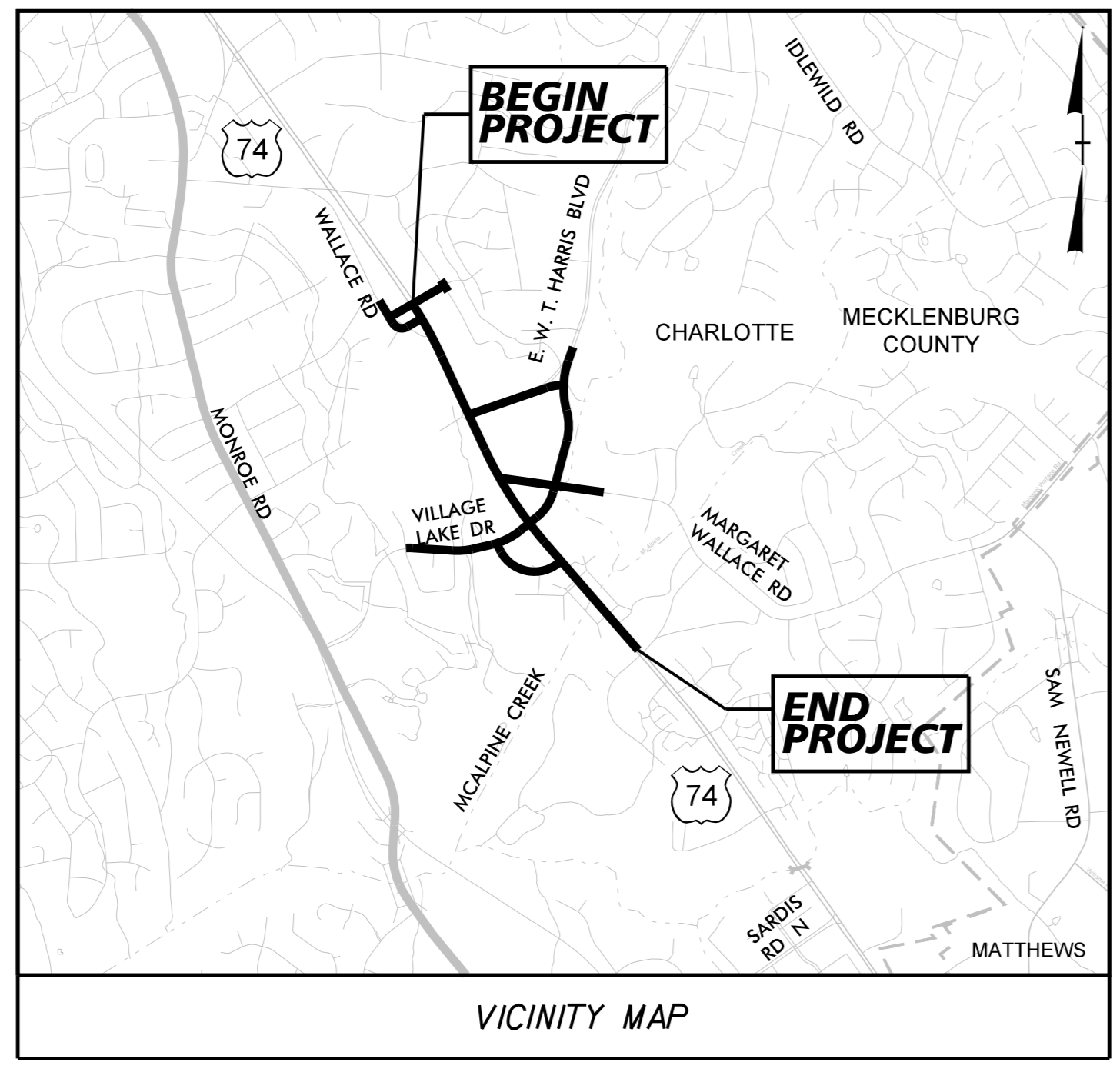


TIP PROJECT: U-2509AA

SEE SHEET 1A FOR INDEX OF SHEETS
SEE SHEET 1B FOR CONVENTIONAL PLAN SHEET SYMBOLS



DESIGN RECOMMENDATION PLAN SET

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

MECKLENBURG COUNTY

REDLINE DRAINAGE

LOCATION: US 74 FROM SHARON FOREST DRIVE AND HARRIS BOULEVARD/VILLAGE LAKE DRIVE AREA

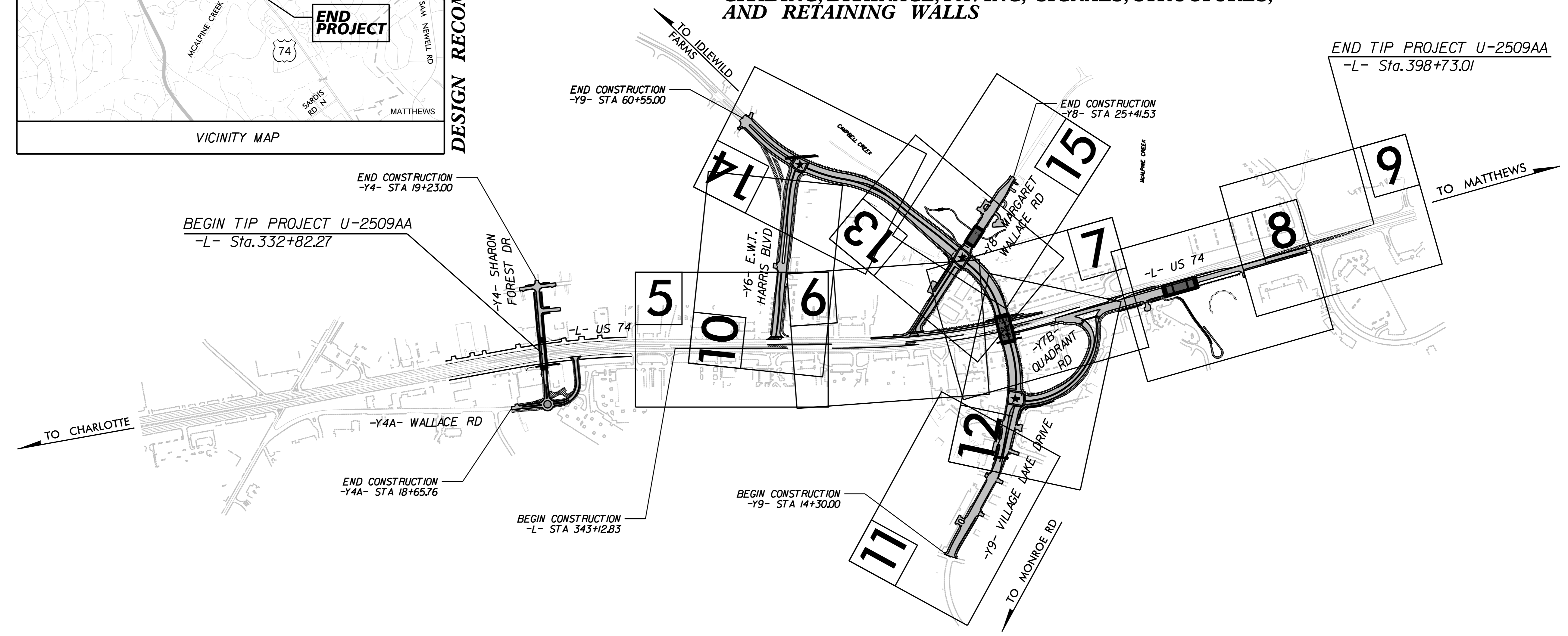
TYPE OF WORK: GRADING, DRAINAGE, PAVING, SIGNALS, STRUCTURES, AND RETAINING WALLS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-2509AA	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
38965.1.1	NHS-74(70)	PE	

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

BETTERMENT

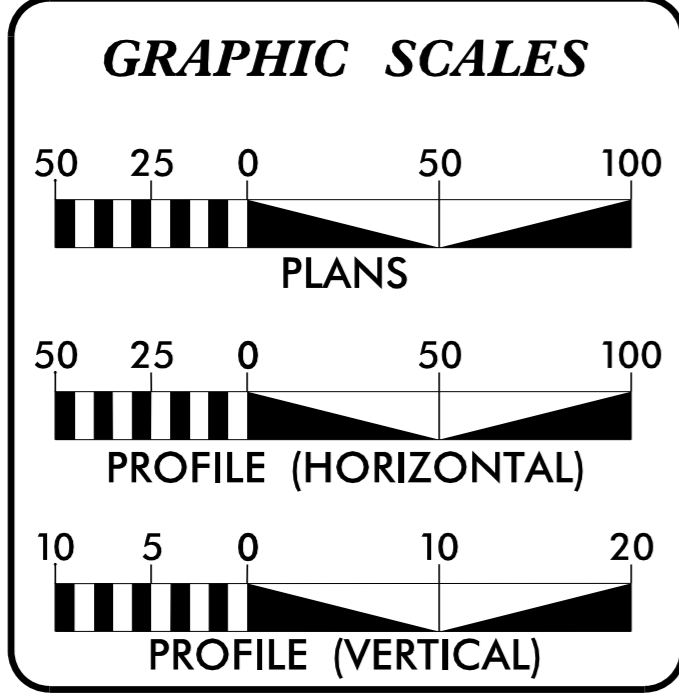
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION



★ TRAFFIC SIGNAL

THIS IS A PARTIAL CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO POINTS AS SHOWN ON THE PLANS. CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD XX.

CONTRACT:



DESIGN DATA

ADT 2022	=	56300 VPD
ADT 2042	=	114600 VPD
K	=	8%
D	=	55%
T	=	4%*
V	=	50 MPH

FUNCTIONAL CLASSIFICATION: ARTERIAL
PRINCIPAL CLASSIFICATION: ARTERIAL
* 1% TTST 3% DUAL REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-2509AA	=	1.143 MILES
LENGTH STRUCTURE PROJECT U-2509AA	=	0.143 MILES
TOTAL LENGTH TIP PROJECT U-2509AA	=	1.143 MILES

PLANS PREPARED FOR THE NCDOT BY:

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JULY 31, 2024

LETTING DATE:
JULY 18, 2028

Kimley»Horn
NC LICENSE #F-0102
200 SOUTH TRYON STREET, SUITE 200
CHARLOTTE, NORTH CAROLINA 28202
PHONE: (704) 333-8131

VOLKERT
5430 Wade Park Blvd., Suite 410
Raleigh, NC 27607
Tel: 919-854-0344 Fax: 919-854-0355
NC License No. F-0785

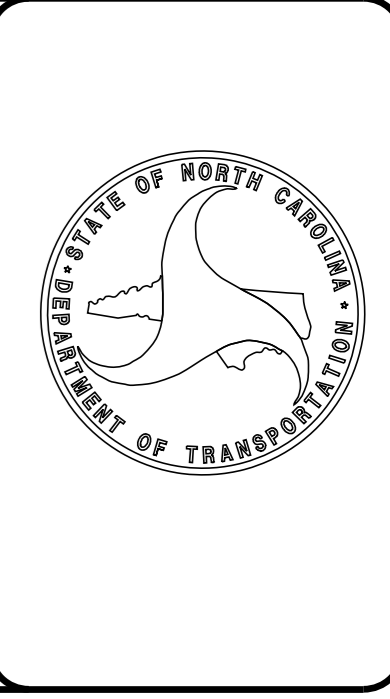
TONY SPACEK, P.E. PROJECT ENGINEER	EMILY MURRAY, P.E. PROJECT ENGINEER
SYDNEY ROSENBLUM, P.E. PROJECT DESIGN ENGINEER	CURTIS HALL, P.E. PROJECT DESIGN ENGINEER
BRYAN KEY, P.E. NCDOT PROJECT MANAGER	

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: _____ P.E.



K:\CHL_PRJ\01036721 - U-2509AA\Hydraulics\CADD\PSHU-2509AA\C2_hyd_tsh.dgn 12/11/2023

SEE SHEET 16 FOR -L- PROFILE

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RIGHT-OF-WAY REV.

CONST. REV.

PROJECT REFERENCE NO. SHEET NO.

U-2509AA 5

R/W SHEET NO.

ROADWAY ENGINEER

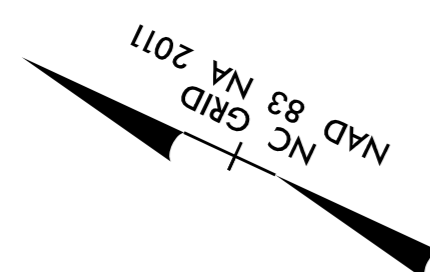
HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

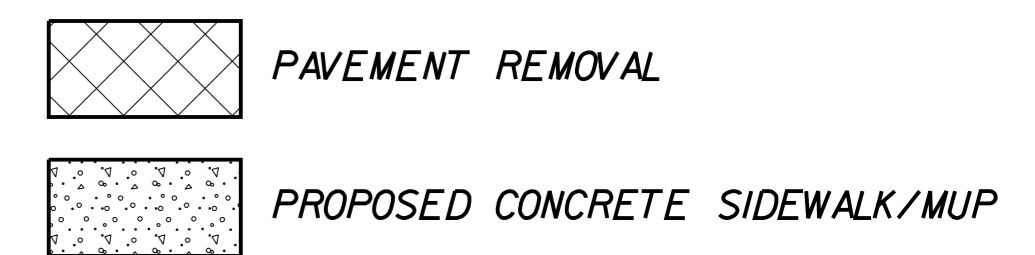
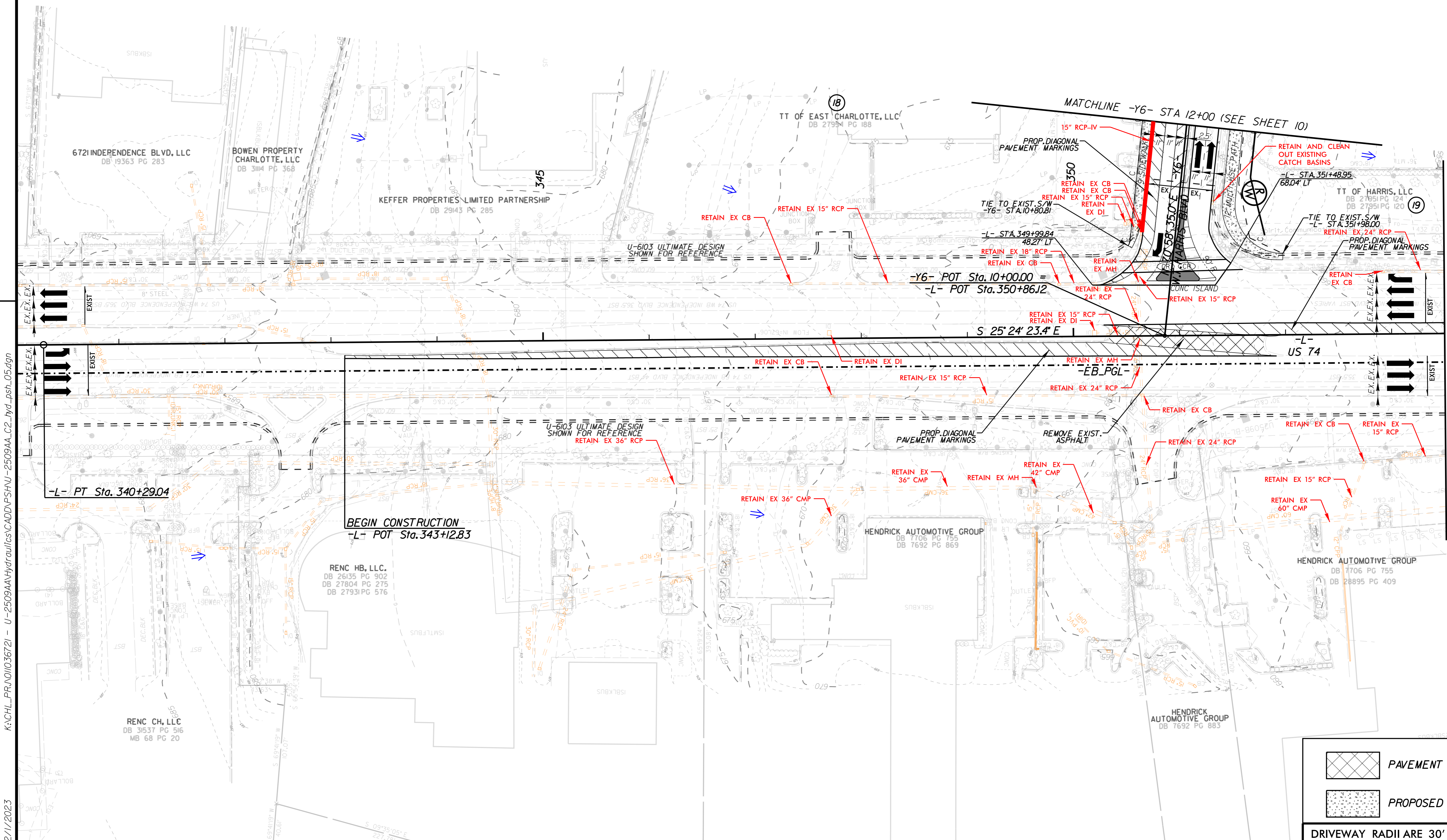
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

BETTERMENT

-L-
PI Sta 148+81.96
 $\Delta = 10^\circ 23' 57.8" (RT)$
 $D = 0' 53' 48.0"$
 $L = 1,159.80'$
 $T = 581.50'$
 $R = 6,390.00'$



REVISIONS



DRIVEWAY RADII ARE 30' UNLESS OTHERWISE NOTED

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12/11/2023

SEE SHEET 16 FOR -L- PROFILE
SEE SHEET 21 FOR -Y6- PROFILE

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CONST. REV.

PROJECT REFERENCE NO. SHEET NO.

U-2509AA 6

R/W SHEET NO.

ROADWAY ENGINEER HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

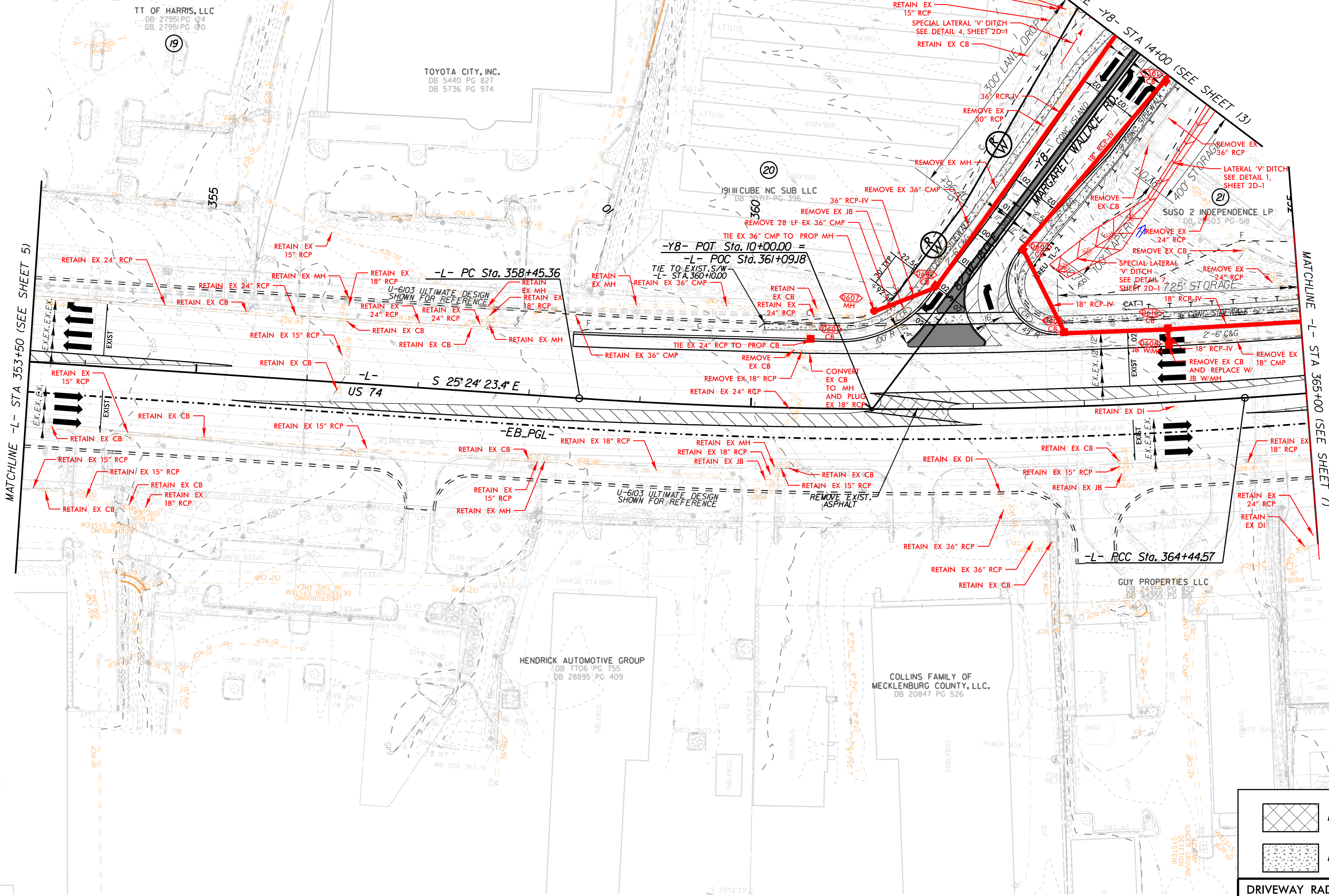
BETTERMENT

REVISIONS

-L-
PI Sta 361+45.42 Δ = 7° 41' 21.0" (LT)
D = 1' 16" 59.6"
L = 599.21'
T = 300.05'
R = 4,465.00'

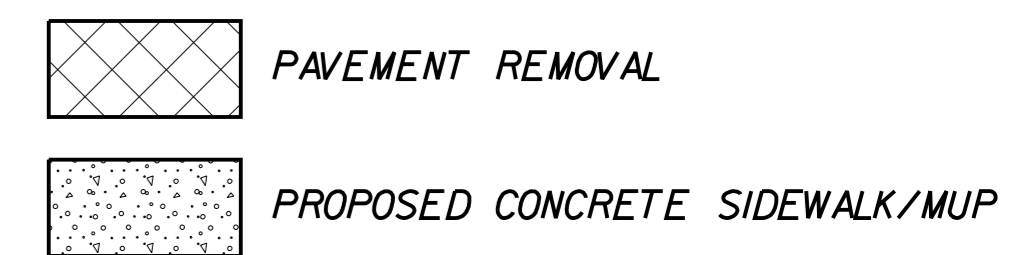
PI Sta 368+39.60 Δ = 7° 39' 39.3" (LT)
D = 0' 58" 16.0"
L = 788.88'
T = 395.03'
R = 5,900.00'

-DRWI-
PI Sta 10+57.50 Δ = 90° 00' 00.0" (RT)
D = 286' 28" 44.0"
L = 31.42'
T = 20.00'
R = 20.00'

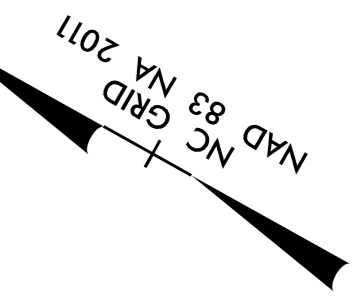


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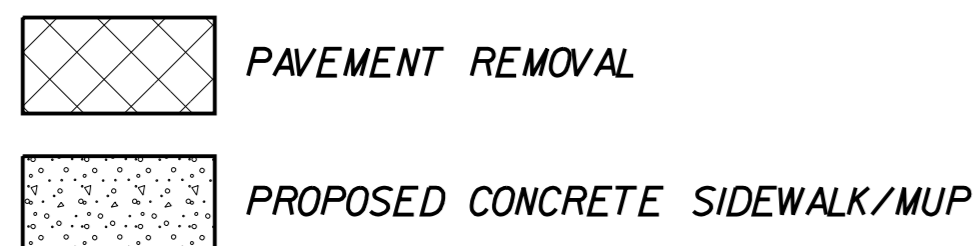
12/11/2023



DRIVEWAY RADII ARE 30' UNLESS OTHERWISE NOTED



SEE SHEET 17 FOR -L- PROFILE
SEE SHEET 24 FOR -Y9- PROFILE



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RIGHT-OF-WAY REV.
CONST. REV.

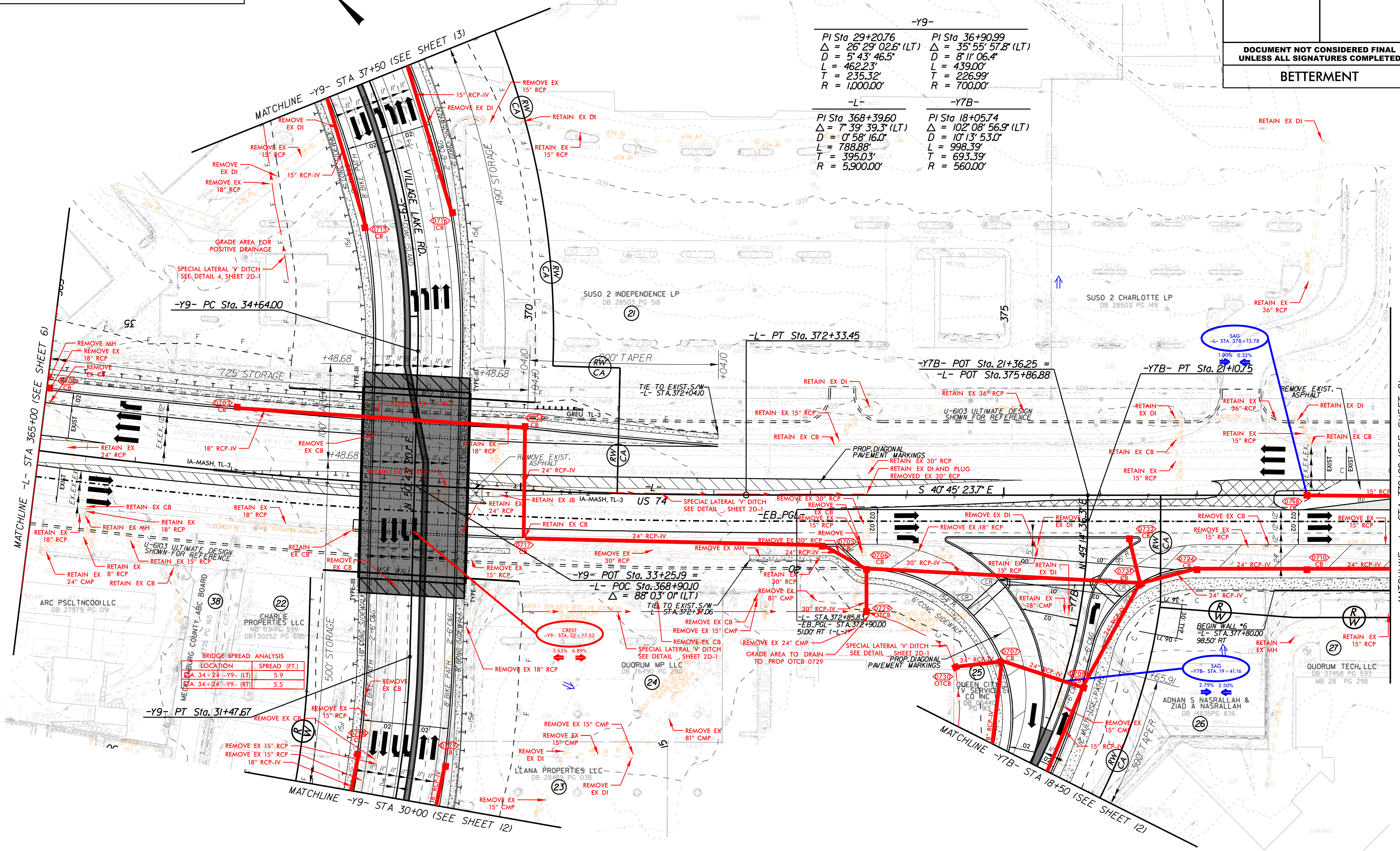
PROJECT REFERENCE NO. U-2509AA	SHEET NO. 7
ROADWAY ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	

**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

BETTERMENT

-Y9-	
PI Sta 29+20.76 $\Delta = 26' 29" 02.6" (LT)$ D = 5' 43' 46.5" L = 462.23' T = 235.32' R = 1,000.00'	PI Sta 36+90.99 $\Delta = 35' 55' 57.8" (LT)$ D = 8' 11' 06.4" L = 439.00' T = 226.99' R = 700.00'
-L-	
PI Sta 368+39.60 $\Delta = 7' 39' 39.3" (LT)$ D = 0' 58' 16.0" L = 788.88' T = 395.03' R = 5,900.00'	-Y7B- PI Sta 18+05.74 $\Delta = 102' 08' 56.9" (LT)$ D = 10' 13' 53.0" L = 998.39' T = 693.39' R = 560.00'

REVISIONS



BRIDGE SPREAD ANALYSIS	
LOCATION	SPREAD (FT.)
A. 34+24 -Y9- (LT)	5.9
A. 34+24 -Y9- (RT)	5.5

DRIVEWAY RADII ARE 30' UNLESS OTHERWISE NOTED

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12/11/2023

SEE SHEET 18 FOR -L- PROFILE
 SEE SHEET 28 FOR -DRW16- PROFILE
 SEE SHEET 29 FOR -GWI- PROFILE

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PROJECT REFERENCE NO. SHEET NO.

U-2509AA 8

R/W SHEET NO.

ROADWAY ENGINEER HYDRAULICS ENGINEER

INCOMPLETE PLANS
 DO NOT USE FOR R/W ACQUISITION

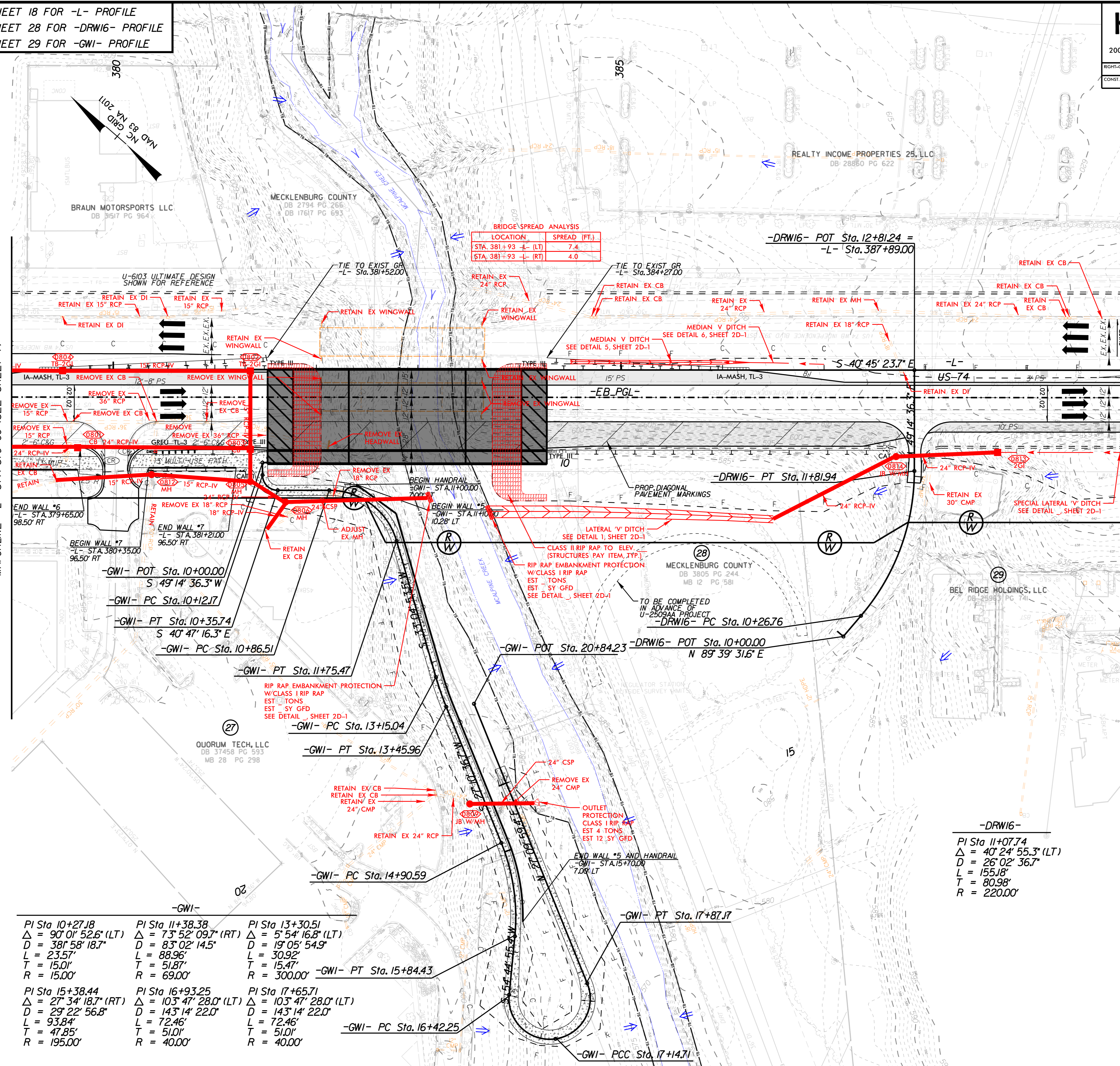
DOCUMENT NOT CONSIDERED FINAL
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BETTERMENT

REVISIONS

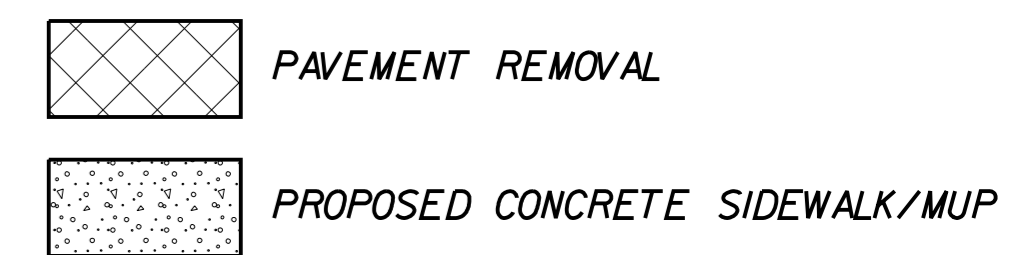
MATCHLINE -L- STA 379+00 (SEE SHEET 7)

MATCHLINE -L- STA 390+00 (SEE SHEET 9)



-GWI- PI Sta 10+27.18 $\Delta = 90^{\circ} 01' 52.6''$ (LT) $D = 381' 58'' 18.7''$ $L = 23.57'$ $T = 15.01'$ $R = 15.00'$	-GWI- PI Sta 11+38.38 $\Delta = 73^{\circ} 52' 09.7''$ (RT) $D = 83^{\circ} 02' 14.5''$ $L = 88.96'$ $T = 51.87'$ $R = 69.00'$	-GWI- PI Sta 13+30.51 $\Delta = 5^{\circ} 54' 16.8''$ (LT) $D = 19^{\circ} 05' 54.9''$ $L = 30.92'$ $T = 15.47'$ $R = 300.00'$
-GWI- PI Sta 15+38.44 $\Delta = 27^{\circ} 34' 18.7''$ (RT) $D = 29^{\circ} 22' 56.8''$ $L = 93.84'$ $T = 47.85'$ $R = 195.00'$	-GWI- PI Sta 16+93.25 $\Delta = 103^{\circ} 47' 28.0''$ (LT) $D = 143^{\circ} 14' 22.0''$ $L = 72.46'$ $T = 51.01'$ $R = 40.00'$	-GWI- PI Sta 17+65.71 $\Delta = 103^{\circ} 47' 28.0''$ (LT) $D = 143^{\circ} 14' 22.0''$ $L = 72.46'$ $T = 51.01'$ $R = 40.00'$

-DRW16-
 PI Sta 11+07.74
 $\Delta = 40^{\circ} 24' 55.3''$ (LT)
 $D = 26^{\circ} 02' 36.7''$
 $L = 155.18'$
 $T = 80.98'$
 $R = 220.00'$



DRIVEWAY RADII ARE 30' UNLESS OTHERWISE NOTED

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SEE SHEET 18 FOR -L- PROFILE

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CONST. REV.

PROJECT REFERENCE NO. SHEET NO.

U-2509AA 9

R/W SHEET NO.

ROADWAY ENGINEER HYDRAULICS ENGINEER

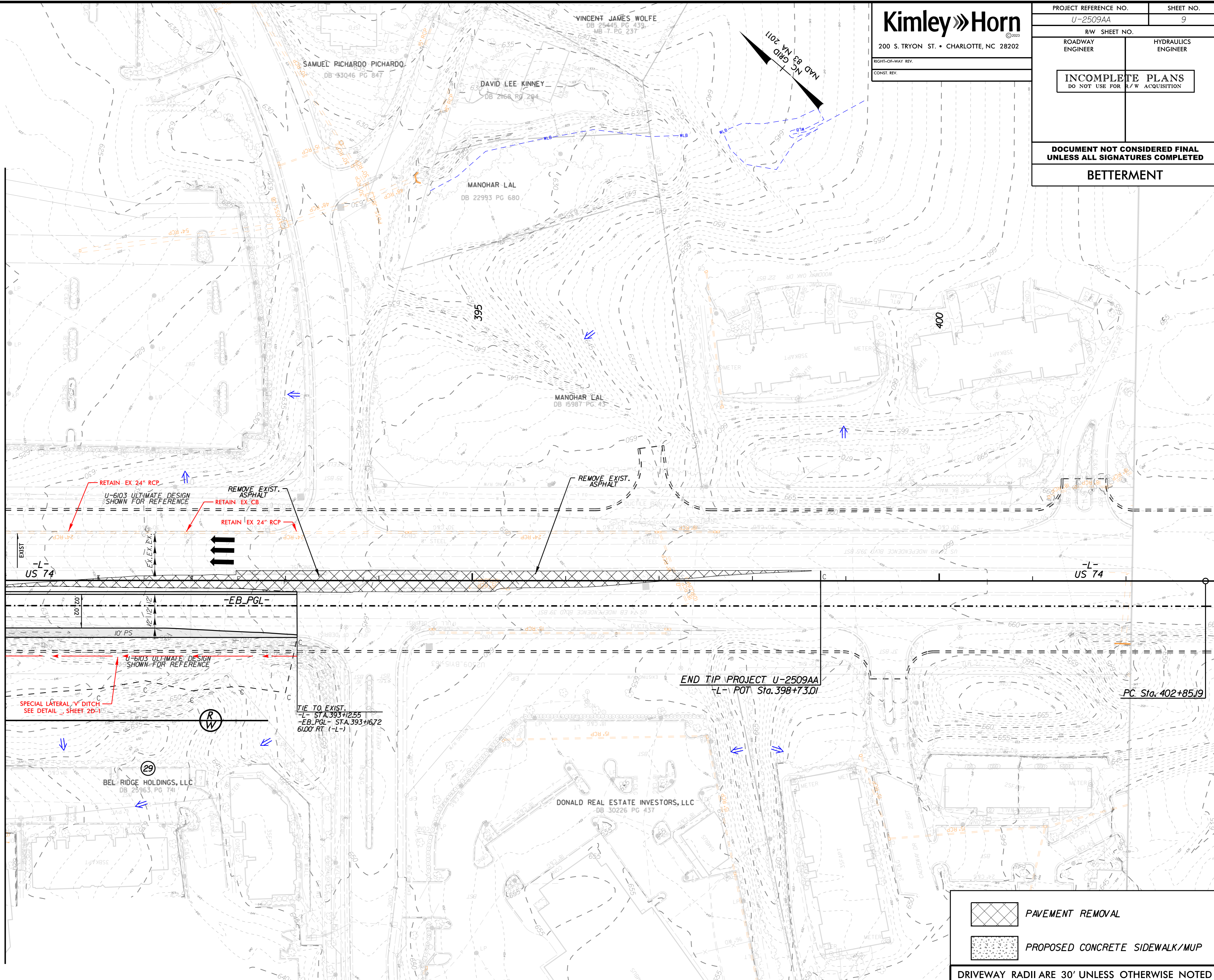
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

BETTERMENT

REVISIONS

MATCHLINE -L- STA 390+00 (SEE SHEET 8)



RETAIN EX 24" RCP
 U-6103 ULTIMATE DESIGN SHOWN FOR REFERENCE
 REMOVE EXIST. ASPHALT
 RETAIN EX CB
 RETAIN EX 24" RCP


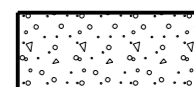
REMOVE EXIST. ASPHALT

U-6103 ULTIMATE DESIGN SHOWN FOR REFERENCE
 SPECIAL LATERAL V DITCH
 SEE DETAIL SHEET 2D-1

TIE TO EXIST.
 -L- STA. 393+255
 -EB-PGL- STA. 393+672
 6100' RT (-L-)

END TIP PROJECT U-2509AA
 -L- POT Sta. 398+73.01

PC Sta. 402+85.19

-  PAVEMENT REMOVAL
-  PROPOSED CONCRETE SIDEWALK/MUP

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SEE SHEET 21 FOR -Y6- PROFILE

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RIGHT-OF-WAY REV.

CONST. REV.

PROJECT REFERENCE NO. SHEET NO.

U-2509AA 10

R/W SHEET NO.

ROADWAY ENGINEER

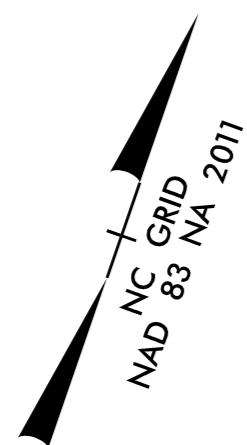
HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

BETTERMENT

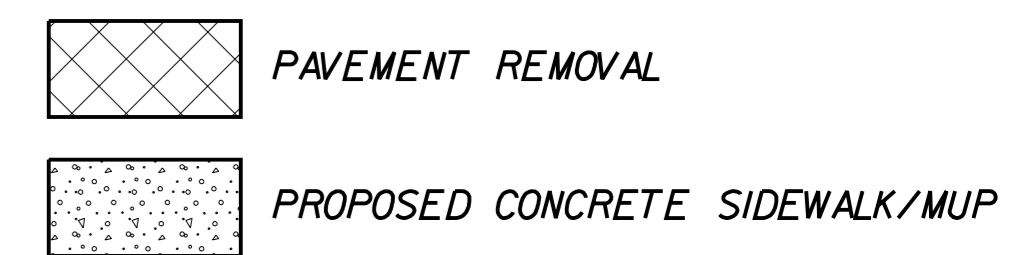
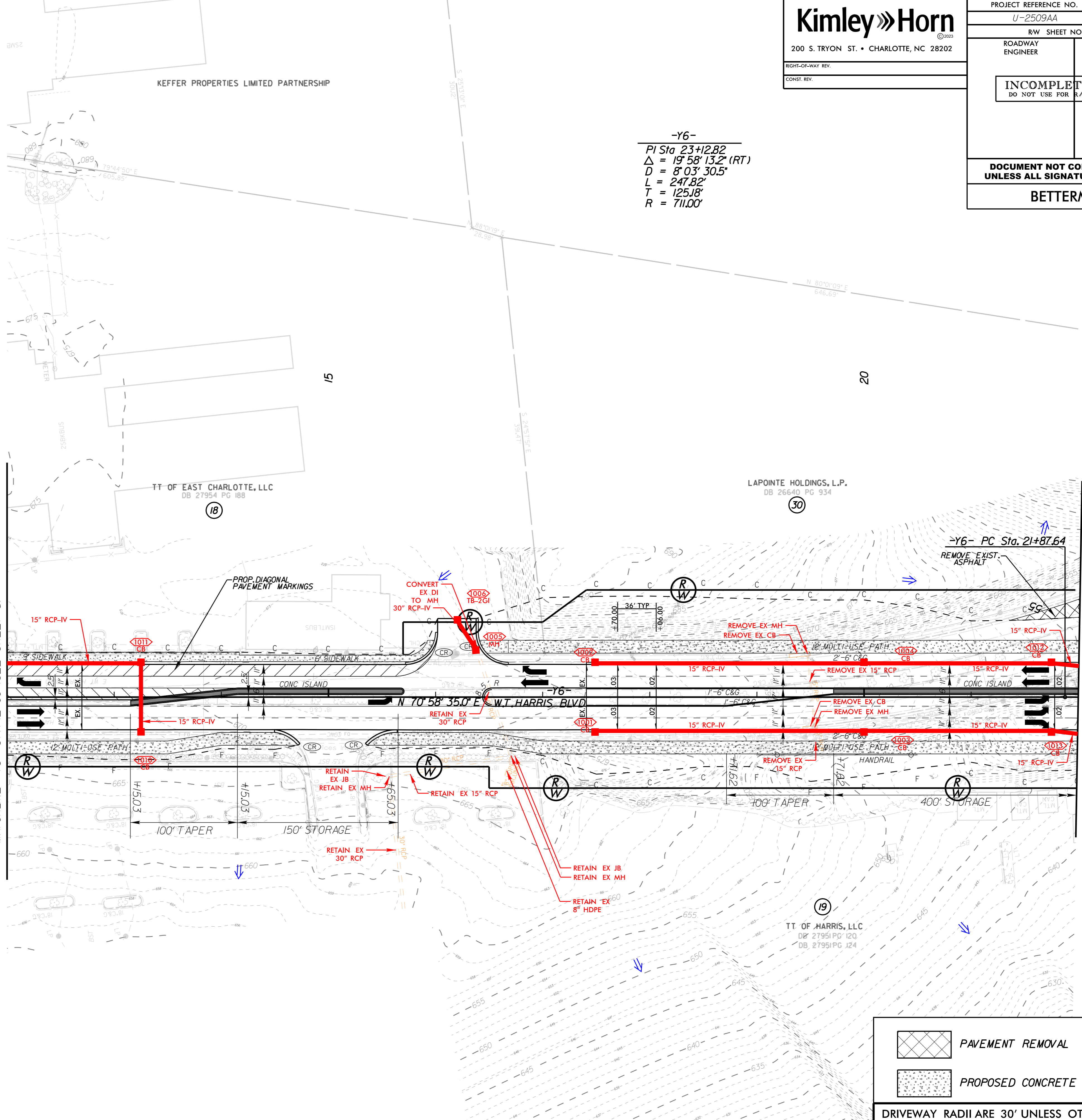
-Y6-
PI Sta 23+12.82
 $\Delta = 19^{\circ} 58' 13.2''$ (RT)
 $D = 8^{\circ} 03' 30.5''$
 $L = 247.82'$
 $T = 125.18'$
 $R = 711.00'$



REVISIONS

MATCHLINE -Y6- STA 12+00 (SEE SHEET 5)

MATCHLINE -Y6- STA 22+00 (SEE SHEET 14)



DRIVEWAY RADII ARE 30' UNLESS OTHERWISE NOTED

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12/11/2023

SEE SHEET 23 FOR -Y9- PROFILE

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RIGHT-OF-WAY REV.
CONST. REV.

PROJECT REFERENCE NO. U-2509AA SHEET NO. 11

R/W SHEET NO. ROADWAY ENGINEER HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

BETTERMENT

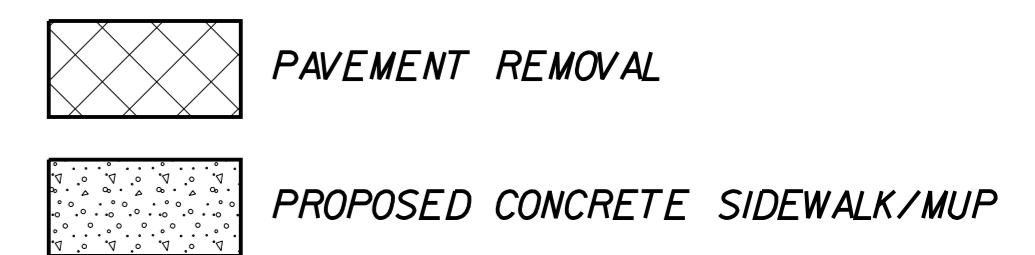
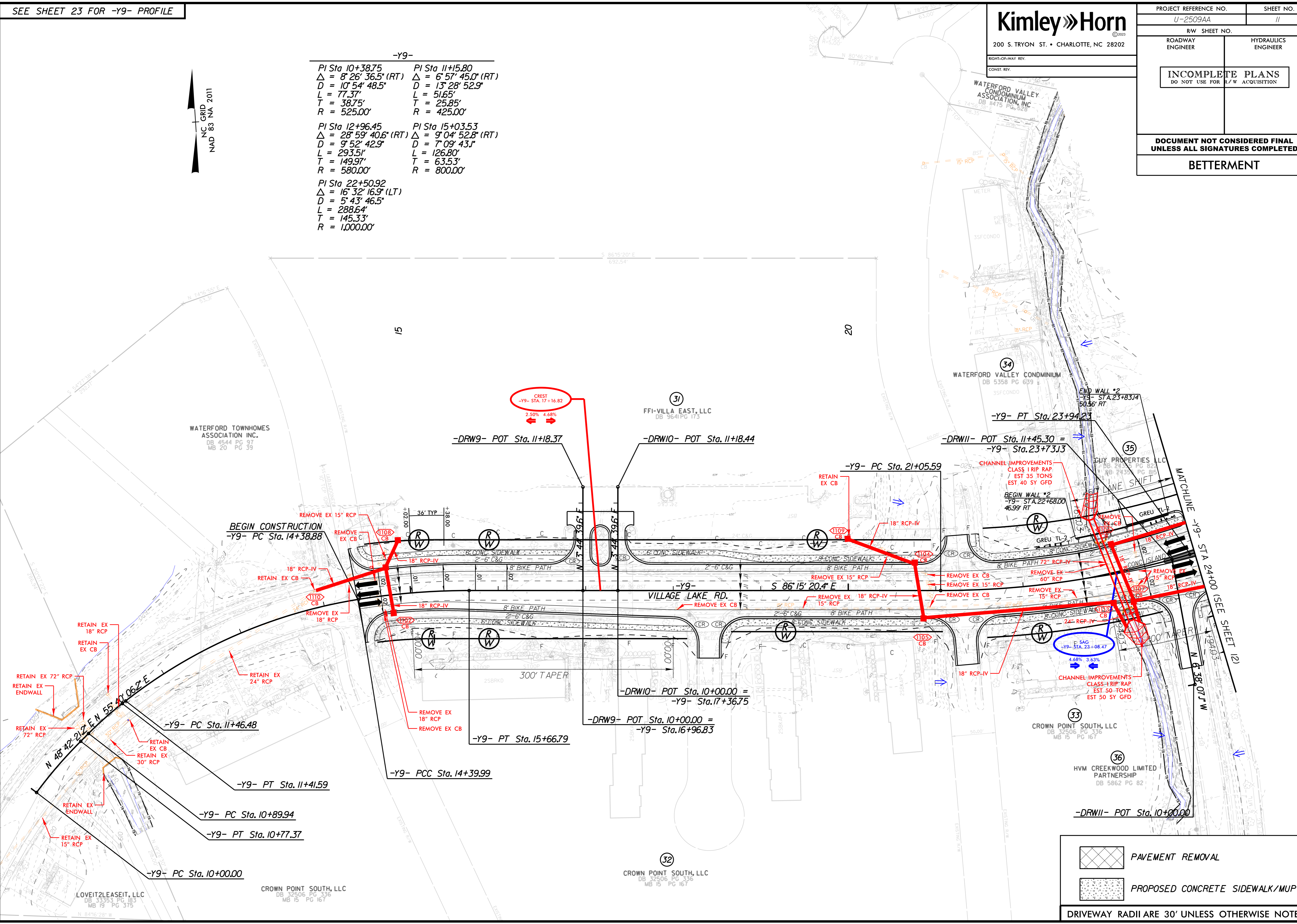
-Y9-

PI Sta 10+38.75 Δ = 8' 26' 36.5" (RT) D = 10' 54' 48.5" L = 77.37' T = 38.75' R = 525.00'	PI Sta 11+15.80 Δ = 6' 57' 45.0" (RT) D = 13' 28' 52.9" L = 51.65' T = 25.85' R = 425.00'
PI Sta 12+96.45 Δ = 28' 59' 40.6" (RT) D = 9' 52' 42.9" L = 293.51' T = 149.97' R = 580.00'	PI Sta 15+03.53 Δ = 9' 04' 52.8" (RT) D = 7' 09' 43.1" L = 126.80' T = 63.53' R = 800.00'
PI Sta 22+50.92 Δ = 16' 32' 16.9" (LT) D = 5' 43' 46.5" L = 288.64' T = 145.33' R = 1,000.00'	



REVISIONS

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SEE SHEET 24 FOR -Y9- PROFILE
SEE SHEET 22 FOR -Y7B- PROFILE

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RIGHT-OF-WAY REV.

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PROJECT REFERENCE NO. SHEET NO.

U-2509AA 12

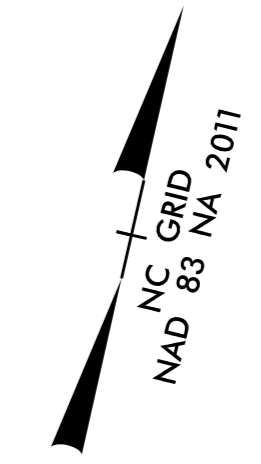
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ROADWAY ENGINEER HYDRAULICS ENGINEER

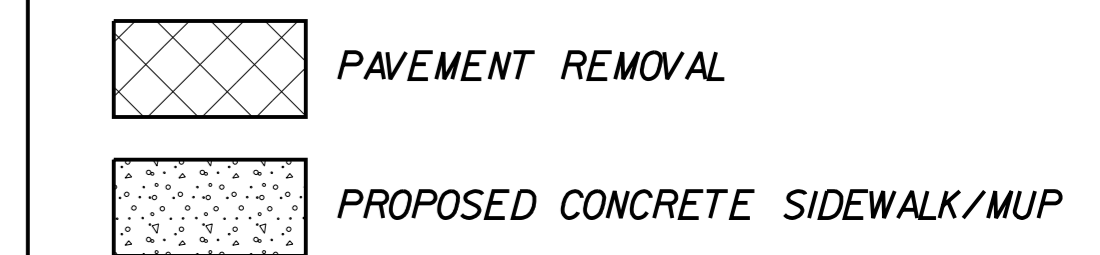
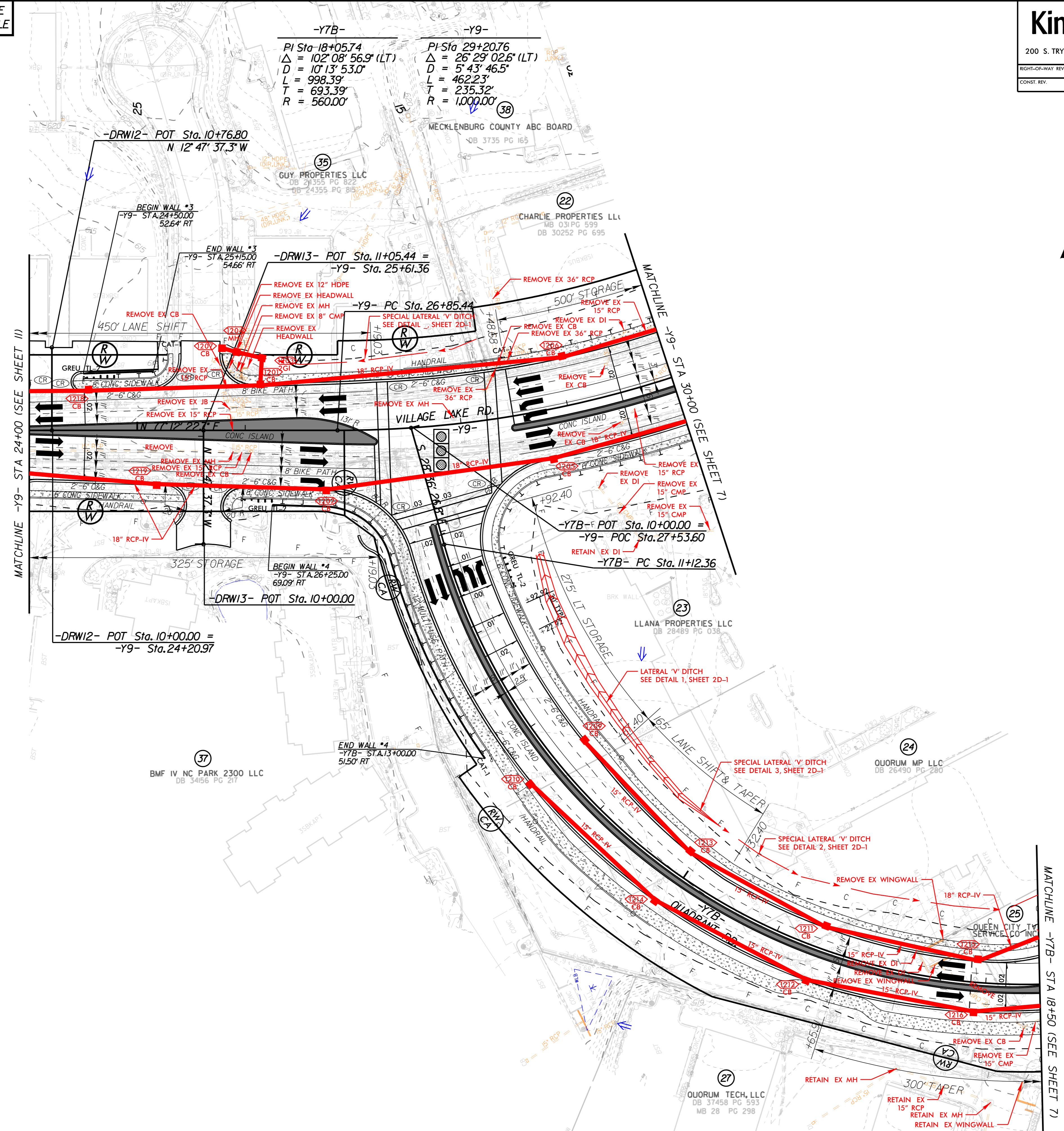
INCOMPLETE PLANS
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BETTERMENT



REVISIONS



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SEE SHEET 22 FOR -Y8- PROFILE
SEE SHEET 24 FOR -Y9- PROFILE

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PROJECT REFERENCE NO. SHEET NO.

U-2509AA 13

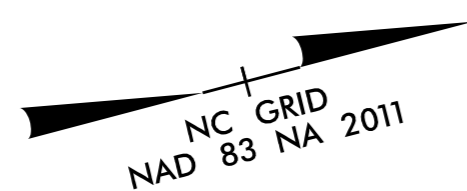
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ROADWAY ENGINEER HYDRAULICS ENGINEER

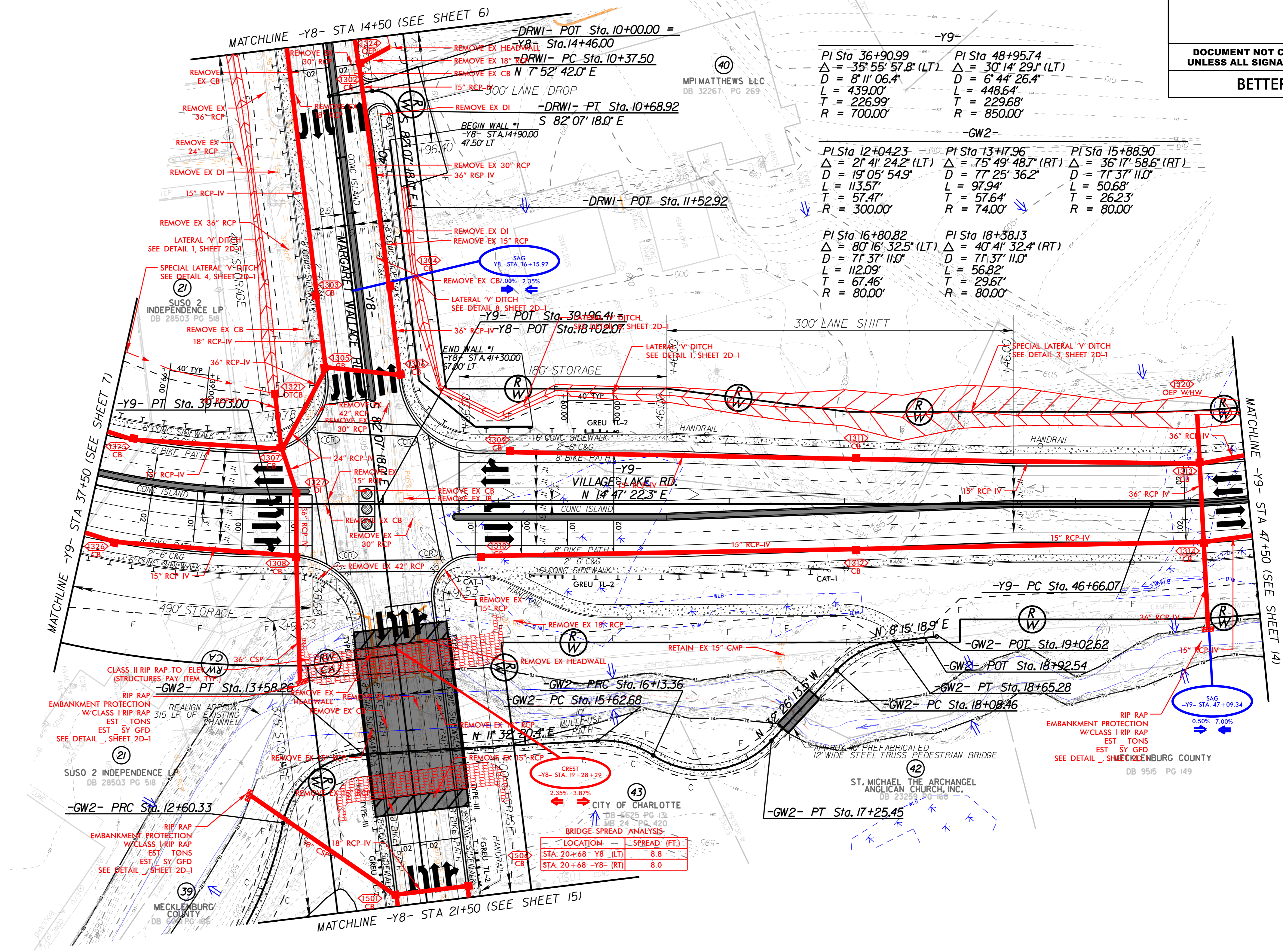
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

BETTERMENT



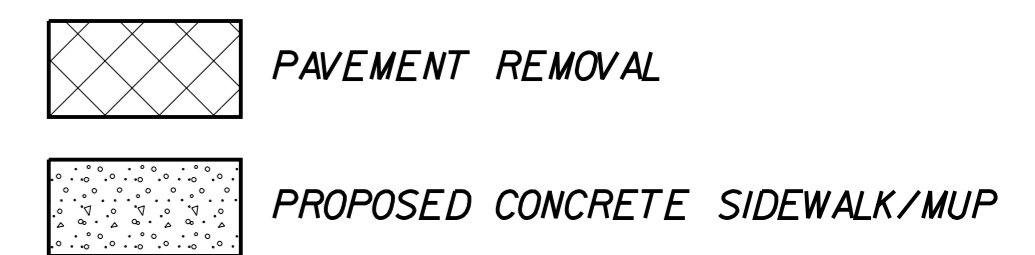
REVISIONS



-Y9-	
PI Sta 36+90.99 Δ = 35° 55' 57.8" (LT) D = 8' 11" 06.4" L = 439.00' T = 226.99' R = 700.00'	PI Sta 48+95.74 Δ = 30° 14' 29.1" (LT) D = 6' 44" 26.4" L = 448.64' T = 229.68' R = 850.00'
-GW2-	
PI Sta 12+04.23 Δ = 21° 41' 24.2" (LT) D = 19' 05' 54.9" L = 113.57' T = 57.47' R = 300.00'	PI Sta 13+17.96 Δ = 75° 49' 48.7" (RT) D = 77' 25' 36.2" L = 97.94' T = 57.64' R = 74.00'
PI Sta 15+88.90 Δ = 36° 17' 58.6" (RT) D = 71' 37' 11.0" L = 50.68' T = 26.23' R = 80.00'	
PI Sta 16+80.82 Δ = 80° 16' 32.5" (LT) D = 71' 37' 11.0" L = 112.09' T = 67.46' R = 80.00'	PI Sta 18+38.13 Δ = 40° 41' 32.4" (RT) D = 71' 37' 11.0" L = 56.82' T = 29.67' R = 80.00'

BRIDGE SPREAD ANALYSIS

LOCATION	SPREAD (FT.)
STA. 20+68 -Y8- (LT)	8.8
STA. 20+68 -Y8- (RT)	8.0



DRIVEWAY RADII ARE 30' UNLESS OTHERWISE NOTED

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SEE SHEET 21 FOR -Y6- PROFILE
SEE SHEET 25 FOR -Y9- PROFILE

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PROJECT REFERENCE NO. SHEET NO.

U-2509AA 14

R/W SHEET NO.

ROADWAY ENGINEER HYDRAULICS ENGINEER

ROADWAY ENGINEER HYDRAULICS ENGINEER

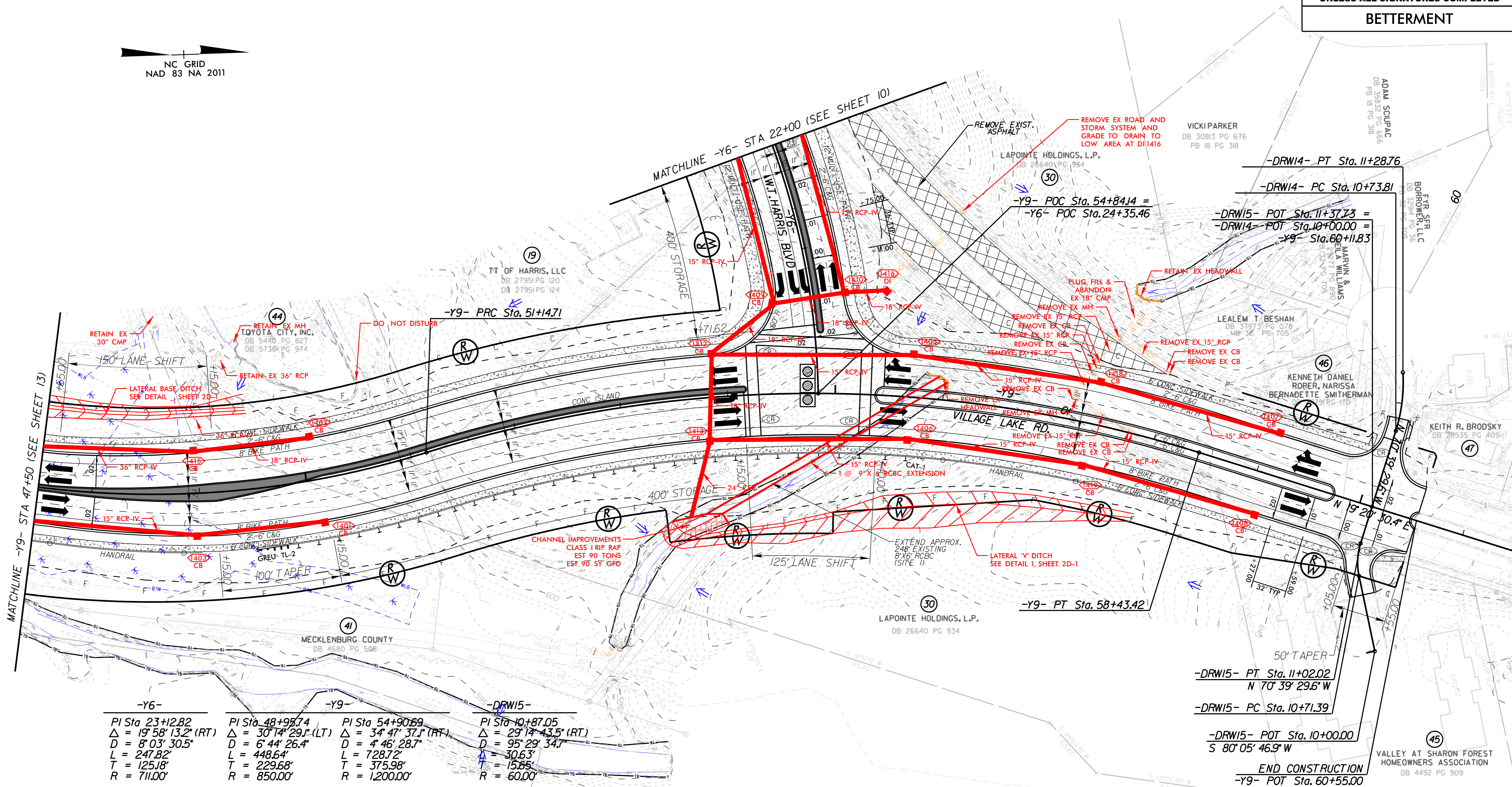
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

BETTERMENT



REVISIONS



-Y6-	-Y9-	-Y9-	-Y9-
PI Sta 23+12.82	PI Sta 48+98.74	PI Sta 54+90.69	PI Sta 10+87.05
$\Delta = 19^{\circ} 58' 13.2''$ (RT)	$\Delta = 30^{\circ} 14' 29.1''$ (LT)	$\Delta = 34^{\circ} 47' 37.1''$ (RT)	$\Delta = 29^{\circ} 14' 43.5''$ (RT)
D = 8' 03" 30.5"	D = 6' 44" 26.4"	D = 4' 46" 28.7"	D = 95' 29" 34.7"
L = 247.82'	L = 448.64'	L = 728.72'	L = 30.63'
T = 125.18'	T = 229.68'	T = 375.98'	T = 15.85'
R = 711.00'	R = 850.00'	R = 1,200.00'	R = 60.00'

PAVEMENT REMOVAL
 PROPOSED CONCRETE SIDEWALK/MUP
 DRIVEWAY RADII ARE 30' UNLESS OTHERWISE NOTED

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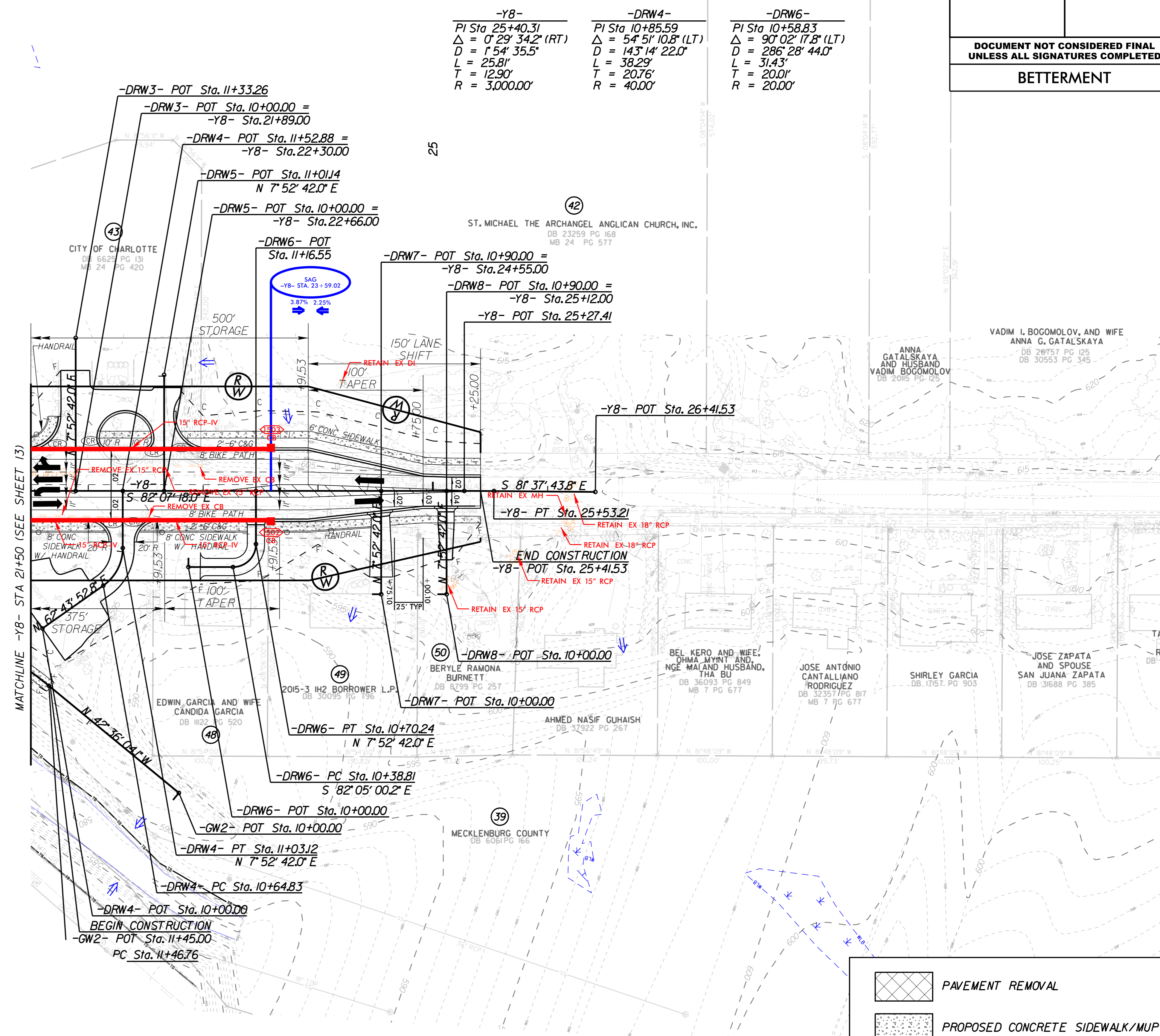
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INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

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BETTERMENT

REVISIONS



-Y8-	-DRW4-	-DRW6-
PI Sta 25+40.31	PI Sta 10+85.59	PI Sta 10+58.83
$\Delta = 0^\circ 29' 34.2''$ (RT)	$\Delta = 54^\circ 51' 10.8''$ (LT)	$\Delta = 90^\circ 02' 17.8''$ (LT)
$D = 154' 35.5''$	$D = 143' 14' 22.0''$	$D = 286' 28' 44.0''$
$L = 25.81'$	$L = 38.29'$	$L = 31.43'$
$T = 12.90'$	$T = 20.76'$	$T = 20.01'$
$R = 3,000.00'$	$R = 40.00'$	$R = 20.00'$

PAVEMENT REMOVAL
 PROPOSED CONCRETE SIDEWALK/MUP
 DRIVEWAY RADII ARE 30' UNLESS OTHERWISE NOTED

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12/11/2023