

REVIEWER NOTES

1. THERE WILL BE A THREE DAY CLOSURE OF THIS DEAD END ROAD WITHOUT DETOUR FOR CONSTRUCTION. SOME WORK CAN BE ACCOMPLISHED USING DAILY ROAD CLOSURES PRIOR TO THE THREE DAY CLOSURE. THESE DETAILS WILL BE WORKED ON DURING THE DESIGN PHASE.
2. IT IS NOT ANTICIPATED THAT RIGHT-OF-WAY ACQUISITION WILL BE NECESSARY FOR THIS PROJECT.
3. IT IS NOT ANTICIPATED THAT AN OVERHEAD UTILITIES RELOCATION WILL BE NEEDED.
4. THIS IS A GRAVEL ROAD, THE FROST DEPTH HAS BEEN CALCULATED TO BE 24"

# STATE OF VERMONT AGENCY OF TRANSPORTATION



## PROPOSED IMPROVEMENT BRIDGE PROJECT

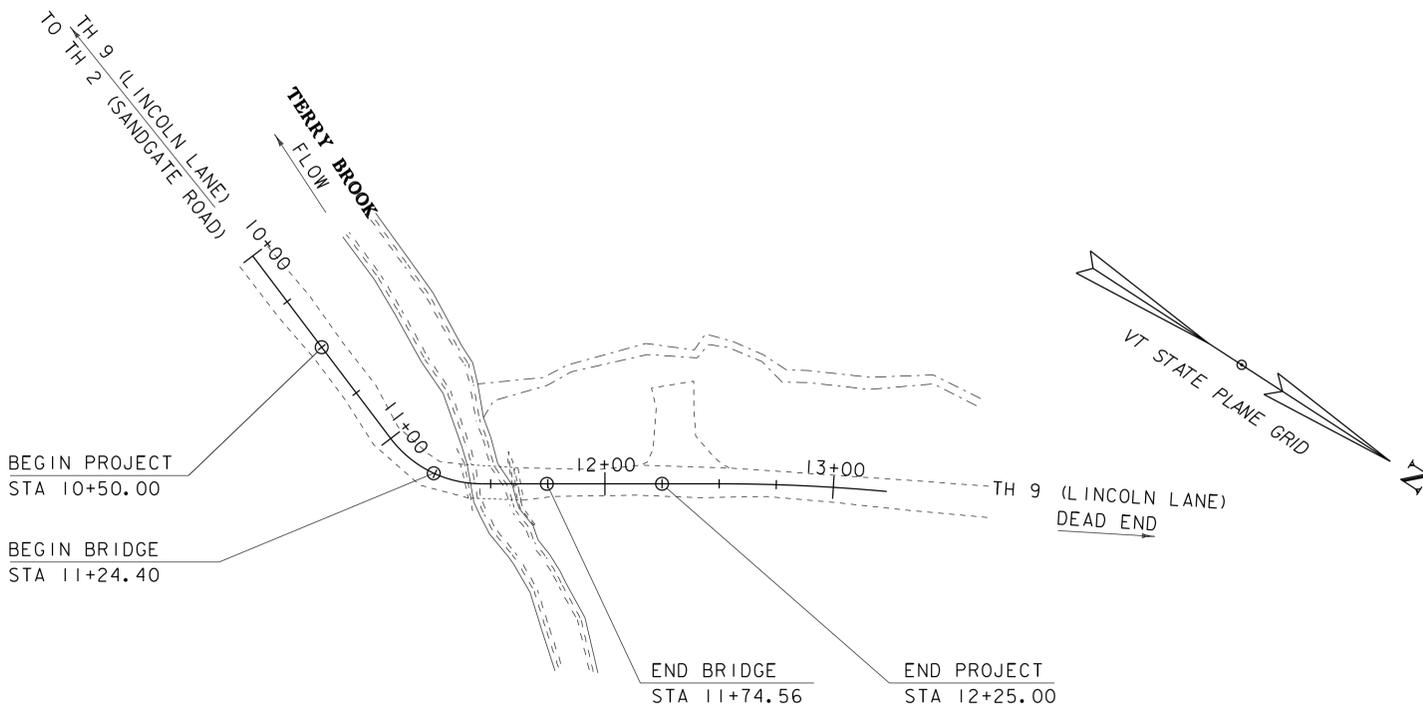
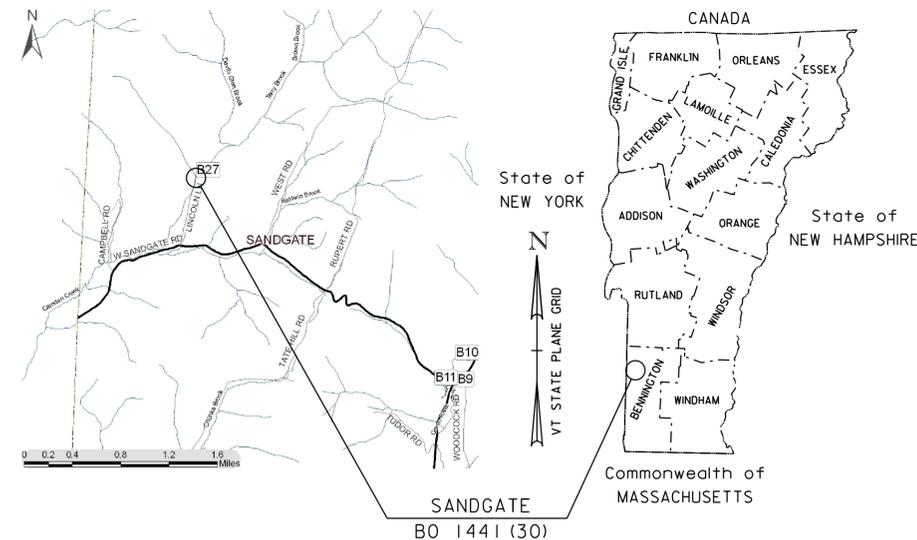
TOWN OF SANDGATE  
COUNTY OF BENNINGTON

ROUTE NO : TOWN HIGHWAY 9 (LINCOLN LANE) , CLASS 3 TH BRIDGE NO : 27

PROJECT LOCATION: LOCATED APPROXIMATELY 0.6 MILES FROM THE JUNCTION OF TH 9 AND TH 2.

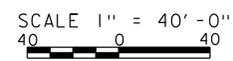
PROJECT DESCRIPTION: REPLACEMENT OF EXISTING BRIDGE WITH A NEW PRECAST STRUCTURE ON SLEEPER SLABS ABUTMENTS.

LENGTH OF STRUCTURE: 47.00 FEET  
 LENGTH OF ROADWAY: 128.00 FEET  
 LENGTH OF PROJECT: 175.00 FEET



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

QUALITY ASSURANCE PROGRAM : LEVEL 2	
SURVEYED BY :	L. ORVIS
SURVEYED DATE :	06-06-2013
DATUM	
VERTICAL	NAVD88
HORIZONTAL	NAD 83 (2011)



**PRELIMINARY PLANS**  
**21-MAY-2015**

DIRECTOR OF PROJECT DELIVERY	
APPROVED _____	DATE _____
PROJECT MANAGER : C. W. CARLSON P. E.	
PROJECT NAME :	SANDGATE
PROJECT NUMBER :	BO 1441 (30)
SHEET 1 OF 23	SHEETS

# PRELIMINARY INFORMATION SHEET (BRIDGE)

INDEX OF SHEETS

PLAN SHEETS

1	TITLE SHEET
2	PRELIMINARY INFORMATION SHEET 1
3	TYPICAL SECTIONS
4	SYMBOLOGLY LEGEND SHEET
5	TIE SHEET
6	LAYOUT SHEET
7	PROFILE AND BANKING DIAGRAM
8	PLAN AND ELEVATION SHEET
9	BORING INFORMATION SHEET
10 - 13	TH9 CROSS SECTION SHEET 1-4
14	MATERIAL TRANSITION DETAIL
15 - 17	CHANNEL CROSS SECTION SHEET 1-3
18	EPSC NARRATIVE
19	EPSC EXISTING LAYOUT
20	EPSC CONSTRUCTION LAYOUT
21	EPSC FINAL LAYOUT
22 - 23	EPSC DETAILS 1-2

STANDARDS LIST

STRUCTURES DETAIL SHEETS

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

FINAL HYDRAULIC REPORT

HYDROLOGIC DATA

Date: April 2015

DRAINAGE AREA : 5.8 sq. mi.  
 CHARACTER OF TERRAIN : Hilly to mountainous, mostly forested with some clearings  
 STREAM CHARACTERISTICS : Small, perennial, alluvial, sinuous, high sediment transport  
 NATURE OF STREAMBED : Mostly cobbles and gravel

PEAK FLOW DATA

Q 2.33 =	275 cfs	Q 50 =	1000 cfs
Q 10 =	600 cfs	Q 100 =	1200 cfs
Q 25 =	800 cfs	Q 500 =	1600 cfs

DATE OF FLOOD OF RECORD : Unknown  
 ESTIMATED DISCHARGE : Unknown  
 WATER SURFACE ELEV. : Unknown  
 NATURAL STREAM VELOCITY : @ Q25 = 10.4 fps  
 ICE CONDITIONS : Moderate  
 DEBRIS : Moderate to high  
 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 : Single span steel beam bridge with timber deck  
 YEAR BUILT : 1960  
 CLEAR SPAN(NORMAL TO STREAM) : 19' effective hydraulic clear span  
 VERTICAL CLEARANCE ABOVE STREAMBED : 5'  
 WATERWAY OF FULL OPENING : 90 sq. ft.  
 DISPOSITION OF STRUCTURE : Remove superstructure and abutment tops  
 TYPE OF MATERIAL UNDER SUBSTRUCTURE : See boring logs

WATER SURFACE ELEVATIONS AT:

Q2.33 =	887.1'	VELOCITY =	7.3 fps
Q10 =	889.9'	"	9.8 fps
Q25 =	890.5'	"	10.4 fps
Q50 =	890.9'	"	10.8 fps
Q100 =	891.3'	"	10.0 fps

LONG TERM STREAMBED CHANGES : No record of any changes.

IS THE ROADWAY OVERTOPPED BELOW Q100 : Yes  
 FREQUENCY : Below Q10  
 RELIEF ELEVATION : 889.4'  
 DISCHARGE OVER ROAD @Q100 : 380 cfs

UPSTREAM STRUCTURE

TOWN : Not Applicable - on small tributaries DISTANCE :  
 HIGHWAY # : STRUCTURE # :  
 CLEAR SPAN : CLEAR HEIGHT :  
 YEAR BUILT : FULL WATERWAY :  
 STRUCTURE TYPE :

DOWNSTREAM STRUCTURE

TOWN : Sandgate DISTANCE : 5100'  
 HIGHWAY # : TH 8 STRUCTURE # : 26  
 CLEAR SPAN : 26'+- CLEAR HEIGHT : 10'+-  
 YEAR BUILT : FULL WATERWAY :  
 STRUCTURE TYPE : Open bottom metal arch

LRFR LOAD RATING FACTORS

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

AS BUILT "REBAR" DETAIL

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

TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT	20 year ESAL for flexible pavement from 2016 to 2036 : 5000
2016	15	10	89	1.1	2	40 year ESAL for flexible pavement from 2016 to 2056 : 10000
2036	15	10	89	1.4	3	Design Speed : 35 mph

PROPOSED STRUCTURE

STRUCTURE TYPE : Precast Concrete Slab Beam Bridge  
 CLEAR SPAN(NORMAL TO STREAM) : 42' effective hydraulic clear span  
 VERTICAL CLEARANCE ABOVE STREAMBED : 7'  
 WATERWAY OF FULL OPENING : 210 sq. ft.

WATER SURFACE ELEVATIONS AT:

Q2.33 =	887.0'	VELOCITY=	7.3 fps
Q10 =	888.7'	"	9.8 fps
Q25 =	889.7'	"	10.4 fps
Q50 =	890.5'	"	10.8 fps
Q100 =	891.7'	"	10.0 fps

IS THE ROADWAY OVERTOPPED BELOW Q100 : Yes  
 FREQUENCY : Between Q25 and Q50  
 RELIEF ELEVATION : 890.0'  
 DISCHARGE OVER ROAD @Q100 : 110 cfs

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE : 890.7'  
 VERTICAL CLEARANCE : @ Q25 = 1.0'

SCOUR : Total long term and contraction scour is 1' up to Q100.  
 Abutment foundations/sheet piling should be designed to be freestanding to elev. 877.5'.  
 REQUIRED CHANNEL PROTECTION : Stone Fill, Type III

PERMIT INFORMATION

AVERAGE DAILY FLOW : 10 cfs DEPTH OR ELEVATION :  
 ORDINARY LOW WATER : 5 cfs Depth = 0.5'  
 ORDINARY HIGH WATER : 120 cfs Depth = 2.0'

TEMPORARY BRIDGE REQUIREMENTS

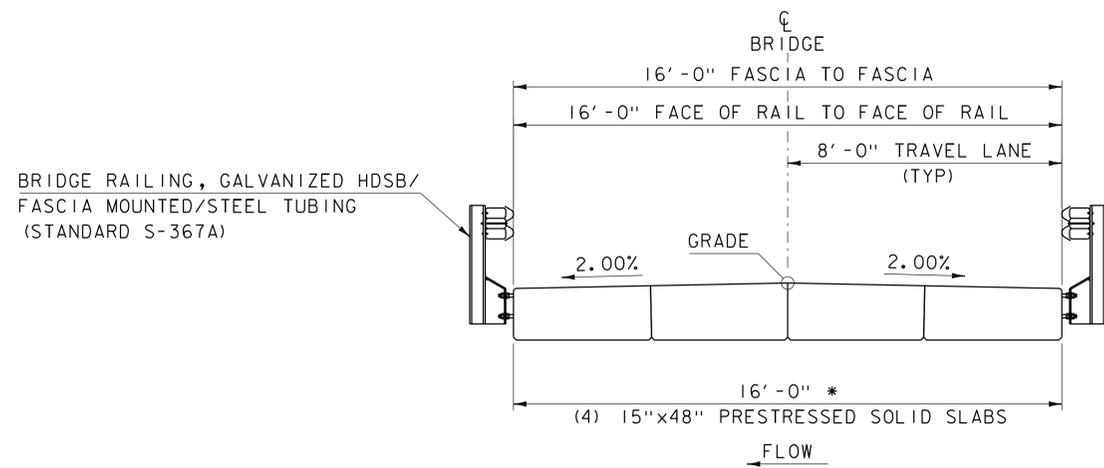
STRUCTURE TYPE : No temporary bridge required  
 CLEAR SPAN (NORMAL TO STREAM) :  
 VERTICAL CLEARANCE ABOVE STREAMBED :  
 WATERWAY AREA OF FULL OPENING :

ADDITIONAL INFORMATION

DESIGN VALUES

1. DESIGN LIVE LOAD	HL-93
2. FUTURE PAVEMENT	d <sub>p</sub> : 3.0 INCH
3. DESIGN SPAN	L: 47.00 FT
4. MIN. MID-SPAN POS. CAMBER @ RELEASE (PRESTRESSED UNITS)	Δ: ---
5. PRESTRESSING STRAND (0.60 INCH DIAMETER - LOW RELAX)	f <sub>y</sub> : 270 KSI
6. PRESTRESSED CONCRETE STRENGTH	f' <sub>c</sub> : 6.0 KSI
7. PRESTRESSED CONCRETE RELEASE STRENGTH	f' <sub>cr</sub> : 5.0 KSI
8. CONCRETE, HIGH PERFORMANCE CLASS AA	f' <sub>c</sub> : 4.0 KSI
9. CONCRETE, HIGH PERFORMANCE CLASS A	f' <sub>c</sub> : 4.0 KSI
10. CONCRETE, HIGH PERFORMANCE CLASS B	f' <sub>c</sub> : 3.5 KSI
11. CONCRETE, CLASS C	f' <sub>c</sub> : 3.0 KSI
12. REINFORCING STEEL	f <sub>y</sub> : 60 KSI
13. STRUCTURAL STEEL AASHTO M270	f <sub>y</sub> : ---
14. NOMINAL BEARING RESISTANCE OF SOIL	q <sub>n</sub> : 4.0 KSF
15. SOIL BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	φ: ---
16. NOMINAL BEARING RESISTANCE OF ROCK	q <sub>n</sub> : 10.0 KSF
17. ROCK BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	φ: ---
18. PILE RESISTANCE FACTOR	φ: ---
19. LATERAL PILE DEFLECTION	Δ: ---
20. BASIC WIND SPEED	V <sub>3s</sub> : ---
21. MINIMUM GROUND SNOW LOAD	p <sub>g</sub> : ---
22. SEISMIC DATA	PGA: 0 S <sub>s</sub> : --- S <sub>1</sub> : ---
23.	---
24.	---
25.	---
26.	---

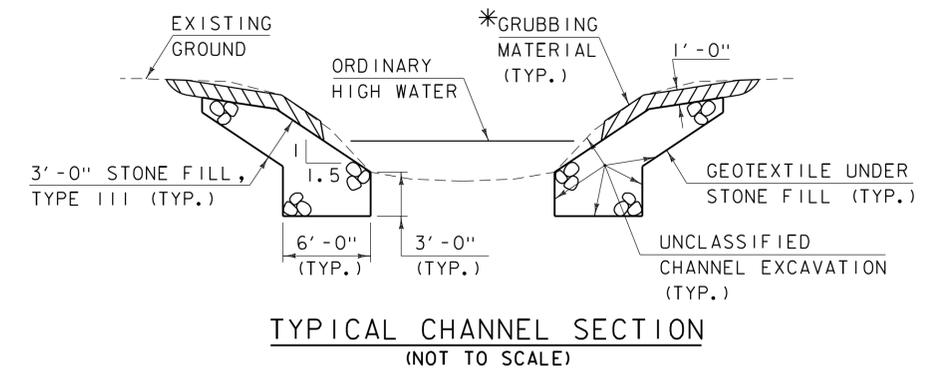
PROJECT NAME : SANDGATE  
 PROJECT NUMBER : BO 1441(30)  
 FILE NAME : s13j086pi.dgn PLOT DATE : 4/9/2015  
 PROJECT LEADER : C.W.CARLSON DRAWN BY : C.BURRALL  
 DESIGNED BY : D.PETERSON CHECKED BY : D.PETERSON  
 PRELIMINARY INFORMATION SHEET 1 SHEET 2 OF 23



**PROPOSED BRIDGE TYPICAL SECTION**

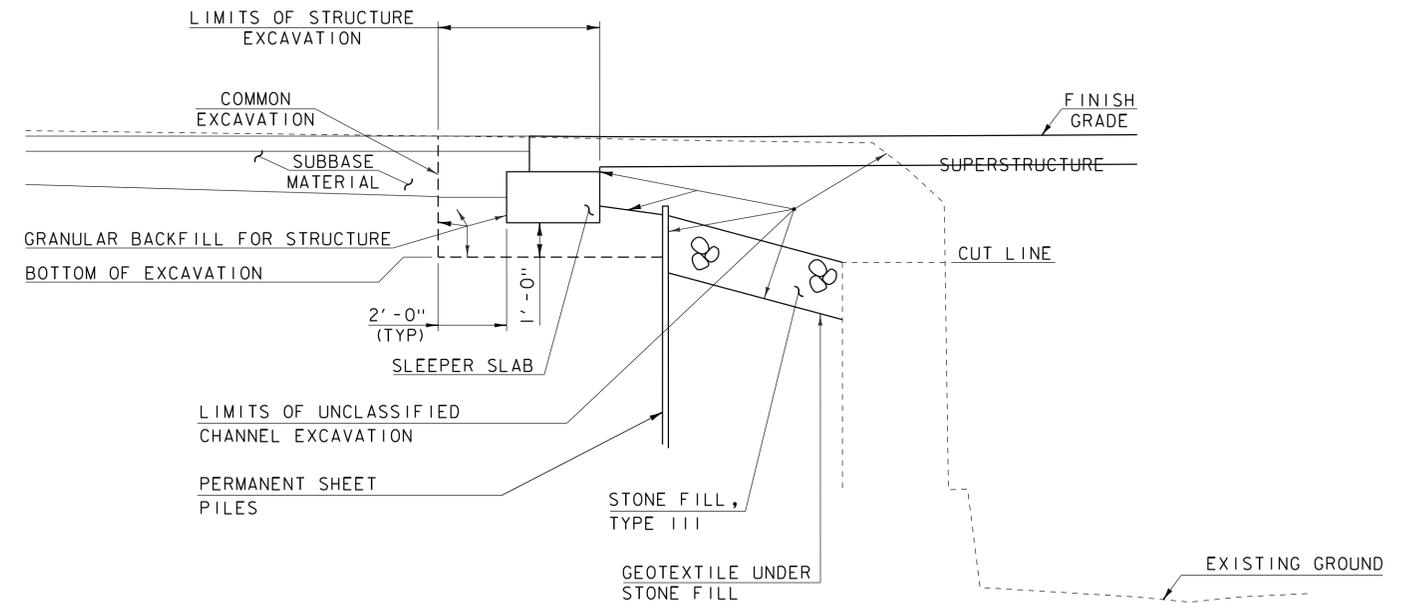
SCALE  $\frac{3}{8}$ " = 1'-0"

\* LEFT FASCIA FLARE AT BEGIN BRIDGE



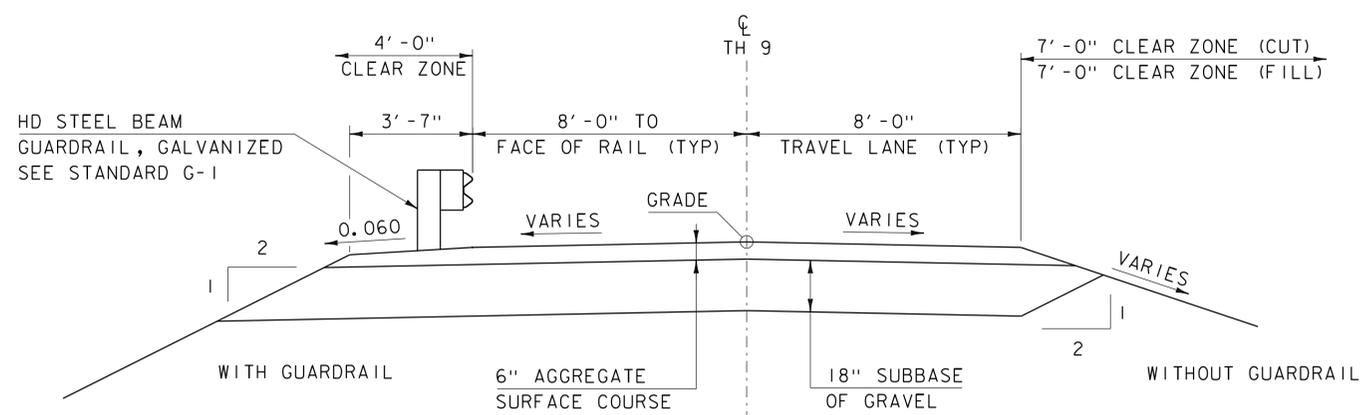
**TYPICAL CHANNEL SECTION**  
(NOT TO SCALE)

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



**SLEEPER SLAB EARTHWORK TYPICAL SECTION**

NOT TO SCALE



**PROPOSED TH 9 TYPICAL SECTION**

SCALE  $\frac{3}{8}$ " = 1'-0"

**MATERIAL TOLERANCES**  
(IF USED ON PROJECT)

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

PROJECT NAME: SANDGATE  
PROJECT NUMBER: BO 1441(30)

FILE NAME: sl3j086+typ.dgn  
PROJECT LEADER: C.W. CARLSON  
DESIGNED BY: D.PETERSON  
TYPICAL SECTIONS

PLOT DATE: 21-MAY-2015  
DRAWN BY: C.BURRALL  
CHECKED BY: J.LACROIX  
SHEET 3 OF 23

**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 — BF —	BARRIER FENCE
XXXXXXXXXXXXXXXXXXXX	TREE PROTECTION ZONE (TPZ)
//////	STRIPING LINE REMOVAL
~~~~~	SHEET PILES

**CONVENTIONAL BOUNDARY SYMBOLGY**

**BOUNDARY LINES**

—————	TOWN BOUNDARY LINE
—————	COUNTY BOUNDARY 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)
— L — L —	PROPERTY LINE (P/L)
▲ — SR — 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
— — — — —	ROAD GUARDRAIL
	RAILROAD TRACKS
-----	CULVERT (EXISTING)
-----	STONE WALL
-----	WALL
~~~~~	WOOD LINE
~~~~~	BRUSH LINE
~~~~~	HEDGE
-----	BODY OF WATER EDGE
-----	LEDGE EXPOSED

PROJECT NAME: SANDGATE  
PROJECT NUMBER: BO 1441(30)

FILE NAME: s13j086p1.dgn PLOT DATE: 21-MAY-2015  
PROJECT LEADER: C.W. CARLSON DRAWN BY: M. LONGSTREET  
DESIGNED BY: D.PETERSON CHECKED BY: J. LACROIX  
SYMBOLGY LEGEND SHEET SHEET 4 OF 23

GPS CONTROL POINTS

SCIANNA = HVCTRL #1  
 NORTH = 245471.514  
 EAST = 1442031.374  
 ELEV. = 891.101

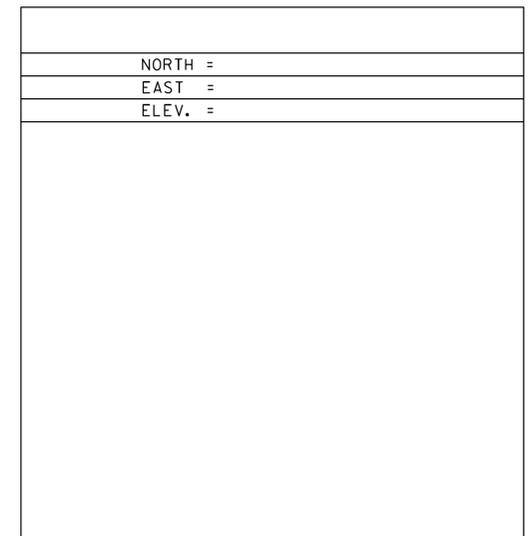
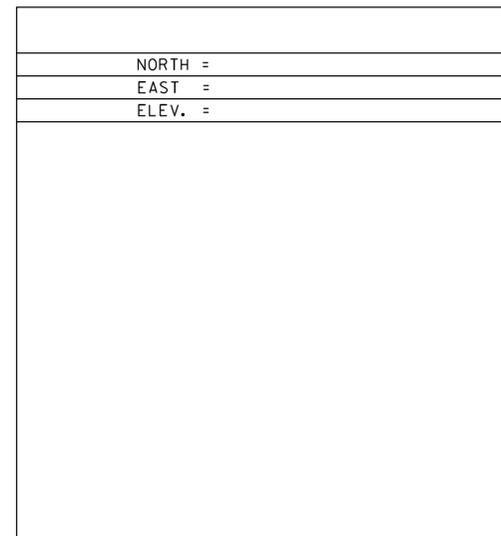
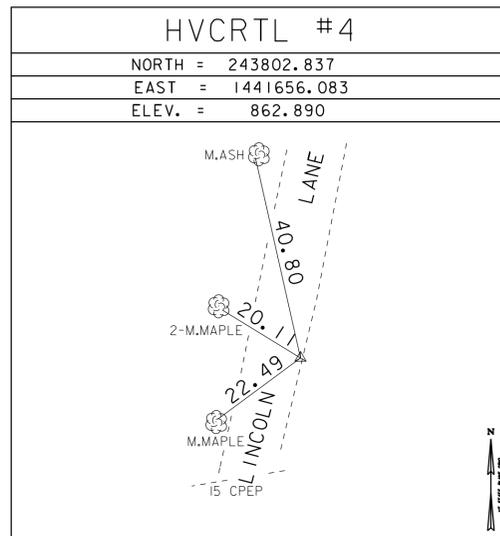
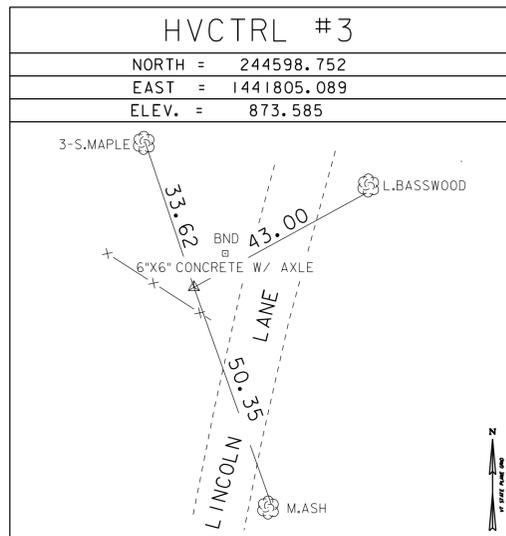
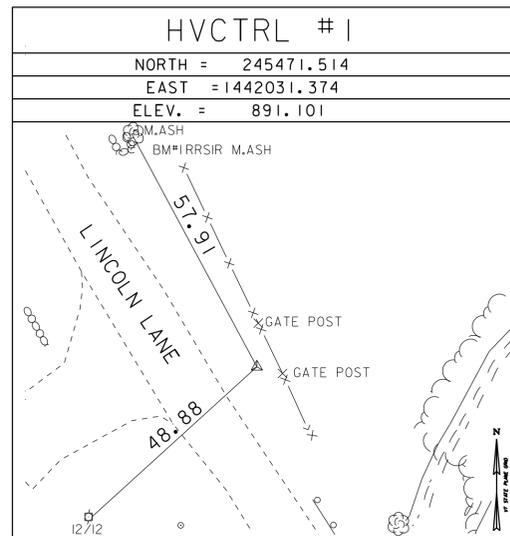
GENERAL LOCATION, SANDGATE, VT.  
 TO REACH FROM THE INTERSECTION OF HISTORIC VT ROUTE 7A AND VT ROUTE 313 IN ARLINGTON, GO WEST ALONG VT ROUTE 313 FOR 3.8 MI (6.1 KM) TO INTERSECTION OF SANDGATE ROAD RIGHT. TURN RIGHT AND GO NORTH ALONG SANDGATE ROAD FOR 3.1 MI (5.0 KM) TO THE Y-INTERSECTION OF WEST SANDGATE ROAD LEFT AND SANDGATE ROAD RIGHT. BEAR LEFT AND GO NORTHWEST ALONG WEST SANDGATE ROAD FOR 2.9 MI (4.7 KM) TO THE INTERSECTION OF LINCOLN LANE RIGHT. TURN RIGHT AND GO NORTH ALONG LINCOLN LANE FOR 0.6 MI (1.0 KM) TO THE SITE OF THE MARK ON THE RIGHT.  
 THE MARK IS SET 10 CM (4 INCHES) BELOW GROUND SURFACE IN THE TOP OF A FENO STYLE MONUMENT. IT IS 4.3 M (14.1 FT) EAST OF AND 0.2 M (0.7 FT) LOWER THAN THE CENTERLINE OF LINCOLN LANE, 1.9 M (6.2 FT) NORTHWEST OF THE SOUTH SIDE OF A GATE, 2.8 M (9.2 FT) SOUTHWEST OF THE NORTH SIDE OF THE GATE, 14.8 M (48.6 FT) EAST OF POLE NO 12/12, 18.8 M (61.7 FT) NORTH OF THE NORTHEAST CORNER OF THE WOODEN DECK OF THE LINCOLN LANE BRIDGE OVER TERRY BROOK AND 18.4 M (60.4 FT) SOUTH OF THE SOUTH END OF A STONE WALL.

LINCOLN LANE  
 NORTH = 243802.902  
 EAST = 1441656.098  
 ELEV. = 862.852

GENERAL LOCATION, SANDGATE, VT.  
 TO REACH FROM THE INTERSECTION OF HISTORIC VT ROUTE 7A AND VT ROUTE 313 IN ARLINGTON, GO WEST ALONG VT ROUTE 313 FOR 3.8 MI (6.1 KM) TO INTERSECTION OF SANDGATE ROAD RIGHT. TURN RIGHT AND GO NORTH ALONG SANDGATE ROAD FOR 3.1 MI (5.0 KM) TO THE Y-INTERSECTION OF WEST SANDGATE ROAD LEFT AND SANDGATE ROAD RIGHT. BEAR LEFT AND GO NORTHWEST ALONG WEST SANDGATE ROAD FOR 2.9 MI (4.7 KM) TO THE INTERSECTION OF LINCOLN LANE RIGHT. TURN RIGHT AND GO NORTH ALONG LINCOLN LANE FOR 0.25 MI (0.4 KM) TO THE SITE OF THE MARK ON THE LEFT IN THE SOUTHWEST CORNER OF A LAWN.  
 THE MARK IS A REBAR WITH RED PLASTIC CAP SET FLUSH WITH THE GROUND. IT IS 2.6 M (8.5 FT) NORTHWEST OF AND LEVEL WITH THE CENTERLINE OF LINCOLN LANE, 16.3 M (53.5 FT) NORTHEAST OF A CONCRETE BOUND THAT IS JUST SOUTHWEST OF A LILAC BUSH, 35.0 M (114.8 FT) SOUTHWEST OF THE CENTERLINE OF THE GRAVEL DRIVE LEADING TO THE STEMPEL HOUSE NO 289 AND 3.0 M (9.8 FT) SOUTHWEST OF A STEEL PIPE WITH ROCK BASE.

GPS CONTROL SET BY VTrans GSU 5/27/2013

TRAVERSE TIES



\*TRAVERSE COMPLETED 6/06/2013 BY L. ORVIS P.C. & H. MCGOWAN, G. HITCHCOCK

Point Type	Station	Northing	Easting	Radius	Length	Tangent
<b>Alignment Name:</b>		TH9prop				
<b>Description:</b>		Proposed TH9 Mainline				
POB	10+00.00	245266.9003	1442028.6674			
PC	10+99.94	245360.8609	1442062.7177			
PI	11+24.79	245384.2240	1442071.1843	50.0000	46.1200	24.8500
PT	11+46.06	245405.0803	1442057.6739			
PC	12+50.14	245492.4292	1442001.0908			
PI	12+86.83	245523.2240	1441981.1425	800.0000	73.3300	36.6900
POE	13+50.00	245579.2088	1441951.7717			

PROJECT NAME:	SANDGATE
PROJECT NUMBER:	BO 1441(30)
FILE NAME:	s13j086+1e.dgn
PROJECT LEADER:	C.W. CARLSON
DESIGNED BY:	D.PETERSON
TIE SHEET	
PLOT DATE:	21-MAY-2015
DRAWN BY:	G.HITCHCOCK
CHECKED BY:	J. LACROIX
SHEET	5 OF 23

**REMOVAL AND DISPOSAL OF GUARDRAIL**

TH9 STA 11+22.60 LT - STA 11+35.00 LT  
 TH9 STA 11+61.90 LT - STA 11+76.20 LT  
 TH9 STA 11+31.40 RT - STA 11+40.85 RT  
 TH9 STA 11+65.00 RT - STA 11+85.20 RT

**HD STEEL BEAM GUARDRAIL, GALVANIZED**

TH9 STA 10+75.94 LT - STA 10+87.21 LT  
 TH9 STA 12+00.77 LT - STA 12+10.57 LT  
 TH9 STA 10+97.98 RT - STA 11+07.88 RT  
 TH9 STA 12+05.31 RT - STA 12+15.11 RT

**GUARDRAIL APPROACH SECTION, TO CONCRETE BRIDGE RAILING, TL-3**

TH9 STA 10+87.21 LT - STA 11+14.54 LT  
 TH9 STA 11+75.84 LT - STA 12+00.77 LT  
 TH9 STA 11+07.88 RT - STA 11+27.94 RT  
 TH9 STA 12+05.31 RT - STA 12+15.11 RT

**BRIDGE RAILING, GALVANIZED HDSB/FASCIA MOUNTED/STEEL TUBING**

TH9 STA 11+14.54 LT - STA 11+75.84 LT  
 TH9 STA 11+27.94 RT - STA 11+80.40 RT

**CONSTRUCT DRIVE (UNPAVED, FIELD DRIVE)**

TH9 STA 12+25.00 (18' WIDE x 14' LONG)

**REMOVING AND RESETING FENCE**

TH9 STA 11+97.73, 24.15 RT TO  
 TH9 STA 12+57.40, 23.70 RT

**REMOVING SIGNS**

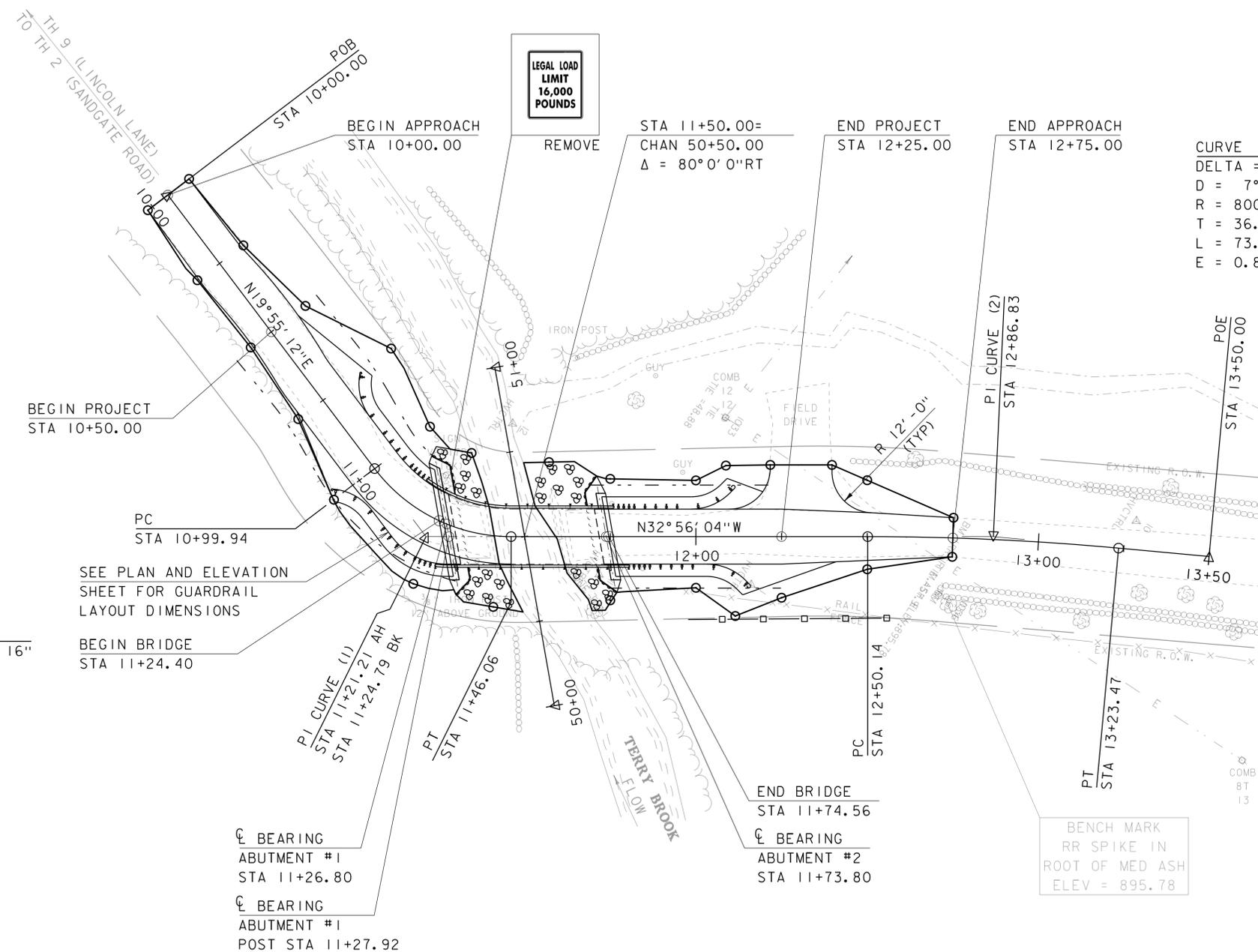
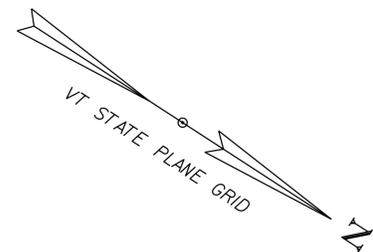
TH9 STA 11+20.00 LT (ON TREE)

**ANCHOR FOR STEEL BEAM RAIL**

TH9 STA 10+87.21 LT  
 TH9 STA 12+00.77 LT  
 TH9 STA 11+07.88 RT  
 TH9 STA 12+15.11 RT

**PERMANENT SHEET PILING**

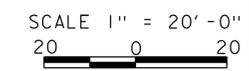
TH9 STA 11+10.20 LT  
 TH9 STA 11+34.20 RT  
 TH9 STA 11+71.06 LT  
 TH9 STA 11+77.01 RT



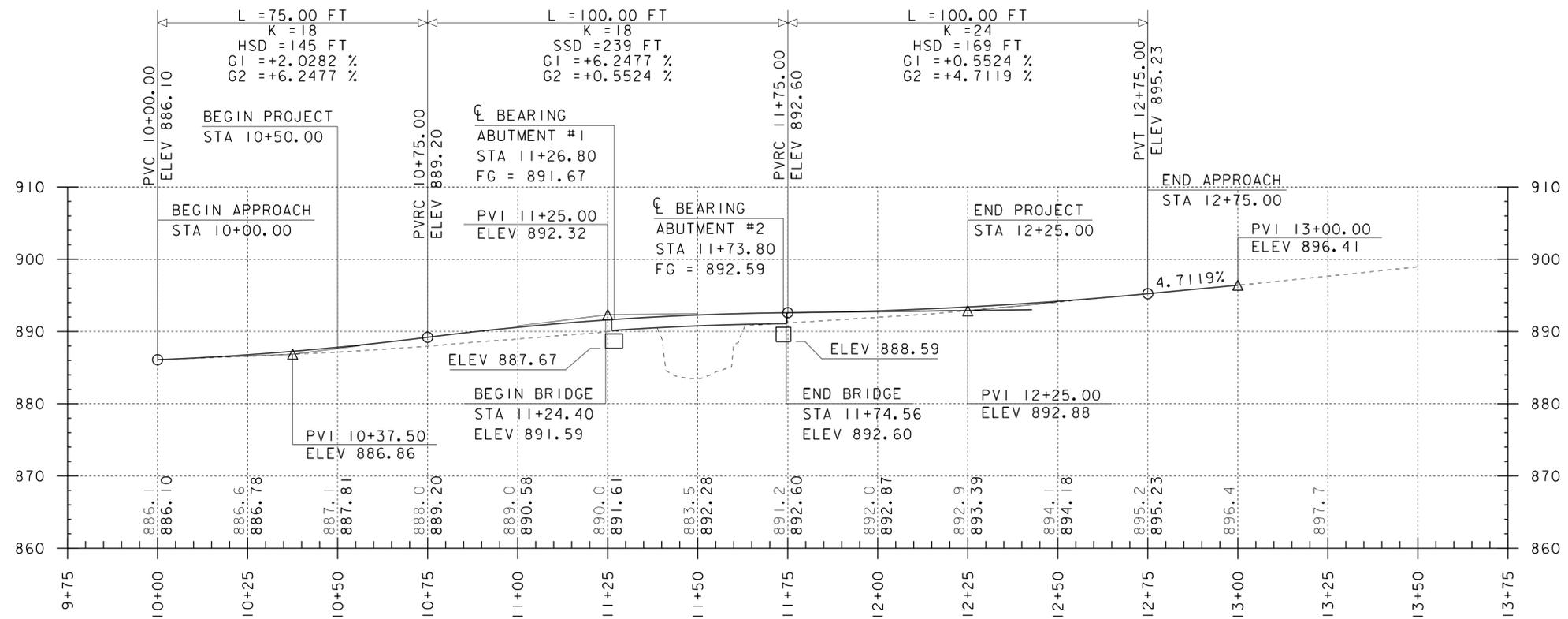
**CURVE (1)**  
 DELTA = 52° 51' 16"  
 D = 114° 35' 30"  
 R = 50.00'  
 T = 24.85'  
 L = 46.12'  
 E = 5.83'

**CURVE (2)**  
 DELTA = 5° 15' 07"  
 D = 7° 09' 43"  
 R = 800.00'  
 T = 36.69'  
 L = 73.33'  
 E = 0.84'

EXISTING BRIDGE DATA  
 STEEL BEAM WITH TIMBER DECK  
 BUILT 1960  
 26' LONG, 15' WIDE

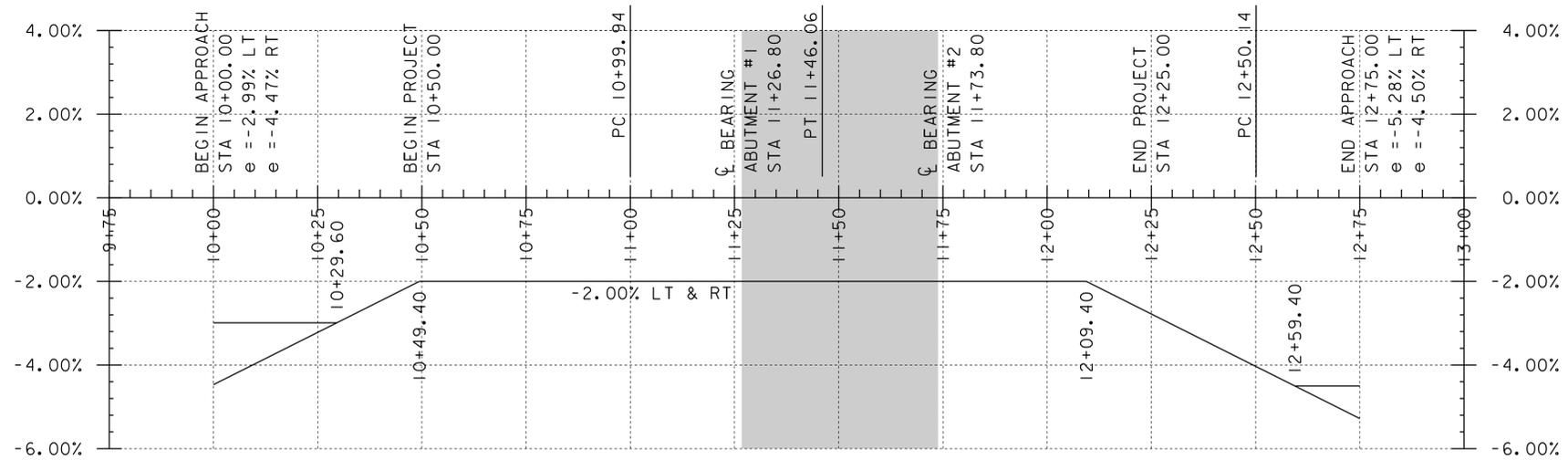


PROJECT NAME: SANDGATE	
PROJECT NUMBER: BO 1441(30)	
FILE NAME: s13j086bdr.dgn	PLOT DATE: 21-MAY-2015
PROJECT LEADER: C.W. CARLSON	DRAWN BY: C.BURRALL
DESIGNED BY: D.PETERSON	CHECKED BY: J.LACROIX
LAYOUT SHEET	SHEET 6 OF 23



**TH 9 PROFILE**

SCALE: HORIZONTAL 1" = 20' -0"  
 VERTICAL 1" = 10' -0"



**TH 9 BANKING DIAGRAM**

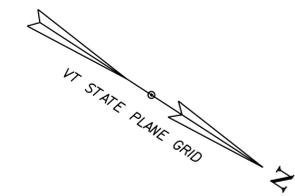
SCALE: HORIZONTAL 1" = 20' -0"  
 VERTICAL 1" = 2.00"

**NOTE:**

GRADES SHOWN TO THE NEAREST TENTH ARE EXISTING GROUND ALONG  $\phi$

GRADES SHOWN TO THE NEAREST HUNDREDTH ARE FINISH GRADE ALONG  $\phi$

PROJECT NAME: SANDGATE	PLOT DATE: 21-MAY-2015
PROJECT NUMBER: BO 1441(30)	DRAWN BY: C.BURRALL
FILE NAME: s13j086pro.dgn	CHECKED BY: J.LACROIX
PROJECT LEADER: C.W. CARLSON	SHEET 7 OF 23
DESIGNED BY: D.PETERSON	



BEGIN PROJECT  
STA 10+50.00

BEGIN BRIDGE  
STA 11+24.40

CL BEARING  
ABUTMENT #2  
STA 11+73.80

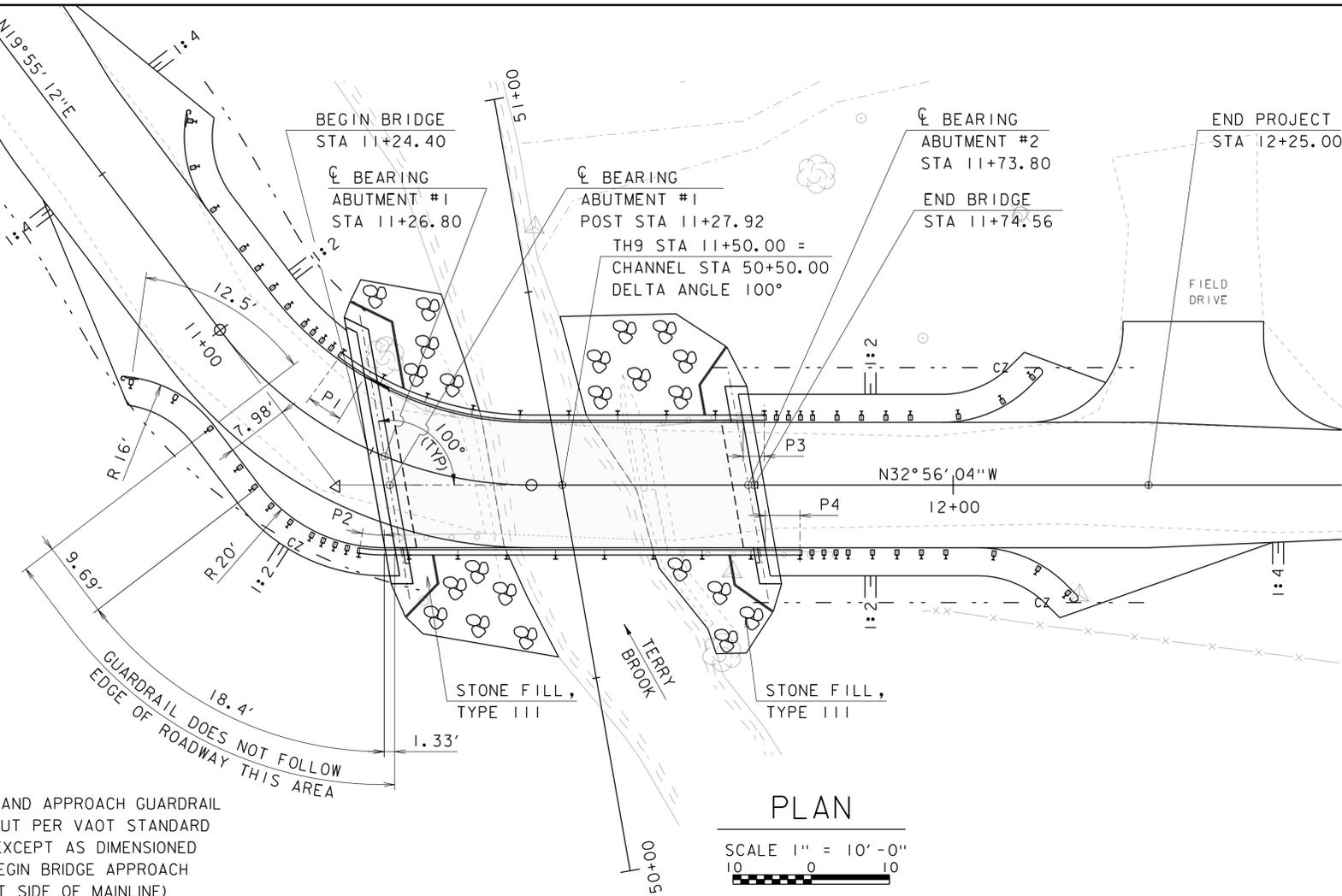
END PROJECT  
STA 12+25.00

FIRST POST OFF BRIDGE LAYOUT TABLE

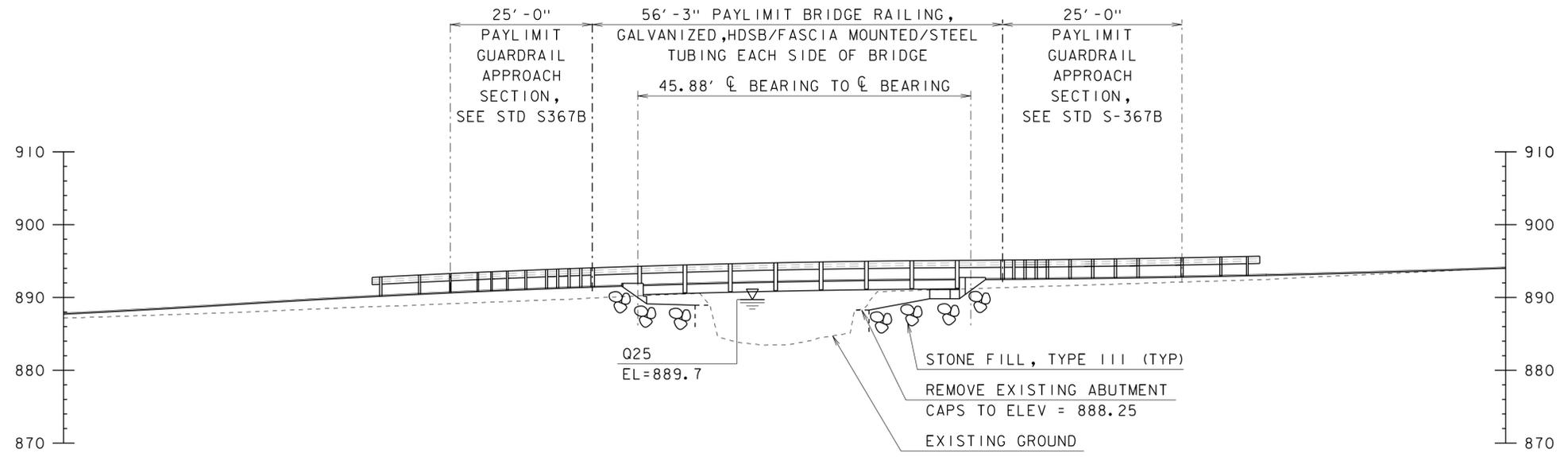
NAME	DIMENSION	DESCRIPTION
P1	4.09'	WINGWALL #1 POST
P2	3.15'	WINGWALL #2 POST
P3	2.68'	WINGWALL #3 POST
P4	4.43'	WINGWALL #4 POST

DIMENSIONS ARE SHOWN FROM CL OF FIRST POST(S) OFF THE BRIDGE, TO THE BEGIN BRIDGE LOCATIONS AT FACE OF RAIL. ALL DIMENSIONS ARE MEASURED ALONG THE FACE OF THE RAIL.

GUARDRAIL AND APPROACH GUARDRAIL ARE LAID OUT PER VAOT STANDARD DRAWINGS, EXCEPT AS DIMENSIONED HERE AT BEGIN BRIDGE APPROACH AREA (RIGHT SIDE OF MAINLINE)



PLAN  
SCALE 1" = 10'-0"  
10 0 10



ELEVATION  
SCALE 1" = 10'-0"  
10 0 10

PROJECT NAME:	SANDGATE	PLOT DATE:	21-MAY-2015
PROJECT NUMBER:	BO 1441(30)	DRAWN BY:	M. LONGSTREET
FILE NAME:	s13j086pe.dgn	CHECKED BY:	J. LACROIX
PROJECT LEADER:	C.W. CARLSON	PLAN AND ELEVATION SHEET	SHEET 8 OF 23

**SOIL CLASSIFICATION**

**AASHTO**

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

**ROCK QUALITY DESIGNATION**

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

**SHEAR STRENGTH**

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

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

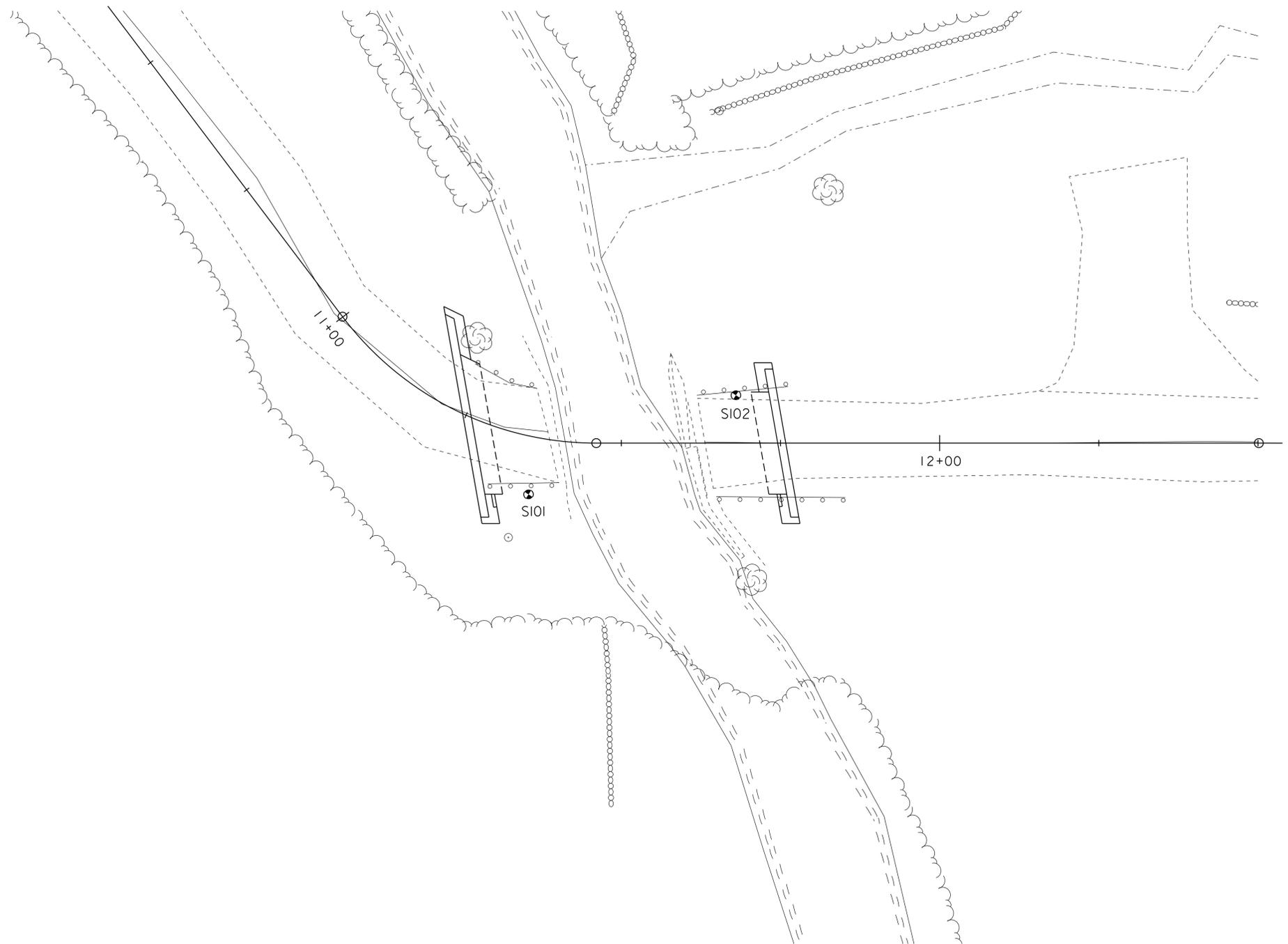
DENSITY (GRANULAR SOILS)		CONSISTENCY (COHESIVE SOILS)	
N	DESCRIPTIVE TERM	N	DESCRIPTIVE TERM
<5	Very Loose	<2	Very Soft
5-10	Loose	2-4	Soft
11-24	Med. Dense	5-8	Med. Stiff
25-50	Dense	9-15	Stiff
>50	Very Dense	16-30	Very Stiff
		31-60	Hard
		>60	Very Hard

**COMMONLY USED SYMBOLS**

- ▼ Water Elevation
- ⊕ Standard Penetration Boring
- ⊗ Auger Boring
- ⊙ Rod Sounding
- S Sample
- N Standard Penetration Test Blow Count Per Foot For: 2" O.D. Sampler 1 3/8" I.D. Sampler Hammer Weight Of 140 Lbs. Hammer Fall Of 30"
- VS Field Vane Shear Test
- US Undisturbed Soil Sample
- B Blast
- DC Diamond Core
- MD Mud Drill
- WA Wash Ahead
- HSA Hollow Stem Auger
- AX Core Size 1 1/8"
- BX Core Size 1 7/8"
- NX Core Size 2 1/8"
- M Double Tube Core Barrel Used
- LL Liquid Limit
- PL Plastic Limit
- PI Plasticity Index
- NP Non Plastic
- w Moisture Content (Dry Wgt. Basis)
- D Dry
- M Moist
- MTW Moist To Wet
- W Wet
- Sat Saturated
- Bo Boulder
- Gr Gravel
- Sa Sand
- Si Silt
- Cl Clay
- HP Hardpan
- Le Ledge
- NLTD No Ledge To Depth
- CNPF Can Not Penetrate Further
- TLOB Top of Ledge Or Boulder
- NR No Recovery
- Rec. Recovery
- 1/2 Rec. Percent Recovery
- ROD Rock Quality Designation
- CBR California Bearing Ratio
- < Less Than
- > Greater Than
- R Refusal (N > 100)
- VTSPG NAD83 - See Note 7

**COLOR**

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



**DEFINITIONS (AASHTO)**

- BEDROCK (LEDGE)** - Rock in its native location of indefinite thickness.
- BOULDER** - A rock fragment with an average dimension > 12 inches.
- COBBLE** - Rock fragments with an average dimension between 3 and 12 inches.
- GRAVEL** - Rounded particles of rock < 3" and > 0.0787" (#10 sieve).
- SAND** - Particles of rock < 0.0787" (#10 sieve) and > 0.0029" (#200 sieve).
- SILT** - Soil < 0.0029" (#200 sieve), non or slightly plastic and exhibits no strength when air-dried.
- CLAY** - Fine grained soil, exhibits plasticity when moist and considerable strength when air-dried.
- VARVED** - Alternate layers of silt and clay.
- HARDPAN** - Extremely dense soil, cemented layer, not softened when wet.
- MUCK** - Soft organic soil (containing > 10% organic material).
- MOISTURE CONTENT** - Weight of water divided by dry weight of soil.
- FLOWING SAND** - Granular soil so saturated (loose) that it flows into drill casing during extraction of wash rod.
- STRIKE** - Angle from magnetic north to line of intersection of bed with a horizontal plane.
- DIP** - Inclination of bed with a horizontal plane.

**GENERAL NOTES**

- The subsurface explorations shown herein were made between ----- and ----- by the Agency.
- Soil and rock classifications, properties and descriptions are based on engineering interpretation from available subsurface information by the Agency and may not necessarily reflect actual variations in subsurface conditions that may be encountered between individual boring or sample locations.
- Observed water levels and/or conditions indicated are as recorded at the time of exploration and may vary according to the prevailing rainfall, methods of exploration and other factors.
- Engineering judgment was exercised in preparing the subsurface information presented herein. Analysis and interpretation of subsurface data was performed and interpreted for Agency design and estimating purposes. Presentation of the information in the Contract is intended to provide the Contractor access to the same data available to the Agency. The subsurface information is presented in good faith and is not intended as a substitute for personal investigation, independent interpretation, independent analysis or judgment by the Contractor.
- Pictorial structure details shown on the boring plan layout or soils profile are for illustrative purposes only and may not accurately portray final contract details.
- Terminology used on boring logs to describe the hardness, degree of weathering, and spacing of fractures, joints and other discontinuities in the bedrock is defined in the AASHTO Manual on Subsurface Investigations, 1988.
- Northing and Easting coordinates are shown in Vermont State Plane Grid North American Datum 1983 in meters and survey feet.

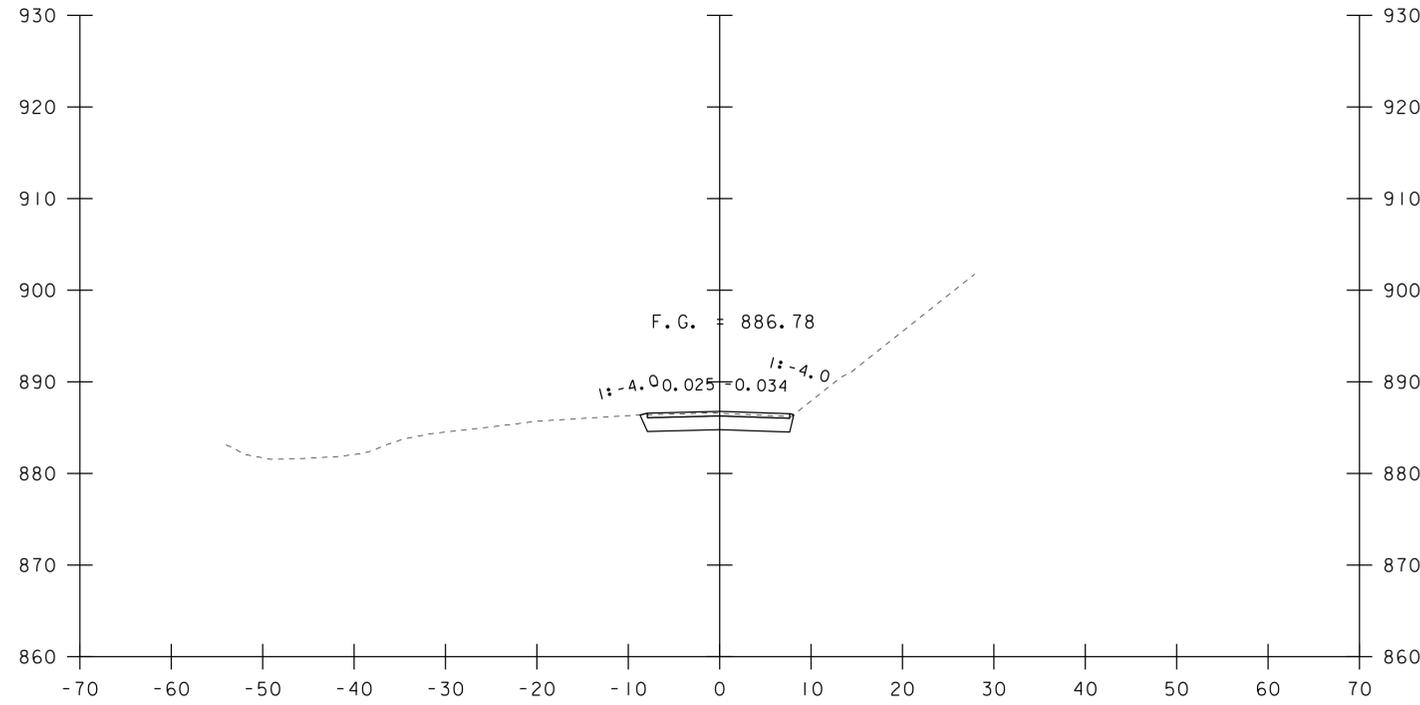
SOUNDING POINT	STATION	OFFSET	NORTH	EAST	ELEVATION
S101	11+37.00	9.00	245400.52	1442070.20	891.98
S102	11+68.00	-7.50	245419.41	1442039.45	892.55

PROJECT NAME: SANDGATE  
PROJECT NUMBER: BO 1441(30)

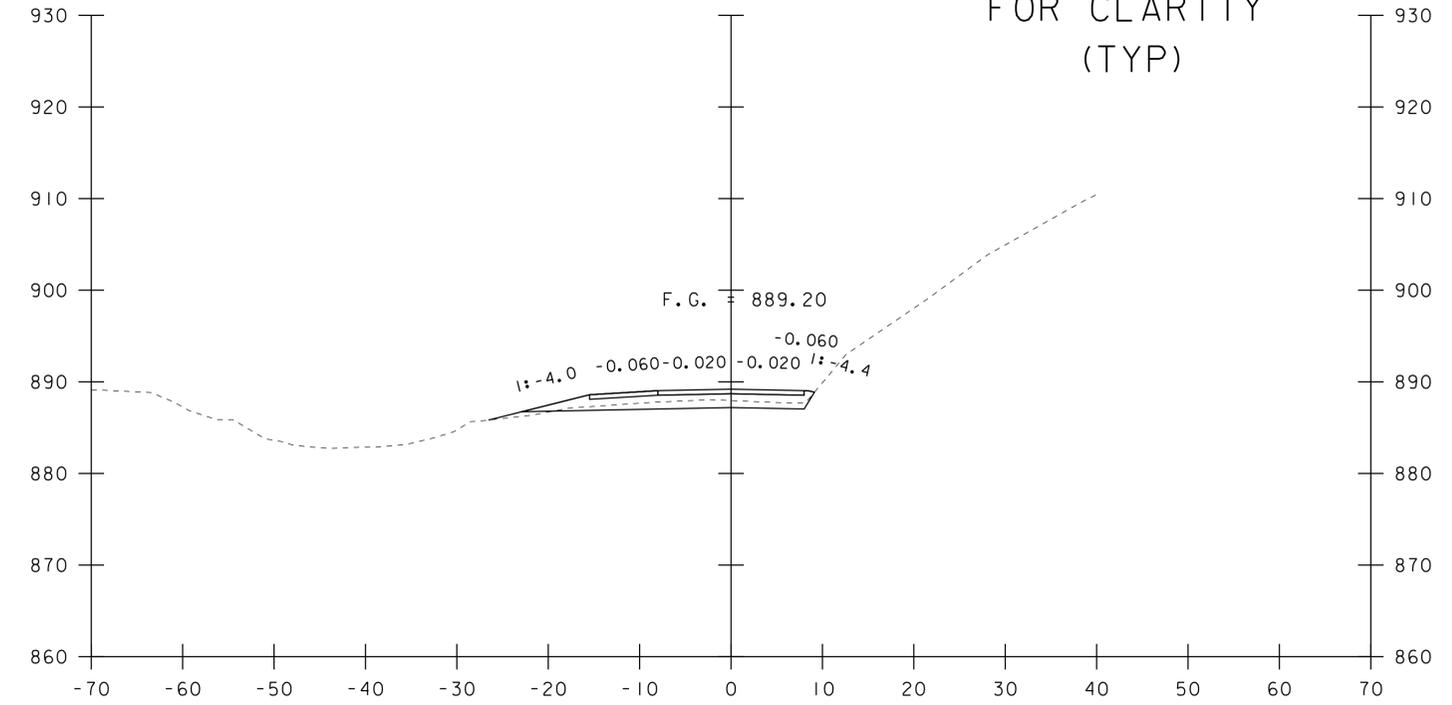
FILE NAME: s13j086bor  
PROJECT LEADER: C.W. CARLSON  
DESIGNED BY: D. PETERSON  
BORING INFORMATION SHEET

PLOT DATE: 21-MAY-2015  
DRAWN BY: M. LONGSTREET  
CHECKED BY: D. PETERSON  
SHEET 9 OF 23

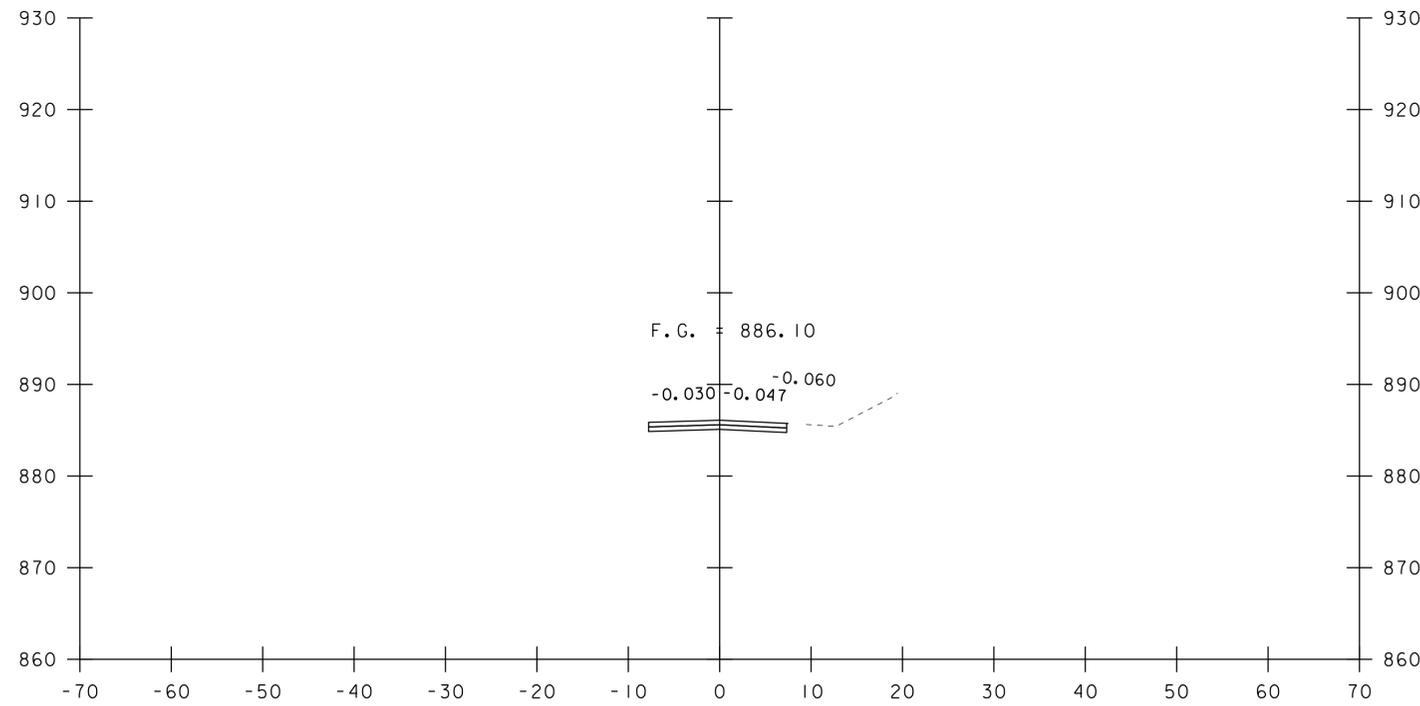
CROSS SECTION GRID OFF  
FOR CLARITY  
(TYP)



10+25

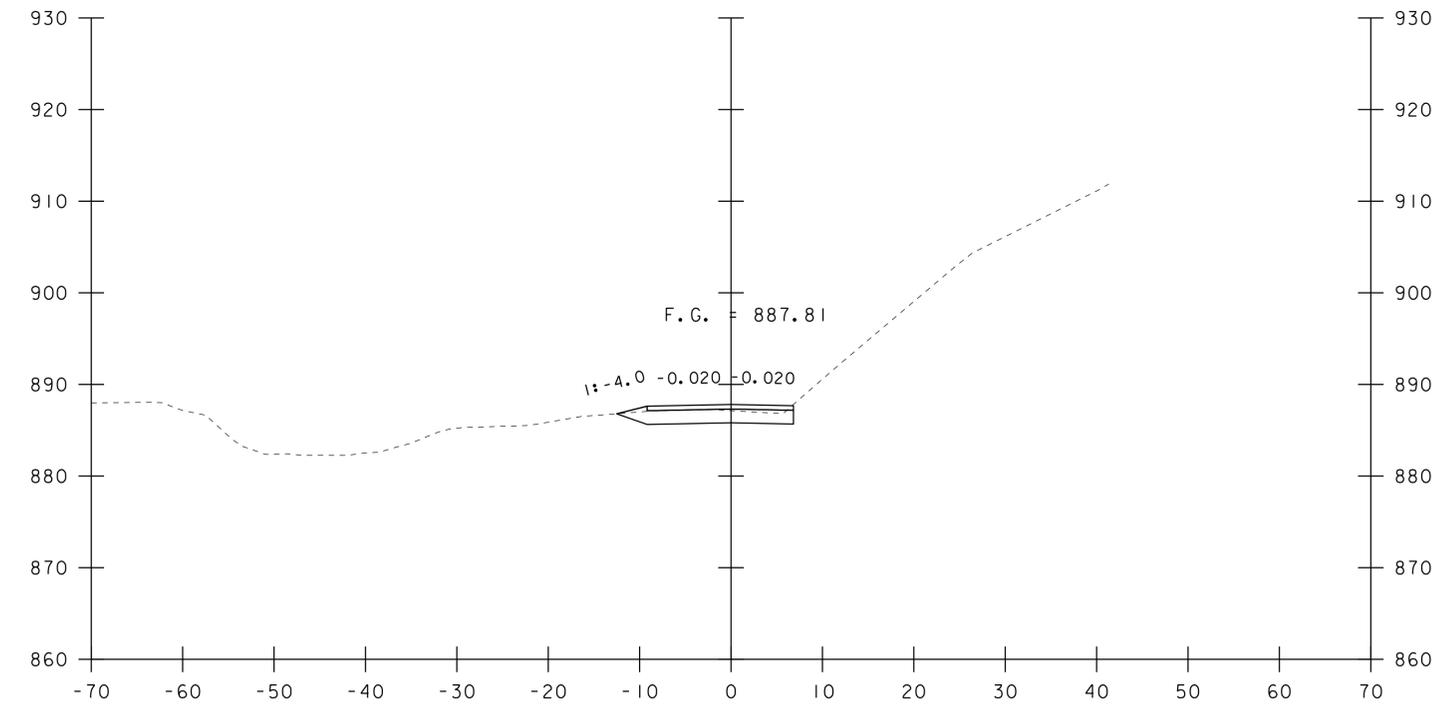


10+75



10+00

BEGIN APPROACH  
STA 10+00.00

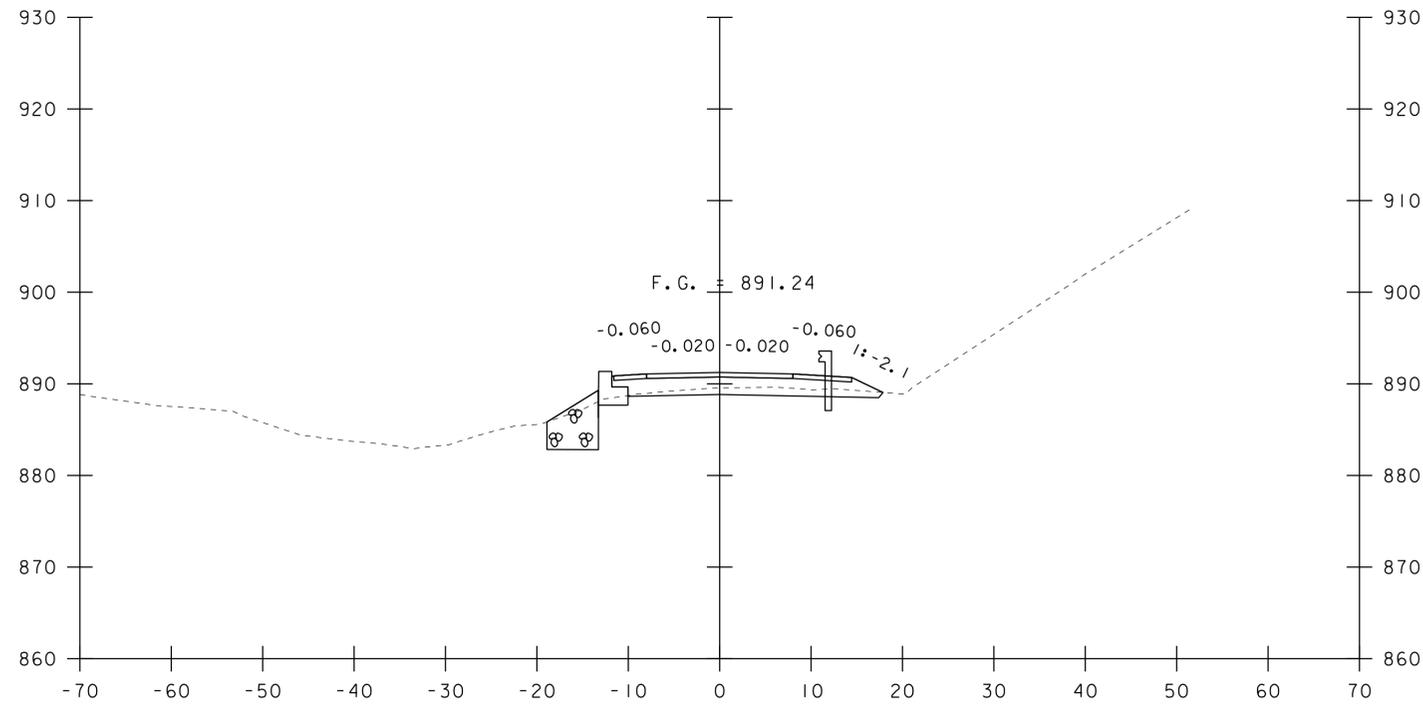


10+50

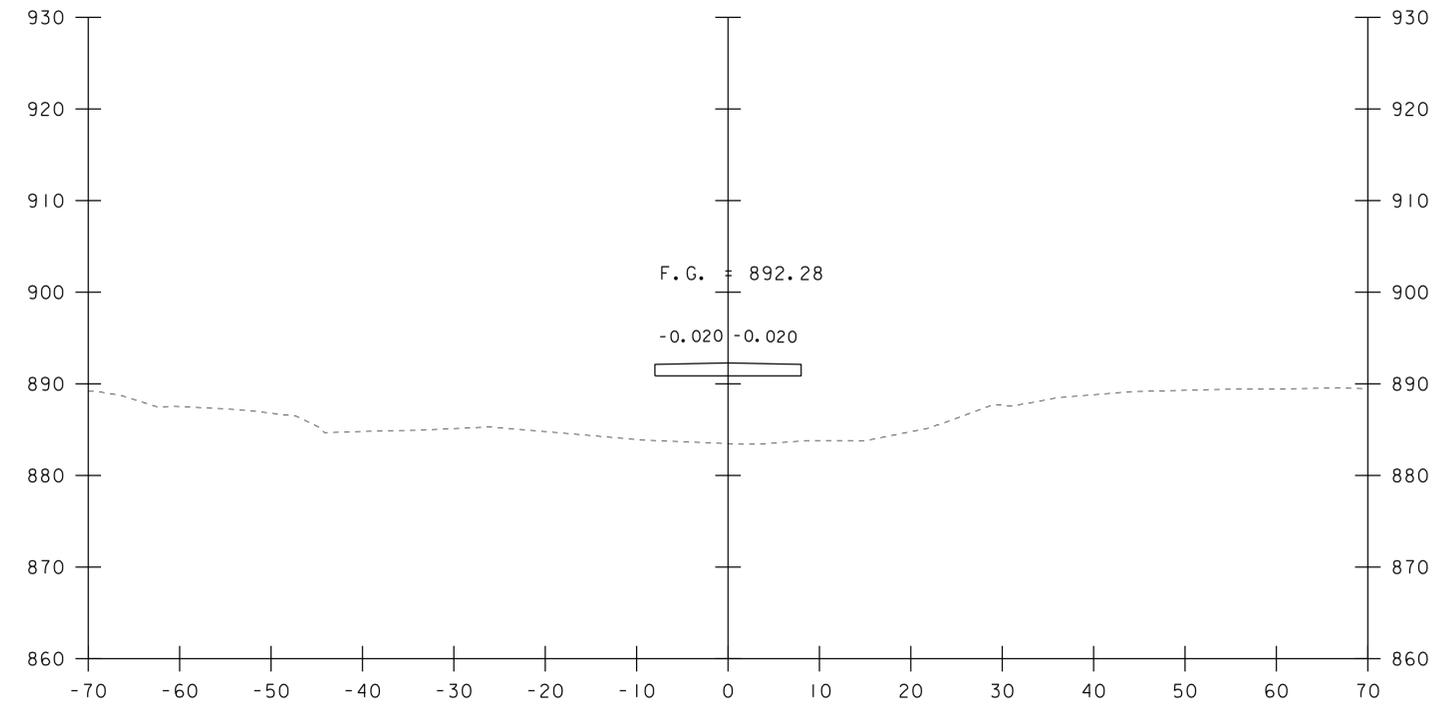
BEGIN PROJECT  
STA 10+50.00

STA. 10+00 TO STA. 10+75

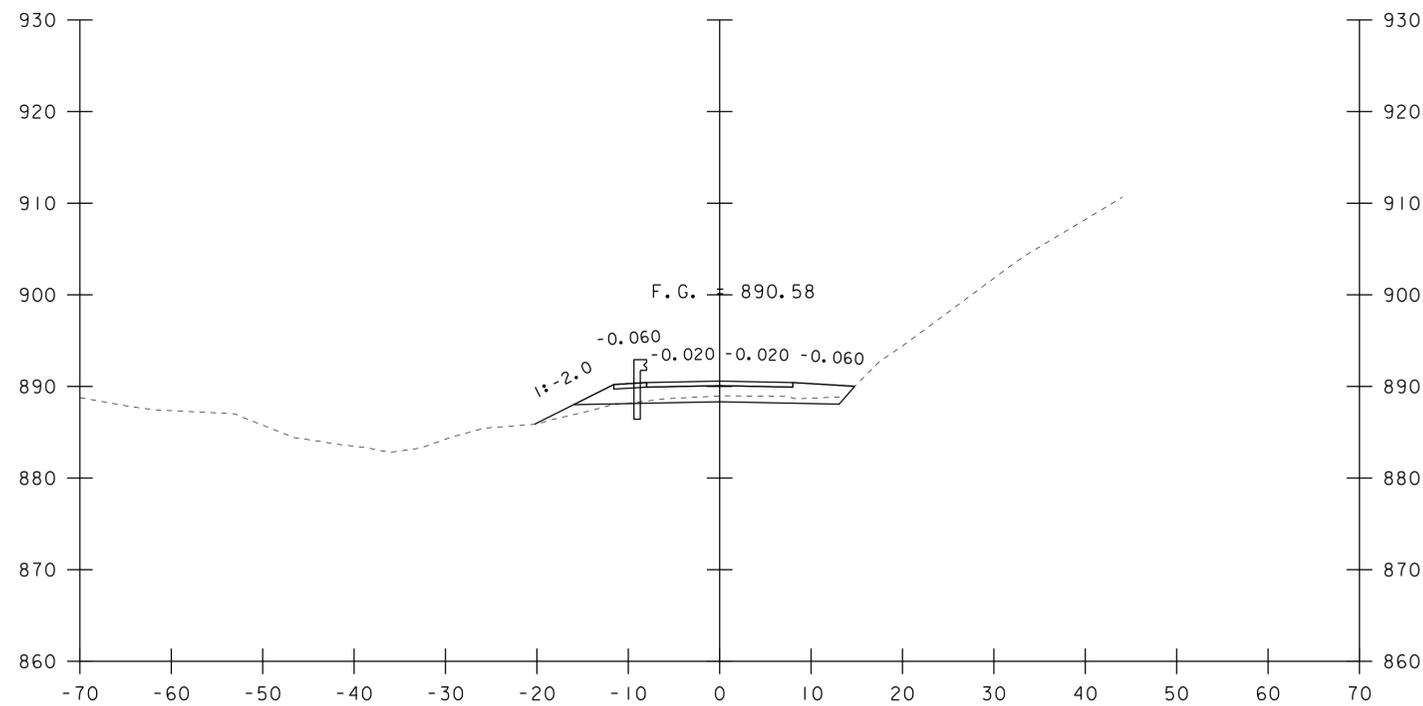
PROJECT NAME: SANDGATE	PLOT DATE: 21-MAY-2015
PROJECT NUMBER: BO 1441(30)	DRAWN BY: M. LONGSTREET
FILE NAME: s13j086xs.dgn	CHECKED BY: D.PETERSON
PROJECT LEADER: C.W. CARLSON	SHEET 10 OF 23
DESIGNED BY: D.PETERSON	
TH9 CROSS SECTION SHEET 1	



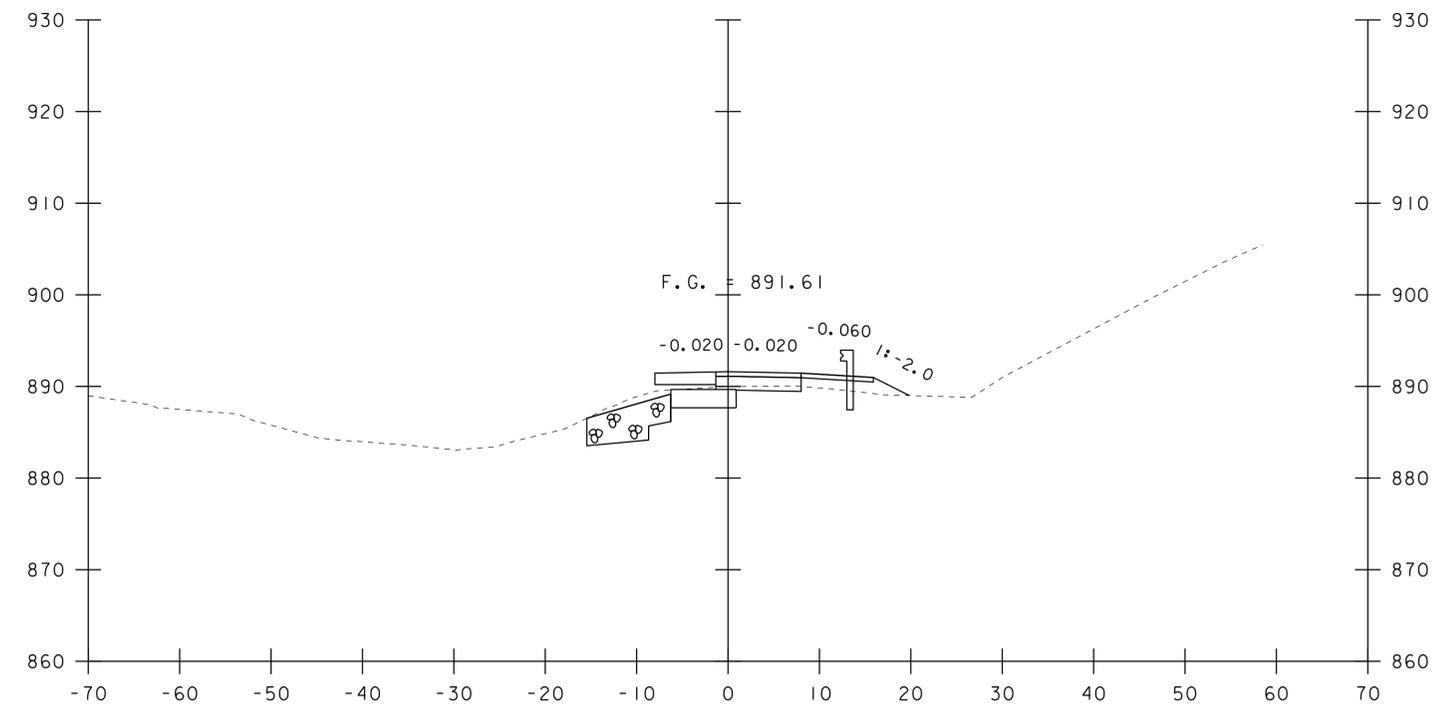
11+15



11+50



11+00

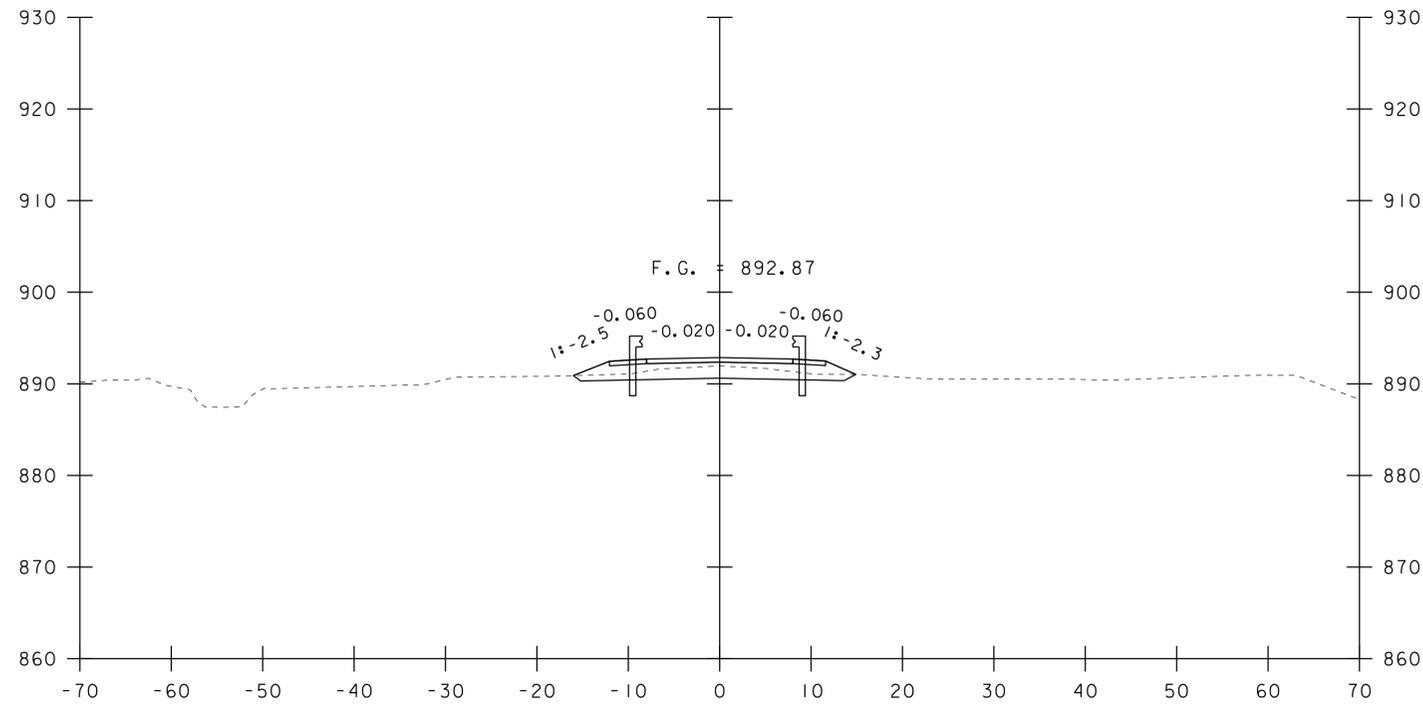


11+25

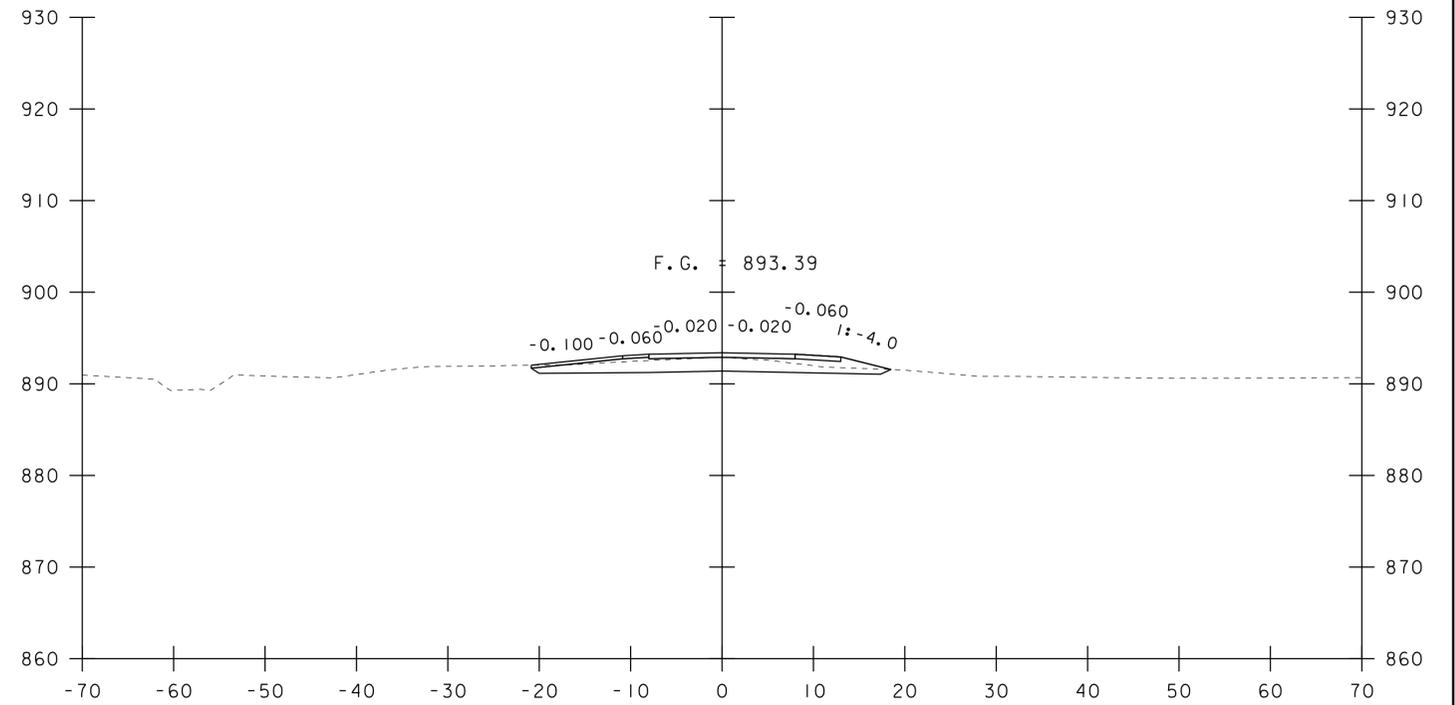
CL BEARING ABUTMENT #1  
STA 11+26.80

STA. 11+00 TO STA. 11+50

PROJECT NAME: SANDGATE	
PROJECT NUMBER: BO 1441(30)	
FILE NAME: s13j086xs.dgn	PLOT DATE: 21-MAY-2015
PROJECT LEADER: C.W. CARLSON	DRAWN BY: M. LONGSTREET
DESIGNED BY: D.PETERSON	CHECKED BY: D.PETERSON
TH9 CROSS SECTION SHEET 2	SHEET 11 OF 23

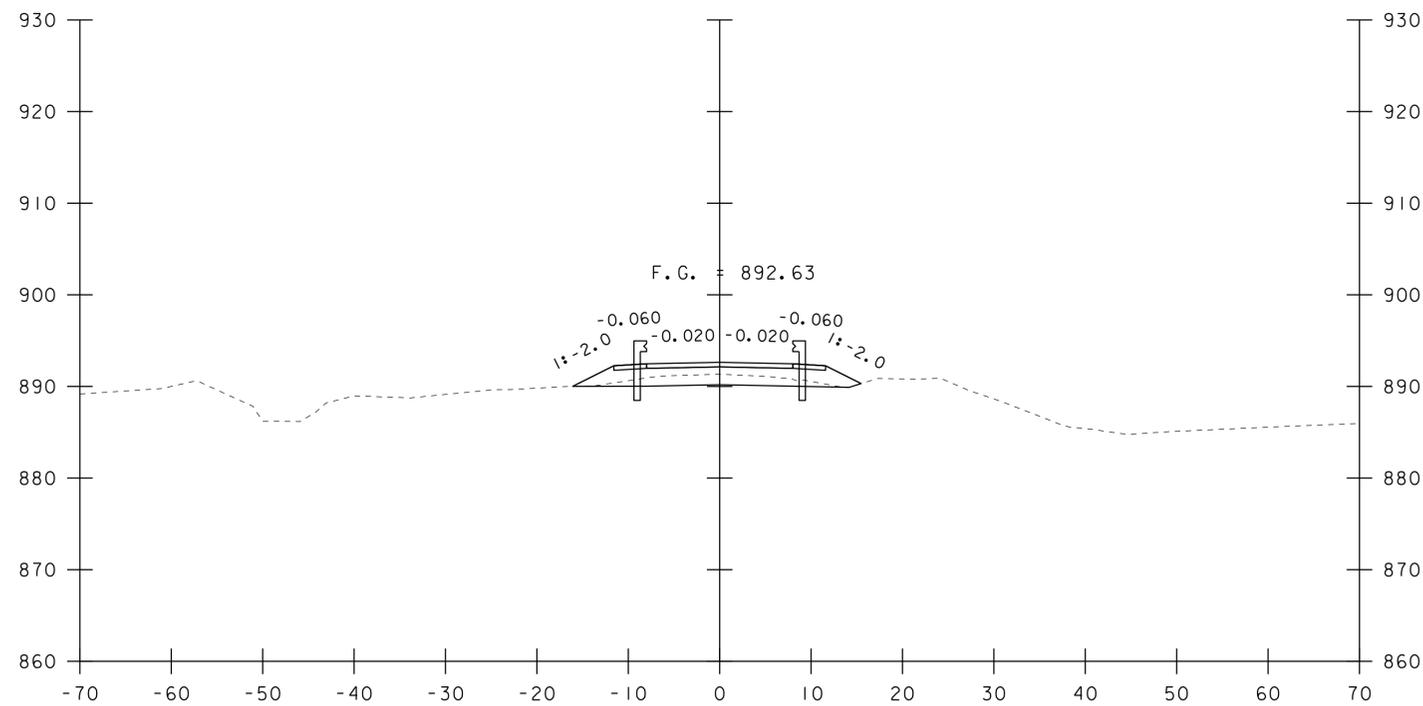


12+00



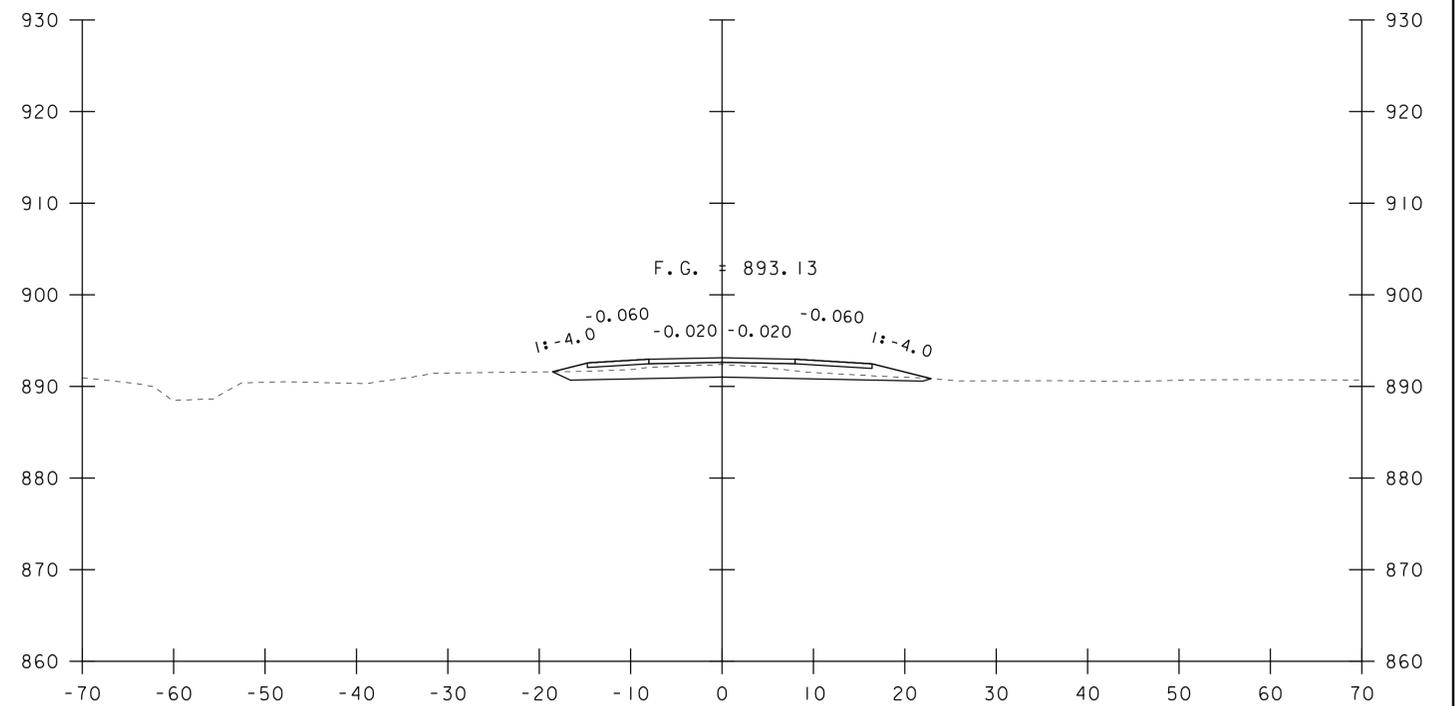
END PROJECT  
STA 12+25.00

12+25



CL BEARING ABUTMENT #2  
STA 11+73.80

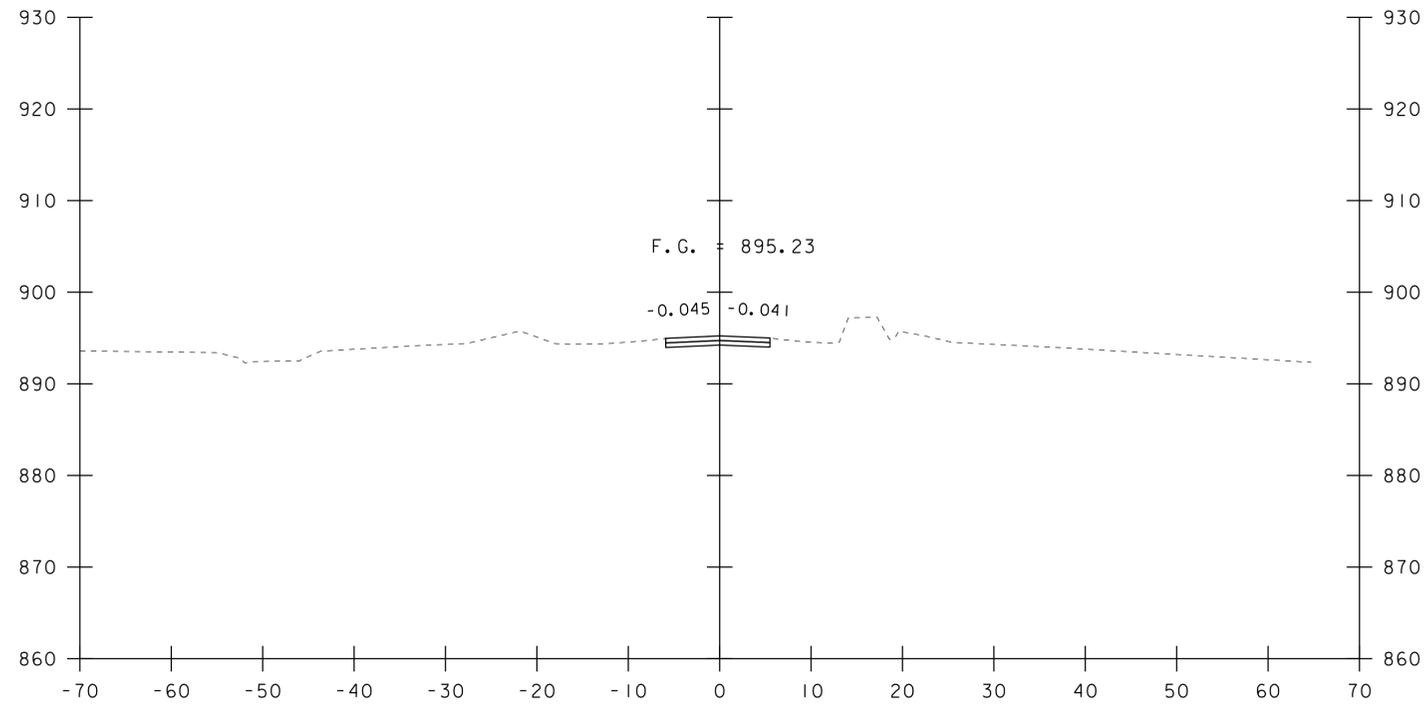
11+80



12+14

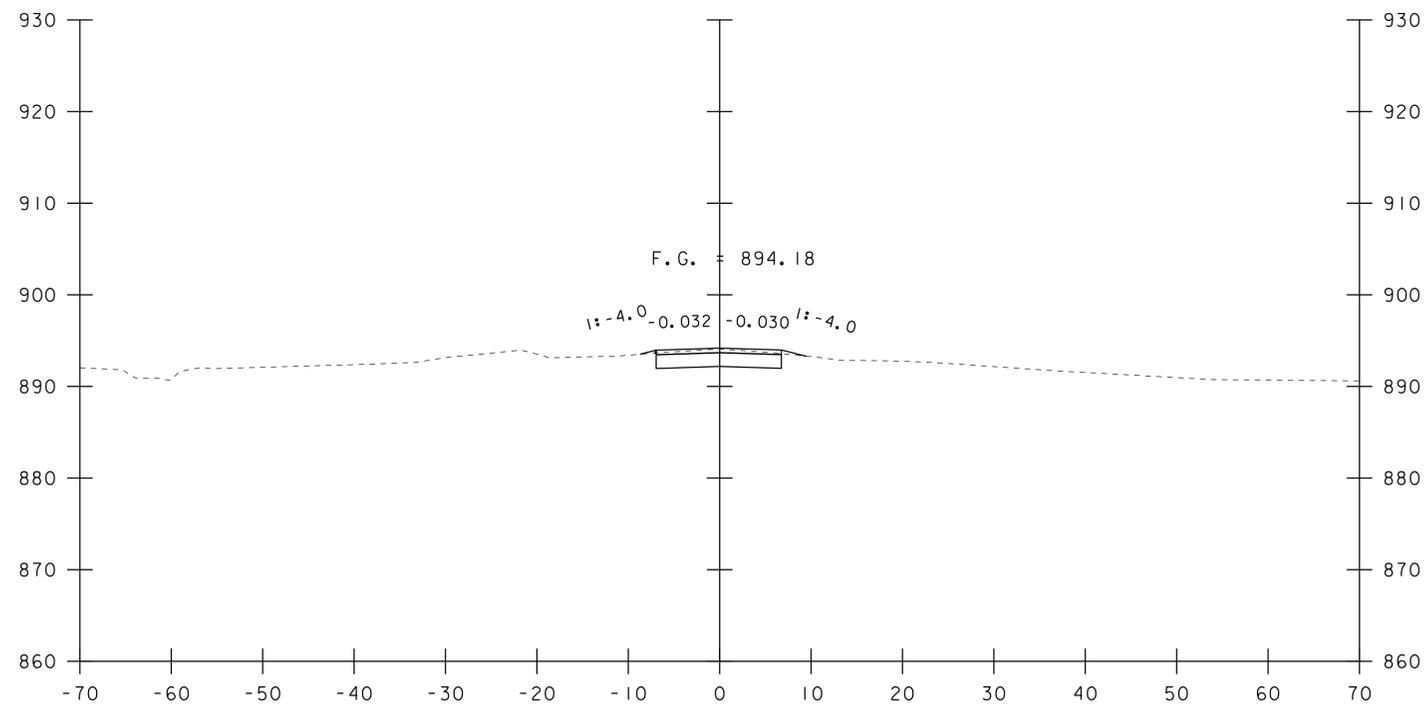
STA. 11+80 TO STA. 12+25

PROJECT NAME: SANDGATE	
PROJECT NUMBER: BO 1441(30)	
FILE NAME: s13j086xs.dgn	PLOT DATE: 21-MAY-2015
PROJECT LEADER: C.W. CARLSON	DRAWN BY: M. LONGSTREET
DESIGNED BY: D.PETERSON	CHECKED BY: D.PETERSON
TH9 CROSS SECTION SHEET 3	SHEET 12 OF 23



END APPROACH  
STA 12+75.00

12+75



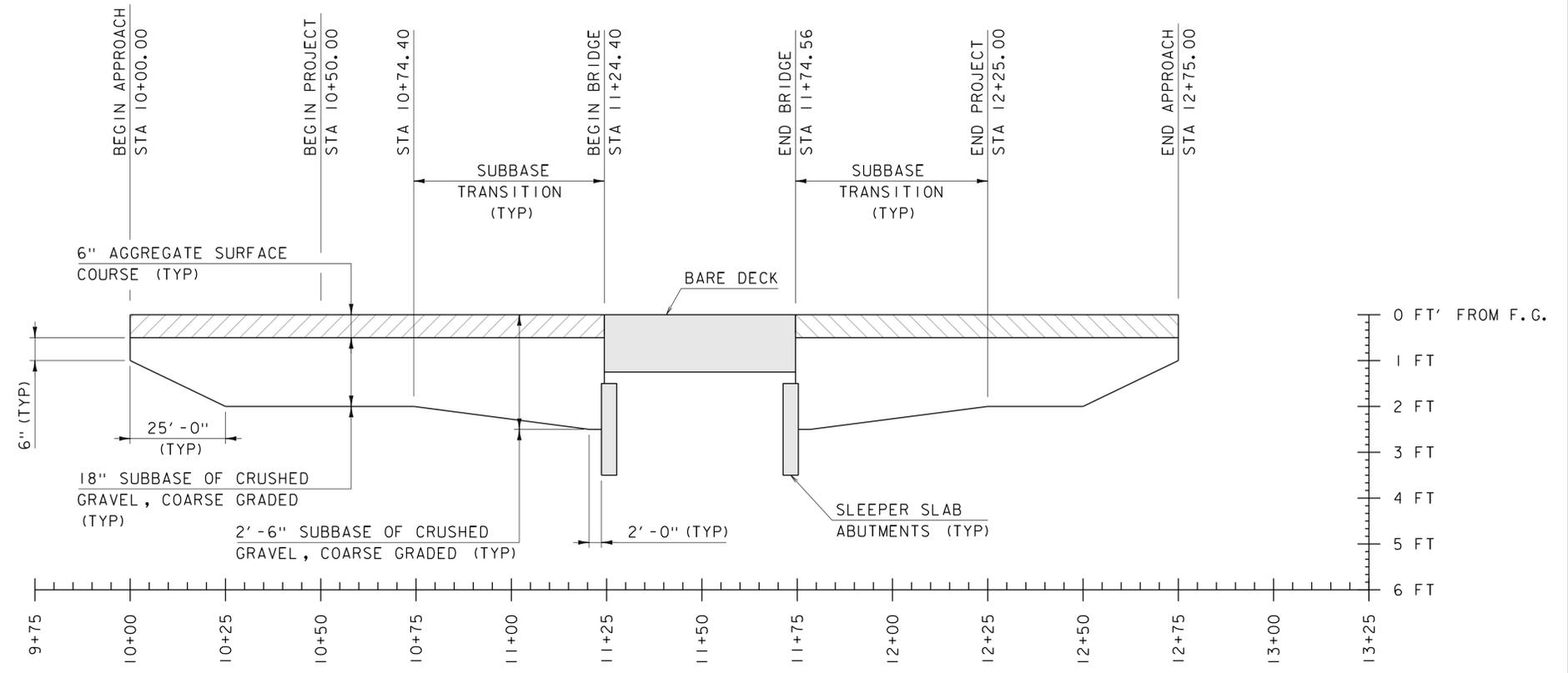
12+50

STA. 12+50 TO STA. 12+75

PROJECT NAME: SANDGATE  
PROJECT NUMBER: BO 1441(30)

FILE NAME: s13j086xs.dgn  
PROJECT LEADER: C.W. CARLSON  
DESIGNED BY: D.PETERSON  
TH9 CROSS SECTION SHEET 4

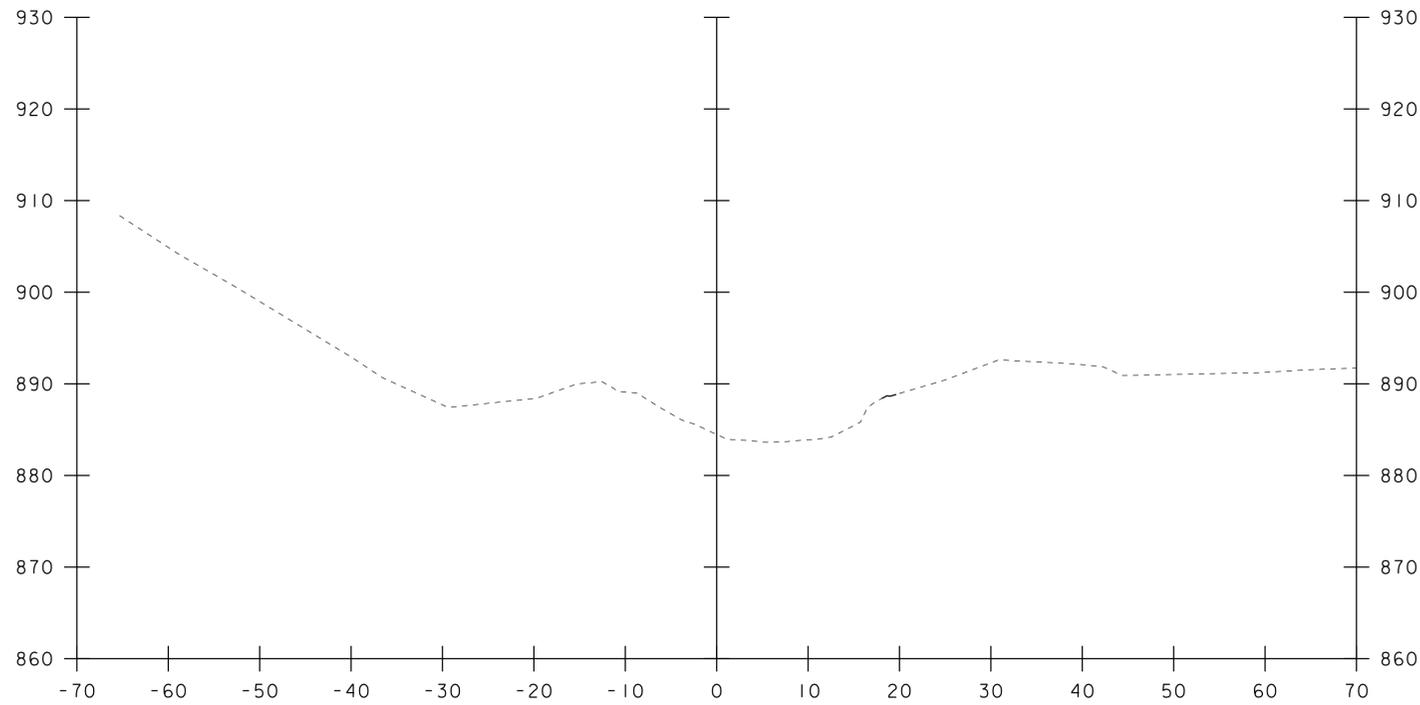
PLOT DATE: 21-MAY-2015  
DRAWN BY: M. LONGSTREET  
CHECKED BY: D.PETERSON  
SHEET 13 OF 23



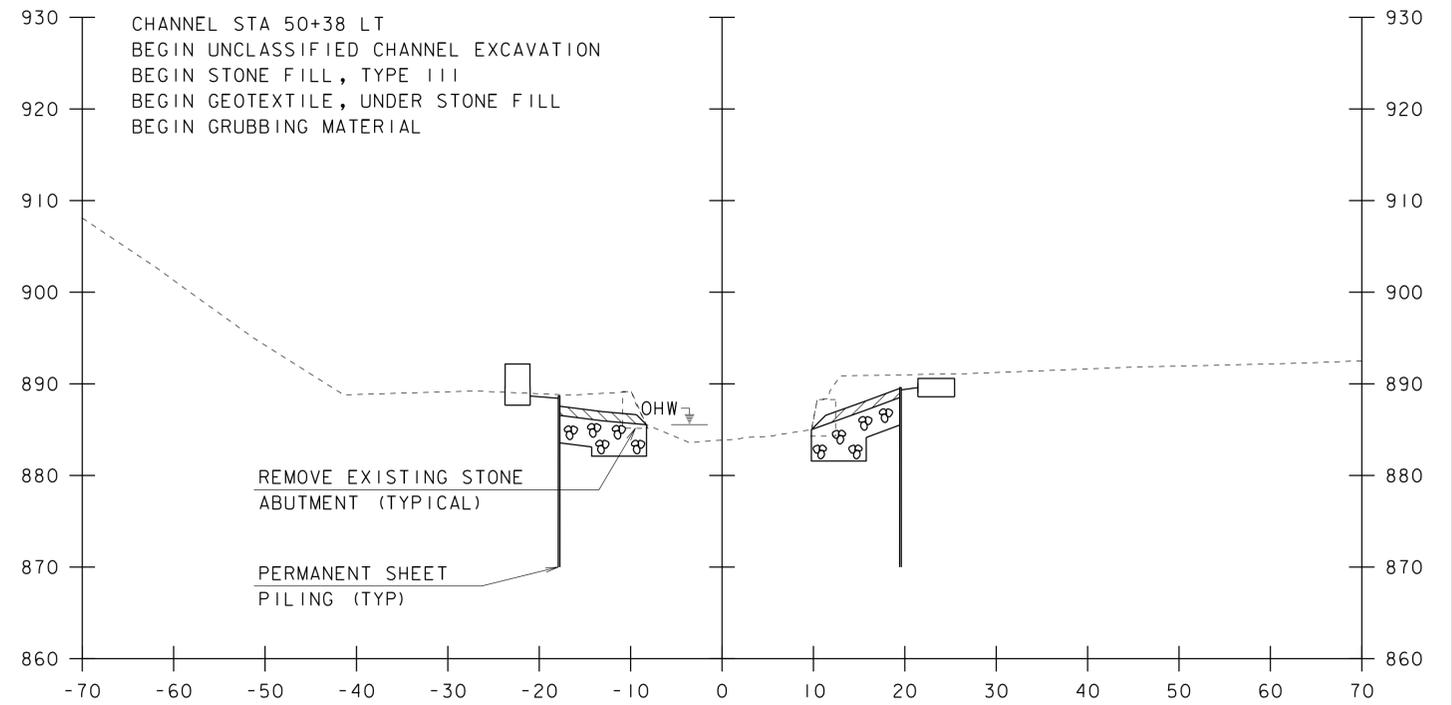
**SUBBASE TRANSITION DETAIL**

SCALE: HORIZONTAL 1" = 20'-0"  
 VERTICAL 12 (TIMES EXAGGERATED)

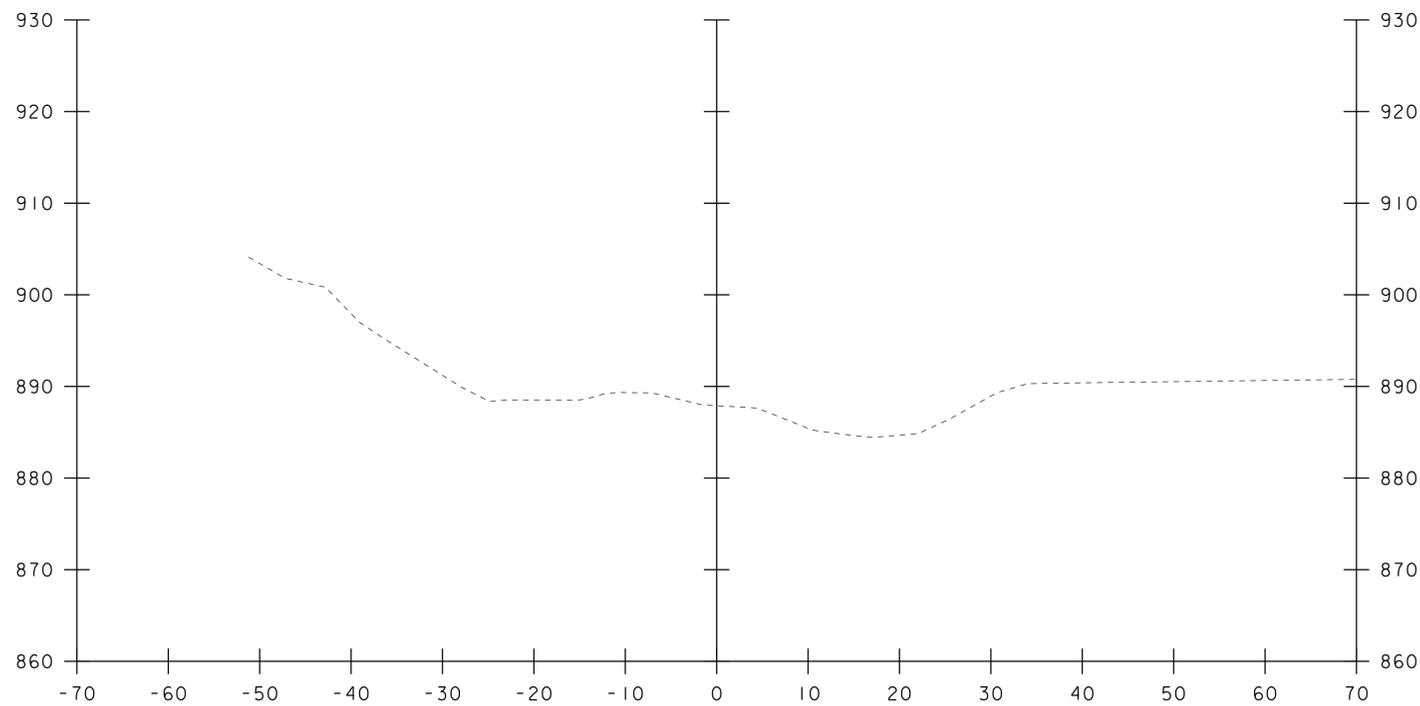
PROJECT NAME: SANDGATE	
PROJECT NUMBER: BO 1441(30)	
FILE NAME: s13j086pro.dgn	PLOT DATE: 21-MAY-2015
PROJECT LEADER: C.W. CARLSON	DRAWN BY: M. LONGSTREET
DESIGNED BY: D.PETERSON	CHECKED BY: J. LACROIX
MATERIAL TRANSITION DETAIL	SHEET 14 OF 23



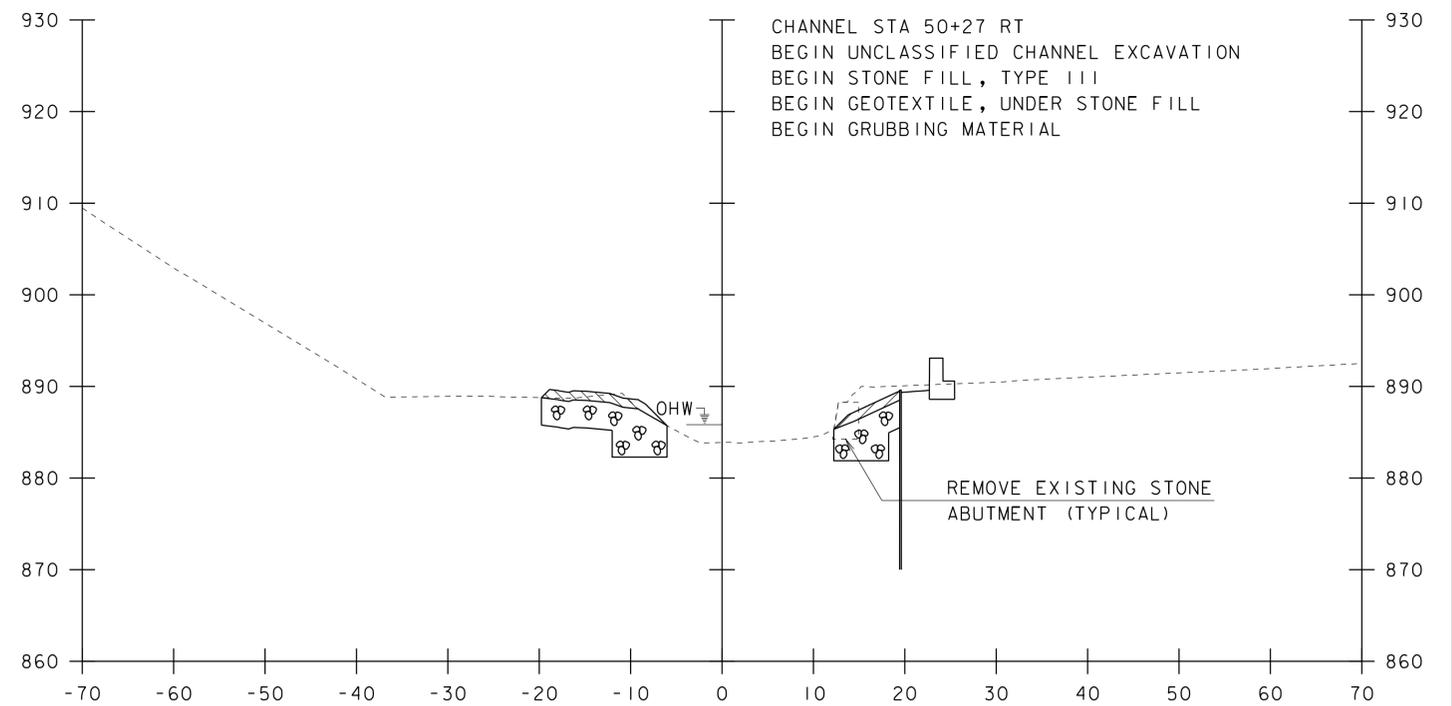
50+25



50+42



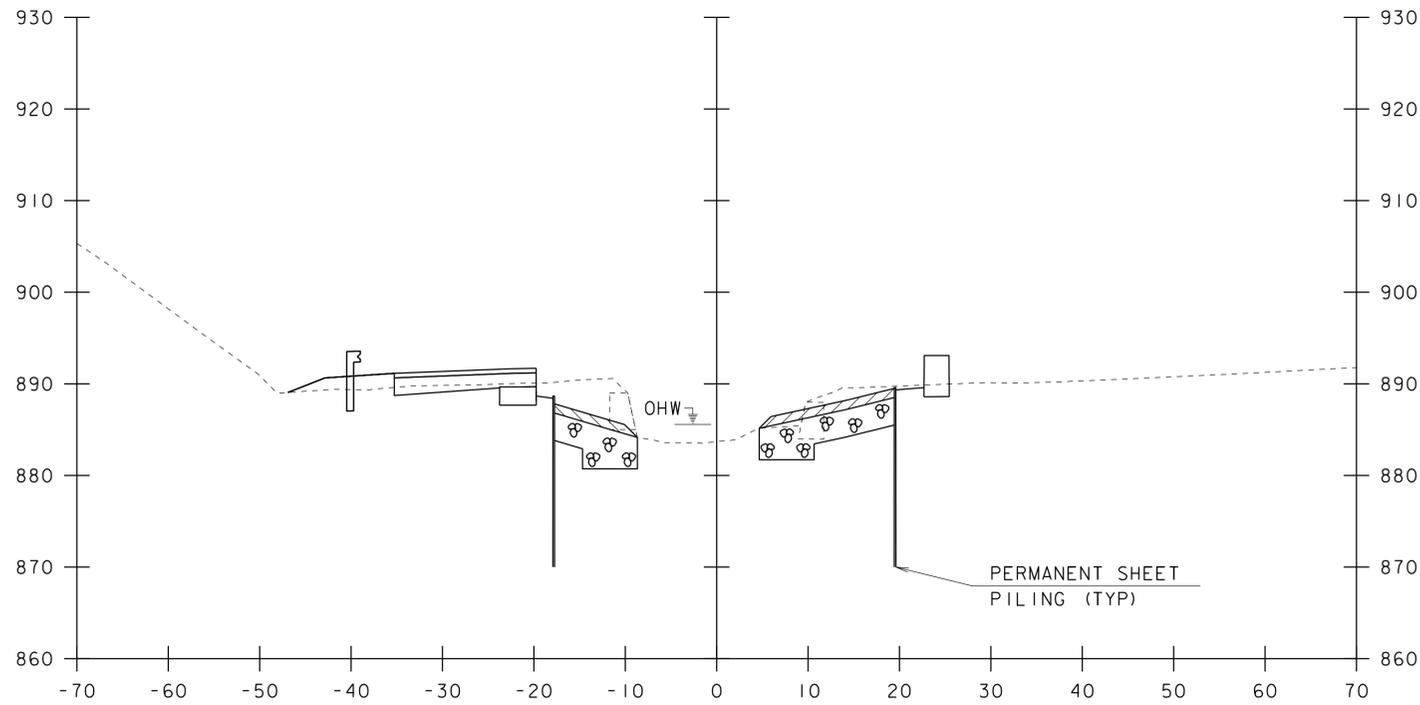
50+00



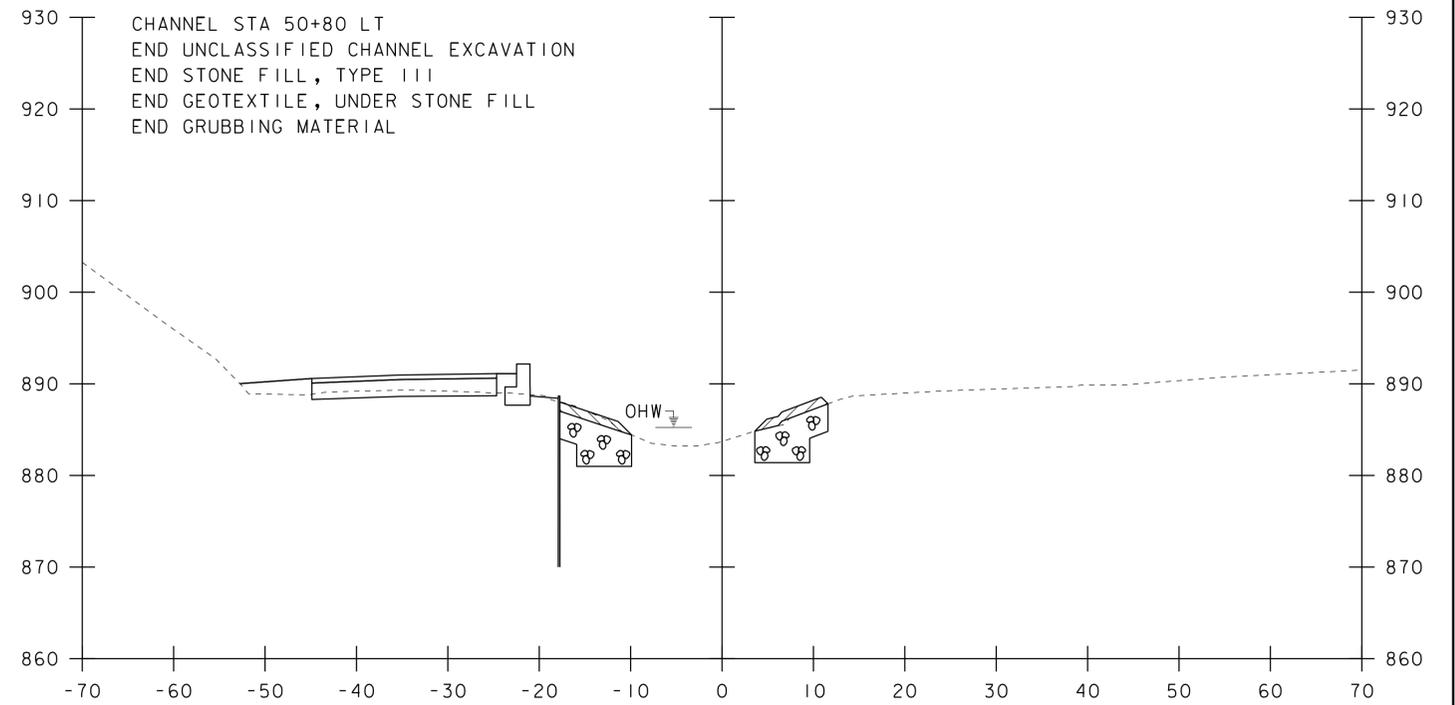
50+34

STA. 50+00 TO STA. 50+42

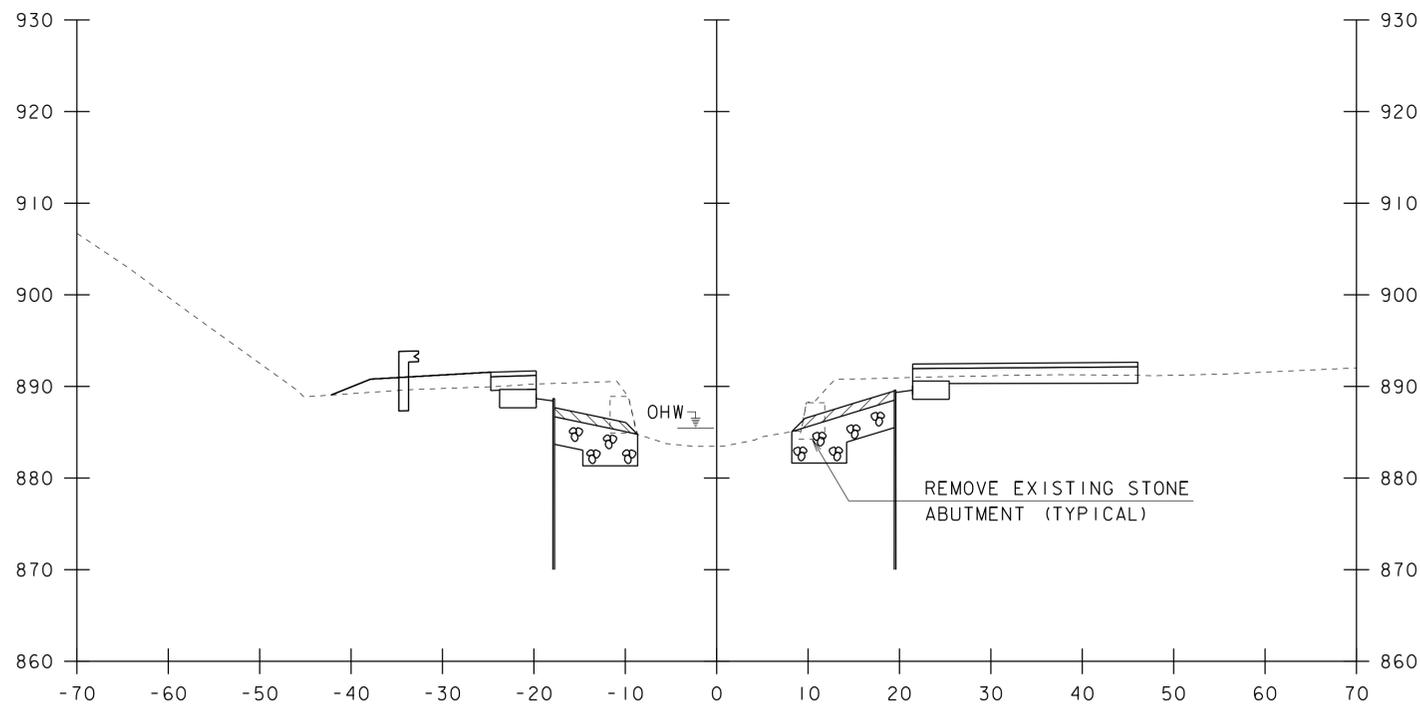
PROJECT NAME: SANDGATE	
PROJECT NUMBER: BO 1441(30)	
FILE NAME: s13j086xs.dgn	PLOT DATE: 21-MAY-2015
PROJECT LEADER: C.W. CARLSON	DRAWN BY: M. LONGSTREET
DESIGNED BY: D.PETERSON	CHECKED BY: D.PETERSON
CHANNEL CROSS SECTION SHEET 1	SHEET 15 OF 23



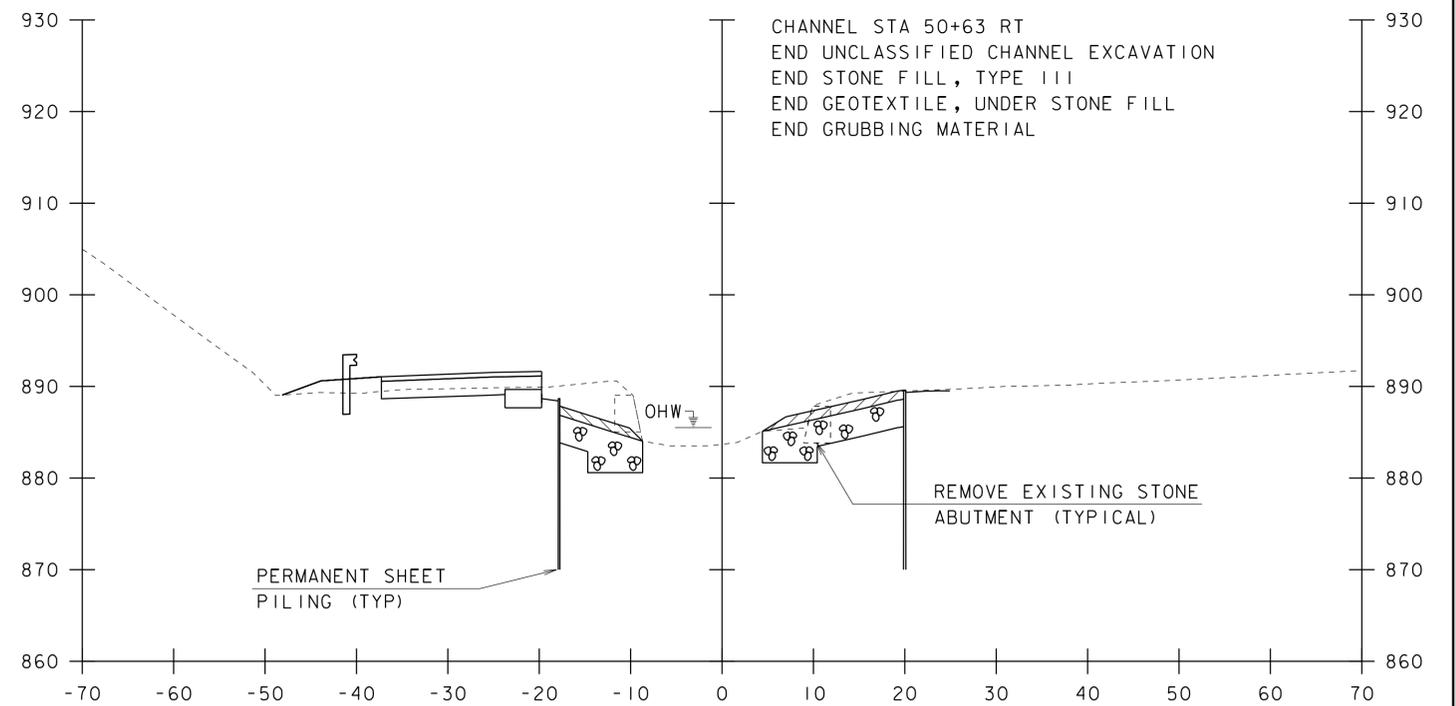
50+58



50+70



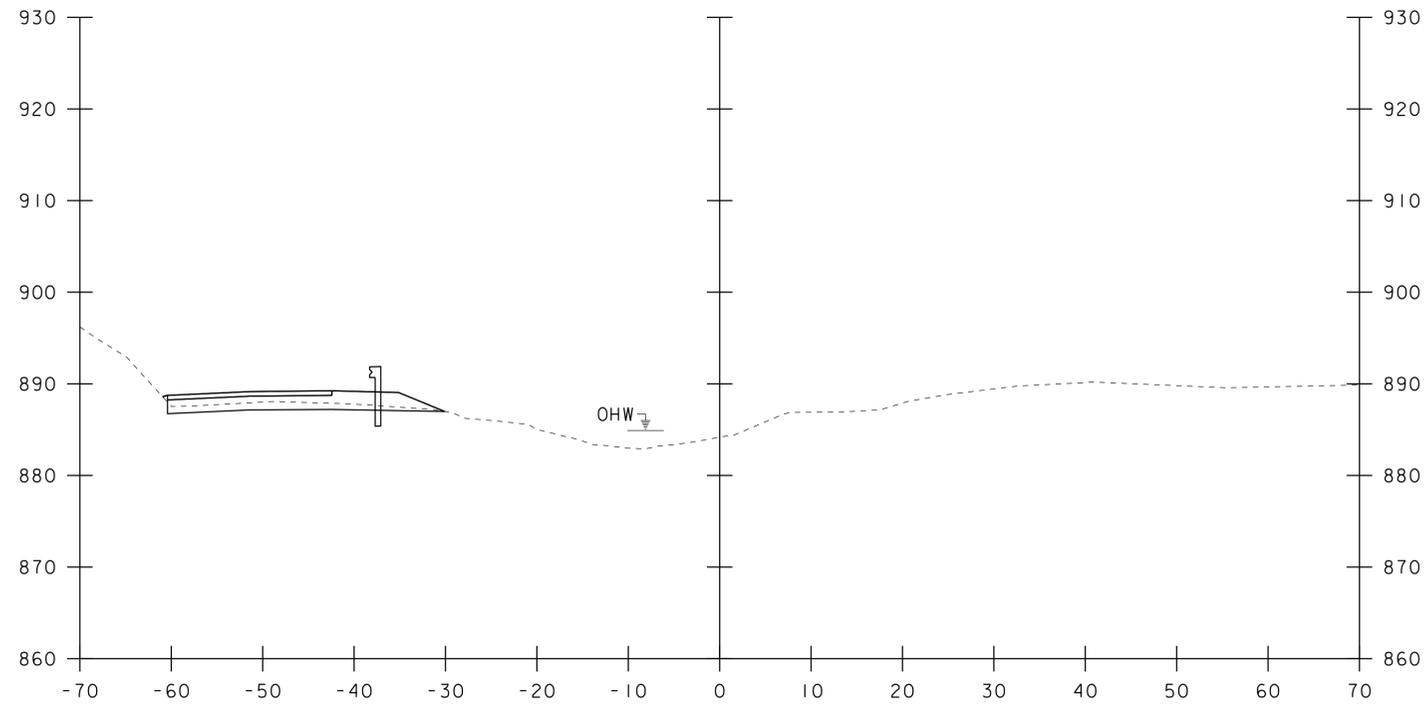
50+50



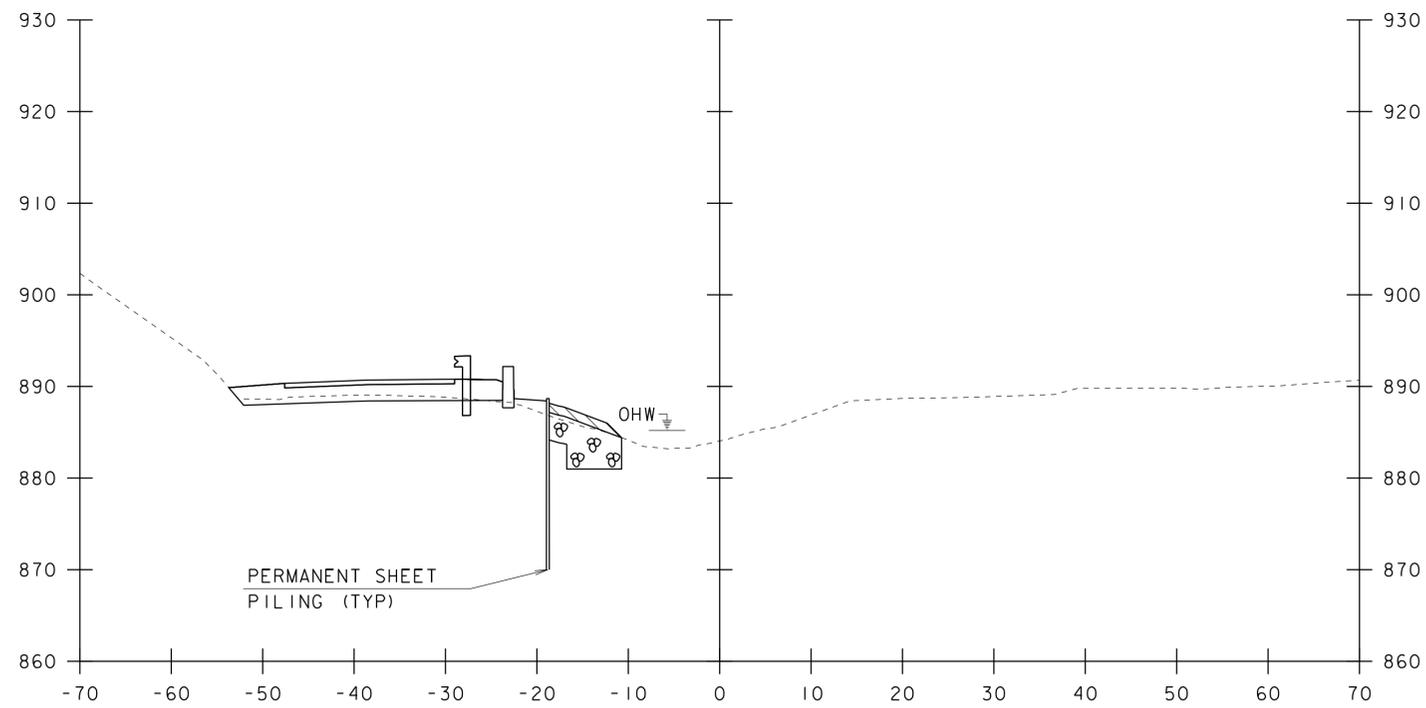
50+60

STA. 50+50 TO STA. 50+70

PROJECT NAME: SANDGATE	
PROJECT NUMBER: BO 1441(30)	
FILE NAME: s13j086xs.dgn	PLOT DATE: 21-MAY-2015
PROJECT LEADER: C.W. CARLSON	DRAWN BY: M. LONGSTREET
DESIGNED BY: D.PETERSON	CHECKED BY: D.PETERSON
CHANNEL CROSS SECTION SHEET 2	SHEET 16 OF 23



51+00



50+75

STA. 50+75 TO STA. 51+00

PROJECT NAME: SANDGATE  
 PROJECT NUMBER: BO 1441(30)

FILE NAME: s13j086xs.dgn  
 PROJECT LEADER: C.W. CARLSON  
 DESIGNED BY: D.PETERSON  
 CHANNEL CROSS SECTION SHEET 3

PLOT DATE: 21-MAY-2015  
 DRAWN BY: M. LONGSTREET  
 CHECKED BY: D.PETERSON  
 SHEET 17 OF 23

# EPSC PLAN NARRATIVE

## 1.1 PROJECT DESCRIPTION

THIS PROJECT IS LOCATED ON LINCOLN LANE (TH 9), APPROXIMATELY 0.6 MILES FROM THE INTERSECTION OF TH 9 AND TH 2 OVER THE TERRY BROOK. IT INVOLVES THE REPLACEMENT OF THE EXISTING SUPERSTRUCTURE WITH MINIMAL APPROACH ROADWAY AND CHANNEL WORK. THE BRIDGE IS BEING REPLACED WITH A 47 FOOT PRECAST NON-VOIDED SLAB BRIDGE. ROAD WILL BE CLOSED TO TRAFFIC FOR 3 DAYS. THE TOTAL LENGTH OF PROJECT IS 175 FEET.

NOTE: AREA OF DISTURBANCE INCLUDES LIMITS OF EARTH DISTURBANCE WITHIN THE PROJECT AREA.

TOTAL AREA OF DISTURBANCE AS SHOWN ON THE ATTACHED EPSC PLAN IS APPROXIMATELY 0.17 ACRES.

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

## 1.2 SITE INVENTORY

### 1.2.1 TOPOGRAPHY

THE TOPOGRAPHY OF THE AREA IS A SADDLE THAT IS WOODED AREA AND SOME RESIDENTIAL AREAS. LINCOLN LANE (TH 9) IS WITHIN THE PROJECT SITE.

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

TERRY BROOK IS THE ONLY WATER SOURCE ON THE PROJECT SITE. THE BROOK IS CLASSIFIED AS SHALLOW. THE STREAM BED CONSISTS OF COBBLES, GRAVEL AND LEDGE.

### 1.2.3 VEGETATION

THE VEGETATION IN THE PROJECT AREA CONSISTS OF HARDWOOD TREES AND UNDERGROWTH. THE IMPACT TO VEGETATION WILL BE LIMITED TO THAT WHICH IS DIRECTLY AFFECTED BY REPLACEMENT OF THE BRIDGE. UPON PROJECT COMPLETION, THE CHANNEL WILL BE ARMORED WITH STONE FILL TYPE III AS SPECIFIED ON THE PLANS. DISTURBED VEGETATION WILL BE REESTABLISHED WITH STANDARD SEED AND MULCH PRACTICES.

### 1.2.4 SOILS

ALL SOIL DATA CAME FROM THE U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE FOR THE COUNTY OF BENNINGTON, VERMONT. SOILS ON THE PROJECT SITE ARE:  
POOTATUCK FINE SANDY LOAM, 0% TO 3% SLOPES, "K FACTOR" = 0.20  
COPAKE GRAVELLY FINE SANDY LOAM, 3% TO 8% SLOPES, "K FACTOR" = 0.32.

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 ARCHAEOLOGICAL AREAS: NO

PRIME AGRICULTURAL LAND: NO

THREATENED AND ENDANGERED SPECIES: NO

WATER RESOURCE: TERRY BROOK

WETLANDS: NO

## 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.

### 1.4.2 LIMIT DISTURBANCE AREA

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

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

### 1.4.3 SITE ENTRANCE/EXIT STABILIZATION

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

STABILIZED CONSTRUCTION ENTRANCES ARE NOT NEEDED FOR THIS GRAVEL 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.

SILT FENCE AND TURBIDITY CURTAIN SHALL BE INSTALLED AS PROPOSED ON THE EPSC PLAN.

### 1.4.5 DIVERT UPLAND RUNOFF

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

### 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.

### 1.4.7 CONSTRUCT PERMANENT CONTROLS

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

NO PERMANENT STORMWATER CONTROLS ANTICIPATED FOR THIS PROJECT.

### 1.4.8 STABILIZE EXPOSED SOILS DURING CONSTRUCTION

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

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

TEMPORARY EROSION CONTROL MATTING IS ANTICIPATED FOR THIS PROJECT.

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

### 1.4.9 WINTER STABILIZATION

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

### 1.4.10 STABILIZE SOIL AT FINAL GRADE

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

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

### 1.4.11 DE-WATERING ACTIVITIES

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

NO DEWATERING IS ANTICIPATED FOR THIS PROJECT.

### 1.4.12 INSPECT YOUR SITE

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

## 1.5 SEQUENCE AND STAGING

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

### 1.5.1 CONSTRUCTION SEQUENCE

### 1.5.2 OFF-SITE ACTIVITIES

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

PROJECT NAME: SANDGATE

PROJECT NUMBER: BO 1441 (30)

FILE NAME: s13j086border.dgn

PROJECT LEADER: C.W. CARLSON

DESIGNED BY: D. PETERSON

EPSC NARRATIVE

PLOT DATE: 21-MAY-2015

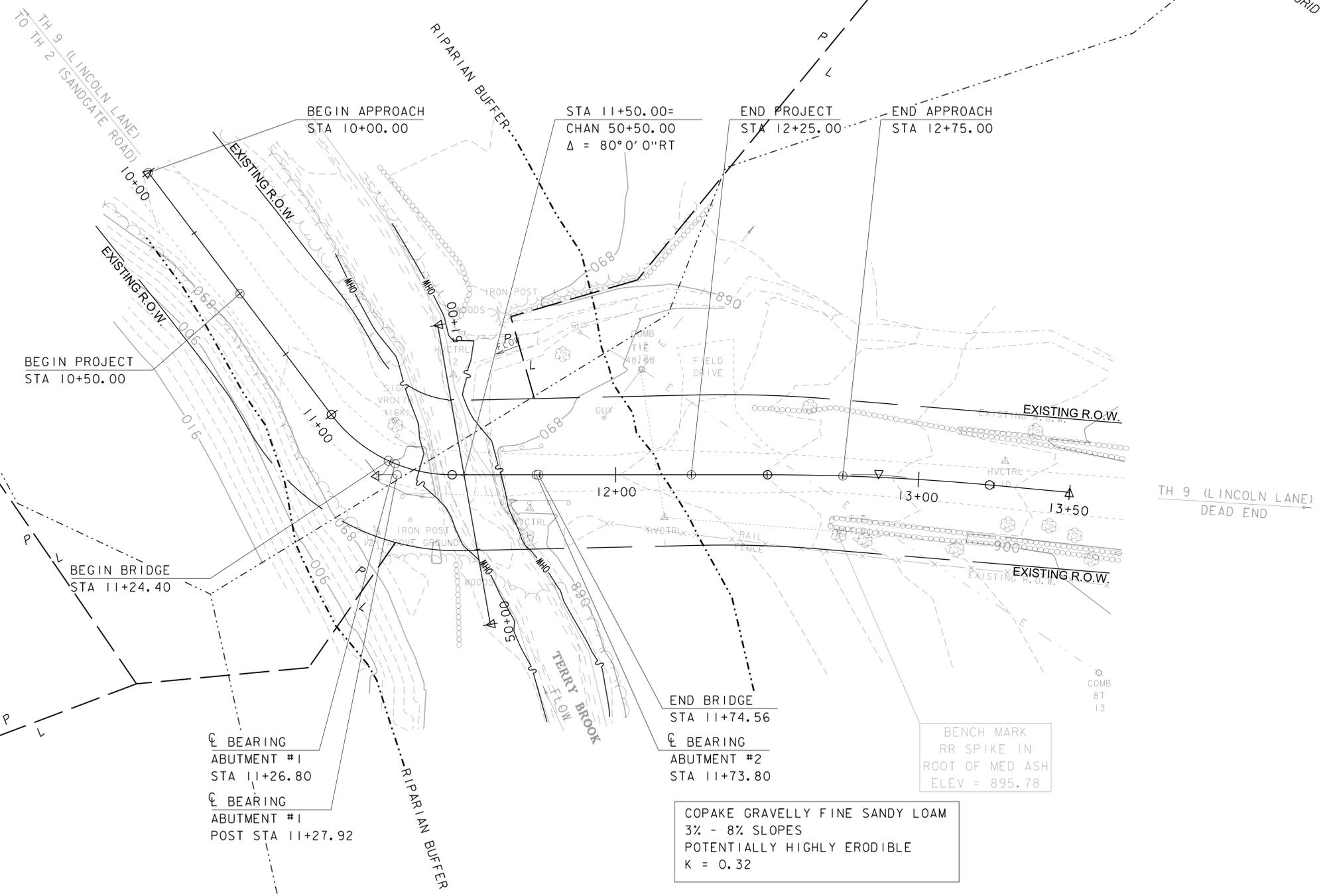
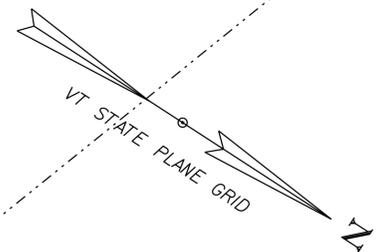
DRAWN BY: M. LONGSTREET

CHECKED BY: D. PETERSON

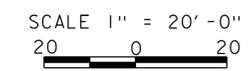
SHEET 18 OF 23

POOTATUCK FINE SANDY LOAM  
 0% - 3% SLOPES  
 NOT HIGHLY ERODIBLE  
 K = 0.20

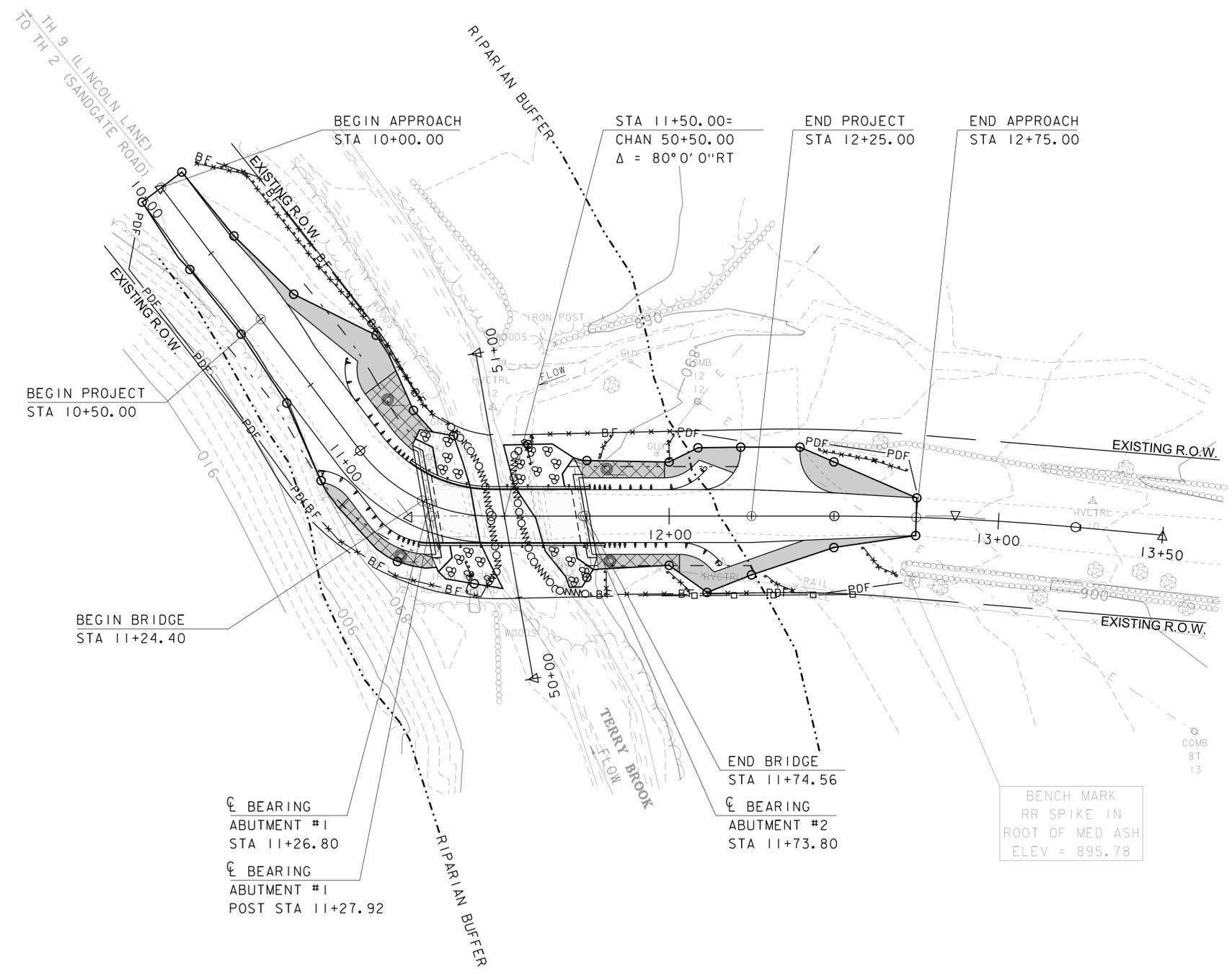
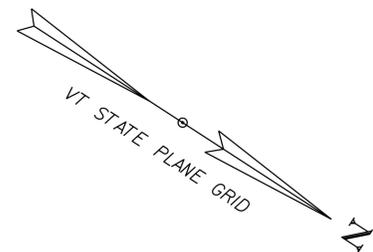
DUTCHESS CHANNERY LOAM  
 25% - 60% SLOPES  
 HIGHLY ERODIBLE  
 K = 0.32



EXISTING BRIDGE DATA  
 STEEL BEAM WITH TIMBER DECK  
 BUILT 1960  
 26' LONG, 15' WIDE



PROJECT NAME:	SANDGATE	PLOT DATE:	21-MAY-2015
PROJECT NUMBER:	BO 1441(30)	DRAWN BY:	M. LONGSTREET
FILE NAME:	s13j086border.dgn	CHECKED BY:	D. PETERSON
PROJECT LEADER:	C.W. CARLSON	SHEET	19 OF 23
DESIGNED BY:	D. PETERSON		
EPSC EXISTING LAYOUT			



⊕ BEARING  
 ABUTMENT #1  
 STA 11+26.80  
 ⊕ BEARING  
 ABUTMENT #1  
 POST STA 11+27.92

END BRIDGE  
 STA 11+74.56  
 ⊕ BEARING  
 ABUTMENT #2  
 STA 11+73.80

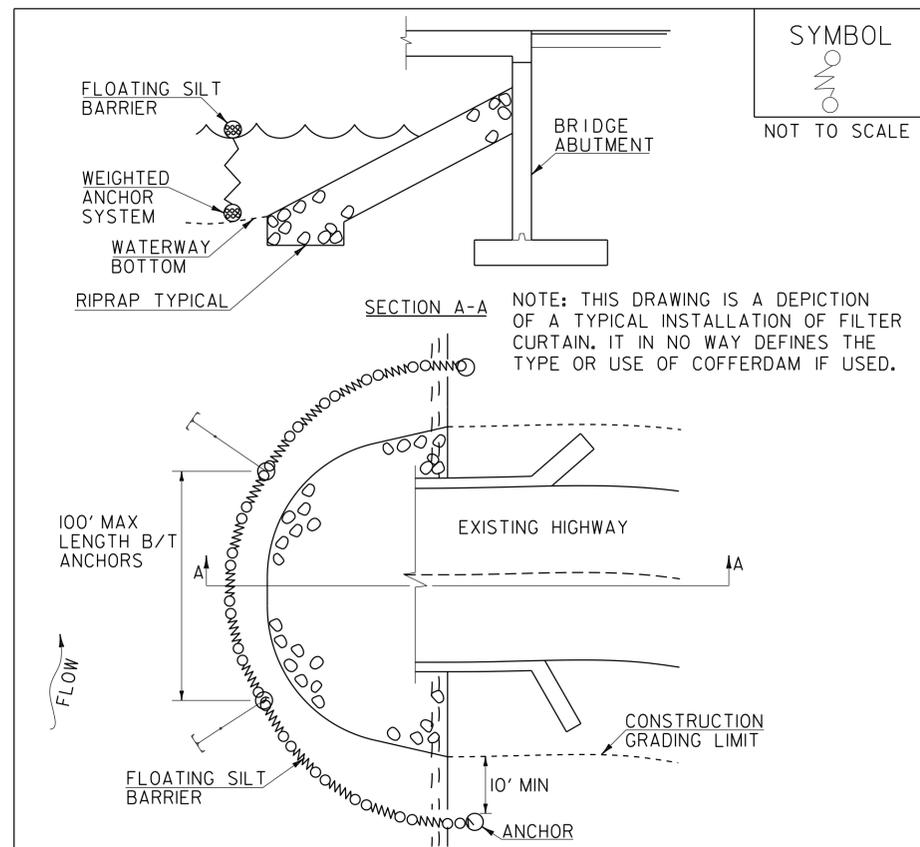
BENCH MARK  
 RR SPIKE IN  
 ROOT OF MED ASH  
 ELEV = 895.78

EXISTING BRIDGE DATA  
 STEEL BEAM WITH TIMBER DECK  
 BUILT 1960  
 26' LONG, 15' WIDE

SCALE 1" = 20'-0"  
 20 0 20

PROJECT NAME: SANDGATE	PLOT DATE: 21-MAY-2015
PROJECT NUMBER: BO 1441(30)	DRAWN BY: M. LONGSTREET
FILE NAME: s13j086border.dgn	CHECKED BY: D. PETERSON
PROJECT LEADER: C.W. CARLSON	SHEET 20 OF 23
DESIGNED BY: D. PETERSON	
EPSC CONSTRUCTION LAYOUT	





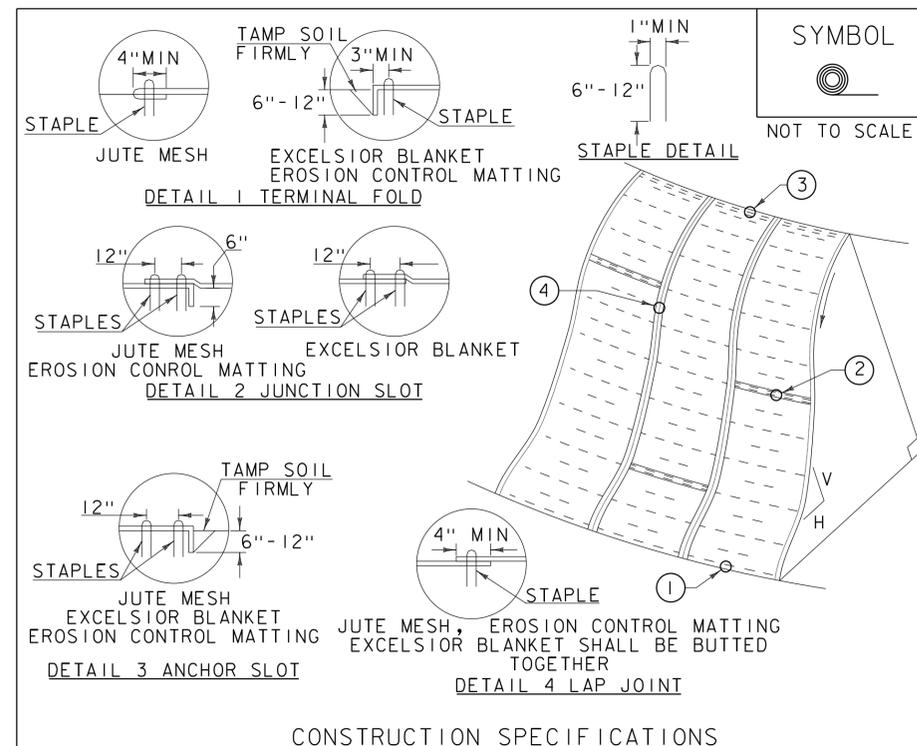
SYMBOL  
  
 NOT TO SCALE

- CONSTRUCTION SPECIFICATIONS**
1. FILTER CURTAIN SHALL NOT BE PLACED ACROSS A FLOWING WATERWAY, OR IN A WATERWAY WITH STREAM VELOCITIES GREATER THAN 1.5 FEET/SECOND.
  2. MAXIMUM 100' LENGTH BETWEEN ANCHORS.
  3. LAST SECTION SHALL TERMINATE A MINIMUM OF 10' BEYOND LIMIT OF DISTURBANCE.
  4. THE WEIGHTED ANCHOR SYSTEM SHALL BE A TYPE WHICH ALLOWS THE CURTAIN TO CONFORM TO THE BOTTOM OF THE WATERWAY.
  5. THE CURTAIN SHALL BE REMOVED BY SLOWLY PULLING TOWARD THE SHORE MINIMIZING THE ESCAPE OF SEDIMENTS INTO WATERWAY.

FILTER CURTAIN

THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 649 FOR GEOTEXTILE FOR FILTER CURTAIN (PAY ITEM 649.6I).

REVISIONS	
APRIL 1, 2008	WHF
JANUARY 13, 2009	WHF
SEPTEMBER 4, 2009	WHF



SYMBOL  
  
 NOT TO SCALE

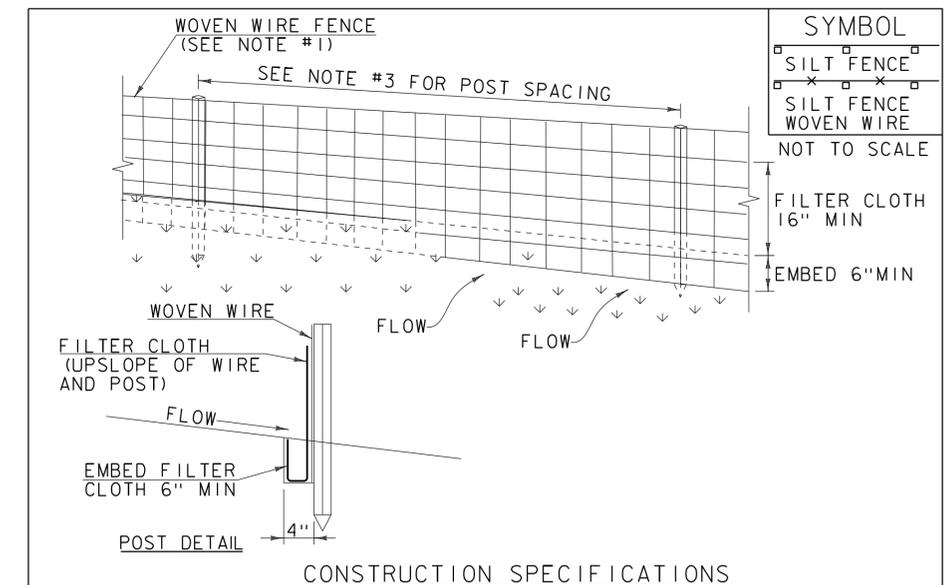
- CONSTRUCTION SPECIFICATIONS**
1. APPLY TO SLOPES GREATER THAN 3H:1V OR WHERE NECESSARY TO AID IN ESTABLISHING VEGETATION.
  2. APPLY FERTILIZER, LIME SEED PRIOR TO PLACING MATTING.
  3. STAPLES ARE TO BE PLACED ALTERNATELY, IN COLUMNS APPROXIMATELY 2' APART AND IN ROWS APPROXIMATELY 3' APART. APPROXIMATELY 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



SYMBOL  
  
 NOT TO SCALE

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

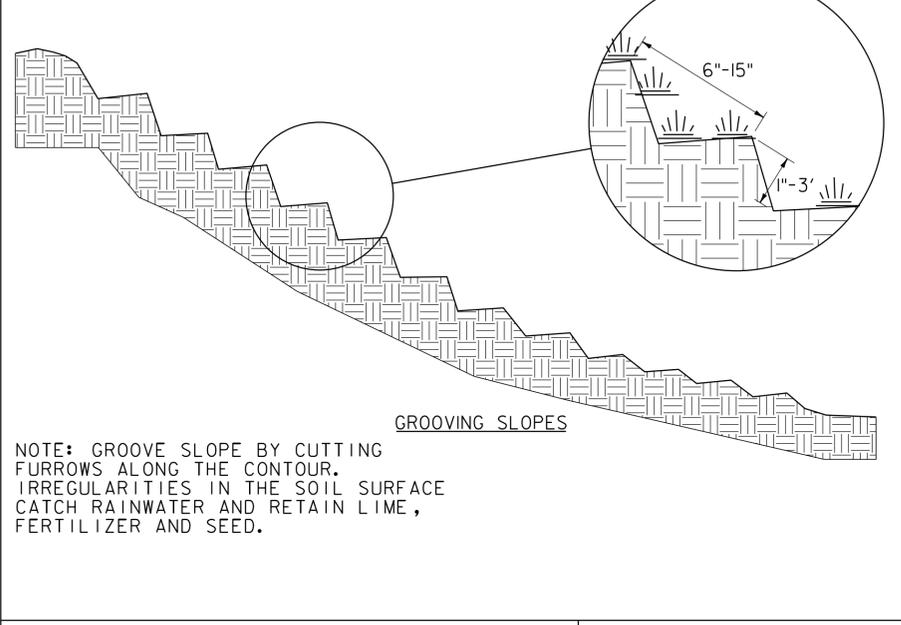
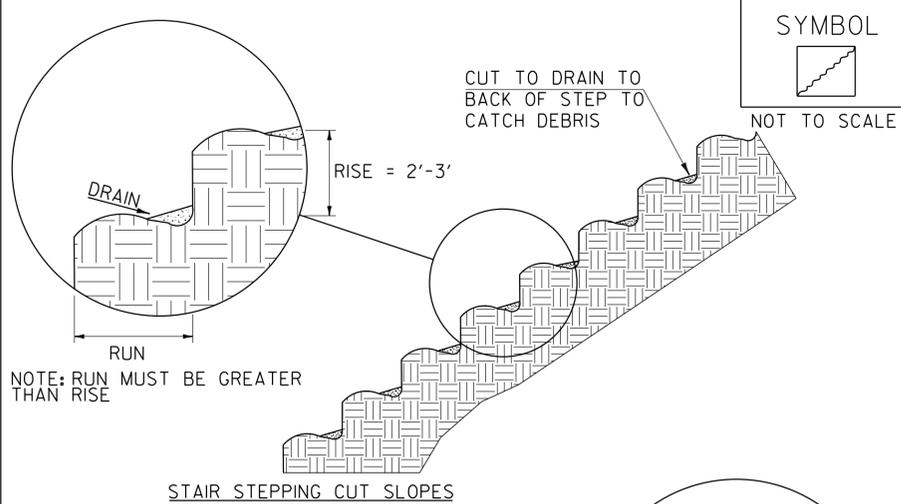
ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC  
 ORIGINALLY DEVELOPED BY USDA-NRCS  
 VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SILT FENCE

NOTES:  
 REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006-" FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.  
 THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 649 AND AS SHOWN IN THE PLANS FOR GEOTEXTILE FOR SILT FENCE (PAY ITEM 649.5I) OR GEOTEXTILE FOR SILT FENCE, WOVEN WIRE REINFORCED (PAY ITEM 649.5I5).

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

PROJECT NAME: SANDGATE	PLOT DATE: 21-MAY-2015
PROJECT NUMBER: BO 1441(30)	DRAWN BY: M. LONGSTREET
FILE NAME: s13j086border.dgn	CHECKED BY: D. PETERSON
PROJECT LEADER: C.W. CARLSON	SHEET 22 OF 23
DESIGNED BY: D. PETERSON	
EPSC DETAILS I	



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

SURFACE ROUGHENING

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

THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT

REVISIONS	
APRIL 1, 2008	WHF
JANUARY 13, 2009	WHF

VAOT LOW GROW / FINE FESCUE MIX						
WEIGHT	LBS/AC		NAME	LATIN NAME	GERM	PURITY
	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						
WEIGHT	LBS/AC		NAME	LATIN NAME	GERM	PURITY
	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

PROJECT NAME: SANDGATE  
PROJECT NUMBER: BO 1441(30)

FILE NAME: s13j086border.dgn  
PROJECT LEADER: C.W. CARLSON  
DESIGNED BY: D. PETERSON  
EPSC DETAILS 2

PLOT DATE: 21-MAY-2015  
DRAWN BY: M. LONGSTREET  
CHECKED BY: D. PETERSON  
SHEET 23 OF 23