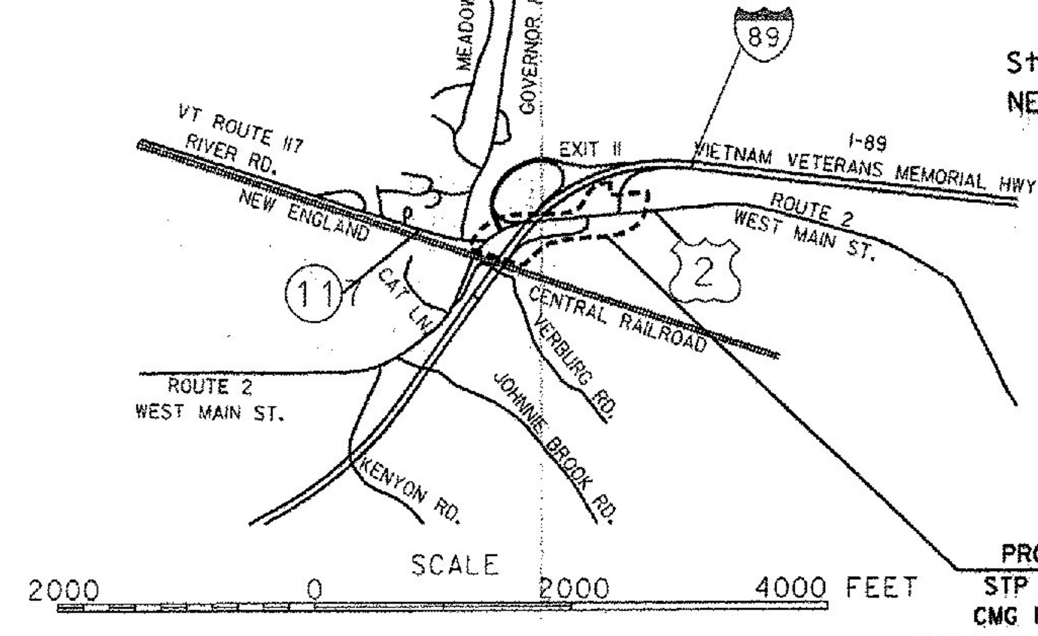
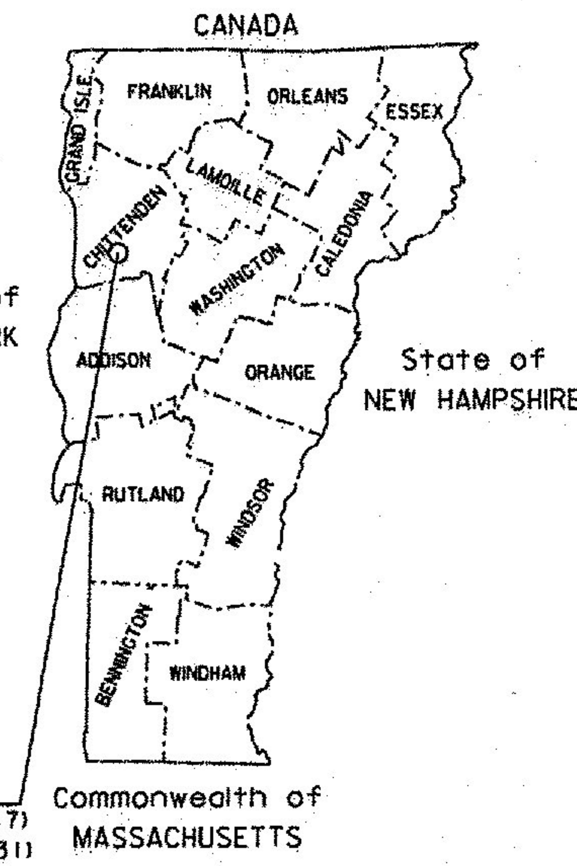
FOR INDEX OF SHEETS, SEE SHEET 2 OF 133

STATE OF VERMONT
AGENCY OF TRANSPORTATION

PROPOSED IMPROVEMENT
TOWN OF RICHMOND
COUNTY OF CHITTENDEN
US ROUTE 2 (MAJOR COLLECTOR)





US ROUTE 2 (RAMP "B" TO RAMP "D") TRAFFIC DATA

2014 AADT	10,200
2034 AADT	12,700
2014 DHV	1,100
2034 DHV	1,400
D	75%
T	2.3%
V	25MPH (BETWEEN ROUTE 117 AND RAMP "C")
V	45MPH (BETWEEN RAMP "C" AND END OF PROJECT)
2014-2034 ESAL	4,531,000 (RAMP F TO VT 117)
2014-2054 ESAL	11,851,000 (RAMP F TO VT 117)

VT ROUTE 117 (BETWEEN GOVERNOR PECK HIGHWAY & US ROUTE 2) TRAFFIC DATA

2014 AADT	7,500
2034 AADT	9,300
2014 DHV	930
2034 DHV	1,100
D	61%
T	6.7%
V	45MPH
2014-2034 ESAL	3,659,000
2014-2054 ESAL	9,591,000

I-89 EXIT 11 (RAMP "A") TRAFFIC DATA

2014 AADT	2,400
2034 AADT	3,000
2014 DHV	370
2034 DHV	440
D	100%
T	6.4%
V	25MPH
2014-2034 ESAL	977,000
2014-2054 ESAL	2,407,000

I-89 EXIT 11 (RAMP "B") TRAFFIC DATA

2014 AADT	2,100
2034 AADT	2,600
2014 DHV	330
2034 DHV	390
D	100%
T	7.0%
V	30MPH
2014-2034 ESAL	931,000
2014-2054 ESAL	2,272,000

I-89 EXIT 11 (RAMP "C") TRAFFIC DATA

2014 AADT	2,200
2034 AADT	2,800
2014 DHV	340
2034 DHV	410
D	100%
T	7.0%
V	25MPH
2014-2034 ESAL	835,000
2014-2054 ESAL	2,037,000

I-89 EXIT 11 (RAMP "D") TRAFFIC DATA

2014 AADT	3,500
2034 AADT	4,300
2014 DHV	590
2034 DHV	730
D	100%
T	7.1%
V	20MPH
2014-2034 ESAL	947,000
2014-2054 ESAL	2,289,000

I-89 EXIT 11 (RAMP "F") TRAFFIC DATA

2014 AADT	1,100
2034 AADT	1,300
2014 DHV	270
2034 DHV	320
D	100%
T	8.3%
V	25MPH
2014-2034 ESAL	438,000
2014-2054 ESAL	1,044,000

PROJECT STP 0284 (17)

BEGINNING AT A POINT ON US ROUTE 2 IN THE TOWN OF RICHMOND, APPROXIMATELY 62 FEET (0.012 MILE) WESTERLY OF VT ROUTE 117 AND EXTENDING EASTERLY ALONG US ROUTE 2 FOR A DISTANCE OF 1850 FEET (0.350 MILE), APPROXIMATELY 324 FEET (0.061 MILE) EASTERLY OF THE I-89 EXIT 11 SOUTHBOUND ON-RAMP "RAMP B".

THIS PROJECT CONSISTS OF BOX WIDENING OF US ROUTE 2, COLD PLANING AND PAVEMENT OVERLAY, PAVEMENT MARKINGS, DRAINAGE, NEW SIGNAGE, THE INSTALLATION OF NEW TRAFFIC SIGNALS AT THE INTERSECTION OF US ROUTE 2 AND VT ROUTE 117, AT THE INTERSECTION OF US ROUTE 2 AND I-89 SOUTHBOUND OFF-RAMP "RAMP D" WITH THE PARK AND RIDE ENTRANCE, AND OTHER HIGHWAY RELATED ITEMS.

PROJECT CMG PARK (31)

BEGINNING AT A POINT NEAR THE PARK AND RIDE IN THE TOWN OF RICHMOND, APPROXIMATELY 123 FEET (0.023 MILES) EASTERLY OF THE EXISTING PARK AND RIDE EDGE OF PAVEMENT AND EXTENDING WESTERLY ACROSS THE PARK AND RIDE FOR A DISTANCE OF 650 FEET (0.123 MILES), APPROXIMATELY 53 FEET (0.010 MILES) WEST OF THE WESTERLY EDGE OF PAVEMENT.

THIS PROJECT CONSISTS OF EXPANDING THE EXISTING PARK AND RIDE FACILITY, PAVEMENT OVERLAY, PAVEMENT MARKINGS, DRAINAGE, NEW SIGNAGE, LANDSCAPING, THE INSTALLATION OF A NEW RETAINING WALL, STAMPED CONCRETE TRAFFIC CIRCLE, STAMPED CONCRETE MEDIAN ISLANDS, NEW BUS SHELTER, AND OTHER AMENITIES.

RECORD PLANS

CONTRACTOR: G.W. TATRO CONSTRUCTION, INC. ESSEX JCT., VT
RESIDENT ENGINEER: JOSH HULETT
CONSTRUCTION BEGAN: SEPTEMBER 3, 2013
CONSTRUCTION COMPLETE: JUNE 2, 2015
RECORD PLANS BY: JOSH HULETT & KEVIN KING

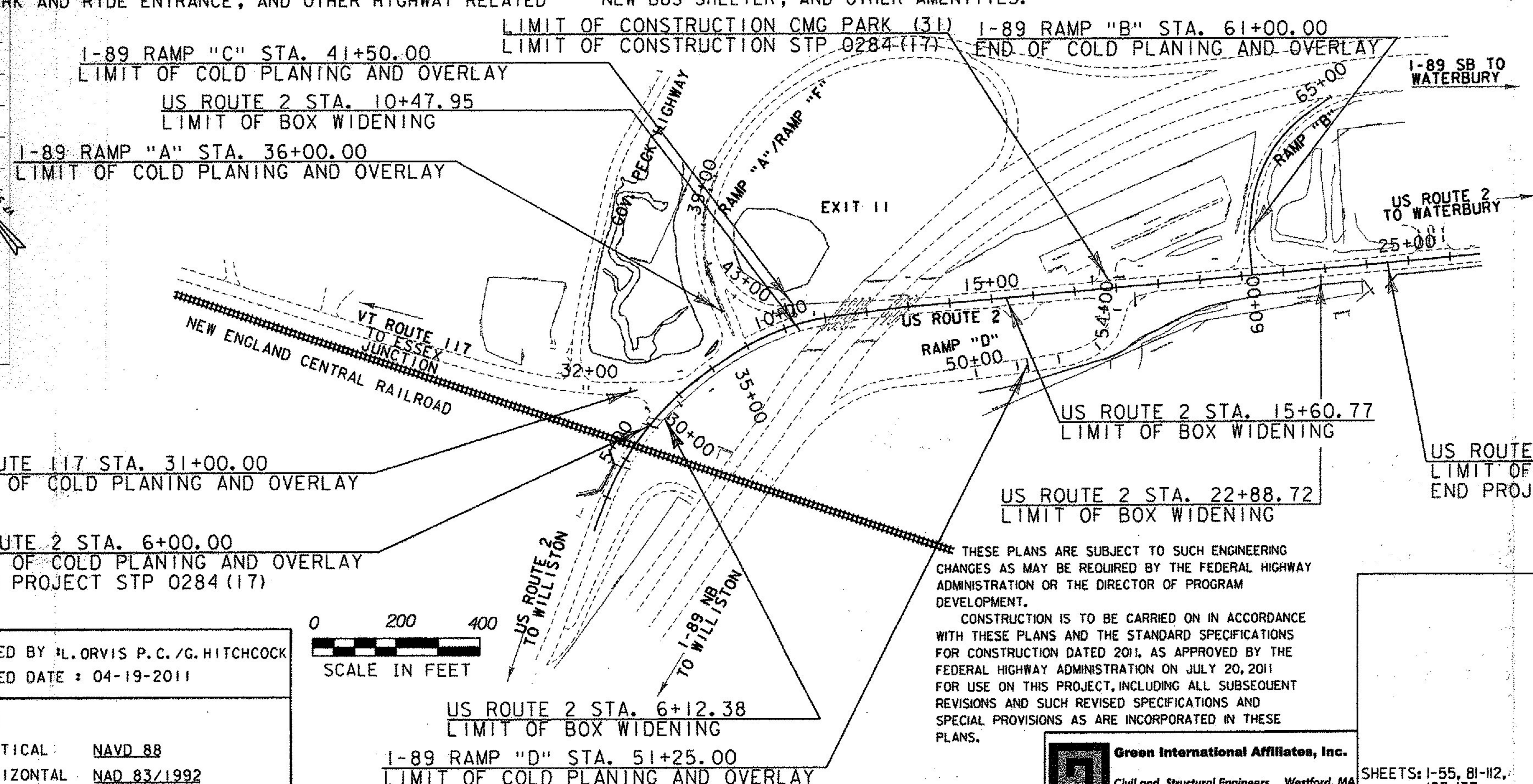
I HEREBY CERTIFY THAT ALL THE CONSTRUCTION REQUIRED BY THIS SET OF DRAWINGS HAS BEEN ACCOMPLISHED AS INDICATED HEREIN.

BY Josh Hulett RESIDENT ENGINEER

DATE February 15, 2017

QUALITY ASSURANCE PROGRAM: LEVEL 1

NOTE: Any further information concerning final quantities, amounts or other details relative to this project may be found at Central Files in the electronic archives.



BITUMINOUS CONCRETE PAVEMENT SUPER PAVE MIXTURE DESIGN CRITERIA

DESIGN LIFE ESAL (DESIGN LANE)	4,531,000
DESIGN NUMBER OF GYRATIONS	65
PERFORMANCE GRADED ASPHALT BINDER	SEE SUBSECTION 490.03 (b)

CONVENTIONAL SYMBOLS

COUNTY LINE
TOWN LINE
LIMITS OF ACCESS
POINT OF ACCESS
FENCE LINE
STONE WALL
TRAVELED WAY
GUARD RAIL
RAILROAD
SURVEY LINE
CULVERT
POWER POLE
TELEPHONE POLE
TREES
CONTROL OF ACCESS
PROPERTY LINE
R.O.W. TAKING LINE
SLOPE RIGHTS
TOP OF CUT
TOE OF SLOPE

SURVEYED BY : L. ORVIS P.C./G. HITCHCOCK
SURVEYED DATE : 04-19-2011

DATUM
VERTICAL NAVD 88
HORIZONTAL NAD 83/1992

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.

Green International Affiliates, Inc.
Civil and Structural Engineers Westford, MA

SHEETS: 1-55, 81-112, 123-133

SHEETS: 56-80, 113-122

DIRECTOR OF PROGRAM DEVELOPMENT
APPROVED [signature] for RMT DATE 6/6/2013

PROJECT MANAGER : JOSHUA SCHULTZ STP 0284 (17)
WAYNE DAVIS CMG PARK (31)

PROJECT NAME : RICHMOND
PROJECT NUMBER : STP 0284 (17)
CMG PARK (31)

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RICHMOND CMG PARK (31)

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NOTE:
THE SIX INCH EXISTING GAS LINE ALONG US ROUTE 2 HAS BEEN SHOWN BASED ON AN AS-PROPOSED DRAWING PROVIDED BY VERMONT GAS. THE CONTRACTOR SHALL FIELD VERIFY ALL UTILITIES WITH EXPLORATORY TEST PITS WHEN DIRECTED BY THE ENGINEER FOR GUARDRAIL POST INSTALLATION, MAST ARM FOUNDATIONS AND OTHER EXCAVATION RELATED ACTIVITIES. TEST PITS SHALL BE PERFORMED PRIOR TO SUBMITTING THE MAST ARM FOUNDATION DESIGN FOR APPROVAL BY THE ENGINEER. THE COST FOR EXPLORATORY TEST PITS WILL BE PAID UNDER CONTRACT ITEM 204.22. ALL UTILITIES HAVE BEEN PLOTTED TO QUALITY LEVEL "C"; SEE BELOW.

UTILITY QUALITY LEVEL INFORMATION INDEX (SEE ASCE/CI 38-02):

UTILITY QUALITY LEVEL A:
PRECISE HORIZONTAL AND VERTICAL LOCATION OF UTILITIES OBTAINED BY THE ACTUAL EXPOSURE (OR VERIFICATION OF PREVIOUSLY EXPOSED AND SURVEYED UTILITIES) AND SUBSEQUENT MEASUREMENT OF SUBSURFACE UTILITIES, USUALLY AT A SPECIFIC POINT. MINIMALLY INTRUSIVE EXCAVATION EQUIPMENT IS TYPICALLY USED TO MINIMIZE THE POTENTIAL FOR UTILITY DAMAGE. A PRECISE HORIZONTAL AND VERTICAL LOCATION, AS WELL AS OTHER UTILITY ATTRIBUTES, IS SHOWN ON PLAN DOCUMENTS. ACCURACY IS TYPICALLY SET TO 0.05 FEET (15-MM) VERTICAL AND TO APPLICABLE HORIZONTAL SURVEY AND MAPPING ACCURACY AS DEFINED OR EXPECTED BY THE PROJECT OWNER. INFORMATION IS ONLY VALID WITHIN THE VISIBLE LIMITS OF THE TEST HOLE.

UTILITY QUALITY LEVEL B:
INFORMATION OBTAINED THROUGH THE APPLICATION OF APPROPRIATE SURFACE GEOPHYSICAL METHODS TO DETERMINE THE EXISTENCE AND APPROXIMATE HORIZONTAL POSITION OF SUBSURFACE UTILITIES. QUALITY LEVEL B DATA SHOULD BE REPRODUCIBLE BY SURFACE GEOPHYSICS AT ANY POINT OF THEIR DEPICTION. THIS INFORMATION IS SURVEYED TO APPLICABLE TOLERANCES DEFINED BY THE PROJECT AND REDUCED ONTO PLAN DOCUMENTS.

UTILITY QUALITY LEVEL C:
INFORMATION OBTAINED BY SURVEYING AND PLOTTING VISIBLE ABOVE-GROUND UTILITY FEATURES AND BY USING PROFESSIONAL JUDGMENT IN CORRELATING THIS INFORMATION TO QUALITY LEVEL D INFORMATION.

UTILITY QUALITY LEVEL D:
INFORMATION DERIVED FROM EXISTING RECORDS OR ORAL RECOLLECTIONS.

PROJECT NAME: RICHMOND
PROJECT NUMBER: STP 0284 (17)/CMG PARK (31)

FILE NAME: z97c186frm.dgn	PLOT DATE: 5/14/2013
PROJECT LEADER: ERIK ATKINS	DRAWN BY: N. BOSAN
DESIGNED BY: T. BIGELOW	CHECKED BY: E. ATKINS
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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.

PROJECT SPECIFIC LEGEND

CODE	DESCRIPTION
	UNDERDRAIN WITH DIRECTION OF FLOW
•F.B.	FLUSHING BASIN
	STONE FILL (REFER TO ROADWAY LAYOUT SHEETS FOR TYPE)
DELIN	DELINEATOR
	PROPOSED MAST ARM
	EXISTING MAST ARM
	DECIDUOUS TREE
	CONIFEROUS TREE
	BARRIER FENCE FOR TREE PROTECTION
	EXISTING TREE
	TREE PROTECTION ZONE (TPZ)
	WHEELCHAIR RAMP
	PRECAST CONCRETE CATCH BASIN
(REC)	INFORMATION OF RECORD
(TYP)	TYPICAL
(MIN)	MINIMUM
RTE	ROUTE
	FLOW ARROW
(ABAND)	ABANDON
	LED LUMINAIRE
	CONSTRUCTION BASELINE

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
	I&M	INSTALL & MAINTAIN EASEMENT
	LAND	LANDSCAPE EASEMENT
	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	CALCULATED ROW POINT
[DISTANCE]		DISTANCE 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 RADIUS OF
T	CURVE TANGENT LENGTH
L	CURVE LENGTH OF
E	CURVE EXTERNAL DISTANCE

UTILITY SYMBOLOGY

UNDERGROUND UTILITIES

SYMBOL	DESCRIPTION
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)

SYMBOL	DESCRIPTION
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

SYMBOL	DESCRIPTION
CZ	CLEAR ZONE
	PLAN LAYOUT MATCHLINE

PROJECT CONSTRUCTION FEATURES

SYMBOL	DESCRIPTION
	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

SYMBOL	DESCRIPTION
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

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

ENVIRONMENTAL RESOURCES

SYMBOL	DESCRIPTION
	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

SYMBOL	DESCRIPTION
ARCH	ARCHEOLOGICAL BOUNDARY
HISTORIC DIST	HISTORIC DISTRICT BOUNDARY
HISTORIC	HISTORIC AREA
H	HISTORIC STRUCTURE

CONVENTIONAL TOPOGRAPHIC SYMBOLOGY

EXISTING FEATURES

SYMBOL	DESCRIPTION
	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: RICHMOND	
PROJECT NUMBER: STP 0284 (17)/CMG PARK (31)	
FILE NAME: z97c186lgnd.dgn	PLOT DATE: 4/29/2013
PROJECT LEADER: ERIK ATKINS	DRAWN BY: N. BOSAN
DESIGNED BY: T. BIGELOW	CHECKED BY: E. ATKINS
CONVENTIONAL SYMBOLOGY LEGEND	SHEET 3 OF 133

STATE OF VERMONT
AGENCY OF TRANSPORTATION

COMPOSITE QUANTITY SHEET 1

SUMMARY OF ESTIMATED QUANTITIES STP 0284(17)				SUMMARY OF ESTIMATED QUANTITIES CMG PARK(31)					TOTALS		DESCRIPTIONS			
ROADWAY	TRAINING	EROSION CONTROL	FULL C.E. ITEMS	ROADWAY	TRAINING	LANDSCAPING	FULL C.E. ITEMS	EROSION CONTROL	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND
0.5				0.5					1		LS	CLEARING AND GRUBBING, INCLUDING INDIVIDUAL TREES AND STUMPS	201.10	-
				1					1		EACH	DEMOLITION AND DISPOSAL OF BUILDING	202.10	-
2850				5400					8250		CY	COMMON EXCAVATION	203.15	130
90				175					265		CY	SOLID ROCK EXCAVATION	203.16	14
20				350					370		CY	EARTH BORROW	203.30	6
850				2600					3450		CY	SAND BORROW	203.31	85
100				850					950		CY	TRENCH EXCAVATION OF EARTH	204.20	5
				12					12		CY	TRENCH EXCAVATION OF ROCK	204.21	2
1				1					2		CY	TRENCH EXCAVATION OF EARTH, EXPLORATORY (N.A.B.I.)	204.22	-
				10					10		CY	STRUCTURE EXCAVATION	204.25	2
				10					10		CY	GRANULAR BACKFILL FOR STRUCTURES	204.30	2
11500									11500		SY	COLD PLANING, BITUMINOUS PAVEMENT	210.10	180
1400				2000					3400		CY	SUBBASE OF DENSE GRADED CRUSHED STONE	301.35	138
25				25					50		CWT	EMULSIFIED ASPHALT	404.65	4
1				1					2		LU	PRICE ADJUSTMENT, ASPHALT CEMENT (N.A.B.I.)	406.50	-
				750					750		LB	BITUMINOUS CRACK SEALING	417.10	40
2200				1450					3650		TON	SUPERPAVE BITUMINOUS CONCRETE PAVEMENT	490.30	48
1				1					2		LU	AIR VOIDS PAY ADJUSTMENT (N.A.B.I.)	490.31	-
1				1					2		LU	MAT DENSITY PAY ADJUSTMENT (N.A.B.I.)	490.32	-
				2					2		CY	CONCRETE, HIGH PERFORMANCE CLASS B	501.34	0.07
				230					230		LB	REINFORCING STEEL, LEVEL I	507.11	6
												BEGIN OPTION AA		
15									15		LF	18" PCCSP .064 (2-2/3 X 1/2)	601.0415	5
15									15		LF	18" RCP CLASS III	601.0815	5
15									15		LF	18" CPEP(SL)	601.2615	5
												END OPTION AA		
1				1					2		EACH	PRECAST REINFORCED CONCRETE CATCH BASIN WITH CAST IRON GRATE	604.20	-
1									1		EACH	REHAB. DROP INLETS, CATCH BASINS, OR MANHOLES, CLASS II	604.415	-
1				2					3		EACH	CAST IRON GRATE WITH FRAME, TYPE B	604.46	-
1									1		EACH	CAST IRON COVER WITH FRAME	604.55	-
225				400					625		LF	6 INCH UNDERDRAIN PIPE	605.10	17
				12					12		LF	6 INCH UNDERDRAIN CARRIER PIPE	605.20	1
2				11					13		EACH	UNDERDRAIN FLUSHING BASIN	605.95	-
		200						450	650		MGAL	DUST CONTROL WITH WATER	609.10	EST.
		2						5	7		TON	DUST AND ICE CONTROL WITH CALCIUM CHLORIDE	609.15	EST.
		8						50	58		CY	STONE FILL, TYPE I	613.10	3.8
		230						50	280		CY	STONE FILL, TYPE II	613.11	11
				975					975		LF	VERTICAL GRANITE CURB	616.21	24
175									175		LF	BITUMINOUS CONCRETE CURB, TYPE A	616.305	16
				1350					1350		LF	REMOVAL OF EXISTING CURB	616.41	49

DETAILED SUMMARY OF QUANTITIES

QUANTITIES	UNIT	ITEMS
COMMON EXCAVATION		
2321	CY	US ROUTE 2
6	CY	VT ROUTE 117
49	CY	I-89 RAMP "A/F"
401	CY	I-89 RAMP "D"
5343	CY	PARK AND RIDE
130	CY	ROUNDING
8250	CY	TOTAL
EARTH BORROW		
9	CY	US ROUTE 2
7	CY	I-89 RAMP "D"
348	CY	PARK AND RIDE
6	CY	ROUNDING
370	CY	TOTAL
TRENCH EXCAVATION OF EARTH		
189		UNDERDRAIN
718		DRY SWALE
38		PROPOSED DRAINAGE
5		ROUNDING
950		TOTAL
TRENCH EXCAVATION OF ROCK		
10	CY	REMOVAL OF EXISTING HEADWALL
2	CY	ROUNDING
12	CY	TOTAL
SUBBASE OF DENSE GRADED CRUSHED STONE		
1132	CY	US ROUTE 2
26	CY	I-89 RAMP "A"
196	CY	I-89 RAMP "D"
1908	CY	PARK AND RIDE
138	CY	ROUNDING
3400	CY	TOTAL
SUPERPAVE BITUMINOUS CONCRETE PAVEMENT		
	US ROUTE 2	
1469	TON	TYPE IVS
702	TON	TYPE IIS
	PARK AND RIDE	
658	TON	TYPE IVS
773	TON	TYPE IIS
48	TON	ROUNDING
3650	TON	TOTAL
EROSION CONTROL		
PERMANENT EROSION CONTROL		
58	CY	STONE FILL, TYPE I
280	CY	STONE FILL, TYPE II
750	SY	GEOTEXTILE UNDER STONE FILL
715	SY	PERMANENT EROSION MATTING
TEMPORARY EROSION CONTROL		
45	SY	GEOTEXTILE FOR SILT FENCE
350	SY	GEOTEXTILE FOR SILT FENCE, WOVEN WIRE REINFORCED
170	LB	SEED, WINTER RYE
2.75	TON	HAY MULCH
2575	SY	TEMPORARY EROSION MATTING
150	CY	VEHICLE TRACKING PAD

PROJECT NAME: RICHMOND
PROJECT NUMBER: STP 0284 (17) / CMG PARK (31)

FILE NAME: z97c186qty.dgn
PROJECT LEADER: ERIK ATKINS
DESIGNED BY: A. ACHARYA
QUANTITY SHEET #1
PLOT DATE: 5/21/2013
DRAWN BY: A. ACHARYA
CHECKED BY: T. BIGELOW

STATE OF VERMONT
AGENCY OF TRANSPORTATION

COMPOSITE QUANTITY SHEET 2

SUMMARY OF ESTIMATED QUANTITIES STP 0284(17)				SUMMARY OF ESTIMATED QUANTITIES CMG PARK(31)					TOTALS		DESCRIPTIONS				DETAILED SUMMARY OF QUANTITIES		
ROADWAY	TRAINING	EROSION CONTROL	FULL C.E. ITEMS	ROADWAY	TRAINING	LANDSCAPING	FULL C.E. ITEMS	EROSION CONTROL	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND	QUANTITIES	UNIT	ITEMS
				75					75		SY	PORTLAND CEMENT CONCRETE SIDEWALK, 8 INCH	618.11	3			
3				11					14		EACH	YIELDING MARKER POSTS	619.17	-			
				125					125		LF	REMOVING AND RESETTING FENCE	620.50	6			
1750									1750		LF	STEEL BEAM GUARDRAIL, GALVANIZED	621.20	50			
1									1		EACH	MANUFACTURED TERMINAL SECTION, FLARED	621.50	-			
1									1		EACH	TERMINAL CONNECTOR FOR STEEL BEAM GUARDRAIL	621.53	-			
5				2					7		EACH	ENERGY ABSORPTION ATTENUATOR	621.56	-			
30									30		LF	REMOVE AND RESET GUARDRAIL	621.75	8			
30									30		EACH	REPLACE GUARDRAIL BEAM UNIT	621.77	2			
850									850		LF	REMOVAL AND DISPOSAL OF GUARDRAIL	621.80	35			
23				17					40		EACH	REMOVAL AND DISPOSAL OF GUIDE POSTS	621.81	-			
1400				250					1650		LF	TEMPORARY TRAFFIC BARRIER	621.90	EST.			
1400									1400		LF	REMOVE AND RESET TEMPORARY TRAFFIC BARRIER	621.95	EST.			
				105					105		LF	DUCTILE IRON PIPE, CEMENT-LINED (18")	628.28	5			
800									800		HR	UNIFORMED TRAFFIC OFFICERS	630.10	EST.			
1000									1000		HR	FLAGGERS	630.15	EST.			
			0.5				0.5		1		LS	FIELD OFFICE, ENGINEERS	631.10	-			
			0.5				0.5		1		LS	TESTING EQUIPMENT, CONCRETE	631.16	-			
			0.5				0.5		1		LS	TESTING EQUIPMENT, BITUMINOUS	631.17	-			
			1500				1500		3000		DL	FIELD OFFICE TELEPHONE (N.A.B.I.)	631.26	-			
	520				520				1040		HR	EMPLOYEE TRAINEESHIP	634.10	EST.			
0.5				0.5					1		LS	MOBILIZATION/DEMOBILIZATION	635.11	-			
				1					1		LS	TRAFFIC CONTROL (CMG PARK (31))	641.10	-			
1									1		LS	TRAFFIC CONTROL (STP 0284 (17))	641.10	-			
0.5				0.5					1		LS	PUBLIC RELATIONS OFFICER	641.12	-			
4				1					5		EACH	PORTABLE CHANGEABLE MESSAGE SIGN	641.15	EST.			
4400				3600					8000		LF	DURABLE 4 INCH WHITE LINE	646.400	-			
4625				80					4705		LF	DURABLE 4 INCH YELLOW LINE	646.410	-			
925									925		LF	DURABLE 6 INCH WHITE LINE	646.420	-			
450									450		LF	DURABLE 6 INCH YELLOW LINE	646.430	-			
150				200					350		LF	DURABLE 8 INCH WHITE LINE	646.440	-			
280				150					430		LF	DURABLE 8 INCH YELLOW LINE	646.450	-			
250									250		LF	DURABLE 12 INCH WHITE LINE	646.460	-			
150				35					185		LF	DURABLE 24 INCH STOP BAR	646.480	-			
51				19					70		EACH	DURABLE LETTER OR SYMBOL	646.490	-			
14000				3600					17600		LF	TEMPORARY 4 INCH WHITE LINE	646.600	-			
16750				80					16830		LF	TEMPORARY 4 INCH YELLOW LINE	646.610	-			
3750									3750		LF	TEMPORARY 6 INCH WHITE LINE	646.620	-			
1500									1500		LF	TEMPORARY 6 INCH YELLOW LINE	646.630	-			
300				200					500		LF	TEMPORARY 8 INCH WHITE LINE	646.640	-			

PROJECT NAME: RICHMOND
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FILE NAME: z97c186qty.dgn
PROJECT LEADER: ERIK ATKINS
DESIGNED BY: A. ACHARYA
QUANTITY SHEET #2

PLOT DATE: 4/29/2013
DRAWN BY: A. ACHARYA
CHECKED BY: T. BIGELOW
SHEET 5 OF 133

STATE OF VERMONT
AGENCY OF TRANSPORTATION

COMPOSITE QUANTITY SHEET 3

SUMMARY OF ESTIMATED QUANTITIES STP 0284(17)				SUMMARY OF ESTIMATED QUANTITIES CMG PARK(31)					TOTALS		DESCRIPTIONS				DETAILED SUMMARY OF QUANTITIES		
ROADWAY	TRAINING	EROSION CONTROL	FULL C.E. ITEMS	ROADWAY	TRAINING	LANDSCAPING	FULL C.E. ITEMS	EROSION CONTROL	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND	QUANTITIES	UNIT	ITEMS
600				140					740		LF	TEMPORARY 8 INCH YELLOW LINE	646.650	-			
500									500		LF	TEMPORARY 12 INCH WHITE LINE	646.660	-			
650				35					685		LF	TEMPORARY 24 INCH STOP BAR	646.680	-			
102				19					121		EACH	TEMPORARY LETTER OR SYMBOL	646.690	-			
1850				800					2650		SF	REMOVAL OF EXISTING PAVEMENT MARKINGS	646.85	123			
		525						225	750		SY	GEOTEXTILE UNDER STONE FILL	649.31	27			
		45							45		SY	GEOTEXTILE FOR SILT FENCE	649.51	5			
		350							350		SY	GEOTEXTILE FOR SILT FENCE, WOVEN WIRE REINFORCED	649.515	11			
		45						125	170		LB	SEED	651.15	6			
		45						125	170		LB	SEED, WINTER RYE	651.17	6			
		175						450	625		LB	FERTILIZER	651.18	7			
		0.75						2	2.75		TON	AGRICULTURAL LIMESTONE	651.20	0.28			
		0.75						2	2.75		TON	HAY MULCH	651.25	0.28			
		100						250	350		CY	TOPSOIL	651.35	18			
		0.5						0.5	1		LS	EPSC PLAN	652.10	-			
		275						260	535		HR	MONITORING EPSC PLAN	652.20	EST.			
		0.5						0.5	1		LU	MAINTENANCE OF EPSC PLAN (N.A.B.I.)	652.30	-			
		75						2500	2575		SY	TEMPORARY EROSION MATTING	653.20	98			
		15						700	715		SY	PERMANENT EROSION MATTING	653.21	34			
		75						75	150		CY	VEHICLE TRACKING PAD	653.35	EST.			
		3						2	5		EACH	INLET PROTECTION DEVICE, TYPE I	653.40	-			
		1150							1150		LF	BARRIER FENCE	653.50	6			
		2200						1100	3300		LF	PROJECT DEMARCATION FENCE	653.55	152			
						5			5		EACH	EVERGREEN TREES (PICEA GLAUCA) (B & B) (7-8 FEET HEIGHT)	656.20	-			
						7			7		EACH	DECIDUOUS TREES (LARIX LARCINA) (B & B) (2" - 2 1/2" CAL.)	656.30	-			
						3			3		EACH	DECIDUOUS TREES (QUERCUS PALUSTRIS) (B & B) (2" - 2 1/2" CAL.)	656.30	-			
						3			3		EACH	DECIDUOUS TREES (QUERCUS RUBRA) (B & B) (2" - 2 1/2" CAL.)	656.30	-			
						50			50		EACH	GROUND COVERS AND VINES (PARTHENOCISSUS QUINQUEFOLIA) (CONT) (#2)	656.40	-			
						25			25		MGAL	LANDSCAPE WATERING	656.65	1			
						35			35		CY	LANDSCAPE BACKFILL, TRUCK MEASUREMENT	656.80	4			
						1			1		LS	TREE PROTECTION	656.85	-			
108.54				48					156.54		SF	TRAFFIC SIGNS, TYPE A	675.20	-			
348.75									348.75		LB	TUBULAR STEEL SIGN POST	675.33	-			
394.6				284					678.6		LF	SQUARE TUBE SIGN POST AND ANCHOR	675.341	-			
2									2		EACH	FOUNDATION FOR TUBULAR STEEL POST	675.43	-			
62				16					78		EACH	REMOVING SIGNS	675.50	-			
51				13					64		EACH	ERECTING SALVAGED SIGNS	675.60	-			
20				5					25		EACH	DELINEATOR WITH STEEL POST	676.10	3			
17									17		EACH	REMOVAL OF EXISTING DELINEATOR	676.12	-			
1									1		EACH	TRAFFIC CONTROL SIGNAL SYSTEM, INTERSECTION (US ROUTE 2 @ I-89 RAMP "D" AND PARK AND RIDE)	678.15	-			

PROJECT NAME: RICHMOND
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FILE NAME: z97c186qty.dgn
PROJECT LEADER: ERIK ATKINS
DESIGNED BY: A. ACHARYA
QUANTITY SHEET #3

PLOT DATE: 4/29/2013
DRAWN BY: A. ACHARYA
CHECKED BY: T. BIGELOW
SHEET 6 OF 133

STATE OF VERMONT
AGENCY OF TRANSPORTATION

COMPOSITE QUANTITY SHEET 4

SUMMARY OF ESTIMATED QUANTITIES STP 0284(17)				SUMMARY OF ESTIMATED QUANTITIES CMG PARK(31)					TOTALS		DESCRIPTIONS				DETAILED SUMMARY OF QUANTITIES		
ROADWAY	TRAINING	EROSION CONTROL	FULL C.E. ITEMS	ROADWAY	TRAINING	LANDSCAPING	FULL C.E. ITEMS	EROSION CONTROL	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND	QUANTITIES	UNIT	ITEMS
1									1		EACH	TRAFFIC CONTROL SIGNAL SYSTEM, INTERSECTION (US ROUTE 2 @ VT ROUTE 117)	678.15	-			
70				250					320		LF	WIRED CONDUIT (1") (PVC)	678.23	-			
140									140		LF	WIRED CONDUIT (2 1/2") (PVC)	678.23	-			
1300				2750					4050		LF	WIRED CONDUIT (2") (PVC)	678.23	-			
75									75		LF	WIRED CONDUIT (3") (PVC)	678.23	-			
7									7		EACH	PULL BOX, STANDARD	678.25	-			
11				26					37		EACH	JUNCTION BOX	678.26	-			
				2					2		EACH	PULL BOX, DOUBLE	678.27	-			
150				275					425		LF	ELECTRICAL CONDUIT SLEEVE (6") (PVC)	678.30	31			
475									475		LF	ELECTRICAL CONDUIT SLEEVE (8") (PVC)	678.30	9			
1									1		EACH	REMOVAL OF EXISTING TRAFFIC CONTROL SIGNAL SYSTEM (US ROUTE 2 @ VT ROUTE 117)	678.45	-			
8				26					34		EACH	LIGHT POLE BASE	679.21	-			
8				26					34		EACH	LIGHT POLE	679.45	-			
				1					1		EACH	POWER DROP STANCHION, STREET LIGHTING	679.55	-			
1				1					2		LU	PRICE ADJUSTMENT, FUEL (N.A.B.I.)	690.50	-			
				10					10		CY	SPECIAL PROVISION (PERMANENT STONE CHECK DAM)	900.608	2			
				4					4		EACH	SPECIAL PROVISION (BICYCLE RACK)	900.620	-			
8									8		EACH	SPECIAL PROVISION (LUMINAIRE, LED) (STP 0284 (17))	900.620	-			
				26					26		EACH	SPECIAL PROVISION (LUMINAIRE, LED) (CMG PARK (31))	900.620	-			
				1					1		EACH	SPECIAL PROVISION (REMOVAL AND DISPOSAL OF EXISTING PAYPHONE)	900.620	-			
				1					1		EACH	SPECIAL PROVISION (REMOVAL AND REPLACEMENT OF EXISTING FLUSHING BASIN IN PAVEMENT)	900.620	-			
				1					1		EACH	SPECIAL PROVISION (REMOVAL OF EXISTING AREA LIGHTING SYSTEM)	900.620	-			
5				1					6		EACH	SPECIAL PROVISION (SOIL BEARING SLIP BASE) (2 1/2")	900.620	-			
				700					700		LF	SPECIAL PROVISION (6 INCH UNDERDRAIN PIPE, DRY SWALE)	900.640	10			
				60					60		LF	SPECIAL PROVISION (6 INCH UNDERDRAIN PIPE, DRY SWALE WITH STONE FILL)	900.640	1			
				1					1		LS	SPECIAL PROVISION (BUS SHELTER)	900.645	-			
				275					275		SY	SPECIAL PROVISION (STAMPED COLORED CONCRETE MEDIAN ISLAND, 5 INCH)	900.675	24			
				150					150		SY	SPECIAL PROVISION (STAMPED COLORED CONCRETE TRAFFIC CIRCLE, 8 INCH)	900.675	10			
				75					75		SY	SPECIAL PROVISION (UNIT BLOCK RETAINING WALL)	900.675	5			

PROJECT NAME: RICHMOND
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FILE NAME: z97c186qty.dgn
PROJECT LEADER: ERIK ATKINS
DESIGNED BY: A. ACHARYA
QUANTITY SHEET #4

PLOT DATE: 4/29/2013
DRAWN BY: A. ACHARYA
CHECKED BY: T. BIGELOW

EROSION CONTROL NARRATIVE

1. **PROJECT DESCRIPTION**

THE RICHMOND STP 0284(17) & CMG PARK(31) PROJECT CONSISTS OF THE RESURFACING AND EXPANSION OF THE EXISTING PARK AND RIDE FACILITY, LOCATED IN THE SOUTHEAST QUADRANT OF THE I-89/US RTE 2 INTERSECTION, TO INCREASE THE CAPACITY OF THE FACILITY. THE IMPROVEMENTS WILL ALSO INCLUDE A SHORT MODULAR UNIT BLOCK WALL TYPE RETAINING WALL, WHICH WILL BE INSTALLED TO ACCOMMODATE A BUS TURNAROUND. LANDSCAPE IMPROVEMENTS ARE INCLUDED IN THE PROJECT SCOPE TO SCREEN AND/OR DIRECT VIEWS OF THE PARK AND RIDE FACILITY, PROVIDING BARRIERS TO LIMIT VEHICULAR TRAFFIC IN SELECTED AREAS, PLANTING VINES TO COVER THE PROPOSED WALL (REDUCING THE LIKELIHOOD OF GRAFFITI), PROVIDING VISUAL INTEREST AND SHADE FOR PARKED CARS WHERE POSSIBLE AND CLEANSING RUN-OFF FROM THE PARKING AREA.

THE PROPOSED PROJECT ALSO INCLUDES REPLACEMENT OF THE EXISTING TEMPORARY TRAFFIC SIGNAL AT THE INTERSECTION OF VT 117 AND US RTE 2 WITH A PERMANENT SIGNAL SYSTEM, WHICH IS TO BE COORDINATED WITH A SECOND PROPOSED SIGNAL AT THE EXISTING PARK AND RIDE FACILITY AND THE I-89 SB OFF RAMP ALONG ROUTE 2. IN ADDITION, THE FOLLOWING ROADWAY WORK IS PROPOSED TO OPTIMIZE TRAFFIC FLOW AT THE PROPOSED SIGNALIZED INTERSECTIONS:

- THE US RTE 2 APPROACH TO VT 117 BETWEEN THE I-89 NB OFF-RAMP A WILL BE WIDENED TO ACCOMMODATE FOUR LANES OF TRAVEL;
- US RTE 2 AT THE I-89 SB ON-RAMP WILL BE WIDENED TO PROVIDE A LEFT TURN POCKET LANE;
- US RTE 2 BETWEEN VT 117 AND THE I-89 SB ON-RAMP B WILL BE RESURFACED BY COLDPLANE AND OVERLAY.

2. **AREA OF DISTURBANCE**

THE TOTAL DISTURBANCE ASSOCIATED WITH CONSTRUCTION OF THIS PROJECT IS APPROX. 2.11 ACRES. SEE BREAKDOWN OF DISTURBANCE PER AREA IN # 5 BELOW.

3. **CONSTRUCTION SEQUENCE**

THE CONTRACTOR SHALL SEQUENCE CONSTRUCTION ACTIVITIES TO MINIMIZE THE EXTENT OF DISTURBED SOILS LEFT OPEN TO EROSION AT ANY GIVEN TIME. AT NO TIME SHALL THE TOTAL CONCURRENT EARTH DISTURBANCE EXCEED 2 ACRES. A PROPOSED GENERAL SEQUENCE FOR EACH OF THE MAJOR CONSTRUCTION ACTIVITIES IS AS FOLLOWS:

- **PARK AND RIDE RECONFIGURATION**
  1) ESTABLISH PERIMETER CONTROLS AND BARRIER FENCE FOR TREE PROTECTION.
  2) INSTALL SEDIMENT CONTROL MEASURES.
  3) BEGIN CUT & FILL OPERATIONS, LIMIT AREA OF DISTURBANCE TO < 1.6 ACRES.
  4) INSTALL DRAIN PIPES AND STRUCTURES.
  5) FORM, ROUGH GRADE AND STABILIZE GRASS SWALES. DIVERT RUNOFF DISCHARGING TO SWALE UNTIL ADEQUATE VEGETATIVE GROWTH HAS BEEN ESTABLISHED.
  6) FINISH GRADE EMBANKMENT AND PERMANENTLY STABILIZE ALL REMAINING EXPOSED SOILS IMMEDIATELY.
  7) CONCURRENTLY INSTALL TEMPORARY AND PERMANENT STABILIZATION AND EPSC MEASURES AS WORK PROGRESSES SO THAT EMBANKMENT IS STABILIZED PRIOR TO ALLOWING RUNOFF TO DISCHARGE TO IT.
  8) COLD-PLANE EXISTING PAVEMENT IN AREAS TO RECEIVE PAVEMENT OVERLAY.
  9) PLACE SUBBASE MATERIAL FOR AREAS OF PARKING AREA EXPANSION.
  10) PAVE AREAS OF PARKING AREA EXPANSION WITH BASE COURSE OF PAVEMENT.
  11) FINAL GRADE SIDE SLOPES.
  12) APPLY PERMANENT STABILIZATION MEASURES TO ALL REMAINING EXPOSED SOIL AREAS.
  13) FINAL PAVING.

- **US RTE 2 ROADWAY WIDENING**
  1) ESTABLISH PERIMETER CONTROLS AND MARK BOUNDARIES FOR SENSITIVE RESOURCE AREAS, SUCH AS WETLANDS AND BUFFER ZONES.
  2) INSTALL SEDIMENT CONTROL MEASURES.
  3) BEGIN CUT/FILL OPERATIONS. LIMIT AREA OF DISTURBANCE TO < 1 ACRE.
  4) FINISH GRADE EMBANKMENT AND PERMANENTLY STABILIZE ALL REMAINING EXPOSED SOILS IMMEDIATELY.
  5) CONCURRENTLY INSTALL TEMPORARY STABILIZATION AND EPSC MEASURES AS WORK PROGRESSES SO THAT EMBANKMENT IS STABILIZED PRIOR TO ALLOWING RUNOFF TO DISCHARGE TO IT.
  6) COLD-PLANE EXISTING PAVEMENT IN AREAS TO RECEIVE PAVEMENT OVERLAY.
  7) PLACE SUBBASE MATERIAL FOR AREAS OF ROADWAY WIDENING.
  8) PAVE AREAS OF ROADWAY WIDENING WITH BASE COURSE OF PAVEMENT.
  9) FINAL GRADE SIDE SLOPES.
  10) APPLY PERMANENT STABILIZATION MEASURES TO ALL REMAINING EXPOSED SOIL AREAS.
  11) PAVE ROADWAY.

4. **STABILIZATION OF EXPOSED SOILS**

- SEED AND MULCH WILL BE USED FOR BOTH PERMANENT AND TEMPORARY STABILIZATION MEASURES. MULCH IS TO BE APPLIED AT A MINIMUM APPLICATION RATE SHOWN ON SHEETS 10 AND 18-22, UNLESS DIRECTED OTHERWISE BY THE ENGINEER.
- DISTURBED AREAS AND SOIL STOCKPILES THAT WILL NOT BE WORKED FOR MORE THAN 7 DAYS SHALL BE TEMPORARILY STABILIZED WITH MULCH/RECP WITHIN 48 HOURS.
- DISTURBED AREAS AND SOIL STOCKPILES THAT WILL NOT BE WORKED FOR MORE THAN 30 DAYS SHALL BE TEMPORARILY STABILIZED WITH SEED AND MULCH/RECP WITHIN 48 HOURS.
- EXPOSED AREAS THAT HAVE ACHIEVED FINAL GRADE SHALL BE PERMANENTLY STABILIZED WITHIN 48 HOURS.
- IN AREAS WHERE VEGETATIVE COVER WILL PROVIDE PERMANENT STABILIZATION, SEEDING TO BE COMPLETED BETWEEN APRIL 15 AND SEPTEMBER 15.

5. **DRAINAGE AREAS AND DISCHARGE POINTS**

THIS PROJECT IS BEING CONSTRUCTED ON THE EXISTING PARK AND RIDE FACILITY AND US RTE 2 IN RICHMOND. FROM THE PROJECT BEGINNING IN THE WEST, THE EXISTING US RTE 2 DESCENDS EAST TOWARDS THE EXISTING PARK AND RIDE FACILITY AT A 3-4% SLOPE. FURTHER EAST, IN THE AREA OF THE PARK AND RIDE FACILITY, THE US RTE 2 ROADWAY IS MUCH MORE FLAT WITH PROFILE GRADES LESS THAN 1%.

THE PROJECT HAS THREE DISCHARGE POINTS TO THE RECEIVING WATER, AN UNNAMED BROOK TRIBUTARY TO THE WINOOSKI RIVER. EACH DISCHARGE POINT CORRESPONDS TO A DRAINAGE AREA IN WHICH THE PROJECT HAS BEEN DIVIDED. ALTHOUGH ALL THREE DRAINAGE AREAS DISCHARGE TO THE UNNAMED BROOK INITIALLY, THE STORMWATER RUNOFF WILL ULTIMATELY BE CONVEYED INTO THE WINOOSKI RIVER.

- **DRAINAGE AREA 1**
  THE DRAINAGE AREA CONSISTS OF THE NORTH SIDE OF US RTE 2, WEST OF I-89, INCLUDING THE PARK AND RIDE FACILITY. THE ASSOCIATED AREA OF DISTURBANCE IS 1.6 ACRES. EXISTING SWALES LOCATED OFF THE PERIMETER OF THE PAVEMENT EDGE OF THE PARKING AREA CONVEY SURFACE RUNOFF FROM THE NORTHERN SLOPE, PARKING AREA, PORTIONS OF US RTE 2 AROUND THE PARKING LOT, AS WELL AS PORTIONS OF I-89 VIA THREE CLOSED DRAINAGE SYSTEMS DISCHARGING TO THE SWALES. THE SWALES ARE CONVEYED EAST UNDER THE I-89 SB ON-RAMP VIA A 30" DIAMETER CULVERT TO DP-1, LOCATED AT THE CONFLUENCE OF SEVERAL SWALES AT THE HEADWATERS OF AN UNNAMED BROOK TRIBUTARY TO THE WINOOSKI RIVER.
- **DRAINAGE AREA 2**
  THE DRAINAGE AREA CONSISTS OF THE SOUTH SIDE OF US RTE 2, WEST OF I-89. THE ASSOCIATED AREA OF DISTURBANCE IS 0.21 ACRES. SOUTHERN PORTION OF US RTE 2, AS WELL AS THE I-89 NB OFF-RAMP DRAINING INTO ROADSIDE SWALES AND CULVERTS TRIBUTARY TO DP-1, LOCATED AT THE CONFLUENCE OF SEVERAL SWALES AT THE HEADWATERS OF AN UNNAMED BROOK TRIBUTARY TO THE WINOOSKI RIVER.
- **DRAINAGE AREA 3**
  THE DRAINAGE AREA CONSISTS OF AREAS NORTH OF US RTE 2 DRAINING SOUTH TOWARDS US RTE 2, INCLUDING CLASS II WETLANDS AND A SYSTEM OF STREAMS. THE ASSOCIATED AREA OF DISTURBANCE IS 0.29 ACRES. THE DRAINAGE AREA IS CONVEYED UNDER US RTE 2 BY AN EXISTING CULVERT TO DP-3, LOCATED WHERE THE CULVERT DISCHARGES TO AN UNNAMED BROOK TRIBUTARY TO THE WINOOSKI RIVER.

DRAINAGE AREA SUMMARY

DRAINAGE AREA	TOTAL DISTURB. (ACRES)	LIMIT OF CONCURRENT DISTURBANCE*	RECEIVING WATER
1	1.60	1.60 ACRES	UNNAMED BROOK TRIBUTARY TO WINOOSKI RIVER
2	0.21	0.21 ACRES	UNNAMED BROOK TRIBUTARY TO WINOOSKI RIVER
3	0.29	0.29 ACRES	UNNAMED BROOK TRIBUTARY TO WINOOSKI RIVER

*AT NO TIME SHALL THE TOTAL CONCURRENT EARTH DISTURBANCE EXCEED 2 ACRES.

SEE THE EPSC SUMMARY SHEETS FOR FURTHER DETAIL REGARDING DRAINAGE AREAS AND RELATED SLOPE AND SOIL ERODIBILTY.

6. **WASTE, BORROW, AND STAGING AREAS**

- EXCEPT AS OTHERWISE SPECIFIED IN THE CONTRACT DOCUMENTS, OFF-SITE WASTE AND BORROW AREAS HAVE NOT BEEN IDENTIFIED FOR THIS PROJECT. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO IDENTIFY AND PERMIT, AS NECESSARY, ANY OFF-SITE WASTE AND BORROW AREAS THAT ARE NEEDED. ALL EROSION PREVENTION AND SEDIMENT CONTROL MEASURES NECESSARY FOR WASTE, BORROW, AND STAGING AREAS OUTSIDE THE PROJECT LIMITS SHALL BE PAID FOR PER SUBSECTION 105.29 OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION.
- THE CONTRACTOR SHALL LOCATE ADDITIONAL AREAS FOR DISPOSAL OF STUMPS, EXCESS SOILS AND COLLECTED SEDIMENT, IF NECESSARY. DISPOSE OF THESE MATERIALS IN A MANNER THAT WILL NOT RESULT IN SEDIMENTS ENTERING WATERS OF THE STATE.
- DISPOSAL/WASTE SITES SHALL BE APPROVED BY THE AGENCY TO RECEIVE THESE MATERIALS. THE CONTRACTOR SHALL SUBMIT TO THE AGENCY, FOR REVIEW AND APPROVAL, A "WASTE BORROW STAGING REVIEW SHEET" FOR EACH DISPOSAL SITE(S) HE/SHE WISHES TO USE FOR THIS PROJECT. ANY ADDITIONAL PERMITTING REQUIRED FOR THE DISPOSAL SITES OR PROOF OF COMPLIANCE FOR THESE WASTE SITES MUST BE FURNISHED BY THE CONTRACTOR PRIOR TO USE.
- IT IS ANTICIPATED THAT CONSTRUCTION STAGING CAN BE ACCOMPLISHED WITHIN THE EXISTING LIMITS OF WORK. VEHICLE AND EQUIPMENT STORAGE AREAS OR AREAS ADJACENT TO CONSTRUCTION TRAILERS OR OTHER HIGH TRAFFIC AREAS SHALL BE COVERED WITH GEOTEXTILE FABRIC AND 12 INCHES OF GRAVEL. FOLLOWING COMPLETION OF CONSTRUCTION, ALL NON-NATIVE MATERIALS SHALL BE REMOVED FROM THE STAGING AREA. COMPACTED, RUTTED, OR OTHERWISE DISTURBED SOILS SHALL BE TILLED, RAKED, SEEDED AND MULCHED.
- ERODIBLE MATERIALS STOCKPILED WITHIN THE MATERIAL STORAGE AREAS SHALL BE ISOLATED WITH SILT FENCE OR OTHER ACCEPTABLE SEDIMENT BARRIER. SOIL STOCKPILED ON THE SITE SHALL BE SEEDED AND MULCHED.
- ALL MATERIAL HANDLING AND DISPOSAL WORK SHALL BE IN ACCORDANCE WITH SECTION 105 OF THE STANDARD SPECIFICATIONS AND THE VERMONT AGENCY OF NATURAL RESOURCES (VANR) REQUIREMENTS. WHEREVER POSSIBLE, EXCAVATED SOIL MATERIAL SHALL BE RE-USED WHEN APPROVED BY AND AT THE DISCRETION OF THE ENGINEER TO FORM EMBANKMENTS AND AS OTHER BORROW MATERIALS.
- TEMPORARY AND PERMANENT STABILIZATION OF ALL STAGING AREAS AND WASTE DISPOSAL AREAS SHALL BE IN ACCORDANCE WITH SECTION 105 OF THE STANDARD SPECIFICATIONS AND IN ACCORDANCE WITH THE CGP-9020 AND VANR REQUIREMENTS.

7. **WINTER CONSTRUCTION REQUIREMENTS**

IT IS NOT EXPECTED THAT CONSTRUCTION ACTIVITIES WILL CONTINUE INTO THE WINTER CONSTRUCTION SEASON. IF ACTIVITIES ARE ON-GOING BETWEEN OCTOBER 15 AND APRIL 15, THE CONTRACTOR SHALL FOLLOW REQUIREMENTS FOR WINTER CONSTRUCTION, AS DEFINED IN SPECIFIC PERMIT CONDITIONS AND AS FOLLOWS:

- ENLARGED ACCESS POINTS, STABILIZED TO PROVIDE FOR SNOW STOCKPILING.
- LIMITS OF DISTURBANCE MOVED OR REPLACED TO REFLECT BOUNDARY OF WINTER WORK.
- DEVELOPMENT OF A SNOW MANAGEMENT PLAN THAT INCLUDES:
  - ADEQUATE STORAGE AND CONTROL OF MELT-WATER
  - STORAGE OF CLEARED SNOW TO BE PLACED DOWN SLOPE OF DISTURBED AREAS AND OUT OF STORMWATER TREATMENT STRUCTURES
- A MINIMUM 25-FOOT BUFFER SHALL BE MAINTAINED FROM PERIMETER CONTROLS.
- DRAINAGE STRUCTURES MUST BE KEPT OPEN AND FREE OF SNOW AND ICE DAMS.
- SILT FENCE AND OTHER PRACTICES REQUIRING EARTH DISTURBANCE MUST BE INSTALLED PRIOR TO THE GROUND FREEZING.
- MULCH TO BE APPLIED AT TWICE THE REGULAR RATE, AS SHOWN ON PLAN SHEETS 10 AND 18-22, UNLESS DIRECTED OTHERWISE BY THE ENGINEER.
- AREAS OF DISTURBED SOILS MUST BE STABILIZED AT THE END OF EACH WORK DAY, WITH THE FOLLOWING EXCEPTIONS:
  - IF NO PRECIPITATION WITHIN 24 HOURS IS FORECAST AND WORK WILL RESUME IN THE SAME AREA WITHIN 24 HOURS.
  - DISTURBED AREAS THAT COLLECT AND RETAIN RUNOFF, SUCH AS OPEN UTILITY TRENCHES, MUST BE STABILIZED AT THE END OF EACH WORK WEEK.
- PRIOR TO STABILIZATION, SNOW OR ICE MUST BE REMOVED TO LESS THAN 1" (25MM) THICKNESS.

CONTRACTOR RESPONSIBILITIES, LIMITATIONS & PROHIBITIONS

1. **GENERAL NOTES**

- IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO AMEND/UPDATE ALL PLANS AND EXISTING PERMITS WHEN ADDING DETAILED CONSTRUCTION PHASING OR ANYTHING ELSE THAT MAY DEVIATE FROM THE APPROVED PLANS AS DIRECTED BY THE RESIDENT ENGINEER.
- OTHER THAN THOSE SHOWN ON THE PLANS ALL LAND DISTURBANCES WITHIN 50 FT OF ALL WATER BODIES, MEASURED FROM THE TOP OF BANK, AND WETLANDS, ARE PROHIBITED WITHOUT FURTHER REGULATORY REVIEW.
- CONTRACTOR TO MAINTAIN ALL EXISTING STREAMS AND RIPARIAN BUFFER ZONES IN THEIR NATURAL CONDITION.
- OFF-SITE DISCHARGES OF ANY MATERIAL OTHER THAN STORMWATER, SUCH AS VEHICLE AND EQUIPMENT MAINTENANCE SPILLS, FUELS, WASH WATER, CONSTRUCTION DEBRIS, OIL, WET CONCRETE (INCLUDING WASHOUT WATER FROM CONCRETE BATCH TRUCKS OR EQUIPMENT USED TO MIX CONCRETE), AND OTHER SUBSTANCES, ARE PROHIBITED.
- THE FAILURE TO PROMPTLY ABATE THE DISCHARGE OF SEDIMENT OR ANY OTHER WASTE WHICH CAUSES A VISIBLE DISCOLORATION OF SURFACE WATERS (INCLUDING WETLANDS), OR IS FOUND TO BE VIOLATING WATER QUALITY STANDARDS BASED ON MONITORING, IS PROHIBITED. ANY CORRECTIVE ACTION UNDERTAKEN TO REMOVE SEDIMENT FROM A WETLAND IS ALSO PROHIBITED.
- WEATHER CONDITIONS WILL BE MONITORED DURING THE CONSTRUCTION SEASON. IF AN EXTENDED RAIN PERIOD OR HEAVY RAIN IS PREDICTED, EXPOSED SOIL AREAS SHALL BE MULCHED PRIOR TO AND DAILY DURING THE RAIN EVENT. IF DETERMINED NECESSARY BY THE RESIDENT ENGINEER, WORK MAY BE SUSPENDED OR LIMITED DURING THE STORM.

2. **EPSC PLAN**

THE CONTRACTOR SHALL SUBMIT AN EPSC PLAN IN ACCORDANCE WITH SPECIAL PROVISION EROSION PREVENTION AND SEDIMENT CONTROL PLAN AND PROJECT PERMITS. THE PLAN AT A MINIMUM SHALL TAKE INTO CONSIDERATION THE FOLLOWING:

- **DRAINAGE AREA 1**
  - THE DISTURBANCE AT ANY ONE TIME IN THIS AREA SHALL BE LIMITED TO 1.60 ACRES.
  - SWALES SHALL BE CONSTRUCTED AND STABILIZED PRIOR TO RECEIVING RUNOFF FROM CLOSED DRAINAGE SYSTEMS.
  - STORMWATER FROM DISTURBED AREAS SHALL BE DIRECTED THROUGH SILT FENCE PRIOR TO DISCHARGE, EXCEPT IN THE CASE OF CONCENTRATED OR CHANNEL FLOW.
  - TEMPORARY EROSION MATTING SHALL BE PLACED ON ALL SLOPES EQUAL TO OR GREATER THAN 3H:1V DURING CONSTRUCTION.
  - INSTALLATION OF PERMANENT CHECK DAMS.
  - INSTALLATION OF PERMANENT EROSION MATTING FOR GRASS CHANNEL LINING.
  - INSTALLATION OF TYPE I STONE FOR SLOPE LINING AND CHANNEL PROTECTION.
- **DRAINAGE AREA 2**
  - THE DISTURBANCE AT ANY ONE TIME IN THIS AREA SHALL BE LIMITED TO 0.21 ACRES.
  - STORMWATER FROM DISTURBED AREAS SHALL BE DIRECTED THROUGH SILT FENCE PRIOR TO DISCHARGE, EXCEPT IN THE CASE OF CONCENTRATED OR CHANNEL FLOW.
  - TEMPORARY EROSION MATTING SHALL BE PLACED ON ALL SLOPES EQUAL TO OR GREATER THAN 3H:1V DURING CONSTRUCTION.
  - INSTALLATION OF TYPE I STONE FOR SLOPE LINING AND CHANNEL PROTECTION.
- **DRAINAGE AREA 3**
  - THE DISTURBANCE AT ANY ONE TIME IN THIS AREA SHALL BE LIMITED TO 0.29 ACRES.
  - ACCESS TO THE AREA, INCLUDING TEMPORARY AND PERMANENT STABILIZATION OF THE PROPOSED ACCESS DURING AND THEN FOLLOWING CONSTRUCTION OF THE PROJECT.
  - STORMWATER FROM DISTURBED AREAS SHALL BE DIRECTED THROUGH SILT FENCE PRIOR TO DISCHARGE, EXCEPT IN THE CASE OF CONCENTRATED OR CHANNEL FLOW.
  - TEMPORARY EROSION MATTING SHALL BE PLACED ON ALL SLOPES EQUAL TO OR GREATER THAN 3H:1V DURING CONSTRUCTION.
  - INSTALLATION OF TYPE I STONE FOR SLOPE LINING AND CHANNEL PROTECTION.

THE EPSC PLAN SHALL ALSO INCLUDE INFORMATION REGARDING:
  - METHOD FOR TREATMENT OF DISCHARGE FROM DEWATERING. 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.
  - STABILIZATION OF OPERATIONAL STORMWATER TREATMENT PRACTICES PRIOR TO DIRECTING RUNOFF TO THEM.

THE RUNOFF CONTROL STANDARD SHALL BE MET IN PART THROUGH THE INSTALLATION OF PERMANENT CHECK DAMS AS SHOWN ON THE PLANS.

THE SLOPE PROTECTION STANDARD SHALL BE MET IN PART THROUGH THE INSTALLATION OF A PERMANENT RETAINING WALL AND PERMANENT RIP RAP SLOPE PROTECTION AS SHOWN ON THE PLANS.

THE FLOW PROTECTION STANDARD SHALL BE MET IN PART THROUGH THE INSTALLATION OF PERMANENT GRASSED SWALES AND A PERMANENTLY LINED WATERWAY AS SHOWN ON THE PLANS.

3. **INSPECTION & MONITORING NOTES**

- CONTRACTOR TO CONDUCT INSPECTIONS AND MONITORING IN ACCORDANCE WITH THE SPECIAL PROVISIONS AND PERMIT SPECIFIC REQUIREMENTS.

Item	Symbol
BARRIER FENCE (LINE STYLE) 653.50	- B F - - B F -
BRUSH LAYER 653.75, DETAIL	BL
CHECK DAM (LINE STYLE) 653.25, DETAIL	
COFFERDAM (LINE STYLE) 208.40	
CURB DROP INLET PROTECTION 653.40, DETAIL	
DUST CONTROL 609.10 & 15	DC
PIPE INLET PROTECTION 653.40, DETAIL	
EXCAVATED DROP INLET PROTECTION 653.40, DETAIL	
FIBER ROLL (EROSION LOG) 653.60, DETAIL	FR
FILTER BAG 653.45, DETAIL	
FILTER FABRIC DROP INLET PROTECTION 653.40, DETAIL	
LIVE CUTTINGS/LIVE STAKES PLANTING 653.70, DETAIL	LS
LIVE FASCINE 653.65, DETAIL	LF
PROJECT DEMARCATION FENCE (LINE STYLE) 653.55	-PDF - PDF-
ROLLED EROSION CONTROL PRODUCT (RECP) 653.20 (TEMP. EROSION MATTING)	
SEDIMENT BASIN INCIDENTAL TO COFFERDAM 208.40	

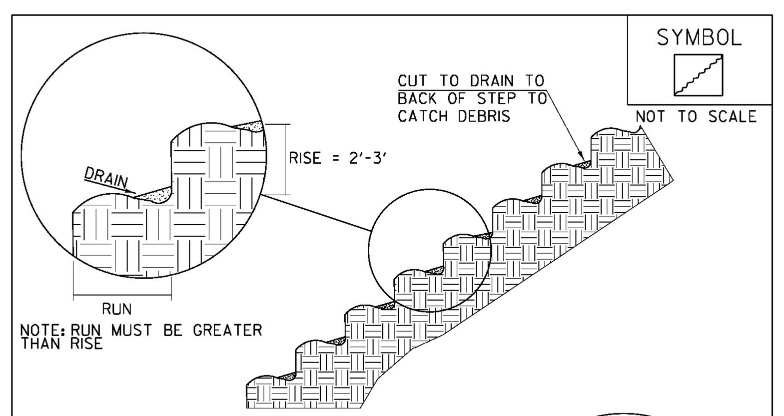
ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC
ORIGINALLY DEVELOPED BY USDA-NRCS
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

STANDARD SYMBOLS

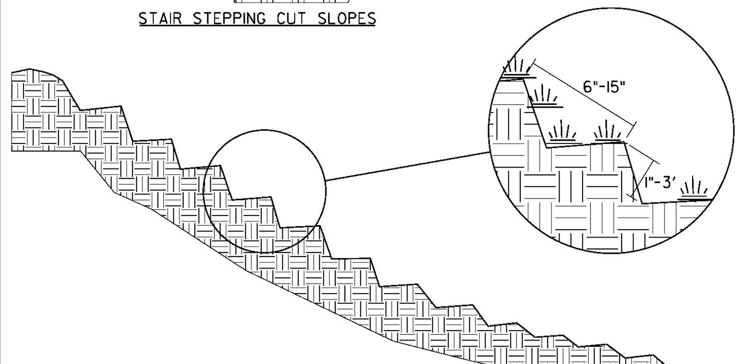
Item	Symbol
SILT FENCE(LINE STYLE) 649.51, DETAIL	
SILT FENCE WOVEN WIRE(LINE STYLE) 649.515, DETAIL	
STABILIZED CONSTRUCTION ENTRANCE 653.35, DETAIL, VEHICLE TRACKING PAD	
STONE & BLOCK DROP INLET PROTECTION 653.40, DETAIL	
SURFACE ROUGHENING INCIDENTAL TO CONTRACT	
TURBIDITY CURTAIN 649.61, DETAIL, FILTER CURTAIN	

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

STANDARD SYMBOLS



STAIR STEPPING CUT SLOPES



GROOVING SLOPES

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

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

SURFACE ROUGHENING

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

THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT

REVISIONS	
APRIL 1, 2008	WHF
JANUARY 13, 2009	WHF

VAOT RURAL AREA MIX

	LBS/AC				
% WEIGHT	BROADCAST	HYDROSEED	NAME	GERM %	PURITY %
37.5%	22.5	45	CREEPING RED FESCUE	85%	98%
37.5%	22.5	45	TALL FESCUE	90%	95%
5.0%	3	6	RED TOP	90%	95%
15.0%	9	18	BIRDSFOOT TREFOIL	85%	98%
5.0%	3	6	ANNUAL RYE GRASS	85%	95%
100%	60	120			

VAOT URBAN AREA MIX

	LBS/AC				
% WEIGHT	BROADCAST	HYDROSEED	NAME	GERM %	PURITY %
42.5%	34	68	CREEPING RED FESCUE	85%	98%
10.0%	8	16	PERENNIAL RYE GRASS	90%	95%
42.5%	34	68	KENTUCKY BLUE GRASS	85%	85%
5.0%	4	8	ANNUAL RYE GRASS	85%	95%
100%	80	160			

SOIL AMENDMENT GUIDANCE

FERTILIZER		LIME	
BROADCAST	HYDROSEED	BROADCAST	HYDROSEED
10-20-10	*FOLLOW*	PELLETIZED	*FOLLOW*
500 LBS/AC	*MANUFACTURER*	2 TONS/AC	*MANUFACTURER*

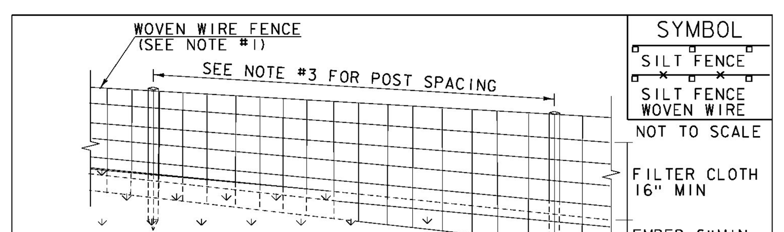
CONSTRUCTION GUIDANCE

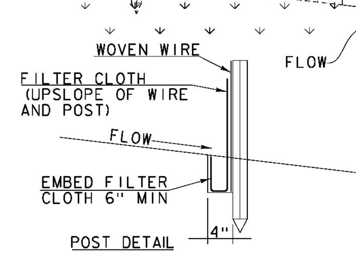
1. RURAL SEED MIX: USE AS INDICATED IN THE PLANS AND/OR FOR ALL ESTABLISHED UPLAND (NON WETLAND) AREAS DISTURBED BY THE CONTRACTOR.
2. URBAN SEED MIX: USE AS INDICATED IN THE PLANS AND/OR FOR ALL ESTABLISHED LAWN AREAS DISTURBED BY THE CONTRACTOR.
3. ALL SEED MIXTURES: SHALL NOT HAVE A WEED CONTENT EXCEEDING 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. TOPSOIL: TO BE USED WITH SEED AS INDICATED ON THE PLANS, OR AS DIRECTED BY THE ENGINEER.
7. HYDROSEEDING: ALTHOUGH GUIDANCE IS GIVEN ABOVE THE SITE CONDITIONS AND THE TYPE OF HYDROSEED WILL ULTIMATELY DICTATE THE AMOUNTS AND TYPES OF SOIL AMENDMENTS TO BE APPLIED
8. TURF ESTABLISHMENT: PLACING SEED, FERTILIZER, LIME AND MULCH PRIOR TO SEPTEMBER 15 AND AFTER APRIL 15 CAN BETTER ENSURE A VIGOROUS GROWTH OF GRASS.

ADAPTED FROM VTRANS TECHNICAL LANDSCAPE MANUAL FOR ROADWAYS AND TRANSPORTATION FACILITIES

TURF ESTABLISHMENT

REVISIONS	
JUNE 23, 2009	WHF
JANUARY 15, 2010	WHF
FEBRUARY 16, 2011	WHF





POST DETAIL

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, MIRAFI 100X, STABILINKA T140N OR APPROVED EQUIVALENT.
3. POST SPACING FOR WIRE-BACKED FENCE SHALL BE 10' MAXIMUM. FOR FILTER-CLOTH FENCE, WHEN ELONGATION IS >50%, POST SPACING SHALL NOT EXCEED 4' AND WHEN ELONGATION IS <50%, POST SPACING SHALL NOT EXCEED 6'.
4. WOVEN WIRE FENCE IS TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES. FILTER CLOTH IS TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION.
5. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVER-LAPPED BY 6" AND FOLDED.
6. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN SEDIMENT REACHES HALF OF FABRIC HEIGHT.

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

SILT FENCE

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

THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 649 AND AS SHOWN IN THE PLANS FOR GEOTEXTILE FOR SILT FENCE (PAY ITEM 649.51) OR GEOTEXTILE FOR SILT FENCE, WOVEN WIRE REINFORCED (PAY ITEM 649.515).

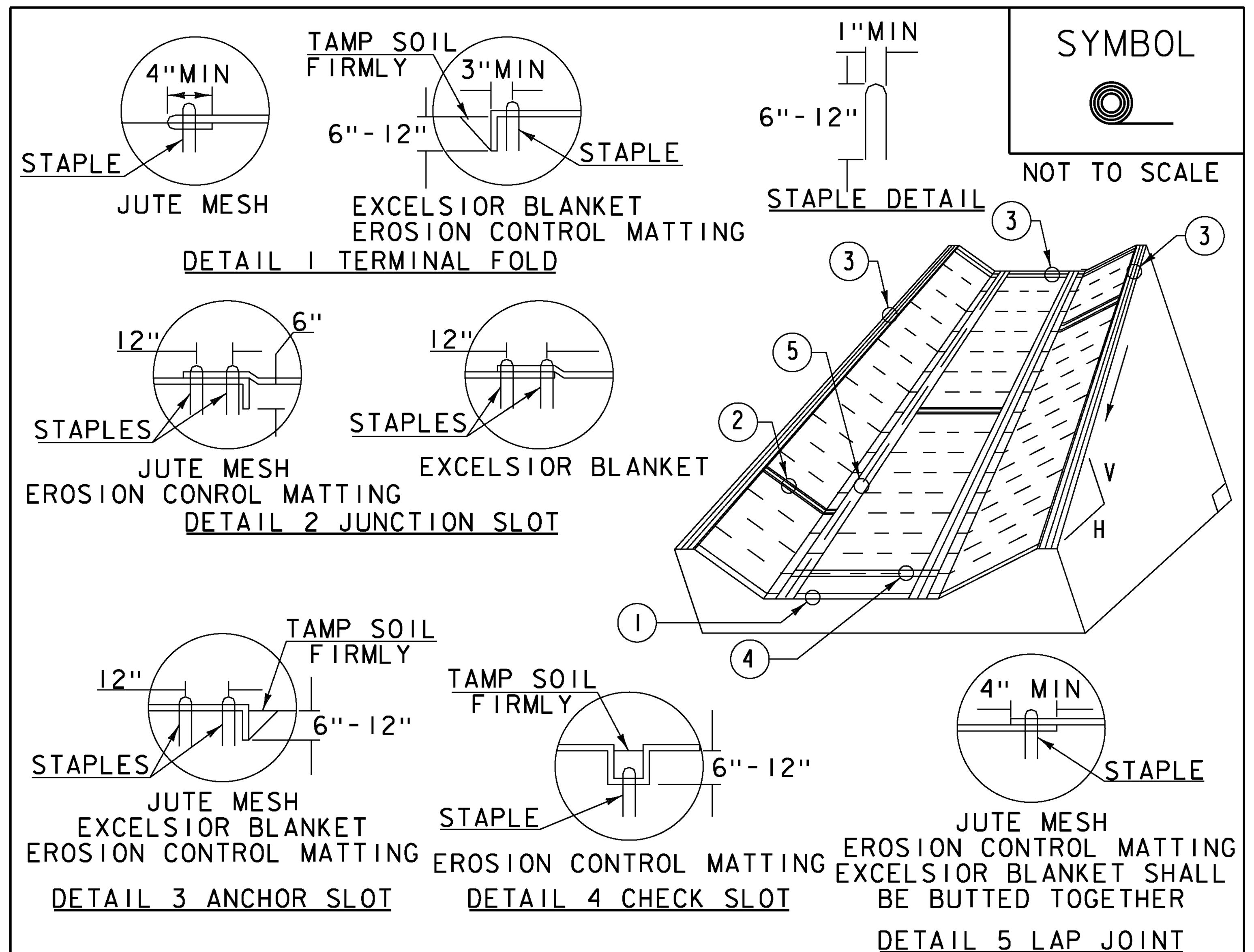
REVISIONS	
MARCH 21, 2008	WHF
DECEMBER 11, 2008	WHF
JANUARY 13, 2009	WHF

PROJECT NAME: RICHMOND
PROJECT NUMBER: STP 0284 (17)/CMG PARK (31)

FILE NAME: z97cl86ecdet.dgn	PLOT DATE: 4/29/2013
PROJECT LEADER: ERIK ATKINS	DRAWN BY: N. BOSAN
DESIGNED BY: T. BIGELOW	CHECKED BY: E. ATKINS
EPSC DETAILS SHEET 1	SHEET 10 OF 133

SYMBOL

NOT TO SCALE



CONSTRUCTION SPECIFICATIONS

1. EROSION MATTING, CHECK SLOTS, SHALL BE SPACED IN DITCH CHANNEL SO THAT ONE OCCURS WITHIN EACH 50' ON SLOPES OF MORE THAN 4% AND LESS THAN 6%. ON SLOPES OF 6% OR MORE, THEY SHALL BE SPACED SO THAT ONE OCCURS WITHIN EACH 25'.
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'X225' ROLL OF MATERIAL AND 125 STAPLES ARE REQUIRED PER 4'X150' ROLL OF MATERIAL.
4. DISTURBED AREAS SHALL BE SMOOTHLY GRADED. EROSION CONTROL MATERIAL SHALL BE PLACED LOOSELY OVER GROUND SURFACE. DO NOT STRETCH.
5. ALL TERMINAL ENDS AND TRANSVERSE LAPS SHALL BE STAPLED AT APPROXIMATELY 12" INTERVALS.

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

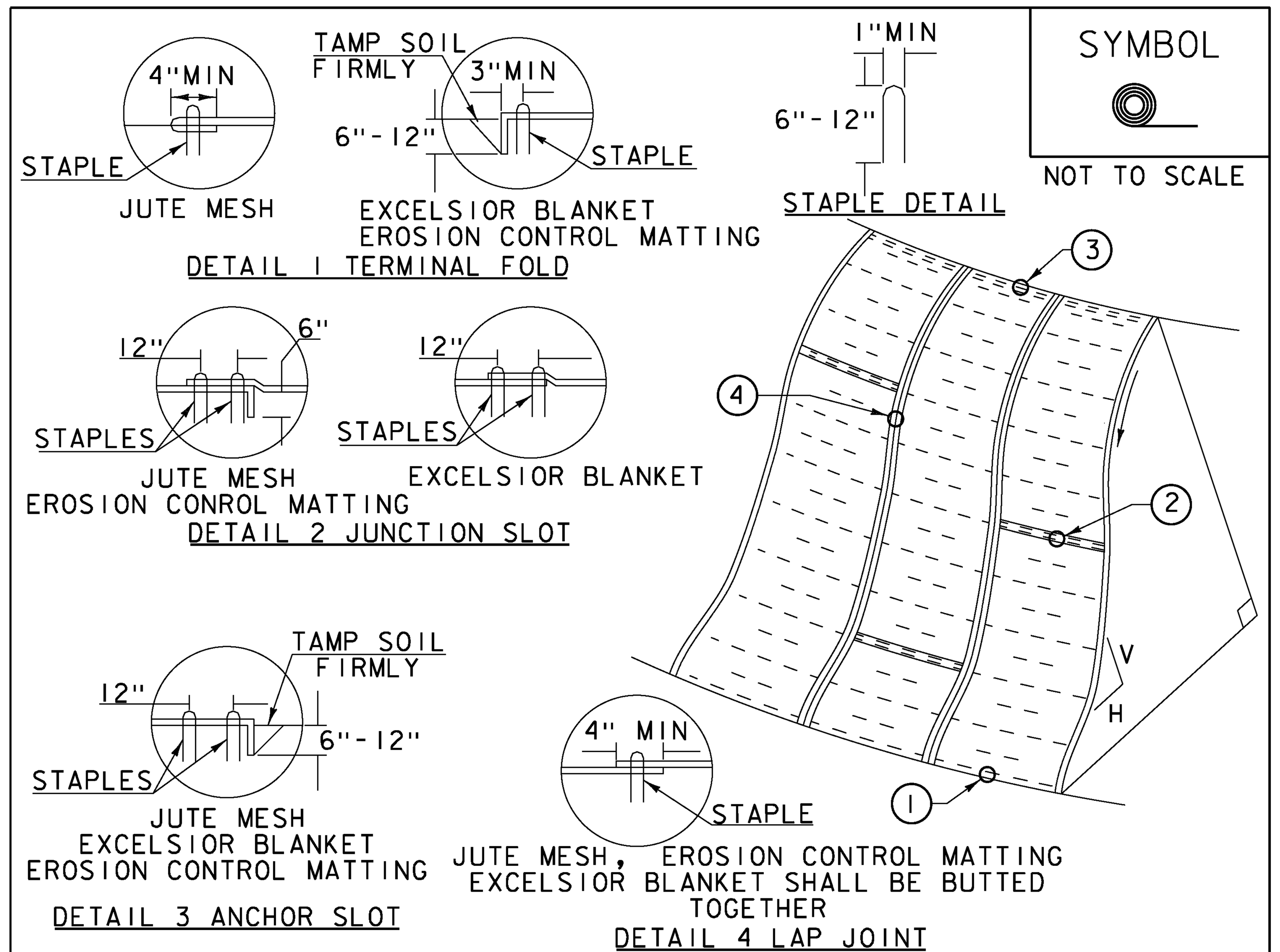
ROLLED EROSION CONTROL PRODUCT (RECP) DITCH

NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- " FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.
THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 653 AND AS SHOWN IN THE PLANS FOR TEMPORARY EROSION MATTING (PAY ITEM 653.20) OR PERMANENT EROSION MATTING (PAY ITEM 653.21).

REVISIONS	
MARCH 8, 2007	JMF
APRIL 16, 2007	WHF
JANUARY 13, 2009	WHF

SYMBOL

NOT TO SCALE



CONSTRUCTION SPECIFICATIONS

1. APPLY TO SLOPES GREATER THAN 3H:1V OR WHERE NECESSARY TO AID IN ESTABLISHING VEGETATION.
2. APPLY FERTILIZER, LIME SEED PRIOR TO PLACING MATTING.
3. STAPLES ARE TO BE PLACED ALTERNATELY, IN COLUMNS APPROXIMATELY 2' APART AND IN ROWS APPROXIMATELY 3' APART. APPROXIMATELY 175 STAPLES ARE REQUIRED PER 4'X225' ROLL OF MATERIAL AND 125 STAPLES ARE REQUIRED PER 4'X150' ROLL OF MATERIAL.
4. DISTURBED AREAS SHALL BE SMOOTHLY GRADED. EROSION CONTROL MATERIAL SHALL BE PLACED LOOSELY OVER GROUND SURFACE. DO NOT STRETCH.
5. ALL TERMINAL ENDS AND TRANSVERSE LAPS SHALL BE STAPLED AT APPROXIMATELY 12" INTERVALS.

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

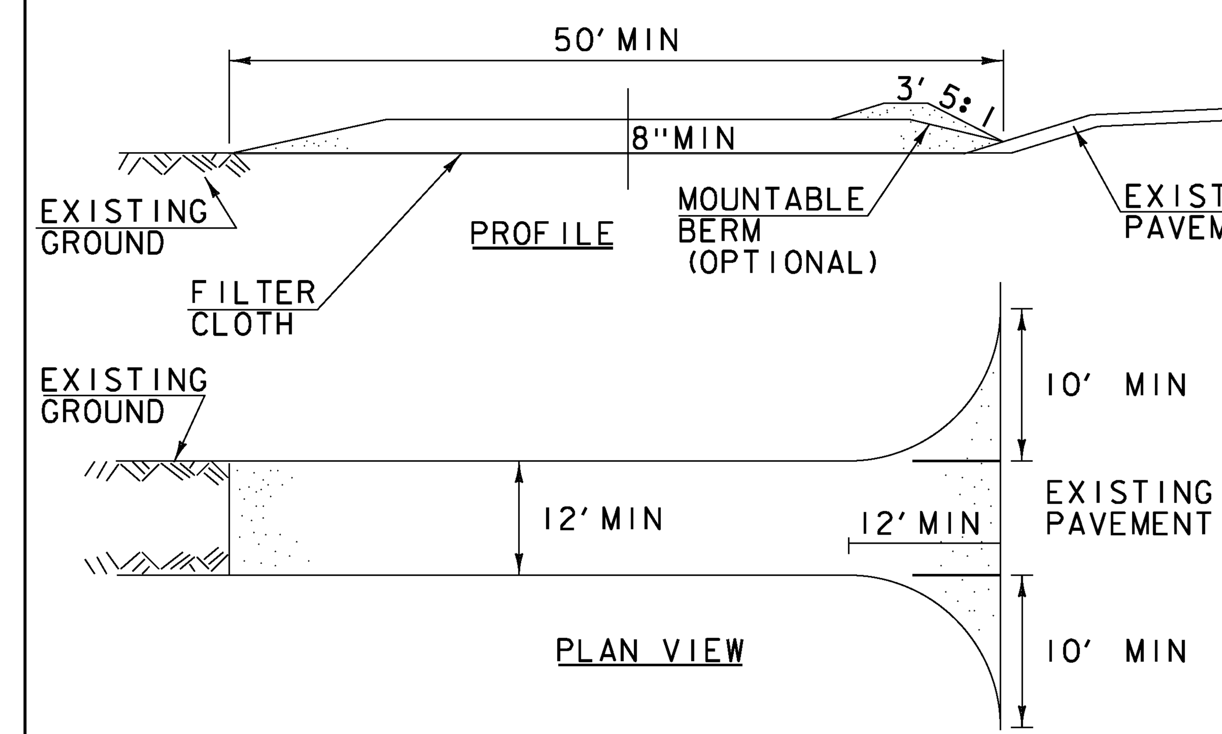
ROLLED EROSION CONTROL PRODUCT (RECP) SIDE SLOPE

NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- " FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.
THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 653 AND AS SHOWN IN THE PLANS FOR TEMPORARY EROSION MATTING (PAY ITEM 653.20) OR PERMANENT EROSION MATTING (PAY ITEM 653.21).

REVISIONS	
APRIL 16, 2007	JMF
JANUARY 13, 2009	WHF

SYMBOL

NOT TO SCALE



CONSTRUCTION SPECIFICATIONS

1. 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.

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

STABILIZED CONSTRUCTION ENTRANCE

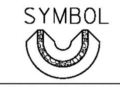
NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- " FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.

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

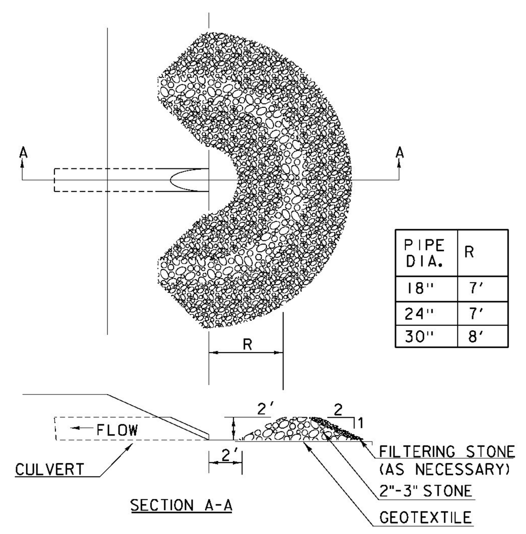
REVISIONS	
MARCH 24, 2008	WHF
JANUARY 13, 2009	WHF

PROJECT NAME: RICHMOND	
PROJECT NUMBER: STP 0284 (17)/CMG PARK (31)	
FILE NAME: z97c186ecdet.dgn	PLOT DATE: 4/29/2013
PROJECT LEADER: ERIK ATKINS	DRAWN BY: N. BOSAN
DESIGNED BY: T. BIGELOW	CHECKED BY: E. ATKINS
EPSC DETAILS SHEET 2	SHEET 11 OF 133

SYMBOL



NOT TO SCALE



PIPE DIA.	R
18"	7'
24"	7'
30"	8'

CONSTRUCTION SPECIFICATIONS

1. USE 2" TO 3" STONE. FILTERING STONE SHALL BE 3/4".
2. PLACE STONE OVER GEOTEXTILE.
3. ONCE THE AREAS UPSTREAM FROM THE CHECK DAM ARE STABILIZED WITH VEGETATION, THE SEDIMENT TRAPPED BEHIND THE DAM SHALL BE DISPOSED OF IN AN APPROVED WASTE AREA.
4. THE CHECK DAM(S) SHALL BE FLATTENED AND GRADED IN A MANNER WHICH PROTECTS THE AREA FROM EROSION AND CHANNEL BLOCKAGE . (GEOTEXTILE MUST BE REMOVED).
5. THE GEOTEXTILE MUST BE DISPOSED OF APPROPRIATELY.
6. THE AREA CONTRIBUTING TO THE CHECK DAM SHALL NOT EXCEED 4 ACRES.

ADAPTED FROM DETAILS PROVIDED BY: ILLINOIS USDA-NRCS
ORIGINALLY DEVELOPED BY USDA-NRCS

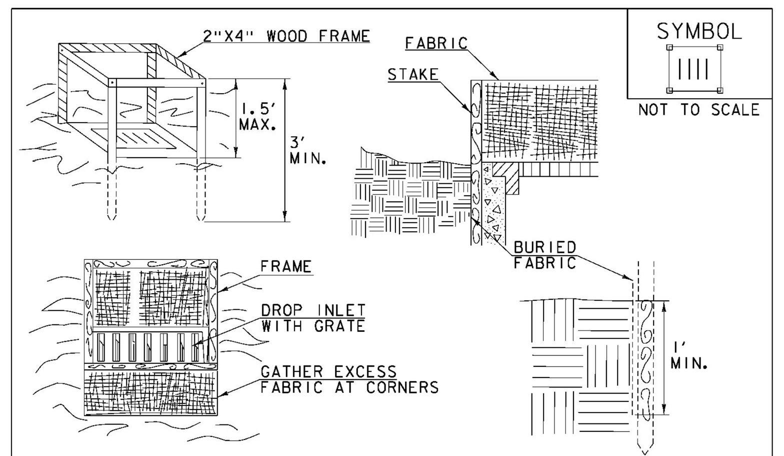
PIPE INLET PROTECTION

THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 653 FOR INLET PROTECTION DEVICE, TYPE I(PAY ITEM 653.40).

REVISIONS	
MARCH 6, 2008	WHF
JANUARY 13, 2009	WHF

SYMBOL

NOT TO SCALE



CONSTRUCTION SPECIFICATIONS

1. FILTER FABRIC SHALL HAVE AN APPARENT OPENING SIZE 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'.
4. SPACE STAKES EVENLY AROUND INLET 3' APART AND DRIVE A MINIMUM 18" DEEP. SPANS GREATER THAN 3' MAY BE BRIDGED WITH THE USE OF WIRE MESH BEHIND THE FILTER FABRIC FOR SUPPORT.
5. FABRIC SHALL BE EMBEDDED 1' 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.
7. 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

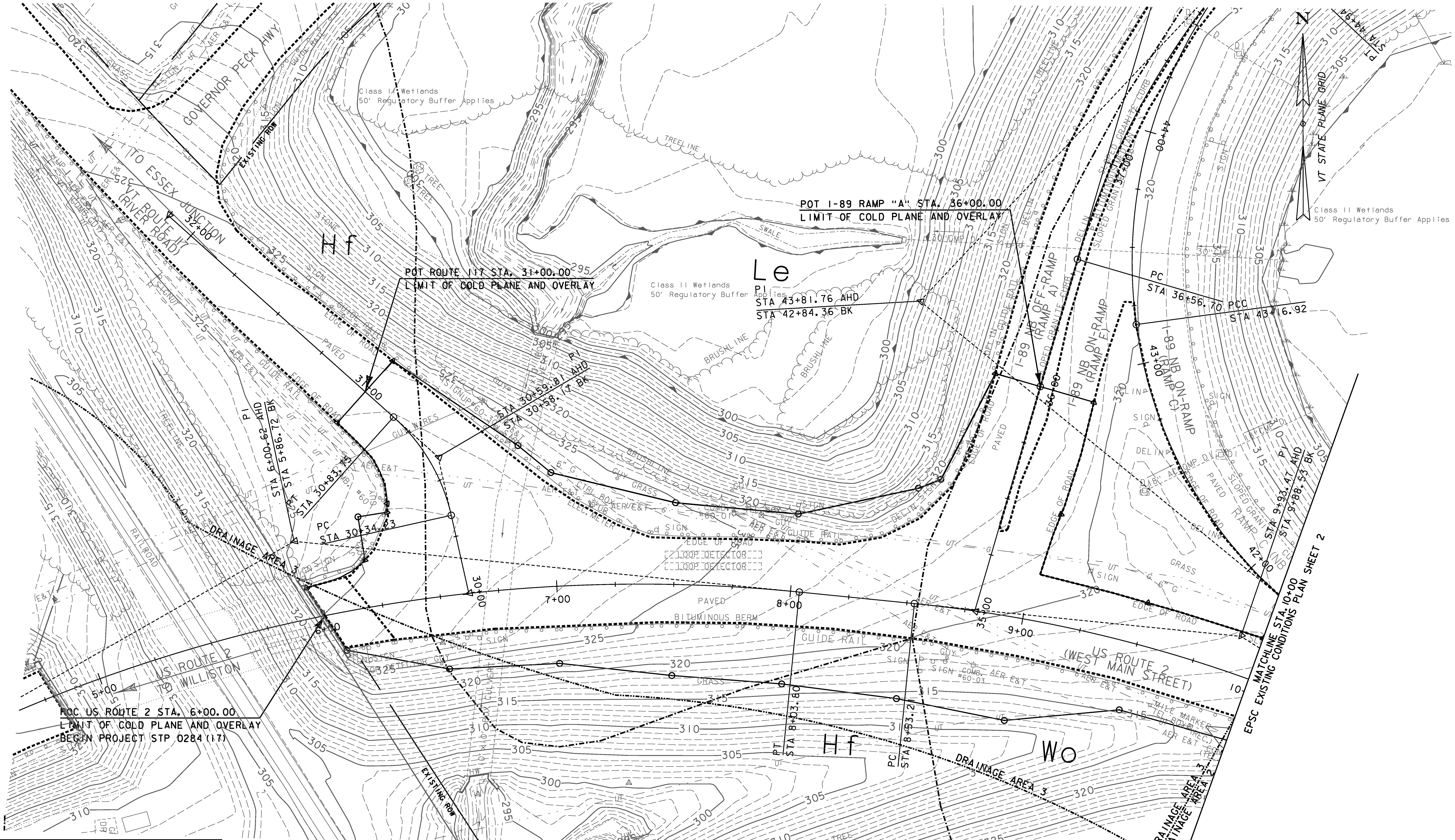
NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- "FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.

THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 653 FOR INLET PROTECTION DEVICE, TYPE I(PAY ITEM 653.40).

REVISIONS	
MARCH 7, 2008	WHF
JANUARY 13, 2009	WHF

PROJECT NAME: RICHMOND
PROJECT NUMBER: STP 0284 (17)/CMG PARK (31)

FILE NAME: z97c186ecdet.dgn
PROJECT LEADER: ERIK ATKINS
DESIGNED BY: T. BIGELOW
EPSC DETAILS SHEET 3
PLOT DATE: 4/29/2013
DRAWN BY: N. BOSAN
CHECKED BY: E. ATKINS



LEGEND

-·-·-·-·-	SOIL TYPE BOUNDARY
—300—	5' INTERVAL CONTOUR
- - - - -	1' INTERVAL CONTOUR
———	EXIST. PROPERTY/ROW LINE
—○—△—	LIMIT OF WORK

SOIL LEGEND

SOIL DESIGNATION	HYDROLOGIC SOIL GROUP CLASSIFICATION	SOIL ERODIBILITY COEFFICIENTS (K)
Hf = HADLEY VERY FINE SANDY LOAM	B	0.49
Le = LIMERICK SILT LOAM	C	0.49
Wo = WINOOSKI VERY FINE SANDY LOAM	B	0.49

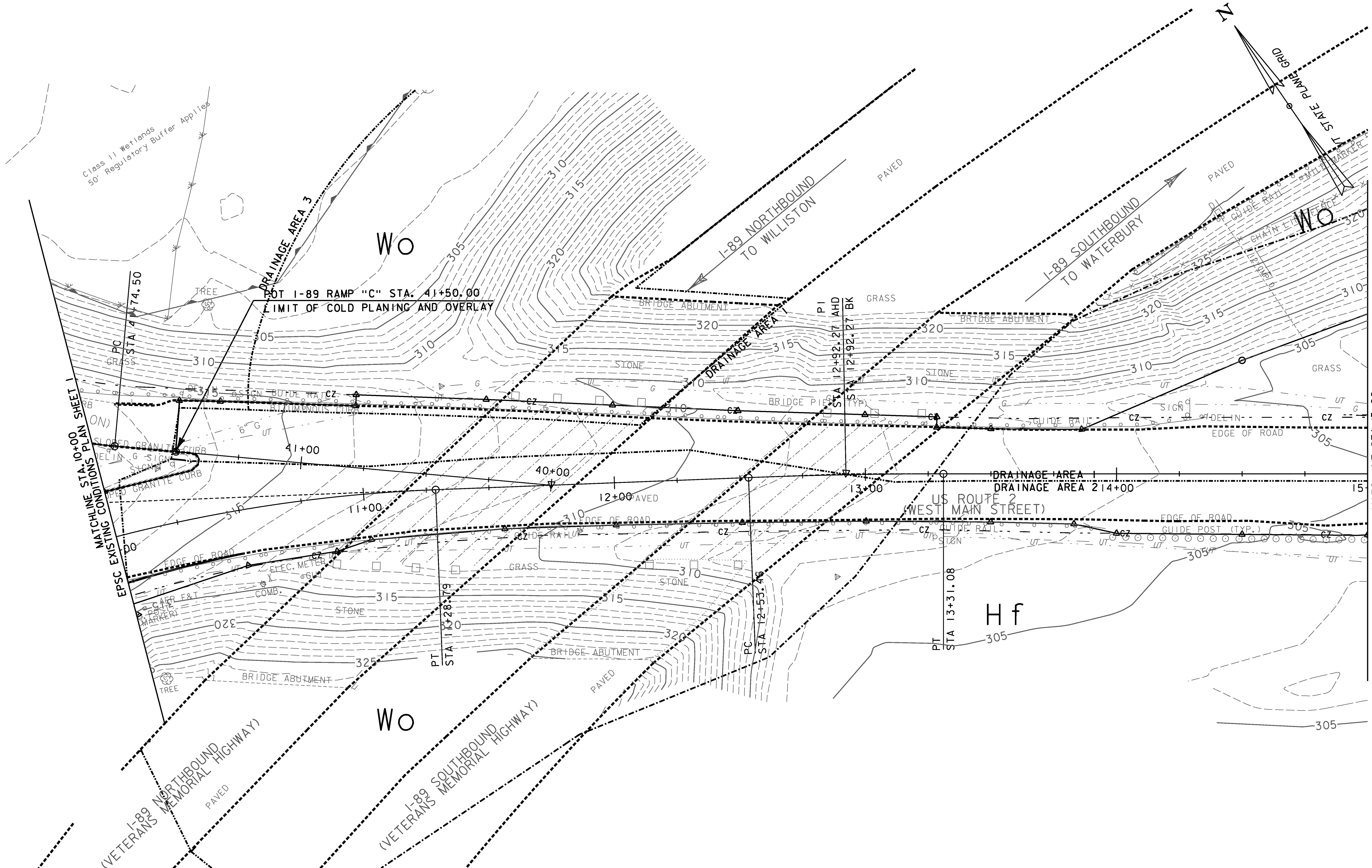
NOTES:

1. SEE EPSC DETAIL SHEETS FOR LEGEND OF SYMBOLS AND CONSTRUCTION DETAILS.
2. SEE THE EPSC NARRATIVE FOR ADDITIONAL REQUIREMENTS.
3. ALL SEDIMENT AND EROSION PREVENTION CONTROL MEASURES SHALL BE COMPLETED AND IN PLACE BEFORE THE BEGINNING OF WORK.
4. ALL DRIANAGE AREAS SHALL BE CONSIDERED APPROXIMATE.
5. DRAINAGE AREA 3 HAS BEEN DETERMINED BY STREAMSTATS.

0 20 40
SCALE IN FEET

PROJECT NAME: RICHMOND
PROJECT NUMBER: STP 0284 (17)

FILE NAME: z97c186ecxcbdr.dgn	PLOT DATE: 4/26/2013
PROJECT LEADER: ERIK ATKINS	DRAWN BY: N. BOSAN
DESIGNED BY: T. BIGELOW	CHECKED BY: E. ATKINS
EPSC EXISTING CONDITIONS PLAN SHEET 1	SHEET 13 OF 133



LEGEND

—·—·—·—	SOIL TYPE BOUNDARY
___300 —	5' INTERVAL CONTOUR
— — — —	1' INTERVAL CONTOUR
———	EXIST. PROPERTY/ROW LINE
⊙ △	LIMIT OF WORK

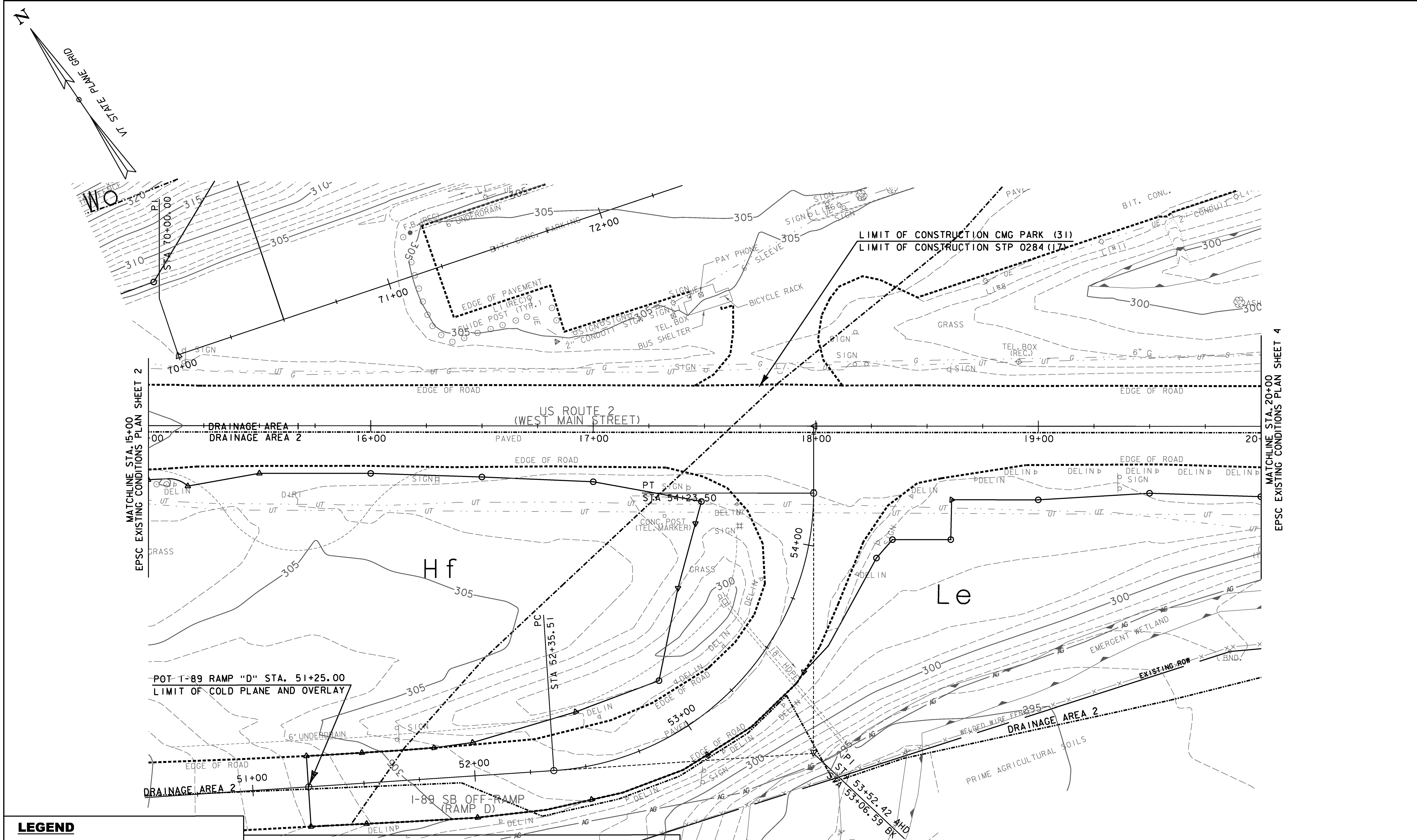
SOIL LEGEND

SOIL DESIGNATION	HYDROLOGIC SOIL GROUP CLASSIFICATION	SOIL ERODIBILITY COEFFICIENTS (K)
Hf = HADLEY VERY FINE SANDY LOAM	B	0.49
Le = LIMERICK SILT LOAM	C	0.49
Wo = WINOOSKI VERY FINE SANDY LOAM	B	0.49

0 20 40
SCALE IN FEET

PROJECT NAME: RICHMOND
PROJECT NUMBER: STP 0284 (17)

FILE NAME: z97c186ecxcbdr.dgn	PLOT DATE: 4/30/2013
PROJECT LEADER: ERIK ATKINS	DRAWN BY: N. BOSAN
DESIGNED BY: T. BIGELOW	CHECKED BY: E. ATKINS
EPSC EXISTING CONDITIONS PLAN SHEET 2	SHEET 14 OF 133



LEGEND

—·—·—·—	SOIL TYPE BOUNDARY
—300—	5' INTERVAL CONTOUR
– – – –	1' INTERVAL CONTOUR
———	EXIST. PROPERTY/ROW LINE
—○—△—	LIMIT OF WORK

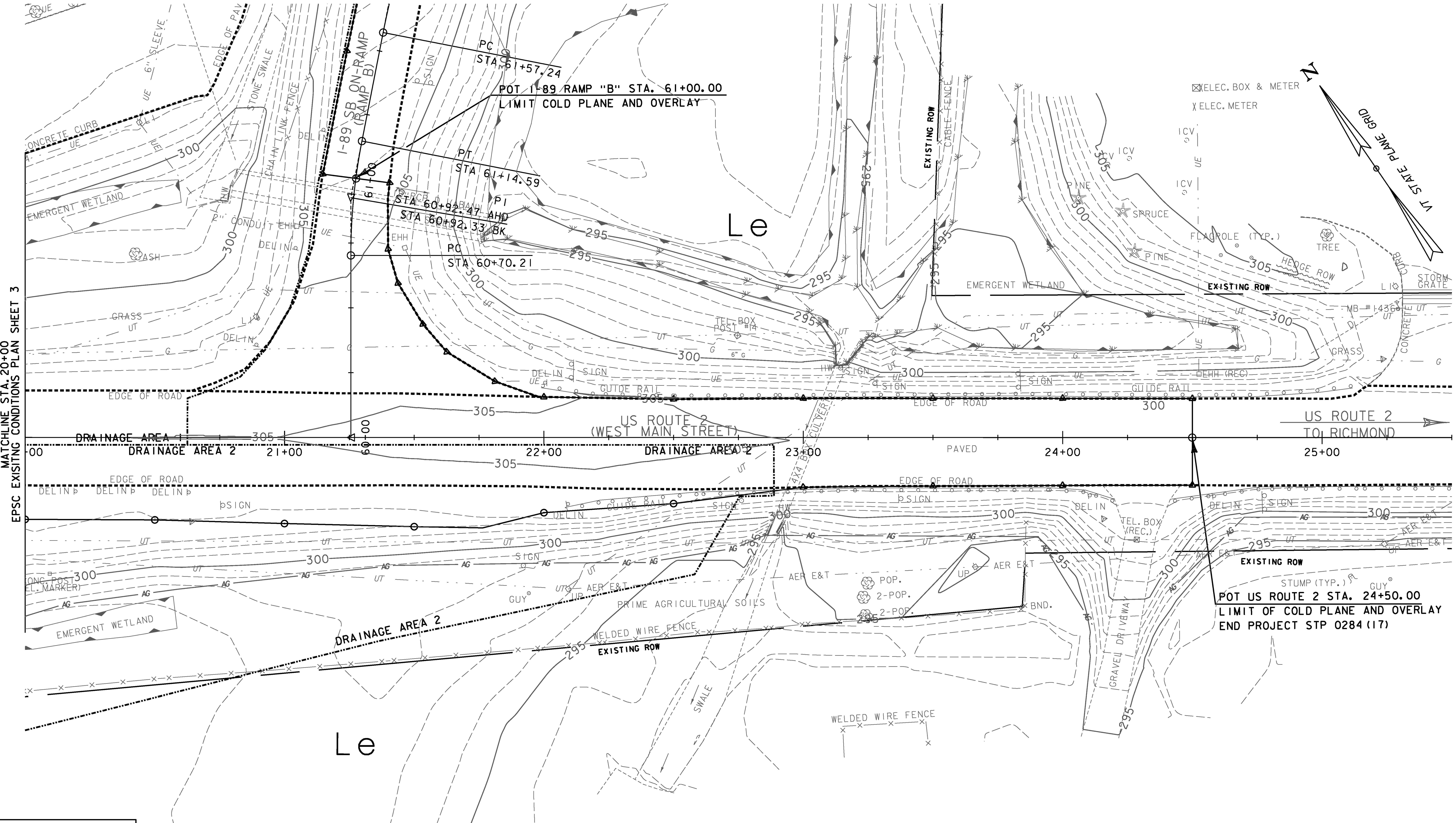
SOIL LEGEND

SOIL DESIGNATION	HYDROLOGIC SOIL GROUP CLASSIFICATION	SOIL ERODIBILITY COEFFICIENTS (K)
Hf = HADLEY VERY FINE SANDY LOAM	B	0.49
Le = LIMERICK SILT LOAM	C	0.49
Wo = WINOOSKI VERY FINE SANDY LOAM	B	0.49

0 20 40
SCALE IN FEET

PROJECT NAME: RICHMOND
PROJECT NUMBER: STP 0284 (17)

FILE NAME: z97c186ecxcbdr.dgn	PLOT DATE: 4/30/2013
PROJECT LEADER: ERIK ATKINS	DRAWN BY: N. BOSAN
DESIGNED BY: T. BIGELOW	CHECKED BY: E. ATKINS
EPSC EXISTING CONDITIONS PLAN SHEET 3	SHEET 15 OF 133



LEGEND

-·-·-·-·-	SOIL TYPE BOUNDARY
—300—	5' INTERVAL CONTOUR
- - - - -	1' INTERVAL CONTOUR
———	EXIST. PROPERTY/ROW LINE
—o—△—	LIMIT OF WORK

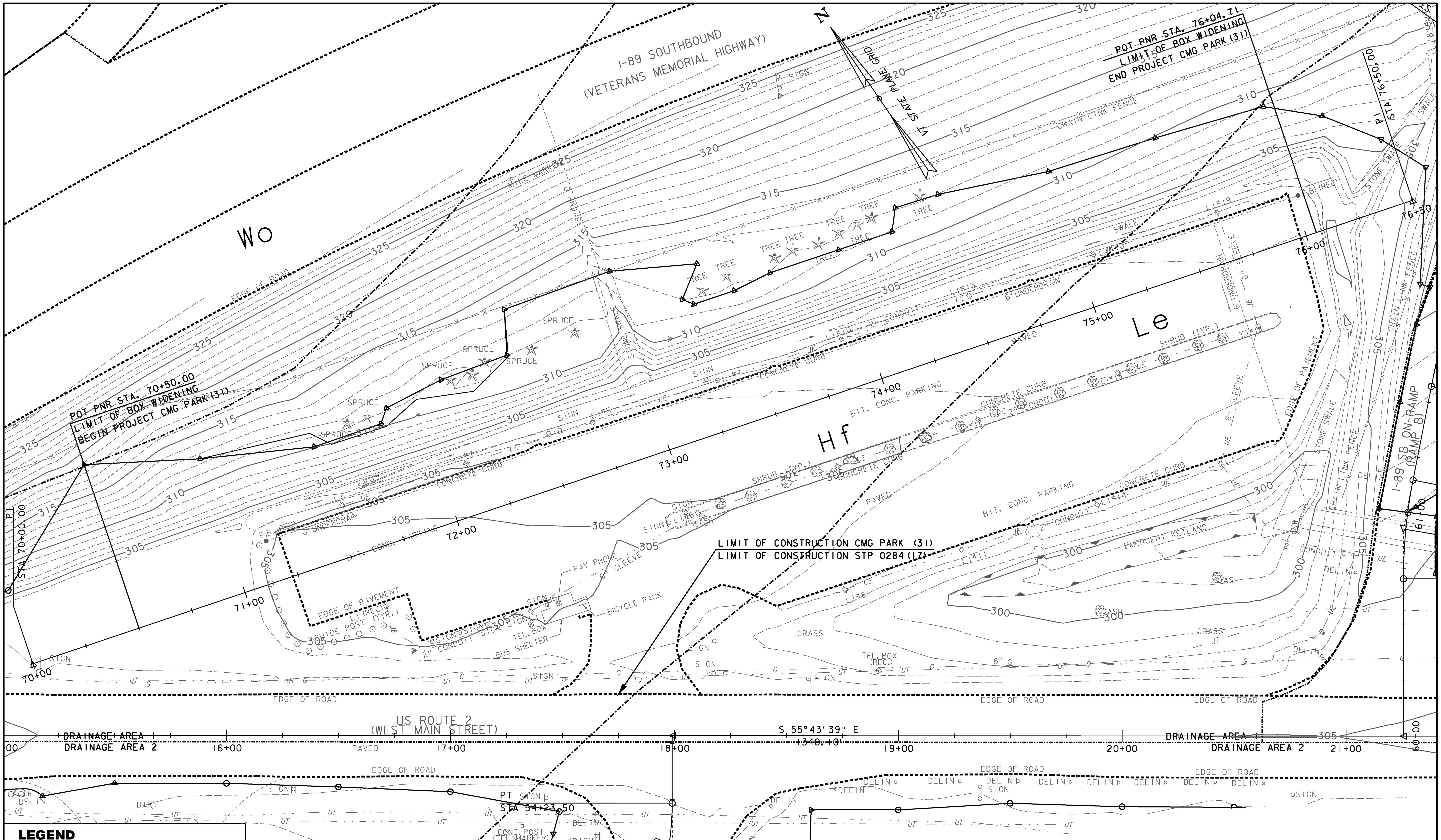
SOIL LEGEND

SOIL DESIGNATION	HYDROLOGIC SOIL GROUP CLASSIFICATION	SOIL ERODIBILITY COEFFICIENTS (K)
Hf = HADLEY VERY FINE SANDY LOAM	B	0.49
Le = LIMERICK SILT LOAM	C	0.49
Wo = WINOOSKI VERY FINE SANDY LOAM	B	0.49

0 20 40
SCALE IN FEET

PROJECT NAME: RICHMOND
PROJECT NUMBER: STP 0284 (17)

FILE NAME: z97c186ecxcbdr.dgn	PLOT DATE: 4/26/2013
PROJECT LEADER: ERIK ATKINS	DRAWN BY: N. BOSAN
DESIGNED BY: T. BIGELOW	CHECKED BY: E. ATKINS
EPSC EXISTING CONDITIONS PLAN SHEET 4	SHEET 16 OF 133



LEGEND

-·-·-·-·-	SOIL TYPE BOUNDARY
—300—	5' INTERVAL CONTOUR
- - - - -	1' INTERVAL CONTOUR
———	EXIST. PROPERTY/ROW LINE
—○—△—	LIMIT OF WORK

SOIL LEGEND

SOIL DESIGNATION	HYDROLOGIC SOIL GROUP CLASSIFICATION	SOIL ERODIBILITY COEFFICIENTS (K)
Hf = HADLEY VERY FINE SANDY LOAM	B	0.49
Le = LIMERICK SILT LOAM	C	0.49
Wo = WINOOSKI VERY FINE SANDY LOAM	B	0.49

0 20 40
SCALE IN FEET

PROJECT NAME: RICHMOND
PROJECT NUMBER: CMG PARK (31)

FILE NAME: z97c186ecxcbdr.dgn
PROJECT LEADER: ERIK ATKINS
DESIGNED BY: T. BIGELOW
EPSC EXISTING CONDITIONS PLAN SHEET 5

PLOT DATE: 4/26/2013
DRAWN BY: N. BOSAN
CHECKED BY: E. ATKINS
SHEET 17 OF 133

GEOTEXTILE FOR SILT FENCE, WOVEN WIRE REINFORCED
US RTE 2 6+00 RT - US RTE 2 8+25 RT
VT RTE 117 31+00 RT - I-89 RAMP "A" 36+00 LT

SEED
US RTE 2 6+00 RT - US RTE 2 10+00 RT
VT RTE 117 31+00 RT - I-89 RAMP "A" 36+00 LT

~~SEED, WINTER RYE~~
~~US RTE 2 6+00 RT - US RTE 2 10+00 RT~~
~~VT RTE 117 31+00 RT - I-89 RAMP "A" 36+00 LT~~

HAY MULCH
US RTE 2 6+00 RT - US RTE 2 10+00 RT
VT RTE 117 31+00 RT - I-89 RAMP "A" 36+00 LT

TOP SOIL
US RTE 2 6+00 RT - US RTE 2 10+00 RT
VT RTE 117 31+00 RT - I-89 RAMP "A" 36+00 LT

TEMPORARY EROSION MATTING
US RTE 2 7+50 LT - I-89 RAMP "A" 36+00 LT

TEMPORARY ~~PERMANENT~~ EROSION MATTING
US RTE 2 7+75 - US RTE 2 8+25

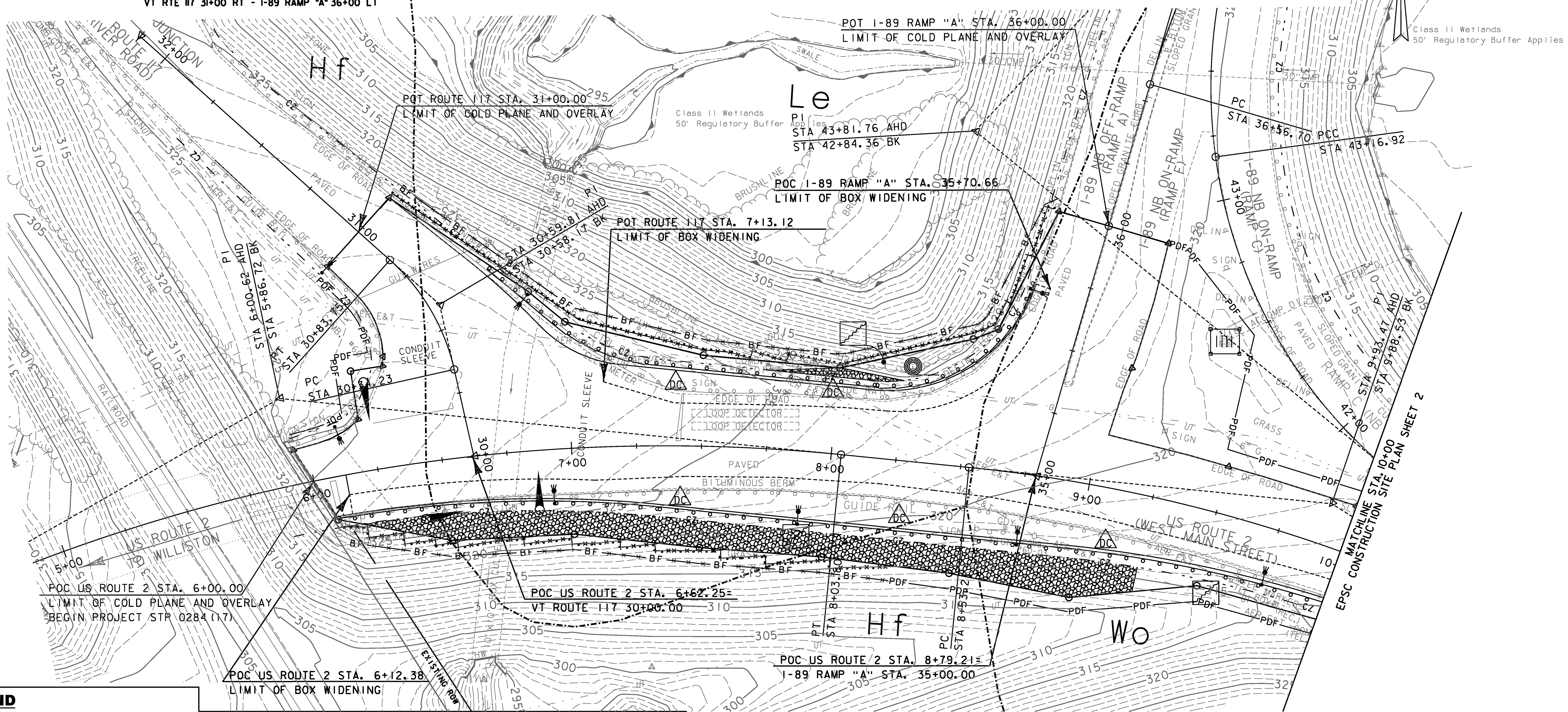
INLET PROTECTION DEVICE, TYPE I (STAKED FABRIC)
US RTE 2 9+38 LT

BARRIER FENCE
US RTE 2 6+00 RT - US RTE 2 8+25 RT
VT RTE 117 31+00 RT - I-89 RAMP "A" 36+00 LT

PROJECT DEMARCATION FENCE
US RTE 2 6+00 LT - VT RTE 117 31+00 LT
US RTE 2 8+25 RT - US RTE 2 10+00 RT
I-89 RAMP "A" 36+00 RT - US RTE 2 10+00 LT

NOTES:

1. SEE EPSC DETAIL SHEETS FOR CONSTRUCTION DETAILS.
2. ALL AREAS OF DISTURBANCE MUST HAVE TEMPORARY OR FINAL STABILIZATION WITHIN 7 DAYS OF THE INITIAL DISTURBANCE. AFTER THIS TIME, ANY DISTURBANCE IN THE AREA MUST BE STABILIZED AT THE END OF EACH WORK DAY. THE FOLLOWING EXCEPTIONS APPLY:
   i) STABILIZATION IS NOT REQUIRED IF WORK IS TO CONTINUE IN THE AREA WITHIN THE NEXT 24 HOURS AND THERE IS NO PRECIPITATION FORCAST FOR THE NEXT 24 HOURS.
   ii) STABILIZATION IS NOT REQUIRED IF THE WORK IS OCCURRING IN A SELF CONTAINED EXCAVATION WITH A DEPTH OF 2 FEET OR GREATER.
3. THE CONTRACTOR SHALL LIMIT CONCURRENT EARTH DISTURBANCE TO 2 ACRES OR LESS AT ANY ONE TIME.
4. THE CONTRACTOR SHALL MINIMIZE ANY SOIL DISTURBANCES BETWEEN OCTOBER 15 THROUGH APRIL 15, TO ASSURE A VIGOROUS CATCH OF VEGETATIVE COVER. SEEDING AND MULCHING SHALL BE COMPLETED BY SEPTEMBER 15 TO THE EXTENT POSSIBLE, OR AS DIRECTED BY THE ENGINEER.
5. THE ON-SITE PLAN COORDINATOR SHALL INSPECT ALL EROSION AND SEDIMENT CONTROL STRUCTURES AND MEASURES AT LEAST ONCE EVERY SEVEN (7) CALENDAR DAYS AND AS SOON AS POSSIBLE BUT NOT MORE THAN 24 HOURS AFTER ANY STORM EVENT. INSPECTION FREQUENCY MAY BE REDUCED TO LESS THAN ONE (1) PER MONTH IF THE ENTIRE SITE IS STABILIZED.



LEGEND

— · — · —	SOIL TYPE BOUNDARY
—300—	5' INTERVAL PROPOSED CONTOUR
— — —	1' INTERVAL PROPOSED CONTOUR
—300—	5' INTERVAL EXISTING CONTOUR
— — —	1' INTERVAL EXISTING CONTOUR
———	EXIST. PROPERTY/ROW LINE
—o—△	LIMIT OF WORK (LIMIT OF DISTURBANCE)
	SURFACE ROUGHENING
	SILT FENCE
	SILT FENCE WOVEN WIRE
	ROLLED EROSION CONTROL PRODUCT, DITCH/SIDESLOPE
	STABILIZED CONSTRUCTION ENTRANCE (SEE TRAFFIC MANAGEMENT PLANS)
	PIPE INLET PROTECTION
	FILTER FABRIC DROP INLET PROTECTION
-BF-	BF- BARRIER FENCE
-PDF-	PDF- PROJECT DEMARCATION FENCE
DC	DUST CONTROL

6. THE CONTRACTOR SHALL IMMEDIATELY ROUGHEN ALL DISTURBED SOIL SURFACES TO THE SATISFACTION OF THE ENGINEER BY THE USE OF TRACK DRIVEN BULLDOZERS, SHEEPSFOOT ROLLERS OR OTHER APPROVED METHODS.
7. THE CONTRACTOR SHALL APPLY DUST CONTROL MEASURES OVER EXPOSED SURFACES NOT INTENDED TO BE VEGETATED.
8. THE CONTRACTOR SHALL INSTALL PERMANENT EROSION CONTROL MEASURES (I.E. CHECKDAMS, EROSION MATTING, STONE FILL FOR SLOPES AND DITCHES) IMMEDIATELY UPON COMPLETION OF GRADING.
9. THE LOCATIONS OF THE VEHICLE TRACKING PADS (SEE TRAFFIC MANAGEMENT PLANS) ARE SUGGESTED ONLY. THE CONTRACTOR SHALL DETERMINE ACTUAL LOCATIONS OF VEHICLE TRACKING PADS NEEDED TO PERFORM THE WORK.
10. SEE TRAFFIC MANAGEMENT PLANS FOR PROJECT PHASING AND THE LOCATION OF ALL STAGING AREAS.
11. SEE THE EPSC NARRATIVE FOR ADDITIONAL REQUIREMENTS.

0 20 40
SCALE IN FEET

PROJECT NAME: RICHMOND
PROJECT NUMBER: STP 0284 (17)

FILE NAME: z97c186eccsbdr.dgn
PROJECT LEADER: ERIK ATKINS
DESIGNED BY: T.BIGELOW
EPSC CONSTRUCTION SITE PLAN SHEET 1

PLOT DATE: 4/29/2013
DRAWN BY: A.ACHARYA
CHECKED BY: E.ATKINS
SHEET 18 OF 133

SEED
US RTE 2 10+00 RT - 10+48 RT
US RTE 2 13+83 RT - 15+00 RT
US RTE 2 14+09 LT - 15+00 RT

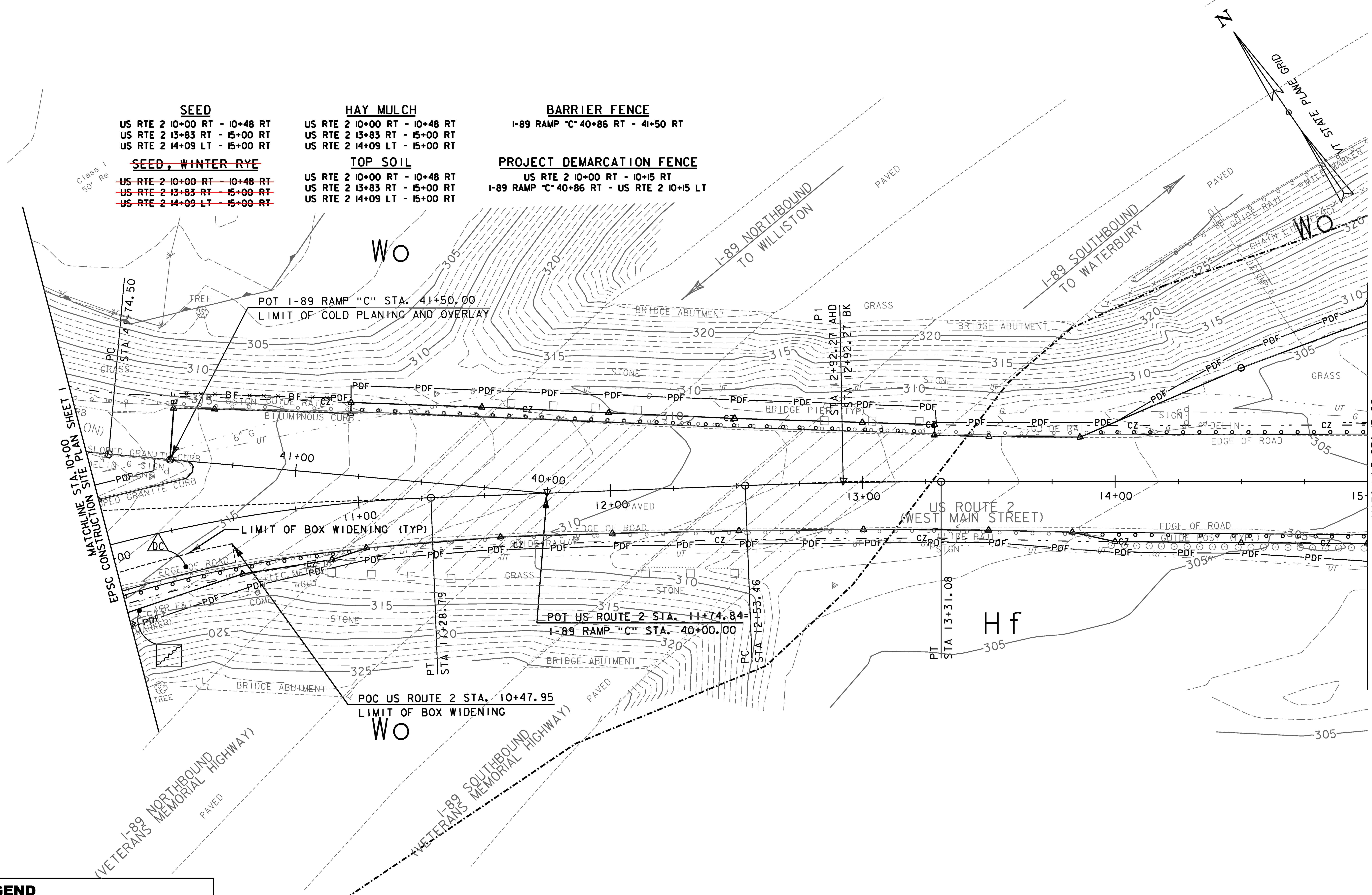
~~SEED, WINTER RYE~~
~~US RTE 2 10+00 RT - 10+48 RT~~
~~US RTE 2 13+83 RT - 15+00 RT~~
~~US RTE 2 14+09 LT - 15+00 RT~~

HAY MULCH
US RTE 2 10+00 RT - 10+48 RT
US RTE 2 13+83 RT - 15+00 RT
US RTE 2 14+09 LT - 15+00 RT

TOP SOIL
US RTE 2 10+00 RT - 10+48 RT
US RTE 2 13+83 RT - 15+00 RT
US RTE 2 14+09 LT - 15+00 RT

BARRIER FENCE
I-89 RAMP "C" 40+86 RT - 41+50 RT

PROJECT DEMARCATION FENCE
US RTE 2 10+00 RT - 10+15 RT
I-89 RAMP "C" 40+86 RT - US RTE 2 10+15 LT



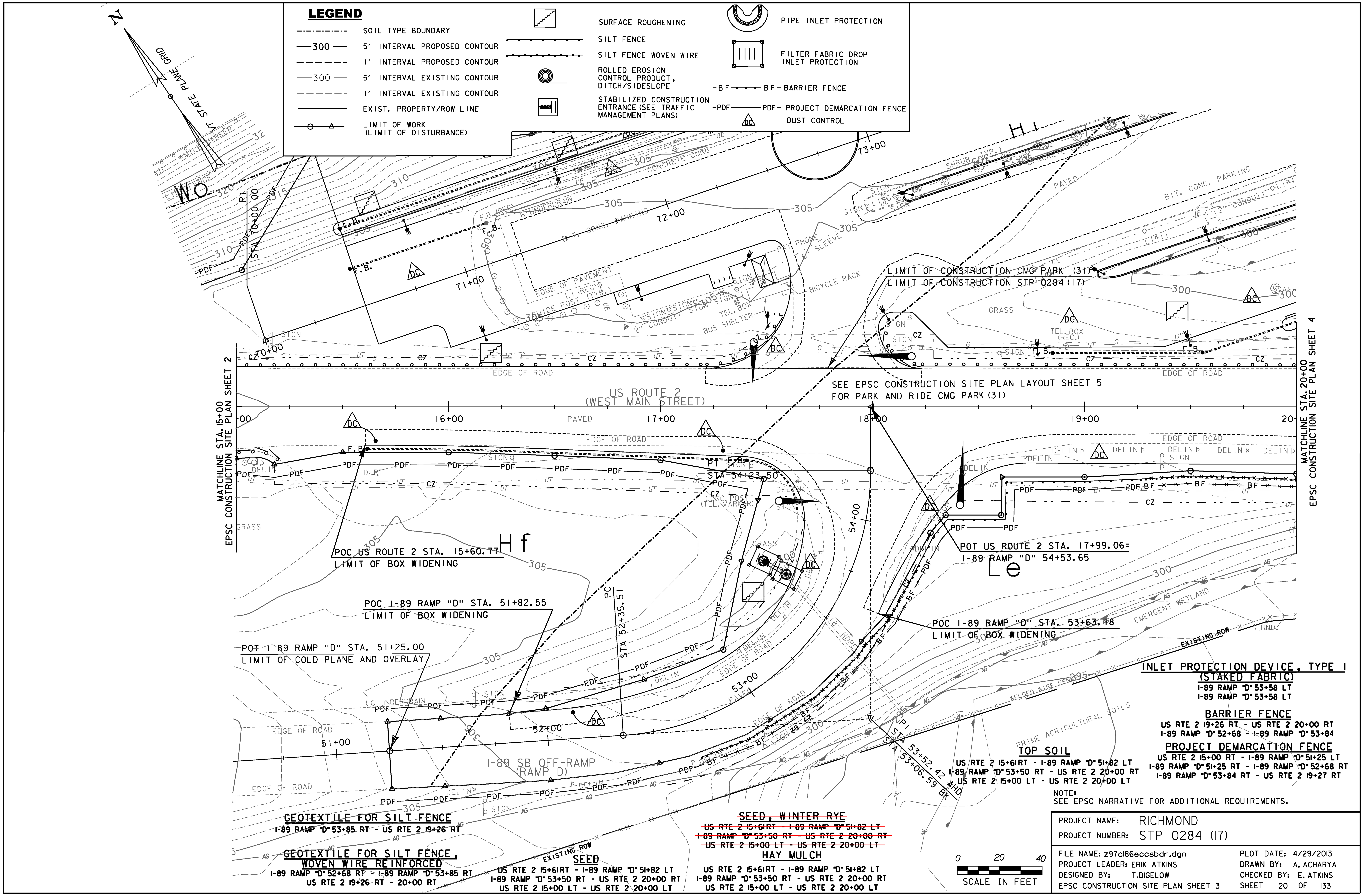
LEGEND

Symbol	Description
- · - · - · -	SOIL TYPE BOUNDARY
—300—	5' INTERVAL PROPOSED CONTOUR
- - - - -	1' INTERVAL PROPOSED CONTOUR
—300—	5' INTERVAL EXISTING CONTOUR
- - - - -	1' INTERVAL EXISTING CONTOUR
———	EXIST. PROPERTY/ROW LINE
—o—△—	LIMIT OF WORK (LIMIT OF DISTURBANCE)
	SURFACE ROUGHENING
	SILT FENCE
	SILT FENCE WOVEN WIRE
	ROLLED EROSION CONTROL PRODUCT, DITCH/SIDESLOPE
	STABILIZED CONSTRUCTION ENTRANCE (SEE TRAFFIC MANAGEMENT PLANS)
	PIPE INLET PROTECTION
	FILTER FABRIC DROP INLET PROTECTION
-BF———BF-	BARRIER FENCE
-PDF———PDF-	PROJECT DEMARCATION FENCE
DC	DUST CONTROL

NOTE:
SEE EPSC NARRATIVE FOR ADDITIONAL REQUIREMENTS.

0 20 40
SCALE IN FEET

PROJECT NAME:	RICHMOND
PROJECT NUMBER:	STP 0284 (17)
FILE NAME: z97c186eccsbdr.dgn	PLOT DATE: 4/29/2013
PROJECT LEADER: ERIK ATKINS	DRAWN BY: A. ACHARYA
DESIGNED BY: T. BIGELOW	CHECKED BY: E. ATKINS
EPSC CONSTRUCTION SITE PLAN SHEET 2	SHEET 19 OF 133



LEGEND

- SOIL TYPE BOUNDARY
- 5' INTERVAL PROPOSED CONTOUR
- 1' INTERVAL PROPOSED CONTOUR
- 5' INTERVAL EXISTING CONTOUR
- 1' INTERVAL EXISTING CONTOUR
- EXIST. PROPERTY/ROW LINE
- LIMIT OF WORK (LIMIT OF DISTURBANCE)
- SURFACE ROUGHENING
- SILT FENCE
- SILT FENCE WOVEN WIRE
- ROLLED EROSION CONTROL PRODUCT, DITCH/SIDESLOPE
- STABILIZED CONSTRUCTION ENTRANCE (SEE TRAFFIC MANAGEMENT PLANS)
- PIPE INLET PROTECTION
- FILTER FABRIC DROP INLET PROTECTION
- -BF- BARRIER FENCE
- -PDF- PROJECT DEMARCATION FENCE
- DUST CONTROL

GEOTEXTILE FOR SILT FENCE
I-89 RAMP "D" 53+85 RT - US RTE 2 19+26 RT

GEOTEXTILE FOR SILT FENCE, WOVEN WIRE REINFORCED
I-89 RAMP "D" 52+68 RT - I-89 RAMP "D" 53+85 RT
US RTE 2 19+26 RT - 20+00 RT

SEED
US RTE 2 15+61RT - I-89 RAMP "D" 51+82 LT
I-89 RAMP "D" 53+50 RT - US RTE 2 20+00 RT
US RTE 2 15+00 LT - US RTE 2 20+00 LT

~~**SEED, WINTER RYE**~~
~~US RTE 2 15+61RT - I-89 RAMP "D" 51+82 LT~~
~~I-89 RAMP "D" 53+50 RT - US RTE 2 20+00 RT~~
~~US RTE 2 15+00 LT - US RTE 2 20+00 LT~~

HAY MULCH
US RTE 2 15+61RT - I-89 RAMP "D" 51+82 LT
I-89 RAMP "D" 53+50 RT - US RTE 2 20+00 RT
US RTE 2 15+00 LT - US RTE 2 20+00 LT

TOP SOIL
US RTE 2 15+61RT - I-89 RAMP "D" 51+82 LT
I-89 RAMP "D" 53+50 RT - US RTE 2 20+00 RT
US RTE 2 15+00 LT - US RTE 2 20+00 LT

INLET PROTECTION DEVICE, TYPE I (STAKED FABRIC)
I-89 RAMP "D" 53+58 LT
I-89 RAMP "D" 53+58 LT

BARRIER FENCE
US RTE 2 19+26 RT - US RTE 2 20+00 RT
I-89 RAMP "D" 52+68 - I-89 RAMP "D" 53+84

PROJECT DEMARCATION FENCE
US RTE 2 15+00 RT - I-89 RAMP "D" 51+25 LT
I-89 RAMP "D" 51+25 RT - I-89 RAMP "D" 52+68 RT
I-89 RAMP "D" 53+84 RT - US RTE 2 19+27 RT

NOTE:
SEE EPSC NARRATIVE FOR ADDITIONAL REQUIREMENTS.

0 20 40
SCALE IN FEET

PROJECT NAME: RICHMOND	
PROJECT NUMBER: STP 0284 (17)	
FILE NAME: z97c186eccsbdr.dgn	PLOT DATE: 4/29/2013
PROJECT LEADER: ERIK ATKINS	DRAWN BY: A. ACHARYA
DESIGNED BY: T.BIGELOW	CHECKED BY: E. ATKINS
EPSC CONSTRUCTION SITE PLAN SHEET 3	SHEET 20 OF 133

GEOTEXTILE FOR SILT FENCE, WOVEN WIRE REINFORCED
US RTE 2 20+00 RT - 21+05 RT

SEED
US RTE 2 20+00 RT - 22+89 RT

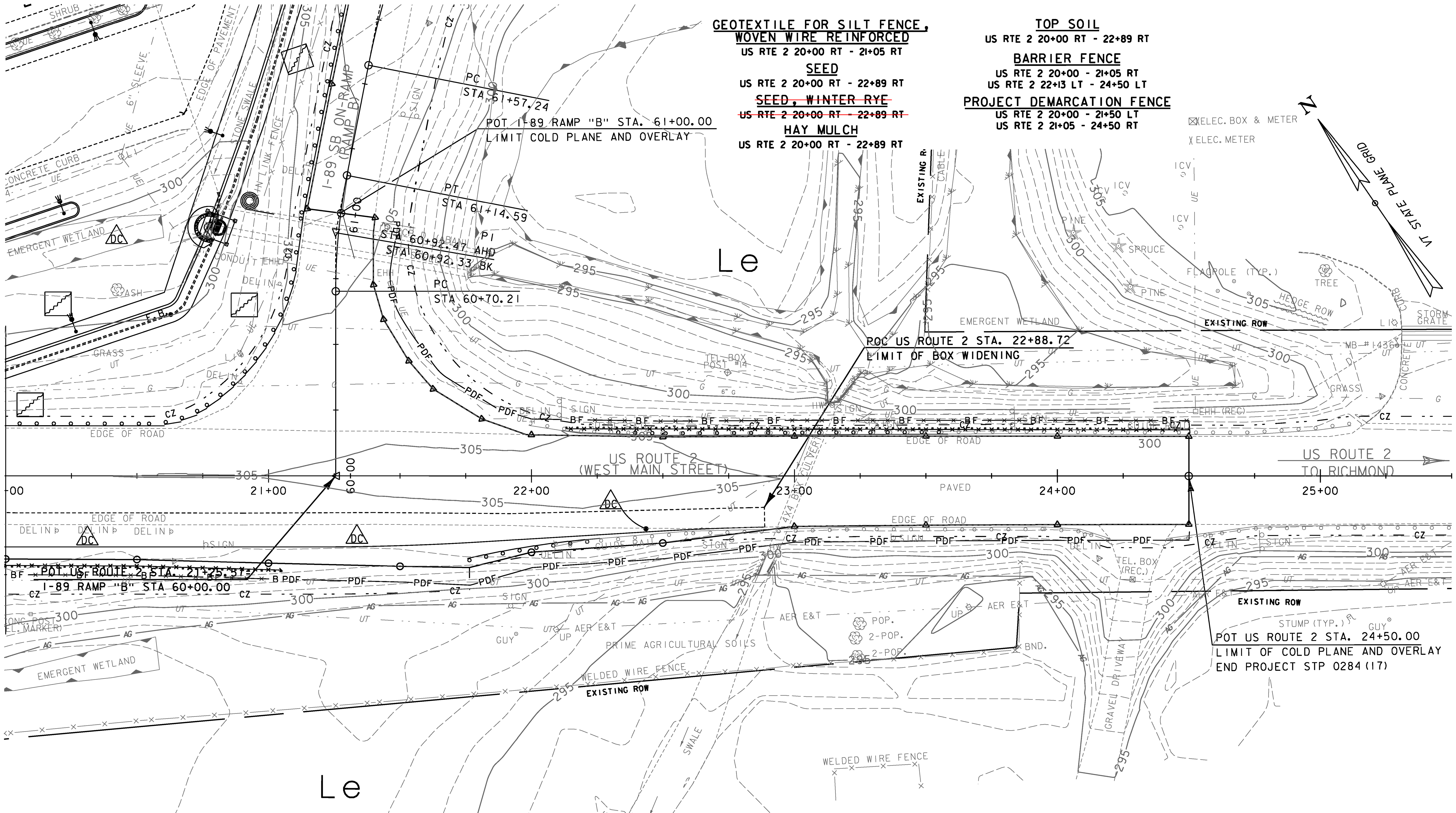
~~SEED, WINTER RYE~~
~~US RTE 2 20+00 RT - 22+89 RT~~

HAY MULCH
US RTE 2 20+00 RT - 22+89 RT

TOP SOIL
US RTE 2 20+00 RT - 22+89 RT

BARRIER FENCE
US RTE 2 20+00 - 21+05 RT
US RTE 2 22+13 LT - 24+50 LT

PROJECT DEMARCATION FENCE
US RTE 2 20+00 - 21+50 LT
US RTE 2 21+05 - 24+50 RT



LEGEND

Symbol	Description
-·-·-·-	SOIL TYPE BOUNDARY
—300—	5' INTERVAL PROPOSED CONTOUR
------	1' INTERVAL PROPOSED CONTOUR
—300—	5' INTERVAL EXISTING CONTOUR
------	1' INTERVAL EXISTING CONTOUR
——	EXIST. PROPERTY/ROW LINE
—o—△—	LIMIT OF WORK (LIMIT OF DISTURBANCE)
	SURFACE ROUGHENING
	SILT FENCE
	SILT FENCE WOVEN WIRE
	ROLLED EROSION CONTROL PRODUCT, DITCH/SIDESLOPE
	STABILIZED CONSTRUCTION ENTRANCE (SEE TRAFFIC MANAGEMENT PLANS)
	PIPE INLET PROTECTION
	FILTER FABRIC DROP INLET PROTECTION
-BF——BF-	BARRIER FENCE
-PDF——PDF-	PROJECT DEMARCATION FENCE
DC	DUST CONTROL

NOTE:
SEE EPSC NARRATIVE FOR ADDITIONAL REQUIREMENTS.

0 20 40
SCALE IN FEET

PROJECT NAME: RICHMOND
PROJECT NUMBER: STP 0284 (17)

FILE NAME: z97cl86eccsbdr.dgn	PLOT DATE: 4/29/2013
PROJECT LEADER: ERIK ATKINS	DRAWN BY: A. ACHARYA
DESIGNED BY: T.BIGELOW	CHECKED BY: E. ATKINS
EPSC CONSTRUCTION SITE PLAN SHEET 4	SHEET 21 OF 133

SEED, WINTER RYE
PNR 70+05 - 72+70 LT
PNR 74+48 - 76+25 LT
PNR 75+57 - 76+15 LT
PNR 70+50 - 72+19 LT
PNR 73+12 - 74+92 RT

SEED
PNR 70+00 LT - 76+46 LT
PNR 70+00 RT - 76+46 RT

SEED, WINTER RYE
~~PNR 70+00 LT - 76+46 LT~~
~~PNR 70+00 RT - 76+46 RT~~

HAY MULCH
PNR 70+00 LT - 76+46 LT
PNR 70+00 RT - 76+46 RT

TOP SOIL
PNR 70+00 LT - 76+46 LT
PNR 70+00 RT - 76+46 RT

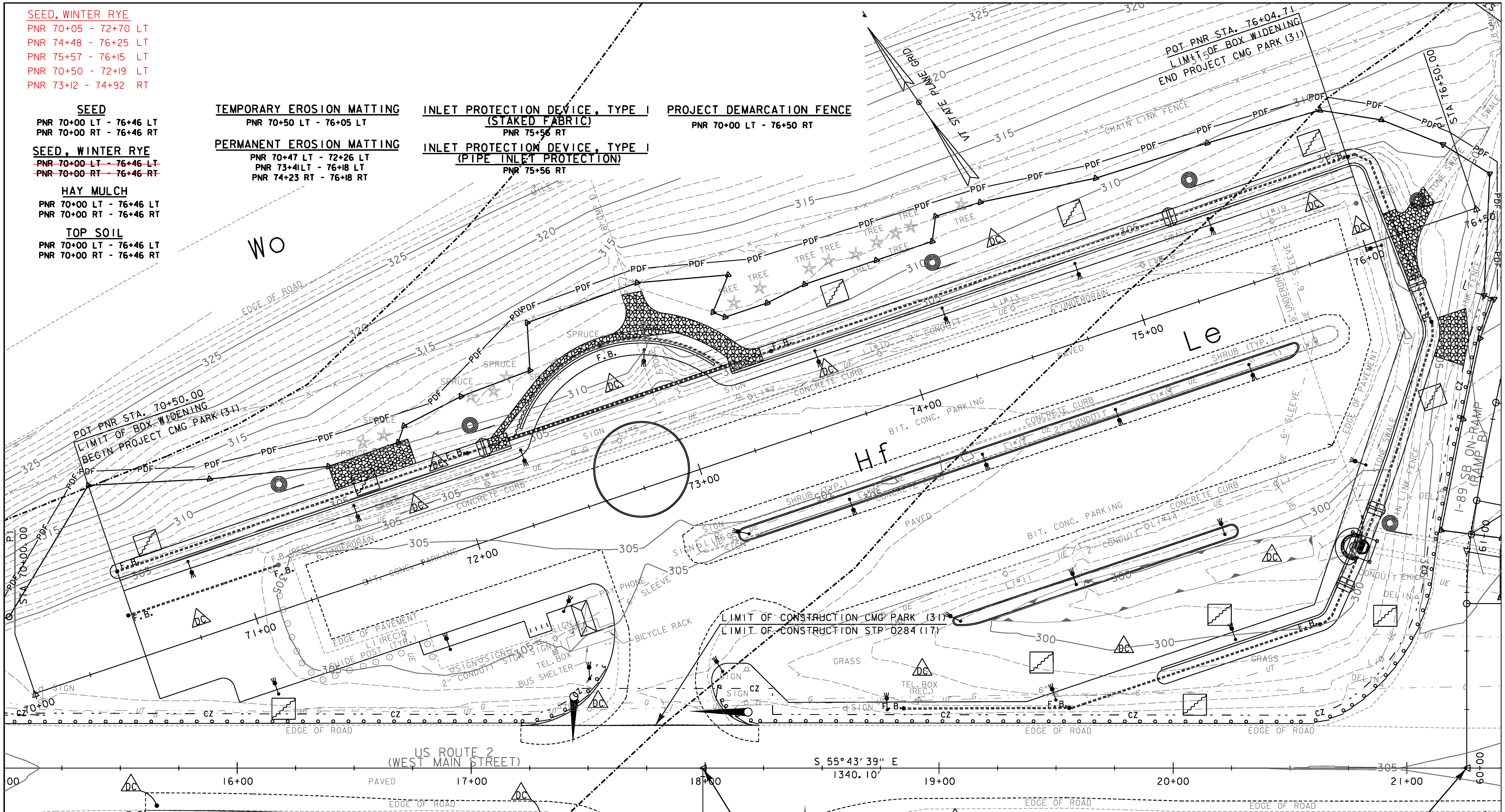
TEMPORARY EROSION MATTING
PNR 70+50 LT - 76+05 LT

PERMANENT EROSION MATTING
PNR 70+47 LT - 72+26 LT
PNR 73+41LT - 76+18 LT
PNR 74+23 RT - 76+18 RT

INLET PROTECTION DEVICE, TYPE I (STAKED FABRIC)
PNR 75+56 RT

INLET PROTECTION DEVICE, TYPE I (PIPE INLET PROTECTION)
PNR 75+56 RT

PROJECT DEMARCATION FENCE
PNR 70+00 LT - 76+50 RT



LEGEND

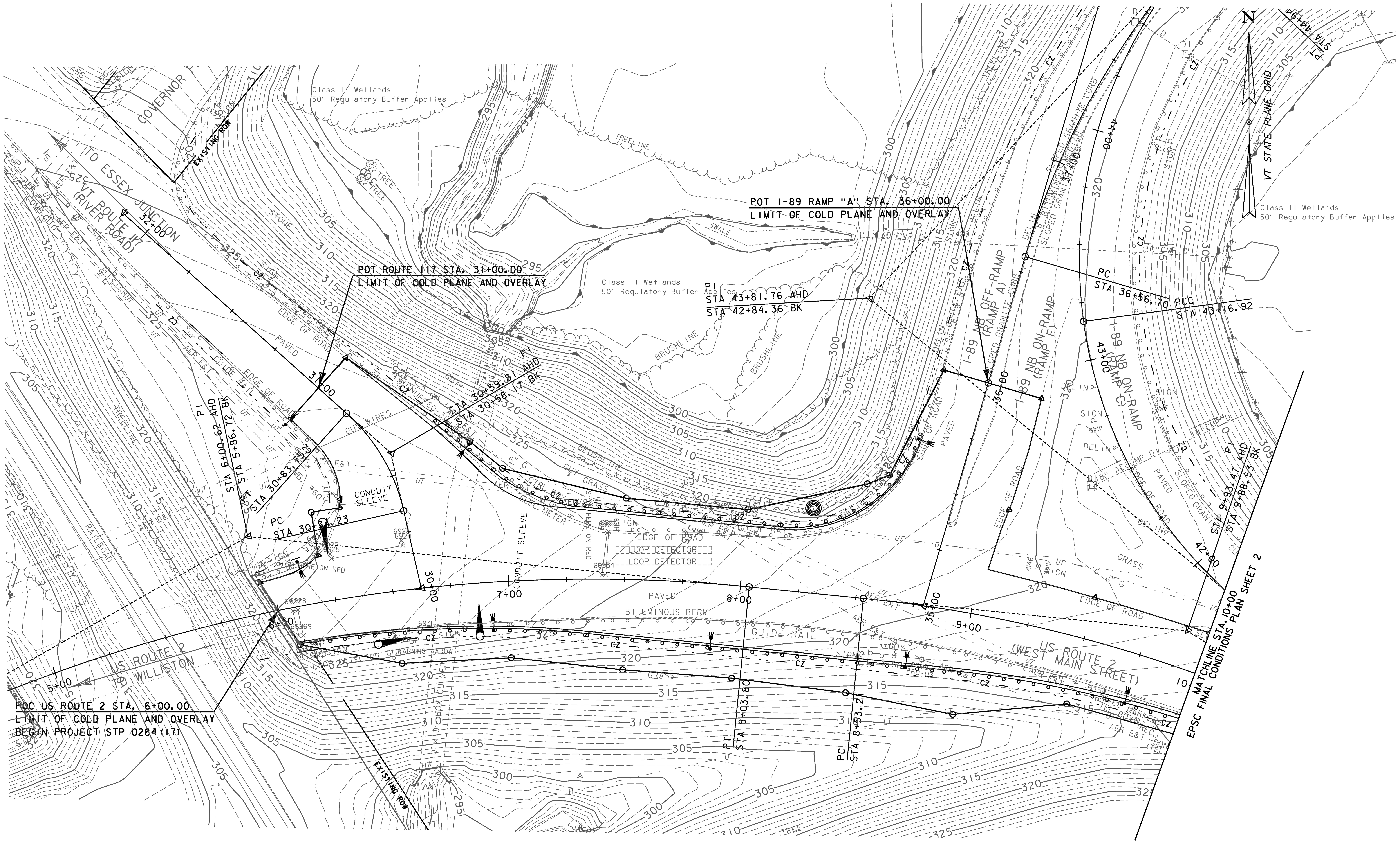
SOIL TYPE BOUNDARY	SURFACE ROUGHENING
5' INTERVAL PROPOSED CONTOUR	SILT FENCE
1' INTERVAL PROPOSED CONTOUR	SILT FENCE WOVEN WIRE
5' INTERVAL EXISTING CONTOUR	ROLLED EROSION CONTROL PRODUCT, DITCH/SIDESLOPE
1' INTERVAL EXISTING CONTOUR	STABILIZED CONSTRUCTION ENTRANCE (SEE TRAFFIC MANAGEMENT PLANS)
EXIST. PROPERTY/ROW LINE	PIPE INLET PROTECTION
LIMIT OF WORK (LIMIT OF DISTURBANCE)	FILTER FABRIC DROP INLET PROTECTION
	-BF- BARRIER FENCE
	-PDF- PROJECT DEMARCATION FENCE
	DC DUST CONTROL

NOTE:
SEE EPSC NARRATIVE FOR ADDITIONAL REQUIREMENTS.

0 20 40
SCALE IN FEET

PROJECT NAME: RICHMOND
PROJECT NUMBER: CMG PARK (31)

FILE NAME: z97c186eccsbdr.dgn
PROJECT LEADER: ERIK ATKINS
DESIGNED BY: T.BIGELOW
EPSC CONSTRUCTION SITE PLAN SHEET 5
PLOT DATE: 4/29/2013
DRAWN BY: A. ACHARYA
CHECKED BY: E. ATKINS
SHEET 22 OF 133

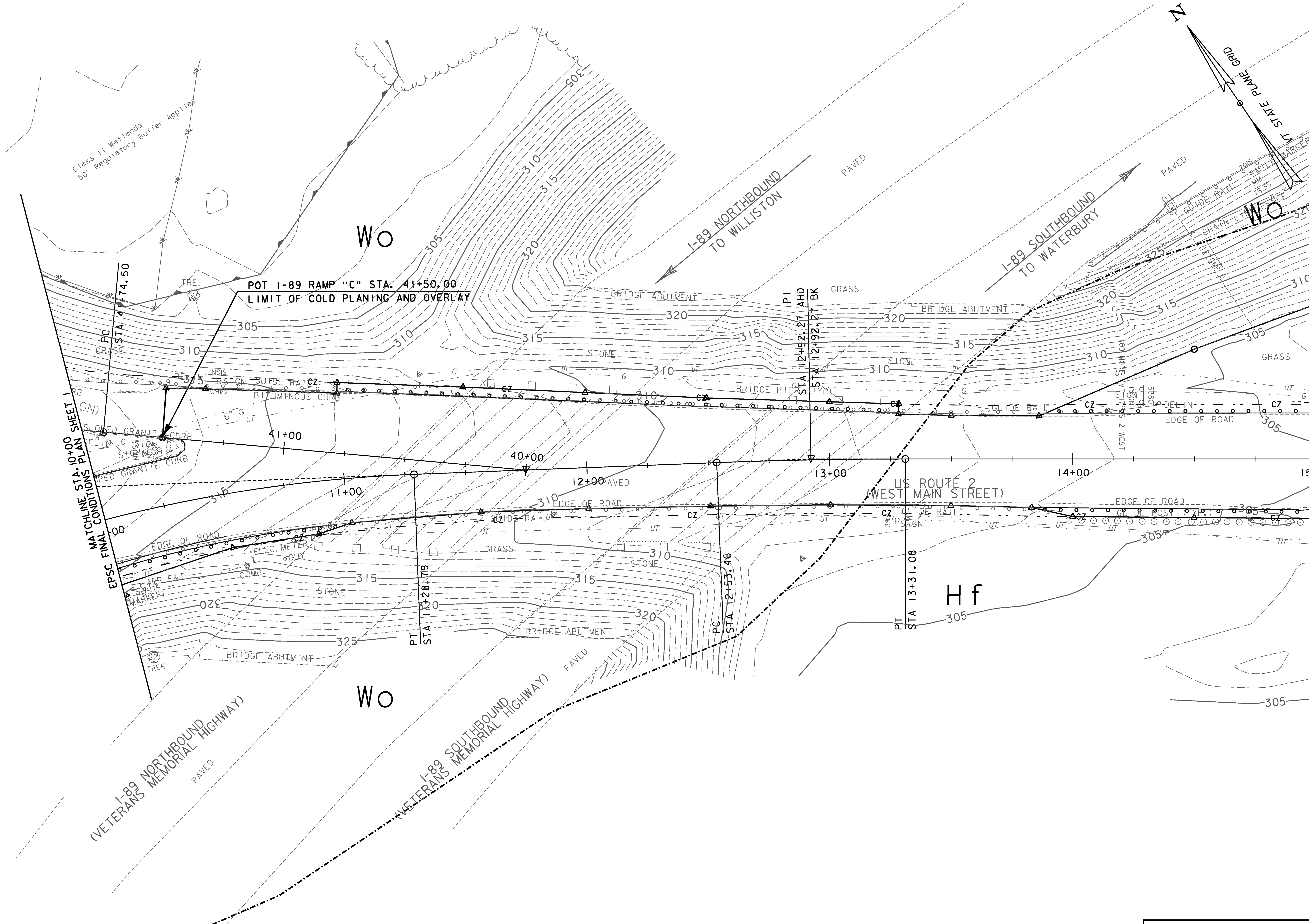


0 20 40

SCALE IN FEET

NOTE:
SEE CROSS SECTIONS AND PARTIAL GRADING PLAN FOR ADDITIONAL PROPOSED GRADING.

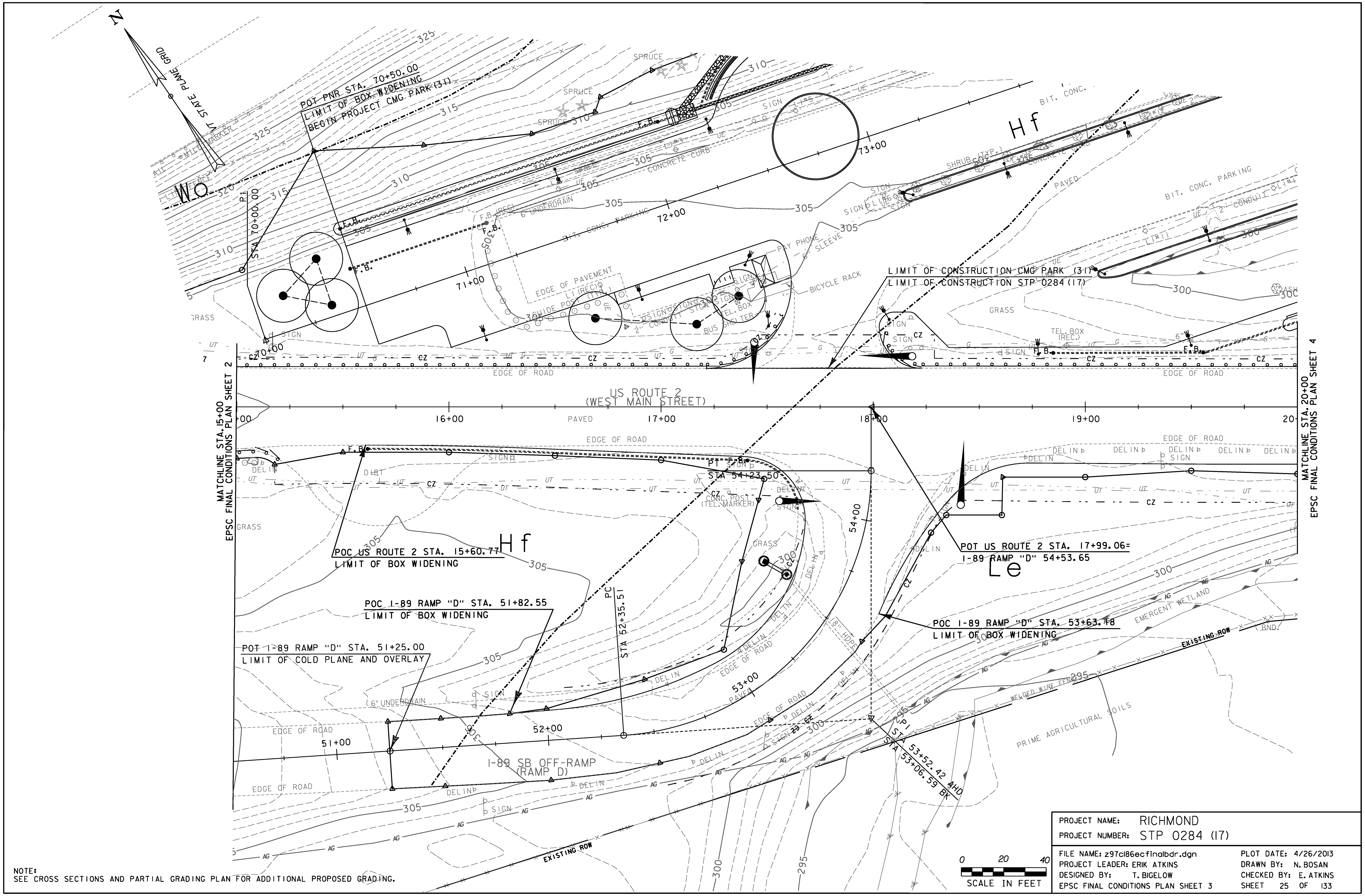
PROJECT NAME: RICHMOND	
PROJECT NUMBER: STP 0284 (17)	
FILE NAME: z97c186ecfinalbdr.dgn	PLOT DATE: 4/26/2013
PROJECT LEADER: ERIK ATKINS	DRAWN BY: N. BOSAN
DESIGNED BY: T. BIGELOW	CHECKED BY: E. ATKINS
EPSC FINAL CONDITIONS PLAN SHEET 1	SHEET 23 OF 133



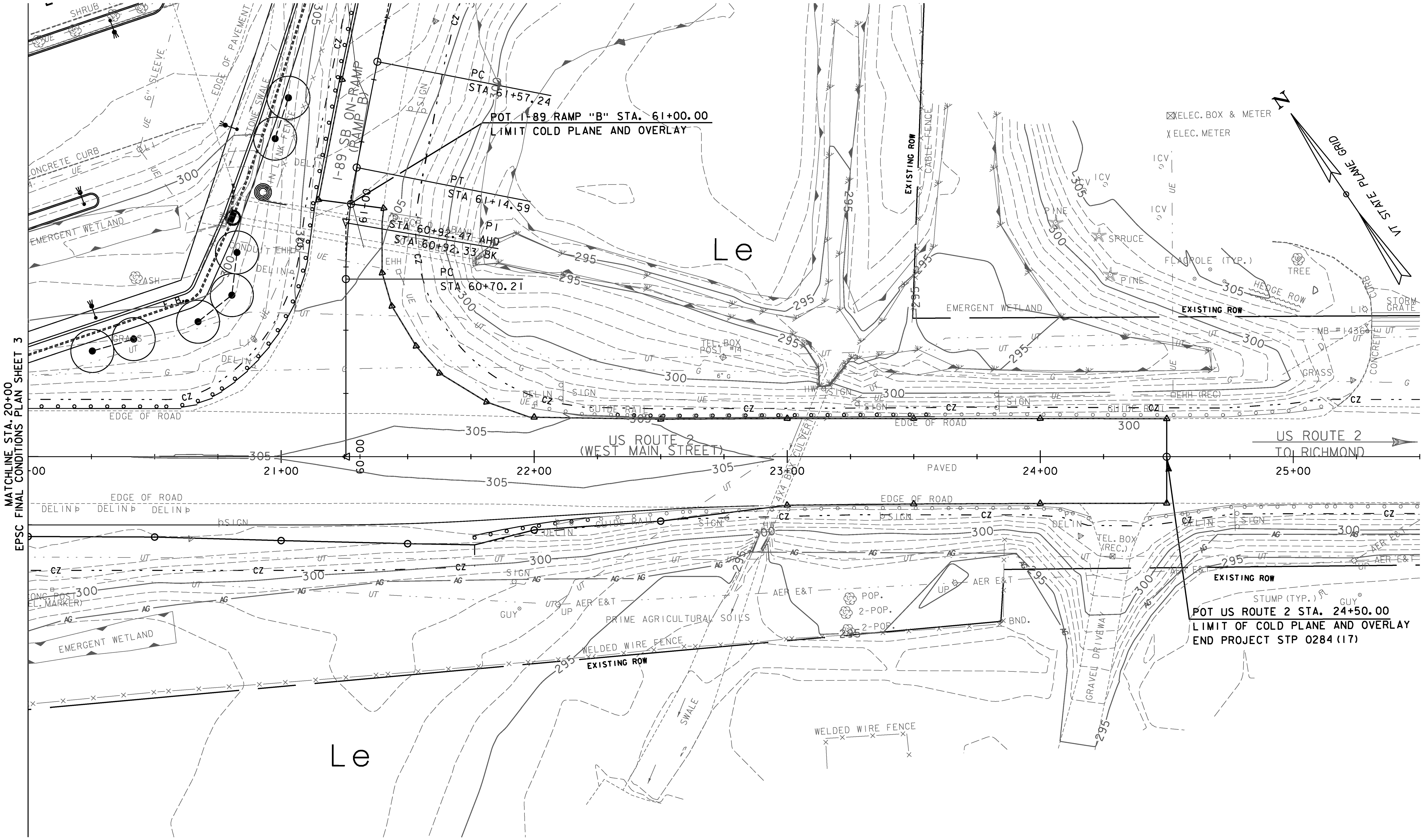
0 20 40
SCALE IN FEET

NOTE:
SEE CROSS SECTIONS AND PARTIAL GRADING PLAN FOR ADDITIONAL PROPOSED GRADING.

PROJECT NAME: RICHMOND	
PROJECT NUMBER: STP 0284 (17)	
FILE NAME: z97c186ecfinalbdr.dgn	PLOT DATE: 4/26/2013
PROJECT LEADER: ERIK ATKINS	DRAWN BY: N. BOSAN
DESIGNED BY: T. BIGELOW	CHECKED BY: E. ATKINS
EPSC FINAL CONDITIONS PLAN SHEET 2	SHEET 24 OF 133



NOTE:
SEE CROSS SECTIONS AND PARTIAL GRADING PLAN FOR ADDITIONAL PROPOSED GRADING.



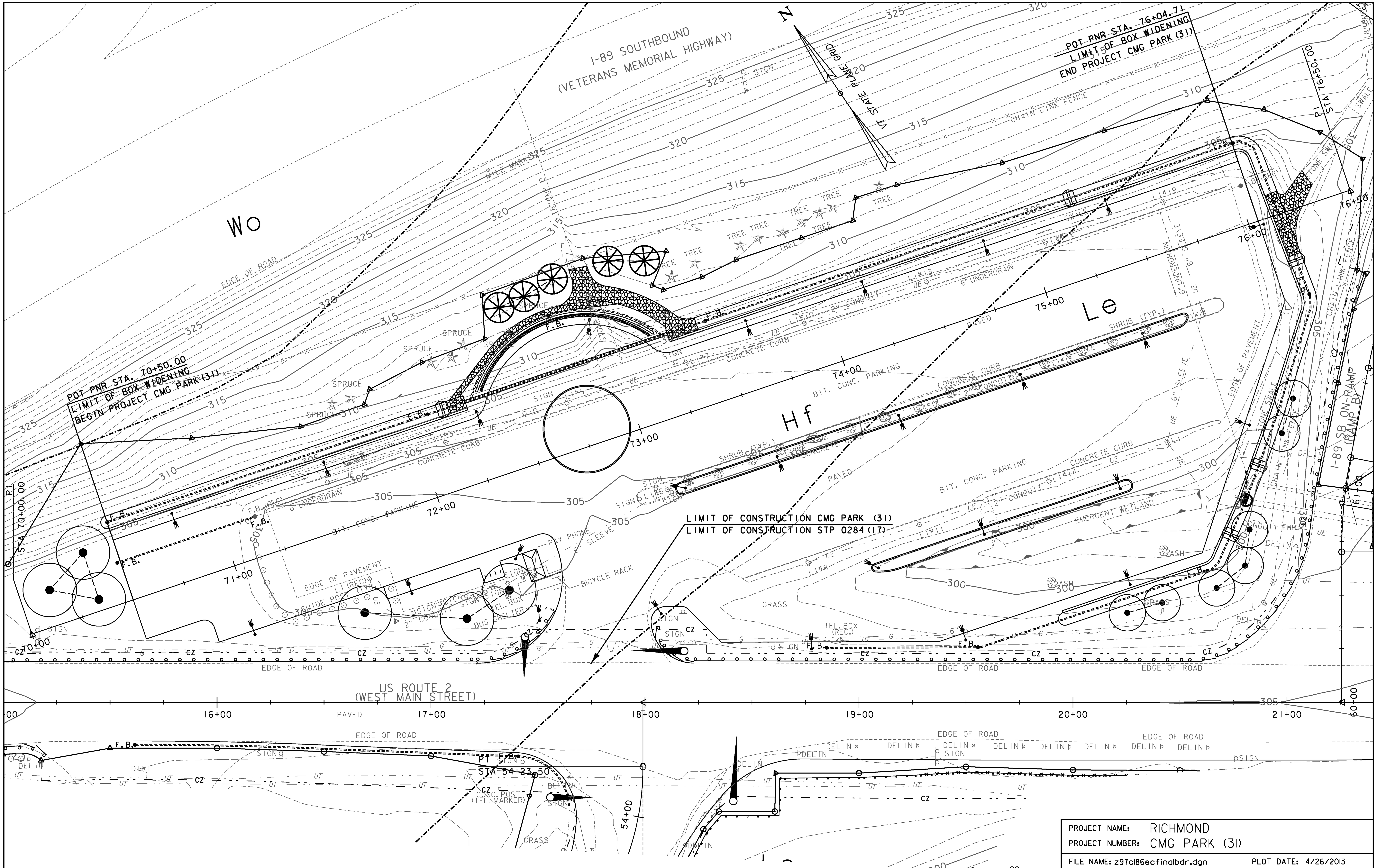
NOTE:
SEE CROSS SECTIONS AND PARTIAL GRADING PLAN FOR ADDITIONAL PROPOSED GRADING.

0 20 40
SCALE IN FEET

PROJECT NAME: RICHMOND
PROJECT NUMBER: STP 0284 (17)

FILE NAME: z97c186ecfinalbdr.dgn
PROJECT LEADER: ERIK ATKINS
DESIGNED BY: T. BIGELOW
EPSC FINAL CONDITIONS PLAN SHEET 4

PLOT DATE: 4/26/2013
DRAWN BY: N. BOSAN
CHECKED BY: E. ATKINS
SHEET 26 OF 133



0 20 40

SCALE IN FEET

PROJECT NAME: RICHMOND
PROJECT NUMBER: CMG PARK (31)

FILE NAME: z97c186ecfinalbdr.dgn	PLOT DATE: 4/26/2013
PROJECT LEADER: ERIK ATKINS	DRAWN BY: N. BOSAN
DESIGNED BY: T. BIGELOW	CHECKED BY: E. ATKINS
EPSC FINAL CONDITIONS PLAN SHEET 5	SHEET 27 OF 133

NOTE:
SEE CROSS SECTIONS AND PARTIAL GRADING PLAN FOR ADDITIONAL PROPOSED GRADING.

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 kPa	CONSISTENCY
<12	Very Soft
12-24	Soft
24-48	Med. Stiff
48-96	Stiff
96-192	Very Stiff
>192	Hard

CORRELATION GUIDE OF "N" TO DENSITY/CONSISTENCY

DENSITY (GRANULAR SOILS)

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

CONSISTENCY (COHESIVE SOILS)

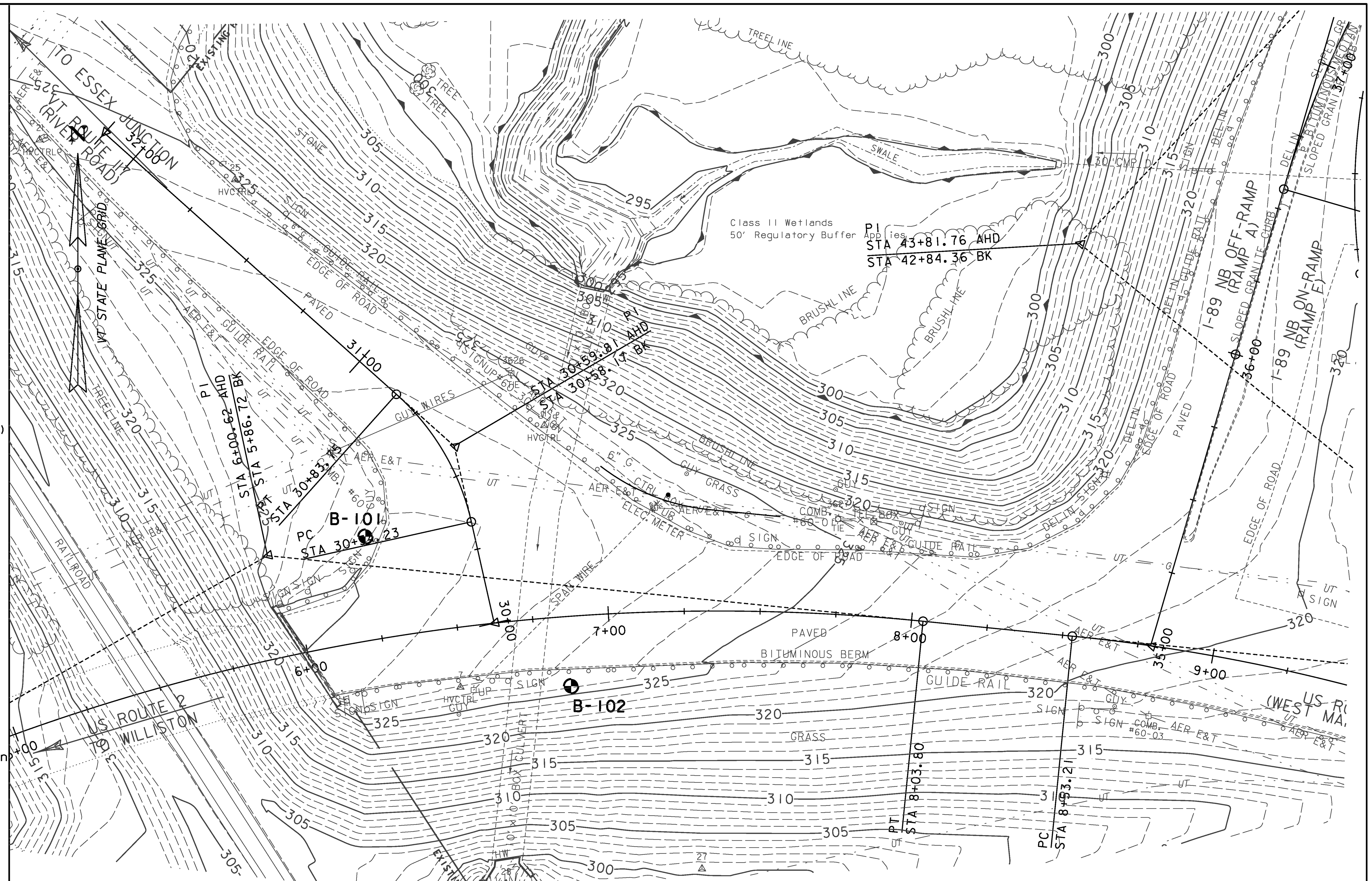
N	DESCRIPTIVE TERM
<2	Very Soft
2-4	Soft
5-8	Med. Stiff
9-15	Stiff
16-30	Very Stiff
31-60	Hard
>60	Very Hard

COMMONLY USED SYMBOLS

▼	Water Elevation
⊗	Standard Penetration Boring
⊕	Auger Boring
⊙	Rod Sounding
S	Sample
N	Standard Penetration Test Blow Count Per 300 mm For: 50.8 mm O.D. Sampler 35.0 mm I.D. Sampler Hammer Weight Of 63.5 kg. Hammer Fall Of 762 mm
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 30.1mm
BX	Core Size 42.0 mm
NX	Core Size 54.7 mm
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	To 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)
OW	Indicates a temporary observation well installed

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.	STATION	OFFSET (ft)	GROUND ELEV.
B-101	VT RTE 2 6+25	34.00 LT	328.6
B-102	VT RTE 2 6+86	23.00 RT	326.3

0 20 40
SCALE IN FEET

DEFINITIONS (AASHTO)

BEDROCK (LEDGE) - Rock in its native location of indefinite thickness.

BOULDER - A rock fragment with an average dimension > 304.8 mm.

COBBLE - Rock fragments with an average dimension between 76.2 and 304.8 mm.

GRAVEL - Rounded particles of rock < 76.2 mm and > 2 mm (#10 sieve).

SAND - Particles of rock < 2 mm (#10 sieve) and > 75 μm (#200 sieve).

SILT - Soil < 75 μm (#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 test borings shown herein were drilled by the Agency on 02/15/12.

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 judgement 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 judgement 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.

PROJECT NAME: RICHMOND
PROJECT NUMBER: STP 0284 (17) / CMG PARK (31)

FILE NAME: z97c186bor.dgn	PLOT DATE: 4/29/2013
PROJECT LEADER: ERIK ATKINS	DRAWN BY: N. BOSAN
DESIGNED BY: T. BIGELOW	CHECKED BY: E. ATKINS
BORING LAYOUT SHEET 1	SHEET 28 OF 133

SOIL CLASSIFICATION

AASHTO

A1	Gravel and Sand
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ROCK QUALITY DESIGNATION

R.Q.D. (%)	ROCK DESCRIPTION
<25	Very Poor
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SHEAR STRENGTH

UNDRAINED SHEAR STRENGTH IN kPa	CONSISTENCY
<12	Very Soft
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COMMONLY USED SYMBOLS

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⊕	Auger Boring
⊙	Rod Sounding
S	Sample
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US	Undisturbed Soil Sample
B	Blast
DC	Diamond Core
MD	Mud Drill
WA	Wash Ahead
HSA	Hollow Stem Auger
AX	Core Size 30.1 mm
BX	Core Size 42.0 mm
NX	Core Size 54.7 mm
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	To Ledge Or Boulder
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Rec.	Recovery
%Rec.	Percent Recovery
RQD	Rock Quality Designation
CBR	California Bearing Ratio
<	Less Than
>	Greater Than
R	Refusal (N > 100)
OW	Indicates a temporary observation well installed

COLOR

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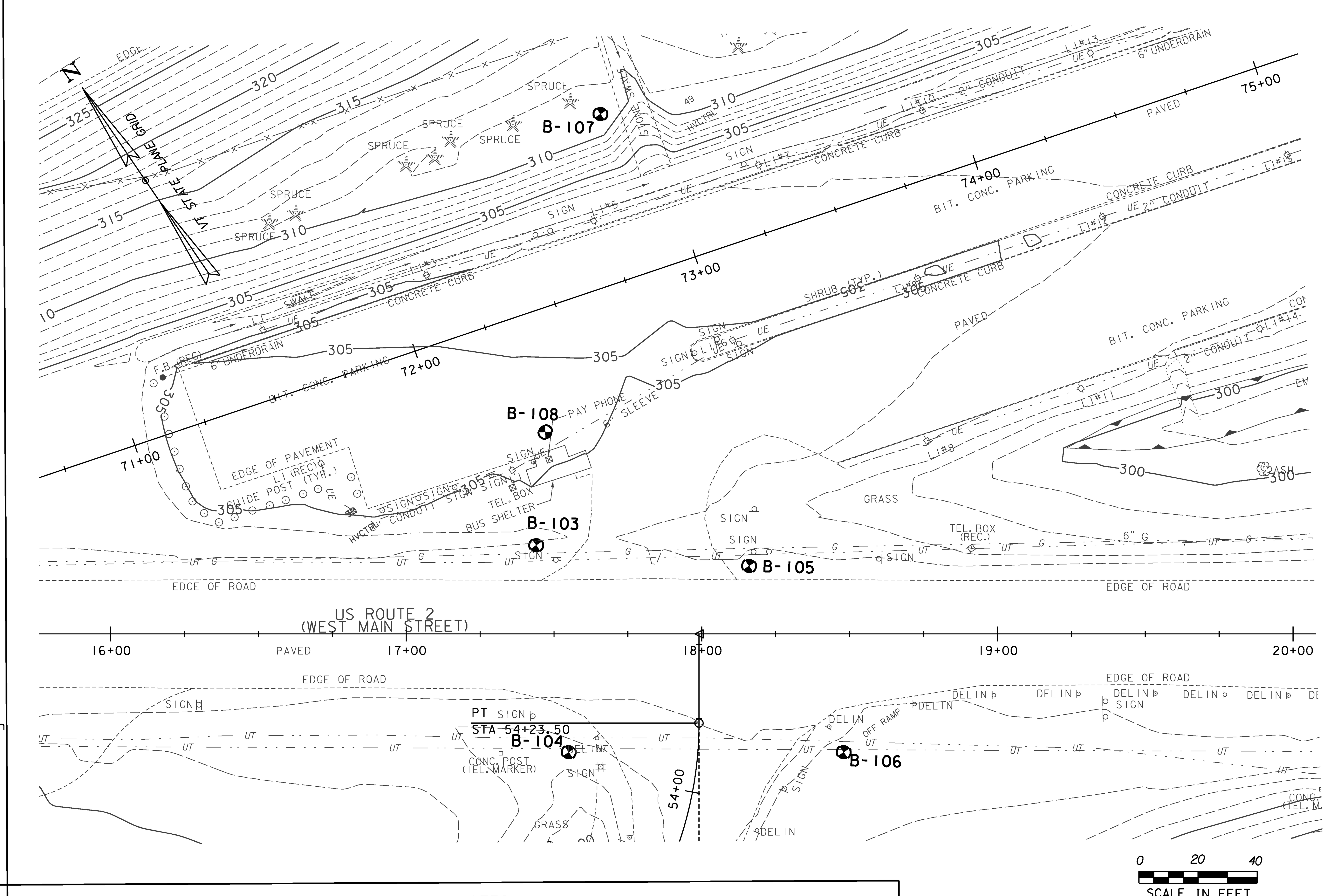
bl	Blue	pu	Purple
brn	Brown	rd	Red
dk	Dark	tn	Tan
gry	Gray	wh	White
gn	Green	yel	Yellow
lt	Light	mltc	Multicolored
or	Orange		



DEFINITIONS (AASHTO)

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SILT - Soil < 75 μm (#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 test borings shown herein were drilled by the Agency between the period from 02/09/12 through 03/22/12.

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 judgement 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 judgement 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.

BORING CHART

HOLE NO.	STATION	OFFSET (ft)	GROUND ELEV.
B-103	VT ROUTE 2 17+44	30.00 LT	304.0
B-104	VT ROUTE 2 17+55	40.00 RT	302.6
B-105	VT ROUTE 2 18+16	23.00 LT	304.2
B-106	VT ROUTE 2 18+48	40.00 RT	303.6
B-107	PNR 72+85	56.00 LT	310.3
B-108	PNR 72+33	40.00 RT	305.2

PROJECT NAME: RICHMOND
PROJECT NUMBER: STP 0284 (17)/ CMG PARK (31)

FILE NAME: z97c186bor.dgn
PROJECT LEADER: ERIK ATKINS
DESIGNED BY: T. BIGELOW
BORING LAYOUT SHEET 2

PLOT DATE: 4/29/2013
DRAWN BY: N. BOSAN
CHECKED BY: E. ATKINS
SHEET 29 OF 133

BORING LOG B-101

VTrans — Working to Get You There — Vermont Agency of Transportation

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

BORING LOG

RICHMOND
STP 0284(17)
US-2

Boring No.: **B-101**
Page No.: 1 of 1
Pin No.: 97C186
Checked By: CEE

Boring Crew: PORTER, WHITLOCK, HOLT
Date Started: 2/15/12 Date Finished: 2/15/12
VTSPG NAD83: N 701850.10 ft E 1506561.00 ft
Station: 6+25 Offset: -34.00
Ground Elevation: 328.6 ft

	Casing	Sampler
Type:	H.S.A.	SS
I.D.:	3.5 in	1.5 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	30 in.

Hammer/Rod Type: Auto/AWJ
Rig: CME 45C SKID C_E = 1.33

Groundwater Observations		
Date	Depth (ft)	Notes
		No water to depth.

CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
A-1-a, SaGr, brn, Moist, Taken from auger flight		6.4	59.2	25.4	15.4
A-4, SaSi, brn, Moist, Rec. = 1.1 ft, Trace of Clay.	7-4-3-4 (7)	14.3	2.1	28.1	69.8
A-4, SaSi, brn, Moist, Rec. = 1.7 ft, Trace of Clay.	3-5-6-5 (11)	13.6	0.9	25.2	73.9
A-4, SaSi, brn, Moist, Rec. = 1.9 ft, Trace of Clay.	8-8-9-9 (17)	14.3	0.9	42.1	57.0
A-4, SaSi, brn, Moist, Rec. = 1.7 ft	3-5-4-4 (9)	13.4	0.2	32.5	67.3
A-4, SaSi, brn, Moist, Rec. = 1.7 ft, Trace of Clay.	4-7-8-12 (15)	14.4		29.5	70.5
A-4, SaSi, brn, Moist, Rec. = 1.6 ft, Trace of Clay.	8-10-11-15 (21)	17.1		24.5	75.5
Field Note:, Cobbles					
Field Note:, No Recovery. Stone in sampler., Rec. = 0.3 ft	8-R@1.0"				
Field Note:, Cobbles					
A-4, SaSi, brn, Moist, Sample taken from auger flights. Trace of Clay.		17.1	0.4	23.8	75.8
Field Note:, Cobbles					

Depth (ft): 5, 10, 15, 20, 25, 30

Hole stopped @ 25.6 ft
In Cobbles or on Ledge.

Remarks:
Lab Note: Samples with "Trace of Clay" had noticeable clay within the sample, but an insufficient amount for testing. The amounts of clay were very small with very thin layers within the sample. It was lean clay with low to medium Limits.

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 of groundwater may occur due to other factors than those present at the time measurements were made.

BORING LOG 2 RICHMOND STP 0284(17).GPJ VERMONT AOT.GDT 2/29/12

BORING LOG B-102

VTrans — Working to Get You There — Vermont Agency of Transportation

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

BORING LOG

RICHMOND
STP 0284(17)
US-2

Boring No.: **B-102**
Page No.: 1 of 1
Pin No.: 97C186
Checked By: CEE

Boring Crew: PORTER, WHITLOCK, HOLT
Date Started: 2/15/12 Date Finished: 2/15/12
VTSPG NAD83: N 701801.00 ft E 1506628.80 ft
Station: 6+86 Offset: 23.00
Ground Elevation: 326.3 ft

	Casing	Sampler
Type:	H.S.A.	SS
I.D.:	3.5 in	1.5 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	30 in.

Hammer/Rod Type: Auto/AWJ
Rig: CME 45C SKID C_E = 1.33

Groundwater Observations		
Date	Depth (ft)	Notes
		No water to depth.

CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
A-1-a, SaGr, brn, Moist, Taken from Auger Flights.		5.2	57.9	31.3	10.8
A-2-4, Sa, brn, Moist, Rec. = 1.9 ft	9-16-24-23 (40)	9.2	16.3	64.8	18.9
A-4, SiSa, brn, Moist, Rec. = 1.3 ft, Trace of Clay.	14-17-27-10 (31)	13.5	11.1	44.8	44.1
A-4, SaSi, brn, Moist, Rec. = 1.6 ft, Trace of Clay.	7-7-9-10 (16)	18.0	2.5	26.7	70.8
A-4, SaSi, brn, Moist, Rec. = 1.2 ft	6-2-3-7 (5)	13.1	4.2	33.8	62.0
A-4, SaSi, brn, Moist, Rec. = 1.0 ft, Trace of Clay.	5-13-14-17 (27)	11.7	4.1	26.2	69.7
A-4, SaSi, brn, Moist, Rec. = 1.9 ft, Trace of Clay.	5-13-12-13 (25)	15.4	1.3	21.1	77.6
Field Note:, Cobbles					
A-4, SaSi, brn, Moist, Rec. = 1.4 ft, Trace of Clay.	3-7-10-11 (17)	15.1	0.8	31.7	67.5
A-4, SaSi, brn, Moist, Rec. = 1.7 ft, Trace of Clay.	8-10-11-15 (21)	16.5	0.4	25.3	74.3

Depth (ft): 5, 10, 15, 20, 25, 30

Hole stopped @ 27.0 ft

Remarks:
Lab Note: Samples with "Trace of Clay" had noticeable clay within the sample, but an insufficient amount for testing. The amounts of clay were very small with very thin layers within the sample. It was lean clay with low to medium Limits.

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 of groundwater may occur due to other factors than those present at the time measurements were made.

BORING LOG 2 RICHMOND STP 0284(17).GPJ VERMONT AOT.GDT 2/29/12

BORING LOG B-103

VTrans — Working to Get You There — Vermont Agency of Transportation

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

BORING LOG

RICHMOND
STP 0284(17)
US-2

Boring No.: **B-103**
Page No.: 1 of 1
Pin No.: 97C186
Checked By: CEE

Boring Crew: PORTER, WHITLOCK, HOLT
Date Started: 2/13/12 Date Finished: 2/13/12
VTSPG NAD83: N 701412.80 ft E 1507581.40 ft
Station: 17+44 Offset: -30.00
Ground Elevation: 304.0 ft

	Casing	Sampler
Type:	H.S.A.	SS
I.D.:	3.5 in	1.5 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	30 in.

Hammer/Rod Type: Auto/AWJ
Rig: CME 45C SKID C_E = 1.33

Groundwater Observations		
Date	Depth (ft)	Notes
		None Taken

CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
A-2-4, SiSa, brn, Moist, Taken from Auger Flights.		11.8	16.8	57.2	26.0
A-1-b, SiGrSa, brn, Moist, Rec. = 1.2 ft	13-11-8-7 (19)	9.1	31.7	43.4	24.9
Rec. = 1.0 ft	7-6-5-7 (11)	25.0	7.1	17.8	75.1
A-4, Si, brn, Moist, Rec. = 0.7 ft	4-3-4-6 (7)	20.7	2.7	39.3	58.0
A-2-4, SiSa, brn, Moist, Rec. = 1.7 ft	4-5-5-6 (10)	16.2	0.9	70.8	28.3
A-1-b, GrSa, brn, Moist, Rec. = 1.1 ft	4-7-8-8 (15)	11.9	30.9	58.6	10.5
A-1-b, GrSa, brn, MTW, Rec. = 0.8 ft	11-6-13-8 (19)	16.5	43.8	45.9	10.3
A-1-b, GrSa, gry, MTW, Rec. = 1.0 ft	6-6-6-6 (12)	19.7	28.5	61.2	10.3
A-1-b, GrSa, gry, Moist, Rec. = 1.0 ft	7-6-8-7 (14)	14.7	33.2	47.5	19.3

Depth (ft): 5, 10, 15, 20, 25, 30

Hole stopped @ 27.0 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 of groundwater may occur due to other factors than those present at the time measurements were made.

BORING LOG 2 RICHMOND STP 0284(17).GPJ VERMONT AOT.GDT 2/29/12

PROJECT NAME:	RICHMOND		
PROJECT NUMBER:	STP 0284 (17) / CMG PARK (31)		
FILE NAME:	z97c186borlog.dgn	PLOT DATE:	4/29/2013
PROJECT LEADER:	ERIK ATKINS	DRAWN BY:	N. BOSAN
DESIGNED BY:	N. BOSAN	CHECKED BY:	E. ATKINS
BORING LOGS SHEET 1		SHEET	30 OF 133

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

BORING LOG — RICHMOND STP 0284(17) US-2

Boring No.: B-104 | Page No.: 1 of 1 | Pin No.: 97C186 | Checked By: CEE

Boring Crew: PORTER, WHITLOCK, HOLT
Date Started: 2/09/12 Date Finished: 2/09/12
VTSPG NAD83: N 701348.00 ft E 1507551.50 ft
Station: 17+55 Offset: 40.00
Ground Elevation: 302.6 ft

	Casing	Sampler
Type:	H.S.A.	SS
I.D.:	3.5 in	1.5 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	30 in.

Hammer/Rod Type: Auto/AWJ
Rig: CME 45C SKID C_E = 1.33

Groundwater Observations

Date	Depth (ft)	Notes
02/10/12	5.5	AM

Depth (ft)	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %	LL %	PI %
	A-2-4, SiGrSa, brn, Moist, Taken from Auger Flights.		15.3	25.3	53.9	20.8		
	A-4, SaSi, brn, Moist, Rec. = 1.5 ft	10-13-9-9 (22)	20.2		21.6	78.4		
5	A-2-4, Sa, brn, Moist, Rec. = 1.4 ft	3-4-5-7 (9)	12.0	3.5	76.9	19.6		
	A-1-b, GrSa, brn, Moist, Rec. = 1.1 ft	4-7-6-7 (13)	3.7	25.3	69.3	5.4		
	A-1-b, GrSa, brn, Moist, Rec. = 1.0 ft	3-7-9-9 (16)	9.5	40.8	50.7	8.5		
10	A-1-b, GrSa, brn, Wet, Rec. = 0.9 ft	7-8-10-8 (18)	15.8	40.4	49.8	9.8		
15	A-1-b, GrSa, brn, Wet, Rec. = 1.5 ft	14-27-24-19 (51)	13.2	35.9	54.2	9.9		
20	A-1-b, GrSa, gry, Wet, Rec. = 1.0 ft	9-11-13-21 (24)	11.7	35.7	53.8	10.5		
25	A-1-b, GrSa, gry, Wet, Rec. = 0.6 ft	9-5-6-6 (11)	14.4	32.0	48.3	19.7		
	A-4, Si, gry, Moist, Rec. = 0.7 ft		26.3	3.1	11.0	85.9	26	4
30	Hole stopped @ 27.0 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 of groundwater may occur due to other factors than those present at the time measurements were made.

BORING LOG 2 RICHMOND STP 0284(17).GPJ VERMONT AOT.GDT 2/29/12

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

BORING LOG — RICHMOND STP 0284(17) US-2

Boring No.: B-105 | Page No.: 1 of 1 | Pin No.: 97C186 | Checked By: CEE

Boring Crew: PORTER, HOLT
Date Started: 2/16/12 Date Finished: 2/16/12
VTSPG NAD83: N 701365.70 ft E 1507636.60 ft
Station: 18+16 Offset: -23.00
Ground Elevation: 304.2 ft

	Casing	Sampler
Type:	H.S.A.	SS
I.D.:	3.5 in	1.5 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	30 in.

Hammer/Rod Type: Auto/AWJ
Rig: CME 45C SKID C_E = 1.33

Groundwater Observations

Date	Depth (ft)	Notes
		None Taken.

Depth (ft)	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %	LL %	PI %
	A-1-b, SaGr, brn, Moist, Taken from Auger flight.		10.2	49.6	32.0	18.4		
	A-4, GrSaSi, brn, Moist, Rec. = 1.1 ft	7-11-14-16 (25)	14.8	23.4	34.0	42.6		
5	Field Note:, No Recovery. Stone in sampler.	23-43-37-57 (80)						
	A-2-4, SiSa, brn, Moist, Rec. = 1.4 ft, Also hitting Cobbles.	18-24-21-18 (45)	9.2	18.5	50.7	30.8		
	A-2-4, SiSa, brn, Moist, Rec. = 1.6 ft	4-5-4-5 (9)	13.6	1.2	64.6	34.2		
10	A-1-b, GrSa, brn, MTW, Rec. = 1.2 ft	5-9-11-8 (20)	12.0	43.9	46.2	9.9		
15	A-1-b, GrSa, brn, Wet, Rec. = 1.2 ft	6-7-8-7 (15)	15.1	42.0	47.2	10.8		
20	A-1-b, SaGr, brn, Wet, Rec. = 1.2 ft	5-7-7-8 (14)	13.2	46.6	43.7	9.7		
25	A-1-a, SaGr, brn, Wet, Rec. = 0.6 ft	5-7-9-11 (16)	13.4	56.5	33.9	9.6		
	A-4, Si, gry, Moist, Rec. = 0.5 ft		27.6		2.2	97.8	27	3
30	Hole stopped @ 27.0 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 of groundwater may occur due to other factors than those present at the time measurements were made.

BORING LOG 2 RICHMOND STP 0284(17).GPJ VERMONT AOT.GDT 2/29/12

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

BORING LOG — RICHMOND STP 0284(17) US-2

Boring No.: B-106 | Page No.: 1 of 1 | Pin No.: 97C186 | Checked By: CEE

Boring Crew: PORTER, WHITLOCK, HOLT
Date Started: 2/09/12 Date Finished: 2/09/12
VTSPG NAD83: N 701295.70 ft E 1507627.60 ft
Station: 18+48 Offset: 40.00
Ground Elevation: 303.6 ft

	Casing	Sampler
Type:	H.S.A.	SS
I.D.:	3.5 in	1.5 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	30 in.

Hammer/Rod Type: Auto/AWJ
Rig: CME 45C SKID C_E = 1.33

Groundwater Observations

Date	Depth (ft)	Notes
02/09/12	9.2	

Depth (ft)	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
	A-2-4, SaSiGr, brn, Moist, Sample off auger flight.		13.0	46.5	23.2	30.3
	A-2-4, SiSa, brn, Moist, Rec. = 1.6 ft	31-40-35-38 (75)	9.6	14.6	64.3	21.1
5	A-2-4, SaSiGr, brn, Moist, Rec. = 1.5 ft	16-25-37-24 (62)	8.2	38.0	30.4	31.6
	A-2-4, GrSiSa, gry, Moist, Rec. = 1.5 ft	9-11-17-9 (18)	10.4	25.9	45.5	28.6
	A-2-4, Sa, gry, MTW		17.9	3.1	77.6	19.3
10	A-4, Si with a Trace of Organics (2.6%), gry, Moist, Rec. = 1.3 ft	2-3-5-6 (8)	35.9	0.9	11.5	87.6
15	A-4, Si with Little Organics (11.8%), Dk/gry, Moist, Rec. = 2.0 ft	WH-WH-3-2 (3)	62.1		6.9	93.1
20	A-4, Si with a Trace of Organics (2.1%), gry, MTW, Rec. = 2.0 ft	WH-WH-3-3 (3)	36.3	0.1	19.9	80.0
25	A-2-4, Sa, gry, Wet, Rec. = 1.5 ft	5-5-6-7 (11)	19.8	14.0	67.7	18.3
	Hole stopped @ 27.0 ft					

Remarks:
1. First sample was off auger flight, due to frost.
2. At 27.0 feet they could not keep wet sand from coming back into auger when trying to sample deeper.

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 of groundwater may occur due to other factors than those present at the time measurements were made.

BORING LOG 2 RICHMOND STP 0284(17).GPJ VERMONT AOT.GDT 2/29/12

PROJECT NAME:	RICHMOND
PROJECT NUMBER:	STP 0284 (17)/ CMG PARK (31)

FILE NAME: z97c186borlog.dgn	PLOT DATE: 4/29/2013
PROJECT LEADER: ERIK ATKINS	DRAWN BY: N. BOSAN
DESIGNED BY: N. BOSAN	CHECKED BY: E. ATKINS
BORING LOGS SHEET 2	SHEET 31 OF 133

VTrans Working to Get You There — Vermont Agency of Transportation

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

BORING LOG

RICHMOND
CMG PARK(31)
US-2

Boring No.: **B-107**
Page No.: 1 of 1
Pin No.: 05K216
Checked By: CEE

Boring Crew: SALISBURY, GARROW
Date Started: 3/22/12 Date Finished: 3/22/12
VTSPG NAD83: N 701520.40 ft E 1507681.70 ft
Station: 72+85 Offset: -56.00
Ground Elevation: 310.3 ft

	Casing	Sampler
Type:	H.S.A.	SS
I.D.:	3 in	1.5 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	30 in.
Hammer/Rod Type:	Auto/AWJ	
Rig:	CME 45C TRACK	C_E = 1.34

Groundwater Observations

Date	Depth (ft)	Notes
03/22/12	17.5	While drilling.

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %	LL %	PI %
5		A-4, ClSi, gry, Moist, Rec. = 1.0 ft	2-2-2-3 (4)	23.4		2.6	97.4	30	8
		A-4, Si, gry, Moist, Rec. = 1.2 ft	2-2-4-5 (6)	22.4		5.7	94.3	28	5
		A-1-b, GrSa, brn, Moist, Rec. = 1.2 ft	2-9-19-9 (28)	6.6	27.5	56.2	16.3		
10		A-4, Si, brn, Moist, Rec. = 1.2 ft	3-3-4-4 (7)	25.2		9.9	90.1		
		A-4, SiSa, brn, Moist, Rec. = 1.7 ft	2-3-2-3 (5)	16.7		53.3	46.7		
15		A-2-4, Sa, brn, Moist, Rec. = 1.8 ft	2-2-2-2 (4)	15.4		81.0	19.0		
20		A-1-b, GrSa, brn, Moist, Rec. = 1.2 ft	6-13-11-11 (24)	14.0	42.0	50.3	7.7		
25		A-1-b, GrSa, gry, Moist, Rec. = 1.0 ft	3-4-4-4 (8)	13.4	45.0	45.9	9.1		
		Hole stopped @ 27.0 ft							
30									

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 of groundwater may occur due to other factors than those present at the time measurements were made.

BORING LOG 2 RICHMOND CMG PARK(31).GPJ VERMONT AOT.GDT 3/28/12

VTrans Working to Get You There — Vermont Agency of Transportation

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

BORING LOG

RICHMOND
CMG PARK(31)
US-2

Boring No.: **B-108**
Page No.: 1 of 1
Pin No.: 05K216
Checked By: CEE

Boring Crew: PORTER, EWALD
Date Started: 2/17/12 Date Finished: 2/17/12
VTSPG NAD83: N 701442.30 ft E 1507604.90 ft
Station: 72+33 Offset: 40.00
Ground Elevation: 305.2 ft

	Casing	Sampler
Type:	H.S.A.	SS
I.D.:	3.5 in	1.5 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	30 in.
Hammer/Rod Type:	Auto/AWJ	
Rig:	CME 45C SKID	C_E = 1.33

Groundwater Observations

Date	Depth (ft)	Notes
02/17/12		Hole collapsed. 6.5'

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
		Field Note:, Asphalt Pavement A-1-a, Gr (Crushed Rock Fill), brn, Moist, Taken from Auger Flight.		1.5	87.5	10.0	2.5
		A-2-4, SiSa, brn, Moist, Rec. = 1.5 ft	6-10-9-7 (19)	8.0	1.8	72.8	25.4
5		A-4, SaSi, Dk/brn, Moist, Rec. = 1.4 ft, Trace of Wood.	6-5-6-6 (11)	23.8	7.7	25.7	66.6
		A-4, Si, brn, Moist, Rec. = 1.7 ft	7-9-8-6 (17)	29.9		3.3	96.7
		A-4, SaSi, brn, Moist, Rec. = 1.7 ft	2-3-4-3 (7)	23.0	0.5	24.0	75.5
10		A-2-4, SiSa, brn, Moist, Rec. = 1.6 ft	2-3-4-5 (7)	19.0	0.1	70.7	29.2
15		A-1-a, SaGr, brn, Wet, Rec. = 0.8 ft	8-8-8-7 (16)	11.8	50.6	42.1	7.3
20		A-1-a, SaGr, brn-gry, Wet, Rec. = 0.5 ft	2-1-WH-WH (1)	11.7	52.8	40.3	6.9
25		A-1-b, GrSa, gry, Wet, Rec. = 1.4 ft	7-7-6-5 (13)	14.2	36.0	54.5	9.5
		Hole stopped @ 27.0 ft					
30		Remarks: 1. Used water in hole to prevent sand from coming up into hole starting at 15.0 foot sample.					

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 of groundwater may occur due to other factors than those present at the time measurements were made.

BORING LOG 2 RICHMOND CMG PARK(31).GPJ VERMONT AOT.GDT 2/29/12

PROJECT NAME: RICHMOND
PROJECT NUMBER: STP 0284 (17)/ CMG PARK (31)

FILE NAME: z97c186borlog.dgn	PLOT DATE: 4/29/2013
PROJECT LEADER: ERIK ATKINS	DRAWN BY: N. BOSAN
DESIGNED BY: N. BOSAN	CHECKED BY: E. ATKINS
BORING LOGS SHEET 3	SHEET 32 OF 133

STATE OF VERMONT
AGENCY OF TRANSPORTATION

US ROUTE 2 (RAMP "B" TO RAMP "D") TRAFFIC DATA

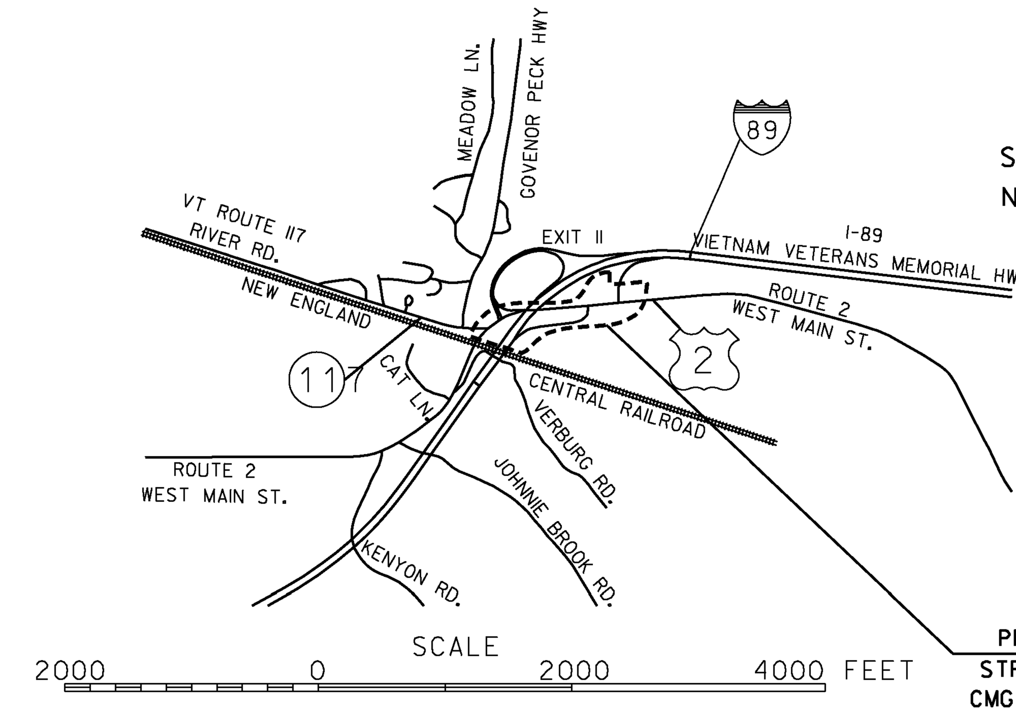
2014 AADT	10,200	
2034 AADT	12,700	
2014 DHV	1,100	
2034 DHV	1,400	
D	75%	
T	2.3%	
V	25MPH	(BETWEEN ROUTE 117 AND RAMP "C")
V	45MPH	(BETWEEN RAMP "C" AND END OF PROJECT)
2014-2034 ESAL	4,531,000	(RAMP F TO VT 117)
2014-2054 ESAL	11,851,000	(RAMP F TO VT 117)

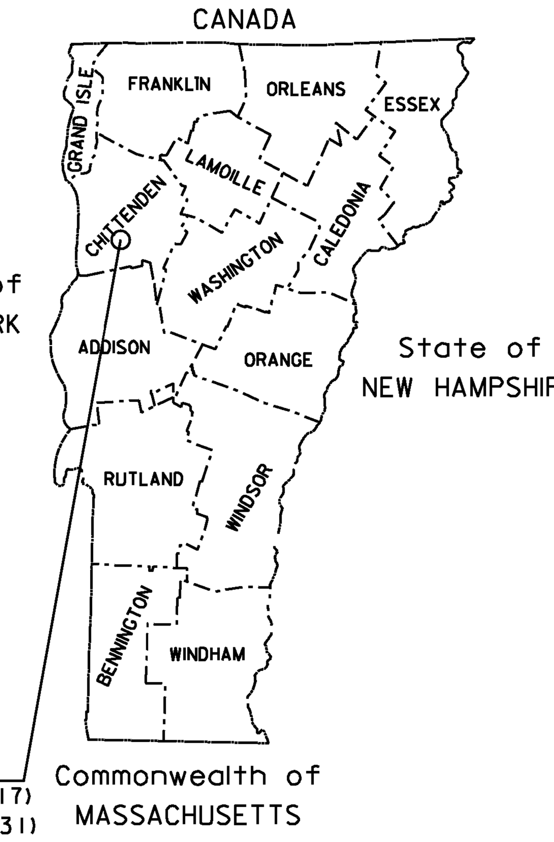
VT ROUTE 117 (BETWEEN GOVERNOR PECK HIGHWAY & US ROUTE 2) TRAFFIC DATA

2014 AADT	7,500
2034 AADT	9,300
2014 DHV	930
2034 DHV	1,100
D	61%
T	6.7%
V	45MPH
2014-2034 ESAL	3,659,000
2014-2054 ESAL	9,591,000

I-89 EXIT 11 (RAMP "A") TRAFFIC DATA

2014 AADT	2,400
2034 AADT	3,000
2014 DHV	370
2034 DHV	440
D	100%
T	6.4%
V	25MPH
2014-2034 ESAL	977,000
2014-2054 ESAL	2,407,000





PROPOSED IMPROVEMENT
TOWN OF RICHMOND
COUNTY OF CHITTENDEN
US ROUTE 2 (MAJOR COLLECTOR)

PROJECT STP 0284 (17)

BEGINNING AT A POINT ON US ROUTE 2 IN THE TOWN OF RICHMOND, APPROXIMATELY 62 FEET (0.012 MILE) WESTERLY OF VT ROUTE 117 AND EXTENDING EASTERLY ALONG US ROUTE 2 FOR A DISTANCE OF 1850 FEET (0.350 MILE), APPROXIMATELY 324 FEET (0.061 MILE) EASTERLY OF THE I-89 EXIT 11 SOUTHBOUND ON-RAMP "RAMP B".

THIS PROJECT CONSISTS OF BOX WIDENING OF US ROUTE 2, COLD PLANING AND PAVEMENT OVERLAY, PAVEMENT MARKINGS, DRAINAGE, NEW SIGNAGE, THE INSTALLATION OF NEW TRAFFIC SIGNALS AT THE INTERSECTION OF US ROUTE 2 AND VT ROUTE 117, AT THE INTERSECTION OF US ROUTE 2 AND I-89 SOUTHBOUND OFF-RAMP "RAMP D" WITH THE PARK AND RIDE ENTRANCE, AND OTHER HIGHWAY RELATED ITEMS.

I-89 EXIT 11 (RAMP "B") TRAFFIC DATA

2014 AADT	2,100
2034 AADT	2,600
2014 DHV	330
2034 DHV	390
D	100%
T	7.0%
V	30MPH
2014-2034 ESAL	931,000
2014-2054 ESAL	2,272,000

I-89 EXIT 11 (RAMP "C") TRAFFIC DATA

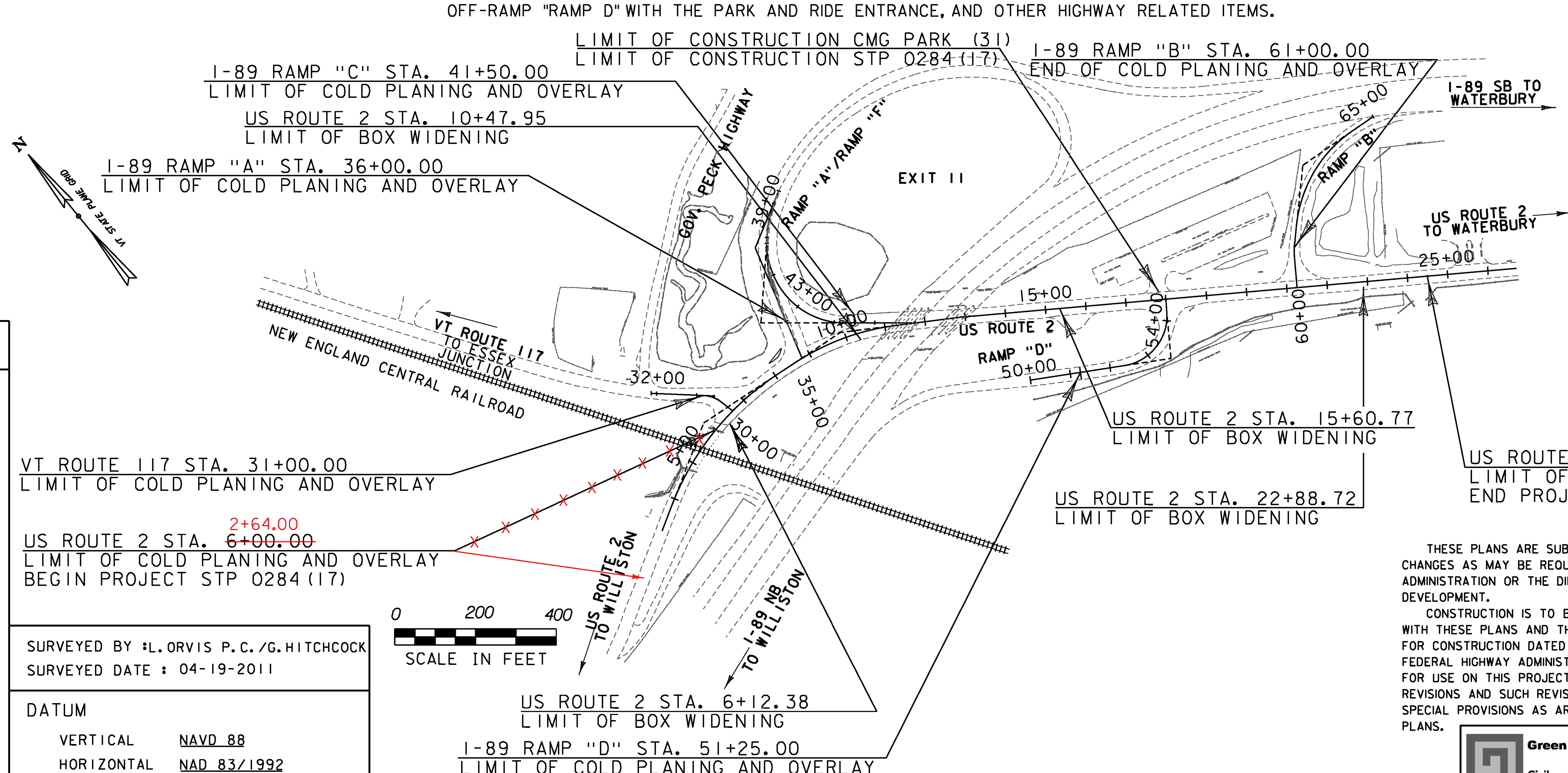
2014 AADT	2,200
2034 AADT	2,800
2014 DHV	340
2034 DHV	410
D	100%
T	7.0%
V	25MPH
2014-2034 ESAL	835,000
2014-2054 ESAL	2,037,000

I-89 EXIT 11 (RAMP "D") TRAFFIC DATA

2014 AADT	3,500
2034 AADT	4,300
2014 DHV	590
2034 DHV	730
D	100%
T	7.1%
V	20MPH
2014-2034 ESAL	947,000
2014-2054 ESAL	2,289,000

I-89 EXIT 11 (RAMP "F") TRAFFIC DATA

2014 AADT	1,100
2034 AADT	1,300
2014 DHV	270
2034 DHV	320
D	100%
T	8.3%
V	25MPH
2014-2034 ESAL	438,000
2014-2054 ESAL	1,044,000



BITUMINOUS CONCRETE PAVEMENT SUPER PAVE MIXTURE DESIGN CRITERIA	
DESIGN LIFE ESAL (DESIGN LANE)	4,531,000
DESIGN NUMBER OF GYRATIONS	65
PERFORMANCE GRADED ASPHALT BINDER	SEE SUBSECTION 490.03 (b)

QUALITY ASSURANCE PROGRAM: LEVEL 1

CONVENTIONAL SYMBOLS

COUNTY LINE
TOWN LINE
LIMITS OF ACCESS
POINT OF ACCESS
FENCE LINE
STONE WALL
TRAVELED WAY
GUARD RAIL
RAILROAD
SURVEY LINE
CULVERT
POWER POLE
TELEPHONE POLE
TREES
CONTROL OF ACCESS
PROPERTY LINE
R.O.W. TAKING LINE
SLOPE RIGHTS
TOP OF CUT
TOE OF SLOPE

SURVEYED BY : L. ORVIS P.C./G. HITCHCOCK
SURVEYED DATE : 04-19-2011

DATUM
VERTICAL NAVD 88
HORIZONTAL NAD 83/1992

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.

Green International Affiliates, Inc.
Civil and Structural Engineers Westford, MA

PROJECT MANAGER : JOSHUA SCHULTZ, P.E.
PROJECT NAME : RICHMOND
PROJECT NUMBER : STP 0284 (17)

MATERIAL ITEM	THICKNESS TOLERANCE
PAVEMENT (TOTAL DEPTH ALL LAYERS)	+/-¼"
SUBBASE (TOTAL DEPTH ALL LAYERS)	+/-1"
SAND BORROW (TOTAL DEPTH ALL LAYERS)	+/-1"

TYPICAL SECTIONS

COLD PLANE AND OVERLAY

2" COLD PLANE

2" SUPERPAVE BITUMINOUS CONCRETE PAVEMENT (1½" WEARING COURSE, OVER ½" LEVELING COURSE, TYPE IVS)

BOX WIDENING

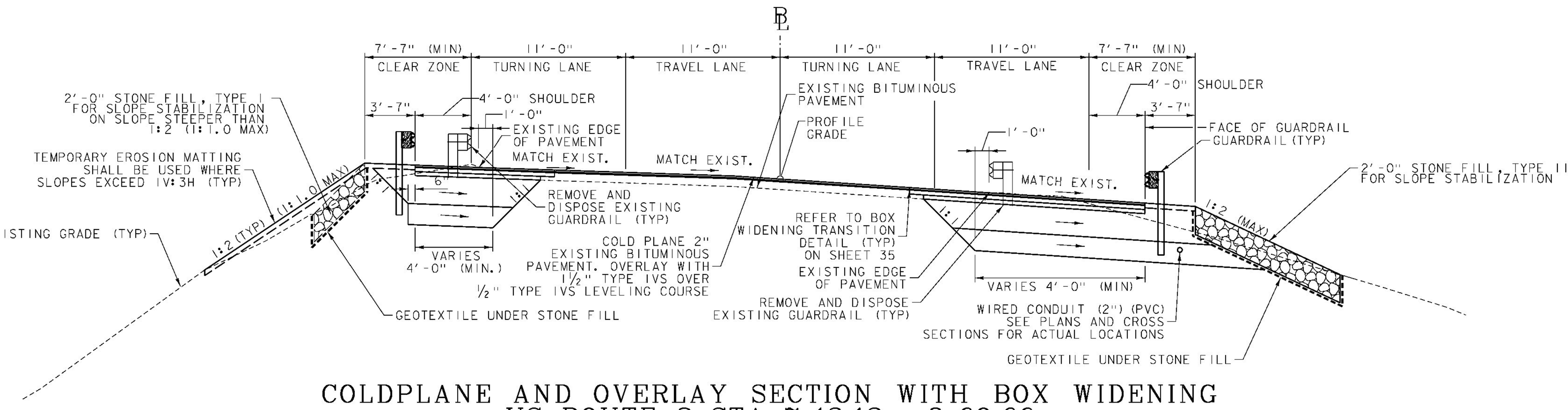
2" SUPERPAVE BITUMINOUS CONCRETE PAVEMENT (1½" OVER ½" LEVELING COURSE, TYPE IVS)

7" SUPERPAVE BITUMINOUS CONCRETE PAVEMENT (3½" OVER 3½", TYPE IIS)

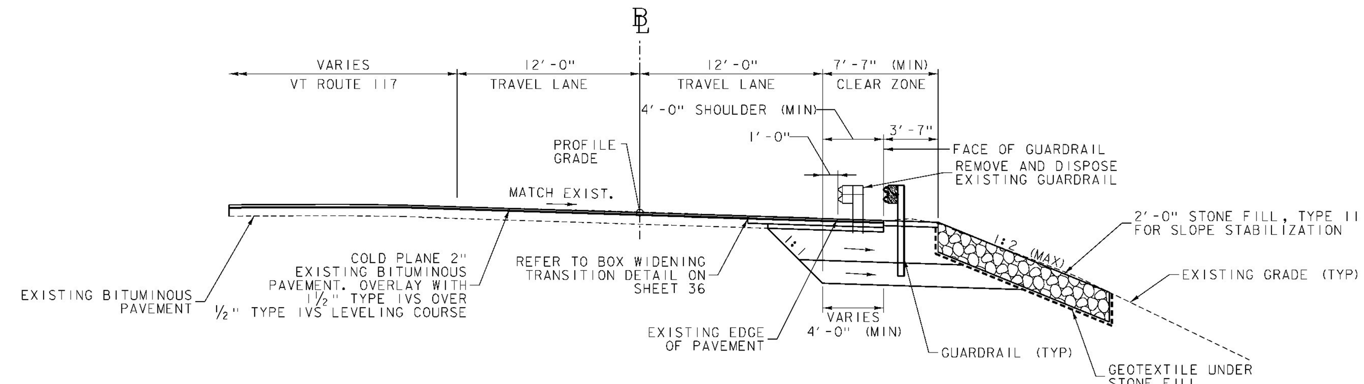
24" SUBBASE OF DENSE GRADED CRUSHED STONE

18" SAND BORROW

TACK COAT: EMULSIFIED ASPHALT IS TO BE APPLIED AT THE RATE OF 0.025 GAL/SY BETWEEN SUCCESSIVE COURSES OF PAVEMENT AS DIRECTED BY THE ENGINEER.



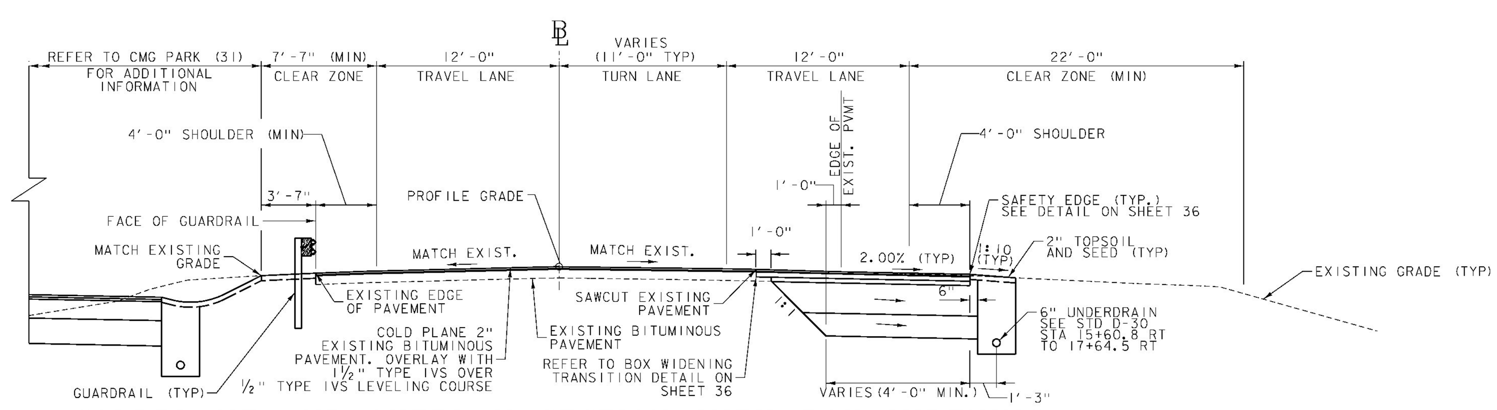
COLDPLANE AND OVERLAY SECTION WITH BOX WIDENING
US ROUTE 2 STA. 7+13.12 - 8+69.66
NOT TO SCALE



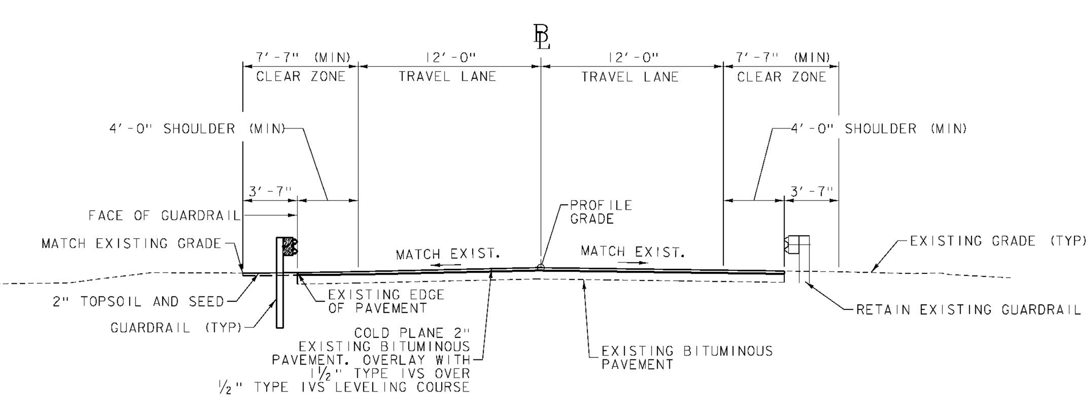
COLDPLANE AND OVERLAY SECTION WITH BOX WIDENING
US ROUTE 2 STA. 6+00.00 - 7+13.12
NOT TO SCALE

PROJECT NAME: RICHMOND	
PROJECT NUMBER: STP 0284 (17)	
FILE NAME: z97cl86typ.dgn	PLOT DATE: 4/29/2013
PROJECT LEADER: ERIK ATKINS	DRAWN BY: S. FORTIER
DESIGNED BY: T. BIGELOW	CHECKED BY: E. ATKINS
US ROUTE 2 TYPICAL SECTIONS SHEET 1	SHEET 34 OF 133

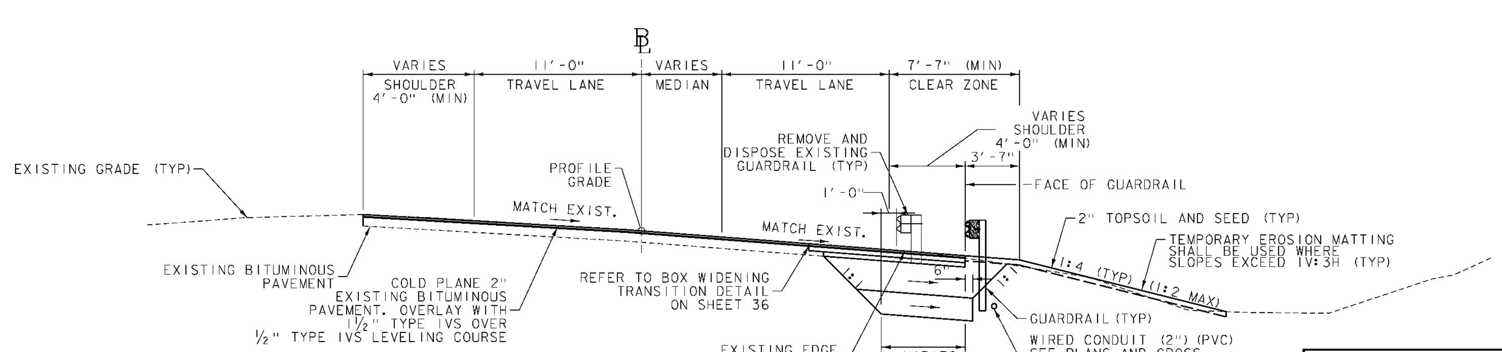
TYPICAL SECTIONS



COLDPLANE AND OVERLAY SECTION WITH BOX WIDENING
US ROUTE 2 STA. 15+60.77 - 22+88.72
NOT TO SCALE



COLDPLANE AND OVERLAY SECTION WITHOUT BOX WIDENING
US ROUTE 2 STA. 10+47.95- 15+60.77
US ROUTE 2 STA. 22+88.72 - 24+50.00
VT ROUTE 117
NOT TO SCALE



COLDPLANE AND OVERLAY SECTION WITH BOX WIDENING
US ROUTE 2 STA. 8+69.66 - 10+47.95
NOT TO SCALE

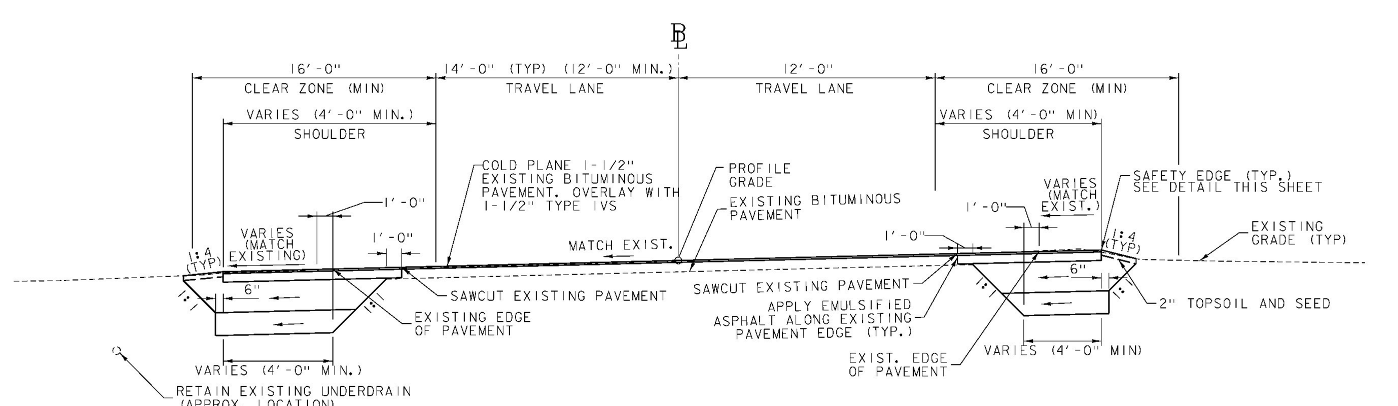
PROJECT NAME: RICHMOND	
PROJECT NUMBER: STP 0284 (17)	
FILE NAME: z97cl86typ.dgn	PLOT DATE: 4/29/2013
PROJECT LEADER: ERIK ATKINS	DRAWN BY: S. FORTIER
DESIGNED BY: T. BIGELOW	CHECKED BY: E. ATKINS
US ROUTE 2 TYPICAL SECTIONS SHEET 2	SHEET 35 OF 133

TYPICAL SECTIONS

RAMP D:
3-1/4" SUPERPAVE BITUMINOUS CONCRETE PAVEMENT (1½" OVER 1¾", TYPE IVS)
5" SUPERPAVE BITUMINOUS CONCRETE PAVEMENT (2½" OVER 2½", TYPE IIS)
24" SUBBASE OF DENSE GRADED CRUSHED STONE
18" SAND BORROW

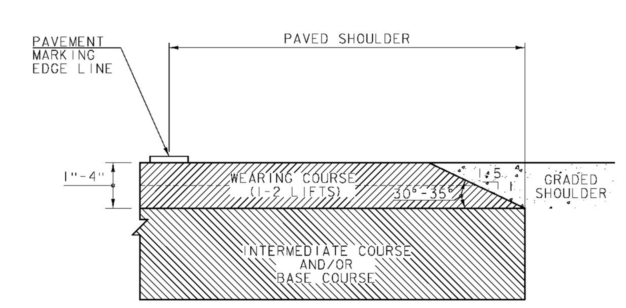
I-89 RAMP "A"/RAMP "F":
2" SUPERPAVE BITUMINOUS CONCRETE PAVEMENT (1½" OVER ½" LEVELING COURSE, TYPE IVS)
7" SUPERPAVE BITUMINOUS CONCRETE PAVEMENT (3½" OVER 3½", TYPE IIS)
24" SUBBASE OF DENSE GRADED CRUSHED STONE
18" SAND BORROW

TACK COAT: EMULSIFIED ASPHALT IS TO BE APPLIED AT THE RATE OF 0.025 GAL/SY BETWEEN SUCCESSIVE COURSES OF PAVEMENT AS DIRECTED BY THE ENGINEER.



COLDPLANE AND OVERLAY SECTION WITH BOX WIDENING I-89 RAMP "D"

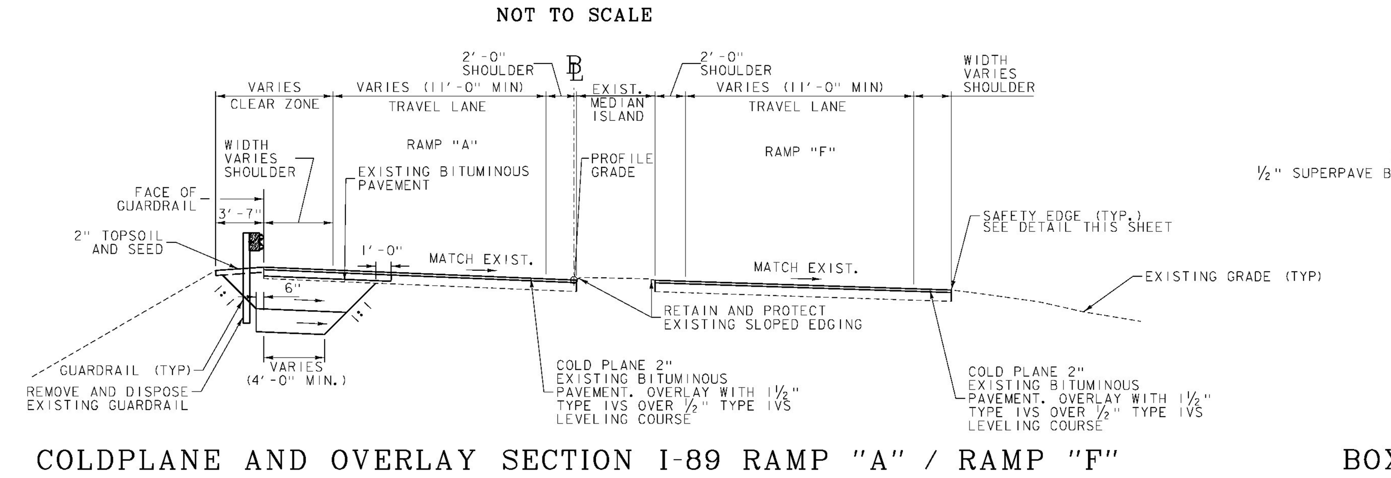
NOT TO SCALE



SAFETY EDGE DETAIL

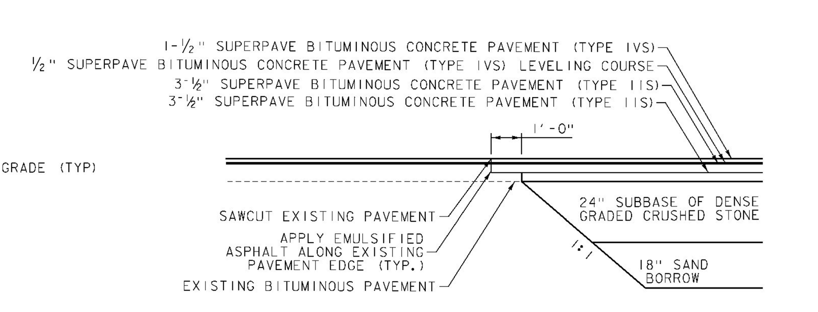
NOT TO SCALE

NOTE:
1. LEVELING COURSE MAY INCLUDE THE "SAFETY EDGE" AT THE DISCRETION OF THE ENGINEER.
2. SAFETY EDGE SHALL NOT BE USED ADJACENT TO GUARDRAIL.
3. 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.



COLDPLANE AND OVERLAY SECTION I-89 RAMP "A" / RAMP "F"

NOT TO SCALE



BOX WIDENING SECTION TRANSITION DETAIL

NOT TO SCALE

PROJECT NAME: RICHMOND	
PROJECT NUMBER: STP 0284 (17)	
FILE NAME: z97c186typ.dgn	PLOT DATE: 4/29/2013
PROJECT LEADER: ERIK ATKINS	DRAWN BY: S. FORTIER
DESIGNED BY: T. BIGELOW	CHECKED BY: E. ATKINS
MISCELLANEOUS TYPICAL SECTIONS	SHEET 36 OF 133

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET 1

SUMMARY OF ESTIMATED QUANTITIES / TOTALS / DESCRIPTIONS

ROADWAY	TRAINING	EROSION CONTROL	FULL C.E. ITEMS	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND
0.5				0.5		LS	CLEARING AND GRUBBING, INCLUDING INDIVIDUAL TREES AND STUMPS	201.10	-
2850				2850		CY	COMMON EXCAVATION	203.15	73
90				90		CY	SOLID ROCK EXCAVATION	203.16	6
20				20		CY	EARTH BORROW	203.30	4
850				850		CY	SAND BORROW	203.31	24
100				100		CY	TRENCH EXCAVATION OF EARTH	204.20	3
1				1		CY	TRENCH EXCAVATION OF EARTH, EXPLORATORY (N.A.B.I.)	204.22	-
11500				11500		SY	COLD PLANING, BITUMINOUS PAVEMENT	210.10	180
1400				1400		CY	SUBBASE OF DENSE GRADED CRUSHED STONE	301.35	46
25				25		CWT	EMULSIFIED ASPHALT	404.65	1
1				1		LU	PRICE ADJUSTMENT, ASPHALT CEMENT (N.A.B.I.)	406.50	-
2200				2200		TON	SUPERPAVE BITUMINOUS CONCRETE PAVEMENT	490.30	29
1				1		LU	AIR VOIDS PAY ADJUSTMENT (N.A.B.I.)	490.31	-
1				1		LU	MAT DENSITY PAY ADJUSTMENT (N.A.B.I.)	490.32	-
							BEGIN OPTION AA		
15				15		LF	18" PCCSP .064 (2-2/3 X 1/2)	601.0415	5
15				15		LF	18" RCP CLASS III	601.0815	5
15				15		LF	18" CPEP(SL)	601.2615	5
							END OPTION AA		
1				1		EACH	PRECAST REINFORCED CONCRETE CATCH BASIN WITH CAST IRON GRATE	604.20	-
1				1		EACH	REHAB. DROP INLETS, CATCH BASINS, OR MANHOLES, CLASS II	604.415	-
1				1		EACH	CAST IRON GRATE WITH FRAME, TYPE B	604.46	-
1				1		EACH	CAST IRON COVER WITH FRAME	604.55	-
225				225		LF	6 INCH UNDERDRAIN PIPE	605.10	10
2				2		EACH	UNDERDRAIN FLUSHING BASIN	605.95	-
		200		200		MGAL	DUST CONTROL WITH WATER	609.10	EST.
		2		2		TON	DUST AND ICE CONTROL WITH CALCIUM CHLORIDE	609.15	EST.
		8		8		CY	STONE FILL, TYPE I	613.10	0.4
		230		230		CY	STONE FILL, TYPE II	613.11	8
175				175		LF	BITUMINOUS CONCRETE CURB, TYPE A	616.305	16
3				3		EACH	YIELDING MARKER POSTS	619.17	-
1750				1750		LF	STEEL BEAM GUARDRAIL, GALVANIZED	621.20	50
1				1		EACH	MANUFACTURED TERMINAL SECTION, FLARED	621.50	-
1				1		EACH	TERMINAL CONNECTOR FOR STEEL BEAM GUARDRAIL	621.53	-
5				5		EACH	ENERGY ABSORPTION ATTENUATOR	621.56	-
30				30		LF	REMOVE AND RESET GUARDRAIL	621.75	8
30				30		EACH	REPLACE GUARDRAIL BEAM UNIT	621.77	2
850				850		LF	REMOVAL AND DISPOSAL OF GUARDRAIL	621.80	35
23				23		EACH	REMOVAL AND DISPOSAL OF GUIDE POSTS	621.81	-
1400				1400		LF	TEMPORARY TRAFFIC BARRIER	621.90	EST.

DETAILED SUMMARY OF QUANTITIES

QUANTITIES	UNIT	ITEMS
COMMON EXCAVATION		
2321	CY	US ROUTE 2
6	CY	VT ROUTE 117
49	CY	I-89 RAMP "A/F"
401	CY	I-89 RAMP "D"
73	CY	ROUNDING
2850	CY	TOTAL
EARTH BORROW		
9	CY	US ROUTE 2
7	CY	I-89 RAMP "D"
4	CY	ROUNDING
20	CY	TOTAL
TRENCH EXCAVATION OF EARTH		
17		PROPOSED DRAINAGE
80		UNDERDRAIN
3		ROUNDING
100		TOTAL
SUBBASE OF DENSE GRADED CRUSHED STONE		
1132	CY	US ROUTE 2
26	CY	I-89 RAMP "A"
196	CY	I-89 RAMP "D"
46	CY	ROUNDING
1400	CY	TOTAL
SUPERPAVE BITUMINOUS CONCRETE PAVEMENT		
	US ROUTE 2	
1469	TON	TYPE IVS
702	TON	TYPE IIS
29	TON	ROUNDING
2200	TON	TOTAL
EROSION CONTROL		
PERMANENT EROSION CONTROL		
8	CY	STONE FILL, TYPE I
230	CY	STONE FILL, TYPE II
525	SY	GEOTEXTILE UNDER STONE FILL
15	SY	PERMANENT EROSION MATTING

PROJECT NAME: RICHMOND
PROJECT NUMBER: STP 0284 (17)

FILE NAME: z97c186qty.dgn
PROJECT LEADER: ERIK ATKINS
DESIGNED BY: A. ACHARYA
QUANTITY SHEET #1

PLOT DATE: 5/21/2013
DRAWN BY: A. ACHARYA
CHECKED BY: T. BIGELOW
SHEET 37 OF 133

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET 2

SUMMARY OF ESTIMATED QUANTITIES				TOTALS		DESCRIPTIONS			
ROADWAY	TRAINING	EROSION CONTROL	FULL C.E. ITEMS	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND
1400				1400		LF	REMOVE AND RESET TEMPORARY TRAFFIC BARRIER	621.95	EST.
800				800		HR	UNIFORMED TRAFFIC OFFICERS	630.10	EST.
1000				1000		HR	FLAGGERS	630.15	EST.
			0.5	0.5		LS	FIELD OFFICE, ENGINEERS	631.10	-
			0.5	0.5		LS	TESTING EQUIPMENT, CONCRETE	631.16	-
			0.5	0.5		LS	TESTING EQUIPMENT, BITUMINOUS	631.17	-
			1500	1500		DL	FIELD OFFICE TELEPHONE (N.A.B.I.)	631.26	-
	520			520		HR	EMPLOYEE TRAINEESHIP	634.10	EST.
0.5				0.5		LS	MOBILIZATION/DEMOBILIZATION	635.11	-
1				1		LS	TRAFFIC CONTROL (STP 0284 (17))	641.10	-
0.5				0.5		LS	PUBLIC RELATIONS OFFICER	641.12	-
4				4		EACH	PORTABLE CHANGEABLE MESSAGE SIGN	641.15	EST.
4400				4400		LF	DURABLE 4 INCH WHITE LINE	646.400	-
4625				4625		LF	DURABLE 4 INCH YELLOW LINE	646.410	-
925				925		LF	DURABLE 6 INCH WHITE LINE	646.420	-
450				450		LF	DURABLE 6 INCH YELLOW LINE	646.430	-
150				150		LF	DURABLE 8 INCH WHITE LINE	646.440	-
280				280		LF	DURABLE 8 INCH YELLOW LINE	646.450	-
250				250		LF	DURABLE 12 INCH WHITE LINE	646.460	-
150				150		LF	DURABLE 24 INCH STOP BAR	646.480	-
51				51		EACH	DURABLE LETTER OR SYMBOL	646.490	-
14000				14000		LF	TEMPORARY 4 INCH WHITE LINE	646.600	-
16750				16750		LF	TEMPORARY 4 INCH YELLOW LINE	646.610	-
3750				3750		LF	TEMPORARY 6 INCH WHITE LINE	646.620	-
1500				1500		LF	TEMPORARY 6 INCH YELLOW LINE	646.630	-
300				300		LF	TEMPORARY 8 INCH WHITE LINE	646.640	-
600				600		LF	TEMPORARY 8 INCH YELLOW LINE	646.650	-
500				500		LF	TEMPORARY 12 INCH WHITE LINE	646.660	-
650				650		LF	TEMPORARY 24 INCH STOP BAR	646.680	-
102				102		EACH	TEMPORARY LETTER OR SYMBOL	646.690	-
1850				1850		SF	REMOVAL OF EXISTING PAVEMENT MARKINGS	646.85	23
		525		525		SY	GEOTEXTILE UNDER STONE FILL	649.31	21
		45		45		SY	GEOTEXTILE FOR SILT FENCE	649.51	5
		350		350		SY	GEOTEXTILE FOR SILT FENCE, WOVEN WIRE REINFORCED	649.515	11
		45		45		LB	SEED	651.15	4
		45		45		LB	SEED, WINTER RYE	651.17	4
		175		175		LB	FERTILIZER	651.18	3
		0.75		0.75		TON	AGRICULTURAL LIMESTONE	651.20	0.06
		0.75		0.75		TON	HAY MULCH	651.25	0.06
		100		100		CY	TOPSOIL	651.35	8

DETAILED SUMMARY OF QUANTITIES		
QUANTITIES	UNIT	ITEMS
TEMPORARY EROSION CONTROL		
45	SY	GEOTEXTILE FOR SILT FENCE
350	SY	GEOTEXTILE FOR SILT FENCE, WOVEN WIRE REINFORCED
45	LB	SEED, WINTER RYE
0.75	TON	HAY MULCH
75	SY	TEMPORARY EROSION MATTING
75	CY	VEHICLE TRACKING PAD

PROJECT NAME: RICHMOND
PROJECT NUMBER: STP 0284 (17)

FILE NAME: z97c186qty.dgn
PLOT DATE: 4/29/2013
PROJECT LEADER: ERIK ATKINS
DRAWN BY: A. ACHARYA
DESIGNED BY: A. ACHARYA
CHECKED BY: T. BIGELOW
QUANTITY SHEET #2

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET 3

SUMMARY OF ESTIMATED QUANTITIES				TOTALS		DESCRIPTIONS			
ROADWAY	TRAINING	EROSION CONTROL	FULL C.E. ITEMS	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND
		0.5		0.5		LS	EPSC PLAN	652.10	-
		275		275		HR	MONITORING EPSC PLAN	652.20	EST.
		0.5		0.5		LU	MAINTENANCE OF EPSC PLAN (N.A.B.I.)	652.30	-
		75		75		SY	TEMPORARY EROSION MATTING	653.20	7
		15		15		SY	PERMANENT EROSION MATTING	653.21	2
		75		75		CY	VEHICLE TRACKING PAD	653.35	EST.
		3		3		EACH	INLET PROTECTION DEVICE, TYPE I	653.40	-
		1150		1150		LF	BARRIER FENCE	653.50	6
		2200		2200		LF	PROJECT DEMARCATION FENCE	653.55	100
108.54				108.54		SF	TRAFFIC SIGNS, TYPE A	675.20	-
348.75				348.75		LB	TUBULAR STEEL SIGN POST	675.33	-
394.6				394.6		LF	SQUARE TUBE SIGN POST AND ANCHOR	675.341	-
2				2		EACH	FOUNDATION FOR TUBULAR STEEL POST	675.43	-
62				62		EACH	REMOVING SIGNS	675.50	-
51				51		EACH	ERECTING SALVAGED SIGNS	675.60	-
20				20		EACH	DELINEATOR WITH STEEL POST	676.10	3
17				17		EACH	REMOVAL OF EXISTING DELINEATOR	676.12	-
1				1		EACH	TRAFFIC CONTROL SIGNAL SYSTEM, INTERSECTION (US ROUTE 2 @ I-89 RAMP "D" AND PARK AND RIDE)	678.15	-
1				1		EACH	TRAFFIC CONTROL SIGNAL SYSTEM, INTERSECTION (US ROUTE 2 @ VT ROUTE 117)	678.15	-
70				70		LF	WIRED CONDUIT (1") (PVC)	678.23	-
140				140		LF	WIRED CONDUIT (2 1/2") (PVC)	678.23	-
1300				1300		LF	WIRED CONDUIT (2") (PVC)	678.23	-
75				75		LF	WIRED CONDUIT (3") (PVC)	678.23	-
7				7		EACH	PULL BOX, STANDARD	678.25	-
11				11		EACH	JUNCTION BOX	678.26	-
150				150		LF	ELECTRICAL CONDUIT SLEEVE (6") (PVC)	678.30	-
475				475		LF	ELECTRICAL CONDUIT SLEEVE (8") (PVC)	678.30	-
1				1		EACH	REMOVAL OF EXISTING TRAFFIC CONTROL SIGNAL SYSTEM (US ROUTE 2 @ VT ROUTE 117)	678.45	-
8				8		EACH	LIGHT POLE BASE	679.21	-
8				8		EACH	LIGHT POLE	679.45	-
1				1		LU	PRICE ADJUSTMENT, FUEL (N.A.B.I.)	690.50	-
8				8		EACH	SPECIAL PROVISION (LUMINAIRE, LED) (STP 0284 (17))	900.620	-
5				5		EACH	SPECIAL PROVISION (SOIL BEARING SLIP BASE) (2 1/2")	900.620	-

DETAILED SUMMARY OF QUANTITIES		
QUANTITIES	UNIT	ITEMS

PROJECT NAME: RICHMOND
PROJECT NUMBER: STP 0284 (17)

FILE NAME: z97c186qty.dgn
PROJECT LEADER: ERIK ATKINS
DESIGNED BY: A. ACHARYA
QUANTITY SHEET #3

PLOT DATE: 4/29/2013
DRAWN BY: A. ACHARYA
CHECKED BY: T. BIGELOW
SHEET 39 OF 133

STATE OF VERMONT
AGENCY OF TRANSPORTATION

ITEM DETAIL AND DRAINAGE SHEET

STATION	STATION	POS.	ASKEW NO. DEG.	INLET/OUTLET TYPE INLET	INLET/OUTLET TYPE OUTLET	PIPE D IN	PIPE L FT	ALLOWABLE OPTIONS RCP CLASS	CAAP TH	CPEP SL	PCCSP TH	REHAB. DI ITEM 604.12	ES EA	CB EA	MH EA	DEPTH DI FT	CONC CLASS B CY	REINF STEEL LBS	DI GRATE TYPE	MANHOLE COVER EA	CRM CY	TRENCH EXCAVATION EARTH CY	TRENCH EXCAVATION ROCK CY	GRAN BKFILL STRUCT CY	EROS MATT SY	STONE FILL CY	STONE FILL TYPE	MARKER POSTS LT EA	MARKER POSTS RT EA	REMARKS
																														* REFER TO ROADWAY LAYOUT SHEETS FOR REMOVAL OR ABANDONMENT REQUIREMENT FOR EXISTING PIPES. QUANTITY OF PIPE REMOVAL IS INCLUDED IN TRENCH EXCAVATION WHERE APPLICABLE
EXISTING DRAINAGE																														
US ROUTE 2																														
1 6+97.3	6+51.9	LT-RT		HW	HW																									RETAIN BOX CULVERT AND HEADWALLS
2 9+63.4	8+34.6	LT		PIPE	PIPE																									RETAIN PIPE
3 9+37.6	9+62.0	LT		DI	DI																									RETAIN PIPE AND STRUCTURE AT 9+37.6 LT
4 9+62.0	9+88.9	LT		DI	PIPE																									RETAIN PIPE AND STRUCTURE AT 9+62.0 LT
5 14+40.4	14+76.3	LT		DI	PIPE																									RETAIN PIPE AND STRUCTURE AT 14+40.4 LT
9 23+16.5	22+93.4	LT-RT		HW	HW																									RETAIN BOX CULVERT AND HEADWALLS
RAMP "D"																														
6 53+58.5	53+38.9	LT-RT		DI	PIPE																									REHAB STRUCTURE AT 53+58.5 LT. CONVERT DI TO MANHOLE (SEE BELOW). RETAIN PIPE.
14 50+65.0	53+58.5	LT-LT		PIPE	DI																									RETAIN UNDERDRAIN
15 54+00.0	53+58.5	LT-LT		PIPE	DI																									RETAIN UNDERDRAIN
RAMP "B"																														
7 60+91.2	60+80.1	LT-RT		HW	HW																									REMOVE HEADWALL AND INSTALL NEW CB (CMG PARK (31) SHEET 101)
8 60+98.1	60+90.8	LT-RT		PIPE	PIPE																									RETAIN PIPE. ABANDONED BY RECORD.
PROPOSED DRAINAGE																														
RAMP "D"																														
1 53+58.5	53+58.5	LT		DI	MH	18	~~10~~ 15	III		X	0.064			1					B			17.3						1		4' DIAMETER PRECAST REINFORCED CONCRETE CATCHBASIN (1 GRATE).
6 53+58.5		LT		MH	HW							1								1										CONVERT EXISTING DI TO MANHOLE. REMOVE EXISTING GRATE AND REPLACE WITH MANHOLE COVER.
TOTALS						18 18 18	10 ~~10~~ 15 10	RCP CLASS III CPEP(SL) PCCSP (0.064)				1		1					B=1	1		17.3						1		

STEEL BEAM GUARDRAIL, GALVANIZED

BEGIN STATION	END STATION	POSITION LEFT FT	POSITION RIGHT FT	END TREATMENT LEFT FT	END TREATMENT RIGHT FT
US ROUTE 2					
6+06.0	10+95.1		475		
13+83.0	15+21.0		137.5		
13+93.8	17+58.0	375			
18+08.0	61+98.9	462.5			
21+76.0	22+26.0		12.5		
VT ROUTE 117 TO RAMP "A"					
30+53.6	35+71.1	237.5			
TOTALS		1075	625		

CURB

SEE ROADWAY LAYOUT SHEET AND
CURB TIE AND LAYOUT SHEET FOR ADDITIONAL DETAILS

TOTALS					

UNDERDRAIN

BEGIN STATION	END STATION	POSITION	TYPE	DIA IN.	LENGTH FT	TRENCH EARTH CY.	TRENCH ROCK CY.	GRAN BKFILL CF	FB EA	MRK. POST EA
12 15+60.8	17+64.5	RT-RT	U	6	215	79.6			~~2~~ 1	~~2~~ 1
		TOTAL 6 INCH UNDERDRAIN PIPE			215	79.6			~~2~~ 1	~~2~~
	16+50	RT								1
	17+45	RT								1
	17+40.8	RT		6					1	
TOTALS					215	79.6			2	3 ~~2~~

KEY	DATE	BY	REVISION
1	11/17/2015	VTRANS	DRAINAGE SHEET UPDATES

PROJECT NAME: RICHMOND
PROJECT NUMBER: STP 0284 (17)

FILE NAME: Z97C186ITEMDET.XLS
PROJECT LEADER: ERIK ATKINS
DESIGNED BY: T. BIGELOW
ITEM DETAIL AND DRAINAGE SHEET

PLOT DATE: 11/15/2012
DRAWN BY: T. BIGELOW
CHECKED BY: E. ATKINS
SHEET 40 OF 133

STATE OF VERMONT
AGENCY OF TRANSPORTATION

EARTHWORKS

STATION	DIST FT.	TOTAL EXCAVATION EARTH AND ROCK AREA S.F.	TOTAL EXCAVATION EARTH AND ROCK VOLUME C.Y.	ROCK EXCAVATION AREA S.F.	ROCK EXCAVATION VOLUME C.Y.	EMBANKMENT AREA S.F.	EMBANKMENT VOLUME C.Y.	AREA S.F.	VOLUME C.Y.
US ROUTE 2									
6+00		0				0			
	50		65				0		
6+50		70				0			
	50		129				0		
7+00		69				0			
	50		185				3		
7+50		131				3			
	50		238				4		
8+00		126				1			
	50		225				1		
8+50		117				0			
	50		200				1		
9+00		99				1			
	50		125				1	CUT	2331
9+50		36				0		ROCK	0
	50		65				0	R.FAC	.495
10+00		34				0		FILL	9
	50		34				0	F.FAC	1.15
10+50		3				0		EX. C	2321
	50		2				0		
11+00		0				0			
	50		0				0		
11+50		0				0			
	50		0				0		
12+00		0				0			
	50		0				0		
12+50		0				0			
	50		0				0		
13+00		0				0			
	50		0				0		
13+50		0				0			
	50		0				0		
14+00		0				0			
	50		0				0		
14+50		0				0			
	50		0				0		
15+00		0				0			
	50		0				0		
15+50		0				0			
	50		29				0		
16+00		31				0			
	50		57				0		
16+50		31				0			
	50		61				0		
17+00		34				0			
	50		69				0		
17+50		41				0			
	50		38				0		
18+00		0				0			
	50		45				0		
18+50		48				0			
	50		89				0		
19+00		48				0			
	50		100				0		
19+50		60				0			
	50		106				0		
20+00		54				0			
	50		100				0		
20+50		54				0			
	50		98				0		
21+00		53				0			
	50		95				0		
21+50		50				0			
	50		82				0		
22+00		39				0			
	50		66				0		
22+50		32				0			
	50		30				0		
23+00		0				0			
	50		0				0		
23+50		0				0			
	50		0				0		
24+00		0				0			
	50		0				0		
24+50		0				0			
VT ROUTE 117									
30+00		2				0		CUT	6
	50		4				0	ROCK	0
30+50		2				0		R.FAC	.495
	50		2				0	FILL	0
31+00		0				0		F.FAC	1.15
								EX. C	6

STATION	DIST FT.	TOTAL EXCAVATION EARTH AND ROCK AREA S.F.	TOTAL EXCAVATION EARTH AND ROCK VOLUME C.Y.	ROCK EXCAVATION AREA S.F.	ROCK EXCAVATION VOLUME C.Y.	EMBANKMENT AREA S.F.	EMBANKMENT VOLUME C.Y.	AREA S.F.	VOLUME C.Y.
I-89 RAMP "A/F"									
35+28		31				0		CUT	49
	22		25				0	ROCK	0
35+50		31				0		R.FAC	.495
	21		24				0	FILL	0
35+71		31				0		F.FAC	1.15
								EX. C	49
I-89 RAMP "D"									
51+83		31				0			
	17		20				0		
52+00		31				0		CUT	400
	50		61				0	ROCK	0
52+50		35				0		R.FAC	.495
	50		64				0	FILL	6
53+00		34				0		F.FAC	1.15
	50		87				3	EX. C	393
53+50		60				4			
	50		93				3		
54+00		40				0			
	32		76				0		
54+32		88				0			

SUMMARY AND BALANCES

STATION TO STATION		TOT EXC. EARTH & ROCK C.Y.	ROCK EXCAV C.Y.	EMBANK C.Y.	EXCESSES CUT	EXCESSES FILL	ACUMULATIVE EXCESSES CUT	ACUMULATIVE EXCESSES FILL
RICHMOND STP 0284 (17)								
6+00	24+50	2321		9	2311		2311	
30+00	31+00	6		0	6		2317	
35+25	35+71	49		0	49		2365	
51+83	54+32	400		6	393		2758	
3% CONTINGENCY			83					
	SUB-TOTAL	2776	83	15	2758			
	TOTAL	2776	83	15	2758			

REMARKS

EARTH AND ROCK EXCAVATION	2776
SOLID ROCK EXCAVATION	83
EARTH EXCAVATION	2693
BACKFILL FOR TRENCH EXCAVATION (CB AND PIPES)	4
PLANIMETERED FILL	15
LESS FACTORED SOLID ROCK	
LESS DISPLACEMENT OF ANY LARGE STRUCTURES	
NET PLANIMETERED FILL	19
FACTOR	1.15
PLANIMETERED FILL INCLUDING FACTOR	22
MATERIALS AVAILABLE FOR FILLS	
EARTH EXCAVATION	2693
CHANNEL EXCAVATION	
UNDERDRAIN EXCAVATION	80
STRUCTURE EXCAVATION	
TRENCH EXCAVATION FOR DRAINAGE	17
TRENCH EXCAVATION OF ROCK	
TOTAL MATERIAL AVAILABLE FOR FILL	2790
TOTAL FILL INCLUDING FACTOR	22
TOTAL MATERIAL FOR FILL	2490
BORROW	
EXCESS EXCAVATION	2768

PROJECT NAME: **RICHMOND**
PROJECT NUMBER: **STP 0284 (17)**

FILE NAME: **Z97C186EWQTY.XLS**
PROJECT LEADER: **ERIK ATKINS**
DESIGNED BY: **T. BIGELOW**
EARTHWORK SHEET

PLOT DATE: **11/15/2012**
DRAWN BY: **A. ACHARYA**
CHECKED BY: **E.ATKINS**
SHEET **41** OF **133**

GPS CONTROL POINTS

HVCTRL #1

CGS DISK
"N24 1935"
N = 703025.864
E = 1505661.647
ELEV. = 304.970

GENERAL LOCATION, RICHMOND, VT., ABOUT 8.5 MI (13.7 KM) EAST OF BURLINGTON, ABOUT 24 MI (38.6 KM) WEST-NORTHWEST OF MONTPELIER, AND ABOUT 26 MI (41.8 KM) SOUTH OF ST ALBANS.
TO REACH FROM THE INTERSECTION OF VT ROUTE 117 AND US ROUTE 2 IN RICHMOND GO NORTH ALONG VT ROUTE 117 FOR 0.3 MI (0.5 KM) TO THE MARK ON THE LEFT, WEST OF THE CENTRAL VERMONT RAILROAD TRACKS AND ABOUT OPPOSITE THE NORTH END OF THE LUCKY SPOT VARIETY STORE. THE MARK IS 9.5 M (31.2 FT) WEST OF AND ABOUT 0.5 M (1.6 FT) LOWER THAN THE WEST RAIL OF THE CVRR, 25.1 M (82.3 FT) WEST OF THE CENTERLINE OF VT ROUTE 117, 25.0 M (82.0 FT) NORTH OF THE CENTERLINE OF A FARM DRIVE, 13.8 M (45.3 FT) WEST-NORTHWEST OF RAILROAD MILEPOST W101, AND 0.2 M (0.7 FT) EAST OF A FIBERGLASS WITNESS POST IN THE RAILROAD RIGHT-OF-WAY FENCE. IT IS SET IN THE TOP OF A 15 CM SQUARE CONCRETE MONUMENT WHICH PROJECTS 7 CM ABOVE GROUND SURFACE.

* DESCRIPTION PROVIDED BY VERMONT AGENCY OF TRANSPORTATION GEODETIC SURVEY UNIT

HVCTRL #2

VTAT DISK
"ACCIDENT 1994"
N = 701724.618
E = 1505713.862
ELEV. = 321.077

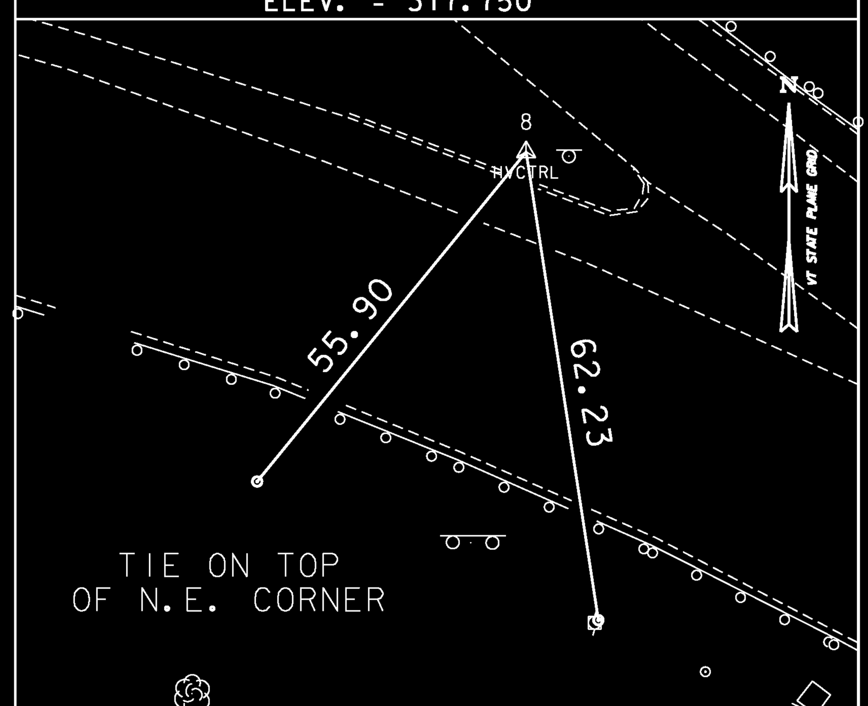
GENERAL LOCATION, RICHMOND, VT.
OWNERSHIP; SOUTHWORTH MILTON INC., RICHMOND VT.

TO REACH FROM THE INTERSECTION OF US ROUTE 2 AND VT ROUTE 117 GO WEST ALONG US ROUTE 2 FOR 0.15 MI (0.24 KM) TO THE CATERPILLAR DEALERSHIP. TURN RIGHT AND GO NORTH ALONG CAT LANE FOR ABOUT 80 M (262.5 FT) TO THE SITE OF MARK ON THE LEFT IN A LAWN. THE MARK IS SET FLUSH WITH GOUND SURFACE IN THE TOP OF A 1.7 M (5.6 FT) X 0.4 M (1.3 FT) ROCK OUTCROP. IT IS 16.5 M (54.1 FT) WEST OF AND ABOUT 2 M (6.6 FT) HIGHER THAN THE CENTERLINE OF CAT LANE, 13.0 M (42.7 FT) NORTHWEST OF A LUMEN (STREETLIGHT), 64.2 M (210.6 FT) NORTH NORTHWEST OF POLE NO 65.

TRAVERSE TIES

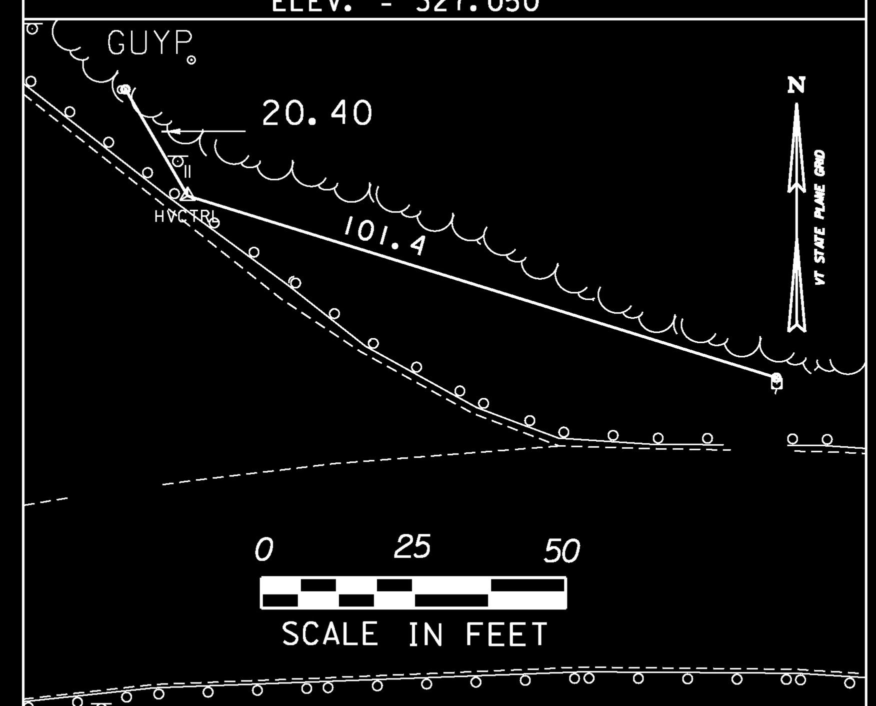
HVCTRL #8

NORTH = 701798.185
EAST = 1506965.378
ELEV. = 317.750



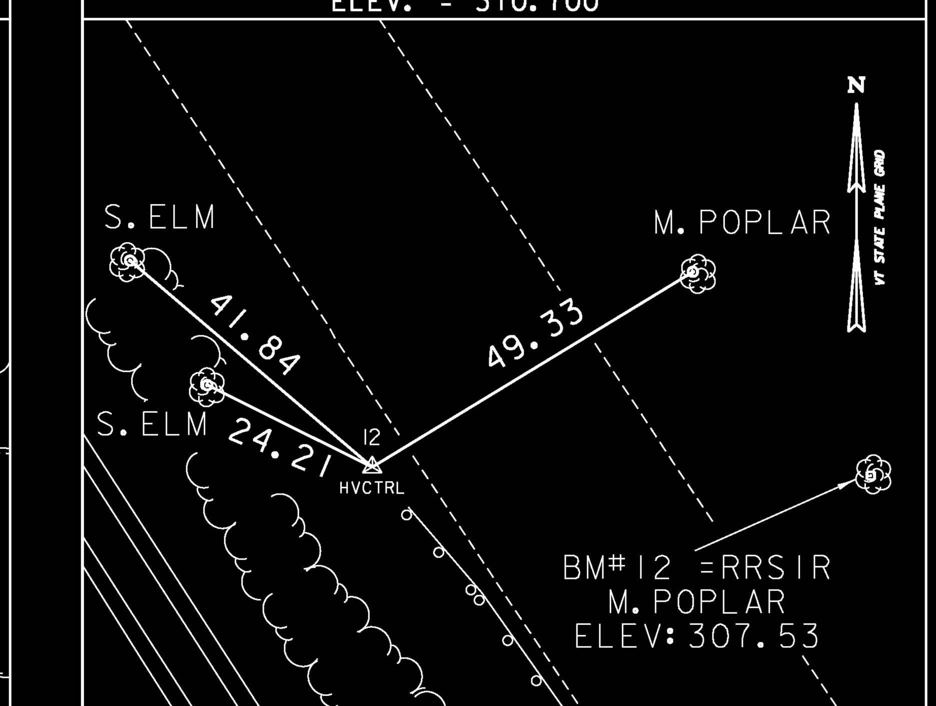
HVCTRL #11

NORTH = 701886.683
EAST = 1506619.985
ELEV. = 327.050



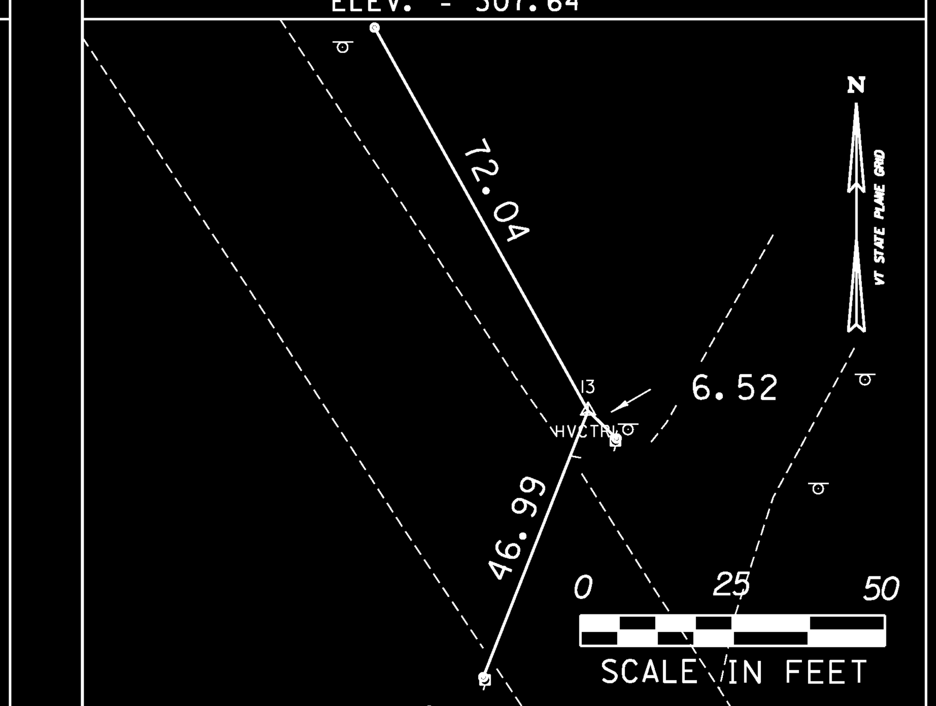
HVCTRL #12

NORTH = 702331.003
EAST = 1506189.689
ELEV. = 310.700



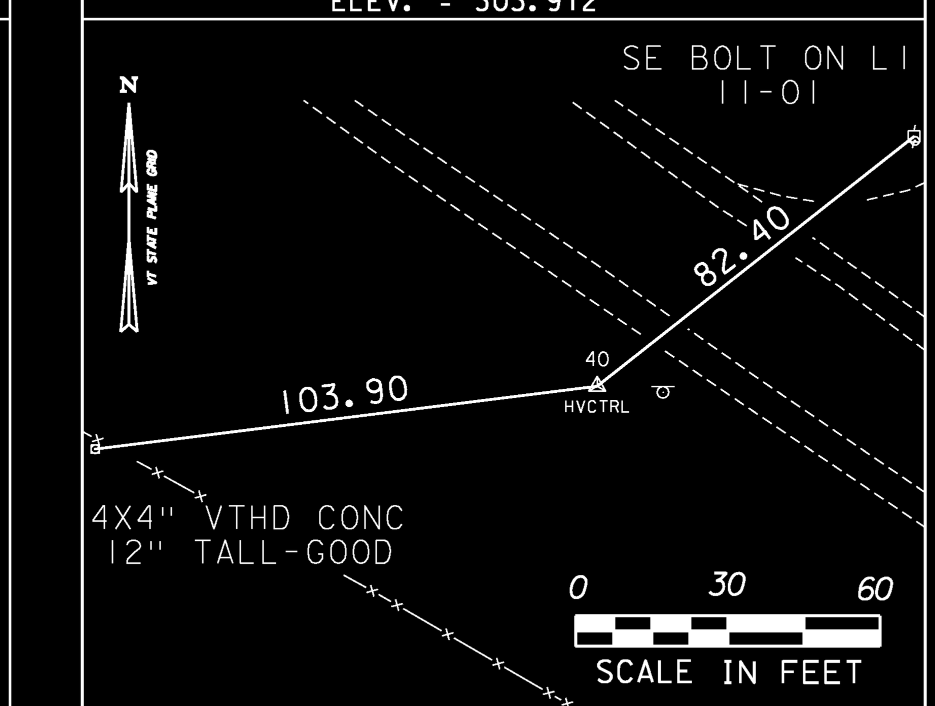
HVCTRL #13

NORTH = 702734.972
EAST = 1505974.609
ELEV. = 307.64



HVCTRL #40

NORTH = 701180.496
EAST = 1507810.656
ELEV. = 303.912

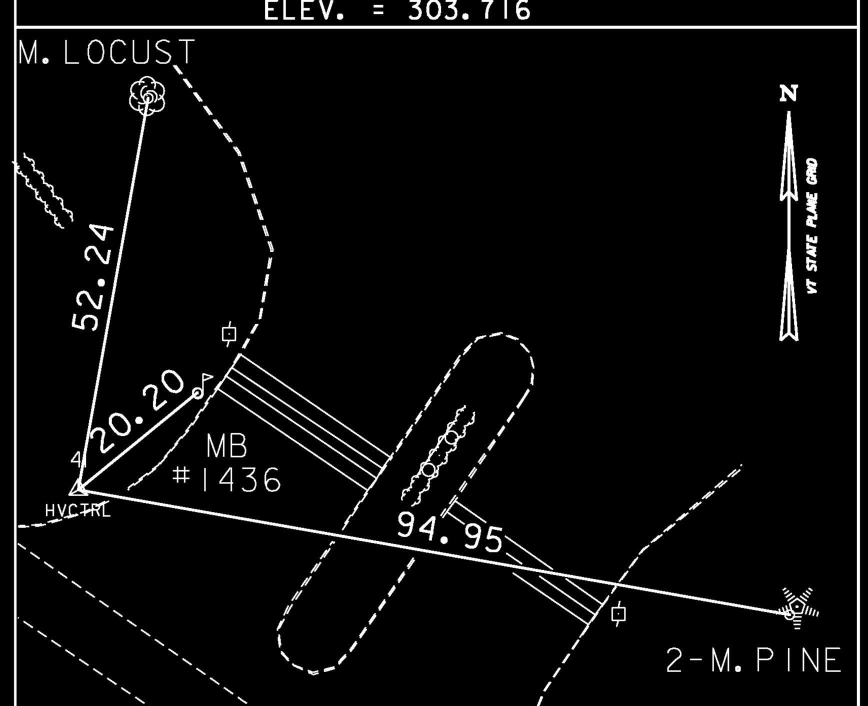


* MAIN TRAVERSE COMPLETED: DEC. 12, 2004 BY. L.ORVIS PC, C.HARDING

TRAVERSE TIES

HVCTRL #41

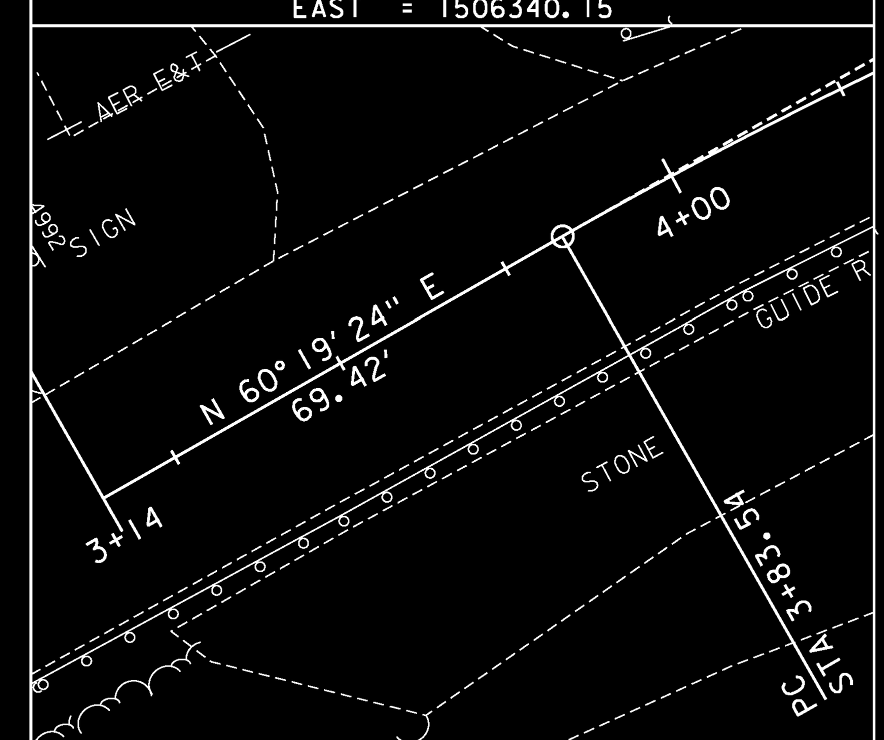
NORTH = 700973.700
EAST = 1508225.493
ELEV. = 303.716



ALIGNMENT TIES

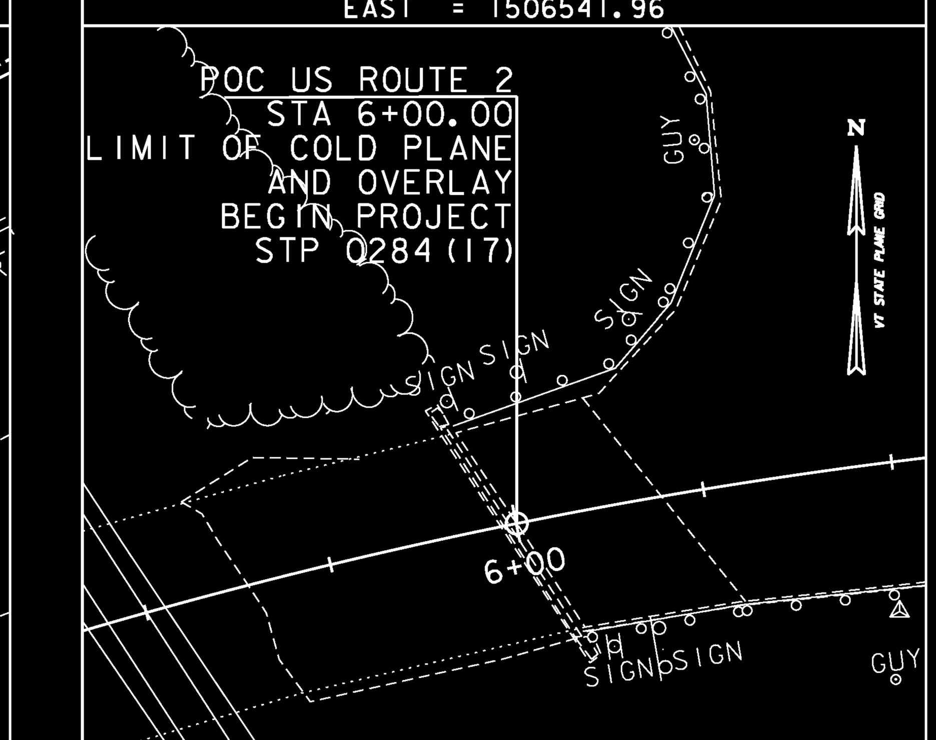
US ROUTE 2 PC STA. 3+83.54

NORTH = 701736.35
EAST = 1506340.15



US ROUTE 2 POC STA. 6+00.00

NORTH = 701812.04
EAST = 1506541.96



US ROUTE 2 POC STA. 6+62.25= VT ROUTE 117 STA. 30+00.00

NORTH = 701821.58
EAST = 1506603.46

0 20 40
SCALE IN FEET

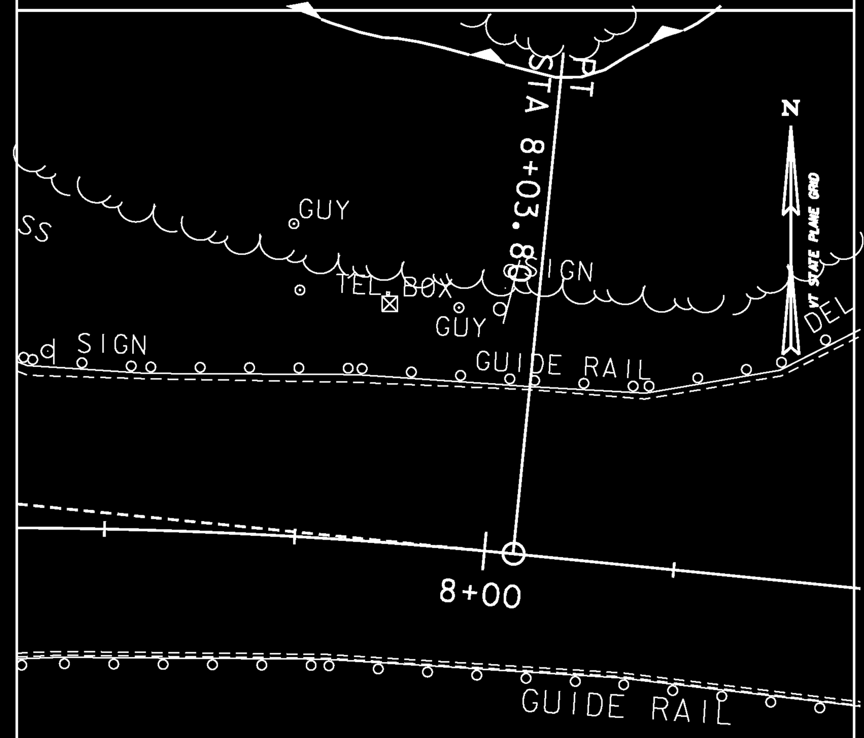
DATUM	
VERTICAL	NAVD88
HORIZONTAL	NAD83 (1992)
ADJUSTMENT	COMPASS

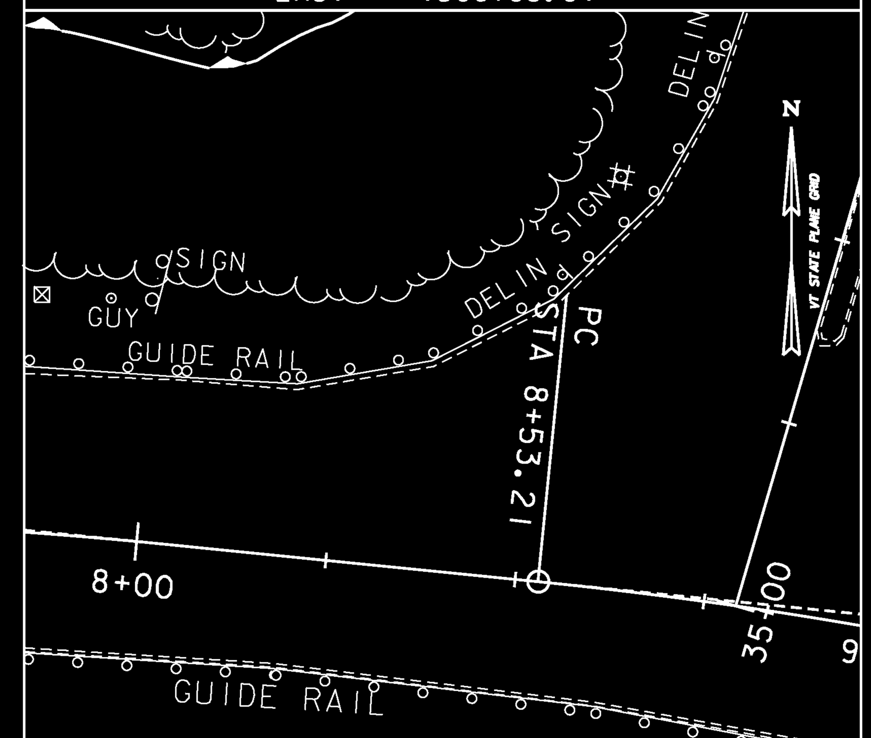
PROJECT NAME: RICHMOND
PROJECT NUMBER: STP 0284 (17)

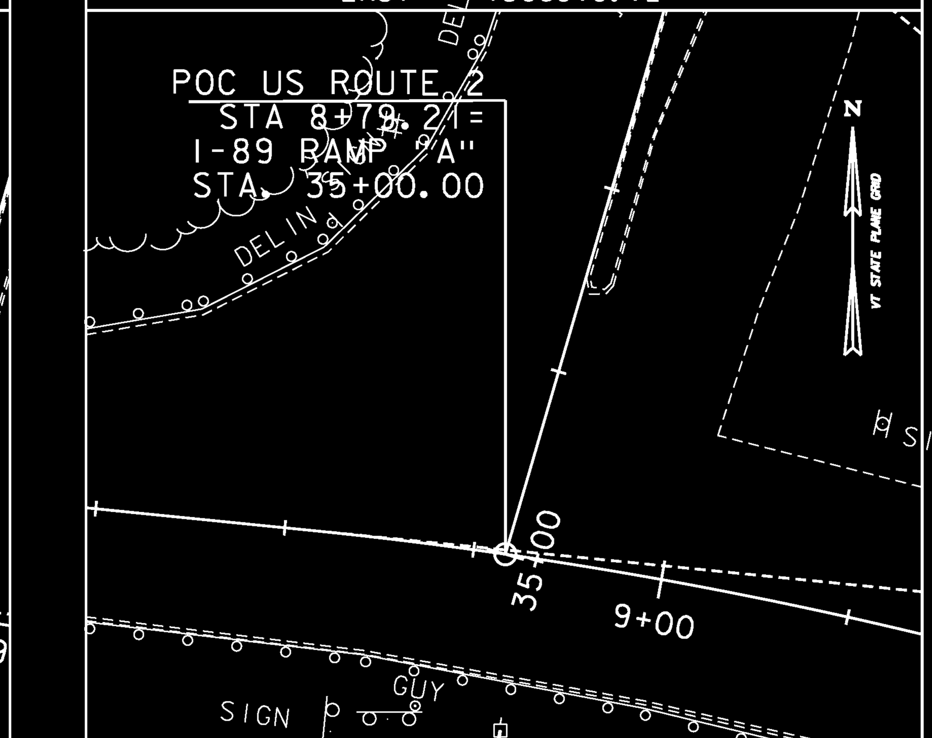
FILE NAME: z97c186t1.dgn	PLOT DATE: 4/29/2013
PROJECT LEADER: ERIK ATKINS	DRAWN BY: A. ACHARYA
DESIGNED BY: T. BIGELOW	CHECKED BY: E. ATKINS
TIE SHEET 1	SHEET 42 OF 133

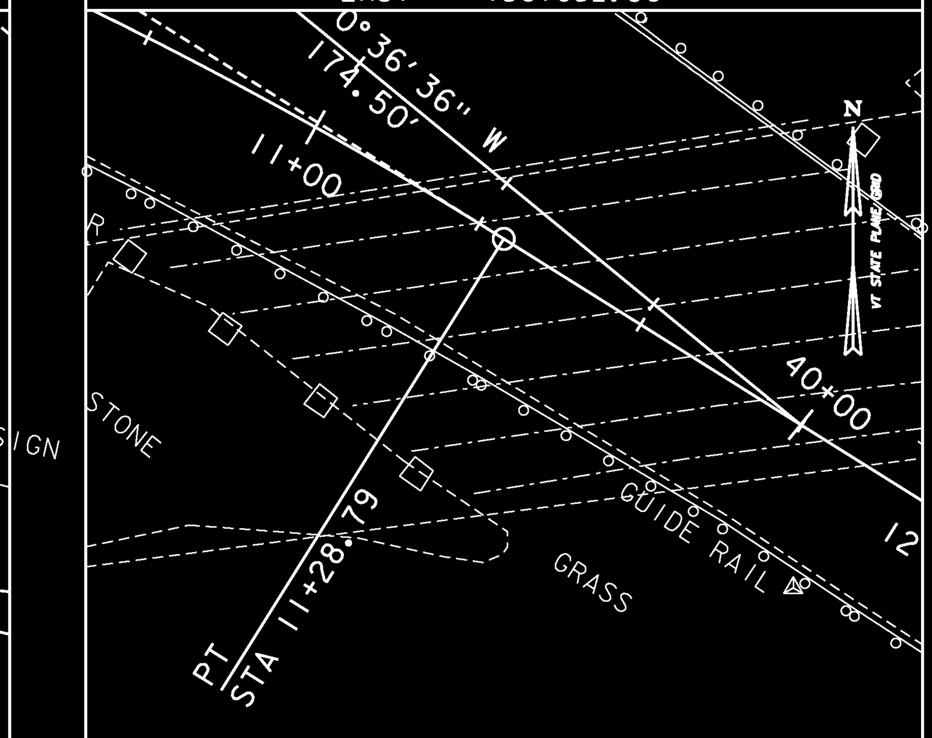
ALIGNMENT TIES

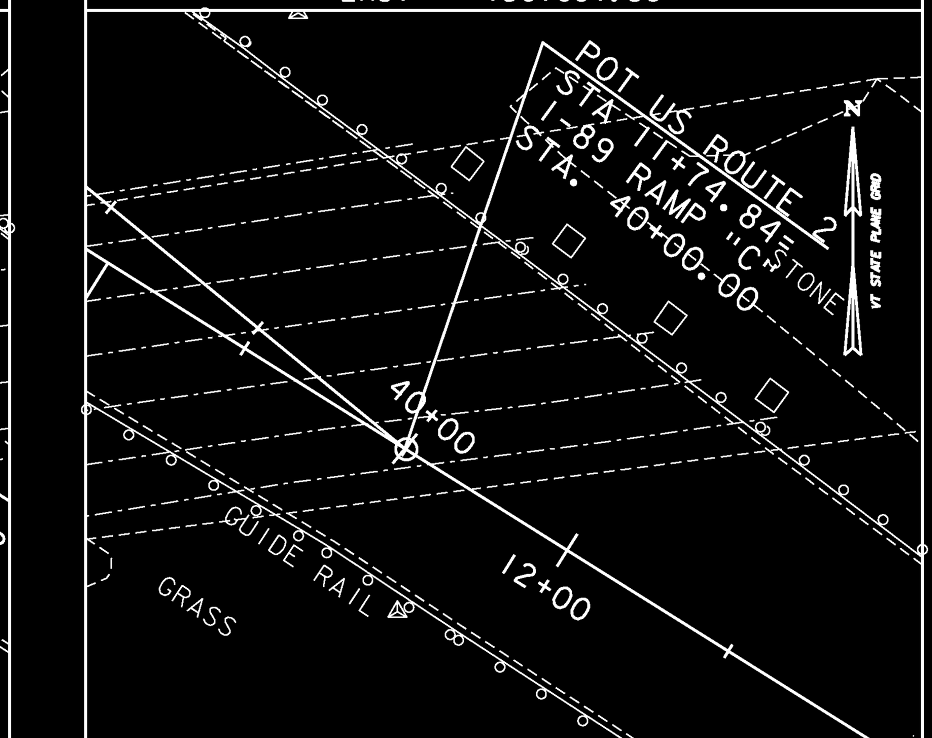
US ROUTE 2 PT STA. 8+03.80	US ROUTE 2 PC STA. 8+53.21	US ROUTE 2 POC STA. 8+79.21= I-89 RAMP "A" STA. 35+00.00	US ROUTE 2 PT STA. 11+28.79	US ROUTE 2 POT STA. 11+74.84= I-89 RAMP "C" STA. 40+00.00
NORTH = 701822.15	NORTH = 701817.21	NORTH = 701814.05	NORTH = 701728.77	NORTH = 701704.33
EAST = 1506744.75	EAST = 1506793.91	EAST = 1506819.72	EAST = 1507052.36	EAST = 1507091.39





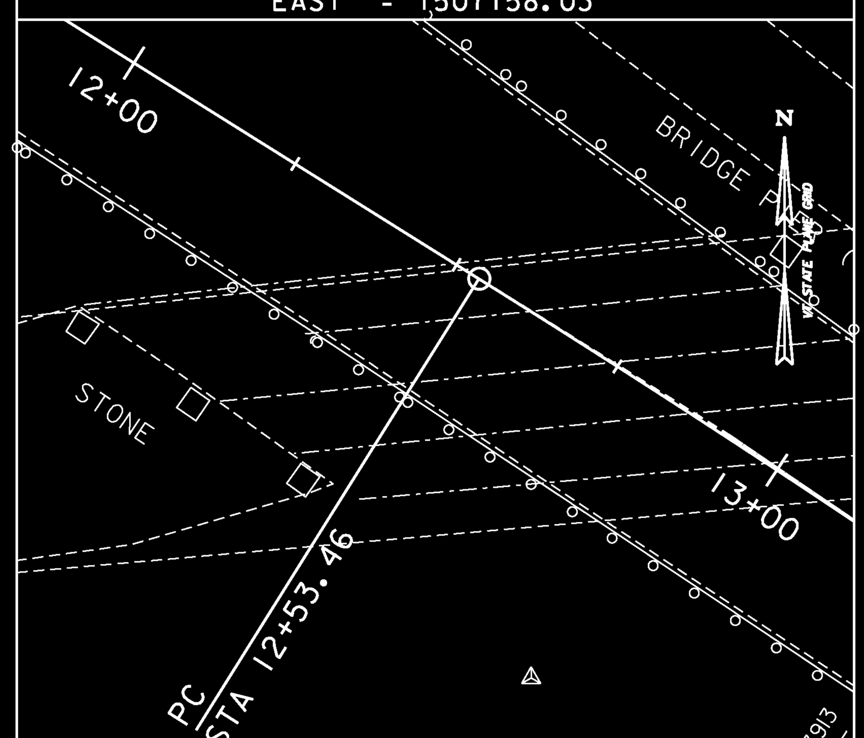


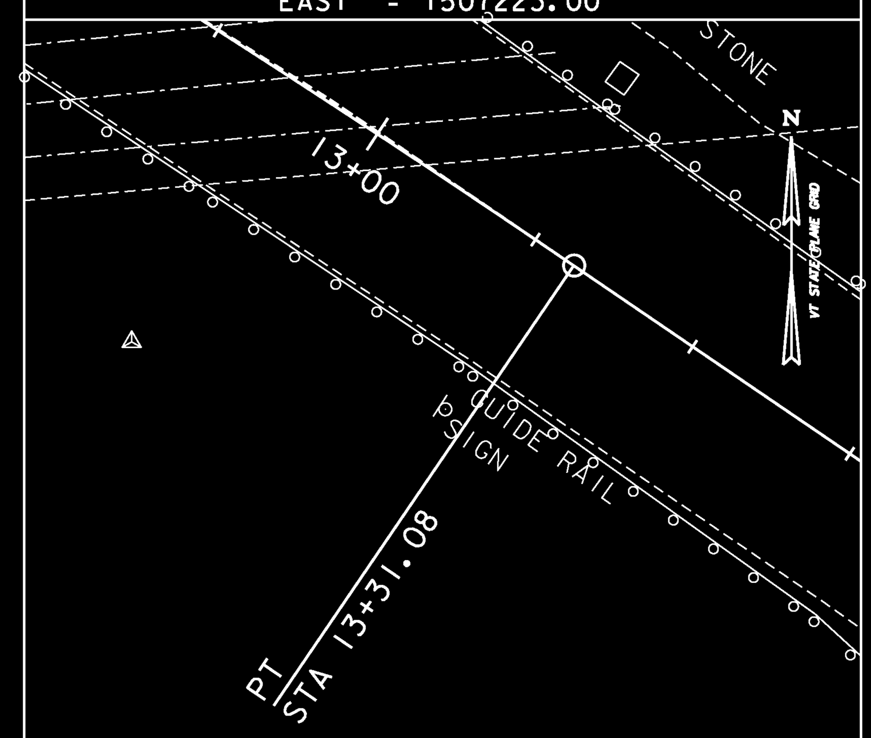


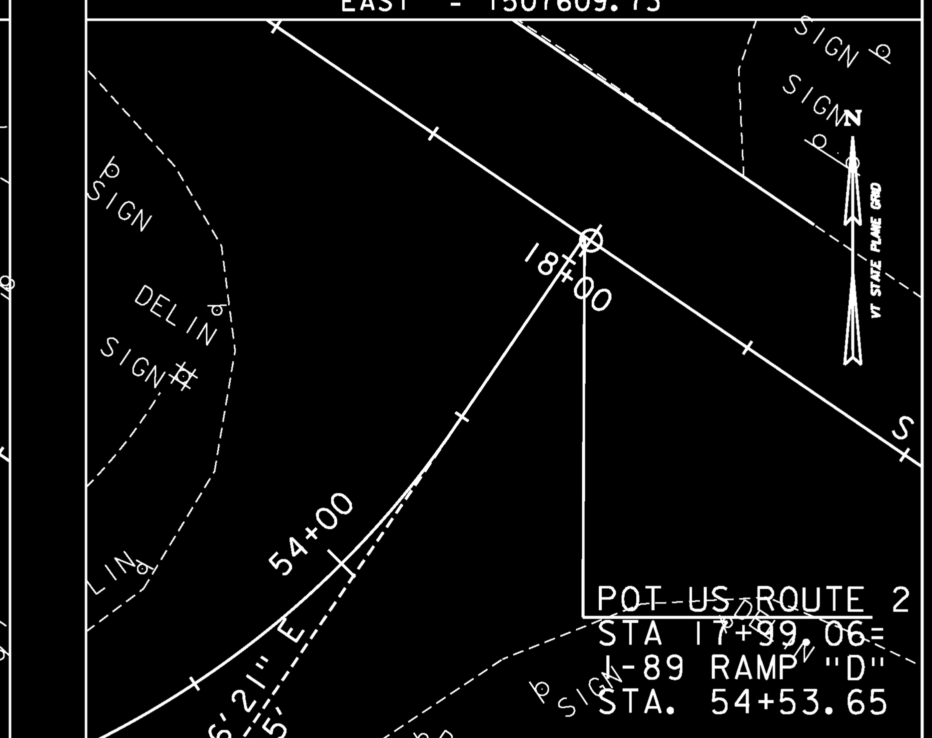


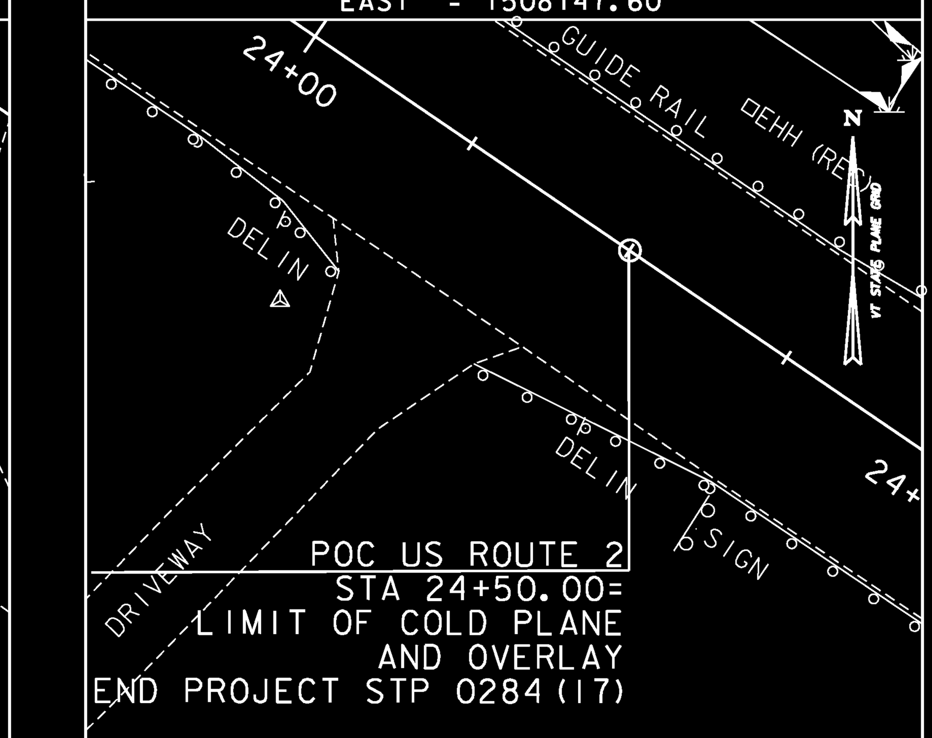
ALIGNMENT TIES

US ROUTE 2 PC STA. 12+53.46	US ROUTE 2 PT STA. 13+31.08	US ROUTE 2 POT STA. 17+99.06= I-89 RAMP "D" STA. 54+53.65	US ROUTE 2 POT STA. 21+25.57= I-89 RAMP "B" STA. 60+00.00	US ROUTE 2 POT STA. 24+50.00
NORTH = 701662.61	NORTH = 701620.16	NORTH = 701356.63	NORTH = 701172.76	NORTH = 700990.07
EAST = 1507158.03	EAST = 1507223.00	EAST = 1507609.73	EAST = 1507879.55	EAST = 1508147.60



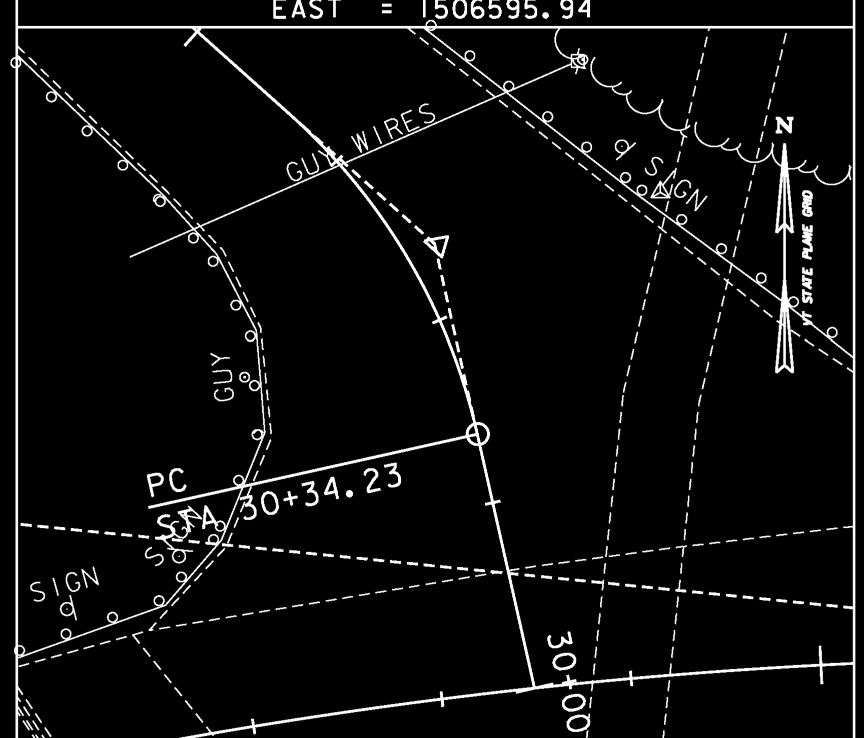


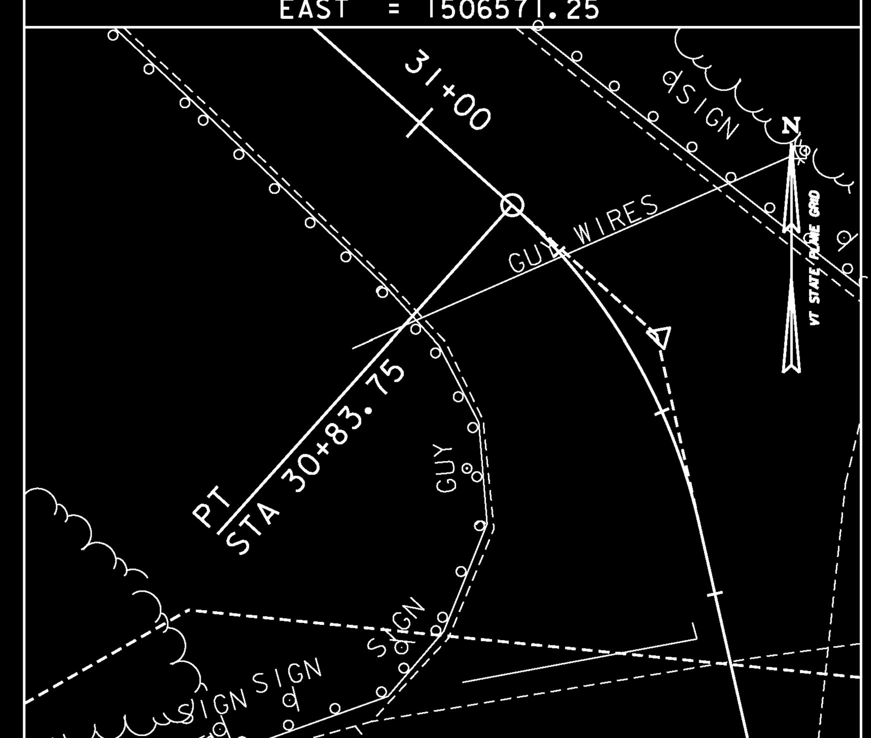


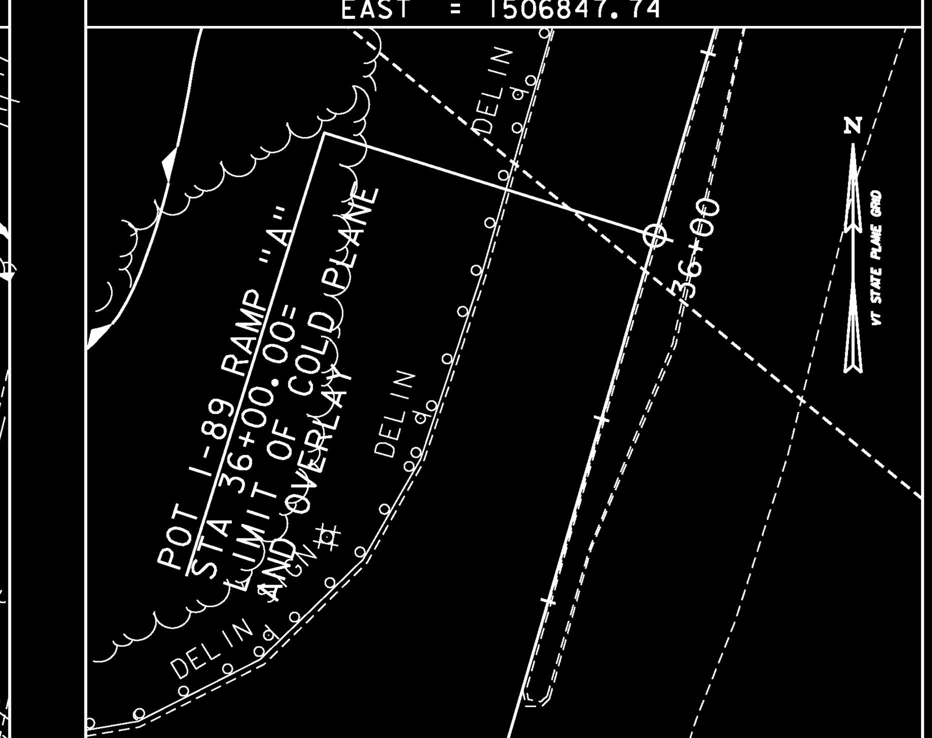


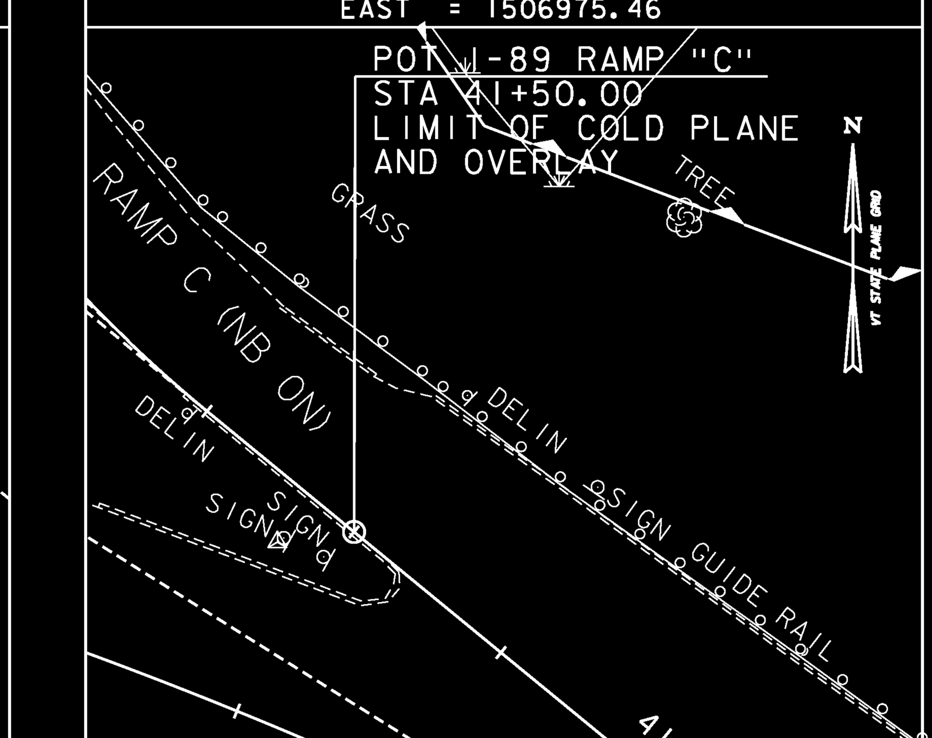
ALIGNMENT TIES

VT ROUTE 117 PC STA. 30+34.23	VT ROUTE 117 PT STA. 30+83.75	VT ROUTE 117 STA. 31+00.00	I-89 RAMP "A" STA 36+00.00	I-89 RAMP "C" POT STA. 41+50.00
NORTH = 701854.97	NORTH = 701896.99	NORTH = 701907.83	NORTH = 701910.05	NORTH = 701799.52
EAST = 1506595.94	EAST = 1506571.25	EAST = 1506559.15	EAST = 1506847.74	EAST = 1506975.46









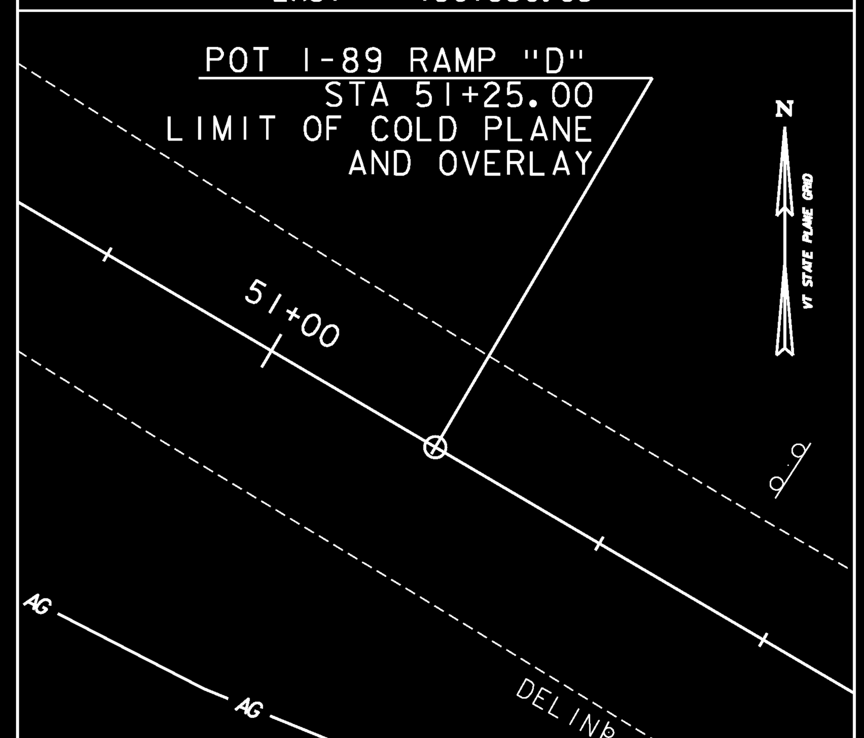
DATUM	
VERTICAL	NAVD88
HORIZONTAL	NAD83 (1992)
ADJUSTMENT	COMPASS

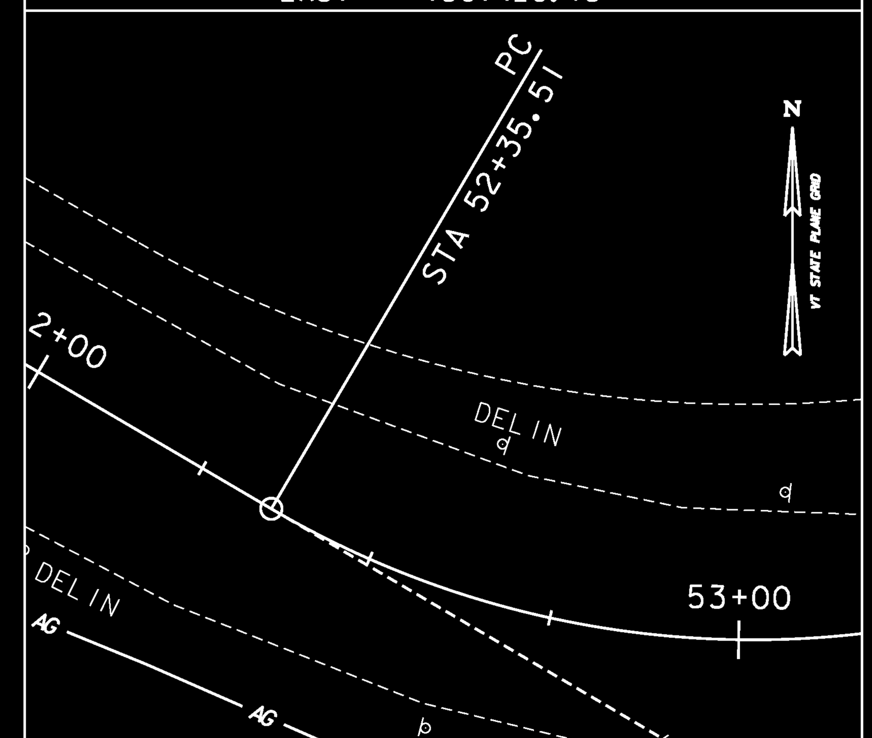
0 20 40
SCALE IN FEET

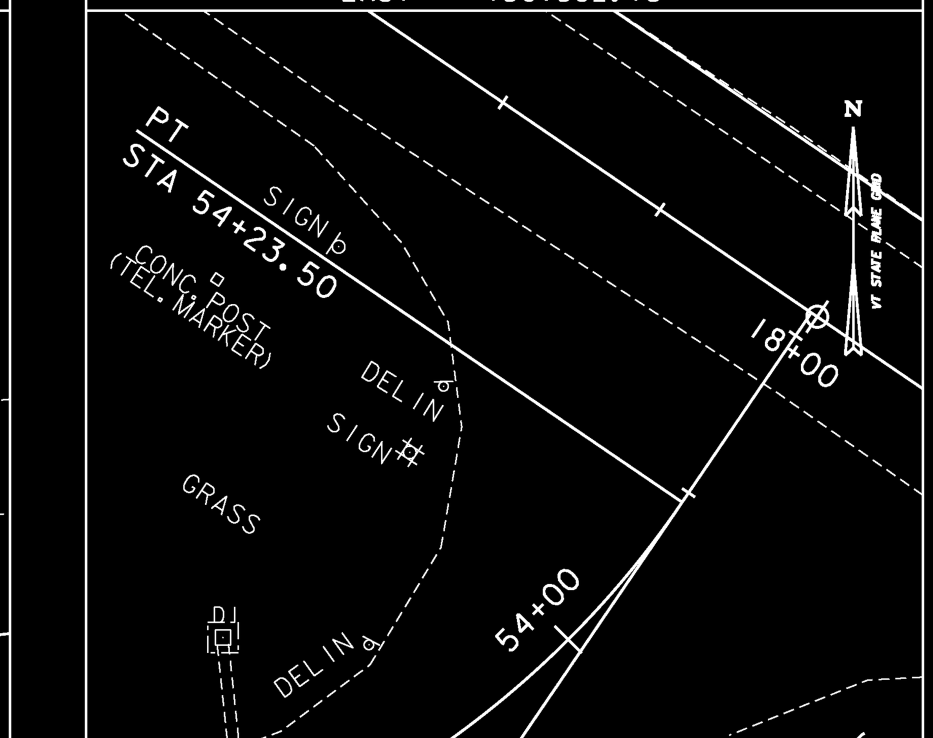
PROJECT NAME: RICHMOND	
PROJECT NUMBER: STP 0284 (17)	
FILE NAME: z97c186t1.dgn	PLOT DATE: 4/29/2013
PROJECT LEADER: ERIK ATKINS	DRAWN BY: A. ACHARYA
DESIGNED BY: T. BIGELOW	CHECKED BY: E. ATKINS
TIE SHEET 2	SHEET 43 OF 133

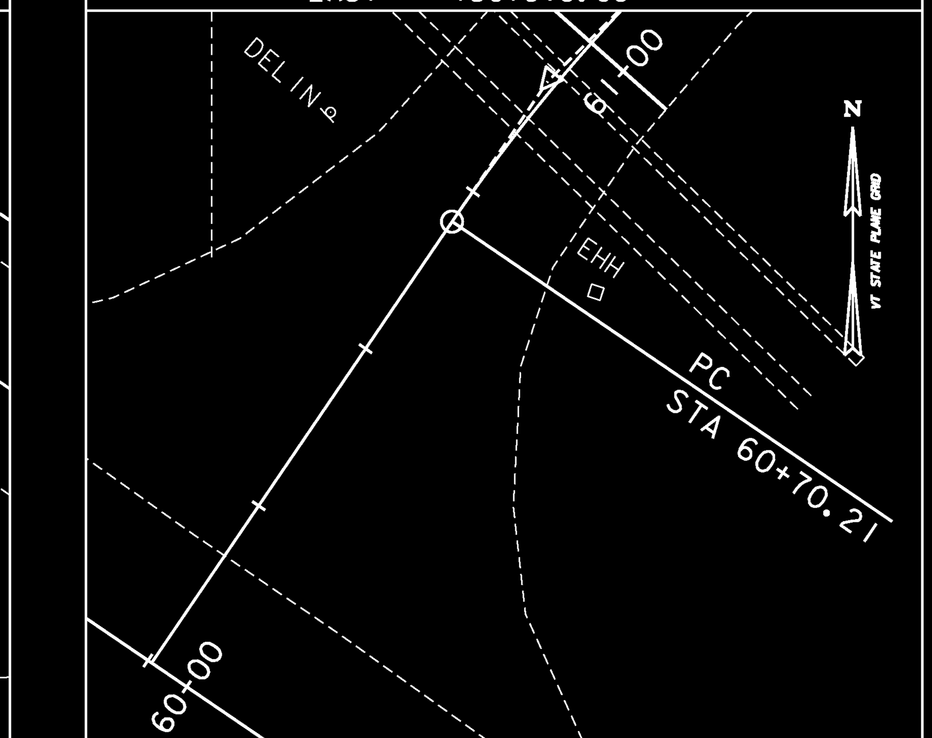
ALIGNMENT TIES

I-89 RAMP "D" POT STA. 51+25.00	I-89 RAMP "D" PT STA. 52+35.51	I-89 RAMP "D" PT STA. 54+23.50	I-89 RAMP "B" PC STA. 60+70.21	I-89 RAMP "B" POC STA. 61+00.00
NORTH = 701350.33	NORTH = 701294.34	NORTH = 701331.72	NORTH = 701230.78	NORTH = 701254.19
EAST = 1507330.85	EAST = 1507426.13	EAST = 1507592.75	EAST = 1507919.09	EAST = 1507937.49









AMIGNMENT TIES

NORTH =	NORTH =	NORTH =	NORTH =	NORTH =
EAST =	EAST =	EAST =	EAST =	EAST =

ALIGNMENT TIES

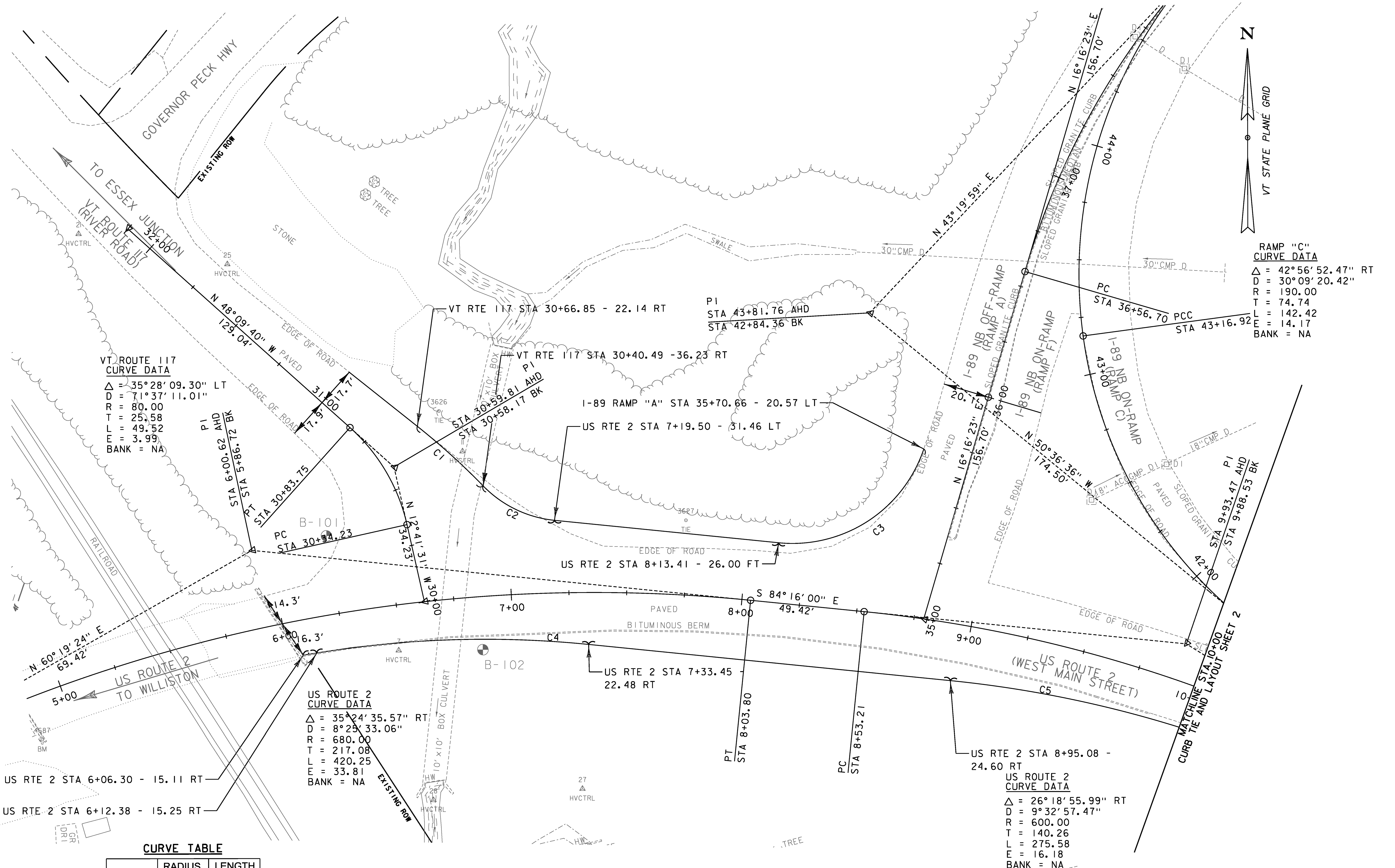
NORTH =	NORTH =	NORTH =	NORTH =	NORTH =
EAST =	EAST =	EAST =	EAST =	EAST =

DATUM	
VERTICAL	NAVD88
HORIZONTAL	NAD83 (1992)
ADJUSTMENT	COMPASS

0 20 40
SCALE IN FEET

PROJECT NAME: RICHMOND
PROJECT NUMBER: STP 0284 (17)

FILE NAME: z97c186t1.dgn	PLOT DATE: 4/29/2013
PROJECT LEADER: ERIK ATKINS	DRAWN BY: A. ACHARYA
DESIGNED BY: T. BIGELOW	CHECKED BY: E. ATKINS
TIE SHEET 3	SHEET 44 OF 133



CURVE TABLE

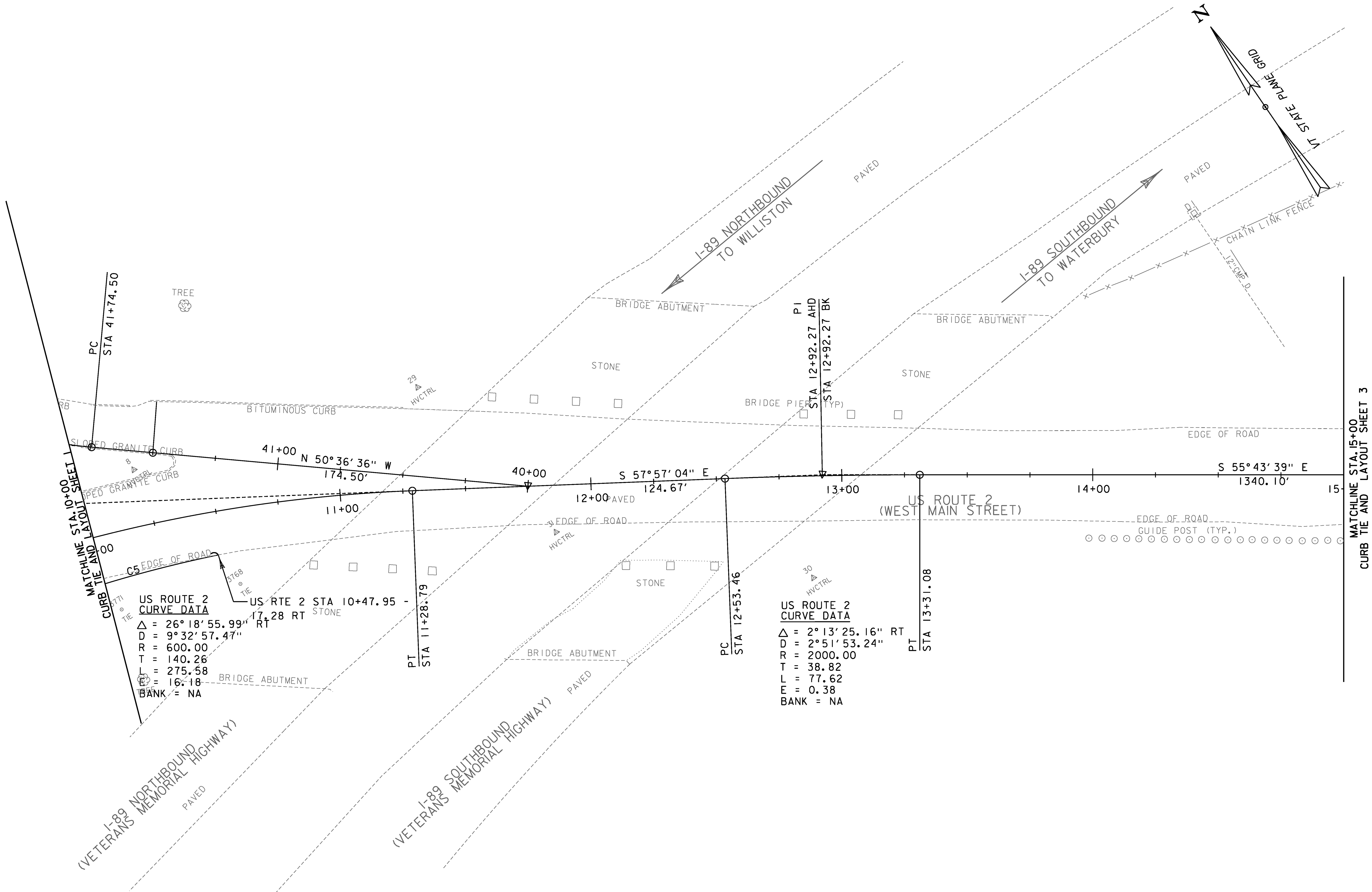
LABEL	RADIUS (ft)	LENGTH (ft)
C1	300.00	38.44
C2	50.00	29.98
C3	60.00	77.16
C4	450.00	118.12
C5	500.00	147.85

0 20 40
SCALE IN FEET

PROJECT NAME: RICHMOND
PROJECT NUMBER: STP 0284 (17)

FILE NAME: z97cl86curbbdr.dgn
PROJECT LEADER: ERIK ATKINS
DESIGNED BY: T. BIGELOW
CURB TIE AND LAYOUT SHEET 1

PLOT DATE: 4/29/2013
DRAWN BY: N. BOSAN
CHECKED BY: E. ATKINS
SHEET 45 OF 133

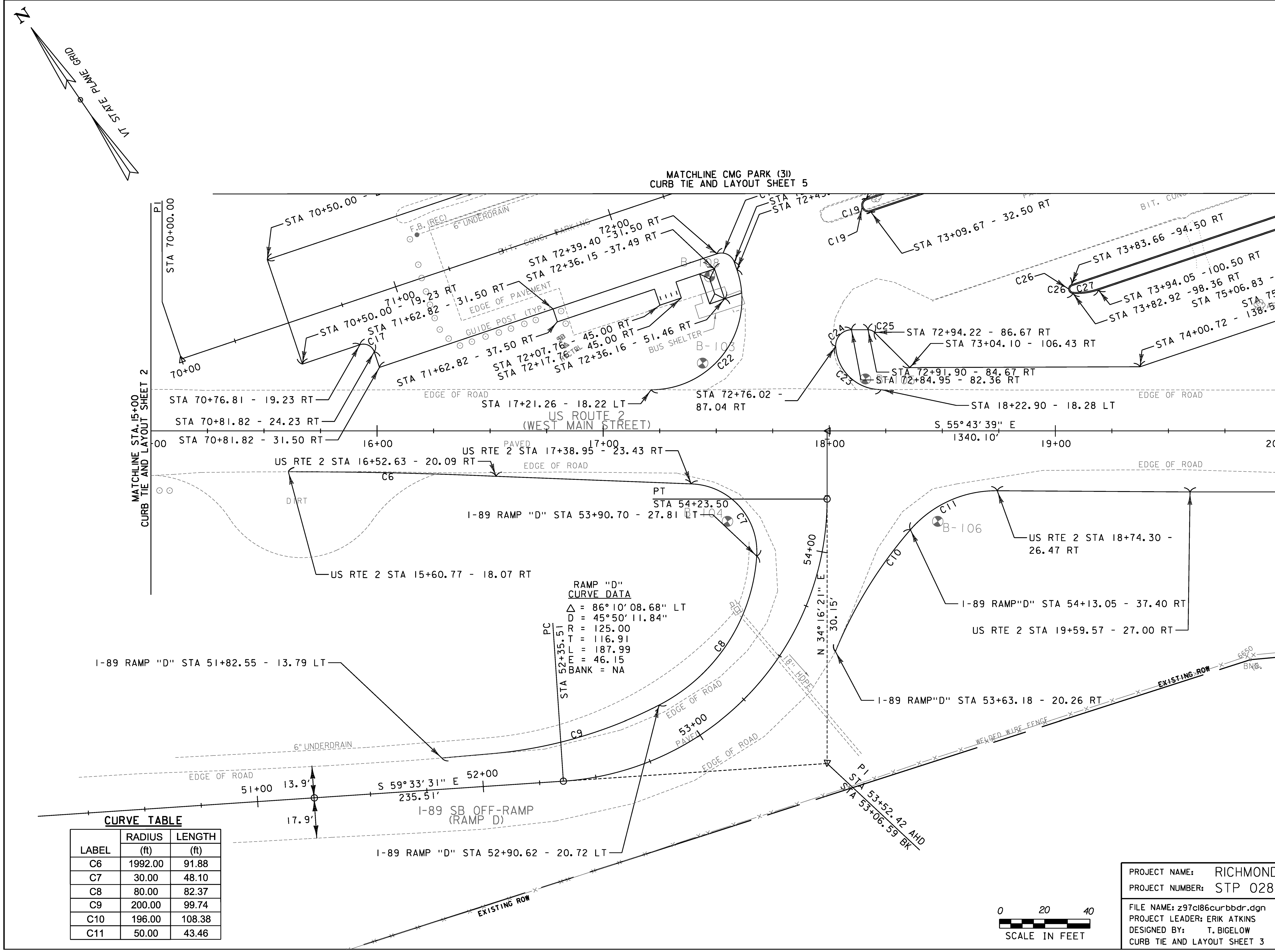


CURVE TABLE

LABEL	RADIUS (ft)	LENGTH (ft)
C5	500.00	147.85

0 20 40
SCALE IN FEET

PROJECT NAME: RICHMOND	
PROJECT NUMBER: STP 0284 (17)	
FILE NAME: z97c186curbbdr.dgn	PLOT DATE: 4/29/2013
PROJECT LEADER: ERIK ATKINS	DRAWN BY: N. BOSAN
DESIGNED BY: T. BIGELOW	CHECKED BY: E. ATKINS
CURB TIE AND LAYOUT SHEET 2	SHEET 46 OF 133



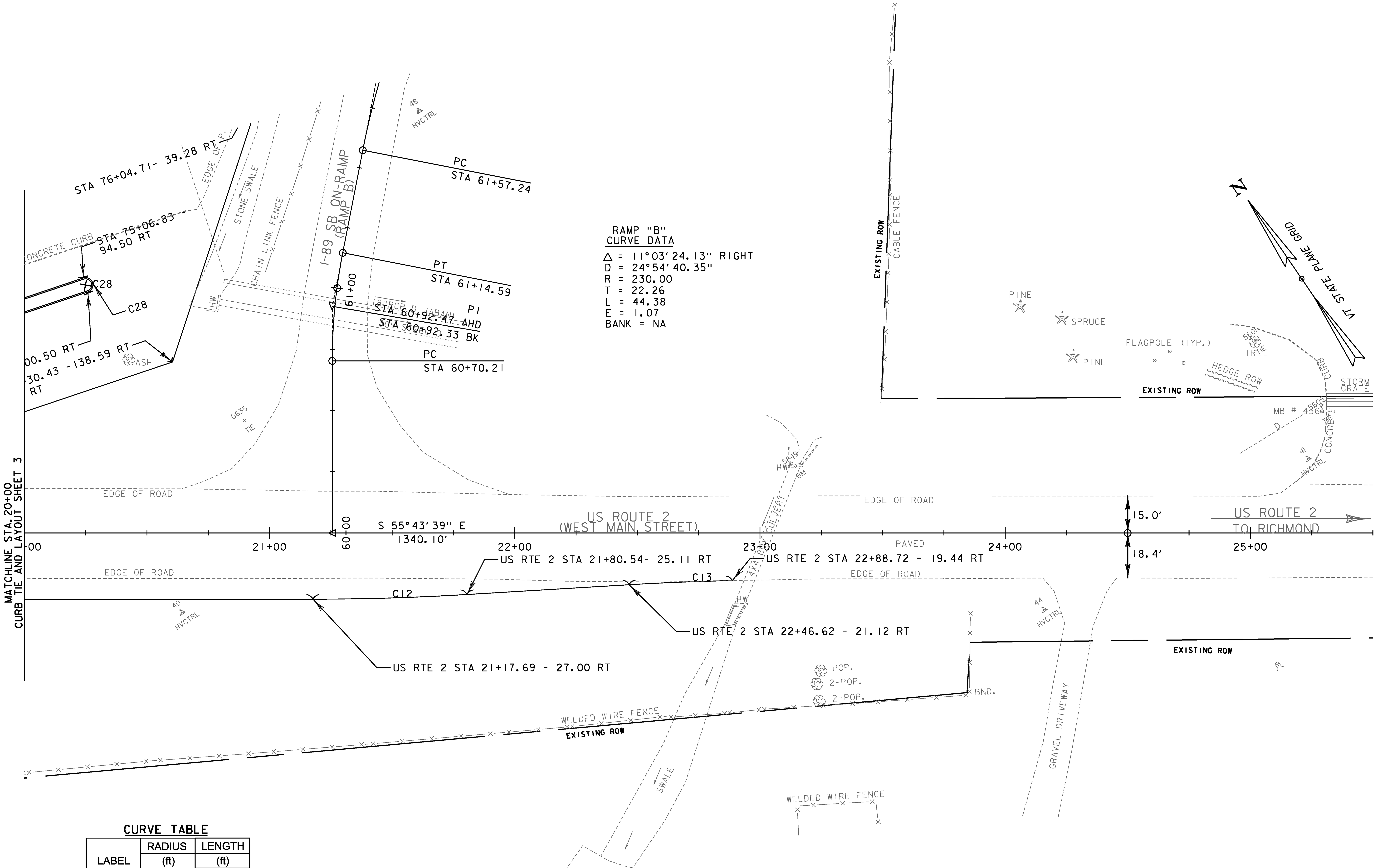
CURVE TABLE

LABEL	RADIUS (ft)	LENGTH (ft)
C6	1992.00	91.88
C7	30.00	48.10
C8	80.00	82.37
C9	200.00	99.74
C10	196.00	108.38
C11	50.00	43.46

PROJECT NAME: RICHMOND
PROJECT NUMBER: STP 0284 (17)

FILE NAME: z97c186curbbdr.dgn
PROJECT LEADER: ERIK ATKINS
DESIGNED BY: T. BIGELOW
CURB TIE AND LAYOUT SHEET 3

PLOT DATE: 4/30/2013
DRAWN BY: N. BOSAN
CHECKED BY: E. ATKINS
SHEET 47 OF 133

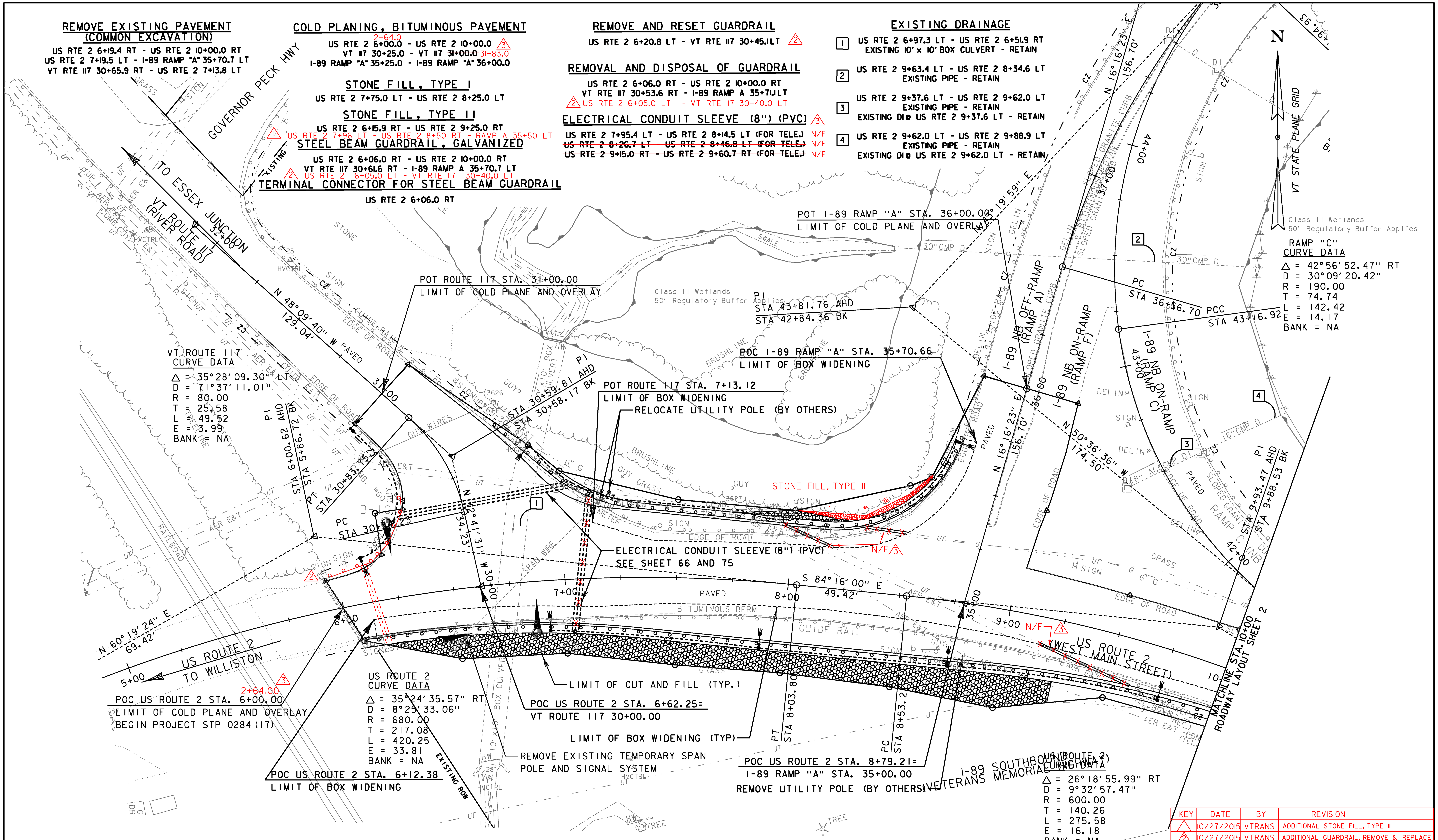


CURVE TABLE

LABEL	RADIUS (ft)	LENGTH (ft)
C12	1044.00	62.89
C13	1036.00	42.13

0 20 40
SCALE IN FEET

PROJECT NAME: RICHMOND	
PROJECT NUMBER: STP 0284 (17)	
FILE NAME: z97c186curbbdr.dgn	PLOT DATE: 4/29/2013
PROJECT LEADER: ERIK ATKINS	DRAWN BY: N. BOSAN
DESIGNED BY: T. BIGELOW	CHECKED BY: E. ATKINS
CURB TIE AND LAYOUT SHEET 4	SHEET 48 OF 133



KEY	DATE	BY	REVISION
1	10/27/2015	VTRANS	ADDITIONAL STONE FILL, TYPE II
2	10/27/2015	VTRANS	ADDITIONAL GUARDRAIL, REMOVE & REPLACE
3	11/12/2015	VTRANS	N/F = NOT FOUND & STATION CHANGES

PROJECT NAME: RICHMOND
PROJECT NUMBER: STP 0284 (17)

FILE NAME: z97c186bdr.dgn
PROJECT LEADER: ERIK ATKINS
DESIGNED BY: T. BIGELOW
ROADWAY LAYOUT SHEET 1

PLOT DATE: 4/30/2013
DRAWN BY: N. BOSAN
CHECKED BY: E. ATKINS
SHEET 49 OF 133

REMOVE EXISTING PAVEMENT
(COMMON EXCAVATION)
US RTE 2 10+00.0 RT - US RTE 2 10+48.0 RT

COLD PLANING, BITUMINOUS PAVEMENT
US RTE 2 10+00.0 - US RTE 2 15+00.0

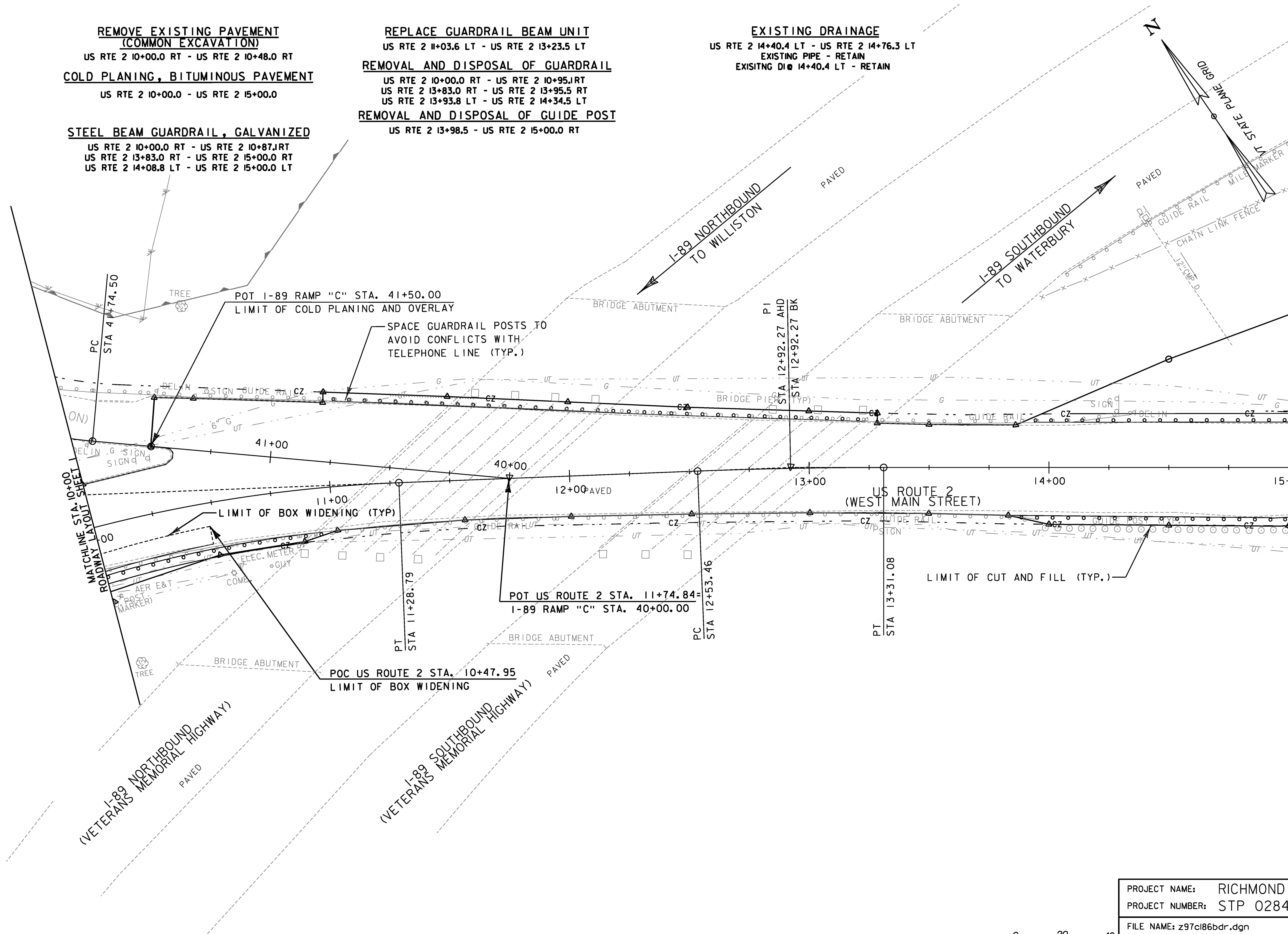
STEEL BEAM GUARDRAIL, GALVANIZED
US RTE 2 10+00.0 RT - US RTE 2 10+87.1 RT
US RTE 2 13+83.0 RT - US RTE 2 15+00.0 RT
US RTE 2 14+08.8 LT - US RTE 2 15+00.0 LT

REPLACE GUARDRAIL BEAM UNIT
US RTE 2 11+03.6 LT - US RTE 2 13+23.5 LT

REMOVAL AND DISPOSAL OF GUARDRAIL
US RTE 2 10+00.0 RT - US RTE 2 10+95.1 RT
US RTE 2 13+83.0 RT - US RTE 2 13+95.5 RT
US RTE 2 13+93.8 LT - US RTE 2 14+34.5 LT

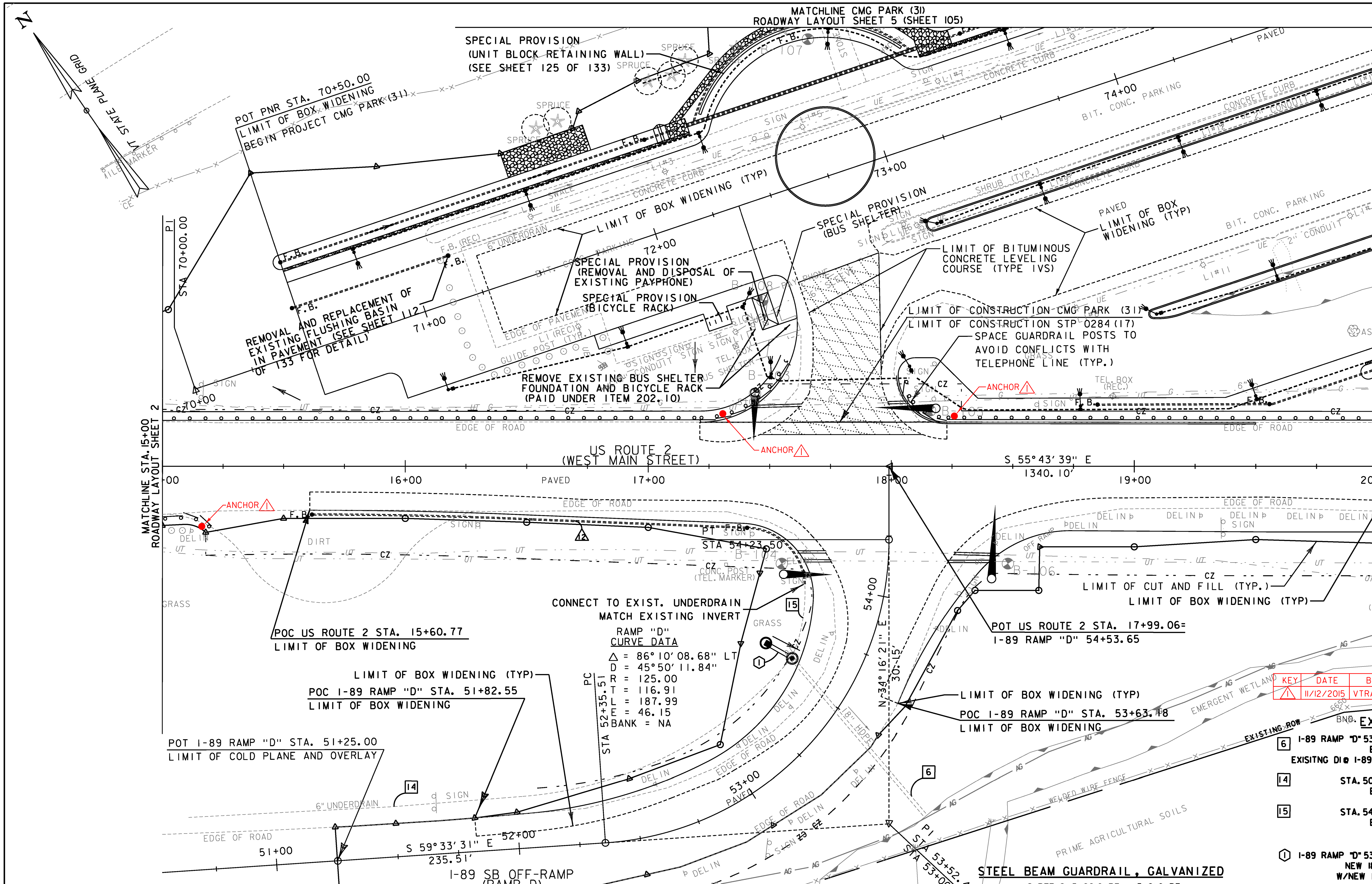
REMOVAL AND DISPOSAL OF GUIDE POST
US RTE 2 13+98.5 - US RTE 2 15+00.0 RT

EXISTING DRAINAGE
US RTE 2 14+40.4 LT - US RTE 2 14+76.3 LT
EXISTING PIPE - RETAIN
EXISITNG DI@ 14+40.4 LT - RETAIN



0 20 40
SCALE IN FEET

PROJECT NAME: RICHMOND	
PROJECT NUMBER: STP 0284 (17)	
FILE NAME: z97c186bdr.dgn	PLOT DATE: 4/26/2013
PROJECT LEADER: ERIK ATKINS	DRAWN BY: N. BOSAN
DESIGNED BY: T. BIGELOW	CHECKED BY: E. ATKINS
ROADWAY LAYOUT SHEET 2	SHEET 50 OF 133



KEY	DATE	BY	REVISION
1	11/12/2015	VTRANS	ANCHOR FOR STEEL BEAM GUARD RAIL

EXISTING DRAINAGE

6 I-89 RAMP "D" 53+58.5 LT - I-89 RAMP "D" 53+38.9 RT
EXISTING PIPE - RETAIN
EXISITNG DI @ I-89 RAMP "D" 53+58.5 LT- CONVERT TO MH

14 STA. 50+65.0 LT - STA. 53+58.5 LT
EXISTING PIPE - RETAIN

15 STA. 54+00.0 LT - STA. 53+58.5 LT
EXISTING PIPE - RETAIN

NEW DRAINAGE

1 I-89 RAMP "D" 53+58.5 LT - I-89 RAMP "D" 53+58.5 LT
NEW 18" X 10' RCP/CPEP(SL)/PCCSP
W/NEW DI @ I-89 RAMP "D" 53+58.5 LT

6 INCH UNDERDRAIN

12 US RTE 2 15+60.8 RT - US RTE 2 17+64.5 RT
NEW 6"X215' UNDERDRAIN W/FB
@ 15+60.8 RT AND 17+40.8 RT

STEEL BEAM GUARDRAIL, GALVANIZED

US RTE 2 15+00.0 RT - 15+21.0 RT
US RTE 2 15+00.0 LT - 17+58.0 LT
US RTE 2 ~~18+08.0~~ LT - 20+00.0 LT 1
18+40.0

REMOVAL AND DISPOSAL OF GUIDE POST

US RTE 2 15+00.0 RT - US RTE 2 15+09.5 RT

REMOVE EXISTING PAVEMENT (COMMON EXCAVATION)

US RTE 2 15+60.8 RT - I-89 RAMP "D" 51+82.6 LT
I-89 RAMP D 53+63.2 RT - US RTE 2 20+00.0 RT

COLD PLANING, BITUMINOUS PAVEMENT

US RTE 2 15+00.0 - US RTE 2 20+00.0
I-89 RAMP D 51+25.0 - I-89 RAMP D 54+25.0

REHAB. DROP INLETS, CATCH BASINS, OR MANHOLES, CLASS II

I-89 RAMP "D" 53+58.5 LT - CONVERT TO DMH
REMOVE EXISTING FRAME AND GRATE
INSTALL NEW FRAME AND COVER

BITUMINOUS CONCRETE CURB, TYPE A

US RTE 2 18+02.2 LT - US RTE 2 19+50.0 LT

~~ELECTRICAL CONDUIT SLEEVE (8") (PVC)~~

~~US RTE 2 17+42.2 LT - US RTE 2 17+63.2 LT (FOR TELE.)~~
~~US RTE 2 17+61.4 RT - US RTE 2 17+73.2 RT (FOR TELE.)~~
~~US RTE 2 17+63.9 RT - US RTE 2 17+75.3 RT (FOR TELE.)~~
~~US RTE 2 17+98.5 LT - US RTE 2 18+07.1 LT (FOR TELE.)~~
~~US RTE 2 18+23.2 RT - US RTE 2 18+41.0 RT (FOR TELE.)~~
~~US RTE 2 18+25.8 RT - US RTE 2 18+44.5 RT (FOR TELE.)~~

0 20 40
SCALE IN FEET

PROJECT NAME:	RICHMOND
PROJECT NUMBER:	STP 0284 (17)

FILE NAME:	z97c186bdr.dgn	PLOT DATE:	4/26/2013
PROJECT LEADER:	ERIK ATKINS	DRAWN BY:	N. BOSAN
DESIGNED BY:	T. BIGELOW	CHECKED BY:	E. ATKINS
ROADWAY LAYOUT SHEET 3		SHEET	51 OF 133

REMOVE EXISTING PAVEMENT
(COMMON EXCAVATION)
US RTE 2 20+00.0 RT - US RTE 2 22+88.7 RT

COLD PLANING, BITUMINOUS PAVEMENT
US RTE 2 20+00.0 - US RTE 2 24+50.0

STEEL BEAM GUARDRAIL, GALVANIZED
US RTE 2 20+00.0 LT - RAMP "B" 61+98.9 LT
US RTE 2 22+13.5 RT - 22+26.0 RT

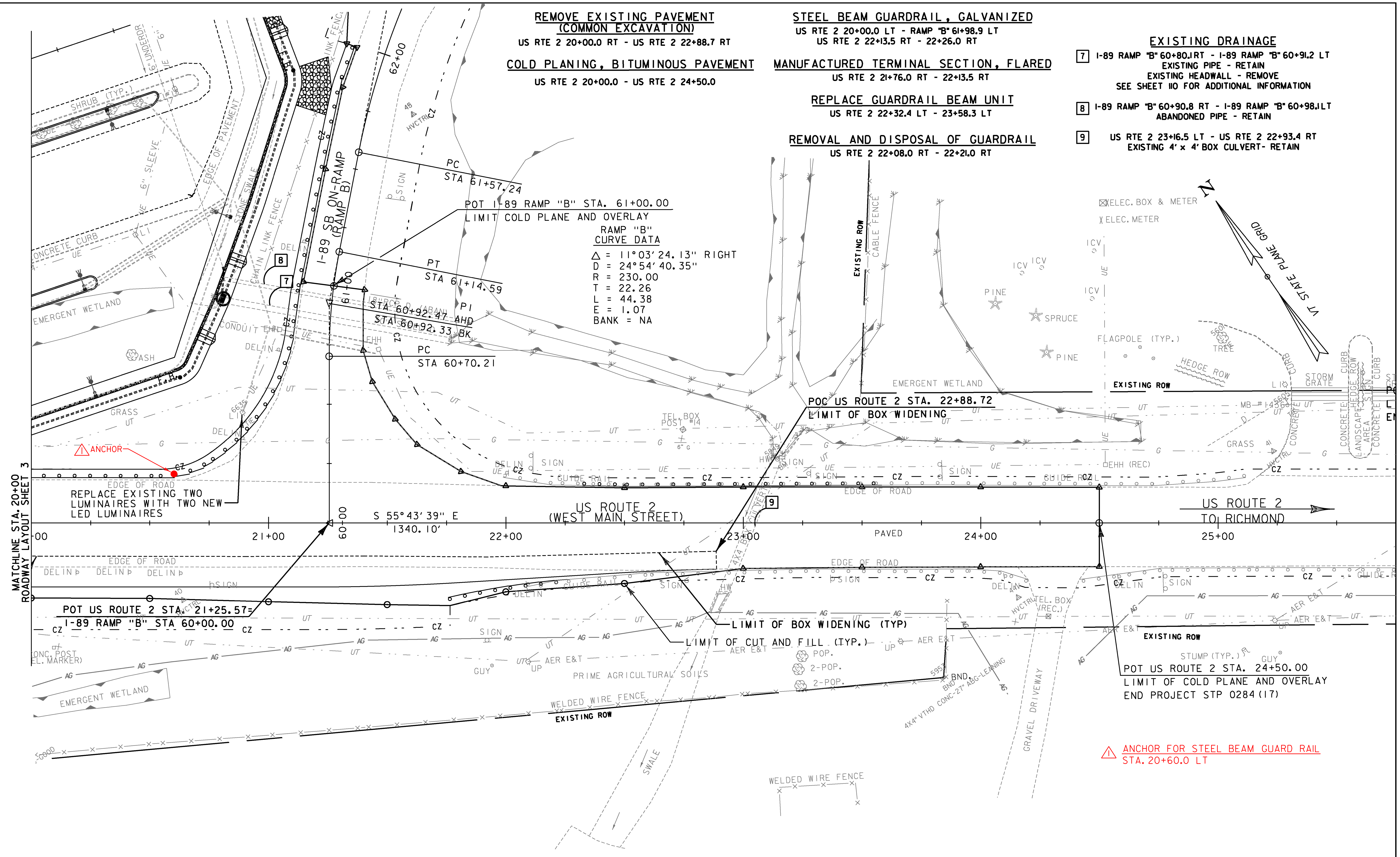
MANUFACTURED TERMINAL SECTION, FLARED
US RTE 2 21+76.0 RT - 22+13.5 RT

REPLACE GUARDRAIL BEAM UNIT
US RTE 2 22+32.4 LT - 23+58.3 LT

REMOVAL AND DISPOSAL OF GUARDRAIL
US RTE 2 22+08.0 RT - 22+21.0 RT

EXISTING DRAINAGE
7 I-89 RAMP "B" 60+80.1 RT - I-89 RAMP "B" 60+91.2 LT
EXISTING PIPE - RETAIN
EXISTING HEADWALL - REMOVE
SEE SHEET 110 FOR ADDITIONAL INFORMATION
8 I-89 RAMP "B" 60+90.8 RT - I-89 RAMP "B" 60+98.1 LT
ABANDONED PIPE - RETAIN
9 US RTE 2 23+16.5 LT - US RTE 2 22+93.4 RT
EXISTING 4' x 4' BOX CULVERT- RETAIN

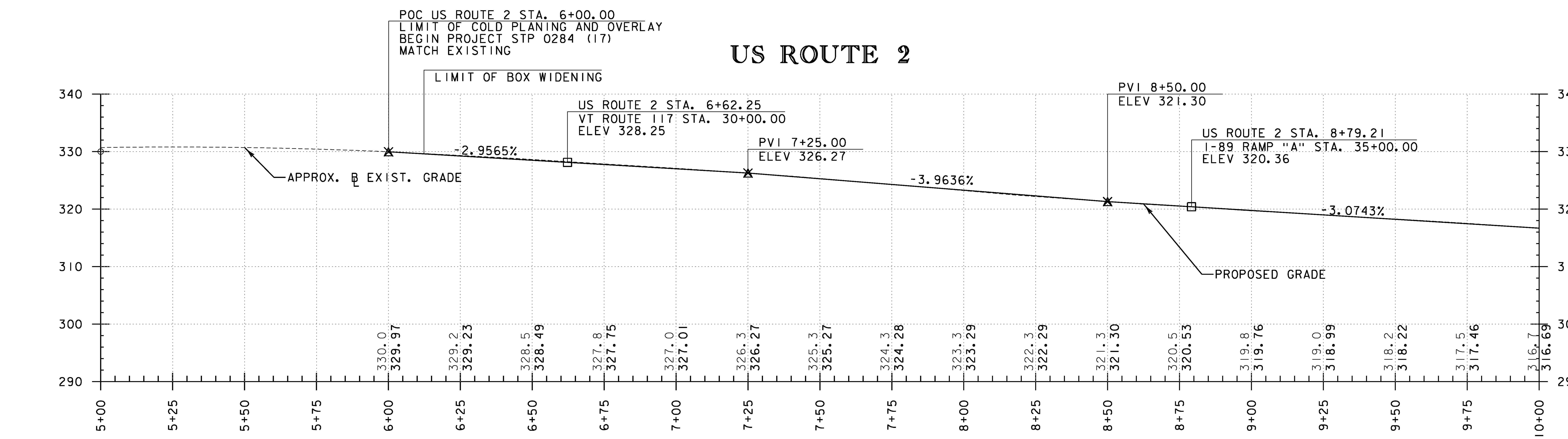
RAMP "B"
CURVE DATA
Δ = 11°03' 24.13" RIGHT
D = 24°54' 40.35"
R = 230.00
T = 22.26
L = 44.38
E = 1.07
BANK = NA

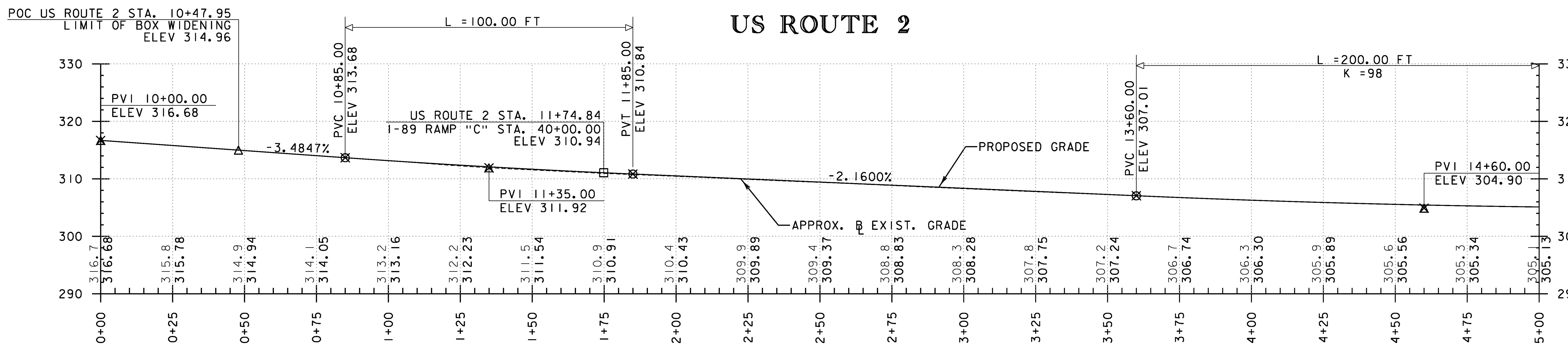


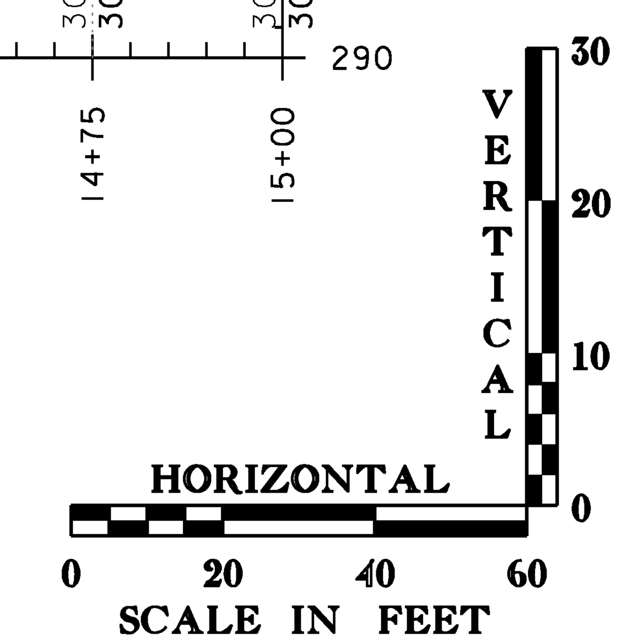
KEY	DATE	BY	REVISION
1	10/27/2015	VTRANS	ANCHOR FOR STEEL BEAM GUARD RAIL

PROJECT NAME: RICHMOND
PROJECT NUMBER: STP 0284 (17)

FILE NAME: z97c186bdr.dgn
PROJECT LEADER: ERIK ATKINS
DESIGNED BY: T. BIGELOW
ROADWAY LAYOUT SHEET 4
PLOT DATE: 5/1/2013
DRAWN BY: N. BOSAN
CHECKED BY: E. ATKINS
SHEET 52 OF 133



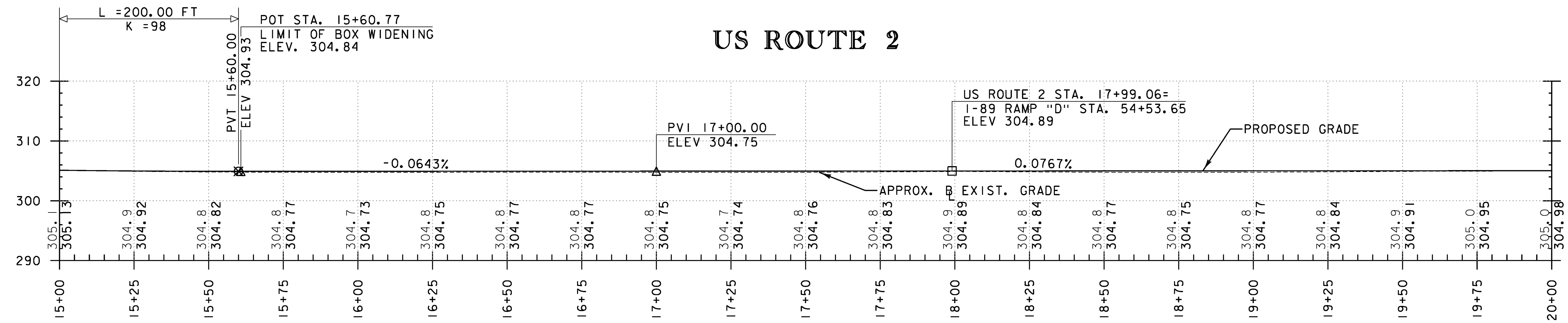


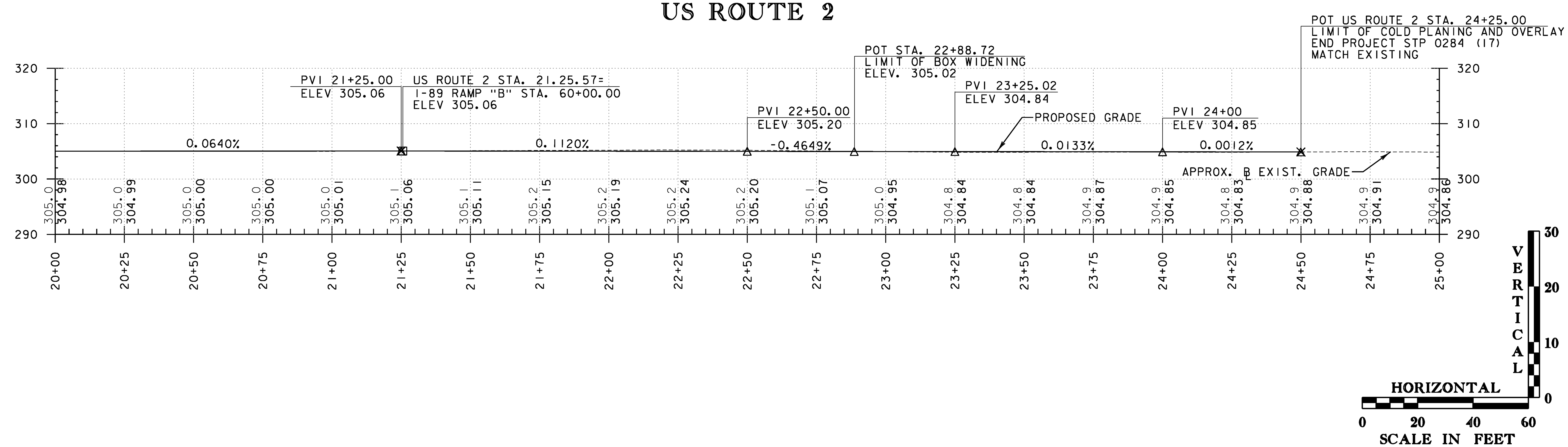


NOTE:
CONTRACTOR SHALL MAINTAIN ALL EXISTING PROFILE GRADES.
PROFILES SHOWN ARE APPROXIMATE REPRESENTATIONS OF EXISTING CONDITIONS AND HAVE BEEN SHOWN FOR INFORMATIONAL PURPOSES ONLY.

THE GRADES SHOWN TO THE NEAREST TENTH ARE THE ORIGINAL GROUND APPROXIMATE ELEVATIONS ALONG THE PROPOSED ALIGNMENT. THE GRADES SHOWN TO THE NEAREST HUNDREDTH ARE THE PROPOSED PROFILE GRADES FOR THE NEW ALIGNMENT.

PROJECT NAME: RICHMOND	
PROJECT NUMBER: STP 0284 (17)	
FILE NAME: z97c186xsl.dgn	PLOT DATE: 4/30/2013
PROJECT LEADER: ERIK ATKINS	DRAWN BY: S. FORTIER
DESIGNED BY: T. BIGELOW	CHECKED BY: E. ATKINS
US ROUTE 2 PROFILE SHEET 1	SHEET 53 OF 133





NOTE:
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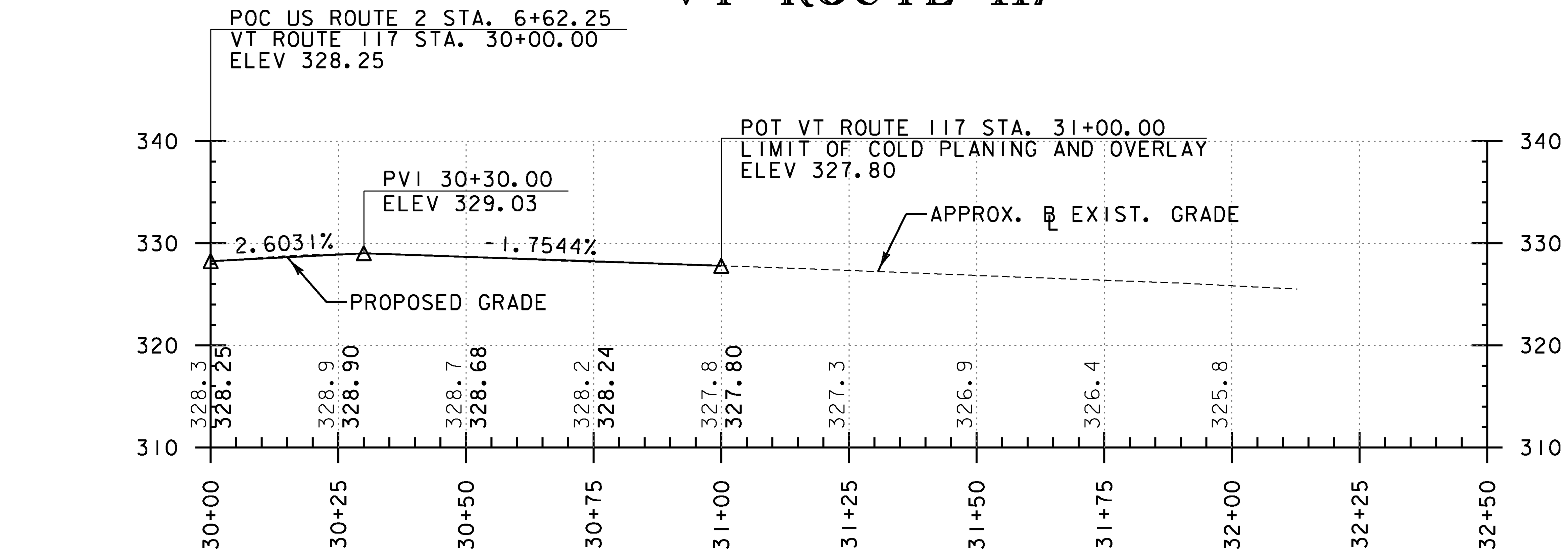
PROFILES SHOWN ARE APPROXIMATE REPRESENTATIONS OF EXISTING CONDITIONS AND HAVE BEEN SHOWN FOR INFORMATIONAL PURPOSES ONLY.

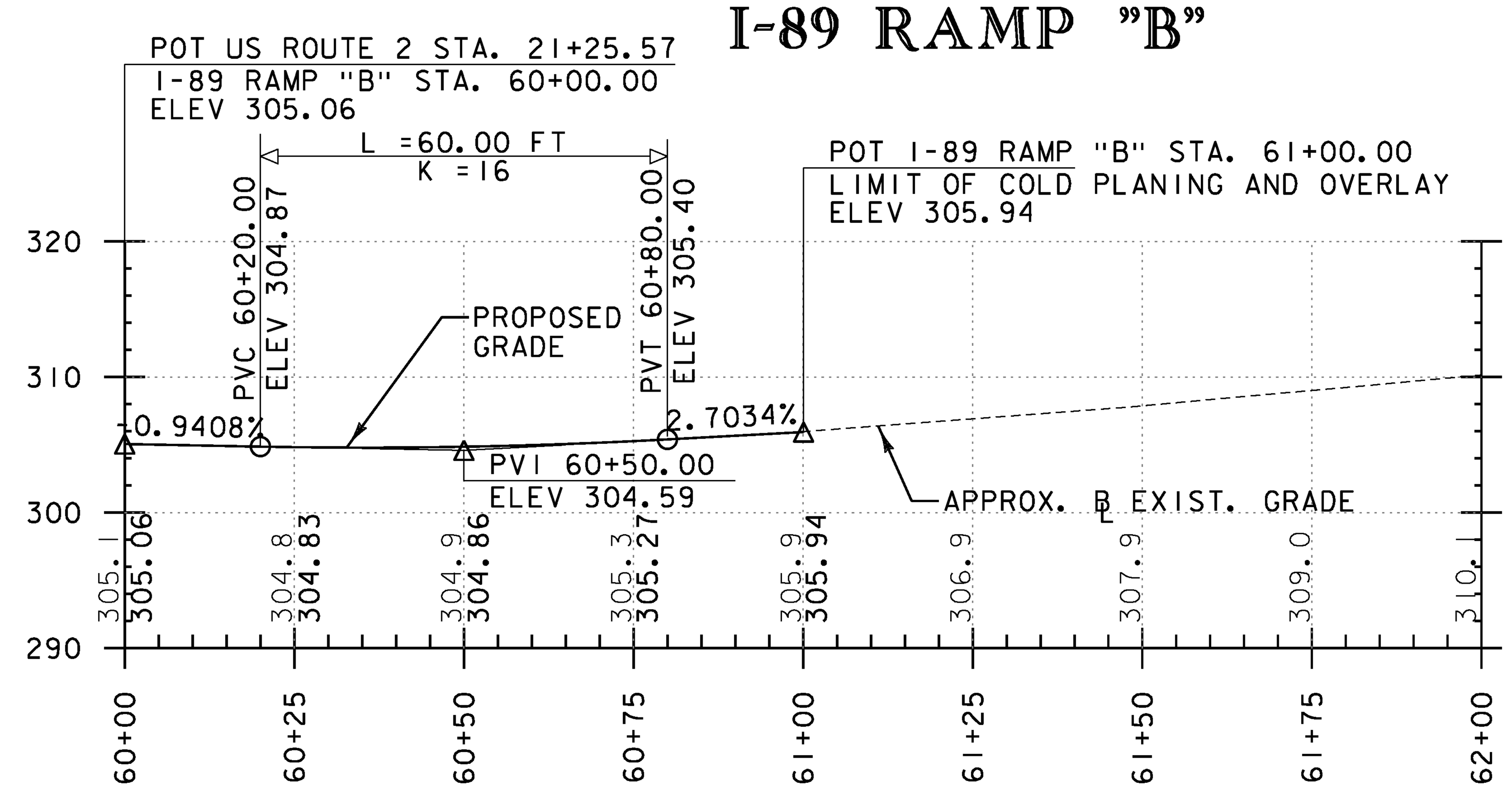
THE GRADES SHOWN TO THE NEAREST TENTH ARE THE ORIGINAL GROUND APPROXIMATE ELEVATIONS ALONG THE PROPOSED ALIGNMENT. THE GRADES SHOWN TO THE NEAREST HUNDREDTH ARE THE PROPOSED PROFILE GRADES FOR THE NEW ALIGNMENT.

PROJECT NAME: RICHMOND	
PROJECT NUMBER: STP 0284 (17)	
FILE NAME: z97c186xsl.dgn	PLOT DATE: 4/29/2013
PROJECT LEADER: ERIK ATKINS	DRAWN BY: S. FORTIER
DESIGNED BY: T. BIGELOW	CHECKED BY: E. ATKINS
US ROUTE 2 PROFILE SHEET 2	SHEET 54 OF 133

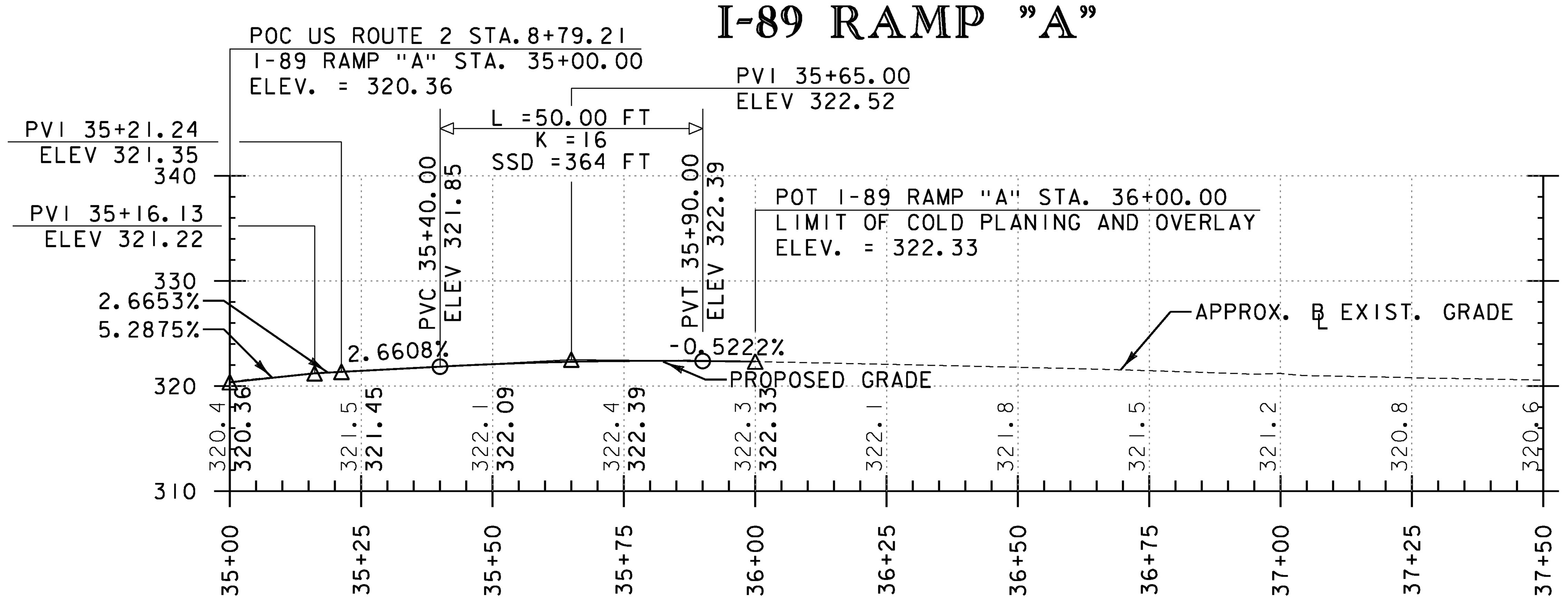
VT ROUTE 117



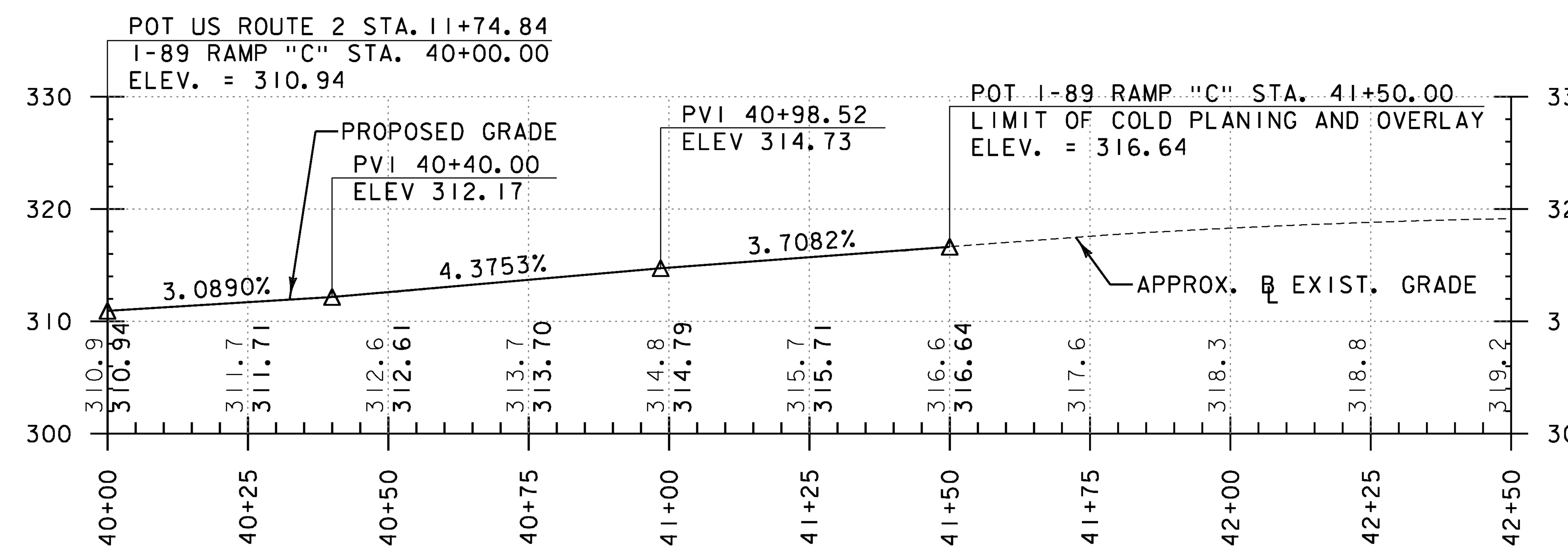
I-89 RAMP "B"



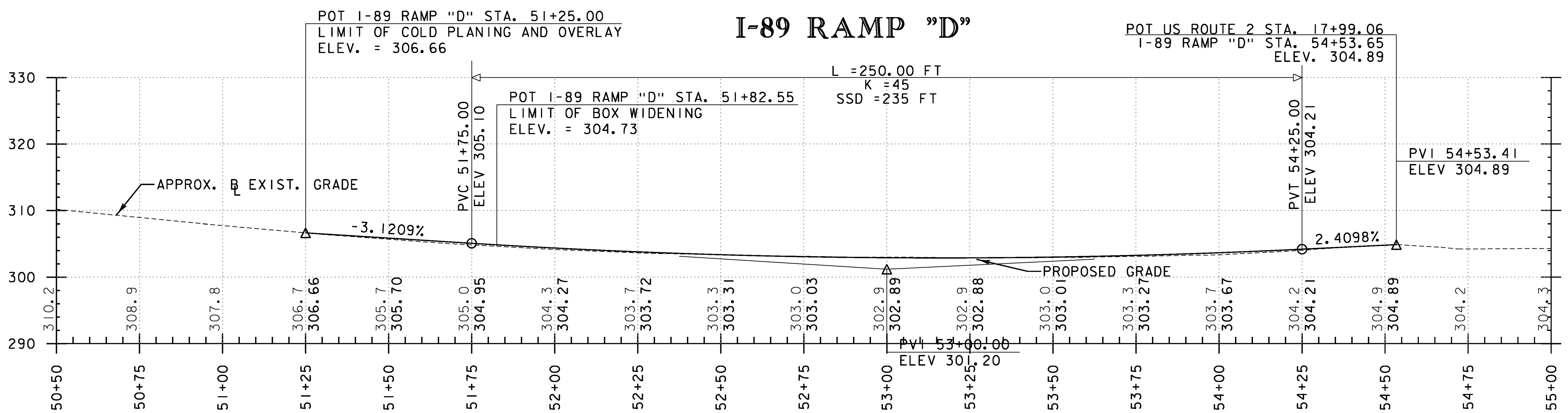
I-89 RAMP "A"

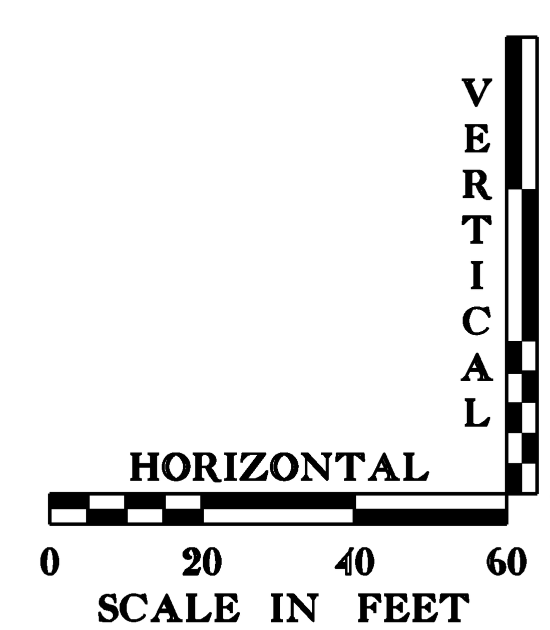


I-89 RAMP "C"



I-89 RAMP "D"





NOTE:
CONTRACTOR SHALL MAINTAIN ALL EXISTING PROFILE GRADES.
PROFILES SHOWN ARE APPROXIMATE REPRESENTATIONS OF EXISTING CONDITIONS AND HAVE BEEN SHOWN FOR INFORMATIONAL PURPOSES ONLY.

THE GRADES SHOWN TO THE NEAREST TENTH ARE THE ORIGINAL GROUND APPROXIMATE ELEVATIONS ALONG THE PROPOSED ALIGNMENT. THE GRADES SHOWN TO THE NEAREST HUNDREDTH ARE THE PROPOSED PROFILE GRADES FOR THE NEW ALIGNMENT.

PROJECT NAME: RICHMOND	
PROJECT NUMBER: STP 0284 (17)	
FILE NAME: z97c186xsl.dgn	PLOT DATE: 4/29/2013
PROJECT LEADER: ERIK ATKINS	DRAWN BY: S. FORTIER
DESIGNED BY: T. BIGELOW	CHECKED BY: E. ATKINS
VT ROUTE 117 & I-89 RAMP PROFILES SHEET	SHEET 55 OF 133

DURABLE 4 INCH WHITE LINE

VT RTE 117 31+00 RT ~ I-89 NB OFF-RAMP (RAMP A) 35+30 LT, 255 LF (EL)
~~U.S. ROUTE 2 5+96 LT ~ ROUTE 117 31+00 LT, 114 LF (EL)~~
~~U.S. ROUTE 2 6+05 ~ 10+00 RT, 385 LF (EL)~~
U.S. ROUTE 2 7+16 ~ 8+41 LT, 126 LF (TL)
U.S. ROUTE 2 7+29 ~ 7+71 RT, 56 LF (DOTTED TL)
U.S. ROUTE 2 7+71 ~ 8+53 RT, 85 LF (TL)
U.S. ROUTE 2 8+50 ~ 9+00 LT, 462 LF (CH)
U.S. ROUTE 2 9+00 ~ 10+00 LT, 100 LF (EL)

DURABLE 4 INCH YELLOW LINE

VT RTE 117 30+34 ~ 31+00 LT & RT, 2X58=116 LF (DYCL)
~~U.S. ROUTE 2 6+00 ~ 6+19 LT & RT, 2X19= 38 LF (DYCL)~~
U.S. ROUTE 2 7+12 ~ 7+75 LT & RT, 4X65=260 LF (DYCL)
U.S. ROUTE 2 7+75 ~ 8+53 LT & RT, 2X78=156 LF (DYCL)
U.S. ROUTE 2 9+06 ~ 10+00 LT & RT, 4X90=360 LF (DYCL)

DURABLE 6 INCH WHITE LINE

I-89 NB OFF-RAMP (RAMP A) 35+30 ~ 36+00 LT, 80 LF (EL)
I-89 NB ON-RAMP (RAMP F) 35+12 ~ 35+53 RT, 40 LF (EL)

DURABLE 6 INCH YELLOW LINE

I-89 NB OFF-RAMP (RAMP A) 35+26 ~ 36+00 LT, 75 LF (EL)
I-89 NB ON-RAMP (RAMP F) 35+26 ~ 35+52 RT, 30 LF (EL)

DURABLE 8 INCH WHITE LINE

U.S. ROUTE 2 8+50 ~ 9+00 LT, 148 LF (DNBBL)

DURABLE 8 INCH YELLOW LINE

U.S. ROUTE 2 7+12 ~ 7+75 RT, 25 LF (GORE)
U.S. ROUTE 2 9+06 ~ 10+00 RT, 50 LF (GORE)

DURABLE 24 INCH STOP BAR

VT RTE 117 30+34 LT, 24 LF
U.S. ROUTE 2 6+19 RT, 12 LF
U.S. ROUTE 2 7+16 LT, 25 LF
I-89 NB OFF-RAMP (RAMP A) 35+30 LT, 31 LF

DURABLE LETTER OR SYMBOL

U.S. ROUTE 2 7+20 ~ 7+71 LT, 1 RIGHT ARROW, 1 "ONLY" (1x4=4 EACH)
U.S. ROUTE 2 7+72 ~ 7+90 RT, 1 LEFT ARROW
U.S. ROUTE 2 8+20 ~ 8+40 LT, 1 RIGHT ARROW
U.S. ROUTE 2 8+20 ~ 8+40 RT, 1 LEFT ARROW

DELINEATORS WITH STEEL POST

I-89 OFF-RAMP (RAMP A) STA 35+37 LT (1 EACH)
REMOVE, STACK AND REINSTALL EACH

REMOVING SIGNS

32 EACH

ERECTING SALVAGED SIGNS

51 EACH

TEMPORARY 4 INCH WHITE LINE

VT RTE 117 31+00 RT ~ I-89 NB OFF-RAMP (RAMP A) 35+30 LT, 255 LF (EL)
~~U.S. ROUTE 2 5+96 LT ~ ROUTE 117 31+00 LT, 114 LF (EL)~~
~~U.S. ROUTE 2 6+05 ~ 10+00 RT, 385 LF (EL)~~
U.S. ROUTE 2 7+16 ~ 8+41 LT, 126 LF (TL)
U.S. ROUTE 2 7+29 ~ 7+71 RT, 56 LF (DOTTED TL)
U.S. ROUTE 2 7+71 ~ 8+53 RT, 85 LF (TL)
U.S. ROUTE 2 8+50 ~ 9+00 LT, 462 LF (CH)
U.S. ROUTE 2 9+00 ~ 10+00 LT, 100 LF (EL)

TEMPORARY 4 INCH YELLOW LINE

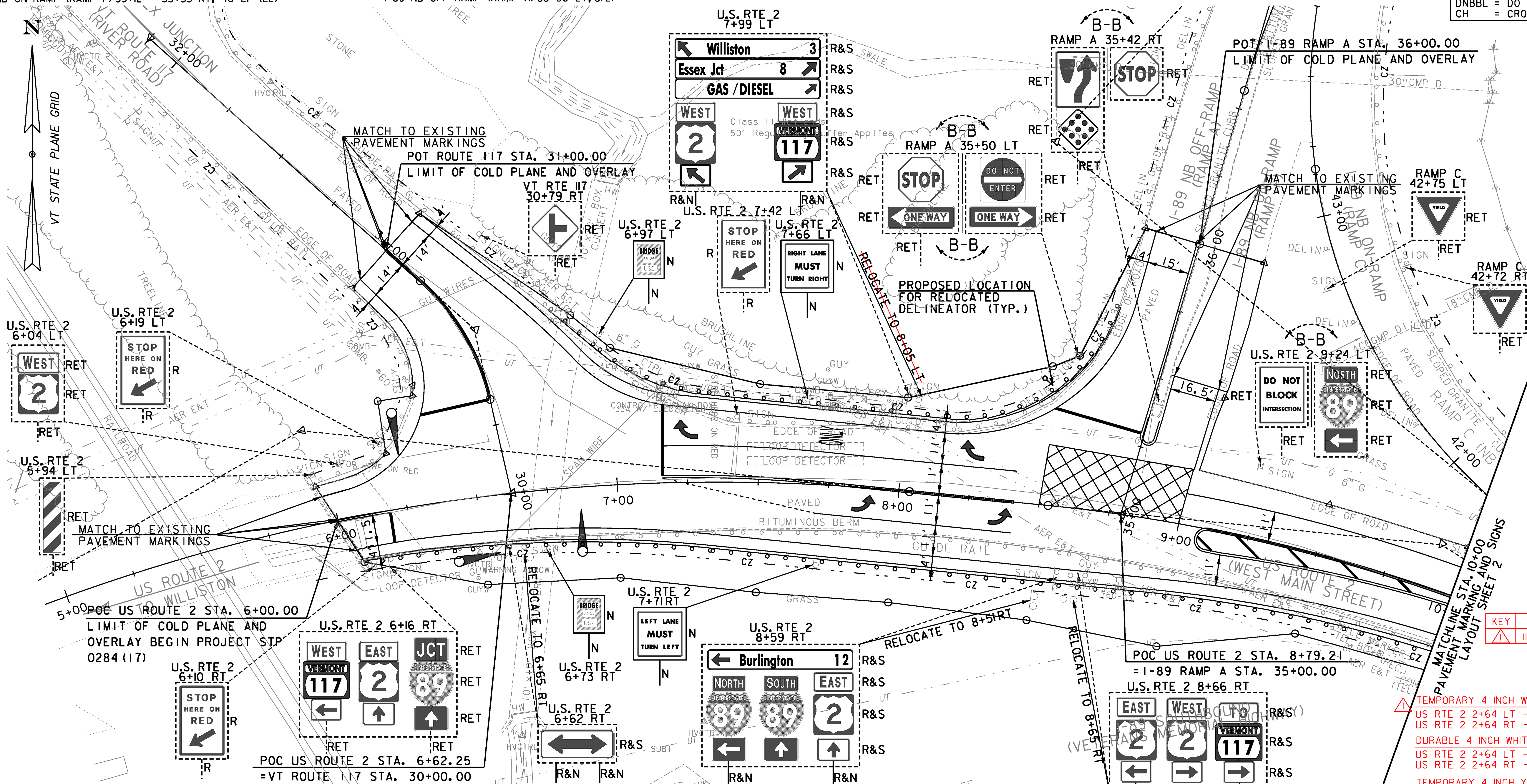
VT RTE 117 30+34 ~ 31+00 LT & RT, 2X58=116 LF (DYCL)
~~U.S. ROUTE 2 6+00 ~ 6+19 LT & RT, 2X19= 38 LF (DYCL)~~
U.S. ROUTE 2 7+12 ~ 7+75 LT & RT, 4X65=260 LF (DYCL)
U.S. ROUTE 2 7+75 ~ 8+53 LT & RT, 2X78=156 LF (DYCL)
U.S. ROUTE 2 9+06 ~ 10+00 LT & RT, 4X90=360 LF (DYCL)

TEMPORARY 8 INCH WHITE LINE

U.S. ROUTE 2 8+50 ~ 9+00 LT, 148 LF (DNBBL)

LEGEND

	= EXISTING SIGN
	= NEW SIGN
B-B	= BACK TO BACK
CL	= CHANNELIZING LINE
DYCL	= DOUBLE YELLOW CENTER LINE
EL	= EDGE LINE
GORE	= GORING
LL	= LANE LINE
N	= NEW
R	= REMOVE EXISTING SIGN AND POST
R&N	= REMOVE EXISTING POST AND PROVIDE NEW POST
R&S	= REMOVE AND SALVAGE
RET	= RETAIN AT EXISTING LOCATION
S	= SALVAGE
TL	= TURN LANE
DNBBL	= DO NOT BLOCK BOX LINE
CH	= CROSSHATCH LINE (5' SPACING)



TEMPORARY 6 INCH WHITE LINE

I-89 NB OFF-RAMP (RAMP A) 35+30 ~ 36+00 LT, 80 LF (EL)
I-89 NB ON-RAMP (RAMP F) 35+12 ~ 35+53 RT, 40 LF (EL)

TEMPORARY 6 INCH YELLOW LINE

I-89 NB OFF-RAMP (RAMP A) 35+26 ~ 36+00 LT, 75 LF (EL)
I-89 NB ON-RAMP (RAMP F) 35+26 ~ 35+52 RT, 30 LF (EL)

TEMPORARY 8 INCH YELLOW LINE

U.S. ROUTE 2 7+12 ~ 7+75 RT, 25 LF (GORE)
U.S. ROUTE 2 9+06 ~ 10+00 RT, 50 LF (GORE)

TEMPORARY 24 INCH STOP BAR

VT RTE 117 30+34 LT, 24 LF
U.S. ROUTE 2 6+19 RT, 12 LF
U.S. ROUTE 2 7+16 LT, 25 LF
I-89 NB OFF-RAMP (RAMP A) 35+30 LT, 31 LF

TEMPORARY LETTER OR SYMBOL

U.S. ROUTE 2 7+20 ~ 7+71 LT, 1 RIGHT ARROW, 1 "ONLY" (1x4=4 EACH)
U.S. ROUTE 2 7+72 ~ 7+90 RT, 1 LEFT ARROW
U.S. ROUTE 2 8+20 ~ 8+40 LT, 1 RIGHT ARROW
U.S. ROUTE 2 8+20 ~ 8+40 RT, 1 LEFT ARROW

NOTE

REFER TO THE TRAFFIC MANAGEMENT PLANS FOR ADDITIONAL PAVEMENT MARKINGS REQUIREMENTS BEYOND THE PROJECT LIMITS

0 20 40
SCALE IN FEET

KEY	DATE	BY	REVISION
1	11/12/2015	VTRANS	STATION UPDATES

TEMPORARY 4 INCH WHITE LINE

US RTE 2 2+64 LT - RTE 117 31+00 LT, 446 LF (EL)
US RTE 2 2+64 RT - 10+00 RT, 726 LF (EL)

DURABLE 4 INCH WHITE LINE

US RTE 2 2+64 LT - RTE 117 31+00 LT, 446 LF (EL)
US RTE 2 2+64 RT - 10+00 RT, 726 LF (EL)

TEMPORARY 4 INCH YELLOW LINE

US RTE 2 2+64 LT - 6+19 LT&RT, 2*355= 710 LF (DYCL)

DURABLE 4 INCH YELLOW LINE

US RTE 2 2+64 LT - 6+19 LT&RT, 2*355= 710 LF

PROJECT NAME:	RICHMOND		
PROJECT NUMBER:	STP 0284 (17)		
FILE NAME: z97c186pmbdr.dgn		PLOT DATE:	4/30/2013
PROJECT LEADER:	JEFFREY MAXTUTIS	DRAWN BY:	Y.CAO/I.ALMY
DESIGNED BY:	J.SOBEL	CHECKED BY:	D.FLYNN
PVMT. MARKING AND SIGNS LAYOUT SHEET 1		SHEET	56 OF 133

DURABLE 4 INCH WHITE LINE

U.S. ROUTE 2 10+00 ~ 10+35 LT, 35 LF (EL)
U.S. ROUTE 2 10+00 ~ 15+00 RT, 496 LF (EL)
U.S. ROUTE 2 11+75 ~ 15+00 LT, 325 LF (EL)

DURABLE 4 INCH YELLOW LINE

U.S. ROUTE 2 10+00 ~ 10+65 LT & RT, 65 X 4=260 LF (DYCL)
U.S. ROUTE 2 10+65 ~ 15+00 LT & RT, 435 X 2=870 LF (DYCL)

DURABLE 6 INCH WHITE LINE

I-89 NB ON-RAMP (RAMP C) 40+00 ~ 41+75 RT, 175 LF (EL)

DURABLE 6 INCH YELLOW LINE

I-89 NB ON-RAMP (RAMP C) 41+35 ~ 41+75 RT, 40 LF (EL)

DURABLE 8 INCH YELLOW LINE

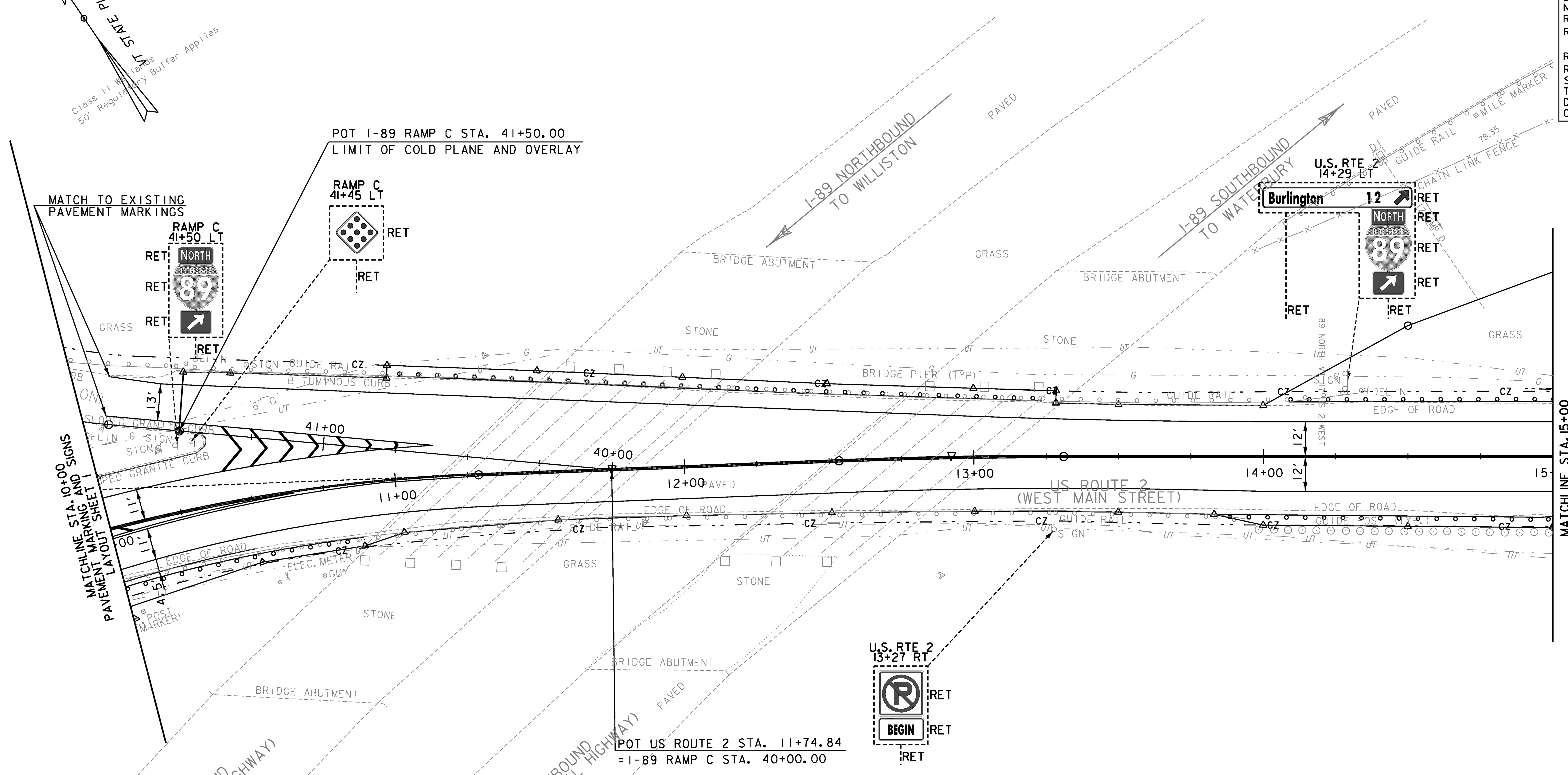
U.S. ROUTE 2 10+03 ~ 10+07 RT, 5 LF (GORE)

DURABLE 12 INCH WHITE LINE

U.S. ROUTE 2 10+35 ~ 11+14 LT, 81LF (CL)
I-89 NB ON-RAMP (RAMP C) 40+62 ~ 41+35 RT, 71LF (CL)
I-89 NB ON-RAMP (RAMP C) 40+62 ~ 41+35 LT & RT, 90 LF (GORE)

LEGEND

▯	= EXISTING SIGN
▯	= NEW SIGN
B-B	= BACK TO BACK
CL	= CHANNELIZING LINE
DYCL	= DOUBLE YELLOW CENTER LINE
EL	= EDGE LINE
GORE	= GORING
LL	= LANE LINE
N	= NEW
R	= REMOVE EXISTING SIGN AND POST
R&N	= REMOVE EXISTING POST AND PROVIDE NEW POST
R&S	= REMOVE AND SALVAGE
RET	= RETAIN AT EXISTING LOCATION
S	= SALVAGE
TL	= TURN LANE
DNBBL	= DO NOT BLOCK BOX LINE
CH	= CROSSHATCH LINE (5' SPACING)



TEMPORARY 4 INCH WHITE LINE

U.S. ROUTE 2 10+00 ~ 10+35 LT, 35 LF (EL)
U.S. ROUTE 2 10+00 ~ 15+00 RT, 496 LF (EL)
U.S. ROUTE 2 11+75 ~ 15+00 LT, 325 LF (EL)

TEMPORARY 4 INCH YELLOW LINE

U.S. ROUTE 2 10+00 ~ 10+65 LT & RT, 65 X 4=260 LF (DYCL)
U.S. ROUTE 2 10+65 ~ 15+00 LT & RT, 435 X 2=870 LF (DYCL)

TEMPORARY 6 INCH WHITE LINE

I-89 NB ON-RAMP (RAMP C) 40+00 ~ 41+75 RT, 175 LF (EL)

TEMPORARY 6 INCH YELLOW LINE

I-89 NB ON-RAMP (RAMP C) 41+35 ~ 41+75 RT, 40 LF (EL)

TEMPORARY 8 INCH YELLOW LINE

U.S. ROUTE 2 10+03 ~ 10+07 RT, 5 LF (GORE)

TEMPORARY 12 INCH WHITE LINE

U.S. ROUTE 2 10+35 ~ 11+14 LT, 81LF (CL)
I-89 NB ON-RAMP (RAMP C) 40+62 ~ 41+35 RT, 71LF (CL)
I-89 NB ON-RAMP (RAMP C) 40+62 ~ 41+35 LT & RT, 90 LF (GORE)

0 20 40
SCALE IN FEET

PROJECT NAME: RICHMOND	
PROJECT NUMBER: STP 0284 (17)	
FILE NAME: z97c186pmbdr.dgn	PLOT DATE: 4/29/2013
PROJECT LEADER: JEFFREY MAXTUTIS	DRAWN BY: Y.CAO/I.ALMY
DESIGNED BY: J.SOBEL	CHECKED BY: D.FLYNN
PVMT. MARKING AND SIGNS LAYOUT SHEET 2	SHEET 57 OF 133

DURABLE 4 INCH WHITE LINE

U.S. ROUTE 2 15+00 ~ 17+47 LT, 255 LF (EL)
U.S. ROUTE 2 18+12 ~ 20+00 LT, 190 LF (EL)
U.S. ROUTE 2 15+00 ~ 17+75 RT, 275 LF (EL)
U.S. ROUTE 2 18+30 ~ 20+00 RT, 170 LF (EL)
U.S. ROUTE 2 18+31 ~ 19+60 RT, 130 LF (DOTTED TL)
U.S. ROUTE 2 19+60 ~ 20+00 RT, 40 LF (TL)

DURABLE 6 INCH YELLOW LINE

I-89 SB OFF-RAMP (RAMP D) 51+25 ~ 54+20 LT, 295 LF (EL)

DURABLE 8 INCH YELLOW LINE

U.S. ROUTE 2 16+35 ~ 17+26 RT, 45 LF (GORE)
U.S. ROUTE 2 18+35 ~ 19+10 RT, 65 LF (GORE)

DURABLE 6 INCH WHITE LINE

I-89 SB OFF-RAMP (RAMP D) 51+25 ~ 54+20 RT, 335 LF (EL)
I-89 SB OFF-RAMP (RAMP D) 51+25 ~ 54+20 RT, 295 LF (LL)

DURABLE LETTER OR SYMBOL

U.S. ROUTE 2 18+84 ~ 19+38 RT, 1 LEFT ARROW, 1 "ONLY" (1x4=4 EACH)
U.S. ROUTE 2 19+78 ~ 19+85 RT, 1 LEFT ARROW, 1 "ONLY" (1x4=4 EACH)
I-89 SB OFF-RAMP (RAMP D) 51+88 ~ 52+59 RT, 1 RIGHT ARROW, 1 "ONLY" (1x4=4 EACH)
I-89 SB OFF-RAMP (RAMP D) 51+84 ~ 51+96 LT, 1 LEFT/THROUGH ARROW
I-89 SB OFF-RAMP (RAMP D) 54+00 ~ 54+14 LT, 1 LEFT/THROUGH ARROW
I-89 SB OFF-RAMP (RAMP D) 53+02 ~ 53+60 RT, 1 RIGHT ARROW, 1 "ONLY" (1x4=4 EACH)
I-89 SB OFF-RAMP (RAMP D) 54+08 ~ 54+15 RT, 1 RIGHT ARROW, 1 "ONLY" (1x4=4 EACH)
I-89 SB OFF-RAMP (RAMP D) 46+75 ~ 47+93, 1 "SIGNAL AHEAD" (1X11=11 EACH)

DURABLE 24 INCH STOP BAR

U.S. ROUTE 2 17+36 RT, 12 LF
U.S. ROUTE 2 18+31 LT, 12 LF
I-89 SB OFF-RAMP (RAMP D) 54+17, 53 LF

SEE TABLE, THIS SHEET

DELINEATORS WITH STEEL POST

~~I-89 SB OFF-RAMP (RAMP D) STA. 52+62 ~ 54+13 LT (5 EACH)~~
~~I-89 SB OFF-RAMP (RAMP D) STA. 53+92 -~~
~~U.S. RTE. 2 20+00 RT (8 EACH)~~
~~REMOVE, STACK AND REINSTALL EACH~~
SEE TABLE, THIS SHEET

REMOVING SIGNS

27 EACH

ERECTING SALVAGED SIGNS

19 EACH

DURABLE 4 INCH YELLOW LINE

U.S. ROUTE 2 15+00 ~ 15+80 LT & RT, 2X80=160 LF (DYCL)
U.S. ROUTE 2 15+80 ~ 17+40 RT, 4X160=640 LF (DYCL)
U.S. ROUTE 2 18+27 ~ 19+40 RT, 4X113=452 LF (DYCL)
U.S. ROUTE 2 19+40 ~ 20+00 LT & RT, 2X60=120 LF (DYCL)

TEMPORARY 4 INCH WHITE LINE

U.S. ROUTE 2 15+00 ~ 17+47 LT, 255 LF (EL)
U.S. ROUTE 2 18+12 ~ 20+00 LT, 190 LF (EL)
U.S. ROUTE 2 15+00 ~ 17+75 RT, 275 LF (EL)
U.S. ROUTE 2 18+30 ~ 20+00 RT, 170 LF (EL)
U.S. ROUTE 2 18+31 ~ 19+60 RT, 130 LF (DOTTED TL)
U.S. ROUTE 2 19+60 ~ 20+00 RT, 40 LF (TL)

TEMPORARY 4 INCH YELLOW LINE

U.S. ROUTE 2 15+00 ~ 15+80 LT & RT, 2X80=160 LF (DYCL)
U.S. ROUTE 2 15+80 ~ 17+40 RT, 4X160=640 LF (DYCL)
U.S. ROUTE 2 18+27 ~ 19+40 RT, 4X113=452 LF (DYCL)
U.S. ROUTE 2 19+40 ~ 20+00 LT & RT, 2X60=120 LF (DYCL)

TEMPORARY 6 INCH WHITE LINE

I-89 SB OFF-RAMP (RAMP D) 51+25 ~ 54+20 RT, 335 LF (EL)
I-89 SB OFF-RAMP (RAMP D) 51+25 ~ 54+20 RT, 295 LF (LL)

TEMPORARY 6 INCH YELLOW LINE

I-89 SB OFF-RAMP (RAMP D) 51+25 ~ 54+20 LT, 295 LF (EL)

TEMPORARY 8 INCH YELLOW LINE

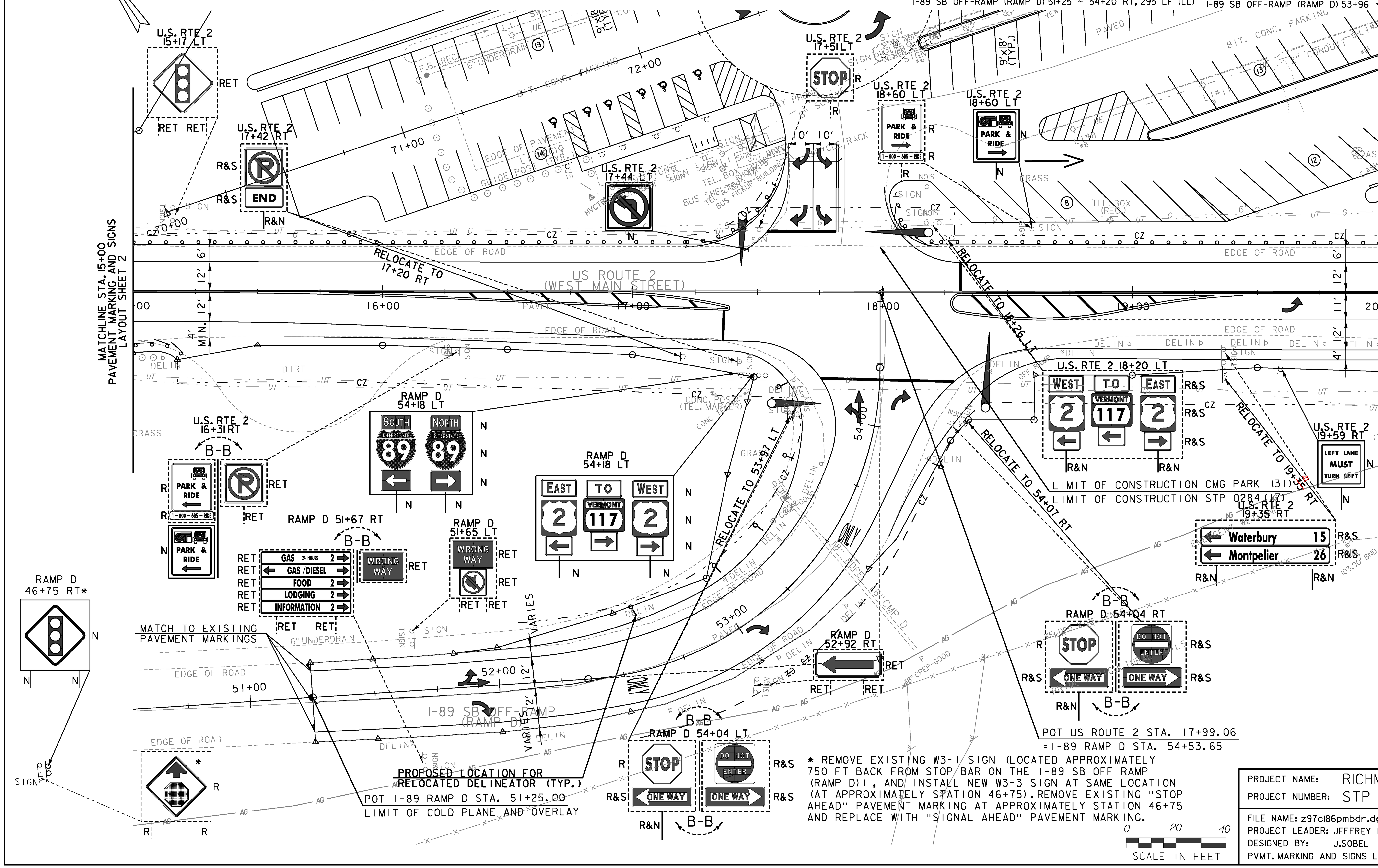
U.S. ROUTE 2 16+35 ~ 17+26 RT, 45 LF (GORE)
U.S. ROUTE 2 18+35 ~ 19+10 RT, 65 LF (GORE)

TEMPORARY 24 INCH STOP BAR

U.S. ROUTE 2 17+36 RT, 12 LF
U.S. ROUTE 2 18+31 LT, 12 LF
I-89 SB OFF-RAMP (RAMP D) 54+17, 53 LF

TEMPORARY LETTER OR SYMBOL

U.S. ROUTE 2 19+60 ~ 19+80 RT, 1 LEFT ARROW, 1 "ONLY" (1x4=4 EACH)
I-89 SB OFF-RAMP (RAMP D) 51+76 ~ 51+97 RT, 1 RIGHT ARROW, 1 "ONLY" (1x4=4 EACH)
I-89 SB OFF-RAMP (RAMP D) 51+84 ~ 51+96 LT, 1 LEFT/THROUGH ARROW
I-89 SB OFF-RAMP (RAMP D) 54+00 ~ 54+14 LT, 1 LEFT/THROUGH ARROW
I-89 SB OFF-RAMP (RAMP D) 53+96 ~ 54+15 RT, 1 RIGHT ARROW, 1 "ONLY" (1x4=4 EACH)



* REMOVE EXISTING W3-1 SIGN (LOCATED APPROXIMATELY 750 FT BACK FROM STOP BAR ON THE I-89 SB OFF RAMP (RAMP D)), AND INSTALL NEW W3-3 SIGN AT SAME LOCATION (AT APPROXIMATELY STATION 46+75). REMOVE EXISTING "STOP AHEAD" PAVEMENT MARKING AT APPROXIMATELY STATION 46+75 AND REPLACE WITH "SIGNAL AHEAD" PAVEMENT MARKING.

0 20 40
SCALE IN FEET

DELINEATORS WITH STEEL POST

US 2	15+25	20' RT	1
US 2	15+35	20' RT	1
US 2	15+45	20' RT	1
US 2	15+55	20' RT	1
US 2	15+65	20' RT	1
US 2	15+75	20' RT	1
US 2	15+85	20' RT	1
US 2	15+95	20' RT	1
US 2	16+05	20' RT	1
US 2	16+15	20' RT	1
US 2	16+25	20' RT	1
US 2	16+35	20' RT	1
US 2	16+45	20' RT	1
US 2	16+55	20' RT	1
US 2	16+65	20' RT	1
US 2	16+75	20' RT	1
US 2	16+85	20' RT	1
US 2	17+25	30' LT	1
US 2	17+25	20' RT	1
US 2	18+25	30' LT	1
US 2	19+12	20' RT	1
US 2	19+39	20' RT	1
US 2	19+65	20' RT	1
US 2	19+88	21' RT	1
US 2	20+08	21' RT	1
US 2	20+31	21' RT	1
US 2	20+53	21' RT	1
US 2	20+75	21' RT	1
RAMP A	35+39	39' LT	1
RAMP D	52+61	26' LT	1
RAMP D	53+06	26' LT	1
RAMP D	53+36	27' LT	1
RAMP D	53+75	31' LT	1
RAMP D	53+90	29' RT	1
RAMP D	54+15	40' LT	1
RAMP D	60+75	23' LT	1
		TOTAL	36

KEY	DATE	BY	REVISION
1	11/17/2015	VTRANS	DELINEATORS

LEGEND

= EXISTING SIGN
= NEW SIGN
B-B = BACK TO BACK
CL = CHANNELIZING LINE
DYCL = DOUBLE YELLOW CENTER LINE
EL = EDGE LINE
GORE = GORING
LL = LANE LINE
N = NEW
R = REMOVE EXISTING SIGN AND POST
R&N = REMOVE EXISTING POST AND PROVIDE NEW POST
R&S = REMOVE AND SALVAGE
RET = RETAIN AT EXISTING LOCATION
S = SALVAGE
TL = TURN LANE
DNBBL = DO NOT BLOCK BOX LINE
CH = CROSSHATCH LINE (5' SPACING)

PROJECT NAME: RICHMOND
PROJECT NUMBER: STP 0284 (17)

FILE NAME: z97c186pmbdr.dgn
PROJECT LEADER: JEFFREY MAXTUTIS
DESIGNED BY: J.SOBEL
PVMT. MARKING AND SIGNS LAYOUT SHEET 3
PLOT DATE: 5/1/2013
DRAWN BY: Y.CAO/LALMY
CHECKED BY: D.FLYNN
SHEET 58 OF 133

DURABLE 4 INCH WHITE LINE

U.S. ROUTE 2 20+00 ~ 20+64 LT, 64 LF (EL)
U.S. ROUTE 2 21+98 ~ 24+50 LT, 252 LF (EL)
U.S. ROUTE 2 20+00 ~ 21+00 RT, 100 LF (TL)
U.S. ROUTE 2 20+00 ~ 24+50 RT, 450 LF (EL)

DURABLE 4 INCH YELLOW LINE

U.S. ROUTE 2 20+00 ~ 20+93 LT & RT, 2X93=186 LF (DYCL)
U.S. ROUTE 2 21+43 ~ 23+15 RT, 4X175=700 LF (DYCL)
U.S. ROUTE 2 23+15 ~ 24+50 LT & RT, 2X135=270 LF (DYCL)

DURABLE 8 INCH YELLOW LINE

U.S. ROUTE 2 21+43 ~ 22+75 RT, 90 LF (GORE)

DURABLE LETTER OR SYMBOL

U.S. ROUTE 2 20+55 ~ 20+76 RT, 1 LEFT ARROW, 1 "ONLY" (1x4=4 EACH)

DELINEATORS WITH STEEL POSTS

U.S. ROUTE 2 STA. 20+19 ~ 20+63 RT (3 EACH)
REMOVE AND REINSTALL EACH

REMOVING SIGNS

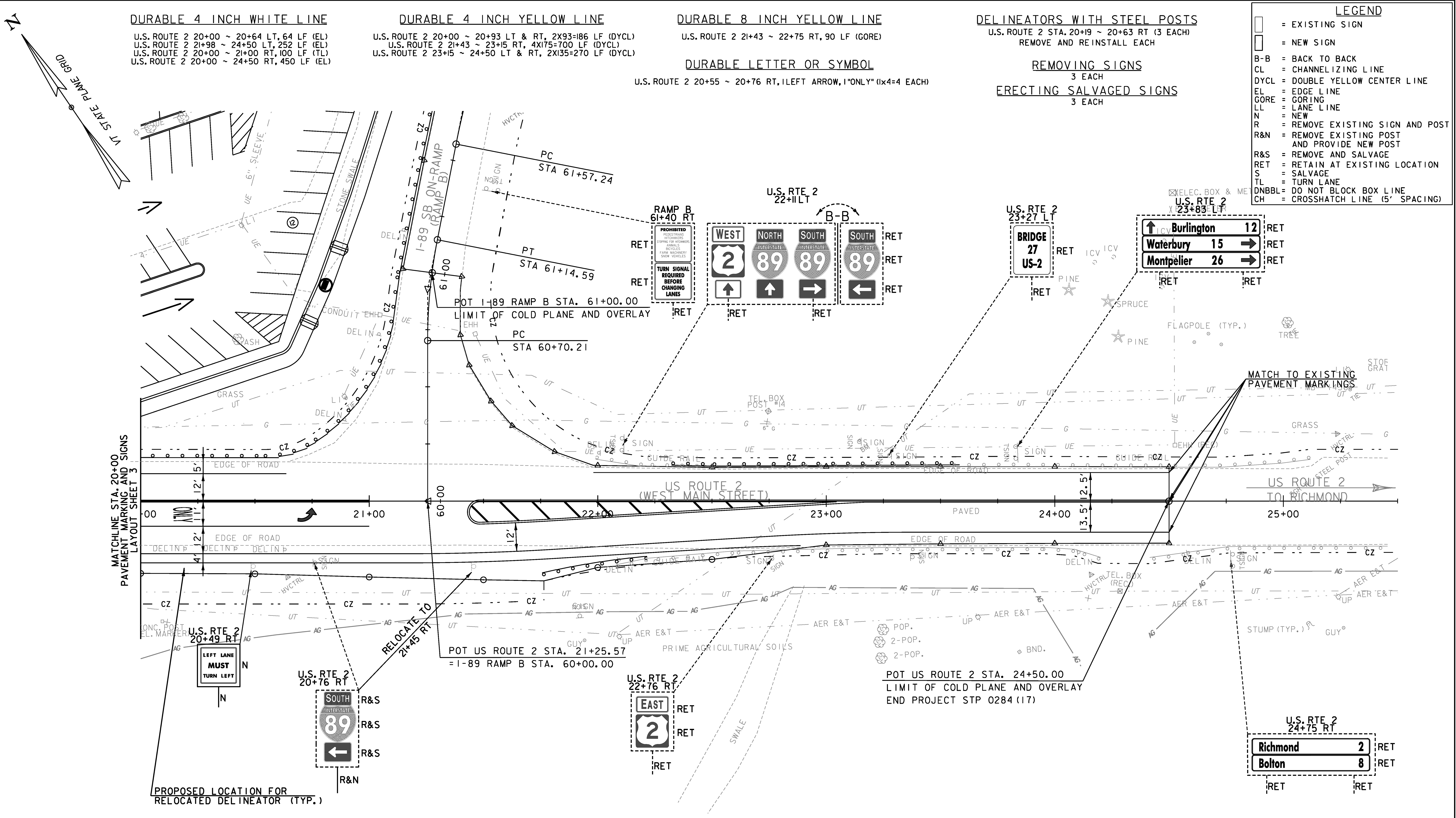
3 EACH

ERECTING SALVAGED SIGNS

3 EACH

LEGEND

▯	=	EXISTING SIGN
▯	=	NEW SIGN
B-B	=	BACK TO BACK
CL	=	CHANNELIZING LINE
DYCL	=	DOUBLE YELLOW CENTER LINE
EL	=	EDGE LINE
GORE	=	GORING
LL	=	LANE LINE
N	=	NEW
R	=	REMOVE EXISTING SIGN AND POST
R&N	=	REMOVE EXISTING POST AND PROVIDE NEW POST
R&S	=	REMOVE AND SALVAGE
RET	=	RETAIN AT EXISTING LOCATION
S	=	SALVAGE
TL	=	TURN LANE
DNBBL	=	DO NOT BLOCK BOX LINE
CH	=	CROSSHATCH LINE (5' SPACING)



TEMPORARY 4 INCH WHITE LINE

U.S. ROUTE 2 20+00 ~ 20+64 LT, 64 LF (EL)
U.S. ROUTE 2 21+98 ~ 24+50 LT, 252 LF (EL)
U.S. ROUTE 2 20+00 ~ 21+00 RT, 100 LF (TL)
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TEMPORARY 4 INCH YELLOW LINE

U.S. ROUTE 2 20+00 ~ 20+93 LT & RT, 2X93=186 LF (DYCL)
U.S. ROUTE 2 21+43 ~ 23+15 RT, 4X175=700 LF (DYCL)
U.S. ROUTE 2 23+15 ~ 24+50 LT & RT, 2X135=270 LF (DYCL)

TEMPORARY 8 INCH YELLOW LINE

U.S. ROUTE 2 21+43 ~ 22+75 RT, 90 LF (GORE)

TEMPORARY LETTER OR SYMBOL

U.S. ROUTE 2 20+55 ~ 20+76 RT, 1 LEFT ARROW, 1 "ONLY" (1x4=4 EACH)

0 20 40
SCALE IN FEET

PROJECT NAME: RICHMOND	
PROJECT NUMBER: STP 0284 (17)	
FILE NAME: z97c186pmbdr.dgn	PLOT DATE: 4/29/2013
PROJECT LEADER: JEFFREY MAXTUTIS	DRAWN BY: Y.CAO/I.ALMY
DESIGNED BY: J.SOBEL	CHECKED BY: D.FLYNN
PVMT. MARKING AND SIGNS LAYOUT SHEET 4	SHEET 59 OF 133

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET 1

MILEMARKER, STATION, OR SIGN NUMBER	SIGN LEGEND	E A	SIGN DIMENSIONS WIDTH (in)	SIGN DIMENSIONS HEIGHT (in)	NEW & SALVAGED SIGNS "A"	NEW & SALVAGED SIGNS "B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	EXIST POST SALVAGE	NO. OF POSTS	FLANGED CHANNEL lb/ft 1.12	FLANGED CHANNEL lb/ft 2.0	FLANGED CHANNEL lb/ft 3.0	SQUARE STEEL (in) 1.75 (1.88 lb/ft)	SQUARE STEEL (in) 2.0 (2.42 lb/ft)	SQUARE STEEL (in) 2.5 (3.35 lb/ft)	ANCHOR	SLEEVE	TUBULAR ALUMINUM Ø (in) 3.0 (1.3 lb/ft)	TUBULAR ALUMINUM Ø (in) 4.0 (1.7 lb/ft)	TUBULAR ALUMINUM Ø (in) 4.0 MOD (1.7 lb/ft)	FOUNDATION	TUBULAR STEEL Ø (in) 3.0 (7.6 lb/ft)	TUBULAR STEEL Ø (in) 3.5 (9.0 lb/ft)	TUBULAR STEEL Ø (in) 4.0 (10.8 lb/ft)	TUBULAR STEEL Ø (in) 5.0 (14.6 lb/ft)	W-SHAPE STEEL FTG. SIZE 24"	W-SHAPE STEEL FTG. SIZE 30"	W-SHAPE STEEL WEIGHT	W-SHAPE STEEL POST SIZE	SIGN FRAME REQUIRED	REMARKS	SIGN DETAIL S.H.S.*	SIGN DETAIL DETAIL ON SHEET NUMBER	SIGN DETAIL STD. SHEET NUMBER
															OPTION ITEMS																					
U.S. ROUTE 2 (WEST MAIN STREET)																																				
STATION 6+65, RT U.S. ROUTE 2	WI-7, TWO-DIRECTION LARGE ARROW						1				2					26.0' X		2															RELOCATE EXISTING SIGN ON NEW POSTS			
STATION 6+73, RT U.S. ROUTE 2	VD-701 BRIDGE NUMBER PLAQUE BR 26 US2	1	6	8	0.33						1					X		1															INSTALL NEW SIGN ON NEW POST			E-134
STATION 6+97, LT U.S. ROUTE 2	VD-701 BRIDGE NUMBER PLAQUE BR 26 US2	1	6	8	0.33						1					X		1															INSTALL NEW SIGN ON NEW POST			E-134
STATION 7+66, LT U.S. ROUTE 2	R3-7R, RIGHT LANE MUST TURN RIGHT	1	30	30	6.25						1					X		1															INSTALL NEW SIGN ON NEW POST	X		
STATION 7+79 ~~7+71~~, RT U.S. ROUTE 2	R3-7L, LEFT LANE MUST TURN LEFT	1	30	30	6.25						1					X		1															INSTALL NEW SIGN ON NEW POST	X		
STATION 7+99 ~~8+05~~, LT U.S. ROUTE 2	DI-1, DESTINATION & DISTANCE SIGN, WILLISTON						1				2												~~2~~ USED EXISTING FOUNDATIONS		X								RELOCATE EXISTING SIGN ON NEW POSTS			
⚠	DI-1, DESTINATION & DISTANCE SIGN, ESSEX JCT						1																										RELOCATE EXISTING SIGN ON NEW POSTS (SUB-MOUNT WITH THE PREVIOUS SIGN)			
	"E" SERIES, SERVICE SIGN, GAS/DIESEL						1																										RELOCATE EXISTING SIGN ON NEW POSTS (SUB-MOUNT WITH THE PREVIOUS SIGNS)			
	M3-4, U.S. ROUTE CARDINAL DIRECTION MARKER, WEST						1																										RELOCATE EXISTING SIGN ON NEW POST (SUB-MOUNT WITH THE PREVIOUS SIGNS)			
	MI-4, U.S. ROUTE 2						1																										RELOCATE EXISTING SIGN ON NEW POST (SUB-MOUNT WITH THE PREVIOUS SIGNS)			
	M6-2, U.S. ROUTE DIRECTIONAL ARROW AUXILIARY SIGN, UPWARD LEFT POINTING DIAGONAL ARROW						1																										RELOCATE EXISTING SIGN ON NEW POST (SUB-MOUNT WITH THE PREVIOUS SIGNS)			
	M3-4, STATE ROUTE CARDINAL DIRECTION MARKER, WEST						1																										RELOCATE EXISTING SIGN ON NEW POST (SUB-MOUNT WITH THE PREVIOUS SIGNS)			
	MI-5, VERMONT STATE ROUTE 117						1																										RELOCATE EXISTING SIGN ON NEW POST (SUB-MOUNT WITH THE PREVIOUS SIGNS)			
												FT	FT	FT	FT	FT 65.5	FT		EA	LB	LB	LB		LB	LB ⚠ ~~348.75~~ 283.50	LB	LB									
TOTALS					SF 13.16	SF	EA. 9	SF				FT			FT 65.5					LB			EA. ~~2~~	LB ⚠ ~~348.75~~ 283.50				EA.	EA.	LB						

FINAL POST LENGTHS ARE TO BE DETERMINED IN THE FIELD. POST SIZES ARE COMPUTED BASED ON INFORMATION FURNISHED ON THE VTRANS STANDARD SHEETS AND THE "SIGN POST DESIGN GUIDELINE".

*STANDARD HIGHWAY SIGNS

KEY	DATE	BY	REVISION
⚠	11/10/2015	VTRANS	SIGN SUMMARY UPDATE

PROJECT NAME: RICHMOND
PROJECT NUMBER: STP 0284 (17)

FILE NAME: z97c186tss.dgn
PROJECT LEADER: JEFFREY MAXTUTIS
DESIGNED BY: J.SOBEL
TRAFFIC SIGN SUMMARY SHEET 1
PLOT DATE: 4/30/2013
DRAWN BY: Y.CAO / I.ALMY
CHECKED BY: D.FLYNN
SHEET 60 OF 133

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET 2

KEY	DATE	BY	REVISION
⚠	11/10/2015	VTRANS	SIGN SUMMARY UPDATE

MILEMARKER, STATION, OR SIGN NUMBER	SIGN LEGEND	SIGN DIMENSIONS EA	SIGN DIMENSIONS WIDTH (in)	SIGN DIMENSIONS HEIGHT (in)	NEW & SALVAGED SIGNS "A"	NEW & SALVAGED SIGNS "B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	EXIST POST SALVAGE	NO. OF POSTS	FLANGED CHANNEL lb/ft 1.12	FLANGED CHANNEL lb/ft 2.0	FLANGED CHANNEL lb/ft 3.0	SQUARE STEEL (in) 1.75 lb/ft 1.88	SQUARE STEEL (in) 2.0 lb/ft 2.42	SQUARE STEEL (in) 2.5 lb/ft 3.35	ANCHOR	SLEEVE	TUBULAR ALUMINUM Ø (in) 3.0 lb/ft 1.3	TUBULAR ALUMINUM Ø (in) 4.0 lb/ft 1.7	TUBULAR ALUMINUM Ø (in) 4.0 MOD lb/ft 1.7	FOUNDATION	TUBULAR STEEL Ø (in) 3.0 lb/ft 7.6	TUBULAR STEEL Ø (in) 3.5 lb/ft 9.0	TUBULAR STEEL Ø (in) 4.0 lb/ft 10.8	TUBULAR STEEL Ø (in) 5.0 lb/ft 14.6	W-SHAPE STEEL FTG. SIZE 24"	W-SHAPE STEEL FTG. SIZE 30"	W-SHAPE STEEL WEIGHT	W-SHAPE STEEL POST SIZE	SIGN FRAME	REQUIRED	REMARKS	SIGN DETAIL S.H.S.*	SIGN DETAIL DETAIL ON SHEET NUMBER	SIGN DETAIL STD. SHEET NUMBER
OPTION ITEMS																																					
U.S. ROUTE 2 (WEST MAIN STREET)																																					
STATION 8+05, LT U.S. ROUTE 2	M6-2, VERMONT STATE ROUTE DIRECTIONAL ARROW AUXILIARY SIGN, UPWARD RIGHT POINTING DIAGONAL ARROW						1																											RELOCATE EXISTING SIGN ON NEW POST (SUB-MOUNT WITH THE PREVIOUS SIGNS)			
STATION 8+51, RT U.S. ROUTE 2	D1-1a, DESTINATION & DISTANCE SIGN, BURLINGTON						1				~~3~~ 2						35.40 X ⚠	~~3~~ 2																RELOCATE EXISTING SIGN ON NEW POSTS.			
	M3-1, INTERSTATE ROUTE CARDINAL DIRECTION MARKER, NORTH						1																											RELOCATE EXISTING SIGN ON NEW POST (SUB-MOUNT WITH THE PREVIOUS SIGN)			
	M1-1, INTERSTATE 89						2																											RELOCATE EXISTING SIGNS ON NEW POSTS (SUB-MOUNT WITH THE PREVIOUS SIGNS)			
	M6-1, INTERSTATE ROUTE DIRECTIONAL ARROW AUXILIARY SIGN, LEFT POINTING ARROW						1																											RELOCATE EXISTING SIGNS ON NEW POSTS (SUB-MOUNT WITH THE PREVIOUS SIGNS)			
	M3-3, INTERSTATE ROUTE CARDINAL DIRECTION MARKER, SOUTH						1																											RELOCATE EXISTING SIGNS ON NEW POSTS (SUB-MOUNT WITH THE PREVIOUS SIGNS)			
	M6-3, INTERSTATE ROUTE DIRECTIONAL ARROW AUXILIARY SIGN, UPWARD POINTING ARROW						1																											RELOCATE EXISTING SIGNS ON NEW POSTS (SUB-MOUNT WITH THE PREVIOUS SIGNS)			
	M3-2, U.S. ROUTE CARDINAL DIRECTION MARKER, EAST						1																											RELOCATE EXISTING SIGNS ON NEW POSTS (SUB-MOUNT WITH THE PREVIOUS SIGNS)			
	M1-4, U.S. ROUTE 2						1																											RELOCATE EXISTING SIGN ON NEW POSTS (SUB-MOUNT WITH THE PREVIOUS SIGNS)			
	M6-3, U.S. ROUTE DIRECTIONAL ARROW AUXILIARY SIGN, UPWARD POINTING ARROW						1																											RELOCATE EXISTING SIGN ON NEW POSTS (SUB-MOUNT WITH THE PREVIOUS SIGNS)			
STATION 8+65, RT U.S. ROUTE 2	M3-2, U.S. ROUTE CARDINAL DIRECTION MARKER, EAST						1				~~3~~ 2						29.0 X ⚠	~~3~~ 2																RELOCATE EXISTING SIGN ON NEW POST.			
	M3-4, U.S. ROUTE CARDINAL DIRECTION MARKER, WEST						1																											RELOCATE EXISTING SIGNS ON NEW POSTS (SUB-MOUNT WITH THE PREVIOUS SIGN)			
	M1-4, U.S. ROUTE 2						2																											RELOCATE EXISTING SIGNS ON NEW POST (SUB-MOUNT WITH THE PREVIOUS SIGNS)			
	M4-5, STATE ROUTE TRAILBLAZER AUXILIARY SIGN, TO						1																											RELOCATE EXISTING SIGN ON NEW POST (SUB-MOUNT WITH THE PREVIOUS SIGNS)			
	M1-5, VERMONT STATE ROUTE 117						1																											RELOCATE EXISTING SIGN ON NEW POST (SUB-MOUNT WITH THE PREVIOUS SIGN)			
												FT	FT	FT	FT	FT	FT ~~91.85~~ 64.40		EA	LB	LB	LB		LB	LB	LB	LB										
TOTALS					SF	SF	EA. 17	SF				FT			FT ⚠ ~~91.85~~ 64.40					LB			EA.	LB				EA.	EA.	LB							

FINAL POST LENGTHS ARE TO BE DETERMINED IN THE FIELD. POST SIZES ARE COMPUTED BASED ON INFORMATION FURNISHED ON THE VTRANS STANDARD SHEETS AND THE "SIGN POST DESIGN GUIDELINE".

*STANDARD HIGHWAY SIGNS

PROJECT NAME: RICHMOND
PROJECT NUMBER: STP 0284 (17)

FILE NAME: z97c186tss.dgn
PROJECT LEADER: JEFFREY MAXTUTIS
DESIGNED BY: J.SOBEL
TRAFFIC SIGN SUMMARY SHEET 2
PLOT DATE: 4/30/2013
DRAWN BY: Y.CAO/I.ALMY
CHECKED BY: D.FLYNN
SHEET 61 OF 133

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET 3

KEY	DATE	BY	REVISION
⚠	11/10/2015	VTRANS	SIGN SUMMARY UPDATE

MILEMARKER, STATION, OR SIGN NUMBER	SIGN LEGEND	SIGN DIMENSIONS EA	SIGN DIMENSIONS WIDTH (in)	SIGN DIMENSIONS HEIGHT (in)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	EXIST POST SALVAGE	NEW SIGN POSTS NO. OF POSTS	FLANGED CHANNEL lb/ft 1.12	FLANGED CHANNEL 2.0	FLANGED CHANNEL 3.0	SQUARE STEEL (in) 1.75 (lb/ft 1.88)	SQUARE STEEL 2.0 (lb/ft 2.42)	SQUARE STEEL 2.5 (lb/ft 3.35)	ANCHOR	SLEEVE	TUBULAR ALUMINUM Ø (in) 3.0 (lb/ft 1.3)	TUBULAR ALUMINUM 4.0 (lb/ft 1.7)	TUBULAR ALUMINUM 4.0 MOD (lb/ft 1.7)	FOUNDATION	TUBULAR STEEL Ø (in) 3.0 (lb/ft 7.6)	TUBULAR STEEL 3.5 (lb/ft 9.0)	TUBULAR STEEL 4.0 (lb/ft 10.8)	TUBULAR STEEL 5.0 (lb/ft 14.6)	W-SHAPE STEEL FTG. SIZE 24"	W-SHAPE STEEL FTG. SIZE 30"	W-SHAPE STEEL WEIGHT	W-SHAPE STEEL POST SIZE	SIGN REQUIRED	REMARKS	SIGN DETAIL S.H.S.*	DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
U.S. ROUTE 2 (WEST MAIN STREET)																																				
STATION 8+65, RT U.S. ROUTE 2	M6-1, U.S. ROUTE DIRECTIONAL ARROW AUXILIARY SIGN, LEFT POINTING ARROW						1																										RELOCATE EXISTING SIGN ON NEW POST (SUB-MOUNT WITH THE PREVIOUS SIGNS)			
	M6-1, U.S. ROUTE DIRECTIONAL ARROW AUXILIARY SIGN, RIGHT POINTING ARROW						2				2						35.40	2															RELOCATE EXISTING SIGNS ON NEW POSTS (SUB-MOUNT WITH THE PREVIOUS SIGNS)			
STATION 16+31, RT U.S. ROUTE 2	D4-2, CHITTENDEN COUNTY TRANSPORTATION AUTHORITY (C.C.T.A.) PARK & RIDE	1	30	36	7.50						1					X		1															INSTALL NEW SIGN ON EXISTING POST (MOUNT BACK-TO-BACK WITH EXISTING R8-3) CCTA LOGO SHALL BE PROVIDED TO THE CONTRACTOR BY VTRANS	X	65	
STATION 17+20, RT U.S. ROUTE 2	R8-3, NO PARKING						1				1					X		1															RELOCATE EXISTING SIGN ON NEW POST			
	M4-6, END						1																										RELOCATE EXISTING SIGN ON NEW POST (SUB-MOUNT WITH THE PREVIOUS SIGN)			
STATION 17+44, LT U.S. ROUTE 2	R3-2, NO LEFT TURN	1	36	36	9.00						~~1~~					~~X~~		~~1~~															INSTALL NEW SIGN ON NEW MAST ARM MP2B.	X		
STATION 18+26, LT U.S. ROUTE 2	M3-4, U.S. ROUTE CARDINAL DIRECTION MARKER, WEST						1				2						31.0 X	2															RELOCATE EXISTING SIGN ON NEW POST.			
	M4-5, STATE ROUTE TRAILBLAZER AUXILIARY SIGN, TO						1																										RELOCATE EXISTING SIGN ON NEW POST (SUB-MOUNT WITH THE PREVIOUS SIGN)			
	M3-2, U.S. ROUTE CARDINAL DIRECTION MARKER, EAST						1																										RELOCATE EXISTING SIGN ON NEW POST (SUB-MOUNT WITH THE PREVIOUS SIGN)			
	M1-4, U.S. ROUTE 2						2																										RELOCATE EXISTING SIGNS ON NEW POSTS (SUB-MOUNT WITH THE PREVIOUS SIGNS)			
	M1-5, VERMONT STATE ROUTE 117						1				2						29.0 ⚠	2															RELOCATE EXISTING SIGN ON NEW POST (SUB-MOUNT WITH THE PREVIOUS SIGNS)			
	M6-1, U.S. ROUTE DIRECTIONAL ARROW AUXILIARY SIGN, LEFT POINTING ARROW						1																										RELOCATE EXISTING SIGN ON NEW POST (SUB-MOUNT WITH THE PREVIOUS SIGNS)			
	M6-1, STATE ROUTE DIRECTIONAL ARROW AUXILIARY SIGN, LEFT POINTING ARROW						1																										RELOCATE EXISTING SIGN ON NEW POST (SUB-MOUNT WITH THE PREVIOUS SIGN)			
	M6-1, U.S. ROUTE DIRECTIONAL ARROW AUXILIARY SIGN, RIGHT POINTING ARROW						1																										RELOCATE EXISTING SIGN ON NEW POST (SUB-MOUNT WITH THE PREVIOUS SIGNS)			
STATION 18+60, LT U.S. ROUTE 2	D4-2, CHITTENDEN COUNTY TRANSPORTATION AUTHORITY (C.C.T.A.) PARK & RIDE	1	30	36	7.50						1					X		1															INSTALL NEW SIGN ON NEW POST. CCTA LOGO SHALL BE PROVIDED TO THE CONTRACTOR BY VTRANS	X	65	
												FT	FT	FT	FT	FT 41.13 ~~46.5~~	FT 31.0 ~~27.5~~		EA	LB	LB	LB		LB	LB	LB	LB									
	TOTALS				SF 24.00	SF	EA. 14	SF				FT			FT 72.13 ~~74.0~~ ⚠					LB			EA.	LB				EA.	EA.	LB						

OPTION ITEMS

FINAL POST LENGTHS ARE TO BE DETERMINED IN THE FIELD. POST SIZES ARE COMPUTED BASED ON INFORMATION FURNISHED ON THE VTRANS STANDARD SHEETS AND THE "SIGN POST DESIGN GUIDELINE".

*STANDARD HIGHWAY SIGNS

PROJECT NAME: RICHMOND
PROJECT NUMBER: STP 0284 (17)

FILE NAME: z97c186tss.dgn
PROJECT LEADER: JEFFREY MAXTUTIS
DESIGNED BY: J.SOBEL
TRAFFIC SIGN SUMMARY SHEET 3
PLOT DATE: 4/30/2013
DRAWN BY: Y.CAO/I.ALMY
CHECKED BY: D.FLYNN
SHEET 62 OF 133

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET 4

MILEMARKER, STATION, OR SIGN NUMBER	SIGN LEGEND	SIGN DIMENSIONS: EA	SIGN DIMENSIONS: WIDTH (in)	SIGN DIMENSIONS: HEIGHT (in)	NEW & SALVAGED SIGNS: "A"	NEW & SALVAGED SIGNS: "B"	NEW & SALVAGED SIGNS: SALV SIGN	NEW & SALVAGED SIGNS: SALV TIS	EXIST POST: RETAIN	EXIST POST: SALVAGE	NO. OF POSTS	FLANGED CHANNEL lb/ft 1.12	FLANGED CHANNEL lb/ft 2.0	FLANGED CHANNEL lb/ft 3.0	SQUARE STEEL (in) 1.75 (lb/ft 1.88)	SQUARE STEEL (in) 2.0 (lb/ft 2.42)	SQUARE STEEL (in) 2.5 (lb/ft 3.35)	ANCHOR	SLEEVE	TUBULAR ALUMINUM Ø (in) 3.0 (lb/ft 1.3)	TUBULAR ALUMINUM Ø (in) 4.0 (lb/ft 1.7)	TUBULAR ALUMINUM Ø (in) 4.0 MOD (lb/ft 1.7)	FOUNDATION	TUBULAR STEEL Ø (in) 3.0 (lb/ft 7.6)	TUBULAR STEEL Ø (in) 3.5 (lb/ft 9.0)	TUBULAR STEEL Ø (in) 4.0 (lb/ft 10.8)	TUBULAR STEEL Ø (in) 5.0 (lb/ft 14.6)	W-SHAPE STEEL: FTG. SIZE 24"	W-SHAPE STEEL: FTG. SIZE 30"	W-SHAPE STEEL: WEIGHT	W-SHAPE STEEL: POST SIZE	SIGN FRAME REQUIRED	REMARKS	SIGN DETAIL: S.H.S.*	SIGN DETAIL: DETAIL ON SHEET NUMBER	SIGN DETAIL: STD. SHEET NUMBER
												OPTION ITEMS																								
U.S. ROUTE 2 (WEST MAIN STREET)																																				
STATION 19+35, RT U.S. ROUTE 2	Waterbury 15 D1-1a, DESTINATION & DISTANCE SIGN, WATERBURY						1				2					25.5 X		2															RELOCATE EXISTING SIGNS ON NEW POSTS			
	Montpelier 26 D1-1a, DESTINATION & DISTANCE SIGN, MONTPELIER						1																										RELOCATE EXISTING SIGN ON NEW POSTS (SUB-MOUNT WITH THE PREVIOUS SIGN)			
STATION 19+59, RT U.S. ROUTE 2	LEFT LANE MUST TURN LEFT R3-7L, LEFT LANE MUST TURN LEFT	1	30	30	6.25						1					13.0 X		1															INSTALL NEW SIGN ON NEW POST	X		
STATION 20+49, RT U.S. ROUTE 2	LEFT LANE MUST TURN LEFT R3-7L, LEFT LANE MUST TURN LEFT	1	30	30	6.25						1					12.5 X		1															INSTALL NEW SIGN ON NEW POST	X		
STATION 21+45, RT U.S. ROUTE 2	SOUTH M3-3, INTERSTATE ROUTE CARDINAL DIRECTION MARKER, SOUTH						1				1						14.00 X	1															RELOCATE EXISTING SIGN ON NEW POST. SPECIAL PROVISION (SOIL BEARING SLIP BASES) REQUIRED.			
	INTERSTATE 89 MI-1, INTERSTATE 89						1																										RELOCATE EXISTING SIGN ON NEW POST (SUB-MOUNT WITH THE PREVIOUS SIGN)			
	M6-1, INTERSTATE ROUTE DIRECTIONAL ARROW AUXILIARY SIGN, LEFT POINTING ARROW						1																										RELOCATE EXISTING SIGN ON NEW POST (SUB-MOUNT WITH THE PREVIOUS SIGN)			
I-89 SB OFF RAMP (RAMP D)																																				
STATION 46+75, RT RAMP D	W3-3, SIGNAL AHEAD	1	48	48	16.00						2					16.75 X		2															INSTALL NEW SIGN ON NEW POSTS	X		
STATION 53+97, LT RAMP D	DO NOT ENTER R5-1, DO NOT ENTER						1				1					14.0 X		1															RELOCATE EXISTING SIGN ON NEW POST			
	ONE WAY R6-1R, ONE WAY						1																										RELOCATE EXISTING SIGN ON NEW POST (SUB-MOUNT WITH THE PREVIOUS SIGN)			
	ONE WAY R6-1L, ONE WAY						1																										RELOCATE EXISTING SIGN ON NEW POST (MOUNT BACK-TO-BACK WITH THE PREVIOUS SIGN)			
STATION 54+07, RT RAMP D	DO NOT ENTER R5-1, DO NOT ENTER						1				1					13.5 X		1															RELOCATE EXISTING SIGN ON NEW POST			
	ONE WAY R6-1R, ONE WAY						1																										RELOCATE EXISTING SIGN ON NEW POST (SUB-MOUNT WITH THE PREVIOUS SIGN)			
												FT	FT	FT	FT	FT 95.25 ~~94.5~~	FT 14.00 ~~13.75~~		EA	LB	LB	LB		LB	LB	LB	LB									
TOTALS					SF 28.50	SF	EA. 10	SF				FT			FT 109.25 ~~108.25~~					LB			EA.	LB				EA.	EA.	LB						

FINAL POST LENGTHS ARE TO BE DETERMINED IN THE FIELD. POST SIZES ARE COMPUTED BASED ON INFORMATION FURNISHED ON THE VTRANS STANDARD SHEETS AND THE "SIGN POST DESIGN GUIDELINE".

*STANDARD HIGHWAY SIGNS

KEY	DATE	BY	REVISION
1	11/12/2015	VTRANS	SIGN SUMMARY UPDATE

PROJECT NAME: RICHMOND
PROJECT NUMBER: STP 0284 (17)

FILE NAME: z97c186tss.dgn
PROJECT LEADER: JEFFREY MAXTUTIS
DESIGNED BY: J.SOBEL
TRAFFIC SIGN SUMMARY SHEET 4

PLOT DATE: 4/29/2013
DRAWN BY: Y.CAO/I.ALMY
CHECKED BY: D.FLYNN
SHEET 63 OF 133

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET 5

MILEMARKER, STATION, OR SIGN NUMBER	SIGN LEGEND	SIGN DIMENSIONS EA	WIDTH (in)	HEIGHT (in)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	SALVAGE	NO. OF POSTS	NEW SIGN POSTS: FLANGED CHANNEL lb/ft 1.12	2.0	3.0	SQUARE STEEL (in) 1.75 lb/ft 1.88	2.0 / 2.42	2.5 / 3.35	ANCHOR	SLEEVE	TUBULAR ALUMINUM Ø (in) 3.0 lb/ft 1.3	4.0 / 1.7	4.0 MOD / 1.7	FOUNDATION	TUBULAR STEEL Ø (in) 3.0 lb/ft 7.6	3.5 / 9.0	4.0 / 10.8	5.0 / 14.6	W-SHAPE STEEL FTG. SIZE 24"	30"	WEIGHT	POST SIZE	SIGN FRAME REQUIRED	REMARKS	SIGN DETAIL S.H.S.*	DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
															OPTION ITEMS																					
I-89 SB OFF RAMP (RAMP D)																																				
STATION 54+07, RT RAMP D	R6-1L, ONE WAY						1																										RELOCATE EXISTING SIGN ON NEW POST (MOUNT BACK-TO-BACK WITH THE PREVIOUS SIGN)			
STATION 54+18, LT RAMP D	M3-3, INTERSTATE ROUTE CARDINAL DIRECTION MARKER, SOUTH	1	24	12	2.00						2						31.0 X	2															INSTALL NEW SIGN ON NEW POST. SPECIAL PROVISION (SOIL BEARING SLIP BASES) REQUIRED.	X		
	M3-1, INTERSTATE ROUTE CARDINAL DIRECTION MARKER, NORTH	1	24	12	2.00																												INSTALL NEW SIGN ON NEW POST(SUB-MOUNT)	X		
	M1-1, INTERSTATE 89	2	24	24	8.00																												INSTALL NEW SIGN ON NEW POST(SUB-MOUNT)	X		
	M6-1, INTERSTATE ROUTE DIRECTIONAL ARROW AUXILIARY SIGN, RIGHT POINTING ARROW	1	21	15	2.19																												INSTALL NEW SIGN ON NEW POST(SUB-MOUNT)	X		
STATION 54+18, LT RAMP D	M3-4, U.S. ROUTE CARDINAL DIRECTION MARKER, WEST	1	24	12	2.00						2						31.0 X	2															INSTALL NEW SIGN ON NEW POST. SPECIAL PROVISION (SOIL BEARING SLIP BASES) REQUIRED.	X		
	M3-2, U.S. ROUTE CARDINAL DIRECTION MARKER, EAST	1	24	12	2.00																												INSTALL NEW SIGN ON NEW POST(SUB-MOUNT)	X		
	M1-5, VERMONT STATE ROUTE 117	1	30	24	5.00																												INSTALL NEW SIGN ON NEW POST(SUB-MOUNT)			E-136 B
	M6-1, STATE ROUTE DIRECTIONAL ARROW AUXILIARY SIGN, LEFT POINTING ARROW	1	24	15	2.5																												INSTALL NEW SIGN ON NEW POST(SUB-MOUNT)	X		
	M6-1, U.S. ROUTE DIRECTIONAL ARROW AUXILIARY SIGN, RIGHT POINTING ARROW	2	24	15	5.0																												INSTALL NEW SIGN ON NEW POST(SUB-MOUNT)	X		
	M1-4, U.S. ROUTE 2	2	24	24	8.00																												INSTALL NEW SIGN ON NEW POST(SUB-MOUNT)	X		
	M6-1, INTERSTATE ROUTE DIRECTIONAL ARROW AUXILIARY SIGN, LEFT POINTING ARROW	1	21	15	2.19																												INSTALL NEW SIGN ON NEW POST(SUB-MOUNT)	X		
	M4-5, STATE ROUTE TRAILBLAZER AUXILIARY SIGN, TO	1	24	12	2.00																												INSTALL NEW SIGN ON NEW POST.			E-136 B
												FT	FT	FT	FT	FT	FT 62.0 ~~55.0~~		EA	LB	LB	LB		LB	LB	LB	LB									
TOTALS					SF 42.88	SF	EA. 1	SF				FT			FT 62.0 ~~55.0~~ △					LB			EA.	LB				EA.	EA.	LB						

FINAL POST LENGTHS ARE TO BE DETERMINED IN THE FIELD. POST SIZES ARE COMPUTED BASED ON INFORMATION FURNISHED ON THE VTRANS STANDARD SHEETS AND THE "SIGN POST DESIGN GUIDELINE".

*STANDARD HIGHWAY SIGNS

KEY	DATE	BY	REVISION
△	11/12/2015	VTRANS	SIGN SUMMARY UPDATE

PROJECT NAME: RICHMOND
PROJECT NUMBER: STP 0284 (17)

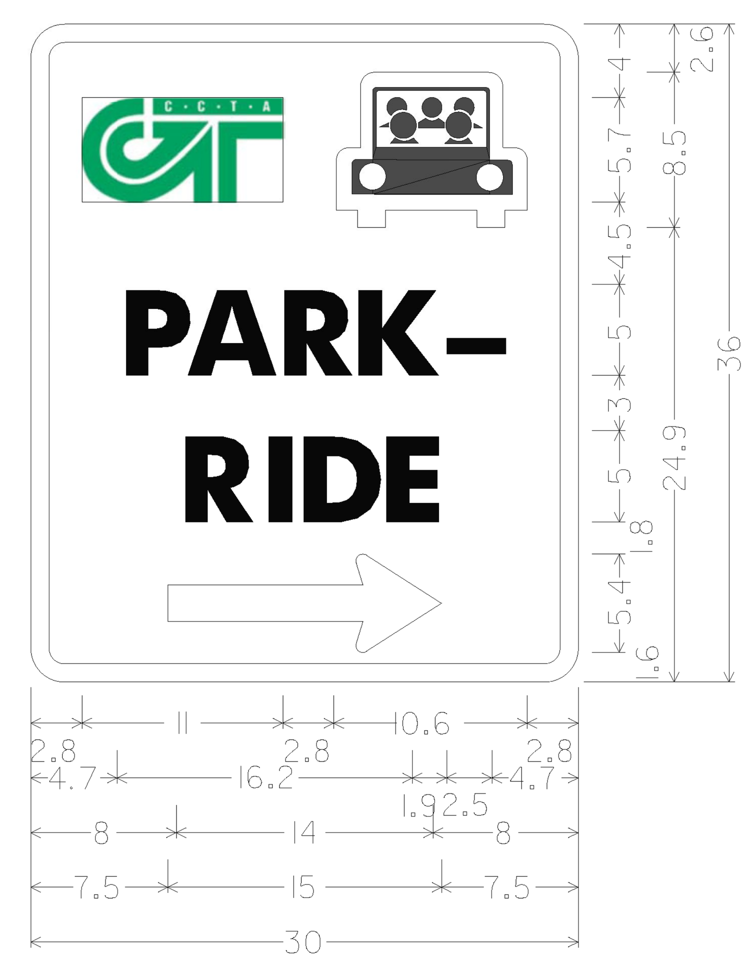
FILE NAME: z97c186tss.dgn
PROJECT LEADER: JEFFREY MAXTUTIS
DESIGNED BY: J.SOBEL
TRAFFIC SIGN SUMMARY SHEET 5

PLOT DATE: 4/29/2013
DRAWN BY: Y.CAO/I.ALMY
CHECKED BY: D.FLYNN
SHEET 64 OF 133

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET 6

MILEMARKER, STATION, OR SIGN NUMBER	SIGN LEGEND	SIGN DIMENSIONS E A	WIDTH (in)	HEIGHT (in)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	SALVAGE	NO. OF POSTS	NEW SIGN POSTS FLANGED CHANNEL lb/ft 1.12	2.0	3.0	SQUARE STEEL (in) 1.75 lb/ft 1.88	2.0 lb/ft 2.42	2.5 lb/ft 3.35	ANCHOR	SLEEVE	TUBULAR ALUMINUM Ø (in) 3.0 lb/ft 1.3	4.0 lb/ft 1.7	4.0 MOD lb/ft 1.7	FOUND-ATION	TUBULAR STEEL Ø (in) 3.0 lb/ft 7.6	3.5 lb/ft 9.0	4.0 lb/ft 10.8	5.0 lb/ft 14.6	W-SHAPE STEEL FTG. SIZE 24"	30"	WEIGHT	POST SIZE	SIGN FRAME REQUIRED	REMARKS	S.H.S.*	SIGN DETAIL DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
					SF	SF	EA.	SF				FT			FT					LB			EA.	LB				EA.	EA.	LB						
		SHEET 60 TOTALS			13.16		9										65.5						2		283.50 ~~348.75~~											
		SHEET 61 TOTALS					17										64.40 ~~91.85~~																			
		SHEET 62 TOTALS			24.00		14										72.13 ~~74.0~~																			
		SHEET 63 TOTALS			28.5		10										109.25 ~~108.25~~																			
		SHEET 64 TOTALS			42.88		1										62.0 ~~55.0~~																			
		GRAND TOTALS			108.54		51										△ 373.28 ~~394.6~~						2		△ 283.50 ~~348.75~~											



D4-2;
1.9" RADIUS, 1.0" BORDER, WHITE ON GREEN;
SYMBOL RA074;
[PARK -] D 601 SPACING;
[RIDE] D;
STANDARD ARROW CUSTOM 15.0" X 5.4" 01;

SIGN DETAIL
NOT TO SCALE

FINAL POST LENGTHS ARE TO BE DETERMINED IN THE FIELD. POST SIZES ARE COMPUTED BASED ON INFORMATION FURNISHED ON THE VTRANS STANDARD SHEETS AND THE "SIGN POST DESIGN GUIDELINE".

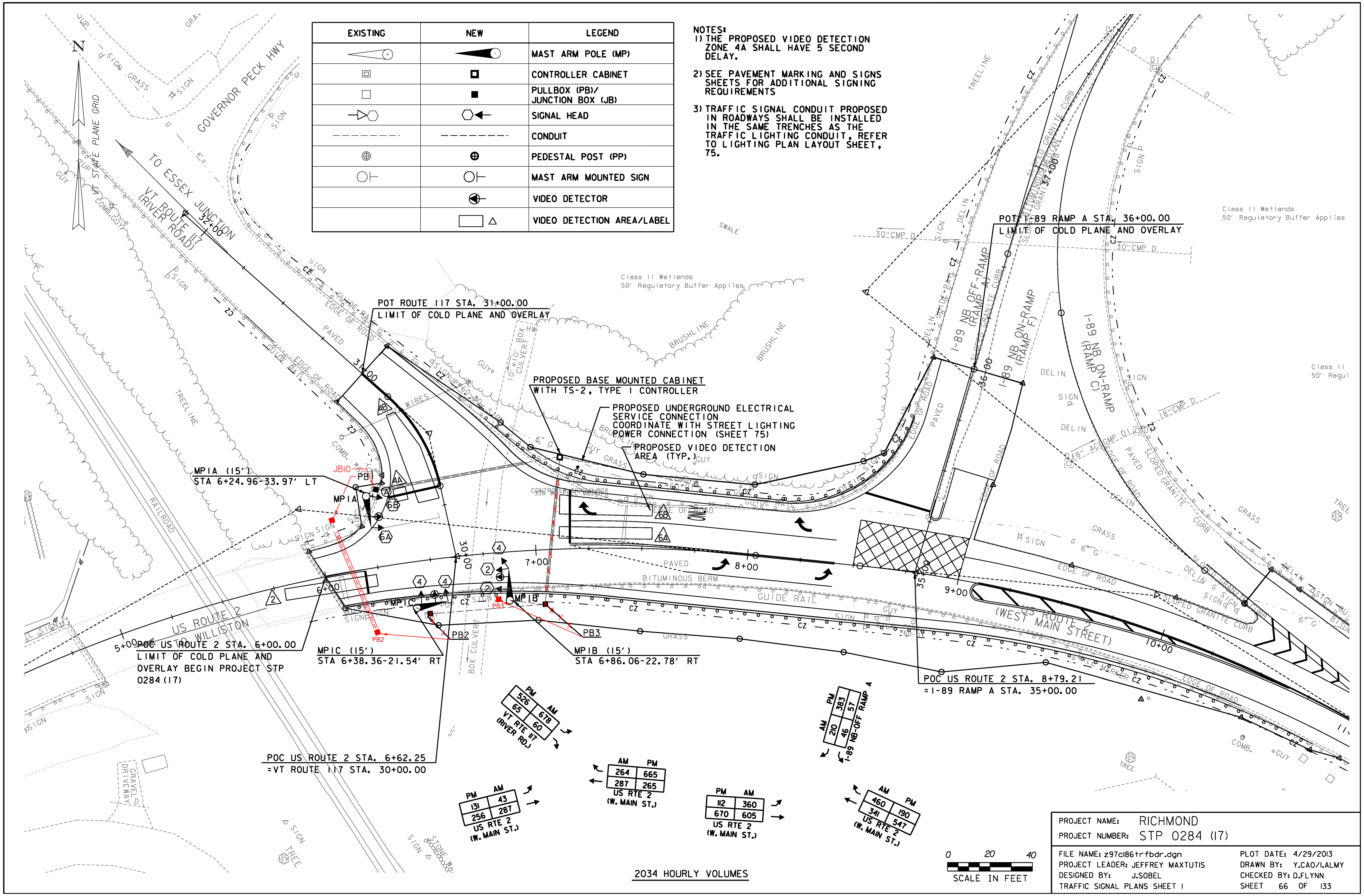
*STANDARD HIGHWAY SIGNS

KEY	DATE	BY	REVISION
△	11/12/2015	VTRANS	SIGN SUMMARY UPDATE

PROJECT NAME: RICHMOND
PROJECT NUMBER: STP 0284 (17)

FILE NAME: z97c186tss.dgn
PROJECT LEADER: JEFFREY MAXTUTIS
DESIGNED BY: J.SOBEL
TRAFFIC SIGN SUMMARY SHEET 6

PLOT DATE: 4/29/2013
DRAWN BY: Y.CAO/I.ALMY
CHECKED BY: D.FLYNN
SHEET 65 OF 133



EXISTING	NEW	LEGEND
		MAST ARM POLE (MP)
		CONTROLLER CABINET
		PULLBOX (PB)/ JUNCTION BOX (JB)
		SIGNAL HEAD
		CONDUIT
		PEDESTAL POST (PP)
		MAST ARM MOUNTED SIGN
		VIDEO DETECTOR
		VIDEO DETECTION AREA/LABEL

NOTES:

1) THE PROPOSED VIDEO DETECTION ZONE 4A SHALL HAVE 5 SECOND DELAY.

2) SEE PAVEMENT MARKING AND SIGNS SHEETS FOR ADDITIONAL SIGNING REQUIREMENTS

3) TRAFFIC SIGNAL CONDUIT PROPOSED IN ROADWAYS SHALL BE INSTALLED IN THE SAME TRENCHES AS THE TRAFFIC LIGHTING CONDUIT, REFER TO LIGHTING PLAN LAYOUT SHEET, 75.

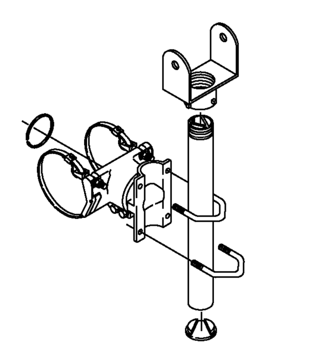
PROJECT NAME: RICHMOND
PROJECT NUMBER: STP 0284 (17)

FILE NAME: z97c186trfbdr.dgn
PROJECT LEADER: JEFFREY MAXTUTIS
DESIGNED BY: J.SOBEL
TRAFFIC SIGNAL PLANS SHEET 1

PLOT DATE: 4/29/2013
DRAWN BY: Y.CAO/I.ALMY
CHECKED BY: D.FLYNN
SHEET 66 OF 133

CAMERA EXTENSION BRACKET FOR MAST ARM

N.T.S.



TWO PIECE CAMERA MOUNT
TUBE LENGTHS: 23", 37", 46", OR 74"
BAND LENGTHS: 29", 36", 42", 48", OR 56"

NOTES:
ALL ASSEMBLIES SHALL HAVE STEEL FASTENERS AND STAINLESS STEEL CLAMP SCREW KITS.
1 OR 2 PIECE BRACKET MOUNTS SHALL BE SPECIFIED FOR CAMERA TYPE.

SEE SHEET 90 FOR CROSS SECTIONS AT PROPOSED MAST ARM POLES

SEE SHEETS 56-59 FOR PAVEMENT MARKINGS AND SIGNS LAYOUT

MAJOR EQUIPMENT LIST

EQUIPMENT ITEM NO. 678.15	US ROUTE 2 (WEST MAIN STREET) @ VT ROUTE 117 (RIVER ROAD)
CANTILEVER POLES W/MAST ARMS	3
NEW 12" TRAFFIC SIGNAL HEADS (ONE-WAY, 3-SECTION) W/TUNNEL VISORS, DISCONNECT HANGERS, BACKPLATES AND MOUNTING HARDWARE	6
NEW 12" TRAFFIC SIGNAL HEADS (ONE-WAY, 5-SECTION) W/TUNNEL VISORS, DISCONNECT HANGERS, BACKPLATES AND MOUNTING HARDWARE	1
TS-2 TYPE 1 CONTROLLER/CABINET	1
CAMERA EXTENSION BRACKET (EA)	3
CAMERA ASSEMBLY (EA)	3
VIDEO DETECTION PROCESSOR (EA)	3
VIDEO DETECTION CABLE (LF)	352
GPS TIME SYNCHRONIZATION UNIT	1

EQUIPMENT	ITEM NO.	UNIT	US ROUTE 2 (WEST MAIN STREET) @ VT ROUTE 117 (RIVER ROAD)	NOTES
WIRED CONDUIT (2") (PVC)	678.23	LF	218	-
WIRED CONDUIT (2½") (PVC)	678.23	LF	18	-
WIRED CONDUIT (3") (PVC)	678.23	LF	68	-
PULLBOX - STANDARD	678.25	EA	3	-
ELECTRICAL CONDUIT SLEEVE	678.30	LF	120	8 INCHES

THE QUANTITIES LISTED ABOVE ARE APPROXIMATE AND ARE FURNISHED FOR INFORMATION ONLY. MISCELLANEOUS (UNLISTED) WIRE, CABLE, HARDWARE ETC., ARE REQUIRED TO PROVIDE FOR A FUNCTIONING TRAFFIC SIGNAL SYSTEM. THE CONTRACTOR IS RESPONSIBLE FOR VERIFICATION OF THE NUMBER OF ITEMS AND THE TYPES OF EQUIPMENT REQUIRED.

US ROUTE 2 (WEST MAIN STREET) @ VT ROUTE 117 (RIVER ROAD)

ELECTRICAL CONDUIT SLEEVE (8") (PVC)

PB1 TO CONTROLLER - 65'
PB3 TO CONTROLLER - 55'

WIRED CONDUIT (2") (PVC)

CONTROLLER TO SERVICE CONNECTION - 65'
CONTROLLER TO PB1 - 86'
PB1 TO MP1A - 5'
PB2 TO PB3 - 54'
PB2 TO MP1C - 8'

~~WIRED CONDUIT (2½") (PVC)~~

~~PB3 TO MP1B - 18'~~

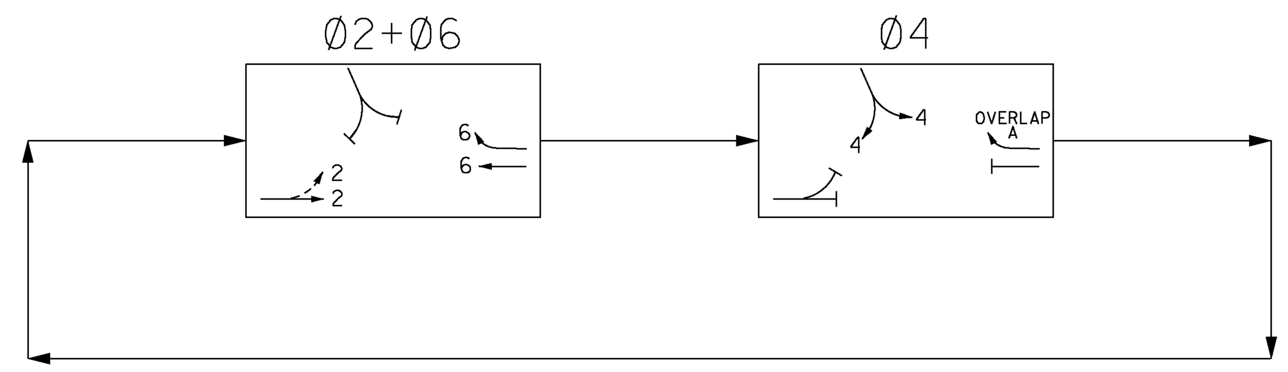
~~WIRED CONDUIT (3") (PVC)~~

~~CONTROLLER TO PB3 - 68'~~

NOTES:
1) TRAFFIC SIGNAL CONDUIT PROPOSED IN ROADWAYS SHALL BE INSTALLED IN THE SAME TRENCHES AS THE TRAFFIC LIGHTING CONDUIT, REFER TO LIGHTING PLAN LAYOUT SHEET, 75.

PHASING DIAGRAM

US ROUTE 2 (WEST MAIN STREET) @ VT ROUTE 117 (RIVER ROAD)



US ROUTE 2 (WEST MAIN STREET) @ VT ROUTE 117 (RIVER ROAD)

TABLE OF CHANGE SEQUENCE

FACE	Ø2 + Ø6 R/W	Ø2 + Ø6 CLEAR TO	Ø2 + Ø6 CLEAR TO ALL OTHER PHASES	Ø4 R/W	Ø4 CLEAR TO	Ø4 CLEAR TO ALL OTHER PHASES	FLASHING OPERATION
2	G	Y	R	R	R	R	FY
4	R	R	R	G	Y	R	FR
6A	G	Y	R	R	R	R	FY
6B	G/→	Y/→	R/→	R/→	R/→	R/→	FY

US ROUTE 2 (WEST MAIN STREET) @ VT ROUTE 117 (RIVER ROAD)

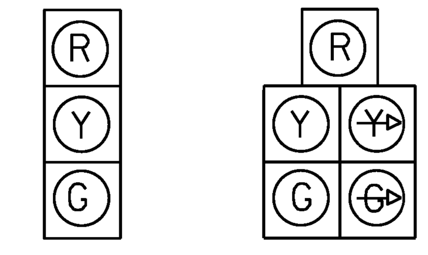
COORDINATION TIMING (SECONDS)

DIAL SPLIT	CYCLE LENGTH	PHASES 1	2	3	4	5	6	7	8	OFFSETS SEC	%
1 - 1	60		26		34		26			35	58
2 - 1	60		31		29		31			32	53
1 - 1	WEEKDAYS - 0600 - 0900										
2 - 1	WEEKDAYS - 1500 - 1900										

FOR ALL OTHER TIMES, THE INTERSECTION SHALL OPERATE IN FREE MODE, WITH MAX 2 GREEN TIMINGS.

NOTES:
1. OFFSET IS REFERENCED AT THE END OF PHASE 4.
2. SPLITS AND OFFSETS ARE SHOWN IN SECONDS.
3. VIDEO DETECTION AREAS ARE IN NON-LOCK PRESENCE MODE.
4. ANY PULL BOX OR JUNCTION BOX WITHIN SIDEWALK SHALL HAVE A SKID RESISTANT COVER.
5. PROPOSED GPS SYSTEM WILL BE USED TO COORDINATE SIGNAL WITH THE SIGNAL AT THE INTERSECTION OF US ROUTE 2/I-89 SB OFF-RAMP.

PROPOSED SIGNAL FACE ARRANGEMENT 12" LENSES



US ROUTE 2 (WEST MAIN STREET) @ VT ROUTE 117 (RIVER ROAD)

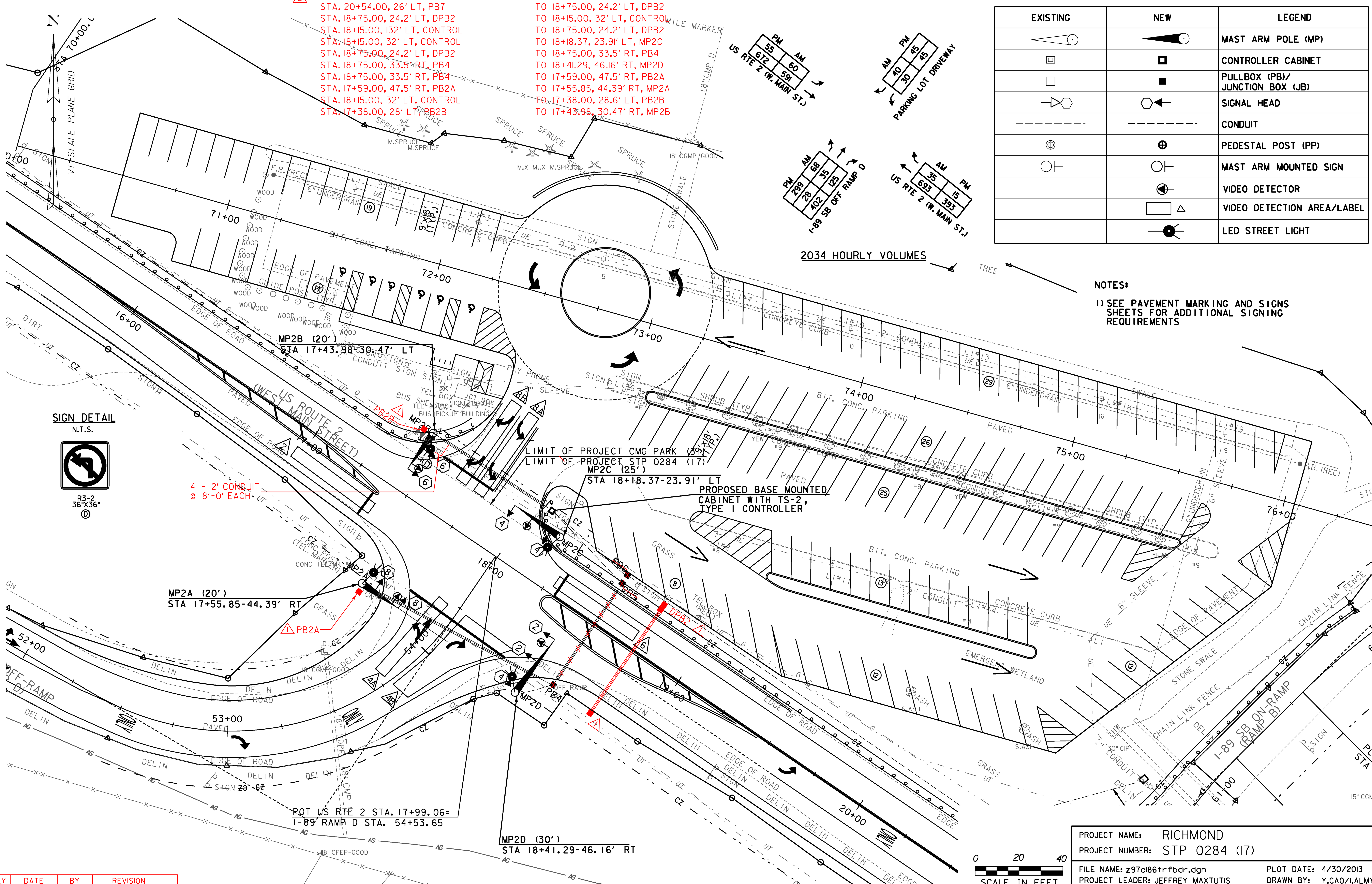
CONTROLLER TIMING CHART								
LOCAL PROGRAMMING	PHASE 1	2	3	4	5	6	7	8
MINIMUM GREEN		8		8		8		
PASSAGE/VEHICLE EXT		3		3		3		
YELLOW CLEARANCE		4		3		4		
ALL RED CLEARANCE		2		3		2		
MAX. 1 GREEN-60 SEC		20		28		20		
MAX. 2 GREEN-60 SEC		25		23		25		
SEC/AT		-		-		-		
TIME BEFORE REDUCE		-		-		-		
TIME TO REDUCE		-		-		-		
WALK		-		-		-		
FLASHING DON'T WALK		-		-		-		
DON'T WALK		-		-		-		
RECALL		N.L.		SOFT		N.L.		

NOTES:
1. DETECTION ZONE 4A SHALL HAVE A 5 SECOND CALL DELAY

PROJECT NAME: RICHMOND	
PROJECT NUMBER: STP 0284 (17)	
FILE NAME: z97c186trfbdr.dgn	PLOT DATE: 4/29/2013
PROJECT LEADER: JEFFREY MAXTUTIS	DRAWN BY: Y.CAO/I.ALMY
DESIGNED BY: J.SOBEL	CHECKED BY: D.FLYNN
TRAFFIC SIGNAL PLANS SHEET 2	SHEET 67 OF 133

WIRED CONDUIT 2" (PVC)

	FROM	TO
△2	STA. 21+00.00, 82.75' LT, POWER STANCHION	TO 20+54, 26' LT, PB7
	STA. 20+54.00, 26' LT, PB7	TO 18+75.00, 24.2' LT, DPB2
	STA. 18+75.00, 24.2' LT, DPB2	TO 18+15.00, 32' LT, CONTROL
	STA. 18+15.00, 132' LT, CONTROL	TO 18+75.00, 24.2' LT, DPB2
	STA. 18+15.00, 32' LT, CONTROL	TO 18+18.37, 23.91' LT, MP2C
	STA. 18+75.00, 24.2' LT, DPB2	TO 18+75.00, 33.5' RT, PB4
	STA. 18+75.00, 33.5' RT, PB4	TO 18+41.29, 46.16' RT, MP2D
	STA. 18+75.00, 33.5' RT, PB4	TO 17+59.00, 47.5' RT, PB2A
	STA. 17+59.00, 47.5' RT, PB2A	TO 17+55.85, 44.39' RT, MP2A
	STA. 18+15.00, 32' LT, CONTROL	TO 17+38.00, 28.6' LT, PB2B
	STA. 17+38.00, 28' LT, PB2B	TO 17+43.98, 30.47' RT, MP2B



EXISTING	NEW	LEGEND
		MAST ARM POLE (MP)
		CONTROLLER CABINET
		PULLBOX (PB)/ JUNCTION BOX (JB)
		SIGNAL HEAD
		CONDUIT
		PEDESTAL POST (PP)
		MAST ARM MOUNTED SIGN
		VIDEO DETECTOR
		VIDEO DETECTION AREA/LABEL
		LED STREET LIGHT

NOTES:

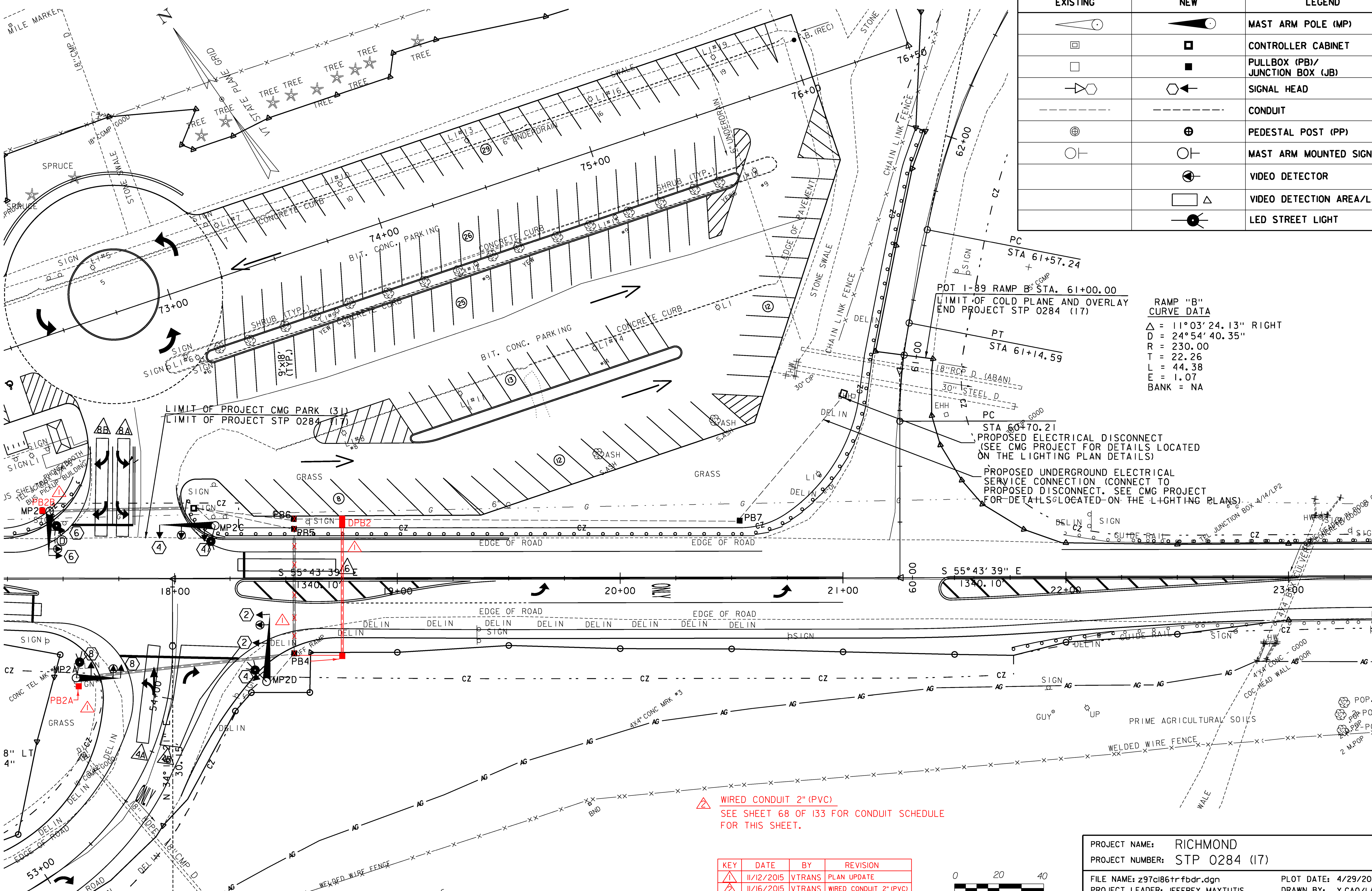
1) SEE PAVEMENT MARKING AND SIGNS SHEETS FOR ADDITIONAL SIGNING REQUIREMENTS

SIGN DETAIL
N.T.S.

R3-2
36"X36"
D

PROJECT NAME:	RICHMOND		
PROJECT NUMBER:	STP 0284 (17)		
FILE NAME: z97c186trfbdr.dgn		PLOT DATE:	4/30/2013
PROJECT LEADER: JEFFREY MAXTUTIS		DRAWN BY:	Y.CAO/I.ALMY
DESIGNED BY: J. SOBEL		CHECKED BY:	D.FLYNN
TRAFFIC SIGNAL PLANS SHEET 3		SHEET	68 OF 133

KEY	DATE	BY	REVISION
△1	11/12/2015	VTRANS	PLAN UPDATE
△2	11/12/2015	VTRANS	WIRED CONDUIT 2" (PVC)



RAMP "B"
CURVE DATA

Δ = 11°03′24.13″ RIGHT
D = 24°54′40.35″
R = 230.00
T = 22.26
L = 44.38
E = 1.07
BANK = NA

EXISTING	NEW	LEGEND
		MAST ARM POLE (MP)
		CONTROLLER CABINET
		PULLBOX (PB)/ JUNCTION BOX (JB)
		SIGNAL HEAD
		CONDUIT
		PEDESTAL POST (PP)
		MAST ARM MOUNTED SIGN
		VIDEO DETECTOR
		VIDEO DETECTION AREA/LABEL
		LED STREET LIGHT

⚠2 WIRED CONDUIT 2" (PVC)
SEE SHEET 68 OF 133 FOR CONDUIT SCHEDULE
FOR THIS SHEET.

KEY	DATE	BY	REVISION
1	11/12/2015	VTRANS	PLAN UPDATE
2	11/16/2015	VTRANS	WIRED CONDUIT 2" (PVC)

0 20 40
SCALE IN FEET

PROJECT NAME: RICHMOND
PROJECT NUMBER: STP 0284 (17)

FILE NAME: z97c186trfbdr.dgn
PROJECT LEADER: JEFFREY MAXTUTIS
DESIGNED BY: J.SOBEL
TRAFFIC SIGNAL PLANS SHEET 4
PLOT DATE: 4/29/2013
DRAWN BY: Y.CAO/I.ALMY
CHECKED BY: D.FLYNN
SHEET 69 OF 133

TRAFFIC SIGNAL NOTES

A. NEW SIGNAL EQUIPMENT

1. ALL SIGNAL HEADS SHALL BE 12" POLYCARBONATE. THE SIGNAL HEADS SHALL HAVE FLAT BLACK HOUSINGS AND VISORS.
2. ALL SIGNAL HEADS SHALL HAVE FLAT BLACK LOUVERED BACK PLATES.
3. THE TRAFFIC SIGNAL CONTROLLER AND RELATED EQUIPMENT SHALL BE AN ECONOLITE ASC/3-2100, A NAZTEC MODEL 980, OR APPROVED EQUIVALENT. THE TRAFFIC SIGNAL SYSTEM CONTROLLER SHALL BE A NEMA TS-2, TYPE 1 CONTROLLER MOUNTED IN A NEMA P44 TRAFFIC CONTROL CABINET WITH 15-INCH BASE EXTENSION INSTALLED AT THE LOCATIONS SHOWN ON THE PLANS. TRAFFIC CONTROL CABINET SHALL BE ORIENTED SUCH THAT THE DOOR DOES NOT FACE THE ROADWAY.
4. ALL SIGNAL HEADS SHALL HAVE RED, YELLOW AND GREEN L.E.D. SIGNALS WITH A VISIBLE BEAM SPREAD OF 80 DEGREES OFF AXIS.
5. ALL SIGNAL EQUIPMENT SHALL BE PAINTED FLAT BLACK IN ACCORDANCE WITH THE SPECIAL PROVISIONS.
6. ALL SIGNAL EQUIPMENT AND MAST ARM MOUNTED SIGNS SHALL HAVE SAFETY CABLES.
7. A DISCONNECT BREAKER FOR EACH CIRCUIT SHALL BE INSTALLED IN A RAINPROOF (NEMA 3R), LOCKED CABINET ON A STANCHION NEXT TO OR BELOW THE METER SOCKET (SEE VTrans STANDARD E-175). A SEPARATE CIRCUIT BREAKER SHALL BE INSTALLED FOR ROADWAY LIGHTING, IF APPLICABLE. THE METER DISCONNET SHALL BE A 100 AMP METER SOCKET DISCONNECT, AND SHALL HAVE A BYPASS.

B. SIGNAL OPERATION

1. SWITCH-OVER TO NEW SIGNAL SYSTEM SHALL NOT OCCUR DURING PEAK TRAFFIC OPERATING PERIODS. UNIFORMED TRAFFIC OFFICERS SHALL CONTROL TRAFFIC DURING SWITCH-OVER.
2. ALL SIGNALS SHALL DWELL ON US ROUTE 2 UNLESS OTHERWISE NOTED.
3. THE US ROUTE 2 THRU PHASE SHALL BE USED FOR THE START-UP PHASE FOLLOWING FLASHING OPERATION.
4. SIGNAL TIMING SHOWN ON THE PLANS MAY REQUIRE FINE-TUNING IN THE FIELD BASED ON TRAFFIC OBSERVATION AND/OR ADDITIONAL FIELD STUDIES.

C. PULLBOXES AND JUNCTION BOXES

1. PULLBOXES AND JUNCTION BOXES ARE DETAILED ON VTrans STANDARD E-173. MINIMUM JUNCTION BOX SIZE SHALL BE 18"X 12"X 12", OR LARGER AS REQUIRED BY THE ELECTRICAL CODE.
2. THE LOGO ON PULLBOXES AND JUNCTION BOXES SHALL BE "TRAFFIC SIGNAL".
3. ALL PULLBOXES AND JUNCTION BOXES SHALL BE INSTALLED IN ACCORDANCE WITH SECTION 678.

D. TRAFFIC SIGNAL CONDUIT

1. ALL TRAFFIC SIGNAL CONDUITS SHALL BE SCHEDULE 80 PVC.
2. WHEN CONDUIT IS PLACED BELOW THE ROADWAY OR ACROSS SIDE ROADS, IT SHALL BE PLACED IN A STEEL SLEEVE, SIZE AS SHOWN ON THE PLANS.
3. ALL TRAFFIC SIGNAL CONDUIT WORK SHALL BE INSTALLED IN ACCORDANCE WITH SECTION 678.
4. MINIMUM CONDUIT SIZES SHALL BE:

a. 1.5" FOR INTERCONNECT CABLE.

b. 2" FOR SHIELDED LEAD-IN CABLE, SIGNAL CABLE, POWER CABLE, AND ALL OTHERS, UNLESS SPECIFIED OTHERWISE ON THE PLANS.

c. SEE CHART ON VTrans STANDARD E-172 FOR DESIGN VALUES.

E. VIDEO DETECTION CAMERAS

1. VIDEO VEHICLE DETECTORS SHALL BE PLACED SO THAT OCCLUSION IS MINIMIZED AND PHASING IS NOT AFFECTED.
2. VIDEO VEHICLE DETECTION AREAS SHALL EXTEND FIVE FEET PAST THE STOP BAR.
3. VIDEO VEHICLE DETECTION SYSTEM SHALL BE ECONOLITE AUTOSCOPE SOLO TERRA, ITERIS VERSICAM, TRAFICON VP SERIES, OR APPROVED EQUAL.
4. SEE THE PLANS OR THE SPECIAL PROVISIONS FOR A DETAILED LIST OF EQUIPMENT.
5. ANY OTHER MISCELLANEOUS EQUIPMENT AND LABOR NECESSARY TO PROVIDE A FULLY FUNCTIONAL VIDEO DETECTION SYSTEM SHALL BE INCIDENTAL TO ITEM #678.15 TRAFFIC CONTROL SYSTEM, INTERSECTION.

F. MAST ARM FOUNDATIONS

1. FOUNDATIONS SHALL BE DESIGNED IN ACCORDANCE WITH THE VTRANS MREI 10-01 GUIDELINES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SOIL BORINGS AND FOUNDATION DESIGN. IN ADDITION TO FABRICATION DRAWINGS, THE BORING LOGS, DESIGN CRITERIA, AND DESIGN CALCULATIONS SHALL BE SUBMITTED AS WORKING DRAWINGS IN ACCORDANCE WITH SUBSECTION 105.03.

G. GENERAL

1. A UNIFORMED TRAFFIC OFFICER WITH A BLUE LIGHT SHALL BE PRESENT DURING ALL LANE CLOSURES.
2. THE CONTRACTOR SHALL ACQUIRE ALL THE NECESSARY PERMITS AND MAKE ALL NECESSARY ARRANGEMENTS WITH THE UTILITY COMPANY TO PROVIDE A PERMANENT POWER SUPPLY TO THE TRAFFIC SIGNAL EQUIPMENT, IF APPLICABLE. THE ROUTING OF POWER TO THE INTERSECTION SHALL BE SUCH THAT THE STATE HAS FULL RESPONSIBILITY FROM THE TRANSFORMER THROUGH THE SIGNAL SYSTEM. NO INTERVENING OWNERSHIP/RESPONSIBILITY SHALL BE ALLOWED.

   ALL ELECTRICAL WIRING SHALL BE DONE BY A LICENSED ELECTRICIAN AND OVERSEEN BY A MASTER ELECTRICIAN.
3. A METAL PLAQUE LISTING OWNERSHIP AND EMERGENCY PHONE NUMBERS SHALL BE ATTACHED TO THE OUTSIDE OF THE CONTROLLER CABINET.

H. TRAFFIC SIGNAL COORDINATION

1. THE TRAFFIC SIGNAL CONTROLLERS AT THE INTERSECTIONS OF US ROUTE 2 @ VT ROUTE 117 AND US ROUTE 2 @ I-89 RAMP "D" AND PARK & RIDE DRIVEWAY SHALL OPERATE AS A COORDINATED SIGNAL SYSTEM.
2. THE LOCAL TS-2 SIGNAL CONTROLLERS SHALL OPERATE IN A TIME-BASED COORDINATION MODE.
3. CLOCK SYNCHRONIZATRION SHALL BE ACHIEVED WITH A GLOBAL POSITIONING SYSTEM (GPS) SYNCHRONIZATION DEVICE.

I. REMOVAL OF EXISTING OR REUSE OF SALVAGED TRAFFIC SIGNAL EQUIPMENT

1. AT THE DISCRETION OF VERMONT AGENCY OF TRANSPORTATION (VTrans), REMOVED AND NOT REUSED TRAFFIC SIGNAL EQUIPMENT SHALL BE DELIVERED TO VTRANS. UNWANTED TRAFFIC SIGNAL EQUIPMENT MUST BE DISPOSED OF BY THE CONTRACTOR. REMOVAL OF TRAFFIC SIGNAL EQUIPMENT SHALL INCLUDE REMOVAL OF CONCRETE BASES OR CUTTING BASES ONE FOOT BELOW GRADE, AND BACKFILLING OF THE HOLES. ANY TRAFFIC SIGNAL EQUIPMENT THAT IS DAMAGED OR LOST BY THE CONTRACTOR DURING REMOVAL SHALL BE REPAIRED OR REPLACED, TO THE SATISFACTION OF VTRANS AT THE CONTRACTOR'S EXPENSE. THE REMOVAL, TRANSPORTING, SALVAGING, AND DISPOSAL OF EXISTING SIGNAL EQUIPMENT SHALL BE PAID FOR UNDER ITEM 678.45 REMOVAL OF EXISTING TRAFFIC CONTROL SIGNAL SYSTEM.

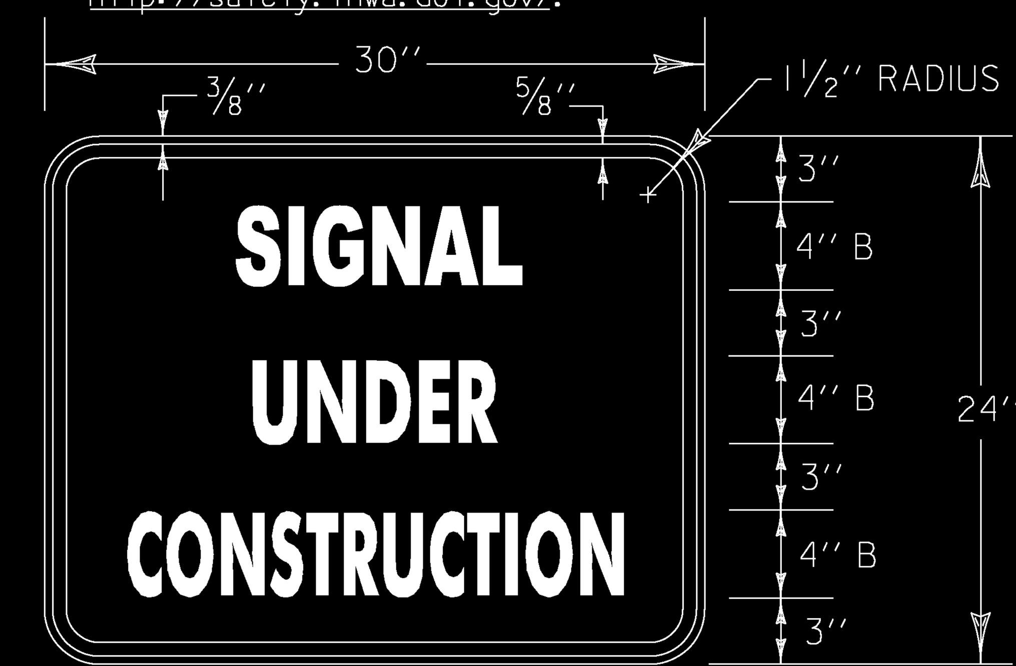
TRAFFIC CONTROL NOTES FOR TRAFFIC SIGNAL WORK

1. THE FOLLOWING NOTES APPLY TO TRAFFIC CONTROL NECESSARY FOR THE INSTALLATION OR MODIFICATION OF THE TRAFFIC SIGNALS ONLY. FOR OVERALL PROJECT TRAFFIC CONTROL MANAGEMENT REQUIREMENTS REFER TO TRAFFIC MANAGEMENT PLANS AND SECTION 641.
2. DURING CONSTRUCTION, TWO-WAY TRAFFIC SHALL BE MAINTAINED AT ALL TIMES ON U.S. ROUTE 2, VERMONT ROUTE 117, AND WITHIN THE PARK & RIDE FACILITY. TWO -WAY TRAFFIC SHALL BE MAINTAINED AT NIGHT, ON WEEKENDS AND HOLIDAYS, DURING PEAK TRAFFIC AND DURING CONSTRUCTION. THE I-89 EXIT 11 SB OFF RAMP (RAMP D) SHALL REMAIN OPEN AT ALL TIMES. AT THE DISCRETION OF THE ENGINEER (OR OTHER DESIGNATED AGENCY REPRESENTATIVE), UNIFORMED TRAFFIC CONTROL OFFICERS OR TRAINED FLAG PERSONS SHALL CONTROL TRAFFIC, WHENEVER REQUIRED.
3. TRAFFIC CONTROL SIGNING AND CHANNELIZING DEVICES SHALL BE IN ACCORDANCE WITH THE APPROPRIATE STANDARD DRAWINGS (E-101, E-102, E-106, E-107, E-110, E-111) AND THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES .
4. AFTER SIGNAL INSTALLATION, ALL HEADS MUST BE COVERED (TURNING SHALL NOT BE ALLOWED) UNTIL TURNED ON. THE METHOD OF COVERING SHALL BE AS FOLLOWS:

   ALL NEW TRAFFIC SIGNAL HEADS WHICH HAVE BEEN INSTALLED BUT NOT PLACED IN EITHER FLASHING OR FULL OPERATION SHALL BE COVERED. EXISTING SIGNAL HEADS WHICH ARE PLACED OUT OF SERVICE IN ORDER TO PERFORM WORK ON THE SIGNAL SYSTEM SHALL ALSO BE COVERED, EXCEPT WHEN SUCH WORK CAN BE COMPLETED IN A RELATIVELY SHORT PERIOD OF TIME (SEVERAL HOURS) AND TRAFFIC CONTROL HAS BEEN PROVIDED FOR.

   THE SIGNAL COVERS SHALL CONSIST OF A ONE PIECE PLASTIC BAG HAVING A MINIMUM THICKNESS OF 4 MIL. THE BAG SHALL BE OPAQUE. THE COVER SHALL SLIP OVER THE ENTIRE SIGNAL HEAD AND SHALL BE SECURELY TIED AT THE OPENING WITH A ROPE OF SUFFICIENT SIZE AND STRENGTH TO SECURE THE COVER. AN INTERMEDIATE ROPE OF THE SAME MATERIAL SHALL BE DRAWN AROUND THE CENTER OF THE COVER TO PREVENT EXCESS FLAPPING IN THE WIND.

   A DRAIN HOLE SHALL BE MADE AT THE BOTTOM OF THE BAG TO ALLOW THE ESCAPE OF MOISTURE. NO TAPE OR ADHESIVE WILL BE ALLOWED TO BE ATTACHED TO ANY SURFACE OF THE SIGNAL HOUSING OR LENSES. ALL COVERS SHALL BE PLACED IN A NEAT WORKMANLIKE MANNER. ANY COVER WHICH IS TORN OR MISSING SHALL BE IMMEDIATELY REPLACED. PAYMENT FOR THE COVERS, THEIR PLACEMENT, AND REMOVAL AND ALL INCIDENTALS FOR COMPLETION OF THE WORK SHALL BE CONSIDERED INCIDENTAL TO THE INSTALLATION OF THE TRAFFIC SIGNAL.
5. WHERE TWO-WAY TRAFFIC IS MAINTAINED USING FLAGGERS DURING CONSTRUCTION, THE SIGN PACKAGE SHOWN ON STD E-110 SHOULD BE USED. APPROACH CONSTRUCTION SIGNING SHALL REMAIN IN PLACE DURING THE ENTIRE CONSTRUCTION PERIOD. OTHER SIGNING SHALL BE REMOVED OR COVERED WHEN NOT APPLICABLE.
6. VARIATIONS IN THE SIGNING PACKAGES MAY BE DICTATED BY UNIQUE GEOMETRY AND/OR TRAFFIC CONDITIONS AND THE TRAFFIC MANAGEMENT PLANS.
7. THE CONTRACTOR SHALL NOT WORK WITHIN THE HIGHWAY ROW WITHOUT THE APPROPRIATE CONSTRUCTION SIGNING IN PLACE AS SHOWN ON STD E-100.
8. AT LOCATIONS WHERE SIGNALS CURRENTLY EXIST, A WORKING SIGNAL SYSTEM SHALL BE IN PLACE AT THE END OF EACH DAY. IF THE SIGNAL SYSTEM IS NOT WORKING AT THE END OF THE DAY, THE CONTRACTOR SHALL PROVIDE UNIFORMED TRAFFIC OFFICERS TO CONTROL TRAFFIC UNTIL SUCH TIME THAT THE EXISTING OR NEW SIGNAL IS IN OPERATION AT NO COST TO THE STATE.
9. "SIGNAL UNDER CONSTRUCTION" SIGN PANELS SHALL BE MOUNTED UNDER "ROAD CONSTRUCTION AHEAD" SIGNS ANYTIME SIGNAL SYSTEM WORK IS BEING PERFORMED (SEE SIGN DETAIL THIS SHEET).
10. THE TYPE OF TEMPORARY TRAFFIC BARRIER USED ON THIS PROJECT SHALL COMPLY WITH NCHRP REPORT 350 TEST LEVEL THREE (TL-3). TEMPORARY TRAFFIC BARRIER MEETING THIS REQUIREMENT CAN BE FOUND AT THE FOLLOWING FHWA WEBSITE: http://safety.fhwa.dot.gov/.



MATERIALS: SEE STD. E-144
COLORS: TEXT & BORDER - BLACK
BACKGROUND - ORANGE (RETROREFLECTIVE SHEETING)

"SIGNAL UNDER CONSTRUCTION" SIGN PANELS SHALL BE MOUNTED UNDER "ROAD CONSTRUCTION AHEAD" SIGNS ANYTIME SIGNAL SYSTEM WORK IS BEING PERFORMED.

CONSTRUCTION SIGN DETAIL

NOT TO SCALE

PROJECT NAME:	RICHMOND		
PROJECT NUMBER:	STP 0284 (17)		
FILE NAME:	z97c186trfbdr2.dgn	PLOT DATE:	5/1/2013
PROJECT LEADER:	JEFFREY MAXTUTIS	DRAWN BY:	Y.CAO/I.ALMY
DESIGNED BY:	J.SOBEL	CHECKED BY:	D.FLYNN
TRAFFIC SIGNAL DETAIL SHEET 1		SHEET	71 OF 133

CANTILEVER SIGNAL AND SIGN SUPPORT NOTES

1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE STATE OF VERMONT AGENCY OF TRANSPORTATION'S (VTrans) "STANDARD SPECIFICATIONS FOR CONSTRUCTION", DATED 2011, WITH CURRENT MODIFICATIONS.

2. OVERHEAD SIGN/SIGNAL SUPPORTS SHALL CONFORM TO AASHTO'S "STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS", DATED 2009 AND IT'S LATEST REVISIONS.

3. THE DESIGN CALCULATIONS SHALL TAKE INTO ACCOUNT THE FOLLOWING CRITERIA:
STRUCTURE CRITERIA
- DESIGN LIFE: 50 YEARS
- WIND LOAD: 90 M.P.H., UNLESS SPECIAL SITE CONDITIONS DICTATE ICE LOAD PER AASHTO'S PUBLICATION ENTITLED "STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS", DATED 2009 AND IT'S LATEST REVISIONS.

FATIGUE CRITERIA
- FATIGUE CATEGORY: 1 FOR MAST ARM SIGN STRUCTURES, 2 FOR SIGNAL MAST ARMS
- VORTEX SHEDDING: INCLUDE
- NATURAL WIND GUSTS: INCLUDE
- TRUCK INDUCED WIND GUSTS: INCLUDE FOR ROADWAYS WHERE SPEED LIMIT IS 40 M.P.H. OR GREATER
- GALLOPING: DO NOT INCLUDE IN DESIGN CALCULATIONS

FOUNDATION CRITERIA
- CONCRETE: CONCRETE, HIGH PERFORMANCE CLASS B, PER SECTION 501.
- REINFORCING STEEL: LEVEL 1 PER SUBSECTION 713.01
- ALLOWABLE BEARING CAPACITY: TO BE DETERMINED
- INTERNAL SOIL FRICTION ANGLE, ? : TO BE DETERMINED

4. ANCHOR BOLTS
FOUR STAINLESS STEEL ANCHOR BOLTS WITH TWO HEXAGON NUTS, ONE WASHER AND ONE LOCK WASHER PER BOLT SHALL BE FURNISHED WITH EACH POLE. ANCHOR BOLT PLATES, WHEN USED, SHALL ALSO BE STAINLESS STEEL. SEE SUBSECTION 714.09

5. FLANGE BOLTS
ALL FLANGE BOLTS AND HEX NUTS SHALL BE HIGH STRENGTH STEEL AND SHALL CONFORM TO ASTM A325. THE FLANGE BOLTS SHALL BE CAPABLE OF RESISTING 133% OF THE FULL DESIGN STRESS OF THE TUBE AT ITS YIELD STRENGTH STRESS.

6. HORIZONTAL AND VERTICAL MEMBERS
STEEL TUBES SHALL BE FORMED AND WELDED WITH ONE CONTINUOUS LONGITUDINAL WELD ONLY. AFTER FORMING AND WELDING THEY SHALL BE COLD ROLLED TO ENSURE UNIFORMITY OF SIZE AND SMOOTHNESS OF WELD. THEY SHALL HAVE A MINIMUM YIELD STRENGTH OF 55 KSI. THERE SHALL BE NO TRANSVERSE WELDING EXCEPT AT THE FLANGE CONNECTIONS AND POLE BASE PLATES. WHERE THE TUBES SHALL TELESCOPE THE FLANGES AND PLATES AND BE CONTINUOUSLY WELDED BOTH SIDES INSIDE AND OUT TO WITHSTAND THE FULL TRANSFER OF THE BENDING STRENGTH TO THE BOLTS. OPTIONALLY, THE MEMBERS MAY BE A SERIES OF TWO OR THREE DIFFERENT DIAMETER PIPES WELDED TOGETHER. STEEL TUBES SHALL BE CONSTRUCTED FROM MATERIALS CONFORMING TO SUBSECTION 752.02.

7. GALVANIZING
ALL STEEL COMPONENTS, EXCEPT CONCRETE REINFORCING AND STAINLESS STEEL HARDWARE, ARE TO BE HOT DIPPED GALVANIZED AFTER FABRICATION. THE ASSEMBLIES SHALL BE DESIGNED AND FABRICATED TO PERMIT GALVANIZING ON ALL INTERIOR AND EXTERIOR SURFACES AND SHALL BE FREE OF POCKETS AND OTHER STRUCTURAL OBSTRUCTIONS THAT WILL NOT PERMIT PROPER DEPOSITION OF ZINC COATING. GALVANIZING SHALL BE IN ACCORDANCE WITH SUBSECTION 752.02. STRAIN POLES, MAST ARMS, PEDESTAL POLES AND THE CONTROLLER CABINET SHALL BE PAINTED BLACK.

8. WELDING

A) ALL DESIGN DETAILS, WORKMANSHIP, PROCEDURES AND INSPECTION SHALL CONFORM WITH SUBSECTION 506.10.

B) ALL WELDS SHALL BE AT LEAST AS STRONG AS THE MATERIAL(S) BEING WELDED.

9. FOUNDATIONS

A) FOOTINGS SHALL BE DESIGNED IN ACCORDANCE WITH VTrans' MATERIALS & RESEARCH ENGINEERING INSTRUCTIONS GEOTECHNICAL DESIGN PROCEDURES FOR MAST ARM AND OVERHEAD SIGN SUPPORT FOUNDATIONS (MREI 10-01), DATED MARCH 9, 2010. A COPY OF WHICH CAN BE FOUND ON THE AGENCY'S WEBSITE: WWW.AOT.STATE.VT.US.

B) FOUNDATIONS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE FOLLOWING NOTES:

1. MINIMUM EMBEDMENT DEPTH OF FIVE FEET SHALL BE USED FOR ALL SPREAD FOOTING FOUNDATIONS; MEASURED FROM THE GROUND SURFACE ELEVATION TO THE BOTTOM OF THE FOOTING ELEVATION.

2. EXCEPT FOR THE UPPERMOST TWO FEET OF SOIL, DRILLED SHAFT FOUNDATIONS SHALL BE POURED AGAINST UNDISTURBED MATERIAL; THE TOP TWO FEET OF SOIL SHALL BE NEGLECTED FOR DESIGN PURPOSES. A DISPOSABLE CIRCULAR CONCRETE FORM, IF USED, SHALL NOT BE PLACED DEEPER THAN TWO FEET, IN ORDER NOT TO REDUCE THE FRICTION BETWEEN THE SOIL AND THE CONCRETE.

3. AS AN ALTERNATIVE TO THE DRILLED HOLES, FOOTINGS MAY BE POURED IN EXCAVATED HOLES USING THE PROPER FORMS, WHICH MUST BE REMOVED. THE EXCAVATED HOLES SHALL BE AT LEAST TWO FEET CLEAR OF THE FOUNDATION SIDES AND ONE FOOT DEEPER THAN THE FOUNDATION. CARE SHALL BE TAKEN TO AVOID EXCAVATING AROUND THE TOP OF THE FOUNDATION. THE BACKFILL MATERIAL SHALL BE COMPACTED AS DESCRIBED IN SUBSECTION 204.08. DESIGN LIMITS AS FOR AUGURED FOOTINGS APPLIES.

4. ANY BACKFILL PLACED ADJACENT TO THE FOOTING SHALL BE GRANULAR MATERIAL MEETING THE REQUIREMENTS FOR GRANULAR BACKFILL FOR STRUCTURES, SUBSECTION 704.08. IT SHALL BE COMPACTED AS DESCRIBED IN SUBSECTION 204.08.

5. CONCRETE FOR THE FOUNDATION SHALL CONFORM TO THE REQUIREMENTS OF CONCRETE, CLASS B, SECTION 501, STRUCTURAL CONCRETE. IF DRILLED SHAFT FOUNDATIONS ARE REQUIRED, THE CONCRETE SPECIFICATIONS MAY NEED TO BE ADJUSTED FOR CONSTRUCTABILITY ISSUES. HOWEVER, IF REQUIRED, THE CONTRACTOR SHALL SUBMIT ANY CHANGES TO THE CONCRETE SPECIFICATION FOR REVIEW BY THE VTrans PROJECT MANAGER.

6. STEEL PILES SHALL MEET THE REQUIREMENTS OF SECTION 505.

7. WHEN THE DESIGN DEPTH OF A FOUNDATION CANNOT BE OBTAINED DUE TO UNFORSEEN FIELD CONDITIONS, THE CONTRACTOR SHALL NOTIFY THE ENGINEER FOR THE MANUFACTURER TO OBTAIN A REVISED FOUNDATION DESIGN. SUCH A REVISION SHALL BE SUBMITTED TO VTrans PROJECT MANAGEMENT AND MAY REQUIRE UP TO A FOUR WEEK REVIEW PERIOD BY VTrans.

C) SIGNALS/SIGNS SHALL BE INSTALLED AND LEVELED AND POLES SHALL BE PLUMB PRIOR TO PLACING GROUT UNDER POLE BASE. GROUT MATERIAL SHALL BE NON-SHRINKING MORTAR CONFORMING TO SUBSECTION 707.03, MORTAR TYPE IV.

D) ANY FURTHER SUBSURFACE INVESTIGATION THAT MAY BE NEEDED SHALL COMPLY WITH VTRANS MATERIALS & RESEARCH ENGINEERING INSTRUCTIONS GEOTECHNICAL GUIDELINES TO STANDARDIZE VTRANS SUBSURFACE INVESTIGATION PROCESS (MREI 11-01), DATED MARCH 17, 2011.

10. EACH OVERHEAD TRAFFIC SIGNAL/SIGN SUPPORT SHALL BE GROUNDED. THE GROUND SHALL CONSIST OF THE FOLLOWING:

A) AN INTERNAL GROUND LUG OPPOSITE THE HAND HOLE

B) A #6 (MIN.) SOFT DRAWN COPPER GROUNDING ELECTRODE CONDUCTOR

C) A 5/8"X 8' (MIN.) COPPER CLAD GROUNDING ELECTRODE THE RESISTANCE TO GROUND SHALL BE 25 OHMS OR LESS. ADDITIONAL GROUNDING ELECTRODES MAY BE REQUIRED (MINIMUM SPACING SHALL BE 6'). WHEN A POWER SERVICE, METER AND DISCONNECT ARE ATTACHED TO A POLE, THERE SHALL BE A CONTINUOUS GROUND WIRE FROM THE METER AND DISCONNECT WITH MAY RUN INTERNAL TO THE UPRIGHT, THROUGH THE 1/2" FLEXIBLE TUBING IN THE CONCRETE BASE TO THE REQUIRED GROUNDING ELECTRODE(S). THE GROUND WIRE FROM THE POLE GROUNDING LUG, CONTROLLER CABINET AND/OR LUMINAIRE MAY ATTACH TO THIS CONTINUOUS GROUNDING ELECTRODE CONDUCTOR FROM THE SERVICE METER AND DISCONNECT. THE CONTRACTOR SHALL PERFORM A RESISTANCE TO GROUND TEST ON THE CONTINUOUS GROUNDING ELECTRODE CONDUCTOR FROM THE SERVICE METER AND DISCONNECT AND PROVIDE A WRITTEN STATEMENT TO THE AREA ELECTRICAL INSPECTOR THAT THE GROUNDING ELECTRODE CONDUCTOR IS CONTINUOUS FROM THE SERVICE METER AND DISCONNECT AND THE RESISTANCE TO GROUND IS 25 OHMS OR LESS.

11. HORIZONTAL MEMBERS SHALL BE CAMBERED AND THE VERTICAL POLES BACK RAKED, WHERE APPLICABLE, TO THE ANTICIPATED DEAD LOAD DEFLECTION PLUS THE CAMBER, IF ANY, SPECIFIED ON THE PLANS.

12. AN EQUIVALENT ALTERNATE DESIGN MAY BE SUBSTITUED FOR THE DETAILS AND MATERIALS SHOWN.

13. THE DETAILS OF DESIGN FOR THE STRUCTURE AND FOUNDATION ARE TO BE SUPPLIED BY THE CONTRACTOR AND/OR BY THE MANUFACTURER, THE STRUCTURE SHALL BE DESIGNED TO RESIST THE MAXIMUM LOADING AS OUTLINED IN THE AASHTO STANDARD SPECIFICATIONS, SEE NOTE 2. ALL DESIGN CALCULATIONS FOR THE STRUCTURE AND THE FOUNDATION SHALL BE CHECKED AND STAMPED BY A LICENSED PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF VERMONT PRIOR TO SUBMITTAL OF THE FABRICATION DRAWINGS TO VTrans.

14. THE CONTRACTOR SHALL SUBMIT THREE COPIES OF THE DESIGN CALCULATIONS TO VTrans PROJECT MANAGER SHOWING THE FOLLOWING INFORMATION FOR EACH OF THE VERTICAL AND HORIZONTAL COMPONENTS OF THE STRUCTURE AND FOUNDATION:

A) THE DESIGN AXIAL AND SHEAR FORCES AND BENDING AND TORSIONAL MOMENTS ACTING AT THE TOP OF THE FOUNDATION.

B) THE DESIGN AXIAL, BENDING AND SHEAR STRESSES AND THE COMBINED STRESS RATIO.

C) VIBRATION AND FATIGUE CALCULATIONS AS SET FORTH IN SECTION 11 OF THE AASHTO PUBLICATION REFERENCED IN NOTE 2.

D) THE ALLOWABLE AXIAL, BENDING, AND SHEAR STRESSES.

E) ITEMS A, B, AND D SHALL BE SHOWN FOR EACH OF THE GROUP LOADINGS (I, II, III) AND FOR THE BASIC WIND LOAD APPLIED TO THE TWO CASES OUTLINED IN THE AASHTO STANDARD SPECIFICATIONS (SEE NOTE 2), SECTION 1.2.5(D)(4).

F)FAILURE TO SUPPLY THE PROPER DESIGN INFORMATION SHALL BE CAUSE FOR REJECTION OF THE STRUCTURE.

G) A MINIMUM OF FOUR WEEKS SHALL BE REQUIRED FOR REVIEW BY VTRANS.

H) EVERY MEMBER AND CONNECTION IN AN OVERHEAD TRAFFIC SIGNAL SUPPORT SHALL BE DESIGNED TO PROVIDE ADDITIONAL RESIDUAL CAPACITY FOR FUTURE MODIFICATION EQUIVALENT TO A 5-SECTION TRAFFIC SIGNAL HEAD WITH A 5-INCH LOUVERED BACKPLATE LOCATED ON THE OUTERMOST EXTENT OF THE MAST ARM.

15. FABRICATION DRAWINGS IN A DIGITAL FORMAT SHALL BE SUBMITTED TO VTRANS PROJECT MANAGER FOR APPROVAL PRIOR TO FABRICATION. THE FABRICATION DRAWINGS SHALL INCLUDE THE FOLLOWING INFORMATION:

A) DETAILED DRAWING OF EACH COMPONENT OF THE STRUCTURE.

B) MATERIAL SPECIFICATION FOR EACH COMPONENT OF THE STRUCTURE, EITHER BY COMPLETE SPECIFICATION OR REFERENCE TO APPLICABLE ASTM STANDARDS.

C) NOTATION OF PROJECT NAME, PROJECT NUMBER, ROUTE NUMBER, AND STRUCTURE STATIONING TO BE INCLUDED ON EACH SHEET.

D) DETAILS FOR LOCATION OF SIGNS/SIGNALS AND ATTACHMENT HARDWARE FOR THE SUPPORT STRUCTURE.

E) ALL ELEVATIONS AND DIMENSIONS NECESSARY TO PROVIDE A COMPLETE SET OF RECORD PLANS.

F) DEAD LOAD DEFLECTION AND CAMBER INFORMATION.

G) WELDING DETAILS AND PROCEDURES ARE REQUIRED FOR ALL WELDS. PROCEDURES SHALL BE SUBMITTED FOR APPROVAL WITH REFERENCE TO EACH WELD IDENTIFIED ON THE FABRICATION DRAWINGS. SEE SUBSECTION 506.10.

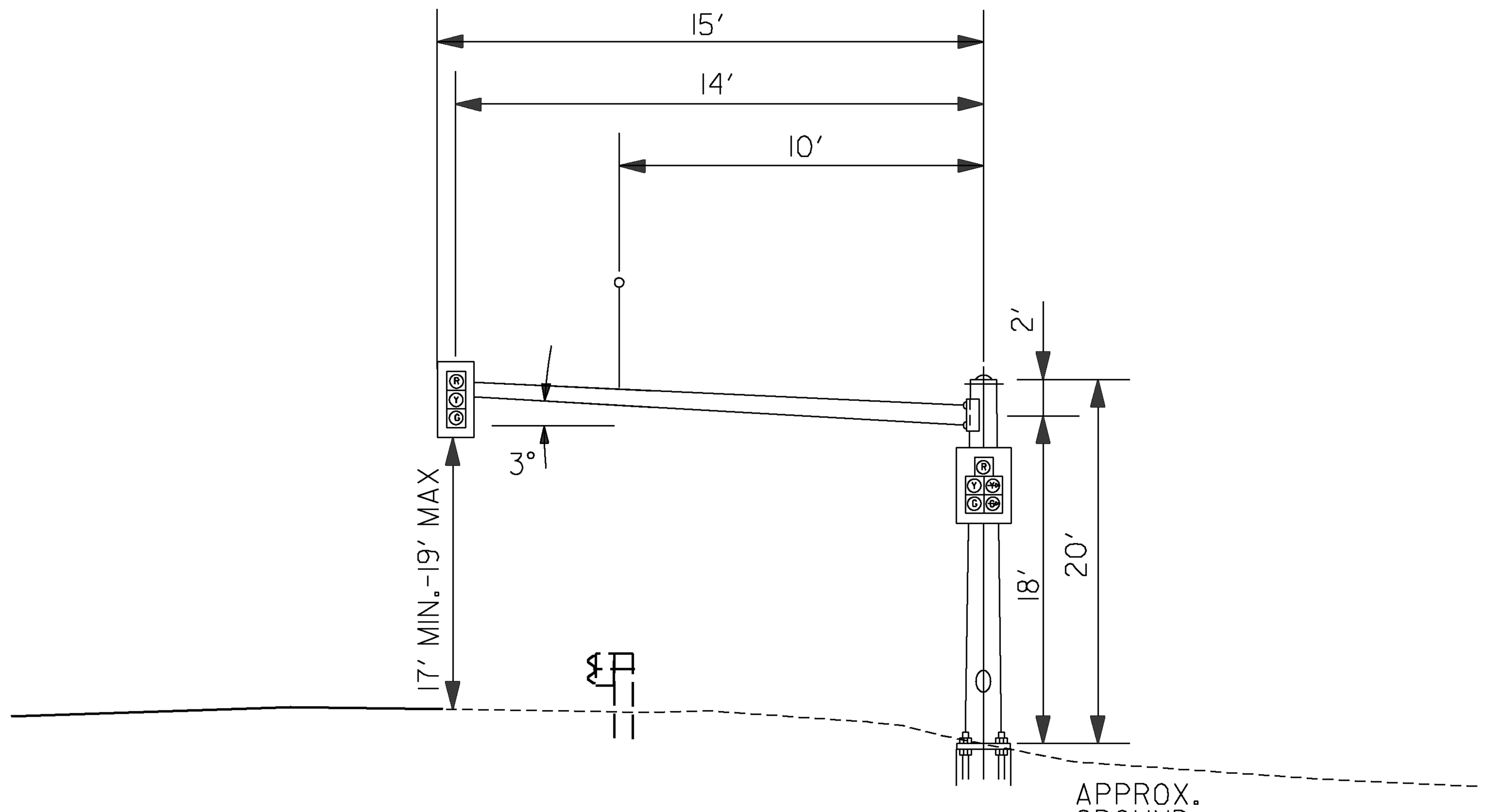
16. THE TRAFFIC SIGNALS SHALL BE MOUNTED TO THE ARM OR POLE USING A FIXED MOUNT SYSTEM, UNLESS OTHERWISE NOTED ON THE CROSS SECTION SHEET. FOR SIGNALS MOUNTED ON A MAST ARM, THE MAST ARM AND MOUNTING POINT SHALL BE IN THE MIDDLE OF THE SIGNAL HEAD.

17. BASE PLATES SHALL BE STAMPED WITH THE VERTICAL POLE DIAMETER, HEIGHT, YIELD STRENGTH, AND GAUGE AND THE HORIZONTAL MEMBER DIAMETER, LENGTH, YIELD STRENGTH AND GAUGE. ALTERNATELY, THE INFORMATION MAY BE STAMPED ON A METAL TAG RIVETED TO THE POLE NEAR THE HAND HOLE.

18. SEE STANDARD E-171A FOR ADDITIONAL NOTES.

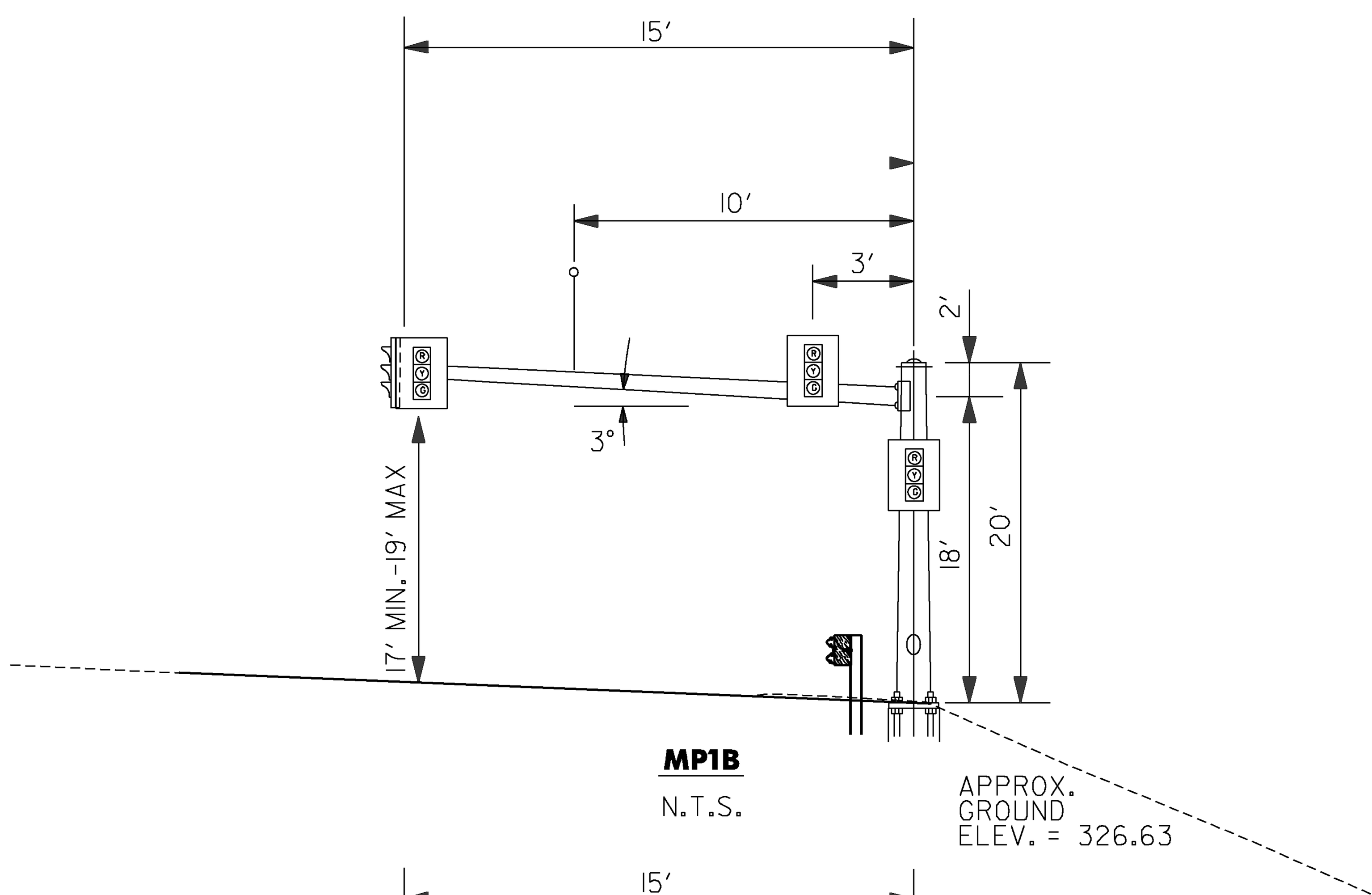
19. CONTRACTOR TO SCHEDULE FINAL INSPECTION AND OBTAIN WRITTEN APPROVAL OF WORK FROM VTRANS TRAFFIC SIGNAL TECHNICIAN.

PROJECT NAME: RICHMOND	
PROJECT NUMBER: STP 0284 (17)	
FILE NAME: z97c186trfbdr2.dgn	PLOT DATE: 5/2/2013
PROJECT LEADER: JEFFREY MAXTUTIS	DRAWN BY: Y.CAO/I.ALMY
DESIGNED BY: J.SOBEL	CHECKED BY: D.FLYNN
TRAFFIC SIGNAL DETAIL SHEET 2	SHEET 72 OF 133



MP1A

N.T.S.



MP1B

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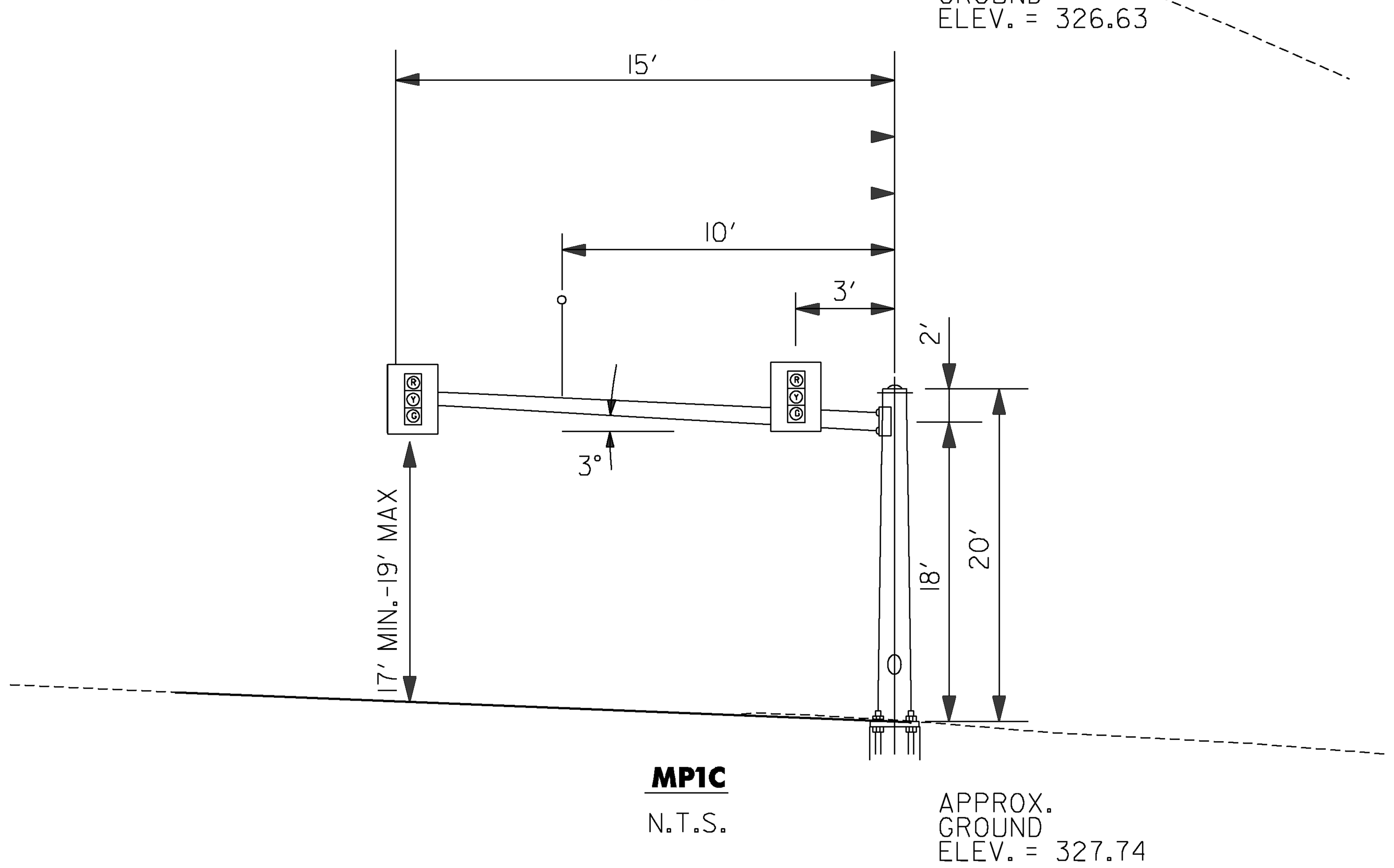

MP1C

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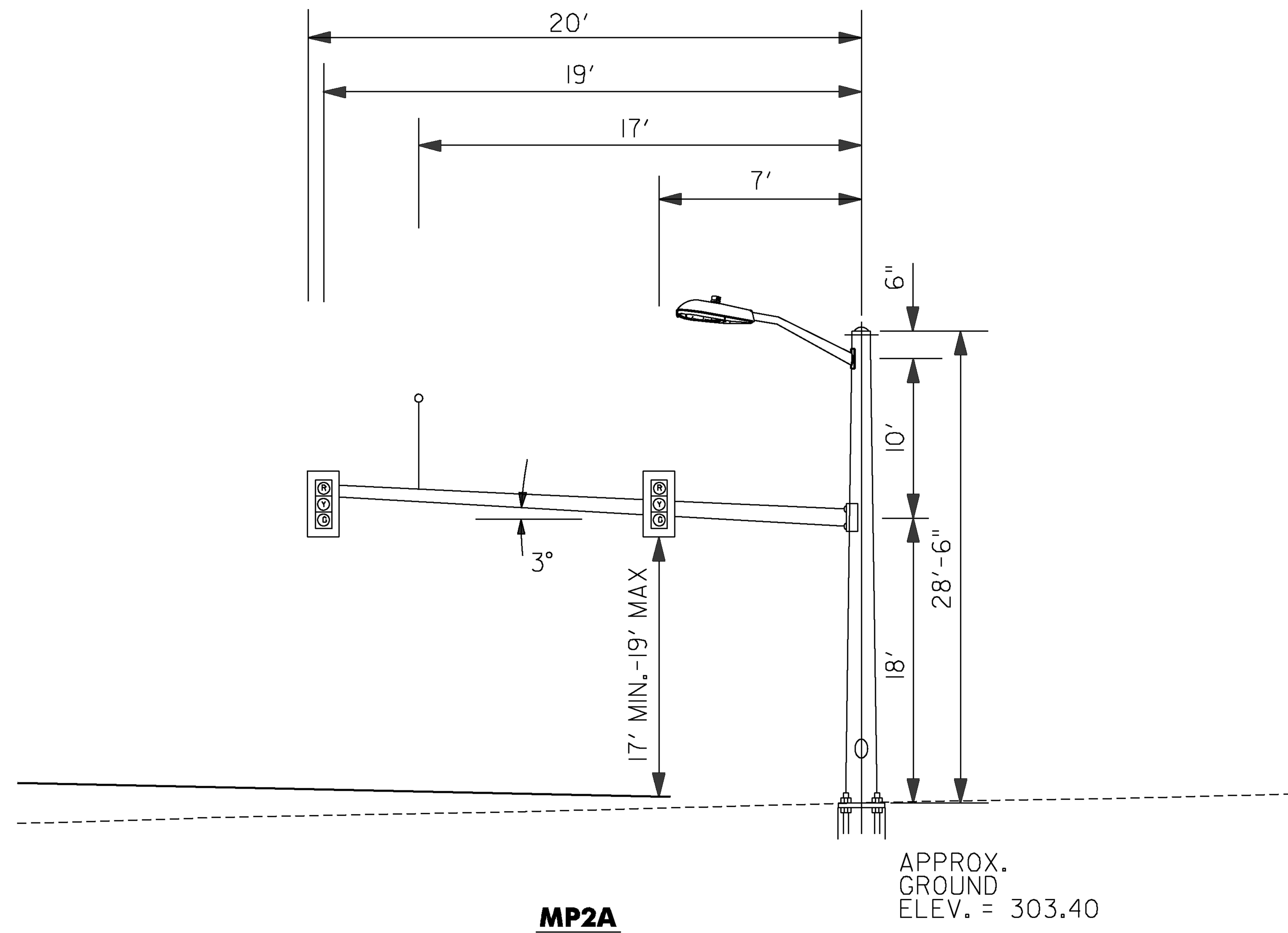

MP2A

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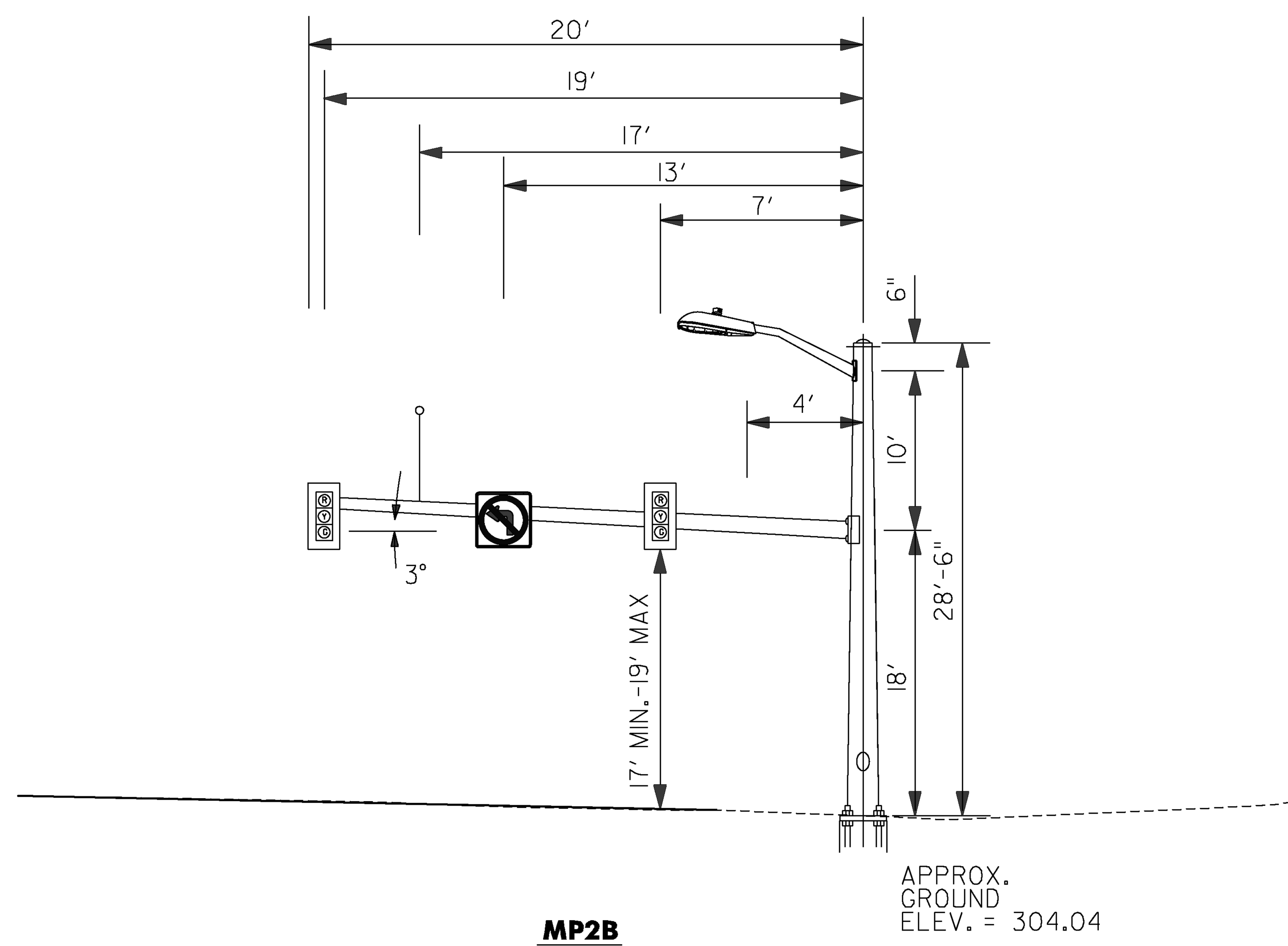

MP2B

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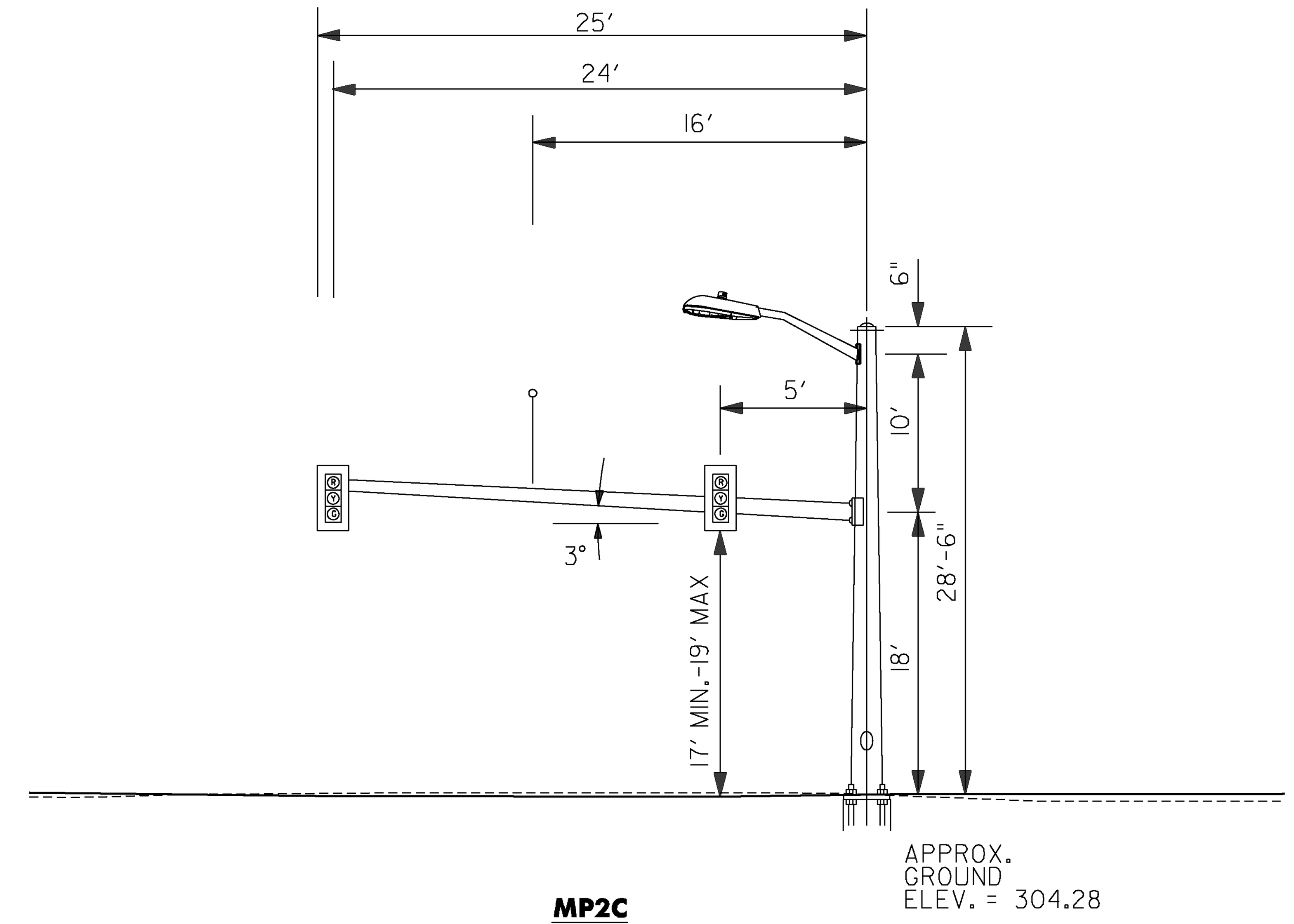

MP2C

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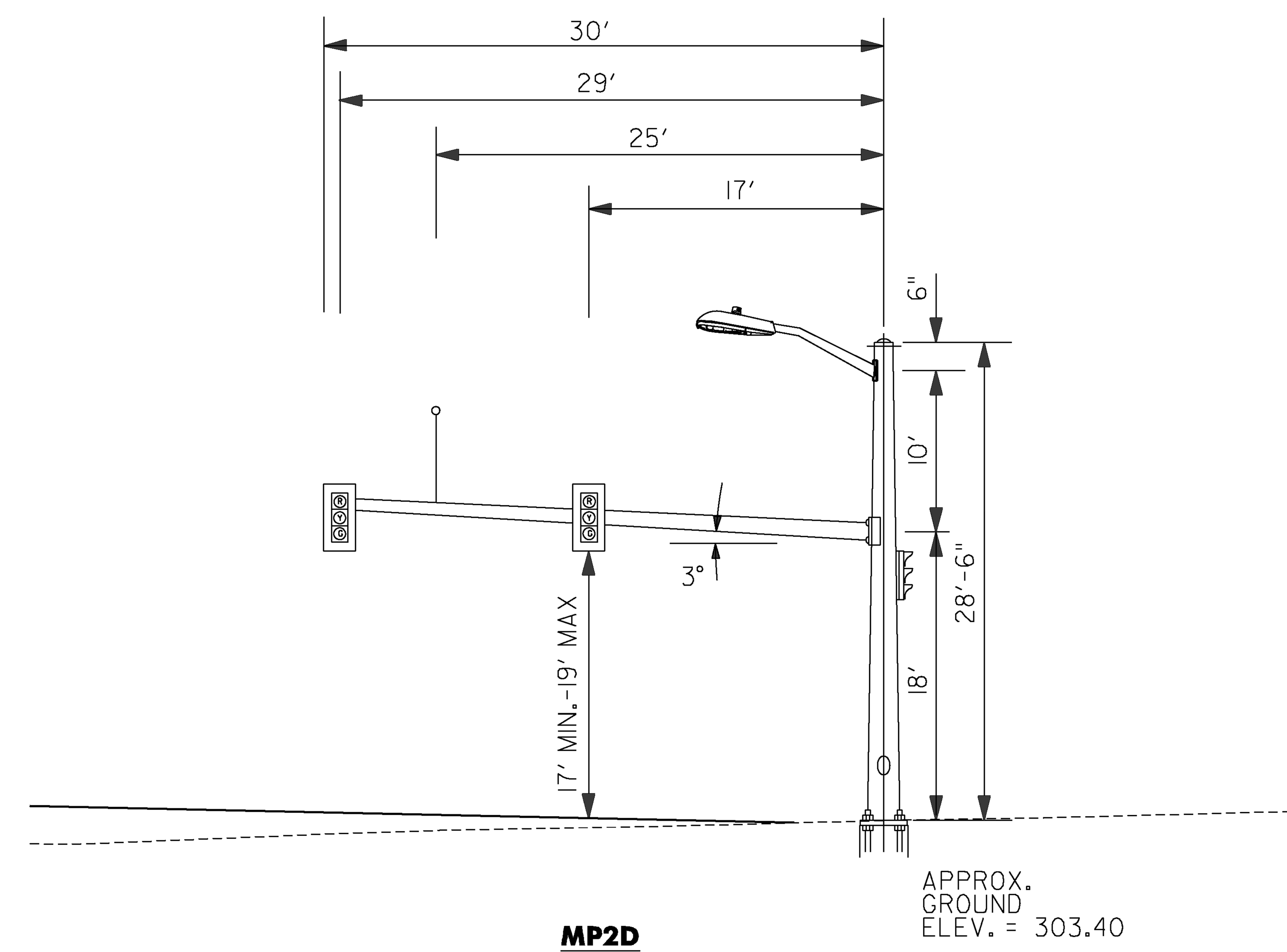
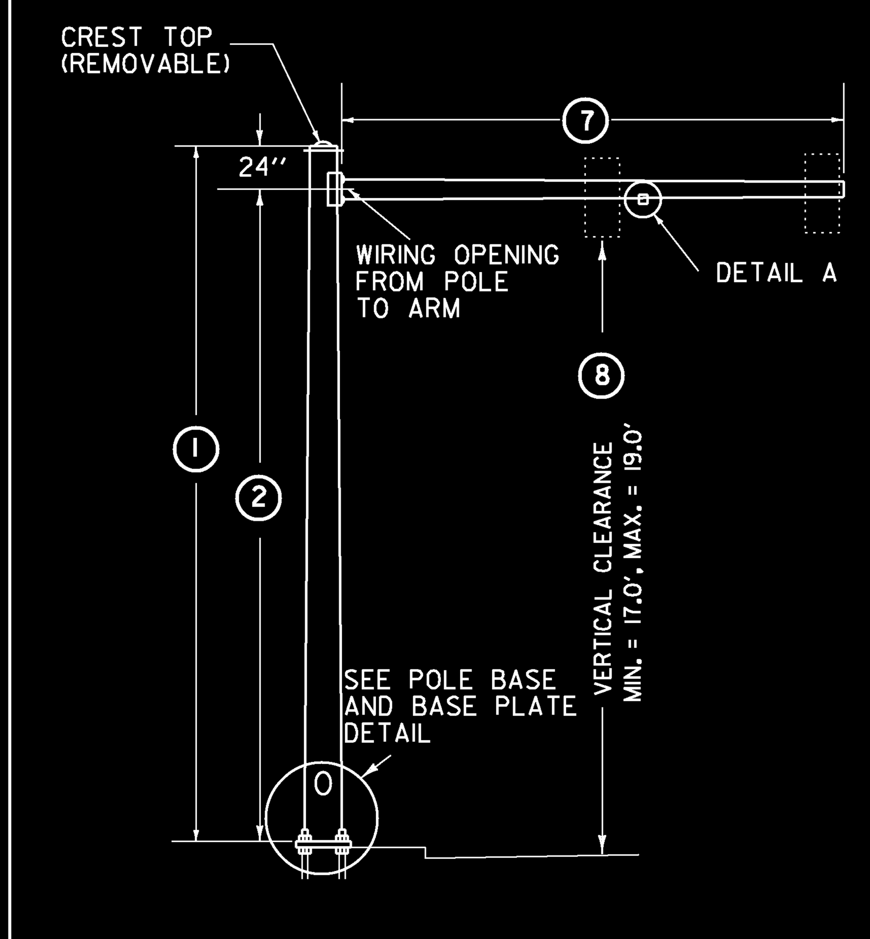


MP2D

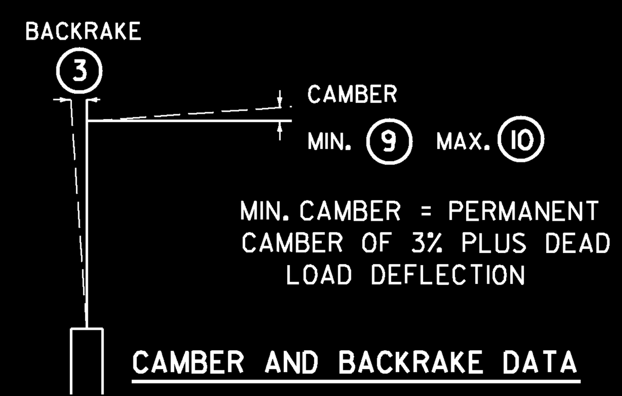
N.T.S.

PROJECT NAME: RICHMOND
PROJECT NUMBER: STP 0284 (17)

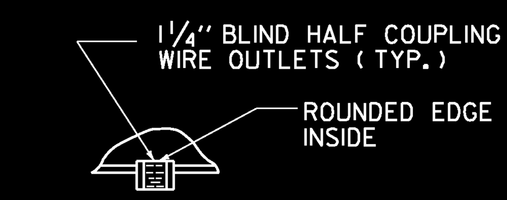
FILE NAME: z97c186trfbdr2.dgn	PLOT DATE: 5/2/2013
PROJECT LEADER: JEFFREY MAXTUTIS	DRAWN BY: Y.CAO/I.ALMY
DESIGNED BY: J.SOBEL	CHECKED BY: D.FLYNN
TRAFFIC SIGNAL DETAIL SHEET 3	SHEET 73 OF 133



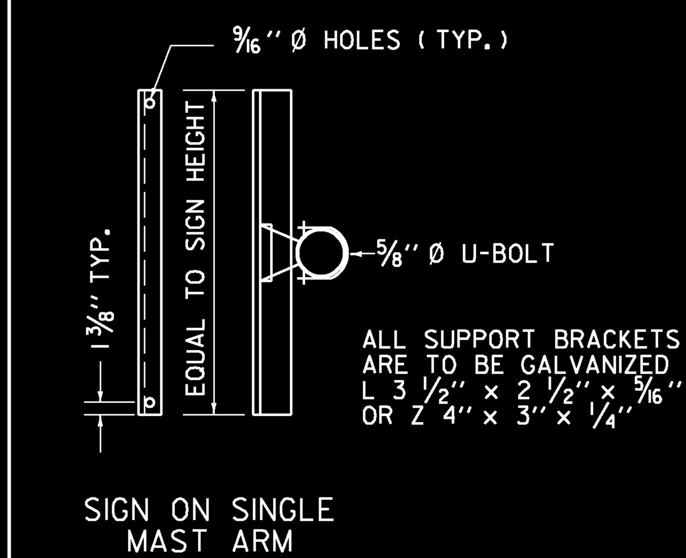
TYPE A



CAMBER AND BACKRAKE DATA

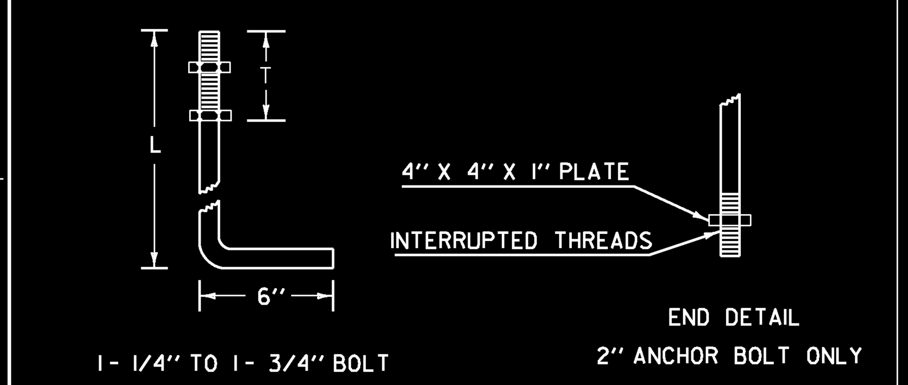


DETAIL A

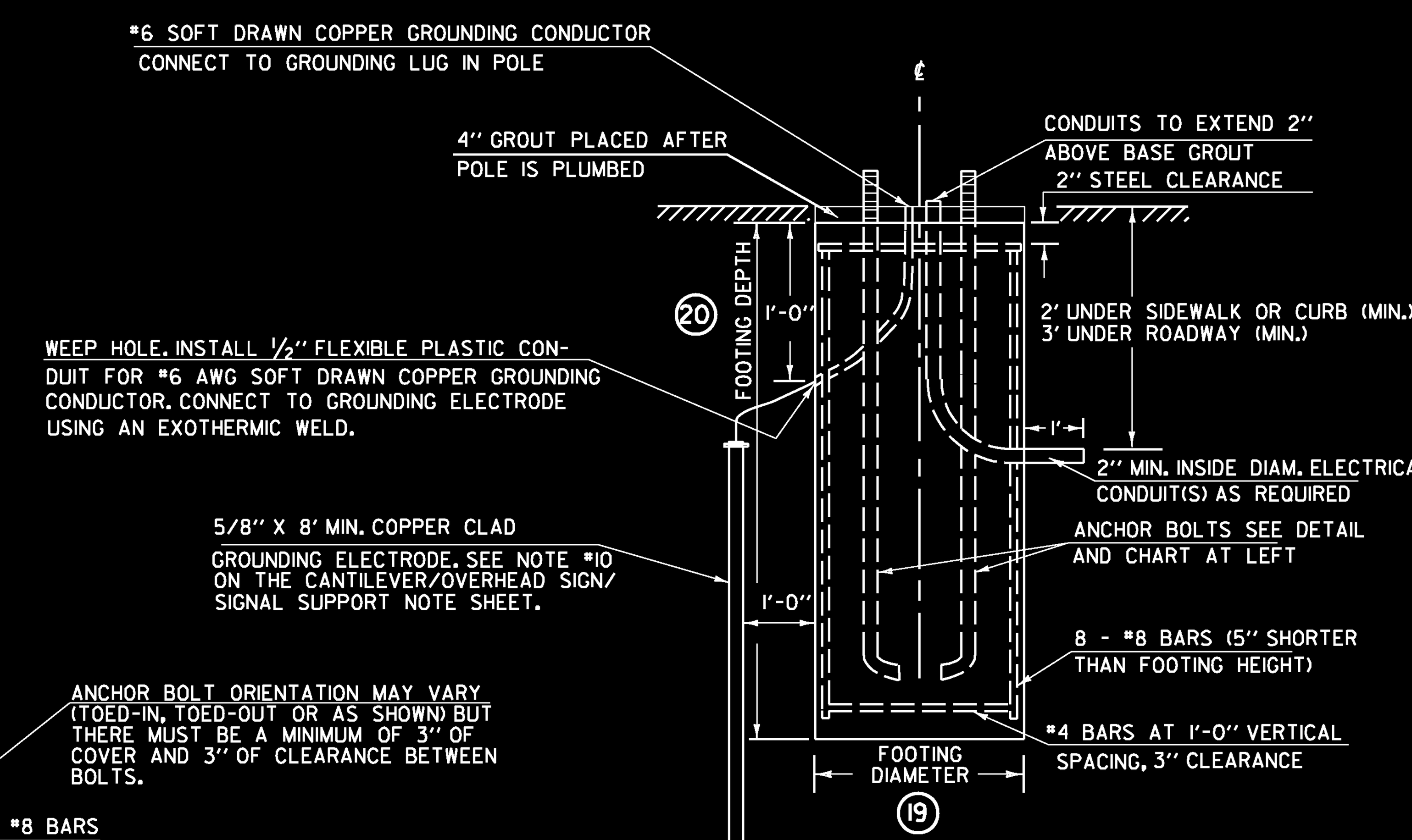


SIGN BRACKET DETAILS

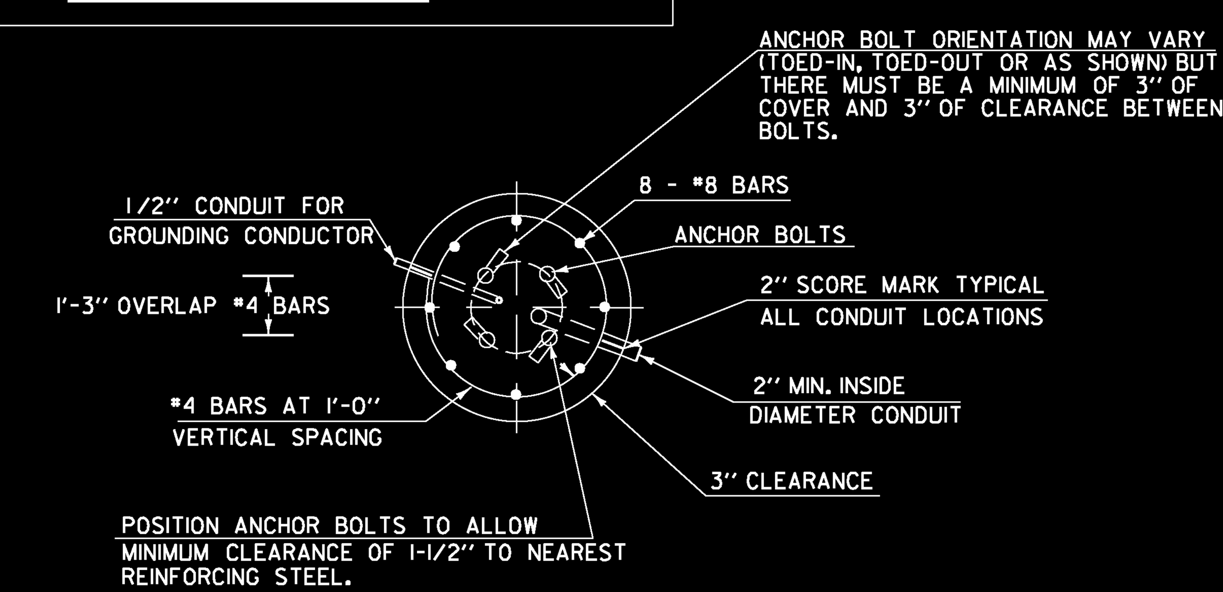
ANCHOR BOLT DETAIL		
SIZE	L (IN)	T (IN)
1- 1/4″ X 48″	42	8
1- 1/2″ X 60″	54	9
1- 3/4″ X 90″	84	9
2″ X 96″	96	9



ANCHOR BOLT DETAIL



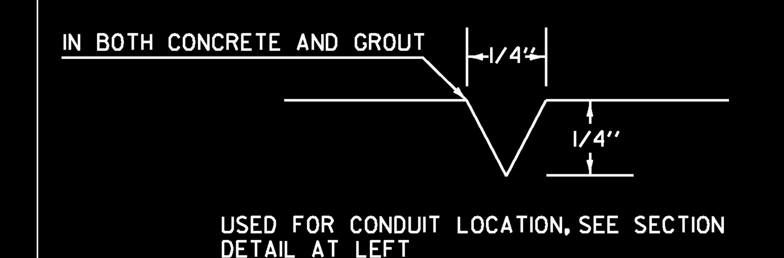
ELEVATION



SECTION

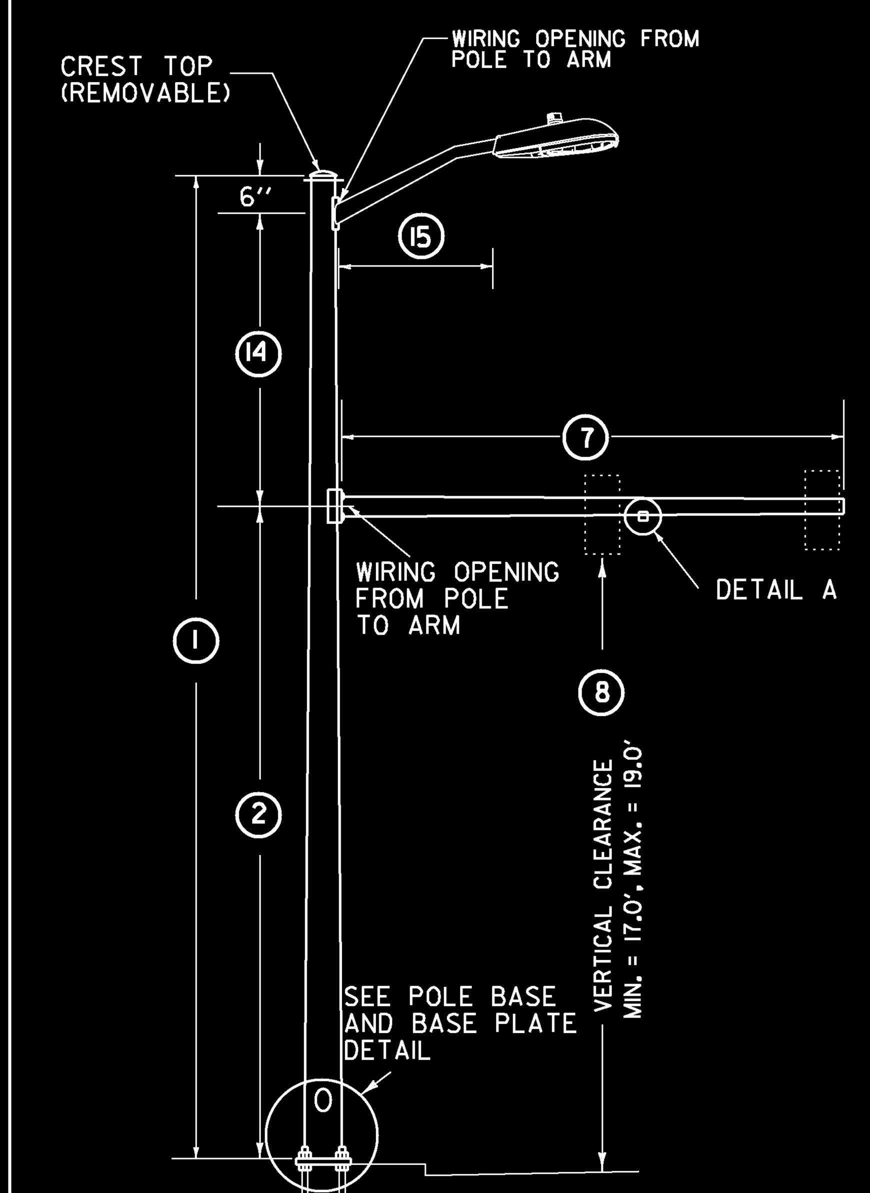
CANTILEVER FOOTING DETAIL

NOTE:
BORINGS FOR THE MAST ARMS WERE PERFORMED ON THE SAME DAY IN FEBRUARY 2012. SUFFICENT TIME WAS NOT GIVEN TO ALLOW FOR STABILIZATION OF THE GROUNDWATER TABLE. THE MAST ARM FOUNDATION DESIGN SHALL ASSUME GROUNDWATER IS AT THE GROUND SURFACE. REFER TO THE GEOTECHNICAL OFFICE MEMORANDUM DATED FEBRUARY 29TH 2012 AND THE ADDENDUM DATED FEBRUARY 7TH 2013 FOR ADDITIONAL REQUIREMENTS.

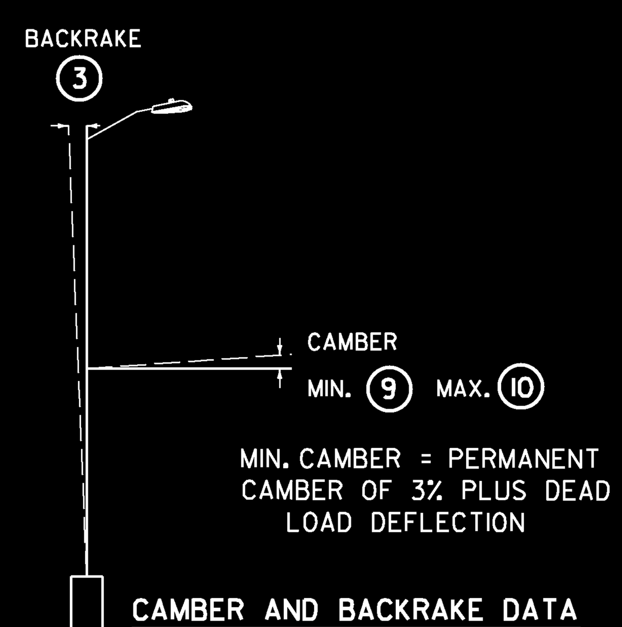


2″ SCORE MARK DETAIL

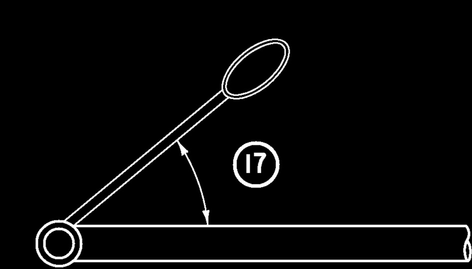
POLE BASE DIAMETER (4)
POLE GAUGE (5)
POLE TAPER RATE (6)
ARM DIAMETER (11)
ARM GAUGE (12)
ARM TAPER RATE (13)
LUMINAIRE MOUNTING HEIGHT ABOVE ROADWAY (16)



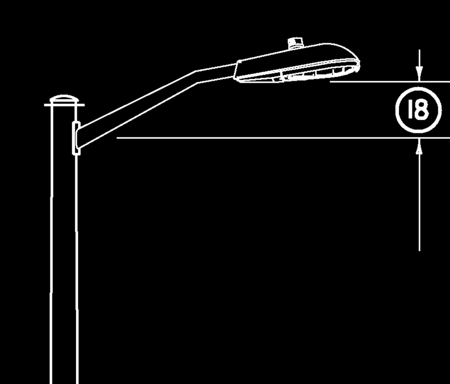
TYPE B



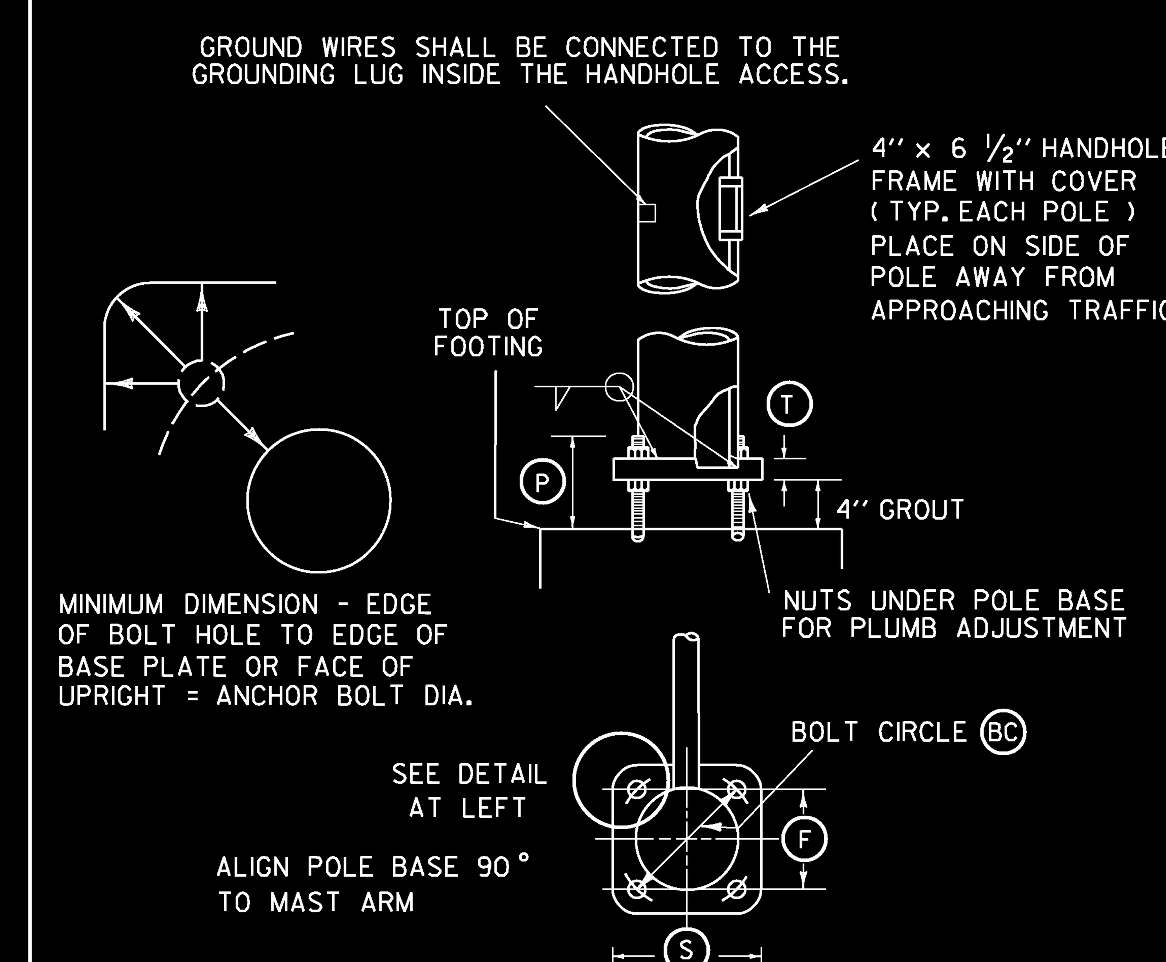
CAMBER AND BACKRAKE DATA



LUMINAIRE ORIENTATION



LUMINAIRE ARM RISE



POLE BASE AND BASE PLATE DETAIL

SEE TRAFFIC SIGNAL DETAIL SHEETS 2 AND 3 FOR CROSS SECTIONS

STRUCTURE DIMENSIONS

POLE DATA								ARM DATA							LIGHTING DATA					FOOTING DATA		BASE PLATE / BOLT DATA					
POLE	TYPE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	BC	F	S	T	P	ANCHOR BOLT SIZE
MP1A	A	20′	18′	TBDM	TBDM	TBDM	TBDM	15′	17′	3%	5%	TBDM	TBDM	TBDM	N/A	N/A	N/A	N/A	N/A	TBDM	TBDM	TBDM	TBDM	TBDM	TBDM	TBDM	TBDM
MP1B	A	20′	18′	TBDM	TBDM	TBDM	TBDM	15′	17′	3%	5%	TBDM	TBDM	TBDM	N/A	N/A	N/A	N/A	N/A	TBDM	TBDM	TBDM	TBDM	TBDM	TBDM	TBDM	TBDM
MP1C	A	20′	18′	TBDM	TBDM	TBDM	TBDM	15′	17′	3%	5%	TBDM	TBDM	TBDM	N/A	N/A	N/A	N/A	N/A	TBDM	TBDM	TBDM	TBDM	TBDM	TBDM	TBDM	TBDM
MP2A	B	28′-6″	18′	TBDM	TBDM	TBDM	TBDM	20′	17′	3%	5%	TBDM	TBDM	TBDM	10′	TBDM	TBDM	TBDM	TBDM	TBDM	TBDM	TBDM	TBDM	TBDM	TBDM	TBDM	TBDM
MP2B	B	28′-6″	18′	TBDM	TBDM	TBDM	TBDM	20′	17′	3%	5%	TBDM	TBDM	TBDM	10′	TBDM	TBDM	TBDM	TBDM	TBDM	TBDM	TBDM	TBDM	TBDM	TBDM	TBDM	TBDM
MP2C	B	28′-6″	18′	TBDM	TBDM	TBDM	TBDM	25′	17′	3%	5%	TBDM	TBDM	TBDM	10′	TBDM	TBDM	TBDM	TBDM	TBDM	TBDM	TBDM	TBDM	TBDM	TBDM	TBDM	TBDM
MP2D	B	28′-6″	18′	TBDM	TBDM	TBDM	TBDM	30′	17′	3%	5%	TBDM	TBDM	TBDM	10′	TBDM	TBDM	TBDM	TBDM	TBDM	TBDM	TBDM	TBDM	TBDM	TBDM	TBDM	TBDM

TBDM = TO BE DETERMINED BY MANUFACTURER

NOTE: DETAILS NOT TO SCALE

PROJECT NAME: RICHMOND
PROJECT NUMBER: STP 0284 (17)

FILE NAME: z97c186trfbdr2.dgn
PROJECT LEADER: JEFFREY MAXTUTIS
DESIGNED BY: J. SOBEL
SIGNAL MAST ARM DETAIL SHEET

PLOT DATE: 4/29/2013
DRAWN BY: Y.CAO/I.ALMY
CHECKED BY: D.FLYNN
SHEET 74 OF 133

LIGHT POLE, LIGHT POLE BASE, LUMINAIRE
US RTE 2 6+12 - 19.0' LT
US RTE 2 6+92 - 21.0' RT
US RTE 2 7+89 - 28.0' RT
US RTE 2 8+75 - 27.5' RT
US RTE 2 9+75 - 21.0' RT
VT RTE 117 30+43 - 34.0' RT
VT RTE 117 31+00 - 21.0' LT
I-89 NB OFF-RAMP 35+68 - 22.0' LT

LIGHT POLE JUNCTION BOX
US RTE 2 6+12 - 21.6' LT
US RTE 2 6+92 - 23.6' RT
US RTE 2 7+89 - 30.6' RT
US RTE 2 8+75 - 30.0' RT
US RTE 2 9+75 - 23.6' RT
VT RTE 117 30+44 - 36.6' RT
VT RTE 117 31+03 - 21.0' LT
I-89 NB OFF RAMP 35+68 - 24.6' LT

JUNCTION BOX
US RTE 2 6+28 - 33.8' LT
US RTE 2 7+04 - 24.0' RT
US RTE 2 7+12 - 39.0' RT
US RTE 2 10+58 - 25.0' RT 2

WIRED CONDUIT (2") (PVC)
~~US RTE 2 6+12 LT (JB) - 6+28 LT (JB) 24'~~
~~US RTE 2 6+28 LT (JB) - 6+31 LT (CONDUIT SLEEVE) 6'~~
~~US RTE 2 6+28 LT (JB) - VT RTE 117 31+03 LT (JB) 47'~~
~~US RTE 2 6+92 RT (JB) - 7+04 RT (JB) 10'~~
~~US RTE 2 7+04 LT (CONDUIT SLEEVE) - 7+12 LT (JB) 25'~~
~~US RTE 2 7+12 LT (JB) - 7+73 LT (PC) 65'~~
~~US RTE 2 7+12 LT (JB) - VT RTE 117 30+44 RT (JB) 34'~~
~~US RTE 2 7+74 LT (PC) - I-89 NB OFF-RAMP 35.68 LT (JB) 115'~~
~~US RTE 2 7+89 RT (JB) - 7+04 RT (JB) 81'~~
~~US RTE 2 7+89 RT (JB) - 8+75 RT (JB) 89'~~
~~US RTE 2 8+75 RT (JB) - 9+75 RT (JB) 104'~~
US RTE 2 9+55 RT (JB) - 10+58 RT (JB) 85' 2
SEE BELOW FOR CONDUIT SCHEDULE

WIRED CONDUIT (1") (PVC)
~~US RTE 2 6+12 LT (JB) - 6+12 LT (LP) 8'~~
~~US RTE 2 6+92 RT (JB) - 6+92 RT (LP) 8'~~
~~US RTE 2 7+89 RT (JB) - 7+89 RT (LP) 8'~~
~~US RTE 2 8+75 RT (JB) - 8+75 RT (LP) 8'~~
~~US RTE 2 9+75 RT (JB) - 9+75 RT (LP) 8'~~
~~VT RTE 117 31+03 LT (JB) - 31+00 LT (LP) 8'~~
~~VT RTE 117 30+43 RT (JB) - 30+44 RT (LP) 8'~~
~~I-89 NB OFF-RAMP 35+68 LT (PB) - 35+68 LT (JB) 8'~~
NO 1" (PVC) CONDUIT USED

ELECTRICAL CONDUIT SLEEVE ~~(6") (PVC)~~ 12" STEEL
US RTE 2 6+31 LT - 7+04 LT 78'
~~US RTE 2 7+04 RT - 7+12 LT 62'~~
1 US RTE 2 6+15 RT

POWER DROP STANCHION, STREET LIGHTING
US RTE 2 7+75 LT
COORDINATE WITH TRAFFIC SIGNAL WORK

LEGEND:
(dashed line)	PROPOSED WIRED CONDUIT
(double dashed line)	PROPOSED ELECTRICAL CONDUIT SLEEVE
(square symbol)	PROPOSED JUNCTION BOX
(pole symbol)	PROPOSED LIGHT POLE & LUMINAIRE
L-2	LUMINAIRE TYPE

NOTES:

1. CONNECT NEW STREET LIGHTING INDICATED TO RELOCATED POWER CABINET AT US RTE 2 7+75 LT. UTILIZE AN EXISTING 20A SPARE BREAKER TO POWER THE NEW STREET LIGHTING.

2. SEE LIGHTING NOTES 1-11, 14, CONDUIT SLEEVE NOTES, DETAILS FOR TAGS ATTACHED TO AREA LIGHT POLES, CONDUIT NOTES, GROUNDING NOTES AND GENERAL NOTES ON THE LIGHTING GENERAL NOTES SHEET (SHEET 114).

3. LIGHTING CONDUIT PROPOSED IN ROADWAYS SHALL BE INSTALLED IN THE SAME TRENCHES AS THE TRAFFIC SIGNAL CONDUIT. REFER TO TRAFFIC SIGNAL PLANS, SHEETS 66 & 68.

LUMINAIRE L-2:

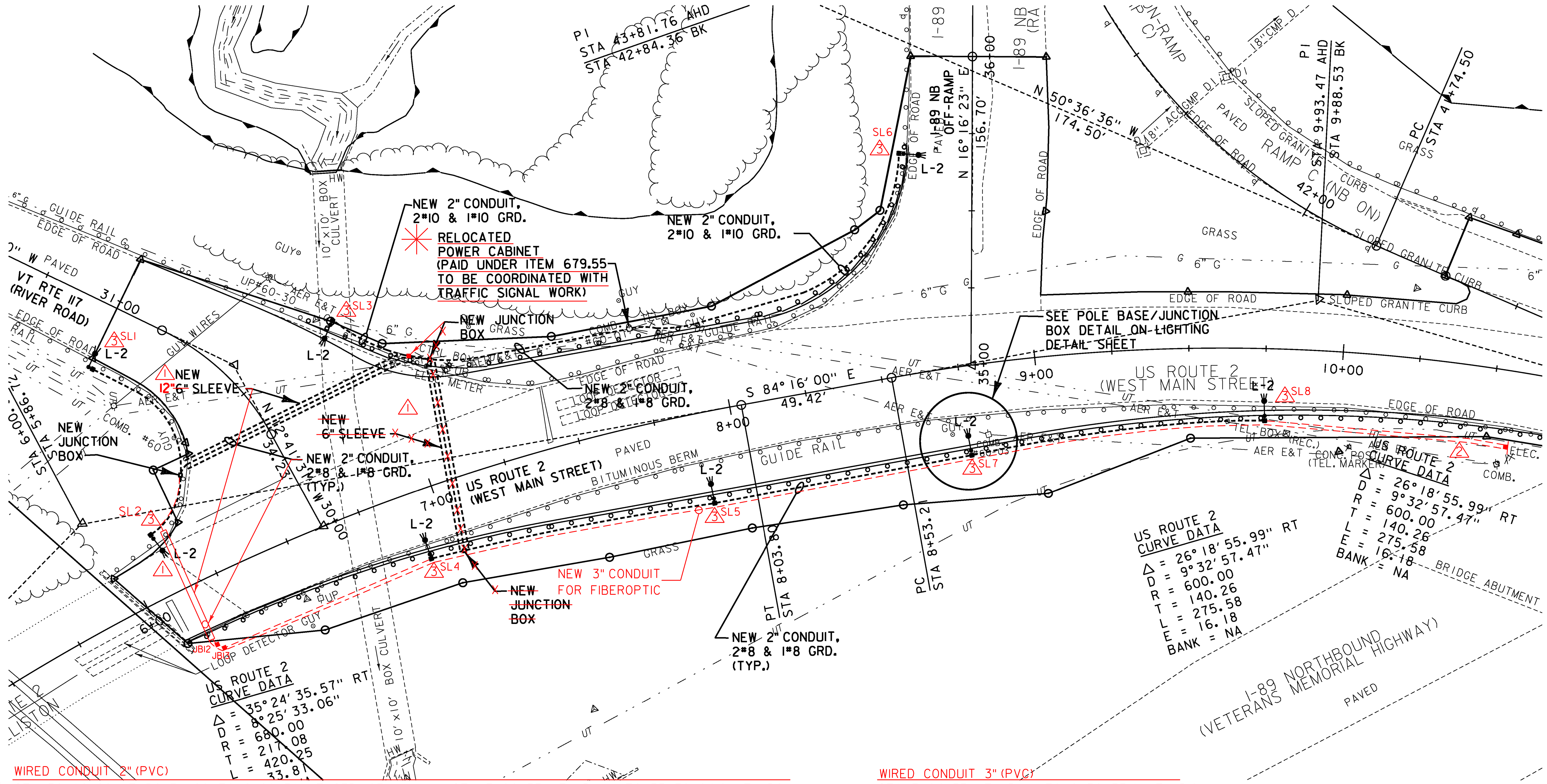
LIGHT DISTRIBUTION IS BASED ON HOLOPHANE PHOTOMETRIC DATA #LEDG 120 53 4K 00 2H L4, FULL CUTOFF, TYPE IV OPTICS, CATALOG #LEDG 120 53 5K AS A L4 PCS (TENON MOUNTED)

THE ABOVE PHOTOMETRIC DATA DRAWINGS WERE USED FOR DESIGN PURPOSES ON THIS PROJECT. ALTERNATE MANUFACTURERS PRODUCTS THAT MAY BE SUBSTITUTED ARE BETALED (LEDWAY IP) AND LRL LED LUMINAIRE #STA-96M. THE ALTERNATE MANUFACTURER MUST MEET THE INSTALLED LUMINAIRE LIGHT UTILIZATION AN MINIMUM FC.

ALL NEW STREET LIGHTING POLES AND LUMINAIRES FOR THIS PROJECT SHALL BE IN ACCORDANCE WITH SUBSECTION 753.01.

STREET LIGHTING DESIGN PARAMETERS:

THE STREET LIGHTING IS BASED ON THE VERMONT AGENCY OF TRANSPORTATION LIGHTING DESIGN GUIDE, RECOMMENDED LIGHTING LEVELS FOR INTERSECTIONS AND ROUNDABOUTS (MAJOR/LOCAL, LOW, FC = 1.3).



WIRED CONDUIT 2" (PVC) 4

STA. 30+86, 29' LT, POLE #60	TO	6+28, 38' LT, SERVICE	
STA. 6+28, 38' LT, SERVICE	TO	6+20, 35' LT, CONTROL	
STA. 6+20, 35' LT, CONTROL	TO	6+24.96, 33.97' LT, MPIA	
STA. 6+20, 35' LT, CONTROL	TO	6+15, 45' LT, PB1	
STA. 6+15, 45' LT, PB1	TO	6+15, 25' RT, PBMPIC	
STA. 6+15, 25' RT, PBMPIC	TO	6+38.36, 21.54' RT, MPIC	
STA. 6+50, 25' RT, PB2	TO	6+76, 23' RT, PB3	
STA. 6+76, 23' RT, PB3	TO	6+86.06, 22.78' RT, MPIB	
STA. 6+28, 38' LT, SERVICE	TO	6+30, 33.8' LT, JB10	
STA. 6+30, 33.8' LT, JB10	TO	31+03, 21' LT, JB1	
STA. 31+03, 21' LT, JB1	TO	31+00, 21' LT, #SL1-105W-LED	
STA. 6+30, 33.8' LT, JB10	TO	7+04, 33' LT, JB11	
STA. 7+04, 33' LT, JB11	TO	30+44, 36.6' RT, JB3	
STA. 30+44, 36.6' RT, JB3	TO	30+44, 34' RT, #SL3-105W-LED	
STA. 7+06, 33' LT, JB11	TO	35+70, 24.6' LT, JB6	
STA. 35+70, 24.6' LT, JB6	TO	35+68, 24.6' LT, #SL6-105W-LED	
STA. 6+28, 33.8' LT, JB10	TO	6+15, 21.6' LT, JB12	
STA. 6+15, 21.6' LT, JB12	TO	6+12, 21.6' LT, JB2	
STA. 6+12, 21.6' LT, JB2	TO	6+12, 21.6' LT, #SL2-105W-LED	
STA. 6+15, 21.6' LT, JB12	TO	6+15, 23' RT, JB13	
STA. 6+15, 23' RT, JB13	TO	6+92, 23' RT, JB4	
STA. 6+92, 23' RT, JB4	TO	6+92, 21' RT, #SL4-105W-LED	
STA. 6+92, 23' RT, JB4	TO	7+89, 30.6' RT, JB5	
STA. 7+89, 30.6' RT, JB5	TO	7+89, 28' RT, #SL5-105W-LED	
STA. 7+89, 30.6' RT, JB5	TO	8+75, 30' RT, JB7	
STA. 8+75, 30.' RT, JB7	TO	8+75, 27.5' RT, #SL7-105W-LED	
STA. 8+75, 30' RT, JB7	TO	9+75, 23.6' RT, JB8	
STA. 9+75, 23.6' RT, JB8	TO	9+75, 21' RT, #SL8-105W-LED	
STA. 9+75, 23.6' RT, JB8	TO	10+54, 23.5' RT, JB9	

WIRED CONDUIT 3" (PVC)

STA. 7+04, 33' LT, JB11	TO	6+30, 33.8' LT, JB10
STA. 6+30, 33.8' LT, JB10	TO	6+15, 21.6' LT, JB12
STA. 6+15, 21.6' LT, JB12	TO	6+15, 23' RT, JB13
STA. 6+15, 23' RT, JB12	TO	10+54, 23.5' RT, JB9

0 20 40
SCALE IN FEET

KEY	DATE	BY	REVISION
1	10/27/2015	VTRANS	SUPPLEMENTAL AGREEMENT 12" STEEL SLEEVE
2	10/27/2015	VTRANS	ADDITIONAL 2" WIRED CONDUIT
2	10/27/2015	VTRANS	ADDITIONAL JUNCTION BOX
3	11/9/2015	VTRANS	CORRECT STREET LIGHT NUMBERS
4	11/13/2015	VTRANS	WIRED CONDUIT SCHEDULE UPDATE

PROJECT NAME: RICHMOND
PROJECT NUMBER: CMG PARK (31)

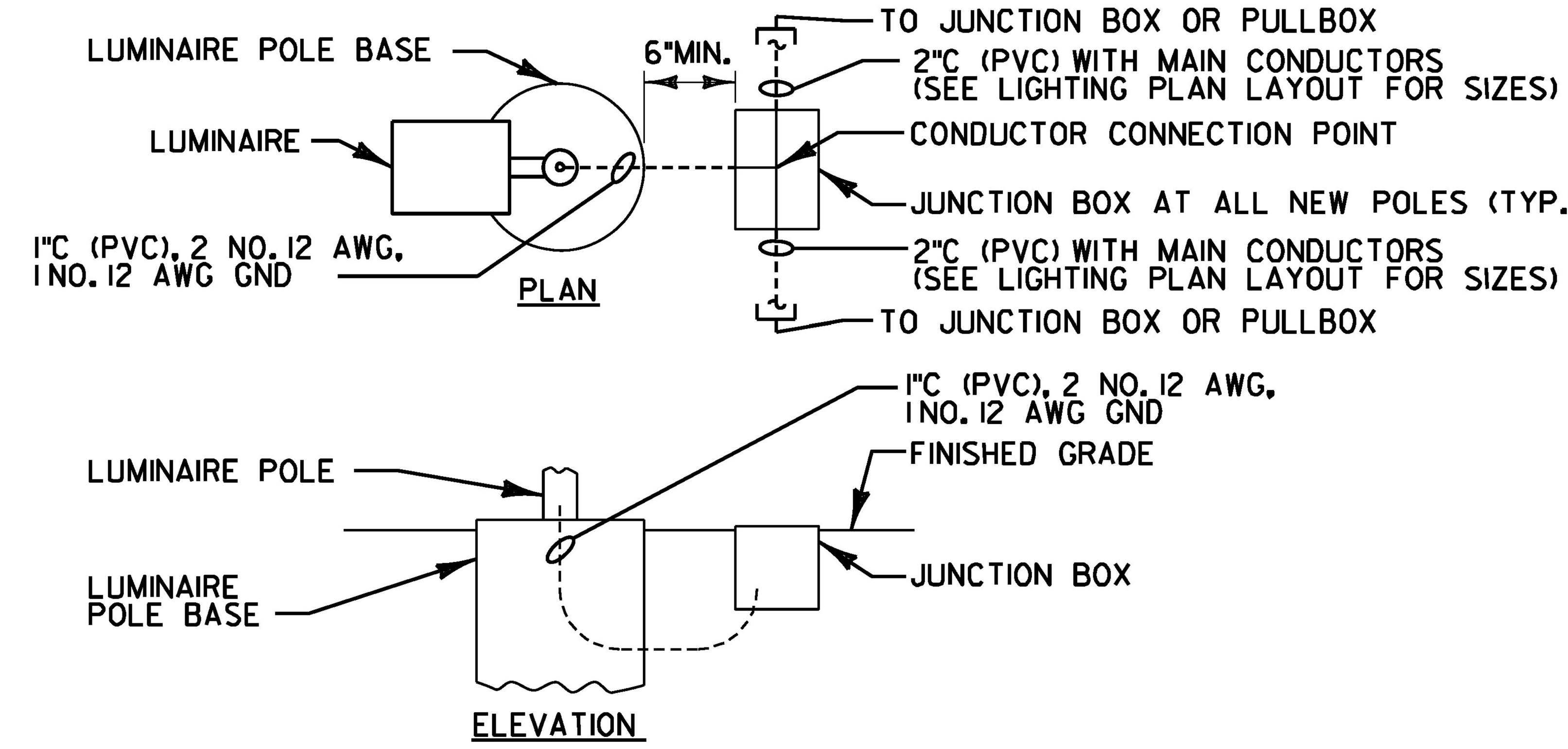
FILE NAME: z97c186e101.dgn
PROJECT LEADER: YASSER RIZK
DESIGNED BY: M. STEWART
LIGHTING PLAN LAYOUT SHEET

PLOT DATE: 4/30/2013
DRAWN BY: M. STEWART
CHECKED BY: Y. RIZK
SHEET 75 OF 133

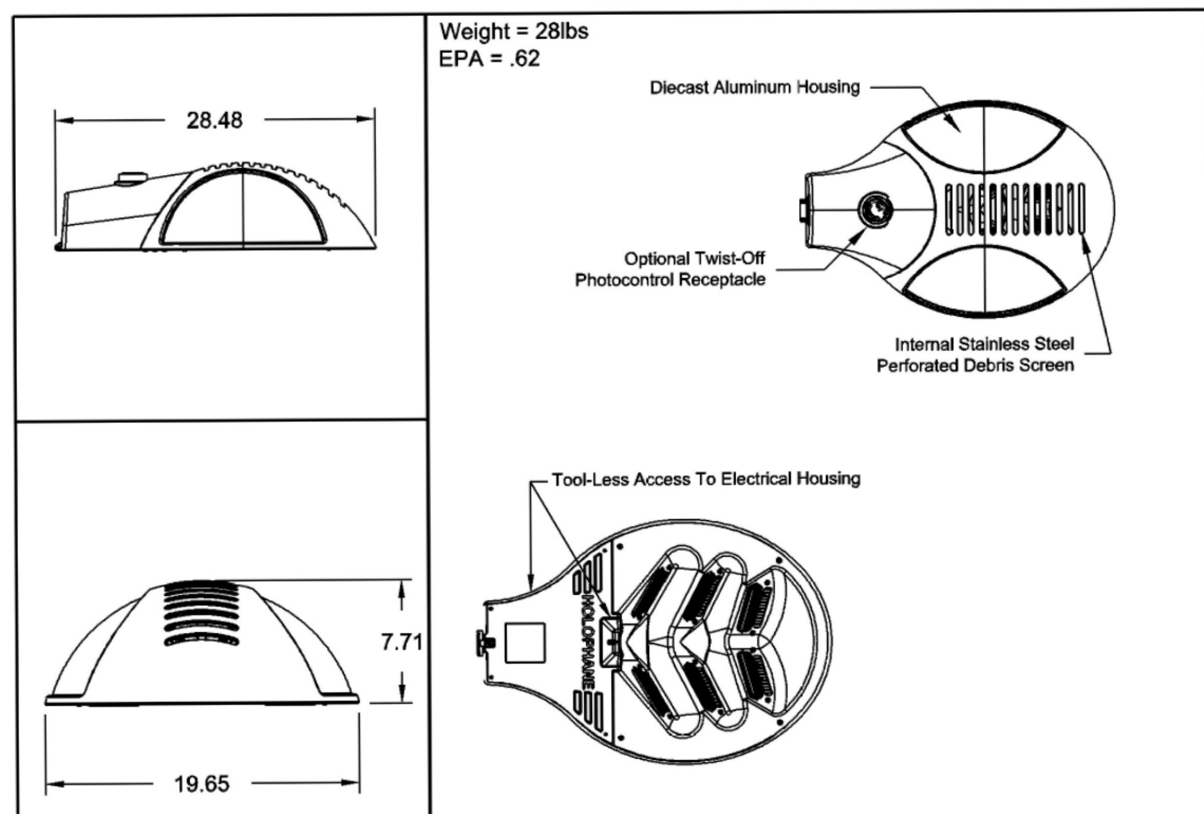
LUMINAIRE SCHEDULE						
LUMINAIRE TYPE	LUMINAIRE MTG	LAMP NO.	LAMP WATTS	VOLTAGE	MANUFACTURER AND BASE MODEL NUMBER	REMARKS AND COMMENTS
L-2	30FT POLE	LED	196W	120V	HOLOPHANE LIGHTING: LEDG 120 53 5K AS A L4 PCS BR-1055-12 (REQUIRED BUG RATING OF 2-0-2)	WITH SOLID STATE LIGHTING PHOTOCONTROL, 12" HORIZONTAL TENON MOUNT
POLE					HOLOPHANE: RTA-30-7E-P2-ND-AK-1-2-3-4	

NOTES:

1. THE LIGHTING FIXTURE SELECTED IS USED AS A BASIS FOR THIS DESIGN. OR EQUAL LIGHTING FIXTURES COULD BE USED IF REQUIRED. HOWEVER REVISED LIGHTING CALCULATION WILL BE REQUIRED TO CONFIRM COMPLIANCE WITH THE PROJECT DESIGN REQUIREMENTS. OF EQUAL LIGHTING FIXTURES SHALL HAVE A BUG RATING OF 2-0-2 OR BETTER.



POLE BASE/JUNCTION BOX DETAIL
NOT TO SCALE



LEDGEND™ LED Roadway Lighting
Functional Outdoor
HOLOPHANE® LEADER IN LIGHTING SOLUTIONS An AcuityBrandsCompany

ORDERING INFORMATION:

Customer Preferred: (Most Frequently Ordered Catalog Numbers)
LEDG 120 35 4K AS G L1 R F1
K L2
W

LEDG — Series
- LEDgend
- LED Roadway

Number of LED'S
- 120 = 120 LED'S
- 108 = 108 LED'S
- 096 = 96 LED'S
- 084 = 84 LED'S
- 072 = 72 LED'S
- 060 = 60 LED'S
- 048 = 48 LED'S
- [3]036 = 36 LED'S

Drive Current
- 35 = 350mA Driver
- 53 = 525mA Driver
- [4]70 = 700mA Driver

Color Temperature
- 4K = 4,000 K CCT +/- 250K
- 5K = 5,000 K CCT +/- 250K

Voltage
- AS = Auto-Sensing Voltage (120 thru 277)
- [2]AH = Auto-Sensing Voltage (347 thru 480)

Housing Color
- A = As Specified
- G = Gray
- H = Graphite
- K = Black
- N = Green
- W = White
- Z = Bronze

Optics
- L1 = Type I, Narrow Asymmetric
- L2 = Type II, Medium Asymmetric
- L3 = Type III, Wide Asymmetric
- L4 = Type IV, Forward Throw

Options

OPTIONS
- B = Constant Lumen Output, Bi-Level Dimming
- C = Constant Lumen Output
- DE = ROAM CONCIERGE Dimming Control
- VE = ROAMVIEW Dimming Control
- EL = Extended Life - Driver
- PCS = DTL Solid-State Lighting Photocontrol 120-277V
- P34 = DTL Twist-Off Photocontrol 347V
- P48 = DTL Twist-Off Photocontrol 480V
- PSC = Shorting Cap
- R = NEMA Twist-Off Photocontrol Receptacle
- SP = Single Pack For UPS

Accessories

ACCESSORIES
- F1 = Single Fusing (120, 240, 277, 347V)
- F2 = Double Fusing (208, 240, 480V)
- BR-1055-XX = P2 Tenon Adapter
- LEDGHSS = House Side Shield

NOTES:
[2]Not available with 36 LED's with 35 or 53 drive currents or with options B, C, DE, VE, EL or PCS
[3]Not available with B, C, DE or VE options with 53 drive current
[4]Not available with 120 LED's

ORDER #:
TYPE:
DRAWN: JRM
DATE: 10/31/12
DWG #: LUM_LEDG

1 of 3

Specifications

General Construction
Rugged die cast aluminum housing, low copper aluminum, allow for corrosion resistance and long life. Horizontal arm mount with +/-6 degrees vertical adjustment. Four bolt mast arm provides easy, secure installation and adjustability for arms 1-1/4 & 2 inch pipe (1.66" & 2.38" O.D.) Trigger latch disengages for easy access to four bolt mounting, terminal block, surge protection module, LED drivers, and electronic transfer switch. An optimized maintained thermal management system is achieved by combining a robust heat sink utilizing both convection and conduction methodology with a mechanical design that provides maximum airflow ensuring a minimum of 50,000 hours L70 at 25C operating ambient. Internal perforated stainless steel cover protects the luminaire against dirt and foliage build up while maintaining the integrity of the airflow requirement. Solar guard technology isolates top cover of luminaire from thermal heat sink through four touch points providing protection from solar loading while not in operation.

Environmental
Luminaire design and tested to comply with ANSI C136:31 2001 for 100,000 cycles at 3G acceleration for normal road and bridge applications. The range of luminaire operation is -40C to +50C.
Six sealed LED light engines meet dust and moisture rating of IP-66 per IEC 60068-2-3 1987 ensures long component life and protection from the environment.
The luminaire is finished with polyester paint applied after a pretreatment process to ensure maximum durability. The finish shall pass the 1000 hour salt fog test per ASTM B117 and D1654 standard.
The luminaire passed Humidity testing per IEC 60068-2-3 1987 and passed Temperature-Voltage Cycling and Condensing Humidity testing per Acuity Brands Validation Test Specification 902-00007-001

Regulatory
The luminaire is safety listed to CSA-C22.2 number 250, wet location. See chart below for model rating based on drive current and led combination.

Series	Drive Current	Number of LED'S	CSA Ambient Listing
LEDG	350 mA	36,60,72,84,96,108,120	40C
LEDG	525 mA	36,48,60,72,84,96,108,120	40C
LEDG	700 mA	72,60,48,36	40C
LEDG	700 mA	84	35C
LEDG	700 mA	96	30C
LEDG	700 mA	108	25C

The luminaire is ROHS compliant. Luminaire meets EMI compliance per FCC Title 47 CFR Part 15, Class A.

Electrical
The surge protection is tested to ANSI/IEEEC62.41-2002 specification. For the AS voltage option (120-277), the device meets category C high (20kV, 10kA). For AH voltage rating (347-480), the protection level is category C low. (6kV, 3kA) The surge protection module (SPD) protects all downstream electronics such as led drivers, transfer switch, and relays for the purpose of protecting from electrical disturbances such as nearby lightning strikes.
Extended life driver option (EL 350 mA only) provides both main and auxiliary driver system extending system driver to 200,000 hours minimum. The control in EL option constantly monitors an output current of the Main Driver. In the event of a Main driver failure (no output current), the control switches power to the Auxiliary driver. The Auxiliary driver is not energized during normal operation.
The photocontrol receptacle is adjustable without tools and is ROAM compatible.
The luminaire is designed to conform to ANSI C82.77:2002 for Maximum Total Harmonic Distortion (THD) -20%. Inrush current complies with NEMA410:2004 table B-2 and line Fluctuations and Ramp input voltage per UL 991:2004.
The luminaire conforms to Electromagnetic compatibility tests for Electrostatic Discharge (ESD) per IEC 61000-4-2:2001, Level 4.

Optical
Environmentally friendly, zero uplight luminaire reduces light pollution. Glass optics provides minimal dirt depreciation and will not discolor or become brittle over time. The permanence of glass results in less dirt depreciation and more maintained lumens on the intended space. The luminaire is available with narrow, medium, and wide asymmetric distributions designed to maximize pole spacing and reduce energy usage resulting in a lower total cost of ownership. The highly engineered light engine is designed to restrict direct view of individual LED's increasing visual comfort within the field of view. The luminaire is available with LED color temperatures of 4000K and 5000K. The minimum color rendering index (CRI) is 70.
Reference www.Holophane.com for individual photometric tests on LEDgend LED luminaire that are tested per LM79 guidelines. Consult factory for LM80 data as that varies per LED chip manufacturer.

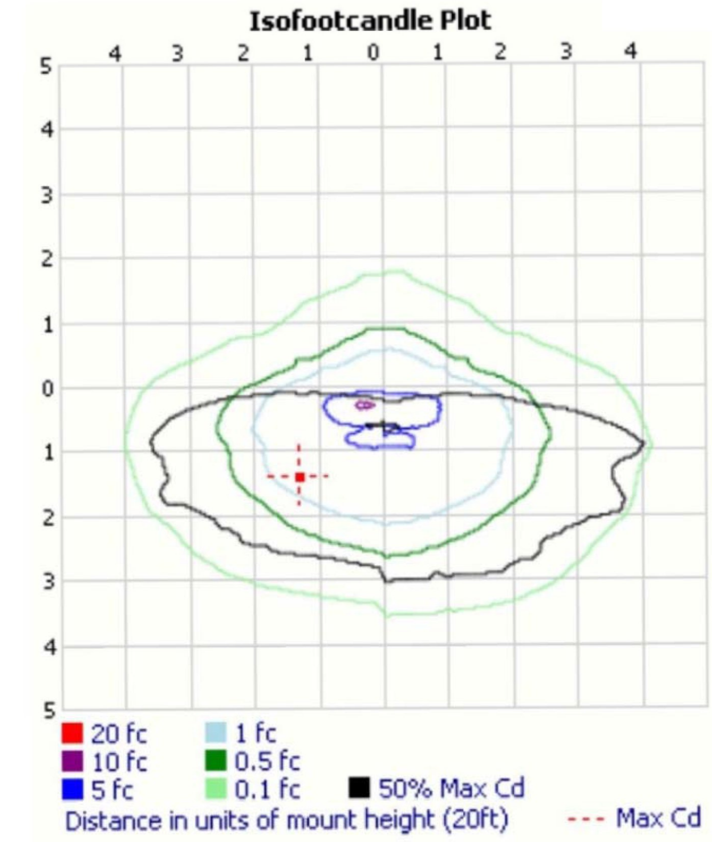
LEDGEND™ LED Roadway Lighting
Functional Outdoor
HOLOPHANE® LEADER IN LIGHTING SOLUTIONS An AcuityBrandsCompany

ORDER #:
TYPE:
DRAWN: LJS
DATE: 10/6/11
DWG #: LUM_LEDG

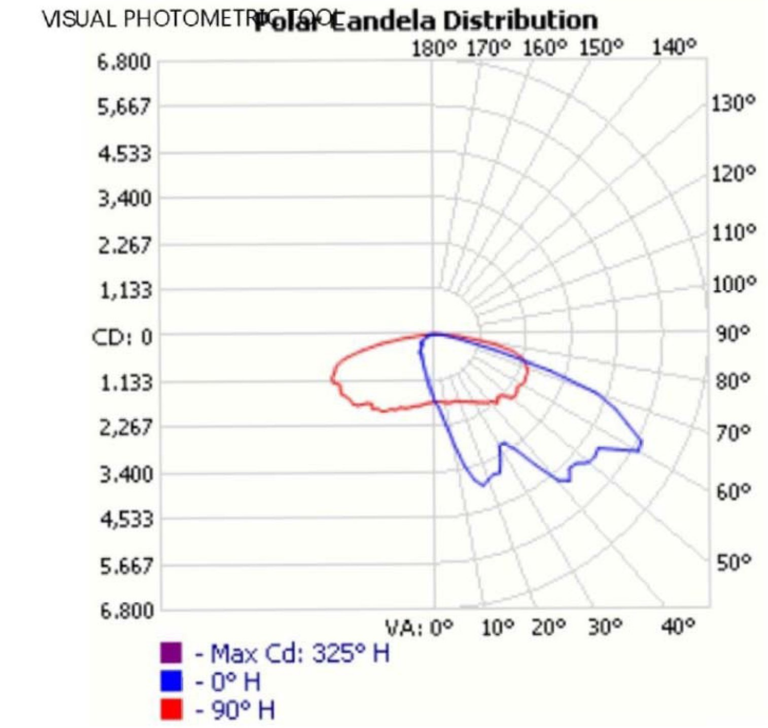
2 of 3

1/30/2013 12:52 PM

Isofootcandle Plot

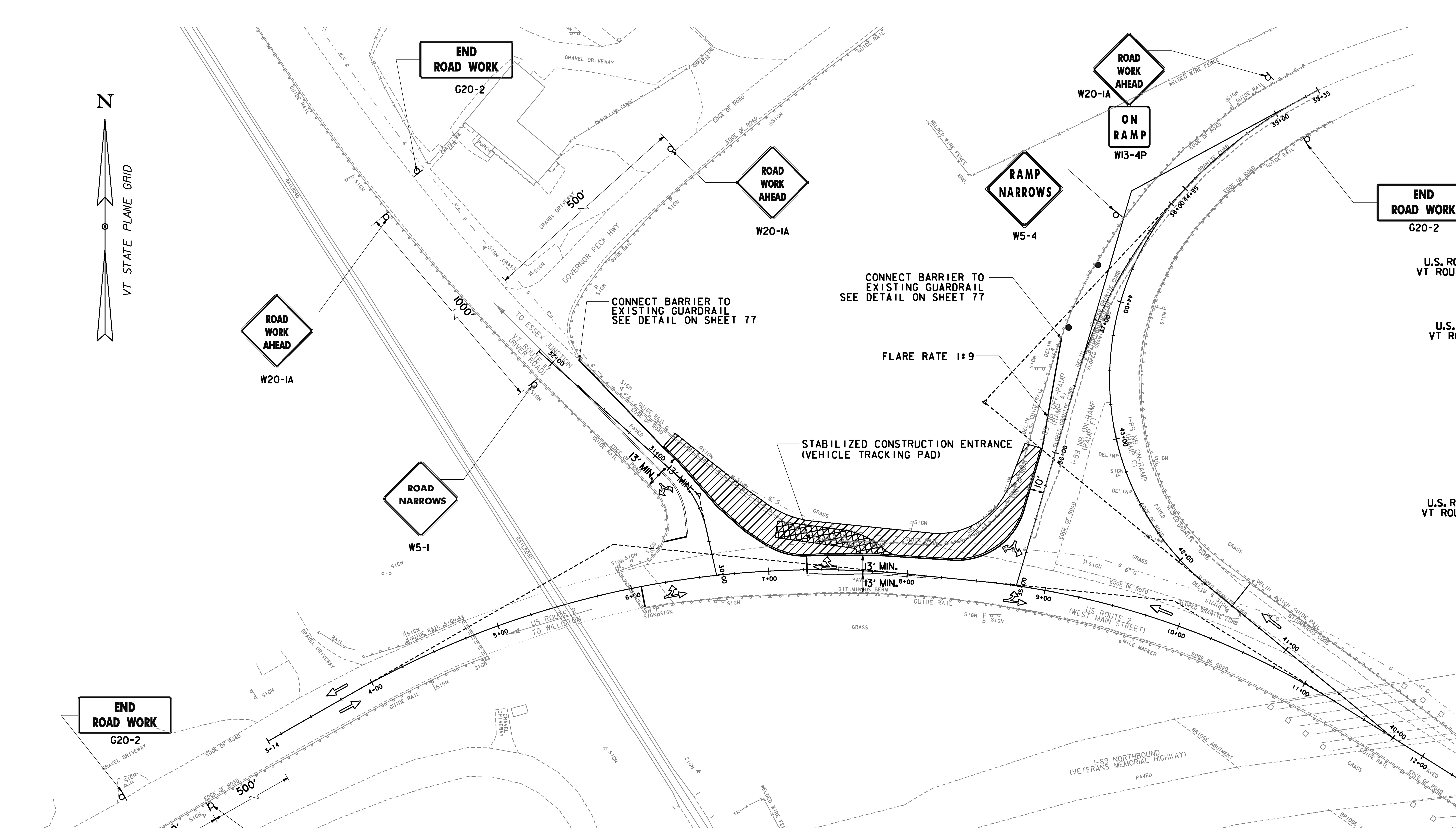


VISUAL PHOTOMETRIC TOOL
Polar Candela Distribution



LEDG 120 53 4K 00 2H L4

PROJECT NAME:	RICHMOND		
PROJECT NUMBER:	STP 0284 (17)		
FILE NAME:	z97cl86el02.dgn	PLOT DATE:	4/29/2013
PROJECT LEADER:	YASSER RIZK	DRAWN BY:	M. STEWART
DESIGNED BY:	M. STEWART	CHECKED BY:	Y. RIZK
LIGHTING DETAILS SHEET		SHEET	76 OF 133



LEGEND

(hatched)	WORK AREA
(line)	TEMPORARY TRAFFIC BARRIER
●	REFLECTORIZED PLASTIC DRUM
(arrow)	FLOW OF TRAFFIC
(sign)	SIGN
DYCL	DOUBLE YELLOW CENTER LINE
EL	EDGE LINE
LL	LANE LINE

TEMPORARY 4 INCH YELLOW LINE

U.S. ROUTE 2 STA. 7+27 ~ 8+25 RT. 98 X 2 = 196 LF (DYCL)
VT ROUTE 117 STA. 30+32 ~ 31+75 LT. 143 X 2 = 286 LF (DYCL)

TEMPORARY 4 INCH WHITE LINE

U.S. ROUTE 2 STA. 7+27 ~ 8+25 RT. 98 X 1 = 98 LF (EL)
VT ROUTE 117 STA. 30+32 ~ 31+75 LT. 143 X 1 = 143 LF (EL)

TEMPORARY 24 INCH STOP BAR

U.S. ROUTE 2 STA. 6+05 RT. 13 LF
U.S. ROUTE 2 STA. 7+27 RT. 13 LF
VT ROUTE 117 STA. 30+32 LT. 16 LF

VEHICLE TRACKING PAD

U.S. ROUTE 2 STA. 7+85 LT

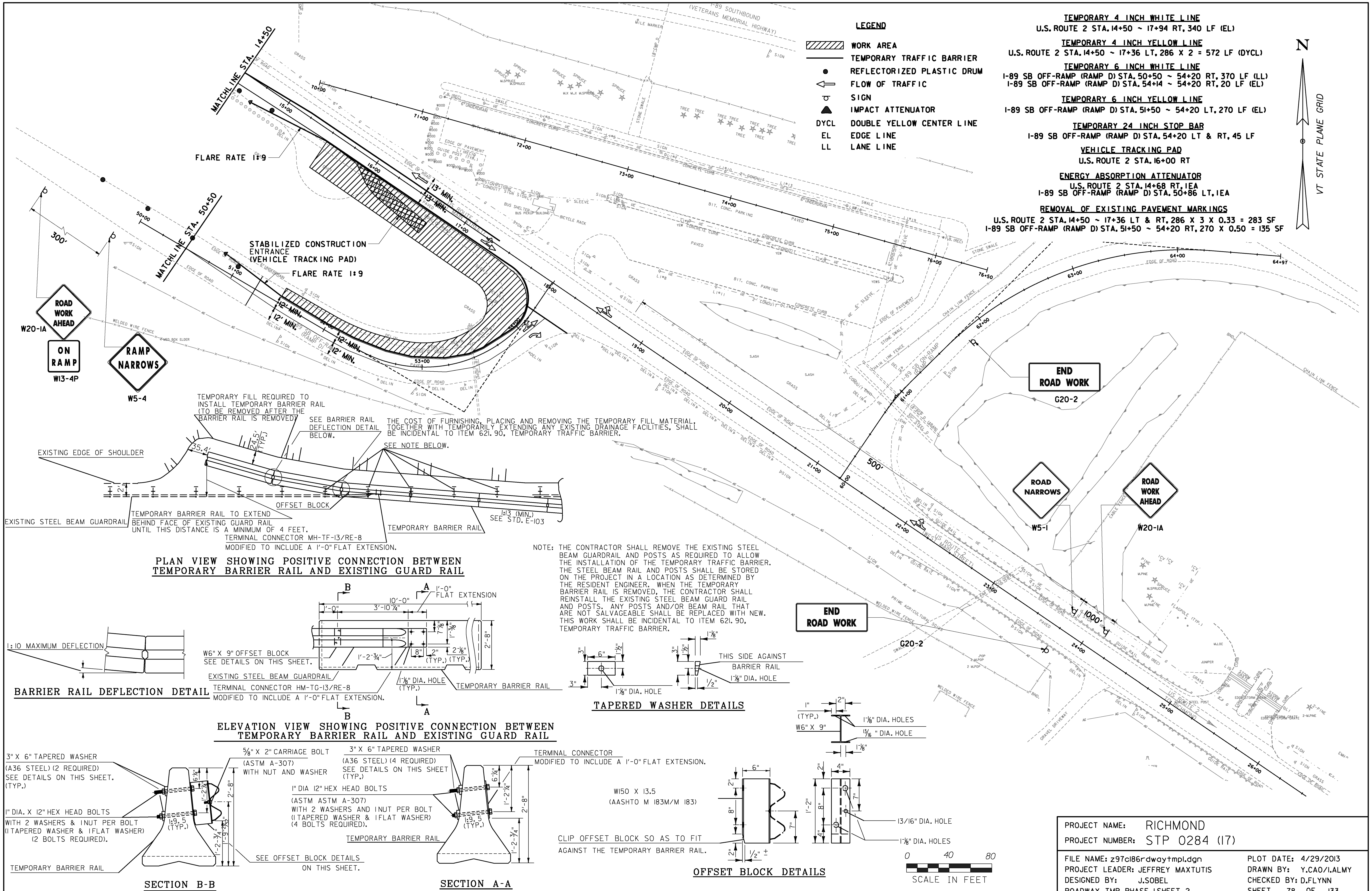
REMOVAL OF EXISTING PAVEMENT MARKINGS

U.S. ROUTE 2 STA. 7+27 ~ 8+25 RT. 98 X 2 X 0.33 = 65 SF
VT ROUTE 117 STA. 30+32 ~ 31+75 LT. 143 X 2 X 0.33 = 95 SF
VT ROUTE 117 STA. 30+32 LT. 32 X 2 = 64 SF

GENERAL TRAFFIC MAINTENANCE NOTES:

1) ALL TEMPORARY TRAFFIC BARRIERS SHALL COMPLY WITH THE REQUIREMENTS OF NOTE 10 OF THE TRAFFIC CONTROL NOTES FOR TRAFFIC SIGNAL WORK (SEE SHEET 70).
2) EXCAVATION FOR SUBBASE OF DENSE GRADED CRUSHED STONE AND SAND BORROW SHALL NOT EXCEED 200' IN LENGTH ALONG ROADWAY OR HALF A DAY OF WORK. AT THE END OF A WORKING DAY, BACKFILLING AND COMPACTION OF SUBBASE AND SAND BORROW SHALL BE COMPLETED UNLESS DIRECTED OTHERWISE BY THE ENGINEER.
3) THE CONSTRUCTION ZONE LONGITUDINAL DROP-OFF REQUIREMENTS OF STD. DRAWINGS E-108 AND E-108A SHALL APPLY. WHERE TEMPORARY TRAFFIC BARRIER IS USED ELEVATION DIFFERENCES BETWEEN A PORTION OF ROADWAY OPENED FOR TRAFFIC AND A PORTION OF ROADWAY CONSTRUCTED SHALL NOT EXCEED 18" DURING NON-WORKING HOURS.
4) ALL EXISTING PAVEMENT MARKINGS IN CONFLICT WITH PROPOSED TEMPORARY PAVEMENT MARKINGS SHALL BE REMOVED. PAYMENT SHALL BE MADE UNDER ITEM 646.85 REMOVAL OF EXISTING PAVEMENT MARKINGS.
5) CONTRACTOR SHALL RELOCATE OR COVER ALL EXISTING SIGNS WHERE THEY WOULD CONFLICT WITH CONSTRUCTION SIGNAGE. THE COST SHALL BE CONSIDERED INCIDENTAL TO THE UNIT PRICE BID FOR ITEM 641.10 TRAFFIC CONTROL.
6) THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING CONSTRUCTION SIGNAGE SO AS NOT TO INTERFERE OR OBSTRUCT THE VIEW OF EXISTING TRAFFIC CONTROL DEVICES, STOPPING SIGHT DISTANCE AND CORNER SIGHT DISTANCE. THE COST SHALL BE CONSIDERED INCIDENTAL TO THE UNIT PRICE BID FOR ITEM 641.10 TRAFFIC CONTROL.
7) ALL TEMPORARY TRAFFIC BARRIERS SHALL BE DELINEATED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS AND THE LATEST EDITION OF "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD).
8) PHASING WORK SHOWN HERE IS SCHEMATIC ONLY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DEVELOPING APPROPRIATE CONSTRUCTION METHODS AND APPLICABLE TRAFFIC MAINTENANCE PLANS FOR ALL TRANSITION WORK BETWEEN PHASES. THE COST SHALL BE CONSIDERED INCIDENTAL TO THE UNIT PRICE BID FOR ITEM 641.10 TRAFFIC CONTROL.
9) PORTABLE CHANGEABLE MESSAGE SIGNS (PCMS) SHALL BE USED IN ADDITION TO ADVANCE WARNING SIGNS. PAYMENT SHALL BE MADE UNDER ITEM 641.15 PORTABLE CHANGEABLE MESSAGE SIGN. THE PLACEMENT OF PCMS SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD.
10) THE NUMBER AND LOCATION OF THE STABILIZED CONSTRUCTION ENTRANCES (VEHICLE TRACKING PAD) SHOWN ON THESE PLANS ARE ONLY CONCEPTUAL. THE CONTRACTOR SHALL PROVIDE EXACT LOCATION IN THE FIELD IN ACCORDANCE WITH THE APPLICABLE VTRANS EROSION CONTROL REQUIREMENTS AND SUBMIT TO ENGINEER FOR APPROVAL. PAYMENT SHALL BE MADE UNDER ITEM 653.35 VEHICLE TRACKING PAD.
11) ALL WORK AREA AND CONSTRUCTION ENTRANCES SHALL BE SECURED DURING OVERNIGHT AND NON ACTIVE PERIODS. THE COST SHALL BE CONSIDERED INCIDENTAL TO THE UNIT PRICE BID FOR ITEM 641.10 TRAFFIC CONTROL.
12) PAYMENT FOR FURNISHING AND PLACING TEMPORARY TRAFFIC SIGNS AND REMOVING AND RELOCATING TEMPORARY TRAFFIC SIGNS FOR THE DIFFERENT PHASES SHALL BE CONSIDERED INCIDENTAL TO THE UNIT PRICE BID FOR ITEM 641.10 TRAFFIC CONTROL.
13) EMERGENCY VEHICLE ACCESS SHALL BE MAINTAINED AT ALL TIMES.
14) REFER TO SHEET 71 FOR TRAFFIC CONTROL NOTES FOR TRAFFIC SIGNAL WORK.
15) LANE CLOSURES SHALL NOT BE IMPLEMENTED BETWEEN 7:00AM - 9:00AM AND 4:00PM-6:00PM.

PROJECT NAME: RICHMOND	
PROJECT NUMBER: STP 0284 (17)	
FILE NAME: z97c186rdwaytmpl.dgn	PLOT DATE: 4/29/2013
PROJECT LEADER: JEFFREY MAXTUTIS	DRAWN BY: Y.CAO/I.ALMY
DESIGNED BY: J.SOBEL	CHECKED BY: D.FLYNN
ROADWAY TMP PHASE 1 SHEET 1	SHEET 77 OF 133



LEGEND

- WORK AREA
- TEMPORARY TRAFFIC BARRIER
- REFLECTORIZED PLASTIC DRUM
- FLOW OF TRAFFIC
- SIGN
- IMPACT ATTENUATOR
- DYCL DOUBLE YELLOW CENTER LINE
- EL EDGE LINE
- LL LANE LINE

TEMPORARY 4 INCH WHITE LINE
U.S. ROUTE 2 STA. 14+50 ~ 17+94 RT, 340 LF (EL)

TEMPORARY 4 INCH YELLOW LINE
U.S. ROUTE 2 STA. 14+50 ~ 17+36 LT, 286 X 2 = 572 LF (DYCL)

TEMPORARY 6 INCH WHITE LINE
I-89 SB OFF-RAMP (RAMP D) STA. 50+50 ~ 54+20 RT, 370 LF (LL)
I-89 SB OFF-RAMP (RAMP D) STA. 54+14 ~ 54+20 RT, 20 LF (EL)

TEMPORARY 6 INCH YELLOW LINE
I-89 SB OFF-RAMP (RAMP D) STA. 51+50 ~ 54+20 LT, 270 LF (EL)

TEMPORARY 24 INCH STOP BAR
I-89 SB OFF-RAMP (RAMP D) STA. 54+20 LT & RT, 45 LF

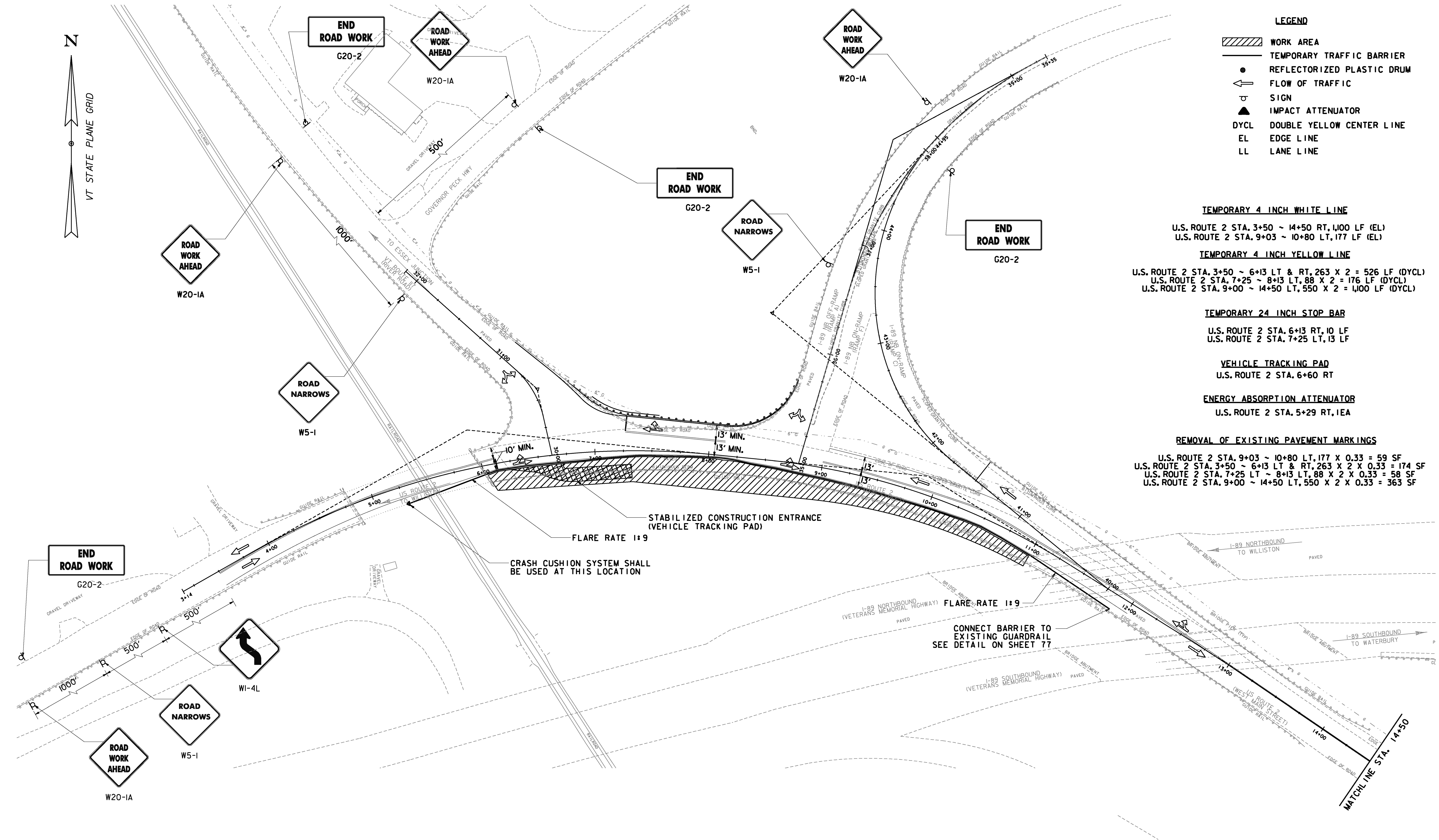
VEHICLE TRACKING PAD
U.S. ROUTE 2 STA. 16+00 RT

ENERGY ABSORPTION ATTENUATOR
U.S. ROUTE 2 STA. 14+68 RT, IEA
I-89 SB OFF-RAMP (RAMP D) STA. 50+86 LT, IEA

REMOVAL OF EXISTING PAVEMENT MARKINGS
U.S. ROUTE 2 STA. 14+50 ~ 17+36 LT & RT, 286 X 3 X 0.33 = 283 SF
I-89 SB OFF-RAMP (RAMP D) STA. 51+50 ~ 54+20 RT, 270 X 0.50 = 135 SF

NOTE: THE CONTRACTOR SHALL REMOVE THE EXISTING STEEL BEAM GUARDRAIL AND POSTS AS REQUIRED TO ALLOW THE INSTALLATION OF THE TEMPORARY TRAFFIC BARRIER. THE STEEL BEAM RAIL AND POSTS SHALL BE STORED ON THE PROJECT IN A LOCATION AS DETERMINED BY THE RESIDENT ENGINEER. WHEN THE TEMPORARY BARRIER RAIL IS REMOVED, THE CONTRACTOR SHALL REINSTALL THE EXISTING STEEL BEAM GUARD RAIL AND POSTS. ANY POSTS AND/OR BEAM RAIL THAT ARE NOT SALVAGEABLE SHALL BE REPLACED WITH NEW. THIS WORK SHALL BE INCIDENTAL TO ITEM 621.90, TEMPORARY TRAFFIC BARRIER.

PROJECT NAME: RICHMOND	
PROJECT NUMBER: STP 0284 (17)	
FILE NAME: z97c186rdwaytmpl.dgn	PLOT DATE: 4/29/2013
PROJECT LEADER: JEFFREY MAXTUTIS	DRAWN BY: Y.CAO/I.ALMY
DESIGNED BY: J.SOBEL	CHECKED BY: D.FLYNN
ROADWAY TMP PHASE 1 SHEET 2	SHEET 78 OF 133



LEGEND

(hatched)	WORK AREA
(line)	TEMPORARY TRAFFIC BARRIER
●	REFLECTORIZED PLASTIC DRUM
(arrow)	FLOW OF TRAFFIC
(symbol)	SIGN
▲	IMPACT ATTENUATOR
DYCL	DOUBLE YELLOW CENTER LINE
EL	EDGE LINE
LL	LANE LINE

TEMPORARY 4 INCH WHITE LINE

U.S. ROUTE 2 STA. 3+50 ~ 14+50 RT. 1,100 LF (EL)
U.S. ROUTE 2 STA. 9+03 ~ 10+80 LT. 177 LF (EL)

TEMPORARY 4 INCH YELLOW LINE

U.S. ROUTE 2 STA. 3+50 ~ 6+13 LT & RT. 263 X 2 = 526 LF (DYCL)
U.S. ROUTE 2 STA. 7+25 ~ 8+13 LT. 88 X 2 = 176 LF (DYCL)
U.S. ROUTE 2 STA. 9+00 ~ 14+50 LT. 550 X 2 = 1,100 LF (DYCL)

TEMPORARY 24 INCH STOP BAR

U.S. ROUTE 2 STA. 6+13 RT. 10 LF
U.S. ROUTE 2 STA. 7+25 LT. 13 LF

VEHICLE TRACKING PAD

U.S. ROUTE 2 STA. 6+60 RT

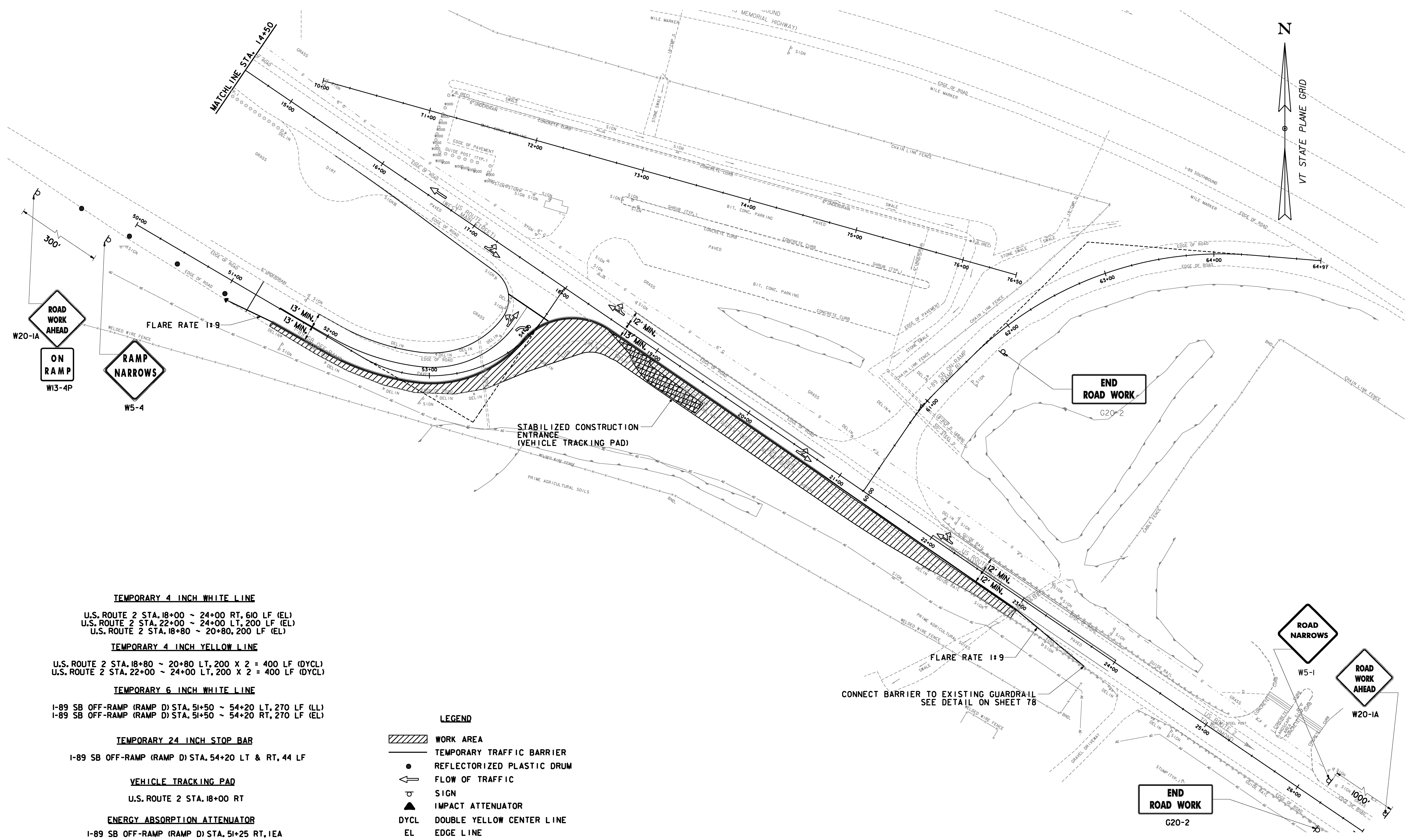
ENERGY ABSORPTION ATTENUATOR

U.S. ROUTE 2 STA. 5+29 RT. 1EA

REMOVAL OF EXISTING PAVEMENT MARKINGS

U.S. ROUTE 2 STA. 9+03 ~ 10+80 LT. 177 X 0.33 = 59 SF
U.S. ROUTE 2 STA. 3+50 ~ 6+13 LT & RT. 263 X 2 X 0.33 = 174 SF
U.S. ROUTE 2 STA. 7+25 LT ~ 8+13 LT. 88 X 2 X 0.33 = 58 SF
U.S. ROUTE 2 STA. 9+00 ~ 14+50 LT. 550 X 2 X 0.33 = 363 SF

PROJECT NAME: RICHMOND	
PROJECT NUMBER: STP 0284 (17)	
FILE NAME: z97c186rdwaytmp2.dgn	PLOT DATE: 4/29/2013
PROJECT LEADER: JEFFREY MAXTUTIS	DRAWN BY: Y.CAO/I.ALMY
DESIGNED BY: J.SOBEL	CHECKED BY: D.FLYNN
ROADWAY TMP PHASE 2 SHEET 1	SHEET 79 OF 133



TEMPORARY 4 INCH WHITE LINE

U.S. ROUTE 2 STA. 18+00 ~ 24+00 RT, 610 LF (EL)
U.S. ROUTE 2 STA. 22+00 ~ 24+00 LT, 200 LF (EL)
U.S. ROUTE 2 STA. 18+80 ~ 20+80, 200 LF (EL)

TEMPORARY 4 INCH YELLOW LINE

U.S. ROUTE 2 STA. 18+80 ~ 20+80 LT, 200 X 2 = 400 LF (DYCL)
U.S. ROUTE 2 STA. 22+00 ~ 24+00 LT, 200 X 2 = 400 LF (DYCL)

TEMPORARY 6 INCH WHITE LINE

I-89 SB OFF-RAMP (RAMP D) STA. 51+50 ~ 54+20 LT, 270 LF (LL)
I-89 SB OFF-RAMP (RAMP D) STA. 51+50 ~ 54+20 RT, 270 LF (EL)

TEMPORARY 24 INCH STOP BAR

I-89 SB OFF-RAMP (RAMP D) STA. 54+20 LT & RT, 44 LF

VEHICLE TRACKING PAD

U.S. ROUTE 2 STA. 18+00 RT

ENERGY ABSORPTION ATTENUATOR

I-89 SB OFF-RAMP (RAMP D) STA. 51+25 RT, 1EA

REMOVAL OF EXISTING PAVEMENT MARKINGS

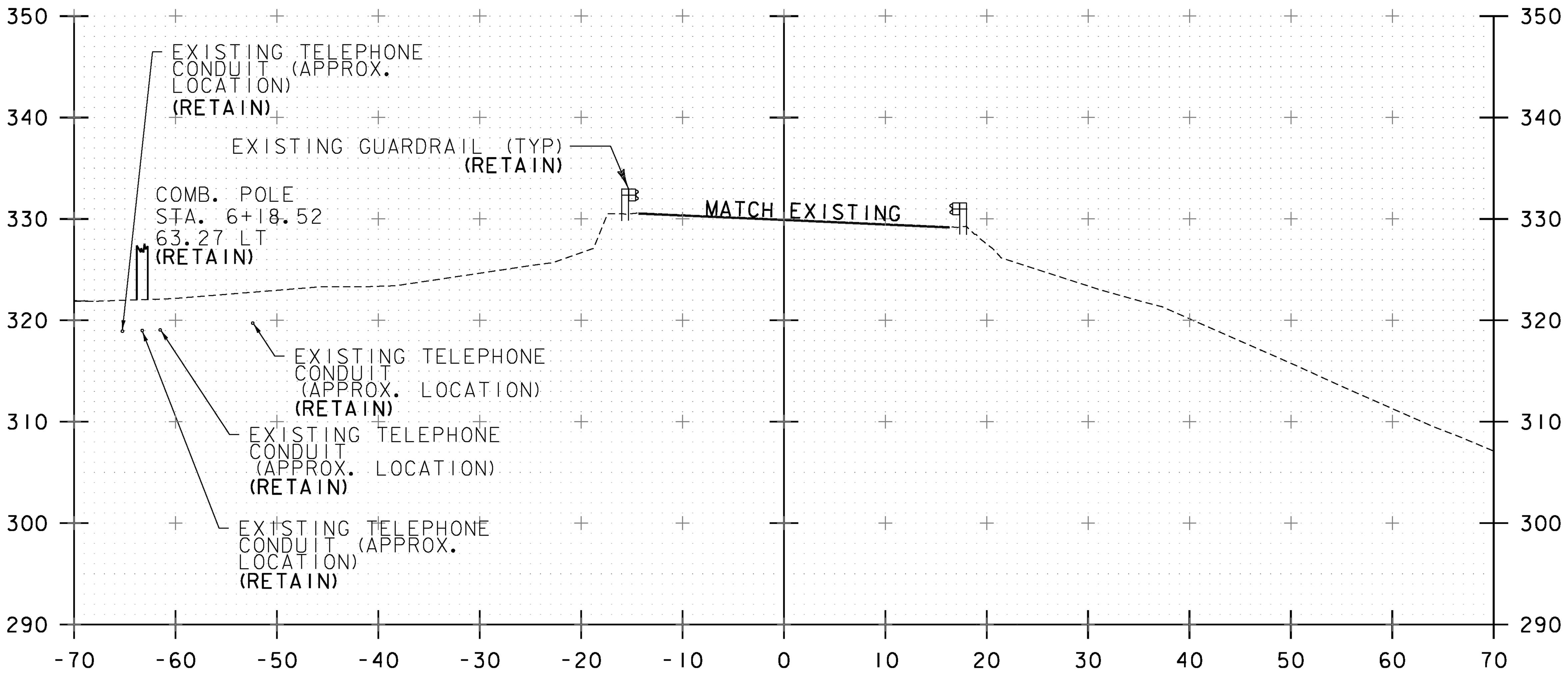
U.S. ROUTE 2 STA. 18+80 ~ 20+80 LT, 200 X 3 X 0.33 = 198 SF
U.S. ROUTE 2 STA. 22+00 ~ 24+00 LT, 200 X 3 X 0.33 = 198 SF
I-89 SB OFF-RAMP (RAMP D) STA. 51+50 ~ 54+20 LT, 270 X 0.50 = 135 SF

LEGEND

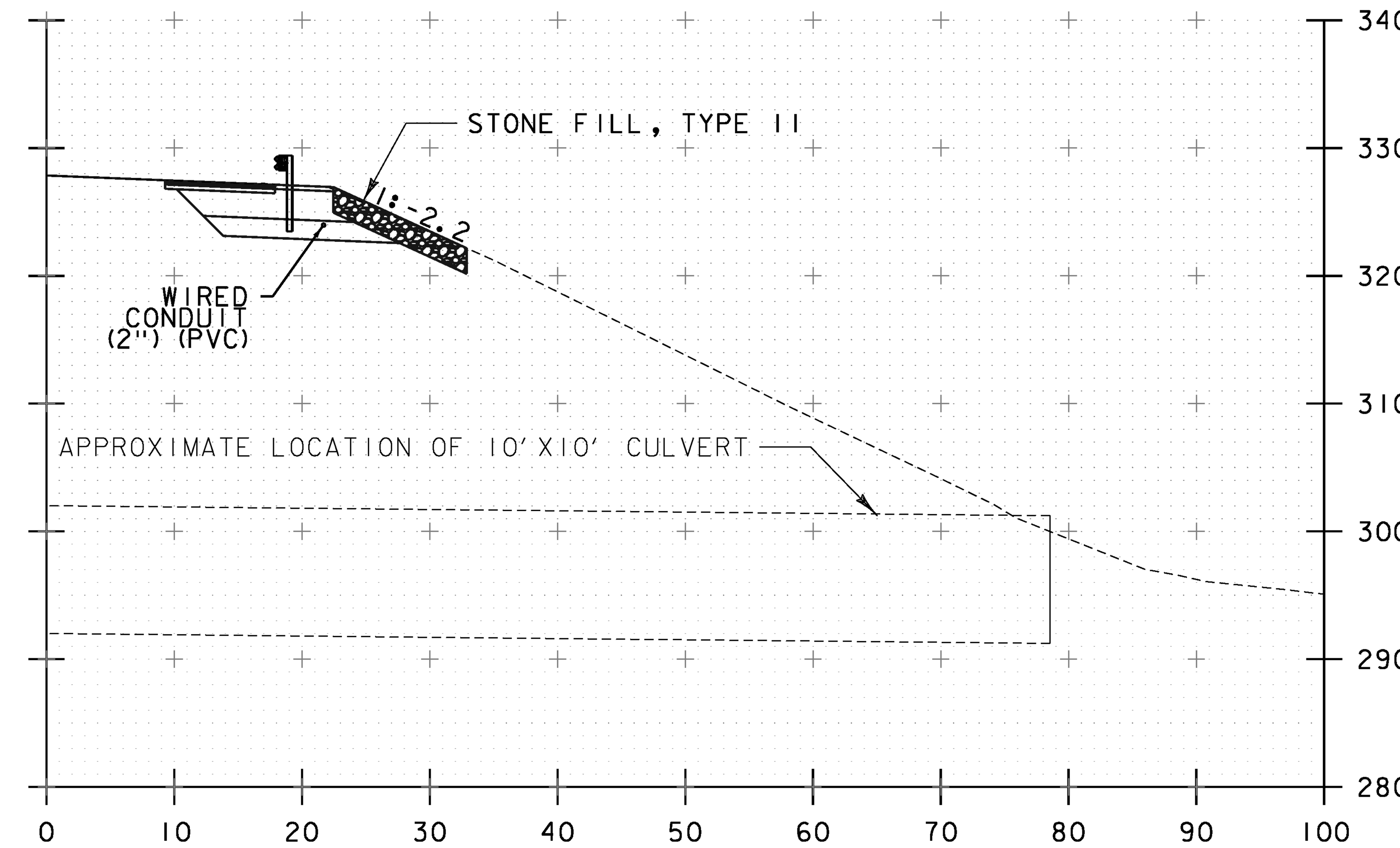
(hatched)	WORK AREA
(line)	TEMPORARY TRAFFIC BARRIER
●	REFLECTORIZED PLASTIC DRUM
⇦	FLOW OF TRAFFIC
(sign symbol)	SIGN
▲	IMPACT ATTENUATOR
DYCL	DOUBLE YELLOW CENTER LINE
EL	EDGE LINE
LL	LANE LINE

0 40 80
SCALE IN FEET

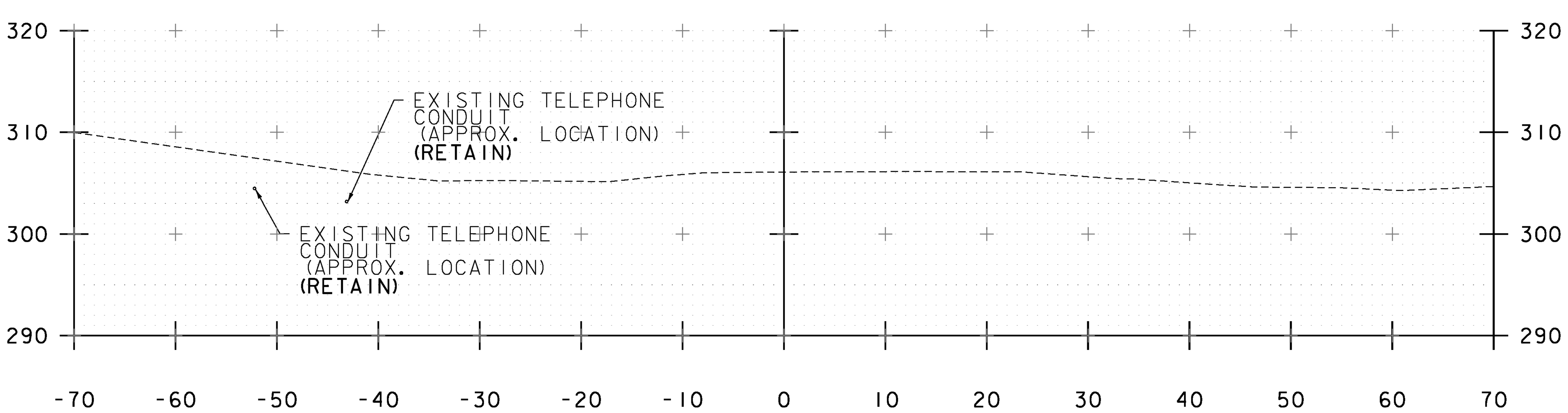
PROJECT NAME: RICHMOND	
PROJECT NUMBER: STP 0284 (17)	
FILE NAME: z97c186rdwaytmp2.dgn	PLOT DATE: 4/29/2013
PROJECT LEADER: JEFFREY MAXTUTIS	DRAWN BY: Y.CAO/I.ALMY
DESIGNED BY: J.SOBEL	CHECKED BY: D.FLYNN
ROADWAY TMP PHASE 2 SHEET 2	SHEET 80 OF 133



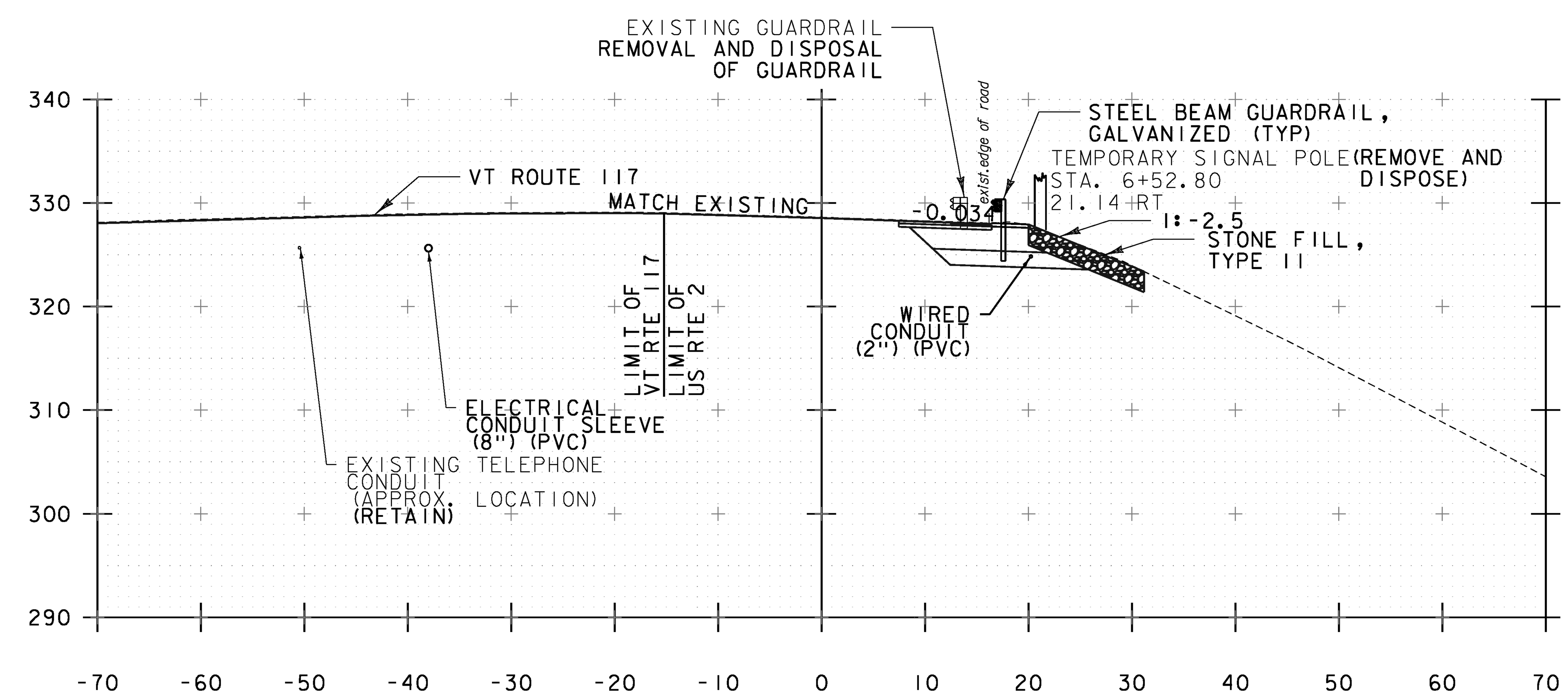
STA. 6+00 SKEWED 22°07′37″
BEGIN PROJECT
MATCH EXISTING BCP



STA. 6+75.02 SKEWED 11°17′15″



5+50

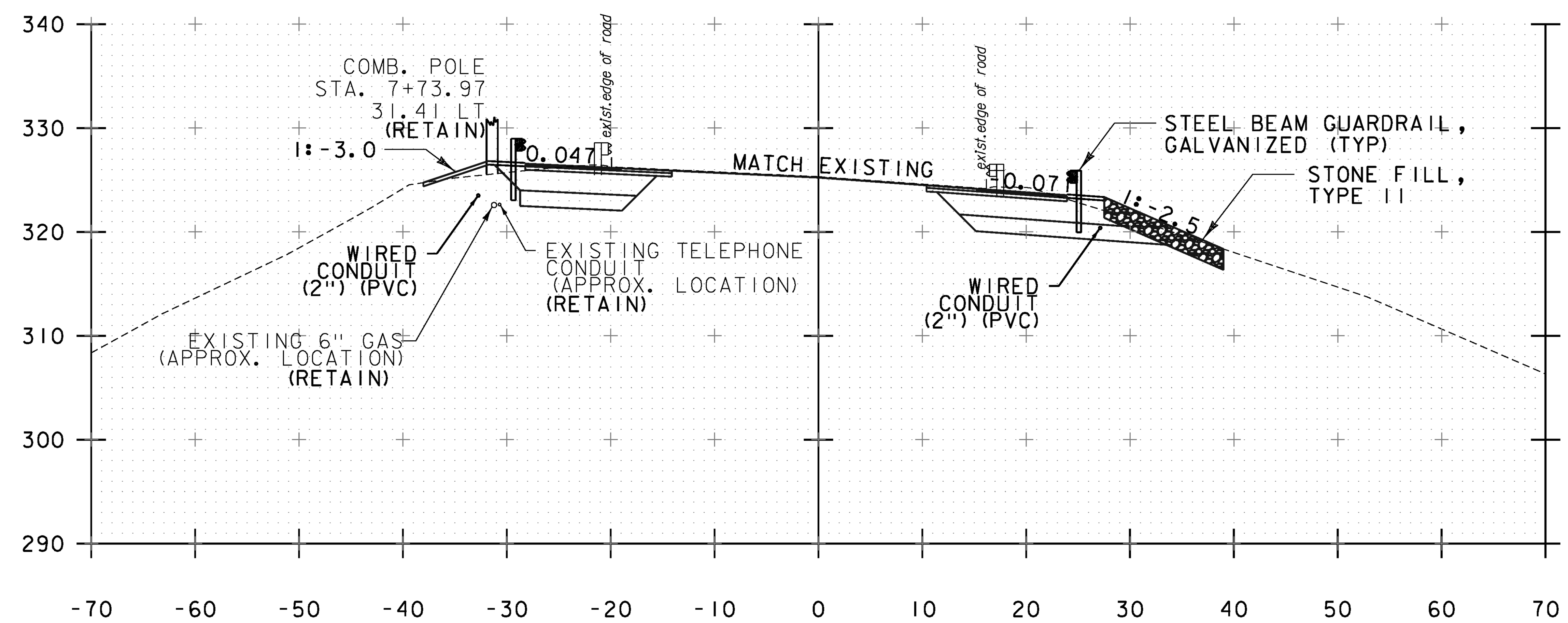


6+50

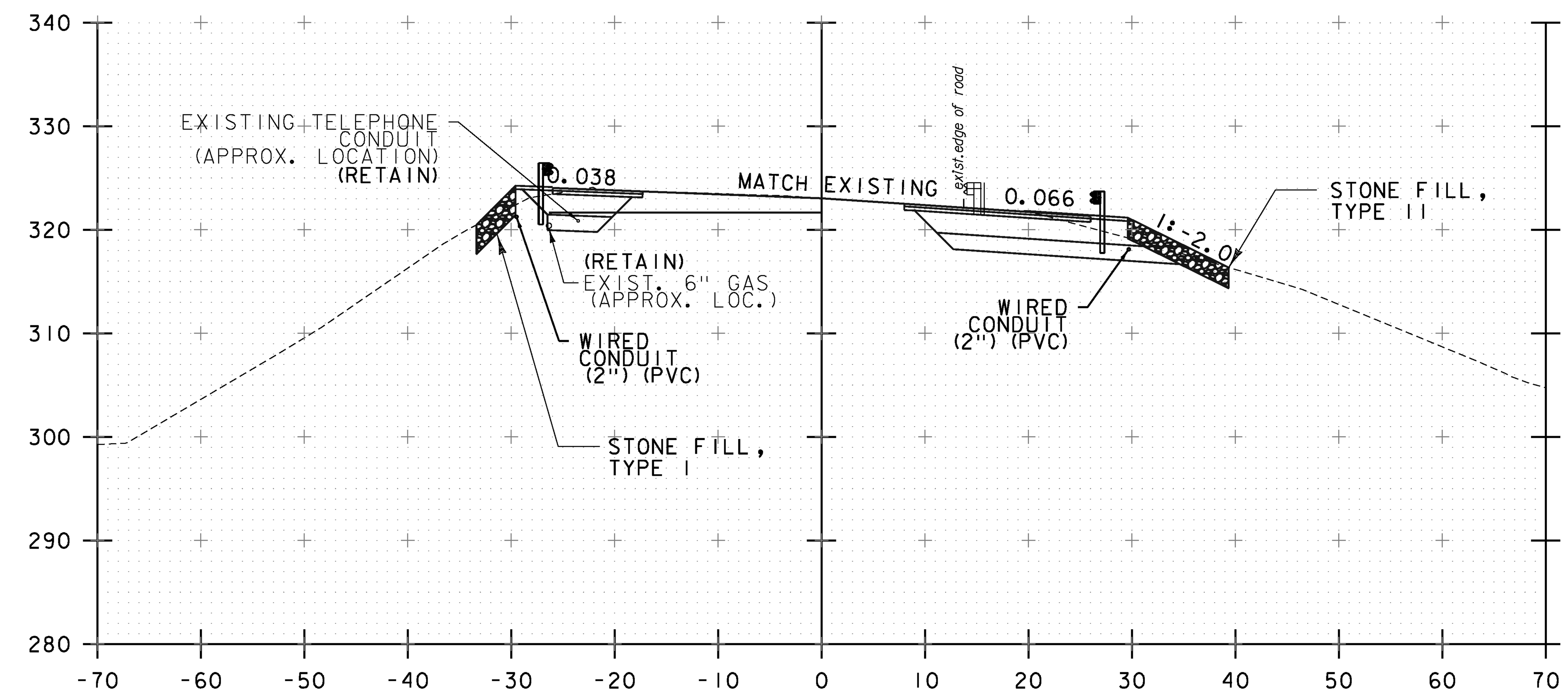
NOTE:
REFER TO SHEET 90 OF 133 FOR CROSS SECTIONS AT THE PROPOSED MAST ARM POLES.

STA. 5+50 TO STA. 6+75.02

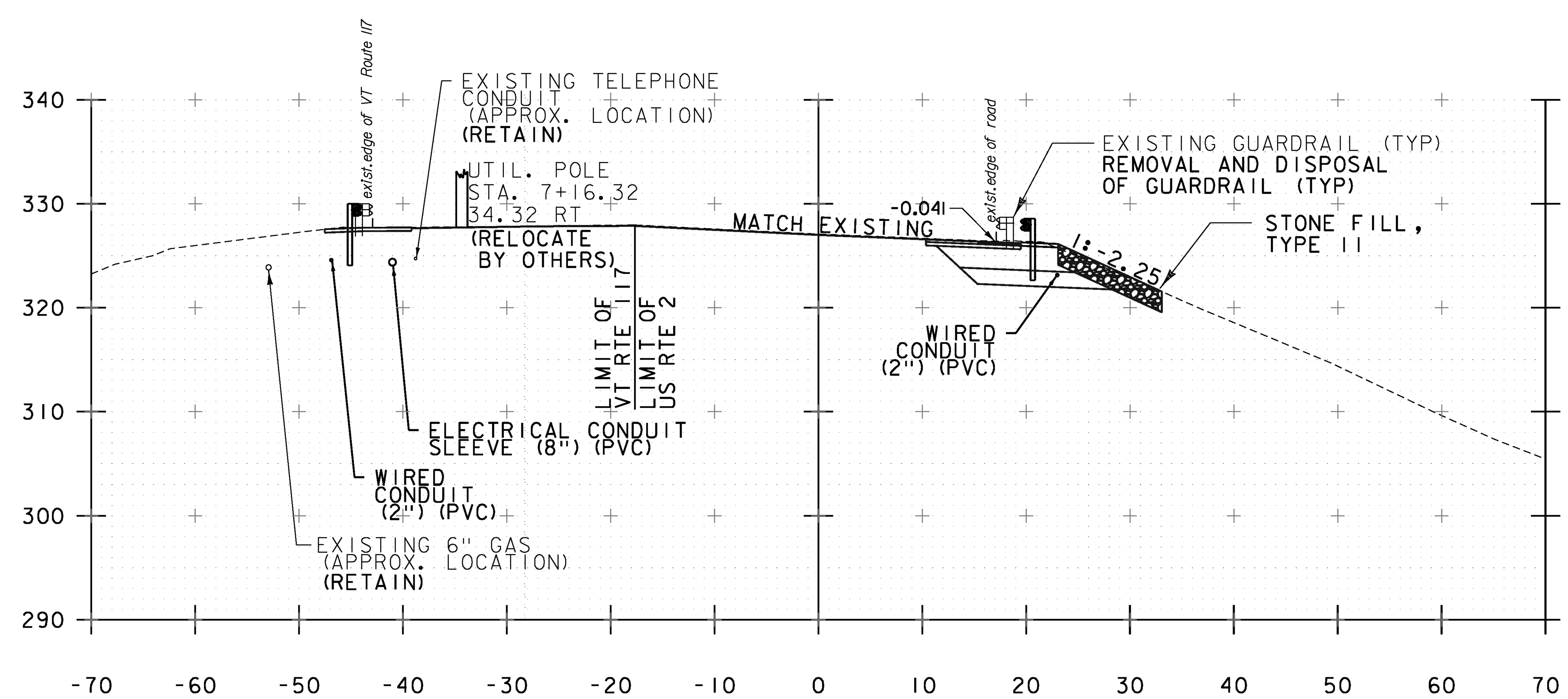
PROJECT NAME: RICHMOND	
PROJECT NUMBER: STP 0284 (17)	
FILE NAME: z97c186xsl.dgn	PLOT DATE: 4/26/2013
PROJECT LEADER: ERIK ATKINS	DRAWN BY: S. FORTIER
DESIGNED BY: T. BIGELOW	CHECKED BY: E. ATKINS
US ROUTE 2 CROSS SECTIONS SHEET 1	SHEET 81 OF 133



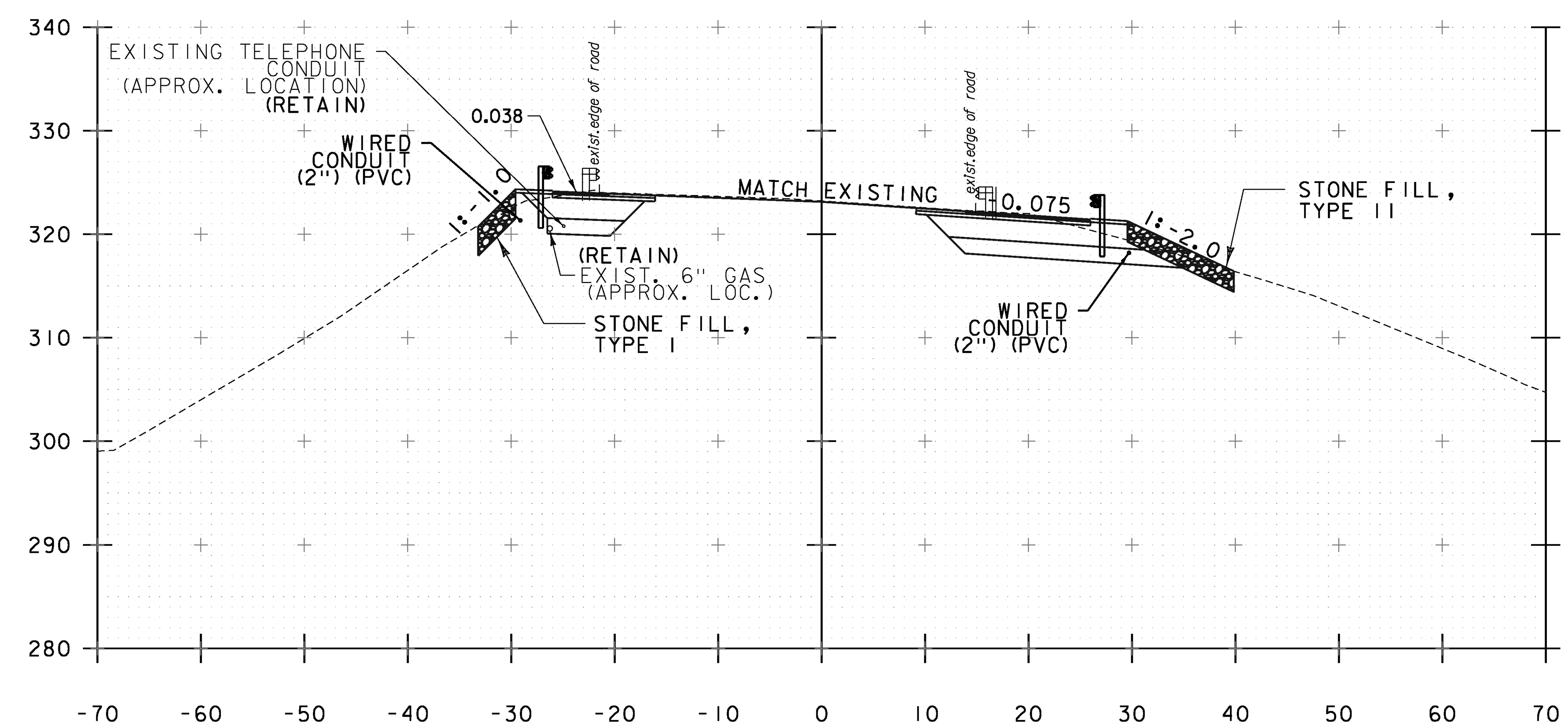
7+50



PT 8+03.80



7+00



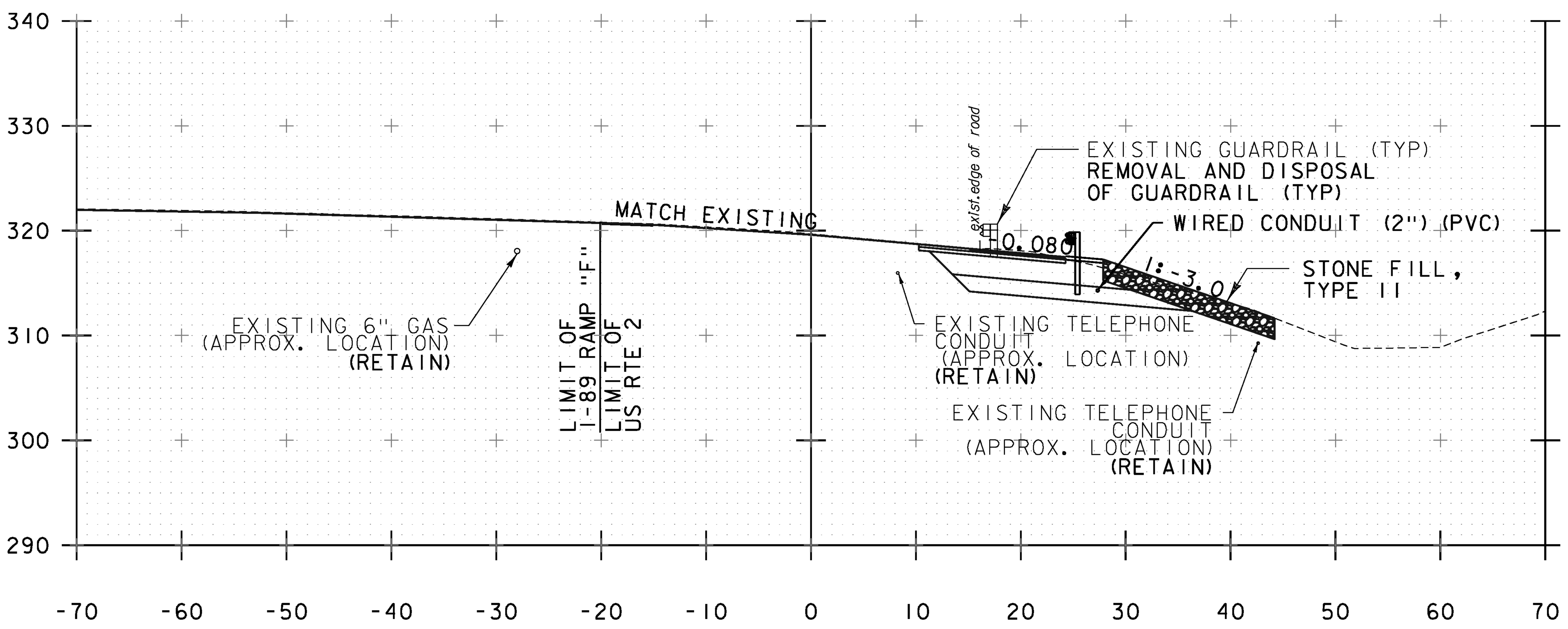
8+00

NOTE:
REFER TO SHEET 90 OF 133 FOR CROSS SECTIONS AT THE PROPOSED MAST ARM POLES.

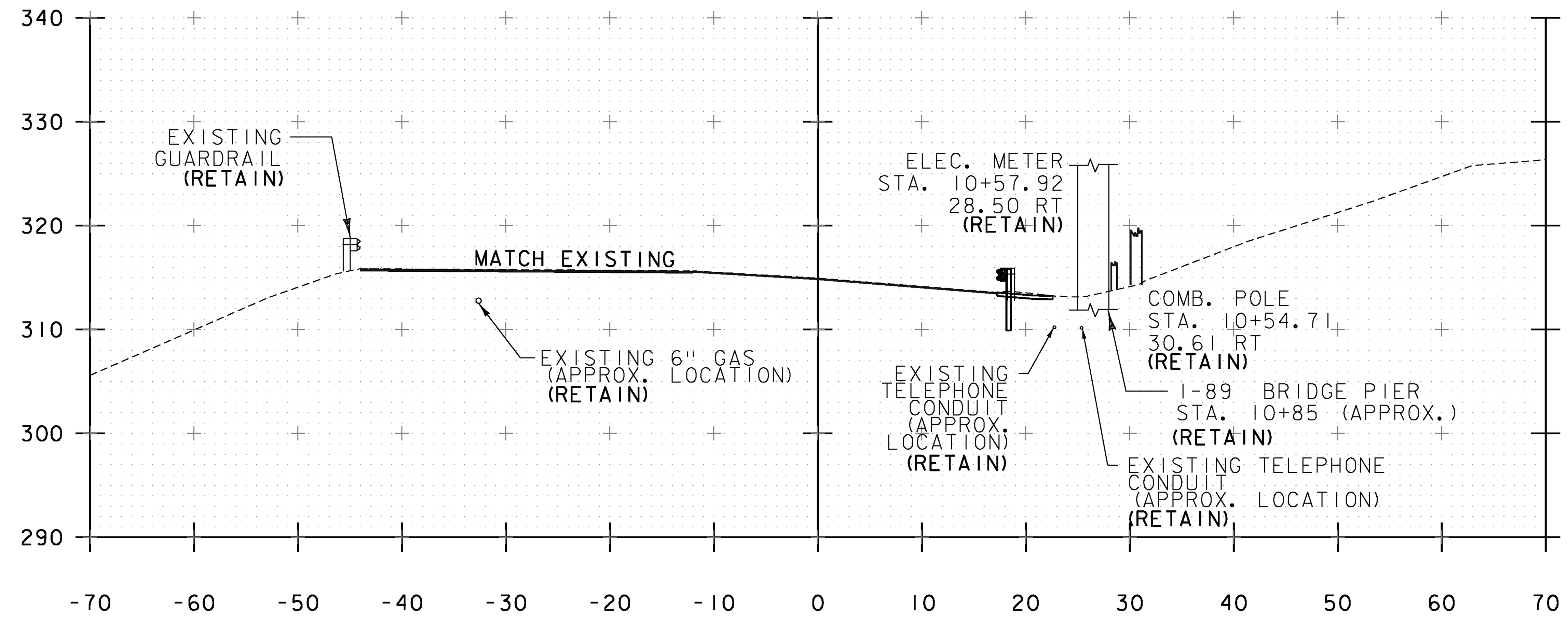
STA. 7+00 TO STA. 8+03.80

PROJECT NAME: RICHMOND
PROJECT NUMBER: STP 0284 (17)

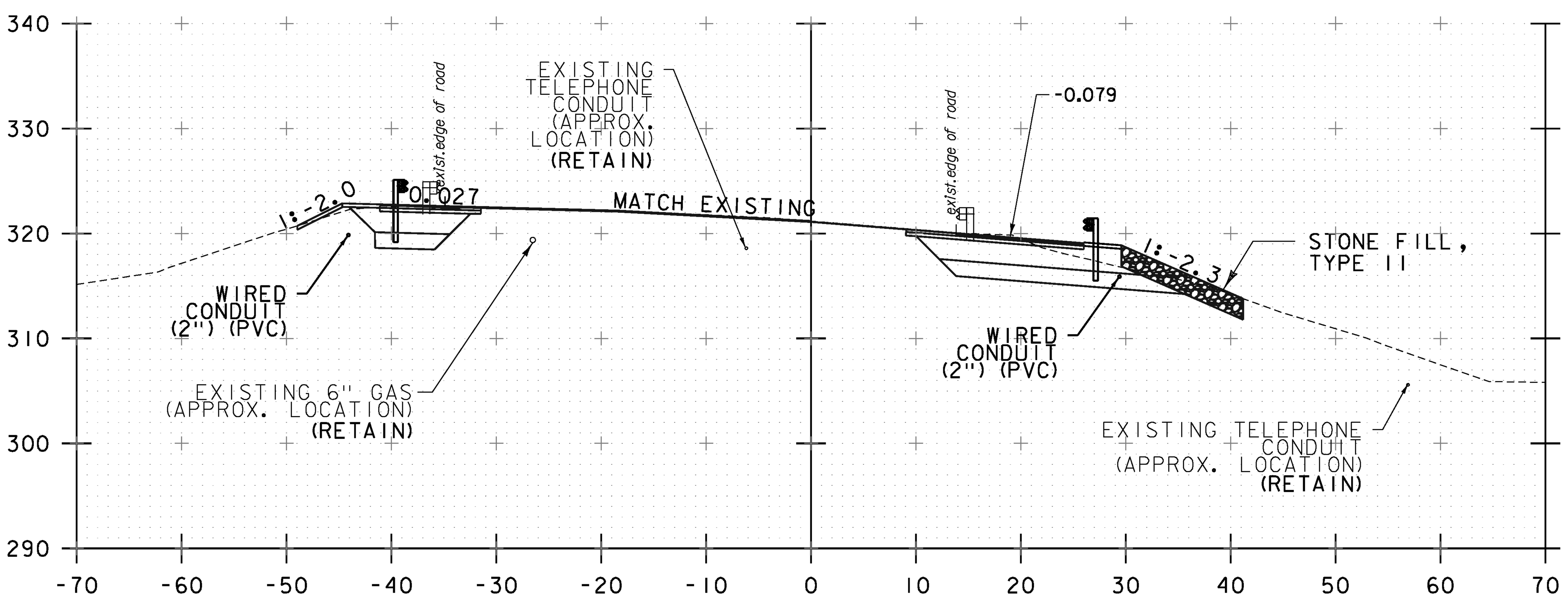
FILE NAME: z97c186xsl.dgn	PLOT DATE: 4/29/2013
PROJECT LEADER: ERIK ATKINS	DRAWN BY: S. FORTIER
DESIGNED BY: T. BIGELOW	CHECKED BY: E. ATKINS
US ROUTE 2 CROSS SECTIONS SHEET 2	SHEET 82 OF 133



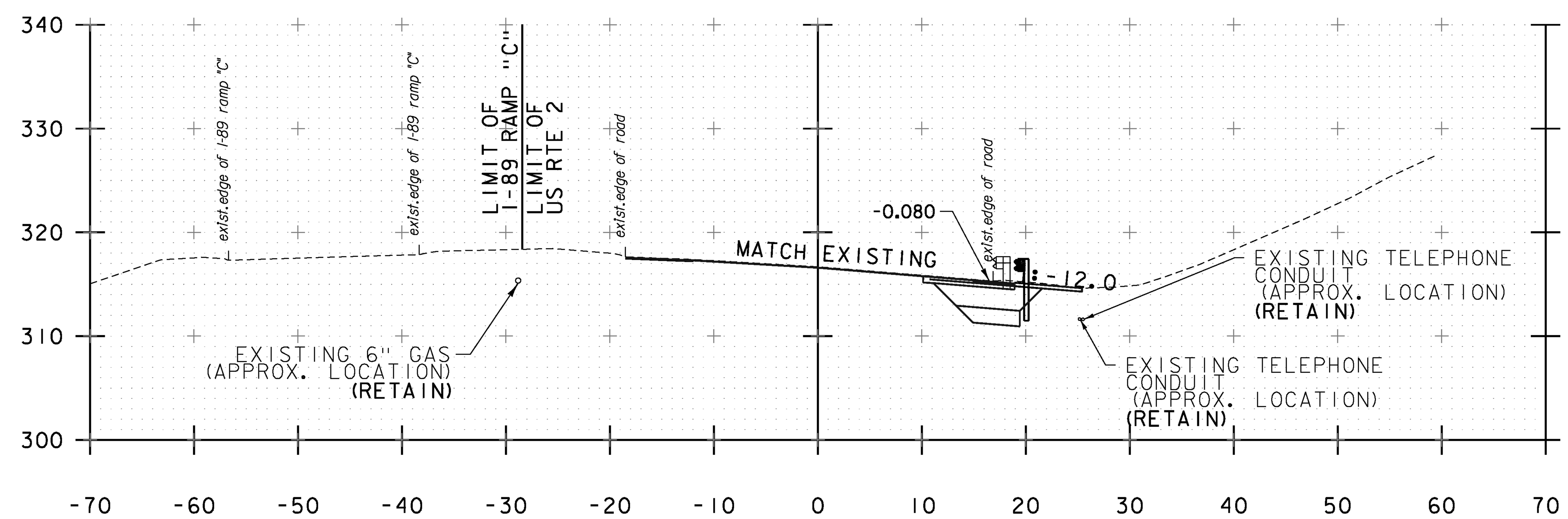
9+00



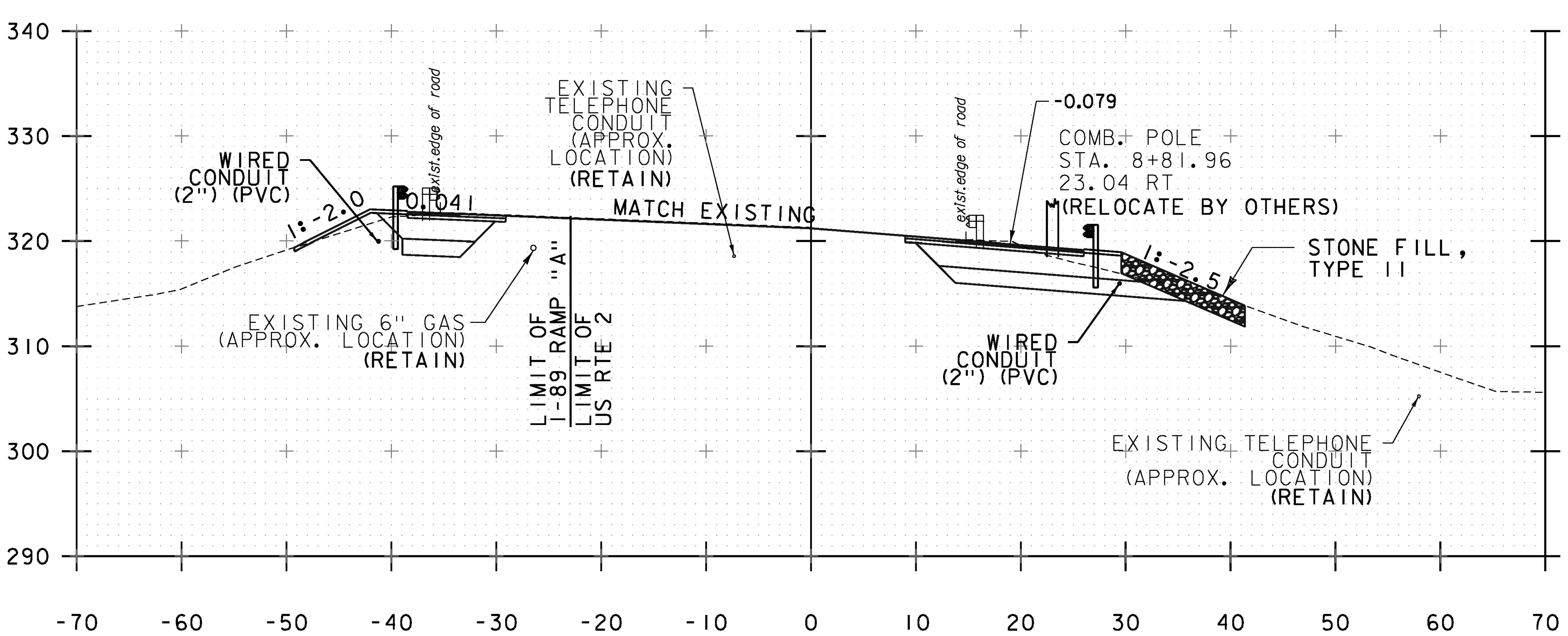
10+50



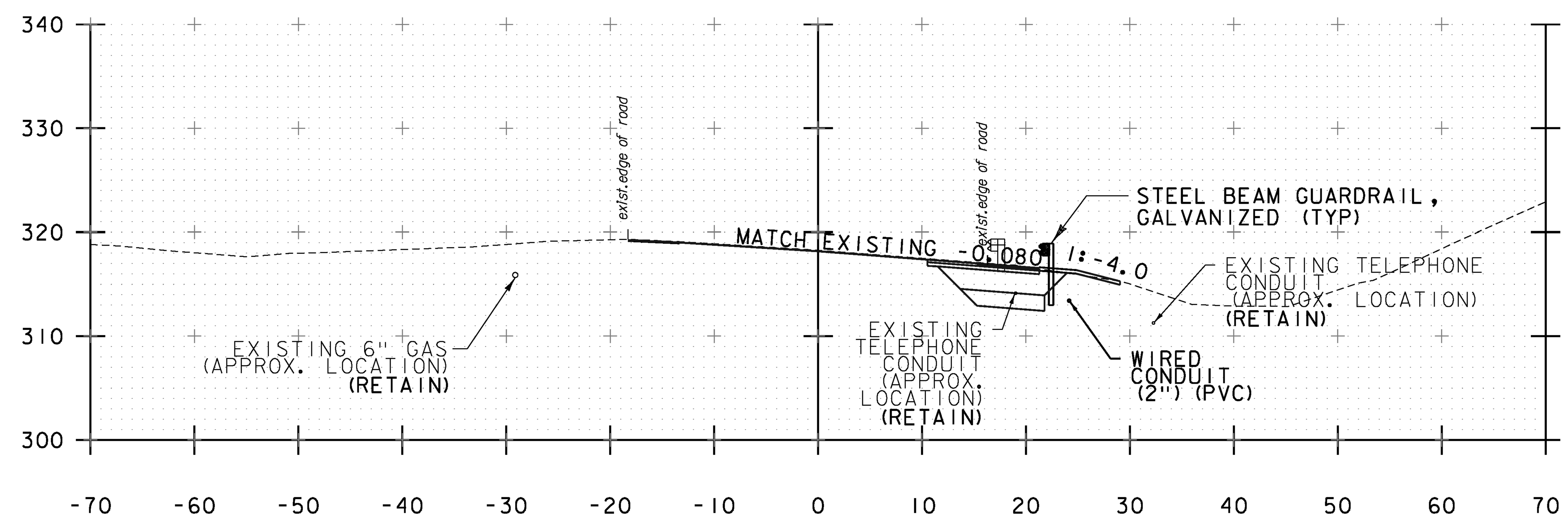
PC 8+53.21



10+00



8+50



9+50

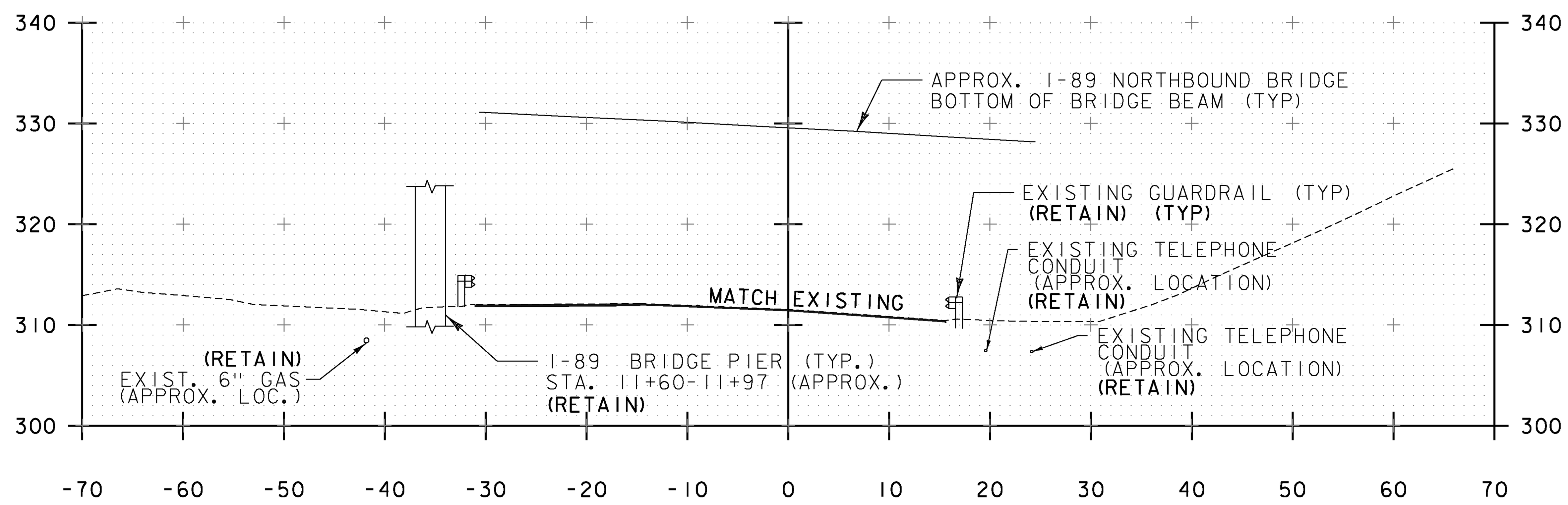
NOTE:
REFER TO SHEET 90 OF 133 FOR CROSS SECTIONS AT THE PROPOSED MAST ARM POLES.

STA. 8+50 TO STA. 10+50

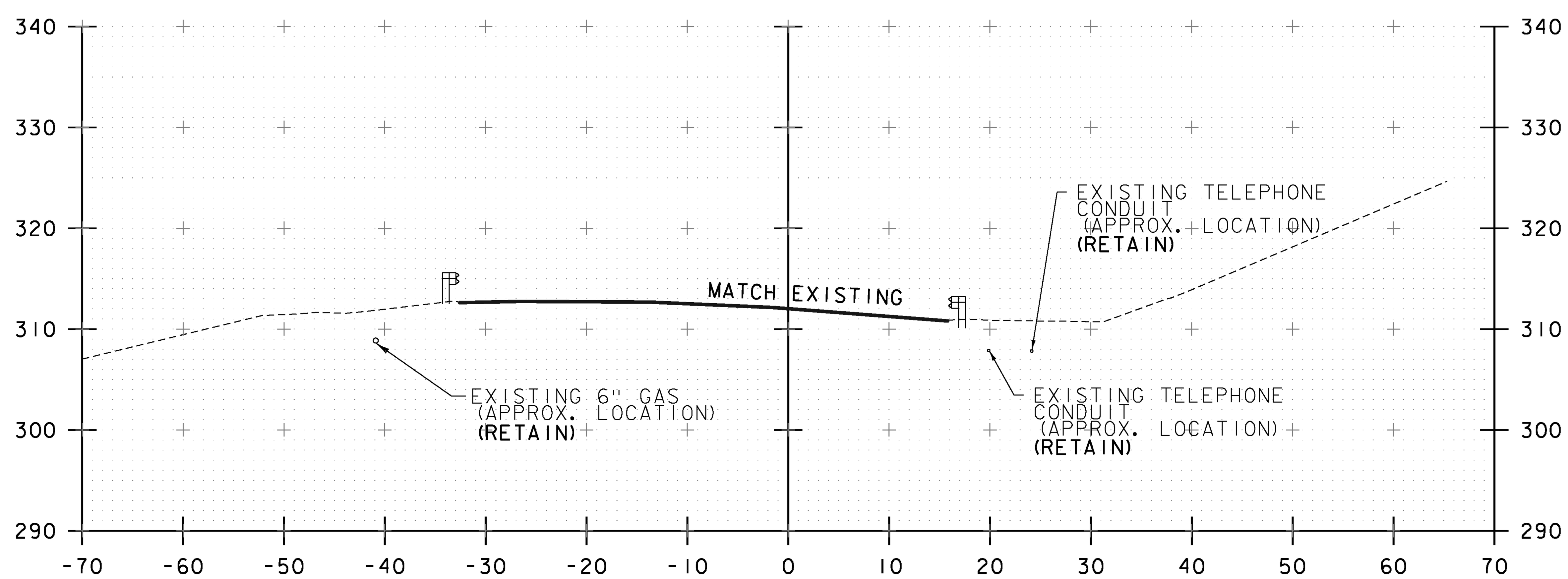
PROJECT NAME: RICHMOND
PROJECT NUMBER: STP 0284 (17)

FILE NAME: z97cl86xsl.dgn
PROJECT LEADER: ERIK ATKINS
DESIGNED BY: T. BIGELOW
US ROUTE 2 CROSS SECTIONS SHEET 3

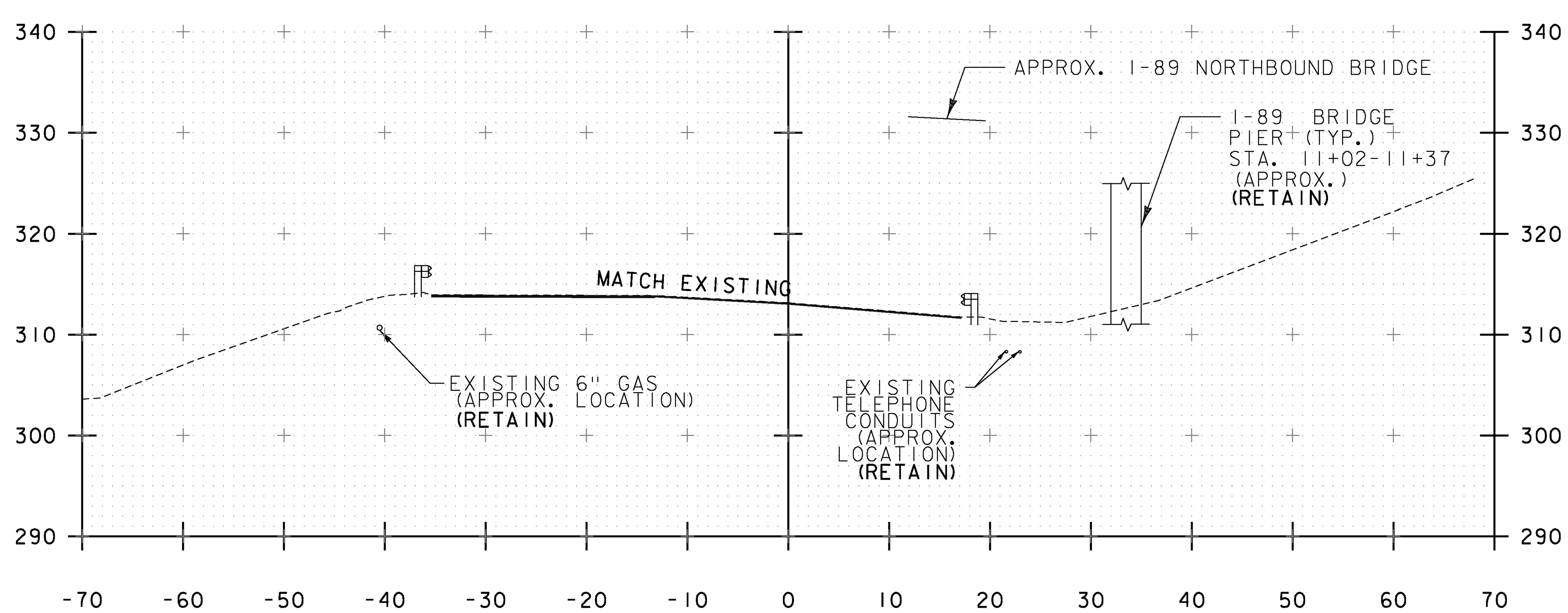
PLOT DATE: 4/26/2013
DRAWN BY: S. FORTIER
CHECKED BY: E. ATKINS
SHEET 83 OF 133



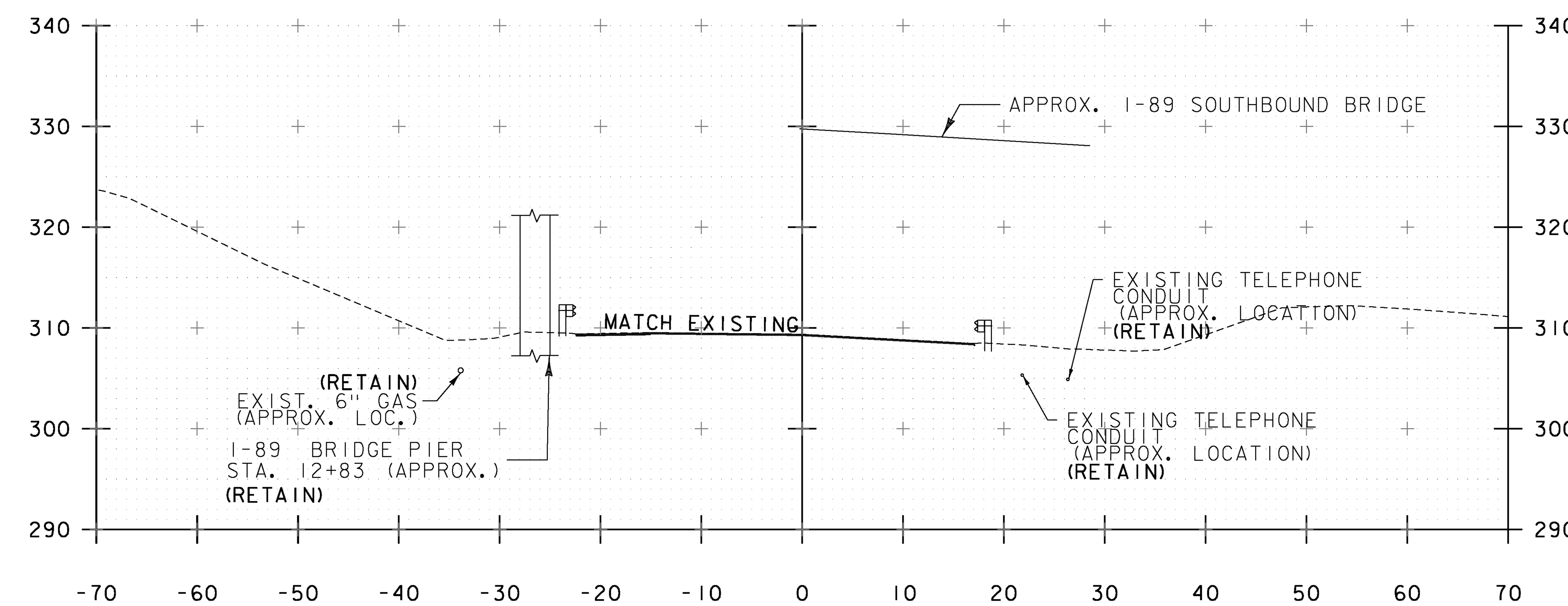
11+50



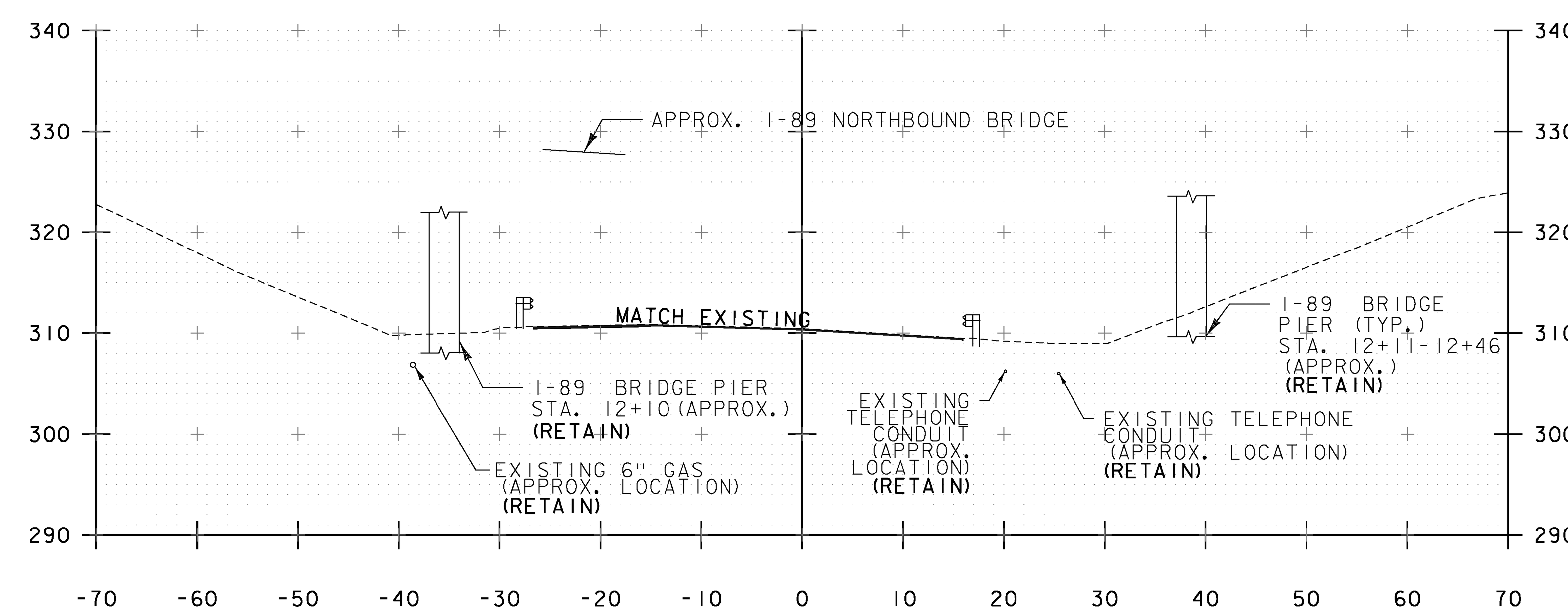
PT 11+29.79



11+00



12+50

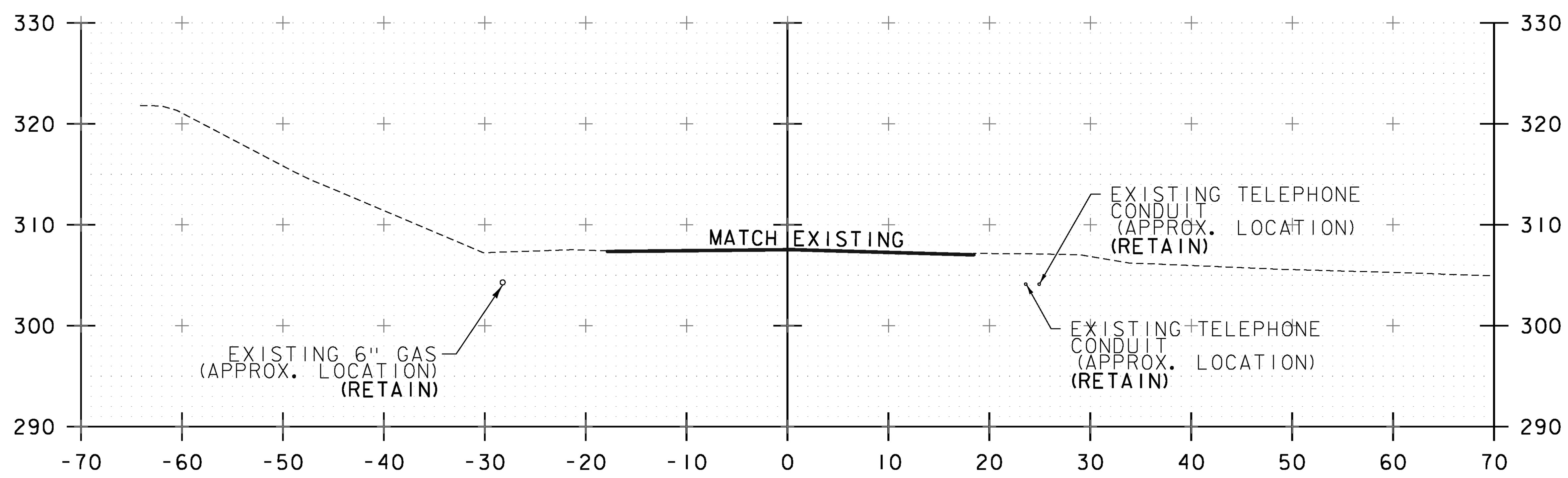


12+00

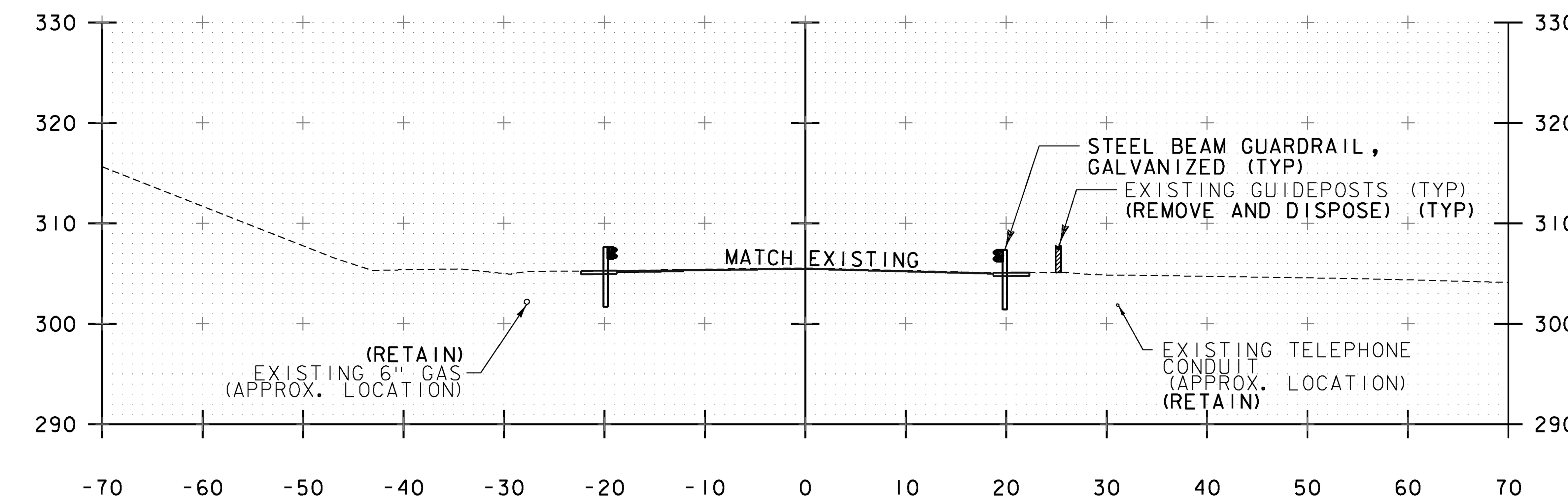
NOTE:
REFER TO SHEET 90 OF 133 FOR CROSS SECTIONS AT THE PROPOSED MAST ARM POLES.

STA. 11+00 TO STA. 12+50

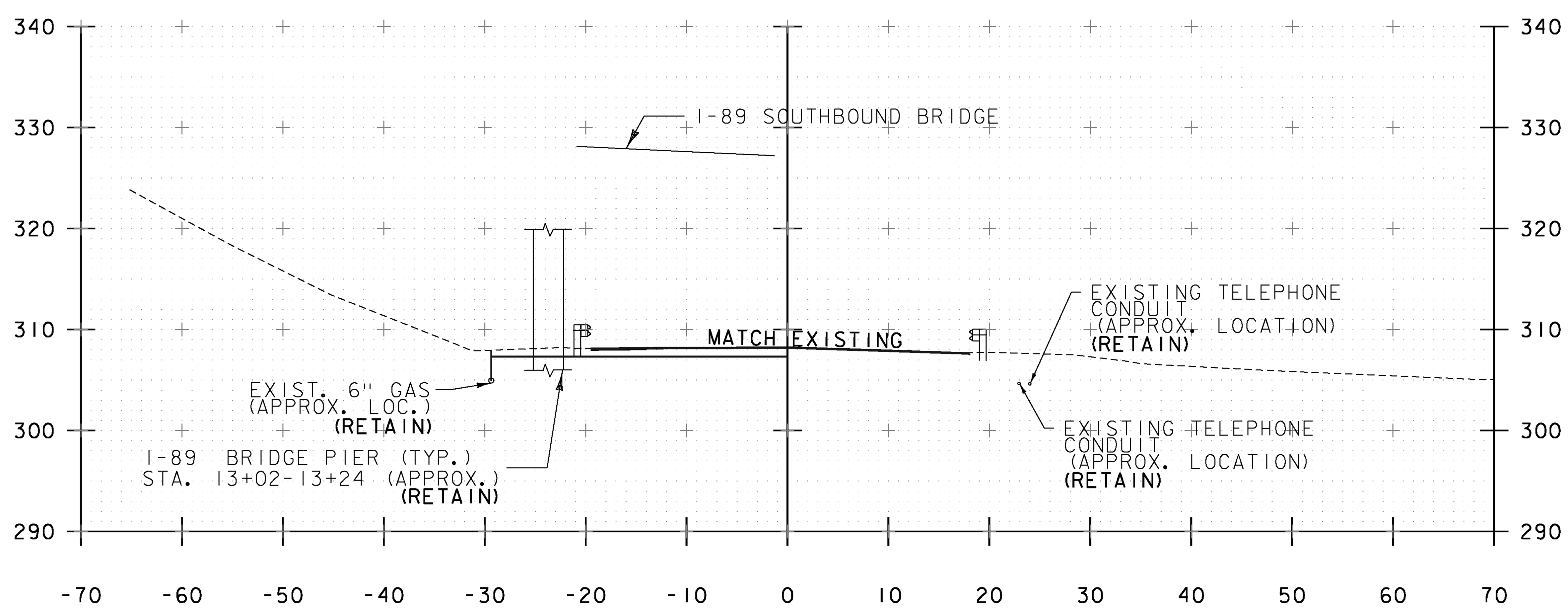
PROJECT NAME: RICHMOND	
PROJECT NUMBER: STP 0284 (17)	
FILE NAME: z97c186xsl.dgn	PLOT DATE: 4/29/2013
PROJECT LEADER: ERIK ATKINS	DRAWN BY: S. FORTIER
DESIGNED BY: T. BIGELOW	CHECKED BY: E. ATKINS
US ROUTE 2 CROSS SECTIONS SHEET 4	SHEET 84 OF 133



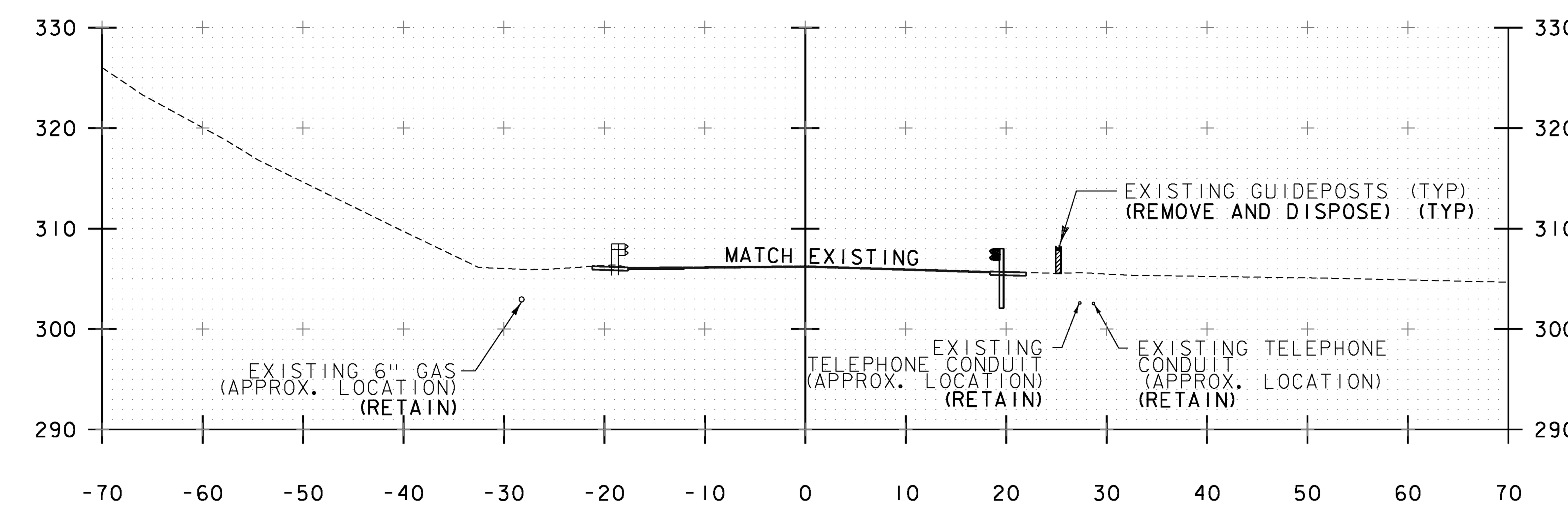
PT 13+31.08



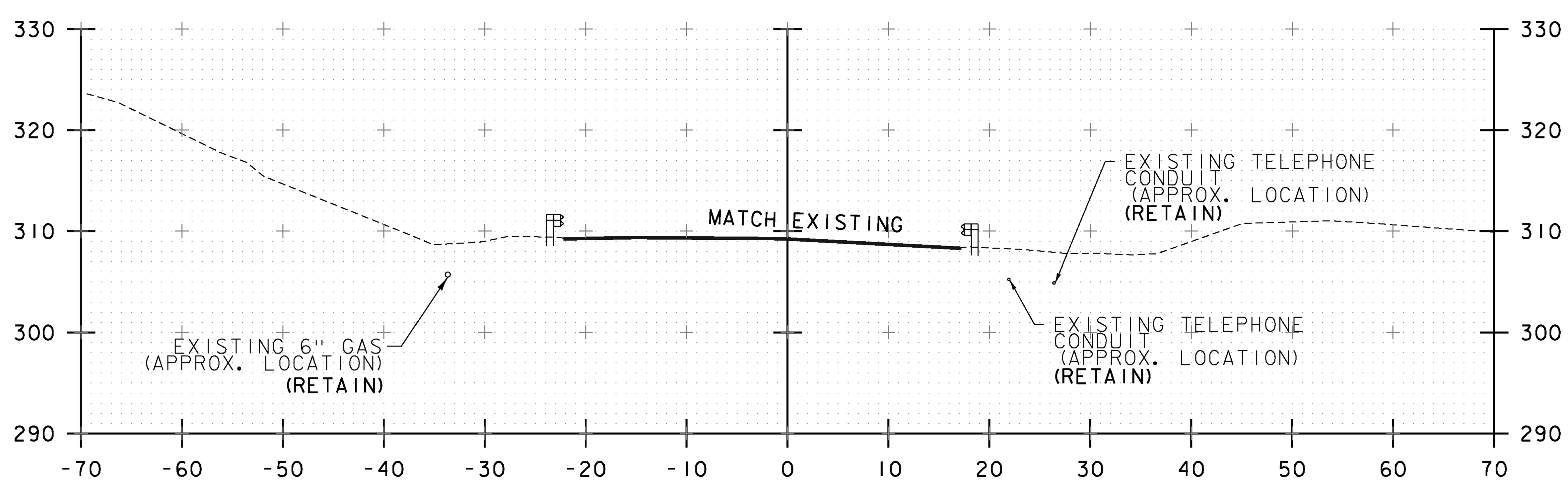
14+50



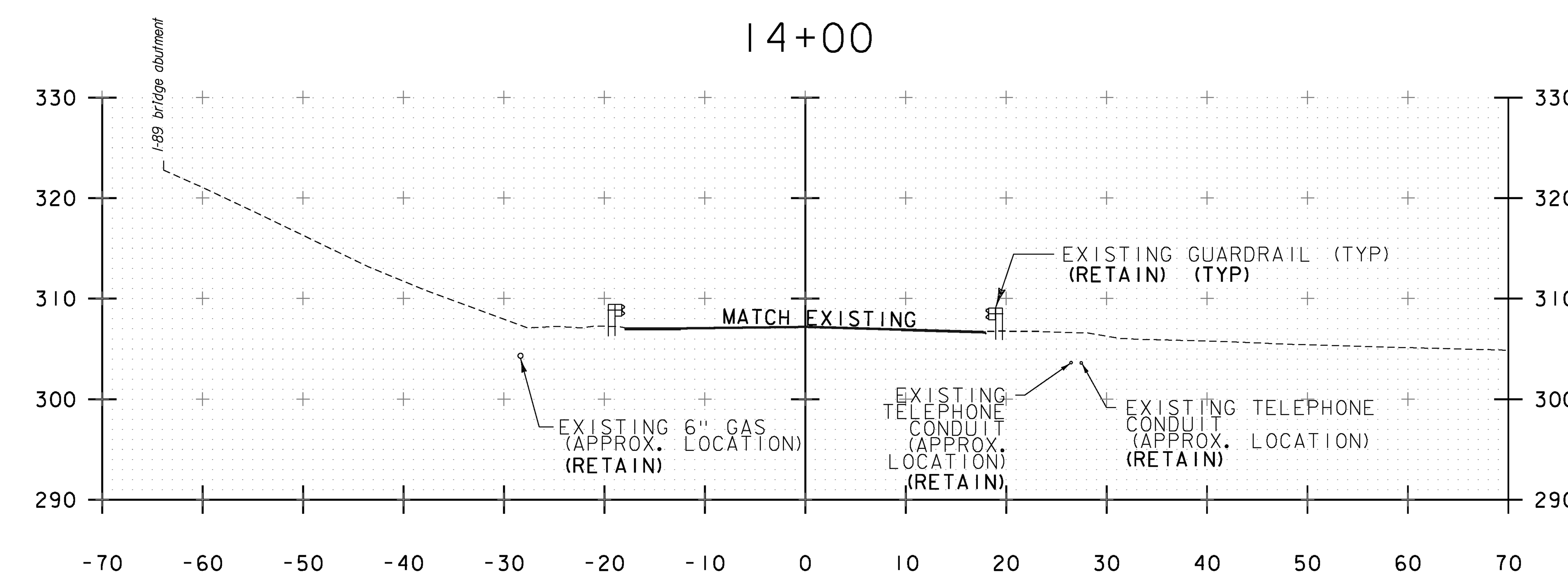
13+00



14+00



PC 12+53.46

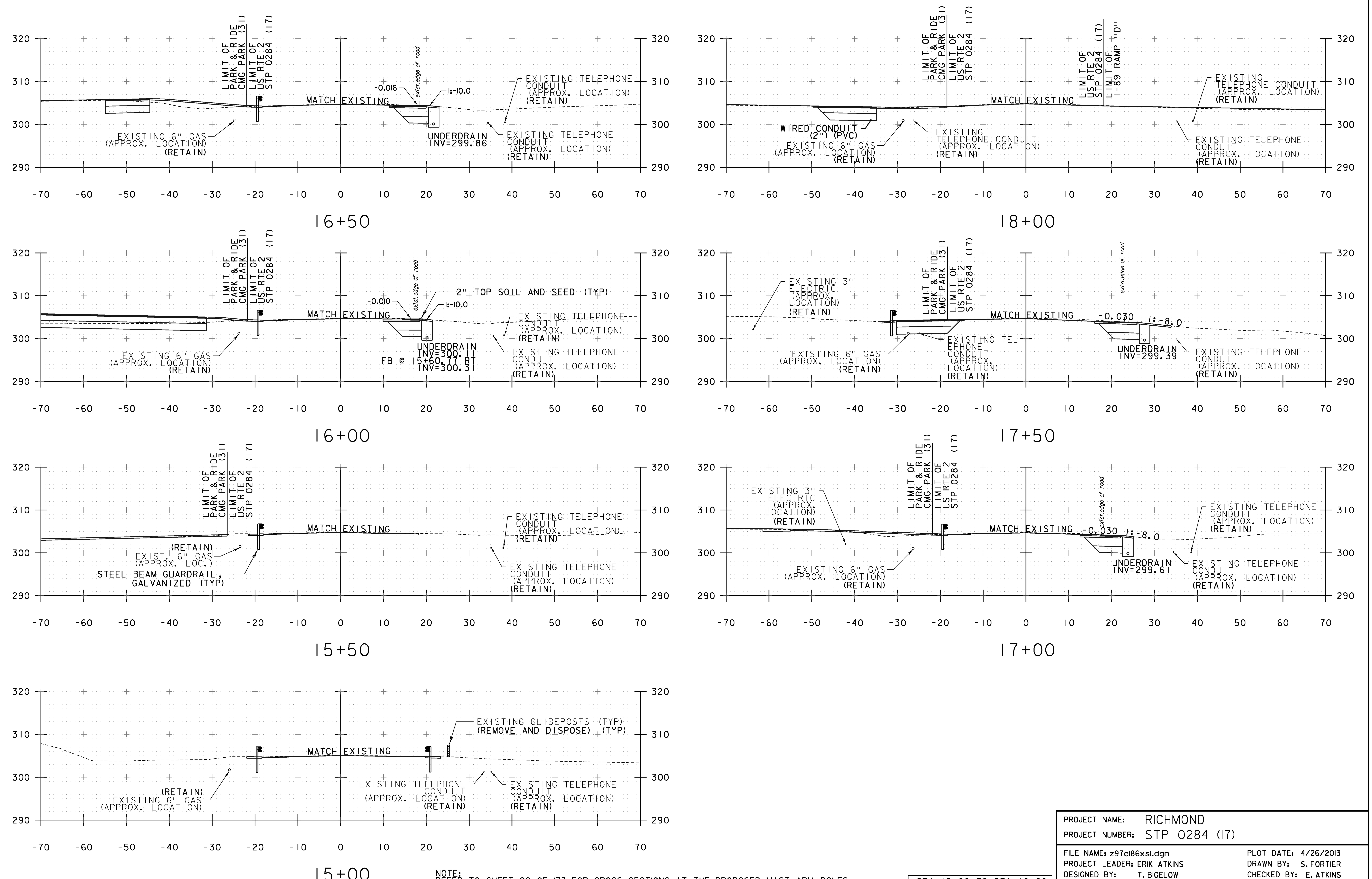


13+50

NOTE:
REFER TO SHEET 90 OF 133 FOR CROSS SECTIONS AT THE PROPOSED MAST ARM POLES.

STA. 12+53.46 TO STA. 14+50

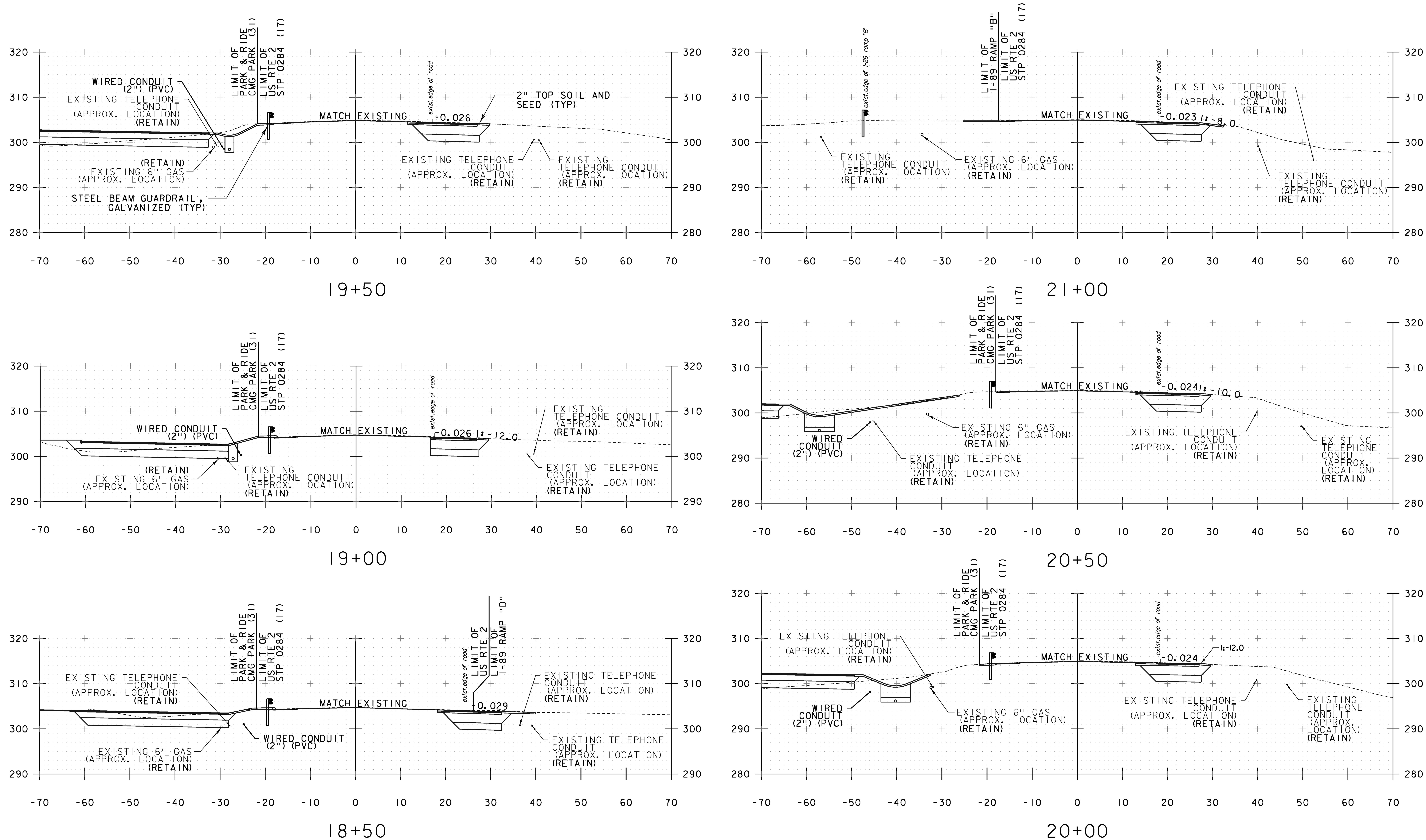
PROJECT NAME: RICHMOND	
PROJECT NUMBER: STP 0284 (17)	
FILE NAME: z97cl86xsl.dgn	PLOT DATE: 4/29/2013
PROJECT LEADER: ERIK ATKINS	DRAWN BY: S. FORTIER
DESIGNED BY: T. BIGELOW	CHECKED BY: E. ATKINS
US ROUTE 2 CROSS SECTIONS SHEET 5	SHEET 85 OF 133



NOTE:
REFER TO SHEET 90 OF 133 FOR CROSS SECTIONS AT THE PROPOSED MAST ARM POLES.

STA. 15+00 TO STA. 18+00

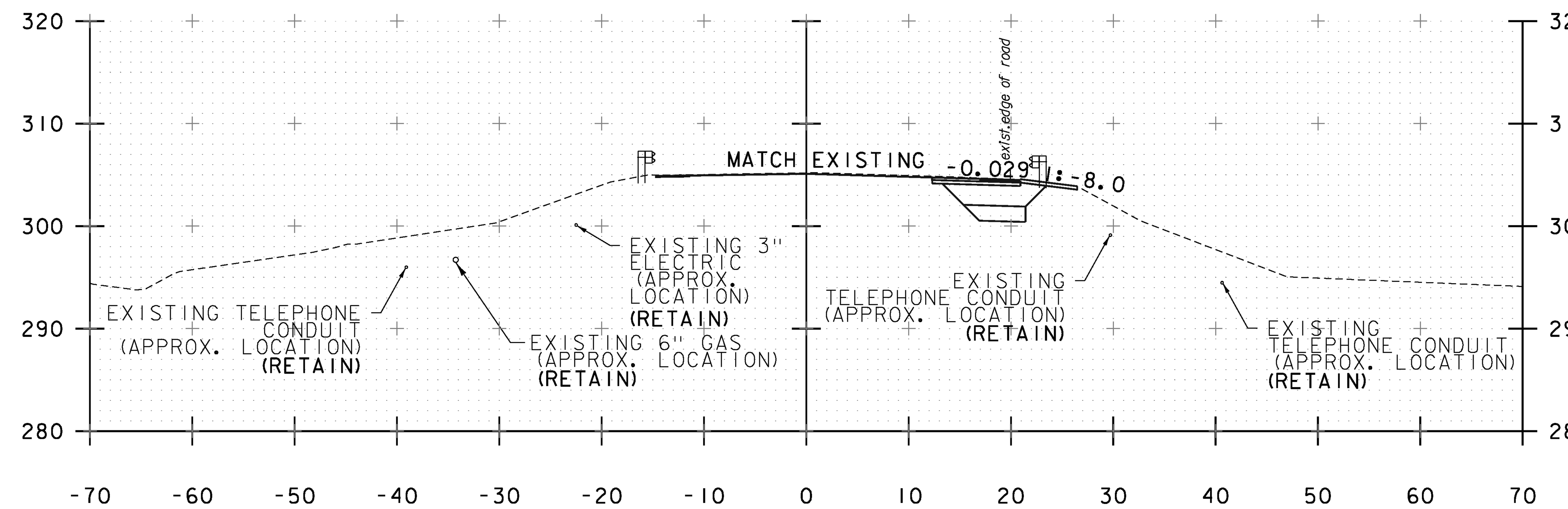
PROJECT NAME: RICHMOND	
PROJECT NUMBER: STP 0284 (17)	
FILE NAME: z97c186xsl.dgn	PLOT DATE: 4/26/2013
PROJECT LEADER: ERIK ATKINS	DRAWN BY: S. FORTIER
DESIGNED BY: T. BIGELOW	CHECKED BY: E. ATKINS
US ROUTE 2 CROSS SECTIONS SHEET 6	SHEET 86 OF 133



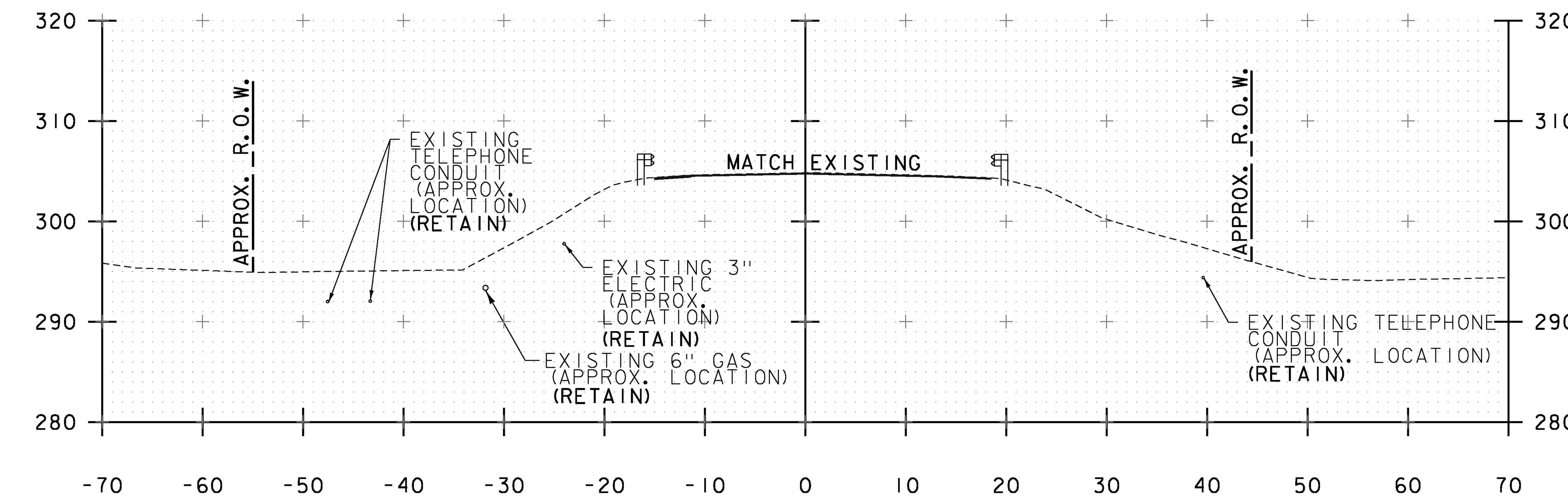
NOTE:
REFER TO SHEET 90 OF 133 FOR CROSS SECTIONS AT THE PROPOSED MAST ARM POLES.

STA. 18+50 TO STA. 21+00

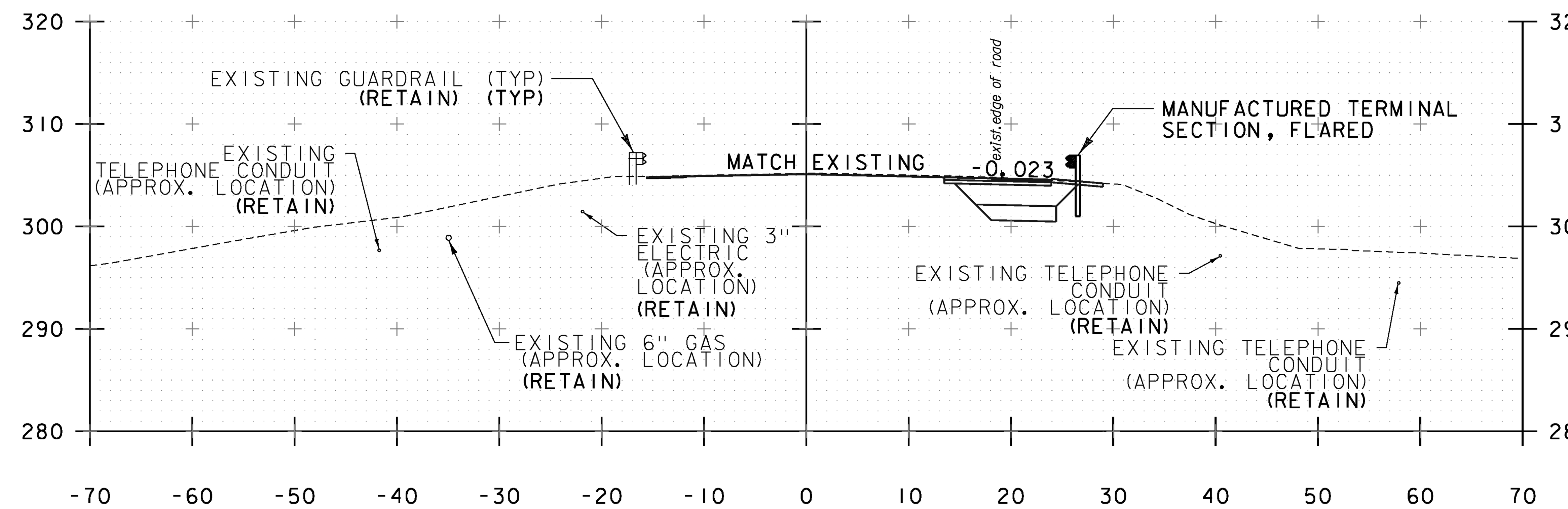
PROJECT NAME: RICHMOND	
PROJECT NUMBER: STP 0284 (17)	
FILE NAME: z97c186xsl.dgn	PLOT DATE: 4/26/2013
PROJECT LEADER: ERIK ATKINS	DRAWN BY: S. FORTIER
DESIGNED BY: T. BIGELOW	CHECKED BY: E. ATKINS
US ROUTE 2 CROSS SECTIONS SHEET 7	SHEET 87 OF 133



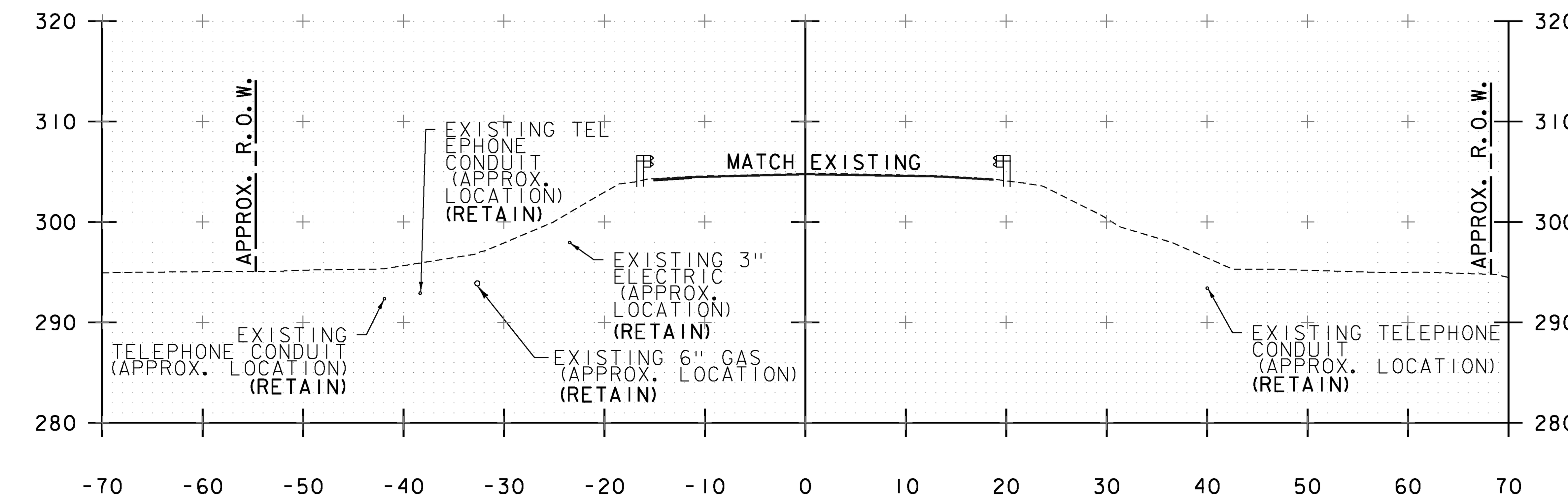
22+50



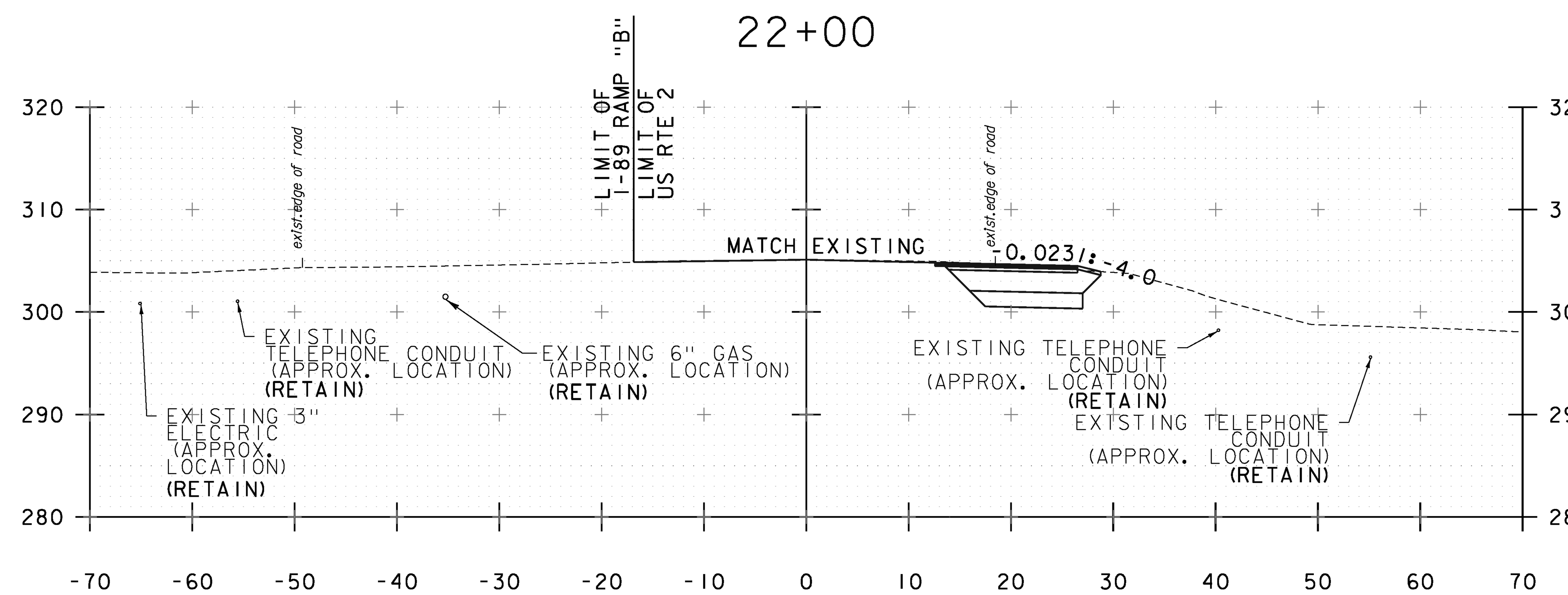
24+00



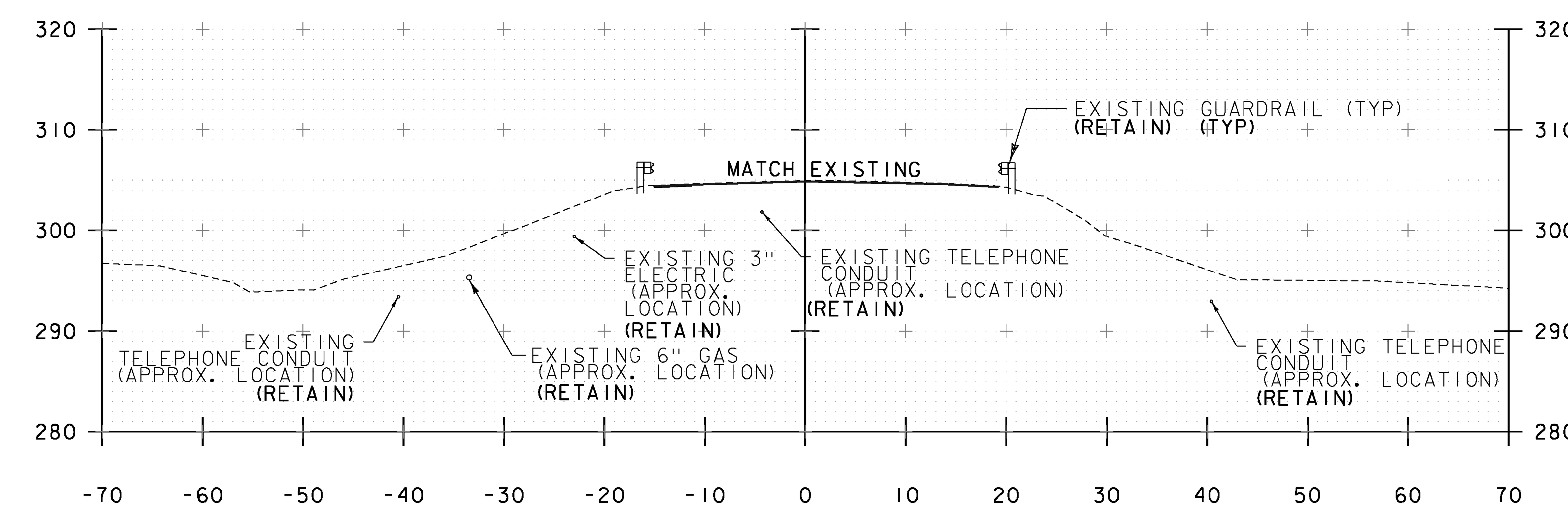
22+00



23+50



21+50

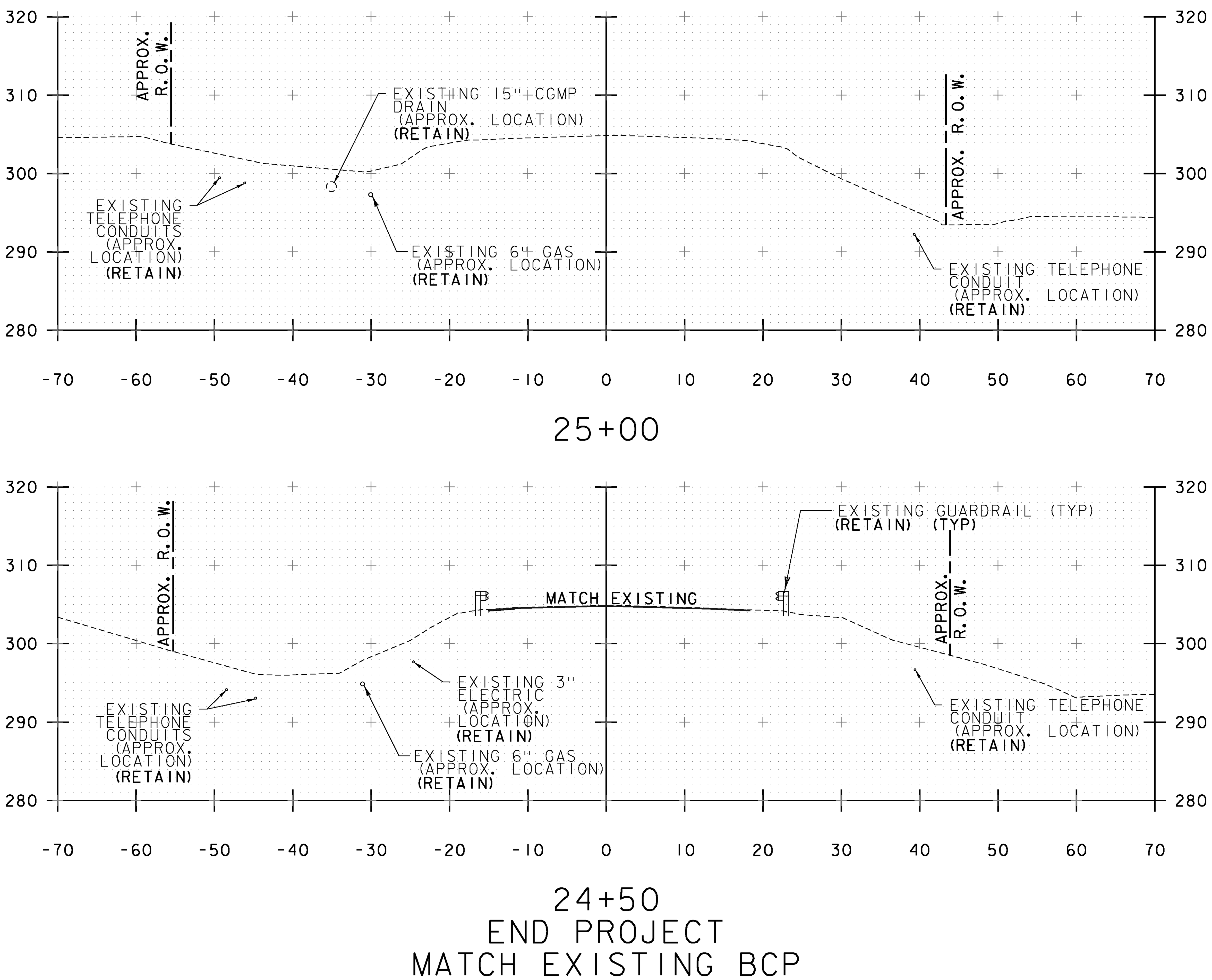


23+00

NOTE:
REFER TO SHEET 90 OF 133 FOR CROSS SECTIONS AT THE PROPOSED MAST ARM POLES.

STA. 21+50 TO STA. 24+00

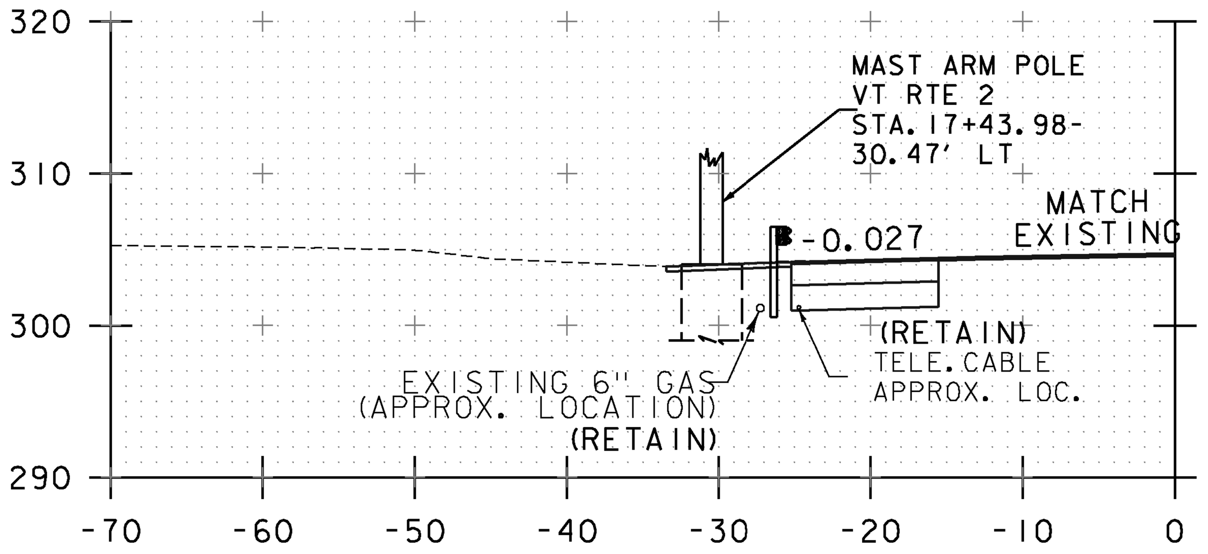
PROJECT NAME: RICHMOND	
PROJECT NUMBER: STP 0284 (17)	
FILE NAME: z97c186xsl.dgn	PLOT DATE: 4/26/2013
PROJECT LEADER: ERIK ATKINS	DRAWN BY: S. FORTIER
DESIGNED BY: T. BIGELOW	CHECKED BY: E. ATKINS
US ROUTE 2 CROSS SECTIONS SHEET 8	SHEET 88 OF 133



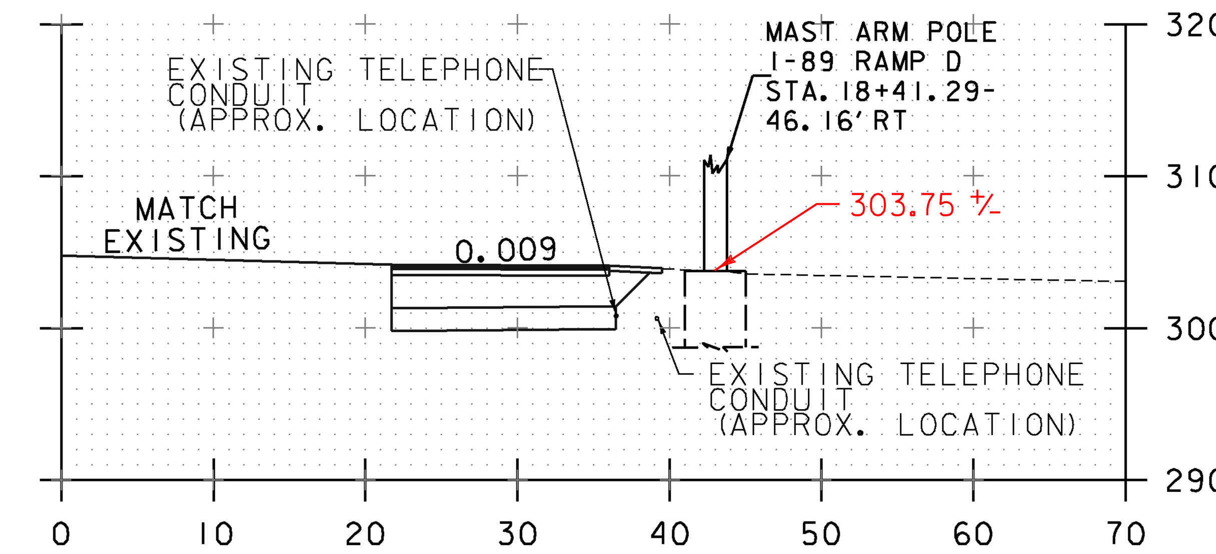
NOTE:
REFER TO SHEET 90 OF 133 FOR CROSS SECTIONS AT THE PROPOSED MAST ARM POLES.

STA. 24+50 TO STA. 25+00

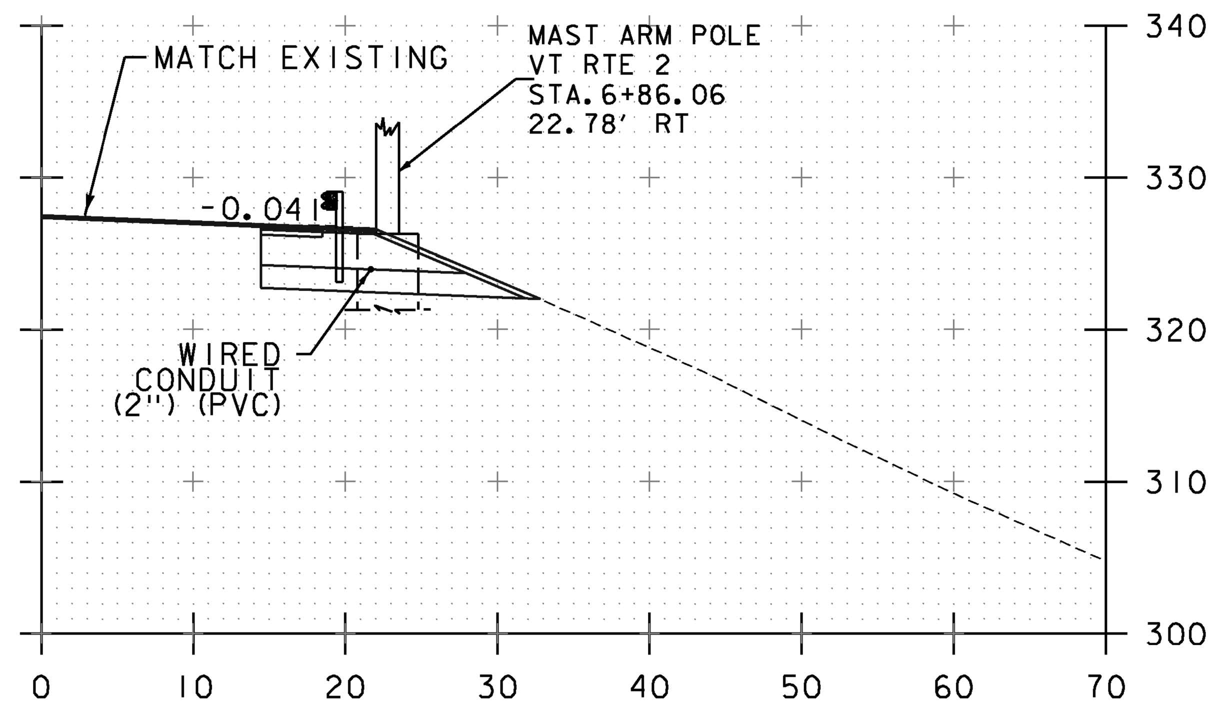
PROJECT NAME: RICHMOND	
PROJECT NUMBER: STP 0284 (17)	
FILE NAME: z97c186xsl.dgn	PLOT DATE: 4/29/2013
PROJECT LEADER: ERIK ATKINS	DRAWN BY: S. FORTIER
DESIGNED BY: T. BIGELOW	CHECKED BY: E. ATKINS
US ROUTE 2 CROSS SECTIONS SHEET 9	SHEET 89 OF 133



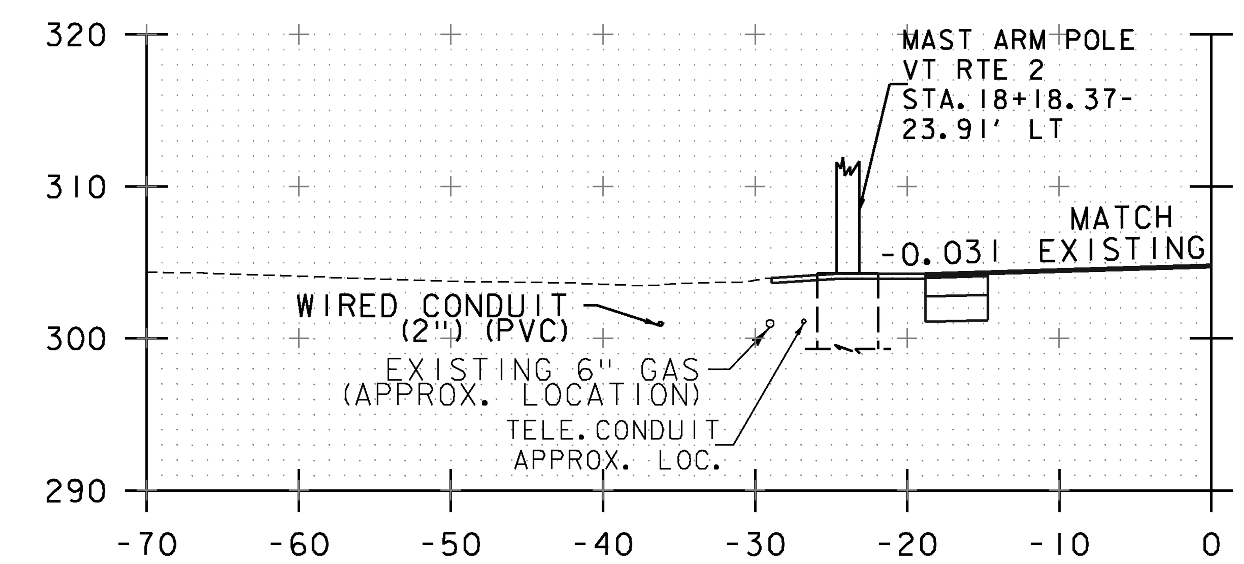
VT ROUTE 2 STA. 17+43.98 - 30.47' LT
MAST ARM POLE # MP2B



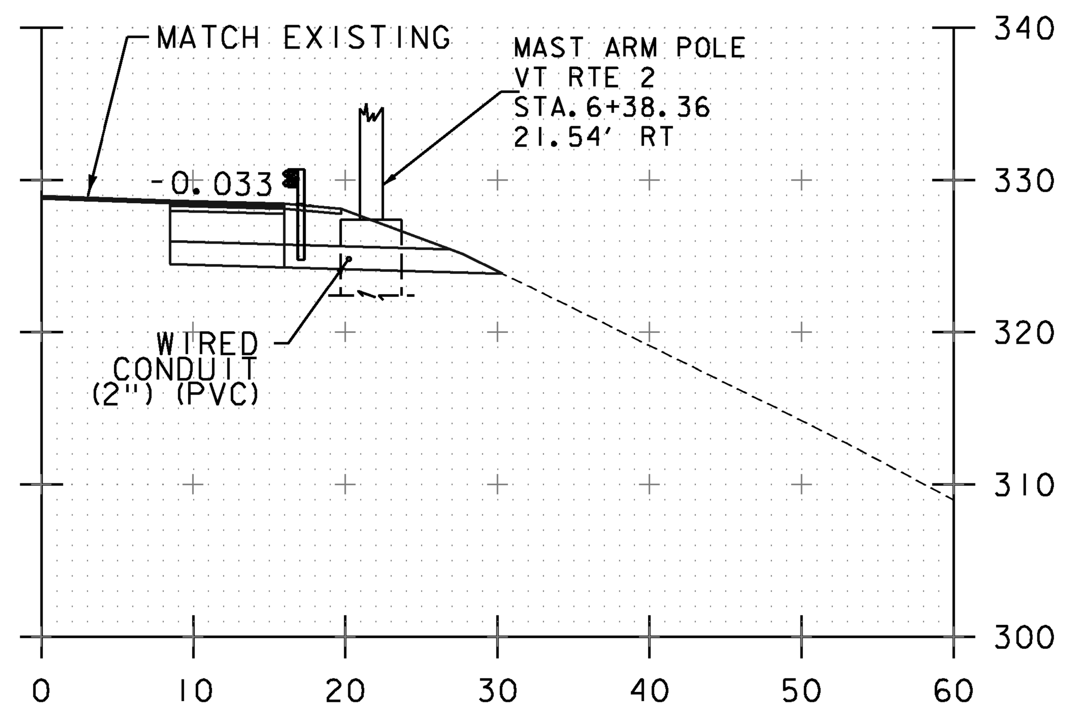
VT ROUTE 2 STA. 18+41.29-46.16' RT
MAST ARM POLE # MP2D



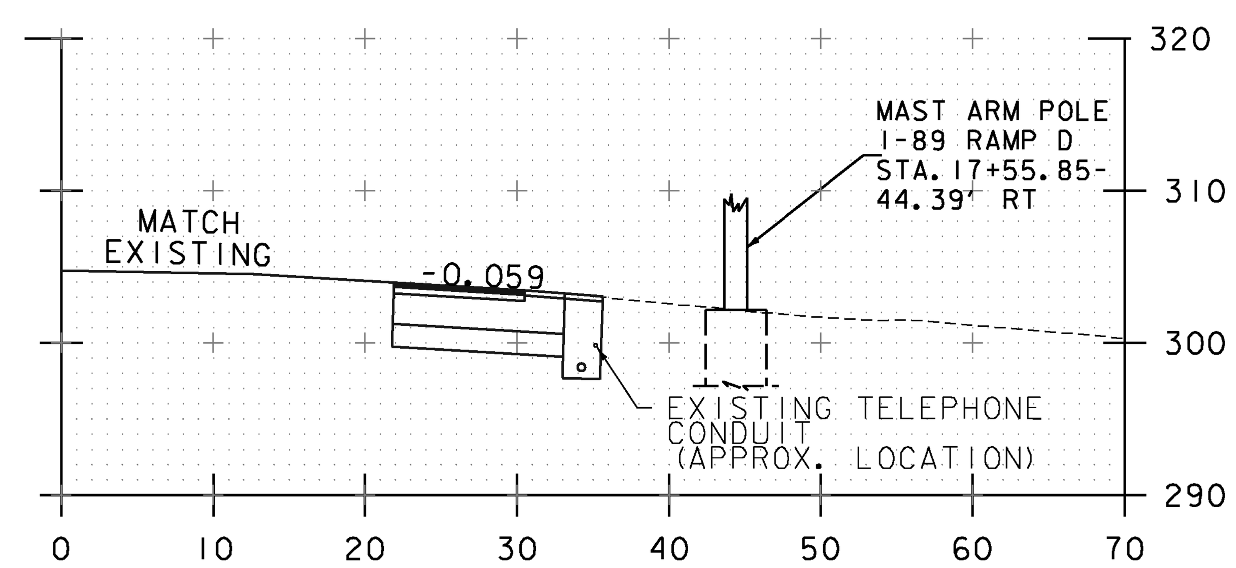
VT ROUTE 2 STA. 6+86.06 - 22.78' RT
MAST ARM POLE # MP1B



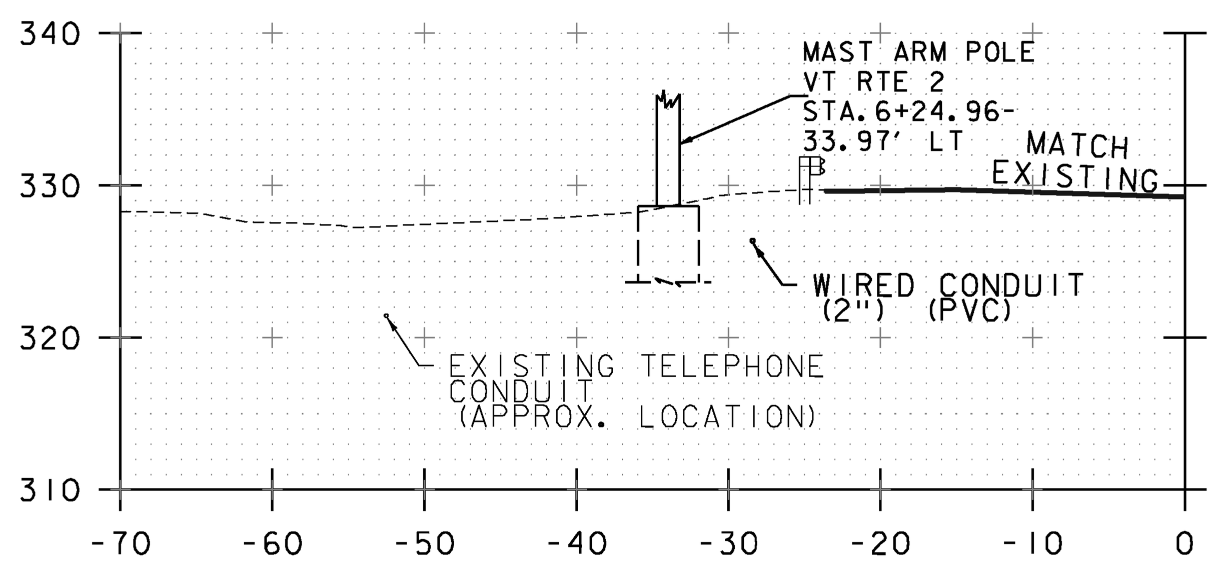
VT ROUTE 2 STA. 18+18.37-23.91' LT
MAST ARM POLE # MP2C



VT ROUTE 2 STA. 6+38.36-21.54' RT
MAST ARM POLE # MP1C

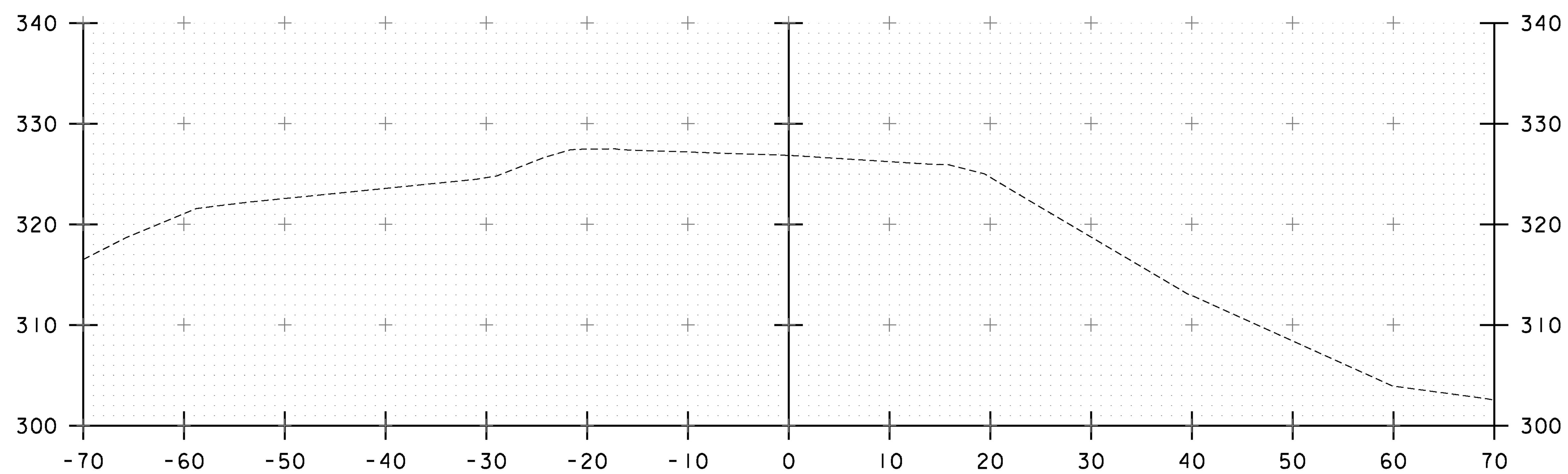


VT ROUTE 2 STA. 17+55.85-44.39' RT
MAST ARM POLE # MP2A

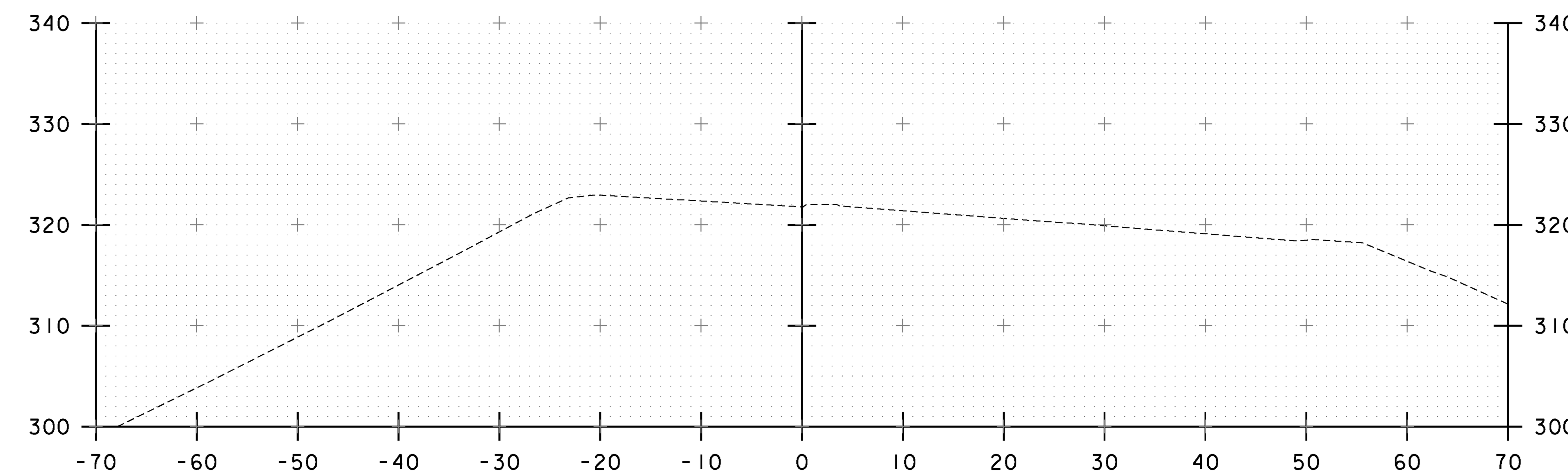


VT ROUTE 2 STA. 6+24.96-33.97' LT
MAST ARM POLE # MP1A

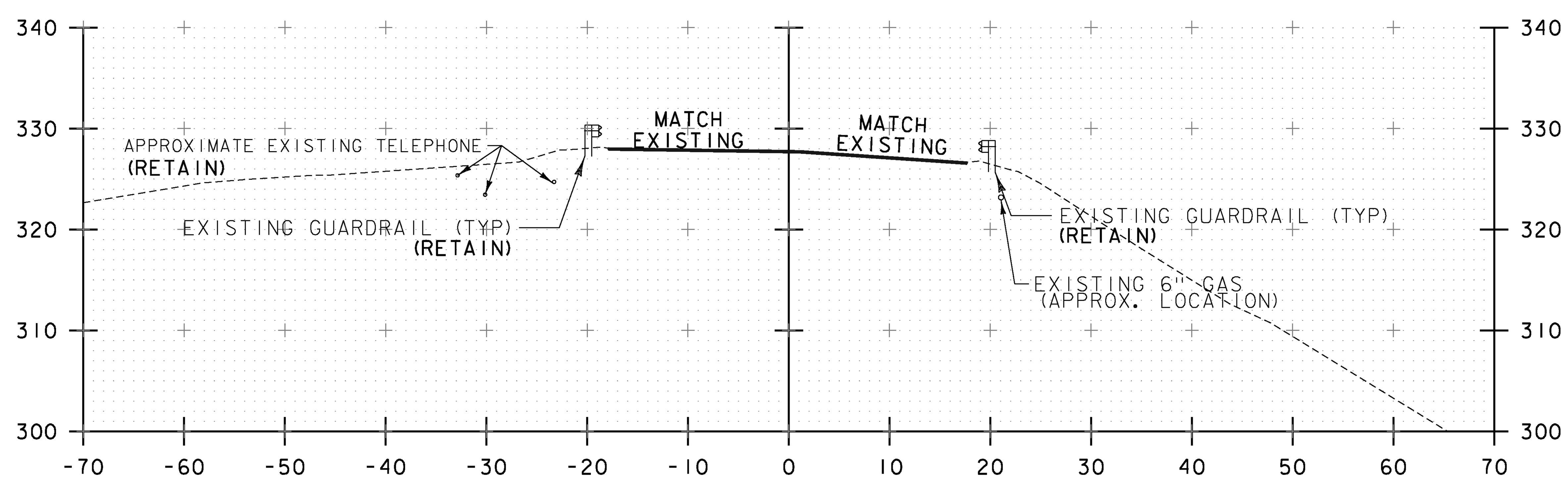
PROJECT NAME: RICHMOND	
PROJECT NUMBER: STP 0284 (17)	
FILE NAME: z97c186xsl.dgn	PLOT DATE: 4/30/2013
PROJECT LEADER: ERIK ATKINS	DRAWN BY: S. FORTIER
DESIGNED BY: T. BIGELOW	CHECKED BY: E. ATKINS
US ROUTE 2 CROSS SECTIONS SHEET 10	SHEET 90 OF 133



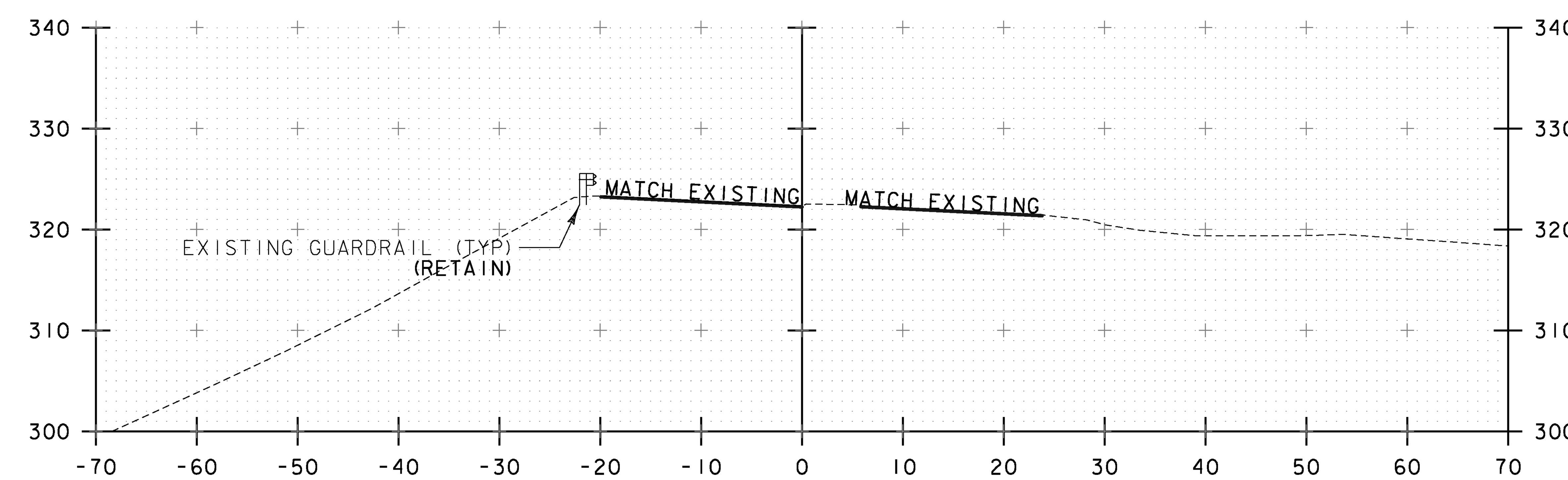
VT 117 STA. 31+50



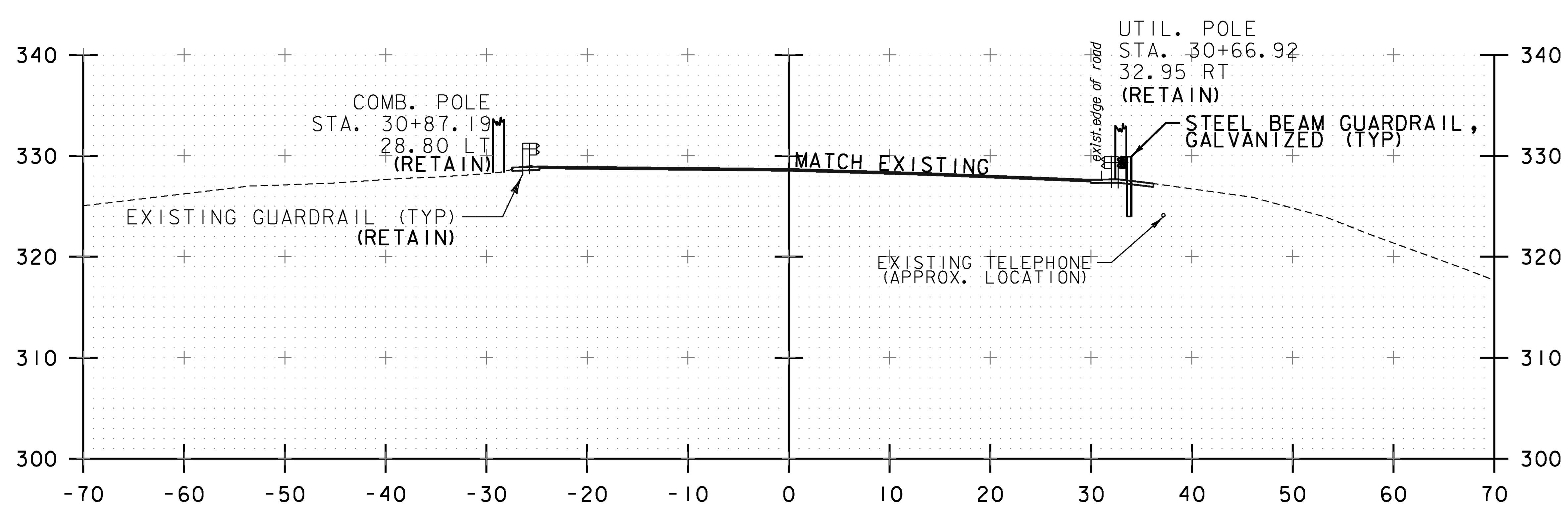
I-89 RAMP "A" STA. 36+50



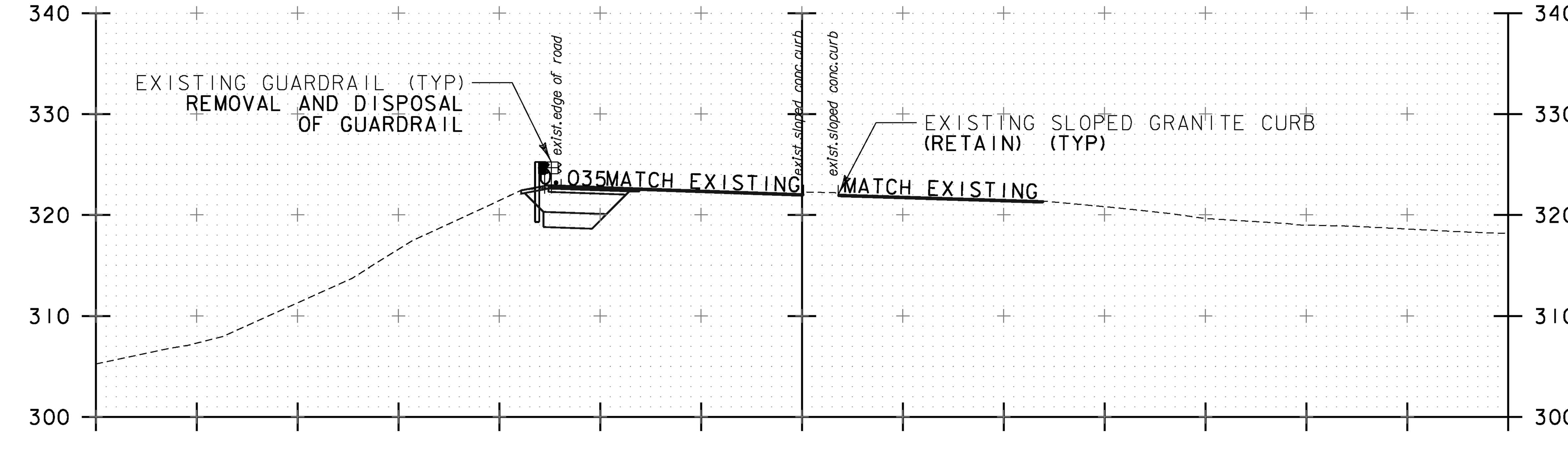
VT 117 STA. 31+00
MATCH EXISTING BCP



I-89 RAMP "A" STA. 36+00
MATCH EXISTING BCP



VT 117 STA. 30+50



I-89 RAMP "A" STA. 35+50

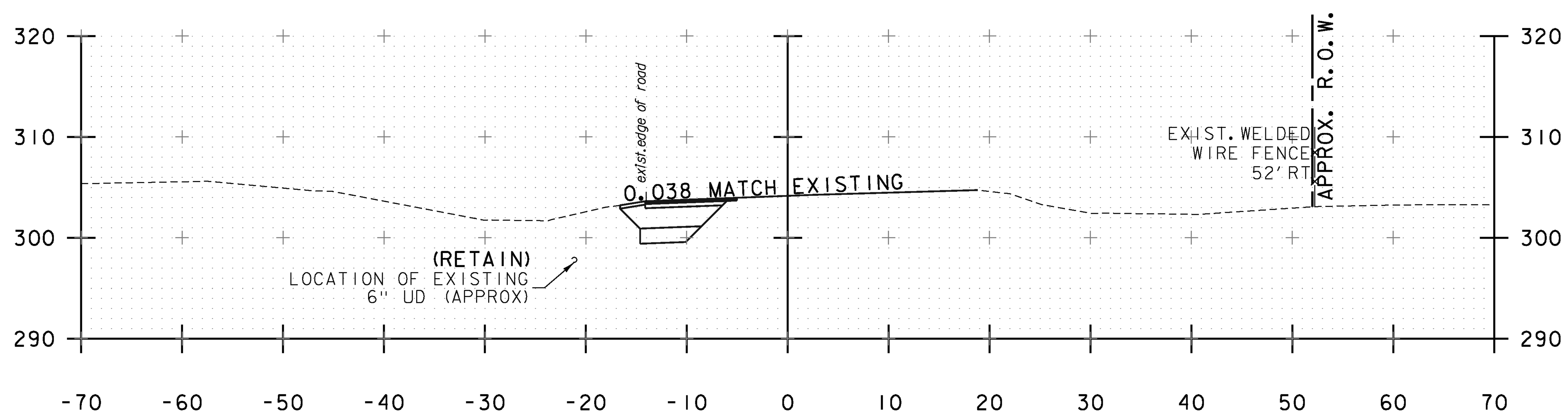
VT 117 STA. 30+50 TO VT 117 STA. 31+50

I-89 RAMP "A" STA. 35+50 TO I-89 RAMP "A" STA. 36+50

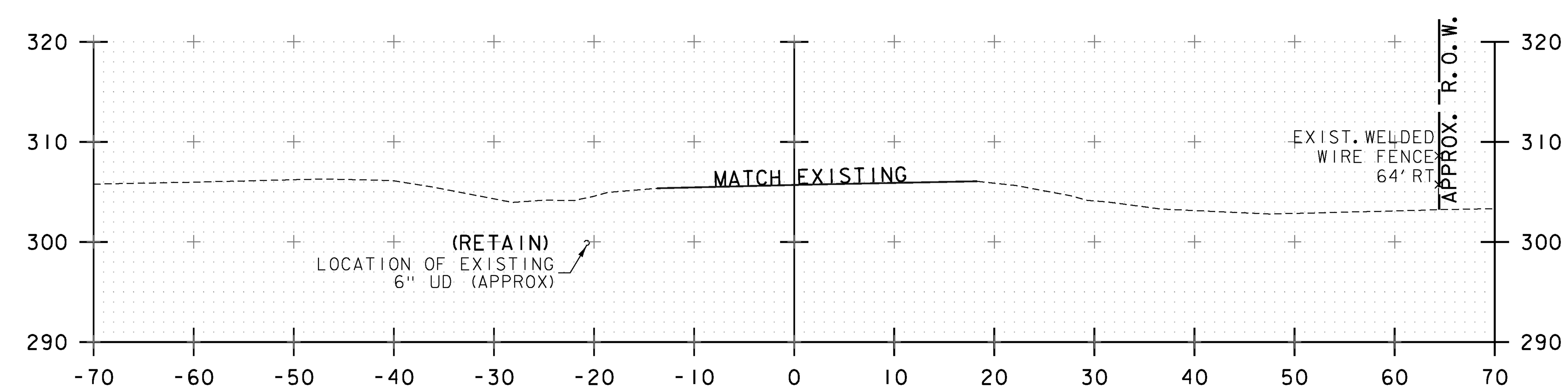
PROJECT NAME: RICHMOND
PROJECT NUMBER: STP 0284 (17)

FILE NAME: z97c186xsl.dgn
PROJECT LEADER: ERIK ATKINS
DESIGNED BY: T. BIGELOW
VT RTE 117 & I-89 RAMP "A" CROSS SECTIONS

PLOT DATE: 4/29/2013
DRAWN BY: S. FORTIER
CHECKED BY: E. ATKINS
SHEET 91 OF 133

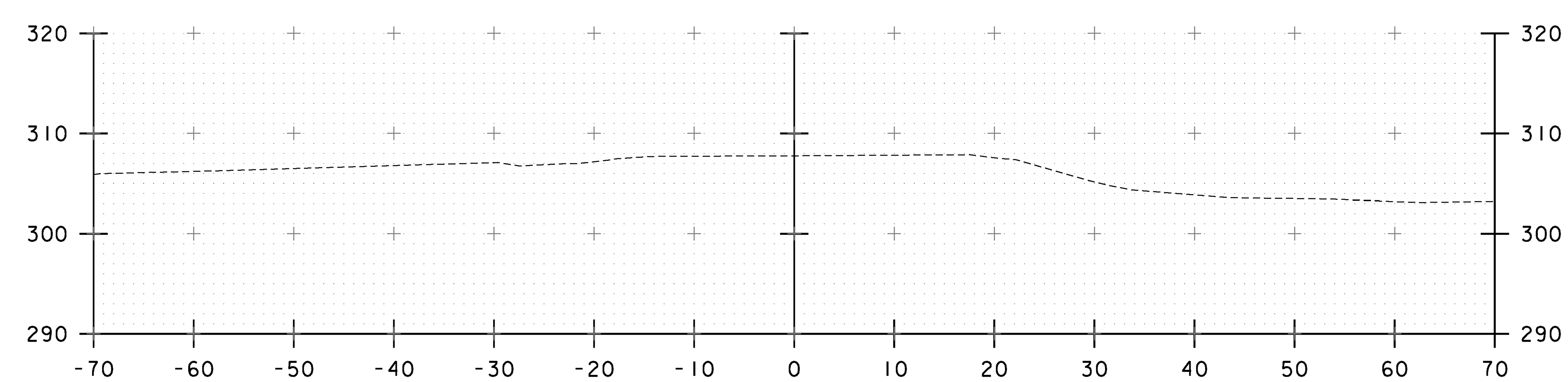


I-89 RAMP "D" STA. 52+00

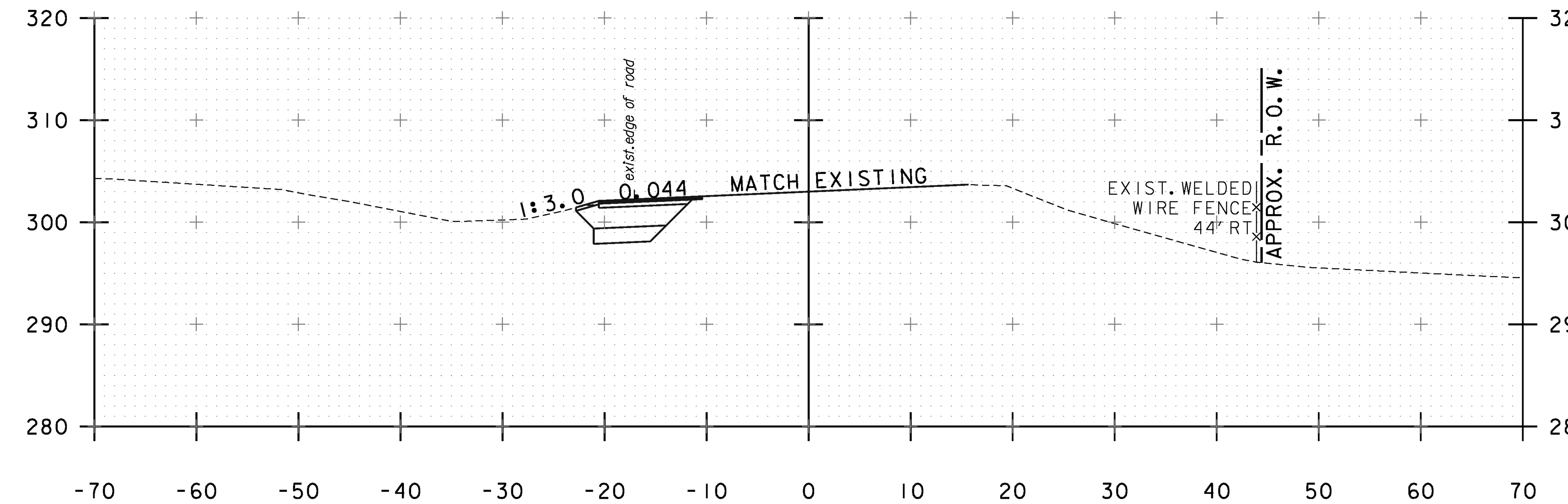


I-89 RAMP "D" STA. 51+50

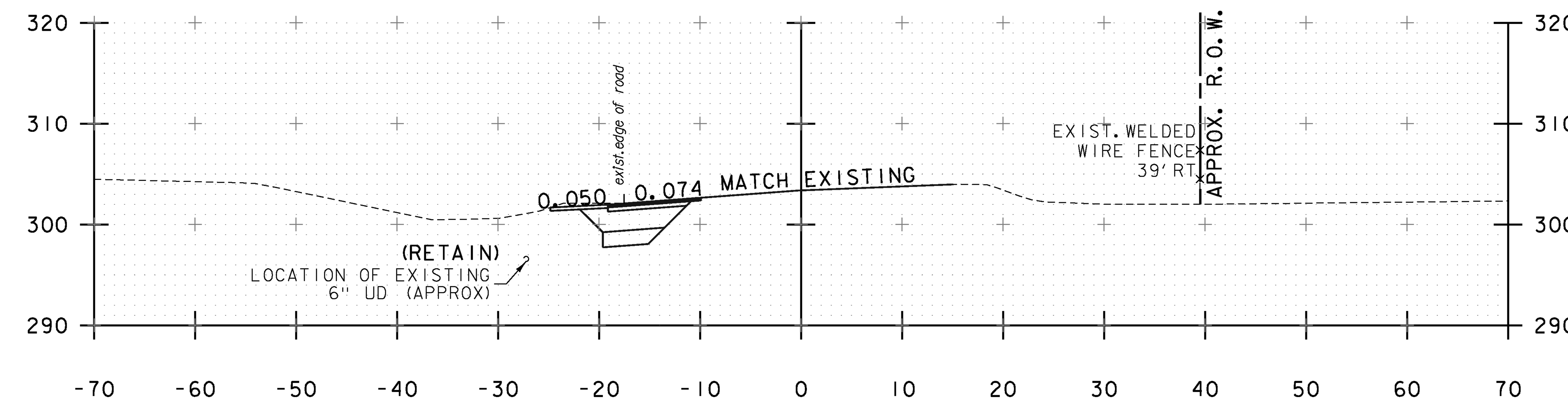
MATCH EXISTING BCP I-89 RAMP "D" STA. 51+25



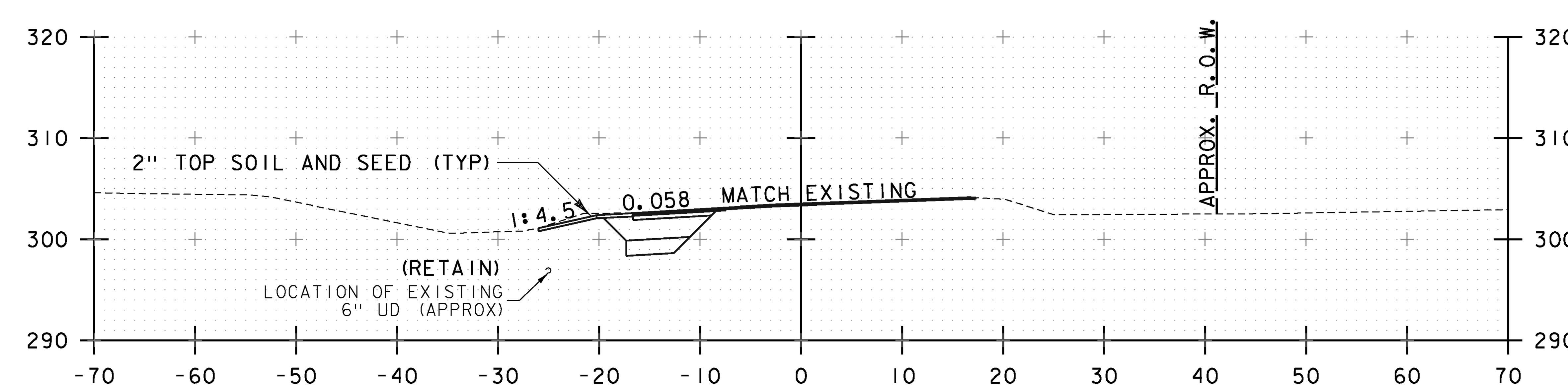
I-89 RAMP "D" STA. 51+00



I-89 RAMP "D" STA. 53+00



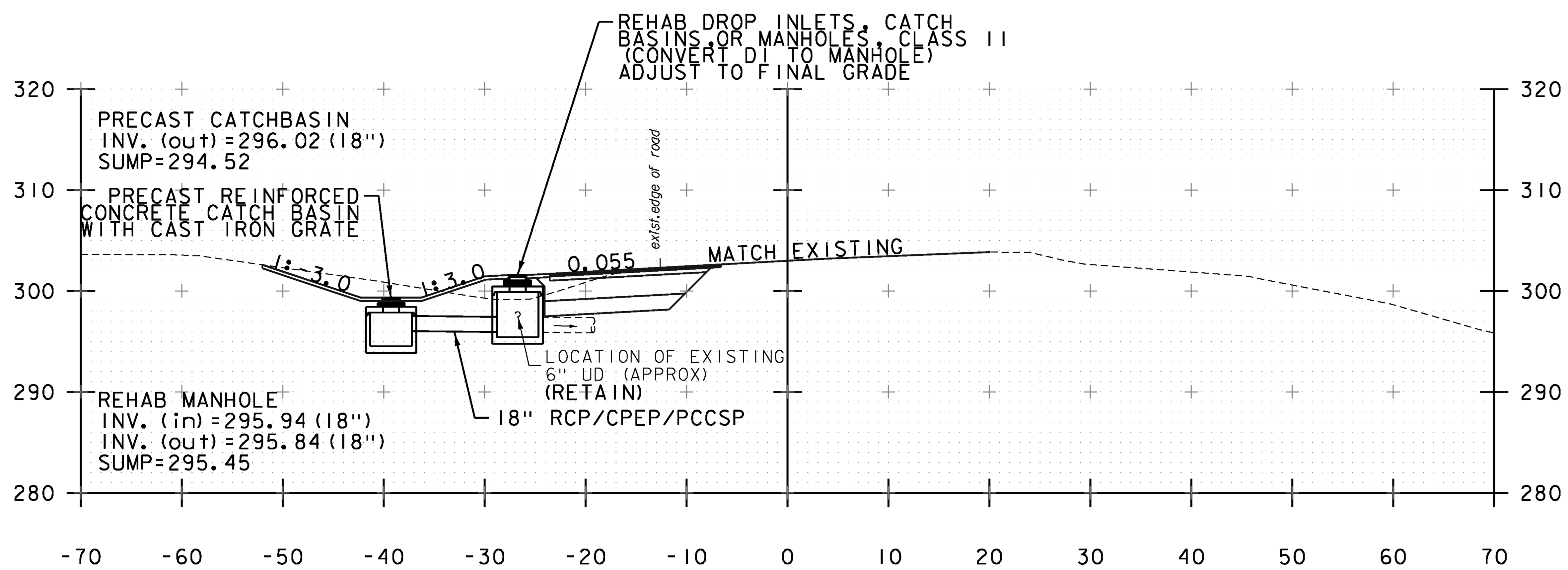
I-89 RAMP "D" STA. 52+50



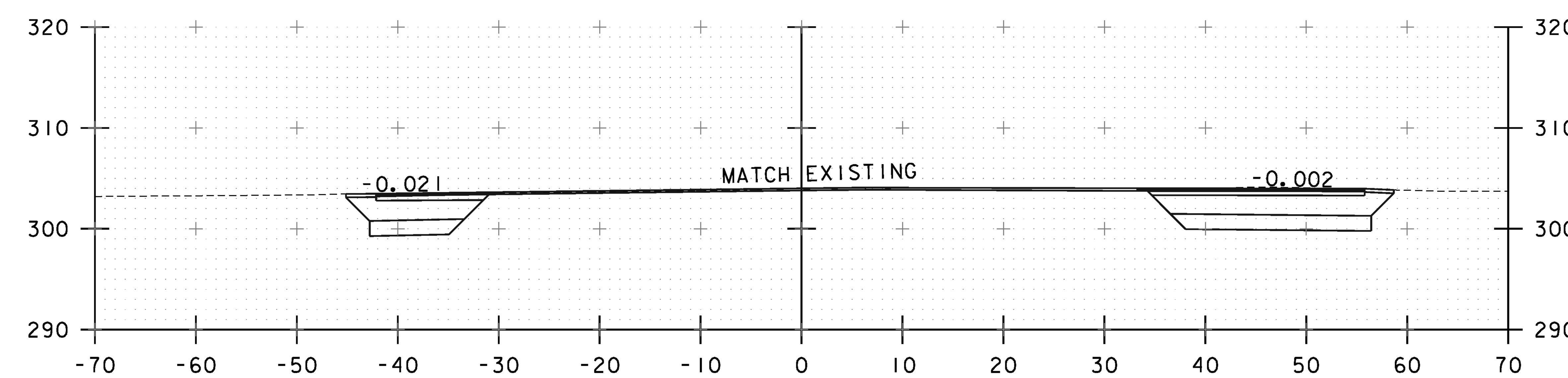
PC 52+35.51

I-89 RAMP "D" STA. 51+00 TO I-89 RAMP "D" STA. 53+00

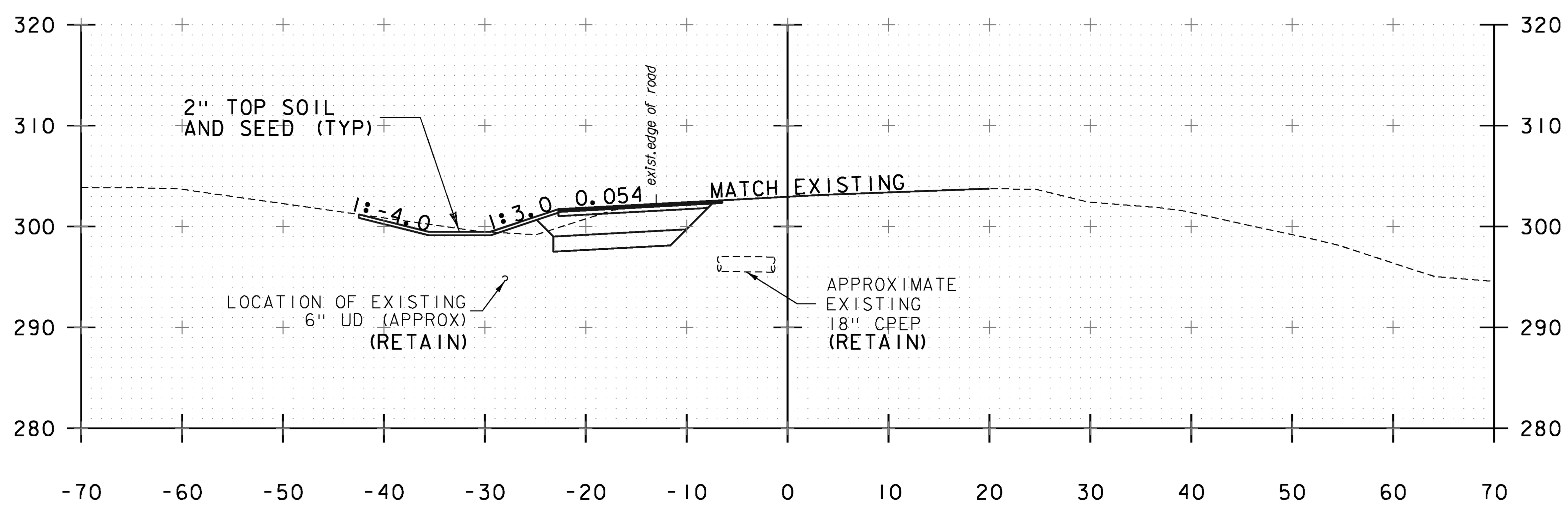
PROJECT NAME: RICHMOND	
PROJECT NUMBER: STP 0284 (17)	
FILE NAME: z97c186xsl.dgn	PLOT DATE: 4/29/2013
PROJECT LEADER: ERIK ATKINS	DRAWN BY: S. FORTIER
DESIGNED BY: T. BIGELOW	CHECKED BY: E. ATKINS
I-89 RAMP "D" CROSS SECTIONS SHEET 1	SHEET 92 OF 133



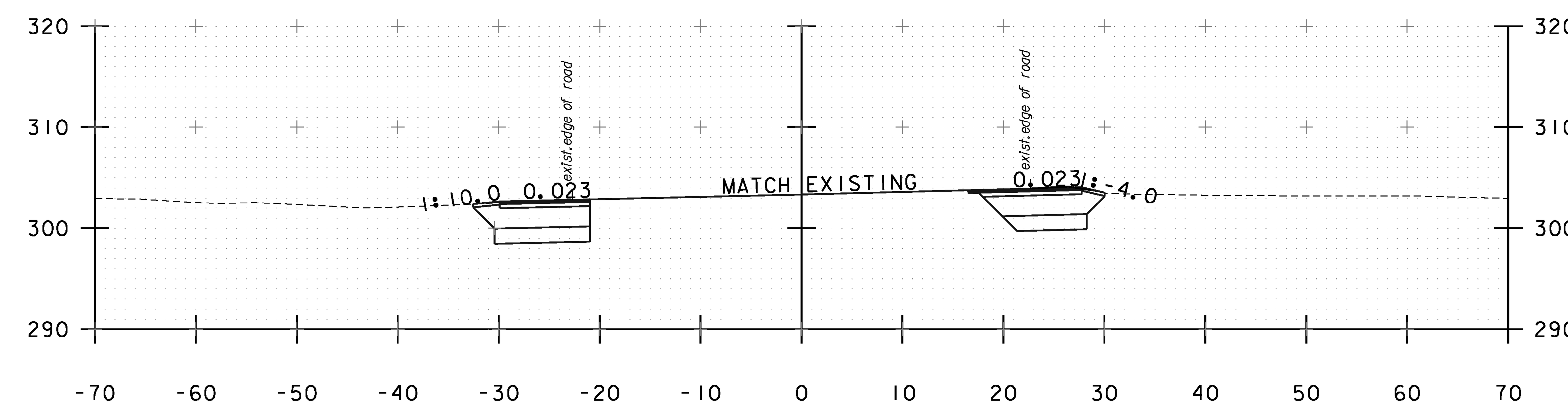
I-89 RAMP "D" STA. 53+59



I-89 RAMP "D" STA. PT 54+23.50



I-89 RAMP "D" STA. 53+50



I-89 RAMP "D" STA. 54+00

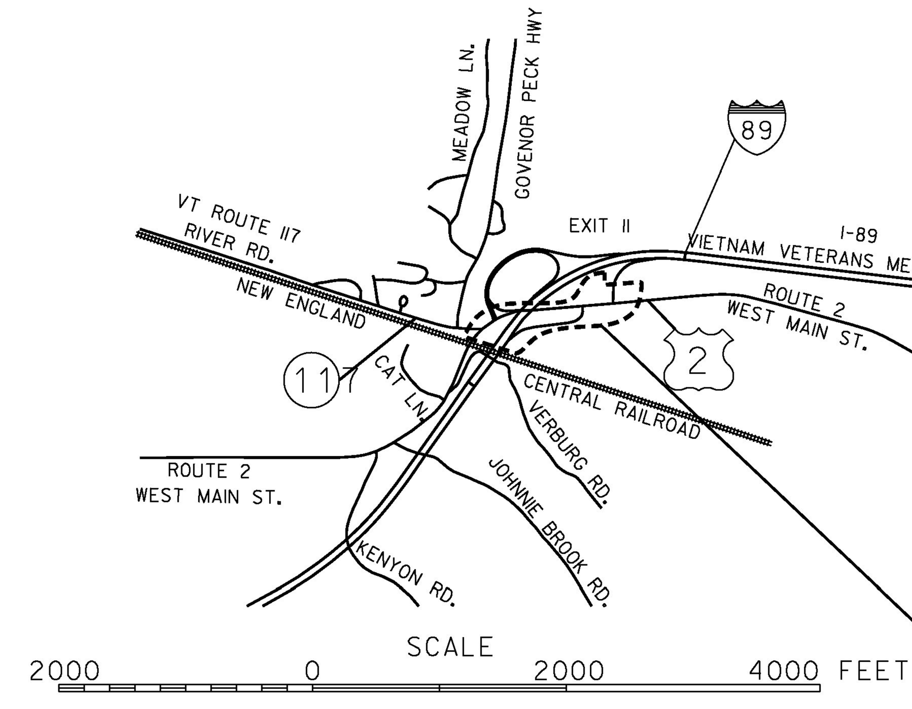
I-89 RAMP "D" STA. 53+50 TO I-89 RAMP "D" STA. 54+23.50

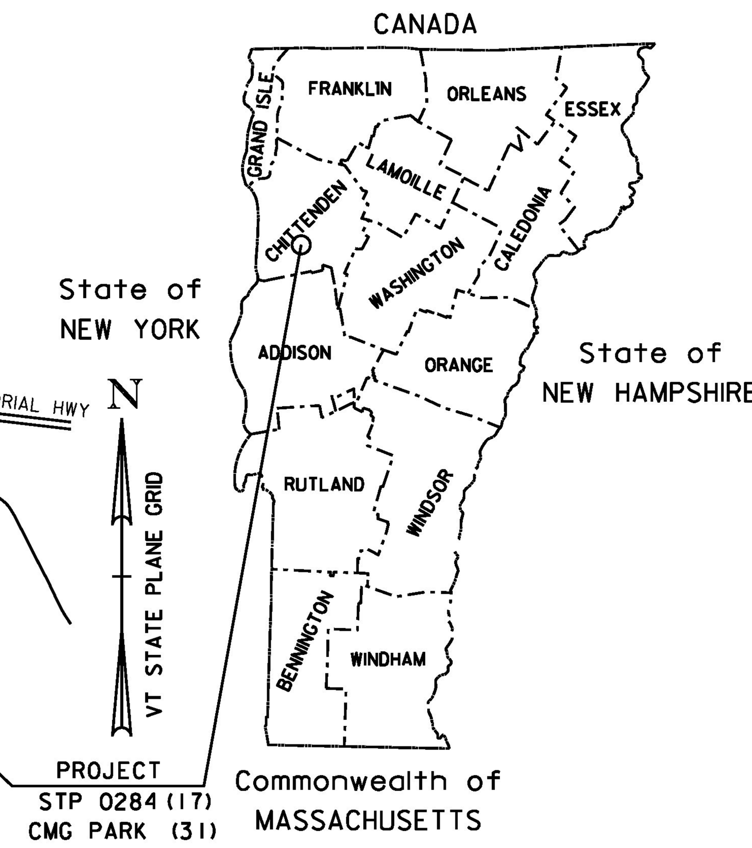
PROJECT NAME: RICHMOND
PROJECT NUMBER: STP 0284 (17)

FILE NAME: z97c186xsl.dgn	PLOT DATE: 4/29/2013
PROJECT LEADER: ERIK ATKINS	DRAWN BY: S. FORTIER
DESIGNED BY: T. BIGELOW	CHECKED BY: E. ATKINS
I-89 RAMP "D" CROSS SECTIONS SHEET 2	SHEET 93 OF 133

STATE OF VERMONT

AGENCY OF TRANSPORTATION





PROPOSED IMPROVEMENT

TOWN OF RICHMOND

COUNTY OF CHITTENDEN

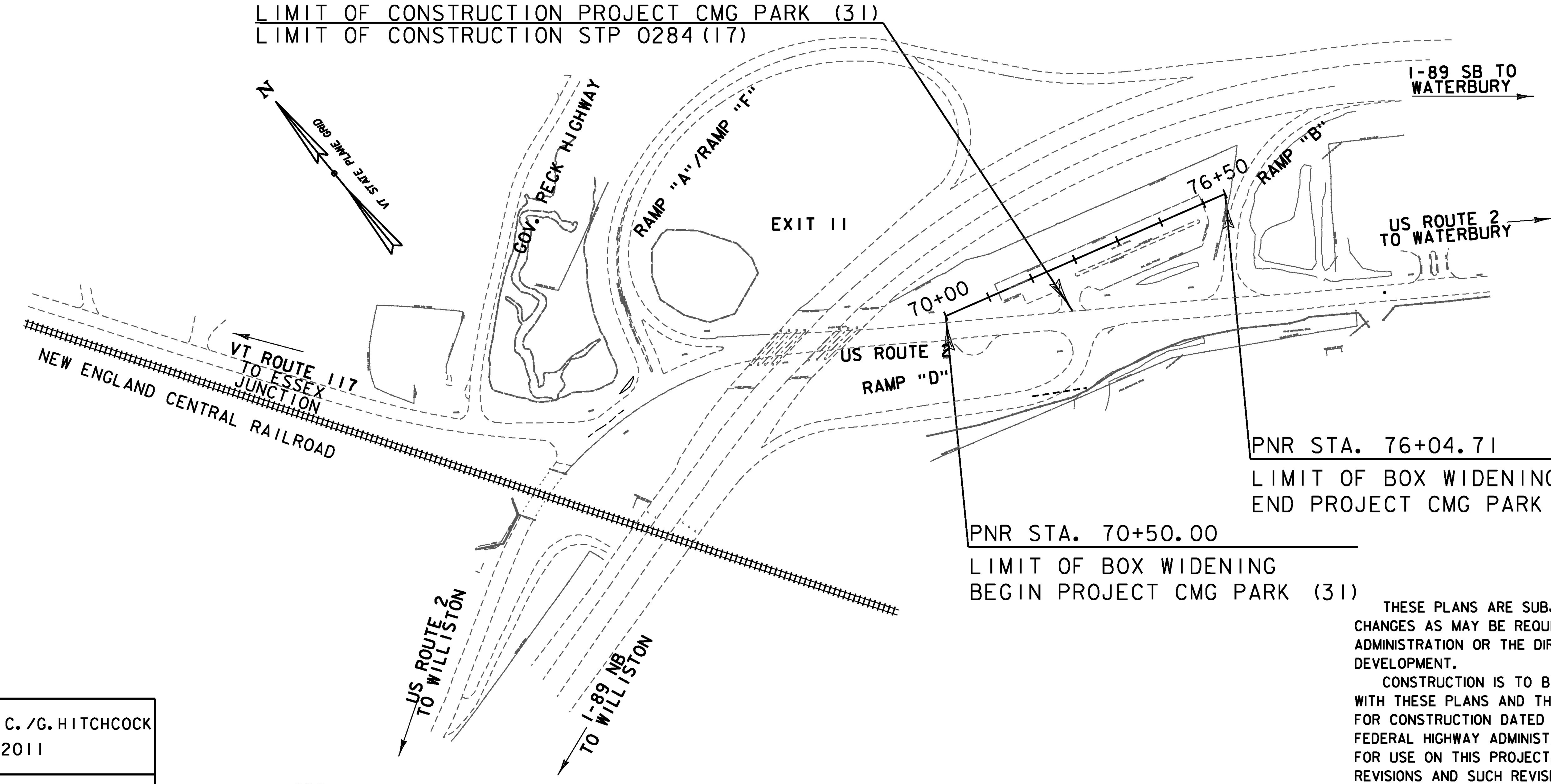
US ROUTE 2 (MAJOR COLLECTOR)

PARK AND RIDE OFF OF INTERSTATE 89 EXIT 11

PROJECT CMG PARK (31)

BEGINNING AT A POINT NEAR THE PARK AND RIDE IN THE TOWN OF RICHMOND, APPROXIMATELY 123 FEET (0.023 MILES) EASTERLY OF THE EXISTING PARK AND RIDE EDGE OF PAVEMENT AND EXTENDING WESTERLY ACROSS THE PARK AND RIDE FOR A DISTANCE OF 650 FEET (0.123 MILES), APPROXIMATELY 53 FEET (0.010 MILES) WEST OF THE WESTERLY EDGE OF PAVEMENT.

THIS PROJECT CONSISTS OF EXPANDING THE EXISTING PARK AND RIDE FACILITY, PAVEMENT OVERLAY, PAVEMENT MARKINGS, DRAINAGE, NEW SIGNAGE, LANDSCAPING, THE INSTALLATION OF A NEW RETAINING WALL, STAMPED CONCRETE TRAFFIC CIRCLE, STAMPED CONCRETE MEDIAN ISLANDS, NEW BUS SHELTER, AND OTHER AMENITIES.



BITUMINOUS CONCRETE PAVEMENT SUPER PAVE MIXTURE DESIGN CRITERIA	
DESIGN LIFE ESAL (DESIGN LANE)	NA
DESIGN NUMBER OF GYRATIONS	65
PERFORMANCE GRADED ASPHALT BINDER	SEE SUBSECTION 490.03 (b)

QUALITY ASSURANCE PROGRAM: LEVEL 1

CONVENTIONAL SYMBOLS

COUNTY LINE
TOWN LINE
LIMITS OF ACCESS
POINT OF ACCESS
FENCE LINE
STONE WALL
TRAVELED WAY
GUARD RAIL
RAILROAD
SURVEY LINE
CULVERT
POWER POLE
TELEPHONE POLE
TREES
CONTROL OF ACCESS
PROPERTY LINE
R.O.W. TAKING LINE
SLOPE RIGHTS
TOP OF CUT
TOE OF SLOPE

SURVEYED BY : L. ORVIS P.C./G. HITCHCOCK
SURVEYED DATE : 04-19-2011

DATUM

VERTICAL NAVD 88

HORIZONTAL NAD 83/1992

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.

Green International Affiliates, Inc.
Civil and Structural Engineers Westford, MA

PROJECT MANAGER : WAYNE DAVIS

PROJECT NAME : RICHMOND
PROJECT NUMBER : CMG PARK (31)

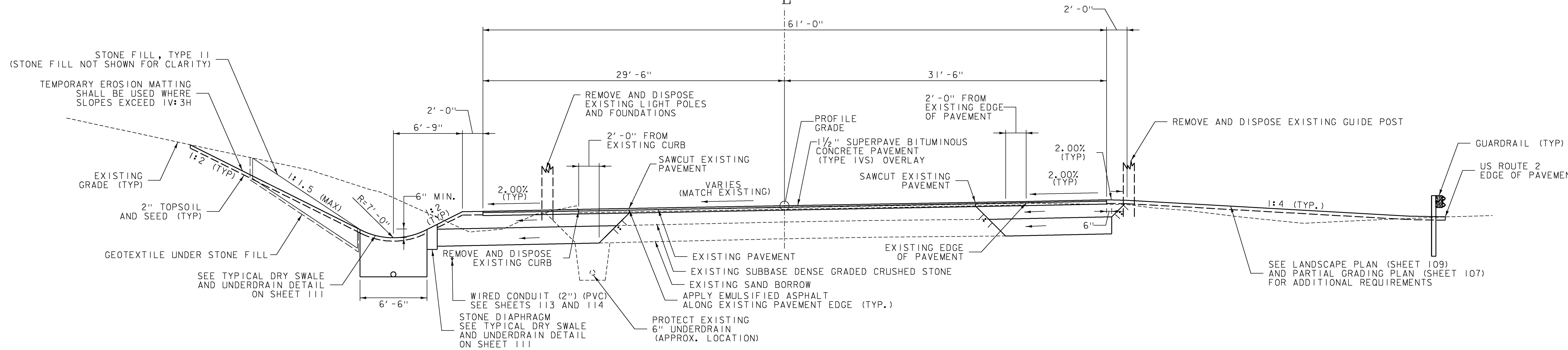
SHEET 94 OF 133 SHEETS

TYPICAL SECTIONS

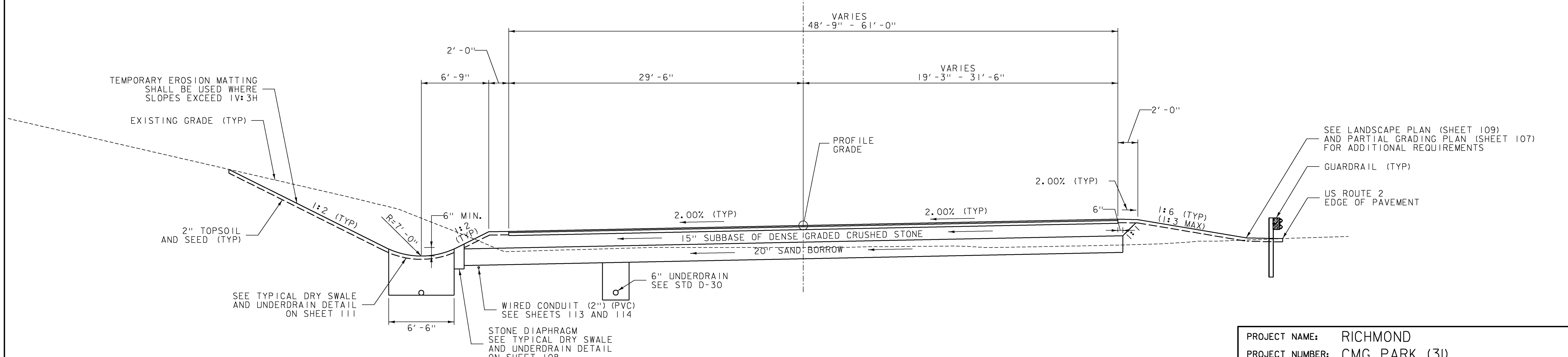
MATERIAL ITEM	THICKNESS TOLERANCE
PAVEMENT (TOTAL DEPTH ALL LAYERS)	+/- 1/4"
SUBBASE (TOTAL DEPTH ALL LAYERS)	+/- 1"
SAND BORROW (TOTAL DEPTH ALL LAYERS)	+/- 1"

1 1/2" SUPERPAVE BITUMINOUS CONCRETE PAVEMENT (TYPE IVS)
3 1/2" SUPERPAVE BITUMINOUS CONCRETE PAVEMENT (TYPE IIS)
15" SUBBASE OF DENSE GRADED CRUSHED STONE
20" SAND BORROW

TACK COAT: EMULSIFIED ASPHALT IS TO BE APPLIED AT THE RATE OF 0.025 GAL/SY BETWEEN SUCCESSIVE COURSES OF PAVEMENT AS DIRECTED BY THE ENGINEER.



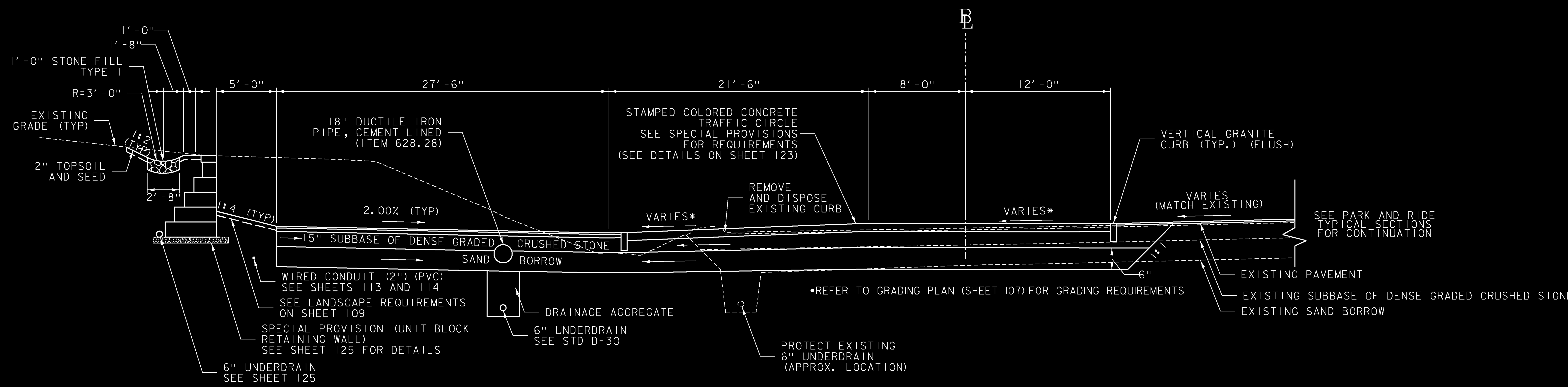
PARK AND RIDE SECTION
STA. 71+24.52 - 71+62.82
NOT TO SCALE



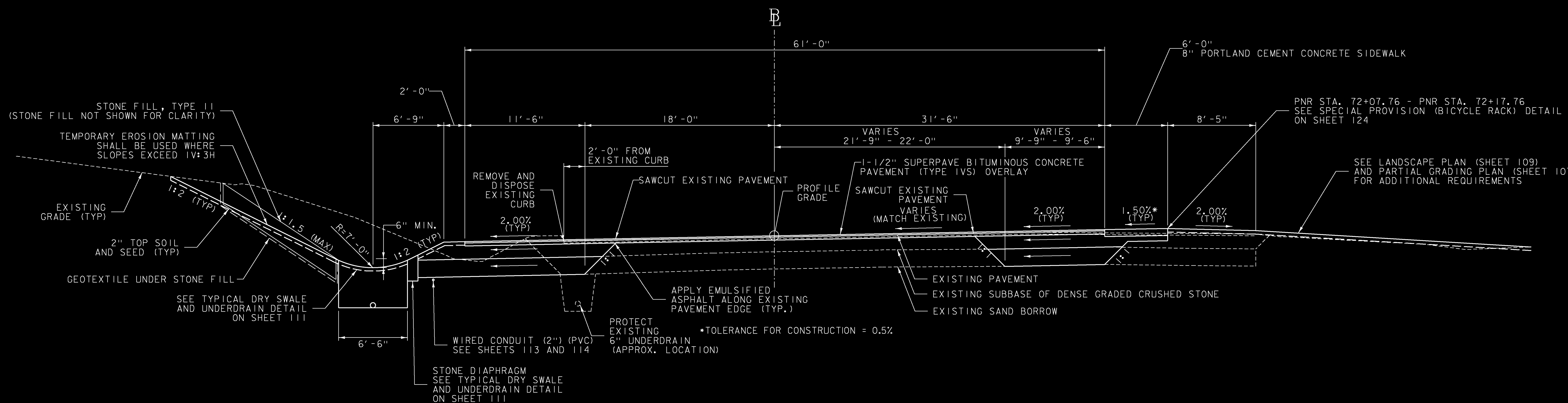
PARK AND RIDE SECTION
STA. 70+50.00 - 71+24.52
NOT TO SCALE

PROJECT NAME: RICHMOND	
PROJECT NUMBER: CMG PARK (31)	
FILE NAME: z97c186typ.dgn	PLOT DATE: 5/14/2013
PROJECT LEADER: ERIK ATKINS	DRAWN BY: S. FORTIER
DESIGNED BY: T. BIGELOW	CHECKED BY: E. ATKINS
PARK AND RIDE TYPICAL SECTIONS SHEET 1	SHEET 95 OF 133

TYPICAL SECTIONS



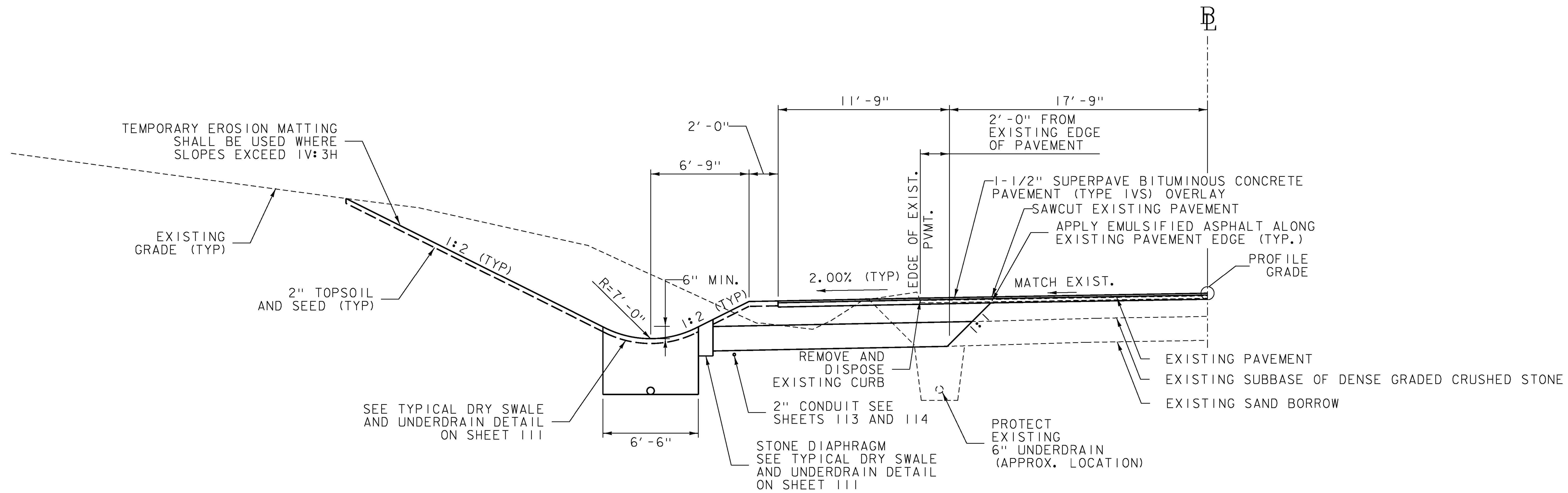
PARK AND RIDE TRAFFIC CIRCLE SECTION
NOT TO SCALE



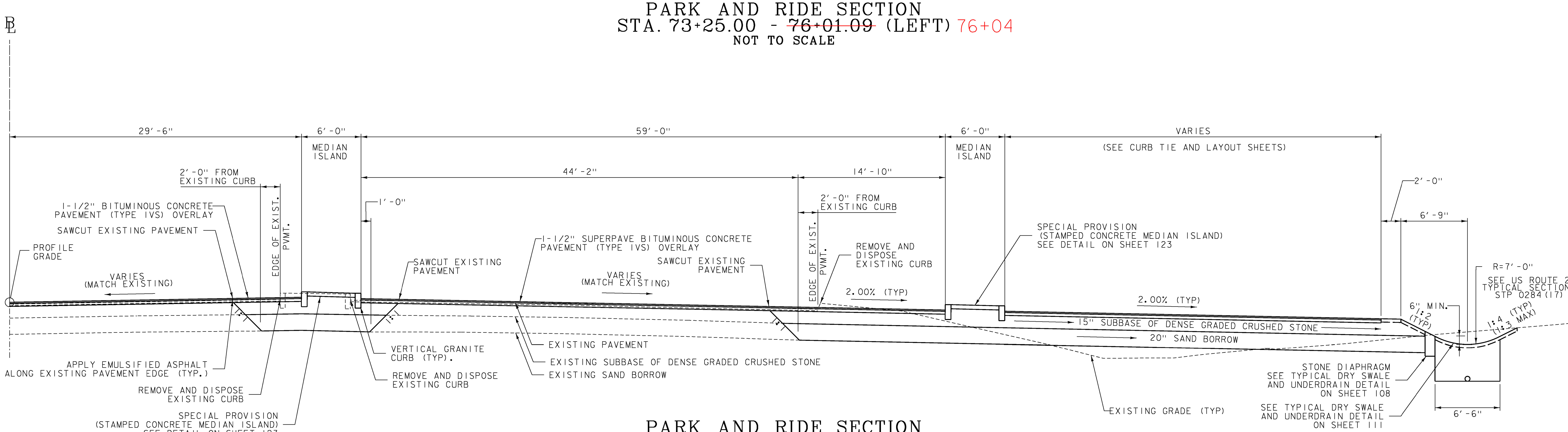
PARK AND RIDE SECTION
STA. 71+62.82 - 72+28.02
NOT TO SCALE

PROJECT NAME: RICHMOND	
PROJECT NUMBER: CMG PARK (31)	
FILE NAME: z97c186typ.dgn	PLOT DATE: 5/2/2013
PROJECT LEADER: ERIK ATKINS	DRAWN BY: S. FORTIER
DESIGNED BY: T. BIGELOW	CHECKED BY: E. ATKINS
PARK AND RIDE TYPICAL SECTIONS SHEET 2	SHEET 96 OF 133

TYPICAL SECTIONS



PARK AND RIDE SECTION
STA. 73+25.00 - ~~76+01.09~~ (LEFT) 76+04
NOT TO SCALE



PARK AND RIDE SECTION
STA. 73+25.00 - ~~76+01.09~~ (RIGHT) 76+04
NOT TO SCALE

PROJECT NAME: RICHMOND	
PROJECT NUMBER: CMG PARK (31)	
FILE NAME: z97c186typ.dgn	PLOT DATE: 4/29/2013
PROJECT LEADER: ERIK ATKINS	DRAWN BY: S. FORTIER
DESIGNED BY: T. BIGELOW	CHECKED BY: E. ATKINS
PARK AND RIDE TYPICAL SECTIONS SHEET 3	SHEET 97 OF 133

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET 1

SUMMARY OF ESTIMATED QUANTITIES / TOTALS / DESCRIPTIONS

ROADWAY	TRAINING	LANDSCAPING	EROSION CONTROL	FULL C.E. ITEMS	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND
0.5					0.5		LS	CLEARING AND GRUBBING, INCLUDING INDIVIDUAL TREES AND STUMPS	201.10	-
1					1		EACH	DEMOLITION AND DISPOSAL OF BUILDING	202.10	-
5400					5400		CY	COMMON EXCAVATION	203.15	57
175					175		CY	SOLID ROCK EXCAVATION	203.16	15
350					350		CY	EARTH BORROW	203.30	2
2600					2600		CY	SAND BORROW	203.31	38
850					850		CY	TRENCH EXCAVATION OF EARTH	204.20	2
12					12		CY	TRENCH EXCAVATION OF ROCK	204.21	2
1					1		CY	TRENCH EXCAVATION OF EARTH, EXPLORATORY (N.A.B.I.)	204.22	-
10					10		CY	STRUCTURE EXCAVATION	204.25	2
10					10		CY	GRANULAR BACKFILL FOR STRUCTURES	204.30	2
2000					2000		CY	SUBBASE OF DENSE GRADED CRUSHED STONE	301.35	92
25					25		CWT	EMULSIFIED ASPHALT	404.65	3
1					1		LU	PRICE ADJUSTMENT, ASPHALT CEMENT (N.A.B.I.)	406.50	-
750					750		LB	BITUMINOUS CRACK SEALING	417.10	40
1450					1450		TON	SUPERPAVE BITUMINOUS CONCRETE PAVEMENT	490.30	19
1					1		LU	AIR VOIDS PAY ADJUSTMENT (N.A.B.I.)	490.31	-
1					1		LU	MAT DENSITY PAY ADJUSTMENT (N.A.B.I.)	490.32	-
2					2		CY	CONCRETE, HIGH PERFORMANCE CLASS B	501.34	0.07
230					230		LB	REINFORCING STEEL, LEVEL I	507.11	6
1					1		EACH	PRECAST REINFORCED CONCRETE CATCH BASIN WITH CAST IRON GRATE	604.20	-
2					2		EACH	CAST IRON GRATE WITH FRAME, TYPE B	604.46	-
400					400		LF	6 INCH UNDERDRAIN PIPE	605.10	7
12					12		LF	6 INCH UNDERDRAIN CARRIER PIPE	605.20	1
11					11		EACH	UNDERDRAIN FLUSHING BASIN	605.95	-
			450		450		MGAL	DUST CONTROL WITH WATER	609.10	EST.
			5		5		TON	DUST AND ICE CONTROL WITH CALCIUM CHLORIDE	609.15	EST.
			50		50		CY	STONE FILL, TYPE I	613.10	3.4
			50		50		CY	STONE FILL, TYPE II	613.11	3
975					975		LF	VERTICAL GRANITE CURB	616.21	24
1350					1350		LF	REMOVAL OF EXISTING CURB	616.41	50
75					75		SY	PORTLAND CEMENT CONCRETE SIDEWALK, 8 INCH	618.11	3
11					11		EACH	YIELDING MARKER POSTS	619.17	-
125					125		LF	REMOVING AND RESETTING FENCE	620.50	6
2					2		EACH	ENERGY ABSORPTION ATTENUATOR	621.56	-
17					17		EACH	REMOVAL AND DISPOSAL OF GUIDE POSTS	621.81	-
250					250		LF	TEMPORARY TRAFFIC BARRIER	621.90	EST.
105					105		LF	DUCTILE IRON PIPE, CEMENT-LINED (18")	628.28	-
				0.5	0.5		LS	FIELD OFFICE, ENGINEERS	631.10	-
				0.5	0.5		LS	TESTING EQUIPMENT, CONCRETE	631.16	-

DETAILED SUMMARY OF QUANTITIES

QUANTITIES	UNIT	ITEMS
COMMON EXCAVATION		
5343	CY	PARK AND RIDE
57	CY	ROUNDING
5400	CY	TOTAL
EARTH BORROW		
348	CY	PARK AND RIDE
2	CY	ROUNDING
350	CY	TOTAL
TRENCH EXCAVATION OF EARTH		
109		UNDERDRAIN
718		DRY SWALE
21		PROPOSED DRAINAGE
2		ROUNDING
850		TOTAL
TRENCH EXCAVATION OF ROCK		
10	CY	REMOVAL OF EXISTING HEADWALL
2	CY	ROUNDING
12	CY	TOTAL
SUBBASE OF DENSE GRADED CRUSHED STONE		
1908	CY	PARK AND RIDE
92	CY	ROUNDING
2000	CY	TOTAL
SUPERPAVE BITUMINOUS CONCRETE PAVEMENT		
658	CY	TYPE IVS
773	CY	TYPE IIS
19	CY	ROUNDING
1450	CY	TOTAL
EROSION CONTROL		
PERMANENT EROSION CONTROL		
50	CY	STONE FILL, TYPE I
50	CY	STONE FILL, TYPE II
225	SY	GEOTEXTILE UNDER STONE FILL
700	SY	PERMANENT EROSION MATTING
TEMPORARY EROSION CONTROL		
125	LB	SEED, WINTER RYE
2	TON	HAY MULCH
2500	SY	TEMPORARY EROSION MATTING
75	CY	VEHICLE TRACKING PAD

PROJECT NAME: RICHMOND
PROJECT NUMBER: CMG PARK (31)

FILE NAME: z97c186qty.dgn
PROJECT LEADER: ERIK ATKINS
DESIGNED BY: A. ACHARYA
QUANTITY SHEET #1

PLOT DATE: 4/30/2013
DRAWN BY: A. ACHARYA
CHECKED BY: T. BIGELOW

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET 2

SUMMARY OF ESTIMATED QUANTITIES					TOTALS		DESCRIPTIONS			
ROADWAY	TRAINING	LANDSCAPING	EROSION CONTROL	FULL C.E. ITEMS	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND
				0.5	0.5		LS	TESTING EQUIPMENT, BITUMINOUS	631.17	-
				1500	1500		DL	FIELD OFFICE TELEPHONE (N.A.B.I.)	631.26	-
	520				520		HR	EMPLOYEE TRAINEESHIP	634.10	EST.
0.5					0.5		LS	MOBILIZATION/DEMOBILIZATION	635.11	-
1					1		LS	TRAFFIC CONTROL (CMG PARK (31))	641.10	-
0.5					0.5		LS	PUBLIC RELATIONS OFFICER	641.12	-
1					1		EACH	PORTABLE CHANGEABLE MESSAGE SIGN	641.15	EST.
3600					3600		LF	DURABLE 4 INCH WHITE LINE	646.400	-
80					80		LF	DURABLE 4 INCH YELLOW LINE	646.410	-
200					200		LF	DURABLE 8 INCH WHITE LINE	646.440	-
150					150		LF	DURABLE 8 INCH YELLOW LINE	646.450	-
35					35		LF	DURABLE 24 INCH STOP BAR	646.480	-
19					19		EACH	DURABLE LETTER OR SYMBOL	646.490	-
3600					3600		LF	TEMPORARY 4 INCH WHITE LINE	646.600	-
80					80		LF	TEMPORARY 4 INCH YELLOW LINE	646.610	-
200					200		LF	TEMPORARY 8 INCH WHITE LINE	646.640	-
140					140		LF	TEMPORARY 8 INCH YELLOW LINE	646.650	-
35					35		LF	TEMPORARY 24 INCH STOP BAR	646.680	-
19					19		EACH	TEMPORARY LETTER OR SYMBOL	646.690	-
800					800		SF	REMOVAL OF EXISTING PAVEMENT MARKINGS	646.85	100
			225		225		SY	GEOTEXTILE UNDER STONE FILL	649.31	6
			125		125		LB	SEED	651.15	2
			125		125		LB	SEED, WINTER RYE	651.17	2
			450		450		LB	FERTILIZER	651.18	4
			2		2		TON	AGRICULTURAL LIMESTONE	651.20	0.22
			2		2		TON	HAY MULCH	651.25	0.22
			250		250		CY	TOPSOIL	651.35	10
			0.5		0.5		LS	EPSC PLAN	652.10	-
			260		260		HR	MONITORING EPSC PLAN	652.20	EST.
			0.5		0.5		LU	MAINTENANCE OF EPSC PLAN (N.A.B.I.)	652.30	-
			2500		2500		SY	TEMPORARY EROSION MATTING	653.20	91
			700		700		SY	PERMANENT EROSION MATTING	653.21	32
			75		75		CY	VEHICLE TRACKING PAD	653.35	EST.
			2		2		EACH	INLET PROTECTION DEVICE, TYPE I	653.40	-
			1100		1100		LF	PROJECT DEMARCATION FENCE	653.55	52
		5			5		EACH	EVERGREEN TREES (PICEA GLAUCA) (B & B) (7-8 FEET HEIGHT)	656.20	-
		7			7		EACH	DECIDUOUS TREES (LARIX LARCINA) (B & B) (5-6 FEET HEIGHT)	656.30	-
		3			3		EACH	DECIDUOUS TREES (QUERCUS PALUSTRIS) (B & B) (2" - 2 1/2" CALIPER)	656.30	-
		3			3		EACH	DECIDUOUS TREES (QUERCUS RUBRA) (B & B) (2" - 2 1/2" CALIPER)	656.30	-
		50			50		EACH	GROUND COVERS AND VINES (PARTHENOCISSUS QUINQUEFOLIA) (CONT.) (#2)	656.40	-

DETAILED SUMMARY OF QUANTITIES		
QUANTITIES	UNIT	ITEMS

PROJECT NAME: RICHMOND
PROJECT NUMBER: CMG PARK (31)

FILE NAME: z97c186qty.dgn
PROJECT LEADER: ERIK ATKINS
DESIGNED BY: A. ACHARYA
QUANTITY SHEET #2

PLOT DATE: 4/30/2013
DRAWN BY: A. ACHARYA
CHECKED BY: T. BIGELOW
SHEET 99 OF 133

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET 3

SUMMARY OF ESTIMATED QUANTITIES					TOTALS		DESCRIPTIONS			
ROADWAY	TRAINING	LANDSCAPING	EROSION CONTROL	FULL C.E. ITEMS	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND
		25			25		MGAL	LANDSCAPE WATERING	656.65	1
		35			35		CY	LANDSCAPE BACKFILL, TRUCK MEASUREMENT	656.80	4
		1			1		LS	TREE PROTECTION	656.85	-
48					48		SF	TRAFFIC SIGNS, TYPE A	675.20	-
284					284		LF	SQUARE TUBE SIGN POST AND ANCHOR	675.341	-
16					16		EACH	REMOVING SIGNS	675.50	-
13					13		EACH	ERECTING SALVAGED SIGNS	675.60	-
5					5		EACH	DELINEATOR WITH STEEL POST	676.10	3
250					250		LF	WIRED CONDUIT (1") (PVC)	678.23	-
2750					2750		LF	WIRED CONDUIT (2") (PVC)	678.23	-
26					26		EACH	JUNCTION BOX	678.26	-
2					2		EACH	PULL BOX, DOUBLE	678.27	-
275					275		LF	ELECTRICAL CONDUIT SLEEVE (6") (PVC)	678.30	-
26					26		EACH	LIGHT POLE BASE	679.21	-
26					26		EACH	LIGHT POLE	679.45	-
1					1		EACH	POWER DROP STANCHION, STREET LIGHTING	679.55	-
1					1		LU	PRICE ADJUSTMENT, FUEL (N.A.B.I.)	690.50	-
10					10		CY	SPECIAL PROVISION (PERMANENT STONE CHECK DAM)	900.608	-
4					4		EACH	SPECIAL PROVISION (BICYCLE RACK)	900.620	-
26					26		EACH	SPECIAL PROVISION (LUMINAIRE, LED) (CMG PARK (31))	900.620	-
1					1		EACH	SPECIAL PROVISION (REMOVAL AND DISPOSAL OF EXISTING PAYPHONE)	900.620	-
1					1		EACH	SPECIAL PROVISION (REMOVAL AND REPLACEMENT EXISTING FLUSHING BASIN IN PAVEMENT)	900.620	-
1					1		EACH	SPECIAL PROVISION (REMOVAL OF EXISTING AREA LIGHTING SYSTEM)	900.620	-
1					1		EACH	SPECIAL PROVISION (SOIL BEARING SLIP BASE) (2 1/2")	900.620	-
700					700		LF	SPECIAL PROVISION (6 INCH UNDERDRAIN PIPE, DRY SWALE)	900.640	10
60					60		LF	SPECIAL PROVISION (6 INCH UNDERDRAIN PIPE, DRY SWALE WITH STONE FILL)	900.640	1
1					1		LS	SPECIAL PROVISION (BUS SHELTER)	900.645	-
275					275		SY	SPECIAL PROVISION (STAMPED COLORED CONCRETE MEDIAN ISLAND, 5 INCH)	900.675	24
150					150		SY	SPECIAL PROVISION (STAMPED COLORED CONCRETE TRAFFIC CIRCLE, 8 INCH)	900.675	10
75					75		SY	SPECIAL PROVISION (UNIT BLOCK RETAINING WALL)	900.675	5

DETAILED SUMMARY OF QUANTITIES

QUANTITIES	UNIT	ITEMS

PROJECT NAME: RICHMOND
PROJECT NUMBER: CMG PARK (31)

FILE NAME: z97c186qty.dgn
PROJECT LEADER: ERIK ATKINS
DESIGNED BY: A. ACHARYA
QUANTITY SHEET #3

PLOT DATE: 5/14/2013
DRAWN BY: A. ACHARYA
CHECKED BY: T. BIGELOW
SHEET 100 OF 133

STATE OF VERMONT
AGENCY OF TRANSPORTATION

ITEM DETAIL AND DRAINAGE SHEET

STATION	STATION	POS.	ASKEW	INLET/OUTLET TYPE INLET	OUTLET	PIPE D	PIPE L	ALLOWABLE OPTIONS RCP	CAAP	CPEP	PCCSP	PIPE ELBOW	ES	CB	MH	DEPTH DI	CONC CLASS B	REINF STEEL	DI GRATE	MANHOLE COVER	CRM	TRENCH EXCAVATION EARTH	ROCK	GRAN BKFILL STRUCT	EROS MATT	STONE FILL		MARKER POSTS LT	RT	REMARKS
			NO. DEG.			IN	FT	CLASS	TH	SL	TH	NO. DEG.	EA	EA	EA	FT	CY	LBS	TYPE	EA	CY	CY	CY	CY	SY	CY	TYPE	EA	EA	
EXISTING DRAINAGE																														
PARK AND RIDE																														
10 72+94.9	72+94.9	LT-LT		DI	PIPE																									RETAIN PIPE AND STRUCTURE IN I-89 MEDIAN
11 71+16.2	76+2.2	LT		PIPE	PIPE																									RETAIN UNDERDRAIN
12 75+62.5	75+61.9	LT-RT		PIPE	PIPE																									RETAIN UNDERDRAIN
13 62+85.2	63+32.9	LT		PIPE	PIPE																									RETAIN PIPE
PROPOSED DRAINAGE																														
PARK AND RIDE																														
2 72+26.5	73+26.3	LT		PIPE	PIPE	18	100																							DUCTILE IRON PIPE, CEMENT LINED. PAID UNDER ITEM 628.28
3 75+57.78		RT		DI	PIPE									1					B(2)			21.6	10.0					1		REMOVE HEADWALL AND INSTALL NEW 6' DIA. PRECAST REINFORCED CONCRETE CATCH BASIN (2 GRATES). REMOVE EXISTING STEEL PIPE AS REQUIRED. SEE DRAINAGE DETAIL SHEET.
TOTALS						18	100	DUCTILE IRON PIPE, CEMENT LINED						1					B=2			21.6	10.0					1		

* EXCAVATION PAID UNDER SPECIAL PROVISION (UNIT BLOCK RETAINING WALL)
** CONNECTION TO EXISTING UNDERDRAIN. NO EXCAVATION REQUIRED.

STEEL BEAM GUARDRAIL, GALVANIZED

BEGIN STATION	END STATION	POSITION LEFT FT	POSITION RIGHT FT	END TREATMENT LEFT FT	END TREATMENT RIGHT FT
See Sheet 40 for Additional Details					
TOTALS					

CURB

SEE ROADWAY LAYOUT SHEET AND
CURB TIE AND LAYOUT SHEET FOR ADDITIONAL DETAILS

TOTAL EXISTING CURB WITHIN CMG PARK (31) = 1301 FT

TOTAL OF NEW VERTICAL GRANITE CURB FOR CMG PARK (31) = 951 FT

TOTAL OF REMOVAL OF EXISTING CURB FOR CMG PARK (31) = 1300 FT

TOTALS

UNDERDRAIN

BEGIN STATION	END STATION	POSITION	TYPE	DIA IN.	LENGTH FT	TRENCH EARTH CY.	TRENCH ROCK CY.	GRAN BKFILL CF	FB EA	MRK. POST EA
#3 3 72+26.5	73+26.3	LT-LT	U	6	100	73.0				
#4 4 72+29.5	73+23.3	LT-LT	U	6	~~111~~ 112	*			1	1
#11 11 70+48.3	71+15.3	LT-LT	U	6	~~67~~ 68	21.3			1	1
#13 13 73+50.0	74+17.0	RT-RT	U	6	~~115~~ 116	42.6			2	2
		TOTAL 6 INCH UNDERDRAIN PIPE			393	136.9			4	4
1 70+50.0	72+17.9	LT-LT	U	6	168	141.6			2	2
2 72+17.9	72+26.5	LT-LT	U	6	~~9~~ 10	7.6				
5 73+26.3	73+40.5	LT-LT	U	6	14	11.8				
6 73+40.5	76+11.5	LT-LT	U	6	298	251.1			2	2
7 76+14.5	76+15.9	LT-RT	U	6	36	30.3				
8 76+15.9	75+57.8	RT-RT	U	6	118	99.4			1	1
9 74+59.9	75+30.0	RT-RT	U	6	106	117.9			2	2
				DRY SWALE	749	659.7			7	7
10 75+61.9	75+57.8	RT-RT	C	6	11	**				
		TOTAL 6 INCH UNDERDRAIN CARRIER PIPE			11					
TOTALS					1,153	796.6			11	11

PROJECT NAME:	RICHMOND		
PROJECT NUMBER:	CMG PARK (31)		
FILE NAME:	Z97C186ITEMDET.XLS	PLOT DATE:	11/15/2012
PROJECT LEADER:	ERIK ATKINS	DRAWN BY:	T. BIGELOW
DESIGNED BY:	T. BIGELOW	CHECKED BY:	E. ATKINS
ITEM DETAIL AND DRAINAGE SHEET		SHEET 101 OF 133	

STATE OF VERMONT
AGENCY OF TRANSPORTATION

EARTHWORKS

STATION	DIST FT.	TOTAL EXCAVATION EARTH AND ROCK AREA S.F.	TOTAL EXCAVATION EARTH AND ROCK VOLUME C.Y.	ROCK EXCAVATION AREA S.F.	ROCK EXCAVATION VOLUME C.Y.	EMBANKMENT AREA S.F.	EMBANKMENT VOLUME C.Y.	AREA S.F.	VOLUME C.Y.
PARK AND RIDE									
70+00		0				0			
	50		153				5		
70+50		165				5			
	50		288				17		
71+00		146				13			
	50		278				23		
71+50		154				12			
	50		299				16		
72+00		169				5			
	33		216				3		
72+33		184				0			
	17		113				0		
72+50		175				0			
	27		273				0	CUT	5343
72+77		372				0		ROCK	0
	23		312				0	R.FAC	.495
73+00		361				0		FILL	235
	20		237				0	F.FAC	1.15
73+20		279				0		EX. C	5073
	30		336				0		
73+50		326				0			
	50		603				0		
74+00		325				0			
	50		585				4		
74+50		307				4			
	50		540				28		
75+00		277				26			
	50		476				81		
75+50		238				62			
	50		565				57		
76+00		372				0			
	5		69				0		
76+05		372				0			
							0		

STATION	DIST FT.	TOTAL EXCAVATION EARTH AND ROCK AREA S.F.	TOTAL EXCAVATION EARTH AND ROCK VOLUME C.Y.	ROCK EXCAVATION AREA S.F.	ROCK EXCAVATION VOLUME C.Y.	EMBANKMENT AREA S.F.	EMBANKMENT VOLUME C.Y.	AREA S.F.	VOLUME C.Y.

STATION	DIST FT.	TOTAL EXCAVATION EARTH AND ROCK AREA S.F.	TOTAL EXCAVATION EARTH AND ROCK VOLUME C.Y.	ROCK EXCAVATION AREA S.F.	ROCK EXCAVATION VOLUME C.Y.	EMBANKMENT AREA S.F.	EMBANKMENT VOLUME C.Y.	AREA S.F.	VOLUME C.Y.

SUMMARY AND BALANCES

STATION TO STATION		TOT EXC. EARTH & ROCK C.Y.	ROCK EXCAV C.Y.	EMBANK C.Y.	EXCESSES CUT	EXCESSES FILL	ACUMULATIVE EXCESSES CUT	ACUMULATIVE EXCESSES FILL
CMG PARK (31)								
70+00	76+05	5343		235	5073		5073	
3% CONTINGENCY			160					
SUB-TOTAL		5343	160	235	5073			
TOTAL		5343	160	235	5073			

REMARKS

EARTH AND ROCK EXCAVATION		5343
SOLID ROCK EXCAVATION		160
EARTH EXCAVATION		5183
BACKFILL FOR TRENCH EXCAVATION (CB AND PIPES)		4
PLANIMETERED FILL		235
LESS FACTORED SOLID ROCK		
LESS DISPLACEMENT OF ANY LARGE STRUCTURES		
NET PLANIMETERED FILL		239
FACTOR		1.15
PLANIMETERED FILL INCLUDING FACTOR		275
MATERIALS AVAILABLE FOR FILLS		
EARTH EXCAVATION		5183
CHANNEL EXCAVATION		
UNDERDRAIN EXCAVATION		797
STRUCTURE EXCAVATION		
TRENCH EXCAVATION FOR DRAINAGE		22
TRENCH EXCAVATION OF ROCK		10
TOTAL MATERIAL AVAILABLE FOR FILL		6012
TOTAL FILL INCLUDING FACTOR		275
TOTAL MATERIAL FOR FILL		6012
BORROW		
EXCESS EXCAVATION		5737

PROJECT NAME: **RICHMOND**
PROJECT NUMBER: **CMG PARK (31)**

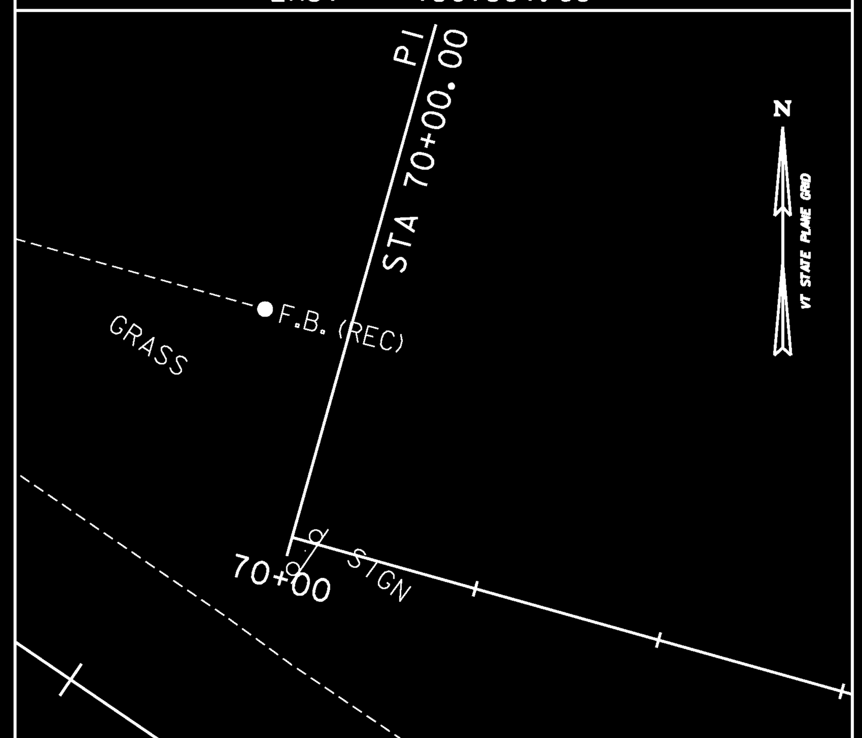
FILE NAME: **Z97C186EWQTY.XLS**
PROJECT LEADER: **ERIK ATKINS**
DESIGNED BY: **T. BIGELOW**
EARTHWORK SHEET

PLOT DATE: **11/15/2012**
DRAWN BY: **A. ACHARYA**
CHECKED BY: **E.ATKINS**
SHEET **102** OF **133**

ALIGNMENT TIES

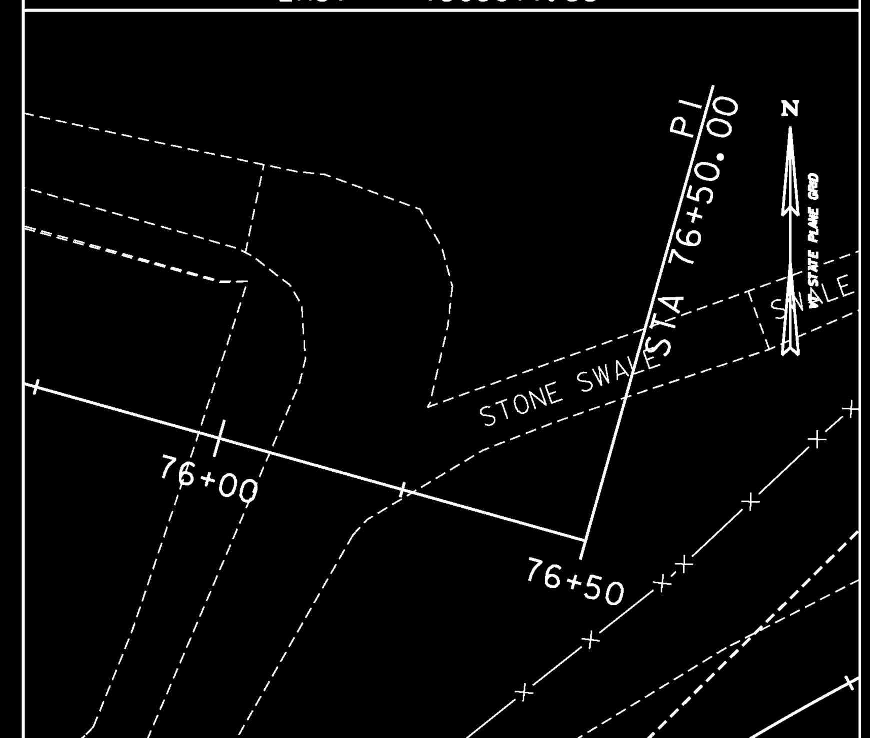
PARK & RIDE POT STA. 70+00.00

NORTH = 701543.75
EAST = 1507391.68



PARK & RIDE POT STA. 76+50.00

NORTH = 701368.28
EAST = 1508017.55



NORTH =
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NORTH =
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AMIGNMENT TIES

NORTH =
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ALIGNMENT TIES

NORTH =
EAST =

NORTH =
EAST =

NORTH =
EAST =

NORTH =
EAST =

NORTH =
EAST =

DATUM	
VERTICAL	NAVD88
HORIZONTAL	NAD83 (1992)
ADJUSTMENT	COMPASS

0 20 40
SCALE IN FEET

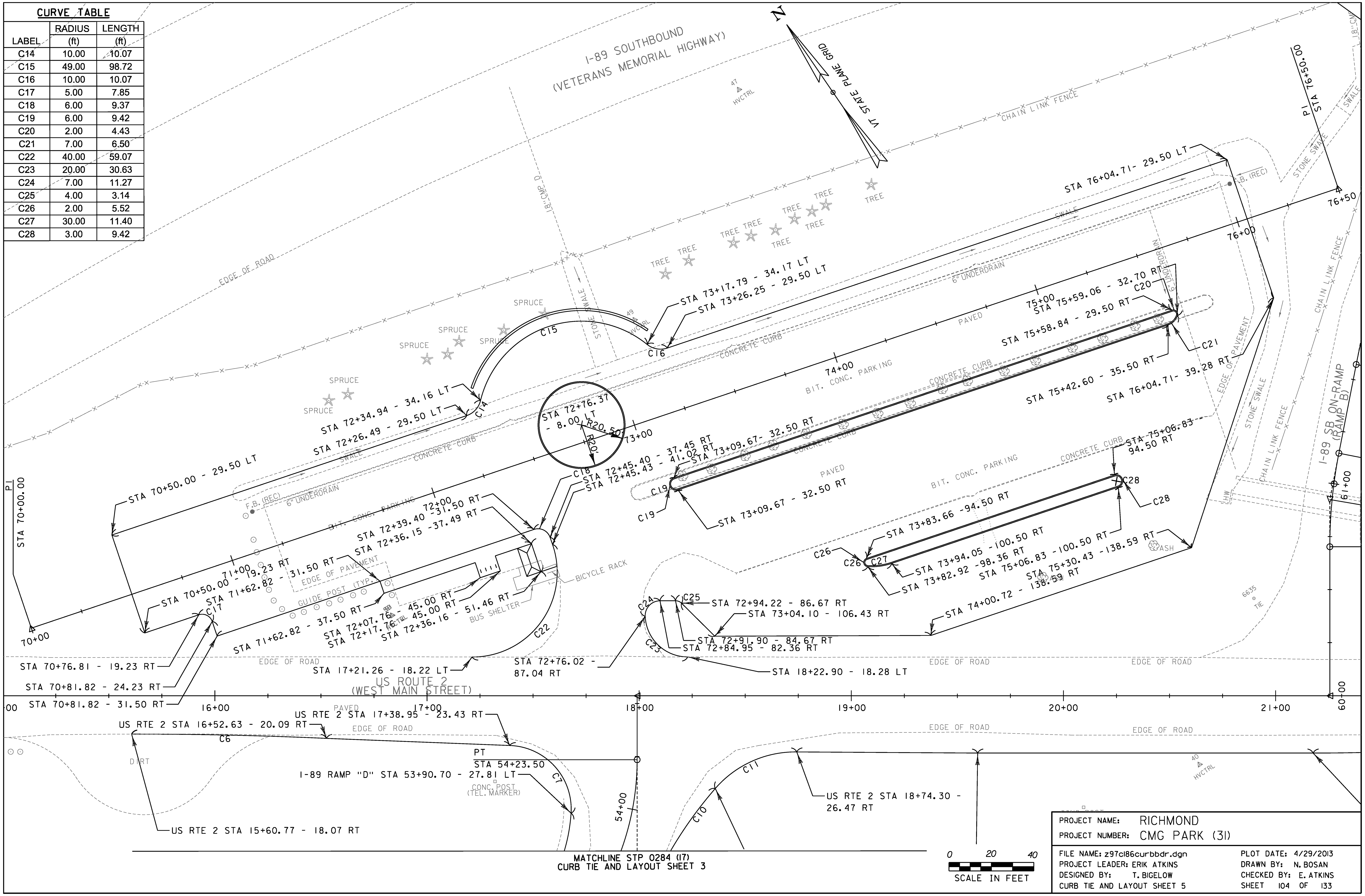
PROJECT NAME: RICHMOND
PROJECT NUMBER: CMG PARK (31)

FILE NAME: z97c186ti.dgn
PROJECT LEADER: ERIK ATKINS
DESIGNED BY: T. BIGELOW
TIE SHEET 4

PLOT DATE: 4/29/2013
DRAWN BY: A. ACHARYA
CHECKED BY: E. ATKINS
SHEET 103 OF 133

CURVE TABLE

LABEL	RADIUS (ft)	LENGTH (ft)
C14	10.00	10.07
C15	49.00	98.72
C16	10.00	10.07
C17	5.00	7.85
C18	6.00	9.37
C19	6.00	9.42
C20	2.00	4.43
C21	7.00	6.50
C22	40.00	59.07
C23	20.00	30.63
C24	7.00	11.27
C25	4.00	3.14
C26	2.00	5.52
C27	30.00	11.40
C28	3.00	9.42



PROJECT NAME:	RICHMOND
PROJECT NUMBER:	CMG PARK (31)

FILE NAME: z97c186curbbdr.dgn	PLOT DATE: 4/29/2013
PROJECT LEADER: ERIK ATKINS	DRAWN BY: N. BOSAN
DESIGNED BY: T. BIGELOW	CHECKED BY: E. ATKINS
CURB TIE AND LAYOUT SHEET 5	SHEET 104 OF 133

DEMOLITION AND DISPOSAL OF BUILDING
PNR 72+31.9 RT

REMOVE EXISTING PAVEMENT (COMMON EXCAVATION)
PNR 71+25.0 LT - PNR 76+04.3 LT
PNR 71+25.0 RT - US RTE 2 17+21.3 LT
US RTE 2 18+23.1 LT - PNR 76+04.3 RT
PNR 72+55.6 RT - PNR 72+96.9 RT
PNR 72+86.0 RT - PNR 75+79.6 RT

BITUMINOUS CRACK SEALING
PNR 70+50.0 - PNR 76+05.0
(SEAL ALL CRACKS AS DIRECTED BY THE ENGINEER)

STONE FILL, TYPE I
PNR 72+19.8 RT - 73+40.5 ~~RT~~ LT
PNR 76+17.5 LT/RT - 76+33.9 RT

STONE FILL, TYPE II
PNR 71+50.0 LT - 71+86.0 LT PNR 70+50.0 LT - 71+13.0 LT PNR 72+00.0 LT - 72+34.0 LT
PNR 76+13.0 RT - 76+32.3 RT PNR 71+42.0 LT - 71+62.0 LT PNR 73+35.0 LT - 74+51.0 LT

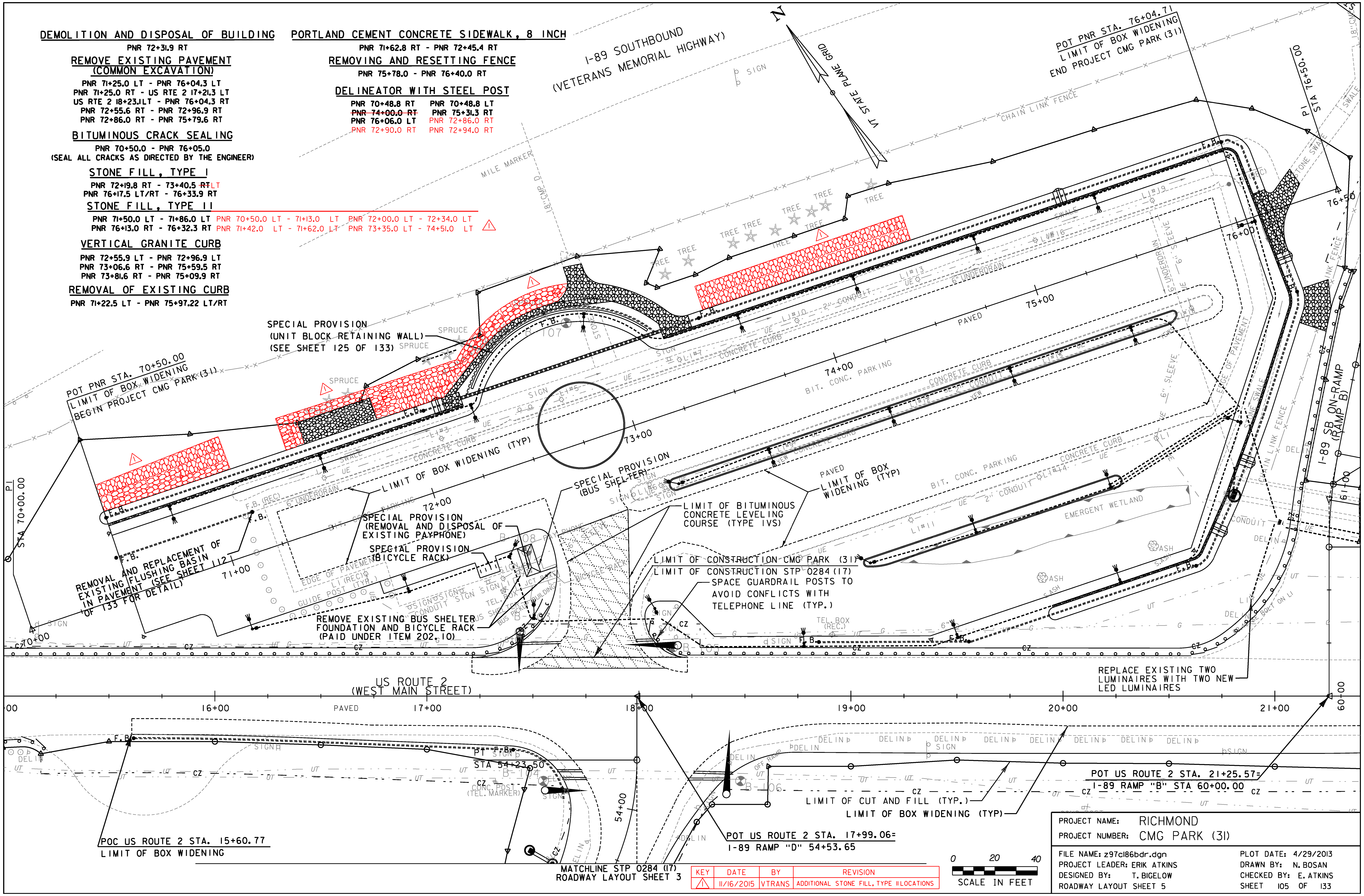
VERTICAL GRANITE CURB
PNR 72+55.9 LT - PNR 72+96.9 LT
PNR 73+06.6 RT - PNR 75+59.5 RT
PNR 73+81.6 RT - PNR 75+09.9 RT

REMOVAL OF EXISTING CURB
PNR 71+22.5 LT - PNR 75+97.22 LT/RT

PORTLAND CEMENT CONCRETE SIDEWALK, 8 INCH
PNR 71+62.8 RT - PNR 72+45.4 RT

REMOVING AND RESETTING FENCE
PNR 75+78.0 - PNR 76+40.0 RT

DELINEATOR WITH STEEL POST
PNR 70+48.8 RT PNR 70+48.8 LT
~~PNR 74+00.0 RT~~ PNR 75+31.3 RT
PNR 76+06.0 LT PNR 72+86.0 RT
PNR 72+90.0 RT PNR 72+94.0 RT

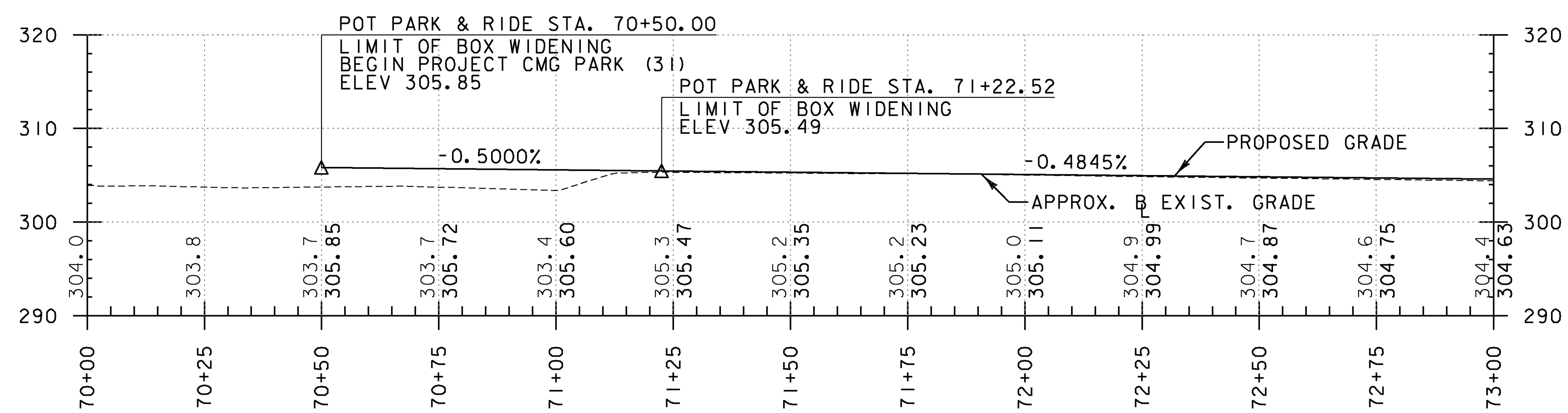


KEY	DATE	BY	REVISION
△	11/16/2015	VTRANS	ADDITIONAL STONE FILL, TYPE II LOCATIONS

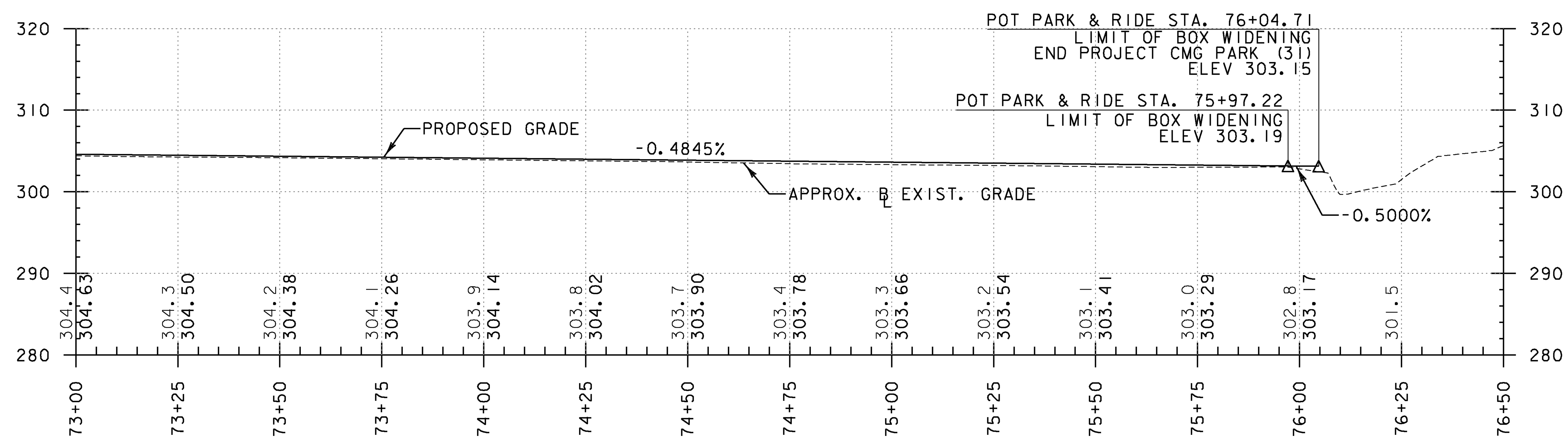
PROJECT NAME: RICHMOND
PROJECT NUMBER: CMG PARK (31)

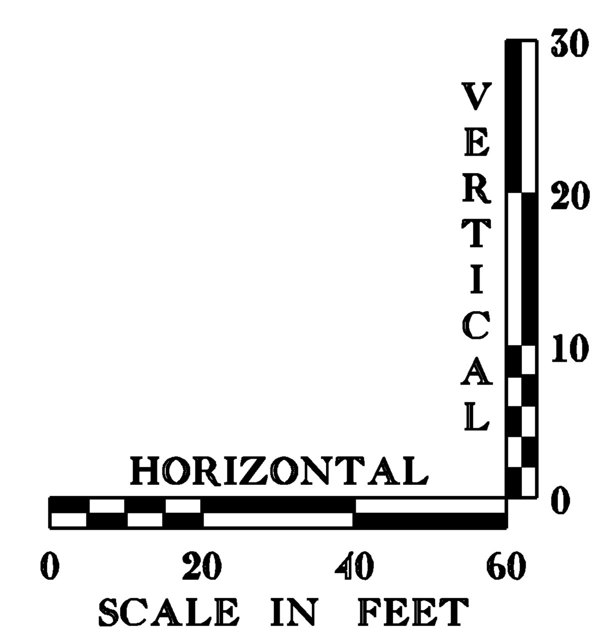
FILE NAME: z97c186bdr.dgn
PROJECT LEADER: ERIK ATKINS
DESIGNED BY: T. BIGELOW
ROADWAY LAYOUT SHEET 5
PLOT DATE: 4/29/2013
DRAWN BY: N. BOSAN
CHECKED BY: E. ATKINS
SHEET 105 OF 133

PARK & RIDE



PARK & RIDE

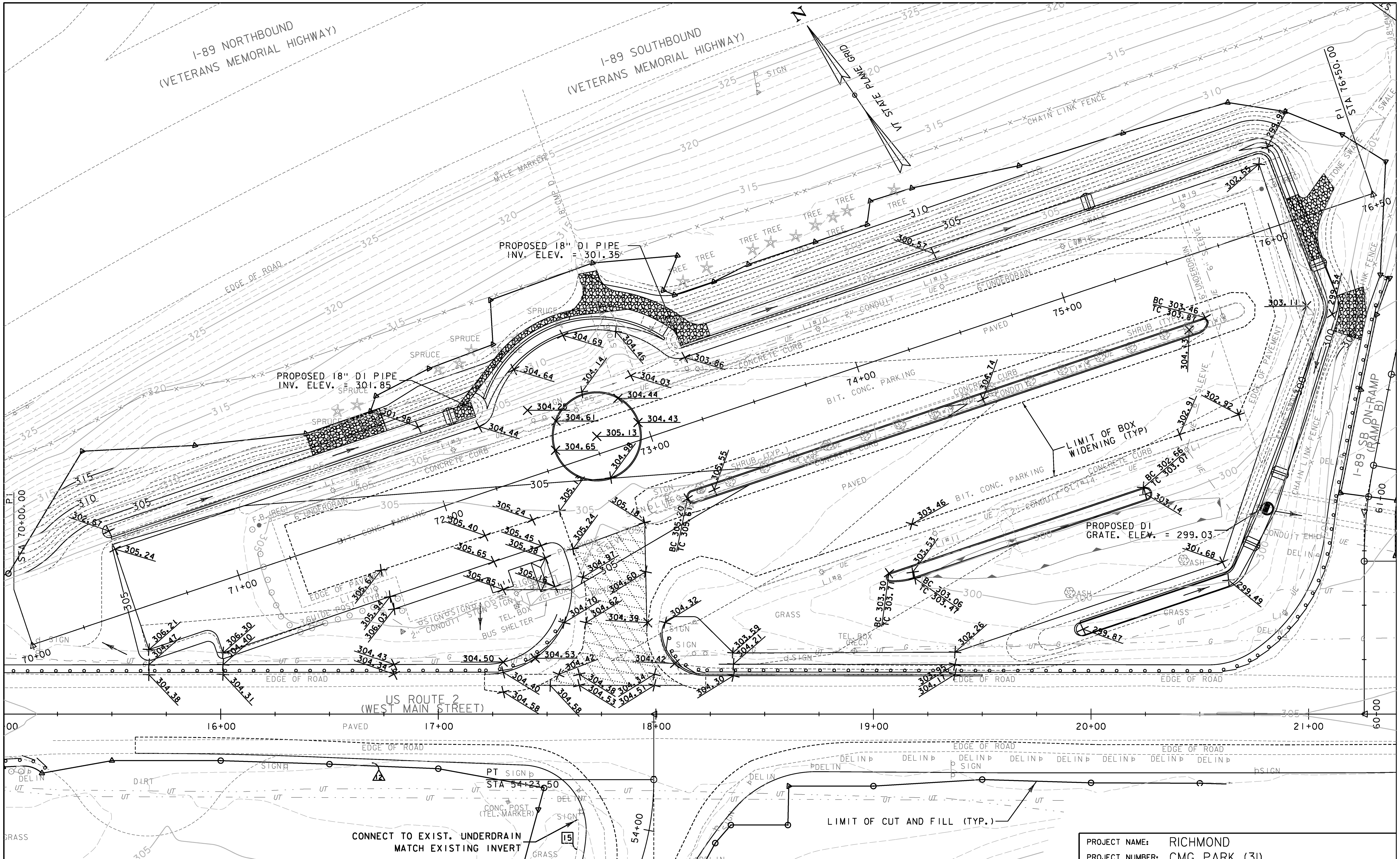




NOTE:
CONTRACTOR SHALL USE PROPOSED PROFILE GRADES FROM STA. 70+50.00 TO STA. 71+22.52 AND STA. 75+97.22 TO STA. 76+01.09. PROPOSED GRADES SHALL BE 1-½" HIGHER THAN EXISTING GRADES BETWEEN 71+22.52 TO 75+97.22. REFER TO PARTIAL GRADING PLAN FOR ADDITIONAL INFORMATION.

THE GRADES SHOWN TO THE NEAREST TENTH ARE THE ORIGINAL GROUND APPROXIMATE ELEVATIONS ALONG THE PROPOSED ALIGNMENT. THE GRADES SHOWN TO THE NEAREST HUNDREDTH ARE THE PROPOSED PROFILE GRADES FOR THE NEW ALIGNMENT.

PROJECT NAME: RICHMOND	
PROJECT NUMBER: CMG PARK (31)	
FILE NAME: z97c186xsl.dgn	PLOT DATE: 5/1/2013
PROJECT LEADER: ERIK ATKINS	DRAWN BY: S. FORTIER
DESIGNED BY: T. BIGELOW	CHECKED BY: E. ATKINS
PARK & RIDE PROFILE	SHEET 106 OF 133

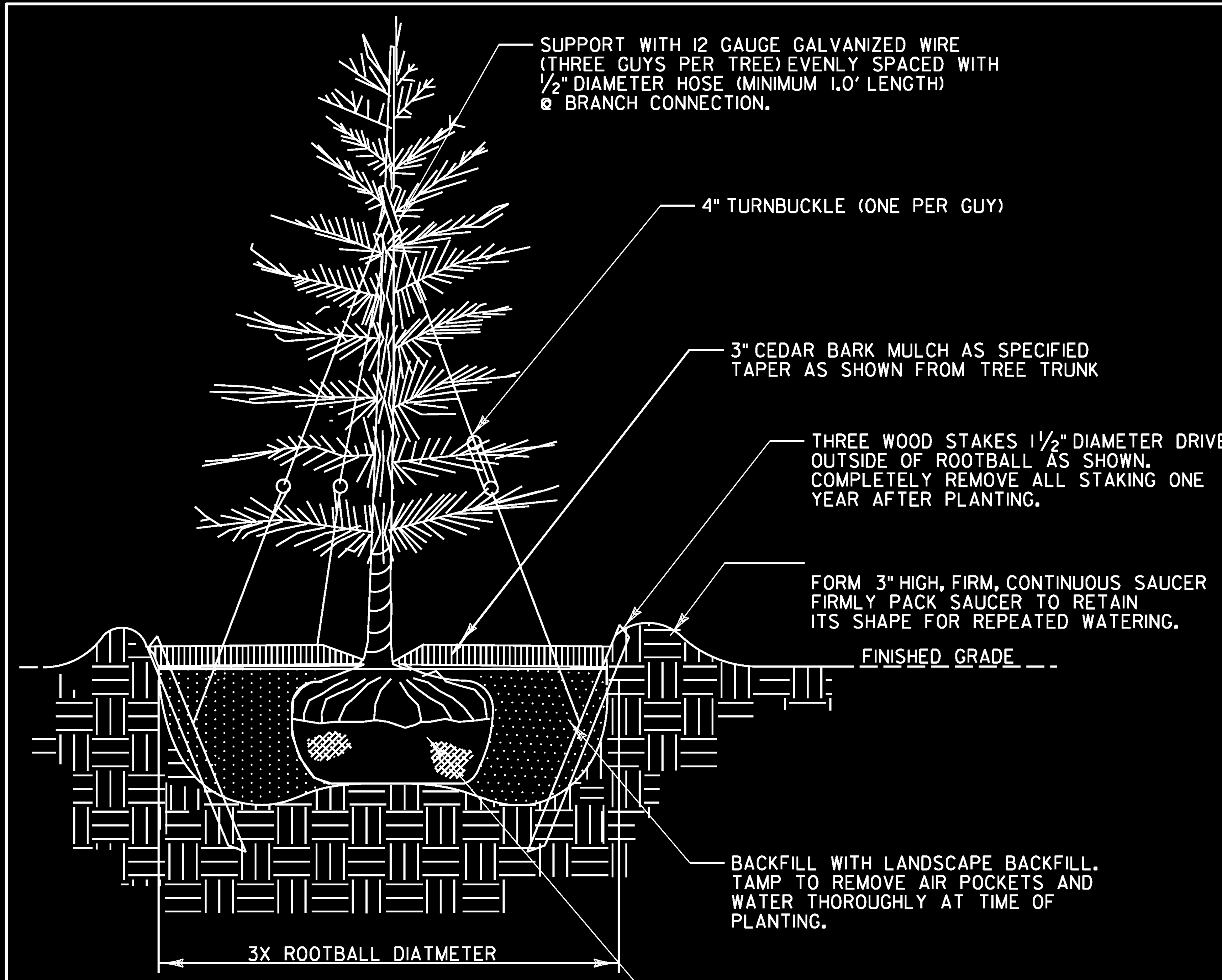


NOTE:
PARKING LOT GRADES ARE SHOWN TO DEPICT GRADING INTENT.
FINAL GRADES SHALL BE BASED ON FINAL 1-½" OVERLAY.
REFER TO CROSS SECTIONS FOR ADDITIONAL GRADING REQUIREMENTS.

VARIABLE DEPTH (2-½" MAX)
LEVELING COURSE TO ACHIEVE DESIRED GRADES

0 20 40
SCALE IN FEET

PROJECT NAME: RICHMOND	
PROJECT NUMBER: CMG PARK (31)	
FILE NAME: z97c186grbdr.dgn	PLOT DATE: 4/30/2013
PROJECT LEADER: ERIK ATKINS	DRAWN BY: S. FORTIER
DESIGNED BY: T. BIGELOW	CHECKED BY: E. ATKINS
PARTIAL GRADING PLAN	SHEET 107 OF 133

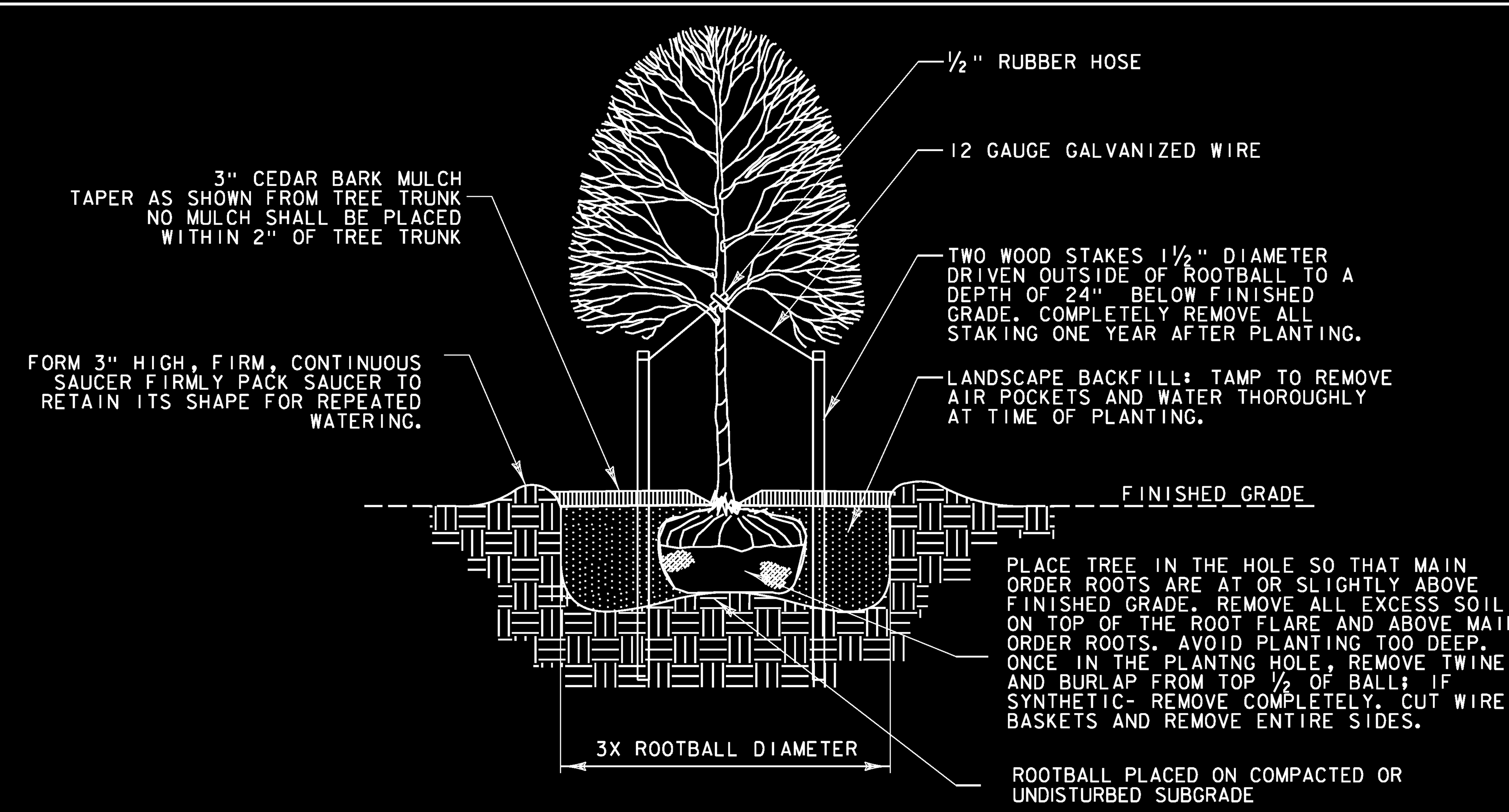


EVERGREEN TREE PLANTING DETAIL

SCALE: NOT TO SCALE

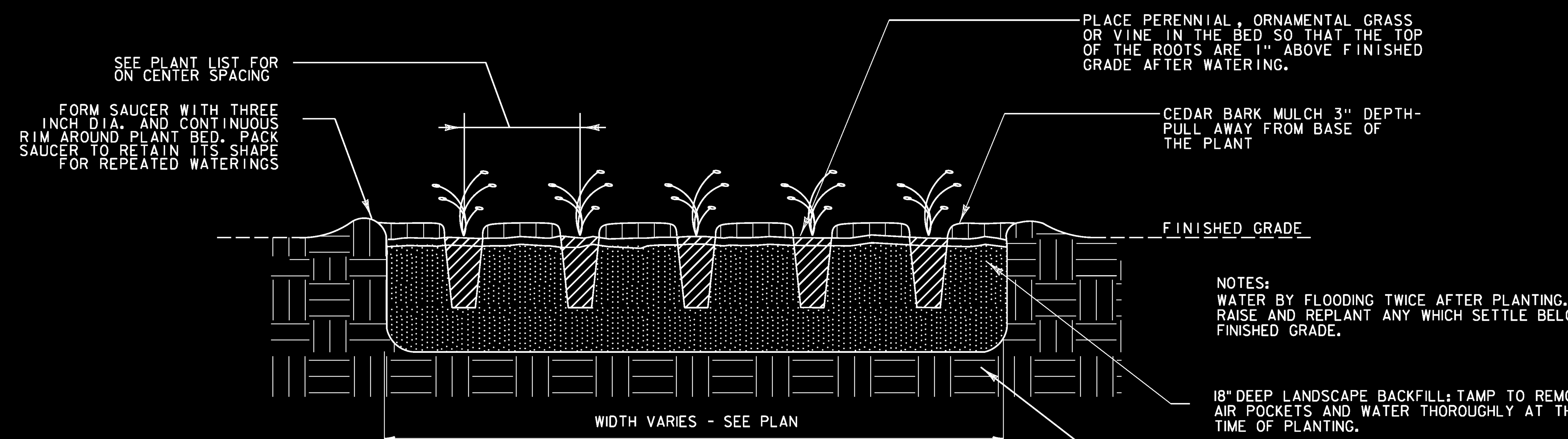
NOTES:

1. ANTI-DESICCANT SPRAY IS TO BE APPLIED TO ALL EVERGREENS PER MANUFACTURER SPECIFICATIONS.
2. COMPLETELY REMOVE ALL GUY-WIRES AND TURNBUCKLE ONE YEAR AFTER PLANTING.



TYPICAL DECIDUOUS TREE PLANTING DETAIL

SCALE: NOT TO SCALE



NOTES:
WATER BY FLOODING TWICE AFTER PLANTING. RAISE AND REPLANT ANY WHICH SETTLE BELOW FINISHED GRADE.

PERENNIAL/ORNAMENTAL GRASS/VINE DETAIL

SCALE: NOT TO SCALE

PLANT LIST

QTY.	SIZE	COMMON NAME/ AREA	BOTANICAL NAME	SPACING/ COMMENTS
DECIDUOUS TREES 656.30				
7	5-6 FEET HEIGHT	TAMARACK	LARIX LARICINA	B&B, SEE PLAN FOR LOCATION
3	2" - 2 1/2" CALIPER	PIN OAK	QUERCUS PALUSTRIS	B&B, SEE PLAN FOR LOCATION
3	2" - 2 1/2" CALIPER	RED OAK	QUERCUS RUBRA	B&B, SEE PLAN FOR LOCATION
EVERGREEN TREES 656.20				
5	7-8 FEET HEIGHT	WHITE SPRUCE	PICEA GLAUCA	B&B, SEE PLAN FOR LOCATION
GROUND COVERS & VINES 656.40				
50	N/A	VIRGINIA CREEPER	PARTHENOCISSUS QUINQUEFOLIA	# 2 CONTAINER - 2' O.C. SPACING

GENERAL LANDSCAPE NOTES;

1. SEE EPSC EROSION CONTROL DETAILS AND STANDARD SPECIFICATIONS FOR SEEDING FORMULAS, FERTILIZER APPLICATION RATES, MULCH REQUIREMENTS ETC..

2. LANDSCAPE BACKFILL, TRUCK MEASUREMENT
BACKFILL WITH PLANTING MIX OF 1/2 SCREENED TOPSOIL, 1/4 COMPOST AND 1/4 NATIVE MATERIAL AS APPROVED BY THE ENGINEER. UNSUITABLE NATIVE MATERIAL SHALL BE REPLACED WITH IMPORTED APPROVED TOPSOIL AS DIRECTED BY ENGINEER.

3. WATERING
SHRUBS TO RECEIVE A MINIMUM OF FIVE GALLONS AT EACH WATERING, TWICE WEEKLY DURING ESTABLISHMENT PERIOD. TREES TO RECEIVE A MINIMUM OF TEN GALLONS AT EACH WATERING, TWICE WEEKLY DURING ESTABLISHMENT PERIOD. CONTRACTORS SHALL MAINTAIN AND PROVIDE A LOG TO THE RESIDENT ENGINEER SHOWING AMOUNTS AND DATES OF WATERING AND NOTING NATURAL RAINFALL EVENTS. WATERING SCHEDULE MAY BE ADJUSTED AS APPROVED BY THE RESIDENT ENGINEER.

4. TREE PIT WIDTH
FOR TREES WITHIN PROJECT CONSTRUCTION LIMITS, THE DIMENSIONS OF BACKFILL PLANTING MIX ARE NOTED ON EACH PLAN SHEET. FOR ALL TREES TO BE PLANTED OUTSIDE PROJECT CONSTRUCTION LIMITS, THE PLANTING PIT SHALL BE THREE TIMES THE WIDTH OF THE ROOTBALL.

5. BARK MULCH SHALL BE CEDAR AND PROVIDED IN ACCORDANCE WITH SUBSECTION 755.10(C).

6. TPZ TREE PROTECTION ZONES SHALL BE USED TO PRESERVE AND PROTECT EXISTING TREES AND TREE ROOTS DURING CONSTRUCTION. REFER TO VTRANS STANDARD SPECIFICATION 656.10 TREE PROTECTION FOR THE PROCEDURES AND LOCATION AND DESCRIPTION OF BARRIER FENCE. ANY DAMAGE TO EXISTING TREES SHALL BE MITIGATED ACCORDING TO THIS SPECIFICATION.

PROJECT NAME: RICHMOND	
PROJECT NUMBER: CMG PARK (31)	
FILE NAME: z97c186landdet.dgn	PLOT DATE: 4/29/2013
PROJECT LEADER: ERIK ATKINS	DRAWN BY: N. BOSAN
DESIGNED BY: J. RIEMENSCHNEIDER	CHECKED BY: E. ATKINS
LANDSCAPE DETAILS	SHEET 108 OF 133

BARRIER FENCE FOR TREE PROTECTION

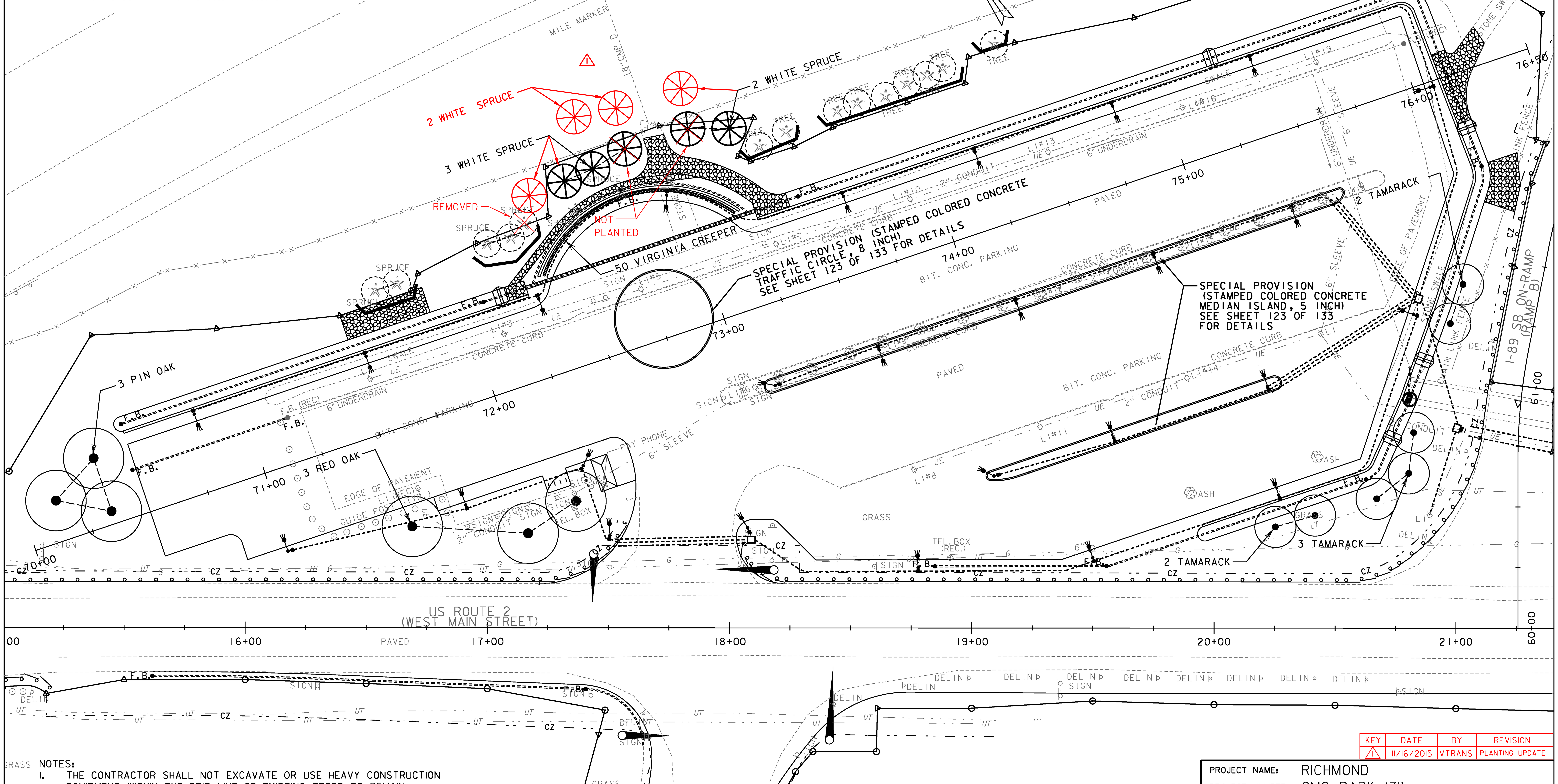
PNR 71+57.8 LT - PNR 71+84.1LT - 32.3
PNR 72+09.6 LT - PNR 72+40.7 LT - 37.6
PNR 73+28.6 LT - PNR 73+54.8 LT - 32.3
PNR 73+63.1LT - PNR 74+26.4 LT - 69.4
PNR 74+33.9 LT - PNR 74+49.5 LT - 21.6

SPECIAL PROVISION
(STAMPED COLORED CONCRETE TRAFFIC CIRCLE, 8 INCH)

PNR 72+56.4 LT/RT - PNR 72+96.4 LT/RT (139.6 SY)

SPECIAL PROVISION
(STAMPED COLORED CONCRETE MEDIAN ISLAND, 5 INCH)

PNR 73+06.7 RT - PNR 75+59.4 RT (167.3 SY)
PNR 73+81.7 RT - PNR 75+09.8 RT (83.6 SY)



0 20 40
SCALE IN FEET

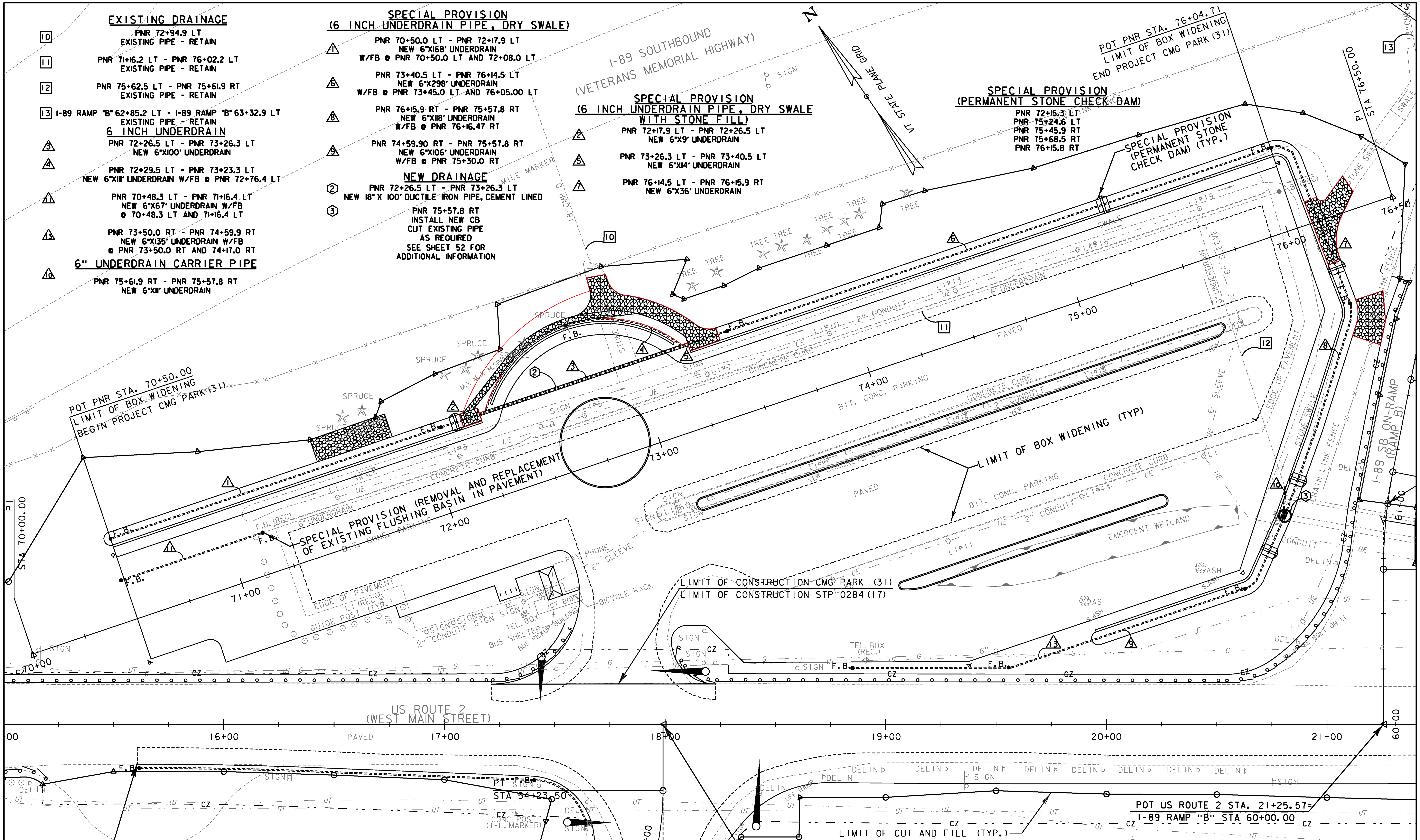
NOTES:
1. THE CONTRACTOR SHALL NOT EXCAVATE OR USE HEAVY CONSTRUCTION EQUIPMENT WITHIN THE DRIP LINE OF EXISTING TREES TO REMAIN. THE CONTRACTOR SHALL NOT ROUND THE SLOPES FROM STA 71+50 TO 74+50, OR AS DIRECTED BY THE ENGINEER.
2. SEE LANDSCAPE DETAILS FOR PLANT LIST.
3. SEE SHEET 113-115 FOR LIGHTING PLAN AND DETAILS.

KEY	DATE	BY	REVISION
1	11/16/2015	VTRANS	PLANTING UPDATE

PROJECT NAME: RICHMOND
PROJECT NUMBER: CMG PARK (31)

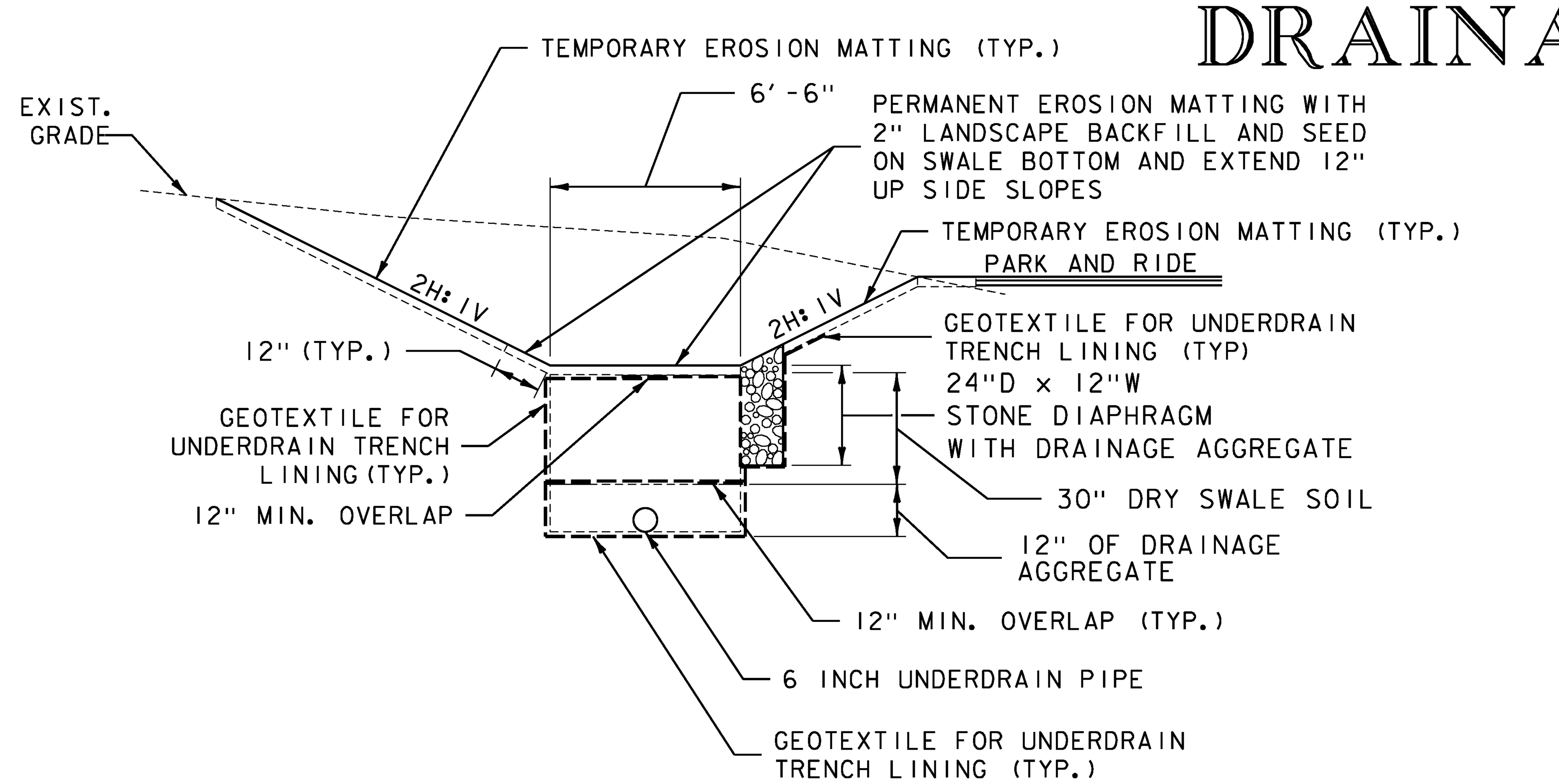
FILE NAME: z97c186landbdr.dgn
PROJECT LEADER: ERIK ATKINS
DESIGNED BY: J. RIEMENSCHNEIDER
LANDSCAPE PLAN

PLOT DATE: 4/30/2013
DRAWN BY: N. BOSAN
CHECKED BY: E. ATKINS
SHEET 109 OF 133



PROJECT NAME: RICHMOND	
PROJECT NUMBER: CMG PARK (31)	
FILE NAME: z97cl86drnbdr.dgn	PLOT DATE: 4/29/2013
PROJECT LEADER: ERIK ATKINS	DRAWN BY: N. BOSAN
DESIGNED BY: T. BIGELOW	CHECKED BY: E. ATKINS
PARK AND RIDE DRAINAGE LAYOUT SHEET	SHEET 110 OF 133

DRAINAGE DETAILS



SPECIAL PROVISION (6 INCH UNDERDRAIN PIPE, DRY SWALE)

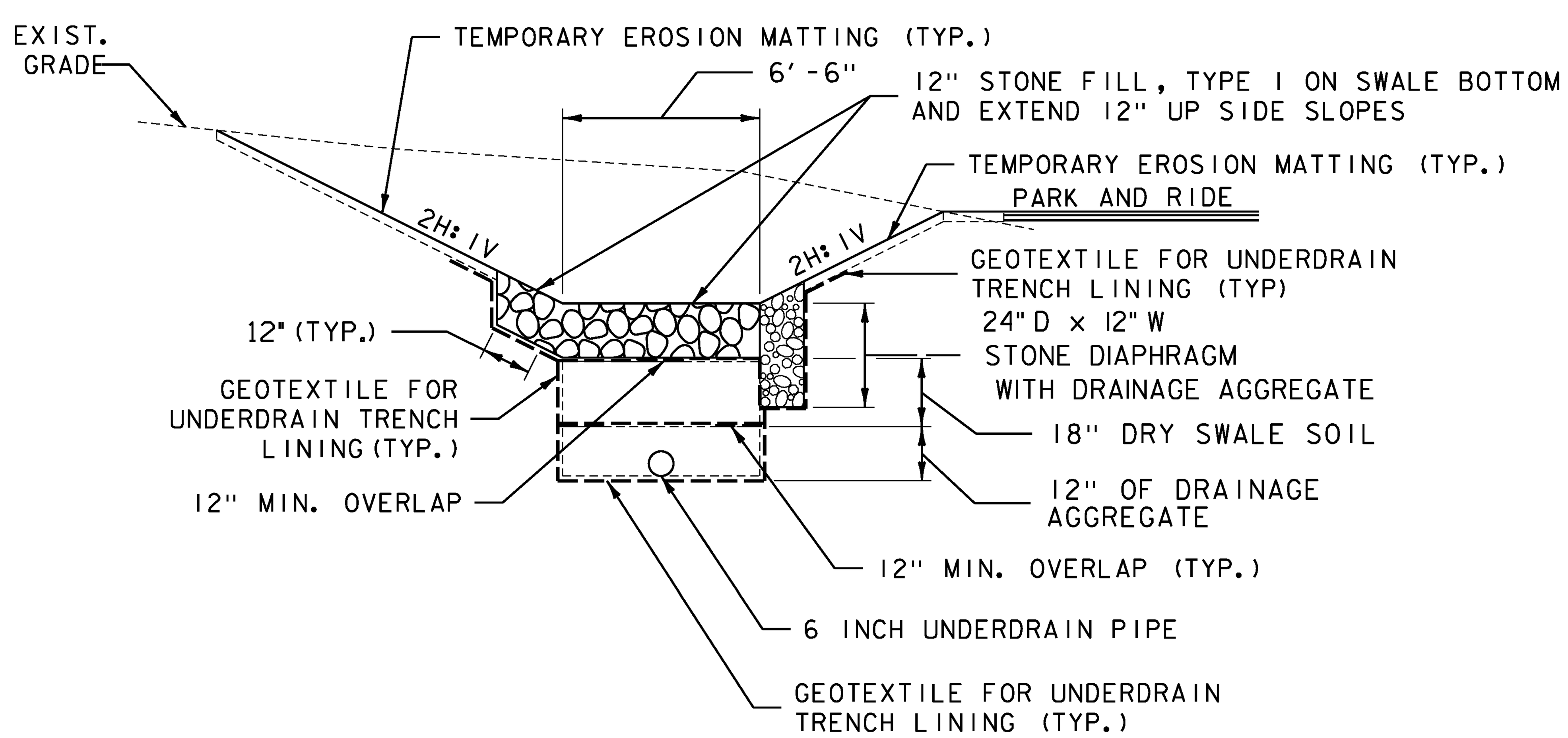
NOT TO SCALE

DRY SWALE NOTES:

1) THE CONTRACTOR SHALL WRAP GEOTEXTILE FOR UNDERDRAIN TRENCH LINING AROUND THE DRY SWALE SOIL AND DRAINAGE AGGREGATE SEPARATELY WITH A MINIMUM OF 12" OVERLAP AT ENDS.

2) THE CONTRACTOR SHALL PLACE PERMANENT EROSION MATTING WITH LANDSCAPE BACKFILL AND SEED OVER THE DRY SWALE SOIL.

3) PAYMENT FOR ITEM 900.640, "SPECIAL PROVISION (6 INCH UNDERDRAIN PIPE, DRY SWALE)" SHALL INCLUDE 6 INCH UNDERDRAIN, DRY SWALE SOIL, DRAINAGE AGGREGATE FOR STONE DIAPHRAGM AND GEOTEXTILE FOR UNDERDRAIN TRENCH LINING. PAYMENT FOR EXCAVATION SHALL BE MADE UNDER ITEM 204.20, "TRENCH EXCAVATION OF EARTH". PAYMENT FOR SEED SHALL BE MADE UNDER 651.15 "SEED". PAYMENT FOR "PERMANENT EROSION MATTING" SHALL BE MADE UNDER ITEM 653.21. PAYMENT FOR LANDSCAPE BACKFILL SHALL BE MADE UNDER ITEM 656.80 "LANDSCAPE BACKFILL, TRUCK MEASUREMENT".



SPECIAL PROVISION (6 INCH UNDERDRAIN PIPE, DRY SWALE WITH STONE FILL)

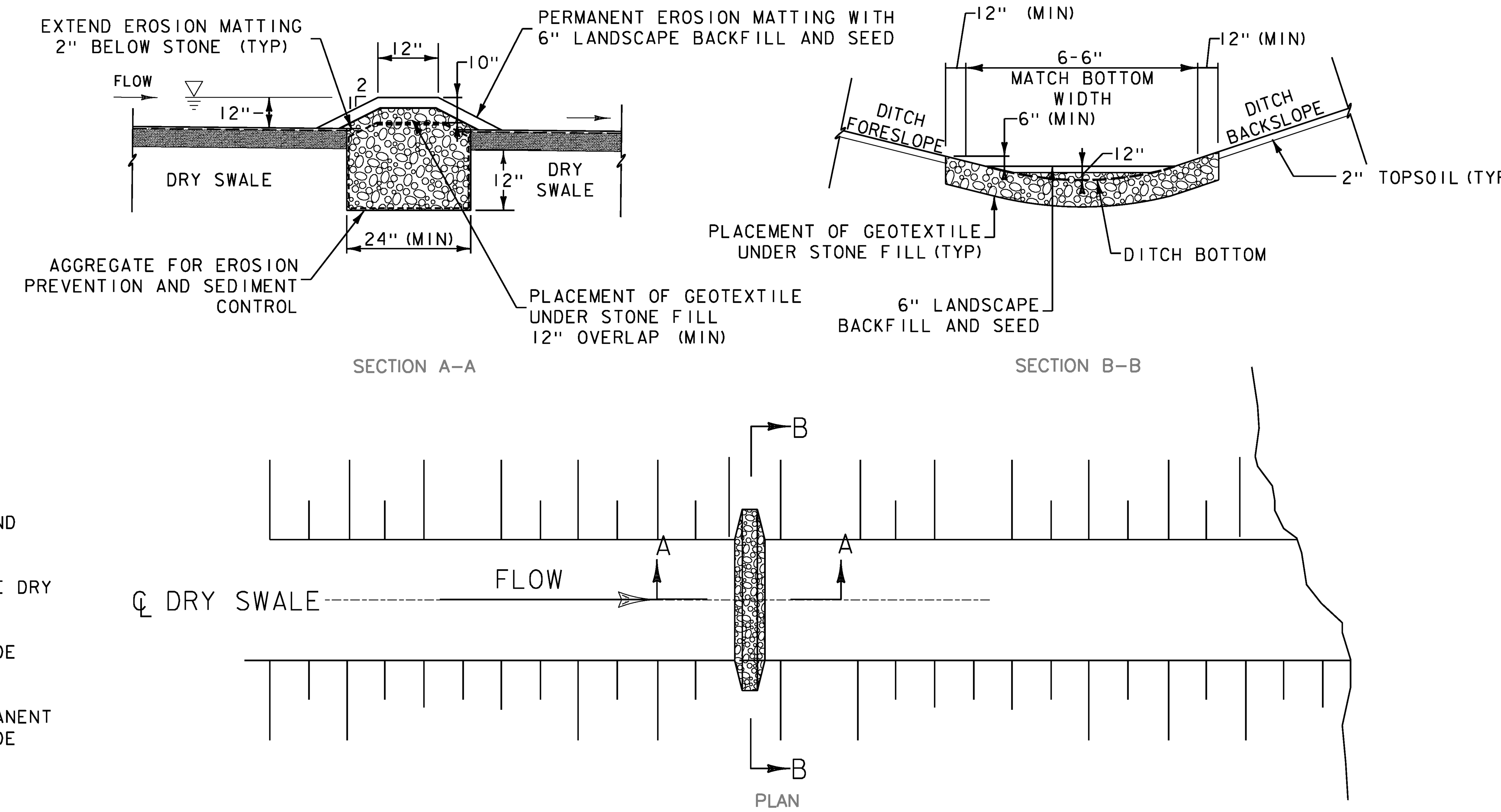
NOT TO SCALE

DRY SWALE WITH STONE FILL NOTES:

1) THE CONTRACTOR SHALL WRAP GEOTEXTILE FOR UNDERDRAIN TRENCH LINING AROUND THE DRY SWALE SOIL AND DRAINAGE AGGREGATE SEPARATELY WITH A MINIMUM OF 12" OVERLAP AT ENDS.

2) THE CONTRACTOR SHALL PLACE 12" OF STONE FILL, TYPE I OVER THE DRY SWALE SOIL.

3) PAYMENT FOR ITEM 900.640, "SPECIAL PROVISION (6 INCH UNDERDRAIN PIPE, DRY SWALE WITH STONE FILL)" SHALL INCLUDE 6 INCH UNDERDRAIN, STONE FILL, TYPE I, DRY SWALE SOIL,DRAINAGE AGGREGATE FOR STONE DIAPHRAGM AND GEOTEXTILE FOR UNDERDRAIN TRENCH LINING. PAYMENT FOR EXCAVATION SHALL BE MADE UNDER ITEM 204.20, "TRENCH EXCAVATION OF EARTH".



SPECIAL PROVISION (PERMANENT STONE CHECK DAM)

NOT TO SCALE

APPLICATION NOTES:

A. THESE CHECK DAMS ARE REQUIRED AS PART OF THE EROSION CONTROL AND PERMANENT STORMWATER MITIGATION REQUIREMENTS FOR THIS PROJECT. ALL CHANGES TO THE LOCATION, SIZE AND GEOMETRY SHALL BE APPROVED BY THE ENGINEER AND SHALL BE IN ACCORDANCE WITH ALL RELATED PERMITS.

GENERAL NOTES:

1. GEOTEXTILE UNDER STONE FILL SHALL BE INSTALLED AS INDICATED IN THE DETAILS. IT SHALL BE PLACED DIRECTLY IN THE BOTTOM OF THE PREPARED TRENCH AND WRAPPED AROUND THE AGGREGATE FOR EROSION PREVENTION AND SEDIMENT CONTROL AS SHOWN. PLACE AGGREGATE FOR EROSION PREVENTION AND SEDIMENT CONTROL OVER THE FABRIC AS SHOWN IN THE DETAILS TO CONCEAL THE FABRIC.

2. STONE FOR THE CHECK DAMS SHALL MEET THE GRADATION REQUIREMENTS OF AGGREGATE FOR EROSION PREVENTION AND SEDIMENT CONTROL AS SPECIFIED IN TABLE 704.17A IN THE STANDARD SPECIFICATIONS. PAYMENT FOR STONE WILL BE INCLUDED UNDER ITEM 900.608 SPECIAL PROVISION (PERMANENT STONE CHECK DAM).

3. LANDSCAPE BACKFILL SHALL BE PLACED TO A DEPTH OF 6 INCHES OVER THE STONE AS SHOWN IN THE DETAIL. PERMANENT EROSION MATTING AND SEED SHALL BE PLACED OVER THE LANDSCAPE BACKFILL. PAYMENT OF LANDSCAPE BACKFILL SHALL BE MADE UNDER ITEM 656.80 "LANDSCAPE BACKFILL, TRUCK MEASUREMENT".

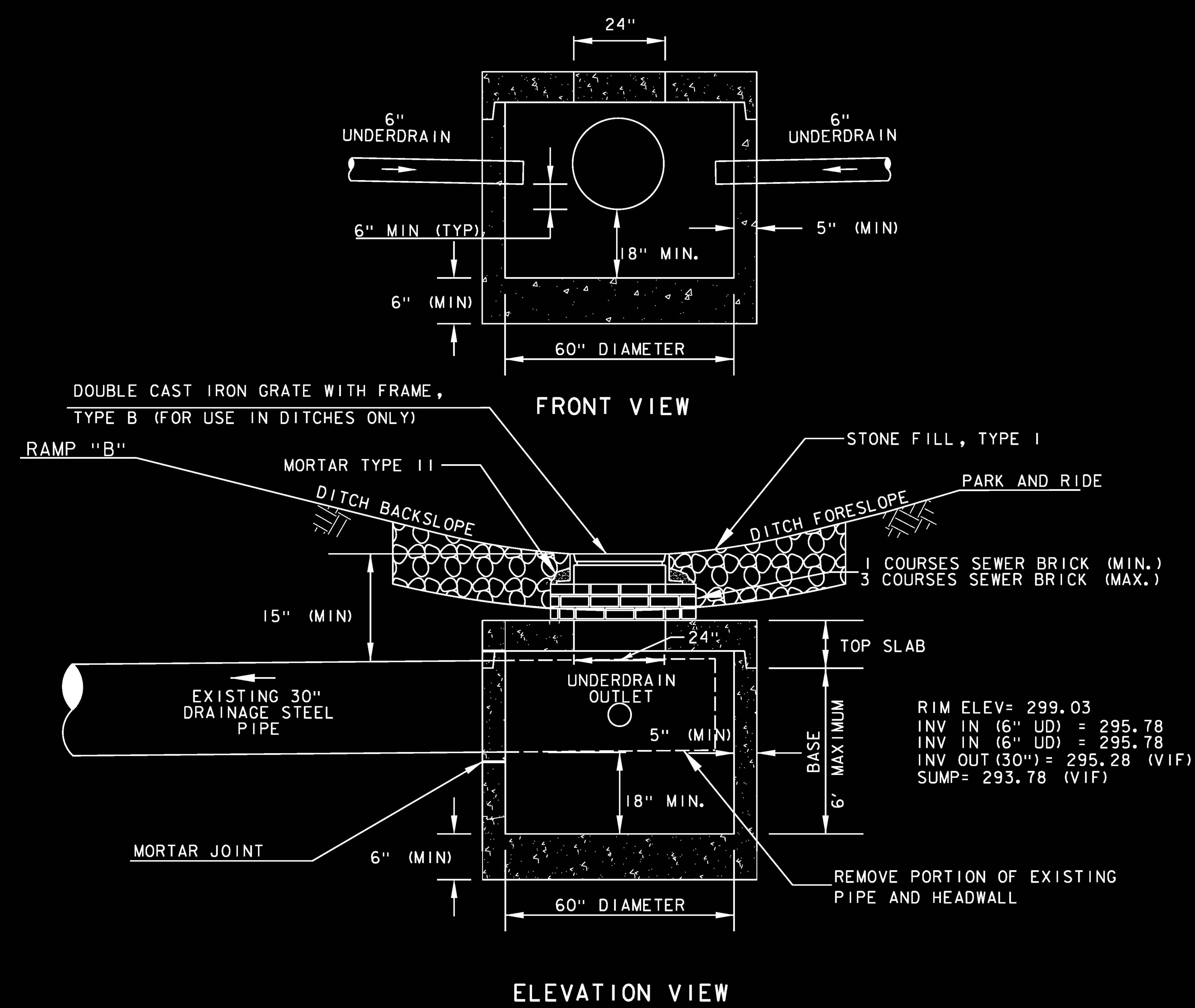
4. PAYMENT FOR EXCAVATION BELOW THE BOTTOM OF LANDSCAPE BACKFILL (FOR DRY SWALE) REQUIRED TO CONSTRUCT THE CHECK DAM SHALL BE MADE UNDER TRENCH EXCAVATION OF EARTH.

5. THE EROSION MATTING FOR THE GRASS CHANNEL SHALL EXTEND BELOW THE STONE AND BE ANCHORED BY THE WEIGHT OF THE STONE AS SHOWN IN THE DETAIL.

6. REFER TO THE EROSION CONTROL NARRATIVE FOR INSPECTION AND MAINTENANCE REQUIREMENTS.

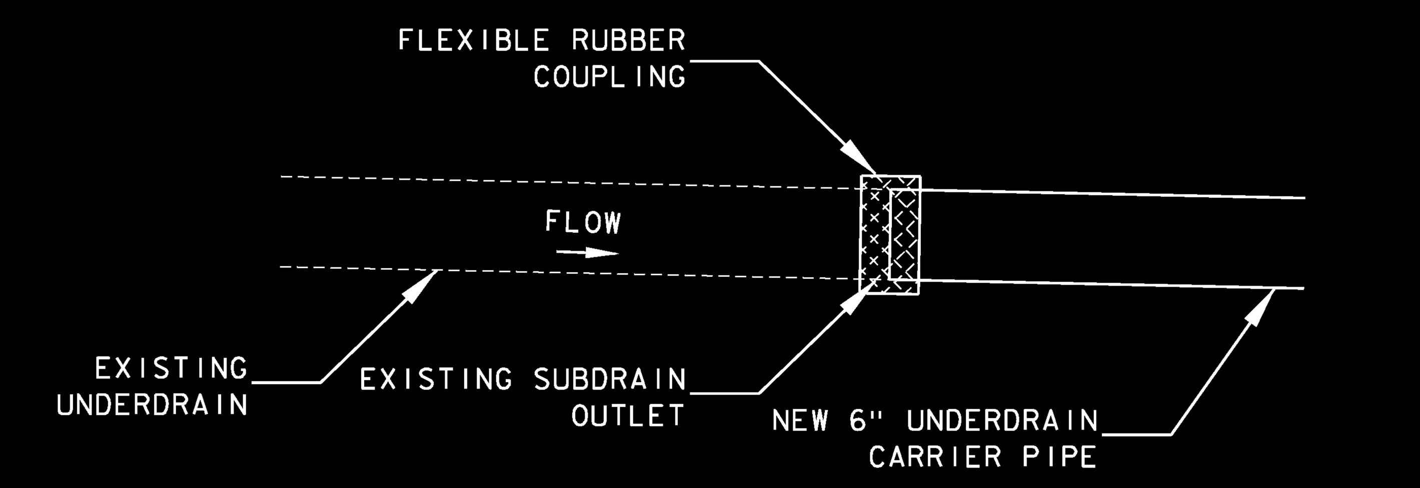
PROJECT NAME: RICHMOND	
PROJECT NUMBER: CMG PARK (31)	
FILE NAME: z97c186drndet.dgn	PLOT DATE: 4/29/2013
PROJECT LEADER: ERIK ATKINS	DRAWN BY: N. BOSAN
DESIGNED BY: T. BIGELOW	CHECKED BY: E. ATKINS
DRAINAGE DETAILS SHEET 1	SHEET 111 OF 133

DRAINAGE DETAILS



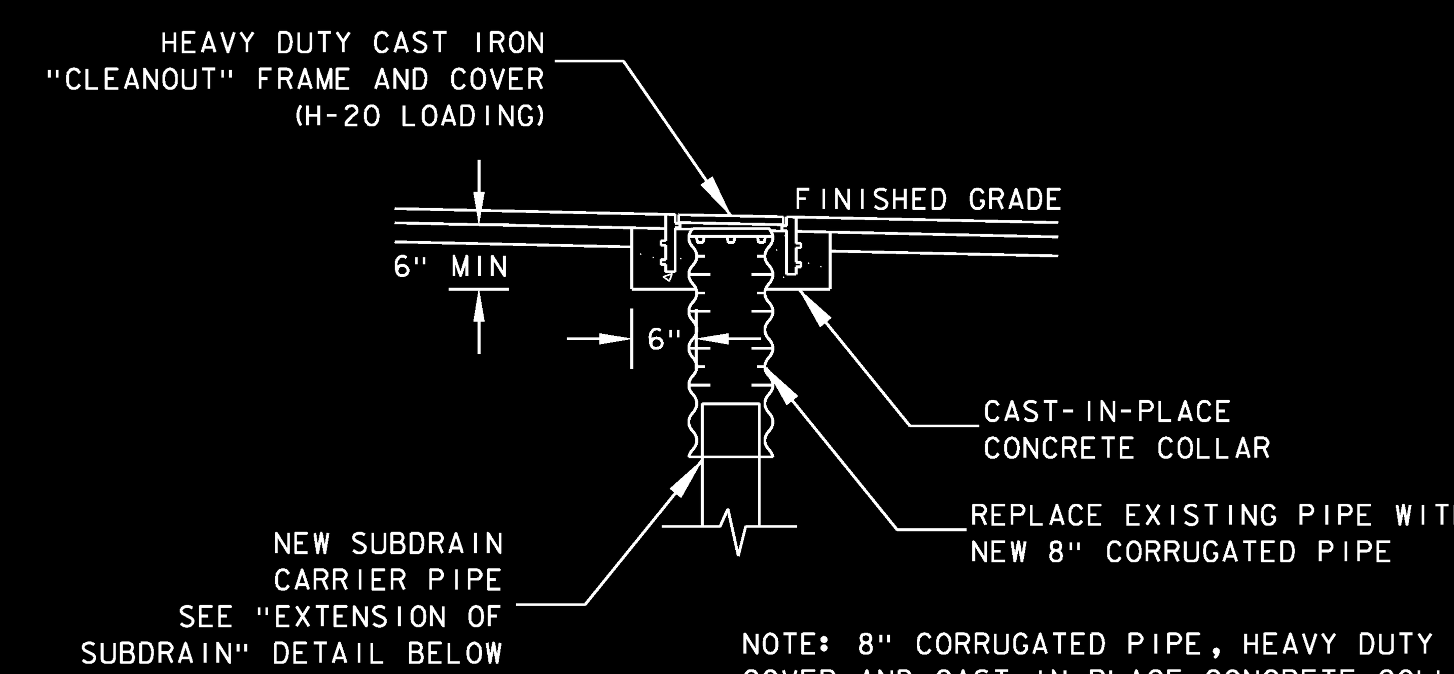
PRECAST CATCH BASIN INSTALLED IN DITCH W/ UNDERDRAIN FLUSHING ACCESS @ RAMP "B" STA. 75+57.78 RT

NOT TO SCALE



EXTENSION OF SUBDRAIN WITH CARRIER PIPE

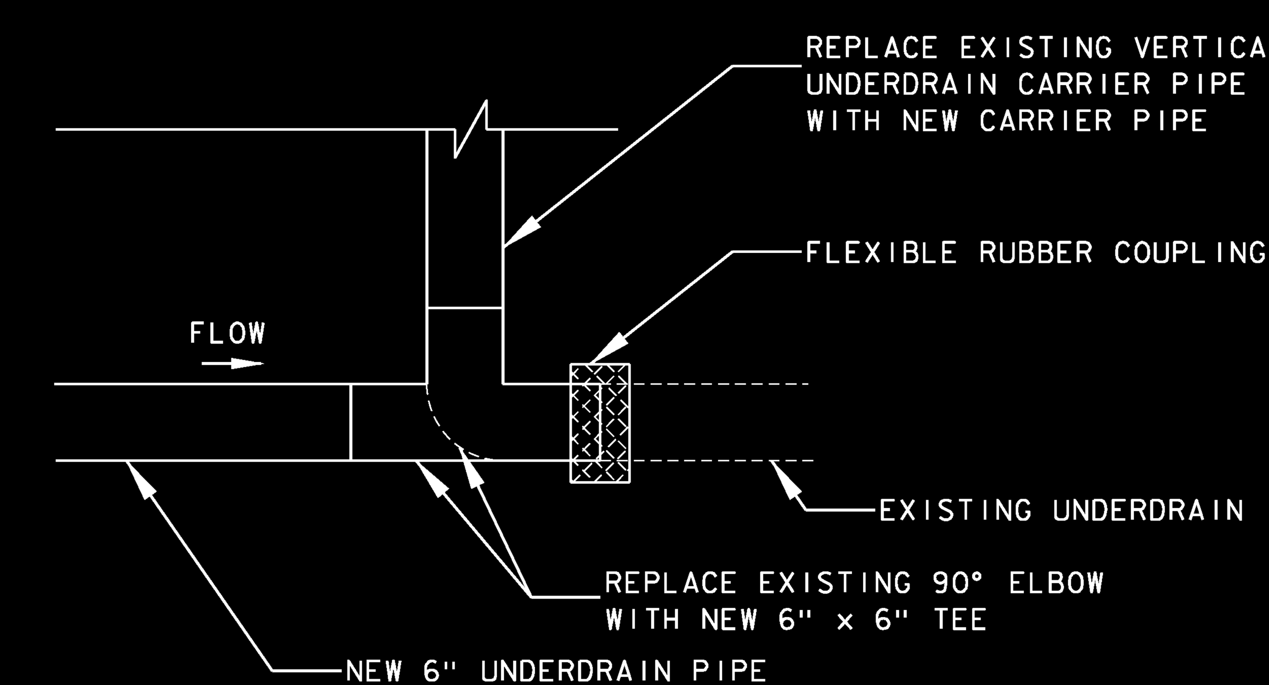
NOT TO SCALE



NOTE: 8" CORRUGATED PIPE, HEAVY DUTY CAST IRON FRAME AND COVER AND CAST-IN-PLACE CONCRETE COLLAR ARE INCLUDED IN THE COST OF SPECIAL PROVISION (REMOVAL AND REPLACEMENT OF EXISTING FLUSHING BASIN IN PAVEMENT)

SPECIAL PROVISION (REMOVAL AND REPLACEMENT OF EXISTING FLUSHING BASIN IN PAVEMENT)

NOT TO SCALE



EXTENSION OF SUBDRAIN

NOT TO SCALE

PRECAST CONCRETE CATCH BASIN NOTES:

1) AT A MINIMUM ALL PRECAST CONCRETE STRUCTURES, FRAME AND COVER/GRATE SHALL MEET AASTHO H-20 LOADING REQUIREMENTS. REFER TO SECTION 604 AND SUBSECTIONS 705.04 AND 715.01 OF THE STANDARD SPECIFICATIONS.
2) FACE OF PIPE SHALL NOT PROJECT MORE THAN 2" OR LESS THAN 1" FROM INSIDE WALL OF STRUCTURE.
3) THE COST OF CUTTING THE EXISTING STEEL PIPE SHALL BE CONSIDERED INCIDENTAL TO ITEM 604.20.
4) ALL STRUCTURES WITH MULTIPLE PIPES SHALL HAVE A MINIMUM OF 12" OF OUTSIDE SURFACE BETWEEN HOLES, NO MORE THAN 75% OF A HORIZONTAL CROSS-SECTION SHALL BE HOLES, AND THERE SHALL BE NO HOLES CLOSER THAN 3" TO JOINTS.
5) THE FRAME SHALL NOT BE SET DIRECTLY ON PRECAST STRUCTURE. FITTING FRAME TO FINAL GRADE SHALL BE DONE WITH BRICK OR PRECAST CONCRETE GRADE RINGS OF APPROPRIATE THICKNESS (3 COURSES MAX).
6) FLAT SLAB TOPS SHALL BE USED FOR ALL CATCH BASINS, UNLESS OTHERWISE PERMITTED BY THE ENGINEER.
7) ALL PIPE INVERTS AND PENETRATION ANGLES SHALL BE FIELD VERIFIED PRIOR TO PRECASTING.
8) PRECAST SECTIONS SHALL HAVE A TONGUE AND GROOVE JOINT AND BE ASSEMBLED USING A BUTYL RUBBER OR APPROVED EQUAL SEALANT.
9) PROVIDE FLEXIBLE RUBBER BOOTS CONFORMING TO ASTM C-923, RESILIENT, OF SIZE REQUIRED, FOR EACH PIPE CONNECTING TO STRUCTURE. BOOTS SHALL BE CAST INTO PRECAST STRUCTURE BY THE MANUFACTURER FOR ALL PIPE PENETRATIONS. FOR RCP PIPES, USE BRICK AND MORTAR.
10) CATCH BASIN GRATE ORIENTATION SHALL BE IN ACCORDANCE WITH STANDARD D-16 FOR TYPE B GRATES.
11) INSTALLATION OF DROP INLETS OVER EXISTING PIPES SHALL INCLUDE CLEAN CUTTING OF THE EXISTING PIPE AND MORTARING ALL JOINTS AS SHOWN IN DETAILS PROVIDED ON THIS SHEET.
12) PAYMENT FOR INSTALLATION OF THE CATCH BASIN SHALL BE MADE UNDER THE PRECAST REINFORCED CONC. CATCH BASIN WITH CAST IRON GRATE ITEM (604.20).
13) REINFORCING IS NOT SHOWN FOR CLARITY.

PROJECT NAME: RICHMOND	
PROJECT NUMBER: CMG PARK (31)	
FILE NAME: z97c186drndet.dgn	PLOT DATE: 4/29/2013
PROJECT LEADER: ERIK ATKINS	DRAWN BY: N. BOSAN
DESIGNED BY: T. BIGELOW	CHECKED BY: E. ATKINS
DRAINAGE DETAILS SHEET 2	SHEET 112 OF 133

WIRED CONDUIT (2") (PVC)

PNR 70+80 LT (JB) - 71+55 LT (JB) 77'
PNR 71+55 LT (JB) - 72+30 LT (JB) 75'
PNR 71+74 RT (JB) - 71+08 RT (JB) 73'
PNR 72+26 RT (JB) - 72+27 RT (JB) 30'
PNR 72+27 RT (JB) - 71+74 RT (JB) 52'
PNR 72+30 LT (JB) - 72+94 LT (JB) 74'
PNR 72+90 RT (JB) - 72+26 RT (JB) 58'
PNR 72+94 LT (PB) - 73+63 LT (JB) 76'
PNR 73+43 RT (JB) - 72+90 RT (JB) 71'
PNR 73+63 LT (JB) - 74+20 LT (JB) 57'
PNR 73+57 RT (JB) - 73+13 RT (JB) 49'
PNR 74+13 RT (JB) - 73+43 RT (JB) 73'
PNR 74+17 RT (JB) - 73+57 RT (JB) 62'
PNR 74+20 LT (JB) - 74+80 LT (JB) 59'
PNR 74+37 RT (JB) - 73+87 RT (JB) 52'
PNR 74+77 RT (JB) - 74+17 RT (JB) 59'
PNR 74+80 LT (JB) - 75+40 LT (JB) 60'
PNR 74+94 RT (JB) - 74+13 RT (JB) 80'
PNR 75+04 RT (JB) - 74+37 RT (JB) 67'

WIRED CONDUIT (2") (PVC)

PNR 75+37 RT (JB) - 74+77 RT (JB) 60'
PNR 75+40 LT (JB) - 76+08 RT (JB) 102'
PNR 75+55 RT (PB) - 75+37 RT (JB) 71'
PNR 75+72 RT (JB) - 74+94 RT (JB) 104'
PNR 75+75 RT (PB) - 75+04 RT (JB) 71'
PNR 76+08 RT (JB) - 75+75 RT (PB) 95'

ADDITIONAL TWO-2" PVC CONDUITS FROM EXISTING HANDHOLE 75+77 142' RT TO POWER CABINET LOCATED AT THE MOBIL STATION APPROXIMATELY 475' AWAY (TOTAL 950').

ADDITIONAL FOUR-2" PVC CONDUITS FROM EXISTING HANDHOLE 75+77 142' RT TO DISCONNECT SWITCHES (TOTAL 50')

2 SEE SHEET 113 A FOR 2" CONDUIT SCHEDULE.

WIRED CONDUIT (1") (PVC) 2"

PNR 70+80 LT (LP) - 70+80 LT (JB) 8'
PNR 71+08 RT (JB) - 70+98 RT (LP) 8'
PNR 71+55 LT (JB) - 71+55 LT (LP) 8'
PNR 71+74 RT (JB) - 71+74 RT (LP) 8'
PNR 72+26 RT (JB) - 72+27 RT (LP) 8'
PNR 72+27 RT (JB) - 72+28 RT (LP) 8'
PNR 72+30 LT (JB) - 72+30 LT (LP) 8'
PNR 72+90 RT (PB) - 72+90 RT (JB) 4'
PNR 72+90 RT (JB) - 72+90 RT (LP) 8'
PNR 72+94 LT (JB) - 72+94 LT (LP) 8'
PNR 73+13 RT (JB) - 73+13 RT (LP) 8'
PNR 73+43 RT (JB) - 73+43 RT (LP) 8'
PNR 73+57 RT (JB) - 73+57 RT (LP) 8'
PNR 73+63 LT (JB) - 73+63 LT (LP) 8'
PNR 73+87 RT (JB) - 73+85 RT (LP) 8'
PNR 74+13 RT (JB) - 74+13 RT (LP) 8'
PNR 74+17 RT (JB) - 74+17 RT (LP) 8'
PNR 74+20 LT (JB) - 74+20 LT (LP) 8'

WIRED CONDUIT (1") (PVC) 2"

PNR 74+37 RT (JB) - 74+37 RT (LP) 8'
PNR 74+77 RT (JB) - 74+77 RT (LP) 8'
PNR 74+80 LT (JB) - 74+80 LT (LP) 8'
PNR 74+94 RT (JB) - 74+94 RT (LP) 8'
PNR 75+04 RT (JB) - 75+04 RT (LP) 8'
PNR 75+37 RT (JB) - 75+37 RT (LP) 8'
PNR 75+40 LT (JB) - 75+40 LT (LP) 8'
PNR 75+75 RT (JB) - 75+72 RT (JB) 7'
PNR 75+72 RT (JB) - 75+70 RT (LP) 8'
PNR 76+08 RT (JB) - 77+07 RT (LP) 8'

ELECTRICAL CONDUIT SLEEVE (6")

PNR 72+80 RT (PB) - 72+25 RT 54'
PNR 75+73 RT (PB) - 75+54 RT 50'
PNR 75+73 RT (PB) - 75+04 RT 70'
PNR 75+77 RT (EHH) - 76+12 RT (EHH) 41'
PNR 75+77 RT (EHH) - 76+12 RT (EHH) 41'

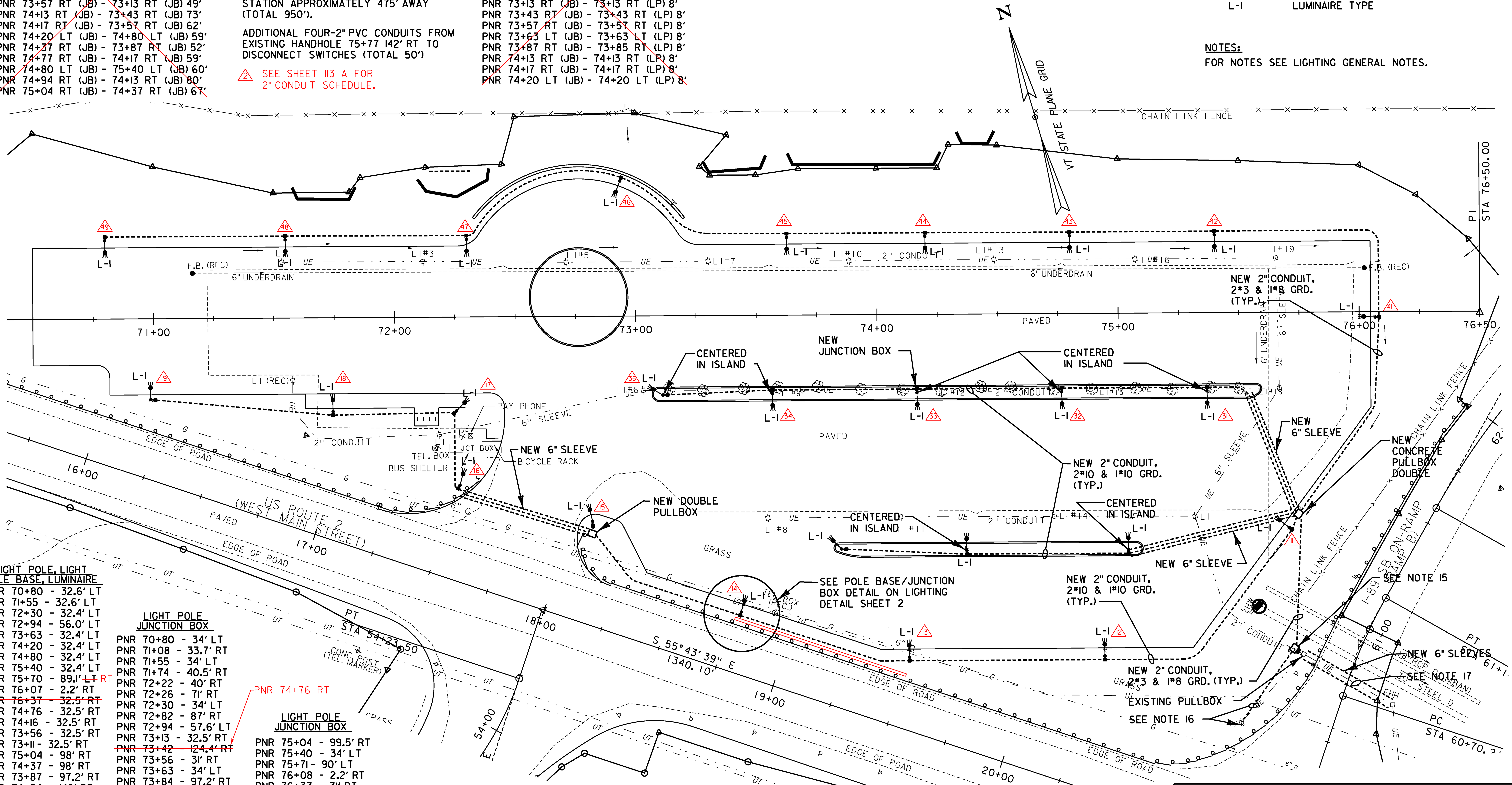
PULL BOX, DOUBLE

PNR ~~72+82 - 90' RT~~ 73+58 OUTLET OF 8" PLASTIC SLEEVE(US2)
PNR 75+75 - 83.6' RT

LEGEND:

-------------	PROPOSED WIRED CONDUIT
=============	PROPOSED ELECTRICAL CONDUIT SLEEVE
□	PROPOSED CONCRETE PULLBOX DOUBLE
▪	PROPOSED JUNCTION BOX
	PROPOSED LIGHT POLE & LUMINAIRE
L-1	LUMINAIRE TYPE

NOTES:
FOR NOTES SEE LIGHTING GENERAL NOTES.



LIGHT POLE, LIGHT POLE BASE, LUMINAIRE

PNR 70+80 - 32.6' LT
PNR 71+55 - 32.6' LT
PNR 72+30 - 32.4' LT
PNR 72+94 - 56.0' LT
PNR 73+63 - 32.4' LT
PNR 74+20 - 32.4' LT
PNR 74+80 - 32.4' LT
PNR 75+40 - 32.4' LT
PNR 75+70 - 89.1' ~~LT~~ RT
PNR 76+07 - 2.2' RT
~~PNR 76+37 - 32.5' RT~~
PNR 74+76 - 32.5' RT
PNR 74+16 - 32.5' RT
PNR 73+56 - 32.5' RT
PNR 73+11 - 32.5' RT
PNR 75+04 - 98' RT
PNR 74+37 - 98' RT
PNR 73+87 - 97.2' RT
PNR 74+94 - 142' RT
PNR 74+13 - 142' RT
PNR 73+43 - 123' RT
PNR 72+82 - 85' RT
PNR 72+25 - 39' RT
PNR 72+27 - 69.8' RT
PNR 71+74 - 38.9' RT
PNR 70+99 - 33.6' RT
PNR 75+37 - 32.5' RT

LIGHT POLE JUNCTION BOX

PNR 70+80 - 34' LT
PNR 71+08 - 33.7' RT
PNR 71+55 - 34' LT
PNR 71+74 - 40.5' RT
PNR 72+22 - 40' RT
PNR 72+26 - 71' RT
PNR 72+30 - 34' LT
PNR 72+82 - 87' RT
PNR 72+94 - 57.6' LT
PNR 73+13 - 32.5' RT
~~PNR 73+42 - 124.4' RT~~ PNR 74+76 RT
PNR 73+56 - 31' RT
PNR 73+63 - 34' LT
PNR 73+84 - 97.2' RT
PNR 74+13 - 143.5' RT
PNR 74+16 - 31' RT
PNR 74+20 - 34' LT
~~PNR 74+36 - 31' RT~~
PNR 74+37 - 99.5' RT
PNR 74+80 - 34' LT
PNR 74+94 - 143.5' RT

LIGHT POLE JUNCTION BOX

PNR 75+04 - 99.5' RT
PNR 75+40 - 34' LT
PNR 75+71 - 90' LT
PNR 76+08 - 2.2' RT
~~PNR 76+37 - 31' RT~~
PNR 75+37 - 31' RT

KEY	DATE	BY	REVISION
1	11/9/2015	VTRANS	LIGHT POLE NUMBERS = AL-PI-96W-LED III
2	11/16/2015	VTRANS	WIRED CONDUIT, SHEET 113 A

0 20 40
SCALE IN FEET

PROJECT NAME: RICHMOND
PROJECT NUMBER: CMG PARK (31)

FILE NAME: z97c186el03.dgn
PROJECT LEADER: YASSER RIZK
DESIGNED BY: M. STEWART
LIGHTING PLAN LAYOUT SHEET
PLOT DATE: 4/29/2013
DRAWN BY: M. STEWART
CHECKED BY: Y. RIZK
SHEET 113 OF 133

2 WIRED CONDUIT (2") PVC

PNR 24+52, 134' RT, POWER METER	TO 24+52, 127' RT, JB(NEW)
PNR 24+52, 125' RT, JB(NEW)	TO 24+52, 25' RT, JB(EXT)
PNR 24+52, 25' RT, JB(EXT)	TO 21+46, 74' RT, JB(EXT)
PNR 21+46, 74' RT, JB(EXT)	TO 21+02, 81' RT, JB(EXT)
PNR 21+02, 81' RT, JB(EXT)	TO 75+73, 138' RT, POWER STATION

PNR 75+73, 138' RT, POWER STATION	TO 75+75, 95' RT, DPB#1
PNR 75+73, 138' RT, POWER STATION	TO 75+50, 169' RT, EXT L1
PNR 75+75, 95' RT, DPB#1	TO 75+71, RT, JB#11
PNR 75+71, RT, JB#11	TO 75+70, 89.1' RT, #11 AL-PI-96W-LED III
PNR 75+71, RT, JB#11	TO 74+94, RT, JB#12
PNR 74+94, RT, JB#12	TO 74+94, 140' RT, #12AL-PI-96W-LED III
PNR 74+94, RT, JB#12	TO 74+13, RT, JB#13
PNR 74+13, RT', JB#13	TO 74+13, 140' RT, #13 AL-PI-96W-LED III
PNR 74+13, RT, JB#13	TO 73+58, RT, DPB#2
PNR 73+58, RT, DPB#2	TO 73+43, 123'RT, #14 AL-PI-96W-LED III
PNR 73+58, RT, DPB#2	TO 72+82, RT, JB#15
PNR 72+82, RT, JB#15	TO 72+82, 85' RT, #15 AL-PI-96W-LED III
PNR 72+82, RT, JB#15	TO 72+26, RT, JB#16
PNR 72+26, RT, JB#16	TO 72+27, 69.8' RT, #16 AL-PI-96W-LED III
PNR 72+26, RT, JB#16	TO 72+22, RT, JB#17
PNR 72+22, RT, JB#17	TO 72+25, 39' RT, #17 AL-PI-96W-LED III
PNR 72+22, RT, JB#17	TO 71+74, RT, JB#18
PNR 71+74, RT, JB#18	TO 71+74, 38.9' RT, #18 AL-PI-96W-LED III
PNR 71+74, RT, JB#18	TO 71+08, RT, JB#19
PNR 71+08, RT, JB#19	TO 70+99, 33.6' RT, #19 AL-PI-96W-LED III

2 WIRED CONDUIT (2") PVC

PNR 75+75, 95' RT, DPB#1	TO 75+04, RT, JB#21
PNR 75+04, RT, JB#21	TO 75+04, 99.5' RT, #21 AL-PI-96W-LED III
PNR 75+04, RT, JB#21	TO 74+37, RT, JB#22
PNR 74+37, RT, JB#22	TO 74+37, 99.5' RT, #22 AL-PI-96W-LED III
PNR 74+37, RT, JB#22	TO 73+84, RT, JB#23
PNR 73+84, RT, JB#23	TO 73+84, 97.2' RT, #23 AL-PI-96W-LED III

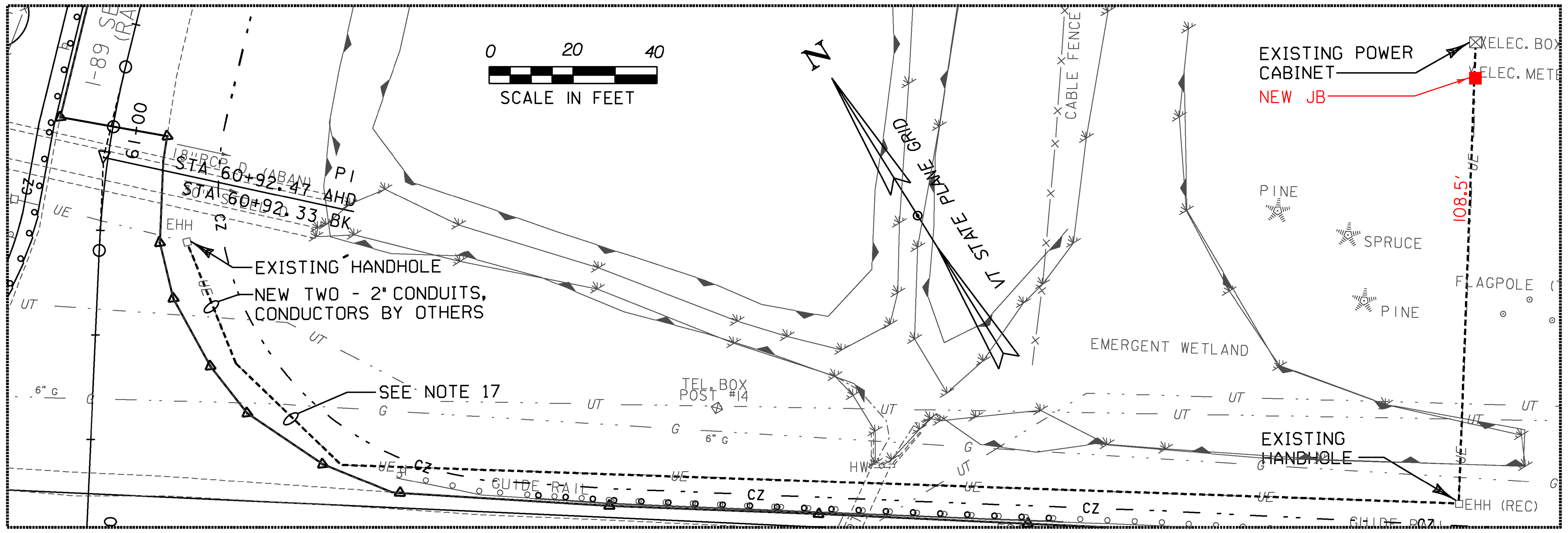
PNR 75+75, 95' RT, DPB#1	TO 75+37, RT, JB#31
PNR 75+37, RT, JB#31	TO 75+37, 32.5' RT, #31 AL-PI-96W-LED III
PNR 75+37, RT, JB#31	TO 74+76, RT, JB#32
PNR 74+76, RT, JB#32	TO 74+76, 32.5' RT, #32 AL-PI-96W-LED III
PNR 74+76, RT, JB#32	TO 74+16, RT, JB#33
PNR 74+16, RT, JB#33	TO 74+16, 32.5' RT, #33 AL-PI-96W-LED III
PNR 74+16, RT, JB#33	TO 73+56, RT, JB#34
PNR 73+56, RT, JB#34	TO 73+56, 32.5' RT, #34 AL-PI-96W-LED III
PNR 73+56, RT, JB#34	TO 73+11, RT, JB#35
PNR 73+11, RT, JB#35	TO 73+11, 32.5' RT, #35 AL-PI-96W-LED III

2 WIRED CONDUIT (2") PVC

PNR 75+75, 95' RT, DPB#1	TO 76+08, RT, JB#41
PNR 76+08, RT, JB#41	TO 76+02, 2.2' RT, #41 AL-PI-96W-LED III
PNR 76+08, RT, JB#41	TO 75+40, LT, JB#42
PNR 75+40, LT, JB#42	TO 75+40, 32.4' LT, #42 AL-PI-96W-LED III
PNR 75+40, LT, JB#42	TO 74+80, LT, JB#43
PNR 74+80, LT JB#43	TO 74+80, 32.4' LT, #43 AL-PI-96W-LED III
PNR 74+80, LT JB#43	TO 74+20, LT, JB#44
PNR 74+20, LT, JB#44	TO 74+20, 32.4' LT, #44 AL-PI-96W-LED III
PNR 74+20, LT, JB#44	TO 73+63, LT, JB#45
PNR 73+63, LT, JB#45	TO 73+63, 32.4' LT, #45 AL-PI-96W-LED III
PNR 73+63, LT, JB#45	TO 72+94, LT, JB#46
PNR 72+94, LT, JB#46	TO 72+94, 56' LT, #46 AL-PI-96W-LED III
PNR 72+94, LT, JB#46	TO 72+30, LT, JB#47
PNR 72+30, LT, JB#47	TO 72+30, 32.4' LT, #47 AL-PI-96W-LED III
PNR 72+30, LT, JB#47	TO 71+55, LT, JB#48
PNR 71+55, LT, JB#48	TO 71+55, 32.6' LT, #48 AL-PI-96W-LED III
PNR 71+55, LT, JB#48	TO 70+88, LT, JB#49
PNR 70+88, LT, JB#49	TO 70+88, 32.6' LT, #49 AL-PI-96W-LED III

KEY	DATE	BY	REVISION
2	11/16/2015	VTRANS	WIRED CONDUIT, SHEET 113 A

PROJECT NAME: RICHMOND
PROJECT NUMBER: CMG PARK (31)



AREA LIGHTING DESIGN PARAMETERS:

THE AREA LIGHTING IS BASED ON THE TOWN OF RICHMOND VERMONT ZONING REGULATIONS. DATED 2010 - FEBRUARY (AMENDED). ZONED FOR AGRICULTURAL/RESIDENTIAL. MINIMUM ILLUMINATION LEVEL; NO LESS THAN 0.2 FC, UNIFORMITY RATIO; 4:1, MINIMUM CRI (COLOR RENDERING INDEX); 70.

LUMINAIRE L-1:

1. LIGHT DISTRIBUTION IS BASED ON VISIONAIRE LIGHTING PHOTOMETRIC DATA #EL2-1_T3_96L_350ma, FULL CUTOFF, TYPE R3 REFLECTOR, CATALOG #EL2-1-T3-96-350-55K
2. ALL NEW AREA LIGHT POLES AND LUMINAIRES FOR THIS PROJECT SHALL BE IN ACCORDANCE WITH SUBSECTION 753.01.
3. THE ABOVE PHOTOMETRIC DATA DRAWINGS WERE USED FOR DESIGN PURPOSES ON THIS PROJECT. OTHER MANUFACTURER'S PRODUCTS MAY BE SUBSTITUTED IF THE INSTALLED LUMINAIRE LIGHT UTILIZATION AND MINIMUM FC ON THE PARKING AREA ARE AT LEAST AS GREAT AS THAT INDICATED BY THE ABOVE PHOTOMETRICS.

8" (MIN.)

1" | #AL-PI-96W-LED-III | 1" TYP. | 1/2"

1/4" 1/2" LETTERING

LEGEND:
BLACK OR WHITE (NON-REFL.) - STAMPED PRIOR TO PRINTING/PAINTING.

BACKGROUND:
NATURAL ALUMINUM OR FLAT BLACK SURFACE, SAME AS POLE FINISH.

DETAILS FOR TAGS ATTACHED TO AREA LIGHT POLES

1. THE TAG SHALL BE MOUNTED ON ALL AREA LIGHTING POLES IN SUCH A MANNER AS TO NOT BE EASILY REMOVED, SUCH AS WELDED, RIVETED, OR BOLTED WITH VANDAL PROOF BOLTS.
2. THE LETTERS SHALL BE PUNCHED, STAMPED, ENGRAVED, OR PHOTO-ETCHED. PUNCHING, STAMPING OR ENGRAVING SHALL PENETRATE AT LEAST 1/2 THE BASE MATERIAL THICKNESS.
3. THE BASE MATERIAL FOR THE TAG SHALL BE ALUMINUM WITH A MINIMUM THICKNESS OF 0.100 INCHES.
4. THE TAG SHALL BE ATTACHED TO THE POLE ABOVE THE HANDHOLE, 6 INCHES MAXIMUM. IF POLE AS TRANSFORMER BASE ATTACH TAG TO COVER.
5. FIXTURE TAG SHALL READ #AL-PI-96W-LED-III

LIGHTING NOTES:

1. AT EACH LUMINAIRE POLE LOCATION SPECIFIED, INSTALL A CONCRETE POLE BASE, STAINLESS STEEL ANCHOR BOLTS, NUTS AND WASHERS (FLAT AND LOCK), ALUMINUM POLE, LUMINAIRE, LUMINAIRE ARM, PHOTOCELL AND WIRING.
2. INSTALL CONDUIT, SIZE TYPE AND LOCATION AS NOTED ON PLANS.
3. CIRCUIT CONDUCTORS SHALL BE CLEARLY IDENTIFIED BY CORROSION RESISTANT TAGS INDICATING CIRCUIT NUMBER AND PANEL SOURCES AT EVERY POLE BASE AND HANDHOLE.
4. ALL CONNECTIONS IN HANDHOLES SHALL BE MADE WITH INSULATED WATERPROOF MECHANICAL SCREW-TYPE CONNECTOR SUITABLE FOR DIRECT BURIAL. NO BARE OR COMPRESSION TYPE CONNECTORS MAY BE USED.
5. UTILIZE APPROVED DUAL-RATED PARALLEL TAP CONNECTOR WITH INSULATING COVER TO TAPS AT POLE BASE.
6. INSTALL RIGID PLASTIC OR STEEL SLEEVES AS PER THE PLAN.
7. INSTALL CONCRETE POLE BASES PER THE VERMONT AGENCY OF TRANSPORTATION STANDARDS E-180A AND E-180B.
8. INSTALL PULLBOXES PER VERMONT AGENCY OF TRANSPORTATION STANDARD E-173.
9. THE OFFSET FOR CONCRETE BASES (FACE OF CURB OR EDGE OF PAVEMENT TO CENTER OF CONCRETE BASE) TO BE A MINIMUM OF 2'-6" OR AS OTHERWISE NOTED ON THE PLANS.
10. WHEN CONCRETE BASES ARE INSTALLED IN SLOPING GROUND, THE GREATEST EXPOSED HEIGHT TO KEEP ALL OF THE TOP ABOVE GROUND MUST BE DOUBLED AND THEN ADDED TO THE MINIMUM DEPTH FOR THE TOTAL BASE HEIGHT.

    CARE SHOULD BE TAKEN WHERE CONCRETE BASES, DRAINAGE STRUCTURES OR UTILITIES ARE CLOSE TOGETHER.
11. ALL NEW AREA LIGHT POLES AND LUMINAIRES FOR THIS PROJECT SHALL BE IN ACCORDANCE WITH SUBSECTION 753.01.
12. WIRE SIZING AND NUMBER OF WIRES IS BASED ON INFORMATION OBTAINED FROM THE UTILITY WHICH INDICATES 240V, 1PH, 60HZ. POWER IS AVAILABLE FROM POWER CABINET FOR POWERING THE AREA LIGHTING. CONTRACTOR TO CONFIRM POWER REQUIREMENTS PRIOR TO PURCHASE AND INSTALLATION OF CONDUIT, WIRE AND LUMINAIRES. IF INFORMATION OBTAINED FROM THE UTILITY IS DIFFERENT THAN WHAT IS INSTALLED IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE WITH THE UTILITY TO INSTALL WHAT IS NECESSARY TO MAKE A COMPLETE AND OPERATIONAL SYSTEM.
13. CONNECT NEW CONDUCTORS TO EXISTING CIRCUIT BREAKER LOCATED IN THE EXISTING POWER CABINET.
14. THE LAST CONCRETE POLE BASE AT THE END OF EACH CIRCUIT AND SOME JUNCTION BOXES SHALL HAVE A CONDUIT SWEEP WITH CAP INSTALLED FOR FUTURE USE.
15. INSTALL FOUR NEW LOCKABLE NEMA 3R DISCONNECT SWITCHES (THREE 30A, ONE FOR THE AREA LIGHTING, ONE FOR THE EXISTING SB ON-RAMP LIGHT POLE, ONE SPARE, ONE SIZED FOR THE LOAD FROM THE SIGNAL CONTROL CABINET) MOUNTED TO STAINLESS STEEL STRUT SUPPORT SECURED TO CONCRETE PAD. STUB OUT A 2" CONDUIT 12" FROM CONCRETE PAD FROM SPARE DISCONNECT SWITCH A CAP. CONCRETE PAD THICKNESS TO BE 6" IN. BELOW THE FROST LINE.
16. REMOVE EXISTING CONDUIT AND WIRING FROM EXISTING LIGHT POLE INDICATED (LEAVE A 12" PIECE OF THE EXISTING CONDUIT FOR CONNECTION TO NEW CONDUIT) BACK TO EXISTING HANDHOLE INDICATED. EXTEND EXISTING WIRING FROM EXISTING HANDHOLE TO NEW DISCONNECT SWITCH. INSTALL A NEW 2" CONDUIT FROM NEW DISCONNECT SWITCH TO EXISTING LIGHT POLE (NEW CONDUCTORS SIZE TO MATCH EXISTING CONDUCTORS REMOVED). REMOVE EXISTING LUMINAIRES ON EXISTING LIGHT POLE AND INSTALL TWO NEW L-1 LUMINAIRES IN THE SAME ORIENTATION AS THE EXISTING. PROVIDE ALL NECESSARY EQUIPMENT/ACCESSORIES TO COMPLETE LUMINAIRE REPLACEMENT. CONNECT NEW LUMINAIRES TO NEW CONDUCTORS INSTALLED.
17. REUSE THE EXISTING TWO 2" CONDUITS FROM EXISTING POWER CABINET TO EXISTING HANDHOLE INDICATED. RUN TWO NEW 2" CONDUITS ALONG SIDE OF EXISTING 2" CONDUITS TO EXISTING POWER CABINET. UTILIZE THE EXISTING HANDHOLES ALONG THE CONDUIT ROUTE TO THE EXISTING POWER CABINET. PROVIDE TWO NEW 6" CONDUIT SLEEVES UNDER THE SB ON-RAMP FOR THE TWO NEW 2" CONDUITS INSTALLED ALONG SIDE THE EXISTING CONDUITS (WIRING TO BE INSTALLED BY OTHERS).
18. ALL ALUMINUM USED IN HOUSINGS AND BRACKETS SHALL BE MARINE GRADE ALLOY. ALL EXPOSED ALUMINUM SHALL BE ANODIZED AND FINISHED WITH A THERMOSET POWDERED COAT FINISH.
19. THE LUMINAIRES ON-BOARD CIRCUITRY SHALL INCLUDE SURGE PROTECTION DEVICES (SPD) TO WITHSTAND HIGH REPETITION NOISE TRANSIENTS AS A RESULT OF UTILITY LINE SWITCHING, NEARBY LIGHTNING STRIKES, AND OTHER INTERFERENCE.
20. THE LUMINAIRES AND ASSOCIATED ON-BOARD CIRCUITRY SHALL MEET CLASS A EMISSION LIMITS UNDER THE FEDERAL COMMUNICATIONS COMMISSION REGULATIONS CONCERNING THE EMISSION OF ELECTRONIC NOISE.
21. THE LUMINAIRE'S TOTAL HARMONIC DISTORTION (CURRENT AND VOLTAGE) INDUCED INTO AN AC POWER LINE BY A LUMINAIRE SHALL NOT EXCEED 20 PERCENT.
22. EACH LUMINAIRE SHALL BE FURNISHED WITH BUTTON-TYPE PHOTOCELL OR A LOCKING TYPE PHOTO CONTROL RECEPTACLE.

CONDUIT SLEEVE:

ALL CONDUIT RUNS UNDER ROADWAY SHALL BE INSTALLED IN RIGID PLASTIC OR STEEL PIPE SLEEVES. MINIMUM WALL THICKNESS FOR RIGID PLASTIC PIPE SLEEVES SHALL BE 1/35TH THE DIAMETER. THE SLEEVES SHALL EXTEND TO WITHIN 2'-0" OF THE SIDE OF A CONCRETE BASE OR PULLBOX. WHERE NO PULLBOX OR CONCRETE BASE IS PRESENT, THE SLEEVE SHALL EXTEND 4'-0" BEYOND THE OUTSIDE EDGE OF SHOULDER OR FACE OF CURB. BACKFILLING AROUND A SLEEVE SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS. THE SLEEVE SHALL BE IN ACCORDANCE WITH SUBSECTION 678.06.

WHEN JACKING A SLEEVE UNDER A ROADWAY IT SHALL BE STEEL WITH MINIMUM DIAMETER OF 8 INCHES AND MINIMUM WALL THICKNESS OF 3/8 INCH. ACTUAL LENGTH TO BE DETERMINED IN THE FIELD BY THE RESIDENT ENGINEER.

WIRE:

ALL WIRING SHALL BE IN ACCORDANCE WITH SUBSECTION 753.04.

CONDUIT:

A 2 INCH (I.D.) MINIMUM CONDUIT SHALL BE USED AT ALL LOCATIONS UNLESS OTHERWISE NOTED ON THE DRAWINGS. ALL CONDUIT SHALL BE AT LEAST SCHEDULE 40 PVC AND EXPOSED CONDUIT SHALL BE SCHEDULE 80 PVC.

EXISTING AREA LIGHTING SYSTEM REMOVAL:

AT THE DISCRETION OF VERMONT AGENCY OF TRANSPORTATION (VTRANS), REMOVED EXISTING LIGHT POLE BASES, LIGHT POLES, LUMINAIRES, PULL BOXES AND WIRING SHALL BE DELIVERED TO THE VTRANS DISTRICT 5 FACILITY AT 5 BARNES AVENUE COLCHESTER. EXISTING BURIED CONDUIT TO BE ABANDONED IN PLACE. UNWANTED LIGHT POLE BASES, LIGHT POLES, LUMINAIRES, PULL BOXES AND WIRING MUST BE DISPOSED OF BY THE CONTRACTOR. REMOVAL OF THE EXISTING AREA LIGHTING SHALL INCLUDE BACKFILLING OF HOLES AND TRENCHES AS A RESULT OF REMOVING THE ABOVE MENTIONED EQUIPMENT. ANY LIGHTING EQUIPMENT MENTIONED ABOVE THAT IS DAMAGED OR LOST BY THE CONTRACTOR DURING REMOVAL SHALL BE REPAIRED OR REPLACED, TO THE SATISFACTION OF VTRANS AT THE CONTRACTOR'S EXPENSE. THE REMOVAL, TRANSPORTING, SALVAGING AND DISPOSAL OF EXISTING LIGHTING EQUIPMENT SHALL BE PAID FOR UNDER ITEM 900.620 SPECIAL PROVISION (REMOVAL OF EXISTING AREA LIGHTING SYSTEM).

EXISTING LIGHTING SYSTEM SHALL BE REMOVED UP TO THE EXISTING PULLBOX INDICATED ON THE PLAN. ALL EXISTING WIRING SHALL BE REMOVED TO THE EXISTING POWER CABINET. EXISTING CONDUIT FROM THE EXISTING PULLBOX INDICATED TO THE EXISTING POWER CABINET SHALL REMAIN AND BE REUSED.

GROUNDING:

ALL CONDUIT MUST INCLUDE A GROUNDING CONDUCTOR, AND RIGID STEEL CONDUIT SHALL BE PROPERLY CONNECTED AT THE JOINT SO AS TO BE WATERTIGHT AND MAINTAIN ELECTRICAL CONTINUITY AND HAVE GROUNDING BUSHINGS SO AS TO ACT AS A GROUND CONDUCTOR.

THE GROUNDING CONDUCTOR SHALL BE CONTINUOUS.

ALUMINUM WIRE SHALL NOT BE USED FOR GROUND WIRE.

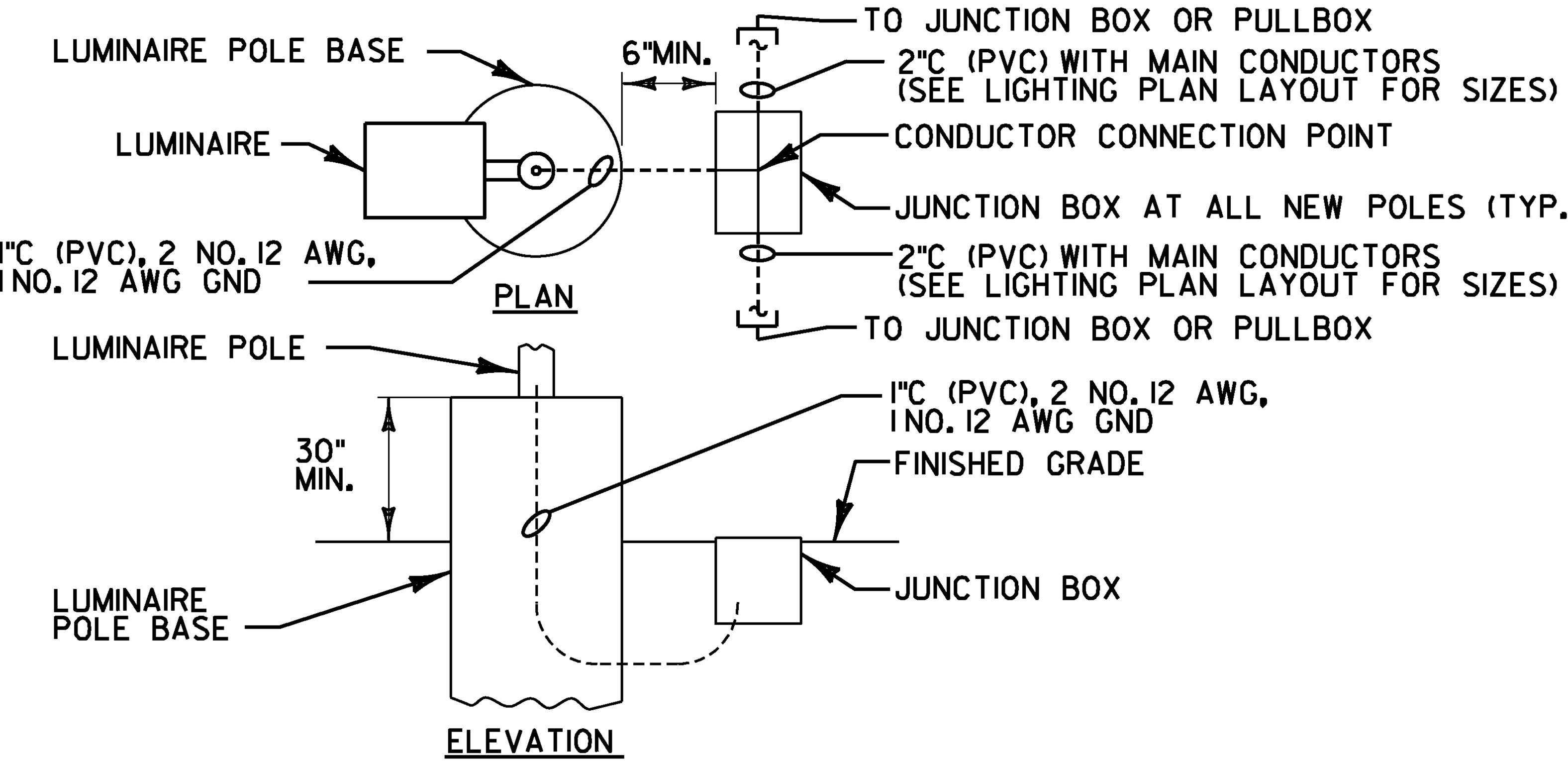
NOTES:

1. DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL ARRANGEMENT OF WORK. BASIC DESIGN CONCEPTS INDICATED ARE TO BE EITHER FOLLOWED OR BETTERED. WORK IS INTENDED TO INCLUDE ITEMS NECESSARY FOR PROPER OPERATION AND COMPLETION. FIELD VERIFY ALL LOCATIONS, ELEVATIONS, AND DIMENSIONS.
2. MATERIALS AND EQUIPMENT SHALL BE LISTED BY UNDERWRITERS' LABORATORIES AND SHALL BE INSTALLED IN ACCORDANCE WITH SUCH LISTINGS.
3. INSTALLATION SHALL BE MADE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
4. ALL MATERIALS AND INSTALLATION SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE, AND ALL CODES, REGULATIONS AND REQUIREMENTS OF ALL MUNICIPAL, STATE, FEDERAL AND OTHER PUBLIC OR PRIVATE AUTHORITIES WHICH HAVE JURISDICTION. IN EACH CASE, CODES ARE MINIMUM REQUIREMENTS.
5. ALL LUMINAIRES SHALL HAVE BIRD SPIKES.

LUMINAIRE SCHEDULE						
LUMINAIRE TYPE	LUMINAIRE MTG	LAMP NO.	LAMP WATTS	VOLTAGE	MANUFACTURER AND BASE MODEL NUMBER	REMARKS AND COMMENTS
L-1	16FT POLE	LED	107W	240V	VISIONAIRE LIGHTING: EL2-1-T3-96L-3-55K-UNV-BOA-BZ-PC240 (REQUIRED BUG RATING OF 2-0-2)	WITH BUTTON TYPE PHOTOCELL
POLE					LITHONIA: 3RTA-16-5C-DM19-FBC-VD-TP-DDB	PROVIDE ROUND POLE ADAPTER FOR SIZE OF POLE INSTALLED

NOTES:

1. THE LIGHTING FIXTURE SELECTED IS USED AS A BASIS FOR THIS DESIGN (VISIONAIRE LIGHTING), OR EQUAL LIGHTING FIXTURES COULD BE USED IF REQUIRED. HOWEVER A REVISED LIGHTING CALCULATION WILL BE REQUIRED TO CONFIRM COMPLIANCE WITH THE PROJECT DESIGN REQUIREMENTS. OR EQUAL LIGHTING FIXTURES SHALL HAVE A BUG RATING OF 2-0-2 OR BETTER.
2. BIRD SPIKES SHALL BE INCLUDED ON ALL LUMINIARES.

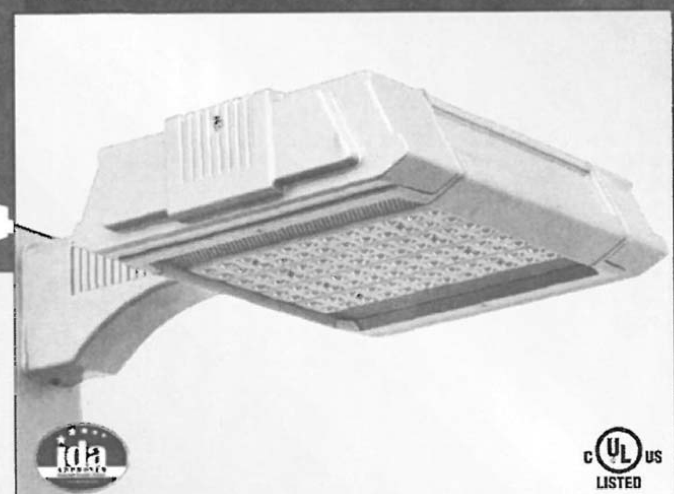


POLE BASE/JUNCTION BOX DETAIL
NOT TO SCALE

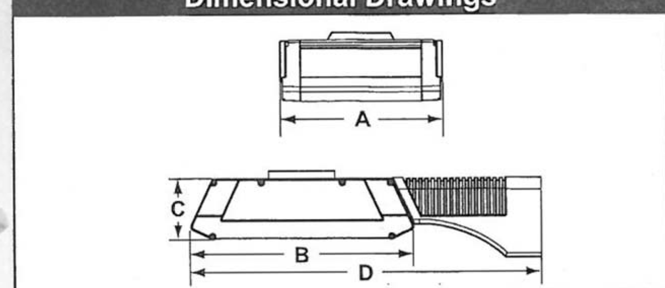
Area

Element
LED

Project Name	Type
Catalog Number	



Dimensional Drawings



Fixture	A	B	C	D	Max. LEDs	Lbs
EL2-S	13⅞"	14½"	4"	21½"	72	30
EL2-1	17⅝"	14½"	4"	21½"	96	34
EL2-2	23⅞"	14½"	4"	21½"	144	38
EL2-3	28⅛"	14½"	4"	21½"	192	41

The **Element** is a modularly-designed area luminaire that maximizes the latest in LED technology. It is available in four sizes, offering from 25 to 400 nominal watts of LED lighting. The **Element** masters the art of efficient heat dissipation, electronic driver protection, maximization of optics control; and features a wide array of energy and security options for optimal efficiency and safety.

The range of housing sizes is accomplished by utilizing a heavy-duty, extruded aluminum body, with heat radiating fins for cutting edge thermal management.

Removable die-cast aluminum end caps for easy driver access, and a shielded, perforated top cover, beneath a protective debris guard, complete the construction of this innovative, long-life LED luminaire.

The standard finish on the **Element** is a thermoset polyester powder coat painted finish in standard and custom colors.

The **Element** utilizes a high-performance LED light engine; and the highest lumen output VisionBar™ LEDs; with built-in optical control; to provide IES Types I, II, III, IV and V distribution patterns. It qualifies as an IES full cutoff fixture; and is Dark-Sky certified to restrict light trespass, glare and light pollution for neighborhood-friendly lighting.

The **Element** boasts an excellent thermal management rating that results in increased lumen output and an LED minimum life estimated from 60,000 to 200,000 hours. Control systems may extend the life of all the **Element** and further reduce maintenance costs. See LED Data Chart for more information.

Model	Optics	Source	Current	Kelvin	Voltage	Mounting	Finish	Options
		# of LEDs	mA					
EL2-S	Type I (T1) Type II (T2) Type III (T3)	24 (24L) 48 (48L) 72 (72L)	350 530 700 350 530 350 (3) (5) (7)	4000K (4K) 5500K (55K)	120-277 *Universal voltage (UNV) 480 (5) 347 (8)	Bolt-On Arm (BOA) Wall Mount *Includes Cast Wall Plate (WM) Knuckle Mount (KM) Mast Arm Fitter (MAF)	White (WH) Bronze (BZ) Black (BK) Forest Green (FG) Grey (GY) Silver Metallic (SL) Custom Color (CC)	Button Type Photocell *Specify voltage (PC120) (PC208) (PC240) (PC277) Dual Circuit (DC) Cutoff Louver System (CLS) Motion Sensor (MS) Round Pole Plate Adaptor For 4"Ø Pole (RPP4) For 5"Ø Pole (RPP5) Controls *Consult Factory Element Conduit Box (ECB)
EL2-1	Type IV (T4) Type V (T5)	24 (24L) 48 (48L) 72 (72L) 96 (96L)	350 530 700 350 530 700 350 530 700 350 530 (3) (5) (7)					
EL2-2		120 (120L) 144 (144L)	350 530 700 350 530 700 (3) (5) (7)					
EL2-3		168 (168L) 192 (192L)	350 530 700 350 530 700 (3) (5) (7)			Round Pole Plate Adaptors (RPP) are to be ordered separately.		

For more detailed information on mounting, wiring or installation instructions, please consult factory. If poles are not ordered with fixtures, please specify mounting requirements. This document contains proprietary information of Visionaire Lighting, LLC. Any use of this information requires the written approval of Visionaire Lighting, LLC. In keeping with our TQM policy of continuous improvement, Visionaire reserves the right to change any specifications contained herein without prior notice.

VISIONAIRE LIGHTING
Performance In A Whole New Light

19645 Rancho Way • Rancho Dominguez, CA • 90220
Tel: (310) 512-6480 • Fax: (310) 512-6486
www.visionairelighting.com

 09.22.11

Element
LED

Area

Housing
• The fixture housing is heavy-duty, extruded aluminum, with heat radiating fins. A perforated aluminum top cover protects the heat radiating fins from contaminants and directs constant air flow over them for maximum cooling.
• The fixture end caps are die-cast aluminum and easily removable with captive fastners for easy access to the LED drivers which are housed within the end-caps for cool operation.
• Silicone gasketing is utilized throughout the fixture for weathertight operation.

Thermal Management
• The **Element** provides excellent overall thermal management by maximizing the fixture's heat sink efficiency. This enables the **Element** to withstand higher ambient temperatures and drive currents without degrading LED life. The **Element** has a low thermal resistance rating. The heat radiating fins and perforated fixture components (see Thermal Convection Heat Management System cutaway below) create superior thermal management results.
• The L_{70} test determines the point in an LEDs life when it reaches 70 percent of its initial output. The **Element** series LEDs have been determined to last 200,000+ hours in 40 °C environments when driven at 350 mA. See LED Data Chart for additional test results.

Optical System
• The highest lumen output LEDs available are utilized in the **Element** series. IES distribution Types I, II, III, IV and V are available. The LED VisionBar™ light assemblies come in multiples of 24 (minimum 24 to maximum 192 LEDs) and are field replaceable. The optical system qualifies as IES full cutoff; and is Dark-Sky certified to restrict light trespass, glare and light pollution.
• CRI values are 67 for 4000K and 72 for 5500K.

Quali-Guard® Finish
• A Quali-Guard® thermoset polyester powder coat painted finish is available in white and custom colors.

Mounting
• The **Element** is provided with a pre-mounted, cast aluminum bolt-on arm (BOA) and Quick Mount pole adaptor that is shipped installed on a Visionaire pole. Installation is as simple as hooking the bolt-on arm onto the pole adaptor and tightening two set screws. A Round Pole Plate adaptor (RPP) is required for mounting to 4"-5" round poles.

Electrical Assembly
• The **Element** is supplied with a choice of 350, 530 or 700 mA high-performance LED drivers that accept 120v thru 480v, 50 Hz to 60 Hz, input. Power factor of 90%. Rated for -40 °C operations.

Warranty
• Five (5) year Limited Warranty on entire system, including finish. For full warranty information, please visit VisionaireLighting.com.

Options
• Button type photocell
• Dual circuit
• Cutoff louver system
• Motion sensor
• Round pole plate adaptor
• Controls
• Element conduit box

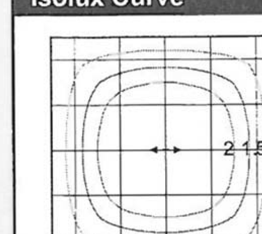
Please consult factory for custom options and available upgrades.

Listings
• **Element** is cULus listed, suitable for wet locations.
• LM79 and LM80. • RoHS compliant.
• Dark-Sky Friendly®, full cutoff certified by the International Dark-Sky Association.
• Meets ANSI 2GC136.31-2001 Vibration Standards when ordered with the MAF mounting option.
• IP65 Pending. • Powder Coated Tough™.

EPA Data

Fixture with Arm						
EL2-S						
EL2-1	.6	.9	1.3	1.4	1.4	1.4
EL2-2	.7	n/a	1.3	n/a	1.5	n/a
EL2-3	1.0	n/a	1.3	n/a	n/a	n/a

Isolux Curve



ELEMENT-3
TYPE V
LED OPTICS
192 LEDs @ 350 mA

Scale: 1 Square = 28 ft
Initial Light Loss Factor = 1.00
Total Lumens Per Luminaire = 18,328
Mounting Height = 28 ft
Arrangement: Twin (back-to-back)

LED Data Chart for 5500K*

# Bars	# LEDs	Output mA	Nominal Watts	Initial Lumens T1	Initial Lumens T2	Initial Lumens T3	Initial Lumens T4	Initial Lumens T5	System Watts 120-277	L_{70} Hours @ 40° C
1 EL2-S EL2-1	24	350	25	2,021	2,109	1,774	2,020	2,356	28	200,000
		530	35	2,520	2,841	2,439	2,684	3,030	39	120,000
		700	50	2,995	3,377	2,962	3,030	3,675	55	70,000
2 EL2-S EL2-1	48	350	50	4,043	3,967	3,504	4,040	4,812	56	200,000
		530	70	5,042	5,683	4,540	5,368	6,087	78	120,000
		700**	100	5,990	6,532	5,667	6,102	7,349	110	70,000
3 EL2-S EL2-1	72	350	75	6,063	6,327	5,185	6,060	7,038	84	200,000
		530**	105	7,563	8,524	6,928	8,052	9,128	117	120,000
		700**	150	8,985	9,799	8,057	9,151	11,024	165	70,000
4 EL2-1	96	350	100	8,086	8,435	6,916	8,080	9,383	112	200,000
		530	140	9,923	11,365	8,911	10,736	12,174	156	120,000
5 EL2-2	120	350	125	10,107	10,544	8,175	10,100	11,455	130	200,000
		530	175	12,405	14,207	10,637	13,420	15,216	199	80,000
		700	250	14,974	16,331	12,457	15,252	18,375	268	60,000
6 EL2-2	144	350	150	12,128	12,655	9,810	12,120	12,736	156	200,000
		530	210	14,885	17,048	12,681	16,128	18,260	237	80,000
		700	300	17,969	19,597	14,752	18,312	22,051	319	60,000
7 EL2-3	168	350	175	14,151	14,761	11,444	14,140	16,037	182	200,000
		530	245	17,367	19,890	14,716	18,788	19,418	274	80,000
		700	350	20,964	22,864	17,005	21,352	25,725	368	60,000
8 EL2-3	192	350	200	16,172	16,836	13,073	16,160	18,328	208	200,000
		530	280	19,847	22,780	16,702	21,472	22,191	312	140,000
		700	400	23,959	26,130	19,167	24,402	29,401	418	60,000

Visit www.VisionaireLighting.com for up-to-the-minute chart information, including types not listed here.
* For 4000K multiply values by 0.97 ** Not available for EL2-S

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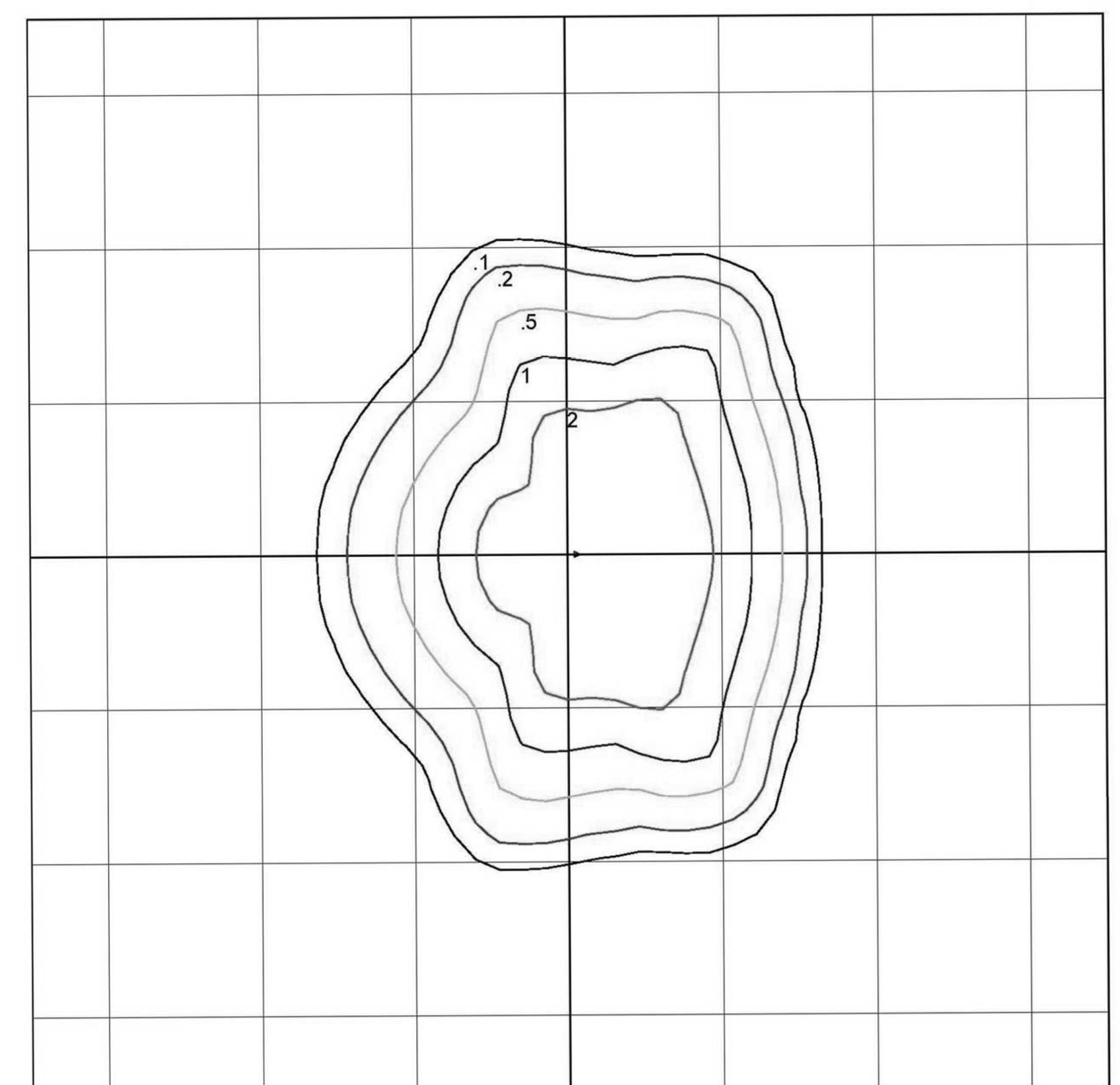
Photometric Toolbox™



VISIONAIRE LIGHTING, LLC
EL2-1 T3-96LC-350MA-4000K
14-1/2"L. X 17-5/8"W. X 4"H. LED LUMINAIRE
LED BARS, EACH BAR HAS 24 TYPE III COOL WHITE LEDS

Horizontal Footcandles
Scale: 1 Inch = 25 Ft.
Light Loss Factor = 1.00
Lumens Per Lamp = N.A. (absolute photometry)
Luminaire Lumens = 8300
Mounting Height = 19.00 Ft
Maximum Calculated Value = 5.04 Fc
Arrangement: Single

Page 1

PROJECT NAME: RICHMOND	
PROJECT NUMBER: CMG PARK (31)	
FILE NAME: z97c186e105.dgn	PLOT DATE: 5/28/2013
PROJECT LEADER: YASSER RIZK	DRAWN BY: M. STEWART
DESIGNED BY: M. STEWART	CHECKED BY: Y. RIZK
LIGHTING DETAILS SHEET	SHEET 115 OF 133

DURABLE 4 INCH WHITE LINE
PNR 72+15~72+45 RT, 54 LF (EL)
PNR 72+43~72+54 RT, 35 LF (LL)
90 DEG. PARKING SPACES - 18X35=630 LF
75 DEG. PARKING SPACES - 19.50X95=1,853 LF
60 DEG. PARKING SPACES - 20.80X12=250 LF
45 DEG. PARKING SPACES - 23.50X21=494 LF
GORE - 240 LF
DOTTED EL - 200 LF

DURABLE 4 INCH YELLOW LINE
PNR 72+45~72+64 RT, 2X35=70 LF (DYCL)

DURABLE 8 INCH YELLOW LINE
PNR 72+56 ~ 72+97 LT & RT,
INNER ROUNDABOUT CIRCLE, 126 LF (EL)

DURABLE 24 INCH STOP BAR
PNR 72+26 ~ 72+52 RT, 28 LF

DURABLE LETTER OR SYMBOL
PNR 71+57 ~ 72+21 RT, 6 HANDICAPPED PAVEMENT MARKING
PNR 72+40 ~ 73+10 LT & RT, INNER ROUNDABOUT,
3 DRIVE COUNTERCLOCKWISE ARROWS
PNR 72+36 ~ 72+48 RT, 2 RIGHT ARROW
PNR 72+47 ~ 72+58 RT, 2 LEFT ARROW
PNR 73+32 ~ 74+67 RT, 2 WRONG WAY ARROW
PNR 74+40 ~ 74+67 LT, 1 WRONG WAY ARROW

REMOVING SIGNS
16 EACH

ERECTING SALVAGED SIGNS
13 EACH

LEGEND

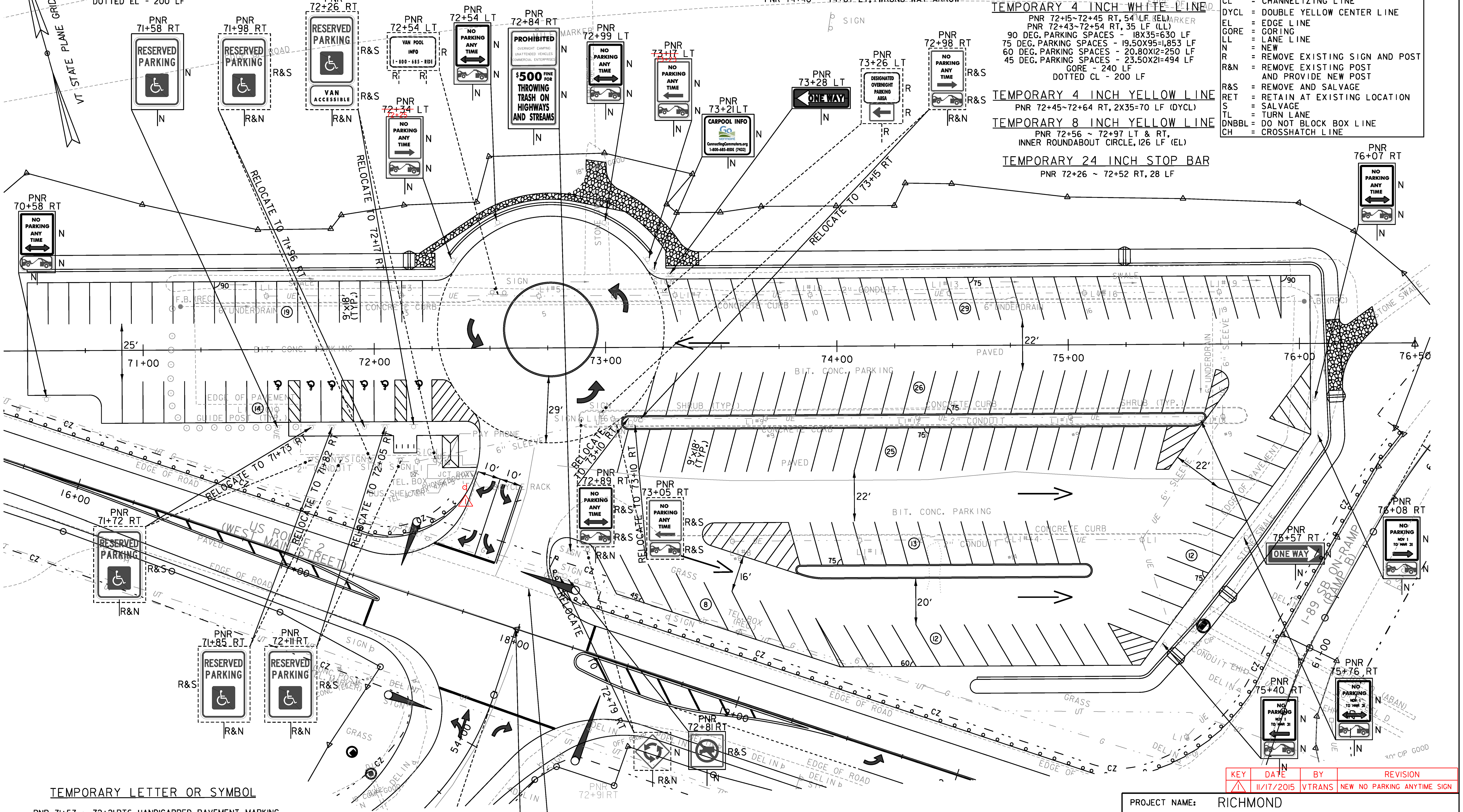
▭	= EXISTING SIGN
▭	= NEW SIGN
B-B	= BACK TO BACK
CL	= CHANNELIZING LINE
DYCL	= DOUBLE YELLOW CENTER LINE
EL	= EDGE LINE
GORE	= GORING
LL	= LANE LINE
N	= NEW
R	= REMOVE EXISTING SIGN AND POST
R&N	= REMOVE EXISTING POST AND PROVIDE NEW POST
R&S	= REMOVE AND SALVAGE
RET	= RETAIN AT EXISTING LOCATION
S	= SALVAGE
TL	= TURN LANE
DNBBL	= DO NOT BLOCK BOX LINE
CH	= CROSSHATCH LINE

TEMPORARY 4 INCH WHITE LINE
PNR 72+15~72+45 RT, 54 LF (EL)
PNR 72+43~72+54 RT, 35 LF (LL)
90 DEG. PARKING SPACES - 18X35=630 LF
75 DEG. PARKING SPACES - 19.50X95=1,853 LF
60 DEG. PARKING SPACES - 20.80X12=250 LF
45 DEG. PARKING SPACES - 23.50X21=494 LF
GORE - 240 LF
DOTTED CL - 200 LF

TEMPORARY 4 INCH YELLOW LINE
PNR 72+45~72+64 RT, 2X35=70 LF (DYCL)

TEMPORARY 8 INCH YELLOW LINE
PNR 72+56 ~ 72+97 LT & RT,
INNER ROUNDABOUT CIRCLE, 126 LF (EL)

TEMPORARY 24 INCH STOP BAR
PNR 72+26 ~ 72+52 RT, 28 LF



TEMPORARY LETTER OR SYMBOL
PNR 71+57 ~ 72+21 RT6 HANDICAPPED PAVEMENT MARKING
PNR 72+40 ~ 73+10 LT & RT, INNER ROUNDABOUT,
3 DRIVE COUNTERCLOCKWISE ARROWS
PNR 72+36 ~ 72+48 RT, 1 RIGHT ARROW, 1"ONLY" (1X4=4 EACH)
PNR 72+47 ~ 72+58 RT, 1 LEFT ARROW, 1"ONLY" (1X4=4 EACH)

BEGIN PROJECT CMG PARK (31)
END PROJECT STP 0284 (17)
POT US ROUTE 2 STA. 17+99.06
= I-89 RAMP D STA. 54+53.65

0 20 40
SCALE IN FEET

KEY	DATE	BY	REVISION
1	11/17/2015	VTRANS	NEW NO PARKING ANYTIME SIGN

PROJECT NAME: RICHMOND
PROJECT NUMBER: CMG PARK (31)

FILE NAME: z97c186pmbdr.dgn
PROJECT LEADER: JEFFREY MAXTUTIS
DESIGNED BY: J.SOBEL
PVMT. MARKING AND SIGNS LAYOUT SHEET
PLOT DATE: 4/30/2013
DRAWN BY: Y.CAO/I.ALMY
CHECKED BY: D.FLYNN
SHEET 116 OF 133

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET 1

KEY	DATE	BY	REVISION
⚠	11/10/2015	VTRANS	SIGN SUMMARY UPDATE

MILEMARKER, STATION, OR SIGN NUMBER	SIGN LEGEND	SIGN DIMENSIONS EA	SIGN DIMENSIONS WIDTH (in)	SIGN DIMENSIONS HEIGHT (in)	NEW & SALVAGED SIGNS "A"	NEW & SALVAGED SIGNS "B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	EXIST POST SALVAGE	NEW SIGN POSTS: NO. OF POSTS	FLANGED CHANNEL lb/ft 1.12	FLANGED CHANNEL 2.0	FLANGED CHANNEL 3.0	SQUARE STEEL (in) 1.75 (lb/ft 1.88)	SQUARE STEEL 2.0 (2.42)	SQUARE STEEL 2.5 (3.35)	ANCHOR	SLEEVE	TUBULAR ALUMINUM Ø (in) 3.0 (lb/ft 1.3)	TUBULAR ALUMINUM 4.0 (1.7)	TUBULAR ALUMINUM 4.0 MOD (1.7)	FOUNDATION	TUBULAR STEEL Ø (in) 3.0 (lb/ft 7.6)	TUBULAR STEEL 3.5 (9.0)	TUBULAR STEEL 4.0 (10.8)	TUBULAR STEEL 5.0 (14.6)	W-SHAPE STEEL FTG. SIZE 24"	W-SHAPE STEEL FTG. SIZE 30"	W-SHAPE STEEL WEIGHT	W-SHAPE STEEL POST SIZE	SIGN FRAME REQUIRED	REMARKS	SIGN DETAIL S.H.S.*	DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
											OPTION ITEMS																									
PARK AND RIDE																																				
STATION 70+58, RT PARK & RIDE	R7-1, NO PARKING ANYTIME	1	12	18	1.50						1					X		1															INSTALL NEW SIGN ON NEW POST	X		
	R7-20IP, TOW-AWAY ZONE (PLAQUE)	1	12	6	0.50																												INSTALL NEW SIGN ON NEW POST (SUB-MOUNT WITH THE PREVIOUS SIGN)	X		
STATION 71+58, RT PARK & RIDE	R7-8, RESERVED PARKING	1	12	18	1.50						1					X		1															INSTALL NEW SIGN ON NEW POST	X		
STATION 71+73, RT PARK & RIDE	R7-8, RESERVED PARKING						1				1					X		1															RELOCATE EXISTING SIGN ON NEW POST			
STATION ~~71+82, RT~~ PARK & RIDE 71+85, RT	R7-8, RESERVED PARKING	1	12	18	1.50	⚠	+				1					X		1															RELOCATE EXISTING SIGN ON NEW POST			
STATION ~~71+96, RT~~ PARK & RIDE 71+98, RT	R7-8, RESERVED PARKING						1				1					X		1															RELOCATE EXISTING SIGN ON NEW POST			
STATION ~~72+05, RT~~ PARK & RIDE 72+11, RT	R7-8, RESERVED PARKING						1				1					X		1															RELOCATE EXISTING SIGN ON NEW POST			
STATION ~~72+17, RT~~ PARK & RIDE 72+26, RT	R7-8, RESERVED PARKING						1				1					X		1															RELOCATE EXISTING SIGN ON NEW POST			
STATION 72+26, RT PARK & RIDE	R7-8P, VAN ACCESSIBLE (PLAQUE)	1	12	6	0.50	⚠	+																										RELOCATE EXISTING SIGN ON NEW POST (SUB-MOUNT WITH THE PREVIOUS SIGN)			
STATION 72+34, LT PARK & RIDE	R7-1R, NO PARKING ANYTIME	1	12	18	1.50						1					X		1															INSTALL NEW SIGN ON NEW POST	X		
	R7-20IP, TOW-AWAY ZONE (PLAQUE)	1	12	6	0.50																												INSTALL NEW SIGN ON NEW POST (SUB-MOUNT WITH THE PREVIOUS SIGN)	X		
STATION 72+54, LT PARK & RIDE	R7-1, NO PARKING ANYTIME	1	12	18	1.50						1					X		1															INSTALL NEW SIGN ON NEW POST	X		
	R7-20IP, TOW-AWAY ZONE (PLAQUE)	1	12	6	0.50																												INSTALL NEW SIGN ON NEW POST (SUB-MOUNT WITH THE PREVIOUS SIGN)	X		
STATION 72+79, RT PARK & RIDE	W2-6, CIRCULAR INTERSECTION	1	30	30	6.25						1					X		1															INSTALL NEW SIGN ON NEW POST	X		
STATION 72+81, RT PARK & RIDE	R5-2, NO TRUCKS		24	18	3.00	⚠	+				1					X		1															RELOCATE EXISTING SIGN ON NEW POST			
												FT	FT	FT	FT	FT 133.75	FT		EA	LB	LB	LB		LB	LB	LB	LB									
	TOTALS				SF ~~13.75~~ 18.75	SF ⚠	EA. ~~7~~ 4	SF				FT			FT 133.75					LB			EA.	LB				EA.	EA.	LB						

FINAL POST LENGTHS ARE TO BE DETERMINED IN THE FIELD. POST SIZES ARE COMPUTED BASED ON INFORMATION FURNISHED ON THE VTRANS STANDARD SHEETS AND THE "SIGN POST DESIGN GUIDELINE".

*STANDARD HIGHWAY SIGNS

PROJECT NAME: RICHMOND
PROJECT NUMBER: CMG PARK (31)

FILE NAME: z97c186tss.dgn
PROJECT LEADER: JEFFREY MAXTUTIS
DESIGNED BY: J.SOBEL
TRAFFIC SIGN SUMMARY SHEET 1

PLOT DATE: 4/29/2013
DRAWN BY: Y.CAO/I.ALMY
CHECKED BY: D.FLYNN
SHEET 117 OF 133

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET 2

MILEMARKER, STATION, OR SIGN NUMBER	SIGN LEGEND	EA	SIGN DIMENSIONS WIDTH (in)	SIGN DIMENSIONS HEIGHT (in)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	EXIST POST SALVAGE	NO. OF POSTS	FLANGED CHANNEL lb/ft 1.12	2.0	3.0	SQUARE STEEL (in) 1.75 lb/ft 1.88	2.0 / 2.42	2.5 / 3.35	ANCHOR	SLEEVE	TUBULAR ALUMINUM Ø (in) 3.0 lb/ft 1.3	4.0 / 1.7	4.0 MOD / 1.7	FOUNDATION	TUBULAR STEEL Ø (in) 3.0 lb/ft 7.6	3.5 / 9.0	4.0 / 10.8	5.0 / 14.6	W-SHAPE STEEL FTG. SIZE 24"	30"	WEIGHT	POST SIZE	SIGN FRAME REQUIRED	REMARKS	SIGN DETAIL S.H.S.*	DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
												OPTION ITEMS																								
PARK AND RIDE																																				
STATION 72+84, RT PARK & RIDE	VR-032, PROHIBITED OVERNIGHT CAMPING, UNATTENDED VEHICLES, COMMERCIAL ENTERPRISES	1	30	24	5.00						1						X	1															INSTALL NEW SIGN ON NEW POST. SPECIAL PROVISION (SOIL BEARING SLIP BASES) REQUIRED.			E-144
	VR-023b, NO LITTERING	1	24	30	5.00																												INSTALL NEW SIGN ON NEW POST (SUB-MOUNT WITH THE PREVIOUS SIGN)			E-144
STATION 72+99, LT PARK & RIDE	R7-1, NO PARKING ANYTIME	1	12	18	1.50						1					X		1															INSTALL NEW SIGN ON NEW POST	X		
	R7-201P, TOW-AWAY ZONE (PLAQUE)	1	12	6	0.50																												INSTALL NEW SIGN ON NEW POST (SUB-MOUNT WITH THE PREVIOUS SIGN)	X		
STATION 73+10, RT PARK & RIDE	R7-1, NO PARKING ANYTIME						1				1					X		1															RELOCATE EXISTING SIGNS ON NEW POST			
	R7-1L, NO PARKING ANYTIME						1																										RELOCATE EXISTING SIGNS ON NEW POST (SUB-MOUNT WITH THE PREVIOUS SIGN)			
	R7-201P, TOW-AWAY ZONE (PLAQUE)						2																										RELOCATE EXISTING SIGNS ON NEW POST (SUB-MOUNT WITH THE PREVIOUS SIGNS)			
STATION 73+15, RT PARK & RIDE	R7-1R, NO PARKING ANYTIME						1				1					X		1															RELOCATE EXISTING SIGNS ON NEW POST			
	R7-201P, TOW-AWAY ZONE (PLAQUE)						1																										RELOCATE EXISTING SIGNS ON NEW POST (SUB-MOUNT WITH THE PREVIOUS SIGNS)			
STATION 73+17, LT PARK & RIDE	R7-1L, NO PARKING ANYTIME	1	12	18	1.50						1					X		1															INSTALL NEW SIGN ON NEW POST	X		
	R7-201P, TOW-AWAY ZONE (PLAQUE)	1	12	6	0.50																												INSTALL NEW SIGN ON NEW POST (SUB-MOUNT WITH THE PREVIOUS SIGN)	X		
STATION 73+21, LT PARK & RIDE	CARPOOL INFO	1	30	30	6.25						1					X		1															INSTALL NEW SIGN ON NEW POST. LOGO SHALL BE PROVIDED TO THE CONTRACTOR BY VTRANS		119	
STATION 73+28, LT PARK & RIDE	R6-1L, ONE WAY	1	36	12	3.00						1					X		1															INSTALL NEW SIGN ON NEW POST			E-142
STATION 75+40, RT PARK & RIDE	R7-1R, NO PARKING ANYTIME	1	12	18	1.50						1					X		1															INSTALL NEW SIGN ON NEW POST	X		
	R7-201P, TOW-AWAY ZONE (PLAQUE)	1	12	6	0.50																												INSTALL NEW SIGN ON NEW POST (SUB-MOUNT WITH THE PREVIOUS SIGN)	X		
												FT	FT	FT	FT	FT 87.5	FT 14.5		EA	LB	LB	LB		LB	LB	LB	LB									
	TOTALS				SF 25.25	SF	EA. 6	SF				FT			FT 102.0					LB			EA.	LB				EA.	EA.	LB						

FINAL POST LENGTHS ARE TO BE DETERMINED IN THE FIELD. POST SIZES ARE COMPUTED BASED ON INFORMATION FURNISHED ON THE VTRANS STANDARD SHEETS AND THE "SIGN POST DESIGN GUIDELINE".

*STANDARD HIGHWAY SIGNS

PROJECT NAME: RICHMOND
PROJECT NUMBER: CMG PARK (31)

FILE NAME: z97c186tss.dgn
PLOT DATE: 4/30/2013
PROJECT LEADER: JEFFREY MAXTUTIS
DRAWN BY: Y.CAO/I.ALMY
DESIGNED BY: J.SOBEL
CHECKED BY: D.FLYNN
TRAFFIC SIGN SUMMARY SHEET 2
SHEET 118 OF 133

STATE OF VERMONT
AGENCY OF TRANSPORTATION

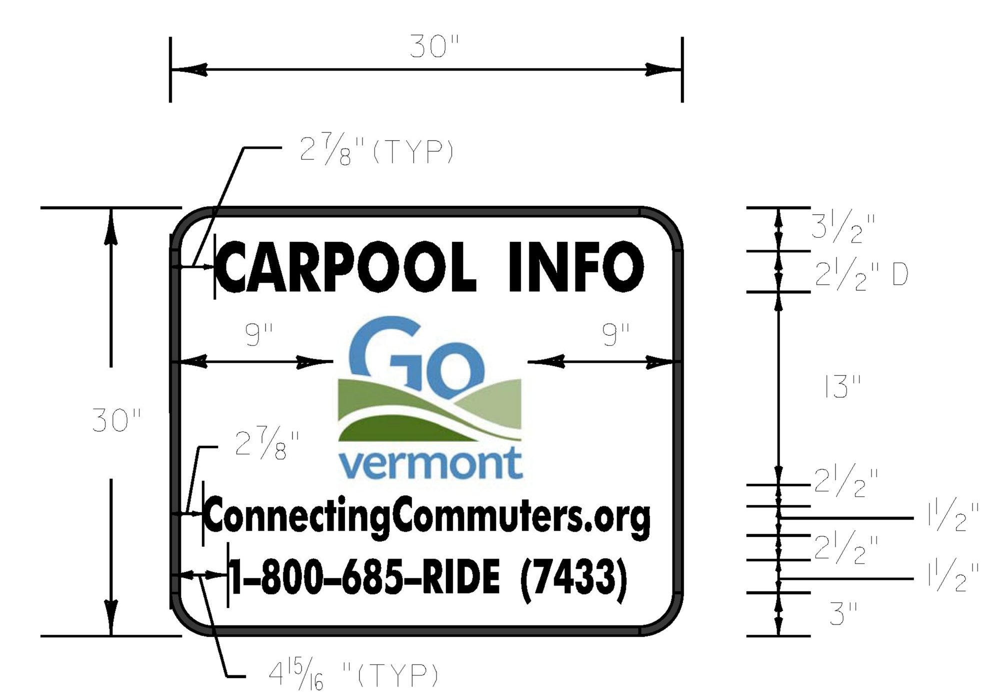
TRAFFIC SIGN SUMMARY SHEET 3

MILEMARKER, STATION, OR SIGN NUMBER	SIGN LEGEND	EA	SIGN DIMENSIONS WIDTH (in)	HEIGHT (in)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	SALVAGE	NO. OF POSTS	FLANGED CHANNEL lb/ft 1.12	2.0	3.0	SQUARE STEEL (in) 1.75 (1.88 lb/ft)	2.0 (2.42)	2.5 (3.35)	ANCHOR	SLEEVE	TUBULAR ALUMINUM Ø (in) 3.0 (1.3 lb/ft)	4.0 (1.7)	4.0 MOD (1.7)	FOUNDATION	TUBULAR STEEL Ø (in) 3.0 (7.6 lb/ft)	3.5 (9.0)	4.0 (10.8)	5.0 (14.6)	W-SHAPE STEEL FTG. SIZE 24"	30"	WEIGHT	POST SIZE	SIGMENT REQUIRED	REMARKS	S.H.S.*	DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
															OPTION ITEMS																					
PARK AND RIDE																																				
STATION 75+57, RT PARK & RIDE	R6-1R, ONE WAY	1	36	12	3.00						1					X		1															INSTALL NEW SIGN ON NEW POST			E-142
STATION 75+76, RT PARK & RIDE	R7-2a, NO PARKING NOV 1 TO MAR 31	1	12	18	1.50						1					X		1															INSTALL NEW SIGN ON NEW POST	X		
	R7-201P, TOW-AWAY ZONE (PLAQUE)	1	12	6	0.50																												INSTALL NEW SIGN ON NEW POST (SUB-MOUNT WITH THE PREVIOUS SIGN)	X		
STATION 76+07, RT PARK & RIDE	R7-1, NO PARKING ANYTIME	1	12	18	1.50						1					X		1															INSTALL NEW SIGN ON NEW POST	X		
	R7-201P, TOW-AWAY ZONE (PLAQUE)	1	12	6	0.50																												INSTALL NEW SIGN ON NEW POST (SUB-MOUNT WITH THE PREVIOUS SIGN)	X		
STATION 76+08, RT PARK & RIDE	R7-2aR, NO PARKING NOV 1 TO MAR 31	1	12	18	1.50						1					X		1															INSTALL NEW SIGN ON NEW POST	X		
	R7-201P, TOW-AWAY ZONE (PLAQUE)	1	12	6	0.50																												INSTALL NEW SIGN ON NEW POST (SUB-MOUNT WITH THE PREVIOUS SIGN)	X		
												FT	FT	FT	FT	FT 48.25	FT		EA	LB	LB	LB		LB	LB	LB	LB									
	TOTALS				SF 11.00 ~~9.00~~	SF	EA.	SF				FT			FT 61.25 ~~48.25~~					LB			EA.	LB				EA.	EA.	LB						
STATION 72+20, RT PARK & RIDE	R7-1, NO PARKING ANYTIME	1	12	18	1.50						1					13.0 X		1																		
⚠	R7-201P, TOW-AWAY ZONE (PLAQUE)	1	12	6	0.50																															

	NEW & SALVAGED SIGNS "A" SF	"B" SF	SALV SIGN EA.	SALV TIS SF	EXIST POST RETAIN	SALVAGE	NO. OF POSTS	FLANGED CHANNEL lb/ft (1.12, 2.0, 3.0) FT	SQUARE STEEL (in) 1.75, 2.0, 2.5 (lb/ft 1.88, 2.42, 3.35) FT	ANCHOR	SLEEVE	TUBULAR ALUMINUM Ø (in) 3.0, 4.0, 4.0 MOD (lb/ft 1.3, 1.7, 1.7) LB	FOUNDATION EA.	TUBULAR STEEL Ø (in) 3.0, 3.5, 4.0, 5.0 (lb/ft 7.6, 9.0, 10.8, 14.6) LB	W-SHAPE STEEL FTG. SIZE 24" EA.	30" EA.	WEIGHT LB
SHEET 117 TOTALS	18.75 ~~13.75~~	⚠	4 ~~7~~						133.75								
SHEET 118 TOTALS	25.25		6						102.00								
SHEET 119 TOTALS	11.00 ~~9.00~~	⚠							61.25 ~~48.25~~								
GRAND TOTALS	55.0 ~~48.0~~	⚠	10 ~~13~~						297.00 ~~284.00~~								

FINAL POST LENGTHS ARE TO BE DETERMINED IN THE FIELD. POST SIZES ARE COMPUTED BASED ON INFORMATION FURNISHED ON THE VTRANS STANDARD SHEETS AND THE "SIGN POST DESIGN GUIDELINE".

*STANDARD HIGHWAY SIGNS



WHITE BORDER AND TEXT (RETROREFLECTIVE) (MINIMUM TYPE IX) WITH BLUE BACKGROUND (RETROREFLECTIVE) (MINIMUM TYPE III) SEE VTRANS STANDARD E-131 FOR MATERIALS

SIGN DETAIL

NOT TO SCALE

KEY	DATE	BY	REVISION
⚠	11/10/2015	VTRANS	SIGN SUMMARY UPDATE

PROJECT NAME: RICHMOND
PROJECT NUMBER: CMG PARK (31)

FILE NAME: z97c186tss.dgn
PLOT DATE: 4/29/2013
PROJECT LEADER: JEFFREY MAXTUTIS
DRAWN BY: Y.CAO/I.ALMY
DESIGNED BY: J.SOBEL
CHECKED BY: D.FLYNN
TRAFFIC SIGN SUMMARY SHEET 3
SHEET 119 OF 133

PNR PHASE I NOTES

1) REMOVE 20' FROM THE EAST END OF THE EXISTING MEDIAN ISLAND. REPLACE THE REMOVED PORTION OF THE MEDIAN ISLAND WITH FULL DEPTH PAVEMENT.

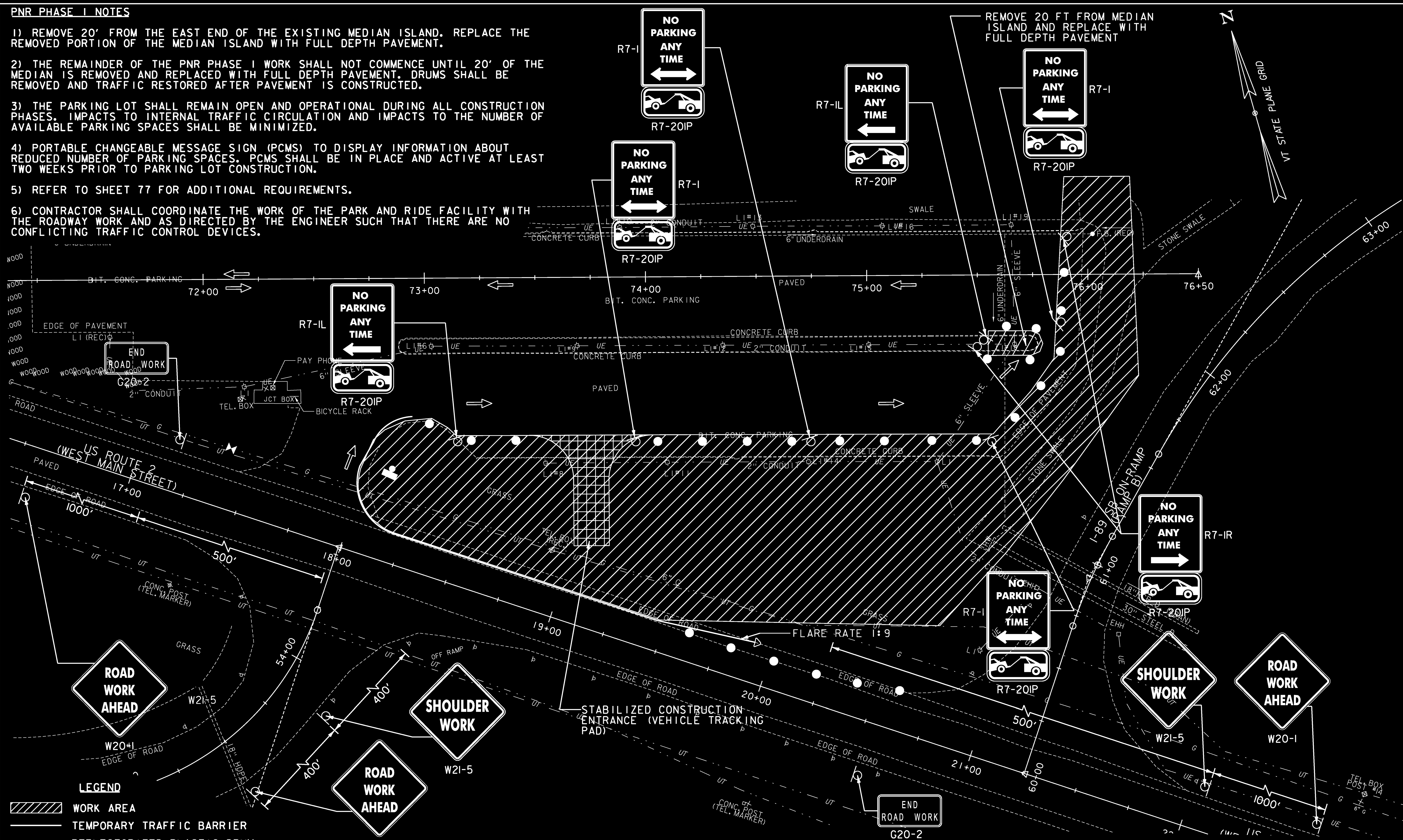
2) THE REMAINDER OF THE PNR PHASE I WORK SHALL NOT COMMENCE UNTIL 20' OF THE MEDIAN IS REMOVED AND REPLACED WITH FULL DEPTH PAVEMENT. DRUMS SHALL BE REMOVED AND TRAFFIC RESTORED AFTER PAVEMENT IS CONSTRUCTED.

3) THE PARKING LOT SHALL REMAIN OPEN AND OPERATIONAL DURING ALL CONSTRUCTION PHASES. IMPACTS TO INTERNAL TRAFFIC CIRCULATION AND IMPACTS TO THE NUMBER OF AVAILABLE PARKING SPACES SHALL BE MINIMIZED.

4) PORTABLE CHANGEABLE MESSAGE SIGN (PCMS) TO DISPLAY INFORMATION ABOUT REDUCED NUMBER OF PARKING SPACES. PCMS SHALL BE IN PLACE AND ACTIVE AT LEAST TWO WEEKS PRIOR TO PARKING LOT CONSTRUCTION.

5) REFER TO SHEET 77 FOR ADDITIONAL REQUIREMENTS.

6) CONTRACTOR SHALL COORDINATE THE WORK OF THE PARK AND RIDE FACILITY WITH THE ROADWAY WORK AND AS DIRECTED BY THE ENGINEER SUCH THAT THERE ARE NO CONFLICTING TRAFFIC CONTROL DEVICES.



LEGEND

- WORK AREA
- TEMPORARY TRAFFIC BARRIER
- REFLECTORIZED PLASTIC DRUM
- FLOW OF TRAFFIC
- SIGN
- IMPACT ATTENUATOR
- PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

REMOVAL OF EXISTING PAVEMENT MARKINGS

PNR STA. 73+25 ~ 75+60 RT (120 SF)
PNR STA. 75+55 ~ 75+80 RT (35 SF)

VEHICLE TRACKING PAD

PNR STA. 73+70 RT

ENERGY ABSORBTION ATTENUATOR

PNR STA. 74+49 RT, 1EA

0 20 40
SCALE IN FEET

PROJECT NAME: RICHMOND	
PROJECT NUMBER: CMG PARK (31)	
FILE NAME: z97c186tmpparki.dgn	PLOT DATE: 4/29/2013
PROJECT LEADER: JEFFREY MAXTUTIS	DRAWN BY: Y.CAO/L.ALMY
DESIGNED BY: J.SOBEL	CHECKED BY: D.FLYNN
PNR TRAFFIC MANAGEMENT PLAN PSE I	SHEET 120 OF 133

PNR PHASE 2 NOTES

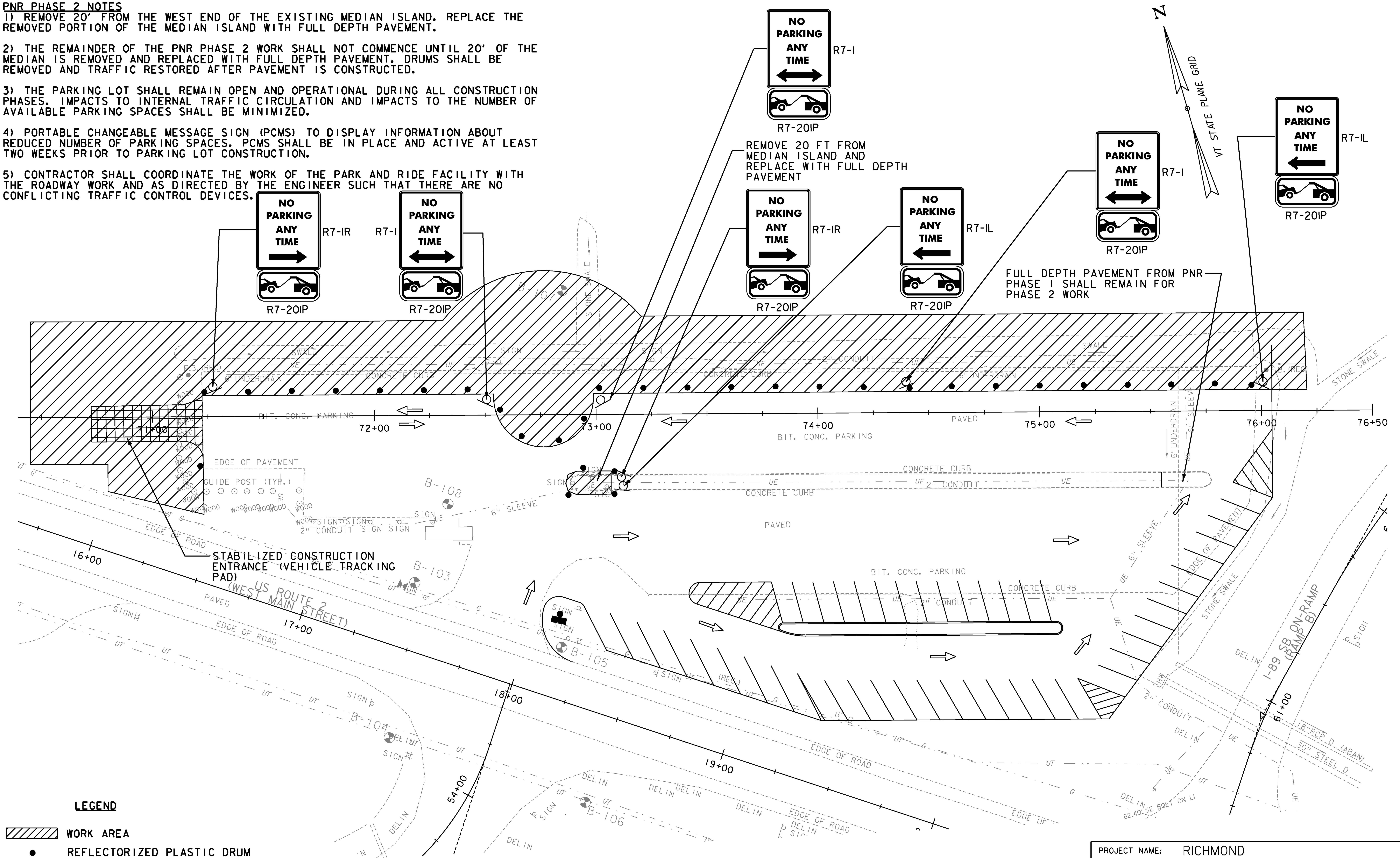
1) REMOVE 20' FROM THE WEST END OF THE EXISTING MEDIAN ISLAND. REPLACE THE REMOVED PORTION OF THE MEDIAN ISLAND WITH FULL DEPTH PAVEMENT.

2) THE REMAINDER OF THE PNR PHASE 2 WORK SHALL NOT COMMENCE UNTIL 20' OF THE MEDIAN IS REMOVED AND REPLACED WITH FULL DEPTH PAVEMENT. DRUMS SHALL BE REMOVED AND TRAFFIC RESTORED AFTER PAVEMENT IS CONSTRUCTED.

3) THE PARKING LOT SHALL REMAIN OPEN AND OPERATIONAL DURING ALL CONSTRUCTION PHASES. IMPACTS TO INTERNAL TRAFFIC CIRCULATION AND IMPACTS TO THE NUMBER OF AVAILABLE PARKING SPACES SHALL BE MINIMIZED.

4) PORTABLE CHANGEABLE MESSAGE SIGN (PCMS) TO DISPLAY INFORMATION ABOUT REDUCED NUMBER OF PARKING SPACES. PCMS SHALL BE IN PLACE AND ACTIVE AT LEAST TWO WEEKS PRIOR TO PARKING LOT CONSTRUCTION.

5) CONTRACTOR SHALL COORDINATE THE WORK OF THE PARK AND RIDE FACILITY WITH THE ROADWAY WORK AND AS DIRECTED BY THE ENGINEER SUCH THAT THERE ARE NO CONFLICTING TRAFFIC CONTROL DEVICES.



LEGEND

- WORK AREA
- ● REFLECTORIZED PLASTIC DRUM
- FLOW OF TRAFFIC
- SIGN
- PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

REMOVAL OF EXISTING PAVEMENT MARKINGS

PNR STA. 71+22 ~ 75+97 LT (260 SF)

VEHICLE TRACKING PAD

PNR STA. 71+22 RT

0 20 40
SCALE IN FEET

PROJECT NAME: RICHMOND	
PROJECT NUMBER: CMG PARK (31)	
FILE NAME: z97c186tmppark2.dgn	PLOT DATE: 4/29/2013
PROJECT LEADER: JEFFREY MAXTUTIS	DRAWN BY: Y.CAO/I.ALMY
DESIGNED BY: J.SOBEL	CHECKED BY: D.FLYNN
PNR TRAFFIC MANAGEMENT PLAN PSE 2	SHEET 121 OF 133

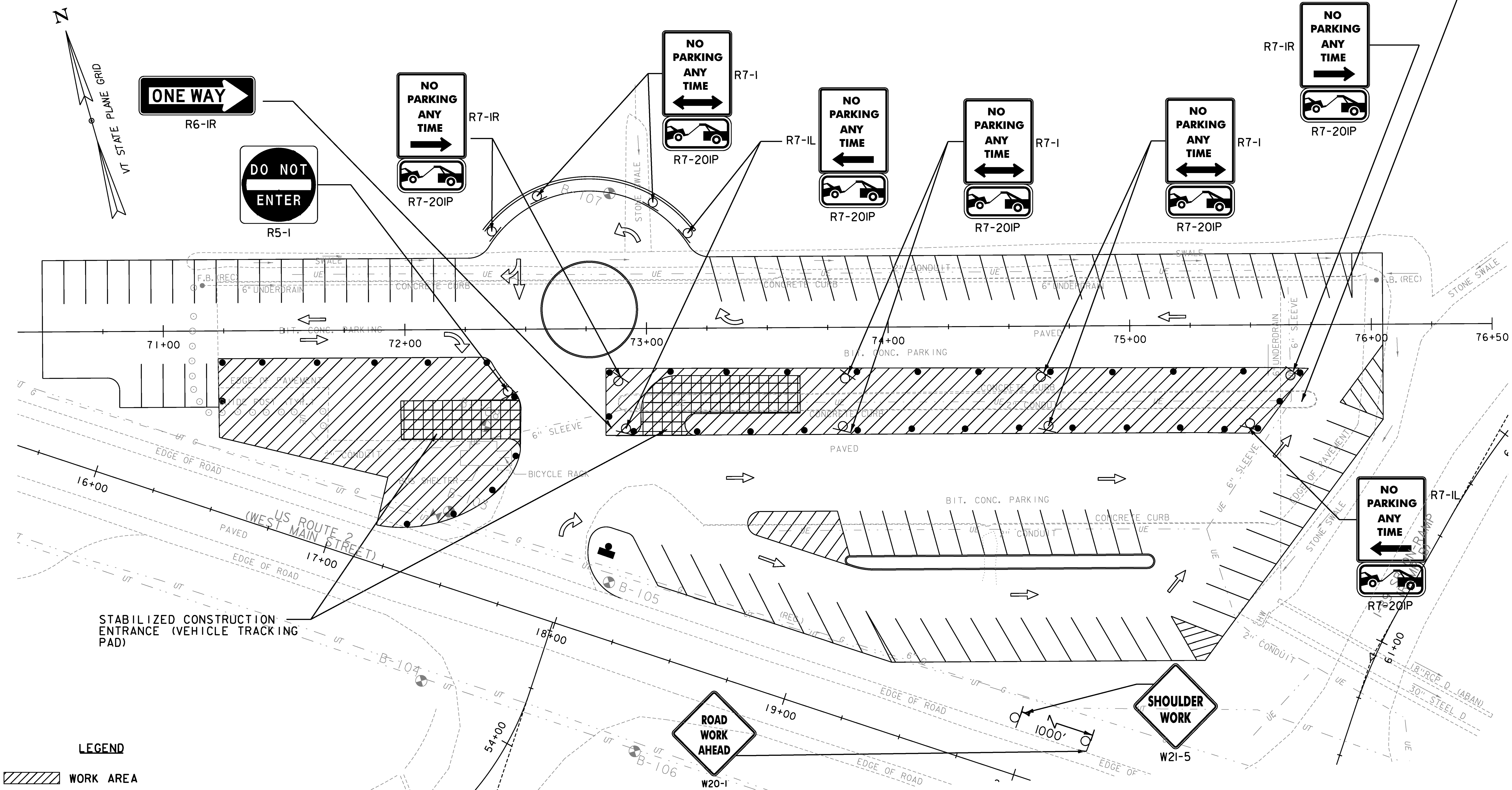
PNR PHASE 3 NOTES

1) THE PARKING LOT SHALL REMAIN OPEN AND OPERATIONAL DURING ALL CONSTRUCTION PHASES. IMPACTS TO INTERNAL TRAFFIC CIRCULATION AND IMPACTS TO THE NUMBER OF AVAILABLE PARKING SPACES SHALL BE MINIMIZED.

2) PORTABLE CHANGEABLE MESSAGE SIGN (PCMS) TO DISPLAY INFORMATION ABOUT REDUCED NUMBER OF PARKING SPACES. PCMS SHALL BE IN PLACE AND ACTIVE AT LEAST TWO WEEKS PRIOR TO PARKING LOT CONSTRUCTION.

3) CONTRACTOR SHALL TEMPORARILY RELOCATE THE EXISTING SHELTER TO A LOCATION ACCESSIBLE TO USERS OF THE PARK AND RIDE LOT. THE SHELTER SHALL BE SECURED TO THE GROUND ON A PAVED SURFACE. THE FINAL LOCATION SHALL BE APPROVED BY THE ENGINEER. COST SHALL BE INCLUDED IN THE COST OF ITEM 202.10 DEMOLITION AND DISPOSAL OF BUILDING.

4) CONTRACTOR SHALL COORDINATE THE WORK OF THE PARK AND RIDE FACILITY WITH THE ROADWAY WORK AND AS DIRECTED BY THE ENGINEER SUCH THAT THERE ARE NO CONFLICTING TRAFFIC CONTROL DEVICES.



LEGEND

- WORK AREA
- REFLECTORIZED PLASTIC DRUM
- FLOW OF TRAFFIC
- SIGN
- PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

REMOVAL OF EXISTING PAVEMENT MARKINGS

PNR STA. 71+22 ~ 72+30 RT (60 SF)
PNR STA. 72+88 ~ 75+70 RT (225 SF)

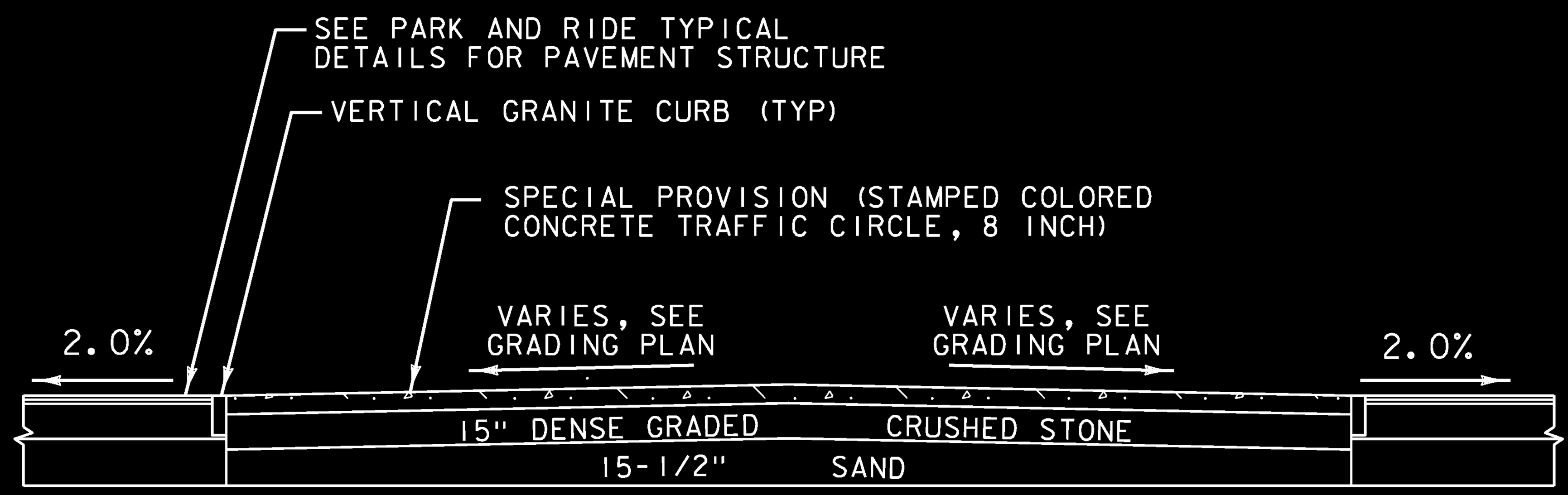
VEHICLE TRACKING PAD

PNR STA. 72+50 RT
PNR STA. 73+05 RT

0 20 40
SCALE IN FEET

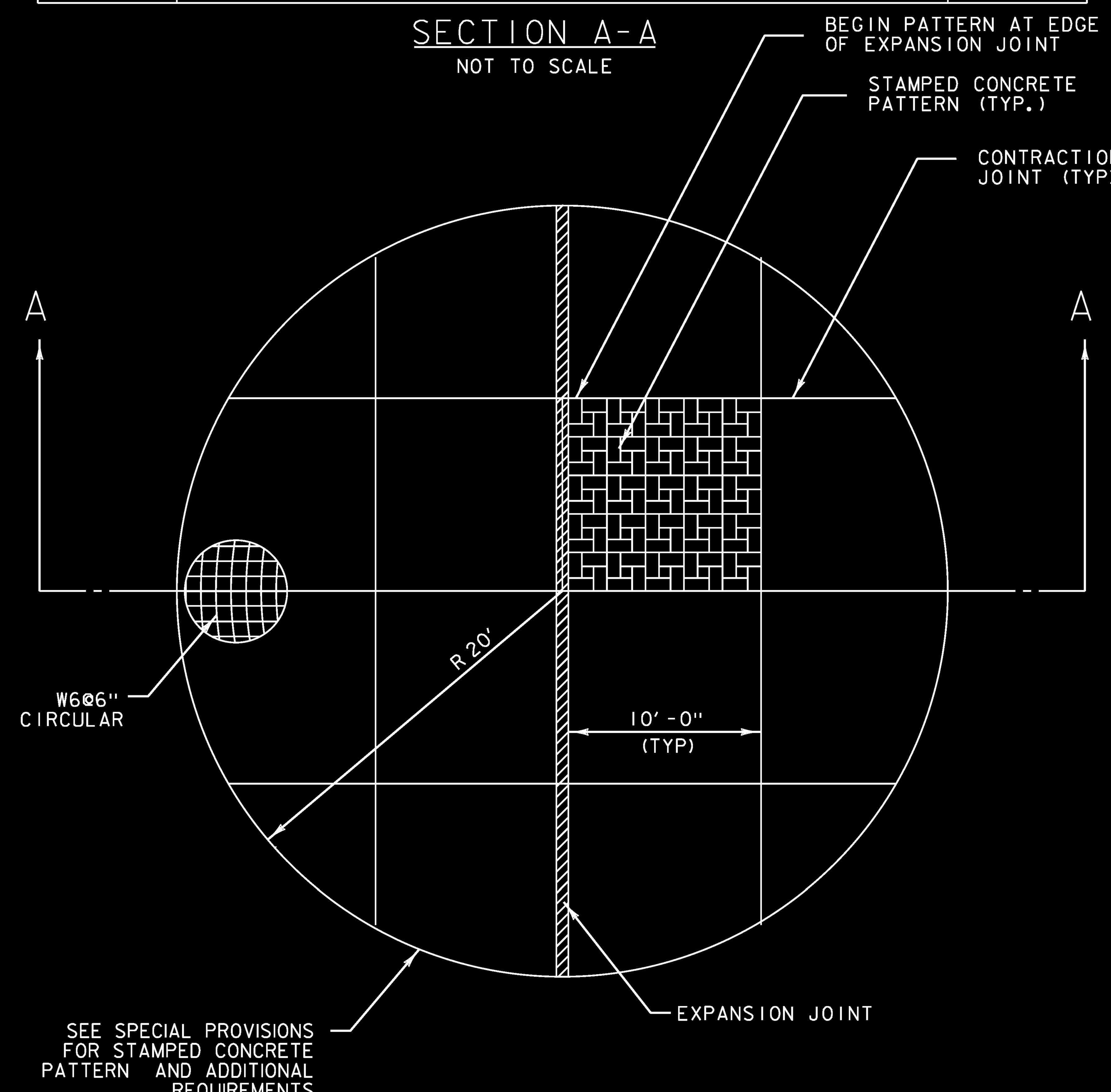
PROJECT NAME: RICHMOND	
PROJECT NUMBER: CMG PARK (31)	
FILE NAME: z97c186tmppark3.dgn	PLOT DATE: 4/29/2013
PROJECT LEADER: JEFFREY MAXTUTIS	DRAWN BY: Y.CAO/I.ALMY
DESIGNED BY: J.SOBEL	CHECKED BY: D.FLYNN
PNR TRAFFIC MANAGEMENT PLAN PSE 3	SHEET 122 OF 133

PARK AND RIDE DETAILS



SECTION A-A

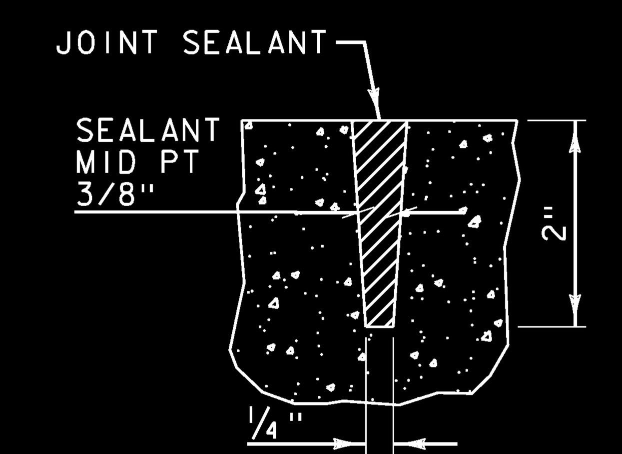
NOT TO SCALE



SPECIAL PROVISION
(STAMPED COLORED CONCRETE TRAFFIC CIRCLE, 8 INCH)

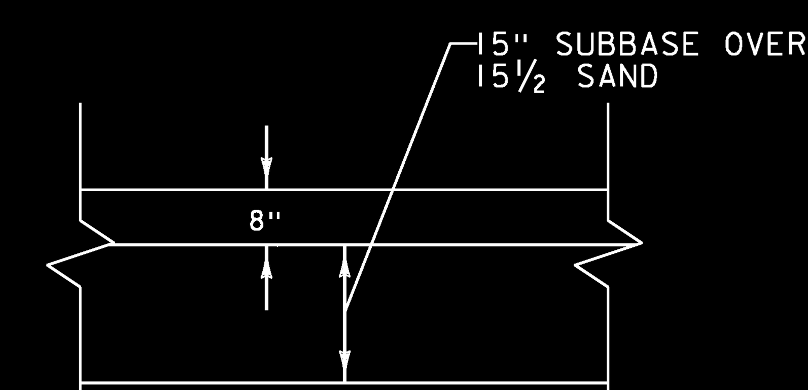
NOT TO SCALE

NOTE: JOINTS OTHER THAN THOSE SHOWN SHALL NOT BE ALLOWED WITHOUT ENGINEER'S APPROVAL.



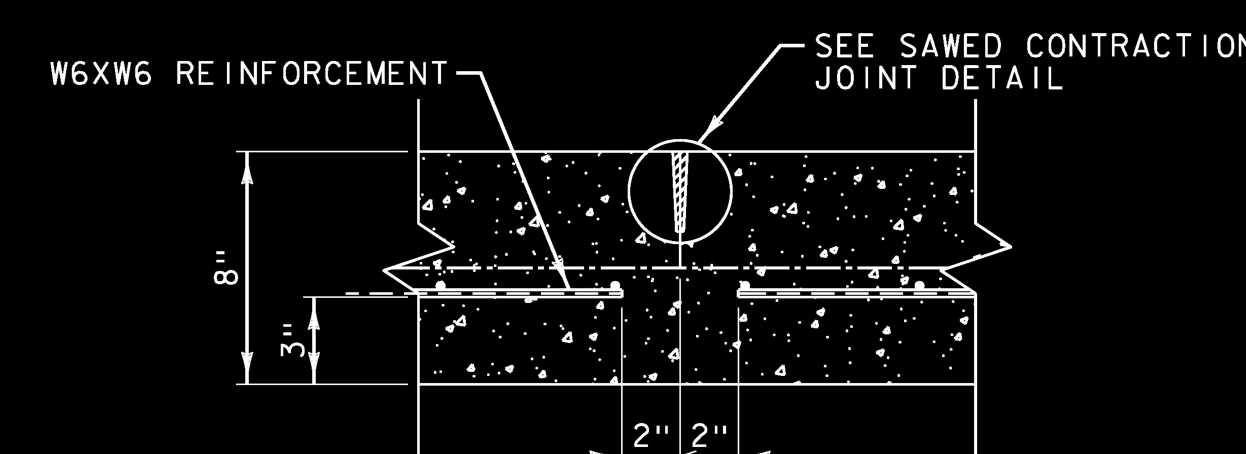
SAWED CONTRACTION JOINT DETAIL

NOT TO SCALE



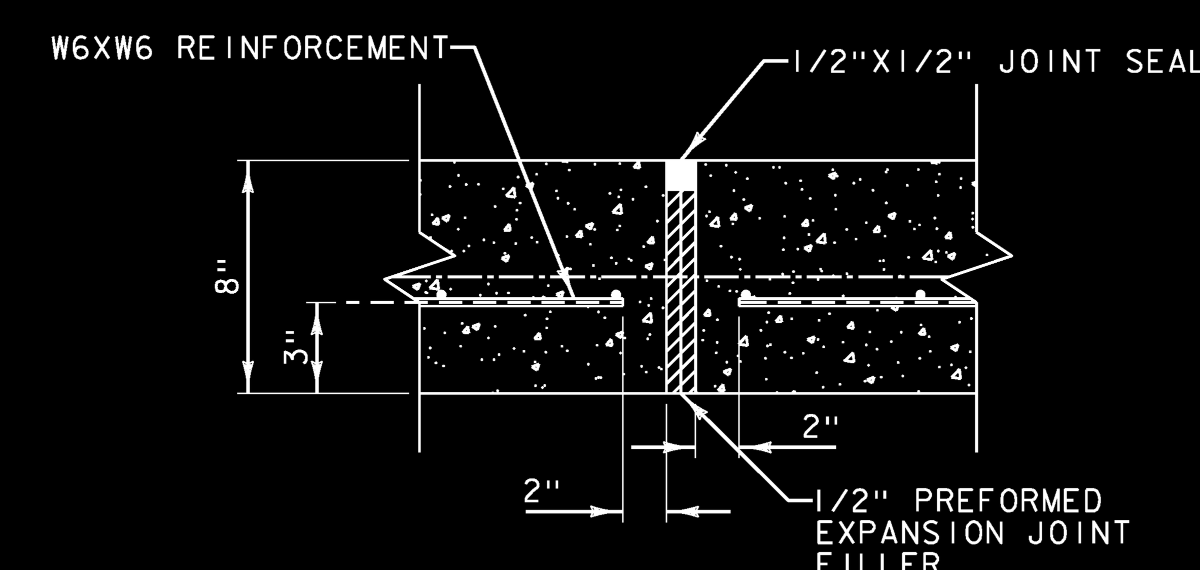
TYPICAL SECTION THRU TRAFFIC CIRCLE

NOT TO SCALE



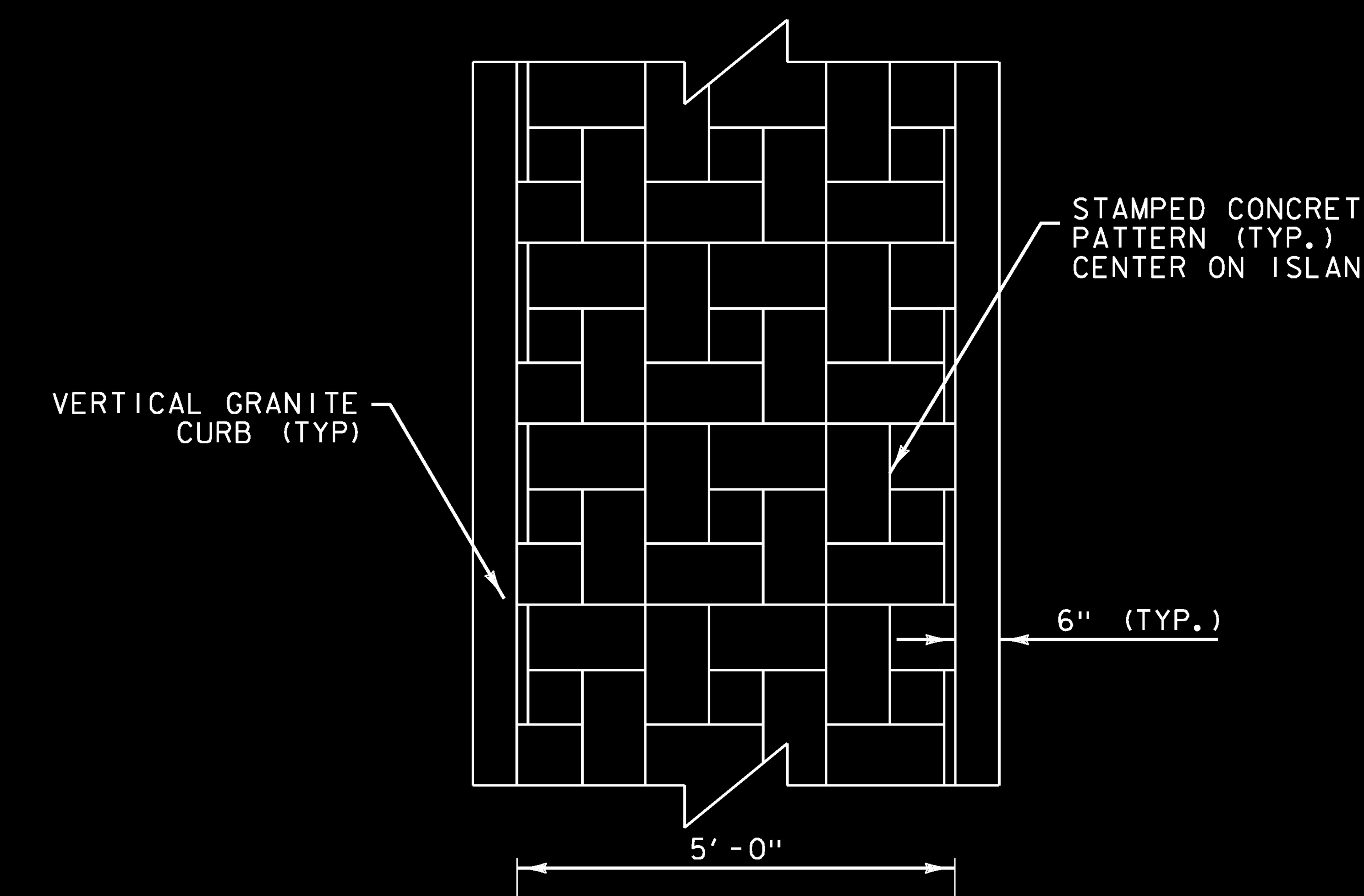
TYPICAL SECTION THRU CONTRACTION JOINT

NOT TO SCALE



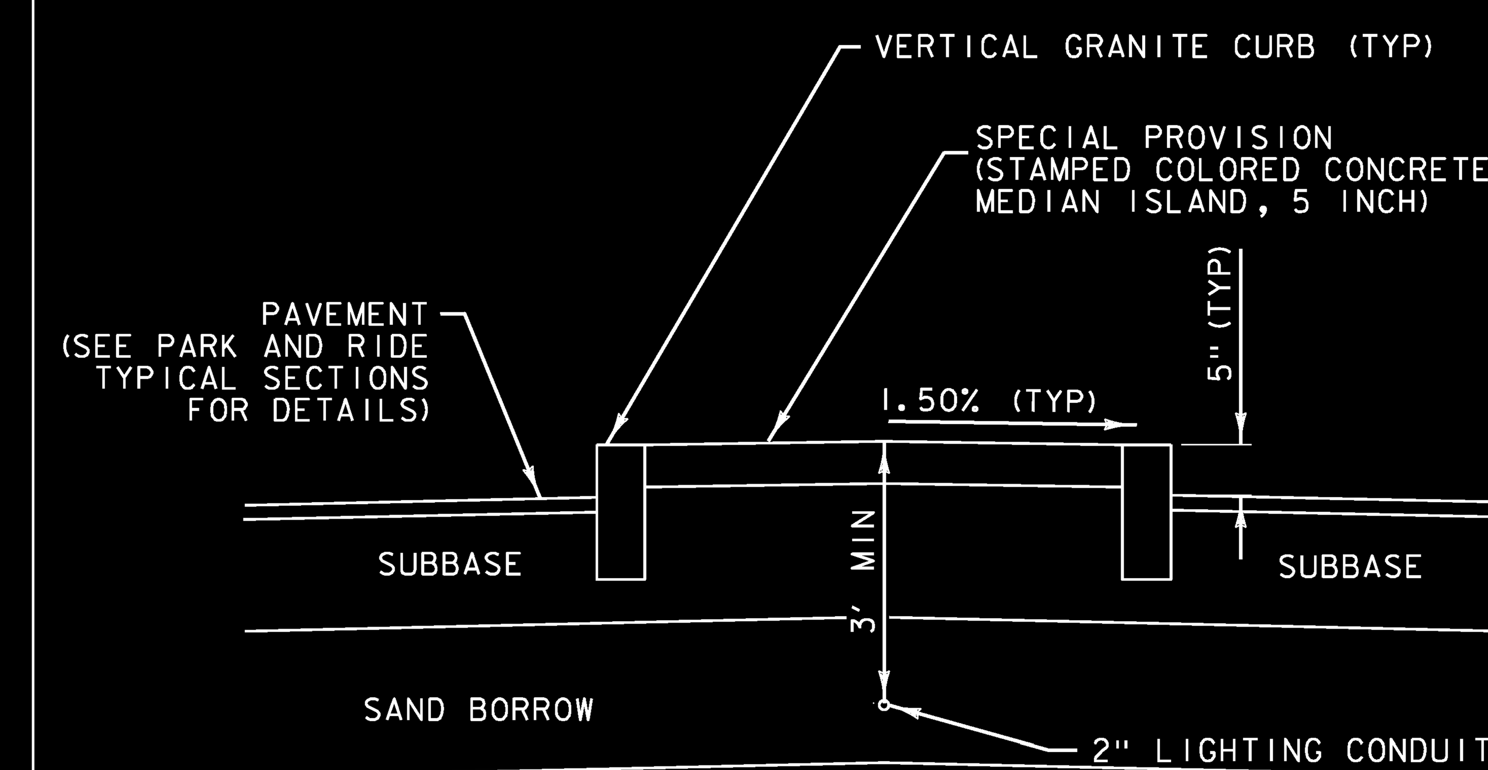
TYPICAL SECTION THRU EXPANSION JOINT

NOT TO SCALE



PLAN VIEW

NOT TO SCALE



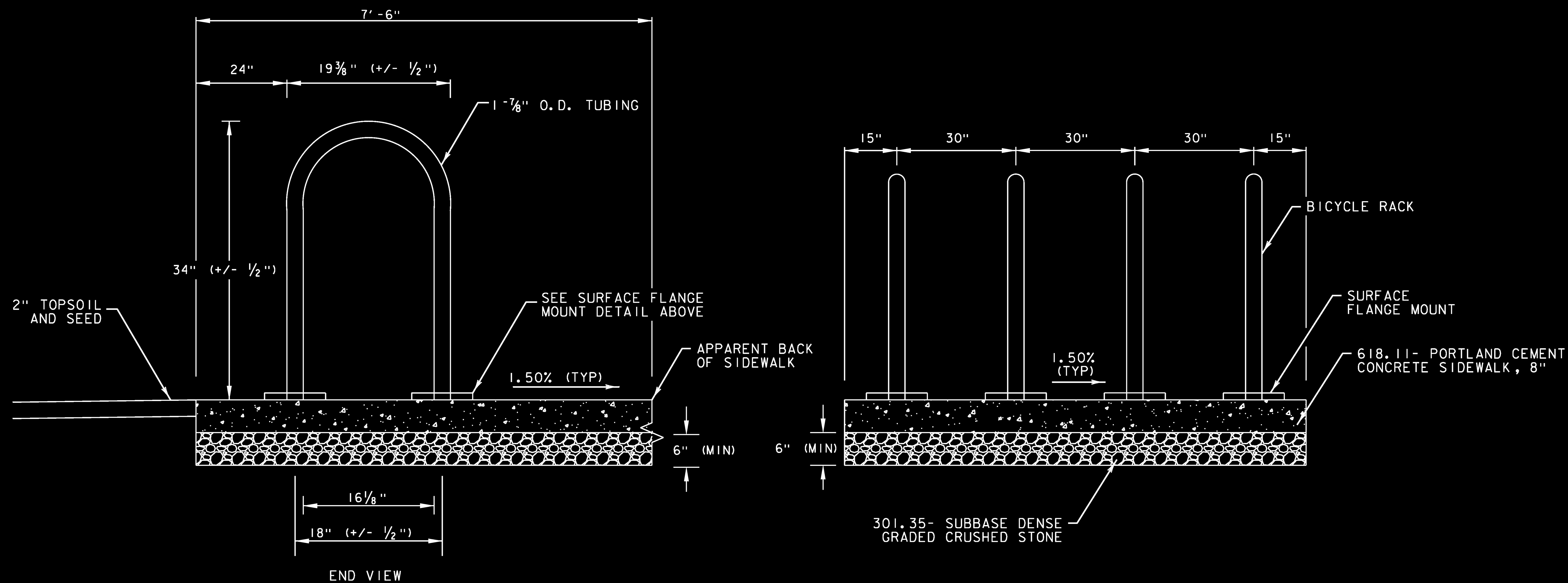
SPECIAL PROVISION
(STAMPED COLORED CONCRETE MEDIAN ISLAND, 5 INCH)
(STA 73+16.66 - 75+09.84 AND
STA 73+81.66 - 75+59.46)

NOT TO SCALE

PROJECT NAME: RICHMOND
PROJECT NUMBER: CMG PARK (31)

FILE NAME: z97c186drndet.dgn	PLOT DATE: 4/29/2013
PROJECT LEADER: ERIK ATKINS	DRAWN BY: N. BOSAN
DESIGNED BY: T. BIGELOW	CHECKED BY: E. ATKINS
PARK AND RIDE DETAILS SHEET 1	SHEET 123 OF 133

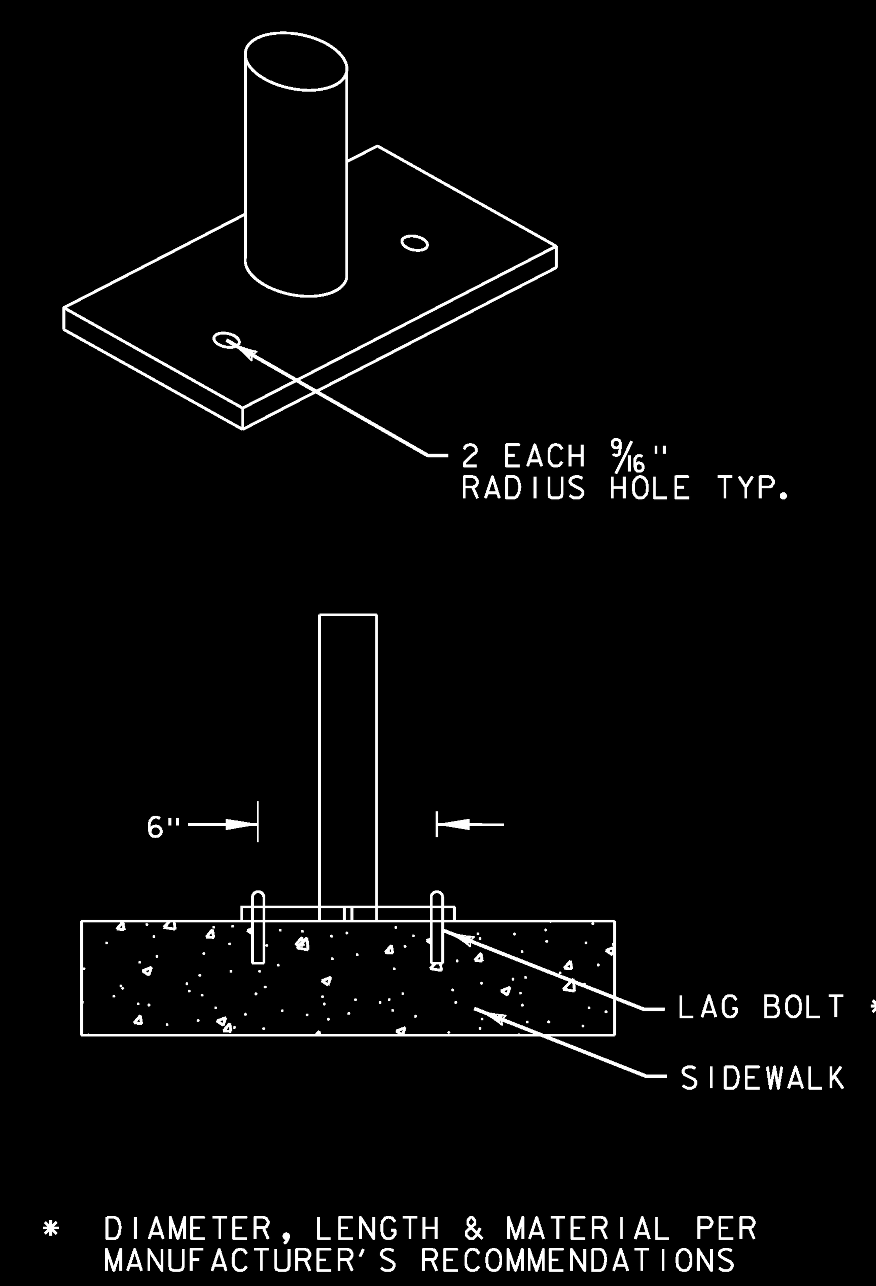
PARK AND RIDE DETAILS



SPECIAL PROVISION (BICYCLE RACK) DETAIL

NOT TO SCALE

NOTE: BICYCLE RACK, SURFACE FLANGE MOUNT, AND LAG BOLTS TO BE PAID UNDER 900.620 SPECIAL PROVISION (BICYCLE RACK).



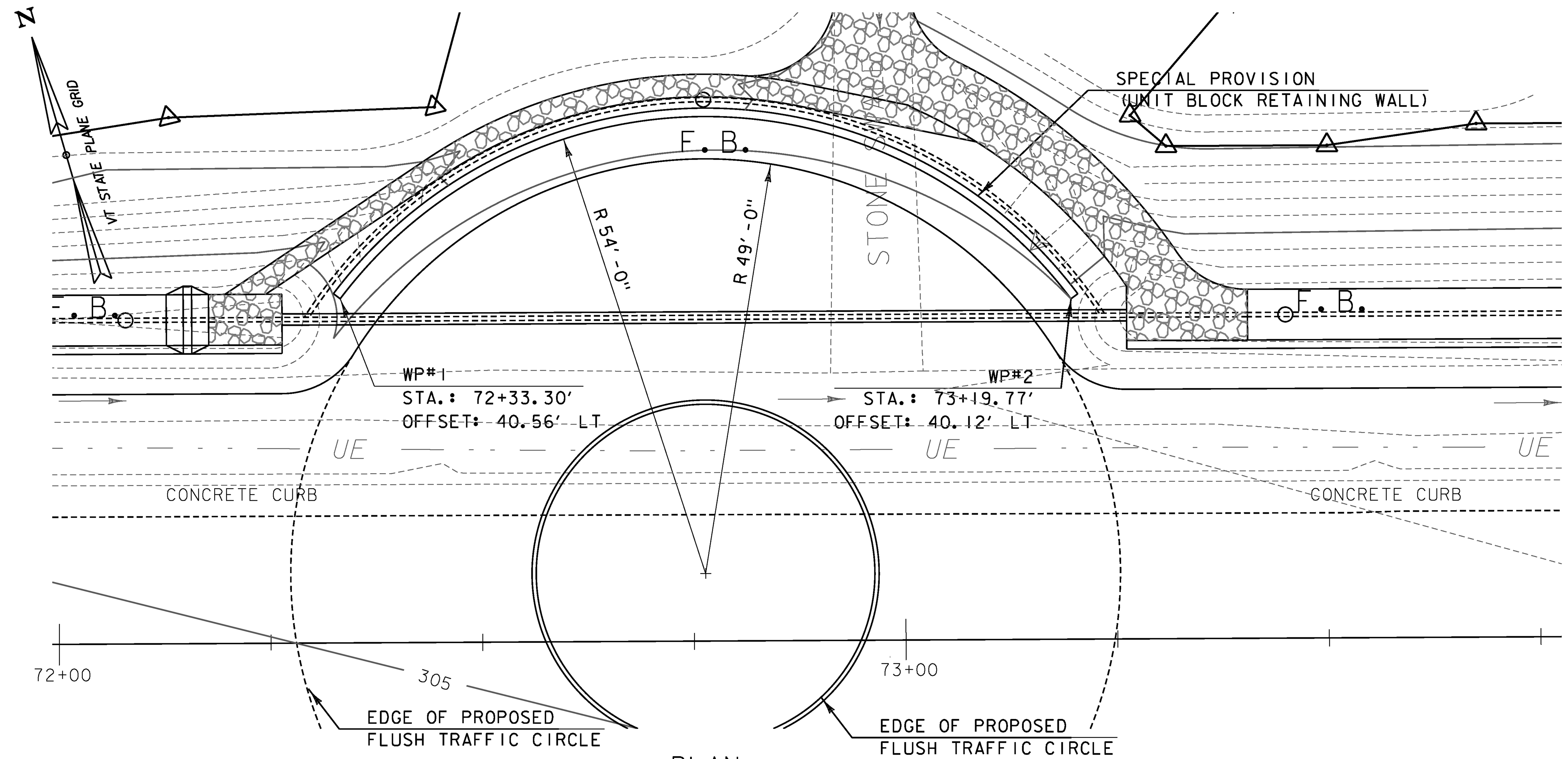
* DIAMETER, LENGTH & MATERIAL PER MANUFACTURER'S RECOMMENDATIONS

SURFACE FLANGE MOUNT DETAIL

NOT TO SCALE

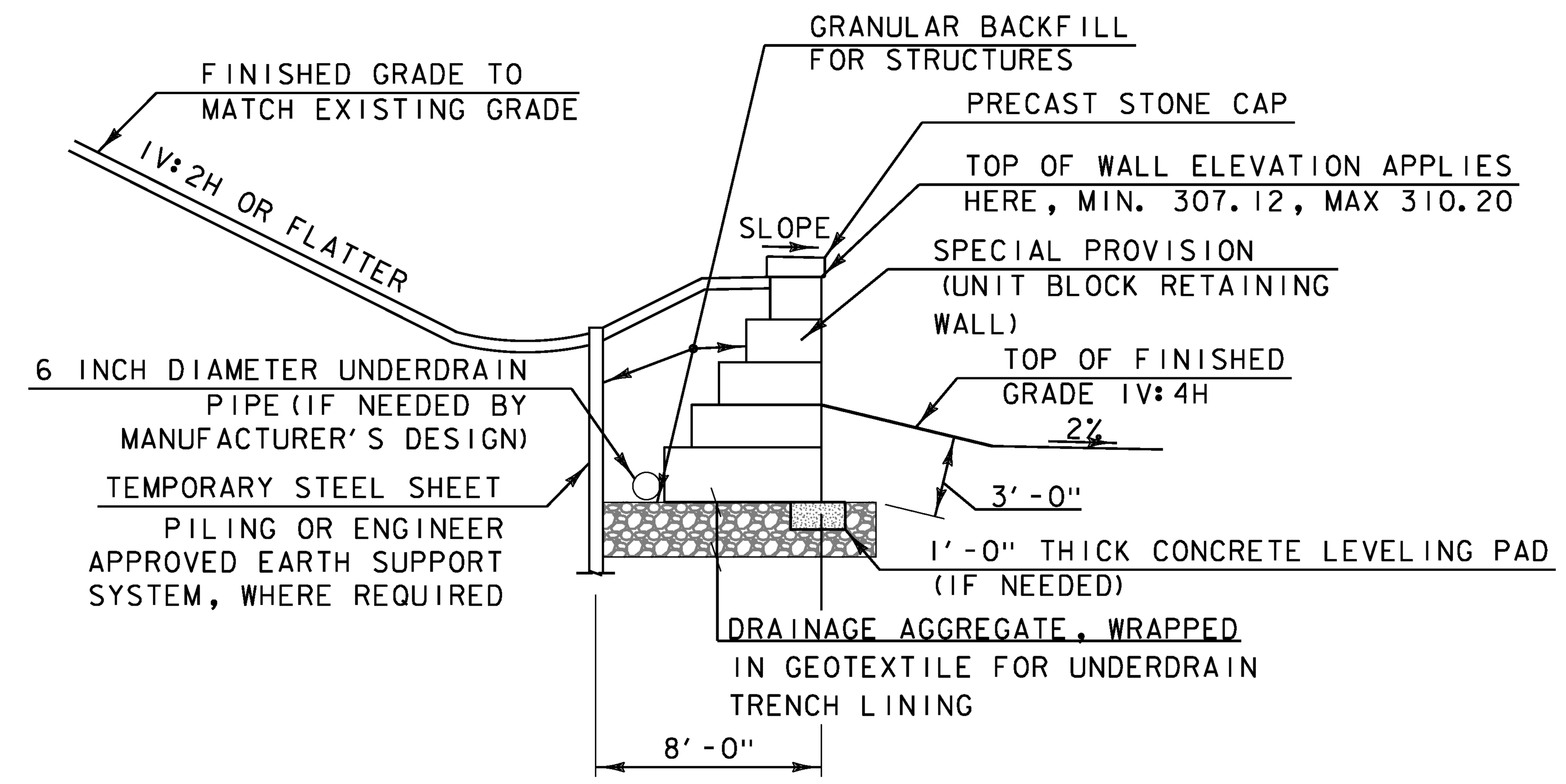
PROJECT NAME: RICHMOND
PROJECT NUMBER: CMG PARK (31)

FILE NAME: z97c186drndet.dgn	PLOT DATE: 4/29/2013
PROJECT LEADER: ERIK ATKINS	DRAWN BY: N. BOSAN
DESIGNED BY: T. BIGELOW	CHECKED BY: E. ATKINS
PARK AND RIDE DETAILS SHEET 2	SHEET 124 OF 133



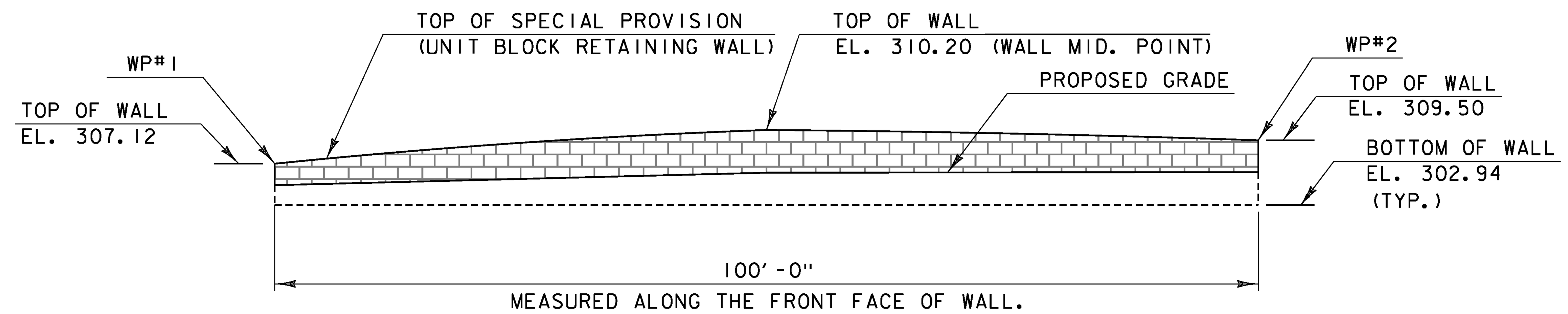
PLAN

SCALE: 1" = 10'-0"



TYPICAL SECTION

SCALE: NOT TO SCALE



DEVELOPED ELEVATION

SCALE: 1" = 10'-0"

UNIT BLOCK RETAINING WALL - DESIGN NOTES

1. THE UNIT BLOCK RETAINING WALL DETAILS SHOWN ON THIS SHEET ARE FOR INFORMATION PURPOSES. THE MANUFACTURER SHALL BE RESPONSIBLE FOR ALL DESIGN AND DETAILING REQUIRED FOR THIS WALL.

2. FINAL DRAWINGS SHALL ALL BE PREPARED BY THE MANUFACTURER/ FABRICATOR AND SUBMITTED TO THE ENGINEER FOR APPROVAL. ALL MATERIALS WITHIN THE BLOCK WALL VOLUME, METHODS OF CONSTRUCTION, AND THE QUALITY OF MATERIALS SHALL MEET THE REQUIREMENTS OF THE SPECIAL PROVISIONS FOR THIS PROJECT.

3. SEE THE BORING LAYOUT SHEETS AND BORING LOGS (SHEETS 28-32) FOR A DESCRIPTION OF THE IN-SITU SOIL CONDITIONS.

4. THE DRAINED STATE OF THE BACKFILL MATERIAL SHALL BE CONSIDERED IN THE DESIGN. IF A FREE DRAINING MATERIAL IS ASSUMED IN THE DESIGN, A DRAINAGE SYSTEM SHALL BE PROVIDED FOR THE WALL SYSTEM CHOSEN. THE COST FOR THE DRAINAGE SYSTEM SHALL BE INCLUDED IN THE UNIT PRICE BID FOR SPECIAL PROVISION (UNIT BLOCK RETAINING WALL) ITEM.

5. EXPANSION AND CONTRACTION SHALL BE CONSIDERED IN THE DESIGN AND DETAILS. PROPER JOINTS SHALL BE DESIGNED, DETAILED AND INCLUDED IN THE BLOCK WALL.

6. ALL WALL COMPONENTS SHALL HAVE A MINIMUM DESIGN LIFE OF 75 YEARS.

7. REFER TO THE GEOTECHNICAL OFFICE MEMORANDUMS INCLUDED IN THE CONTRACT DOCUMENTS FOR ADDITIONAL INFORMATION.

UNIT BLOCK RETAINING WALL - CONSTRUCTION NOTES

8. THE CONTRACTOR IS RESPONSIBLE FOR CONTROLLING THE STORM WATER DRAINAGE IN THE VICINITY OF THE WALL DURING CONSTRUCTION. STORM WATER RUNOFF IS TO BE COLLECTED AND DISCHARGED AWAY FROM THE WALL.

9. SUPPORT OF EXCAVATION SHALL BE DESIGNED AND PROVIDED BY THE CONTRACTOR AND SHALL BE CONSIDERED INCIDENTAL TO SPECIAL PROVISION (UNIT BLOCK RETAINING WALL).

UNIT BLOCK RETAINING WALL - MATERIAL NOTES

10. THE EXPOSED FACES OF BLOCK WALLS SHALL HAVE AN APPROVED STONE-FACED FINISH. CONTRACTOR SHALL SUBMIT FINISH SAMPLE TO ENGINEER FOR APPROVAL.

UNIT BLOCK RETAINING WALL - RESTRICTIONS

11. NO TIMBER ELEMENTS SHALL BE ALLOWED AS FINAL IN PLACE COMPONENTS OF BLOCK WALL SYSTEM SUPPORTING FILL.

12. ALL EXPOSED EDGES OF WALL BLOCKS SHALL BE COVERED WITH FINISH COPING UNITS, AS SHOWN ON THE PLANS. THE COSTS FOR THIS SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE SPECIAL PROVISION (UNIT BLOCK RETAINING WALL) ITEM.

B-109 MAX BEARING RESISTANCE AND SETTLEMENT TABLE

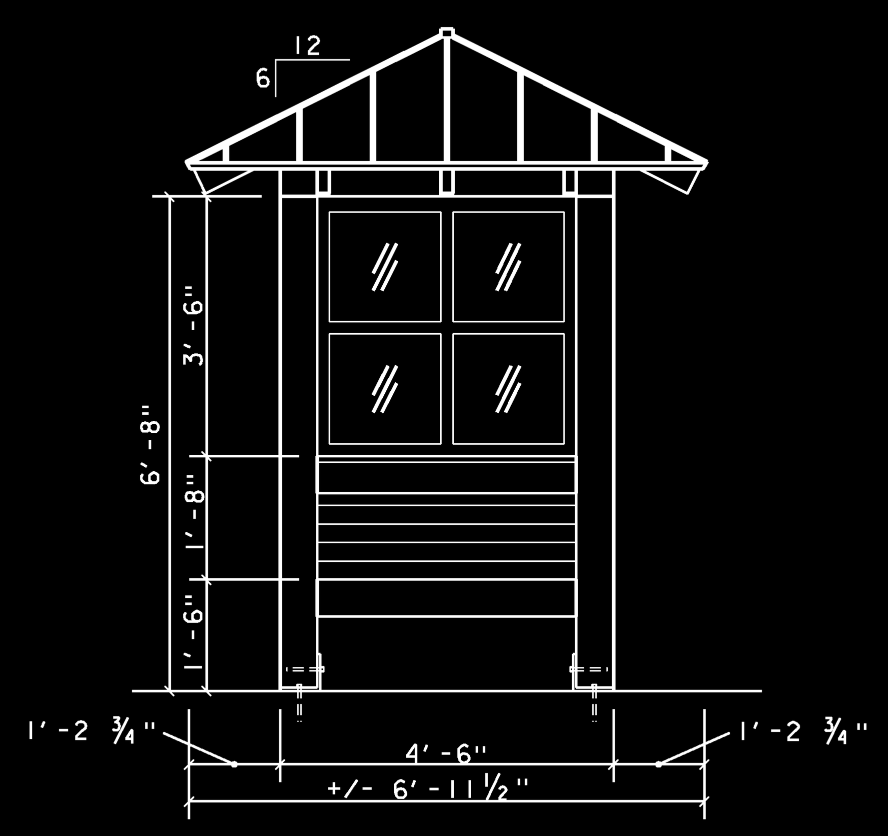
DESIGN PARAMETER	703.01A GRANULAR BORROW	704.08-GRANULAR BACKFILL FOR STRUCTURES	LOOSE GRAVELLY SAND (IN-SITU)
DENSITY (LB/FT³):	130	140	115
INTERNAL FRICTION ANGLE (DEG.):	32	34	32
COEF. OF FRICTION, f:			
-mass concrete cast against soil:	0.45	0.55	0.49
-soil against precast/ formed concrete:	0.40	0.48	0.40
ACTIVE EARTH PRESSURE COEF., Ka:	0.31	0.28	0.31
PASSIVE EARTH PRESSURE COEF., Kp:	3.22	3.54	3.22
AT-REST EARTH PRESSURE COEF., Ko:	0.47	0.44	0.47

BACKFILL MATERIAL TABLE

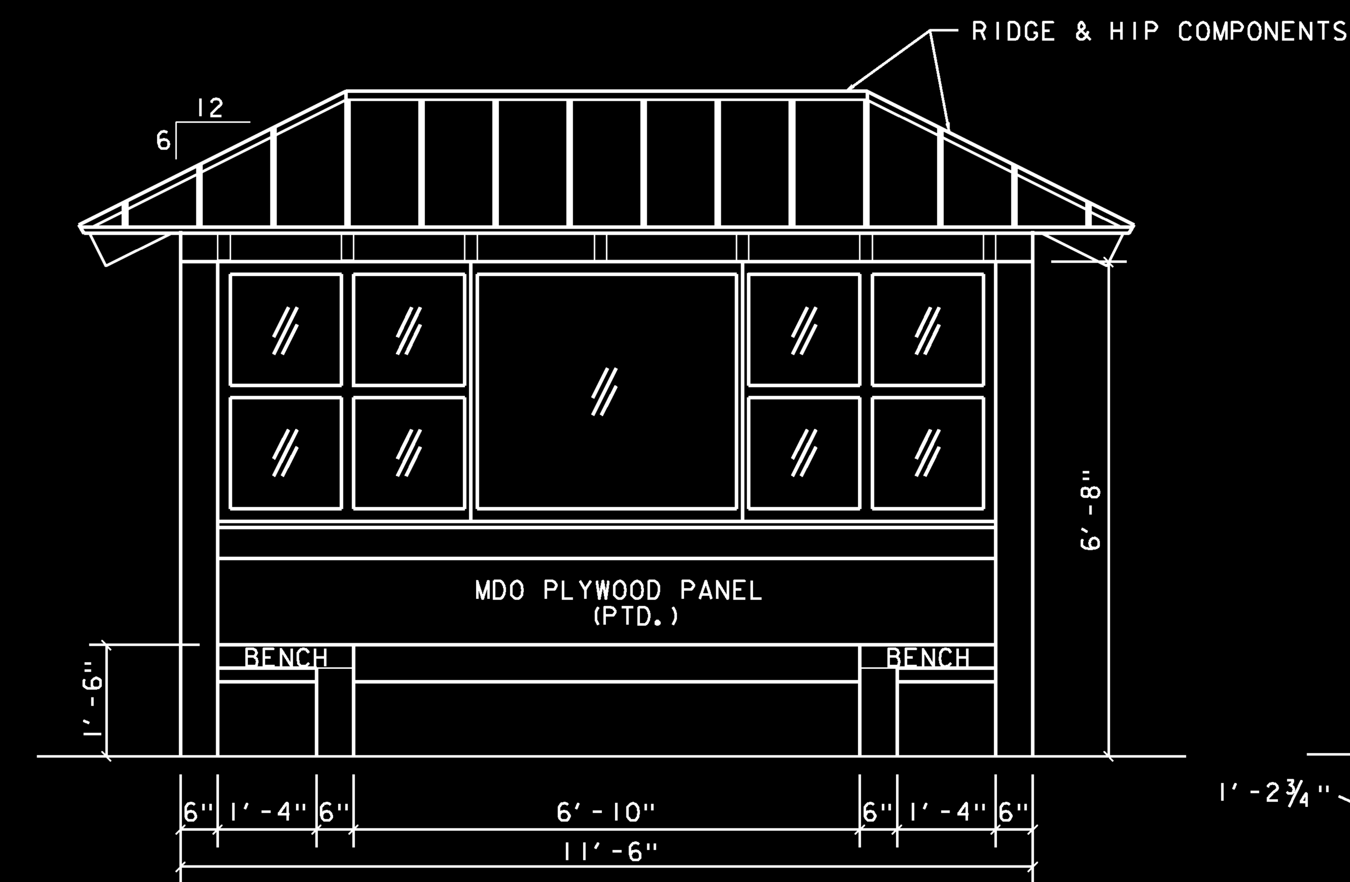
FOOTING WIDTH (FT.)	MAX. BEARING RESISTANCE (KSF)	SETTLEMENT (IN.)
2	2.0	0.505
4	2.8	0.700
6	3.5	0.825
8	4.3	0.930

PROJECT NAME: RICHMOND
PROJECT NUMBER: CMG PARK (31)

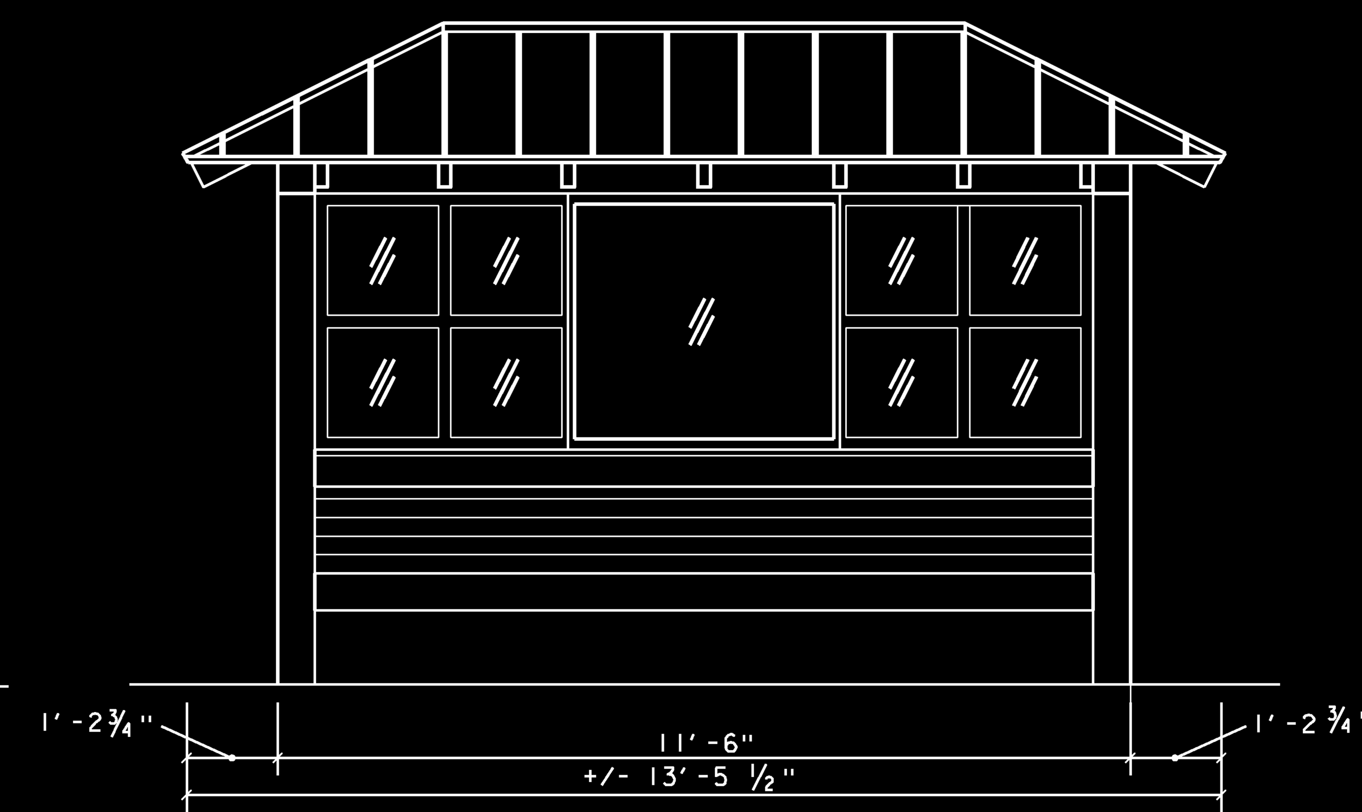
FILE NAME: z97c186typret.dgn
PROJECT LEADER: ERIK ATKINS
DESIGNED BY: M. ABAZARI
SPECIAL PROVISION (UNIT BLOCK RET. WALL)
PLOT DATE: 4/29/2013
DRAWN BY: D. RITACCO
CHECKED BY: E. ATKINS
SHEET 125 OF 133



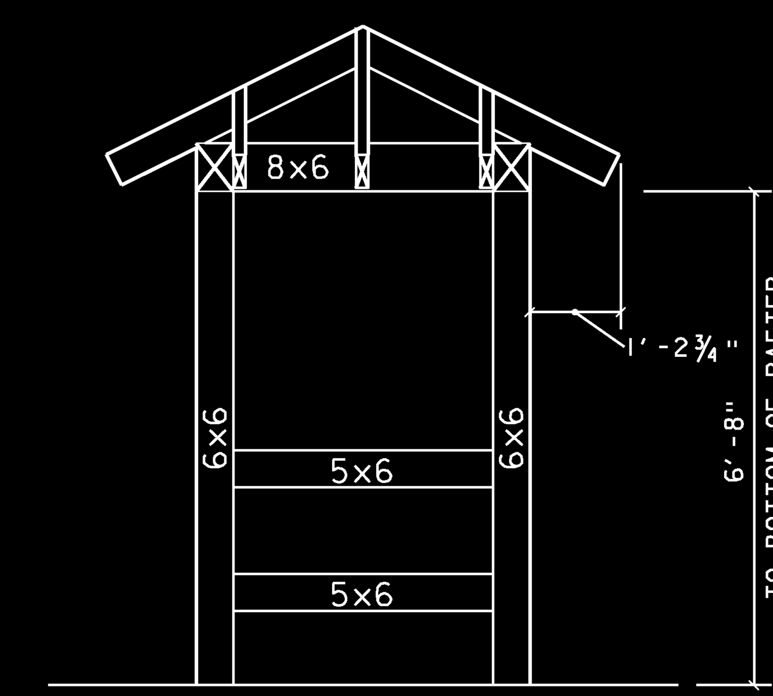
(1) **END ELEVATION (TYP.)**
SCALE: 1/2" = 1'-0"



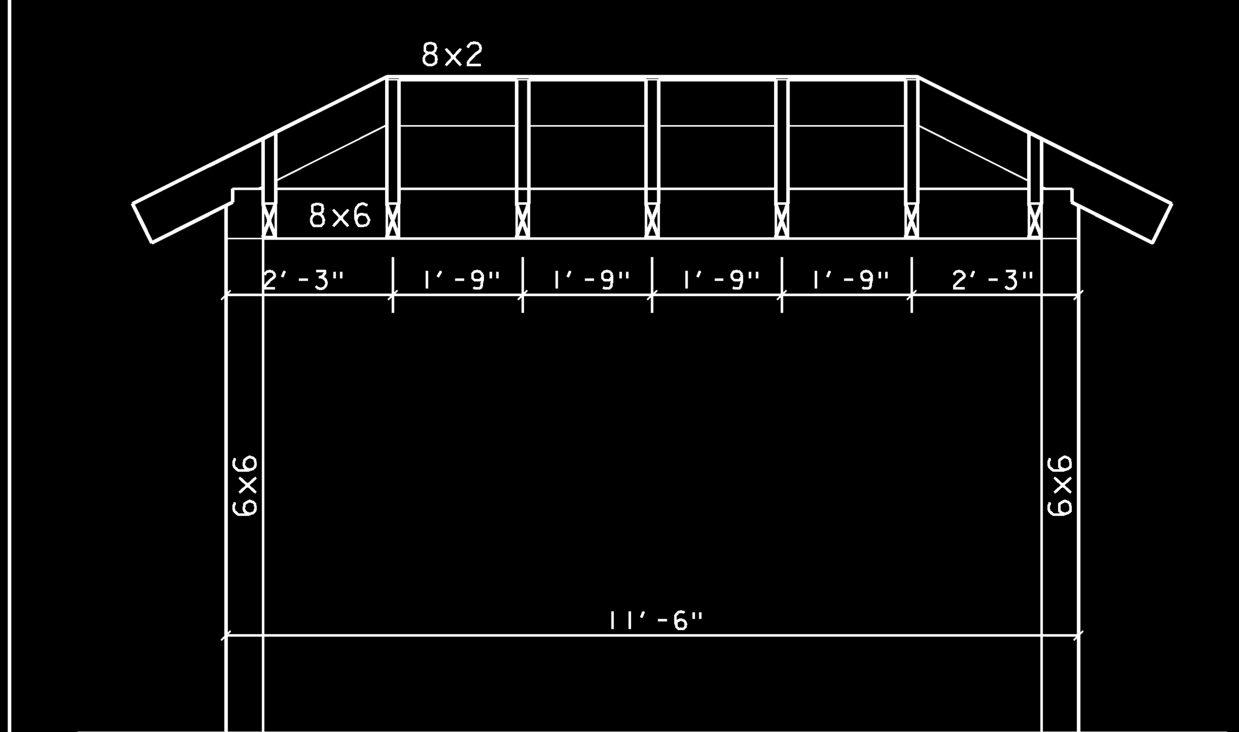
(2) **FRONT/INTERIOR ELEVATION**
SCALE: 1/2" = 1'-0"



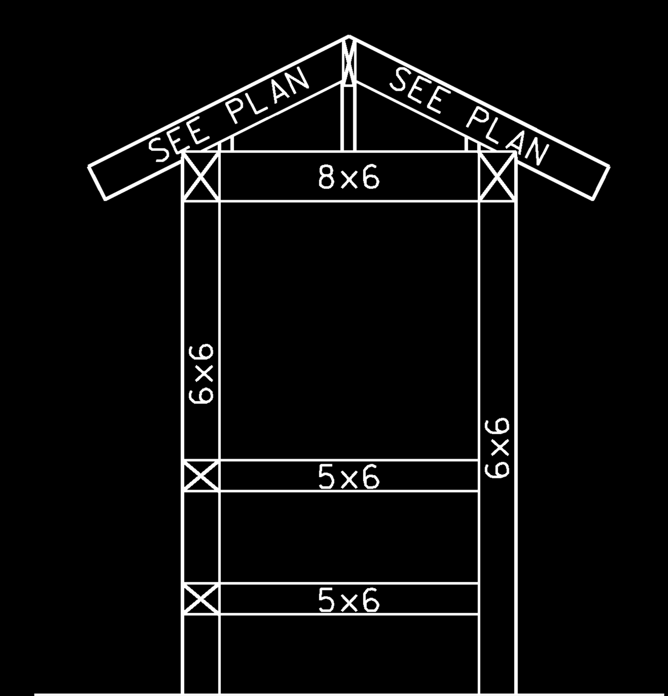
(3) **REAR ELEVATION**
SCALE: 1/2" = 1'-0"



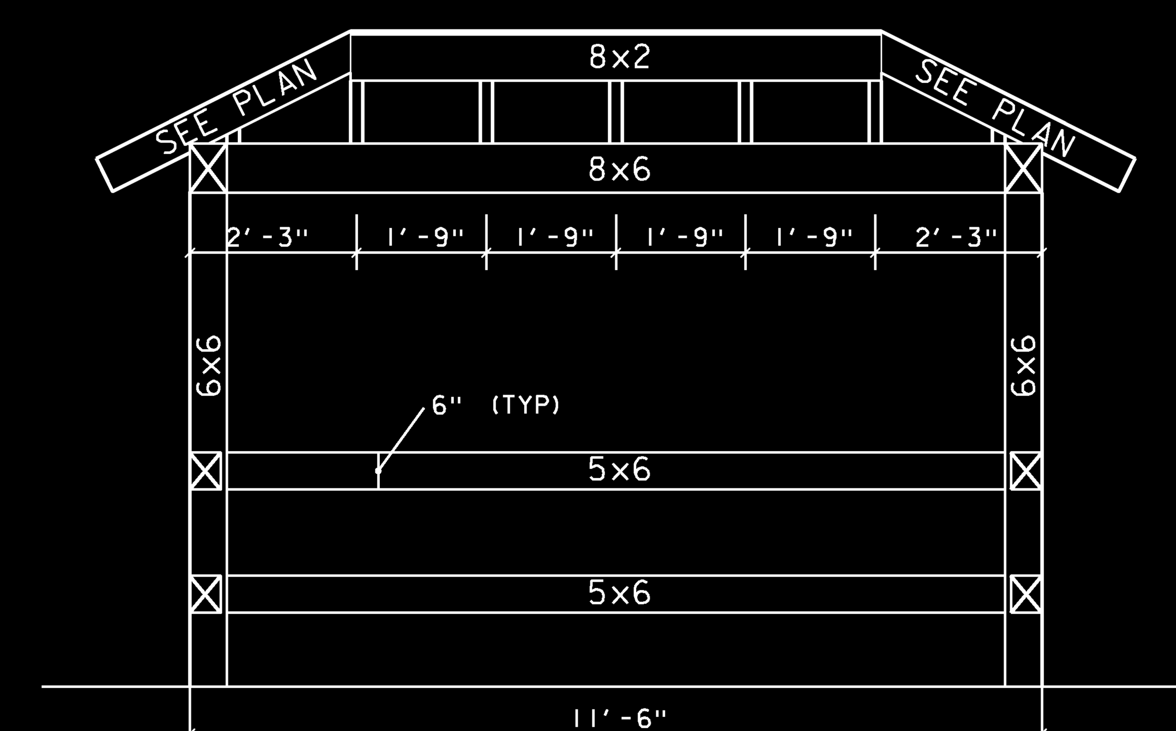
(4) **END FRAMING - ELEVATION**
SCALE: 1/2" = 1'-0"



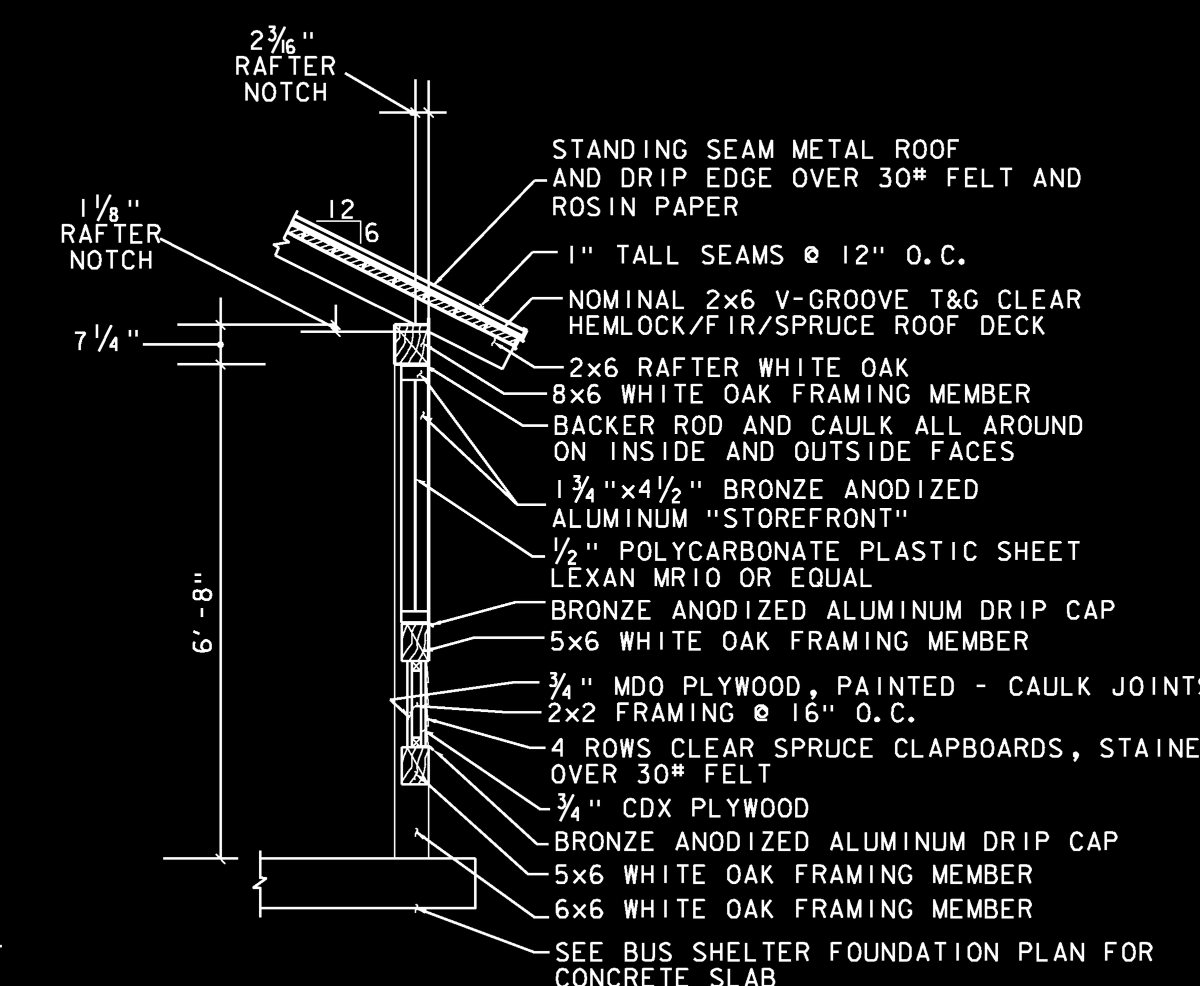
(5) **FRONT/REAR FRAMING - ELEVATION**
SCALE: 1/2" = 1'-0"



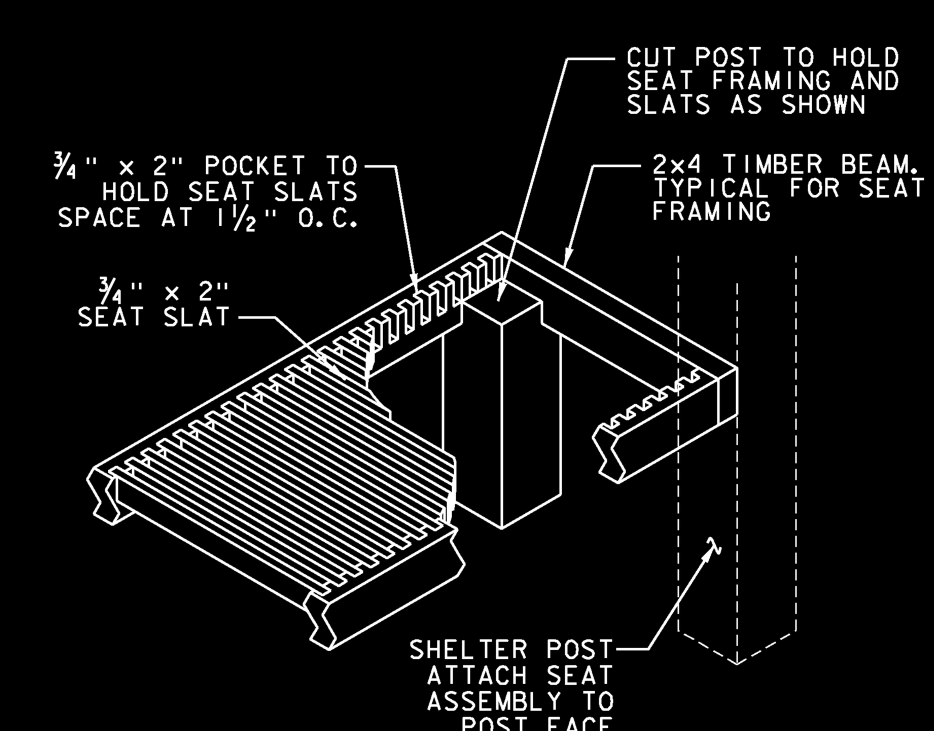
(6) **END FRAMING - SECTION**
SCALE: 1/2" = 1'-0"



(7) **FRONT/REAR FRAMING - SECTION**
SCALE: 1/2" = 1'-0"



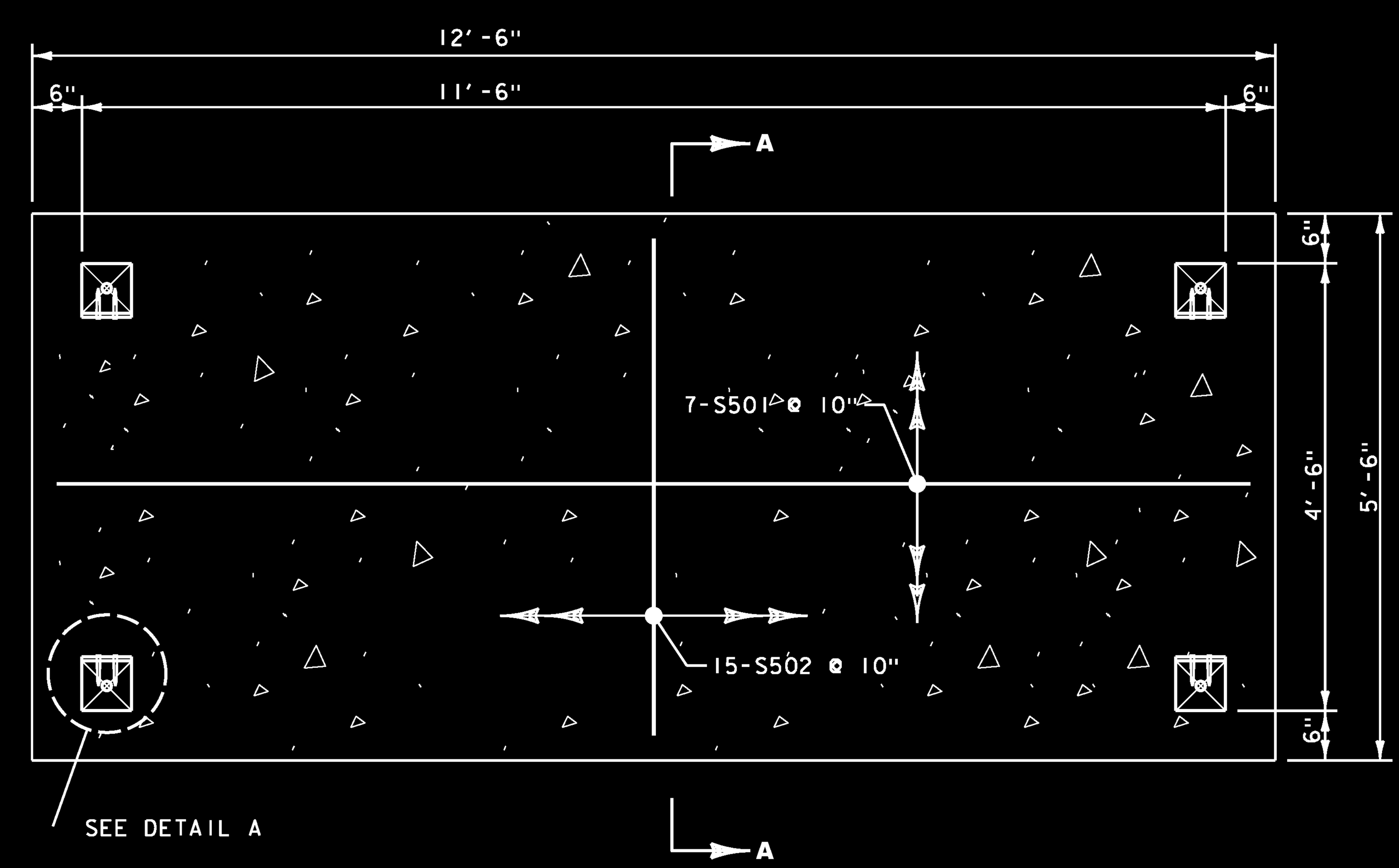
(8) **TYPICAL WALL SECTION**
SCALE: 1/2" = 1'-0"



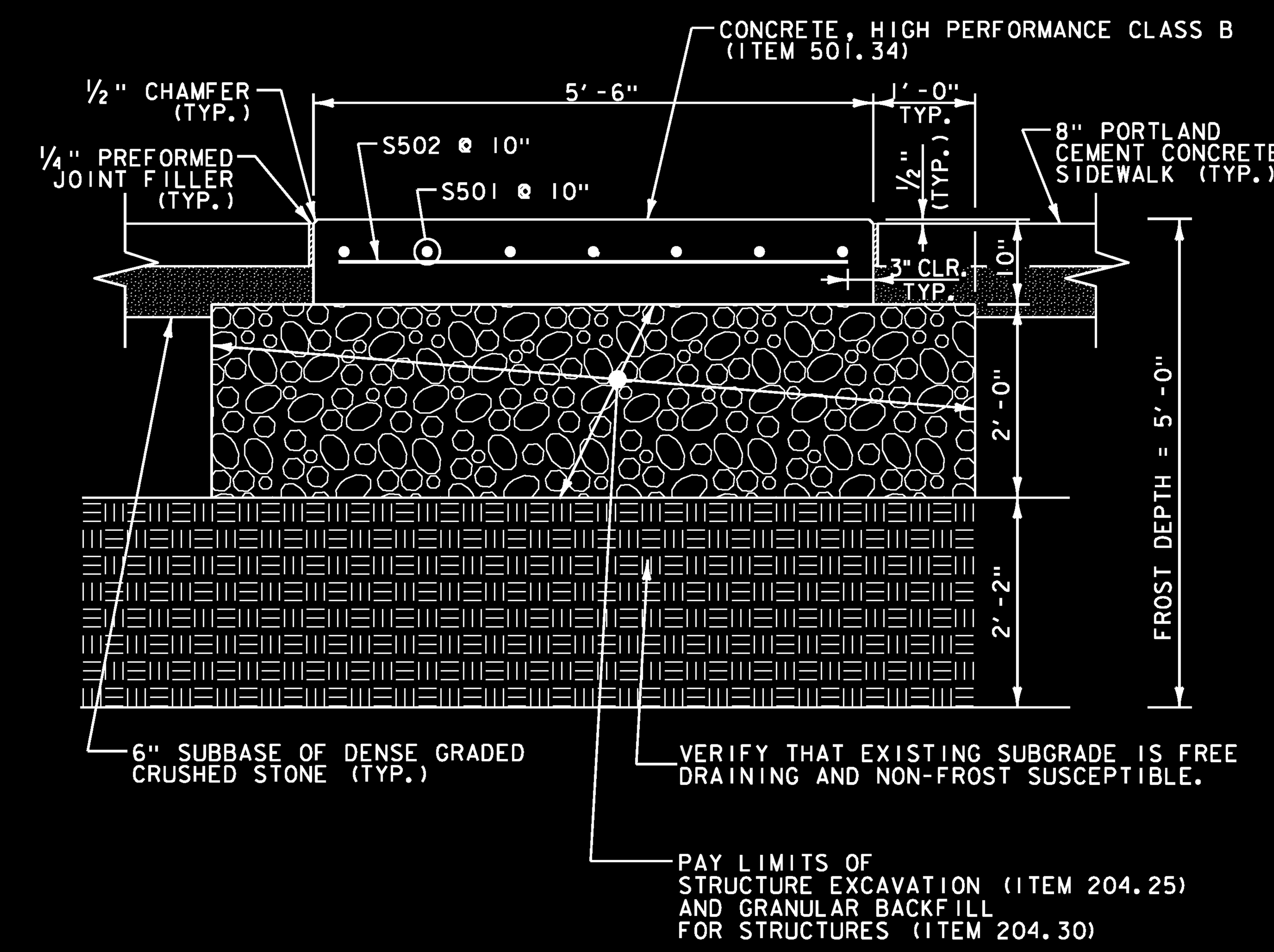
(9) **DETAIL - BENCH FRAMING**
NOT TO SCALE

NOTES
1. JACK AND COMMON RAFTERS ARE 2x6.
2. HIP RAFTERS ARE 2x7
3. RIDGE BEAM IS 2x8

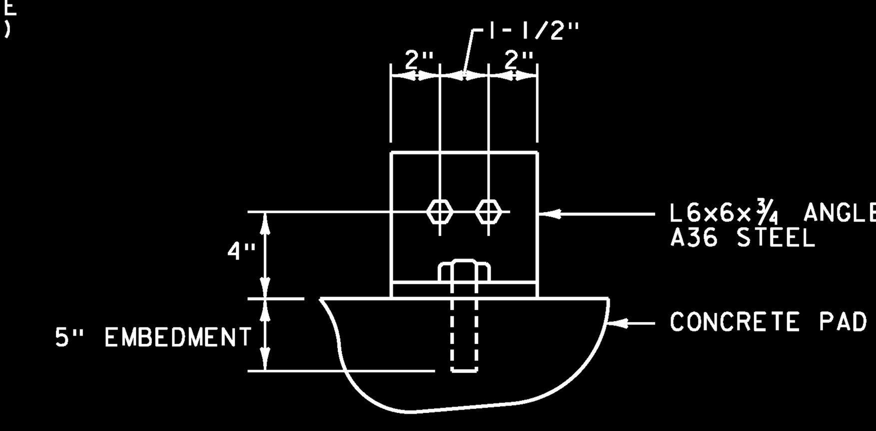
PROJECT NAME: RICHMOND	
PROJECT NUMBER: CMG PARK (31)	
FILE NAME: z97cl86shelter.dgn	PLOT DATE: 5/1/2013
PROJECT LEADER: ERIK ATKINS	DRAWN BY: N. BOSAN
DESIGNED BY: C. NORET	CHECKED BY: G. BOTAZZI
BUS SHELTER PLAN, DTLS & ELEVS SHEET 1	SHEET 126 OF 133



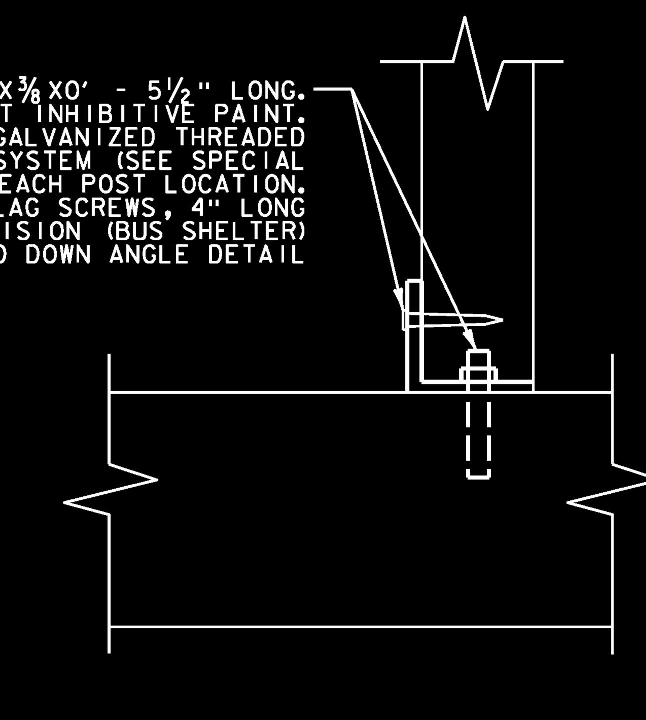
FOUNDATION PLAN
SCALE: ¾" = 1'-0"



RIDER SHELTER SLAB DETAIL
SECTION A-A
SCALE: ¾" = 1'-0"



HOLD DOWN ANGLE
NOT TO SCALE



DETAIL A
NOT TO SCALE

DESIGN CRITERIA:

1. THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH THE VERMONT FIRE & BUILDING SAFETY CODE, 2006 (AMENDED JUNE 2011)

ROOF:

SNOW LOAD:	
GROUND SNOW LOAD (Pg)	= 50 PSF
IMPORTANCE FACTOR (Is)	= 1.0
SNOW EXOSURE FACTOR (Ce)	= 1.0
THERMAL FACTOR (Ct)	= 1.2
ROOF SNOW LOAD (Pf)	= 42 PSF
LIVE LOAD (MIN. DOES NOT GOVERN):	= 20 PSF
DEAD LOADS FOR NEW CONSTRUCTION:	
ROOFING	= 1.5 PSF
2" NOMINAL DECKING	= 3.7 PSF
2x @ 1'-9" O.C. FRAMING	= 3.0 PSF
MISC.	= 1.8 PSF
TOTAL DEAD LOAD	= 10.0 PSF
TOTAL ROOF LOAD	= 52.0 PSF

WIND LOADS:

IMPORTANCE FACTOR (Iw)	= 1.0
EXPOSURE	= C
BASIC WIND SPEED	= 90 MPH
BASE WIND PRESSURE	= 15.0 PSF
MWFRS WIND PRESSURE (NORMAL TO RIDG)	= 16.5 PSF
MWFRS WIND PRESSURE (PARALLEL TO RIDGE)	= 13.6 PSF

SEISMIC:

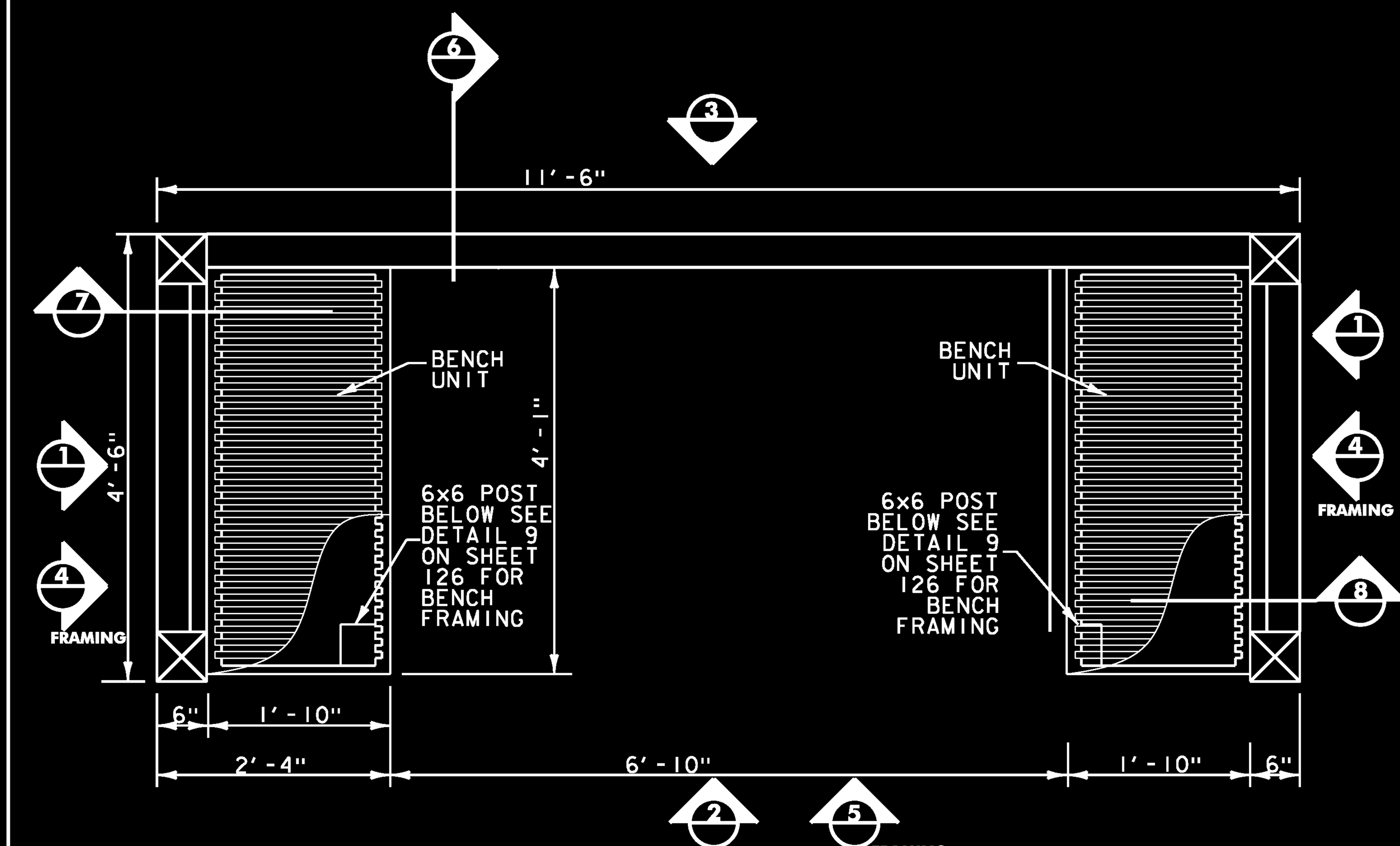
IMPORTANCE FACTOR (Ie)	= 1.0
SEISMIC DESIGN CATEGORY	= C
OCCUPANCY CATEGORY	= II
SPECTRAL RESPONSE ACCELERATION (Ss)	= 0.339 (S1) = 0.092
SPECTRAL RESPONSE COEFFICIENT (Sds)	= 0.346 (Sd1) = 0.147
SITE CLASSIFICATION	= D
BUILDING FRAME SYSEMS	
LIGHT FRAME WALLS WITH SHEAR PANELS - WOOD STRUCTURAL PANELS	
SEISMIC REPONSE COEFFICIENT (Cs)	= 0.049
REPSONSE MODIFICATION FACTOR (R)	= 7

ANALYSIS PROCEDURE: EQUIVALEN LATERAL FORCE

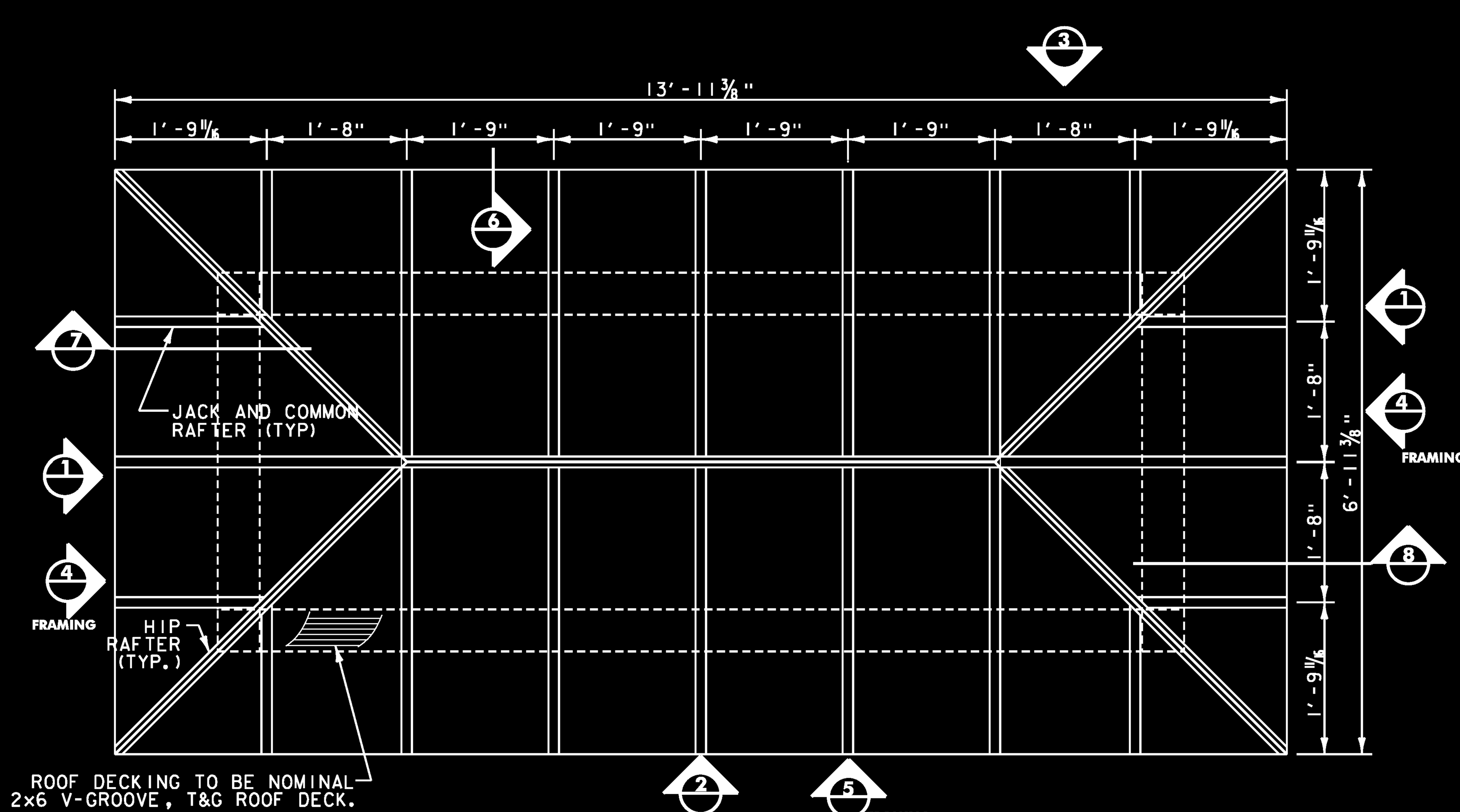
LATERAL DESIGN CONTROL: WIND (Vy); WIND (Vx)

NOTES:

1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO STATE OF VERMONT AGENCY OF TRANSPORTATION SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION, ITS LATEST REVISIONS AND THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, 1996 ed. WITH LATEST INTERIMS.
2. REINFORCING PLACEMENT TOLERANCES SHALL BE:
   SPACING +/- 1"
   CLEARANCE +/- ¼"
3. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED ¾" BY ¾".
4. WATER REPELLENT SHALL BE APPLIED TO ALL EXPOSED CONCRETE.
5. PAYMENT OF ITEMS AND LABOR SHOWN ON THIS SHEET SHALL BE INCLUDED UNDER SPECIAL PROVISION (BUS SHELTER), (ITEM 900.645, LUMP SUM) UNLESS OTHERWISE NOTED.
6. REINFORCING STEEL SHALL BE PAID FOR UNDER ITEM 507.11.
7. SEE SHEET 127 OF 132 FOR REINFORCING STEEL SCHEDULE



PLAN VIEW
SCALE: ¾" = 1'-0"



NOTES:
1. JACK AND COMMON RAFTERS ARE 2x6.
2. HIP RAFTERS ARE 2x7
3. RIDGE BEAM IS 2x8

ROOF FRAMING PLAN
SCALE: ¾" = 1'-0"

PROJECT NAME: RICHMOND	
PROJECT NUMBER: CMG PARK (31)	
FILE NAME: z97c186shelter.dgn	PLOT DATE: 4/29/2013
PROJECT LEADER: ERIK ATKINS	DRAWN BY: N. BOSAN
DESIGNED BY: C. NORET	CHECKED BY: C. BOTAZZI
BUS SHELTER PLAN, DTLS & ELEVS SHEET 2	SHEET 127 OF 133

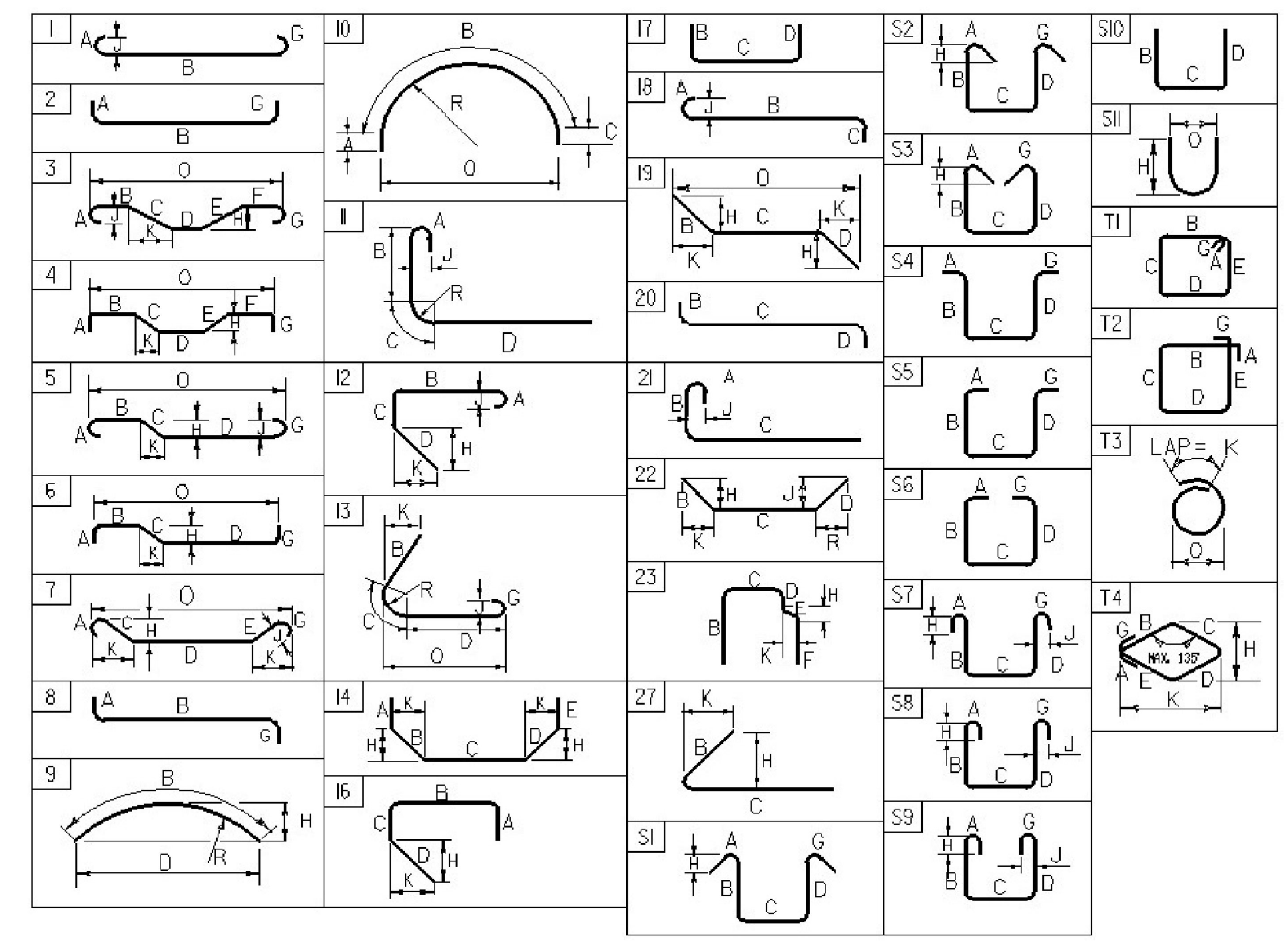
STATE OF VERMONT
AGENCY OF TRANSPORTATION

REINFORCING STEEL SCHEDULE

ITEM	EACH	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O
	BUS SHELTER																
1	7	5	5'- 0"	S501	STR												
2	15	5	12'- 0"	S502	STR												
	TRAFFIC CIRCLE																
3	W6	x	W6	REINFORCEMENT													

~ NOTES ~

1. UNLESS OTHERWISE DESIGNATED, ALL BAR REINFORCEMENT FOR CONCRETE IN SIZES UP TO AND INCLUDING NO. 18 SHALL CONFORM TO THE REQUIREMENTS OF THE "SPECIFICATIONS FOR DEFORMED BILLET-STEEL BARS FOR CONCRETE REINFORCEMENT", AASHTO M 31 (ASTM A 615-SI). ALL BARS SHALL BE GRADE 60, UNLESS OTHERWISE DESIGNATED.
2. FOR TYPICAL BENDING DETAILS, RECOMMENDED PIN DIAMETER "D" OF BENDS AND HOOKS, AND OTHER STANDARD PRACTICE, SEE CURRENT CONCRETE REINFORCING STEEL INSTITUTE "MANUAL OF STANDARD PRACTICE".
3. BARS WHICH REQUIRE MORE ACCURATE BENDING THAN STANDARD PRACTICES SHOULD HAVE LIMITS INDICATED.
4. ALL DIMENSIONS ARE OUT TO OUT OF BAR EXCEPT "A" AND "G" ON STANDARD 180 DEGREE AND 135 DEGREE HOOKS.
5. "J" DIMENSION ON 180 DEGREE HOOKS TO BE SHOWN ONLY WHERE NECESSARY TO RESTRICT HOOK SIZE. OTHERWISE, STANDARD HOOKS ARE TO BE USED.
6. "H" DIMENSION ON STIRRUPS TO BE SHOWN ONLY WHEN NECESSARY TO MAINTAIN CLEARANCES.
7. WHERE SLOPE DIFFERS FROM 45 DEGREES, DIMENSIONS "H" AND "K" MUST BE SHOWN.
8. ▲ DENOTES BARS TO BE CUT IN FIELD.
9. ✳ DENOTES ONE EXTRA BAR ADDED FOR TESTING PURPOSES.
10. △ DENOTES TWO EXTRA BARS ADDED FOR TESTING PURPOSES.
11. E IN BAR MARK PREFIX DENOTES EPOXY COATED REINFORCING STEEL.

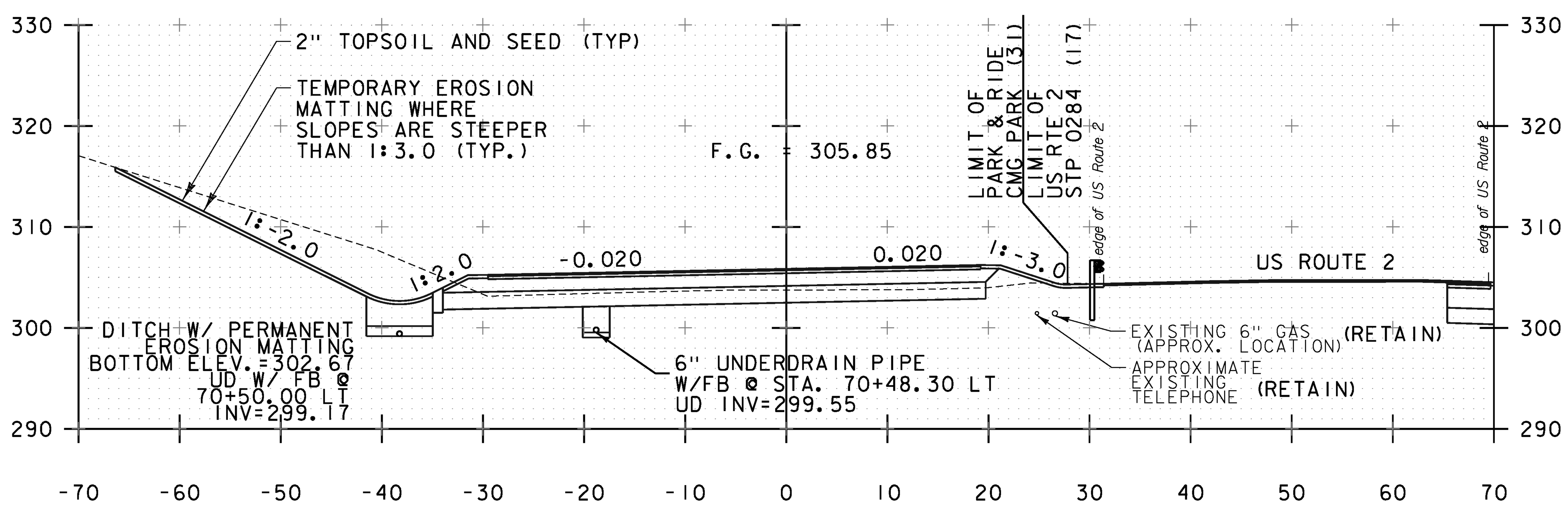


ASTM STANDARD REINFORCING BARS

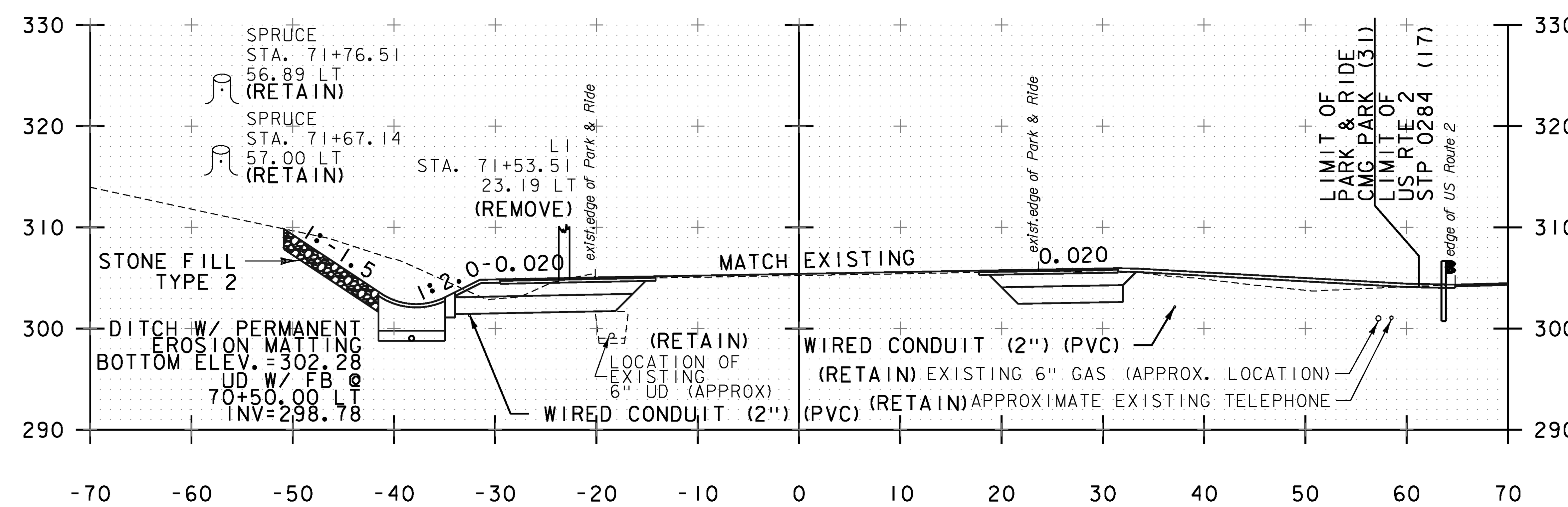
BAR SIZE DESIGNATION	WEIGHT POUNDS PER FOOT	NOMINAL DIMENSIONS ROUND SECTION DIAMETER INCHES	AREA INCHES ^{2}	PERIMETER INCHES
#3	0.376	0.375	0.11	1.178
#4	0.668	0.500	0.20	1.571
#5	1.043	0.625	0.31	1.963
#6	1.502	0.750	0.44	2.356
#7	2.044	0.875	0.60	2.749
#8	2.670	1.000	0.79	3.142
#9	3.400	1.128	1.00	3.544
#10	4.303	1.270	1.27	3.990
#11	5.313	1.410	1.56	4.430
#14	7.65	1.693	2.25	5.32
#18	13.60	2.257	4.00	7.09

PROJECT NAME: **RICHMOND**
PROJECT NUMBER: **CMG PARK (31)**

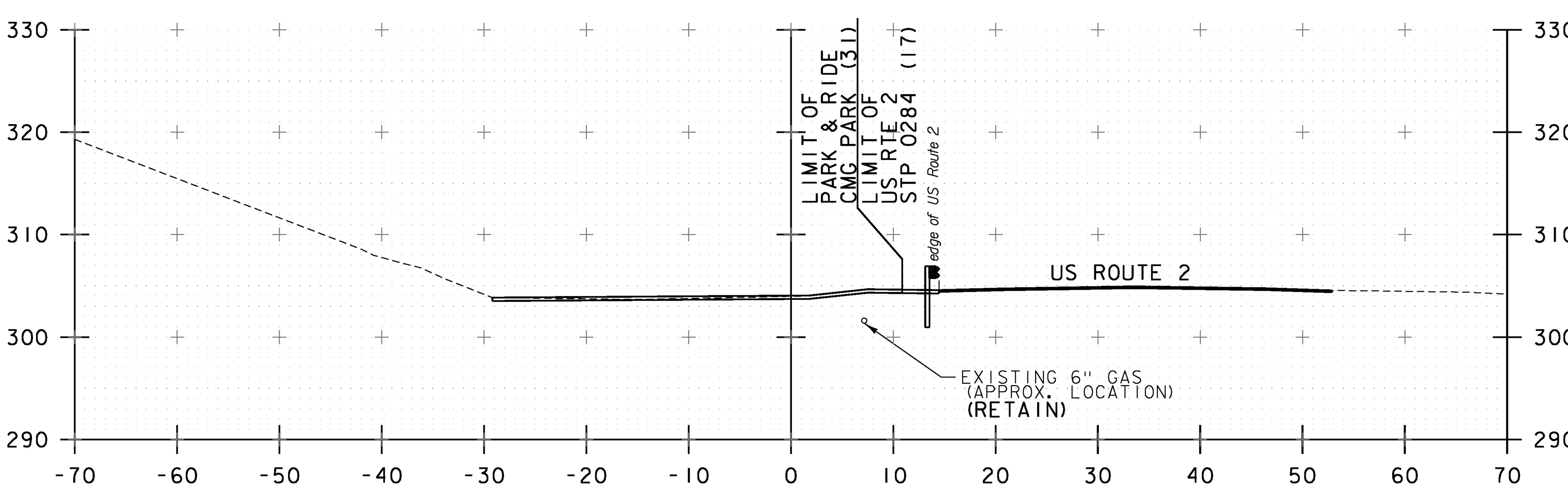
FILE NAME: **z97c186reinf.xls** PLOT DATE: **12/16/2011**
PROJECT MANAGER: **ERIK ATKINS** DRAWN BY: **N. BOSAN**
DESIGNED BY: **C. NORRET** CHECKED BY: **G. BOTAZZI**
REINFORCING STEEL SCHEDULE SHEET **128** OF **133**



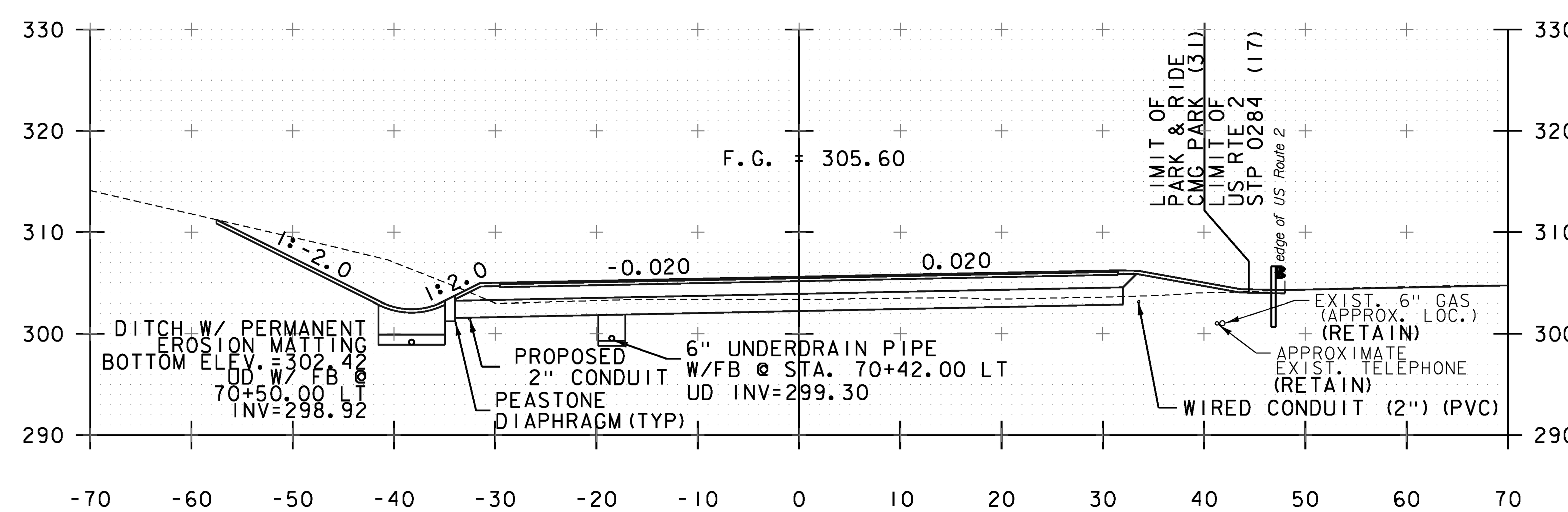
70+50



71+50



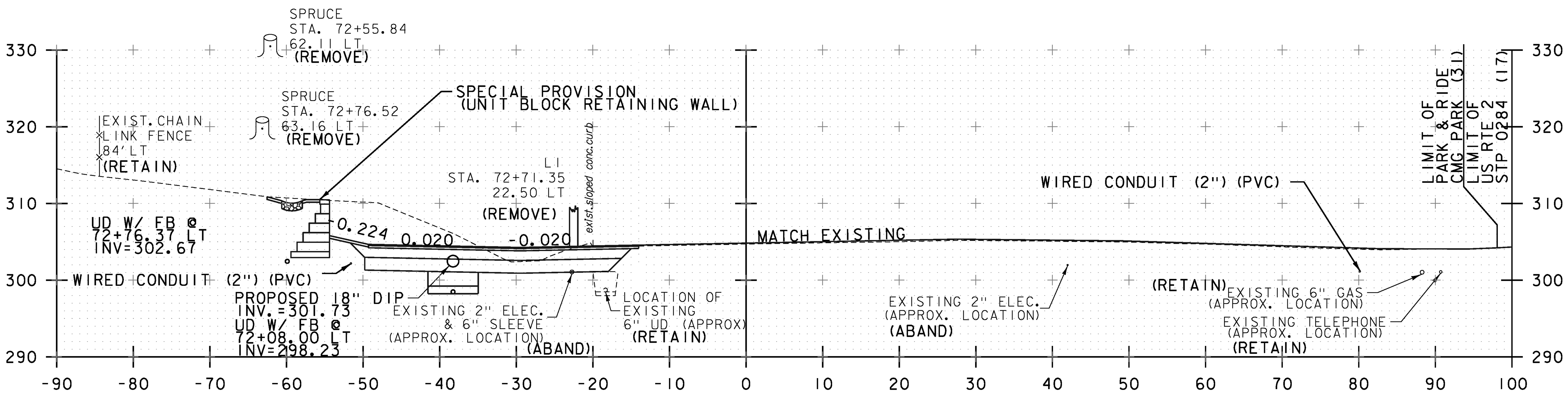
70+00



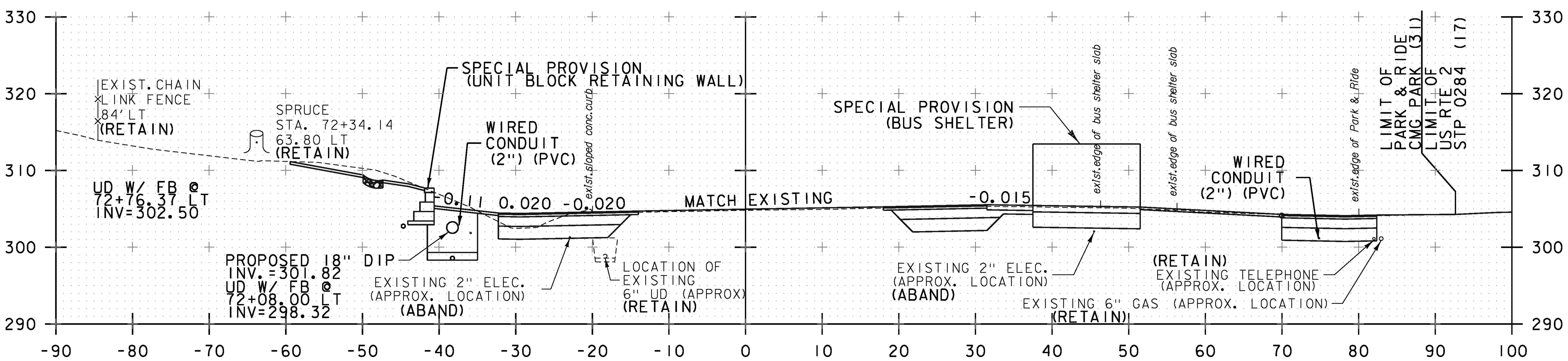
71+00

STA. 70+00 TO STA. 71+50

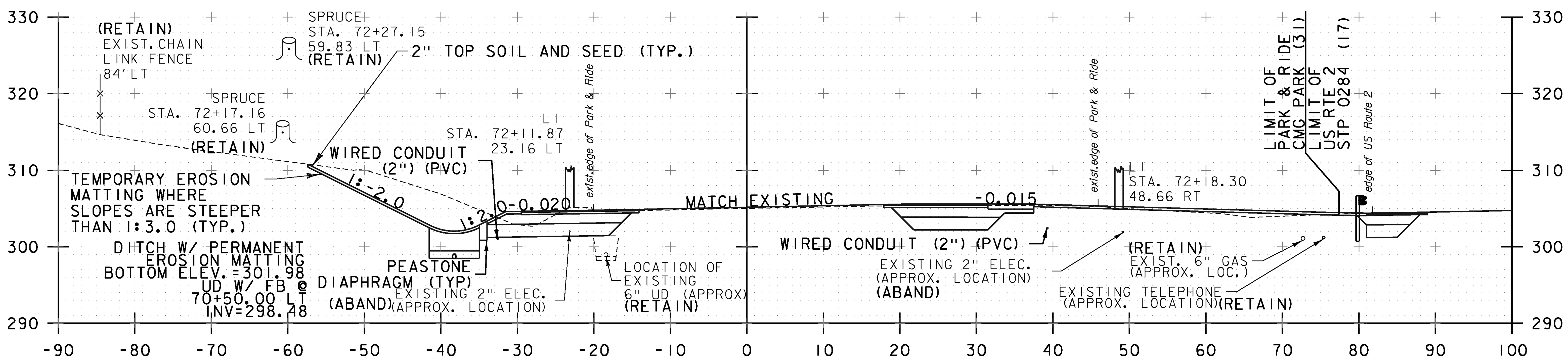
PROJECT NAME: RICHMOND	
PROJECT NUMBER: CMG PARK (31)	
FILE NAME: z97cl86xsl.dgn	PLOT DATE: 4/29/2013
PROJECT LEADER: ERIK ATKINS	DRAWN BY: S. FORTIER
DESIGNED BY: T. BIGELOW	CHECKED BY: E. ATKINS
PARK & RIDE CROSS SECTIONS SHEET 1	SHEET 129 OF 133



72+50



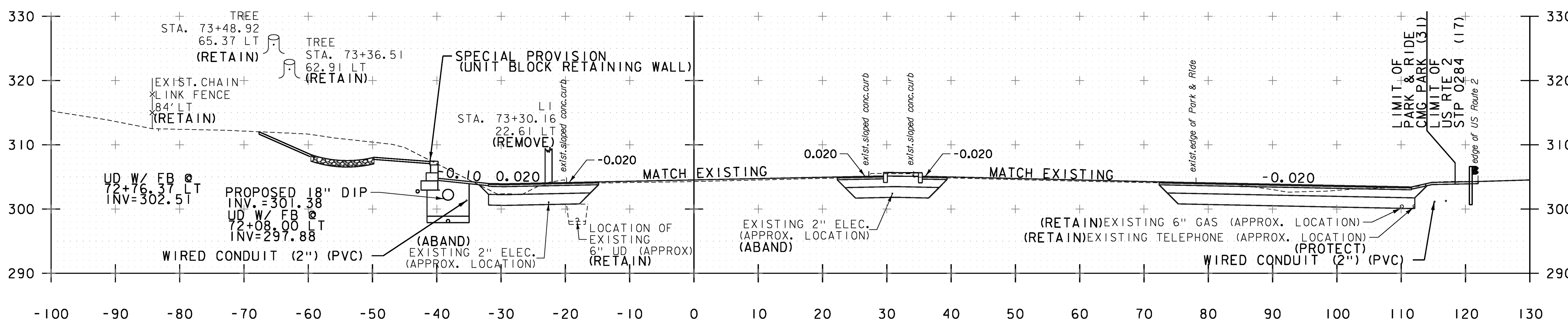
72+33.30 @ WP#1
SPECIAL PROVISION (UNIT BLOCK RETAINING WALL)



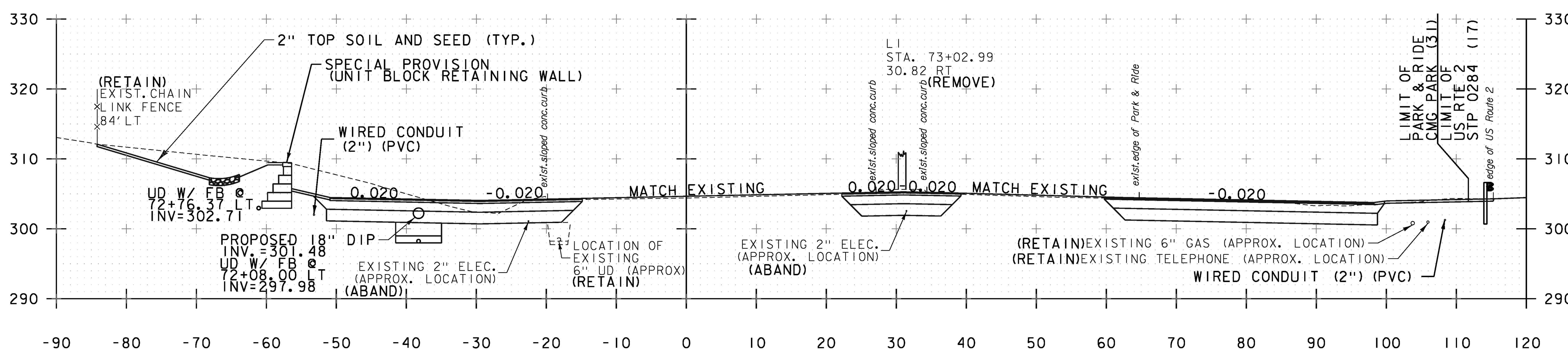
72+00

STA. 72+00 TO STA. 72+50

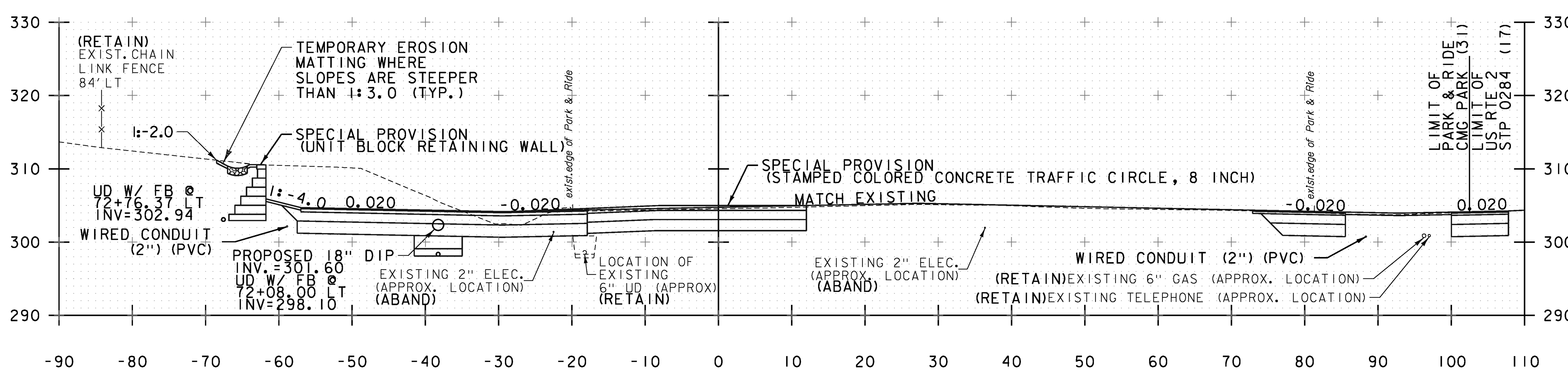
PROJECT NAME: RICHMOND	
PROJECT NUMBER: CMG PARK (31)	
FILE NAME: z97c186xsl.dgn	PLOT DATE: 4/29/2013
PROJECT LEADER: ERIK ATKINS	DRAWN BY: S. FORTIER
DESIGNED BY: T. BIGELOW	CHECKED BY: E. ATKINS
PARK & RIDE CROSS SECTIONS SHEET 2	SHEET 130 OF 133



73+19.77 @ WP#2
SPECIAL PROVISION (UNIT BLOCK RETAINING WALL)



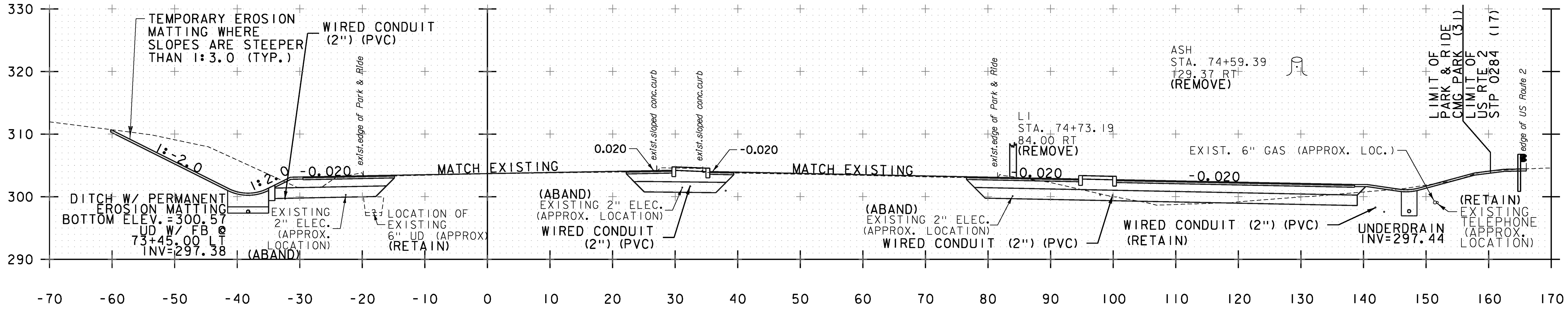
73+00



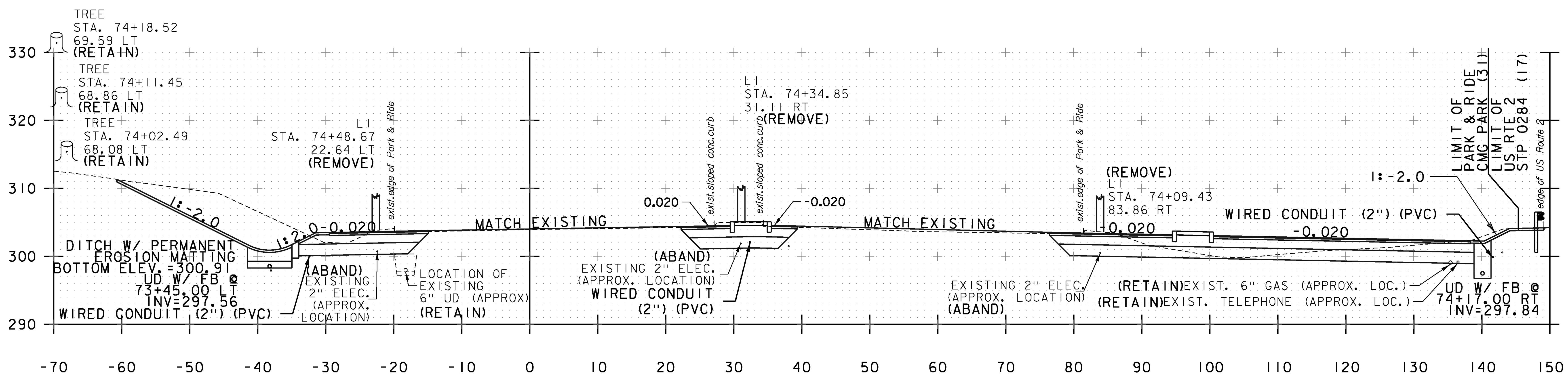
72+76.37 @ CENTER OF
SPECIAL PROVISION (STAMPED CONCRETE TRAFFIC CIRCLE, 8 INCH)

STA. 72+76.37 TO STA. 73+20

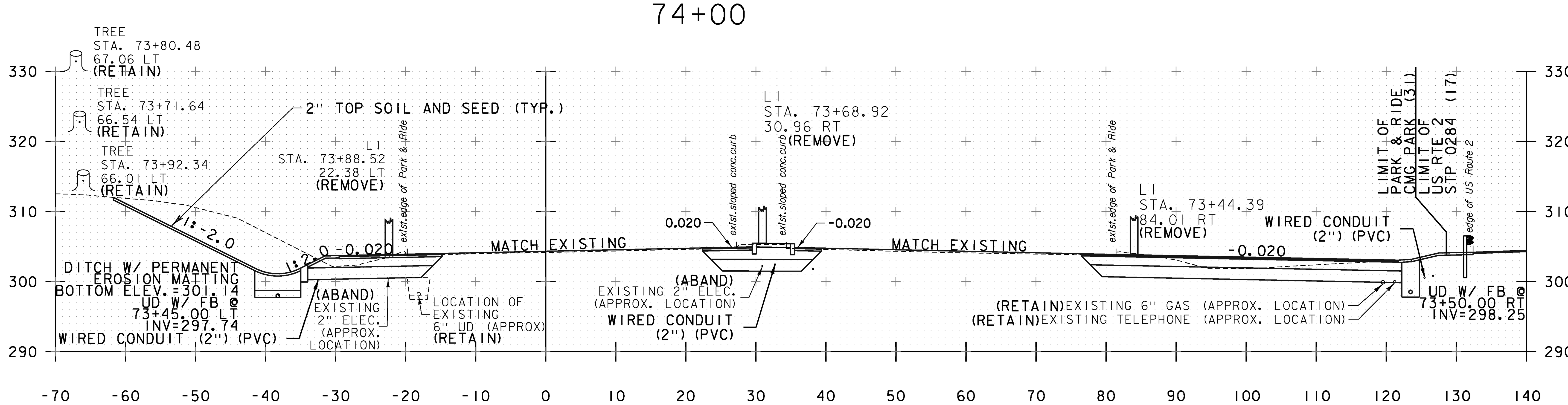
PROJECT NAME: RICHMOND	
PROJECT NUMBER: CMG PARK (31)	
FILE NAME: z97cl86xsl.dgn	PLOT DATE: 4/29/2013
PROJECT LEADER: ERIK ATKINS	DRAWN BY: S. FORTIER
DESIGNED BY: T. BIGELOW	CHECKED BY: E. ATKINS
PARK & RIDE CROSS SECTIONS SHEET 3	SHEET 131 OF 133



74+50



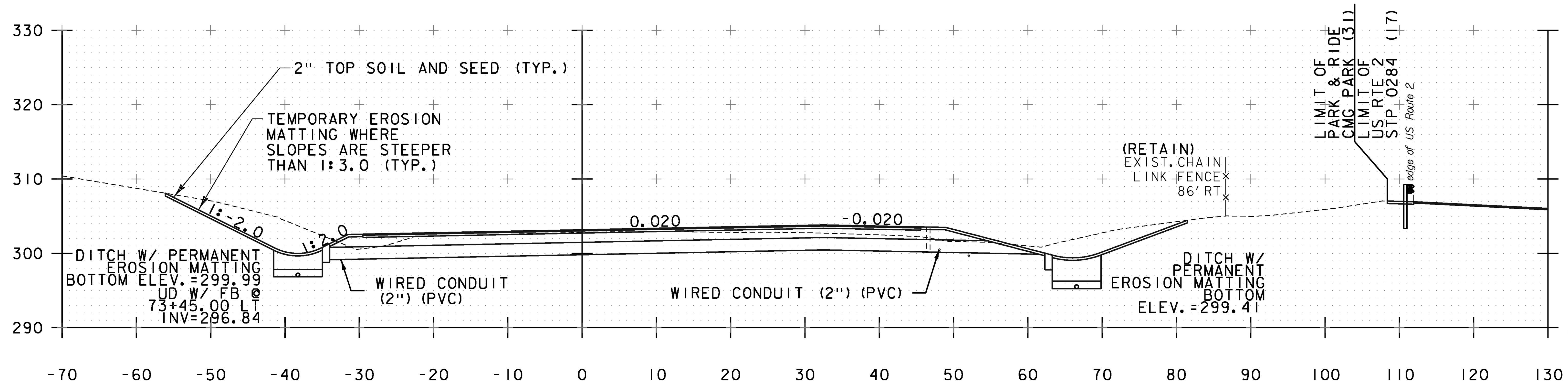
74+00



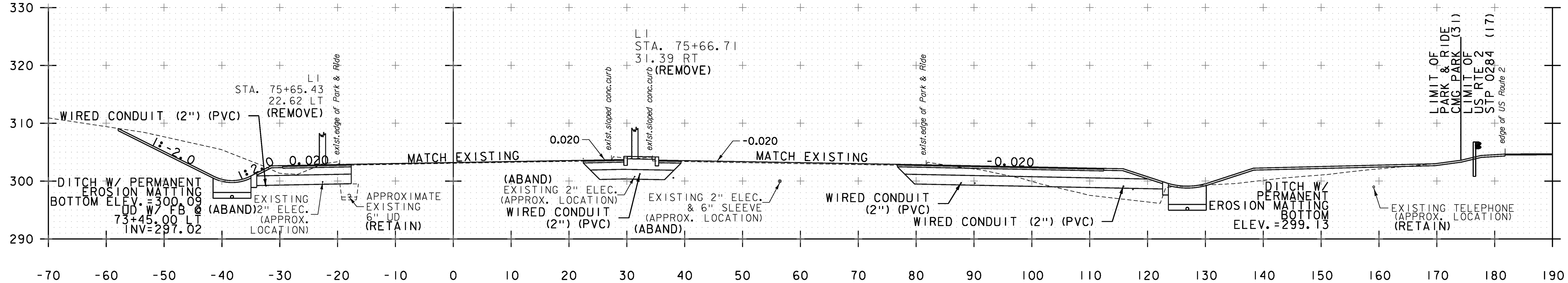
73+50

STA. 73+50 TO STA. 74+50

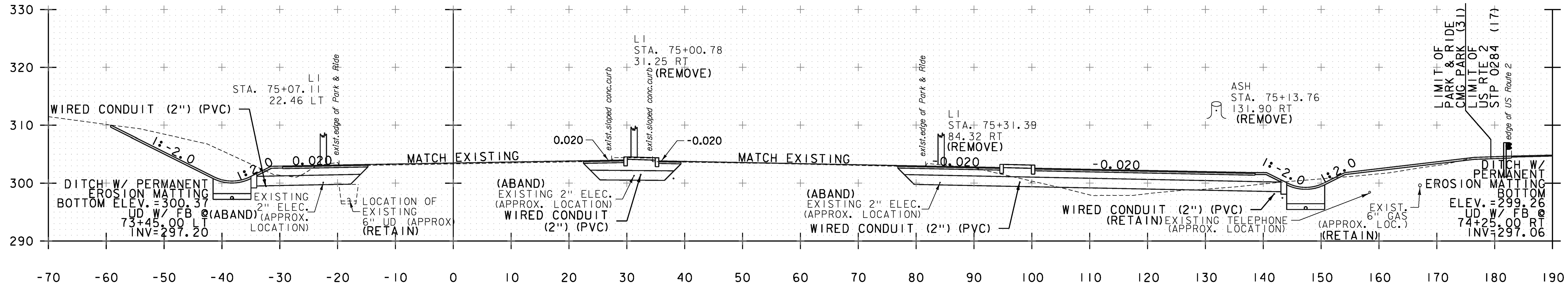
PROJECT NAME: RICHMOND	
PROJECT NUMBER: CMG PARK (31)	
FILE NAME: z97c186xsl.dgn	PLOT DATE: 4/29/2013
PROJECT LEADER: ERIK ATKINS	DRAWN BY: S. FORTIER
DESIGNED BY: T. BIGELOW	CHECKED BY: E. ATKINS
PARK & RIDE CROSS SECTIONS SHEET 4	SHEET 132 OF 133



76+00



75+50

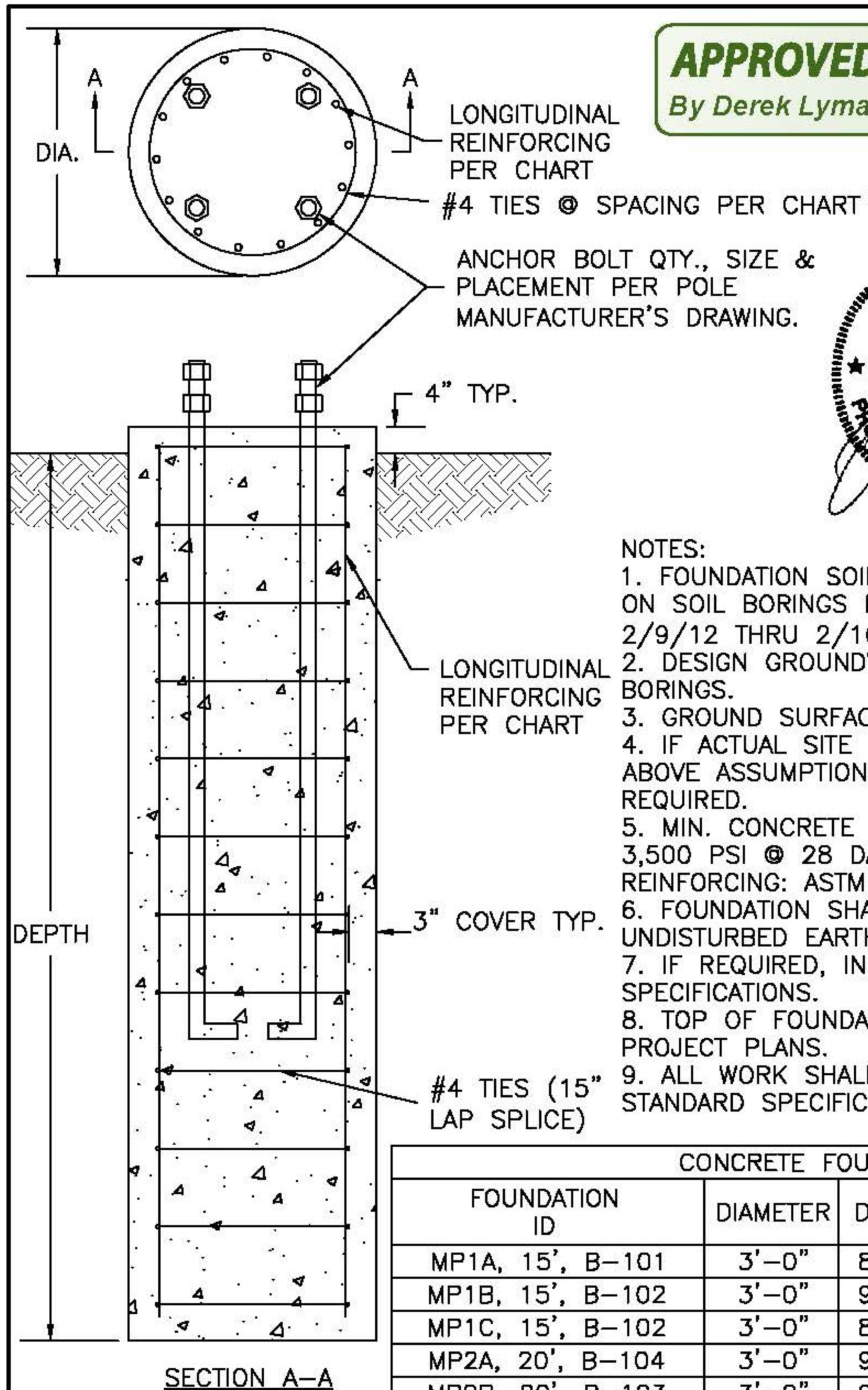


75+00

STA. 75+00 TO STA. 76+00

PROJECT NAME: RICHMOND	
PROJECT NUMBER: CMG PARK (31)	
FILE NAME: z97c186xsl.dgn	PLOT DATE: 4/29/2013
PROJECT LEADER: ERIK ATKINS	DRAWN BY: S. FORTIER
DESIGNED BY: T. BIGELOW	CHECKED BY: E. ATKINS
PARK & RIDE CROSS SECTIONS SHEET 5	SHEET 133 OF 133

APPROVED
By Derek Lyman at 2:53 pm, Mar 05, 2014



STATE OF VERMONT
DAVID N. FRITZ
No. 8694
Structural I
LICENSED
PROFESSIONAL ENGINEER

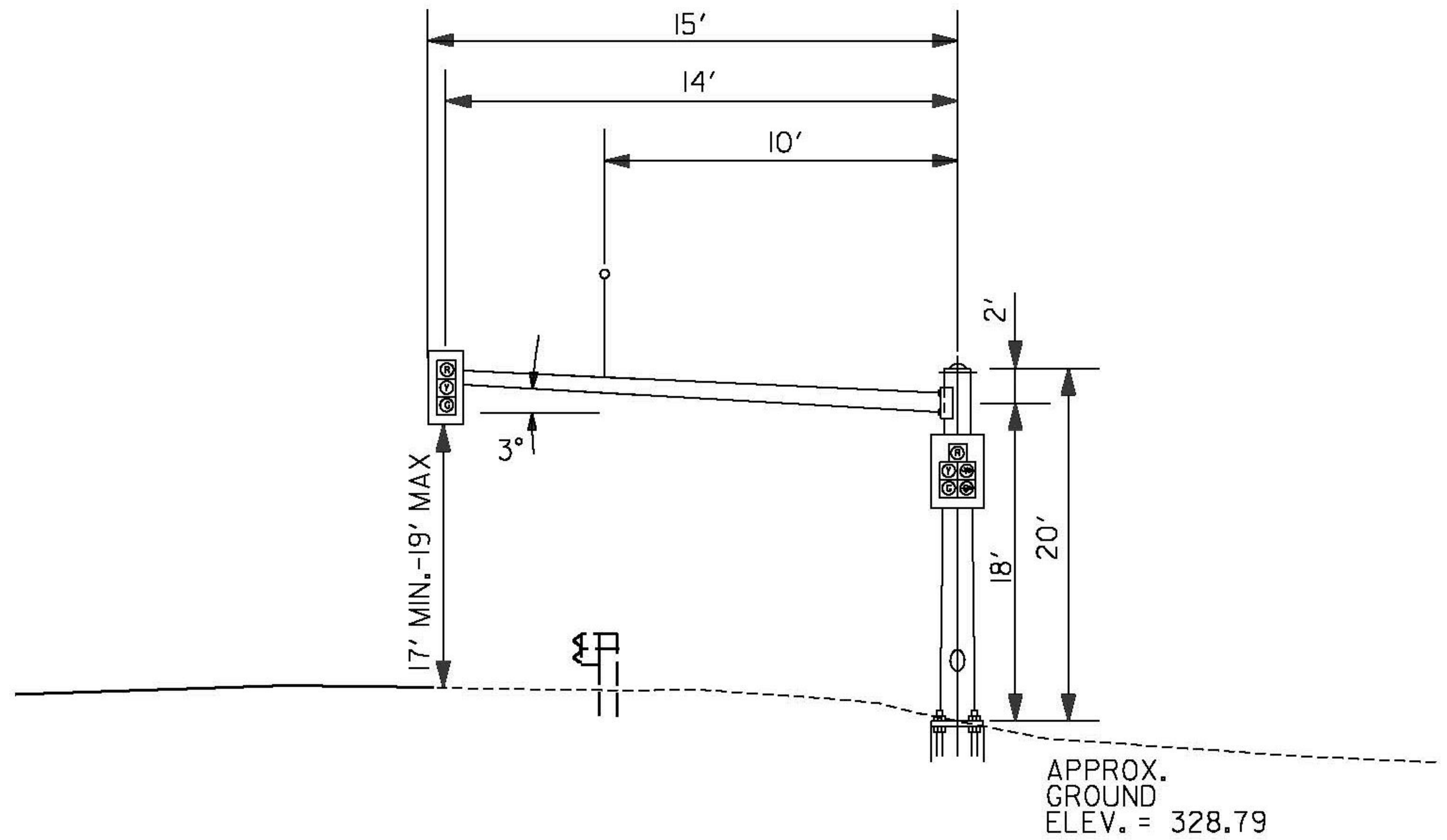
3/3/14

NOTES:
1. FOUNDATION SOIL PROPERTIES ARE BASED ON SOIL BORINGS PROVIDED BY VTRANS DATED 2/9/12 THRU 2/16/12.
2. DESIGN GROUNDWATER ELEVATION PER SOIL BORINGS.
3. GROUND SURFACE PER CROSS SECTIONS.
4. IF ACTUAL SITE CONDITIONS VARY FROM ABOVE ASSUMPTION, FOUNDATION REDESIGN IS REQUIRED.
5. MIN. CONCRETE COMPRESSIVE STRENGTH OF 3,500 PSI @ 28 DAYS.
REINFORCING: ASTM A615 GR. 60.
6. FOUNDATION SHALL BE CAST AGAINST UNDISTURBED EARTH
7. IF REQUIRED, INSTALL CONDUIT PER OWNER SPECIFICATIONS.
8. TOP OF FOUNDATION ELEVATION PER PROJECT PLANS.
9. ALL WORK SHALL CONFORM TO VTRANS STANDARD SPECIFICATIONS FOR CONSTRUCTION.

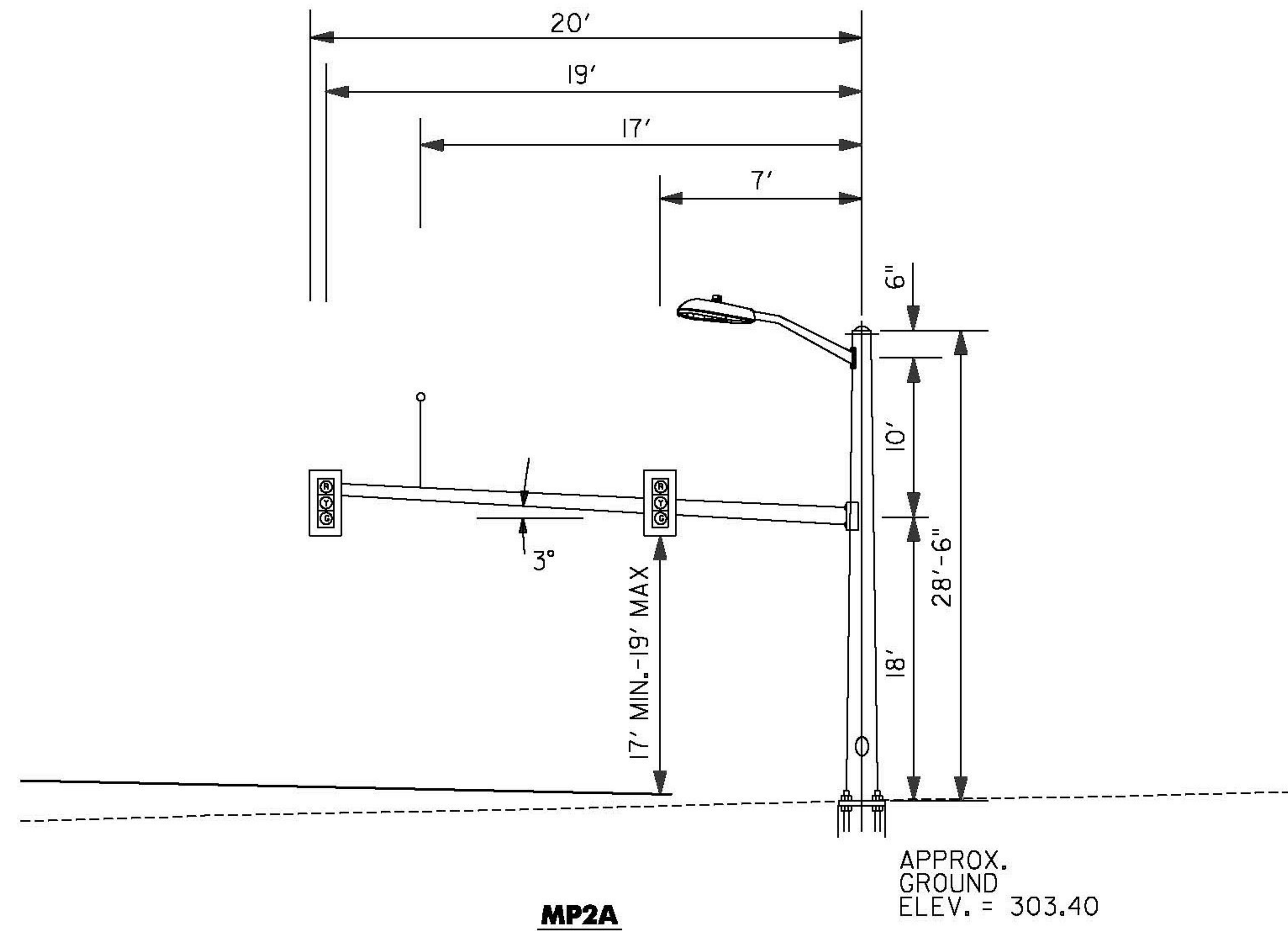
CONCRETE FOUNDATION DATA

FOUNDATION ID	DIAMETER	DEPTH	LONG. BARS	TIE SPA.	CONCRETE VOL. (C.Y.)
MP1A, 15', B–101	3'–0"	8'–6"	8–#8	12"	3
MP1B, 15', B–102	3'–0"	9'–6"	8–#8	12"	3
MP1C, 15', B–102	3'–0"	8'–6"	8–#8	12"	3
MP2A, 20', B–104	3'–0"	9'–6"	8–#8	12"	3
MP2B, 20', B–103	3'–0"	9'–6"	8–#8	12"	3
MP2C, 25', B–105	3'–0"	9'–6"	8–#8	12"	3
MP2D, 30', B–106	3'–0"	11'–6"	8–#8	12"	4

TRAFFIC POLE FOUNDATION DESIGN
RICHMOND, VERMONT
STP 0284 (17)
DRAWING NO. 51660–R1



MP1A
N.T.S.



MP2A
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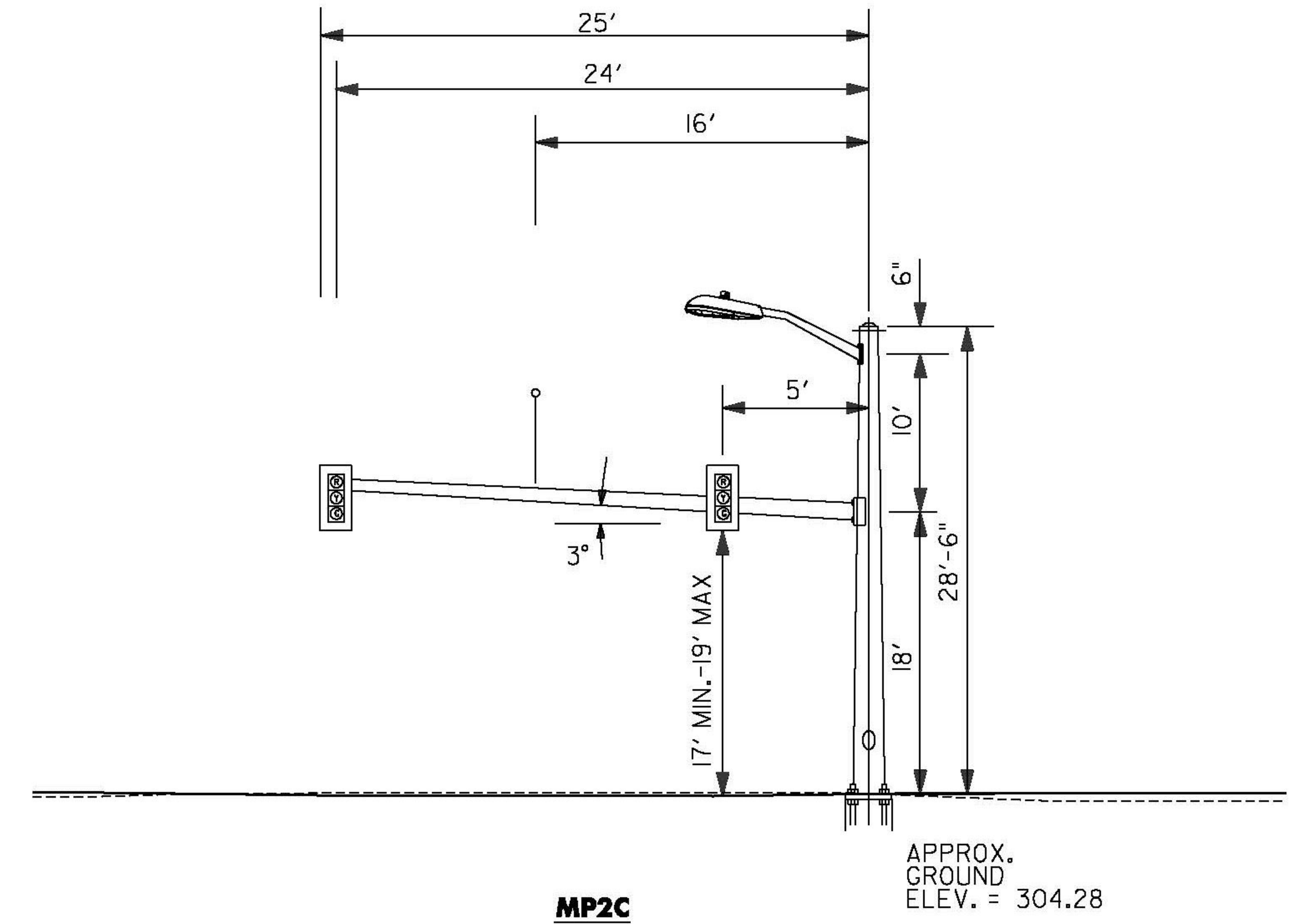

MP2C
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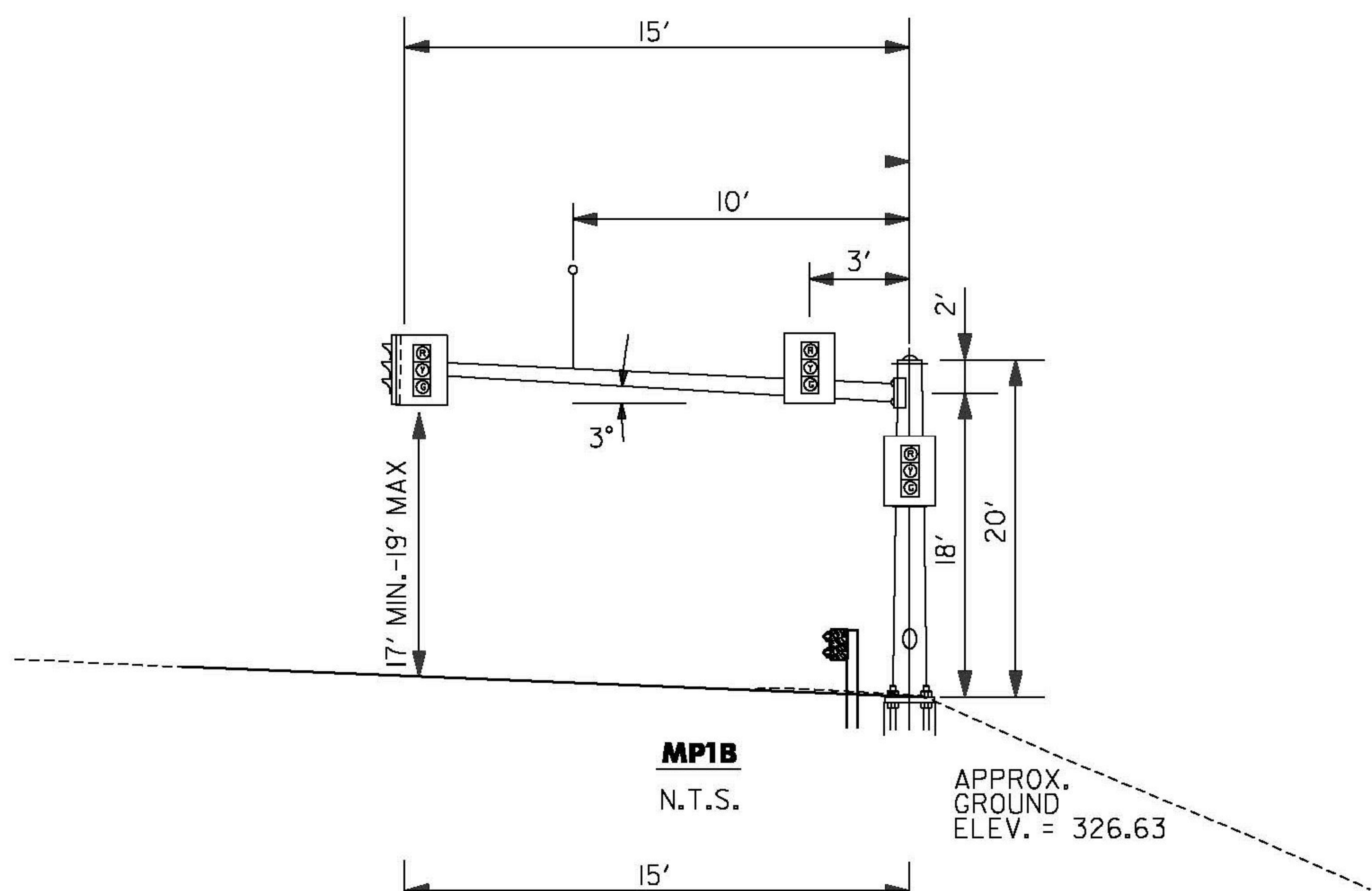

MP1B
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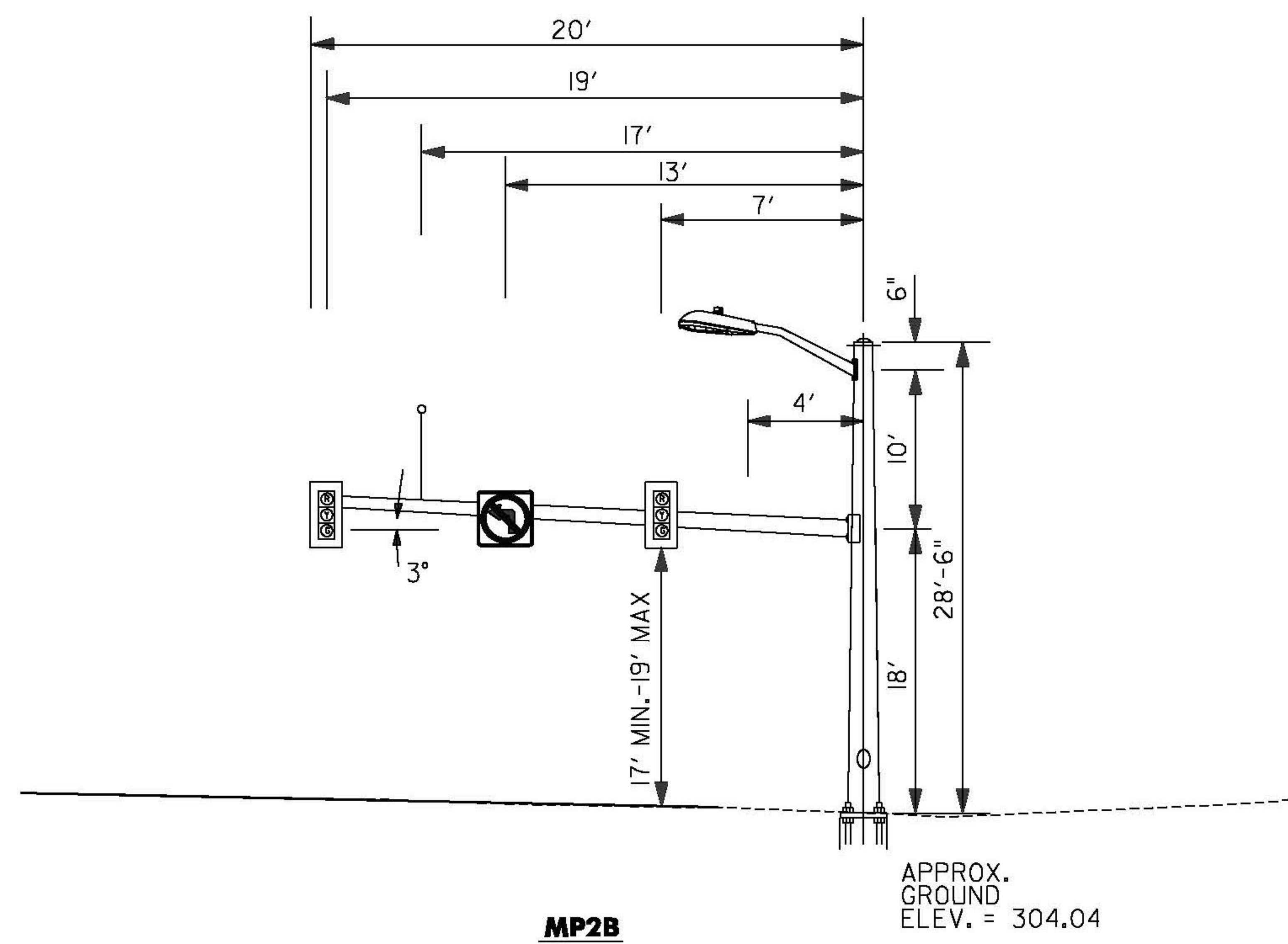

MP2B
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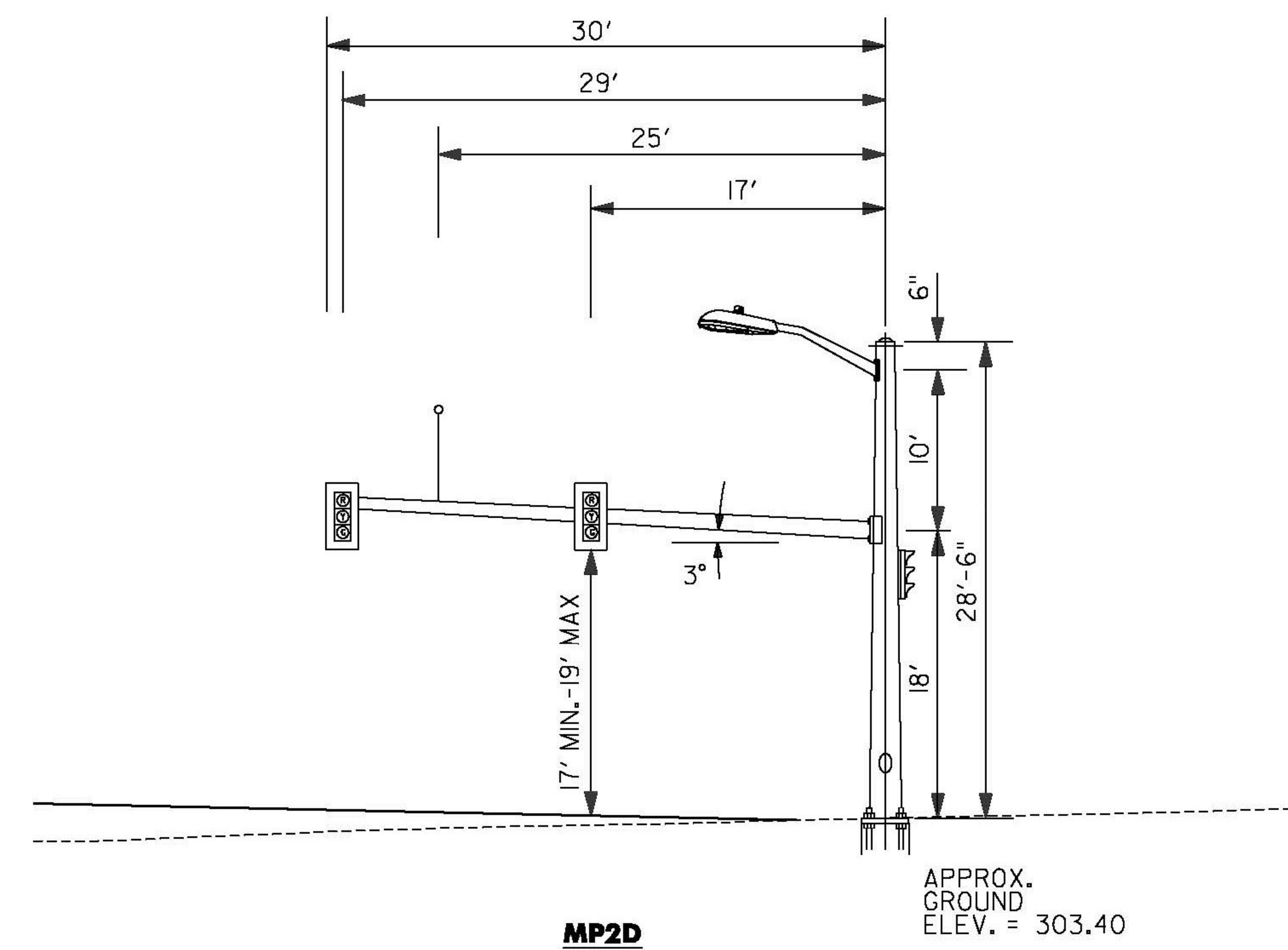

MP2D
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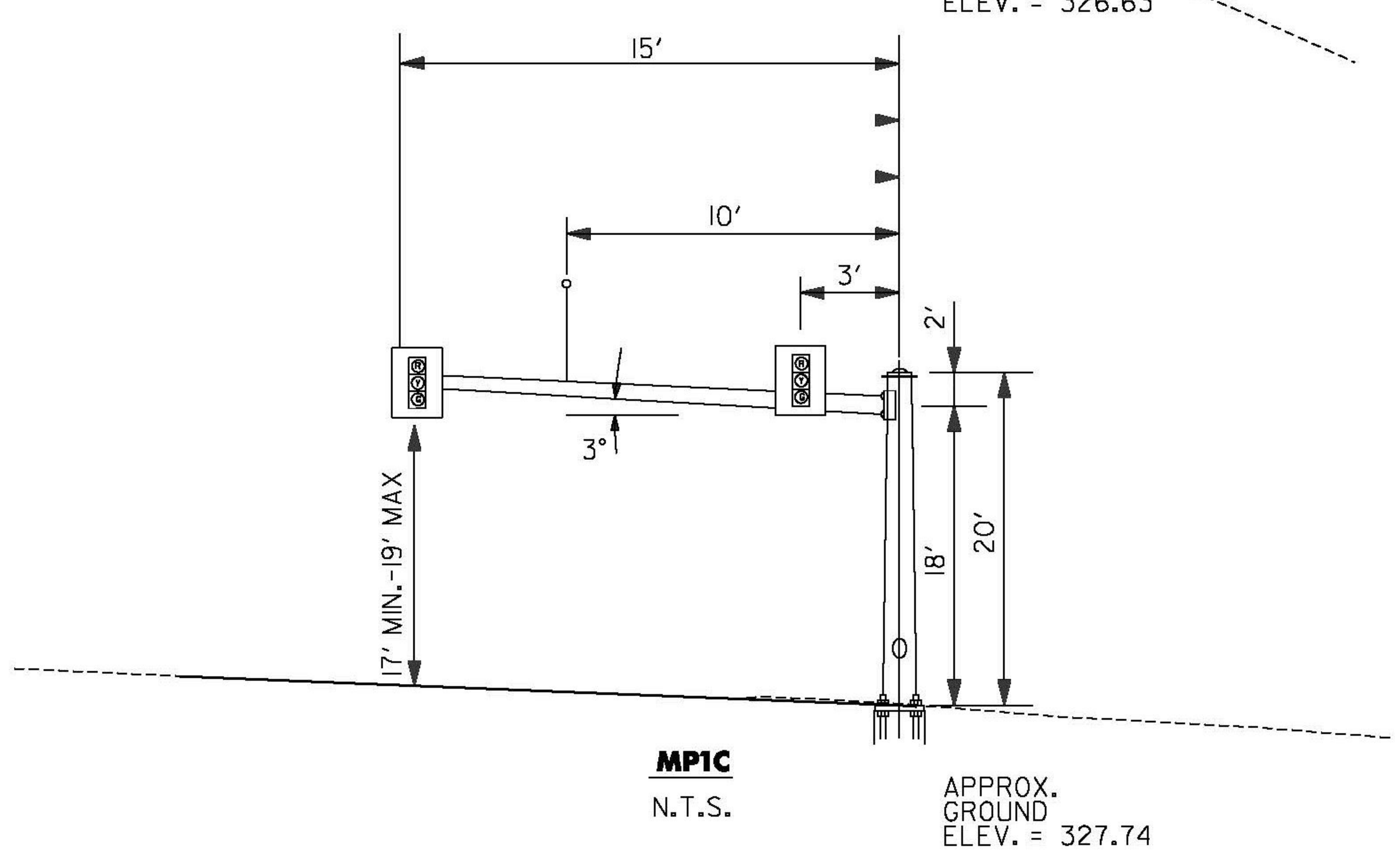
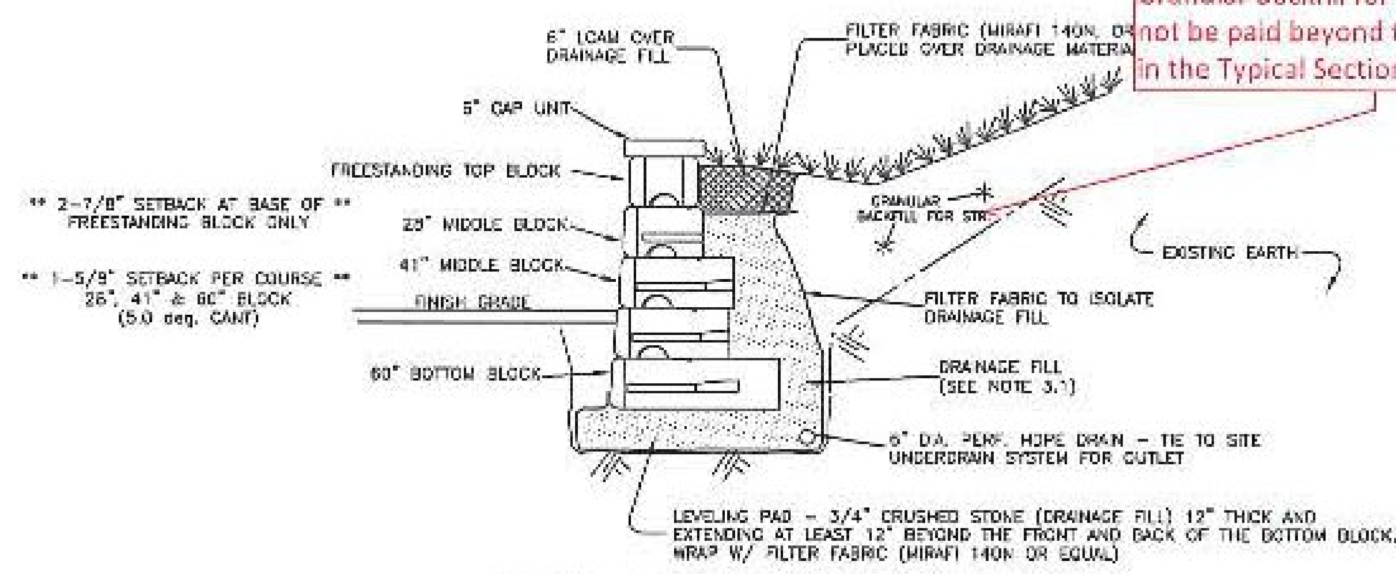


MP1C
N.T.S.

PROJECT NAME: RICHMOND	
PROJECT NUMBER: STP 0284 (17)	
FILE NAME: z97c186trfbdr2.dgn	PLOT DATE: 5/2/2013
PROJECT LEADER: JEFFREY MAXTUTIS	DRAWN BY: Y.CAO/I.ALMY
DESIGNED BY: J.SOBEL	CHECKED BY: D.FLYNN
TRAFFIC SIGNAL DETAIL SHEET 3	SHEET 73 OF 133



Per Note 9 on Sheet 125 of 133, Granular Backfill for Structures shall not be paid beyond the limits shown in the Typical Section.

MAXIMUM APPLIED BEARING PRESSURE: 1500 psf

TYPICAL SECTION – GRAVITY WALL
(TYPICAL DETAIL ONLY – SEE WALL FACE DRAWING FOR SPECIFIC BLOCK CONFIGURATIONS)

"REDI-ROCK" SEGMENTAL RETAINING WALL

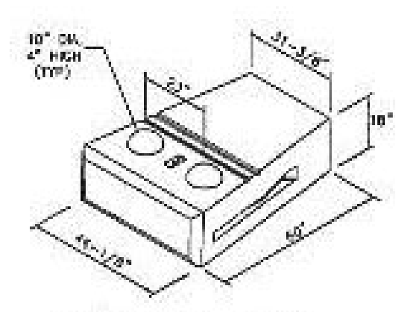
BLOCK SPECIFICATION NOTES:

1. ALL BLOCKS SHALL BE MANUFACTURED BY A LICENSED REDI-ROCK (TM) MANUFACTURER.

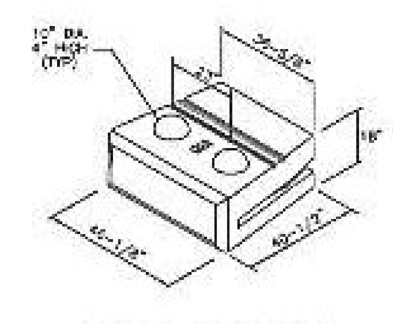
2. BLOCKS SHALL MEET THE MINIMUM REDI-ROCK SPECIFICATIONS OF 4000 psi WITH AN AIR CONTENT OF 4%-6%.

3. THE REDI-ROCK UNITS SHALL UTILIZE THE LEDGESTONE FACE TEXTURE.

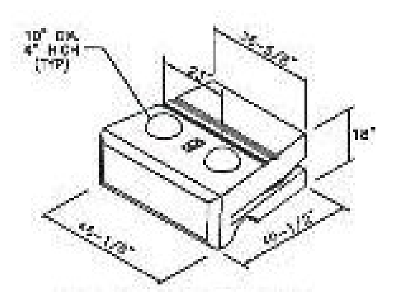
NOTE: HALF-BLOCKS HAVE THE SAME FEATURES AS SHOWN HERE FOR FULL BLOCKS BUT THEY ARE 23-1/16" WIDE, NOT THE FULL 46-1/8" WIDE.



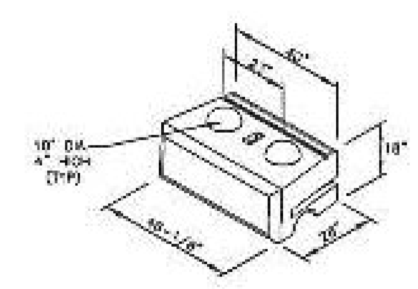
60" BOTTOM BLOCK
NOT-TO-SCALE



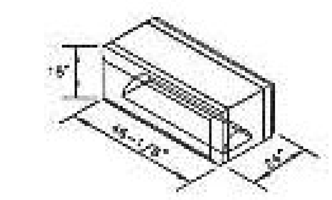
41" BOTTOM BLOCK
NOT-TO-SCALE



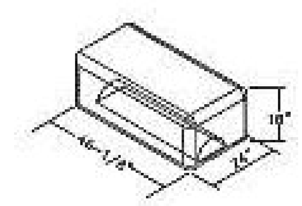
41" MIDDLE BLOCK
NOT-TO-SCALE



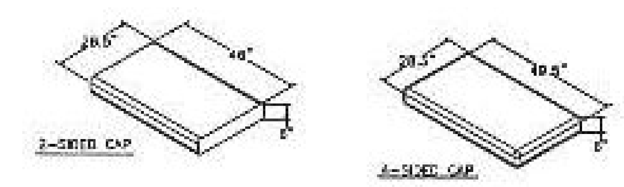
28" MIDDLE BLOCK
NOT-TO-SCALE



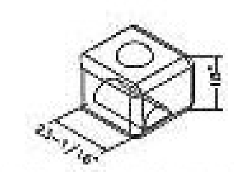
FREESTANDING TOP BLOCK
NOT-TO-SCALE



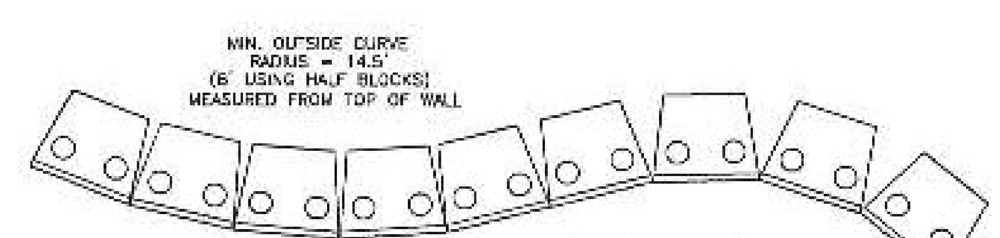
FREESTANDING TOP END BLOCK
NOT-TO-SCALE



CAP UNITS
NOT-TO-SCALE



HALF FREESTANDING MIDDLE END BLOCK
NOT-TO-SCALE



CURVE DETAIL
TYPICAL CURVES
(NOT TO SCALE)

COMPACTION NOTE: WHERE THE RETAINING WALL PASSES OVER ANY UTILITY LINES, COMPACTION OF THE SOIL WITHIN THE UTILITY TRENCH IS CRITICAL IN ORDER TO PREVENT SETTLEMENT OF THE WALL. COMPACTION OF ALL FILL MATERIAL IN UTILITY TRENCHES WHICH PASS UNDER THIS RETAINING WALL MUST BE AT LEAST 95% OF THE MAXIMUM DENSITY OF THE FILL MATERIAL (PER SPECIAL PROVISION).

COMPACTED FILL/BACKFILL GENERAL REQUIREMENTS

SIEVE SIZE	% PASSING
3"	100%
#4	45-75%
#100	0-12%
#200	0-6%

VT AOT 704.08A
GRANULAR BACKFILL FOR STRUCTURES

DRAINAGE FILL – ASTM #57 STONE GRADATION REQUIREMENTS

SIEVE SIZE	% PASSING
1-1/2"	100
1"	95 – 100
1/2"	25 – 60
#4	0 – 10
#8	0 – 5
#200	0 – 2

DESIGN ASSUMPTIONS

SOIL	SOIL UNIT WEIGHT	Φ
GRANULAR BACKFILL	140	34
IN-SITU SAND	115	32
3/4" CRUSHED STONE #57	110	40

APPLIED SURCHARGE LOADING: NONE

SEISMIC ACCELERATION = 0.09

MAX. SLOPE ABOVE WALL: 2H:1V

AASHTO LRFD LOAD/RESISTANCE FACTORS

INTERNAL STABILITY:	
VERTICAL EARTH PRESSURE – EV	1.35
EARTHQUAKE LOADS – EQ	1.00
LIVE LOAD SURCHARGE – LS	1.75
DEAD LOAD SURCHARGE – ES	1.50
EXTERNAL STABILITY:	
VERTICAL EARTH PRESSURE – EV	
SLIDING & ECCENTRICITY:	1.00 (STATIC) 1.00 (COMBINED STATIC/SEISMIC)
BEARING CAPACITY:	1.35 (STATIC) 1.35 (COMBINED STATIC/SEISMIC)
ACTIVE EARTH PRESSURE – EH	1.50
ACTIVE EARTH PRESSURE (EARTHQUAKE)	1.50
EARTHQUAKE LOADS – EQ	1.00
BEARING CAPACITY	0.45 (STATIC) 0.45 (COMBINED STATIC/SEISMIC)

GENERAL NOTES:

1. SITE PREPARATION:
   - 1.1. STRIP ALL VEGETATION, ORGANIC SOILS AND UNSUITABLE FILL SOILS FROM THE WALL ALIGNMENT AREA.
   - 1.2. BENCH CUT ALL EXCAVATED SLOPES.
   - 1.3. DO NOT OVER EXCAVATE UNLESS DIRECTED TO DO SO BY THE OWNER'S SITE REPRESENTATIVE IN ORDER TO REMOVE UNSUITABLE SOIL.
   - 1.4. THE OWNER'S SITE REPRESENTATIVE SHALL VERIFY THE COMPETENCY OF THE FOUNDATION SOILS.
2. LEVELING PAD & BOTTOM BLOCK:
   - 2.1. LEVELING PAD SHALL CONSIST OF 3/4" CRUSHED STONE (DRAINAGE FILL) MEETING THE GRADATION REQUIREMENTS OF ASTM #57 STONE. IT SHALL BE AT LEAST 12" THICK, EXTEND AT LEAST 12" TO EITHER SIDE OF THE BASE BLOCK, AND BE WRAPPED IN FILTER FABRIC (MIRAFI 140N OR EQUAL).
   - 2.2. MINIMUM EMBEDMENT OF WALL BELOW FINISH GRADE SHALL BE AS INDICATED ON THE WALL FACE DRAWING.
   - 2.3. FOLLOW APPLICABLE PROVISIONS OF THE MANUFACTURER'S INSTALLATION INSTRUCTIONS AND WRITTEN SPECIFICATIONS, ESPECIALLY WITH REGARDS TO LEVELING OF BLOCKS AND BASE.
3. WALL DRAIN:
   - 3.1. DRAINAGE FILL SHALL CONSIST OF ASTM #57 SIZE CRUSHED STONE PLACED FOR A DEPTH OF AT LEAST 12" BEHIND THE WALL. A FILTER FABRIC SHALL BE PLACED OVER THE CUT OR FILL FACE BEHIND THE WALL TO PREVENT THE MIGRATION OF SOIL INTO THE DRAINAGE MATERIAL.
   - 3.2. THE 6" DIA. PERFORATED HDPE WALL DRAIN SHALL BE TIED TO THE SITE UNDERDRAIN FOR OUTLET.
   - 3.3. PLACE A FILTER FABRIC (MIRAFI 140N, OR EQUAL) OVER THE DRAINAGE MATERIAL TO MINIMIZE SOIL MIGRATION FROM THE SURFACE MATERIAL (TOPSOIL OR IMPERVIOUS) INTO THE DRAINAGE MATERIAL.
4. BACKFILLING & COMPACTION:
   - 4.1. BACKFILL AND COMPACT THE FILL MATERIAL BEHIND THE WALL AS THE WALL IS INSTALLED.
   - 4.2. COMPACTION TESTS SHALL BE TAKEN AS THE WALL IS INSTALLED. THE MINIMUM NUMBER OF TESTS SHALL BE DETERMINED BY THE OWNER'S SITE REPRESENTATIVE.
   - 4.3. COMPACTION SHALL BE TO A MINIMUM OF 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY.
   - 4.4. RECOMMENDED COMPACTION EQUIPMENT WITHIN 15 FEET OF THE BACK OF THE WALL IS AS FOLLOWS:
     0 – 4 FEET HAND TAMP OR VIBRATORY PLATE COMPACTOR
     4 – 15 FEET NOTHING LARGER THAN TWO-DRUM, WALK-BEHIND VIBRATORY ROLLER
     (LARGER ROLLERS CAN BE USED STATICALLY, PROVIDED LIFT SIZE DOES NOT COMPROMISE ACHIEVEMENT OF NECESSARY COMPACTION RATES.)
5. GENERAL WALL LAYOUT & CONSTRUCTION:
   - 5.1. FINAL WALL ALIGNMENT SHALL BE LOCATED IN THE FIELD BY THE CONTRACTOR.
   - 5.2. PROVIDE LATERAL DRAINAGE SWALES TO DIRECT FLOWS AROUND THE ENDS OF THE WALL AND AWAY FROM THE WALL DURING CONSTRUCTION. THIS MEASURE WILL REDUCE THE POTENTIAL FOR EXTREME PRECIPITATION EVENTS FROM DAMAGING THE WALL DURING THE CONSTRUCTION PHASE.
   - 5.3. TURF, OR SOME ACCEPTABLE FORM OF SOIL EROSION PROTECTION, SHOULD BE ESTABLISHED AT THE TOP OF THE WALL (WHERE REQUIRED) BY THE LANDSCAPE CONTRACTOR AS SOON AS THE WALL IS COMPLETED.
   - 5.4. ADHERE CAPS WITH A MINIMUM OF TWO 3/8" DIAMETER BEADS OF CONSTRUCTION ADHESIVE SUCH AS TITEBOND HEAVY DUTY CONSTRUCTION ADHESIVE BY FRANKLIN INTERNATIONAL. MORTAR CEMENT CAN ALSO BE USED.
   - 5.5. IF CONDITIONS ARE DIFFERENT THAN THOSE STATED IN THESE DRAWINGS AND SPECIFICATIONS, THE CONTRACTOR MUST CONTACT THE DESIGN ENGINEER PRIOR TO PROCEEDING WITH THE CONSTRUCTION OF THE WALL.
   - 5.6. THESE WALLS HAVE BEEN DESIGNED WITH CONSIDERATION OF SEISMIC LOADINGS.

IT IS THE RESPONSIBILITY OF THE INSTALLER TO REVIEW THE NOTES AND DETAILS ON ALL SHEETS OF THIS PLAN SET

NO EXCEPTIONS TAKEN ☐ DISAPPROVED ☐
Revise and Resubmit ☐ Approved as Noted ☑

CHECKING IS ONLY FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND GENERAL COMPLIANCE WITH THE INFORMATION GIVEN IN THE CONTRACT DOCUMENTS. ANY ACTION SHOWN IS SUBJECT TO THE REQUIREMENTS OF THE PLANS AND SPECIFICATIONS. CONTRACTOR IS RESPONSIBLE FOR DIMENSIONS WHICH SHALL BE CONFIRMED AND CORRELATED AT THE JOB SITE; FABRICATION PROCESSES AND TECHNIQUES OF CONSTRUCTION; COORDINATION OF HIS WORK WITH THAT OF ALL OTHER TRADES; AND THE SATISFACTORY PERFORMANCE OF THE WORK.

GREEN INTERNATIONAL AFFILIATES, INC.
CONSULTING ENGINEERS

CHECKED BY: RMS DATE 12/17/13
SIGNED BY: RMS DATE 12/17/13

STATE OF VERMONT ERIC T. MERLUZZI #08043 CIVIL PROFESSIONAL ENGINEER

NOTE: THIS DRAWING WAS PREPARED FOR USE WITH REDI-ROCK (TM) RETAINING WALL SYSTEMS. CONTACT REDI-ROCK WALLS OF NEW ENGLAND AT (603) 863-1000.

ERIC MERLUZZI, P.E.
184 ROWENTOWN ROAD, WENTWORTH, NH 03282
PHONE: (603) 786-2751 E-MAIL: em33@earthlink.net

CLIENT: REDI-ROCK WALLS OF NEW ENGLAND
8 REEDS MILL ROAD, NEWPORT, NH 03773

PROJECT: RICHMOND CMC PARK (31)
RICHMOND, VT

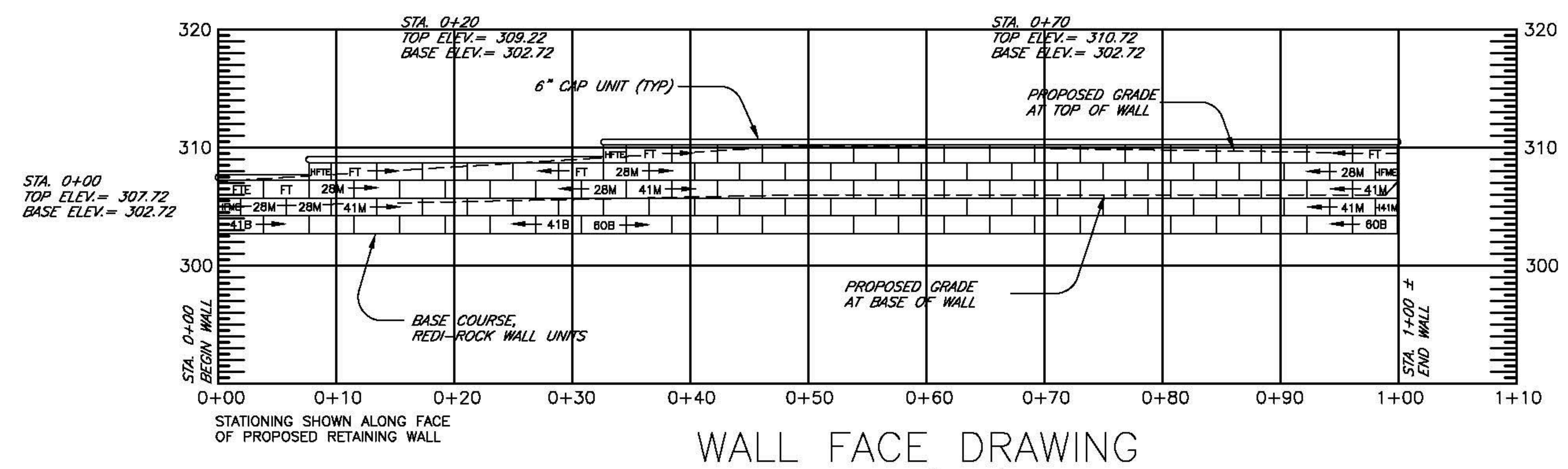
SHEET TITLE: RETAINING WALL DESIGN SHEET 1

DATE: NOVEMBER 21, 2013 SCALE: AS SHOWN PROJECT No.: 2013-143

REVISION #1 12/13/13 REVISE PER 12/9/13 COMMENTS BY GREEN INTERNATIONAL AFFILIATES, INC. CONSULTING ENGINEERS E.M.

REVISION SET NUMBER 1

SHEET 1 OF 2



WALL FACE DRAWING

SCALE: 1" = 10'

BLOCK LEGEND & QUANTITIES

FTE	FREESTANDING TOP 3-SIDED BLOCK	2
HFTE	HALF FREESTANDING TOP 3-SIDED BLOCK	2
FT	FREESTANDING TOP BLOCK	23
HFME	HALF FREESTANDING MIDDLE 3-SIDED BLOCK	2
28M	28" MIDDLE BLOCK	26
H41M	HALF 41" MIDDLE BLOCK	1
41M	41" MIDDLE BLOCK	40
41B	41" BOTTOM BLOCK	8
60B	60" BOTTOM BLOCK	18
	6" CAP, 4 SIDED	4
	6" CAP, 2 SIDED	25

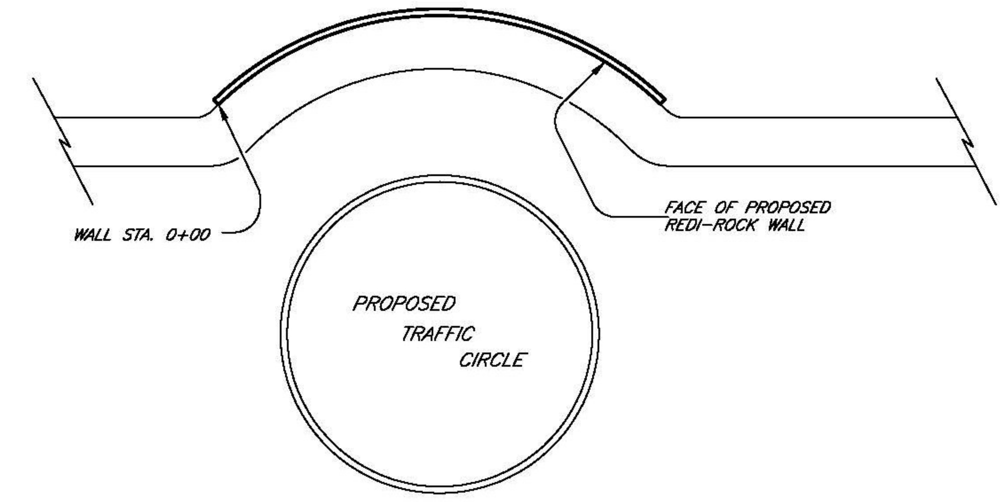
NOTE: IF THE FIELD CONDITIONS INDICATE THE GRADE AT THE BASE AND/OR TOP OF THE WALL TO BE DIFFERENT FROM THAT SHOWN ON THESE PLANS, THE DESIGN ENGINEER SHALL BE CONTACTED TO VERIFY CHANGES TO THE WALL BASE COURSE AND/OR TOP OF WALL ELEVATION. THE GRADES SHOWN ON THIS PLAN ARE BASED ON THE UNIT BLOCK RETAINING WALL PLAN (SHEET 125 OF 133) PREPARED BY VAOT ENGINEERING, PLOT DATE 4/29/13.

NOTE REGARDING FIELD-TRIMMING OF REDI-ROCK COMPONENTS:

THE CONTRACTOR SHOULD ANTICIPATE SOME FIELD TRIMMING OF THE REDI-ROCK WALL COMPONENTS. TYPICAL SITUATIONS THAT REQUIRE FIELD TRIMMING INCLUDE:

1. *MITRE CUTTING ENDS OF CAPS ALONG WALL RADIUS.*
2. *CUTTING FULL LENGTH CAPS TO FIT WHERE APPROXIMATELY HALF CAPS ARE NEEDED.*
3. *TRIMMING A PORTION OFF THE REAR OF THE 41" BLOCK BELOW THE HALF FREESTANDING MIDDLE BLOCK SO THAT THE FREESTANDING BLOCK ALIGNS WITH ADJACENT BLOCK.*

IT IS THE RESPONSIBILITY OF THE INSTALLER TO REVIEW THE NOTES AND DETAILS ON ALL SHEETS OF THIS PLAN SET



VICINITY SKETCH

(NOT TO SCALE)
SEE CONSTRUCTION DRAWINGS BY OTHERS

NOTE: THIS DRAWING WAS PREPARED FOR USE WITH REDI-ROCK (TM) RETAINING WALL SYSTEMS. CONTACT REDI-ROCK WALLS OF NEW ENGLAND AT (603) 863-1000.

ERIC MERLUZZI, P.E.

184 ROWENTOWN ROAD, WENTWORTH, NH 03282
PHONE: (603) 786-2751 *E-MAIL: em35@earthlink.net*

CLIENT: *REDI-ROCK WALLS OF NEW ENGLAND*
8 REEDS MILL ROAD, NEWPORT, NH 03773

PROJECT: *RICHMOND CMG PARK (31)*
RICMOND, VT

SHEET TITLE: *RETAINING WALL DESIGN SHEET 2*

DATE:	SCALE:	PROJECT No.:
NOVEMBER 21, 2013	*AS SHOWN*	*2013-143*

SHEET 2 OF 2

REVISION #1 12/13/13 REVISE PER 12/9/13 COMMENTS BY GREEN INTERNATIONAL AFFILIATES, INC. CONSULTING ENGINEERS	E.M.	REVISION SET NUMBER	1

Analysis of Redi Rock wall

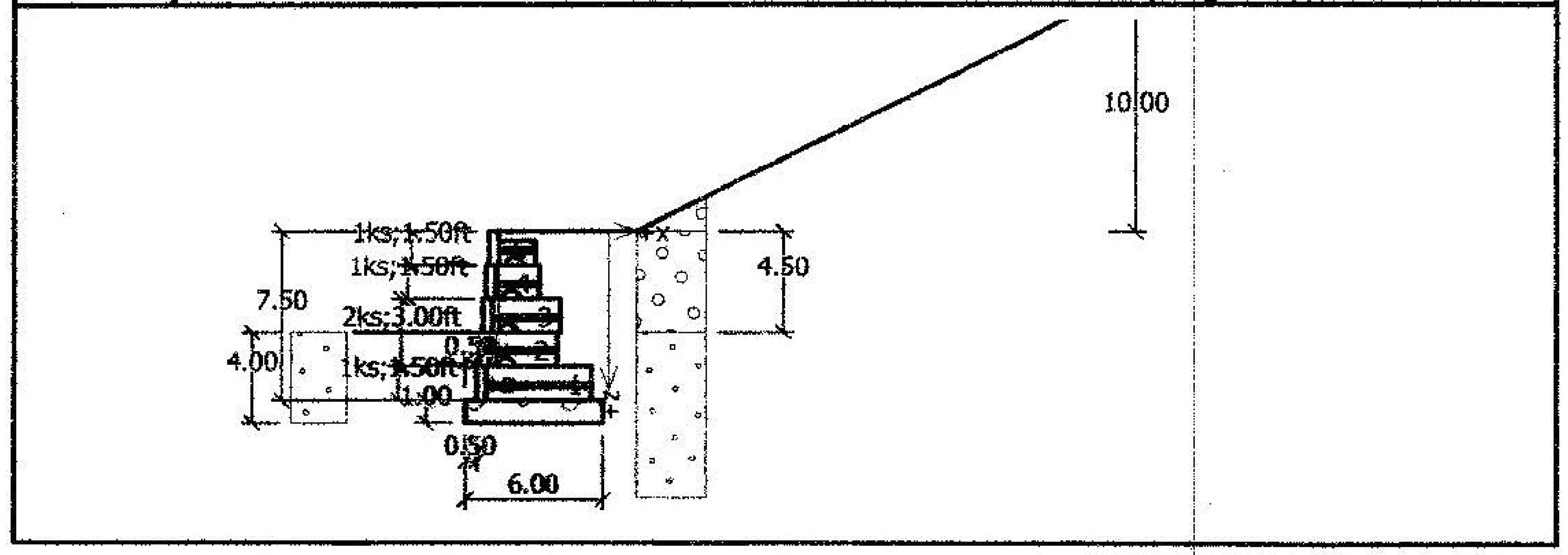
Input data

Project

Part : WALL STA. 0+50, 7.5' HT, 6' WIDE SWALE TO 2H:1V SLOPE ABOVE REVISION #1
Descript. : RICHMOND CMG PARK (31)
Author : ERIC MERLUZZI, P.E.
Customer : REDI-ROCK WALLS OF NEW ENGLAND
Date : 12/12/2013

STATE OF VERMONT
ERIC T. MERLUZZI
NO. 06043
CIVIL
LICENSED
PROFESSIONAL ENGINEER

Name : Project **Stage : 1**



Settings

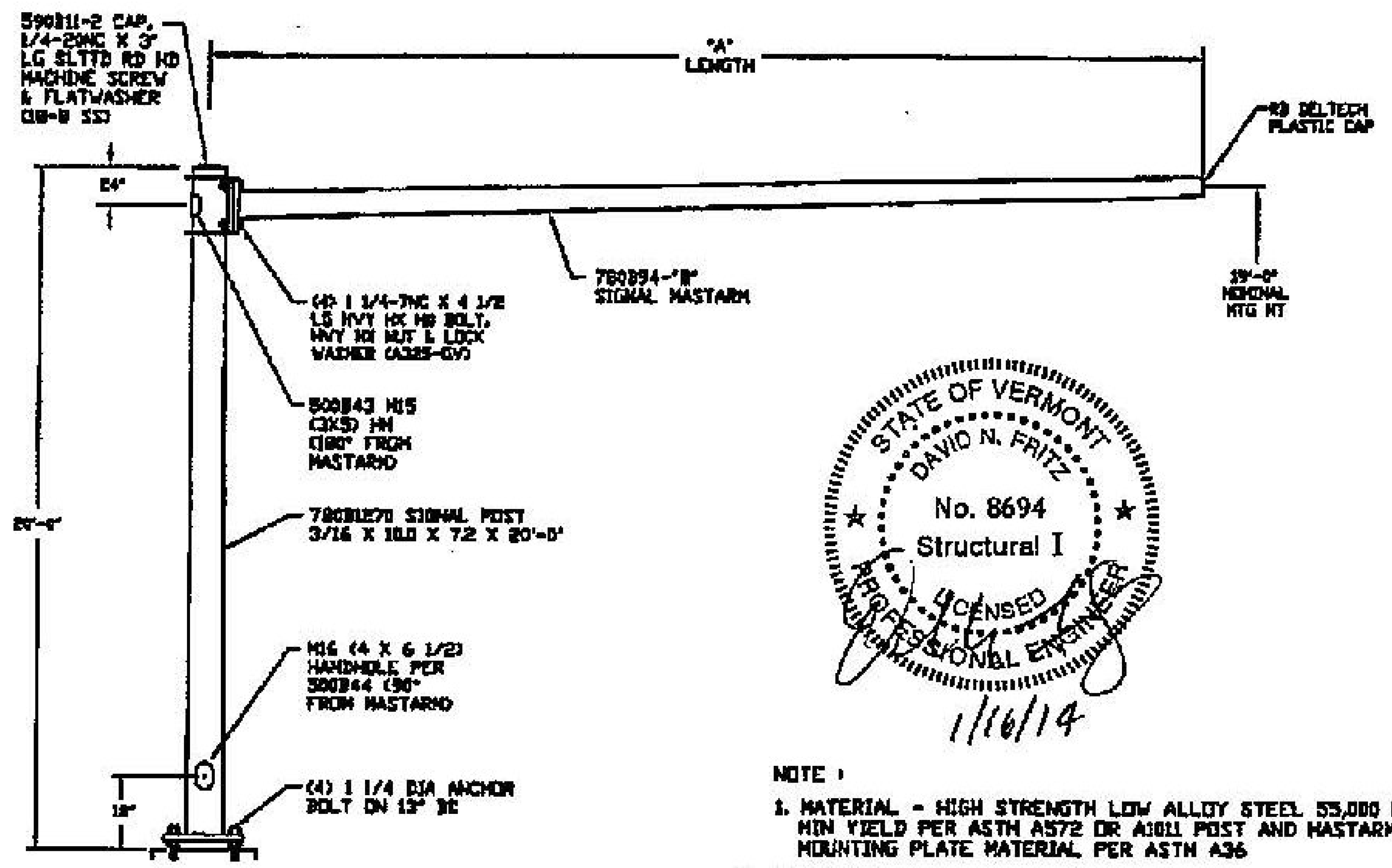
(input for current task)
Wall analysis

Active earth pressure calculation : Coulomb
Passive earth pressure calculation : Caqout-Kerisel
Earthquake analysis : Mononobe-Okabe
Shape of earth wedge : Calculate as skew
Reduction coeff. of contact first block - base : 0.80
Verification methodology : according to LRFD

Partial factors on loads (L)					
Permanent design situation					
		Favourable		Unfavourable	
Dead load of structural components :	DC =	0.90	[–]	1.25	[–]
Dead load of wearing surfaces :	DW =	0.65	[–]	1.35	[–]
Earth pressure load :	EH =	0.90	[–]	1.50	[–]
Earth surcharge load (permanent) :	ES =	0.75	[–]	1.50	[–]
Vertical pressure of earth fill :	EV =	1.00	[–]	1.35	[–]
Live load surcharge :	LS =	0.00	[–]	1.75	[–]
Water load :	WA =	1.00	[–]	1.00	[–]

Partial factors for resistances (R)			
Permanent design situation			
Partial factor on overturning :	γ_{Re} =	0.90	[–]
Partial factor on sliding resistance :	γ_{Rh} =	0.80	[–]

APPROVED
By Derek Lyman at 8:57 am, Feb 11, 2014



FINISH = HOT DIP GALVANIZED PER ASTM A123
WITH TOP COAT PAINTED MILLERBERND FLAT BLACK
MILLERBERND #PT-1-17-FTD-093-FR

NOTE :

1. MATERIAL - HIGH STRENGTH LOW ALLOY STEEL 55,000 PSI MIN YIELD PER ASTM A572 OR A1011 POST AND MASTARM MOUNTING PLATE MATERIAL PER ASTM A36
2. FINISH -
3. DESIGN CRITERIA- 2009 AASHTO STANDARD FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS.WIND LOAD 90 MPH FATIGUE CATEGORY 2. NATURAL WIND GUSTS, TRUCK GUST
4. POST AND MASTARM TO BE ROUND TAPERED TUBE FABRICATED WITH ONE SUBMERGED ARC LONGITUDINAL SEAM WELD.
5. HEX HEAD BOLTS AND NUTS (UNLESS SPECIFIED) ASTM A325 GV A153 FOR SIZES 1/2 THRU 1 1/2 DIA AND ASTM A354BC GV A153 FOR SIZES OVER 1 1/2 DIA

QTY	POLE NO	MASTARM 'A' LG	MASTARM 'B' P/N	MILLERBERND PART NUMBER
1	MP1A	15'	P15C7	REOHA-P15C7-190-VT
2	MP1B, MP1C	15'	P15C7	REOHA-P15C7-190-VT

PO#3250-2139 / VT DOT: STP.0284(17) RICHMOND / US ROUTE 2, VT ROUTE 117
US ROUTE 2, OFF-RAMP (RAMP D) / MILLERBERND SALES ORDER #51660

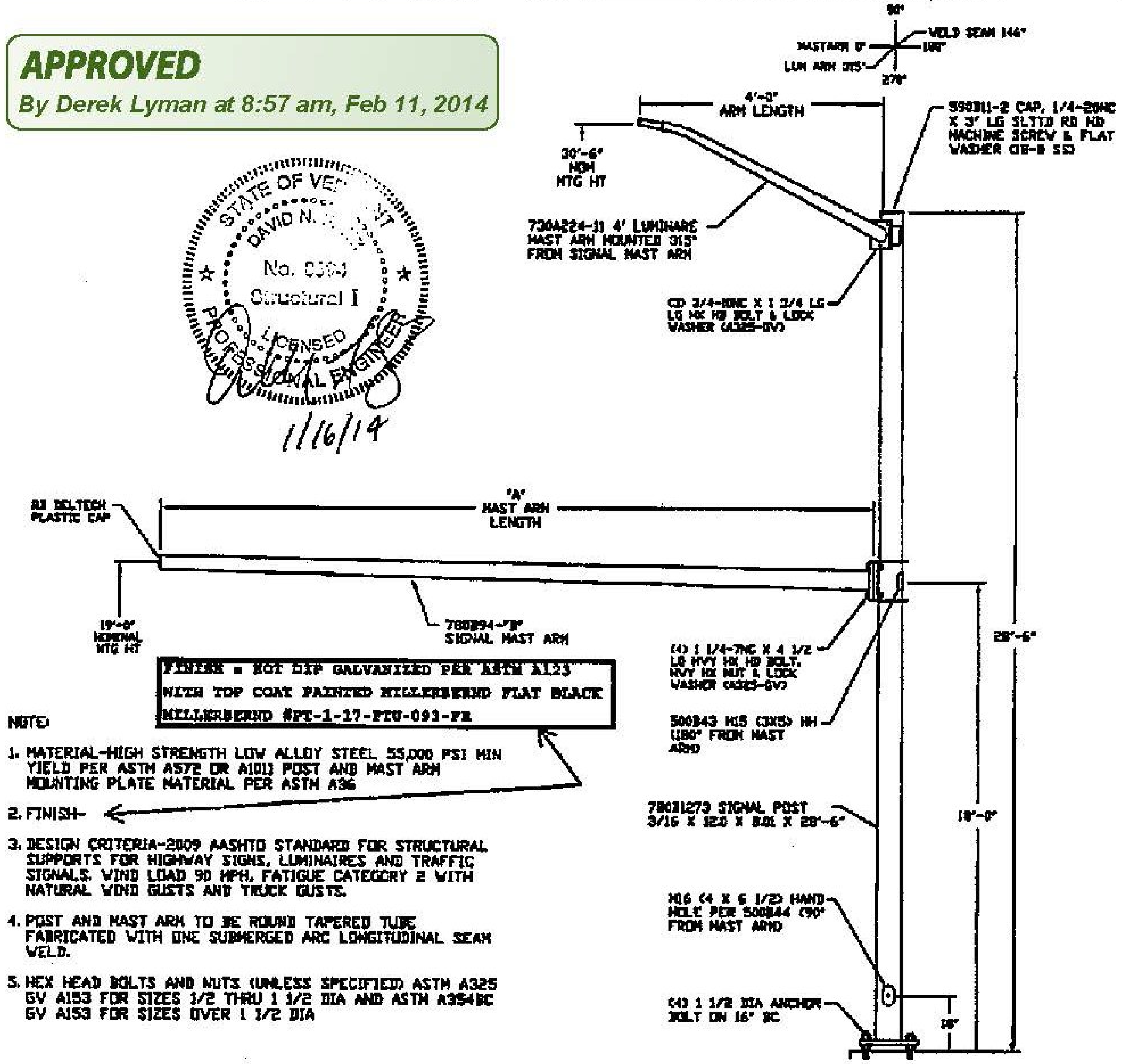
DWN: NIK G	REOHA-P-190-VT-MP1A,B&C ROUND SIGNAL STANDARD		
DATE: 9-18-12			
CHK: REBEKAH	Millerbernd	MANUFACTURING CO. WINSTED, MN	REOHA-P(VT)
SCALE: NTS			

11/13/13 REVISED TO 2009 AASHTO FROM 2001

APPROVED
By Derek Lyman at 8:57 am, Feb 11, 2014

STATE OF VERMONT
No.
Structural I
LICENSED
PROFESSIONAL ENGINEER

1/16/14



FINISH = HOT DIP GALVANIZED PER ASTM A123
WITH TOP COAT PAINTED MILLERBERND FLAT BLACK
MILLERBERND #PT-1-17-PTU-093-FB

NOTE:

1. MATERIAL-HIGH STRENGTH LOW ALLOY STEEL 55,000 PSI MIN YIELD PER ASTM A572 OR A1011 POST AND MAST ARM MOUNTING PLATE MATERIAL PER ASTM A36
2. FINISH-
3. DESIGN CRITERIA-2009 AASHTO STANDARD FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS. WIND LOAD 90 MPH, FATIGUE CATEGORY 2 WITH NATURAL WIND GUSTS AND TRUCK GUSTS.
4. POST AND MAST ARM TO BE ROUND TAPERED TUBE FABRICATED WITH ONE SUBMERGED ARC LONGITUDINAL SEAM WELD.
5. HEX HEAD BOLTS AND NUTS (UNLESS SPECIFIED) ASTM A325 GV A153 FOR SIZES 1/2 THRU 1 1/2 DIA AND ASTM A354BC GV A153 FOR SIZES OVER 1 1/2 DIA

QTY	POLE NO	MAST ARM		MILLERBERND PART NUMBER
		"A" LG	"B" P/N	
1	MP2B	20'	P20C9	RE2HA-P20C9-190-J4-306/315-VT

PO#3250-2139 / VT DOT: STP.0284(17) RICHMOND / US ROUTE 2, VT ROUTE 117
US ROUTE 2,
OFF-RAMP (RAMP D)
MILLERBERND #51660

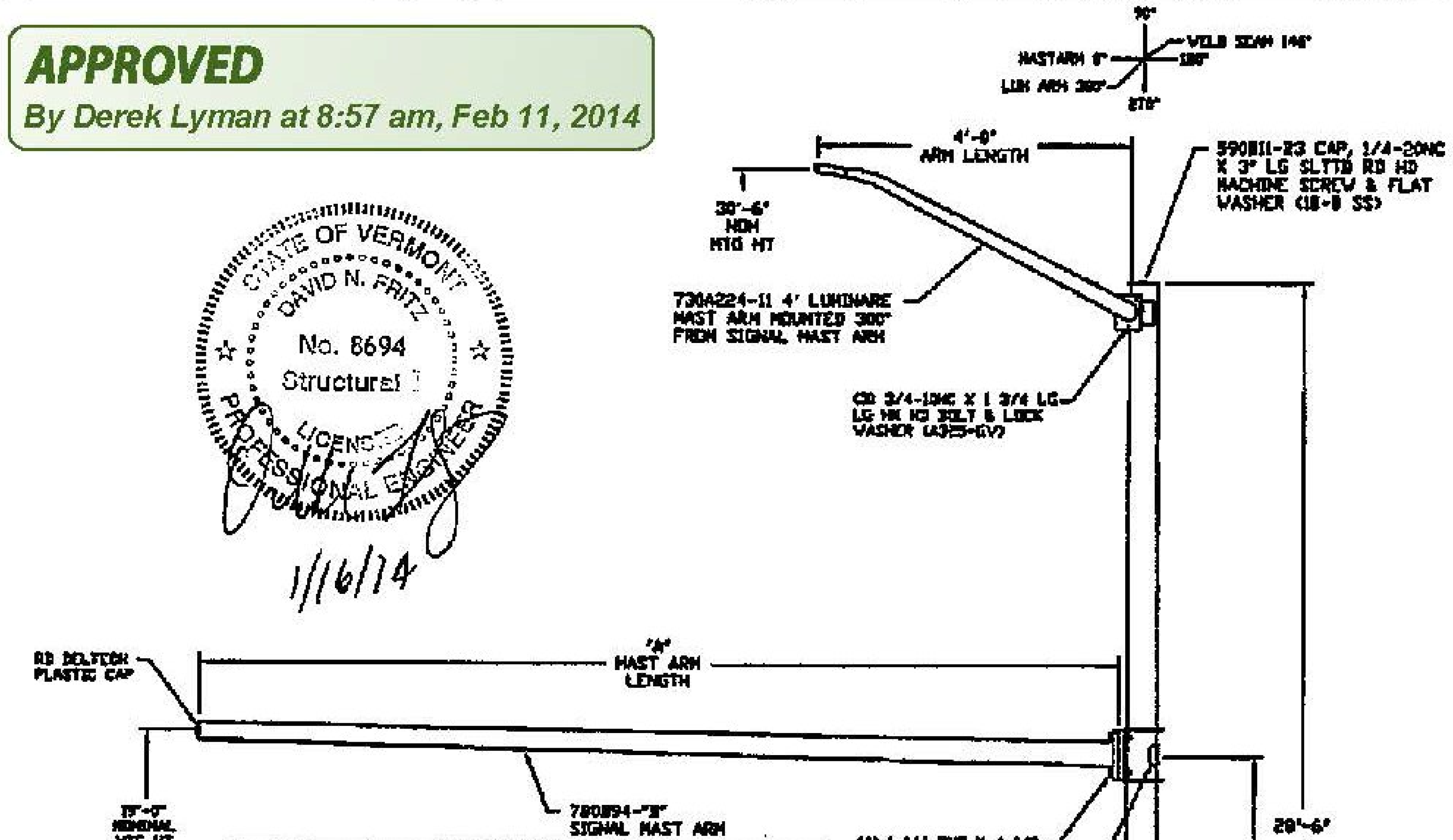
REV 12-11-13 WAS 11X7.0 IS: 12X8.0-PJF
REV 11-19-13 RENAME SIGNAL STANDARD, WAS RE1HT-190/206-J315-VT-MP2D
REV 11-13-13 FROM AASHTO 2001 TO 2009

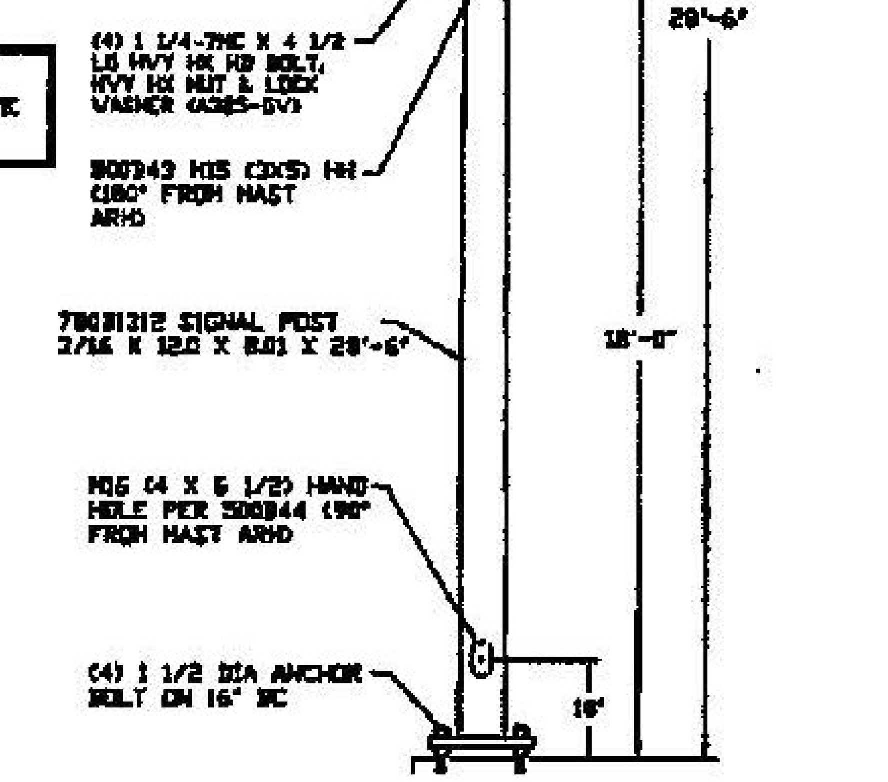
DWN: NIK G.	RE2HA-P-190/306-J315-VT ROUND SIGNAL STANDARD
DATE: 9-18-13	
CHK: REBEKAH	MILLERBERND 622 6TH ST. SO. WINSTED, MN 55395 — RE2HA-P-190-306-J315(VT)
SCALE: NTS	

APPROVED
By Derek Lyman at 8:57 am, Feb 11, 2014

STATE OF VERMONT
DAVID N. FRITZ
No. 8694
Structural
LICENSED
PROFESSIONAL ENGINEER

1/16/14





FINISH = HOT DIP GALVANIZED PER ASTM A123
WITH TOP COAT PAINTED MILLERBERND FLAT BLACK
MILLERBERND #PT-1-17-PTU-093-PR

NOTE:

1. MATERIAL-HIGH STRENGTH LOW ALLOY STEEL 55,000 PSI MIN YIELD PER ASTM A572 OR A1011 POST AND MAST ARM MOUNTING PLATE MATERIAL PER ASTM A36
2. FINISH-
3. DESIGN CRITERIA-2009 AASHTO STANDARD FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS. WIND LOAD 90 MPH, FATIGUE CATEGORY 2 WITH NATURAL WIND GUSTS AND TRUCK GUSTS.
4. POST AND MAST ARM TO BE ROUND TAPERED TUBE FABRICATED WITH ONE SUBMERGED ARC LONGITUDINAL SEAM WELD.
5. HEX HEAD BOLTS AND NUTS (UNLESS SPECIFIED) ASTM A325 GV A153 FOR SIZES 1/2 THRU 1 1/2 DIA AND ASTM A354BC GV A153 FOR SIZES OVER 1 1/2 DIA

QTY	POLE NO	MAST ARM 'A' LG	MAST ARM 'B' P/N	MILLERBERND PART NUMBER
1	MP2C	25'	P25C9	RE2HA-P25C9-190-J4-306/300-VT
1	MP2A	20'	P20C9	RE2HA-P20C9-190-J4-306/300-VT

PO#3250-2139 / VT DOT: STP.0284(17) RICHMOND / US ROUTE 2, VT ROUTE 117
US ROUTE 2,
OFF-RAMP (RAMP D)
MILLERBERND #51660

REV 12-11-13 WAS: 11.0X7.0 IS: 12.0X8.0-PJF
REV 11-13-13 FROM AASHTO 2001 TO 2009

DWN: DOUG F.	RE2HA-P-190/306-J300-VT ROUND SIGNAL STANDARD
DATE: 11-4-13	
CHK: REBEKAH	MILLERBERND 622 6TH ST. SO. WINSTED, MN 55395 — RE2HA-P-190-306-J300(VT)
SCALE: NTS	

APPROVED
By Derek Lyman at 8:57 am, Feb 11, 2014

STATE OF VERMONT
DAVID N. FRITZ
No. 8694
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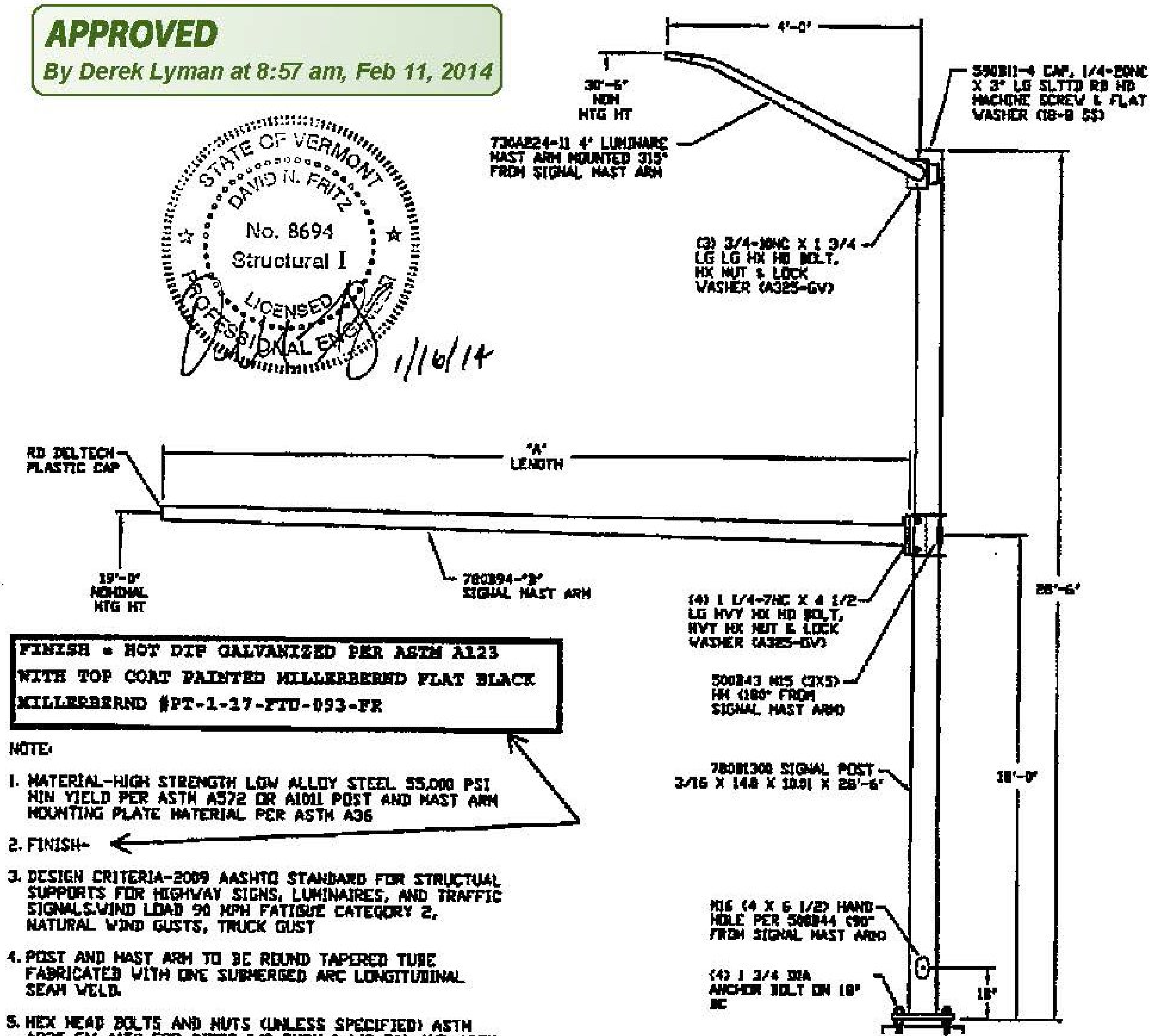
PROFESSIONAL ENGINEER
1/16/14



FINISH = HOT DIP GALVANIZED PER ASTM A123
WITH TOP COAT PAINTED MILLERBERND FLAT BLACK
MILLERBERND #PT-1-17-FTU-093-FR

NOTE:

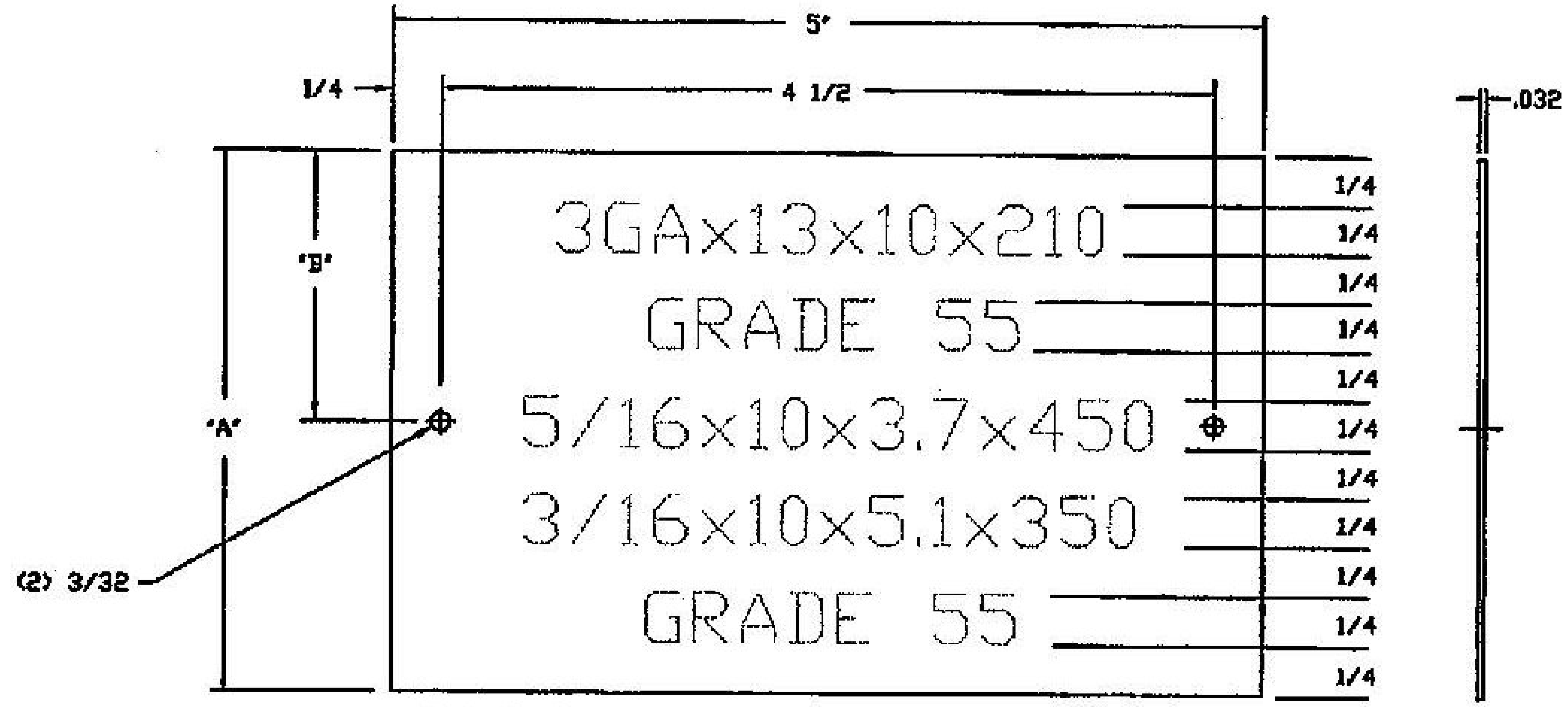
1. MATERIAL-HIGH STRENGTH LOW ALLOY STEEL 55,000 PSI MIN YIELD PER ASTM A572 OR A1011 POST AND MAST ARM MOUNTING PLATE MATERIAL PER ASTM A36
2. FINISH-
3. DESIGN CRITERIA-2009 AASHTO STANDARD FOR STRUCTUAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS.WIND LOAD 90 MPH FATIGUE CATEGORY 2, NATURAL WIND GUSTS, TRUCK GUST
4. POST AND MAST ARM TO BE ROUND TAPERED TUBE FABRICATED WITH ONE SUBMERGED ARC LONGITUDINAL SEAM WELD.
5. HEX HEAD BOLTS AND NUTS (UNLESS SPECIFIED) ASTM A325 GV A153 FOR SIZES 1/2 THRU 1 1/2 DIA AND ASTM A354BC GV A153 FOR SIZES OVER 1 1/2 DIA

QTY	POLE NO	MAST ARM		MILLERBERND PART NUMBER
		'A' LG	'B' P/N	
1	MP2D	30'	P30C1	RE4HA-P30C1-190-J4-306/315-VT

PO#3250-2139 / VT DOT: STP.0284(17) RICHMOND / US ROUTE 2, VT ROUTE 117

US ROUTE 2,
OFF-RAMP (RAMP D)
MILLERBERND #51660

DWN: DOUG F.	RE4HA-P-190-306-J315-VT ROUND SIGNAL STANDARD	
DATE: 10-30-13		
CHK: REBEKAH	Millerbernd MANUFACTURING CO. WINSTED, MN	RE4HA-P-190-306-J315(VT)
SCALE: NTS		



(EXAMPLE SHOWN FOR SINGLE & TWIN MASTARMS)

NOTE:

1. MATERIAL- .032 TK 1100-H14 ALUMINUM

2. STAMP THE IDENTIFICATION NUMBERS AS SHOWN ON THE SINGLE POST DRAWING

EX: 3GAx13x10x210 GRADE 55 = VERTICAL POLE: THICKNESS, BOTTOM OD, TOP OD, LENGTH & GRADE OF STEEL

5/16x10x3.7x450 3/16x10x5.1x350 GRADE 55 = SIGNAL MASTARM & TWIN SIGNAL MASTARM: THICKNESS, BOTTOM OD, TOP OD, LENGTH & GRADE OF STEEL

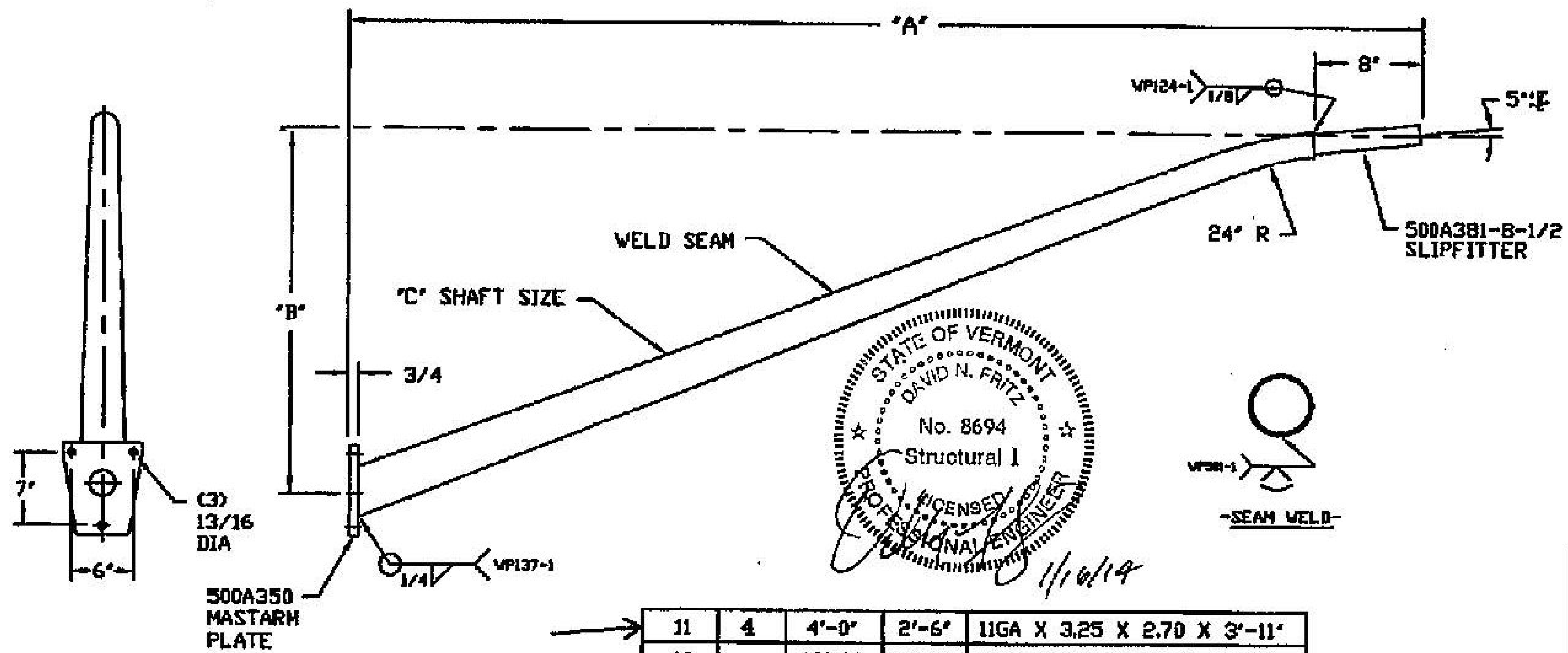
STATE OF VERMONT
DAVID N. FRITZ
No. 8694
Structural I
LICENSED
PROFESSIONAL ENGINEER
1/16/14

-2	2 3/4	1 3/8	5 ROWS STAMPING TWIN MASTARM
-1	2 1/4	1 1/8	4 ROWS STAMPING SINGLE MASTARM
DASH NO	"A"	"B"	DESCRIPTION

PO#3250-2139 / VT DOT: STP.0284(17) RICHMOND / US ROUTE 2, VT ROUTE 117 US ROUTE 2, OFF-RAMP (RAMP D)
MILLERBERND SALES ORDER #51660

DWN: PAUL F.	IDENTIFICATION TAG (VERMONT) GRADE OF STEEL & SHAFT SIZE FOR POST & MASTARM
DATE: 3-15-06	
CHK: WILL Q.	Millerbernd MANUFACTURING CO. WINSTED, MN — 500A1098
SCALE: NTS	

APPROVED
By Derek Lyman at 8:57 am, Feb 11, 2014



DASH NO	QTY	"A" LENGTH	"B" RISE	"C" SHAFT SIZE
11	4	4'-0"	2'-6"	11GA X 3.25 X 2.70 X 3'-11"
10		16'-0"	5'-9"	11GA X 5.28 X 3.0 X 16'-4"
9		17'-0"	5'-9"	11GA X 5.42 X 3.0 X 17'-4"
8		22'-0"	5'-9"	11GA X 5.91 X 3.0 X 22'-3"
7		20'-0"	5'-9"	11GA X 5.91 X 3.0 X 20'-3"
6		18'-0"	5'-9"	11GA X 5.42 X 2.77 X 18'-4"
5		15'-0"	4'-6"	11GA X 4.87 X 2.65 X 15'-4"
4		12'-0"	3'-10"	11GA X 4.11 X 2.65 X 11'-8"
3		10'-0"	2'-9"	11GA X 4.16 X 2.65 X 10'-0"
2		8'-0"	2'-6"	11GA X 3.96 X 2.80 X 7'-8"
1		6'-0"	1'-9"	11GA X 3.59 X 2.70 X 5'-11"

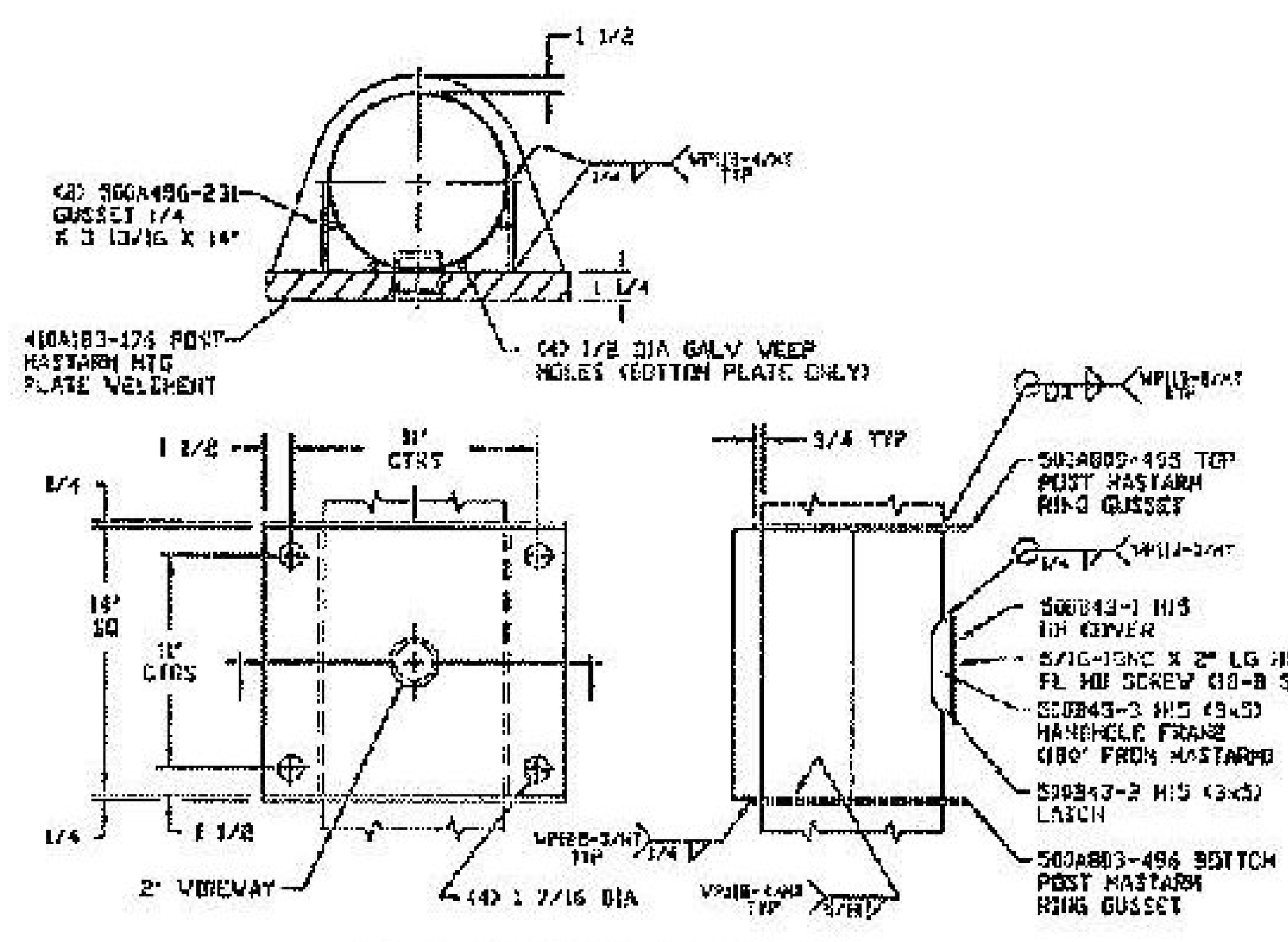
NOTE:

1. SHAFT MATERIAL- HIGH STRENGTH LOW ALLOY STEEL 50,000 PSI MIN YIELD PER ASTM A607 (A606 IF SELF WEATHERING)
2. PLATE MATERIAL- LOW CARBON STEEL 36,000 PSI MIN YIELD PER ASTM A36 (A588 IF SELF WEATHERING)
3. THE FOLLOWING PARTS WILL BE SHIPPED UNASSEMBLED:
   (3) 3/4-10NC X 1 3/4 LG HX HD BOLT (A325-GV)
   (3) 3/4 LOCKWASHER (GV)
4. FINSIH- HOT DIP GALVANIZED PER ASTM A123 WITH TOP COAT PAINTED MILLERBERND FLAT BLACK MILLERBERND #PT-1-17-FTU-093-FR

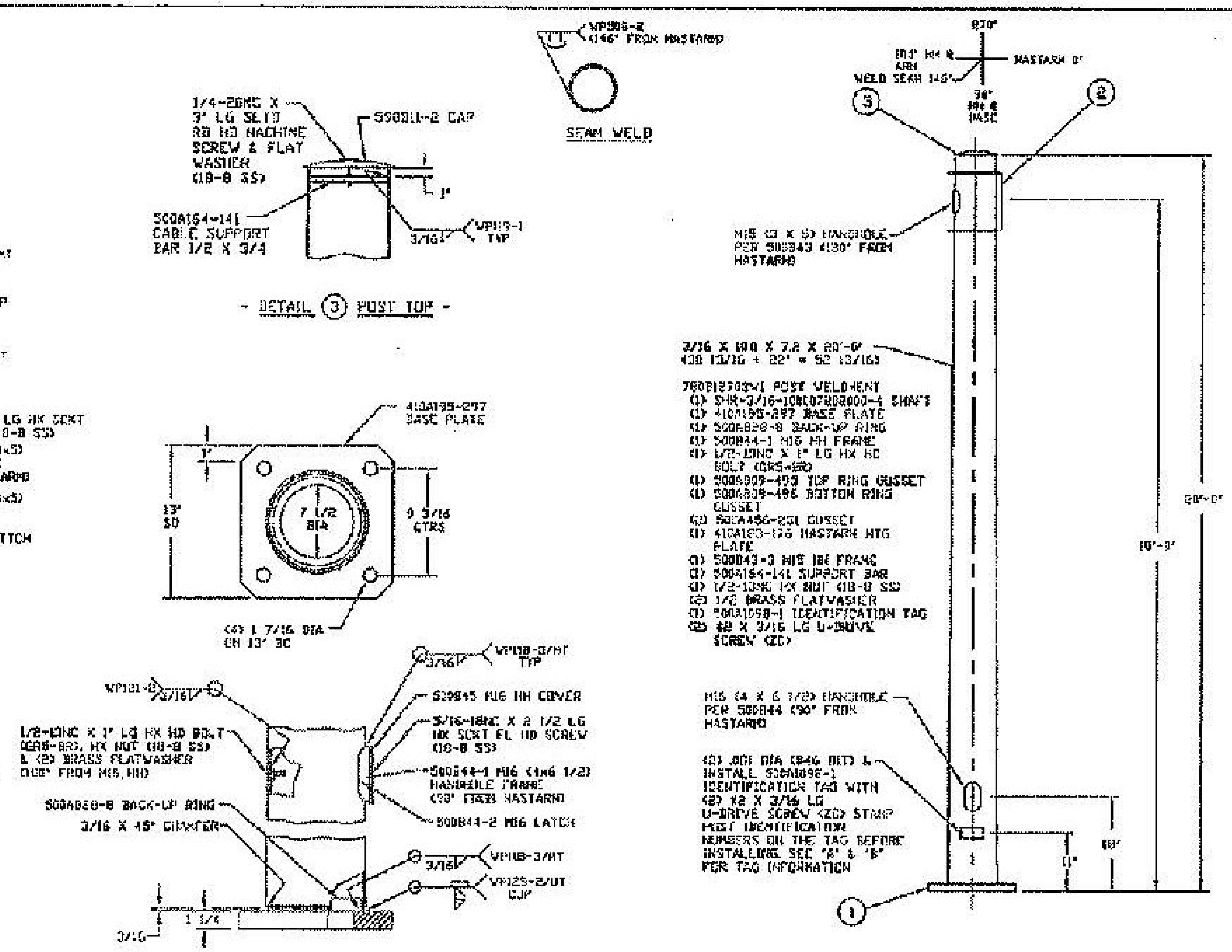
PO#3250-2139 / VT DOT: STP.0284(17) RICHMOND / US ROUTE 2, VT ROUTE 117 US ROUTE 2, OFF-RAMP (RAMP D) / MILLERBERND #51660

DWN: FLOYD F.	"K" MASTARM 6', 8', 10', 12', 15', 18' & 20' MASTARMS	
DATE: 4-6-99		
CHK: WILL Q.	Millerbernd MANUFACTURING CO. WINSTED, MN	730A224
SCALE: NTS		

REV 6-13-07 MOVE SEAM WELD TO TOP
REV: 2-21-05 ADDED SLIPFITTER TO PIPE END



- DETAIL (2) POST MASTARM MTG PLATE -

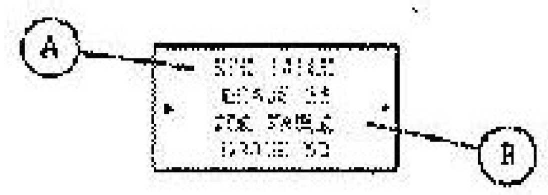


- DETAIL (3) POST TOP -

- DETAIL (1) POST BASE -

NOTE :

1. MATERIAL- HIGH STRENGTH LOW ALLOY STEEL 55,000 PSI MIN YIELD PER ASTM A572. POST & MASTARM MOUNTING PLATE MATERIAL PER ASTM A36
2. FINISH-HOT DIP GALVANIZED PER ASTM A123 WITH TOP COAT PAINTED MILLERBERND FLAT BLACK MILLERBERND #PT-1-17-PTO-093-PR
3. POST TO BE ROUND TUBE FABRICATED WITH ONE SUBMERGED ARC LONGITUDINAL SEAM WELD WITH 100% PENETRATION 6" FROM BASE PLATE & 60% FOR REMAINDER. GAS METAL ARC WELDING PROCESS TO BE USED FOR REMAINDER OF WELDED FABRICATION WITH 100% PENETRATION WELD FOR BASE PLATE TO SHAFT CIRCUMFERENTIAL WELD
4. WELD TESTING- 100% PENETRATION WELDS ULTRASONIC TESTED (UT) USING THE CYCLICALLY LOADED ACCEPTANCE/REJECTION CRITERIA TABLE 6.3 OF AWS D1.1 SPECIFICATION. 100% OF THE POST/MASTARM CONNECTION WELDS MAGNETIC PARTICLE TESTED (MT) AND A RANDOM 30% OF REMAINING FILLET WELDS & PARTIAL PENETRATION LONGITUDINAL SEAM WELDS MAGNETIC PARTICLE TESTED (MT)
5. HEX HEAD BOLTS & NUTS (UNLESS SPECIFIED) ASTM A325 GALV A153 FOR SIZES 1/4 TO 1 1/2 DIA & ASTM A354BC GV A153 FOR SIZES OVER 1 1/2 DIA.
6. THE POST & THE FOLLOWING ITEMS WILL BE SHIPPED UNASSEMBLED:
   - (1) 500B43-1 M15 HH COVER
   - (1) 500B43-2 M15 HH LATCH
   - (1) 5/16-18NC X 2" LG HX SCKT FL HD SCREW (18-8 SS)
   - (1) 500B45 M16 HH COVER
   - (1) 500B44-2 M16 HH LATCH
   - (1) 5/16-18NC X 2 1/2 LG HX SCKT FL HD SCREW (18-8 SS)
   - (1) 590B11-2 POLE CAP
   - (1) 1/4-20NC X 3" LG SLOTTED RD HD MACHINE SCREW (18-8 SS)
   - (1) 1/4 FLATWASHER (18-8 SS)



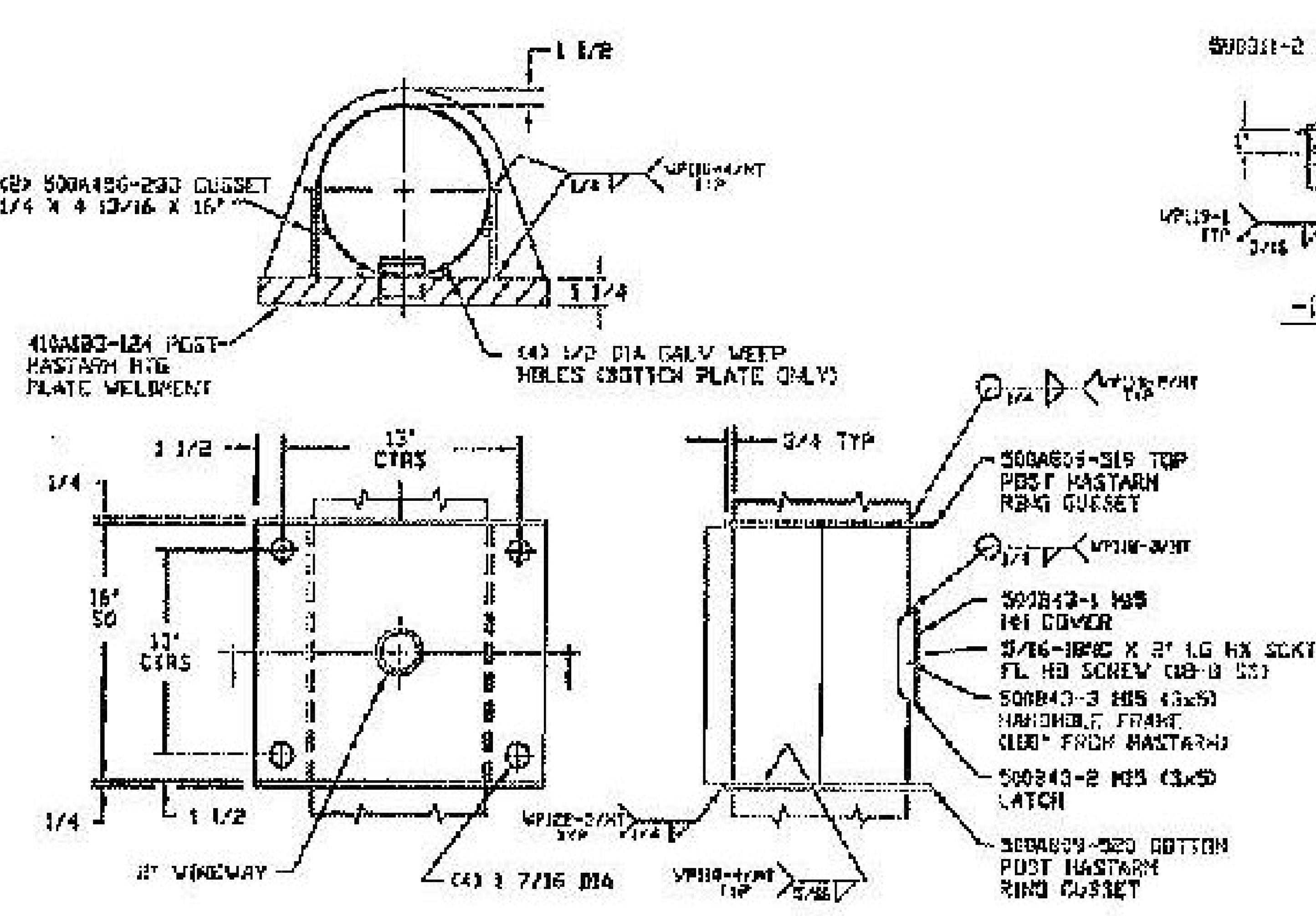
IDENTIFICATION TAG EXAMPLE

PART NO	QTY	DESCRIPTION	"A" POST TAG INFORMATION	"B" MASTARM TAG INFORMATION
780B1270	3	SIGNAL POST	3/16x10x7.2x200 GRADE 55	3/16 X 7.0 X 4.9 X 150 GRADE 55

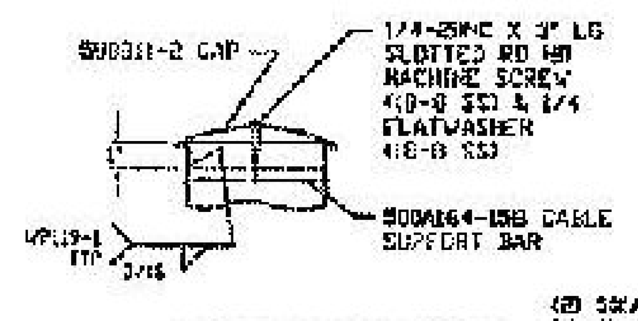
PO#3250-2139 / VT DOT: STP.0284(17) RICHMOND / US ROUTE 2, VT ROUTE 117 US ROUTE 2. OFF-RAMP (RAMP D) MILLERBERND #51660

REV 1/30/14: DETAIL 2, ARM TO TOP GUSS WELD WAS WPS 100 ARM PLATE TO GUSS & BOTTOM WAS 5/16

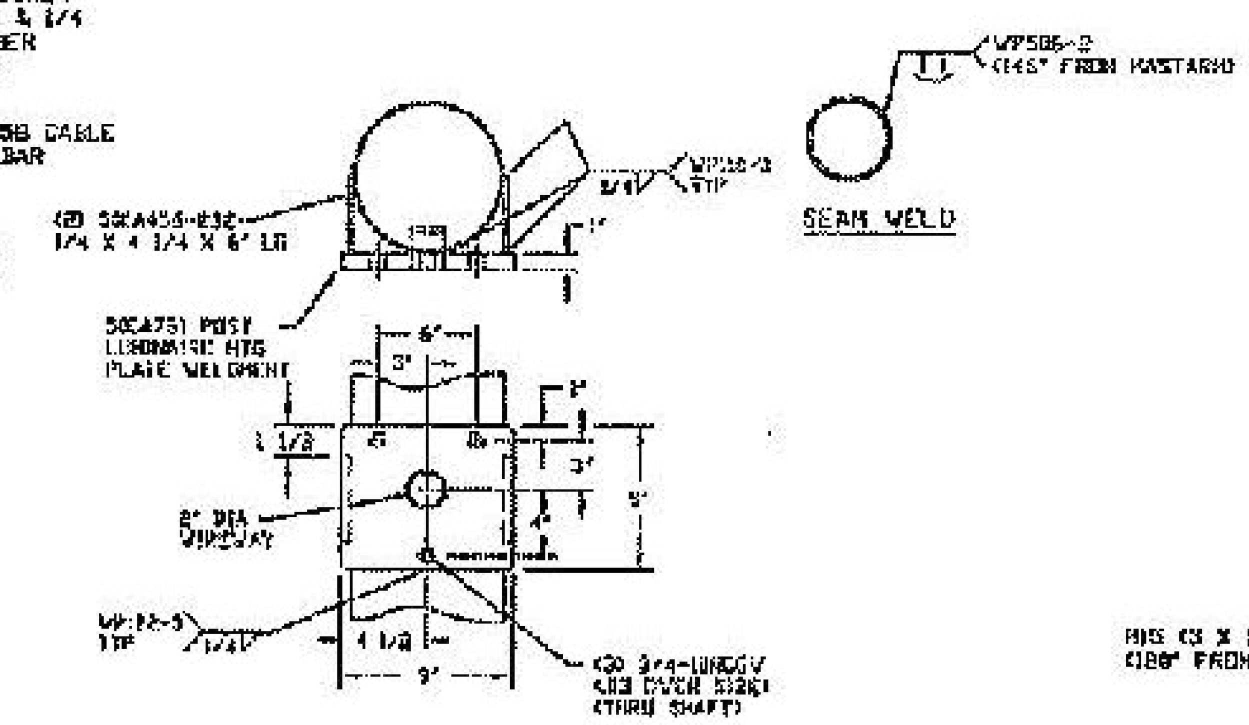
DWN: NIK G	REOHA-200-VT ROUND SIGNAL POST 3/16 X 10.0 X 20'-0" POST	
DATE: 9-17-13		
CHK: REBEKAH	Millerbernd MANUFACTURING CO. WINSTED, MN	780B1270
SCALE: NTS		



-DETAIL (2) POST MASTARM MTG PLATE-

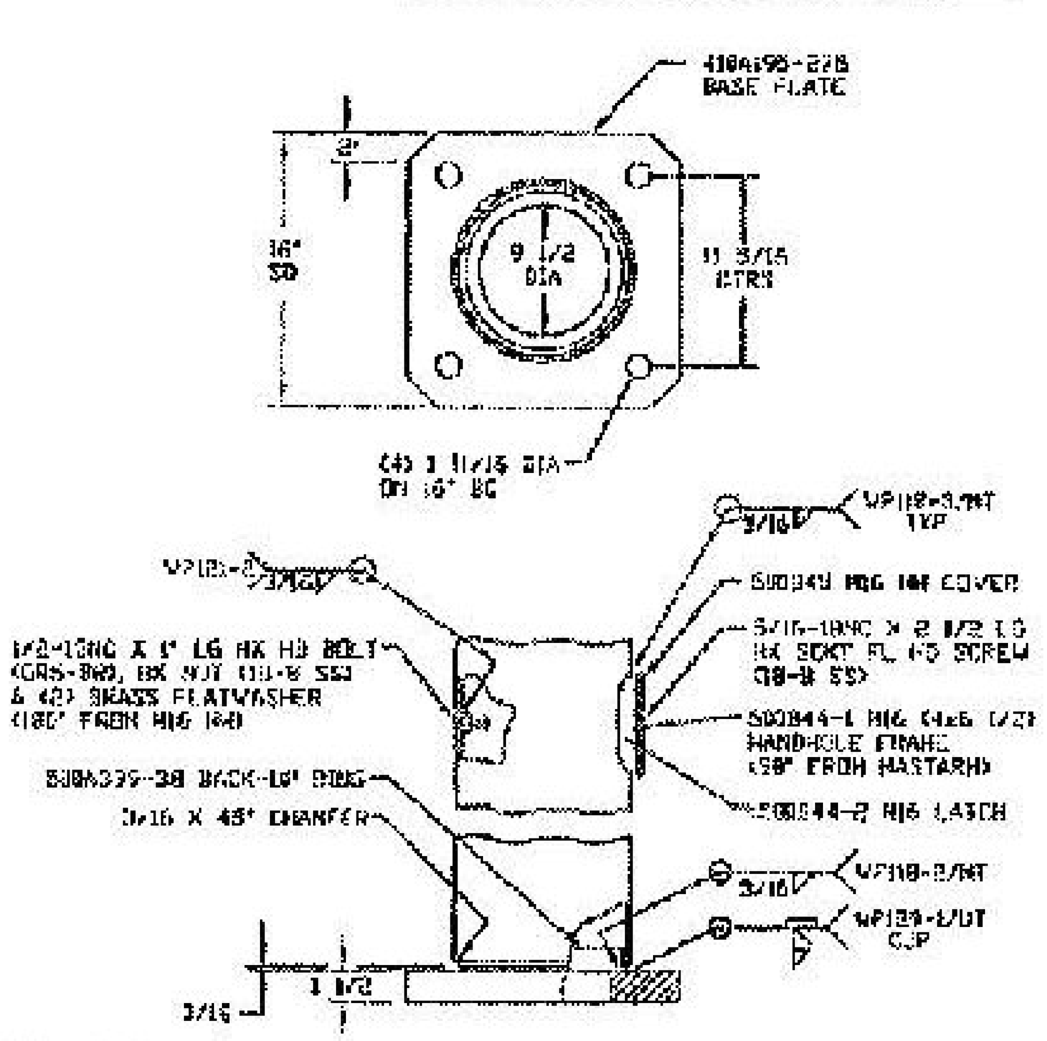


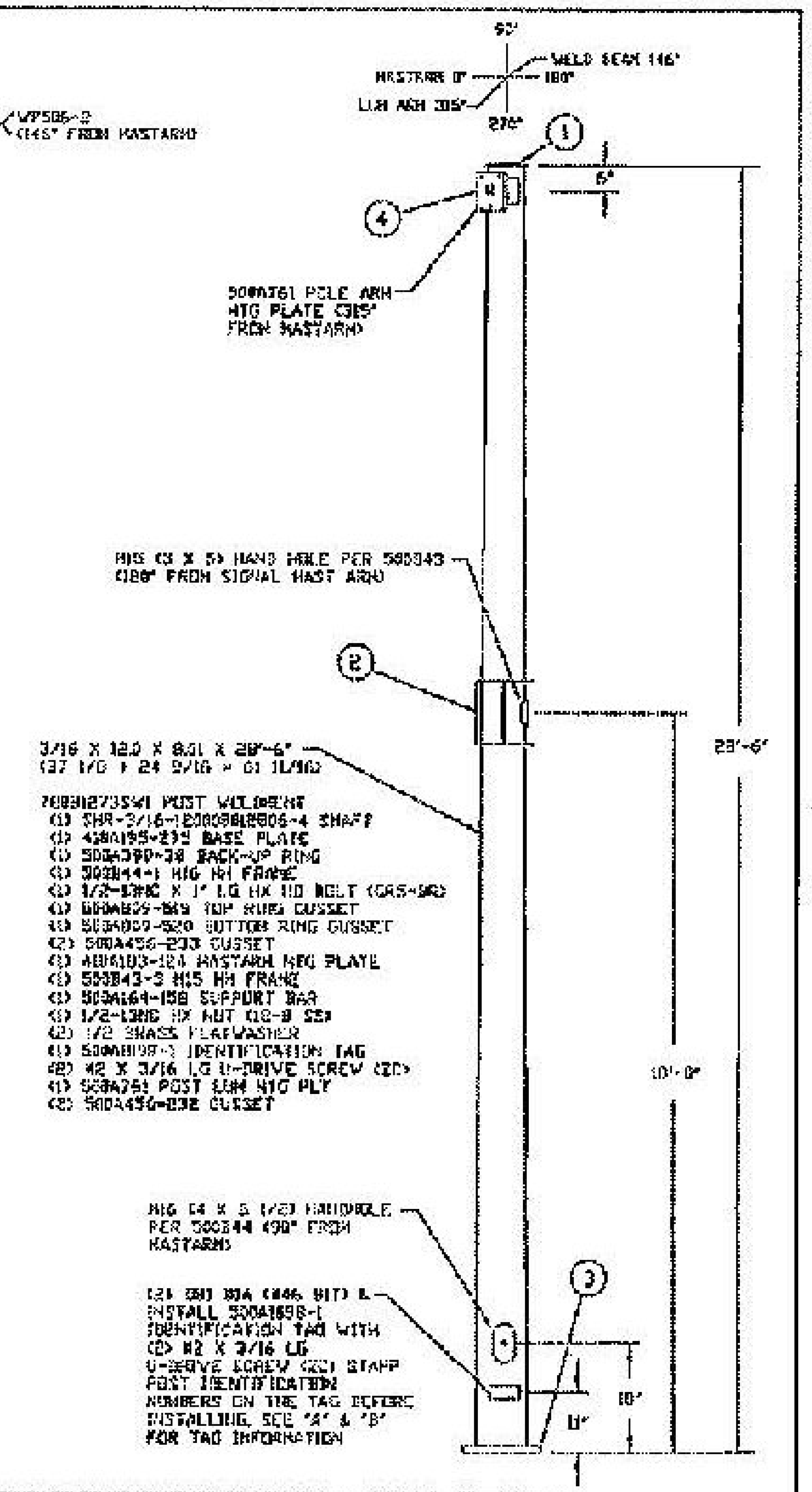
-DETAIL 1 POLE TOP-



DETAIL 4 500A761 POLE ARM MTG PLATE

- DETAIL (1) POST BASE -





IDENTIFICATION TAG EXAMPLE

NOTE:

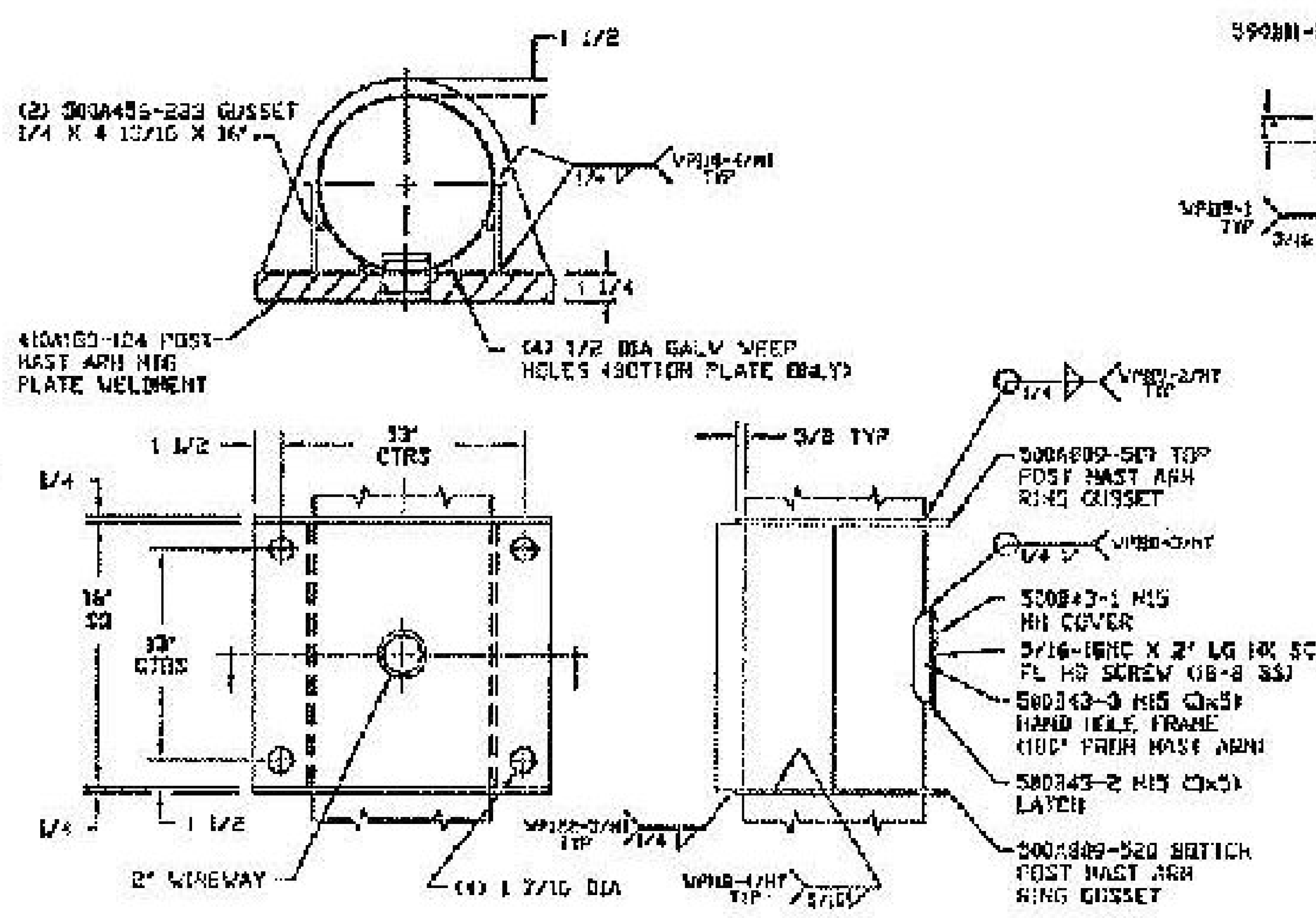
1. MATERIAL - HIGH STRENGTH LOW ALLOY STEEL 50,000 PSI MIN YIELD PER ASTM A572. POST AND MASTARM MOUNTING BASE MATERIAL PER ASTM A36.
2. FINISH -HOT DIP GALVANIZED PER ASTM A123 WITH TOP COAT PAINTED MILLERBERND FLAT BLACK MILLERBERND #PT-1-17-VTU-093-78
3. POST TO BE ROUND TUBE FABRICATED WITH ONE SUBMERSED ARC LONGITUDINAL SEAM WELD WITH 100% PENETRATION 6" FORM BASE PLATE AND 60% FOR REMAINDER. GAS METAL ARC WELDING PROCESS TO BE USED FOR REMAINDER OF WELDED FABRICATION WITH 100% PENETRATION WELD FOR BASE PLATE TO SHAFT CIRCUMFERENTIAL WELD
4. WELD TESTING - 100% PENETRATION WELDS ULTRASONIC TESTED (UT) USING THE CYCLICALLY LOADED ACCEPTANCE/REJECTION CRITERIA TABLE 6.3 OF AWS D1.1 SPECIFICATION. 100% OF THE POST/MASTARMCONNECTION WELDS MAGNETIC PARTICLE TESTED (MT) AND A RANDOM 30% OF REMAINING FILLET WELDS & PARTICLE PENETRATION LONGITUDINAL SEAM WELDS MAGNETIC PARTICLE TESTED (MT)
5. HX HD BOLTS & NUTS (UNLESS SPECIFIED) ASTM A325 GALV A153 FOR SIZES 1/4 TO 1 1/2 DIA & ASTM A354BC GV A153 FOR SIZES OVER 1 1/2 DIA.
6. THE POST AND THE FOLLOWING ITEMS WILL BE SHIPPED UNASSEMBLED:
   (1) 500B45 MI6 HH COVER
   (1) 500B44-2 MI6 HH LATCH
   (1) 5/16-18NC X 2 1/2 LG HX SCKT FL HD SCREW (18-8 SS)
   (1) 590B11-2 STEEL CAP
   (1) 1/4-20NC X 3" LG SLOTTD RD HD MACHINE SCREW (18-8 SS)
   (1) 1/4 FLATWASHER (18-8 SS)
   (1) 500B43-1 MI5 HH COVER
   (1) 500B43-2 MI5 HH LATCH
   (1) 5/16-18NC X 2" LG HX SCKT FL HD SCREW(18-8 SS)

PART NO	QTY	DESCRIPTION	"A" POST TAG INFORMATION	"B" MASTARM TAG INFORMATION
780B1273	1	SIGNAL POST	3/16x12x8.0x286	3/16 X 9.0 X 2.2 X 203 GRADE 55

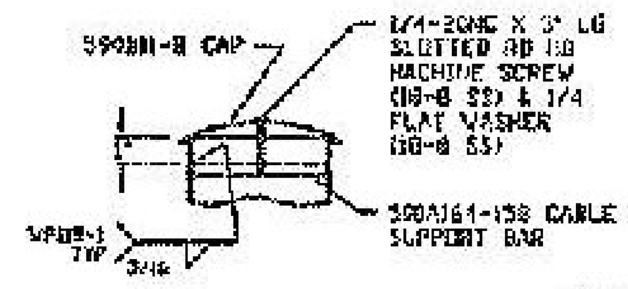
PO#3250-2135 / VT DOT: STP.0234(17) RICHMOND / US ROUTE 2, VT ROUTE 117 / US ROUTE 2, OFF-RAMP (RAMP D) / MMC #51660

REV 1-30-14 DETAIL 2, ARM TO TOP GUSS WELD WAS WP159) ARM PLATE TO GUSS & BOTTOM WAS 3/16
REV 11-27-13 CHG POLE DAF. WAS (8X70) 15: (2.0X80). 80) WAS 15' 15: 16"- PJF
REV 11-19-13 RENAME POST, WAS RE2HX-180/286-J15-VT, DROP -1 IN PN
REV 10-31-13 CORRECT UPPER HAND HOLE CALLOUT ON MAIN VIEW FROM MI6 HH TO MI5 HH

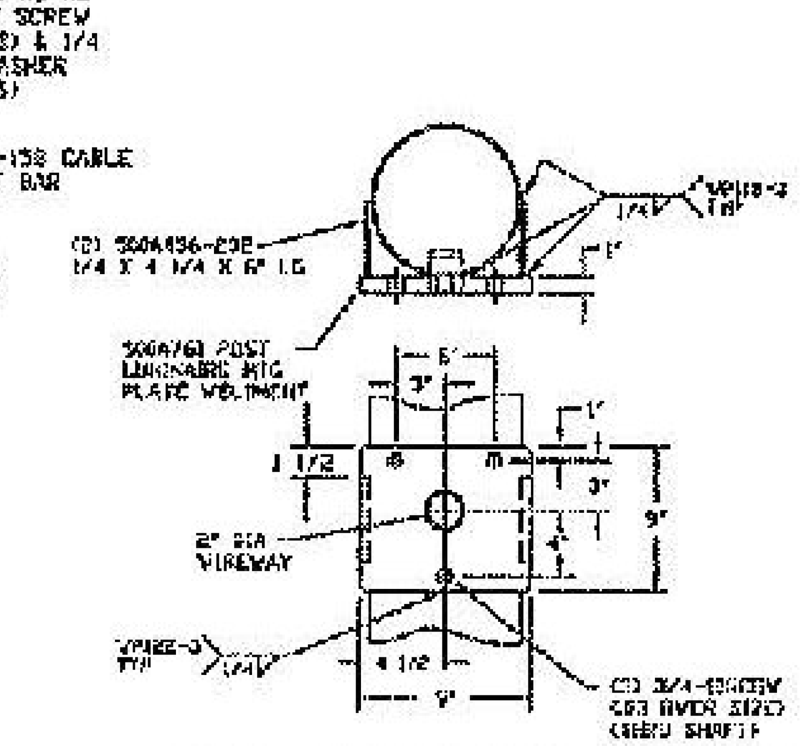
DWN: NIK G.	RE2HA-180/286-J315-VT ROUND SIGNAL POST 3/16 X 12.0 X 28'-6" POST LUMINAIRE ARM AT 315 DEG
DATE: 9-17-13	
CHK: REBEKAH	Millerbernd MANUFACTURING CO. WINSTED, MN — 780B1273
SCALE: NTS	



DETAIL 2 POST MAST ARM MTG PLATE

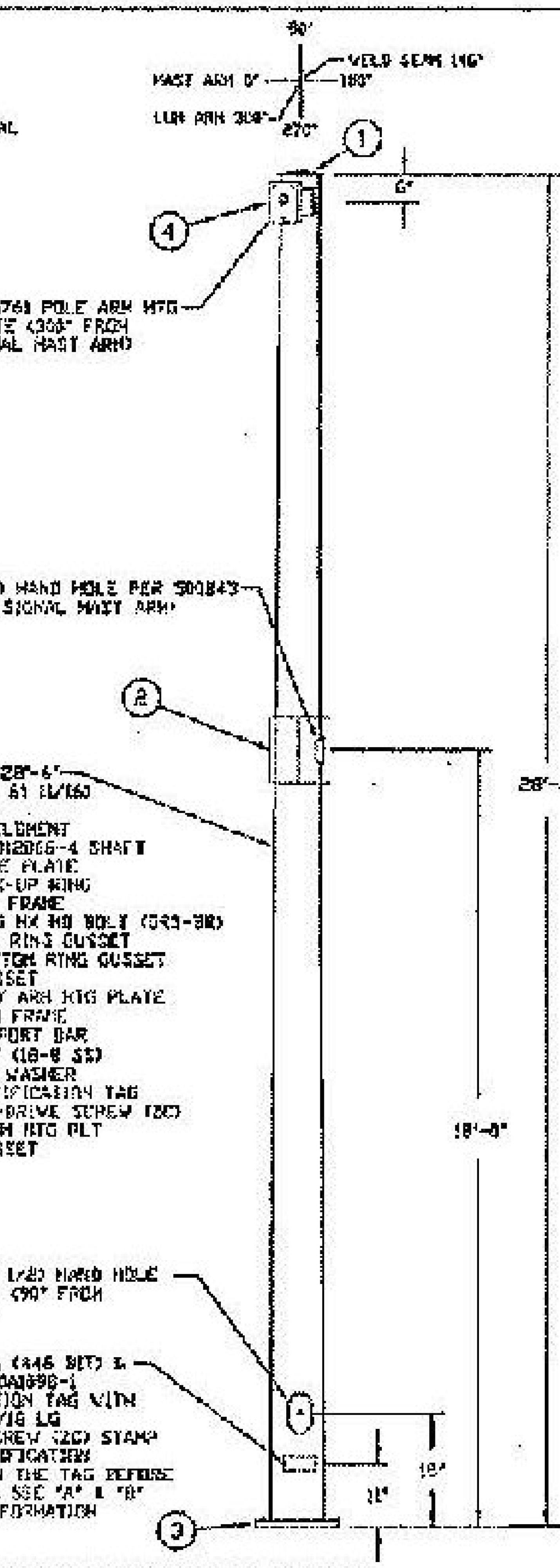


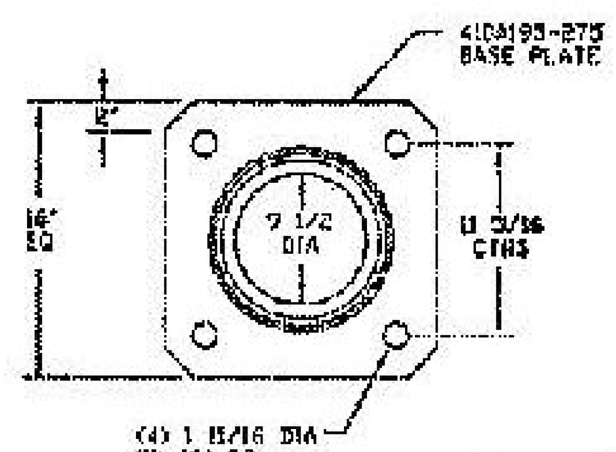
DETAIL 1 POLE TOP

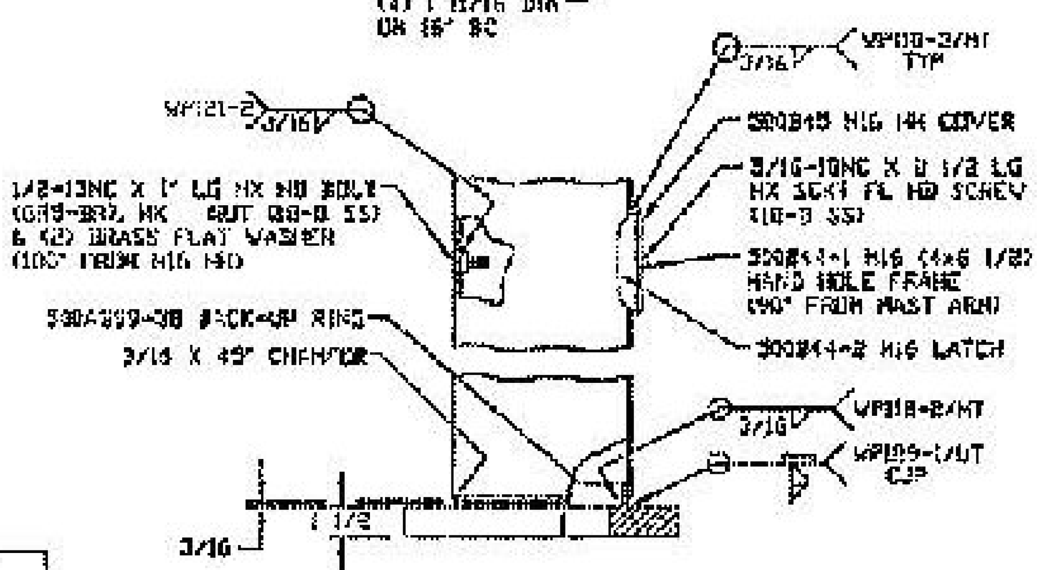


DETAIL 4 500A761 POLE ARM MTG PLATE

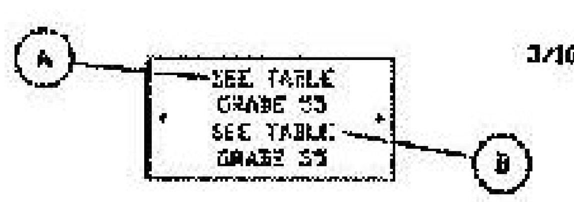
SEAM WELD







DETAIL 3 POST BASE



IDENTIFICATION TAG EXAMPLE

NOTE:

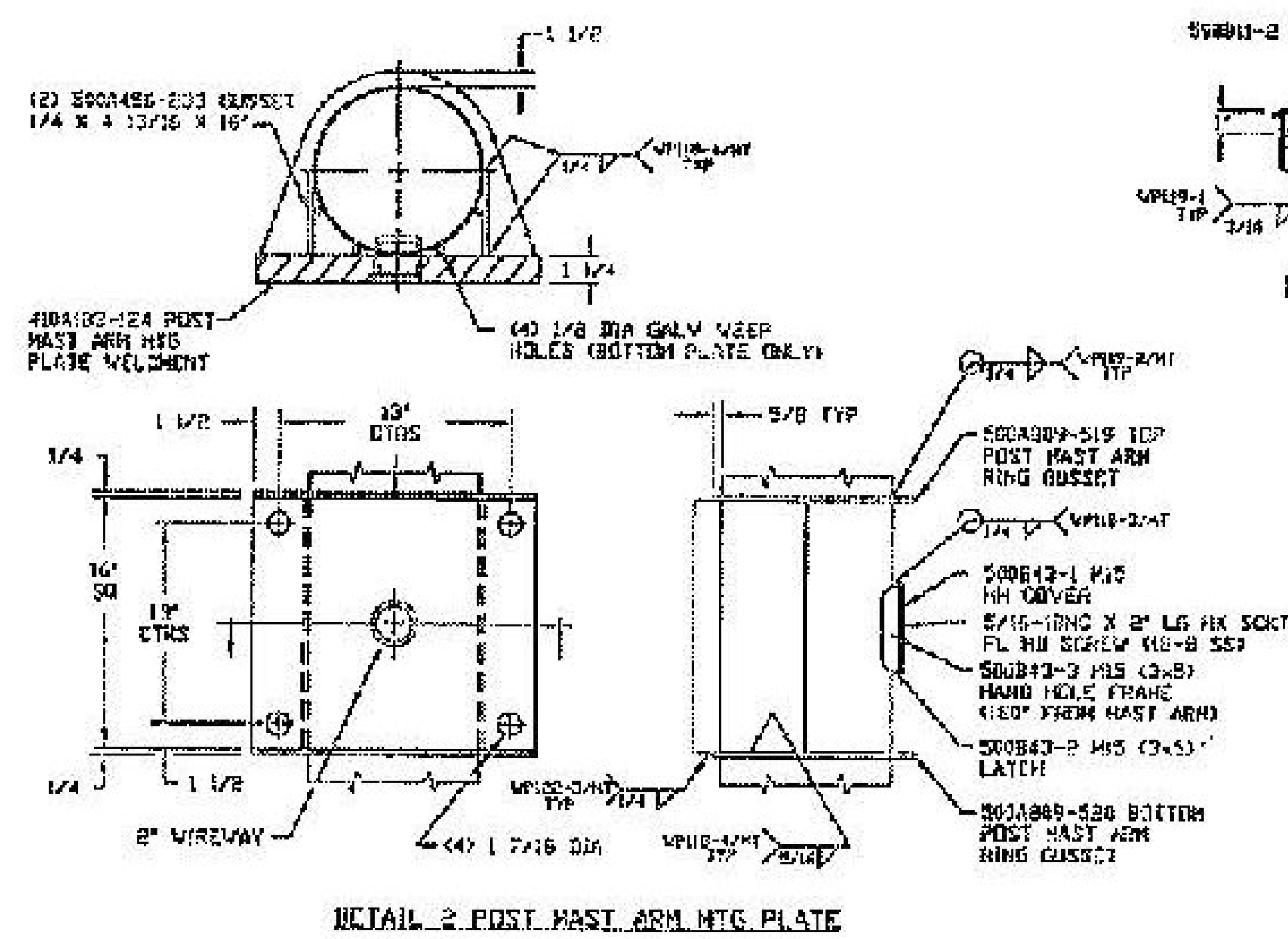
1. MATERIAL-HIGH STRENGTH LOW ALLOY STEEL 55,000 PSI MIN YIELD PER ASTM A572. POST AND MAST ARM MOUNTING BASE MATERIAL PER ASTM A36.
2. FINISH- **HOT DIP GALVANIZED PER ASTM A123 WITH TOP COAT PAINTED MILLERBERND FLAT BLACK MILLERBERND #PT-1-17-FTU-093-FR**
3. POST TO BE ROUND TUBE FABRICATED WITH ONE SUBMERGED ARC LONGITUDINAL SEAM WELD WITH 100% PENETRATION 6' FORM BASE PLATE AND 60% FOR REMAINDER. GAS METAL ARC WELDING PROCESS TO BE USED FOR REMAINDER OF WELDED FABRICATION WITH 100% PENETRATION WELD FOR BASE PLATE TO SHAFT CIRCUMFERENTIAL WELD
4. WELD TESTING-100% PENETRATION WELDS ULTRASONIC TESTED (UT) USING THE CYCLICALLY LOADED ACCEPTANCE/REJECTION CRITERIA TABLE 6.3 OF AWS D1.1 SPECIFICATION. 100% OF THE POST/MAST ARMCONNECTION WELDS MAGNETIC PARTICLE TESTED (MT) AND A RANDOM 30% OF REMAINING FILLET WELDS & PARTICLE PENETRATION LONGITUDINAL SEAM WELDS MAGNETIC PARTICLE TESTED (MT)
5. HX HD BOLTS & NUTS (UNLESS SPECIFIED) ASTM A325 GALV A153 FOR SIZES 1/4 TO 1 1/2 DIA & ASTM A354BC GV A153 FOR SIZES OVER 1 1/2 DIA.
6. THE POST AND THE FOLLOWING ITEMS WILL BE SHIPPED UNASSEMBLED:
   (1) 500B45 M16 HH COVER
   (1) 500B44-2 M16 HH LATCH
   (1) 5/16-18NC X 2 1/2 LG HX SCKT FL HD SCREW (18-8 SS)
   (1) 590B11-23 STEEL CAP
   (1) 1/4-20NC X 3" LG SLOTTD RD HD MACHINE SCREW (18-8 SS)
   (1) 1/4 FLAT WASHER (18-8 SS)
   (1) 500B43-1 M15 HH COVER
   (1) 500B43-2 M15 HH LATCH
   (1) 5/16-18NC X 2" LG HX SCKT FL HD SCREW (18-8 SS)

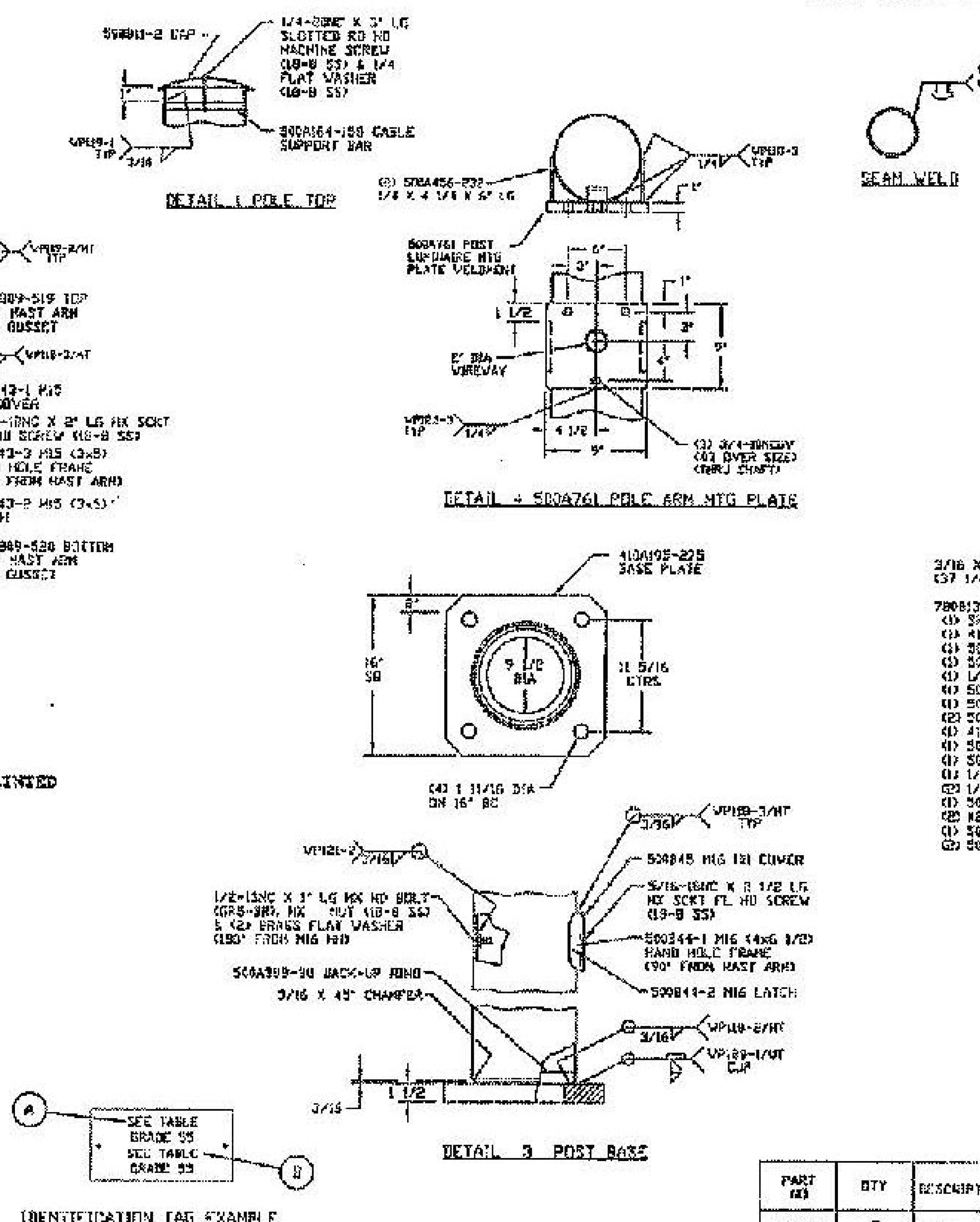
PART NO	QTY	DESCRIPTION	"A" POST TAG INFORMATION	"B" MAST ARM TAG INFORMATION
780B1312	1	SIGNAL POST	3/16x12x8.0x286 GRADE 55	3/16 X 9.0 X 5.3 X 200 GRADE 55

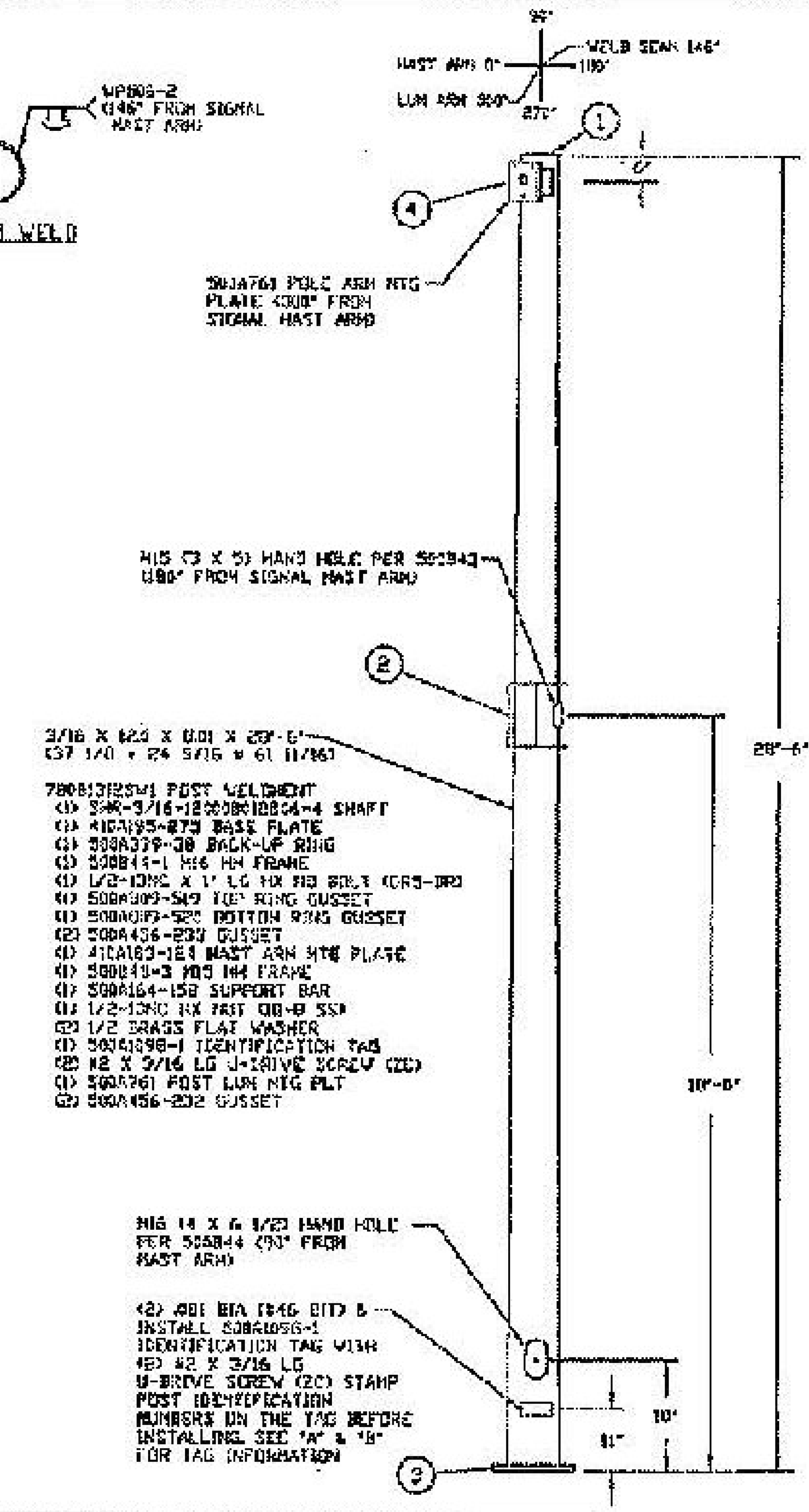
PO#3250-2139 / VT DOT: STP.0264(17) RICHMOND / US ROUTE 2, VT ROUTE 117, US ROUTE 2,OFF-RAMP (RAMP D) / MILLERBERND #51660

REV 1-30-14 DETAIL 2, ARM TO TOP GUSS WELD WAS WP155; ARM PLATE TO GUSS & BOTTOM WAS 8/16

DWN: DOUG F.	RE2HA-180/286-J300-VT ROUND SIGNAL POST 3/16 X 12.0 X 28'-6' POST LUMINAIRE ARM AT 300 DEG
DATE: 11-4-13	
CHK: REBEKAH	Millerbernd MANUFACTURING CO. WINSTED, MN
SCALE: NTS	780B1312







NOTE:

1. MATERIAL-HIGH STRENGTH LOW ALLOY STEEL 55,000 PSI MIN YIELD PER ASTM A572. POST AND MAST ARM MOUNTING BASE MATERIAL PER ASTM A36.

2. FINISH- HOT DIP GALVANIZED PER ASTM A123 WITH TOP COAT PAINTED MILLERBERND FLAT BLACK MILLERBERND #PT-1-17-PTU-093-FR

3. POST TO BE ROUND TUBE FABRICATED WITH ONE SUBMERGED ARC LONGITUDINAL SEAM WELD WITH 100% PENETRATION 6" FORM BASE PLATE AND 60% FOR REMAINDER. GAS METAL ARC WELDING PROCESS TO BE USED FOR REMAINDER OF WELDED FABRICATION WITH 100% PENETRATION WELD FOR BASE PLATE TO SHAFT CIRCUMFERENTIAL WELD

4. WELD TESTING-100% PENETRATION WELDS ULTRASONIC TESTED (UT) USING THE CYCLICALLY LOADED ACCEPTANCE/REJECTION CRITERIA TABLE 6.3 OF AWS D1.1 SPECIFICATION. 100% OF THE POST/MAST ARMCONNECTION WELDS MAGNETIC PARTICLE TESTED (MT) AND A RANDOM 30% OF REMAINING FILLET WELDS & PARTICLE PENETRATION LONGITUDINAL SEAM WELDS MAGNETIC PARTICLE TESTED (MT)

5. HX HD BOLTS & NUTS (UNLESS SPECIFIED) ASTM A325 GALV A153 FOR SIZES 1/4 TO 1 1/2 DIA & ASTM A354BC GV A153 FOR SIZES OVER 1 1/2 DIA.

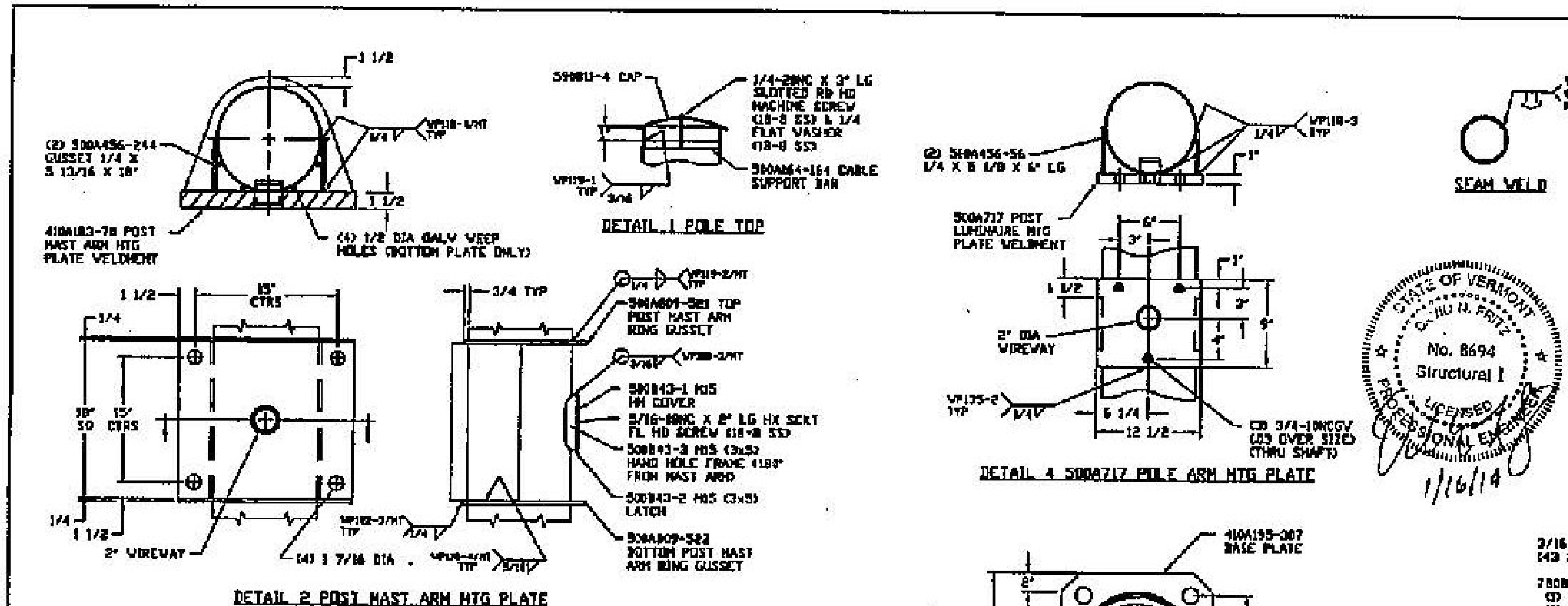
6. THE POST AND THE FOLLOWING ITEMS WILL BE SHIPPED UNASSEMBLED:
   (1) 500345 M16 HH COVER
   (1) 500344-2 M16 HH LATCH
   (1) 5/16-18NC X 2 1/2 LG HX SCKT FL HD SCREW (18-8 SS)
   (1) 590B11-23 STEEL CAP
   (1) 1/4-20NC X 3" LG SLOTTED RD HD MACHINE SCREW (18-8 SS)
   (1) 1/4 FLAT WASHER (18-8 SS)
   (1) 500843-1 M15 HH COVER
   (1) 500843-2 M15 HH LATCH
   (1) 5/16-18NC X 2" LG HX SCKT FL HD SCREW (18-8 SS)

PART (#)	QTY	DESCRIPTION	"A" POST TAG INFORMATION	"B" MAST ARM TAG INFORMATION
780B1312	1	SIGNAL POST	3/16x12x28-6x266 GRADE 55	3/16 X 9.0 X 5.5 X 250 GRADE 55

PO#3250-2135 / VT DOT: STP.0284(17) RICHMOND / US ROUTE 3, VT ROUTE 117, DD ROUTE 2, OFF-RAMP (RAMP D) / MILLERBERND #51660

REV 1-30-14 DETAIL 2, ARM TO TOP GUSS WELD WAS VP(3/8) ARM PLATE TO GUSS & BOTTOM WAS 5/16

DWN: DOUG F.	RE2HA-180/286-J300-VT ROUND SIGNAL POST 3/16 X 12.0 X 28'-6" POST LUMINAIRE ARM AT 300 DEG
DATE: 11-4-13	
CHK: RESEKAH	Millerbernd MANUFACTURING CO. WINSTED, MN — 780B1312
SCALE: NTS	

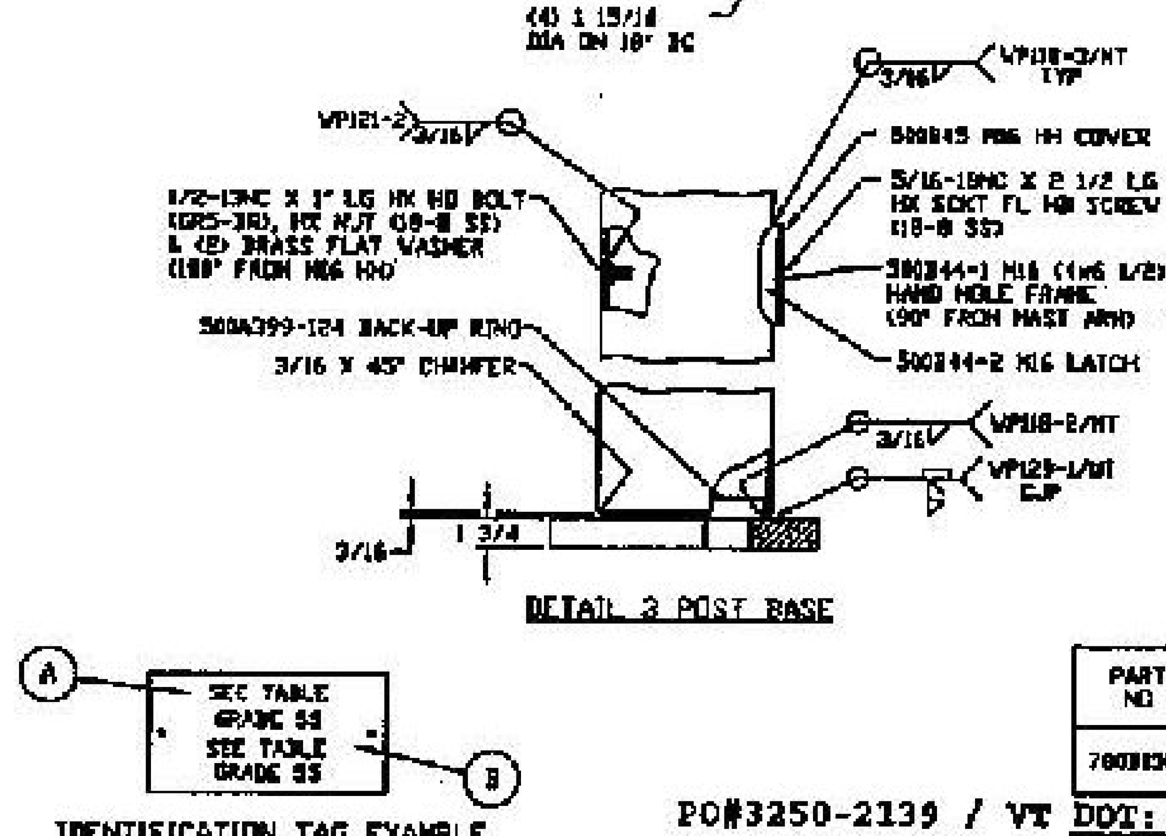


DETAIL 1 POLE TOP

DETAIL 2 POST MAST ARM MTG PLATE

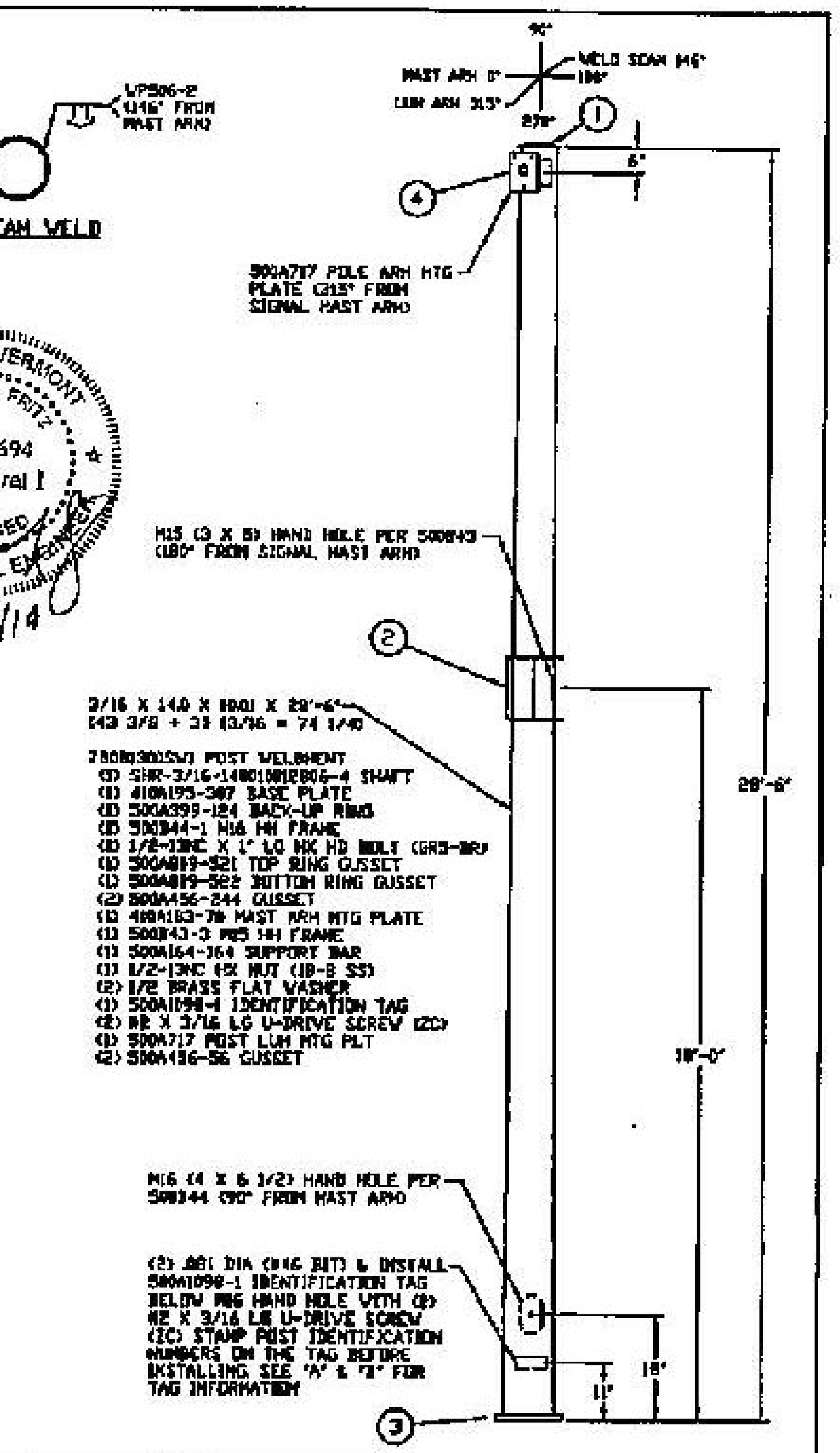
DETAIL 4 500A717 POLE ARM MTG PLATE

SEAM WELD



DETAIL 3 POST BASE

IDENTIFICATION TAG EXAMPLE



NOTE:

1. MATERIAL-HIGH STRENGTH LOW ALLOY STEEL 55,000 PSI MIN YIELD PER ASTM A572. POST AND MAST ARM MOUNTING BASE MATERIAL PER ASTM A36.
2. FINISH-HOT DIP GALVANIZED PER ASTM A123 WITH TOP COAT PAINTED MILLERBERND FLAT BLACK MILLERBERND #PI-1-17-FTU-093-FR
3. POST TO BE ROUND TAPERED TUBE FABRICATED WITH ONE SUBMERGED ARC LONGITUDINAL SEAM WELD WITH 100% PENETRATION 6" FORM BASE PLATE AND 60% FOR REMAINDER. GAS METAL ARC WELDING PROCESS TO BE USED FOR REMAINDER OF WELDED FABRICATION WITH 100% PENETRATION WELD FOR BASE PLATE TO SHAFT CIRCUMFERENTIAL WELD
4. WELD TESTING-100% PENETRATION WELDS ULTRASONIC TESTED (UT) USING THE CYCLICALLY LOADED ACCEPTANCE/REJECTION CRITERIA TABLE 6.3 OF AWS D1.1 SPECIFICATION. 100% OF THE POST/MAST ARMCONNECTION WELDS MAGNETIC PARTICLE TESTED (MT) AND A RANDOM 30% OF REMAINING FILLET WELDS & PARTICLE PENETRATION LONGITUDINAL SEAM WELDS MAGNETIC PARTICLE TESTED (MT)
5. HX HD BOLTS & NUTS (UNLESS SPECIFIED) ASTM A325 GALV A153 FOR SIZES 1/4 TO 1 1/2 DIA & ASTM A354BC GV A153 FOR SIZES OVER 1 1/2 DIA.
6. THE POST AND THE FOLLOWING ITEMS WILL BE SHIPPED UNASSEMBLED:
   - (1) 500B45 M16 HH COVER
   - (1) 500B44-2 M16 HH LATCH
   - (1) 5/16-18NC X 2 1/2 LG HX SCKT FL HD SCREW (18-8 SS)
   - (1) 590B11-4 STEEL CAP
   - (1) 1/4-20NC X 3" LG SLOTTD RD HD MACHINE SCREW (18-8 SS)
   - (1) 1/4 FLAT WASHER (18-8 SS)
   - (1) 500B43-1 M15 HH COVER
   - (1) 500B43-2 M15 HH LATCH
   - (1) 5/16-18NC X 2" LG HX SCKT FL HD SCREW (18-8 SS)

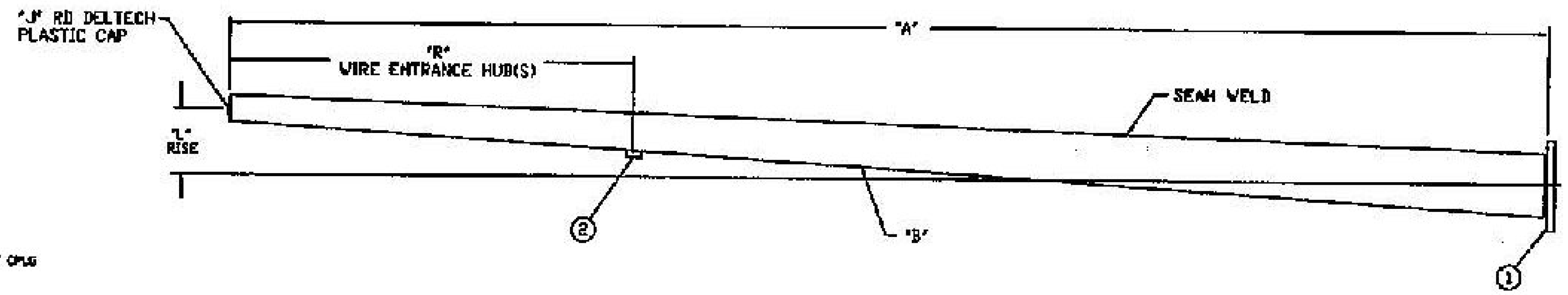
PART NO	QTY	DESCRIPTION	"A" POST TAG INFORMATION	"B" MAST ARM TAG INFORMATION
780B1300	1	SIGNAL POST	3/16x14x10.0x286 GRADE 55	3/16 X 11.0 X 5.8 X 300 GRADE 55

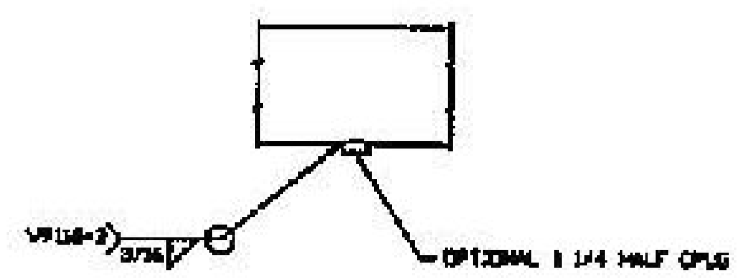
PO#3250-2139 / VT DOT: STP.0284(17) RICHMOND / US ROUTE 2, VT ROUTE 117
US ROUTE 2,
OFF-RAMP (RAMP D)
MILLERBERND #51660

REV 12-11-13 WAS (28X8.0) IS 14.0X10- PJF

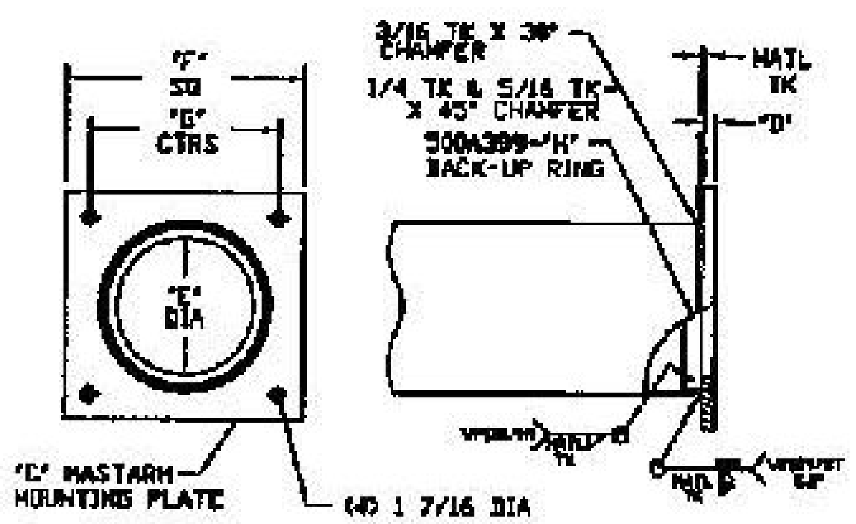
DWN: DOUG F.	RE4HA-180/286-J3I5-VT ROUND SIGNAL POST 3/16 X 14.0 X 28'-6" POST LUMINAIRE ARM AT 315 DEG
DATE: 10-30-13	
CHK: REBEKAH	MILLERBERND 622 6TH ST. SO. WINSTED, MN 55395
SCALE: NTS	780B1300

APPROVED
By Derek Lyman at 8:55 am, Feb 11, 2014





-DETAIL ② OPTIONAL MASTARM SIGNAL WIRE ENTRANCE HUB(S)-



-DETAIL ① MASTARM BASE-

DASH NO "A" LENGTH & TK	QTY	POST SIZE	"B" SHAFT SIZE	SHAFT BLANK SIZE	"C" BASE PLATE 410A193-	"D" BASE TK	"E" BASE DIA CUTOUT	"F" BASE SQ	"G" HOLE CTRS	"H" BACK-UP RING 500A399-	"J" DELTECH PLASTIC CAP	"K" BOLT LG	"L" RISE
P15C7	3	E0	3/16 X 7.0 X 4.90 X 15'-0"	21 3/8 + 14 13/16 = 36 3/16	291	1 1/4	4 1/2	14"	11"	500A399-12	5" 8600021	4 1/2	3.0"
P19C7		E0	3/16 X 7.0 X 4.34 X 19'-0"	21 3/8 + 13 1/16 = 34 7/16	35	1 1/4	4 1/2	16 1/2	12 1/2	500A399-12	4 1/4 8600018	4 1/2	2.0"
P20C7		E0	3/16 X 7.0 X 4.20 X 20'-0"	21 3/8 + 12 5/8 = 34"	291	1 1/4	4 1/2	14"	11"	500A399-12	4 1/4 8600018	4 1/2	3.0"
P20C8		E1	3/16 X 8.0 X 5.20 X 20'-0"	24 9/16 + 15 3/4 = 40 5/16	302	1 1/4	5 1/2	15"	12"	500A399-13	5 1/4 8600022	4 1/2	3.0"
P20C9	2	E2	3/16 X 9.0 X 6.20 X 20'-0"	27 11/16 + 18 3/4 = 46 9/16	188	1 1/4	6 1/2	16"	13"	500A399-51	6 1/4 8600022	4 1/2	3.0"
P25C7		E0	3/16 X 7.0 X 3.5 X 25'-0"	21 3/8 + 10 7/16 = 31 13/16	291	1 1/4	4 1/2	14"	11"	500A399-12	3 1/2 8600015	4 1/2	3.0"
P25C8		E1	3/16 X 8.0 X 4.5 X 25'-0"	24 9/16 + 13 9/16 = 38 1/8	271	1 1/4	5 1/2	15"	12"	500A399-13	4 1/2 8600019	4 1/2	3.0"
P25C9	1	E2	3/16 X 9.0 X 5.5 X 25'-0"	27 11/16 + 16 11/16 = 44 3/8	188	1 1/4	6 1/2	16"	13"	500A399-51	5 1/2 8600019	4 1/2	3.0"
P30C8		E1	3/16 X 8.0 X 3.8 X 30'-0"	24 9/16 + 11 3/8 = 35 15/16	271	1 1/4	5 1/2	15"	12"	500A399-13	3 3/4 8600016	4 1/2	3.0"
P30C9		E2	3/16 X 9.0 X 4.8 X 30'-0"	27 11/16 + 14 1/2 = 42 3/16	188	1 1/4	6 1/2	16"	13"	500A399-51	4 3/4 8600020	4 1/2	3.0"
P30C1	1	E4	3/16 X 11.0 X 6.8 X 30'-0"	33 15/16 + 20 3/4 = 54 3/4	169	1 1/2	8 1/2	18"	15"	500A399-110	6 3/4 8600034	5"	3.0"
P32C9		E2	3/16 X 9.0 X 4.52 X 32'-0"	27 11/16 + 13 5/8 = 41 5/16	6	1 1/4	7 1/8	16 1/2	13 1/2	500A399-51	4 1/2 8600019	4 1/2	2.5"
P35C0		B3	3/16 X 10.0 X 5.1 X 35'-0"	30 13/16 + 15 7/16 = 46 1/4	21	1 1/2	8"	17 1/2	14 1/2	500A399-23	5" 8600021	5"	3.0"
P46D1		B3	1/4 X 11.0 X 4.56 X 46'-0"	33 3/4 + 13 9/16 = 47 5/16	82	1 3/4	9"	18 1/2	15 1/2	500A399-21	4 1/2 8600019	5"	3.0"

NOTE :

1. MATERIAL- HIGH STRENGTH LOW ALLOY STEEL 55,000 PSI MIN YIELD PER ASTM A572 OR A1011. MOUNTING PLATE MATERIAL PER ASTM A36.
2. FINISH-HOT DIP GALVANIZED PER ASTM A123 WITH TOP COAT PAINTED MILLERBERND FLAT BLACK MILLERBERND #PY-1-17-FTU-093-FR
3. MASTARM TO BE ROUND TUBE FABRICATED WITH ONE SUBMERGED ARC LONGITUDINAL SEAM WELD WITH 100% PENETRATION 6" FROM BASE PLATE & 60% FOR REMAINDER. GAS METAL ARC WELDING PROCESS TO BE USED FOR THE REMAINDER OF WELDED FABRICATION.
4. WELD TESTING- 100% PENETRATION WELDS ULTRASONIC TESTED (UT) USING THE CYCLICALLY LOADED ACCEPTANCE/REJECTION CRITERIA TABLE 6.3 OF AWS D1.1 SPECIFCATION. A RANDOM 30% OF REMAINING FILLET WELDS & PARTIAL PENETRATION LONGITUDINAL SEAM WELDS MAGNETIC PARTICLE TESTED (MT)
5. HEX HEAD BOLTS & NUTS (UNLESS SPECIFIED) ASTM A325 GALV A153
6. TO ADD OPTIONAL WIRE ENTRANCE HUB(S) ADD TO END OF PART NUMBER SLASH W AND NUMBER OF FEET FROM END OF MASTARM EX) 730B94-P35C0/W11-23
7. THE MASTARM & FOLLOWING ITEMS WILL BE SHIPPED UNASSEMBLED:
   (4) 1 1/4-7NC X "K" LG HVY HX BOLT (A325 GV)
   (4) 1 1/4-7NC HVY HX NUT (A563 GV)
   (4) 1 1/4 LOCKWASHER (GV)
   (1) "J" RD DELTECH PLASTIC CAP

STATE OF VERMONT
DAVID M. FRITZ
No. 8694
Structural I
LICENSED PROFESSIONAL ENGINEER
1/16/14

2	15'	ADVISE	780B94-P15C7/ADVISE (ADVISE 2,3, or 4 CPLG)
1	15'	ADVISE	780B94-P15C7/ADVISE (ADVISE 1, or 2 CPLG)
2	20'	ADVISE	780B94-P20C9/ADVISE (ADVISE 2, or 3 CPLG)
1	25'	ADVISE	780B94-P25C9/ADVISE (ADVISE 2, or 3 CPLG)
1	30'	ADVISE	780B94-P30C1/ADVISE (ADVISE 2, or 3 CPLG)
QTY	"A" LENGTH	"R" OPTIONAL WIRE ENTRANCE HUB LOCATION(S)	780B94-DASH NUMBER 780B94-P35C0/W11-23

PO#3250-2139 / VT DOT: STP.0284(17) RICHMOND / US ROUTE 2, VT ROUTE 117
US ROUTE 2,
OFF-RAMP (RAMP D)
MILLERBERND #51660
REV 9-23-13 CHANGED GRADE 50 TO 55

DWN: PAUL F.	R(B3,E2,E0)HA-VT ROUND SIGNAL MASTARM WITH 1 1/4 WIRE ENTRANCE HUB(S) FOR SIGNAL HEAD(S)	
DATE: 3-27-06		
CHK: WILL Q.	Millerbernd MANUFACTURING CO. WINSTED, MN	780B94
SCALE: NTS		

APPROVED
By Derek Lyman at 8:55 am, Feb 11, 2014