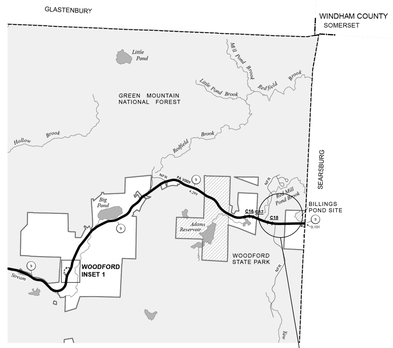
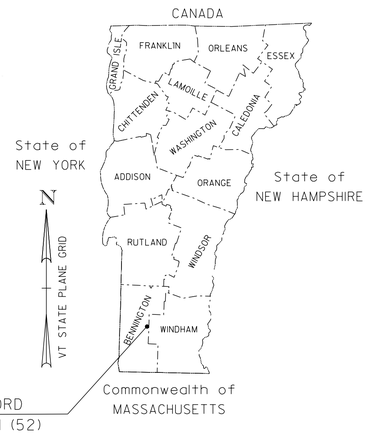
REVIEWER NOTES

1. IT IS ANTICIPATED THAT CHANNEL RIGHT-OF-WAY ACQUISITION WILL BE NECESSARY.

2. THERE ARE EXISTING OVERHEAD UTILITIES WITHIN THE PROJECT AREA WHICH WILL REQUIRE RELOCATION BY OTHERS.

STATE OF VERMONT
AGENCY OF TRANSPORTATION





PROPOSED IMPROVEMENT
BRIDGE PROJECT

TOWN OF WOODFORD
COUNTY OF BENNINGTON

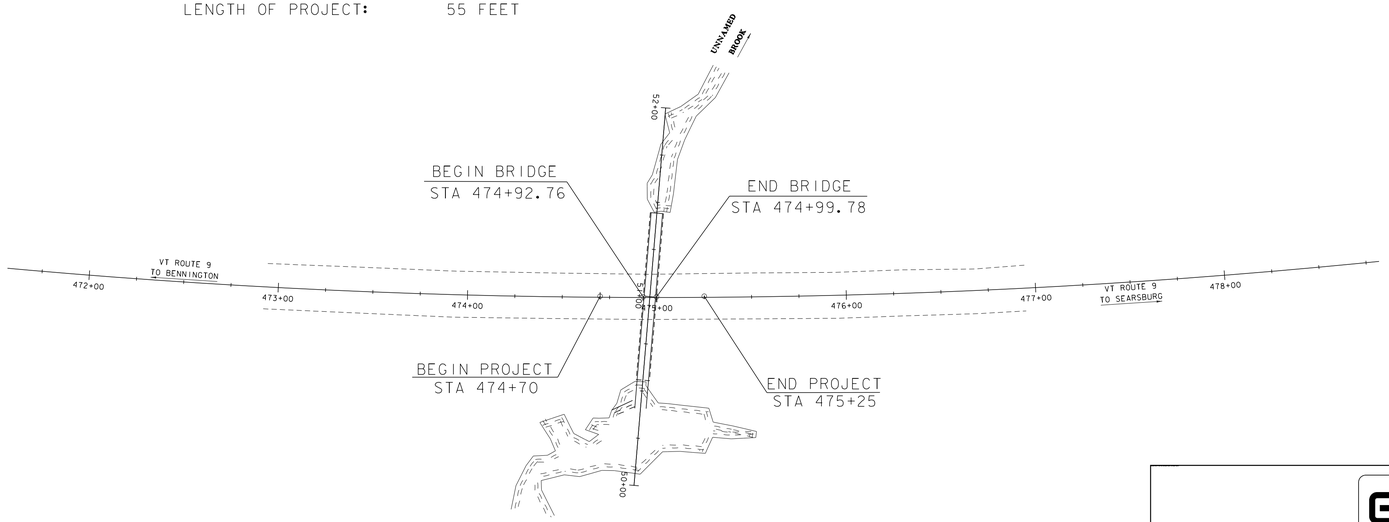
ROUTE NO : VT 9 ; BRIDGE NO : 18

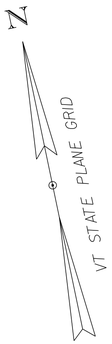
PROJECT LOCATION: APPROXIMATELY 2.4 MILES WEST OF INTERSECTION WITH VT 8.

PROJECT DESCRIPTION: THE PROJECT SHALL CONSIST OF LINING THE EXISTING CULVERT WITH A NEW CULVERT AND GROUTING BETWEEN THE TWO. A BEVELLED HEADWALL SHALL BE CONSTRUCTED AT THE INLET.

LENGTH OF STRUCTURE: 7 FEET

LENGTH OF PROJECT: 55 FEET





SCALE 1" = 40'-0"
40 0 40

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

SURVEYED BY : VTRANS
SURVEYED DATE : 07/03/2014

DATUM
VERTICAL NAVD88
HORIZONTAL NAVD83 (2011)

CONCEPTUAL PLANS
JULY-14-2016

GM2 ASSOCIATES
GM2 Associates, Inc.
197 Loudon Road, Suite 310
Concord, NH 03301
Tel: 603-856-7854
Fax: 603-856-7855

DIRECTOR OF PROJECT DELIVERY
APPROVED _____ DATE _____

PROJECT MANAGER : N. WARK

PROJECT NAME : WOODFORD
PROJECT NUMBER : BF 010-1(52)

SHEET 1 OF 10 SHEETS

STATE OF VERMONT
AGENCY OF TRANSPORTATION

PRELIMINARY INFORMATION SHEET (CULVERT)

Version
LRFD

INDEX OF SHEETS

PLAN SHEETS

STANDARDS LIST

STRUCTURES DETAIL SHEETS

FINAL HYDRAULIC REPORT

TRAFFIC MAINTENANCE NOTES

1. MAINTAIN TWO-WAY TRAFFIC ON THE EXISTING STRUCTURE.
2. TRAFFIC SIGNALS ARE NOT NECESSARY.
3. SIDEWALKS ARE NOT NECESSARY

DESIGN VALUES

1. DESIGN LIVE LOAD		HL-93
2. FUTURE PAVEMENT	dp:	---
3. CULVERT OPENING	D:	7.00 FT
4. MIN. MID-SPAN POS. CAMBER @ RELEASE (PRESTRESSED UNITS)	Δ:	---
5. PRESTRESSING STRAND	fy:	---
6. PRESTRESSED CONCRETE STRENGTH	$f'c$:	---
7. PRESTRESSED CONCRETE RELEASE STRENGTH	$f'ci$:	---
8. CONCRETE, HIGH PERFORMANCE CLASS AA	$f'c$:	--- KSI
9. CONCRETE, HIGH PERFORMANCE CLASS A	$f'c$:	--- KSI
10. CONCRETE, HIGH PERFORMANCE CLASS B	$f'c$:	3.5 KSI
11. CONCRETE, CLASS C	$f'c$:	--- KSI
12. REINFORCING STEEL	fy:	60 KSI
13. STRUCTURAL STEEL AASHTO M270	fy:	---
14. NOMINAL BEARING RESISTANCE OF SOIL	qn:	--- KSF
15. SOIL BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	ϕ:	---
16. NOMINAL BEARING RESISTANCE OF ROCK	qn:	--- KSF
17. ROCK BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	ϕ:	---
18. PILE RESISTANCE FACTOR	ϕ:	---
19. LATERAL PILE DEFLECTION	Δ:	--- INCH
20. BASIC WIND SPEED	$V3s$:	---
21. MINIMUM GROUND SNOW LOAD	pg:	---
22. SEISMIC DATA	PGA: ---	Ss: ---
		$S1$: ---
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:	TABLE TO BE COMPLETED BY CONTRACTOR'S DESIGNER						

CULVERT DESIGN CRITERIA

1. PROPOSED CULVERT IS A STEEL CORRUGATED (0'-0" X 0'-0" X 0'-0" PIPE).
2. CULVERT ENDS ARE NOT SKEWED.
3. CULVERT WILL BE SET AT A SLOPE OF 0.00 IN. ON 0 FT.
4. CULVERT WILL NOT REQUIRE FISH PASSAGE ACCOMODATIONS
5. CULVERT CONSTRUCTION WILL NOT REQUIRE A TEMPORARY PIPE

AS BUILT "REBAR" DETAIL

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

TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT
2017	3200	490	54	15.2	540
2037	3400	520	54	19.9	750

20 year ESAL for flexible pavement from 2017 to 2037 : N/A

40 year ESAL for flexible pavement from 2017 to 2057 : N/A

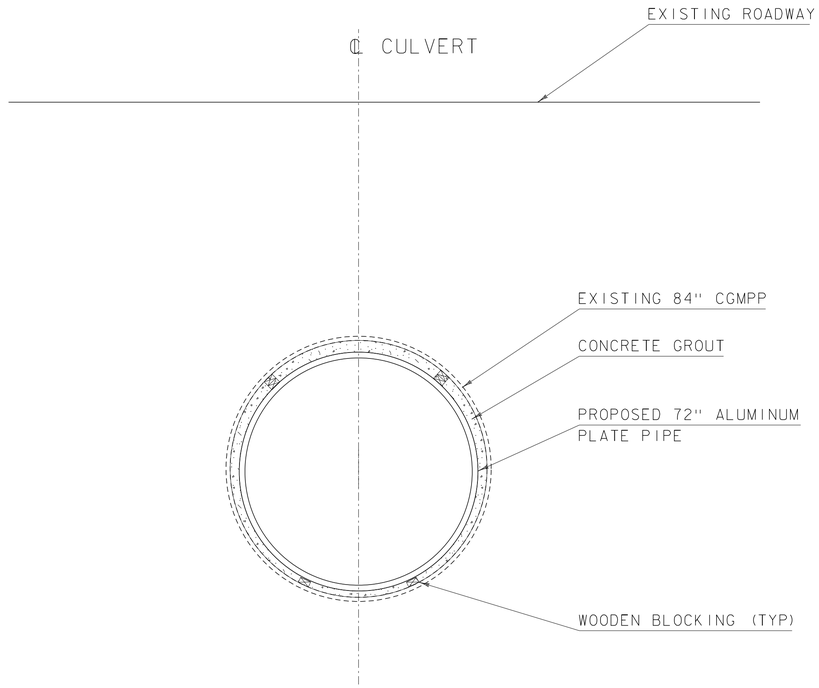
Design Speed : 50 mph

PROJECT NAME: **WOODFORD**

PROJECT NUMBER: **BF 010-1(52)**

FILE NAME: **z13b270pi.dgn**
PROJECT LEADER: **T. LEVINS**
DESIGNED BY: **A. KURDEKAR**
PRELIMINARY INFORMATION SHEET

PLOT DATE: 7/14/2016
DRAWN BY: **A. KURDEKAR**
CHECKED BY: **T. LEVINS**
SHEET 2 OF 10



TYPICAL SECTION

NOT TO SCALE

GM2 ASSOCIATES

PROJECT NAME: WOODFORD	
PROJECT NUMBER: BF 010-1(52)	
FILE NAME: zl3b270typical.dgn	PLOT DATE: 7/6/2016
PROJECT LEADER: T. LEVINS	DRAWN BY: A. KURDEKAR
DESIGNED BY: A. KURDEKAR	CHECKED BY: T. LEVINS
TYPICAL SECTION	SHEET 3 OF 10

GENERAL INFORMATION

SYMBOLOGY LEGEND NOTE

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

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

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

COMMON TOPOGRAPHIC POINT SYMBOLS

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

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

PROPOSED GEOMETRY CODES

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

UTILITY SYMBOLOGY

UNDERGROUND UTILITIES

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

ABOVE GROUND UTILITIES (AERIAL)

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

PROJECT CONSTRUCTION SYMBOLOGY

PROJECT DESIGN & LAYOUT SYMBOLOGY

- CZ — CLEAR ZONE
- PLAN LAYOUT MATCHLINE

PROJECT CONSTRUCTION FEATURES

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

CONVENTIONAL BOUNDARY SYMBOLOGY

BOUNDARY LINES

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

EPSC LAYOUT PLAN SYMBOLOGY

EPSC MEASURES

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

SEE EPSC DETAIL SHEETS FOR ADDITIONAL SYMBOLOGY

ENVIRONMENTAL RESOURCES

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

ARCHEOLOGICAL & HISTORIC

- ARCH — ARCHEOLOGICAL BOUNDARY
- HISTORIC DIST — HISTORIC DISTRICT BOUNDARY
- HISTORIC — HISTORIC AREA
- (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

GM2 ASSOCIATES

PROJECT NAME:	WOODFORD
PROJECT NUMBER:	BF 010-1(52)
FILE NAME: zl3b270legend.dgn	PLOT DATE: 7/6/2016
PROJECT LEADER: T. LEVINS	DRAWN BY: A. KURDEKAR
DESIGNED BY: A. KURDEKAR	CHECKED BY: T. LEVINS
CONVENTIONAL SYMBOLOGY LEGEND	SHEET 4 OF 10

N

VT STATE PLANE GRID

UNNAMED BROOK

52+00

MAINLINE STA 474+96.26
=CHANNEL STA 51+00.00

Δ=85°

EXISTING
RIGHT-OF-WAY

BEGIN BRIDGE
STA 474+92.76

END BRIDGE
STA 474+99.78

SIGN
VD-701
(VT 9
BR 18)

END PROJECT
STA 475+25.00

BEGIN PROJECT
STA 474+70.00

51+00

VT ROUTE 9
TO SEARSBURG

VT ROUTE 9
TO BENNINGTON

472+00

473+00

474+00

475+00

476+00

477+00

478+00

SIGN
VD-701
(VT 9
BR 18)

EXISTING 84" CGMPP
NEW 72" ALUMINUM PLATE PIPE

GRAVEL DRIVE
VAST TRAIL

AER E&T

COMB
23
689

50+00

CONSTRUCT NEW CONCRETE
HEADWALL AT INLET

PI
STA 475+99.17

EXISTING
RIGHT-OF-WAY

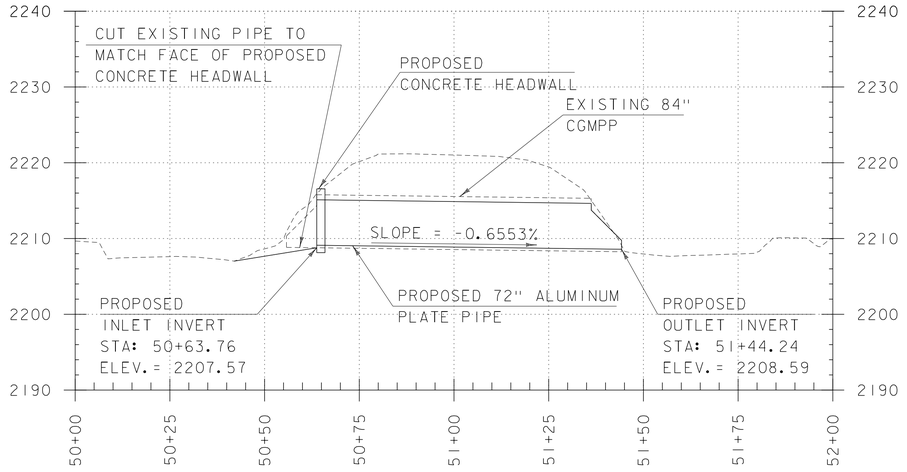
EXISTING CURVE
DELTA = 23°00'40"
D = 1°30'00"
R = 3819.72'
T = 777.51'
L = 1534.07'
E = 78.33'

EXISTING CULVERT DATA
EXISTING 7' CGMPP
92' LONG, BUILT 1919
RECONSTRUCTED 1965
6' AVERAGE COVER
38 SQFT WATERWAY AREA

SCALE 1" = 40'-0"
40 0 40

GM2 ASSOCIATES

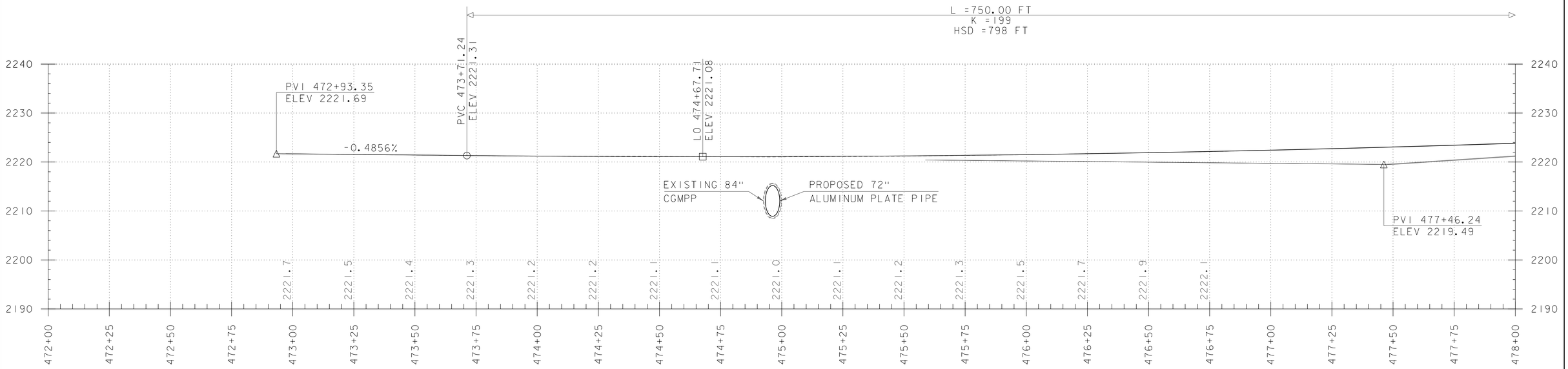
PROJECT NAME:	WOODFORD		
PROJECT NUMBER:	BF 010-1(52)		
FILE NAME:	z13b270layout.dgn	PLOT DATE:	7/5/2016
PROJECT LEADER:	T. LEVINS	DRAWN BY:	A. KURDEKAR
DESIGNED BY:	A. KURDEKAR	CHECKED BY:	T. LEVINS
LAYOUT		SHEET	5 OF 10



CULVERT PROFILE

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

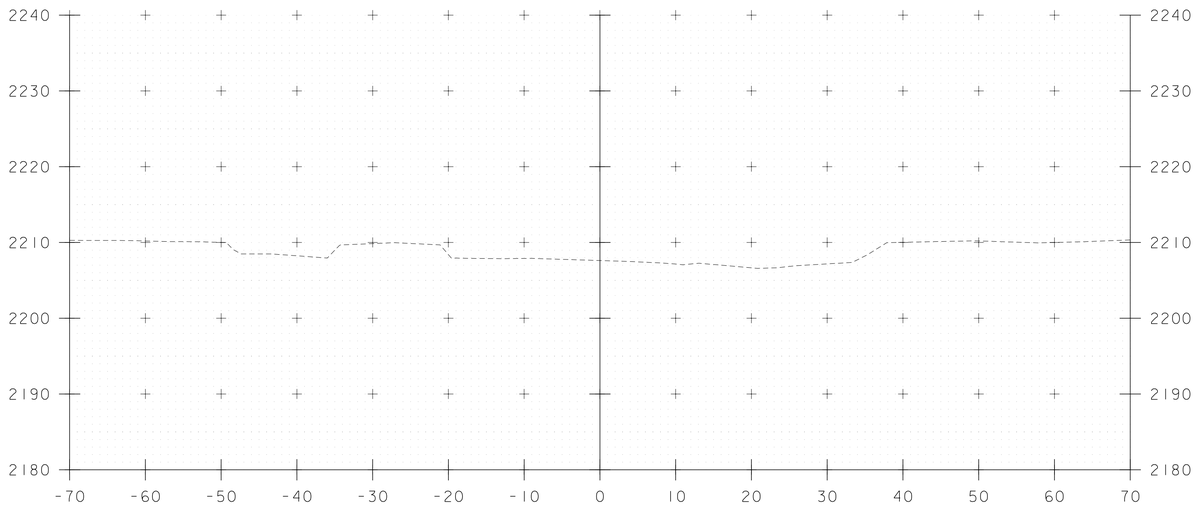
NOTE:
ELEVATION SHOWN TO THE NEAREST TENTH ARE EXISTING GROUND ALONG ℄
GRADES SHOWN TO THE NEAREST HUNDREDTH ARE FINISH GRADE ALONG ℄



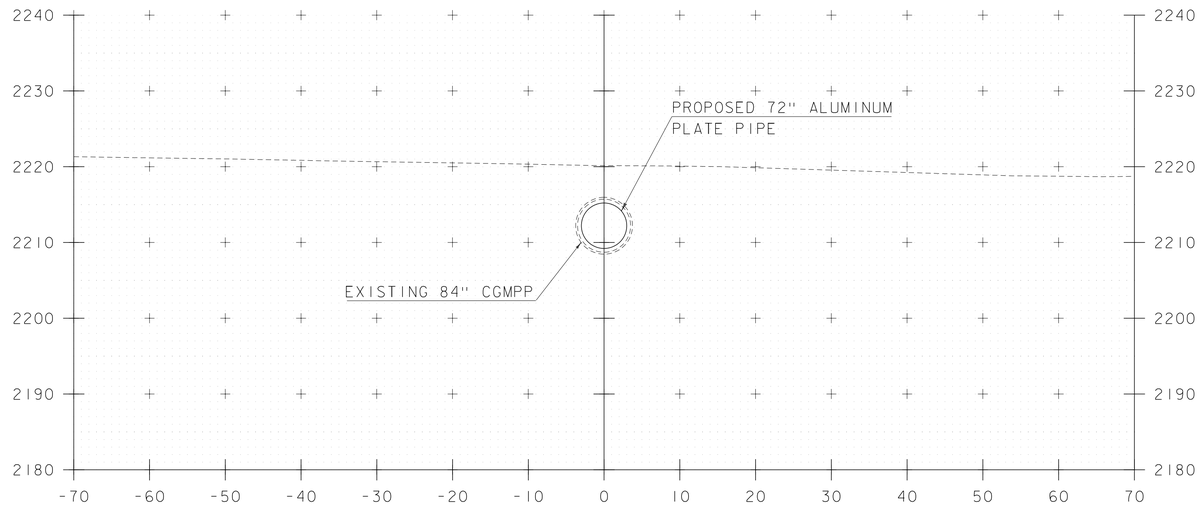
VT ROUTE 9 PROFILE

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

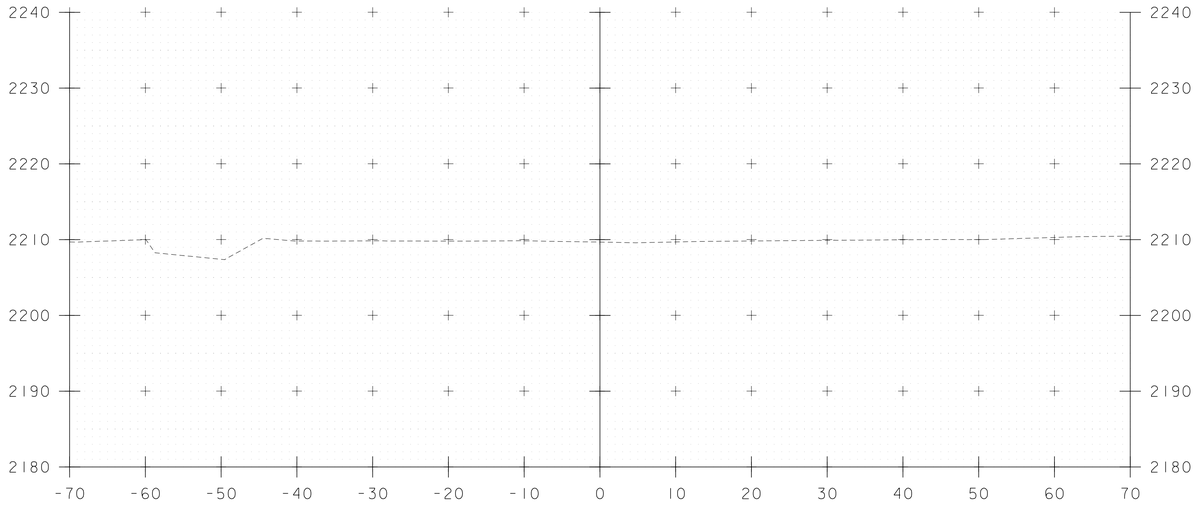
PROJECT NAME:	WOODFORD
PROJECT NUMBER:	BF 010-1(52)
FILE NAME: zl3b270profile.dgn	PLOT DATE: 7/6/2016
PROJECT LEADER: T. LEVINS	DRAWN BY: A. KURDEKAR
DESIGNED BY: A. KURDEKAR	CHECKED BY: T. LEVINS
PROFILE	SHEET 6 OF 10



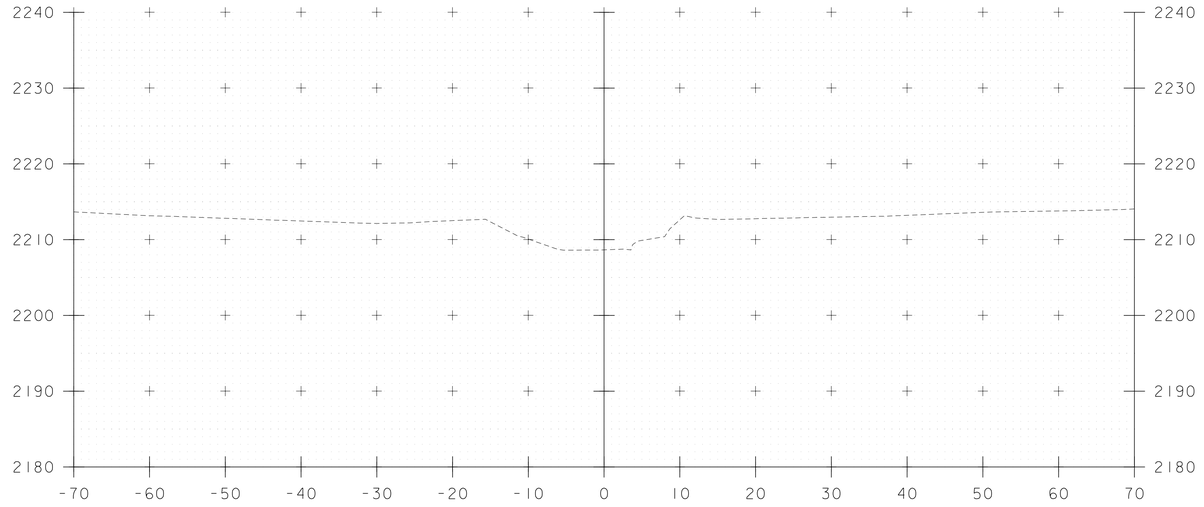
50+25



50+75



50+00



50+50

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

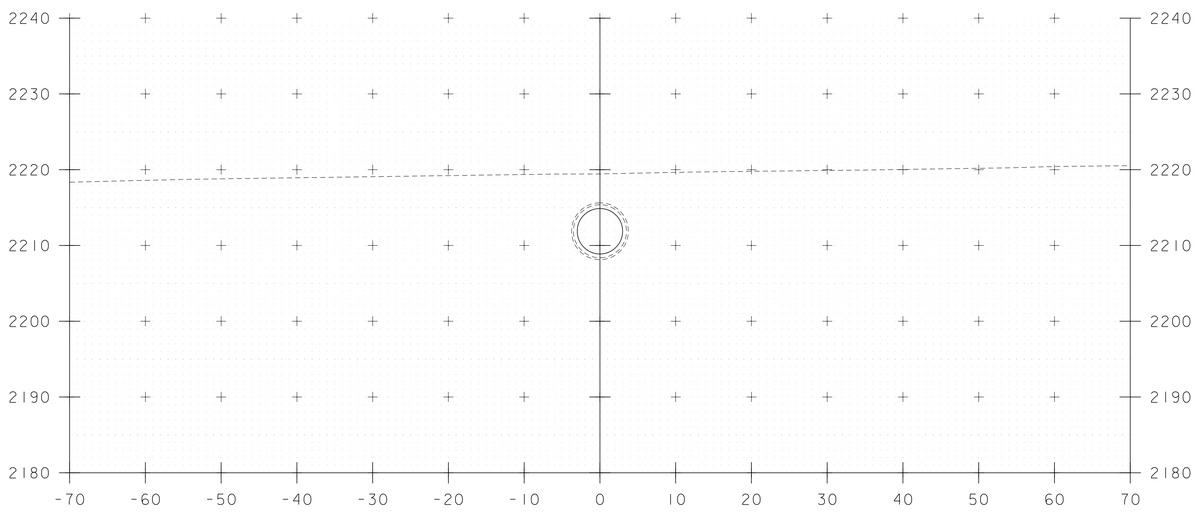
STA. 50+00 TO STA. 50+75

GM2 ASSOCIATES

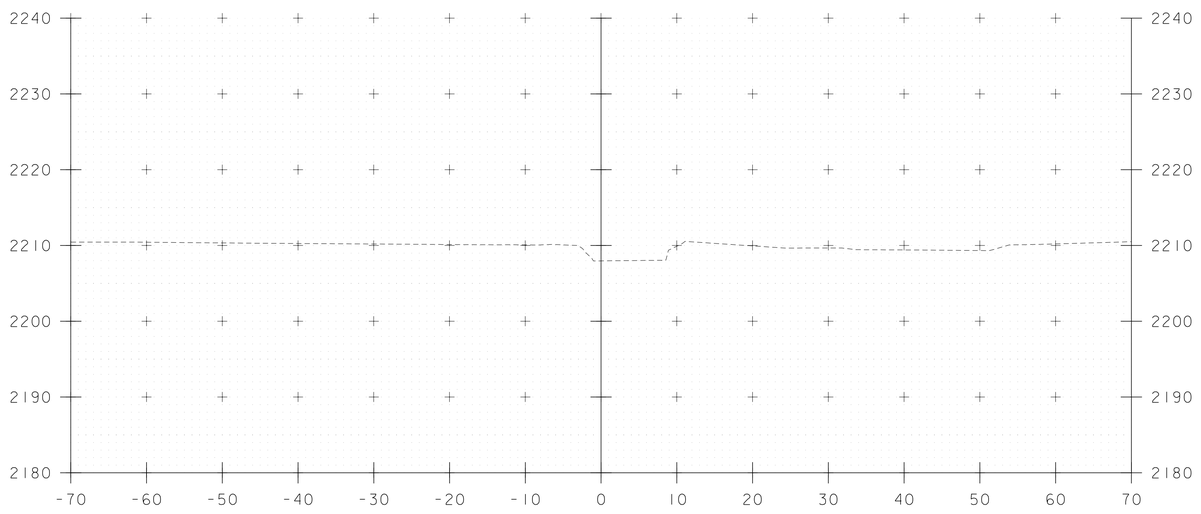
PROJECT NAME: WOODFORD
PROJECT NUMBER: BF 010-1(52)

FILE NAME: z13b270xs.dgn
PROJECT LEADER: T. LEVINS
DESIGNED BY: A. KURDEKAR
CHANNEL CROSS SECTIONS 1

PLOT DATE: 7/5/2016
DRAWN BY: A. KURDEKAR
CHECKED BY: T. LEVINS
SHEET 7 OF 10



51+25



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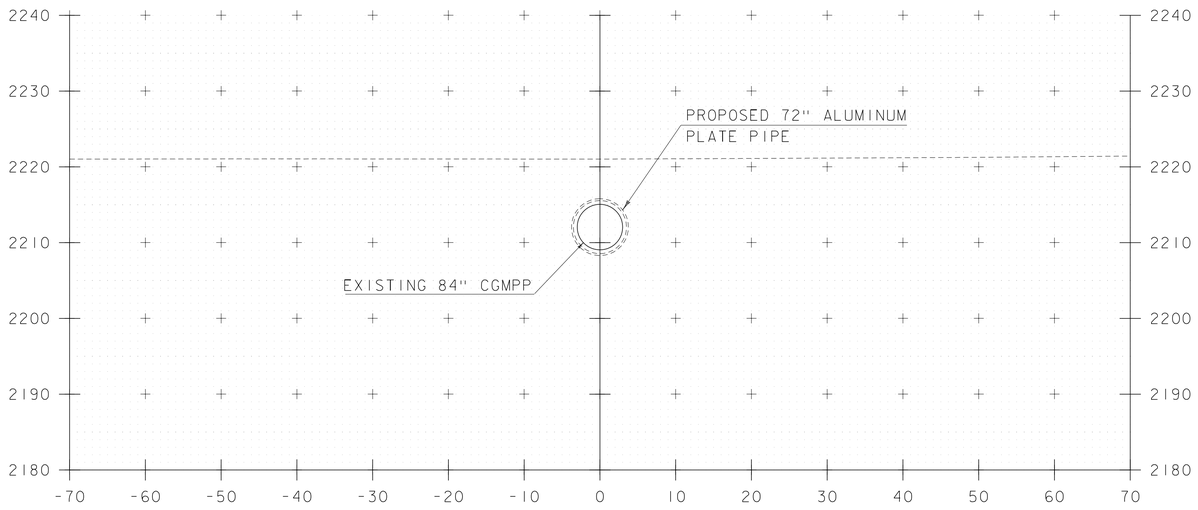
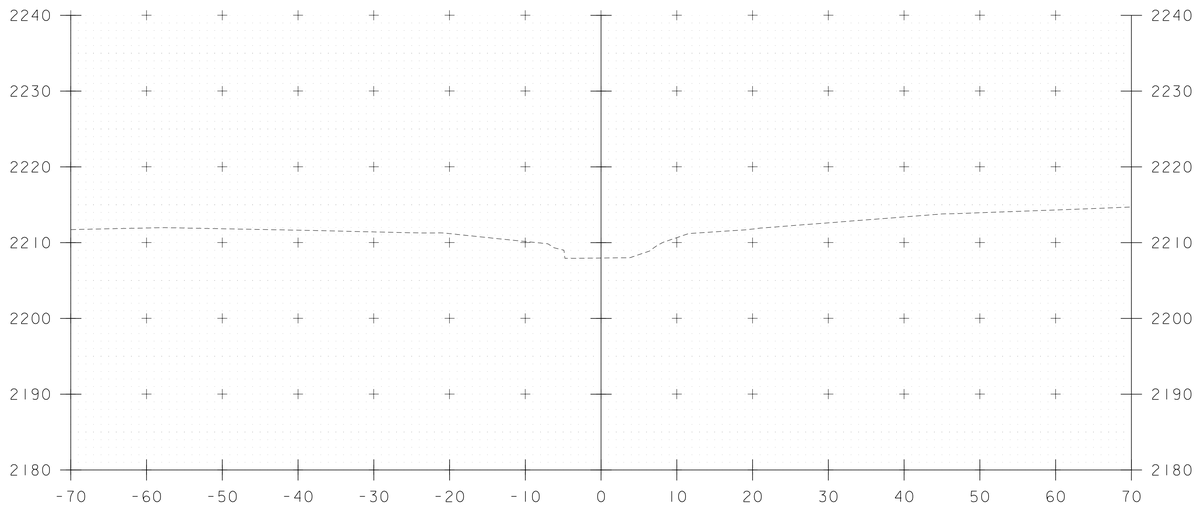


51+00



51+50

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

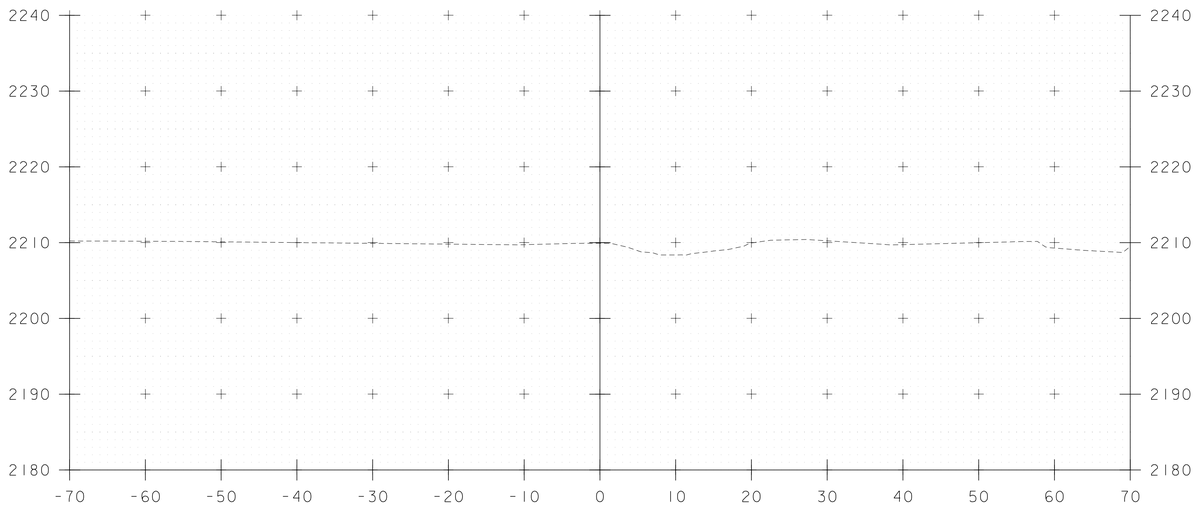
STA. 51+00 TO STA. 51+75

GM2 ASSOCIATES

PROJECT NAME: WOODFORD
PROJECT NUMBER: BF 010-1(52)

FILE NAME: z13b270xs.dgn
PROJECT LEADER: T. LEVINS
DESIGNED BY: A. KURDEKAR
CHANNEL CROSS SECTIONS 2

PLOT DATE: 8/6/2016
DRAWN BY: A. KURDEKAR
CHECKED BY: T. LEVINS
SHEET 8 OF 10



52+00

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

STA. 52+00 TO STA. 52+00

GM2 ASSOCIATES

PROJECT NAME: WOODFORD
PROJECT NUMBER: BF 010-1(52)

FILE NAME: zl3b270xs.dgn
PROJECT LEADER: T. LEVINS
DESIGNED BY: A. KURDEKAR
CHANNEL CROSS SECTIONS 3

PLOT DATE: 7/6/2016
DRAWN BY: A. KURDEKAR
CHECKED BY: T. LEVINS
SHEET 9 OF 10

N

VT STATE PLANE GRID

VERMONT MOUNTAIN
NATIONAL FOREST

EXISTING
RIGHT-OF-WAY

UNNAMED
BROOK

2210

2210

2210

2210

2210

2210

2210

2220

2220

2220

2220

2220

HVCTRL
20

HVCTRL
21

SIGN
VD-701
(VT 9
BR 18)

SIGN
VD-701
(VT 9
BR 18)

FLOW

7" CGMP

VT ROUTE 9
TO BENNINGTON

VT ROUTE 9
TO SEARSBURG

GRAVEL DRIVE
VAST TRAIL

GRAVEL DRIVE
VAST TRAIL

AER E&T

AER E&T

AER E&T

AER E&T

AER E&T

AER E&T

AER E&T

COMB
236
689

EXISTING
RIGHT-OF-WAY

VERMONT MOUNTAIN
NATIONAL FOREST

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

EM2 ASSOCIATES

PROJECT NAME: WOODFORD
PROJECT NUMBER: BF 010-1(52)

FILE NAME: z13b270resource.dgn
PROJECT LEADER: T. LEVINS
DESIGNED BY: A. KURDEKAR
RESOURCE SITE PLAN

PLOT DATE: 6/15/16
DRAWN BY: A. KURDEKAR
CHECKED BY: T. LEVINS
SHEET 10 OF 10