

REVIEWER NOTES

1. THE BRIDGE WILL BE CLOSED FOR A FOUR WEEK PERIOD. THE TOWN OF STRAFFORD IS RESPONSIBLE FOR SIGNING A DETOUR ROUTE IF DESIRED.
2. RIGHT-OF-WAY ACQUISITION WILL BE NECESSARY.
3. AN OVERHEAD UTILITIES RELOCATION WILL BE NEEDED. THE PROPOSED RELOCATION IS IS SHOWN ON THE UTILITY LAYOUT SHEET.
4. A SIMPLIFIED PAVEMENT DESIGN HAS BEEN COMPLETED FOR THIS PROJECT.

STATE OF VERMONT AGENCY OF TRANSPORTATION



PROPOSED IMPROVEMENT BRIDGE PROJECT

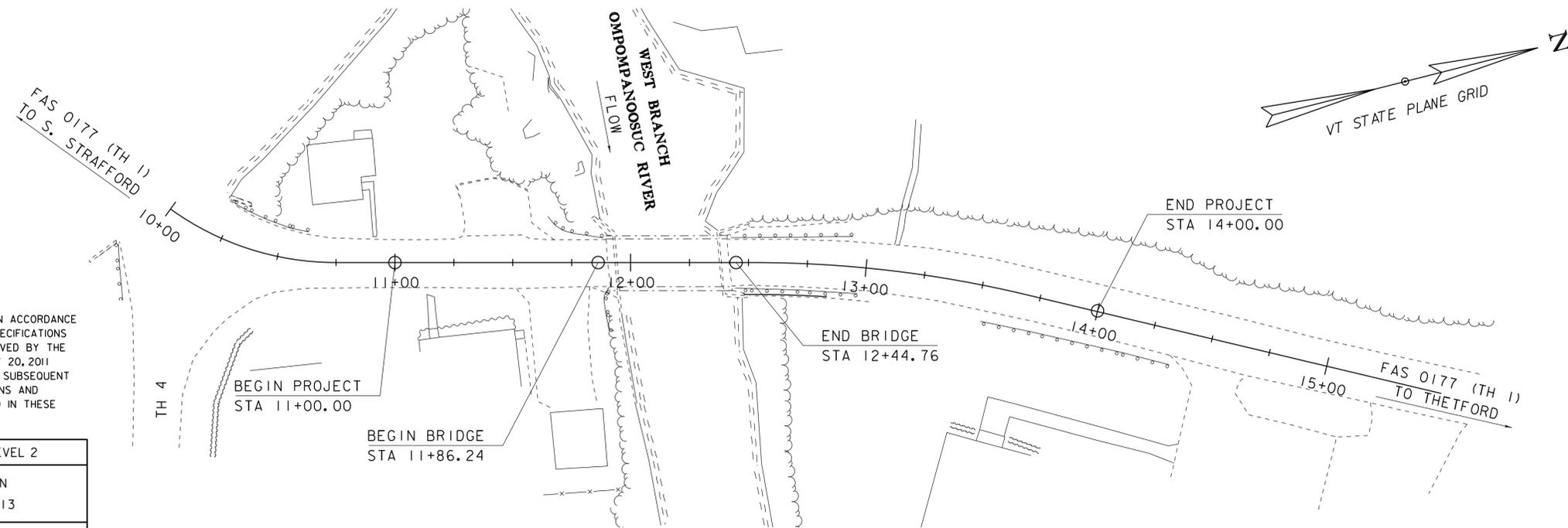
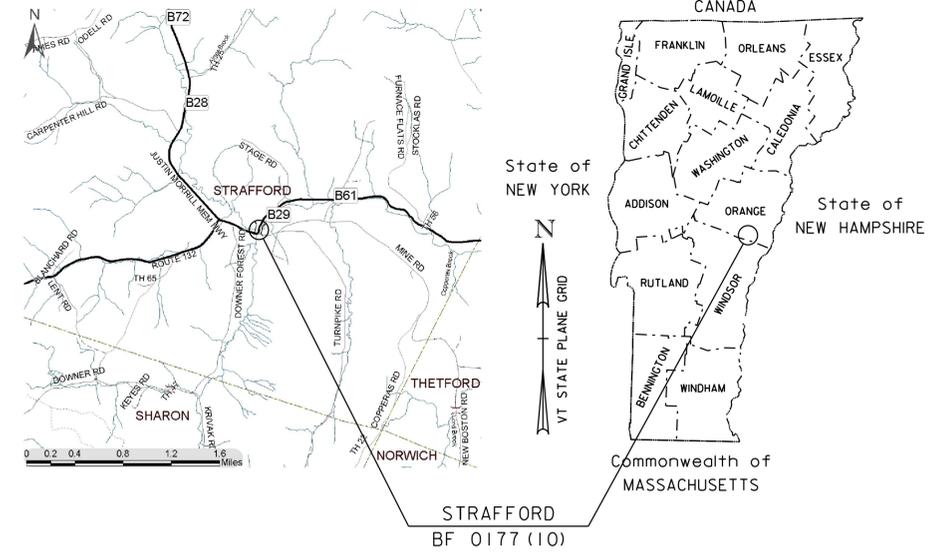
TOWN OF STRAFFORD
COUNTY OF ORANGE

ROUTE NO : FAS 0177 (TH 1), RURAL MAJOR COLLECTOR, CLASS 2 TOWN HIGHWAY BRIDGE NO : 29

PROJECT LOCATION: APPROXIMATELY 0.04 MILES NORTH OF THE INTERSECTION OF TOWN HIGHWAY 1 (FAS 0177) AND TOWN HIGHWAY 4.

PROJECT DESCRIPTION: REMOVAL OF THE EXISTING STRUCTURE AND REPLACEMENT WITH A NEW STRUCTURE.

LENGTH OF STRUCTURE: 58.52 FEET
LENGTH OF ROADWAY: 241.48 FEET
LENGTH OF PROJECT: 300.00 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 :	R. GILMAN
SURVEYED DATE :	04/18/2013
DATUM	
VERTICAL	NAVD88
HORIZONTAL	NAD 83 (2011)

SCALE 1" = 30' - 0"
30 0 30

PRELIMINARY PLANS 04-AUG-2015

DIRECTOR OF PROJECT DELIVERY	
APPROVED _____	DATE _____
PROJECT MANAGER : KRISTIN HIGGINS, P.E.	
PROJECT NAME :	STRAFFORD
PROJECT NUMBER :	BF 0177 (10)
SHEET 1 OF 31 SHEETS	

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FINAL HYDRAULIC REPORT

PLAN SHEETS

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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
SD-516.10	BRIDGE JOINT ASPHALTIC PLUG	5/7/2010
SD-601.00	STRUCTURAL STEEL DETAILS AND NOTES	5/7/2010
SD-602.00	STRUCTURAL STEEL PLATE GIRDER DETAILS AND NOTES	5/7/2010

HYDROLOGIC DATA

Date: April 2015

DRAINAGE AREA : 34.7 sq. mi.
 CHARACTER OF TERRAIN : Mostly forested, small ponds, rural
 STREAM CHARACTERISTICS : Sinuous and alluvial
 NATURE OF STREAMBED : Cobbles, gravel, and sand

PEAK FLOW DATA

Q 2.33 =	1125 cfs	Q 50 =	3900 cfs
Q 10 =	2350 cfs	Q 100 =	4700 cfs
Q 25 =	3150 cfs	Q 500 =	6500 cfs

DATE OF FLOOD OF RECORD : Unknown
 ESTIMATED DISCHARGE : Unknown
 WATER SURFACE ELEV. : Unknown
 NATURAL STREAM VELOCITY : @ Q50 = 8.4 fps
 ICE CONDITIONS : Moderate
 DEBRIS : Light to moderate
 DOES THE STREAM REACH MAXIMUM HIGHWATER ELEV. RAPIDLY? No
 IS ORDINARY RISE RAPID? No
 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 concrete t-beam
 YEAR BUILT : 1923
 CLEAR SPAN(NORMAL TO STREAM): 43'
 VERTICAL CLEARANCE ABOVE STREAMBED: ~10'
 WATERWAY OF FULL OPENING: 425 sq. ft.
 DISPOSITION OF STRUCTURE: Remove and replace
 TYPE OF MATERIAL UNDER SUBSTRUCTURE: See borings

WATER SURFACE ELEVATIONS AT:

Q2.33 =	879.8'	VELOCITY =	5.2 fps
Q10 =	882.3'	"	7.5 fps
Q25 =	883.3'	"	9.5 fps
Q50 =	885.9'	"	9.5 fps
Q100 =	886.5'	"	11.2 fps

LONG TERM STREAMBED CHANGES: None noted

IS THE ROADWAY OVERTOPPED BELOW Q100: Yes
 FREQUENCY: Below Q50
 RELIEF ELEVATION: 884.7'
 DISCHARGE OVER ROAD @Q100: 645 cfs

UPSTREAM STRUCTURE

TOWN: Stratford DISTANCE: 8600'
 HIGHWAY #: TH 2 STRUCTURE #: 28
 CLEAR SPAN: 26' CLEAR HEIGHT:
 YEAR BUILT: 1919 FULL WATERWAY:
 STRUCTURE TYPE: Concrete t-beam

DOWNSTREAM STRUCTURE

TOWN: Stratford DISTANCE: 4040'
 HIGHWAY #: TH 39 STRUCTURE #: 61
 CLEAR SPAN: 62' CLEAR HEIGHT:
 YEAR BUILT: 1919, Reconstructed in 1971 FULL WATERWAY:
 STRUCTURE TYPE: Rolled beam

LRFR LOAD RATING FACTORS

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

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 : 228000
2016	1400	180	55	3.7	65	40 year ESAL for flexible pavement from 2016 to 2056 : 542000
2036	1500	190	55	6	110	Design Speed : 25 mph

PROPOSED STRUCTURE

STRUCTURE TYPE: Single span steel beam
 CLEAR SPAN(NORMAL TO STREAM): 53'
 VERTICAL CLEARANCE ABOVE STREAMBED: ~11.5'
 WATERWAY OF FULL OPENING: 565 sq. ft.

WATER SURFACE ELEVATIONS AT:

Q2.33 =	879.4'	VELOCITY=	5.2 fps
Q10 =	882.0'	"	7.0 fps
Q25 =	883.1'	"	8.3 fps
Q50 =	884.0'	"	9.6 fps
Q100 =	884.8'	"	11.4 fps

IS THE ROADWAY OVERTOPPED BELOW Q100: No
 FREQUENCY: N/A
 RELIEF ELEVATION: 884.7'
 DISCHARGE OVER ROAD @Q100: N/A

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 885.0'
 VERTICAL CLEARANCE: @ Q50 = 1.0'

SCOUR: 4' of contraction scour up to Q200
 Piles should be freestanding up to 6' below streambed elevation.
 REQUIRED CHANNEL PROTECTION: Stone Fill Type III

PERMIT INFORMATION

AVERAGE DAILY FLOW: DEPTH OR ELEVATION:
 ORDINARY LOW WATER:
 ORDINARY HIGH WATER:

TEMPORARY BRIDGE REQUIREMENTS

STRUCTURE TYPE: None required
 CLEAR SPAN (NORMAL TO STREAM):
 VERTICAL CLEARANCE ABOVE STREAMBED:
 WATERWAY AREA OF FULL OPENING:

ADDITIONAL INFORMATION

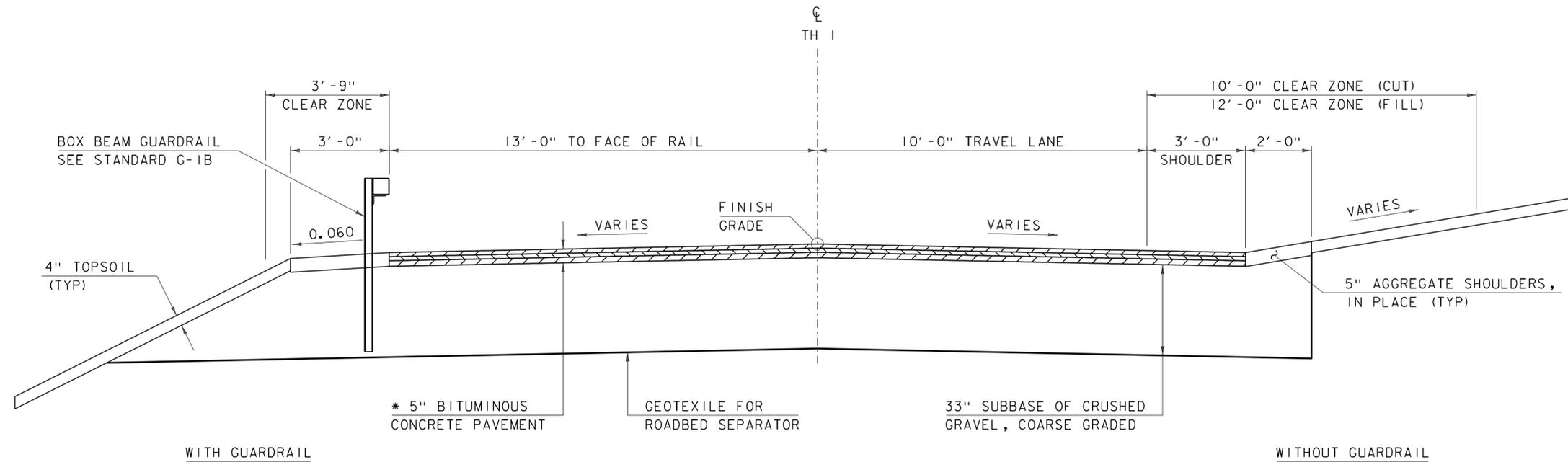
TRAFFIC MAINTENANCE NOTES

1. MAINTAIN TRAFFIC ON AN OFF SITE DETOUR.
2. TRAFFIC SIGNALS ARE NOT NECESSARY.
3. SIDEWALKS ARE NOT NECESSARY

DESIGN VALUES

1. DESIGN LIVE LOAD	HL-93
2. FUTURE PAVEMENT	d _p : 0.0 INCH
3. DESIGN SPAN	L: 57.00 FT
4. MIN. MID-SPAN POS. CAMBER @ RELEASE (PRESTRESSED UNITS)	Δ: ---
5. PRESTRESSING STRAND	f _y : ---
6. PRESTRESSED CONCRETE STRENGTH	f' _c : ---
7. PRESTRESSED CONCRETE RELEASE STRENGTH	f' _{cr} : ---
8. CONCRETE, HIGH PERFORMANCE CLASS AA	f' _c : 4.0 KSI
9. CONCRETE, HIGH PERFORMANCE CLASS A	f' _c : 4.0 KSI
10. CONCRETE, HIGH PERFORMANCE CLASS B	f' _c : 3.5 KSI
11. CONCRETE, CLASS C	f' _c : 3.0 KSI
12. REINFORCING STEEL	f _y : 60 KSI
13. STRUCTURAL STEEL AASHTO M270 (WEATHERING)	f _y : 50 KSI
14. NOMINAL BEARING RESISTANCE OF SOIL	q _n : 4.0 KSF
15. SOIL BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	φ: ---
16. NOMINAL BEARING RESISTANCE OF ROCK	q _n : 10.0 KSF
17. ROCK BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	φ: ---
18. PILE RESISTANCE FACTOR	φ: 0.65
19. LATERAL PILE DEFLECTION	Δ: ---
20. BASIC WIND SPEED	V _{3s} : ---
21. MINIMUM GROUND SNOW LOAD	p _g : ---
22. SEISMIC DATA	PGA: 0.65
	S _s : ---
	S ₁ : ---
23.	---
24.	---
25.	---
26.	---

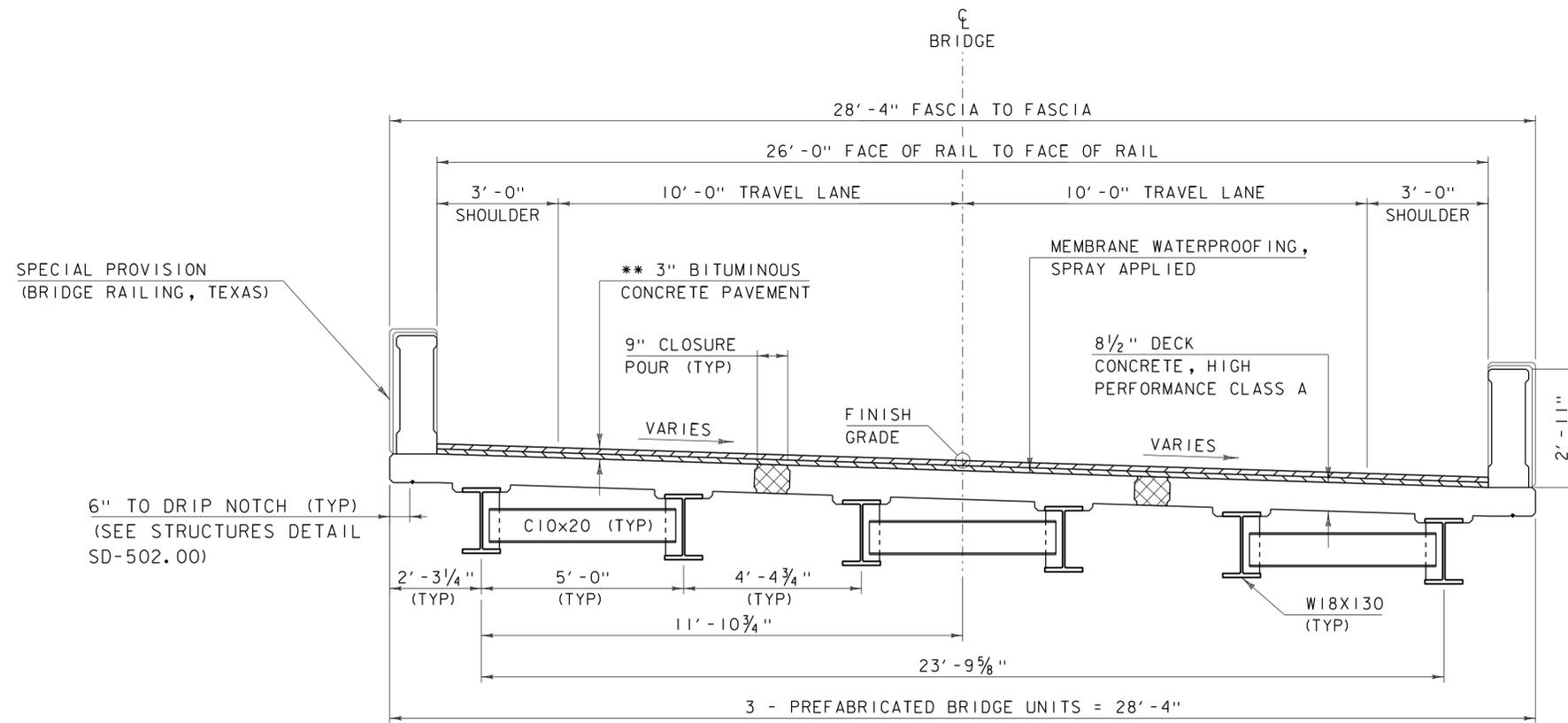
PROJECT NAME: STRAFFORD
 PROJECT NUMBER: BF 0177(10)
 FILE NAME: s13j088exoe1.dgn PLOT DATE: 8/3/2015
 PROJECT LEADER: K. HIGGINS DRAWN BY: R. KLINEFELTER
 DESIGNED BY: R. KLINEFELTER CHECKED BY: J. SALVATORI
 PRELIMINARY INFORMATION SHEET 1 SHEET 2 OF 31



- * 1 1/2" SUPERPAVE BITUMINOUS CONCRETE PAVEMENT TYPE IVS, OVER
- 1 1/2" SUPERPAVE BITUMINOUS CONCRETE PAVEMENT TYPE IVS, OVER
- 2" SUPERPAVE BITUMINOUS CONCRETE PAVEMENT TYPE IIIS

ROADWAY TYPICAL SECTION

SCALE 1/2" = 1'-0"



- ** 1 1/2" SUPERPAVE BITUMINOUS CONCRETE PAVEMENT TYPE IVS, OVER
- 1 1/2" SUPERPAVE BITUMINOUS CONCRETE PAVEMENT TYPE IVS

BRIDGE TYPICAL SECTION

SCALE 1/2" = 1'-0"

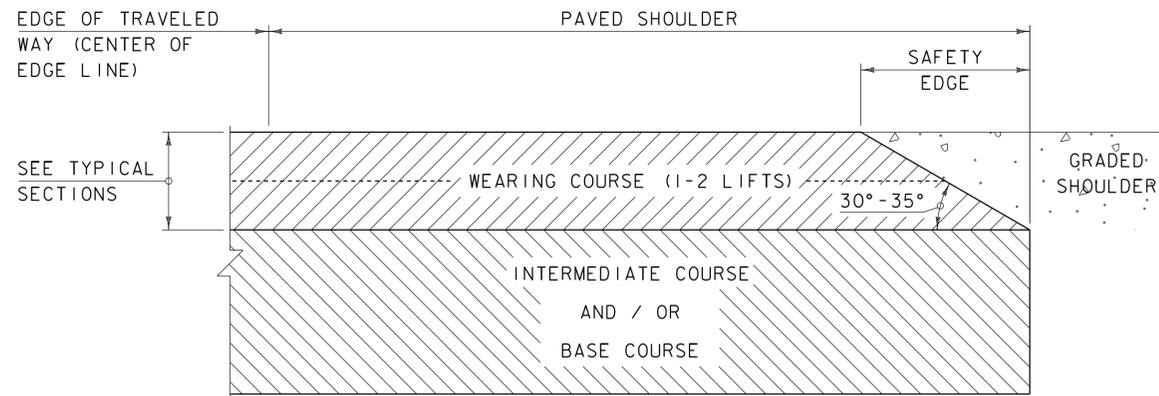
MATERIAL TOLERANCES
(IF USED ON PROJECT)

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

PROJECT NAME: STRAFFORD
PROJECT NUMBER: BF 0177(10)

FILE NAME: s13j088typical.dgn
PROJECT LEADER: K. HIGGINS
DESIGNED BY: R. KLINEFELTER
TYPICAL SECTIONS I

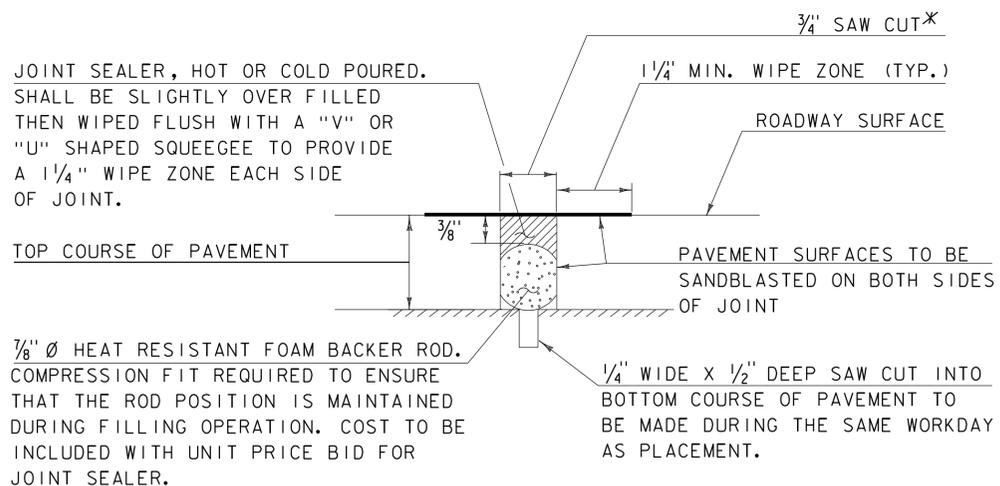
PLOT DATE: 04-AUG-2015
DRAWN BY: R. KLINEFELTER
CHECKED BY: J. SALVATORI
SHEET 3 OF 31



SAFETY EDGE DETAIL

NOT TO SCALE

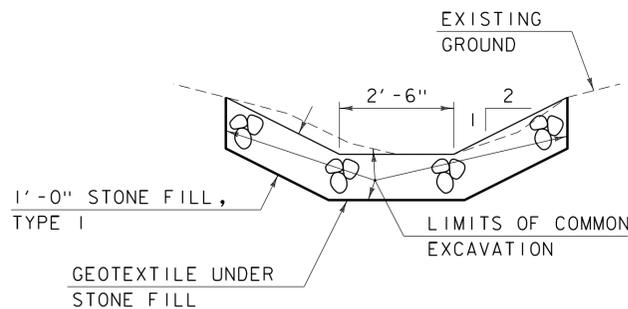
1. LEVELING COURSE MAY INCLUDE THE "SAFETY EDGE" AT THE CONTRACTOR'S CHOICE.
2. THE EDGE OF PAVEMENT SHALL BE FORMED IN SUCH A WAY THAT THE BITUMINOUS CONCRETE PAVEMENT IS EXTRUDED OR COMPRESSED TO FORM THE 30 TO 35 DEGREE ANGLE. DEVICES THAT SIMPLY STRIKE-OFF THE MIX WITHOUT PROVIDING ANY COMPACTIVE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



SAWED PAVEMENT JOINT DETAIL

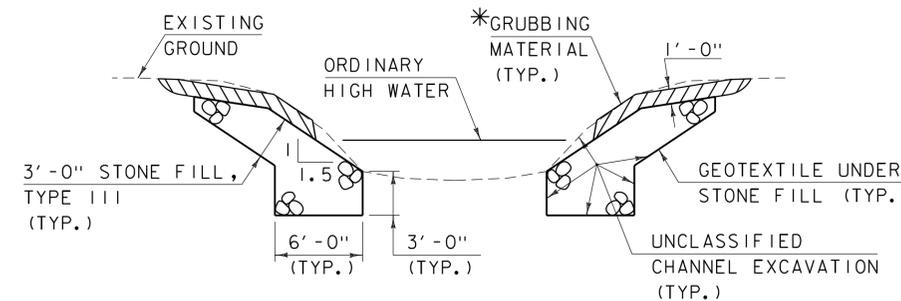
NOT TO SCALE

*JOINT IS TO BE LOCATED ACCURATELY BY STRING LINING, OR OTHER MEANS, PRIOR TO PAVING, SO THAT THE SAW CUTS WILL BE MADE DIRECTLY OVER THE END OF CONCRETE DECK. JOINT SHALL BE CUT DRY IN A SINGLE PASS AND BE SEALED WITHIN 24 HOURS OR PRIOR TO EXPOSURE TO TRAFFIC. JOINT SHALL BE CLEANED PRIOR TO APPLYING THE JOINT SEALER.



TYPICAL DITCH SECTION

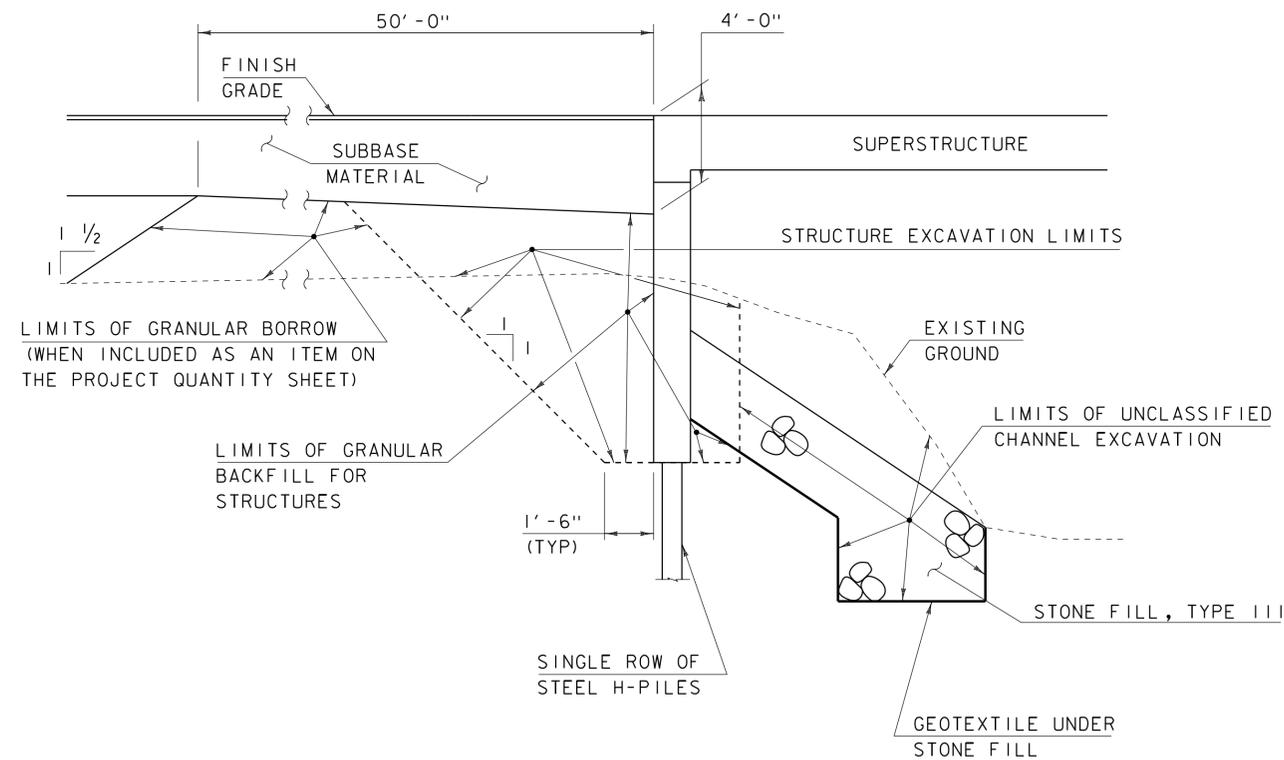
NOT TO SCALE



TYPICAL CHANNEL SECTION

NOT TO SCALE

*GRUBBING MATERIAL SHALL NOT BE PLACED ON THE STONE FILL IN THE AREA UNDER THE BRIDGE. WHENEVER CHANNEL SLOPE INTERSECTS ROADWAY SUBBASE, GRUBBING MATERIAL SHALL BEGIN AT THE BOTTOM OF SUBBASE.



TYPICAL INTEGRAL ABUTMENT SECTION

NOT TO SCALE

ACTUAL LIMITS OF STRUCTURE EXCAVATION SHALL BE DETERMINED BY THE CONTRACTOR. HOWEVER, ONLY EXCAVATION BETWEEN THE LIMITS SHOWN WILL BE PAID FOR UNDER ITEM 204.25 "STRUCTURE EXCAVATION". EXCAVATION BY THE CONTRACTOR OUTSIDE OF THESE LIMITS WILL BE AT THE EXPENSE OF THE CONTRACTOR.

PROJECT NAME:	STRAFFORD
PROJECT NUMBER:	BF 0177(10)
FILE NAME:	sl3j088typical.dgn
PROJECT LEADER:	K. HIGGINS
DESIGNED BY:	R. KLINEFELTER
TYPICAL SECTIONS	2
PLOT DATE:	04-AUG-2015
DRAWN BY:	R. KLINEFELTER
CHECKED BY:	J. SALVATORI
SHEET	4 OF 31

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

— UT —	UTILITY (GENERIC-UNKNOWN)
— UE —	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)

— T —	UTILITY (GENERIC-UNKNOWN)
— E —	TELEPHONE
— 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	PROJECT DEMARCATION FENCE
BF	BARRIER FENCE
—	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	PROPERTY LINE (P/L)
SR	SLOPE RIGHTS
6f	6F PROPERTY BOUNDARY
4f	4F PROPERTY BOUNDARY
HAZ	HAZARDOUS WASTE

EPSC LAYOUT PLAN SYMBOLGY

EPSC MEASURES

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

SEE EPSC DETAIL SHEETS FOR ADDITIONAL SYMBOLGY

ENVIRONMENTAL RESOURCES

—	WETLAND BOUNDARY
—	RIPARIAN BUFFER ZONE
—	WETLAND BUFFER ZONE
—	SOIL TYPE BOUNDARY
T&E	THREATENED & ENDANGERED SPECIES
HAZ	HAZARDOUS WASTE AREA
AG	AGRICULTURAL LAND
HABITAT	FISH & WILDLIFE HABITAT
FLOOD 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
(H)	HISTORIC STRUCTURE

CONVENTIONAL TOPOGRAPHIC SYMBOLGY

EXISTING FEATURES

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

PROJECT NAME: STRAFFORD

PROJECT NUMBER: BF 0177(10)

FILE NAME: s13j088exce1.dgn

PROJECT LEADER: K. HIGGINS

DESIGNED BY: R. KLINEFELTER

LEGEND SHEET

PLOT DATE: 04-AUG-2015

DRAWN BY: M.LONGSTREET

CHECKED BY: J. SALVATORI

SHEET 5 OF 31

GPS CONTROL POINTS

--- HVCTRL #1 ---

S STRAFFORD BR 25

NORTH = 486206.940
 EAST = 1677367.840
 ELEV. = 894.930

GENERAL LOCATION SOUTH STRAFFORD, VT.
 THE MARK IS SET IN THE TOP OF THE ABUTMENT AT THE SOUTHWEST CORNER OF A BRIDGE OVER A STREAM FEEDING THE WEST BRANCH OF THE OMPOMPANOSUC RIVER. IT IS ABOUT 100 M SOUTHWEST OF THE BARRETT MEMORIAL BRIDGE OVER THE WEST BRANCH.
 IT IS 15 CM EAST OF THE WEST EDGE OF THE ABUTMENT, 15 CM WEST OF THE EAST EDGE OF THE ABUTMENT, 0.3 M SOUTH-SOUTHWEST OF THE SOUTH TIP OF THE BRIDGE RAIL, 0.8 M NORTH OF THE ABUTMENT VERTICAL ANGLE POINT AND 5.3 M NORTHWEST OF POLE NO 3.

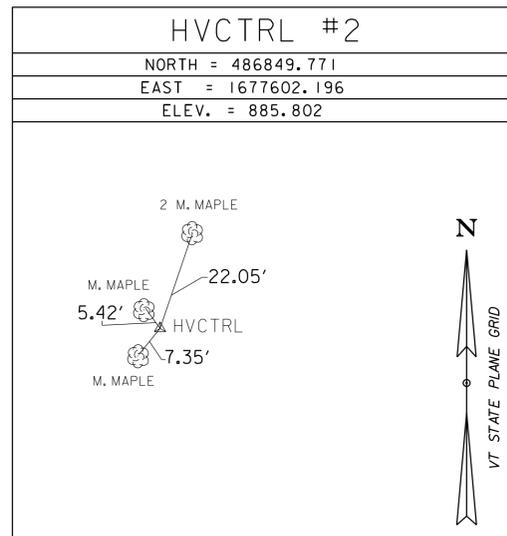
--- HVCTRL #10 ---

JB 1

NORTH = 486660.580
 EAST = 1684339.340
 ELEV. = 829.260

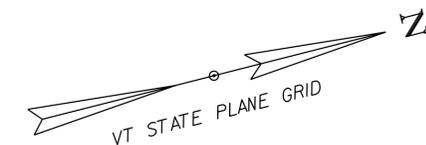
GENERAL LOCATION, SOUTH STRAFFORD, VT.
 1.6 MI (2.6 KM) EAST OF, AT DESERTED VILLAGE OF COPPER FLAT, 25 FT (7.6 M) SOUTHWEST OF CENTER OF ROAD, 250 FT (76.2 M) NORTHWEST JUNCTION OF DISCONTINUED ROAD SOUTHWEST, IN EMBEDDED BOULDER.

TRAVERSE TIES



DATUM	
VERTICAL	NAVD 88
HORIZONTAL	NAD 83(2011)
ADJUSTMENT	COMPASS

PROJECT NAME: STRAFFORD	
PROJECT NUMBER: BF 0177(10)	
FILE NAME: s13j088+1.dgn	PLOT DATE: 04-AUG-2015
PROJECT LEADER: K. HIGGINS	DRAWN BY: S. DONOVAN
DESIGNED BY: R. KLINEFELTER	CHECKED BY: J. SALVATORI
TIE SHEET	SHEET 6 OF 31



WINOOSKI VERY FINE SANDY LOAM
 0-3% SLOPE
 TYPE C SOIL
 K VALUE = 0.37
 HIGH EROSION POTENTIAL

BUCKLAND LOAM
 3-8% SLOPE
 TYPE C/D SOIL
 K VALUE = 0.32
 MODERATE EROSION POTENTIAL

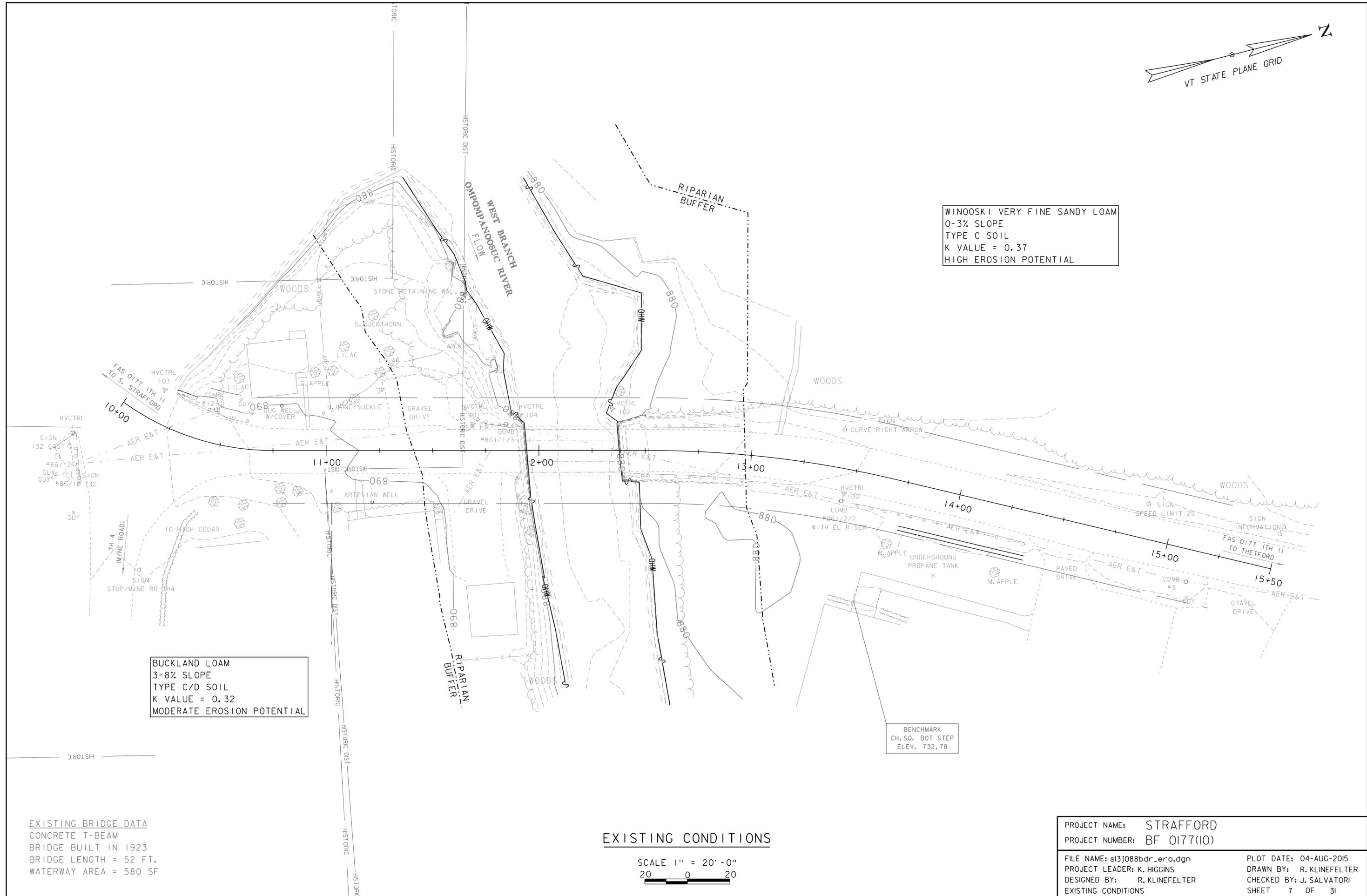
BENCHMARK
 CH. SO. BOT STEP
 ELEV. 732.78

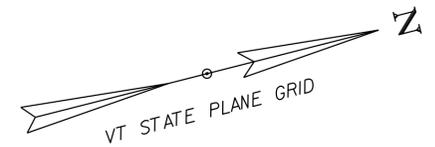
EXISTING BRIDGE DATA
 CONCRETE T-BEAM
 BRIDGE BUILT IN 1923
 BRIDGE LENGTH = 52 FT.
 WATERWAY AREA = 580 SF

EXISTING CONDITIONS

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

PROJECT NAME:	STRAFFORD	PLOT DATE:	04-AUG-2015
PROJECT NUMBER:	BF 0177(10)	DRAWN BY:	R. KLINEFELTER
FILE NAME:	sl3j088bdr_ero.dgn	CHECKED BY:	J. SALVATORI
PROJECT LEADER:	K. HIGGINS	SHEET	7 OF 31
DESIGNED BY:	R. KLINEFELTER		
EXISTING CONDITIONS			





MAINLINE CURVE #1: MAINLINE CURVE #2:
 DELTA = 35°47'00" DELTA = 13°22'00"
 D = 47°44'47" D = 11°27'33"
 R = 120.00' R = 500.00'
 T = 38.74' T = 58.59'
 L = 74.94' L = 116.65'
 E = 6.10' E = 3.42'

CONSTRUCT DRIVE W/5'-0" PAVED
 APRON AND 3" AGGREGATE SURFACE
 COURSE BEYOND APRON
 STA 11+24.65 - 11+62.99 LT
 STA 11+51.96 - 11+87.03 RT
 CONSTRUCT 5'-0" PAVED APRON
 STA 14+36.73 - 14+69.72 RT

4" YELLOW LINE (DOUBLE)
 STA 10+25 - 14+75 CL

4" WHITE LINE
 STA 10+25 - 14+75 LT
 STA 10+25 - 14+75 RT

STONE FILL, TYPE I DITCH
 STA 13+25 - 14+20 LT

REMOVAL OF CONCRETE OR MASONRY
 STA 12+50 - 13+03 RT
 STA 12+51 - 12+91 LT

REMOVAL AND DISPOSAL OF GUARDRAIL
 STA 11+65 - 11+88 LT
 STA 11+89 - 11+91 RT
 STA 12+43 - 12+93 LT
 STA 12+44 - 12+97 RT
 STA 13+52 - 14+35 RT

CONCRETE CURB, TYPE B
 STA 12+48 - 12+85 RT

MAINLINE PT #1
 STA 10+74.94
 N = 486296.1699
 E = 1677398.8689

MAINLINE POB/PC #1
 STA 10+00.00
 N = 486233.7153
 E = 1677359.6785

BEGIN APPROACH
 STA 10+25.00
 MATCH EXISTING

CHANNEL POB
 STA 50+00.00
 N = 486439.7737
 E = 1677333.6585

MAINLINE PC #2
 STA 12+52.02
 N = 486467.8201
 E = 1677442.3562

MAINLINE PI #2
 STA 13+10.61 BK=
 STA 13+10.07 AHD
 N = 486524.6148
 E = 1677456.7451

MAINLINE PT #2
 STA 13+68.66
 N = 486576.5446
 E = 1677483.8740

STONE FILL,
 TYPE I
 (TYP)

END PROJECT
 STA 14+00.00
 FG = 883.17

END APPROACH
 STA 14+75.00
 MATCH EXISTING

MAINLINE POE
 STA 15+50.00
 N = 486737.2697
 E = 1677567.8396

MAINLINE PI #1
 STA 10+38.74 BK=
 STA 10+36.20 AHD
 N = 486258.6167
 E = 1677389.3548

BEGIN PROJECT
 STA 11+00.00
 FG = 890.48

BEGIN BRIDGE
 STA 11+86.24
 FG = 888.73

CL BEARING
 STA 11+87.00
 FG = 888.72

END BRIDGE
 STA 12+44.76
 FG = 887.71

CL BEARING
 STA 12+44.00
 FG = 887.73

ML STA 12+15.50 =
 CH STA 51+00.00
 Δ = 180°00'00" RT

CHANNEL POE
 STA 52+00.00
 N = 486425.0680
 E = 1677533.1172

BENCHMARK
 CH. SO. BOT STEP
 ELEV. 732.78

LAYOUT SHEET

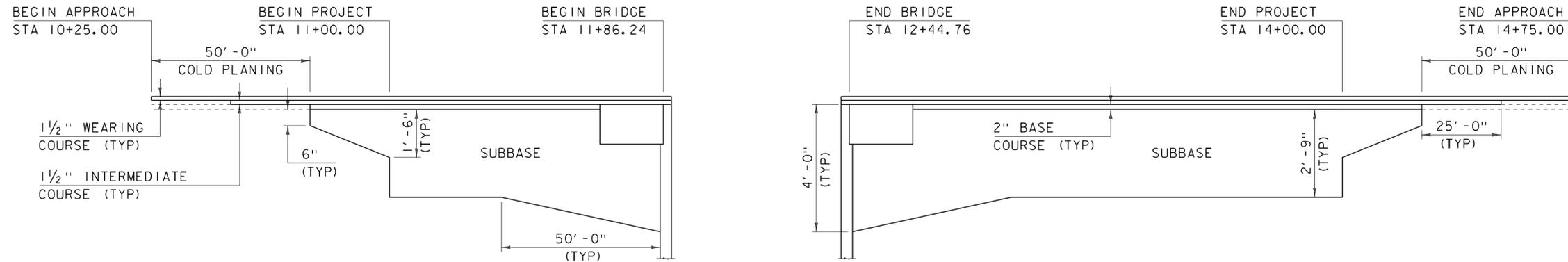
SCALE 1" = 20'-0"
 20 0 20

NOTE:
 ADJUST NEW CENTERLINE AND
 EDGE LINES TO MATCH EXISTING
 LINES AT BEGIN/END APPROACH

PROJECT NAME: STRAFFORD
 PROJECT NUMBER: BF 0177(10)

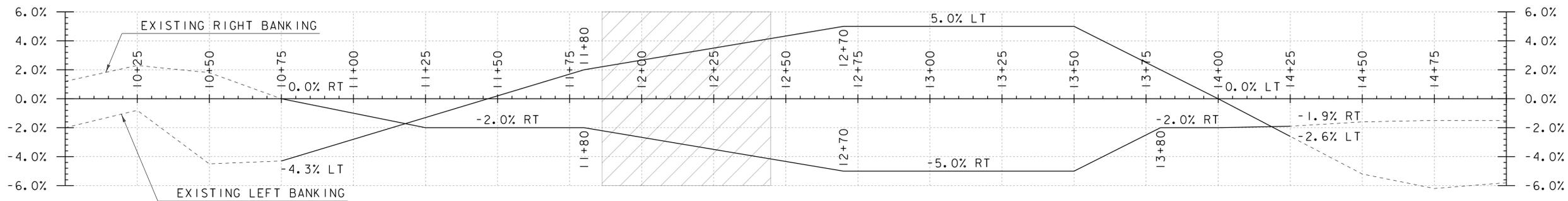
FILE NAME: s13j088bdr.dgn
 PROJECT LEADER: K. HIGGINS
 DESIGNED BY: R. KLINEFELTER
 LAYOUT SHEET

PLOT DATE: 04-AUG-2015
 DRAWN BY: R. KLINEFELTER
 CHECKED BY: J. SALVATORI
 SHEET 8 OF 31



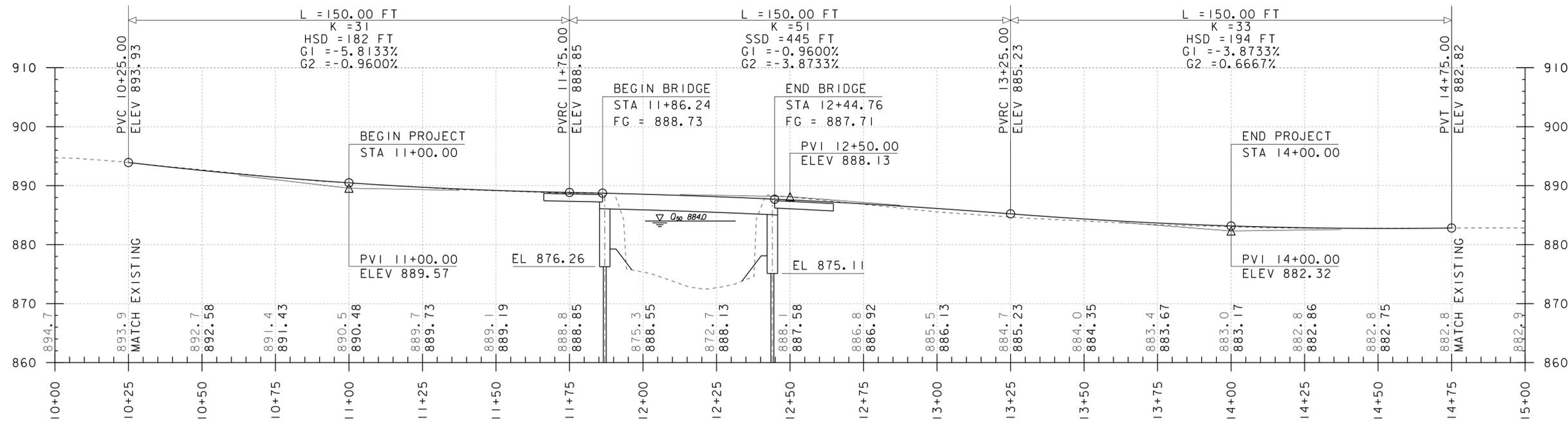
MATERIAL TRANSITION

SCALE: HORIZONTAL: 1"=20'-0"
NO VERTICAL SCALE



BANKING DIAGRAM

SCALE: HORIZONTAL: 1"=20'-0"
VERTICAL: 1"=1.0%



MAINLINE PROFILE

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

THE GRADES SHOWN TO THE TENTH ARE THE EXISTING GROUND ELEVATIONS ALONG THE PROPOSED ALIGNMENT.

THE GRADES SHOWN TO THE NEAREST HUNDREDTH ARE THE FINISH GRADES ALONG THE PROPOSED ALIGNMENT.

PROJECT NAME: STRAFFORD

PROJECT NUMBER: BF 0177(10)

FILE NAME: s13j088pro.dgn

PROJECT LEADER: K. HIGGINS

DESIGNED BY: R. KLINEFELTER

MAINLINE PROFILE & BANKING DIAGRAM

PLOT DATE: 04-AUG-2015

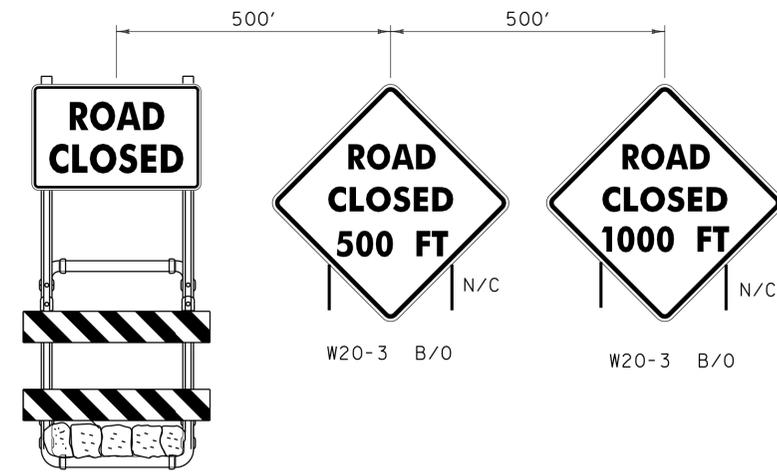
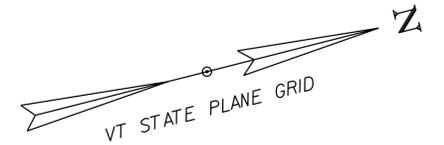
DRAWN BY: R. KLINEFELTER

CHECKED BY: J. SALVATORI

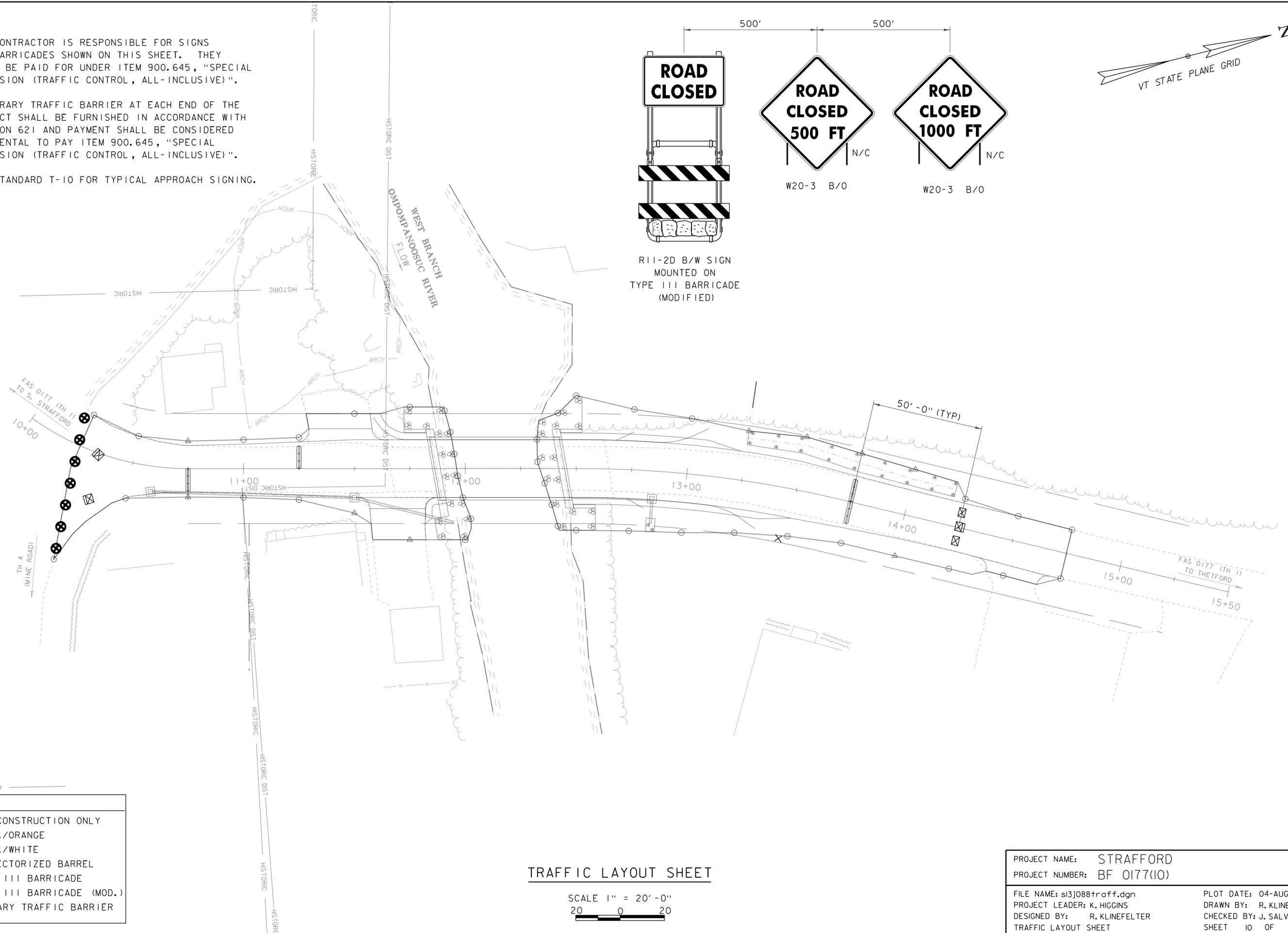
SHEET 9 OF 31

NOTES:

1. THE CONTRACTOR IS RESPONSIBLE FOR SIGNS AND BARRICADES SHOWN ON THIS SHEET. THEY SHALL BE PAID FOR UNDER ITEM 900.645, "SPECIAL PROVISION (TRAFFIC CONTROL, ALL-INCLUSIVE)".
2. TEMPORARY TRAFFIC BARRIER AT EACH END OF THE PROJECT SHALL BE FURNISHED IN ACCORDANCE WITH SECTION 621 AND PAYMENT SHALL BE CONSIDERED INCIDENTAL TO PAY ITEM 900.645, "SPECIAL PROVISION (TRAFFIC CONTROL, ALL-INCLUSIVE)".
3. SEE STANDARD T-10 FOR TYPICAL APPROACH SIGNING.

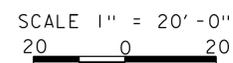


R11-2D B/W SIGN MOUNTED ON TYPE III BARRICADE (MODIFIED)

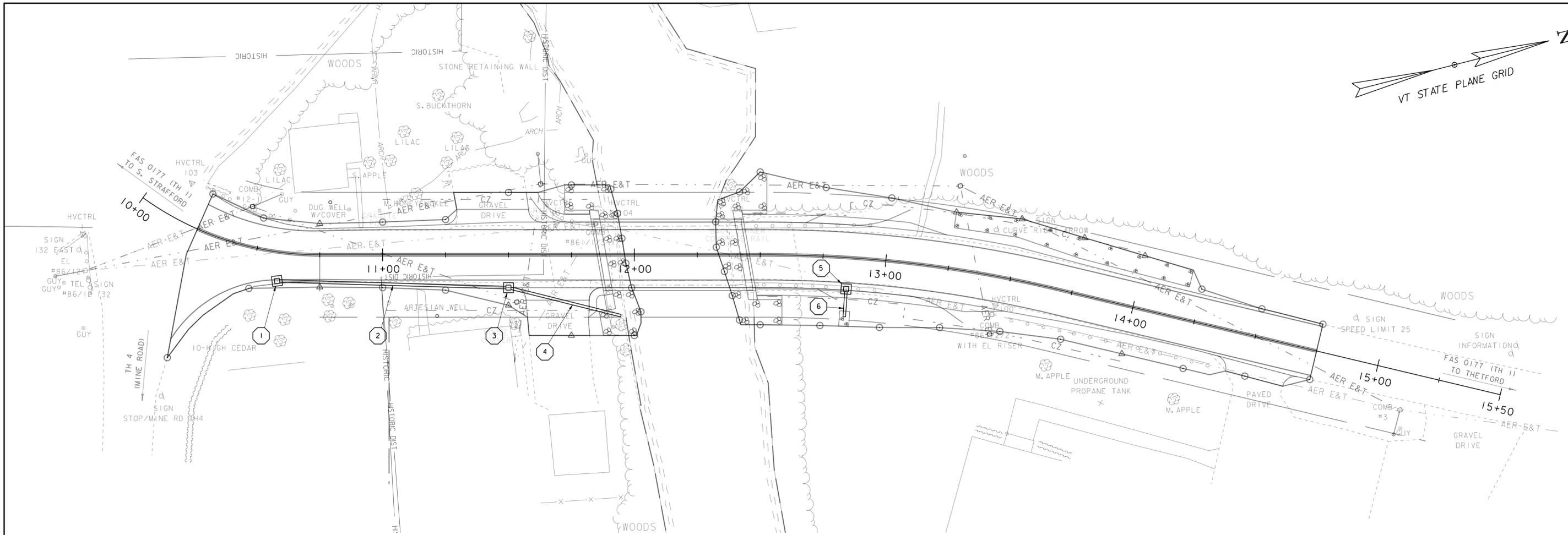
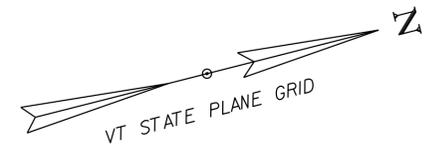


LEGEND	
N/C	- NEW/CONSTRUCTION ONLY
B/O	- BLACK/ORANGE
B/W	- BLACK/WHITE
⊗	- REFLECTORIZED BARREL
⊠	- TYPE III BARRICADE
⊠	- TYPE III BARRICADE (MOD.)
▬▬▬	- TEMPORARY TRAFFIC BARRIER

TRAFFIC LAYOUT SHEET

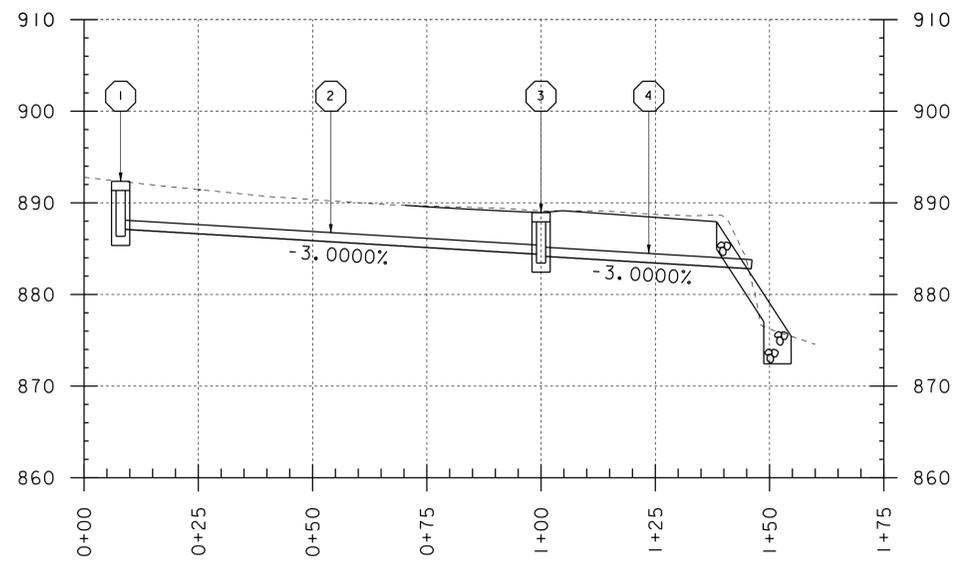


PROJECT NAME:	STRAFFORD	PLOT DATE:	04-AUG-2015
PROJECT NUMBER:	BF 0177(10)	DRAWN BY:	R. KLINEFELTER
FILE NAME:	s13j088traff.dgn	CHECKED BY:	J. SALVATORI
PROJECT LEADER:	K. HIGGINS	TRAFFIC LAYOUT SHEET	SHEET 10 OF 31
DESIGNED BY:	R. KLINEFELTER		



DRAINAGE LAYOUT

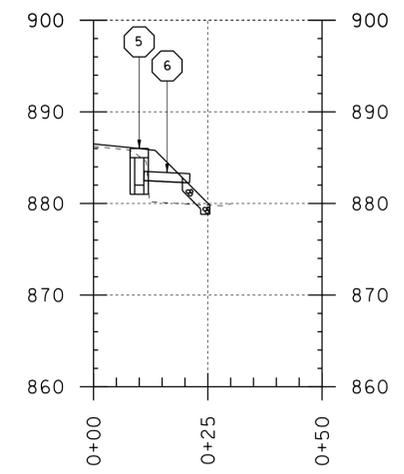
SCALE 1" = 20' - 0"
 20 0 20



DRAINAGE PROFILE #1

HOR. SCALE 1" = 20' - 0"
 VER. SCALE 1" = 10' - 0"

- ① NEW PRECAST REINFORCED CONCRETE DROP INLET WITH CAST IRON GRATE
PTOG EL 891.60
SUMP EL 886.60
- ② NEW 12" x 90' OPTION PIPE
INLET EL 887.10
OUTLET EL 884.40
- ③ NEW PRECAST REINFORCED CONCRETE DROP INLET WITH CAST IRON GRATE
PTOG EL 888.90
SUMP EL 883.40
- ④ NEW 12" x 45' OPTION PIPE
INLET EL 884.15
OUTLET EL 882.80



DRAINAGE PROFILE #2

HOR. SCALE 1" = 20' - 0"
 VER. SCALE 1" = 10' - 0"

- ⑤ NEW PRECAST REINFORCED CONCRETE DROP INLET WITH CAST IRON GRATE
PTOG EL 886.00
SUMP EL 882.00
- ⑥ NEW 12" x 10' OPTION PIPE WITH 4' WIDE x 6' LONG' STONE FILL, TYPE I PAD
INLET EL 882.50
OUTLET EL 882.25

PROJECT NAME:	STRAFFORD	PLOT DATE:	04-AUG-2015
PROJECT NUMBER:	BF 0177(10 101/100)	DRAWN BY:	J. SALVATORI
FILE NAME:	sl3j088bdr_drain.dgn	CHECKED BY:	R. KLINEFELTER
PROJECT LEADER:	K. HIGGINS	SHEET	II OF 31
DESIGNED BY:	J. SALVATORI		
DRAINAGE LAYOUT			

SOIL CLASSIFICATION

AASHTO

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

ROCK QUALITY DESIGNATION

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

SHEAR STRENGTH

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

CORRELATION GUIDE OF "N" TO DENSITY/CONSISTENCY

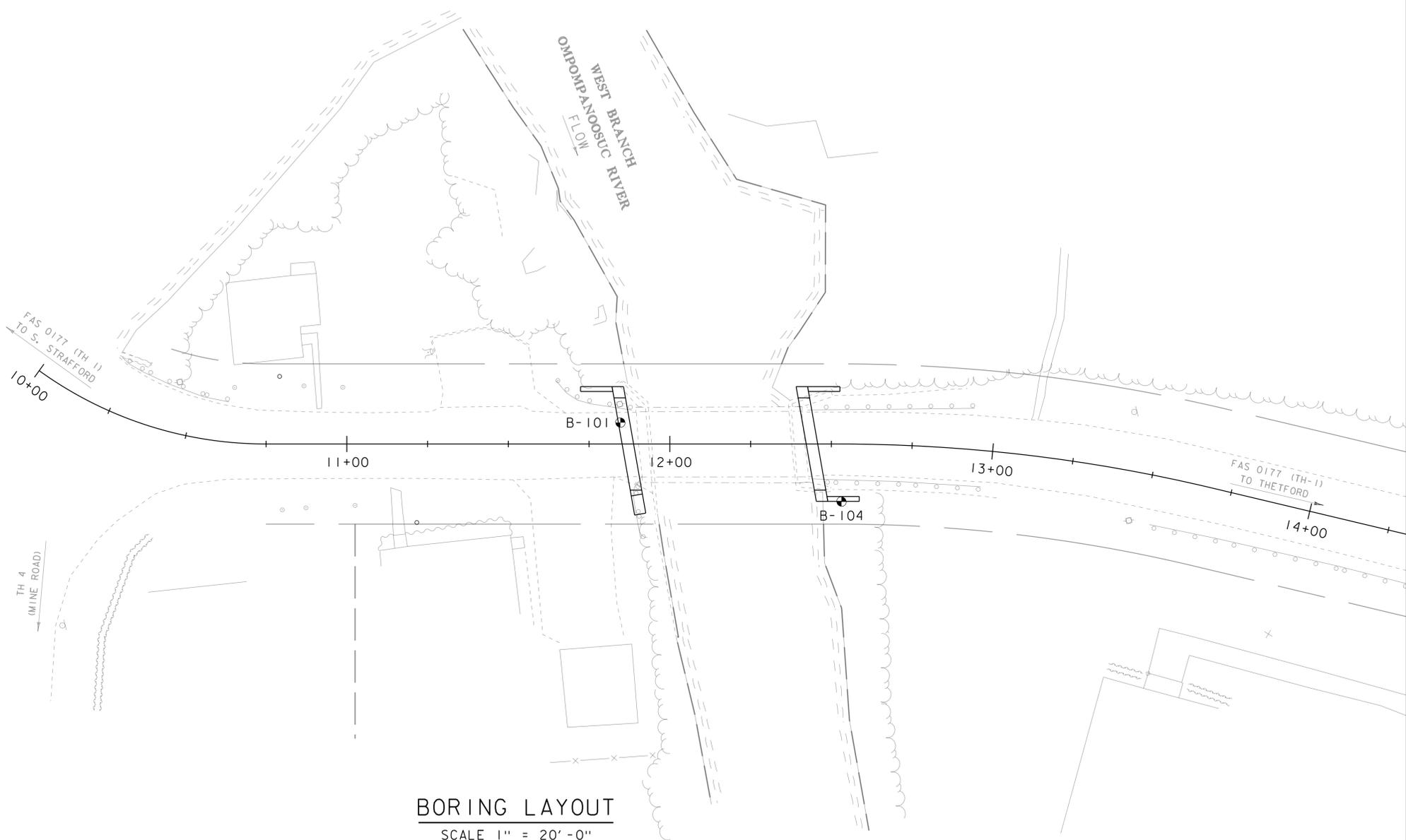
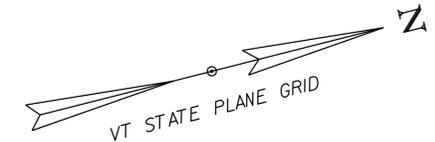
DENSITY (GRANULAR SOILS)		CONSISTENCY (COHESIVE SOILS)	
N	DESCRIPTIVE TERM	N	DESCRIPTIVE TERM
<5	Very Loose	<2	Very Soft
5-10	Loose	2-4	Soft
11-24	Med. Dense	5-8	Med. Stiff
25-50	Dense	9-15	Stiff
>50	Very Dense	16-30	Very Stiff
		31-60	Hard
		>60	Very Hard

COMMONLY USED SYMBOLS

▼	Water Elevation
⊕	Standard Penetration Boring
⊗	Auger Boring
⊙	Rod Sounding
S	Sample
N	Standard Penetration Test Blow Count Per Foot For: 2" O. D. Sampler 1 3/8" I. D. Sampler Hammer Weight Of 140 Lbs. Hammer Fall Of 30"
VS	Field Vane Shear Test
US	Undisturbed Soil Sample
B	Blast
DC	Diamond Core
MD	Mud Drill
WA	Wash Ahead
HSA	Hollow Stem Auger
AX	Core Size 1 1/8"
BX	Core Size 1 3/8"
NX	Core Size 2 1/8"
M	Double Tube Core Barrel Used
LL	Liquid Limit
PL	Plastic Limit
PI	Plasticity Index
NP	Non Plastic
w	Moisture Content (Dry Wgt. Basis)
D	Dry
M	Moist
MTW	Moist To Wet
W	Wet
Sat	Saturated
Bo	Boulder
Gr	Gravel
Sa	Sand
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		



BORING LAYOUT

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

DEFINITIONS (AASHTO)

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

GENERAL NOTES

- The subsurface explorations shown herein were made between 12/12/2013 and 01/16/2014 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.

BORING CHART

HOLE NO.	SURV. STATION	OFFSET	GROUND ELEV.	ELEV. TLOB
B-101	11+85	6.6 LT	888.0	830.9
B-102	12+53	17.8 RT	881.0	851.0

PROJECT NAME: STRAFFORD
 PROJECT NUMBER: BF 0177(10)
 FILE NAME: s13j088boring.dgn
 PROJECT LEADER: K. HIGGINS
 DESIGNED BY: R. KLINEFELTER
 BORING LAYOUT SHEET
 PLOT DATE: 04-AUG-2015
 DRAWN BY: R. KLINEFELTER
 CHECKED BY: J. SALVATORI
 SHEET 13 OF 31

VTTrans Working to Get You There Vermont Agency of Transportation		STATE OF VERMONT AGENCY OF TRANSPORTATION MATERIALS & RESEARCH SECTION SUBSURFACE INFORMATION		BORING LOG		Boring No.: B-101				
				STRAFFORD BF 0177(10) VT-132 BR-29		Page No.: 1 of 2				
						Pin No.: 13J088				
						Checked By: CEE				
Boring Crew: GARROW, HOOK, DAIGNEAULT		Type: WB SPLIT BARREL		Groundwater Observations						
Date Started: 12/12/13 Date Finished: 1/10/14		I.D.: 4 in 1.5 in		Date	Depth (ft)	Notes				
VTSPG NAD83: N 486404.17 ft E 1677419.41 ft		Hammer Wt: N.A. 140 lb.		12/23/13	12.9	After 10 days.				
Station: 11+85 Offset: -7.00		Hammer Fall: N.A. 30 in.		01/09/14	9.6	AM				
Ground Elevation: 888.0 ft		Hammer/Rod Type: Auto/AWJ		01/14/14	12.6	AM				
		Rig: CME 45C SKID C _e = 1.33								
Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Core Rec. % (RQD %)	Drill Rate minutes/ft	Blows/ft (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
		Asphalt Pavement, 0.0 ft - 1.15 ft								
		A-2-4, GrSa, Lt/brn, Moist, Rec. = 1.2 ft, Cleaned out with roller cone.				10-6-4-6 (10)	13.5	24.7	56.7	18.6
5		A-2-4, Sa, brn, Moist, Rec. = 0.8 ft				5-3-4-6 (7)	17.6	18.7	61.5	19.8
		Field Note: No Recovery Field Note: NXDC, Cleaned out casing.				R@5.0"				
		A-1-b, SaGr, brn, Moist, Rec. = 0.3 ft, Lab Note: Lots of Broken Rock was within sample.				44-R@1.0"	9.3	56.0	30.7	13.3
10		Field Note: NXDC, Cleaned out casing. Field Note: No Recovery Field Note: NXDC, Cleaned out casing.				R@1.0"				
		A-2-4, SiSa, gry-brn, MTW, Rec. = 0.5 ft, NXDC, Cleaned out casing.				10-2-1-3 (3)	39.8	8.4	67.9	23.7
15		A-1-a, SaGr, gry-brn, MTW, Rec. = 0.3 ft, Lab Note: Sample was mostly Broken Rock.				12-10-8-12 (18)	10.7	60.3	29.1	10.6
		A-1-b, GrSa, brn, Moist, Rec. = 1.2 ft				14-22-20-22 (42)	12.0	32.2	49.7	18.1
		A-1-b, GrSa, brn, Moist, Rec. = 1.0 ft				17-15-13-13 (28)	13.1	25.5	60.6	13.9
20		A-1-b, GrSa, brn, Moist, Rec. = 0.9 ft				24-15-13-R@5.0" (28)	12.5	36.9	50.5	12.6
		Field Note: NXDC, Cleaned out casing.								
25		A-1-b, GrSa, brn, Moist, Rec. = 0.8 ft, Lab Note: Broken Rock was within sample.				4-12-17-31 (29)	13.5	20.1	66.5	13.4
30		Visual Description: Broken Rock, gry, Moist, Rec. = 0.3 ft Field Note: Pulled casing and changed bit Field Note: NXDC, Cleaned out casing.				3-R@3.5"	11.4			
35		A-2-4, GrSa, brn, Moist, Rec. = 1.0 ft, Lab Note: Broken Rock was within sample.				29-44-R@2.5" (R)	13.9	32.6	49.4	18.0

BORING LOG 2 STRAFFORD BF 0177(10).GPJ VERMONT AOT.GDT 1/21/14

ABUT I BTM.
EL 876.26

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

EST. PILE TIP
EL 830.9

VTTrans Working to Get You There Vermont Agency of Transportation		STATE OF VERMONT AGENCY OF TRANSPORTATION MATERIALS & RESEARCH SECTION SUBSURFACE INFORMATION		BORING LOG		Boring No.: B-101				
				STRAFFORD BF 0177(10) VT-132 BR-29		Page No.: 2 of 2				
						Pin No.: 13J088				
						Checked By: CEE				
Boring Crew: GARROW, HOOK, DAIGNEAULT		Type: WB SPLIT BARREL		Groundwater Observations						
Date Started: 12/12/13 Date Finished: 1/10/14		I.D.: 4 in 1.5 in		Date	Depth (ft)	Notes				
VTSPG NAD83: N 486404.17 ft E 1677419.41 ft		Hammer Wt: N.A. 140 lb.		12/23/13	12.9	After 10 days.				
Station: 11+85 Offset: -7.00		Hammer Fall: N.A. 30 in.		01/09/14	9.6	AM				
Ground Elevation: 888.0 ft		Hammer/Rod Type: Auto/AWJ		01/14/14	12.6	AM				
		Rig: CME 45C SKID C _e = 1.33								
Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Core Rec. % (RQD %)	Drill Rate minutes/ft	Blows/ft (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
		Field Note: NXDC, Cleaned out casing.								
40		A-2-4, Sa, brn, Moist, Rec. = 1.1 ft				26-34-R@2.5" (R)	17.8	7.4	74.6	18.0
45		A-1-b, GrSa, Dk/brn, Moist, Rec. = 1.1 ft				16-8-22-R@2.5" (30)	18.2	27.8	52.8	19.4
50		Field Note: NXDC, Cleaned out casing. A-1-b, GrSa, Dk/brn, Moist, Rec. = 1.0 ft				39-43-R@2.5" (R)	14.9	30.3	53.9	15.8
55		Field Note: NXDC, Cleaned out casing. Field Note: No Recovery				R@6.0"				
		57.1 ft - 59.1 ft, Gray, Micaceous quartz-rich Limestone, Hard, Unweathered, Fair rock, NXDC, RMR = 57	1 (60)	65 (0)	5					Top of Bedrock @ 57.1 ft
60		59.1 ft - 63.1 ft, Gray, Micaceous quartz-rich Limestone, Hard, Unweathered, Good rock, NXDC, RMR = 65	2 (60)	90 (50)	11					
					7					
					6					
65		63.1 ft - 67.1 ft, Gray, Micaceous quartz-rich Limestone, Hard, Unweathered, Good rock, NXDC, RMR = 74	3 (60)	100 (93)	10					
					7					
					8					
					7					
		Hole stopped @ 67.1 ft								
70		Remarks: 1. Inclement weathered hindered the days able to drill within the start and finish date. 2. Hole collapsed at 16.3 ft. (01/14/14)								
75										

BORING LOG 2 STRAFFORD BF 0177(10).GPJ VERMONT AOT.GDT 1/21/14

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

PROJECT NAME:	STRAFFORD
PROJECT NUMBER:	BF 0177(10)
FILE NAME:	s13j088boring.dgn
PROJECT LEADER:	K. HIGGINS
DESIGNED BY:	R. KLINEFELTER
BORING LOGS	
PLOT DATE:	04-AUG-2015
DRAWN BY:	R. KLINEFELTER
CHECKED BY:	J. SALVATORI
SHEET	14 OF 31



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

BORING LOG

Boring No.: **B-104**
Page No.: 1 of 1
Pin No.: 13J088
Checked By: CEE

**STRAFFORD
BF 0177(10)
VT-132 BR-29**

Boring Crew: HOOK, DAIGNEAULT	Type: WB	Casing: SS	Groundwater Observations		
Date Started: 1/15/14	Date Finished: 1/16/14	I.D.: 4 in	Date	Depth (ft)	Notes
VTSPG NAD83: N 486464.52 ft E 1677459.89 ft	Hammer Wt: N.A.	140 lb.	01/16/14	7.5	AM
Station: 12+52	Offset: 17.50	Hammer Fall: N.A.	01/16/14	5.3	Casing removed.
Ground Elevation: 881.0 ft	Hammer/Rod Type: Auto/AWJ	Rig: CME 45C TRACK			
		C _e = 1.34			

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Core Rec. % (RQD %)	Drill Rate minutes/ft	Blows/ft (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
		A-3, Sa, brn, Moist, Rec. = 0.2 ft				2-1-WH-1 (1)	38.4	5.5	86.9	7.6
		A-2-4, Sa, brn, Moist, Rec. = 1.1 ft, Lab Note: Wood chunks were within sample.				1-2-2-3 (4)	19.9	11.7	76.6	11.7
5		A-1-b, SaGr, Lt/brn, Moist, Rec. = 0.5 ft, Lab Note: Broken Rock was within sample.				2-5-10-7 (15)	9.0	50.0	43.3	6.7
		A-1-b, GrSa, gry-brn, MTW, Rec. = 1.5 ft, Lab Note: Broken Rock was within sample.				5-8-9-7 (17)	16.5	34.0	56.7	9.3
		A-1-b, GrSa, brn, Wet, Rec. = 2.0 ft, Cleaned out with roller cone.				6-6-8-9 (14)	18.7	25.5	65.3	9.2
10		A-2-4, GrSa, brn, Moist, Rec. = 0.9 ft, Cleaned out with roller cone.				5-7-7-11 (14)	15.8	25.4	56.6	18.0
		A-1-b, GrSa, brn, Moist, Rec. = 1.1 ft, Cleaned out with roller cone.				12-15-27-23 (42)	12.2	30.5	54.8	14.7
15		A-1-b, GrSa, brn, Moist, Rec. = 1.1 ft, Lab Note: Broken Rock was within sample.				9-21-31-R@1.0" (52)	10.9	38.6	46.1	15.3
		Field Note: NXDC, Cleaned out casing.				15-14-22-20 (36)	13.5	32.6	51.5	15.9
		A-2-4, GrSa, brn, Moist, Rec. = 1.2 ft, NXDC, Cleaned out casing.				12-11-16-28 (27)	12.7	34.5	52.3	13.2
20		A-1-b, GrSa, brn, Moist, Rec. = 1.1 ft, Lab Note: Broken Rock was within sample.								
		Field Note: NXDC, Cleaned out casing.								
25		A-2-4, SiGrSa, brn, Moist, Rec. = 0.9 ft				45-R@6.0" (R)	15.5	28.1	51.4	20.5
		Field Note: Cobble/Hardpan, NXDC, Cleaned out casing.								
30		30.0 ft - 32.0 ft, Gray, Micaceous quartz-rich Limestone, Hard, Unweathered, Fair rock, NXDC, RMR = 57	1 (60)	100 (0)	6 5					
		32.0 ft - 35.0 ft, Gray, Micaceous quartz-rich Limestone, Hard, Unweathered, Good rock, NXDC, RMR = 71	2 (60)	100 (87)	7 8 7					
35		35.0 ft - 40.0 ft, Gray, Micaceous quartz-rich Limestone, Hard, Unweathered, Good rock, NXDC, RMR = 71	3 (60)	86 (80)	6 7 5 6 5					
40		Hole stopped @ 40.0 ft								

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

ABUT 2 BTM.
EL 875.11

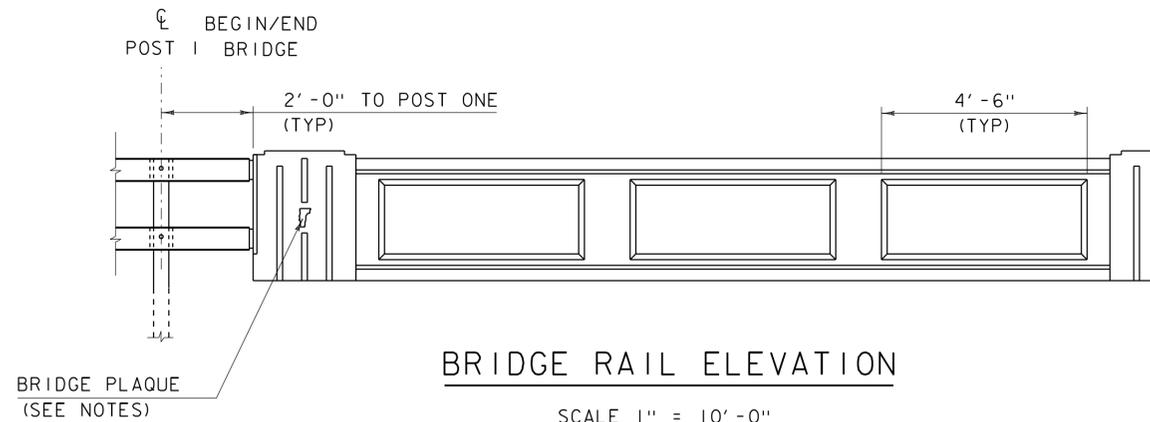
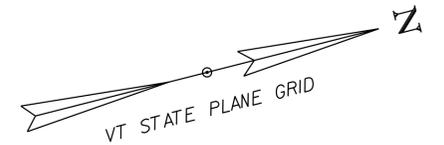
EST. PILE TIP
EL 851.0

BORING LOG: 2 STRAFFORD BF 0177(10).GP.J. VERMONT AOT.GDT. 1/21/14

PROJECT NAME: STRAFFORD	PLOT DATE: 04-AUG-2015
PROJECT NUMBER: BF 0177(10)	DRAWN BY: R. KLINEFELTER
FILE NAME: s13j088boring.dgn	CHECKED BY: J. SALVATORI
PROJECT LEADER: K. HIGGINS	SHEET 15 OF 31
DESIGNED BY: R. KLINEFELTER	
BORING LOGS	

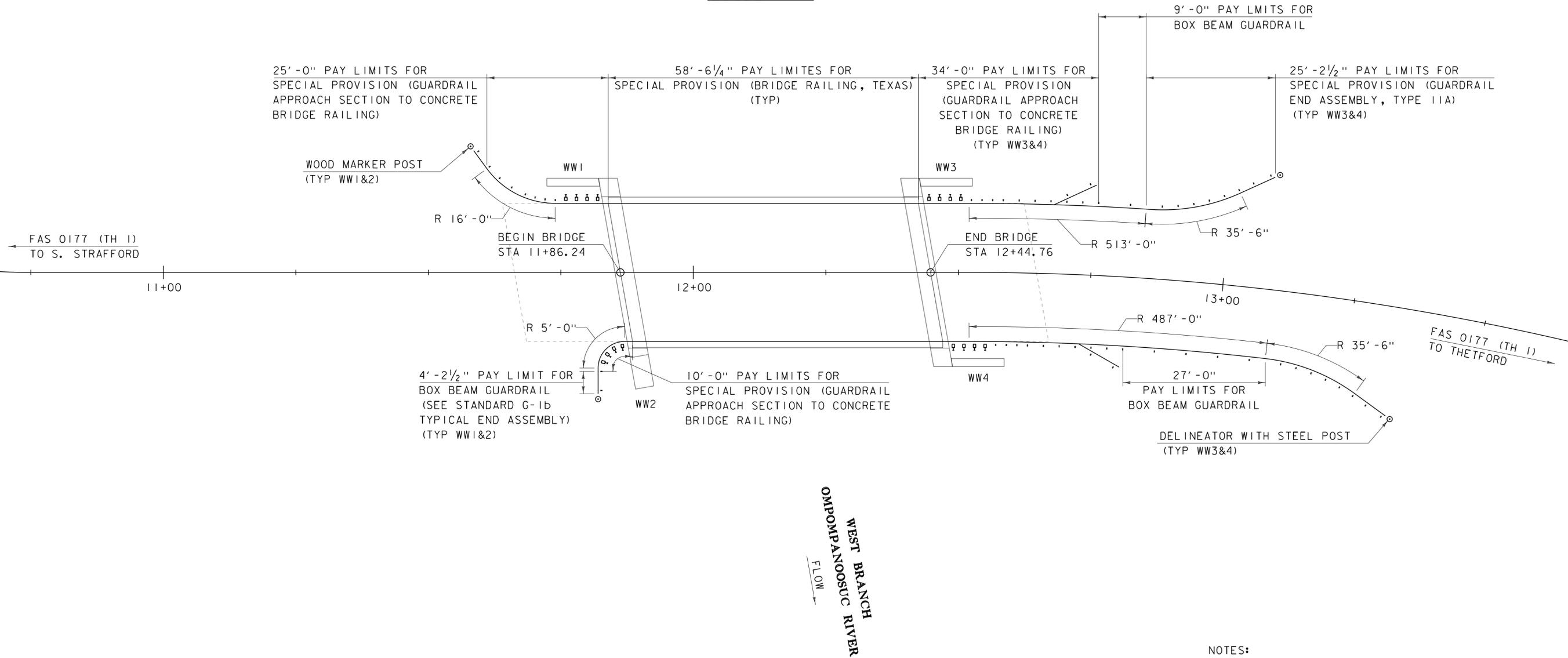
WOOD MARKER POSTS
 STA 11+59 LT
 STA 11+82 RT

DELINEATOR WITH STEEL POST
 STA 13+20 LT (BLUE)
 STA RT 13+35 (GREEN)



BRIDGE RAIL ELEVATION

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



NOTES:

1. THE BRIDGE PLAQUE FURNISHED BY THE AGENCY SHALL BE CAST INTO THE PARAPET AT WINGWALL 2. ALL WORK TO INSTALL THE PLAQUE SHALL BE INCIDENTAL TO THE BRIDGE RAIL ITEM.

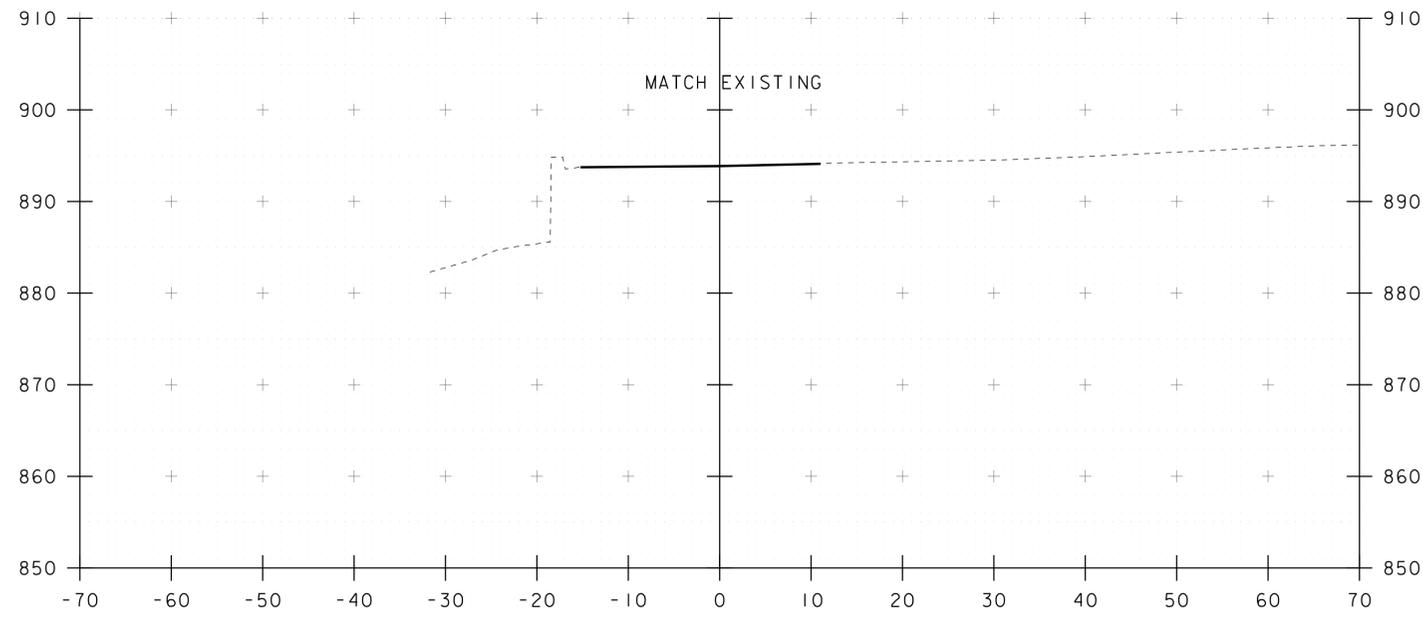
NOTES:

- 1) SEE STANDARDS G-1b, G-4, T-40, AND T-45 FOR ADDITIONAL DETAILS.

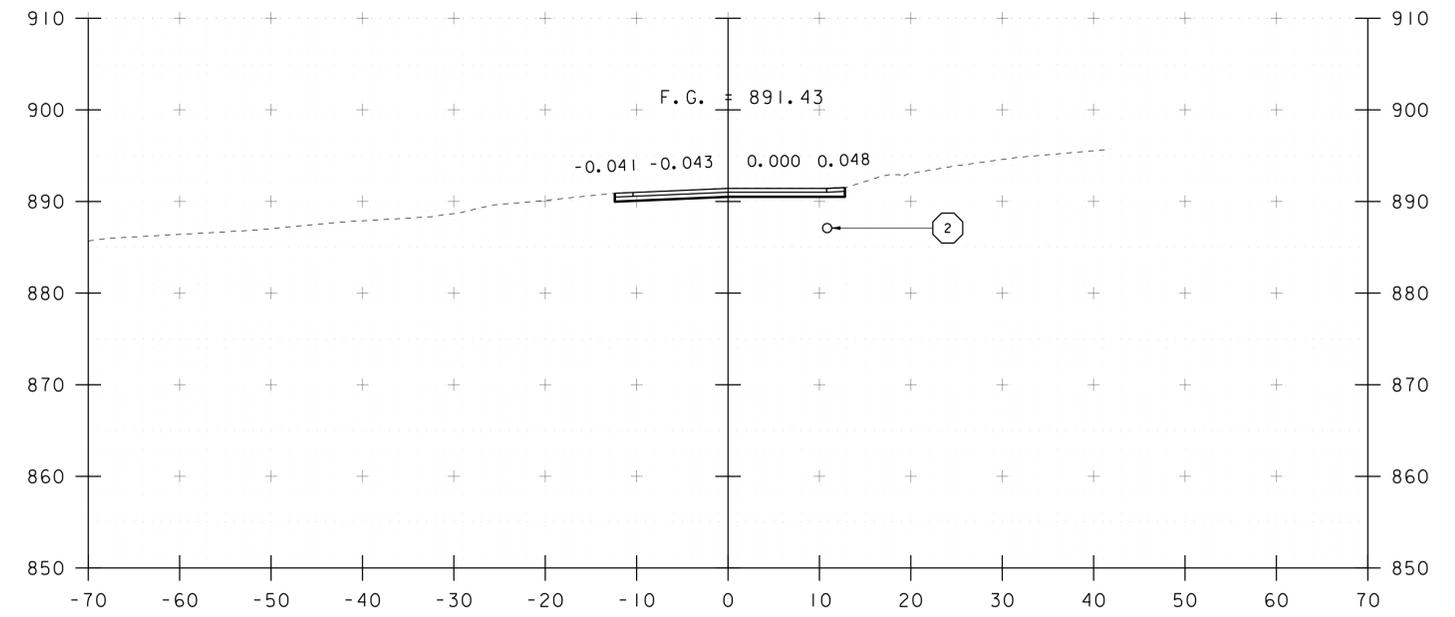
RAIL LAYOUT SHEET

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

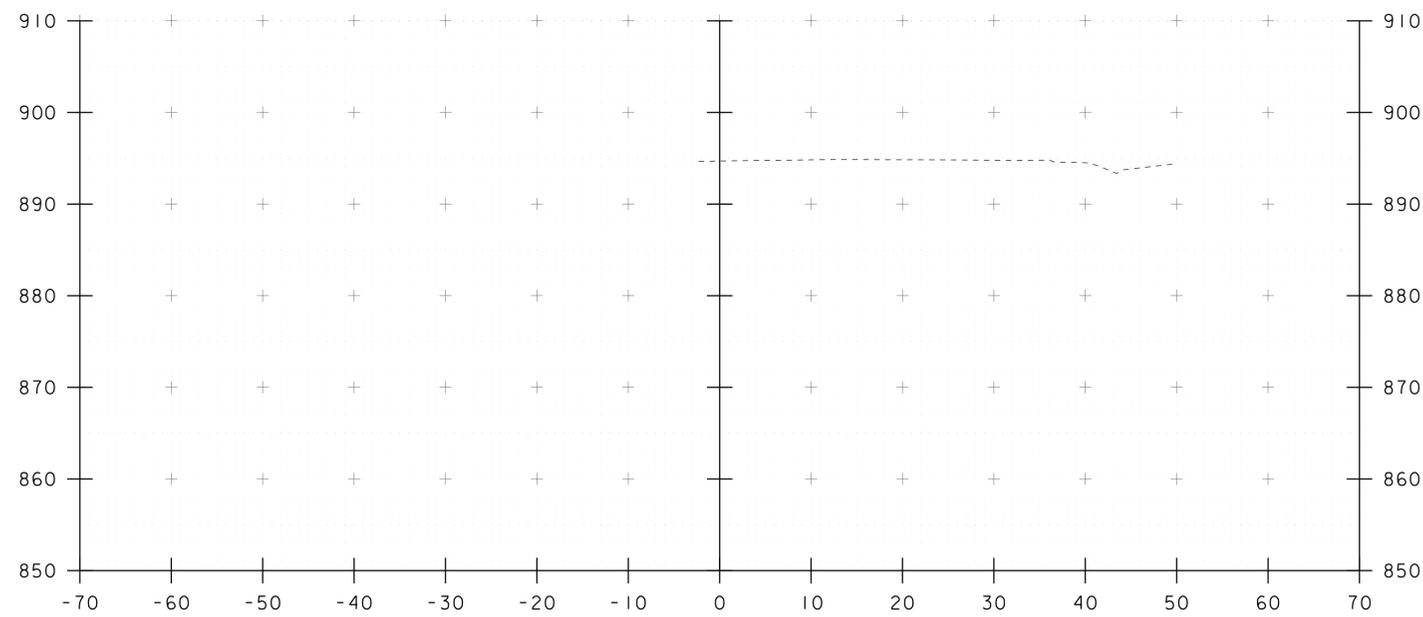
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PROJECT NUMBER:	BF 0177(10)	DRAWN BY:	R. KLINEFELTER
FILE NAME:	s13j088rail.dgn	CHECKED BY:	J. SALVATORI
PROJECT LEADER:	K. HIGGINS	SHEET	16 OF 31
DESIGNED BY:	R. KLINEFELTER		
RAIL LAYOUT SHEET			



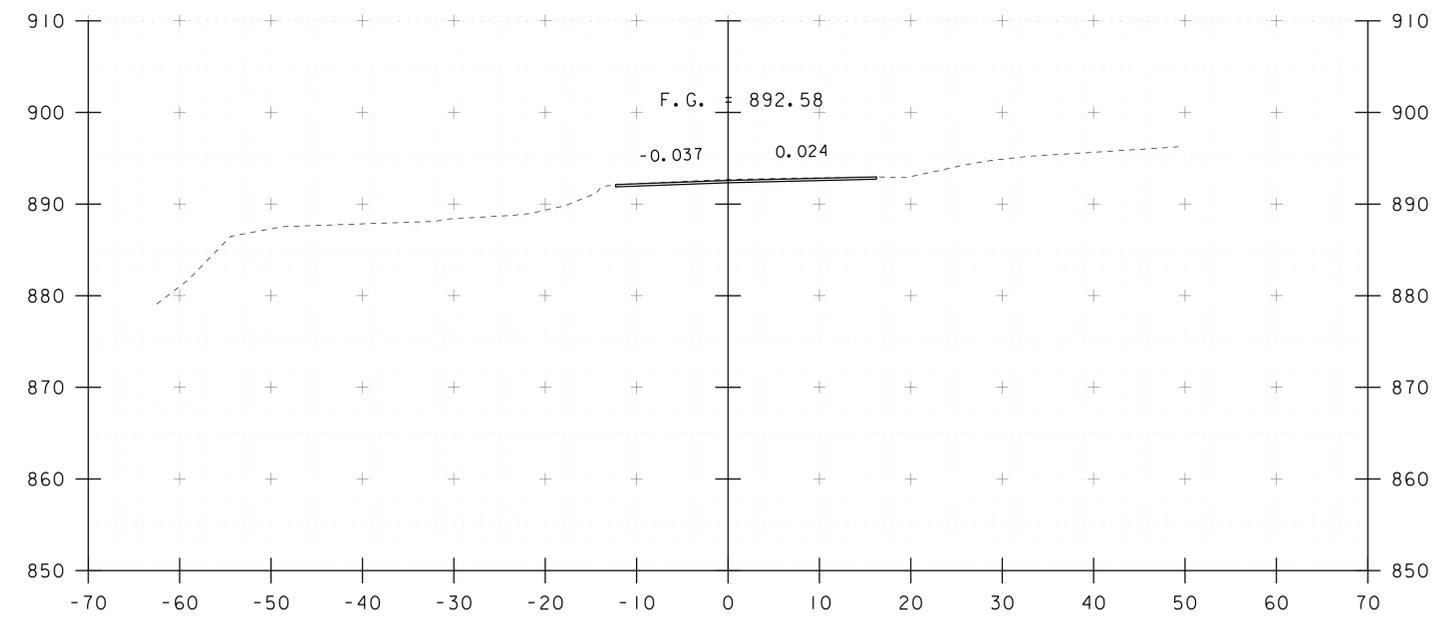
10+25
BEGIN APPROACH



10+75



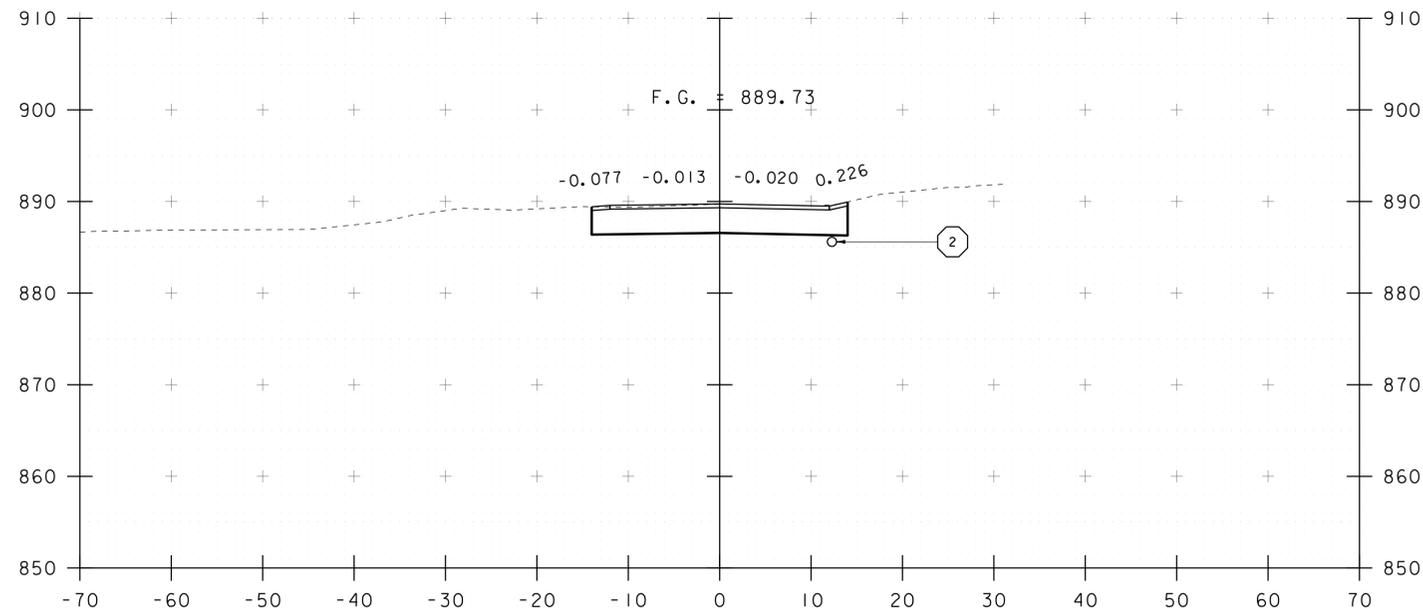
10+00



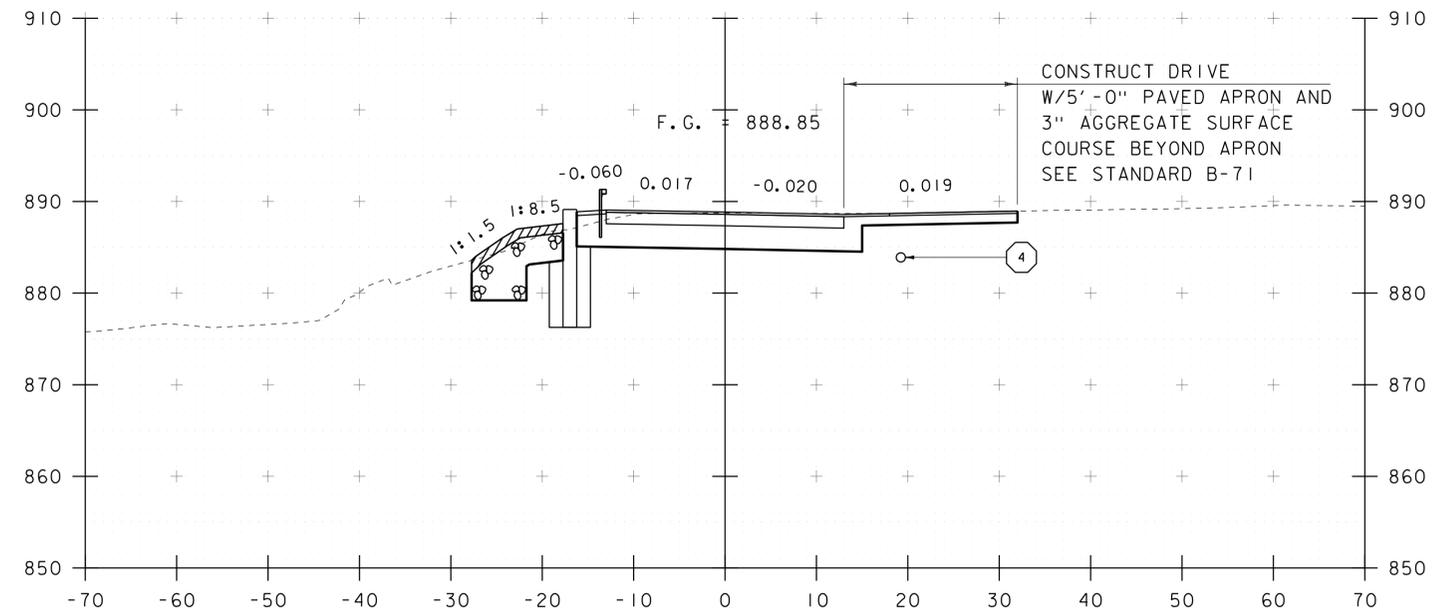
10+50

STA. 10+00 TO STA. 10+75

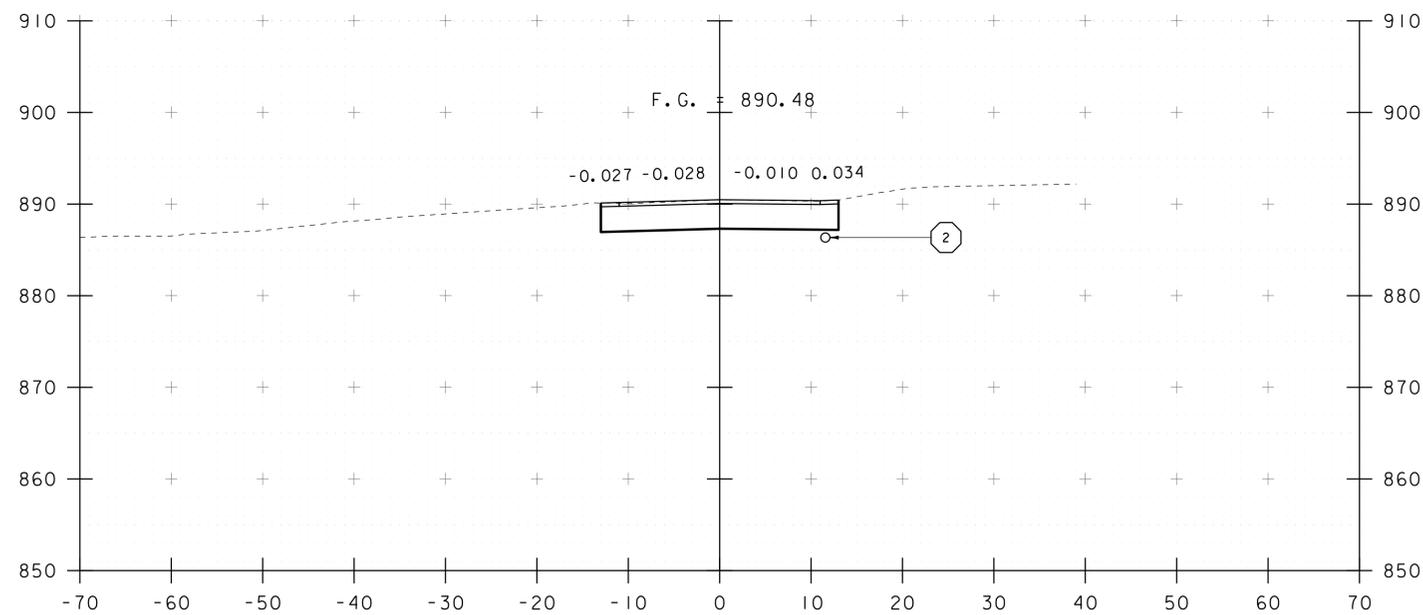
PROJECT NAME: STRAFFORD	
PROJECT NUMBER: BF 0177(10)	
FILE NAME: s13j088xsl.dgn	PLOT DATE: 04-AUG-2015
PROJECT LEADER: K. HIGGINS	DRAWN BY: R. KLINEFELTER
DESIGNED BY: R. KLINEFELTER	CHECKED BY: J. SALVATORI
MAINLINE SECTIONS	SHEET 17 OF 31



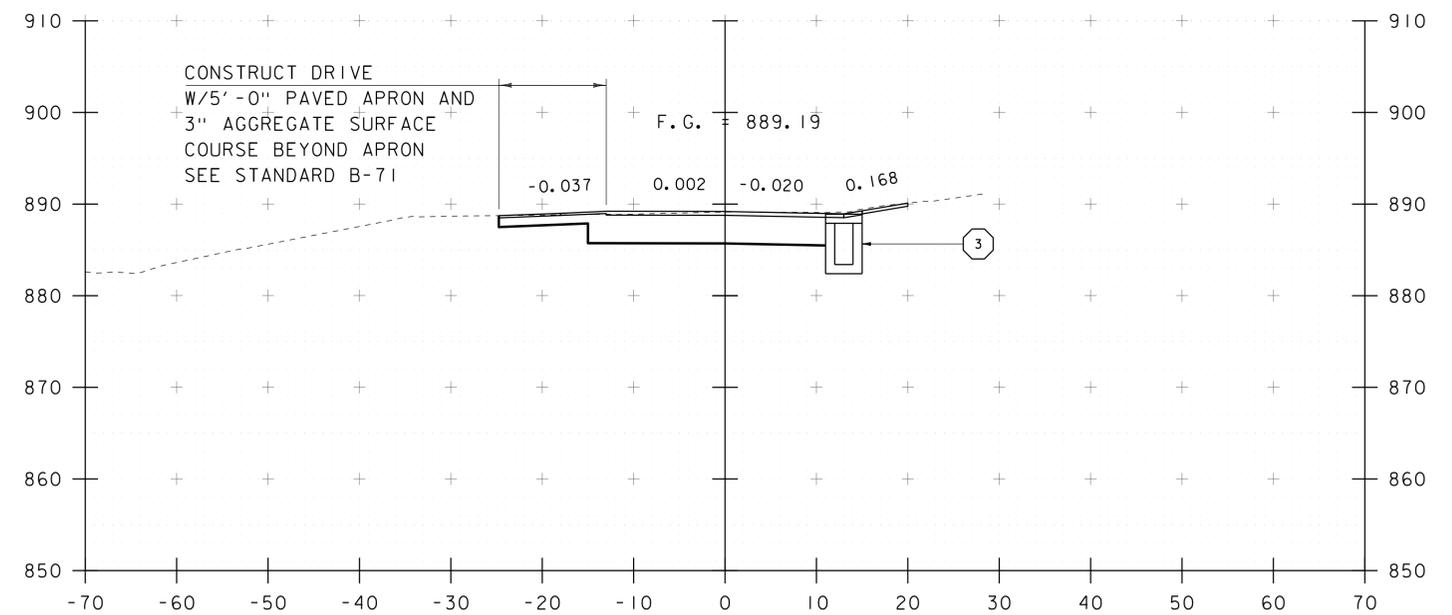
11+25



11+75
BEGIN BRIDGE STA 11+86.24



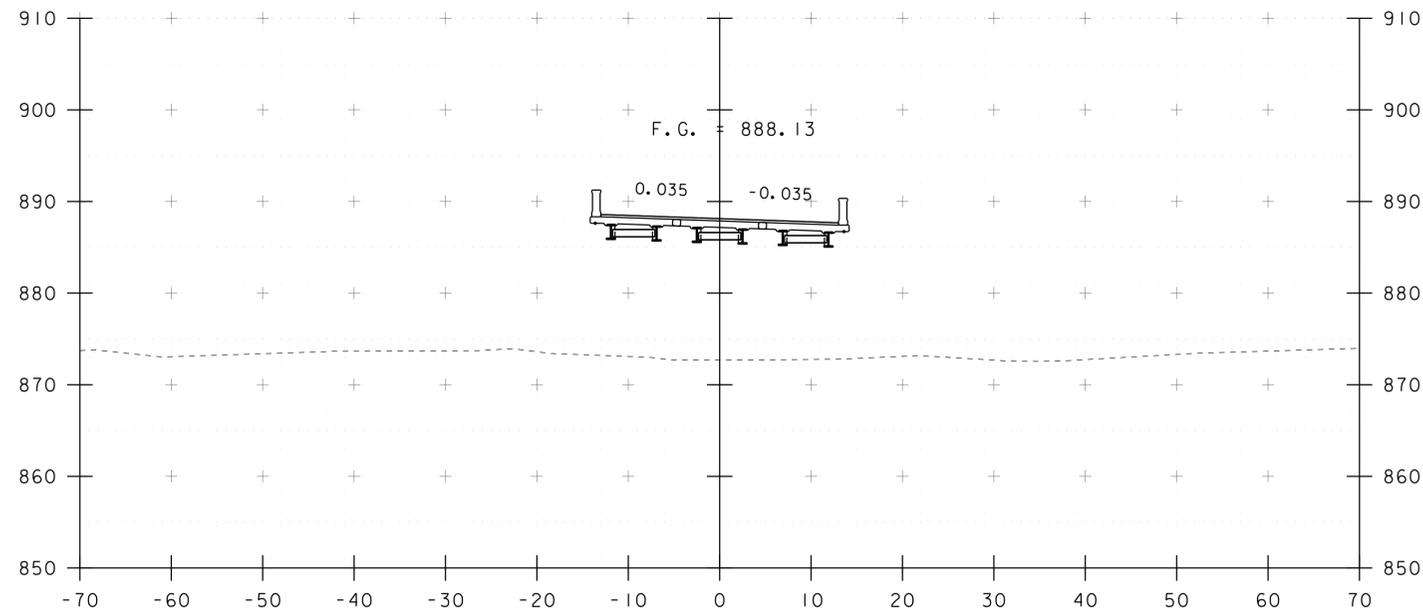
11+00
BEGIN PROJECT



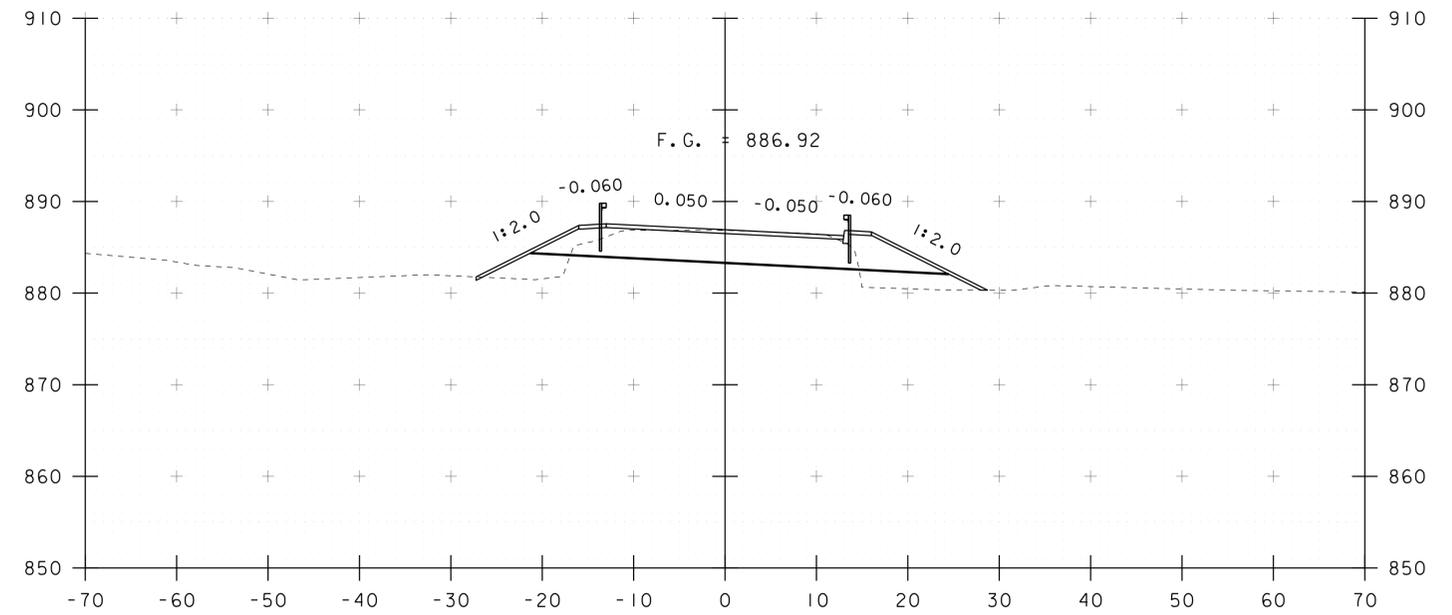
11+50

STA. 11+00 TO STA. 11+75

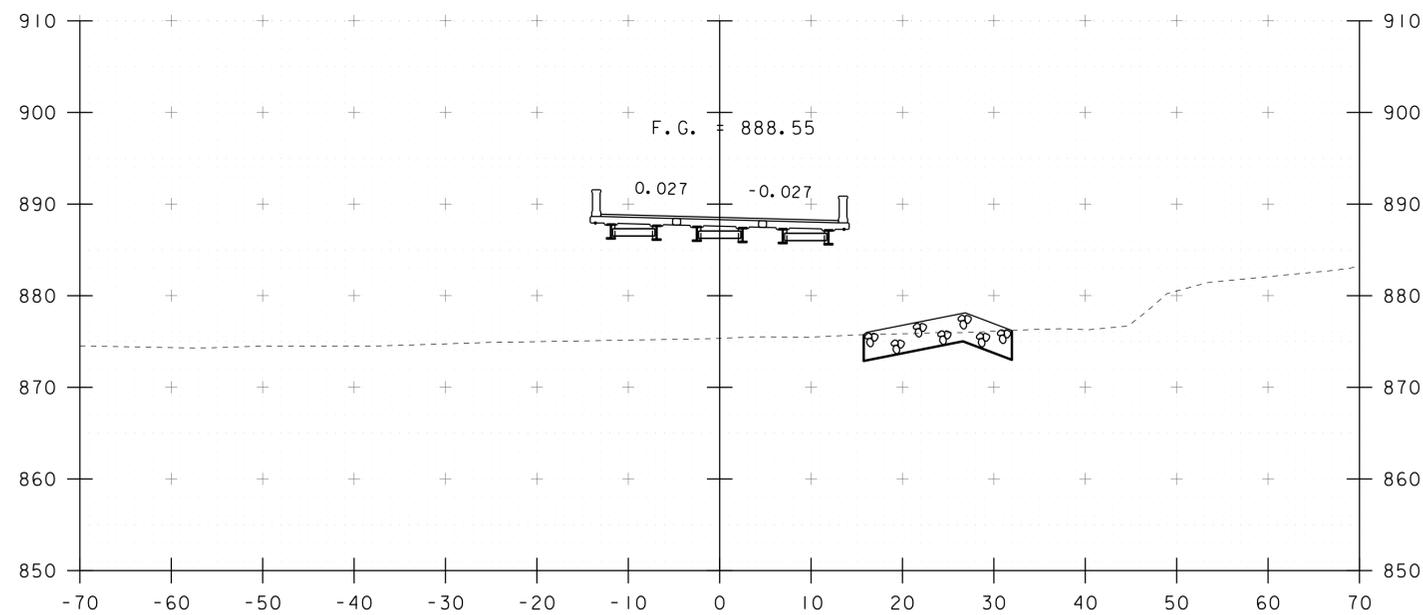
PROJECT NAME: STRAFFORD	
PROJECT NUMBER: BF 0177(10)	
FILE NAME: s13j088xsl.dgn	PLOT DATE: 04-AUG-2015
PROJECT LEADER: K. HIGGINS	DRAWN BY: R. KLINEFELTER
DESIGNED BY: R. KLINEFELTER	CHECKED BY: J. SALVATORI
MAINLINE SECTIONS	SHEET 18 OF 31



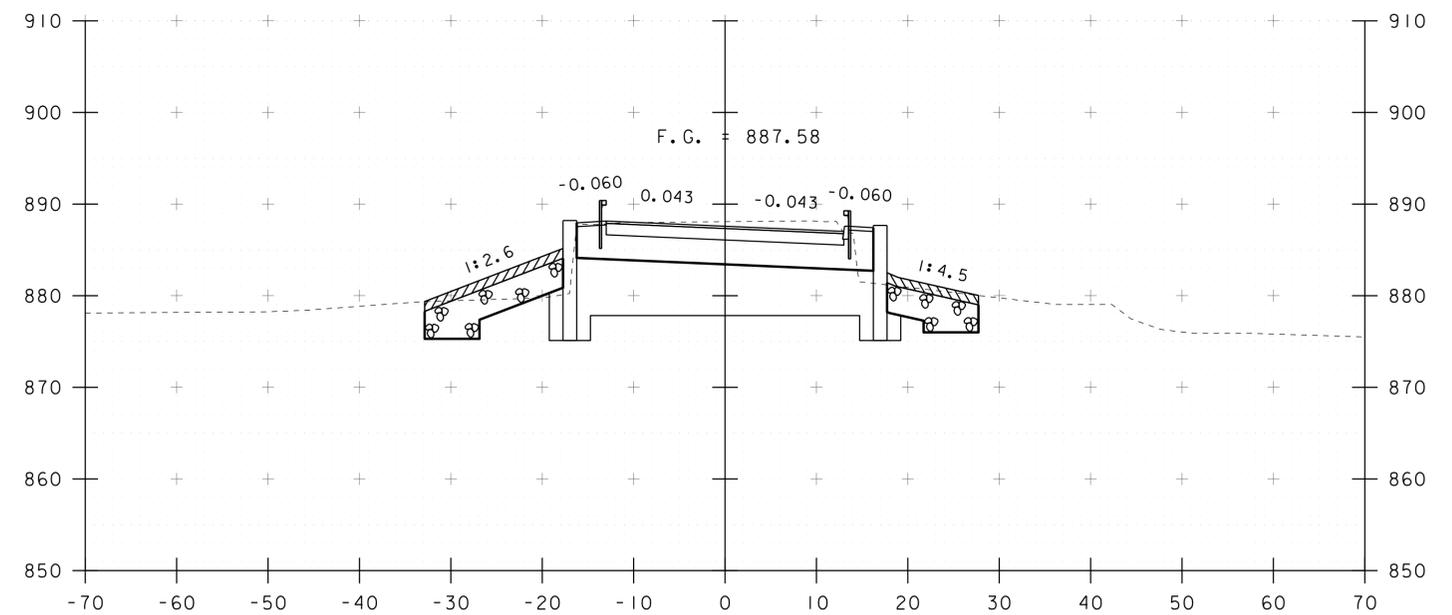
12+25
END BRIDGE STA 12+44.76



12+75



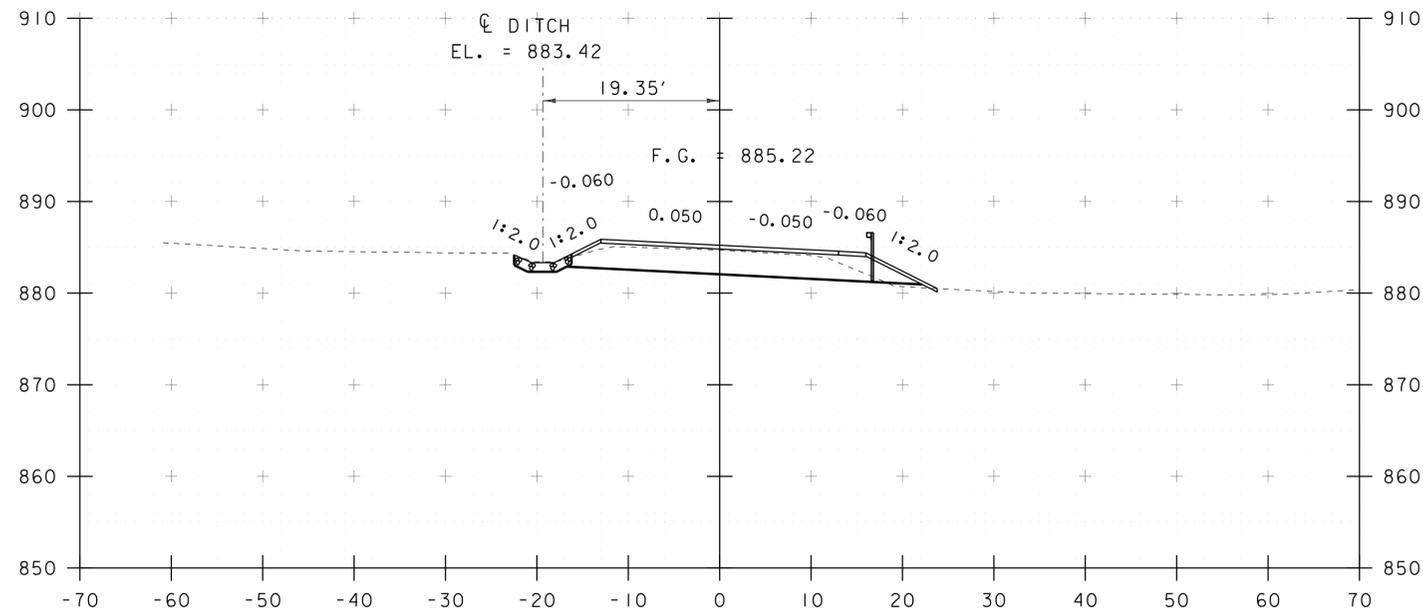
12+00



12+50

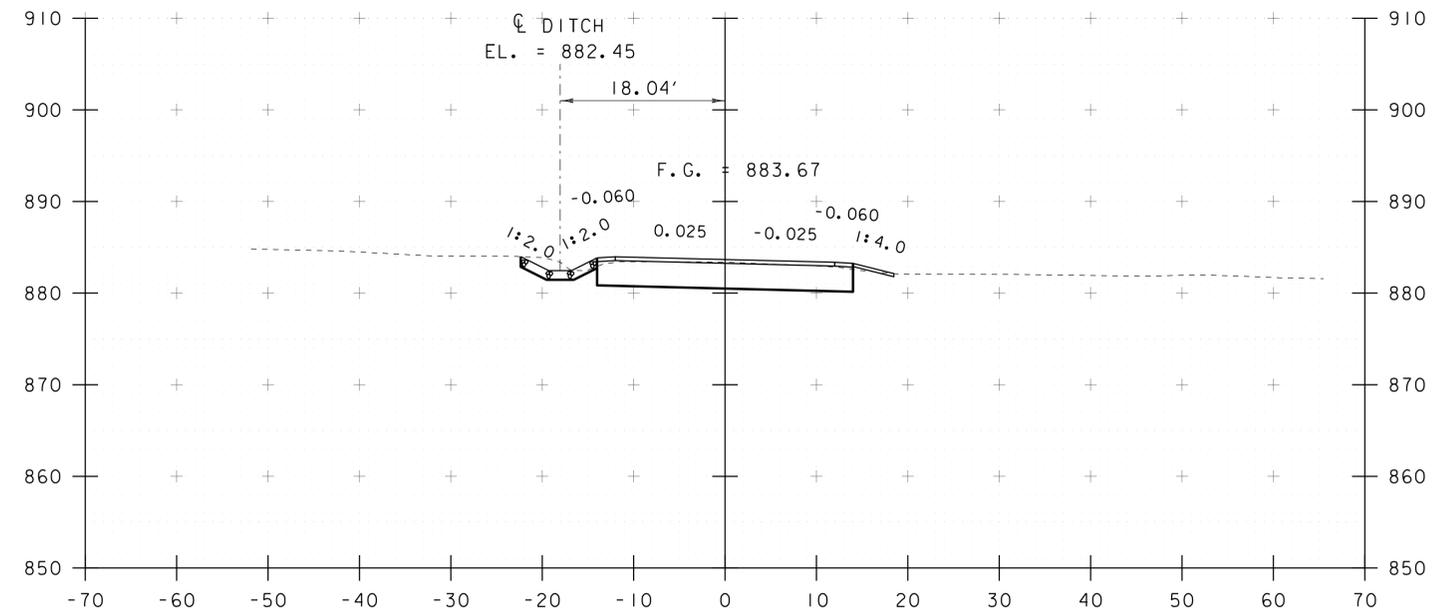
STA. 12+00 TO STA. 12+75

PROJECT NAME:	STRAFFORD	PLOT DATE:	04-AUG-2015
PROJECT NUMBER:	BF 0177(10)	DRAWN BY:	R. KLINEFELTER
FILE NAME:	sl3j088xsl.dgn	DESIGNED BY:	R. KLINEFELTER
PROJECT LEADER:	K. HIGGINS	CHECKED BY:	J. SALVATORI
MAINLINE SECTIONS		SHEET	19 OF 31

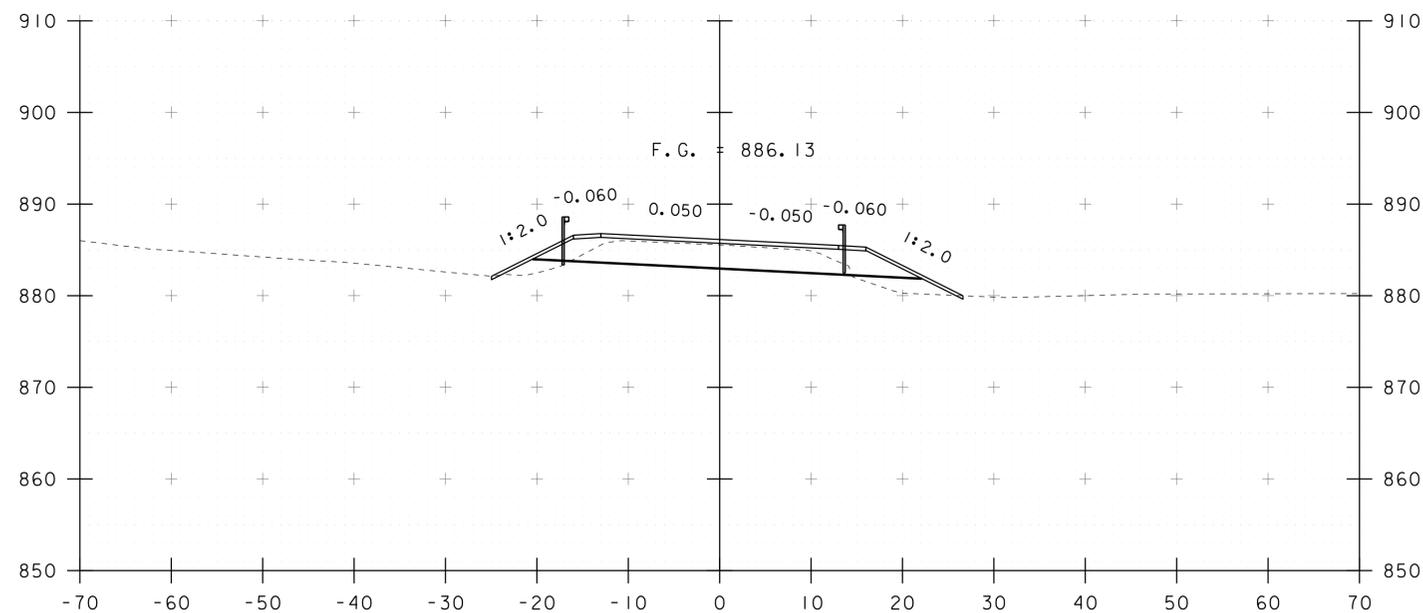


STA 13+25.00 LT
 BEGIN STONE FILL, TYPE I
 GEOTEXTILE UNDER STONE FILL

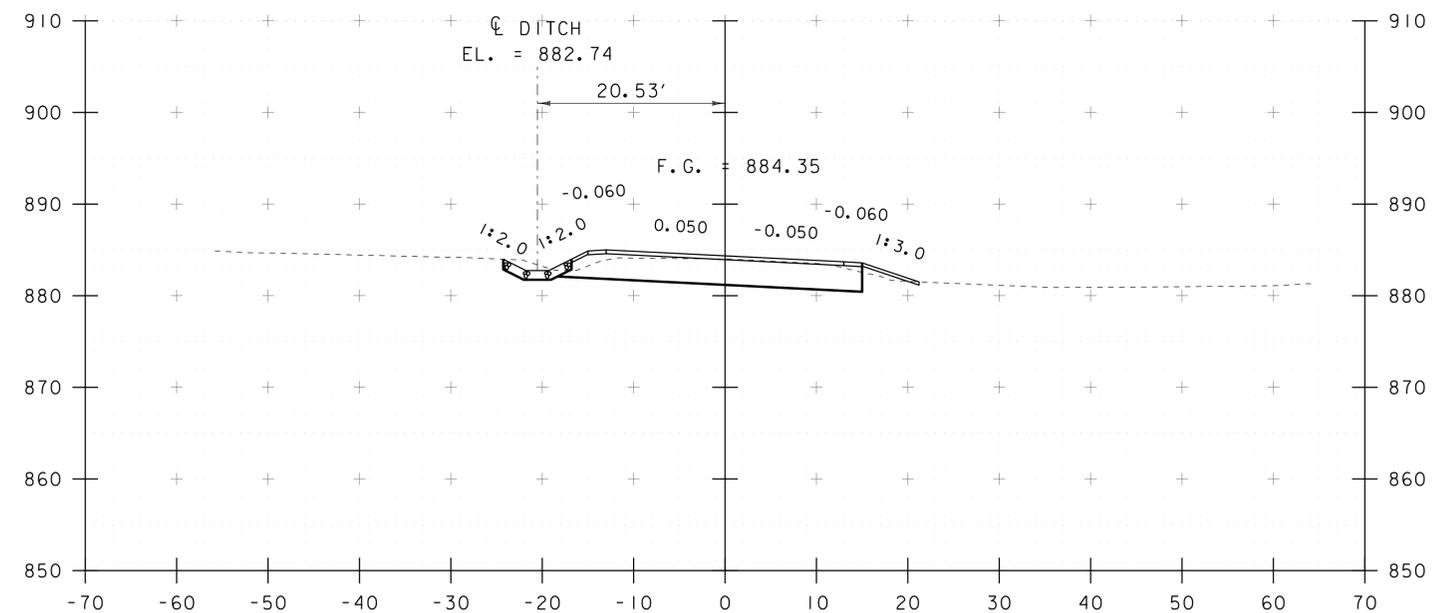
13+25



13+75



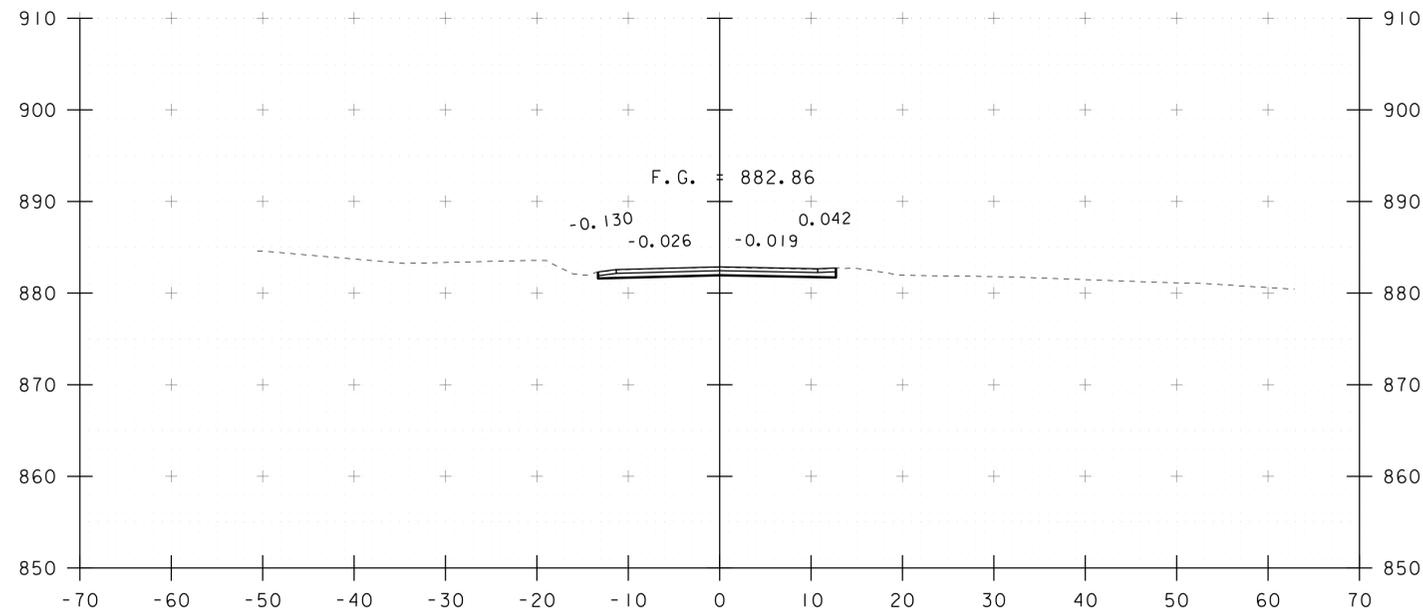
13+00



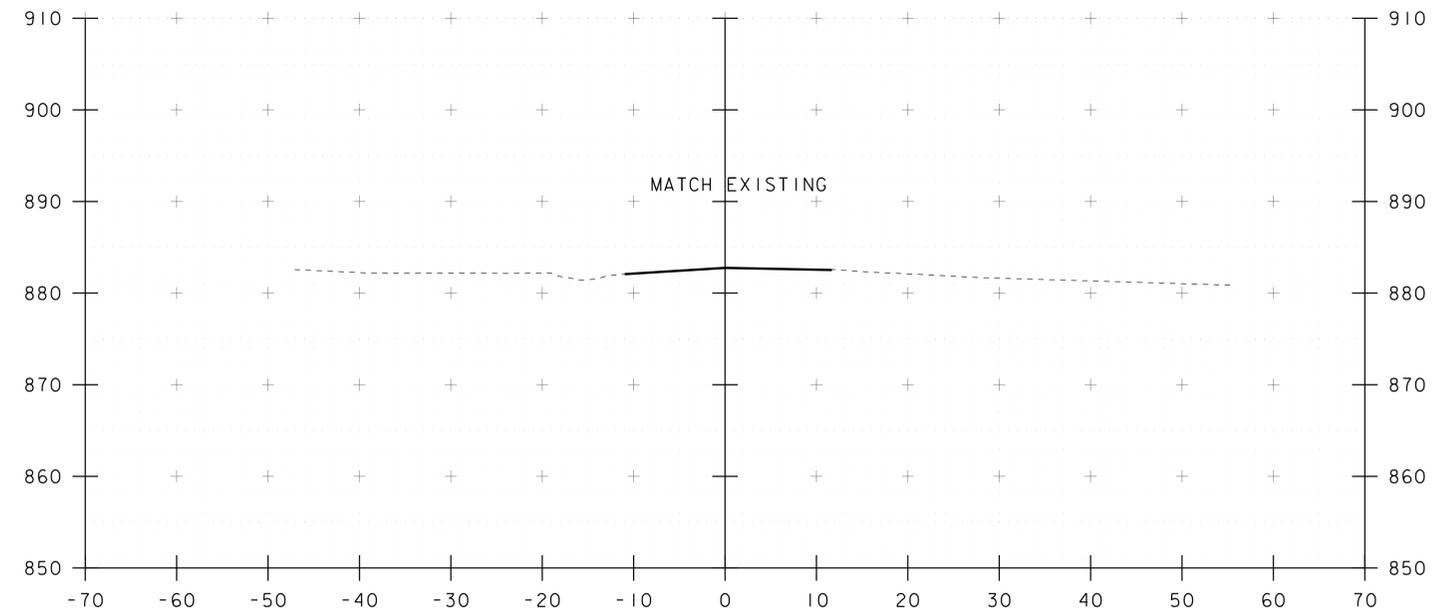
13+50

STA. 13+00 TO STA. 13+75

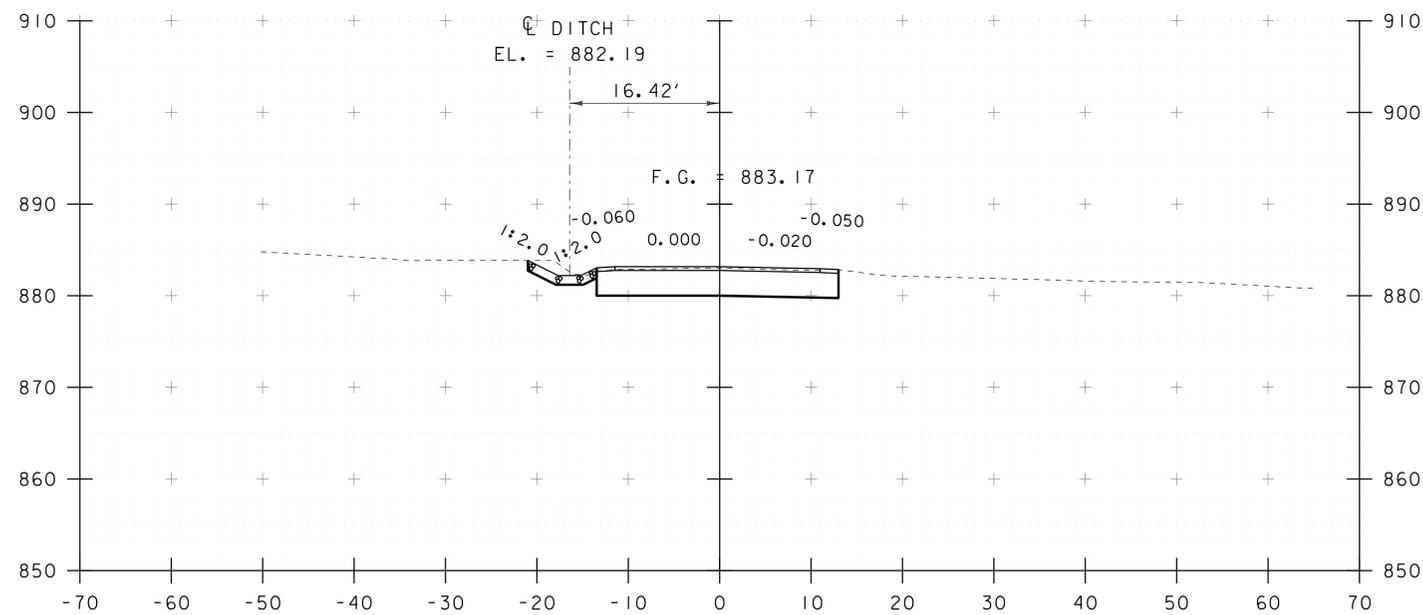
PROJECT NAME:	STRAFFORD	PLOT DATE:	04-AUG-2015
PROJECT NUMBER:	BF 0177(10)	DRAWN BY:	R. KLINEFELTER
FILE NAME:	sl3j088xsl.dgn	DESIGNED BY:	R. KLINEFELTER
PROJECT LEADER:	K. HIGGINS	CHECKED BY:	J. SALVATORI
DESIGNED BY:	R. KLINEFELTER	SHEET	20 OF 31
MAINLINE SECTIONS			



14+25

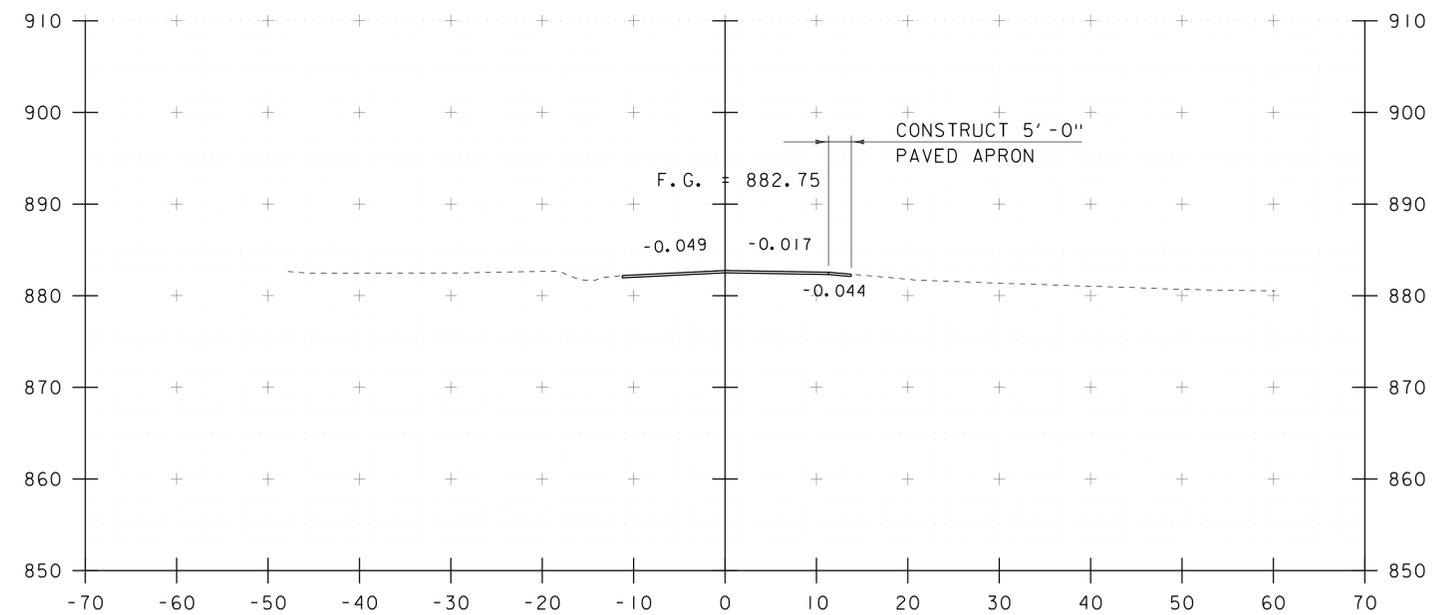


14+75
END APPROACH



14+00
END PROJECT

STA 14+20.00 LT
END STONE FILL, TYPE I
GEOTEXTILE UNDER STONE FILL



14+50

STA. 14+00 TO STA. 14+75

PROJECT NAME: STRAFFORD

PROJECT NUMBER: BF 0177(10)

FILE NAME: s13j088xsl.dgn

PROJECT LEADER: K. HIGGINS

DESIGNED BY: R. KLINEFELTER

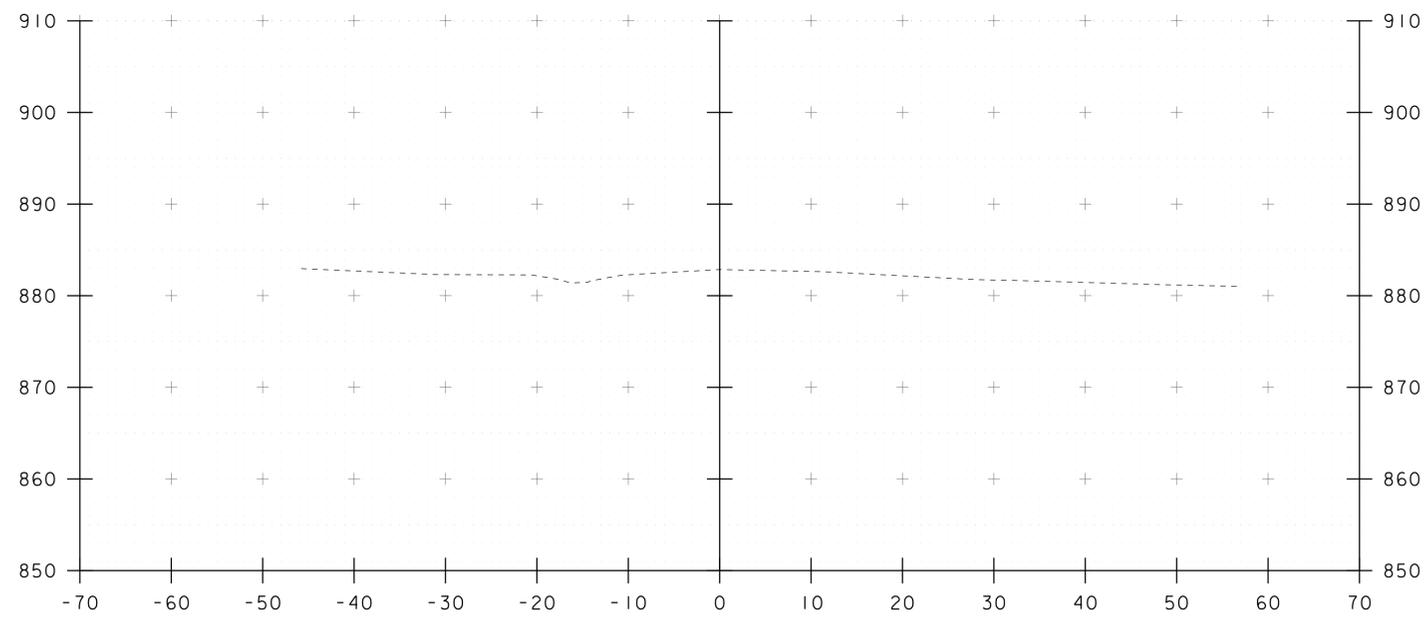
MAINLINE SECTIONS

PLOT DATE: 04-AUG-2015

DRAWN BY: R. KLINEFELTER

CHECKED BY: J. SALVATORI

SHEET 21 OF 31



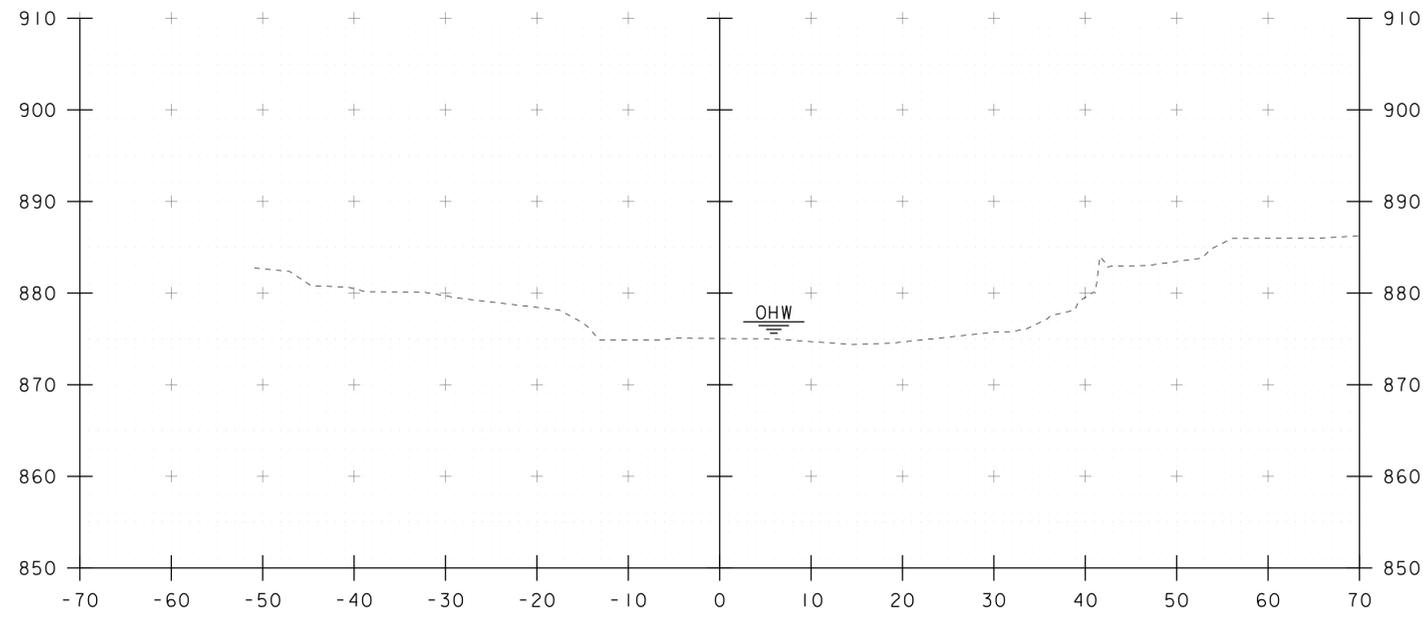
15+00

STA. 15+00 TO STA. 15+00

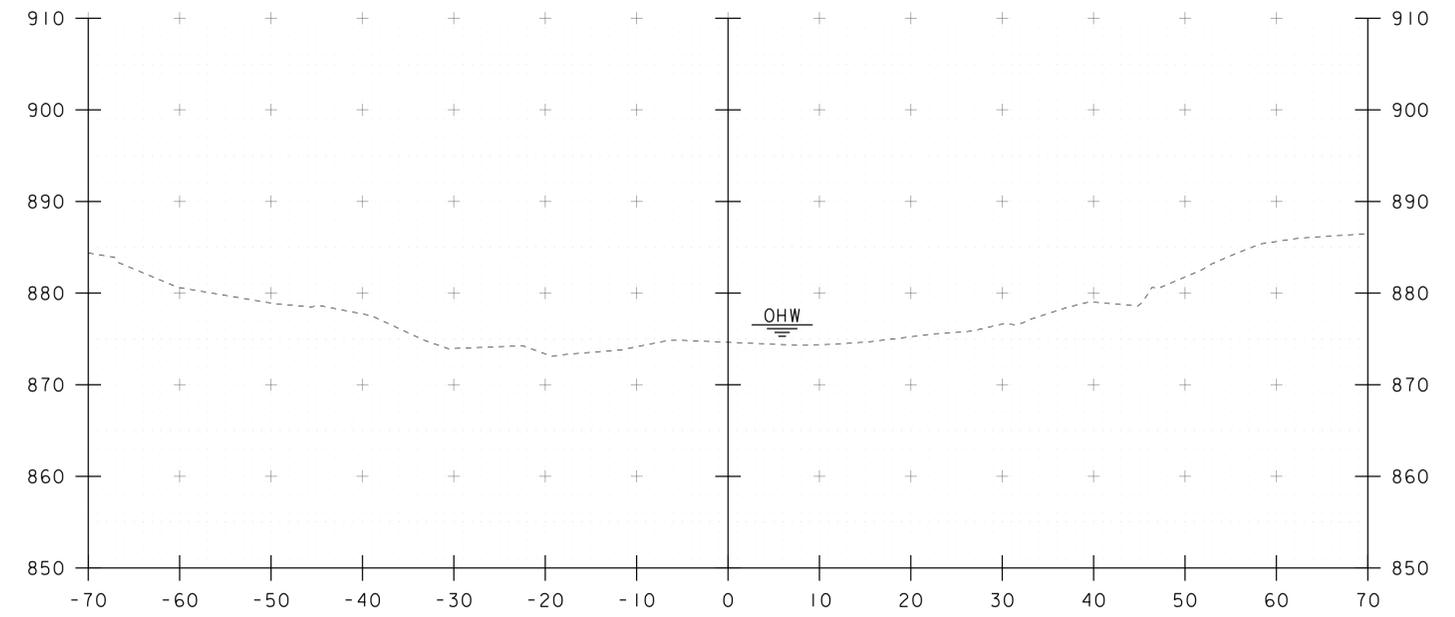
PROJECT NAME: STRAFFORD
 PROJECT NUMBER: BF 0177(10)

FILE NAME: s13j088xsl.dgn
 PROJECT LEADER: K. HIGGINS
 DESIGNED BY: R. KLINEFELTER
 MAINLINE SECTIONS

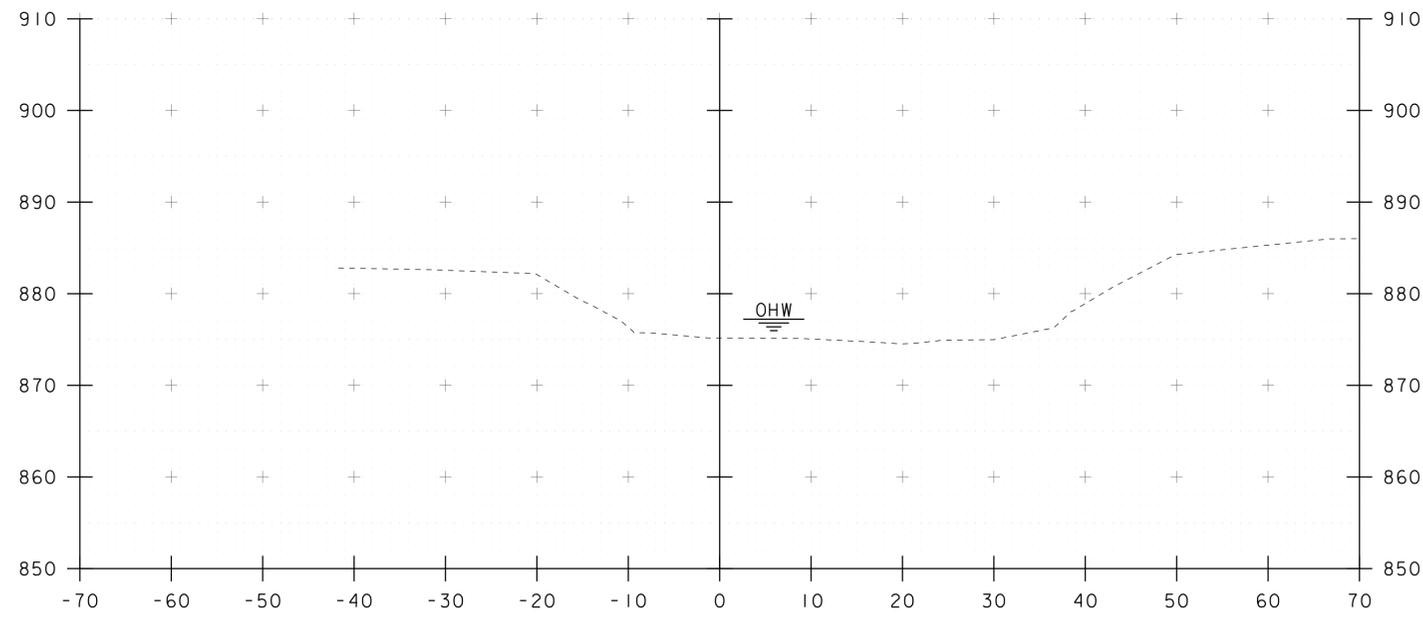
PLOT DATE: 04-AUG-2015
 DRAWN BY: R. KLINEFELTER
 CHECKED BY: J. SALVATORI
 SHEET 22 OF 31



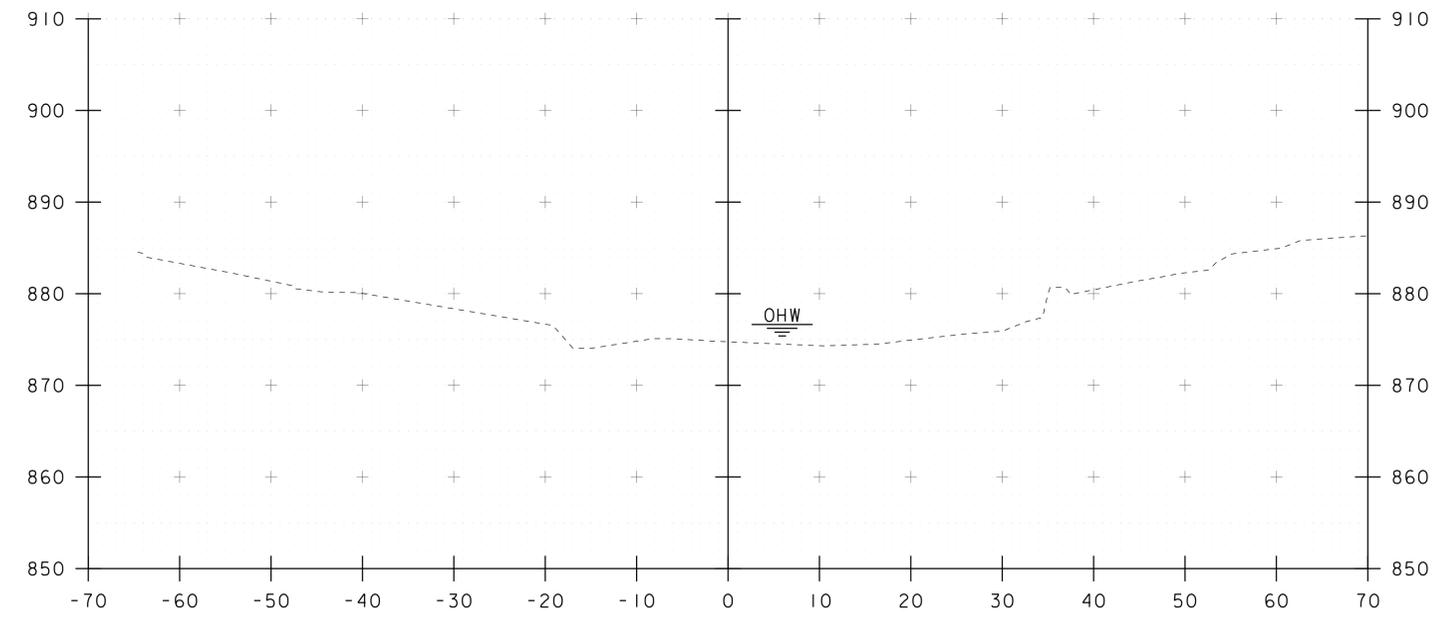
50+10



50+30



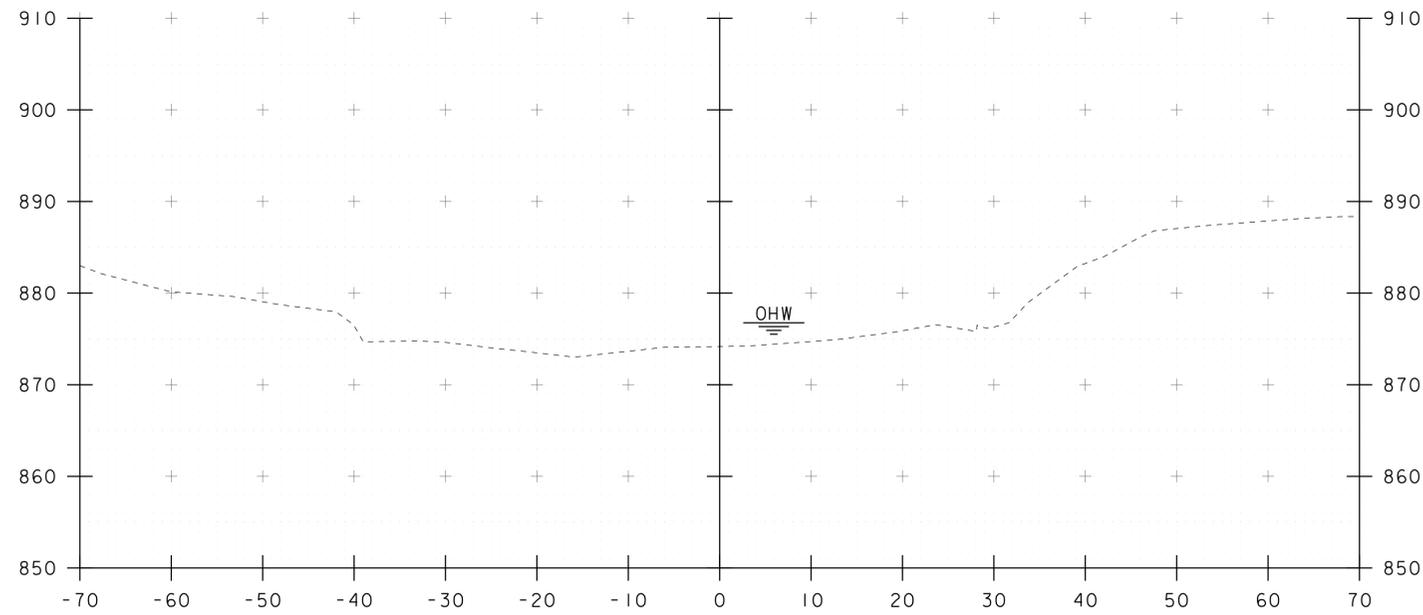
50+00



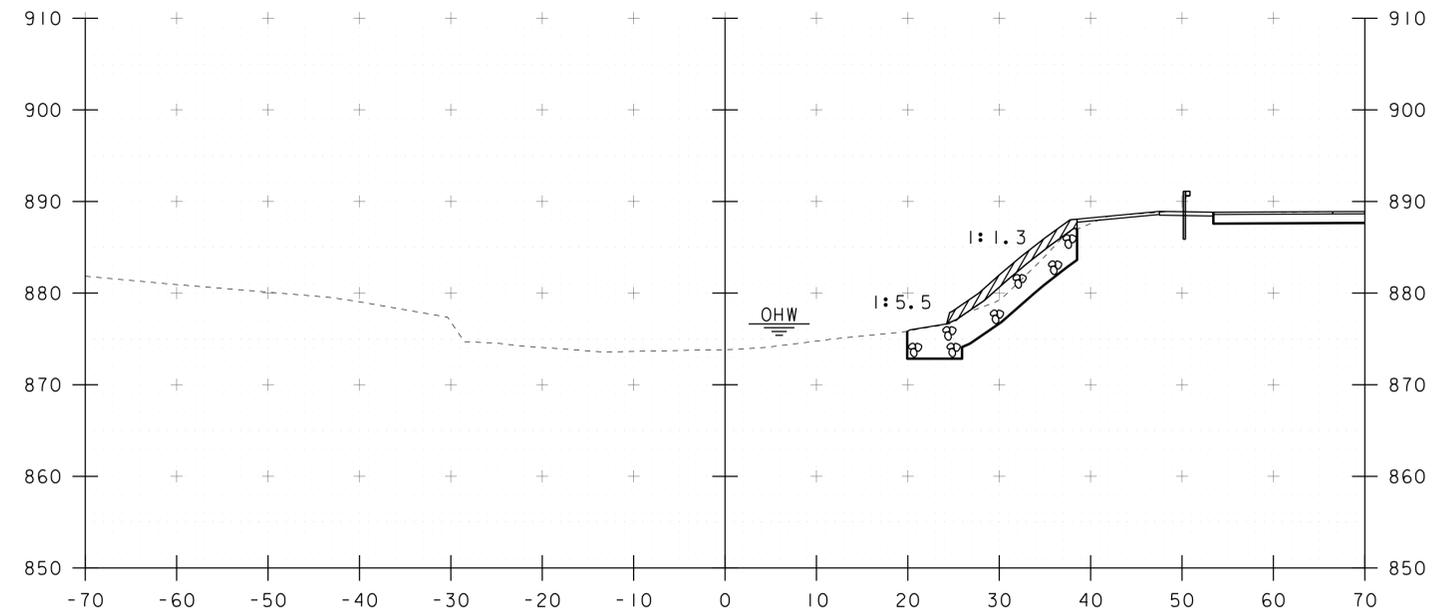
50+20

STA. 50+00 TO STA. 50+30

PROJECT NAME:	STRAFFORD	PLOT DATE:	04-AUG-2015
PROJECT NUMBER:	BF 0177(10)	DRAWN BY:	R. KLINEFELTER
FILE NAME:	sl3j088xsl.dgn	DESIGNED BY:	R. KLINEFELTER
PROJECT LEADER:	K. HIGGINS	CHECKED BY:	J. SALVATORI
CHANNEL SECTIONS		SHEET	23 OF 31

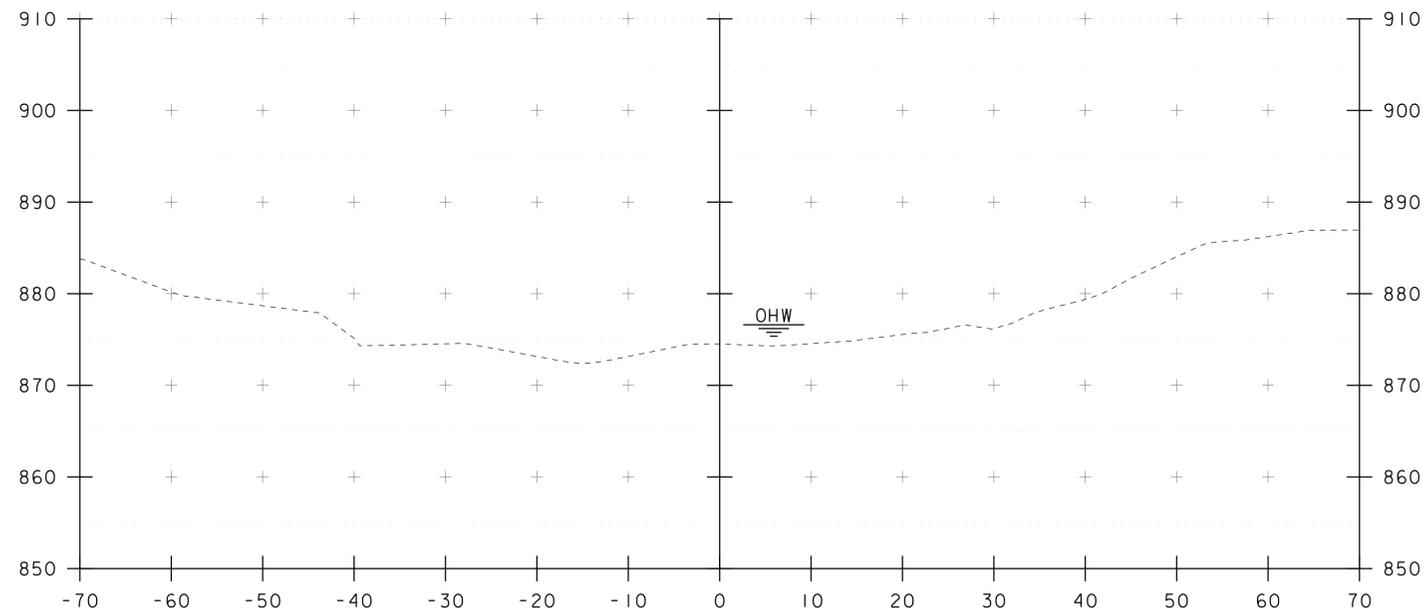


50+50

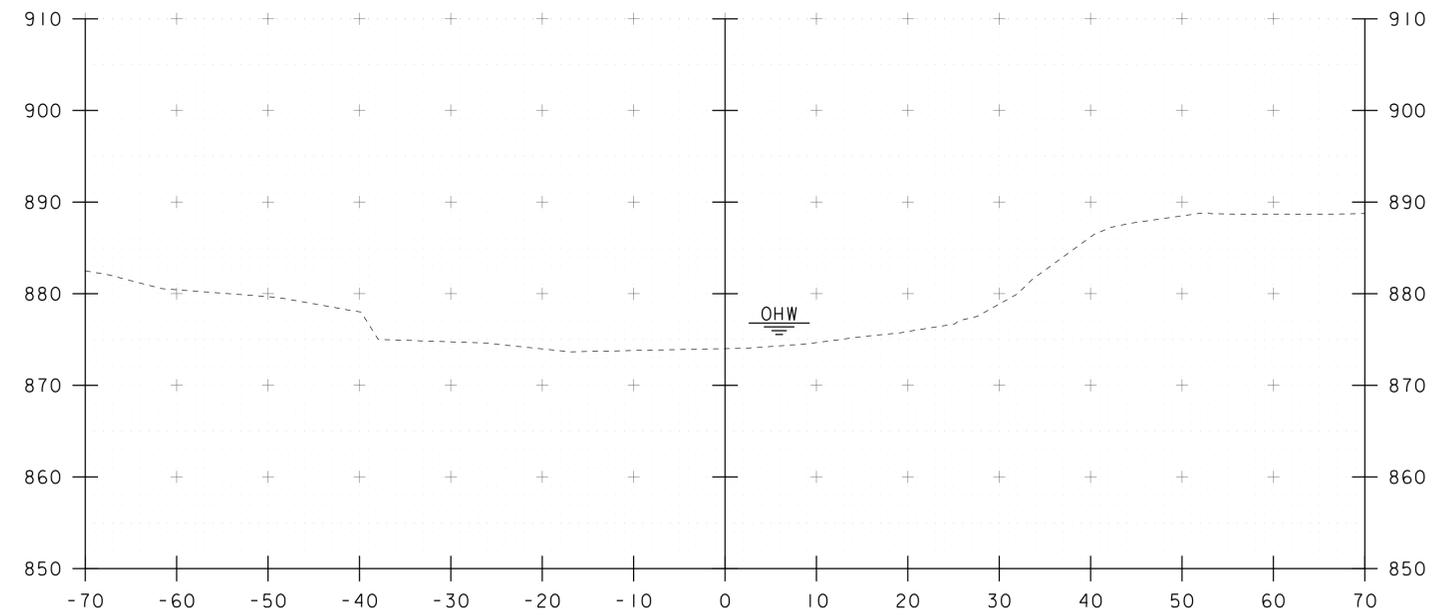


STA 50+76.00 LT
 BEGIN STONE FILL, TYPE III
 GEOTEXTILE UNDER STONE FILL
 GRUBBING MATERIAL
 UNCLASSIFIED CHANNEL EXCAVATION

50+70



50+40

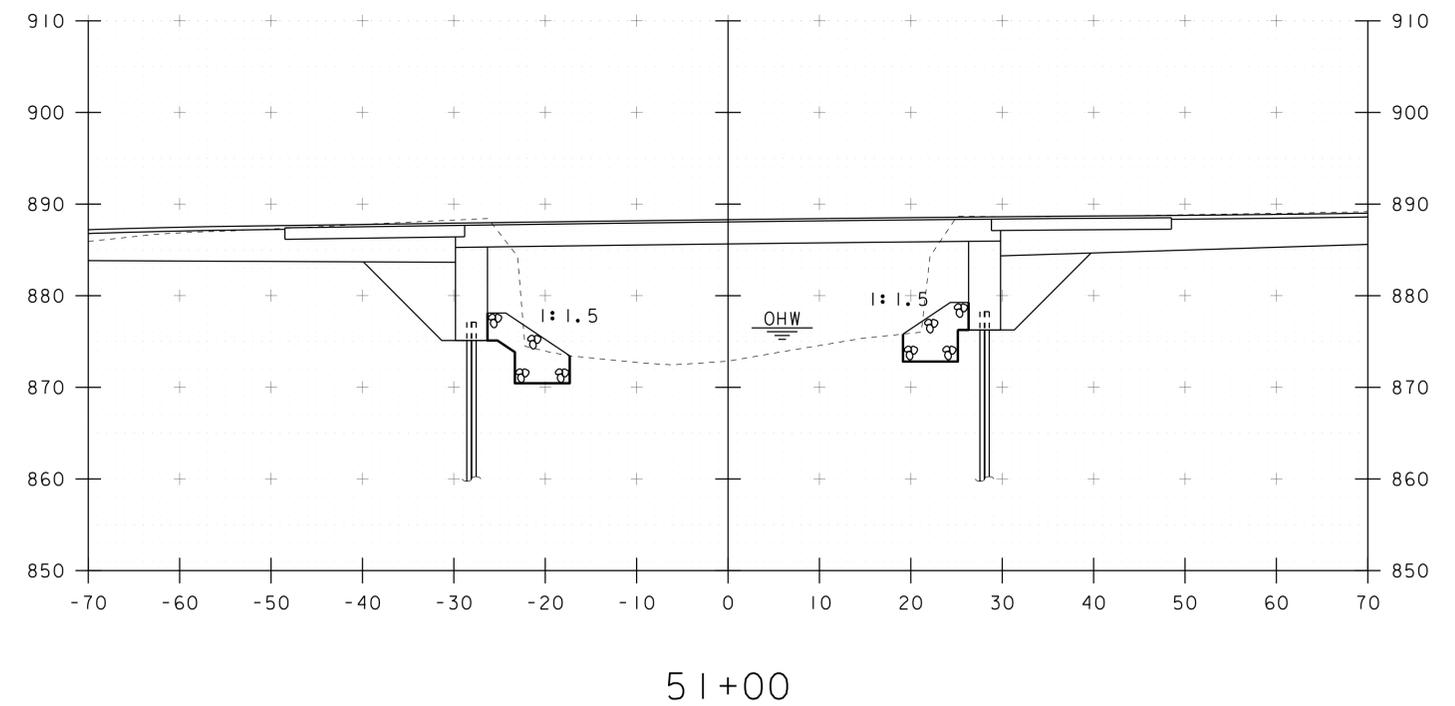
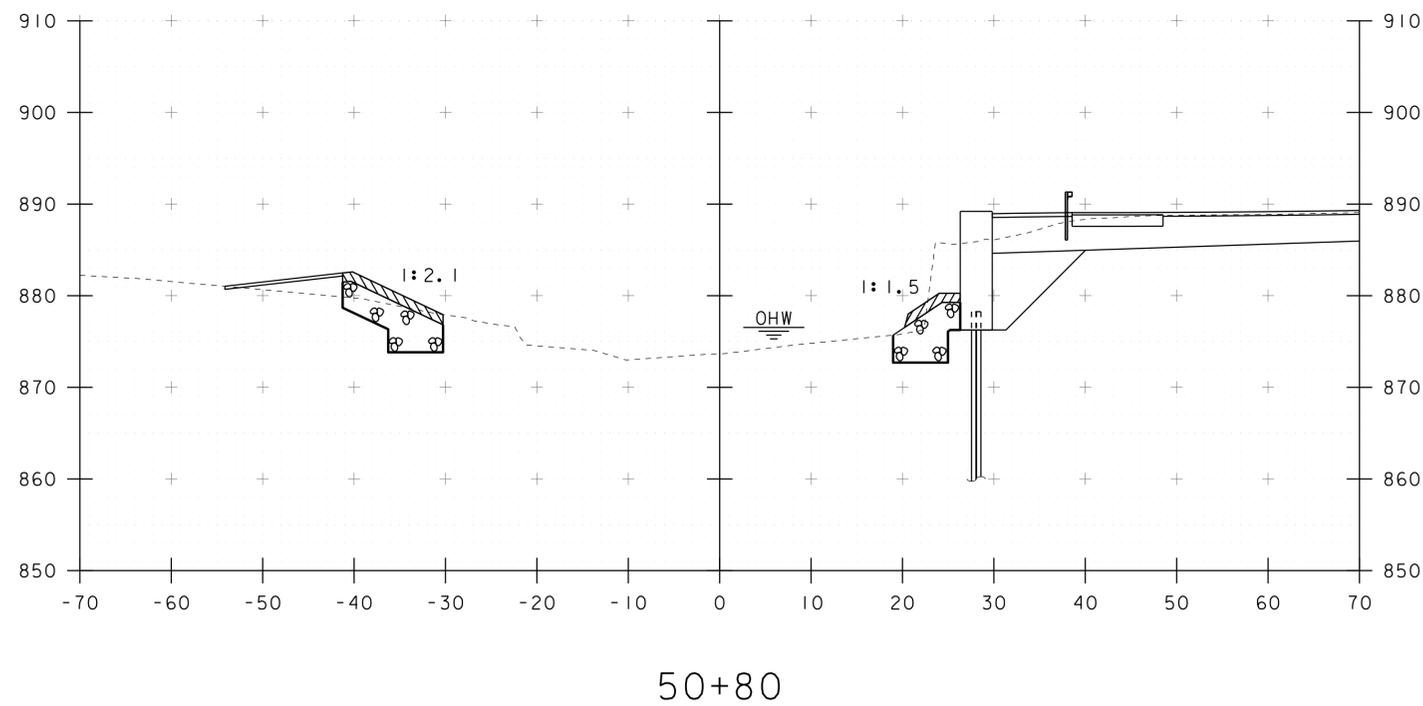
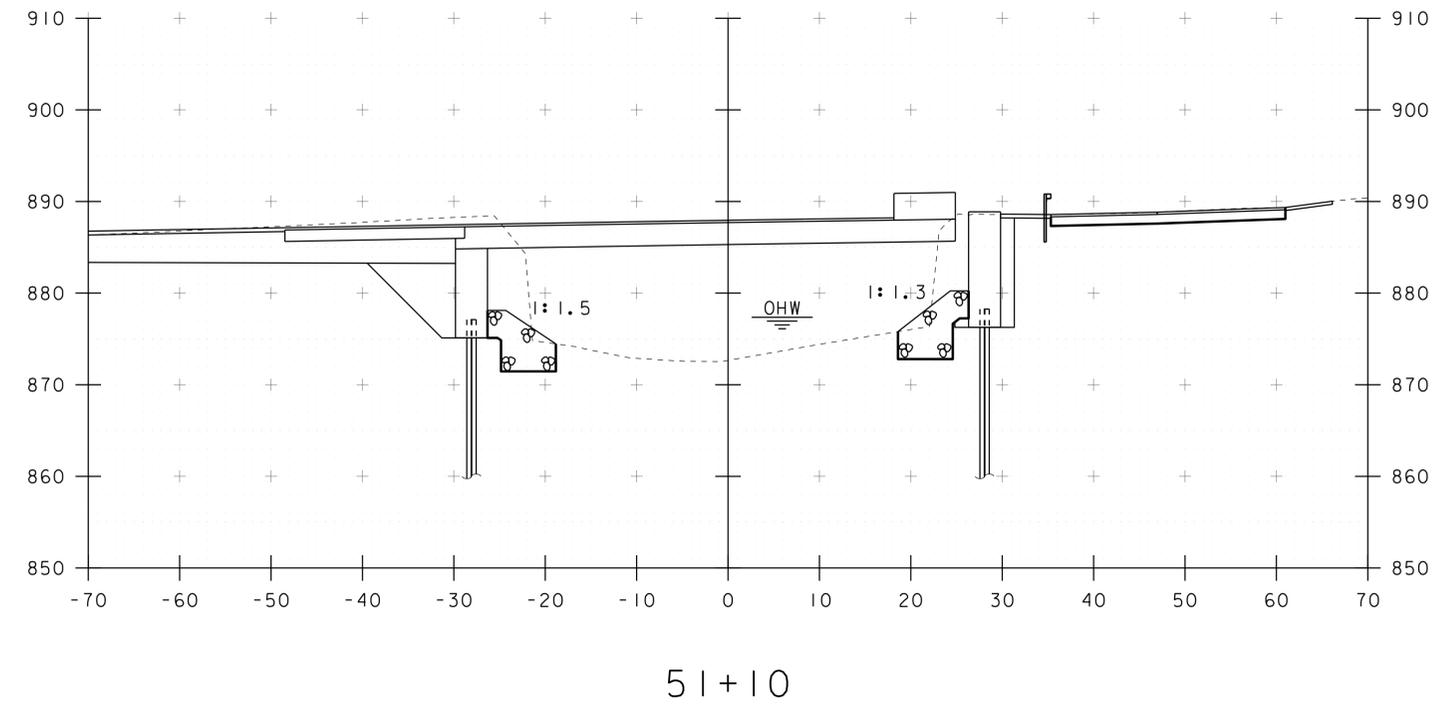
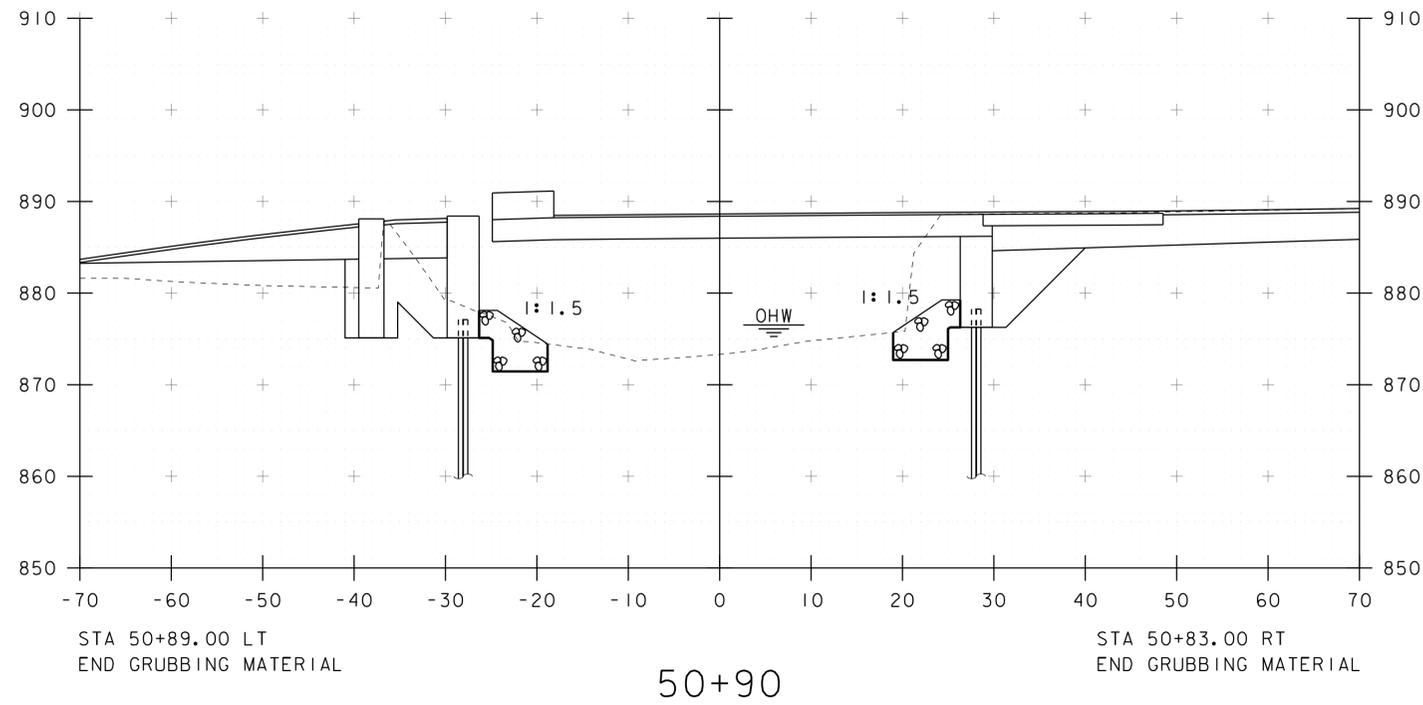


STA 50+65.00 RT
 BEGIN STONE FILL, TYPE III
 GEOTEXTILE UNDER STONE FILL
 GRUBBING MATERIAL
 UNCLASSIFIED CHANNEL EXCAVATION

50+60

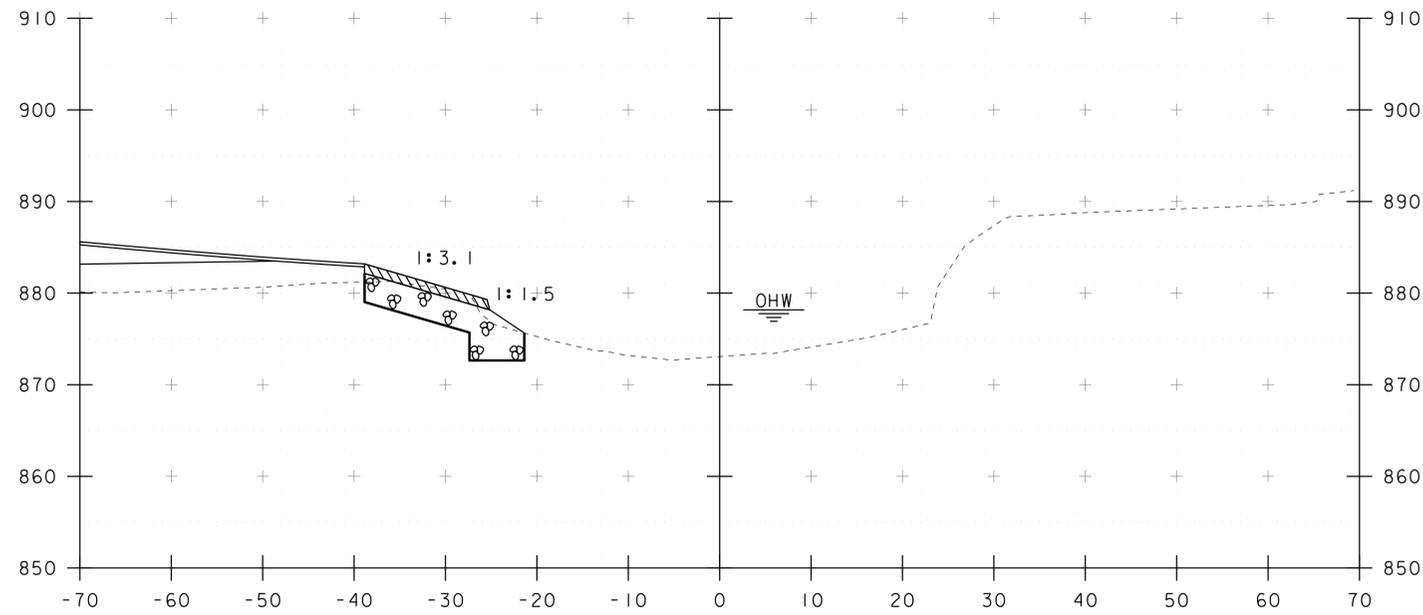
STA. 50+40 TO STA. 50+70

PROJECT NAME:	STRAFFORD	PLOT DATE:	04-AUG-2015
PROJECT NUMBER:	BF 0177(10)	DRAWN BY:	R. KLINEFELTER
FILE NAME:	sl3j088xsl.dgn	DESIGNED BY:	R. KLINEFELTER
PROJECT LEADER:	K. HIGGINS	CHECKED BY:	J. SALVATORI
CHANNEL SECTIONS		SHEET	24 OF 31



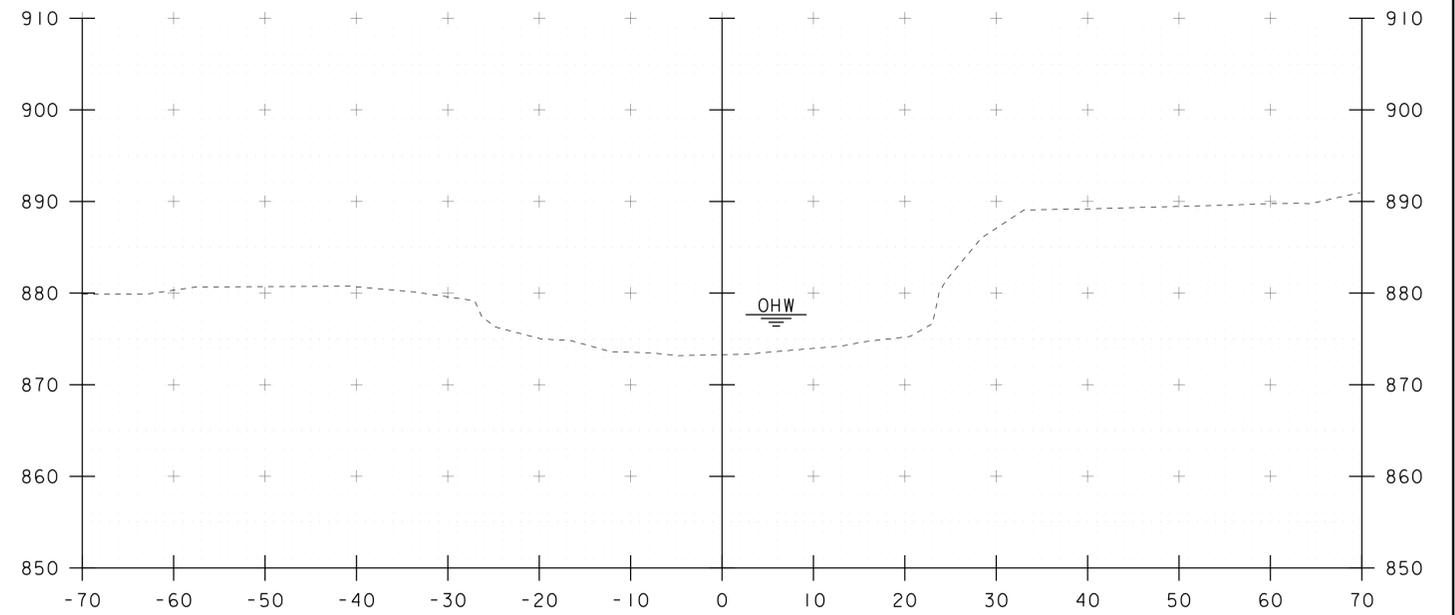
STA. 50+80 TO STA. 51+10

PROJECT NAME:	STRAFFORD	PLOT DATE:	04-AUG-2015
PROJECT NUMBER:	BF 0177(10)	DRAWN BY:	R. KLINEFELTER
FILE NAME:	s13j088xsl.dgn	DESIGNED BY:	R. KLINEFELTER
PROJECT LEADER:	K. HIGGINS	CHECKED BY:	J. SALVATORI
CHANNEL SECTIONS		SHEET	25 OF 31

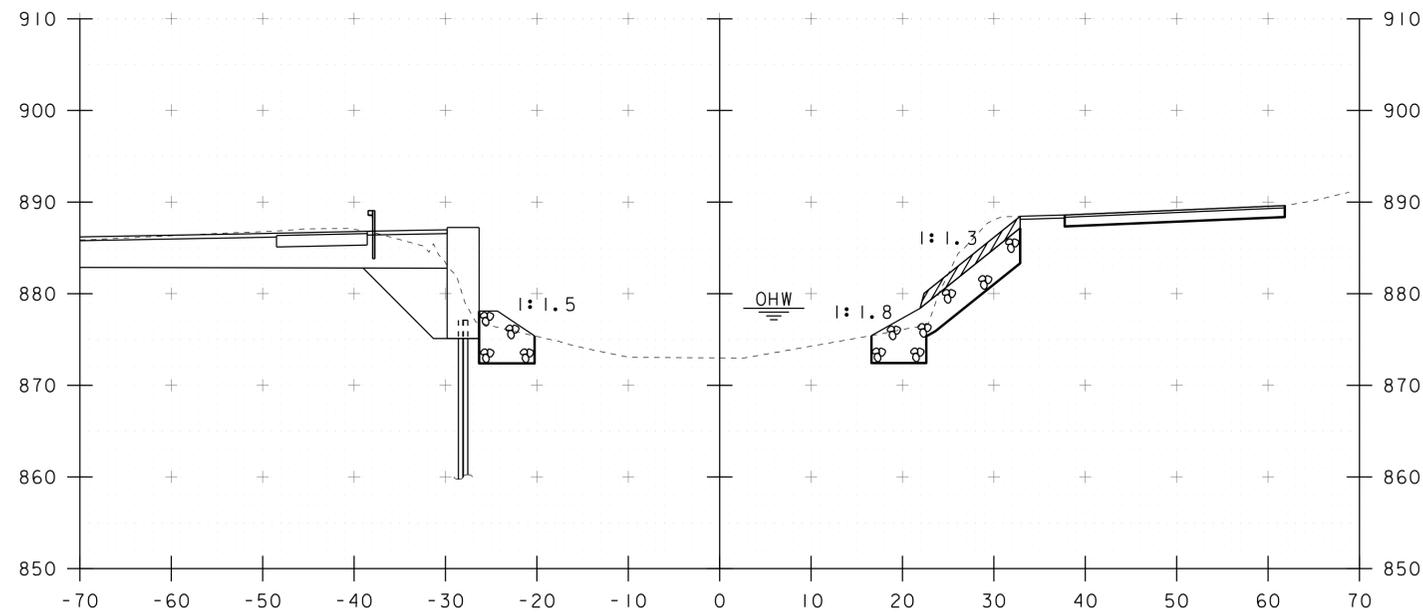


STA 51+35.00 LT
END STONE FILL, TYPE III
GEOTEXTILE UNDER STONE FILL
GRUBBING MATERIAL
UNCLASSIFIED CHANNEL EXCAVATION

51+30



51+50

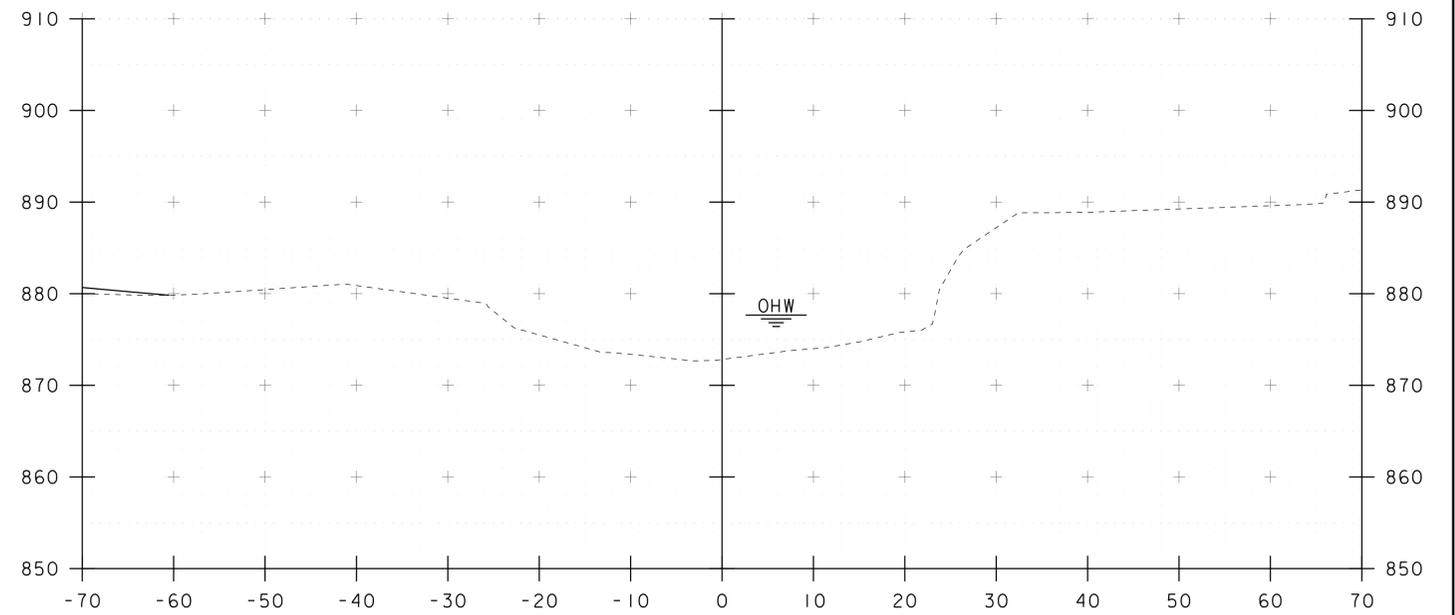


STA 51+18.00 LT
BEGIN GRUBBING MATERIAL

51+20

STA 51+11.00 RT
BEGIN GRUBBING MATERIAL

STA 51+29.00 RT
END STONE FILL, TYPE III
GEOTEXTILE UNDER STONE FILL
GRUBBING MATERIAL
UNCLASSIFIED CHANNEL EXCAVATION

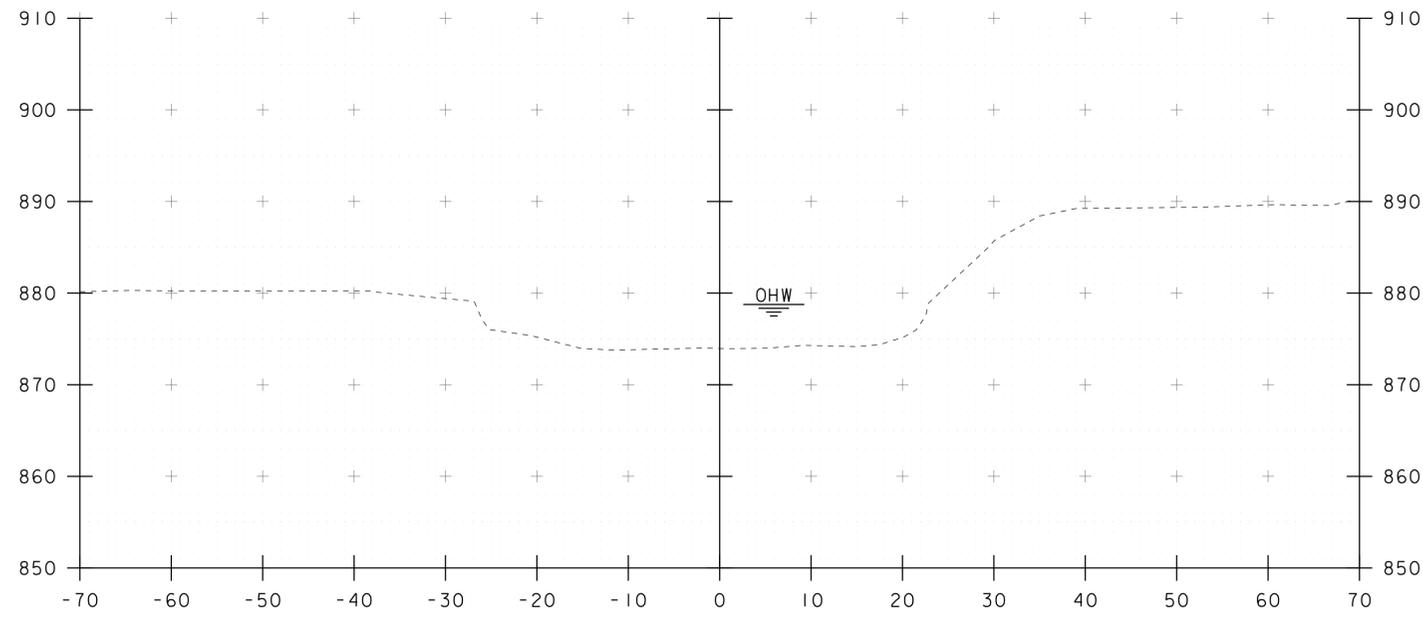


51+40

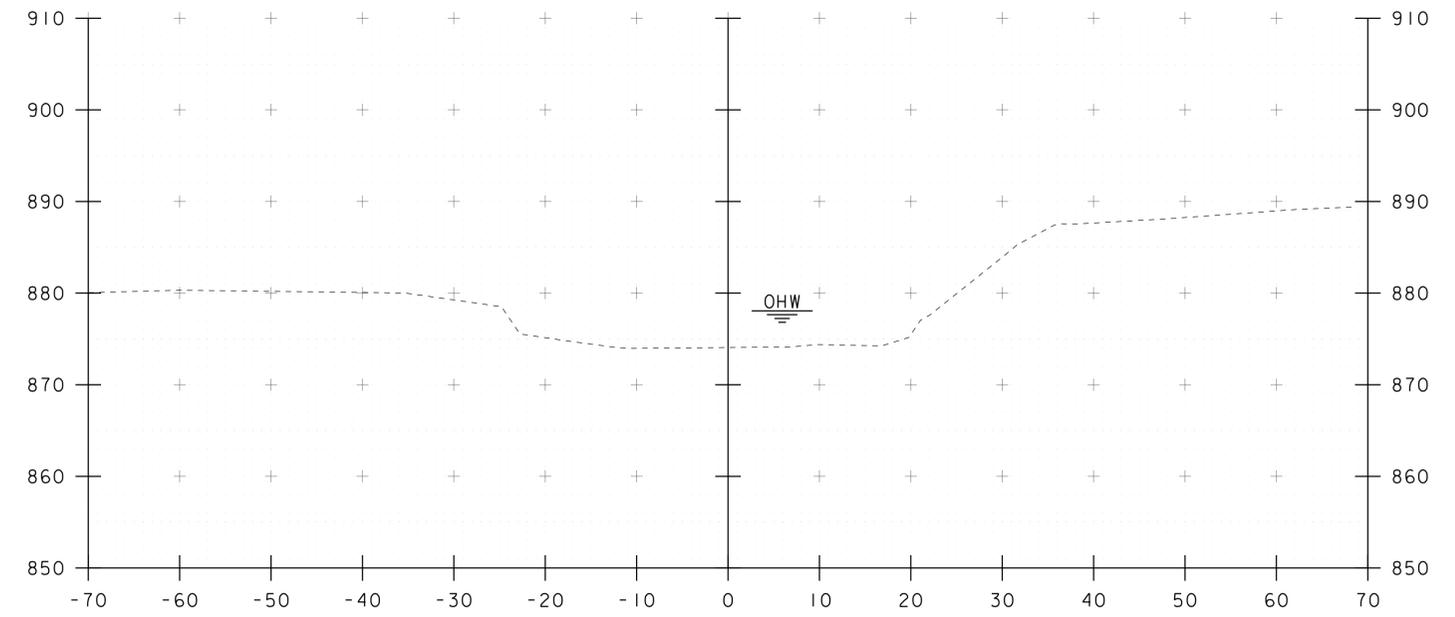
STA. 51+20 TO STA. 51+50

PROJECT NAME: STRAFFORD
PROJECT NUMBER: BF 0177(10)
FILE NAME: s13j088xsl.dgn
PROJECT LEADER: K. HIGGINS
DESIGNED BY: R. KLINEFELTER
CHANNEL SECTIONS

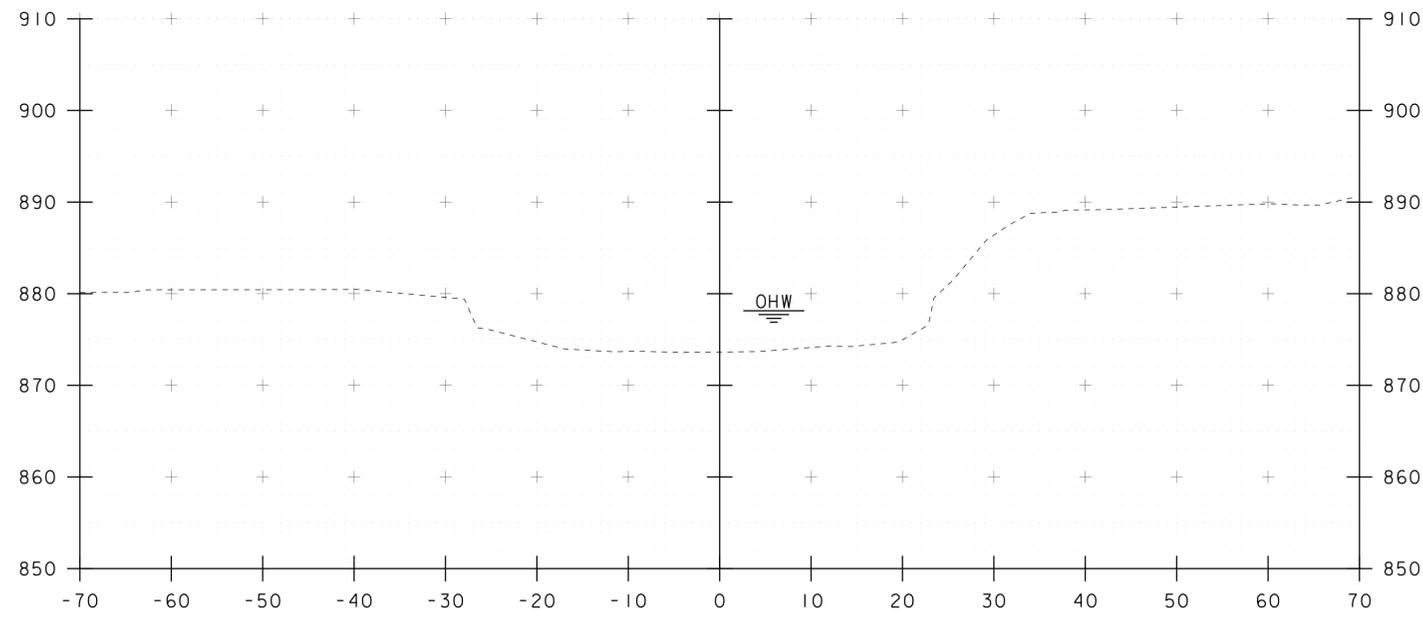
PLOT DATE: 04-AUG-2015
DRAWN BY: R. KLINEFELTER
CHECKED BY: J. SALVATORI
SHEET 26 OF 31



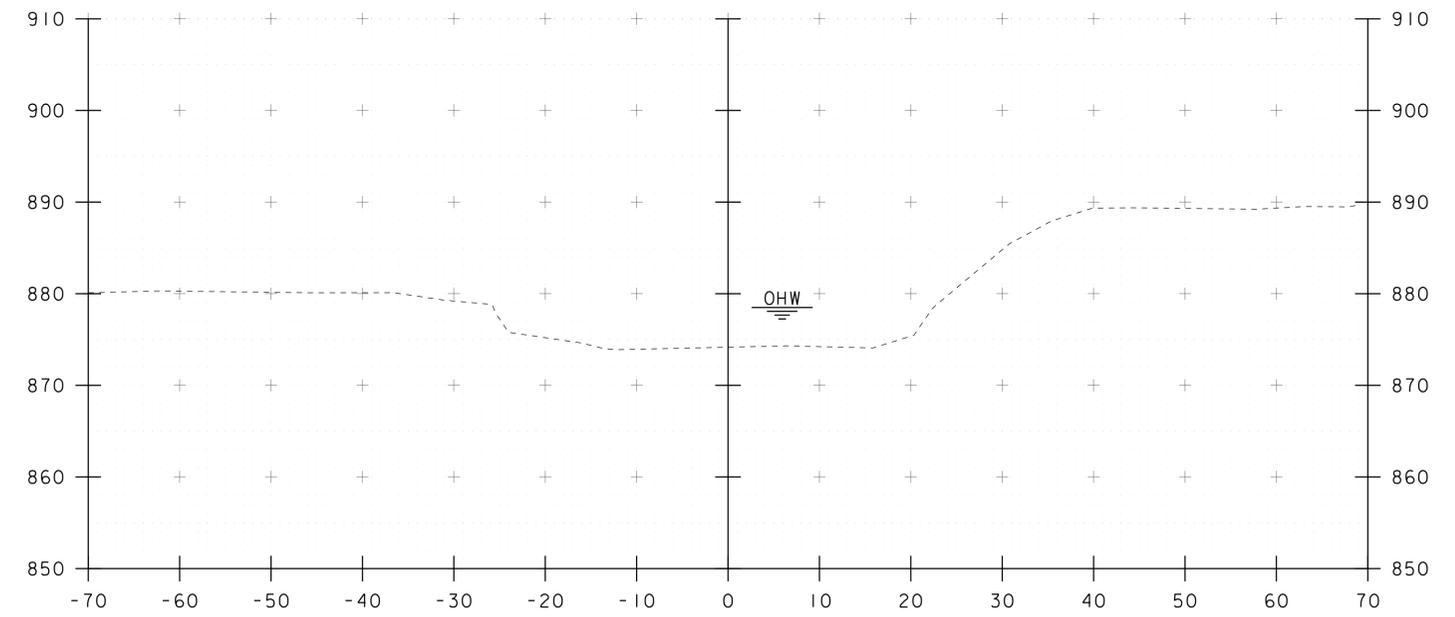
51+70



51+90



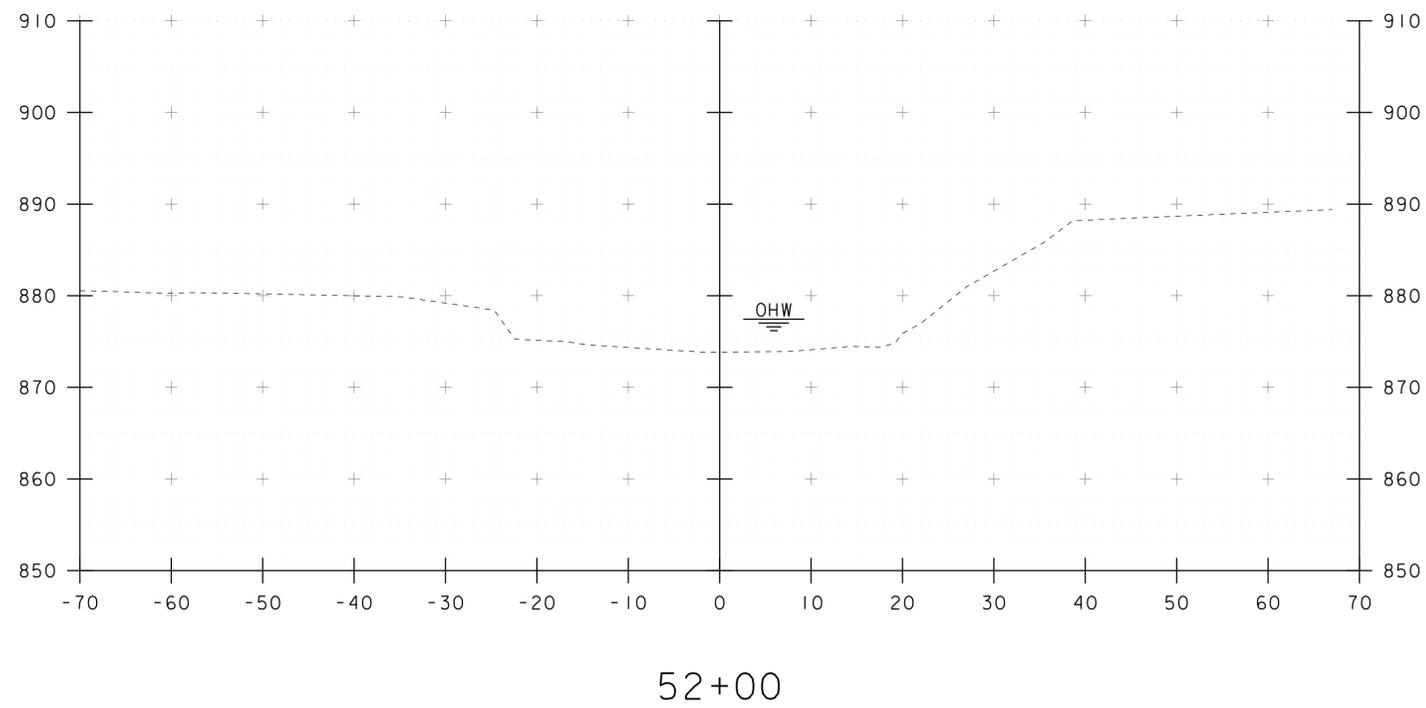
51+60



51+80

STA. 51+60 TO STA. 51+90

PROJECT NAME:	STRAFFORD	PLOT DATE:	04-AUG-2015
PROJECT NUMBER:	BF 0177(10)	DRAWN BY:	R. KLINEFELTER
FILE NAME:	sl3j088xsl.dgn	DESIGNED BY:	R. KLINEFELTER
PROJECT LEADER:	K. HIGGINS	CHECKED BY:	J. SALVATORI
CHANNEL SECTIONS		SHEET	27 OF 31



STA. 52+00 TO STA. 52+00

PROJECT NAME: STRAFFORD	PLOT DATE: 04-AUG-2015
PROJECT NUMBER: BF 0177(10)	DRAWN BY: R. KLINEFELTER
FILE NAME: s13j088xsl.dgn	CHECKED BY: J. SALVATORI
PROJECT LEADER: K. HIGGINS	SHEET 28 OF 31
DESIGNED BY: R. KLINEFELTER	
CHANNEL SECTIONS	

EPSC PLAN NARRATIVE

1.1 PROJECT DESCRIPTION

THIS PROJECT INVOLVES THE REMOVAL OF BRIDGE 29 IN ITS ENTIRETY. BRIDGE 29 WILL BE REPLACED WITH A NEW STRUCTURE, SPANNING 53 FEET OVER THE WEST BRANCH OMPOMPANOOSUC RIVER, ON NEW ABUTMENTS ALONG THE EXISTING ALIGNMENT. BRIDGE 29 IS LOCATED IN THE TOWN OF STRAFFORD, ON TOWN HIGHWAY 1 (FAS 0177), APPROXIMATELY 0.04 MILES NORTH OF THE INTERSECTION OF TOWN HIGHWAY 1 AND TOWN HIGHWAY 4.

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

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

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

1.2 SITE INVENTORY

1.2.1 TOPOGRAPHY

THE TOPOGRAPHY OF THE AREA INCLUDES FORESTED ROLLING HILLS WITH OCCASIONAL OPEN AREAS FOR RESIDENTIAL AND AGRICULTURAL USE. TOWN HIGHWAY 1 (FAS 0177), MINE ROAD (TH4), AND THREE DRIVEWAYS ARE WITHIN THE PROJECT SITE. THERE ARE TWO RESIDENCES ON THE SOUTH SIDE OF THE PROJECT AND A CHURCH ON THE NORTH SIDE OF THE PROJECT.

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

THE WEST BRANCH OMPOMPANOOSUC RIVER AND AN UNNAMED TRIBUTARY THAT CROSSES BENEATH TOWN HIGHWAY 1 TO THE SOUTH OF THE PROJECT ARE THE ONLY WATER SOURCES ON THE PROJECT SITE. THE WEST BRANCH OMPOMPANOOSUC RIVER IS CLASSIFIED AS SINUOUS AND ALLUVIAL. THE STREAM BED CONSISTS OF COBBLES, GRAVEL, AND SAND. THE TRIBUTARY AREA AT THE BRIDGE CROSSING IS 34.7 MILES².

1.2.3 VEGETATION

THE VEGETATION IN THE PROJECT AREA CONSISTS OF HARDWOOD AND SOFTWOOD TREES AND UNDERGROWTH. THE IMPACT TO VEGETATION WILL BE LIMITED TO THAT WHICH IS DIRECTLY AFFECTED BY REPLACEMENT OF THE EXISTING 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 ORANGE, VERMONT. SOILS ON THE PROJECT SITE ARE BUCKLAND LOAM, 3% TO 8% SLOPES, "K FACTOR" = 0.32 AND WINOOSKI VERY FINE SANDY LOAM, "K FACTOR" = 0.37. BOTH OF THESE SOILS ARE CONSIDERED TO HAVE MODERATE TO HIGH EROSION POTENTIAL.

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: YES, HISTORICAL AREA ON SOUTH SIDE OF PROJECT AND ARCHAEOLOGICAL AREA IN SOUTHWEST QUADRANT.
PRIME AGRICULTURAL LAND: NO
THREATENED AND ENDANGERED SPECIES: NO
WATER RESOURCE: WEST BRANCH OMPOMPANOOSUC RIVER
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.

WOVEN WIRE BARRIER FENCE (BF) SHALL BE USED TO PHYSICALLY MARK SITE BOUNDARIES AS PROPOSED ON THE EPSC PLAN.

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.

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 SHALL BE INSTALLED AS PROPOSED ON THE EPSC PLAN.

FILTER CURTAINS SHALL BE INSTALLED AS PROPOSED ON THE EPSC PLAN.

FILTER FABRIC DROP INLET PROTECTION 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.

NO DIVERSIONARY MEASURES ARE 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.

NO CHECK STRUCTURES ARE ANTICIPATED ON THIS PROJECT.

1.4.7 CONSTRUCT PERMANENT CONTROLS

DROP INLETS, OPTION PIPES AND STONE LINED DITCHES 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 OR IN ACCORDANCE WITH THE CONSTRUCTION GENERAL PERMIT 3-9020 AUTHORIZATION.

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

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

1.4.9 WINTER STABILIZATION

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

1.4.10 STABILIZE SOIL AT FINAL GRADE

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

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

BIODEGRADABLE EROSION CONTROL SHALL BE INSTALLED AS PROPOSED ON THE EPSC PLAN.

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.

TREATMENT OF DEWATERING COFFERDAM IS NOT ANTICIPATED.

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.

1.5.3 UPDATES

PROJECT NAME: STRAFFORD

PROJECT NUMBER: BF 0177(10)

FILE NAME: s13j088ero.narrative.dgn

PROJECT LEADER: K. HIGGINS

DESIGNED BY: R. KLINEFELTER

EPSC NARRATIVE

PLOT DATE: 04-AUG-2015

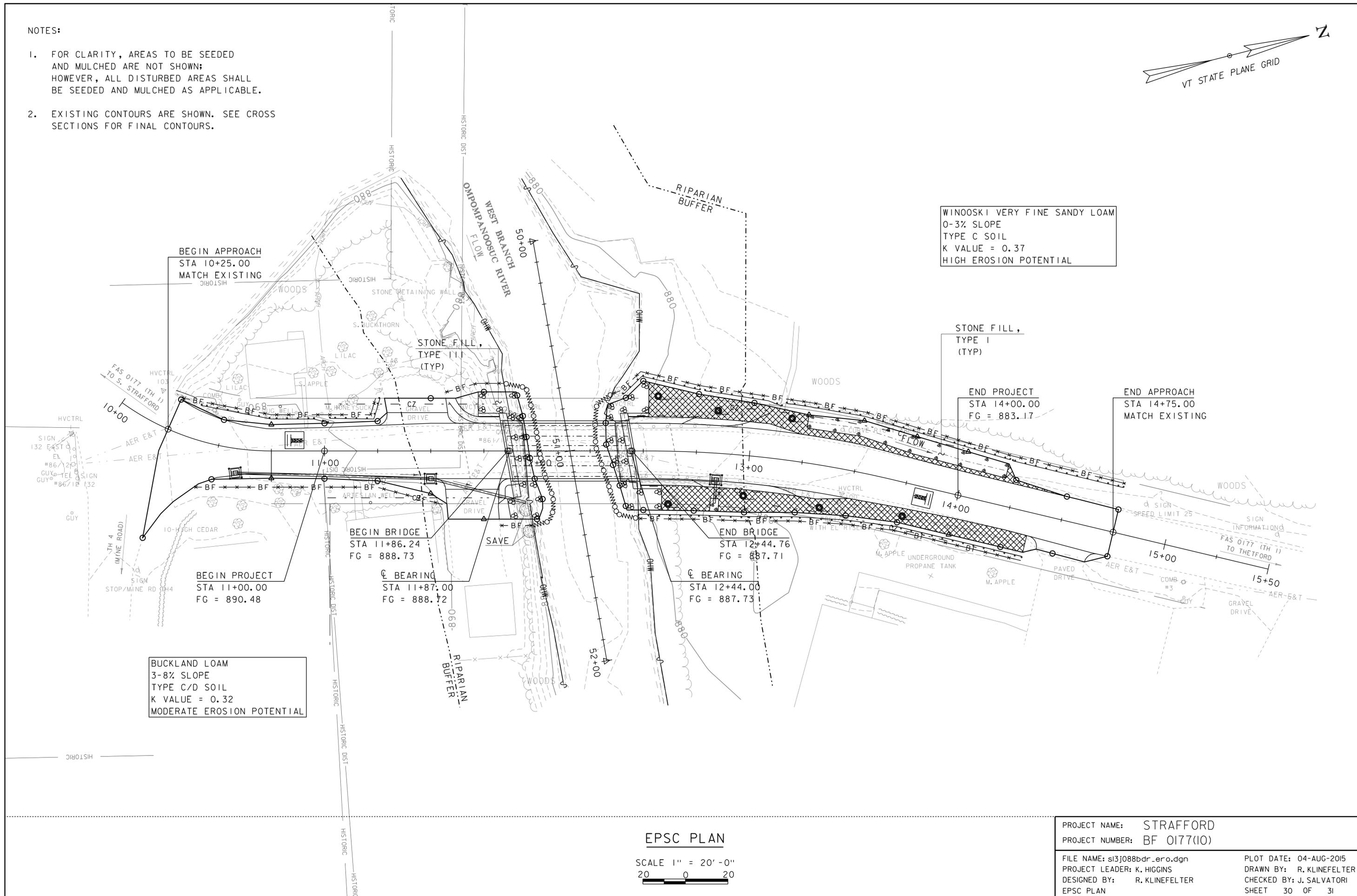
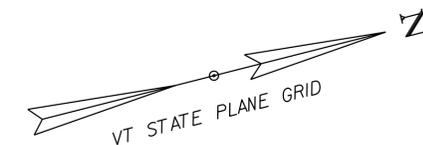
DRAWN BY: R. KLINEFELTER

CHECKED BY: J. SALVATORI

SHEET 29 OF 31

NOTES:

- FOR CLARITY, AREAS TO BE SEEDED AND MULCHED ARE NOT SHOWN; HOWEVER, ALL DISTURBED AREAS SHALL BE SEEDED AND MULCHED AS APPLICABLE.
- EXISTING CONTOURS ARE SHOWN. SEE CROSS SECTIONS FOR FINAL CONTOURS.



WINOOSKI VERY FINE SANDY LOAM
 0-3% SLOPE
 TYPE C SOIL
 K VALUE = 0.37
 HIGH EROSION POTENTIAL

STONE FILL,
 TYPE I
 (TYP)

END PROJECT
 STA 14+00.00
 FG = 883.17

END APPROACH
 STA 14+75.00
 MATCH EXISTING

BEGIN BRIDGE
 STA 11+86.24
 FG = 888.73

END BRIDGE
 STA 12+44.76
 FG = 887.71

BEGIN PROJECT
 STA 11+00.00
 FG = 890.48

CE BEARING
 STA 11+87.00
 FG = 888.72

CE BEARING
 STA 12+44.00
 FG = 887.73

BUCKLAND LOAM
 3-8% SLOPE
 TYPE C/D SOIL
 K VALUE = 0.32
 MODERATE EROSION POTENTIAL

EPSC PLAN

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

PROJECT NAME: STRAFFORD
 PROJECT NUMBER: BF 0177(10)

FILE NAME: s13j088bdr_ero.dgn
 PROJECT LEADER: K. HIGGINS
 DESIGNED BY: R. KLINEFELTER
 EPSC PLAN

PLOT DATE: 04-AUG-2015
 DRAWN BY: R. KLINEFELTER
 CHECKED BY: J. SALVATORI
 SHEET 30 OF 31

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

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

THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 649 FOR GEOTEXTILE FOR FILTER CURTAIN (PAY ITEM 649.61).

SYMBOL
NOT TO SCALE

CONSTRUCTION SPECIFICATIONS

NOTE: GROOVE SLOPE BY CUTTING FURROWS ALONG THE CONTOUR. IRREGULARITIES IN THE SOIL SURFACE CATCH RAINWATER AND RETAIN LIME, FERTILIZER AND SEED.

SURFACE ROUGHENING

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

REVISIONS		
APRIL 1, 2008	WHF	
JANUARY 13, 2009	WHF	

THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT

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

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

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

CONSTRUCTION GUIDANCE

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

TURF ESTABLISHMENT

ADAPTED FROM VTRANS TECHNICAL LANDSCAPE MANUAL FOR ROADWAYS AND TRANSPORTATION FACILITIES

REVISIONS		
JANUARY 12, 2015	WHF	

THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 651 FOR SEED (PAY ITEM 651.5)

SYMBOL

CONSTRUCTION SPECIFICATIONS

1. FILTER FABRIC SHALL HAVE AN EOS OF 40-85. BURLAP MAY BE USED FOR SHORT TERM APPLICATIONS.
2. CUT FABRIC FROM A CONTINUOUS ROLL TO ELIMINATE JOINTS. IF JOINTS ARE NEEDED THEY WILL BE OVERLAPPED TO THE NEXT STAKE.
3. STAKE MATERIALS WILL BE STANDARD 2" x 4" WOOD OR EQUIVALENT METAL WITH A MINIMUM LENGTH OF 3 FEET.
4. SPACE STAKES EVENLY AROUND INLET 3 FEET APART AND DRIVE A MINIMUM 18 INCHES DEEP. SPANS GREATER THAN 3 FEET MAY BE BRIDGED WITH THE USE OF WIRE MESH BEHIND THE FILTER FABRIC FOR SUPPORT.
5. FABRIC SHALL BE EMBEDDED 1 FOOT MINIMUM BELOW GROUND AND BACKFILLED. IT SHALL BE SECURELY FASTENED TO THE STAKES AND FRAME.
6. A 2" x 4" WOOD FRAME SHALL BE COMPLETED AROUND THE CREST OF THE FABRIC FOR OVER FLOW STABILITY.

MAXIMUM DRAINAGE AREA 1 ACRE

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

FILTER FABRIC DROP INLET PROTECTION

REVISIONS		
MARCH 8, 2007	JMF	

THIS ITEM SHALL BE PAID FOR UNDER ITEM 653.40 INLET PROTECTION DEVICE, TYPE 1

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.

ROLLED EROSION CONTROL PRODUCT (RECP) SIDE SLOPE

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

REVISIONS		
APRIL 16, 2007	JMF	
JANUARY 13, 2009	WHF	

THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 653 AND AS SHOWN IN THE PLANS FOR GEOTEXTILE EROSION MATTING (PAY ITEM 653.20) OR PERMANENT EROSION MATTING (PAY ITEM 653.20).

SYMBOL
NOT TO SCALE

CONSTRUCTION SPECIFICATIONS

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

STABILIZED CONSTRUCTION ENTRANCE

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

REVISIONS		
MARCH 24, 2008	WHF	
JANUARY 13, 2009	WHF	

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

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.

SILT FENCE

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

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

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

PROJECT NAME: STRAFFORD
PROJECT NUMBER: BF 0177(10)

FILE NAME: s13j08ero_details.dgn
PROJECT LEADER: K. HIGGINS
DESIGNED BY: R. KLINFELTER
EPSC DETAILS

PLOT DATE: 04-AUG-2015
DRAWN BY: R. KLINFELTER
CHECKED BY: J. SALVATORI
SHEET 31 OF 31