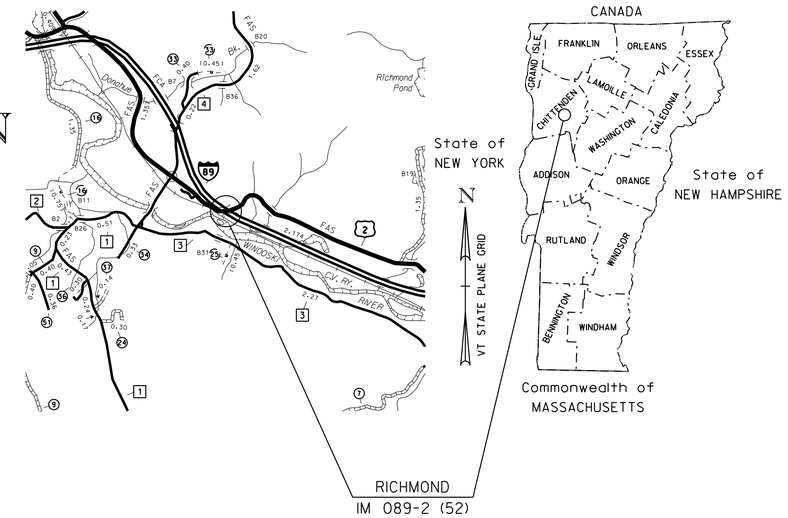
1) TRAFFIC WILL BE MAINTAINED ON THE EXISTING STRUCTURE AND PHASED AS SHOWN IN THE PLANS. ADDITIONAL CONSIDERATION WILL NEED TO BE MADE DUE TO THE FIRE STATION BEING WITHIN THE PROJECT LIMITS. IT CANNOT BE CLOSED. A SECOND ACCESS LOCATION MAY BE NEEDED IF THE MAIN DRIVE IS BLOCKED DURING CONSTRUCTION.

2) PROJECT WILL REQUIRE OPERATIONAL AND CONSTRUCTION STORM WATER PERMITS.

3) UTILITY RELOCATION AND ROW WILL BE REQUIRED.

4) BORINGS HAVE NOT BEEN COMPLETED SO STRUCTURE LAYOUT AND FOUNDATION TYPE IS SUBJECT TO CHANGE.

STATE OF VERMONT
AGENCY OF TRANSPORTATION



PROPOSED IMPROVEMENT
BRIDGE PROJECT

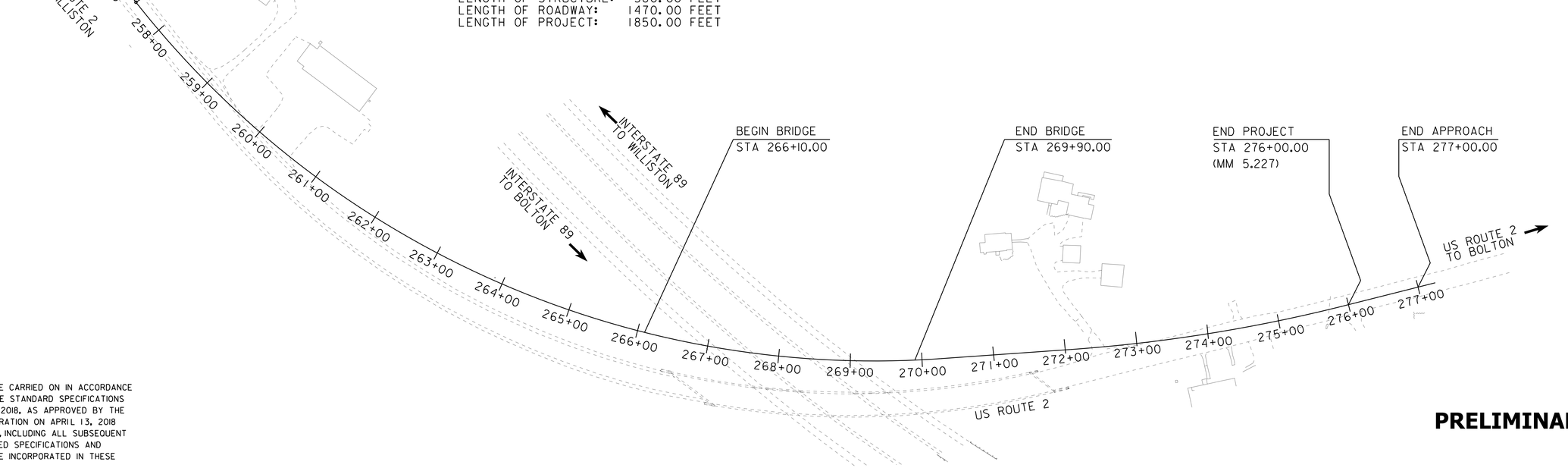
TOWN OF RICHMOND
COUNTY OF CHITTENDEN

ROUTE NO : US ROUTE 2, MAJOR COLLECTOR, BRIDGE 29

PROJECT LOCATION: APPROXIMATELY 1.9 MILES EAST OF THE INTERSECTION OF US ROUTE 2 AND VT ROUTE 117

PROJECT DESCRIPTION: REPLACEMENT OF BRIDGE NO. 29 ON US-2 IN RICHMOND OVER I-89

LENGTH OF STRUCTURE: 380.00 FEET
LENGTH OF ROADWAY: 1470.00 FEET
LENGTH OF PROJECT: 1850.00 FEET



CONSTRUCTION IS TO BE CARRIED ON IN ACCORDANCE WITH THESE PLANS AND THE STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 2018, AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION ON APRIL 13, 2018 FOR USE ON THIS PROJECT, INCLUDING ALL SUBSEQUENT REVISIONS AND SUCH REVISED SPECIFICATIONS AND SPECIAL PROVISIONS AS ARE INCORPORATED IN THESE PLANS.

PRELIMINARY PLANS

QUALITY ASSURANCE PROGRAM : LEVEL 2

SURVEYED BY : VTRANS
SURVEYED DATE : 08/06/2018

DATUM
VERTICAL NAVD 88 FT
HORIZONTAL NAD 83 (2011) SPC (4400 VT) 5FT

SCALE 1" = 80'-0"
80 0 80

HIGHWAY DIVISION, CHIEF ENGINEER
APPROVED _____ DATE _____

PROJECT MANAGER : CAROLYN COTA, P.E.

PROJECT NAME : RICHMOND
PROJECT NUMBER : IM 089-2 (52)

SHEET 1 OF 53 SHEETS

STATE OF VERMONT
AGENCY OF TRANSPORTATION

PRELIMINARY INFORMATION SHEET (BRIDGE)

Version
LRFD

INDEX OF SHEETS

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2	PRELIMINARY INFORMATION
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5	DETOUR PHASING TYPICALS
6	DETOUR PHASING DETAILS
7	DRIVEWAY DETAILS
8	SYMBOLOGY LEGENDS
9	TIE SHEET
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20	MATERIAL TRANSITION DETAIL
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DETAIL SHEETS

STANDARDS LIST

FINAL HYDRAULIC REPORT

TRAFFIC MAINTENANCE NOTES

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

DESIGN VALUES

1.	DESIGN LIVE LOAD		HL-93
2.	FUTURE PAVEMENT	d_p:	2.5 INCH
3.	ABUTMENT BEARING TO BEARING LENGTH (TWO SPANS) (189.00 - 189.00) FT	L:	378.00 FT
4.	MIN. MID-SPAN POS. CAMBER @ RELEASE (PRESTRESSED UNITS)	Δ:	- - -
5.	PRESTRESSING STRAND	f_y:	- - -
6.	PRESTRESSED CONCRETE STRENGTH	f'_c:	- - -
7.	PRESTRESSED CONCRETE RELEASE STRENGTH	f'_{ci}:	- - -
8.	HIGH PERFORMANCE CONCRETE, CLASS PCD	f'_c:	4.0 KSI
9.	HIGH PERFORMANCE CONCRETE, CLASS PCS	f'_c:	3.5 KSI
10.	CONCRETE HIGH PERFORMANCE, CLASS PSS	f'_c:	4.0 KSI
11.	CONCRETE, CLASS C	f'_c:	3.0 KSI
12.	REINFORCING STEEL	f_y:	60 KSI
13.	STRUCTURAL STEEL AASHTO M270 (WEATHERING)	f_y:	50 KSI
14.	NOMINAL BEARING RESISTANCE OF SOIL	q_n:	4.0 KSF
15.	SOIL BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	ϕ:	- - -
16.	NOMINAL BEARING RESISTANCE OF ROCK	q_n:	10.0 KSF
17.	ROCK BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	ϕ:	- - -
18.	PILE RESISTANCE FACTOR	ϕ:	- - -
19.	LATERAL PILE DEFLECTION	Δ:	- - -
20.	BASIC WIND SPEED	V_{3s}:	- - -
21.	MINIMUM GROUND SNOW LOAD	p_g:	- - -
22.	SEISMIC DATA PGA: - - -	S_s:	- - -
		S_1:	- - -
23.			
24.			- - -
25.			- - -
26.			- - -

LRFR LOAD RATING FACTORS

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

TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT
2022	2400	320	67	0.9	230
2042	2600	350	67	1.3	380

20 year ESAL for flexible pavement from 2022 to 2042 : 1493000

40 year ESAL for flexible pavement from 2022 to 2062 : 3616000

Design Speed : 40 mph

AS BUILT "REBAR" DETAIL

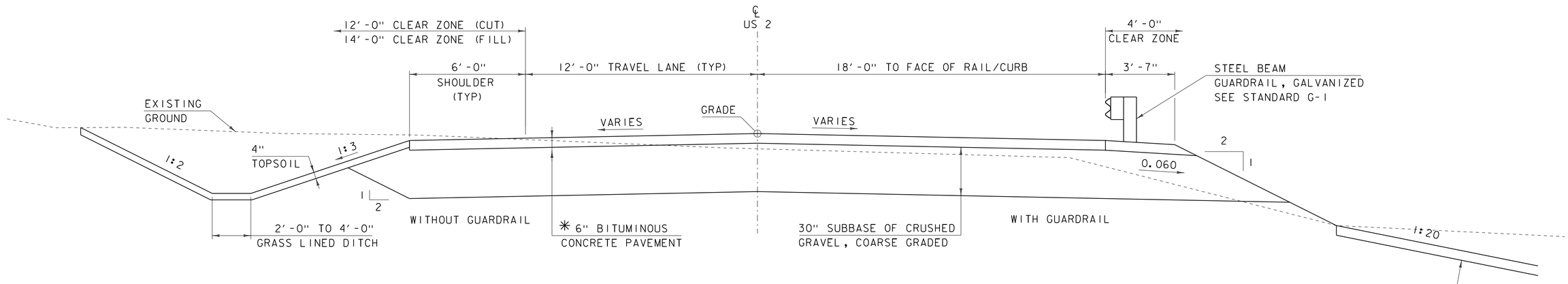
LEVEL I	LEVEL II	LEVEL III
TYPE:	TYPE:	TYPE:
GRADE:	GRADE:	GRADE:

PROJECT NAME: **RICHMOND**

PROJECT NUMBER: **IM 089-2(52)**

FILE NAME: **P1 Sheet Builder_v008-20c.xls**
PROJECT LEADER: **C.CARLSON**
DESIGNED BY: **D.PETERSON**
PRELIMINARY INFORMATION SHEET 1

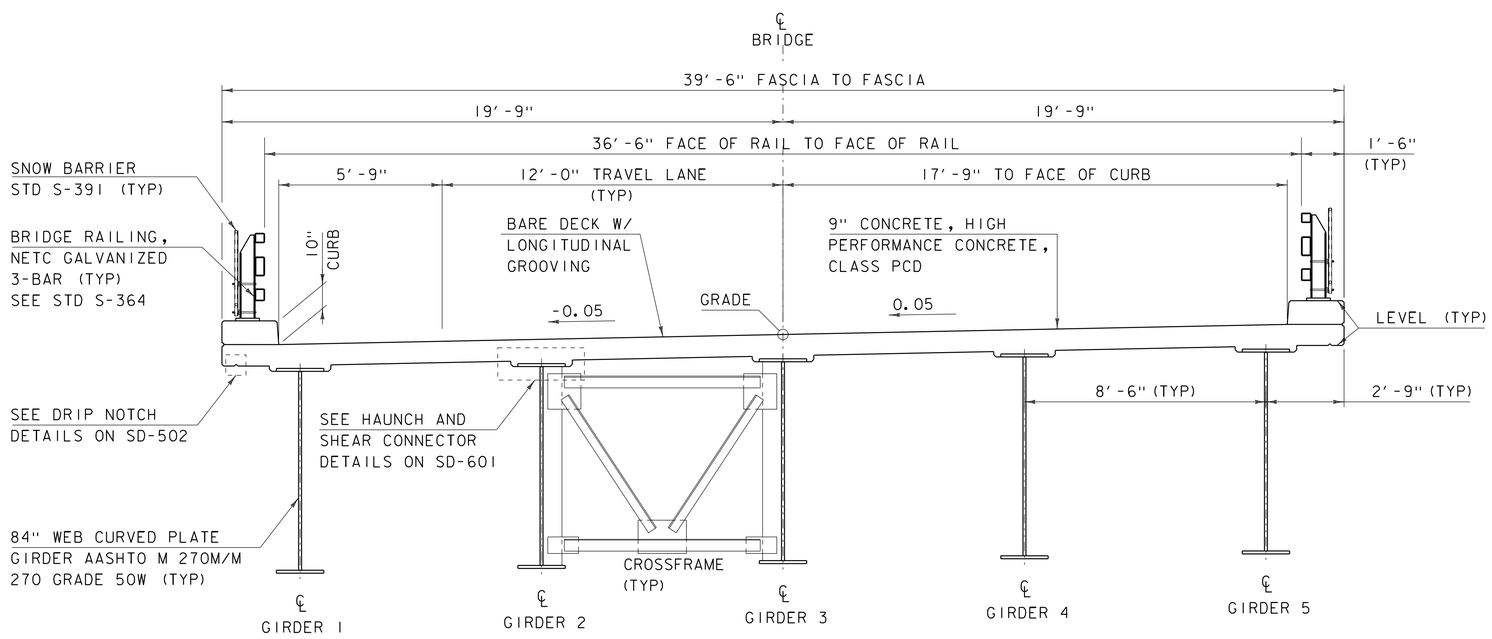
PLOT DATE: 3/7/2020
DRAWN BY: **D.KARABEGOVIC**
CHECKED BY: **D.PETERSON**
SHEET 2 OF 51



PROPOSED US ROUTE 2 TYPICAL SECTION

SCALE 3/8" = 1'-0"

* BITUMINOUS CONCRETE PAVEMENT
  1 1/2" TYPE IVS WEARING COURSE
  1 1/2" TYPE IVS BINDER COURSE OVER
  3" TYPE IIS BASE COURSE



BRIDGE TYPICAL SECTION

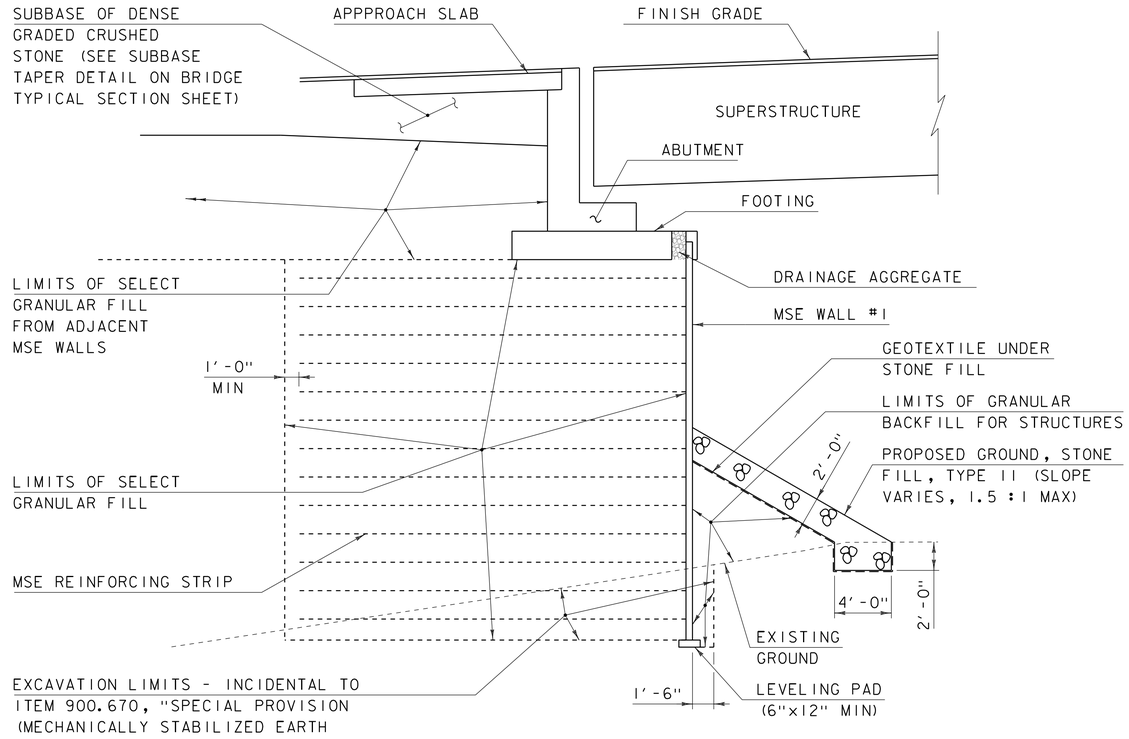
SCALE 3/8" = 1'-0"

MATERIAL TOLERANCES (IF USED ON PROJECT)	
SURFACE	
- PAVEMENT (TOTAL THICKNESS)	+/- 1/4"
- AGGREGATE SURFACE COURSE	+/- 1/2"
SUBBASE	+/- 1"
SAND BORROW	+/- 1"

PROJECT NAME: RICHMOND
PROJECT NUMBER: IM 089-2(52)

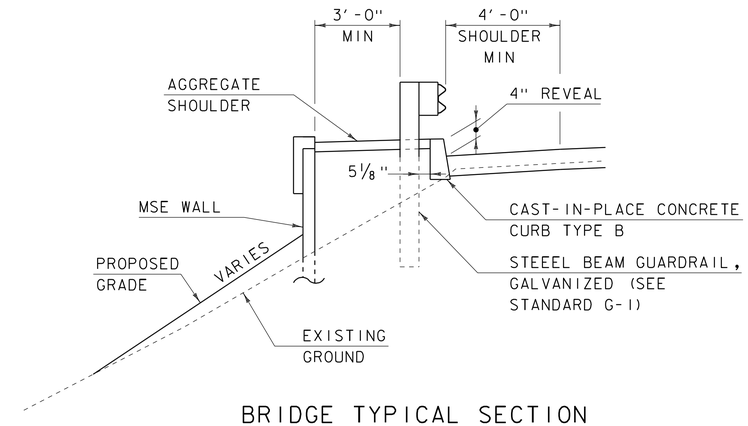
FILE NAME: sl6al83typ.dgn
PROJECT LEADER: C. COTA
DESIGNED BY: D. PETERSON
TYPICAL SECTIONS 1

PLOT DATE: 27-AUG-2020
DRAWN BY: A. FLINN
CHECKED BY: D. PETERSON
SHEET 3 OF 53



ABUTMENT #1 EARTHWORK SECTION

SCALE 3/16" = 1'-0"



BRIDGE TYPICAL SECTION

SCALE 3/8" = 1'-0"

1. ONE FT UNDERCUT FOR PIER #2 AS DETERMINED NECESSARY BY THE ENGINEER.

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

3. CRUSHED STONE FOR UNDERDRAIN TRENCH SHALL MEET THE REQUIREMENTS OF SUBSECTION 704.02C. PAYMENT FOR CRUSHED STONE WILL BE MADE UNDER ITEM 204.30 "GRANULAR BACKFILL FOR STRUCTURES".

4. GEOTEXTILE FOR UNDERDRAIN TRENCH LINING SHALL BE PLACED IN ACCORDANCE WITH AND SHALL MEET THE REQUIREMENTS OF SECTIONS 649 AND 720. PAYMENT FOR GEOTEXTILE FOR UNDERDRAIN TRENCH LINING WILL BE INCLUDED UNDER ITEM 204.3 "GRANULAR BACKFILL FOR STRUCTURES".

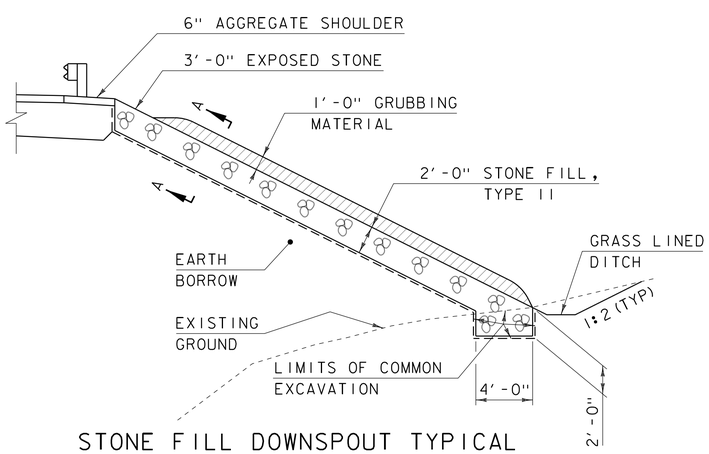
5. SEE ROADWAY TYPICAL SECTION SHEETS FOR ADDITIONAL ROADWAY EMBANKMENT DETAILS.

6. GRUBBING MATERIAL SHALL BE PLACED UP TO THE ELEVATION OF THE BOTTOM OF SUBBASE. GRUBBING MATERIAL SHALL BE PLACED OVER STONE FILL PROTECTED SLOPES AS SHOWN IN THE ROADWAY CROSS SECTION SHEETS. GRUBBING MATERIAL SHALL NOT BE PLACED OVER STONE FILL BELOW THE BRIDGE BETWEEN THE FOOTPRINT LIMITS OF THE BRIDGE FASCIAS.

7. SOME SLOPES MAY REQUIRE OVERBUILD FOR PHASED CONSTRUCTION. TEMPORARY OVERBUILD SLOPES NOT SHOWN FOR CLARITY. SEE ROADWAY CROSS SECTION SHEETS FOR LOCATIONS.

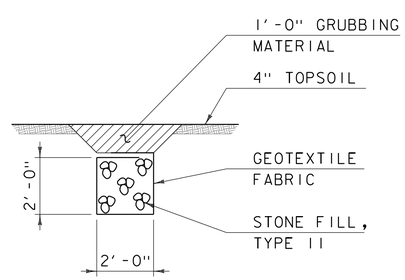
8. PLACE STONE FILL, TYPE IV UP TO ELEVATION ___.--.

9. ALL EXCAVATION AND BACKFILL WITH THE MSE WALLS IS INCIDENTAL TO ITEM 900.670, SPECIAL PROVISION (MECHANICALLY STABILIZED EARTH RETAINING WALL)", EXCEPT WHERE STRUCTURE EXCAVATION LIMITS AT ABUTMENT #2 CONFLICT. IN THAT LOCATION, STRUCTURE EXCAVATION TO THE LIMITS SHOWN ON THIS SHEET SHALL BE PAID.



STONE FILL DOWNSPOUT TYPICAL

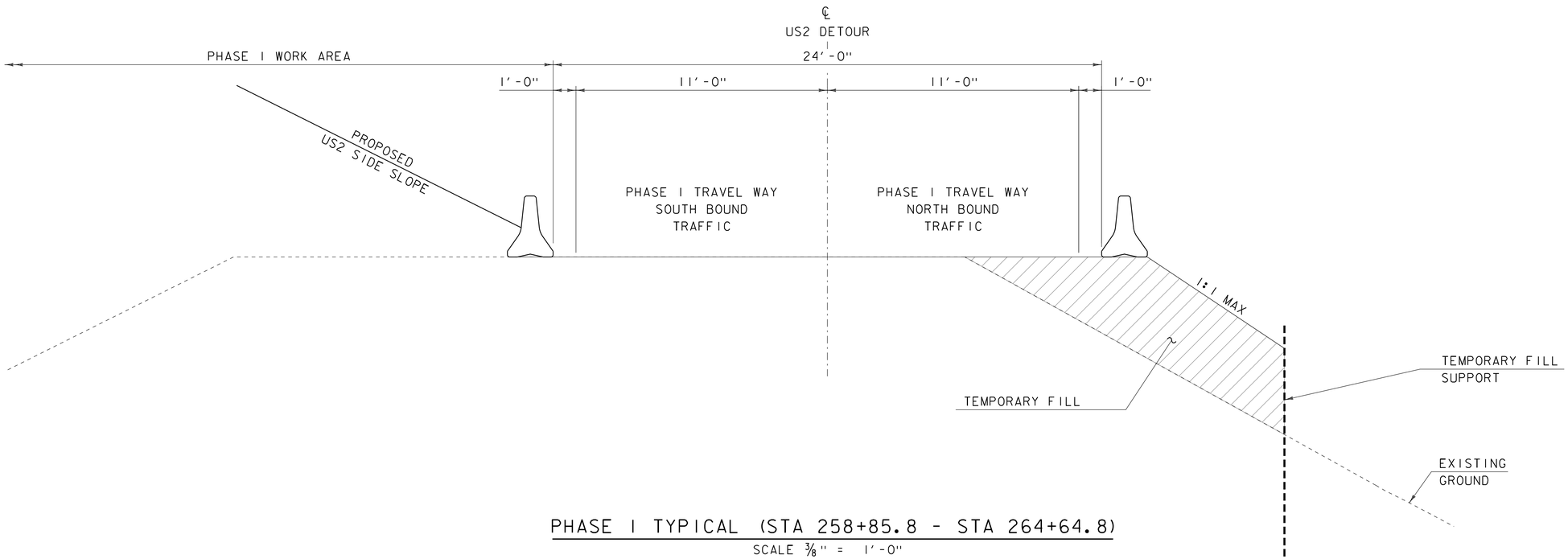
SCALE 3/16" = 1'-0"



SECTION A-A

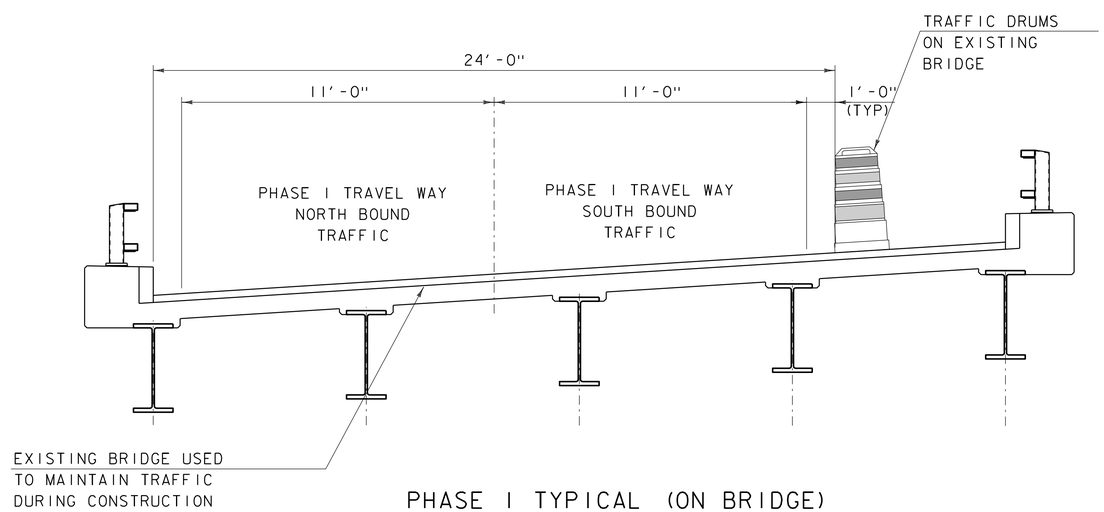
SCALE 3/8" = 1'-0"

PROJECT NAME: RICHMOND	
PROJECT NUMBER: IM 089-2(52)	
FILE NAME: s16a183typ.dgn	PLOT DATE: 27-AUG-2020
PROJECT LEADER: C. COTA	DRAWN BY: A. FLINN
DESIGNED BY: D. PETERSON	CHECKED BY: D. PETERSON
TYPICAL SECTIONS 2	SHEET 4 OF 53



PHASE I TYPICAL (STA 258+85.8 - STA 264+64.8)

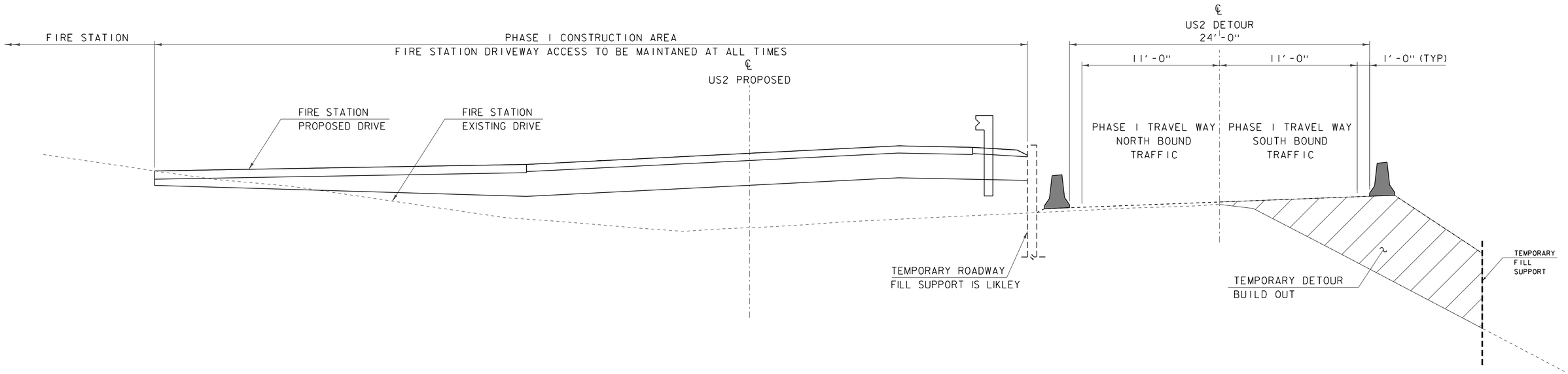
SCALE 3/8" = 1'-0"



PHASE I TYPICAL (ON BRIDGE)

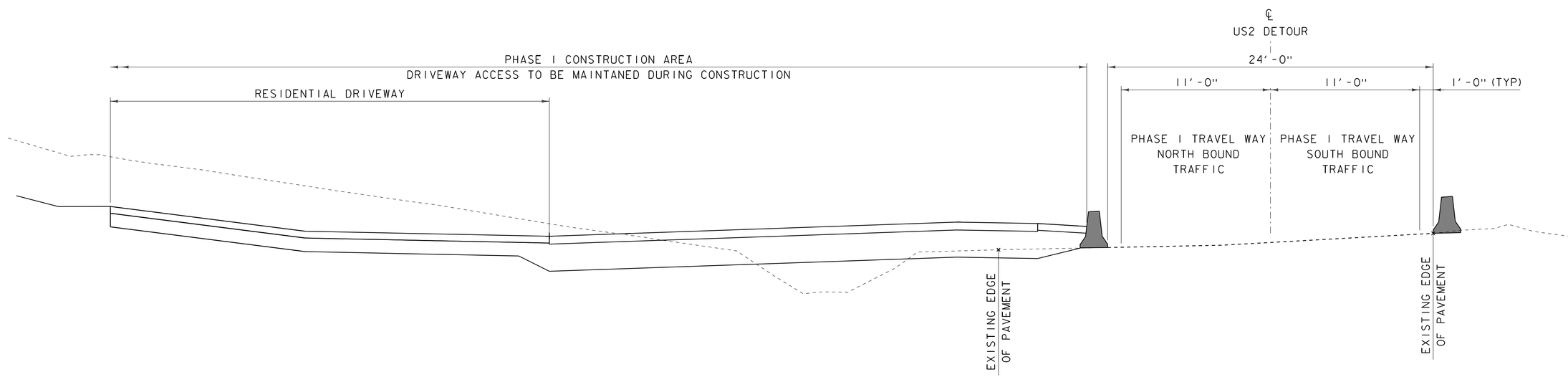
SCALE 3/8" = 1'-0"

PROJECT NAME: RICHMOND	
PROJECT NUMBER: IM 089-2(52)	
FILE NAME: s16a183typ_phase.dgn	PLOT DATE: 27-AUG-2020
PROJECT LEADER: C. COTA	DRAWN BY: M. LONGSTREET
DESIGNED BY: D. PETERSON	CHECKED BY: D. PETERSON
DETOUR PHASING TYPICALS	SHEET 5 OF 53



PHASE I SECTION STA 260+00

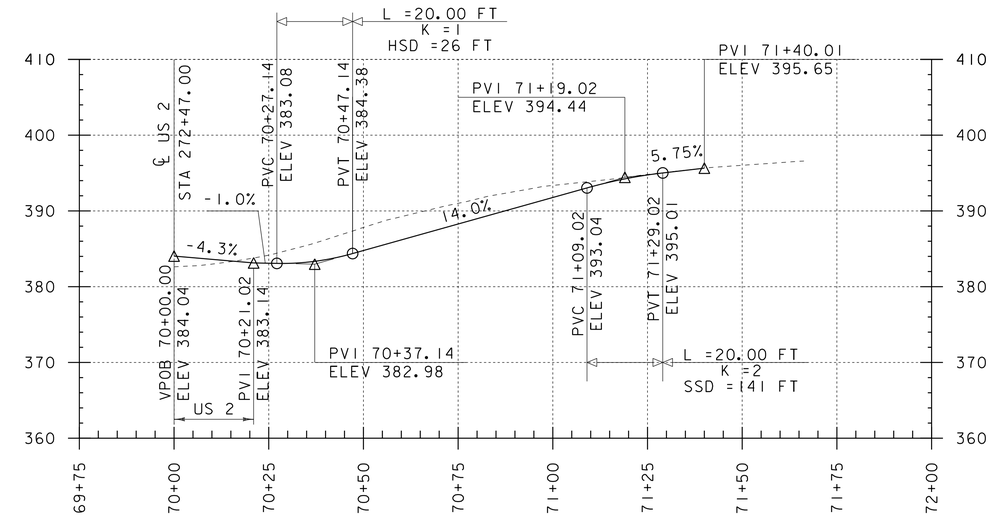
SCALE 1/4" = 1'-0"



PHASE I SECTION STA 272+25

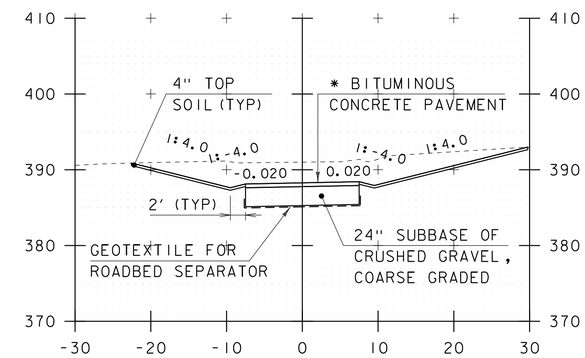
SCALE 1/4" = 1'-0"

PROJECT NAME: RICHMOND	
PROJECT NUMBER: IM 089-2(52)	
FILE NAME: sl6al83typ_phase.dgn	PLOT DATE: 27-AUG-2020
PROJECT LEADER: C. COTA	DRAWN BY: M. LONGSTREET
DESIGNED BY: D. PETERSON	CHECKED BY: D. PETERSON
PHASING DETAILS	SHEET 6 OF 53



DRIVE STA 272+47 PROFILE

SCALE: 1" = 20'-0"



DRIVE STA 272+47
(TYPICAL CROSS SECTION)

ELEVATION VARIES, SEE PROFILE FOR ELEVATIONS

* BITUMINOUS CONCRETE PAVEMENT
1½" TYPE IVS WEARING COURSE
3" TYPE IIS BASE COURSE

PROJECT NAME: RICHMOND	
PROJECT NUMBER: IM 089-2(52)	
FILE NAME: s16a183pro.dgn	PLOT DATE: 27-AUG-2020
PROJECT LEADER: C. COTA	DRAWN BY: M. LONGSTREET
DESIGNED BY: D. PETERSON	CHECKED BY: D. PETERSON
DRIVEWAY DETAILS	SHEET 7 OF 53

GENERAL INFORMATION

SYMBOLOGY LEGEND NOTE

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

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

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

COMMON TOPOGRAPHIC POINT SYMBOLS

POINT	CODE	DESCRIPTION
	APL	BOUND APPARENT LOCATION
	BM	BENCHMARK
	BND	BOUND
	CB	CATCH BASIN
	COMB	COMBINATION POLE
	DITHR	DROP INLET THROATED DNC
	EL	ELECTRIC POWER POLE
	FPOLE	FLAGPOLE
	GASFIL	GAS FILLER
	GP	GUIDE POST
	GSO	GAS SHUT OFF
	GUY	GUY POLE
	GUYW	GUY WIRE
	GV	GATE VALVE
	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
CB	CHORD BEARING

UTILITY SYMBOLOGY

UNDERGROUND UTILITIES

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

ABOVE GROUND UTILITIES (AERIAL)

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

PROJECT CONSTRUCTION SYMBOLOGY

PROJECT DESIGN & LAYOUT SYMBOLOGY

CZ	CLEAR ZONE
	PLAN LAYOUT MATCHLINE

PROJECT CONSTRUCTION FEATURES

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

CONVENTIONAL BOUNDARY SYMBOLOGY

BOUNDARY LINES

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

EPSC LAYOUT PLAN SYMBOLOGY

EPSC MEASURES

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

SEE EPSC DETAIL SHEETS FOR ADDITIONAL SYMBOLOGY

ENVIRONMENTAL RESOURCES

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

ARCHEOLOGICAL & HISTORIC

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

CONVENTIONAL TOPOGRAPHIC SYMBOLOGY

EXISTING FEATURES

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

PROJECT NAME: RICHMOND
PROJECT NUMBER: IM 089-2 52)

FILE NAME: s16al83_forms.dgn
PROJECT LEADER: C. COTA
DESIGNED BY: D.PETERSON
SYMBOLOGY LEGEND

PLOT DATE: 27-AUG-2020
DRAWN BY: M.LONGSTREET
CHECKED BY: D.PETERSON
SHEET 8 OF 53

PRIMARY CONTROL

HVCTRL #1
SNIPE AZ MK 2013
NORTH = 689236.6550
EAST = 1522476.6760
ELEV. = 322.1300

THE MARK IS LOCATED ON INTERSTATE 89 IN THE SOUTHEAST SIDE OF THE U-TURN BETWEEN MILE MARKERS 74.40 AND 74.45. THIS IS THE MOST NORTHERN OF TWO U-TURNS JUST NORTH OF THE BRIDGES OVER US ROUTE 2 IN JONESVILLE. THE MARK IS SET 20 CM (8 INCHES) BELOW GROUND SURFACE IN THE TOP OF A FENO STYLE MONUMENT. IT IS 7.9 M (25.9 FT) SOUTHEAST OF AND ABOUT 0.6 M (2.0 FT) LOWER THAN THE CENTERLINE OF THE U-TURN, 11.3 M (37.1 FT) SOUTHWEST OF THE SOUTHWEST EDGE OF PAVEMENT OF THE NORTHBOUND LANE, 3.7 M (12.1 FT) NORTHEAST OF THE NORTHEAST EDGE OF PAVEMENT OF THE SOUTHBOUND LANE, 8.3 M (27.2 FT) SOUTHWEST OF THE MOST SOUTHWESTERLY POST FOR A U-TURN SIGN AND 0.3 M (1.0 FT) SOUTHEAST OF A FIBERGLASS WITNESS POST.

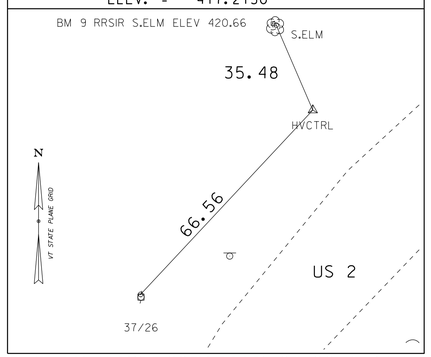
HVCTRL #2
SNIPE 2013
NORTH = 690764.1700
EAST = 1522549.8360
ELEV. = 316.4800

TO REACH FROM THE CENTER OF THE I-89 BRIDGES OVER US ROUTE 2 JUST NORTHWEST OF JONESVILLE, GO NORTHERLY ALONG US ROUTE 2 FOR 0.6 MI (1.0 KM) TO THE SITE OF THE MARK ON THE LEFT ABOUT OPPOSITE OF SNIPE IRELAND ROAD. THE MARK IS SET 20 CM (8 INCHES) BELOW GROUND SURFACE IN THE TOP OF A FENO STYLE MONUMENT. IT IS 6.0 M (19.7 FT) SOUTH OF AND ABOUT 0.3 M (1.0 FT) LOWER THAN THE CENTERLINE OF US ROUTE 2, 8.5 M (27.9 FT) WEST OF POLE NO 94-50, 34.6 M (113.5 FT) EAST OF POLE NO 94, 24.3 M (79.7 FT) WEST-SOUTHWEST OF THE SOUTHWEST CORNER OF BRIDGE NO 32 OVER SNIPE IRELAND BROOK AND 4.0 M (13.1 FT) WEST-SOUTHWEST OF THE WEST-SOUTHWEST END OF A STEEL BEAM GUARD RAIL POST.

SECONDARY CONTROL

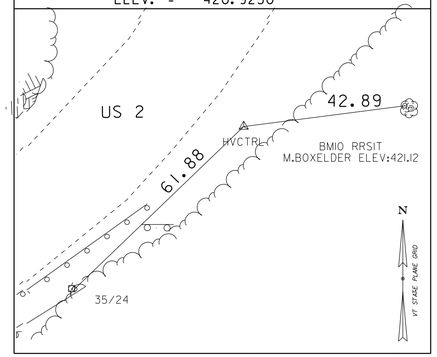
HVCTRL #9

NORTH = 693945.9066
EAST = 1515187.5358
ELEV. = 417.2130



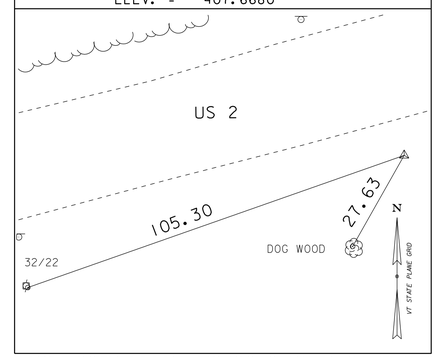
HVCTRL #10

NORTH = 693556.7061
EAST = 1515065.4112
ELEV. = 420.9230



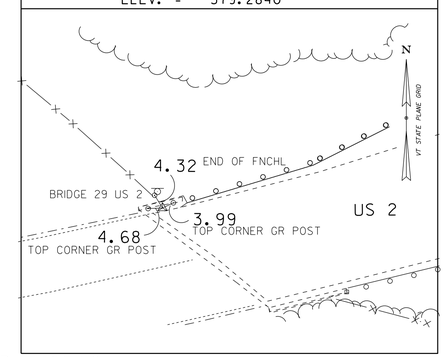
HVCTRL #11

NORTH = 693377.4420
EAST = 1514685.7235
ELEV. = 407.6680



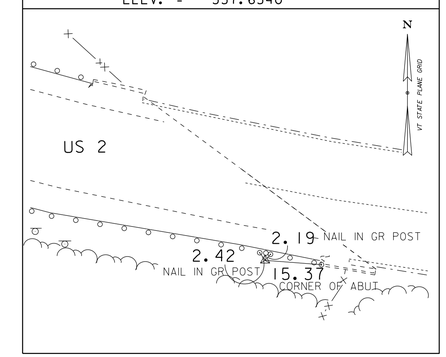
HVCTRL # 20

NORTH = 693254.3967
EAST = 1514045.9979
ELEV. = 379.2840



HVCTRL #21

NORTH = 693211.5403
EAST = 1513571.7794
ELEV. = 357.6540

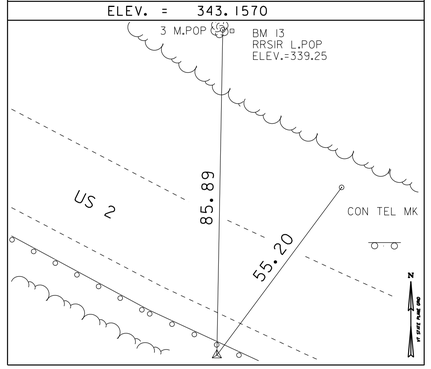


MAIN TRAVERSE COMPLETED 04/2014 BY L.ORVIS, G.HITCHCOCK, H.MCGOWAN SECONDARY TRAVERSE COMPLETED 7/9/2018 BY R.GILMAN & B.HERRING

SECONDARY CONTROL

HVCTRL #13

NORTH = 693301.0046
EAST = 1513291.0504
ELEV. = 343.1570



DATUM	
VERTICAL	NAVD88
HORIZONTAL	NAD83(2011)
ADJUSTMENT	COMPASS

PROJECT NAME: RICHMOND
PROJECT NUMBER: IM089-2(52)

FILE NAME: x16a183T1.DGN	PLOT DATE: 27-AUG-2020
PROJECT LEADER: C. COTA	DRAWN BY: H.MCGOWAN
DESIGNED BY: C. MOONEY	CHECKED BY: C. MOONEY
TIE SHEET	SHEET 9 OF 53

REMOVAL AND DISPOSAL OF GUARDRAIL
STA 257+51.2 - 260+75.0 RT

STEEL BEAM GUARDRAIL, GALVANIZED
STA 260+57.1 - 260+75.0 LT
STA 258+29.8 - 260+75.0 RT

COARSE-MILLING, BITUMINOUS PAVEMENT
STA 256+75.0 - 257+25.0

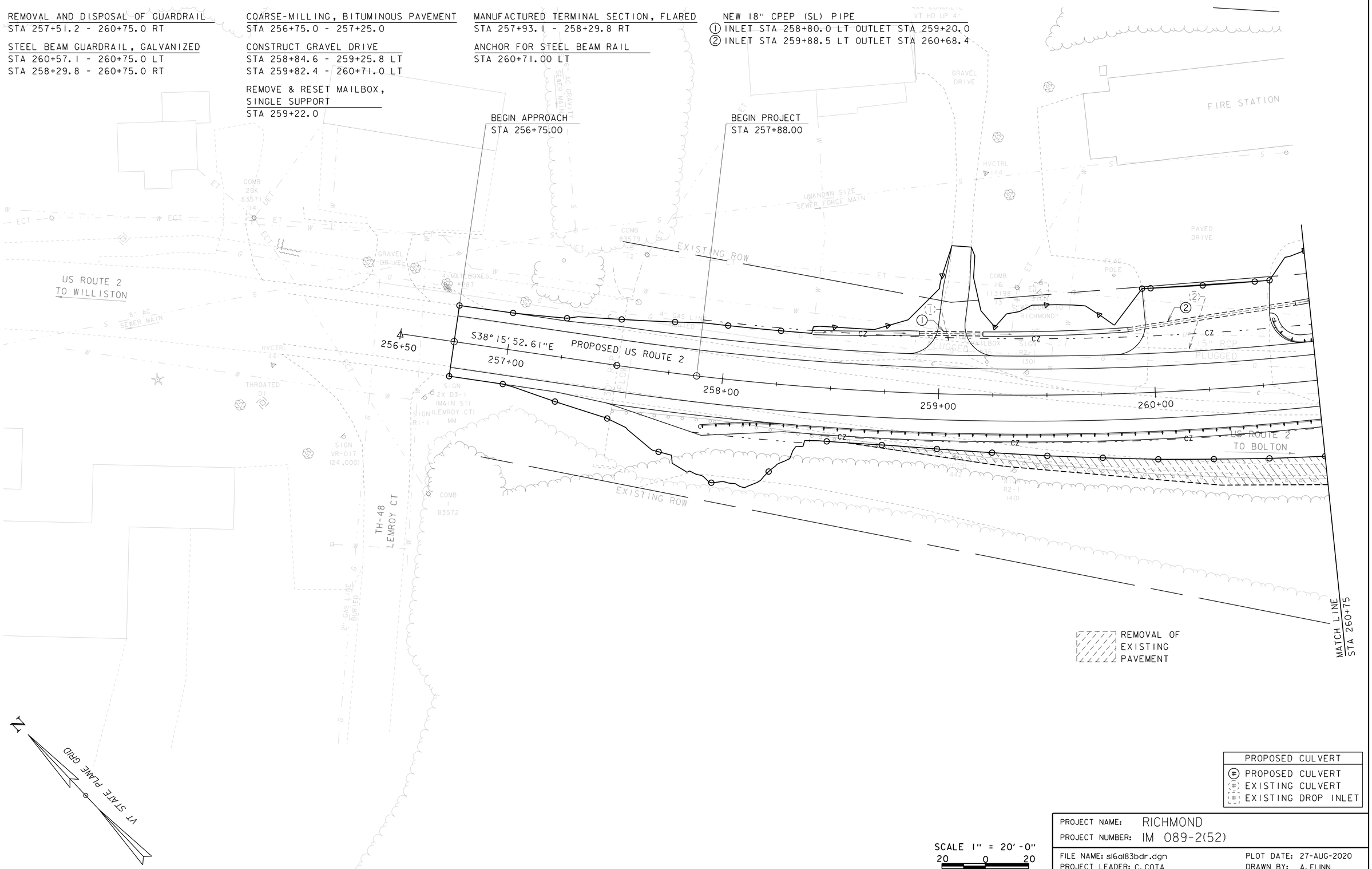
CONSTRUCT GRAVEL DRIVE
STA 258+84.6 - 259+25.8 LT
STA 259+82.4 - 260+71.0 LT

REMOVE & RESET MAILBOX, SINGLE SUPPORT
STA 259+22.0

MANUFACTURED TERMINAL SECTION, FLARED
STA 257+93.1 - 258+29.8 RT

ANCHOR FOR STEEL BEAM RAIL
STA 260+71.00 LT

NEW 18" CPEP (SL) PIPE
① INLET STA 258+80.0 LT OUTLET STA 259+20.0
② INLET STA 259+88.5 LT OUTLET STA 260+68.4



PROPOSED CULVERT
(#) PROPOSED CULVERT
(#) EXISTING CULVERT
(#) EXISTING DROP INLET

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

PROJECT NAME: RICHMOND
PROJECT NUMBER: IM 089-2(52)

FILE NAME: s16a183bdr.dgn
PROJECT LEADER: C. COTA
DESIGNED BY: D. PETERSON
LAYOUT SHEET 1

PLOT DATE: 27-AUG-2020
DRAWN BY: A. FLINN
CHECKED BY: D. PETERSON
SHEET 10 OF 53

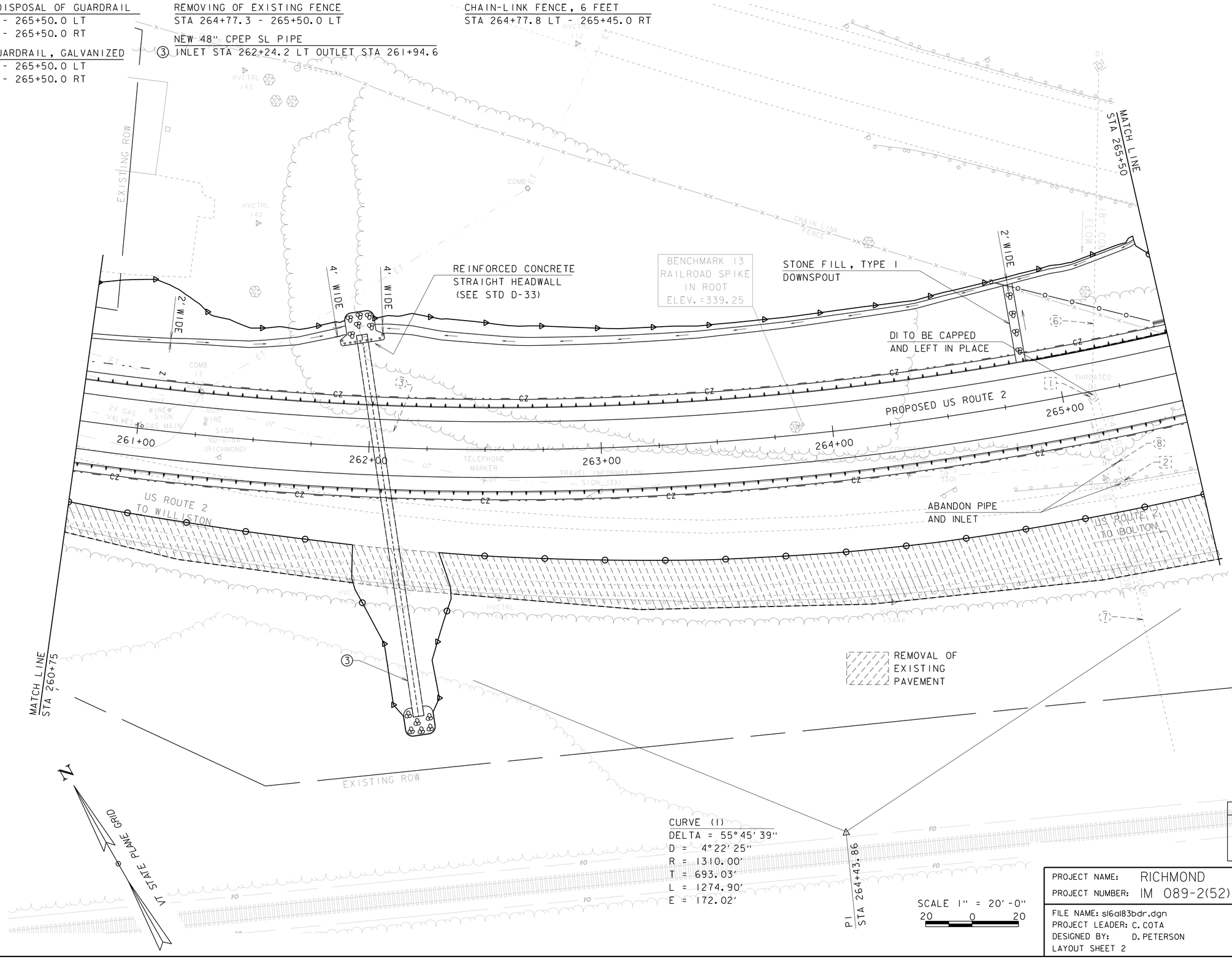
REMOVAL AND DISPOSAL OF GUARDRAIL
STA 264+72.9 - 265+50.0 LT
STA 260+75.0 - 265+50.0 RT

STEEL BEAM GUARDRAIL, GALVANIZED
STA 260+75.0 - 265+50.0 LT
STA 260+75.0 - 265+50.0 RT

REMOVING OF EXISTING FENCE
STA 264+77.3 - 265+50.0 LT

NEW 48" CPEP SL PIPE
(3) INLET STA 262+24.2 LT OUTLET STA 261+94.6

CHAIN-LINK FENCE, 6 FEET
STA 264+77.8 LT - 265+45.0 RT



PROJECT NAME: RICHMOND
PROJECT NUMBER: IM 089-2(52)

FILE NAME: s16a183bdr.dgn
PROJECT LEADER: C. COTA
DESIGNED BY: D. PETERSON
LAYOUT SHEET 2

PLOT DATE: 27-AUG-2020
DRAWN BY: A. FLINN
CHECKED BY: D. PETERSON
SHEET 11 OF 53

REMOVAL AND DISPOSAL OF GUARDRAIL
STA 265+50.0 - 266+43.7 LT
STA 265+50.0 - 267+08.6 RT

STEEL BEAM GUARDRAIL, GALVANIZED
STA 265+50.0 - 265+78.1 LT
STA 267+75.3 - 268+40.0 LT
STA 270+21.9 - 271+50.0 LT
STA 265+50.0 - 265+79.0 RT
STA 270+21.0 - 271+50.0 RT

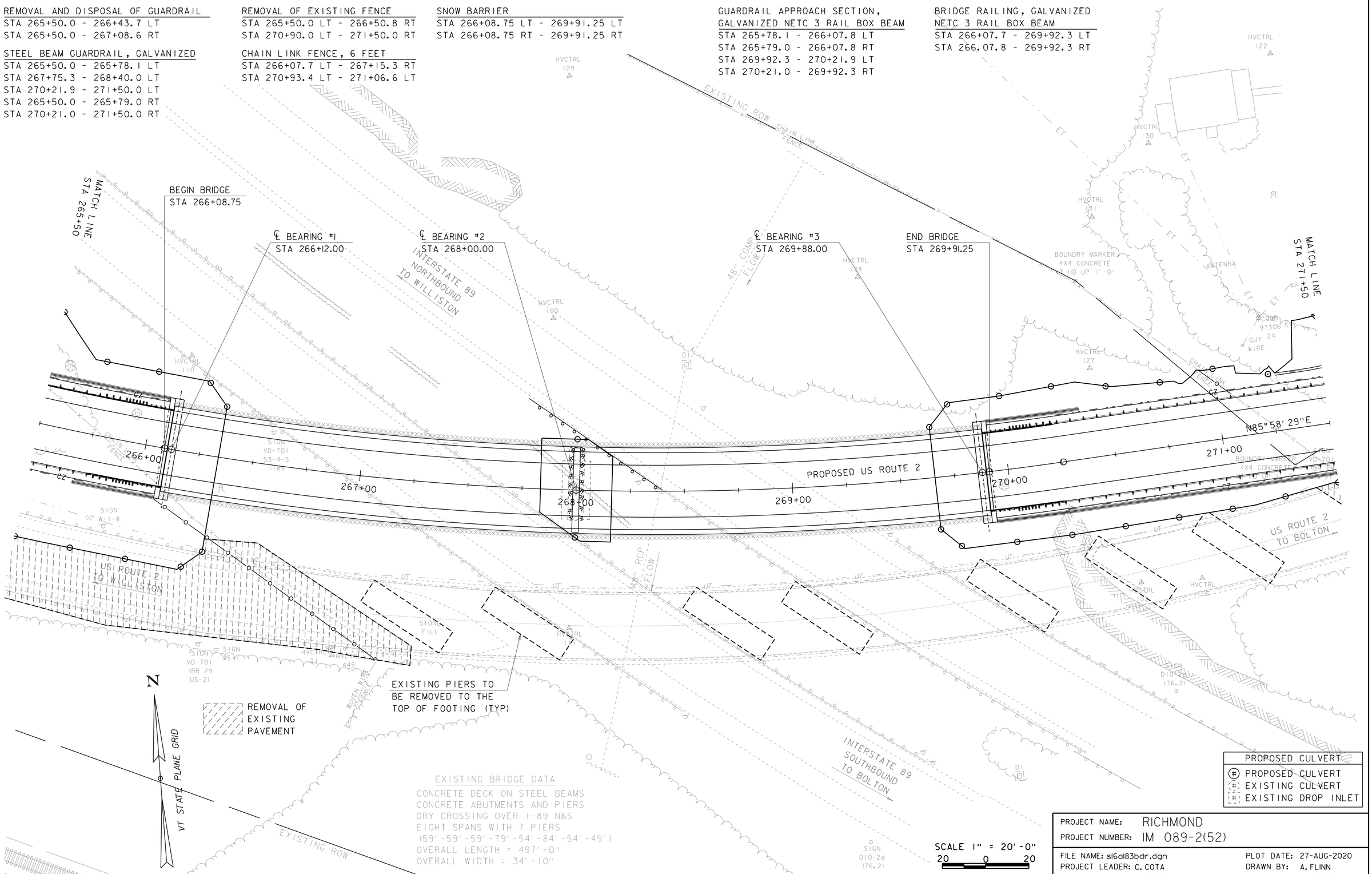
REMOVAL OF EXISTING FENCE
STA 265+50.0 LT - 266+50.8 RT
STA 270+90.0 LT - 271+50.0 RT

CHAIN LINK FENCE, 6 FEET
STA 266+07.7 LT - 267+15.3 RT
STA 270+93.4 LT - 271+06.6 LT

SNOW BARRIER
STA 266+08.75 LT - 269+91.25 LT
STA 266+08.75 RT - 269+91.25 RT

GUARDRAIL APPROACH SECTION, GALVANIZED NETC 3 RAIL BOX BEAM
STA 265+78.1 - 266+07.8 LT
STA 265+79.0 - 266+07.8 RT
STA 269+92.3 - 270+21.9 LT
STA 270+21.0 - 269+92.3 RT

BRIDGE RAILING, GALVANIZED NETC 3 RAIL BOX BEAM
STA 266+07.7 - 269+92.3 LT
STA 266.07.8 - 269+92.3 RT



PROJECT NAME: RICHMOND	
PROJECT NUMBER: IM 089-2(52)	
FILE NAME: s16a183bdr.dgn	PLOT DATE: 27-AUG-2020
PROJECT LEADER: C. COTA	DRAWN BY: A. FLINN
DESIGNED BY: D. PETERSON	CHECKED BY: D. PETERSON
LAYOUT SHEET 3	SHEET 12 OF 53

REMOVAL AND DISPOSAL OF GUARDRAIL
STA 271+60.8 - 272+20.7 LT
STA 272+01.5 - 272+89.4 RT

STEEL BEAM GUARDRAIL, GALVANIZED
STA 271+50.0 - 272+08.4 LT
STA 272+50.0 - 271+80.4 RT

COARSE-MILLING, BITUMINOUS PAVEMENT
STA 276+50.0 - 277+00.0

REMOVAL OF EXISTING FENCE
STA 271+50.0 - 271+53.2 RT

REMOVE & RESET MAILBOX, SINGLE SUPPORT
STA 276+25.9 RT

RELOCATE MAILBOX, SINGLE SUPPORT
STA 272+62.1 LT
STA 273+75.6 LT

CONSTRUCT DRIVE (FIELD)
STA 274+30.7 - 274+52.7 LT

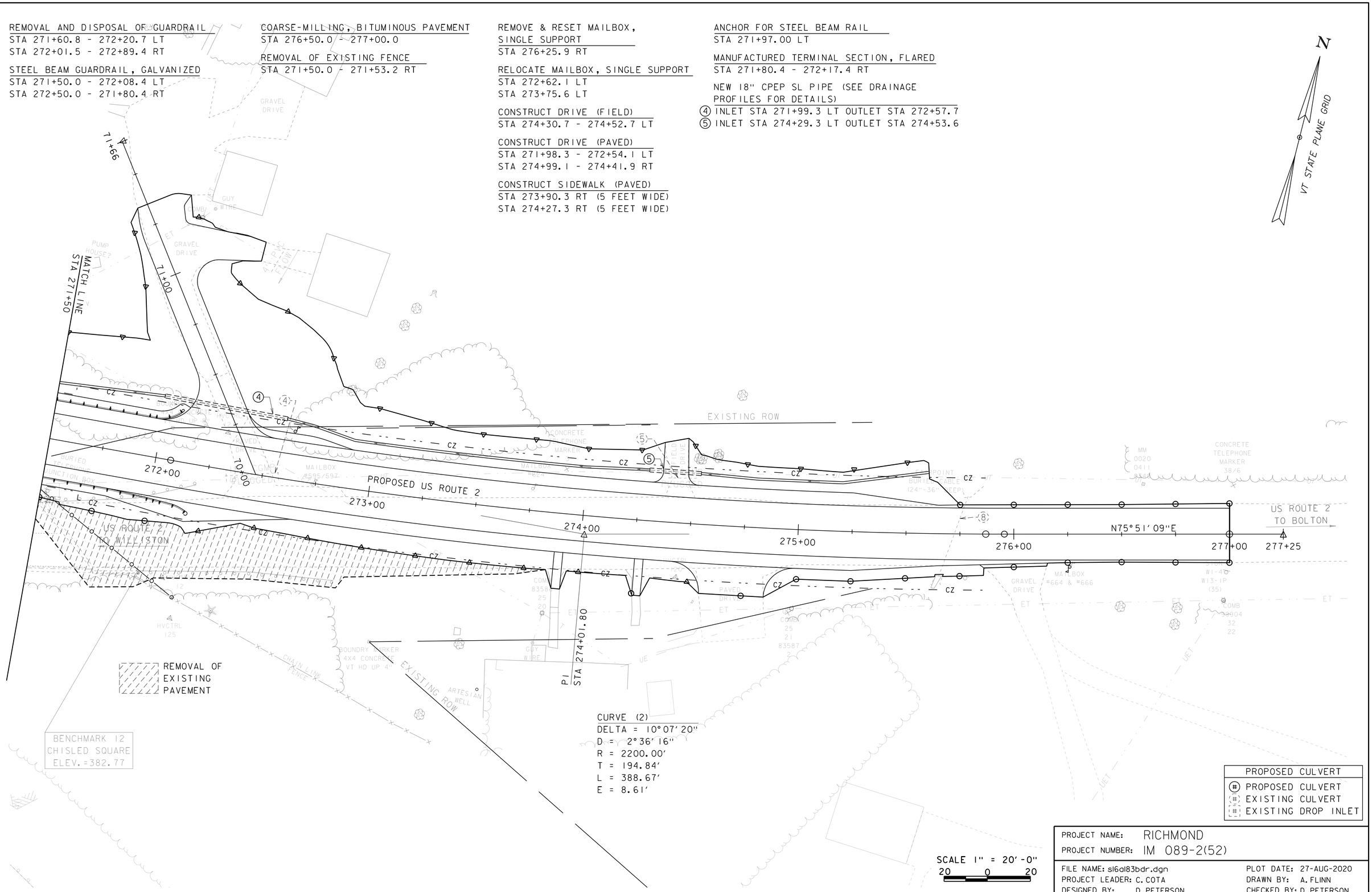
CONSTRUCT DRIVE (PAVED)
STA 271+98.3 - 272+54.1 LT
STA 274+99.1 - 274+41.9 RT

CONSTRUCT SIDEWALK (PAVED)
STA 273+90.3 RT (5 FEET WIDE)
STA 274+27.3 RT (5 FEET WIDE)

ANCHOR FOR STEEL BEAM RAIL
STA 271+97.00 LT

MANUFACTURED TERMINAL SECTION, FLARED
STA 271+80.4 - 272+17.4 RT

NEW 18" CPEP SL PIPE (SEE DRAINAGE PROFILES FOR DETAILS)
④ INLET STA 271+99.3 LT OUTLET STA 272+57.7
⑤ INLET STA 274+29.3 LT OUTLET STA 274+53.6

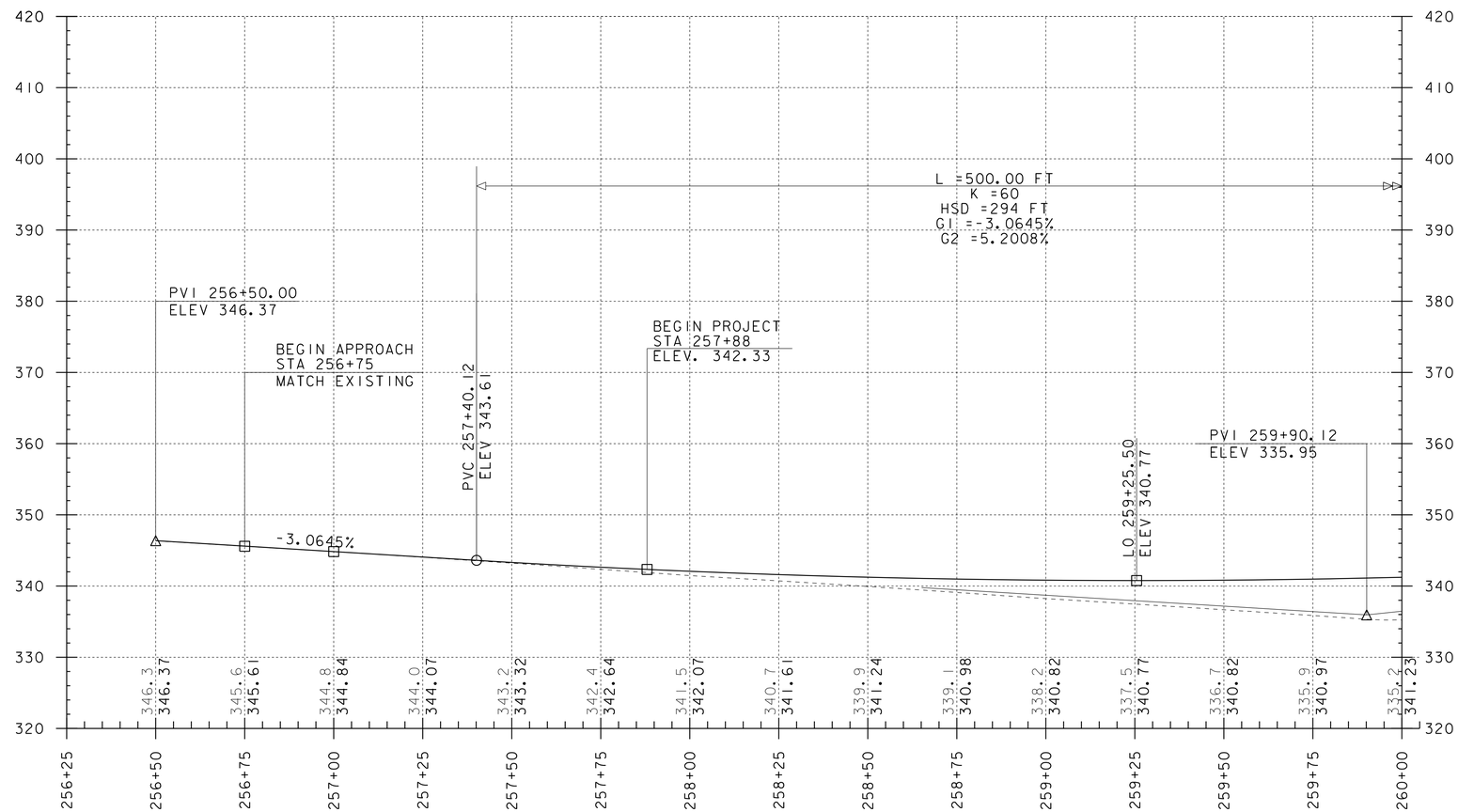


PROPOSED CULVERT
⑪ PROPOSED CULVERT
⑪ EXISTING CULVERT
⑪ EXISTING DROP INLET

PROJECT NAME: RICHMOND
PROJECT NUMBER: IM 089-2(52)

FILE NAME: s16a183bdr.dgn
PROJECT LEADER: C. COTA
DESIGNED BY: D. PETERSON
LAYOUT SHEET 4

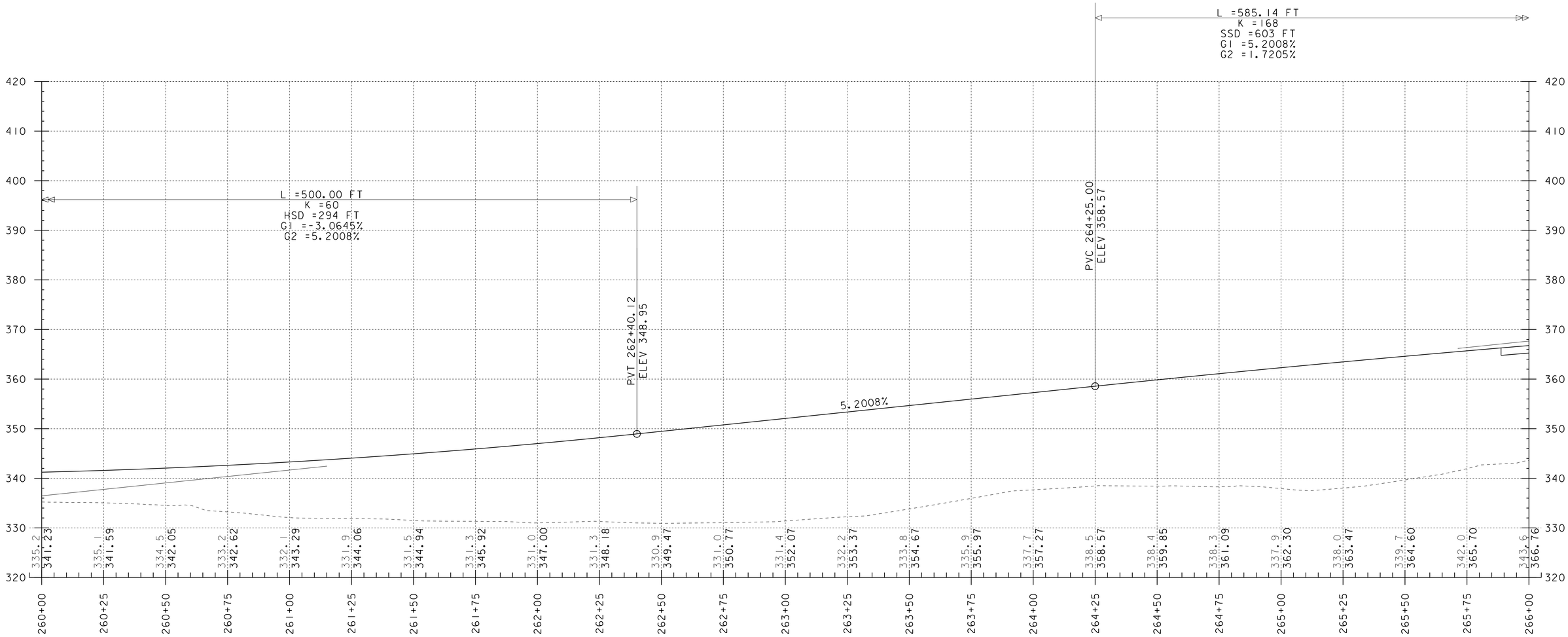
PLOT DATE: 27-AUG-2020
DRAWN BY: A. FLINN
CHECKED BY: D. PETERSON
SHEET 13 OF 53



US 2 PROPOSED PROFILE A

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

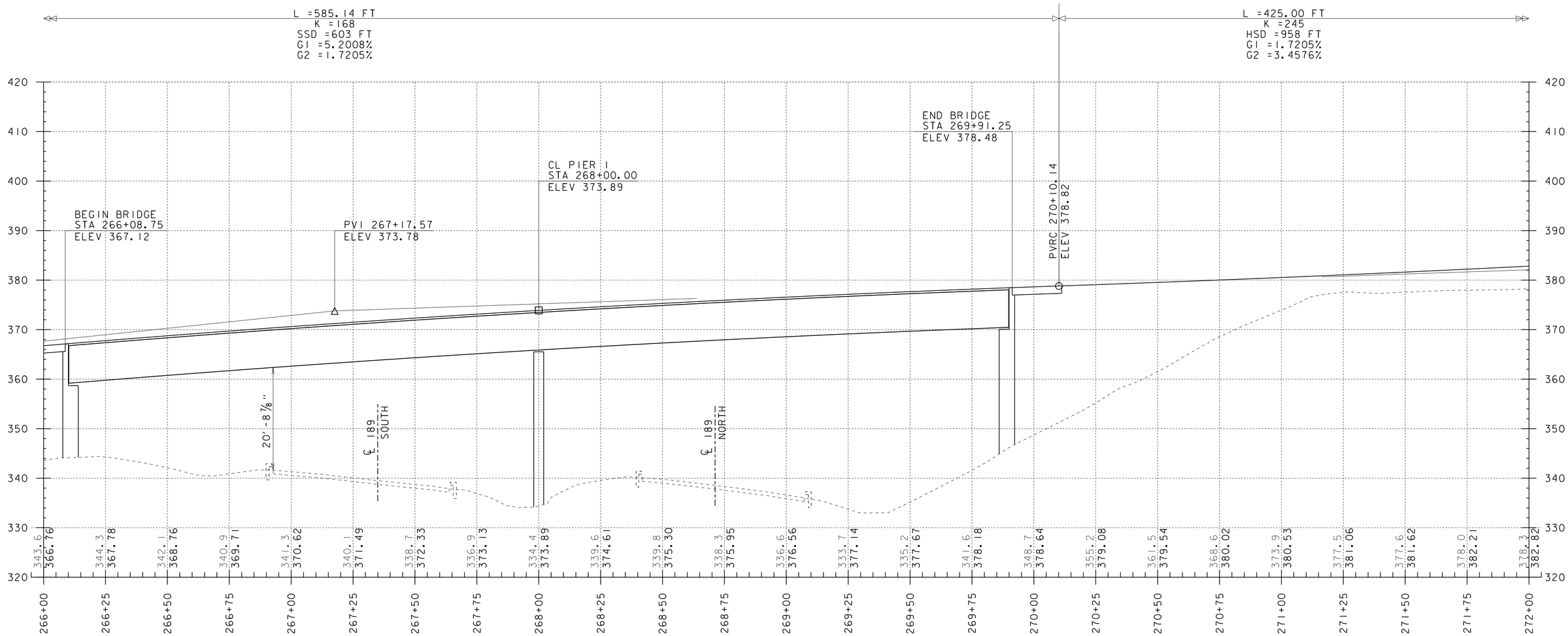
PROJECT NAME: RICHMOND	
PROJECT NUMBER: IM 089-2(52)	
FILE NAME: s16a183pro.dgn	PLOT DATE: 27-AUG-2020
PROJECT LEADER: C. COTA	DRAWN BY: M. LONGSTREET
DESIGNED BY: D. PETERSON	CHECKED BY: D. PETERSON
US ROUT 2 PROFILE 1	SHEET 14 OF 53



US 2 PROPOSED PROFILE B

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

PROJECT NAME: RICHMOND	
PROJECT NUMBER: IM 089-2(52)	
FILE NAME: s16a183pro.dgn	PLOT DATE: 27-AUG-2020
PROJECT LEADER: C. COTA	DRAWN BY: M. LONGSTREET
DESIGNED BY: D. PETERSON	CHECKED BY: D. PETERSON
US ROUT 2 PROFILE 2	SHEET 15 OF 53

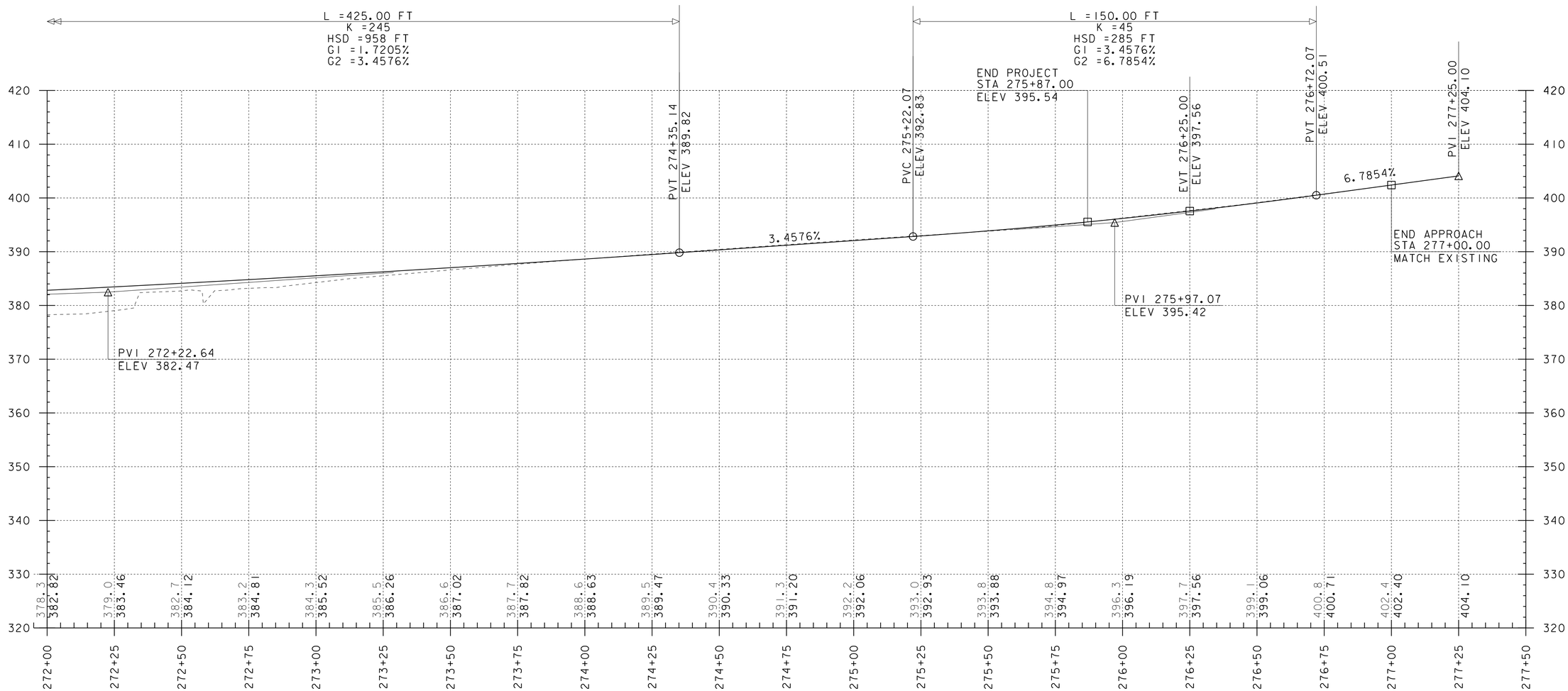


US 2 PROPOSED PROFILE C

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

NOTE:
SUBSTRUCTURES SHOWN ARE CONCEPTUAL

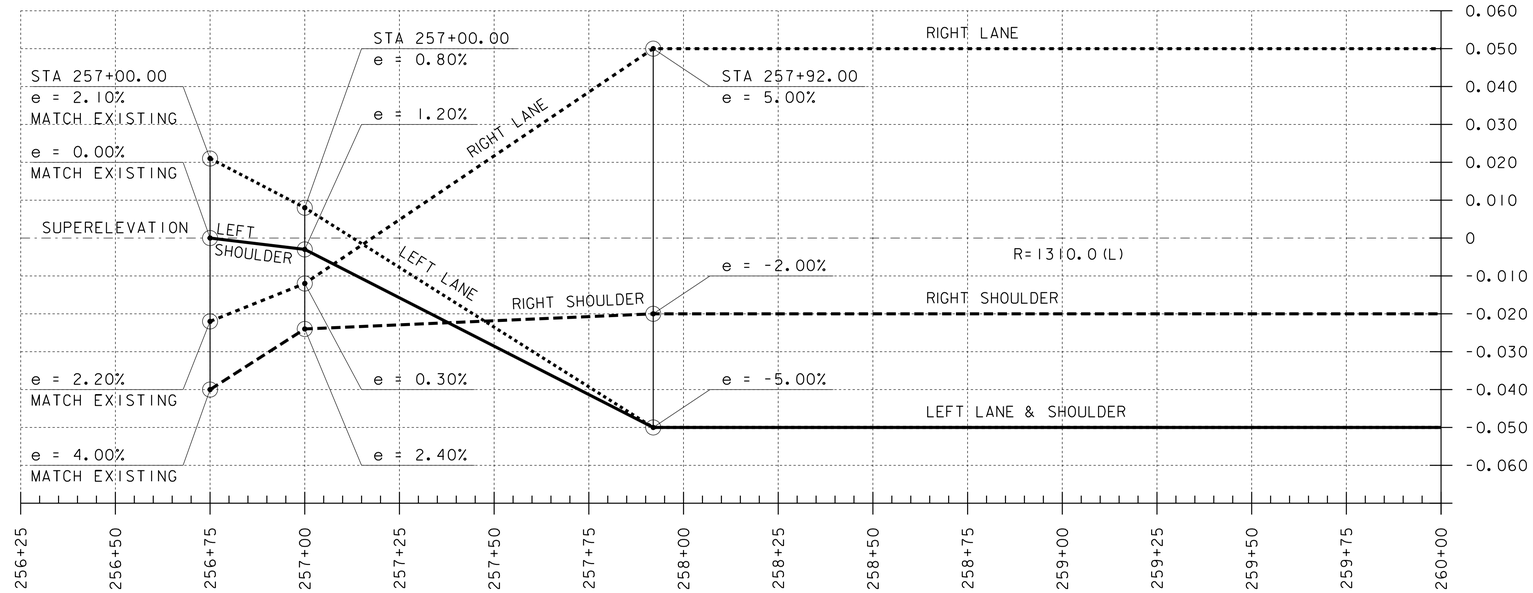
PROJECT NAME: RICHMOND	
PROJECT NUMBER: IM 089-2(52)	
FILE NAME: s16al83pro.dgn	PLOT DATE: 27-AUG-2020
PROJECT LEADER: C. COTA	DRAWN BY: M. LONGSTREET
DESIGNED BY: D. PETERSON	CHECKED BY: D. PETERSON
US ROUT 2 PROFILE 3	SHEET 16 OF 53



US 2 PROPOSED PROFILE D

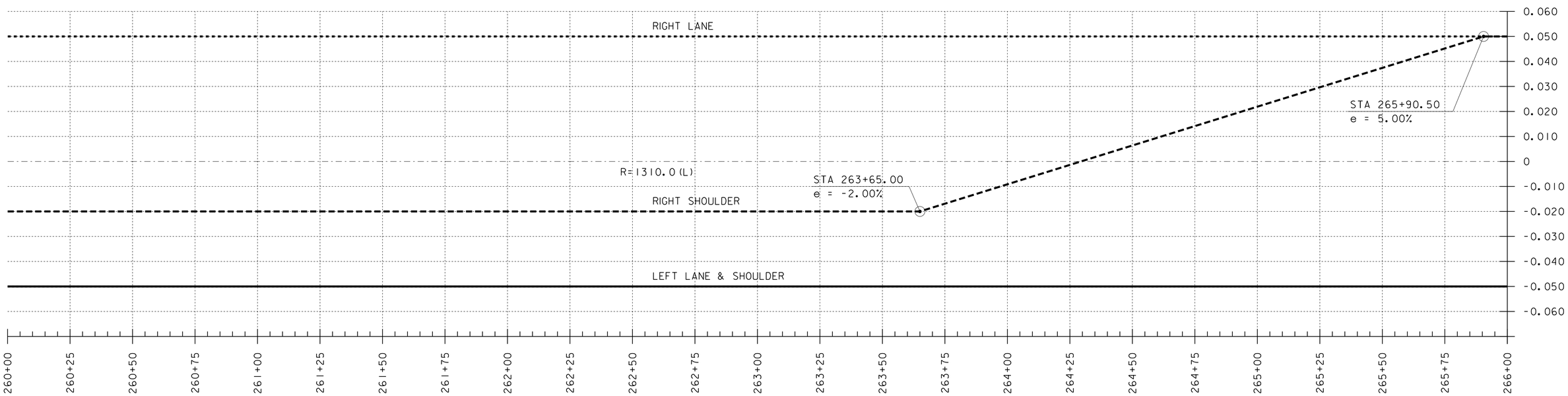
HORIZONTAL SCALE: 1" = 20'-0"
VERTICAL SCALE: 1" = 10'-0"

PROJECT NAME: RICHMOND	
PROJECT NUMBER: IM 089-2(52)	
FILE NAME: s16a183pro.dgn	PLOT DATE: 27-AUG-2020
PROJECT LEADER: C. COTA	DRAWN BY: M. LONGSTREET
DESIGNED BY: D. PETERSON	CHECKED BY: D. PETERSON
US ROUT 2 PROFILE 4	SHEET 17 OF 53



US 2 BANKING DIAGRAM A

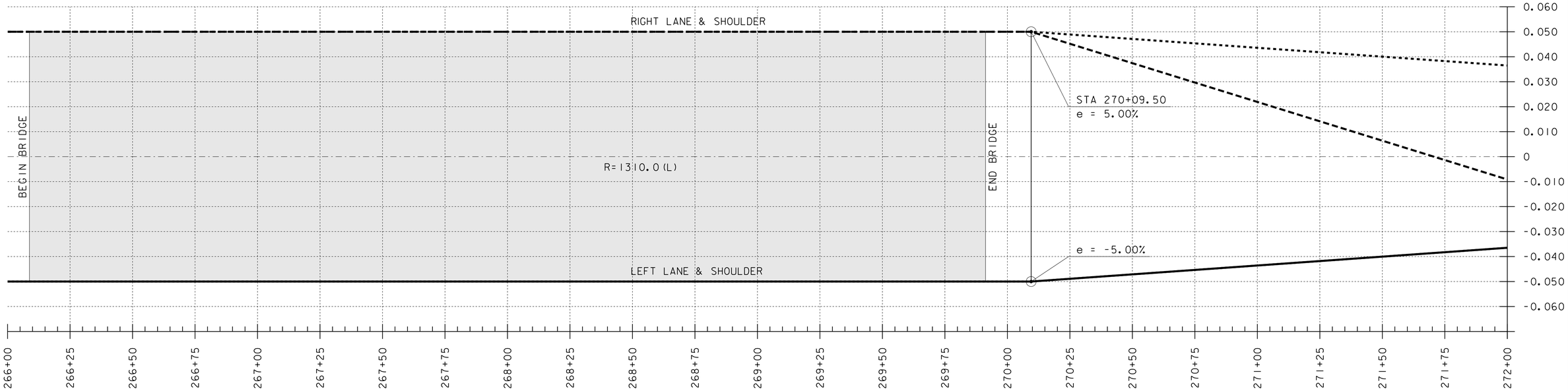
HORIZONTAL SCALE: 1" = 20'-0"
VERTICAL SCALE: 1" = 0.020 (2.00%)



US 2 BANKING DIAGRAM B

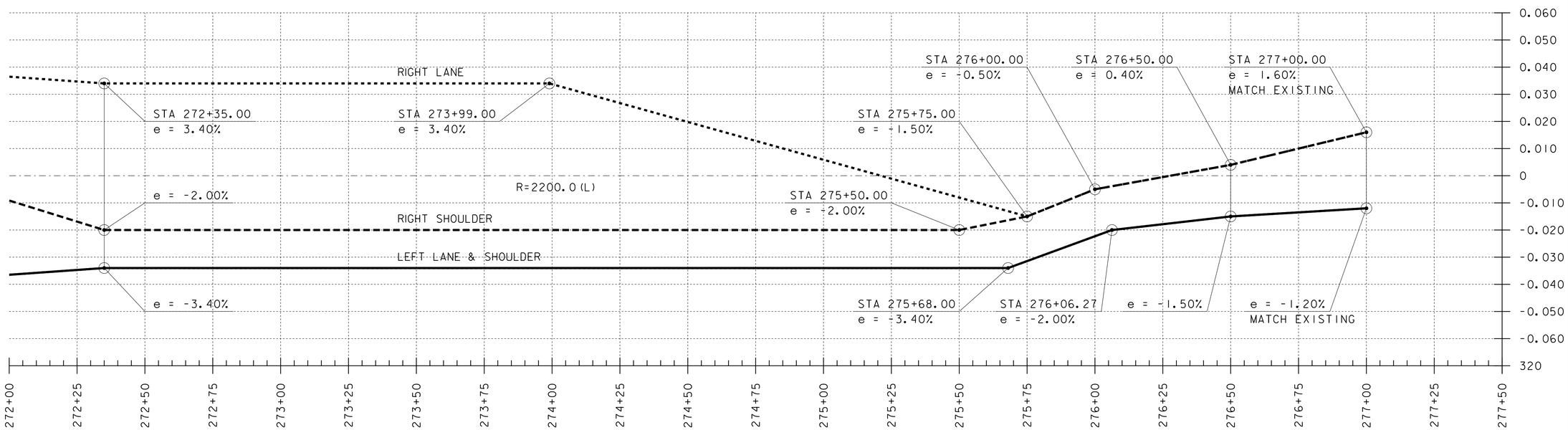
HORIZONTAL SCALE: 1" = 20'-0"
VERTICAL SCALE: 1" = 0.020 (2.00%)

PROJECT NAME: RICHMOND	
PROJECT NUMBER: IM 089-2(52)	
FILE NAME: 16a183/s16a183profile.dgn	PLOT DATE: 27-AUG-2020
PROJECT LEADER: C. COTA	DRAWN BY: M. LONGSTREET
DESIGNED BY: D. PETERSON	CHECKED BY: D. PETERSON
US 2 BANKING DIAGRAM 1	SHEET 18 OF 53



US 2 BANKING DIAGRAM C

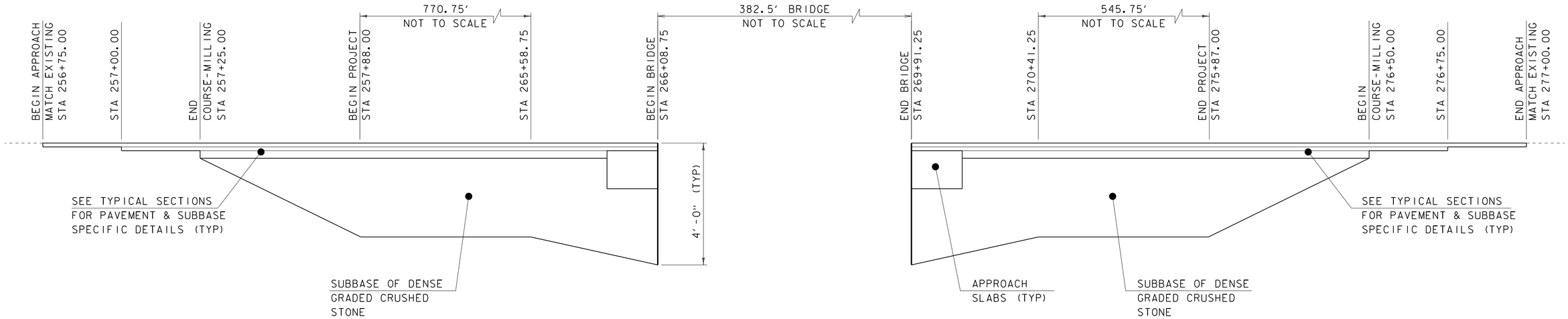
HORIZONTAL SCALE: 1" = 20'-0"
VERTICAL SCALE: 1" = 0.020 (2.00%)



US 2 BANKING DIAGRAM D

HORIZONTAL SCALE: 1" = 20'-0"
VERTICAL SCALE: 1" = 0.020 (2.00%)

PROJECT NAME: RICHMOND	
PROJECT NUMBER: IM 089-2(52)	
FILE NAME: I6al83/sI6al83profile.dgn	PLOT DATE: 27-AUG-2020
PROJECT LEADER: C. COTA	DRAWN BY: M. LONGSTREET
DESIGNED BY: D. PETERSON	CHECKED BY: D. PETERSON
US 2 BANKING DIAGRAM 2	SHEET 19 OF 53

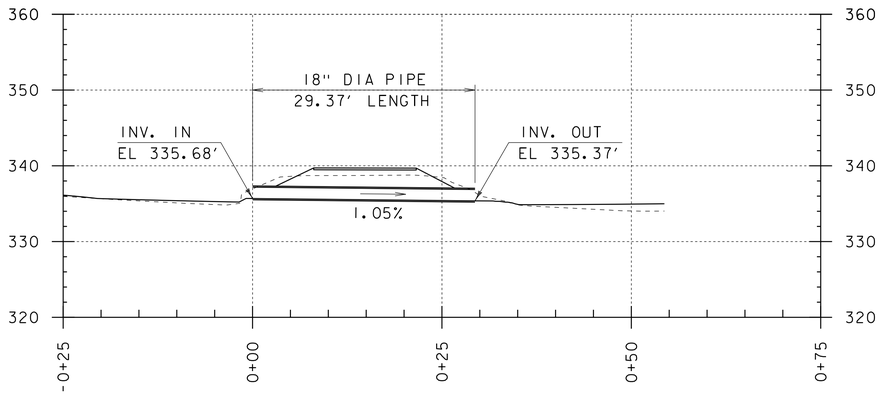


US 2 MATERIAL TRANSITION DETAIL

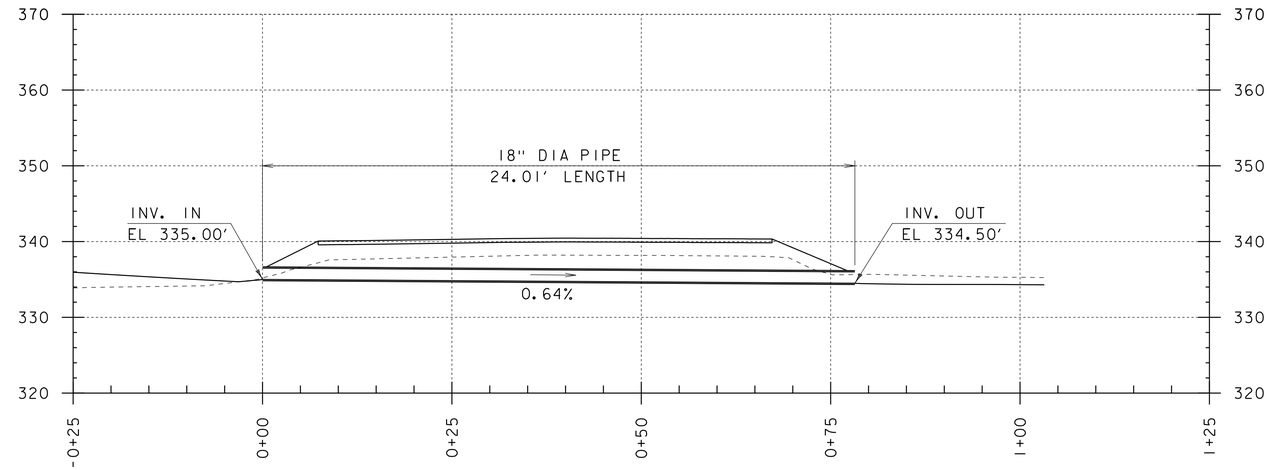
HORIZONTAL SCALE: NOT TO SCALE
VERTICAL NOT TO SCALE

PROJECT NAME: RICHMOND	
PROJECT NUMBER: IM 089-2(52)	
FILE NAME: s16a183pro.dgn	PLOT DATE: 27-AUG-2020
PROJECT LEADER: C. COTA	DRAWN BY: M. LONGSTREET
DESIGNED BY: D. PETERSON	CHECKED BY: D. PETERSON
MATERIAL TRANSITION DETAIL	SHEET 20 OF 53

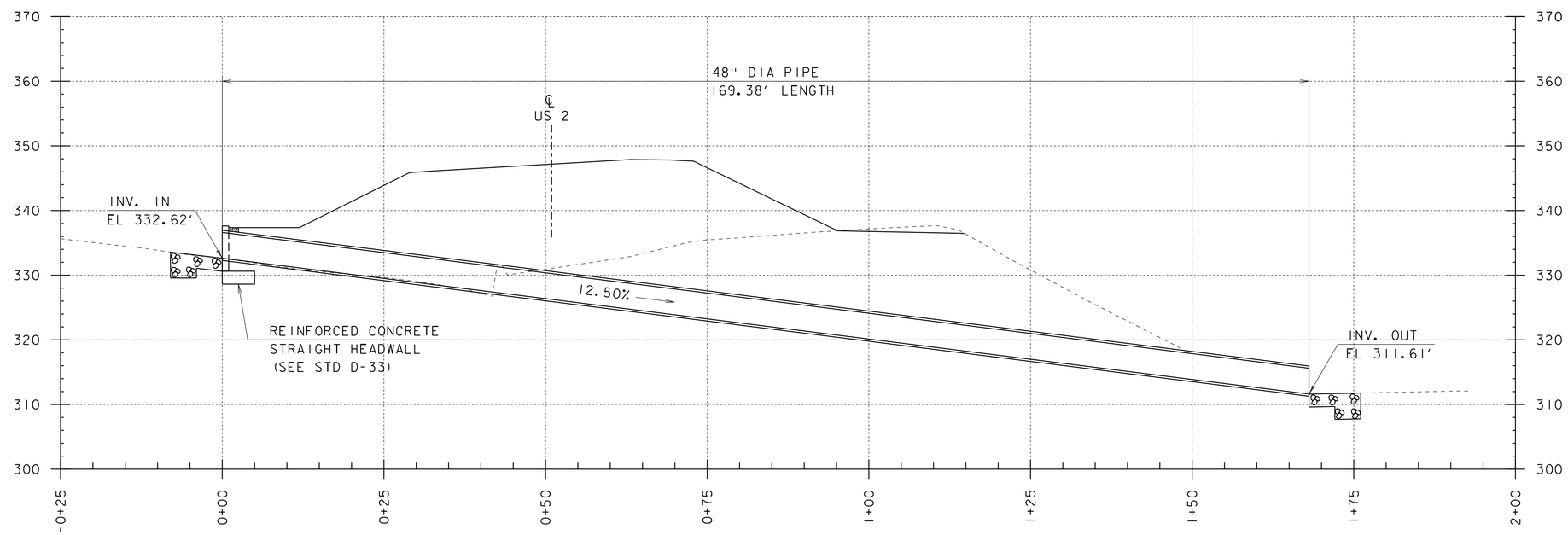
CULVERT 1



CULVERT 2

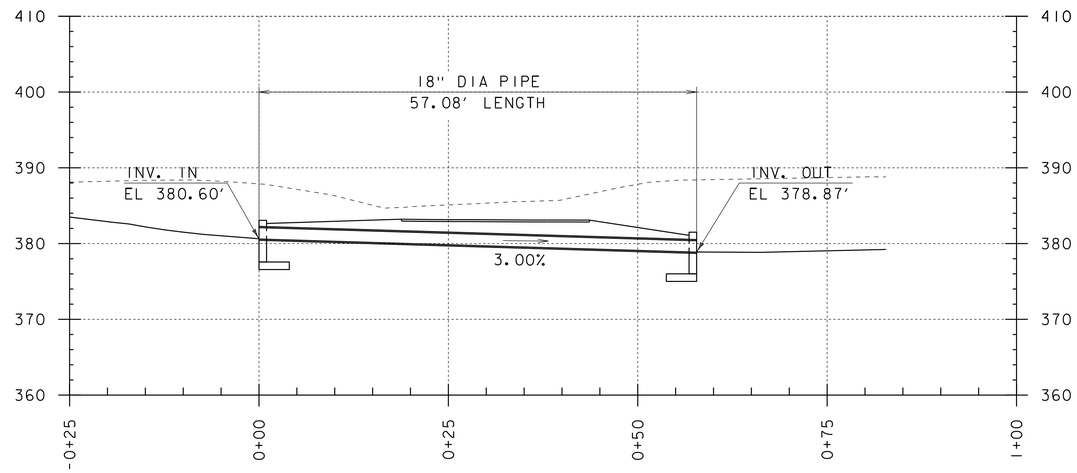


CULVERT 3

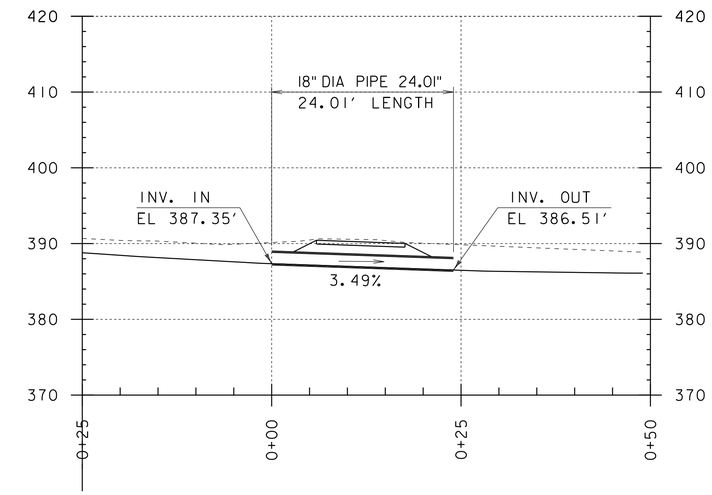


PROJECT NAME: RICHMOND	
PROJECT NUMBER: IM 089-2(52)	
FILE NAME: s16a183proDrainage.dgn	PLOT DATE: 27-AUG-2020
PROJECT LEADER: C. COTA	DRAWN BY: M. LONGSTREET
DESIGNED BY: D. PETERSON	CHECKED BY: D. PETERSON
DRAINAGE PROFILES 1	SHEET 21 OF 53

CULVERT 4



CULVERT 5



PROJECT NAME: RICHMOND	
PROJECT NUMBER: IM 089-2(52)	
FILE NAME: s16a183proDrainage.dgn	PLOT DATE: 27-AUG-2020
PROJECT LEADER: C. COTA	DRAWN BY: M. LONGSTREET
DESIGNED BY: D. PETERSON	CHECKED BY: D. PETERSON
DRAINAGE PROFILES 2	SHEET 22 OF 53

EXISTING SIGNS

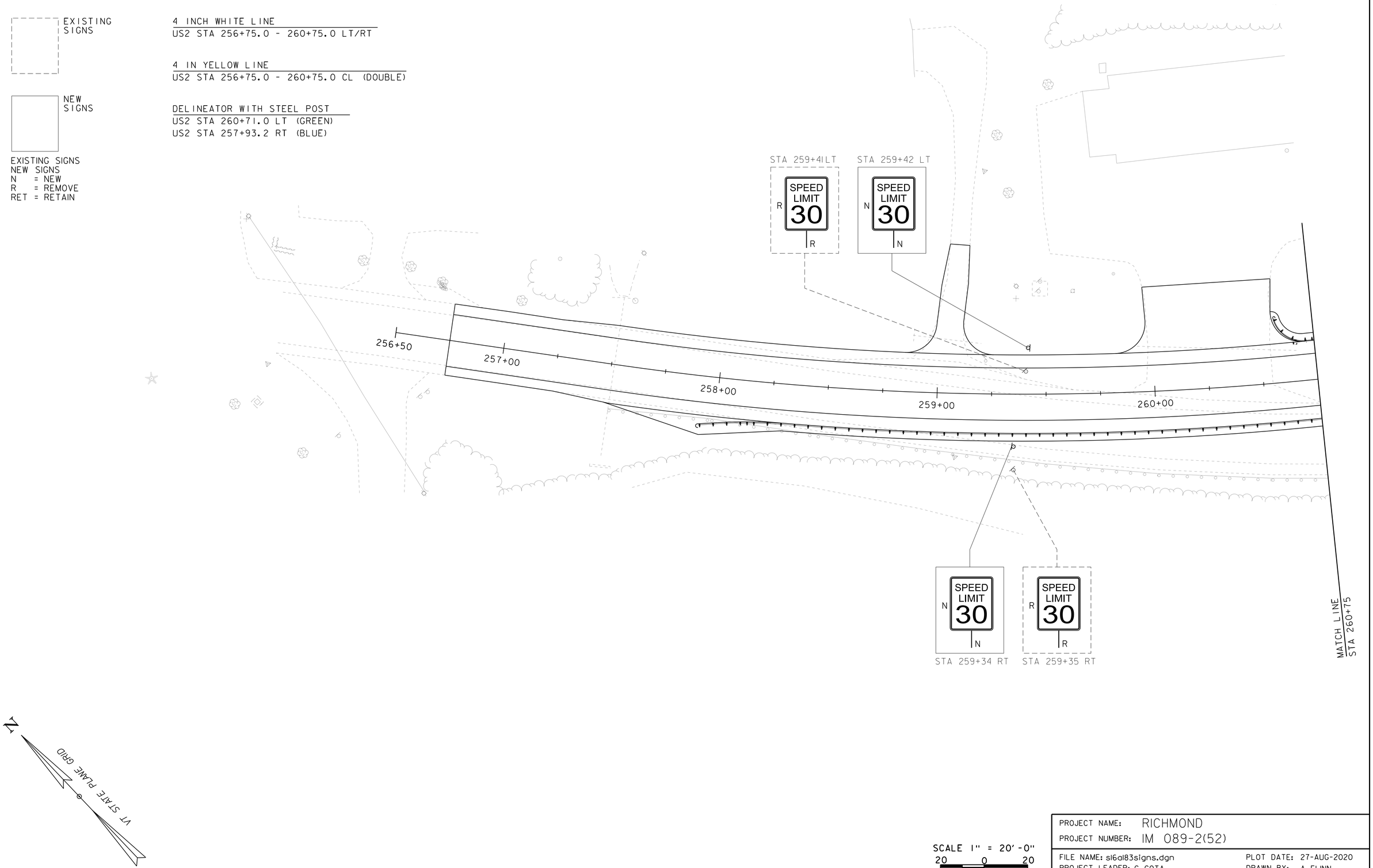
NEW SIGNS

EXISTING SIGNS
NEW SIGNS
N = NEW
R = REMOVE
RET = RETAIN

4 INCH WHITE LINE
US2 STA 256+75.0 - 260+75.0 LT/RT

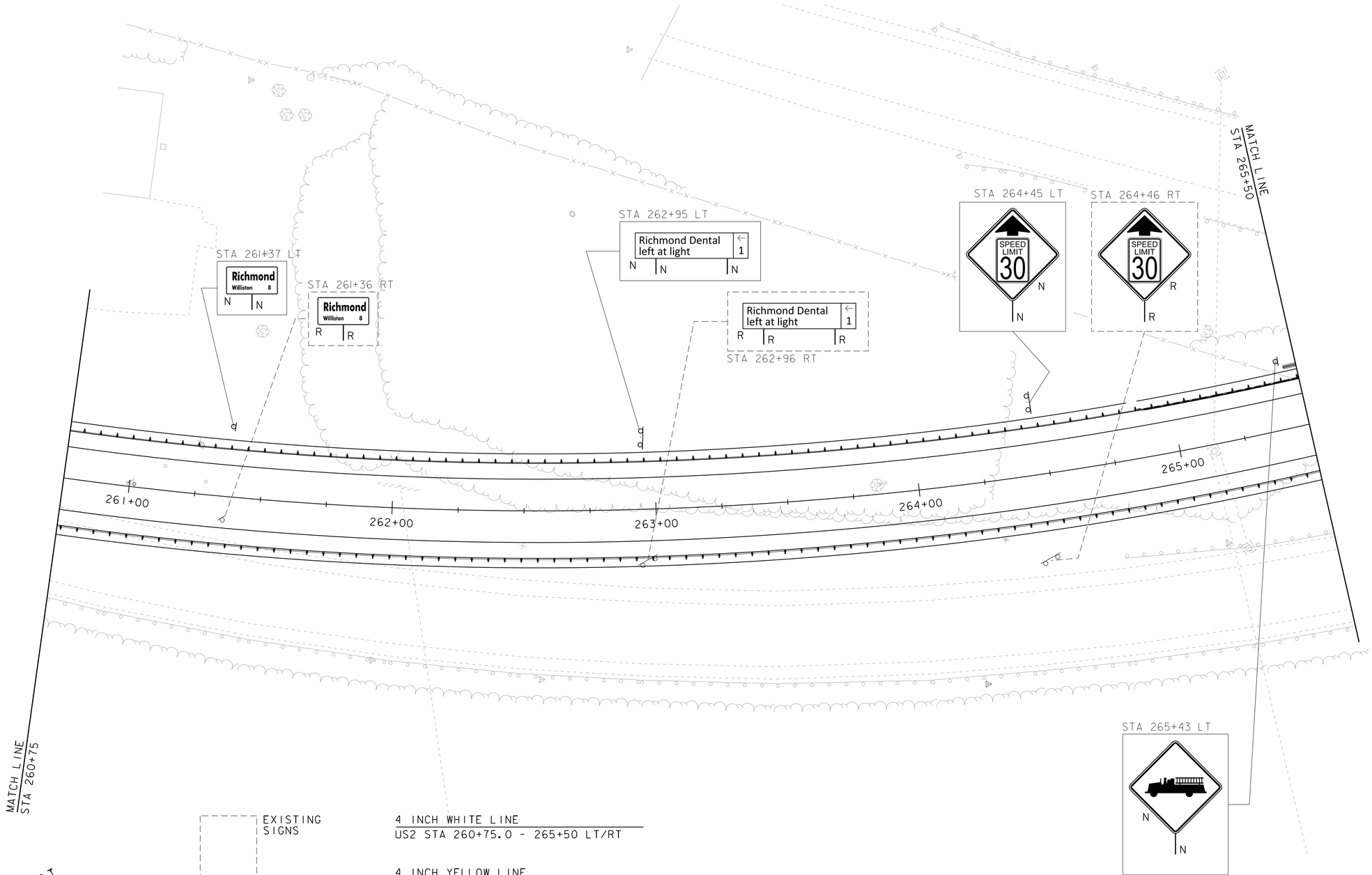
4 IN YELLOW LINE
US2 STA 256+75.0 - 260+75.0 CL (DOUBLE)

DELINEATOR WITH STEEL POST
US2 STA 260+71.0 LT (GREEN)
US2 STA 257+93.2 RT (BLUE)



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

PROJECT NAME: RICHMOND	
PROJECT NUMBER: IM 089-2(52)	
FILE NAME: sl6al83signs.dgn	PLOT DATE: 27-AUG-2020
PROJECT LEADER: C. COTA	DRAWN BY: A. FLINN
DESIGNED BY: D. PETERSON	CHECKED BY: D. PETERSON
TRAFFIC SIGNS AND MARKINGS 1	SHEET 23 OF 53



EXISTING SIGNS

NEW SIGNS

EXISTING SIGNS
NEW SIGNS
N = NEW
R = REMOVE
RET = RETAIN

4 INCH WHITE LINE
US2 STA 260+75.0 - 265+50 LT/RT

4 INCH YELLOW LINE
US2 STA 260+75.0 - 265+50 CL (DOUBLE)

N

VT STATE PLANE GRID

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

PROJECT NAME: RICHMOND	
PROJECT NUMBER: IM 089-2(52)	
FILE NAME: s16a183signs.dgn	PLOT DATE: 27-AUG-2020
PROJECT LEADER: C. COTA	DRAWN BY: A. FLINN
DESIGNED BY: D. PETERSON	CHECKED BY: D. PETERSON
TRAFFIC SIGNS AND MARKINGS 2	SHEET 24 OF 53

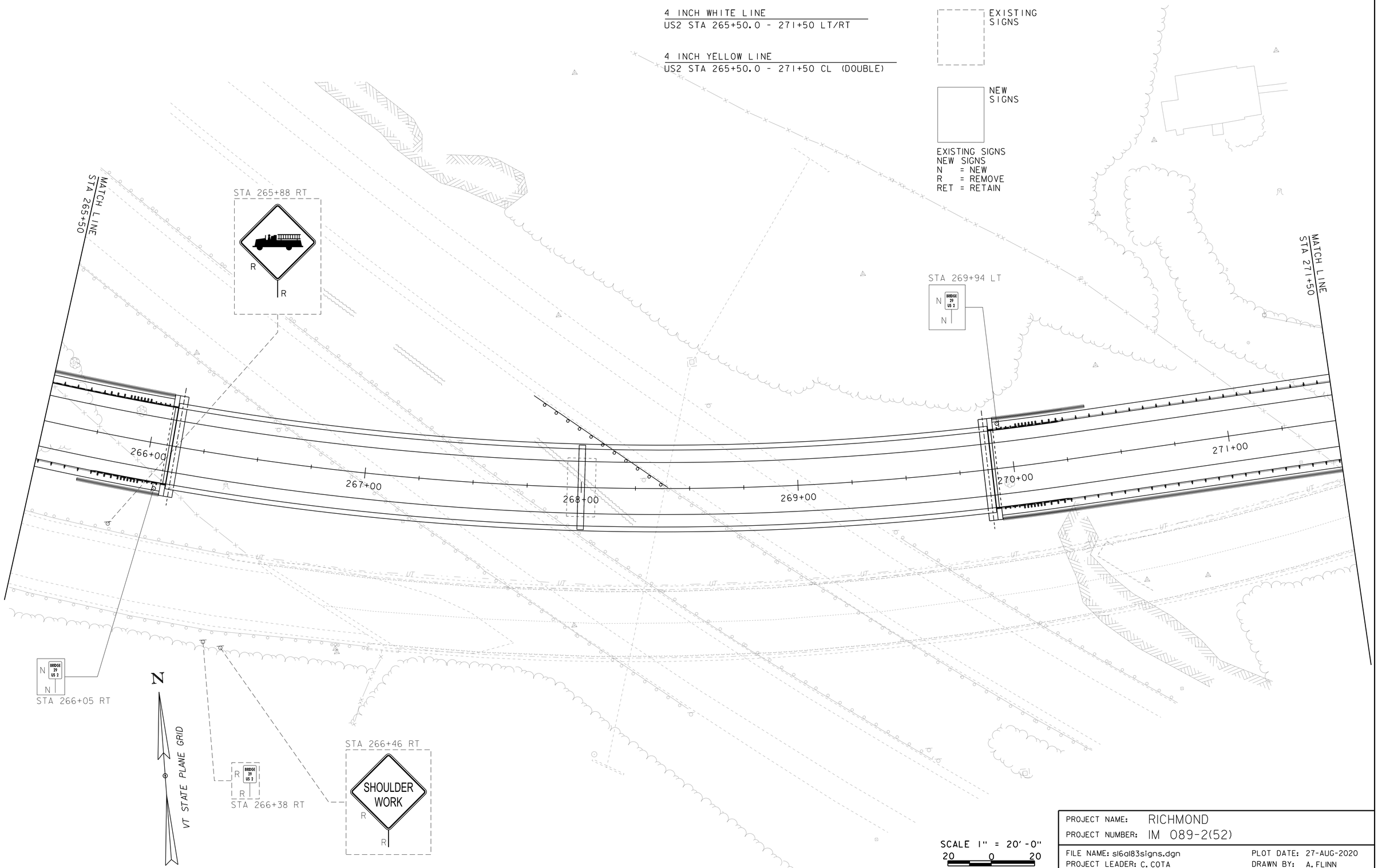
4 INCH WHITE LINE
US2 STA 265+50.0 - 271+50 LT/RT

4 INCH YELLOW LINE
US2 STA 265+50.0 - 271+50 CL (DOUBLE)

EXISTING SIGNS

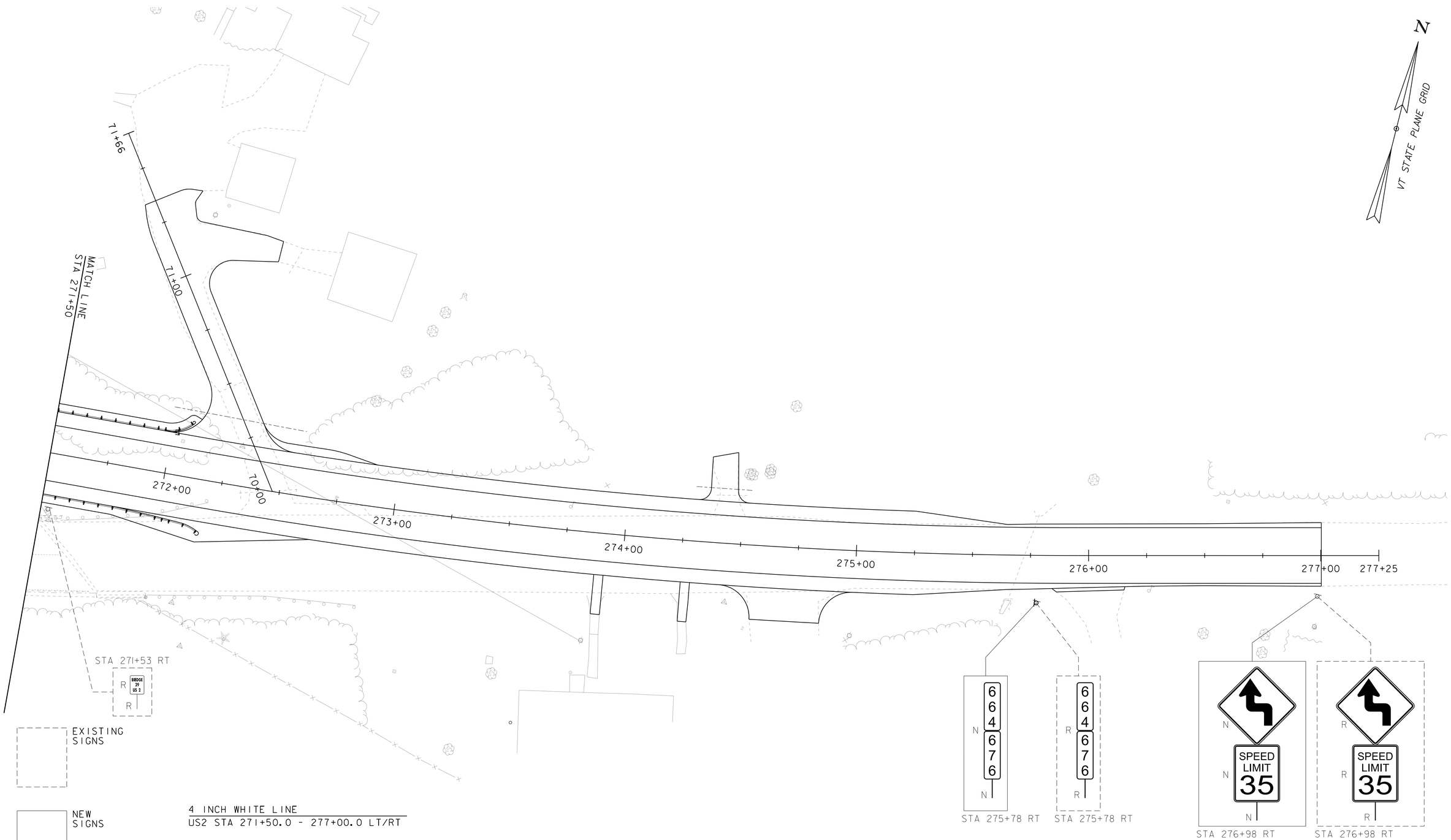
NEW SIGNS

EXISTING SIGNS
NEW SIGNS
N = NEW
R = REMOVE
RET = RETAIN



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

PROJECT NAME: RICHMOND	
PROJECT NUMBER: IM 089-2(52)	
FILE NAME: si6al83signs.dgn	PLOT DATE: 27-AUG-2020
PROJECT LEADER: C. COTA	DRAWN BY: A. FLINN
DESIGNED BY: D. PETERSON	CHECKED BY: D. PETERSON
TRAFFIC SIGNS AND MARKINGS 3	SHEET 25 OF 53



PROJECT NAME: RICHMOND	
PROJECT NUMBER: IM 089-2(52)	
FILE NAME: s16a183signs.dgn	PLOT DATE: 27-AUG-2020
PROJECT LEADER: C. COTA	DRAWN BY: A. FLINN
DESIGNED BY: D. PETERSON	CHECKED BY: D. PETERSON
TRAFFIC SIGNS AND MARKINGS 4	SHEET 26 OF 53

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET

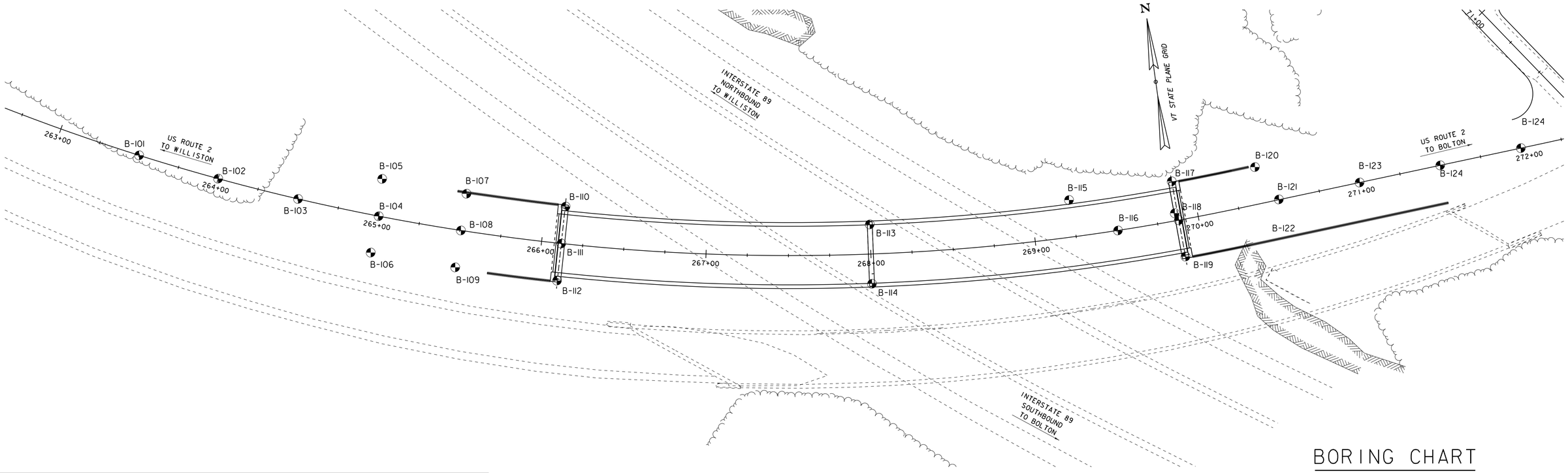
MILE MARKER, STATION OR SIGN NUMBER	SIGN LEGEND	SIGN DIMENSIONS EACH	WIDTH (in)	HEIGHT (in)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	SALVAGE	NEW SIGN POSTS NO. OF POST	FLANGED CHANNEL (LB / FT) 1.12	2.00	3.00	SQUARE STEEL (in) (LB / FT) 1.75	2.00	2.50	ANCHOR	SLEEVE	TUBULAR ALUMINUM Ø (IN) (LB / FT) 3.00	4.00	4.0 MOD	FOUNDATION	TUBULAR STEEL Ø (IN) (LB / FT) 3.00	3.50	4.00	5.00	W-SHAPE STEEL FTG. SIZE 24"	30"	WEIGHT	POST SIZE	SIGN FRAME REQUIRED	REMARKS / SHSM - SIGN DESIGNATION	SIGN DETAIL DETAIL ON SHEET NUMBER	STANDARD SHEET NUMBER
OPTION ITEMS																																			
259+42.0 LT		1	24.0	30.0	5.0						1.0					15.0		X															R2_130		SHSM
259+34.0 RT		1	24.0	30.0	5.0						1.0					15.0		X															R2_130		SHSM
261+37.0 LT		1	36.0	4.0	6.3						1.0					15.0		X															VD-018A		T-95
264+45.0 LT		1	30.0	30.0	6.3						1.0					15.0		X															W3-5		SHSM
265+43.0 LT		1	30.0	30.0	6.3						1.0					15.0		X															W11-8		SHSM
265+88.0 RT		1	30.0	30.0	6.3						1.0					15.0		X															W11-9		SHSM
266+05.0 RT		1	6.0	10.0	0.42						1.0				8.0			X															VD-701		T-42
269+94.0 LT		1	6.0	10.0	0.42						1.0				8.0			X															VD-701		T-42
376+98.0 RT		1	30.0	30.0	6.3						1.0					15.0		X															W1-4L		SHSM
376+98.0 RT		1	24.0	30.0	5.00						0.0							X															R2_130		SHSM
												FT	FT	FT	FT	FT	FT		EA	LB	LB	LB		LB	LB	LB	LB								
												.	.	.	16.	105.	.	XXXXX	.	.	.	.		.	.	.	.								
		TOTALS			SF 47.29	SF .	EA. .	SF .	16			FT .			FT 121.					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 STANDARD SHEETS AND THE VTRANS "SIGN POST DESIGN GUIDELINE."

PROJECT NAME: RICHMOND
PROJECT NUMBER: IM 089-2 52)

FILE NAME: sl6al83_forms.dgn
PROJECT LEADER: C. COTA
DESIGNED BY: D.PETERSON
TRAFFIC SIGN SUMMARY

PLOT DATE: 27-AUG-2020
DRAWN BY: M.LONGSTREET
CHECKED BY: D.PETERSON
SHEET 27 OF 53



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

SOIL CLASSIFICATION

AASHTO

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

ROCK QUALITY DESIGNATION

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

SHEAR STRENGTH

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

CORRELATION GUIDE OF "N" TO DENSITY/CONSISTENCY

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

DEFINITIONS (AASHTO)

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

BOULDER - A rock fragment with an average dimension > 12 inches.

COBBLE - Rock fragments with an average dimension between 3 and 12 inches.

GRAVEL - Rounded particles of rock < 3" and > 0.0787" (#10 sieve).

SAND - Particles of rock < 0.0787" (#10 sieve) and > 0.0029" (#200 sieve).

SILT - Soil < 0.0029" (#200 sieve), non or slightly plastic and exhibits no strength when air-dried.

CLAY - Fine grained soil, exhibits plasticity when moist and considerable strength when air-dried.

VARVED - Alternate layers of silt and clay.

HARDPAN - Extremely dense soil, cemented layer, not softened when wet.

MUCK - Soft organic soil (containing > 10% organic material.

MOISTURE CONTENT - Weight of water divided by dry weight of soil.

FLOWING SAND - Granular soil so saturated (loose) that it flows into drill casing during extraction of wash rod.

STRIKE - Angle from magnetic north to line of intersection of bed with a horizontal plane.

DIP - Inclination of bed with a horizontal plane.

COMMONLY USED SYMBOLS

▼	Water Elevation
⊗	Standard Penetration Boring
⊕	Auger Boring
⊙	Rod Sounding
S	Sample
N	Standard Penetration Test Blow Count Per Foot For: 2" O.D. Sampler; 1 3/8" I.D. Sampler; Hammer Weight Of 140 Lbs.; Hammer Fall Of 30"
VS	Field Vane Shear Test
US	Undisturbed Soil Sample

B	Blast
DC	Diamond Core
MD	Mud Drill
WA	Wash Ahead
HSA	Hollow Stem Auger
AX	Core Size 1 1/8"
BX	Core Size 1 5/8"
NX	Core Size 2 1/8"
M	Double Tube Core Barrel Used
LL	Liquid Limit
PL	Plastic Limit
PI	Plasticity Index
NP	Non Plastic
W	Moisture Content (Dry Wgt. Basis)

D	Dry
M	Moist
MTW	Moist To Wet
W	Wet
Sat	Saturated
Bo	Boulder
Gr	Gravel
Sa	Sand
Si	Silt
Cl	Clay
HP	Hardpan
Le	Ledge
NLTD	No Ledge To Depth
CNPF	Can Not Penetrate Further
TLOB	Top of Ledge Or Boulder

NR	No Recovery
Rec.	Recovery
%Rec.	Percent Recovery
RQD	Rock Quality Designation
CBR	California Bearing Ratio
<	Less Than
>	Greater Than
R	Refusal (N > 100)
VTSPG	NAD83 - See Note 7

COLOR

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

GENERAL NOTES

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

2. Soil and rock classifications, properties and descriptions are based on engineering interpretation from available subsurface information by the Agency and may not necessarily reflect actual variations in subsurface conditions that may be encountered between individual boring or sample locations.

3. Observed water levels and/or conditions indicated are as recorded at the time of exploration and may vary according to the prevailing rainfall, methods of exploration and other factors.

4. Engineering judgment was exercised in preparing the subsurface information presented herein. Analysis and interpretation of subsurface data was performed and interpreted for Agency design and estimating purposes. Presentation of the information in the Contract is intended to provide the Contractor access to the same data available to the Agency. The subsurface information is presented in good faith and is not intended as a substitute for personal investigation, independent interpretation, independent analysis or judgment by the Contractor.

5. Pictorial structure details shown on the boring plan layout or soils profile are for illustrative purposes only and may not accurately portray final contract details.

6. Terminology used on boring logs to describe the hardness, degree of weathering, and spacing of fractures, joints and other discontinuities in the bedrock is defined in the AASHTO Manual on Subsurface Investigations, 1988.

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

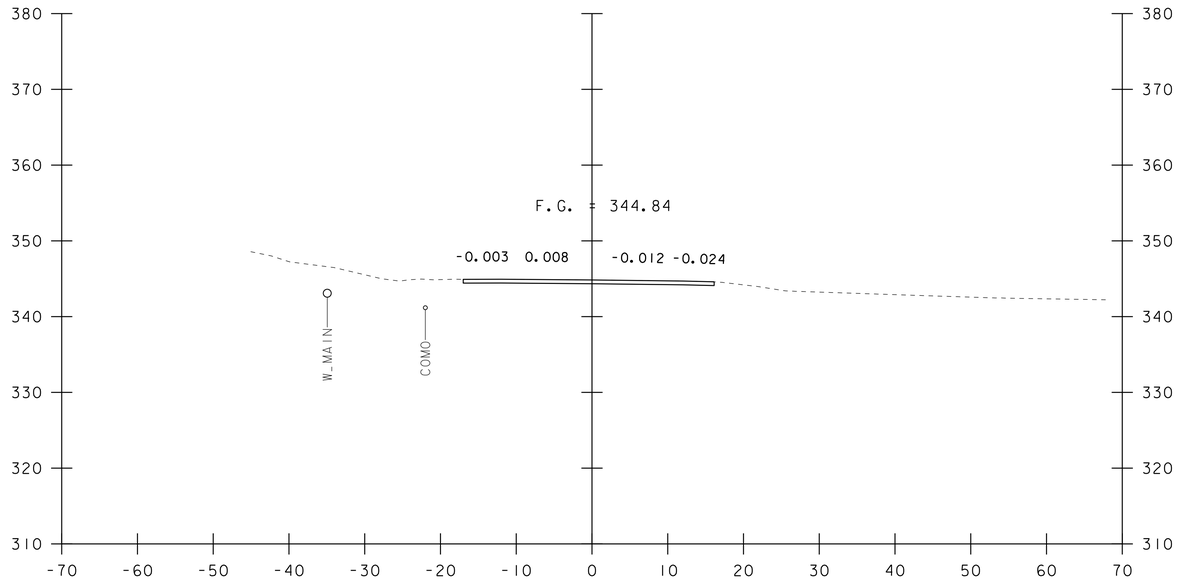
BORING CHART

HOLE NO.	STATION	OFFSET	NORTHING	EASTING
B-101	263+50.00	0.00 LT	693398.49	1513259.29
B-102	264+00.00	0.00 LT	693377.81	1513304.81
B-103	264+50.00	0.00 LT	693358.88	1513351.08
B-104	265+00.00	0.00 RT	693341.72	1513398.04
B-105	265+97.71	22.58 LT	693363.82	1513403.26
B-106	264+99.46	22.58 RT	693320.55	1513390.19
B-107	265+50.60	22.54 LT	693347.79	1513452.70
B-108	265+50.60	0.00 RT	693326.20	1513446.21
B-109	265+50.60	22.62 RT	693304.54	1513439.86
B-110	266+12.21	22.55 LT	693331.71	1513511.07
B-111	266+12.00	0.00 LT	693309.89	1513505.39
B-112	266+11.80	22.62 RT	693288.00	1513499.69
B-113	268+00.00	18.00 LT	693295.30	1513692.23
B-114	268+00.00	18.00 RT	693259.49	1513688.56
B-115	269+23.60	22.49 LT	693293.11	1513813.94
B-116	269+50.60	0.00 RT	693270.69	1513840.77
B-117	269+87.19	22.63 LT	693294.28	1513876.41
B-118	269+87.98	0.00 RT	693271.70	1513878.13
B-119	269+88.74	22.51 RT	693249.25	1513879.83
B-120	270+40.12	22.34 LT	693297.17	1513928.35
B-121	270+50.00	0.00 RT	693275.74	1513940.01
B-122	270+39.84	22.85 RT	693252.09	1513931.73
B-123	271+00.00	0.00 RT	693280.72	1513989.76
B-124	271+50.00	0.00 LT	693285.83	1514039.50
B-125	272+00.00	0.00 RT	693290.94	1514089.24

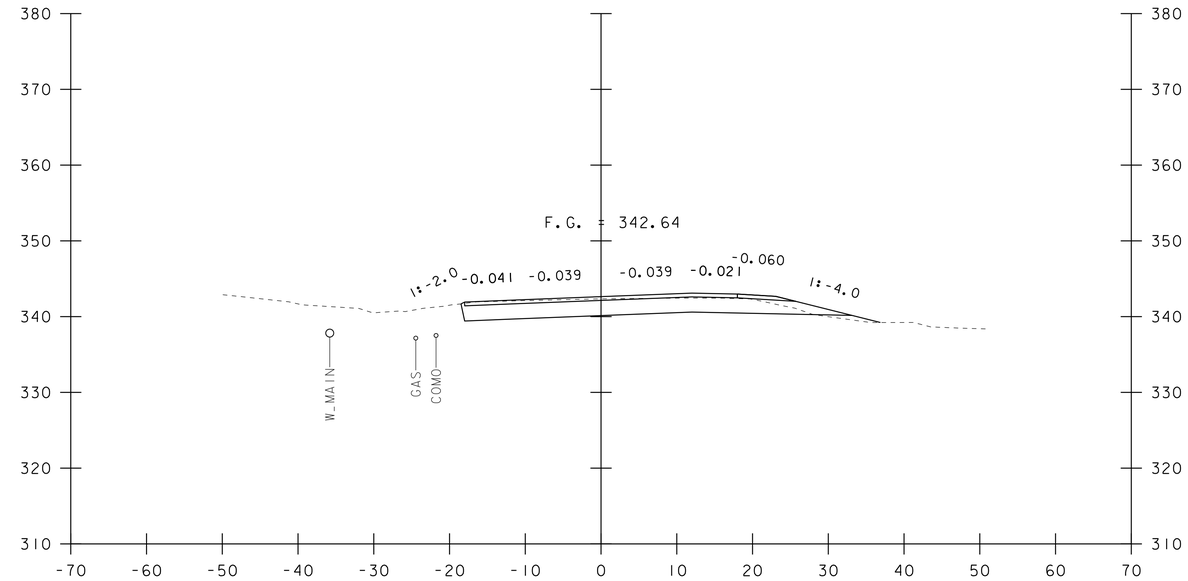
PROJECT NAME: RICHMOND
PROJECT NUMBER: IM 089-2(52)

FILE NAME: s16a183boring.dgn
PROJECT LEADER: C. COTA
DESIGNED BY: D. PETERSON
BORING INFORMATION

PLOT DATE: 27-AUG-2020
DRAWN BY: D. KARABEGOVIC
CHECKED BY: D. PETERSON
SHEET 28 OF 53

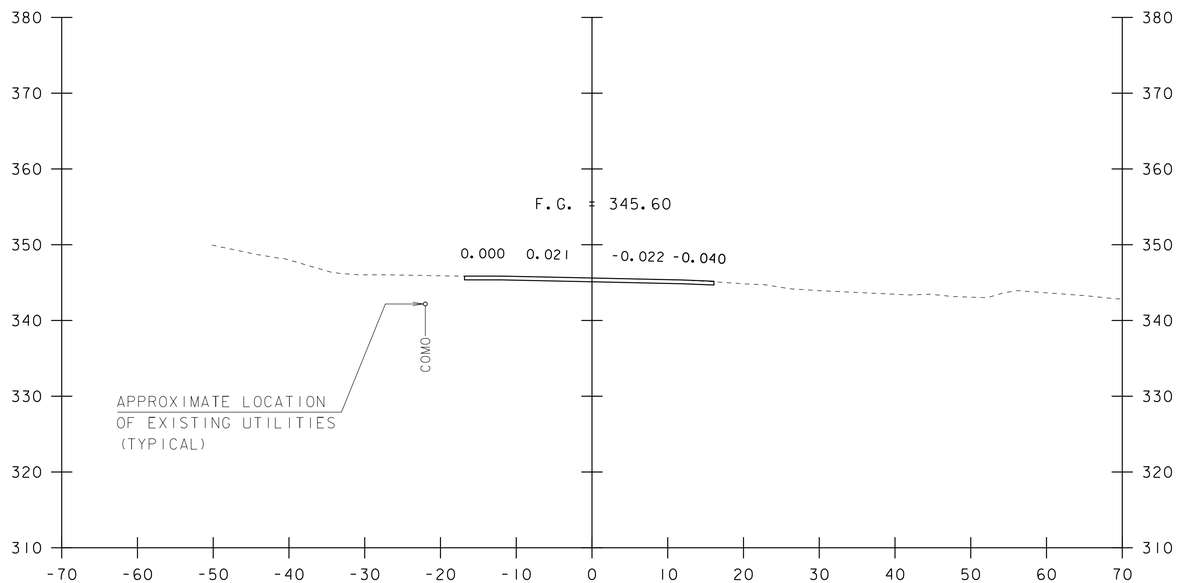


257+00



BEGIN PROJECT
STA 257+88.00

257+75



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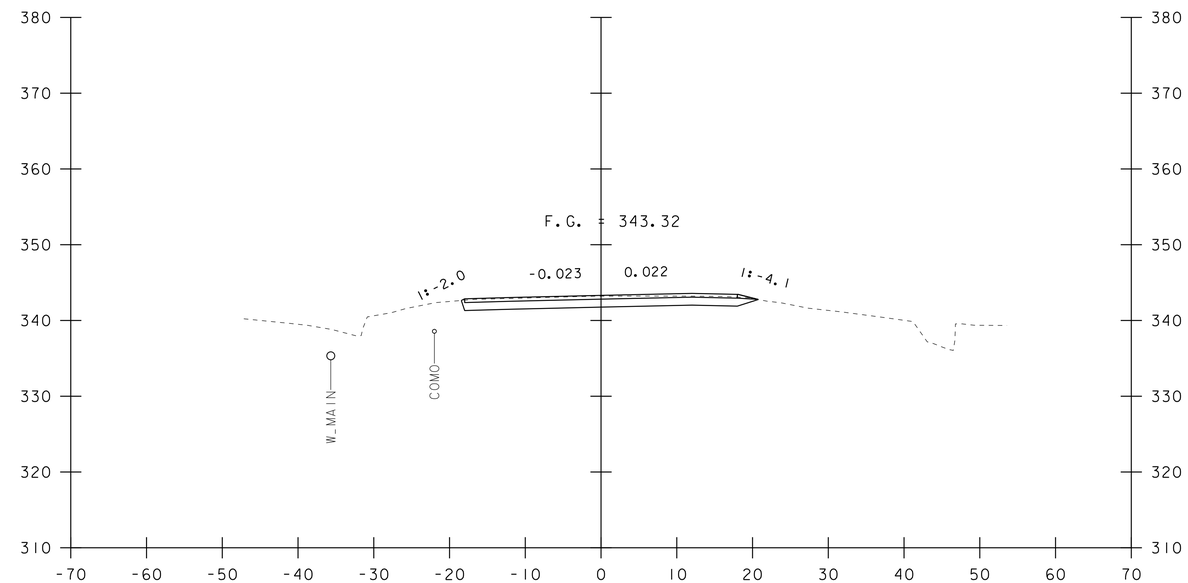
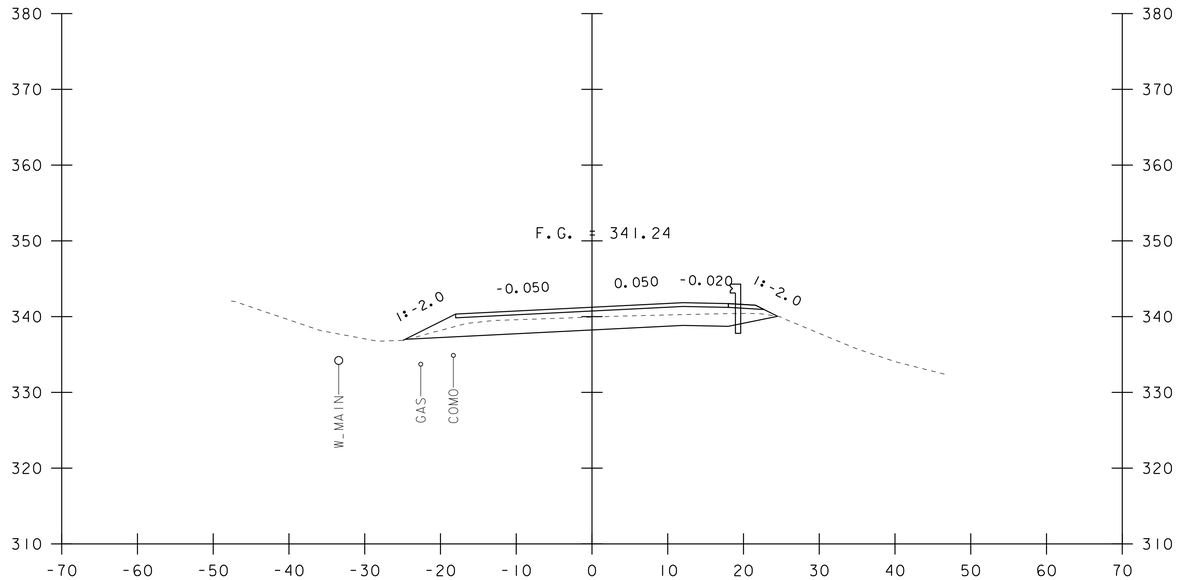
256+75



257+50

STA. 256+75 TO STA. 257+75

PROJECT NAME: RICHMOND	
PROJECT NUMBER: IM 089-2(52)	
FILE NAME: sl6al83xs.dgn	PLOT DATE: 27-AUG-2020
PROJECT LEADER: C. COTA	DRAWN BY: M. LONGSTREET
DESIGNED BY: D. PETERSON	CHECKED BY: D. PETERSON
US 2 CROSS SECTIONS 1	SHEET 29 OF 53



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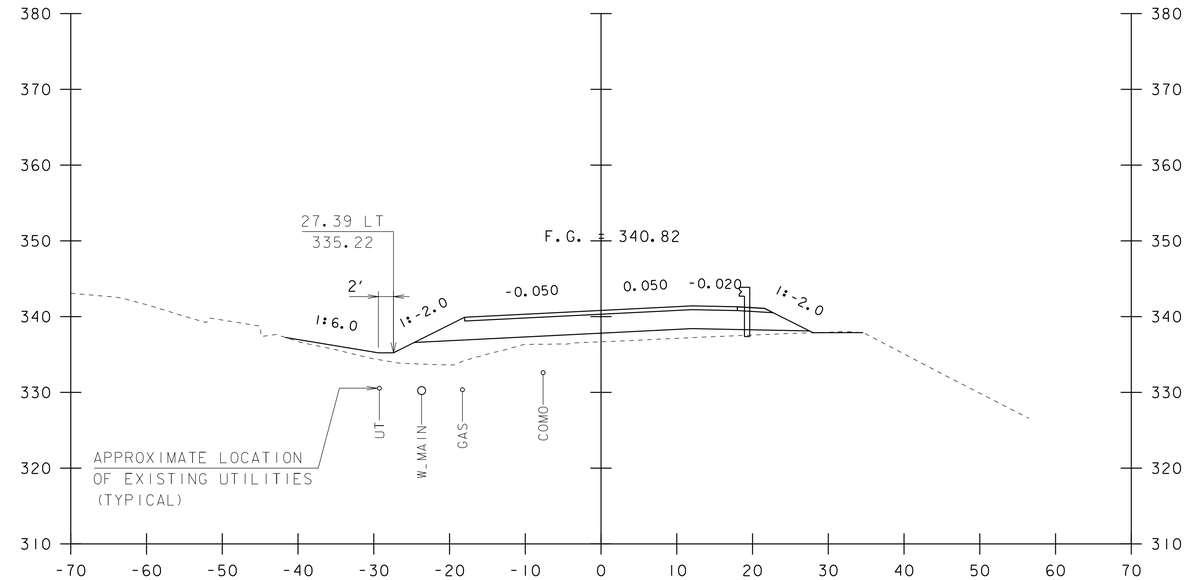

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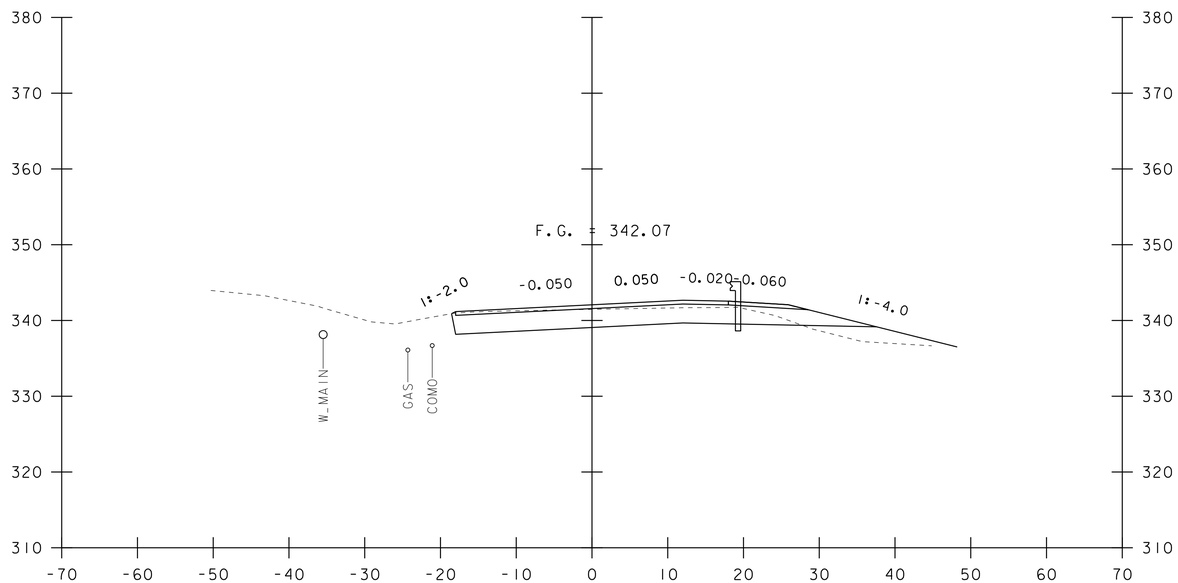

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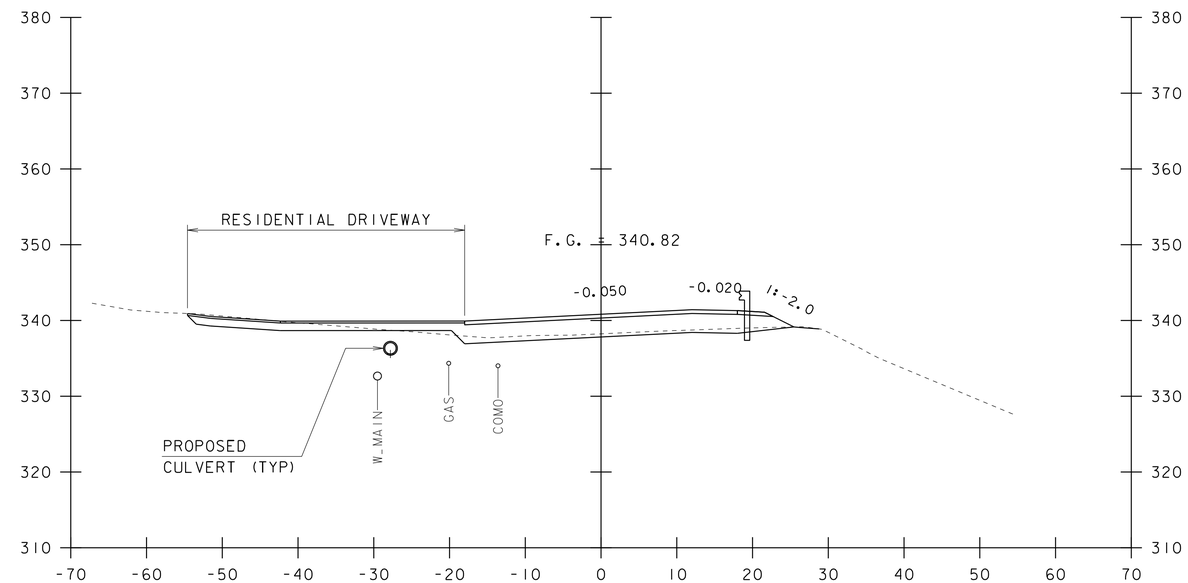
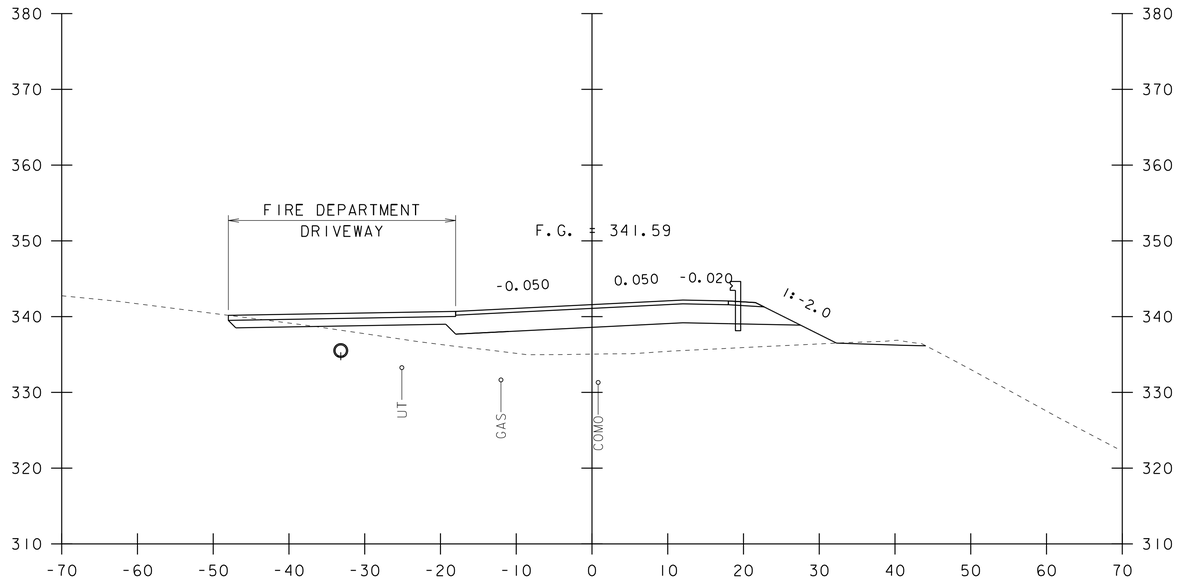


259+00

STA. 258+00 TO STA. 259+50

PROJECT NAME: RICHMOND	
PROJECT NUMBER: IM 089-2(52)	
FILE NAME: sl6al83xs.dgn	PLOT DATE: 27-AUG-2020
PROJECT LEADER: C. COTA	DRAWN BY: M. LONGSTREET
DESIGNED BY: D. PETERSON	CHECKED BY: D. PETERSON
US 2 CROSS SECTIONS 2	SHEET 30 OF 53



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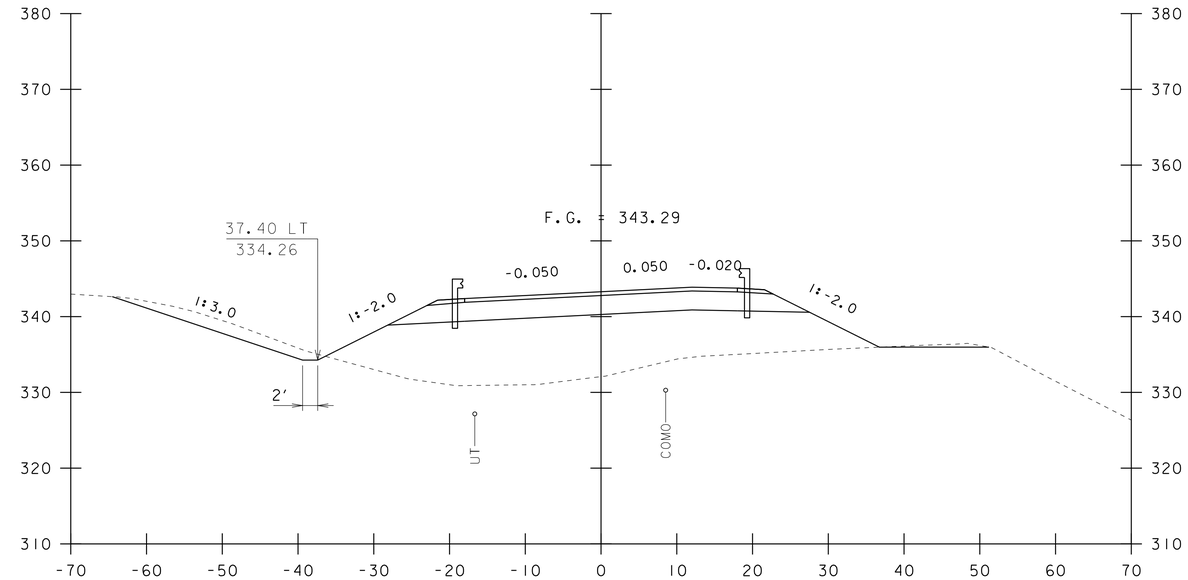
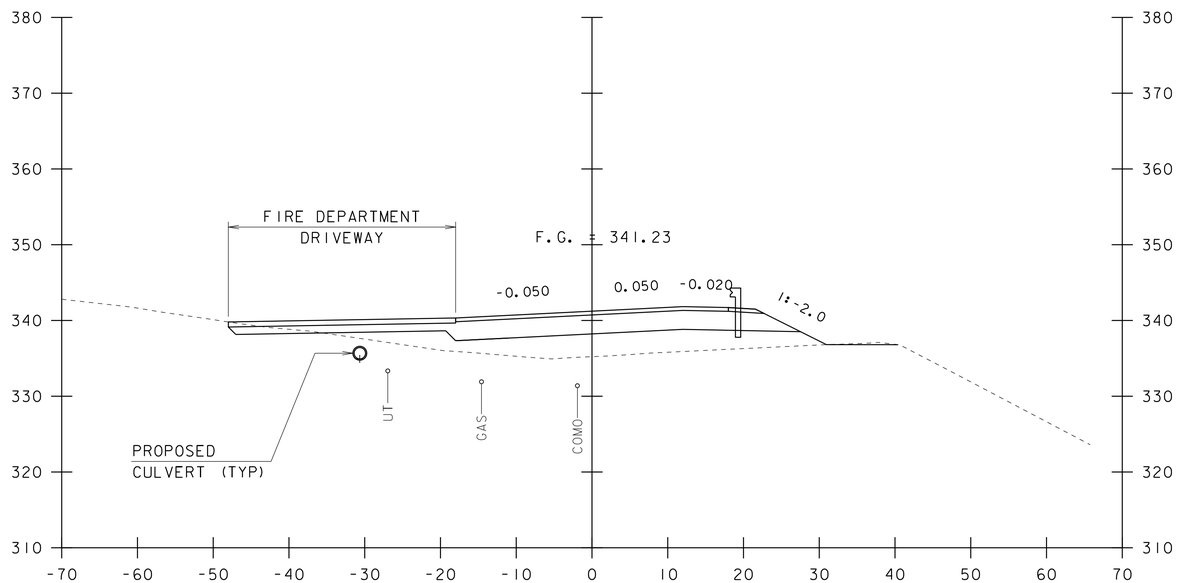


261+00



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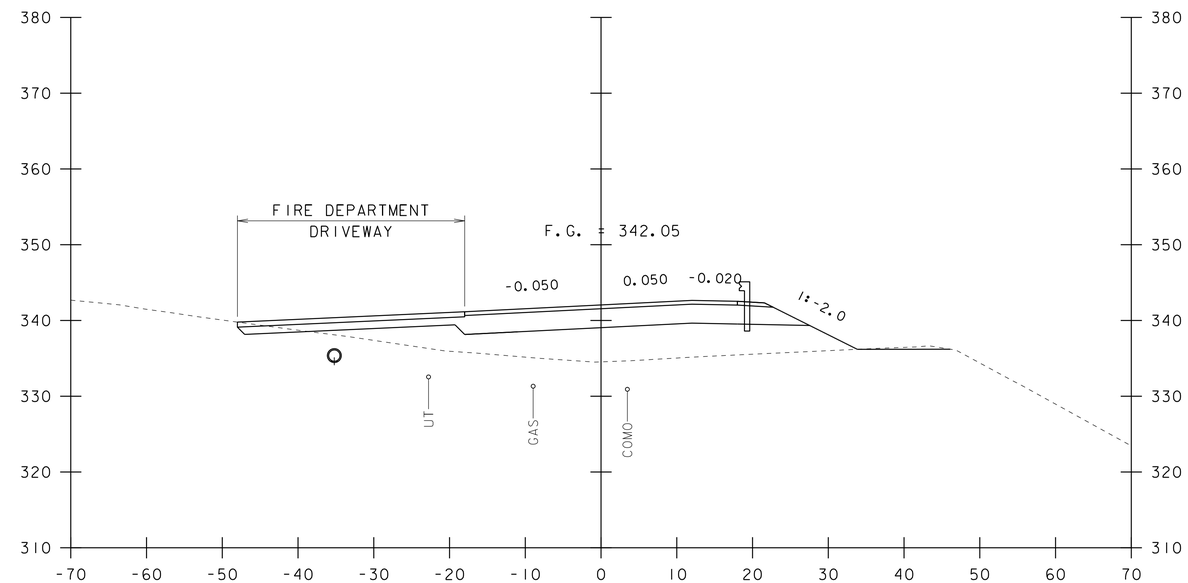
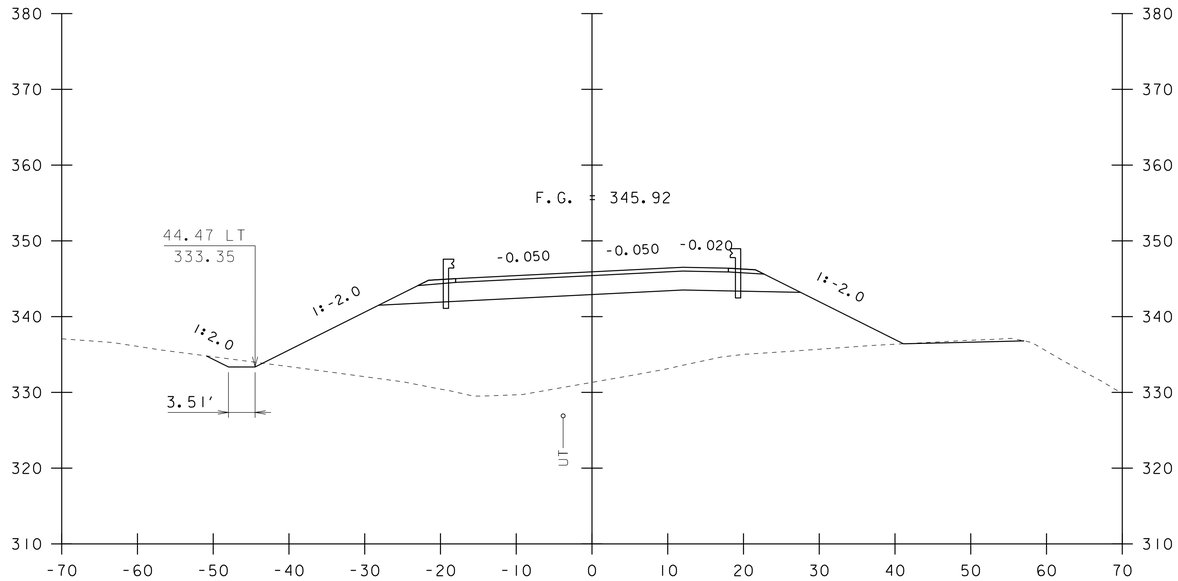


260+50

STA. 260+00 TO STA. 261+00

PROJECT NAME: RICHMOND	
PROJECT NUMBER: IM 089-2(52)	
FILE NAME: sl6al83xs.dgn	PLOT DATE: 27-AUG-2020
PROJECT LEADER: C. COTA	DRAWN BY: M. LONGSTREET
DESIGNED BY: D. PETERSON	CHECKED BY: D. PETERSON
US 2 CROSS SECTIONS 3	SHEET 31 OF 53



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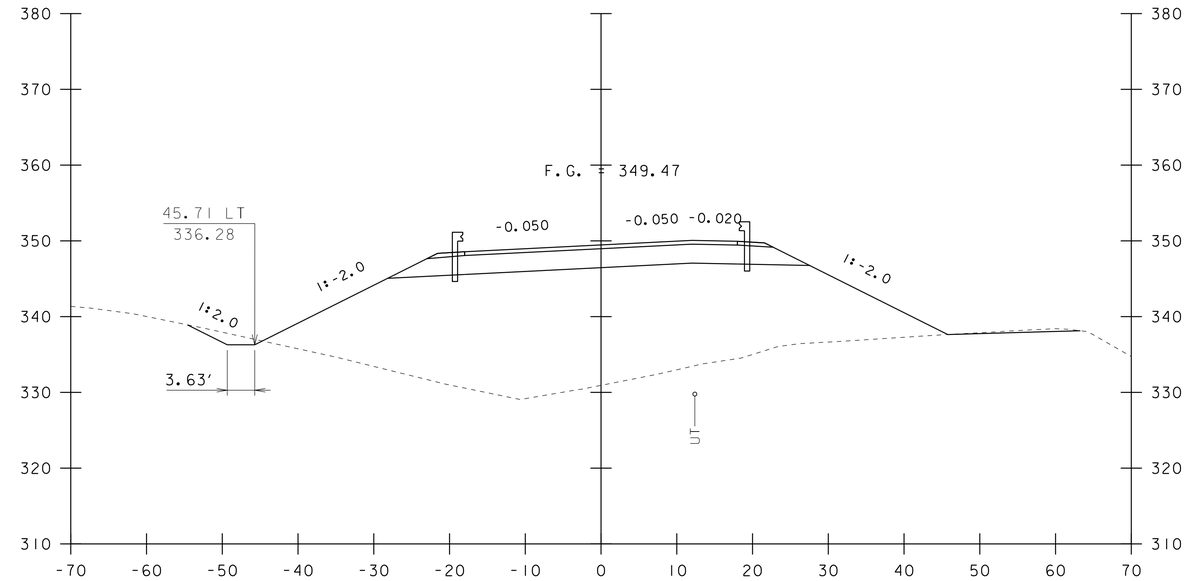

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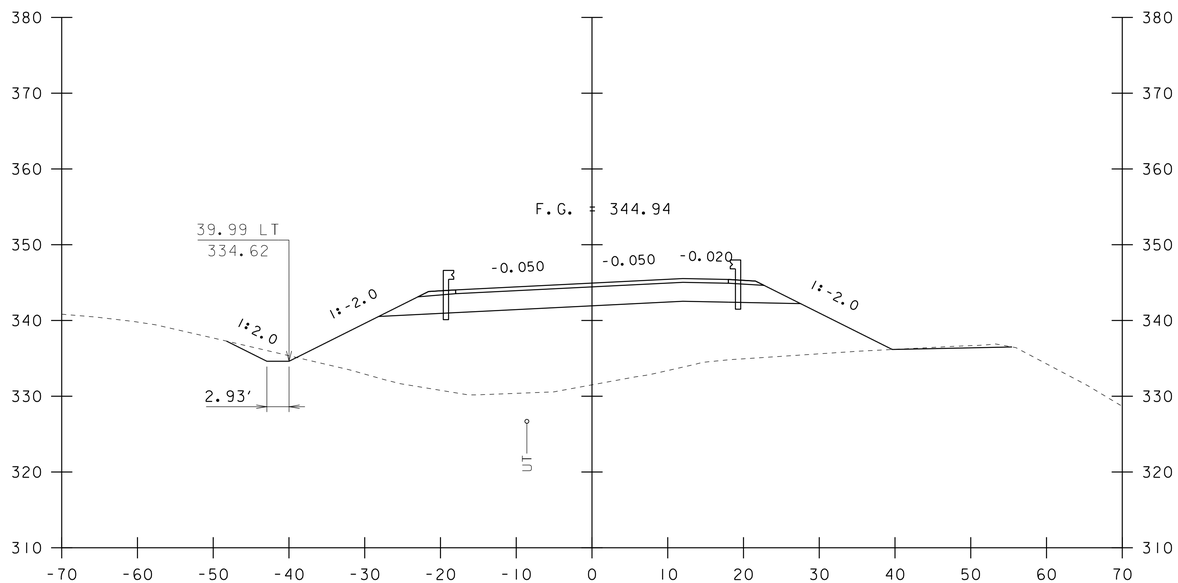

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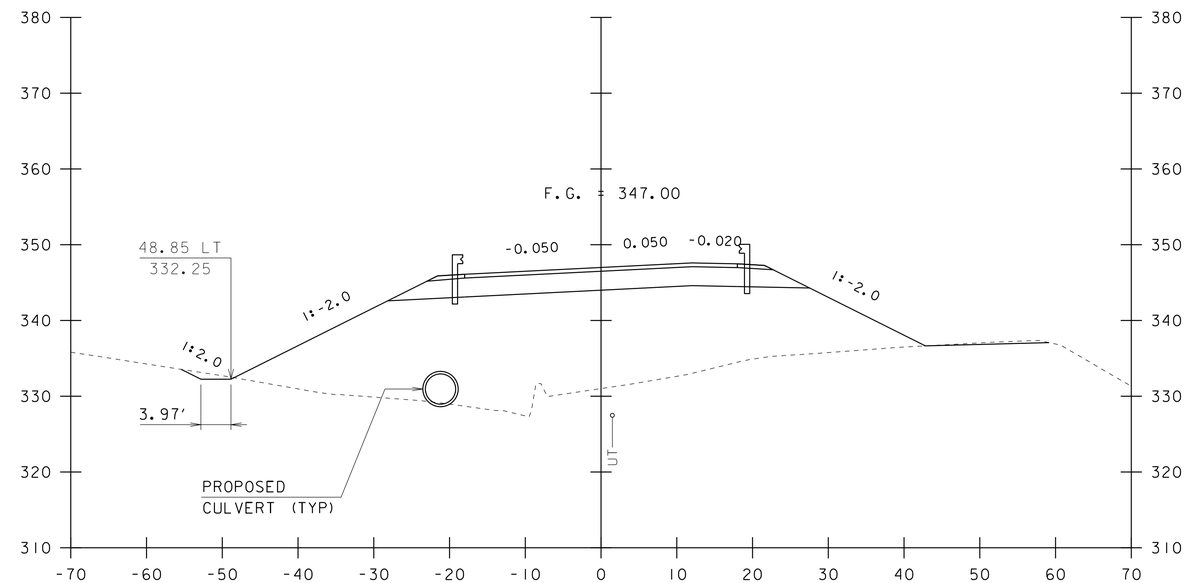
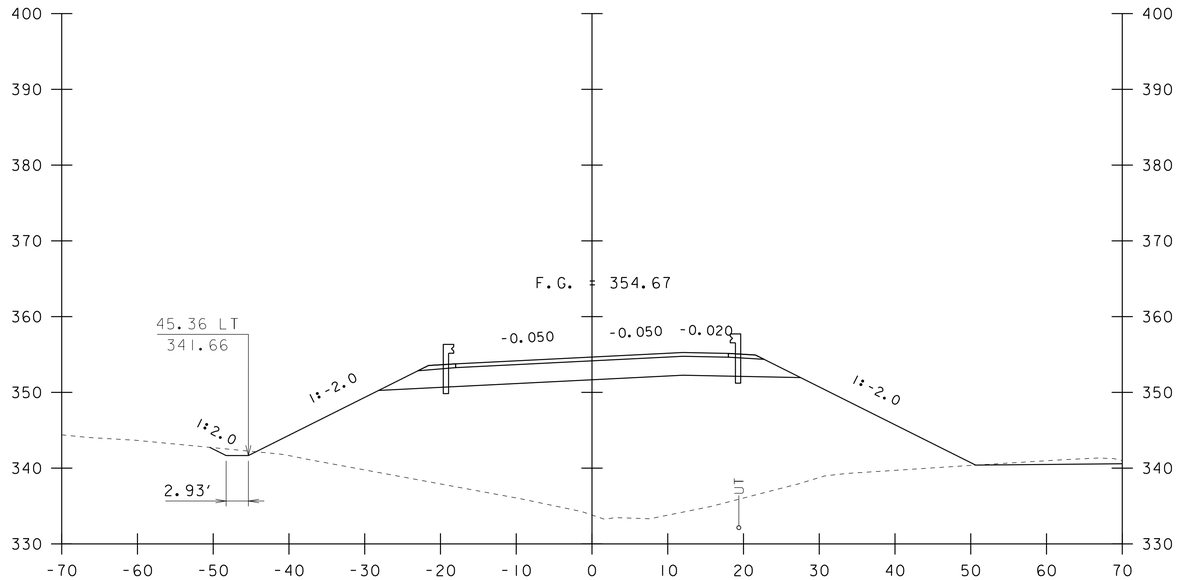


262+00

STA. 261+50 TO STA. 262+50

PROJECT NAME: RICHMOND	
PROJECT NUMBER: IM 089-2(52)	
FILE NAME: sl6al83xs.dgn	PLOT DATE: 27-AUG-2020
PROJECT LEADER: C. COTA	DRAWN BY: M. LONGSTREET
DESIGNED BY: D. PETERSON	CHECKED BY: D. PETERSON
US 2 CROSS SECTIONS 4	SHEET 32 OF 53



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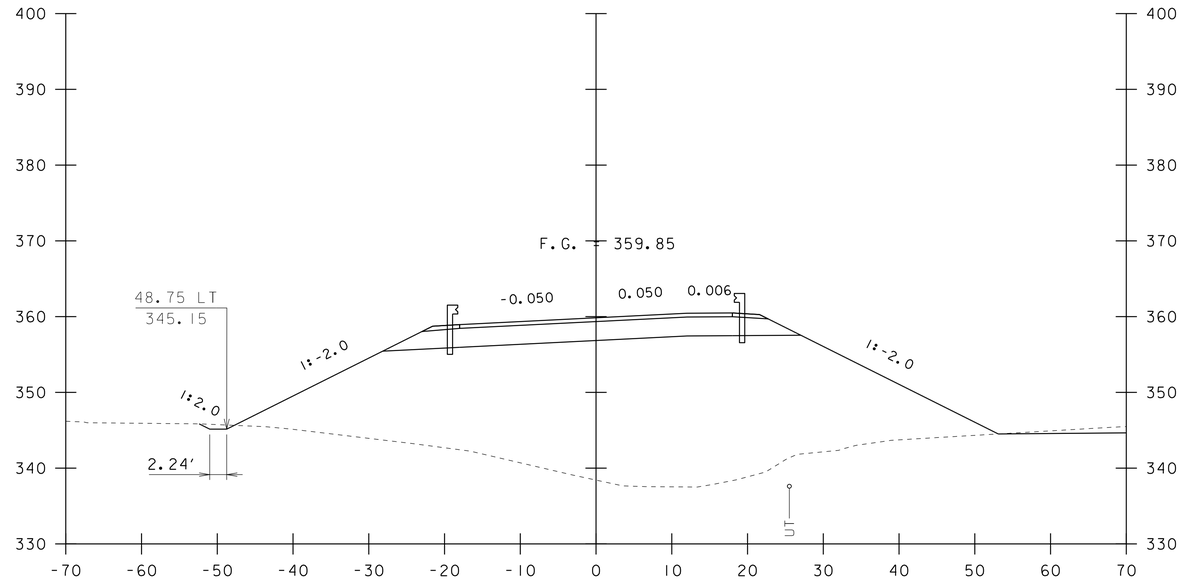

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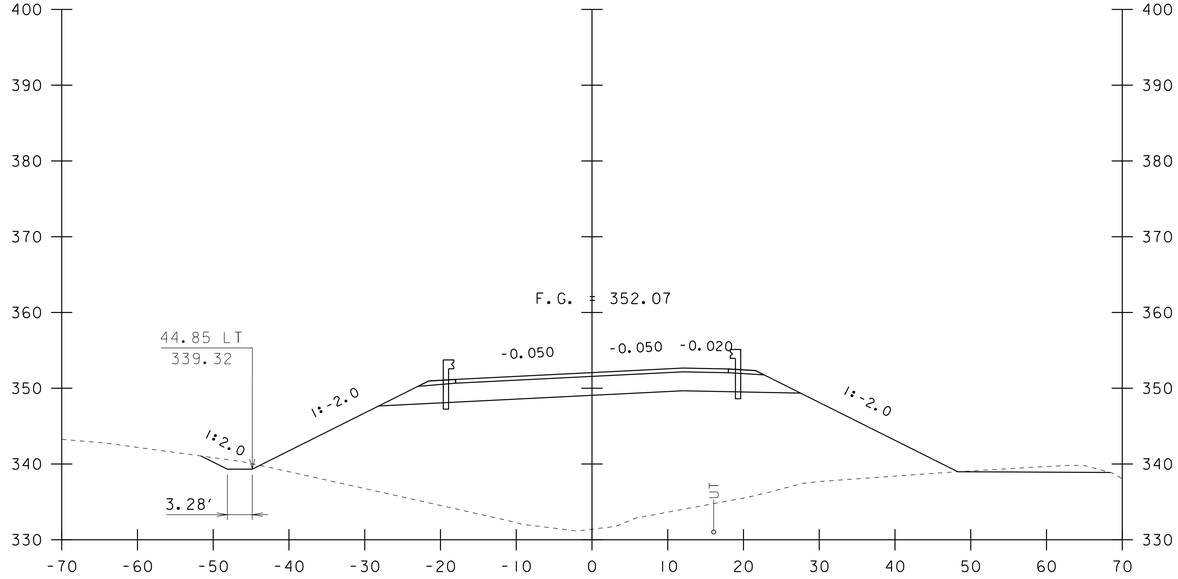

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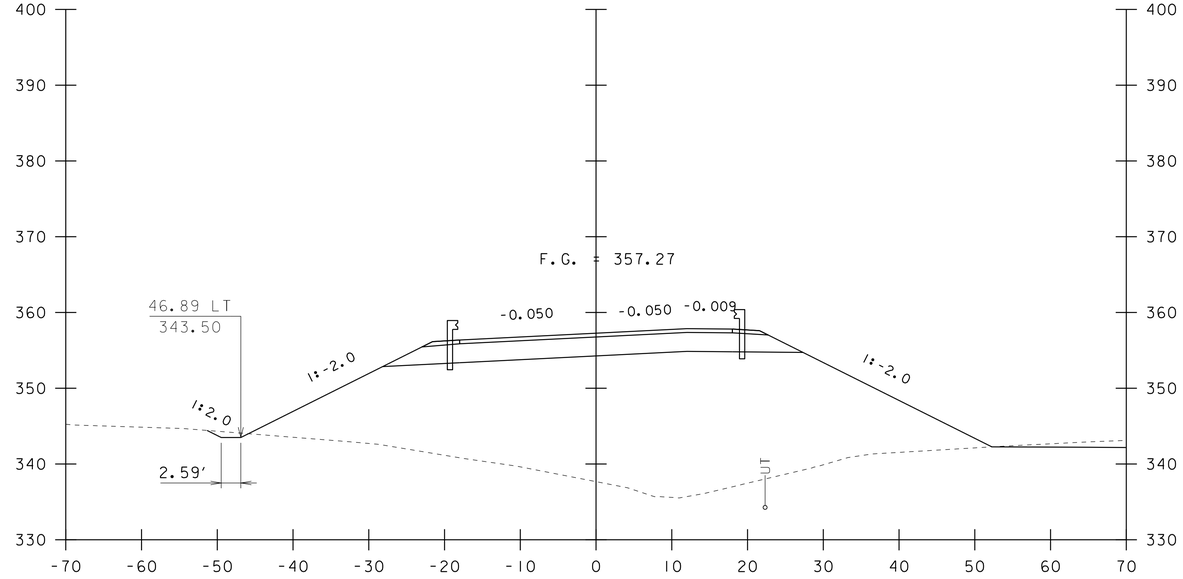
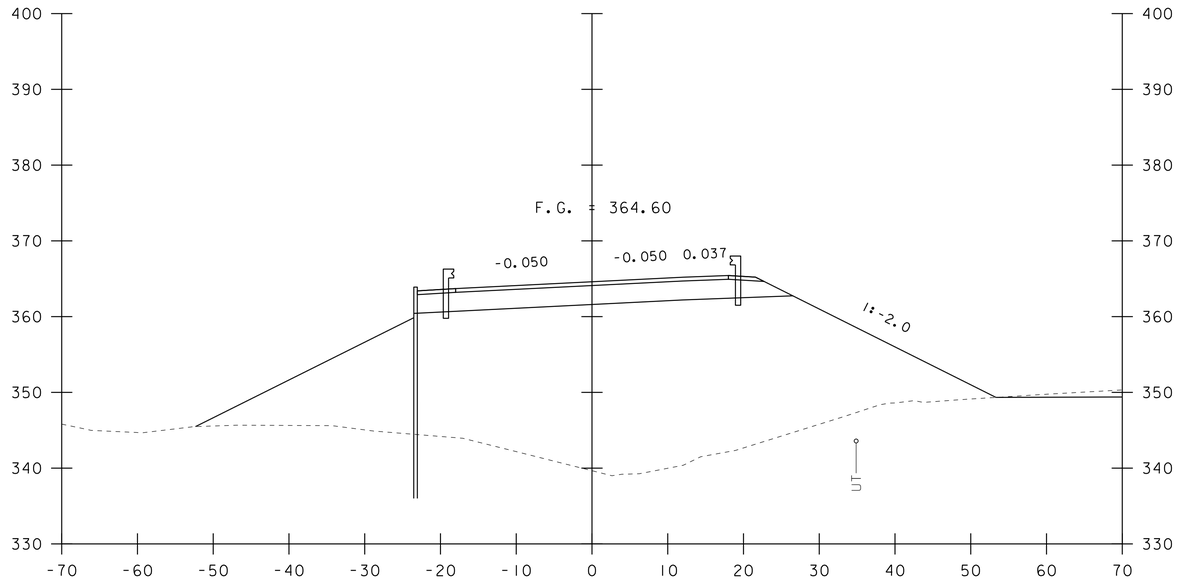


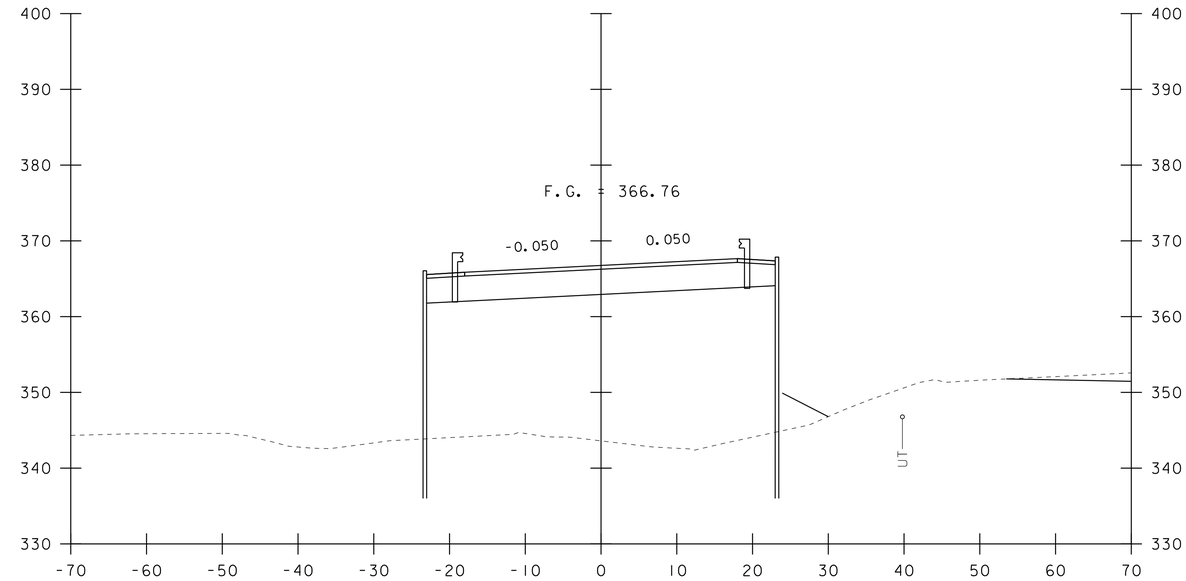
264+00

STA. 263+00 TO STA. 264+50

PROJECT NAME: RICHMOND	
PROJECT NUMBER: IM 089-2(52)	
FILE NAME: sl6al83xs.dgn	PLOT DATE: 27-AUG-2020
PROJECT LEADER: C. COTA	DRAWN BY: M. LONGSTREET
DESIGNED BY: D. PETERSON	CHECKED BY: D. PETERSON
US 2 CROSS SECTIONS 5	SHEET 33 OF 53

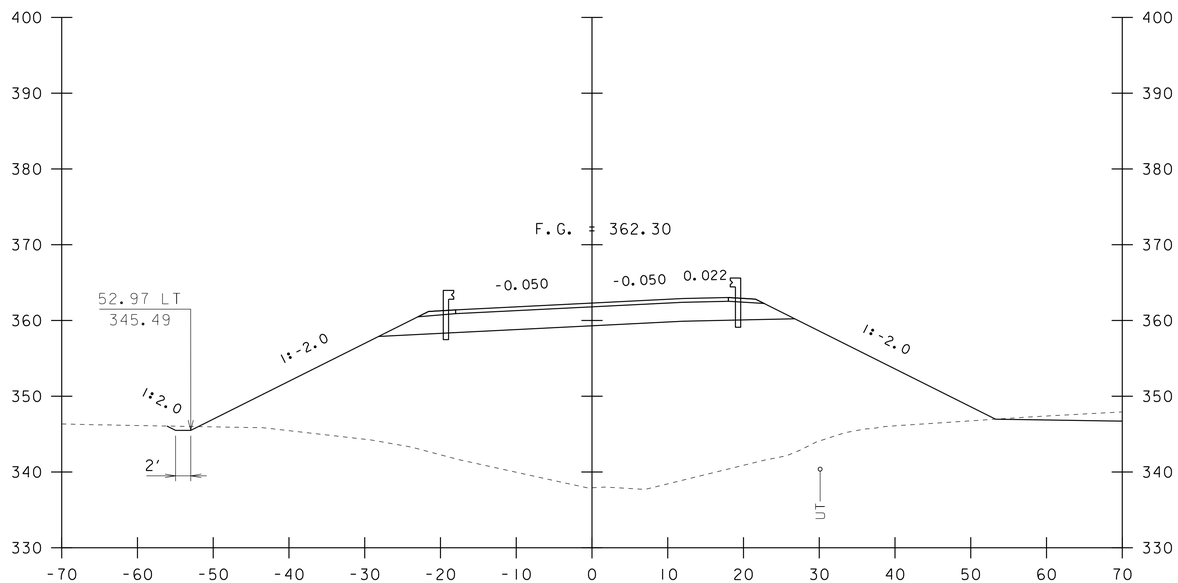


265+50

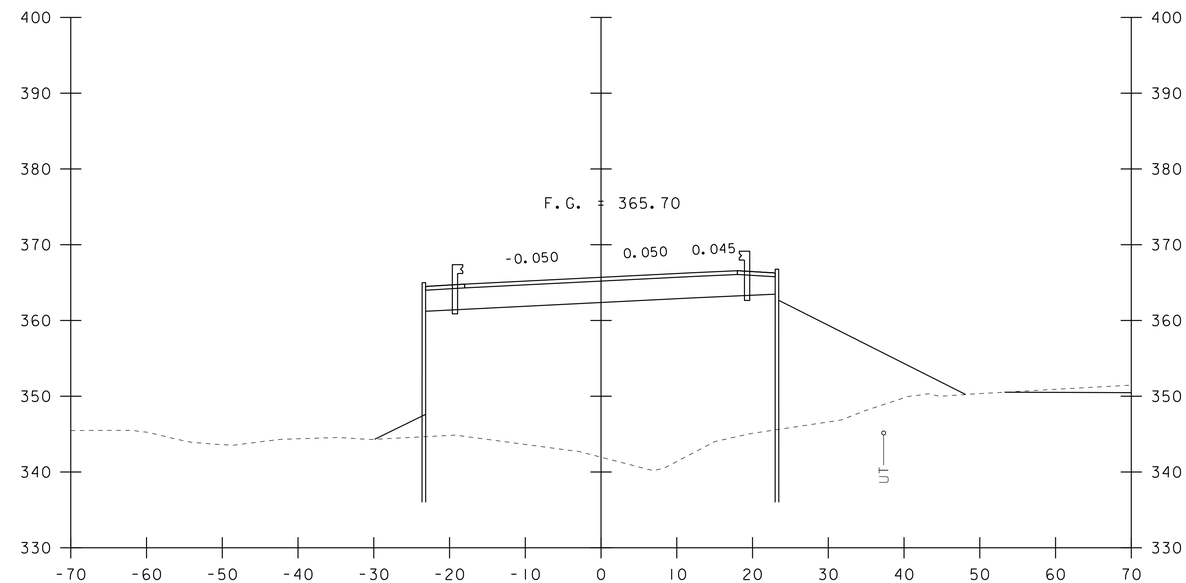


BEGIN BRIDGE
STA 266+08.75

266+00



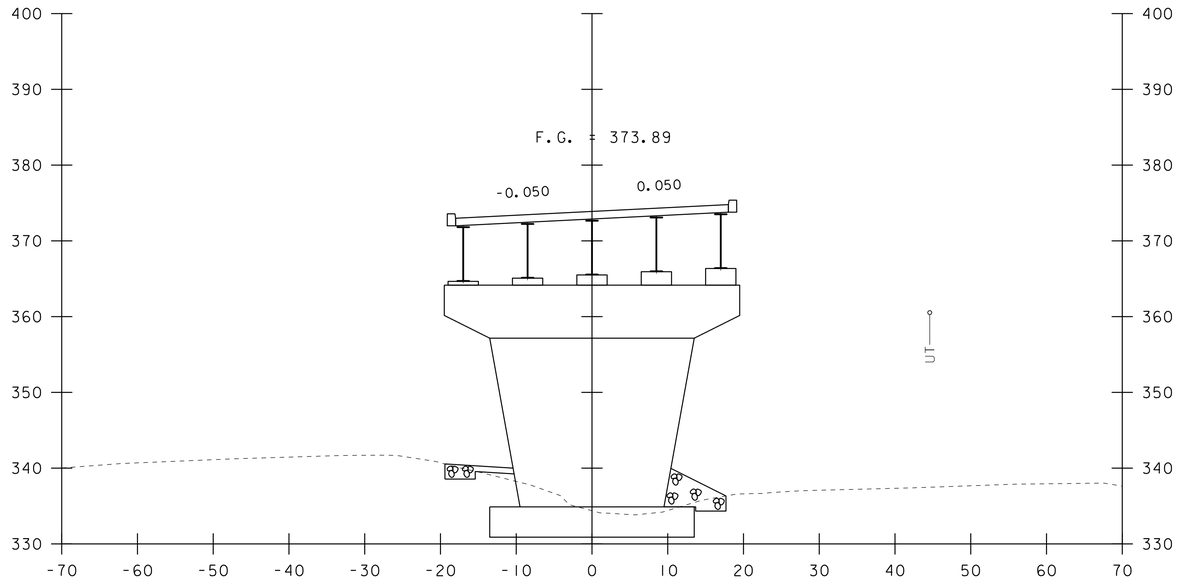
265+00



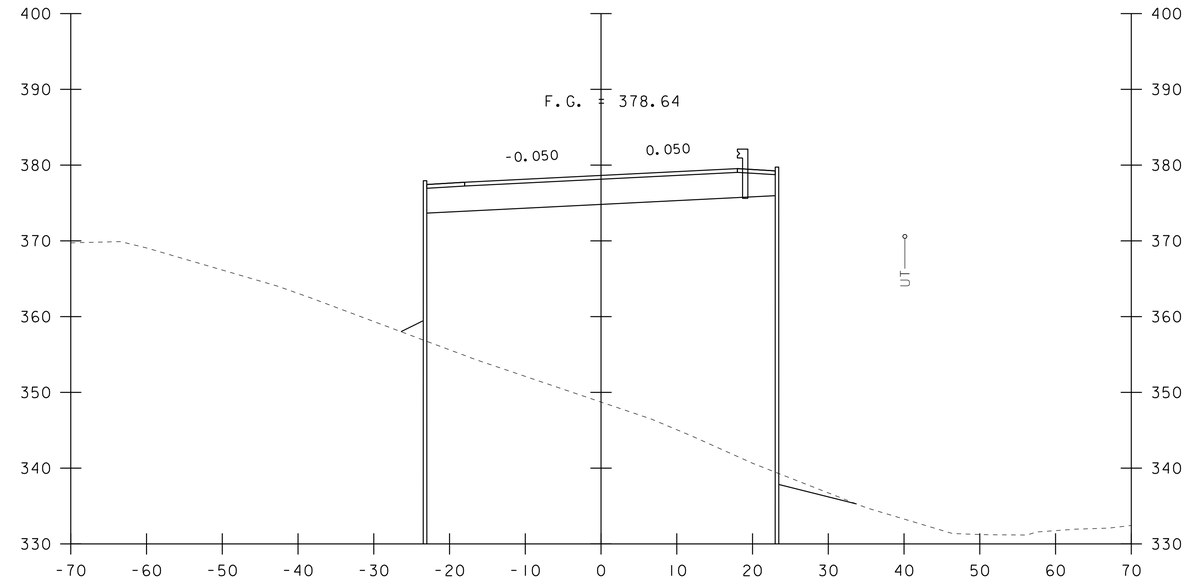
265+75

STA. 265+00 TO STA. 266+00

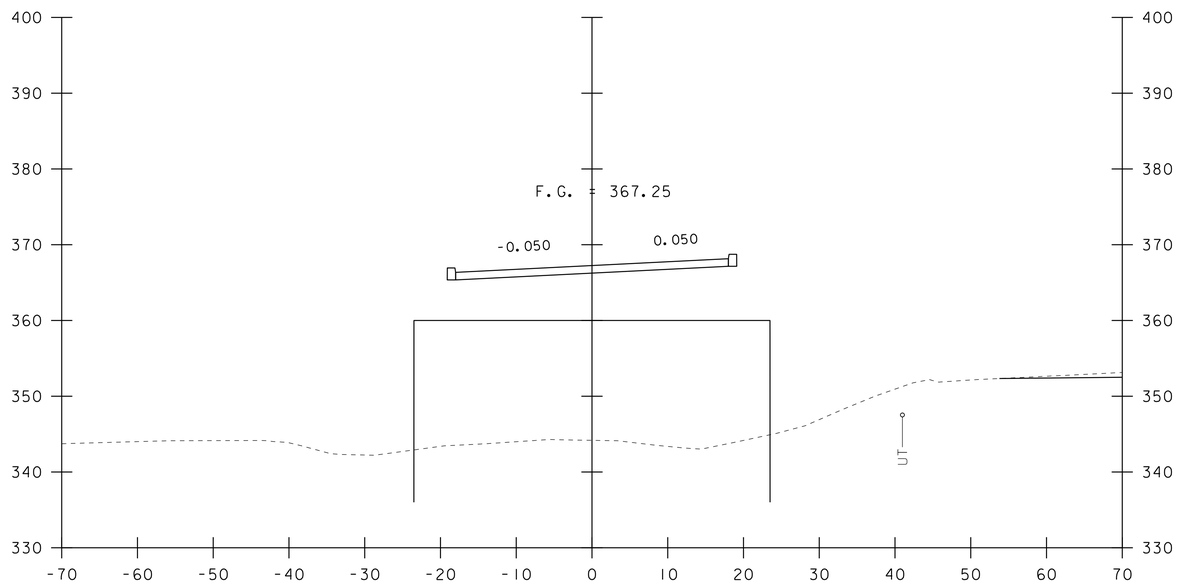
PROJECT NAME: RICHMOND	
PROJECT NUMBER: IM 089-2(52)	
FILE NAME: sl6al83xs.dgn	PLOT DATE: 27-AUG-2020
PROJECT LEADER: C. COTA	DRAWN BY: M. LONGSTREET
DESIGNED BY: D. PETERSON	CHECKED BY: D. PETERSON
US 2 CROSS SECTIONS 6	SHEET 34 OF 53



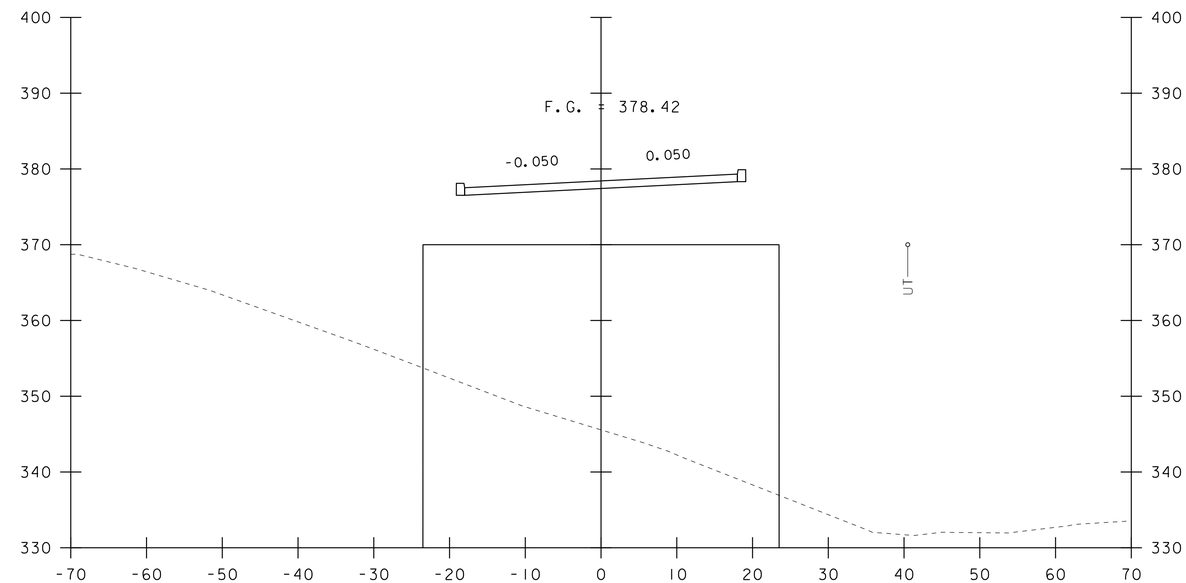
268+00



270+00



266+12

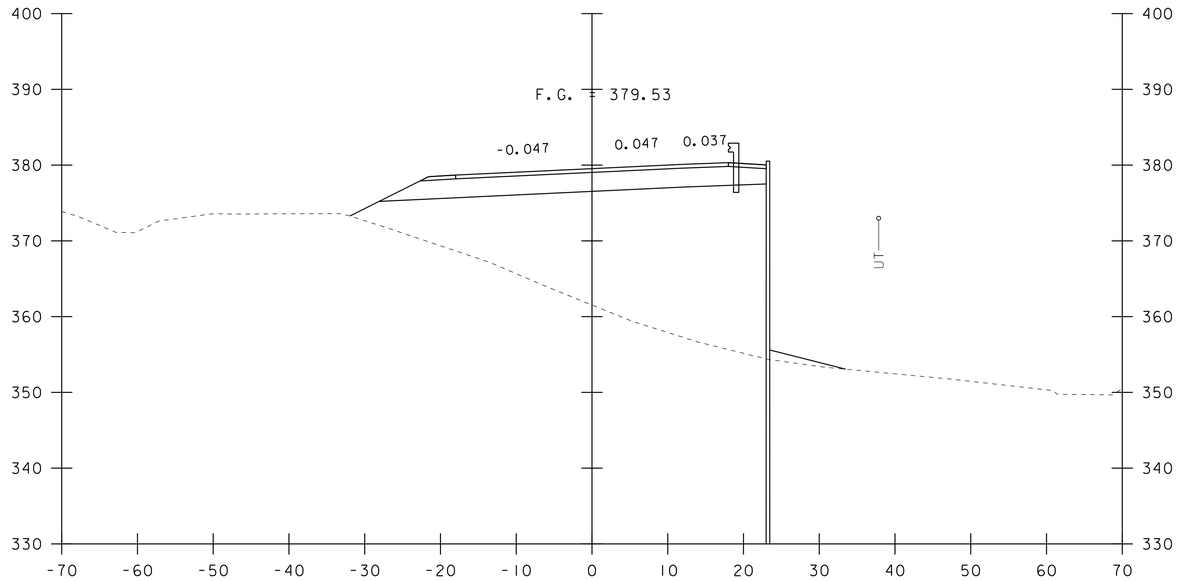


END BRIDGE
STA 269+91.25

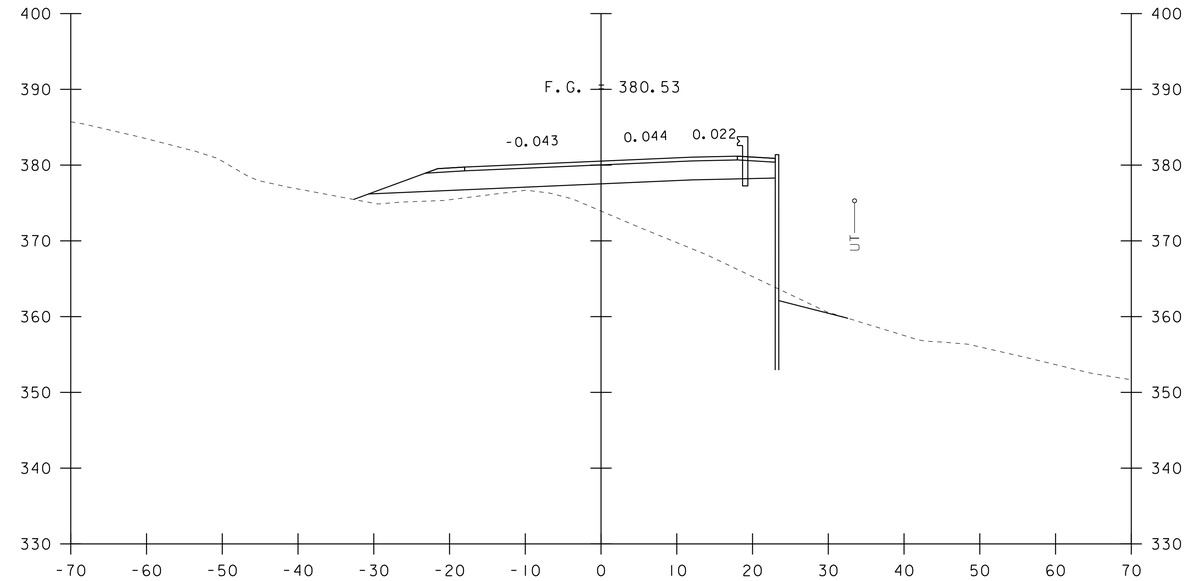
269+88

STA. 266+12 TO STA. 270+00

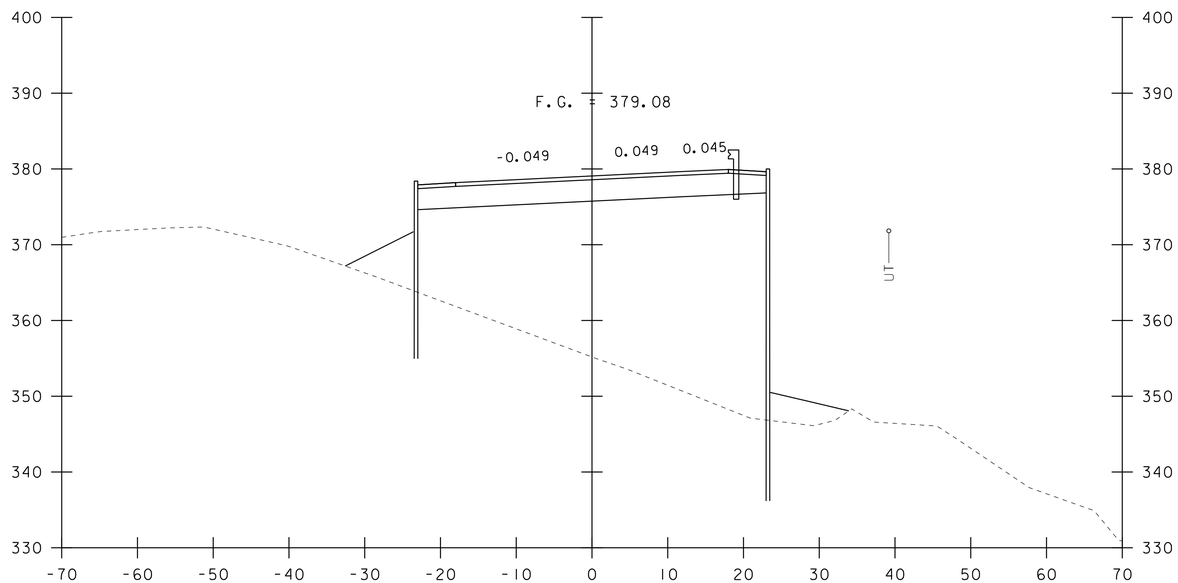
PROJECT NAME: RICHMOND	
PROJECT NUMBER: IM 089-2(52)	
FILE NAME: sl6al83xs.dgn	PLOT DATE: 27-AUG-2020
PROJECT LEADER: C. COTA	DRAWN BY: M. LONGSTREET
DESIGNED BY: D. PETERSON	CHECKED BY: D. PETERSON
US 2 CROSS SECTIONS 7	SHEET 35 OF 53



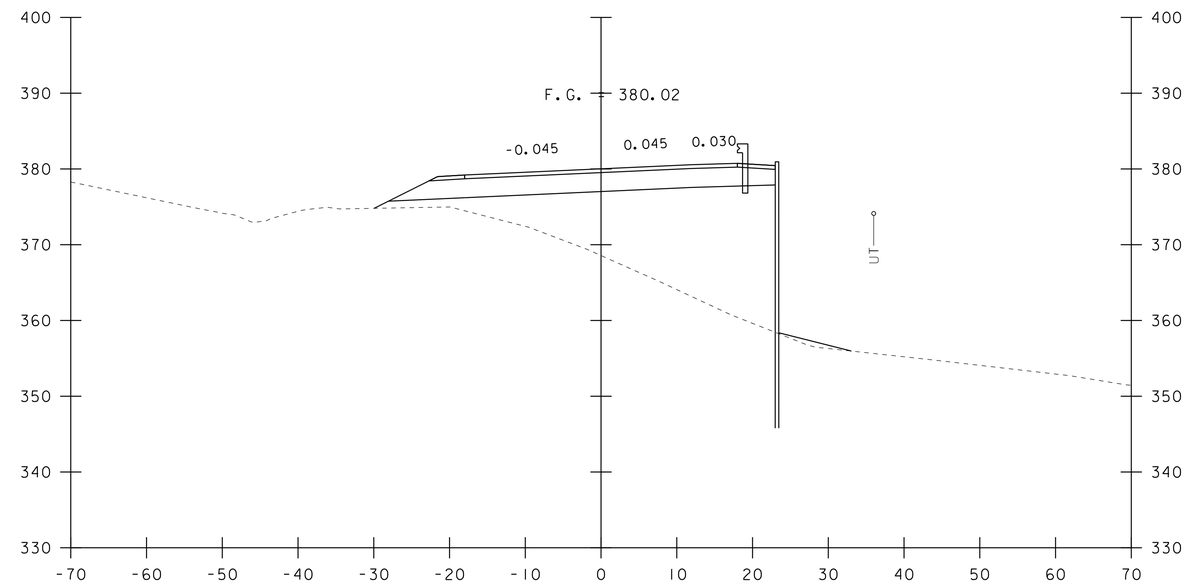
270+50



271+00



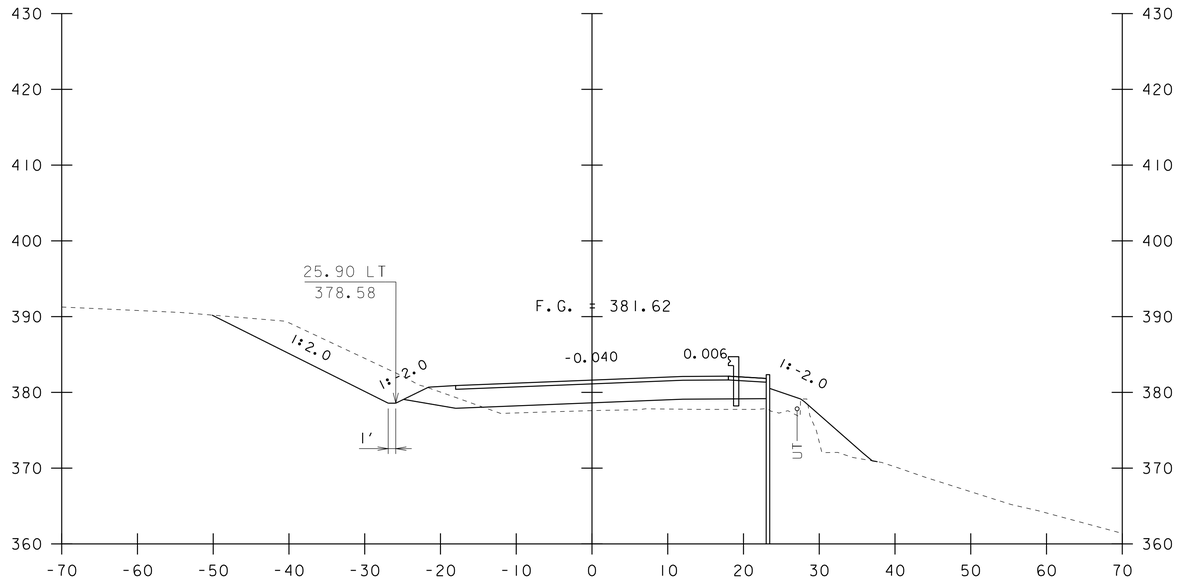
270+25



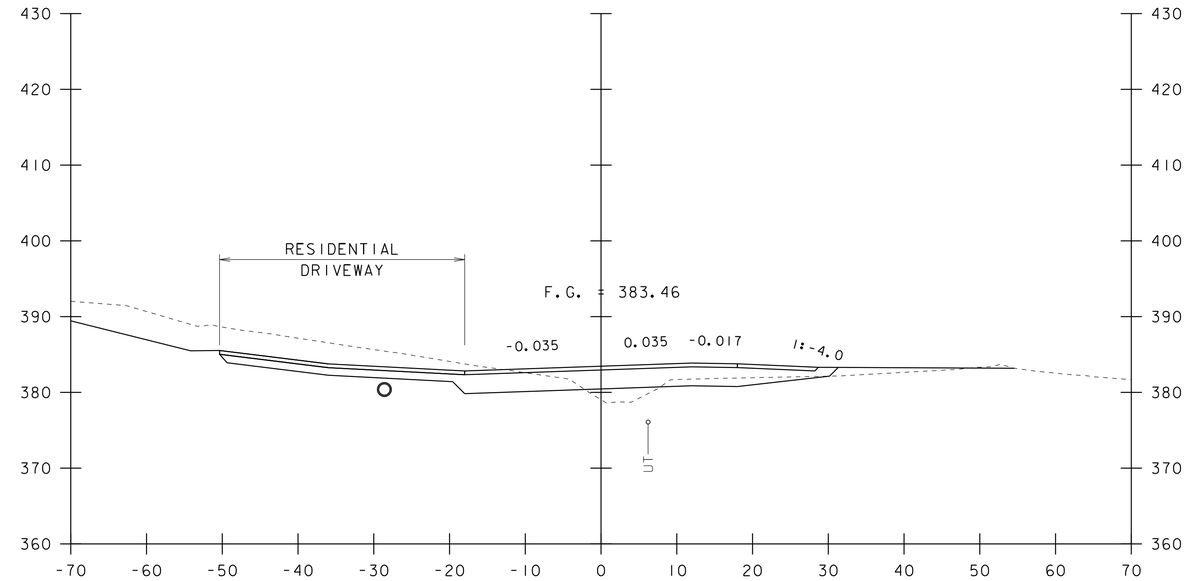
270+75

STA. 270+25 TO STA. 271+00

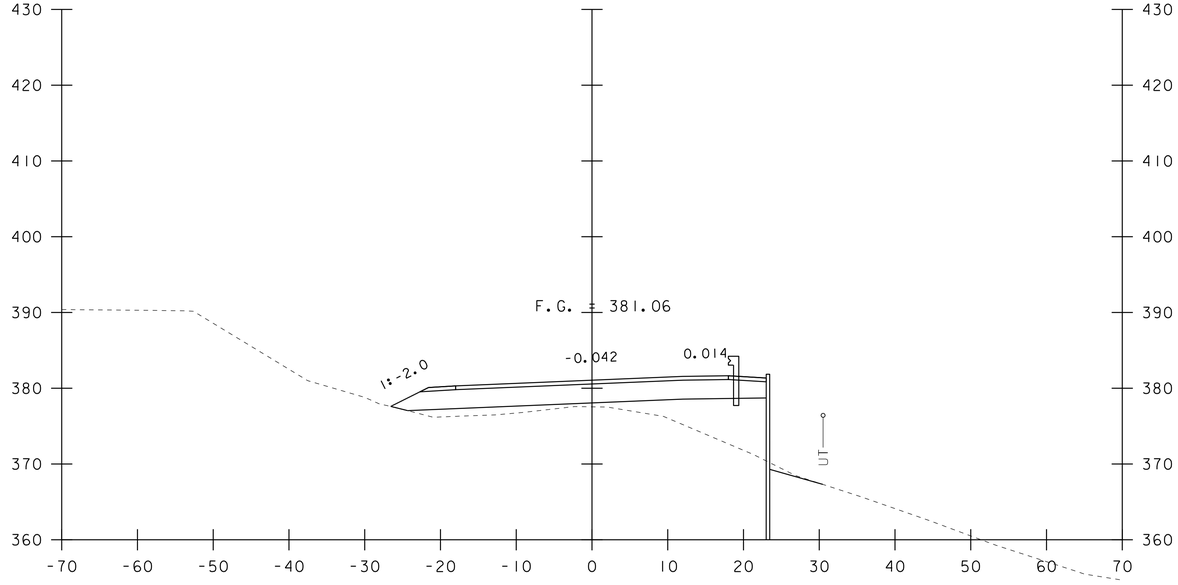
PROJECT NAME: RICHMOND	
PROJECT NUMBER: IM 089-2(52)	
FILE NAME: sl6al83xs.dgn	PLOT DATE: 27-AUG-2020
PROJECT LEADER: C. COTA	DRAWN BY: M. LONGSTREET
DESIGNED BY: D. PETERSON	CHECKED BY: D. PETERSON
US 2 CROSS SECTIONS 8	SHEET 36 OF 53



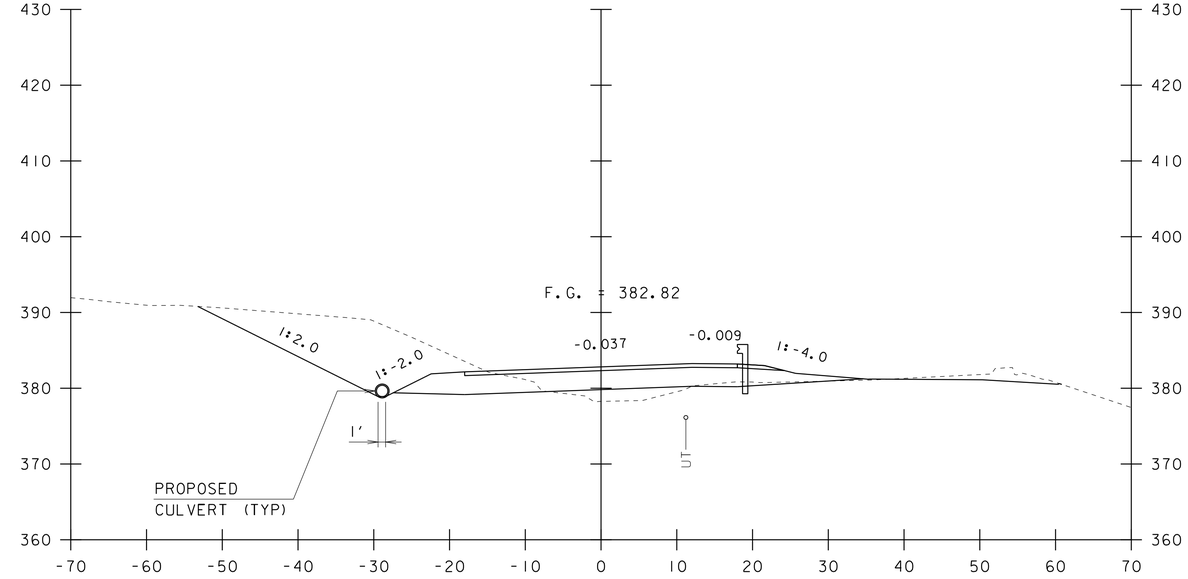
271+50



272+25



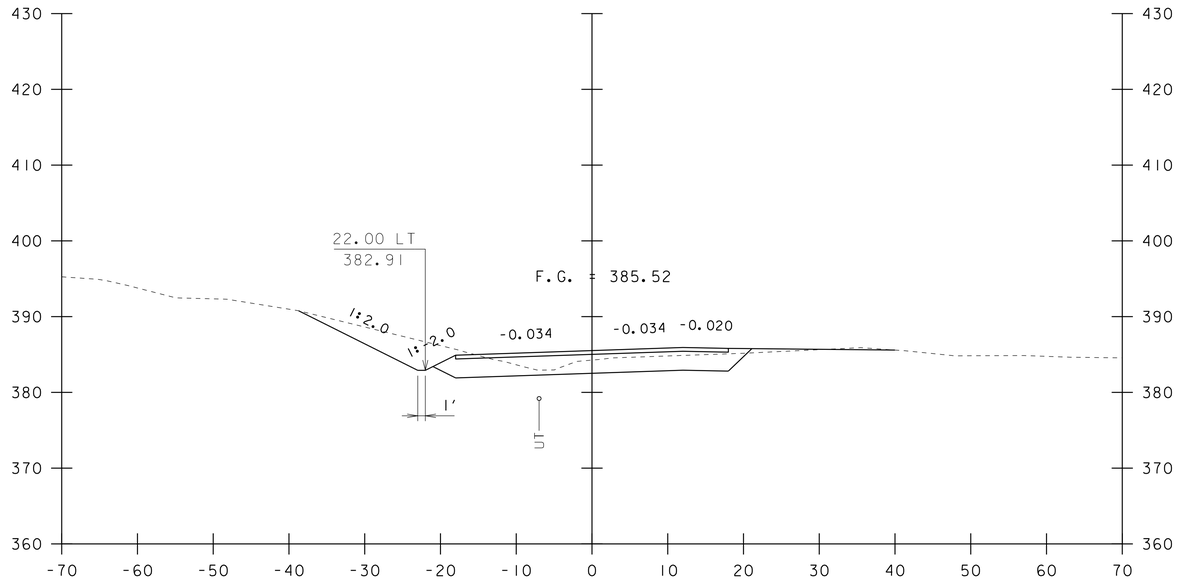
271+25



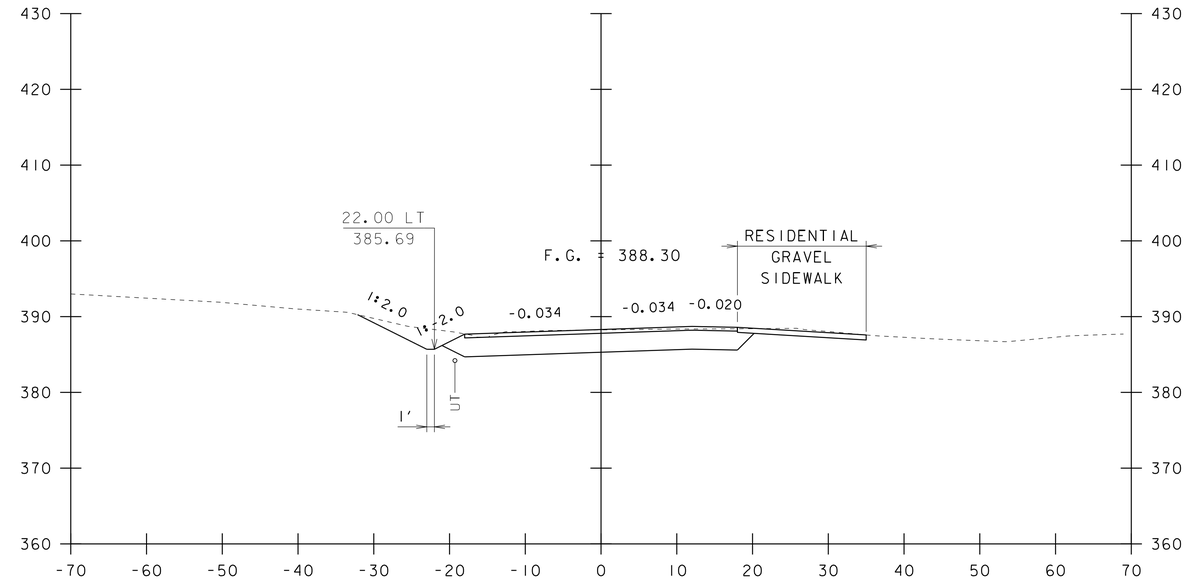
272+00

STA. 271+25 TO STA. 272+25

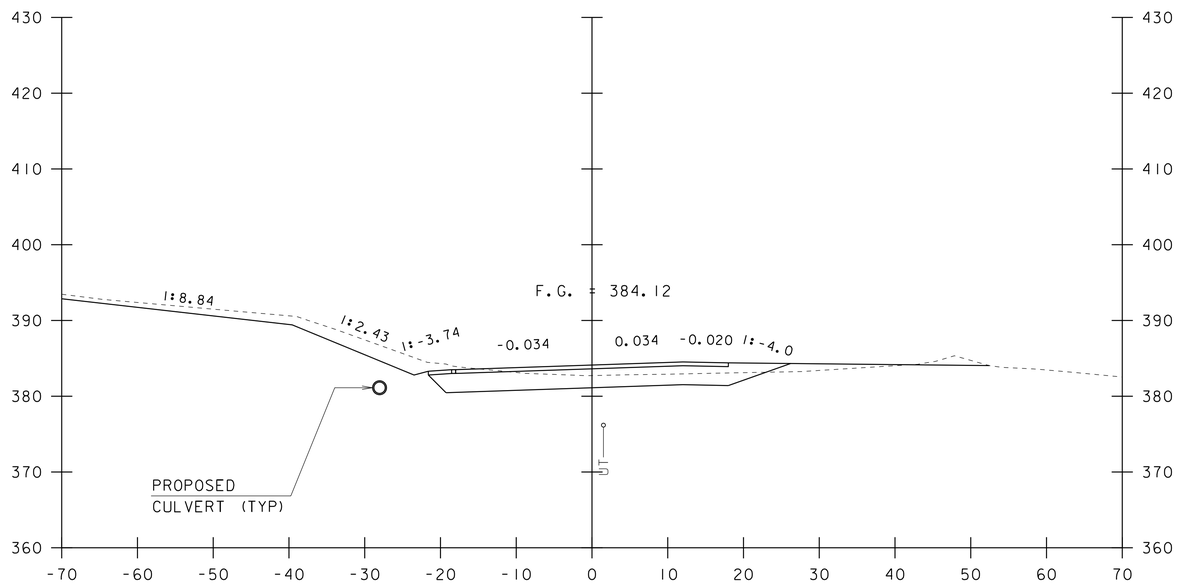
PROJECT NAME: RICHMOND	
PROJECT NUMBER: IM 089-2(52)	
FILE NAME: sl6al83xs.dgn	PLOT DATE: 27-AUG-2020
PROJECT LEADER: C. COTA	DRAWN BY: M. LONGSTREET
DESIGNED BY: D. PETERSON	CHECKED BY: D. PETERSON
US 2 CROSS SECTIONS 9	SHEET 37 OF 53



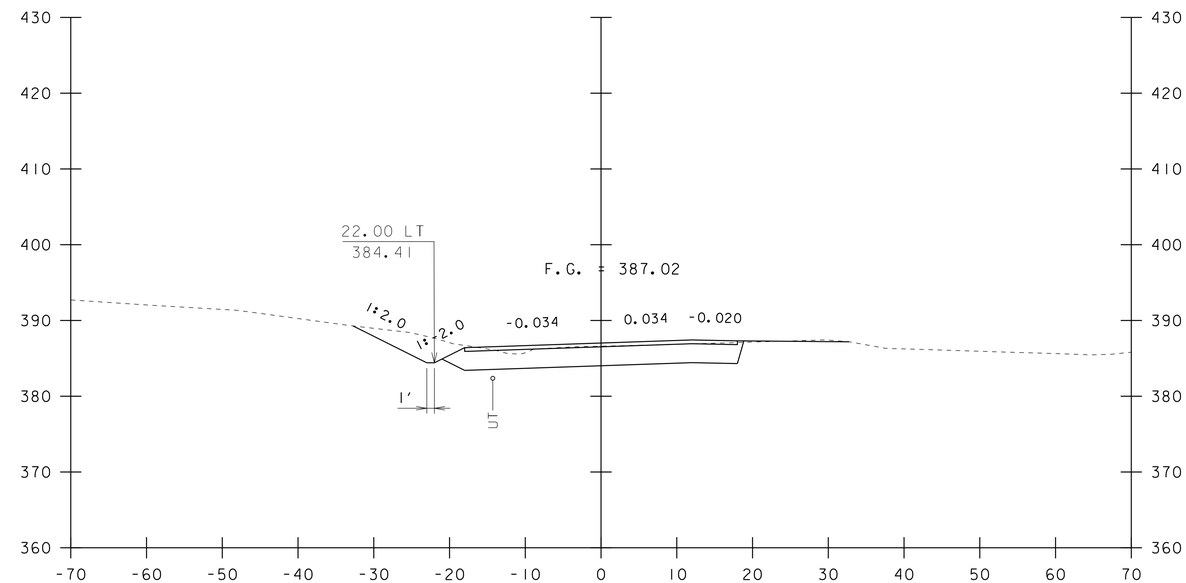
273+00



273+90



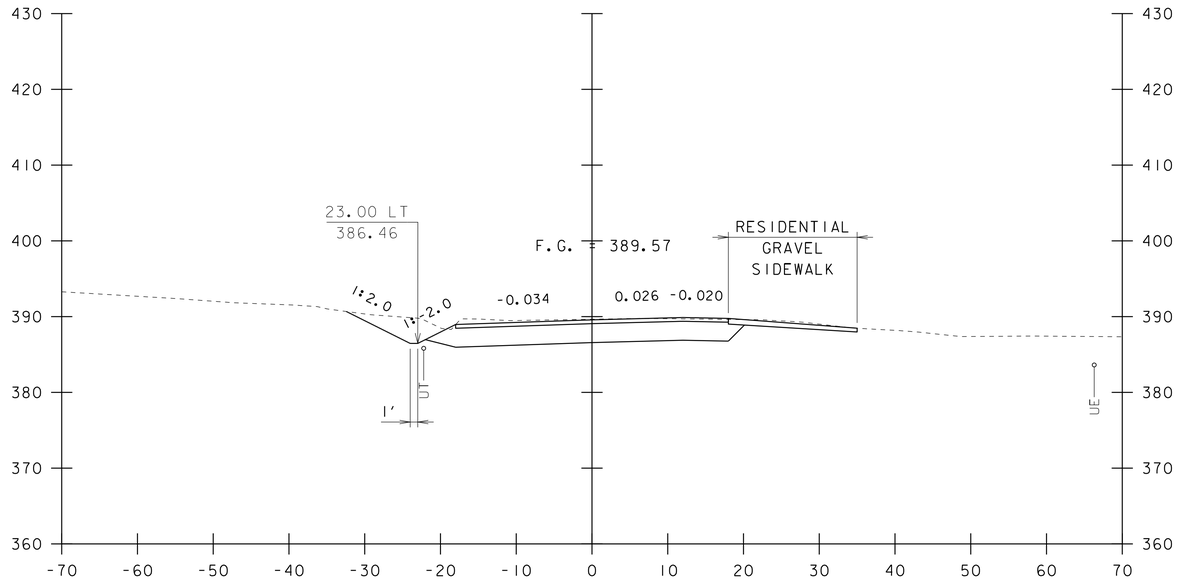
272+50



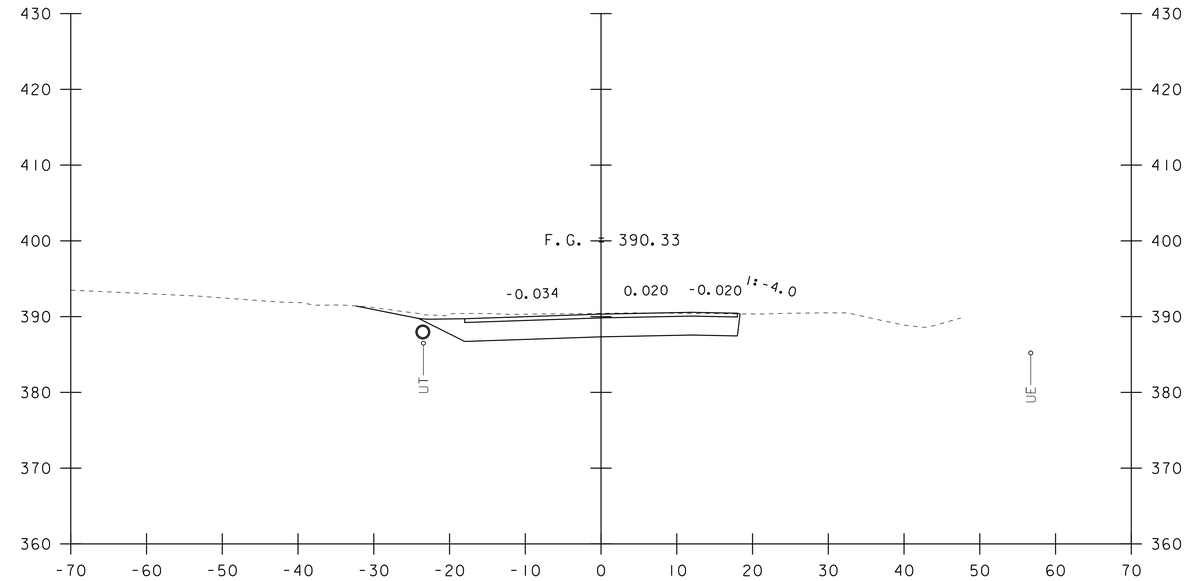
273+50

STA. 272+50 TO STA. 273+90

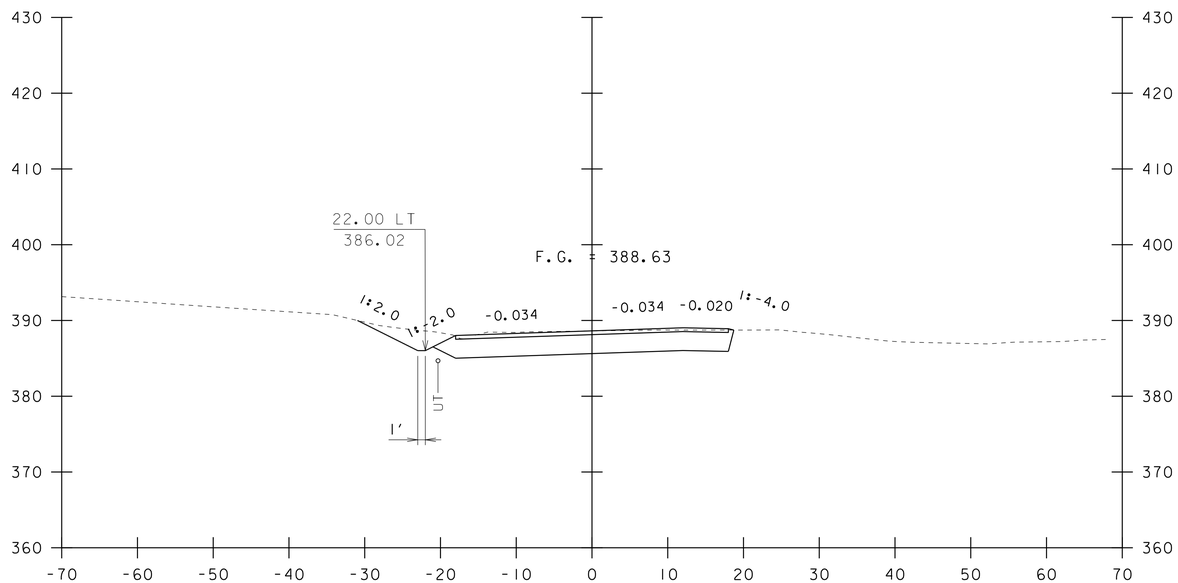
PROJECT NAME: RICHMOND	
PROJECT NUMBER: IM 089-2(52)	
FILE NAME: sl6al83xs.dgn	PLOT DATE: 27-AUG-2020
PROJECT LEADER: C. COTA	DRAWN BY: M. LONGSTREET
DESIGNED BY: D. PETERSON	CHECKED BY: D. PETERSON
US 2 CROSS SECTIONS 10	SHEET 38 OF 53



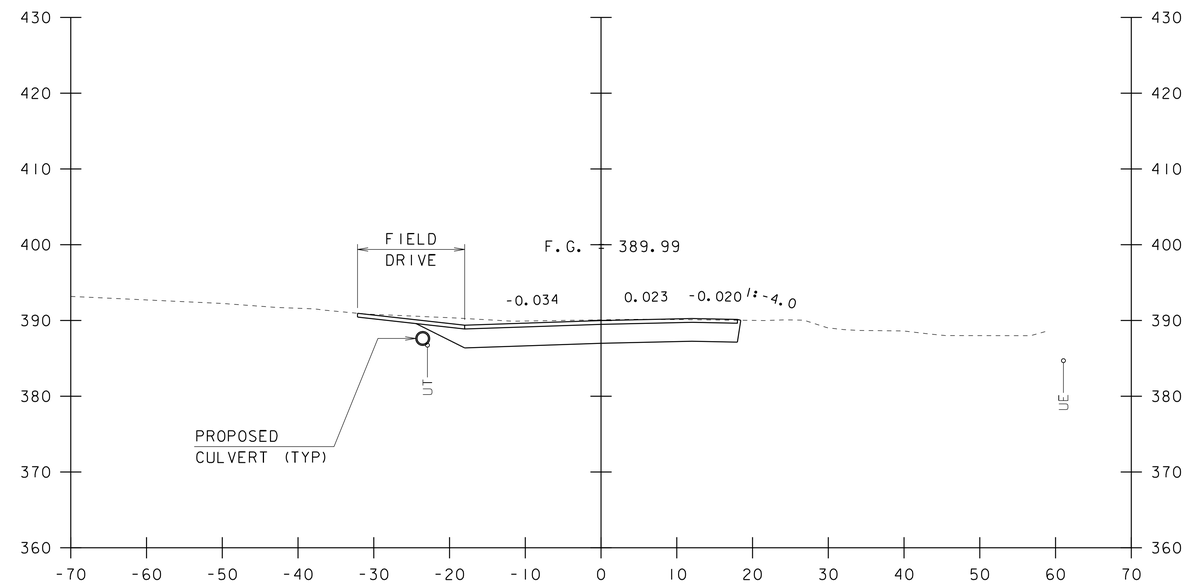
274+28



274+50



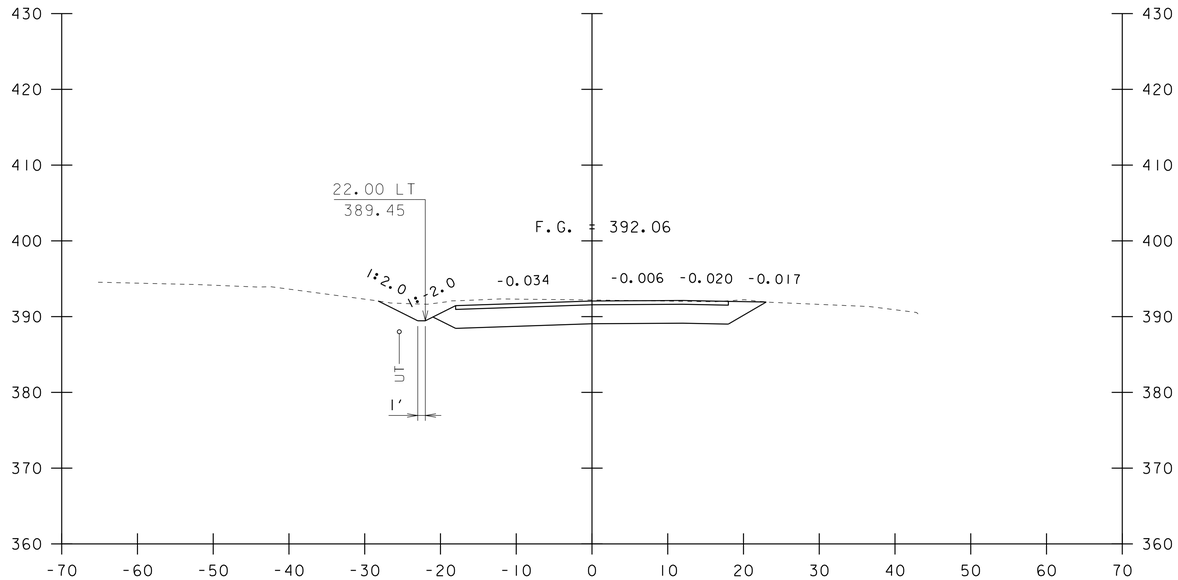
274+00



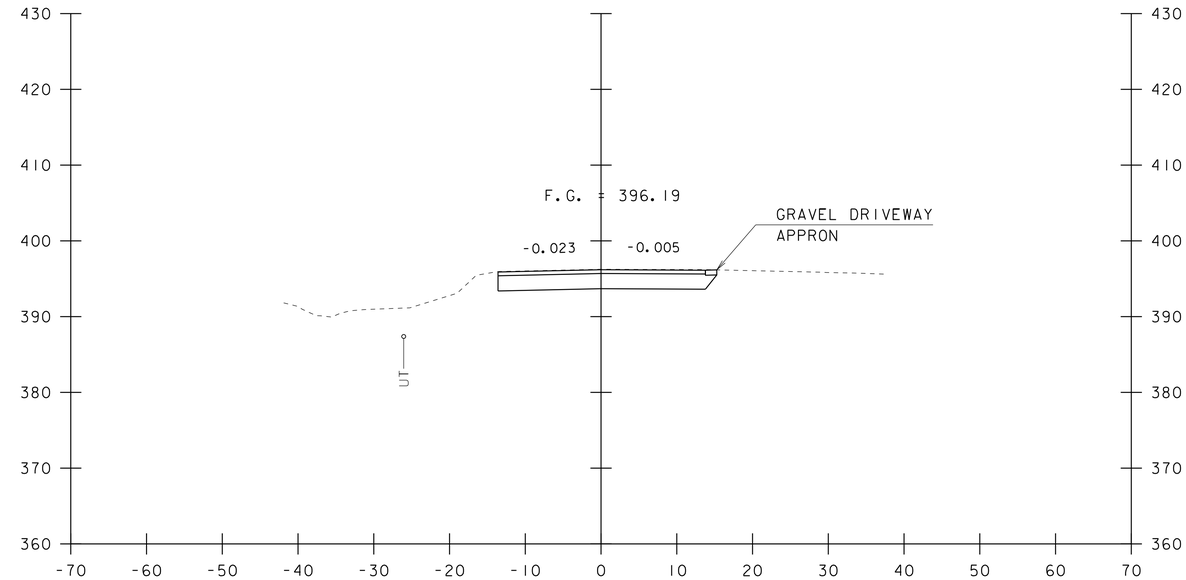
274+40

STA. 274+00 TO STA. 274+50

PROJECT NAME: RICHMOND	
PROJECT NUMBER: IM 089-2(52)	
FILE NAME: sl6al83xs.dgn	PLOT DATE: 27-AUG-2020
PROJECT LEADER: C. COTA	DRAWN BY: M. LONGSTREET
DESIGNED BY: D. PETERSON	CHECKED BY: D. PETERSON
US 2 CROSS SECTIONS II	SHEET 39 OF 53

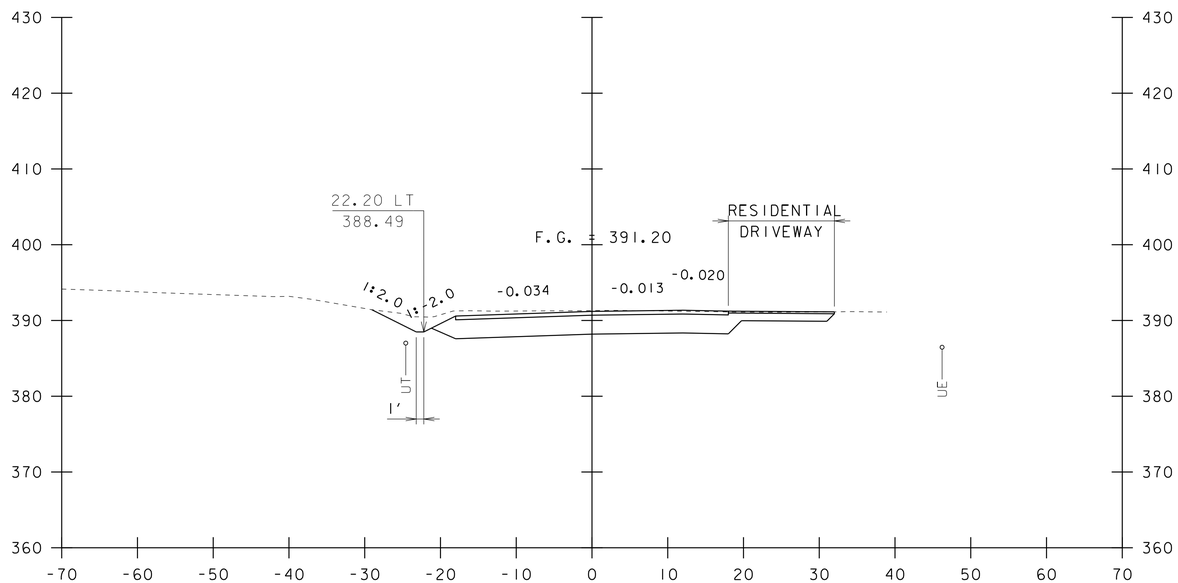


275+00

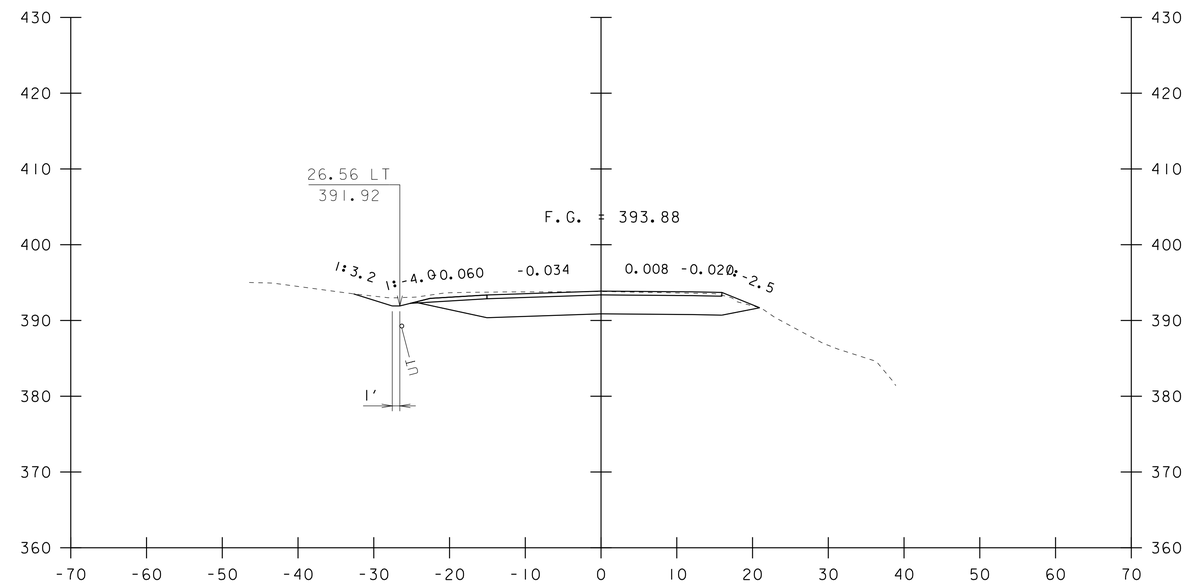


END PROJECT
STA 275+87.00

276+00



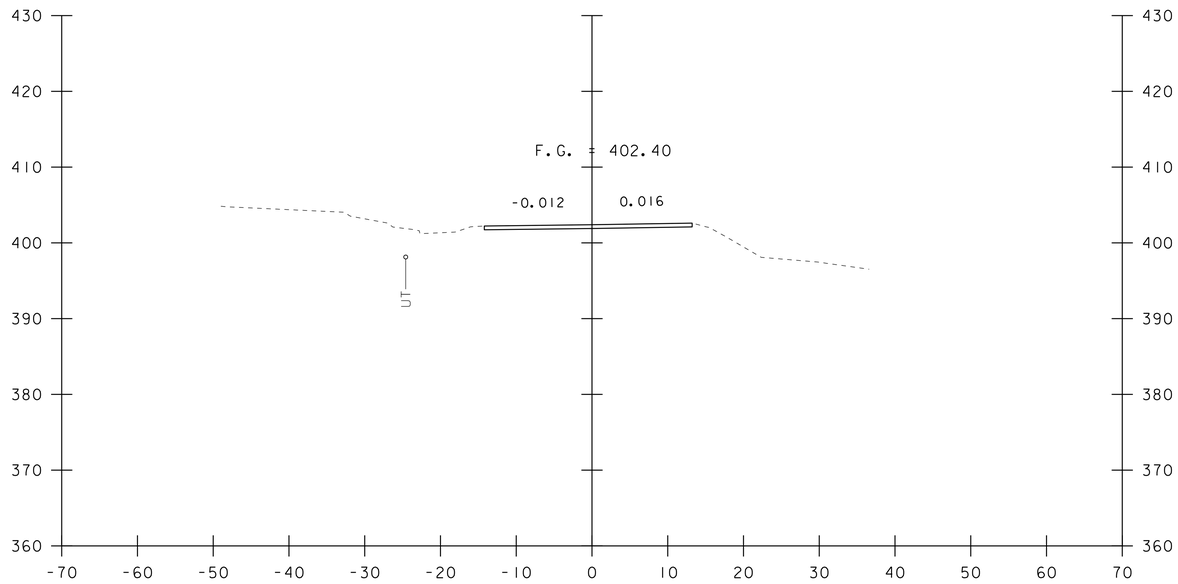
274+75



275+50

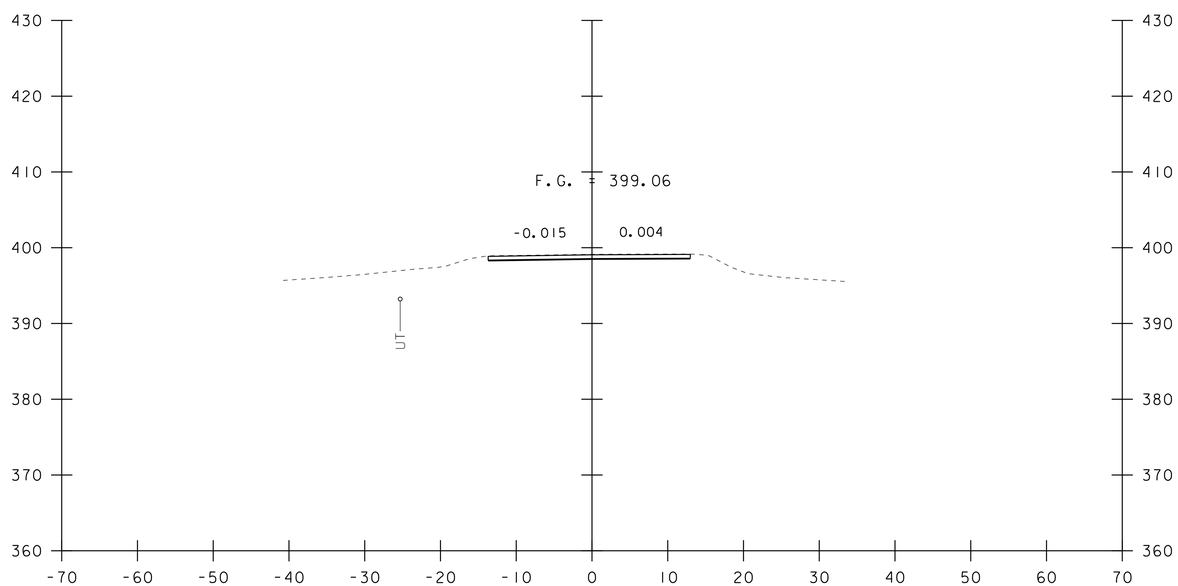
STA. 274+75 TO STA. 276+00

PROJECT NAME: RICHMOND	
PROJECT NUMBER: IM 089-2(52)	
FILE NAME: sl6al83xs.dgn	PLOT DATE: 27-AUG-2020
PROJECT LEADER: C. COTA	DRAWN BY: M. LONGSTREET
DESIGNED BY: D. PETERSON	CHECKED BY: D. PETERSON
US 2 CROSS SECTIONS 12	SHEET 40 OF 53



END APPROACH
STA 277+00.00

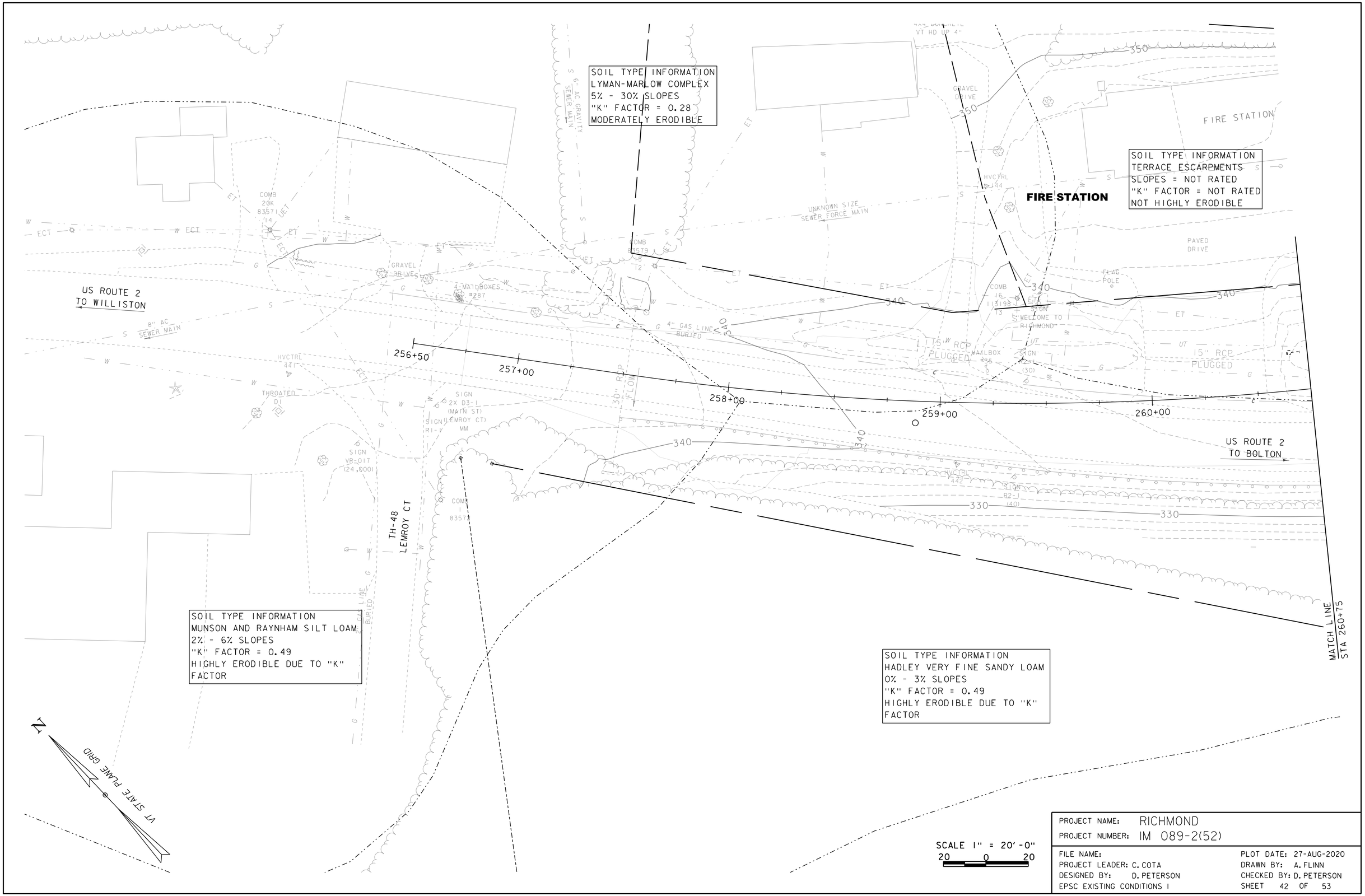
277+00



276+50

STA. 276+50 TO STA. 277+25

PROJECT NAME: RICHMOND	
PROJECT NUMBER: IM 089-2(52)	
FILE NAME: s16a183xs.dgn	PLOT DATE: 27-AUG-2020
PROJECT LEADER: C. COTA	DRAWN BY: M. LONGSTREET
DESIGNED BY: D. PETERSON	CHECKED BY: D. PETERSON
US 2 CROSS SECTIONS 13	SHEET 41 OF 53



PROJECT NAME: RICHMOND	
PROJECT NUMBER: IM 089-2(52)	
FILE NAME:	PLOT DATE: 27-AUG-2020
PROJECT LEADER: C. COTA	DRAWN BY: A. FLINN
DESIGNED BY: D. PETERSON	CHECKED BY: D. PETERSON
EPSC EXISTING CONDITIONS 1	SHEET 42 OF 53

SOIL TYPE INFORMATION
TERRACE ESCARPMENTS
SLOPES = NOT RATED
"K" FACTOR = NOT RATED
NOT HIGHLY ERODIBLE

SOIL TYPE INFORMATION
TERRACE ESCARPMENTS
SLOPES = NOT RATED
"K" FACTOR = NOT RATED
NOT HIGHLY ERODIBLE

BENCHMARK 13
RAILROAD SPIKE
IN ROOT
ELEV. = 339.25

SOIL TYPE INFORMATION
HADLEY VERY FINE SANDY LOAM
0% - 3% SLOPES
"K" FACTOR = 0.49
HIGHLY ERODIBLE DUE TO "K"
FACTOR

MATCH LINE
STA 265+50

MATCH LINE
STA 260+75

US ROUTE 2
TO WILLISTON

US ROUTE 2
TO BOLTON

261+00
262+00
263+00
264+00
265+00

CHAIN LINK FENCE
HVCTRL 143
HVCTRL 142
HVCTRL 112
HVCTRL 140
HVCTRL 141
HVCTRL 139
HVCTRL 138
COMB
GUY WIRE
SIGN
2X GAS VALVES
GAS MAIN
VD-0188 (RICHMOND)
CONCRETE TELEPHONE MARKER
TRAVEL INFORMATION SIGN (3X)
THROATED DI
18" CMP FLOW
48" CMP FLOW
24" CMP FLOW
FO
UT
ET
340
330
350

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

VT STATE PLANE GRID

PROJECT NAME: RICHMOND	
PROJECT NUMBER: IM 089-2(52)	
FILE NAME:	PLOT DATE: 27-AUG-2020
PROJECT LEADER: C. COTA	DRAWN BY: A. FLINN
DESIGNED BY: D. PETERSON	CHECKED BY: D. PETERSON
EPSC EXISTING CONDITIONS 2	SHEET 43 OF 53

SOIL TYPE INFORMATION
TERRACE ESCARPMENTS
SLOPES = NOT RATED
"K" FACTOR = NOT RATED
NOT HIGHLY ERODIBLE

MATCH LINE
STA 265+50

PCC
STA 1447+71.65

INTERSTATE 89
NORTHBOUND
TO WILLISTON

WARD, BARBARA & GEORGE C.;
HILL BETH P.

MATCH LINE
STA 271+50

266+00
267+00
268+00
269+00
270+00
271+00

US ROUTE 2
TO WILLISTON

US ROUTE 2
TO BOLTON

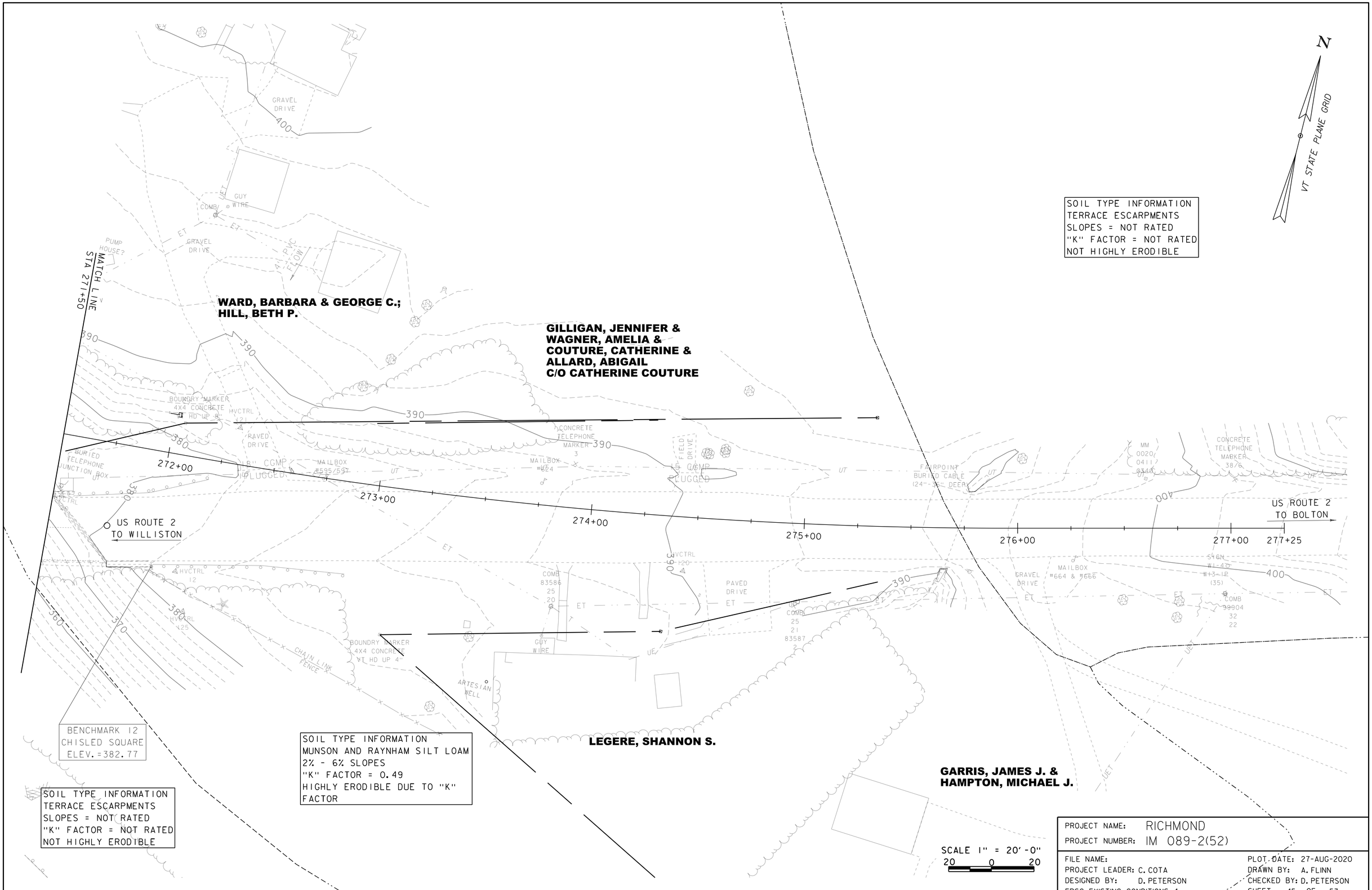
INTERSTATE 89
SOUTHBOUND
TO BOLTON

SOIL TYPE INFORMATION
HADLEY VERY FINE SANDY LOAM
0% - 3% SLOPES
"K" FACTOR = 0.49
HIGHLY ERODIBLE DUE TO "K"
FACTOR

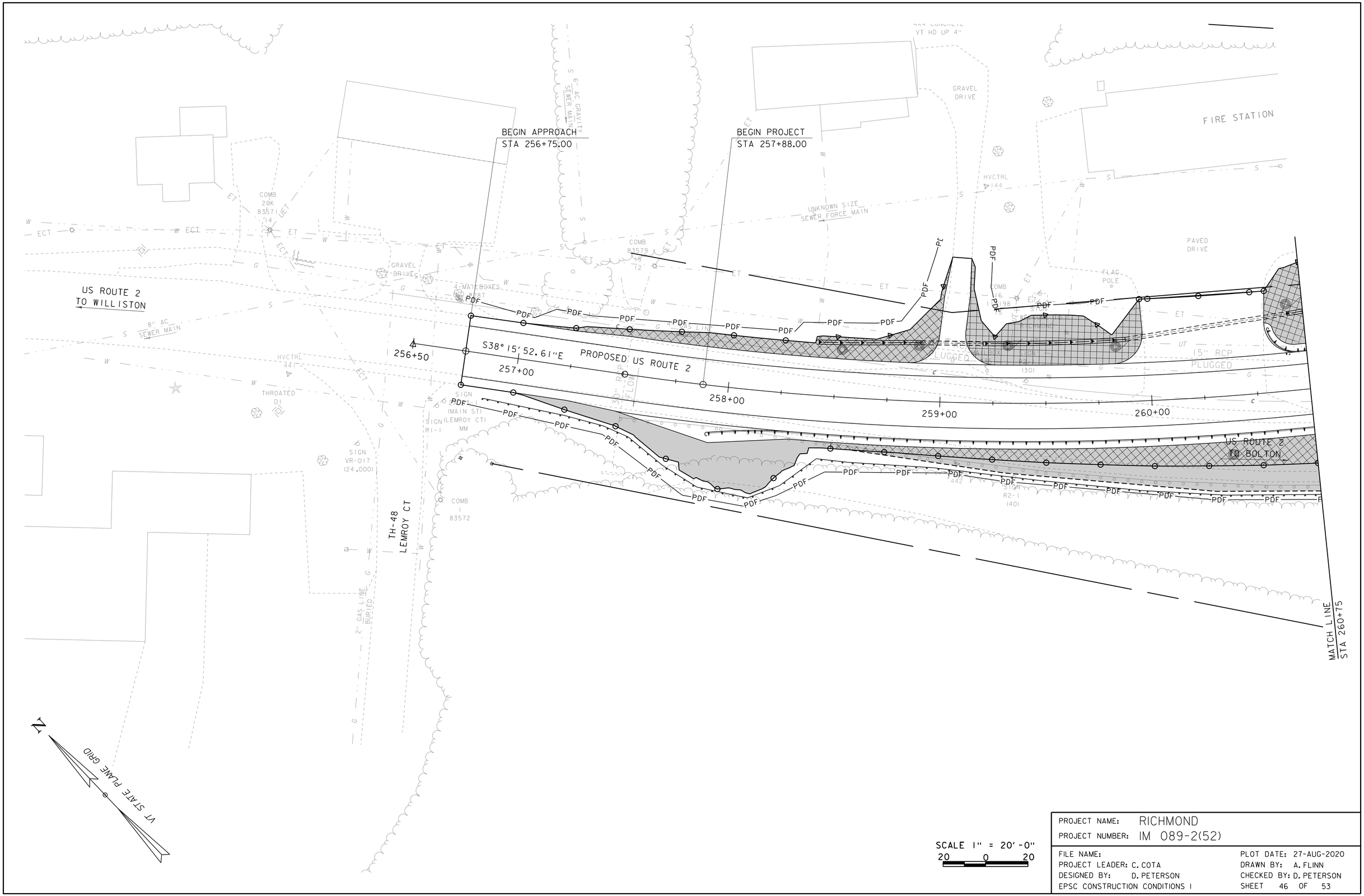
N
VT STATE PLANE GRID

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

PROJECT NAME: RICHMOND	
PROJECT NUMBER: IM 089-2(52)	
FILE NAME:	PLOT DATE: 27-AUG-2020
PROJECT LEADER: C. COTA	DRAWN BY: A. FLINN
DESIGNED BY: D. PETERSON	CHECKED BY: D. PETERSON
EPSC EXISTING CONDITIONS 3	SHEET 44 OF 53

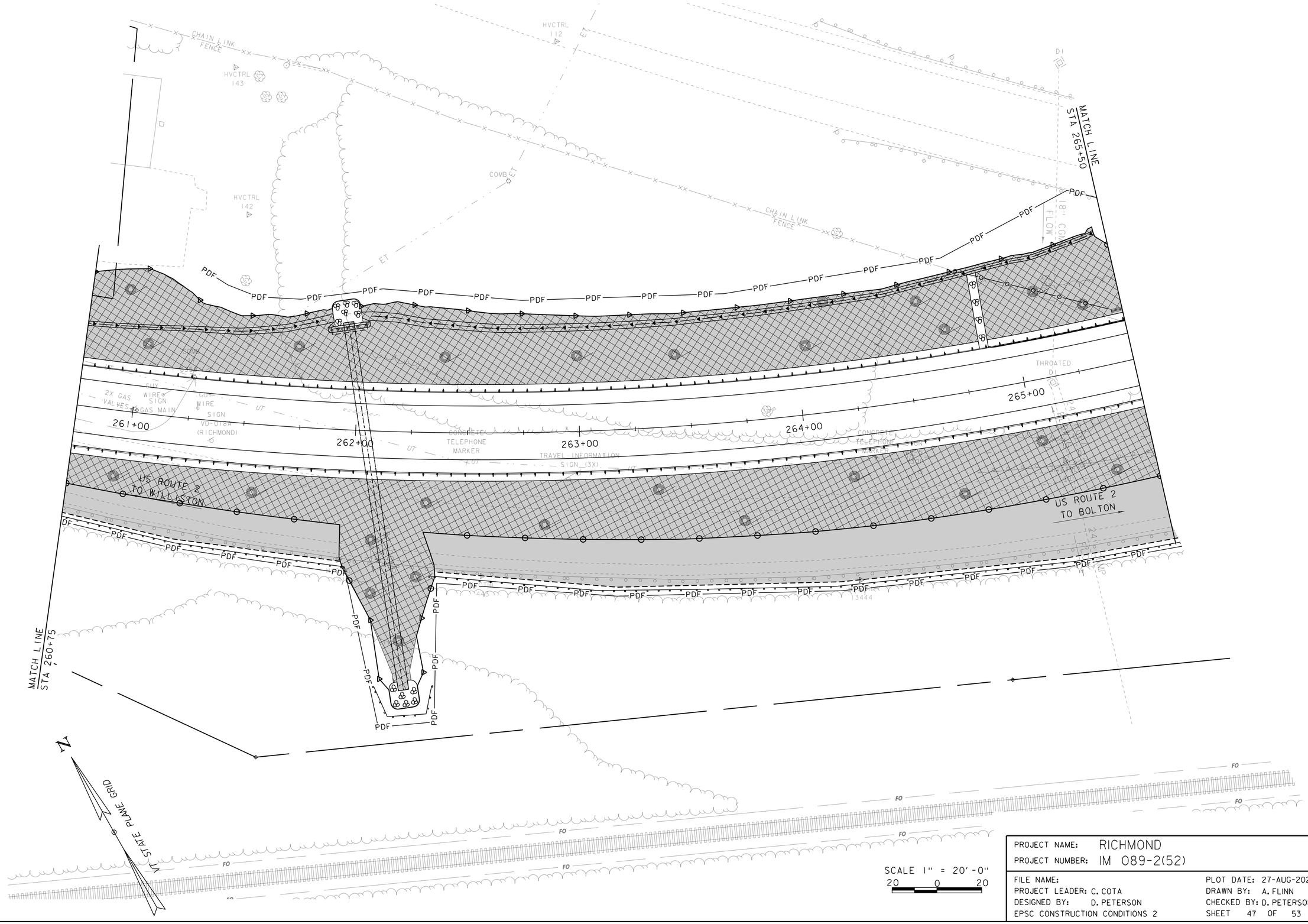


PROJECT NAME: RICHMOND	
PROJECT NUMBER: IM 089-2(52)	
FILE NAME:	PLOT DATE: 27-AUG-2020
PROJECT LEADER: C. COTA	DRAWN BY: A. FLINN
DESIGNED BY: D. PETERSON	CHECKED BY: D. PETERSON
EPSC EXISTING CONDITIONS 4	SHEET 45 OF 53



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

PROJECT NAME: RICHMOND	
PROJECT NUMBER: IM 089-2(52)	
FILE NAME:	PLOT DATE: 27-AUG-2020
PROJECT LEADER: C. COTA	DRAWN BY: A. FLINN
DESIGNED BY: D. PETERSON	CHECKED BY: D. PETERSON
EPSC CONSTRUCTION CONDITIONS I	SHEET 46 OF 53



PROJECT NAME:	RICHMOND
PROJECT NUMBER:	IM 089-2(52)

FILE NAME:	PLOT DATE: 27-AUG-2020
PROJECT LEADER: C. COTA	DRAWN BY: A. FLINN
DESIGNED BY: D. PETERSON	CHECKED BY: D. PETERSON
EPSC CONSTRUCTION CONDITIONS 2	SHEET 47 OF 53

MATCH LINE
STA 265+50

BEGIN BRIDGE
STA 266+08.75

℄ BEARING #1
STA 266+12.00

℄ BEARING #2
STA 268+00.00

℄ BEARING #3
STA 269+88.00

END BRIDGE
STA 269+91.25

MATCH LINE
STA 271+50

INTERSTATE 89
NORTHBOUND
TO WILLISTON

INTERSTATE 89
SOUTHBOUND
TO BOLTON

PROPOSED US ROUTE 2

US ROUTE 2
TO WILLISTON

US ROUTE 2
TO BOLTON

266+00
267+00
268+00
269+00
270+00
271+00

N85° 58' 29"E

48" CONC
FLOW

CHAIN LINK
FENCE

BOUNDRY MARKER
4X4 CONCRETE

ANTENNA

GUY
WIRE

STONE
FILL

WOVEN WIRE
FENCE

SIGN
VD-701
53-4-S
I-89

SIGN
VD-701
(BR 29
US-2)

SIGN
D10-2a
(76.2)

SIGN
D10-2b
(76.2)

N

VT STATE PLANE GRID

EXISTING BRIDGE DATA

CONCRETE DECK ON STEEL BEAMS
CONCRETE ABUTMENTS AND PIERS
DRY CROSSING OVER I-89 N&S
EIGHT SPANS WITH 7 PIERS
(59'-59'-59'-79'-54'-84'-54'-49')
OVERALL LENGTH = 497'-0"
OVERALL WIDTH = 34'-10"

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

PROJECT NAME: RICHMOND	
PROJECT NUMBER: IM 089-2(52)	
FILE NAME:	PLOT DATE: 27-AUG-2020
PROJECT LEADER: C. COTA	DRAWN BY: A. FLINN
DESIGNED BY: D. PETERSON	CHECKED BY: D. PETERSON
EPSC CONSTRUCTION CONDITIONS 3	SHEET 48 OF 53

N

VT STATE PLANE GRID

MATCH LINE
STA 271+50

US ROUTE 2
TO WILLISTON

US ROUTE 2
TO BOLTON

EXISTING ROW

272+00
273+00
274+00
275+00
276+00
277+00
277+25

BENCHMARK 12
CHISLED SQUARE
ELEV.=382.77

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

PROJECT NAME: RICHMOND	
PROJECT NUMBER: IM 089-2(52)	
FILE NAME:	PLOT DATE: 27-AUG-2020
PROJECT LEADER: C. COTA	DRAWN BY: A. FLINN
DESIGNED BY: D. PETERSON	CHECKED BY: D. PETERSON
EPSC CONSTRUCTION CONDITIONS 4	SHEET 49 OF 53

BEGIN APPROACH
STA 256+75.00

BEGIN PROJECT
STA 257+88.00

FIRE STATION

FIRE STATION

US ROUTE 2
TO WILLISTON

S38° 15' 52.61"E

PROPOSED US ROUTE 2

256+50

257+00

258+00

259+00

260+00

US ROUTE 2
TO BOLTON

TH-48
LEMROY CT

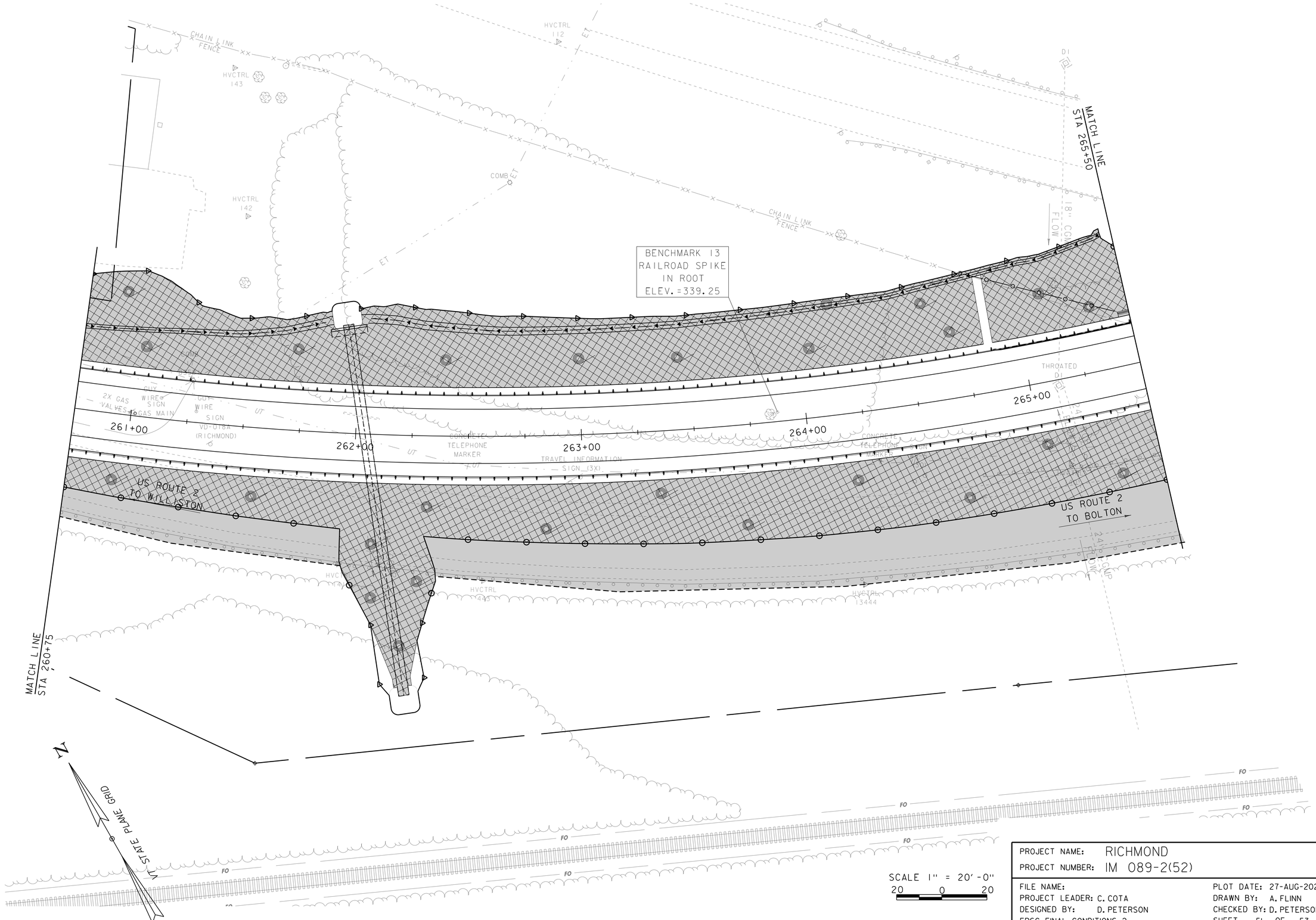
MATCH LINE
STA 260+75

VT STATE PLANE GRID

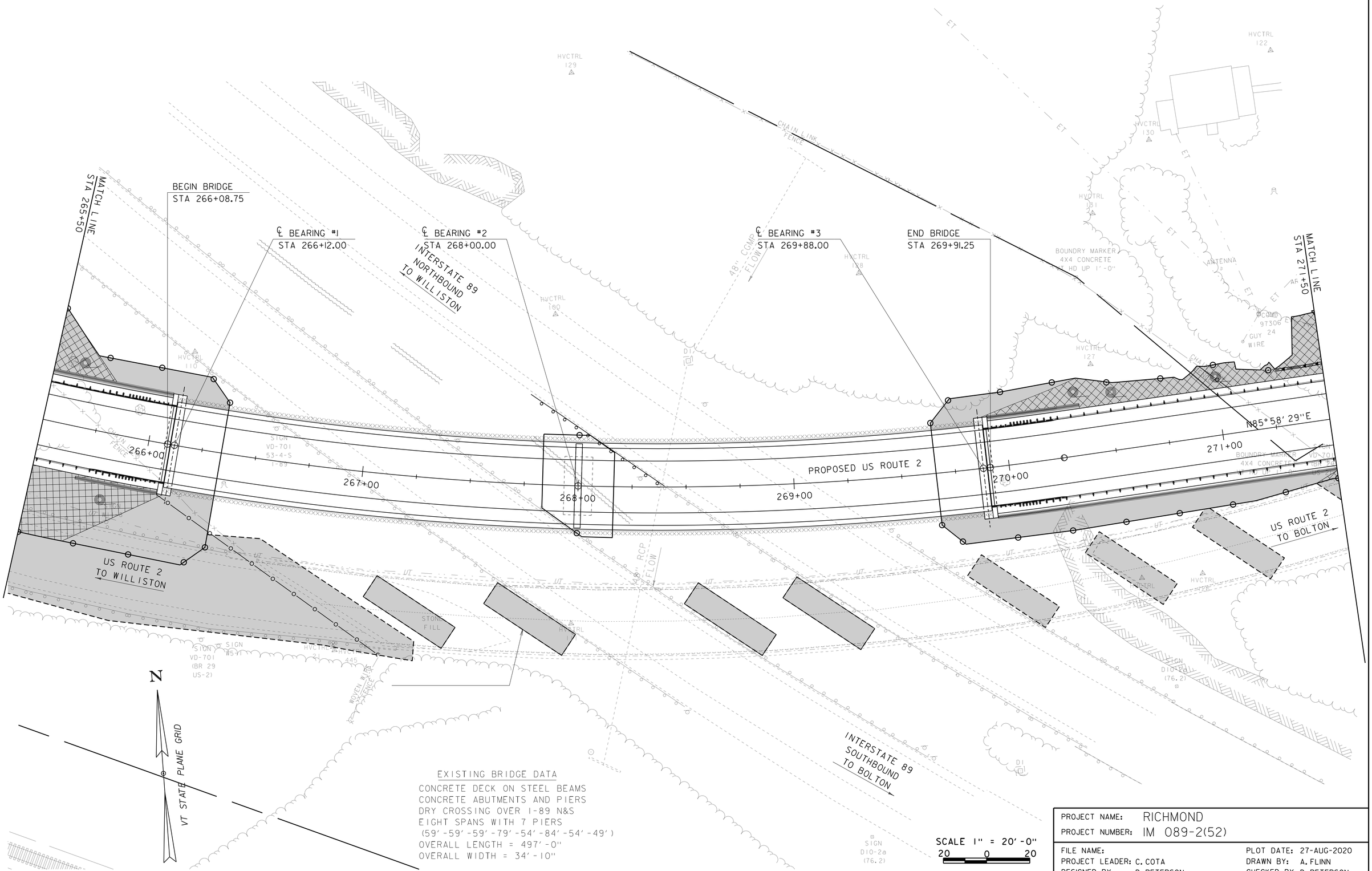
N

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

PROJECT NAME: RICHMOND	
PROJECT NUMBER: IM 089-2(52)	
FILE NAME:	PLOT DATE: 27-AUG-2020
PROJECT LEADER: C. COTA	DRAWN BY: A. FLINN
DESIGNED BY: D. PETERSON	CHECKED BY: D. PETERSON
EPSC FINAL CONDITIONS 1	SHEET 50 OF 53



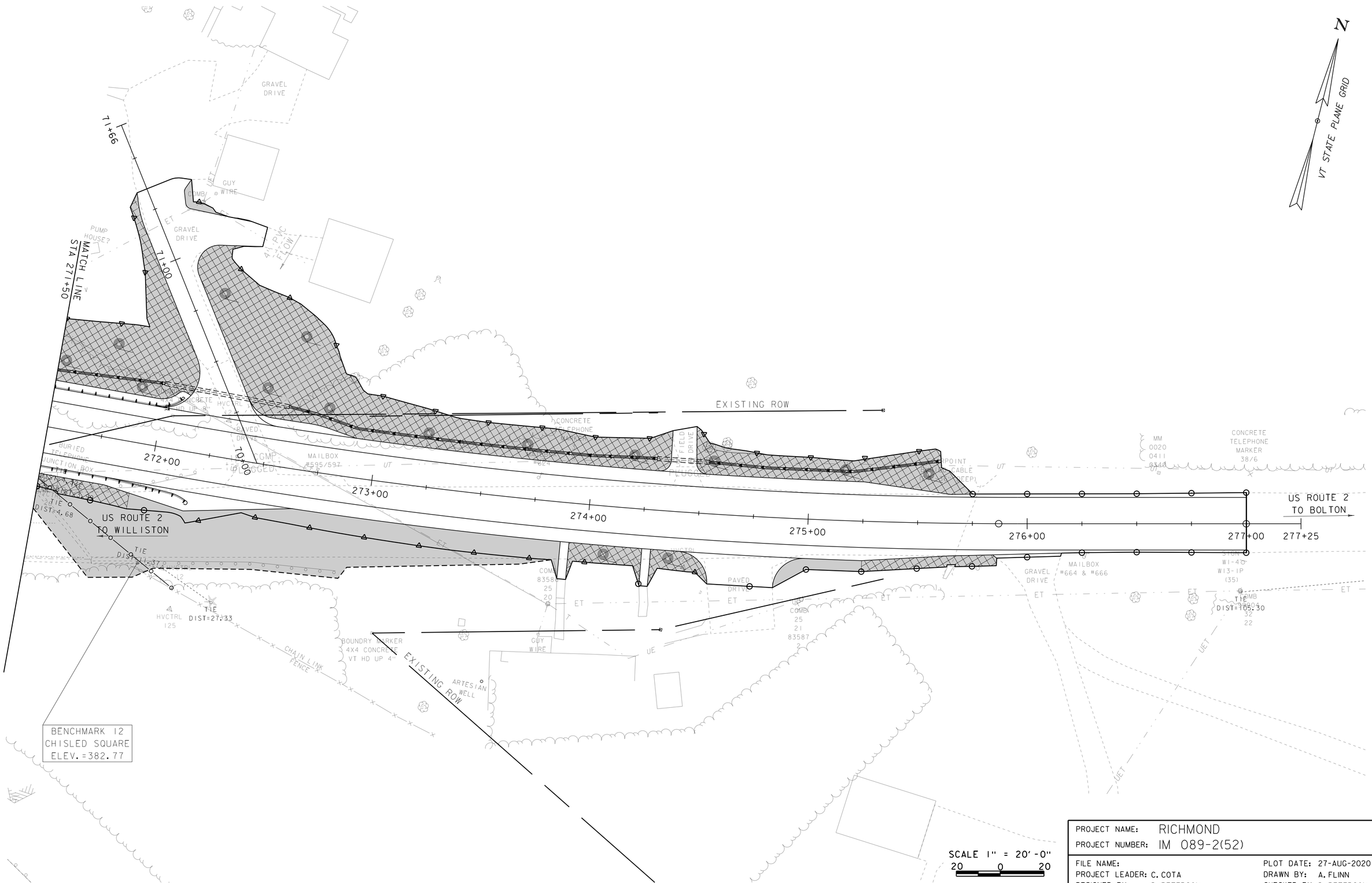
PROJECT NAME: RICHMOND	
PROJECT NUMBER: IM 089-2(52)	
FILE NAME:	PLOT DATE: 27-AUG-2020
PROJECT LEADER: C. COTA	DRAWN BY: A. FLINN
DESIGNED BY: D. PETERSON	CHECKED BY: D. PETERSON
EPSC FINAL CONDITIONS 2	SHEET 51 OF 53



EXISTING BRIDGE DATA

CONCRETE DECK ON STEEL BEAMS
CONCRETE ABUTMENTS AND PIERS
DRY CROSSING OVER I-89 N&S
EIGHT SPANS WITH 7 PIERS
(59'-59'-59'-79'-54'-84'-54'-49')
OVERALL LENGTH = 497'-0"
OVERALL WIDTH = 34'-10"

PROJECT NAME: RICHMOND	
PROJECT NUMBER: IM 089-2(52)	
FILE NAME:	PLOT DATE: 27-AUG-2020
PROJECT LEADER: C. COTA	DRAWN BY: A. FLINN
DESIGNED BY: D. PETERSON	CHECKED BY: D. PETERSON
EPSC FINAL CONDITIONS 3	SHEET 52 OF 53



PROJECT NAME: RICHMOND	
PROJECT NUMBER: IM 089-2(52)	
FILE NAME:	PLOT DATE: 27-AUG-2020
PROJECT LEADER: C. COTA	DRAWN BY: A. FLINN
DESIGNED BY: D. PETERSON	CHECKED BY: D. PETERSON
EPSC FINAL CONDITIONS 4	SHEET 53 OF 53