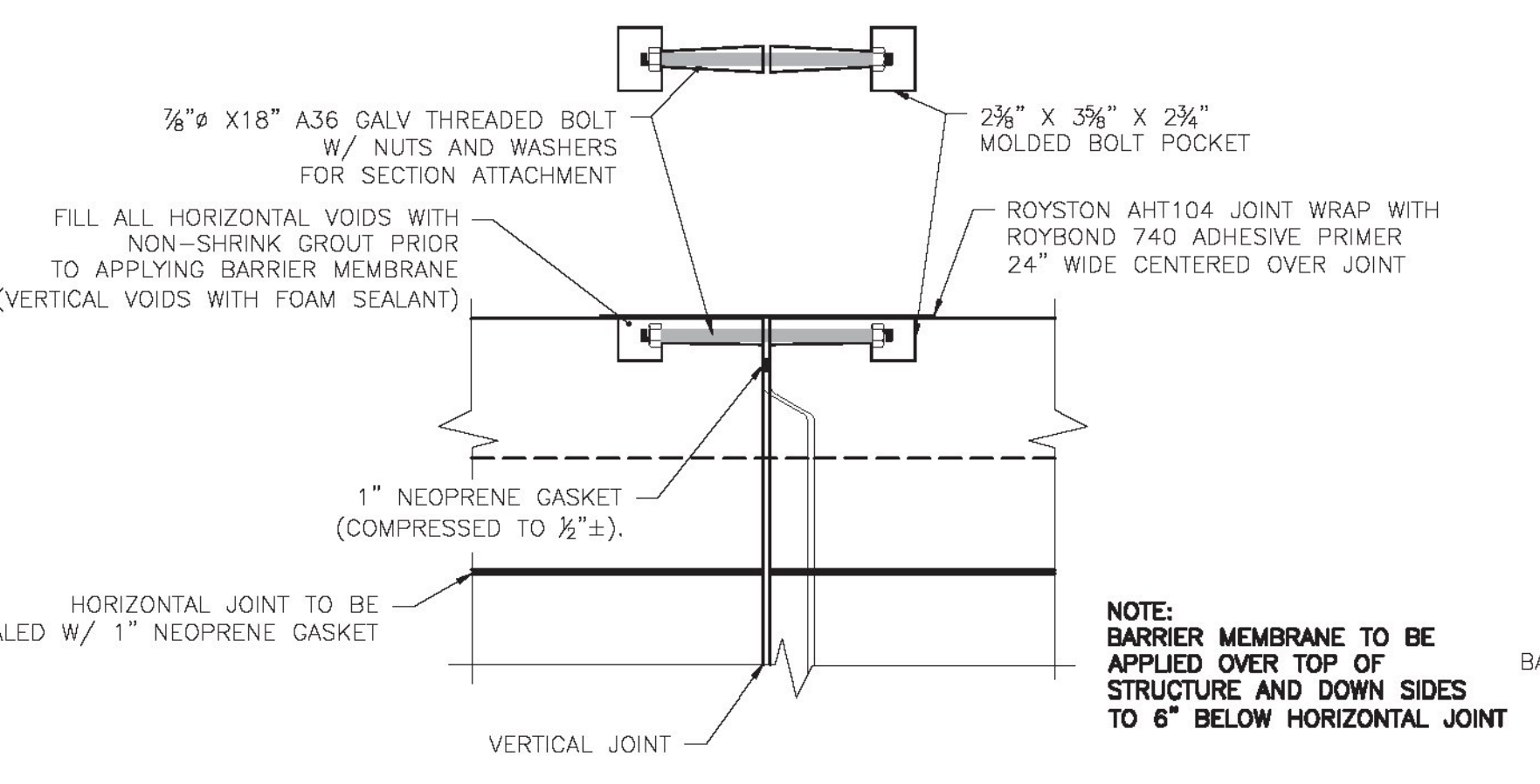
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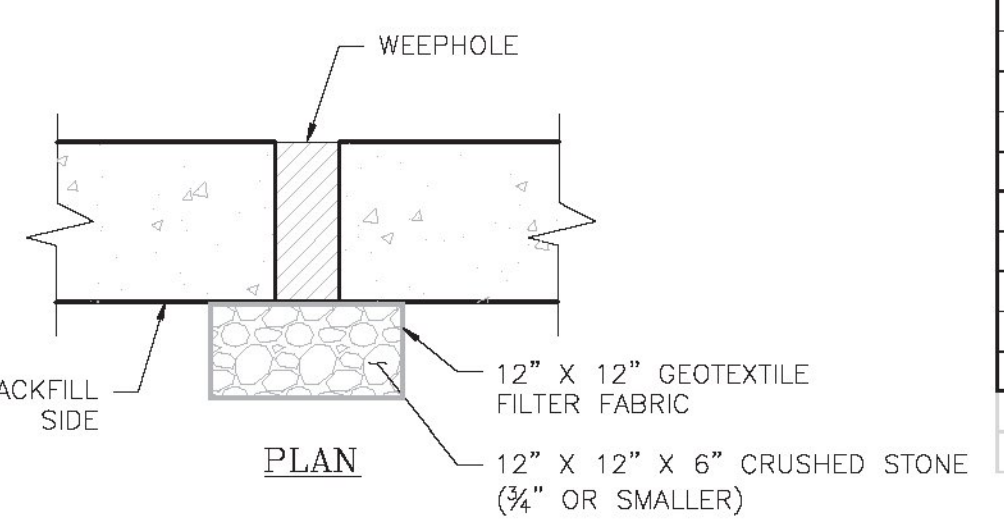
**1 LAYOUT PLAN VIEW**  
S1.0 3/8" = 1'-0"



**2 PROFILE PLAN VIEW**  
S1.0 3/8" = 1'-0"



**3 BOX CULVERT JOINT CONNECTION DETAIL**  
S1.0 1" = 1'-0"



**4 WEEPHOLE BACKFILL DETAIL**  
S1.0 1" = 1'-0"

BILL OF MATERIALS			
QTY	DESCRIPTION	IN STOCK	ORDERED FROM
<b>ITEMS CAST-IN</b>			
108	RL-24 4TON X 3.5" PLATE ANCHORS		
16	1-8NC 6X6 DOUBLE W/W ANCHORS		
22	5-TON UTILITY ANCHORS		
10	2.5" DIA X 12" PVC SLEEVES		
16LF	4" DIA PVC SLEEVES (WEEP)		
<b>ITEMS FOR PRESHIPPING/PREP.</b>			
330LF	1" CLOSED CELL NEOPRENE (25LF/ROLL)		
2 GAL	RED ADHESIVE (PRESS-SEAL 1-326)		
<b>ITEMS TO SHIP TO THE JOB</b>			
20	4"X4"X25" PLASTIC SHIMS		
240LF	ROYSTON 24" JOINT WRAP (50LF/ROLL)		
4 GAL	ROYSTON 740 ADHESIVE PRIMER (1 GAL/ROLL)		
48	7/8" X 18" GALV. THREADED ROD W/ 2 NUTS 4 WASHERS		
6	135 DEG (1/2" X 10" X 14") GALV. W/W PLATES W/ HARDWARE		
2	112 DEG (1/2" X 10" X 14") GALV. W/W PLATES W/ HARDWARE		
10	#6 X 14" DOWEL BARS		

**GENERAL NOTES:**

- THE PLANS ARE INTENDED TO BE DRAWN TO SCALE. HOWEVER, IF A CRITICAL DIMENSION IS NOT PROVIDED, MICHE CORPORATION SHOULD BE CONTACTED FOR VERIFICATION.
- IF ANY OF THE WORK TO BE DONE AS SHOWN ON THE DRAWINGS DOES NOT CORRESPOND WITH THE EXISTING FIELD CONDITIONS, CONTACT THE ENGINEER PRIOR TO PROCEEDING WITH THE WORK IN QUESTION.
- FIELD-VERIFY ALL ELEVATIONS PRIOR TO THE START OF CONSTRUCTION. IF THERE ARE ANY DISCREPANCIES, CONSULT THE ENGINEER PRIOR TO PROCEEDING WITH THE WORK IN QUESTION.
- MAINTAIN MINIMUM 60 DEGREE SLING ANGLE WHEN HANDLING PRECAST COMPONENTS.
- PRECAST COMPONENTS SHALL REACH A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI PRIOR TO STRIPPING, AND THE MINIMUM DESIGN COMPRESSIVE STRENGTH PRIOR TO SHIPPING, UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
- ALL JOINTS AND VOIDS SHALL BE FILLED WITH NON-SHRINK GROUT. VERTICAL SURFACE VOIDS MAY BE FILLED WITH FOAM SEALANT.
- SHOP DRAWINGS WERE DEVELOPED USING THE FOLLOWING RESOURCES FOR THE CONTRACT:
  - "PROPOSED IMPROVEMENT BRIDGE PROJECT, TOWN OF WINHALL, VT ROUTE 30, BRIDGE NUMBERS 47 AND 52", PAGES 1-60 OF 60, PREPARED BY STANTEC CONSULTING SERVICES, INC. OF SOUTH BURLINGTON, VT. DATED 9/25/2014 WITH NO REVISION DATE.
- IF THERE IS ADDITIONAL INFORMATION PERTINENT TO THE FABRICATION AND INSTALLATION OF THESE UNITS THAT IS NOT CONTAINED WITHIN THE RESOURCES LISTED ABOVE IT SHALL BE BROUGHT TO THE ATTENTION OF MICHE CORPORATION. FAILURE TO MAKE SUCH ADDITIONAL INFORMATION AVAILABLE SHALL RELIEVE MICHE CORPORATION OF ALL LIABILITIES ARISING FROM ERRORS OR OMISSIONS RELATED TO THE OMITTED INFORMATION.

**BOX CULVERT NOTES:**

- BOX CULVERT SECTIONS ARE DESIGNED IN ACCORDANCE WITH:
  - AASHTO "LRFD BRIDGE DESIGN SPECIFICATIONS", 6TH EDITION.
  - VTRANS 2011 "STANDARD SPECIFICATIONS FOR CONSTRUCTION".
- THE FOLLOWING CRITERIA WAS USED FOR DESIGN:
  - LIVE LOAD: HL-93
  - EARTH COVER: 5-7 FEET
  - BACKFILL SOIL UNIT WEIGHT: 140 PCF
  - BACKFILL SOIL FRICTION ANGLE: 34 DEGREES
  - CONCRETE STRENGTH: 5,000 PSI
  - STEEL YIELD STRENGTH: 60,000 PSI
- CONCRETE SHALL BE SELF-CONSOLIDATING CONFORMING TO ASTM C260 WITH A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 5,000 PSI. AGGREGATE SHALL CONFORM TO ASTM C-33 WITH A MAXIMUM DIAMETER OF 3/4". CEMENT SHALL CONFORM TO ASTM C150.
- REINFORCING SHALL BE GRADE 60 DEFORMED BLACK BARS CONFORMING TO ASTM A-615. ALL BARS SHALL BE BENT COLD.
- ALL EXPOSED EDGES EXCEPT WHERE NOTED SHALL BE CHAMFERED 3/4".
- SUBGRADE PREPARATION SHALL CONFORM TO VTRANS 204.07 BEDDING FOR STRUCTURES. FOOTINGS SHALL BE PLACED AT ELEVATIONS SHOWN ON A MINIMUM OF 1'-0" OF CRUSHED STONE CONFORMING TO VTRANS 704.05(A). ALL TOPSOIL, LOOSE FILL, AND DELETERIOUS MATERIALS SHALL BE REMOVED BEFORE PLACING BACKFILL.
- BACKFILL MATERIAL SHALL CONFORM TO VTRANS SECTION 704.08 GRANULAR BACKFILL FOR STRUCTURES. BACKFILL SHALL EXTEND FOR A MINIMUM DISTANCE OF 3'-0" BEYOND THE HORIZONTAL LIMITS OF THE STRUCTURE. PLACEMENT SHALL CONFORM TO VTRANS SECTION 204.08.
- EXPOSED SURFACES SHOULD BE COATED WITH VTRANS APPROVED WATER REPELLENT (SUPPLIED BY OTHERS).
- EACH SECTION SHALL BE PROVIDED WITH BOLT POCKETS FOR ATTACHMENT TO ADJACENT SECTIONS. 7/8" DIA. GALV. THREADED ROD, WASHERS AND NUTS SHALL BE PROVIDED FOR ASSEMBLY IN THE FIELD. CLOSED-CELL NEOPRENE JOINT SEALANT SHALL BE USED IN ALL JOINTS UNLESS NOTED OTHERWISE.
- 2FT WIDE ROYSTON JOINT WRAP WITH ADHESIVE PROVIDED BY MICHE CORP. INSTALLED BY OTHERS, CENTER ON JOINT AFTER GROUTING. BARRIER MEMBRANE PROVIDED AND INSTALLED BY OTHERS OVER TOP OF STRUCTURE AND DOWN THE SIDES TO 6" BELOW THE HORIZONTAL JOINT. CURB WALL NOTES:

**WING WALL NOTES:**

- SECTIONS ARE DESIGNED IN ACCORDANCE WITH:
  - AASHTO "LRFD BRIDGE DESIGN SPECIFICATIONS", 6TH EDITION
  - VTRANS 2011 "STANDARD SPECIFICATIONS FOR CONSTRUCTION".
- THE FOLLOWING SOIL PROPERTIES WERE USED IN THE DESIGN:
 

SOIL WEIGHT [PCF]	FRICTION ANGLE [DEG]
RETAINED SOIL 140	34
FOUNDATION SOIL 140	40

  - LIVE LOAD SURCHARGE = 2FT EQUIVALENT HEIGHT OF SOIL
  - BACKSLOPE ANGLE: 2:1
  - FACTORED BEARING RESISTANCE = 6000PSF (SERVICE), 15400PSF (STRENGTH)
- CONCRETE SHALL BE SELF-CONSOLIDATING CONFORMING TO ASTM C260 WITH A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 5,000 PSI. AGGREGATE SHALL CONFORM TO ASTM C-33 WITH A MAXIMUM DIAMETER OF 3/4". CEMENT SHALL CONFORM TO ASTM C150.
- UNLESS NOTED OTHERWISE, REINFORCING SHALL BE GRADE 60 DEFORMED BLACK BARS CONFORMING TO ASTM A-615. WHERE REQUIRED, EPOXY COATED REINFORCING SHALL CONFORM TO ASTM A-775. ALL BARS SHALL BE BENT COLD.
- ALL EXPOSED EDGES EXCEPT WHERE NOTED SHALL BE CHAMFERED 3/4".
- BACKFILL MATERIAL SHALL CONFORM TO VTRANS SECTION 704.08 GRANULAR BACKFILL FOR STRUCTURES. PLACEMENT SHALL CONFORM TO VTRANS SECTION 204.08.
- ALL EXPOSED EDGES OF CONCRETE SHALL BE COATED WITH A VTRANS APPROVED WATER REPELLANT (BY OTHERS).
- SUBGRADE PREPARATION SHALL CONFORM TO VTRANS 204.07 BEDDING FOR STRUCTURES. FOOTINGS SHALL BE PLACED AT ELEVATIONS SHOWN ON A MINIMUM OF 1'-0" OF CRUSHED STONE CONFORMING TO VTRANS 704.05(A). ALL TOPSOIL, LOOSE FILL, AND DELETERIOUS MATERIALS SHALL BE REMOVED BEFORE PLACING BACKFILL.

**PRECAST CONCRETE FOOTING NOTES:**

- FOOTING CONCRETE SHALL BE SELF-CONSOLIDATING CONFORMING TO ASTM C260 WITH A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 5,000 PSI. AGGREGATE SHALL CONFORM TO ASTM C-33 WITH A MAXIMUM DIAMETER OF 3/4". CEMENT SHALL CONFORM TO ASTM C150.
- UNLESS NOTED OTHERWISE, REINFORCING SHALL BE GRADE 60 DEFORMED BLACK BARS CONFORMING TO ASTM A-615. ALL BARS SHALL BE BENT COLD.
- ALL EXPOSED EDGES EXCEPT WHERE NOTED SHALL BE CHAMFERED 3/4".
- SUBGRADE PREPARATION FOR THE WINGWALL FOOTINGS SHALL CONFORM TO VTRANS 204.07 BEDDING FOR STRUCTURES. FOOTINGS SHALL BE PLACED AT ELEVATIONS SHOWN ON A MINIMUM OF 1'-0" OF CRUSHED STONE CONFORMING TO VTRANS 704.05(A). ALL TOPSOIL, LOOSE FILL, AND DELETERIOUS MATERIALS SHALL BE REMOVED BEFORE PLACING BACKFILL. SUBGRADE PREPARATION FOR THE CUT-OFF WALLS PER DETAIL ON SHEET 41 OF THE CONTRACT PLANS.

**LIST OF SHEETS:**

- S1.0 LAYOUT/PROFILE VIEW & DETAILS
- S2.0 FOOTING LAYOUT/DETAILS AND END ELEVATIONS
- S3.0 BOX CULVERT DETAILS
- S4.0 WINGWALL DETAILS
- S5.0 ANCHOR DETAILS

Project No. 5778  
Date: 2/24/2015

Designed by: PTL/CFP  
Drawn by: CFP  
Checked by: PTL

Scale: AS SHOWN

Prepared for:  
**Renaud Brothers, Inc.**  
283 Fort Bridgeman Rd #2  
Vernon, VT 05354

**Bridge #52 - VT Route 30 - VAOT STP Culv(31)**  
Winhall, VT

**12'x7' Open Top Box Culvert - Layout and Profile Views**

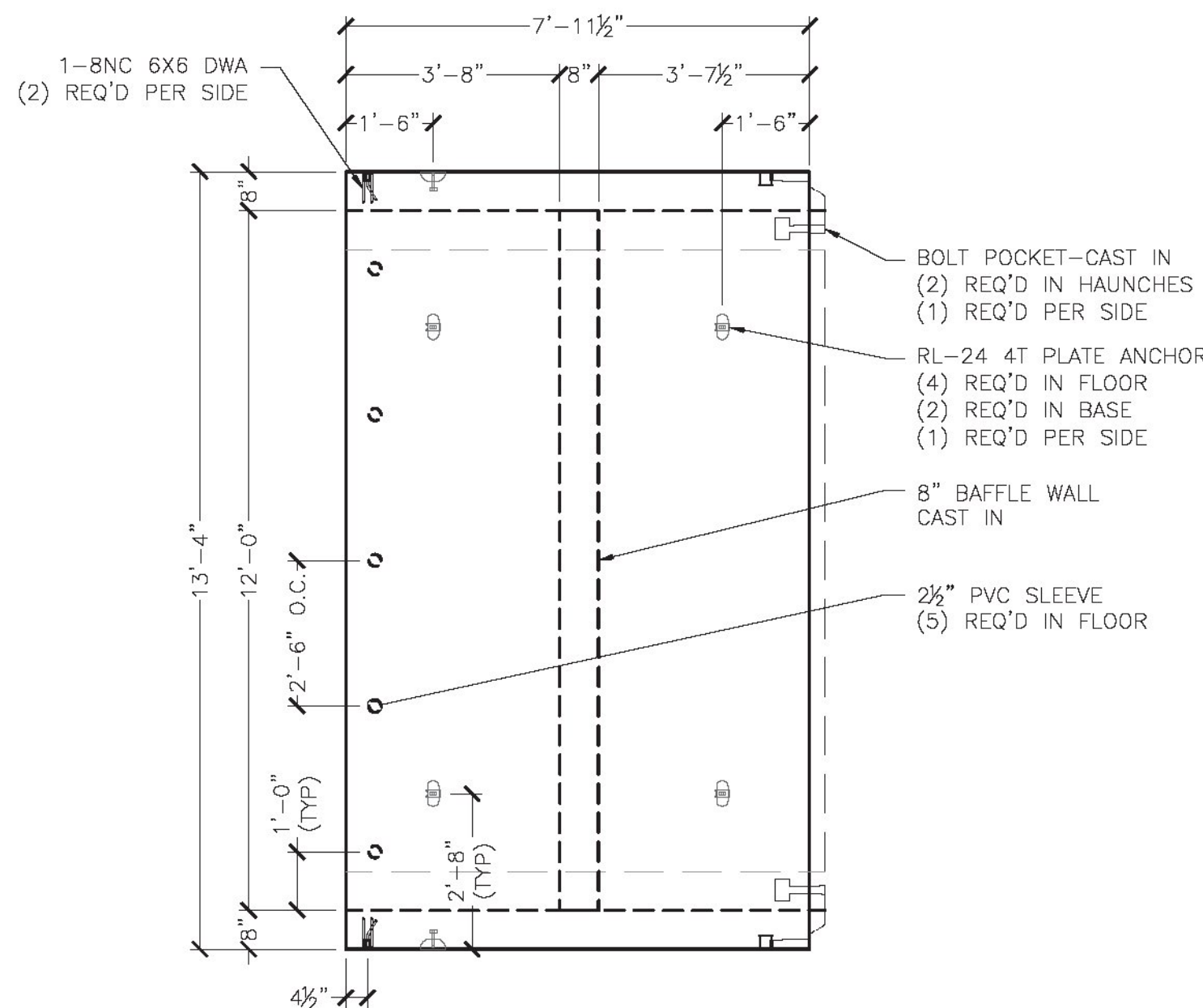
Structural I  
Professional Engineer  
No. 0031  
4/15/2015  
4/20/15

Revised W/W angle as contractors request  
Revised per Stantec review #1015

Date  
By

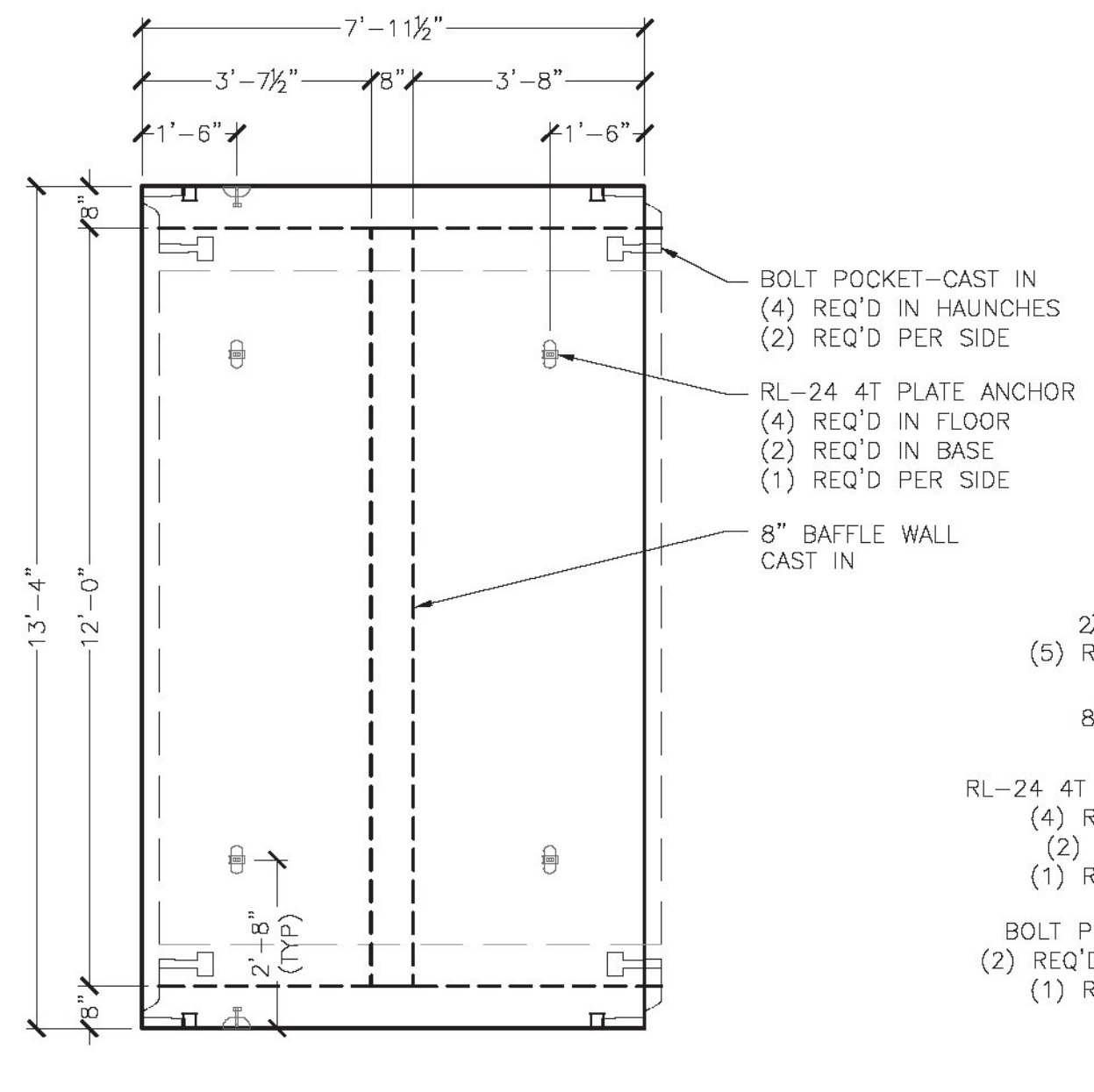
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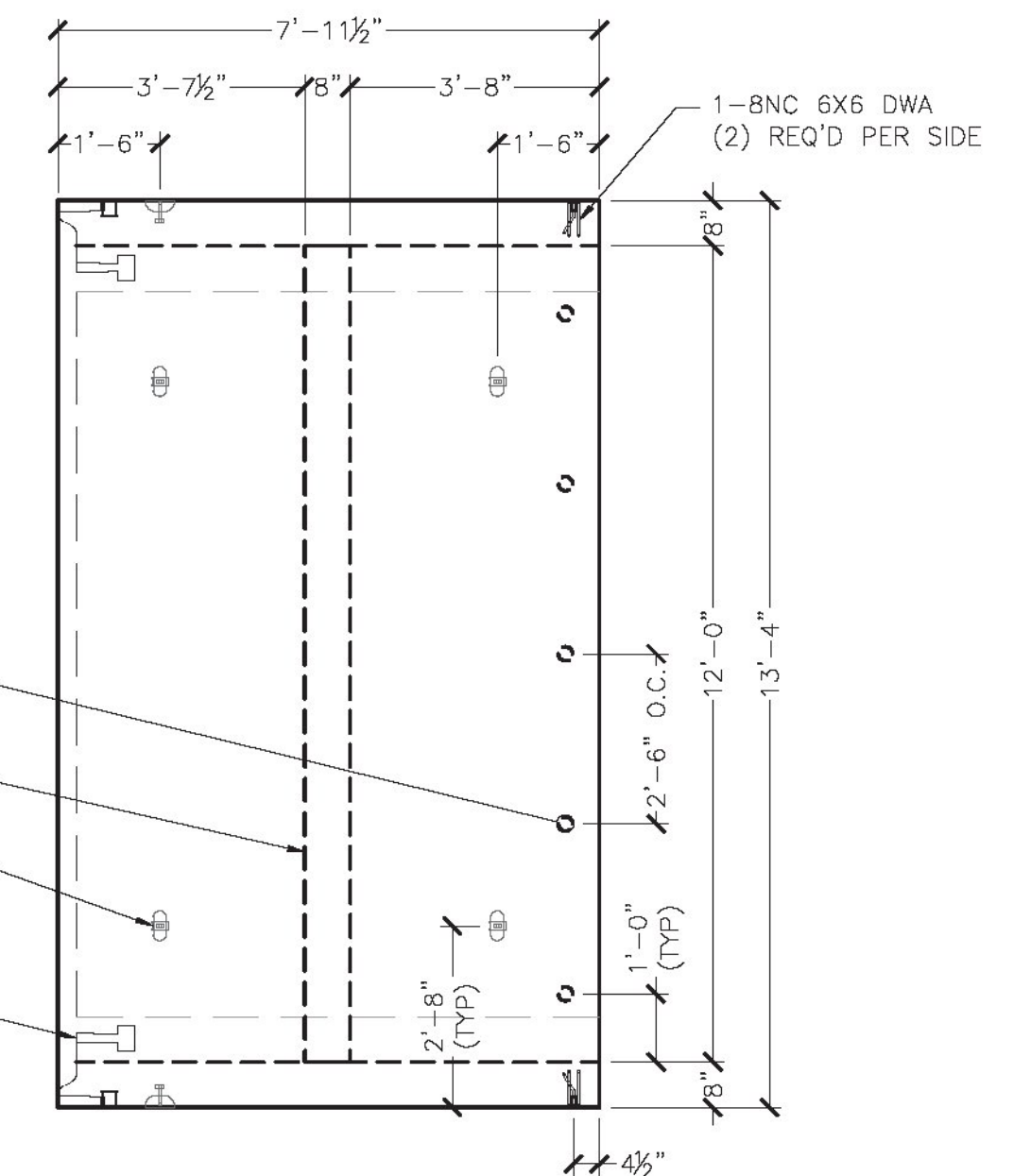
**1** BC3 PLAN VIEW  
S3.0 3/8" = 1'-0"

**BC3 - 1 REQ'D**  
ITEM 281207  
UNIT WEIGHT AND VOLUME:  
CULVERT: 5.62CY (23,600#)  
BAFFLE WALL: .28CY (1,180#)  
TOTAL WEIGHT: 24,780#



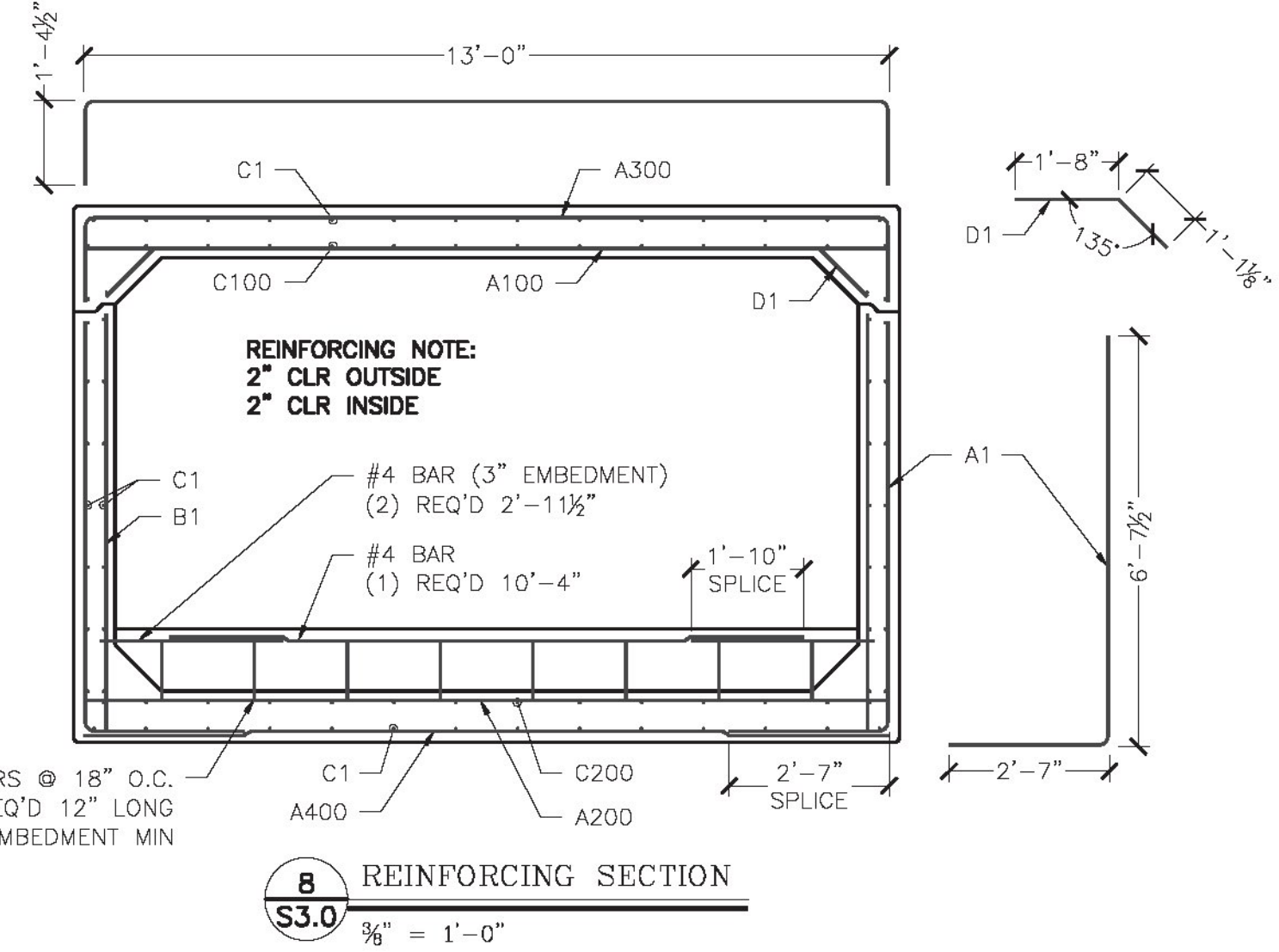
**3** BC2 PLAN VIEW  
S3.0 3/8" = 1'-0"

**BC2 - 7 REQ'D**  
ITEM 281207  
UNIT WEIGHT AND VOLUME:  
CULVERT: 5.62CY (23,600#)  
BAFFLE WALL: .28CY (1,180#)  
TOTAL WEIGHT: 24,780#



**5** BC1 PLAN VIEW  
S3.0 3/8" = 1'-0"

**BC1 - 1 REQ'D**  
ITEM 281207  
UNIT WEIGHT AND VOLUME:  
CULVERT: 5.62CY (23,600#)  
BAFFLE WALL: .28CY (1,180#)  
TOTAL WEIGHT: 24,780#

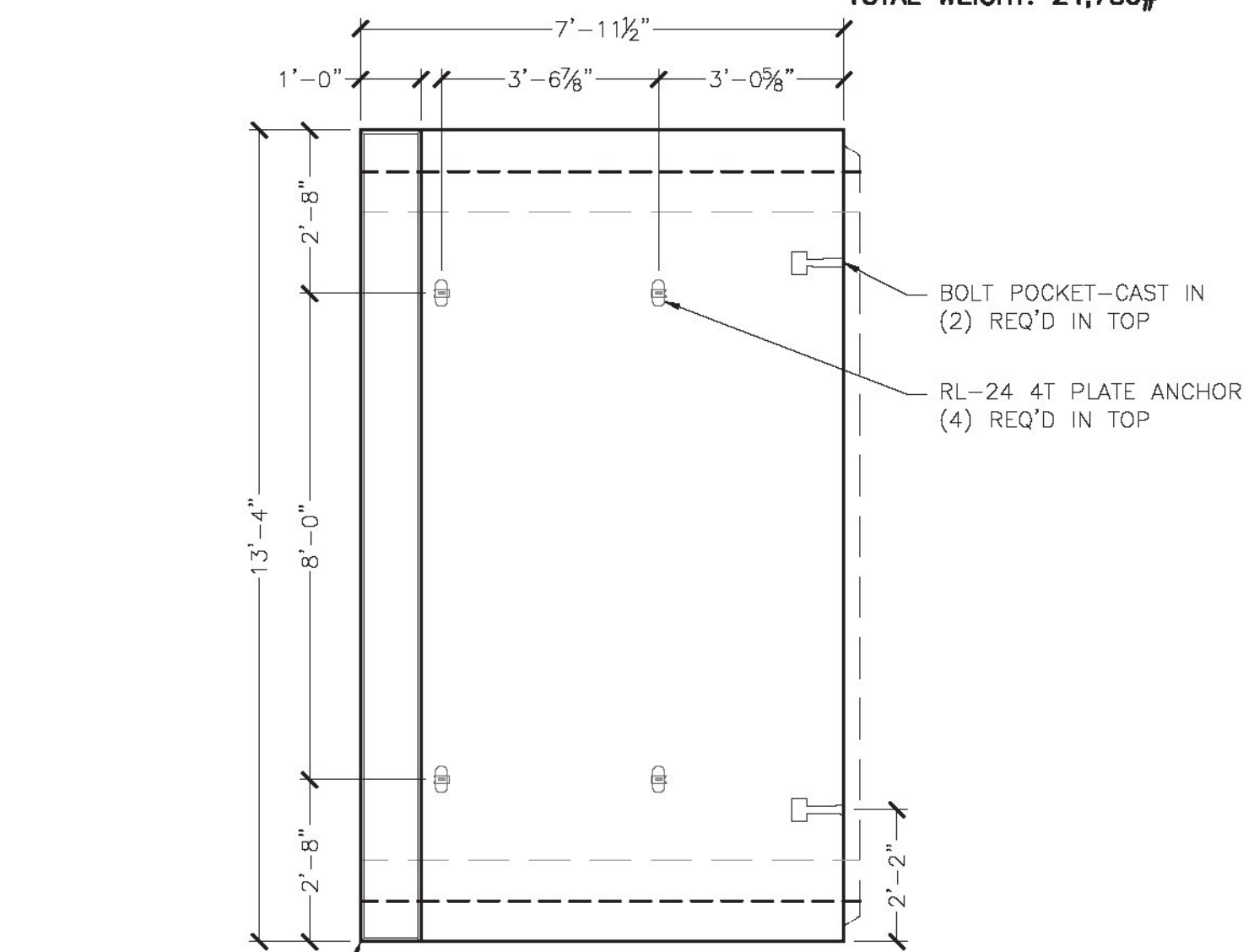


**8** REINFORCING SECTION  
S3.0 3/8" = 1'-0"

LOCATION	MARK	QTY	SIZE	SPACING	TYPE	CUT LENGTH
TOP SLAB (INT)	A100	14	#8	7"	STRAIGHT	13'-0"
BOT. SLAB (INT)	A200	8	#5	12"	STRAIGHT	13'-0"
TOP SLAB (EXT)	A300	8	#4	12"	"U" BAR	15'-6 1/2"
BOT. SLAB (EXT)	A400	11	#6	9"	STRAIGHT	13'-0"
WALL (EXT)	A1	22	#6	9"	"L" BAR	9'-1 1/4"
WALL (INT)	B1	16	#4	12"	STRAIGHT	6'-9"
LONGIT. TOP (EXT)	C1	14	#4	12"	STRAIGHT	7'-7"
LONGIT. TOP (INT)	C100	14	#4	12"	STRAIGHT	7'-7"
LONGIT. BOT. (INT)	C200	14	#4	12"	STRAIGHT	7'-7"
LONGIT. BOT (EXT)	C1	14	#4	12"	STRAIGHT	7'-7"
LONGIT. WALL (EXT)	C1	14	#4	12"	STRAIGHT	7'-7"
LONGIT. WALL (INT)	C1	14	#4	12"	STRAIGHT	7'-7"
TOP SLAB (HAUNCH)	D1	28	#4	7"	BENT BARS	2'-9 1/2"

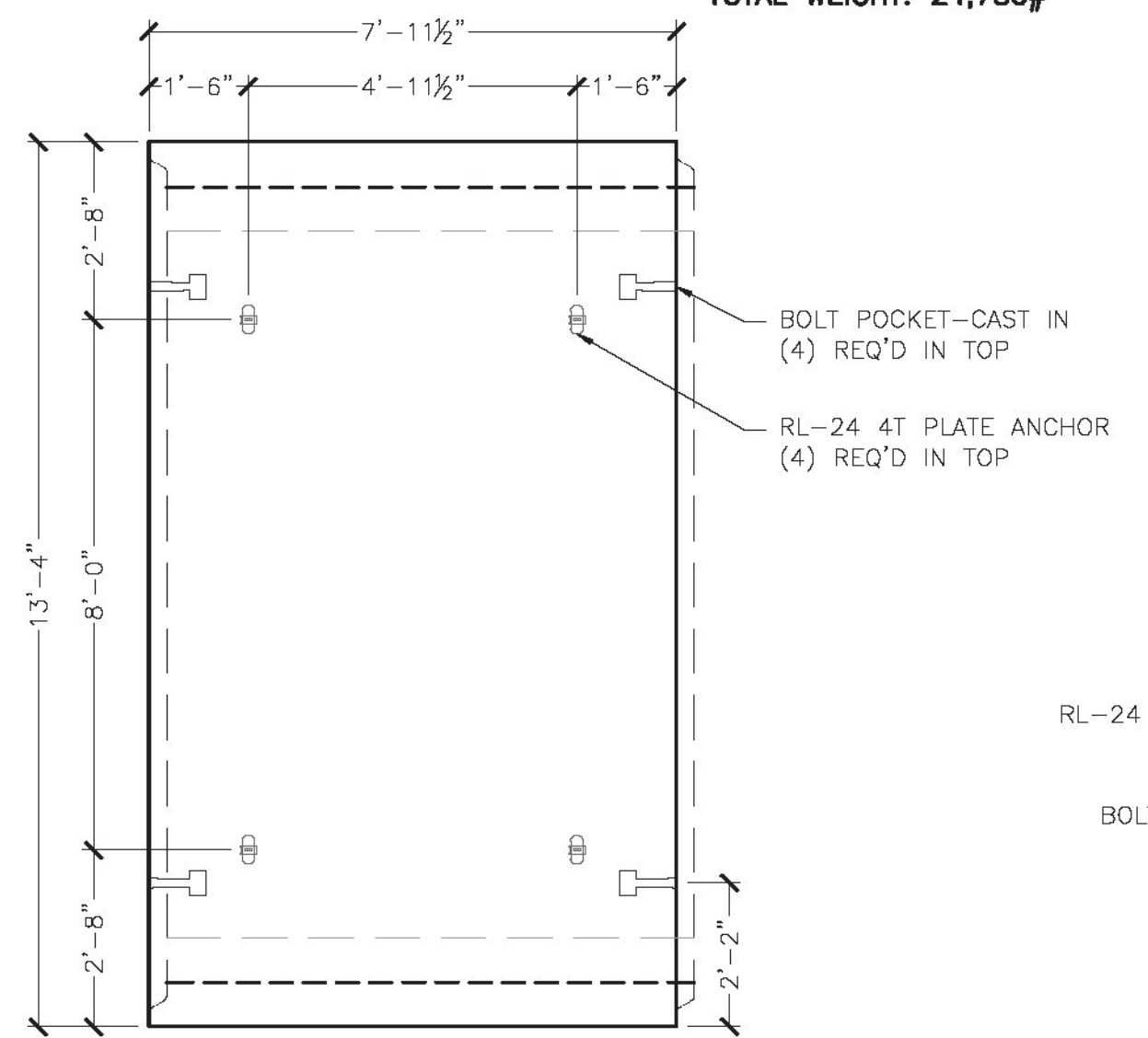
LOCATION	MARK	QTY	SIZE	SPACING	TYPE	CUT LENGTH
TOP SLAB (INT)	A100	14	#8	7"	STRAIGHT	13'-0"
BOT. SLAB (INT)	A200	8	#5	12"	STRAIGHT	13'-0"
TOP SLAB (EXT)	A300	8	#4	12"	"U" BAR	15'-6 1/2"
BOT. SLAB (EXT)	A400	11	#6	9"	STRAIGHT	13'-0"
WALL (EXT)	A1	22	#6	9"	"L" BAR	8'-8 1/4"
WALL (INT)	B1	16	#4	12"	STRAIGHT	6'-9"
LONGIT. TOP (EXT)	C1	14	#4	12"	STRAIGHT	7'-7"
LONGIT. TOP (INT)	C100	14	#4	12"	STRAIGHT	7'-4"
LONGIT. BOT. (INT)	C200	14	#4	12"	STRAIGHT	7'-4"
LONGIT. BOT (EXT)	C1	14	#4	12"	STRAIGHT	7'-7"
LONGIT. WALL (EXT)	C1	14	#4	12"	STRAIGHT	7'-7"
LONGIT. WALL (INT)	C1	14	#4	12"	STRAIGHT	7'-4"
TOP SLAB (HAUNCH)	D1	28	#4	7"	BENT BARS	2'-9 1/2"
TOP SLAB	DBS1	28	#4	12"	"L" DOWELS	2'-0"
CURB WALL	DB1	28	#4	12"	STRAIGHT	2'-4 1/2"
CURB WALL	CWS1	6	#4	12"	STRAIGHT	13'-0"

LOCATION	MARK	QTY	SIZE	SPACING	TYPE	CUT LENGTH
TOP SLAB (INT)	A100	14	#8	7"	STRAIGHT	13'-0"
BOT. SLAB (INT)	A200	8	#5	12"	STRAIGHT	13'-0"
TOP SLAB (EXT)	A300	8	#4	12"	"U" BAR	15'-6 1/2"
BOT. SLAB (EXT)	A400	11	#6	9"	STRAIGHT	13'-0"
WALL (EXT)	A1	22	#6	9"	"L" BAR	8'-8 1/4"
WALL (INT)	B1	16	#4	12"	STRAIGHT	6'-9"
LONGIT. TOP (EXT)	C1	14	#4	12"	STRAIGHT	7'-7"
LONGIT. TOP (INT)	C100	14	#4	12"	STRAIGHT	7'-10"
LONGIT. BOT. (INT)	C200	14	#4	12"	STRAIGHT	7'-10"
LONGIT. BOT (EXT)	C1	14	#4	12"	STRAIGHT	7'-7"
LONGIT. WALL (EXT)	C1	14	#4	12"	STRAIGHT	7'-7"
LONGIT. WALL (INT)	C1	14	#4	12"	STRAIGHT	7'-10"
TOP SLAB (HAUNCH)	D1	28	#4	7"	BENT BARS	2'-9 1/2"
TOP SLAB	DBS1	28	#4	12"	"L" DOWELS	2'-0"
CURB WALL	DB1	28	#4	12"	STRAIGHT	1'-8 1/4"
CURB WALL	CWS1	6	#4	12"	STRAIGHT	13'-0"



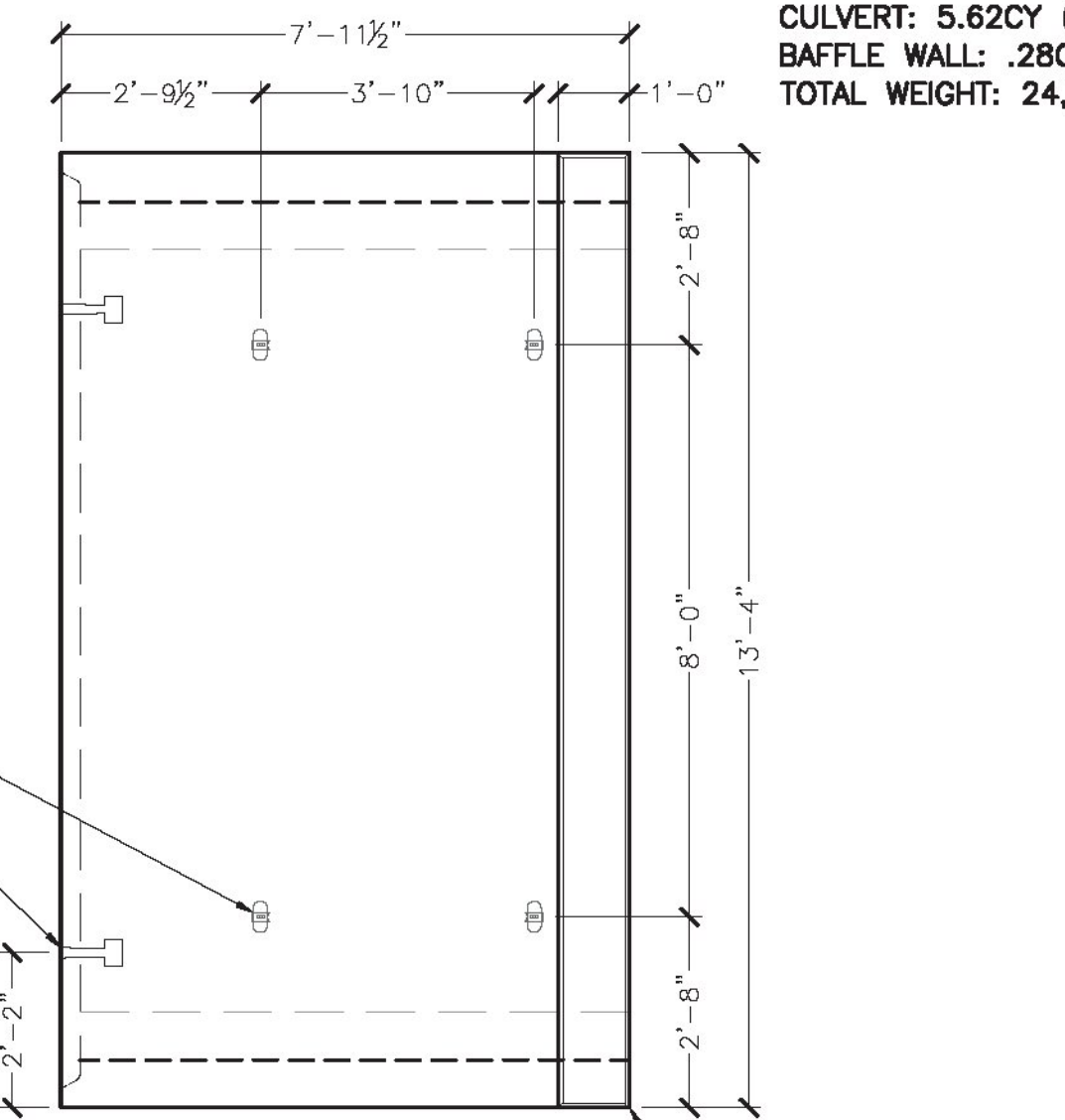
**2** TS3 ELEV. VIEW  
S3.0 3/8" = 1'-0"

**TS3 - 1 REQ'D**  
ITEM 281207  
UNIT WEIGHT AND VOLUME:  
TOP SLAB: 3.76CY (15,790#)  
CURB WALL: .94CY (3,950#)  
TOTAL WEIGHT: 19,740#



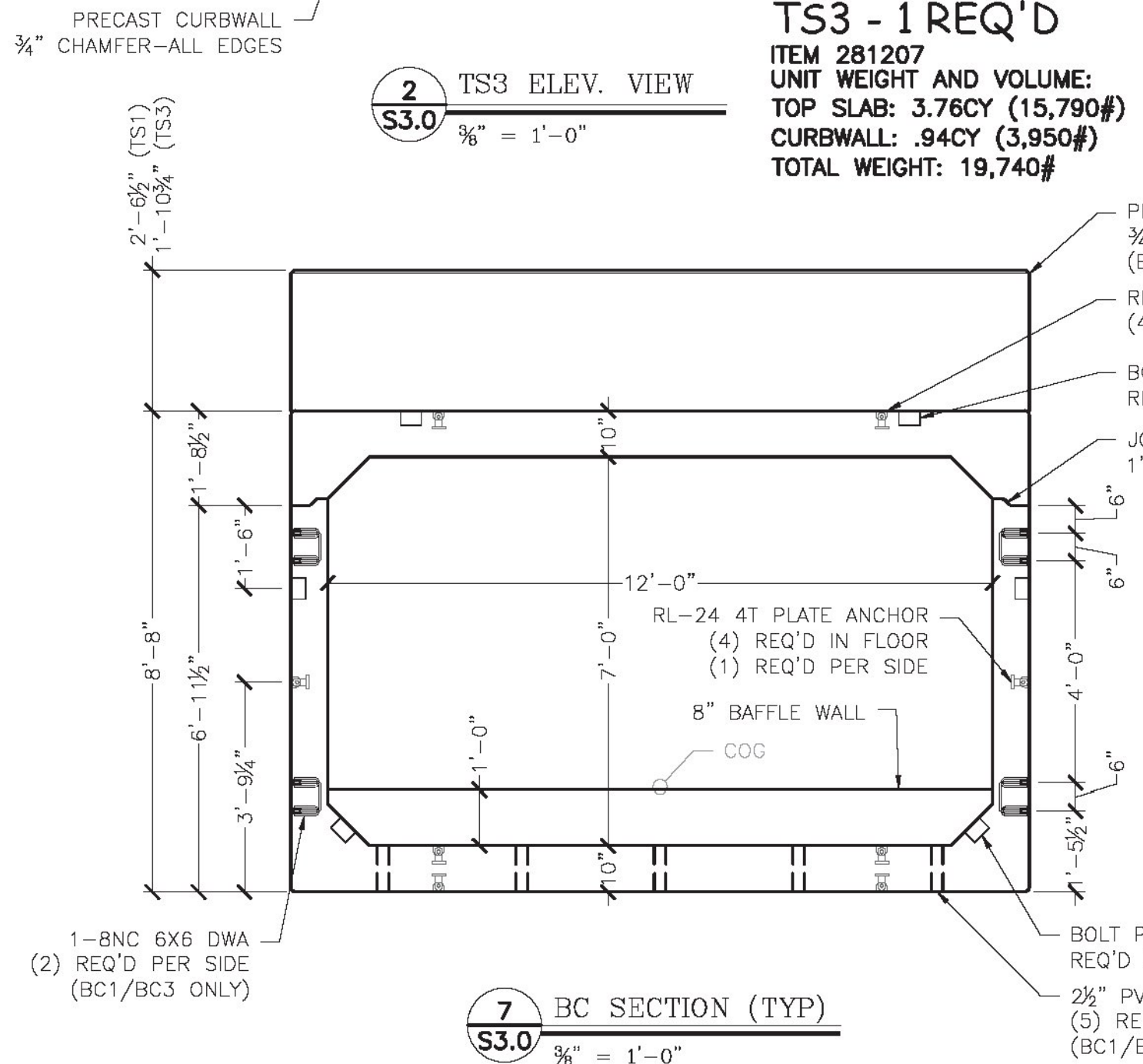
**4** TS2 ELEV. VIEW  
S3.0 3/8" = 1'-0"

**TS2 - 7 REQ'D**  
ITEM 281207  
UNIT WEIGHT AND VOLUME:  
TOP SLAB: 3.76CY (15,790#)

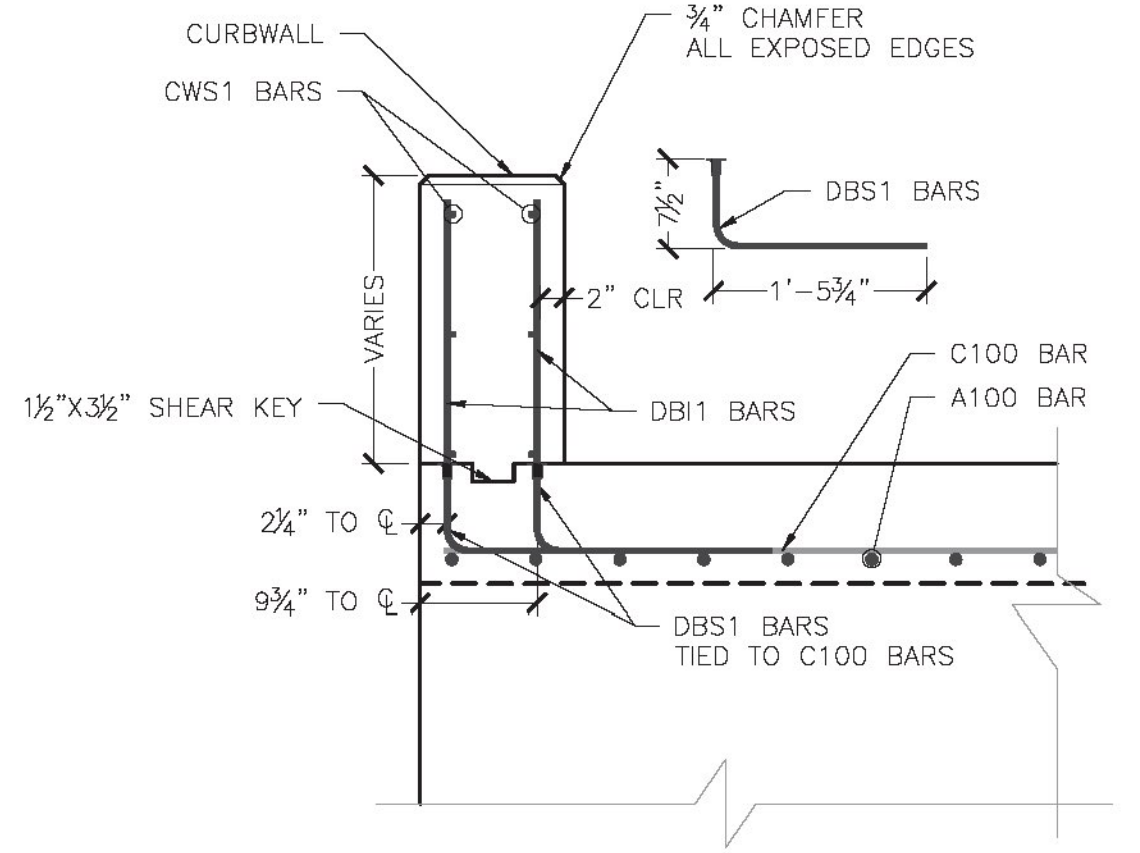


**6** TS1 ELEV. VIEW  
S3.0 3/8" = 1'-0"

**TS1 - 1 REQ'D**  
ITEM 281207  
UNIT WEIGHT AND VOLUME:  
TOP SLAB: 3.76CY (15,790#)  
CURB WALL: .94CY (3,950#)  
TOTAL WEIGHT: 19,740#



**7** BC SECTION (TYP)  
S3.0 3/8" = 1'-0"



**9** CURB WALL REINFORCING SECTION  
S3.0 3/8" = 1'-0"

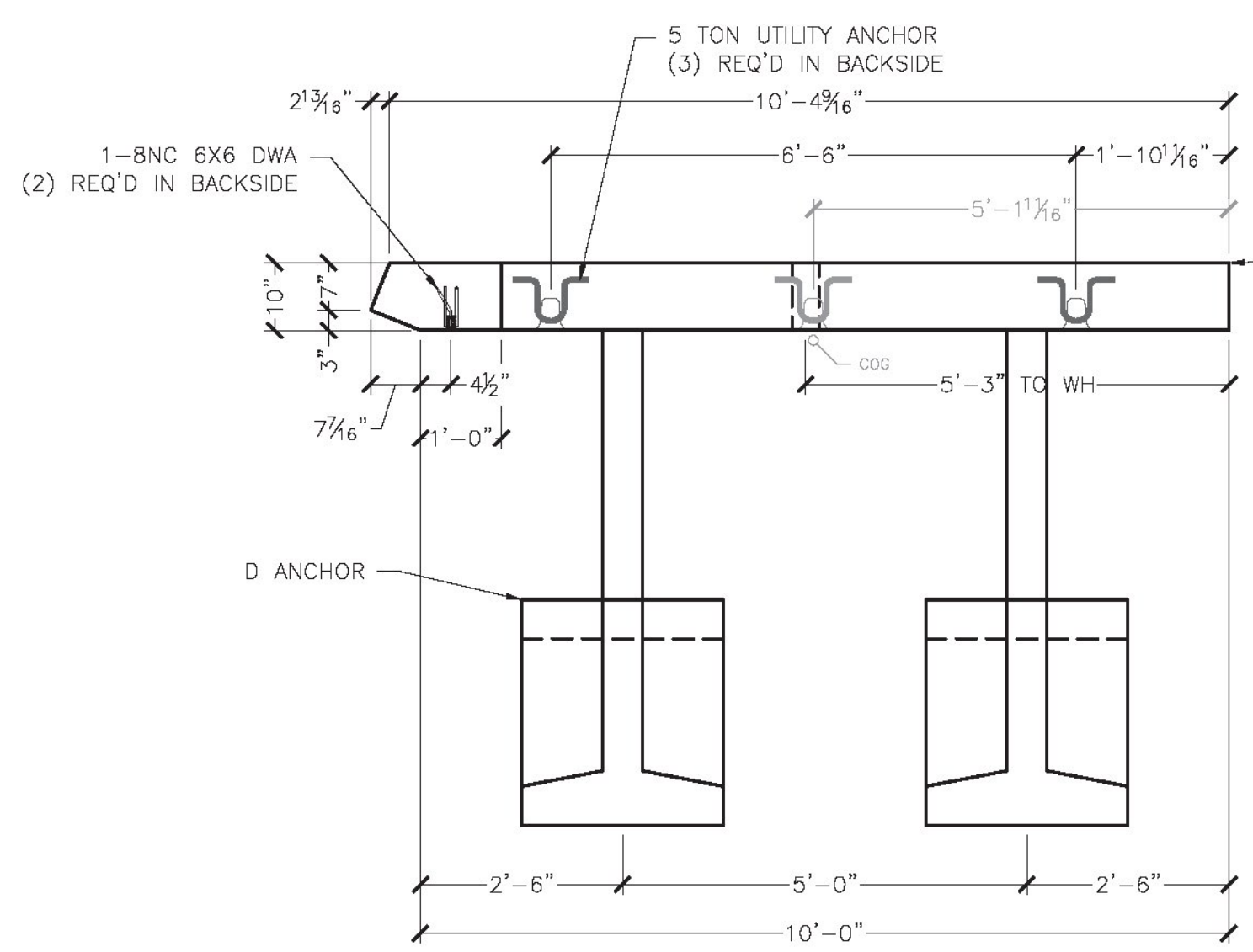
Revision	Date	No.
4/20/15		
4/15/2015		
Revised per Stakeholder review #10115		
PPL		
By		

**MICHIE**  
CONSULTANTS  
173 BUXTON INDUSTRIAL DRIVE - PO BOX 870  
HENNIKER, NH 03242  
PHONE: 603-428-3218  
WWW.MICHIEGRP.COM

**Bridge #52 - VT Route 30 - VAOT STP Culv(31)**  
**Winhall, VT**  
12x7' Open Top Box Culvert - Footing Layout & Elevations  
Scale: AS SHOWN  
Checked by: PPL  
Drawn by: CFP  
Designed by: PPL/CFP  
Project No. 5778  
Date: 2/24/2015

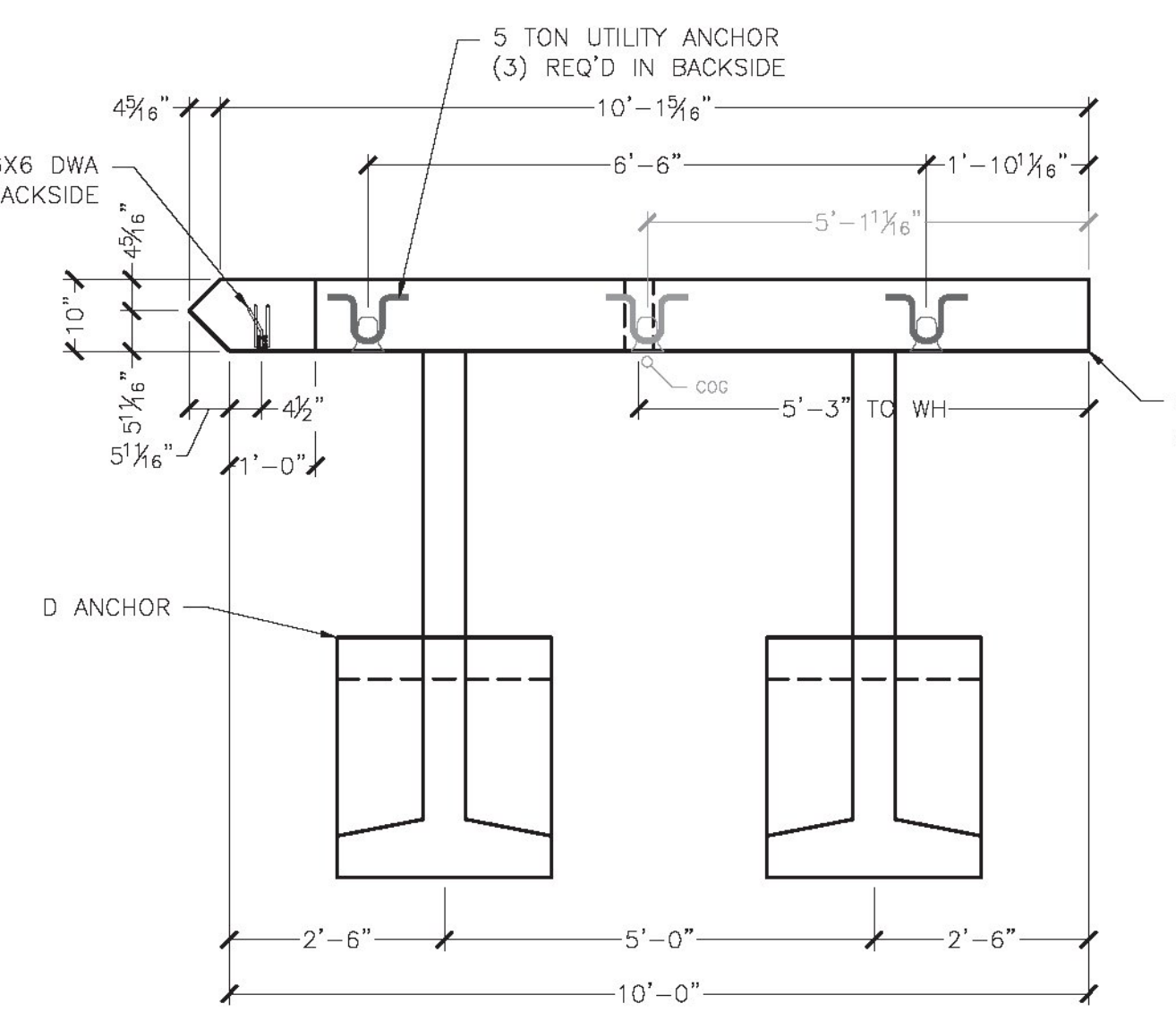
Prepared for:  
**Renaud Brothers, Inc.**  
283 Fort Bridgeman Rd #2  
Vernon, VT 05354

SYNOPSIS: RENAUD BROTHERS, WINHALL, VT. WINHALL, VT. PROJECT: BRIDGE #52 - VT ROUTE 30 - VAOT STP CULVERT. DATE: 07/20/15. DRAWN BY: PDL/CPD. CHECKED BY: PDL. SCALE: AS SHOWN. PROJECT NO.: 5778. DATE: 2/24/2015.



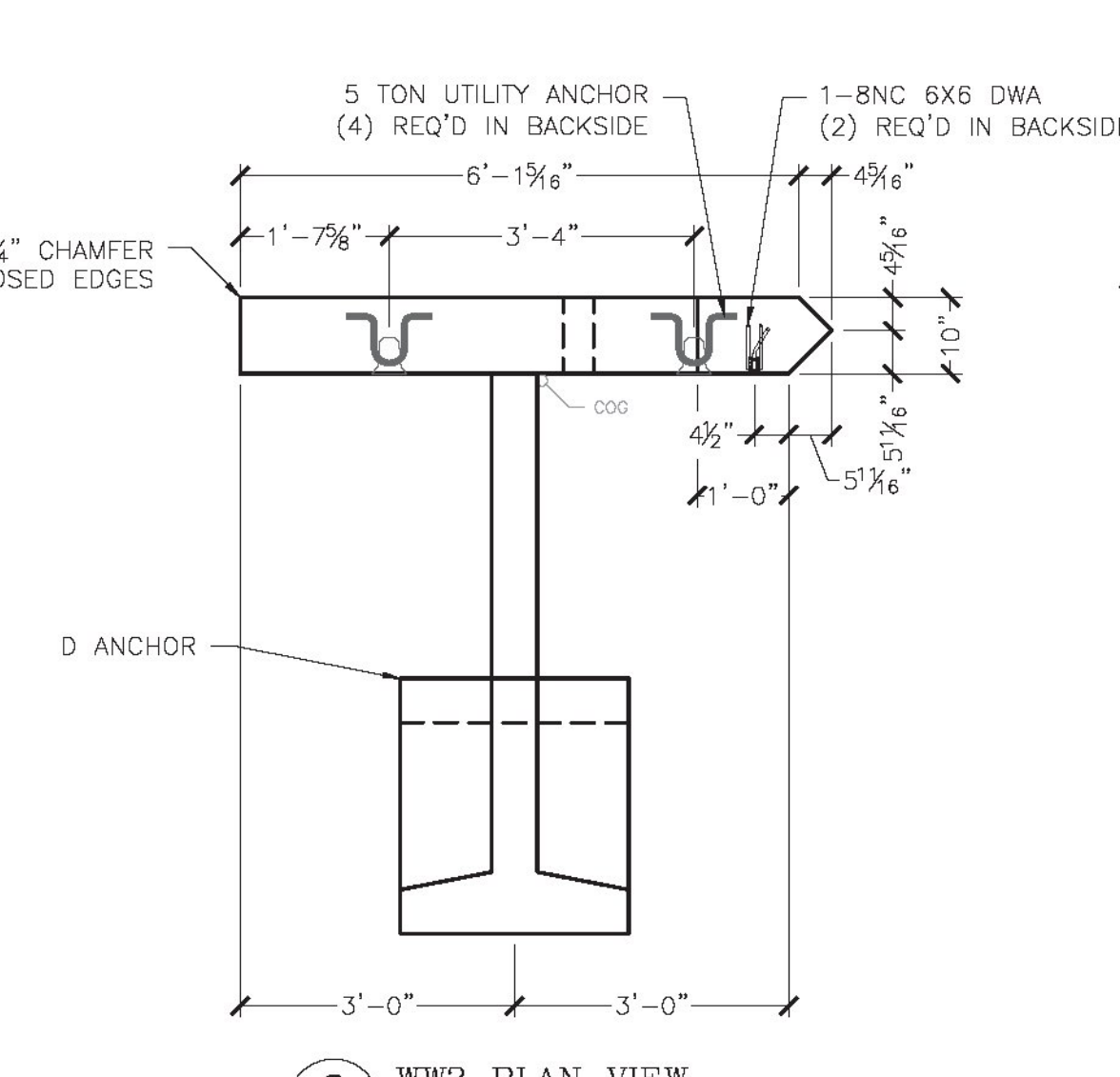
1 WW4 PLAN VIEW  
S4.0 1/2" = 1'-0"

WW4 - 1 REQ'D  
ITEM 275602  
UNIT WEIGHT AND VOLUME:  
WALL: 3.13CY (13,150#)  
D ANCHOR: 0.54CY (2,270#)  
TOTAL WEIGHT: 15,420#



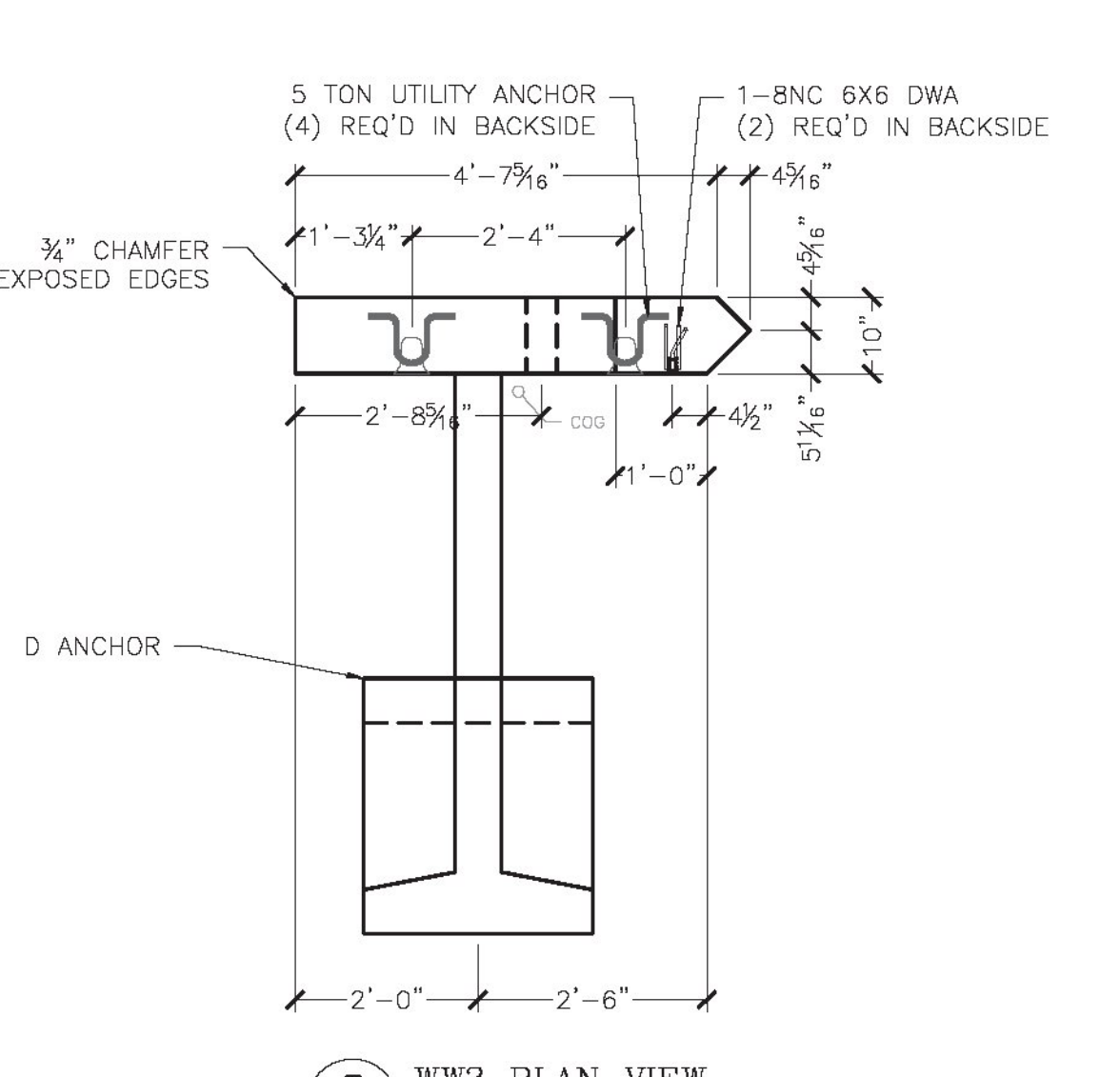
3 WW1 PLAN VIEW  
S4.0 1/2" = 1'-0"

WW1 - 1 REQ'D  
ITEM 275602  
UNIT WEIGHT AND VOLUME:  
WALL: 3.17CY (13,320#)  
D ANCHOR: 0.54CY (2,270#)  
TOTAL WEIGHT: 15,590#



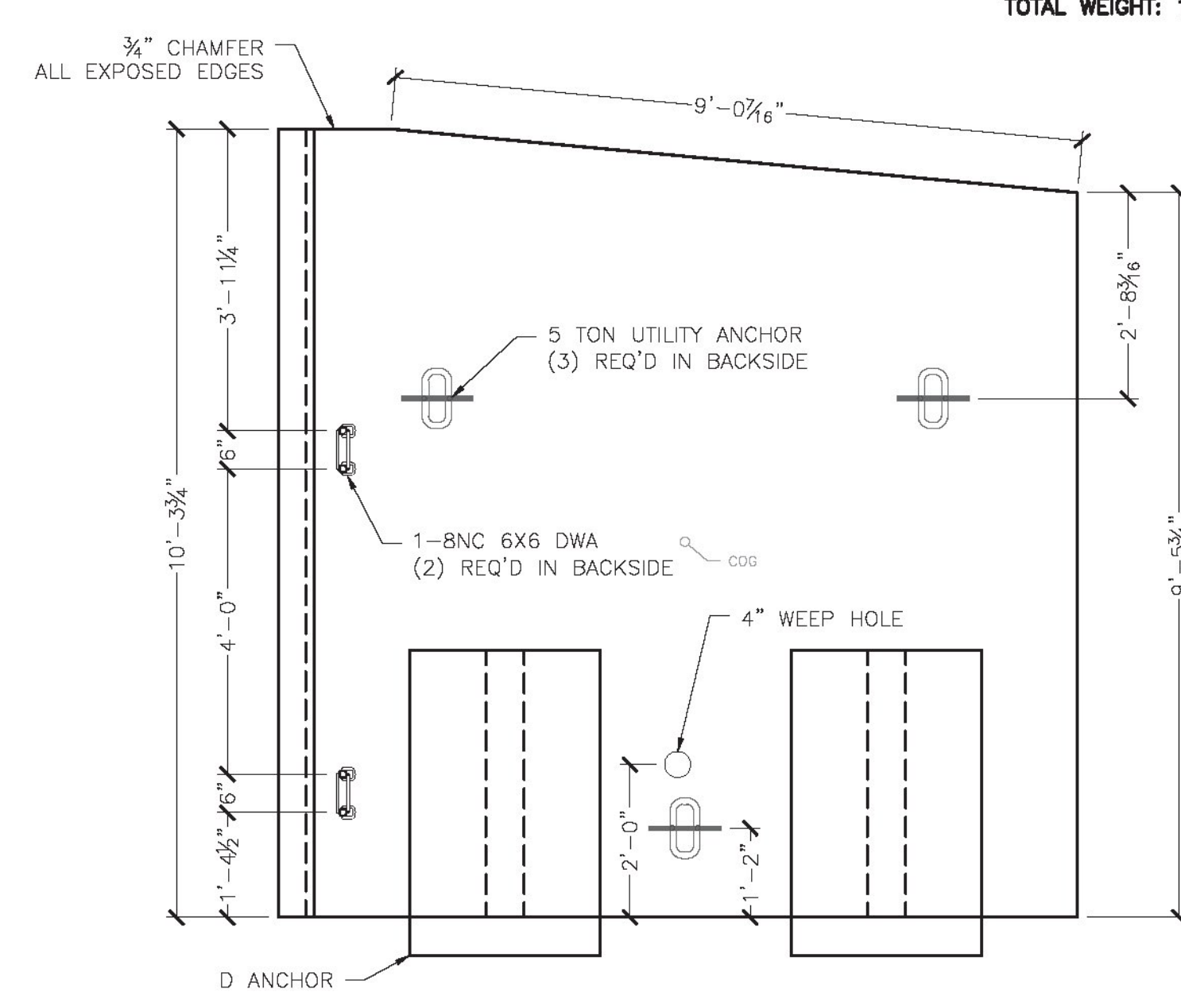
5 WW2 PLAN VIEW  
S4.0 1/2" = 1'-0"

WW2 - 1 REQ'D  
ITEM 275602  
UNIT WEIGHT AND VOLUME:  
WALL: 1.76CY (7,390#)  
D ANCHOR: 0.54CY (2,270#)  
TOTAL WEIGHT: 9,660#

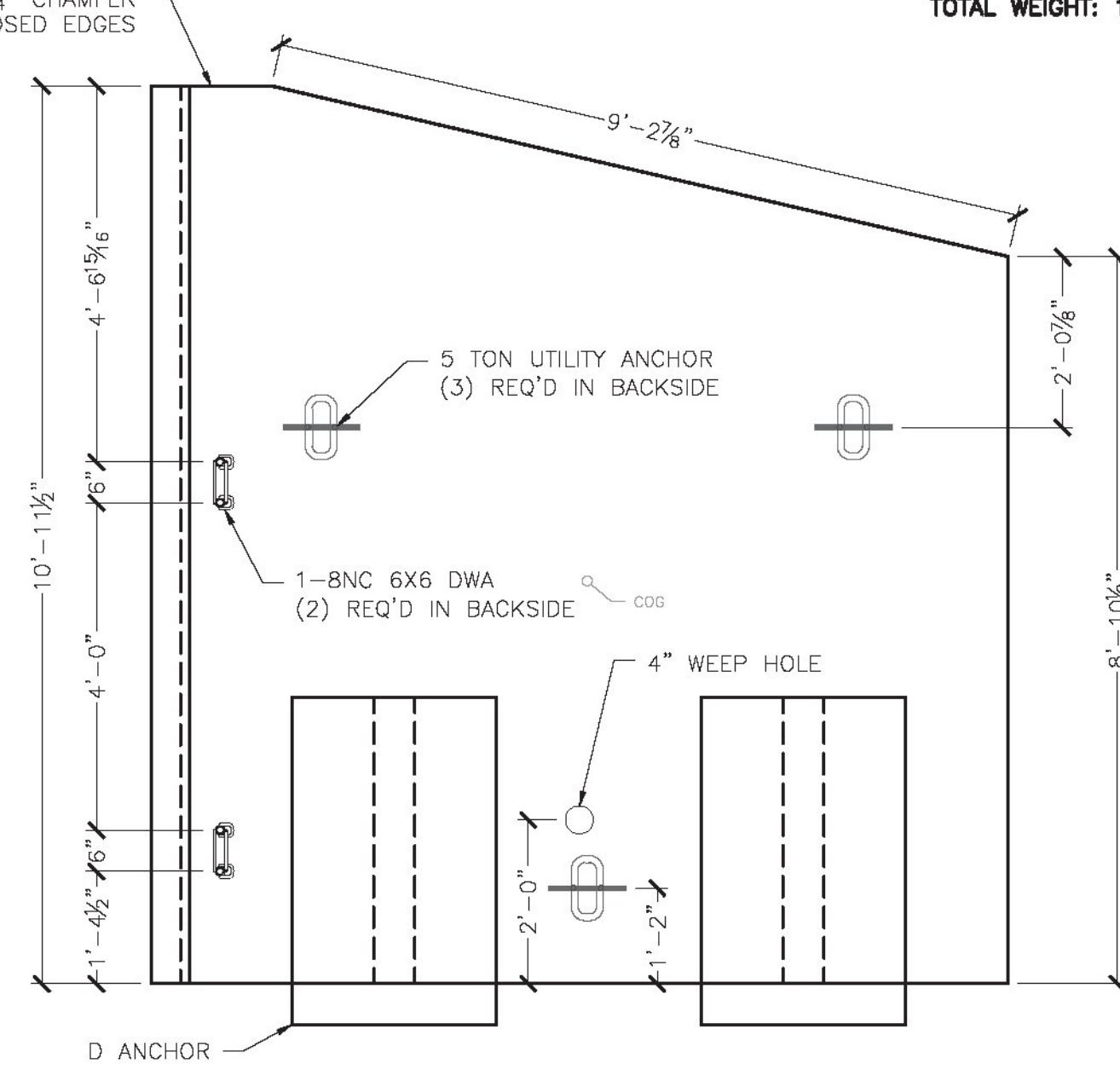


7 WW3 PLAN VIEW  
S4.0 1/2" = 1'-0"

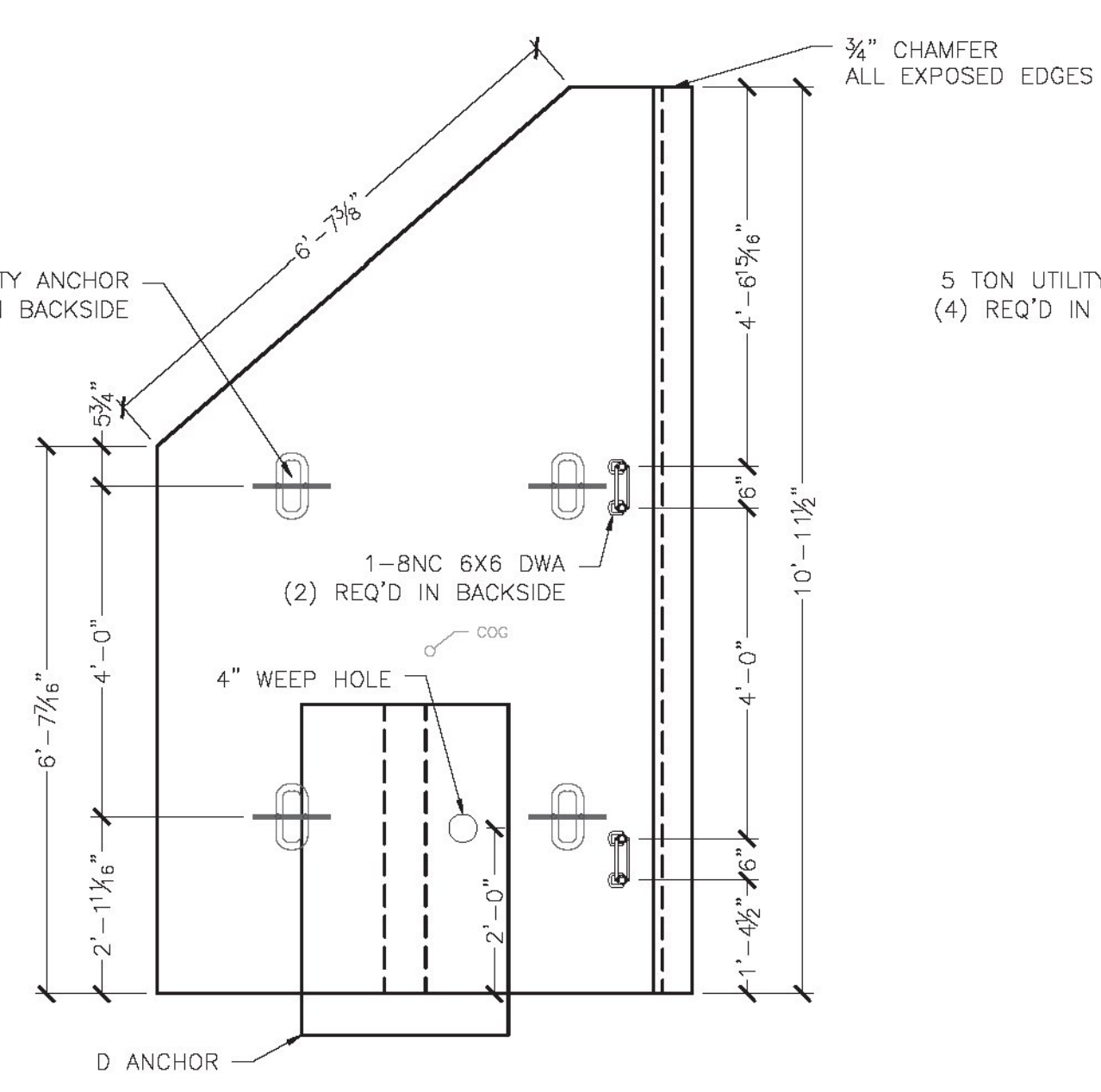
WW3 - 1 REQ'D  
ITEM 275602  
UNIT WEIGHT AND VOLUME:  
WALL: 1.31CY (5,500#)  
D ANCHOR: 0.54CY (2,270#)  
TOTAL WEIGHT: 7,770#



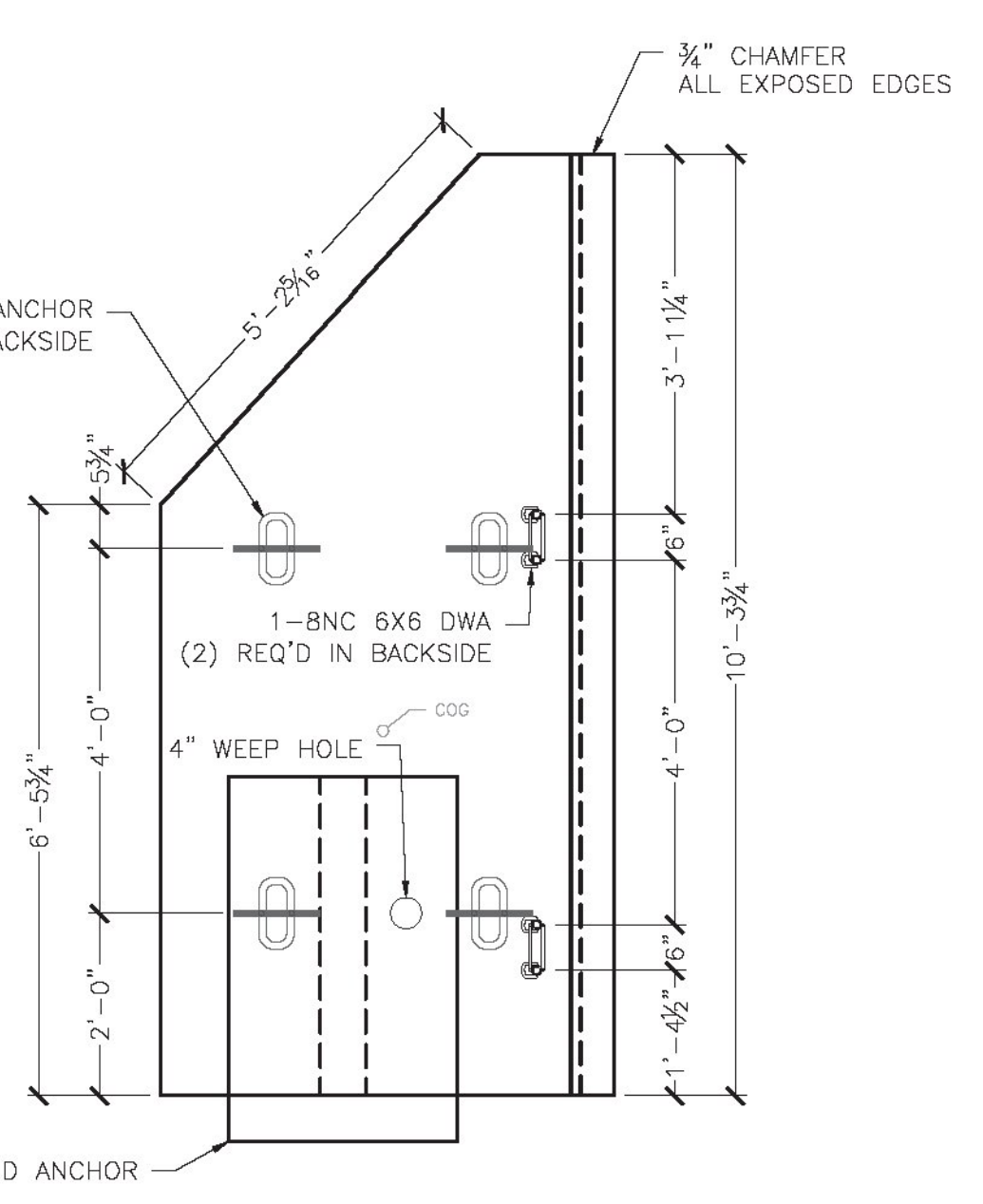
2 WW4 ELEV. VIEW  
S4.0 1/2" = 1'-0" (Looking @ Backside)



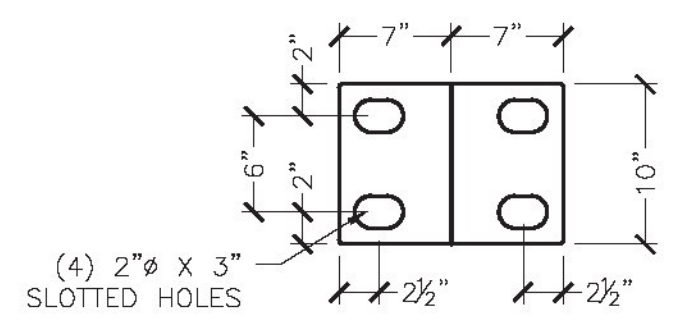
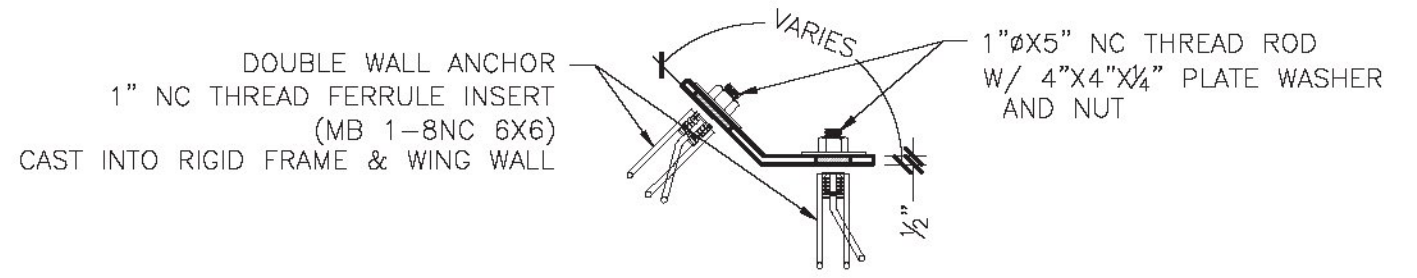
4 WW1 ELEV. VIEW  
S4.0 1/2" = 1'-0" (Looking @ Backside)



6 WW2 ELEV. VIEW  
S4.0 1/2" = 1'-0" (Looking @ Backside)



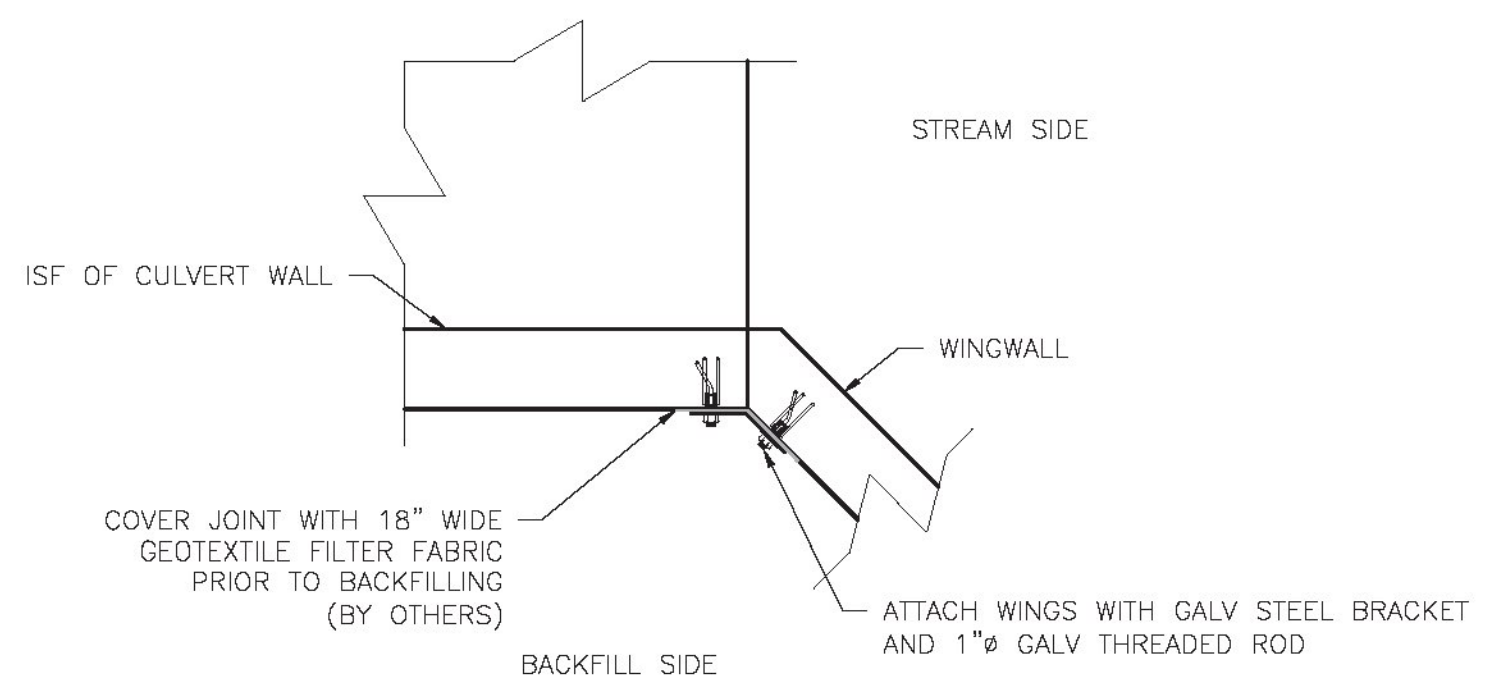
8 WW3 ELEV. VIEW  
S4.0 1/2" = 1'-0" (Looking @ Backside)



WW BRACKET  
6 REQ'D @ 135°  
2 REQ'D @ 112° (WW4)

PLATES TO BE MADE OF 1/2" MILD STEEL,  
PLASMA CUT, AND BENT AS REQUIRED.  
(HOT DIPPED GALVANIZED AFTER BENDING)

9 WINGWALL BRACKET DETAIL  
S4.0 1" = 1'-0"



10 BRIDGE TO WW JOINT DETAIL  
S4.0 1/2" = 1'-0"



MICHIE  
173 BUXTON INDUSTRIAL DRIVE - PO BOX 870  
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PHONE: 603-428-3218  
WWW.MICHIECORP.COM

Bridge #52 - VT Route 30 - VAOT STP Culv(31)  
Winhall, VT  
12'x7' Open Top Box Culvert - Wingwall Details  
Scale: AS SHOWN  
Checked by: PDL  
Drawn by: CPD  
Project No. 5778  
Date: 2/24/2015

Prepared for:  
Renaud Brothers, Inc.  
283 Fort Bridgeman Rd #2  
Vernon, VT 05354

NOTE: BAR COUNTS REPRESENT 1 UNIT.

WW4 REINFORCING SCHEDULE					
BAR MARK	LOCATION	TYPE	SIZE/SPACING	CUT LENGTH	# OF PCS
VERTICAL	OSF	STRAIGHT	#4 @ 12"	9'-11 1/2" TO 9'-1 1/4"	10
VERTICAL	ISF	STRAIGHT	#5 @ 9"	9'-11 1/2" TO 9'-1 1/4"	10
HORIZONTAL	OSF	STRAIGHT	#4 @ 12"	9'-11 1/2"	10
HORIZONTAL	ISF	STRAIGHT	#4 @ 12"	9'-10 1/4"	10
DIAGONAL	FOLLOW SLOPE	STRAIGHT	#4	9'-0"	2

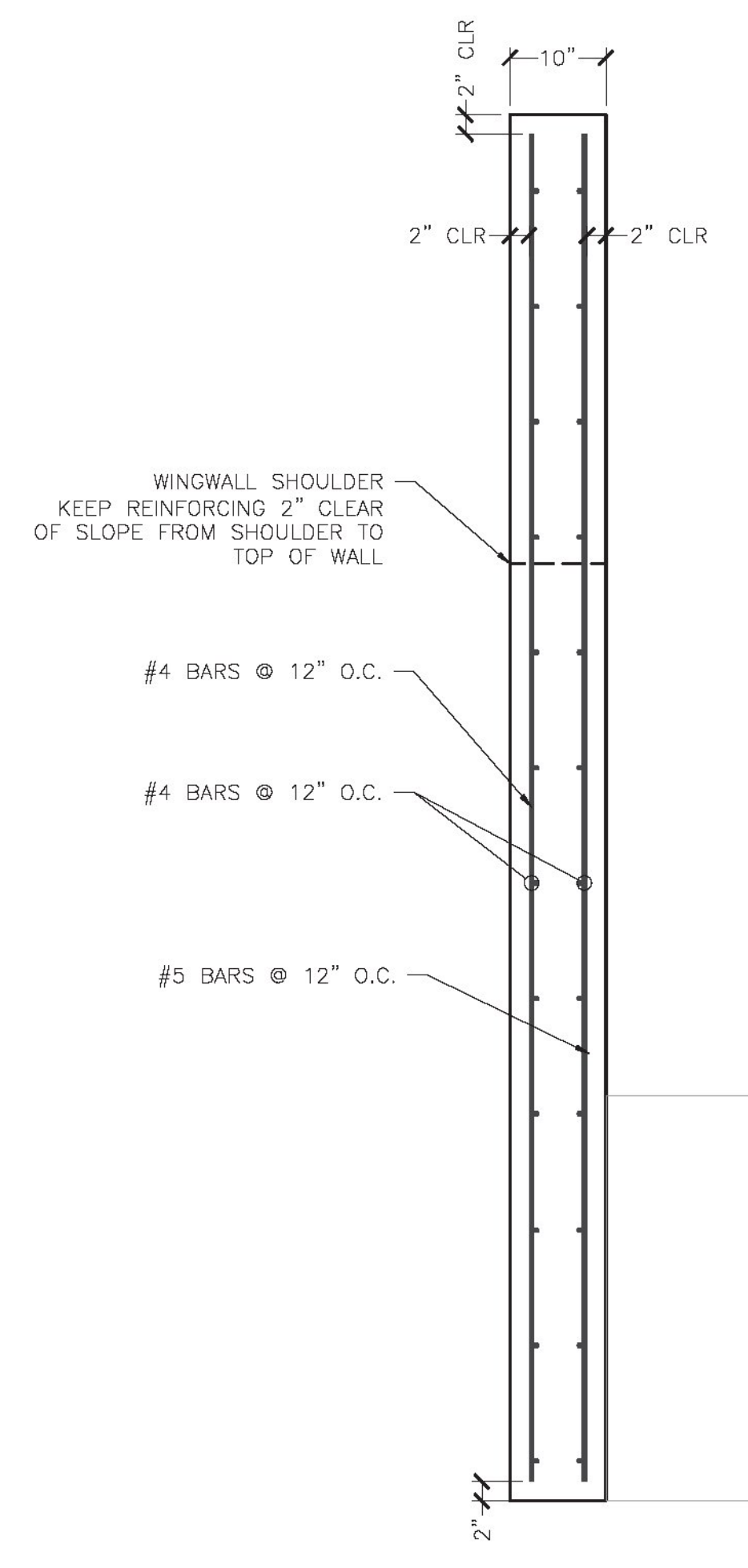
WW2 REINFORCING SCHEDULE					
BAR MARK	LOCATION	TYPE	SIZE/SPACING	CUT LENGTH	# OF PCS
VERTICAL	OSF	STRAIGHT	#4 @ 12"	10'-7 1/2" TO 6'-3 1/2"	6
VERTICAL	ISF	STRAIGHT	#5 @ 9"	10'-7 1/2" TO 6'-3 1/2"	6
HORIZONTAL	OSF	STRAIGHT	#4 @ 12"	5'-11 1/2"	11
HORIZONTAL	ISF	STRAIGHT	#4 @ 12"	5'-10 1/2"	11
DIAGONAL	FOLLOW SLOPE	STRAIGHT	#4	6'-5"	2

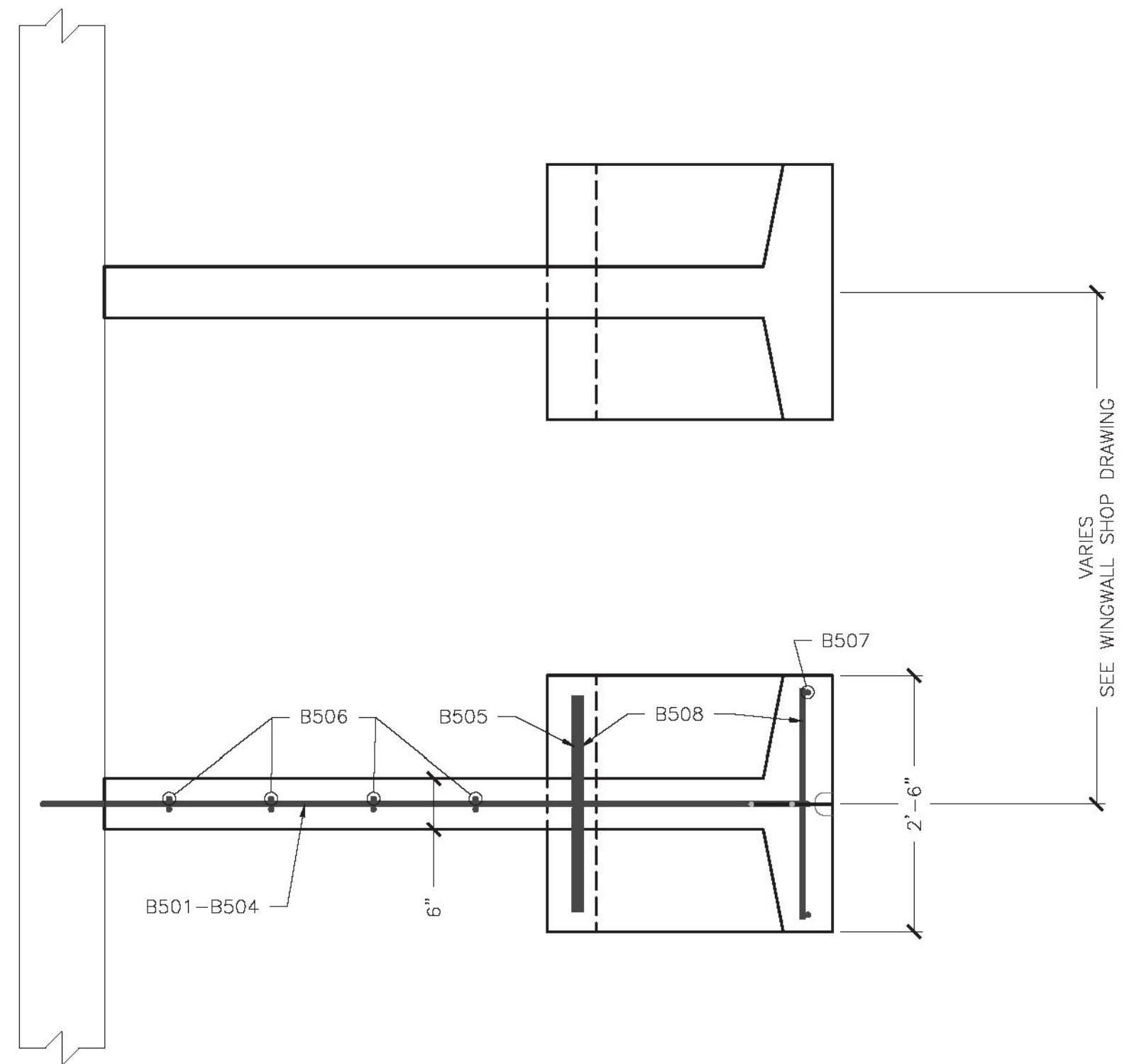
WW3 REINFORCING SCHEDULE					
BAR MARK	LOCATION	TYPE	SIZE/SPACING	CUT LENGTH	# OF PCS
VERTICAL	OSF	STRAIGHT	#4 @ 12"	9'-11 1/2" TO 6'-1 1/4"	5
VERTICAL	ISF	STRAIGHT	#5 @ 9"	9'-11 1/2" TO 6'-1 1/4"	5
HORIZONTAL	OSF	STRAIGHT	#4 @ 12"	4'-5 1/2"	10
HORIZONTAL	ISF	STRAIGHT	#4 @ 12"	4'-4 1/2"	10
DIAGONAL	FOLLOW SLOPE	STRAIGHT	#4	5'-0"	2

WW1 REINFORCING SCHEDULE					
BAR MARK	LOCATION	TYPE	SIZE/SPACING	CUT LENGTH	# OF PCS
VERTICAL	OSF	STRAIGHT	#4 @ 12"	9'-11 1/2" TO 8'-5 1/2"	10
VERTICAL	ISF	STRAIGHT	#5 @ 9"	9'-11 1/2" TO 8'-5 1/2"	10
HORIZONTAL	OSF	STRAIGHT	#4 @ 12"	9'-11 1/2"	10
HORIZONTAL	ISF	STRAIGHT	#4 @ 12"	9'-10 1/4"	10
DIAGONAL	FOLLOW SLOPE	STRAIGHT	#4	9'-0"	2

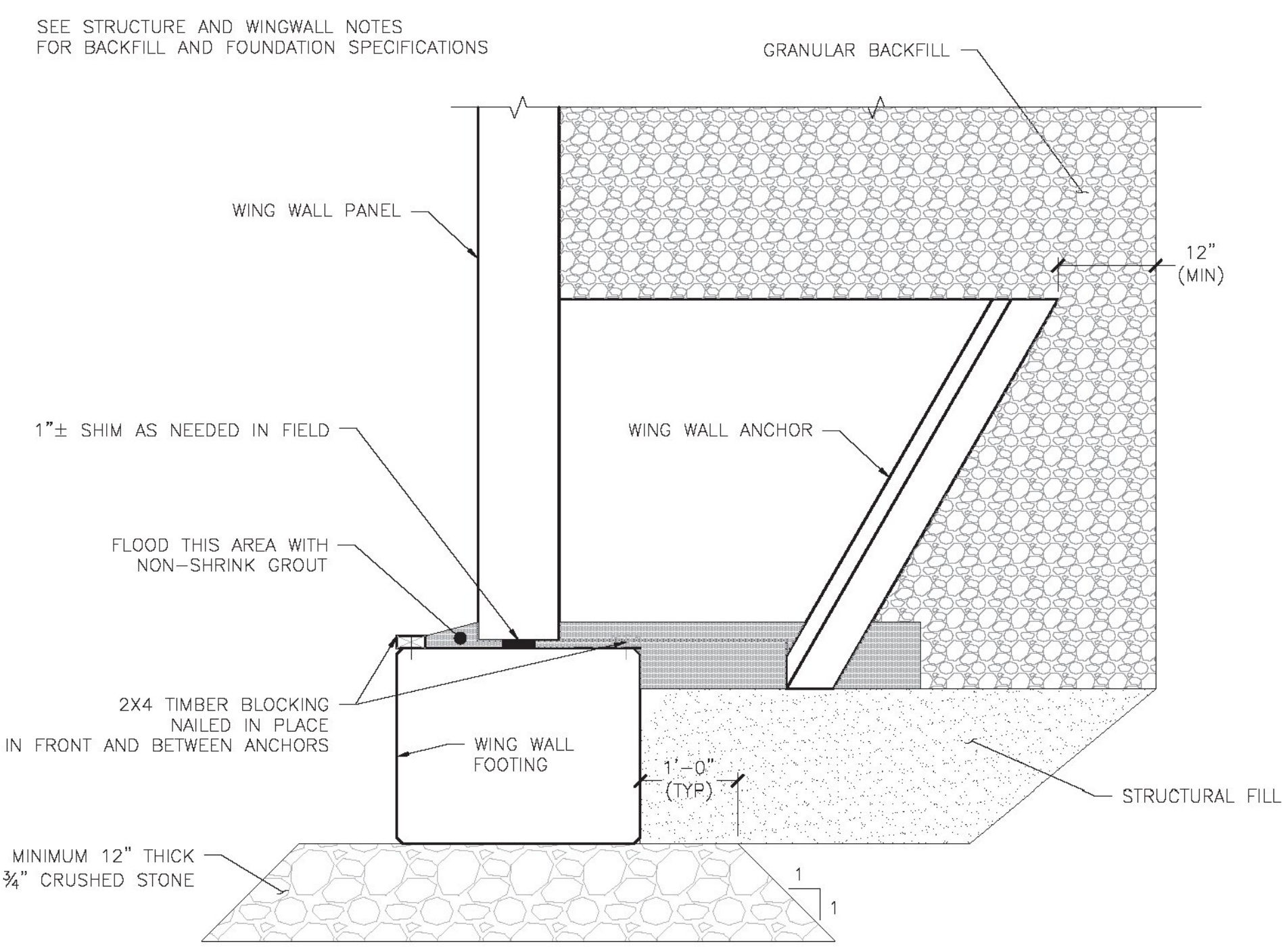


1 WINGWALL REINFORCING (TYP)  
3/4" = 1'-0"

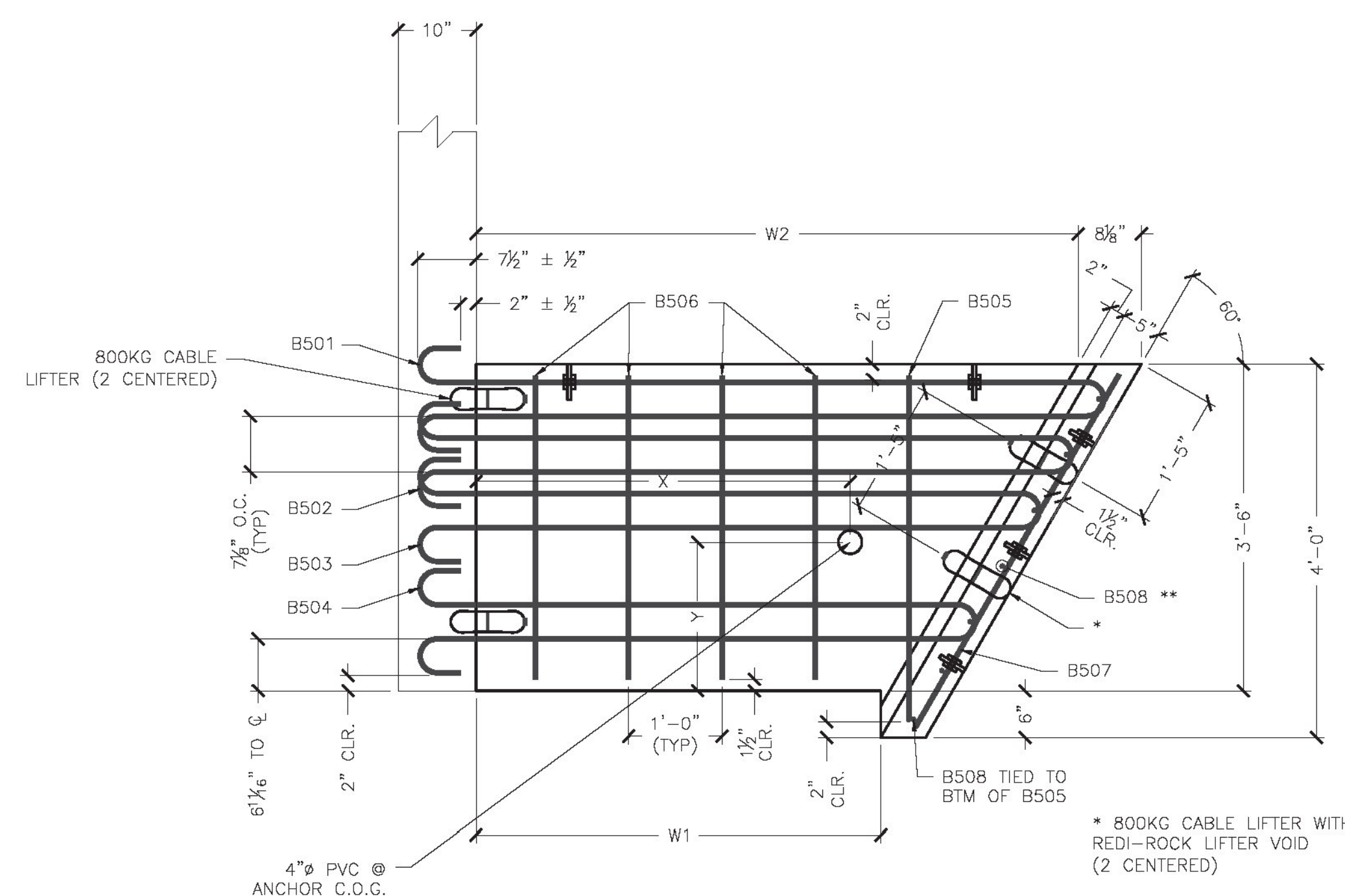


NOTE: REINFORCING SHOWN REPRESENTS "E" ANCHOR  
OTHER ANCHOR REINFORCING SIMILAR

6 REQ'D



2 FOOTING TO WW  
ATTACHMENT DETAIL  
3/4" = 1'-0"



3 ANCHOR DETAIL  
3/4" = 1'-0"

ANCHOR TYPE "B"					
CONCRETE QUANTITY	0.41 CY				
WEIGHT	1740 LB				
W1	1'-4"				
W2	3'-5 1/2"				
X = 2'-2 1/8"		Y = 1'-8 1/8"			
BAR LIST					
MARK	QTY	SIZE	L	TYPE	LENGTH
B501	1	#5	4'-4 1/2"	1	10'-1 1/2"
B502	1	#5	4'-0 1/2"	1	9'-5"
B503	1	#5	3'-8 1/2"	1	8'-9"
B504	1	#5	3'-0"	1	7'-4 1/2"
B505	2	#5	3'-8 1/2"	2	4'-7"
B506	2	#5	-----	Str.	3'-3"
B507	4	#5	-----	Str.	4'-4 1/2"
B508	7	#5	-----	Str.	2'-3"

ANCHOR TYPE "C"					
CONCRETE QUANTITY	0.48 CY				
WEIGHT	2010 LB				
W1	2'-4"				
W2	4'-5 1/2"				
X = 2'-8 3/8"		Y = 1'-8 1/2"			
BAR LIST					
MARK	QTY	SIZE	L	TYPE	LENGTH
B501	1	#5	5'-4 1/2"	1	12'-1 1/2"
B502	1	#5	5'-0 1/2"	1	11'-5"
B503	1	#5	4'-8 1/2"	1	10'-9"
B504	1	#5	4'-0"	1	9'-4 1/2"
B505	2	#5	3'-8 1/2"	2	4'-7"
B506	4	#5	-----	Str.	3'-3"
B507	4	#5	-----	Str.	4'-4 1/2"
B508	7	#5	-----	Str.	2'-3"

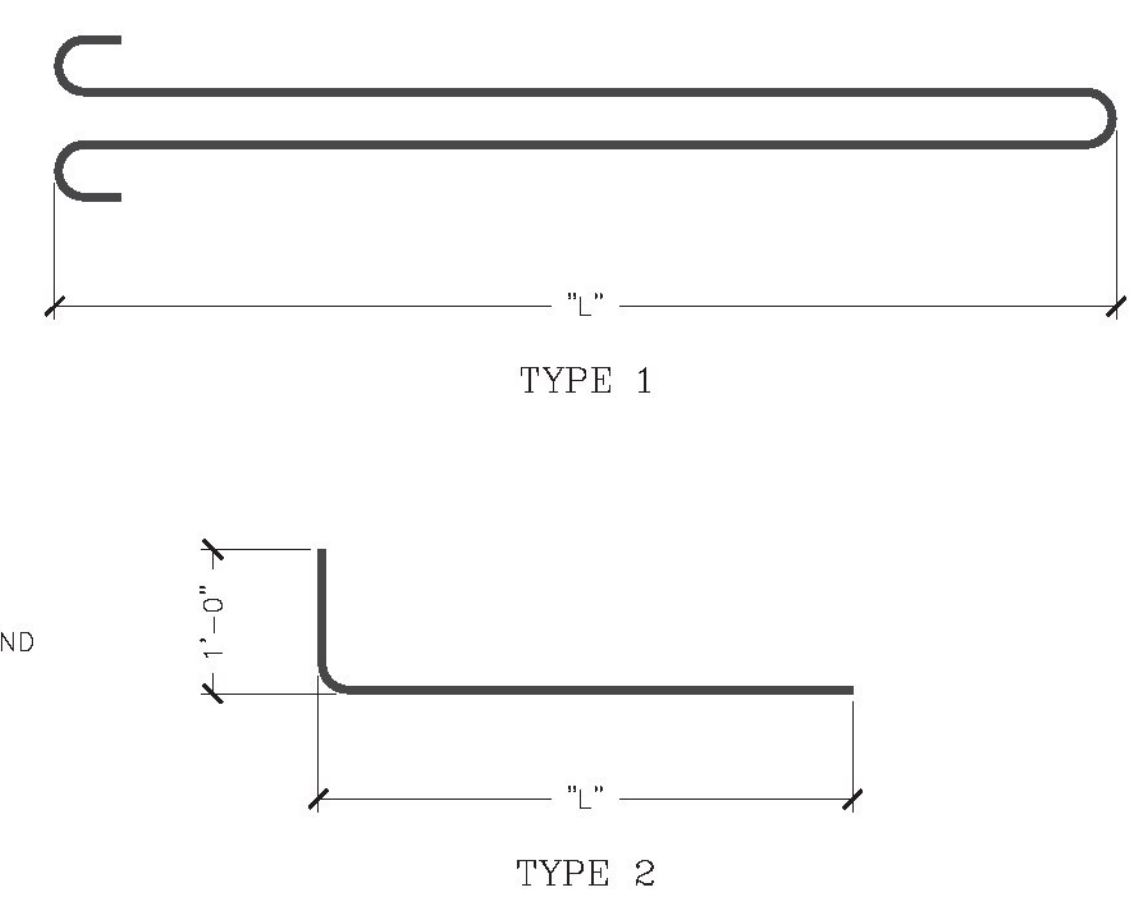
ANCHOR TYPE "D"					
CONCRETE QUANTITY	0.54 CY				
WEIGHT	2285 LB				
W1	3'-4"				
W2	5'-5 1/2"				
X = 3'-5 1/8"		Y = 1'-8 1/2"			
BAR LIST					
MARK	QTY	SIZE	L	TYPE	LENGTH
B501	1	#5	6'-4 1/2"	1	14'-1 1/2"
B502	1	#5	6'-0 1/2"	1	13'-5"
B503	1	#5	5'-8 1/2"	1	12'-9"
B504	1	#5	5'-0"	1	11'-4 1/2"
B505	2	#5	3'-8 1/2"	2	4'-7"
B506	6	#5	-----	Str.	3'-3"
B507	4	#5	-----	Str.	4'-4 1/2"
B508	7	#5	-----	Str.	2'-3"

ANCHOR TYPE "E"					
CONCRETE QUANTITY	0.61 CY				
WEIGHT	2550 LB				
W1	4'-4"				
W2	6'-5 1/2"				
X = 4'-0"		Y = 1'-8 1/2"			
BAR LIST					
MARK	QTY	SIZE	L	TYPE	LENGTH
B501	1	#5	7'-4 1/2"	1	16'-1 1/2"
B502	1	#5	7'-0 1/2"	1	15'-5"
B503	1	#5	6'-8 1/2"	1	14'-9"
B504	1	#5	6'-0"	1	13'-4 1/2"
B505	2	#5	3'-8 1/2"	2	4'-7"
B506	8	#5	-----	Str.	3'-3"
B507	4	#5	-----	Str.	4'-4 1/2"
B508	7	#5	-----	Str.	2'-3"

ANCHOR TYPE "F"					
CONCRETE QUANTITY	0.68 CY				
WEIGHT	2860 LB				
W1	5'-4"				
W2	7'-5 1/2"				
X = 4'-7 1/8"		Y = 1'-8 1/2"			
BAR LIST					
MARK	QTY	SIZE	L	TYPE	LENGTH
B501	1	#5	8'-4 1/2"	1	18'-1 1/2"
B502	1	#5	8'-0 1/2"	1	17'-5"
B503	1	#5	7'-8 1/2"	1	16'-9"
B504	1	#5	7'-0"	1	15'-4 1/2"
B505	2	#5	3'-8 1/2"	2	4'-7"
B506	10	#5	-----	Str.	3'-3"
B507	4	#5	-----	Str.	4'-4 1/2"
B508	7	#5	-----	Str.	2'-3"



Project No. 5778  
Date: 2/24/2015  
Designed by: xxx  
Drawn by: CFP  
Checked by: XXX  
Scale: AS SHOWN

173 BUXTON INDUSTRIAL DRIVE - PO BOX 870  
HENNIKER, NH 03242  
PHONE: 603-428-3218  
WWW.MICHIECORP.COM

REINFORCING SCHEDULE  
DATE: 4/15/2015  
REVISED FOR STARTER REVIEW #1015  
DATE: 4/15/2015  
REVISED FOR STARTER REVIEW #1015  
DATE: 4/20/15

Prepared for:  
**Renaud Brothers, Inc.**  
283 Fort Bridgeman Rd #2  
Vernon, VT 05354

Bridge #52 - VT Route 30 - VAOT STP Culv(31)  
Winhall, VT  
12'x7' Open Top Box Culvert - Anchor Details

DWG NO.  
SS.0