

STATE OF VERMONT
AGENCY OF TRANSPORTATION



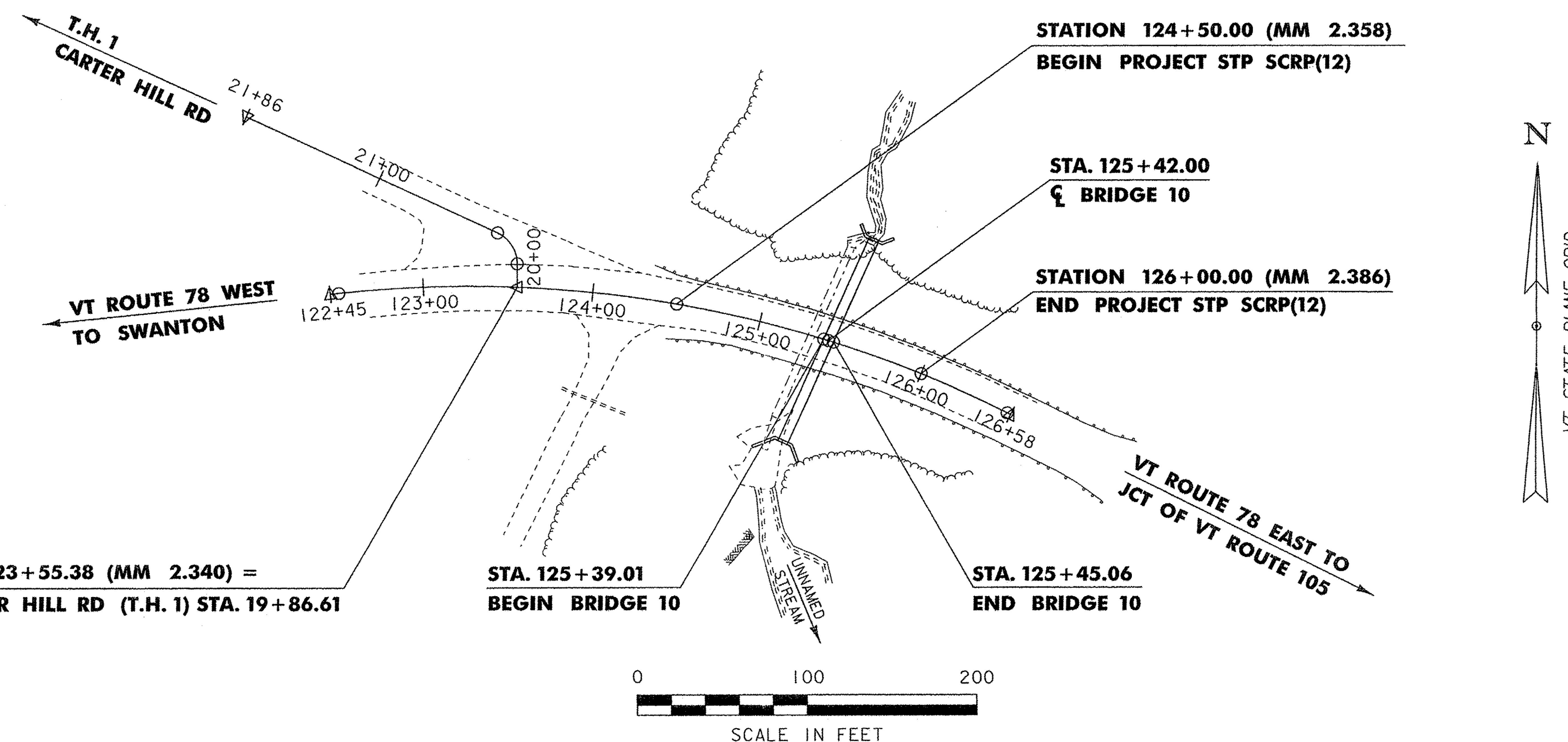
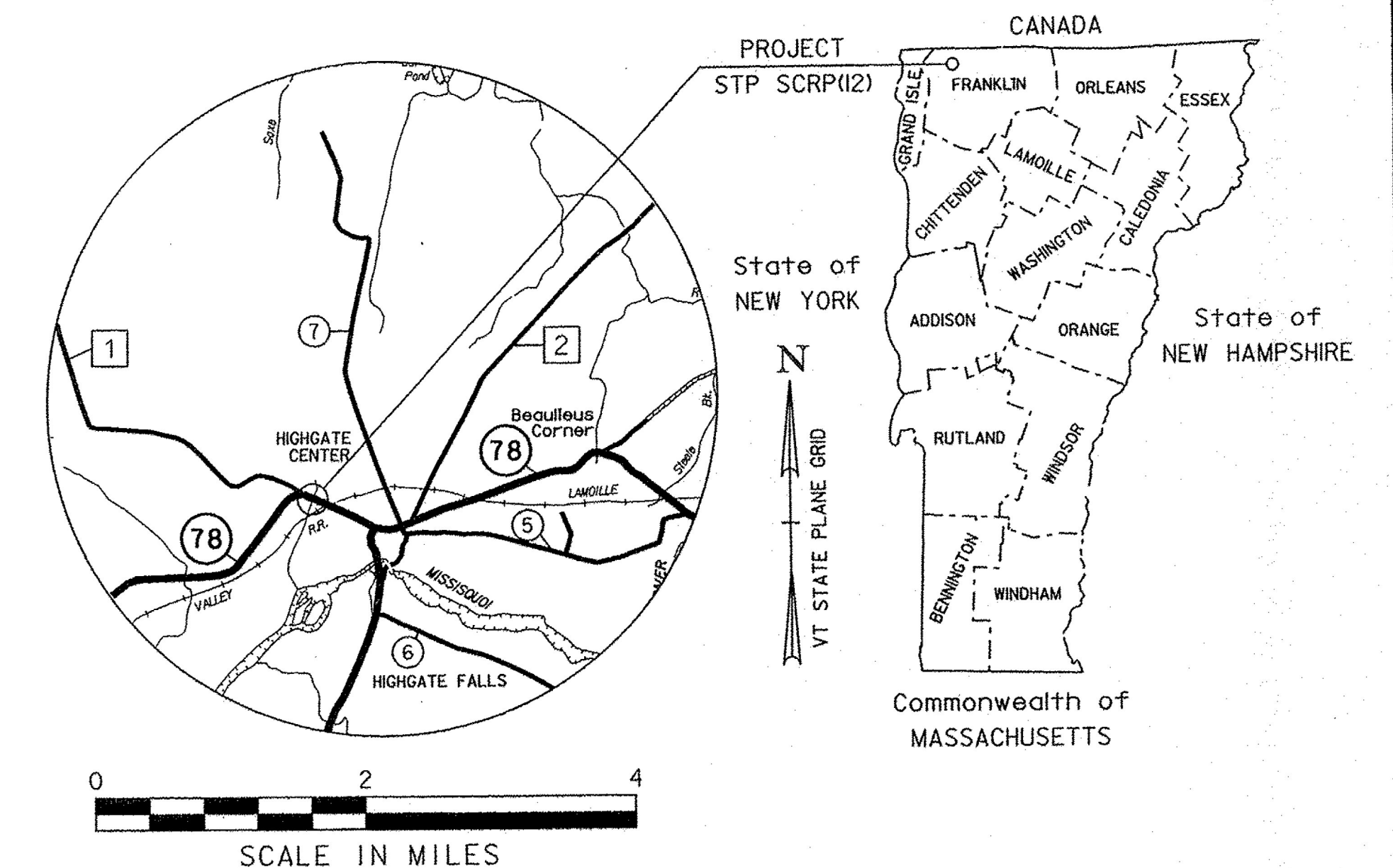
PROPOSED IMPROVEMENT
BRIDGE PROJECT
TOWN OF HIGHGATE
COUNTY OF FRANKLIN

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.



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	
DATE	Nov. 1, 2018
RESIDENT ENGINEER	
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.	

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)

DIRECTOR OF PROJECT DELIVERY	
APPROVED:	DATE 9/19/2016
PROJECT MANAGER : BRUCE MARTIN, P.E.	
PROJECT NAME : HIGHGATE	
PROJECT NUMBER : STP SCR(12)	
SHEET 1 OF 40 SHEETS	

STATE OF VERMONT
AGENCY OF TRANSPORTATION

PRELIMINARY INFORMATION SHEET (CULVERT)

Version

LRFD

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SOUTH ACCESS RD CROSS SECTION SHEETS
CHANNEL CROSS SECTION SHEETS
CONSTRUCTION APPROACH SIGNING SHEET

STANDARDS LIST

G-1
T-1
T-10
T-28
T-29
T-30
T-42
T-45

11-10-2015
04-25-2016
08-06-2012
08-06-2012
08-06-2012
08-06-2012
04-09-2014
01-02-2013

STRUCTURES DETAIL SHEETS

SD-501.00
SD-502.00

CONCRETE DETAILS AND NOTES
CONCRETE DETAILS AND NOTES

5/7/2010
5/7/2010

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 10 = 80 cfs
Q 25 = 100 cfs
Q 50 = 120 cfs
Q 100 = 140 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'
Q10 = 260.7'
Q25 = 261.3'
Q50 = 262.0'
Q100 = 262.7'
VELOCITY = 11.2 fps
12.9 fps
13.6 fps
14.2 fps
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

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'
Q10 = 260.1'
Q25 = 260.6'
Q50 = 261.0'
Q100 = 261.5'
VELOCITY= 13.0 fps
14.6 fps
15.2 fps
15.7 fps
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
ORDINARY LOW WATER: 0.5 cfs
ORDINARY HIGH WATER: 20 cfs
DEPTH OR ELEVATION: Depth < 0.5'
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 dp: 3.0 INCH
3. CULVERT OPENING D: 6.00 FT
4. MIN. MID-SPAN POS. CAMBER @ RELEASE (PRESTRESSED UNITS) Δ: ---
5. PRESTRESSING STRAND fy: ---
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 fy: 60 KSI
13. STRUCTURAL STEEL AASHTO M270 fy: ---
14. NOMINAL BEARING RESISTANCE OF SOIL qn: ---
15. SOIL BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD) φ: 0.45
16. NOMINAL BEARING RESISTANCE OF ROCK qn: 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 V3s: ---
21. MINIMUM GROUND SNOW LOAD pg: ---
22. SEISMIC DATA PGA: 0 Ss: ---
S1: ---
23. ---
24. ---
25. ---
26. ---

LRFR LOAD RATING FACTORS

LOADING LEVELS
TONNAGE
INVENTORY
POSTING
OPERATING
COMMENTS:

TRUCK

H-20
HL-93
3S2
6 AXLE
3A. STR.
4A. STR.
5A. SEM

20
36
36
66
30
34.5
38

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

AS BUILT "REBAR" DETAIL

LEVEL I
TYPE:
GRADE:

LEVEL II
TYPE:
GRADE:

LEVEL III
TYPE:
GRADE:

TRAFFIC DATA

YEAR
ADT
DHV
% D
% T
ADTT

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

GENERAL INFORMATION

SYMBOLGY LEGEND NOTE

THE SYMBOLGY ON THIS SHEET IS INTENDED TO COVER STANDARD CONVENTIONAL SYMBOLGY. THE SYMBOLGY 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. SYMBOLGY 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 SYMBOLGY

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 SYMBOLGY

PROJECT DESIGN & LAYOUT SYMBOLGY	
— -- — 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 — PDF —	PROJECT DEMARCATION FENCE
BF — x — x — BF — x —	BARRIER FENCE
xxxxxxxxxxxxxxxxxxxx	TREE PROTECTION ZONE (TPZ)
//////////	STRIPING LINE REMOVAL
~~~~~	SHEET PILES

CONVENTIONAL BOUNDARY SYMBOLGY

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 — — — — — P —	PROPERTY LINE (P/L)
— SR — — — — — SR —	SLOPE RIGHTS
6f ————— 6f —	6F PROPERTY BOUNDARY
4f ————— 4f —	4F PROPERTY BOUNDARY
HAZ ————— HAZ —	HAZARDOUS WASTE

EPSC LAYOUT PLAN SYMBOLGY

EPSC MEASURES	
ONNOONNOONNO	FILTER CURTAIN
— — — — —	SILT FENCE
— x — x — x — x —	SILT FENCE WOVEN WIRE
— — — — —	CHECK DAM
▣	DISTURBED AREAS REQUIRING RE-VEGETATION
⊗	EROSION MATTING

SEE EPSC DETAIL SHEETS FOR ADDITIONAL SYMBOLGY

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

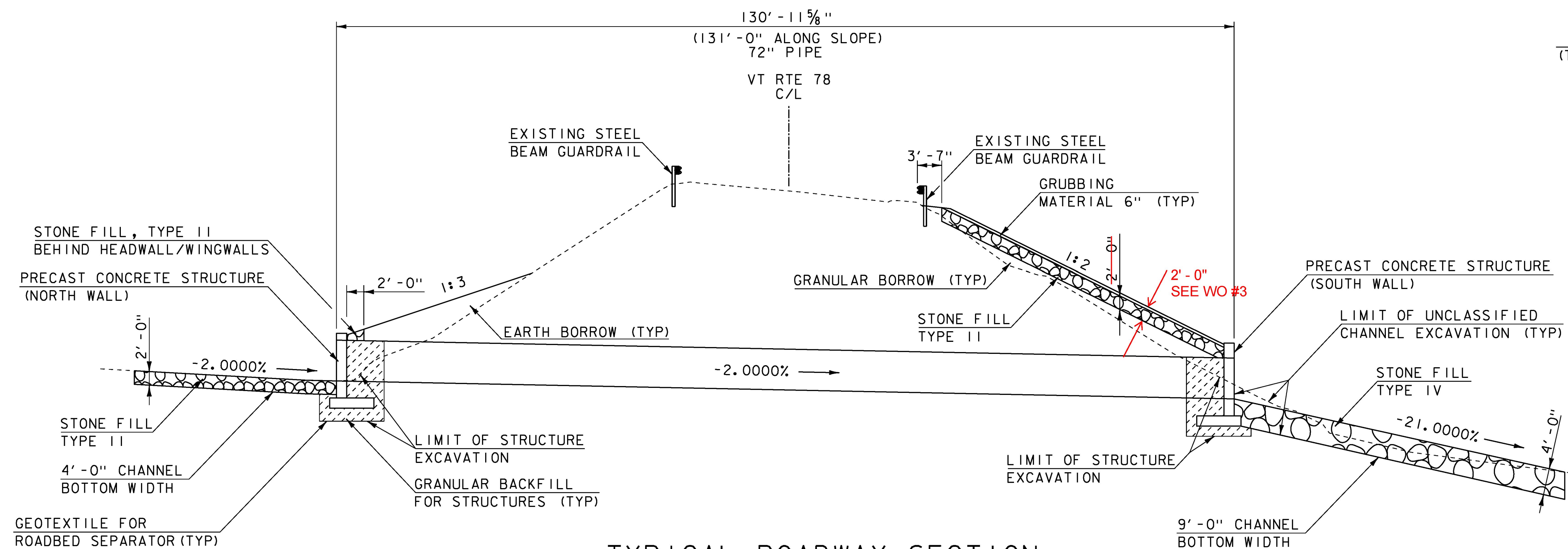
ARCHEOLOGICAL & HISTORIC	
— ARCH —	ARCHEOLOGICAL BOUNDARY
— HISTORIC DIST —	HISTORIC DISTRICT BOUNDARY
— HISTORIC —	HISTORIC AREA
Ⓜ	HISTORIC STRUCTURE

CONVENTIONAL TOPOGRAPHIC SYMBOLGY

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

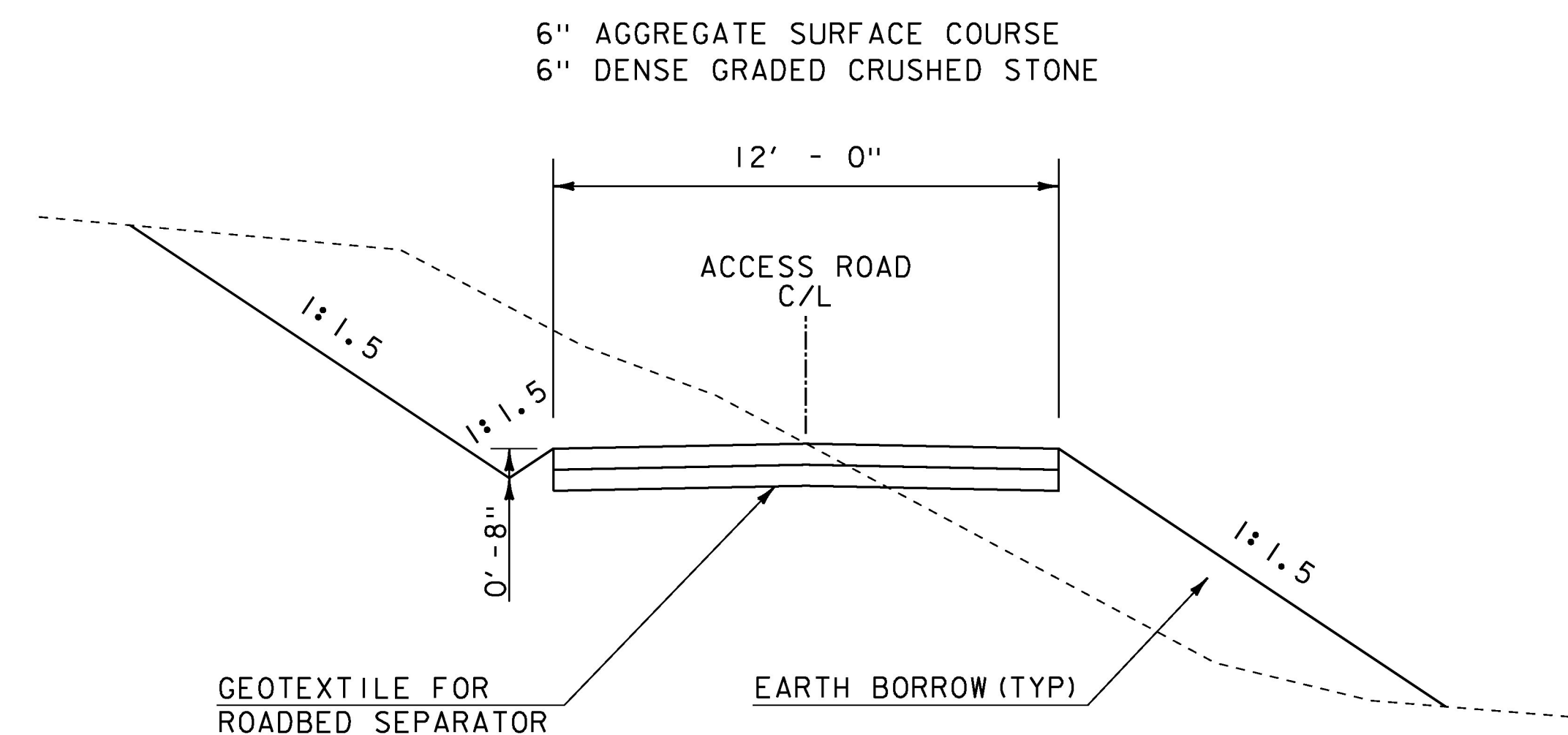
PROJECT NAME: HIGHGATE	
PROJECT NUMBER: STP SCRP(I2)	
FILE NAME: d13ci34_frm.dgn	PLOT DATE: 14-OCT-2016
PROJECT LEADER: B. MARTIN	DRAWN BY: A. KEMPTON
DESIGNED BY: A. KEMPTON	CHECKED BY: M. GAMELIN
CONVENTIONAL SYMBOLGY LEGEND SHEET	SHEET 3 OF 40





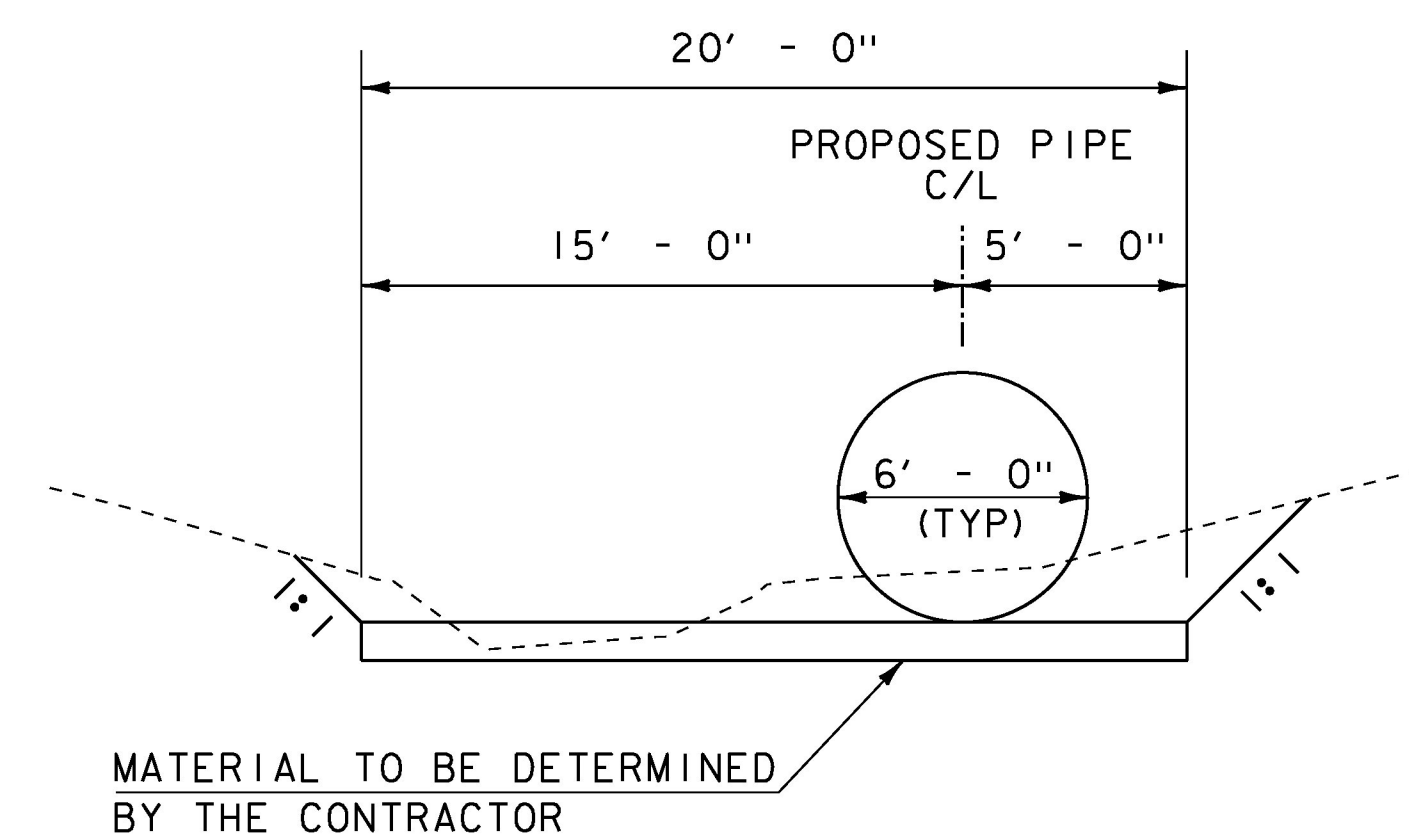
**TYPICAL ROADWAY SECTION  
(AT CENTERLINE OF PIPE)**

NOT TO SCALE



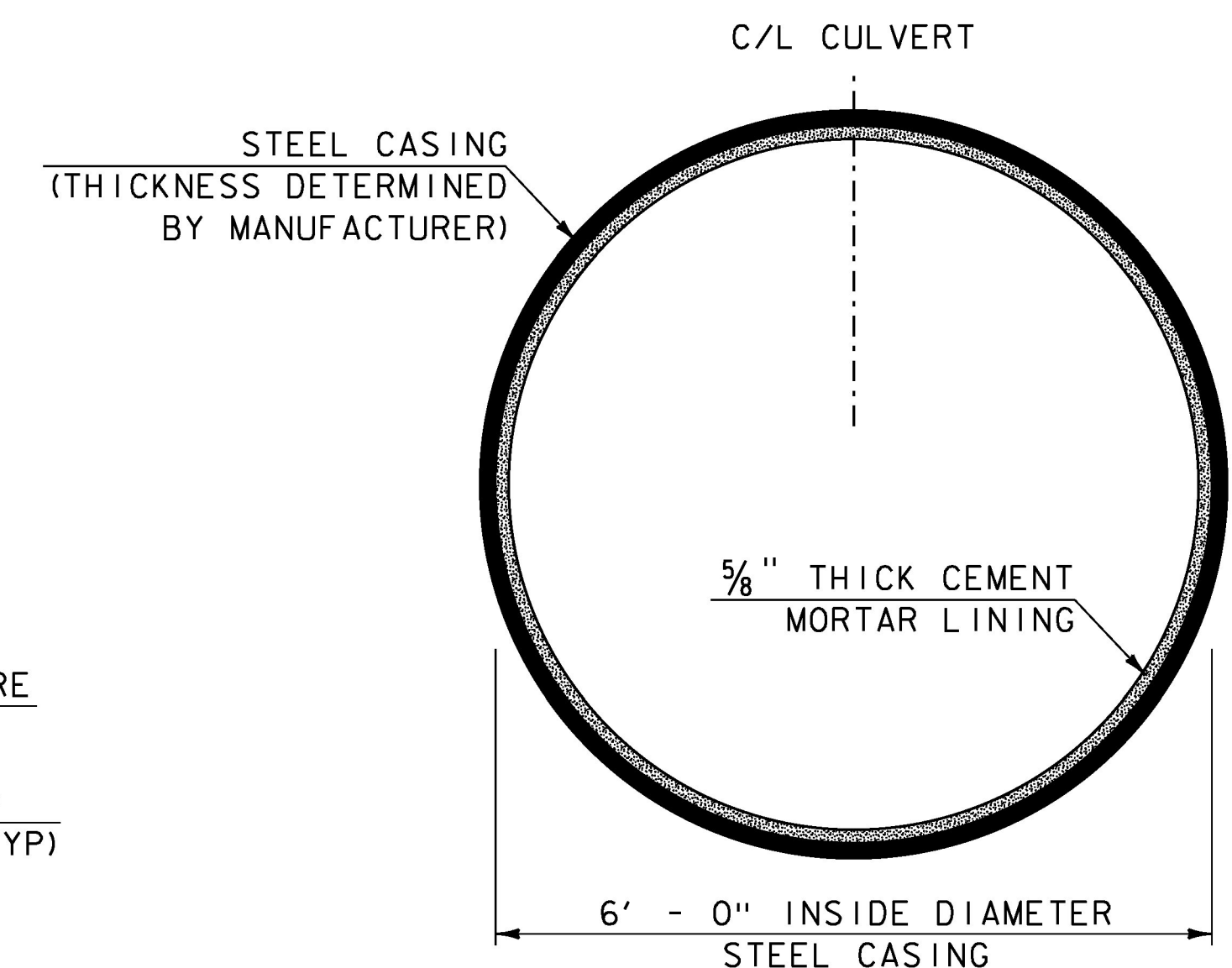
**TYPICAL ACCESS ROAD SECTION**

NOT TO SCALE



**TYPICAL STAGING AREA  
(RAMMING PAD) SECTION**

NOT TO SCALE



**TYPICAL CULVERT 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 SCRPI(2)	
FILE NAME: d13ci34typ.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:

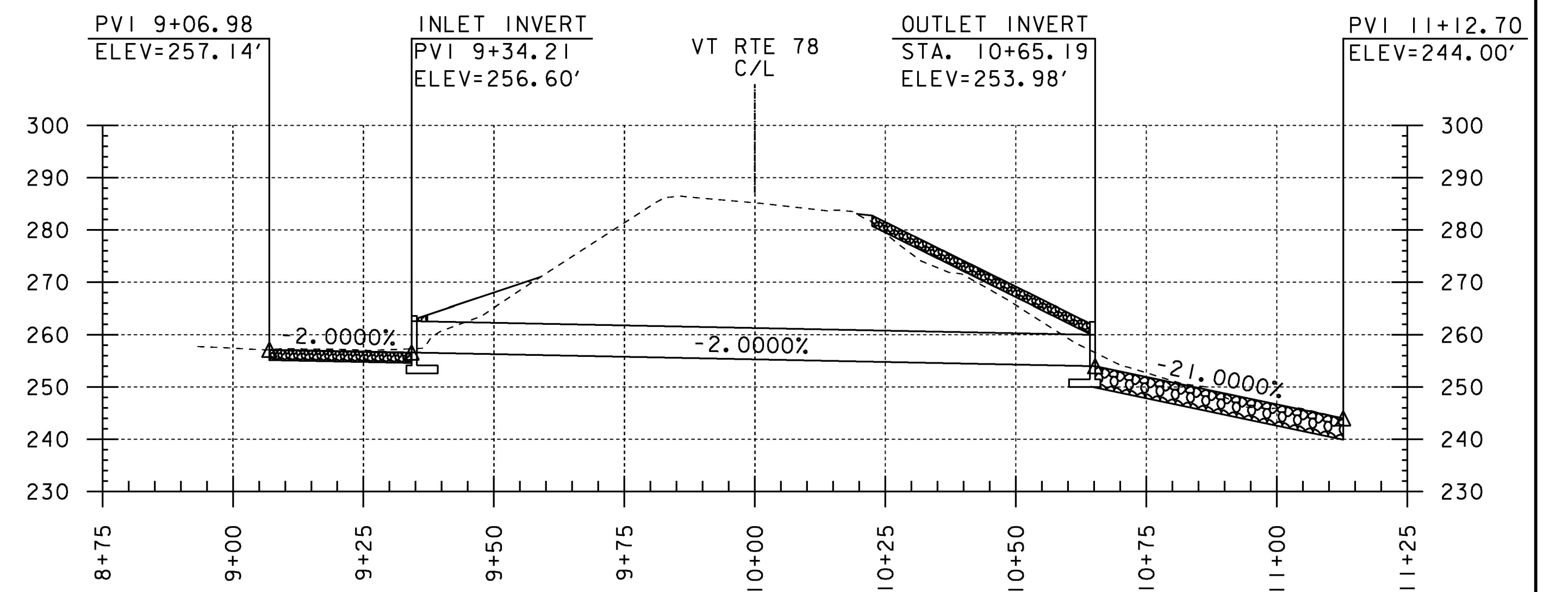
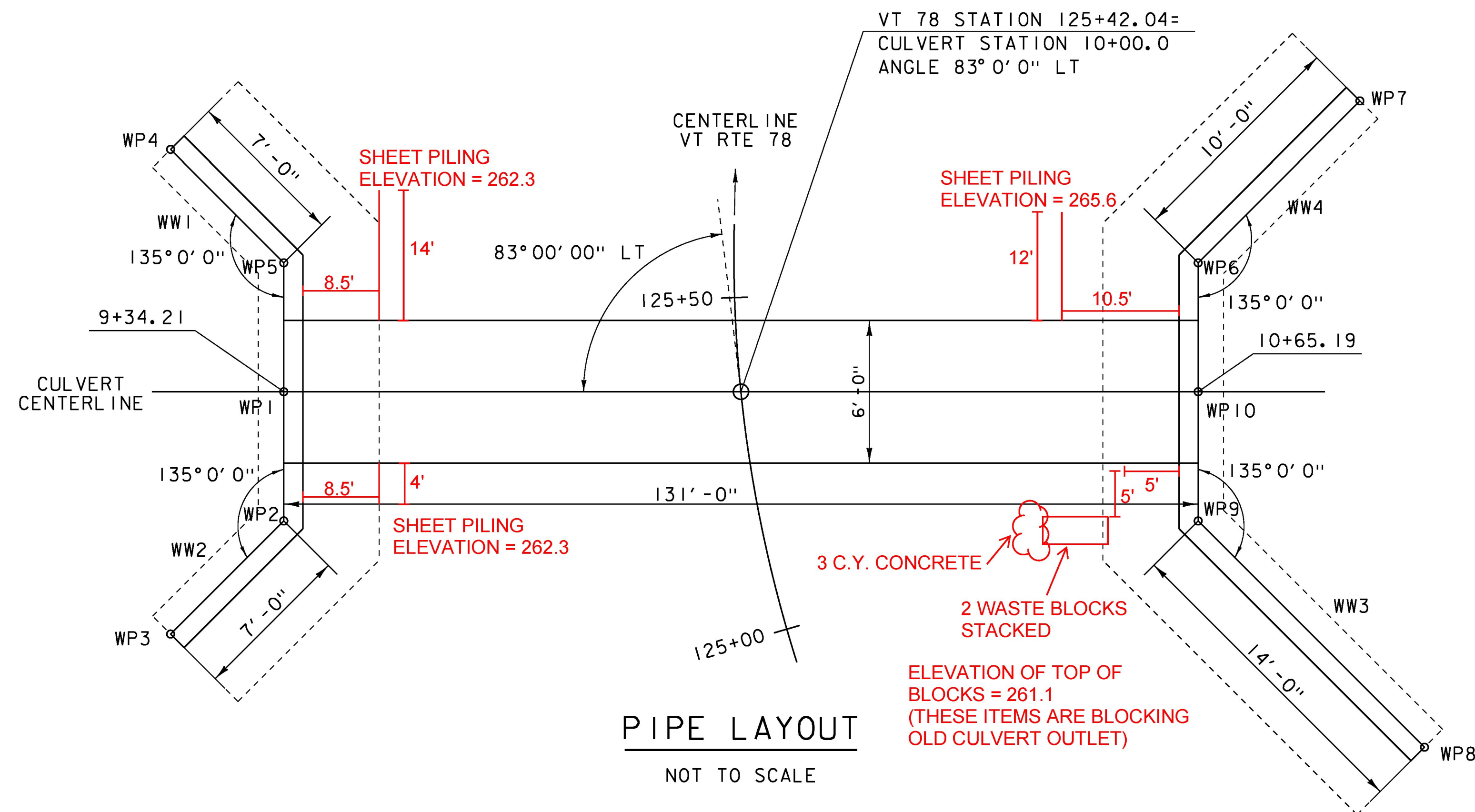
- 1. ITEM 900.640 SPECIAL PROVISION (TRENCHLESS PIPE WITH CEMENT MORTAR LINING)(72" DIAMETER) WILL INCLUDE, BUT IS NOT LIMITED TO THE DESIGN, FABRICATION, DELIVERY, HANDLING, REPAIR AND CONSTRUCTION OF ALL THE CULVERT AND CEMENT MORTAR ELEMENTS.
- 2. THE REMOVAL AND DISPOSAL OF ALL MATERIAL FROM INSIDE 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 +/- 1/2"
  - B. CLEARANCE +/- 1/4"
- 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.

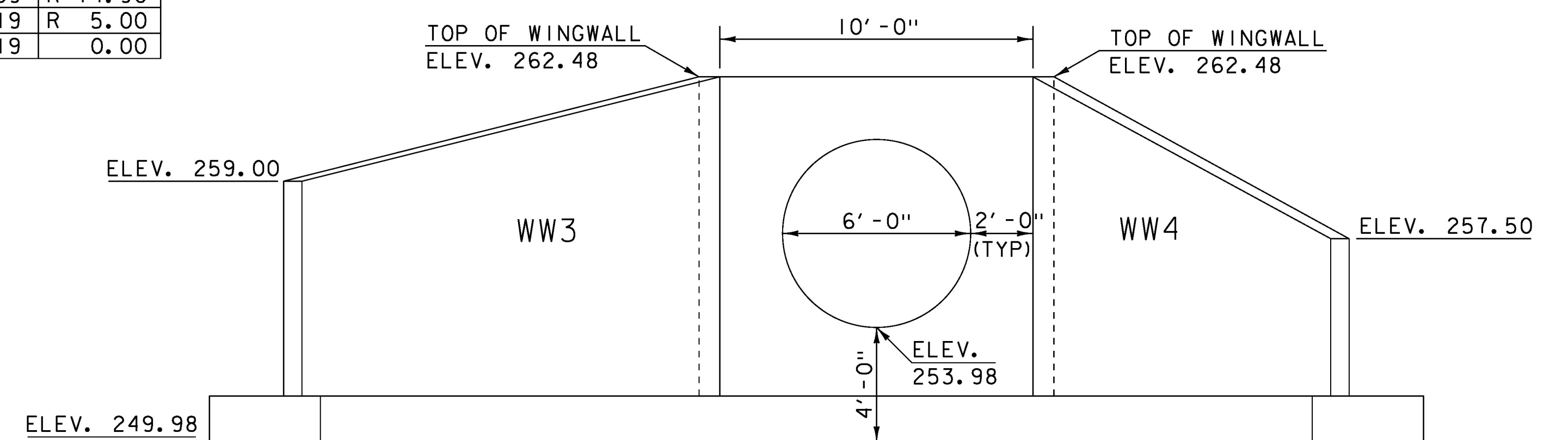
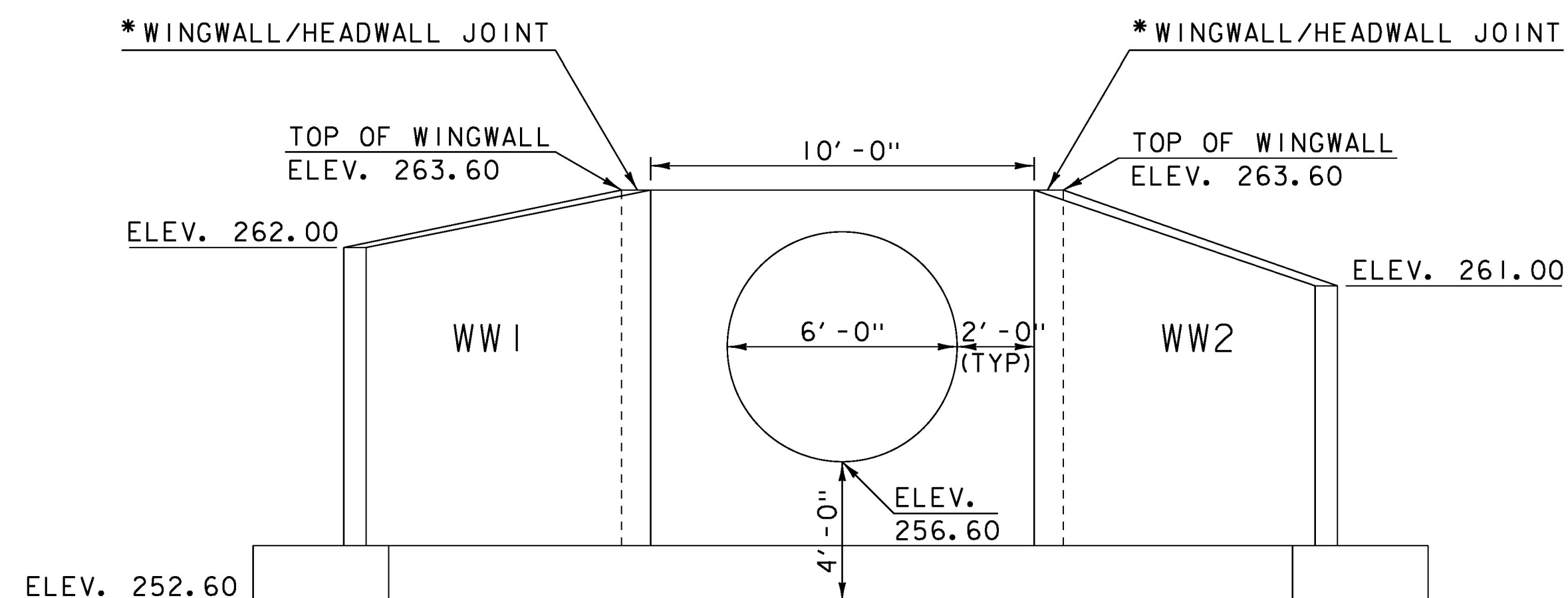
PROJECT NAME: HIGHGATE	
PROJECT NUMBER: STP SCRP(12)	
FILE NAME: d13c134det.dgn	PLOT DATE: 14-OCT-2016
PROJECT LEADER: B. MARTIN	DRAWN BY: A. KEMPTON
DESIGNED BY: A. KEMPTON	CHECKED BY: M. GAMELIN
PROJECT NOTES SHEET	SHEET 5 OF 40





### 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

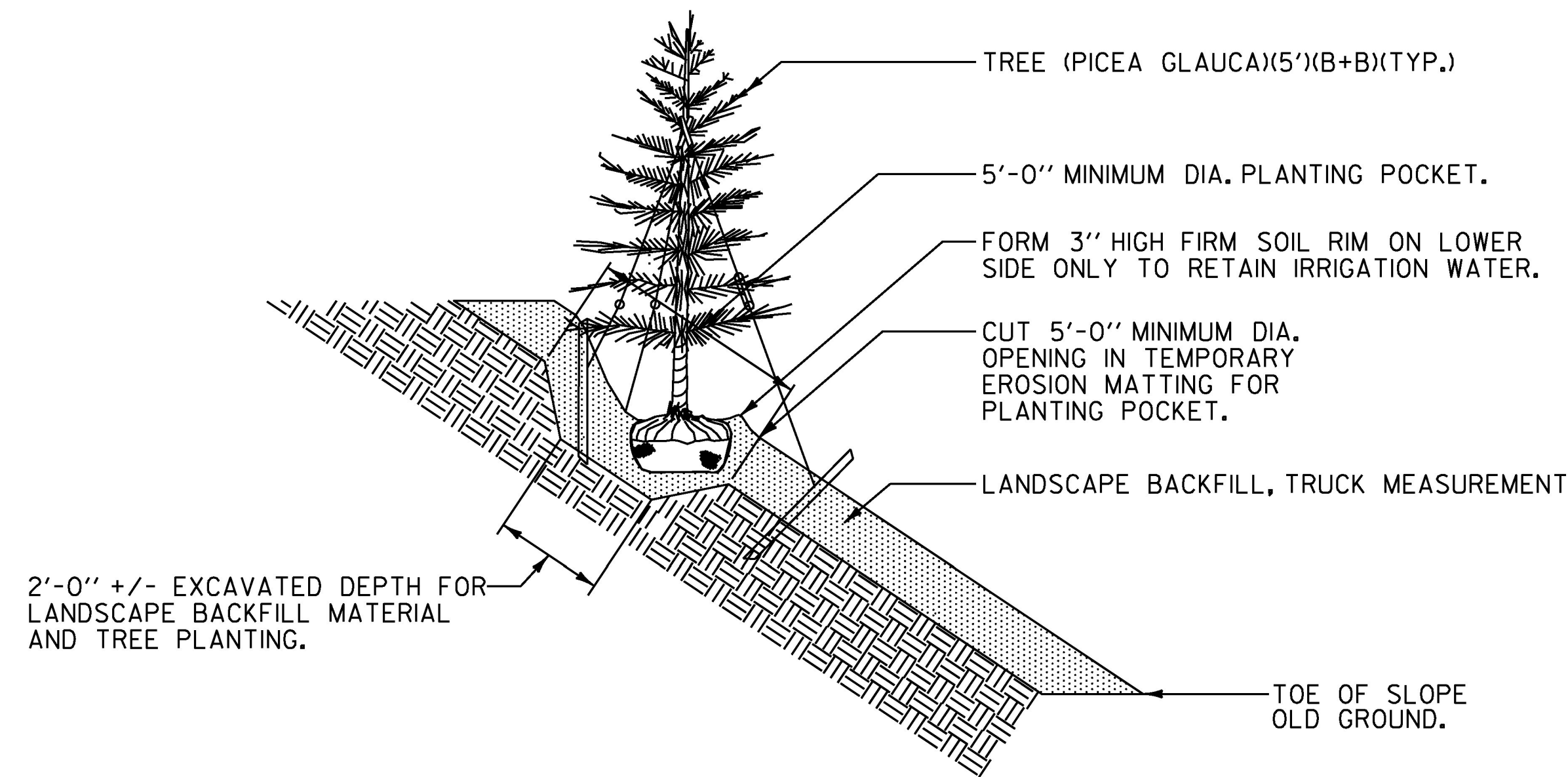


PROJECT NAME: HIGHGATE  
PROJECT NUMBER: STP SCRP(I2)

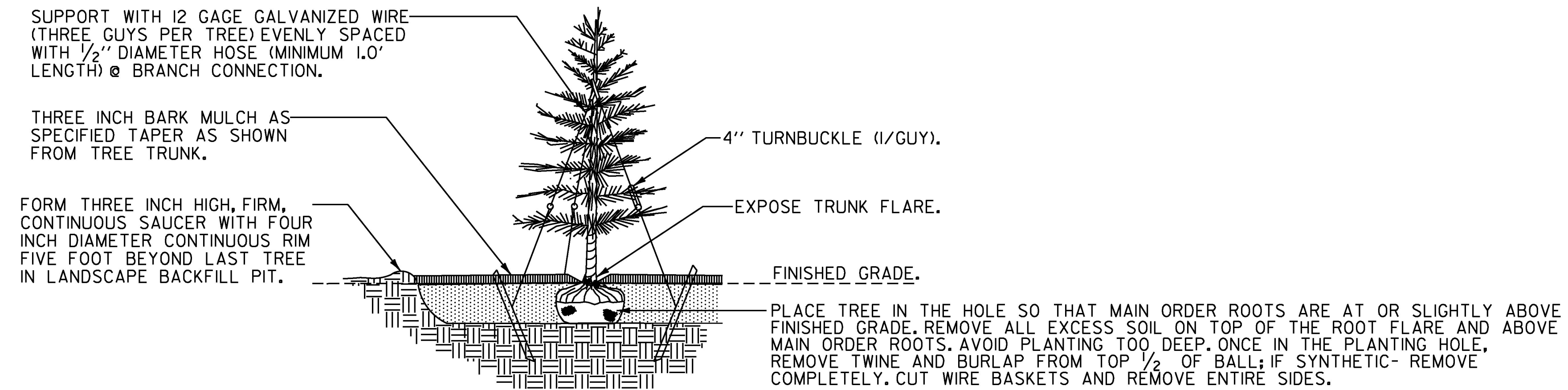
FILE NAME: d13ci34det.dgn  
PROJECT LEADER: B. MARTIN  
DESIGNED BY: A. KEMPTON  
DETAIL SHEET

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

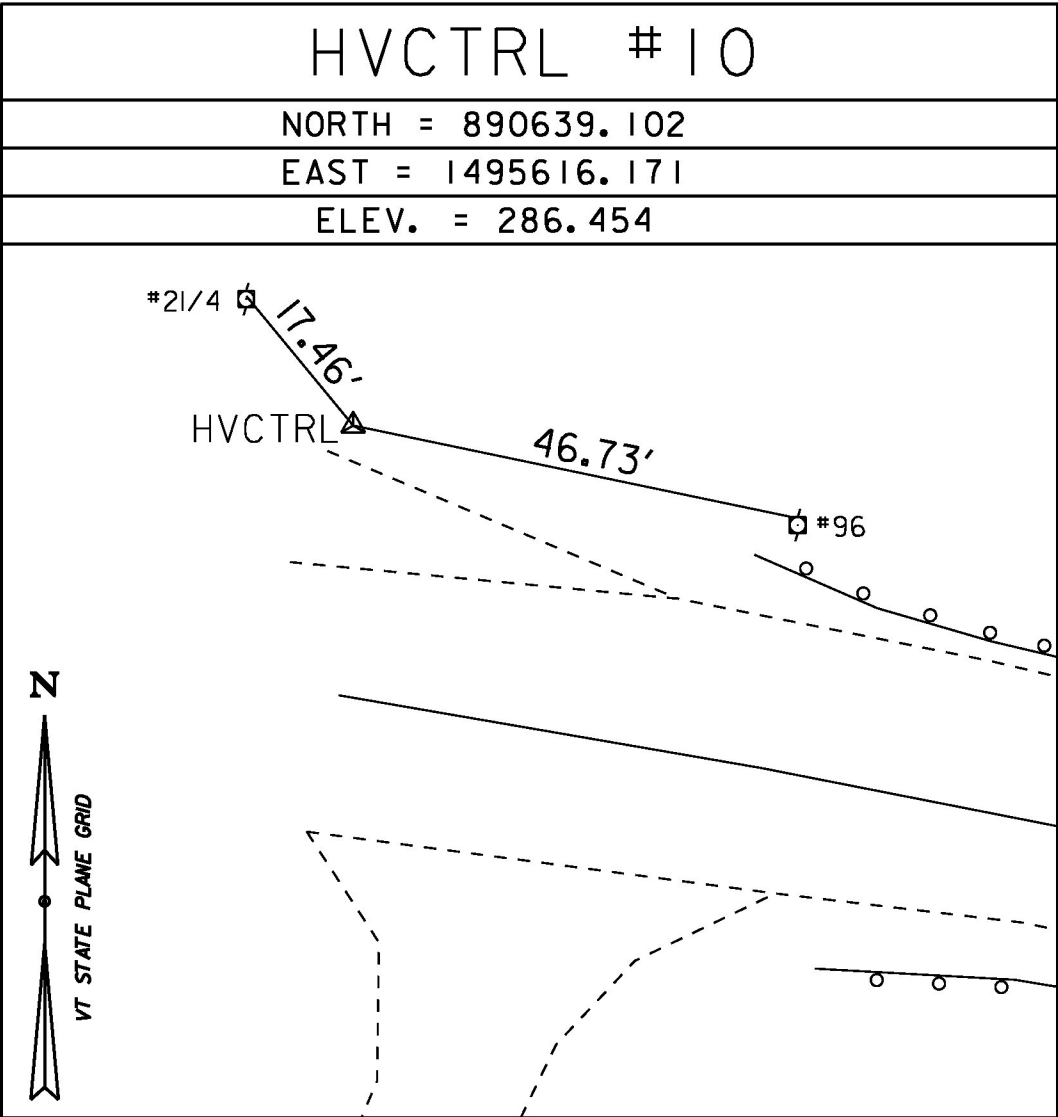
GENERAL LANDSCAPE NOTES:

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(I2)

FILE NAME: d13ci34frm.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

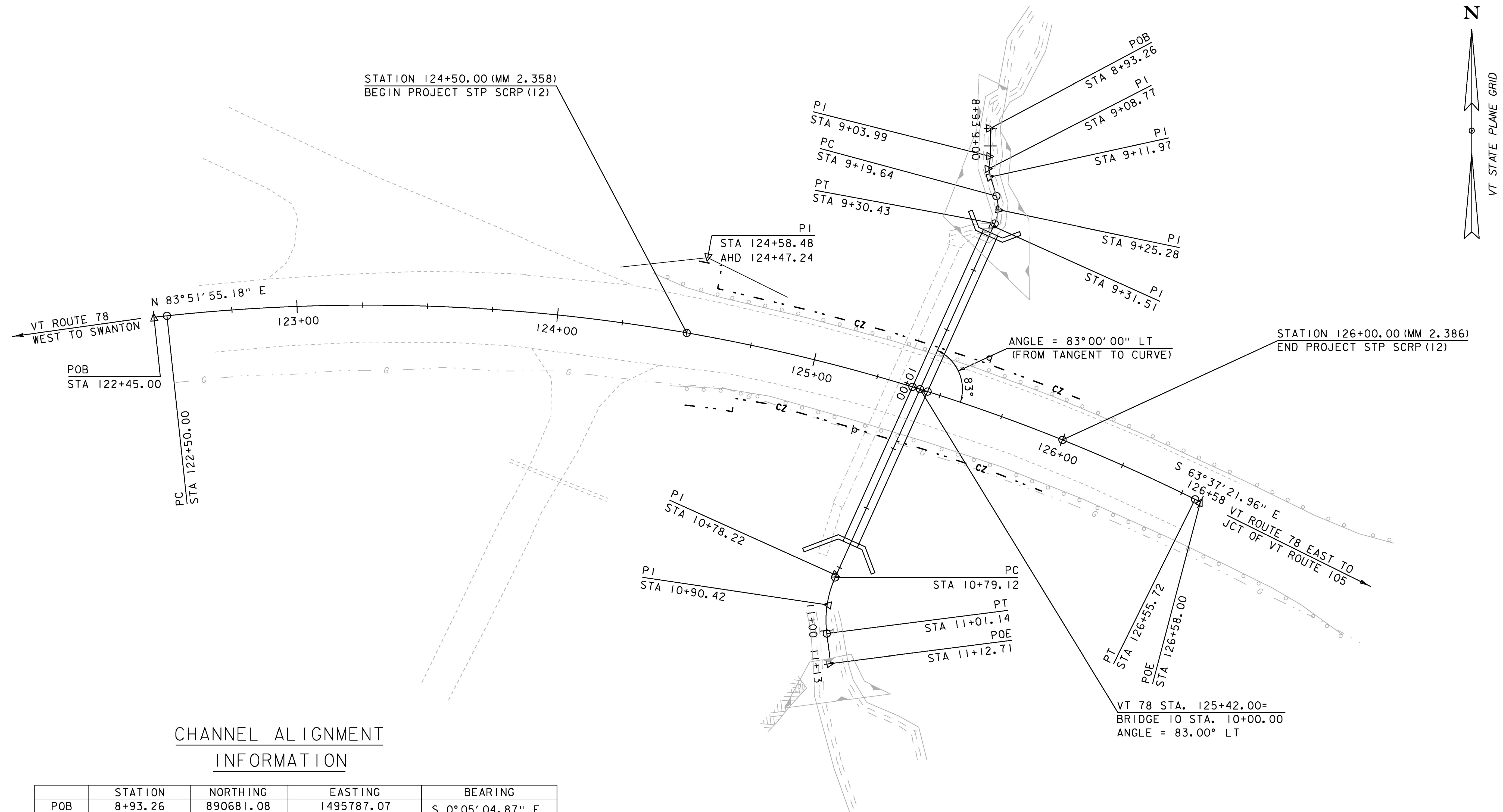


GPS CONTROL POINTS		HVCTRL #1  FSO B 1998  NORTH = 888880.200  EAST = 1485628.790  ELEV. = 230.92     THE STATION IS LOCATED APPROXIMATELY 9.7 KM (6.00 MI) SOUTH OF THE U.S. AND CANADA BORDER, 4.43 KM (2.75 MI) WEST OF HIGHGATE CENTER, 2.9 KM (1.80 MI) EAST OF SWANTON, 1.6 KM (1.00 MI) EAST OF INTERSTATE 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 HIGHWAY 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 DISK 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 1978  0.7 MI WEST FROM HIGHGATE CENTER. 0.65 MILE WEST ALONG STATE HIGHWAY 78 FROM THE POST OFFICE AT HIGHGATE 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 OF A 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:    X13C134T1.DGN    PLOT DATE: 14-OCT-2016   PROJECT LEADER: B. MARTIN    DRAWN BY:    C. CYR   DESIGNED BY:    A. KEMPTON    CHECKED BY: P. BEYOR   TIE SHEET 1    SHEET    8    OF    40				



ALIGNMENT TIES	N. ACCESS PC 0+04.74	N. ACCESS PT 0+71.12	N. ACCESS PC 2+29.86	N. ACCESS PT 2+40.31	N. ACCESS POE 3+46.94
	NORTH = 890708.65	NORTH = 890735.40	NORTH = 890710.02	NORTH = 890707.46	NORTH = 890672.43
	EAST = 1495464.25	EAST = 1495520.65	EAST = 1495677.34	EAST = 1495687.46	EAST = 1495788.17
	ELEV. =	ELEV. = 284.42	ELEV. = 282.42	ELEV. = 282.29	ELEV. =
ALIGNMENT TIES	S. ACCESS POB 1+00.00	S. ACCESS PC 1+17.03	S. ACCESS PT 1+33.05	S. ACCESS POE 2+42.16	PIPE ALIGN. POB 9+03.50
	NORTH = 890564.79	NORTH = 890557.79	NORTH = 890547.71	NORTH = 890458.50	NORTH = 890669.16
	EAST = 1495632.56	EAST = 1495648.08	EAST = 1495660.29	EAST = 1495723.10	EAST = 1495799.78
	ELEV. =	ELEV. = 280.70	ELEV. = 274.79	ELEV. =	ELEV. =
ALIGNMENT TIES	PIPE ALIGN. POE 11+34.0				
	NORTH = 890459.03	NORTH =	NORTH =	NORTH =	NORTH =
	EAST = 1495705.05	EAST =	EAST =	EAST =	EAST =
	ELEV. =	ELEV. =	ELEV. =	ELEV. =	ELEV. =
DATUM					
VERTICAL	NAVD 88				
HORIZONTAL	NAD 83 (2011)				
ADJUSTMENT	COMPASS				
		PROJECT NAME: HIGHGATE			
		PROJECT NUMBER: STP SCRP(12)			
		FILE NAME: dl3cl34+1e.dgn		PLOT DATE: 14-OCT-2016	
		PROJECT LEADER: B. MARTIN		DRAWN BY: A. KEMPTON	
		DESIGNED BY: A. KEMPTON		CHECKED BY: M. GAMELIN	
		TIE SHEET 2		SHEET 9 OF 40	

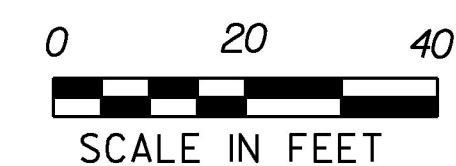




CHANNEL ALIGNMENT  
INFORMATION

	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	
PC	9+19.64	890655.15	1495789.39	S 16°56'49.55" E
PI	9+25.28	890649.75	1495791.04	
PT	9+30.43	890644.61	1495788.72	S 24°16'03.17" W
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



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

PROJECT NAME:	HIGHGATE
PROJECT NUMBER:	STP SCRPI(2)
FILE NAME:	d13ci34def.dgn
PROJECT LEADER:	B. MARTIN
DESIGNED BY:	A. KEMPTON
CHANNEL ALIGNMENT SHEET	
PLOT DATE:	14-OCT-2016
DRAWN BY:	A. KEMPTON
CHECKED BY:	M. GAGELIN
SHEET	10 OF 40



		STATE OF VERMONT AGENCY OF TRANSPORTATION MATERIALS & RESEARCH SECTION SUBSURFACE INFORMATION		BORING LOG		Boring No.: <b>B-101</b>							
				HIGHGATE STP SCR(12) VT-78 BR-10 CULVERT MM2.37		Page No.: 1 of 1 Pin No.: 13C134 Checked By: CCB							
Boring Crew: DAIGNEAULT, HALL		Casing		Sampler		Groundwater Observations							
Date Started: 8/12/13 Date Finished: 8/12/13		Type: WB SS		I.D.: 4 in 1.5 in		Date Depth Notes							
VTSPG NAD83: N 890591.03 ft E 1495758.78 ft		Hammer Wt: N.A. 140 lb.		Hammer Fall: N.A. 30 in.		08/12/13 26.0 While drilling.							
Station: 125+38 Offset: -9.00		Hammer/Rod Type: Auto/AWJ											
Ground Elevation: 285.44 ft		Rig: CME 55 TRACK C = 1.46											
Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)		Run (Dip deg.)	Core Rec. % (RCD %)	Drill Rate minutes/ft	Blows/ft (N Value)	Moisture Content %	Gravel %	Sand %	Fines %	LL %	PI %
		Asphalt Pavement, 0.0 ft - 1.0 ft					12-12-11-10 (23)	11.3	2.6	73.4	24.0		
		A-2-4, SiSa, brn, Moist, Rec. = 1.1 ft											
		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
30		Visual Description: Wood, brn, Moist, Rec. = 0.5 ft, (Possible Log Mat)											
		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							
		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							
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 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.													

		STATE OF VERMONT AGENCY OF TRANSPORTATION MATERIALS & RESEARCH SECTION SUBSURFACE INFORMATION		BORING LOG		Boring No.: <b>B-102</b>							
				HIGHGATE STP SCR(12) VT-78 BR-10 CULVERT MM2.37		Page No.: 1 of 1 Pin No.: 13C134 Checked By: CCB							
Boring Crew: DAIGNEAULT, HALL, JUDKINS		Casing		Sampler		Groundwater Observations							
Date Started: 8/09/13 Date Finished: 8/19/13		Type: WB SS		I.D.: 4 in 1.5 in		Date Depth Notes							
VTSPG NAD83: N 890639.50 ft E 1495793.67 ft		Hammer Wt: N.A. 140 lb.		Hammer Fall: N.A. 30 in.		08/09/13 10.2 While drilling.							
Station: 125+49 Offset: -66.00		Hammer/Rod Type: Auto/AWJ											
Ground Elevation: 259.09 ft		Rig: CME 55 TRACK C = 1.46											
Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)		Run (Dip deg.)	Core Rec. % (RCD %)	Drill Rate minutes/ft	Blows/ft (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							
		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 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.													



		STATE OF VERMONT AGENCY OF TRANSPORTATION MATERIALS & RESEARCH SECTION SUBSURFACE INFORMATION		BORING LOG		Boring No.: <b>B-103</b>					
				HIGHGATE STP SCR(12) VT-78 BR-10 CULVERT MM2.37		Page No.: 1 of 1 Pin No.: 13C134 Checked By: CCB					
Boring Crew: DAIGNEAULT, JUDKINS, HALL		Casing		Sampler	Groundwater Observations						
Date Started: 8/08/13 Date Finished: 8/08/13		Type: WB		SS	Date	Depth (ft)	Notes				
VTSPG NAD83: N 890523.91 ft E 1495749.11 ft		I.D.: 4 in		1.5 in							
Station: 125+31 Offset: 58.00		Hammer Wt: N.A.		140 lb.							
Ground Elevation: 250.99 ft		Hammer Fall: N.A.		30 in.							
		Hammer/Rod Type: Auto/AWJ									
		Rig: CME 55 TRACK		C _c = 1.46							
Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)			Blows/ft (N Value)	Moisture Content %	Gravel %	Sand %	Fines %	LL %	PI %
		Visual Description: GrSiSa, brn, Moist, Rec. = 0.2 ft, Possible Fill. Field Note: NXDC, Cobbles			R@2.5"	10.1					
5		A-1-b, SiSaGr, gry, MTW, Rec. = 0.7 ft, Broken Rock was within sample. Lab Note, NXDC, Cobbles			16-9-9-9 (18)	10.5	39.7	38.8	21.5		
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		
15		Field Note: NXDC, Cobbles A-2-4, SaGrSi, gry, Moist, Rec. = 0.9 ft, A small amount of Clay was noticeable. Broken Rock was within sample. Field Note: NXDC, Cleaned out casing.			39-36-R@1.0" (R)	8.2	33.2	25.1	41.7		
20		A-4, CiSi, 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											
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 _c 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.											

		STATE OF VERMONT AGENCY OF TRANSPORTATION MATERIALS & RESEARCH SECTION SUBSURFACE INFORMATION		BORING LOG		Boring No.: <b>B-104</b>					
				HIGHGATE STP SCR(12) VT-78 BR-10 CULVERT MM2.37		Page No.: 1 of 1 Pin No.: 13C134 Checked By: CCB					
Boring Crew: DAIGNEAULT, HALL		Casing		Sampler	Groundwater Observations						
Date Started: 8/12/13 Date Finished: 8/12/13		Type: WB		N.A.	Date	Depth (ft)	Notes				
VTSPG NAD83: N 890573.83 ft E 1495753.91 ft		I.D.: 4 in			08/12/13	2.3	After drilling.				
Station: 125+37 Offset: 12.30		Hammer Wt: N.A.		N.A.							
Ground Elevation: 283.54 ft		Hammer Fall: N.A.		N.A.							
		Hammer/Rod Type:									
		Rig: CME 55 TRACK		C _c =							
Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)			Blows/ft (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											
20		18.0 ft - 27.0 ft, Easy drilling. Brown sand & gray silt in area. Gray sandy silt in water return.									
30		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.									
40		40.0 ft - 46.0 ft, Extremely difficult drilling. Advanced at a very slow pace. Most likely solid rock. Steady rise water pressure.									
50		Hole stopped @ 46.0 ft In Possible Bedrock.									
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 _c 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.											



STATE OF VERMONT AGENCY OF TRANSPORTATION												QUANTITY SHEET 1									
SUMMARY OF ESTIMATED QUANTITIES												TOTALS		DESCRIPTIONS				DETAILED SUMMARY OF QUANTITIES			
							ROADWAY	LANDSCAPING	EROSION CONTROL	BRIDGE #10	FULL C.E. ITEMS	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND	QUANTITIES	UNIT	ITEMS	
							1					1		LS	CLEARING AND GRUBBING, INCLUDING INDIVIDUAL TREES AND STUMPS	201.10	-			EARTHWORKS SUMMARY	
							75					75		CY	COMMON EXCAVATION	203.15	9.8	75	CY	FILL AVAILABLE	
							5					5		CY	SOLID ROCK EXCAVATION	203.16	2.5	66	CY	COMMON EXCAVATION (75 x 1.0)	
										220		220		CY	UNCLASSIFIED CHANNEL EXCAVATION	203.27	5.1	63	CY	CHANNEL EXCAVATION (220 x 0.3)	
							70					70		CY	GRANULAR BORROW	203.32	9.3	41	CY	STRUCTURE EXCAVATION (210 x 0.3)	
							1					1		CY	TRENCH EXCAVATION OF EARTH, EXPLORATORY (N.A.B.I.)	204.22	EST	10	CY	PIPE RAMMING SPOILS (137 x 0.3)	
										210		210		CY	STRUCTURE EXCAVATION	204.25	4			ROUNDING	
										190		190		CY	GRANULAR BACKFILL FOR STRUCTURES	204.30	3.3	255	CY	TOTAL FILL AVAILABLE	
										3		3		GAL	WATER REPELLENT, SILANE	514.10	0.4	253	CY	EARTH BORROW REQUIRED (220 x 1.15)	
										1		1		LS	PRECAST CONCRETE STRUCTURE (NORTH WALL)	540.10	-	70	CY	GRANULAR BORROW REQUIRED	
										1		1		LS	PRECAST CONCRETE STRUCTURE (SOUTH WALL)	540.10	-	68	CY	ADDITIONAL FILL REQUIRED	
							70					70		CY	CONTROLLED DENSITY (FLOWABLE) FILL	541.45	4.8	2	CY	ROUNDING	
							20					20		HR	ALL PURPOSE EXCAVATOR RENTAL, TYPE I	608.25	EST	70	CY	TOTAL ADDITIONAL FILL REQUIRED	
							40					40		HR	TRUCK RENTAL	608.37	EST			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.	
							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				
																		PROJECT NAME: HIGHGATE			
																		PROJECT NUMBER: STP SCRPI(2)			
																		FILE NAME: dl3cl34_frm.dgn			
																		PLOT DATE: 14-OCT-2016			
																		PROJECT LEADER: B. MARTIN			
																		DESIGNED BY: A. KEMPTON			
																		CHECKED BY: M. GAMELIN			
																		QUANTITY SHEET 1			
																		SHEET 13 OF 40			



## QUANTITY SHEET 2

[illegible]

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
QUANTITY SHEET 2	SHEET 14 OF 40



# RIGHT - OF - WAY DETAIL SHEET

[illegible]

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



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

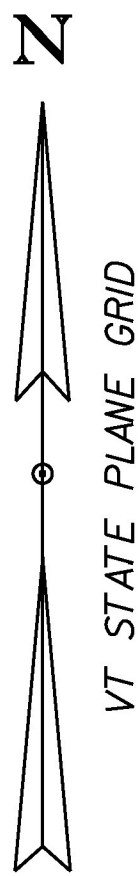
GROUND SURFACE SHALL BE TILLED  
TO A DEPTH OF 18" FOR NEW TREES  
IN A CONTINUOUS BED, AS SHOWN

NORTH ACCESS RD  
(SEE NEXT SHEET)

PROPOSED CONIFEROUS  
TREES (8' SPACING)

UNNAMED  
STREAM

N/F  
TREMBLAY, GILBERT  
& MARIE



GREENIA PROPERTIES, LLC

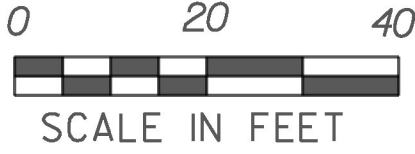
N/F  
TREMBLAY, GILBERT  
& MARIE

NOTE:  
THE EXISTING BOX CULVERT SHALL BE  
ABANDONED IN PLACE AND SHALL BE FILLED  
WITH CONTROLLED 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 SCR(12)

FILE NAME: r13cl34lay.dgn  
PROJECT LEADER: B. MARTIN  
DESIGNED BY: A. KEMPTON  
R.O.W. LAYOUT SHEET 1 OF 1

PLOT DATE: 14-OCT-2016  
DRAWN BY: A. EGIZI  
CHECKED BY: R. CLOUTIER  
SHEET 16 OF 40



END R.O.W. PROJECT  
HIGHGATE STP SCR(12)  
STA. 126+11, 39.01' RT

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'

TOWN OF HIGHGATE

N/F  
PATTERSON, SCOTT

TOWN OF HIGHGATE  
TH1, CARTER HILL  
ROAD

BEGIN R.O.W. PROJECT  
HIGHGATE STP SCR(12)  
STA. TH1 21+58, 11.90' RT

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.

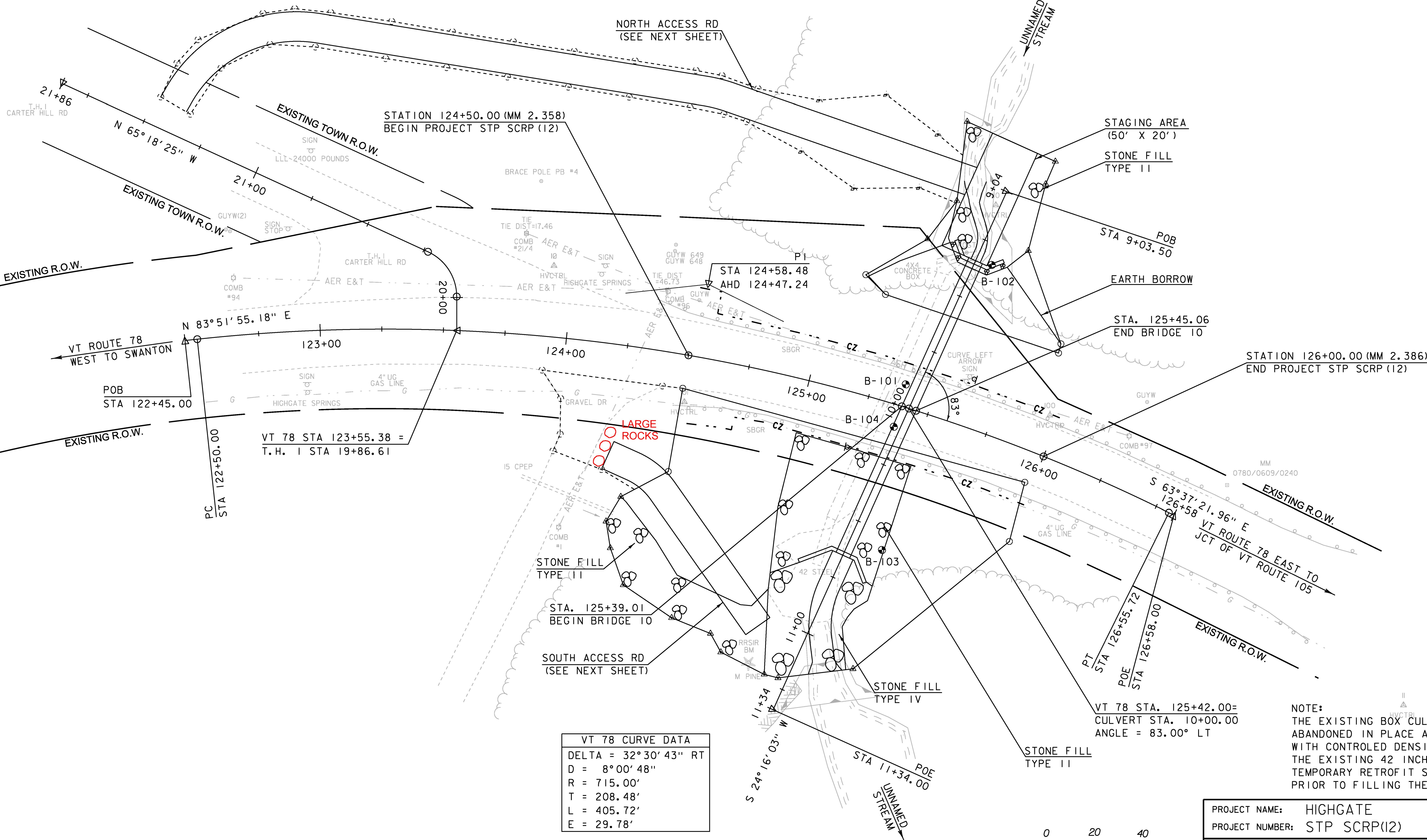
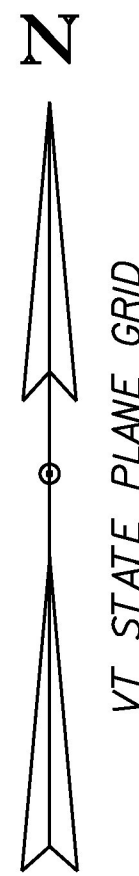
FOR R.O.W.  
USE ONLY



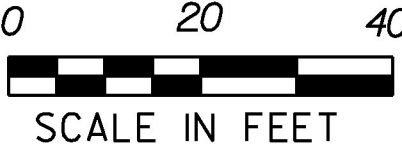
TRAFFIC SIGNS, TYPE A (BRIDGE NUMBER PLAQUE)  
STA. 125+22.0 RT  
STA. 125+63.0 LT  
SQUARE TUBE SIGN POST AND ANCHOR  
STA. 125+22.0 RT  
STA. 125+63.0 LT

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

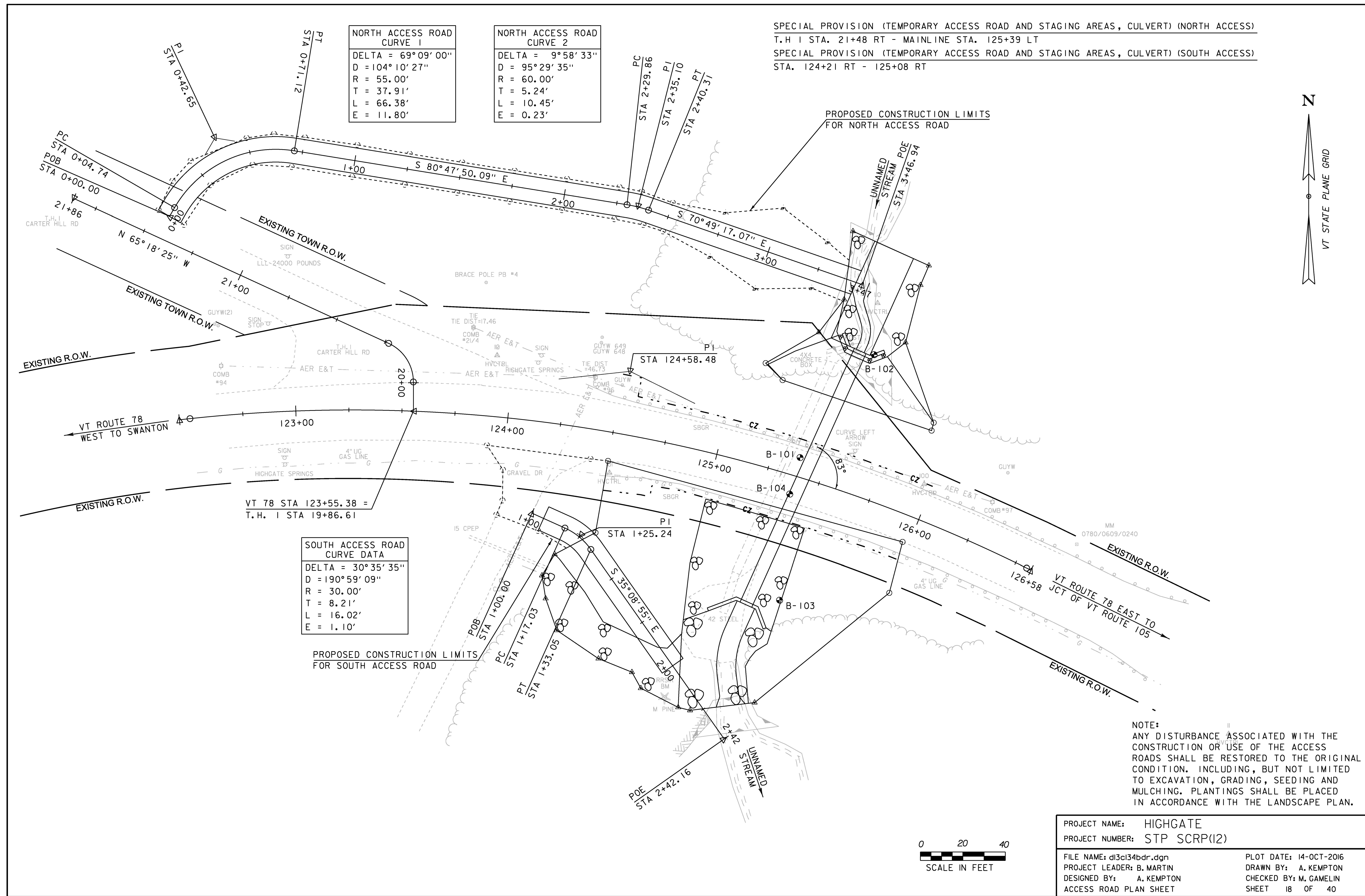


VT 78 CURVE DATA	
DELTA =	32°30'43" RT
D =	8°00'48"
R =	715.00'
T =	208.48'
L =	405.72'
E =	29.78'

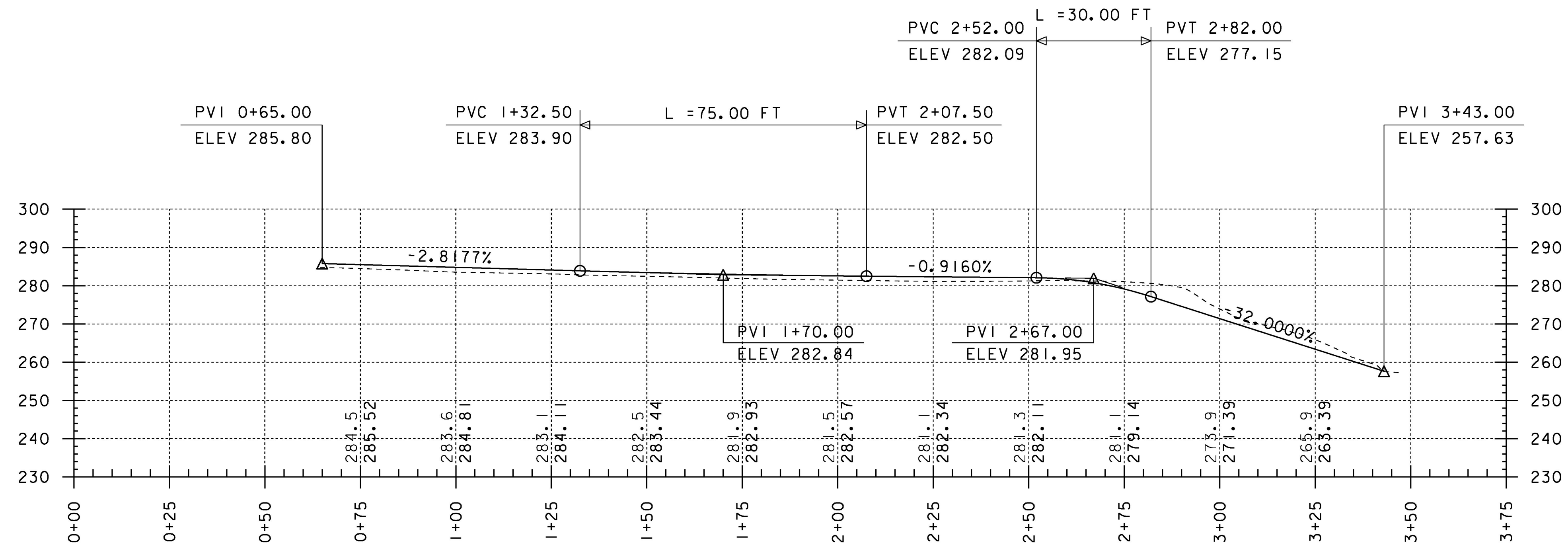


PROJECT NAME:	HIGHGATE
PROJECT NUMBER:	STP SCRPI(2)
FILE NAME:	d13ci34bdr.dgn
PROJECT LEADER:	B. MARTIN
DESIGNED BY:	A. KEMPTON
PLAN SHEET	
PLOT DATE:	14-OCT-2016
DRAWN BY:	A. KEMPTON
CHECKED BY:	M. GAMELIN
SHEET	17 OF 40

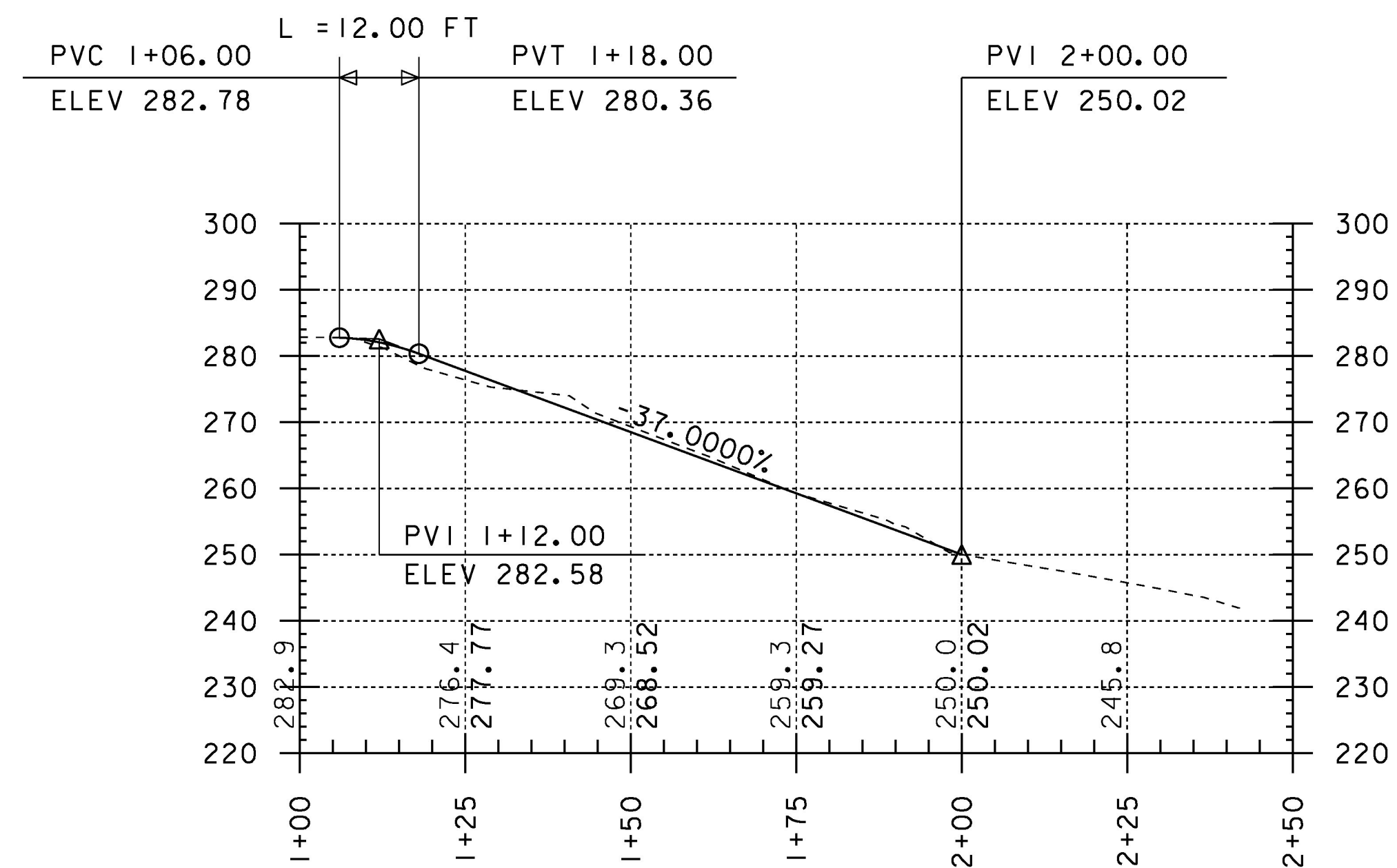








NORTH ACCESS ROAD PROFILE



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.

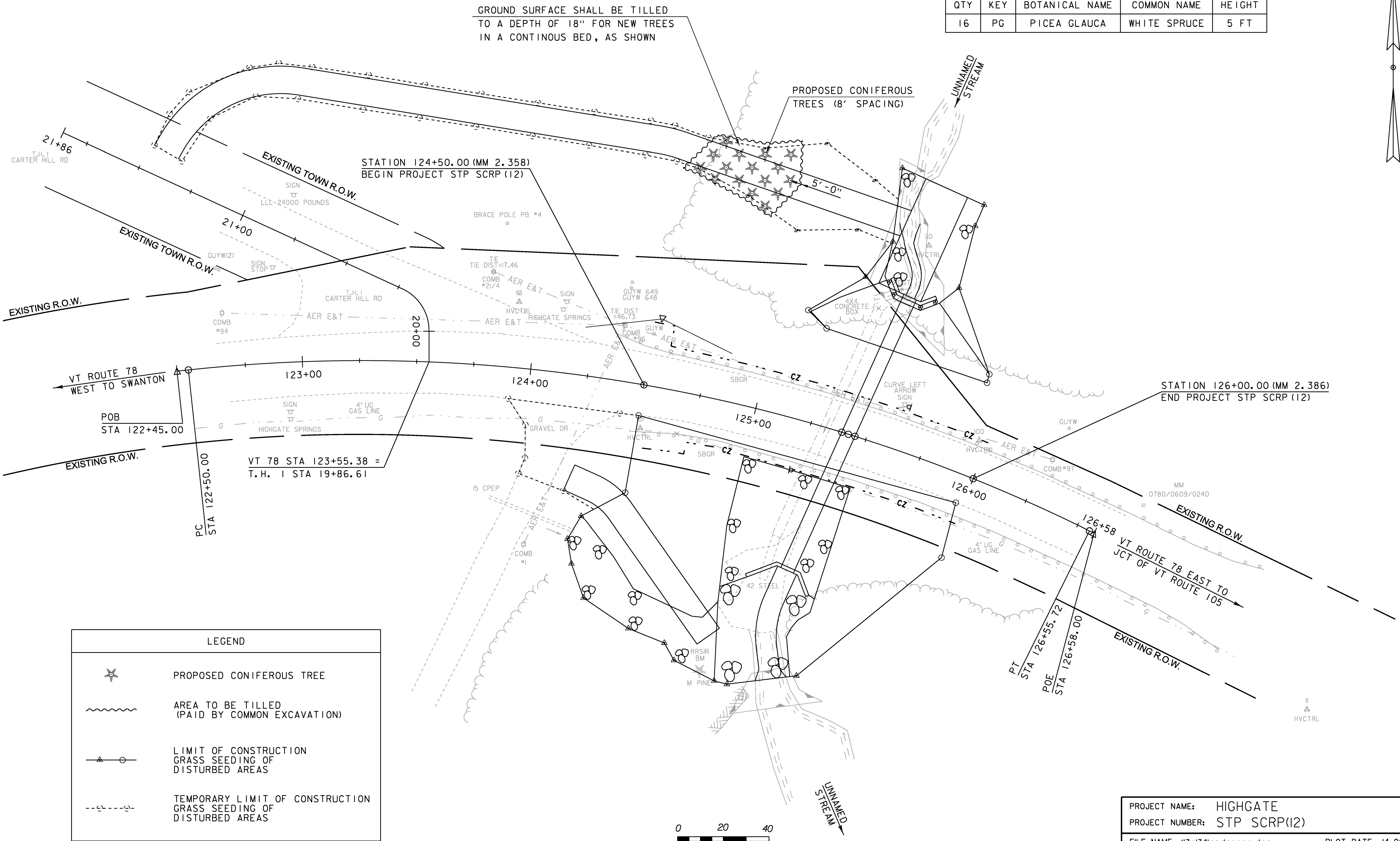
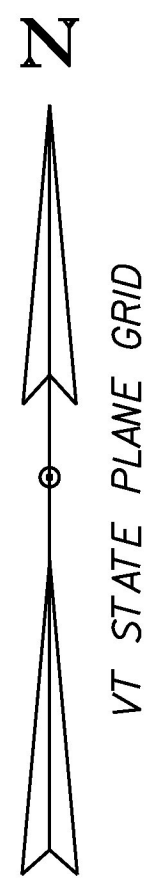
SCALE IN FEET

PROJECT NAME: HIGHGATE	
PROJECT NUMBER: STP SCRP(I2)	
FILE NAME: d\3ci34pro.dgn	PLOT DATE: 14-OCT-2016
PROJECT LEADER: B. MARTIN	DRAWN BY: A. KEMPTON
DESIGNED BY: A. KEMPTON	CHECKED BY: M. GAMELIN
ACCESS ROAD PROFILE SHEET	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



PROJECT NAME:	HIGHGATE	PLOT DATE:	14-OCT-2016
PROJECT NUMBER:	STP SCRPI(12)	DRAWN BY:	A. AGRAWAL
FILE NAME:	d13cl34landscape.dgn	CHECKED BY:	A. KEMPTON
PROJECT LEADER:	B. MARTIN	LANDSCAPE PLAN SHEET	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 EROSION 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(I2)	
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			NAME	LATIN NAME	GERM	PURITY
WEIGHT	BROADCAST	HYDROSEED				
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				

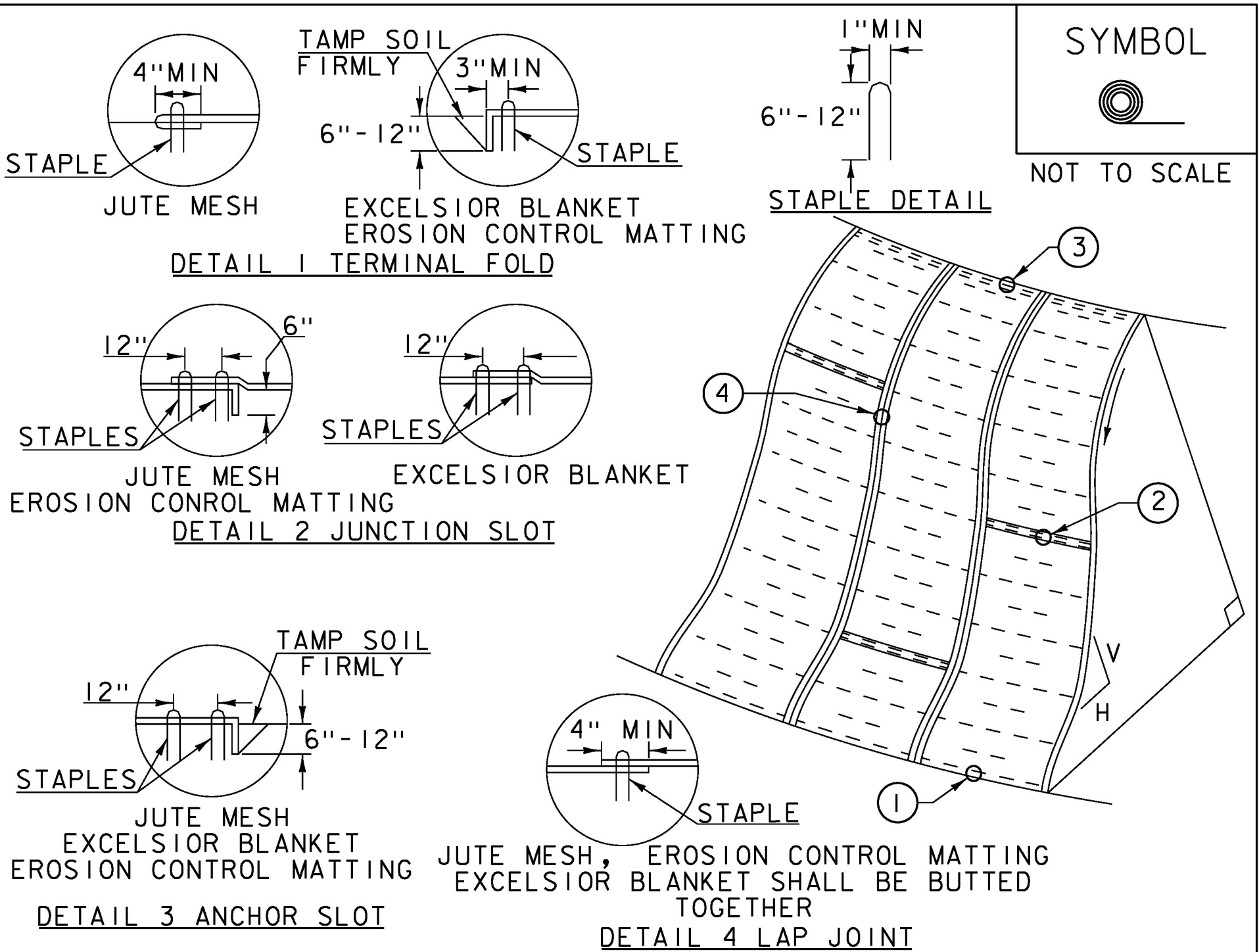
VAOT RURAL AREA MIX						
LBS/AC			NAME	LATIN NAME	GERM	PURITY
WEIGHT	BROADCAST	HYDROSEED				
37.5%	22.5	45	CREeping RED FESCUE	FESTUCA RUBRA VAR. RUBRA	85%	98%
37.5%	22.5	45	TALL FESCUE	FESTUCA ARUNDINACEA	90%	95%
5.0%	3	6	RED TOP	AGROSTIS GIGANTEA	90%	95%
15.0%	9	18	WHITE FIELD CLOVER	TRIFOLIUM REPENS	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 651 FOR SEED (PAY ITEM 651.15)	REVISIONS JANUARY 12, 2015    WHF



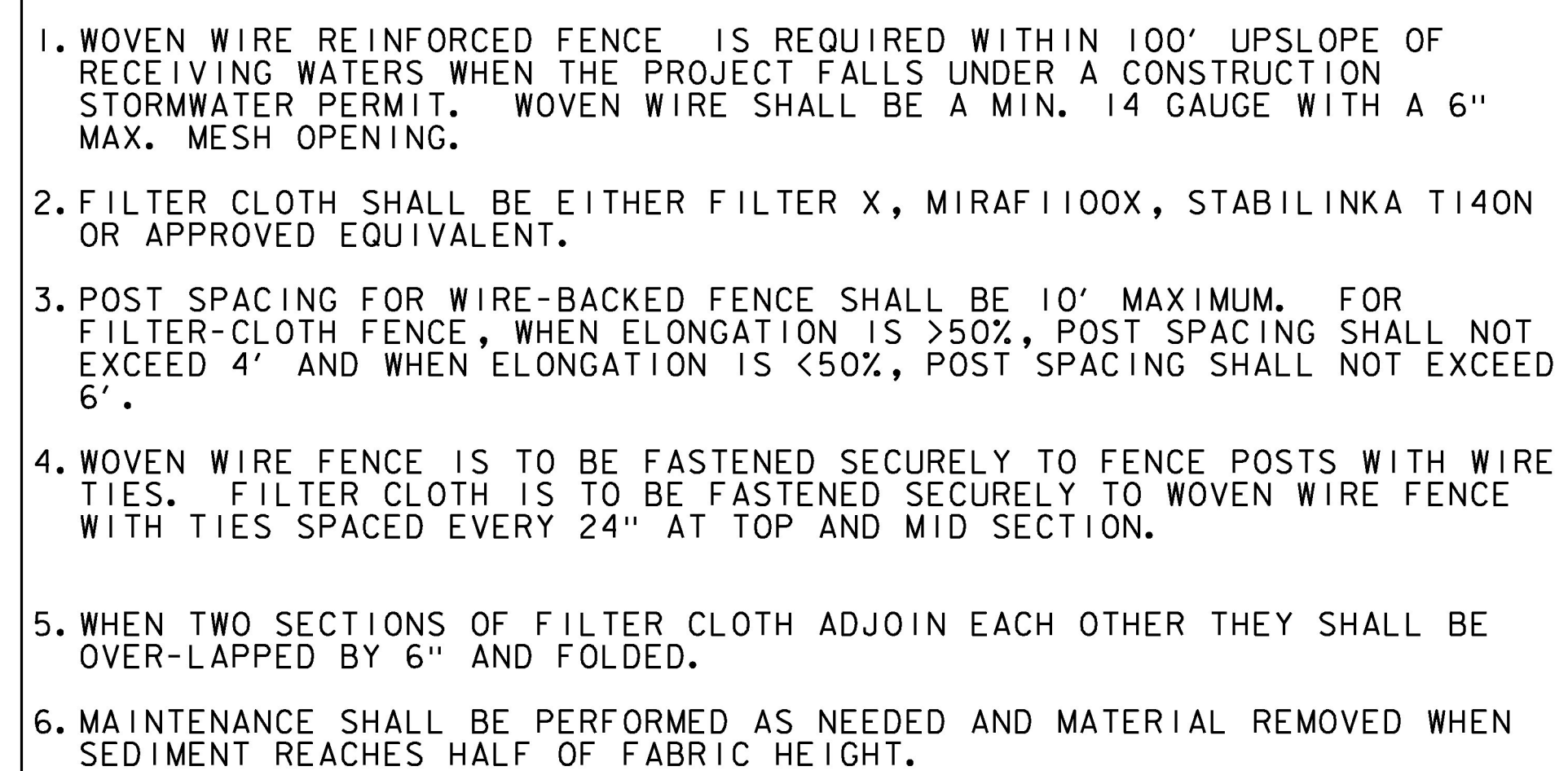
CONSTRUCTION SPECIFICATIONS

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' X 225' ROLL OF MATERIAL AND 125 STAPLES ARE REQUIRED PER 4' X 150' ROLL OF MATERIAL.
4. DISTURBED AREAS SHALL BE SMOOTHLY GRADED. EROSION CONTROL MATERIAL SHALL BE PLACED LOOSELY OVER GROUND SURFACE. DO NOT STRETCH.
5. ALL TERMINAL ENDS AND TRANSVERSE LAPS SHALL BE STAPLED AT APPROXIMATELY 12" INTERVALS.

ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC ORIGINALLY DEVELOPED BY USDA-NRCS VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION	ROLLED EROSION CONTROL PRODUCT (RECP) SIDE SLOPE
NOTES: REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006-" FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE. THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 653 AND AS SHOWN IN THE PLANS FOR TEMPORARY EROSION MATTING (PAY ITEM 653.20) OR PERMANENT EROSION MATTING (PAY ITEM 653.21).	
REVISIONS APRIL 16, 2007    JMF JANUARY 13, 2009    WHF	

PROJECT NAME: HIGHGATE	
PROJECT NUMBER: STP SCRP(12)	
FILE NAME: d13c134_frm.dgn	PLOT DATE: 14-OCT-2016
PROJECT LEADER: B. MARTIN	DRAWN BY: A. KEMPTON
DESIGNED BY: A. KEMPTON	CHECKED BY: W. FARLEY
EPSC DETAIL SHEET 1	SHEET 22 OF 40

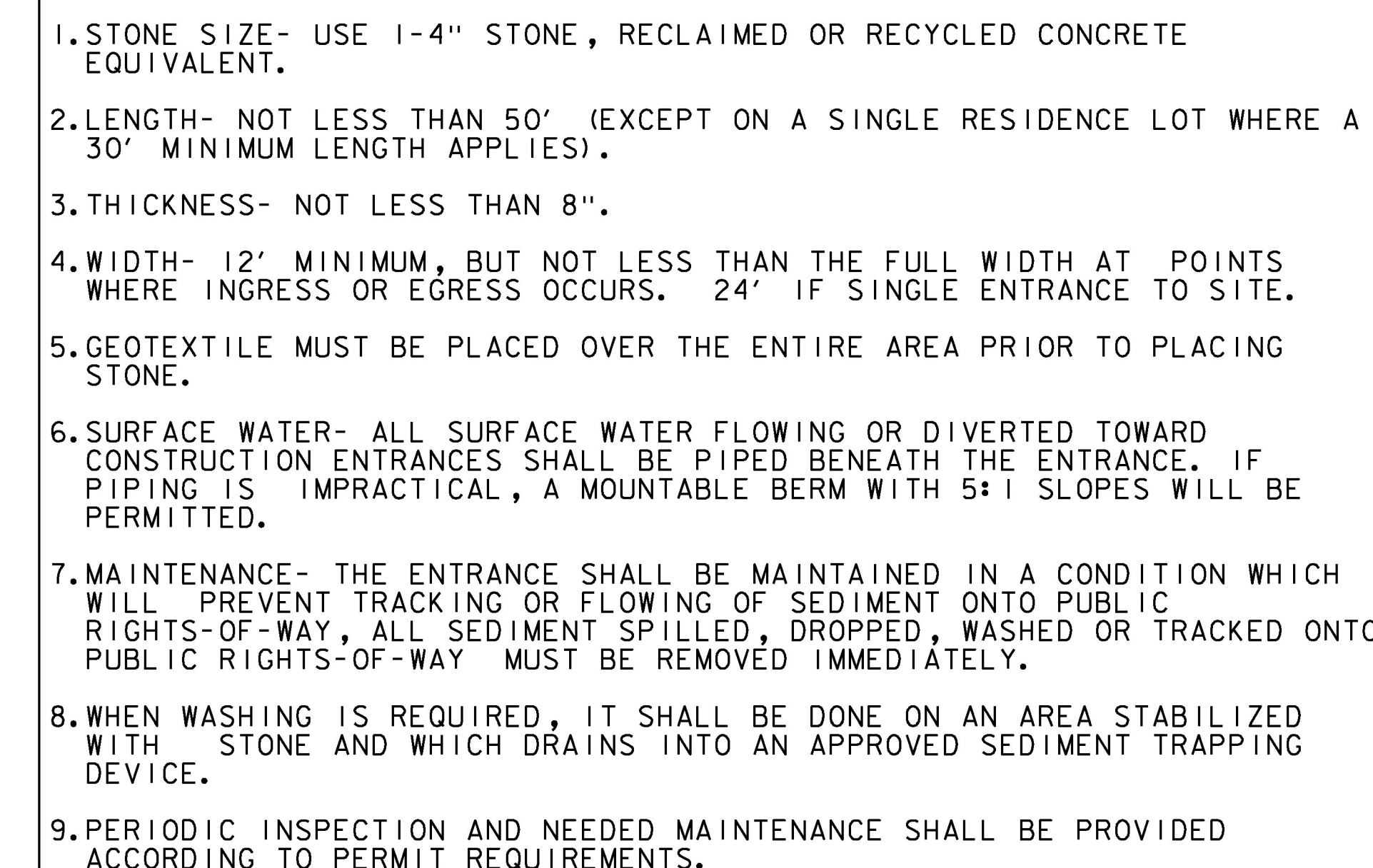




SILT FENCE

THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 649 AND AS SHOWN IN THE PLANS FOR ~~GEOTEXTILE FOR SILT FENCE (PAY ITEM 649.5)~~ OR GEOTEXTILE FOR SILT FENCE, WOVEN WIRE REINFORCED (PAY ITEM 649.5J).

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



STABILIZED  
CONSTRUCTION  
ENTRANCE

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

FILE NAME: d13c134_frm.dgn	PLOT DATE: 14-OCT-2016
PROJECT LEADER: B. MARTIN	DRAWN BY: A. KEMPTON
DESIGNED BY: A. KEMPTON	CHECKED BY: W. FARLEY
EPSC DETAIL SHEET 2	SHEET 23 OF 40

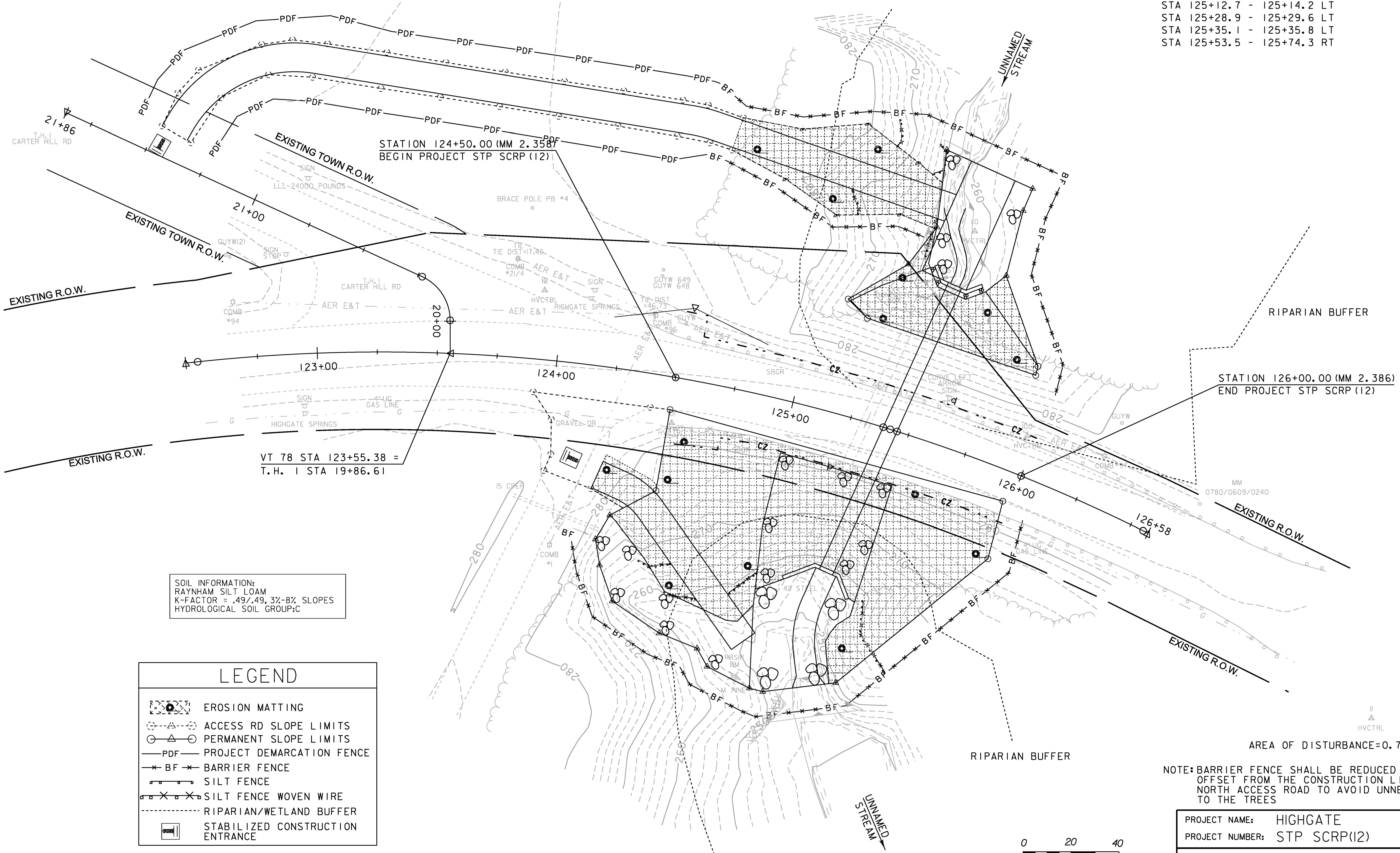
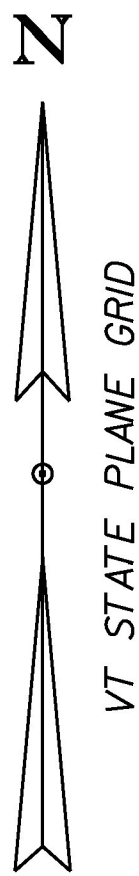


VEHICLE TRACKING PAD  
T.H. 1 STA 21+45.5 RT  
STA 124+12.4 RT

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

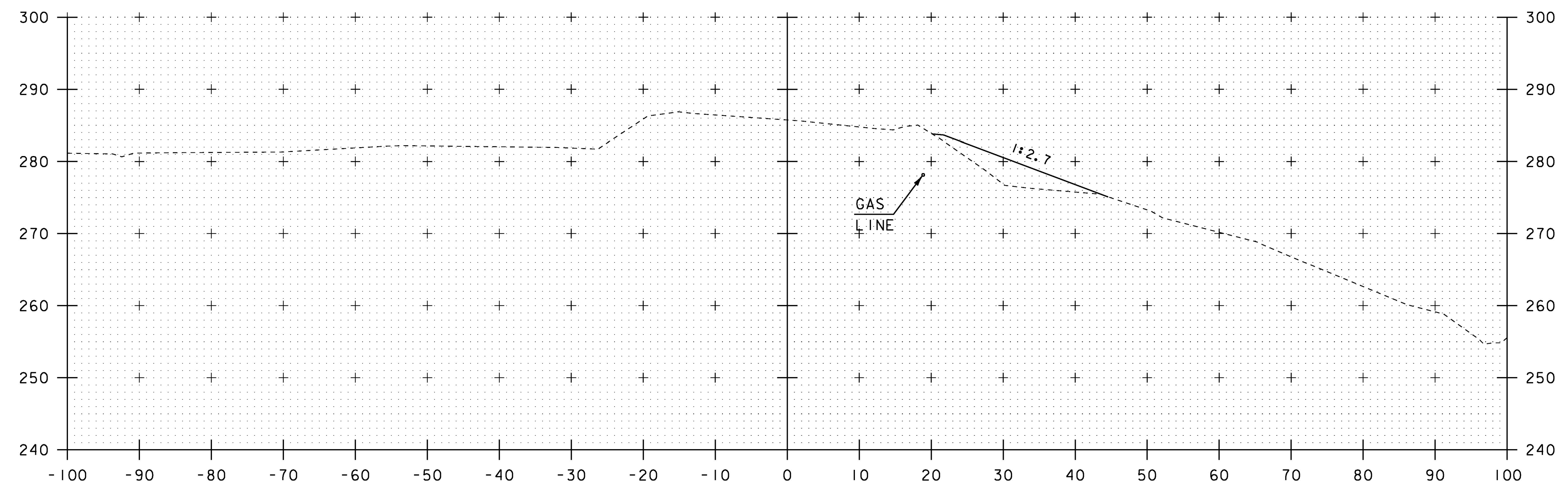


AREA OF DISTURBANCE=0.782 ACRES

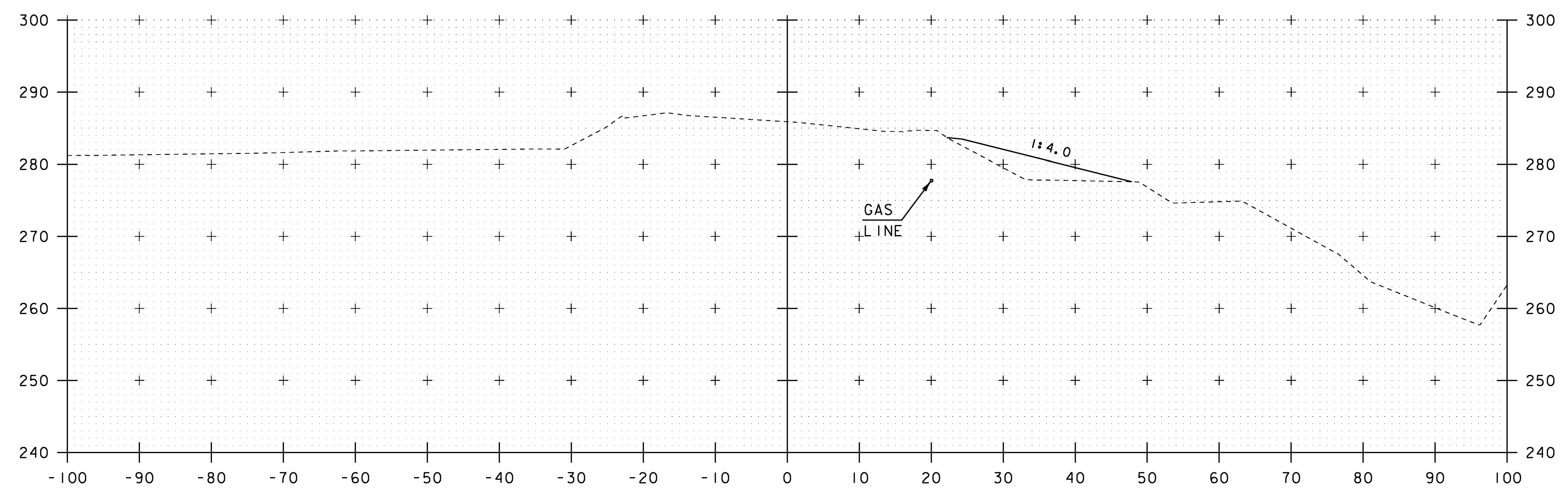
NOTE: BARRIER FENCE SHALL BE REDUCED TO A FIVE FOOT  
OFFSET FROM THE CONSTRUCTION LIMIT ON THE  
NORTH ACCESS ROAD TO AVOID UNNECESSARY IMPACTS  
TO THE TREES

PROJECT NAME: HIGHGATE	PLOT DATE: 14-OCT-2016
PROJECT NUMBER: STP SCR(12)	DRAWN BY: A. KEMPTON
FILE NAME: d13ci34ero.dgn	CHECKED BY: M. GAMELIN
DESIGNED BY: A. KEMPTON	SHEET 24 OF 40
EPSC PLAN SHEET	





124+75



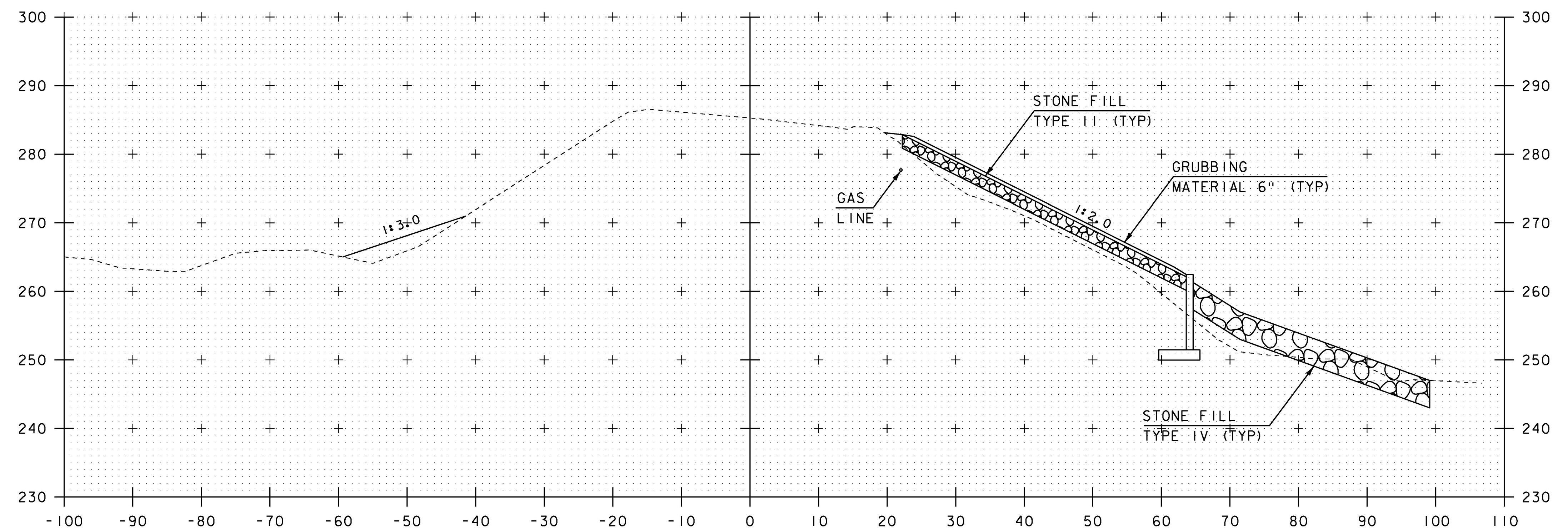
124+50  
BEGIN PROJECT

SCALE IN FEET

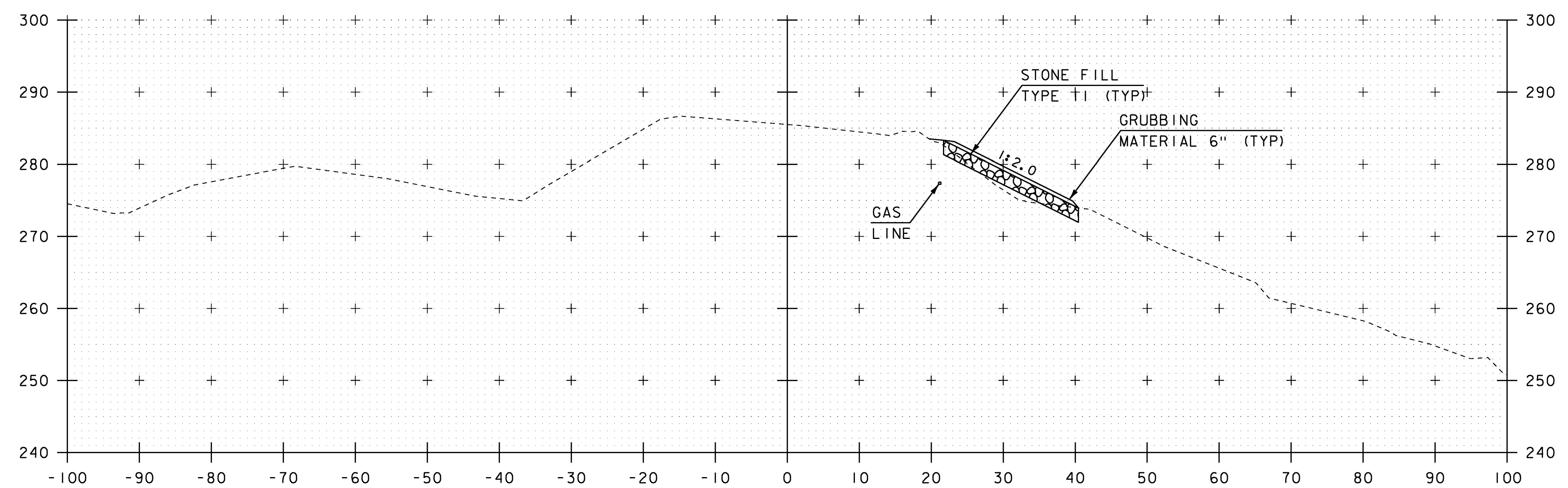
STA. 124+50 TO STA. 124+75

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. GAMELIN
VT 78 CROSS SECTION SHEET 1	SHEET 25 OF 40





125+25



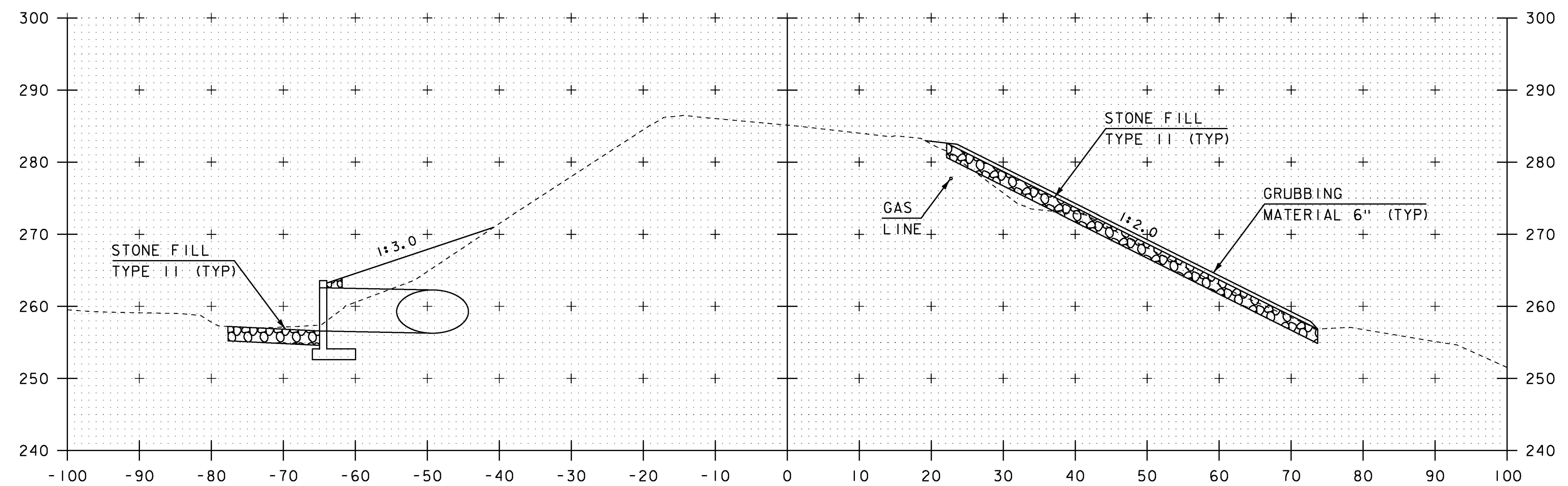
125+00

SCALE IN FEET

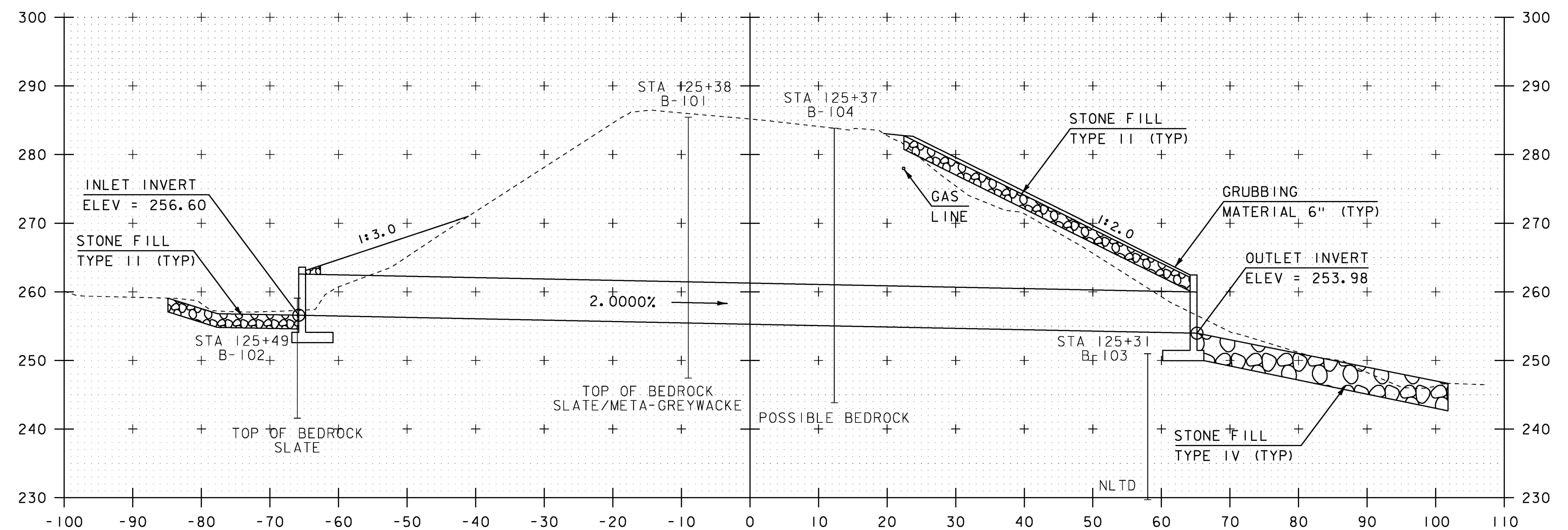
STA. 125+00 TO STA. 125+25

PROJECT NAME:	HIGHGATE
PROJECT NUMBER:	STP SCRP(12)
FILE NAME:	d13cl34xs.dgn
PROJECT LEADER:	B. MARTIN
DESIGNED BY:	A. KEMPTON
VT 78 CROSS SECTION SHEET 2	
PLOT DATE:	14-OCT-2016
DRAWN BY:	A. KEMPTON
CHECKED BY:	M. GAMELIN
SHEET	26 OF 40





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

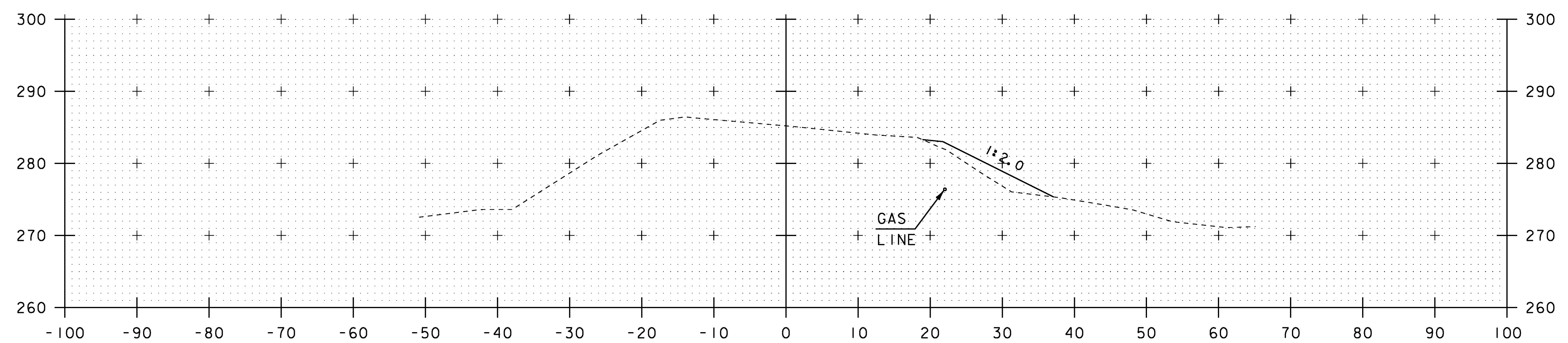
PROJECT NAME: HIGHGATE  
PROJECT NUMBER: STP SCRP(12)

FILE NAME: d13ci34xs.dgn  
PROJECT LEADER: B. MARTIN  
DESIGNED BY: A. KEMPTON  
VT 78 CROSS SECTION SHEET 3

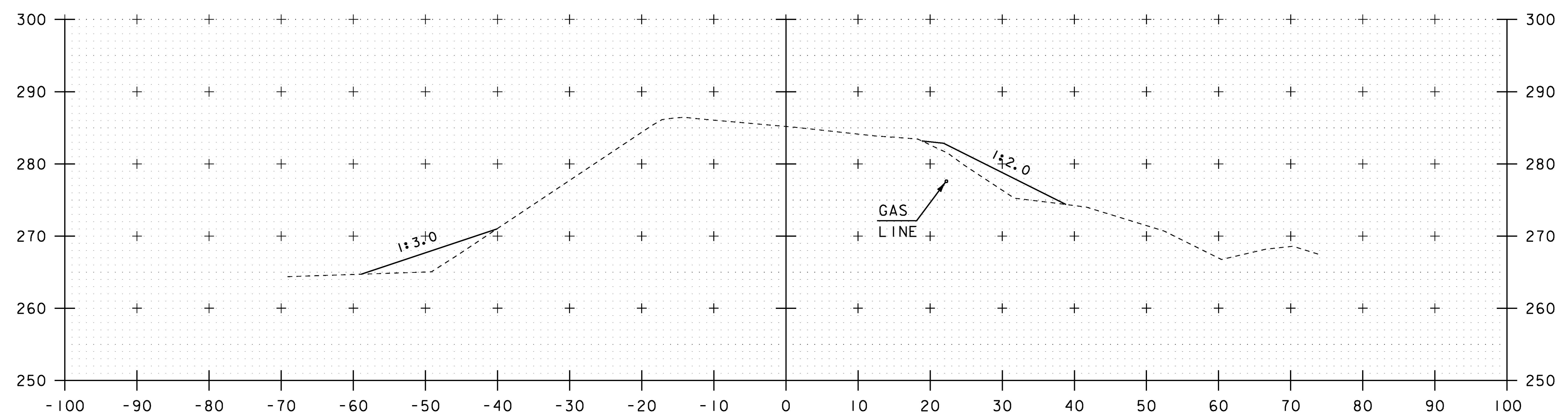
PLOT DATE: 14-OCT-2016  
DRAWN BY: A. KEMPTON  
CHECKED BY: M. GAMELIN  
SHEET 27 OF 40

STA. 125+42 TO STA. 125+50





126+00  
END PROJECT



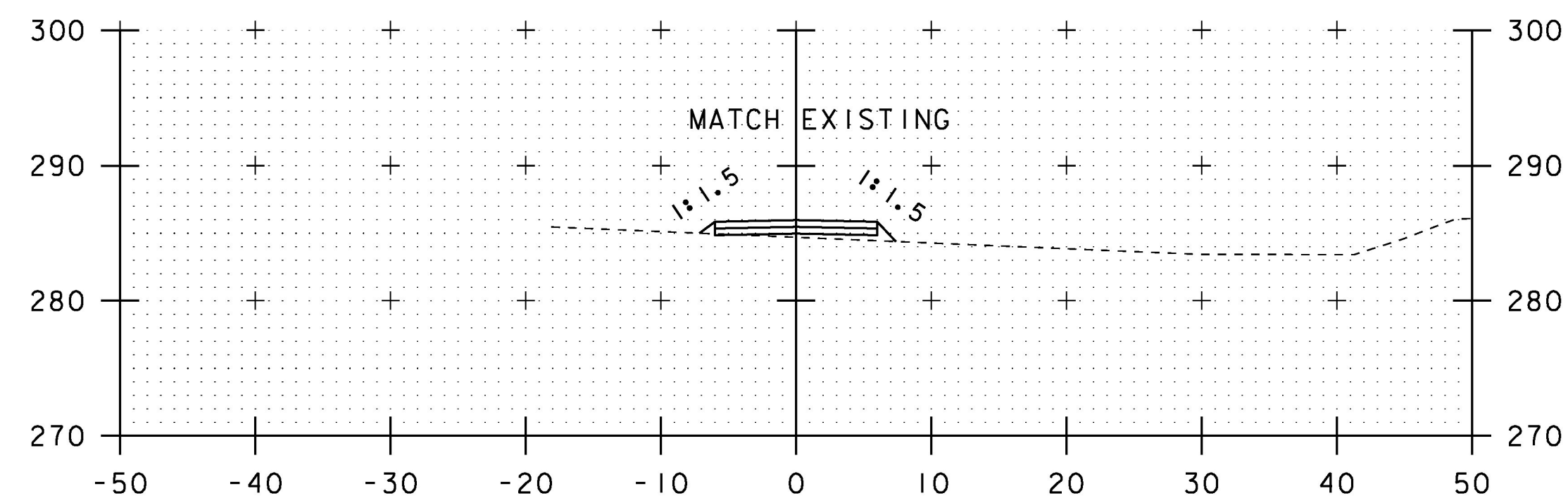
125+75

SCALE IN FEET

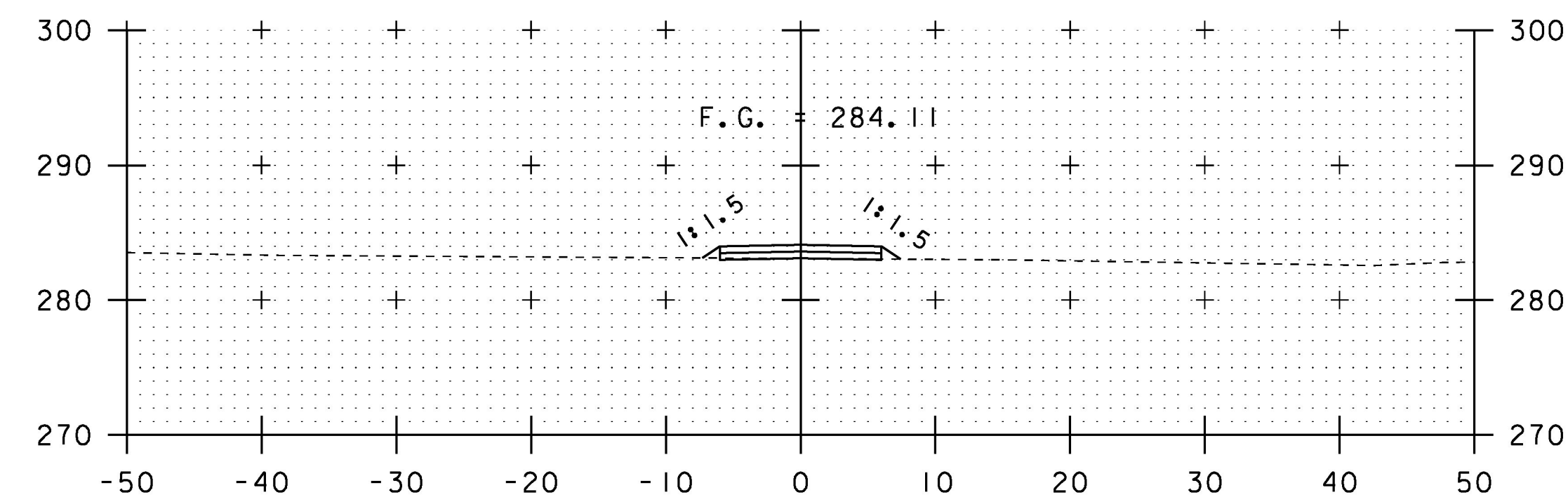
PROJECT NAME: HIGHGATE	
PROJECT NUMBER: STP SCRP(12)	
FILE NAME: d13cl34xs.dgn	PLOT DATE: 14-OCT-2016
PROJECT LEADER: B. MARTIN	DRAWN BY: A. KEMPTON
DESIGNED BY: A. KEMPTON	CHECKED BY: M. GAMELIN
VT 78 CROSS SECTION SHEET 4	SHEET 28 OF 40

STA. 125+75 TO STA. 126+00

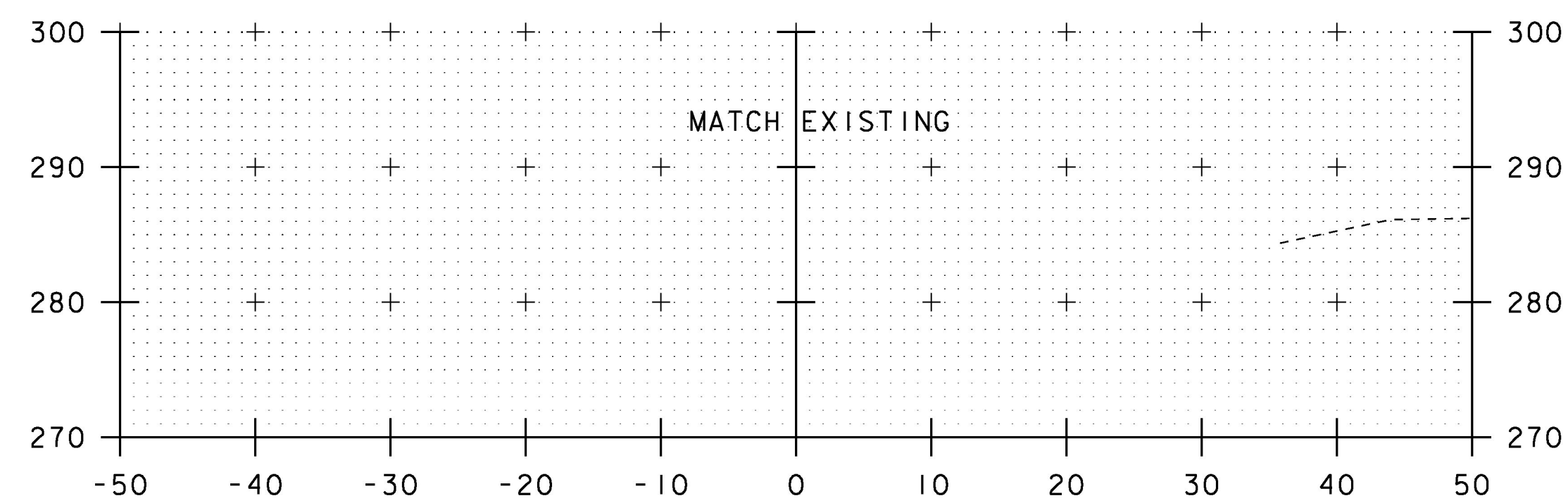




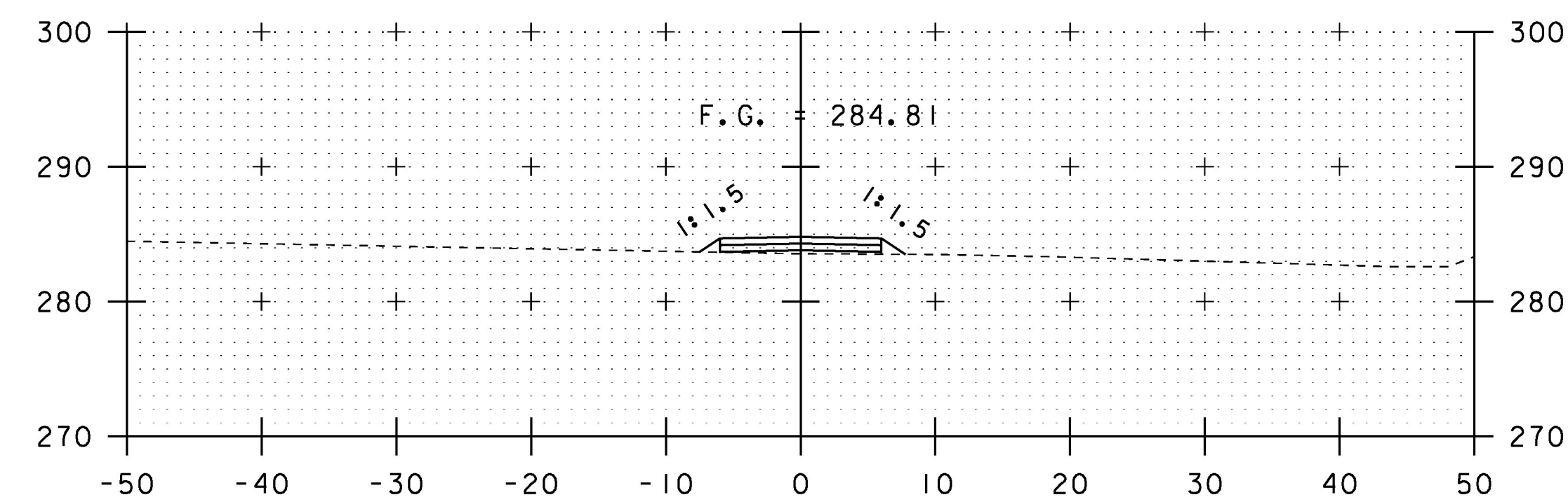
0+50



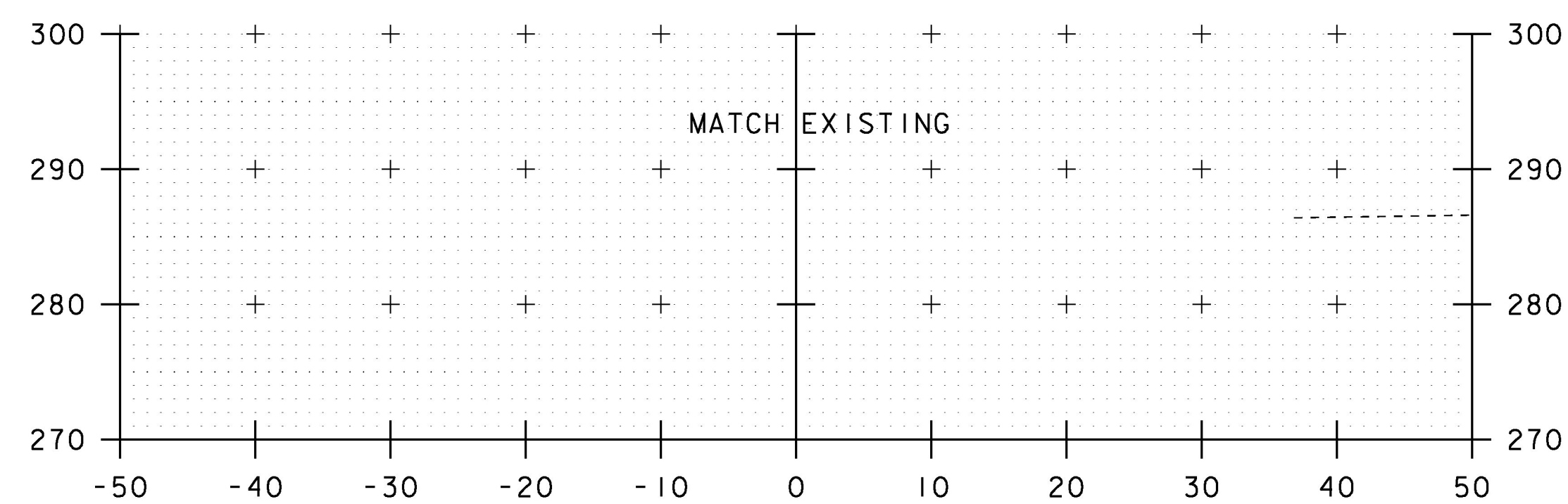
1+25



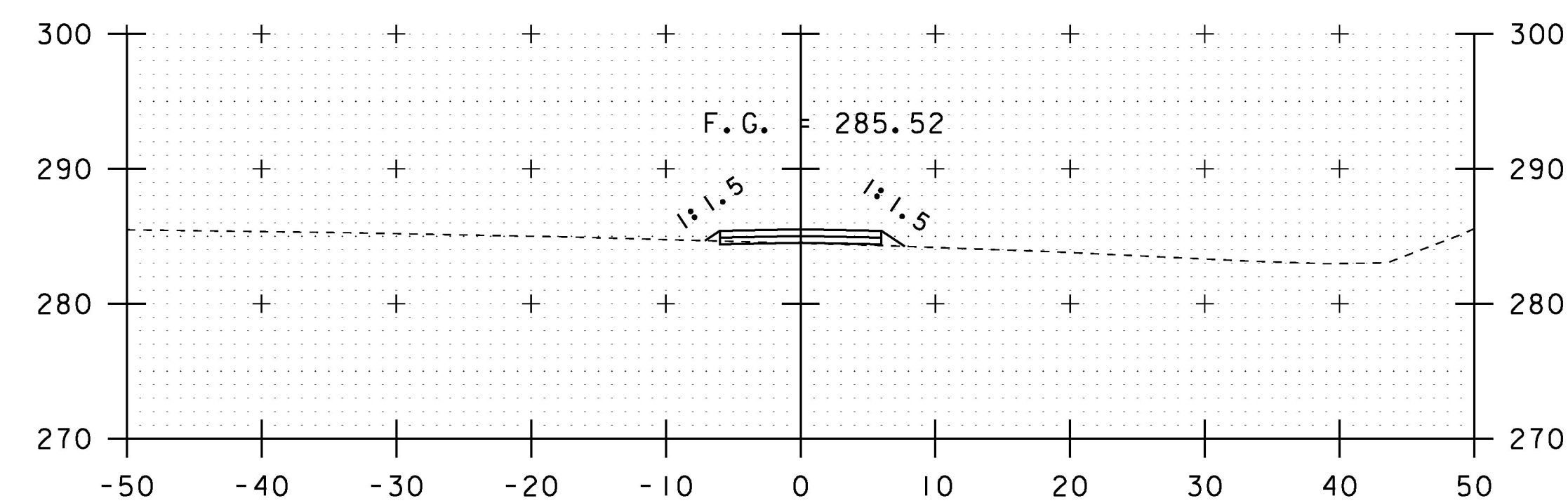
0+25



1+00



0+00  
BEGIN ACCESS ROAD



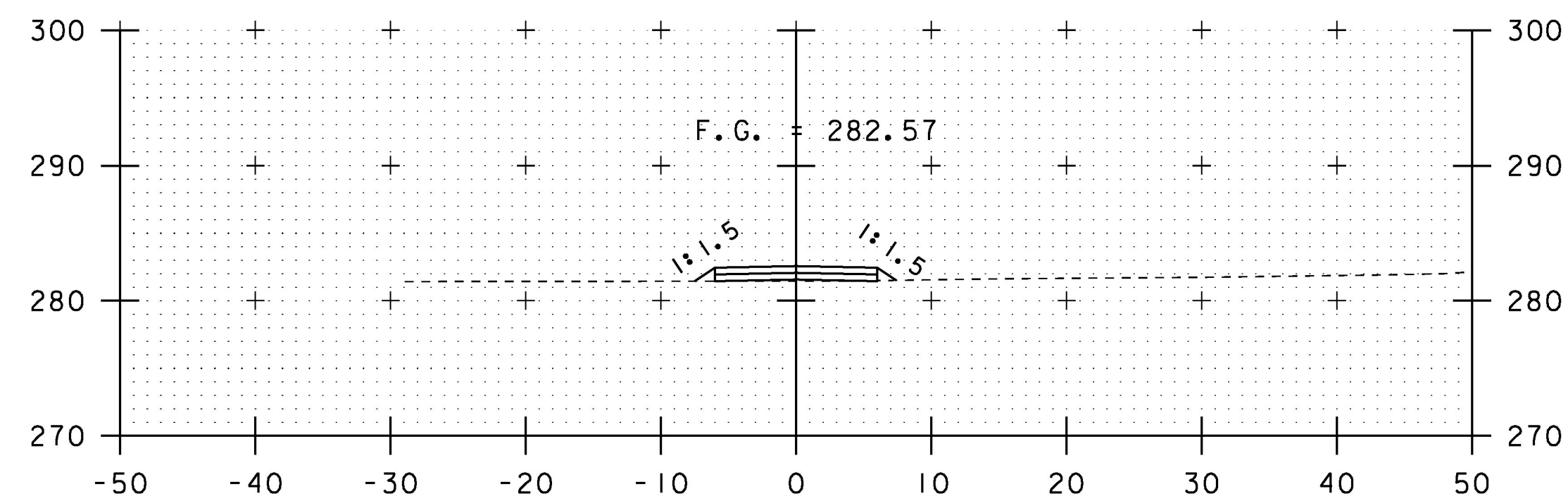
0+75

SCALE IN FEET

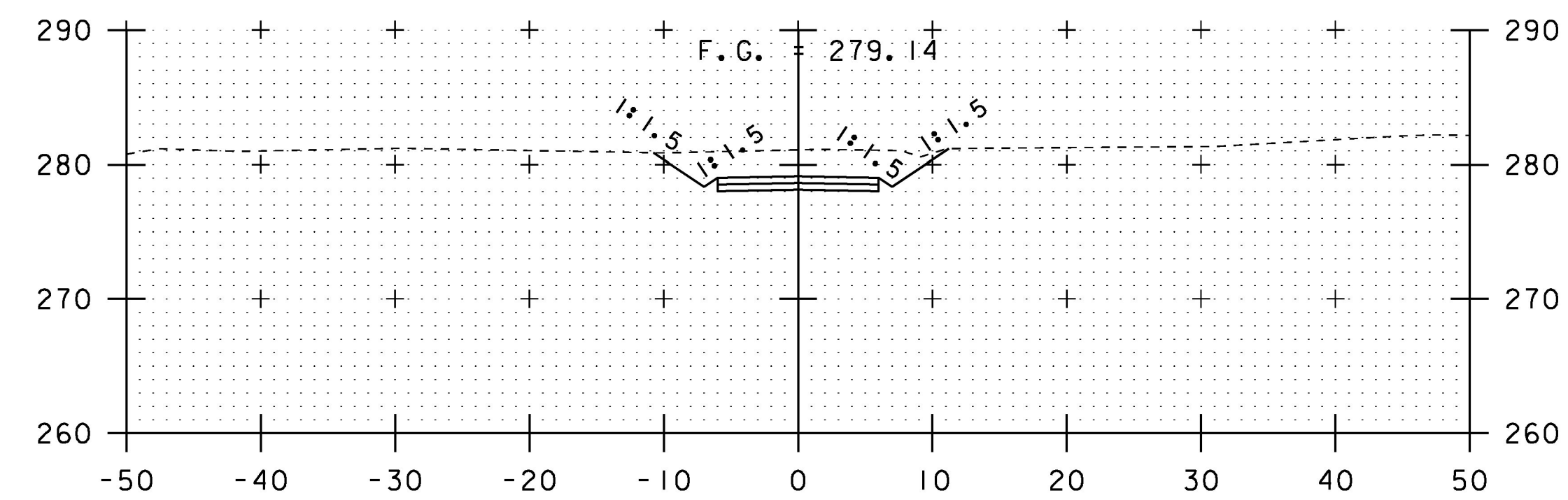
PROJECT NAME: HIGHGATE	
PROJECT NUMBER: STP SCRP(12)	
FILE NAME: d13cl34xs.dgn	PLOT DATE: 14-OCT-2016
PROJECT LEADER: B. MARTIN	DRAWN BY: A. KEMPTON
DESIGNED BY: A. KEMPTON	CHECKED BY: M. GAMELIN
NORTH ACCESS RD CROSS SECTION SHEET 1 SHEET 29 OF 40	

STA. 0+00 TO STA. 1+25

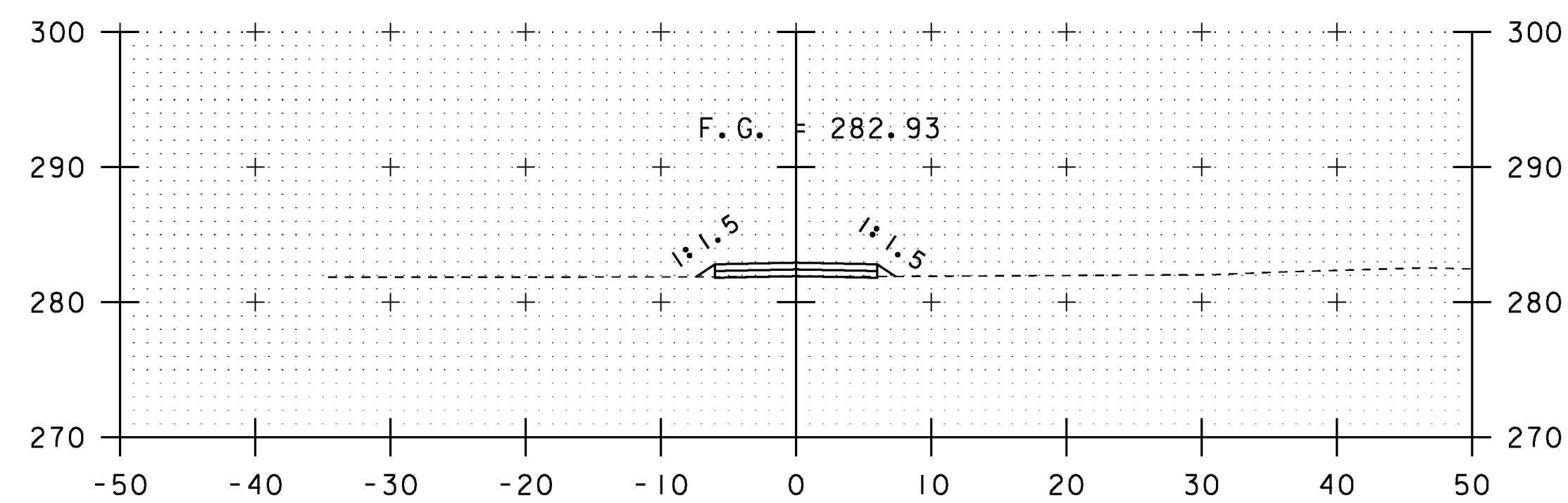




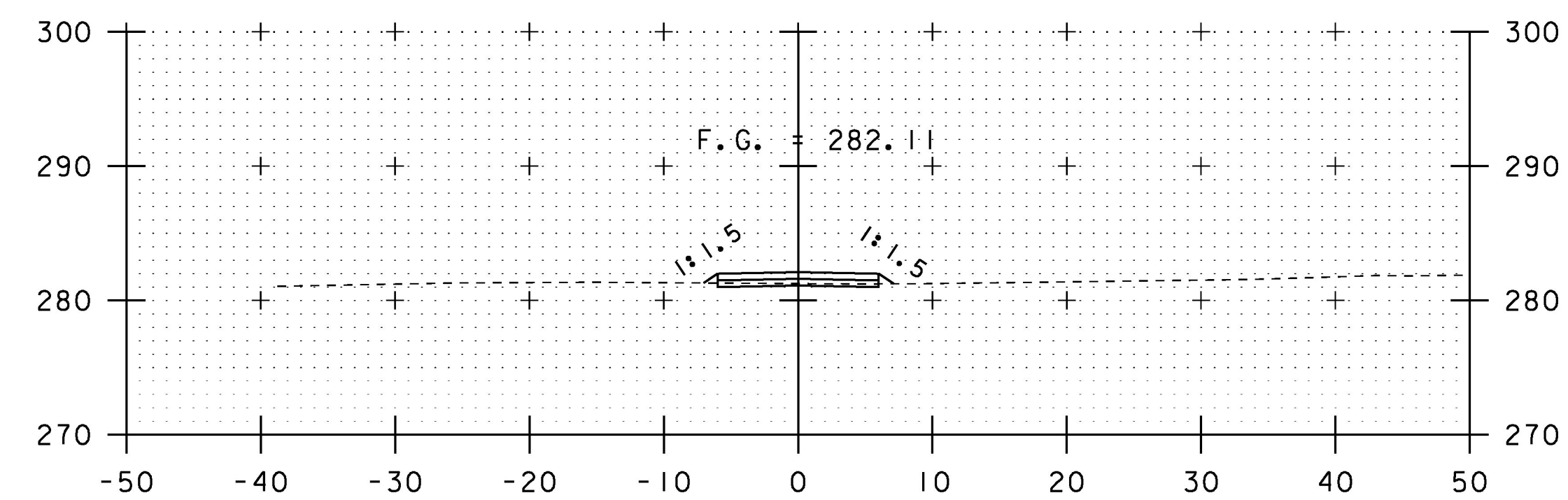
2+00



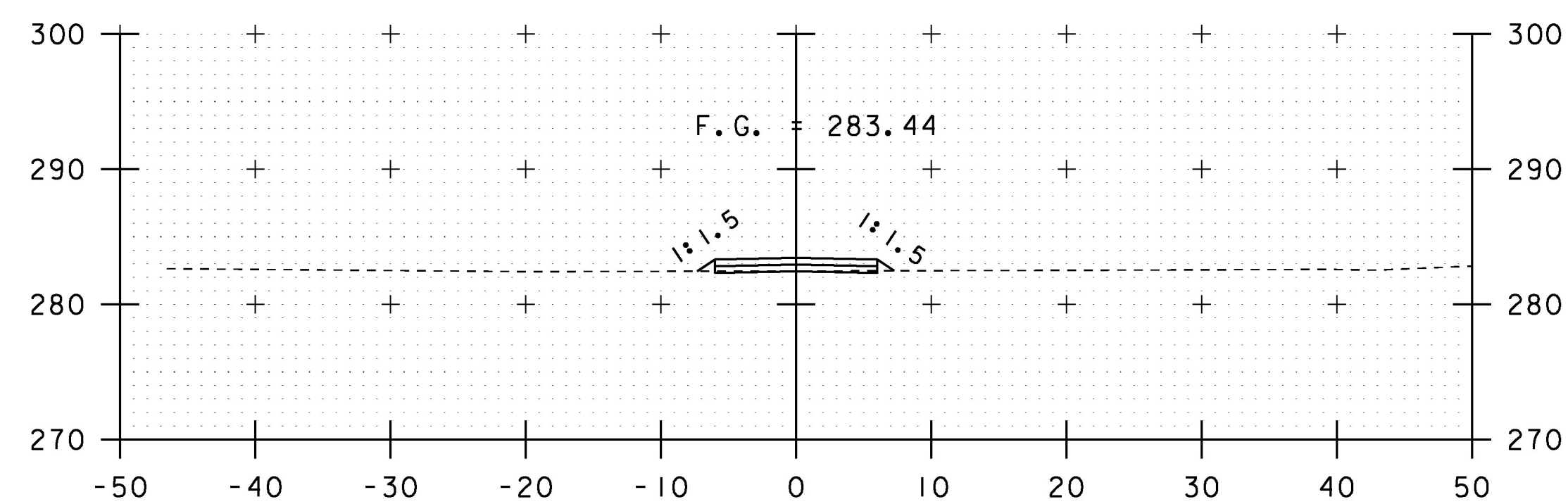
2+75



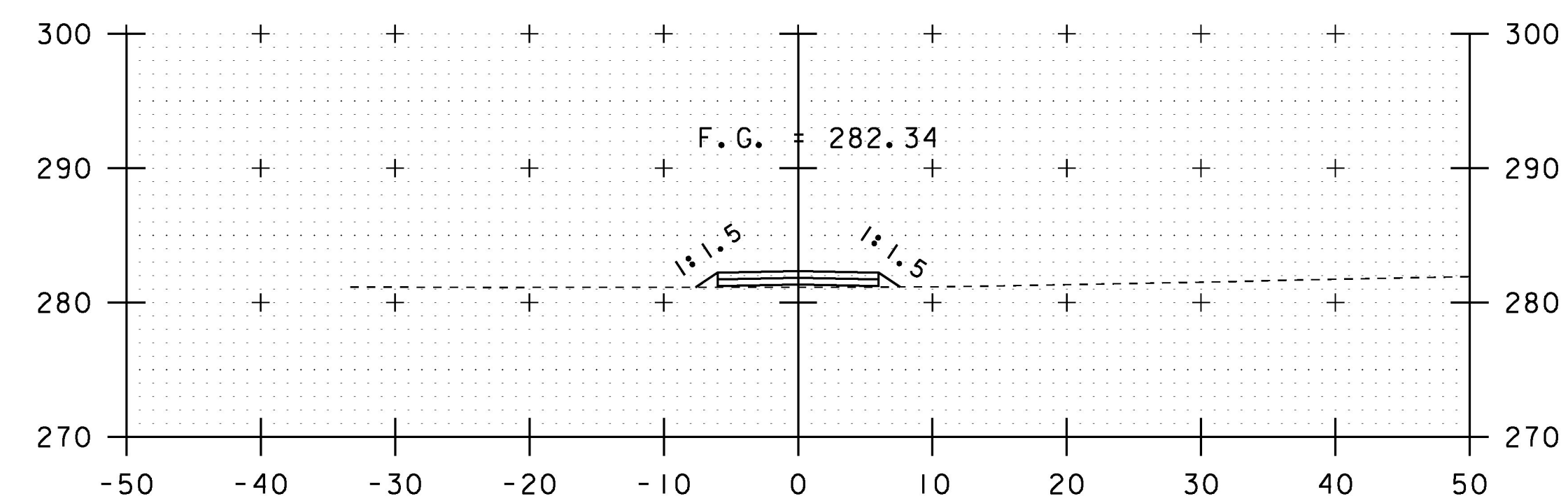
1+75



2+50



1+50



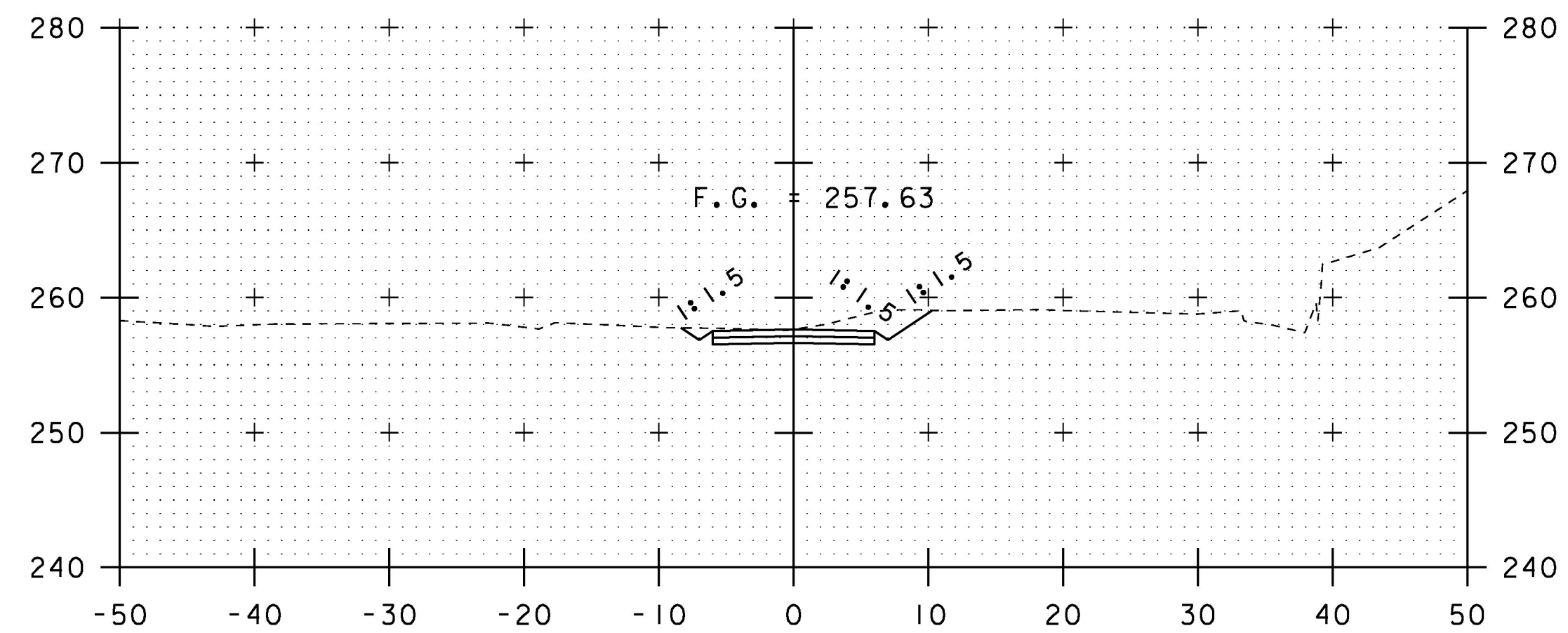
2+25

SCALE IN FEET

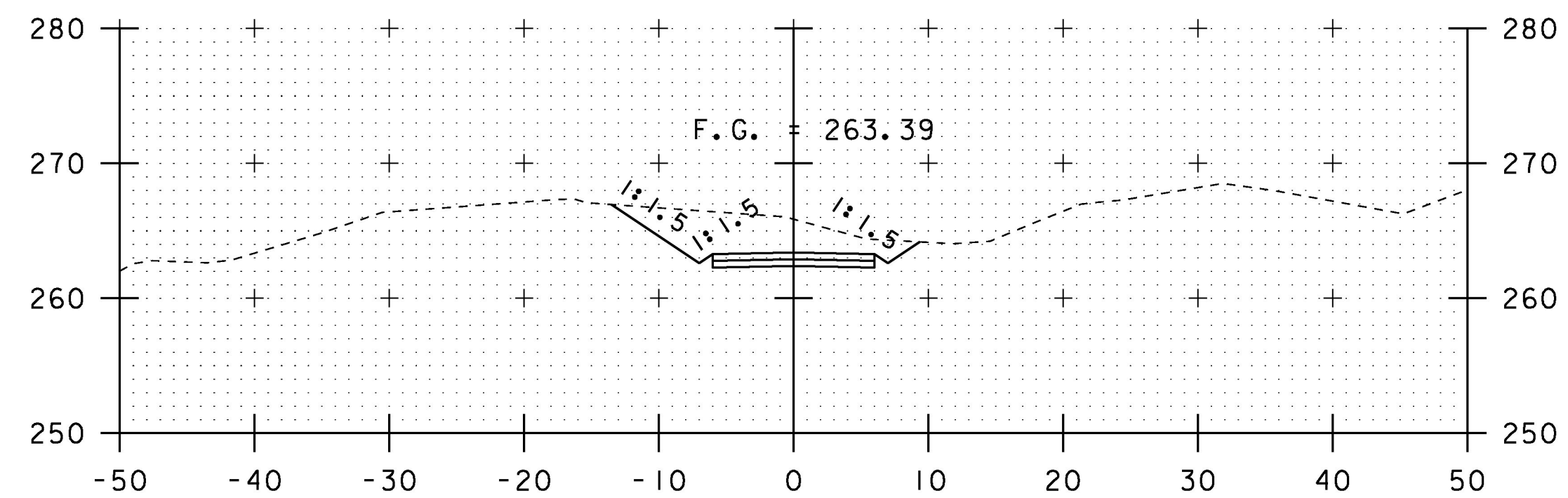
PROJECT NAME: HIGHGATE	
PROJECT NUMBER: STP SCRP(12)	
FILE NAME: d13cl34xs.dgn	PLOT DATE: 14-OCT-2016
PROJECT LEADER: B. MARTIN	DRAWN BY: A. KEMPTON
DESIGNED BY: A. KEMPTON	CHECKED BY: M. GAMELIN
NORTH ACCESS RD CROSS SECTION SHEET 2 SHEET 30 OF 40	

STA. 1+50 TO STA. 2+75

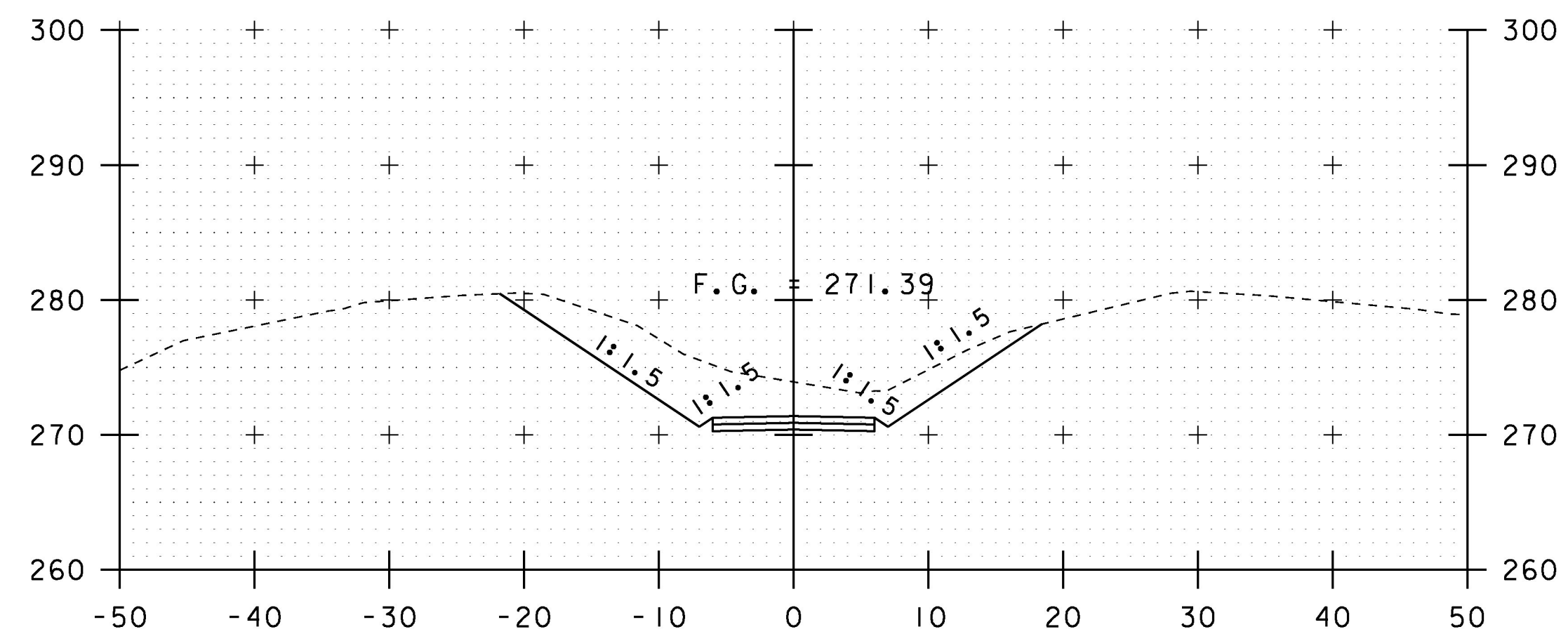




3+43  
END ACCESS ROAD



3+25



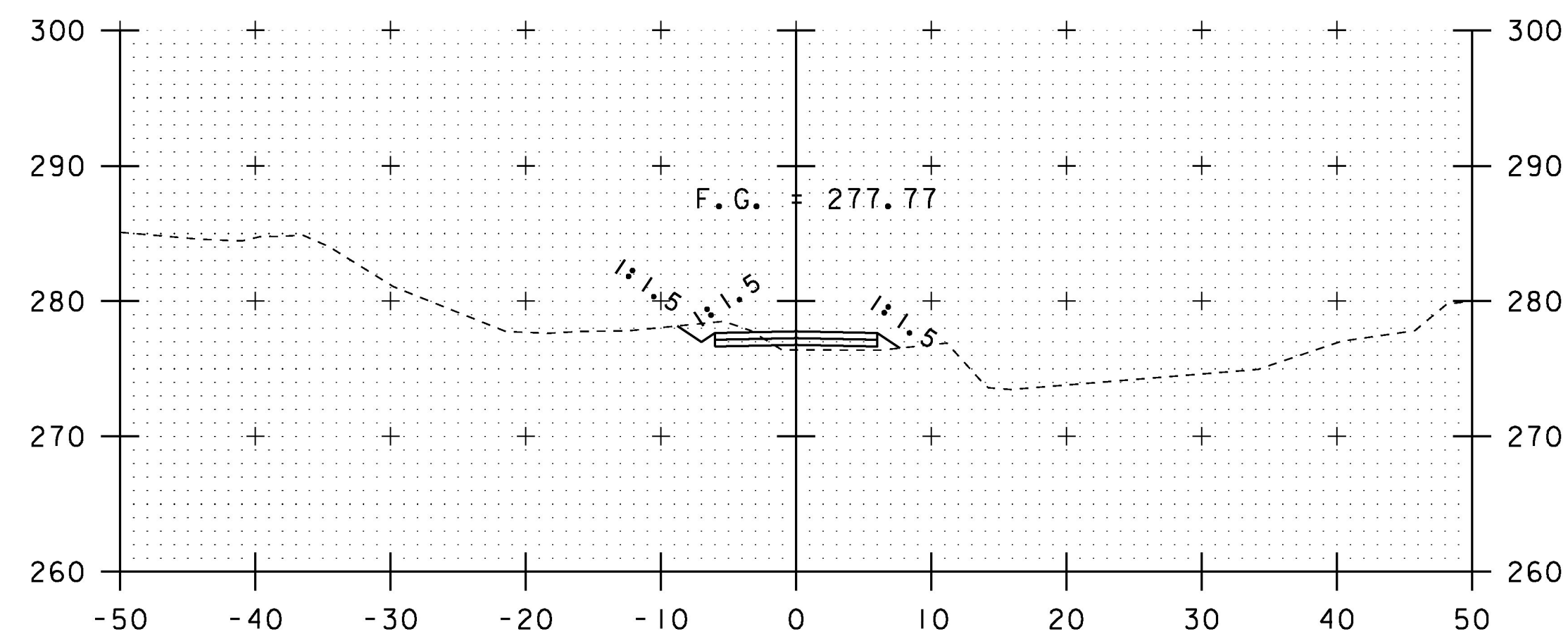
3+00

SCALE IN FEET

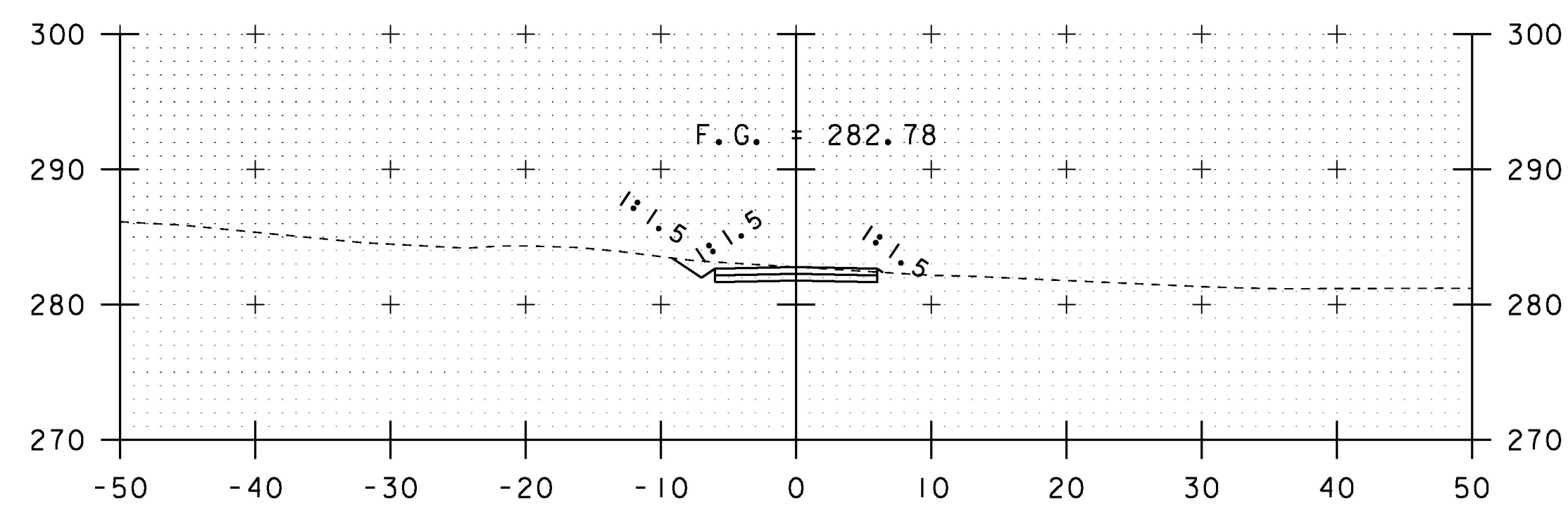
PROJECT NAME: HIGHGATE	
PROJECT NUMBER: STP SCRP(I2)	
FILE NAME: d13cl34xs.dgn	PLOT DATE: 14-OCT-2016
PROJECT LEADER: B. MARTIN	DRAWN BY: A. KEMPTON
DESIGNED BY: A. KEMPTON	CHECKED BY: M. GAMELIN
NORTH ACCESS RD CROSS SECTION SHEET 3 SHEET 31 OF 40	

STA. 3+00 TO STA. 3+43



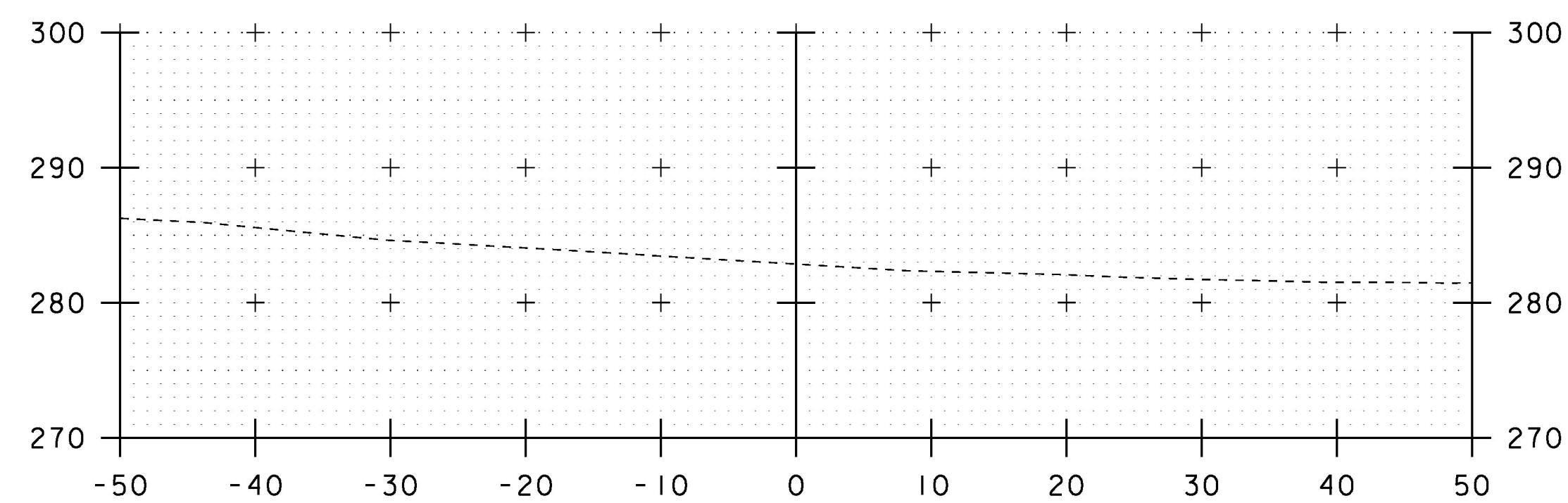


I+25

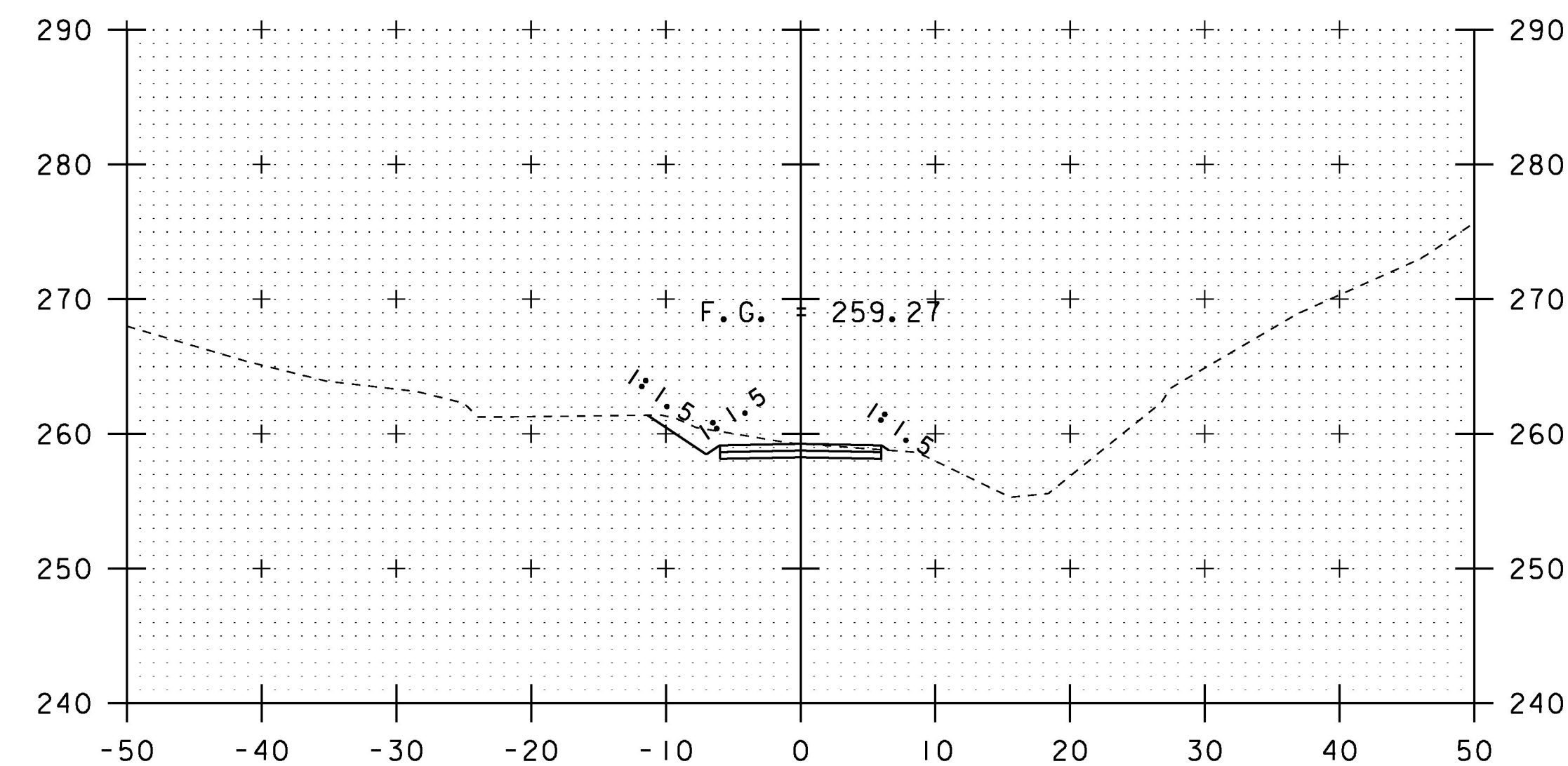


I+06

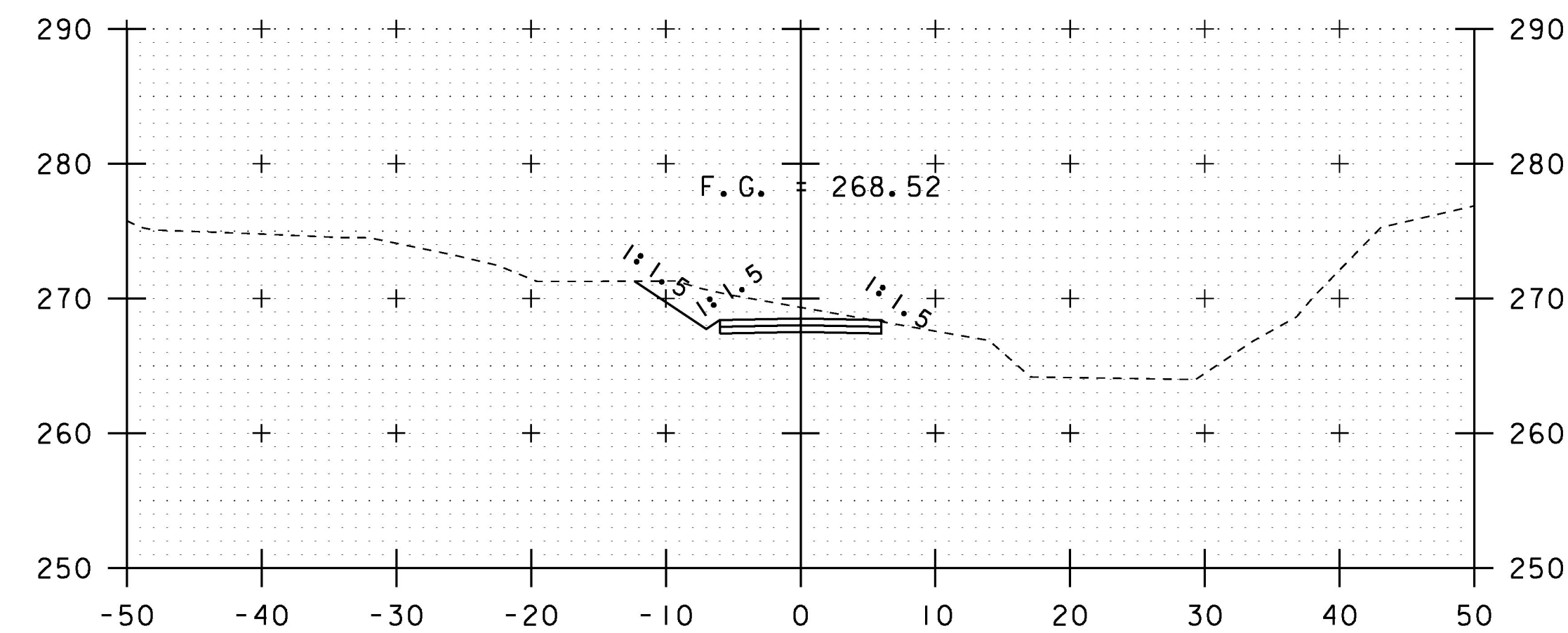
BEGIN ACCESS ROAD



I+00



I+75



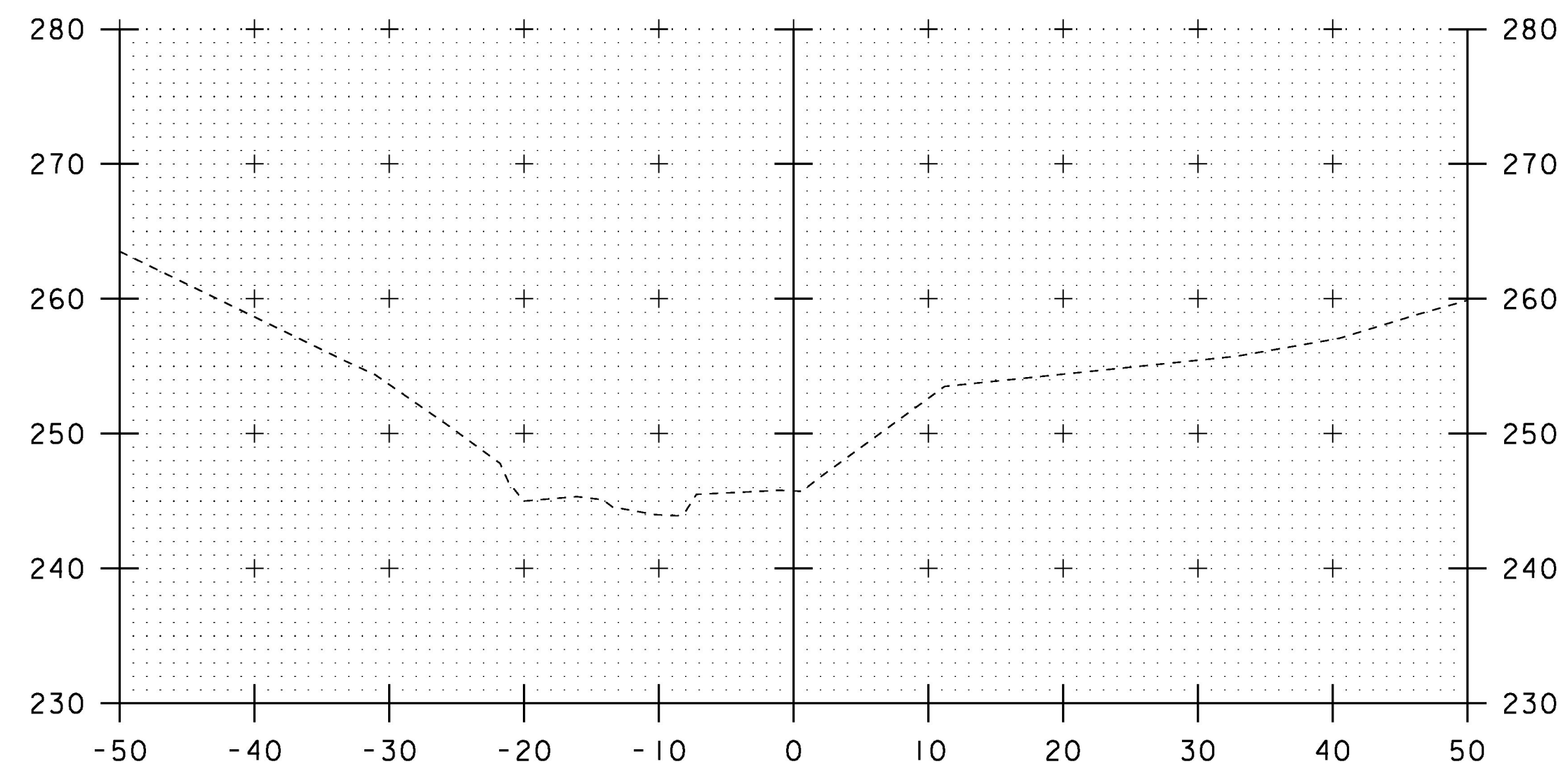
I+50

SCALE IN FEET

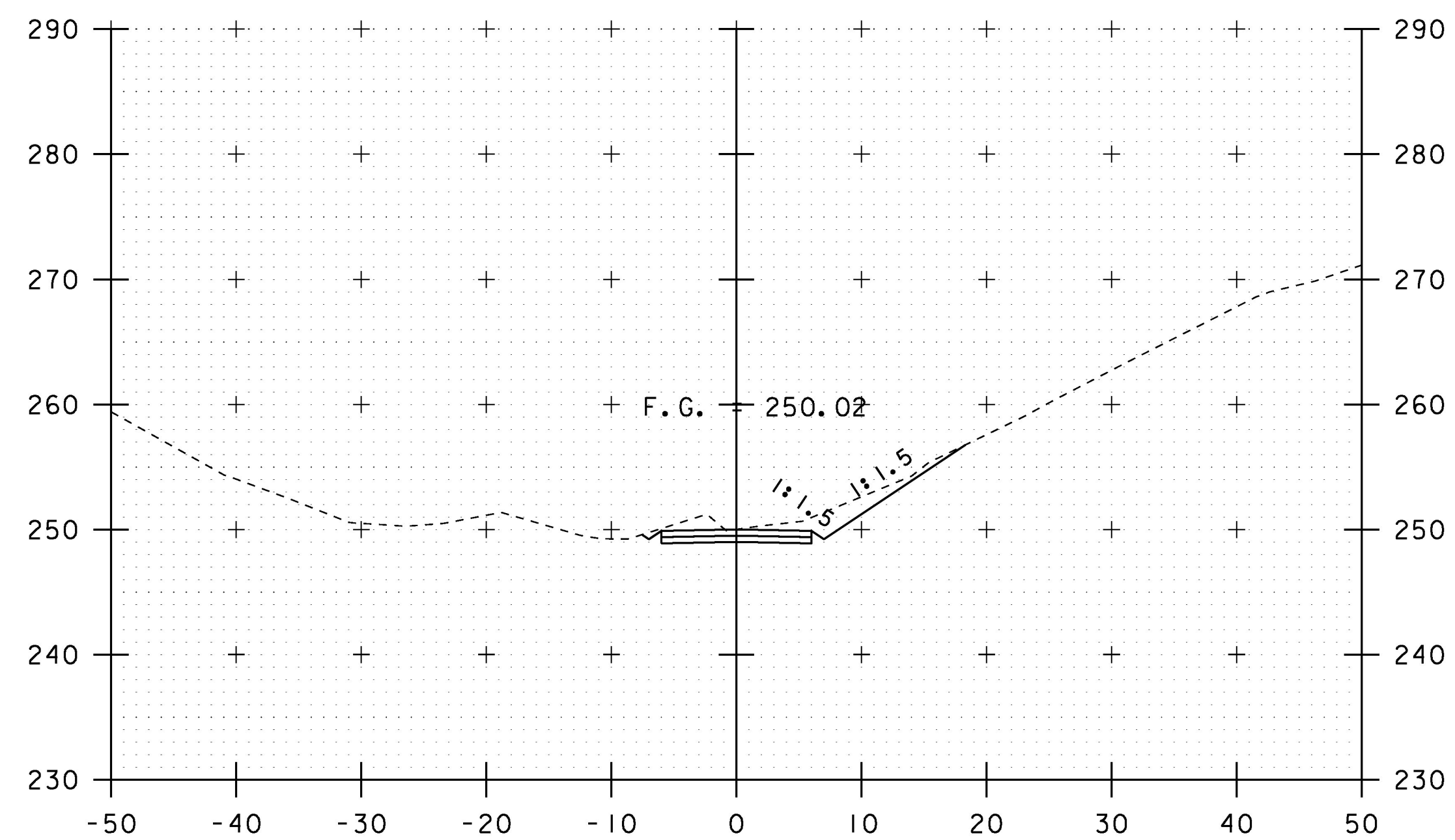
STA. I+00 TO STA. I+75

PROJECT NAME:	HIGHGATE
PROJECT NUMBER:	STP SCRP(I2)
FILE NAME:	d13cl34xs.dgn
PROJECT LEADER:	B. MARTIN
DESIGNED BY:	A. KEMPTON
SOUTH ACCESS RD CROSS SECTION SHEET I	SHEET 32 OF 40
PLOT DATE:	14-OCT-2016
DRAWN BY:	A. KEMPTON
CHECKED BY:	M. GAMELIN

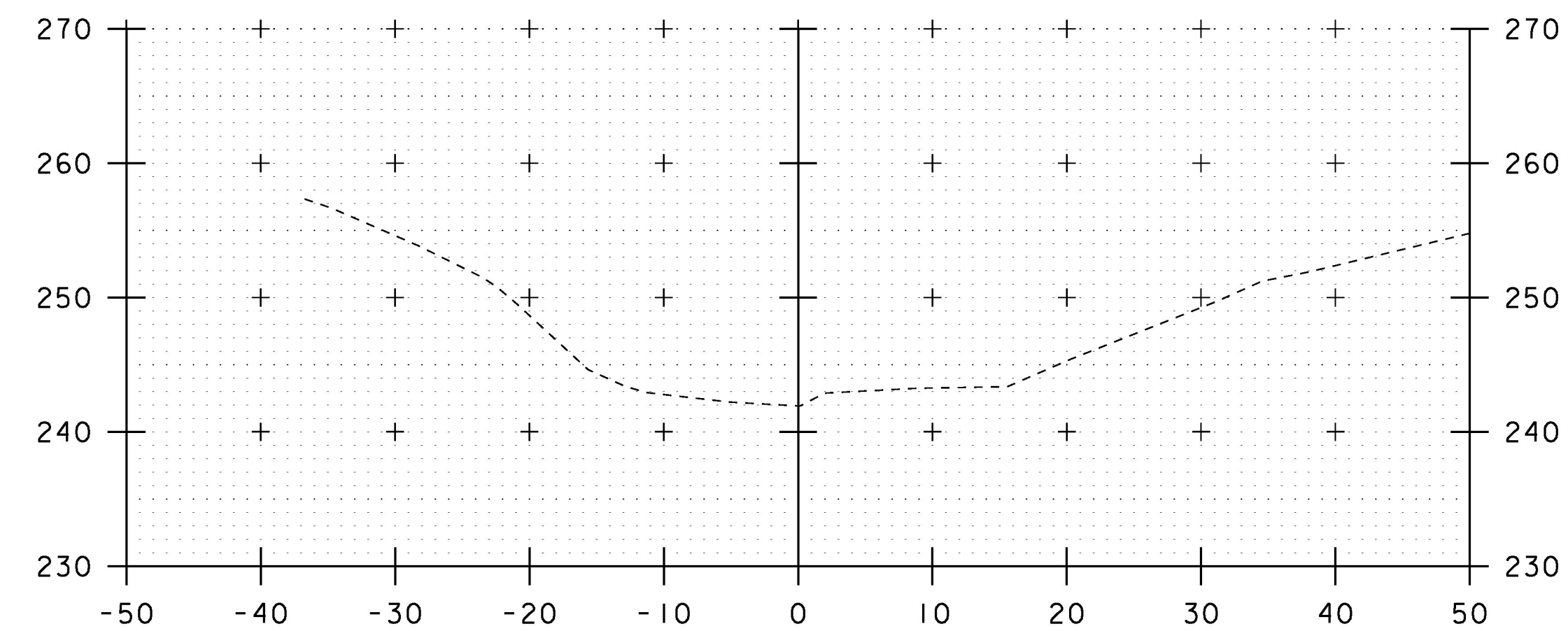




2+25



2+00  
END ACCESS ROAD



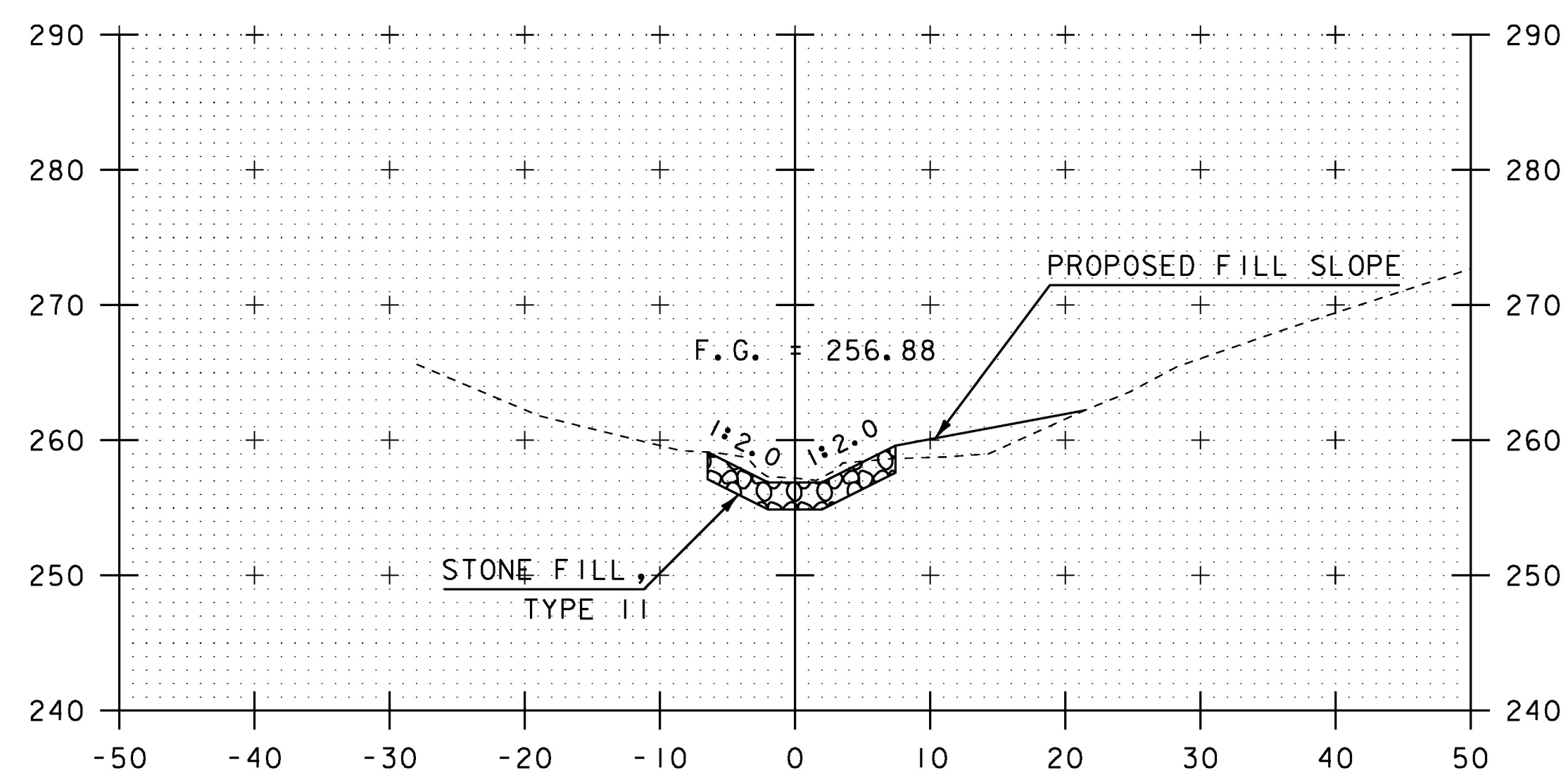
2+42

STA. 2+00 TO STA. 2+42

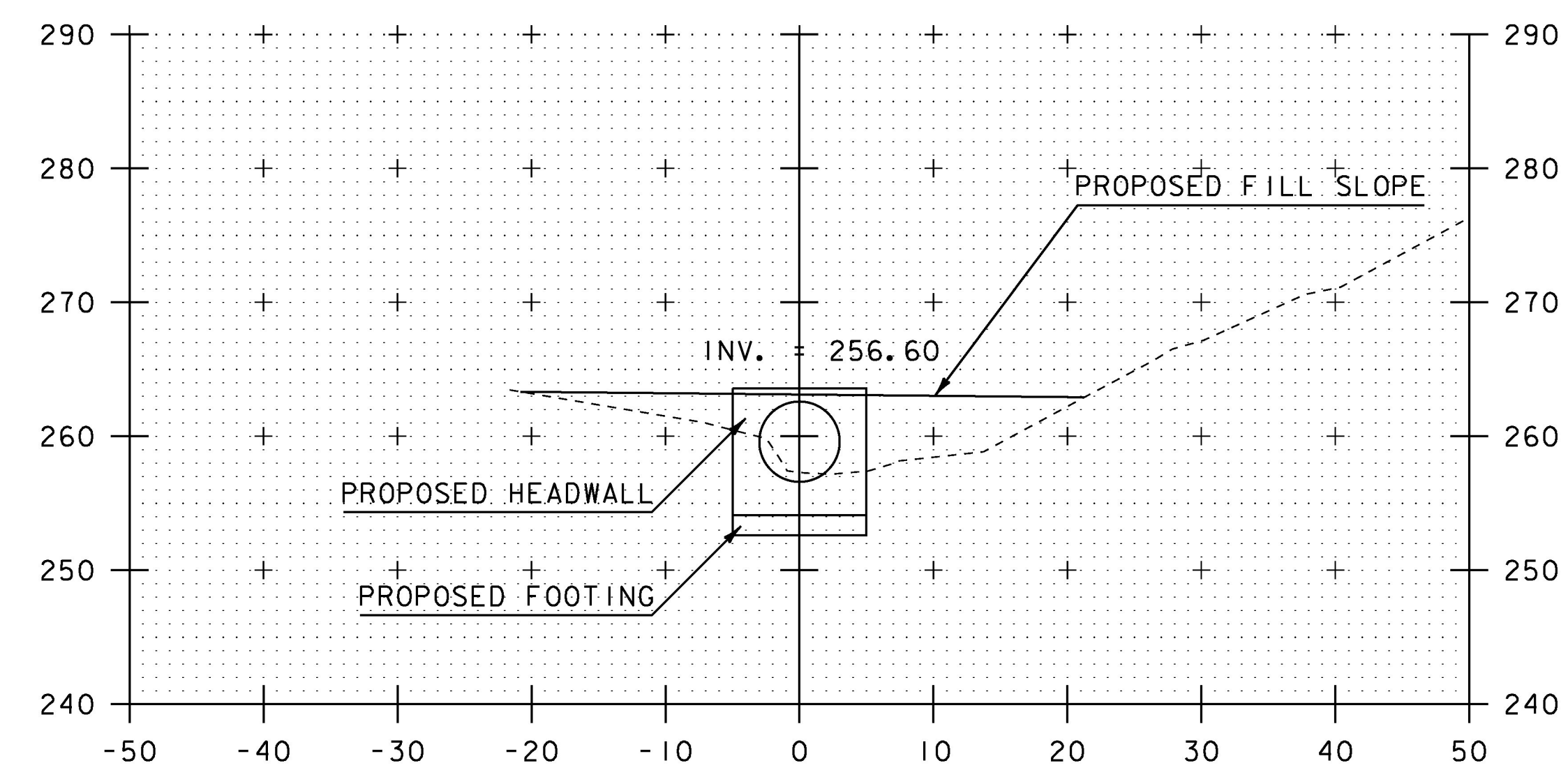
SCALE IN FEET

PROJECT NAME: HIGHGATE	
PROJECT NUMBER: STP SCRP(I2)	
FILE NAME: d13cl34xs.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	

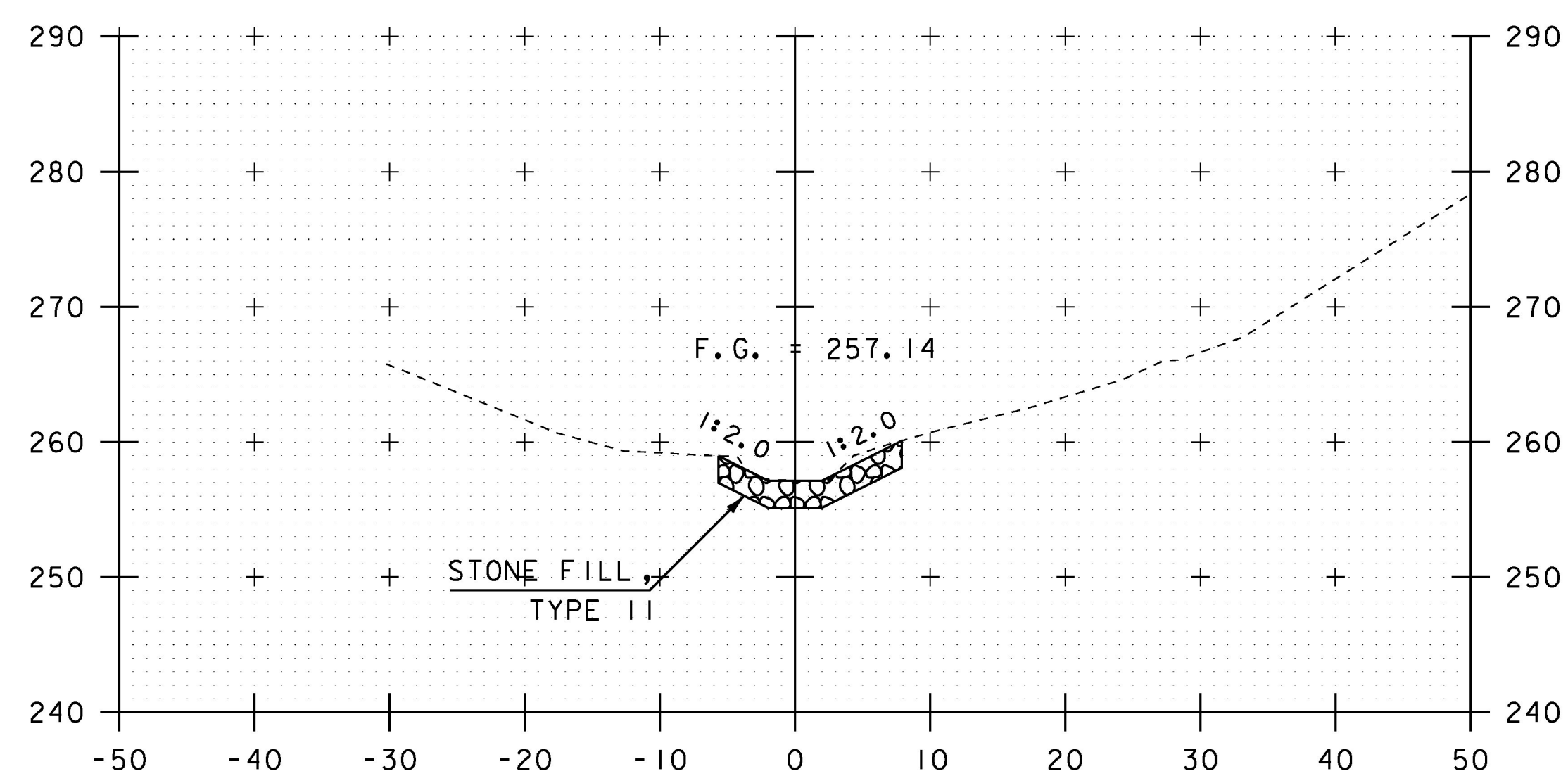




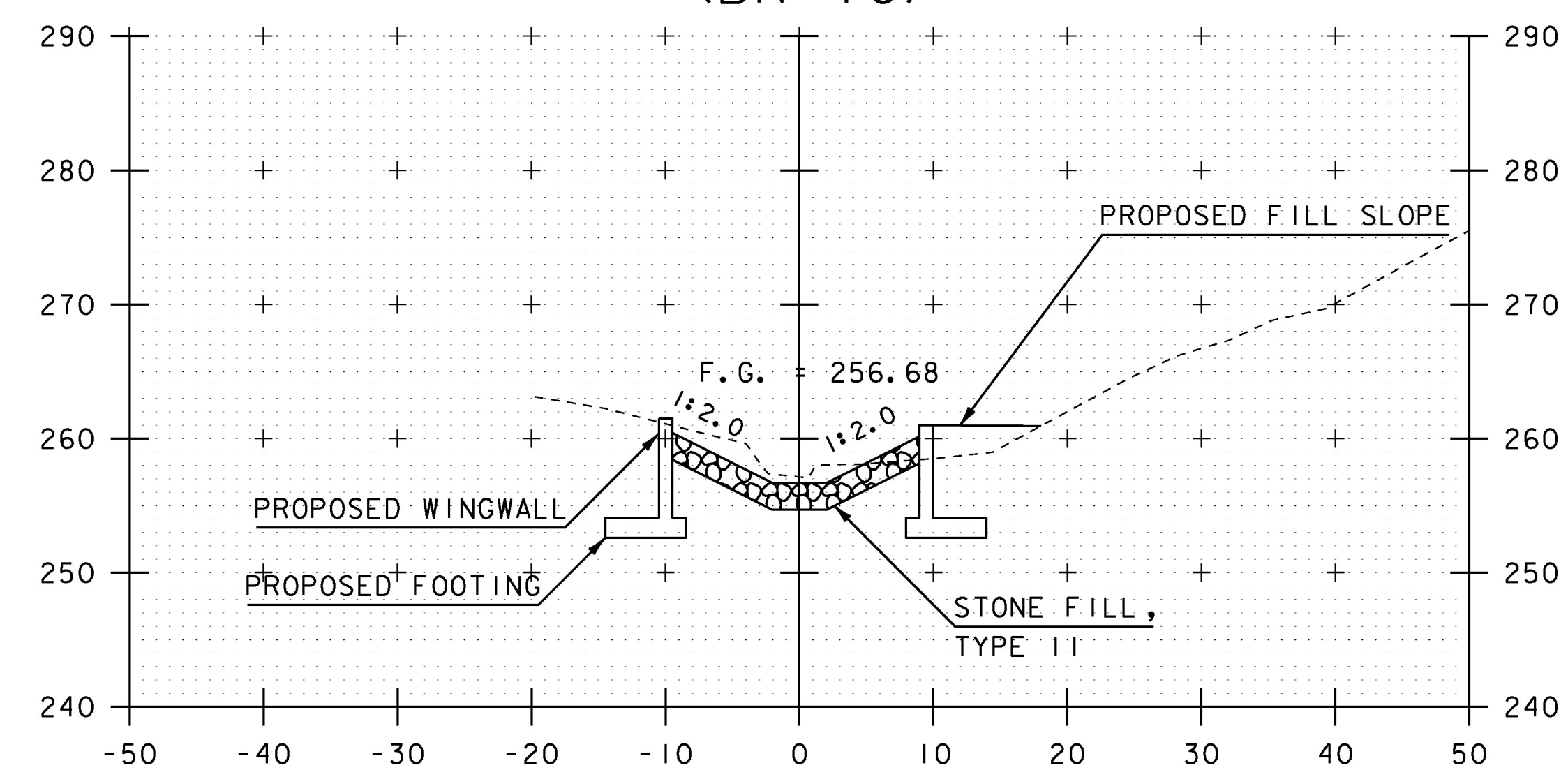
9+20



9+34.21  
BEGIN CULVERT  
(BR 10)



9+07  
BEGIN CHANNEL WORK



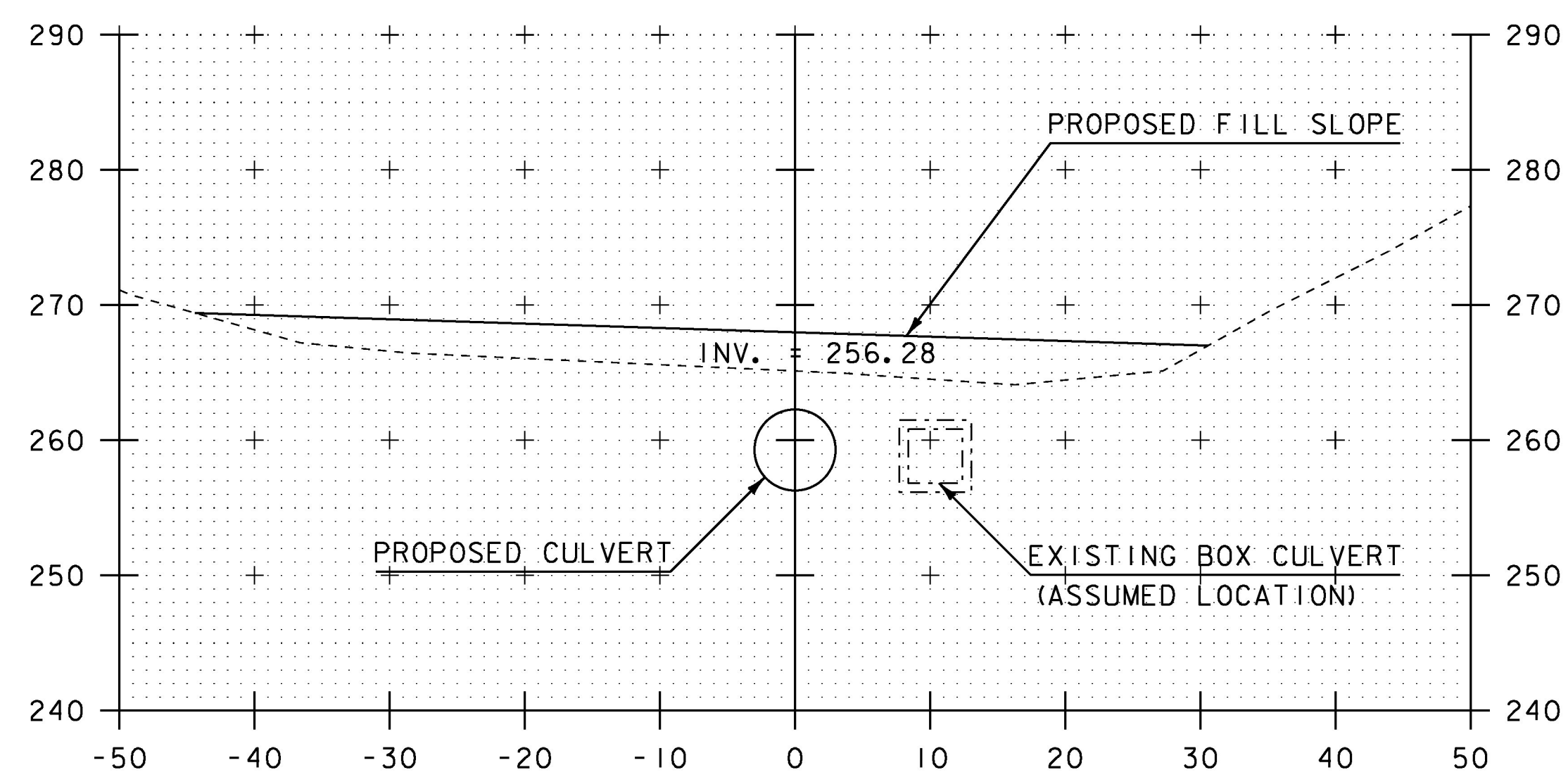
9+30

SCALE IN FEET

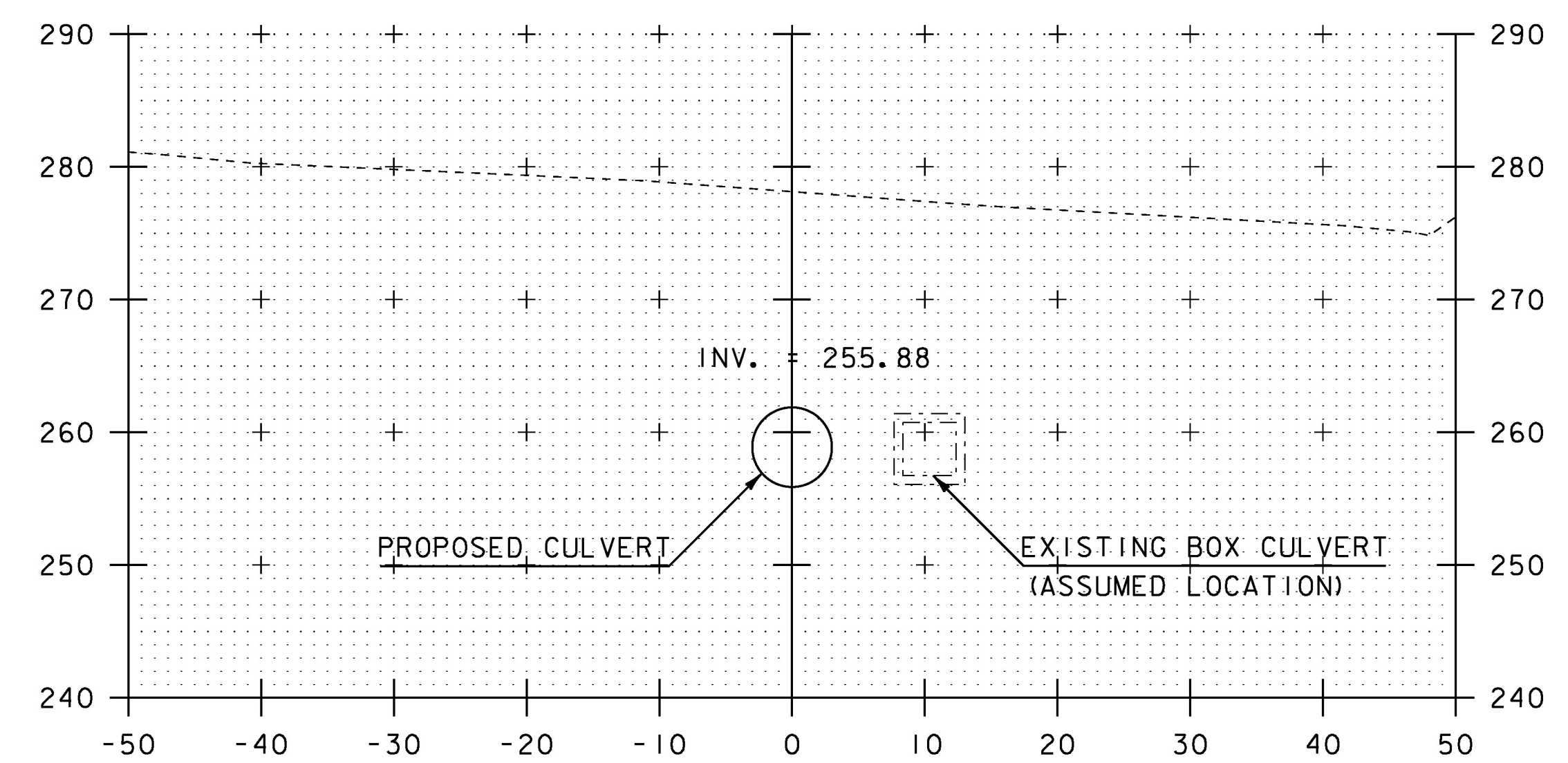
PROJECT NAME: HIGHGATE	
PROJECT NUMBER: STP SCRP(12)	
FILE NAME: d13ci34xs.dgn	PLOT DATE: 14-OCT-2016
PROJECT LEADER: B. MARTIN	DRAWN BY: A. KEMPTON
DESIGNED BY: A. KEMPTON	CHECKED BY: M. GAMELIN
CHANNEL CROSS SECTION SHEET 1	SHEET 34 OF 40

STA. 9+07 TO STA. 9+34

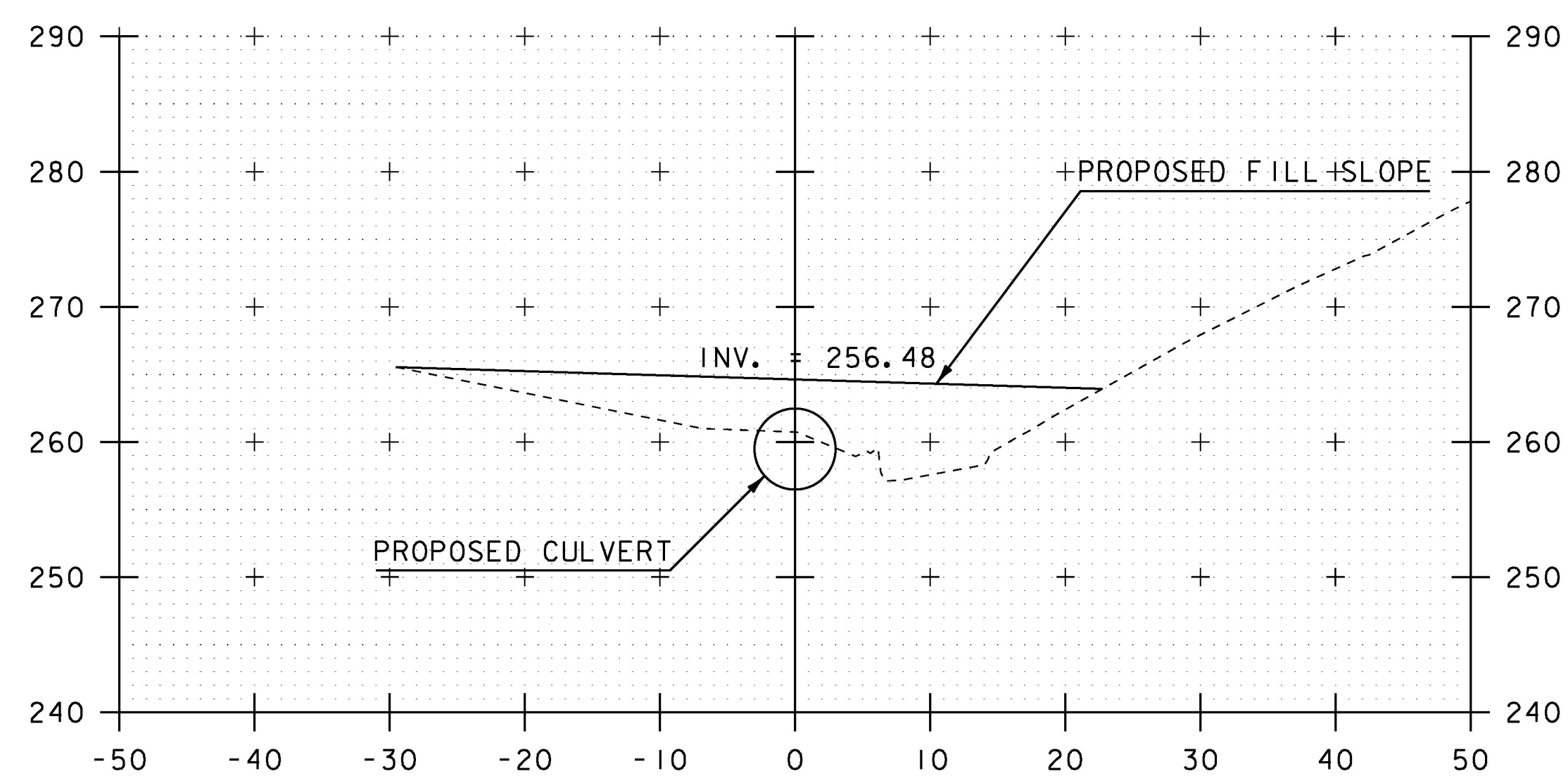




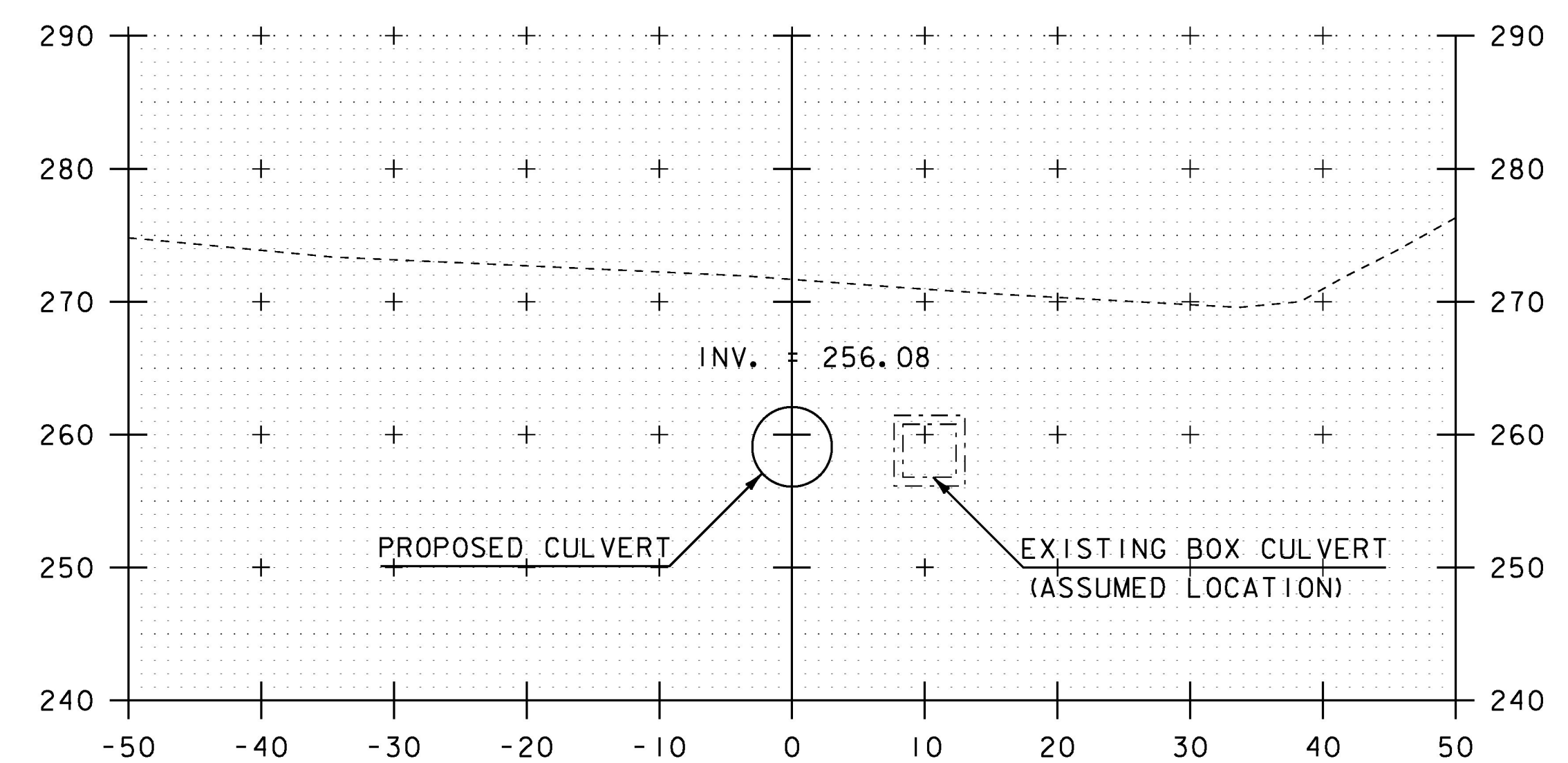
9+50



9+70



9+40



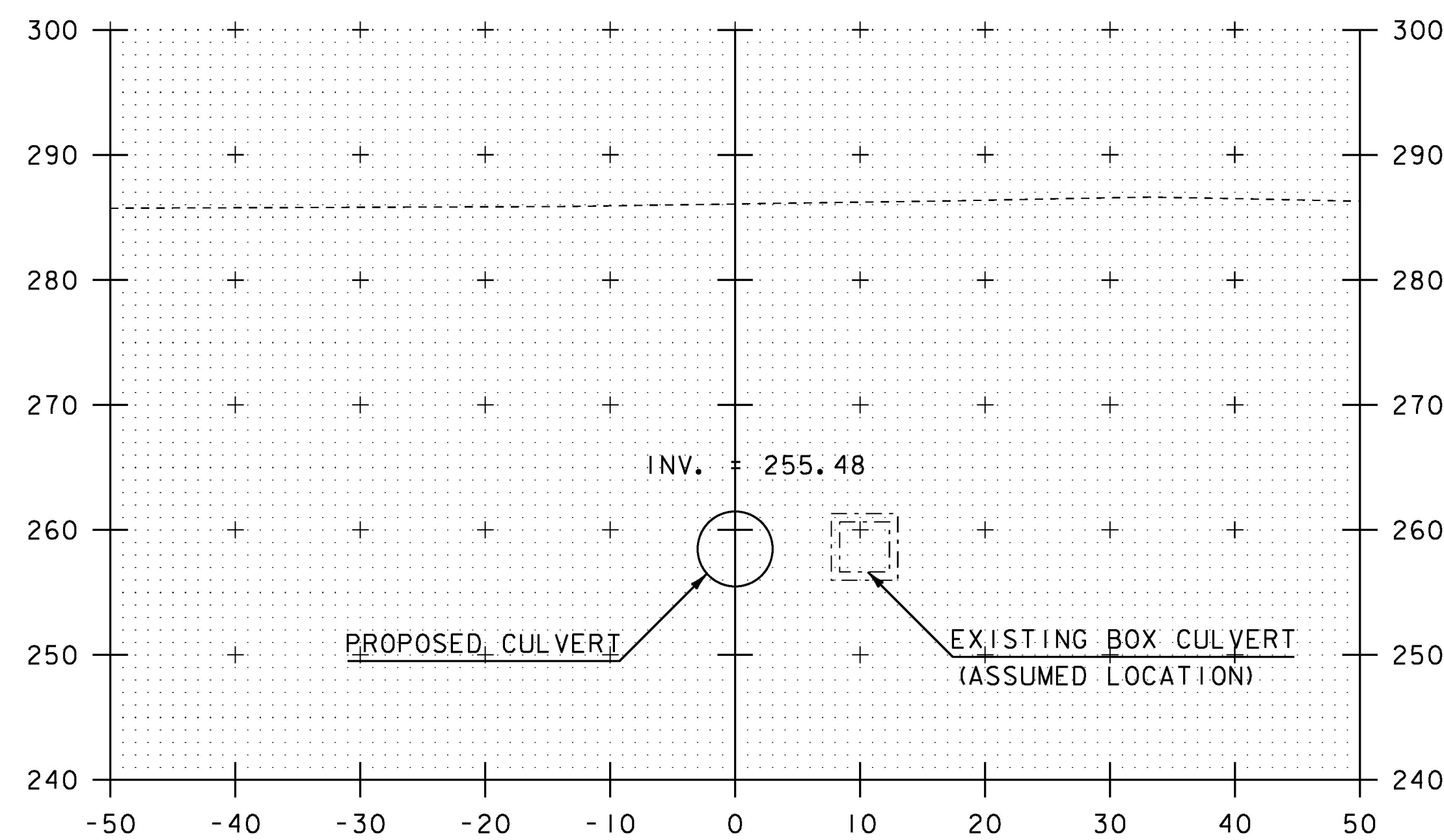
9+60

SCALE IN FEET

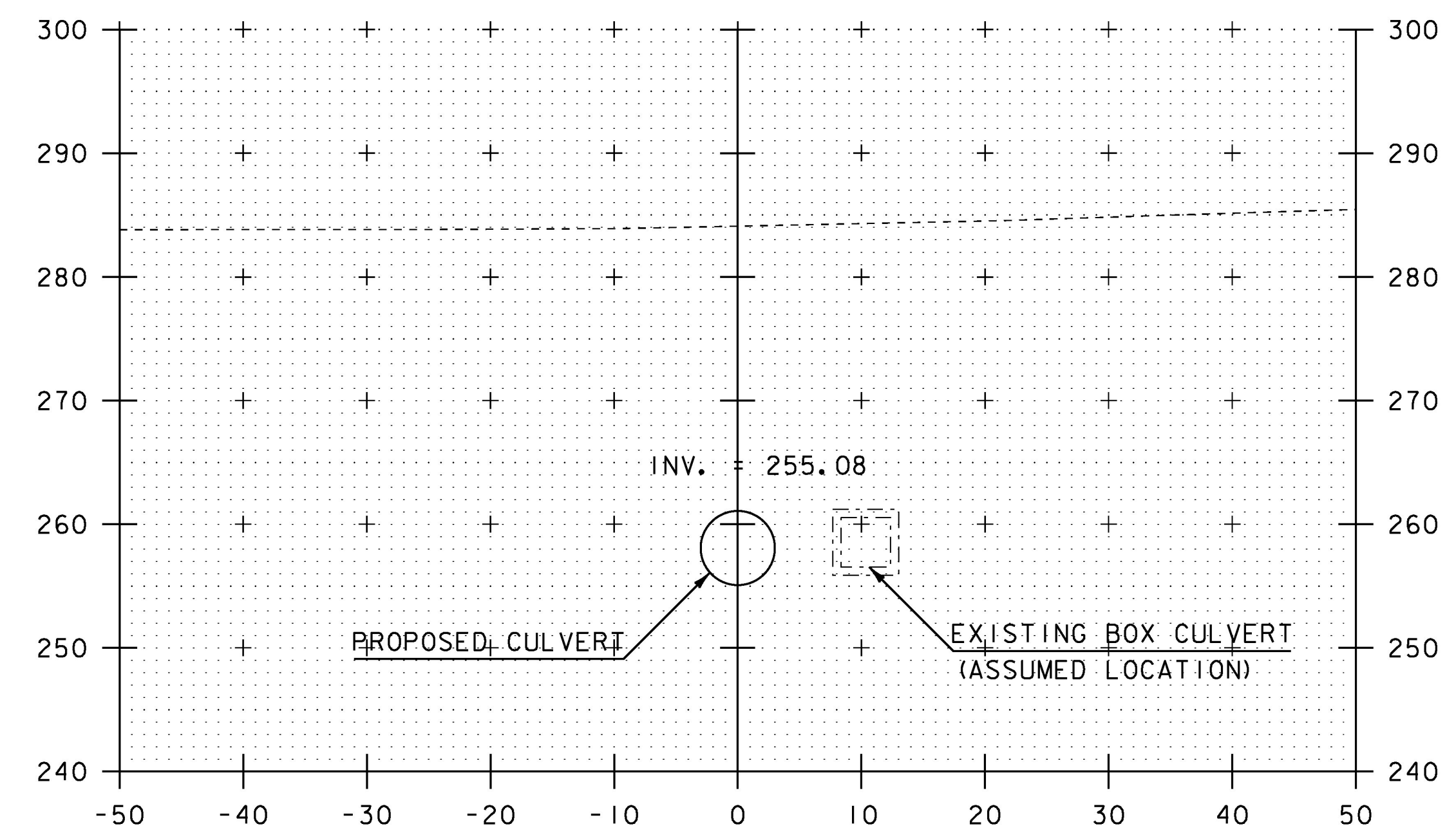
STA. 9+40 TO STA. 9+70

PROJECT NAME: HIGHGATE	
PROJECT NUMBER: STP SCRP(I2)	
FILE NAME: d13ci34xs.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

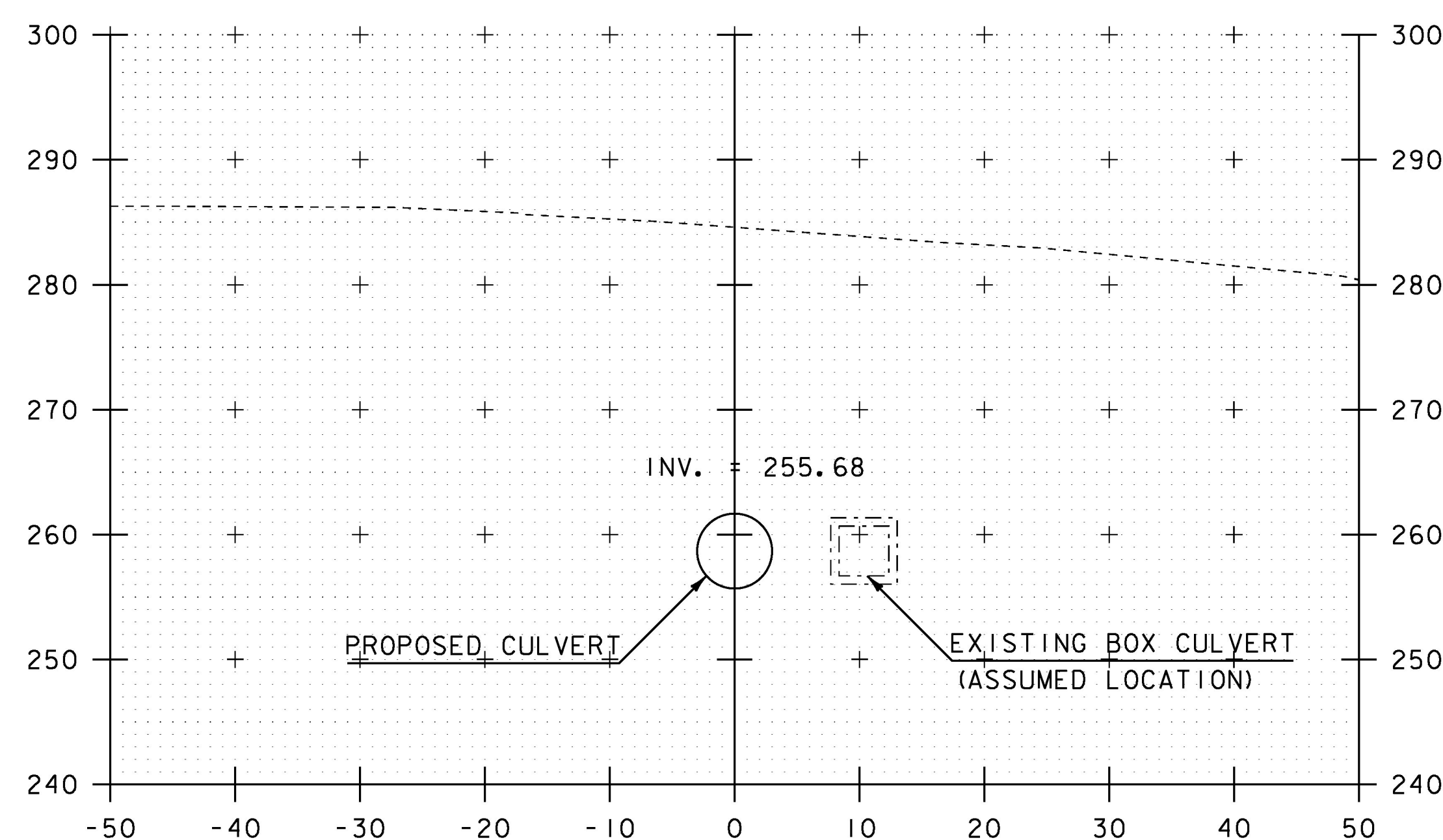




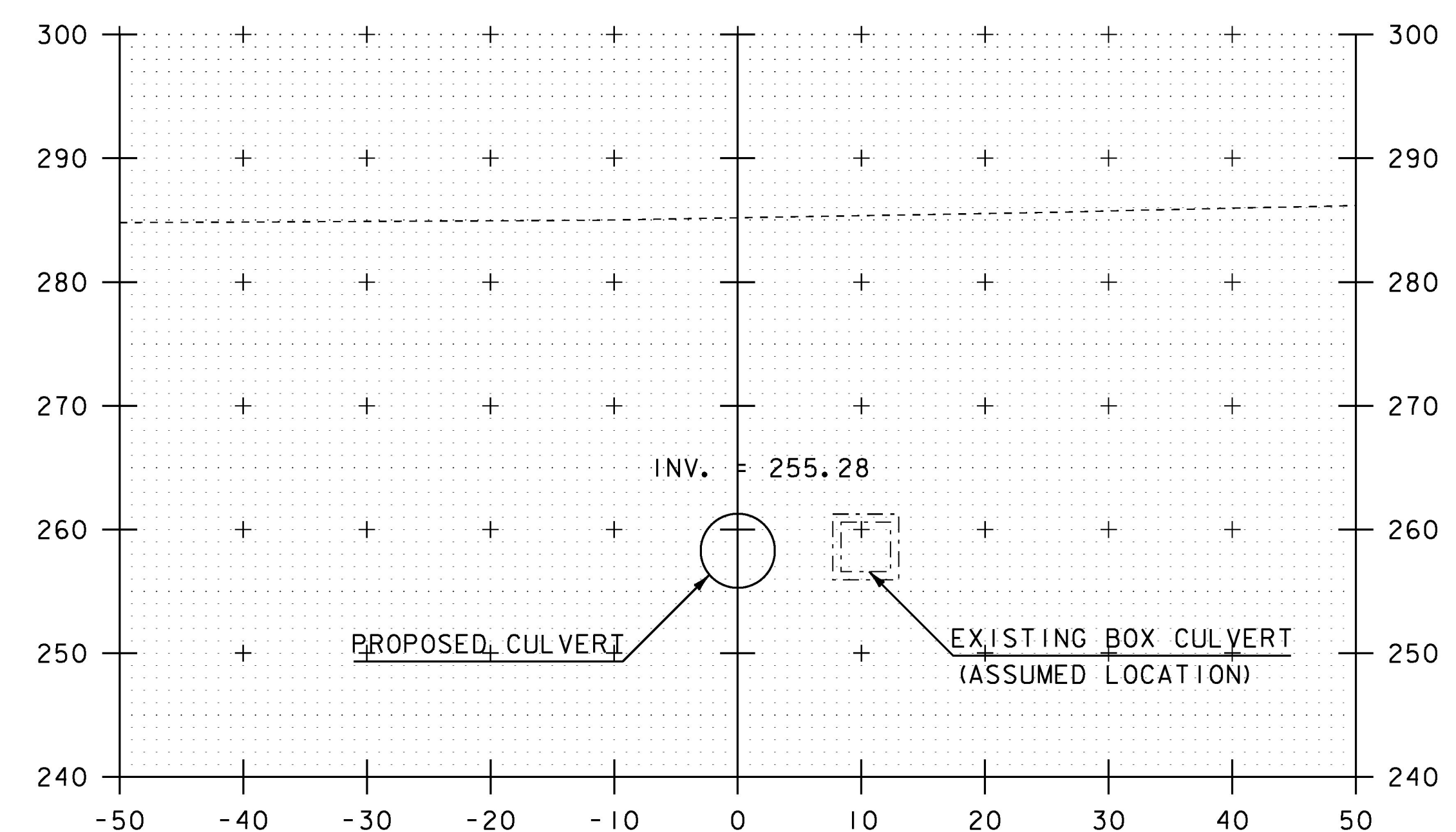
9+90



10+10



9+80



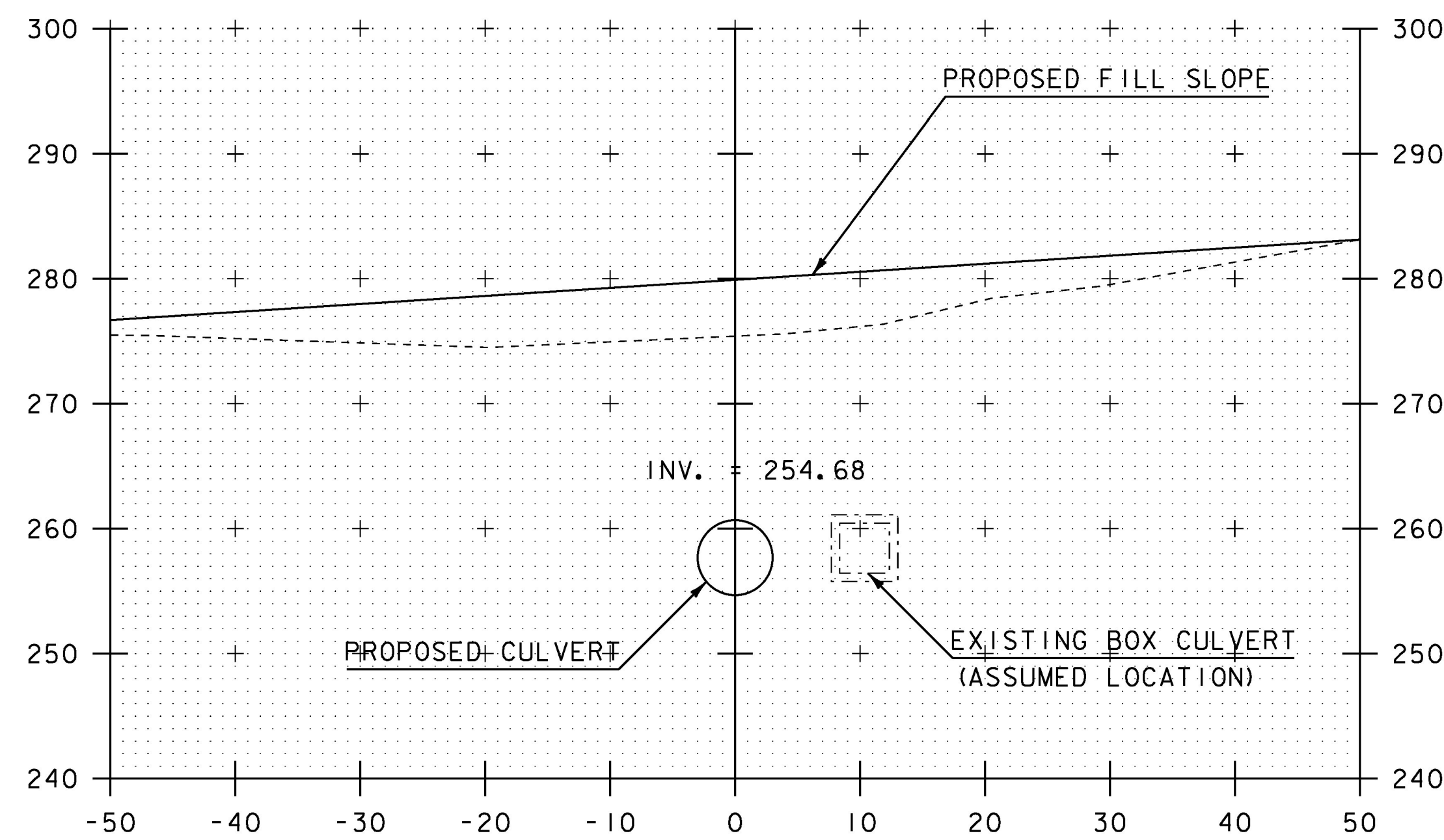
10+00

SCALE IN FEET

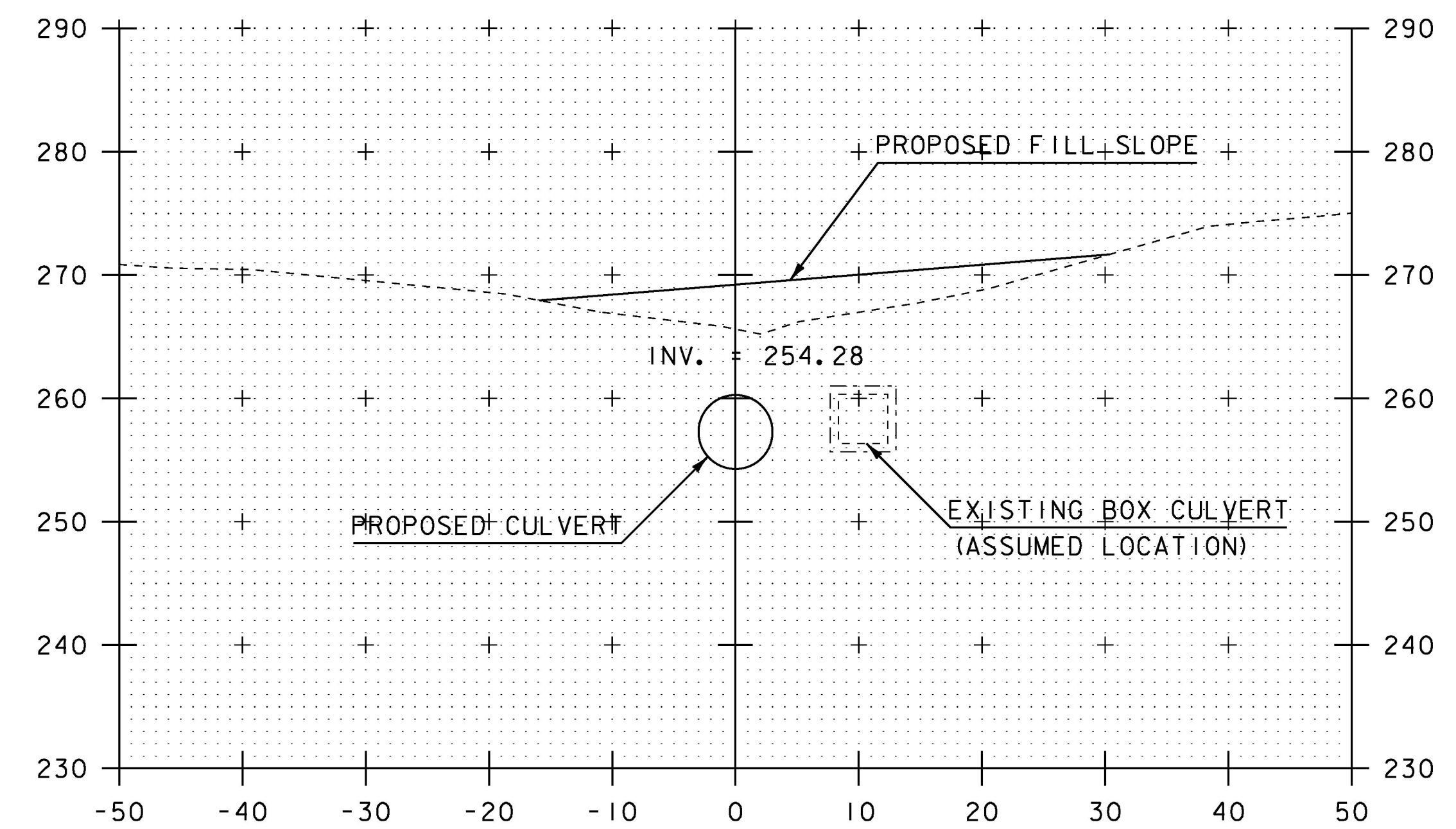
STA. 9+80 TO STA. 10+10

PROJECT NAME:	HIGHGATE
PROJECT NUMBER:	STP SCRP(I2)
FILE NAME:	d13ci34xs.dgn
PROJECT LEADER:	B. MARTIN
DESIGNED BY:	A. KEMPTON
CHANNEL CROSS SECTION SHEET 3	
PLOT DATE:	14-OCT-2016
DRAWN BY:	A. KEMPTON
CHECKED BY:	M. GAMELIN
SHEET	36 OF 40

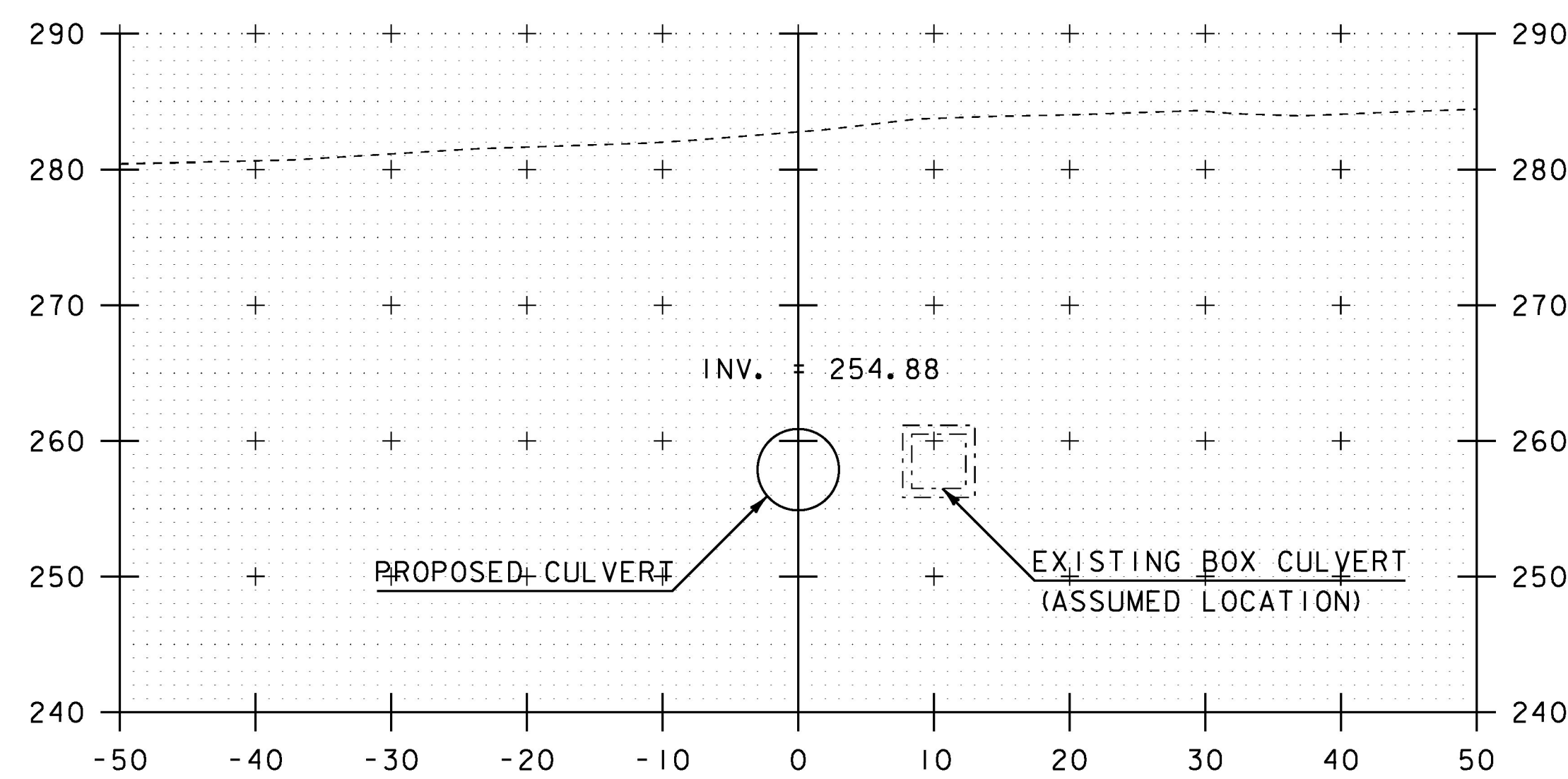




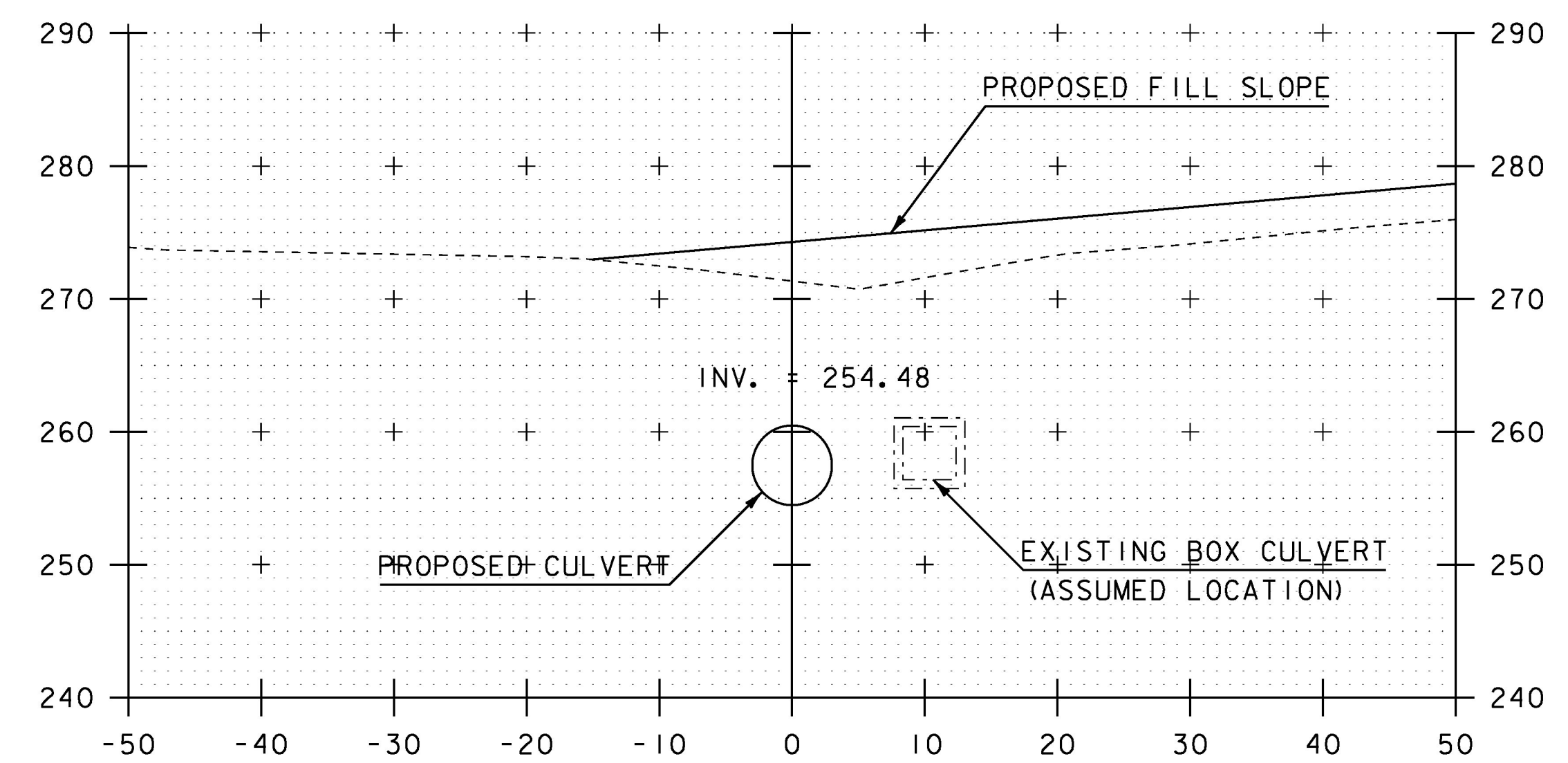
10+30



10+50



10+20



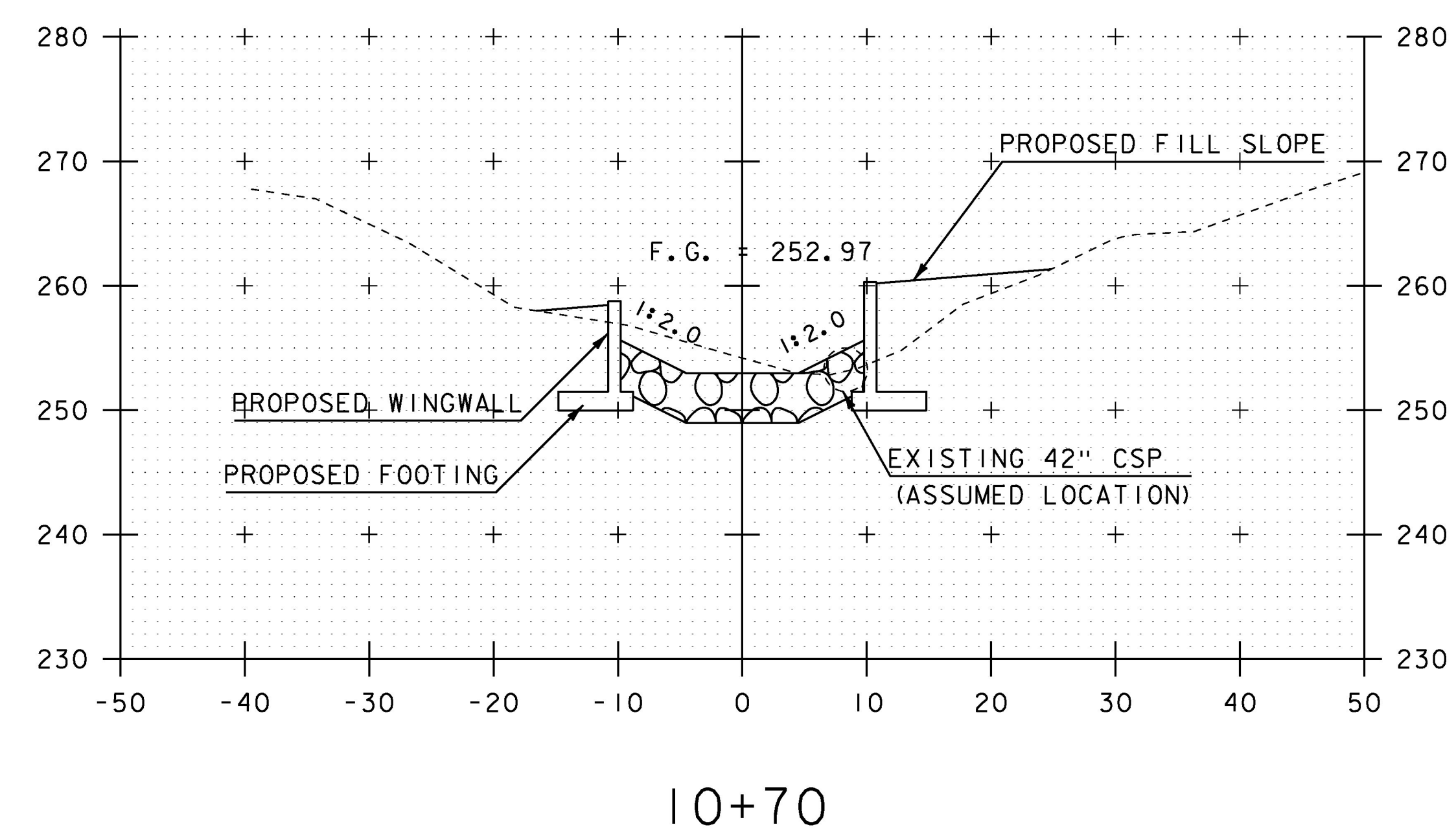
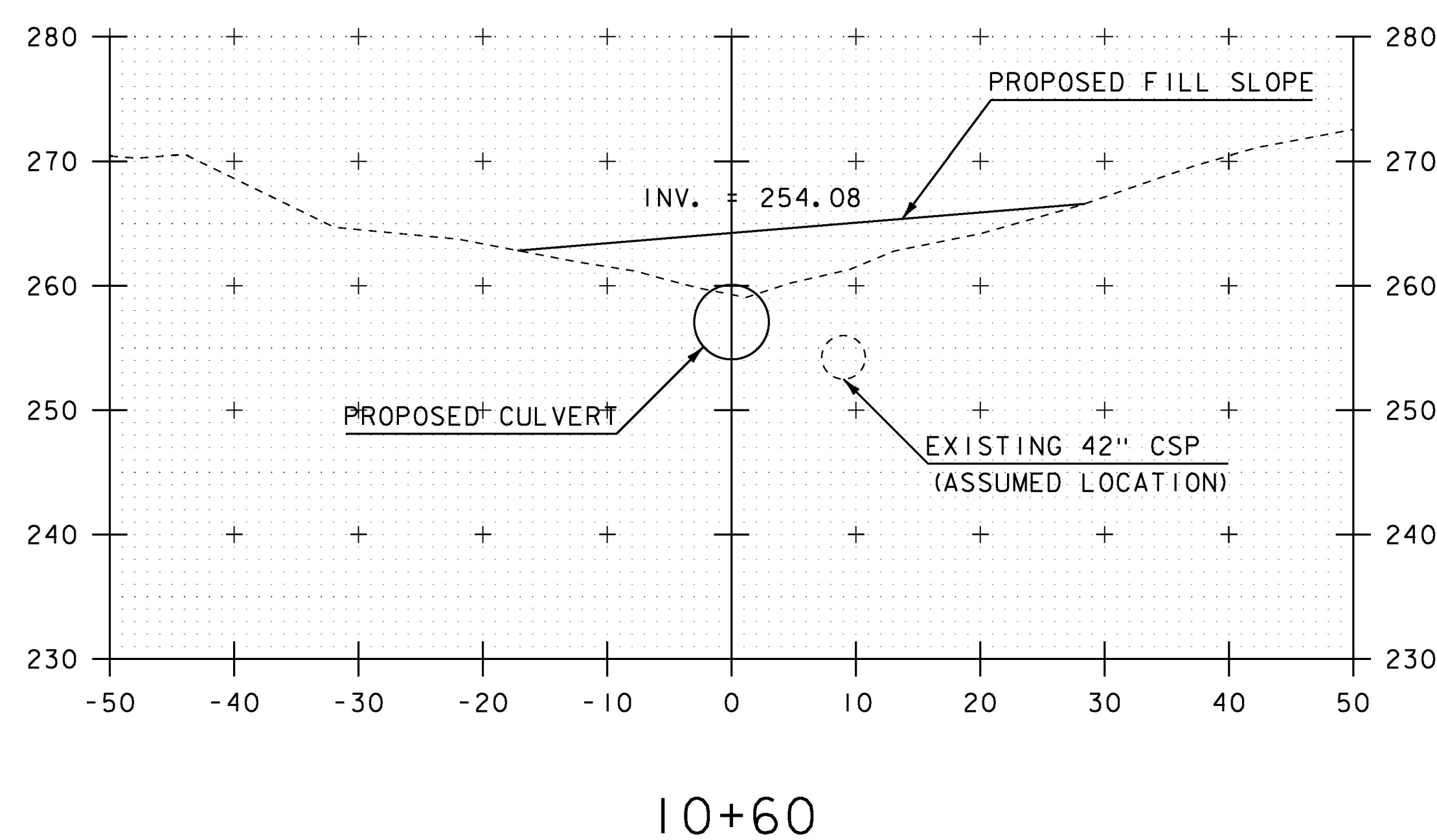
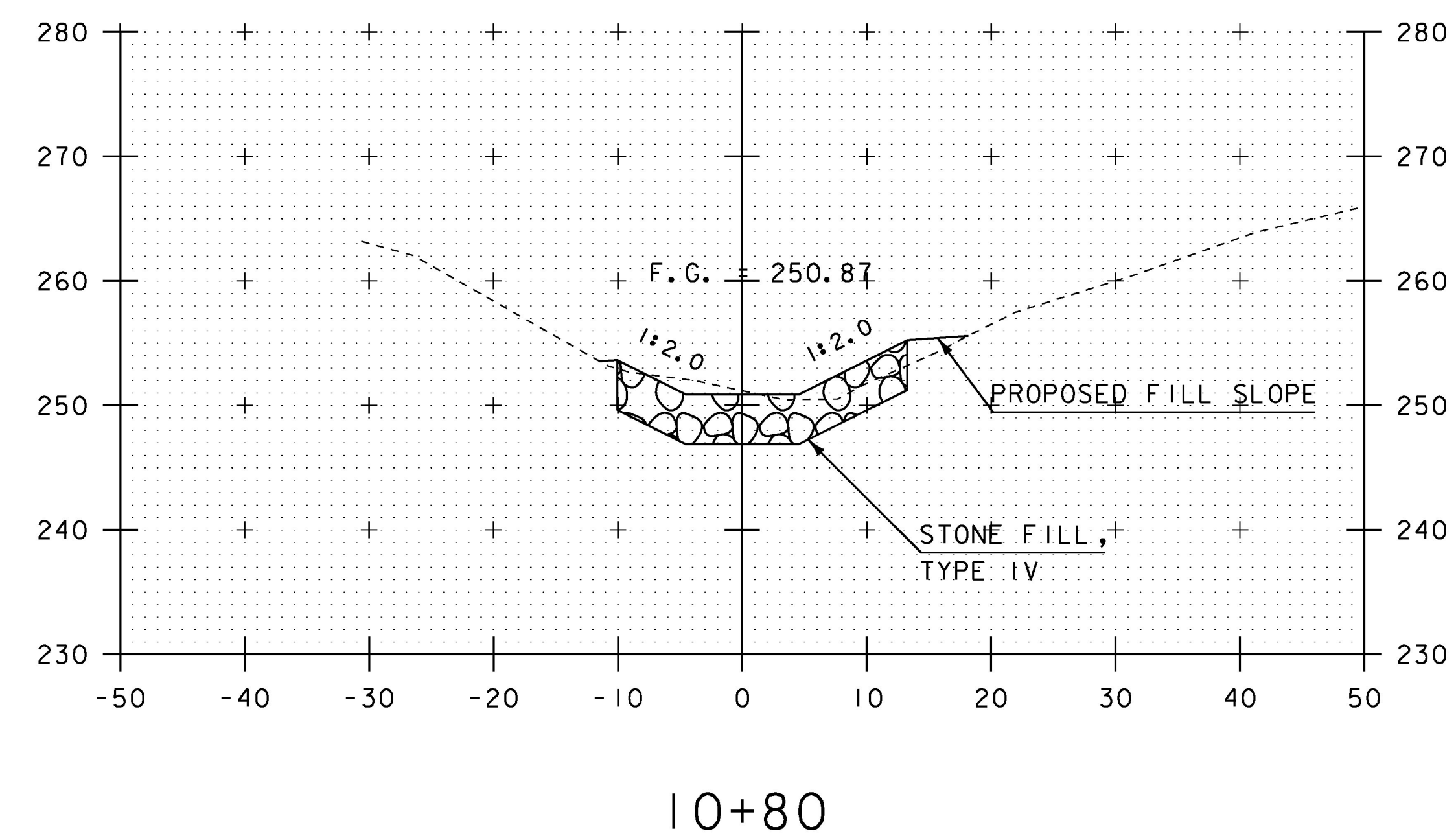
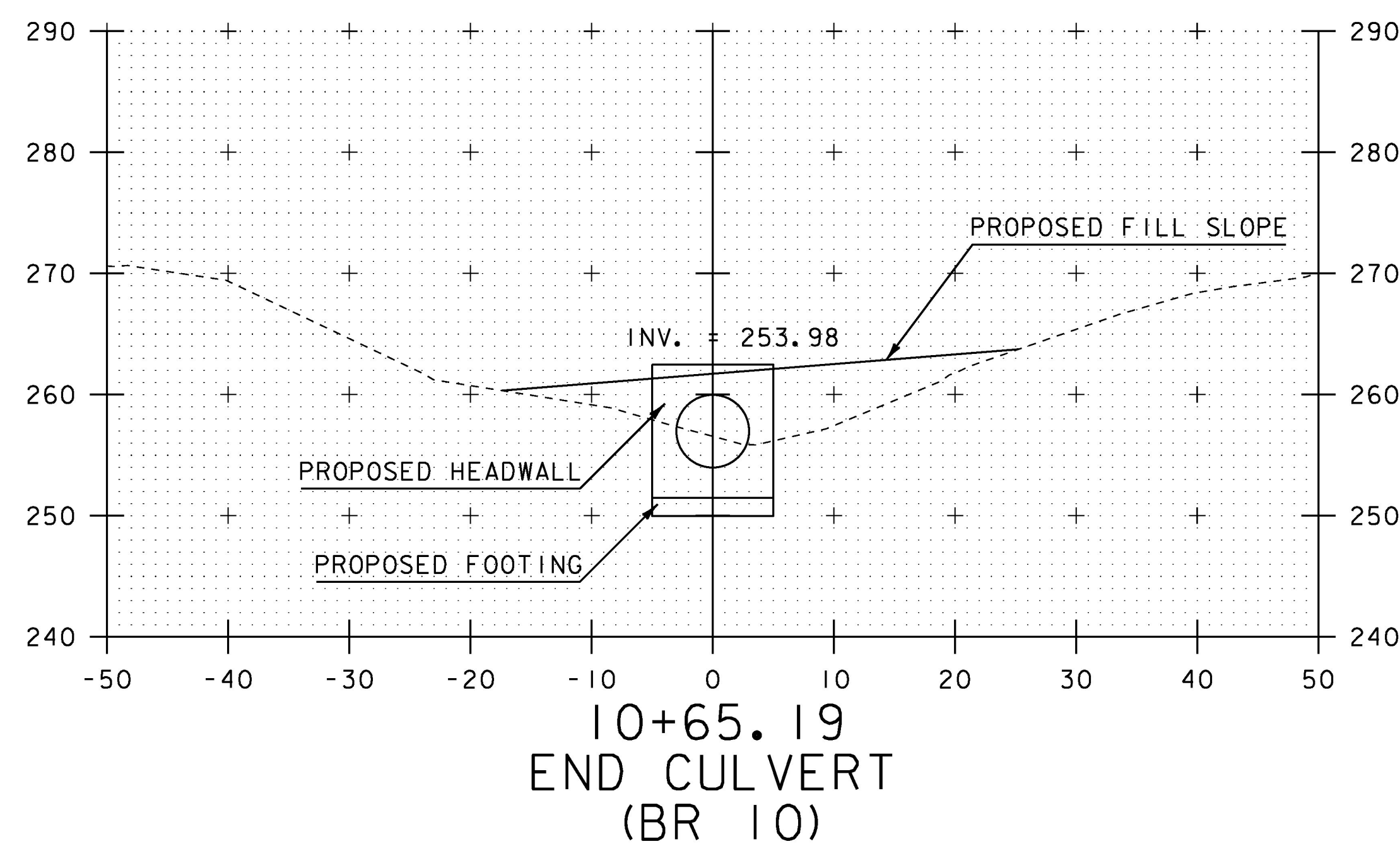
10+40

SCALE IN FEET

PROJECT NAME: HIGHGATE	
PROJECT NUMBER: STP SCRP(I2)	
FILE NAME: d13ci34xs.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

STA. 10+20 TO STA. 10+50



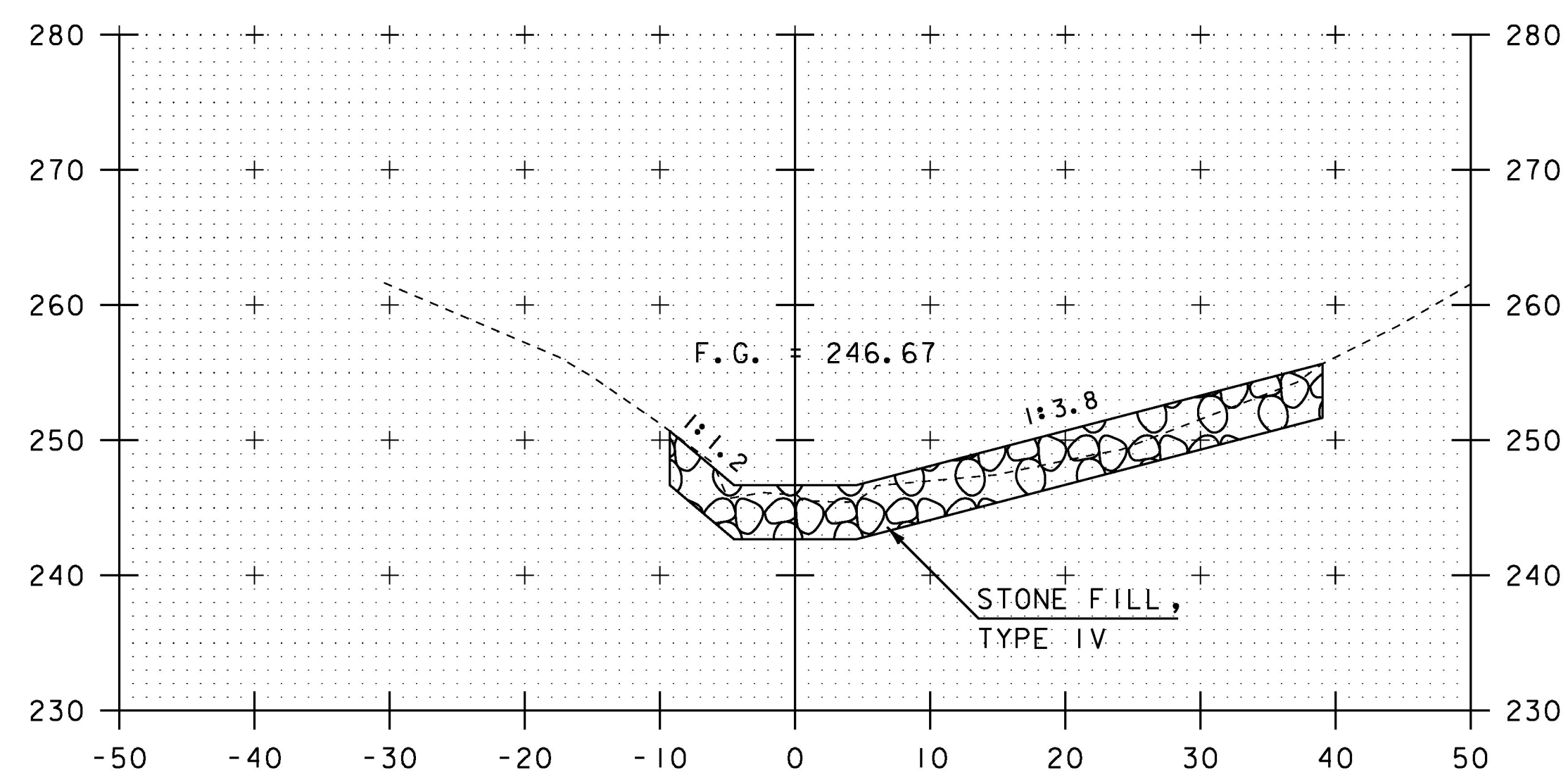


SCALE IN FEET

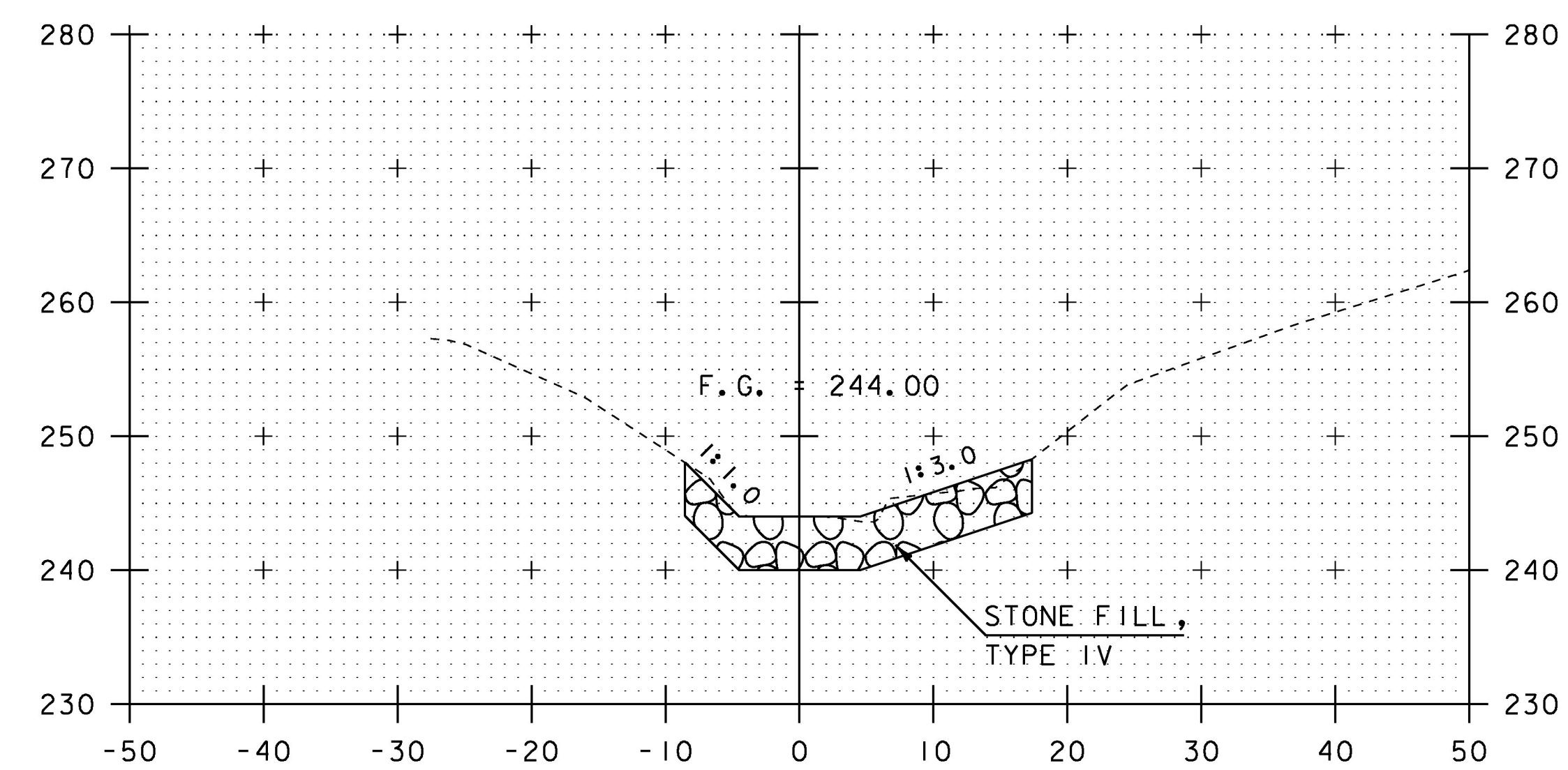
PROJECT NAME: HIGHGATE	
PROJECT NUMBER: STP SCRP(12)	
FILE NAME: d13ci34xs.dgn	PLOT DATE: 14-OCT-2016
PROJECT LEADER: B. MARTIN	DRAWN BY: A. KEMPTON
DESIGNED BY: A. KEMPTON	CHECKED BY: M. GAMELIN
CHANNEL CROSS SECTION SHEET 5	SHEET 38 OF 40

STA. 10+60 TO STA. 10+80

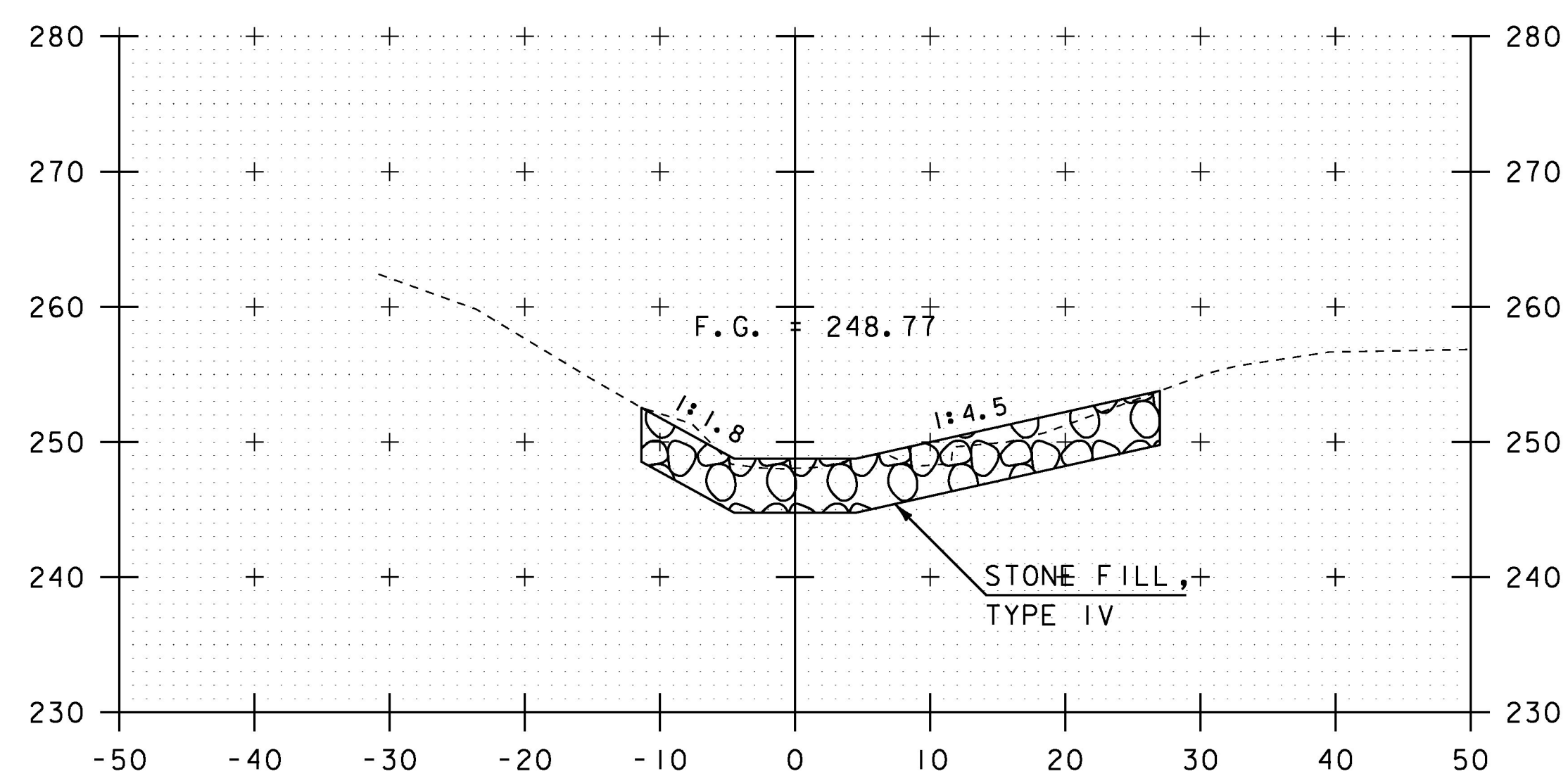




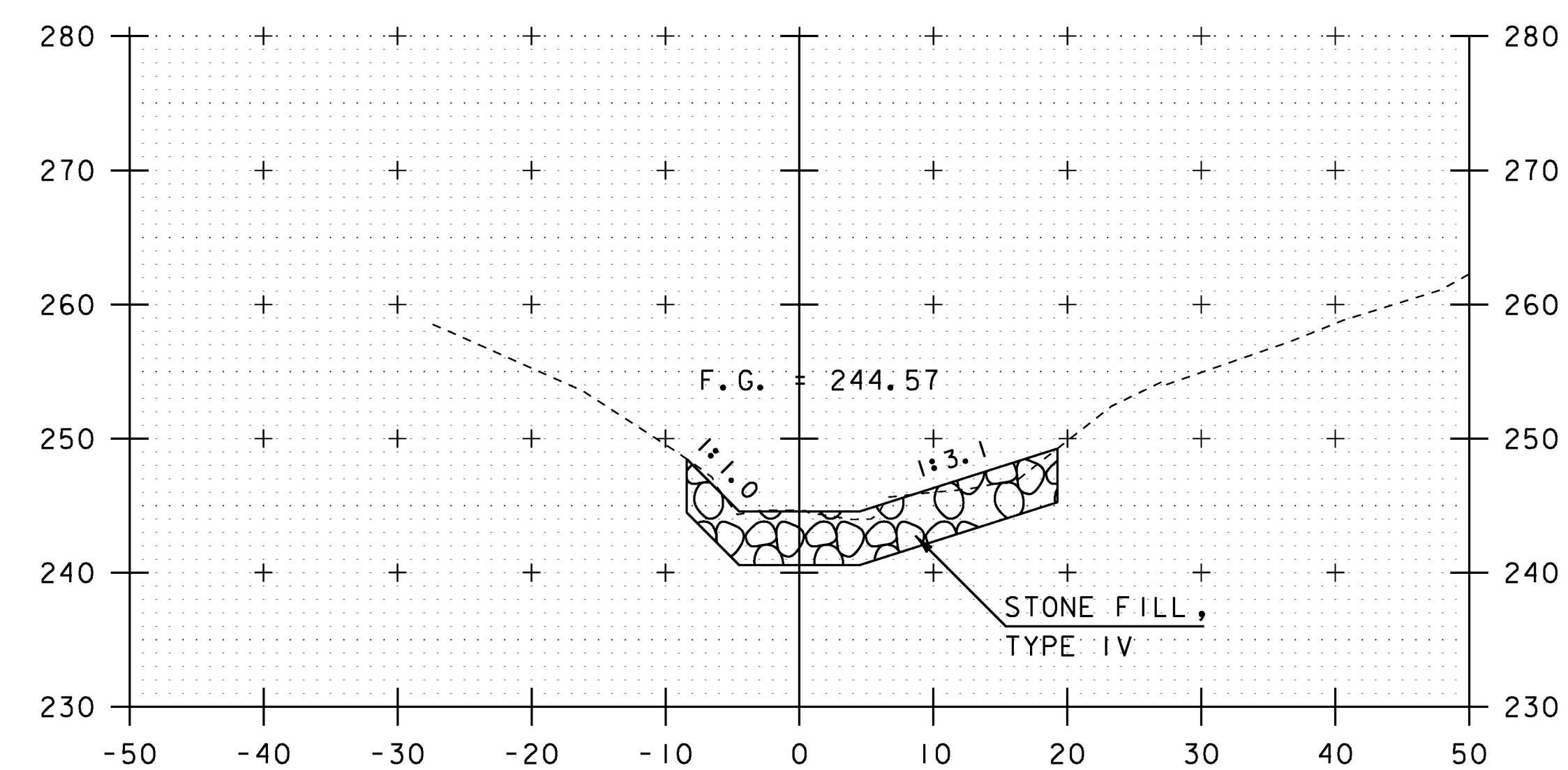
11+00



11+13  
END CHANNEL WORK



10+90



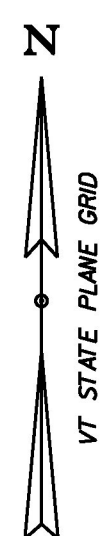
11+10

SCALE IN FEET

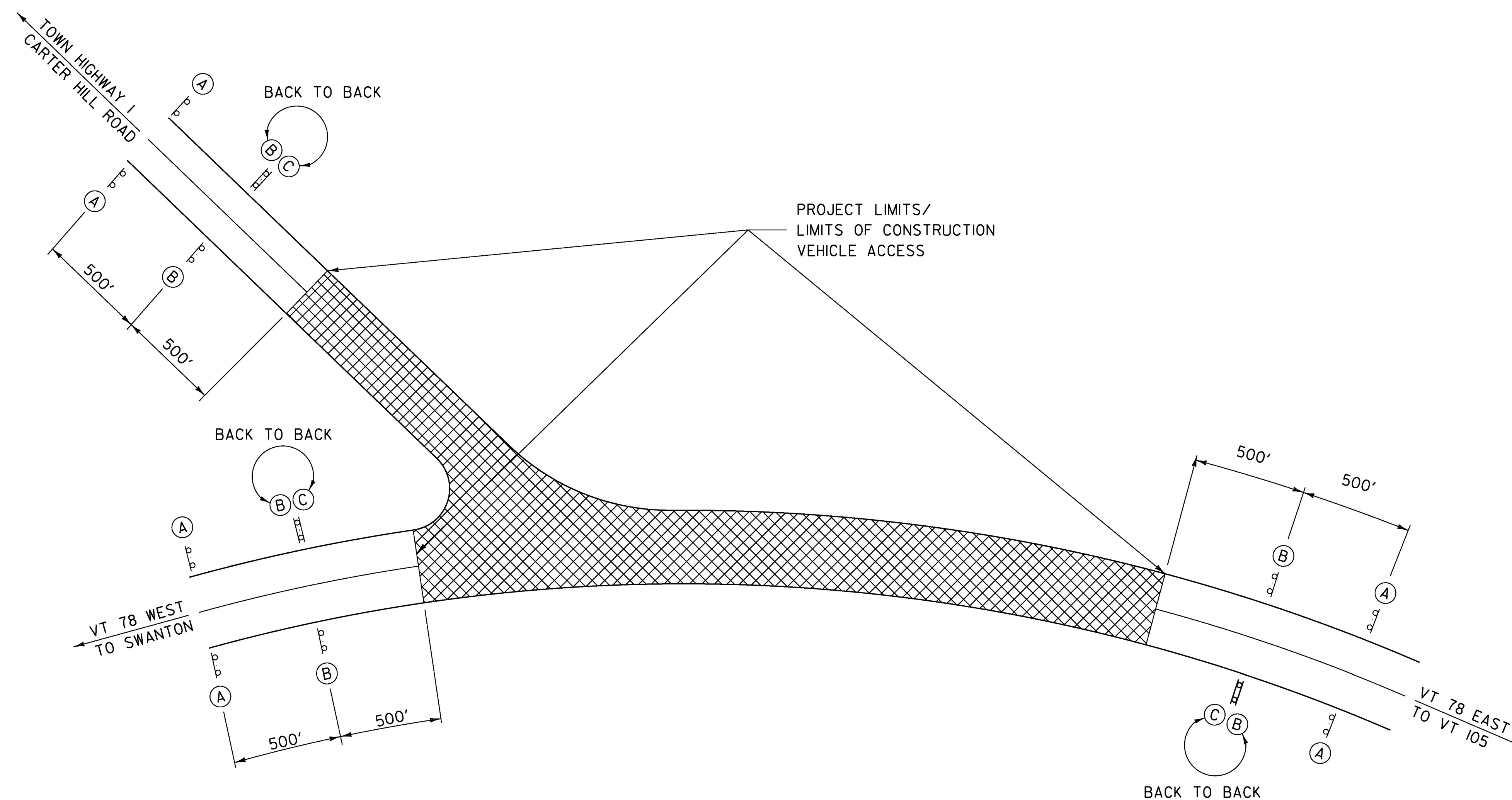
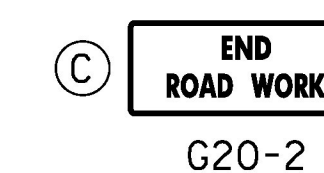
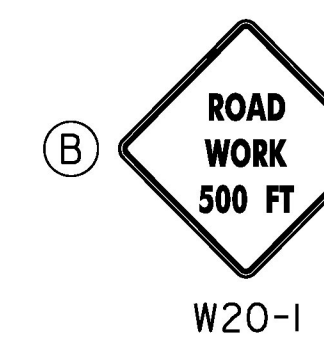
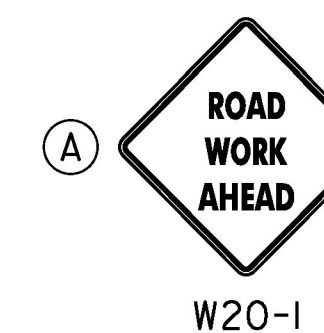
STA. 10+90 TO STA. 11+13

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





## LEGEND



### 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.

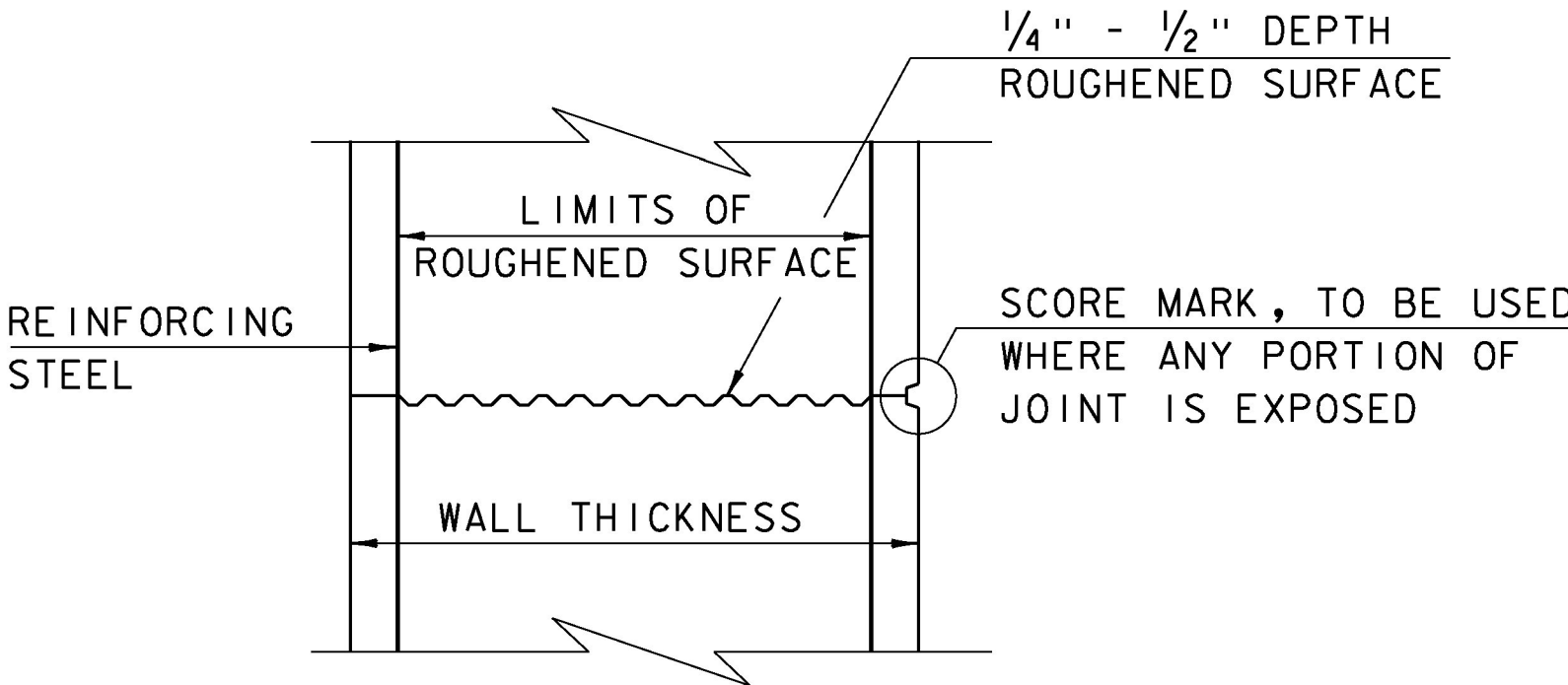
NOT TO SCALE

PROJECT NAME: HIGHGATE	
PROJECT NUMBER: STP SCRPI(2)	
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



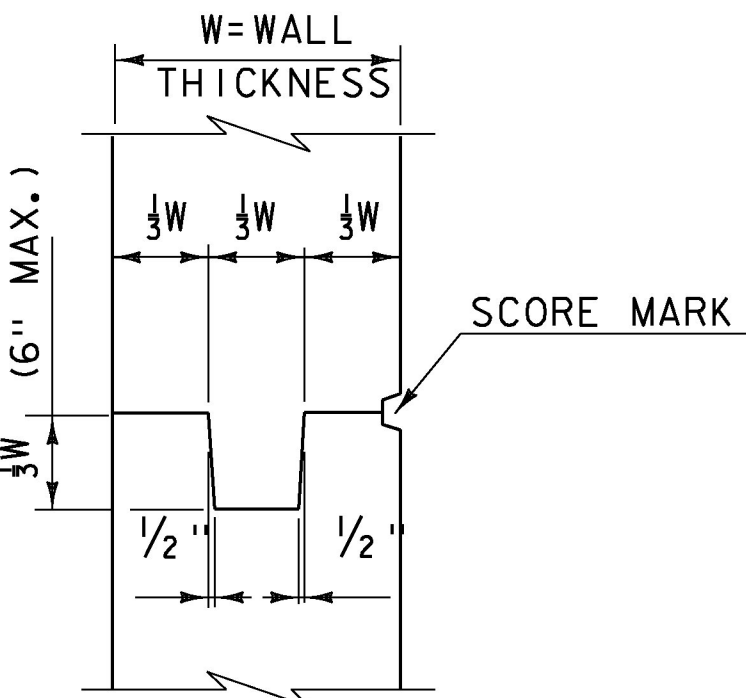
CONCRETE GENERAL NOTES

- 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.

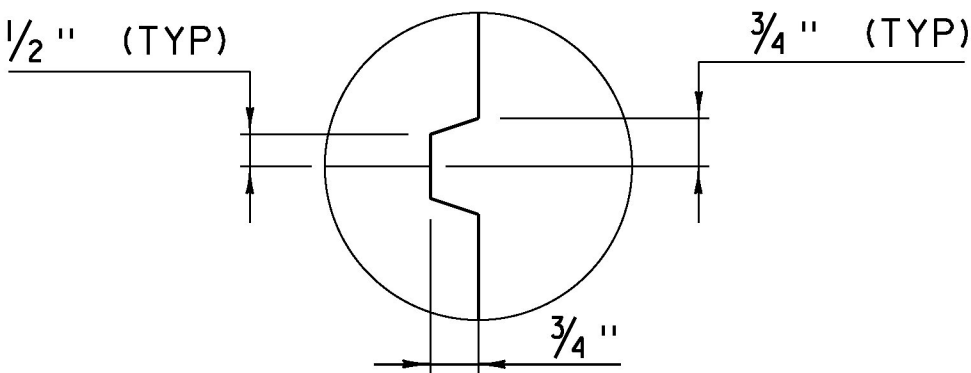


TYPICAL HORIZONTAL CONSTRUCTION JOINT  
(NOT TO SCALE)

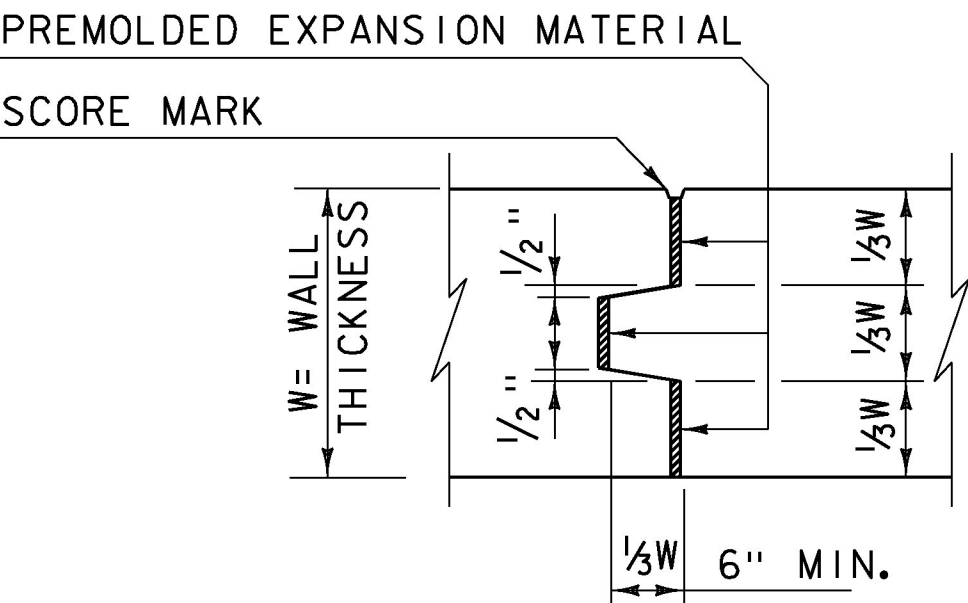
- 1. THE SURFACE OF THE CONCRETE CONSTRUCTION JOINTS SHALL BE CLEANED AND FREE OF LAITANCE.
- 2. IMMEDIATELY BEFORE NEW CONCRETE IS PLACED, ALL CONSTRUCTION JOINTS SHALL BE WETTED AND STANDING WATER REMOVED.



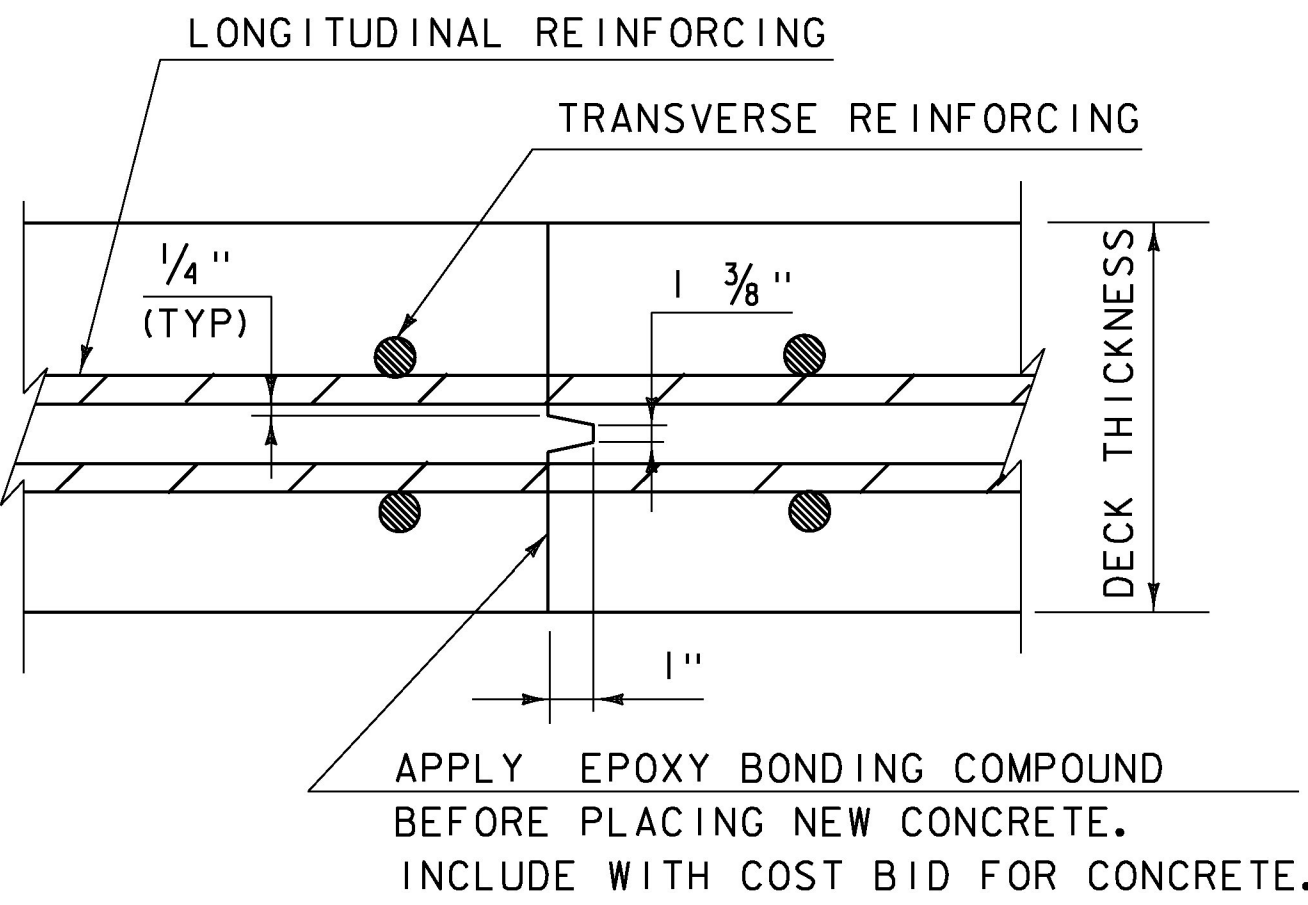
TYPICAL CONCRETE CONSTRUCTION JOINT  
(NOT TO SCALE)



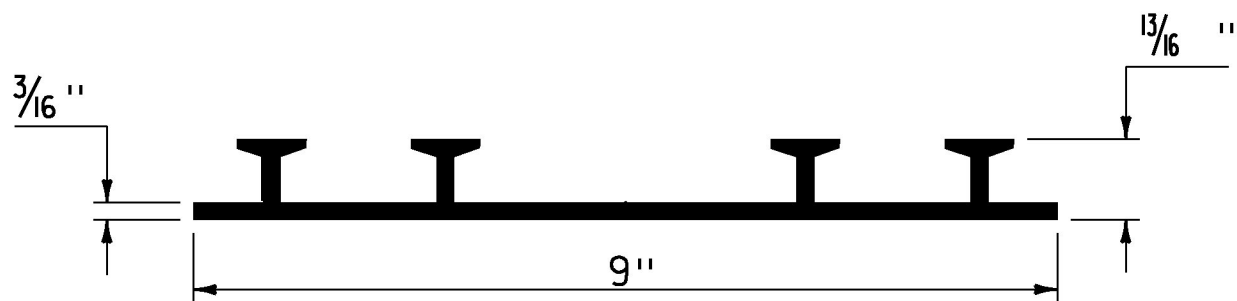
SCORE MARK DETAIL  
(NOT TO SCALE)



TYPICAL CONCRETE EXPANSION JOINT  
(NOT TO SCALE)



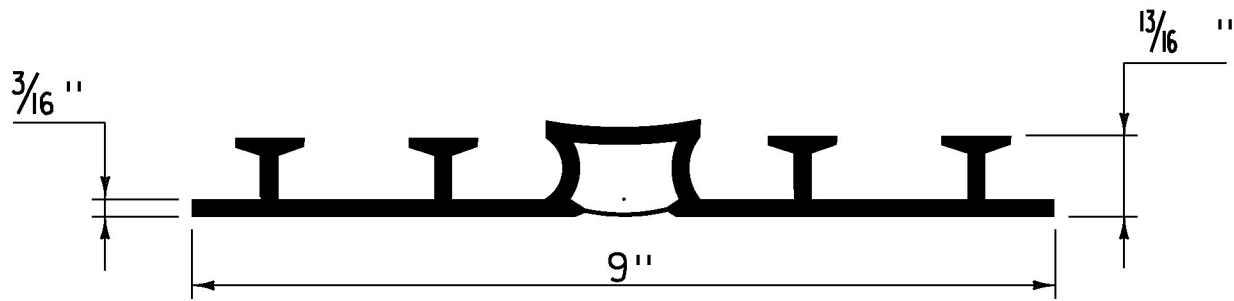
TRANSVERSE BRIDGE SLAB  
CONSTRUCTION JOINT DETAILS  
(NOT TO SCALE)



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.

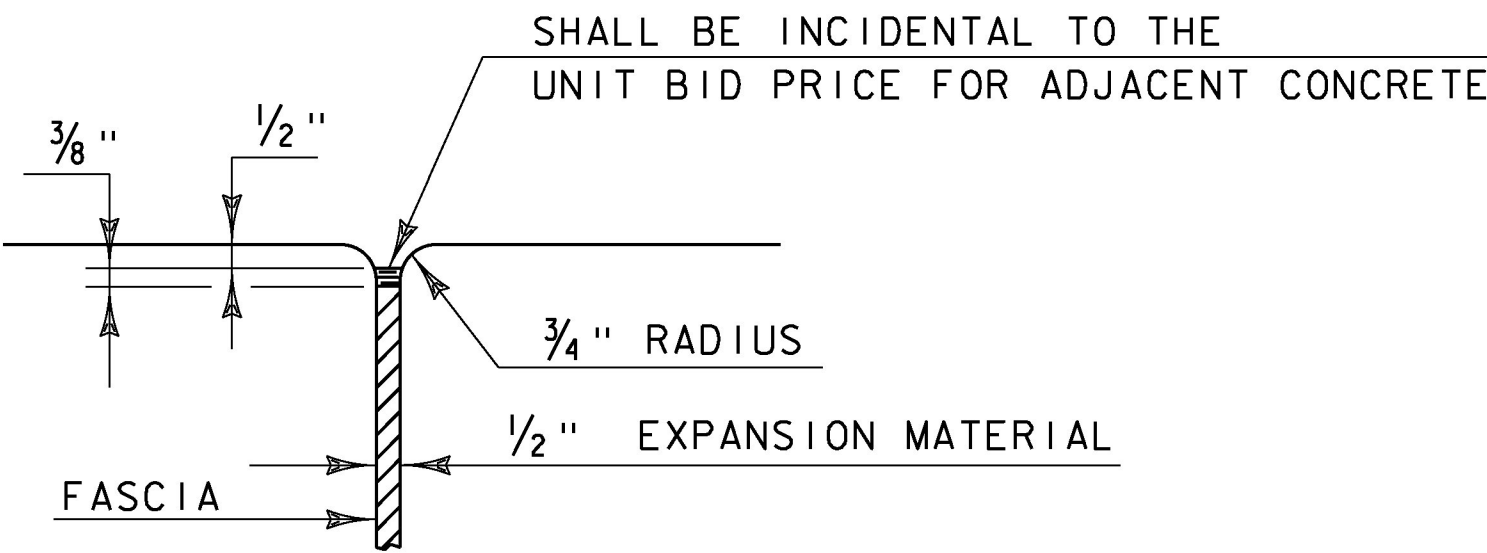
OTHER CONFIGURATIONS OF WATERSTOP MAY BE USED UPON APPROVAL OF THE ENGINEER.



P.V.C. WATERSTOP FOR  
EXPANSION JOINTS  
(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.

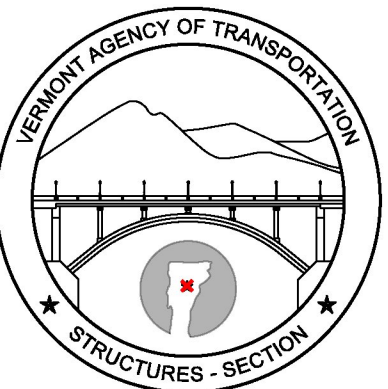


JOINT BETWEEN FASCIA  
AND WINGWALL  
(NOT TO SCALE)

REVISIONS

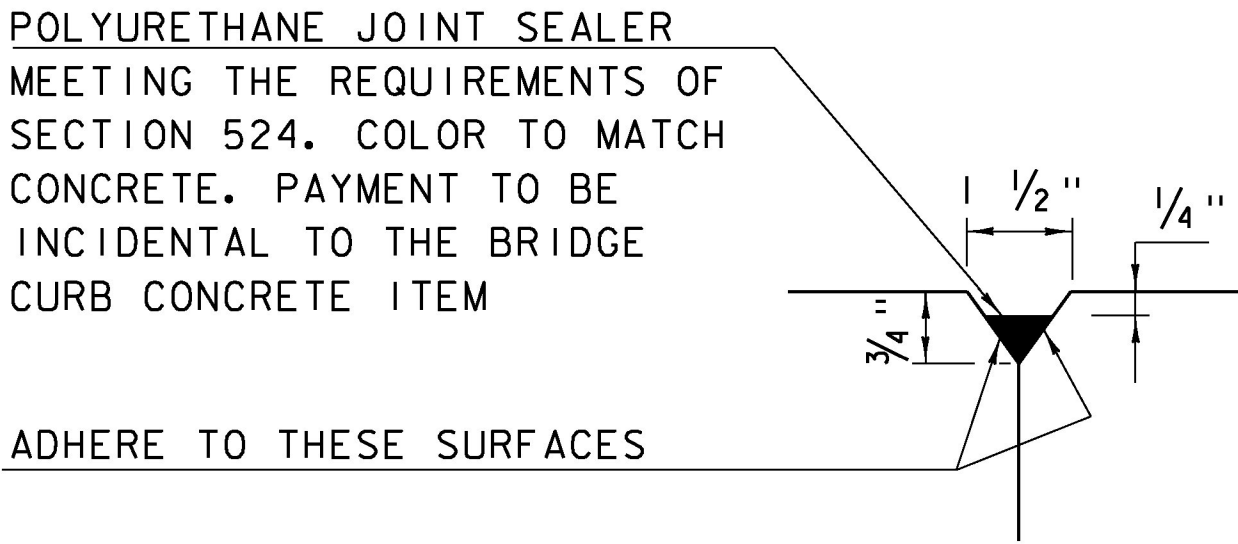
MAY 7, 2010	APPROVED FOR USE BY VAOT STRUCTURES SECTION
FEBRUARY 9, 2012	REBAR SUBSTITUTION ALLOWANCE ADDED TO CONCRETE GENERAL NOTES.

CONCRETE  
DETAILS AND NOTES

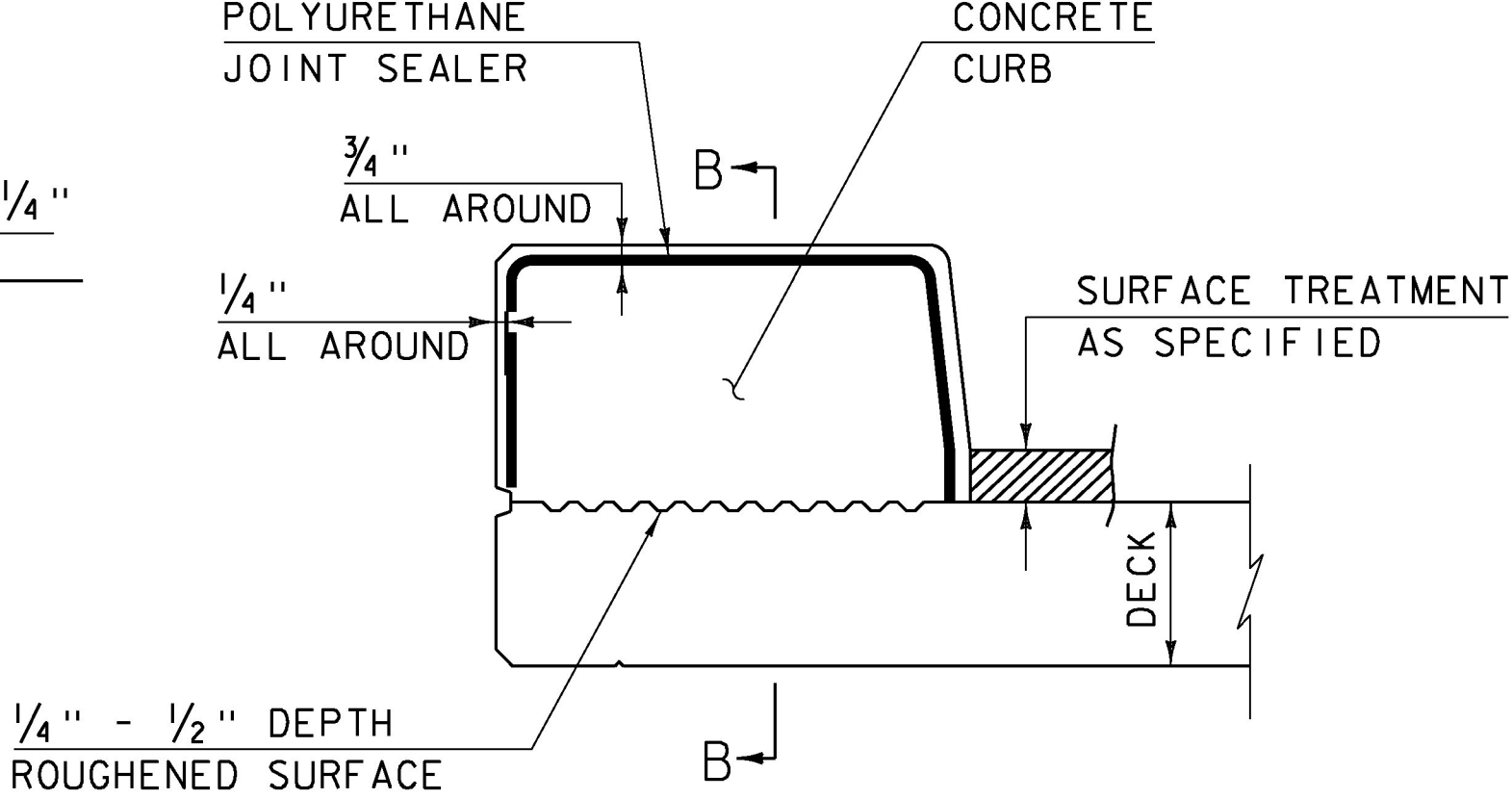


STRUCTURES  
DETAIL  
SD-501.00



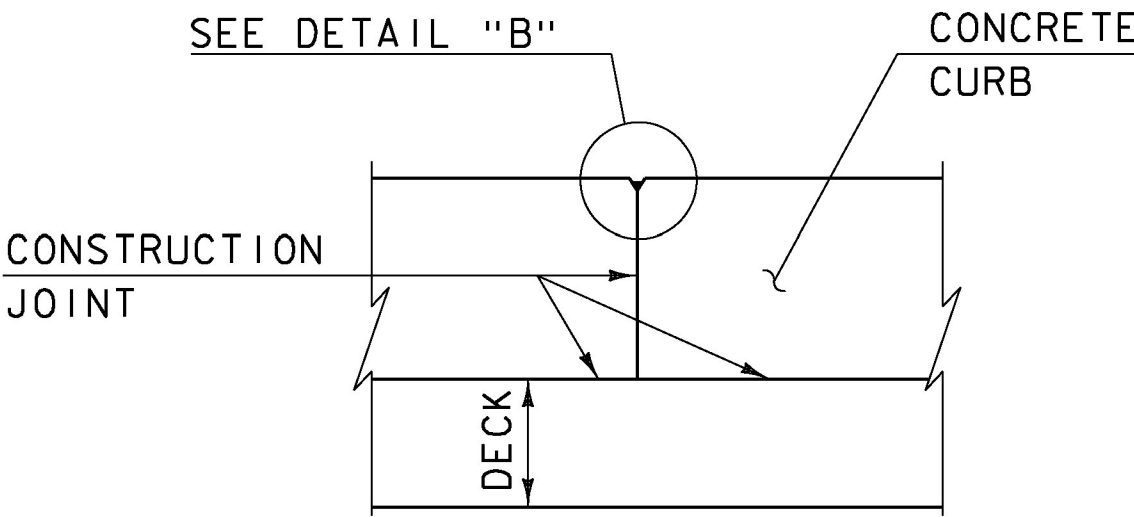


DETAIL "B"  
(NOT TO SCALE)

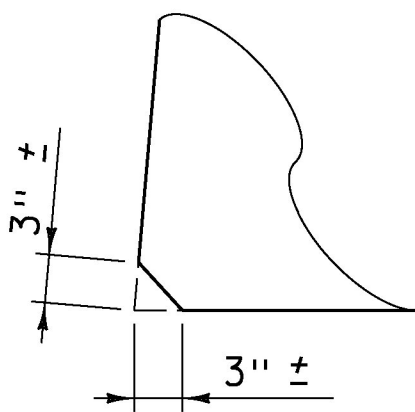


CONCRETE CURB JOINT SECTION  
(NOT TO SCALE)

1. SEE TYPICAL HORIZONTAL CONSTRUCTION JOINT  
DETAIL FOR ADDITIONAL INFORMATION



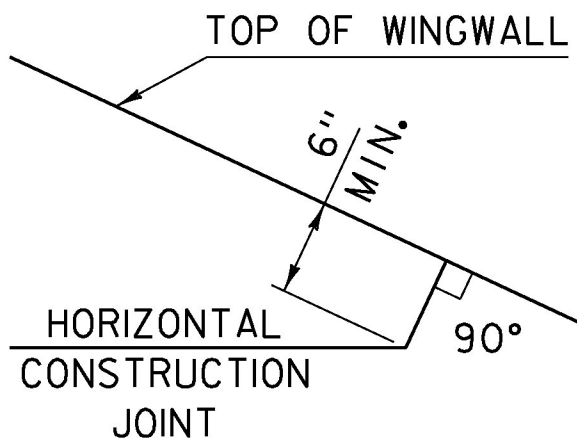
SECTION B - B  
(NOT TO SCALE)



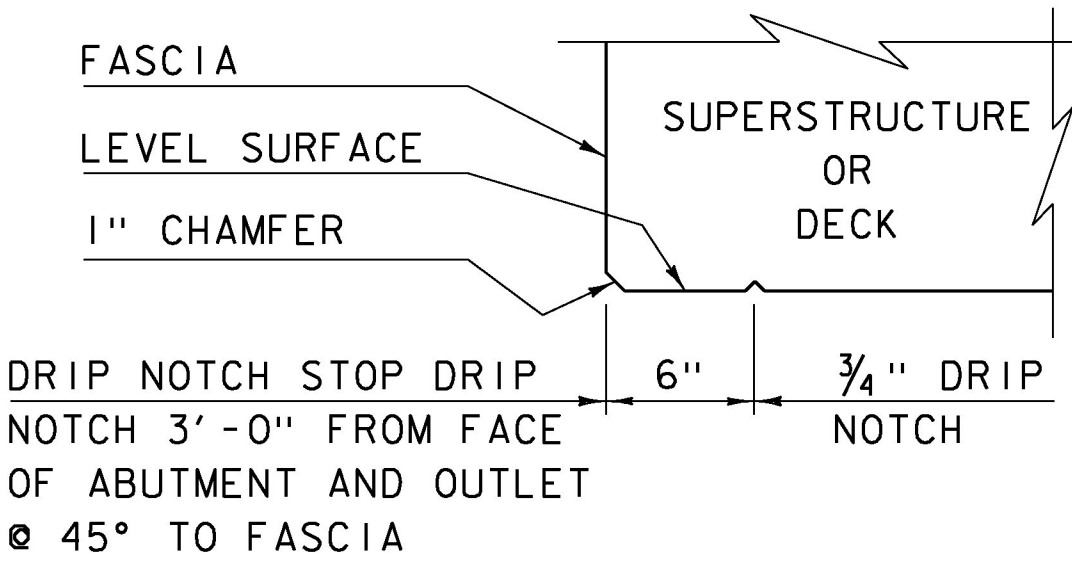
ACUTE ANGLE  
CLIP DETAIL  
(NOT TO SCALE)

CONCRETE CURB JOINT NOTES

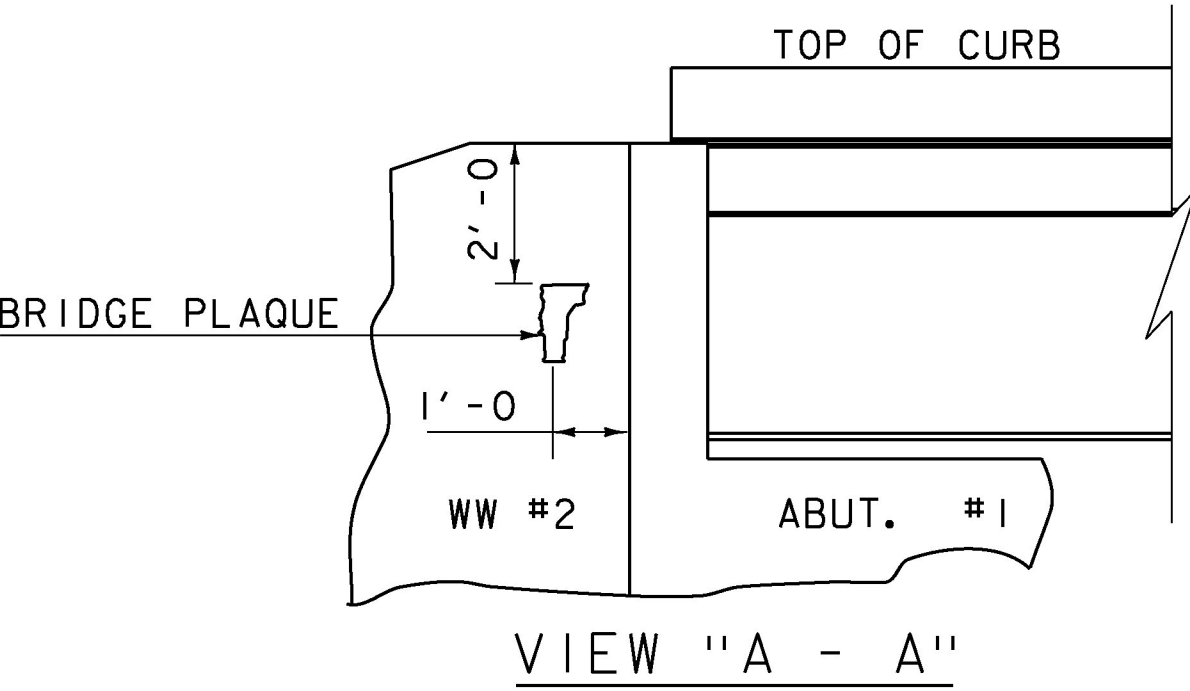
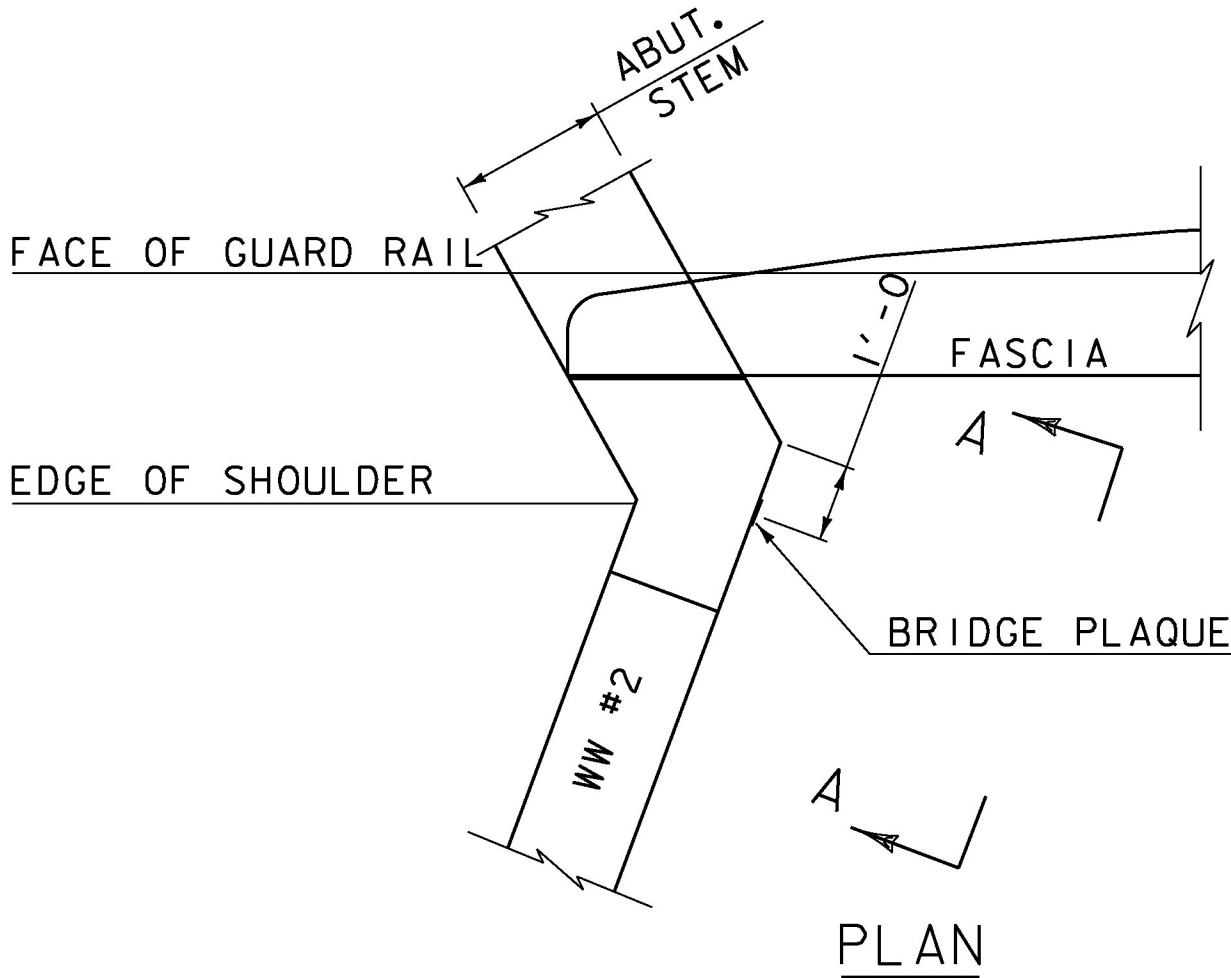
1. CONCRETE CURBS MAY BE PLACED IN ONE CONTINUOUS OPERATION IF AN APPROVED SHRINKAGE REDUCING ADMIXTURE LISTED IN THE SPECIAL PROVISIONS IS USED WITH THE CONCRETE MIX DESIGN. PAYMENT FOR THE SHRINKAGE REDUCING ADMIXTURE WILL BE INCIDENTAL TO THE BRIDGE CURB CONCRETE ITEM.
2. IF THE CONTRACTOR CHOOSES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

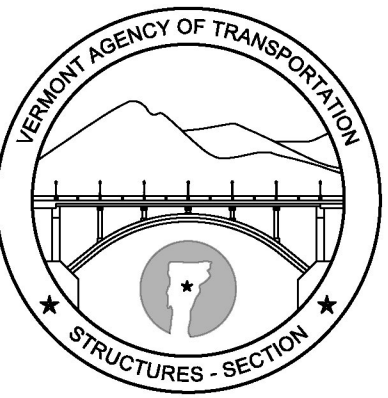
THE BRIDGE PLAQUE WILL BE SUPPLIED BY THE AGENCY OF TRANSPORTATION AND SHALL BE INSTALLED BY THE CONTRACTOR AT ABUTMENT #1 ON THE RIGHT SIDE AS SHOWN OR AS DIRECTED BY THE ENGINEER.

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

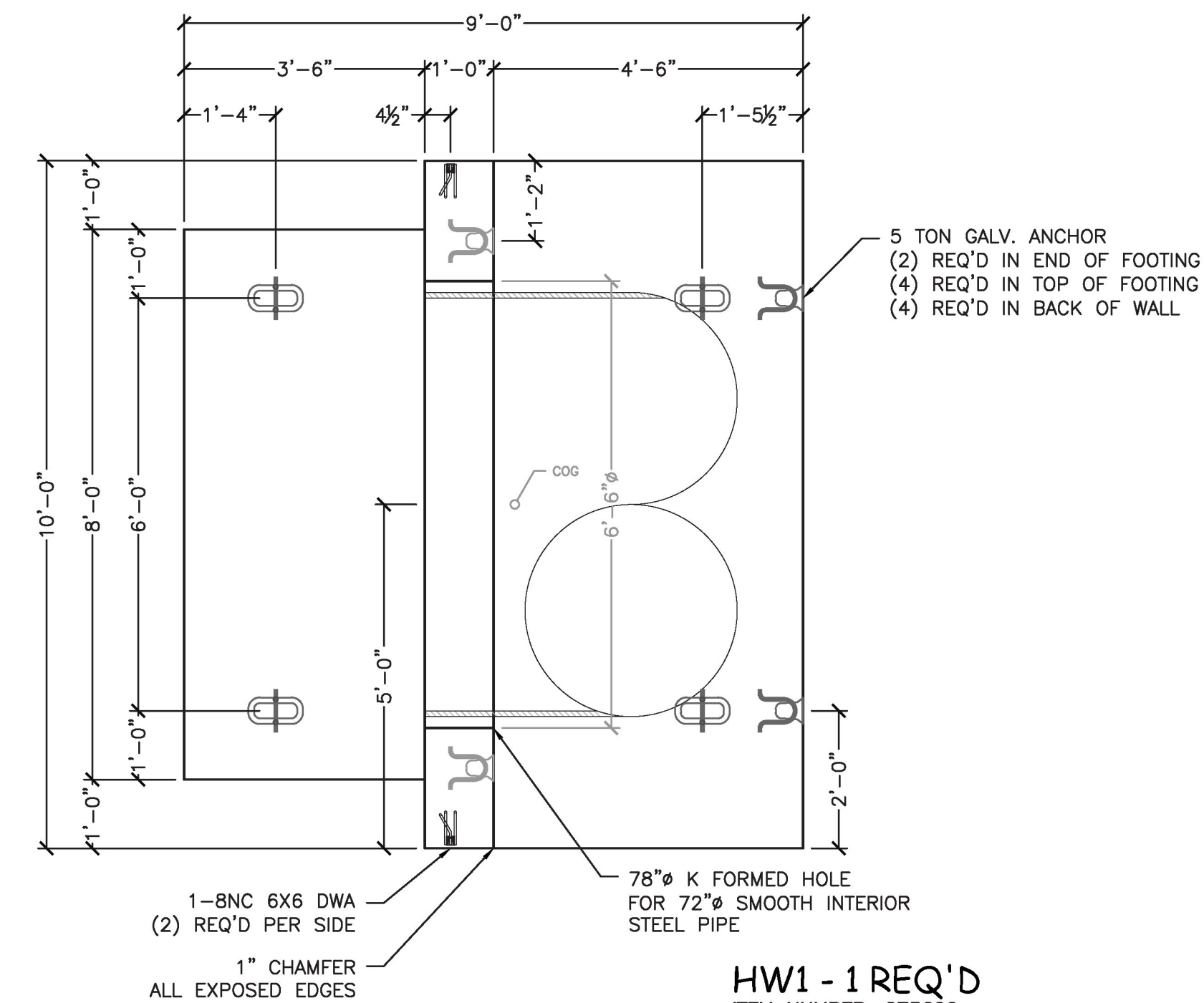


STRUCTURES  
DETAIL  
SD-502.00



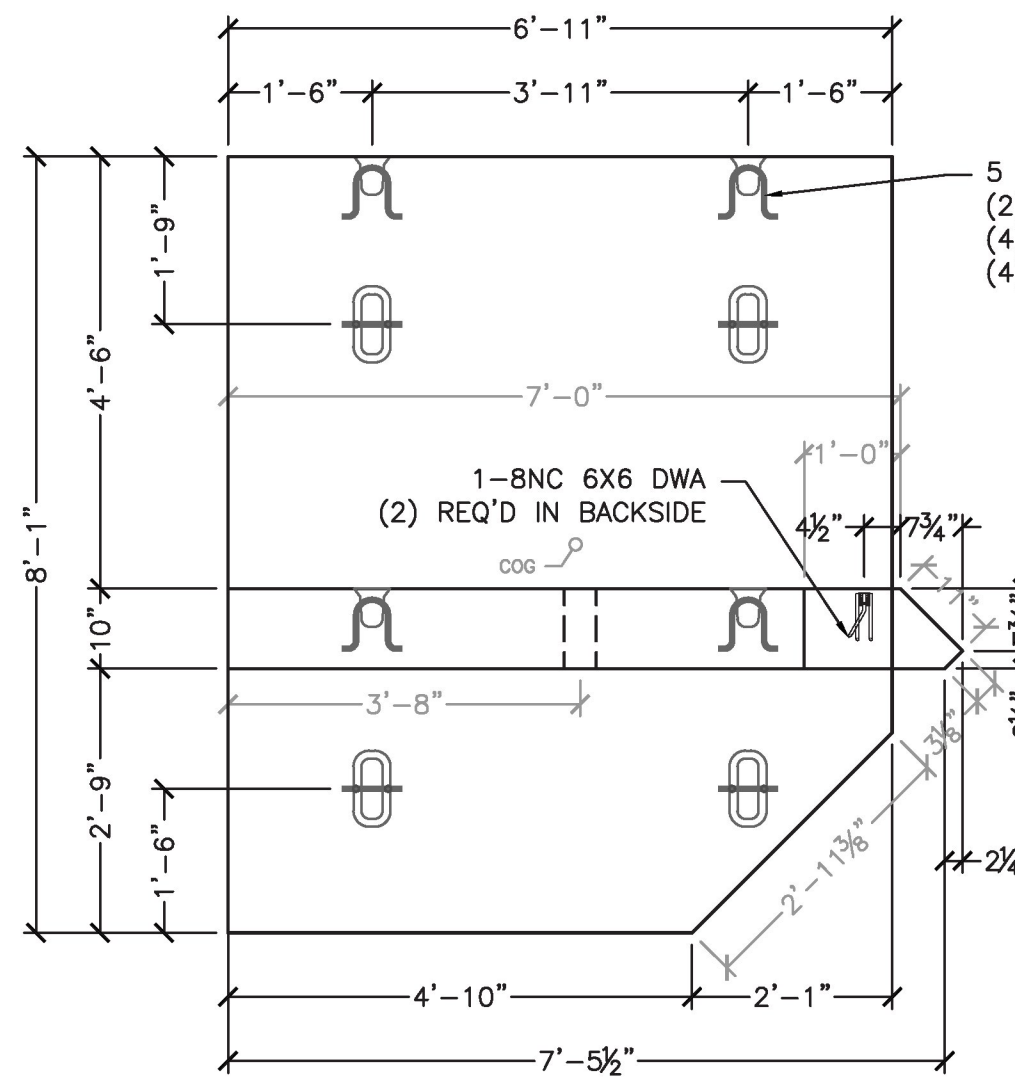






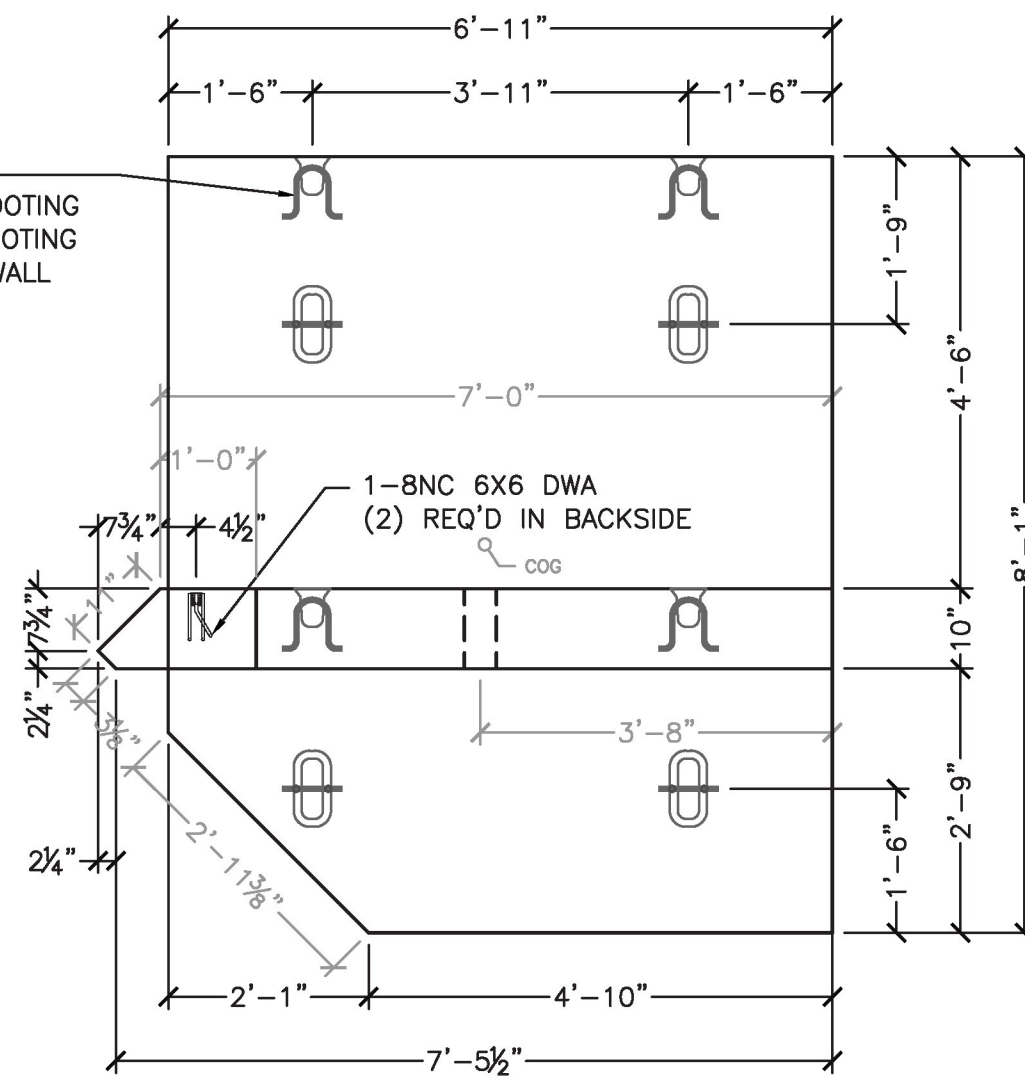
1 HW1 PLAN VIEW  
S2.0  
1/2" = 1'-0"

**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#



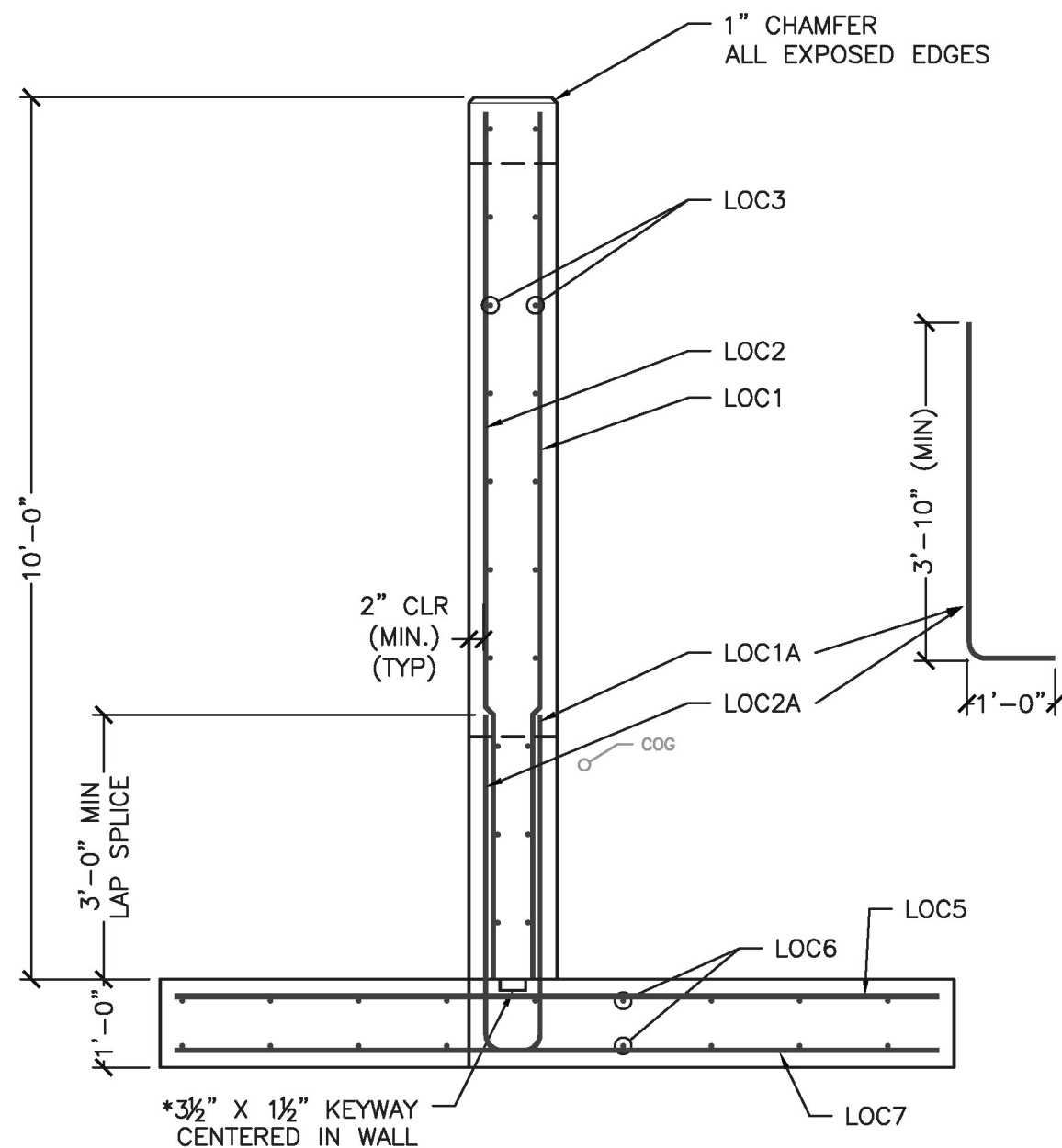
4 WW1 PLAN VIEW  
S2.0  
1/2" = 1'-0"

**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 WW2 PLAN VIEW  
S2.0  
1/2" = 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#

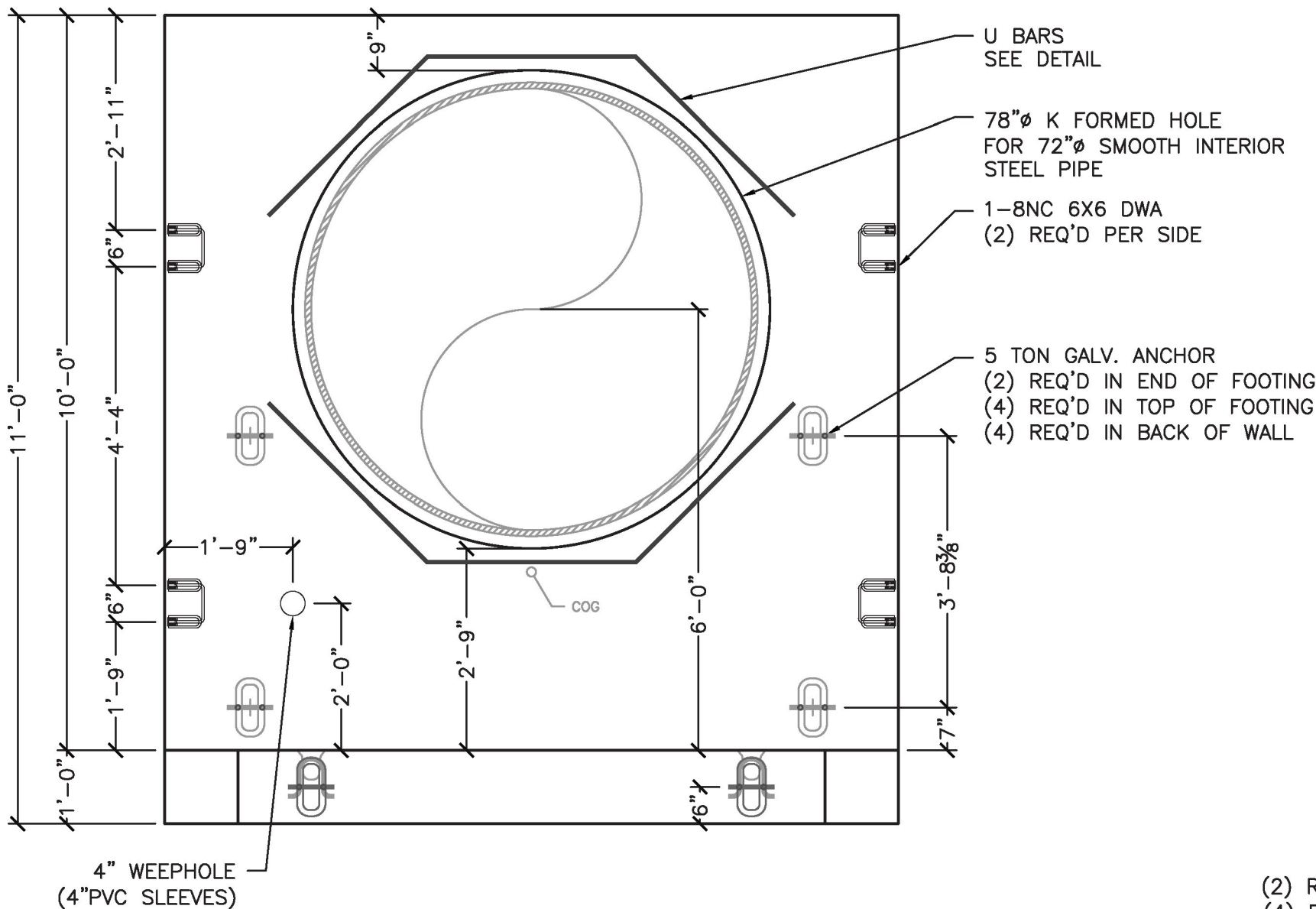


3 HW1 REINFORCING SECTION  
S2.0  
1/2" = 1'-0"

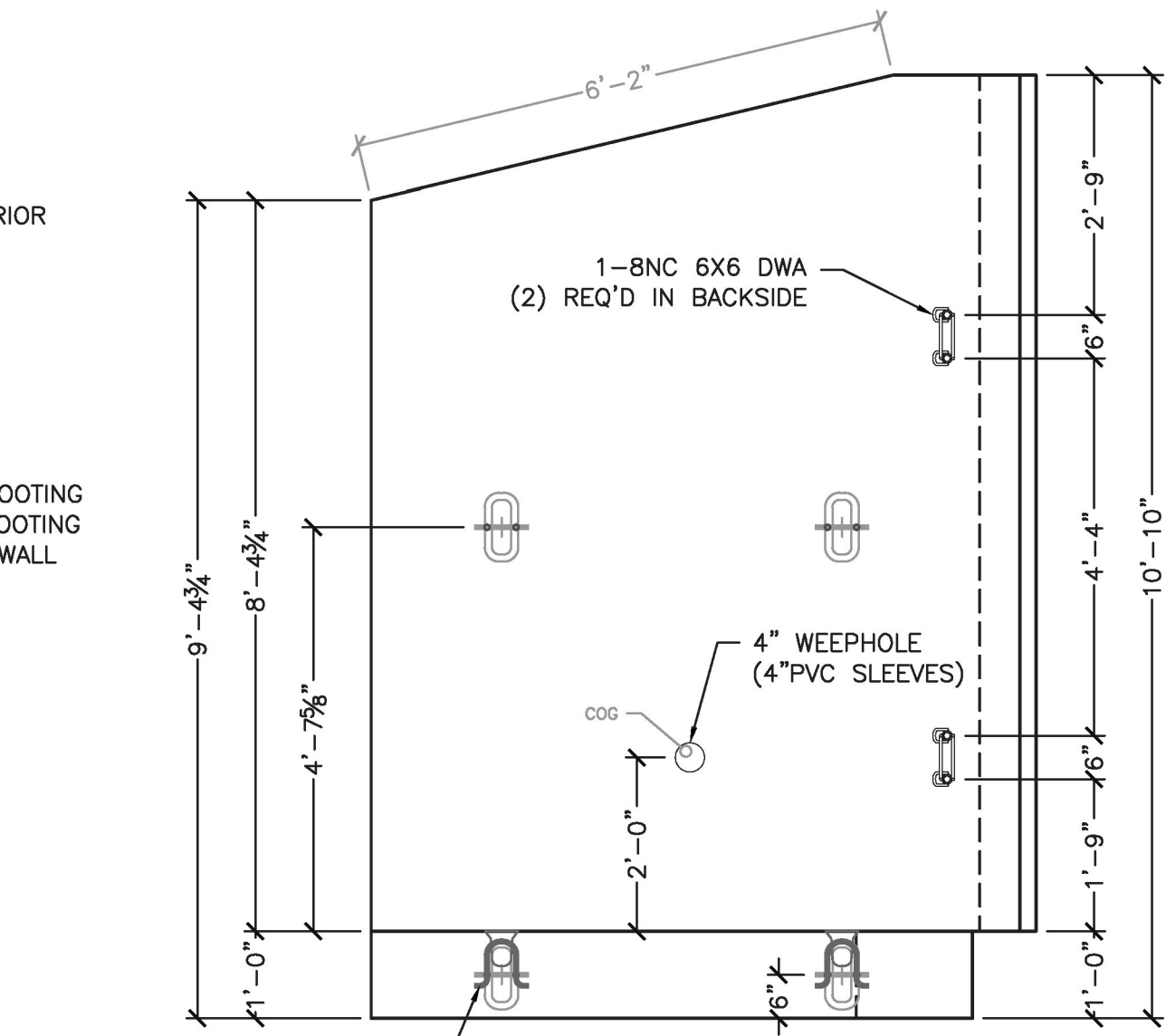
* TERMINATE SHEAR KEY  
4" SHORT OF ENDS

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"

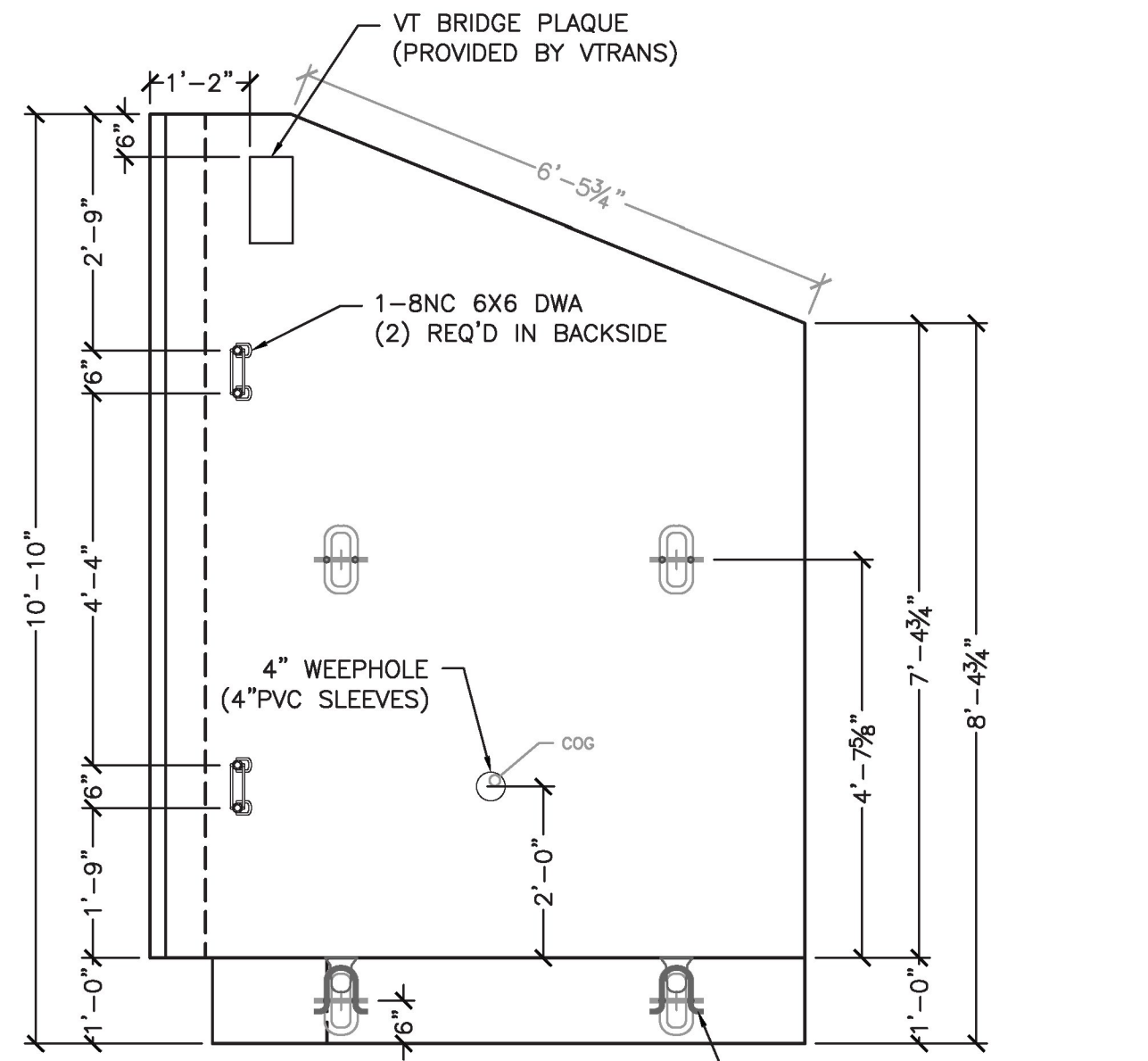
** TWO EXTRA BARS WILL BE NEEDED. EACH SIZE FOR SAMPLING.



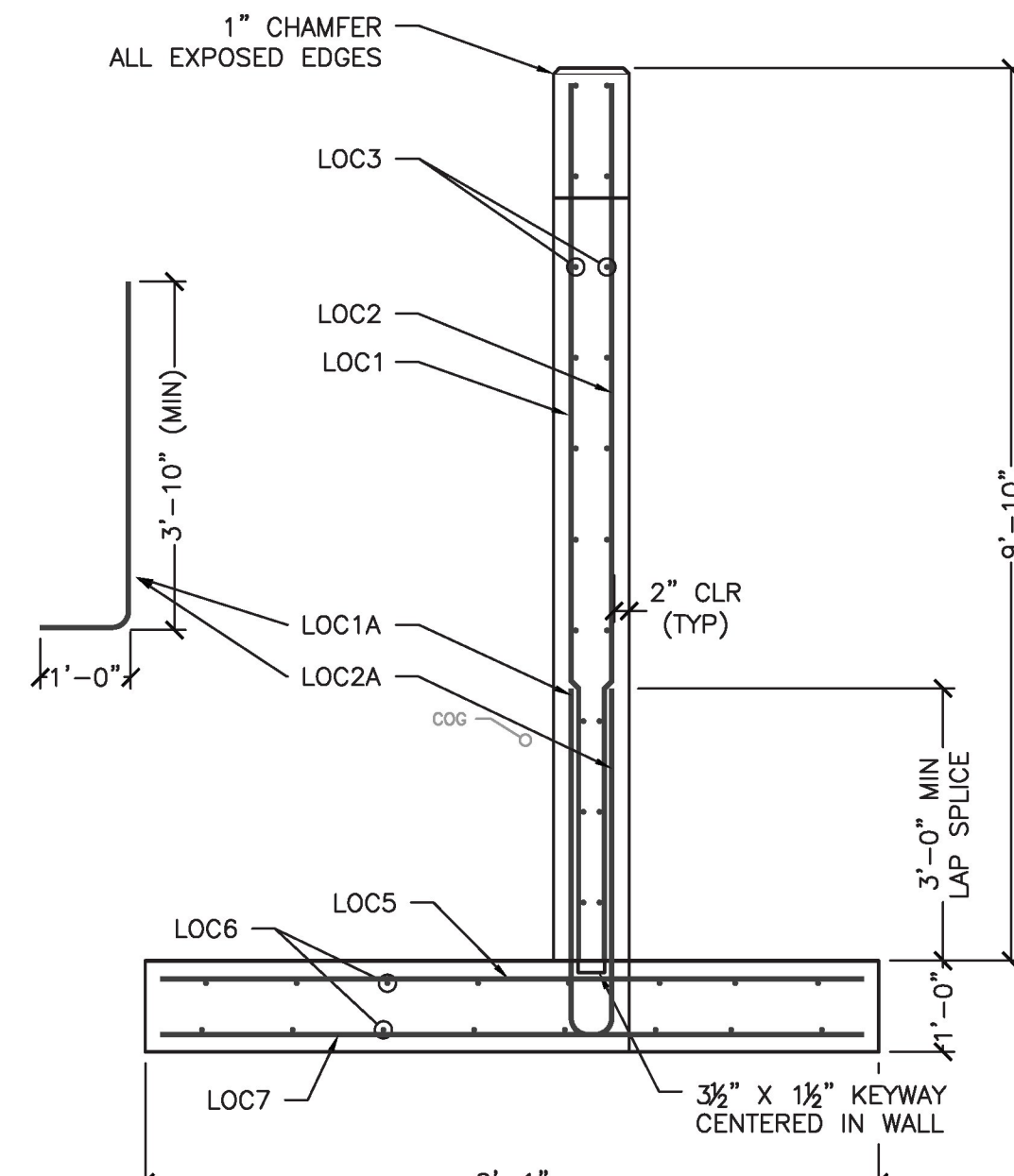
2 HW1 ELEV. VIEW  
S2.0  
1/2" = 1'-0" (Looking @ Front)



5 WW1 ELEV. VIEW  
S2.0  
1/2" = 1'-0" (Looking @ Front)

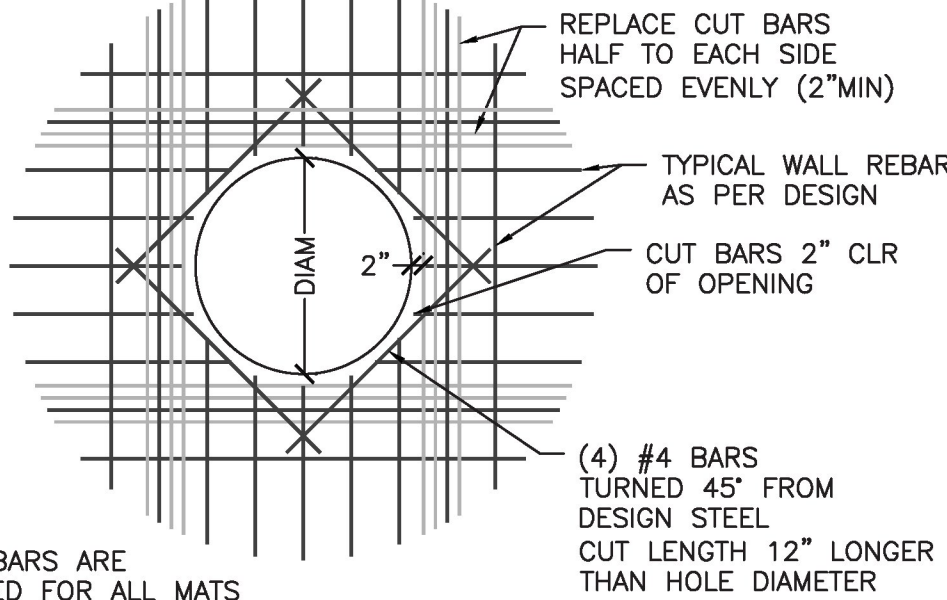
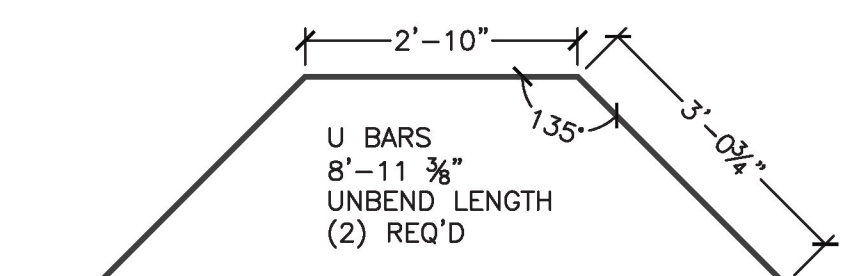


7 WW2 ELEV. VIEW  
S2.0  
1/2" = 1'-0" (Looking @ Front)



8 WW REINFORCING SECTION  
S2.0  
1/2" = 1'-0"

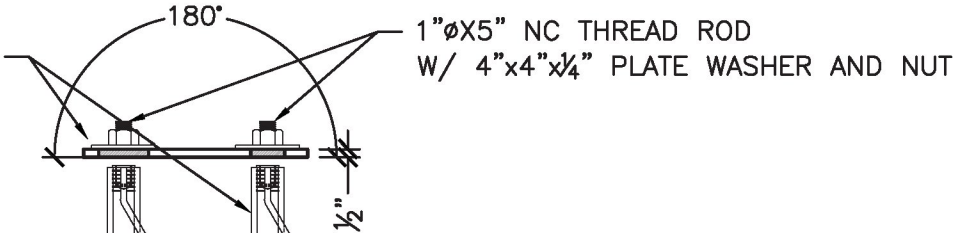
WW REINFORCING SCHEDULE					
MARK	TYPE	SIZE	SPACING	QTY	LENGTH
LOC1	STR	#5	8"	11	9'-8"
LOC1A	L BAR	#5	8"	11	4'-9"
LOC2	STR	#4	12"	7	9'-8"
LOC2A	L BAR	#4	12"	7	4'-9"
LOC3	STR	#4	12"	20	7'-4" OF / 6'-10" IF
LOC5	STR	#5	8"	10	7'-9"
LOC6	STR	#4	12"	16	6'-7"
LOC7	STR	#4	12"	7	7'-9"



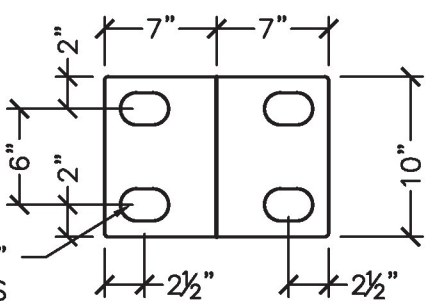
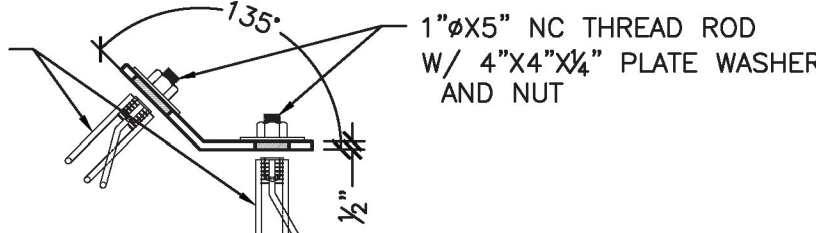
NOTE:  
EXTRA BARS ARE  
REQUIRED FOR ALL MATS

9 TYPICAL REINFORCEMENT AT HOLE  
S2.0  
3/8" = 1'-0"

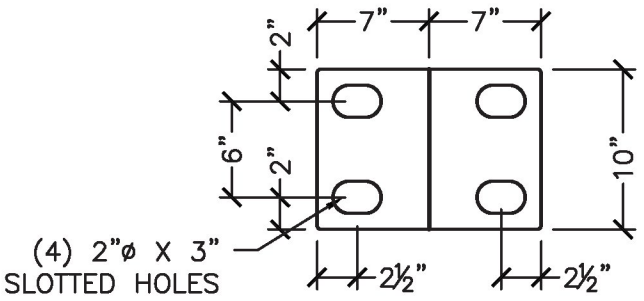
DOUBLE WALL ANCHOR  
1" NC THREAD FERRULE INSERT  
(MB 1-BNC 6X6)  
CAST INTO RIGID FRAME & WING WALL



DOUBLE WALL ANCHOR  
1" NC THREAD FERRULE INSERT  
(MB 1-BNC 6X6)  
CAST INTO RIGID FRAME & WING WALL



WW BRACKET  
(2 REQUIRED)



WW BRACKET  
(8 REQUIRED)

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

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

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

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



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

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

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

DWG NO.  
S2.0

Project No. 7910  
Date: 3/7/2017  
Designed by: Delta  
Drawn by: CJP  
Scale: AS SHOWN  
Checked by: Delta  
By: XXX  
Revision



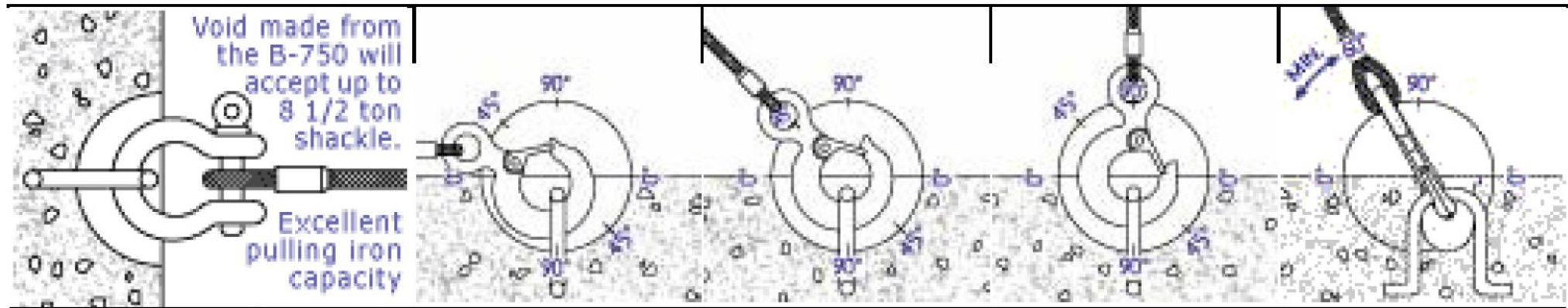




**OXFORD**  
Industrial Technologies, LLC

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.

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[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](#)

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Oxford Lift System®

Anchors & Accessories

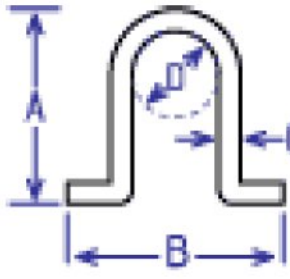
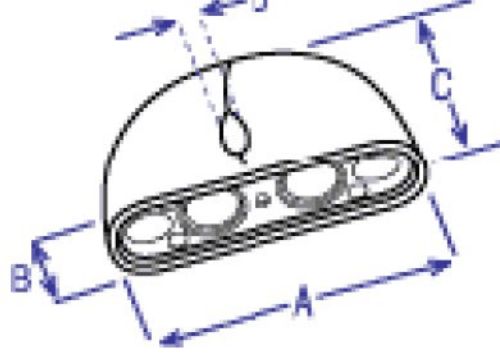
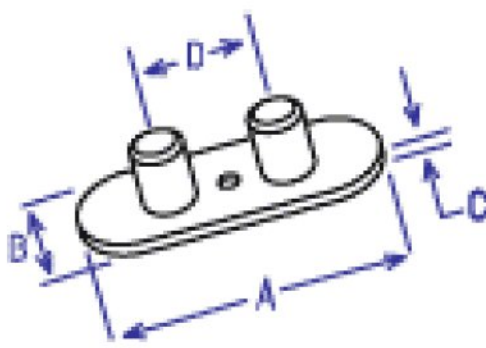
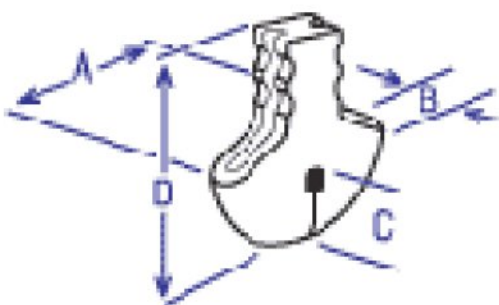
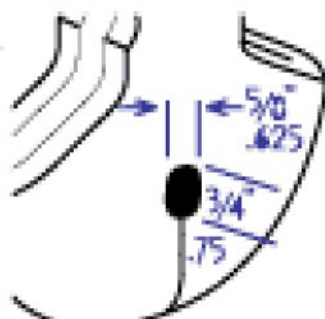
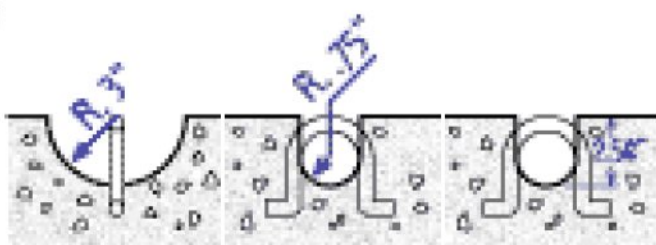
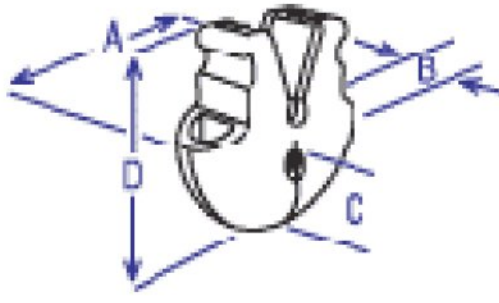
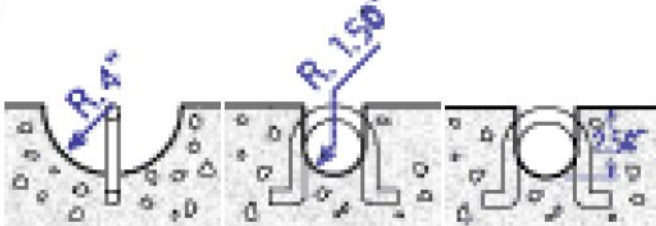
Anchor	Product Code	A	B	C	D	Unit Weight
	<b>A 500-3</b>	3.00"	6.25"	(1/2") .500"	2.00"	.625 lbs.
	<b>A 500-4</b>	4.00"	6.25"	(1/2") .500"	2.00"	.75 lbs.
	<b>A 500-5</b>	5.00"	6.25"	(1/2") .500"	2.00"	.775 lbs.
	<b>A 750-5</b>	4.75"	7.50"	(3/4") .750"	3.00"	1.75 lbs.
	<b>A 750-7</b>	6.75"	7.50"	(3/4") .750"	3.00"	2.00 lbs.
Block Out	Product Code	A	B	C	D	Unit Weight
	<b>B 500</b>	7.00"	2.00"	3.00"	(1/2") .500"	1.10 lbs.
	<b>Void Dimensions</b> Shown without Anchor 					
	<b>B 750</b>	8.00"	3.00"	4.00"	(3/4") .750"	3.50 lbs.
	<b>Void Dimensions</b> Shown without Anchor 					
	Product Code	A	B	C	D	Unit Weight
	<b>SMP 500</b> (Snap-On Mounting Plate)	6.50"	1.50"	(3/8") .375"	2.25"	7.95 lbs.
	<b>MMP 500</b> (Magnetic Mounting)	6.50"	1.50"	(3/8") .375"	2.25"	.900 lbs.



	Plate)					
	<b>SMP 750</b> (Snap-On Mounting Plate)	7.25"	2.25"	(3/8") .375"	2.25"	1.75 lbs.
	<b>MMP 750</b> (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
	<b>S 150</b>	6.00"	1.50"	2.50"	6.75"	1.50 lbs.
						
S-300 Sink-It	Product Code	A	B	C	D	Unit Weight
	<b>S 300</b>	8.00"	3.00"	3.50"	8.00"	4.00 lbs.
						

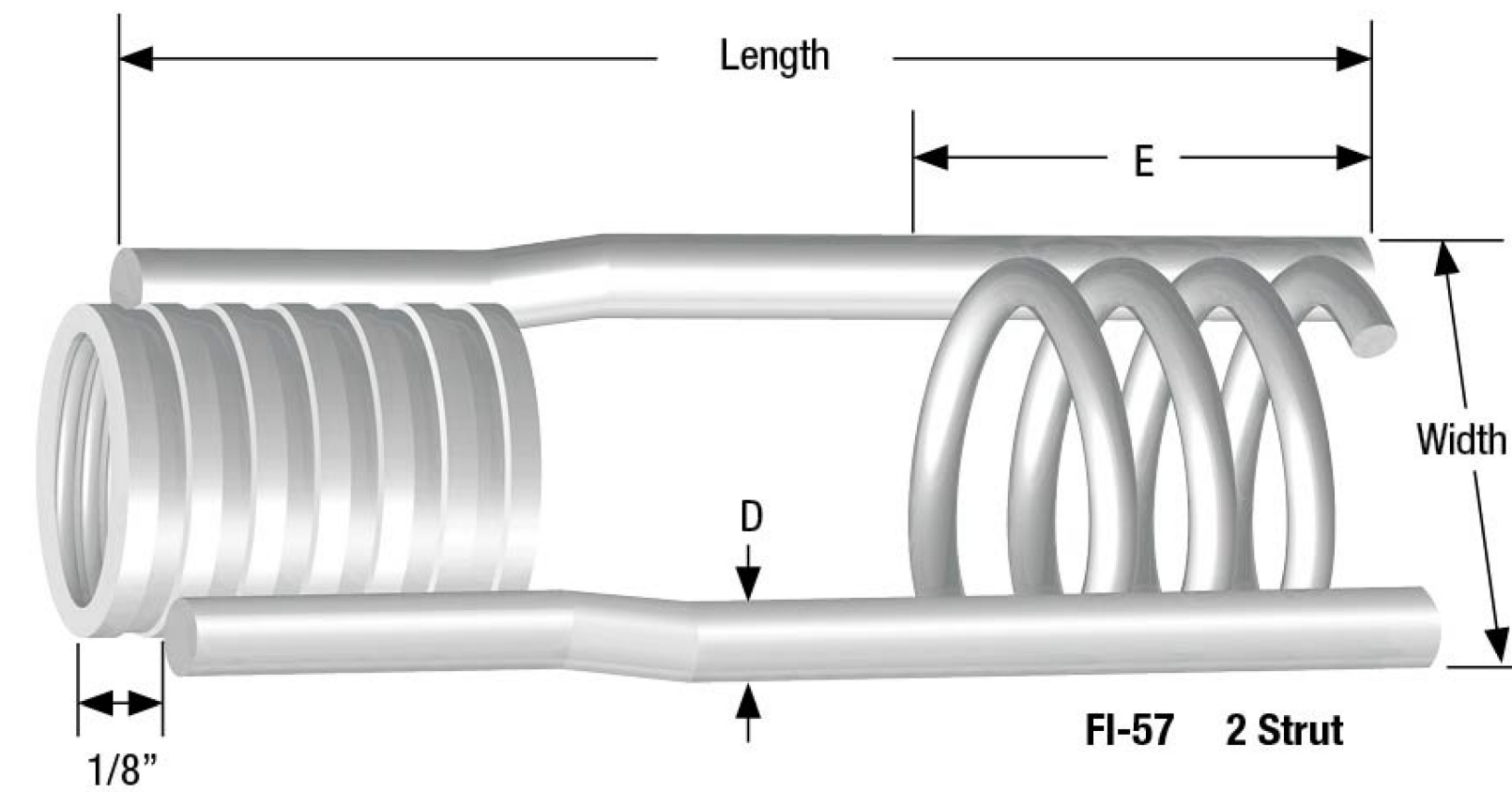
[< back](#)   [next >](#)

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



INSERTS

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

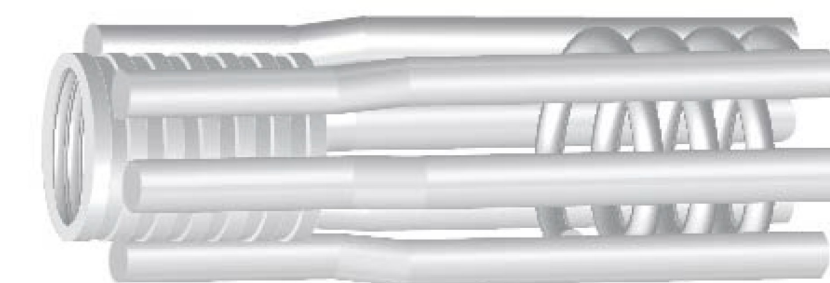


The Expanded Coil, Ferrule Insert is a high-strength, highly versatile insert available for numerous precast concrete applications. It is available in 3/4", 1", 1-1/4" and 1-1/2" bolt diameters. The insert is constructed with a NC threaded ferrule, shaped struts (two, four or six depending on model) 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



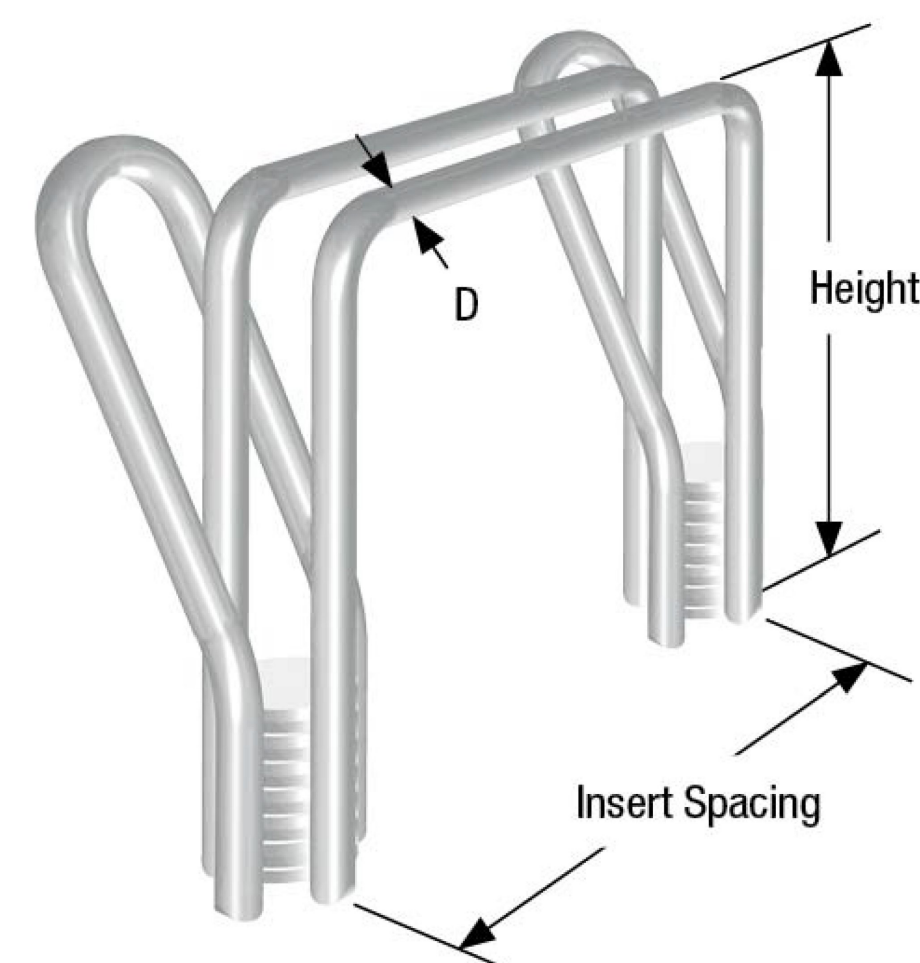
FI-61 6 Strut

#### EXPANDED COIL, FERRULE INSERT DIMENSIONS AND LOAD CHART

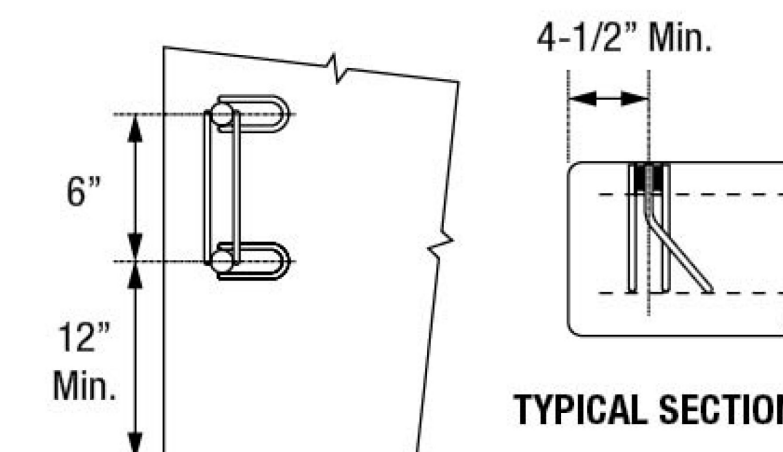
Part Number	Bolt Diameter	Threads per Inch (N.C.)	Length	Width	# of Struts	Wire Diameter D	E	Insert Ultimate Mechanical Capacity (lbs)	In-Concrete Capacity, 3:1 SWL		
									Min. Edge Distance	Tension (lbs)	Shear (lbs)
FI5734412P	3/4"	10	4-1/2"	2-3/8"	2	0.375"	1-5/8"	17,670	14"	5,890	5,890
FI571512P	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



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.



#### 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

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

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  
Address: 1569 Breezy Hill Road  
City/State/Zip: St. Johnsbury, VT 05819

Date: 3/22/2017  
Date Shipped: April 2017  
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

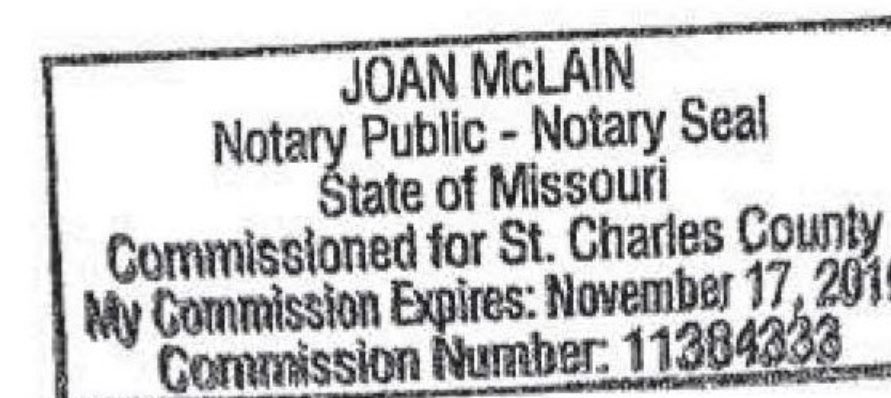
**CERTIFICATION**

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*

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



*Joan McLain*  
Notary Public

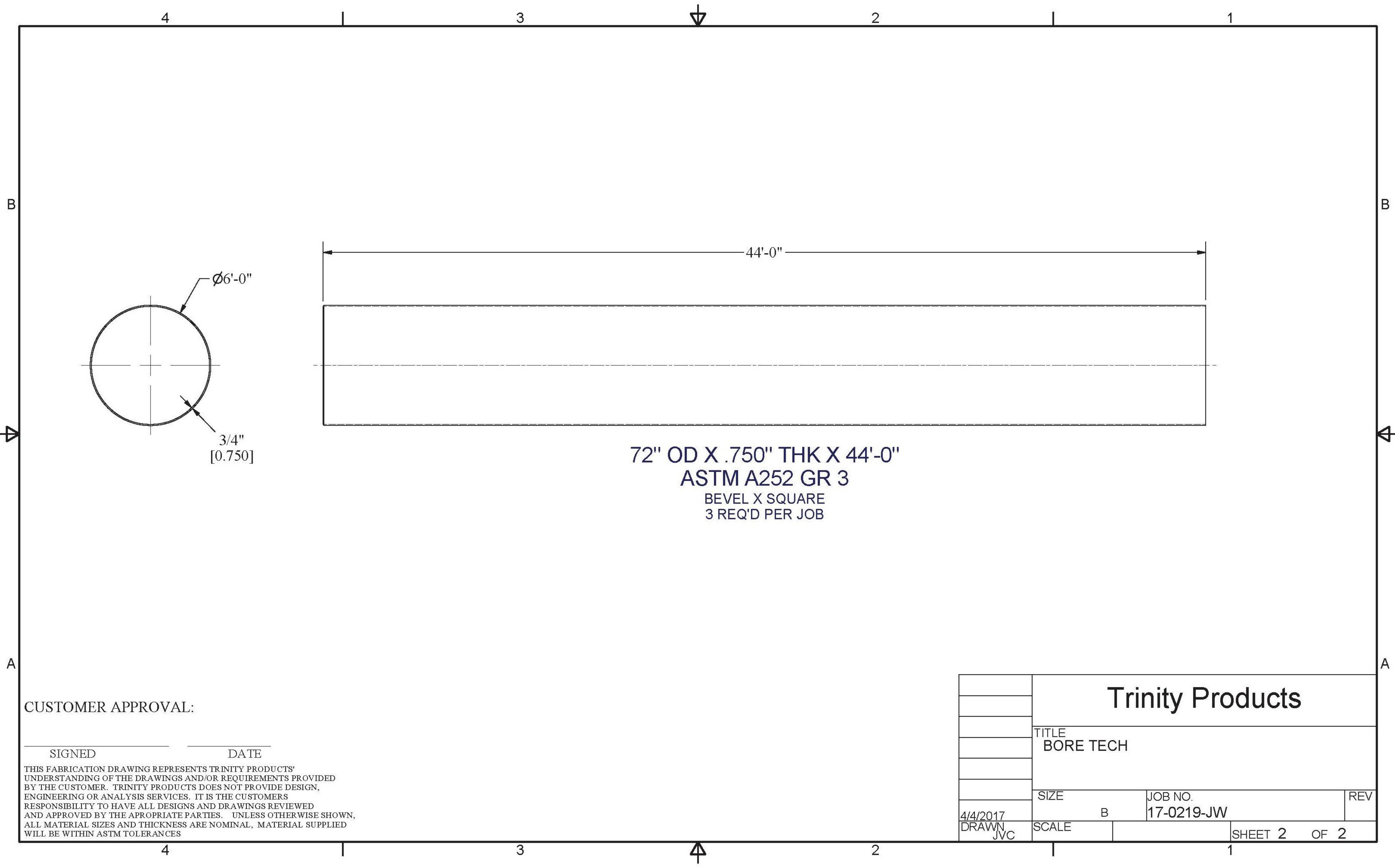


Trinity Products, LLC  
1969 West Terra Lane  
O'Fallon, Mo 63366











## **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 solvent.  
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, LLC 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	Current		Volts	Travel Speed	Joint Details
		Diam.	Type & Polarity	Amps or Wire Feed Speed			
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	

Form N-2

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

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 ☐

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, LLC 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	Current		Volts	Travel Speed
		Diam.	Type & Polarity	Amps or Wire Feed 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"

PASS 1 Joint Details

WELD TO FILL ENTIRE GROOVE CONTINUOUS AROUND ENTIRE PIPE

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, LLC 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	Current		Volts	Travel Speed
		Diam.	Type & Polarity	Amps or Wire Feed Speed		
<u>ALL</u>	<u>SMAW</u>	<u>1/8"</u>	<u>DCEP</u>	<u>115</u>	<u>21-25</u>	<u>4-8 ipm</u>
		<u>ALL PASSES WILL HAVE MAX 3/16" BEAD</u>				

Joint Details

PASS 1  
3/16" WELD CONTINUOUS AROUND HOUSING

3/8"

1/2" STEEL PLATE

IGPS HOUSING

PASS 2  
3/16" WELD CONTINUOUS AROUND HOUSING, BOTH SIDES

3/4" THK ROLLED PLATE

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

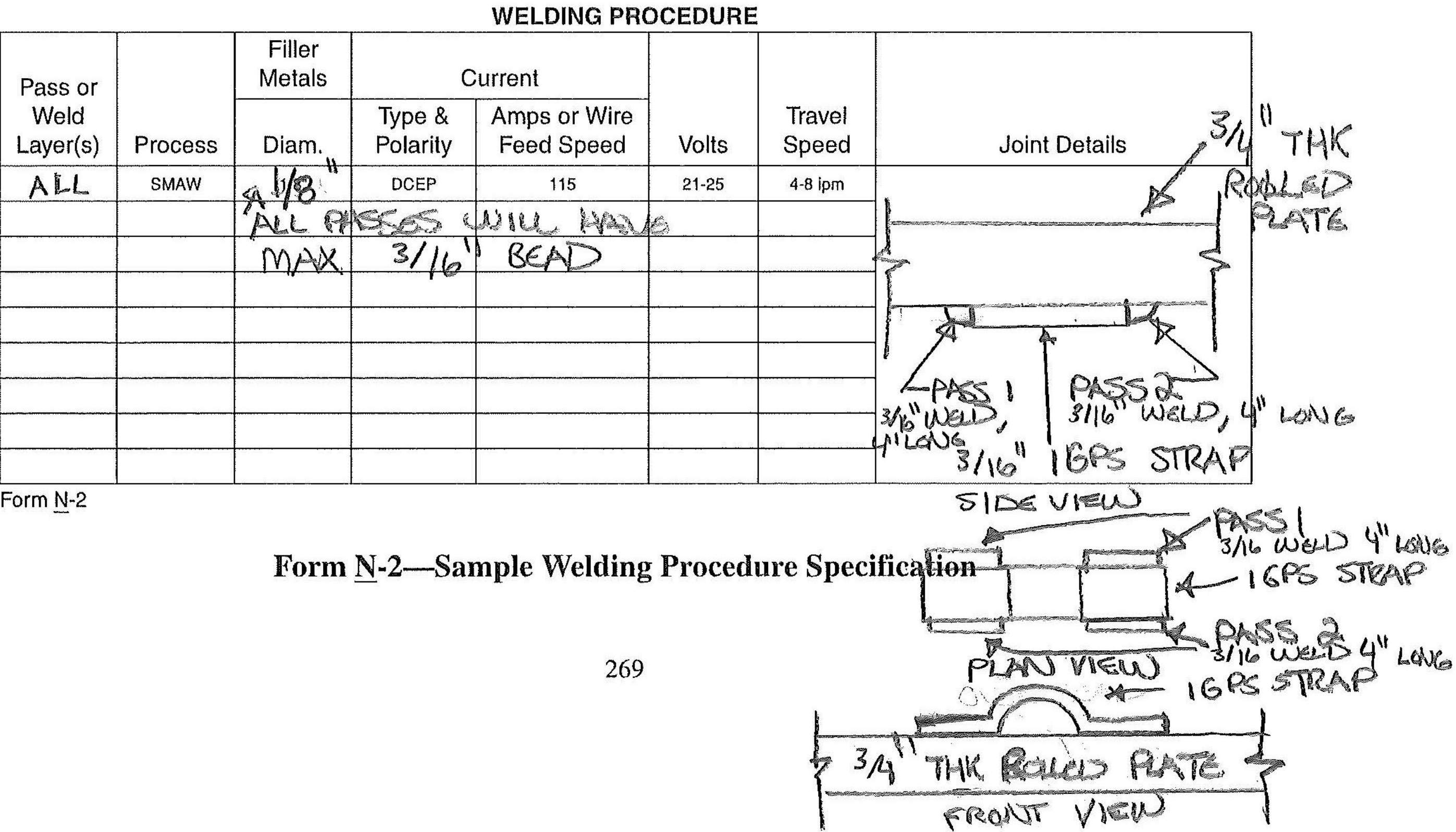
**POSITION**  
Position of Groove NA Fillet Vertical 5G  
Vertical Progression: Up ☒ Down ☐  
**ELECTRICAL CHARACTERISTICS**  
Transfer Mode (GMAW): Globular ☐ Spray ☐  
Current: AC ☐ DCEP ☒ DCEN ☐ Pulsed ☐  
Electrical Stick Out NA  
Other NA

**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





## 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	<b>PLEASE NOTE THIS WAS ALSO SENT TO RYAN FOSTER on 4/11/17, ADDED 4/10/17, JTC CCI</b>	SMAW	SMAW
Electrode (single or multiple)		Single	Single
Current/Polarity		DCEP	DCEP
Position		3G	Flat/Horizontal/Vertical
		Uphill	Uphill Only
Backing (YES or NO)	Weld Progression	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

## 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	<b>PLEASE NOTE THIS WAS ALSO SENT TO RYAN FOSTER on 4/11/17, ADDED 4/10/17, JTC CCI</b>	SMAW	SMAW
Electrode (single or multiple)		Single	Single
Current/Polarity		DCEP	DCEP
Position		4G	Flat/Overhead
		N/A	N/A
Backing (YES or NO)	Weld Progression	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

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:	3/16/2016