REVIEWER NOTES

1. THIS BRIDGE WILL BE CLOSED FOR A MAXIMUM FOR 12 WEEKS
   A. CONSTRUCTION CAN START MAY 1ST.
   B. IN STREAM WORK BETWEEN JUNE 1ST AND SEPTEMBER 1ST.
   C. POSSIBLE CLOSURE BETWEEN JULY 7TH AND SEPTEMBER 21ST.
   D. CLEAN UP AND DEMOBILIZE BY OCTOBER 31ST.

2. THE TOWN WILL BE RESPONSIBLE FOR SELECTING, SIGNING, AND MAINTAINING ANY DETOUR ROUTES USED DURING CONSTRUCTION.

3. IT IS ANTICIPATED THAT THE AERIAL ELECTRIC AND TELEPHONE UTILITIES WILL NEED TO BE RELOCATED.

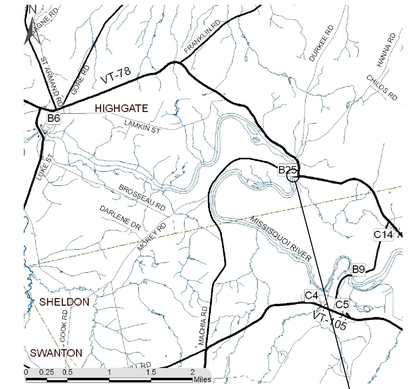
4. ADDITIONAL TEMPORARY AND PERMANENT ROW WILL BE NEEDED FOR THIS PROJECT.

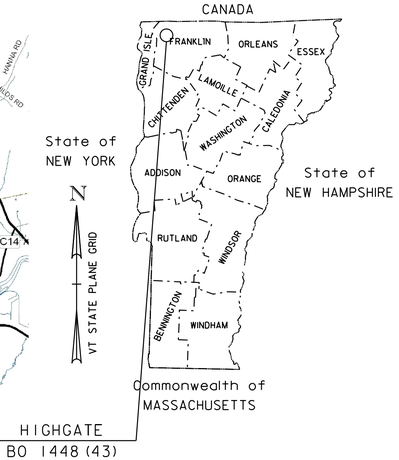
5. IT IS ANTICIPATED THAT A CAUSEWAY WILL NEED TO BE CONSTRUCTED IN THE RIVER STARTING AT THE SOUTHWEST CORNER OF THE BRIDGE AND EXTENDING SLIGHTLY EAST OF THE EXISTING PIER.

6. A SIMPLIFIED PAVEMENT DESIGN HAS BEEN DONE FOR THIS PROJECT.

7. THE GUARDRAIL ABOUT THE MACHIA APARTMENTS MEETS TL-2 STANDARDS, BUT DOES REMOVE ONE OF THEIR TWO DRIVE ACCESSES. SHOULD THE TOWN DESIRE OTHER OPTIONS, DESIGN EXCEPTIONS MAY BE NEEDED TO LEAVE THE MACHIA ROAD DRIVE OPEN.

STATE OF VERMONT
AGENCY OF TRANSPORTATION





PROPOSED IMPROVEMENT
BRIDGE PROJECT

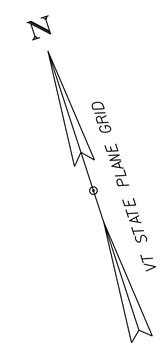
VILLAGE OF HIGHGATE
COUNTY OF FRANKLIN

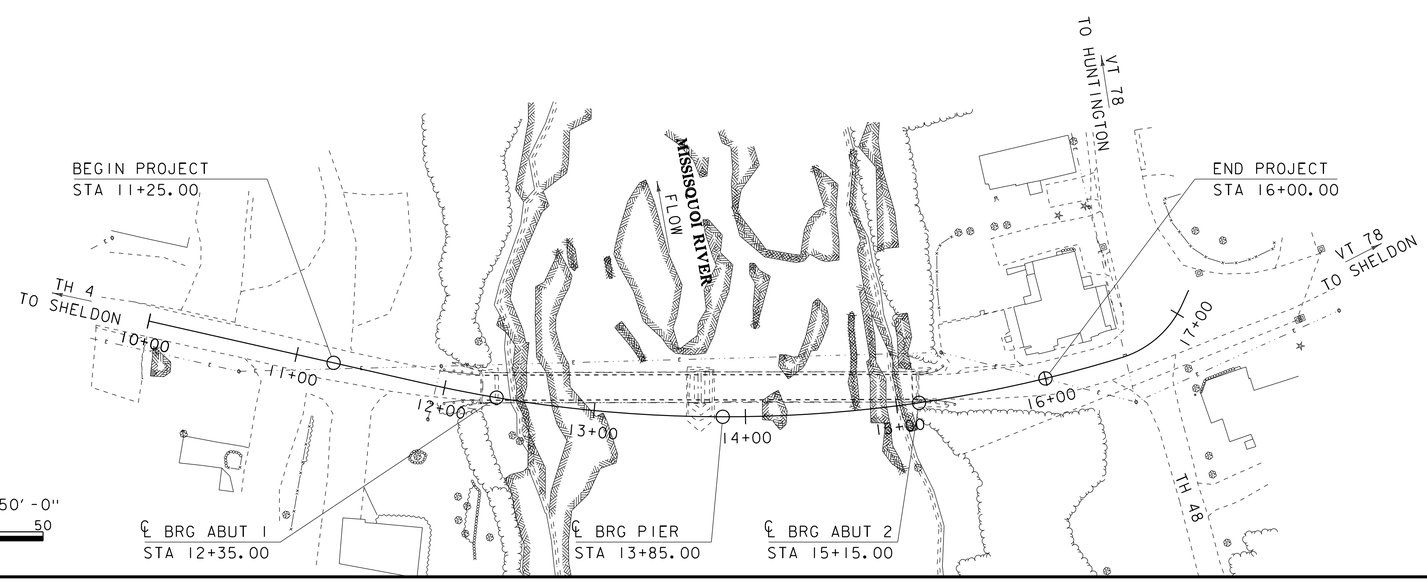
ROUTE NO : TOWN HIGHWAY 4. CLASS 2 LOCAL TOWN ROAD BRIDGE NO : 25

PROJECT LOCATION: 200 FEET WEST OF THE INTERSECTION OF TH 4 (MACHIA ROAD) AND VT ROUTE 78

PROJECT DESCRIPTION: REMOVAL OF EXISTING STRUCTURE AND REPLACEMENT WITH A NEW STRUCTURE. INCLUDING APPROACH WORK ON TOWN HIGHWAY 4

LENGTH OF STRUCTURE: 280.00 FEET
LENGTH OF ROADWAY: 195.00 FEET
LENGTH OF PROJECT: 475.00 FEET





THESE PLANS ARE SUBJECT TO SUCH ENGINEERING CHANGES AS MAY BE REQUIRED BY THE FEDERAL HIGHWAY ADMINISTRATION OR THE DIRECTOR OF PROGRAM DEVELOPMENT.

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.

CONCEPTUAL PLANS
03-APR-2014

QUALITY ASSURANCE PROGRAM : LEVEL 2	
SURVEYED BY :	L. ORVIS
SURVEYED DATE :	05/29/2013
DATUM	
VERTICAL	NAVD88
HORIZONTAL	NAD 83 (2007)

DIRECTOR OF PROGRAM DEVELOPMENT	
APPROVED _____	DATE _____
PROJECT MANAGER :	C.P. WILLIAMS
PROJECT NAME :	HIGHGATE
PROJECT NUMBER :	BO 1448 (43)
SHEET 1 OF 24 SHEETS	

STATE OF VERMONT
AGENCY OF TRANSPORTATION

PRELIMINARY INFORMATION SHEET (BRIDGE)

Version
LRFD

INDEX OF SHEETS

PLAN SHEETS

1	TITLE SHEET
2	PRELIMINARY INFORMATION SHEET
3	TYPICAL SECTIONS
4	SYMBOLOGY LEGEND
5	BRIDGE LAYOUT SHEET
6	INTERSECTION LAYOUT SHEET
7	RAILING LAYOUT SHEET
8	INTERSECTION RAILING LAYOUT SHEET
9	PROFILE SHEET
10	BANKING DIAGRAM SHEET
11 - 12	BORING INFORMATION SHEETS
13 - 19	MAINLINE CROSS SECTIONS
20 - 22	CHANNEL CROSS SECTIONS
23 - 24	EXISTING CONDITION SHEETS

STRUCTURES DETAIL SHEETS

SD-366.00	LONGSPAN STEEL BEAM GUARDRAIL, GALVANIZED	11/25/2013
SD-501.00	CONCRETE DETAILS AND NOTES	5/7/2010
SD-502.00	CONCRETE DETAILS AND NOTES	5/7/2010
SD-516.00	BRIDGE JOINT ASHPALTIC PLUG	5/7/2010
SD-516.11a	BRIDGE EXPANSION JOINT, VERMONT	2/24/2011
SD-516.11b	BRIDGE EXPANSION JOINT, VERMONT	2/25/2011
SD-601.00	STRUCTURAL STEEL DETAILS AND NOTES	5/7/2010
SD-602.00	STRUCTURAL STEEL PLATE GIRDER DETAILS AND NOTES	5/7/2010

STANDARDS LIST

FINAL HYDRAULIC REPORT

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:	3.0 INCH
3.	DESIGN SPAN	L:	280.00 FT
4.	MIN. MID-SPAN POS. CAMBER @ RELEASE (PRESTRESSED UNITS)	Δ:	- - -
5.	PRESTRESSING STRAND (0.60 INCH DIAMETER - LOW RELAX)	f_y:	270 KSI
6.	PRESTRESSED CONCRETE STRENGTH	f'_c:	6.0 KSI
7.	PRESTRESSED CONCRETE RELEASE STRENGTH	f'_{ci}:	5.0 KSI
8.	CONCRETE, HIGH PERFORMANCE CLASS AA	f'_c:	4.0 KSI
9.	CONCRETE, HIGH PERFORMANCE CLASS A	f'_c:	4.0 KSI
10.	CONCRETE, HIGH PERFORMANCE CLASS B	f'_c:	3.5 KSI
11.	CONCRETE, CLASS C	f'_c:	3.0 KSI
12.	REINFORCING STEEL	f_y:	60 KSI
13.	STRUCTURAL STEEL AASHTO M270	f_y:	- - -
14.	NOMINAL BEARING RESISTANCE OF SOIL	q_n:	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:	- - -
19.	LATERAL PILE DEFLECTION	Δ:	- - -
20.	BASIC WIND SPEED	V_{3s}:	- - -
21.	MINIMUM GROUND SNOW LOAD	p_g:	- - -
22.	SEISMIC DATA PGA: 0	S_s:	- - -
		S_1:	- - -
23.			
24.			- - -
25.			- - -
26.			- - -

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

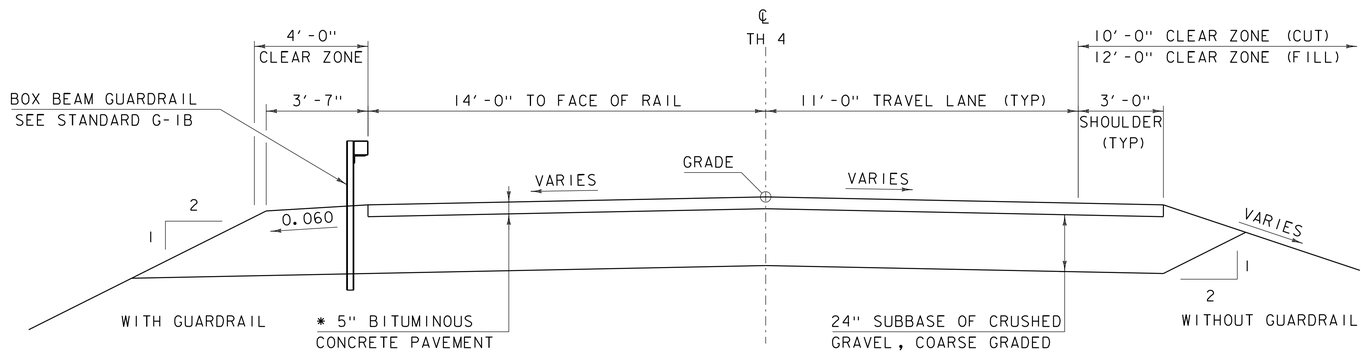
YEAR	ADT	DHV	% D	% T	ADTT
2016	750	95	67	4.4	30
2036	790	100	67	6.1	45

20 year ESAL for flexible pavement from 2016 to 2036 : 76000
40 year ESAL for flexible pavement from 2016 to 2056 : 161000
Design Speed : 35 mph

PROJECT NAME: **HIGHGATE**
PROJECT NUMBER: **BO 1448(43)**

FILE NAME: **13j378/s13j378excel.dgn**
PROJECT LEADER: **C.P.WILLIAMS**
DESIGNED BY:
PRELIMINARY INFORMATION SHEET 1

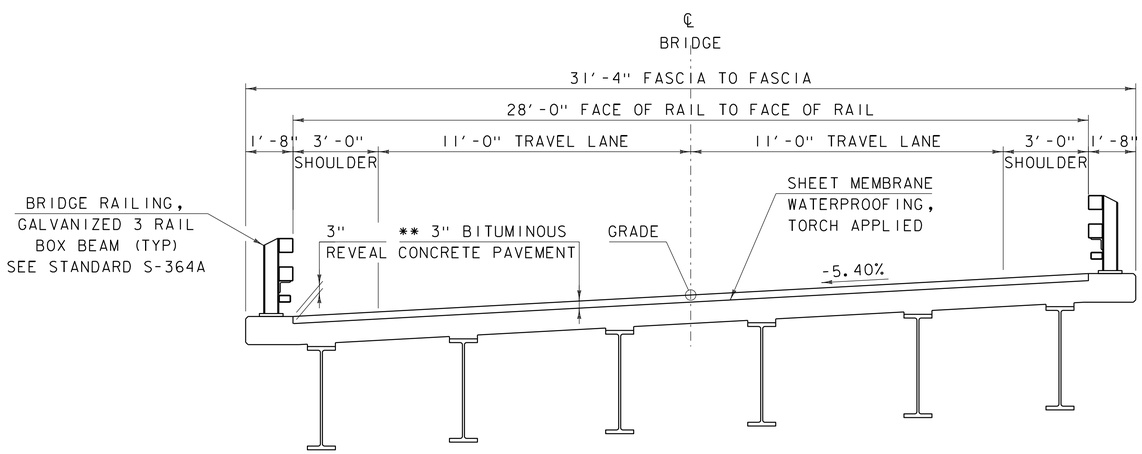
PLOT DATE: 4/2/2014
DRAWN BY: **D.D.BEARD**
CHECKED BY:
SHEET 2 OF 24



PROPOSED TH 4 TYPICAL SECTION

SCALE 3/8" = 1'-0"

* 1½" TYPE IVS OVER
1½" TYPE IVS OVER
2" TYPE IIIS



PROPOSED BRIDGE TYPICAL SECTION

SCALE 3/8" = 1'-0"

** 1½" TYPE IVS OVER
1½" TYPE IVS

NOTE: SUPERSTRUCTURE NOT YET DESIGNED
BEAMS SHOWN FOR EXAMPLE ONLY.

MATERIAL TOLERANCES

(IF USED ON PROJECT)

SURFACE	
- PAVEMENT (TOTAL THICKNESS)	+/- ¼"
- AGGREGATE SURFACE COURSE	+/- ½"
SUBBASE	+/- 1"
SAND BORROW	+/- 1"

PROJECT NAME: HIGHGATE
PROJECT NUMBER: BO 1448(43)

FILE NAME: 98j378/s98j378typ.dgn
PROJECT LEADER: C.P.WILLIAMS
DESIGNED BY: T.FILLBACH
TYPICAL SECTIONS

PLOT DATE: 03-APR-2014
DRAWN BY: D.D.BEARD
CHECKED BY: ------
SHEET 3 OF 24

GENERAL INFORMATION

SYMBOLOGY LEGEND NOTE

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

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

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

COMMON TOPOGRAPHIC POINT SYMBOLS

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

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

PROPOSED GEOMETRY CODES

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

UTILITY SYMBOLOGY

UNDERGROUND UTILITIES

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

ABOVE GROUND UTILITIES (AERIAL)

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

PROJECT CONSTRUCTION SYMBOLOGY

PROJECT DESIGN & LAYOUT SYMBOLOGY

CZ	CLEAR ZONE
	PLAN LAYOUT MATCHLINE

PROJECT CONSTRUCTION FEATURES

	TOP OF CUT SLOPE
	TOE OF FILL SLOPE
	STONE FILL
	BOTTOM OF DITCH ℄
	CULVERT PROPOSED
	STRUCTURE SUBSURFACE
PDF	PROJECT DEMARCATION FENCE
BF	BARRIER FENCE
	TREE PROTECTION ZONE (TPZ)
	STRIPING LINE REMOVAL
	SHEET PILES

CONVENTIONAL BOUNDARY SYMBOLOGY

BOUNDARY LINES

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

EPSC LAYOUT PLAN SYMBOLOGY

EPSC MEASURES

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

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 SYMBOLOGY

EXISTING FEATURES

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

PROJECT NAME: HIGHGATE
PROJECT NUMBER: BO 1448(43)

FILE NAME: 98j378/s98j378excel.dgn
PROJECT LEADER: C.P.WILLIAMS
DESIGNED BY: ------
SYMBOLOGY LEGEND

PLOT DATE: 03-APR-2014
DRAWN BY: M.LONGSTREET
CHECKED BY: ------
SHEET 4 OF 24

BEGIN APPROACH
STA 10+50.00

BEGIN PROJECT
STA 11+25.00

PC
STA 11+86.02

℄ BEARING ABUT #1
STA 12+35.00

℄ PIER
STA 13+85.00

℄ BEARING ABUT #2
STA 15+15.00

END PROJECT
STA 16+00.00

MAJOR CHORD
STA 13+75.00 BK =
STA 13+76.13 AH =
CHANNEL STA 51+00
Δ = 90° 0' 0" LT

CONCEPTUAL
CONSTRUCTION LIMITS

TH 4
S 59° 12' 20.92" E
TO SHELDON

11+00
12+00
13+00
14+00
15+00
16+00
50+00
51+00
52+00

MAJOR CHORD
MINOR CHORD 1
MINOR CHORD 2

CONCEPTUAL
CAUSEWAY

BENCH MARK
USGS DISK
5 LLB 1962
ELEV. = 221.48

STA 14+24.08 BK
=STA 14+13.42 AH
PI

PROPOSED CURVE #1
DELTA = 29° 37' 59"
D = 6° 21' 58"
R = 900.00'
T = 238.07'
L = 465.47'
E = 30.95'

MATCH LINE
STA 16+25.00

MISSISQUOI RIVER
FLOW

VT STATE PLANE GRID
N

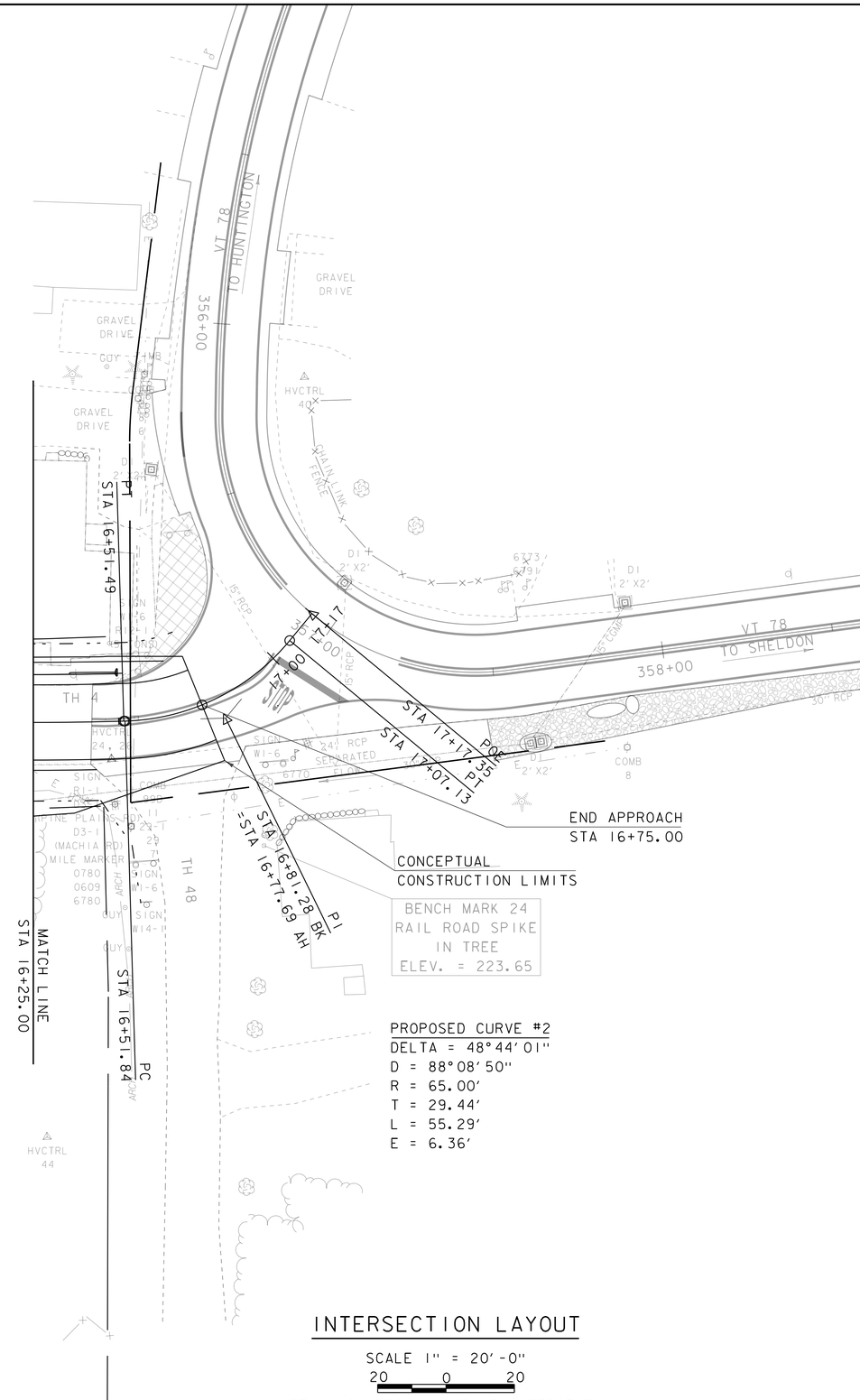
GRAVEL DRIVE
GRAVEL PARKING LOT
ARTESIAN WELL
RAIL FENCE
24" RCP SEPARATED FLOW
4" PVC UNDERDRAIN
SIGN
15 TON WEIGHT LIMIT
STRICTLY ENFORCED
SIGN FINES EXCEED 750
W/ METER
W/ UNDERGROUND
HVCTRL 25
HVCTRL 48
HVCTRL 41
HVCTRL 51
HVCTRL 49
HVCTRL 47
COMB 99D 14 29-1 3
COMB 99D 12 29-1 5
COMB 13S 2A
GUY
WIRE FENCE
HISTORIC
ARCH
CZ

EXISTING BRIDGE INFORMATION
TWO SPAN THRU STEEL TRUSS
BUILT 1928
MAX SPAN LENGTH = 143'
TOTAL LENGTH = 292'
SINGLE LANE BRIDGE,
POSTED FOR 5 TONS.

LAYOUT

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

PROJECT NAME: HIGHGATE	
PROJECT NUMBER: BO 1448(43)	
FILE NAME: 98j378/s98j378border.dgn	PLOT DATE: 03-APR-2014
PROJECT LEADER: C.P.WILLIAMS	DRAWN BY: D.D.BEARD
DESIGNED BY: T.C.FILLBACH	CHECKED BY: ------
BRIDGE LAYOUT SHEET	SHEET 5 OF 24



INTERSECTION LAYOUT

SCALE 1" = 20'-0"

20 0 20

NOTE: INCLUDES LAYOUT OF INTERSECTION FROM PROJECT 07C186

PROJECT NAME: HIGHGATE	
PROJECT NUMBER: BO 1448(43)	
FILE NAME: 98j378/s98j378border.dgn	PLOT DATE: 03-APR-2014
PROJECT LEADER: C.P.WILLIAMS	DRAWN BY: D.D.BEARD
DESIGNED BY: T.C.FILLBACH	CHECKED BY: ------
INTERSECTION LAYOUT SHEET	SHEET 6 OF 24

END ASSEMBLY (TYP)
SEE STANDARD G-1B

PC
STA 11+86.02

TH 4
TO SHELDON

11+00
12+00
13+00
14+00
15+00
16+00

52+00
50+00

MAJOR CHORD
MINOR CHORD 1
MINOR CHORD 2

BRIDGE RAILING
GALVANIZED
3 RAIL BOX BEAM
SEE STD S-364A

GUARDRAIL APPROACH
SECTION GALVANIZED
3 RAIL BOX BEAM (TYP)
SEE STD S-364B

BOX BEAM
GUARDRAIL (TYP)
SEE STD G-1B

BOX BEAM GUARD RAIL
END ASSEMBLY TYPE 11A
(SEE NYDOT STD 606-04)

N
VT STATE PLANE GRID

MISSISQUOI RIVER
FLOW

24" RCP
SEPARATED
FLOW

4" PVC
UNDERDRAIN

ARTESIAN
WELL

RAIL
FENCE

MOVEABLE WIRE
FENCE

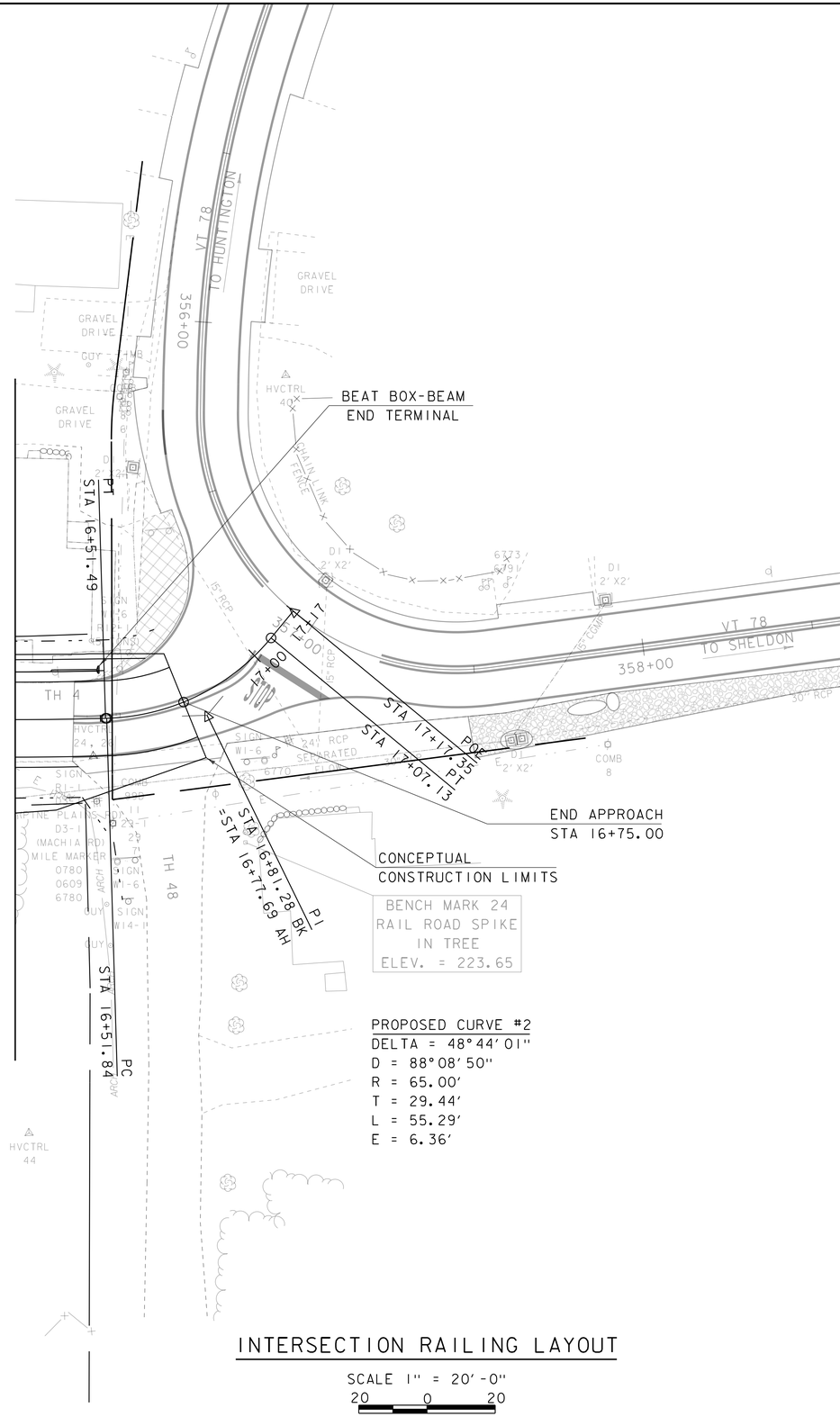
HVCTRL 25
HVCTRL 48
HVCTRL 45
HVCTRL 41
HVCTRL 51
HVCTRL 46
HVCTRL 49
HVCTRL 47

EXISTING BRIDGE INFORMATION
TWO SPAN THRU STEEL TRUSS
BUILT 1928
MAX SPAN LENGTH = 143'
TOTAL LENGTH = 292'
SINGLE LANE BRIDGE,
POSTED FOR 5 TONS.

RAILING LAYOUT

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

PROJECT NAME: HIGHGATE	
PROJECT NUMBER: BO 1448(43)	
FILE NAME: 98j378/s98j378border.dgn	PLOT DATE: 03-APR-2014
PROJECT LEADER: C.P.WILLIAMS	DRAWN BY: D.D.BEARD
DESIGNED BY: T.C.FILLBACH	CHECKED BY: ------
RAILING LAYOUT SHEET	SHEET 7 OF 24

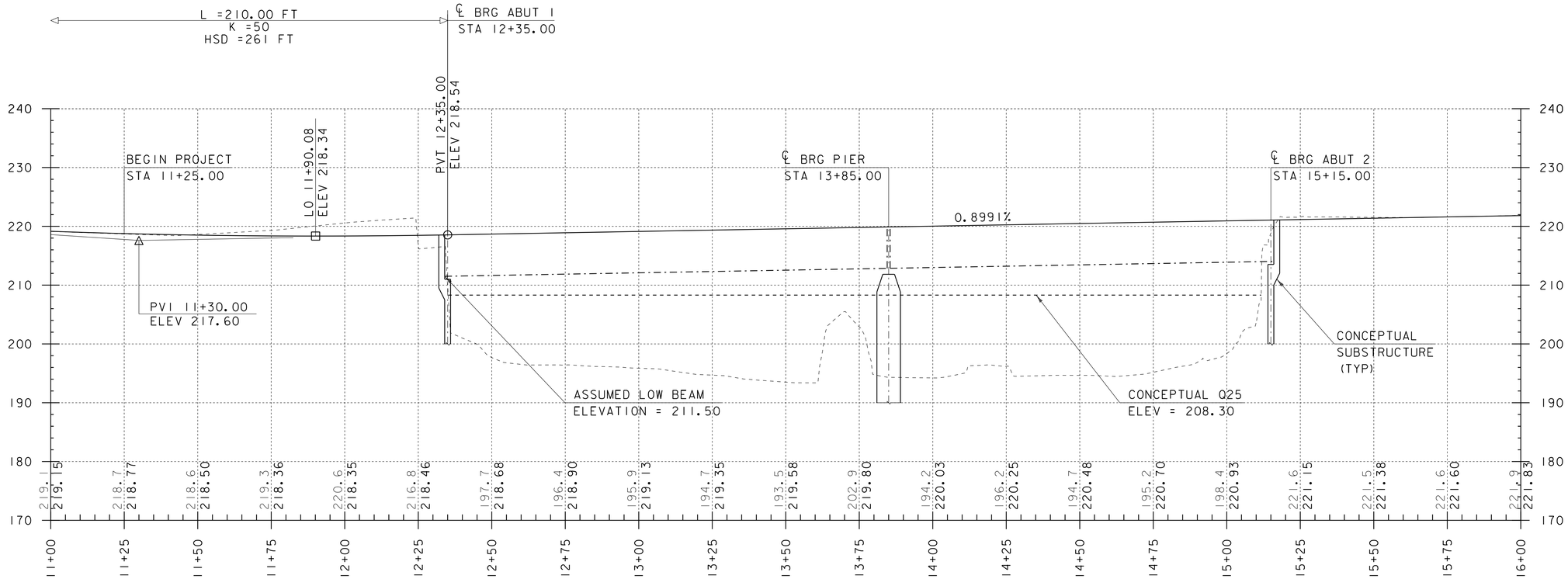


INTERSECTION RAILING LAYOUT

SCALE 1" = 20'-0"

20 0 20

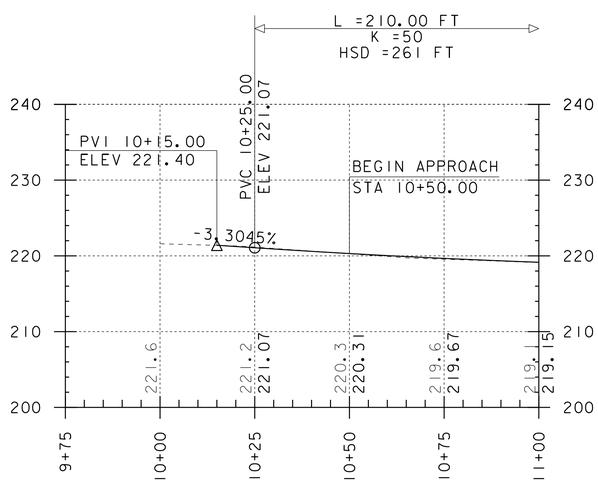
PROJECT NAME: HIGHGATE	
PROJECT NUMBER: BO 1448(43)	
FILE NAME: 98j378/s98j378border.dgn	PLOT DATE: 03-APR-2014
PROJECT LEADER: C.P.WILLIAMS	DRAWN BY: D.D.BEARD
DESIGNED BY: T.C.FILLBACH	CHECKED BY: ------
INTERSECTION RAILING LAYOUT SHEET	SHEET 8 OF 24



TH 4 PROFILE SECTION 2

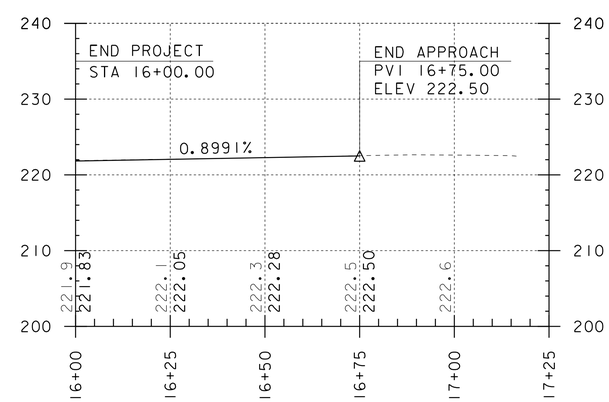
SCALE: HORIZONTAL 1"=20'-0"
VERTICAL 1"=10'-0"

NOTE: ALL SUBSTRUCTURE UNITS ARE ASSUMED TO BE SPREAD FOOTINGS FOUNDED ON ROCK



TH 4 PROFILE SECTION 1

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

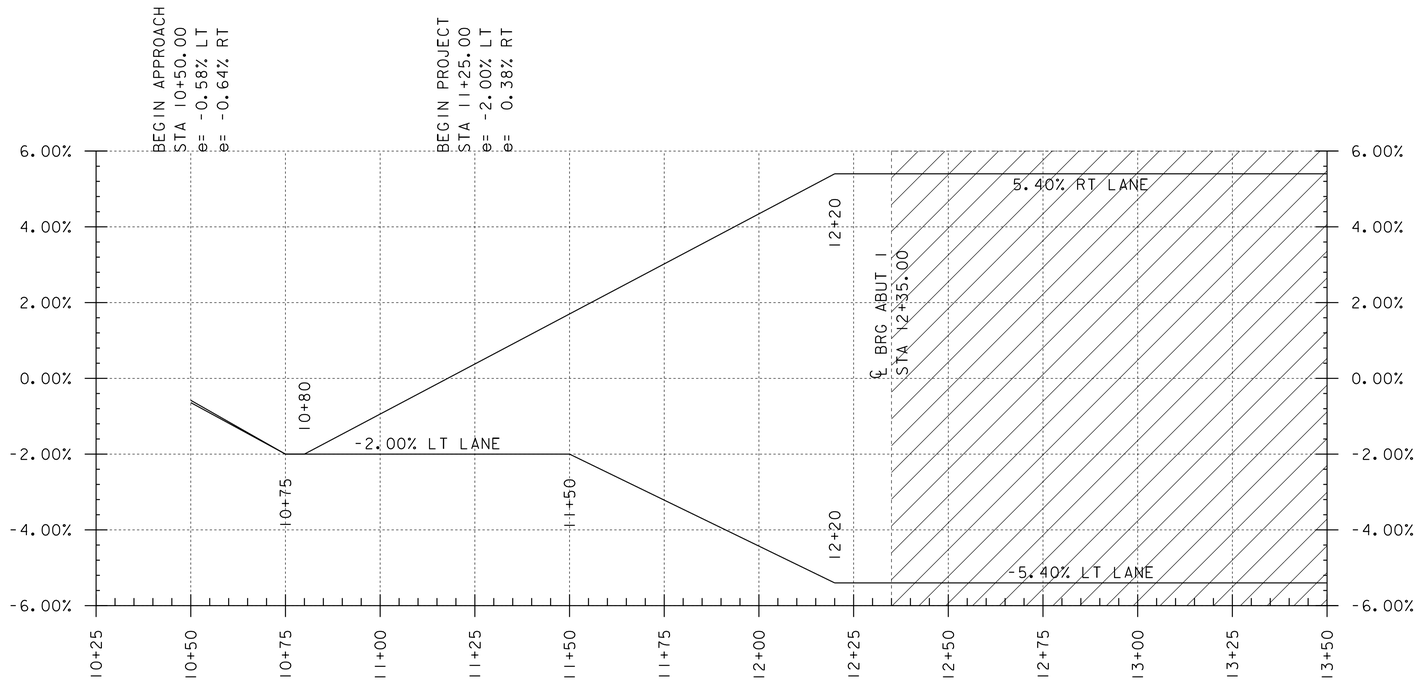


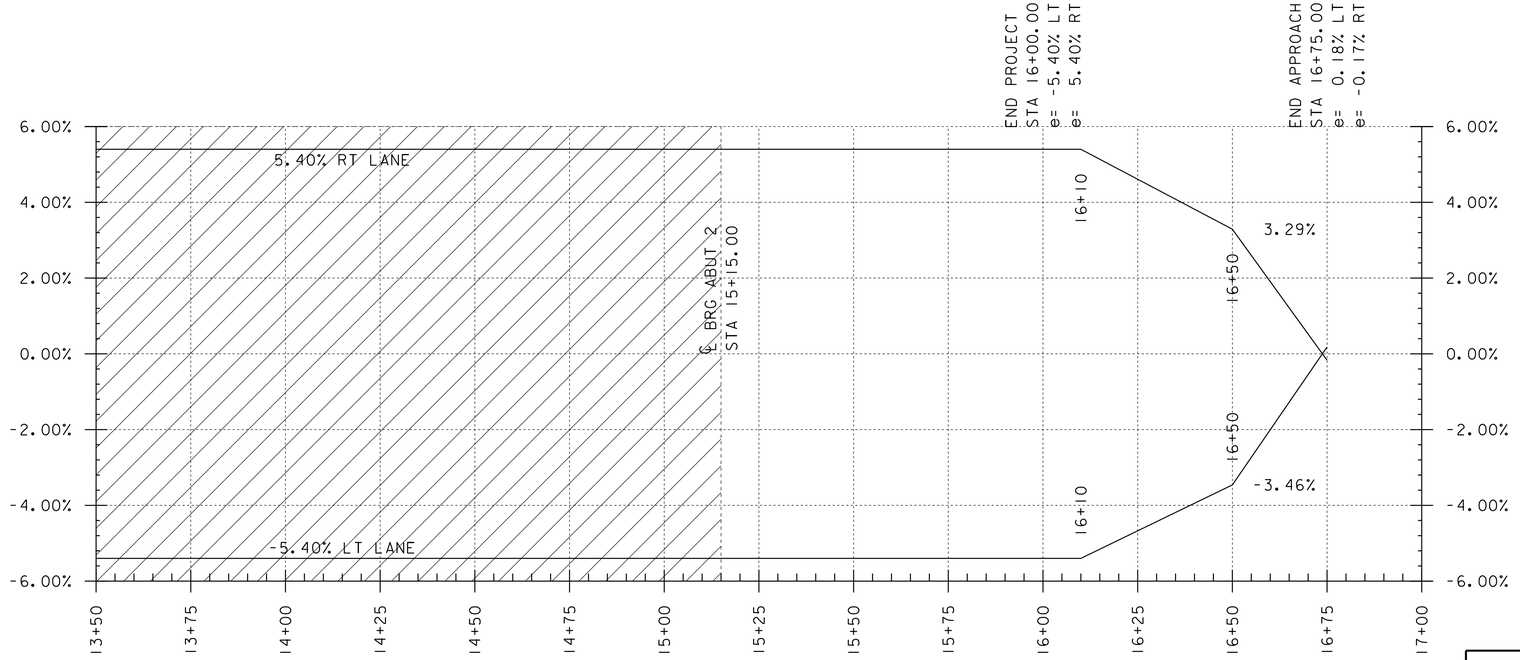
TH 4 PROFILE SECTION 3

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

NOTE:
GRADES SHOWN TO THE NEAREST TENTH ARE EXISTING GROUND ALONG ℄
GRADES SHOWN TO THE NEAREST HUNDREDTH ARE FINISH GRADE ALONG ℄

PROJECT NAME: HIGHGATE	
PROJECT NUMBER: BO 1448(43)	
FILE NAME: 98j378/s98j378profile.dgn	PLOT DATE: 03-APR-2014
PROJECT LEADER: C.P.WILLIAMS	DRAWN BY: D.D.BEARD
DESIGNED BY: ------	CHECKED BY: ------
PROFILE SHEET	SHEET 9 OF 24





TH 4 BANKING DIAGRAM

PROJECT NAME: HIGHGATE	
PROJECT NUMBER: BO 1448(43)	
FILE NAME: 98j378/s98j378profile.dgn	PLOT DATE: 03-APR-2014
PROJECT LEADER: C.P.WILLIAMS	DRAWN BY: D.D.BEARD
DESIGNED BY: T.C.FILLBACH	CHECKED BY: ------
BANKING DIAGRAM SHEET	SHEET 10 OF 24

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

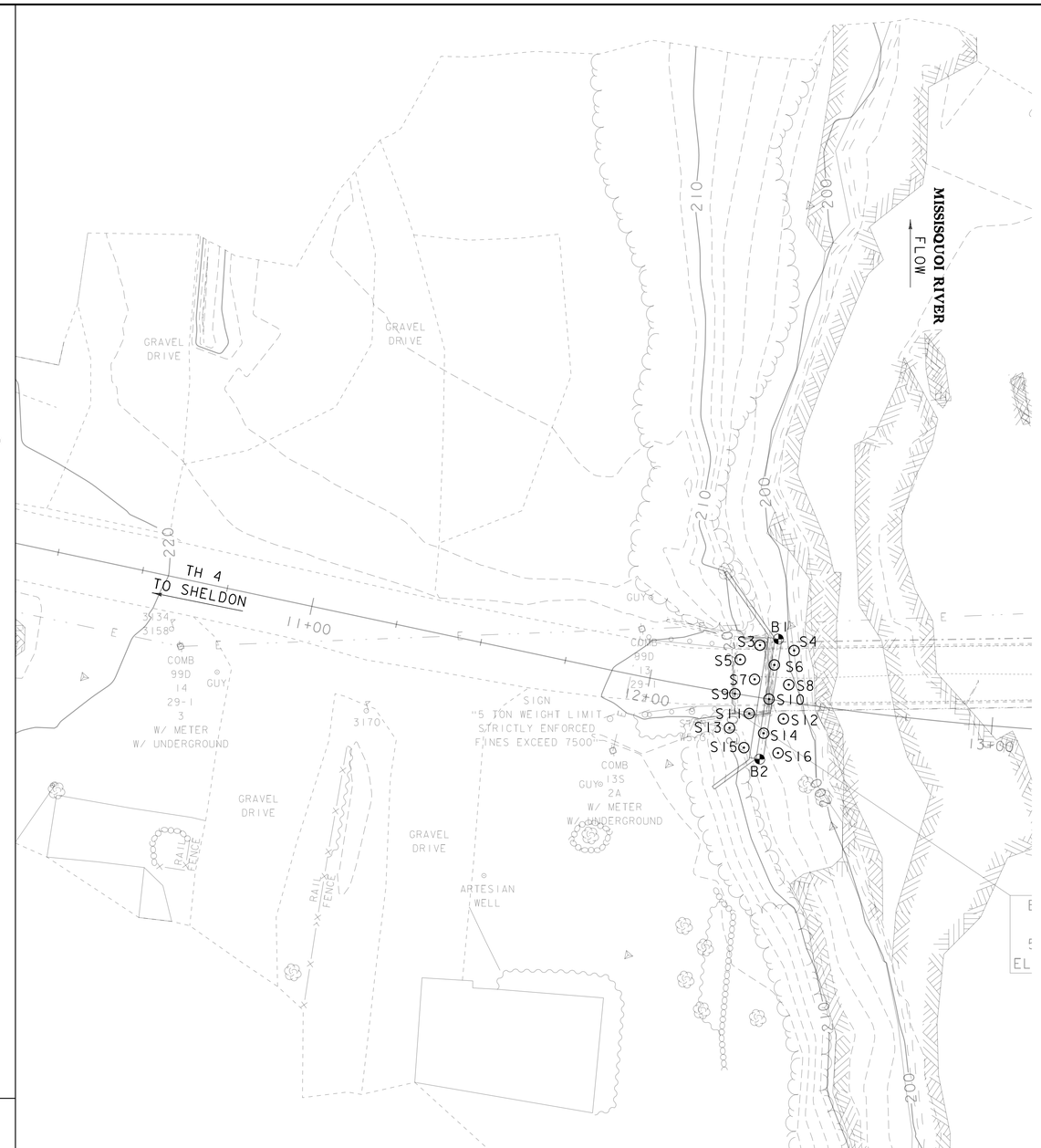
DENSITY (GRANULAR SOILS)		CONSISTENCY (COHESIVE SOILS)	
N	DESCRIPTIVE TERM	N	DESCRIPTIVE TERM
<5	Very Loose	<2	Very Soft
5-10	Loose	2-4	Soft
11-24	Med. Dense	5-8	Med. Stiff
25-50	Dense	9-15	Stiff
>50	Very Dense	16-30	Very Stiff
		31-60	Hard
		>60	Very Hard

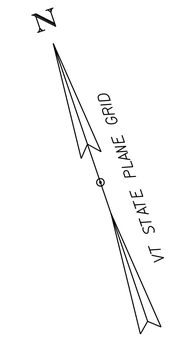
COMMONLY USED SYMBOLS

▼	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 5/8"
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
%Rec.	Percent Recovery
RQD	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
gry	Gray	wh	White
gn	Green	yel	Yellow
lt	Light	mltc	Multicolored
or	Orange		





BORING CHART

HOLE NO.	SURV. STATION	OFFSET	GROUND ELEV.	ELEV. TLOB
B1	12+35	17.6LT		
B2	12+35	17.6RT		
S3	12+30	15.0LT		
S4	12+40	15.0LT		
S5	12+25	10.0LT		
S6	12+35	10.0LT		
S7	12+30	5.0LT		
S8	12+40	5.0LT		
S9	12+25	0.0CL		
S10	12+35	0.0CL		
S11	12+30	5.0RT		
S12	12+40	5.0RT		
S13	12+25	10.0RT		
S14	12+35	10.0RT		
S15	12+30	15.0RT		
S16	12+40	15.0RT		

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

1. The subsurface explorations shown herein were made between _____ and _____ by the Agency.

2. 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.

3. 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.

4. 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.

5. 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.

6. 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.

7. Northing and Easting coordinates are shown in Vermont State Plane Grid North American Datum 1983 in meters and survey feet.

PROJECT NAME: HIGHGATE
PROJECT NUMBER: BO 1448(43)

FILE NAME: 98J378/s98J378boring.dgn
PROJECT LEADER: C.P.WILLIAMS
DESIGNED BY: T.C.FILLBACH
ABUTMENT #1 BORING INFORMATION SHEET

PLOT DATE: 03-APR-2014
DRAWN BY: D.D.BEARD
CHECKED BY: ------
SHEET 11 OF 24

SOIL CLASSIFICATION

AASHTO

A1	Gravel and Sand
A3	Fine Sand
A2	Silty or Clayey Gravel and Sand
A4	Silty Soil - Low Compressibility
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DENSITY (GRANULAR SOILS)

N	DESCRIPTIVE TERM
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5-10	Loose
11-24	Med. Dense
25-50	Dense
>50	Very Dense

CONSISTENCY (COHESIVE SOILS)

N	DESCRIPTIVE TERM
<2	Very Soft
2-4	Soft
5-8	Med. Stiff
9-15	Stiff
16-30	Very Stiff
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COMMONLY USED SYMBOLS

▼	Water Elevation
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⊕	Auger Boring
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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 5/8"
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
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Si	Silt
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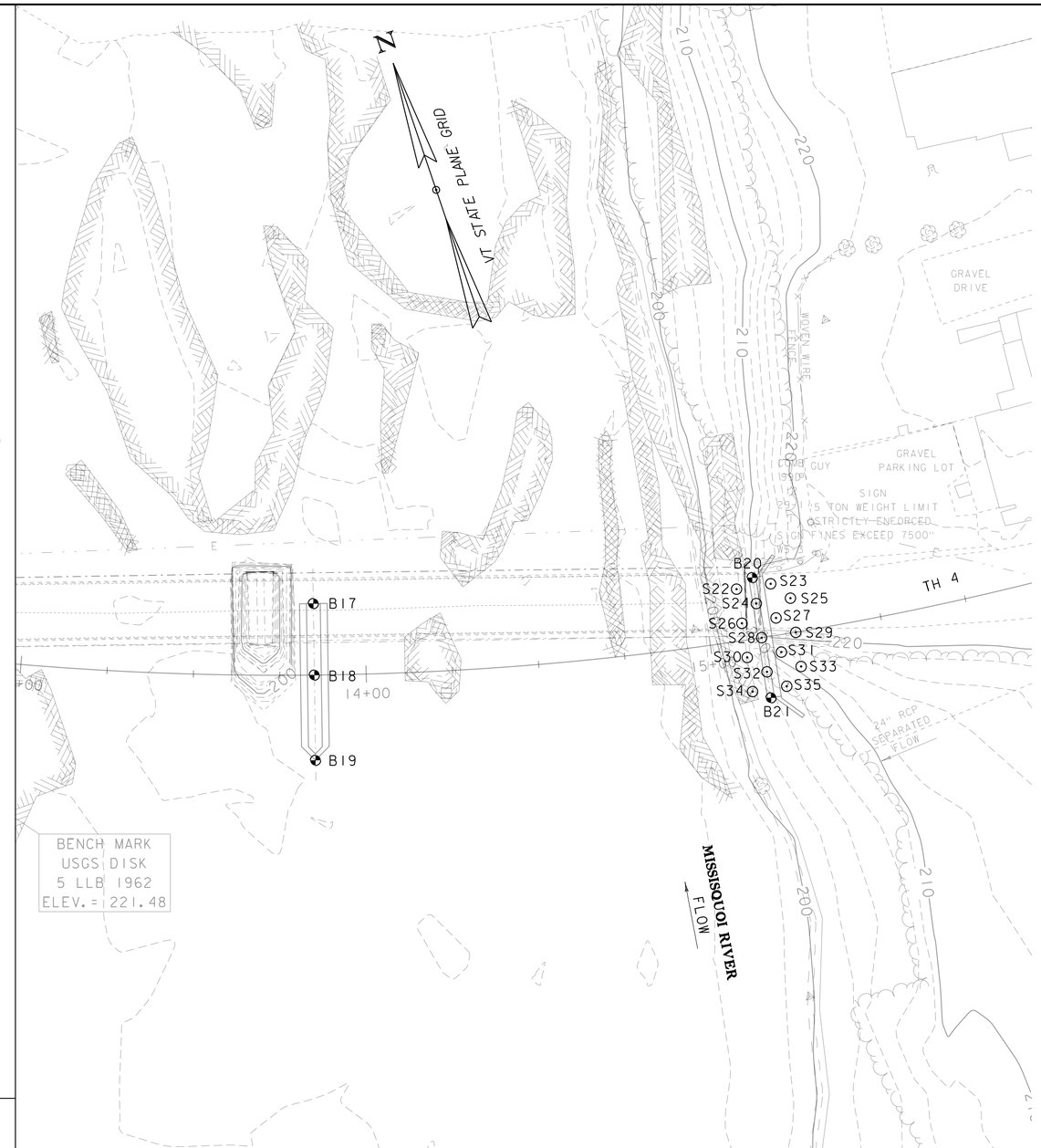
brn	Brown	rd	Red
dk	Dark	tn	Tan
gry	Gray	wh	White
gn	Green	yel	Yellow
lt	Light	mltc	Multicolored
or	Orange		



BORING CHART

HOLE NO.	SURV. STATION	OFFSET	GROUND ELEV.	ELEV. TLOB
B17	13+85	20.0LT		
B18	13+85	0.0CL		
B19	13+85	25.0RT		
B20	15+15	17.6LT		
B21	15+15	17.6RT		
S22	15+10	15.0LT		
S23	15+20	15.0LT		
S24	15+15	10.0LT		
S25	15+25	10.0LT		
S26	15+10	5.0LT		
S27	15+20	5.0LT		
S28	15+15	0.0CL		
S29	15+25	0.0CL		
S30	15+10	5.0RT		
S31	15+20	5.0RT		
S32	15+15	10.0RT		
S33	15+25	10.0RT		
S34	15+10	15.0RT		
S35	15+20	15.0RT		

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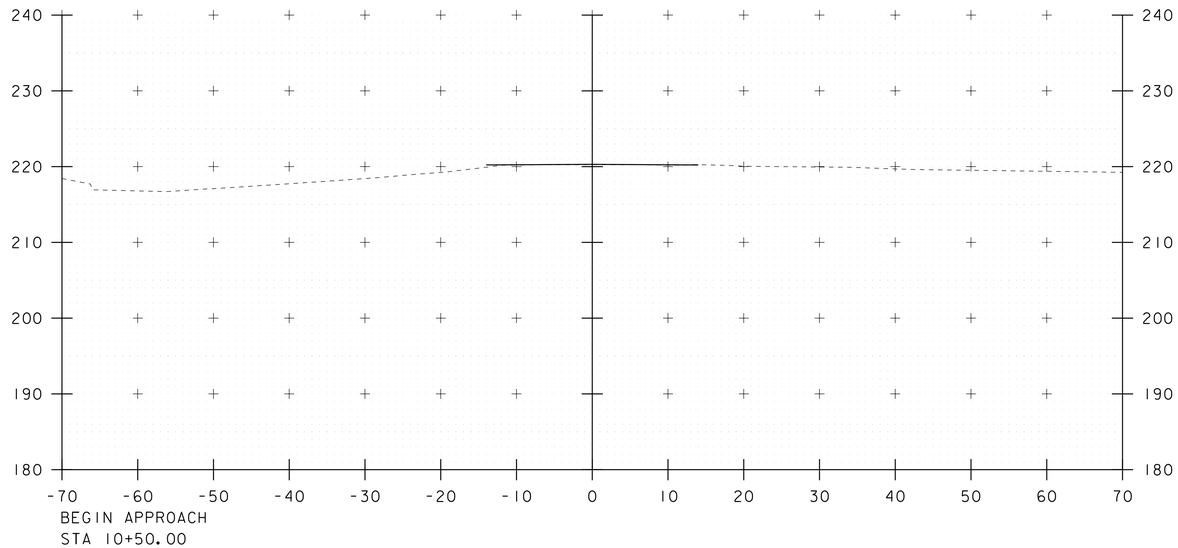
7. Northing and Easting coordinates are shown in Vermont State Plane Grid North American Datum 1983 in meters and survey feet.

PROJECT NAME: HIGHGATE
PROJECT NUMBER: BO 1448(43)

FILE NAME: 98j378/s98j378boring.dgn
PROJECT LEADER: C.P.WILLIAMS
DESIGNED BY: T.C.FILLBACH
ABUTMENT #2 BORING INFORMATION SHEET

PLOT DATE: 03-APR-2014
DRAWN BY: D.D.BEARD
CHECKED BY: ------
SHEET 12 OF 24



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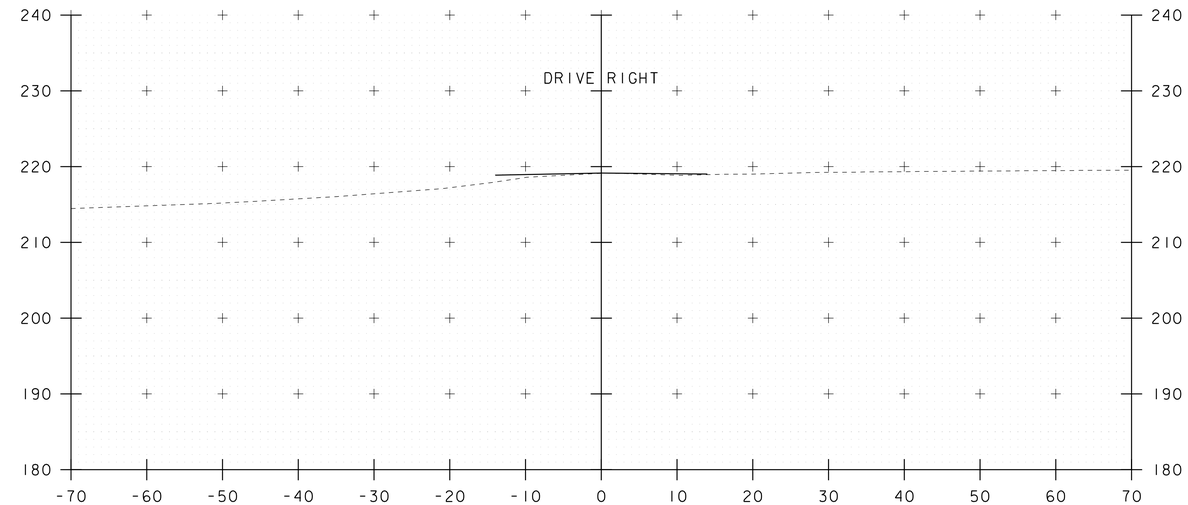

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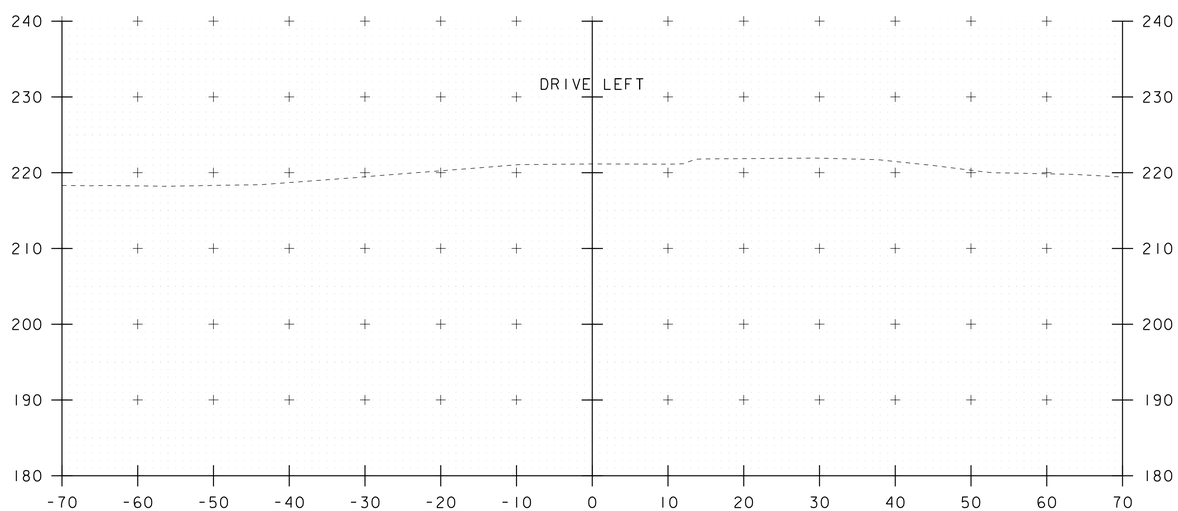

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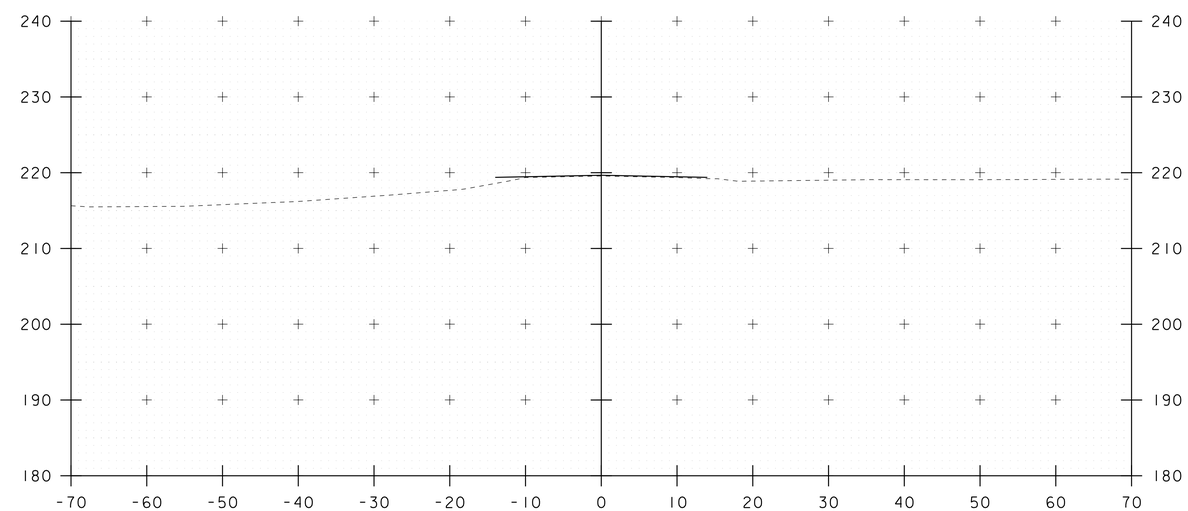
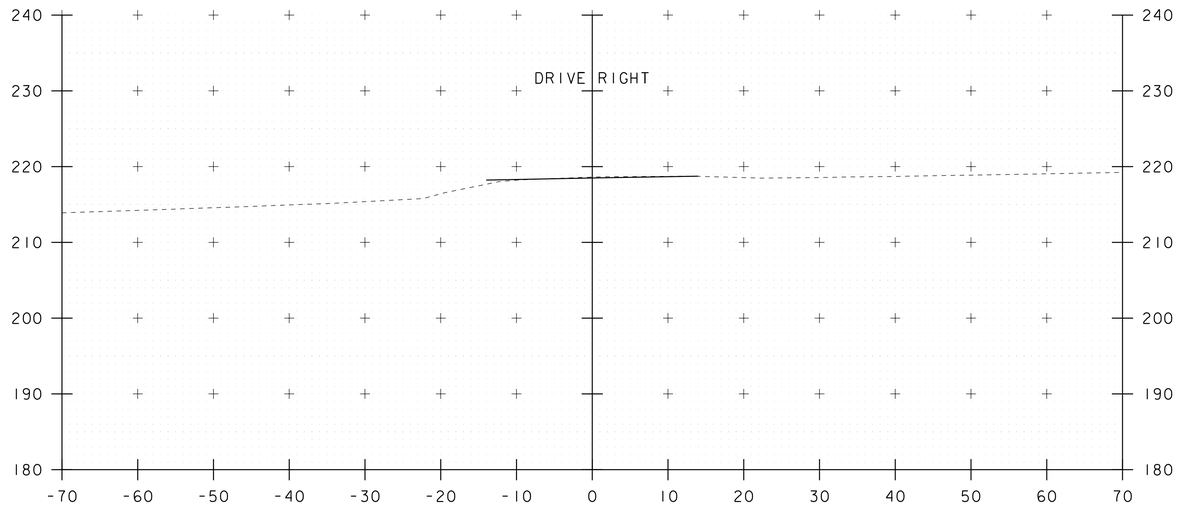


10+75

STA. 10+25 TO STA. 11+00

PROJECT NAME: HIGHGATE	
PROJECT NUMBER: BO 1448(43)	
FILE NAME: 98j378/s98j378xs.dgn	PLOT DATE: 03-APR-2014
PROJECT LEADER: C.P.WILLIAMS	DRAWN BY: D.D.BEARD
DESIGNED BY: ------	CHECKED BY: ------
MAINLINE CROSS SECTIONS 1	SHEET 13 OF 24



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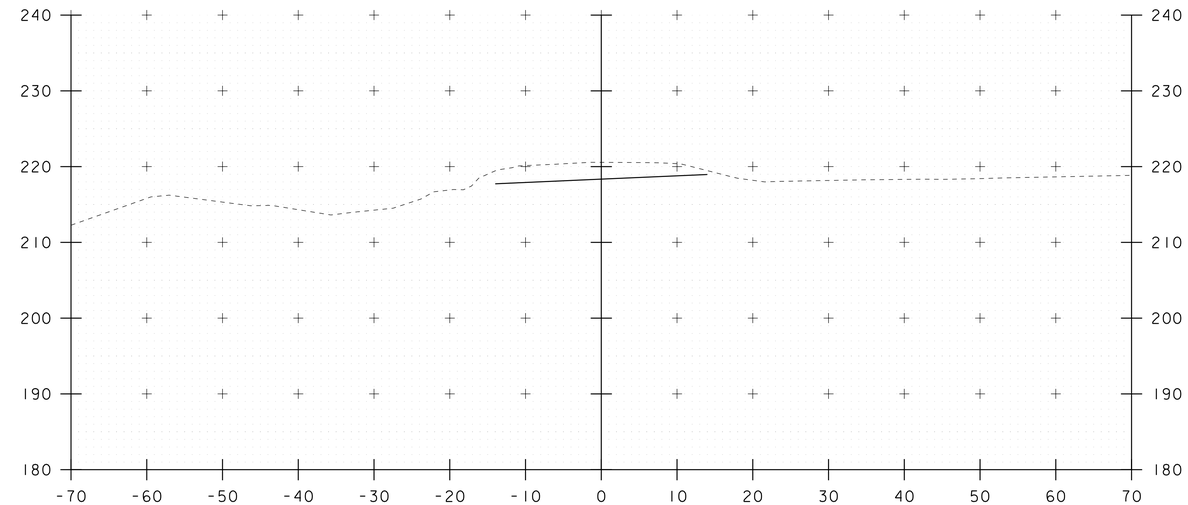

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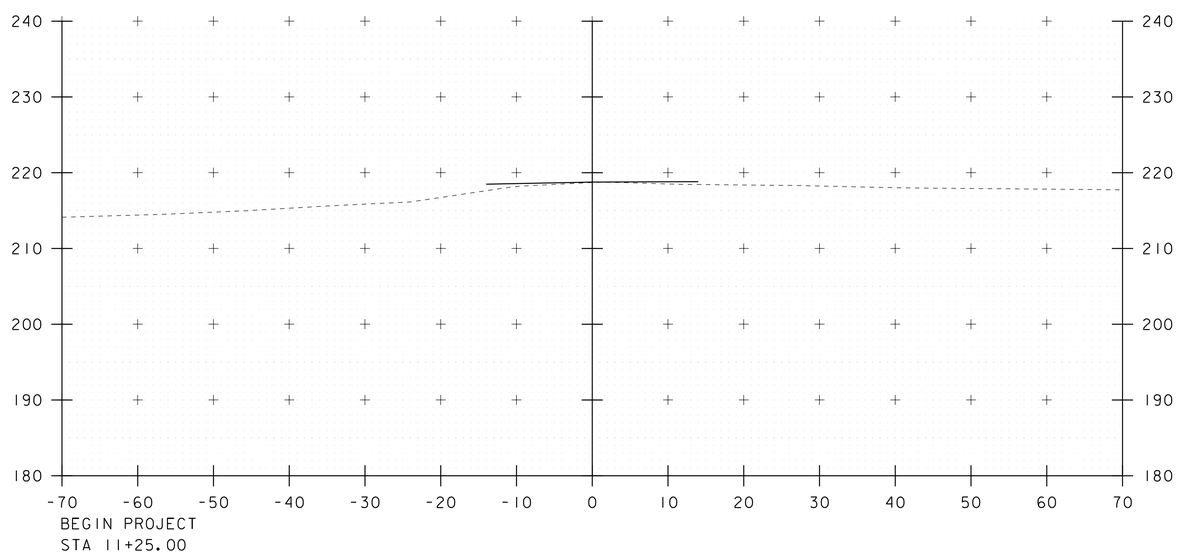

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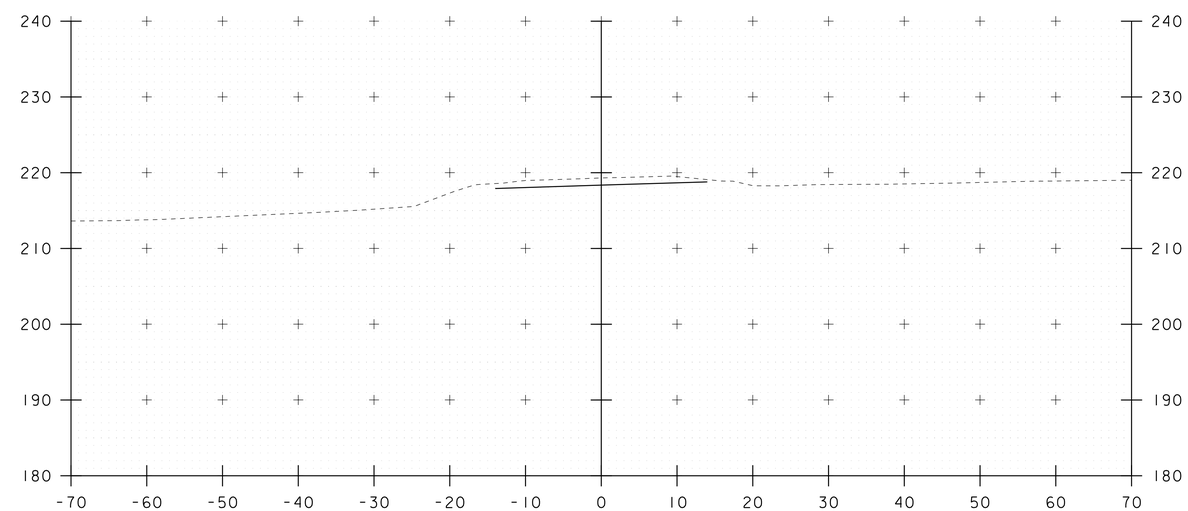
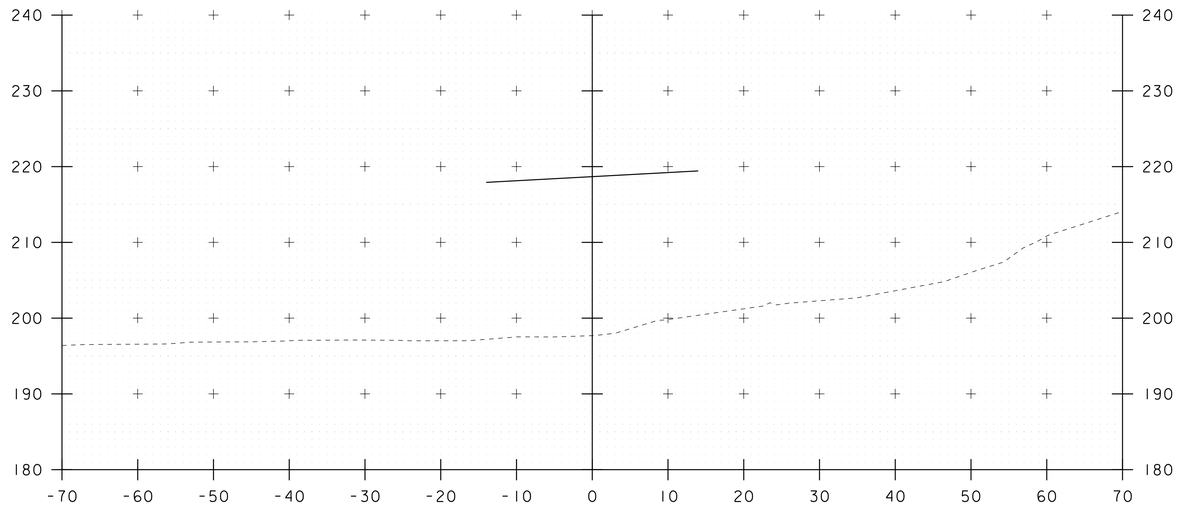


11+75

STA. 11+25 TO STA. 12+00

PROJECT NAME: HIGHGATE	
PROJECT NUMBER: BO 1448(43)	
FILE NAME: 98j378/s98j378xs.dgn	PLOT DATE: 03-APR-2014
PROJECT LEADER: C.P.WILLIAMS	DRAWN BY: D.D.BEARD
DESIGNED BY: ------	CHECKED BY: ------
MAINLINE CROSS SECTIONS 2	SHEET 14 OF 24



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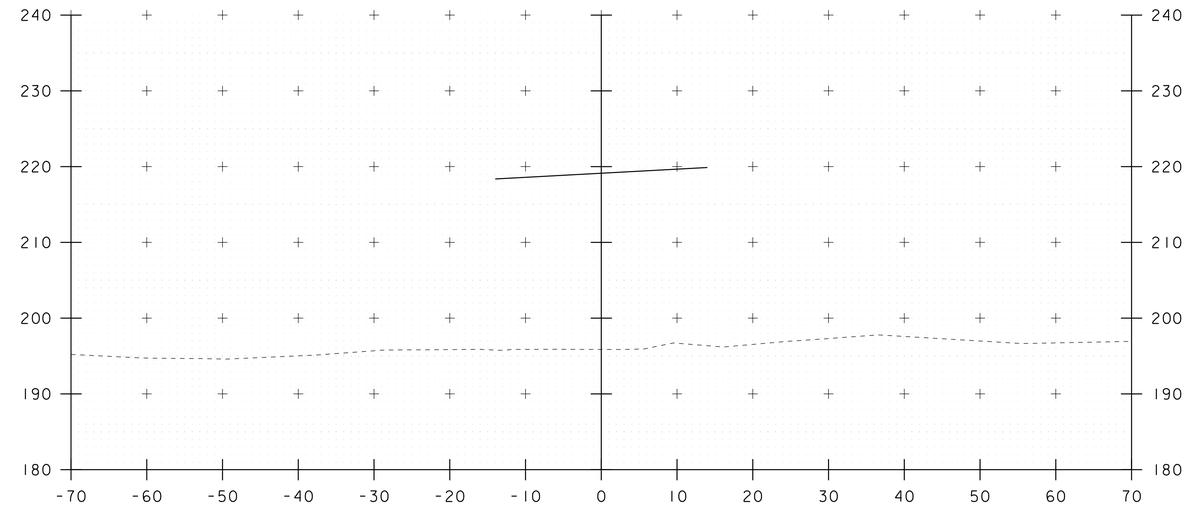

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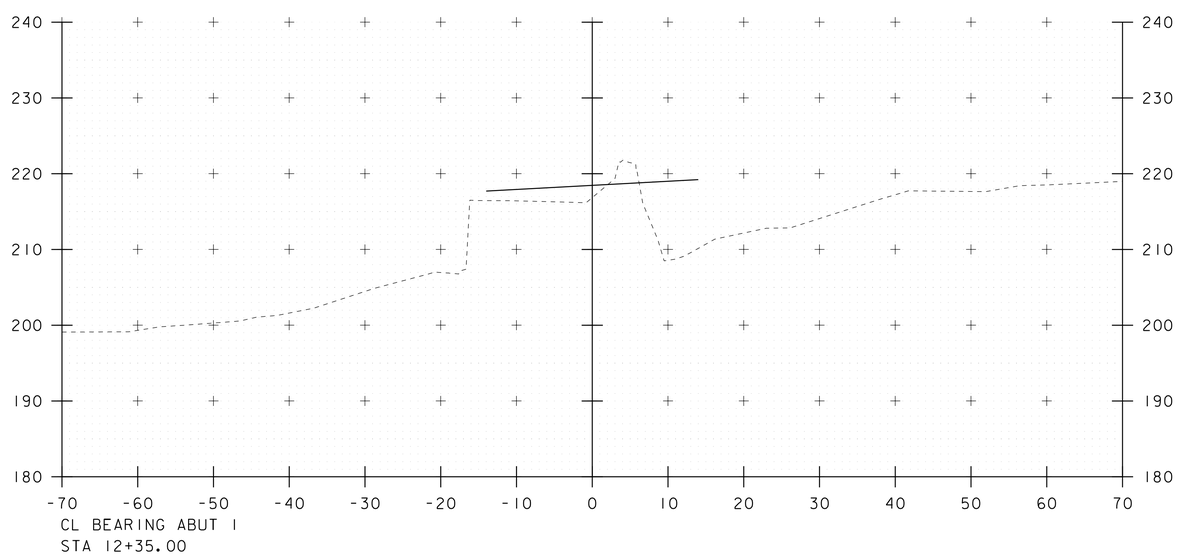

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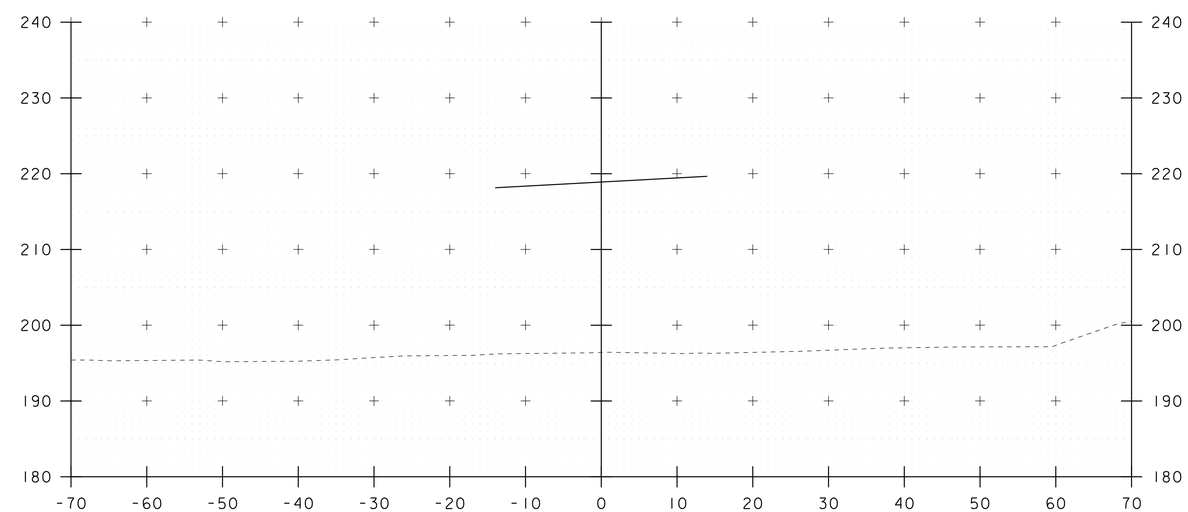
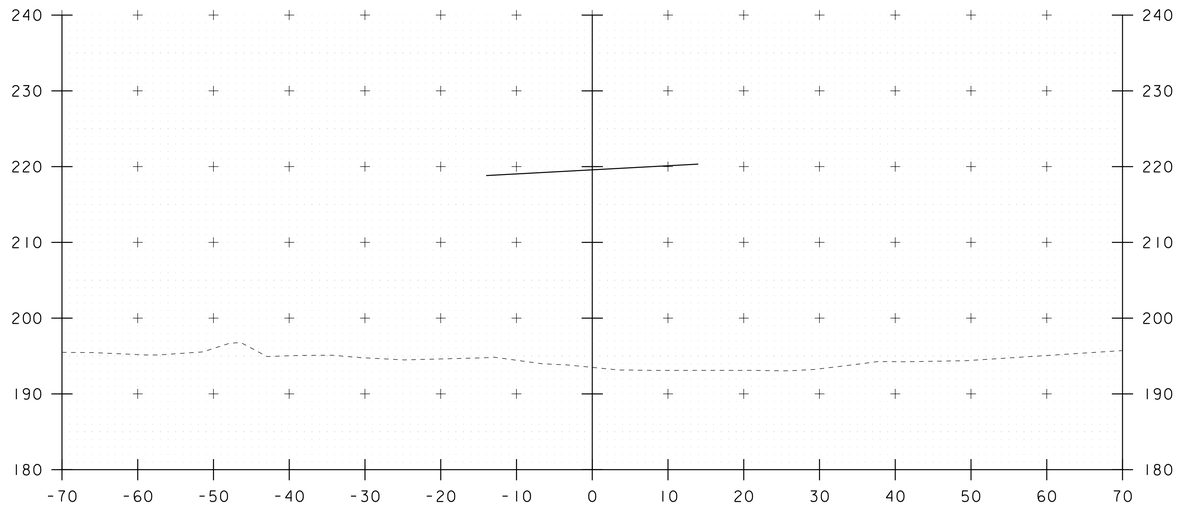


12+75

STA. 12+25 TO STA. 13+00

PROJECT NAME: HIGHGATE	
PROJECT NUMBER: BO 1448(43)	
FILE NAME: 98j378/s98j378xs.dgn	PLOT DATE: 03-APR-2014
PROJECT LEADER: C.P.WILLIAMS	DRAWN BY: D.D.BEARD
DESIGNED BY: ------	CHECKED BY: ------
MAINLINE CROSS SECTIONS 3	SHEET 15 OF 24



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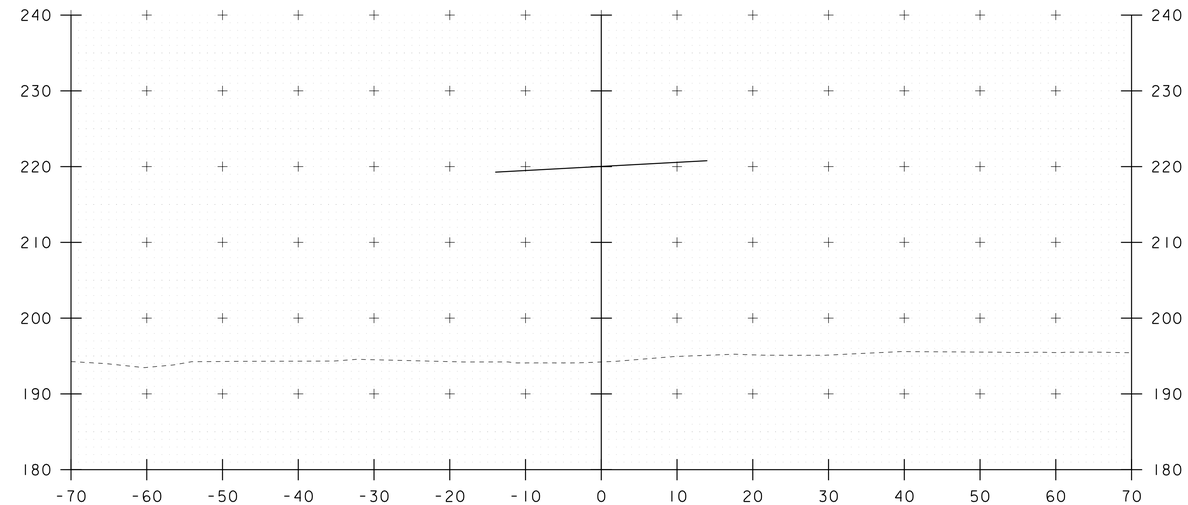
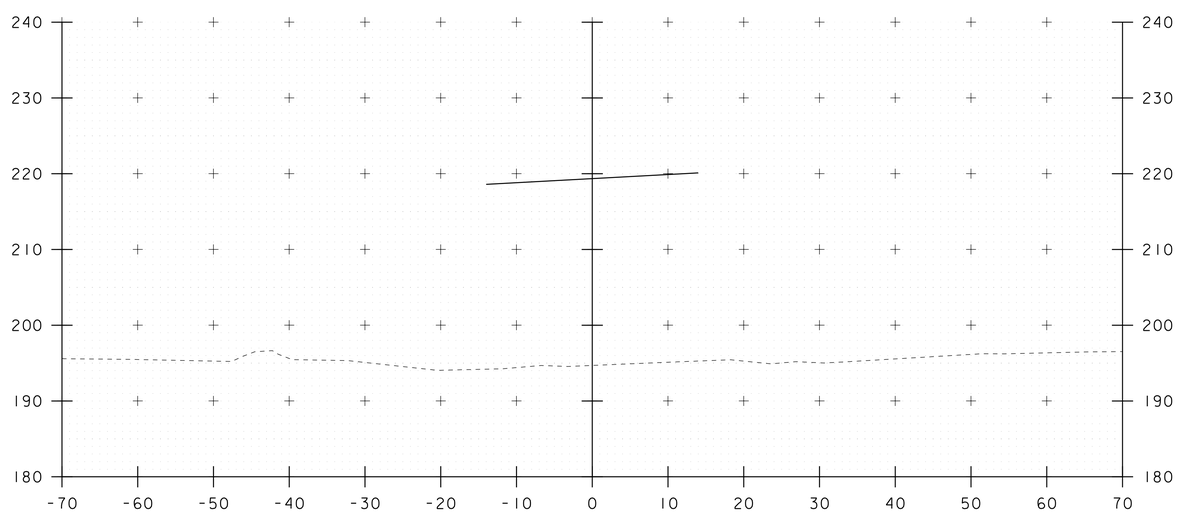
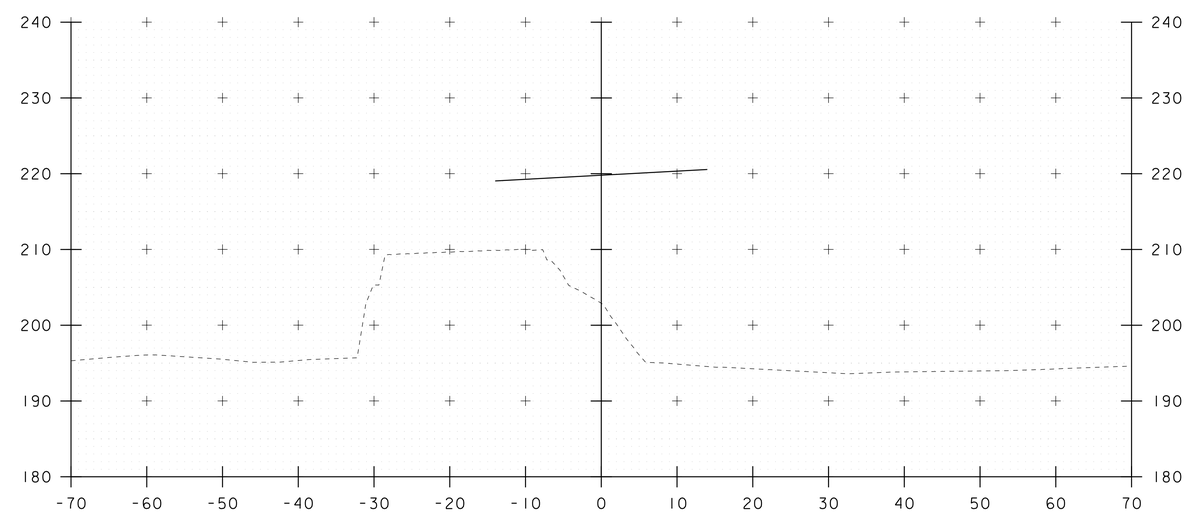


14+00



13+25

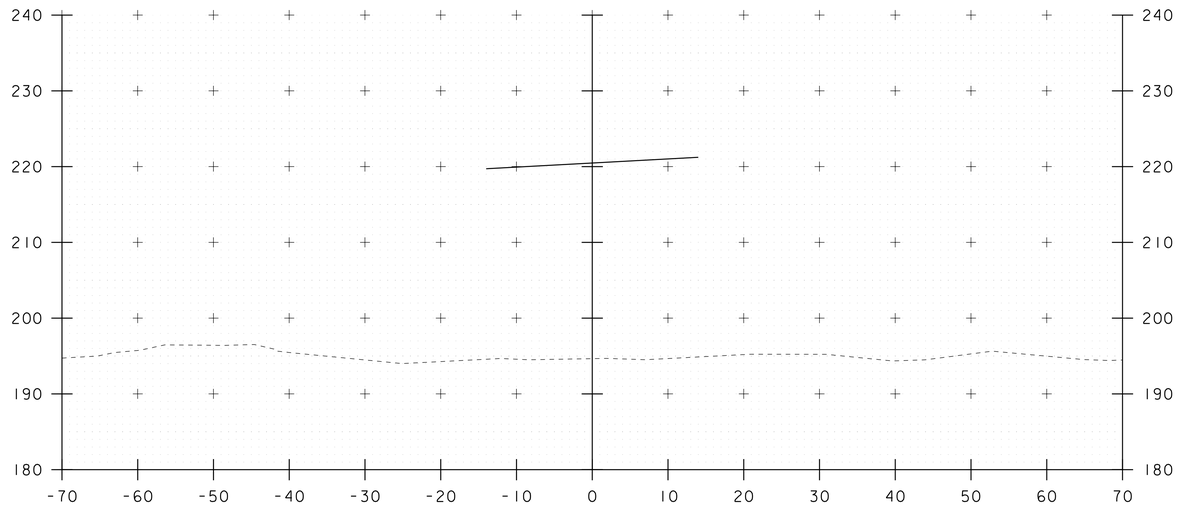


CL BEARING PIER
STA 13+85.00

13+75

STA. 13+25 TO STA. 14+00

PROJECT NAME: HIGHGATE	
PROJECT NUMBER: BO 1448(43)	
FILE NAME: 98j378/s98j378xs.dgn	PLOT DATE: 03-APR-2014
PROJECT LEADER: C.P.WILLIAMS	DRAWN BY: D.D.BEARD
DESIGNED BY: ------	CHECKED BY: ------
MAINLINE CROSS SECTIONS 4	SHEET 16 OF 24



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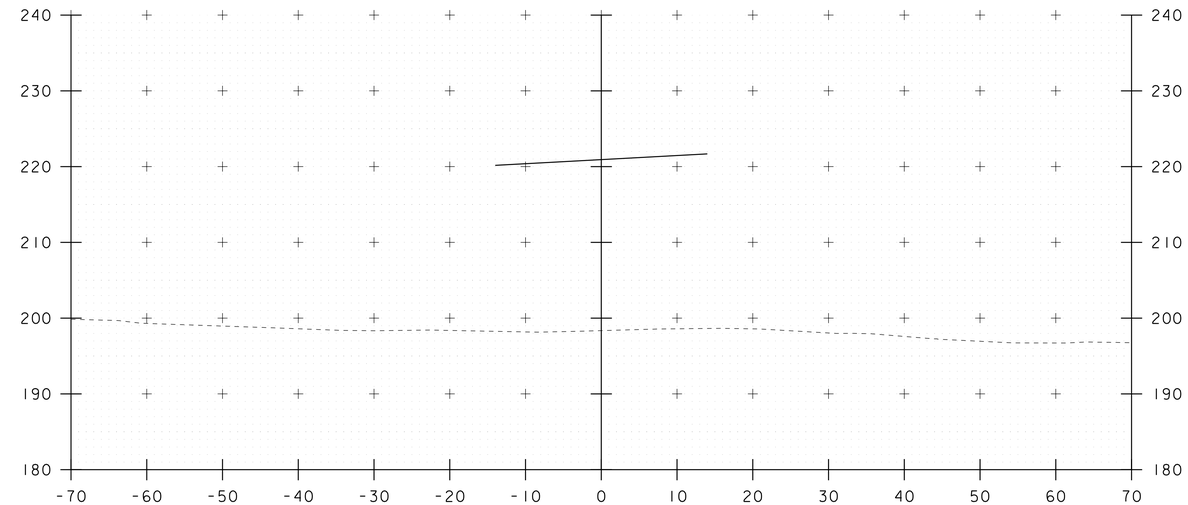
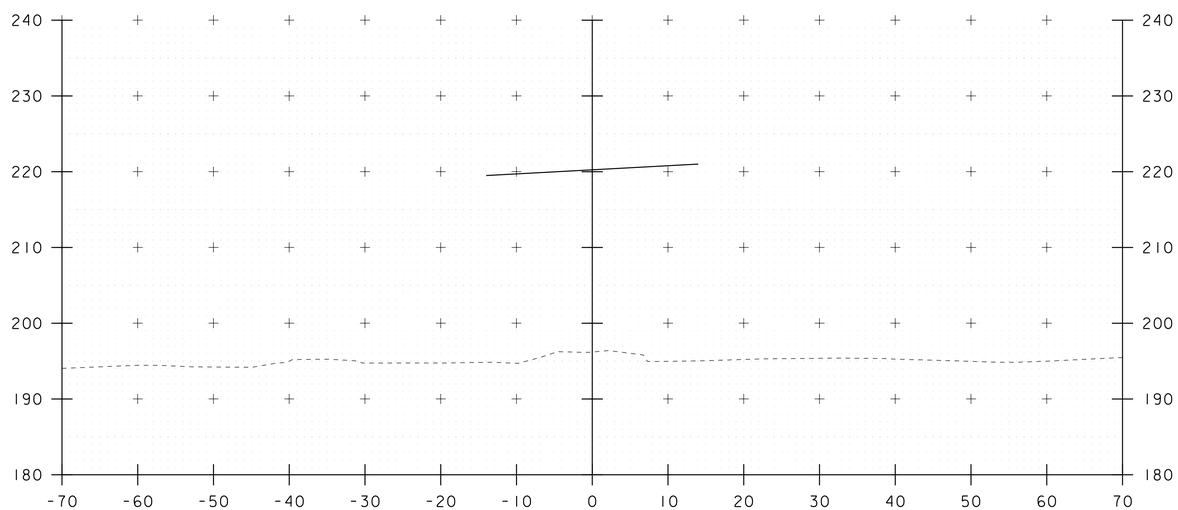
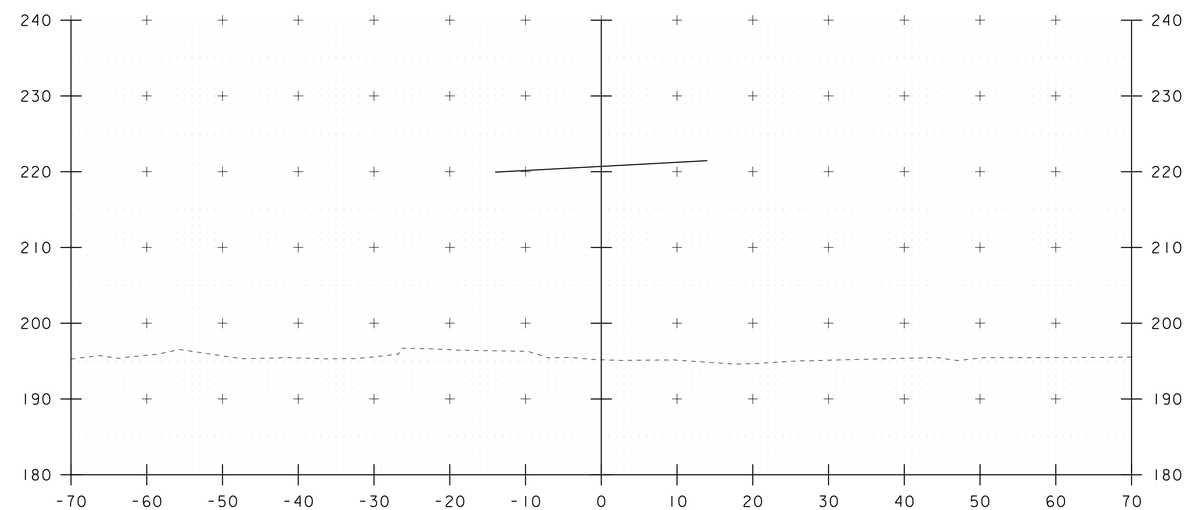


CL BEARING ABUT 2
STA 15+15.00

15+00



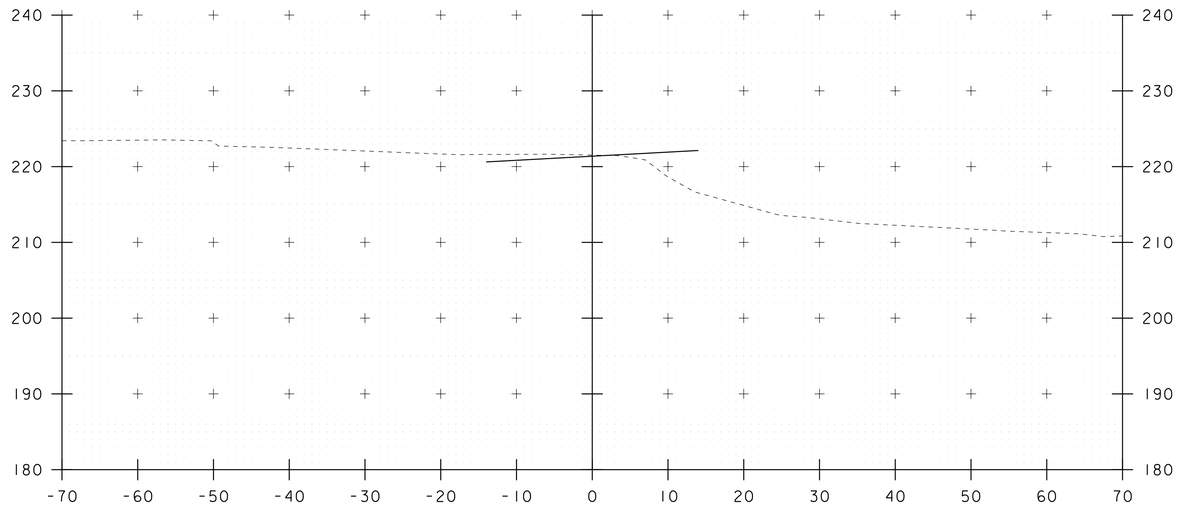
14+25



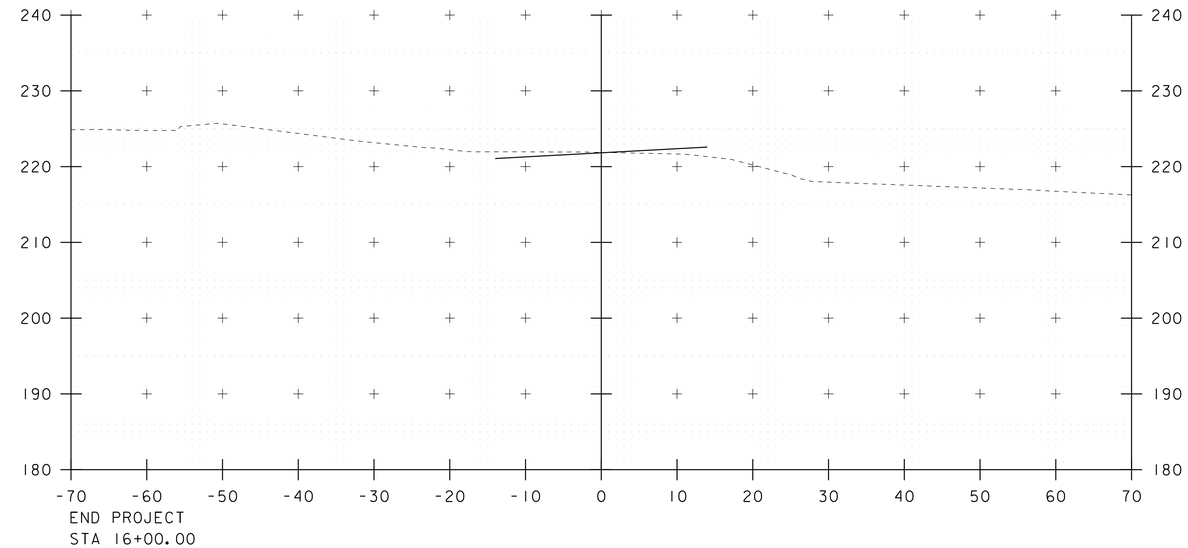
14+75

STA. 14+25 TO STA. 15+00

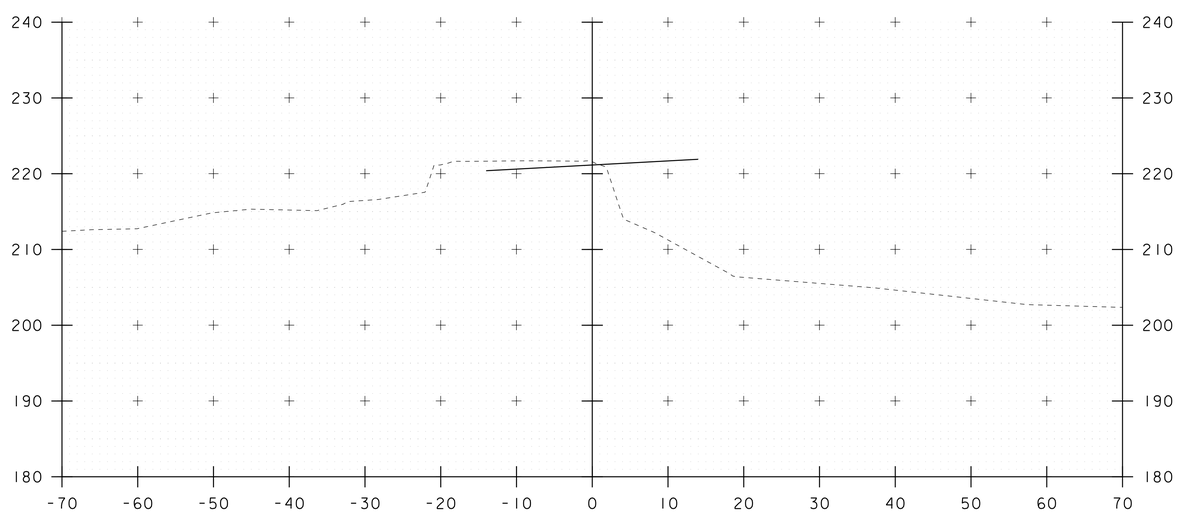
PROJECT NAME: HIGHGATE	
PROJECT NUMBER: BO 1448(43)	
FILE NAME: 98j378/s98j378xs.dgn	PLOT DATE: 03-APR-2014
PROJECT LEADER: C.P.WILLIAMS	DRAWN BY: D.D.BEARD
DESIGNED BY: ------	CHECKED BY: ------
MAINLINE CROSS SECTIONS 5	SHEET 17 OF 24



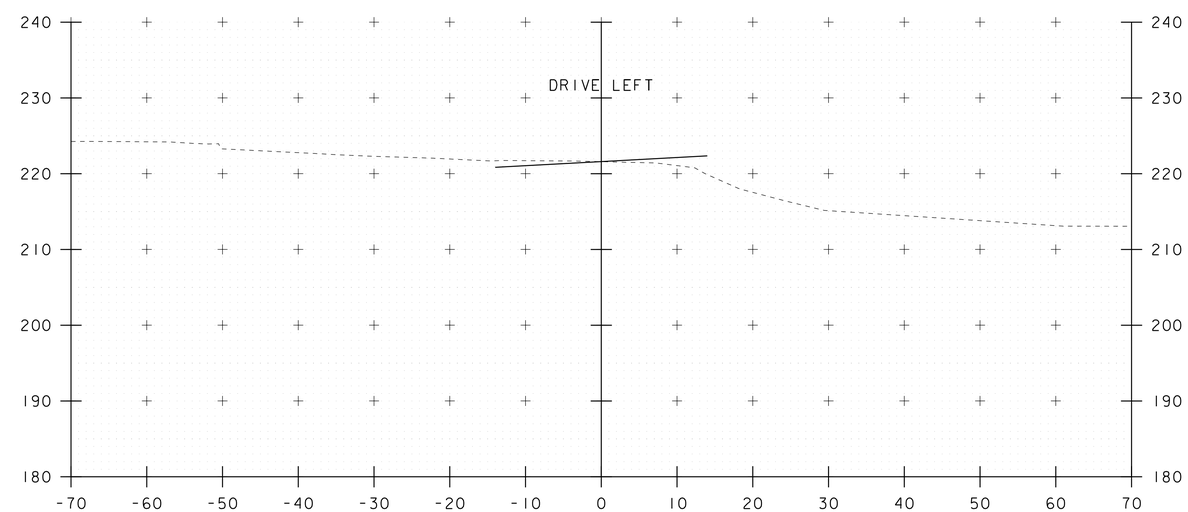
15+50



16+00



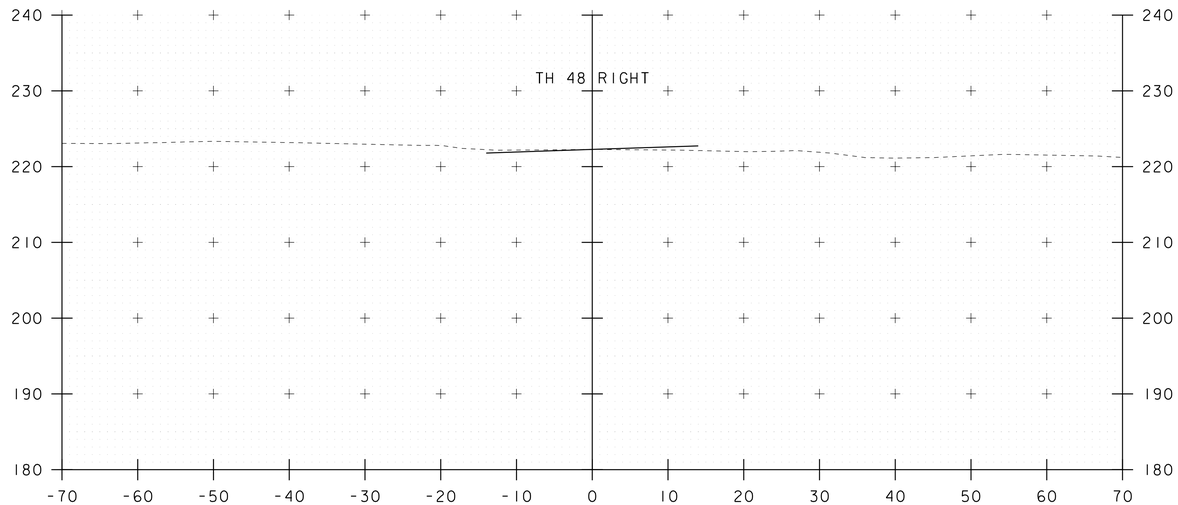
15+25



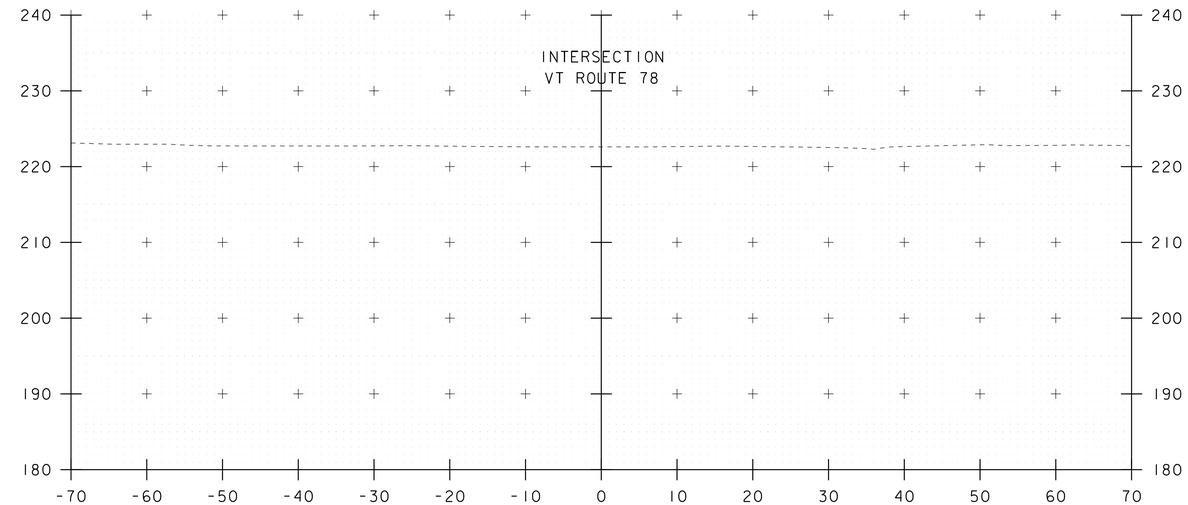
15+75

STA. 15+25 TO STA. 16+00

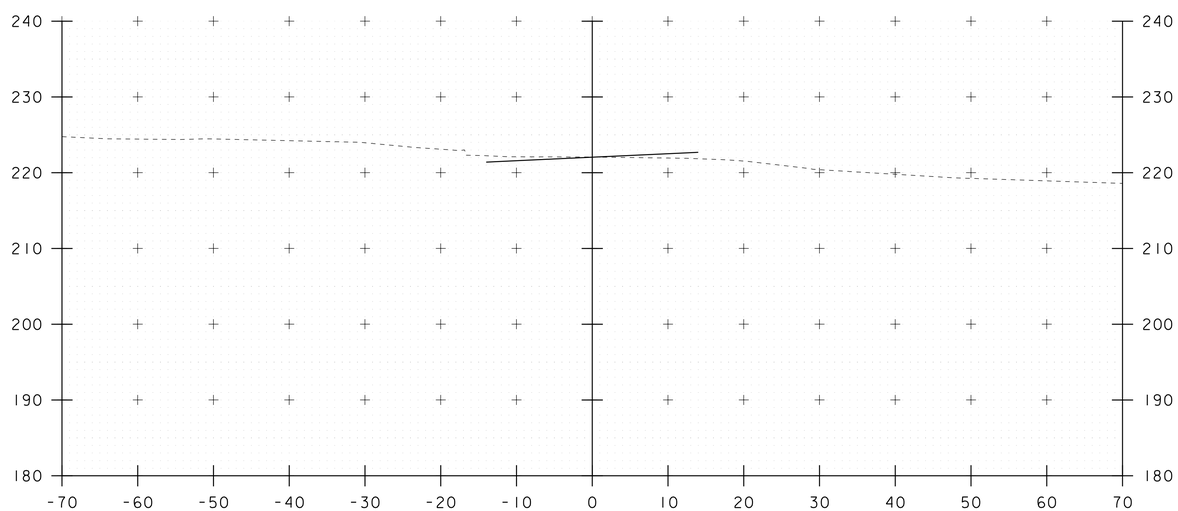
PROJECT NAME: HIGHGATE	
PROJECT NUMBER: BO 1448(43)	
FILE NAME: 98j378/s98j378xs.dgn	PLOT DATE: 03-APR-2014
PROJECT LEADER: C.P.WILLIAMS	DRAWN BY: D.D.BEARD
DESIGNED BY: ------	CHECKED BY: ------
MAINLINE CROSS SECTIONS 6	SHEET 18 OF 24



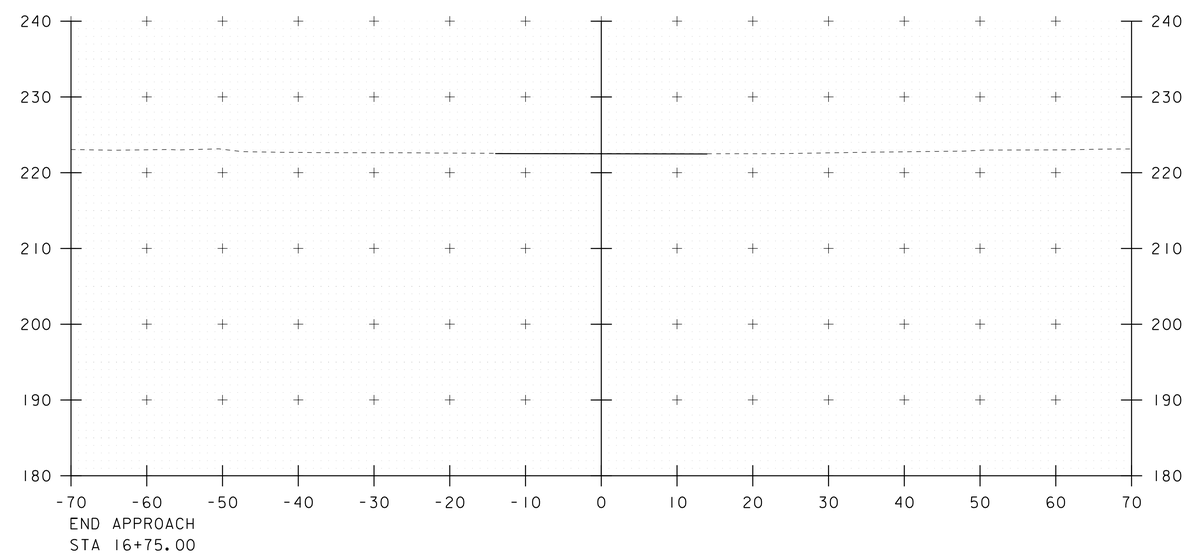
16+50



17+00



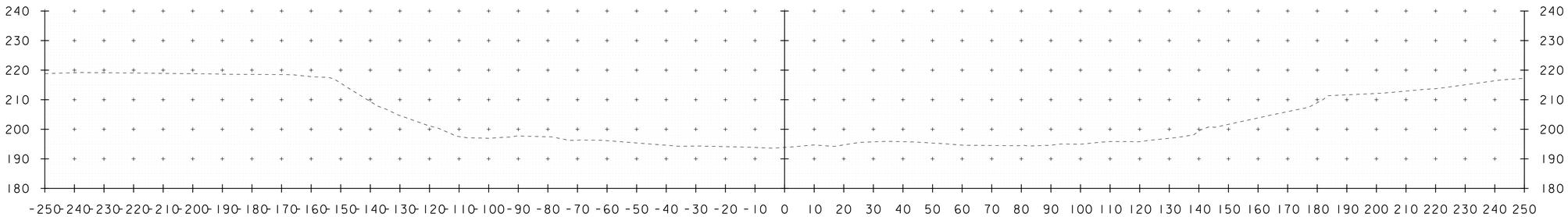
16+25



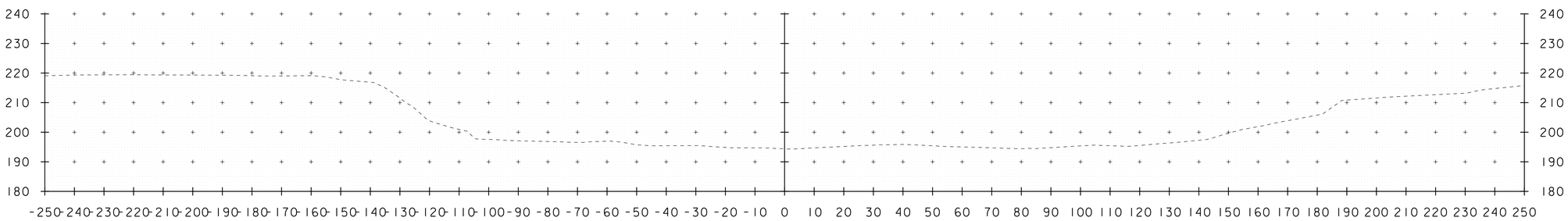
16+75

STA. 16+25 TO STA. 17+00

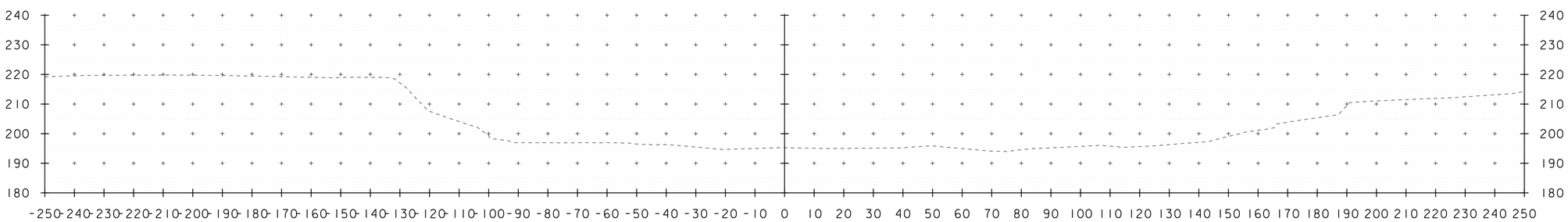
PROJECT NAME: HIGHGATE	
PROJECT NUMBER: BO 1448(43)	
FILE NAME: 98j378/s98j378xs.dgn	PLOT DATE: 03-APR-2014
PROJECT LEADER: C.P.WILLIAMS	DRAWN BY: D.D.BEARD
DESIGNED BY: ------	CHECKED BY: ------
MAINLINE CROSS SECTIONS 7	SHEET 19 OF 24



50+50



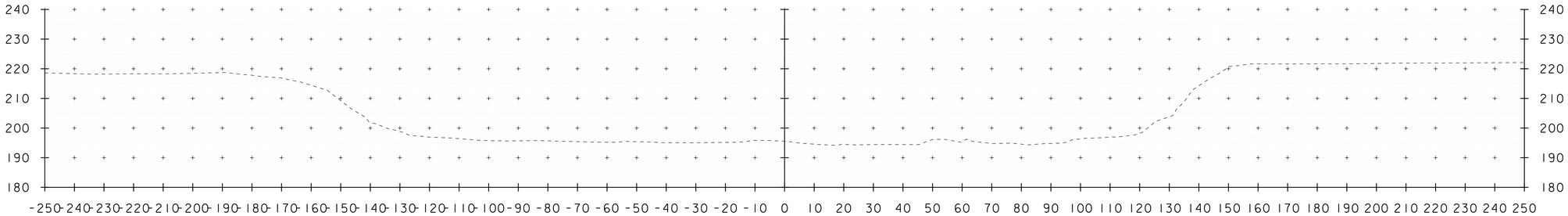
50+25



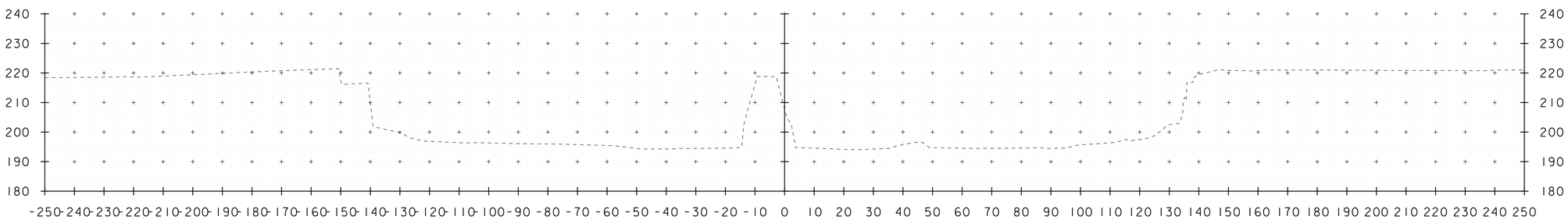
50+00

STA. 50+00 TO STA. 50+50

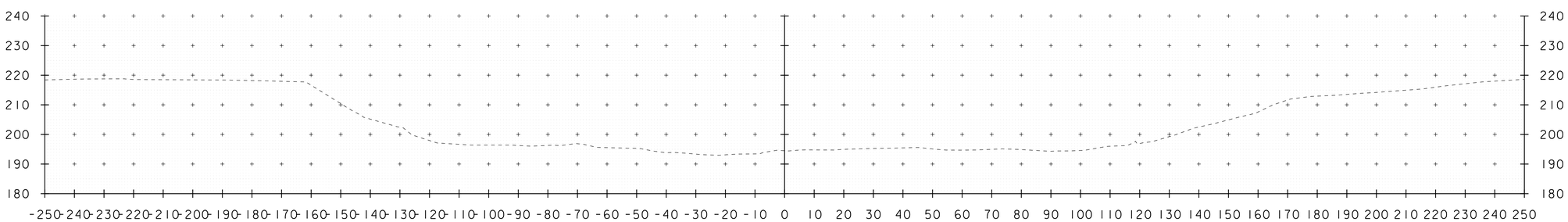
PROJECT NAME: HIGHGATE	
PROJECT NUMBER: BO 1448(43)	
FILE NAME: 98j378/s98j378xs.dgn	PLOT DATE: 03-APR-2014
PROJECT LEADER: C.P.WILLIAMS	DRAWN BY: D.D.BEARD
DESIGNED BY: ------	CHECKED BY: ------
CHANNEL CROSS SECTIONS 1	SHEET 20 OF 24



51+25



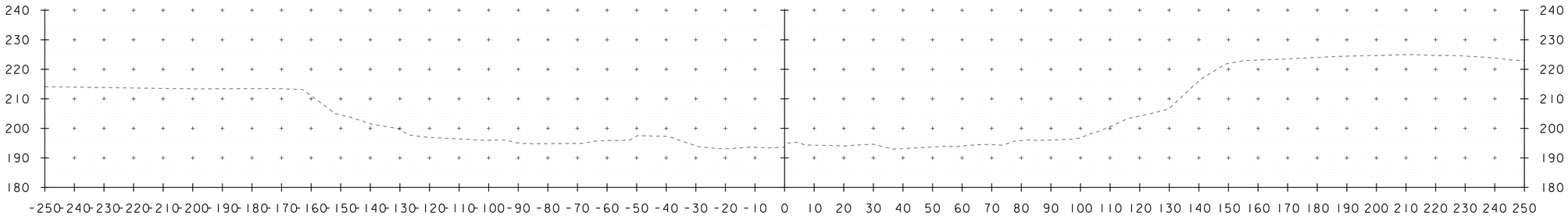
51+00



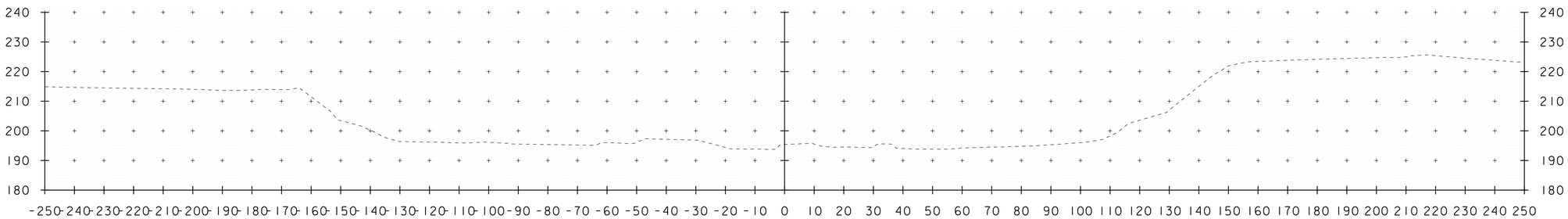
50+75

STA. 50+75 TO STA. 51+25

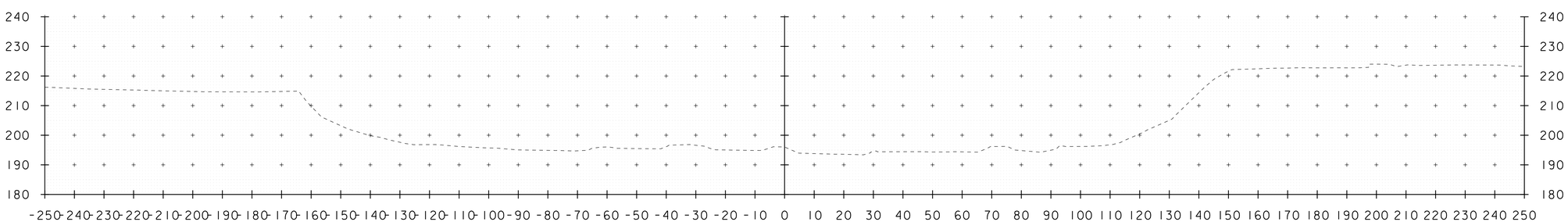
PROJECT NAME: HIGHGATE	
PROJECT NUMBER: B0 1448(43)	
FILE NAME: 98J378/s98J378xs.dgn	PLOT DATE: 03-APR-2014
PROJECT LEADER: C.P.WILLIAMS	DRAWN BY: D.D.BEARD
DESIGNED BY: ------	CHECKED BY: ------
CHANNEL CROSS SECTIONS 2	SHEET 21 OF 24



52+00



51+75



51+50

STA. 51+50 TO STA. 52+00

PROJECT NAME: HIGHGATE	
PROJECT NUMBER: BO 1448(43)	
FILE NAME: 98j378/s98j378xs.dgn	PLOT DATE: 03-APR-2014
PROJECT LEADER: C.P.WILLIAMS	DRAWN BY: D.D.BEARD
DESIGNED BY: ------	CHECKED BY: ------
CHANNEL CROSS SECTIONS 3	SHEET 22 OF 24

COLTON GRAVELLY LOAMY SAND
2%-8% SLOPES
POTENTIALLY HIGHLY ERODIBLE
K=0.17

SOIL TYPE: WATER

WINDSOR LOAMY FINE SAND
0%-3% SLOPES
NOT HIGHLY ERODIBLE
K=0.17

DRAGON, DAVID M. & JACQUELINE

MACHIA, R CH

MACHIA, RO CHERY

LAPLANT, NANCY

BOUSQUET, ARTHUR & LEMNAH, LEORA

SWEENEY, MARCIA MAE

POB STA 40+00.00

PC STA 41+18.99

PT STA 42+01.39

PC STA 44+83.65

PI STA 41+60.38

PI STA 45+64.70

TH 4 TO SHELDON

S 58°27' 17" E

S 71°56' 34" E

40+00 41+00 42+00 43+00 44+00 45+00

50+00 51+00 52+00

EXISTING CURVE 1
DELTA = 13°29' 16"
D = 16°22' 13"
R = 350.00'
T = 41.39'
L = 82.39'
E = 2.44'

EXISTING CURVE 2
DELTA = 20°52' 25"
D = 13°01' 18"
R = 440.00'
T = 81.05'
L = 160.30'
E = 7.40'

BENCH MARK
USGS DISK
5 LLB 1962
ELEV. = 1221.48

MISSISQUOI RIVER
FLOW

VT STATE PLANE GRID

EXISTING BRIDGE INFORMATION
TWO SPAN THRU STEEL TRUSS
BUILT 1928
MAX SPAN LENGTH = 143'
TOTAL LENGTH = 292'
SINGLE LANE BRIDGE,
POSTED FOR 5 TONS.

EXISTING CONDITIONS

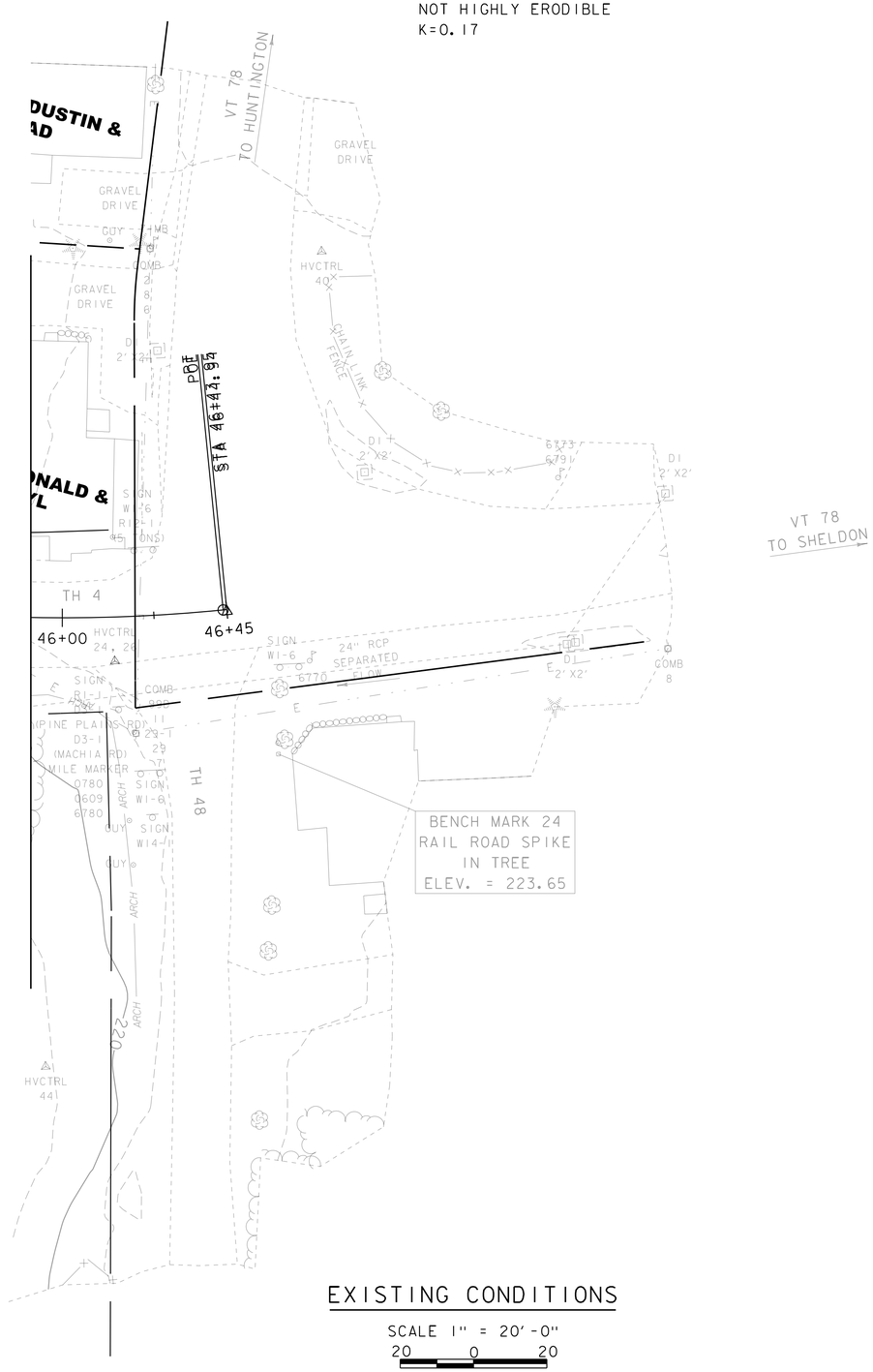
SCALE 1" = 20'-0"
20 0 20

PROJECT NAME: HIGHGATE
PROJECT NUMBER: BO 1448(43)

FILE NAME: 98j378/s98j378border_ero.dgn
PROJECT LEADER: C.P.WILLIAMS
DESIGNED BY: T.C.FILLBACH
EXISTING CONDITION SHEET 1

PLOT DATE: 03-APR-2014
DRAWN BY: D.D.BEARD
CHECKED BY: ------
SHEET 23 OF 24

WINDSOR LOAMY FINE SAND
0%-3% SLOPES
NOT HIGHLY ERODIBLE
K=0.17



N

VT STATE PLANE GRID

EXISTING CONDITIONS

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

PROJECT NAME: HIGHGATE	
PROJECT NUMBER: BO 1448(43)	
FILE NAME: 98j378/s98j378border_ero.dgn	PLOT DATE: 03-APR-2014
PROJECT LEADER: C.P.WILLIAMS	DRAWN BY: D.D.BEARD
DESIGNED BY: T.C.FILLBACH	CHECKED BY: ------
EXISTING CONDITION SHEET 2	SHEET 24 OF 24