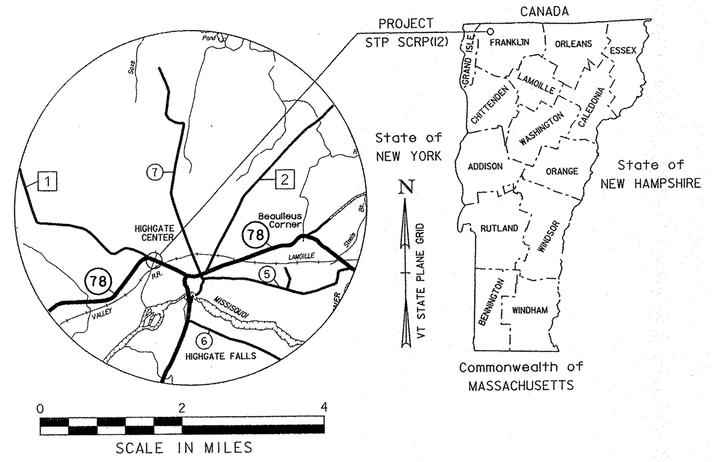
STATE OF VERMONT
AGENCY OF TRANSPORTATION

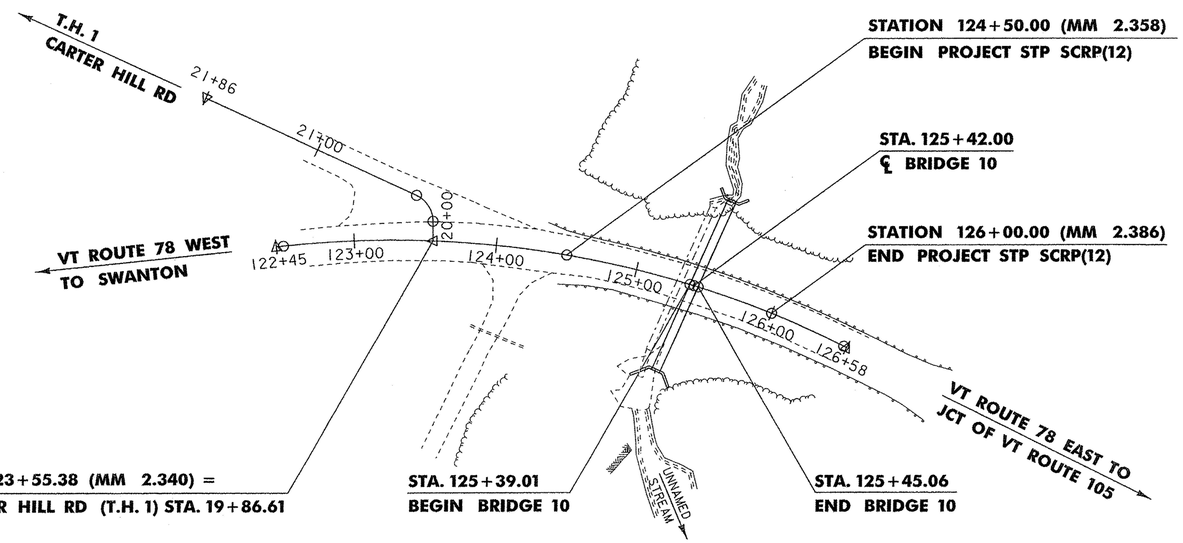
PROPOSED IMPROVEMENT
BRIDGE PROJECT
TOWN OF HIGHGATE
COUNTY OF FRANKLIN
VT ROUTE 78 (MAJOR COLLECTOR), BRIDGE #10

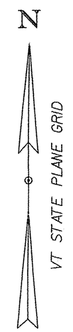


BEGINNING IN THE TOWN OF HIGHGATE ON VT ROUTE 78 AT STATION 124+50.00 (MM 2.358)
EXTENDING EASTERLY TO STATION 126+00.00 (MM 2.386)

LENGTH OF ROADWAY: 143.95 FEET = 0.027 MILES
LENGTH OF BRIDGE: 6.05 FEET = 0.001 MILES
LENGTH OF PROJECT: 150.00 FEET = 0.028 MILES

WORK TO BE PERFORMED UNDER THIS PROJECT INCLUDES INSTALLATION OF A NEW PIPE, HEADWALLS, WINGWALLS, SLOPE STABILIZATION, ABANDONMENT OF THE EXISTING BOX CULVERT AND OTHER HIGHWAY RELATED ITEMS.





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 :	VAOT - R. GILMAN
SURVEYED DATE :	09/11/2014
DATUM	
VERTICAL	NAVD 88
HORIZONTAL	NAD 83 (2011)

RECORD PLANS

CONTRACTOR:	CASELLA CONSTRUCTION, INC. - MENDON, VT
RESIDENT ENGINEER:	SCOTT WHEATLEY
CONSTRUCTION BEGAN:	APRIL 17, 2017
CONSTRUCTION COMPLETE:	APRIL 10, 2018
RECORD PLANS BY:	SCOTT WHEATLEY & JESSE IVES

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

BY _____ RESIDENT ENGINEER

DATE Nov. 1, 2018

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.

DIRECTOR OF PROJECT DELIVERY
APPROVED _____ DATE 9/19/2016

PROJECT MANAGER : BRUCE MARTIN, P.E.

PROJECT NAME : HIGHGATE
PROJECT NUMBER : STP SCRP(12)

SHEET 1 OF 40 SHEETS

STATE OF VERMONT
AGENCY OF TRANSPORTATION

PRELIMINARY INFORMATION SHEET (CULVERT)

Version
LRFD

INDEX OF SHEETS

PLAN SHEETS

STANDARDS LIST

G-1	11-10-2015
T-1	04-25-2016
T-10	08-06-2012
T-28	08-06-2012
T-29	08-06-2012
T-30	08-06-2012
T-42	04-09-2014
T-45	01-02-2013

STRUCTURES DETAIL SHEETS

SD-501.00	CONCRETE DETAILS AND NOTES	5/7/2010
SD-502.00	CONCRETE DETAILS AND NOTES	5/7/2010

TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT
0	0	0	0	0	0
XXXX	0	0	0	0	0

20 year ESAL for flexible pavement from XXXX to XXXX : 0

40 year ESAL for flexible pavement from XXXX to XXXX : 0

Design Speed : 0 mph

AS BUILT "REBAR" DETAIL

LEVEL I	LEVEL II	LEVEL III
TYPE:	TYPE:	TYPE:
GRADE:	GRADE:	GRADE:

FINAL HYDRAULIC REPORT

HYDROLOGIC DATA

Date: March 2015

DRAINAGE AREA : 0.34 sq. mi.
CHARACTER OF TERRAIN : Hilly, mixture of open and forested land cover
STREAM CHARACTERISTICS : Sinuous, alluvial, low grade upstream & steep downstream
NATURE OF STREAMBED : Silt & sand upstream, stone, gravel, silt & sand downstream

PEAK FLOW DATA

Q 2.33 =	45 cfs	Q 50 =	120 cfs
Q 10 =	80 cfs	Q 100 =	140 cfs
Q 25 =	100 cfs	Q 500 =	190 cfs

DATE OF FLOOD OF RECORD: Unknown
ESTIMATED DISCHARGE: Unknown
WATER SURFACE ELEV.: Unknown
NATURAL STREAM VELOCITY : @ Q50 = 13.3 fps
ICE CONDITIONS : Light to moderate
DEBRIS: Moderate to heavy
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: Reinforced Concrete Box
YEAR BUILT: Unknown
CLEAR SPAN(NORMAL TO STREAM): 4.0'
VERTICAL CLEARANCE ABOVE STREAMBED: 4.0'
WATERWAY OF FULL OPENING: 16 sq. ft.
DISPOSITION OF STRUCTURE: Abandon and fill with flowable fill
TYPE OF MATERIAL UNDER SUBSTRUCTURE: See boring logs

WATER SURFACE ELEVATIONS AT:

Q2.33 =	259.5'	VELOCITY =	11.2 fps
Q10 =	260.7'	"	12.9 fps
Q25 =	261.3'	"	13.6 fps
Q50 =	262.0'	"	14.2 fps
Q100 =	262.7'	"	14.7 fps

LONG TERM STREAMBED CHANGES: The only changes noted are deposition upstream and erosion downstream, likely due to the inadequate size and failure of the existing structure.

IS THE ROADWAY OVERTOPPED BELOW Q100: No
FREQUENCY: Above Q100
RELIEF ELEVATION: 285.0'
DISCHARGE OVER ROAD @Q100: None

UPSTREAM STRUCTURE

TOWN: None — DISTANCE:
HIGHWAY # : — STRUCTURE #:
CLEAR SPAN: — CLEAR HEIGHT:
YEAR BUILT: — FULL WATERWAY:
STRUCTURE TYPE:

DOWNSTREAM STRUCTURE

TOWN: Highgate — DISTANCE: 800'
HIGHWAY # : Rail trail — STRUCTURE #: -
CLEAR SPAN: Unknown — CLEAR HEIGHT: Unknown
YEAR BUILT: Unknown — FULL WATERWAY: -
STRUCTURE TYPE: Unknown

LRFR LOAD RATING FACTORS

LOADING LEVELS	TRUCK						
	H-20	HL-93	3S2	6 AXLE	3A. STR.	4A. STR.	5A. SEMI
TONNAGE	**20**	**36**	**36**	**66**	**30**	**34.5**	**38**
INVENTORY							
POSTING							
OPERATING							
COMMENTS:	TABLE TO BE COMPLETED BY CONTRACTOR'S DESIGNER						

CULVERT DESIGN CRITERIA

1. PROPOSED CULVERT IS A STEEL CORRUGATED (6'-0" X 6'-0" X 131'-0" PIPE).
2. CULVERT ENDS ARE NOT SKEWED.
3. CULVERT WILL BE SET AT A SLOPE OF 12.00 IN. ON 50 FT.
4. CULVERT WILL NOT REQUIRE FISH PASSAGE ACCOMODATIONS
5. CULVERT CONSTRUCTION WILL NOT REQUIRE A TEMPORARY PIPE

PROPOSED STRUCTURE

STRUCTURE TYPE: Smooth interior steel pipe with cement mortar lining

CLEAR SPAN(NORMAL TO STREAM): 5.9'
VERTICAL CLEARANCE ABOVE STREAMBED: 5.9'
WATERWAY OF FULL OPENING: 27 sq. ft.

WATER SURFACE ELEVATIONS AT:

Q2.33 =	259.1'	VELOCITY=	13.0 fps
Q10 =	260.1'	"	14.6 fps
Q25 =	260.6'	"	15.2 fps
Q50 =	261.0'	"	15.7 fps
Q100 =	261.5'	"	16.2 fps

IS THE ROADWAY OVERTOPPED BELOW Q100: No
FREQUENCY: Above Q100
RELIEF ELEVATION: 285.0'
DISCHARGE OVER ROAD @Q100: None

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 262.6' (top of pipe at inlet)
VERTICAL CLEARANCE: @ Q50 = 1.6'

SCOUR: Not applicable for a pipe

REQUIRED CHANNEL PROTECTION: Stone Fill, Type II at inlet and Type IV at outlet

PERMIT INFORMATION

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

TEMPORARY BRIDGE REQUIREMENTS

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

ADDITIONAL INFORMATION

TRAFFIC MAINTENANCE NOTES

1. MAINTAIN TWO-WAY TRAFFIC ON THE EXISTING STRUCTURE.
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. CULVERT OPENING	D:	6.00 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'_{ci}:	- - -
8. CONCRETE, HIGH PERFORMANCE CLASS AA	f'_c:	4.0 KSI
9. CONCRETE, HIGH PERFORMANCE CLASS A	f'_c:	4.0 KSI
10. CONCRETE, HIGH PERFORMANCE CLASS B	f'_c:	3.5 KSI
11. CONCRETE, CLASS C	f'_c:	3.0 KSI
12. REINFORCING STEEL	f_y:	60 KSI
13. STRUCTURAL STEEL AASHTO M270	f_y:	- - -
14. NOMINAL BEARING RESISTANCE OF SOIL	q_n:	- - -
15. SOIL BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	ϕ:	0.45
16. NOMINAL BEARING RESISTANCE OF ROCK	q_n:	10.0 KSF
17. ROCK BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	ϕ:	0.45
18. PILE RESISTANCE FACTOR	ϕ:	- - -
19. LATERAL PILE DEFLECTION	Δ:	- - -
20. BASIC WIND SPEED	V_{3s}:	- - -
21. MINIMUM GROUND SNOW LOAD	p_g:	- - -
22. SEISMIC DATA — PGA: 0	S_s:	- - -
	S_1:	- - -
23.		- - -
24.		- - -
25.		- - -
26.		- - -

PROJECT NAME: **HIGHGATE**
PROJECT NUMBER: **STP SCRP(12)**

FILE NAME: **d13c134_PI.xls**
PROJECT LEADER: **B. MARTIN**
DESIGNED BY: **A. KEMPTON**
PRELIMINARY INFORMATION SHEET 1

PLOT DATE: 10/13/2016
DRAWN BY: **A. KEMPTON**
CHECKED BY: **D. WILLEY**
SHEET 2 OF 40

GENERAL INFORMATION

SYMBOLOGY LEGEND NOTE

THE SYMBOLOGY ON THIS SHEET IS INTENDED TO COVER STANDARD CONVENTIONAL SYMBOLOGY. THE SYMBOLOGY 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. SYMBOLOGY 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 VALUE
	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 SYMBOLOGY

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 SYMBOLOGY

PROJECT DESIGN & LAYOUT SYMBOLOGY

- 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 SYMBOLOGY

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 SR SR — SLOPE RIGHTS
- 6F — 6F PROPERTY BOUNDARY
- 4F — 4F PROPERTY BOUNDARY
- HAZ — HAZARDOUS WASTE

EPSC LAYOUT PLAN SYMBOLOGY

EPSC MEASURES

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

SEE EPSC DETAIL SHEETS FOR ADDITIONAL SYMBOLOGY

ENVIRONMENTAL RESOURCES

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

ARCHEOLOGICAL & HISTORIC

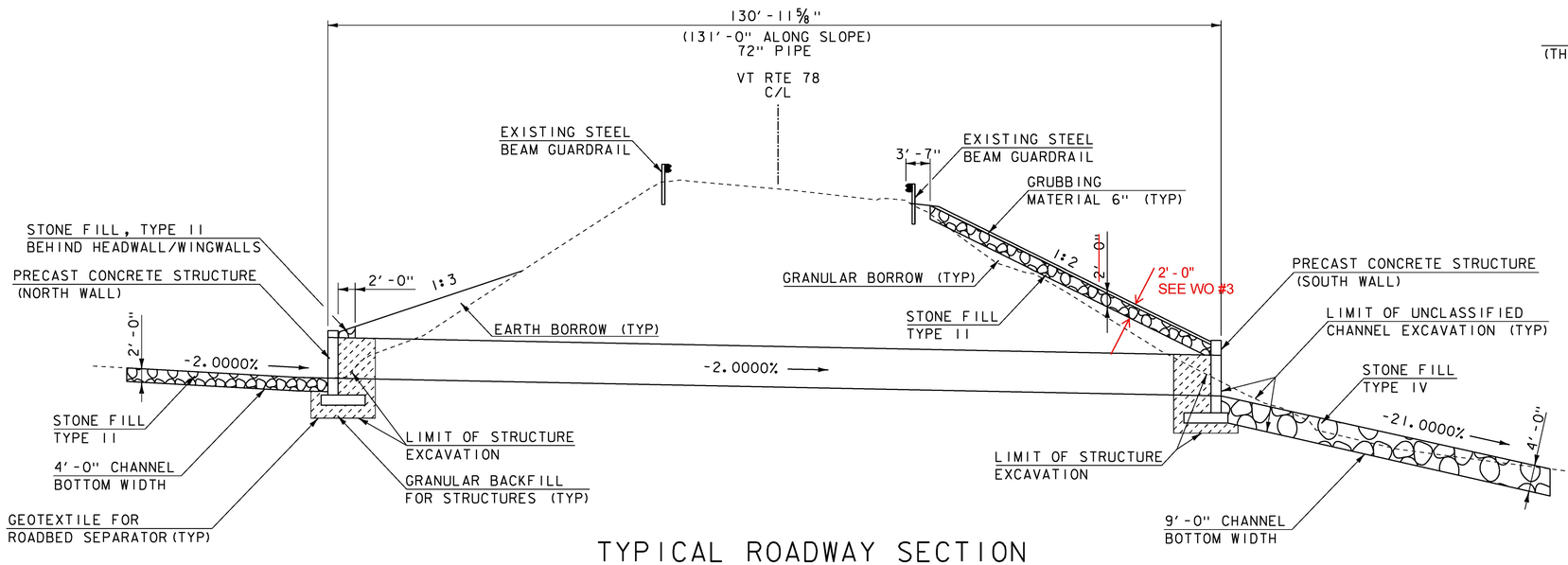
- ARCH — ARCHEOLOGICAL BOUNDARY
- HISTORIC DIST — HISTORIC DISTRICT BOUNDARY
- HISTORIC — HISTORIC AREA
- Ⓗ HISTORIC STRUCTURE

CONVENTIONAL TOPOGRAPHIC SYMBOLOGY

EXISTING FEATURES

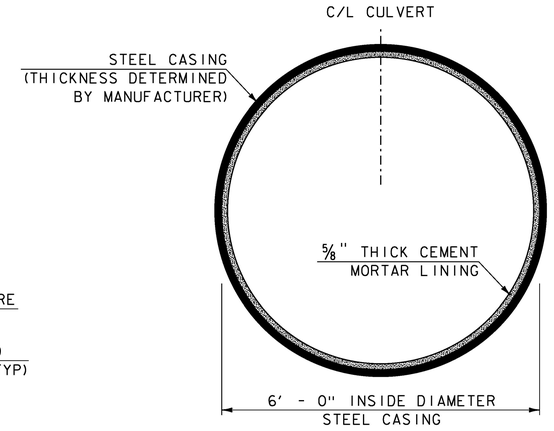
- ROAD EDGE PAVEMENT
- ROAD EDGE GRAVEL
- DRIVEWAY EDGE
- DITCH
- FOUNDATION
- FENCE (EXISTING)
- FENCE WOOD POST
- FENCE STEEL POST
- GARDEN
- ROAD GUARDRAIL
- RAILROAD TRACKS
- CULVERT (EXISTING)
- STONE WALL
- WALL
- WOOD LINE
- BRUSH LINE
- HEDGE
- BODY OF WATER EDGE
- LEDGE EXPOSED

PROJECT NAME:	HIGHGATE
PROJECT NUMBER:	STP SCRP(12)
FILE NAME: dl3cl34_frm.dgn	PLOT DATE: 14-OCT-2016
PROJECT LEADER: B. MARTIN	DRAWN BY: A. KEMPTON
DESIGNED BY: A. KEMPTON	CHECKED BY: M. GAMELIN
CONVENTIONAL SYMBOLOGY LEGEND SHEET	SHEET 3 OF 40



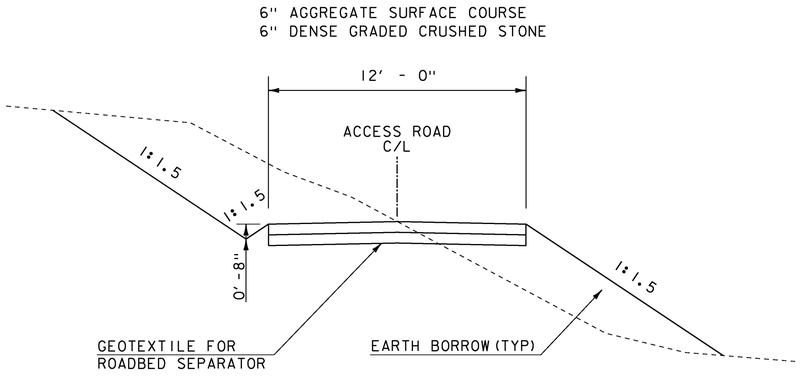
TYPICAL ROADWAY SECTION (AT CENTERLINE OF PIPE)

NOT TO SCALE



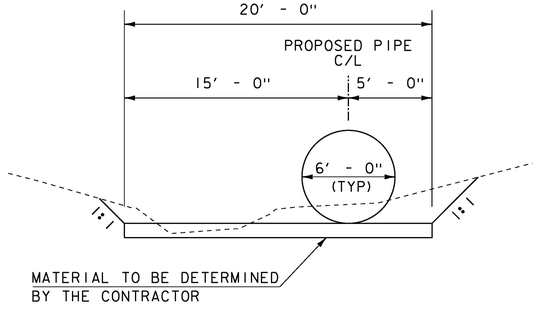
TYPICAL CULVERT SECTION

NOT TO SCALE



TYPICAL ACCESS ROAD SECTION

NOT TO SCALE



TYPICAL STAGING AREA (RAMMING PAD) SECTION

NOT TO SCALE

GENERAL NOTES:

1. A MINIMUM OF 1.5 FEET OF MATERIAL SHALL BE EXCAVATED BELOW THE BOTTOM OF THE OUTLET FOOTINGS AND 2.0 FEET BELOW THE INLET FOOTINGS.
2. GRANULAR BACKFILL FOR STRUCTURES SHALL BE PLACED TO A MINIMUM DISTANCE OF 1.5 FEET BELOW AND 1.5 FEET BEHIND ALL WINGWALLS AND HEADWALLS.
3. IF THE EXISTING GUARDRAIL IS DAMAGED OR REMOVED FOR THE CONTRACTORS CONVENIENCE, IT SHALL BE REPLACED AT THE CONTRACTORS EXPENSE.
4. EARTH BORROW SHALL BE PLACED AT A 1:3 SLOPE TO BACKFILL THE HEADWALL AND WINGWALLS ON THE NORTH SLOPE FROM STATION 125+12 TO STATION 125+90 LT.
5. THE SOUTH SLOPE SHALL SMOOTHLY TRANSITION FROM A 1:4 SIDE SLOPE AT STATION 124+50 RT. TO A 1:2 SIDE SLOPE AT STATION 125+00 RT.
6. THE SOUTH SLOPE SHALL BE STABILIZED WITH TYPE II STONE FILL AND 6" OF GRUBBING MATERIAL FROM STATION 125+00 TO STATION 125+50 RT.
7. THE EXISTING BOX CULVERT SHALL BE ABANDONED IN PLACE AND SHALL BE FILLED WITH CONTROLLED DENSITY (FLOWABLE) FILL.
8. IN ORDER TO CONSTRUCT THE PROPOSED INLET WINGWALLS AND FOOTINGS THE EXISTING INLET WINGWALLS SHALL BE REMOVED. THIS WORK WILL BE PAID FOR UNDER ITEM 203.16 SOLID ROCK EXCAVATION.
9. A 50' X 20' RAMMING PAD SHALL BE CONSTRUCTED AT THE INLET OF THE PIPE. ALL WORK AND MATERIALS ASSOCIATED WITH THE STAGING AREA WILL BE CONSIDERED INCIDENTAL TO SPECIAL PROVISION (TRENCHLESS PIPE WITH CEMENT MORTAR LINING) (72" DIAMETER). THE RAMMING PAD SHALL BE OFFSET TO THE WEST (SEE TYPICAL SECTION) OF THE PIPE INVERT TO MINIMIZE IMPACTS TO THE CHANNEL EMBANKMENT. THE STAGING AREA SHALL BE RESTORED TO ITS ORIGINAL CONDITION AND LINED WITH STONE FILL, TYPE II AFTER THE PIPE HAS BEEN INSTALLED.

PROJECT NAME:	HIGHGATE
PROJECT NUMBER:	STP SCRP(12)

FILE NAME: dl3cl34typ.dgn	PLOT DATE: 14-OCT-2016
PROJECT LEADER: B. MARTIN	DRAWN BY: A. KEMPTON
DESIGNED BY: A. KEMPTON	CHECKED BY: M. GAMELIN
TYPICAL SECTIONS SHEET	SHEET 4 OF 40

CULVERT NOTES:

1. ITEM 900.640 SPECIAL PROVISION (TRENCHLESS PIPE WITH CEMENT MORTAR LINING)(72" DIAMETER) WILL INCLUDE, BUT IS NOT LIMITED TO THE DESIGN, FABRICATION, DELIVERY, HANDLING, REPAIR AND CONSTRUCTION OF ALL THE CULVERT AND CEMENT MORTAR ELEMENTS.

2. THE REMOVAL AND DISPOSAL OF ALL MATERIAL FROM INSIDE THE TRENCHLESS PIPE WILL BE CONSIDERED INCIDENTAL TO ITEM 900.640 SPECIAL PROVISION (TRENCHLESS PIPE WITH CEMENT MORTAR LINING)(72" DIAMETER).

HEADWALL NOTES:

1. ITEM 540.10 PRECAST CONCRETE STRUCTURE (SOUTH WALL) AND ITEM 540.10 PRECAST CONCRETE STRUCTURE (NORTH WALL) WILL INCLUDE, BUT ARE NOT LIMITED TO THE DESIGN, FABRICATION, FURNISHING AND CONSTRUCTION OF THE HEADWALLS, WINGWALLS AND FOOTINGS. EACH WALL SHALL BE DESIGNED AND FABRICATED TO THE ELEVATIONS SHOWN ON THE PLANS. THE WALL AND FOOTING THICKNESSES ARE SHOWN FOR REFERENCE ONLY. THE ACTUAL DIMENSIONS WILL BE DEPENDENT ON THE CONTRACTOR.

2. THE CULVERT AND WALL SYSTEM SHALL BE DESIGNED PER THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 7TH EDITION, DATED 2014, AND ITS LATEST REVISIONS, AND SHALL CONSIDER THE FOLLOWING DESIGN CRITERIA:

   A. DESIGN LOADING = HL-93

   B. WEIGHT OF BACKFILL MATERIAL = 140 PCF

   C. SEE GEOTECHNICAL REPORT FOR FACTORED SOIL BEARING RESISTANCES.

   D. PRECAST CONCRETE COMPRESSIVE STRENGTH: f'c = 5000 psi
      CAST-IN-PLACE CONCRETE COMPRESSIVE STRENGTH: f'c = 3500 psi

   E. REINFORCING STEEL (CAST-IN-PLACE CONCRETE WALLS): Fy = 60,000 psi

3. IT SHALL BE NOTED THAT THE SOIL CONDITIONS VARY GREATLY BETWEEN THE NORTH AND SOUTH WALLS. ALL REQUIREMENTS IN THE GEOTECHNICAL REPORT SHALL BE MET.

4. WEEP HOLES IN THE HEADWALLS SHALL BE PLACED APPROXIMATELY EVERY 10'. WEEP HOLES SHALL BE COVERED WITH GEOTEXTILE, OR EQUIVALENT, TO RETAIN BACKFILL MATERIAL AND TO PREVENT ENTRY BY ANIMALS. PAYMENT WILL BE CONSIDERED INCIDENTAL TO ITEM 540.10 PRECAST CONCRETE STRUCTURE.

5. ALL REINFORCING STEEL SHALL HAVE A MINIMUM CLEAR COVER OF 2".

6. REINFORCING STEEL PLACEMENT TOLERANCES SHALL BE AS FOLLOWS:

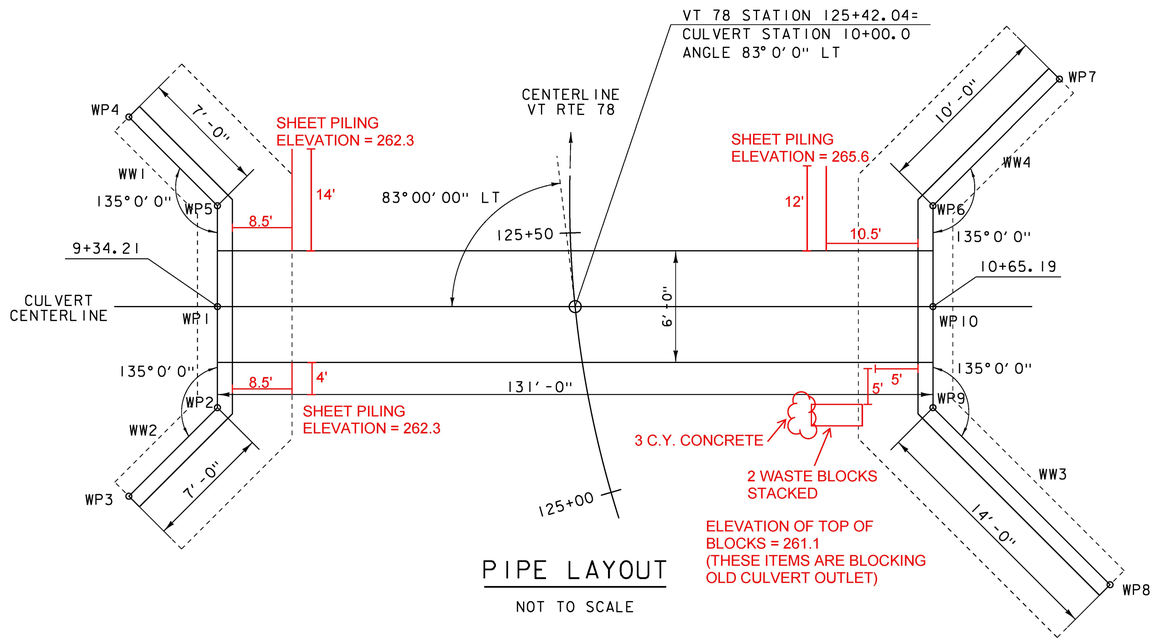
   A. SPACING +/- ½"

   B. CLEARANCE +/- ¼"

7. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 1" X 1".

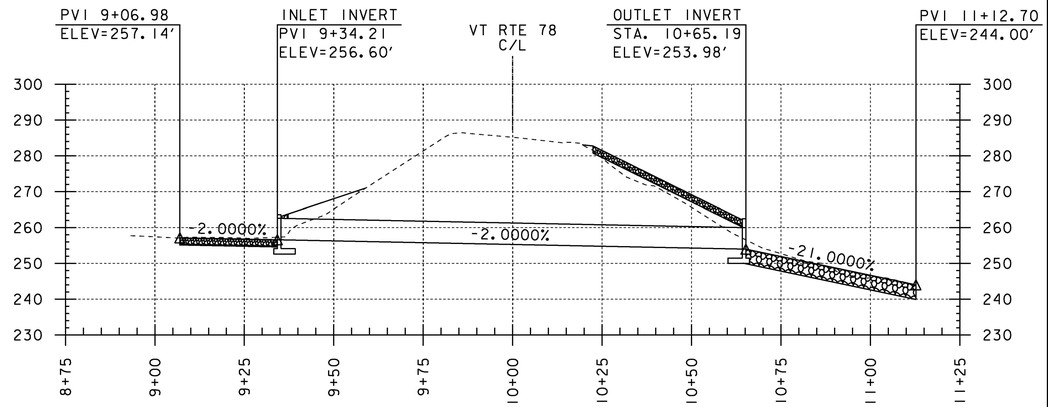
8. WATER REPELLENT, SILANE SHALL BE FURNISHED IN ACCORDANCE WITH SECTION 514 AND SHALL BE FIELD APPLIED TO ALL EXPOSED EXTERIOR SURFACES OF PRECAST CONCRETE. PAYMENT WILL BE MADE UNDER ITEM 514.10 WATER REPELLENT, SILANE.

PROJECT NAME:	HIGHGATE
PROJECT NUMBER:	STP SCRP(12)
FILE NAME: dl3cl34det.dgn	PLOT DATE: 14-OCT-2016
PROJECT LEADER: B. MARTIN	DRAWN BY: A. KEMPTON
DESIGNED BY: A. KEMPTON	CHECKED BY: M. GAMELIN
PROJECT NOTES SHEET	SHEET 5 OF 40



PIPE LAYOUT

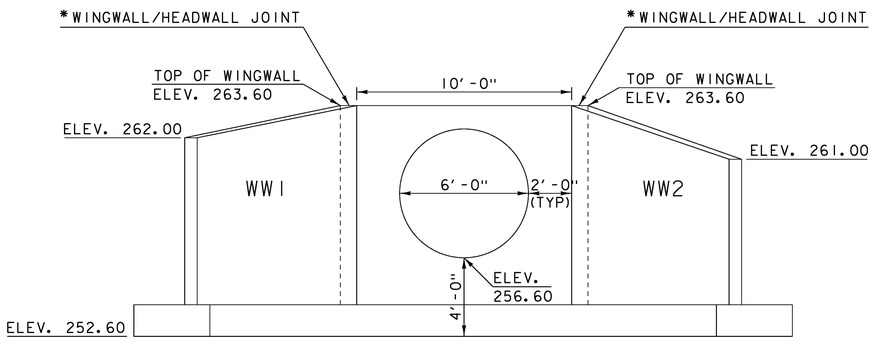
NOT TO SCALE



CHANNEL PROFILE

WORKING POINTS
STATIONS AND OFFSETS

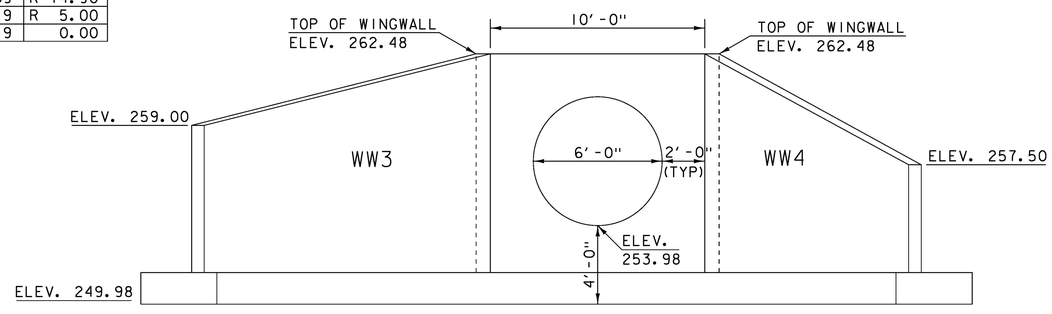
WP#	STATION	OFFSET
WP1	9+34.21	0.00
WP2	9+34.21	R 5.00
WP3	9+29.26	R 9.95
WP4	9+29.26	L 9.95
WP5	9+34.21	L 5.00
WP6	10+65.19	L 5.00
WP7	10+72.26	L 12.07
WP8	10+75.09	R 14.90
WP9	10+65.19	R 5.00
WP10	10+65.19	0.00



PIPE
INLET ELEVATION

NOT TO SCALE

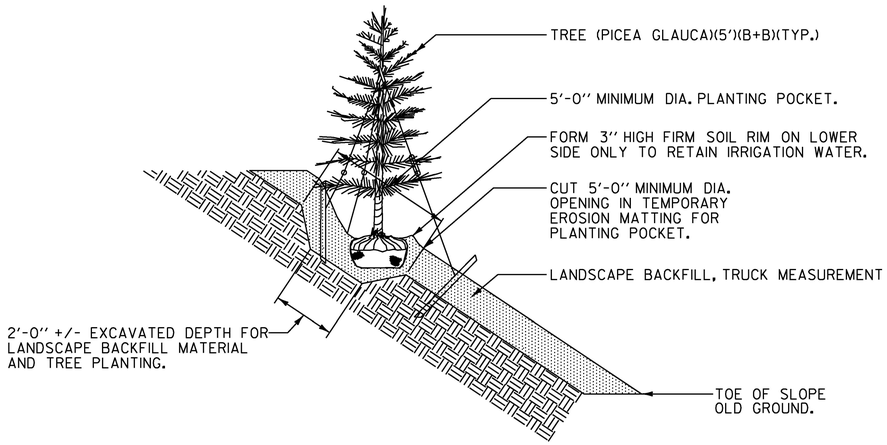
*JOINT SHALL BE FABRICATED TO ALLOW ONE INCH OF DIFFERENTIAL SETTLEMENT BETWEEN THE HEADWALL AND WINGWALLS (SEE GEOTECHNICAL REPORT)



PIPE
OUTLET ELEVATION

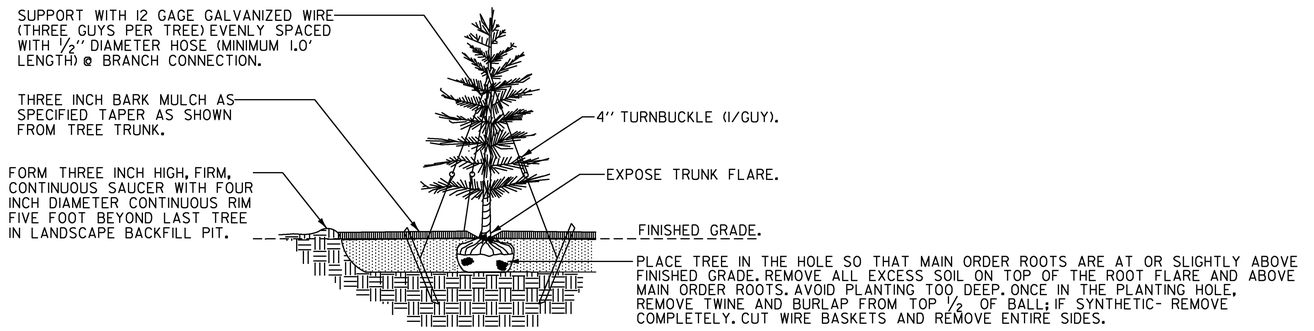
NOT TO SCALE

PROJECT NAME:	HIGHGATE
PROJECT NUMBER:	STP SCRP(12)
FILE NAME: dl3cl34det.dgn	PLOT DATE: 14-OCT-2016
PROJECT LEADER: B. MARTIN	DRAWN BY: A. KEMPTON
DESIGNED BY: A. KEMPTON	CHECKED BY: M. GAMELIN
DETAIL SHEET	SHEET 6 OF 40



EVERGREEN TREE PLANTING SLOPE DETAIL

NOT TO SCALE



EVERGREEN TREE PLANTING DETAIL

NOT TO SCALE

NOTES:

1. ANTI-DESICCANT SPRAY SHALL BE APPLIED TO ALL EVERGREENS PER MANUFACTURER SPECIFICATIONS.

2. COMPLETELY REMOVE ALL GUY-WIRES AND TURNBUCKLE ONE YEAR AFTER PLANTING.

GENERAL LANDSCAPE NOTES:

1. ORGANIC MATERIAL
   TOPSOIL, COMPOST AND NATIVE EXISTING SOIL SHALL BE TESTED AT AN APPROVED LAB PRIOR TO DELIVERY ON SITE AND INSTALLATION. ORGANIC MATTER SHALL BE A MINIMUM OF FIVE PERCENT.

2. TOPSOIL BACK FILL MIX
   TAMP TO REMOVE AIR POCKETS AND WATER THOROUGHLY IMMEDIATELY AFTER PLANTING, TO RECEIVE A MINIMUM OF 10 GALLONS AT EACH WATERING, TWICE WEEKLY DURING THE ESTABLISHMENT PERIOD. UNSUITABLE NATIVE MATERIAL SHALL BE REPLACED WITH IMPORTED APPROVED TOPSOIL AS DIRECTED BY ENGINEER.

PROJECT NAME:	HIGHGATE
PROJECT NUMBER:	STP SCRP(12)
FILE NAME: dl3cl34frm.dgn	PLOT DATE: 14-OCT-2016
PROJECT LEADER: B. MARTIN	DRAWN BY: A. AGRAWAL
DESIGNED BY: A. AGRAWAL	CHECKED BY: A. KEMPTON
LANDSCAPE DETAILS SHEET	SHEET 7 OF 40

GPS CONTROL POINTS

HVCTRL #1

FSO B 1998

NORTH = 888880.200
EAST = 1485628.790
ELEV. = 230.92

THE STATION IS LOCATEDAPPROXIMATELY 9.7 KM (6.00 MI) SOUTH OF THE U.S. AND CANADA BORDER,4.43 KM (2.75 MI) WEST OF HIGHGATE CENTER, 2.9 KM (1.80 MI) EAST OF SWANTON, 1.6 KM (1.00 MI) EAST OF INTERSTATE HIGHWAY 89 AND IS AT THE HIGHGATE/FRANKLIN COUNTY STATE AIRPORT. TO REACH THE STATION FROM THE JUNCTION OF INTERSTATE HIGHWAY 89 (EXIT 21) AND STATE HIGWAY 78, PROCEED NORTHEAST 1.8 KM (1.10 MI) TO A ROAD ON THE LEFT LEADING TO THE AIRPORT. TURN LEFT AND PROCEED NORTH 0.89 KM (0.55 MI) ALONG THE AIRPORT ACCESS ROAD TO THE GATE ON THE LEFT, SOUTH OF THE TERMINAL.TURN LEFT AND PROCEED THROUGH THE GATE WEST 0.2 KM (0.10 MI) ACROSS THE APRON AND ALONG TAXIWAY ALPHA TO THE JUNCTION OF TAXIWAY ALPHA AND RUNWAY 1-19. PROCEED DIRECTLY ACROSS RUNWAY 1-19 AND THEN PROCEED APPROXIMATELY 80 M (262.5 FT) IN A WEST SOUTHWESTERLY DIRECTION TO THE STATION SOUTH OF A SIGN MARKED-- NO UNAUTHORIZED PERSONNEL BEYOND THIS POINT--. THE STATION IS A STANDARD NGS DISK STAMPED--FSO B 1998--, SET IN THE TOP OF A ROUND CONCRETE MONUMENT 0.3 M (1.0 FT) IN DIAMETER, WITH A STEEL ROD IMBEDDED IN THE CONCRETE AND SET FLUSH WITH THE GROUND. THE STATION IS LOCATED 78.30 M (256.89 FT) ON A MAGNETIC COMPASS BEARING OF SOUTH 81 DEGREES WEST FROM A RUNWAY LIGHT ACROSS RUNWAY 1-19 FROM TAXIWAY ALPHA, 63.30 M (207.68 FT) ON A MAGNETIC COMPASS BEARING OF NORTH 85 DEGREES WEST FROM A SLOPE INDICATOR LIGHT, 22.40 M (73.49 FT) ON A MAGNETIC COMPASS BEARING OF SOUTH 80 DEGREES EAST FROM THE CENTERLINE OF A DIRT ACCESS ROAD, AND 18.13 M (59.48 FT)ON A MAGNETIC COMPASS BEARING OF SOUTH 05 DEGREES WEST FROM A SIGN MARKED-- NO UNAUTHORIZED PERSONNEL BEYOND THIS POINT.

HVCTRL #2

S 48

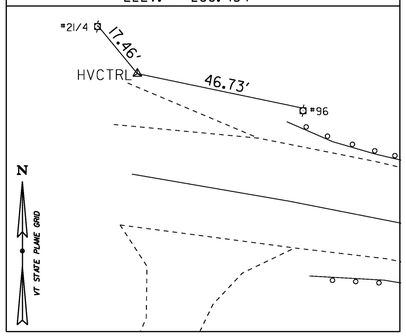
NORTH = 886449.590
EAST = 1487636.010
ELEV. = 238.250

DESCRIBED BY NATIONAL GEODETIC SURVEY 1978
1.85 MI NE FROM SWANTON. 1.85 MILES EAST ALONG STATE HIGHWAY 78 FROM THE POST OFFICE AT SWANTON, AT THE T-JUNCTION OF A PAVED ROAD LEADING NORTHWEST TO THE FRANKLIN COUNTY STATE AIRPORT, 75.7 FT. NORTHWEST OF THE CENTER LINE OF THE HIGHWAY, 27.2 FT. NORTHEAST OF THE CENTER LINE OF THE ROAD, 101.5 FT. NORTH OF AND ACROSS THE HIGHWAY FROM POWER POLE 8, 57.9 FT NORTHEAST OF AND ACROSS THE ROAD FROM A STOP SIGN, 5.5 FT. SOUTHEAST OF A POWER POLE. THE DIS IS 4-INCHES BELOW THE SURFACE OF THE GROUND, ACCESS TO WHICH IS HAD THROUGH A 4-INCH PLASTIC SCREW PLUG. ABOUT LEVEL WITH HIGHWAY. 3 FEET NORTHWEST OF A WITNESS POST.

TRAVERSE TIES

HVCTRL #10

NORTH = 890639.102
EAST = 1495616.171
ELEV. = 286.454



HVCTRL #11 / U 48

NORTH = 890460.866
EAST = 1495960.700
ELEV. = 280.710

DESCRIBED BY NATIONAL GEODETIC SURVEY 19780.7 MI WEST FROM HIGHGATE CENTER. 0.65 MILE WEST ALONG STATE HIGHWAY 78 FROM THE POST OFFICE ATHIGHGATE CENTER, 0.1 MILE EAST OF THE Y-JUNCTION OF SPRING ROAD,26.4 FT. SOUTHWEST OF THE CENTER LINE OF THE HIGHWAY, 3.5 FT. SOUTHWEST OF POWER POLE 21, 105.8 FT. SOUTHEAST OF THE SOUTHEAST END OF THE SOUTHWEST ROW OF WOODEN GUARD POST WITH CABLE ATTACHED, 137 FT.NORTHWEST OF AND ACROSS THE HIGHWAY FROM A POWER POLE, ON THE INSIDE AND AT THE SOUTHEAST END OFA CURVE. THE DISK IS 2 INCHES BELOW THE SURFACE OF THE GROUND, ACCESS TO WHICH IS HAD THROUGH A 4-INCH PLASTIC SCREW PLUG.3 FEET BELOW HIGHWAY. 3 FEET NORTHEAST OF A WITNESS POST.

NORTH =
EAST =
ELEV. =

NORTH =
EAST =
ELEV. =

NORTH =
EAST =
ELEV. =

ALIGNMENT TIES

VT 78 POB 122+45.00

NORTH = 890608.78
EAST = 1495466.51
ELEV. =

VT 78 PC 122+50.00

NORTH = 890609.32
EAST = 1495471.48
ELEV. =

VT 78 PT 126+55.72

NORTH = 890538.97
EAST = 1495865.55
ELEV. =

VT 78 POE 126+58.00

NORTH = 890537.96
EAST = 1495867.59
ELEV. =

N. ACCESS POB 0+00.00

NORTH = 890704.55
EAST = 1495461.87
ELEV. =

DATUM

VERTICAL NAVD 88
HORIZONTAL NAD 83(2011)
ADJUSTMENT COMPASS

PROJECT NAME: HIGHGATE
PROJECT NUMBER: STP SCRP(12)

FILE NAME: X13C134TI.DGN
PROJECT LEADER: B. MARTIN
DESIGNED BY: A. KEMPTON
TIE SHEET 1

PLOT DATE: 14-OCT-2016
DRAWN BY: C. CYR
CHECKED BY: P. BEYOR
SHEET 8 OF 40

ALIGNMENT TIES

N. ACCESS PC 0+04.74
NORTH = 890708.65
EAST = 1495464.25
ELEV. =

N. ACCESS PT 0+71.12
NORTH = 890735.40
EAST = 1495520.65
ELEV. = 284.42

N. ACCESS PC 2+29.86
NORTH = 890710.02
EAST = 1495677.34
ELEV. = 282.42

N. ACCESS PT 2+40.31
NORTH = 890707.46
EAST = 1495687.46
ELEV. = 282.29

N. ACCESS POE 3+46.94
NORTH = 890672.43
EAST = 1495788.17
ELEV. =

ALIGNMENT TIES

S. ACCESS POB 1+00.00
NORTH = 890564.79
EAST = 1495632.56
ELEV. =

S. ACCESS PC 1+17.03
NORTH = 890557.79
EAST = 1495648.08
ELEV. = 280.70

S. ACCESS PT 1+33.05
NORTH = 890547.71
EAST = 1495660.29
ELEV. = 274.79

S. ACCESS POE 2+42.16
NORTH = 890458.50
EAST = 1495723.10
ELEV. =

PIPE ALIGN. POB 9+03.50
NORTH = 890669.16
EAST = 1495799.78
ELEV. =

ALIGNMENT TIES

PIPE ALIGN. POE 11+34.0
NORTH = 890459.03
EAST = 1495705.05
ELEV. =

NORTH =
EAST =
ELEV. =

NORTH =
EAST =
ELEV. =

NORTH =
EAST =
ELEV. =

NORTH =
EAST =
ELEV. =

DATUM

VERTICAL NAVD 88

HORIZONTAL NAD 83 (2011)

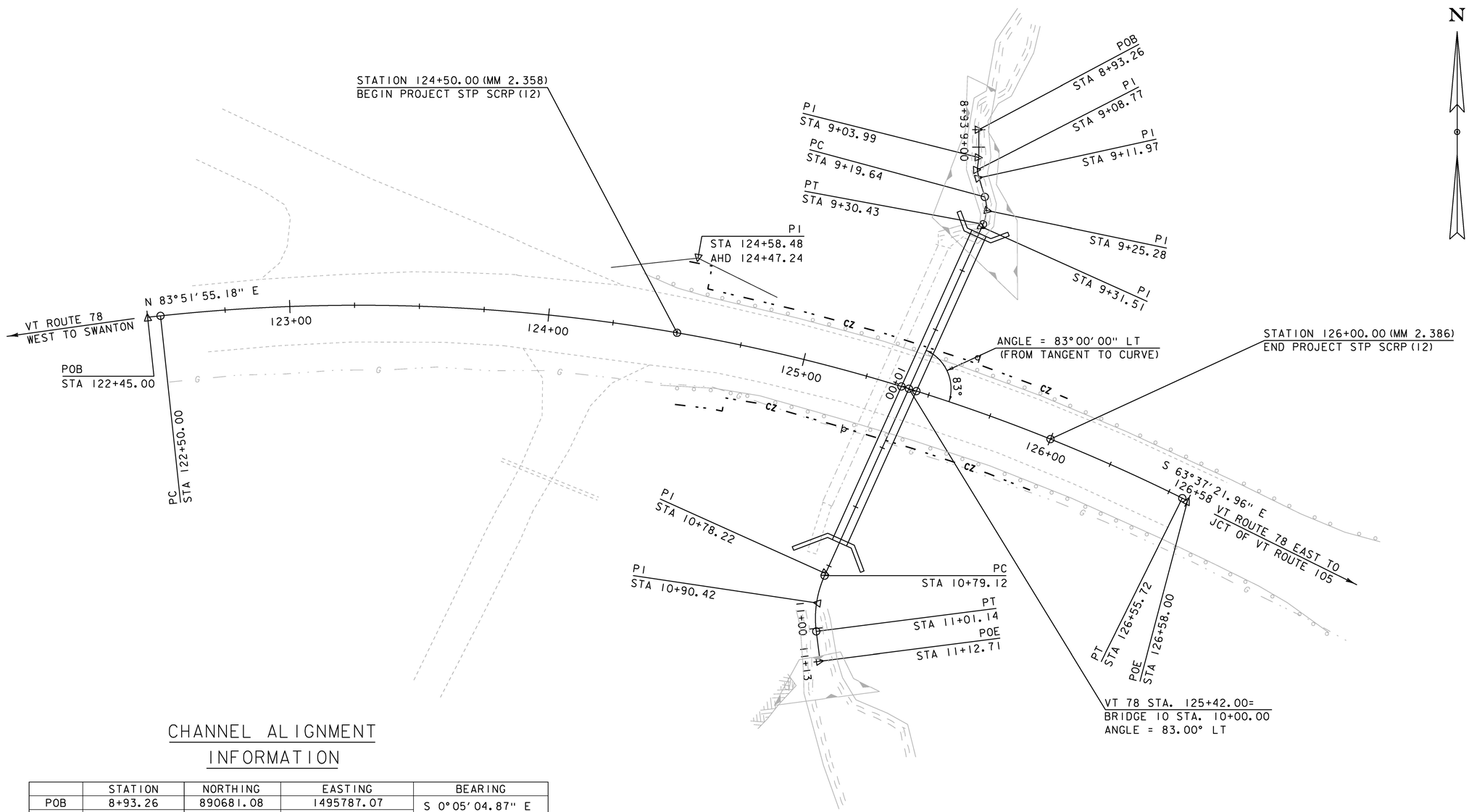
ADJUSTMENT COMPASS

PROJECT NAME: HIGHGATE

PROJECT NUMBER: STP SCRP(12)

FILE NAME: d13c134tie.dgn
PROJECT LEADER: B. MARTIN
DESIGNED BY: A. KEMPTON
TIE SHEET 2

PLOT DATE: 14-OCT-2016
DRAWN BY: A. KEMPTON
CHECKED BY: M. GAMELIN
SHEET 9 OF 40



CHANNEL ALIGNMENT INFORMATION

	STATION	NORTHING	EASTING	BEARING
POB	8+93.26	890681.08	1495787.07	S 0°05'04.87" E
PI	9+03.99	890670.35	1495787.09	S 7°22'12.94" W
PI	9+08.77	890665.61	1495786.47	S 12°20'38.48" E
PI	9+11.97	890662.49	1495787.16	S 16°56'49.55" E
PC	9+19.64	890655.15	1495789.39	
PI	9+25.28	890649.75	1495791.04	S 24°16'03.17" W
PT	9+30.43	890644.61	1495788.72	
PI	9+31.51	890643.62	1495788.27	S 24°16'03.17" W
PI	10+78.22	890509.88	1495727.98	
PC	10+79.12	890509.06	1495727.61	S 24°16'03.17" W
PI	10+90.42	890498.76	1495722.96	
PT	11+01.14	890487.55	1495724.39	S 7°16'52.86" E
POE	11+12.71	890476.08	1495725.86	

CHANNEL ALIGNMENT

0 20 40
SCALE IN FEET

NOTE:
THE CHANNEL ALIGNMENT WAS USED TO DEVELOP THE CHANNEL PROFILE AND CHANNEL CROSS SECTIONS.

PROJECT NAME:	HIGHGATE
PROJECT NUMBER:	STP SCRP(12)
FILE NAME: dl3cl34det.dgn	PLOT DATE: 14-OCT-2016
PROJECT LEADER: B. MARTIN	DRAWN BY: A. KEMPTON
DESIGNED BY: A. KEMPTON	CHECKED BY: M .GAMELIN
CHANNEL ALIGNMENT SHEET	SHEET 10 OF 40

STATE OF VERMONT
AGENCY OF TRANSPORTATION
MATERIALS & RESEARCH SECTION
SUBSURFACE INFORMATION

BORING LOG

HIGHGATE
STP SCRP(12)
VT-78 BR-10 CULVERT MM2.37

Boring No.: **B-101**
Page No.: 1 of 1
Pin No.: 13C134
Checked By: CCB

Boring Crew: DAIGNEAULT, HALL
Date Started: 8/12/13 Date Finished: 8/12/13
VTSPG NAD83: N 890591.03 ft E 1495758.78 ft
Station: 125+38 Offset: -9.00
Ground Elevation: 285.44 ft

	Casing	Sampler
Type:	WB	SS
I.D.:	4 in	1.5 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	30 in.
Hammer/Rod Type:	Auto/AWJ	
Rig:	CME 55 TRACK	C_e = 1.46

Groundwater Observations

Date	Depth (ft)	Notes
08/12/13	26.0	While drilling.

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Run (D/p deg.)	Core Rec. % (RQD %)	Drill Rate minutes/ft	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %	LL %	PI %
		Asphalt Pavement, 0.0 ft - 1.0 ft										
		A-2-4, SiSa, brn, Moist, Rec. = 1.1 ft				12-12-11-10 (23)	11.3	2.6	73.4	24.0		
		A-4, SiSa, brn, Moist, Rec. = 1.0 ft				5-5-6-6 (11)	14.9	8.2	56.2	35.6		
10		Field Note:, No Recovery				7-8-6-5 (14)						
		A-2-4, SiSa, brn, Moist, Rec. = 1.1 ft				7-12-9-6 (21)	17.4	2.9	63.8	33.3		
20		A-2-4, Sa, brn, Moist, Rec. = 0.8 ft				8-7-9-5 (16)	16.7	6.0	77.8	16.2		
		A-6, SiCl, gry, Moist, Rec. = 0.9 ft, Decayed Wood was within sample.				1-1-2-13 (3)	26.0	0.3	15.7	84.0	29	14
		Visual Description:, Wood, brn, Moist, Rec. = 0.5 ft, (Possible Log Mat)										
30		Field Note:, No Recovery				4-7-6-4 (13)						
		Visual Description:, Broken Rock with Silt, blk, Moist, Rec. = 0.2 ft				R@9.5"						
40		38.0 ft - 43.0 ft, Laminated black, Slate, and meta-greywacke. Moderately soft to moderately hard, Slightly weathered, Poor rock, NXMDC, Drillers report numerous thin drilling breaks throughout run. May be Boulders. RMR = 30	1 (0)	34 (8)	2 2 1 1 2				Top of Bedrock @ 38.0 ft			
		43.0 ft - 48.0 ft, Black, Slate, and meta-greywacke. Moderately soft to moderately hard, Slightly weathered, Poor rock, NXMDC, Drillers report numerous thin drilling breaks throughout run. May be Boulders. RMR = 30	2 (0)	36 (0)	2 2 2 2 2 3							
50		Hole stopped @ 48.0 ft										
		Remarks: Hole collapsed at 36.0 ft.										

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

BORING LOG 2 HIGHGATE STP SCRP(12).GPJ VERMONT AOT.GDT 9/25/13

STATE OF VERMONT
AGENCY OF TRANSPORTATION
MATERIALS & RESEARCH SECTION
SUBSURFACE INFORMATION

BORING LOG

HIGHGATE
STP SCRP(12)
VT-78 BR-10 CULVERT MM2.37

Boring No.: **B-102**
Page No.: 1 of 1
Pin No.: 13C134
Checked By: CCB

Boring Crew: DAIGNEAULT, HALL, JUDKINS
Date Started: 8/09/13 Date Finished: 8/19/13
VTSPG NAD83: N 890639.50 ft E 1495793.67 ft
Station: 125+49 Offset: -66.00
Ground Elevation: 259.09 ft

	Casing	Sampler
Type:	WB	SS
I.D.:	4 in	1.5 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	30 in.
Hammer/Rod Type:	Auto/AWJ	
Rig:	CME 55 TRACK	C_e = 1.46

Groundwater Observations

Date	Depth (ft)	Notes
08/09/13	10.2	While drilling.

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Run (D/p deg.)	Core Rec. % (RQD %)	Drill Rate minutes/ft	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %	LL %	PI %
		A-4, SaSi, brn, Moist, Rec. = 1.6 ft, Grass & Roots were within sample.				WH-1-WH-1 (1)	31.5	0.4	42.4	57.2		
5		A-7-6, Cl, gry, Moist, Rec. = 2.0 ft				WH-WH-WH-2 (WH)	31.3	2.9	4.1	93.0	47	26
10		A-6, SiCl, gry, Moist, Rec. = 0.9 ft				1-3-27-29 (30)	22.2	6.9	13.9	79.2	31	15
		A-1-b, SaSiGr, gry, Moist, Rec. = 0.7 ft, Lab Note: Mostly Broken Rock with Silt.					8.1	52.6	23.7	23.7		
15		A-1-b, SaGr, gry, Moist, Rec. = 0.6 ft, Lab Note: Mostly Broken Rock with Silty Sand				R@8.5"	7.0	64.1	25.8	10.1		
20		17.5 ft - 21.5 ft, Black, Slate, Moderately soft, Slightly weathered, Poor rock, NXMDC, RMR = 30	1 (20)	93 (0)	5 3 4 5		Top of Bedrock @ 17.5 ft					
		Hole stopped @ 21.5 ft										
25		Remarks: Hole collapsed at 13.0 ft.										
30												
35												
40												
45												

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

BORING LOG 2 HIGHGATE STP SCRP(12).GPJ VERMONT AOT.GDT 9/25/13

PROJECT NAME: HIGHGATE
PROJECT NUMBER: STP SCRP(12)

FILE NAME: dl3cl34_frm.dgn
PROJECT LEADER: B. MARTIN
DESIGNED BY: A. KEMPTON
BORING SHEET 1

PLOT DATE: 14-OCT-2016
DRAWN BY: A. KEMPTON
CHECKED BY: M. GAMELIN
SHEET 11 OF 40

STATE OF VERMONT
AGENCY OF TRANSPORTATION
MATERIALS & RESEARCH SECTION
SUBSURFACE INFORMATION

BORING LOG

HIGHGATE
STP SCRP(12)
VT-78 BR-10 CULVERT MM2.37

Boring No.: **B-103**
Page No.: 1 of 1
Pin No.: 13C134
Checked By: CCB

Boring Crew: DAIGNEAULT, JUDKINS, HALL
Date Started: 8/08/13 Date Finished: 8/08/13
VTSPG NAD83: N 890523.91 ft E 1495749.11 ft
Station: 125+31 Offset: 58.00
Ground Elevation: 250.99 ft

	Casing	Sampler
Type:	WB	SS
I.D.:	4 in	1.5 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	30 in.
Hammer/Rod Type:	Auto/AWJ	
Rig:	CME 55 TRACK	C_e = 1.46

Groundwater Observations		
Date	Depth (ft)	Notes

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %	LL %	PI %
		Visual Description:, GrSiSa, brn, Moist, Rec. = 0.2 ft, Possible Fill.	R@2.5"	10.1					
		Field Note:, NXDC, Cobbles							
5		A-1-b, SiSaGr, gry, MTW, Rec. = 0.7 ft, Broken Rock was within sample.	16-9-9-9 (18)	10.5	39.7	38.8	21.5		
		Lab Note, NXDC, Cobbles							
10		A-1-b, SiSaGr, gry, MTW, Rec. = 1.2 ft, Broken Rock was within sample.	8-19-19-20 (38)	7.7	41.8	36.9	21.3		
		Field Note:, NXDC, Cobbles							
15		A-2-4, SaGrSi, gry, Moist, Rec. = 0.9 ft, A small amount of Clay was noticeable. Broken Rock was within sample.	39-36-R@1.0" (R)	8.2	33.2	25.1	41.7		
		Field Note:, NXDC, Cleaned out casing.							
20		A-4, ClSi, gry, Moist, Rec. = 1.2 ft, Broken Rock was within sample.	R@8.5"	11.1	15.6	18.0	66.4	22	7
		Hole stopped @ 21.3 ft							
25									
30									
35									
40									
45									

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

BORING LOG 2 HIGHGATE STP SCRP(12).GPJ VERMONT AOT.GDT 9/25/13

STATE OF VERMONT
AGENCY OF TRANSPORTATION
MATERIALS & RESEARCH SECTION
SUBSURFACE INFORMATION

BORING LOG

HIGHGATE
STP SCRP(12)
VT-78 BR-10 CULVERT MM2.37

Boring No.: **B-104**
Page No.: 1 of 1
Pin No.: 13C134
Checked By: CCB

Boring Crew: DAIGNEAULT, HALL
Date Started: 8/12/13 Date Finished: 8/12/13
VTSPG NAD83: N 890573.83 ft E 1495753.91 ft
Station: 125+37 Offset: 12.30
Ground Elevation: 283.54 ft

	Casing	Sampler
Type:	WB	N.A.
I.D.:	4 in	
Hammer Wt:	N.A.	N.A.
Hammer Fall:	N.A.	N.A.
Hammer/Rod Type:		
Rig:	CME 55 TRACK	C_e =

Groundwater Observations		
Date	Depth (ft)	Notes
08/12/13	2.3	After drilling.

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
		0.0 ft - 18.0 ft, Brown sandy water return. Easy drilling. A few to no cobbles.					
10							
		18.0 ft - 27.0 ft, Easy drilling. Brown sand & gray silt in area. Gray sandy silt in water return.					
20							
		27.0 ft - 32.0 ft, Slow advance of drill. Many spikes in water pressure. Drilling got difficult at 27.0 feet. Most likely Wood was plugging the casing. A lot of Wood in water return.					
30							
		40.0 ft - 46.0 ft, Extremely difficult drilling. Advanced at a very slow pace. Most likely solid rock. Steady rise water pressure.					
40							
		Hole stopped @ 46.0 ft In Possible Bedrock.					
50		Remarks: 1. Boring advanced to determine bedrock depth. 2. Visual description of soil by drilling personnel. 3. Hole collapsed at 36.0 ft.					

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

BORING LOG 2 HIGHGATE STP SCRP(12).GPJ VERMONT AOT.GDT 10/8/13

PROJECT NAME: HIGHGATE
PROJECT NUMBER: STP SCRP(12)

FILE NAME: d13c134_frm.dgn
PROJECT LEADER: B. MARTIN
DESIGNED BY: A. KEMPTON
BORING SHEET 2

PLOT DATE: 14-OCT-2016
DRAWN BY: A. KEMPTON
CHECKED BY: M. GAMELIN
SHEET 12 OF 40

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET 1

SUMMARY OF ESTIMATED QUANTITIES

ROADWAY	LANDSCAPING	EROSION CONTROL	BRIDGE #10	FULL C.E. ITEMS	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND
1					1		LS	CLEARING AND GRUBBING, INCLUDING INDIVIDUAL TREES AND STUMPS	201.10	-
75					75		CY	COMMON EXCAVATION	203.15	9.8
5					5		CY	SOLID ROCK EXCAVATION	203.16	2.5
			220		220		CY	UNCLASSIFIED CHANNEL EXCAVATION	203.27	5.1
70					70		CY	GRANULAR BORROW	203.32	9.3
1					1		CY	TRENCH EXCAVATION OF EARTH, EXPLORATORY (N.A.B.I.)	204.22	EST
			210		210		CY	STRUCTURE EXCAVATION	204.25	4
			190		190		CY	GRANULAR BACKFILL FOR STRUCTURES	204.30	3.3
			3		3		GAL	WATER REPELLENT, SILANE	514.10	0.4
			1		1		LS	PRECAST CONCRETE STRUCTURE (NORTH WALL)	540.10	-
			1		1		LS	PRECAST CONCRETE STRUCTURE (SOUTH WALL)	540.10	-
70					70		CY	CONTROLLED DENSITY (FLOWABLE) FILL	541.45	4.8
20					20		HR	ALL PURPOSE EXCAVATOR RENTAL, TYPE I	608.25	EST
40					40		HR	TRUCK RENTAL	608.37	EST
20					20		HR	LOADER RENTAL, TYPE I	608.40	EST
		390			390		CY	STONE FILL, TYPE II	613.11	5
			220		220		CY	STONE FILL, TYPE IV	613.13	4
800					800		HR	FLAGGERS	630.15	EST
				1	1		LS	FIELD OFFICE, ENGINEERS	631.10	-
				1	1		LS	TESTING EQUIPMENT, CONCRETE	631.16	-
				3000	3000		DL	FIELD OFFICE TELEPHONE (N.A.B.I.)	631.26	-
1					1		LS	MOBILIZATION/DEMOBILIZATION	635.11	-
1					1		LS	TRAFFIC CONTROL	641.10	-
2					2		EACH	PORTABLE CHANGEABLE MESSAGE SIGN	641.15	-
			25		25		SY	GEOTEXTILE FOR ROADBED SEPARATOR	649.11	3.7
		65			65		SY	GEOTEXTILE FOR SILT FENCE, WOVEN WIRE REINFORCED	649.515	1
		30			30		LB	SEED	651.15	4
		210			210		LB	FERTILIZER	651.18	2.3
		0.9			0.9		TON	AGRICULTURAL LIMESTONE	651.20	0.1
		0.2			0.2		TON	HAY MULCH	651.25	0.03
		250			250		SY	GRUBBING MATERIAL (6")	651.40	9
		1			1		LS	EPSC PLAN	652.10	-
		10			10		HR	MONITORING EPSC PLAN	652.20	EST
		1			1		LU	MAINTENANCE OF EPSC PLAN (N.A.B.I.)	652.30	-
		1650			1650		SY	TEMPORARY EROSION MATTING	653.20	39
		36			36		CY	VEHICLE TRACKING PAD	653.35	0.2
		625			625		LF	BARRIER FENCE	653.50	2
		490			490		LF	PROJECT DEMARCATION FENCE	653.55	8
	16				16		EACH	EVERGREEN TREES (PICEA GLAUCA)(5')(B&B)	656.20	-
	17				17		MGAL	LANDSCAPE WATERING	656.65	0.4

TOTALS

DESCRIPTIONS

DETAILED SUMMARY OF QUANTITIES

QUANTITIES	UNIT	ITEMS
		EARTHWORKS SUMMARY
		FILL AVAILABLE
75	CY	COMMON EXCAVATION (75 x 1.0)
66	CY	CHANNEL EXCAVATION (220 x 0.3)
63	CY	STRUCTURE EXCAVATION (210 x 0.3)
41	CY	PIPE RAMMING SPOILS (137 x 0.3)
10	CY	ROUNDING
255	CY	TOTAL FILL AVAILABLE
253	CY	EARTH BORROW REQUIED (220 x 1.15)
70	CY	GRANULAR BORROW REQUIRED
68	CY	ADDITIONAL FILL REQUIRED
2	CY	ROUNDING
70	CY	TOTAL ADDITIONAL FILL REQUIRED
		BASED ON THE EARTHWORKS SUMMARY, 70 CY OF GRANULAR BORROW IS ANTICIPATED. IF MORE SUITABLE FILL IS ENCOUNTERED THAN WAS ASSUMED IN THE EARTHWORKS SUMMARY, IT SHALL BE USED IN PLACE OF ITEM 203.32 GRANULAR BORROW.

PROJECT NAME: HIGHGATE
PROJECT NUMBER: STP SCRP(12)

FILE NAME: dl3cl34_frm.dgn
PROJECT LEADER: B. MARTIN
DESIGNED BY: A. KEMPTON
QUANTITY SHEET 1

PLOT DATE: 14-OCT-2016
DRAWN BY: A. KEMPTON
CHECKED BY: M. GAMELIN
SHEET 13 OF 40

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET 2

SUMMARY OF ESTIMATED QUANTITIES

ROADWAY	LANDSCAPING	EROSION CONTROL	BRIDGE #10	FULL C.E. ITEMS
	81			
0.84				
25				
			8	
			131	
			1	
			1	
			1	

TOTALS

GRAND TOTAL	FINAL
81	
0.84	
25	
8	
131	
1	
1	
1	

DESCRIPTIONS

UNIT	ITEMS	ITEM NUMBER	ROUND
CY	LANDSCAPE BACKFILL, TRUCK MEASUREMENT	656.80	1
SF	TRAFFIC SIGNS, TYPE A	675.20	-
LF	SQUARE TUBE SIGN POST AND ANCHOR	675.341	1
HR	SPECIAL PROVISION (TRENCHLESS PIPE OBSTRUCTION REMOVAL)	900.630	EST
LF	SPECIAL PROVISION (TRENCHLESS PIPE WITH CEMENT MORTAR LINING) (72" DIAMETER)	900.640	-
LS	SPECIAL PROVISION (TEMPORARY ACCESS ROAD AND STAGING AREAS, CULVERT)(NORTH ACCESS)	900.645	-
LS	SPECIAL PROVISION (TEMPORARY ACCESS ROAD AND STAGING AREAS, CULVERT)(SOUTH ACCESS)	900.645	-
LS	SPECIAL PROVISION (TEMPORARY RELOCATION OF STREAM)	900.645	-

DETAILED SUMMARY OF QUANTITIES

QUANTITIES	UNIT	ITEMS

PROJECT NAME: HIGHGATE
PROJECT NUMBER: STP SCRP(12)

FILE NAME: dl3cl34_frm.dgn
PROJECT LEADER: B. MARTIN
DESIGNED BY: A. KEMPTON
QUANTITY SHEET 2

PLOT DATE: 14-OCT-2016
DRAWN BY: A. KEMPTON
CHECKED BY: M. GAMELIN
SHEET 14 OF 40

STATE OF VERMONT
AGENCY OF TRANSPORTATION

RIGHT - OF - WAY DETAIL SHEET

TABLE OF PROPERTY ACQUISITION

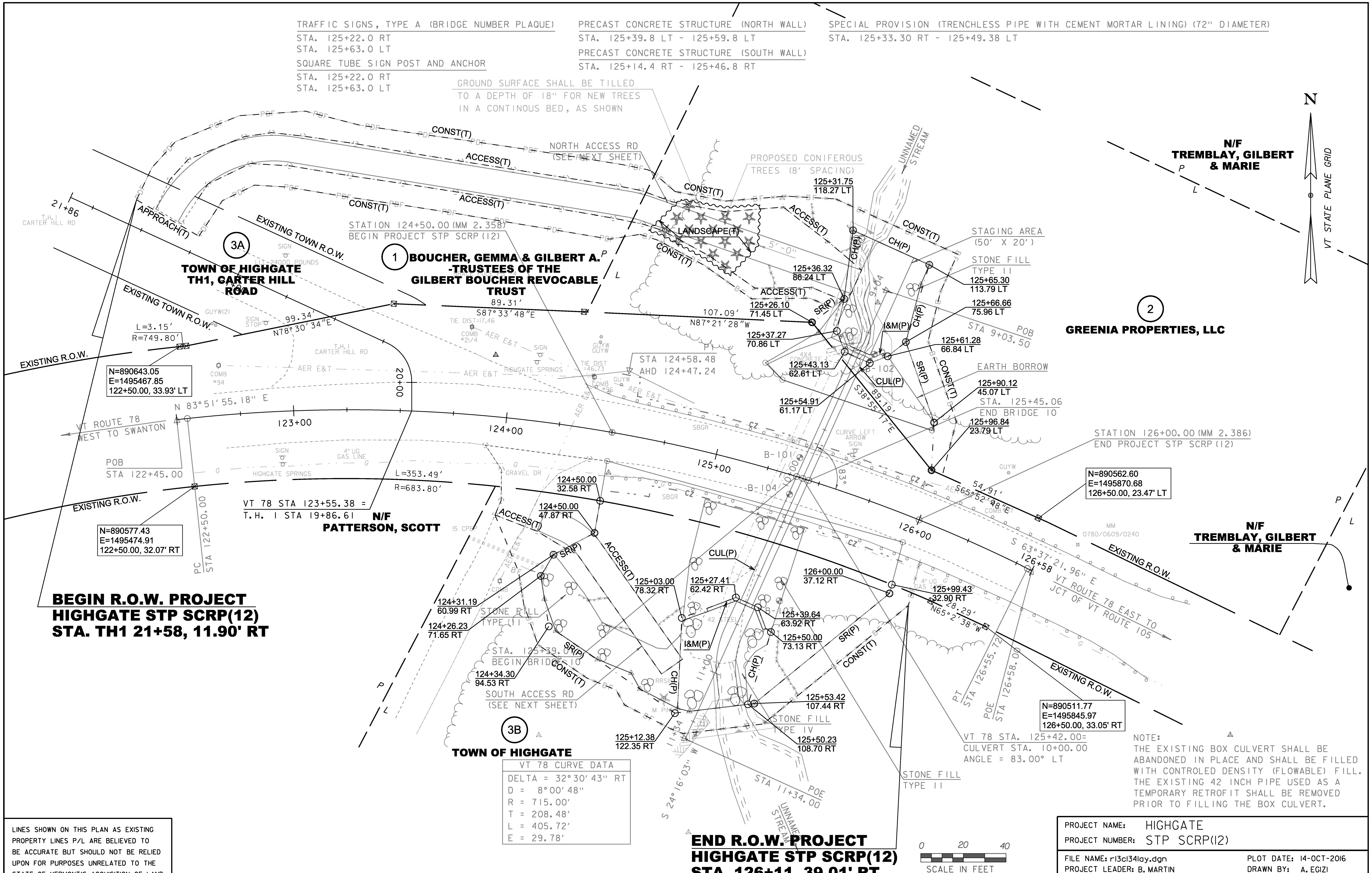
PARCEL NO.	PROPERTY OWNER	ROW LAYOUT NO.	BEGINNING STATION	ENDING STATION	TAKE	REMAINDER	RIGHT			RECORDING DATA					REMARKS
					AREA±	AREA±	TYPE	T / P	AREA ±	TITLE	DATE	TOWN / CITY	BOOK	PAGE	
1	BOUCHER, GEMMA & GILBERT A.	1	TH1 21+32 RT	124+43 LT			CONSTRUCTION	T	2,022 SF	GTR	03/16/16	HIGHGATE	176	599-602	INCL. PDF
	TRUSTEES OF THE GILBERT BOUCHER		TH1 21+48 RT	124+47 LT			ACCESS	T	3,270 SF						INCL. TRAFFIC CONTROL
	REVOCABLE TRUST		TH1 21+58 RT	124+49 LT			CONSTRUCTION	T	2,422 SF						INCL. PDF
2	GREENIA PROPERTIES, LLC	1	124+41 LT	125+36 LT			CONSTRUCTION	T	544 SF	WD	08/12/16	HIGHGATE	178	15-17	INCL. BF & EC
			124+43 LT	125+40 LT			ACCESS	T	2,585 SF						INCL. TRAFFIC CONTROL, EC
			124+47 LT	126+02 LT			CONSTRUCTION	T	2,315 SF						INCL. BF & EC
			124+51 LT	124+96 LT			LANDSCAPE	T							PLANT 16 WHITE SPRUCE TREES
			125+31.75 LT	125+66.66 LT			CHANNEL	P	1,763 SF						INCL. STONE FILL
			125+26.10 LT	125+96.84 LT			SLOPE	P	1,232 SF						INCL. TEMP. EC
			125+39.82 LT	125+59.77 LT			INSTALL & MAINTAIN	P							WINGWALL
			125+45.70 LT	125+52.12 LT			CULVERT	P							
3A	TOWN OF HIGHGATE	1	TH1 21+22 RT	TH1 21+58 RT			APPROACH	T	506 SF	QCD	08/29/16	HIGHGATE	178	164-166	INCL. TRAFFIC CONTROL & PDF
3B		1	123+99 RT	125+09 RT			ACCESS	T	1,758 SF						INCL. TRAFFIC CONTROL
			123+99 RT	126+11 RT			CONSTRUCTION	T	2,676 SF						INCL. BF & EC
			124+26.23 RT	126+00.00 RT			SLOPE	P	0.19 A						INCL. TEMP. EC; 8,195 SF±
			125+03.00 RT	125+50.23 RT			CHANNEL	P	1,802 SF						INCL. STONE FILL, TEMP. EC
			125+14.42 RT	125+46.88 RT			INSTALL & MAINTAIN	P							WINGWALL
			125+30.26 RT	125+40.98 RT			CULVERT	P							
4	VERMONT ELECTRIC COOPERATIVE, INC.		TH1 21+58 RT	126+11 RT											UTILITY
5	COMCAST OF CONNECTICUT/GEORGIA/ MASSACHUSETTS/NEW HAMPSHIRE/ NEW YORK/NORTH CAROLINA/ VERMONT, LLC		TH1 21+58 RT	126+11 RT											UTILITY
6	TELEPHONE OPERATING COMPANY OF VERMONT LLC		TH1 21+58 RT	126+11 RT											UTILITY

TABLE OF REVISIONS

REVISION NO.	ROW SET SHEET #	DESCRIPTION	DATE

APPROVED: RYAN CLOUTIER DATE: 10-15-15
CHIEF, PLANS & TITLES

PROJECT NAME:	**HIGHGATE**
PROJECT NUMBER:	**STP SCRP (12)**
FILE NAME: **r13c134detail.xls**	PLOT DATE: 14-OCT-2016
PROJECT LEADER: **B. MARTIN**	DRAWN BY: **M. TROTTIER**
DESIGNED BY: **A. EGIZI**	CHECKED BY: **R. CLOUTIER**
R.O.W. DETAIL SHEET #1	SHEET 15 OF 40


TRAFFIC SIGNS, TYPE A (BRIDGE NUMBER PLAQUE)
STA. 125+22.0 RT
STA. 125+63.0 LT
SQUARE TUBE SIGN POST AND ANCHOR
STA. 125+22.0 RT
STA. 125+63.0 LT
PRECAST CONCRETE STRUCTURE (NORTH WALL)
STA. 125+39.8 LT - 125+59.8 LT
PRECAST CONCRETE STRUCTURE (SOUTH WALL)
STA. 125+14.4 RT - 125+46.8 RT
SPECIAL PROVISION (TRENCHLESS PIPE WITH CEMENT MORTAR LINING) (72" DIAMETER)
STA. 125+33.30 RT - 125+49.38 LT
GROUND SURFACE SHALL BE TILLED
TO A DEPTH OF 18" FOR NEW TREES
IN A CONTINOUS BED, AS SHOWN
NORTH ACCESS RD
(SEE NEXT SHEET)
PROPOSED CONIFEROUS
TREES (8' SPACING)
UNNAMED STREAM
N
VT STATE PLANE GRID
N/F
TREMBLAY, GILBERT
& MARIE
STAGING AREA
(50' X 20')
STONE FILL
TYPE II
EARTH BORROW
STA. 125+45.06
END BRIDGE 10
STATION 126+00.00 (MM 2.386)
END PROJECT STP SCRP(12)
2
GREENIA PROPERTIES, LLC
1
BOUCHER, GEMMA & GILBERT A.
-TRUSTEES OF THE
GILBERT BOUCHER REVOCABLE
TRUST
3A
TOWN OF HIGHGATE
TH1, CARTER HILL
ROAD
STATION 124+50.00 (MM 2.358)
BEGIN PROJECT STP SCRP(12)
STA 124+58.48
AHD 124+47.24
EXISTING TOWN R.O.W.
EXISTING R.O.W.
L=3.15'
R=749.80'
N=890643.05
E=1495467.85
122+50.00, 33.93' LT
99.34'
N78°30'34"E
89.31'
S87°33'48"E
107.09'
N87°21'28"W
N 83°51'55.18" E
VT ROUTE 78
WEST TO SWANTON
POB
STA 122+45.00
L=353.49'
R=683.80'
VT 78 STA 123+55.38 =
T.H. 1 STA 19+86.61
N/F
PATTERSON, SCOTT
N=890577.43
E=1495474.91
122+50.00, 32.07' RT
N=890562.60
E=1495870.68
126+50.00, 23.47' LT
N=890511.77
E=1495845.97
126+50.00, 33.05' RT
N/F
TREMBLAY, GILBERT
& MARIE
VT ROUTE 78 EAST TO
JCT OF VT ROUTE 105
BEGIN R.O.W. PROJECT
HIGHGATE STP SCRP(12)
STA. TH1 21+58, 11.90' RT
STA. 125+39.0
BEGIN BRIDGE 10
SOUTH ACCESS RD
(SEE NEXT SHEET)
3B
TOWN OF HIGHGATE
VT 78 STA. 125+42.00=
CULVERT STA. 10+00.00
ANGLE = 83.00° LT
STONE FILL
TYPE IV
STONE FILL
TYPE II
END R.O.W. PROJECT
HIGHGATE STP SCRP(12)
STA. 126+11, 39.01' RT
0 20 40
SCALE IN FEET

NOTE:
THE EXISTING BOX CULVERT SHALL BE ABANDONED IN PLACE AND SHALL BE FILLED WITH CONTROLED DENSITY (FLOWABLE) FILL. THE EXISTING 42 INCH PIPE USED AS A TEMPORARY RETROFIT SHALL BE REMOVED PRIOR TO FILLING THE BOX CULVERT.

VT 78 CURVE DATA
DELTA = 32°30'43" RT
D = 8°00'48"
R = 715.00'
T = 208.48'
L = 405.72'
E = 29.78'

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.

FOR R.O.W. USE ONLY

PROJECT NAME: HIGHGATE	
PROJECT NUMBER: STP SCRP(12)	
FILE NAME: r13c134lay.dgn	PLOT DATE: 14-OCT-2016
PROJECT LEADER: B. MARTIN	DRAWN BY: A. EGIZI
DESIGNED BY: A. KEMPTON	CHECKED BY: R. CLOUTIER
R.O.W. LAYOUT SHEET 1 OF 1	SHEET 16 OF 40

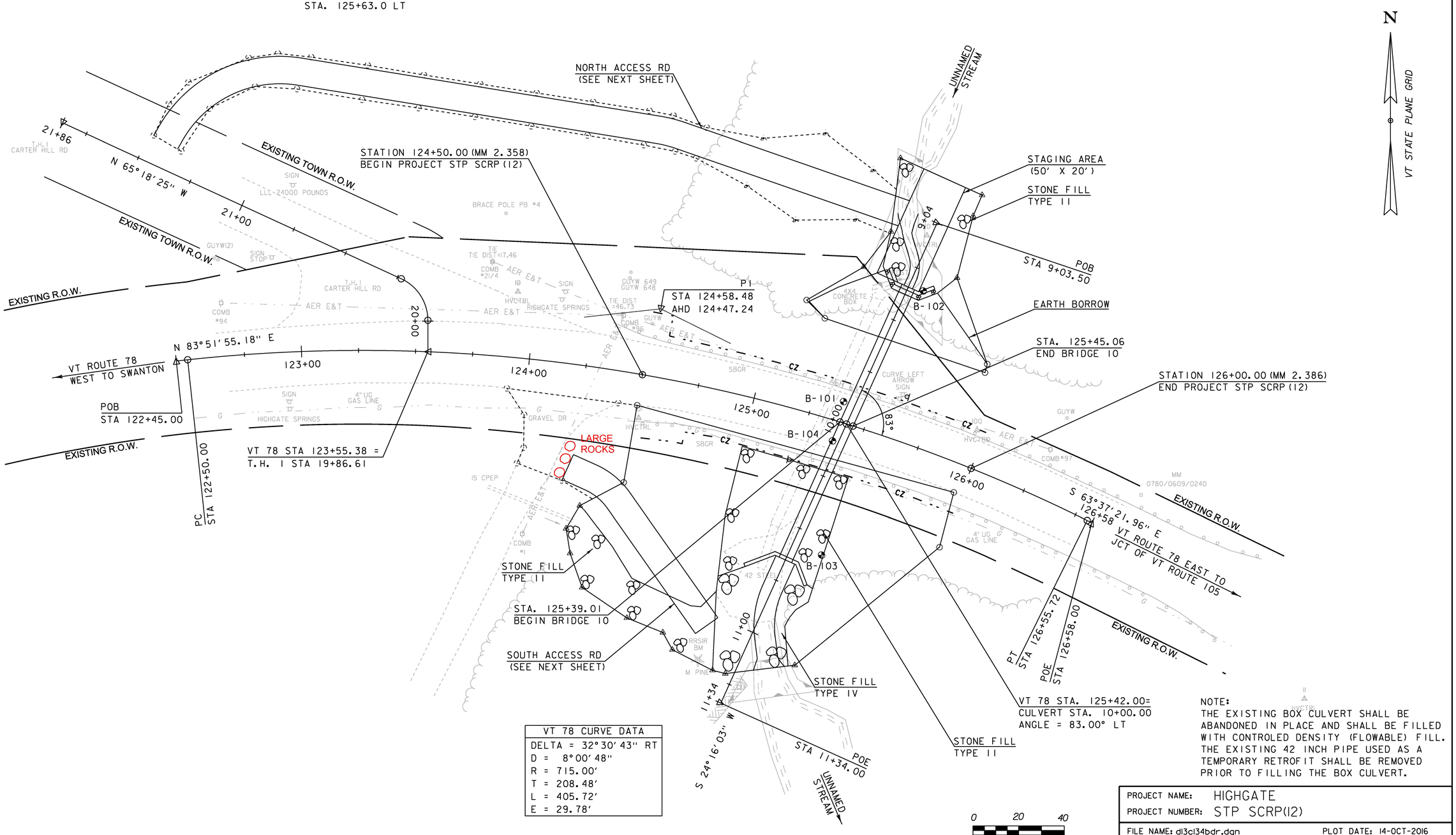
TRAFFIC SIGNS, TYPE A (BRIDGE NUMBER PLAQUE)
STA. 125+22.0 RT
STA. 125+63.0 LT

SQUARE TUBE SIGN POST AND ANCHOR
STA. 125+22.0 RT
STA. 125+63.0 LT

PRECAST CONCRETE STRUCTURE (NORTH WALL)
STA. 125+39.8 LT - 125+59.8 LT

PRECAST CONCRETE STRUCTURE (SOUTH WALL)
STA. 125+14.4 RT - 125+46.8 RT

SPECIAL PROVISION (TRENCHLESS PIPE WITH CEMENT MORTAR LINING) (72" DIAMETER)
STA. 125+33.30 RT - 125+49.38 LT



VT 78 CURVE DATA
DELTA = 32° 30' 43" RT
D = 8° 00' 48"
R = 715.00'
T = 208.48'
L = 405.72'
E = 29.78'

0 20 40
SCALE IN FEET

NOTE:
THE EXISTING BOX CULVERT SHALL BE ABANDONED IN PLACE AND SHALL BE FILLED WITH CONTROLED DENSITY (FLOWABLE) FILL. THE EXISTING 42 INCH PIPE USED AS A TEMPORARY RETROFIT SHALL BE REMOVED PRIOR TO FILLING THE BOX CULVERT.

PROJECT NAME: HIGHGATE
PROJECT NUMBER: STP SCRP(12)

FILE NAME: dl3cl34bdr.dgn
PROJECT LEADER: B. MARTIN
DESIGNED BY: A. KEMPTON
PLAN SHEET

PLOT DATE: 14-OCT-2016
DRAWN BY: A. KEMPTON
CHECKED BY: M. GAMELIN
SHEET 17 OF 40

SPECIAL PROVISION (TEMPORARY ACCESS ROAD AND STAGING AREAS, CULVERT) (NORTH ACCESS)
T.H I STA. 21+48 RT - MAINLINE STA. 125+39 LT
SPECIAL PROVISION (TEMPORARY ACCESS ROAD AND STAGING AREAS, CULVERT) (SOUTH ACCESS)
STA. 124+21 RT - 125+08 RT

NORTH ACCESS ROAD CURVE 1
DELTA = 69°09'00"
D = 104°10'27"
R = 55.00'
T = 37.91'
L = 66.38'
E = 11.80'

NORTH ACCESS ROAD CURVE 2
DELTA = 9°58'33"
D = 95°29'35"
R = 60.00'
T = 5.24'
L = 10.45'
E = 0.23'

SOUTH ACCESS ROAD CURVE DATA
DELTA = 30°35'35"
D = 190°59'09"
R = 30.00'
T = 8.21'
L = 16.02'
E = 1.10'

PROPOSED CONSTRUCTION LIMITS FOR NORTH ACCESS ROAD

PROPOSED CONSTRUCTION LIMITS FOR SOUTH ACCESS ROAD

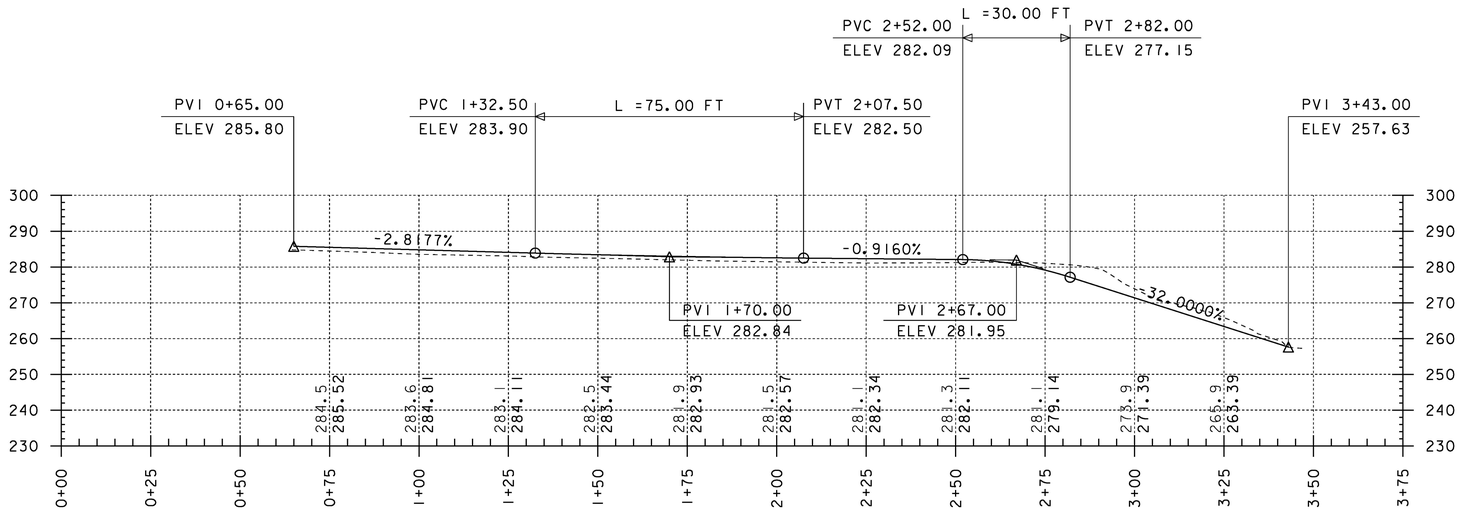
N

VT STATE PLANE GRID

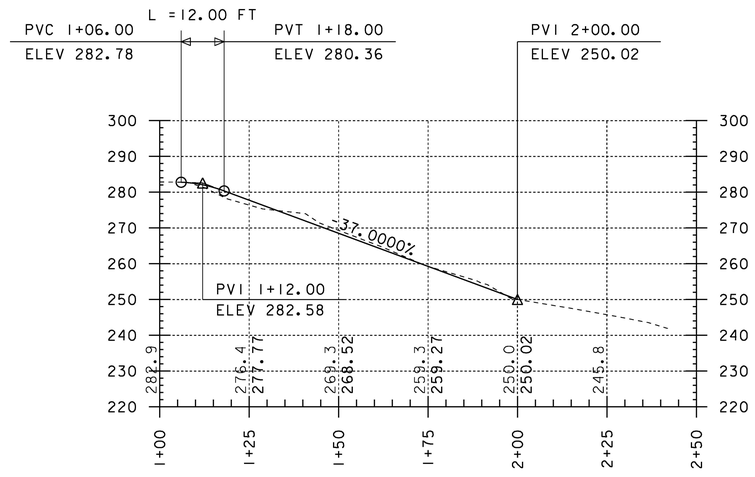
NOTE:
ANY DISTURBANCE ASSOCIATED WITH THE CONSTRUCTION OR USE OF THE ACCESS ROADS SHALL BE RESTORED TO THE ORIGINAL CONDITION. INCLUDING, BUT NOT LIMITED TO EXCAVATION, GRADING, SEEDING AND MULCHING. PLANTINGS SHALL BE PLACED IN ACCORDANCE WITH THE LANDSCAPE PLAN.

0 20 40
SCALE IN FEET

PROJECT NAME:	HIGHGATE
PROJECT NUMBER:	STP SCRP(12)
FILE NAME: dl3cl34bdr.dgn	PLOT DATE: 14-OCT-2016
PROJECT LEADER: B. MARTIN	DRAWN BY: A. KEMPTON
DESIGNED BY: A. KEMPTON	CHECKED BY: M. GAMELIN
ACCESS ROAD PLAN SHEET	SHEET 18 OF 40



NORTH ACCESS ROAD PROFILE



SOUTH ACCESS ROAD PROFILE

ELEVATIONS SHOWN TO THE NEAREST TENTH OF A FOOT ARE FOR EXISTING GROUND ALONG THE CENTERLINE.

ELEVATIONS SHOWN TO THE NEAREST HUNDREDTH OF A FOOT ARE FOR PROPOSED FINISHED GRADE ALONG THE CENTERLINE.

SCALE IN FEET

PROJECT NAME: HIGHGATE
PROJECT NUMBER: STP SCRP(12)

FILE NAME: dl3cl34pro.dgn
PROJECT LEADER: B. MARTIN
DESIGNED BY: A. KEMPTON
ACCESS ROAD PROFILE SHEET

PLOT DATE: 14-OCT-2016
DRAWN BY: A. KEMPTON
CHECKED BY: M. GAMELIN
SHEET 19 OF 40

EVERGREEN TREE (PICEA GLAUCA) (5') (B&B)
124+57 - 124+92 LT - 16 PG

QTY	KEY	BOTANICAL NAME	COMMON NAME	HEIGHT
16	PG	PICEA GLAUCA	WHITE SPRUCE	5 FT

GROUND SURFACE SHALL BE TILLED
TO A DEPTH OF 18" FOR NEW TREES
IN A CONTINOUS BED, AS SHOWN

PROPOSED CONIFEROUS
TREES (8' SPACING)

5'-0"

STATION 124+50.00 (MM 2.358)
BEGIN PROJECT STP SCRP(12)

STATION 126+00.00 (MM 2.386)
END PROJECT STP SCRP(12)

N

VT STATE PLANE GRID

UNNAMED STREAM

21+86
T.H. 1
CARTER HILL RD

EXISTING TOWN R.O.W.

21+00

EXISTING TOWN R.O.W.

EXISTING R.O.W.

SIGN
LLL-24000 POUNDS

BRACE POLE PB #4

GUYW(2)

SIGN
STOP

TIE
TIE DIST=17.46
COMB
#21/4

AER E&T

IO
HVCTRL

T.H. 1
CARTER HILL RD

COMB
#94

AER E&T

HIGHGATE SPRINGS

GUYW 649
GUYW 648

TIE DIST
=46.73

COMB
#96

GUYW

AER E&T

SBGR

CZ

4X4
CONCRETE
BOX

IO
HVCTRL

20+00

123+00

124+00

125+00

126+00

VT ROUTE 78
WEST TO SWANTON

POB
STA 122+45.00

SIGN

4" UG
GAS LINE

G

HIGHGATE SPRINGS

GRAVEL DR

HVCTRL

SBGR

CZ

CURVE LEFT
ARROW
SIGN

GUYW

100
HVCTRD

AER E&T

COMB
#57

MM
0780/0609/0240

EXISTING R.O.W.

VT 78 STA 123+55.38 =
T.H. 1 STA 19+86.61

PC
STA 122+50.00

I5 CPEP

AER E&T

COMB
#1

42 STEEL

RRSIR
BM

M. PINE

126+58 VT ROUTE 78 EAST TO
JCT OF VT ROUTE 105

PT
STA 126+55.72

POE
STA 126+58.00

EXISTING R.O.W.

4" UG
GAS LINE

G

II
HVCTRL

UNNAMED STREAM

LEGEND

	PROPOSED CONIFEROUS TREE
	AREA TO BE TILLED (PAID BY COMMON EXCAVATION)
	LIMIT OF CONSTRUCTION GRASS SEEDING OF DISTURBED AREAS
	TEMPORARY LIMIT OF CONSTRUCTION GRASS SEEDING OF DISTURBED AREAS

0 20 40
SCALE IN FEET

PROJECT NAME: HIGHGATE
PROJECT NUMBER: STP SCRP(12)

FILE NAME: dl3cl34landscape.dgn
PROJECT LEADER: B. MARTIN
DESIGNED BY: A. AGRAWAL
LANDSCAPE PLAN SHEET

PLOT DATE: 14-OCT-2016
DRAWN BY: A. AGRAWAL
CHECKED BY: A. KEMPTON
SHEET 20 OF 40

EPSC PLAN NARRATIVE

1.1 PROJECT DESCRIPTION

THIS PROJECT INVOLVES THE TRENCHLESS INSTALLATION OF A NEW 72" CULVERT (BRIDGE #10) WITH NEW HEADWALLS AND WINGWALLS. THE EXISTING BOX CULVERT WILL BE ABANDONED IN PLACE AND FILLED WITH FLOWABLE FILL. THIS PROJECT WILL ALSO INCLUDE SLOPE AND CHANNEL STABILIZATION. BRIDGE #10 IS LOCATED IN THE TOWN OF HIGHGATE, ON VT ROUTE 78, APPROXIMATELY AT THE INTERSECTION OF VT ROUTE 78, CARTER HILL ROAD (TH 1). THE LENGTH OF THE CULVERT WILL BE INCREASED TO 131 FEET.

NOTE: AREA OF DISTURBANCE ONLY INCLUDES LIMITS OF EARTH DISTURBANCE WITHIN THE PROJECT AREA AS SHOWN ON THE ATTACHED EPSC PLAN.

TOTAL AREA OF DISTURBANCE AS SHOWN ON THE ATTACHED EPSC PLAN IS APPROXIMATELY 0.78 ACRES.

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

1.2 SITE INVENTORY

1.2.1 TOPOGRAPHY

THE TOPOGRAPHY OF THE PROJECT AREA IS RELATIVELY FLAT WITH A SMALL RAVINE CREATED BY THE UNNAMED STREAM, WHICH BRIDGE #10 CARRIES UNDER VT ROUTE 78. THERE IS A WELL ESTABLISHED VEGETATIVE BUFFER ALONG THE STREAM, HOWEVER, THE SOUTH SIDE SLOPE OF VT ROUTE 78 IN THE PROJECT AREA IS UNSTABLE.

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

THE UNNAMED STREAM IS THE ONLY WATER SOURCE ON THE PROJECT SITE. THE STREAM CROSSING IS APROXIMATELY 0.6 MILES UPSTREAM FROM THE MISSISSQUOI RIVER, WHERE THE STREAM OUTLETS. THE STREAM BED CONSISTS OF GRAVEL, COBBLES AND BOULDERS. THE TRIBUTARY AREA AT THE CULVERT CROSSING IS APPROXIMATELY 0.34 SQUARE MILES.

1.2.3 VEGETATION

THE VEGETATION IN THE PROJECT AREA CONSISTS PRIMARILY OF CONIFEROUS TREES AND UNDERGROWTH. THE IMPACT TO VEGETATION WILL BE LIMITED TO THAT WHICH IS DIRECTLY AFFECTED BY INSTALLATION OF THE NEW CULVERT, INCLUDING ACCESS ROADS. UPON PROJECT COMPLETION, THE CHANNEL WILL BE ARMORED WITH STONE FILL TYPE II AT THE INLET AND TYPE IV 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 FRANKLIN, VERMONT. THE SOIL ON THE PROJECT SITE IS RAYNHAM SILT LOAM, 3% TO 8% SLOPES, "K FACTOR" = 0.49. THE SOIL IS POTENTIALLY HIGHLY ERODIBLE.

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: NORTHERN LONG-EARED BAT
WATER RESOURCE: UNNAMED STREAM
WETLANDS: YES - THERE ARE SMALL WOODED WETLANDS NEAR THE INLET AND OUTLET OF THE PROPOSED CULVERT

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.

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. BARRIER FENCE SHALL BE USED INSTEAD OF PROJECT DEMARCATION FENCE WITHIN 100 FEET OF A WATER RESOURCE (STREAM, BROOK, LAKE, POND, WETLAND, ETC).

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 CONTRACTORS 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. THERE SHALL BE TWO STABILIZED CONSTRUCTION ENTRANCES EMPLOYED, ONE AT THE BEGINNING OF EACH ACCESS ROAD.

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.

WOVEN WIRE REINFORCED SILT FENCE WILL BE INSTALLED AS PROPOSED ON THE EPSC PLAN. WOVEN WIRE REINFORCED SILT FENCE SHALL BE USED INSTEAD OF SILT FENCE WITHIN 100 FEET UPSLOPE OF RECEIVING WATERS.

1.4.5 DIVERT UPLAND RUNOFF

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

DIVERSION MEASURES ARE NOT ANTICIPATED ON THIS PROJECT.

1.4.6 SLOW DOWN CHANNELIZED RUNOFF

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

THERE ARE NO AREAS OF CHANNELIZED FLOW ANTICIPATED ON THE PROJECT, ASIDE FROM THE STREAM ITSELF, THEREFORE, THE USE OF CHECK DAMS IS NOT ANTICIPATED.

1.4.7 CONSTRUCT PERMANENT CONTROLS

PERMANENT STORMWATER TREATMENT DEVICES SHALL BE INSTALLED AS SHOWN ON THE PLANS AND IN ACCORDANCE WITH PERMIT CONDITIONS.

1.4.8 STABILIZE EXPOSED SOILS DURING CONSTRUCTION

ALL AREAS OF DISTURBANCE MUST HAVE TEMPORARY STABILIZATION IN PLACE WITHIN 48 HOURS OF DISTURBANCE, EXCEPT WHERE FURTHER CONSTRUCTION ACTIVITIES ARE ANTICIPATED TO OCCUR WITHIN 48 HOURS.

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.

WINTER CONSTRUCTION ACTIVITIES ARE NOT ANTICIPAED TO OCCUR, THEREFORE, THIS PRINCIPAL MAY NOT BE NECESSARY.

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, TEMPORARY EROSION CONTROL MATTING OR AN EQUIVALENT SHALL BE USED INSTEAD OF MULCH. SEEDING FORMULAS CAN BE SEEN ON THE DETAIL SHEETS FOLLOWING THIS SHEET.

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.

MAINTAINING THE EXISTING FLOW IN THE STREAM IS ANTICIPATED (IT MAY BE DIVERTED), THEREFORE THIS PRINCIPAL MAY NOT BE NECESSARY.

1.4.12 INSPECT YOUR SITE

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

1.5 SEQUENCE AND STAGING

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

1.5.1 OFF-SITE ACTIVITIES

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

PROJECT NAME:	HIGHGATE
PROJECT NUMBER:	STP SCRP(12)
FILE NAME: dl3cl34_frm.dgn	PLOT DATE: 14-OCT-2016
PROJECT LEADER: B. MARTIN	DRAWN BY: A. KEMPTON
DESIGNED BY: A. KEMPTON	CHECKED BY: W. FARLEY
EPSC NARRATIVE SHEET	SHEET 21 OF 40

VAOT LOW GROW/FINE FESCUE MIX

	LBS/AC					
WEIGHT	BROADCAST	HYDROSEED	NAME	LATIN NAME	GERM	PURITY
38%	57	95	CREEPING RED FESCUE	FESTUCA RUBRA VAR. RUBRA	90%	98%
29%	43.5	72.5	HARD FESCUE	FESTUCA LONGIFOLIA	85%	95%
15%	22.5	37.5	CHEWINGS FESCUE	FESTUCA RUBRA VAR. COMMUTATA	87%	95%
15%	22.5	37.5	ANNUAL RYEGRASS	LOLIUM MULTIFLORUM	90%	95%
3%	4.5	7.5	INERTS			
100%	150	250				

VAOT RURAL AREA MIX

	LBS/AC					
WEIGHT	BROADCAST	HYDROSEED	NAME	LATIN NAME	GERM	PURITY
37.5%	22.5	45	CREEPING RED FESCUE	FESTUCA RUBRA VAR. RUBRA	85%	98%
37.5%	22.5	45	TALL FESCUE	FESTUCA ARUNDINACEA	90%	95%
5.0%	3	6	RED TOP	AGROSTIS GIGANTEA	90%	95%
15.0%	9	18	WHITE FIELD CLOVER	TRIFOLIUM REPENS	85%	98%
5.0%	3	6	ANNUAL RYE GRASS	LOLIUM MULTIFLORUM	85%	95%
100%	60	120				

GENERAL AMENDMENT GUIDANCE		
FERTILIZER	LIME	
10/20/10	AG LIME	PELLITIZED
500 LBS/AC	2 TONS/AC	1 TONS/AC

CONSTRUCTION GUIDANCE

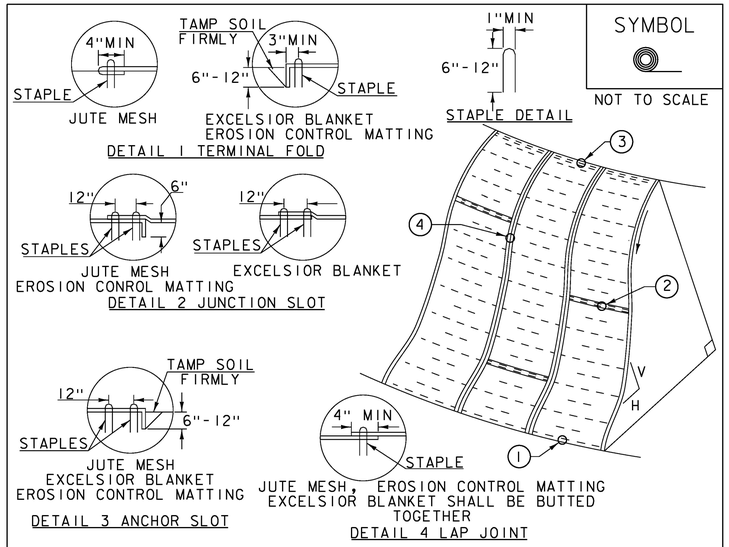
1. SEED MIX: THE CONTRACTOR SHALL COORDINATE WITH THE RESIDENT ENGINEER ON WHICH SEED MIX TO USE.
2. SEED MIX: USE AS INDICATED IN THE PLANS AND/OR FOR ALL ESTABLISHED UPLAND (NON WETLAND) AREAS DISTURBED BY THE CONTRACTOR.
3. ALL SEED MIXTURES: SHALL NOT HAVE A WEED CONTENT EXCEEDING 0.40% BY WEIGHT AND SHALL BE FREE OF ALL NOXIOUS SEED.
4. FERTILIZER AND LIMESTONE: SHALL FOLLOW RATES SHOWN ON PLAN OR AS DIRECTED BY THE ENGINEER.
5. HAY MULCH: TO BE PLACED ON EARTH SLOPES AT THE RATE OF 2 TONS/ACRE, ACHIEVE 90% GROUND COVER OR AS DIRECTED BY THE ENGINEER.
6. HYDROSEEDING: ALTHOUGH GUIDANCE IS GIVEN ABOVE THE SITE CONDITIONS AND THE TYPE OF HYDROSEED PROPOSED FOR USE WILL ULTIMATELY DICTATE THE AMOUNTS AND TYPES OF SOIL AMENDMENTS TO BE APPLIED.
7. 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

THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 651FOR SEED (PAY ITEM 651.15)

REVISIONS	
JANUARY 12, 2015	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'X225' ROLL OF MATERIAL AND 125 STAPLES ARE REQUIRED PER 4'X150' ROLL OF MATERIAL.
4. DISTURBED AREAS SHALL BE SMOOTHLY GRADED. EROSION CONTROL MATERIAL SHALL BE PLACED LOOSELY OVER GROUND SURFACE. DO NOT STRETCH.
5. ALL TERMINAL ENDS AND TRANSVERSE LAPS SHALL BE STAPLED AT APPROXIMATELY 12" INTERVALS.

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

ROLLED EROSION CONTROL PRODUCT (RECP) SIDE SLOPE

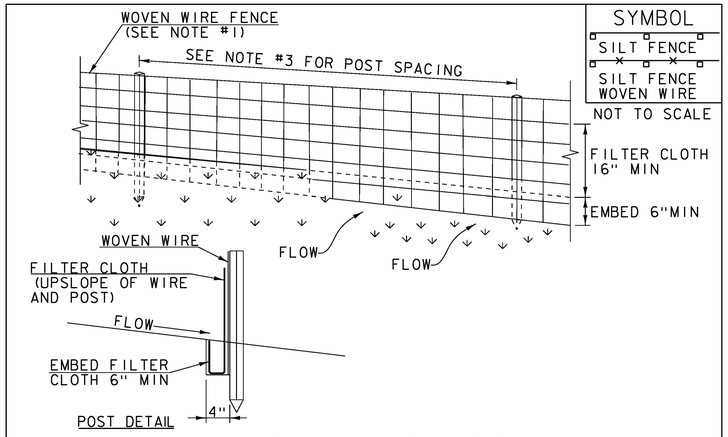
NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- " FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.
THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 653 AND AS SHOWN IN THE PLANS FOR TEMPORARY EROSION MATTING (PAY ITEM 653.20)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

REVISIONS	
APRIL 16, 2007	JMF
JANUARY 13, 2009	WHF

PROJECT NAME: HIGHGATE
PROJECT NUMBER: STP SCRP(12)

FILE NAME: dl3cl34_frm.dgn
PROJECT LEADER: B. MARTIN
DESIGNED BY: A. KEMPTON
EPSC DETAIL SHEET 1

PLOT DATE: 14-OCT-2016
DRAWN BY: A. KEMPTON
CHECKED BY: W. FARLEY
SHEET 22 OF 40



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, MIRAFI100X, 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.

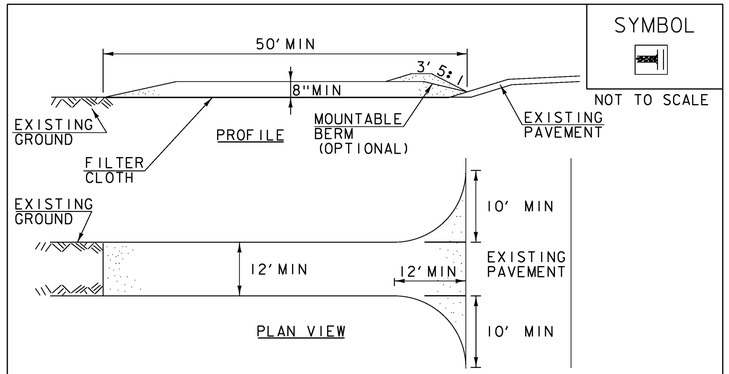
ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC
ORIGINALLY DEVELOPED BY USDA-NRCS
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

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



CONSTRUCTION SPECIFICATIONS

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

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

STABILIZED CONSTRUCTION ENTRANCE

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

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

REVISIONS	
MARCH 24, 2008	WHF
JANUARY 13, 2009	WHF

PROJECT NAME: HIGHGATE
PROJECT NUMBER: STP SCRP(12)

FILE NAME: dl3cl34_frm.dgn
PROJECT LEADER: B. MARTIN
DESIGNED BY: A. KEMPTON
EPSC DETAIL SHEET 2

PLOT DATE: 14-OCT-2016
DRAWN BY: A. KEMPTON
CHECKED BY: W. FARLEY
SHEET 23 OF 40

VEHICLE TRACKING PAD
T.H. 1 STA 21+45.5 RT
STA 124+12.4 RT

PROJECT DEMARCATION FENCE
N. ACCESS RD STA 0+00.0 - 2+37.2 LT
N. ACCESS RD STA 0+00.0 - 2+37.2 RT

BARRIER FENCE
N. ACCESS RD STA 2+37.2 LT - MAINLINE STA 126+03.3 LT
N. ACCESS RD STA 2+37.2 RT - N. ACCESS RD STA 3+38.7 RT
STA 124+16.7 - 126+07.7 RT

GEOTEXTILE FOR SILT FENCE, WOVEN WIRE REINFORCED
STA 124+47.8 - 124+62.1 RT
STA 124+62.3 - 124+77.3 RT
STA 124+92.1 - 125+02.8 RT
STA 125+02.2 - 125+06.4 LT
STA 125+12.7 - 125+14.2 LT
STA 125+28.9 - 125+29.6 LT
STA 125+35.1 - 125+35.8 LT
STA 125+53.5 - 125+74.3 RT

N
VT STATE PLANE GRID

STATION 124+50.00 (MM 2.358)
BEGIN PROJECT STP SCRP(12)

STATION 126+00.00 (MM 2.386)
END PROJECT STP SCRP(12)

VT 78 STA 123+55.38 =
T.H. 1 STA 19+86.61

RIPARIAN BUFFER

RIPARIAN BUFFER

SOIL INFORMATION:
RAYNHAM SILT LOAM
K-FACTOR = .49/.49, 3%-8% SLOPES
HYDROLOGICAL SOIL GROUP:C

LEGEND

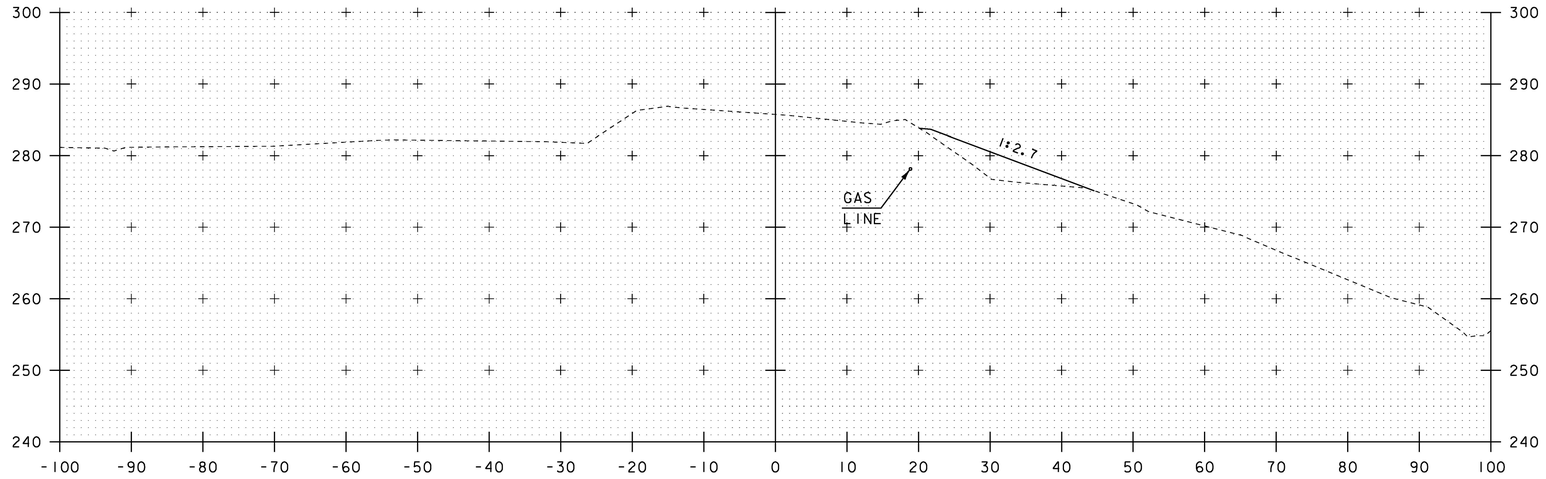
- EROSION MATTING
- ACCESS RD SLOPE LIMITS
- PERMANENT SLOPE LIMITS
- PDF — PROJECT DEMARCATION FENCE
- BF — BARRIER FENCE
- SILT FENCE
- SILT FENCE WOVEN WIRE
- RIPARIAN/WETLAND BUFFER
- STABILIZED CONSTRUCTION ENTRANCE

0 20 40
SCALE IN FEET

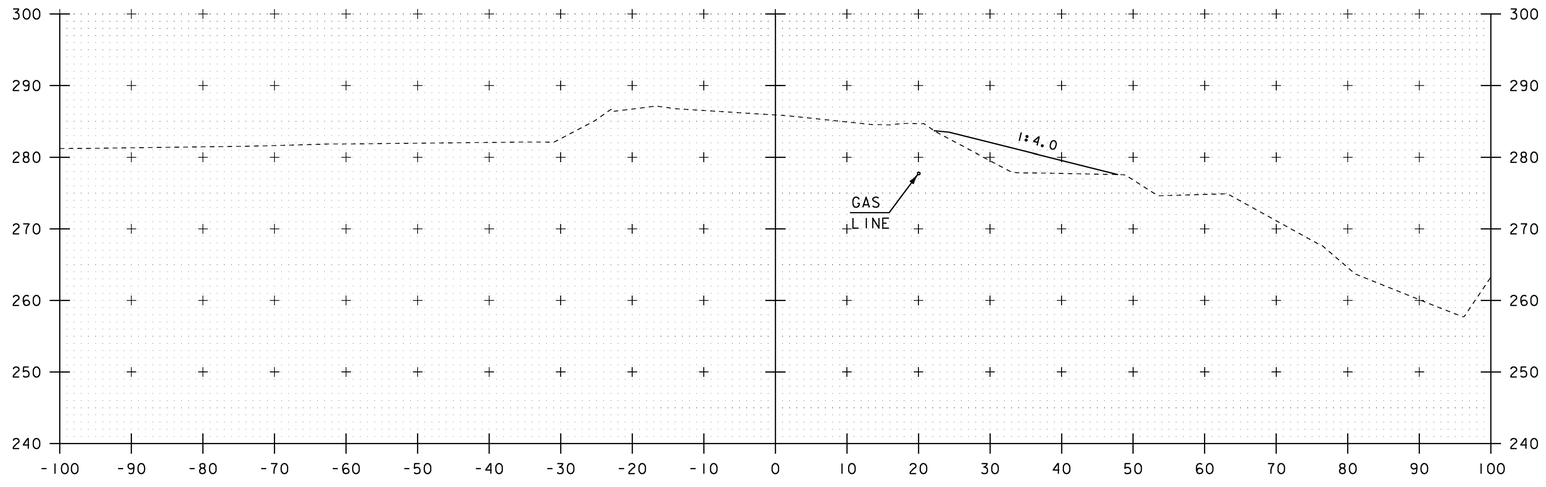
AREA OF DISTURBANCE=0.782 ACRES

NOTE: BARRIER FENCE SHALL BE REDUCED TO A FIVE FOOT OFFSET FROM THE CONSTRUCTION LIMIT ON THE NORTH ACCESS ROAD TO AVOID UNNECESSARY IMPACTS TO THE TREES

PROJECT NAME:	HIGHGATE
PROJECT NUMBER:	STP SCRP(12)
FILE NAME: dl3cl34ero.dgn	PLOT DATE: 14-OCT-2016
PROJECT LEADER: B. MARTIN	DRAWN BY: A. KEMPTON
DESIGNED BY: A. KEMPTON	CHECKED BY: M. GAMELIN
EPSC PLAN SHEET	SHEET 24 OF 40



124+75



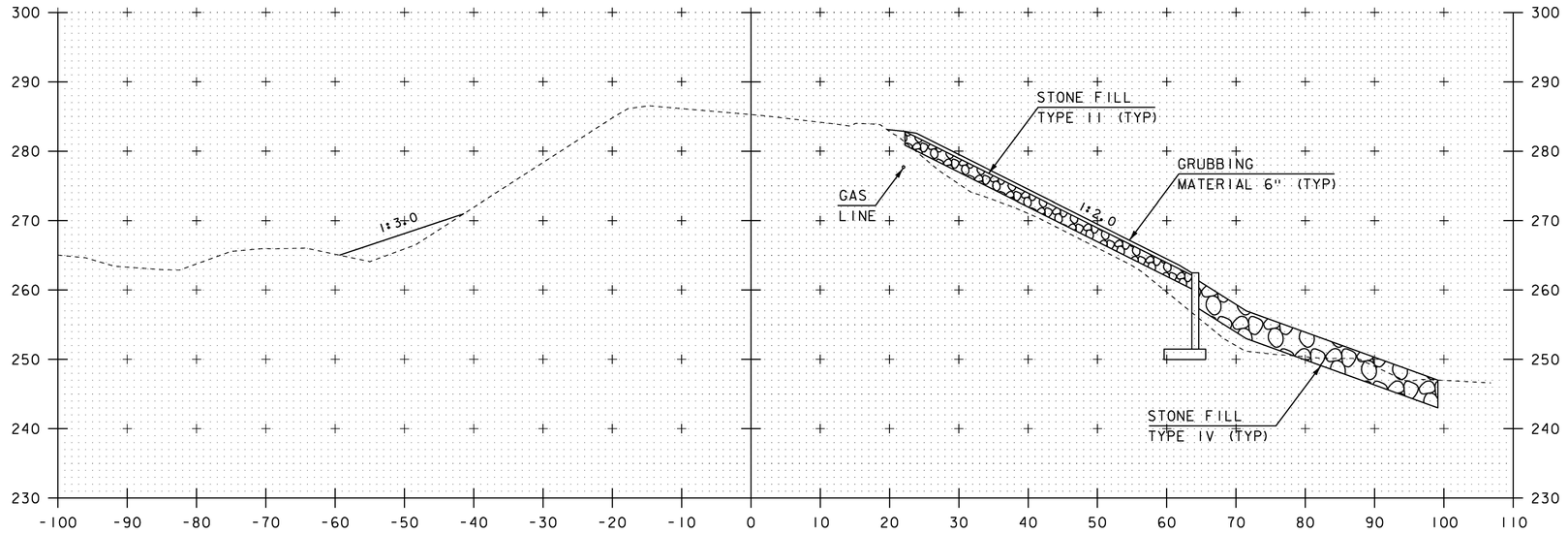
124+50
BEGIN PROJECT

SCALE IN FEET

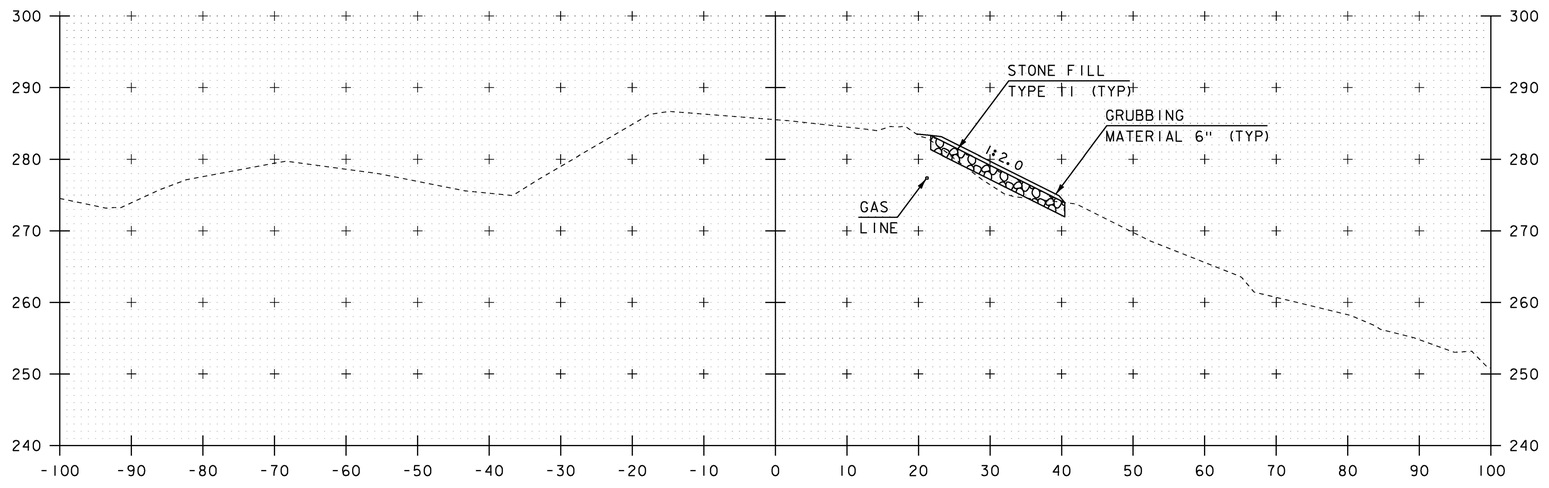
PROJECT NAME:	HIGHGATE
PROJECT NUMBER:	STP SCRP(12)

FILE NAME: dl3cl34xs.dgn	PLOT DATE: 14-OCT-2016
PROJECT LEADER: B. MARTIN	DRAWN BY: A. KEMPTON
DESIGNED BY: A. KEMPTON	CHECKED BY: M. GAMELIN
VT 78 CROSS SECTION SHEET 1	SHEET 25 OF 40

STA. 124+50 TO STA. 124+75



125+25



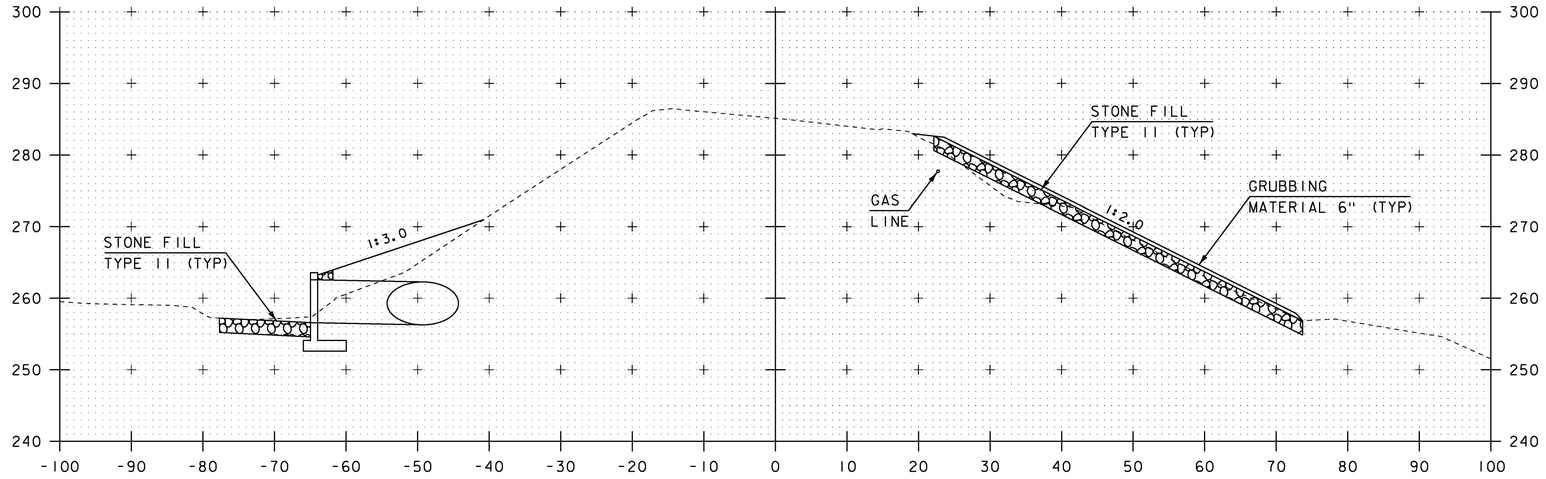
125+00

SCALE IN FEET

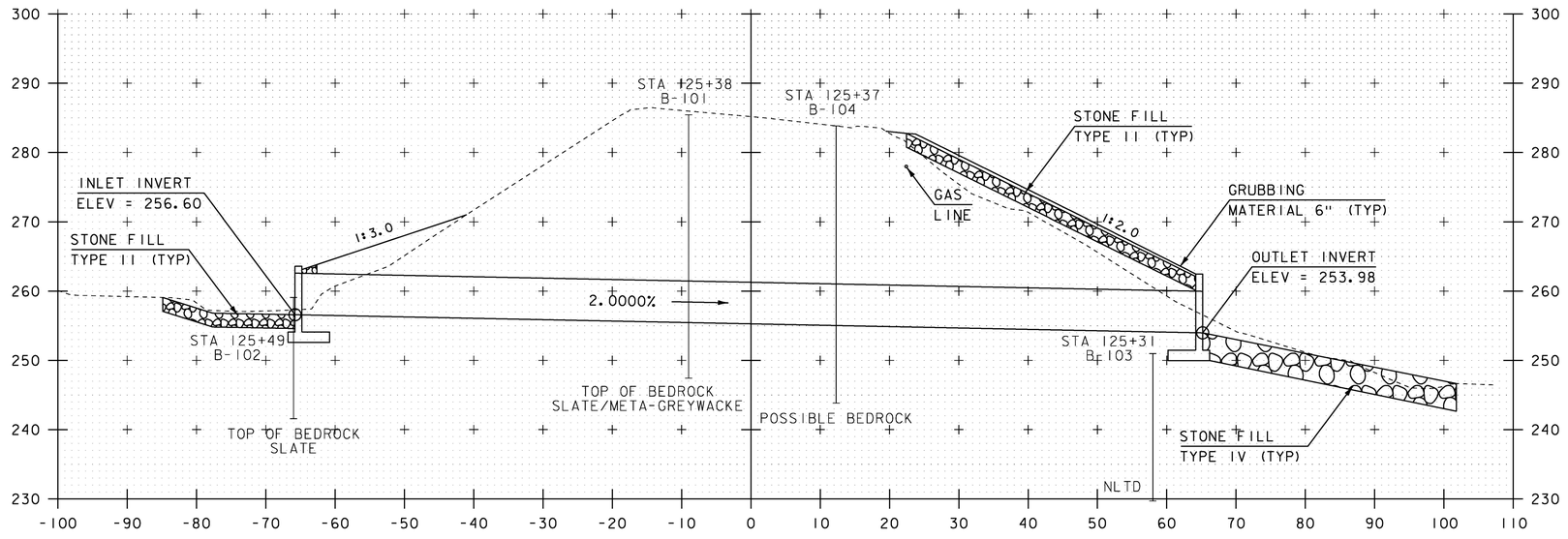
PROJECT NAME:	HIGHGATE
PROJECT NUMBER:	STP SCRP(12)

FILE NAME: dl3cl34xs.dgn	PLOT DATE: 14-OCT-2016
PROJECT LEADER: B. MARTIN	DRAWN BY: A. KEMPTON
DESIGNED BY: A. KEMPTON	CHECKED BY: M. GAMELIN
VT 78 CROSS SECTION SHEET 2	SHEET 26 OF 40

STA. 125+00 TO STA. 125+25



125+50



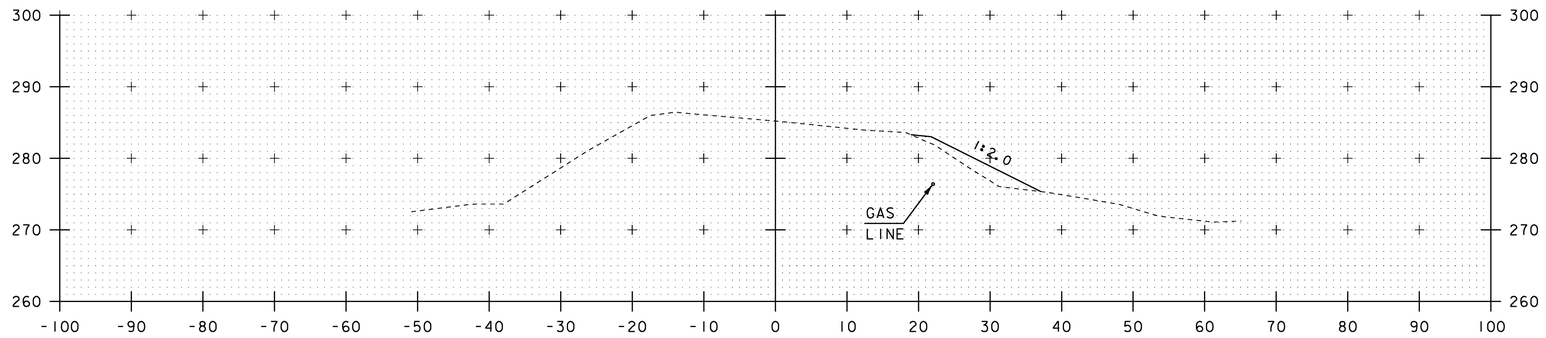
NOTES:
1. BORING LOCATIONS HAVE BEEN PROJECTED ON TO THE CROSS SECTION FROM THE STATION INDICATED ON THE BORING LOGS.
2. BORING LOCATIONS AND STRATA ELEVATIONS ARE APPROXIMATE.

125+42.00
SKEWED 83°00'00" LT
(BR 10)

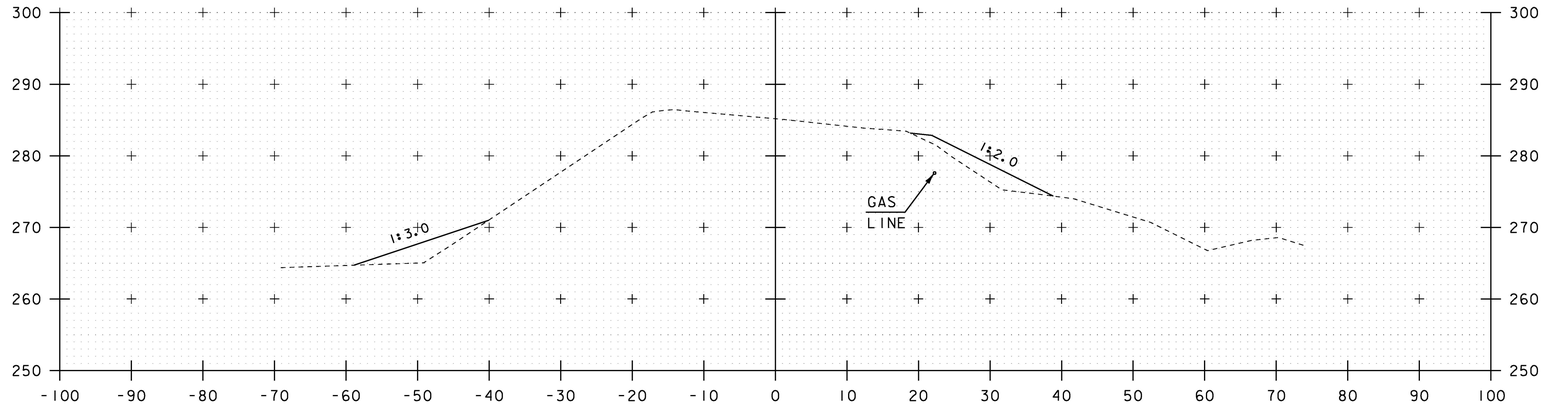
SCALE IN FEET

STA. 125+42 TO STA. 125+50

PROJECT NAME: HIGHGATE	
PROJECT NUMBER: STP SCRP(12)	
FILE NAME: dl3cl34xs.dgn	PLOT DATE: 14-OCT-2016
PROJECT LEADER: B. MARTIN	DRAWN BY: A. KEMPTON
DESIGNED BY: A. KEMPTON	CHECKED BY: M. GAMELIN
VT 78 CROSS SECTION SHEET 3	SHEET 27 OF 40



126+00
END PROJECT



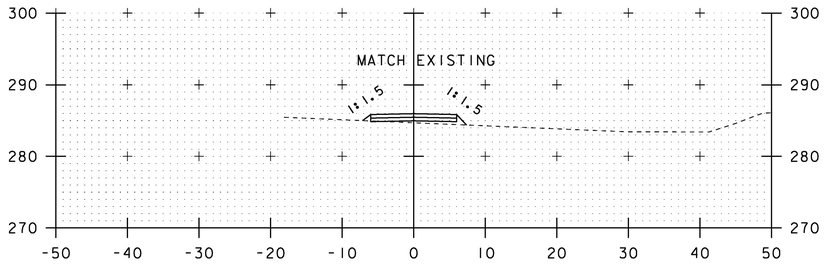
125+75

SCALE IN FEET

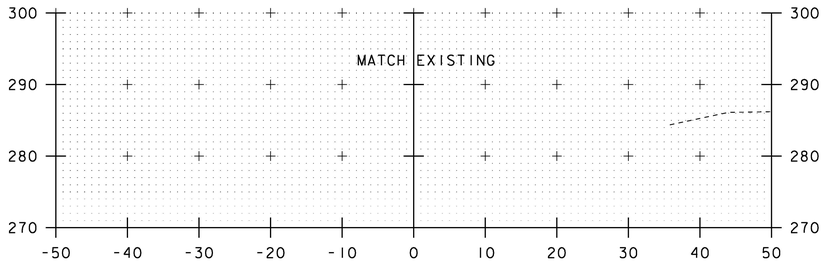
PROJECT NAME:	HIGHGATE
PROJECT NUMBER:	STP SCRP(12)

FILE NAME: dl3cl34xs.dgn	PLOT DATE: 14-OCT-2016
PROJECT LEADER: B. MARTIN	DRAWN BY: A. KEMPTON
DESIGNED BY: A. KEMPTON	CHECKED BY: M. GAMELIN
VT 78 CROSS SECTION SHEET 4	SHEET 28 OF 40

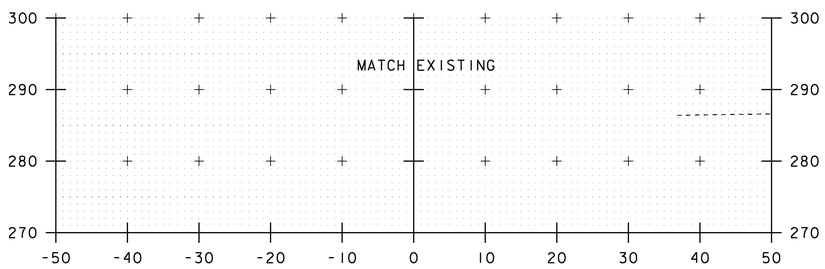
STA. 125+75 TO STA. 126+00



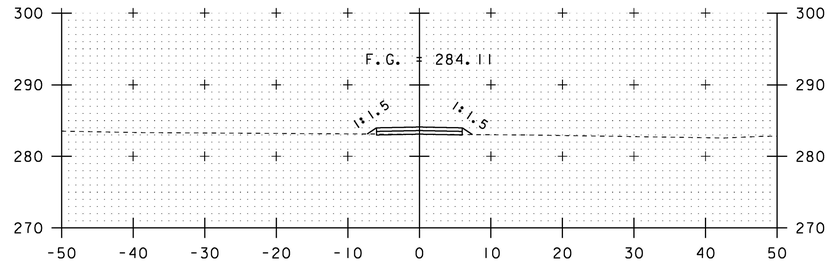
0+50



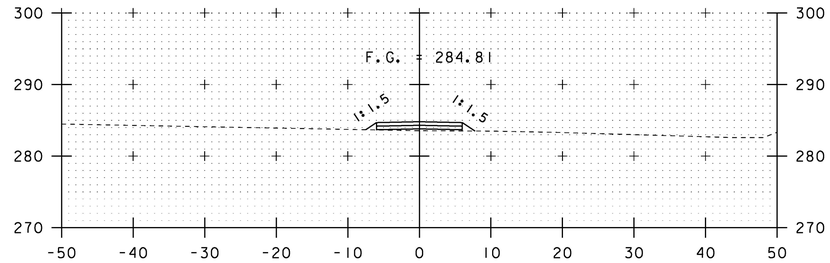
0+25



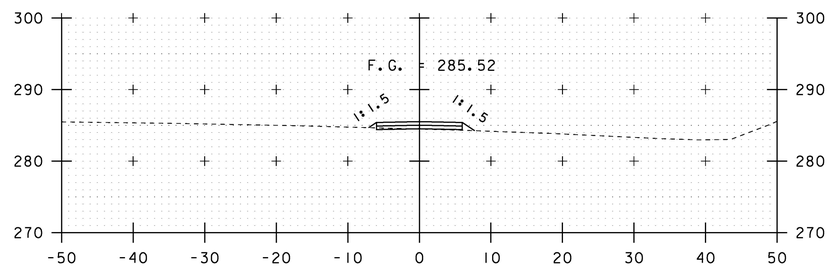
0+00
BEGIN ACCESS ROAD



1+25



1+00



0+75

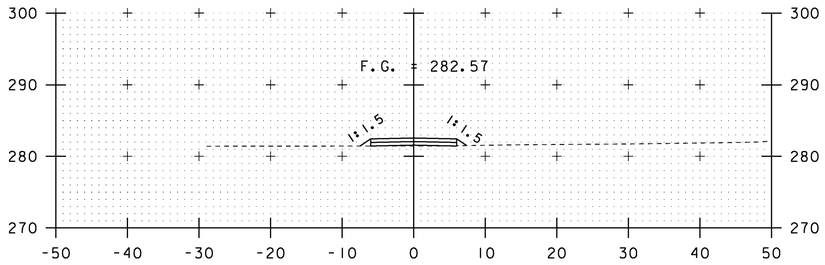
SCALE IN FEET

STA. 0+00 TO STA. 1+25

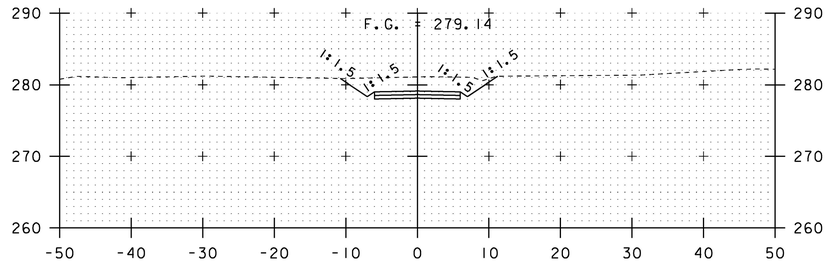
PROJECT NAME: HIGHGATE
PROJECT NUMBER: STP SCRP(12)

FILE NAME: dl3cl34xs.dgn
PROJECT LEADER: B. MARTIN
DESIGNED BY: A. KEMPTON
NORTH ACCESS RD CROSS SECTION SHEET 1

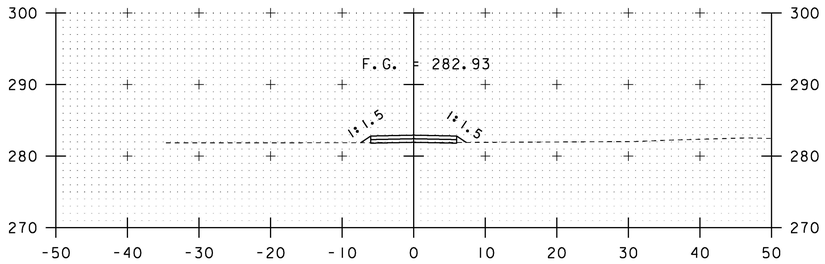
PLOT DATE: 14-OCT-2016
DRAWN BY: A. KEMPTON
CHECKED BY: M. GAMELIN
SHEET 29 OF 40



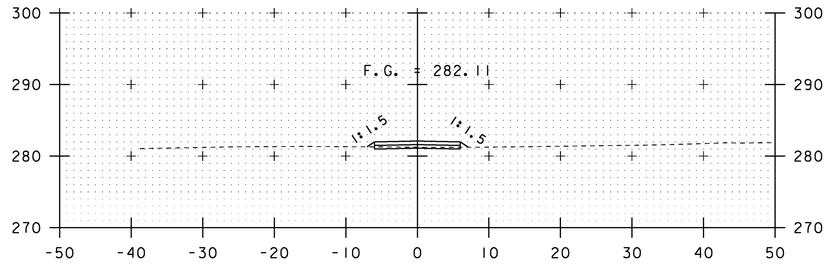
2+00



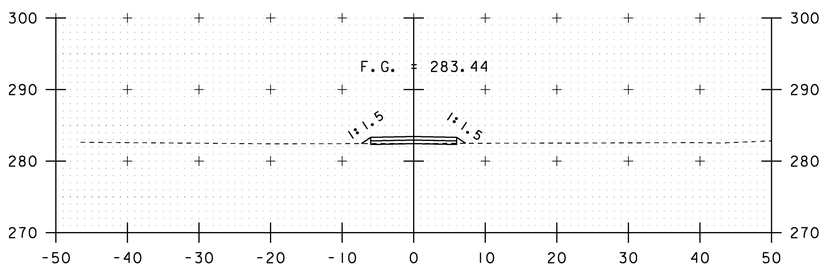
2+75



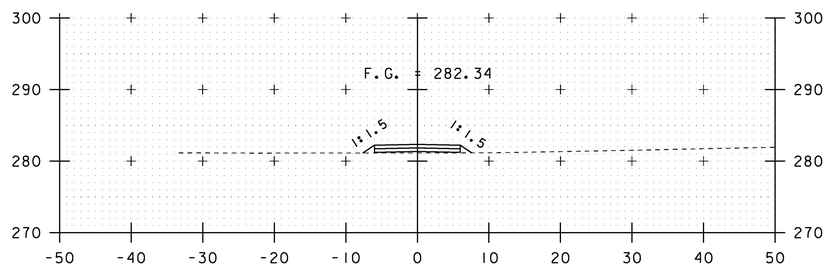
1+75



2+50



1+50

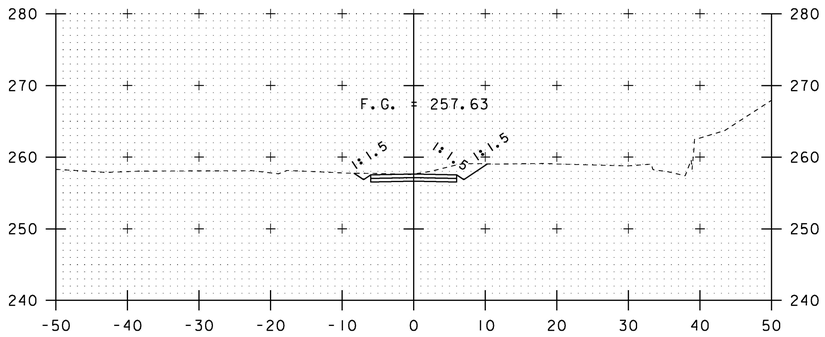


2+25

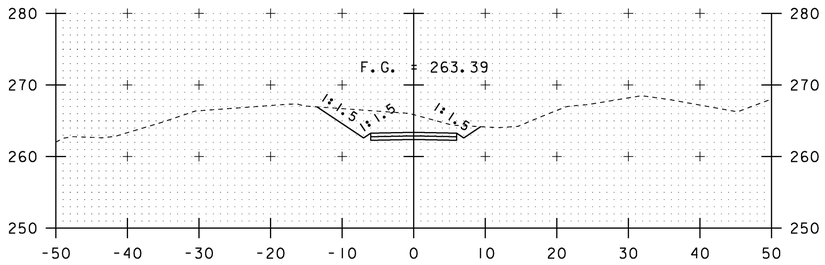
SCALE IN FEET

STA. 1+50 TO STA. 2+75

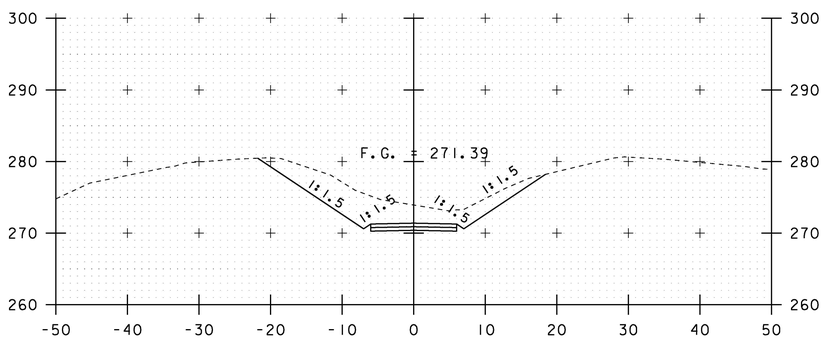
PROJECT NAME: HIGHGATE	
PROJECT NUMBER: STP SCRP(12)	
FILE NAME: dl3cl34xs.dgn	PLOT DATE: 14-OCT-2016
PROJECT LEADER: B. MARTIN	DRAWN BY: A. KEMPTON
DESIGNED BY: A. KEMPTON	CHECKED BY: M. GAMELIN
NORTH ACCESS RD CROSS SECTION SHEET 2	SHEET 30 OF 40



3+43
END ACCESS ROAD



3+25

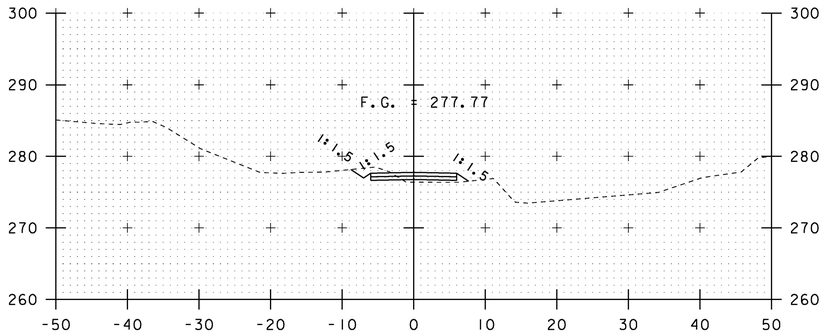


3+00

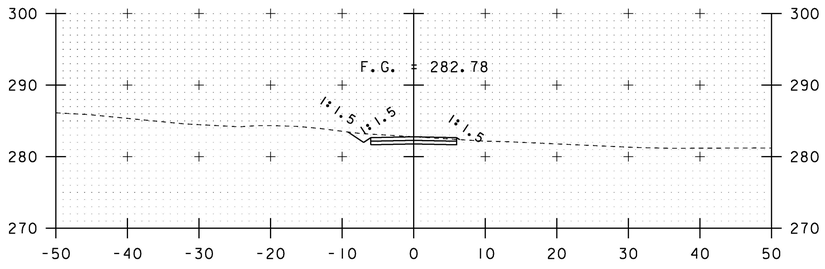
SCALE IN FEET

STA. 3+00 TO STA. 3+43

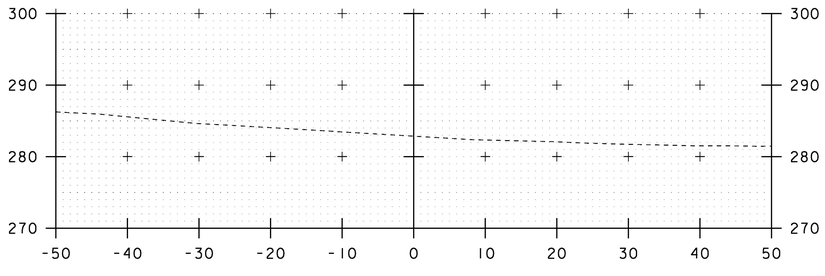
PROJECT NAME: HIGHGATE	
PROJECT NUMBER: STP SCRP(12)	
FILE NAME: dl3cl34xs.dgn	PLOT DATE: 14-OCT-2016
PROJECT LEADER: B. MARTIN	DRAWN BY: A. KEMPTON
DESIGNED BY: A. KEMPTON	CHECKED BY: M. GAMELIN
NORTH ACCESS RD CROSS SECTION SHEET 3	SHEET 31 OF 40



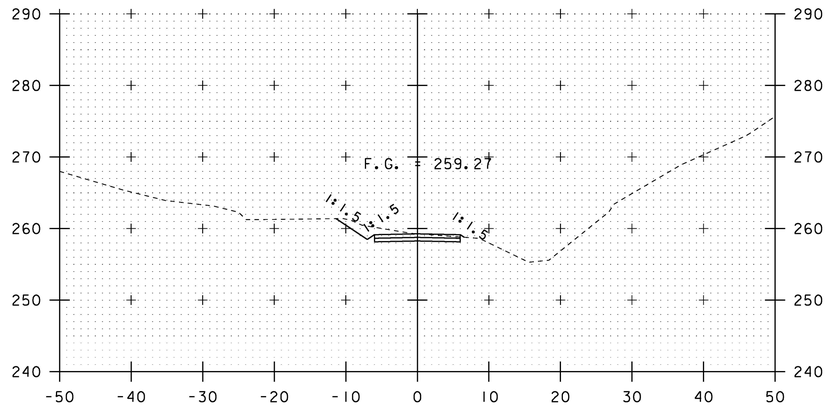
1+25



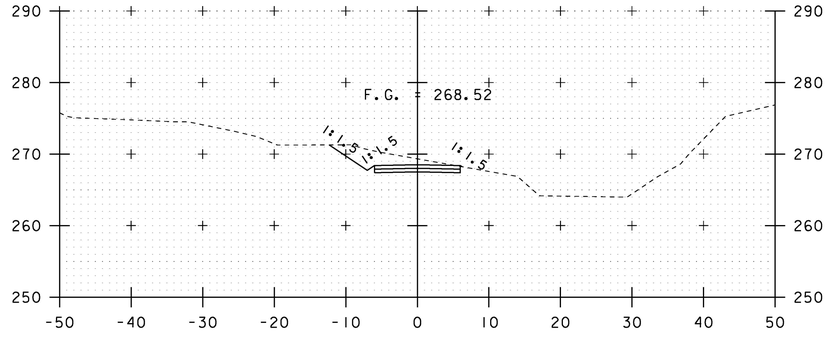
1+06
BEGIN ACCESS ROAD



1+00



1+75

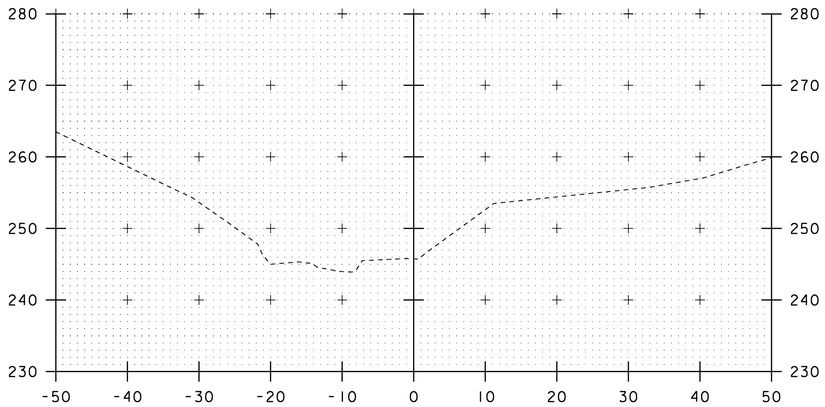


1+50

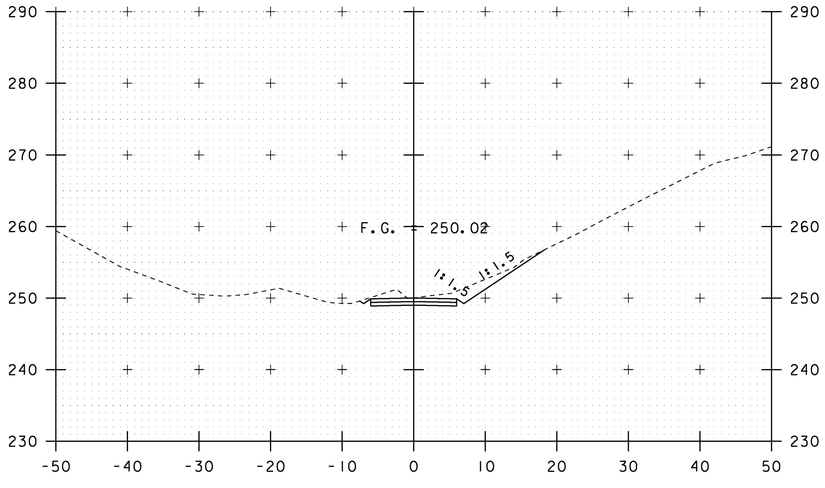
SCALE IN FEET

STA. 1+00 TO STA. 1+75

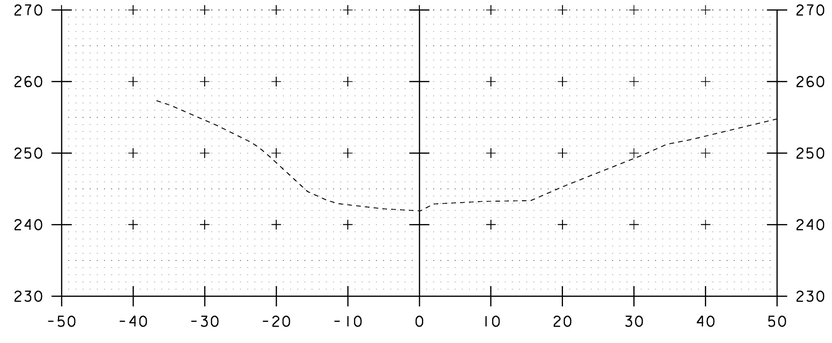
PROJECT NAME: HIGHGATE	
PROJECT NUMBER: STP SCRP(12)	
FILE NAME: d13c134xs.dgn	PLOT DATE: 14-OCT-2016
PROJECT LEADER: B. MARTIN	DRAWN BY: A. KEMPTON
DESIGNED BY: A. KEMPTON	CHECKED BY: M. CAMELIN
SOUTH ACCESS RD CROSS SECTION SHEET 1	SHEET 32 OF 40



2+25



2+00
END ACCESS ROAD



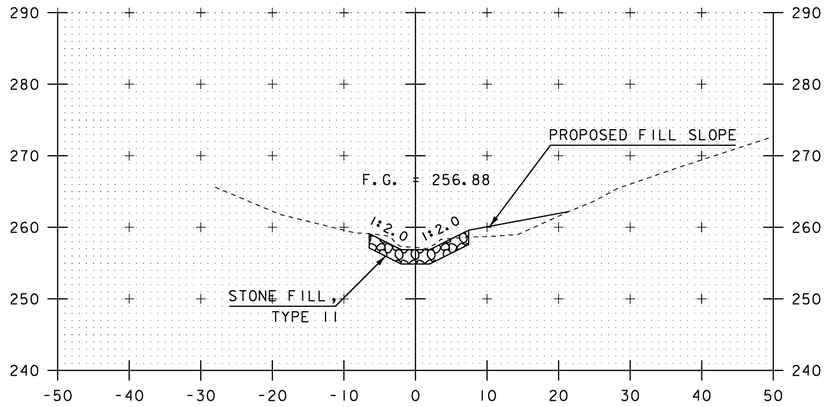
2+42

STA. 2+00 TO STA. 2+42

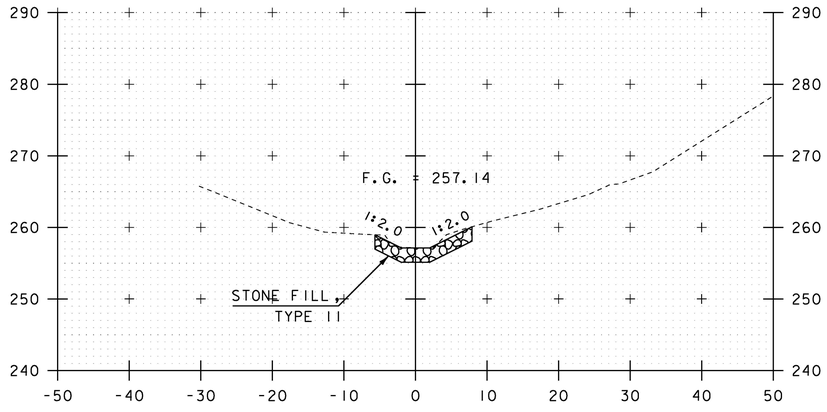
SCALE IN FEET

PROJECT NAME:	HIGHGATE
PROJECT NUMBER:	STP SCRP(12)

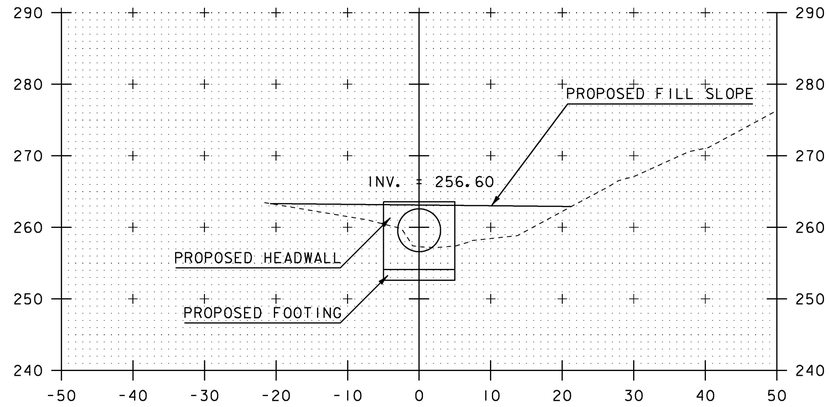
FILE NAME: dl3cl34xs.dgn	PLOT DATE: 14-OCT-2016
PROJECT LEADER: B. MARTIN	DRAWN BY: A. KEMPTON
DESIGNED BY: A. KEMPTON	CHECKED BY: M. GAMELIN
SOUTH ACCESS RD CROSS SECTION SHEET 2	SHEET 33 OF 40



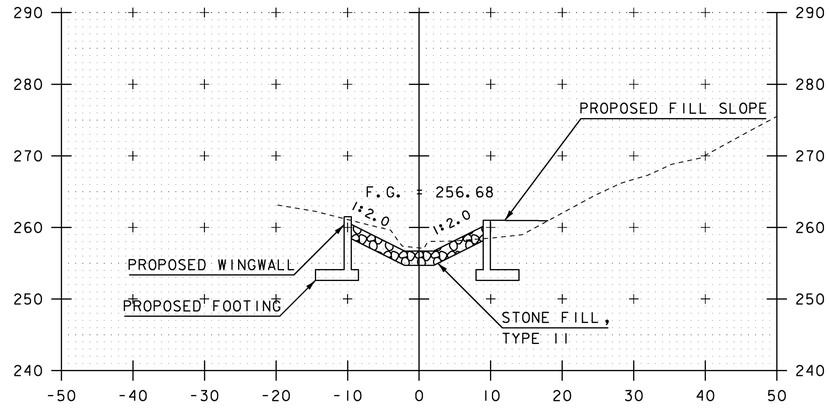
9+20



9+07
BEGIN CHANNEL WORK



9+34.21
BEGIN CULVERT
(BR 10)

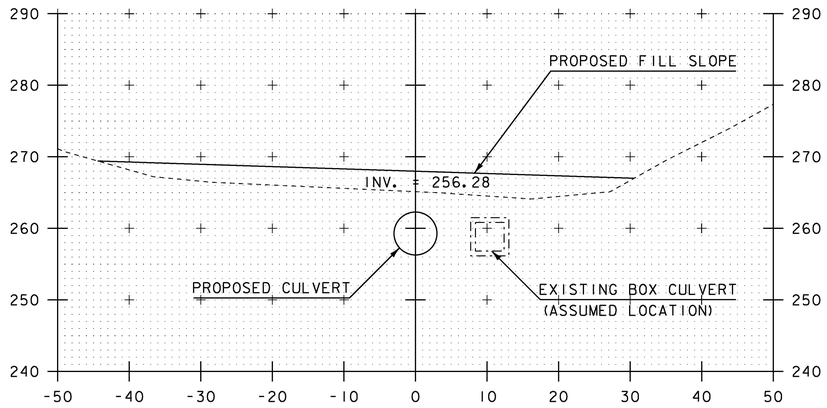


9+30

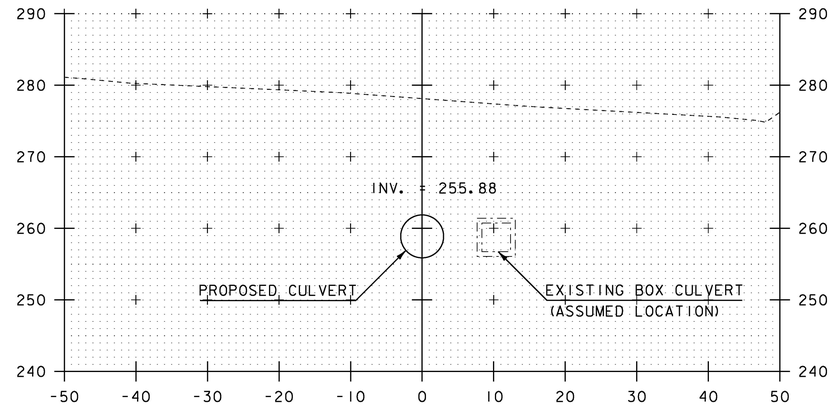
SCALE IN FEET

STA. 9+07 TO STA. 9+34

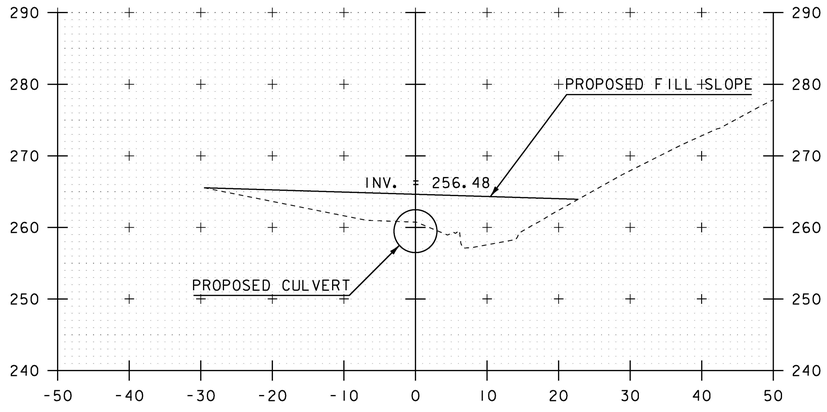
PROJECT NAME: HIGHGATE	
PROJECT NUMBER: STP SCRP(12)	
FILE NAME: dl3cl34xs.dgn	PLOT DATE: 14-OCT-2016
PROJECT LEADER: B. MARTIN	DRAWN BY: A. KEMPTON
DESIGNED BY: A. KEMPTON	CHECKED BY: M. GAMELIN
CHANNEL CROSS SECTION SHEET 1	SHEET 34 OF 40



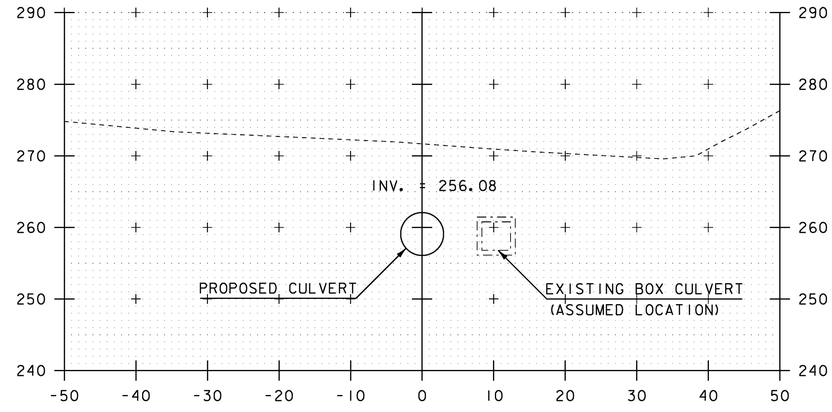
9+50



9+70



9+40

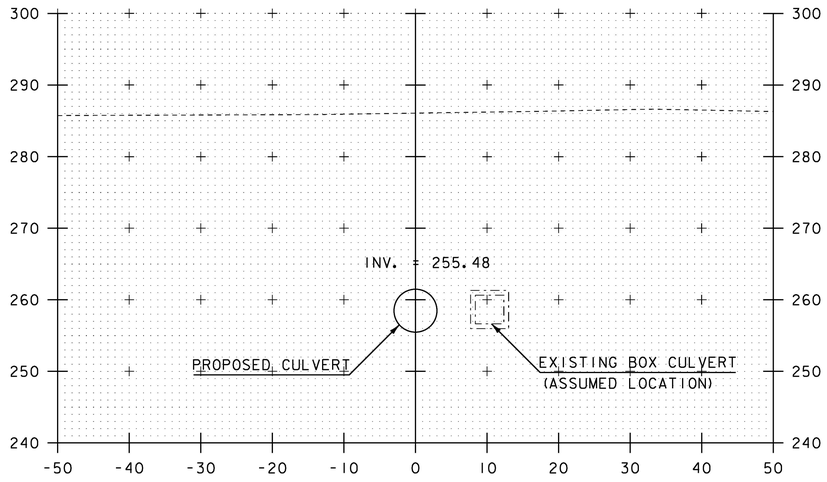


9+60

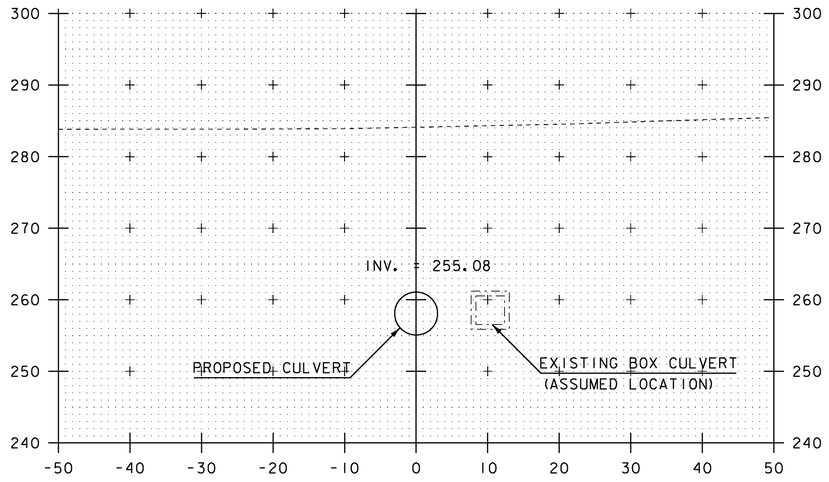
SCALE IN FEET

STA. 9+40 TO STA. 9+70

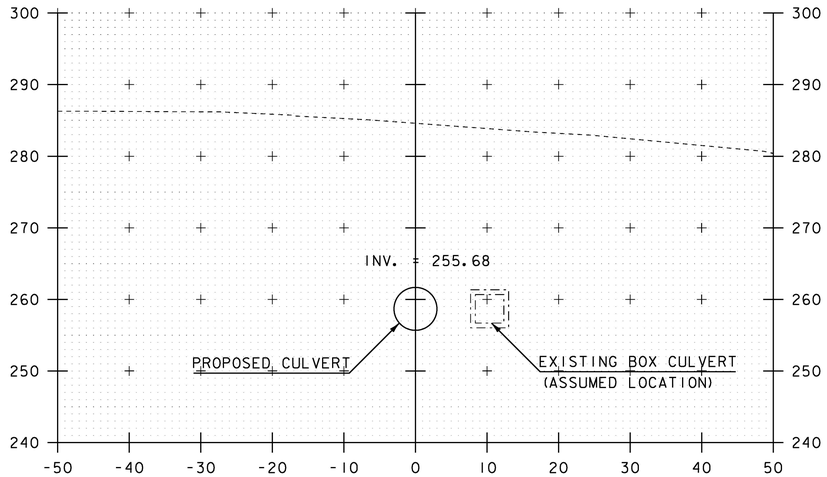
PROJECT NAME: HIGHGATE	
PROJECT NUMBER: STP SCRP(12)	
FILE NAME: dl3cl34xs.dgn	PLOT DATE: 14-OCT-2016
PROJECT LEADER: B. MARTIN	DRAWN BY: A. KEMPTON
DESIGNED BY: A. KEMPTON	CHECKED BY: M. GAMELIN
CHANNEL CROSS SECTION SHEET 2	SHEET 35 OF 40



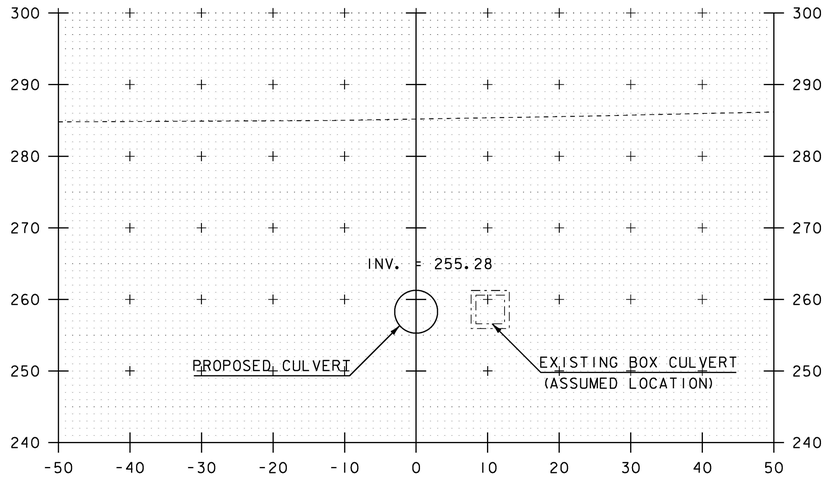
9+90



10+10



9+80

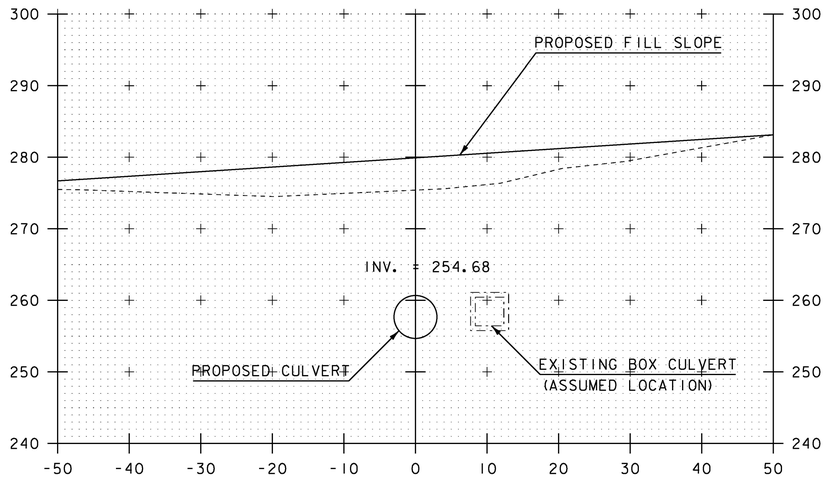


10+00

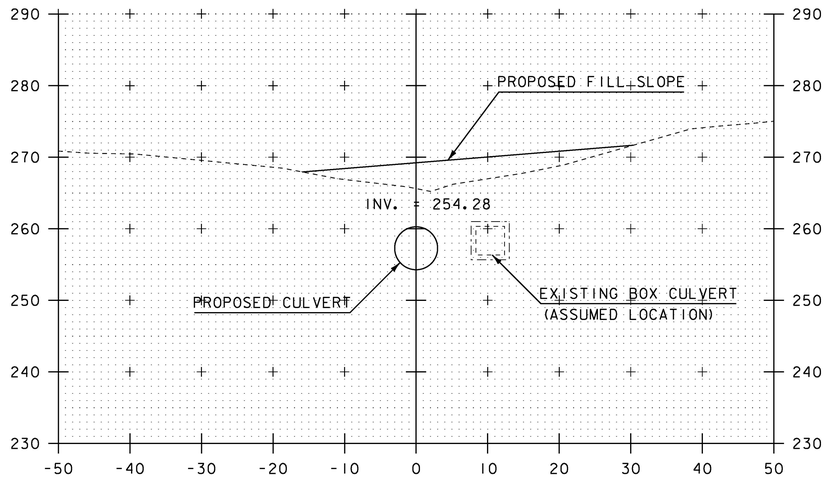
SCALE IN FEET

STA. 9+80 TO STA. 10+10

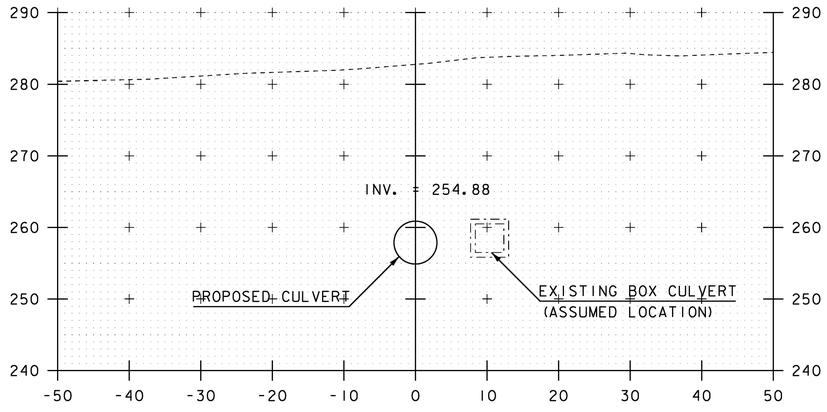
PROJECT NAME: HIGHGATE	
PROJECT NUMBER: STP SCRP(12)	
FILE NAME: dl3cl34xs.dgn	PLOT DATE: 14-OCT-2016
PROJECT LEADER: B. MARTIN	DRAWN BY: A. KEMPTON
DESIGNED BY: A. KEMPTON	CHECKED BY: M. GAMELIN
CHANNEL CROSS SECTION SHEET 3	SHEET 36 OF 40



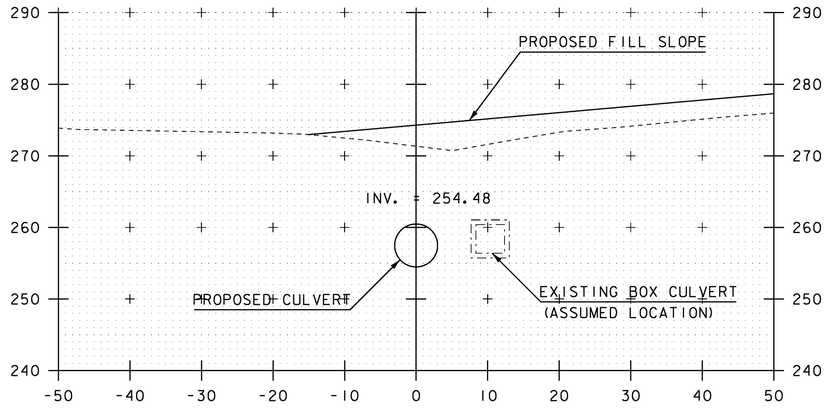
10+30



10+50



10+20

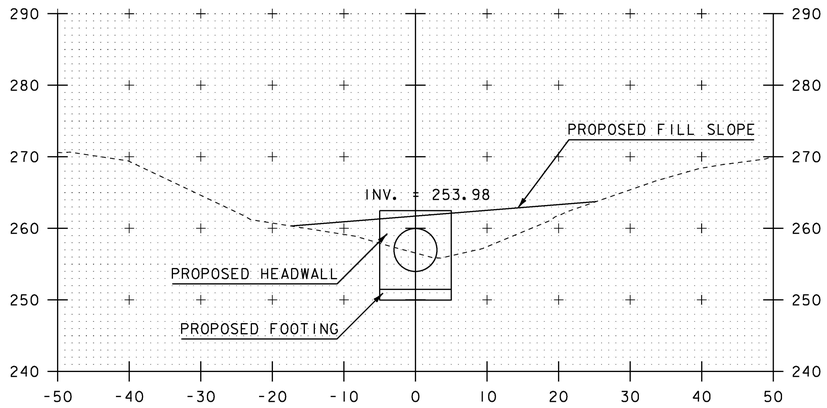


10+40

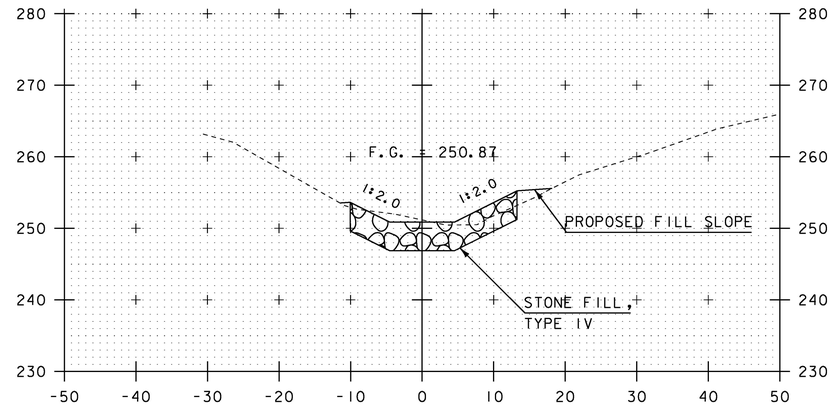
SCALE IN FEET

STA. 10+20 TO STA. 10+50

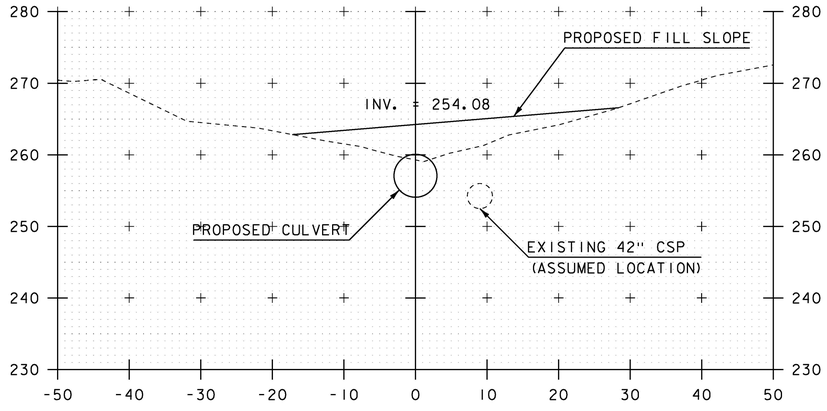
PROJECT NAME: HIGHGATE	
PROJECT NUMBER: STP SCRP(12)	
FILE NAME: dl3cl34xs.dgn	PLOT DATE: 14-OCT-2016
PROJECT LEADER: B. MARTIN	DRAWN BY: A. KEMPTON
DESIGNED BY: A. KEMPTON	CHECKED BY: M. GAMELIN
CHANNEL CROSS SECTION SHEET 4	SHEET 37 OF 40



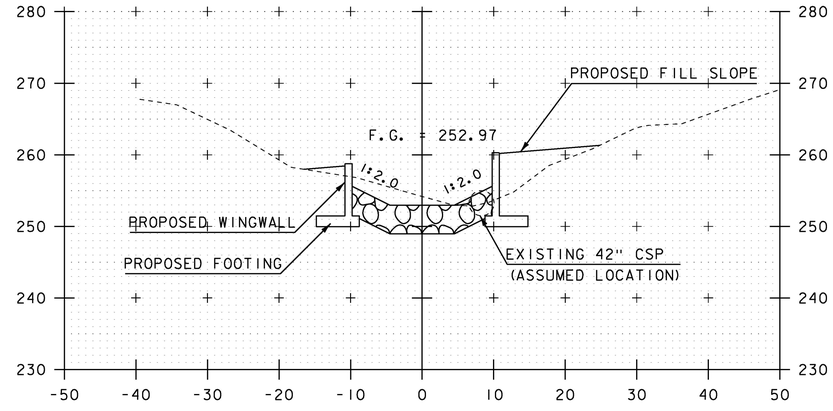
10+65.19
END CULVERT
(BR 10)



10+80



10+60

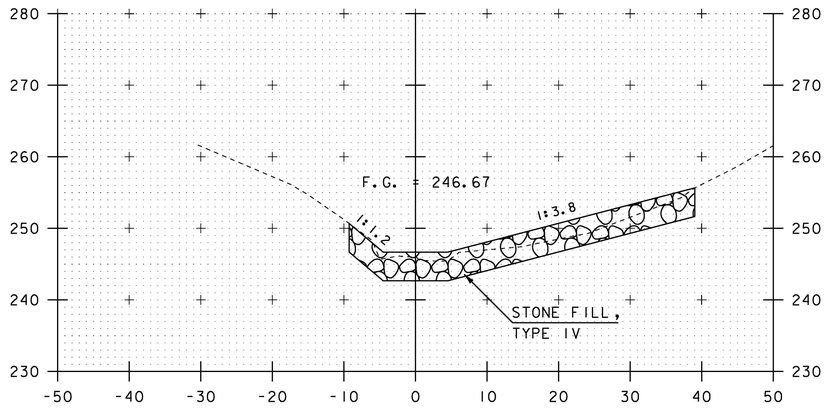


10+70

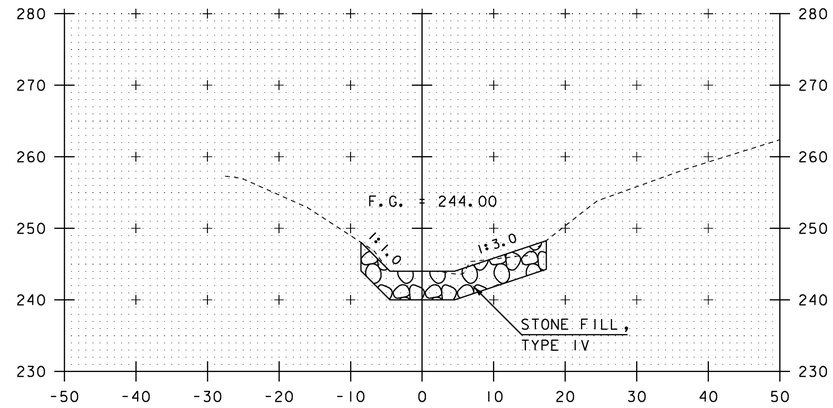
SCALE IN FEET

STA. 10+60 TO STA. 10+80

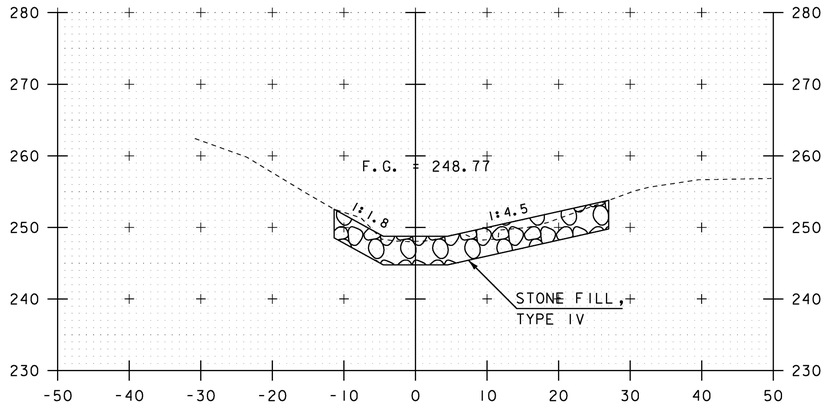
PROJECT NAME: HIGHGATE	
PROJECT NUMBER: STP SCRP(12)	
FILE NAME: dl3cl34xs.dgn	PLOT DATE: 14-OCT-2016
PROJECT LEADER: B. MARTIN	DRAWN BY: A. KEMPTON
DESIGNED BY: A. KEMPTON	CHECKED BY: M. GAMELIN
CHANNEL CROSS SECTION SHEET 5	SHEET 38 OF 40



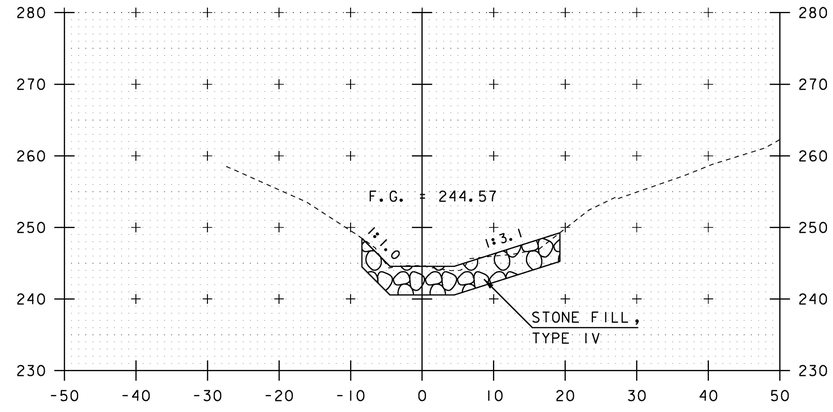
11+00



11+13
END CHANNEL WORK



10+90



11+10

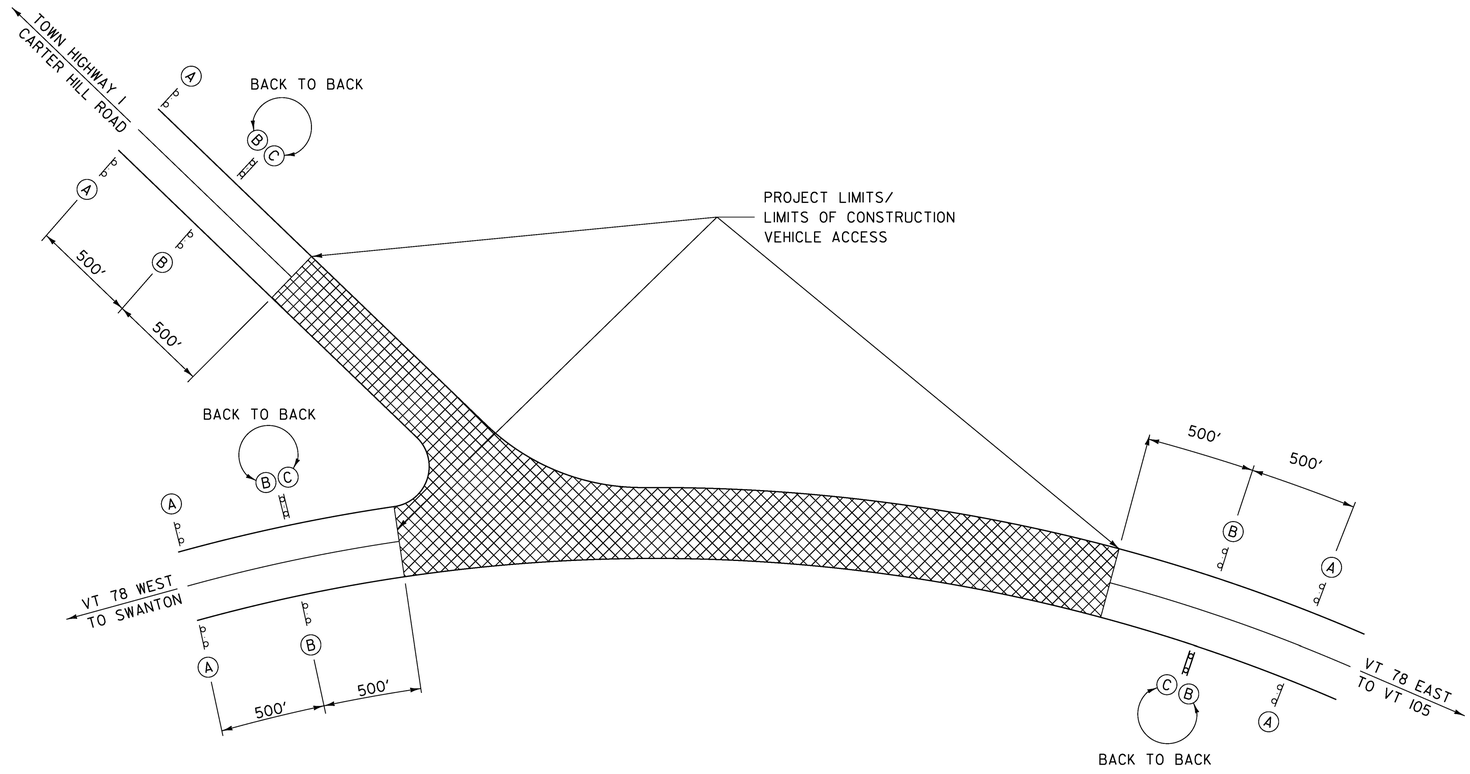
SCALE IN FEET

STA. 10+90 TO STA. 11+13

PROJECT NAME: HIGHGATE	
PROJECT NUMBER: STP SCRP(12)	
FILE NAME: dl3cl34xs.dgn	PLOT DATE: 14-OCT-2016
PROJECT LEADER: B. MARTIN	DRAWN BY: A. KEMPTON
DESIGNED BY: A. KEMPTON	CHECKED BY: M. GAMELIN
CHANNEL CROSS SECTION SHEET 6	SHEET 39 OF 40

N

VT STATE PLANE GRID



LEGEND

(A) ROAD WORK AHEAD — W20-1

(B) ROAD WORK 500 FT — W20-1

(C) END ROAD WORK — G20-2

TRAFFIC CONTROL NOTES:

THE CONTRACTOR SHALL SUBMIT A SITE SPECIFIC TRAFFIC CONTROL PLAN TO THE ENGINEER. THE PLAN SHALL INCLUDE PROVISIONS FOR IMPLEMENTATION AND MAINTENANCE OF TRAFFIC CONTROL FOR ALL WORK ASSOCIATED WITH THIS PROJECT. ALL COSTS ASSOCIATED WITH THE DEVELOPMENT AND ANY NECESSARY REVISION OF A TRAFFIC CONTROL PLAN WILL BE PAID FOR UNDER ITEM 641.10 TRAFFIC CONTROL.

THE TRAFFIC CONTROL PLANS SHOWN HEREIN ARE APPROXIMATE AND INTENDED TO BE UTILIZED IN CONJUNCTION WITH APPLICABLE VTRANS STANDARD DRAWINGS AND THE MUTCD. THE USE OF ADDITIONAL SIGNAGE AND DELINEATION IS ANTICIPATED AND WILL BE DETERMINED BY THE CONTRACTORS MEANS, METHODS AND CONSTRUCTION SEQUENCING.

THE CONTRACTOR IS NOTIFIED THAT ALL ROADWAYS INCLUDED IN AND ASSOCIATED WITH THIS PROJECT ARE SUBJECT TO OCCASIONAL USE AND TRAVEL BY EMERGENCY RESPONSE VEHICLES. THE CONTRACTOR SHALL MAKE AND IMPLEMENT PLANS AND PROCEDURES DESIGNED TO ENSURE SWIFT AND UNIMPEDED TRAVEL OF EMERGENCY RESPONSE VEHICLES THROUGH CONSTRUCTION ZONES AND SHALL SUBMIT THEM TO THE ENGINEER WITH THE OVERALL TRAFFIC CONTROL PLAN.

CONSTRUCTION APPROACH SIGNING

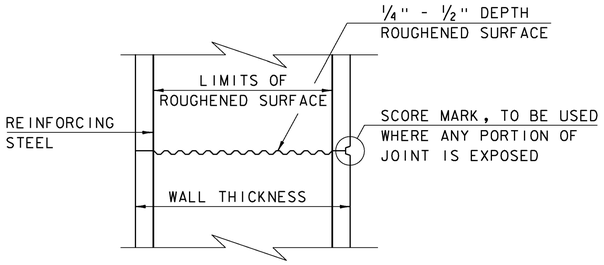
FIELD CONDITIONS MAY DICTATE THE ACTUAL SIGN PLACEMENT.

NOT TO SCALE

PROJECT NAME: HIGHGATE	
PROJECT NUMBER: STP SCRP(12)	
FILE NAME: dl3cl34frm.dgn	PLOT DATE: 14-OCT-2016
PROJECT LEADER: B. MARTIN	DRAWN BY: A. KEMPTON
DESIGNED BY: A. KEMPTON	CHECKED BY: M. GAMELIN
CONSTRUCTION APPROACH SIGNING SHEET	SHEET 40 OF 40

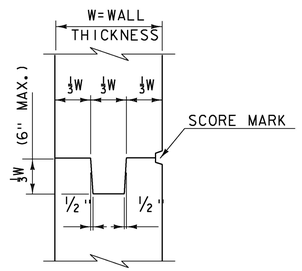
CONCRETE GENERAL NOTES

1. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 1" x 1"
2. REINFORCING STEEL SIZE AND SPACING SHOWN IN THE PLANS IS BASED ON 60 KSI STEEL, UNLESS NOTED OTHERWISE. WITH THE ENGINEER'S PERMISSION, BAR SIZE AND SPACING MAY BE MODIFIED ACCORDING TO THE LATEST AASHTO LRFD BRIDGE DESIGN SPECIFICATION AND STRUCTURES DESIGN MANUAL WHEN USING HIGHER STRENGTH STEEL.

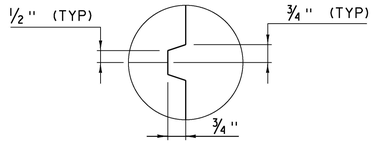


TYPICAL HORIZONTAL CONSTRUCTION JOINT
(NOT TO SCALE)

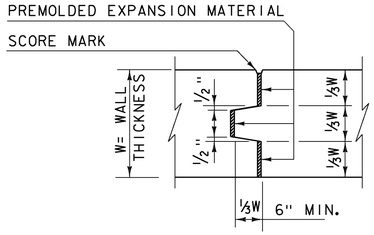
1. THE SURFACE OF THE CONCRETE CONSTRUCTION JOINTS SHALL BE CLEANED AND FREE OF LAITANCE.
2. IMMEDIATELY BEFORE NEW CONCRETE IS PLACED, ALL CONSTRUCTION JOINTS SHALL BE WETTED AND STANDING WATER REMOVED.



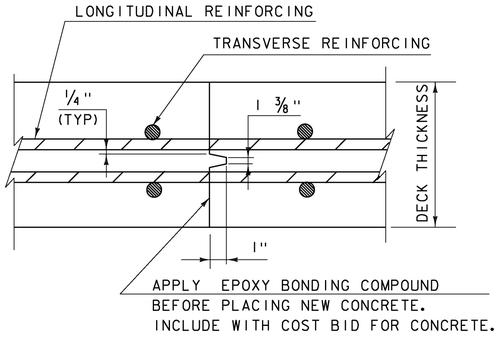
TYPICAL CONCRETE CONSTRUCTION JOINT
(NOT TO SCALE)



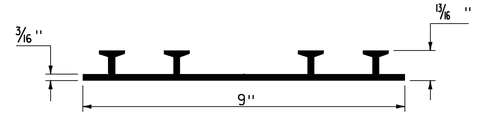
SCORE MARK DETAIL
(NOT TO SCALE)



TYPICAL CONCRETE EXPANSION JOINT
(NOT TO SCALE)



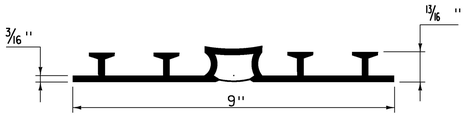
TRANSVERSE BRIDGE SLAB CONSTRUCTION JOINT DETAILS
(NOT TO SCALE)



P.V.C. WATERSTOP FOR CONSTRUCTION JOINTS
(NOT TO SCALE)

PAYMENT FOR THE P.V.C. WATERSTOP SHALL BE INCIDENTAL TO THE UNIT BID PRICE FOR THE ADJACENT CONCRETE.

OTHER CONFIGURATIONS OF WATERSTOP MAY BE USED UPON APPROVAL OF THE ENGINEER.



P.V.C. WATERSTOP FOR EXPANSION JOINTS
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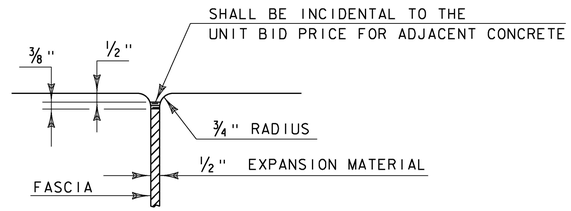


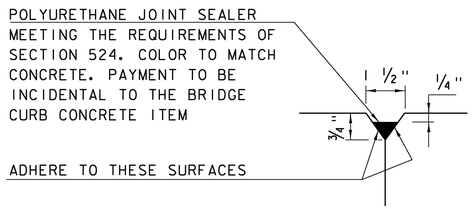
JOINT BETWEEN FASCIA AND WINGWALL
(NOT TO SCALE)

REVISIONS	
MAY 7, 2010	APPROVED FOR USE BY VAOT STRUCTURES SECTION
FEBRUARY 9, 2012	REBAR SUBSTITUTION ALLOWANCE ADDED TO CONCRETE GENERAL NOTES.

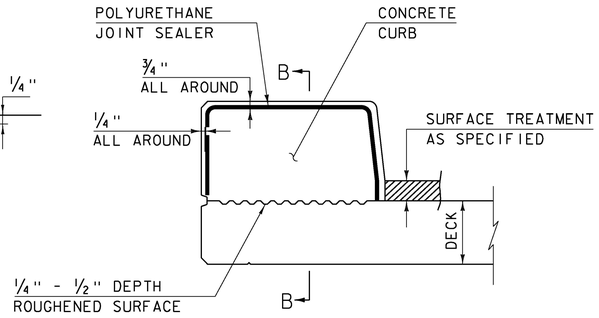
CONCRETE DETAILS AND NOTES

VERMONT AGENCY OF TRANSPORTATION
STRUCTURES - SECTION

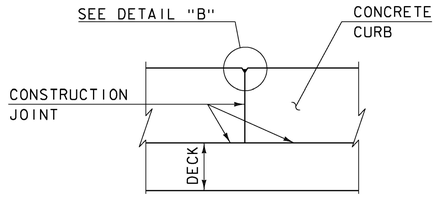
STRUCTURES DETAIL
SD-501.00



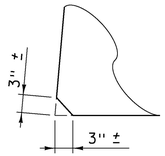
DETAIL "B"
(NOT TO SCALE)



CONCRETE CURB JOINT SECTION
(NOT TO SCALE)

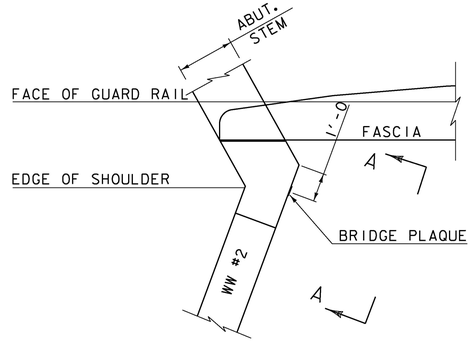


SECTION B - B
(NOT TO SCALE)



ACUTE ANGLE CLIP DETAIL
(NOT TO SCALE)

1. SEE TYPICAL HORIZONTAL CONSTRUCTION JOINT DETAIL FOR ADDITIONAL INFORMATION



PLAN

CONCRETE CURB JOINT NOTES

1. CONCRETE CURBS MAY BE PLACED IN ONE CONTINUOUS OPERATION IF AN APPROVED SHRINKAGE REDUCING ADMIXTURE LISTED IN THE SPECIAL PROVISIONS IS USED WITH THE CONCRETE MIX DESIGN. PAYMENT FOR THE SHRINKAGE REDUCING ADMIXTURE WILL BE INCIDENTAL TO THE BRIDGE CURB CONCRETE ITEM.

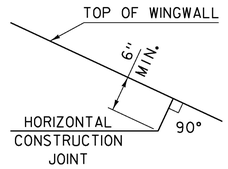
2. IF THE CONTRACTOR CHOOSES NOT TO USE AN APPROVED SHRINKAGE REDUCING ADMIXTURE, THE CURBS SHALL BE CONSTRUCTED WITH CONSTRUCTION JOINTS SPACED AT A MAXIMUM OF 15'-0" CENTER TO CENTER AND 2'-0" MINIMUM FROM THE CENTER OF NEAREST BRIDGE RAILING POST.

3. ON MULTI-SPAN CONTINUOUS SUPERSTRUCTURES, REGARDLESS OF WHETHER APPROVED SHRINKAGE REDUCING ADMIXTURE IS USED, CURB JOINTS SHALL BE LOCATED OVER THE CENTERLINE OF PIERS AND 7'-0" EACH SIDE OF THE CENTERLINE OF EACH PIER.

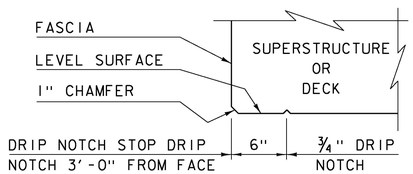
4. WHEN CURB JOINTS ARE USED THE CURBS SHALL BE PLACED IN ALTERNATE SECTIONS WITH A MINIMUM OF 48 HOUR DELAY BETWEEN ADJACENT PLACEMENTS.

5. LONGITUDINAL REINFORCING SHALL BE CONTINUOUS THROUGH CURB CONSTRUCTION JOINTS. CURB STIRRUP BARS SHALL BE TURNED AS NECESSARY TO MAINTAIN COVER IN THE FLARED CURB ENDS.

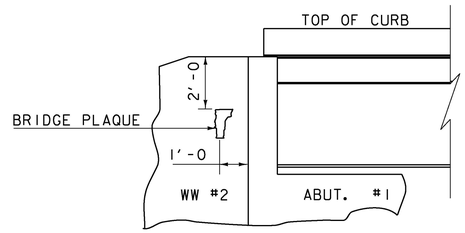
6. THE JOINT SPACING AND DETAILS SHOWN SHALL APPLY TO SIDEWALKS WHEN SHOWN IN THE PLANS.



HORIZONTAL WINGWALL CONSTRUCTION JOINT
(NOT TO SCALE)



DRIP NOTCH DETAIL
(NOT TO SCALE)



VIEW "A - A"

BRIDGE PLAQUE
(NOT TO SCALE)

THE BRIDGE PLAQUE WILL BE SUPPLIED BY THE AGENCY OF TRANSPORTATION AND SHALL BE INSTALLED BY THE CONTRACTOR AT ABUTMENT #1 ON THE RIGHT SIDE AS SHOWN OR AS DIRECTED BY THE ENGINEER.

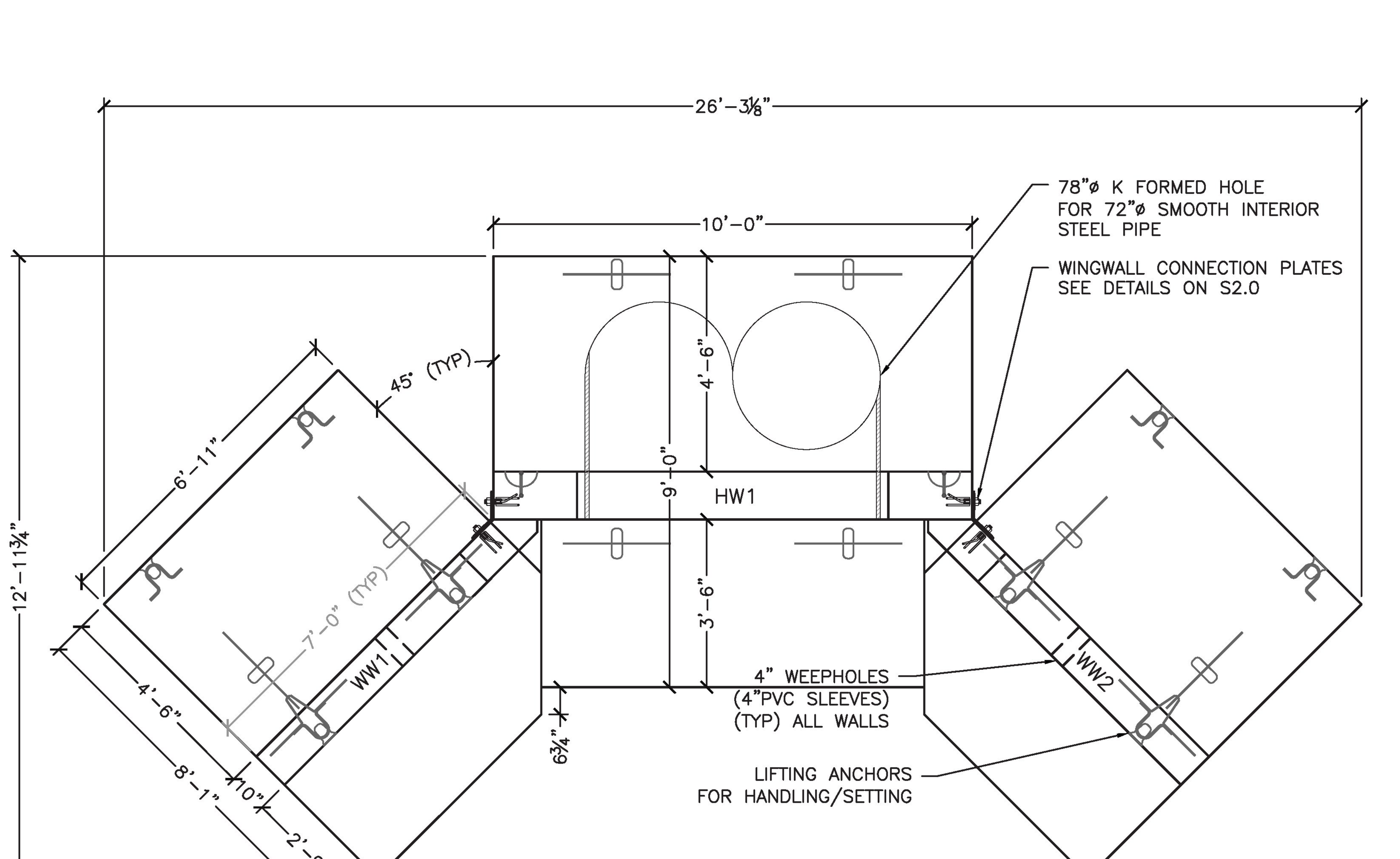
PAYMENT FOR INSTALLATION OF THE BRIDGE PLAQUE SHALL BE INCIDENTAL TO THE ADJACENT CONCRETE.

REVISIONS	
MAY 7, 2010	APPROVED FOR USE BY VAOT STRUCTURES SECTION
JUNE 4, 2010	MODIFIED AND ADDED TWO DETAILS
OCTOBER 10, 2012	MODIFIED HORZ. JOINT WINGWALL ADD 6" MIN. DIMENSION

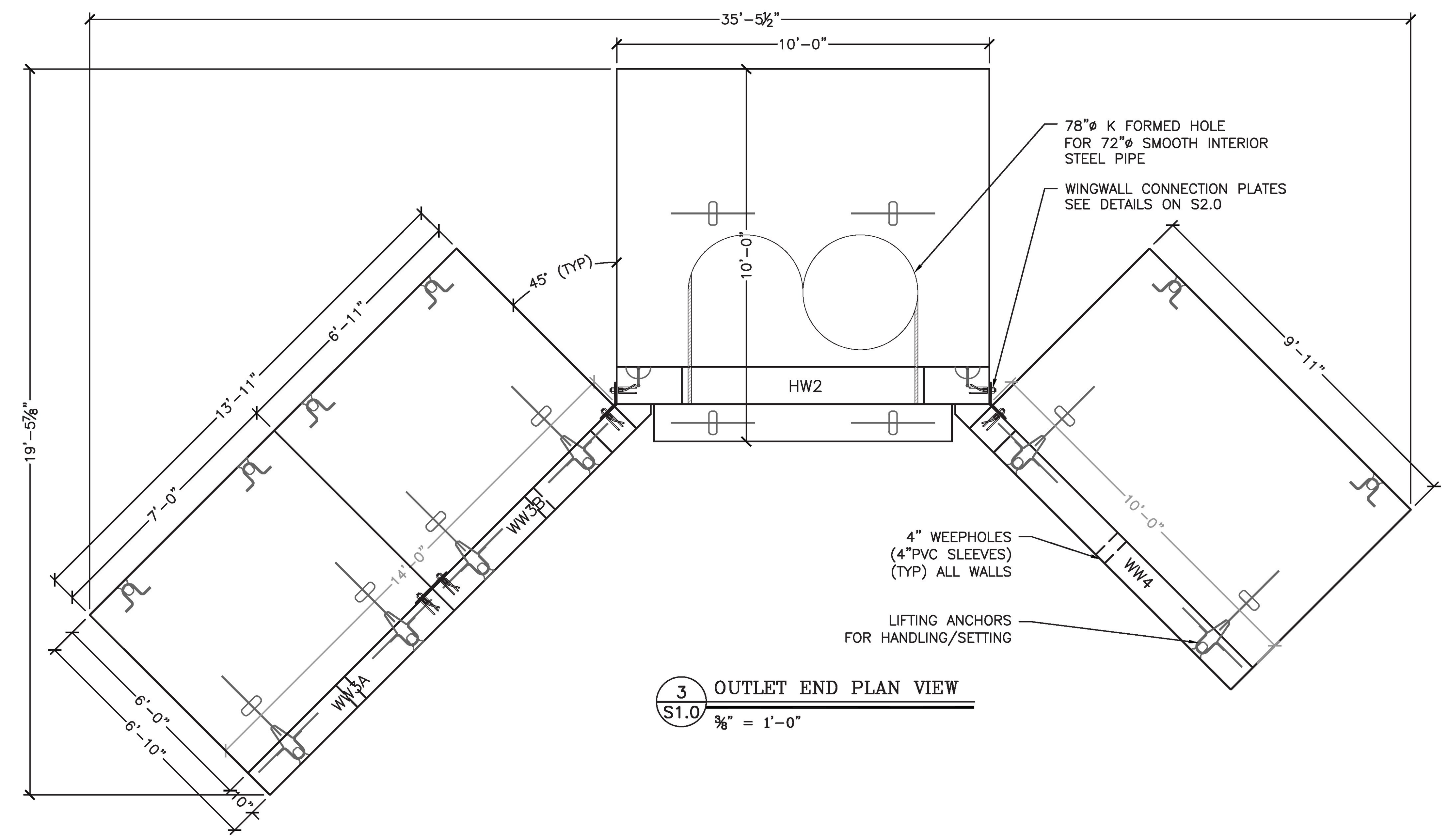
CONCRETE DETAILS AND NOTES

VERMONT AGENCY OF TRANSPORTATION
STRUCTURES - SECTION

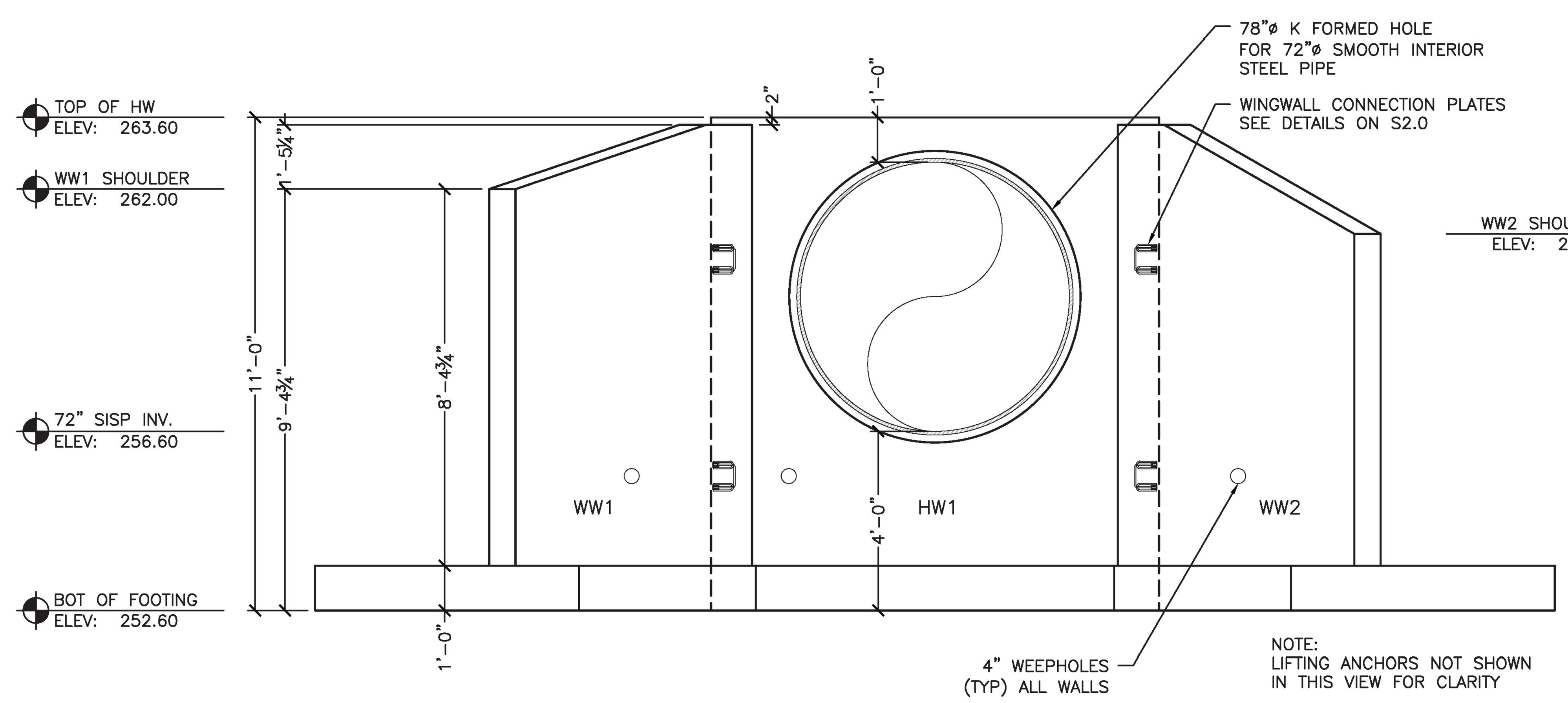
STRUCTURES DETAIL
SD-502.00



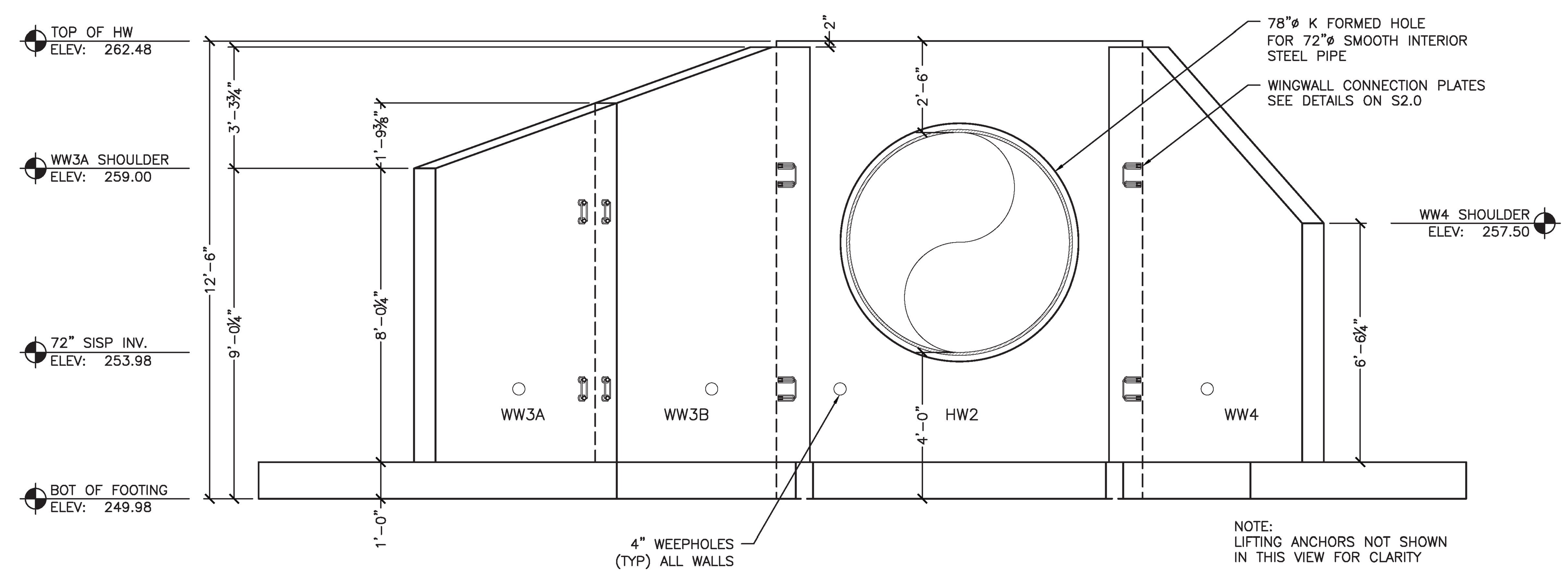
(1/S1.0) INLET END PLAN VIEW
⅜" = 1'-0"



(3/S1.0) OUTLET END PLAN VIEW
⅜" = 1'-0"



(2/S1.0) INLET END ELEV VIEW
⅜" = 1'-0"



(4/S1.0) OUTLET END ELEV VIEW
⅜" = 1'-0"

GENERAL NOTES:

1. THE PLANS ARE INTENDED TO BE DRAWN TO SCALE. HOWEVER, IF A CRITICAL DIMENSION IS NOT PROVIDED, MICHIE CORPORATION SHOULD BE CONTACTED FOR VERIFICATION.

2. 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.

3. 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.

4. MAINTAIN MINIMUM 60 DEGREE SLING ANGLE WHEN HANDLING PRECAST COMPONENTS.

5. 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.

6. SHOP DRAWINGS WERE DEVELOPED USING THE FOLLOWING RESOURCES FOR THE CONTRACT:
- "PROPOSED IMPROVEMENT, TOWN OF HIGHGATE, VT ROUTE 78 (MAJOR COLLECTOR) BRIDGE #10." PREPARED BY THE VAOT, DATED 9/19/2016.

7. 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 MICHIE CORPORATION. FAILURE TO MAKE SUCH ADDITIONAL INFORMATION AVAILABLE SHALL RELIEVE MICHIE CORPORATION OF ALL LIABILITIES ARISING FROM ERRORS OR OMISSIONS RELATED TO THE OMITTED INFORMATION.

8. ALL VOIDS SHALL BE FILLED WITH NON SHRINK GROUT.

HEADWALL NOTES:

1. SECTIONS ARE DESIGNED IN ACCORDANCE WITH
- AASHTO "LRFD BRIDGE DESIGN SPECIFICATIONS", 7TH EDITION
- STANDARD SPECIFICATION AND GENERAL SPECIAL PROVISIONS SECTION 540.

2. THE FOLLOWING SOIL PROPERTIES WERE USED IN THE DESIGN:

	SOIL WEIGHT [PCF]	FRICTION ANGLE [DEG]
• RETAINED SOIL(INLET)	140	34
• FOUNDATION SOIL(INLET)	95	29
• RETAINED SOIL(OUTLET)	140	34
• FOUNDATION SOIL(OUTLET)	135	38

- LIVE LOAD SURCHARGE = SEE DESIGN
- BACKSLOPE ANGLE: SEE DESIGN
- ALLOWABLE BEARING RESISTANCE = SEE GEOTECH REPORT

3. CONCRETE SHALL BE SELF-CONSOLIDATING CONFORMING TO SECTION 540 WITH A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 5,000 PSI. AGGREGATE SHALL CONFORM TO SECTION 540 WITH A MAXIMUM DIAMETER OF 3/4". CEMENT SHALL CONFORM TO ASTM C150. MICHIE MIX 5035CAS.

4. REINFORCING SHALL BE GRADE 60, DEFORMED BLACK BARS, CONFORMING TO ASTM A-615. ALL BARS SHALL BE BENT COLD.

5. ALL EXPOSED EDGES EXCEPT WHERE NOTED SHALL BE CHAMFERED 1".

6. BACKFILL SHALL CONFORM TO VTRANS SECTION 708.04 GRANULAR BACKFILL FOR STRUCTURES. BACKFILL SHALL EXTEND BEYOND THE HORIZONTAL LIMITS OF THE STRUCTURE AS DETAILED IN THE CONTRACT DOCUMENTS. PLACEMENT SHALL CONFORM TO VTRANS SECTION 204.08

PRODUCTION CONTROL PROCEDURES

1. CYLINDER SAMPLING AND CURING:
   A. A MINIMUM OF EIGHT (8) CYLINDERS PER LOT WILL BE MADE IN ACCORDANCE WITH ASTM C31. CYLINDERS WILL BE TESTED IN ACCORDANCE WITH ASTM C39.
   B. UNIT WEIGHT (ASTM CI38), AIR CONTENT (ASTM C231), SPREAD PER SCC GUIDELINES, AND TEMPERATURE TESTS WILL BE TAKEN INITIALLY FOR EACH BATCH. NOT TO EXCEED NINE (9) CUBIC YARDS. THE FREQUENCY OF SOME TESTS MAY BE REDUCED WHEN THE VTRANS REPRESENTATIVE DETERMINES THAT THE PRECASTER IS CONSISTENT IN HIS BATCHING OPERATION. THESE TESTS WILL BE TAKEN PRIOR TO PLACING CONCRETE IN FORM.

NOTE: 1 AIR TEST PER BATCH (OR DELIVERY TRUCK) IS REQUIRED, AND SHALL NOT BE REDUCED

   C. ALL CAST CYLINDERS WILL BE CURED IN THE SAME MANNER AS THE PIECES THEY REPRESENT.

2. CYLINDER BREAKS:
   A. FOR EARLY STRENGTH VERIFICATION, CYLINDERS MAY BE BROKEN AT ANY TIME UP TO 28 DAYS AFTER CASTING. IF THE AVERAGE STRENGTH OF TWO (2) CYLINDERS MEETS OR EXCEEDS THE REQUIRED 28 DAY STRENGTH (WITH EACH CYLINDER HAVING A MINIMUM OF 95% OF THE REQUIRED 28 DAY STRENGTH), THE LOT SHALL BE ACCEPTED FOR STRENGTH.

3. QUALITY CONTROL TEST AND EQUIPMENT:

CYLINDER TESTER:	FORNEY 500 SERIES WITH DR-2 DIGITAL READOUT CALIBRATED BIANNUALLY
AIR METER:	PRESSURE METER BY FORNEY (CALIBRATED MONTHLY)
SLUMP CONE:	STANDARD 8" BASE, 4" AT RIM, 12" IN HEIGHT MEASURED IN ACCORDANCE WITH SCC GUIDELINES
SCALES FOR UNIT WEIGHT:	MEASURED IN ACCORDANCE WITH ASTM C143 100 LBS. CAPACITY CALIBRATED ANNUALLY TO THE NEAREST 1/10TH POUND
CYLINDER MOLDS:	4" DIAMETER X 8" PLASTIC

4. CONCRETE TESTING AND AIR METER CALIBRATION WILL BE DONE BY PLANT PERSONNEL (ACI GRADE I CERTIFIED) ALL TESTING PRODUCERS WILL BE OBSERVED BY VERMONT INSPECTORS OR AUTHORIZED REPRESENTATIVES.

CURING

1. THIS SECTION APPLIES TO ALL PRECAST PIECES CAST IN EACH RESPECTIVE LOT. ALL CURING PROCEDURES SHALL ADHERE TO THE REQUIREMENTS OF SECTION 540.08 OF THE VT STANDARD SPECIFICATIONS FOR CONSTRUCTION 2011 EDITION.
2. AS SOON AS PRACTICAL AFTER PLACEMENT OF FRESH CONCRETE THE CASTING FORMS SHALL BE COVERED WITH POLYETHYLENE SHEETING UNTIL STRIPPING STRENGTH HAS BEEN ACHIEVED.
3. ONCE STRIPPING STRENGTH HAS BEEN ACHIEVED THE PRECAST PRODUCT SHALL BE REMOVED FROM THE FORM AND PLACED IN A DESIGNATED CURING AREA (INTERIOR OR EXTERIOR DEPENDING ON WEATHER CONDITIONS)
4. AT THE DESIGNATED CURING AREA THE PRECAST SHALL BE CURED USING ONE OF THE APPROVED METHODS IN SECTION 501.17 UNTIL DESIGN STRENGTH HAS BEEN ACHIEVED.
   -FOR VAOT PROJECT# STP SCRP (12) – HIGHGATE, VT ROUTE 78 – BRIDGE #10, THE FOLLOWING METHOD WILL BE UTILIZED; 501.17 (4) – WHITE POLYETHYLENE SHEETING METHOD.
5. THE TEMPERATURE MONITORING METHOD WILL BE DETERMINED DURING THE PRE-CONSTRUCTION MEETING WITH THE CONTRACTOR AND VAOT PERSONNEL.
5. AS SOON AS THE DESIGN STRENGTH HAS BEEN ACHIEVED THE PRODUCT WILL BE REMOVED FROM THE CURING AREA AND TRANSPORTED TO THE STAGING AREA WHERE IT WILL BE STORED UNTIL SHIPPING.

FINISH

1. ALL PRECAST COMPONENTS WILL HAVE A STEEL FORM FINISH ON THE VISIBLE FACES. THE BURIED SIDE OF THE WINGWALLS AND CURBWALLS WILL BE THE POUR FACE AND WILL HAVE A STEEL TROWEL FINISH. THE BRIDGE SECTIONS WILL HAVE A STEEL FORM FINISH ON ALL FACES EXCEPT THE TOP OF THE DECK, THIS WILL HAVE A STEEL TROWEL FINISH.
2. ANY AND ALL REPAIR PROCEDURES WILL ADHERE TO NPCA BEST PRACTICES, AND WILL BE GENERATED SPECIFICALLY FOR THE APPLICATION AT THE TIME OF NEED.

HANDLING/STORAGE

1. ONCE STRIPPING STRENGTH HAS BEEN ACHIEVED, ALL PRECAST COMPONENTS WILL BE REMOVED FROM THE FORMS USING OVERHEAD CRANES. THE PIECES WILL THEN BE PLACED ON FLATBED TRAILERS AND TRANSPORTED TO THE CURING AREA, OR STORAGE YARD WHERE THEY WILL EITHER BE PLACED ON DUNNAGE (WINGWALLS) OR DIRECTLY ON THE GROUND (CULVERT). ONCE THE CURING PROCESS HAS REACHED DESIGN STRENGTH, THE PRECAST WILL BE HANDLED USING THE INDICATED LIFTERS/ANCHORS AND APPROPRIATE RIGGING, IN PREPARATION FOR SHIPPING ON FLAT BED TRAILERS. PLACEMENT OF THE DUNNAGE WILL GENERALLY FOLLOW THE ¼ RULE OR BE PLACED UNDER THE LIFTERS, HOWEVER FINAL DECISIONS REGARDING PLACEMENT WILL BE THAT OF THE MANUFACTURER/DESIGNER.

BILL OF MATERIALS

QTY	DESCRIPTION	IN STOCK	ORDERED FROM	DATE ORDERED	DATE DELIVERED
	ITEMS CAST-IN				
7LF	4"DIA PVC PIPE FOR WEEP HOLES				
60	5 TON UTILITY ANCHORS				
20	1-8NC 6X6 DWA				
	ITEMS FOR PRESHIPPING/PREP.				
	ITEMS TO SHIP TO THE JOB				
8	(10"X14"X1/2" GALV. STEEL WW PLATE (135 DEG)				
2	(10"X14"X1/2" GALV. STEEL WW PLATE (180 DEG)				
40	1"DIA X 5" NC THREAD ROD W/ NUT				
40	4"X4"X1/4" PLATE WASHER				

SHEET LIST

VT Route 78 - VAOT # STP SCRP (12)
Highgate, VT
Special Headwalls - 72"Ø SI Steel Pipe

Project No. 7910 | Date: 3/7/2017 | Designed by: Delta | Drawn by: CFP | Checked by: Delta | Scale: AS SHOWN

MICHIE CORPORATION
173 BUXTON INDUSTRIAL DRIVE - PO BOX 870
HENNIKER, NH 03242
PHONE: 603-428-3218
FAX: 603-428-7426
WWW.MICHIECORP.COM

STATE OF VERMONT – D. BURNS – No. 9031 – Structural I – LICENSED PROFESSIONAL ENGINEER – 5/2/17

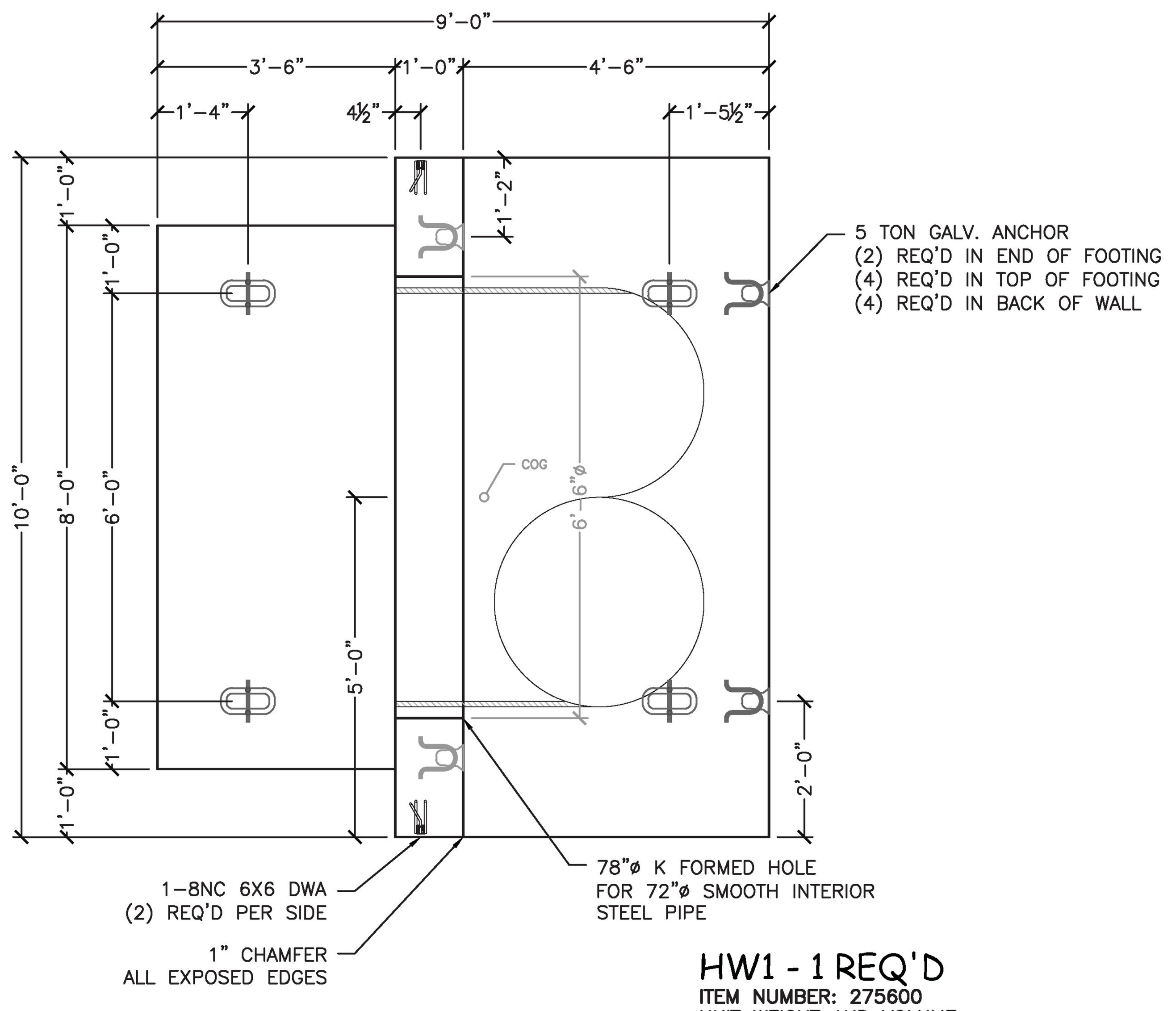
No.	Date	Revision	By
△	XX/XX/XXXX	XX	XXX

Prepared for:
Casella Construction, Inc.
25 Industrial Ave.
Mendon, VT 05701

DWG NO.
S1.0

Delta Job# 2017.059.003 Chk: RJA

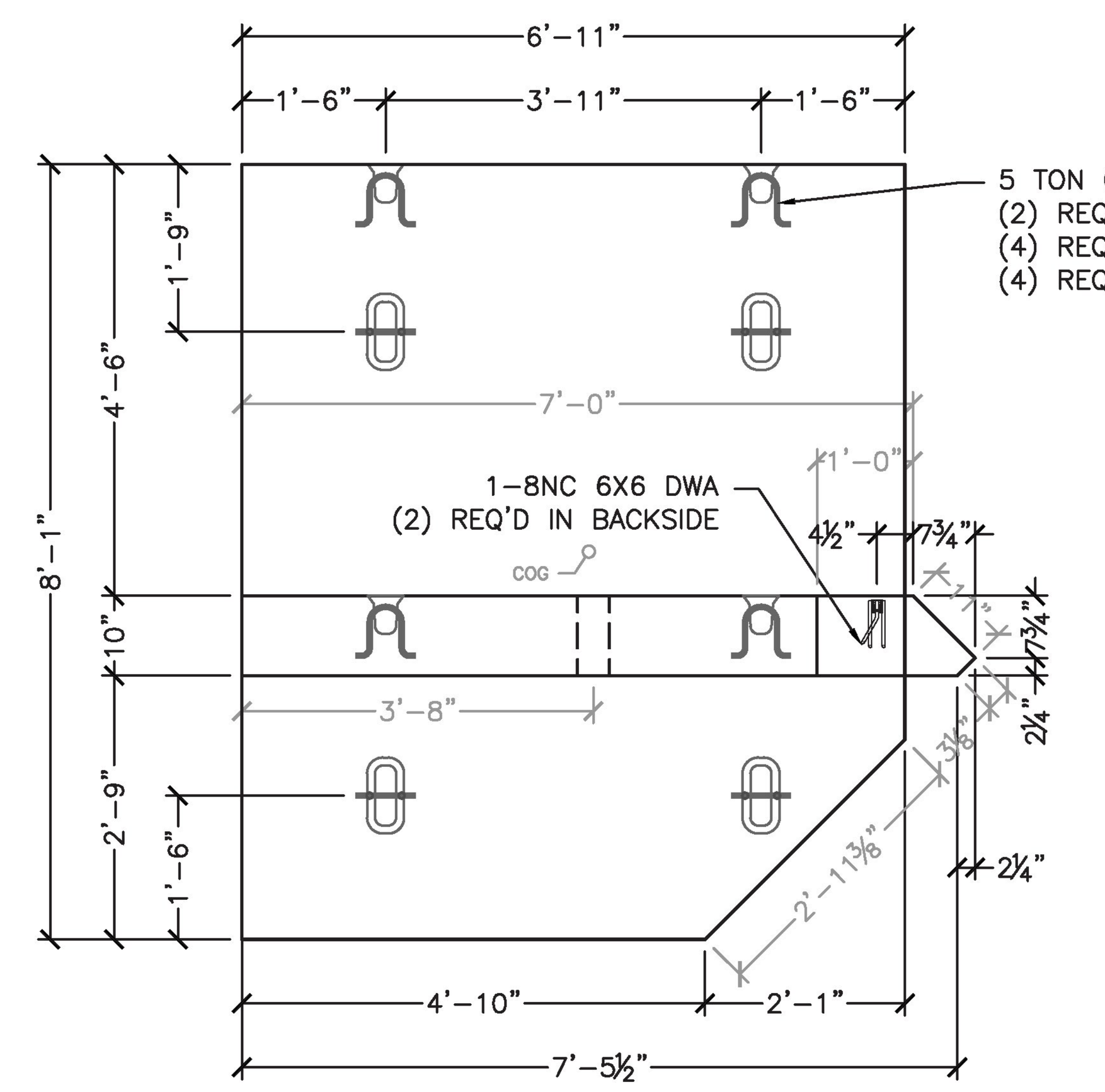
S:\PROJECTS\CASELLA CONSTRUCTION\HIGHGATE, VT – VT RT 78\DWGS\HW 72IN PC7 CASELLA 7910.DWG 5/1/2017 11:03 AM



1 S2.0 HW1 PLAN VIEW
½" = 1'-0"

HW1 - 1 REQ'D

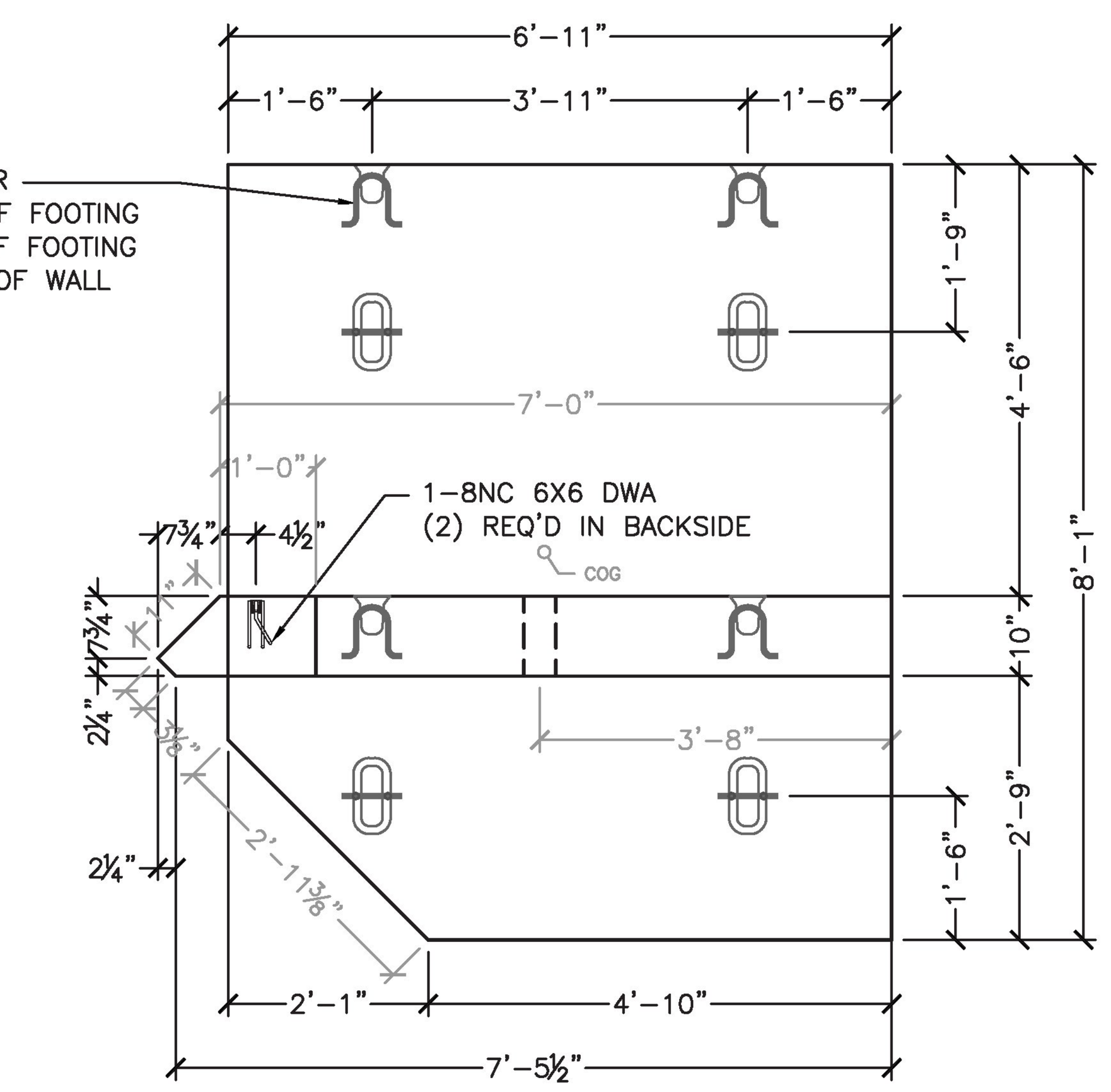
ITEM NUMBER: 275600
UNIT WEIGHT AND VOLUME:
FOOTING: 3.08CY (12,940#)
WALL: 2.47CY (10,370#)
TOTAL WEIGHT: 23,310#



4 S2.0 WW1 PLAN VIEW
½" = 1'-0"

WW1 - 1 REQ'D

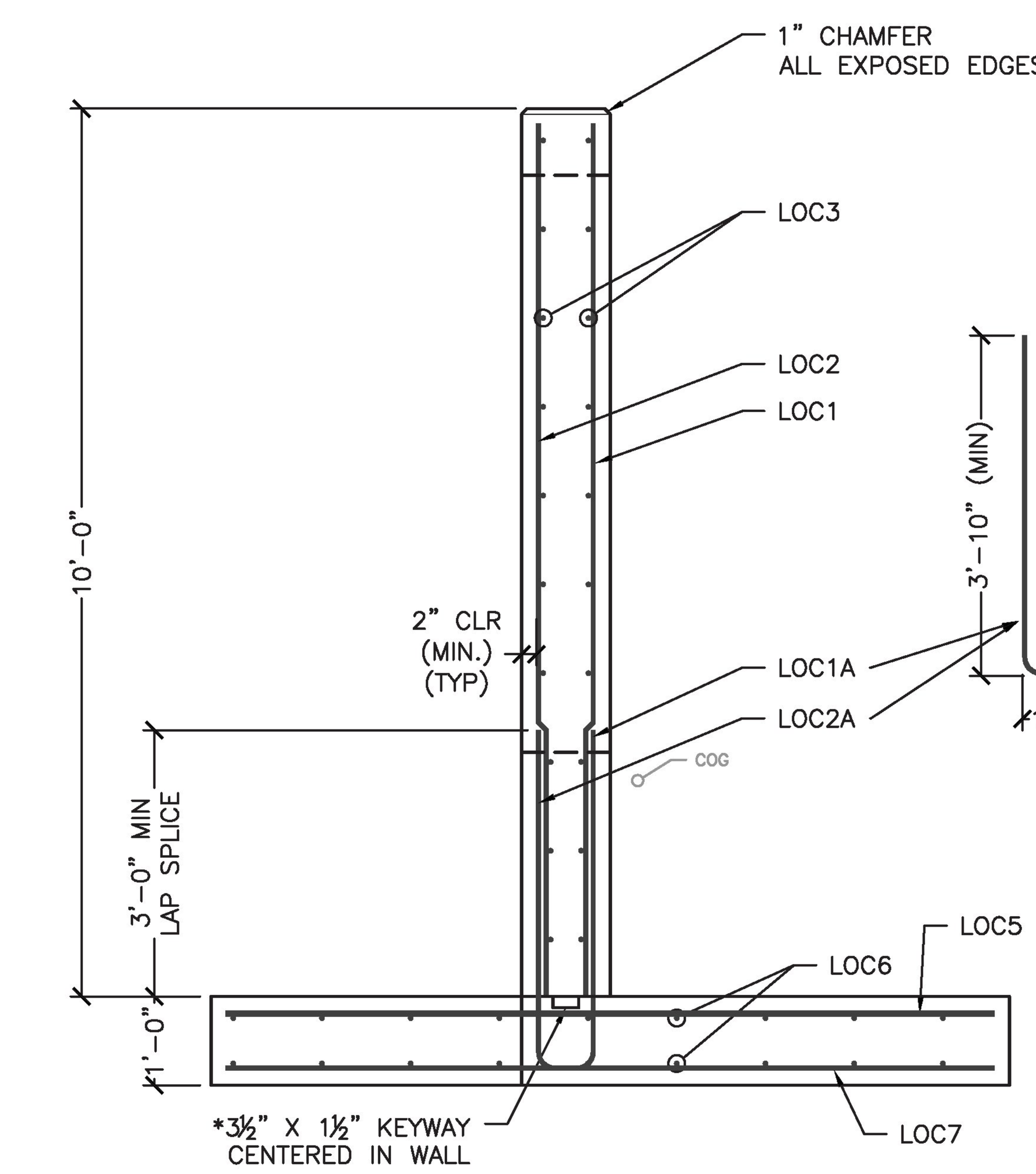
ITEM NUMBER: 275600
UNIT WEIGHT AND VOLUME:
FOOTING: 2.00CY (8,400#)
WALL: 2.09CY (8,820#)
TOTAL WEIGHT: 17,220#



6 S2.0 WW2 PLAN VIEW
½" = 1'-0"

WW2 - 1 REQ'D

ITEM NUMBER: 275600
UNIT WEIGHT AND VOLUME:
FOOTING: 2.00CY (8,400#)
WALL: 2.09CY (8,820#)
TOTAL WEIGHT: 17,220#

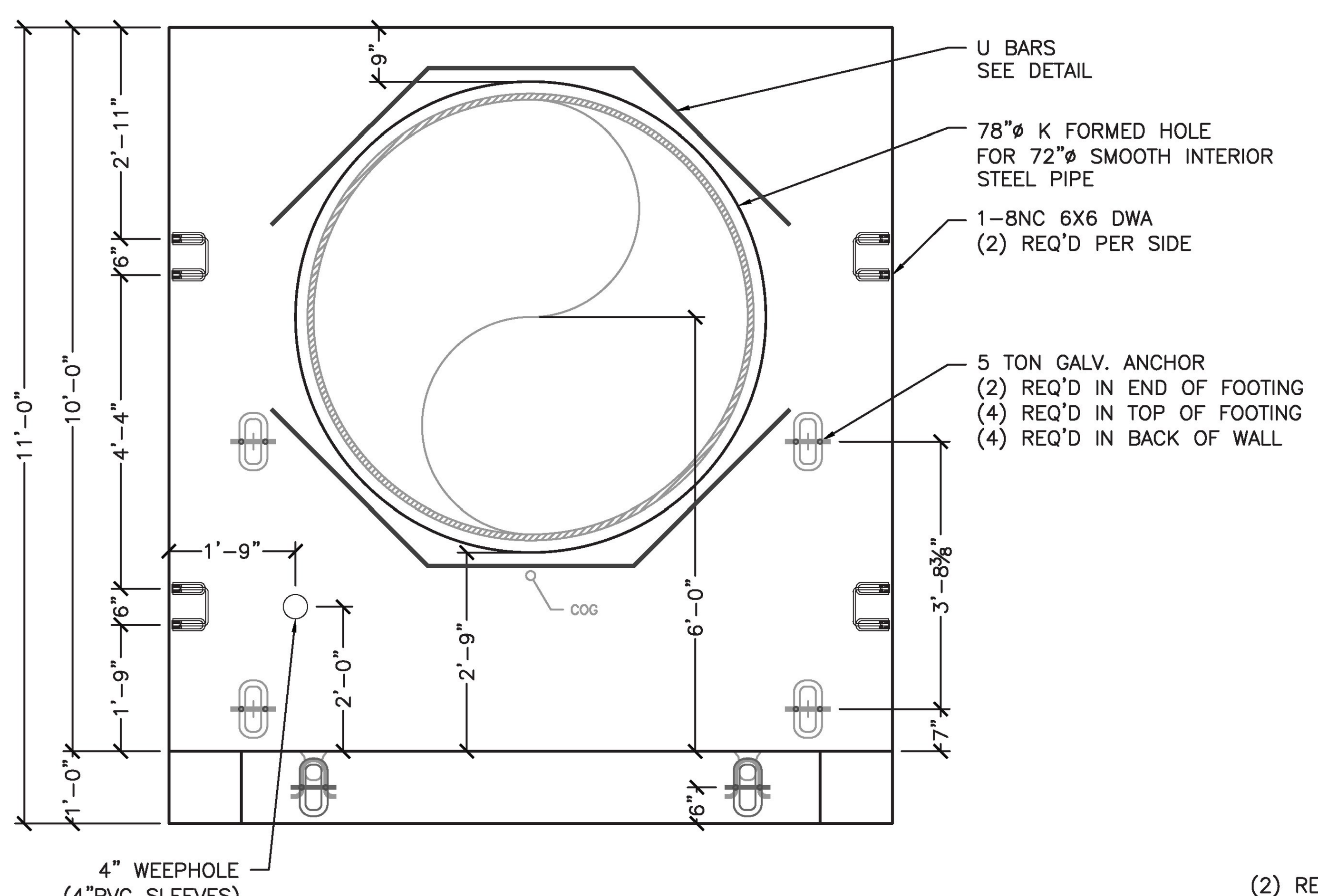


* TERMINATE SHEAR KEY
4" SHORT OF ENDS

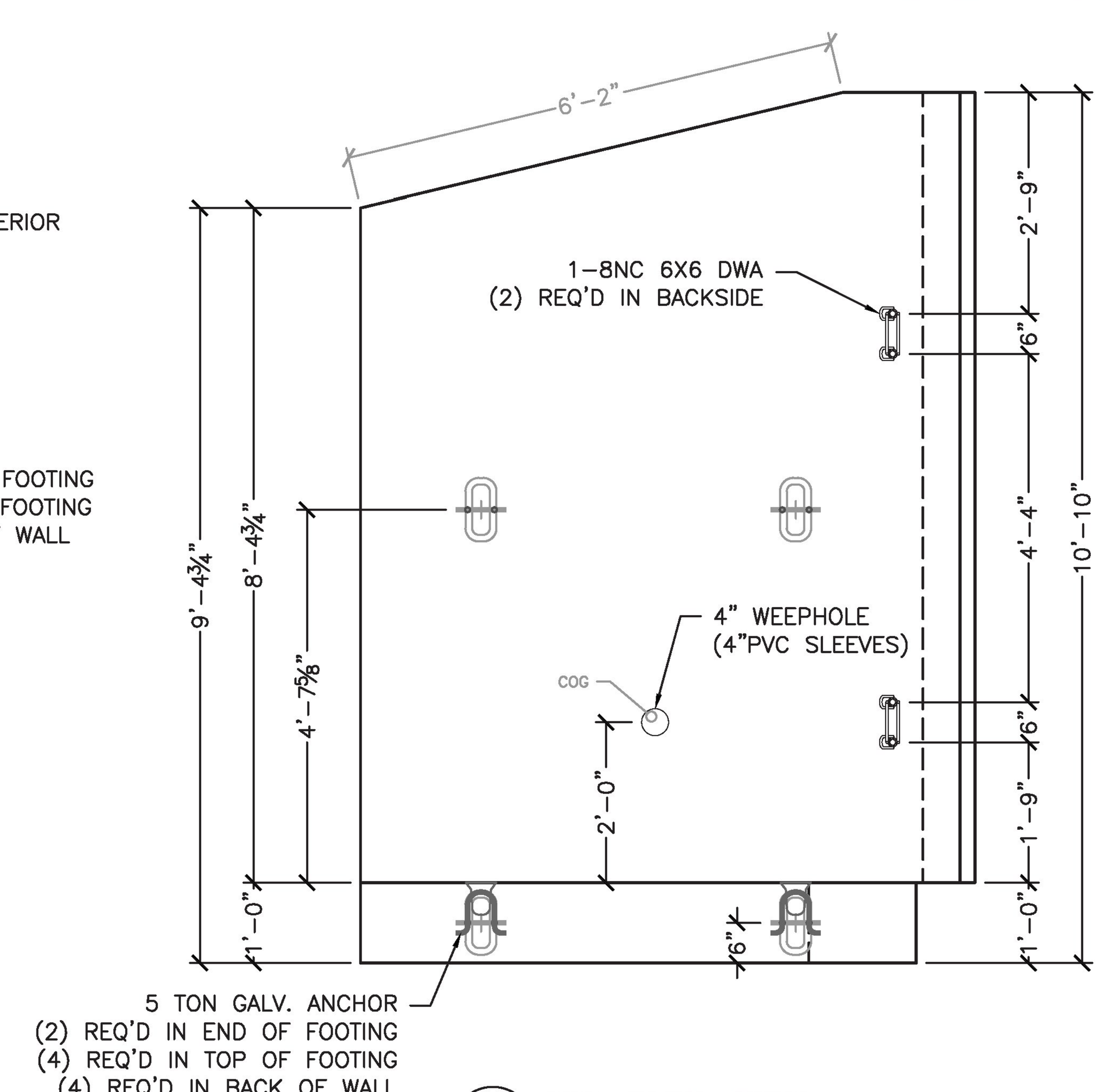
3 S2.0 HW1 REINFORCING SECTION
½" = 1'-0"

HW REINFORCING SCHEDULE					
MARK	TYPE	SIZE	SPACING	QTY	LENGTH
LOC1	STR	** #6	8"	15	9'-10"
LOC1A	L BAR	#6	8"	15	4'-9"
LOC2	STR	** #4	12"	10	9'-10"
LOC2A	L BAR	#4	12"	10	4'-9"
LOC3	STR	#4	12"	20	8'-8"
LOC5	STR	#6	10"	12	8'-8"
LOC6	STR	#4	12"	20	8'-8"
LOC7	STR	#4	10"	12	8'-8"

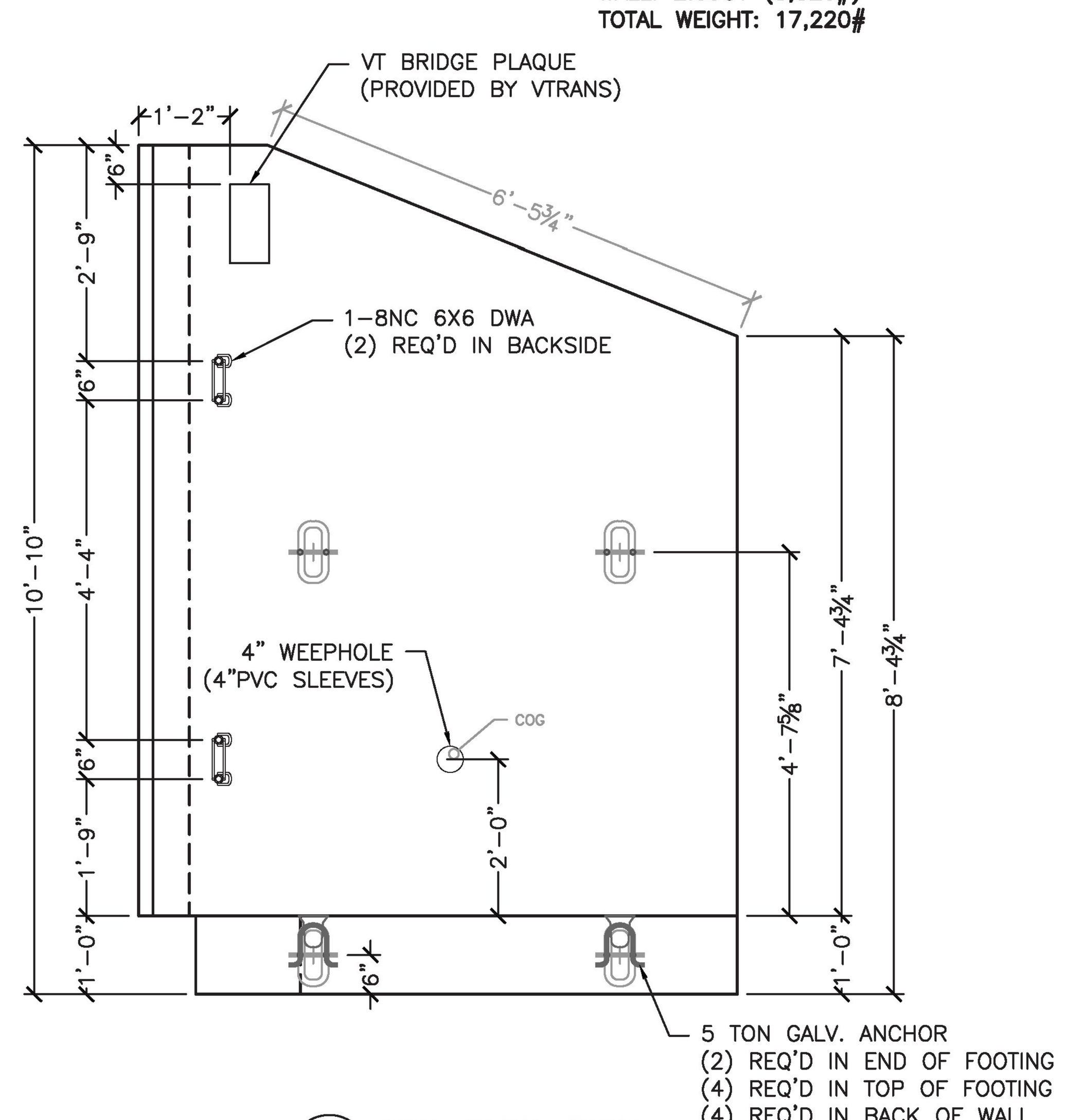
** TWO EXTRA BARS WILL BE NEEDED. EACH SIZE FOR SAMPLING.



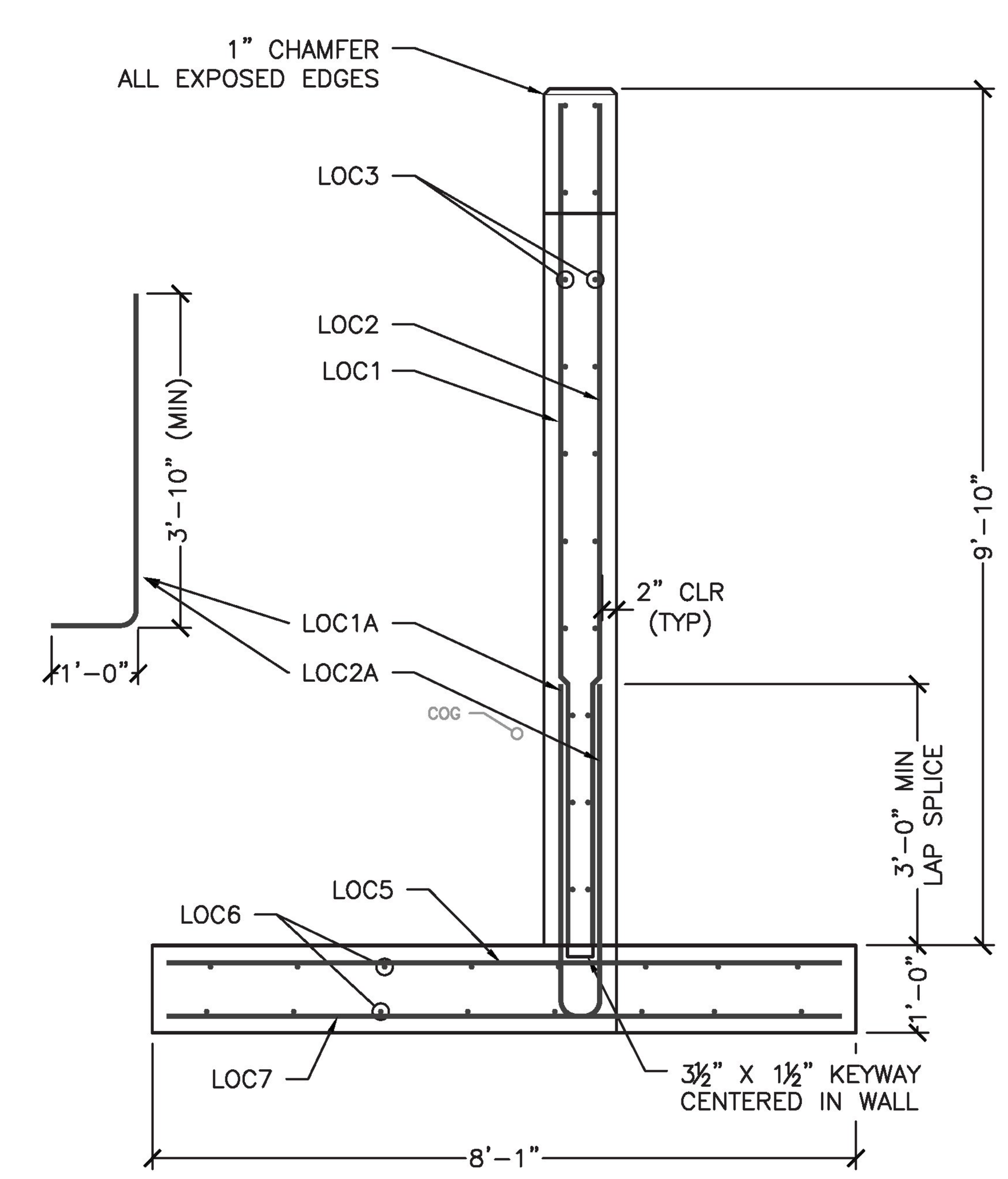
2 S2.0 HW1 ELEV. VIEW
½" = 1'-0"(Looking @ Front)



5 S2.0 WW1 ELEV. VIEW
½" = 1'-0"(Looking @ Front)

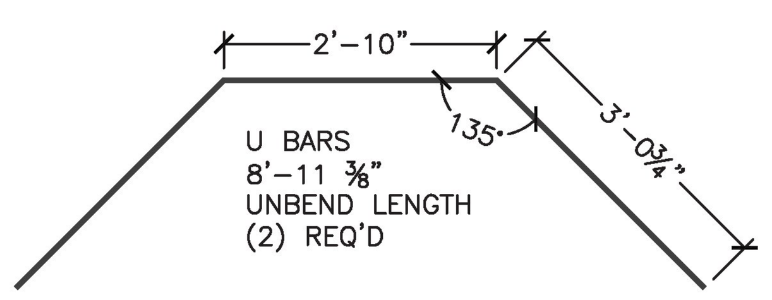


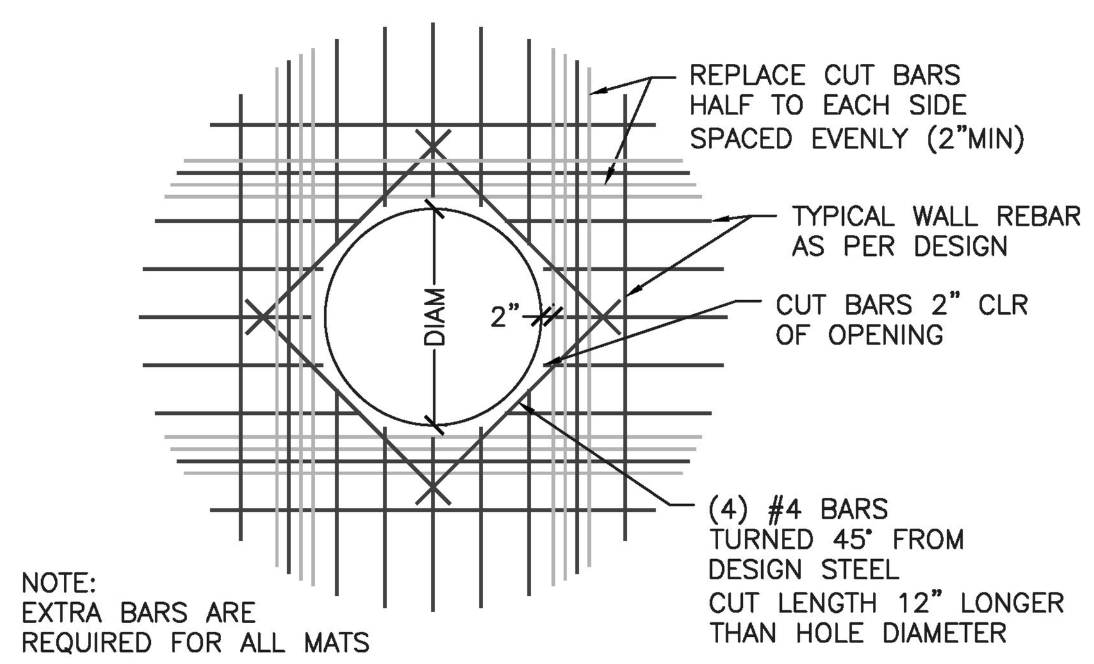
7 S2.0 WW2 ELEV. VIEW
½" = 1'-0"(Looking @ Front)



8 S2.0 WW REINFORCING SECTION
½" = 1'-0"

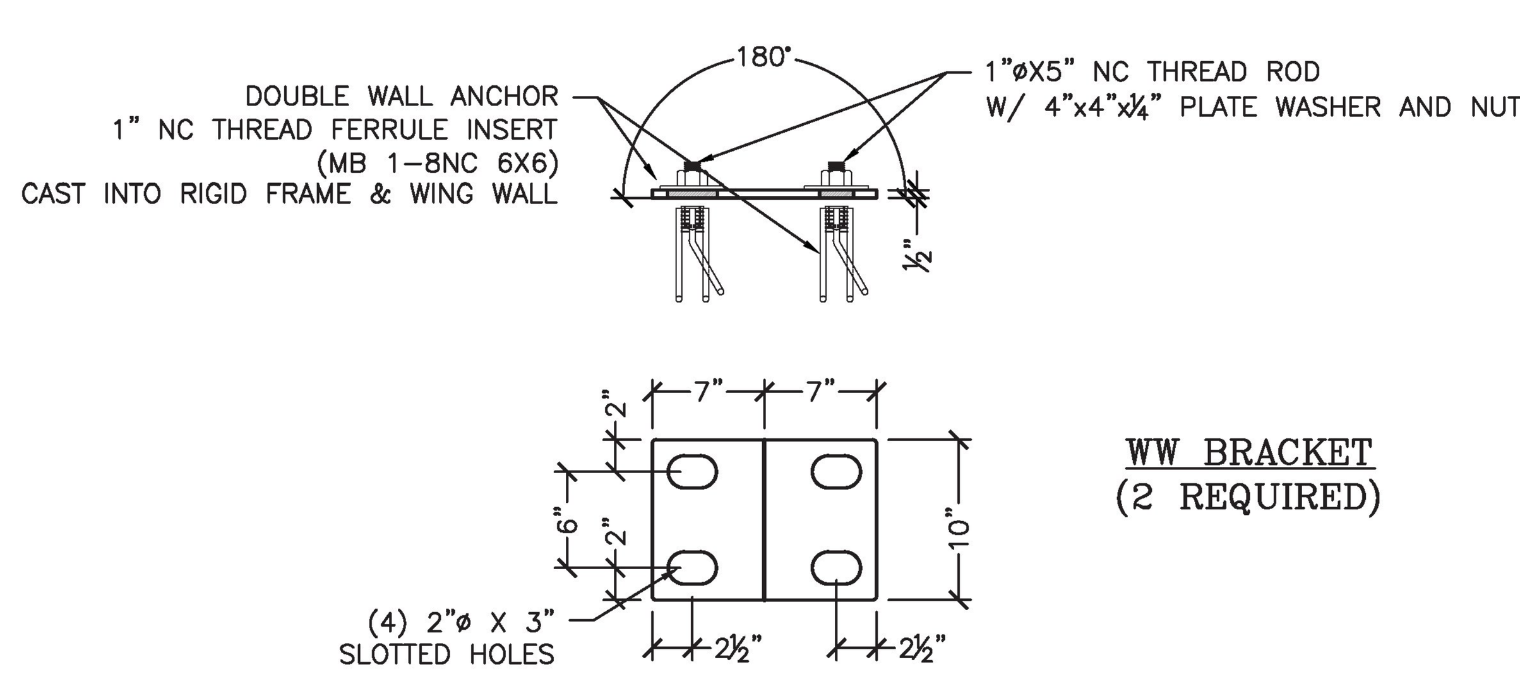
WW REINFORCING SCHEDULE					
MARK	TYPE	SIZE	SPACING	QTY	LENGTH
LOC1	STR	#5	8"	11	9'-8"
LOC1A	L BAR	#5	8"	11	4'-9"
LOC2	STR	#4	12"	7	9'-8"
LOC2A	L BAR	#4	12"	7	4'-9"
LOC3	STR	#4	12"	20	7'-4" OF / 6'-10" IF
LOC5	STR	#5	8"	10	7'-9"
LOC6	STR	#4	12"	16	6'-7"
LOC7	STR	#4	12"	7	7'-9"





NOTE:
EXTRA BARS ARE
REQUIRED FOR ALL MATS

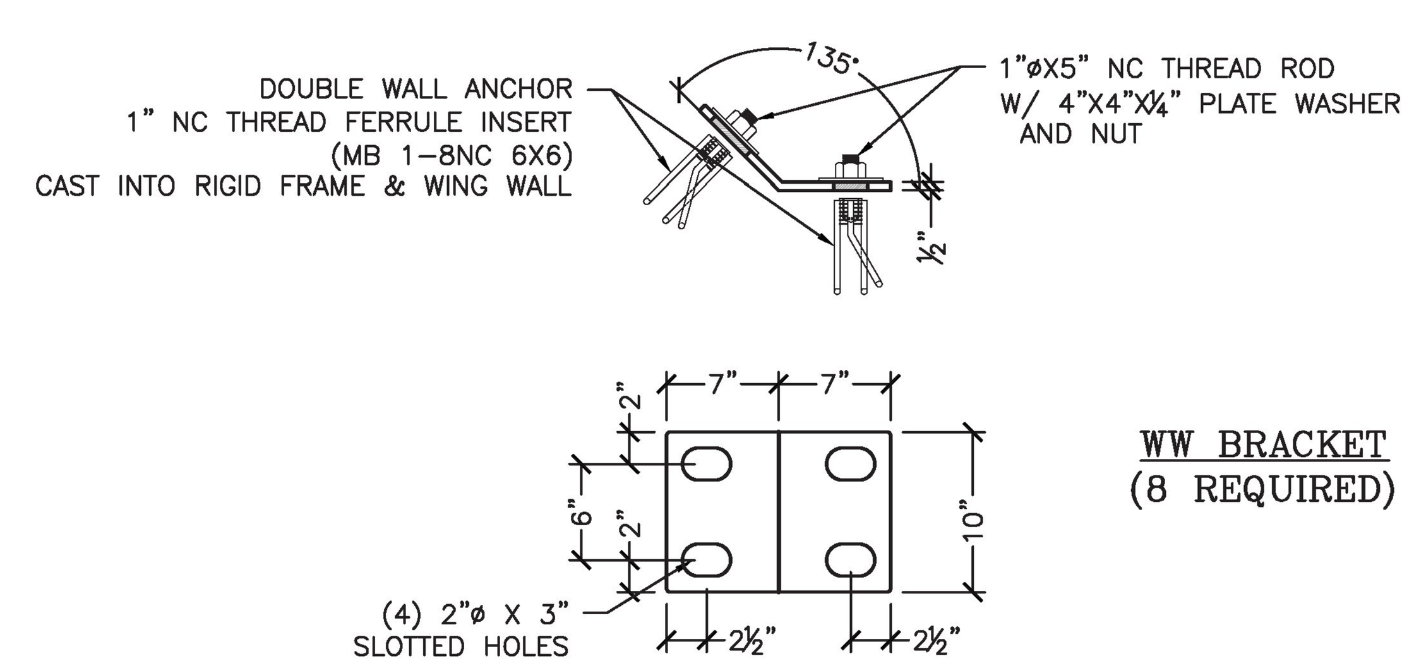
9 S2.0 TYPICAL REINFORCEMENT AT HOLE
⅜" = 1'-0"



WW BRACKET
(2 REQUIRED)

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

10 S2.0 WINGWALL BRACKET DETAIL
1" = 1'-0"



WW BRACKET
(8 REQUIRED)

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

11 S2.0 WINGWALL BRACKET DETAIL
1" = 1'-0"

No.	Date	Revision	By
	XX-XX-XXXX	XX	XXX

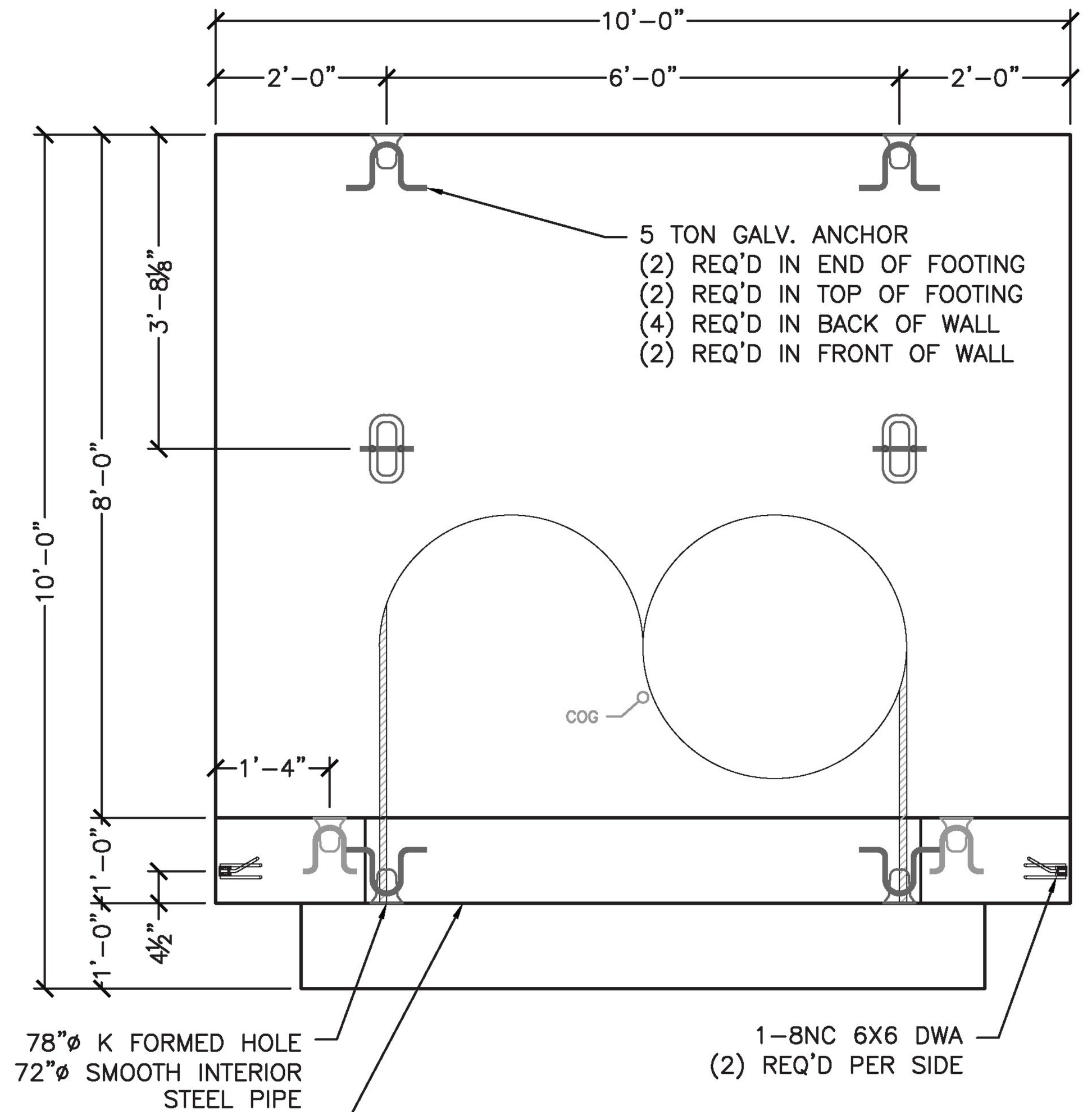
MICHIE CORPORATION
173 BUXTON INDUSTRIAL DRIVE - PO BOX 870
HENNIKER, NH 03242
PHONE 603-428-3218
FAX 603-428-7426
WWW.MICHIECORP.COM

VT Route 78 - VAOT # STP SCRP (12)
Highgate, VT
Inlet End Headwall Details

Scale: AS SHOWN
Checked by: Delta
Drawn by: CFP
Designed by: Delta
Project No. 7910
Date: 3/7/2017

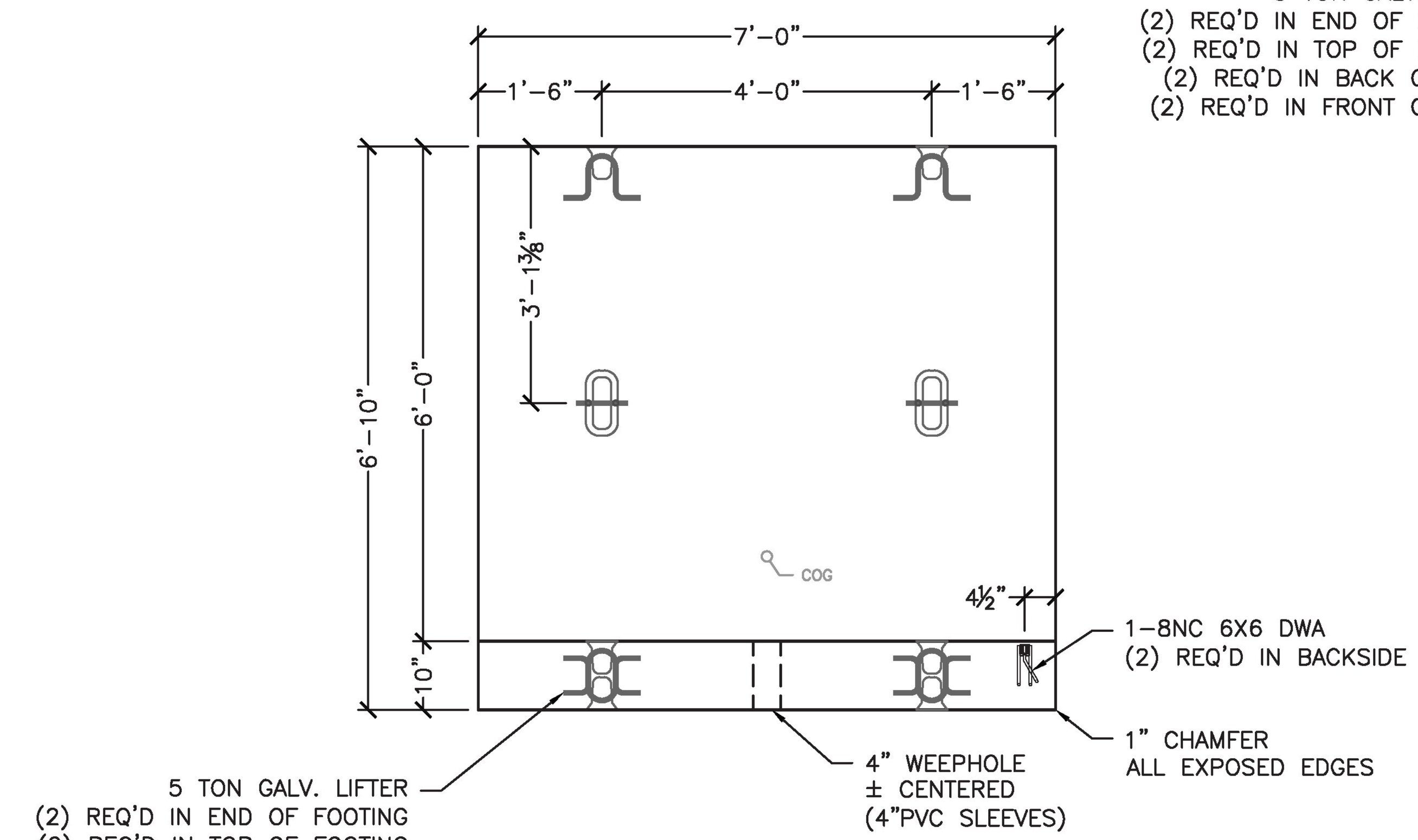
Prepared for:
Casella Construction, Inc.
25 Industrial Ave.
Mendon, VT 05701

DWG NO.
S2.0



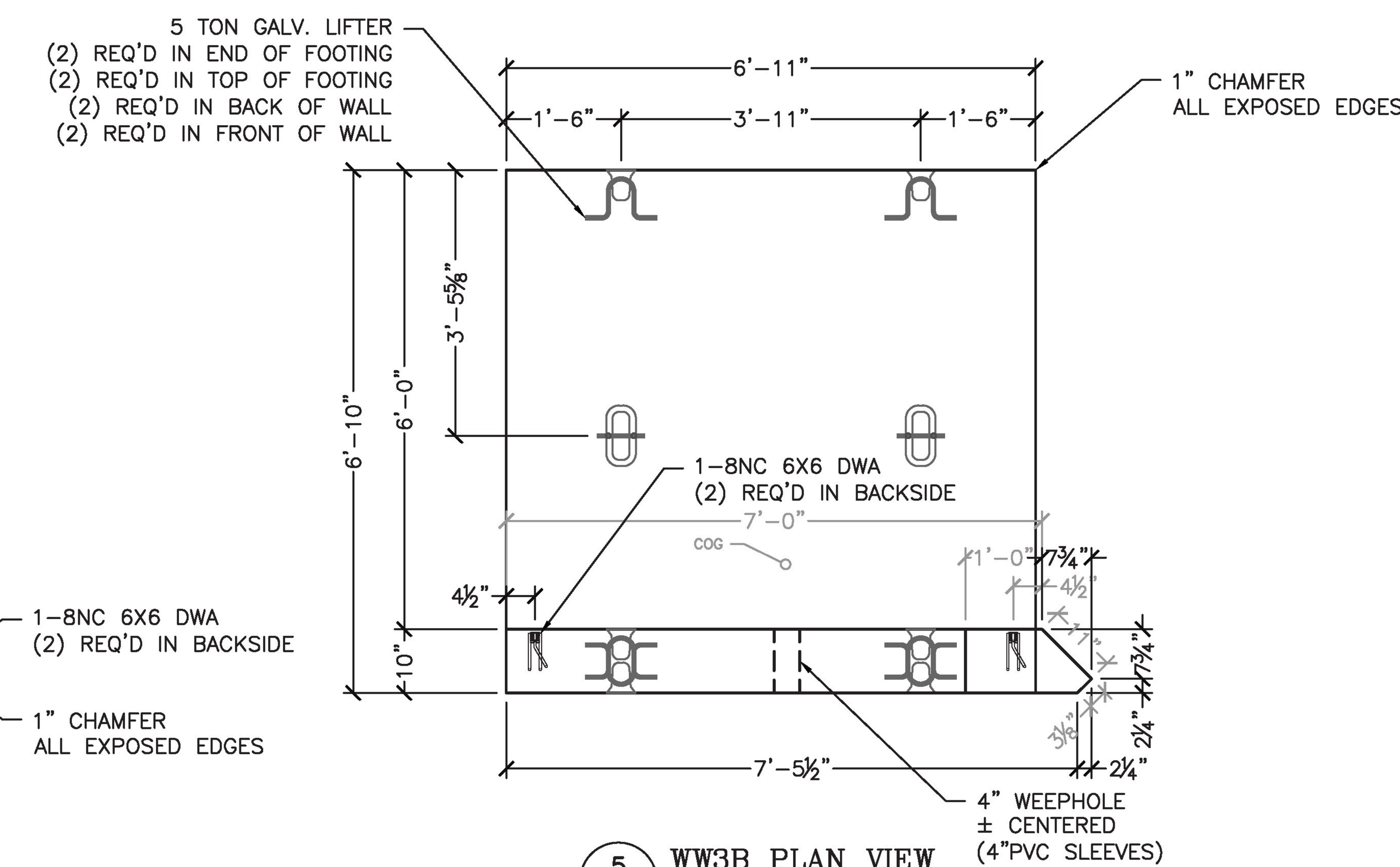
1 HW2 PLAN VIEW
S3.0
½" = 1'-0"

HW2 - 1 REQ'D
ITEM NUMBER: 275600
UNIT WEIGHT AND VOLUME:
FOOTING: 3.63CY (15,245#)
WALL: 3.03CY (12,730#)
TOTAL WEIGHT: 27,975#



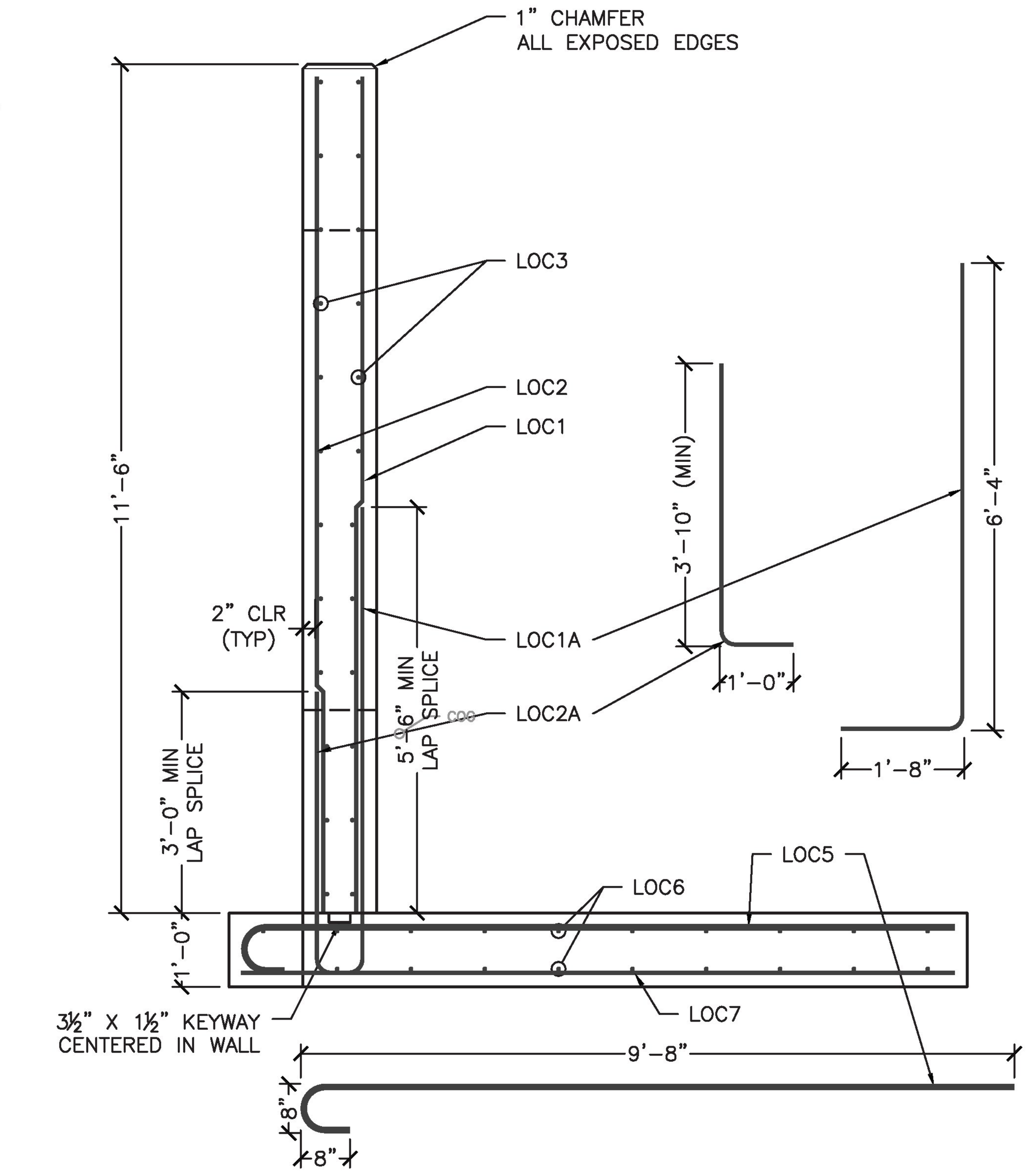
3 WW3A PLAN VIEW
S3.0
½" = 1'-0"

WW3A - 1 REQ'D
ITEM NUMBER: 275600
UNIT WEIGHT AND VOLUME:
FOOTING: 1.77CY (7,440#)
WALL: 1.93CY (8,100#)
TOTAL WEIGHT: 15,540#



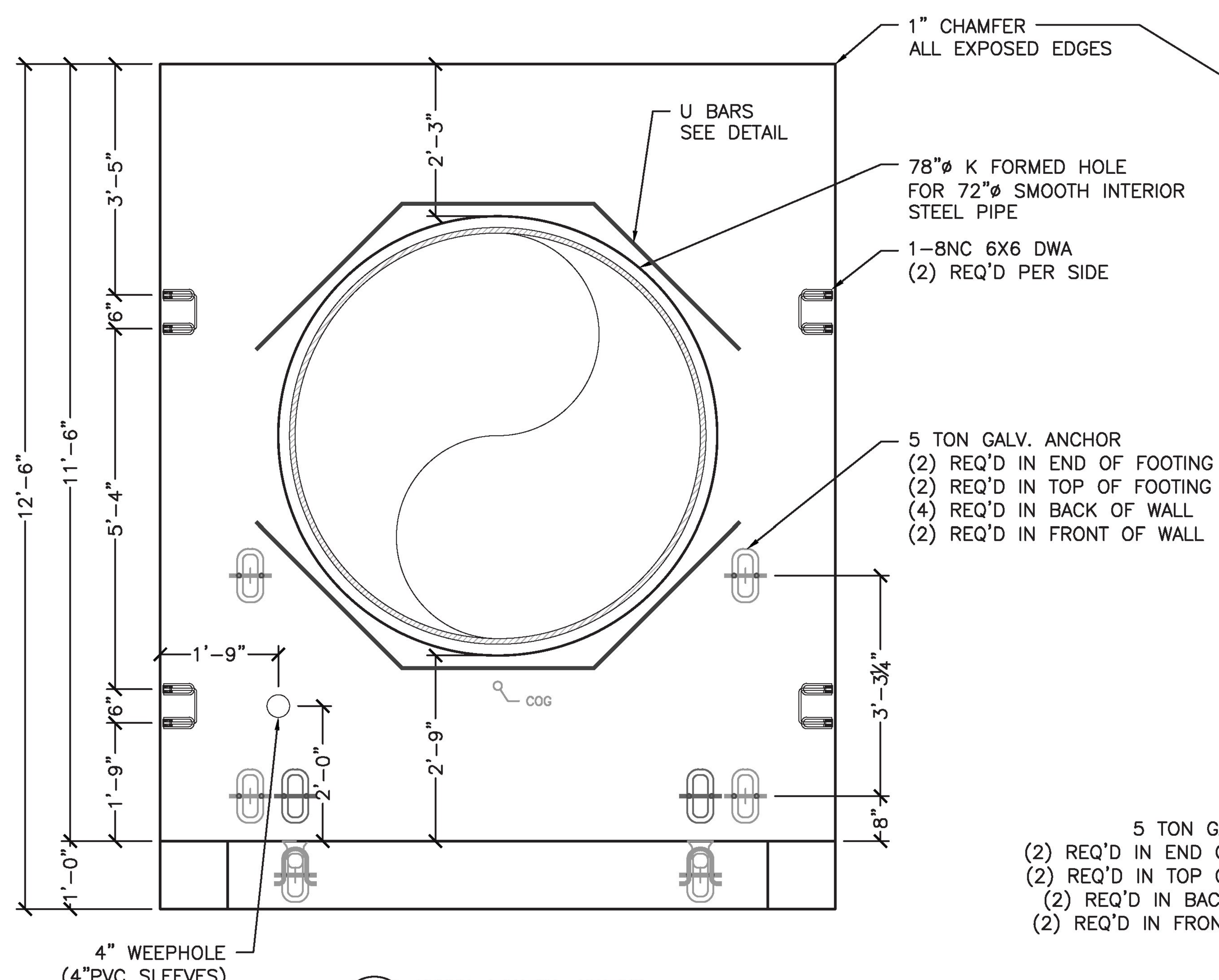
5 WW3B PLAN VIEW
S3.0
½" = 1'-0"

WW3B - 1 REQ'D
ITEM NUMBER: 275600
UNIT WEIGHT AND VOLUME:
FOOTING: 1.75CY (7,350#)
WALL: 2.42CY (10,164#)
TOTAL WEIGHT: 17,514#

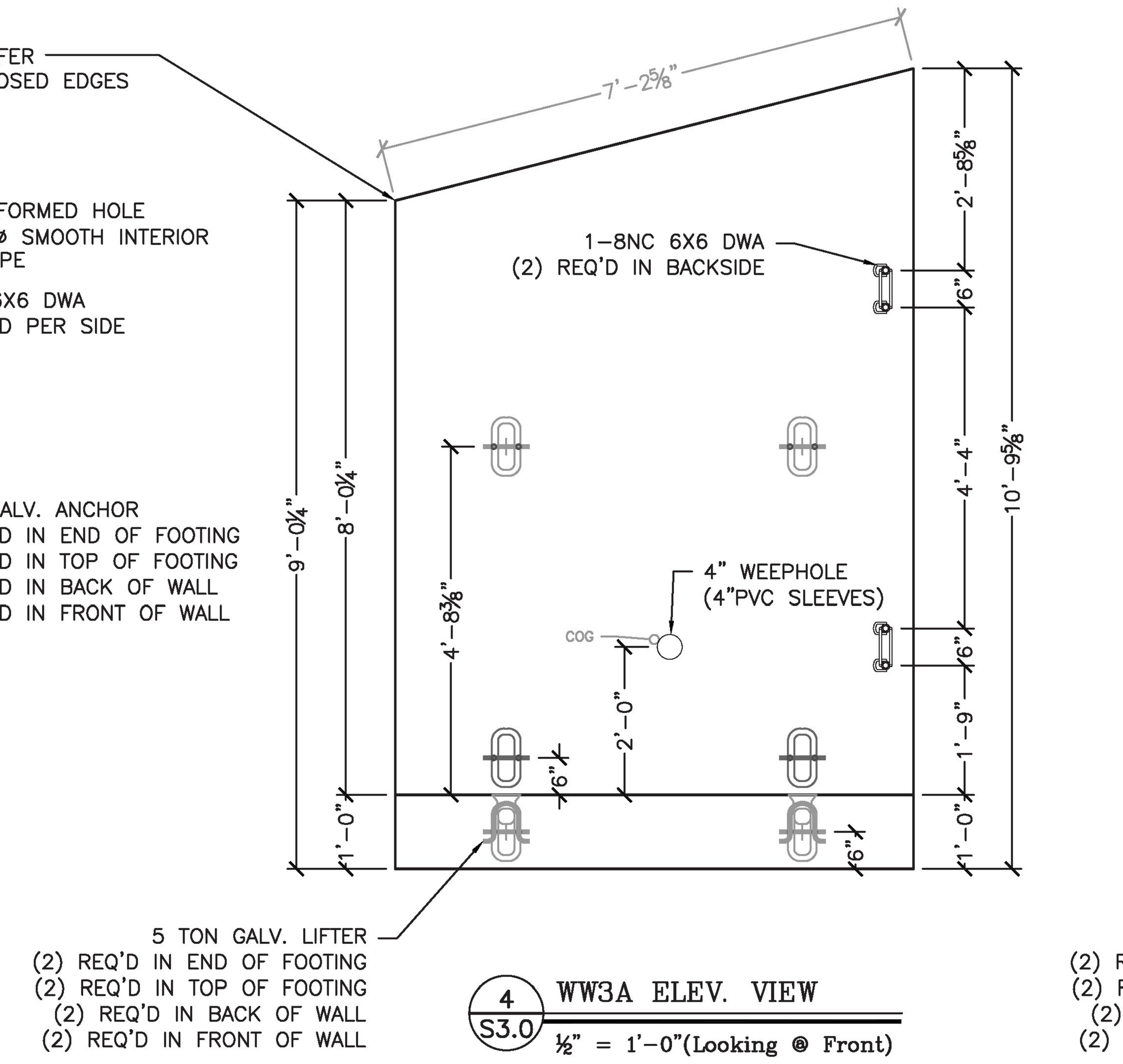


9 HW1 REINFORCING SECTION
S3.0
½" = 1'-0"

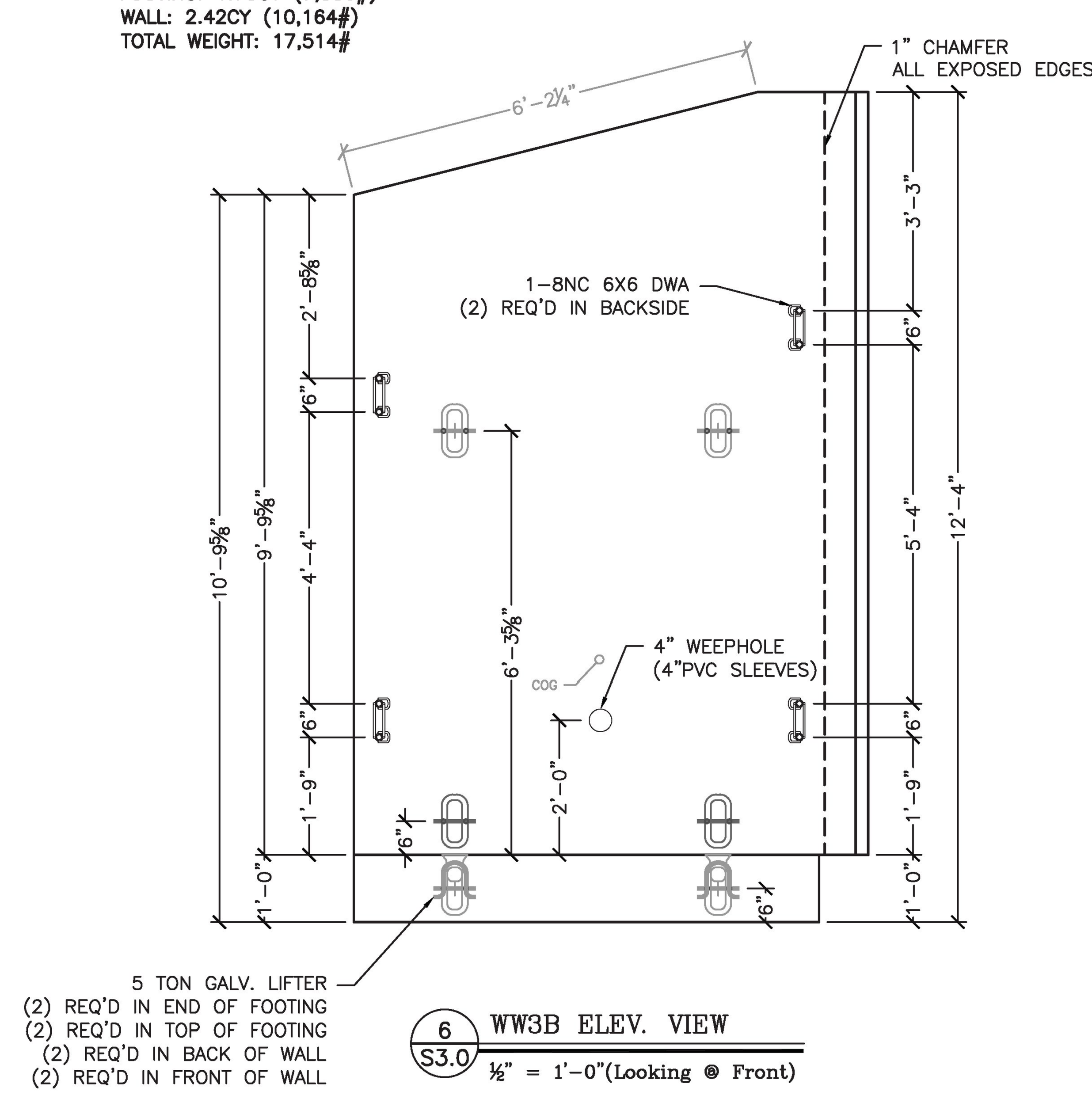
HW REINFORCING SCHEDULE					
MARK	TYPE	SIZE	SPACING	QTY	LENGTH
LOC1	STR	#8	6"	20	11'-4"
LOC1A	L BAR	#8	6"	20	7'-10 1/2"
LOC2	STR	#4	12"	10	11'-4"
LOC2A	L BAR	#4	12"	10	4'-9"
LOC3	STR	#4	12"	24	9'-8"
LOC5	HOOK	#8	5"	20	10'-7"
LOC6	STR	#4	12"	20	9'-8"
LOC7	STR	#4	12"	10	9'-8"



2 HW2 ELEV. VIEW
S3.0
½" = 1'-0"(Looking @ Front)



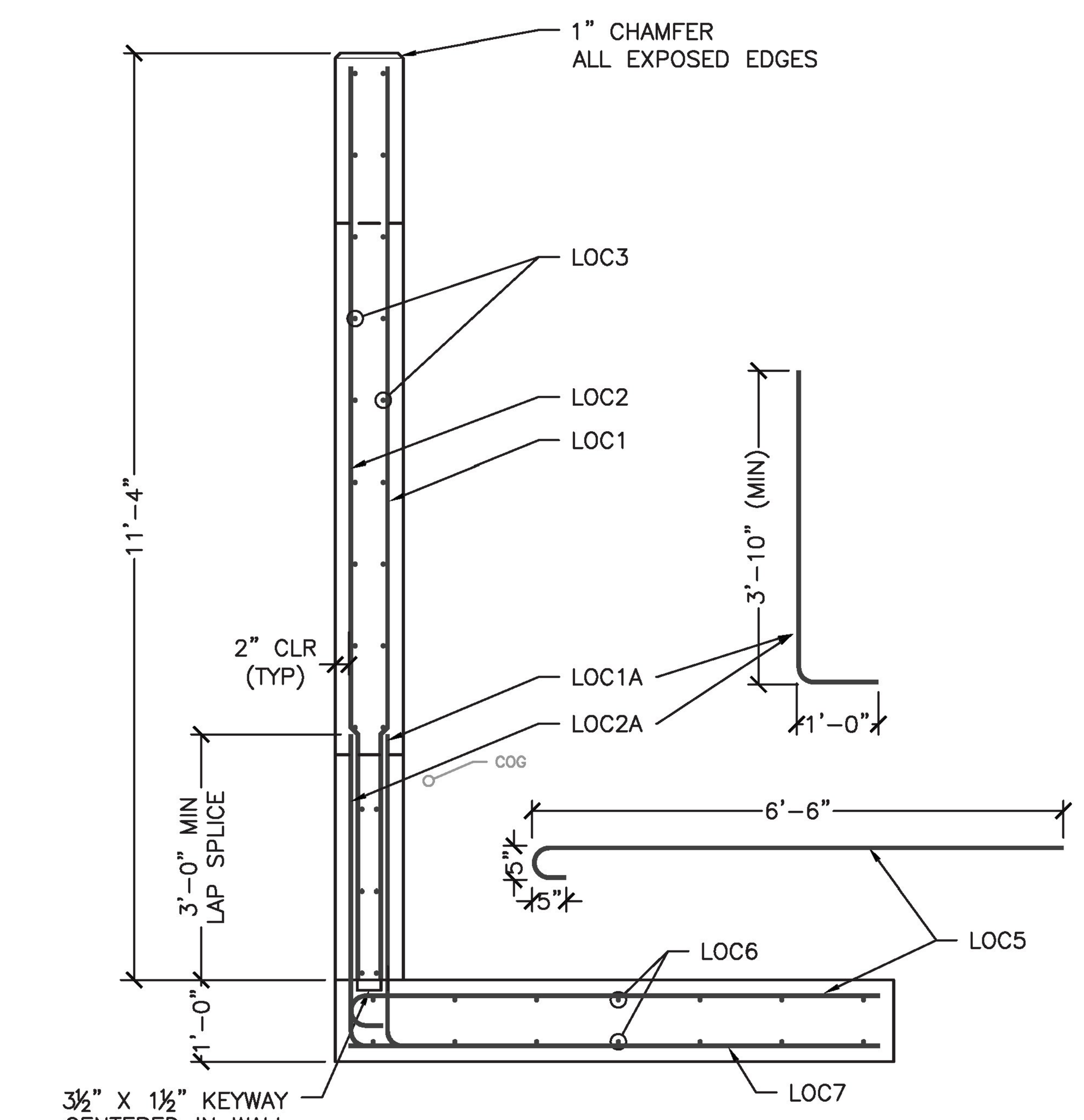
4 WW3A ELEV. VIEW
S3.0
½" = 1'-0"(Looking @ Front)



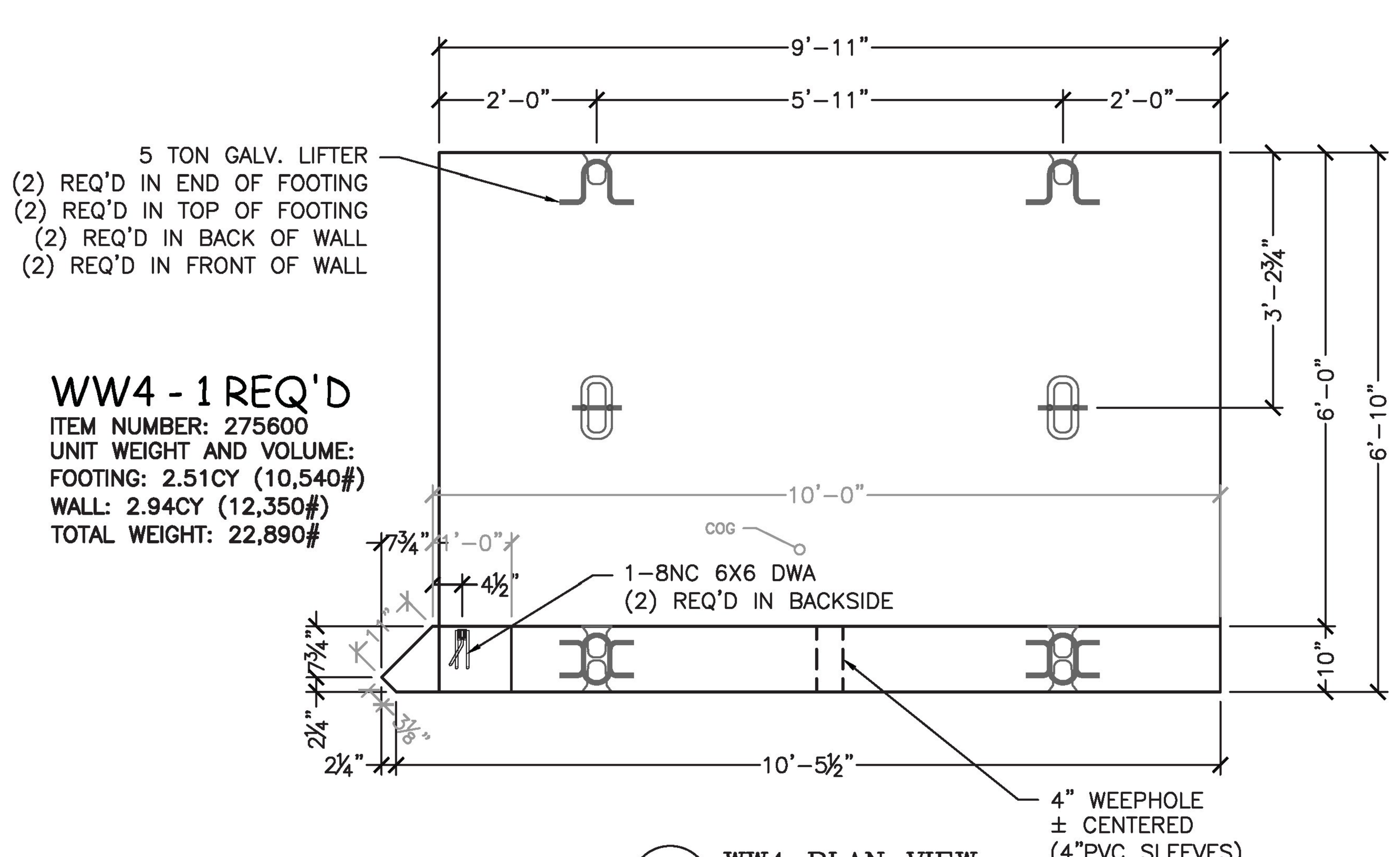
6 WW3B ELEV. VIEW
S3.0
½" = 1'-0"(Looking @ Front)

WW3A REINFORCING SCHEDULE					
MARK	TYPE	SIZE	SPACING	QTY	LENGTH
LOC1	STR	#5	6"	14	9'-7 1/2"
LOC1A	L BAR	#5	6"	14	4'-9"
LOC2	STR	#4	12"	7	9'-7 1/2"
LOC2A	L BAR	#4	12"	7	4'-9"
LOC3	STR	#4	12"	20	6'-8"
LOC5	HOOK	#5	6"	14	7'-1"
LOC6	STR	#4	12"	14	6'-8"
LOC7	STR	#4	12"	7	6'-6"

WW3B REINFORCING SCHEDULE					
MARK	TYPE	SIZE	SPACING	QTY	LENGTH
LOC1	STR	#5	6"	14	11'-2"
LOC1A	L BAR	#5	6"	14	4'-9"
LOC2	STR	#4	12"	7	11'-2"
LOC2A	L BAR	#4	12"	7	4'-9"
LOC3	STR	#4	12"	22	7'-3" OF / 6'-10" IF
LOC5	HOOK	#5	6"	14	7'-1"
LOC6	STR	#4	12"	14	6'-7"
LOC7	STR	#4	12"	7	6'-6"

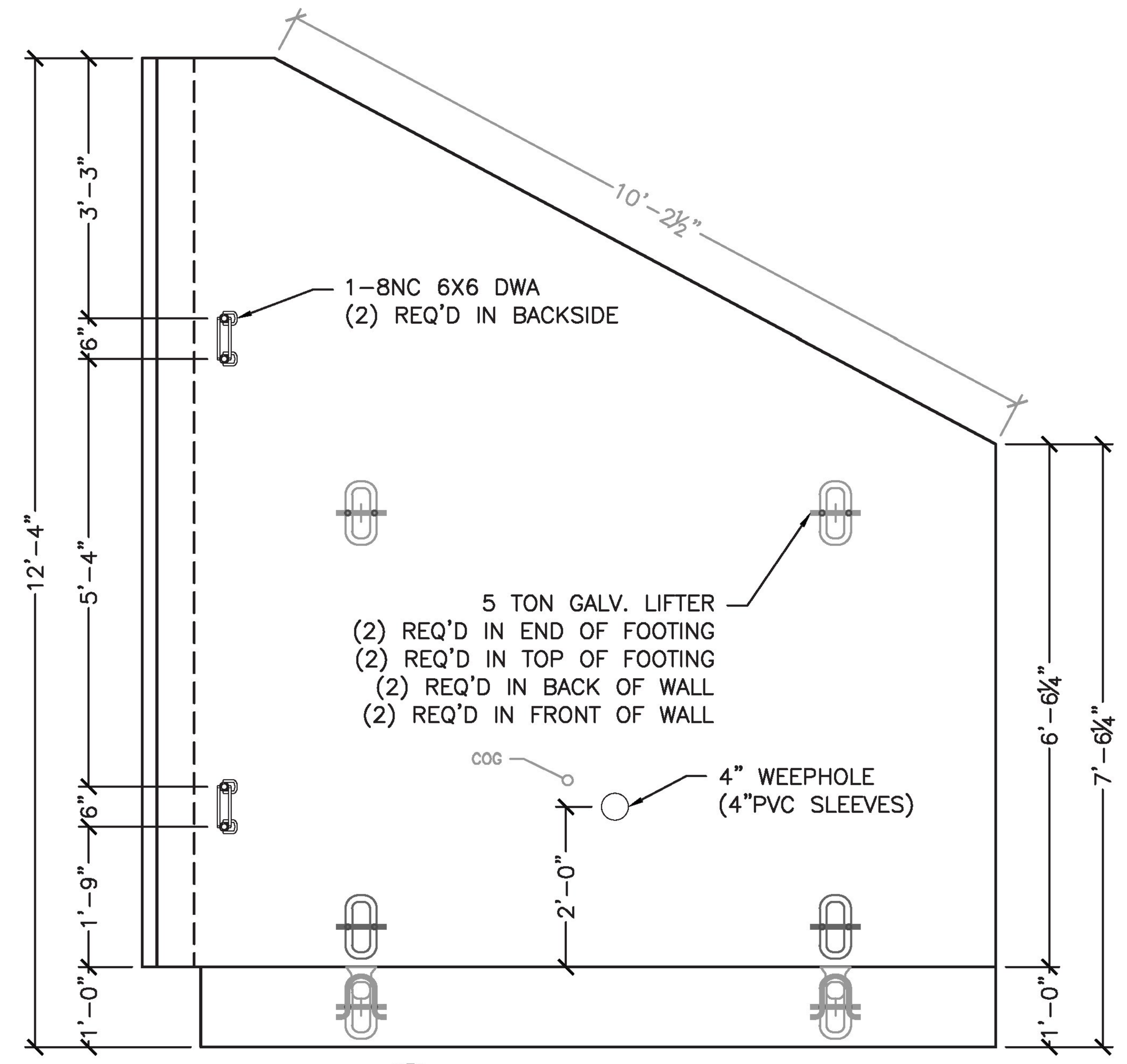


10 WW REINFORCING SECTION
S3.0
½" = 1'-0"

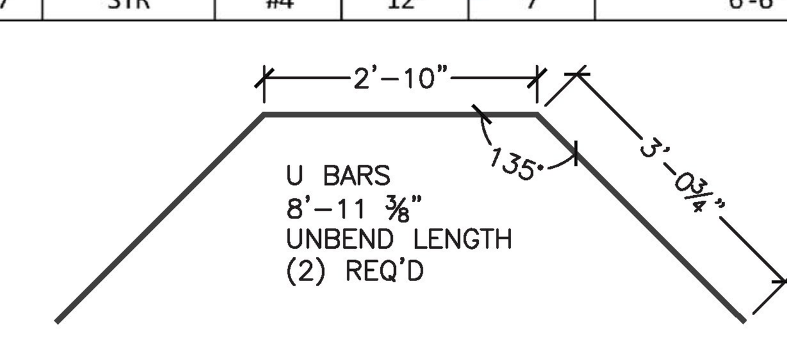


WW4 - 1 REQ'D
ITEM NUMBER: 275600
UNIT WEIGHT AND VOLUME:
FOOTING: 2.51CY (10,540#)
WALL: 2.94CY (12,350#)
TOTAL WEIGHT: 22,890#

7 WW4 PLAN VIEW
S3.0
½" = 1'-0"



8 WW4 ELEV. VIEW
S3.0
½" = 1'-0"(Looking @ Front)



WW4 REINFORCING SCHEDULE					
MARK	TYPE	SIZE	SPACING	QTY	LENGTH
LOC1	STR	#5	5"	20	11'-2"
LOC1A	L BAR	#5	6"	20	4'-9"
LOC2	STR	#4	12"	10	11'-2"
LOC2A	L BAR	#4	12"	10	4'-9"
LOC3	STR	#4	12"	24	10'-3" OF / 9'-10" IF
LOC5	HOOK	#6	6"	20	7'-1"
LOC6	STR	#4	12"	20	9-7"
LOC7	STR	#4	12"	10	6'-6"

MICHIE CORPORATION
173 BUXTON INDUSTRIAL DRIVE - PO BOX 870
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PHONE 603-428-3218
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VT Route 78 - VAOT # STP SCRP (12)
Highgate, VT

Outlet End Headwall Details

Project No. 7910
Date: 3/7/2017
Drawn by: CFP
Designed by: xxx
Checked by: XXX
Scale: AS SHOWN

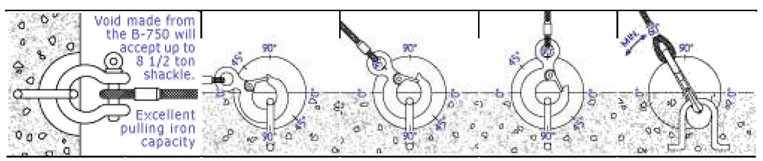
Prepared for:
Casella Construction, Inc.
25 Industrial Ave.
Mendon, VT 05701

DWG NO.
S3.0

OXFORD Industrial Technologies, LLC

PO Box 736 ▪ Stevenson, CT 06491
www.oxfordtechusa.com
Phone: (203) 268-6030
Fax: (203) 445-1240
info@oxfordtechusa.com

Oxford Lift System®



Anchor Product Code	Slab Min. Inches	Safe Working Load @ 90 degree Shear-0 degree Pull	Safe Working Load @ 90 degree Shear-45 degree Pull	Safe Working Load @ 90 degree Tension-90 degree Pull	Safe Working Load @ 90 degree Shear-60 degree Pull
A 500-3	4.00"	4,500	4,000	3,500	4,000
A 500-4	5.00"	8,000	5,500	4,000	5,000
A 500-5	6.00"	10,500	6,500	5,000	5,500
A 750-5	6.00"	12,500	8,000	7,000	7,000
A 750-7	8.00"	15,000	12,500	10,000	10,000

Note: Safe Working Load provides a factor of safety of approximately 4:1
Test Results are based on a minimum concrete compressive strength of 4,000 psi.

<back next>

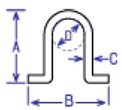
Home | B-500 & B-750 | S-150 | S-300 | Lift Anchor & Order Form | Concrete Products
Pull Iron Capacity | Anchors & Accessories | Toggle-Lok | Insert/Lift Anchor | Grid-Lok/ Rebar Chair | Helpful Calculations COMING SOON!

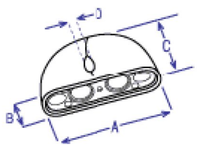
OXFORD Industrial Technologies, LLC

PO Box 736 ▪ Stevenson, CT 06491
www.oxfordtechusa.com
Phone: (203) 268-6030
Fax: (203) 445-1240
info@oxfordtechusa.com

Oxford Lift System®

Anchors & Accessories

Anchor	Product Code	A	B	C	D	Unit Weight
	**A 500-3**	3.00"	6.25"	(1/2") .500"	2.00"	.625 lbs.
	A 500-4	4.00"	6.25"	(1/2") .500"	2.00"	.75 lbs.
	A 500-5	5.00"	6.25"	(1/2") .500"	2.00"	.775 lbs.
	A 750-5	4.75"	7.50"	(3/4") .750"	3.00"	1.75 lbs.
	A 750-7	6.75"	7.50"	(3/4") .750"	3.00"	2.00 lbs.

Block Out	Product Code	A	B	C	D	Unit Weight
	B 500	7.00"	2.00"	3.00"	(1/2") .500"	1.10 lbs.
	**Void Dimensions** Shown without Anchor  					
	B 750	8.00"	3.00"	4.00"	(3/4") .750"	3.50 lbs.
	Void Dimensions Shown without Anchor  					

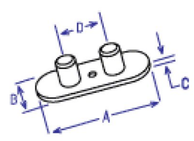
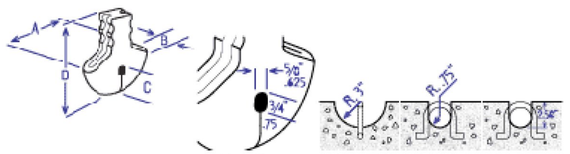
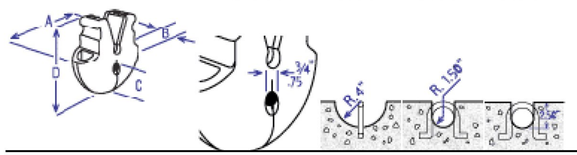
Mounting Plate	Product Code	A	B	C	D	Unit Weight
	**SMP 500** (Snap-On Mounting Plate)	6.50"	1.50"	(3/8") .375"	2.25"	7.95 lbs.
	MMP 500 (Magnetic Mounting	6.50"	1.50"	(3/8") .375"	2.25"	.900 lbs.

	Plate) **SMP 750** (Snap-On Mounting Plate)	7.25"	2.25"	(3/8") .375"	2.25"	1.75 lbs.
	MMP 750 (Magnetic Mounting Plate)	7.25"	2.25"	(3/8") .375"	2.25"	2.00 lbs.

Original Sink-It	Product Code	A	B	C	D	Unit Weight
	**S 150**	6.00"	1.50"	2.50"	6.75"	1.50 lbs.

S-300 Sink-It	Product Code	A	B	C	D	Unit Weight
	**S 300**	8.00"	3.00"	3.50"	8.00"	4.00 lbs.

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Home | B-500 & B-750 | S-150 | S-300 | Lift Anchor & Order Form | Concrete Products
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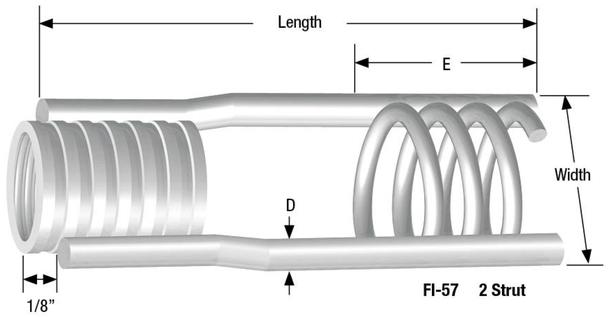
INSERTS

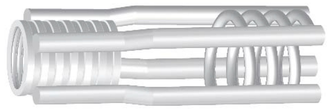
FI-57, FI-59, FI-61: EXPANDED COIL, FERRULE INSERT



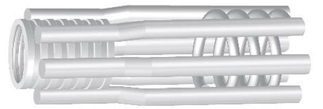
FI-57 2 Strut

The Expanded Coil, Ferrule Insert is a high-strength, highly versatile insert available for numerous precast concrete applications. It is available in 3/4", 1", 1-1/4" and 1-1/2" bolt diameters. The insert is constructed with a NC threaded ferrule, shaped struts (two, four or six depending on model) and an expanded wire coil. This efficient design increases the shear cone surface area thus increasing the load capacity of the insert. Insert is available in plated finish.

Standard inserts not designed for use with hot dip galvanized bolts.



FI-59 4 Strut



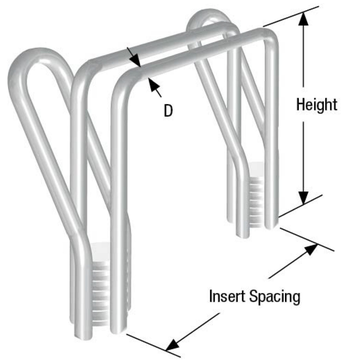
FI-61 6 Strut

EXPANDED COIL, FERRULE INSERT DIMENSIONS AND LOAD CHART

Part Number	Bolt Diameter	Threads per Inch (N.C.)	Length	Width	# of Struts	Wire Diameter D	E	Insert Ultimate Mechanical Capacity (lbs)	In-Concrete Capacity, 3:1 SWL		
									Min. Edge Distance	Tension (lbs)	Shear (lbs)
FI5734412P	3/4"	10	4-1/2"	2-3/8"	2	0.375"	1-5/8"	17,670	14"	5,890	5,890
FI571512P	1"	8	5-1/2"	2-7/8"	2	0.440"	2-1/8"	24,300	16"	8,100	8,100
FI59114712P	1-1/4"	7	7-1/2"	3-1/8"	4	0.440"	2-7/8"	39,930	18"	13,310	13,310
FI61112912P	1-1/2"	6	9-1/2"	3-3/8"	6	0.440"	3-7/8"	56,040	22"	18,680	18,680

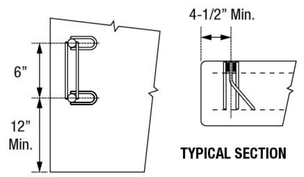
Safe Working Load is based on 3,000 psi concrete and insert setback 1/2" from the concrete surface.

FI-WW: WING WALL ANCHOR



Standard inserts not designed for use with hot dip galvanized bolts.

Fabricated for a precast concrete retaining wall which forms a wing wall for a precast concrete culvert unit, the Wing Wall Anchor supports a concrete footer projecting laterally from the wing wall into the back-filled soil behind the wing wall. Insert is available in plated finish.



TYPICAL SECTION

WING WALL ANCHOR DIMENSIONS

Part Number	Bolt Diameter	Insert Spacing	Height	Wire Diameter D	In-Concrete Capacity, 3:1 SWL	
					Tension (lbs)	Shear (lbs)
FIWW166P	1"	6"	6"	0.375"	8,500	4,500
FIWW168P	1"	6"	8"	0.375"	8,500	4,500

Safe Working Load is based on 3,000 psi concrete and insert setback 1/2" from the concrete surface.

APPENDIX A – Trinity Material Certification and Fabrication Drawings

CERTIFICATE
OF MATERIALS

Customer:	Bore Tech LLC	Date:	3/22/2017
Address:	1569 Breezy Hill Road	Date Shipped:	April 2017
City/State/Zip:	St. Johnsbury, VT 05819	Contract #:	Highgate STP SCRP (12) VAOT
		Our Order #:	TPIO15878

MATERIALS

132LF of 72" OD x .750" Nom Wall. ASTM A252 Grade 3 Spiral Weld Steel Pipe. Bare. Bev x Sq Ends.
Melted & Manufactured in The USA with Mill Test Reports (MTR's). Final Lengths TBD

Manufacturer: Domestic

CERTIFICATION

This will certify that to the best of my knowledge and belief, the above described material was produced with the following specifications:

ASTM A252 Grade 3. 45 KSI Min Yeild, 66 KSI Min Tensile
Melted & Manufactured in USA with MTR's.

Bryce Davis

JOAN McLAIN
Notary Public - Notary Seal
State of Missouri
Commissioned for St. Charles County
My Commission Expires: November 17, 2019
Commission Number: 11384333

Subscribed and affirmed before me
this 22nd day of March, 2017

Joan McLain
Notary Public

TRINITY PRODUCTS
trinityproducts.com

Trinity Products, LLC
1969 West Terra Lane
O'Fallon, Mo 63366

NOTE TO FABRICATOR:

ALL HOLES TO BE FREE OF BURRS

TRINITY PRODUCTS, INC. STANDARD TOLERANCES

DRILLED AND/OR BURNED ITEMS:

- DRILLED/BURNED HOLE SIZE: ***TOLERANCE (+1/16"; -0")***
- DRILLED/BURNED HOLE PLACEMENT: ***TOLERANCE (+1/16"; -1/16")***
- BURNED PARTS (NON-HOLE DIMS.): ***TOLERANCE (+1/16"; -1/16")***
  DIMENSIONS APPLIED TO ITEMS CREATED ON A BURN TABLE, NOT INCLUDING HOLES - SEE PREVIOUS LISTINGS.

FOR CUT MATERIAL: MATERIAL MADE TO LENGTH TO INCLUDE, BUT NOT LIMITED TO, I-BEAM, CHANNEL, ANGLE, TUBING, PIPE, OR BARSTOCK ON EQUIPMENT SUCH AS A SAW, BEAM COPER, OR IRON WORKER.

- WELDED CONNECTIONS: ***TOLERANCE (+1/8"; - 1/8")***
  A PART WHOSE ENDS WILL BE WELDED TO ANOTHER PIECE OF STRUCTURAL MATERIAL WITH NO INTENTION OF BOLTING.
- BOLTED END CONNECTIONS: ***TOLERANCE (+0"; -1/16")***
  A PART WHOSE ENDS WILL BE WELDED TO A MATCH PLATE OR FLANGE.
- ANGLE OF CUT: ***TOLERANCE (+1 DEGREE; -1 DEGREE)***
- FABRICATION PIPE CUTTING: ***TOLERANCE (+1/16"; -3/8")***
  DIMENSIONS APPLIED TO PIPES WHOSE END USE IS FABRICATION.

FOR GENERAL FITTING: THE ASSEMBLY OF ITEMS PER PRINTS PRIOR TO WELDING

- WELDED MEMBERS: ***TOLERANCE (+1/8"; -1/8")***
  DIMENSIONS APPLIED TO ASSEMBLIES WHICH ARE STAND ALONE ASSEMBLIES AND HAVE NO CONNECTIONS TO BE MADE IN THE FIELD OR REQUIRE A WELDED CONNECTION IN THE FIELD.
- BOLTED CONNECTIONS FOR SHOP FIT: ***TOLERANCE (+1/8"; -1/8")***
  DIMENSIONS APPLIED TO ASSEMBLIES WHICH TRINITY WILL BE PERFORMING A SHOP FIT TO ENSURE CONFORMANCE TO CUSTOMER DESIGN.
- UNCONTROLLED BOLTED CONNECTIONS: ***TOLERANCE (+1/16"; -1/16")***
  DIMENSIONS APPLIED TO ASSEMBLIES WHICH WILL BE BOLTED TO AN OBJECT IN THE FIELD, TRINITY DOES NOT HAVE ACCESS TO CONFIRM ACCURACY OF CONNECTION.

TRINITY PRODUCTS, INC. SIGN POLE TOLERANCES

- EXPOSED DIMENSIONS: ***TOLERANCE (+1/16"; -1/16" AT FIT, WITH +1/8"; -1/8" POST WELD.)***
  THE DIMENSION APPLIED TO THE DISTANCE FROM THE TOP OF A SIGNPOLE PIPE OR MATCH PLATE TO THE BASE OF THE CAP PLATE.
- LENGTH OF PAINT OMISSION BELOW GRADE: ***TOLERANCE (+6"; -0")***
- SPACER RINGS: ***TOLERANCE (+3/16"; -3/16" IF TRINITY IS PROVIDING THE LOWER POLE, AND +1/8"; -1/8" IF TRINITY IS NOT PROVIDING THE BASE POLE.)***

• FABRICATOR SHALL HOLD ALL LISTED TOLERANCES UNLESS OTHERWISE NOTED ON THE DRAWING.

NOTE TO CUSTOMER:

DUE TO PIPE LENGTHS AVAILIBLE AT TIME OF ORDER CUSTOMER MAY HAVE MIDWELD PRODUCED TO AWS D1.1 PRE-QUALIFIED CJP WELD JOINT AND AISC SPECIFICATIONS. SEE BELOW FOR PRE QUALIFIED JOINT DETAILS:

- **ALL PIPE WITH MAT'L THICKNESS LESS THAN OR EQUAL TO .500" NOMINAL AND OUTSIDE DIAMETER LESS THAN OR EQUAL TO 30":**
  PREQUALIFICATION JOINT DESIGNATION: *B-U4a-GF*
  NOMENCLATURE: *BEVEL-GROOVE WELD WITH BACKING BAND*
  WELD PROCESS: *FCAW*
  ROOT OPENING: *3/16" +1/4";-1/16"*
  GROOVE ANGLE: *30 DEG +10 DEG; -5 DEG*
  POSITIONS: *ALL*
- **ALL PIPE WITH MAT'L THICKNESS GREATER THAN .500" NOMINAL AND OUTSIDE DIAMETER LESS THAN OR EQUAL TO 30":**
  PREQUALIFICATION JOINT DESIGNATION: *B-U4a-S*
  NOMENCLATURE: *BEVEL-GROOVE WELD WITH BACKING BAND*
  WELD PROCESS: *SAW*
  ROOT OPENING: *3/8" +1/4";-1/16"*
  GROOVE ANGLE: *30 DEG +10 DEG; -5 DEG*
  POSITIONS: *FLAT*
- **ALL PIPE WITH MAT'L THICKNESS LESS THAN OR EQUAL TO .500" NOMINAL AND OUTSIDE DIAMETER GREATER THAN OR EQUAL TO 36":**
  PREQUALIFICATION JOINT DESIGNATION: *B-U4b-GF*
  NOMENCLATURE: *BEVEL-GROOVE WELD WITH BACKING WELD*
  WELD PROCESS: *FCAW*
  ROOT OPENING: *0" +1/16";-1/8"*
  GROOVE ANGLE: *45 DEG +10 DEG; -5 DEG*
  POSITIONS: *ALL*
- **ALL PIPE WITH MAT'L THICKNESS GREATER THAN .500" NOMINAL AND OUTSIDE DIAMETER GREATER THAN OR EQUAL TO 36":**
  PREQUALIFICATION JOINT DESIGNATION: *B-L2c-S*
  NOMENCLATURE: *V BEVEL-GROOVE WELD WITH BACKGOUGE*
  WELD PROCESS: *SAW*
  ROOT OPENING: *0" +1/16";-0"*
  GROOVE ANGLE: *60 DEG +10 DEG; -5 DEG*
  POSITIONS: *FLAT*

REQUIRED WELD PRE-HEAT	
MATERIAL THICKNESS	PRE-HEAT TEMP.
3/4" OR LESS	32 DEGREES
> 3/4" TO 1 1/2"	50 DEGREES
> 1 1/2" TO 2 1/2"	150 DEGREES
> 2 1/2"	225 DEGREES

CUSTOMER APPROVAL:

SIGNED _____ DATE _____

THIS FABRICATION DRAWING REPRESENTS TRINITY PRODUCTS' UNDERSTANDING OF THE DRAWINGS AND/OR REQUIREMENTS PROVIDED BY THE CUSTOMER. TRINITY PRODUCTS DOES NOT PROVIDE DESIGN, ENGINEERING OR ANALYSIS SERVICES. IT IS THE CUSTOMERS RESPONSIBILITY TO HAVE ALL DESIGNS AND DRAWINGS REVIEWED AND APPROVED BY THE APROPRIATE PARTIES. UNLESS OTHERWISE SHOWN, ALL MATERIAL SIZES AND THICKNESS ARE NOMINAL, MATERIAL SUPPLIED WILL BE WITHIN ASTM TOLERANCES

Trinity Products

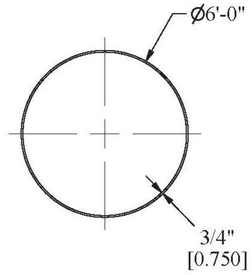
TITLE: BORE TECH

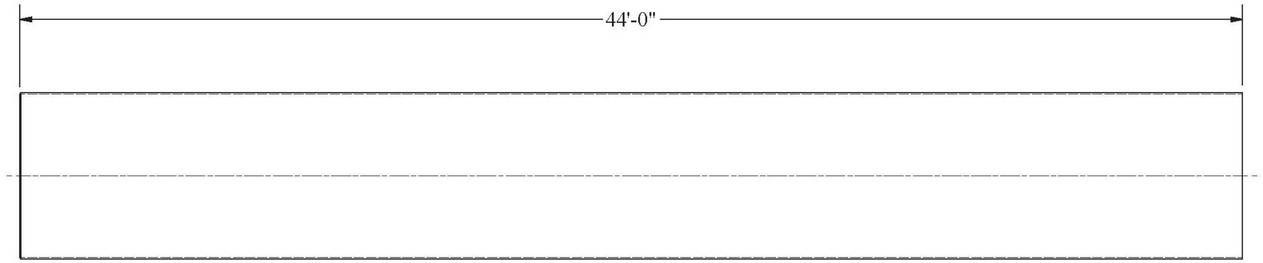
SIZE	JOB NO.	REV
B	17-0219-JW	

4/4/2017 DRAWN JVC

SCALE

SHEET 1 OF 2





72" OD X .750" THK X 44'-0"
ASTM A252 GR 3
BEVEL X SQUARE
3 REQ'D PER JOB

CUSTOMER APPROVAL:

SIGNED _____ DATE _____

THIS FABRICATION DRAWING REPRESENTS TRINITY PRODUCTS' UNDERSTANDING OF THE DRAWINGS AND/OR REQUIREMENTS PROVIDED BY THE CUSTOMER. TRINITY PRODUCTS DOES NOT PROVIDE DESIGN, ENGINEERING OR ANALYSIS SERVICES. IT IS THE CUSTOMERS RESPONSIBILITY TO HAVE ALL DESIGNS AND DRAWINGS REVIEWED AND APPROVED BY THE APROPRIATE PARTIES. UNLESS OTHERWISE SHOWN, ALL MATERIAL SIZES AND THICKNESS ARE NOMINAL, MATERIAL SUPPLIED WILL BE WITHIN ASTM TOLERANCES

Trinity Products

TITLE: BORE TECH

SIZE	JOB NO.	REV
B	17-0219-JW	

4/4/2017
DRAWN JVC
SCALE
SHEET 2 OF 2

APPENDIX B – Welding Procedures and Welder Certification

WELDING PROCEDURE SPECIFICATION (WPS)
PREQUALIFIED ■ QUALIFIED BY TESTING ☐
or PROCEDURE QUALIFICATION RECORDS (PQR) Yes ☐
AASHTO/AWS D1.5 Qualification Type 5.12.1 ☐ – 5.12.2 ☐ – 5.12.4 ☐

Contractor/
Organization: Boretech, LLC
Welding Process(es): SMAW
Type: Manual ■ Semiautomatic ☐
Mechanized ☐ Automatic ☐
Tandem ☐ Parallel ☐

Lap Joint

JOINT DESIGN USED
Single ■ Double Weld ☐
Backing: Yes ☐ No ■ Material: NA
Root Opening: NA Root Face Dimension: NA
Groove Angle: NA Radius (J–U): NA
Backgouging: Yes ☐ No ■ Method: NA
Root Treatment: Remove grease and oil with soilvent.

Surface will be cleaned with wire brush and grinder. Joint shall be dry prior to welding.

BASE METALS
Material Spec.: ASTM A252
Type or Grade: Grade 3 Spiral Weld Steel Pipe
Thickness: Groove: NA Fillet: NA
Diameter (Pipe): 72"

FILLER METALS
AWS Specification: AWS A5/A5.1M
AWS Classification: E7018
Manufacturer Trade Name: NA

SHIELDING
Flux: NA Mfg. Trade Name: NA
Electrode-Flux (Class): NA
Gas Composition: NA
Flow Rate: NA Gas Cup Size: NA

Identification: WPS - 2 Fillet Field Welding of Cutting Shoe
Revision: NA Date: NA By: NA
Authorized by: Boretech, LCC Date: NA
Supporting PQR No.(s): NA

POSITION
Position of Groove: NA Fillet: Vertical 5G
Vertical Progression: Up ■ Down ☐

ELECTRICAL CHARACTERISTICS
Transfer Mode (GMAW): Globular ☐ Spray ☐
Current: AC ☐ DCEP ■ DCEN ☐ Pulsed ☐
Electrical Stick Out: NA
Other: NA

TECHNIQUE
Stringer or Weave Bead: Either
Multi-pass or Single Pass (per side): Either
Number of Electrodes: 1
Electrode Spacing: Longitudinal: NA
Lateral: NA Angle: NA
Interpass Cleaning: Clean slag with chipping hammer and wire brush

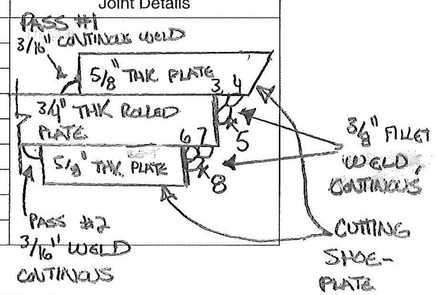
PREHEAT
Preheat Temp., Min.: 50 degrees F
Interpass Temp., Min.: 50 degrees F
Interpass Temp., Max.: 500 degrees F

POSTWELD HEAT TREATMENT
Temp.: None Hold Time: NA
Heating/Cooling Rate: 15 minutes minimum

HEAT INPUT
Calculated Heat Input Value: kJ/in ☐ kJ/mm ☐
Max. Heat Input: NA Min. Heat Input: NA

WELDING PROCEDURE

Pass or Weld Layer(s)	Process	Filler Metals Diam.	Current Type & Polarity	Current Amps or Wire Feed Speed	Volts	Travel Speed	Joint Details
1	SMAW	1/8"	DCEP	115	21-25	4-8 ipm	
2	SMAW	1/8"	DCEP	115	21-25	4-8 ipm	
3	SMAW	1/8"	DCEP	115	21-25	4-8 ipm	
4	SMAW	1/8"	DCEP	115	21-25	4-8 ipm	
5	SMAW	1/8"	DCEP	115	21-25	4-8 ipm	
6	SMAW	1/8"	DCEP	115	21-25	4-8 ipm	
7	SMAW	1/8"	DCEP	115	21-25	4-8 ipm	
8	SMAW	1/8"	DCEP	115	21-25	4-8 ipm	



Max Layer Thickness will be 3/16" for all passes

Form N-2

lding Procedure Specification

WELDING PROCEDURE SPECIFICATION (WPS)
PREQUALIFIED ■ QUALIFIED BY TESTING ☐
or PROCEDURE QUALIFICATION RECORDS (PQR) Yes ☐
AASHTO/AWS D1.5 Qualification Type 5.12.1 ☐ – 5.12.2 ☐ – 5.12.4 ☐

Contractor/
Organization: Boretech, LLC
Welding Process(es): SMAW
Type: Manual ■ Semiautomatic ☐
Mechanized ☐ Automatic ☐
Tandem ☐ Parallel ☐

Single V Groove

JOINT DESIGN USED
Single ■ Double Weld ☐
Backing: Yes ☐ No ■ Material: NA
Root Opening: 1/8" Root Face Dimension: 1/8"
Groove Angle: 30 Radius (J–U): NA
Backgouging: Yes ■ No ☐ Method: Bevel done at Fabricator
Root Treatment: Remove grease and oil with solvent.
Surface will be cleaned with wire brush and grinder. Joint shall be dry prior to welding.

BASE METALS
Material Spec.: Pipe - ASTM A252
Type or Grade: Grade 3 Spiral Weld Steel Pipe
Thickness: Groove: 3/4" Fillet:
Diameter (Pipe): 72

FILLER METALS
AWS Specification: AWS A5/A5.1M
AWS Classification: Pass 1 E6010 / Pass 2+ E7018
Manufacturer Trade Name: NA

SHIELDING
Flux: NA Mfg. Trade Name: NA
Electrode-Flux (Class): NA
Gas Composition: NA
Flow Rate: NA Gas Cup Size: NA

Identification: WPS 1 - Full Penetration Field Welding of Pipe Sections
Revision: NA Date: NA By: NA
Authorized by: Boretech, LCC Date: 4/26/17
Supporting PQR No.(s): NA

POSITION
Position of Groove: All Fillet: NA
Vertical Progression: Up ■ Down ☐

ELECTRICAL CHARACTERISTICS
Transfer Mode (GMAW): Globular ☐ Spray ☐
Current: AC ☐ DCEP ■ DCEN ☐ Pulsed ☐
Electrical Stick Out: NA
Other: NA

TECHNIQUE
Stringer or Weave Bead: Either
Multi-pass or Single Pass (per side): Either
Number of Electrodes: 1
Electrode Spacing: Longitudinal: NA
Lateral: Angle:
Interpass Cleaning: Clean slag with chipping hammer and wire brush

PREHEAT
Preheat Temp., Min.: 50 degrees F
Interpass Temp., Min.: 50 degrees F
Interpass Temp., Max.: 500 degree F

POSTWELD HEAT TREATMENT
Temp.: None Hold Time: NA
Heating/Cooling Rate: 15 minutes minimum

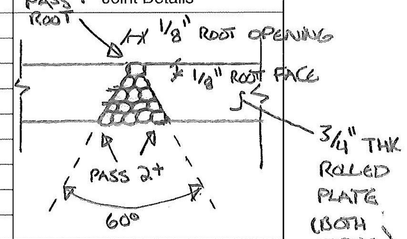
HEAT INPUT
Calculated Heat Input Value: kJ/in ☐ kJ/mm ☐
Max. Heat Input: NA Min. Heat Input: NA

WELDING PROCEDURE

Pass or Weld Layer(s)	Process	Filler Metals Diam.	Current Type & Polarity	Current Amps or Wire Feed Speed	Volts	Travel Speed
1	SMAW	1/8" E6010	DCEP	115	21-25	4-8 ipm
2+	SMAW	1/8" E7018	DCEP	115	21-25	4-8 ipm

Max Layer Thickness will be 3/16"

Joint Details



Form N-2

Form N-2—Sample Welding Procedure Specification

WELDING PROCEDURE SPECIFICATION (WPS)
PREQUALIFIED ■ QUALIFIED BY TESTING ☐
or PROCEDURE QUALIFICATION RECORDS (PQR) Yes ☐
AASHTO/AWS D1.5 Qualification Type 5.12.1 ☐ – 5.12.2 ☐ – 5.12.4 ☐

Contractor/
Organization: Boretech, LLC
Welding Process(es): SMAW
Type: Manual ■ Semiautomatic ☐
Mechanized ☐ Automatic ☐
Tandem ☐ Parallel ☐

Butt Joint

JOINT DESIGN USED
Single ■ Double Weld ☐
Backing: Yes ☐ No ■ Material: NA
Root Opening: NA Root Face Dimension: NA
Groove Angle: NA Radius (J–U): NA
Backgouging: Yes ☐ No ■ Method: NA
Root Treatment: Remove grease and oil with solvent.
Surface will be cleaned with wire brush and grinder. Joint shall be dry prior to welding.

BASE METALS
Material Spec.: Pipe - ASTM A252 / iGPS Housing - A36
Type or Grade: Pipe - Grade 3 Spiral Weld Steel Pipe / iGPS Housing - NA
Thickness: Groove: NA Fillet: NA
Diameter (Pipe): 72"

FILLER METALS
AWS Specification: AWS A5/A5.1M
AWS Classification: E7018
Manufacturer Trade Name: NA

SHIELDING
Flux: NA Mfg. Trade Name: NA
Electrode-Flux (Class): NA
Gas Composition: NA
Flow Rate: NA Gas Cup Size: NA

Identification: WPS - 3 Fillet Field Welding of iGPS Housing
Revision: NA Date: NA By: NA
Authorized by: Boretech, LCC Date: 4/26/17
Supporting PQR No.(s): NA

POSITION
Position of Groove: NA Fillet: Vertical 5G
Vertical Progression: Up ■ Down ☐

ELECTRICAL CHARACTERISTICS
Transfer Mode (GMAW): Globular ☐ Spray ☐
Current: AC ☐ DCEP ■ DCEN ☐ Pulsed ☐
Electrical Stick Out: NA
Other: NA

TECHNIQUE
Stringer or Weave Bead: Either
Multi-pass or Single Pass (per side): Either
Number of Electrodes: 1
Electrode Spacing: Longitudinal: NA
Lateral: NA Angle: NA
Interpass Cleaning: Clean slag with chipping hammer and wire brush

PREHEAT
Preheat Temp., Min.: 50 degrees F
Interpass Temp., Min.: 50 degrees F
Interpass Temp., Max.: 500 degrees F

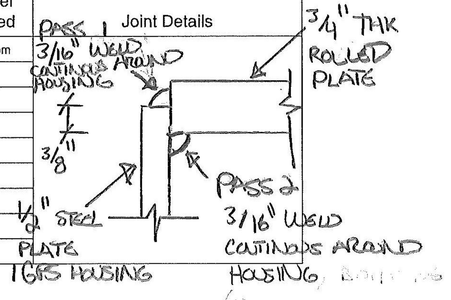
POSTWELD HEAT TREATMENT
Temp.: None Hold Time: NA
Heating/Cooling Rate: 15 minutes minimum

HEAT INPUT
Calculated Heat Input Value: kJ/in ☐ kJ/mm ☐
Max. Heat Input: NA Min. Heat Input: NA

WELDING PROCEDURE

Pass or Weld Layer(s)	Process	Filler Metals Diam.	Current Type & Polarity	Current Amps or Wire Feed Speed	Volts	Travel Speed
ALL	SMAW	1/8"	DCEP	115	21-25	4-8 ipm
		ALL PASSES WILL HAVE				
		MAX 3/16" BEAD				

Joint Details



Form N-2

Form N-2—Sample Welding Procedure Specification

WELDING PROCEDURE SPECIFICATION (WPS)
PREQUALIFIED ■ QUALIFIED BY TESTING ☐
or PROCEDURE QUALIFICATION RECORDS (PQR) Yes ☐
AASHTO/AWS D1.5 Qualification Type 5.12.1 ☐ – 5.12.2 ☐ – 5.12.4 ☐

Contractor/
Organization: Boretech, LLC
Welding Process(es): SMAW
Type: Manual ■ Semiautomatic ☐
Mechanized ☐ Automatic ☐
Tandem ☐ Parallel ☐

Butt Joint

JOINT DESIGN USED
Single ■ Double Weld ☐
Backing: Yes ☐ No ■ Material: NA
Root Opening: NA Root Face Dimension: NA
Groove Angle: NA Radius (J–U): NA
Backgouging: Yes ☐ No ■ Method: NA
Root Treatment: Remove grease and oil with solvent.

Surface will be cleaned with wire brush and grinder. Joint shall be dry prior to welding.

BASE METALS
Material Spec.: Pipe - ASTM A252 / iGPS Strap - A36
Type or Grade: Pipe - Grade 3 Spiral Weld Steel Pipe / iGPS Strap - NA
Thickness: Groove: NA Fillet: NA
Diameter (Pipe): 72"

FILLER METALS
AWS Specification: AWS A5/A5.1M
AWS Classification: E6010
Manufacturer Trade Name: NA

SHIELDING
Flux: NA Mfg. Trade Name: NA
Electrode-Flux (Class): NA
Gas Composition: NA
Flow Rate: NA Gas Cup Size: NA

Identification: WPS - 4 Fillet Field Welding of iGPS Sleeve Strap
Revision: NA Date: NA By: NA
Authorized by: Boretech, LCC Date: 4/26/17
Supporting PQR No.(s): NA

POSITION
Position of Groove: NA Fillet: Vertical 5G
Vertical Progression: Up ■ Down ☐

ELECTRICAL CHARACTERISTICS
Transfer Mode (GMAW): Globular ☐ Spray ☐
Current: AC ☐ DCEP ■ DCEN ☐ Pulsed ☐
Electrical Stick Out: NA
Other: NA

TECHNIQUE
Stringer or Weave Bead: Either
Multi-pass or Single Pass (per side): Single
Number of Electrodes: 1
Electrode Spacing: Longitudinal: NA
Lateral: NA Angle: NA
Interpass Cleaning: Clean slag with chipping hammer and wire brush

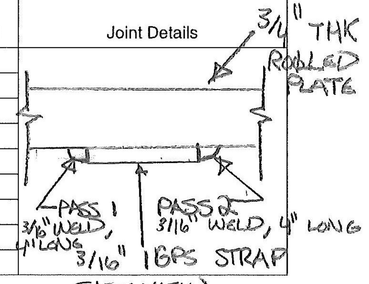
PREHEAT
Preheat Temp., Min.: 50
Interpass Temp., Min.: 50
Interpass Temp., Max.: 500

POSTWELD HEAT TREATMENT
Temp.: None Hold Time: NA
Heating/Cooling Rate: 15 minutes minimum

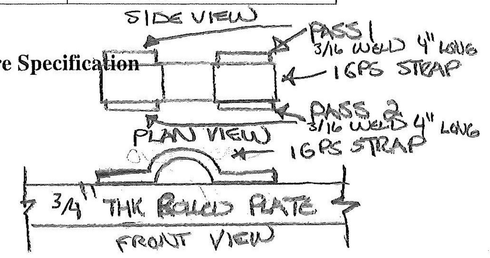
HEAT INPUT
Calculated Heat Input Value: kJ/in ☐ kJ/mm ☐
Max. Heat Input: NA Min. Heat Input: NA

WELDING PROCEDURE

Pass or Weld Layer(s)	Process	Filler Metals Diam.	Current Type & Polarity	Current Amps or Wire Feed Speed	Volts	Travel Speed	Joint Details
ALL	SMAW	1/8"	DCEP	115	21-25	4-8 ipm	
		ALL PASSES WILL HAVE					
		MAX.	3/16" BEAD				



Form N-2



Form N-2—Sample Welding Procedure Specification

WELDER, WELDING OPERATOR OR TRACK WELDER QUALIFICATION TEST RECORD

Code: AASHTO/AWS D1.5M/D1.5:2010

Name: Seth Henley **Identification No.** 031617SH

Welding Procedure Specification No. B2.1-1-016:1994 **Date:** 03/16/2017

Variables		Record Actual Values Used in Qualification	Qualification Range
Process/Type		SMAW	SMAW
Electrode (single or multiple)		Single	Single
Current/Polarity		DCEP	DCEP
Position		3G	Flat/Horizontal/Vertical
	Weld Progression	Uphill	Uphill Only
Backing (YES or NO)		Yes	With Steel Backing Only
Material/Spec.		M 270M/ M270 (A 709/A 709M) Gr. 250 [Gr. 36]	M 270M/ M270 (A 709/A 709M) Gr. 250 [Gr. 36]
Base Material			
	Thickness (Plate)		
	Groove	1"	1/8" to Unlimited
	Fillet	N/A	Flat, Horizontal, Vertical Fillets
	Thickness: (Pipe/Tube)		
	Groove	N/A	1/8" to Unlimited
	Fillet	N/A	Unlimited Thickness
	Diameter: (Pipe)		
	Groove	N/A	N/A
	Fillet	N/A	N/A
Filler Metal			
	Spec. No.	AWS A5.1	AWS A5.1/A5.1M or AWS A5.5/A5.5M
	Class	E7018	All Listed in Table 4.1 under pre-qualified
F-No.		F4	F4 Only
Gas/Flux Type		N/A	N/A
Other		N/A	N/A

PLEASE NOTE THIS WAS ALSO SENT TO RYAN FOSTER on 4/11/17, ADDED 4/10/17, JTC CCI

Visual Inspection: Acceptable YES or NO

Guided Bend Test Results

Type	Results	Type	Results
Side	Accept	N/A	
Side	Accept	N/A	

Fillet Test Results

Appearance: N/A Fillet Size: N/A

Fracture Test Root Penetration: N/A Macro etch: N/A

(Describe the location, nature and size of any crack or tearing of specimen.)
N/A

Inspected by: Chris Govoni Test No: N/A

Organization: Advanced Welding Institute Date: 3/16/2017

Radiographic Results

Film Identification Number	Results	Remarks	Film Identification Number	Results	Remarks

Interpreted by: N/A Test Number: N/A

Organization: N/A Date: N/A

We, the undersigned, certify that the statements in this record are correct and that the test welds were prepared, welded and tested in accordance with the requirements of Section 5 of AASHTO/AWS D1.5M/D1.5:2010 Bridge Welding Code

Inspected by: *Chris Govoni AWS/CWI* Witnessed by: Chris Govoni

Contractor: CS Welding & Repair Date: 3/16/2017

WELDER, WELDING OPERATOR OR TRACK WELDER QUALIFICATION TEST RECORD

Code: AASHTO/AWS D1.5M/D1.5:2010

Name: Seth Henley **Identification No.** 031617SH

Welding Procedure Specification No. B2.1-1-016:1994 **Date:** 3/16/2017

Variables		Record Actual Values Used in Qualification	Qualification Range
Process/Type		SMAW	SMAW
Electrode (single or multiple)		Single	Single
Current/Polarity		DCEP	DCEP
Position		4G	Flat/Overhead
	Weld Progression	N/A	N/A
Backing (YES or NO)		Yes	With Steel Backing Only
Material/Spec.		M 270M/ M270 (A 709/A 709M) Gr. 250 [Gr. 36]	M 270M/ M270 (A 709/A 709M) Gr. 250 [Gr. 36]
Base Material			
	Thickness (Plate)		
	Groove	1"	1/8" to Unlimited
	Fillet	N/A	Flat, Horizontal, Overhead Fillets
	Thickness: (Pipe/Tube)		
	Groove	N/A	1/8" to Unlimited
	Fillet	N/A	Unlimited Thickness
	Diameter: (Pipe)		
	Groove	N/A	N/A
	Fillet	N/A	N/A
Filler Metal			
	Spec. No.	AWS A5.1	AWS A5.1/A5.1M or AWS A5.5/A5.5M
	Class	E7018	All Listed in Table 4.1 under pre-qualified
F-No.		F4	F4 Only
Gas/Flux Type		N/A	N/A
Other		N/A	N/A

PLEASE NOTE THIS WAS ALSO SENT TO RYAN FOSTER on 4/11/17, ADDED 4/10/17, JTC CCI

Visual Inspection: Acceptable YES or NO

Guided Bend Test Results

Type	Results	Type	Results
Side	Accept	N/A	
Side	Accept	N/A	

Fillet Test Results

Appearance: N/A Fillet Size: N/A

Fracture Test Root Penetration: N/A Macro etch: N/A

(Describe the location, nature and size of any crack or tearing of specimen.)
N/A

Inspected by: Chris Govoni Test No: N/A

Organization: Advanced Welding Institute Date: 3/16/2017

Radiographic Results

Film Identification Number	Results	Remarks	Film Identification Number	Results	Remarks

Interpreted by: N/A Test Number: N/A

Organization: N/A Date: N/A

We, the undersigned, certify that the statements in this record are correct and that the test welds were prepared, welded and tested in accordance with the requirements of Section 5 of AASHTO/AWS D1.5M/D1.5:2010 Bridge Welding Code

Inspected by: Chris Govoni 13112023 Witnessed by: Chris Govoni

Chris Govoni AWS/CWI

Contractor: CS Welding & Repair Date: 3/16/2016