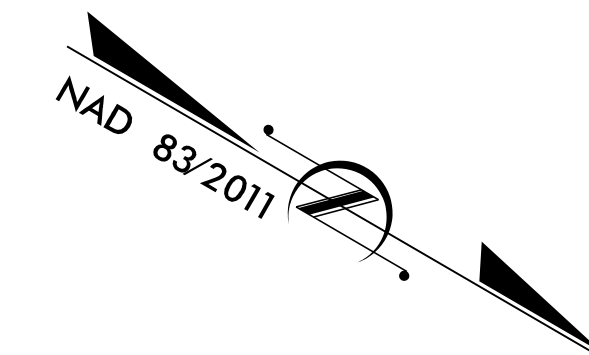
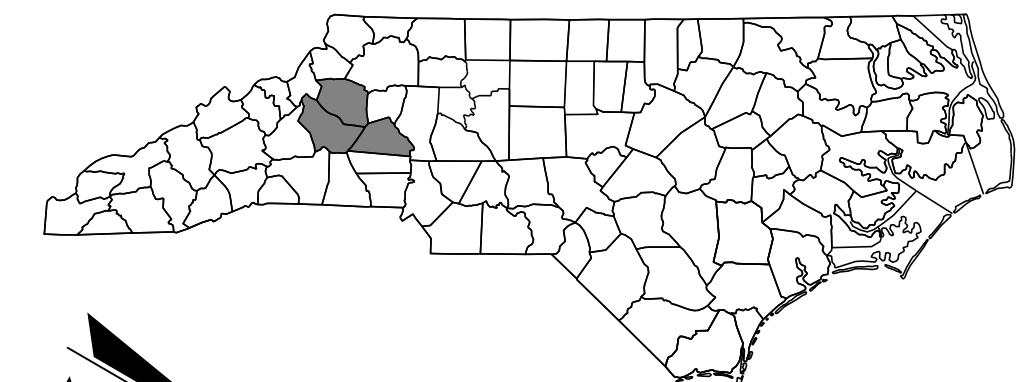


STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-4700A	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
35993.1.1	NHF-321(18)	PE	



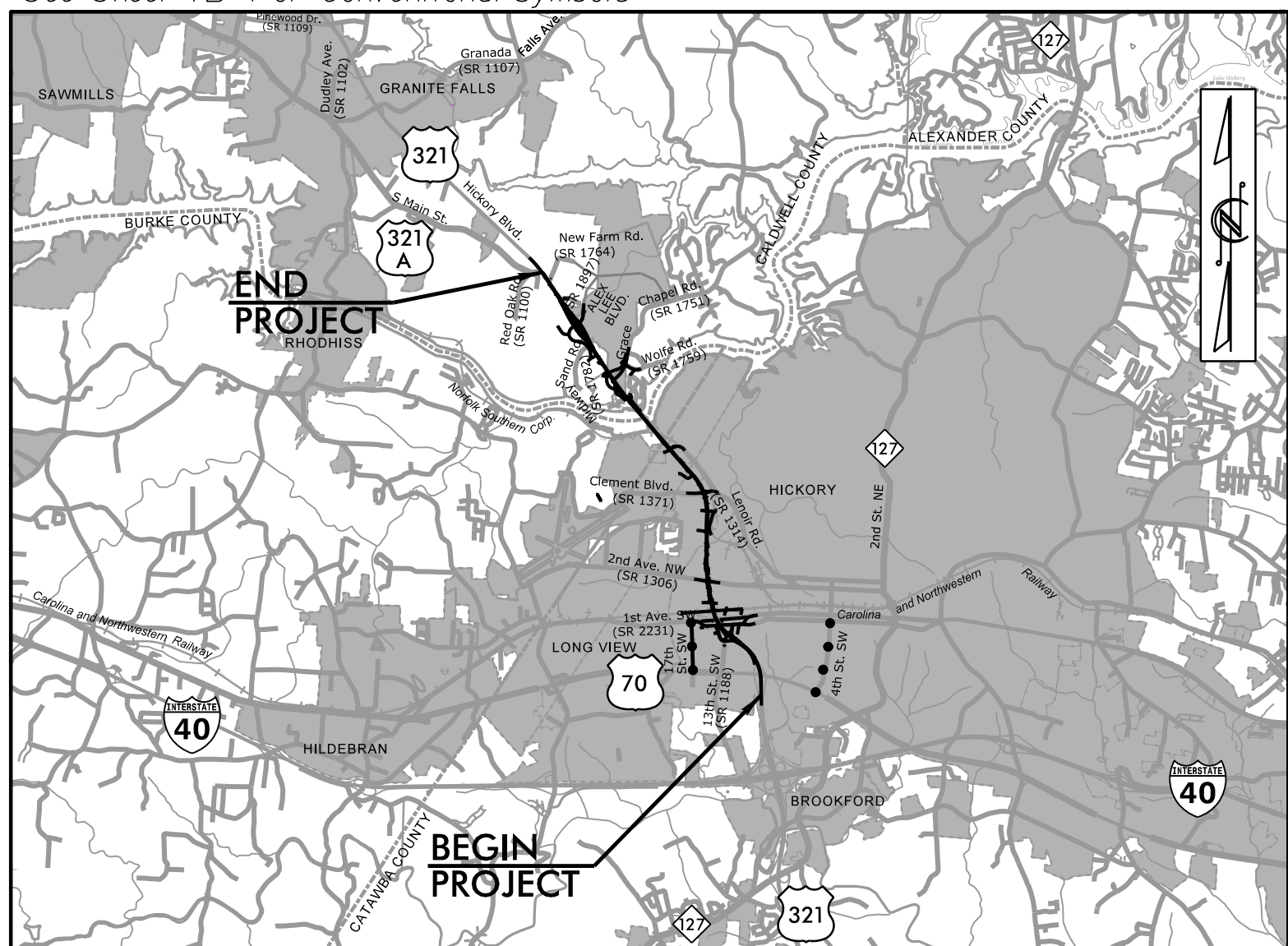
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

# BURKE, CALDWELL, & CATAWBA COUNTIES

**LOCATION: US 321 WIDENING IMPROVEMENTS FROM US 70 IN HICKORY TO JUST SOUTH OF US 321A /NEW FARM RD.**

**TYPE OF WORK: GRADING, PAVING, WIDENING, DRAINAGE, CULVERTS, SIGNING, STRUCTURES, RETAINING WALL, SIGNALS, & UTILITIES**

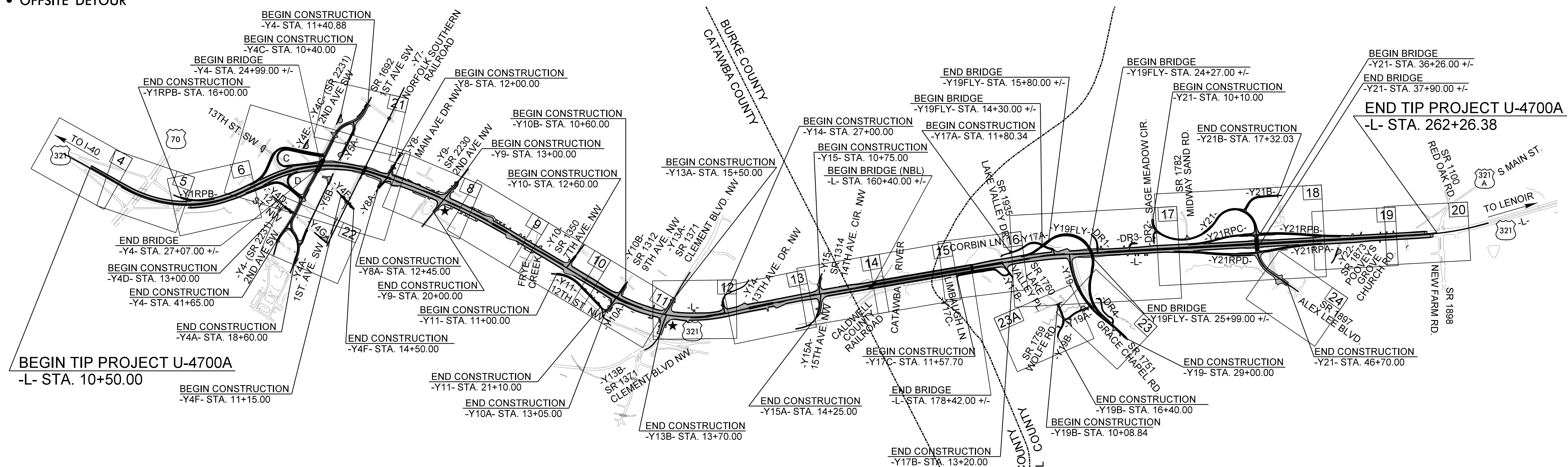
See Sheet 1A For Index of Sheets  
See Sheet 1B For Conventional Symbols



VICINITY MAP (NTS)

••• OFFSITE DETOUR

25% ROADWAY PLANS



**NOTES:**

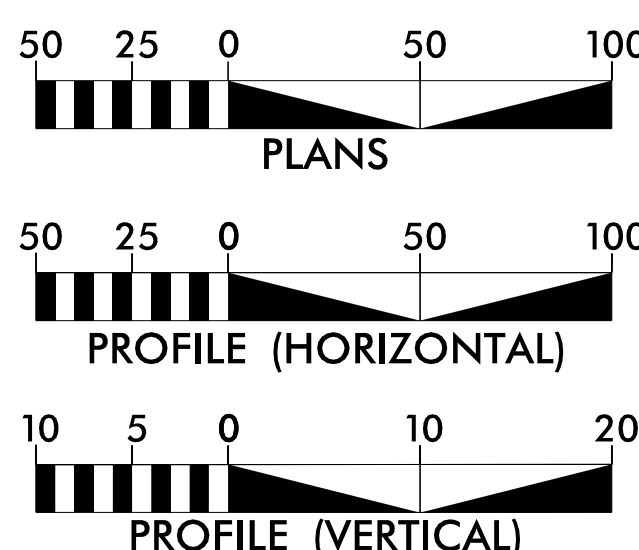
1. THIS PROJECT IS PARTIALLY WITHIN THE MUNICIPAL BOUNDARIES OF THE CITY OF HICKORY.
2. CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD
3. THIS IS A PARTIAL CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO POINTS AS SHOWN ON THE PLANS. ★ TRAFFIC SIGNAL

**4B ROADWAY PLANS  
DATE: 05/28/2019**

**INCOMPLETE PLANS  
DO NOT USE FOR R/W ACQUISITION  
DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED**

**CONTRACT:**

**GRAPHIC SCALES**



**DESIGN DATA**

ADT 2021 = 50,135  
ADT 2041 = 57,490  
V = 60 MPH  
DHV = 9%  
D = 60%  
T = 8% \*  
(\* TTST = 4% /\* DUAL = 4%)  
FUNC CLASS = ARTERIAL STATEWIDE TIER  
DESIGN EXCEPTIONS AS NOTED ON PLANS

**PROJECT LENGTH**

LENGTH ROADWAY TIP PROJECT U-4700A..... 4.427 miles  
LENGTH STRUCTURE TIP PROJECT U-4700A..... 0.341 miles (NBL)  
TOTAL LENGTH OF PROJECT U-4700A..... 4.768 miles

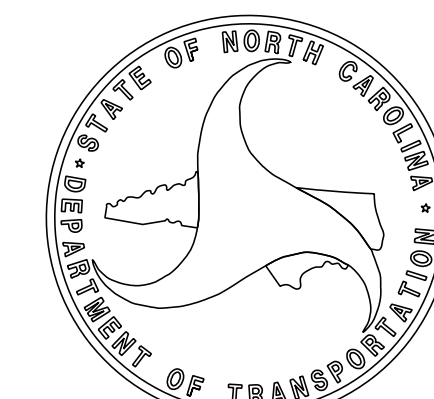
PLANS PREPARED BY:

**RK&K**  
P: (919) 878-9560  
900 Ridgely Drive Suite 350 | Raleigh, North Carolina 27609-3960  
NC License No. F-0112  
Engineers | Construction Managers | Planners | Scientists  
www.rkk.com  
Responsive People | Creative Solutions

FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION  
**RIGHT OF WAY DATE:** June 19, 2019  
**LETTING DATE:** August 18, 2021  
**Brandon McInnis, P.E.**  
PROJECT ENGINEER  
**Matthew Lamy, P.E.**  
PROJECT DESIGN ENGINEER

**HYDRAULICS ENGINEER**

SIGNATURE: \_\_\_\_\_ P.E.  
**ROADWAY DESIGN ENGINEER**  
SIGNATURE: \_\_\_\_\_ P.E.



2018 STANDARD SPECIFICATIONS  
NCDOT DIVISION 12  
CONTACT: Bryan Sowell, P.E.

# STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

## CONVENTIONAL PLAN SHEET SYMBOLS

12/2/2016

### BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin	○ EIP
Computed Property Corner	-----
Property Monument	□ ECM
Parcel/Sequence Number	①23
Existing Fence Line	-x-x-x-
Proposed Woven Wire Fence	○
Proposed Chain Link Fence	□
Proposed Barbed Wire Fence	◇
Existing Wetland Boundary	--- WLB ---
Proposed Wetland Boundary	--- WLB ---
Existing Endangered Animal Boundary	--- EAB ---
Existing Endangered Plant Boundary	--- EPB ---
Existing Historic Property Boundary	--- HPB ---
Known Contamination Area: Soil	☠ S ☠
Potential Contamination Area: Soil	☠ S ☠
Known Contamination Area: Water	☠ W ☠
Potential Contamination Area: Water	☠ W ☠
Contaminated Site: Known or Potential	☠ ?

### BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or U/G Tank Cap	○
Sign	○ S
Well	○ W
Small Mine	✕
Foundation	□
Area Outline	□
Cemetery	□
Building	□
School	□
Church	□
Dam	□

### HYDROLOGY:

Stream or Body of Water	-----
Hydro, Pool or Reservoir	□
Jurisdictional Stream	--- JS ---
Buffer Zone 1	--- BZ 1 ---
Buffer Zone 2	--- BZ 2 ---
Flow Arrow	←
Disappearing Stream	→
Spring	○
Wetland	--- WLB ---
Proposed Lateral, Tail, Head Ditch	--- FLOW ---
False Sump	▽

### RAILROADS:

Standard Gauge	-----
RR Signal Milepost	○ MILEPOST 35
Switch	□ SWITCH
RR Abandoned	-----
RR Dismantled	-----

### RIGHT OF WAY & PROJECT CONTROL:

Secondary Horiz and Vert Control Point	◆
Primary Horiz Control Point	○
Primary Horiz and Vert Control Point	◆
Exist Permanent Easement Pin and Cap	◇
New Permanent Easement Pin and Cap	◆
Vertical Benchmark	⊠
Existing Right of Way Marker	△
Existing Right of Way Line	-----
New Right of Way Line	○ R W
New Right of Way Line with Pin and Cap	○ R W ◆
New Right of Way Line with Concrete or Granite R/W Marker	○ R W ◆
New Control of Access Line with Concrete C/A Marker	○ C/A
Existing Control of Access	○ C/A
New Control of Access	○ C/A
Existing Easement Line	--- E ---
New Temporary Construction Easement	--- E ---
New Temporary Drainage Easement	--- TDE ---
New Permanent Drainage Easement	--- PDE ---
New Permanent Drainage / Utility Easement	--- DUE ---
New Permanent Utility Easement	--- PUE ---
New Temporary Utility Easement	--- TUE ---
New Aerial Utility Easement	--- AUE ---

### ROADS AND RELATED FEATURES:

Existing Edge of Pavement	-----
Existing Curb	-----
Proposed Slope Stakes Cut	--- C ---
Proposed Slope Stakes Fill	--- F ---
Proposed Curb Ramp	--- CR ---
Existing Metal Guardrail	--- T ---
Proposed Guardrail	--- T ---
Existing Cable Guiderail	--- T ---
Proposed Cable Guiderail	--- T ---
Equality Symbol	⊕
Pavement Removal	⊠

### VEGETATION:

Single Tree	○
Single Shrub	○

Note: Not to Scale

\*S.U.E. = Subsurface Utility Engineering

Hedge	-----
Woods Line	-----
Orchard	○
Vineyard	□ Vineyard

### EXISTING STRUCTURES:

MAJOR:	
Bridge, Tunnel or Box Culvert	--- CONC ---
Bridge Wing Wall, Head Wall and End Wall	--- CONC WW ---
MINOR:	
Head and End Wall	--- CONC HW ---
Pipe Culvert	-----
Footbridge	--- ---
Drainage Box: Catch Basin, DI or JB	□ CB
Paved Ditch Gutter	-----
Storm Sewer Manhole	○ S
Storm Sewer	--- S ---

### UTILITIES:

POWER:	
Existing Power Pole	●
Proposed Power Pole	○
Existing Joint Use Pole	●
Proposed Joint Use Pole	○
Power Manhole	○ P
Power Line Tower	⊠
Power Transformer	⊠
U/G Power Cable Hand Hole	○
H-Frame Pole	●
U/G Power Line LOS B (S.U.E.*)	--- P ---
U/G Power Line LOS C (S.U.E.*)	--- P ---
U/G Power Line LOS D (S.U.E.*)	--- P ---

### TELEPHONE:

Existing Telephone Pole	●
Proposed Telephone Pole	○
Telephone Manhole	○ T
Telephone Pedestal	□ T
Telephone Cell Tower	⊠
U/G Telephone Cable Hand Hole	○
U/G Telephone Cable LOS B (S.U.E.*)	--- T ---
U/G Telephone Cable LOS C (S.U.E.*)	--- T ---
U/G Telephone Cable LOS D (S.U.E.*)	--- T ---
U/G Telephone Conduit LOS B (S.U.E.*)	--- TC ---
U/G Telephone Conduit LOS C (S.U.E.*)	--- TC ---
U/G Telephone Conduit LOS D (S.U.E.*)	--- TC ---
U/G Fiber Optics Cable LOS B (S.U.E.*)	--- T FO ---
U/G Fiber Optics Cable LOS C (S.U.E.*)	--- T FO ---
U/G Fiber Optics Cable LOS D (S.U.E.*)	--- T FO ---

### WATER:

Water Manhole	○ W
Water Meter	○
Water Valve	⊗
Water Hydrant	⊕
U/G Water Line LOS B (S.U.E.*)	--- W ---
U/G Water Line LOS C (S.U.E.*)	--- W ---
U/G Water Line LOS D (S.U.E.*)	--- W ---
Above Ground Water Line	--- A/G Water ---

### TV:

TV Pedestal	□
TV Tower	⊗
U/G TV Cable Hand Hole	○
U/G TV Cable LOS B (S.U.E.*)	--- TV ---
U/G TV Cable LOS C (S.U.E.*)	--- TV ---
U/G TV Cable LOS D (S.U.E.*)	--- TV ---
U/G Fiber Optic Cable LOS B (S.U.E.*)	--- TV FO ---
U/G Fiber Optic Cable LOS C (S.U.E.*)	--- TV FO ---
U/G Fiber Optic Cable LOS D (S.U.E.*)	--- TV FO ---

### GAS:

Gas Valve	◇
Gas Meter	◇
U/G Gas Line LOS B (S.U.E.*)	--- G ---
U/G Gas Line LOS C (S.U.E.*)	--- G ---
U/G Gas Line LOS D (S.U.E.*)	--- G ---
Above Ground Gas Line	--- A/G Gas ---

### SANITARY SEWER:

Sanitary Sewer Manhole	⊕
Sanitary Sewer Cleanout	⊕
U/G Sanitary Sewer Line	--- SS ---
Above Ground Sanitary Sewer	--- A/G Sanitary Sewer ---
SS Forced Main Line LOS B (S.U.E.*)	--- FSS ---
SS Forced Main Line LOS C (S.U.E.*)	--- FSS ---
SS Forced Main Line LOS D (S.U.E.*)	--- FSS ---

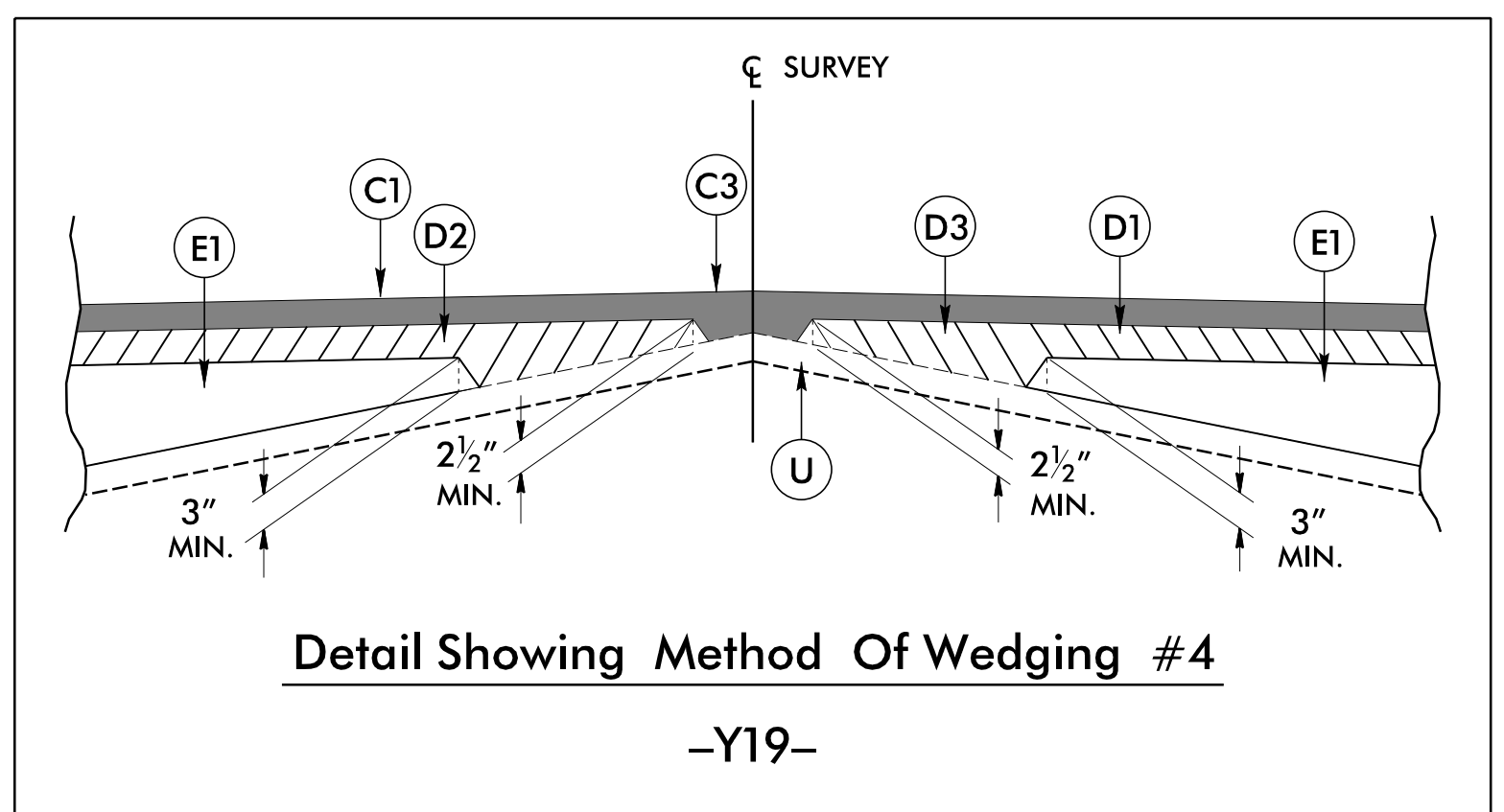
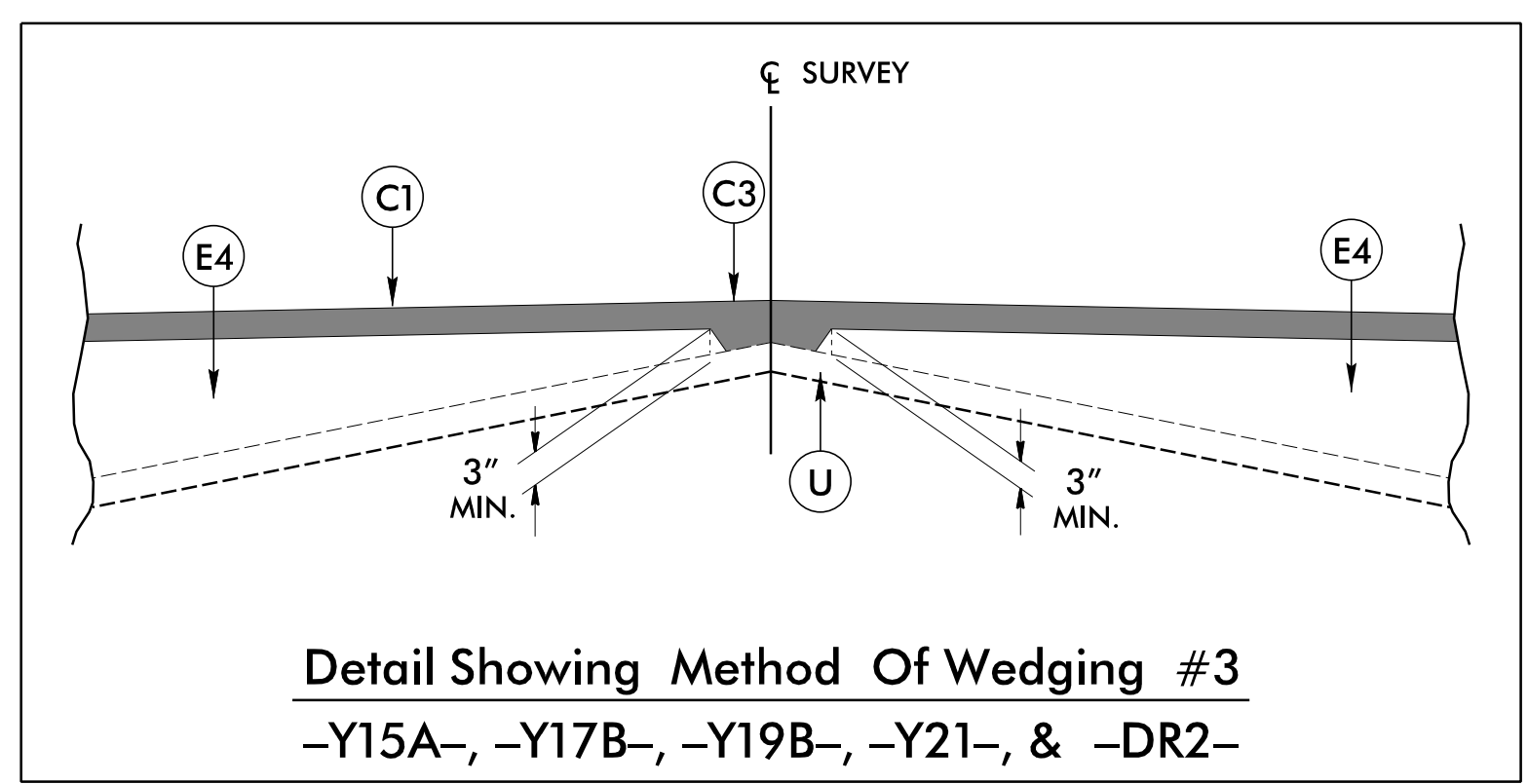
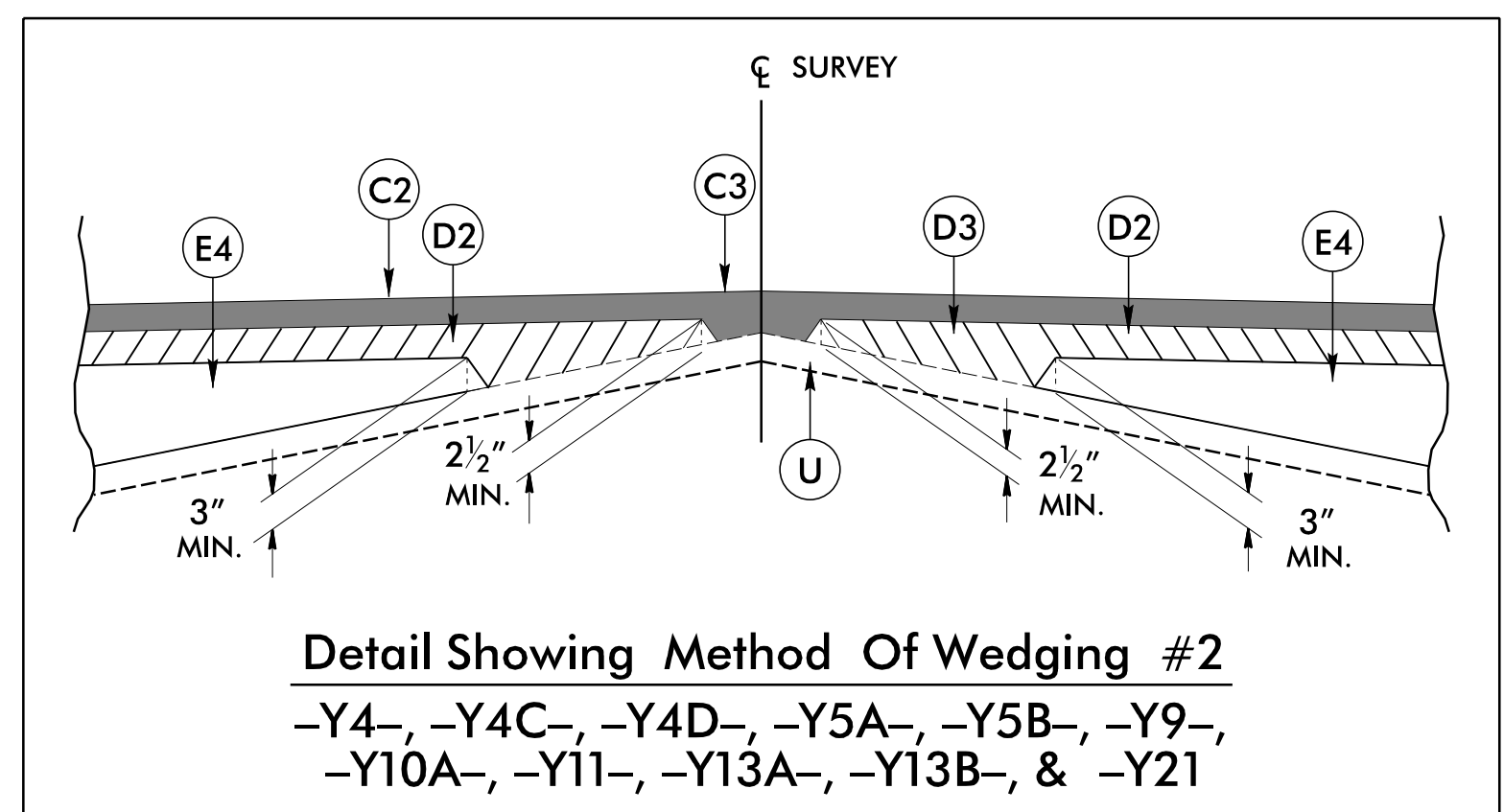
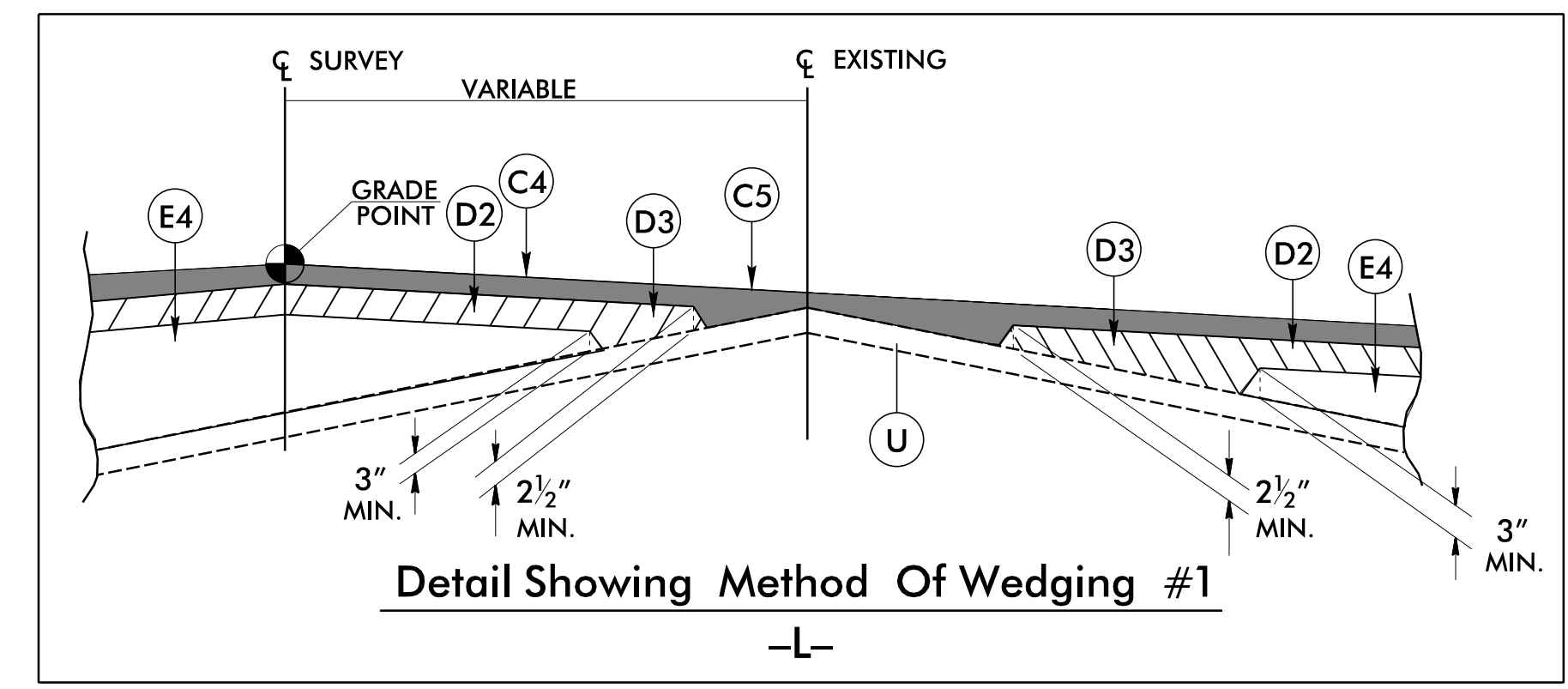
### MISCELLANEOUS:

Utility Pole	●
Utility Pole with Base	□
Utility Located Object	○
Utility Traffic Signal Box	□
Utility Unknown U/G Line LOS B (S.U.E.*)	--- 7UTL ---
U/G Tank; Water, Gas, Oil	□
Underground Storage Tank, Approx. Loc.	⊠ UST
A/G Tank; Water, Gas, Oil	□
Geoenvironmental Boring	⊕
U/G Test Hole LOS A (S.U.E.*)	○
Abandoned According to Utility Records	AATUR
End of Information	E.O.I.

# PAVEMENT SCHEDULE

C1	PROP. APPROX. 2½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	R1	DOUBLE FACED CONCRETE BARRIER (TYPE T, T1, T2)
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	R2	1'-6" CONCRETE CURB AND GUTTER
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 1½" OR GREATER THAN 2" IN DEPTH.	R3	2'-6" CONCRETE CURB AND GUTTER
C4	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	R4	2'-9" CONCRETE CURB AND GUTTER
C5	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 1½" OR GREATER THAN 2" IN DEPTH.	R5	5" MONOLITHIC CONCRETE MEDIAN (KEYED-IN)
D1	PROP. APPROX. 2.5" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.	R6	EXPRESSWAY GUTTER
D2	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	R7	SINGLE FACE CONCRETE BARRIER
D3	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 2½" IN DEPTH OR GREATER THAN 4.0" IN DEPTH.	R8	SHOULDER BERM GUTTER
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	R9	8" x 12" CONCRETE CURB
E2	PROP. APPROX. 5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.	T	EARTH MATERIAL
E3	PROP. APPROX. 6½" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 370.5 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	U	EXISTING PAVEMENT
E4	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3.0" IN DEPTH OR GREATER THAN 5½" IN DEPTH.	V	3" MILLING OF EXISTING ASPHALT PAVEMENT
J1	PROP. 10" AGGREGATE BASE COURSE	W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAILS)

PROJECT REFERENCE NO. <b>U-4700A</b>	SHEET NO. <b>2A-1</b>
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



R:\2019\Roadway\Proj\U4700A\_rdy\_tup.dgn

**NOTES:**  
SEE PLANS FOR LOCATION OF AUXILIARY LANES, TURN LANES, TAPERS, AND CONCRETE ISLANDS.  
\*4:1 MAXIMUM SLOPES WITHIN INTERCHANGES.  
PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

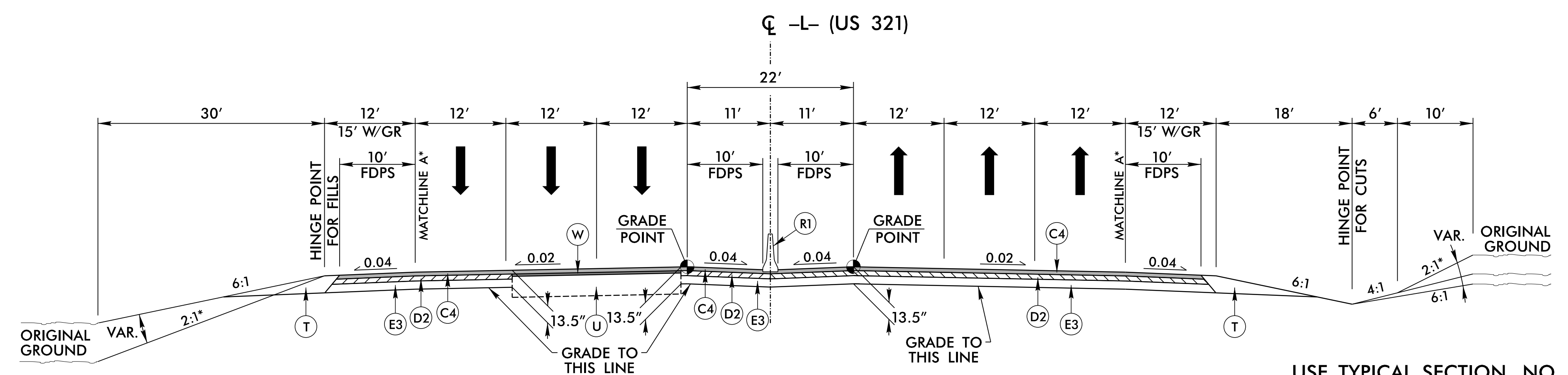
RK&K

P: (919) 878-9560  
900 Ridgefield Drive Suite 350 | Raleigh, North Carolina 27609-3960  
NC License No. F-0112

Engineers | Construction Managers | Planners | Scientists  
www.rkk.com  
Responsive People | Creative Solutions

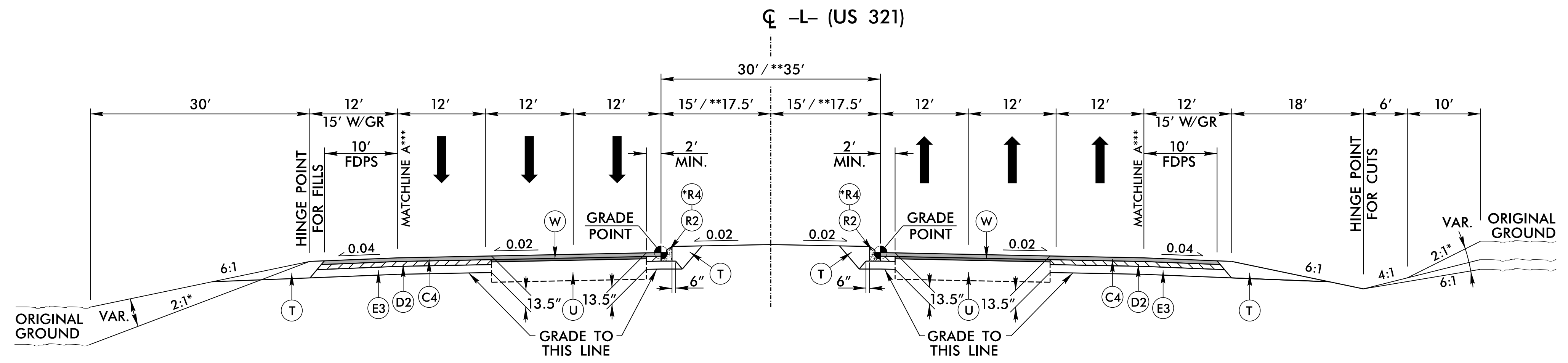


PAVEMENT SCHEDULE	
C1	2½" S9.5B
C2	3" S9.5B
C3	VAR. S9.5B
C4	3" S9.5C
C5	VAR. S9.5C
D1	2½" I19.0C
D2	4" I19.0C
D3	VAR. I19.0C
E1	4" B25.0C
E2	5" B25.0C
E3	6½" B25.0C
E4	VAR. B25.0C
J1	10" ABC
R1	TYPE T BARRIER
R2	1'-6" C&G
R3	2'-6" C&G
R4	2'-9" C&G
R5	CONC. ISLAND
R6	EXP. GUTTER
R7	CONC. BARRIER
R8	SBG
R9	8" x 12" CURB
T	EARTH MATERIAL
U	EXIST. PAVE.
V	3" MILLING
W	WEDGING



**TYPICAL SECTION NO. 4**  
\*SEE SHEET 2A-4 FOR INSETS

**USE TYPICAL SECTION NO. 4**  
-L- STA. 55+10.00 TO STA. 60+57.00



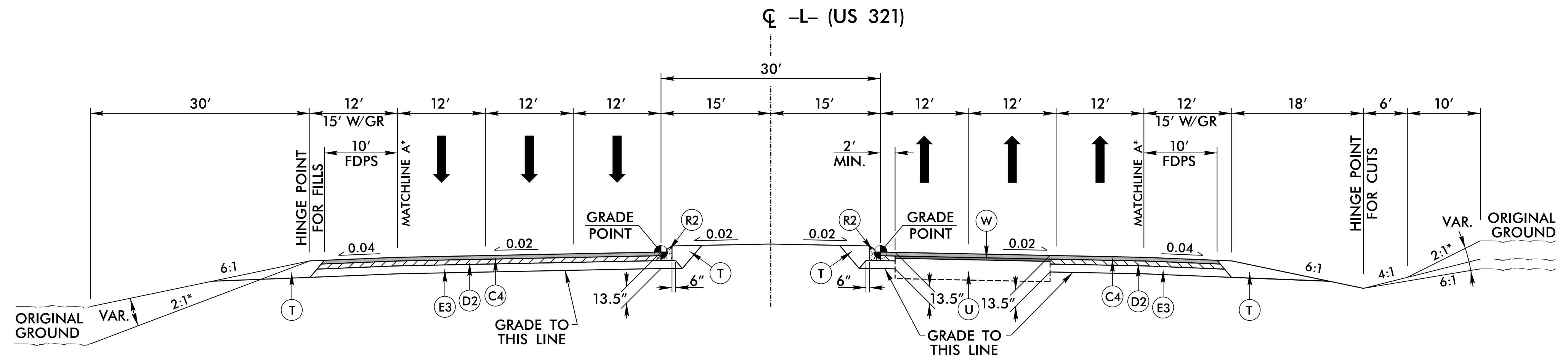
**TYPICAL SECTION NO. 5**  
\*\*\*SEE SHEET 2A-4 FOR INSETS

**USE TYPICAL SECTION NO. 5**  
-L- STA. 67+25.00 TO STA. 138+23.00  
-L- STA. 183+75.00 TO STA. 260+00.00 LT / 261+00.00 RT  
  
NOTE: TRANSITION FROM TYPICAL SECTION NO. 5 TO EXISTING IN THE FOLLOWING LOCATIONS:  
-L- STA. 260+00.00 TO STA. 260+50.00 LT  
-L- STA. 261+00.00 TO STA. 261+50.00 RT

\* NOTE: USE R4 IN PLACE OF R2 IN THE FOLLOWING LOCATIONS:  
-L- STA. 110+89.00 TO STA. 135+15.00 (MED RT)  
-L- STA. 187+81.26 TO STA. 195+63.41 (MED LT)  
-L- STA. 257+52.12 TO STA. 262+26.38 (MED RT)

\*\* NOTE: USE 35' MEDIAN (17.5' LT & RT) IN THE FOLLOWING LOCATIONS:  
-L- STA. 102+00.00 TO STA. 138+00.00

\*\* NOTE: TRANSITION FROM 30' MEDIAN TO 35' MEDIAN IN THE FOLLOWING LOCATIONS:  
-L- STA. 100+50.00 TO STA. 102+00.00  
-L- STA. 138+00.00 TO STA. 139+50.00



**TYPICAL SECTION NO. 6**  
\*SEE SHEET 2A-4 FOR INSETS

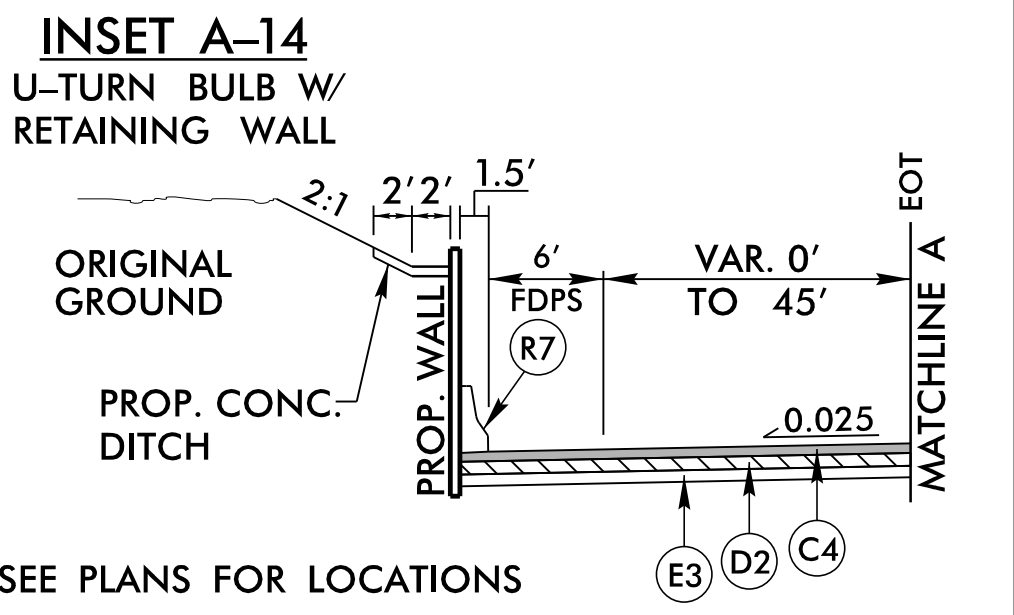
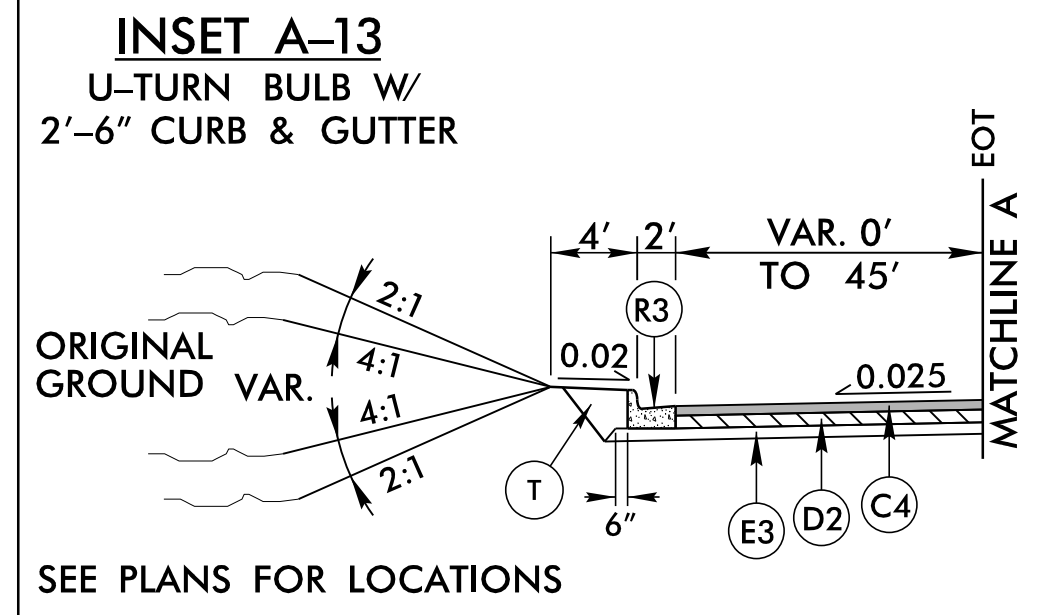
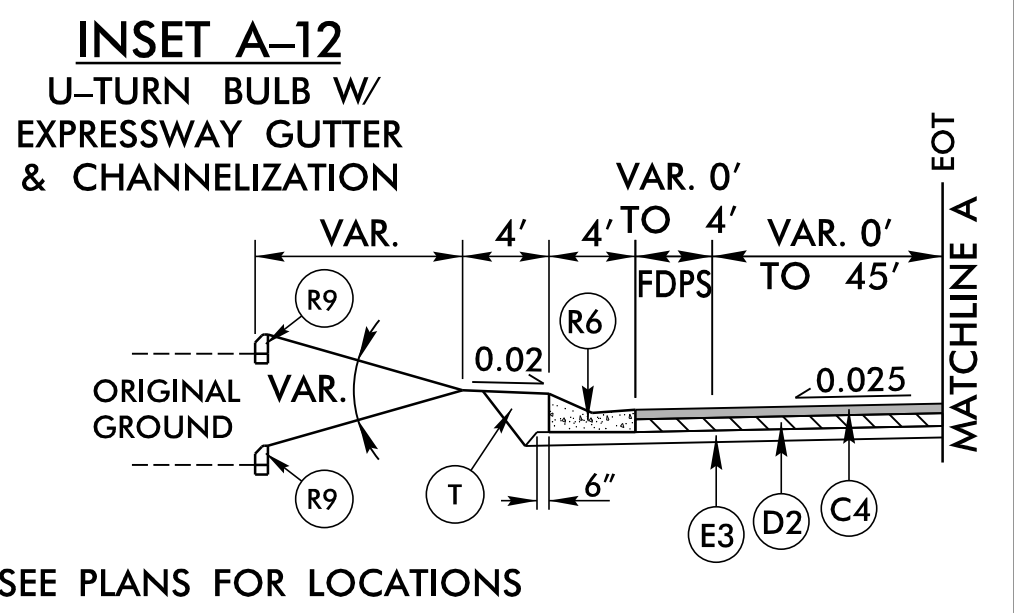
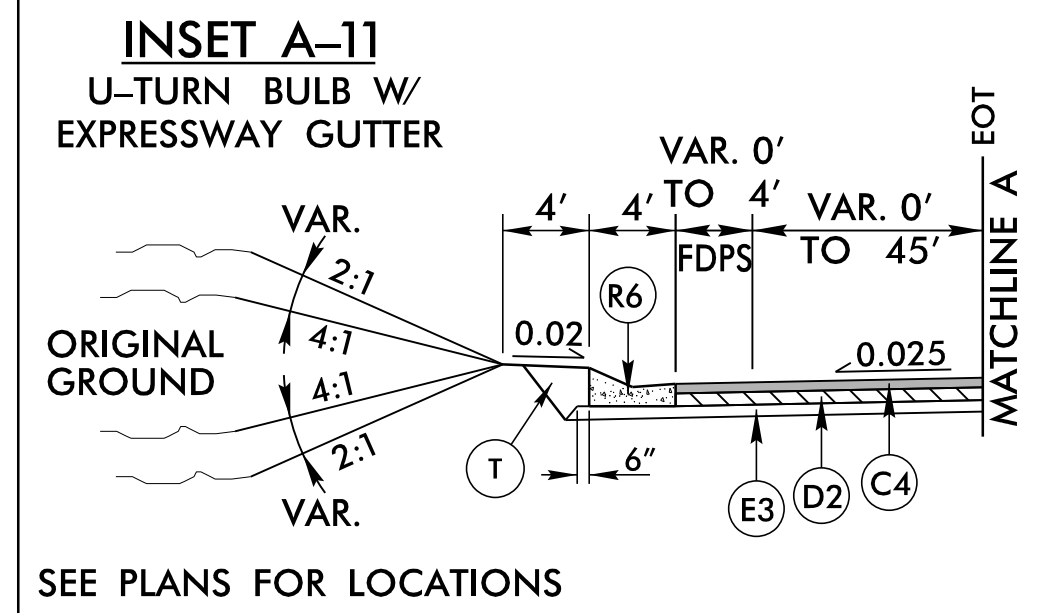
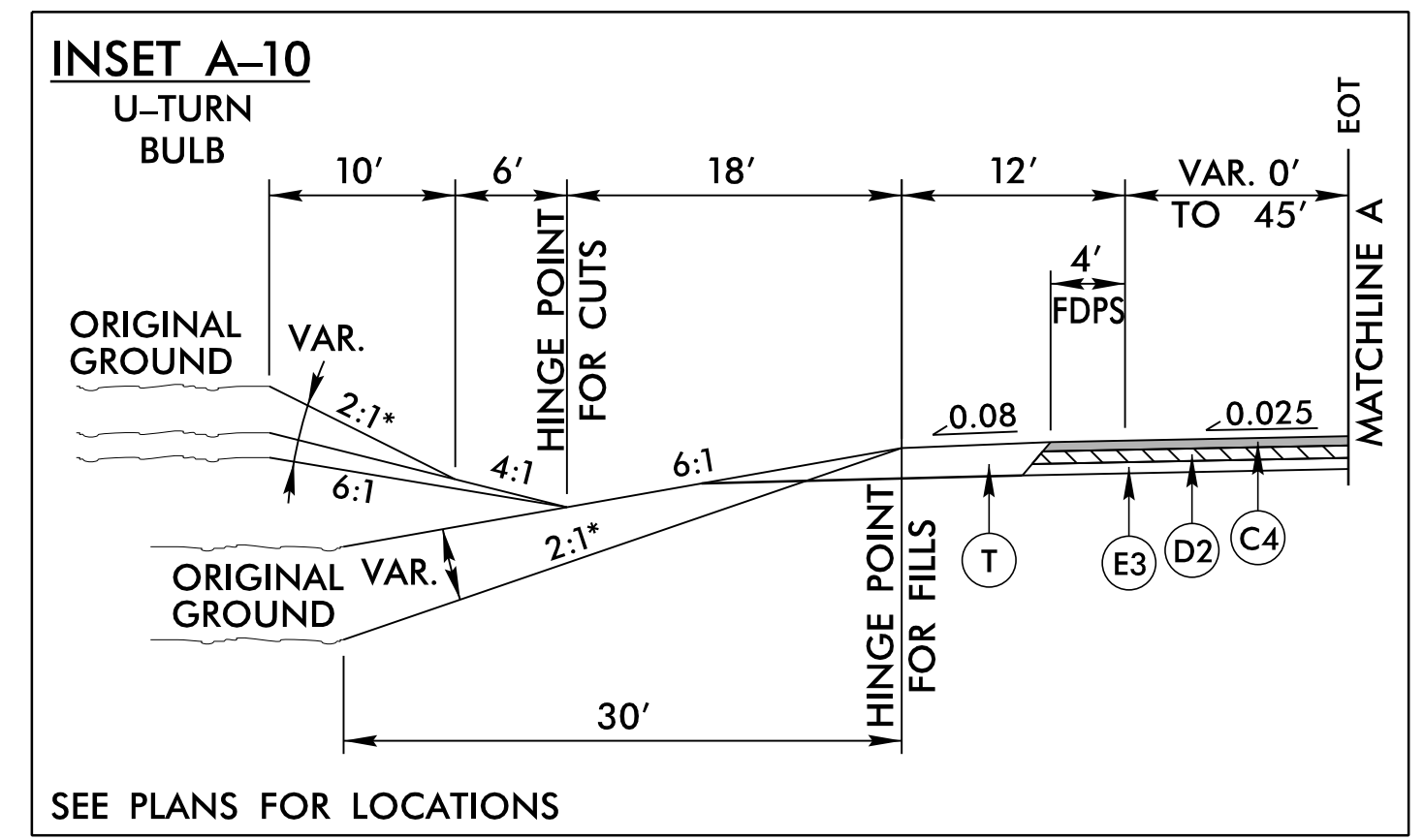
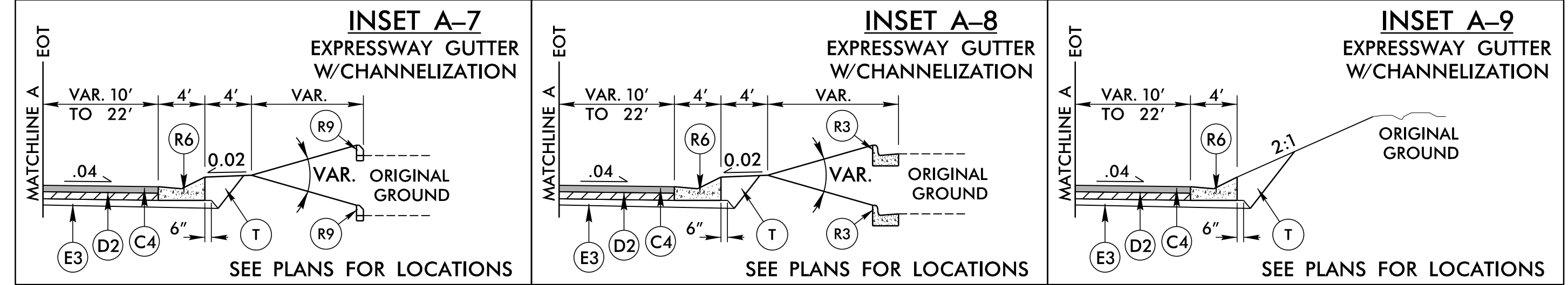
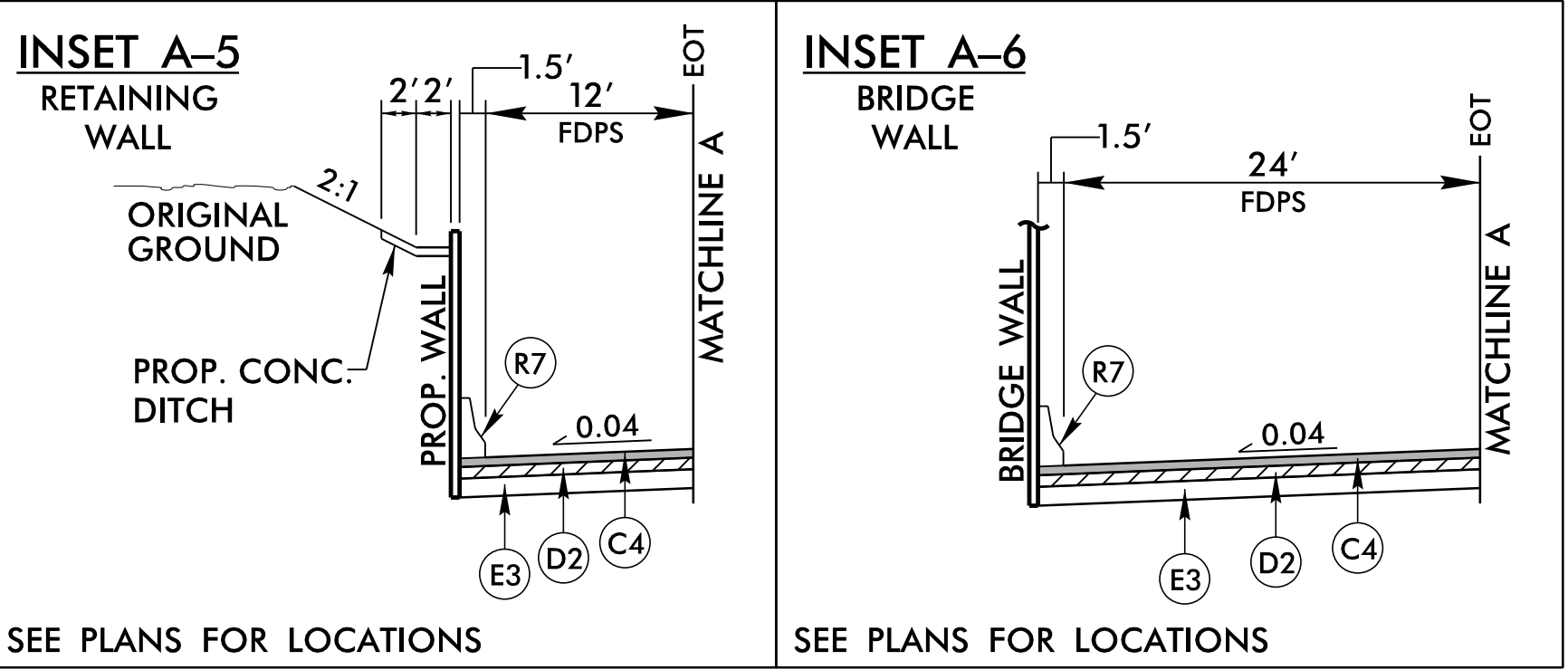
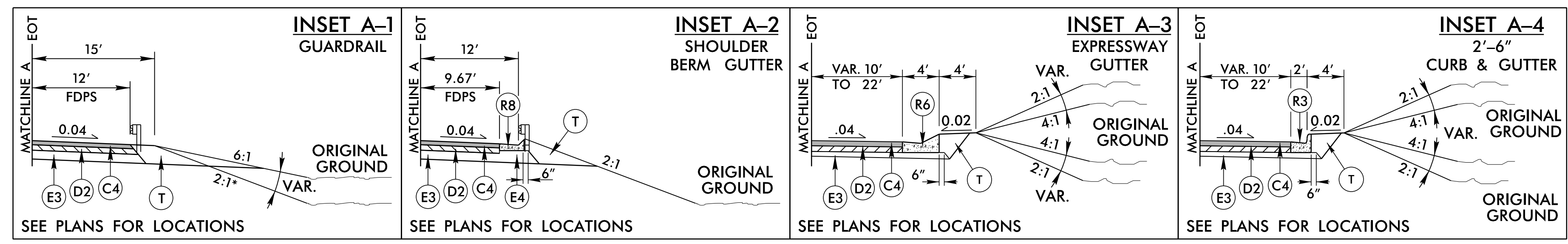
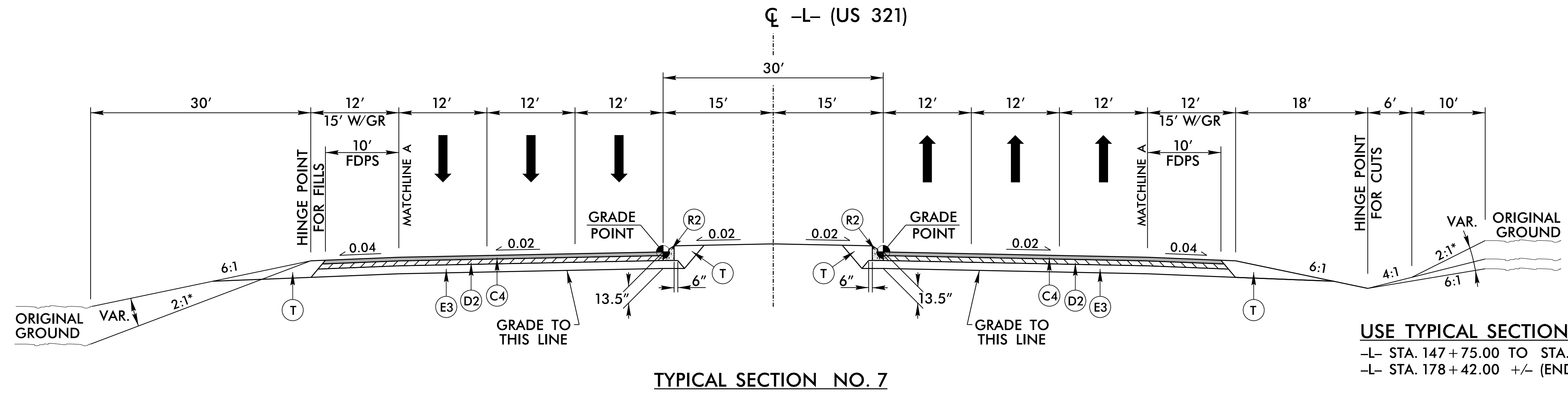
**USE TYPICAL SECTION NO. 6**  
-L- STA. 138+25.00 TO STA. 147+75.00  
-L- STA. 182+25.00 TO STA. 183+75.00

**NOTES:**  
SEE PLANS FOR LOCATION OF AUXILIARY LANES, TURN LANES, TAPERS, AND CONCRETE ISLANDS.  
\*4:1 MAXIMUM SLOPES WITHIN INTERCHANGES.  
PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.  
FOR -L- IN NORMAL CROWN SECTIONS, OUTSIDE TURN LANES, AUXILIARY LANES, ACCEL. & DECEL. LANES, AND U-TURN BULBS WILL BE SLOPED AT 0.025.

R:\4700A\Drawings\Roadway\Proc\U4700a\_rdy\_tup.dgn 11/10/2019 11:49:28 AM

PAVEMENT SCHEDULE	
C1	2½" S9.5B
C2	3" S9.5B
C3	VAR. S9.5B
C4	3" S9.5C
C5	VAR. S9.5C
D1	2½" I19.0C
D2	4" I19.0C
D3	VAR. I19.0C
E1	4" B25.0C
E2	5" B25.0C
E3	6½" B25.0C
E4	VAR. B25.0C
J1	10" ABC
R1	TYPE T BARRIER
R2	1'-6" C&G
R3	2'-6" C&G
R4	2'-9" C&G
R5	CONC. ISLAND
R6	EXP. GUTTER
R7	CONC. BARRIER
R8	SBG
R9	8" x 12" CURB
T	EARTH MATERIAL
U	EXIST. PAVE.
V	3" MILLING
W	WEDGING

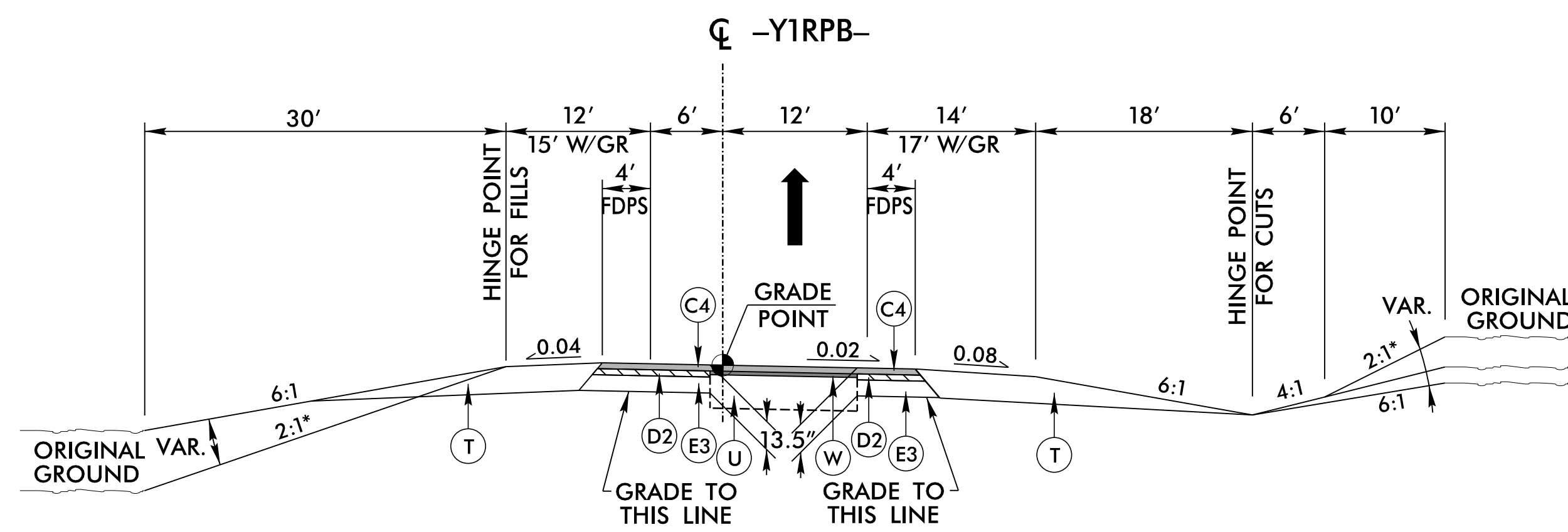
PROJECT REFERENCE NO. U-4700A	SHEET NO. 2A-4
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION	
<b>DOCUMENT NOT CONSIDERED FINAL</b> UNLESS ALL SIGNATURES COMPLETED	



**NOTES:**  
 SEE PLANS FOR LOCATION OF AUXILIARY LANES, TURN LANES, TAPERS, AND CONCRETE ISLANDS.  
 \*4:1 MAXIMUM SLOPES WITHIN INTERCHANGES.  
 PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.  
 FOR -L- IN NORMAL CROWN SECTIONS, OUTSIDE TURN LANES, AUXILIARY LANES, ACCEL. & DECEL. LANES, AND U-TURN BULBS WILL BE SLOPED AT 0.025.

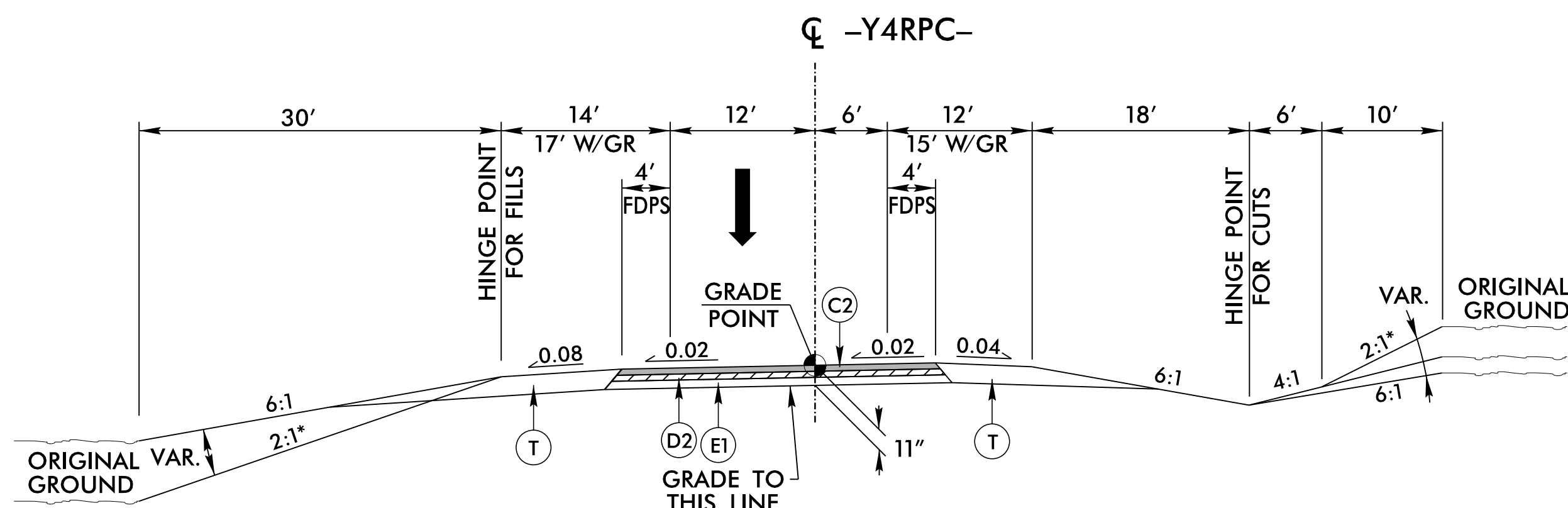
PAVEMENT SCHEDULE	
C1	2½" S9.5B
C2	3" S9.5B
C3	VAR. S9.5B
C4	3" S9.5C
C5	VAR. S9.5C
D1	2½" I19.0C
D2	4" I19.0C
D3	VAR. I19.0C
E1	4" B25.0C
E2	5" B25.0C
E3	6½" B25.0C
E4	VAR. B25.0C
J1	10" ABC
R1	TYPE T BARRIER
R2	1'-6" C&G
R3	2'-6" C&G
R4	2'-9" C&G
R5	CONC. ISLAND
R6	EXP. GUTTER
R7	CONC. BARRIER
R8	SBG
R9	8" x 12" CURB
T	EARTH MATERIAL
U	EXIST. PAVE.
V	3" MILLING
W	WEDGING

PROJECT REFERENCE NO. U-4700A	SHEET NO. 2A-5
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION	
<b>DOCUMENT NOT CONSIDERED FINAL</b> UNLESS ALL SIGNATURES COMPLETED	



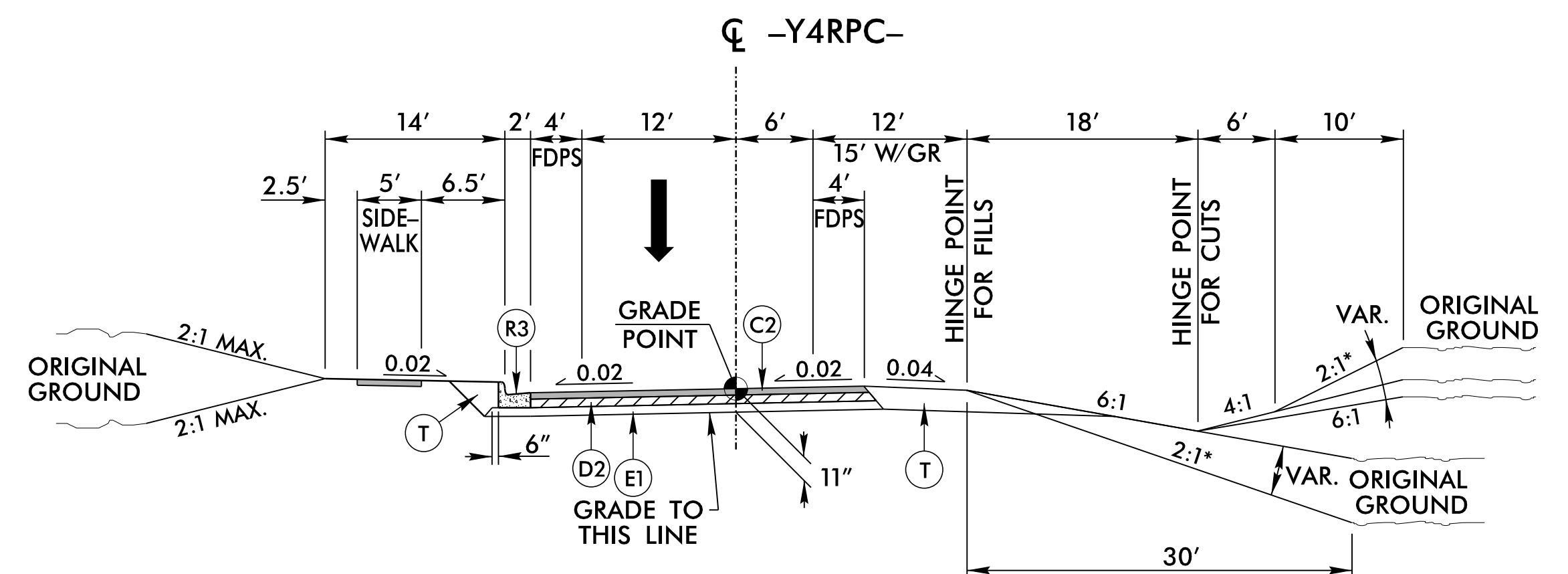
**TYPICAL SECTION NO. 8**  
-Y1RPB- STA 10+00.00 TO STA. 15+50.00

TRANSITION FROM TYPICAL SECTION NO. 8 TO EXISTING IN THE FOLLOWING LOCATION:  
-Y1RPB- STA. 15+50.00 TO STA. 16+00.00

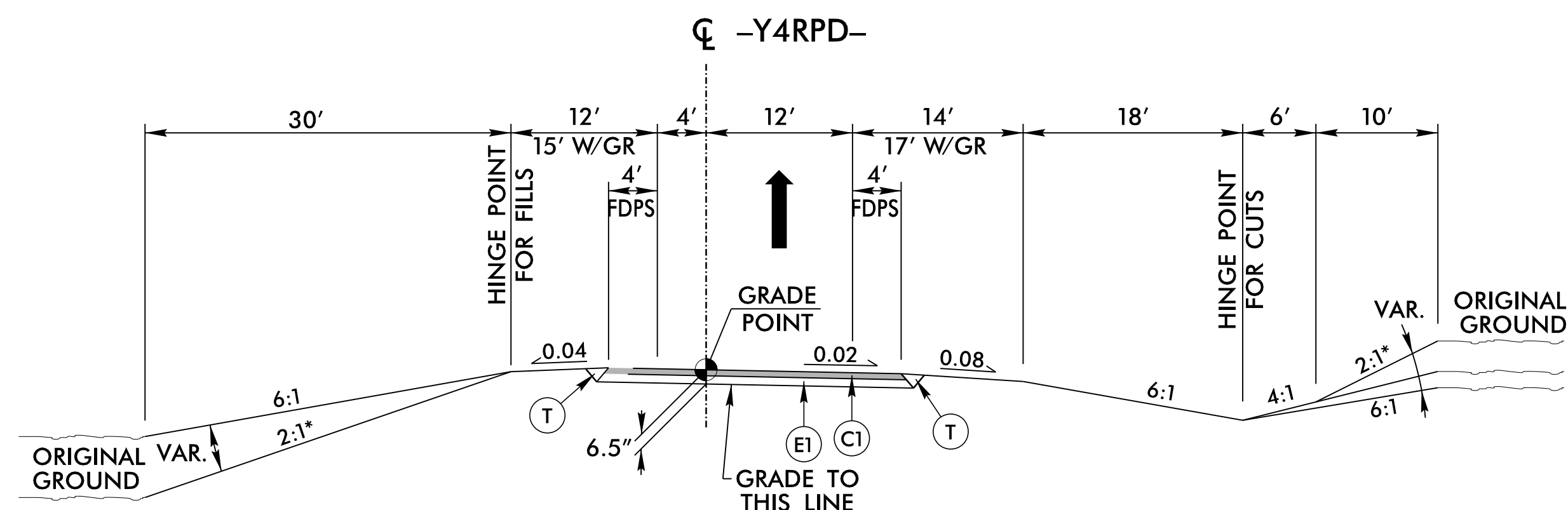


**TYPICAL SECTION NO. 9**  
-Y4RPC- STA 10+00.00 TO STA. 17+40.00

NOTE: USE -L- PAVEMENT DESIGN IN THE FOLLOWING LOCATIONS:  
-Y4RPC- STA. 10+00.00 TO STA. 12+55.90

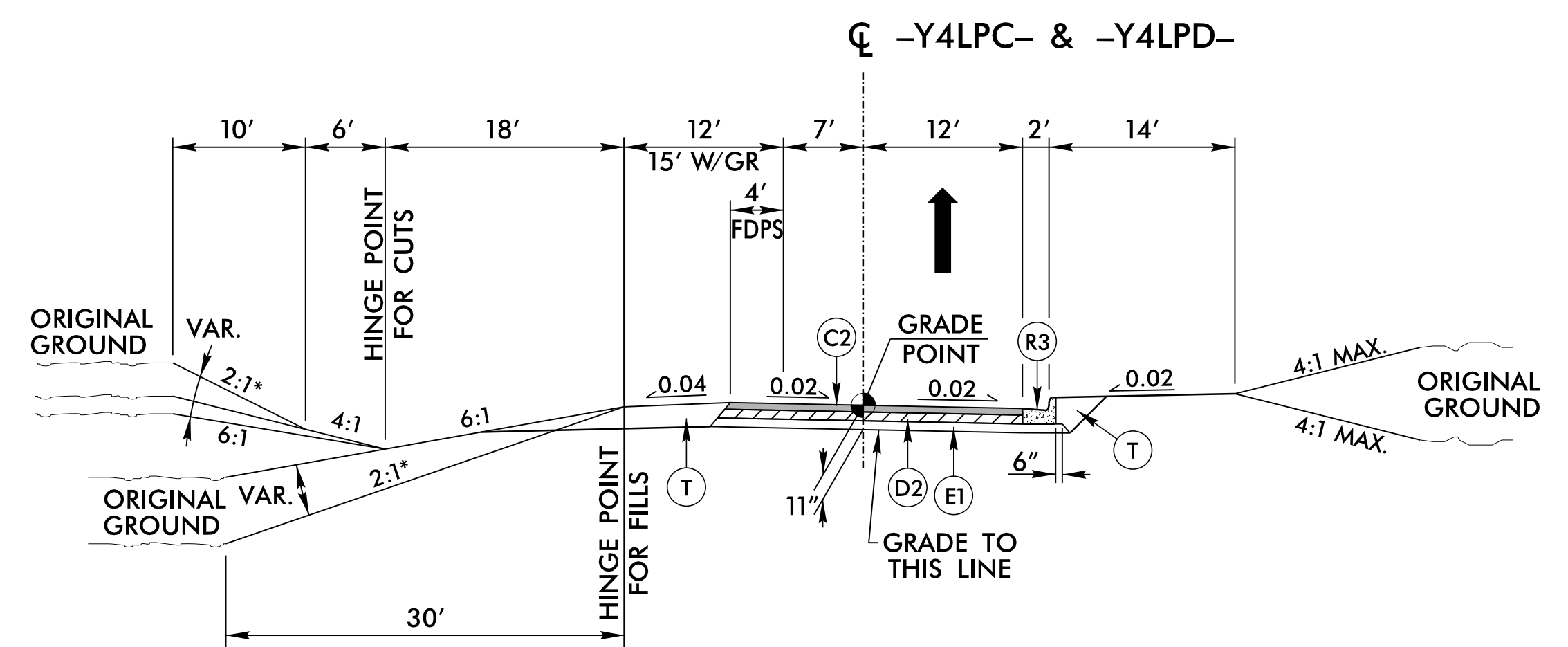


**TYPICAL SECTION NO. 10**  
-Y4RPC- STA 17+40.00 TO STA. 26+77.02



**TYPICAL SECTION NO. 11**  
-Y4RPD- STA 9+99.89 TO STA. 21+34.70

NOTE: USE -L- PAVEMENT DESIGN IN THE FOLLOWING LOCATIONS:  
-Y4RPD- STA. 9+99.89 TO STA. 14+54.94

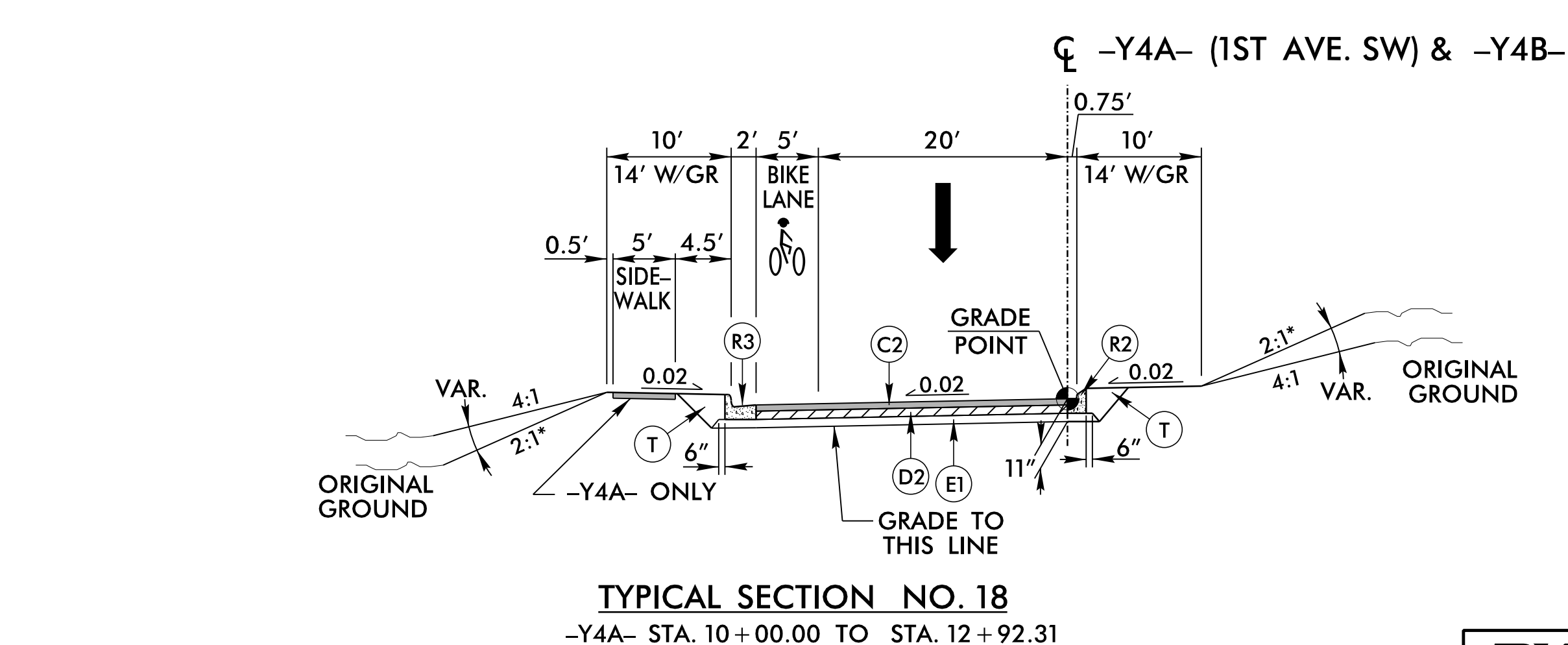
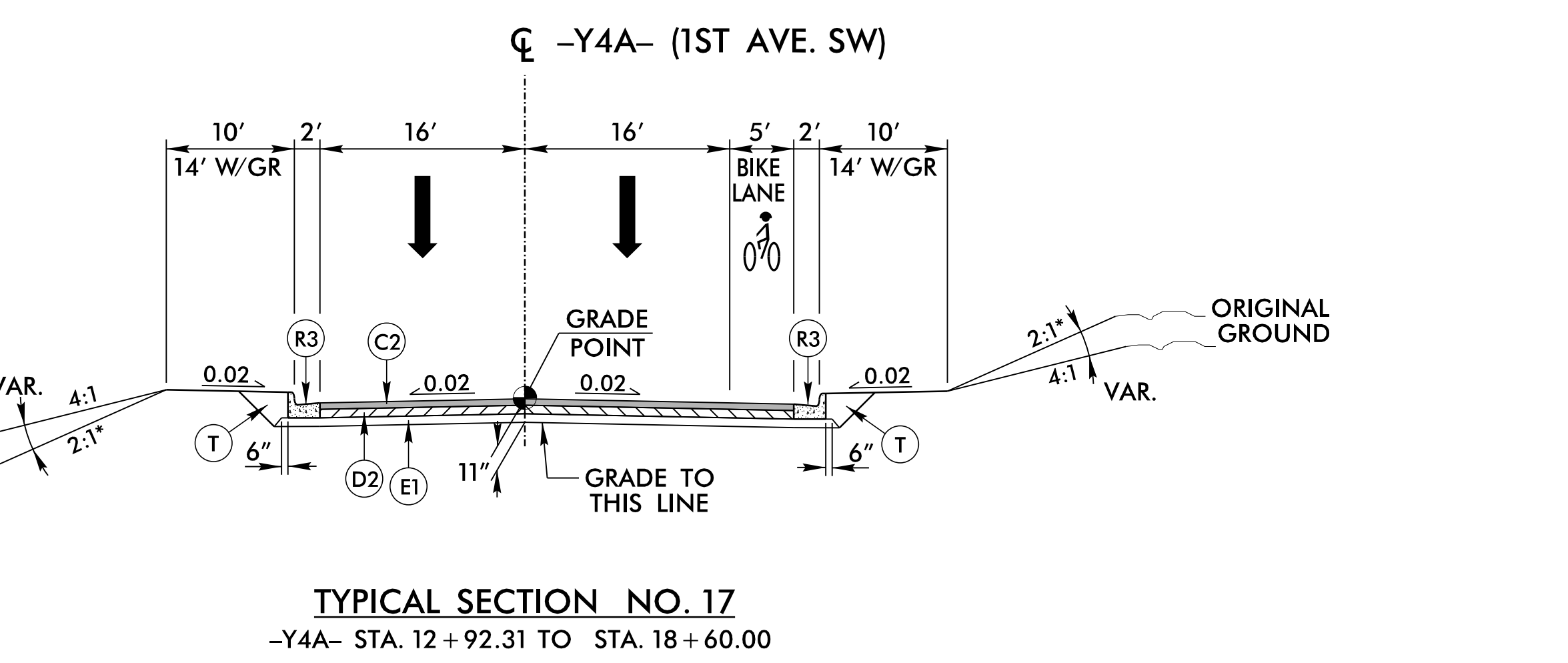
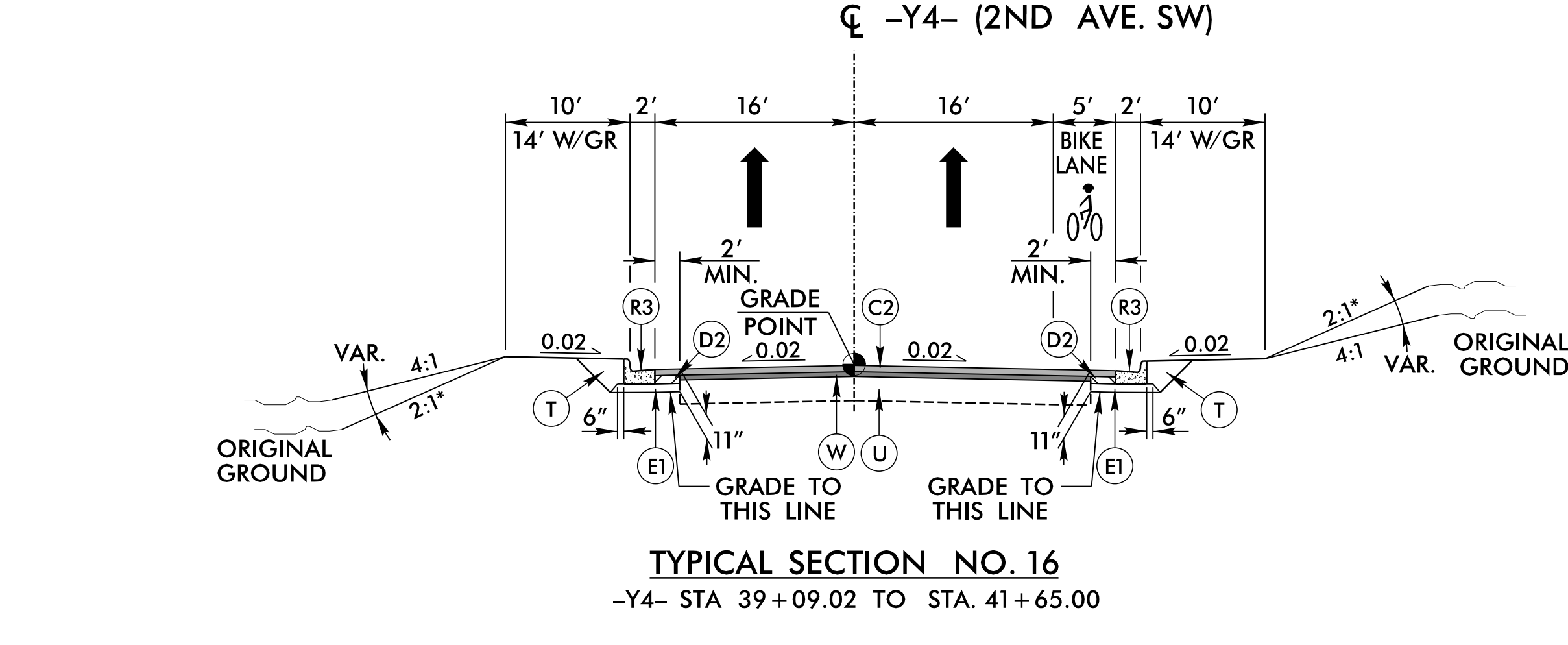
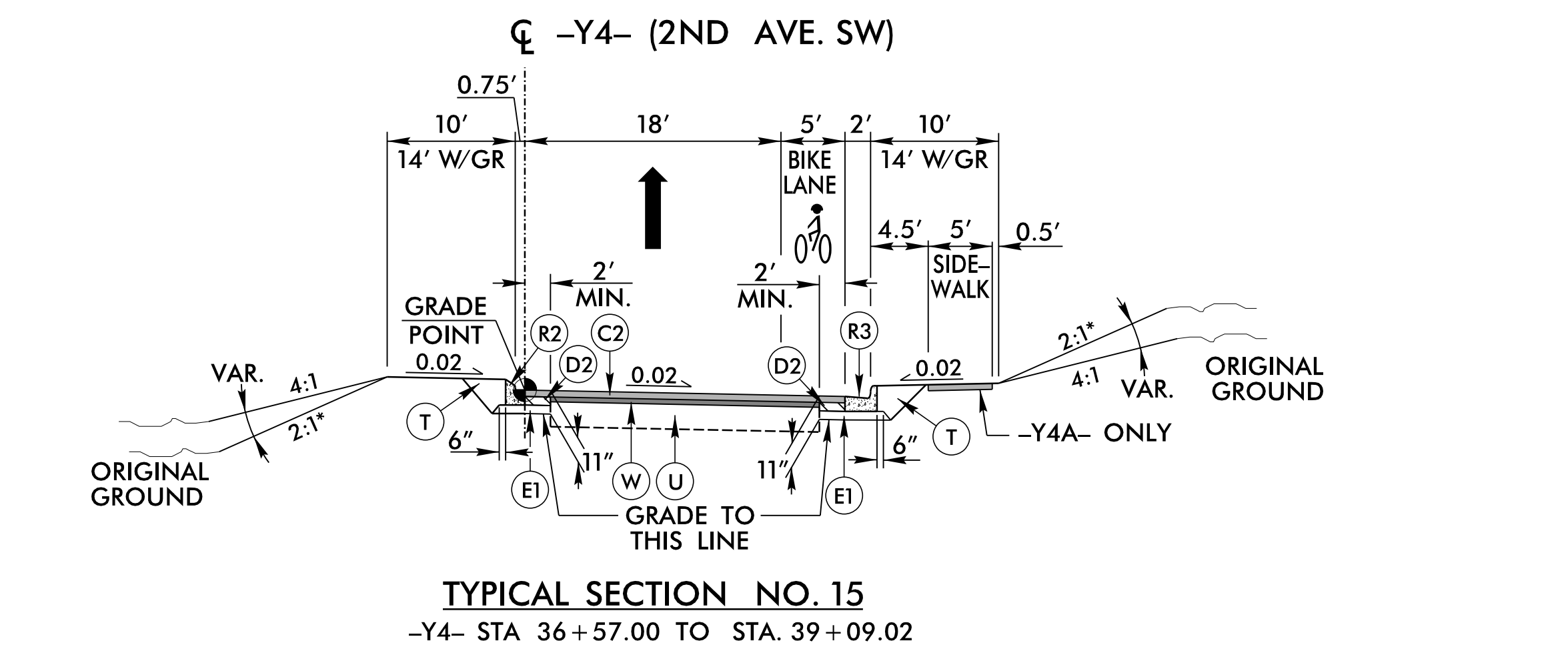
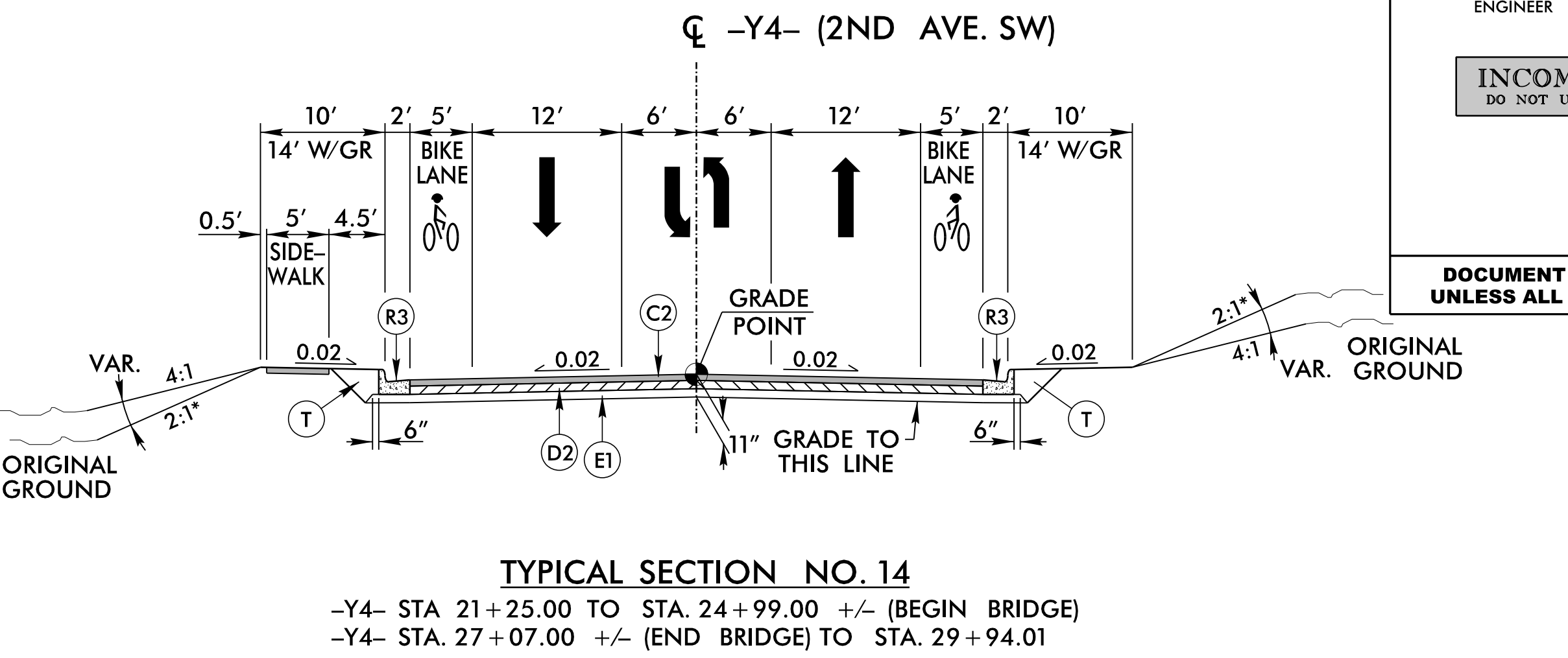
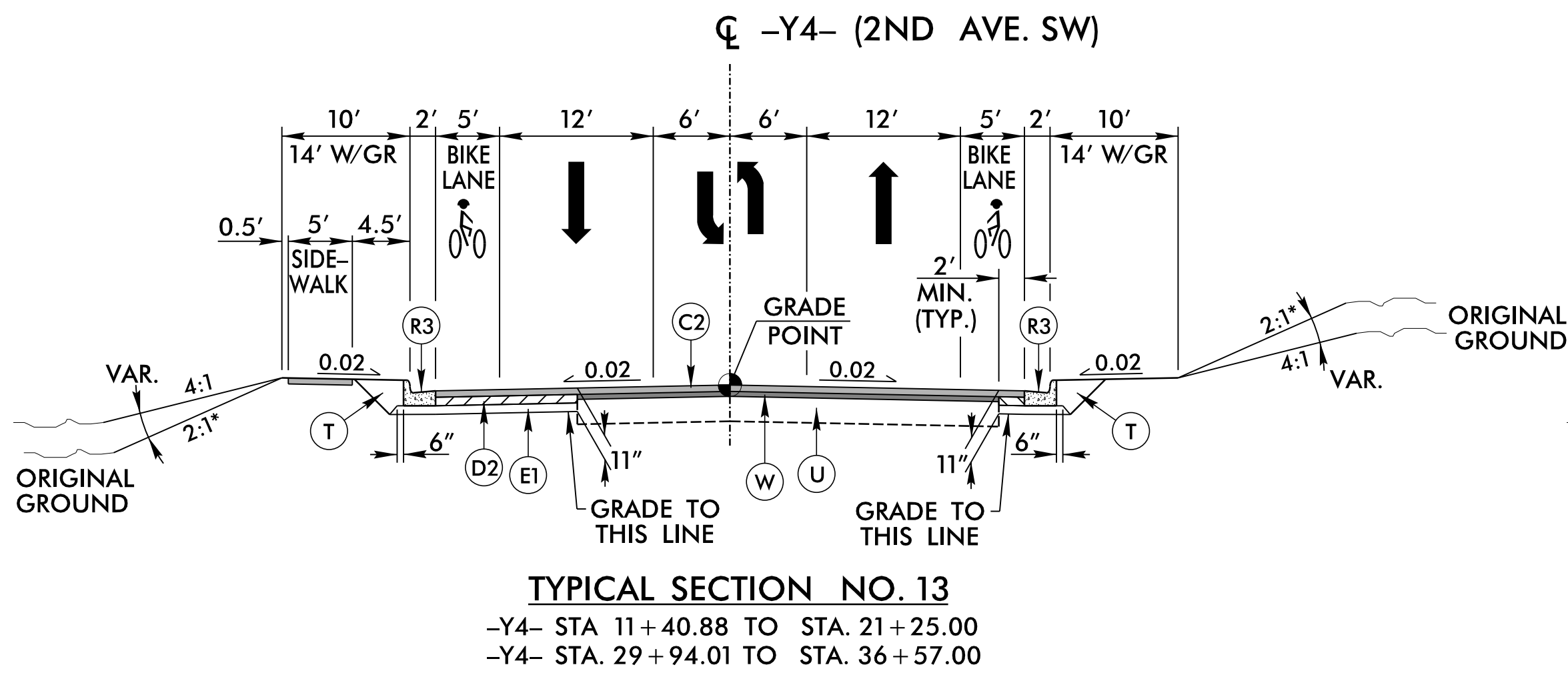


**TYPICAL SECTION NO. 12**  
-Y4LPC- STA 10+00.00 TO STA. 27+23.93  
-Y4LPD- STA. 10+00.00 TO STA. 16+68.29 (MIRROR IMAGE)

NOTE: USE -L- PAVEMENT DESIGN IN THE FOLLOWING LOCATIONS:  
-Y4LPC- STA. 10+00.00 TO STA. 15+26.72  
-Y4LPD- STA. 10+00.00 TO STA. 11+66.30

**NOTES:**  
SEE PLANS FOR LOCATION OF AUXILIARY LANES, TURN LANES, TAPERS, AND CONCRETE ISLANDS.  
\*4:1 MAXIMUM SLOPES WITHIN INTERCHANGES.  
PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

PAVEMENT SCHEDULE	
C1	2½" S9.5B
C2	3" S9.5B
C3	VAR. S9.5B
C4	3" S9.5C
C5	VAR. S9.5C
D1	2½" I19.0C
D2	4" I19.0C
D3	VAR. I19.0C
E1	4" B25.0C
E2	5" B25.0C
E3	6½" B25.0C
E4	VAR. B25.0C
J1	10" ABC
R1	TYPE T BARRIER
R2	1'-6" C&G
R3	2'-6" C&G
R4	2'-9" C&G
R5	CONC. ISLAND
R6	EXP. GUTTER
R7	CONC. BARRIER
R8	SBG
R9	8" x 12" CURB
T	EARTH MATERIAL
U	EXIST. PAVE.
V	3" MILLING
W	WEDGING

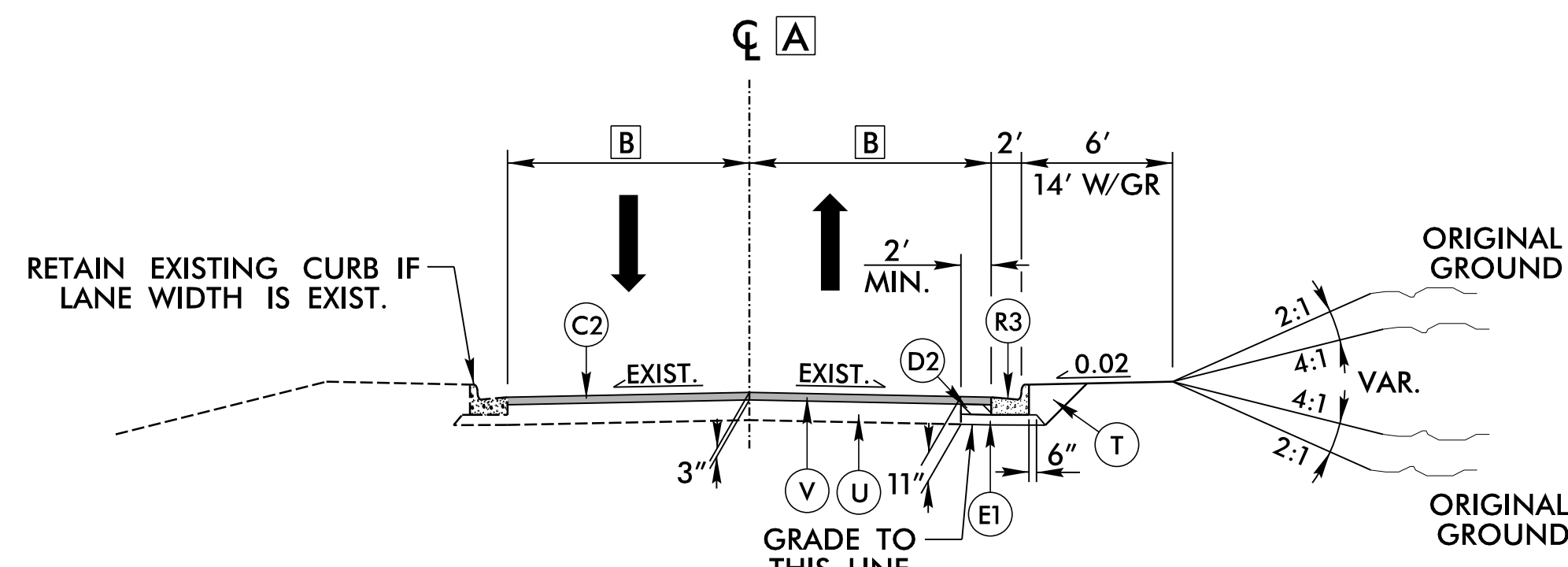


**NOTES:**  
SEE PLANS FOR LOCATION OF AUXILIARY LANES, TURN LANES, TAPERS, AND CONCRETE ISLANDS.  
\*4:1 MAXIMUM SLOPES WITHIN INTERCHANGES.  
PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

R:\4700A\Roadway\ProJ\U4700a\_rdy\_tjg.dgn  
11/10/2019 10:49:29 AM

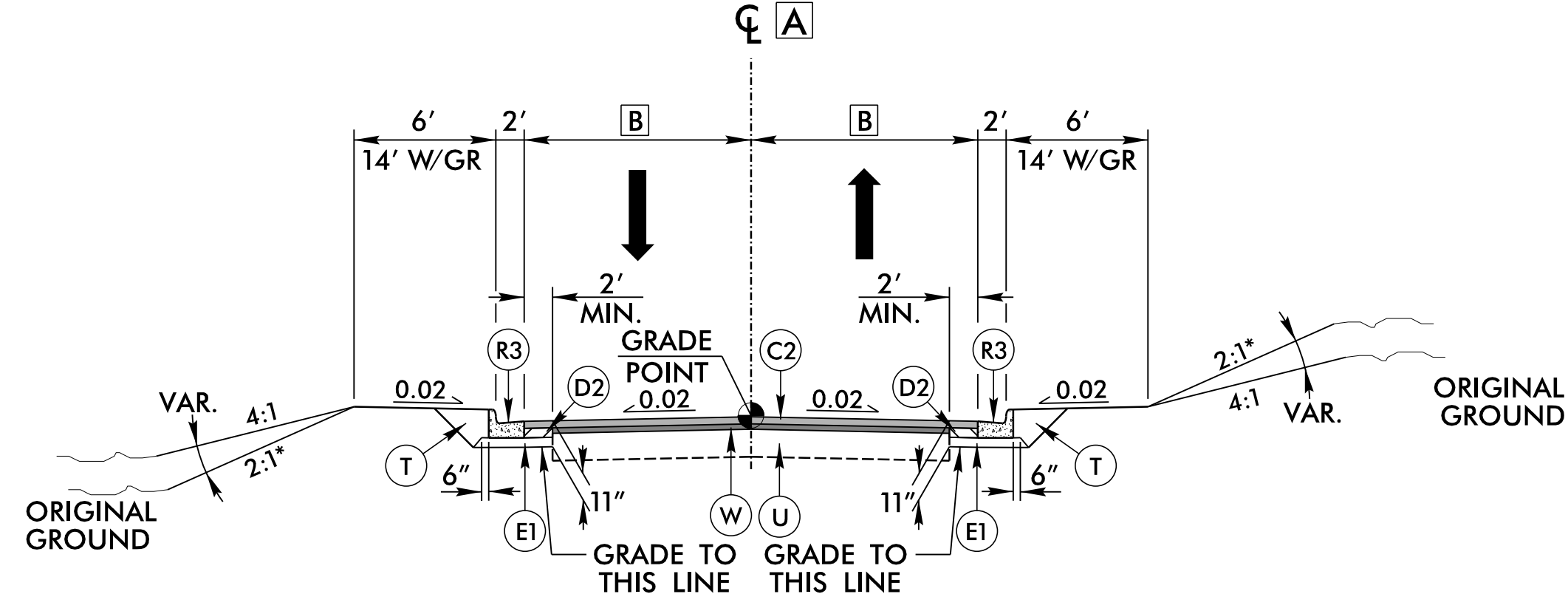


PAVEMENT SCHEDULE	
C1	2½" S9.5B
C2	3" S9.5B
C3	VAR. S9.5B
C4	3" S9.5C
C5	VAR. S9.5C
D1	2½" I19.0C
D2	4" I19.0C
D3	VAR. I19.0C
E1	4" B25.0C
E2	5" B25.0C
E3	6½" B25.0C
E4	VAR. B25.0C
J1	10" ABC
R1	TYPE T BARRIER
R2	1'-6" C&G
R3	2'-6" C&G
R4	2'-9" C&G
R5	CONC. ISLAND
R6	EXP. GUTTER
R7	CONC. BARRIER
R8	SBG
R9	8" x 12" CURB
T	EARTH MATERIAL
U	EXIST. PAVE.
V	3" MILLING
W	WEDGING



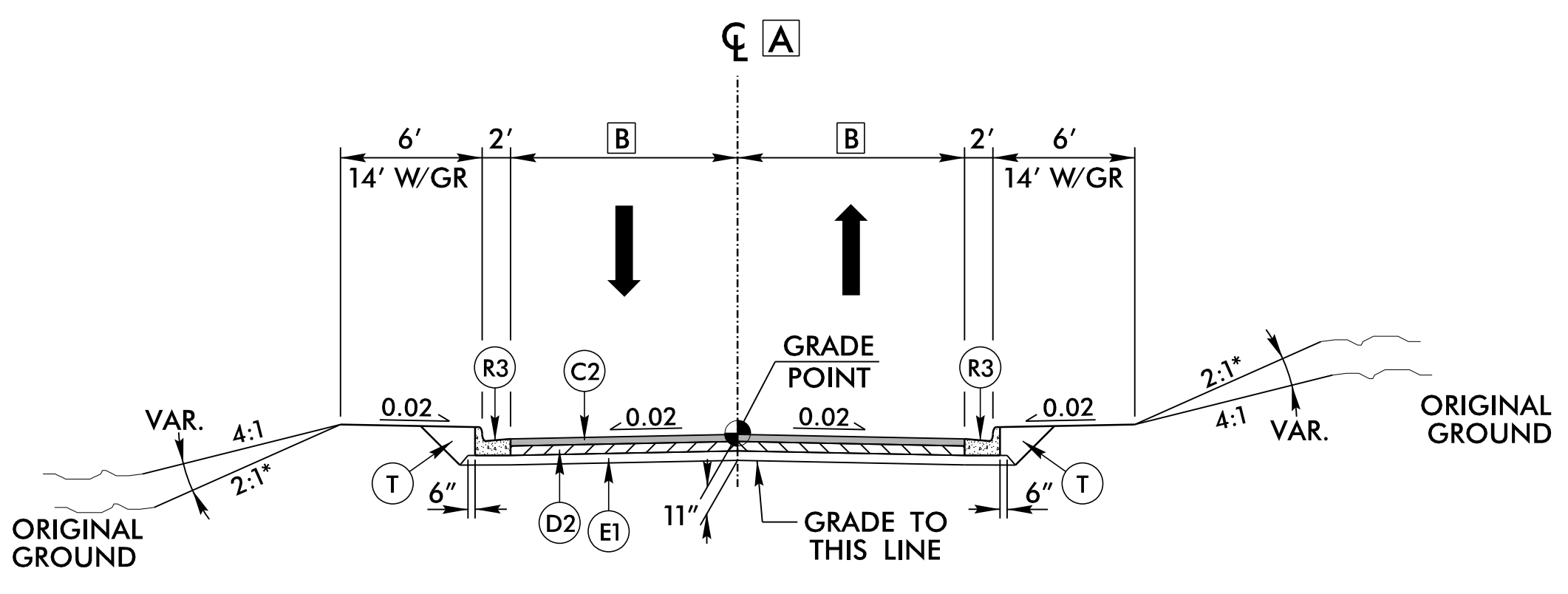
TYPICAL SECTION NO. 19

A: ALIGNMENT & STREET NAME	B: LANE WIDTH	C: STATION RANGE
-Y4C- (2ND AVE. SW)	EXIST. RT VAR. EXIST. TO 70' LT	STA. 10+00.00 TO STA. 11+44.99
-Y4E- (3RD AVE. SW)	EXIST. RT VAR. EXIST. TO 70' LT	STA. 10+31.42 TO STA. 11+75.00
-Y4G (12TH ST. SW)	EXIST. RT VAR. EXIST. TO 42' LT	STA. 11+27.18 TO STA. 12+75.81
-Y5B- (1ST ST. AVE. SW)	EXIST. LT VAR. EXIST. TO 70' RT	STA. 10+75.00 TO STA. 12+19.42



TYPICAL SECTION NO. 20

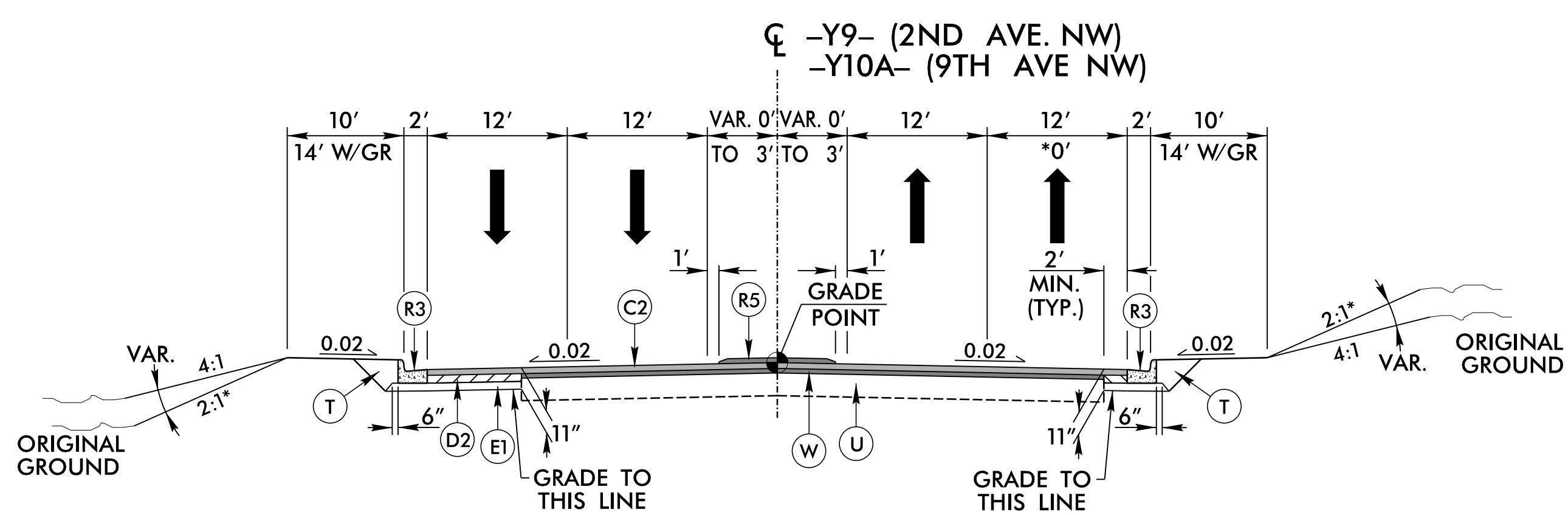
A: ALIGNMENT & STREET NAME	B: LANE WIDTH	C: STATION RANGE
-Y4D- (12TH ST. NW)	14'	STA. 13+00.00 TO STA. 15+04.18
-Y4F- (14TH ST. NW)	14'	STA. 11+15.00 TO STA. 14+55.00
-Y5A- (1ST AVE. SW)	16'	STA. 10+17.00 TO STA. 16+90.98
-Y11- (12TH ST. DR. NW)	16'	STA. 11+00.00 TO STA. 21+10.00



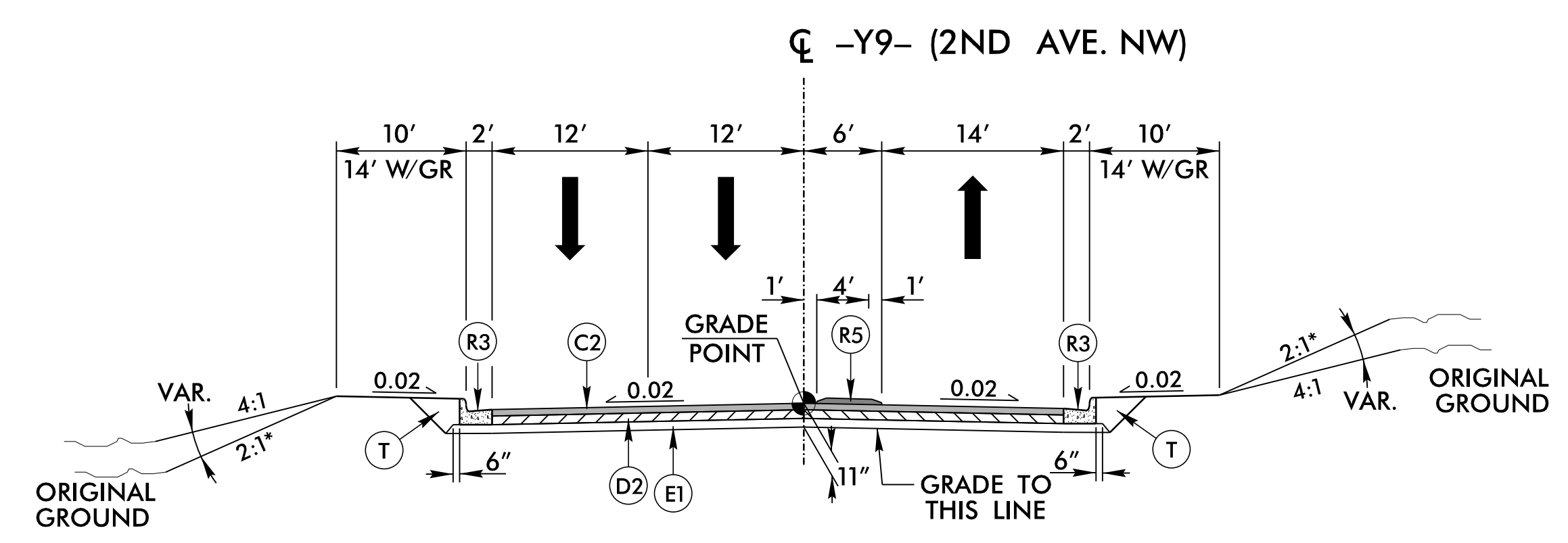
TYPICAL SECTION NO. 21

A: ALIGNMENT & STREET NAME	B: LANE WIDTH	C: STATION RANGE
-Y5B- (1ST AVE. DR. NW)	16'	STA. 21+00.00 TO STA. 24+20.69
-Y8- (MAIN AVE. DR. NW)	16'	STA. 12+00.00 TO STA. 14+33.81
-Y8A- (MAIN AVE. DR. NW)	12'	STA. 10+53.62 TO STA. 12+20.00
-Y10- (7TH AVE. NW)	18'	STA. 12+60.00 TO STA. 14+73.75
-Y10B- (9TH AVE. NW)	18'	STA. 10+60.00 TO STA. 12+95.86
-Y14- (13TH AVE. DR. NW)	18'	STA. 27+00.00 TO STA. 28+65.98
-Y15- (14TH AVE. CIR. NW)	20'	STA. 10+75.00 TO STA. 13+29.30

NOTE: TRANSITION FROM TYPICAL SECTION NO. 21 TO EXISTING IN THE FOLLOWING LOCATIONS:  
-Y8A- STA. 12+20.00 TO STA. 12+45.00



TYPICAL SECTION NO. 22  
-Y9- STA. 13+00.00 TO STA. 16+57.70  
\*-Y10A- STA. 10+53.66 TO STA. 13+05.00



TYPICAL SECTION NO. 23  
-Y9- STA. 17+6319 TO STA. 20+00.00

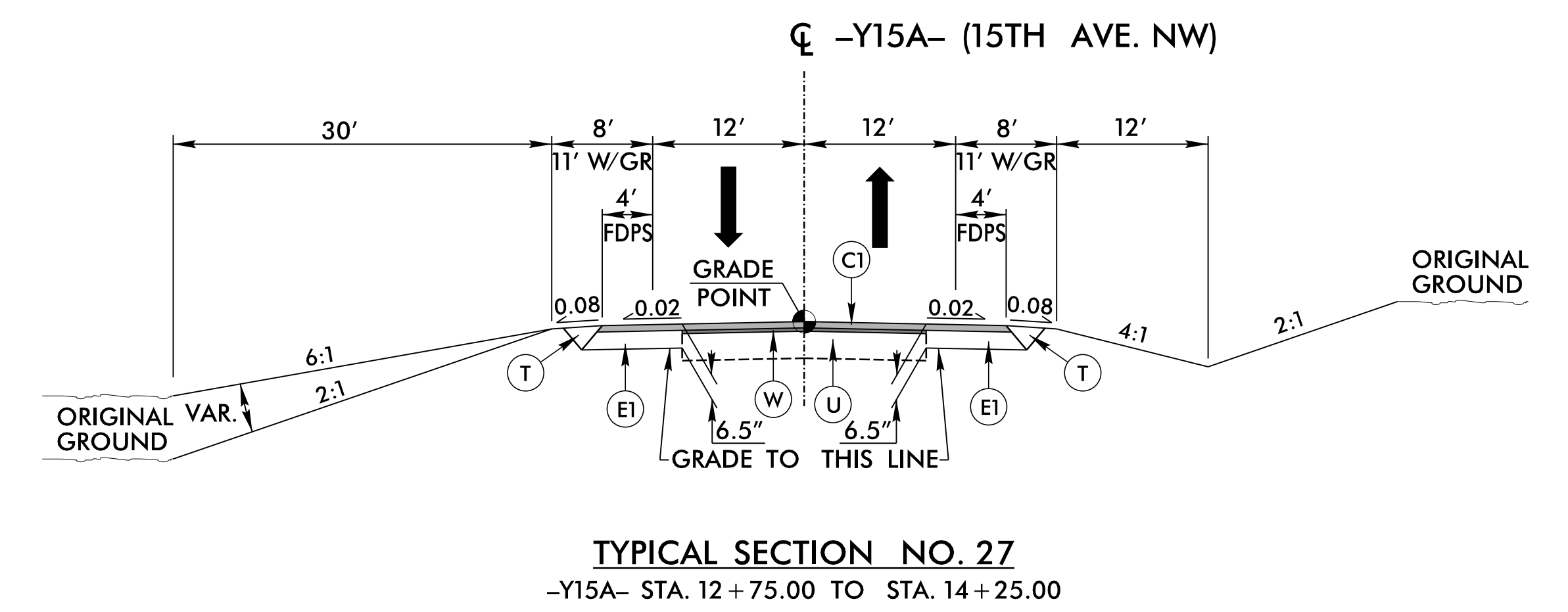
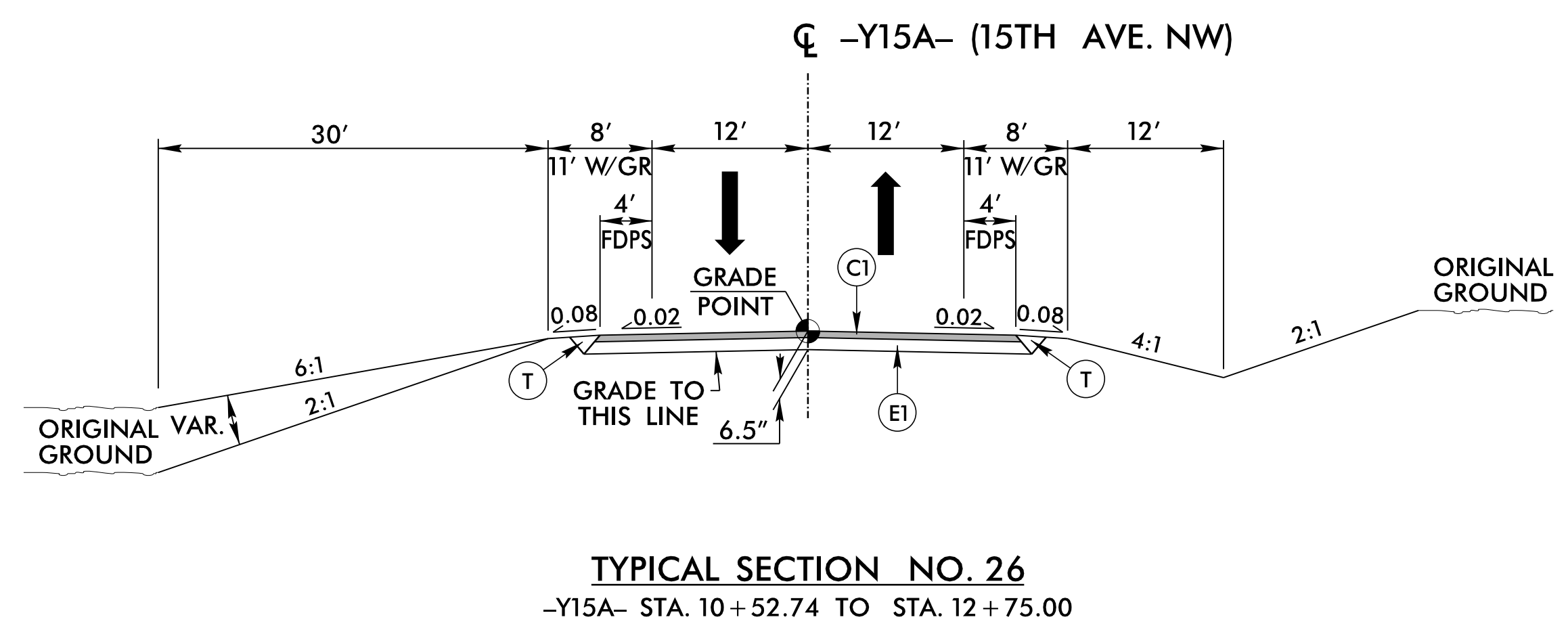
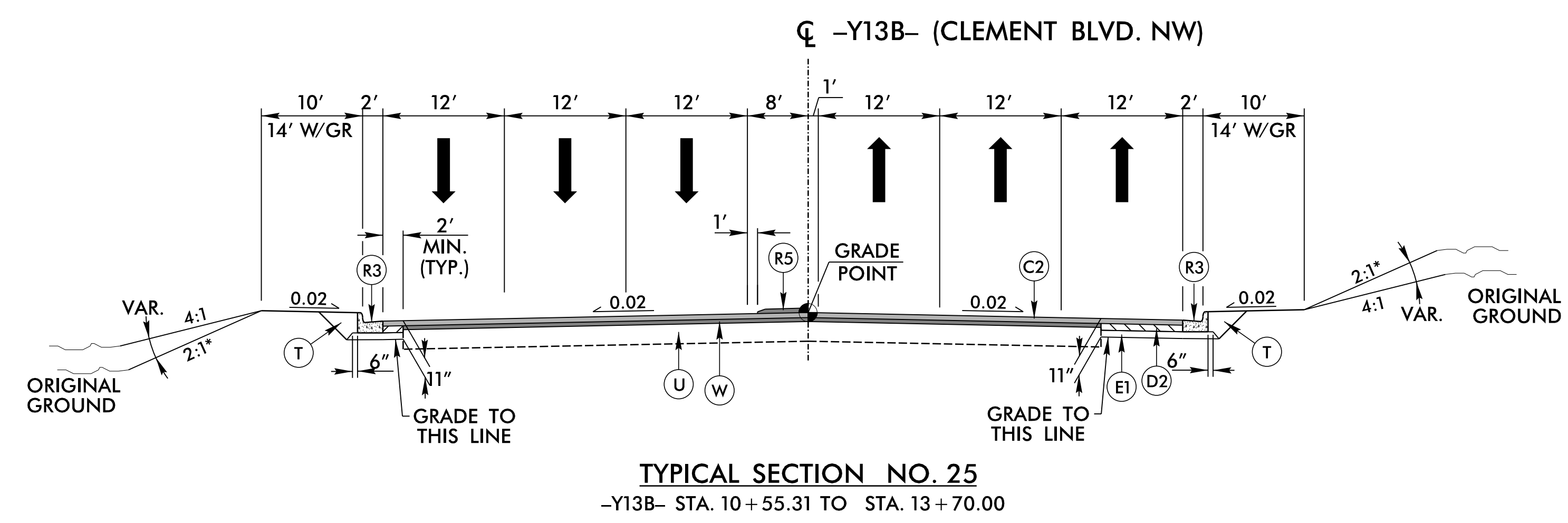
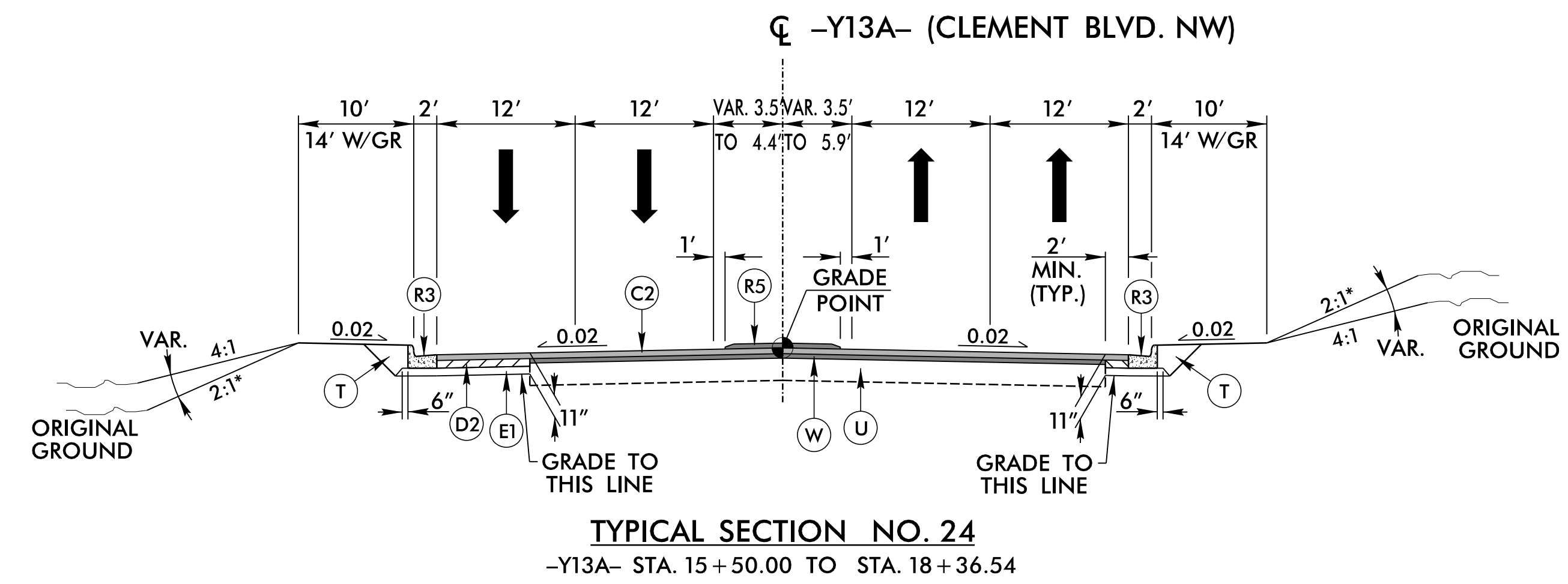
NOTES:  
SEE PLANS FOR LOCATION OF AUXILIARY LANES, TURN LANES, TAPERS, AND CONCRETE ISLANDS.  
\*4:1 MAXIMUM SLOPES WITHIN INTERCHANGES.  
PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

PROJECT REFERENCE NO. U-4700A	SHEET NO. 2A-7
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION	
<b>DOCUMENT NOT CONSIDERED FINAL</b> UNLESS ALL SIGNATURES COMPLETED	

**RK&K**  
P: (919) 878-9560  
900 Ridgefield Drive Suite 350 | Raleigh, North Carolina 27609-3960  
NC License No. F-0112  
Engineers | Construction Managers | Planners | Scientists  
www.rkk.com  
Responsive People | Creative Solutions

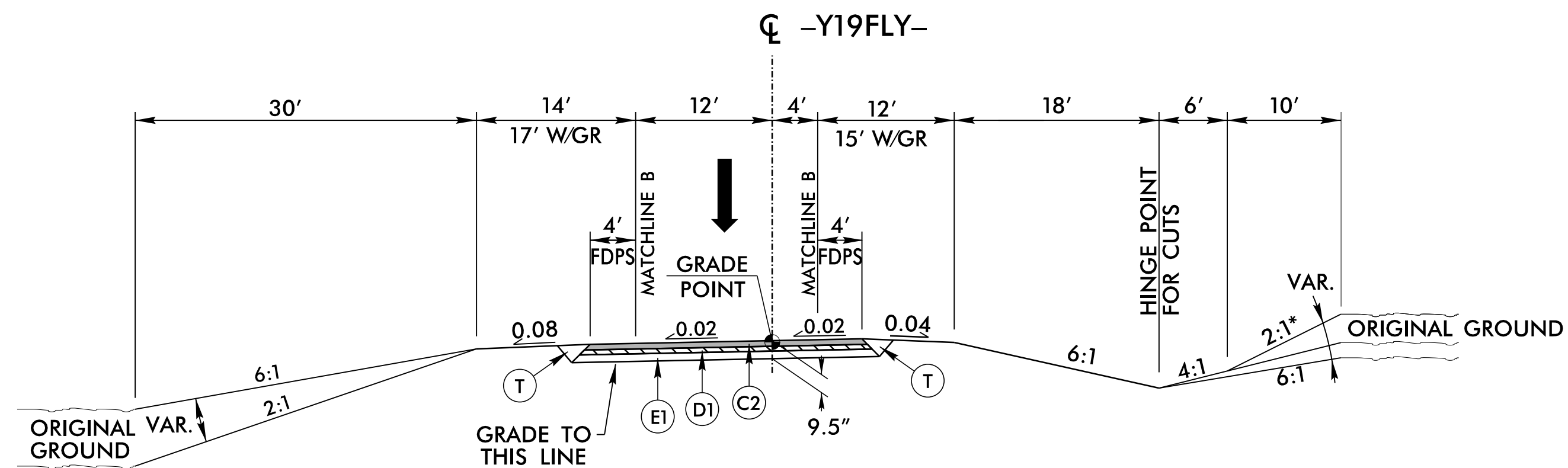
PAVEMENT SCHEDULE	
C1	2½" S9.5B
C2	3" S9.5B
C3	VAR. S9.5B
C4	3" S9.5C
C5	VAR. S9.5C
D1	2½" I19.0C
D2	4" I19.0C
D3	VAR. I19.0C
E1	4" B25.0C
E2	5" B25.0C
E3	6½" B25.0C
E4	VAR. B25.0C
J1	10" ABC
R1	TYPE T BARRIER
R2	1'-6" C&G
R3	2'-6" C&G
R4	2'-9" C&G
R5	CONC. ISLAND
R6	EXP. GUTTER
R7	CONC. BARRIER
R8	SBG
R9	8" x 12" CURB
T	EARTH MATERIAL
U	EXIST. PAVE.
V	3" MILLING
W	WEDGING

PROJECT REFERENCE NO. U-4700A	SHEET NO. 2A-8
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION	
<b>DOCUMENT NOT CONSIDERED FINAL</b> UNLESS ALL SIGNATURES COMPLETED	



**NOTES:**  
 SEE PLANS FOR LOCATION OF AUXILIARY LANES, TURN LANES, TAPERS, AND CONCRETE ISLANDS.  
 \*4:1 MAXIMUM SLOPES WITHIN INTERCHANGES.  
 PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

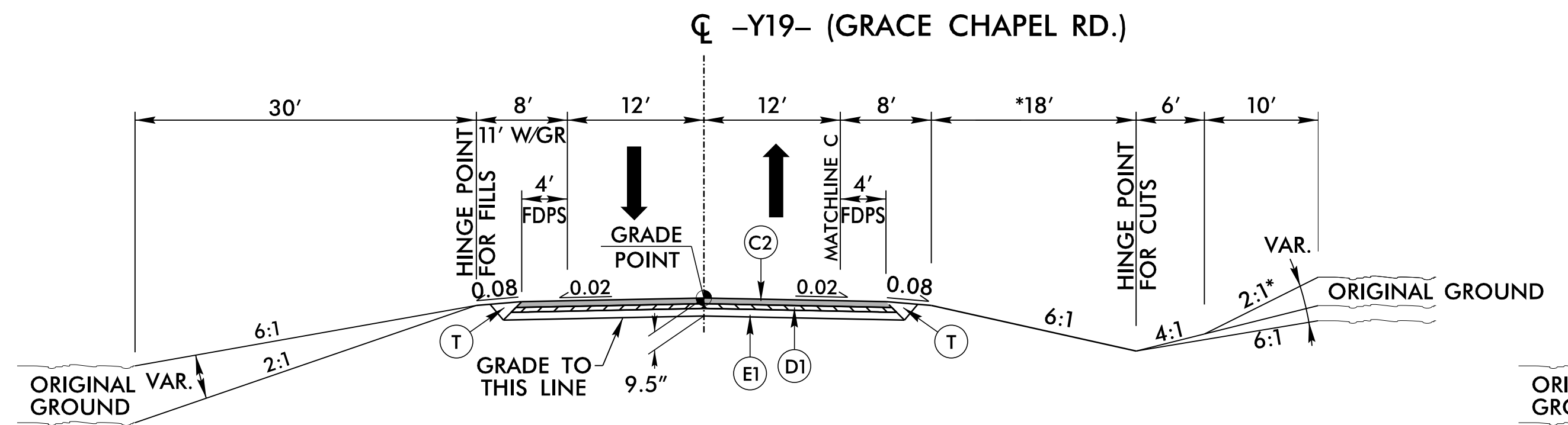
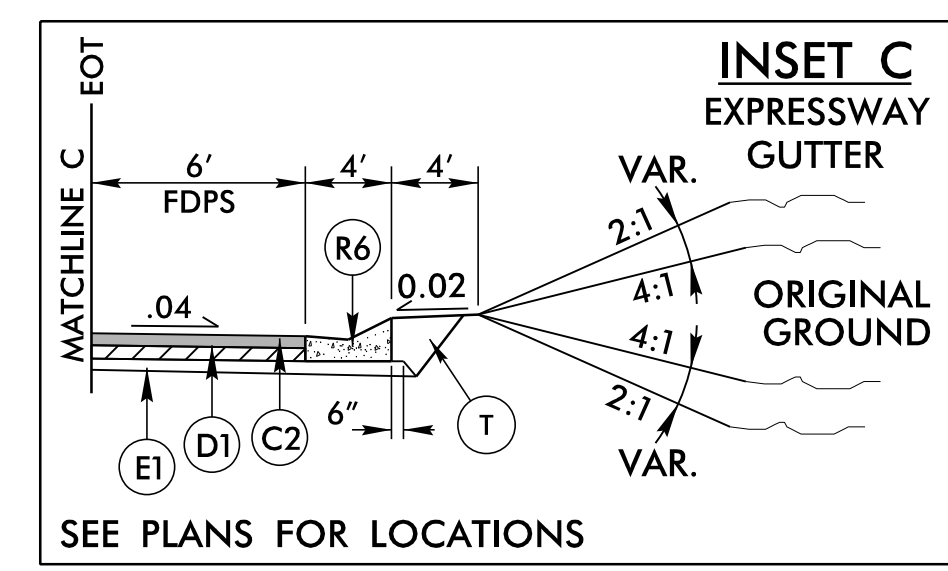
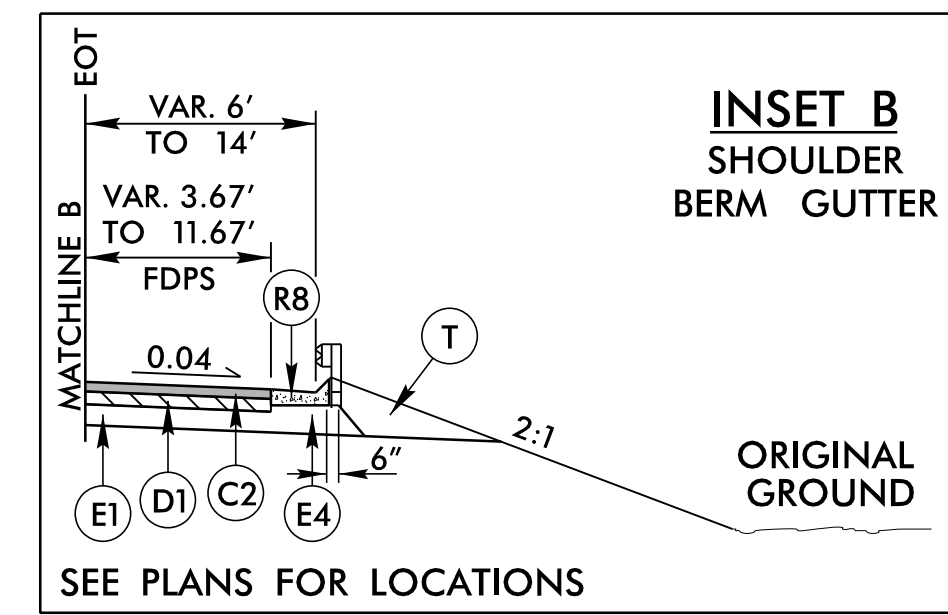
PAVEMENT SCHEDULE	
C1	2½" S9.5B
C2	3" S9.5B
C3	VAR. S9.5B
C4	3" S9.5C
C5	VAR. S9.5C
D1	2½" I19.0C
D2	4" I19.0C
D3	VAR. I19.0C
E1	4" B25.0C
E2	5" B25.0C
E3	6½" B25.0C
E4	VAR. B25.0C
J1	10" ABC
R1	TYPE T BARRIER
R2	1'-6" C&G
R3	2'-6" C&G
R4	2'-9" C&G
R5	CONC. ISLAND
R6	EXP. GUTTER
R7	CONC. BARRIER
R8	SBG
R9	8" x 12" CURB
T	EARTH MATERIAL
U	EXIST. PAVE.
V	3" MILLING
W	WEDGING



**TYPICAL SECTION NO. 28**

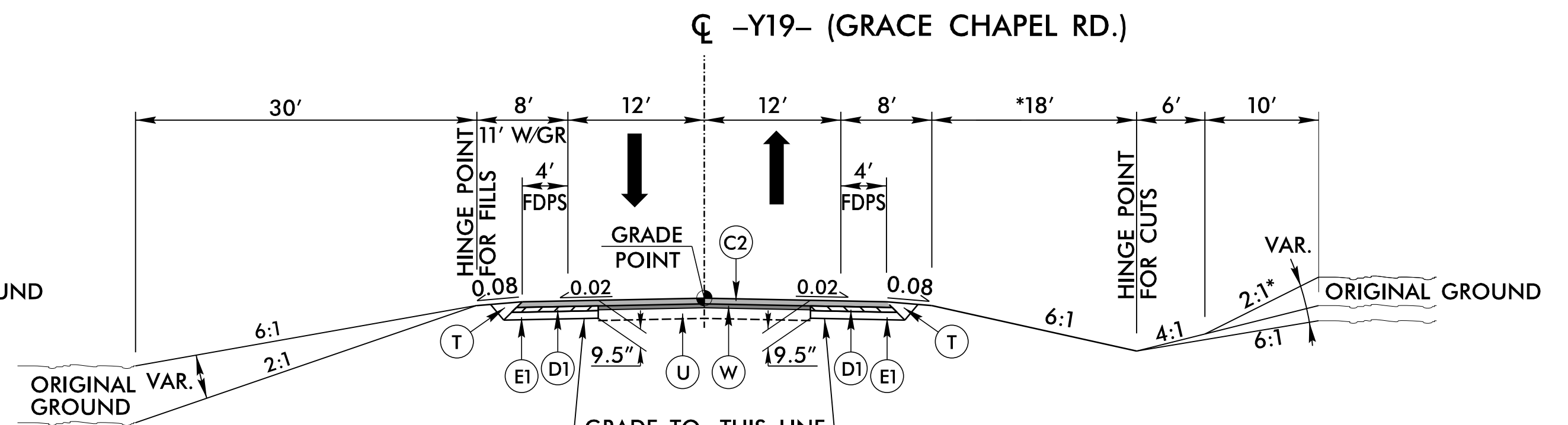
-Y19FLY- STA. 10+00.00 TO STA. 14+30.00 +/- (BEGIN BRIDGE)  
 -Y19FLY- STA. 15+80.00 +/- (END BRIDGE) TO STA. 24+27.00 +/- (BEGIN BRIDGE)  
 -Y19FLY- STA. 25+99.00 +/- (END BRIDGE) TO STA. 37+28.00

NOTE: USE -L- PAVEMENT DESIGN IN THE FOLLOWING LOCATION:  
 -Y19FLY- STA. 10+00.00 TO STA. 12+29.16



**TYPICAL SECTION NO. 29**

-Y19- STA. 10+51.02 TO STA. 24+75.00

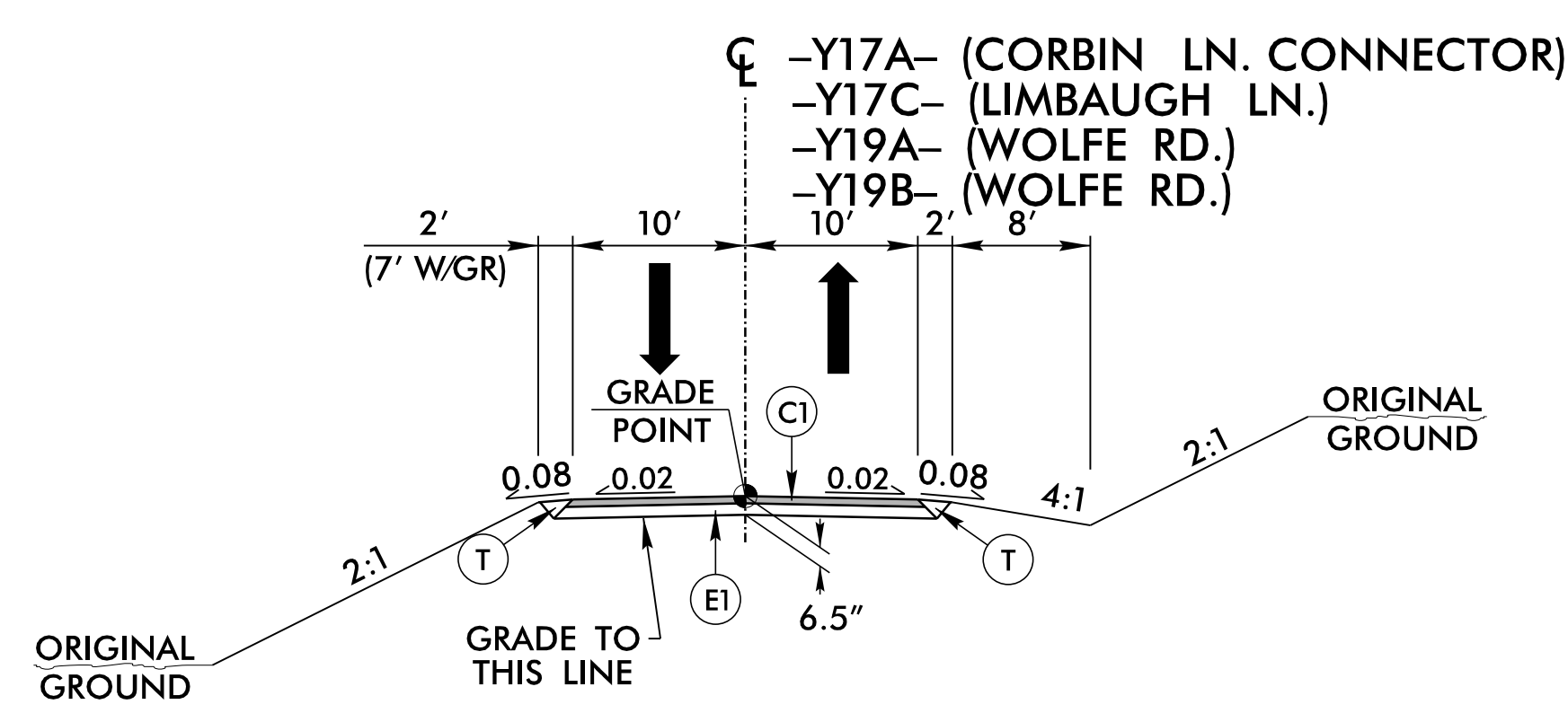


**TYPICAL SECTION NO. 30**

-Y19- STA. 24+75.00 TO STA. 28+50.00

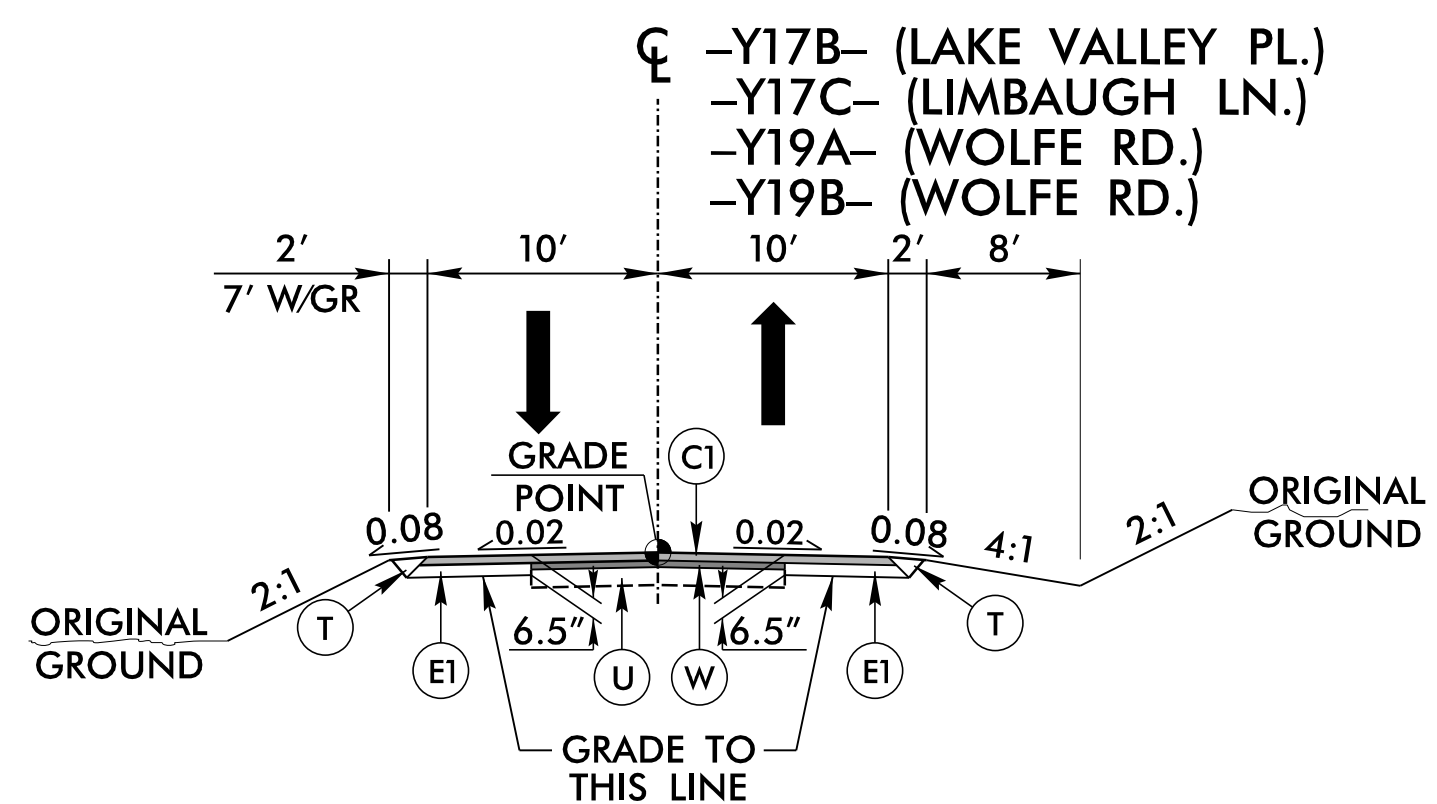
TRANSITION FROM TYPICAL SECTION NO. 30 TO EXISTING IN THE FOLLOWING LOCATION:  
 -Y19- STA. 28+50.00 TO STA. 29+00.00

\* NOTE: FOR TYPICAL SECTIONS NO. 29 & 30, USE 12' DITCH  
 -Y19- STA. 23+60.00 TO STA. 27+55.00 RT



**TYPICAL SECTION NO. 31**

-Y17A- STA. 11+80.34 TO STA. 20+58.28  
 -Y17C- STA. 17+11.04 TO STA. 20+67.50  
 -Y19A- STA. 13+25.00 TO STA. 15+39.07  
 -Y19B- STA. 10+08.84 TO STA. 15+75.00



**TYPICAL SECTION NO. 32**

-Y17B- STA. 10+58.07 TO STA. 12+95.00  
 -Y17C- STA. 13+00.00 TO STA. 17+11.04  
 -Y19A- STA. 10+92.66 TO STA. 13+25.00  
 -Y19B- STA. 15+75.00 TO STA. 16+40.00

TRANSITION FROM TYPICAL SECTION NO. 32 TO EXISTING IN THE FOLLOWING LOCATION:  
 -Y17B- STA. 12+95.00 TO STA. 13+20.00

PROJECT REFERENCE NO. U-4700A	SHEET NO. 2A-9
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION	
<b>DOCUMENT NOT CONSIDERED FINAL</b> UNLESS ALL SIGNATURES COMPLETED	

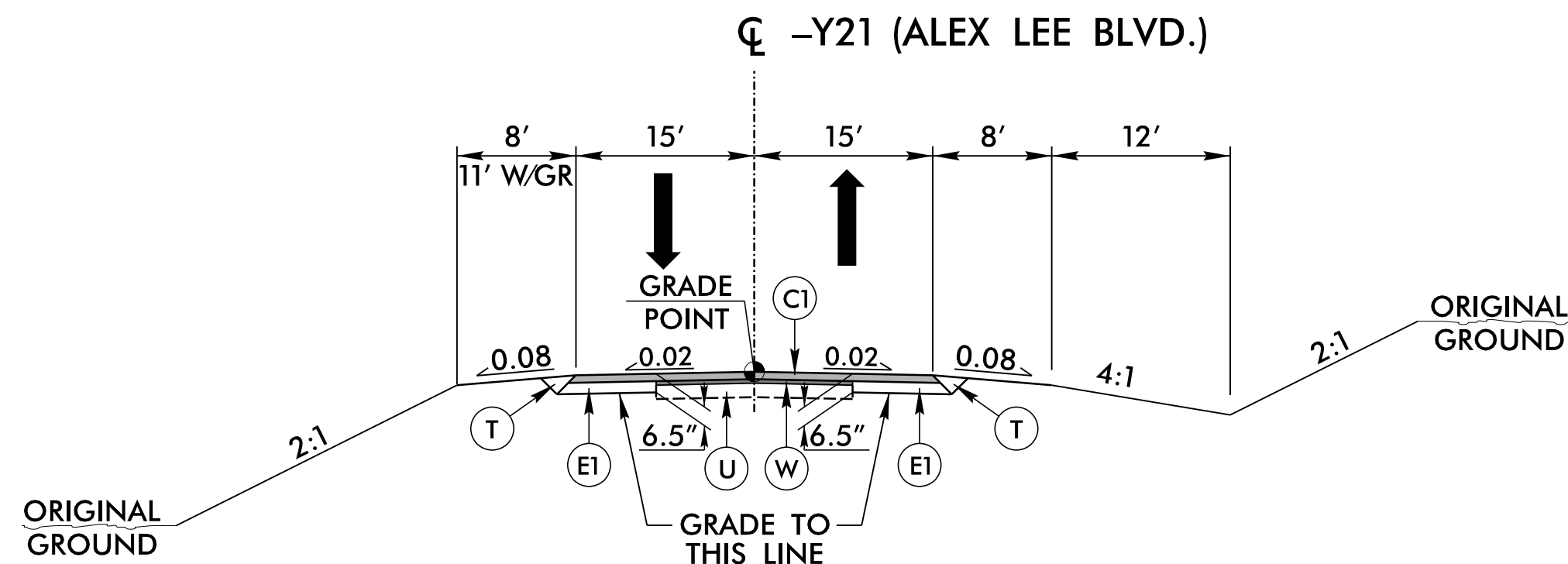
R:\2019\2019\_Roadway\Proj\U4700A\_rdy\_tjg.dgn  
 11/14/2019 10:00:00 AM

**NOTES:**  
 SEE PLANS FOR LOCATION OF AUXILIARY LANES, TURN LANES, TAPERS, AND CONCRETE ISLANDS.  
 \*4:1 MAXIMUM SLOPES WITHIN INTERCHANGES.  
 PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

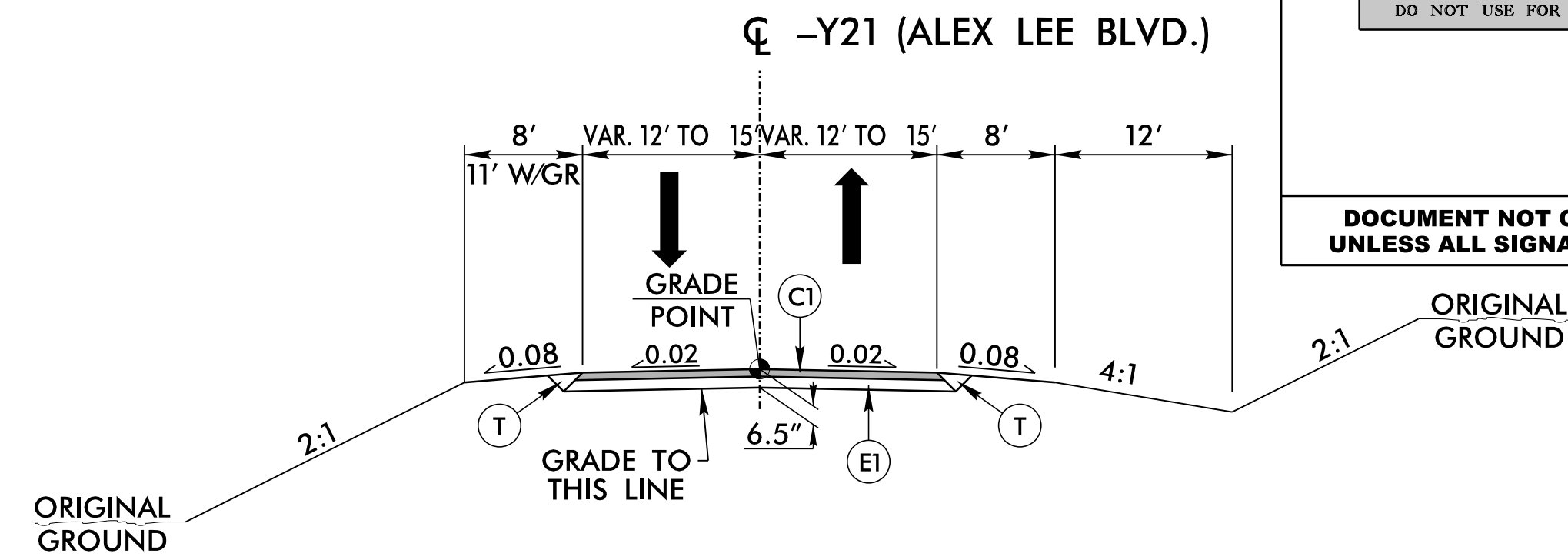
**RK&K**  
 P: (919) 878-9500  
 900 Ridgefield Drive Suite 350 | Raleigh, North Carolina 27609-3960  
 NC License No. F-0112  
 Engineers | Construction Managers | Planners | Scientists  
 www.rkk.com  
 Responsive People | Creative Solutions

PAVEMENT SCHEDULE	
C1	2½" S9.5B
C2	3" S9.5B
C3	VAR. S9.5B
C4	3" S9.5C
C5	VAR. S9.5C
D1	2½" I19.0C
D2	4" I19.0C
D3	VAR. I19.0C
E1	4" B25.0C
E2	5" B25.0C
E3	6½" B25.0C
E4	VAR. B25.0C
J1	10" ABC
R1	TYPE T BARRIER
R2	1'-6" C&G
R3	2'-6" C&G
R4	2'-9" C&G
R5	CONC. ISLAND
R6	EXP. GUTTER
R7	CONC. BARRIER
R8	SBG
R9	8" x 12" CURB
T	EARTH MATERIAL
U	EXIST. PAVE.
V	3" MILLING
W	WEDGING

PROJECT REFERENCE NO. U-4700A	SHEET NO. 2A-10
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION	
<b>DOCUMENT NOT CONSIDERED FINAL</b> UNLESS ALL SIGNATURES COMPLETED	

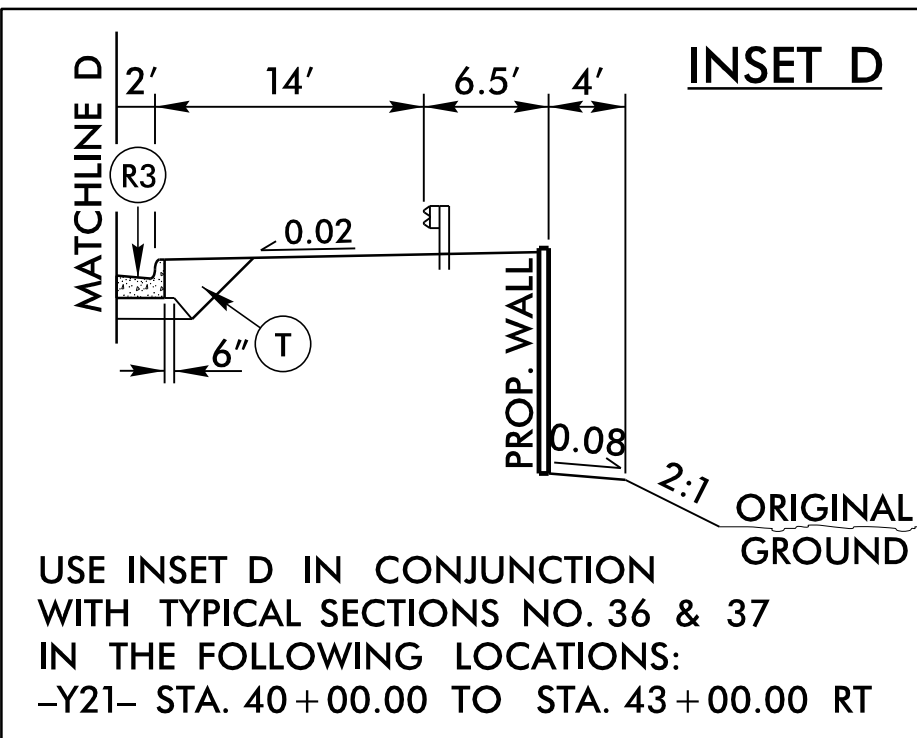


**TYPICAL SECTION NO. 33**  
-Y21- STA. 10+10.00 TO STA. 11+51.28

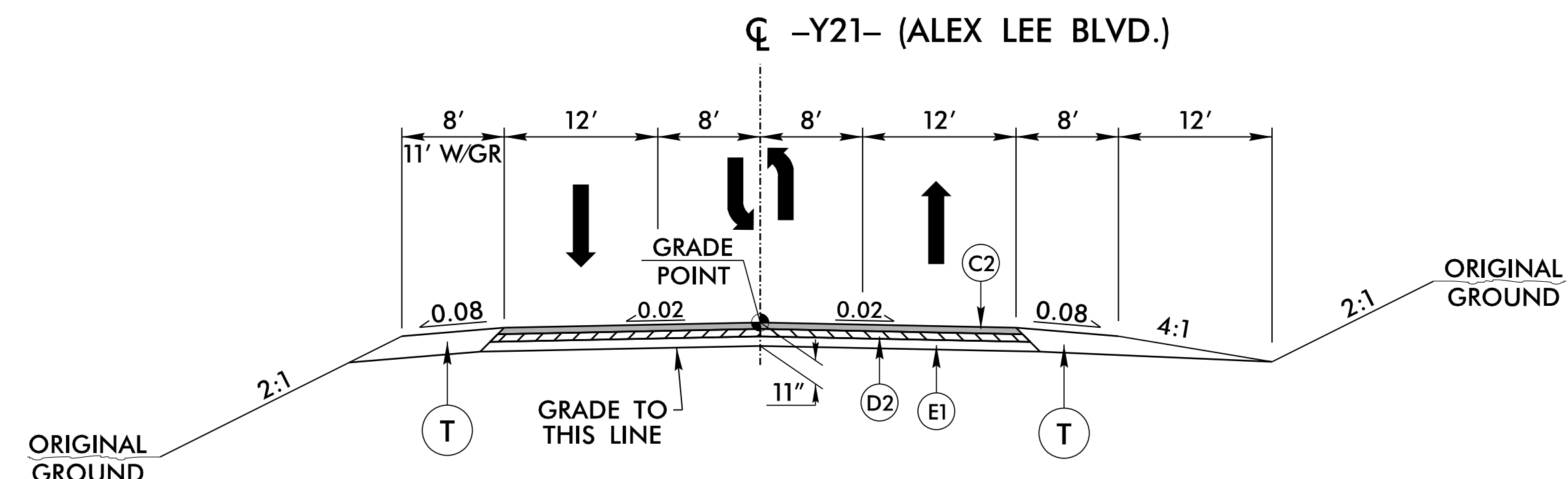


**TYPICAL SECTION NO. 34**  
-Y21- STA. 11+51.28 TO STA. 33+30.00

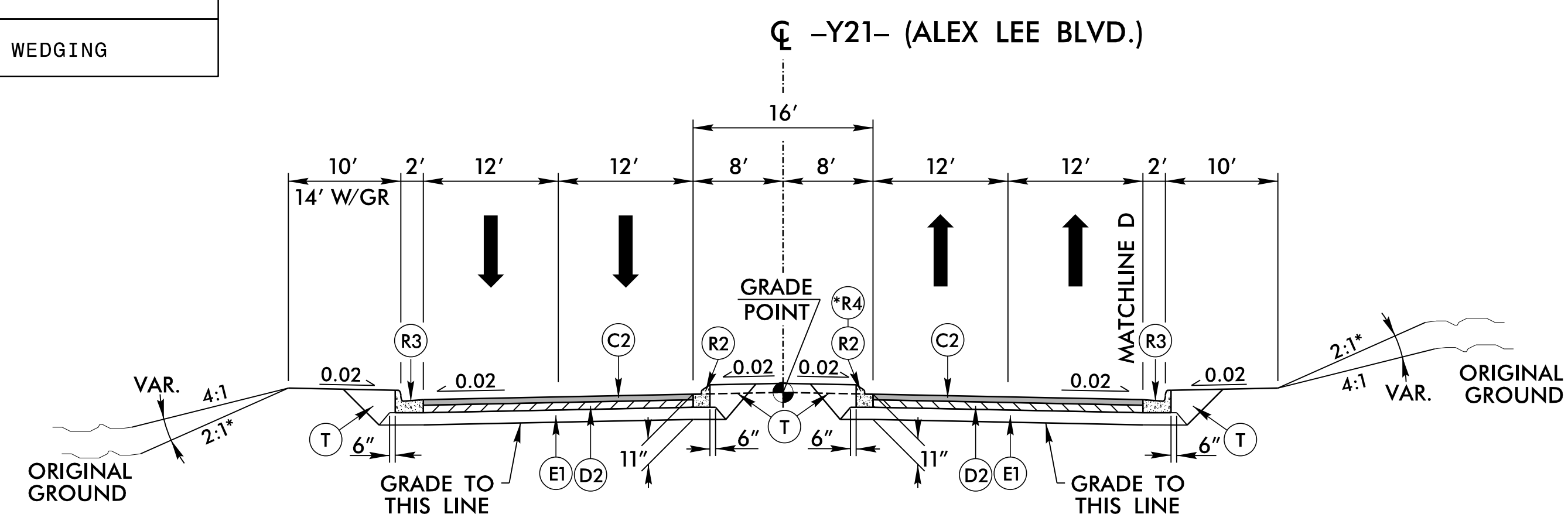
NOTE: TRANSITION FROM TYPICAL SECTION NO. 34 TO TYPICAL SECTION NO. 35 IN THE FOLLOWING LOCATIONS:  
-Y21- STA. 33+30.00 TO STA. 34+50.00



USE INSET D IN CONJUNCTION WITH TYPICAL SECTIONS NO. 36 & 37 IN THE FOLLOWING LOCATIONS:  
-Y21- STA. 40+00.00 TO STA. 43+00.00 RT

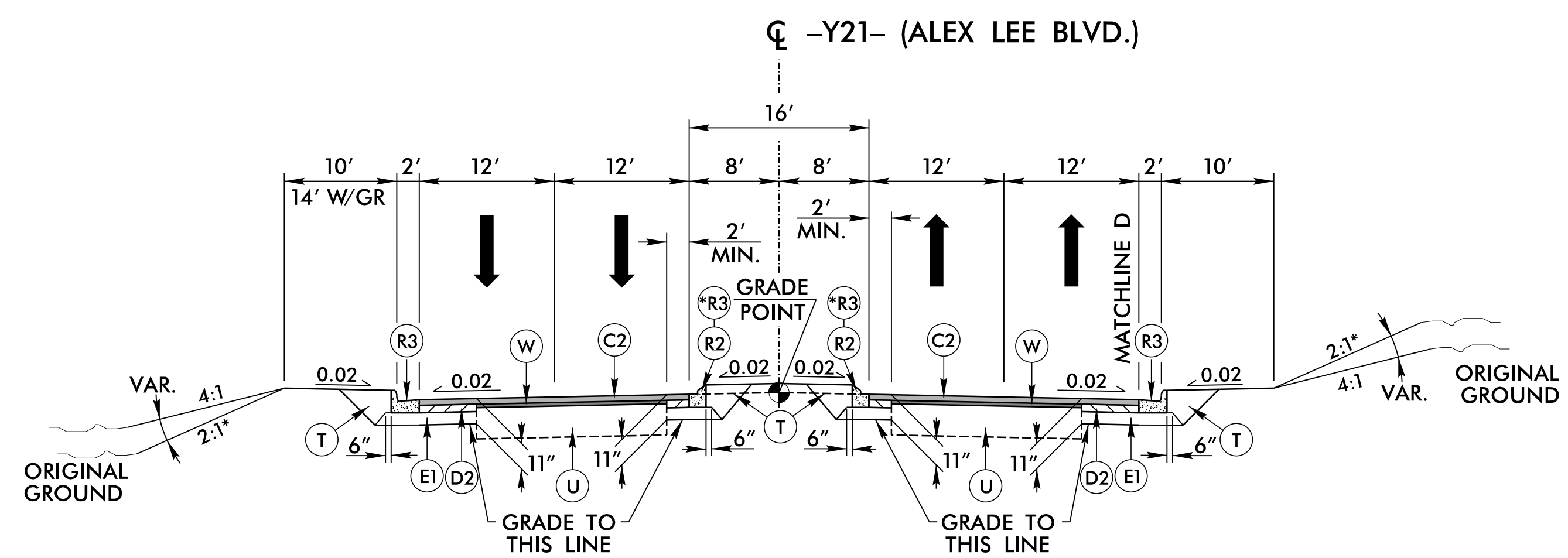


**TYPICAL SECTION NO. 35**  
-Y21- STA. 34+50.00 TO STA. 36+26.00 +/- (BEGIN BRIDGE)  
-Y21- STA. 37+90.00 +/- (END BRIDGE) TO STA. 38+92.00



**TYPICAL SECTION NO. 36**  
-Y21- STA. 38+92.00 TO STA. 42+94.27

\* NOTE: USE R4 IN PLACE OF R2 IN THE FOLLOWING LOCATIONS:  
-Y21- STA. 39+00.00 TO STA. 41+48.75 (RT)



**TYPICAL SECTION NO. 37**  
-Y21- STA. 42+94.27 TO STA. 46+70.00

\* NOTE: USE R3 IN PLACE OF R2 IN THE FOLLOWING LOCATIONS:  
-Y21- STA. 45+70.00 TO STA. 46+70.00 (LT)  
-Y21- STA. 45+70.00 TO STA. 46+70.00 (RT)

NOTE: TRANSITION FROM PROPOSED MEDIAN WIDTH TO EXISTING MEDIAN WIDTH FROM  
-Y21- STA. 44+70.00 TO STA. 46+70.00

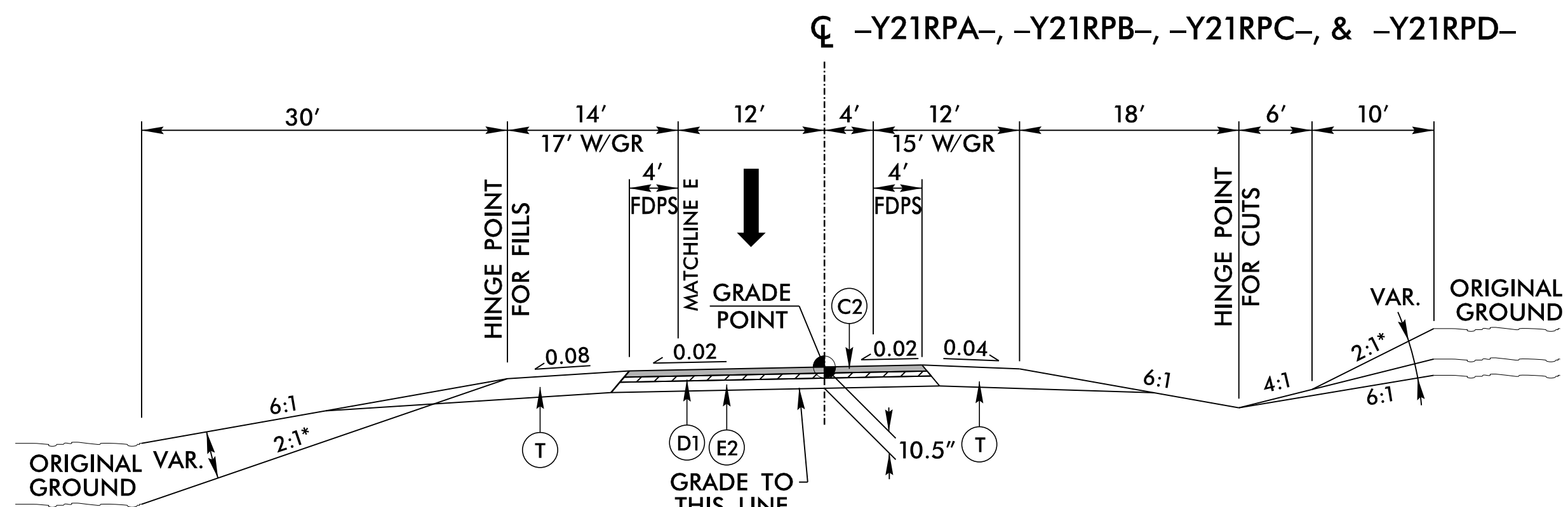
R:\2019\09\09\Projects\U4700a\_rdy\_tjg.dgn

**NOTES:**  
SEE PLANS FOR LOCATION OF AUXILIARY LANES, TURN LANES, TAPERS, AND CONCRETE ISLANDS.  
\*4:1 MAXIMUM SLOPES WITHIN INTERCHANGES.  
PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

**RK&K**  
P: (919) 878-9500  
900 Ridgefield Drive Suite 350 | Raleigh, North Carolina 27609-3960  
NC License No. F-0112  
Engineers | Construction Managers | Planners | Scientists  
www.rkk.com  
Responsive People | Creative Solutions

PAVEMENT SCHEDULE	
C1	2½" S9.5B
C2	3" S9.5B
C3	VAR. S9.5B
C4	3" S9.5C
C5	VAR. S9.5C
D1	2½" I19.0C
D2	4" I19.0C
D3	VAR. I19.0C
E1	4" B25.0C
E2	5" B25.0C
E3	6½" B25.0C
E4	VAR. B25.0C
J1	10" ABC
R1	TYPE T BARRIER
R2	1'-6" C&G
R3	2'-6" C&G
R4	2'-9" C&G
R5	CONC. ISLAND
R6	EXP. GUTTER
R7	CONC. BARRIER
R8	SBG
R9	8" x 12" CURB
T	EARTH MATERIAL
U	EXIST. PAVE.
V	3" MILLING
W	WEDGING

PROJECT REFERENCE NO. U-4700A	SHEET NO. 2A-11
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION	
<b>DOCUMENT NOT CONSIDERED FINAL</b> UNLESS ALL SIGNATURES COMPLETED	

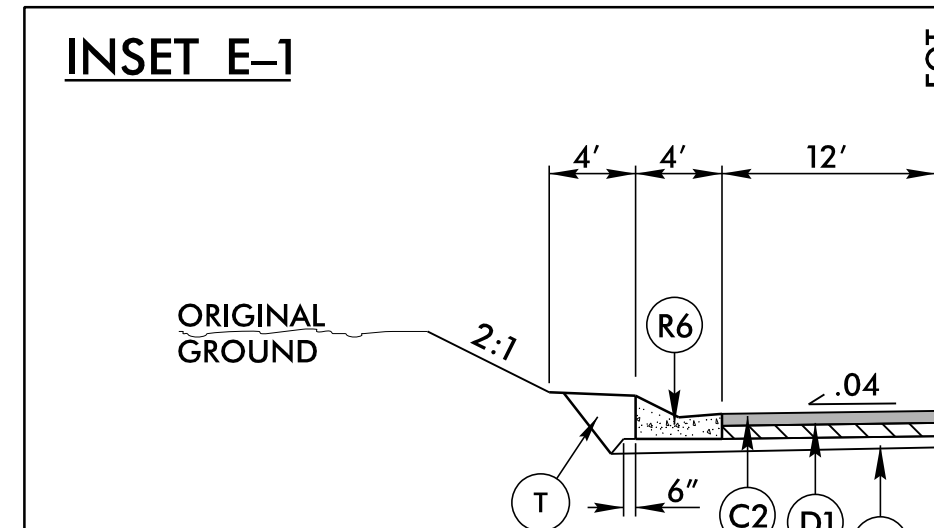


**TYPICAL SECTION NO. 38**

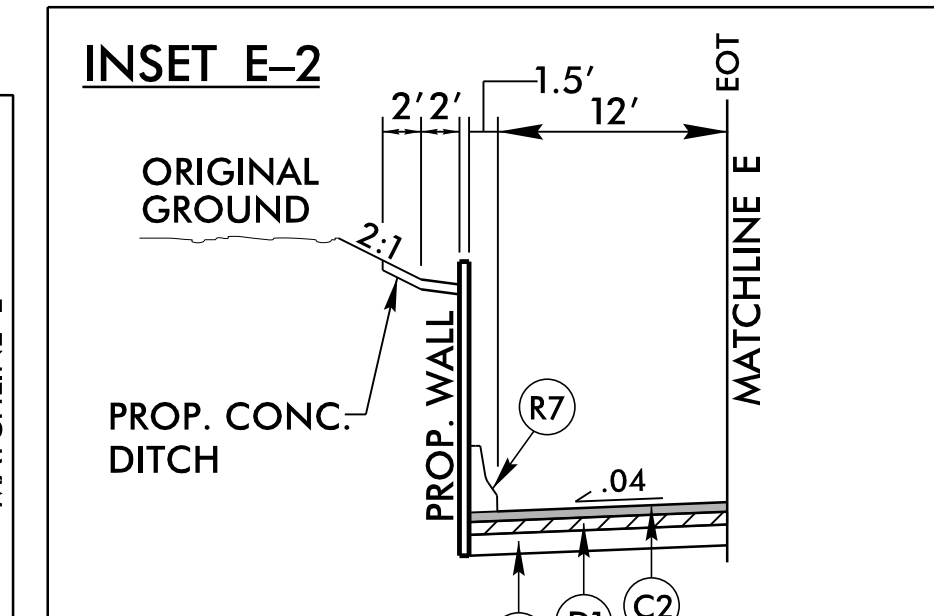
-Y21RPA- STA. 10+00.00 TO STA. 21+46.82  
 \*-Y21RPB- STA. 10+00.00 TO STA. 24+97.04  
 -Y21RPC- STA. 10+00.00 TO STA. 22+25.07  
 \*-Y21RPD- STA. 10+00.00 TO STA. 24+86.06

NOTE: USE -L- PAVEMENT IN THE FOLLOWING LOCATIONS:  
 -Y21RPA- STA. 10+00.00 TO STA. 15+99.85  
 -Y21RPB- STA. 10+00.00 TO STA. 14+41.77  
 -Y21RPC- STA. 10+00.00 TO STA. 13+7.88  
 -Y21RPD- STA. 10+00.00 TO STA. 14+37.00

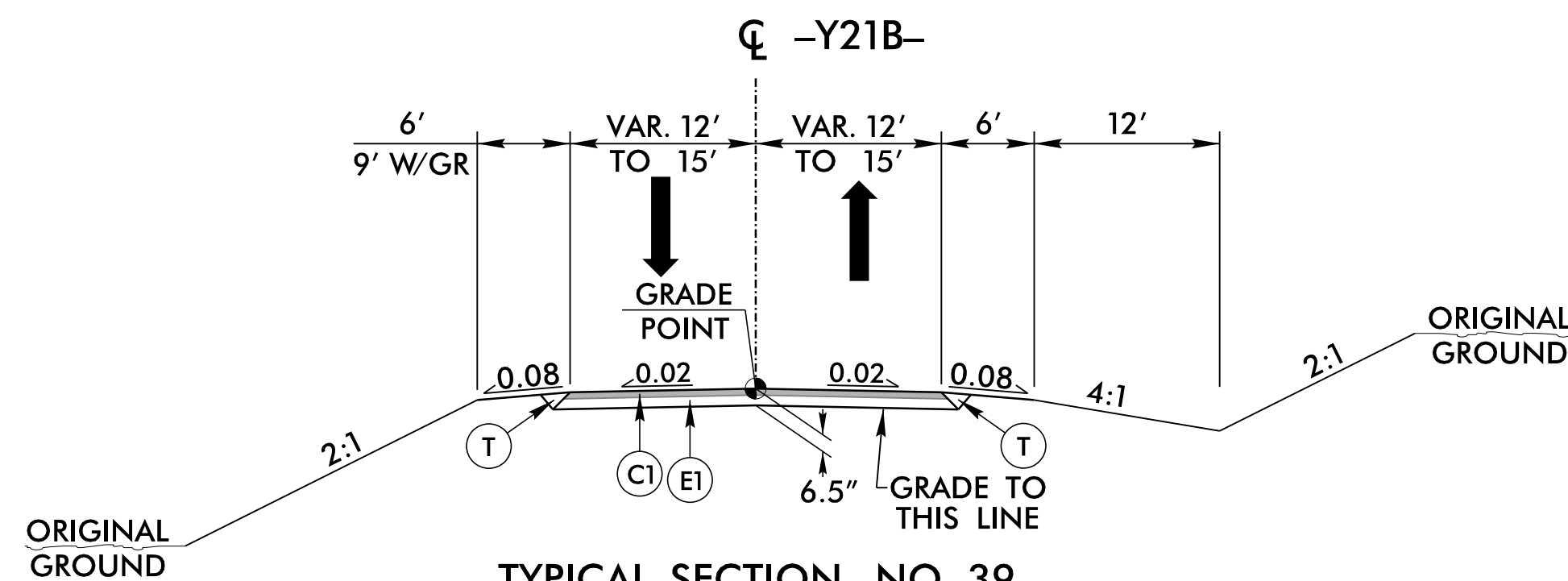
\* NOTE: MIRROR IMAGE



USE INSET E-1 IN CONJUNCTION WITH TYPICAL SECTION NO. 38 IN THE FOLLOWING LOCATIONS:  
 -Y21RPA- STA. 10+00.00 TO STA. 13+25.00 LT

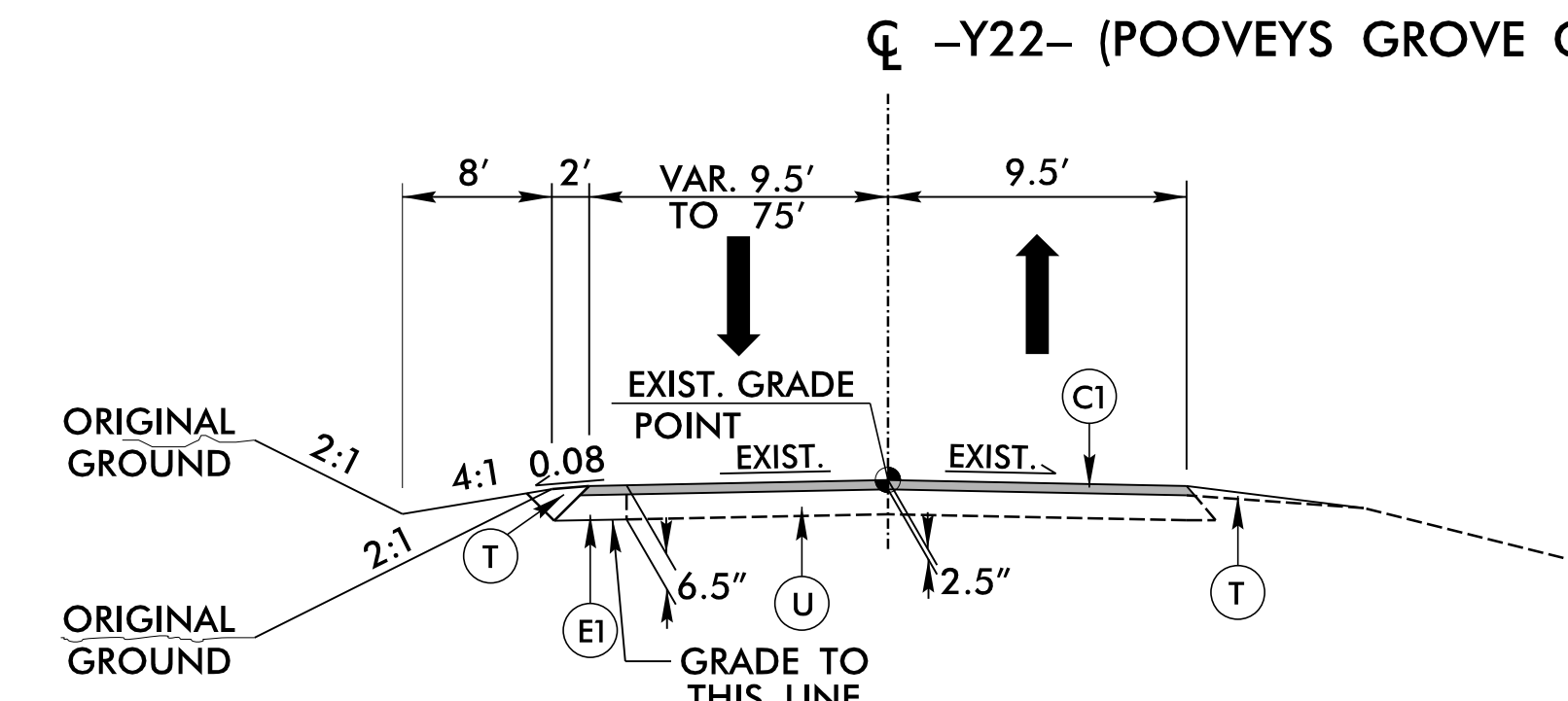


USE INSET E-2 IN CONJUNCTION WITH TYPICAL SECTION NO. 38 IN THE FOLLOWING LOCATIONS:  
 -Y21RPA- STA. 13+25.00 TO STA. 18+20.00 LT



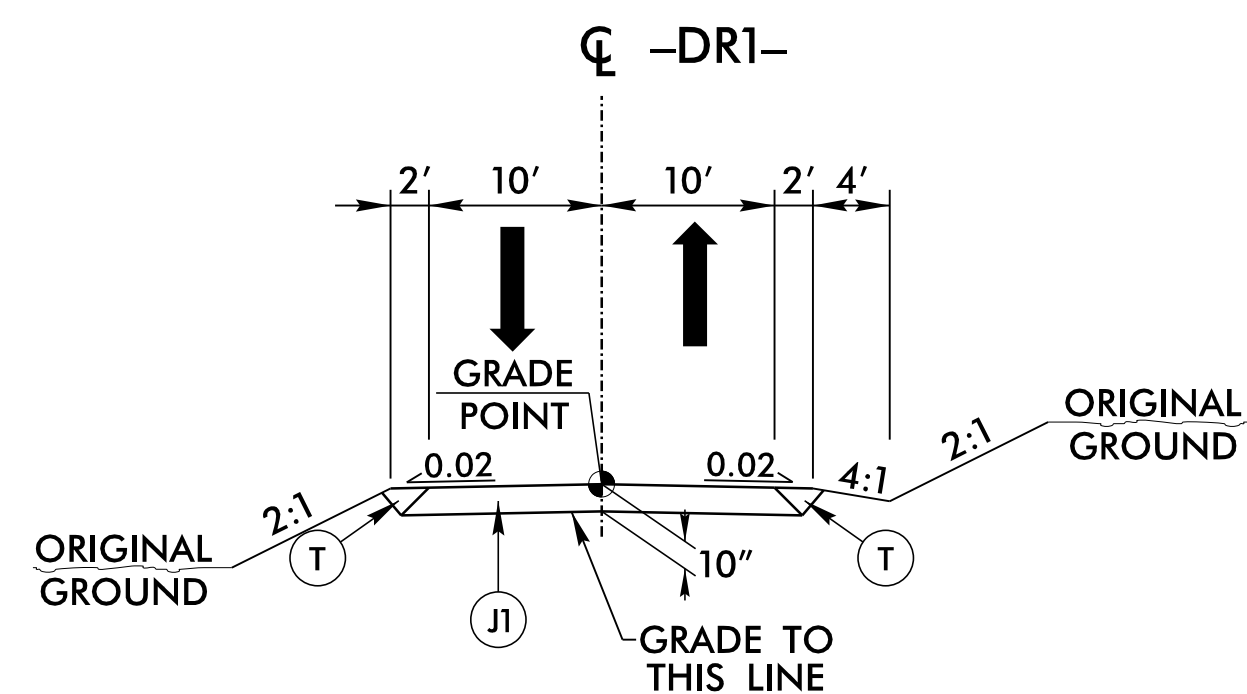
**TYPICAL SECTION NO. 39**

-Y21A- STA. 10+14.00 TO STA. 17+32.03



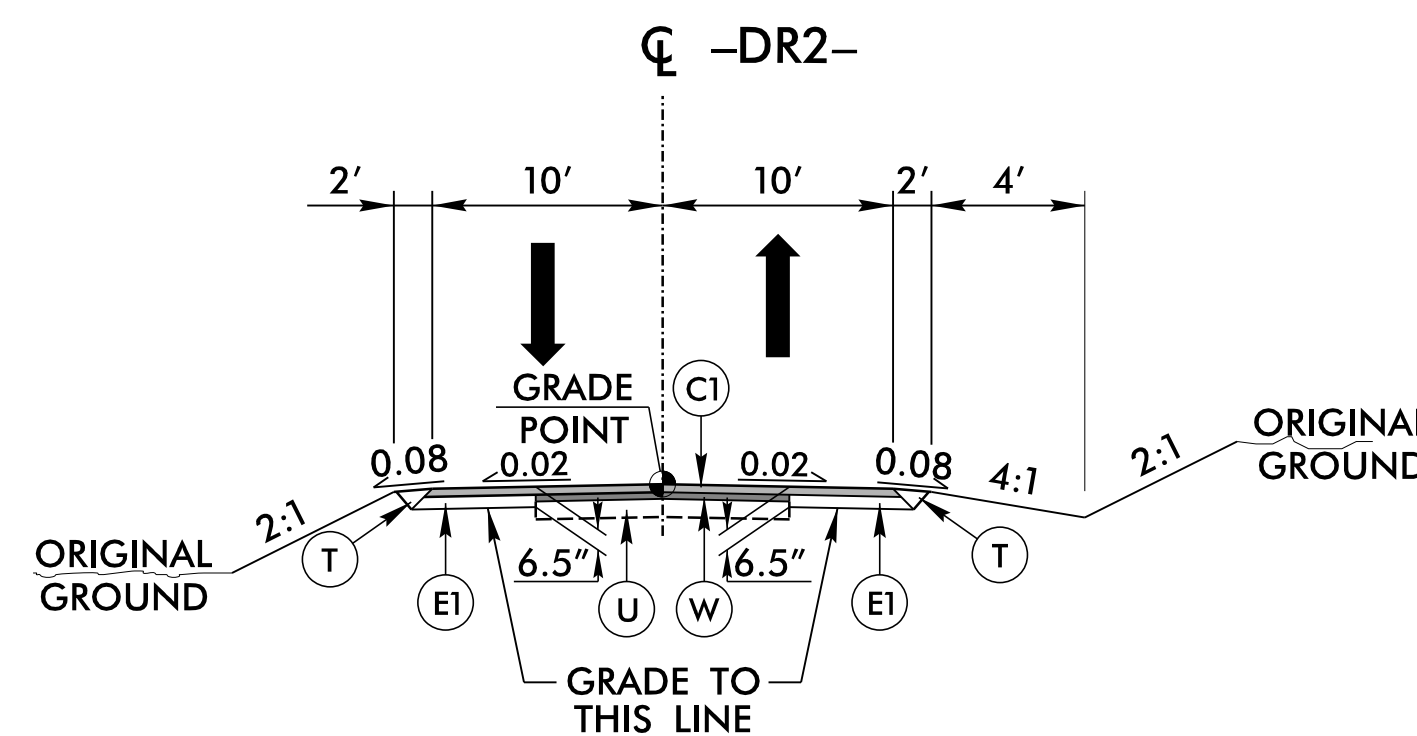
**TYPICAL SECTION NO. 40**

-Y22- STA. 10+26.92 TO STA. 11+72.22



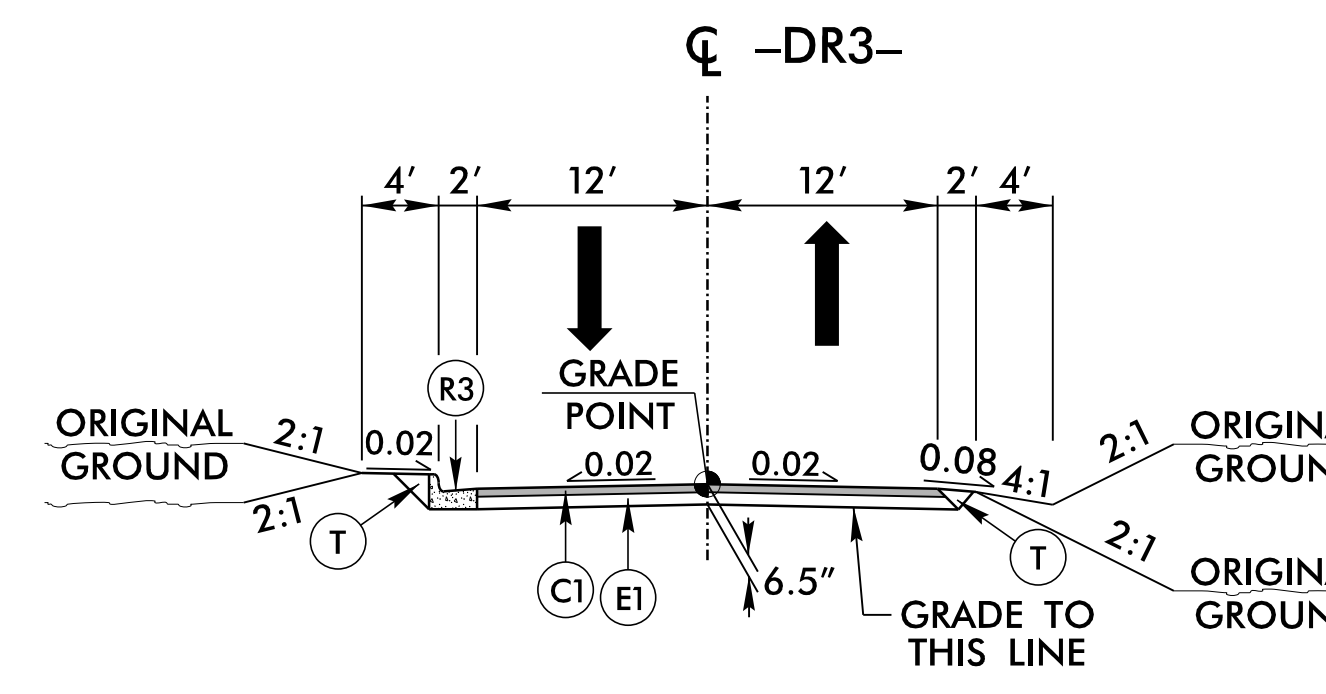
**TYPICAL SECTION NO. 41**

-DR1- STA. 10+50.00 TO STA. 13+18.55



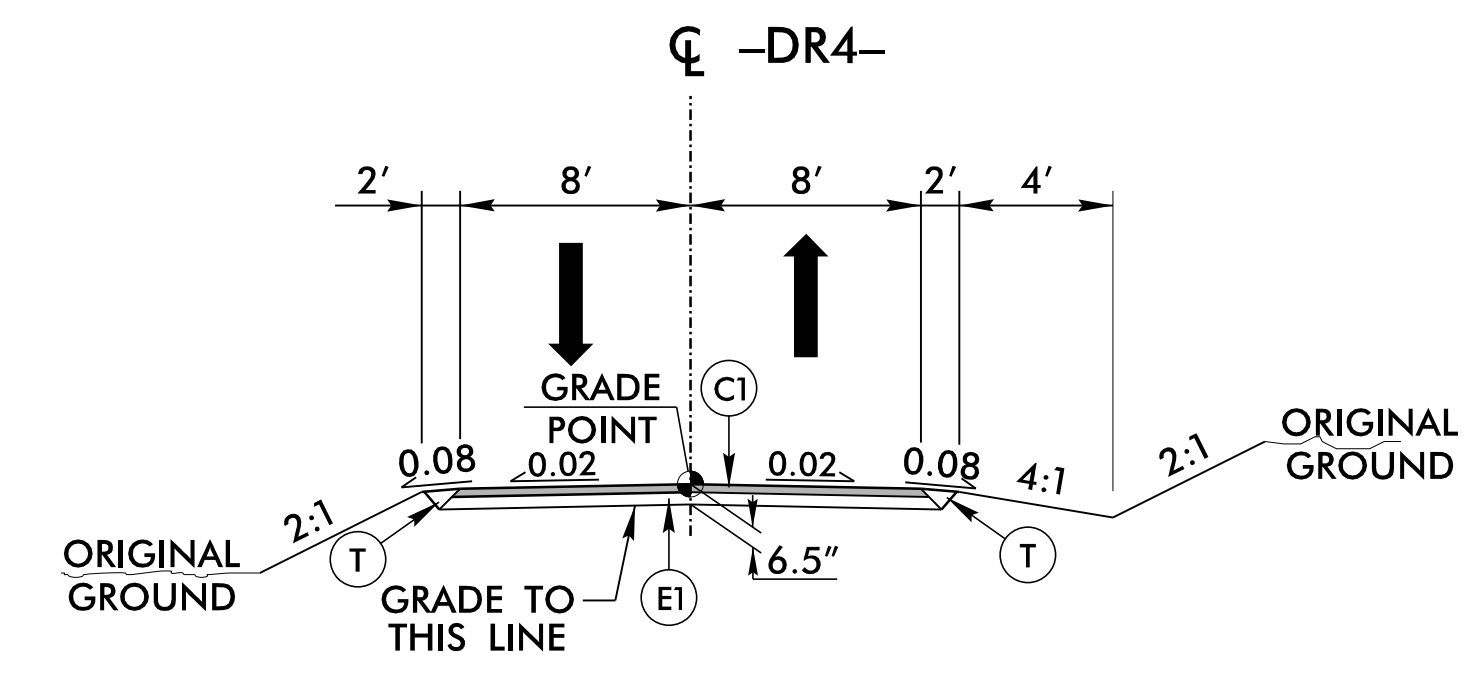
**TYPICAL SECTION NO. 42**

-DR2- STA. 10+15.00 TO STA. 12+15.00



**TYPICAL SECTION NO. 43**

-DR3- STA. 10+44.00 TO STA. 11+99.00



**TYPICAL SECTION NO. 44**

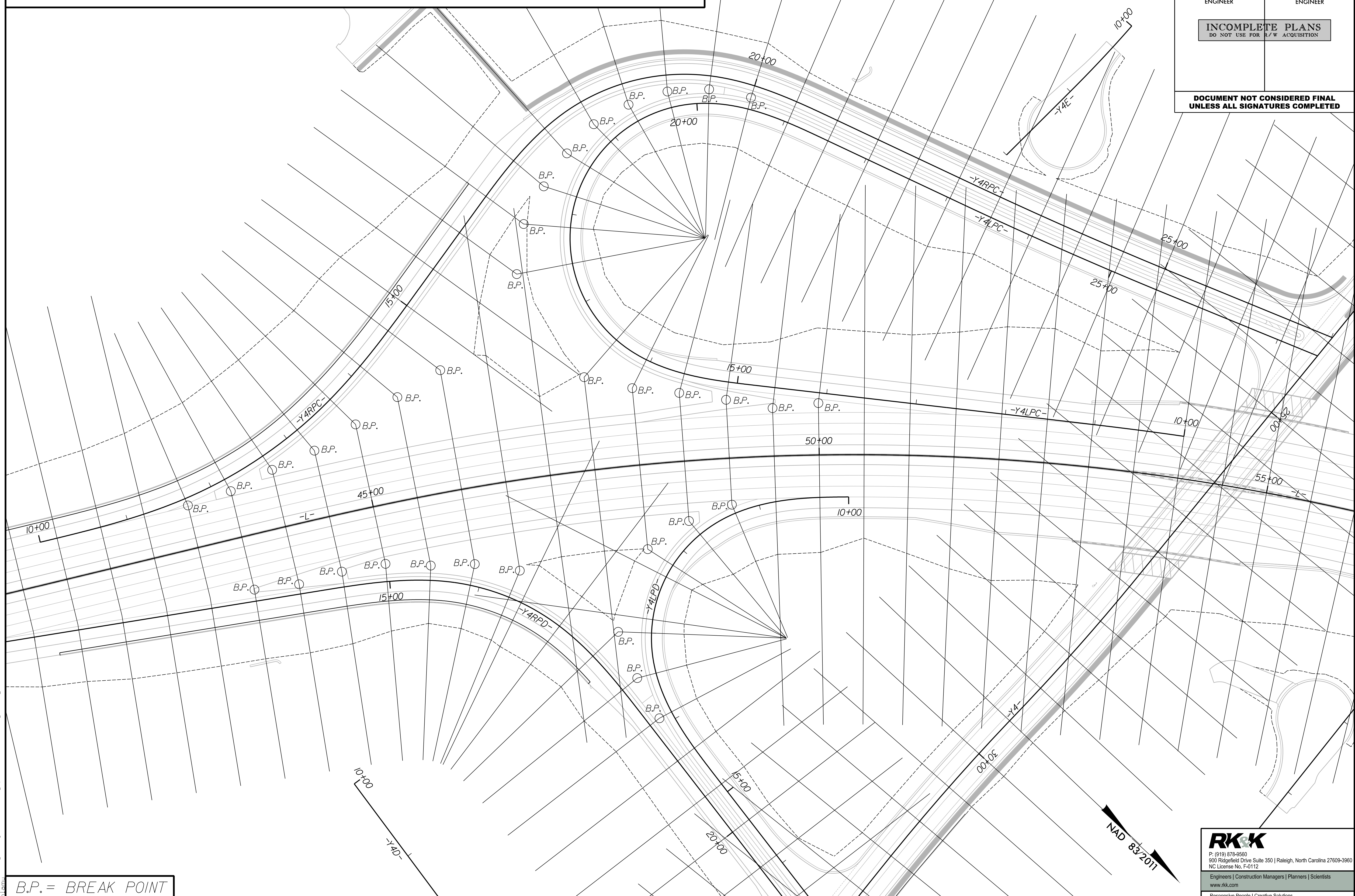
-DR4- STA. 10+39.47 TO STA. 16+25.61

**NOTES:**  
 SEE PLANS FOR LOCATION OF AUXILIARY LANES, TURN LANES, TAPERS, AND CONCRETE ISLANDS.  
 \*4:1 MAXIMUM SLOPES WITHIN INTERCHANGES.  
 PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

# CROSS-SECTION LAYOUT: -L- & -Y4- INTERCHANGE

PROJECT REFERENCE NO. U-4700A	SHEET NO. 2B-1
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION	
<b>DOCUMENT NOT CONSIDERED FINAL</b> UNLESS ALL SIGNATURES COMPLETED	

8/17/19  
P:\2019\Roadway\Pro\4700a\_rdy\_psh02B-1\_XSC-Layout.dgn



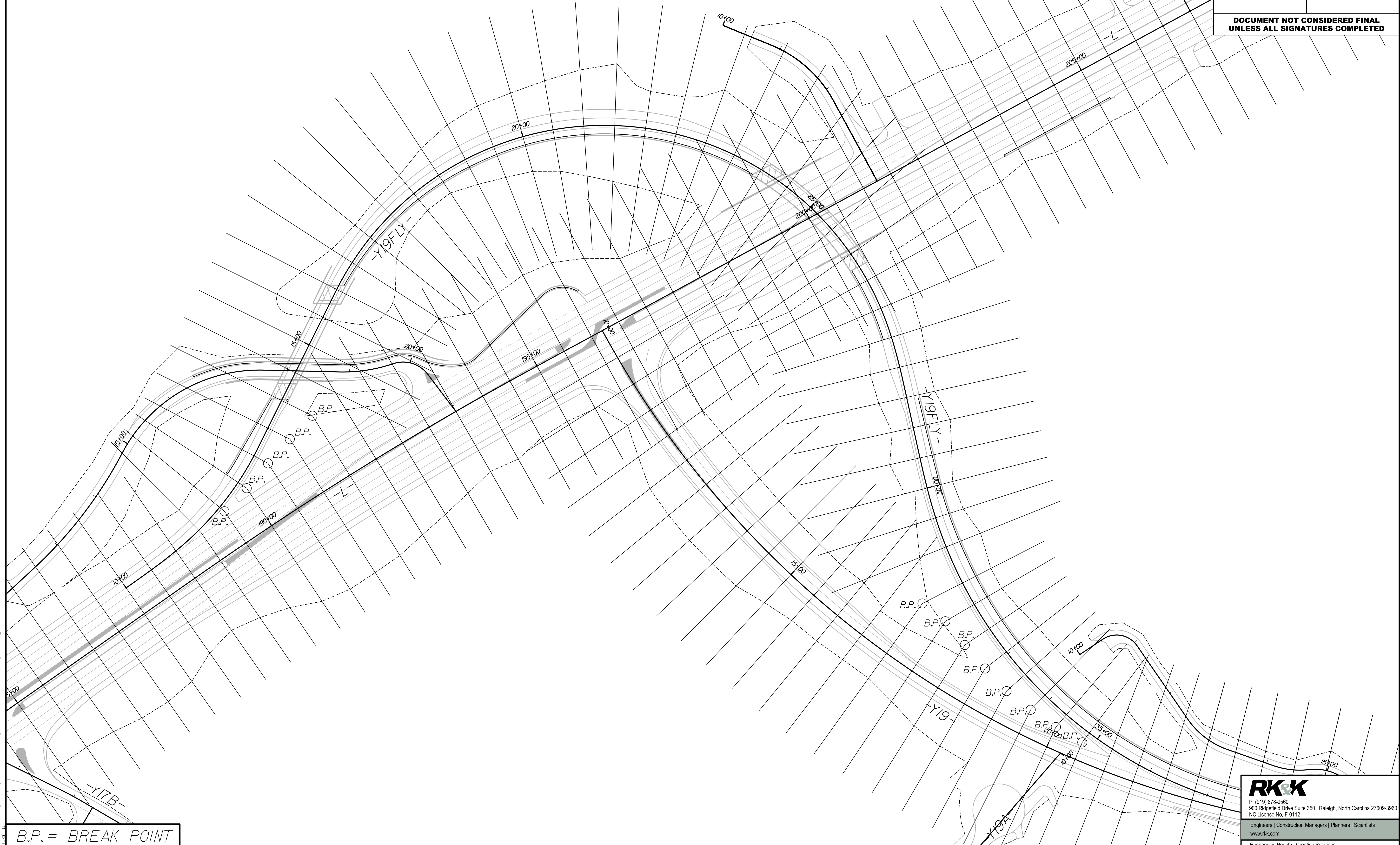
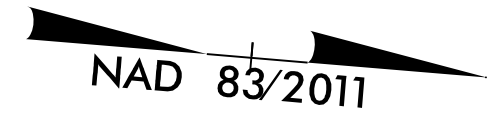
B.P. = BREAK POINT

**RK&K**  
 P: (919) 878-9560  
 900 Ridgely Drive Suite 350 | Raleigh, North Carolina 27609-3960  
 NC License No. F-0112  
 Engineers | Construction Managers | Planners | Scientists  
 www.rkk.com  
 Responsive People | Creative Solutions

8/17/19

# CROSS-SECTION LAYOUT: -Y19FLY-

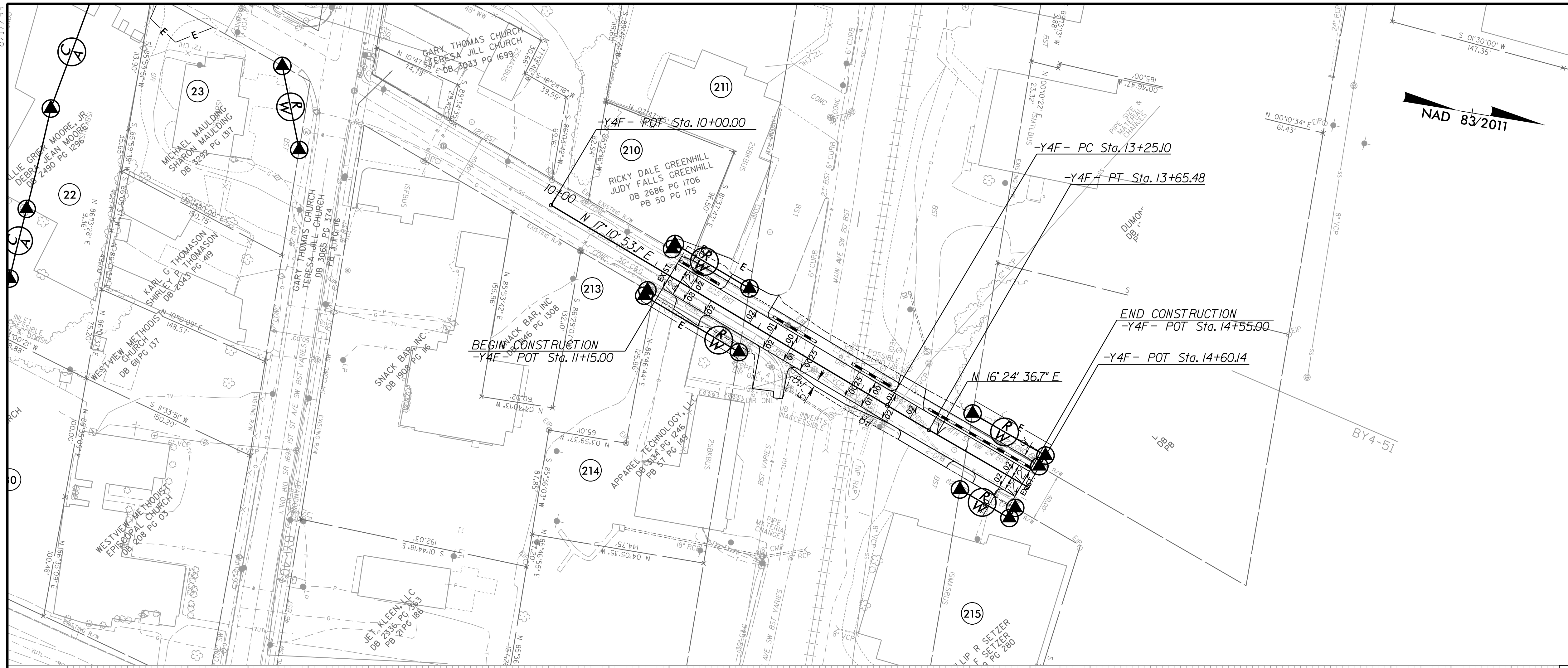
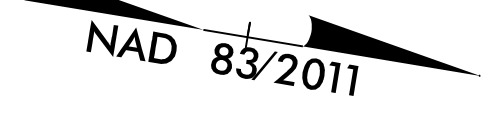
PROJECT REFERENCE NO. U-4700A	SHEET NO. 2B-2
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION	
<b>DOCUMENT NOT CONSIDERED FINAL</b> UNLESS ALL SIGNATURES COMPLETED	



F:\2019\Projects\U-4700A\rdw-psd\02B-2\_XSC-Layout.dgn

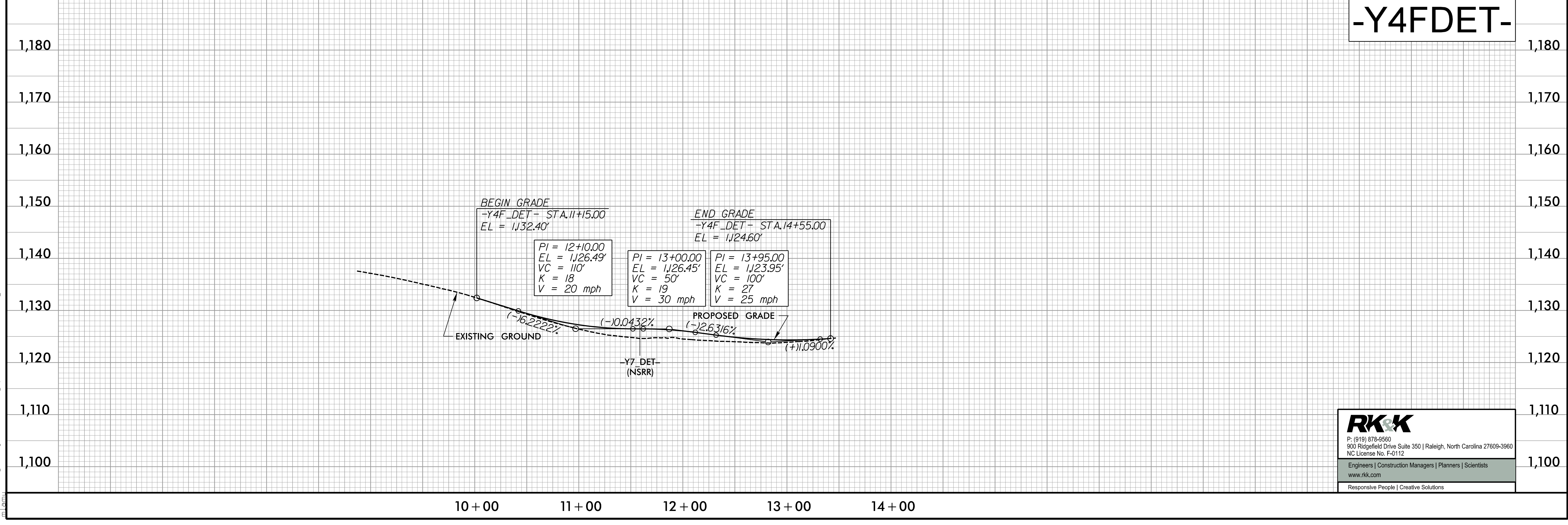
B.P. = BREAK POINT

**RK&K**  
 P: (919) 878-9560  
 900 Ridgely Drive Suite 350 | Raleigh, North Carolina 27609-3960  
 NC License No. F-0112  
 Engineers | Construction Managers | Planners | Scientists  
 www.rkk.com  
 Responsive People | Creative Solutions



**-Y4F-**  
 PI Sta 13+45.29  
 $\Delta = 0' 46' 16.4" (LT)$   
 $D = 1' 54' 35.5"$   
 $L = 40.38'$   
 $T = 20.19'$   
 $R = 3,000.00'$   
 $e = NC$   
 $Lr = 50'$   
 $V = 30 \text{ mph}$

# -Y4FDET-



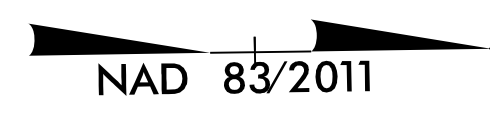
**RK&K**  
 P: (919) 878-9560  
 900 Ridgefield Drive Suite 350 | Raleigh, North Carolina 27609-3960  
 NC License No. F-0112  
 Engineers | Construction Managers | Planners | Scientists  
 www.rkk.com  
 Responsive People | Creative Solutions

8/17/19 8/28/2019 F:\33\Roadway\Pro\U4700A\_rdy\_psh02B-3\_Y4FDET.dgn

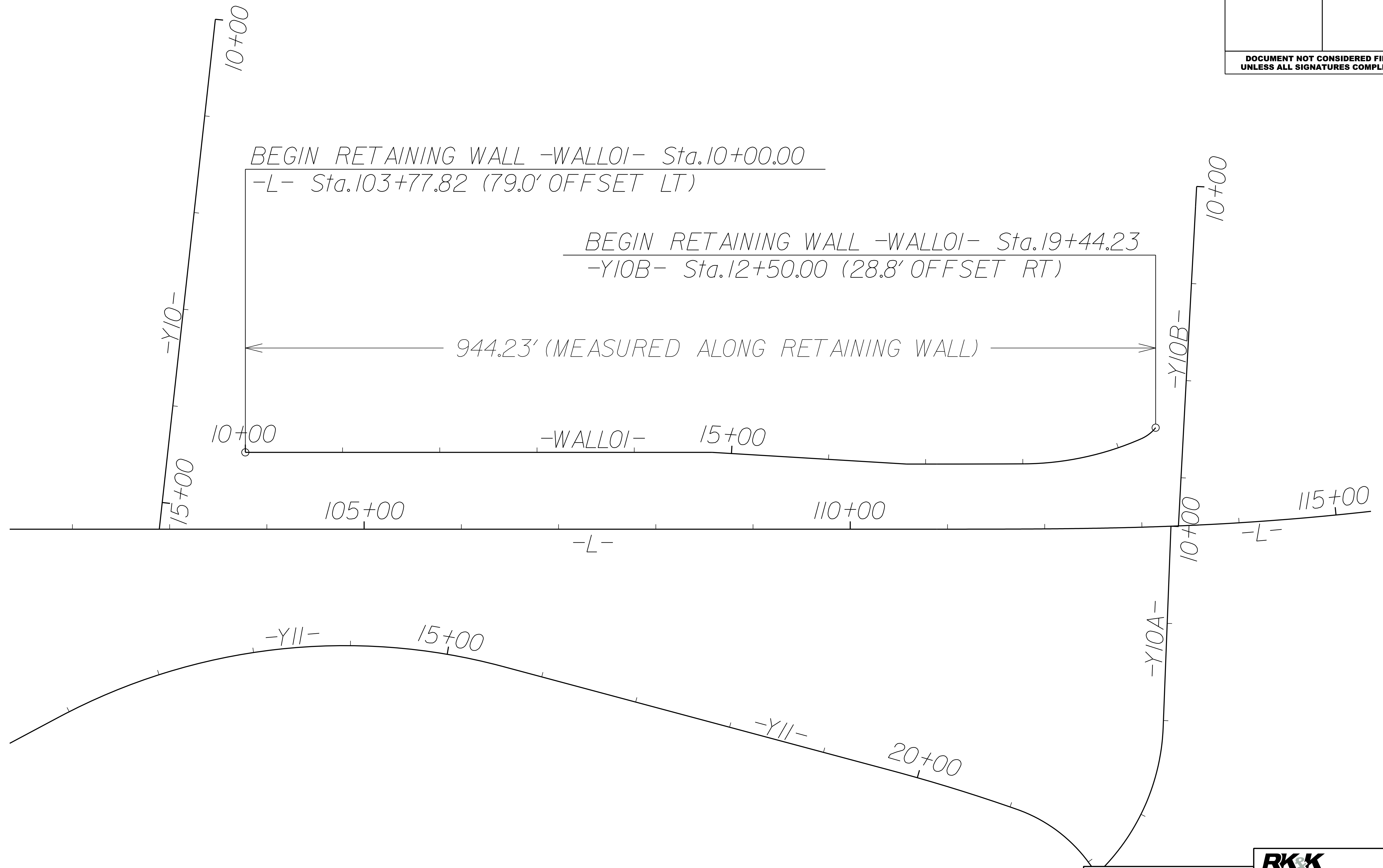


8/17/99

# RETAINING WALLS #1 DETAIL – LOCATION DETAIL



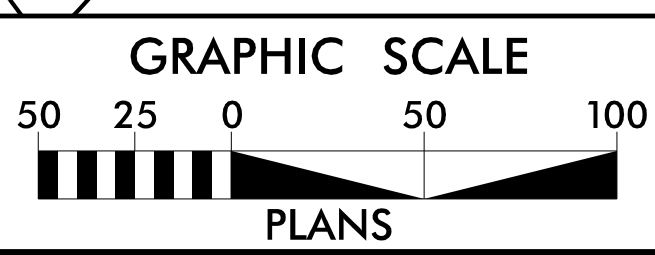
PROJECT REFERENCE NO. U-4700A	SHEET NO. 2B-4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION	
<b>DOCUMENT NOT CONSIDERED FINAL</b> UNLESS ALL SIGNATURES COMPLETED	



5/28/2019 R:\Roadway\Pro\4700a-rdy\_psh\02B-4.dgn

CURVED WALL NOTE: THE WALL ENVELOPE DOES NOT ACTUALLY DEPICT THE ACTUAL FACE OF THE WALL

FOR PLAN SEE SHTS. 10 & 11



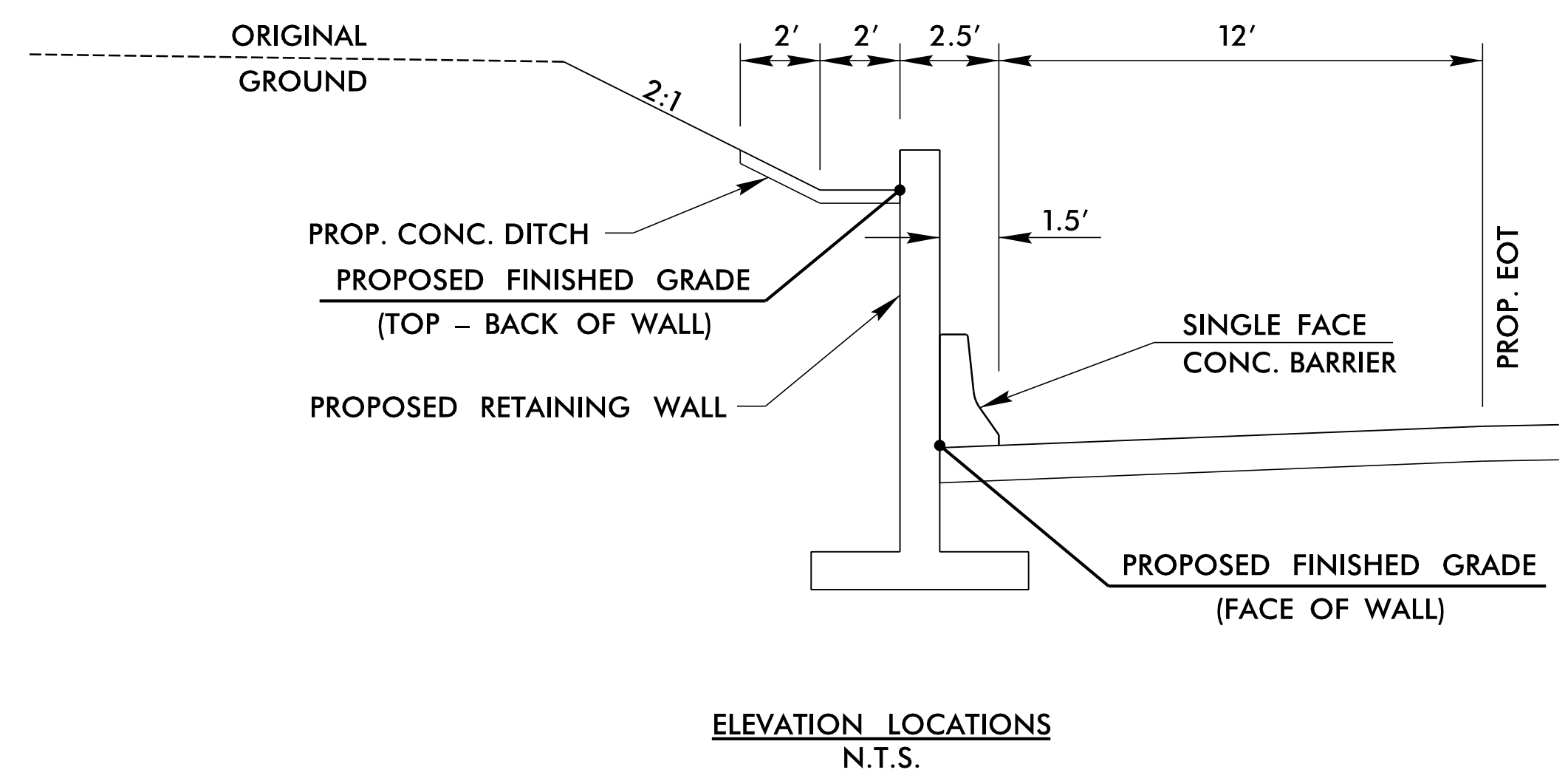
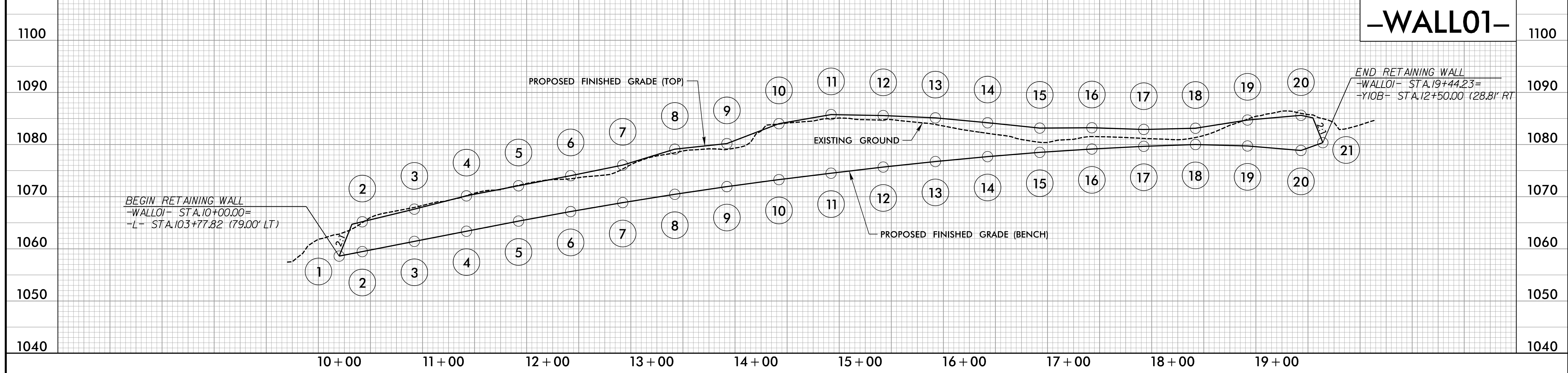
**RK&K**  
P: (919) 878-9560  
900 Ridgely Drive Suite 350 | Raleigh, North Carolina 27609-3960  
NC License No. F-0112  
www.rkk.com  
Engineers | Construction Managers | Planners | Scientists  
Responsive People | Creative Solutions

5/28/99

PROJECT REFERENCE NO. U-4700A	SHEET NO. 2B-5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION	

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

# RETAINING WALL #1 PROFILE DETAIL



POINT NO.	-WALL01-STATION	PROPOSED FINISHED GRADE (TOP)	PROPOSED FINISHED GRADE (BENCH)
1	10+00.00	1,058.61	1,058.61
2	10+22.18	1,065.20	1,059.48
3	10+72.18	1,067.62	1,061.43
4	11+22.18	1,070.17	1,063.38
5	11+72.18	1,072.10	1,065.32
6	12+22.18	1,074.03	1,067.16
7	12+72.18	1,076.07	1,068.87
8	13+22.18	1,079.12	1,070.46
9	13+72.18	1,080.19	1,071.93
10	14+22.18	1,084.01	1,073.28
11	14+72.18	1,085.75	1,074.51
12	15+22.25	1,085.57	1,075.68
13	15+72.34	1,085.12	1,076.75
14	16+22.43	1,084.18	1,077.69
15	16+72.52	1,083.16	1,078.51
16	17+22.53	1,083.23	1,079.15
17	17+72.37	1,082.90	1,079.66
18	18+22.01	1,083.13	1,080.01
19	18+71.95	1,084.70	1,079.73
20	19+23.29	1,085.60	1,078.86
21	19+44.23	1,080.36	1,080.36

5/28/2018  
 R:\Projects\2018\U-4700A\U-4700A-rd\5/28/18\2B-5.dgn  
 11:00 AM



5/28/99

# RETAINING WALL #2 PROFILE DETAIL

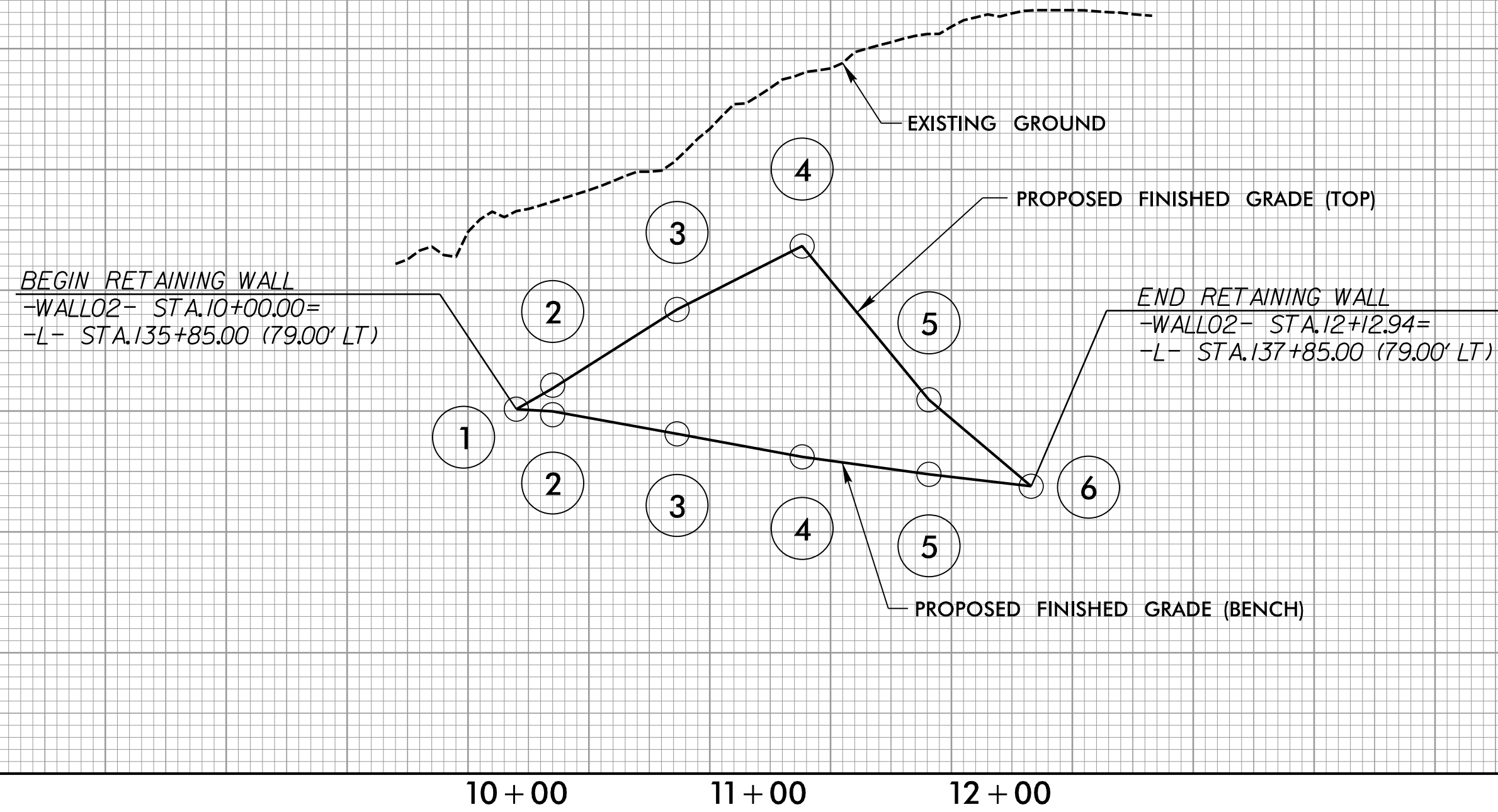
PROJECT REFERENCE NO. U-4700A	SHEET NO. 2B-7
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION	

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

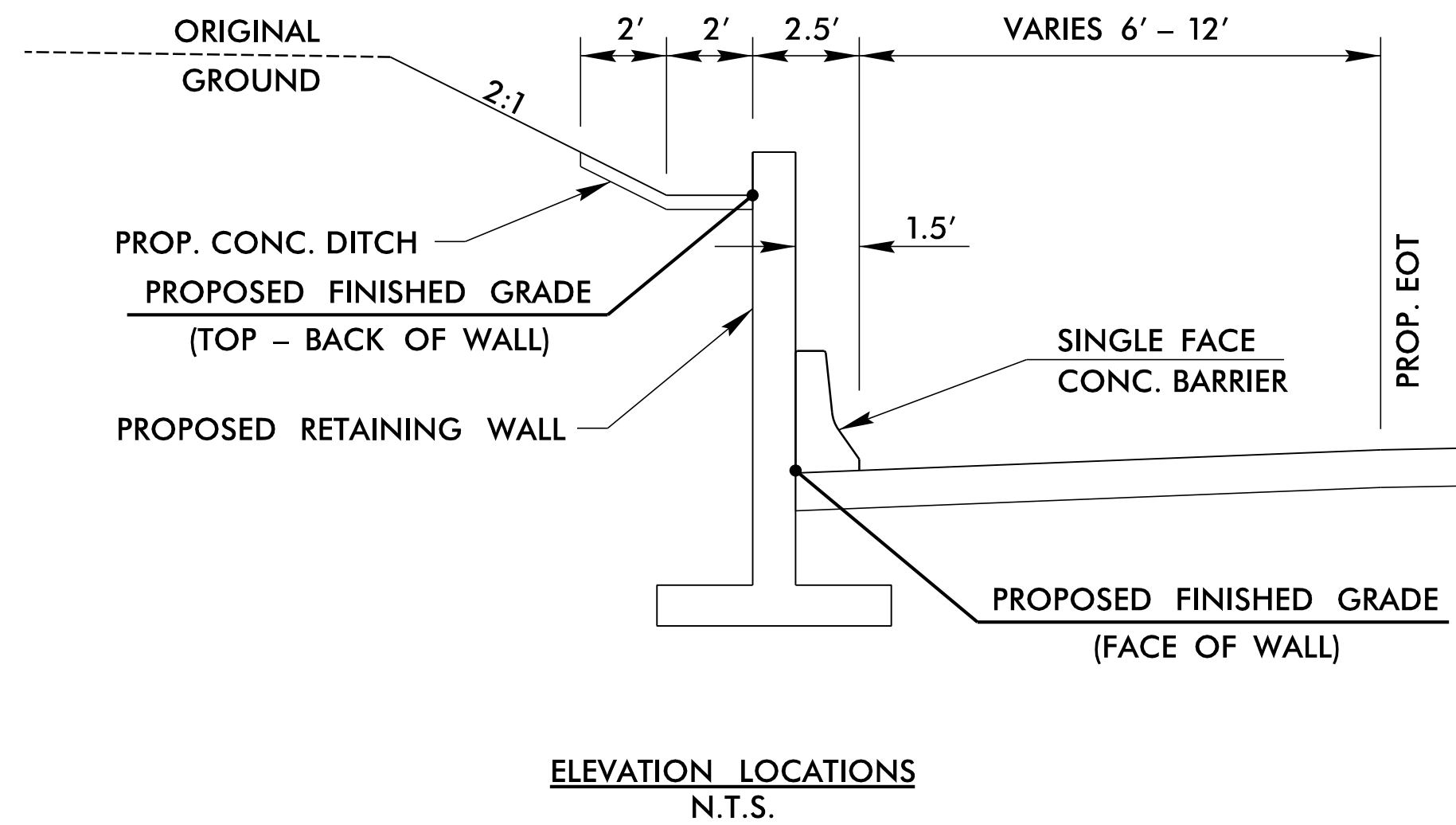
**-WALL02-**

1090  
1080  
1070  
1060  
1050  
1040  
1030  
1020  
1010  
1000

1060  
1050  
1040  
1030  
1020  
1010  
1000



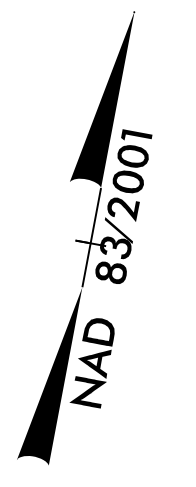
POINT NO.	-WALL02-STATION	PROPOSED FINISHED GRADE (TOP)	PROPOSED FINISHED GRADE (BENCH)
1	10+00.00	1,030.16	1,030.16
2	10+15.04	1,031.88	1,029.97
3	10+66.48	1,038.42	1,028.12
4	11+18.23	1,043.66	1,026.21
5	11+70.70	1,030.93	1,024.77
6	12+12.94	1,023.78	1,023.78



5/28/2018  
R:\Projects\2018\U47000a\_rdy\_esh\02B-7.dgn

8/17/99

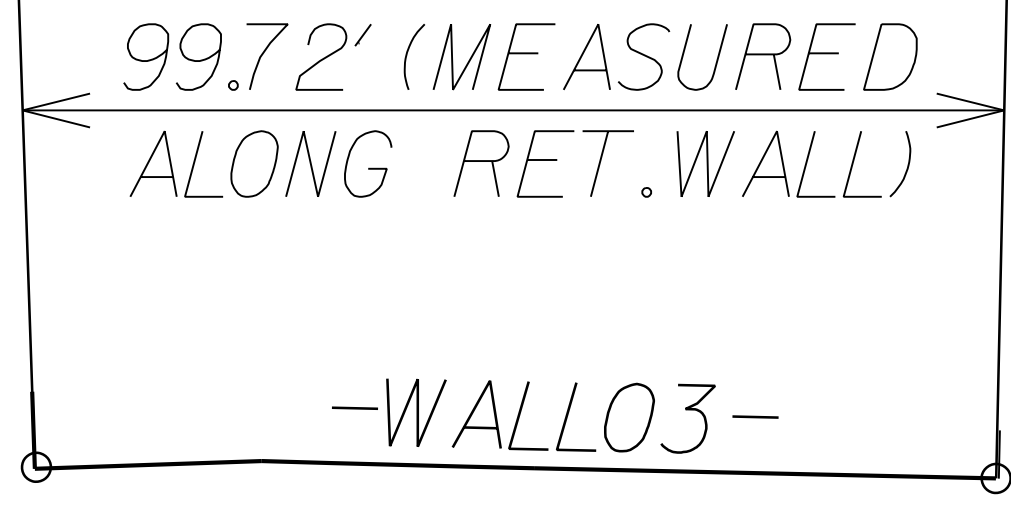
# RETAINING WALL #3 DETAIL – LOCATION DETAIL



PROJECT REFERENCE NO. <i>U-4700A</i>		SHEET NO. <i>2B-8</i>	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION			
<b>DOCUMENT NOT CONSIDERED FINAL</b> UNLESS ALL SIGNATURES COMPLETED			

*BEGIN RETAINING WALL -WALLO3- Sta.10+00.00  
-Y5B- Sta.21+50.00 (22.4' OFFSET LT)*

*END RETAINING WALL -WALLO3- Sta.10+99.72  
-Y5B- Sta.22+50.00 (24.0' OFFSET LT)*



5/28/2019  
R:\Roadway\Pro\4700\0a-rdy\_psh\02B-8.dgn

CURVED WALL NOTE: THE WALL ENVELOPE DOES NOT ACTUALLY DEPICT THE ACTUAL FACE OF THE WALL

FOR PLAN SEE SHT. 22

GRAPHIC SCALE

PLANS

**RK&K**

P: (919) 878-9560  
900 Ridgely Drive Suite 350 | Raleigh, North Carolina 27609-3960  
NC License No. F-0112

Engineers | Construction Managers | Planners | Scientists  
www.rkk.com

Responsive People | Creative Solutions

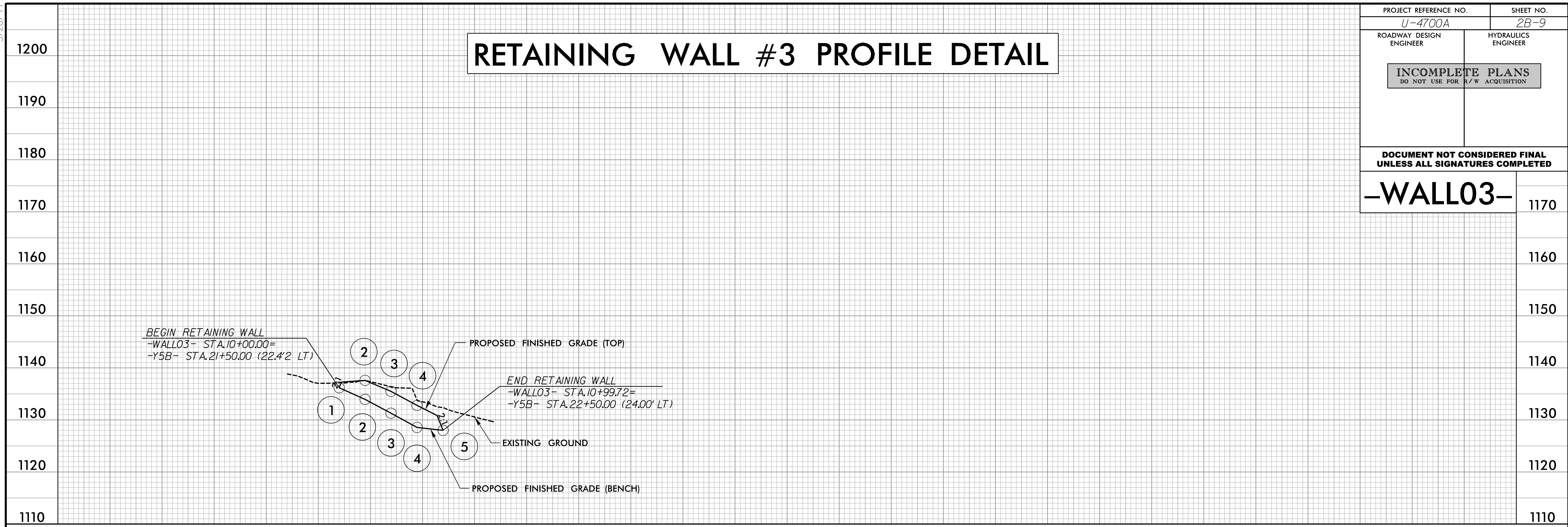
5/28/99

PROJECT REFERENCE NO. U-4700A	SHEET NO. 2B-9
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION	

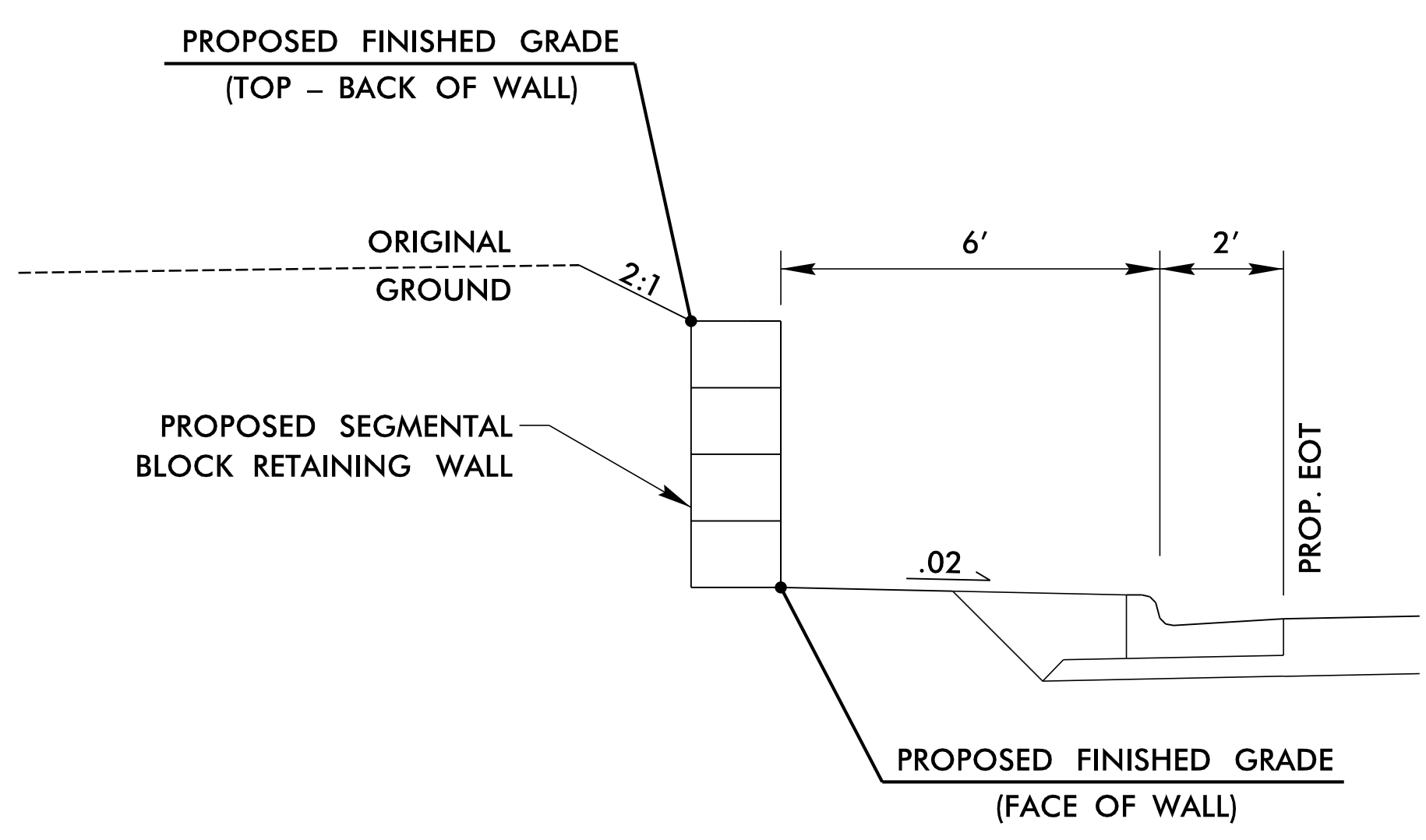
**DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED**

# RETAINING WALL #3 PROFILE DETAIL

**-WALLO3-** 1170



POINT NO.	-WALLO3- STATION	PROPOSED FINISHED GRADE (TOP)	PROPOSED FINISHED GRADE (BENCH)
1	10+00.00	1,136.19	1,136.19
2	10+24.90	1,137.61	1,133.95
3	10+49.74	1,135.50	1,131.30
4	10+74.72	1,132.80	1,128.56
5	10+99.72	1,128.00	1,128.00

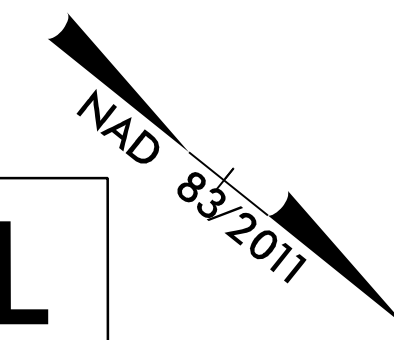


**ELEVATION LOCATIONS**  
N.T.S.

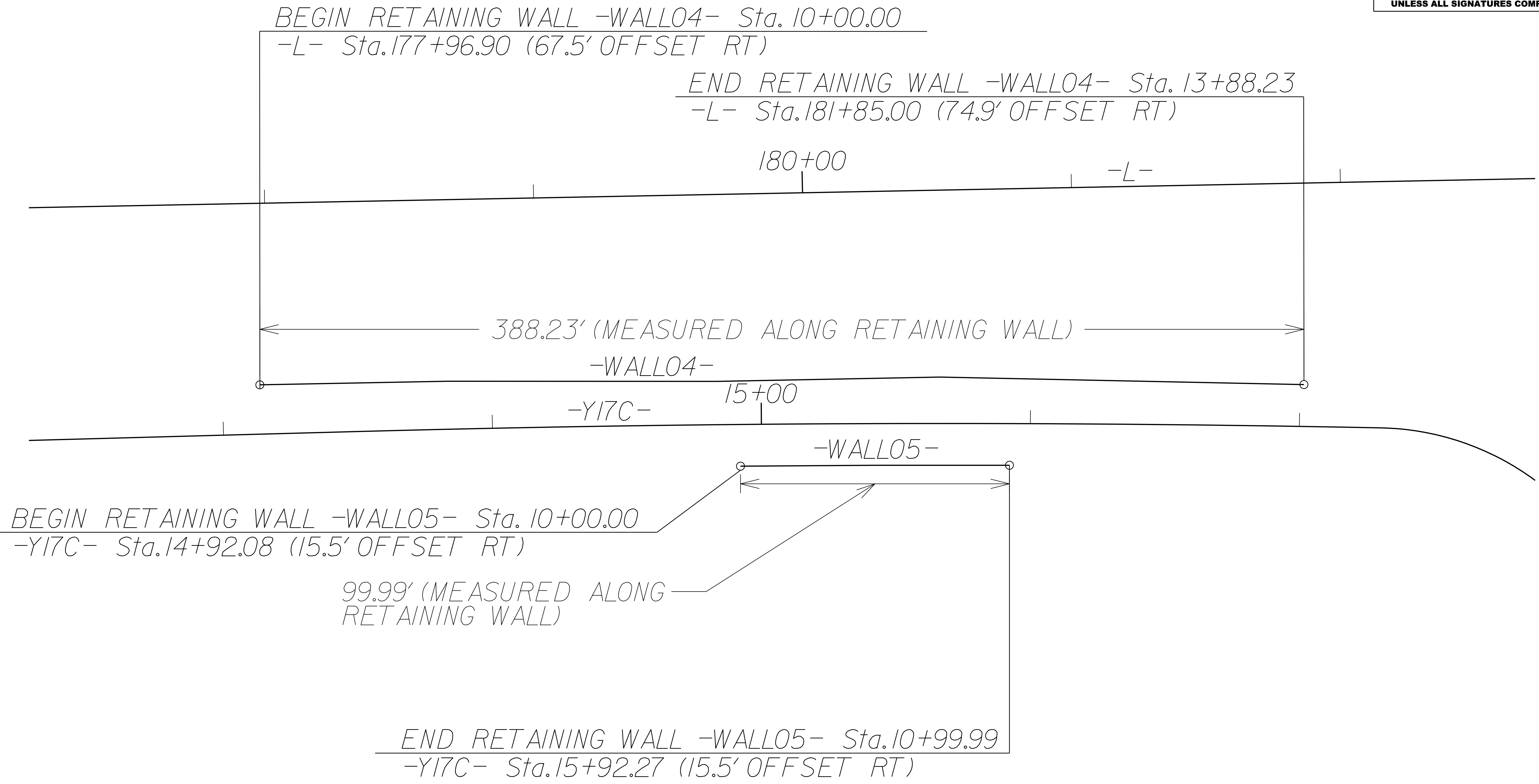
F:\2018\Projects\U47000a\_rdy\_esh02B-9.dgn  
 5/28/2018 10:00 AM

8/17/99

PROJECT REFERENCE NO. <i>U-4700A</i>	SHEET NO. <i>2B-10</i>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION	
<b>DOCUMENT NOT CONSIDERED FINAL</b> UNLESS ALL SIGNATURES COMPLETED	

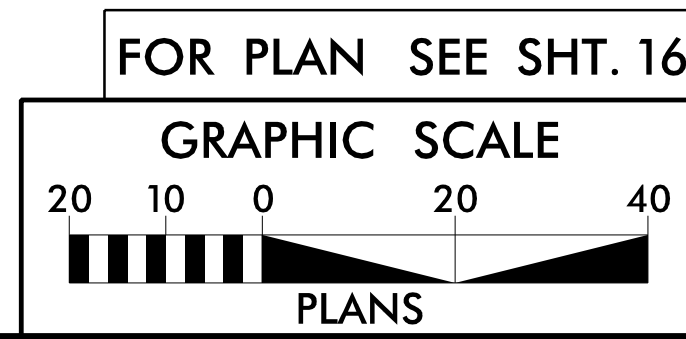


# RETAINING WALLS #4 & #5 DETAIL – LOCATION DETAIL



5/28/2019  
R:\Roadway\Pro\4700a\_rdy\_psh02B-10.dgn

CURVED WALL NOTE: THE WALL ENVELOPE DOES NOT ACTUALLY DEPICT THE ACTUAL FACE OF THE WALL



**RK&K**

P: (919) 878-9560  
 900 Ridgely Drive Suite 350 | Raleigh, North Carolina 27609-3960  
 NC License No. F-0112

Engineers | Construction Managers | Planners | Scientists  
 www.rkk.com

Responsive People | Creative Solutions

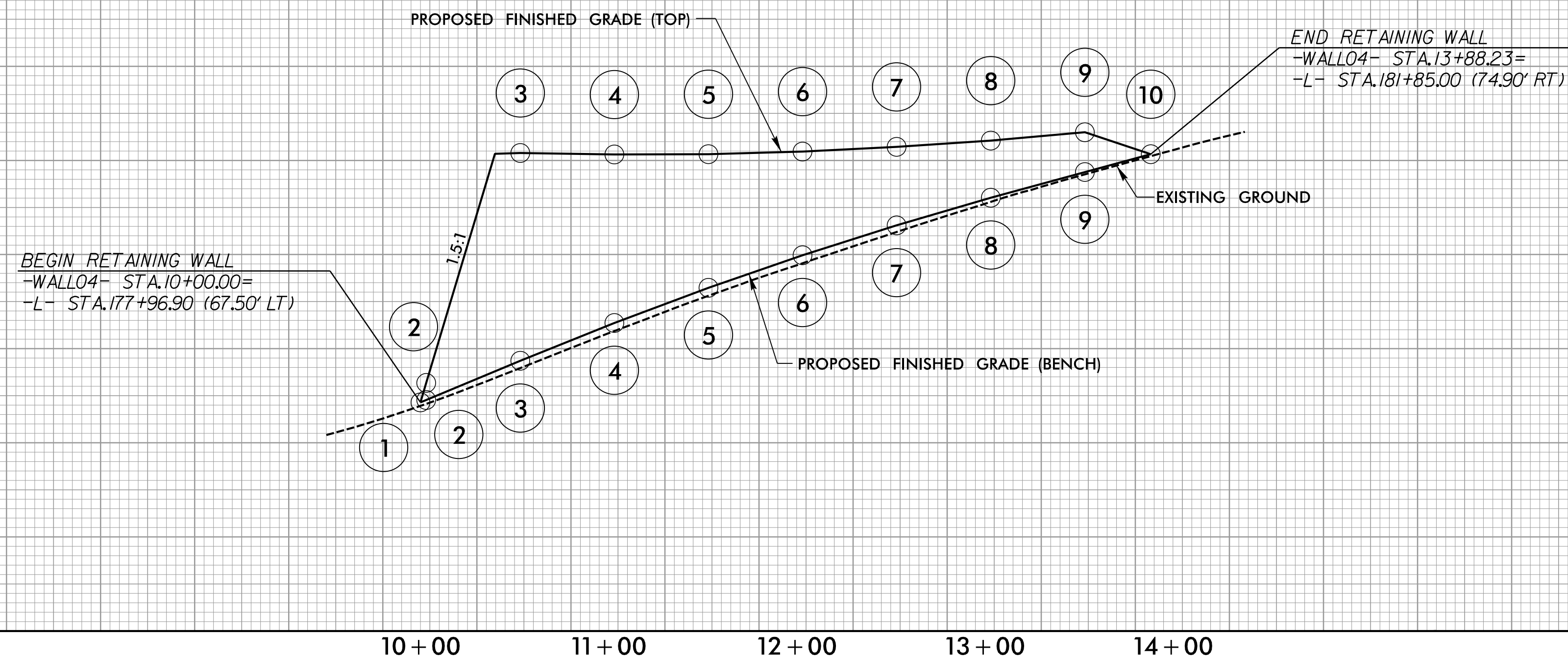
5/28/99

PROJECT REFERENCE NO. U-4700A	SHEET NO. 2B-11
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION	

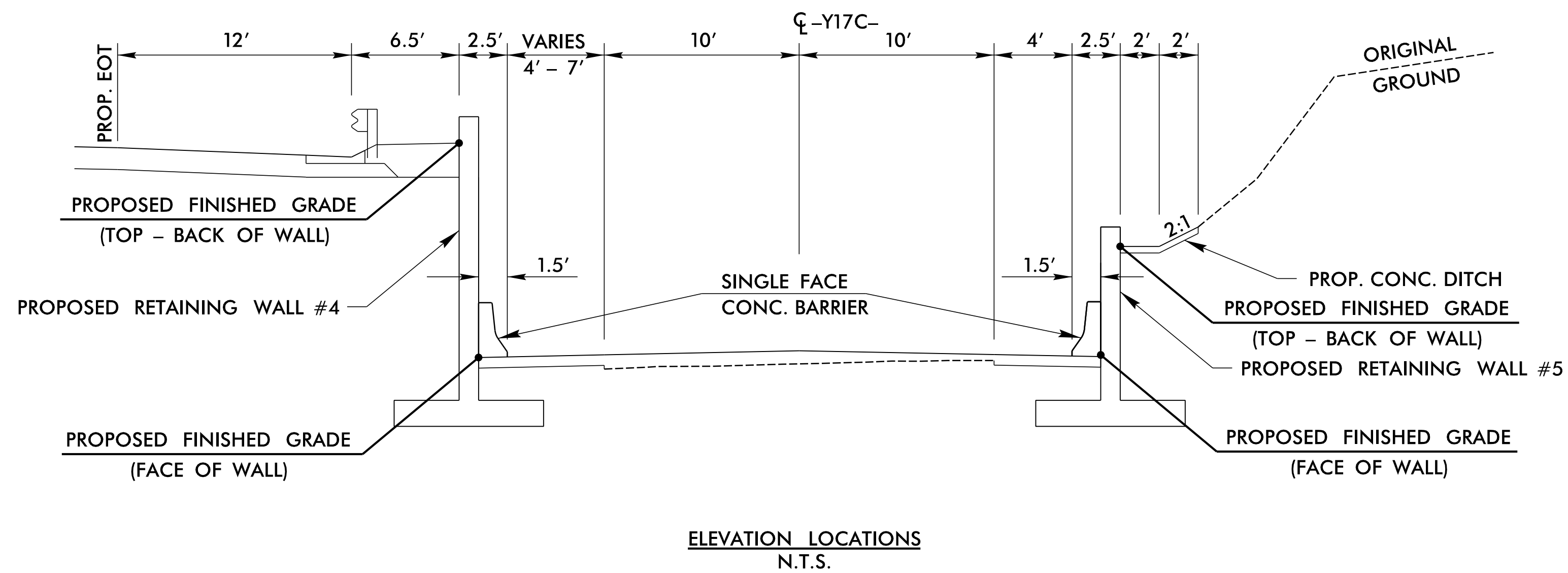
**DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED**

# RETAINING WALL #4 PROFILE DETAIL

1030  
1020  
1010  
1000  
990  
980  
970  
960  
950  
940



**-WALL04-** 1000  
990  
980  
970  
960  
950  
940



POINT NO.	-WALL04-STATION	PROPOSED FINISHED GRADE (TOP)	PROPOSED FINISHED GRADE (BENCH)
1	10+00.00	964.29	964.29
2	10+03.10	966.36	964.55
3	10+53.10	990.79	968.72
4	11+03.11	990.63	972.73
5	11+53.12	990.66	976.47
6	12+03.12	990.94	979.93
7	12+53.12	991.44	983.10
8	13+03.16	992.11	986.04
9	13+53.20	992.99	988.77
10	13+88.23	990.66	990.66

R:\2018\2018\Projects\U47000a\_rdy\_esh02B-11.dgn

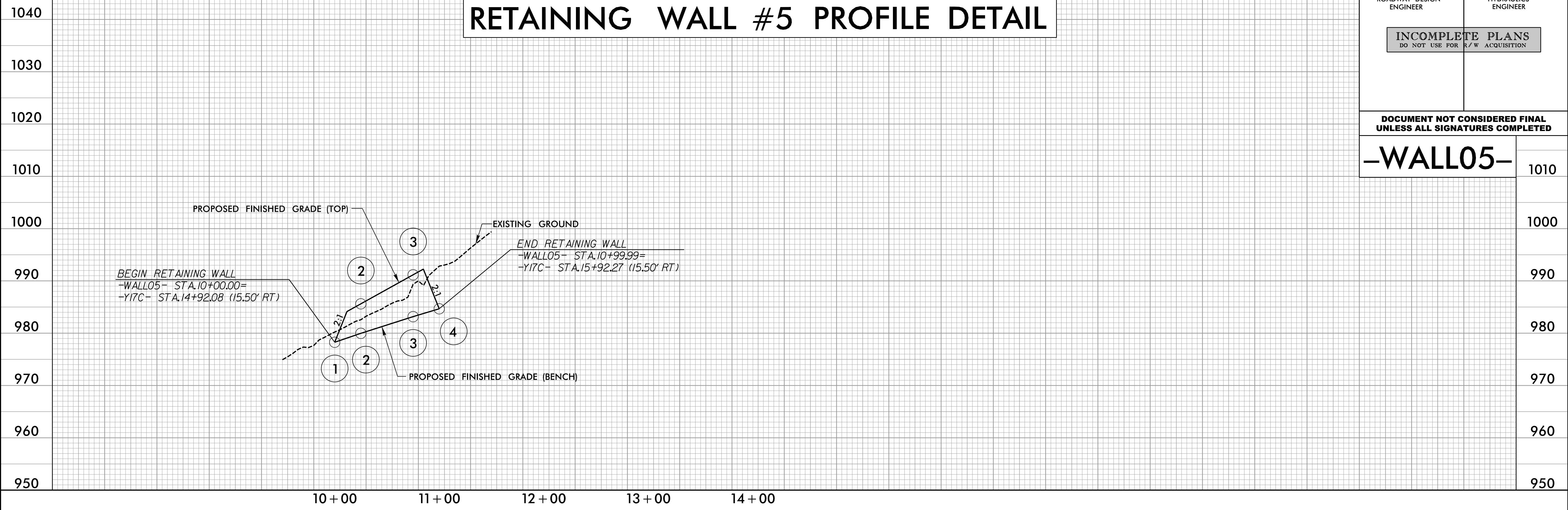


5/28/99

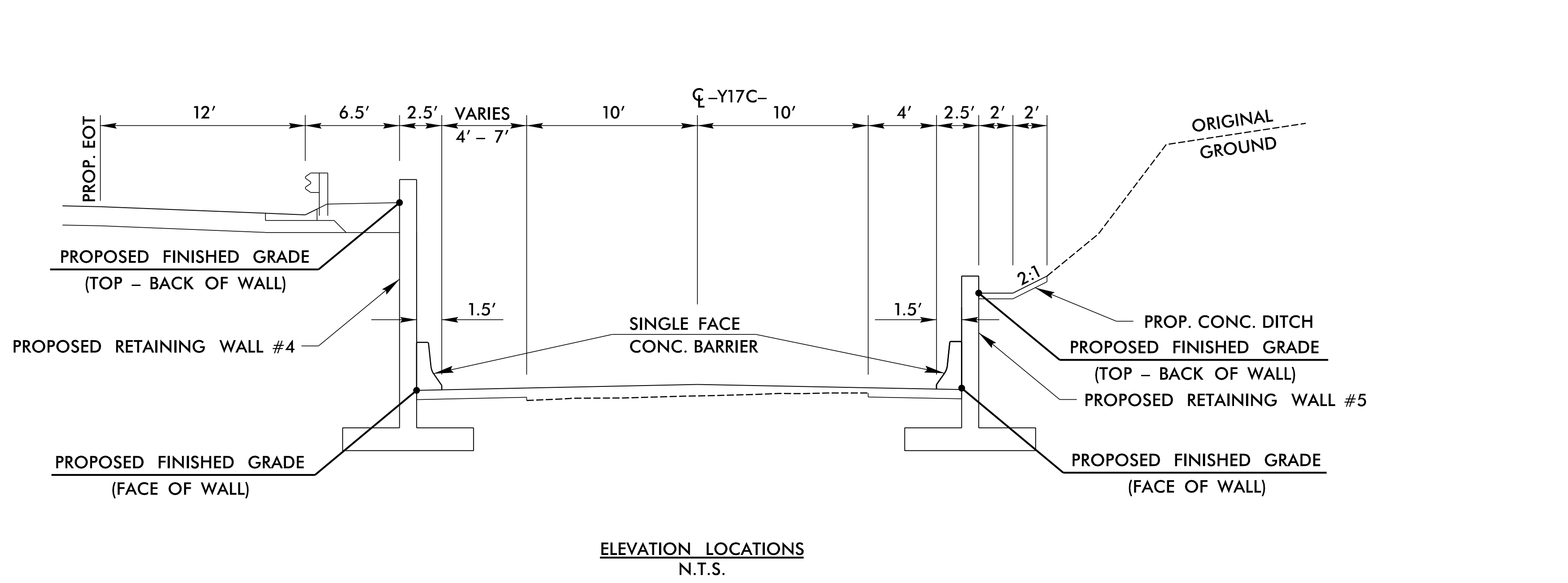
PROJECT REFERENCE NO. U-4700A	SHEET NO. 2B-12
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

# RETAINING WALL #5 PROFILE DETAIL



**-WALL05-**



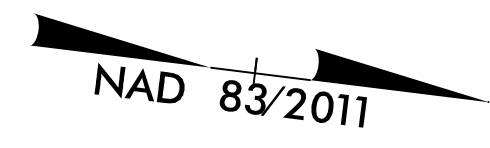
POINT NO.	-WALL05-STATION	PROPOSED FINISHED GRADE (TOP)	PROPOSED FINISHED GRADE (BENCH)
1	10+00.00	978.27	978.27
2	10+25.02	985.62	979.97
3	10+75.02	991.17	983.17
4	10+99.99	984.67	984.67

ELEVATION LOCATIONS  
N.T.S.

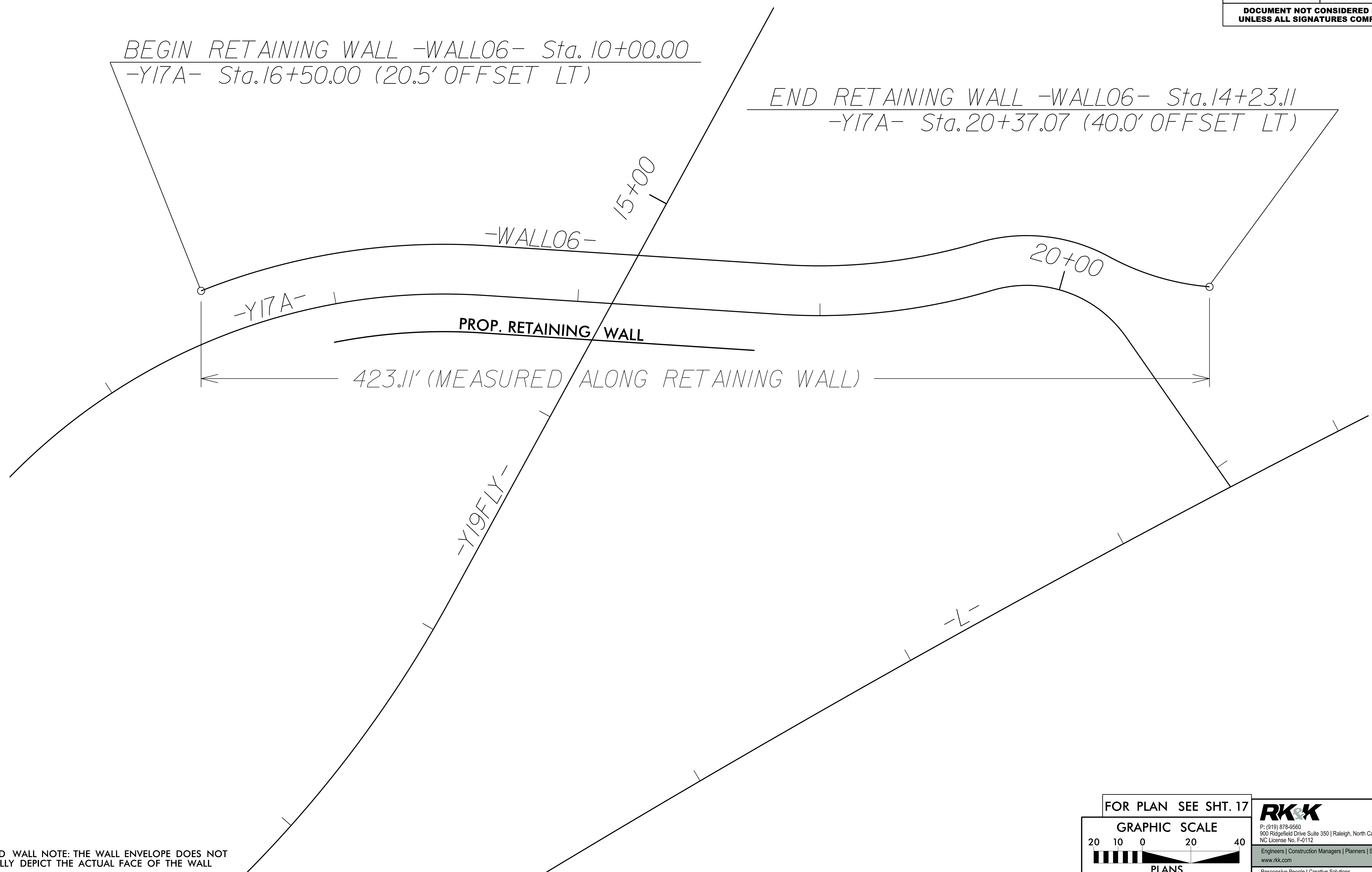
5/28/2018  
 R:\Projects\2018\U-4700A\U-4700A-rd\esh02B-12.dgn  
 11:00 AM

8/17/99

PROJECT REFERENCE NO. U-4700A		SHEET NO. 2B-13	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION			
<b>DOCUMENT NOT CONSIDERED FINAL</b> UNLESS ALL SIGNATURES COMPLETED			



# RETAINING WALL #6 DETAIL – LOCATION DETAIL



5/28/2019 R:\Roadway\Pro\4700\psh\psh02B-13.dgn

FOR PLAN SEE SHT. 17

**GRAPHIC SCALE**

20 10 0 20 40

PLANS

**RK&K**

P: (919) 878-9560  
900 Ridgely Drive Suite 350 | Raleigh, North Carolina 27609-3960  
NC License No. F-0112

Engineers | Construction Managers | Planners | Scientists  
www.rkk.com

Responsive People | Creative Solutions

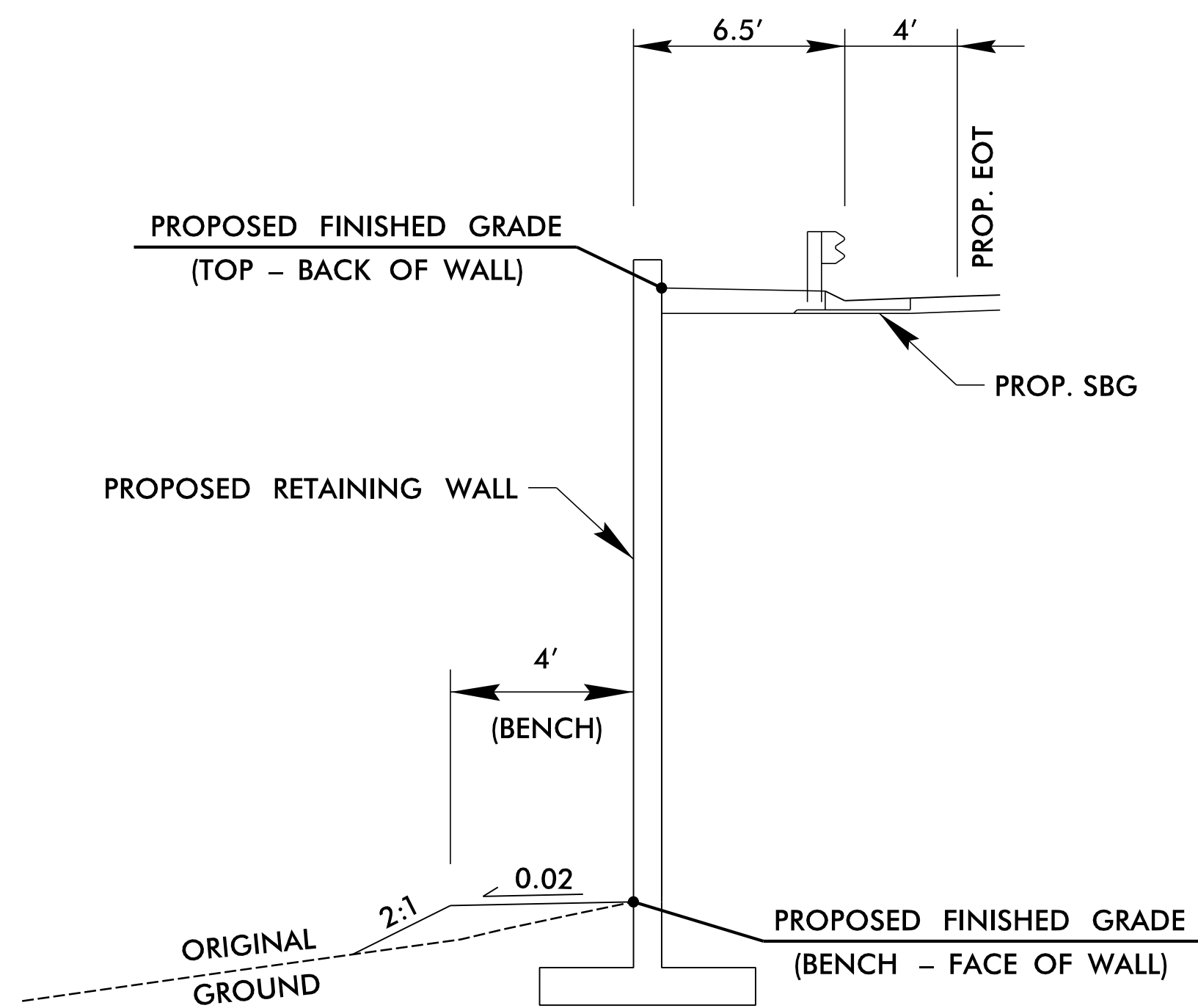
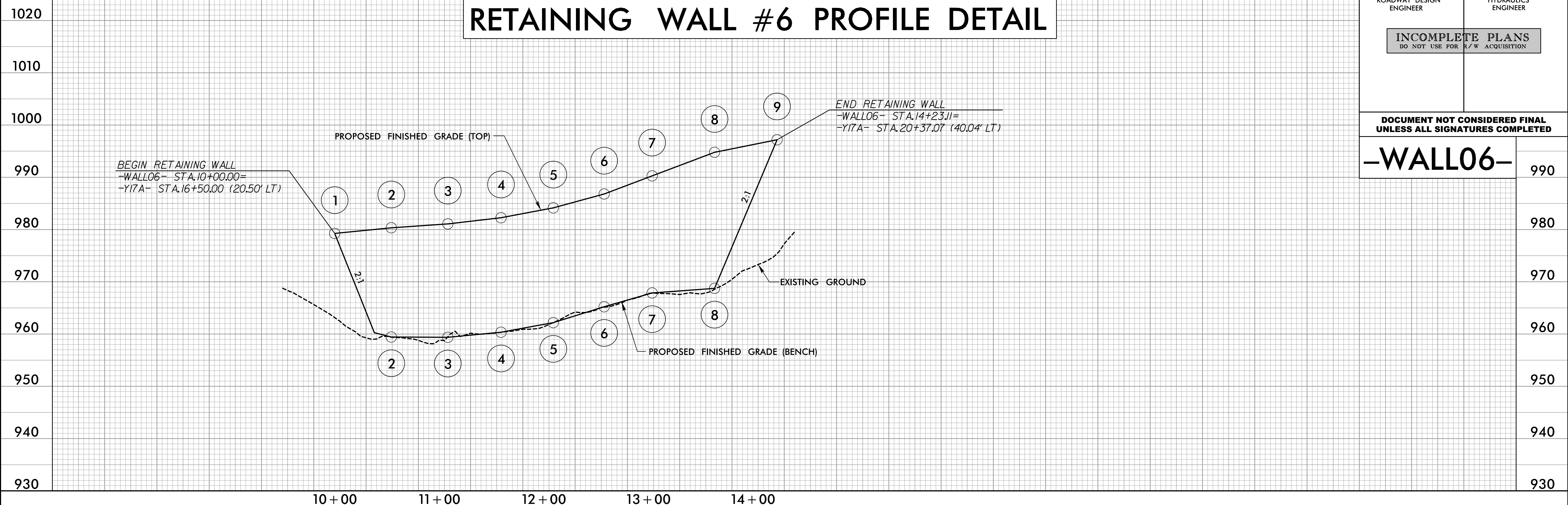
5/28/99

PROJECT REFERENCE NO. U-4700A	SHEET NO. 2B-14
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION	

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

**-WALL06-**

# RETAINING WALL #6 PROFILE DETAIL



POINT NO.	-WALL06-STATION	PROPOSED FINISHED GRADE (TOP)	PROPOSED FINISHED GRADE (BENCH)
1	10+00.00	979.26	979.26
2	10+54.15	980.32	959.44
3	11+08.20	981.08	959.38
4	11+59.09	982.26	960.35
5	12+09.09	984.15	962.19
6	12+57.74	986.81	965.24
7	13+03.64	990.28	967.87
8	13+63.34	994.78	968.74
9	14+23.11	997.18	997.18

ELEVATION LOCATIONS  
N.T.S.

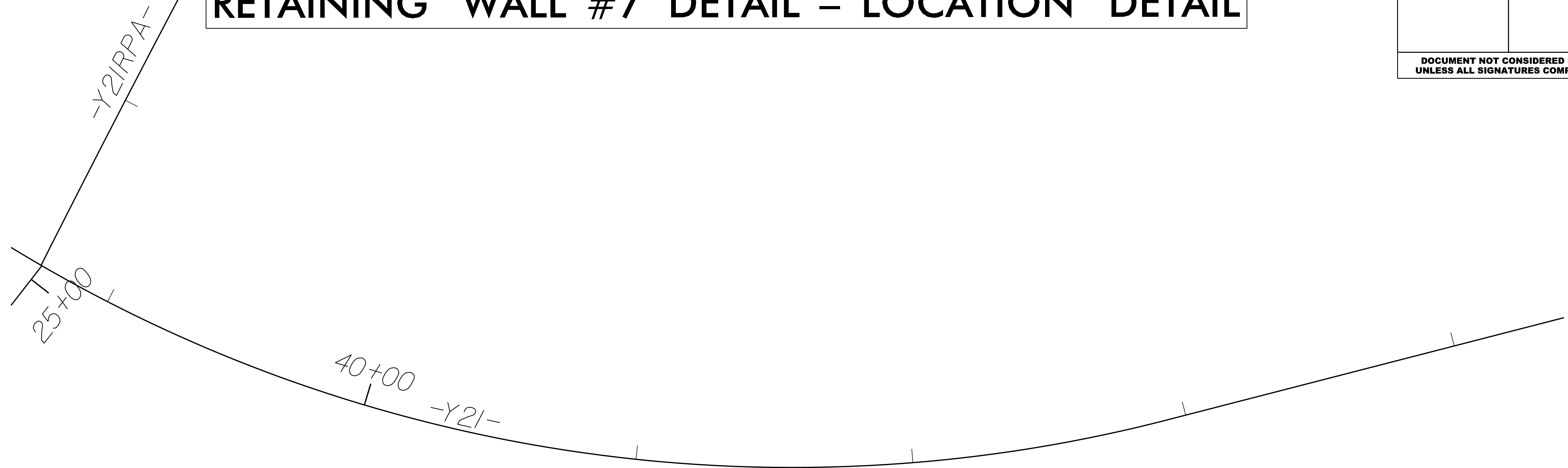
5/28/2018  
 R:\Projects\2018\U-4700A\Proj\U4700A\_rdy\_esh02B-14.dgn  
 11:00 AM

8/17/99

PROJECT REFERENCE NO. U-4700A	SHEET NO. 2B-15
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION	
<b>DOCUMENT NOT CONSIDERED FINAL</b> UNLESS ALL SIGNATURES COMPLETED	



# RETAINING WALL #7 DETAIL – LOCATION DETAIL



349.27' (MEASURED ALONG RETAINING WALL)

-WALLO7-

END RETAINING WALL -WALLO7- Sta. 13+49.27  
-Y21- Sta. 43+20.80 (52.5' OFFSET RT)

BEGIN RETAINING WALL -WALLO7- Sta. 10+00.00  
-Y21- Sta. 40+00.00 (52.8' OFFSET RT)

5/28/2019 R:\Roadway\Pro\4700a\_rdy\_psh02B-15.dgn

CURVED WALL NOTE: THE WALL ENVELOPE DOES NOT ACTUALLY DEPICT THE ACTUAL FACE OF THE WALL

FOR PLAN SEE SHT. 18

**GRAPHIC SCALE**

20 10 0 20 40

PLANS

**RK&K**

P: (919) 878-9560  
900 Ridgely Drive Suite 350 | Raleigh, North Carolina 27609-3960  
NC License No. F-0112

Engineers | Construction Managers | Planners | Scientists  
www.rkk.com

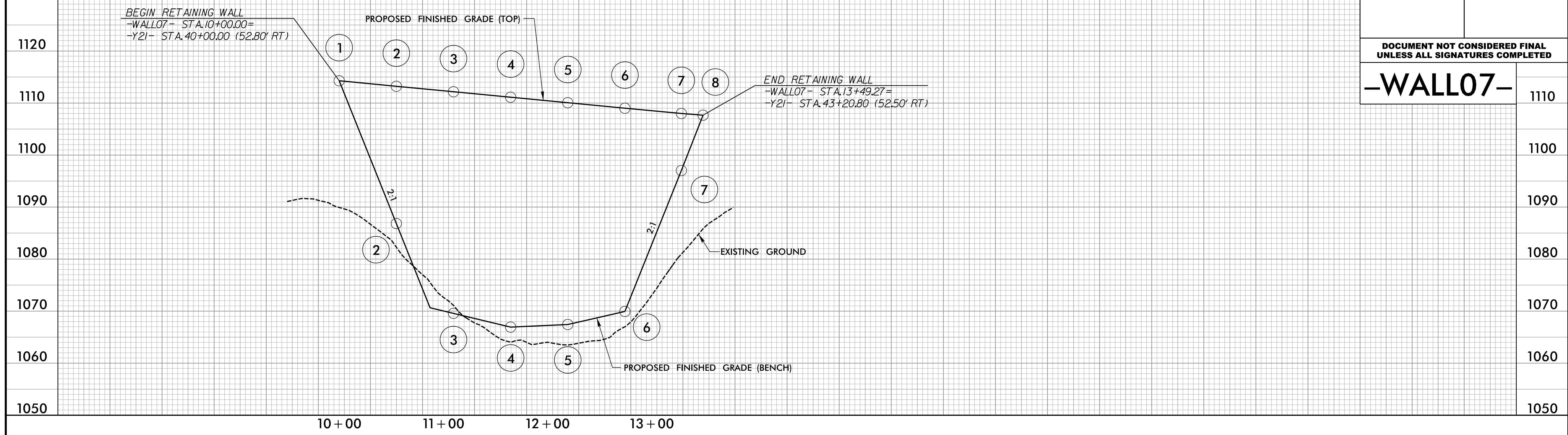
Responsive People | Creative Solutions

5/28/99

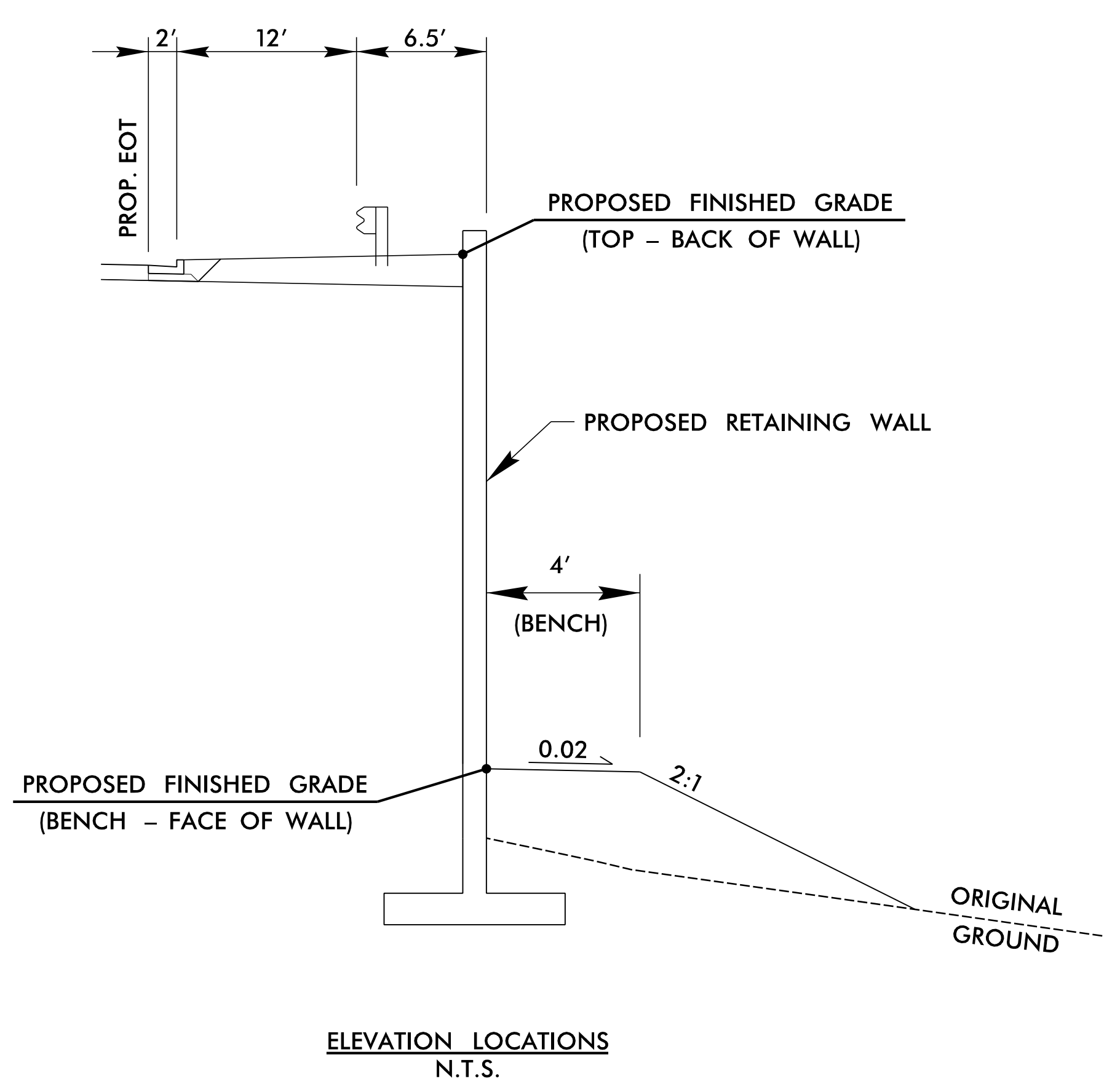
PROJECT REFERENCE NO. U-4700A	SHEET NO. 2B-16
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION	

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

# RETAINING WALL #7 PROFILE DETAIL



**-WALL07-**



POINT NO.	-WALL07- STATION	PROPOSED FINISHED GRADE (TOP)	PROPOSED FINISHED GRADE (BENCH)
1	10+00.00	1,114.28	1,114.28
2	10+54.88	1,113.22	1,086.84
3	11+09.73	1,112.17	1,069.57
4	11+64.59	1,111.12	1,066.94
5	12+19.45	1,110.07	1,067.44
6	12+74.31	1,109.00	1,069.94
7	13+28.48	1,107.99	1,097.03
8	13+49.27	1,107.67	1,107.67

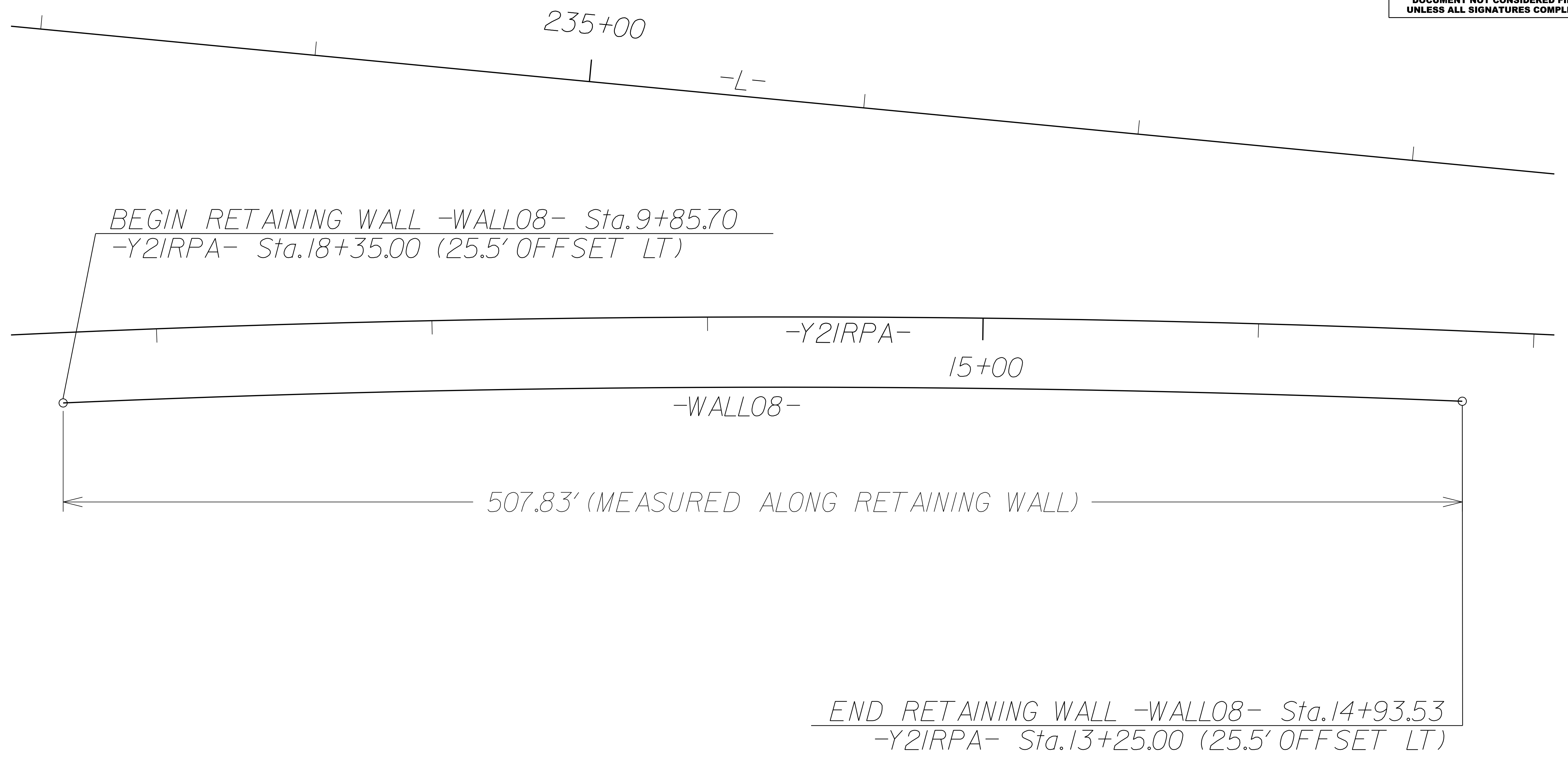
5/28/2018  
R:\Projects\2018\U-4700A\Proj\U4700A\_rdy\_esh02B-16.dgn

8/17/99

PROJECT REFERENCE NO. U-4700A	SHEET NO. 2B-17
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION	
<b>DOCUMENT NOT CONSIDERED FINAL</b> UNLESS ALL SIGNATURES COMPLETED	



# RETAINING WALL #8 DETAIL – LOCATION DETAIL



5/28/2019 R:\Roadway\Pro\4700a-rdy\_psh02B-17.dgn

CURVED WALL NOTE: THE WALL ENVELOPE DOES NOT ACTUALLY DEPICT THE ACTUAL FACE OF THE WALL

FOR PLAN SEE SHT. 18

**GRAPHIC SCALE**

20 10 0 20 40

PLANS

**RK&K**

P: (919) 878-9560  
900 Ridgely Drive Suite 350 | Raleigh, North Carolina 27609-3960  
NC License No. F-0112

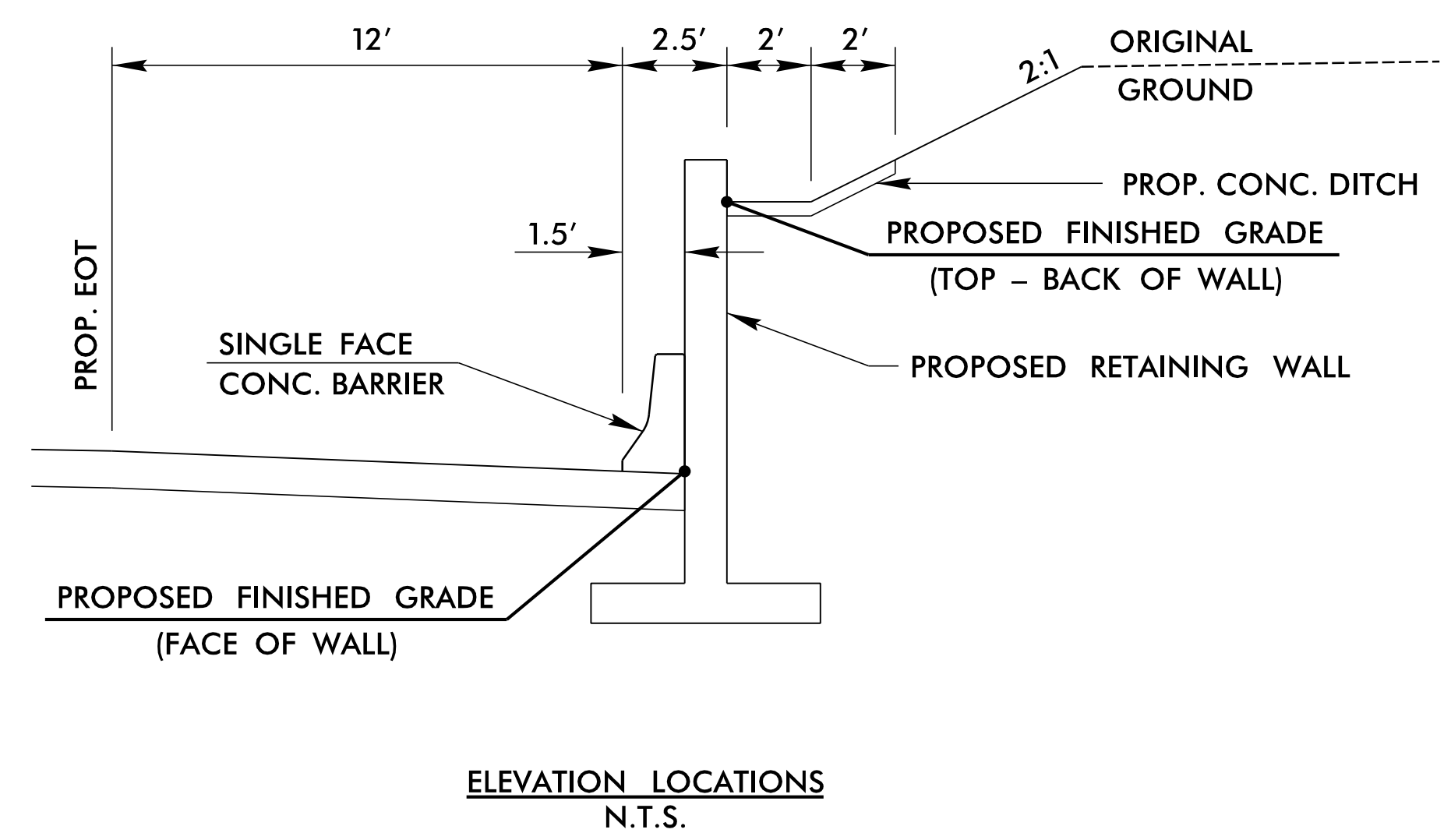
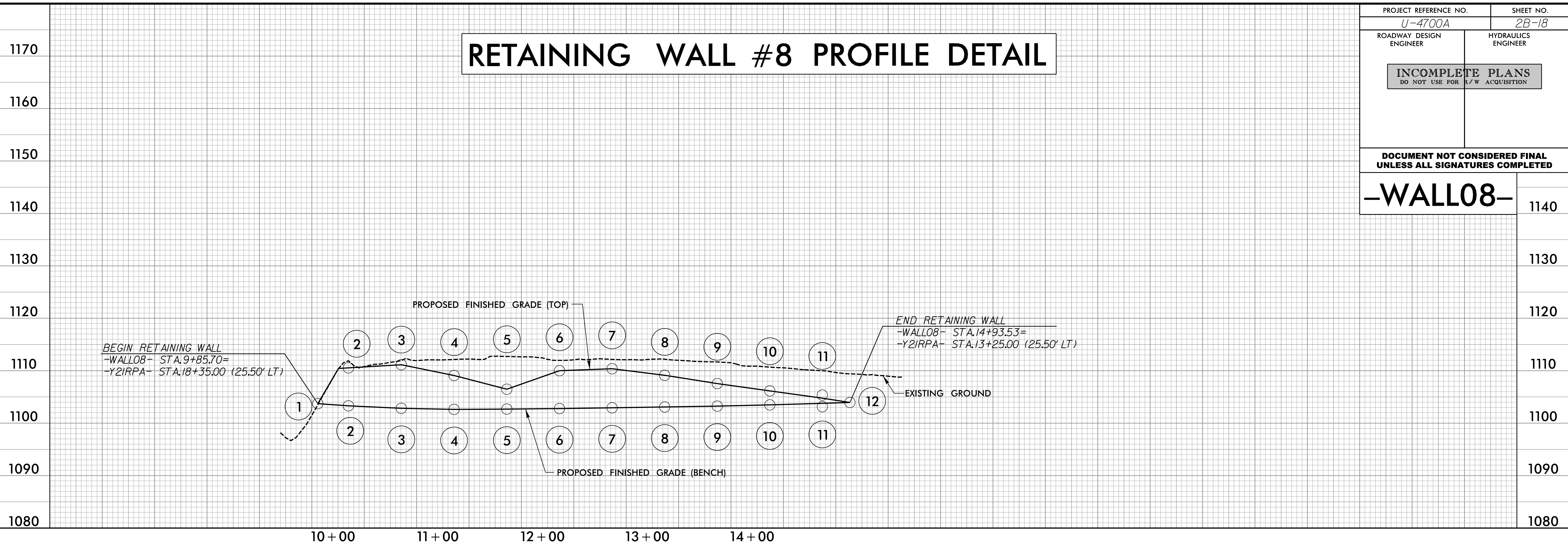
Engineers | Construction Managers | Planners | Scientists  
www.rkk.com

Responsive People | Creative Solutions

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

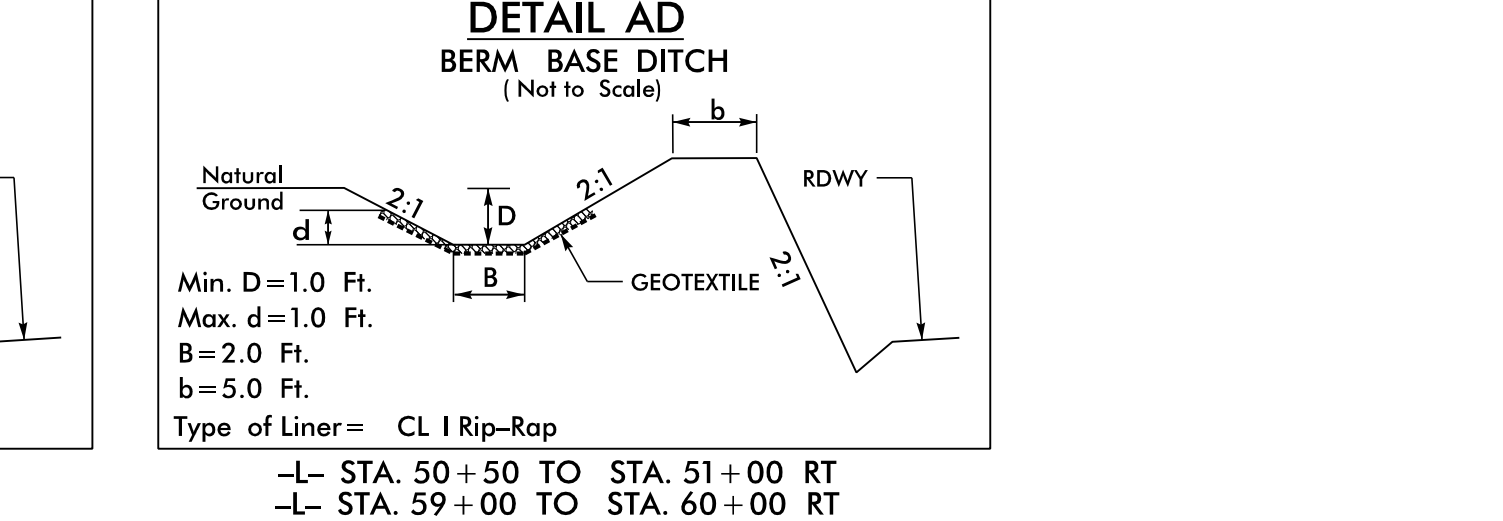
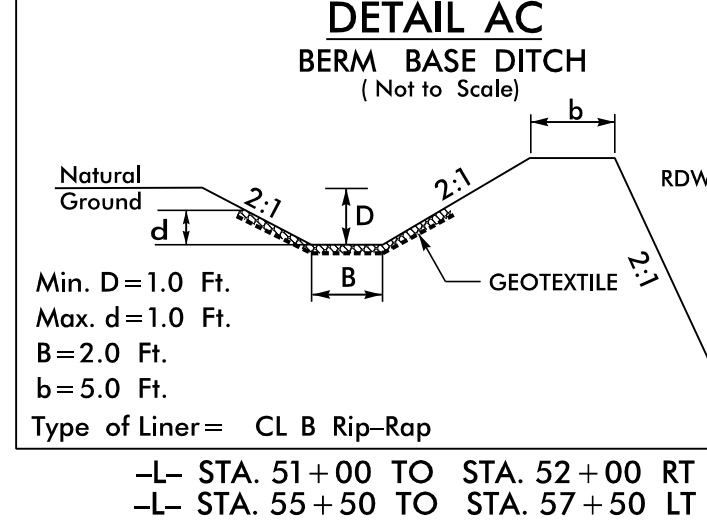
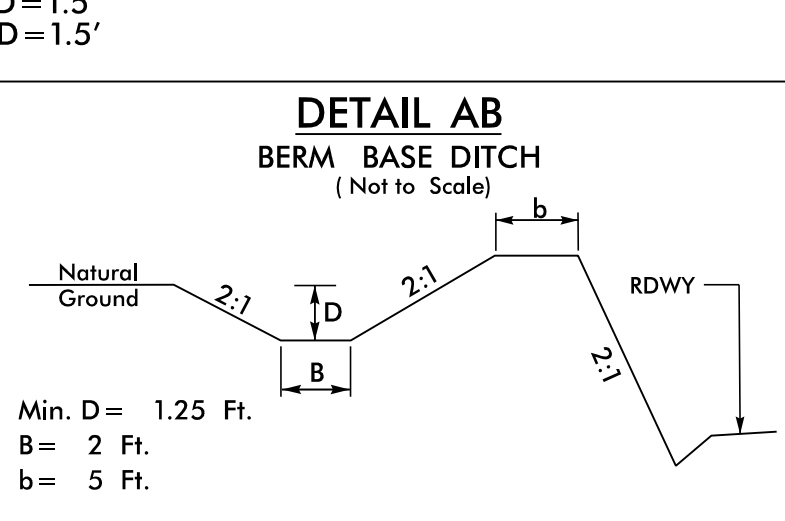
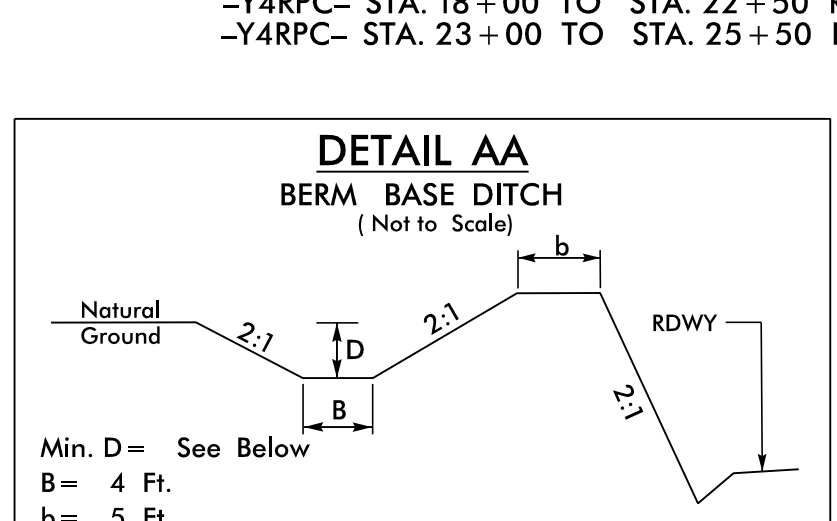
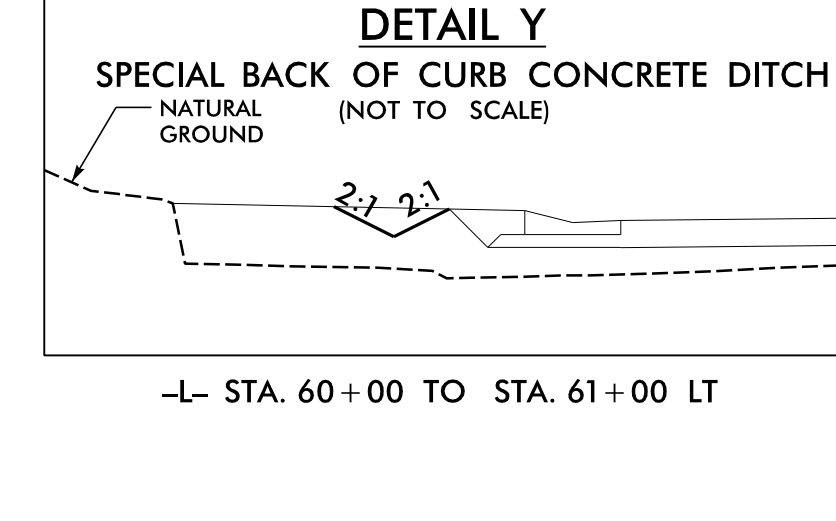
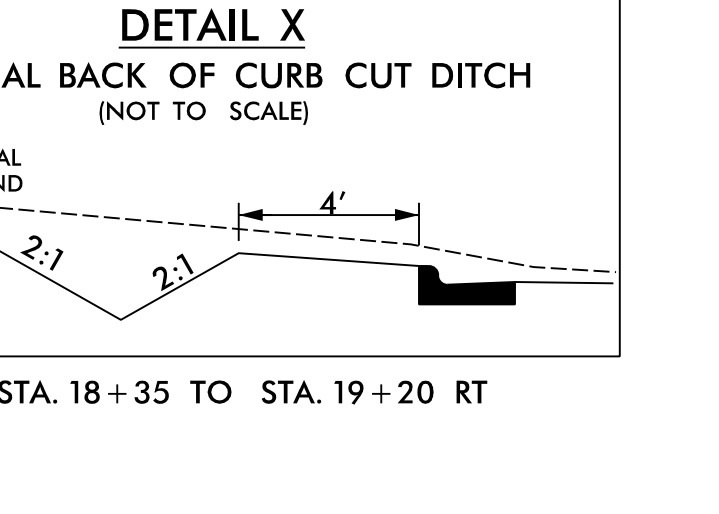
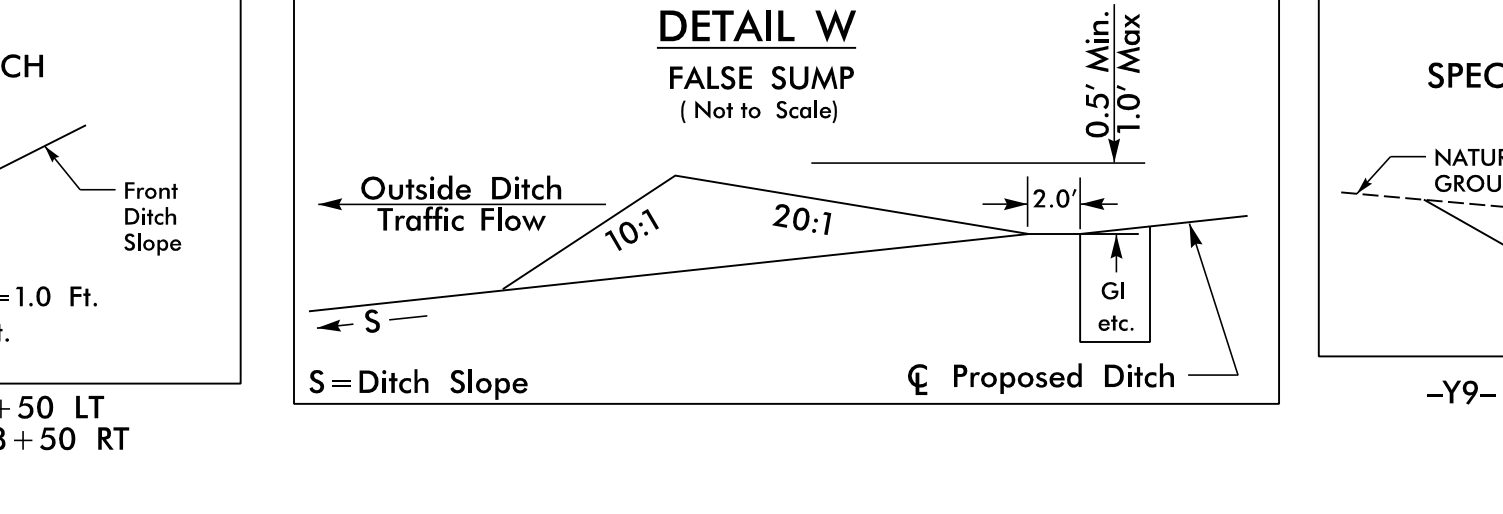
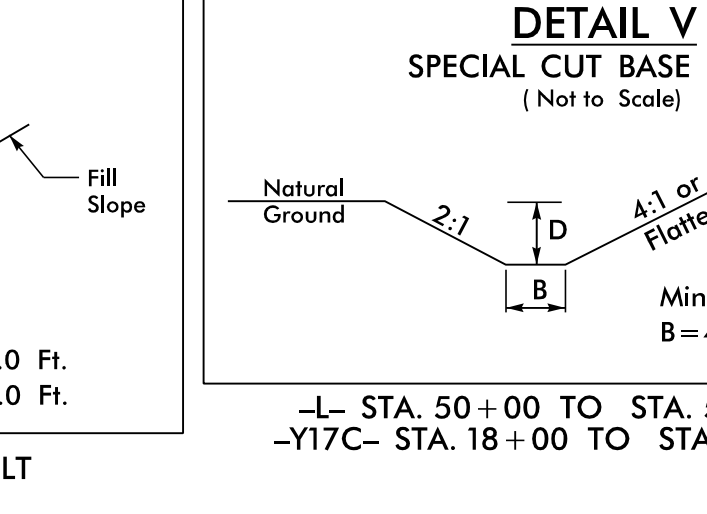
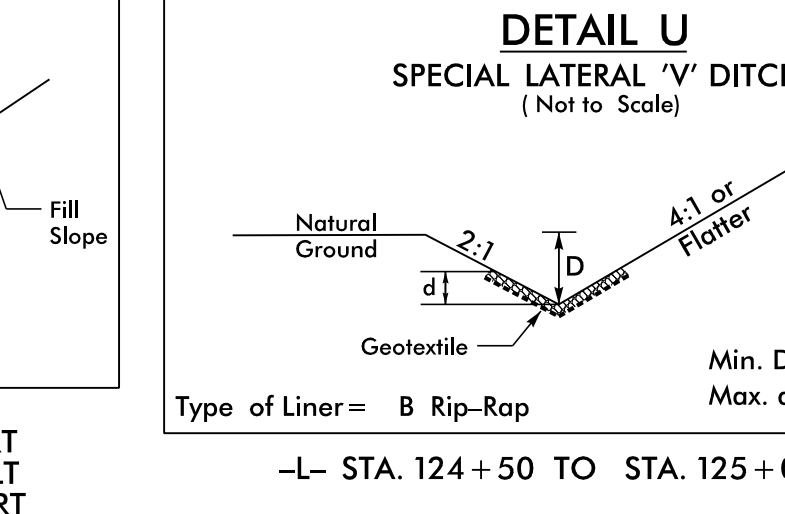
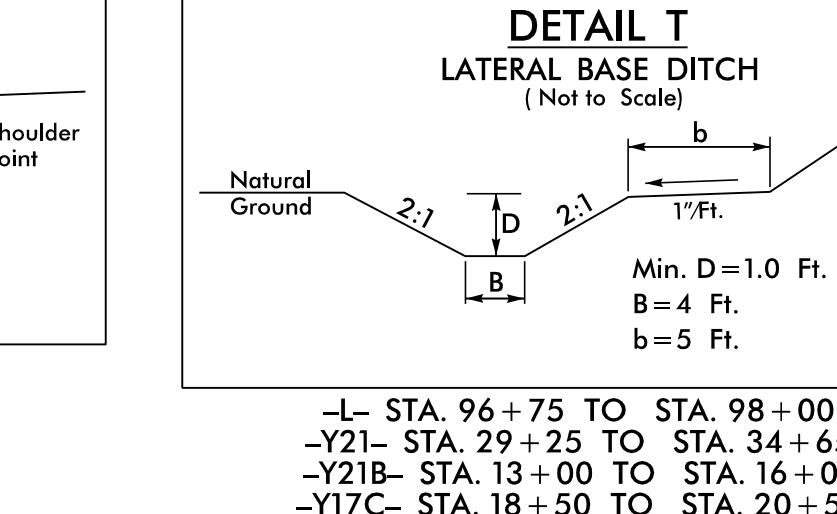
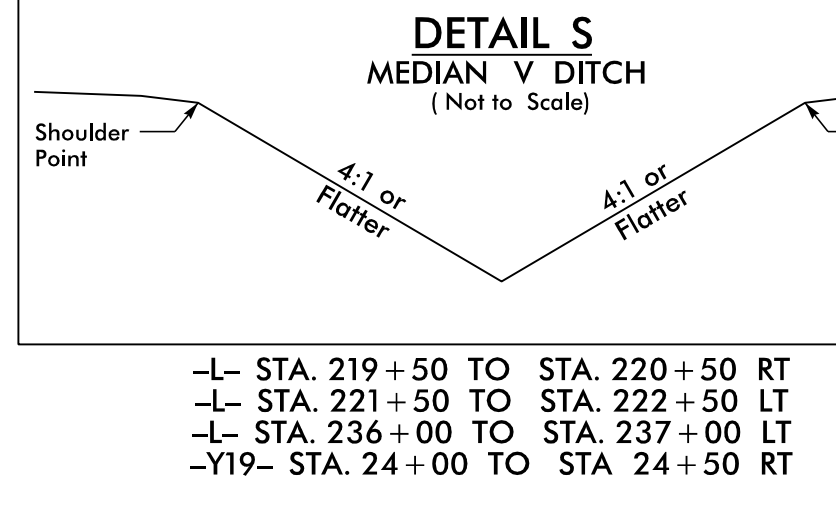
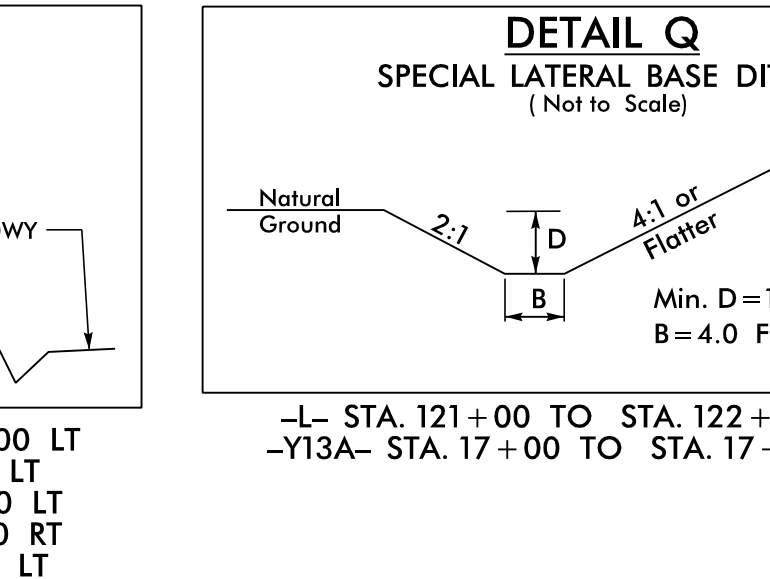
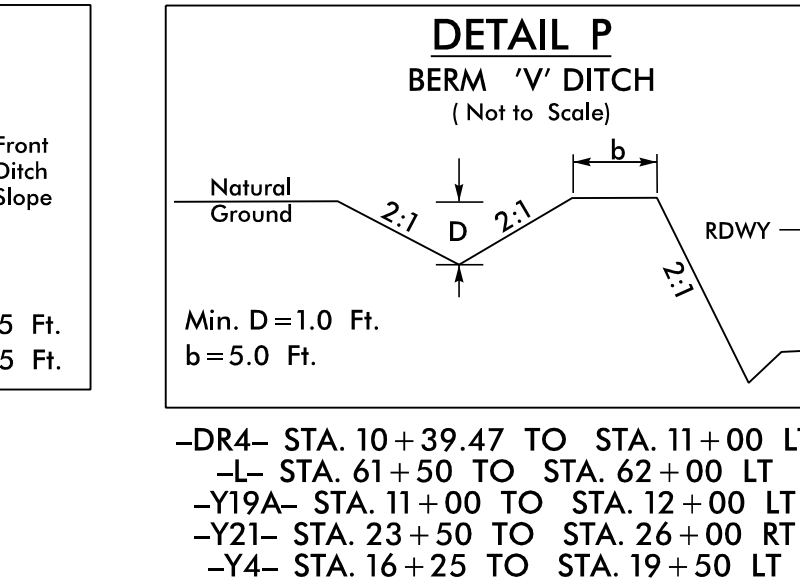
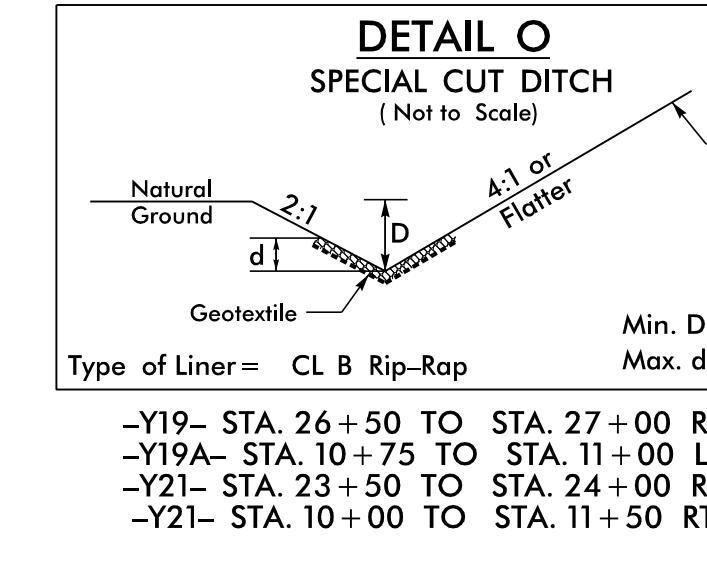
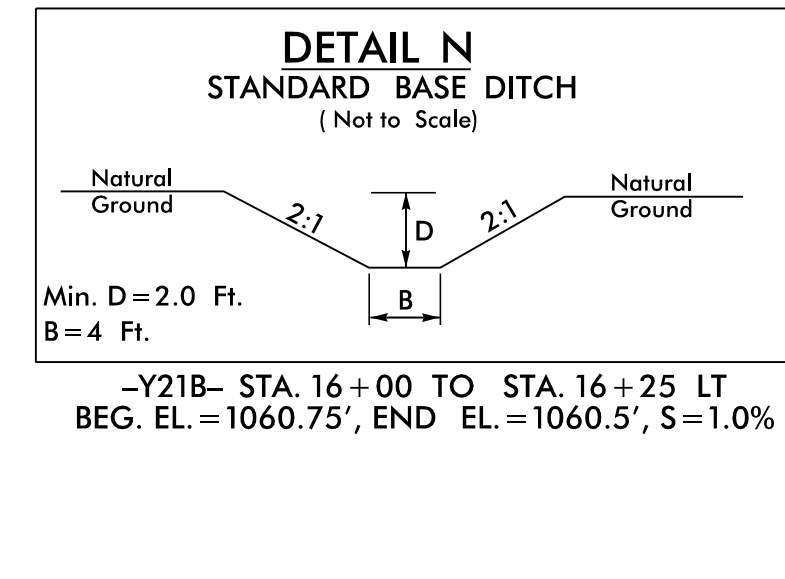
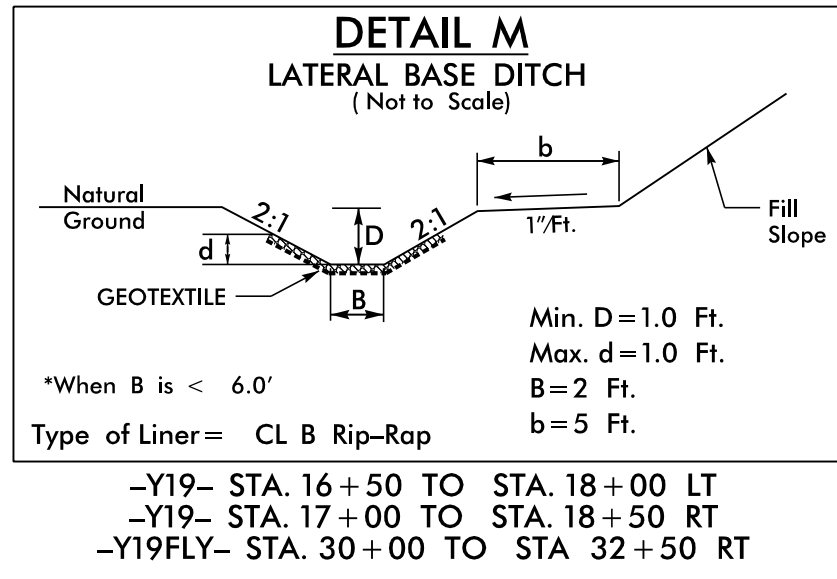
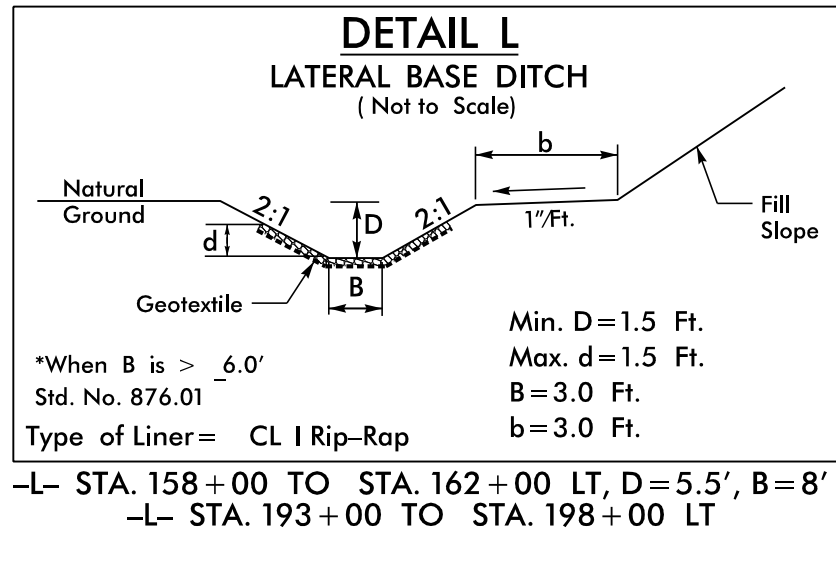
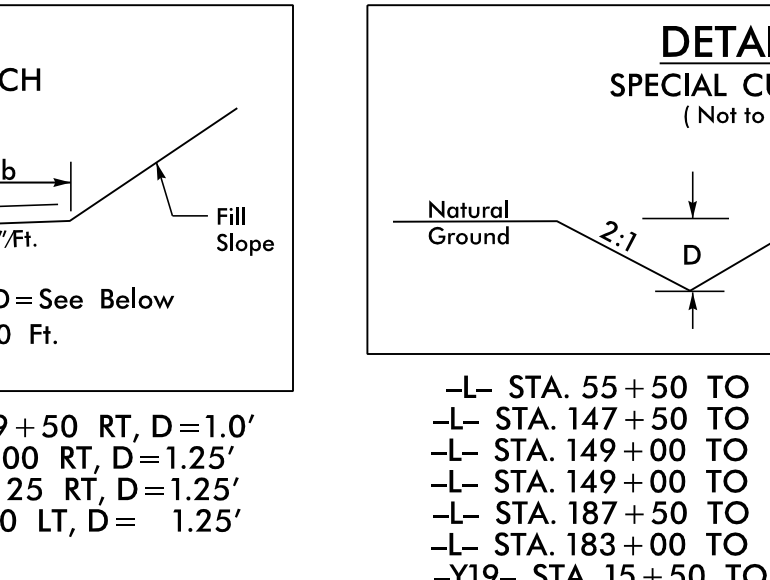
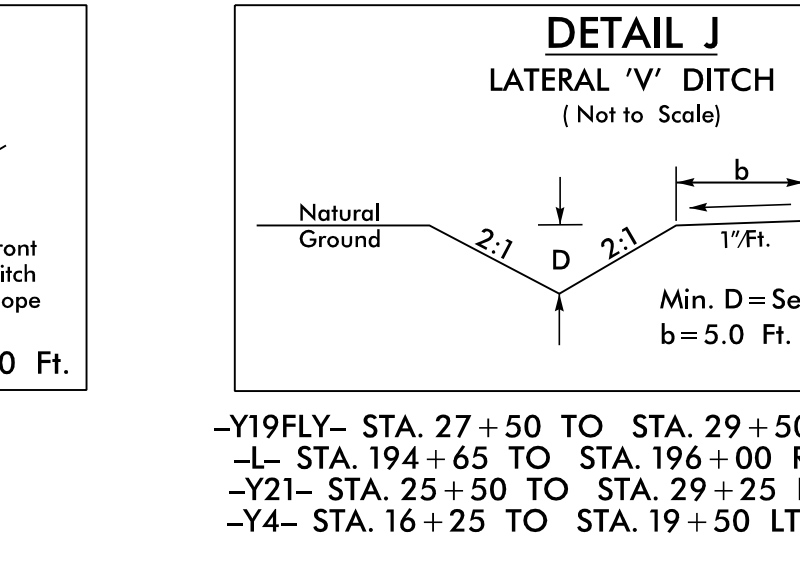
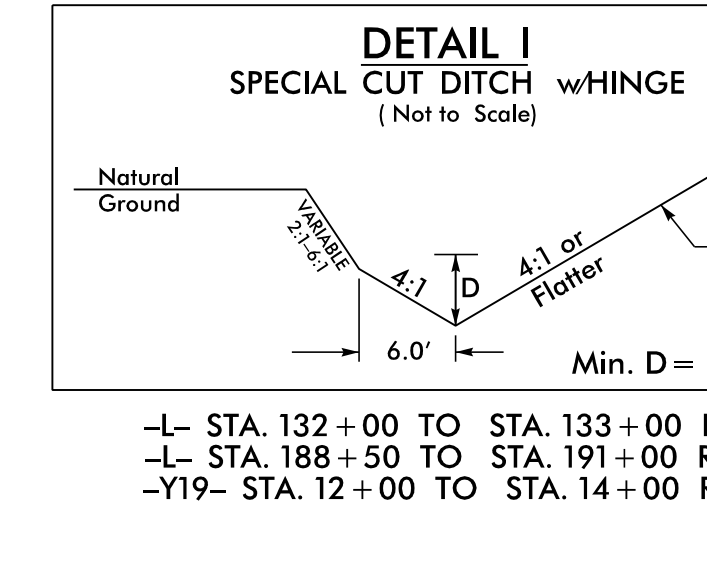
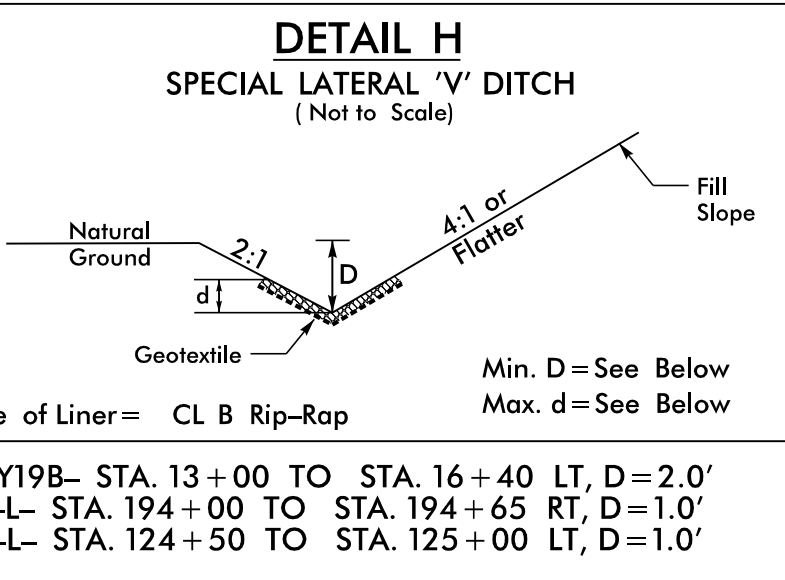
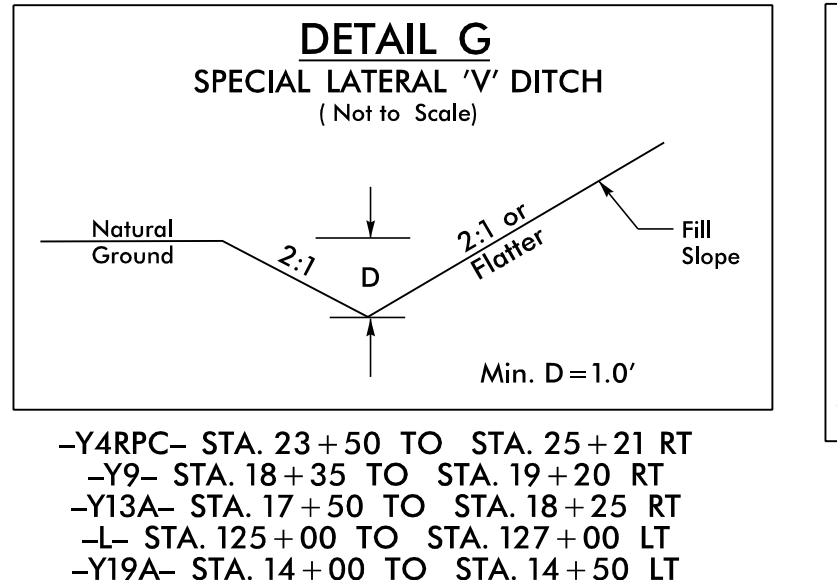
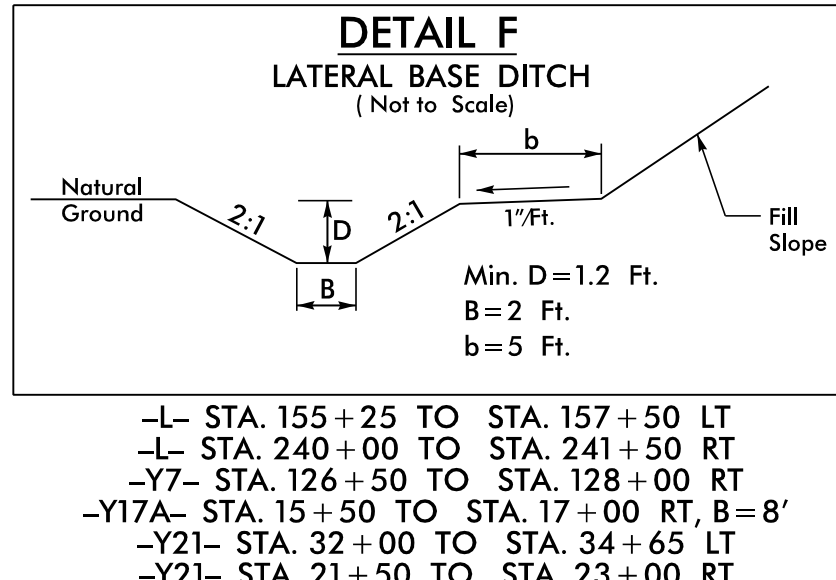
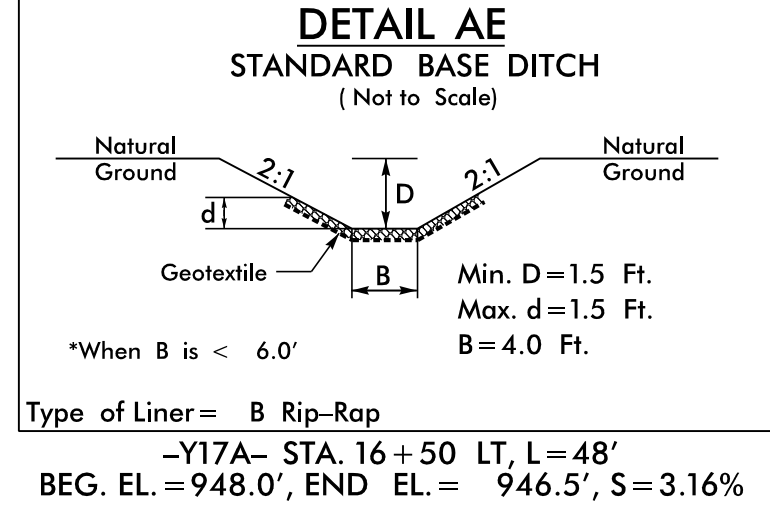
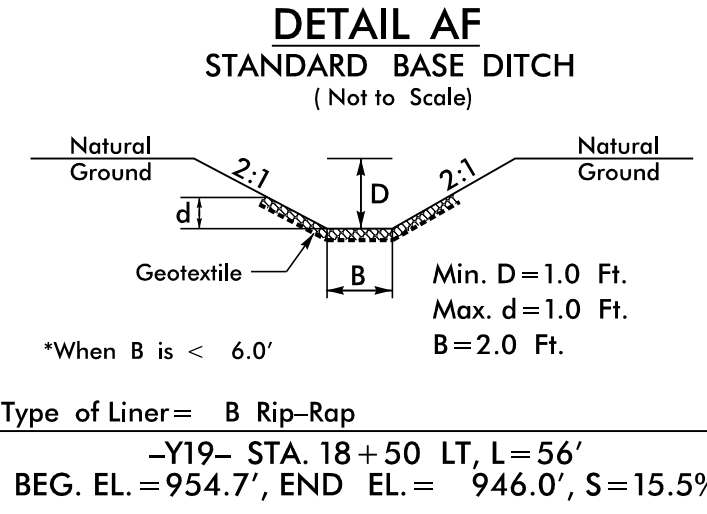
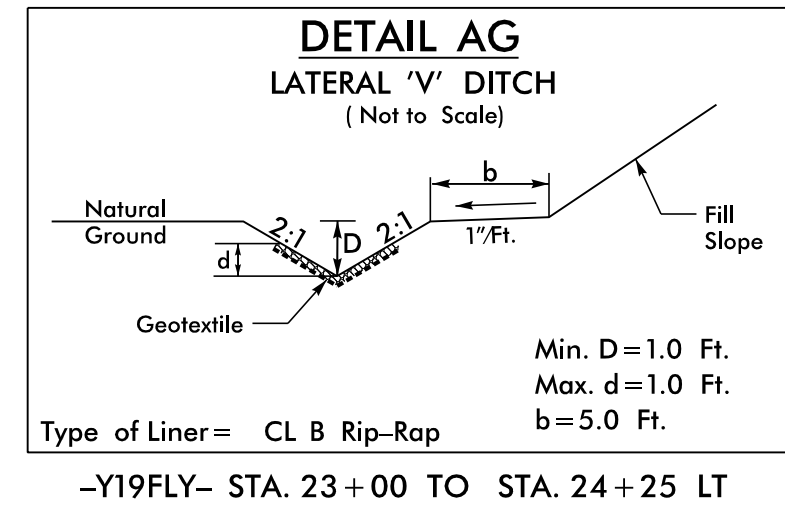
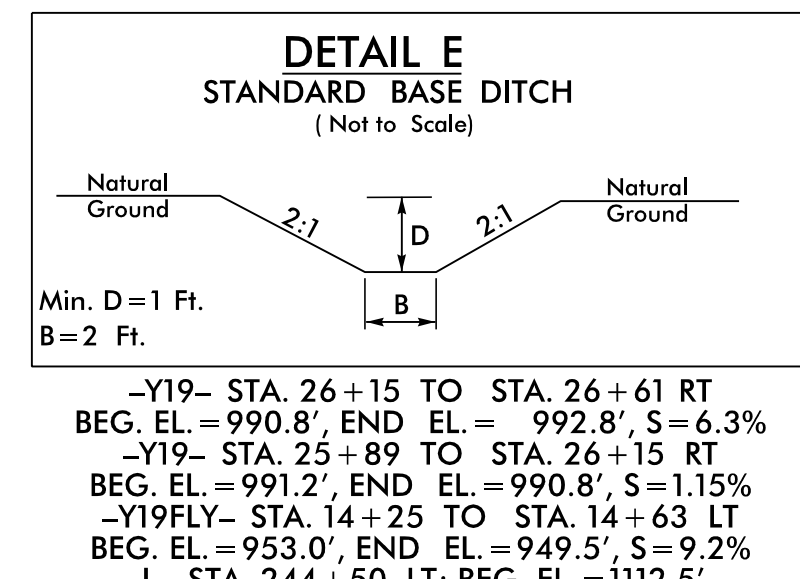
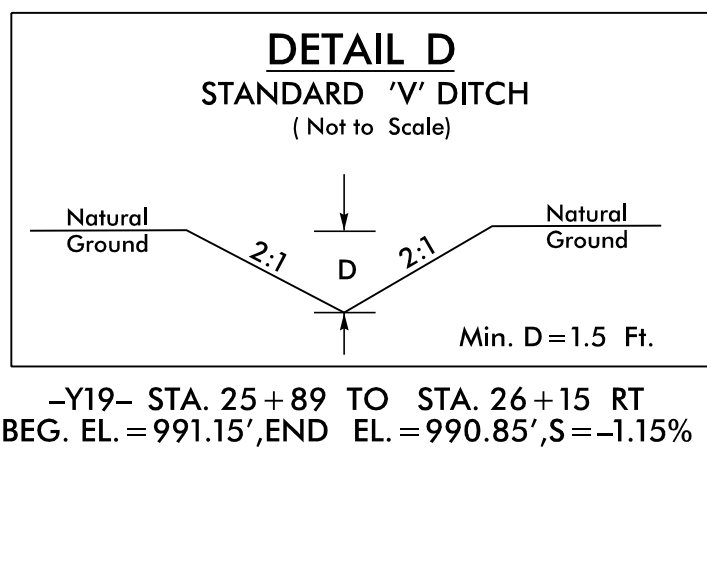
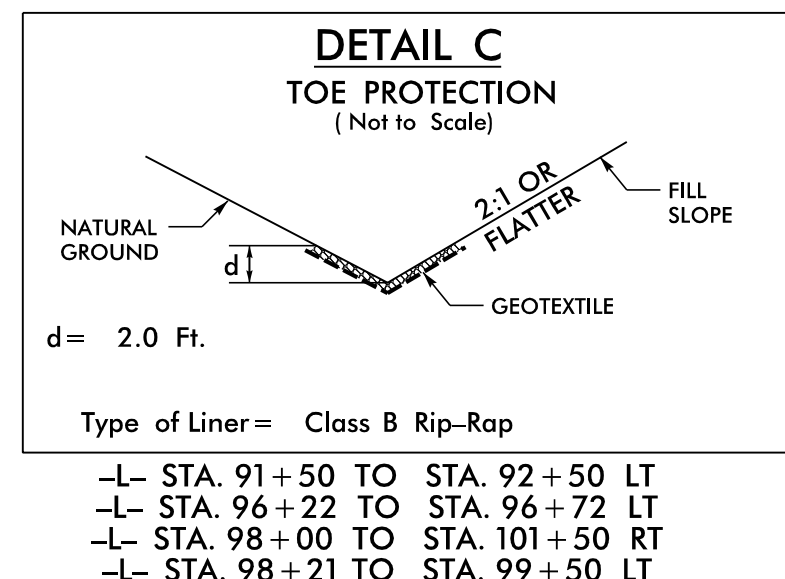
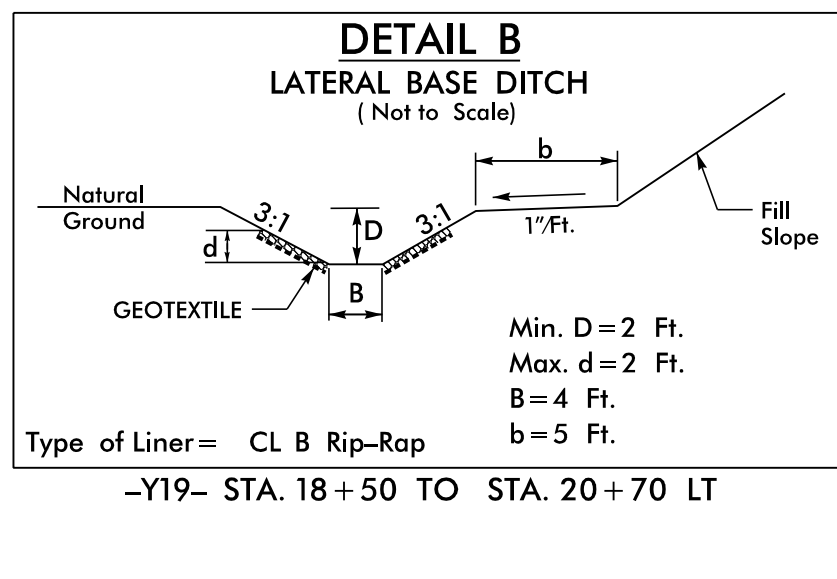
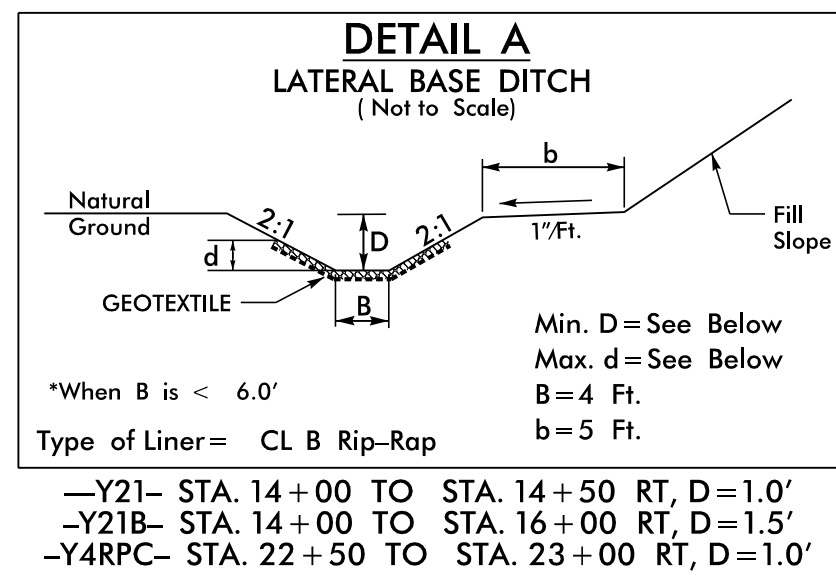
**-WALL08-**

# RETAINING WALL #8 PROFILE DETAIL



POINT NO.	-WALL08-STATION	PROPOSED FINISHED GRADE (TOP)	PROPOSED FINISHED GRADE (BENCH)
1	9+85.70	1,103.73	1,103.73
2	10+14.95	1,110.55	1,103.31
3	10+65.37	1,111.15	1,102.84
4	11+15.74	1,109.09	1,102.63
5	11+66.07	1,106.47	1,102.69
6	12+16.34	1,110.01	1,102.78
7	12+66.58	1,110.38	1,102.93
8	13+16.77	1,109.13	1,103.08
9	13+66.93	1,107.54	1,103.26
10	14+17.06	1,106.16	1,103.49
11	14+67.15	1,104.77	1,103.78
12	14+93.53	1,103.94	1,103.94

5/28/19 11:00 AM \\p01\proj\47000a\_rdy\_psh\02B-18.dgn



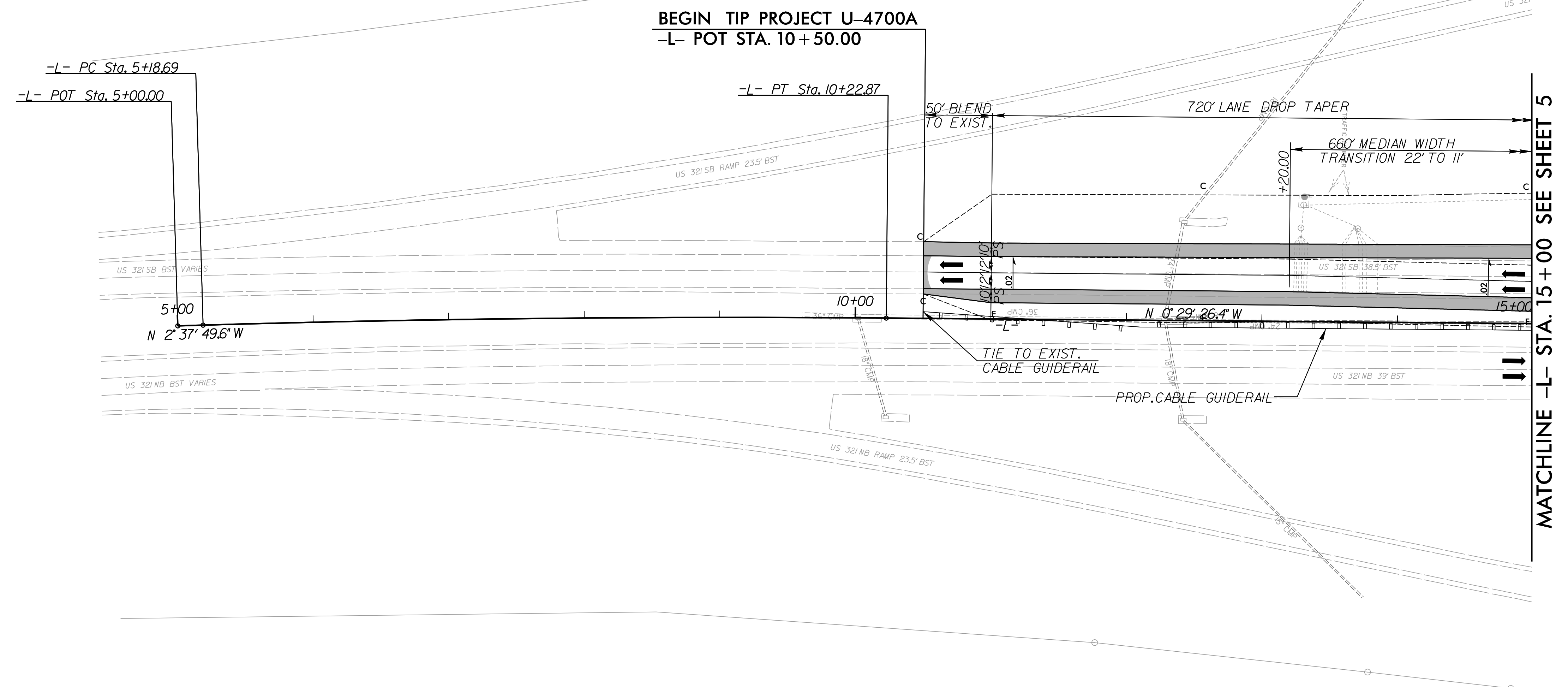
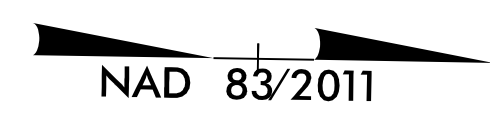
5/28/2019 R:\Hydra\ra1\cs\CADD\U-4700A\_Hyd\_Ditch\_Detail.dgn



8/17/19

-L-  
 PI Sta 7+70.81  
 $\Delta = 2' 08" 23.3" (RT)$   
 $D = 0' 25" 27.9"$   
 $L = 504.18'$   
 $T = 252.12'$   
 $R = 13,500.00'$   
 $e = exist.$   
 $V = 60 \text{ mph}$

PROJECT REFERENCE NO. U-4700A	SHEET NO. 4
RW SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION	
<b>DOCUMENT NOT CONSIDERED FINAL</b> UNLESS ALL SIGNATURES COMPLETED	



8/17/2019  
 F:\Projects\2019\Projects\U-4700A\rdw\psh04.dgn  
 psh04

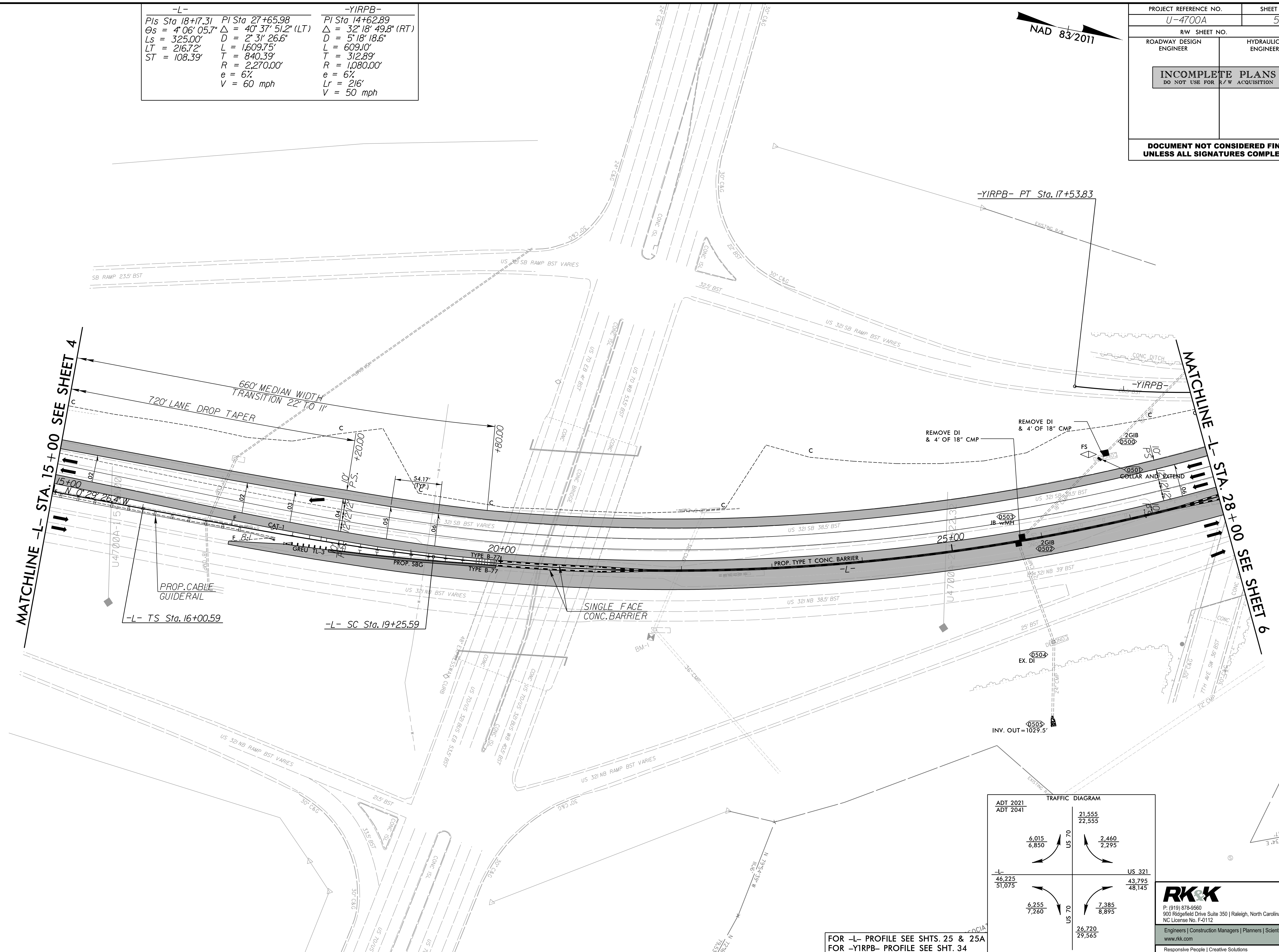
FOR -L- PROFILE SEE SHT. 25

**RK&K**  
 P: (919) 878-9560  
 900 Ridgefield Drive Suite 350 | Raleigh, North Carolina 27609-3980  
 NC License No. F-0112  
 Engineers | Construction Managers | Planners | Scientists  
 www.rkk.com  
 Responsive People | Creative Solutions

8.17.99

-L-		-YIRPB-	
PI Sta 18+17.31	PI Sta 27+65.98	PI Sta 14+62.89	
$\Theta_s = 4^\circ 06' 05.7''$	$\Delta = 40^\circ 37' 51.2''$ (LT)	$\Delta = 32^\circ 18' 49.8''$ (RT)	
$L_s = 325.00'$	$D = 2^\circ 31' 26.6''$	$D = 5^\circ 18' 18.6''$	
$LT = 216.72'$	$L = 1,609.75'$	$L = 609.10'$	
$ST = 108.39'$	$T = 840.39'$	$T = 312.89'$	
	$R = 2,270.00'$	$R = 1,080.00'$	
	$e = 6\%$	$e = 6\%$	
	$V = 60$ mph	$V = 50$ mph	

PROJECT REFERENCE NO. U-4700A	SHEET NO. 5
RW SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION	
<b>DOCUMENT NOT CONSIDERED FINAL</b> UNLESS ALL SIGNATURES COMPLETED	



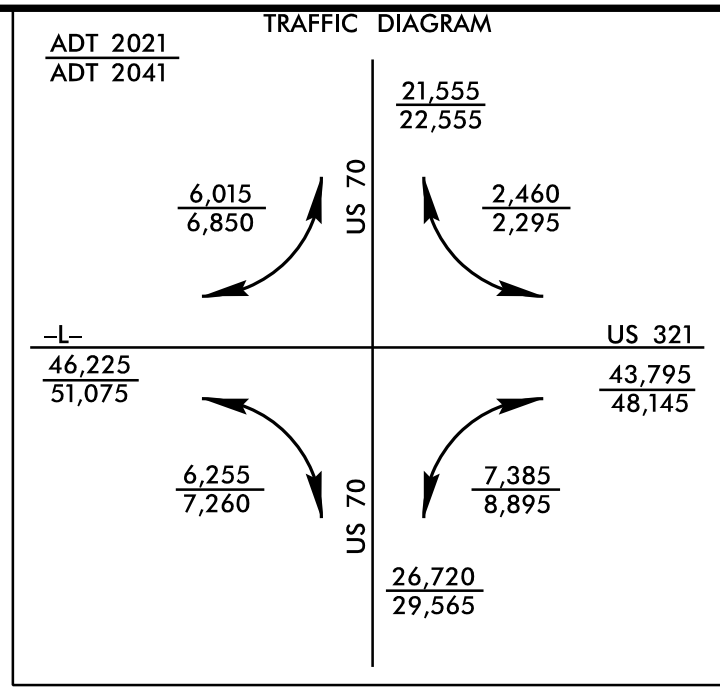
TRAFFIC DIAGRAM

ADT 2021 ADT 2041		21,555 22,555
6,015 6,850	US 70	2,460 2,295
46,225 51,075	US 321	43,795 48,145
6,255 7,260	US 70	7,385 8,895
		26,720 29,565

FOR -L- PROFILE SEE SHTS. 25 & 25A  
FOR -YIRPB- PROFILE SEE SHIT. 34

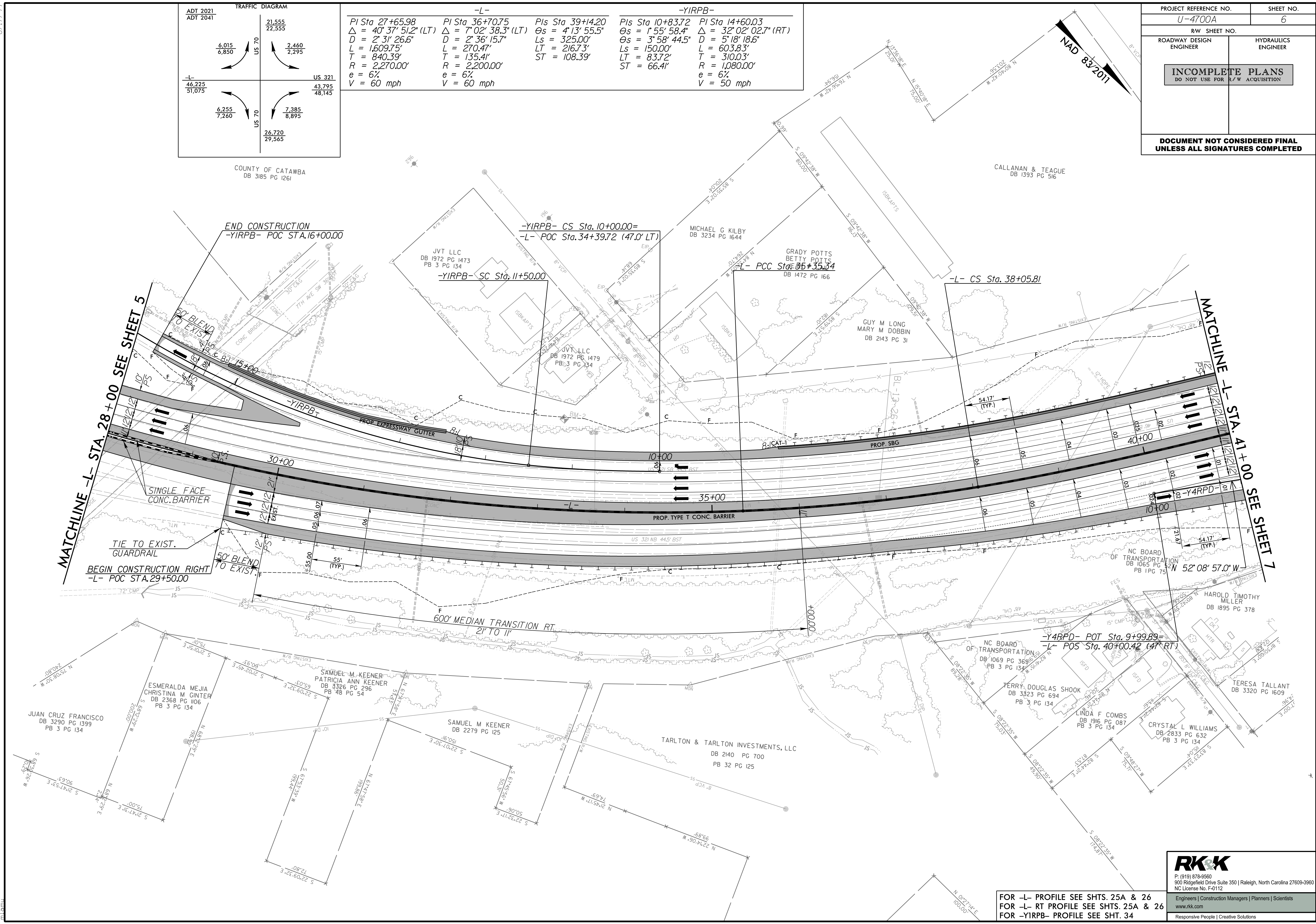
**RK&K**  
 P: (919) 878-9560  
 900 Ridgefield Drive Suite 350 | Raleigh, North Carolina 27609-3960  
 NC License No. F-4112  
 Engineers | Construction Managers | Planners | Scientists  
 www.rkk.com  
 Responsive People | Creative Solutions

F:\28\2018\Roadway\Proj\U4700a\_rdy\_esh05.dgn



-L-		-YIRPB-	
PI Sta 27+65.98	PI Sta 36+70.75	PIs Sta 39+14.20	PIs Sta 10+83.72
$\Delta = 40^\circ 37' 51.2" (LT)$	$\Delta = 7^\circ 02' 38.3" (LT)$	$\Theta_s = 4^\circ 13' 55.5"$	$\Theta_s = 1^\circ 55' 58.4"$
$D = 2^\circ 31' 26.6"$	$D = 2^\circ 36' 15.7"$	$L_s = 325.00'$	$D = 5^\circ 18' 18.6"$
$L = 1,609.75'$	$L = 270.47'$	$LT = 216.73'$	$L_s = 150.00'$
$T = 840.39'$	$T = 135.41'$	$ST = 108.39'$	$T = 310.03'$
$R = 2,270.00'$	$R = 2,200.00'$	$\Theta_s = 83.72^\circ$	$R = 1,080.00'$
$e = 6\%$	$e = 6\%$	$ST = 66.41'$	$e = 6\%$
$V = 60 \text{ mph}$	$V = 60 \text{ mph}$		$V = 50 \text{ mph}$

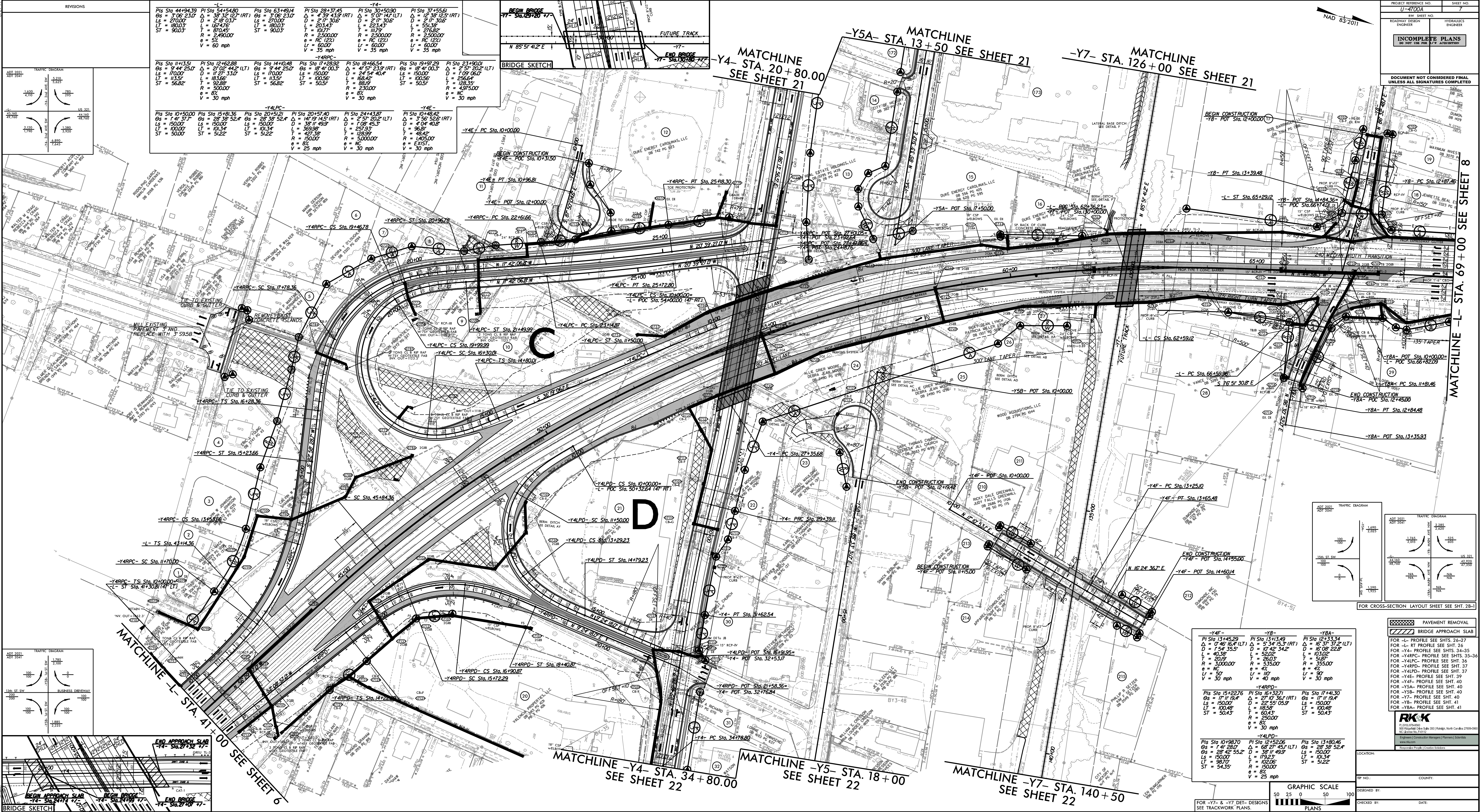
PROJECT REFERENCE NO. U-4700A	SHEET NO. 6
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION	
<b>DOCUMENT NOT CONSIDERED FINAL</b> UNLESS ALL SIGNATURES COMPLETED	



FOR -L- PROFILE SEE SHTS. 25A & 26  
FOR -L- RT PROFILE SEE SHTS. 25A & 26  
FOR -YIRPB- PROFILE SEE SHT. 34

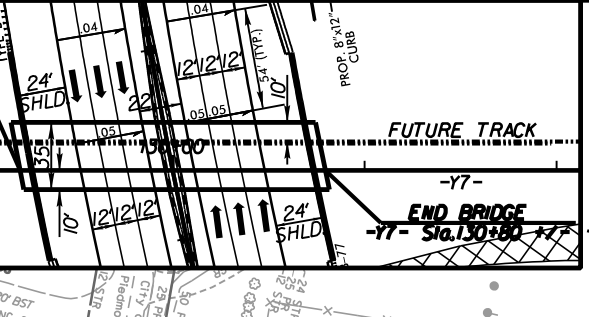
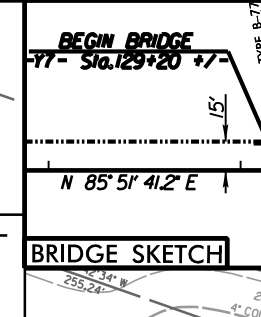
**RK&K**  
P: (919) 878-9500  
900 Ridgefield Drive Suite 350 | Raleigh, North Carolina 27609-3960  
NC License No. F-4112  
Engineers | Construction Managers | Planners | Scientists  
www.rk&k.com  
Responsive People | Creative Solutions

8/17/99  
R:\Projects\U47000a\_rdy\_esh06.dgn  
8/28/2018



REVISIONS table with 3 columns: No., Description, and Date. Includes a small traffic diagram.

Tables of curve data for various stations, including PI, PC, PT, and stationing values.



PROJECT REFERENCE NO. 17-4700A, SHEET NO. 7, ROADWAY DESIGN, HYDRAULICS ENGINEER, INCOMPLETE PLANS, DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED.

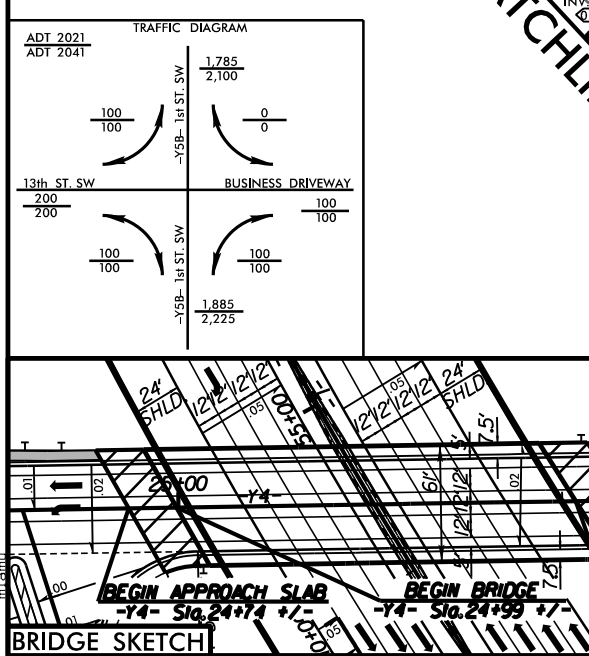
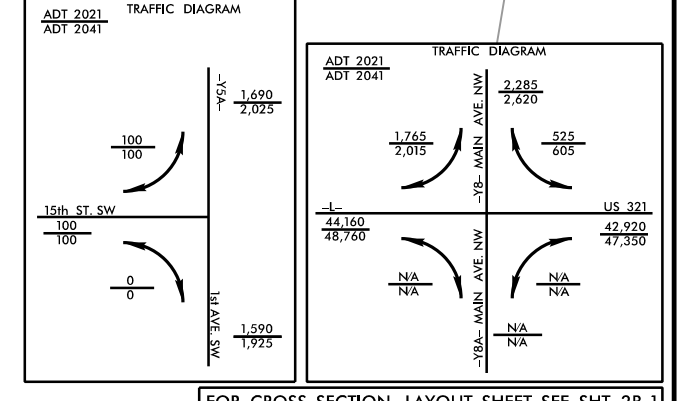
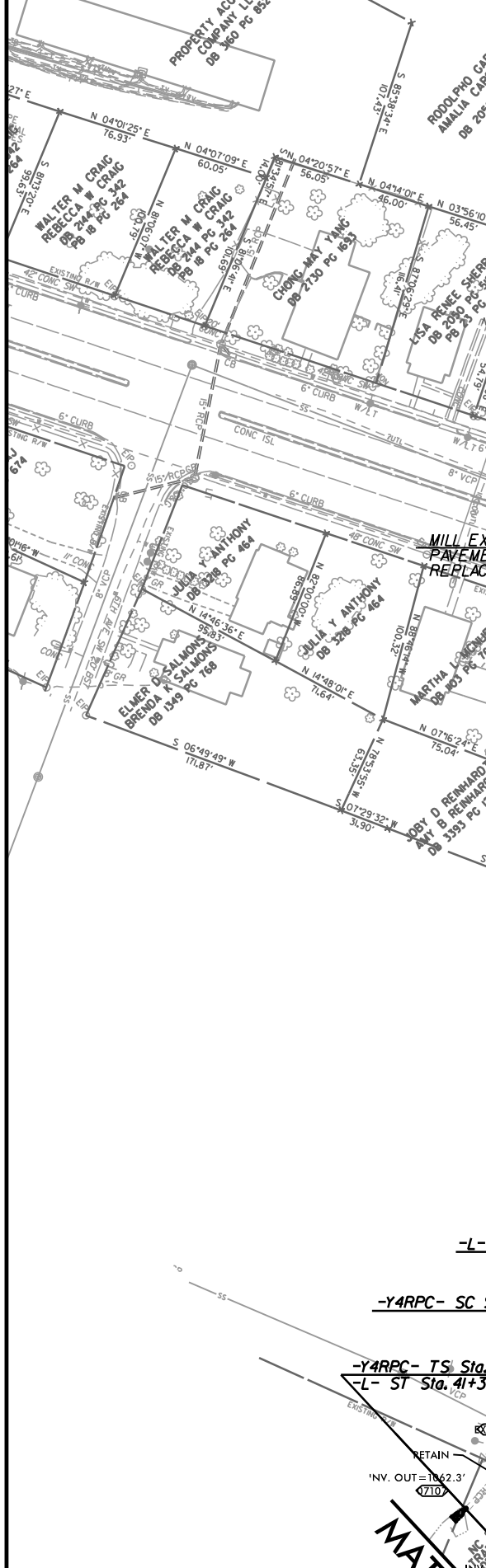


Table of curve data for various stations, including PI, PC, PT, and stationing values.

Table of curve data for various stations, including PI, PC, PT, and stationing values.

Table of curve data for various stations, including PI, PC, PT, and stationing values.

Table of curve data for various stations, including PI, PC, PT, and stationing values.

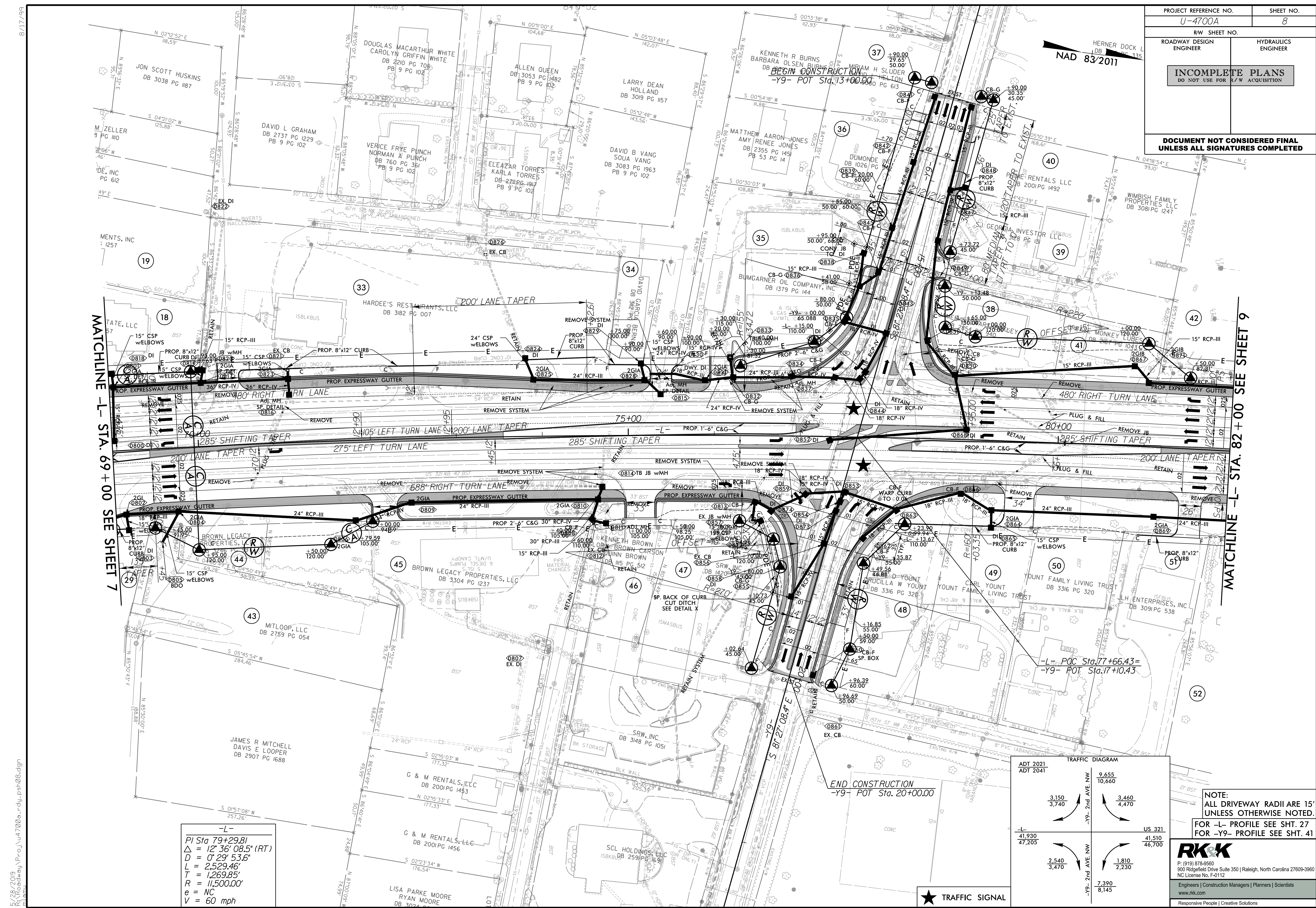
Summary table of curve data for stations -Y4F, -Y8, and -Y8A. Includes graphical scale and notes for cross-section layout sheet.

FOR CROSS-SECTION LAYOUT SHEET SEE SHIT. 2B-1

PAVEMENT REMOVAL, BRIDGE APPROACH SLAB, PROFILE SEE SHIT. 26-27, etc.

PROJECT NO., COUNTY, DESIGNED BY, CHECKED BY, DATE.

MATCHLINE -L- STA. 69 + 00 SEE SHEET 8, MATCHLINE -Y4- STA. 20 + 80.00 SEE SHEET 21, MATCHLINE -Y5A- STA. 13 + 50 SEE SHEET 21, MATCHLINE -Y7- STA. 126 + 00 SEE SHEET 21, MATCHLINE -L- STA. 41 + 00 SEE SHEET 6, MATCHLINE -Y4- STA. 34 + 80.00 SEE SHEET 22, MATCHLINE -Y5- STA. 18 + 00 SEE SHEET 22, MATCHLINE -Y7- STA. 140 + 50 SEE SHEET 22.



8/17/19

MATCHLINE -L- STA. 69+00 SEE SHEET 7

MATCHLINE -L- STA. 82+00 SEE SHEET 9

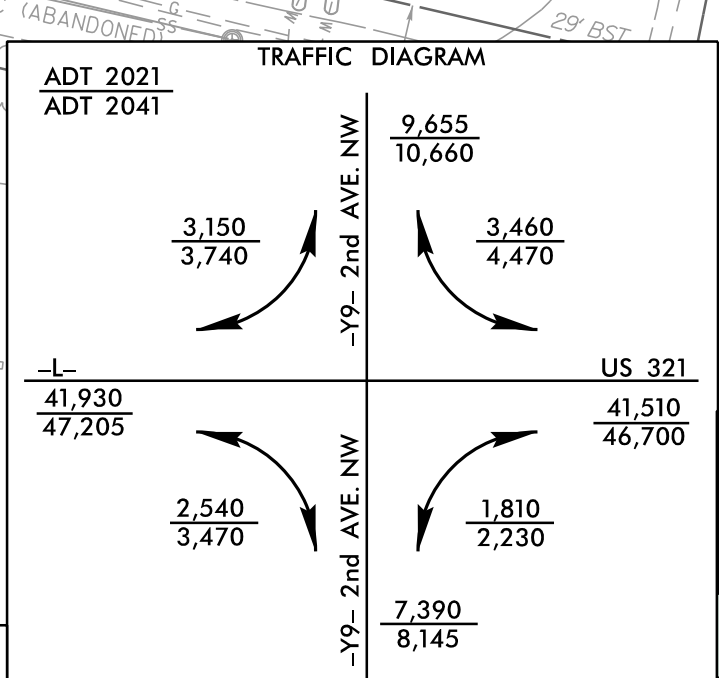
NAD 83/2011

BEGIN CONSTRUCTION  
-Y9- POT Sta. 13+00.00

END CONSTRUCTION  
-Y9- POT Sta. 20+00.00

-L- POC Sta. 77+66.43 =  
-Y9- POT Sta. 17+10.43

-L-  
 $Pi$  Sta 79+29.81  
 $\Delta = 12' 36" 08.5" (RT)$   
 $D = 0' 29' 53.6"$   
 $L = 2,529.46'$   
 $T = 1,269.85'$   
 $R = 11,500.00'$   
 $e = NC$   
 $V = 60$  mph



NOTE:  
ALL DRIVEWAY RADII ARE 15'  
UNLESS OTHERWISE NOTED.  
FOR -L- PROFILE SEE SHT. 27  
FOR -Y9- PROFILE SEE SHT. 41

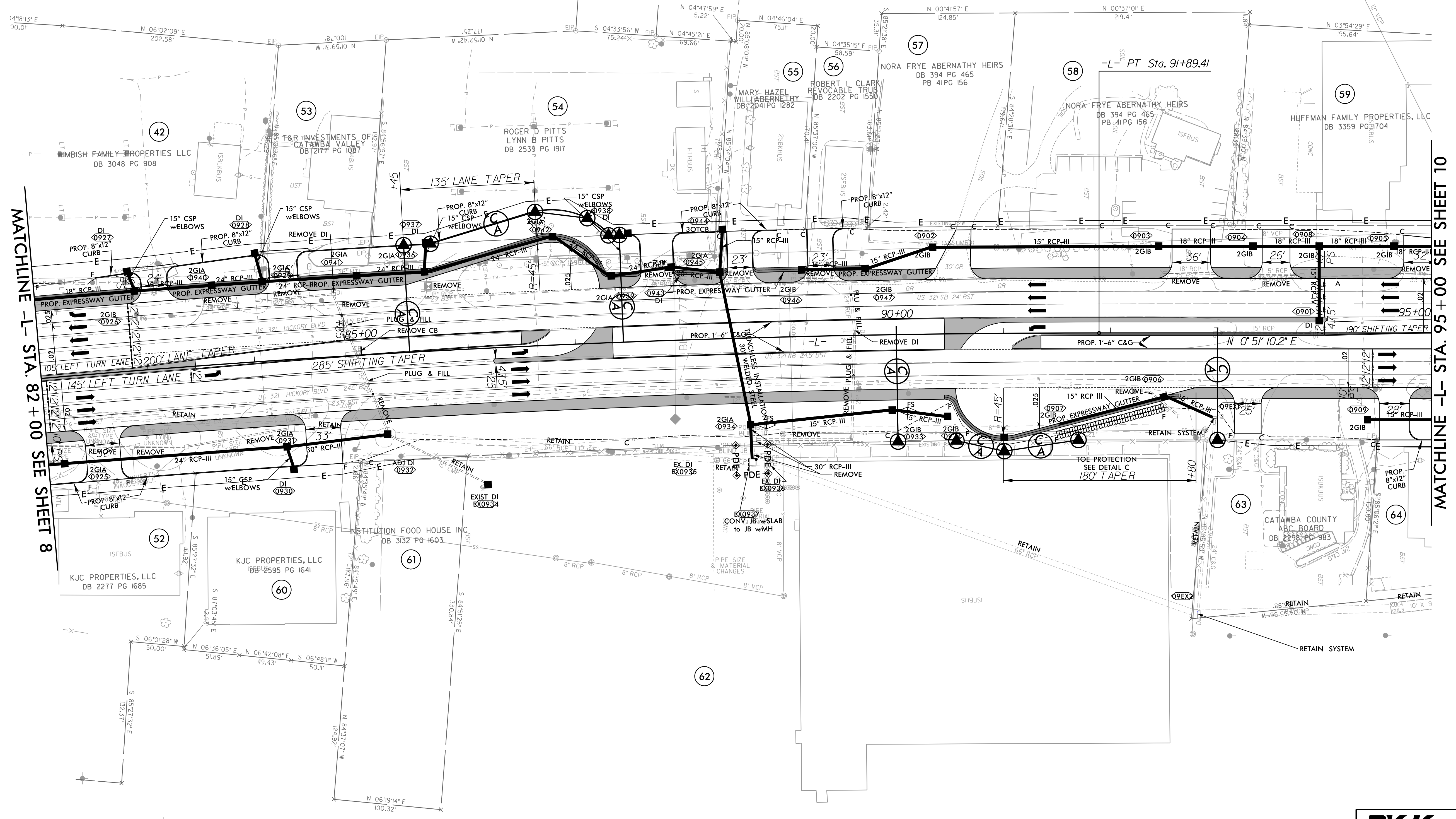
**RK&K**  
 P: (919) 878-9560  
 900 Ridgefield Drive Suite 350 | Raleigh, North Carolina 27609-3960  
 NC License No. F-0112  
 Engineers | Construction Managers | Planners | Scientists  
 www.rkk.com  
 Responsive People | Creative Solutions

★ TRAFFIC SIGNAL

PROJECT REFERENCE NO. U-4700A	SHEET NO. 9
RW SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION	
<b>DOCUMENT NOT CONSIDERED FINAL</b> UNLESS ALL SIGNATURES COMPLETED	

-L-  
 PI Sta 79+29.81  
 $\Delta = 12^{\circ} 36' 08.5" (RT)$   
 $D = 0^{\circ} 29' 53.6"$   
 $L = 2,529.46'$   
 $T = 1,269.85'$   
 $R = 11,500.00'$   
 $e = NC$   
 $V = 60 \text{ mph}$

NAD 83/2011



MATCHLINE -L- STA. 82+00 SEE SHEET 8

MATCHLINE -L- STA. 95+00 SEE SHEET 10

NOTE:  
 ALL DRIVEWAY RADII ARE 15'  
 UNLESS OTHERWISE NOTED.

**RK&K**  
 P: (919) 878-9560  
 900 Ridgefield Drive Suite 350 | Raleigh, North Carolina 27609-3960  
 NC License No. F-0112  
 Engineers | Construction Managers | Planners | Scientists  
 www.rkk.com  
 Responsive People | Creative Solutions

FOR -L- PROFILE SEE SHTS. 27-28

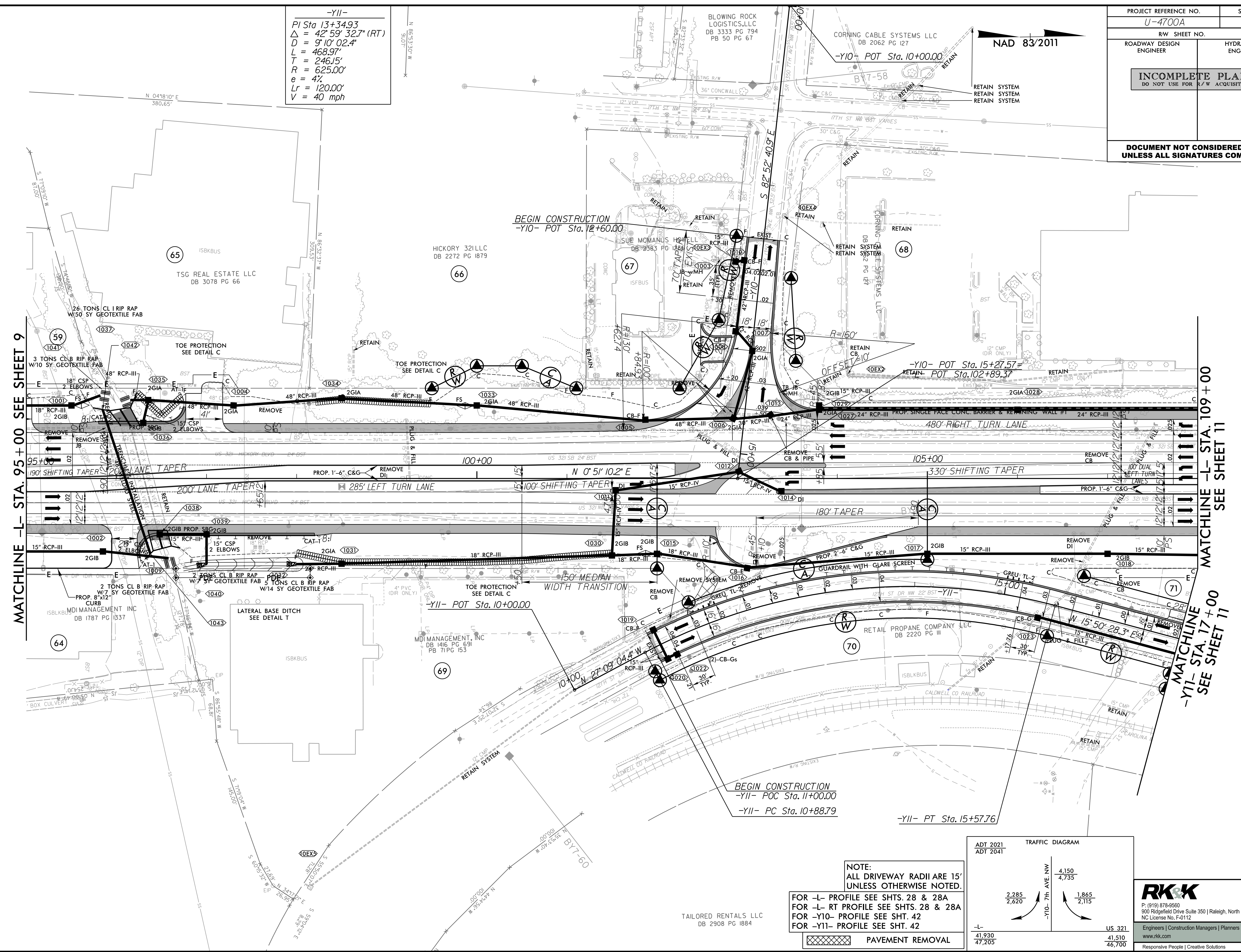
8/17/19

F:\3872019\3872019.dwg

PROJECT REFERENCE NO. U-4700A	SHEET NO. 10
RW SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION	
<b>DOCUMENT NOT CONSIDERED FINAL</b> UNLESS ALL SIGNATURES COMPLETED	

-Y11-  
 PI Sta 13+34.93  
 $\Delta = 42^{\circ} 59' 32.7" (RT)$   
 $D = 9' 10" 02.4"$   
 $L = 468.97'$   
 $T = 246.15'$   
 $R = 625.00'$   
 $e = 4\%$   
 $Lr = 120.00'$   
 $V = 40 \text{ mph}$

NAD 83/2011

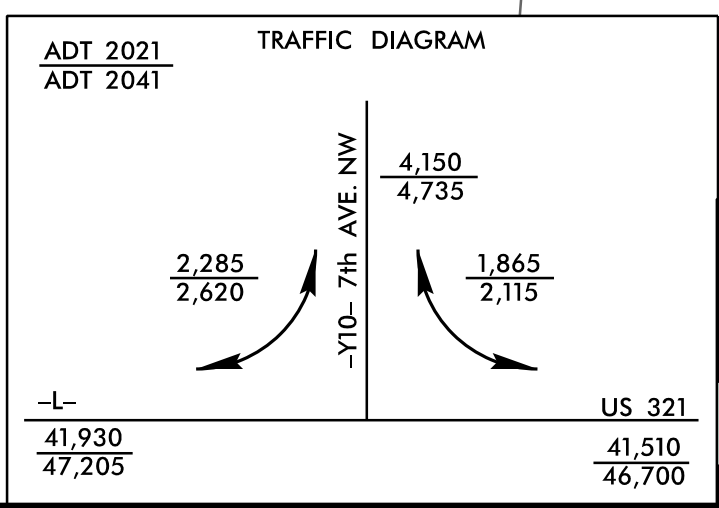


MATCHLINE -L- STA. 95+00 SEE SHEET 9

MATCHLINE -L- STA. 109+00 SEE SHEET 11

**NOTE:**  
 ALL DRIVEWAY RADII ARE 15'  
 UNLESS OTHERWISE NOTED.  
 FOR -L- PROFILE SEE SHTS. 28 & 28A  
 FOR -L- RT PROFILE SEE SHTS. 28 & 28A  
 FOR -Y10- PROFILE SEE SHT. 42  
 FOR -Y11- PROFILE SEE SHT. 42

PAVEMENT REMOVAL



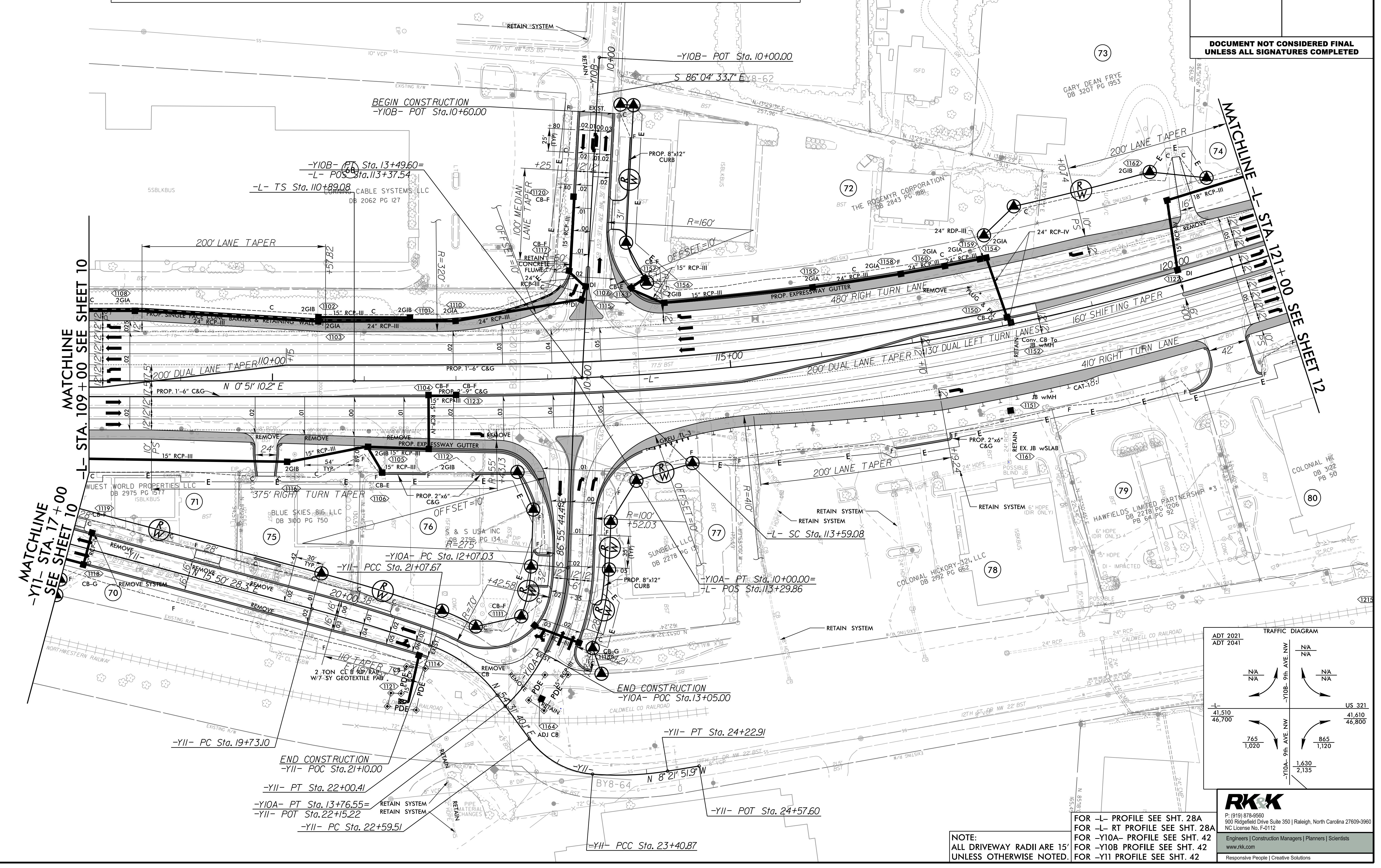
**RK&K**  
 P: (919) 878-9560  
 900 Ridgefield Drive Suite 350 | Raleigh, North Carolina 27609-3980  
 NC License No. F-0112  
 Engineers | Construction Managers | Planners | Scientists  
 www.rkk.com  
 Responsive People | Creative Solutions

8/17/19

F:\328\2019\328\Drawings\Proj\4700A\_rdw\_psh10.dgn

-L-	-Y10A-	-Y11-	-Y10B-	-Y11-	-Y10B-
PI Sta 112+69.10 θs = 2° 44' 51.9" Ls = 270.00' LT = 180.02' ST = 90.02'	PI Sta 123+39.11 Δ = 38° 23' 26.5" (LT) D = 2° 02' 07.3" L = 1,886.17' T = 980.03' R = 2,815.00' e = 5% V = 60 mph	PI Sta 12+96.25 -L- POS Sta. 113+37.54 Δ = 44° 09' 00.8" (RT) D = 26° 02' 36.7" L = 169.52' T = 89.22' R = 220.00' e = 4% V = 25 mph	PI Sta 20+40.42 Δ = 4° 24' 21.0" (RT) D = 3° 16' 26.6" L = 134.57' T = 67.32' R = 1,750.00' e = 3% V = 40 mph	PI Sta 21+55.47 Δ = 34° 16' 50.8" (RT) D = 36° 57' 54.1" L = 92.74' T = 47.80' R = 155.00' e = 4% V = 25 mph	PI Sta 23+02.87 Δ = 49° 03' 58.9" (LT) D = 60° 18' 40.8" L = 81.36' T = 43.36' R = 95.00' e = 4% V = 20 mph
PI Sta 23+82.09 Δ = 13° 49' 33.1" (LT) D = 16° 51' 06.1" L = 82.04' T = 41.22' R = 340.00' e = 4% V = 30 mph					

PROJECT REFERENCE NO. U-4700A	SHEET NO. 11
RW SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	
<b>INCOMPLETE PLANS</b> DO NOT USE FOR ACQUISITION	
<b>DOCUMENT NOT CONSIDERED FINAL</b> UNLESS ALL SIGNATURES COMPLETED	



ADT 2021 ADT 2041			
	N/A	N/A	N/A
	N/A	N/A	N/A
	765	865	
	1,020	1,120	
		1,630	
		2,135	

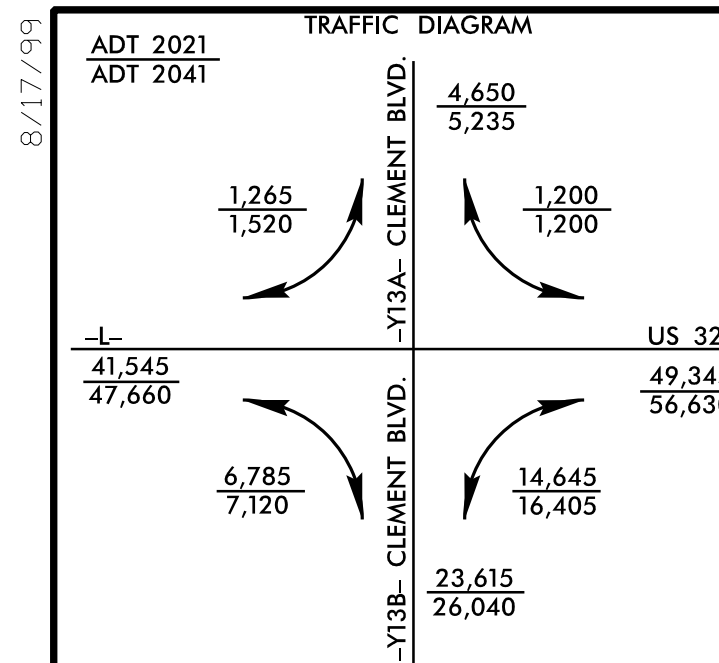
**RK&K**  
 P: (919) 878-9560  
 900 Ridgefield Drive Suite 350 | Raleigh, North Carolina 27609-3980  
 NC License No. F-0112  
 Engineers | Construction Managers | Planners | Scientists  
 www.rkk.com  
 Responsive People | Creative Solutions

NOTE:  
 ALL DRIVEWAY RADII ARE 15'  
 UNLESS OTHERWISE NOTED.

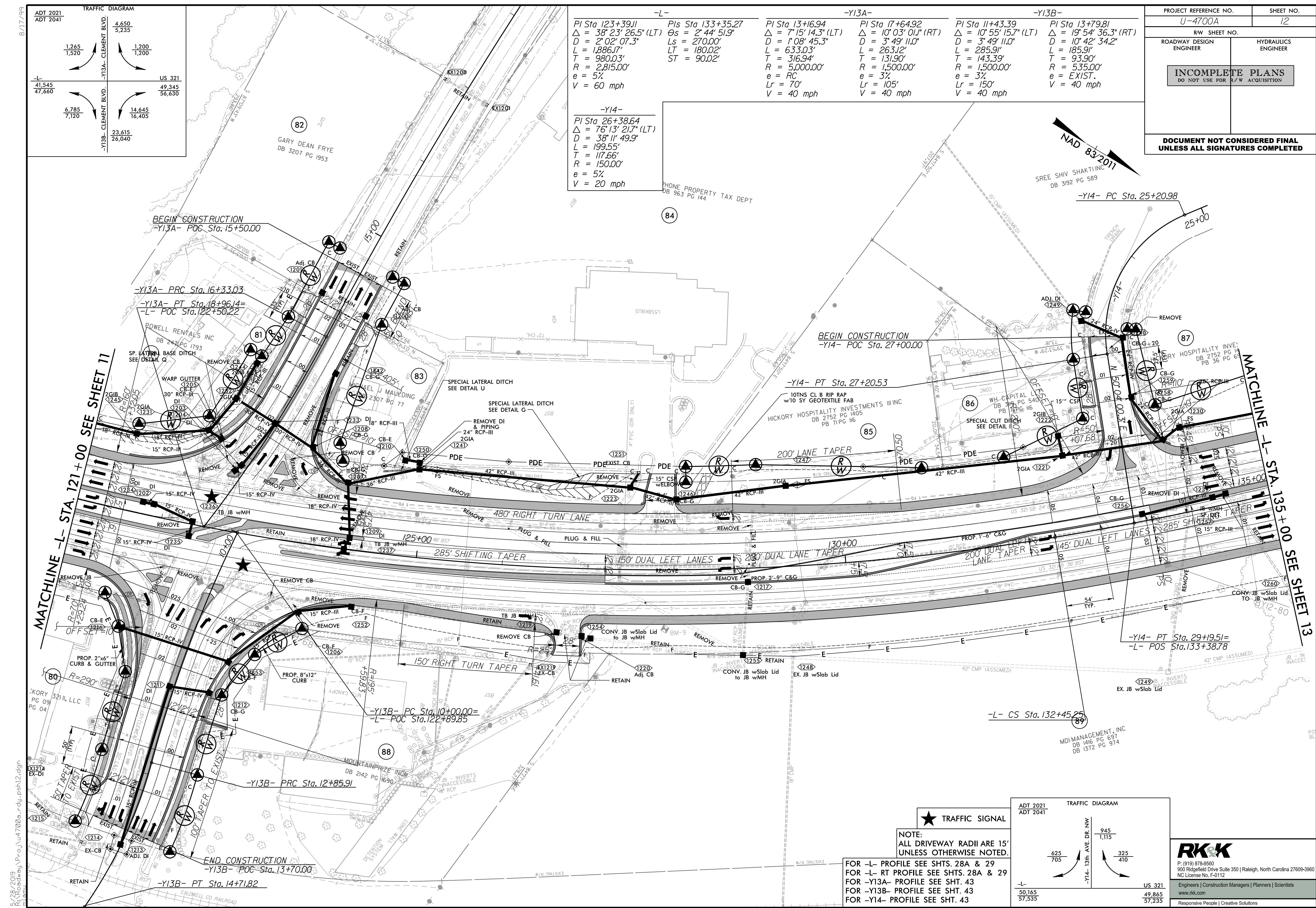
FOR -L- PROFILE SEE SHT. 28A  
 FOR -L- RT PROFILE SEE SHT. 28A  
 FOR -Y10A- PROFILE SEE SHT. 42  
 FOR -Y10B PROFILE SEE SHT. 42  
 FOR -Y11 PROFILE SEE SHT. 42

8/17/19  
 F:\3\2019\Projects\4700A\_rdw\psht11.dgn  
 11/11/2019 10:00:00 AM





<b>-L-</b>	<b>-Y13A-</b>	<b>-Y13B-</b>
PI Sta 123+39.11 Δ = 38° 23' 26.5" (LT) D = 2° 02' 07.3" L = 1,886.17' T = 980.03' R = 2,815.00' e = 5% V = 60 mph	PI Sta 133+35.27 Δ = 2° 44' 51.9" D = 270.00' L = 180.02' ST = 90.02'	PI Sta 13+16.94 Δ = 7° 15' 14.3" (LT) D = 1° 08' 45.3" L = 633.03' T = 316.94' R = 5,000.00' e = RC Lr = 70' V = 40 mph
<b>-Y14-</b>	<b>-Y13A-</b>	<b>-Y13B-</b>
PI Sta 26+38.64 Δ = 76° 13' 21.7" (LT) D = 38° 11' 49.9" L = 199.55' T = 117.66' R = 150.00' e = 5% V = 20 mph	PI Sta 17+64.92 Δ = 10° 03' 01" (RT) D = 3° 49' 11.0" L = 263.12' T = 131.90' R = 1,500.00' e = 3% Lr = 105' V = 40 mph	PI Sta 11+43.39 Δ = 10° 55' 15.7" (LT) D = 3° 49' 11.0" L = 285.91' T = 143.39' R = 1,500.00' e = 3% Lr = 105' V = 40 mph
		PI Sta 13+79.81 Δ = 19° 54' 36.3" (RT) D = 10° 42' 34.2" L = 185.91' T = 93.90' R = 535.00' e = EXIST. V = 40 mph

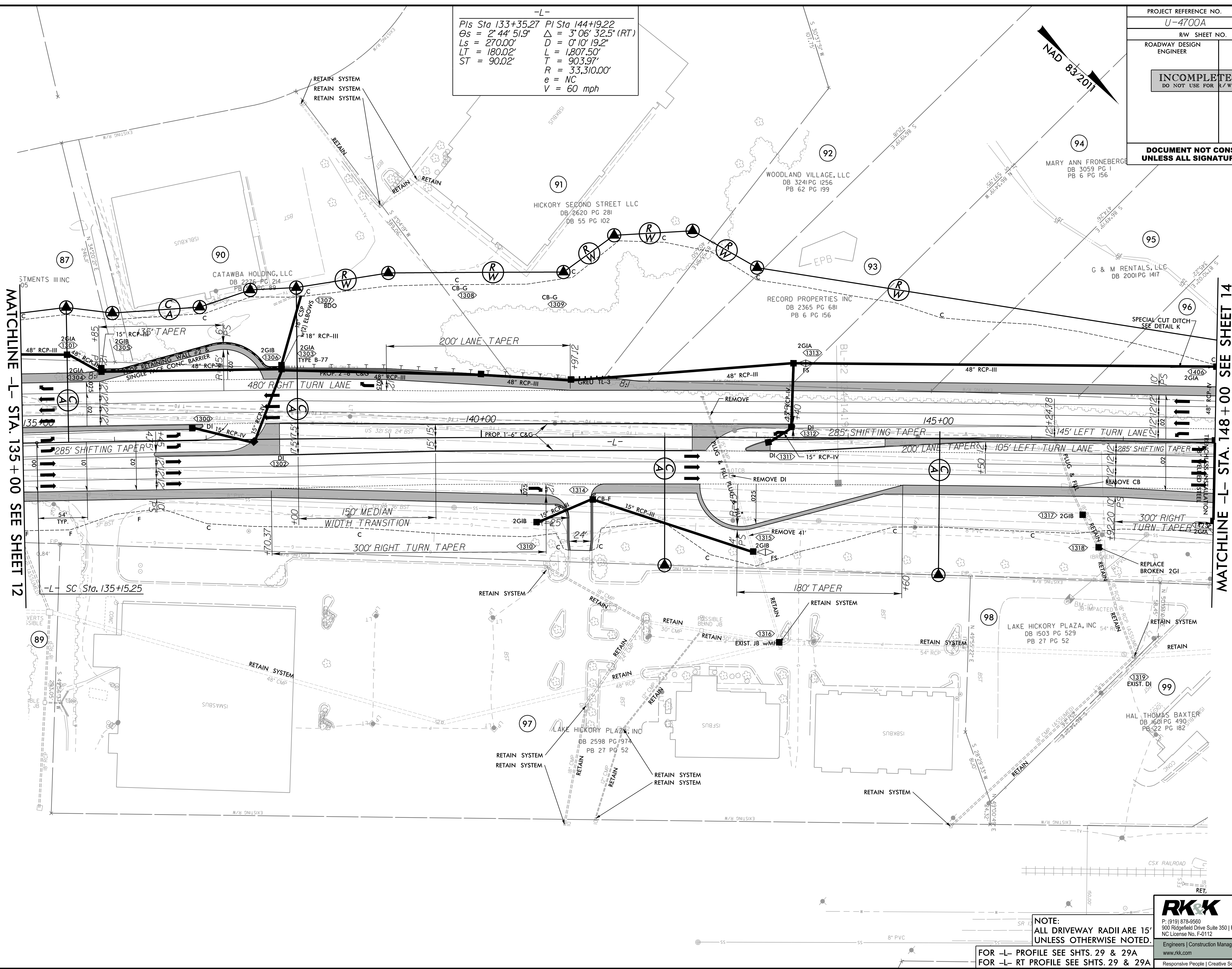


8/17/19  
C:\p\2019\Projects\U4700A\_rdw\psht12.dgn

PROJECT REFERENCE NO. U-4700A	SHEET NO. 13
RW SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION	
<b>DOCUMENT NOT CONSIDERED FINAL</b> UNLESS ALL SIGNATURES COMPLETED	

-L-

Pls Sta 133+35.27 PI Sta 144+19.22  
 $\theta_s = 2^\circ 44' 51.9"$   $\Delta = 3^\circ 06' 32.5"$  (RT)  
 $L_s = 270.00'$   $D = 0^\circ 10' 19.2"$   
 $LT = 180.02'$   $L = 1,807.50'$   
 $ST = 90.02'$   $T = 903.97'$   
 $R = 33,310.00'$   
 $e = NC$   
 $V = 60 \text{ mph}$



MATCHLINE -L- STA. 135+00 SEE SHEET 12

MATCHLINE -L- STA. 148+00 SEE SHEET 14

**NOTE:**  
 ALL DRIVEWAY RADII ARE 15'  
 UNLESS OTHERWISE NOTED.

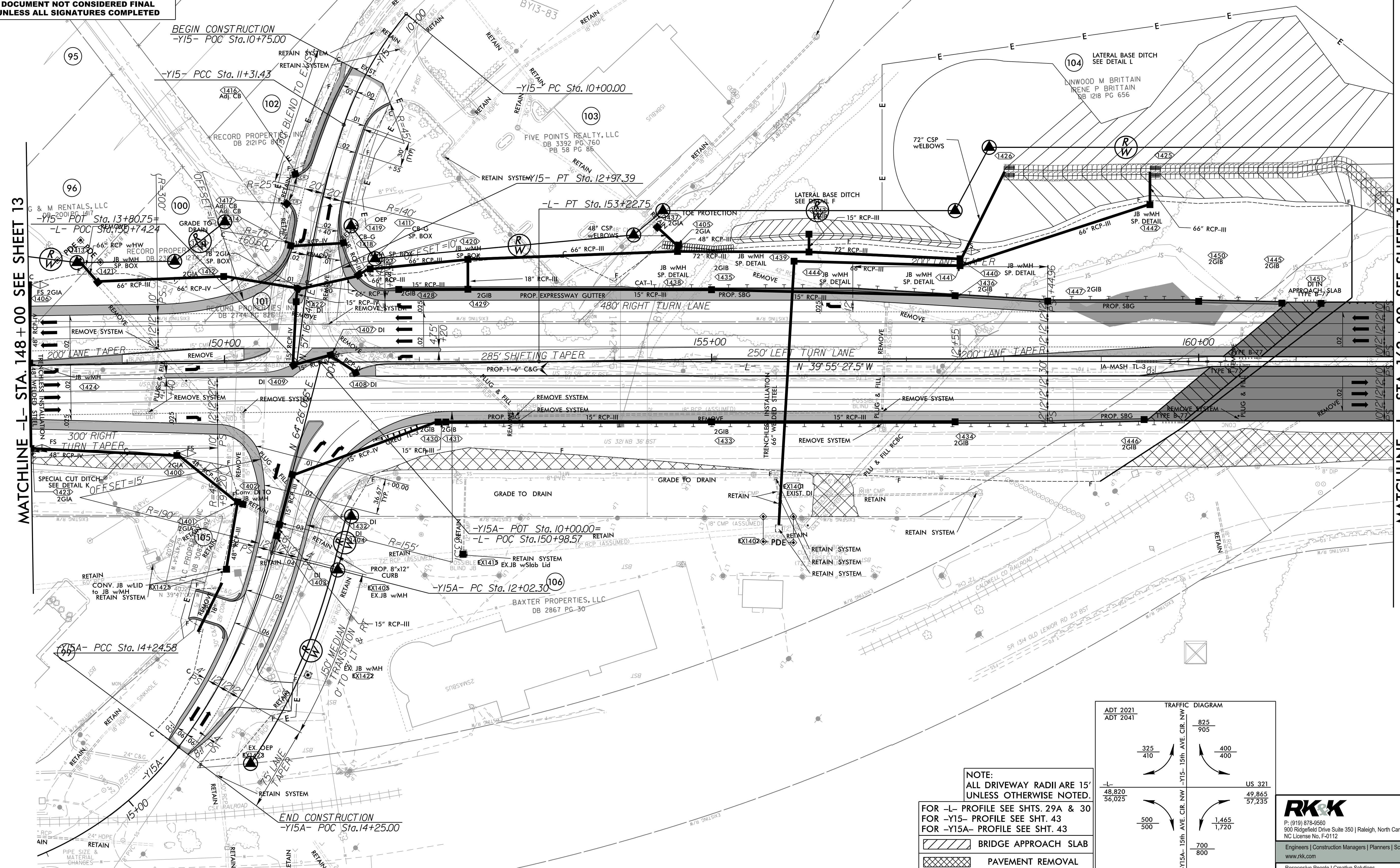
FOR -L- PROFILE SEE SHTS. 29 & 29A  
 FOR -L- RT PROFILE SEE SHTS. 29 & 29A

**RK&K**  
 P: (919) 878-9560  
 900 Ridgefield Drive Suite 350 | Raleigh, North Carolina 27609-3980  
 NC License No. F-0112  
 Engineers | Construction Managers | Planners | Scientists  
 www.rkk.com  
 Responsive People | Creative Solutions

8/17/2019  
 F:\3\2019\Projects\47000\47000a\_r.dwg - psh13.dwg

PROJECT REFERENCE NO. U-4700A	SHEET NO. 14
RW SHEET NO. ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION	
<b>DOCUMENT NOT CONSIDERED FINAL</b> UNLESS ALL SIGNATURES COMPLETED	

-L-	-Y15-	-Y15A-
PI Sta 144+19.22	PI Sta 10+66.42	PI Sta 12+14.72
$\Delta = 3^{\circ} 06' 32.5''$ (RT)	$\Delta = 20^{\circ} 21' 11.0''$ (LT)	$\Delta = 11^{\circ} 57' 38.1''$ (LT)
D = 0' 10' 19.2"	D = 15' 29' 07.2"	D = 7' 12' 25.3"
L = 1,807.50'	L = 131.43'	L = 165.96'
T = 903.97'	T = 66.42'	T = 83.28'
R = 33,310.00'	R = 370.00'	R = 795.00'
e = NC	e = 4%	e = 6%
V = 60 mph	V = 30 mph	V = 40 mph



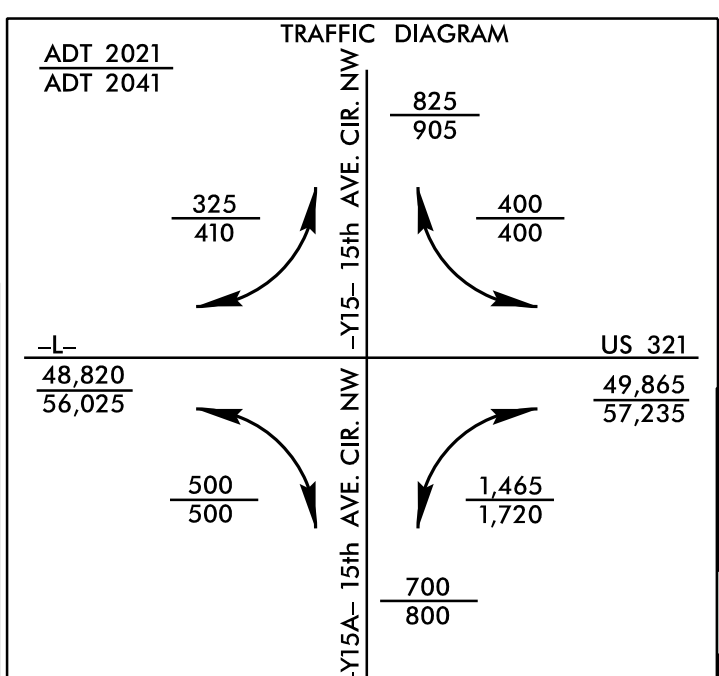
MATCHLINE -L- STA. 148+00 SEE SHEET 13

MATCHLINE -L- STA. 162+00 SEE SHEET 15

**NOTE:**  
ALL DRIVEWAY RADII ARE 15'  
UNLESS OTHERWISE NOTED.

FOR -L- PROFILE SEE SHTS. 29A & 30  
FOR -Y15- PROFILE SEE SHT. 43  
FOR -Y15A- PROFILE SEE SHT. 43

BRIDGE APPROACH SLAB  
 PAVEMENT REMOVAL



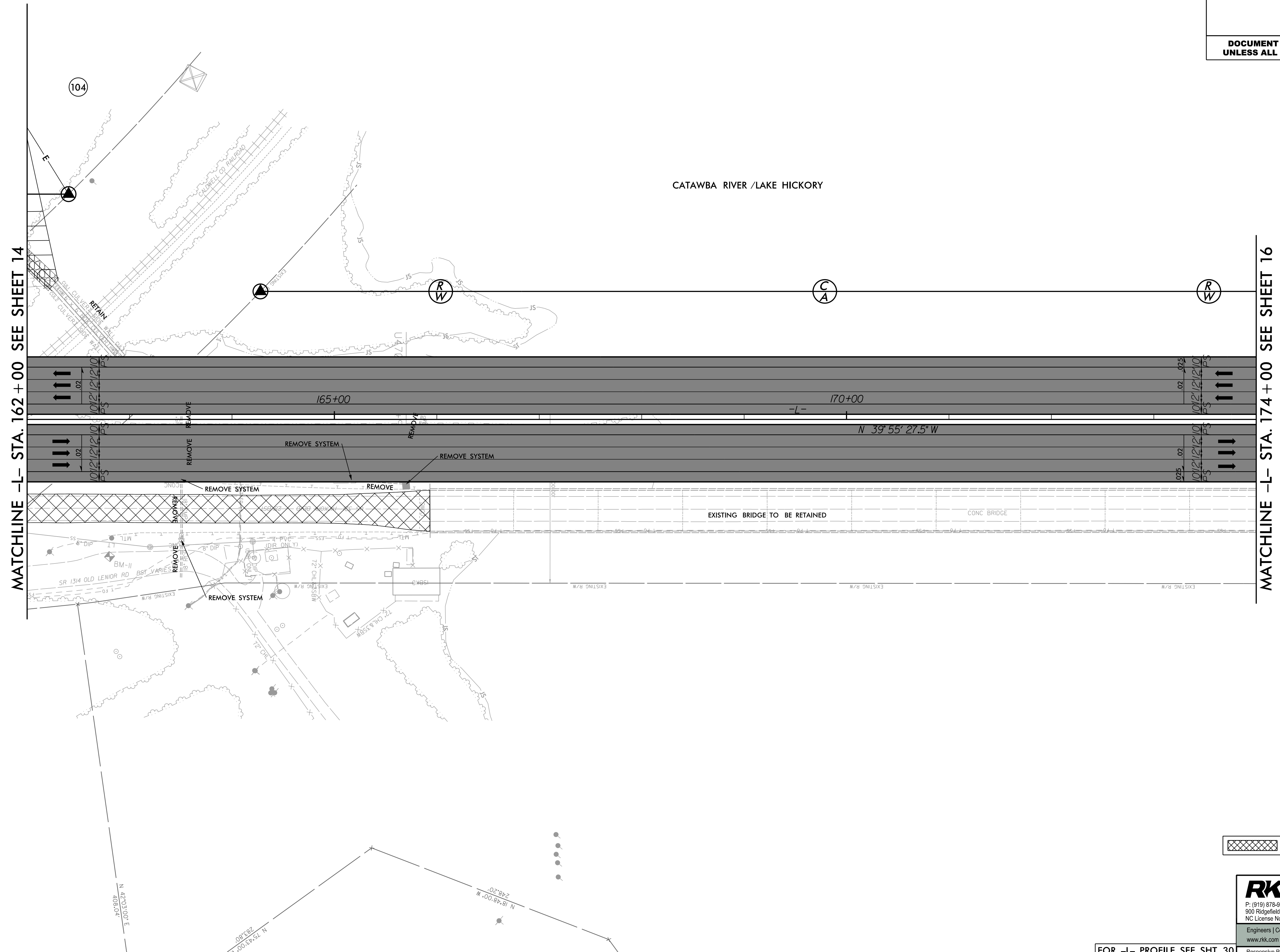
**RK&K**  
P: (919) 878-9560  
900 Ridgefield Drive Suite 350 | Raleigh, North Carolina 27609-3980  
NC License No. F-0112

Engineers | Construction Managers | Planners | Scientists  
www.rkk.com  
Responsive People | Creative Solutions

8/17/2019  
F:\2019\Projects\U-4700A\U-4700A-r.dwg  
8/17/2019

PROJECT REFERENCE NO. U-4700A	SHEET NO. 15
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION	
<b>DOCUMENT NOT CONSIDERED FINAL</b> UNLESS ALL SIGNATURES COMPLETED	

NAD 83/2011



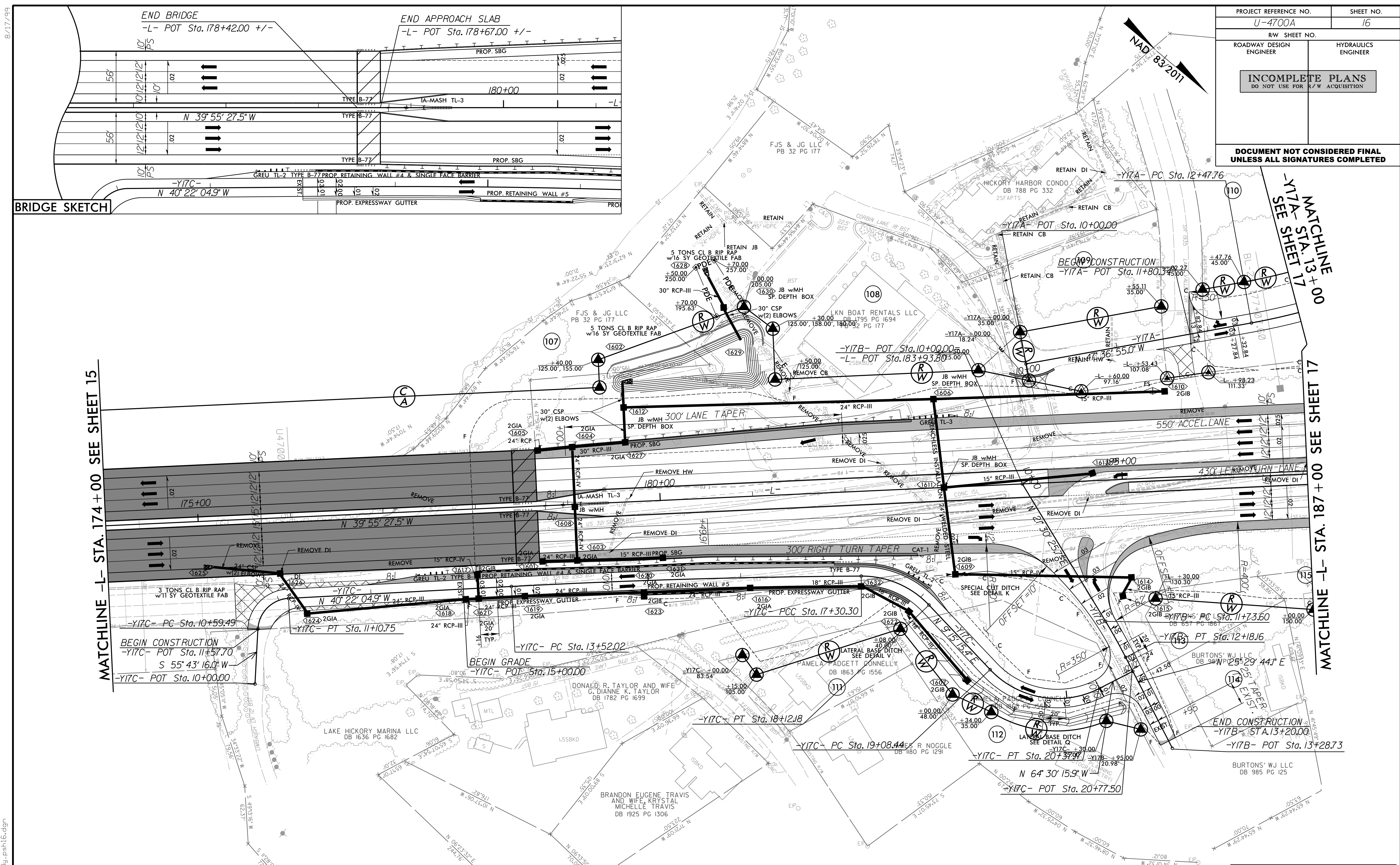
PAVEMENT REMOVAL

**RK&K**  
 P: (919) 878-9560  
 900 Ridgefield Drive Suite 350 | Raleigh, North Carolina 27609-3960  
 NC License No. F-0112  
 Engineers | Construction Managers | Planners | Scientists  
 www.rkk.com  
 Responsive People | Creative Solutions

FOR -L- PROFILE SEE SHT. 30

8/17/99

F:\3872019  
 R:\3872019\Proj\4700A\_r\rdw\psht15.dgn



**BRIDGE SKETCH**

MATCHLINE -L- STA. 174+00 SEE SHEET 15

MATCHLINE -L- STA. 187+00 SEE SHEET 17

8/17/1995  
8/13/2019  
C:\Users\j\OneDrive\Projects\U4700A\_rdw\psht16.dgn

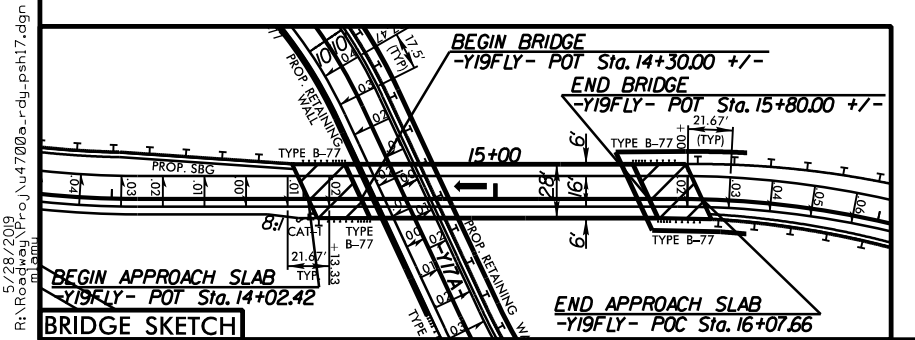
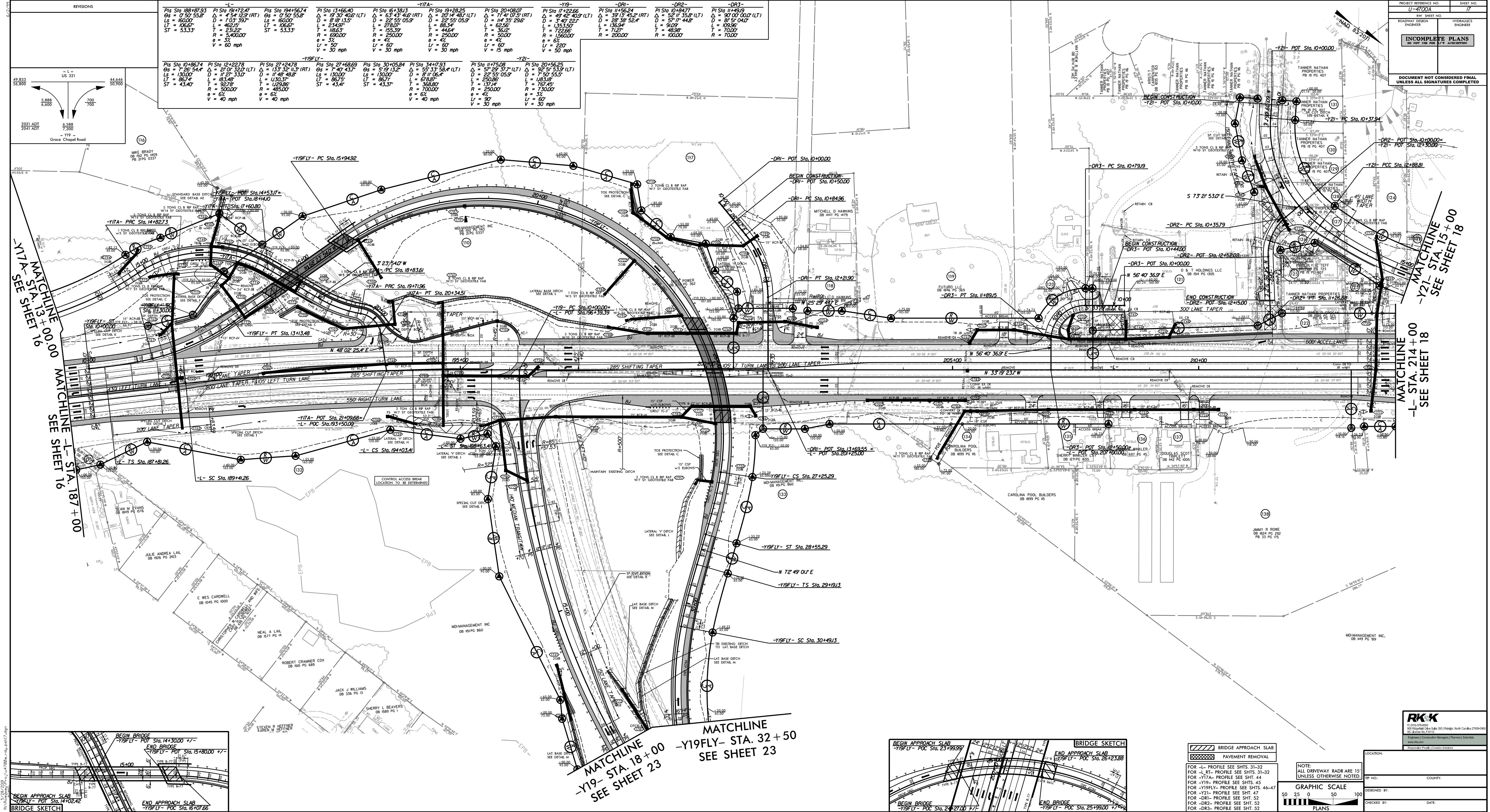
-Y17A-		-Y17B-		-Y17C-	
PI Sta 13+66.40	PI Sta 11+95.89	PI Sta 10+90.96	PI Sta 15+41.19	PI Sta 17+73.69	PI Sta 19+83.47
$\Delta = 19^\circ 30' 40.6''$ (LT)	$\Delta = 3^\circ 59' 18.4''$ (RT)	$\Delta = 83^\circ 54' 39.1''$ (RT)	$\Delta = 2^\circ 42' 33.3''$ (RT)	$\Delta = 46^\circ 54' 46.9''$ (RT)	$\Delta = 73^\circ 45' 31.3''$ (LT)
D = 8' 18' 13.5"	D = 8' 57' 08.9"	D = 163' 42' 08.0"	D = 0' 42' 58.3"	D = 57' 17' 44.8"	D = 57' 17' 44.8"
L = 234.97'	L = 44.55'	L = 51.26'	L = 378.28'	L = 81.88'	L = 128.73'
T = 118.63'	T = 22.28'	T = 31.46'	T = 189.18'	T = 43.39'	T = 75.03'
R = 690.00'	R = 640.00'	R = 35.00'	R = 8,000.00'	R = 100.00'	R = 100.00'
e = 3%	e = 4%	e = NC	e = NC	e = NC	e = NC
Lr = 50'	Lr = 120'	Lr = NC	Lr = 40'	Lr = 40'	Lr = 40'
V = 30 mph	V = 30 mph	V = 20 mph	V = 20 mph	V = 20 mph	V = 20 mph

BRIDGE APPROACH SLAB  
 PAVEMENT REMOVAL

**RK&K**  
 P: (919) 878-9560  
 900 Ridgefield Drive Suite 350 | Raleigh, North Carolina 27609-3960  
 NC License No. F-0112  
 Engineers | Construction Managers | Planners | Scientists  
 www.rkk.com  
 Responsive People | Creative Solutions

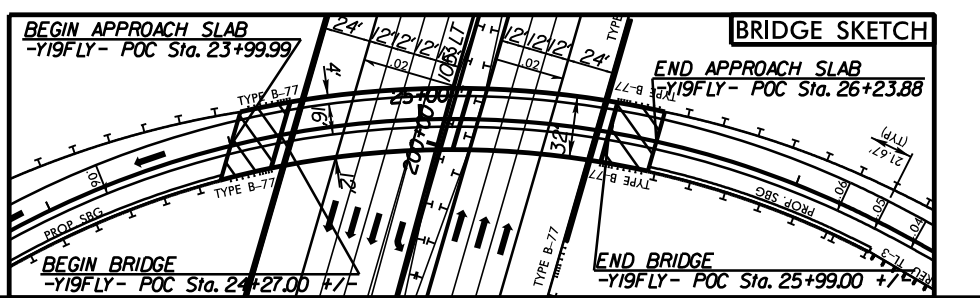
FOR -L- PROFILE SEE SHTS. 30 & 31  
 FOR -Y17A- PROFILE SEE SHT. 44  
 FOR -Y17B- PROFILE SEE SHT. 44  
 FOR -Y17C- PROFILE SEE SHT. 44

REVISIONS 48 833 58.800 2021 ADT 3041 ADT 3.888 7.000 700 700 US 321 Grace Chapel Road WISE BRADY DB 92 PC 409 PB 210 0337 -Y19- V = 60 mph	-Y1A- PI Sta 189487.93 Gs = 0' 50' 55.8" Ls = 80.00' Lt = 185.07' T = 533.33' R = 5400.00' e = 3% V = 60 mph	-Y1B- PI Sta 194456.74 Gs = 0' 50' 55.8" Ls = 80.00' Lt = 185.07' T = 533.33' R = 5400.00' e = 3% V = 60 mph	-Y1C- PI Sta 199425.57 Gs = 0' 50' 55.8" Ls = 80.00' Lt = 185.07' T = 533.33' R = 5400.00' e = 3% V = 60 mph	-Y1D- PI Sta 204394.40 Gs = 0' 50' 55.8" Ls = 80.00' Lt = 185.07' T = 533.33' R = 5400.00' e = 3% V = 60 mph	-Y1E- PI Sta 209363.23 Gs = 0' 50' 55.8" Ls = 80.00' Lt = 185.07' T = 533.33' R = 5400.00' e = 3% V = 60 mph	-Y1F- PI Sta 214332.06 Gs = 0' 50' 55.8" Ls = 80.00' Lt = 185.07' T = 533.33' R = 5400.00' e = 3% V = 60 mph	-Y1G- PI Sta 219300.89 Gs = 0' 50' 55.8" Ls = 80.00' Lt = 185.07' T = 533.33' R = 5400.00' e = 3% V = 60 mph	-Y1H- PI Sta 224269.72 Gs = 0' 50' 55.8" Ls = 80.00' Lt = 185.07' T = 533.33' R = 5400.00' e = 3% V = 60 mph	-Y1I- PI Sta 229238.55 Gs = 0' 50' 55.8" Ls = 80.00' Lt = 185.07' T = 533.33' R = 5400.00' e = 3% V = 60 mph	-Y1J- PI Sta 234207.38 Gs = 0' 50' 55.8" Ls = 80.00' Lt = 185.07' T = 533.33' R = 5400.00' e = 3% V = 60 mph	-Y1K- PI Sta 239176.21 Gs = 0' 50' 55.8" Ls = 80.00' Lt = 185.07' T = 533.33' R = 5400.00' e = 3% V = 60 mph	-Y1L- PI Sta 244145.04 Gs = 0' 50' 55.8" Ls = 80.00' Lt = 185.07' T = 533.33' R = 5400.00' e = 3% V = 60 mph	-Y1M- PI Sta 249113.87 Gs = 0' 50' 55.8" Ls = 80.00' Lt = 185.07' T = 533.33' R = 5400.00' e = 3% V = 60 mph	-Y1N- PI Sta 254082.70 Gs = 0' 50' 55.8" Ls = 80.00' Lt = 185.07' T = 533.33' R = 5400.00' e = 3% V = 60 mph	-Y1O- PI Sta 259051.53 Gs = 0' 50' 55.8" Ls = 80.00' Lt = 185.07' T = 533.33' R = 5400.00' e = 3% V = 60 mph	-Y1P- PI Sta 264020.36 Gs = 0' 50' 55.8" Ls = 80.00' Lt = 185.07' T = 533.33' R = 5400.00' e = 3% V = 60 mph	-Y1Q- PI Sta 268989.19 Gs = 0' 50' 55.8" Ls = 80.00' Lt = 185.07' T = 533.33' R = 5400.00' e = 3% V = 60 mph	-Y1R- PI Sta 273958.02 Gs = 0' 50' 55.8" Ls = 80.00' Lt = 185.07' T = 533.33' R = 5400.00' e = 3% V = 60 mph	-Y1S- PI Sta 278926.85 Gs = 0' 50' 55.8" Ls = 80.00' Lt = 185.07' T = 533.33' R = 5400.00' e = 3% V = 60 mph	-Y1T- PI Sta 283895.68 Gs = 0' 50' 55.8" Ls = 80.00' Lt = 185.07' T = 533.33' R = 5400.00' e = 3% V = 60 mph	-Y1U- PI Sta 288864.51 Gs = 0' 50' 55.8" Ls = 80.00' Lt = 185.07' T = 533.33' R = 5400.00' e = 3% V = 60 mph	-Y1V- PI Sta 293833.34 Gs = 0' 50' 55.8" Ls = 80.00' Lt = 185.07' T = 533.33' R = 5400.00' e = 3% V = 60 mph	-Y1W- PI Sta 298802.17 Gs = 0' 50' 55.8" Ls = 80.00' Lt = 185.07' T = 533.33' R = 5400.00' e = 3% V = 60 mph	-Y1X- PI Sta 303771.00 Gs = 0' 50' 55.8" Ls = 80.00' Lt = 185.07' T = 533.33' R = 5400.00' e = 3% V = 60 mph	-Y1Y- PI Sta 308739.83 Gs = 0' 50' 55.8" Ls = 80.00' Lt = 185.07' T = 533.33' R = 5400.00' e = 3% V = 60 mph	-Y1Z- PI Sta 313708.66 Gs = 0' 50' 55.8" Ls = 80.00' Lt = 185.07' T = 533.33' R = 5400.00' e = 3% V = 60 mph
--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--



MATCHLINE  
 -Y19- STA. 18+00  
 SEE SHEET 23

MATCHLINE  
 -Y19FLY- STA. 32+50  
 SEE SHEET 23



BRIDGE APPROACH SLAB  
 PAVEMENT REMOVAL

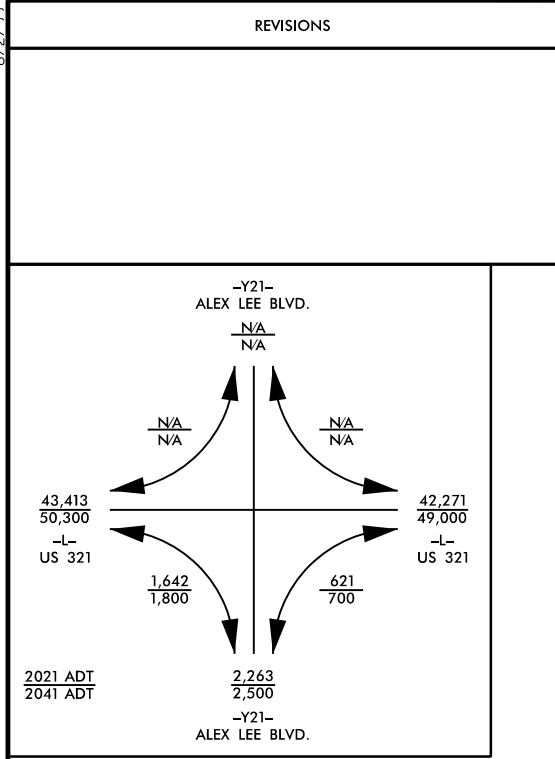
FOR -L- PROFILE SEE SHTS. 31-32  
 FOR -L-R- PROFILE SEE SHTS. 31-32  
 FOR -Y17A- PROFILE SEE SHT. 44  
 FOR -Y17B- PROFILE SEE SHTS. 45  
 FOR -Y19FLY- PROFILE SEE SHTS. 46-47  
 FOR -Y21- PROFILE SEE SHT. 47  
 FOR -DRI- PROFILE SEE SHT. 52  
 FOR -DR2- PROFILE SEE SHT. 52  
 FOR -DR3- PROFILE SEE SHT. 52

NOTE:  
 ALL DRIVEWAY RADII ARE 15'  
 UNLESS OTHERWISE NOTED.

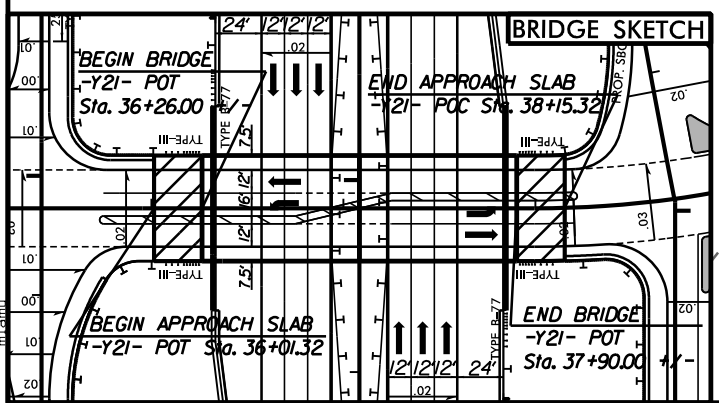
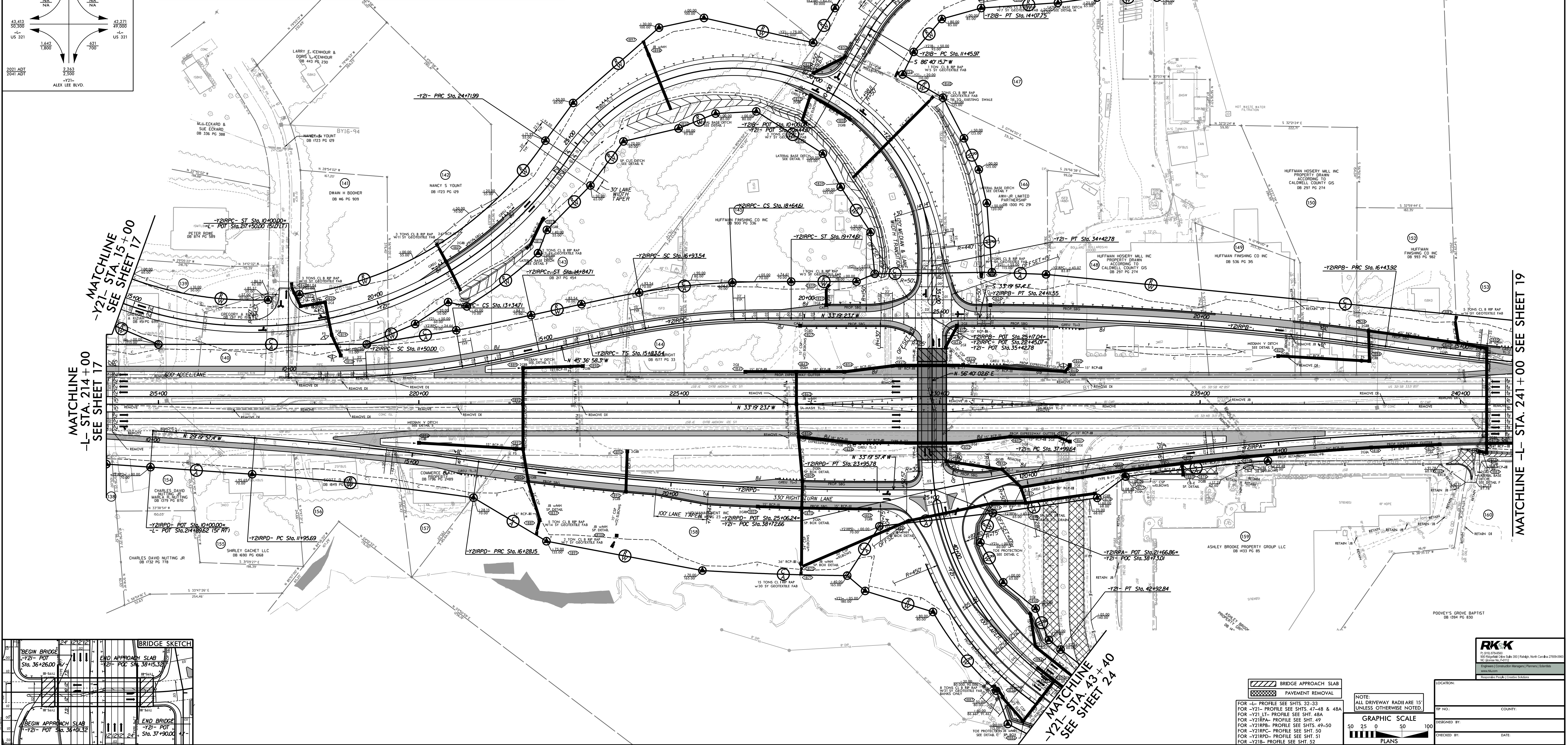
GRAPHIC SCALE  
 50 25 0 50 100  
 PLANS

**RK-K**  
 1111111111  
 1000 Parkway (2nd & 3rd Sts) Raleigh, North Carolina 27601-2001  
 P.O. Box 100, Raleigh, NC 27611  
 Engineers | Construction Managers | Planners | Scientists  
 Environmental Planners | Civil & Survey

LOCATION: \_\_\_\_\_  
 COUNTY: \_\_\_\_\_  
 TP NO.: \_\_\_\_\_  
 DESIGNED BY: \_\_\_\_\_  
 CHECKED BY: \_\_\_\_\_  
 DATE: \_\_\_\_\_



-Y21-		-Y21RPA-		-Y21RPB-		-Y21RPD-	
PI Sta 20+56.25	PI Sta 37+29.60	PI Sta 40+64.95	PI Sta 15+84.72	PI Sta 14+27.79	PI Sta 20+28.38	PI Sta 14+12.02	PI Sta 20+12.61
$\Delta = 92^\circ 5' 53.9" (LT)$	$\Delta = 146^\circ 22' 28.1" (RT)$	$\Delta = 52^\circ 19' 47.8" (LT)$	$\Delta = 110^\circ 05' 33.6" (LT)$	$\Delta = 4^\circ 07' 46.9" (RT)$	$\Delta = 8^\circ 07' 46.9" (RT)$	$\Delta = 8^\circ 07' 46.9" (RT)$	$\Delta = 8^\circ 07' 46.9" (RT)$
$D = 7^\circ 59' 55.5"$	$D = 6^\circ 04' 40.2"$	$D = 17^\circ 39' 17.2"$	$D = 0^\circ 59' 17.7"$	$D = 1^\circ 03' 32.7"$	$D = 1^\circ 03' 32.7"$	$D = 1^\circ 03' 32.7"$	$D = 1^\circ 03' 32.7"$
$L = 183.36'$	$L = 91.072'$	$L = 493.20'$	$L = 146.86'$	$L = 432.46'$	$L = 767.52'$	$L = 432.46'$	$L = 767.52'$
$T = 759.48'$	$T = 257.54'$	$T = 265.30'$	$T = 389.52'$	$T = 265.30'$	$T = 389.52'$	$T = 265.30'$	$T = 389.52'$
$R = 750.00'$	$R = 590.00'$	$R = 600.00'$	$R = 600.00'$	$R = 600.00'$	$R = 600.00'$	$R = 600.00'$	$R = 600.00'$
$e = 32'$	$e = 42'$	$e = 42'$	$e = 42'$	$e = 42'$	$e = 42'$	$e = 42'$	$e = 42'$
$Lr = 62'$	$Lr = 62'$	$Lr = 62'$	$Lr = 62'$	$Lr = 62'$	$Lr = 62'$	$Lr = 62'$	$Lr = 62'$
$V = 30 \text{ mph}$	$V = 30 \text{ mph}$	$V = 40 \text{ mph}$	$V = 40 \text{ mph}$	$V = 50 \text{ mph}$	$V = 50 \text{ mph}$	$V = 50 \text{ mph}$	$V = 50 \text{ mph}$



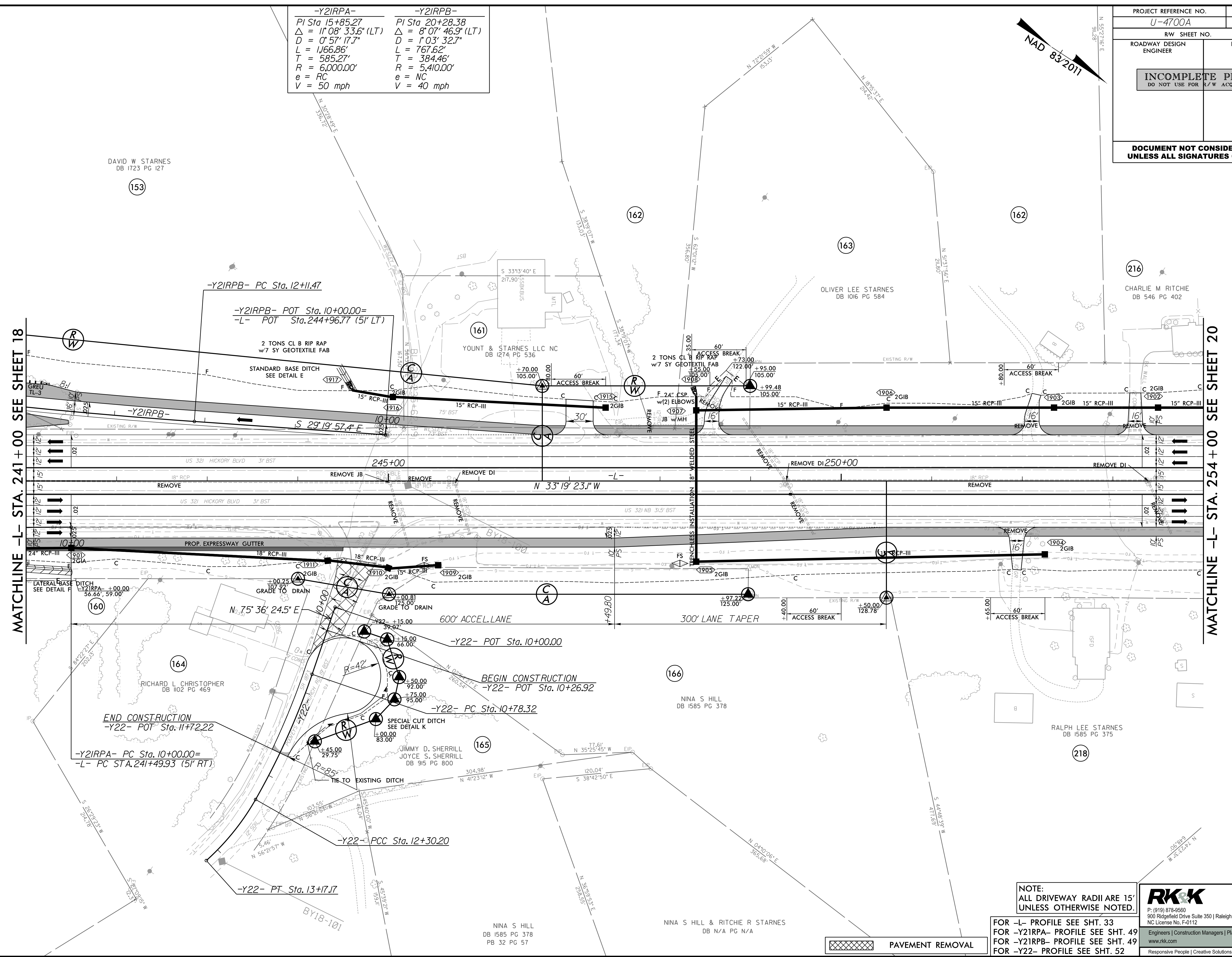
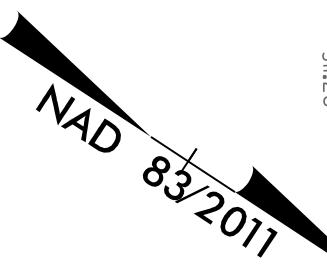
BRIDGE APPROACH SLAB  
 PAVEMENT REMOVAL  
 NOTE: ALL DRIVEWAY RADII ARE 15' UNLESS OTHERWISE NOTED.  
 GRAPHIC SCALE  
 0 25 50 100  
 PLANS  
 FOR -L- PROFILE SEE SHTS. 32-33  
 FOR -Y21- PROFILE SEE SHTS. 47-48 & 48A  
 FOR -Y21RPA- PROFILE SEE SHT. 48A  
 FOR -Y21RPA- PROFILE SEE SHT. 49  
 FOR -Y21RPA- PROFILE SEE SHTS. 49-50  
 FOR -Y21RPA- PROFILE SEE SHT. 50  
 FOR -Y21RPA- PROFILE SEE SHT. 51  
 FOR -Y21RPA- PROFILE SEE SHT. 52

PROJECT REFERENCE NO. 17-4700A  
 SHEET NO. 18  
 ROADWAY DESIGN ENGINEER  
 HYDRAULICS ENGINEER  
**INCOMPLETE PLANS**  
 DO NOT USE FOR CONSTRUCTION  
 DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

**RK-K**  
 100 Parkway Drive, Suite 101 Raleigh, North Carolina 27603  
 (919) 876-7212  
 Fax: (919) 876-7213  
 www.rk-k.com  
 Registered Professional Engineer  
 License No. 35014  
 State of North Carolina  
 LOCATION: \_\_\_\_\_  
 COUNTY: \_\_\_\_\_  
 TP NO.: \_\_\_\_\_  
 DESIGNED BY: \_\_\_\_\_  
 CHECKED BY: \_\_\_\_\_  
 DATE: \_\_\_\_\_

PROJECT REFERENCE NO. U-4700A	SHEET NO. 19
RW SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION	
<b>DOCUMENT NOT CONSIDERED FINAL</b> UNLESS ALL SIGNATURES COMPLETED	

<b>-Y2IRPA-</b> PI Sta 15+85.27 $\Delta = 11^{\circ}08'33.6"$ (LT) D = 0'57"17.7" L = 1166.86' T = 585.27' R = 6,000.00' e = RC V = 50 mph	<b>-Y2IRPB-</b> PI Sta 20+28.38 $\Delta = 8^{\circ}07'46.9"$ (LT) D = 1'03"32.7" L = 767.62' T = 384.46' R = 5,410.00' e = NC V = 40 mph
--	--



MATCHLINE -L- STA. 241+00 SEE SHEET 18

MATCHLINE -L- STA. 254+00 SEE SHEET 20

**END CONSTRUCTION**  
-Y22- POT Sta. 11+72.22

**BEGIN CONSTRUCTION**  
-Y22- POT Sta. 10+26.92

-Y2IRPA- PC Sta. 10+00.00=  
-L- PC STA. 241+49.93 (51' RT)

-Y22- PC Sta. 10+78.32

-Y22- PCC Sta. 12+30.20

-Y22- PT Sta. 13+17.17

**NOTE:**  
ALL DRIVEWAY RADII ARE 15'  
UNLESS OTHERWISE NOTED.

FOR -L- PROFILE SEE SHT. 33  
FOR -Y2IRPA- PROFILE SEE SHT. 49  
FOR -Y2IRPB- PROFILE SEE SHT. 49  
FOR -Y22- PROFILE SEE SHT. 52



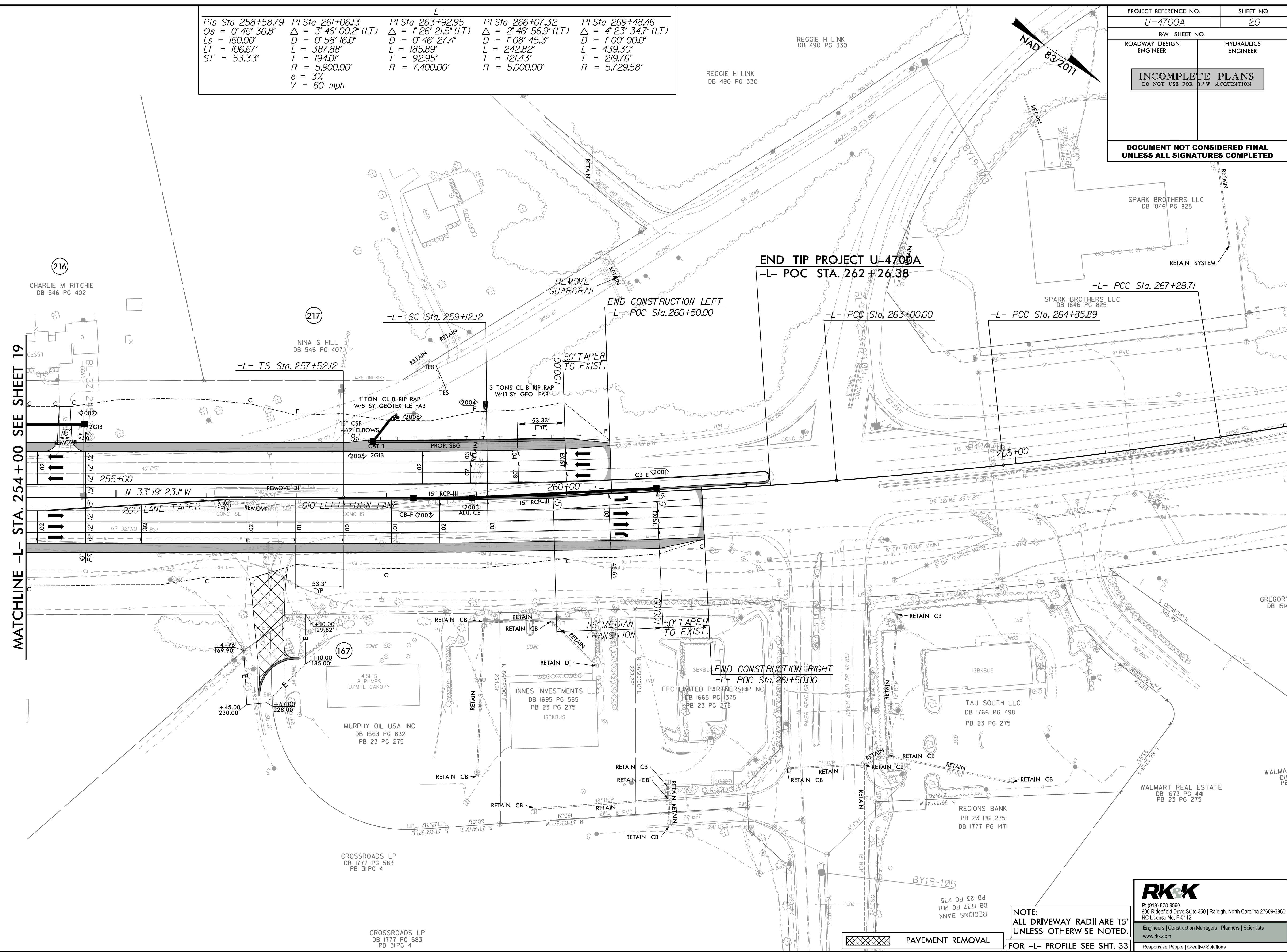
**RK&K**  
P: (919) 878-9560  
900 Ridgefield Drive Suite 350 | Raleigh, North Carolina 27609-3980  
NC License No. F-0112  
Engineers | Construction Managers | Planners | Scientists  
www.rkk.com  
Responsive People | Creative Solutions

8/17/19  
F:\362\2019\Projects\47000\47000.dwg\_r.dwg\_psh19.dwg



PROJECT REFERENCE NO. U-4700A	SHEET NO. 20
RW SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION	
<b>DOCUMENT NOT CONSIDERED FINAL</b> UNLESS ALL SIGNATURES COMPLETED	

Pls Sta 258+58.79 θs = 0° 46' 36.8" Ls = 160.00' LT = 106.67' ST = 53.33'	PI Sta 261+06.13 Δ = 3° 46' 00.2" (LT) D = 0' 58' 16.0" L = 387.88' T = 194.01' R = 5,900.00' e = 3% V = 60 mph	PI Sta 263+92.95 Δ = 1° 26' 21.5" (LT) D = 0' 46' 27.4" L = 185.89' T = 92.95' R = 7,400.00'	PI Sta 266+07.32 Δ = 2° 46' 56.9" (LT) D = 1' 08' 45.3" L = 242.82' T = 121.43' R = 5,000.00'	PI Sta 269+48.46 Δ = 4° 23' 34.7" (LT) D = 1' 00' 00.0" L = 439.30' T = 219.76' R = 5,729.58'
---	--	---	--	--



MATCHLINE -L- STA. 254+00 SEE SHEET 19

**END TIP PROJECT U-4700A**  
-L- POC STA. 262+26.38

**END CONSTRUCTION LEFT**  
-L- POC Sta. 260+50.00

-L- PCC Sta. 263+00.00

-L- PCC Sta. 264+85.89

-L- PCC Sta. 267+28.71

**END CONSTRUCTION RIGHT**  
-L- POC Sta. 261+50.00

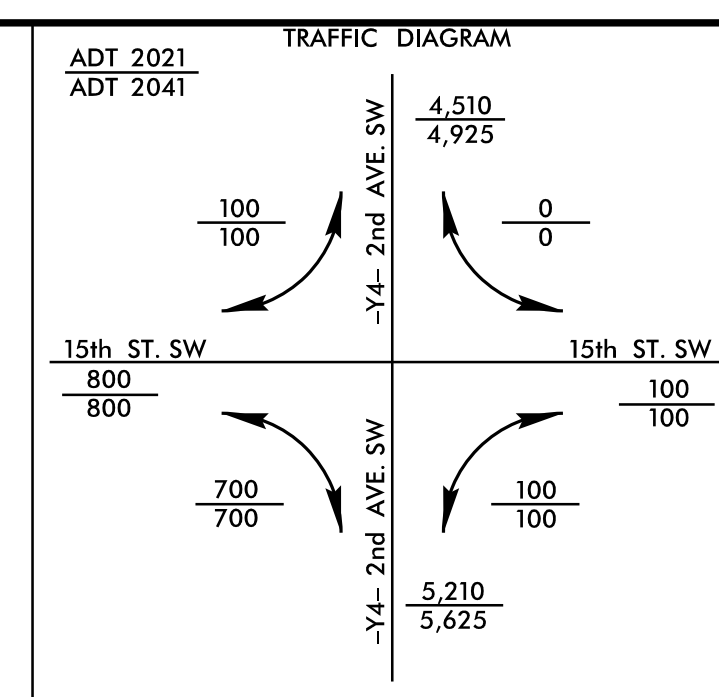
**NOTE:**  
ALL DRIVEWAY RADII ARE 15'  
UNLESS OTHERWISE NOTED.  
FOR -L- PROFILE SEE SHT. 33

PAVEMENT REMOVAL

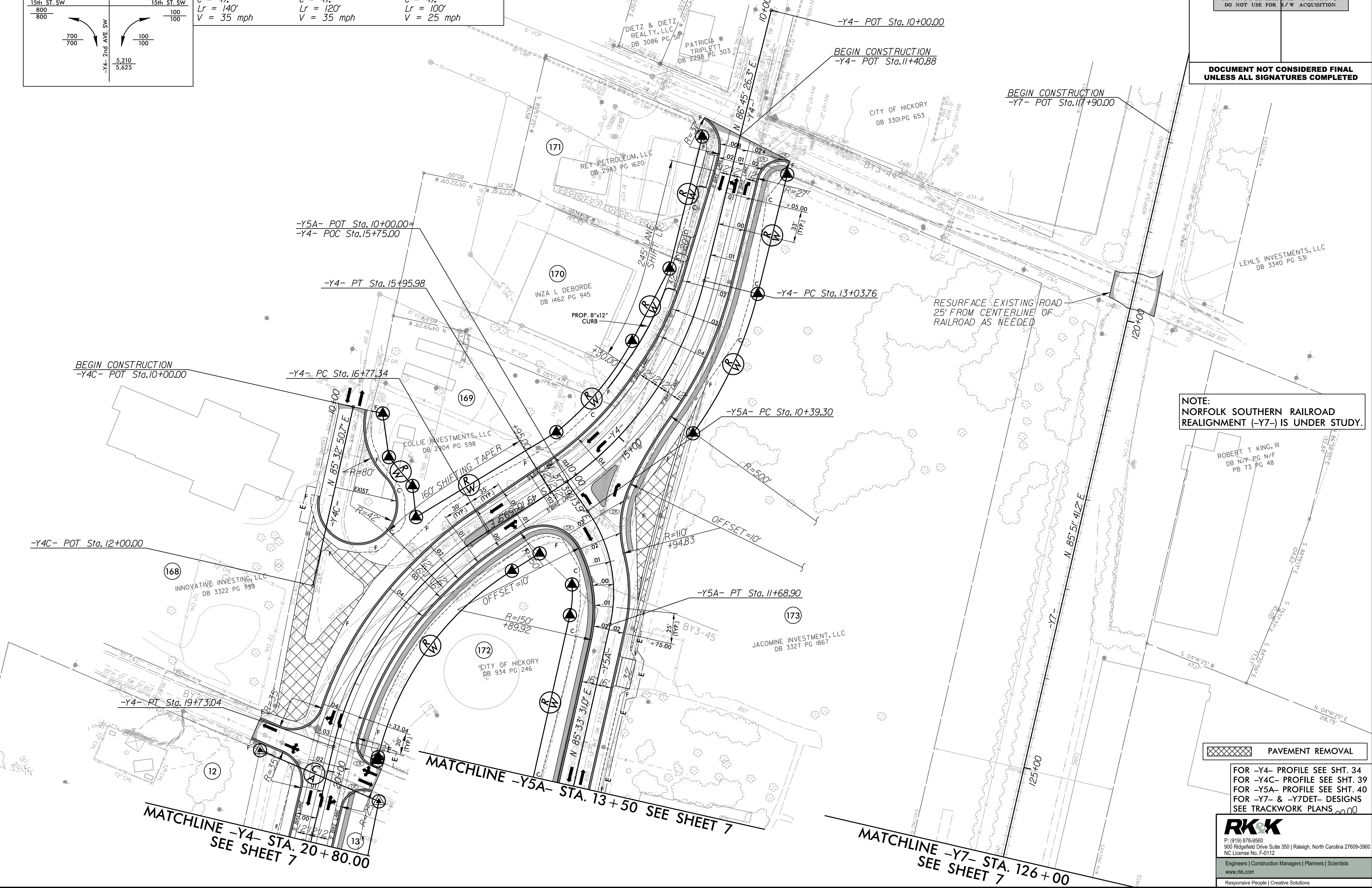
**RK&K**  
P: (919) 878-9560  
900 Ridgefield Drive Suite 350 | Raleigh, North Carolina 27609-3960  
NC License No. F-0112  
Engineers | Construction Managers | Planners | Scientists  
www.rkk.com  
Responsive People | Creative Solutions

8/17/19  
F:\2019\Projects\U-4700A\U-4700A\_rdw\_psh.dwg  
CROSSROADS LP DB 1777 PG 583 PB 31PG 4

PROJECT REFERENCE NO. U-4700A	SHEET NO. 21
RW SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION	
<b>DOCUMENT NOT CONSIDERED FINAL</b> UNLESS ALL SIGNATURES COMPLETED	



-Y4-	-Y4-	-Y5A-
PI Sta 14+57.52	PI Sta 18+33.13	PI Sta 11+08.16
$\Delta = 44^\circ 03' 33.7''$ (RT)	$\Delta = 44^\circ 35' 03.6''$ (LT)	$\Delta = 47^\circ 54' 17.2''$ (RT)
$D = 15^\circ 04' 40.2''$	$D = 15^\circ 04' 40.2''$	$D = 36^\circ 57' 54.1''$
$L = 292.2'$	$L = 295.69'$	$L = 129.59'$
$T = 153.76'$	$T = 155.79'$	$T = 68.86'$
$R = 380.00'$	$R = 380.00'$	$R = 155.00'$
$e = 4\%$	$e = 4\%$	$e = 4\%$
$Lr = 140'$	$Lr = 120'$	$Lr = 100'$
$V = 35$ mph	$V = 35$ mph	$V = 25$ mph



**NOTE:**  
NORFOLK SOUTHERN RAILROAD  
REALIGNMENT (-Y7-) IS UNDER STUDY.

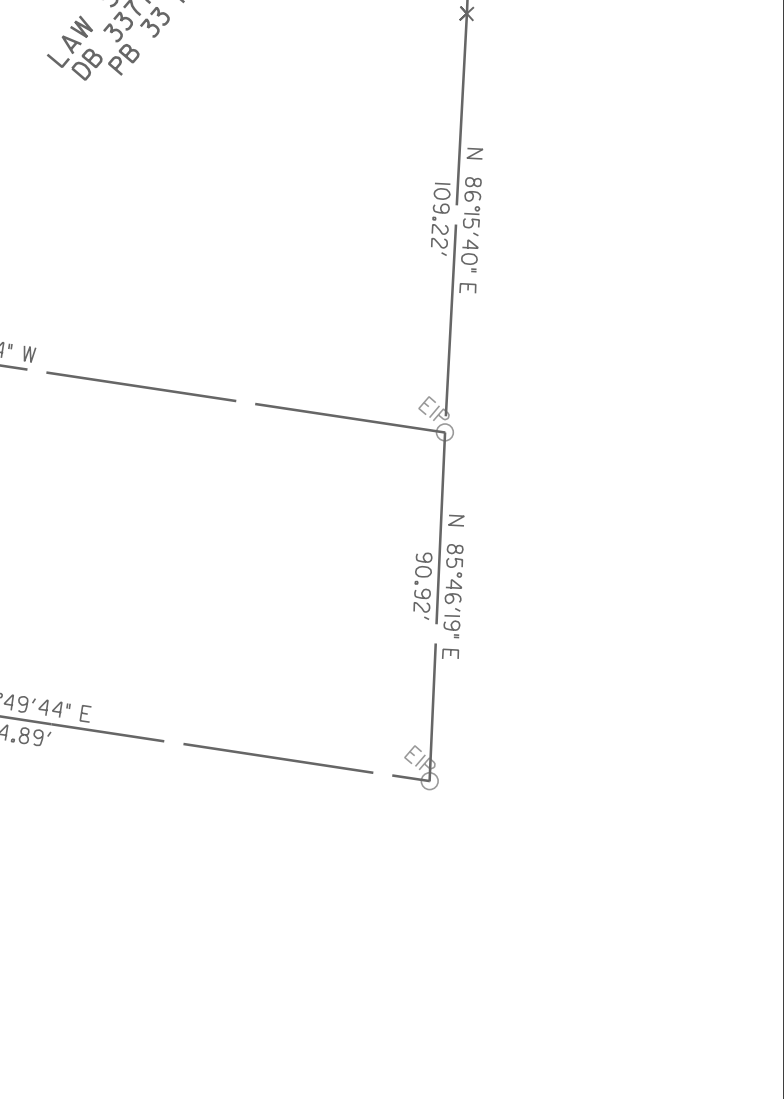
PAVEMENT REMOVAL

FOR -Y4- PROFILE SEE SHT. 34  
FOR -Y4C- PROFILE SEE SHT. 39  
FOR -Y5A- PROFILE SEE SHT. 40  
FOR -Y7- & -Y7DET- DESIGNS  
SEE TRACKWORK PLANS

**RK&K**  
P: (919) 878-9560  
900 Ridgefield Drive Suite 350 | Raleigh, North Carolina 27609-3980  
NC License No. F-0112  
Engineers | Construction Managers | Planners | Scientists  
www.rkk.com  
Responsive People | Creative Solutions

8/17/19  
F:\362\2019\362\2019\Proj\47000\...\_r.dwg - psh21.dgn

NAD 83/2011



-Y4-	
PI Sta 37+55.61 Δ = 12' 38" 12.5" (RT) D = 2' 17" 30.6" L = 551.38' T = 276.82' R = 2,500.00' e = RC (2%) Lr = 60' V = 35 mph	PI Sta 41+05.34 Δ = 22' 22" 33.6" (LT) D = 15' 04" 40.2" L = 148.40' T = 75.16' R = 380.00' e = 4% Lr = 110' V = 35 mph

-Y4A-	
PI Sta 11+65.45 Δ = 66' 59" 30.7" (LT) D = 22' 55" 05.9" L = 292.31' T = 165.45' R = 250.00* e = 4% Lr = 110' V = 30 mph*	PI Sta 15+23.45 Δ = 57' 39" 06.0" (RT) D = 13' 38" 30.7" L = 422.61' T = 231.4' R = 420.00' e = 4% Lr = 110' V = 35 mph

-Y4B-		-Y4D-	
PI Sta 10+88.22 Δ = 107' 13" 56.0" (RT) D = 88' 08" 50.5" L = 121.65' T = 88.22' R = 65.00* e = 4% Lr = 90' V = 15 mph*	PI Sta 14+16.24 Δ = 12' 33" 23.1" (LT) D = 8' 11" 06.4" L = 153.41' T = 77.01' R = 700.00' e = 3% Lr = 70' V = 30 mph		

-Y4G-		-Y5B-	
PI Sta 11+58.92 Δ = 2' 51" 29.7" (LT) D = 0' 53" 58.1" L = 317.77' T = 158.92' R = 6,370.00' e = EXIST. V = 30 mph	PI Sta 20+37.96 Δ = 5' 01" 05.2" (LT) D = 1' 31" 40.4" L = 328.43' T = 164.32' R = 3,750.00' e = EXIST. V = 30 mph	PI Sta 23+99.22 Δ = 60' 54" 24.3" (RT) D = 6' 33" 39.43" L = 95.67' T = 52.92' R = 90.00' e = 3% V = 20 mph	

\* DESIGN EXCEPTION REQUIRED  
 PAVEMENT REMOVAL

FOR -Y4- PROFILE SEE SHT. 35  
 FOR -Y4A- PROFILE SEE SHT. 39  
 FOR -Y4B- PROFILE SEE SHT. 39  
 FOR -Y4D- PROFILE SEE SHT. 39  
 FOR -Y5B- PROFILE SEE SHT. 40  
 FOR -Y7- & -Y7DET- DESIGNS SEE TRACKWORK PLANS

**RK&K**  
 P: (919) 878-9560  
 900 Ridgefield Drive Suite 350 | Raleigh, North Carolina 27609-3960  
 NC License No. F-0112  
 Engineers | Construction Managers | Planners | Scientists  
 www.rkk.com  
 Responsive People | Creative Solutions

8/17/19  
 E:\3872019\3872019\Projects\U4700A\_rdw\psht22.dgn

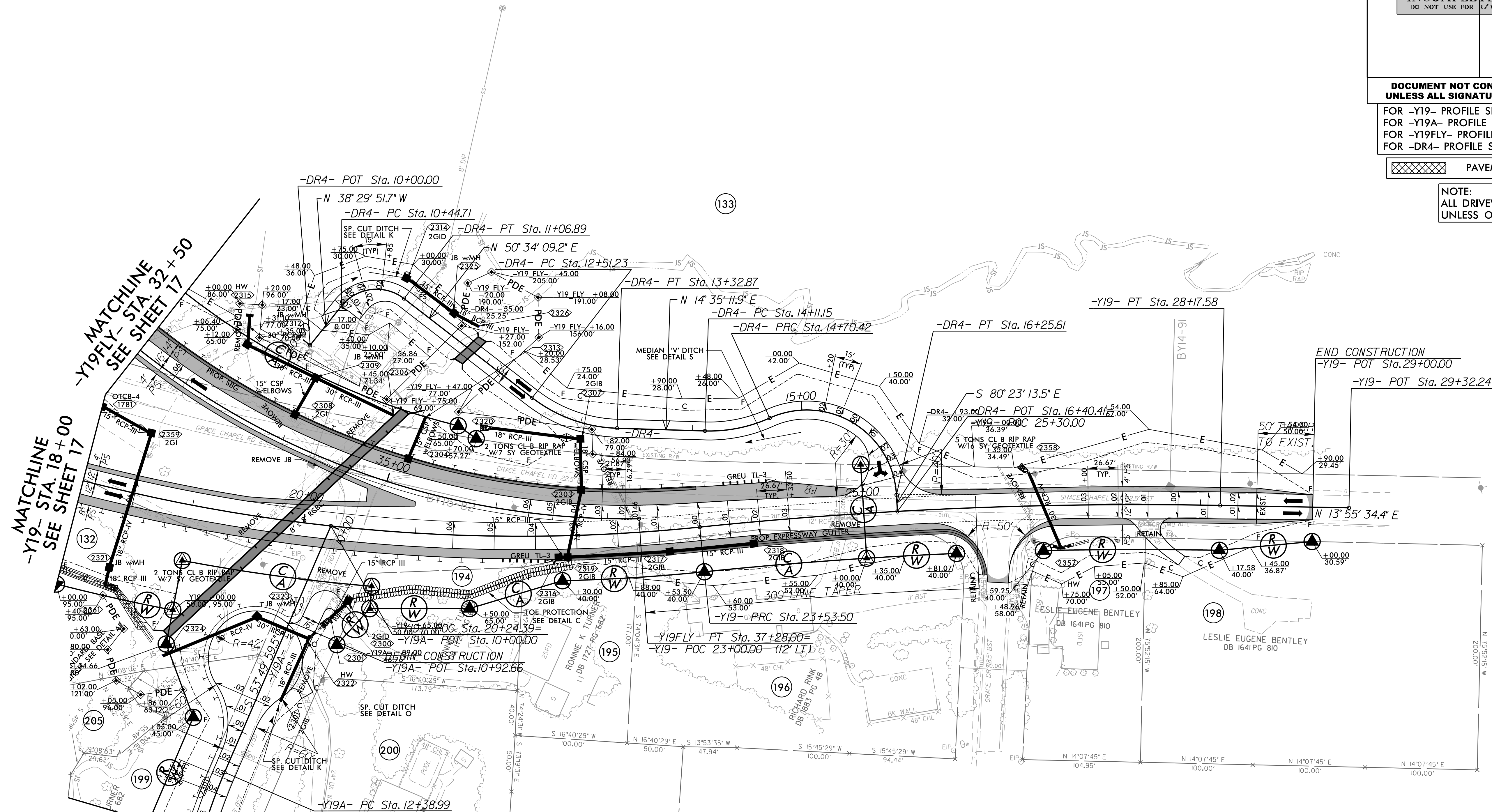
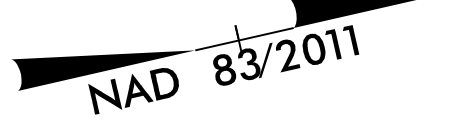
PROJECT REFERENCE NO. U-4700A	SHEET NO. 23
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION	

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

FOR -Y19- PROFILE SEE SHT. 45  
 FOR -Y19A- PROFILE SEE SHT. 45  
 FOR -Y19FLY- PROFILE SEE SHTS. 46-47  
 FOR -DR4- PROFILE SEE SHT. 53

PAVEMENT REMOVAL

NOTE:  
ALL DRIVEWAY RADII ARE 15'  
UNLESS OTHERWISE NOTED.



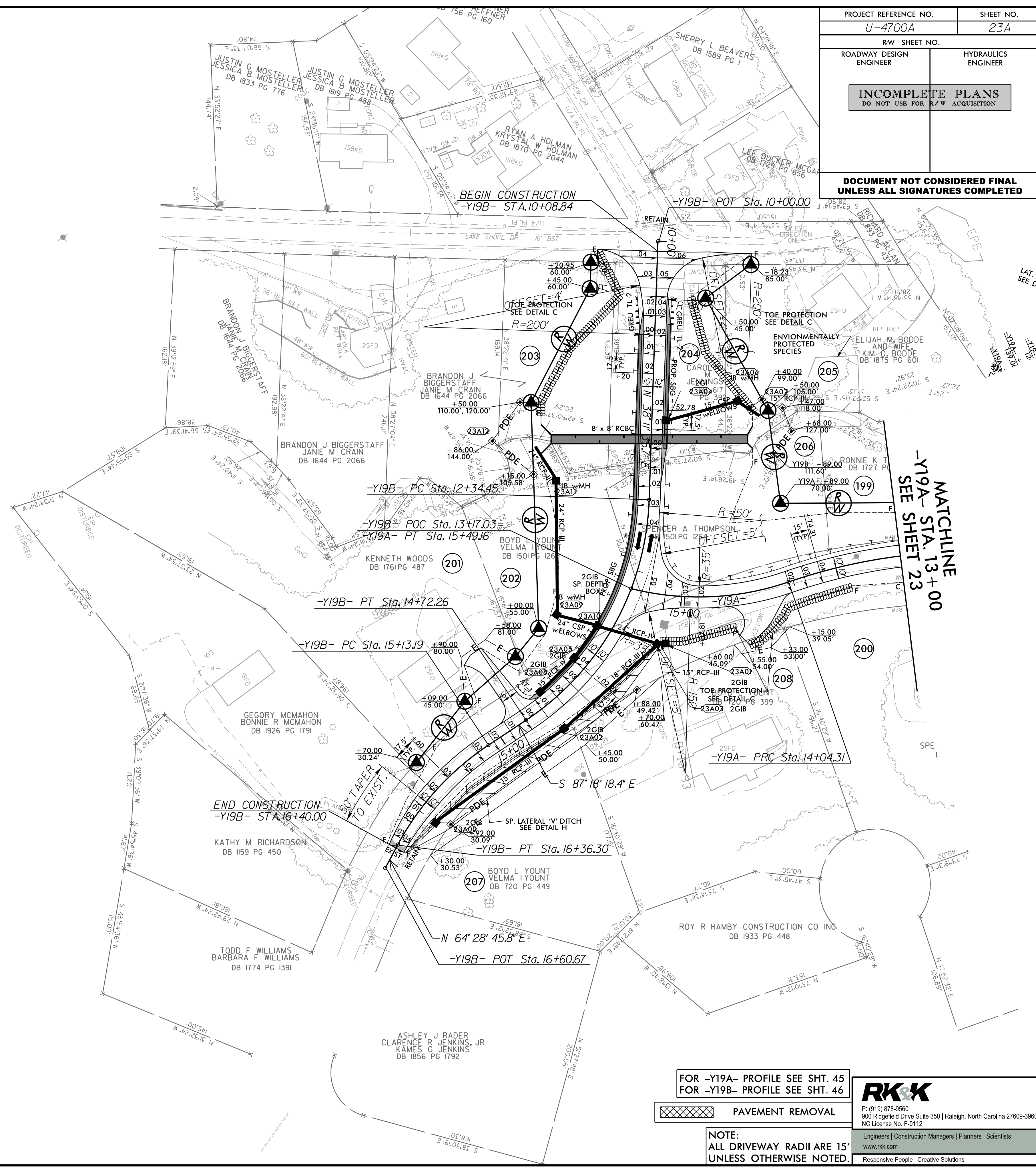
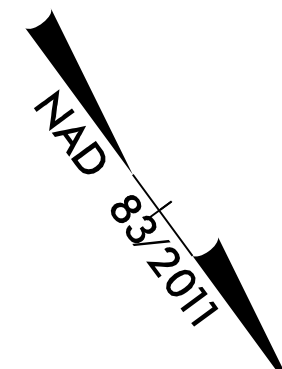
-DR4-			
PI Sta 10+84.07	PI Sta 12+93.45	PI Sta 14+41.31	PI Sta 15+87.14
$\Delta = 89^{\circ}04'00.9''$ (RT)	$\Delta = 35^{\circ}58'57.3''$ (LT)	$\Delta = 26^{\circ}07'13.3''$ (LT)	$\Delta = 111^{\circ}08'47.8''$ (RT)
D = 143'14'22.0"	D = 44'04'25.2"	D = 44'04'25.2"	D = 71'37'11.0"
L = 62.18'	L = 81.64'	L = 59.27'	L = 155.19'
T = 39.35'	T = 42.22'	T = 30.16'	T = 116.72'
R = 40.00'	R = 130.00'	R = 130.00'	R = 80.00'

-Y19-		-Y19FLY-		-Y19A-	
PI Sta 17+22.66	PI Sta 25+85.82	PI Sta 34+17.93	PI Sta 13+22.41	PI Sta 13+22.41	PI Sta 13+22.41
$\Delta = 49^{\circ}42'40.9''$ (LT)	$\Delta = 6^{\circ}57'38.3''$ (RT)	$\Delta = 55^{\circ}33'58.4''$ (LT)	$\Delta = 18^{\circ}56'39.7''$ (LT)	$\Delta = 18^{\circ}56'39.7''$ (LT)	$\Delta = 18^{\circ}56'39.7''$ (LT)
D = 3'40'22.1"	D = 1'29'59.6"	D = 8'11'06.4"	D = 11'27'33.0"	D = 11'27'33.0"	D = 11'27'33.0"
L = 1,353.50'	L = 464.08'	L = 678.87'	L = 165.32'	L = 165.32'	L = 165.32'
T = 722.66'	T = 232.32'	T = 368.80'	T = 83.42'	T = 83.42'	T = 83.42'
R = 1,560.00'	R = 3,820.00'	R = 700.00'	R = 500.00'	R = 500.00'	R = 500.00'
e = 6%	e = 3%	e = 6%	e = 4%	e = 4%	e = 4%
Lr = 220'	Lr = 80'	V = 40 mph	Lr = 60'	Lr = 60'	Lr = 60'
V = 50 mph	V = 50 mph		V = 30 mph	V = 30 mph	V = 30 mph

P: (919) 878-9560  
 900 Ridgely Drive Suite 350 | Raleigh, North Carolina 27609-3960  
 NC License No. F-0112  
 Engineers | Construction Managers | Planners | Scientists  
 www.rk.com  
 Responsive People | Creative Solutions

PROJECT REFERENCE NO. U-4700A		SHEET NO. 23A	
RW SHEET NO. ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION			
<b>DOCUMENT NOT CONSIDERED FINAL</b> UNLESS ALL SIGNATURES COMPLETED			



MATCHLINE  
-Y19A- STA. 13+00  
SEE SHEET 23

-Y19A-		-Y19B-	
PI Sta 13+22.41	PI Sta 14+78.83	PI Sta 13+63.21	PI Sta 15+76.02
$\Delta = 18^{\circ} 56' 39.7''$ (LT)	$\Delta = 33^{\circ} 11' 57.0''$ (RT)	$\Delta = 54^{\circ} 30' 06.0''$ (RT)	$\Delta = 28^{\circ} 12' 55.8''$ (LT)
D = 11' 27' 33.0"	D = 22' 55' 05.9"	D = 22' 55' 05.9"	D = 22' 55' 05.9"
L = 165.32'	L = 144.86'	L = 237.81'	L = 123.11'
T = 83.42'	T = 74.53'	T = 128.76'	T = 62.83'
R = 500.00'	R = 250.00'	R = 250.00'	R = 250.00'
e = 4%	e = 4%	e = 4%	e = 4%
Lr = 60'	Lr = 60'	Lr = 70'	Lr = 70'
V = 30 mph	V = 30 mph	V = 30 mph	V = 30 mph

FOR -Y19A- PROFILE SEE SHT. 45  
FOR -Y19B- PROFILE SEE SHT. 46

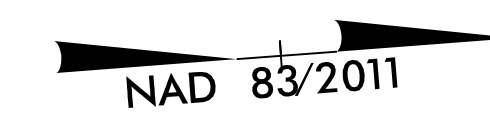
PAVEMENT REMOVAL

NOTE:  
ALL DRIVEWAY RADII ARE 15'  
UNLESS OTHERWISE NOTED.

**RK&K**  
P: (919) 878-9560  
900 Ridgeland Drive Suite 350 | Raleigh, North Carolina 27609-3960  
NC License No. F-0112  
Engineers | Construction Managers | Planners | Scientists  
www.rk.com  
Responsive People | Creative Solutions


8/17/99  
5/28/2019  
R:\Roadway\Proj\4700a\_rdy\_psh23A.dgn

PROJECT REFERENCE NO. U-4700A	SHEET NO. 24
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION	
<b>DOCUMENT NOT CONSIDERED FINAL</b> UNLESS ALL SIGNATURES COMPLETED	



8/17/19

F:\2019\Projects\U-4700A\rdw\psh24.dgn

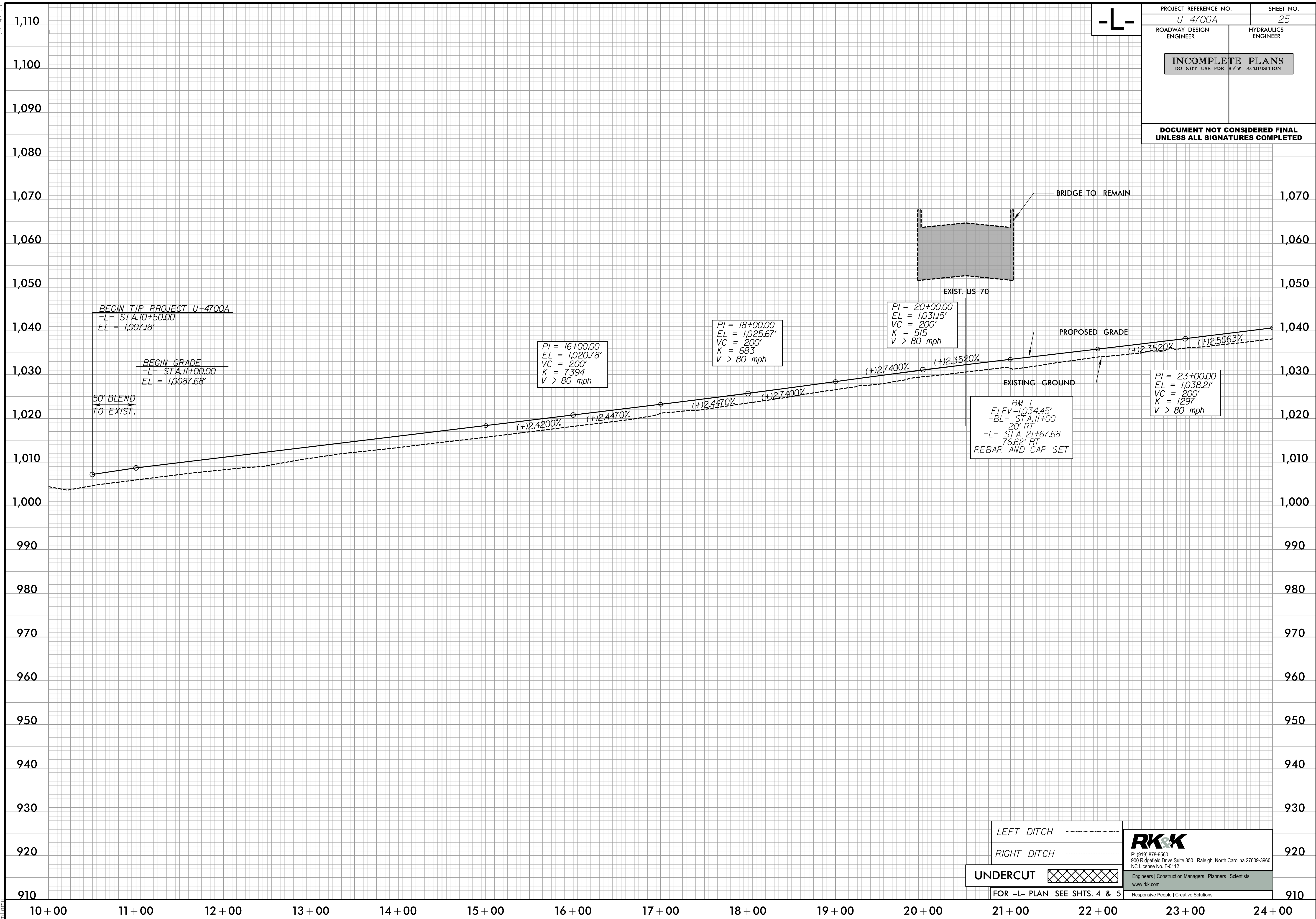
 PAVEMENT REMOVAL  
 FOR -Y21- PROFILE SEE SHT. 48A  
 FOR -Y21 LT- PROFILE SEE SHT. 48A

**RK&K**  
 P: (919) 878-9560  
 900 Ridgefield Drive Suite 350 | Raleigh, North Carolina 27609-3960  
 NC License No. F-0112  
 Engineers | Construction Managers | Planners | Scientists  
 www.rkk.com  
 Responsive People | Creative Solutions

5/14/99

-L-

PROJECT REFERENCE NO. <b>U-4700A</b>	SHEET NO. <b>25</b>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION	
<b>DOCUMENT NOT CONSIDERED FINAL</b> UNLESS ALL SIGNATURES COMPLETED	



F:\2008\05\05\05\Proj\U4700a\_rdy\_rf125.dgn

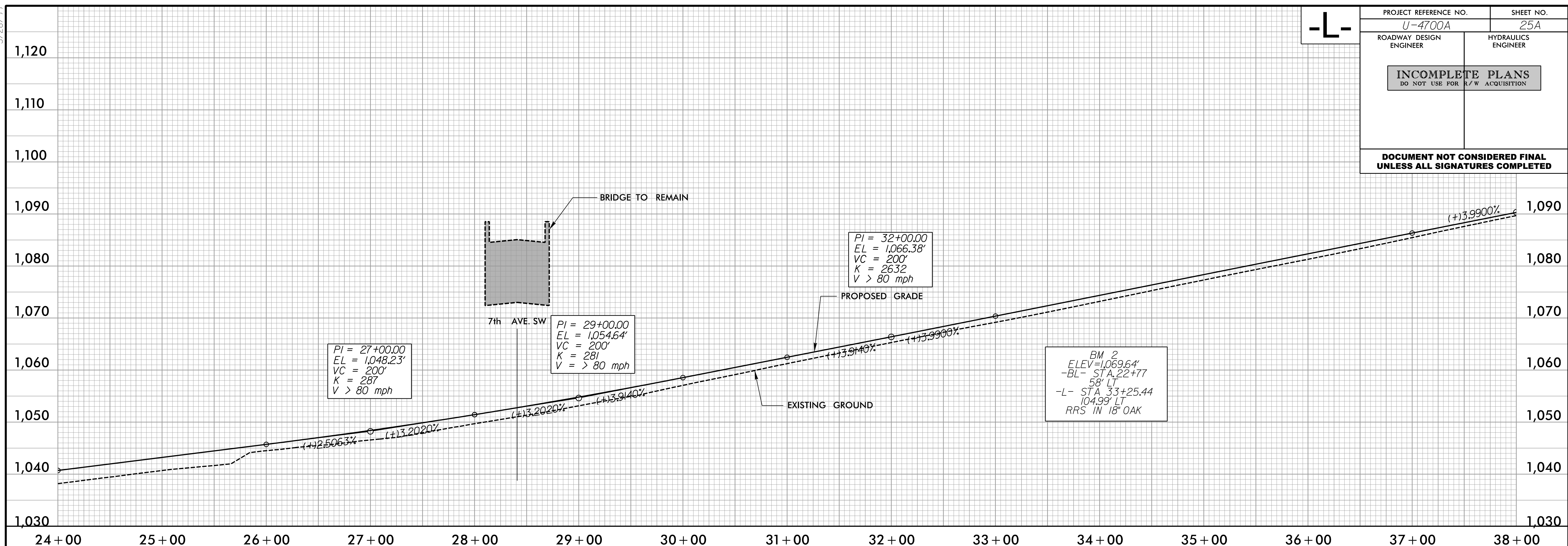
LEFT DITCH .....  
 RIGHT DITCH .....  
 UNDERCUT [Hatched Box]  
 FOR -L- PLAN SEE SHTS. 4 & 5

**RK&K**  
 P: (919) 878-9560  
 900 Ridgeway Drive Suite 350 | Raleigh, North Carolina 27609-3960  
 NC License No. F-0112  
 Engineers | Construction Managers | Planners | Scientists  
 www.rkk.com  
 Responsive People | Creative Solutions

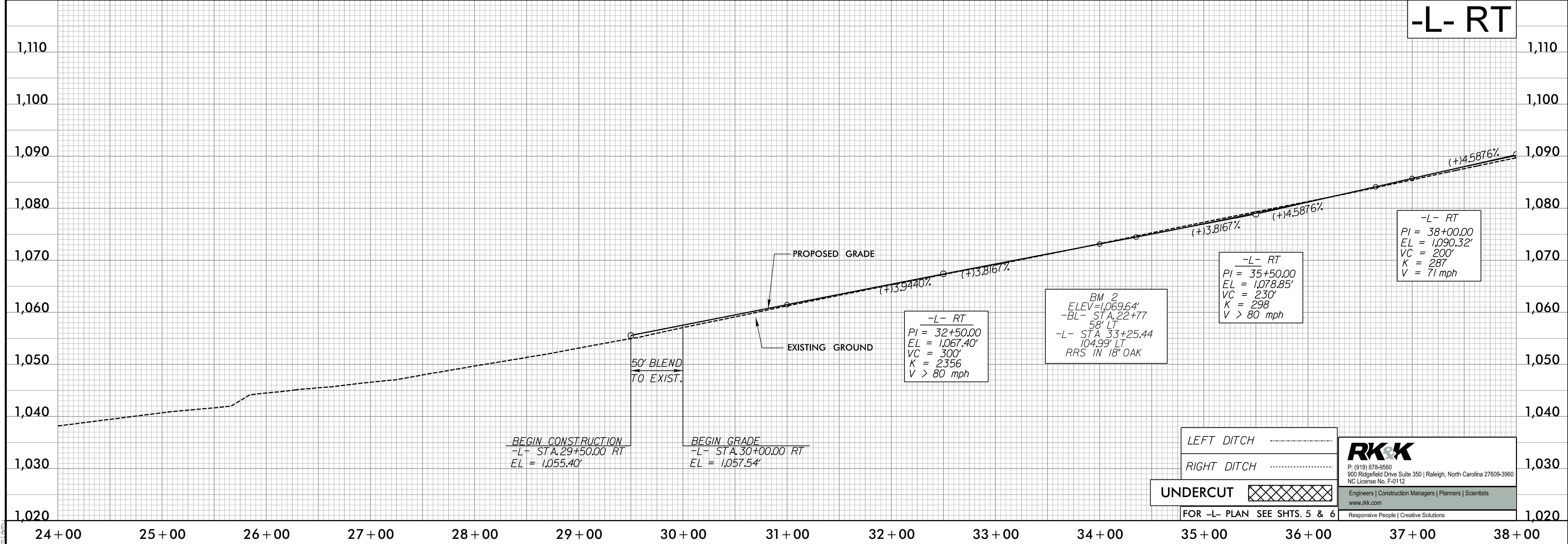
5/28/99

-L-

PROJECT REFERENCE NO. U-4700A	SHEET NO. 25A
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION	
<b>DOCUMENT NOT CONSIDERED FINAL</b> UNLESS ALL SIGNATURES COMPLETED	



-L- RT



LEFT DITCH .....  
 RIGHT DITCH .....  
**UNDERCUT** [Cross-hatch pattern]  
 FOR -L- PLAN SEE SHTS. 5 & 6

**RK&K**  
 P: (919) 878-9560  
 900 Ridgely Drive Suite 350 | Raleigh, North Carolina 27609-3960  
 NC License No. F-0112  
 Engineers | Construction Managers | Planners | Scientists  
 www.rkk.com  
 Responsive People | Creative Solutions

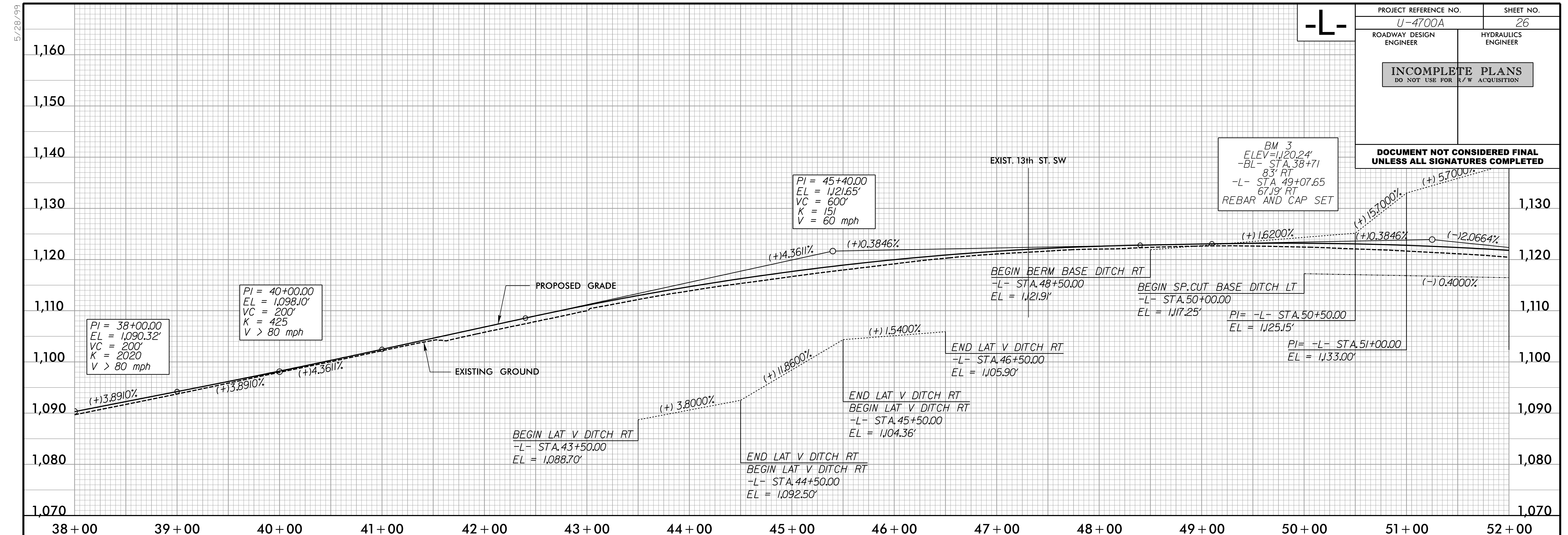
F:\2009\Projects\U-4700a\_rdy\_r125A.dgn



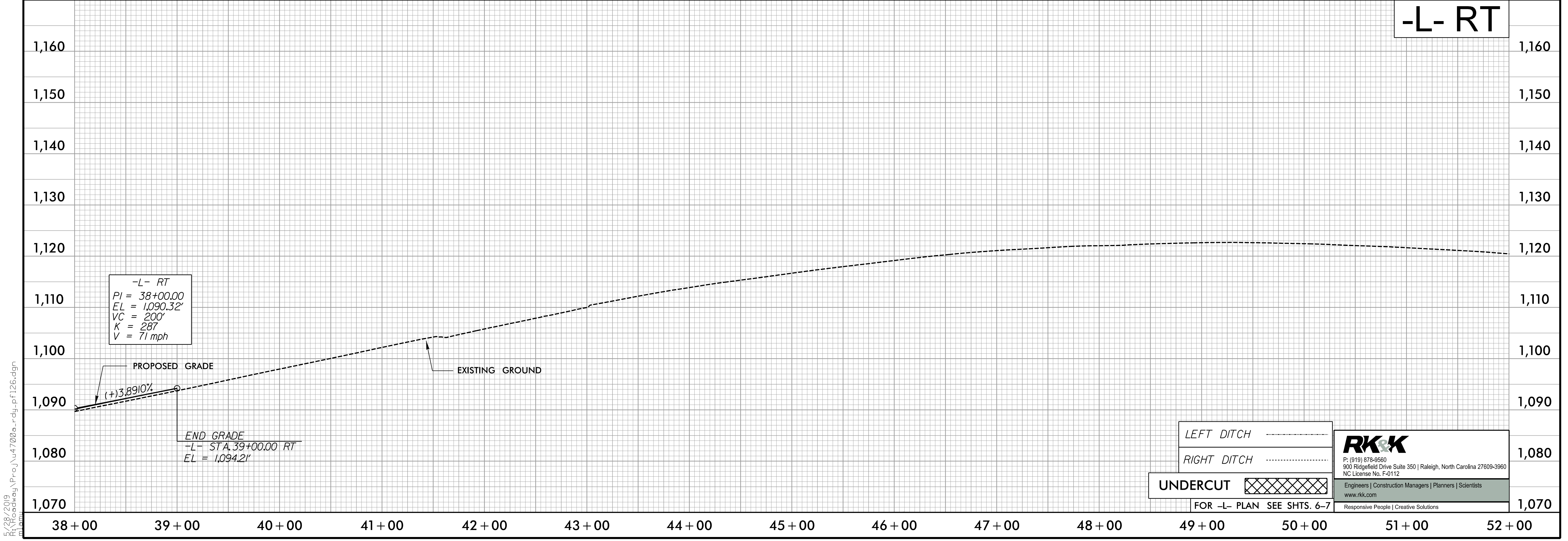
-L-

PROJECT REFERENCE NO. U-4700A		SHEET NO. 26	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION			

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

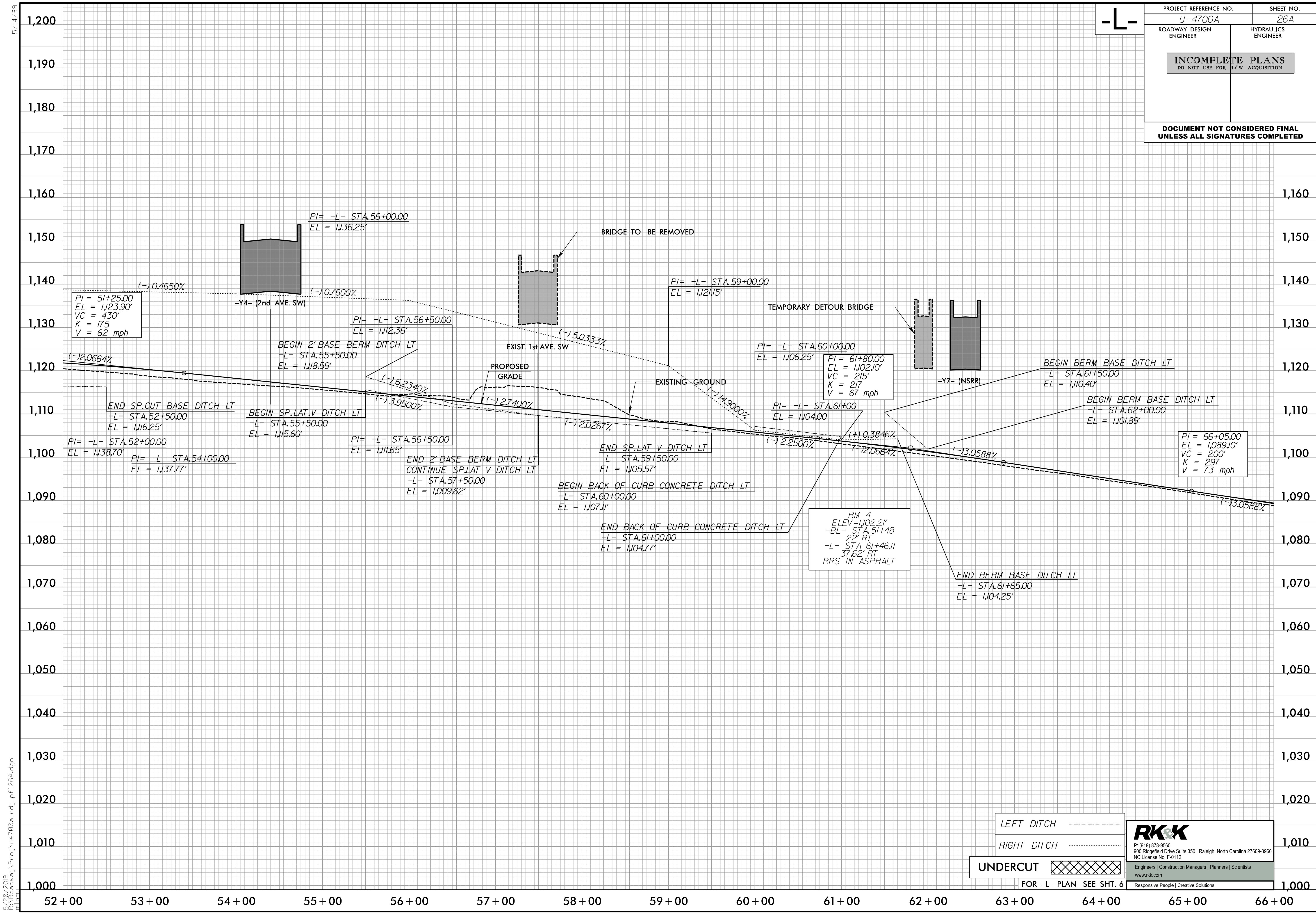


-L- RT



5/28/19  
F:\2019\Roadway\Proj\4700a\_rdy\_p126.dgn

**RK&K**  
 P: (919) 878-9560  
 900 Ridgeway Drive Suite 350 | Raleigh, North Carolina 27609-3960  
 NC License No. F-0112  
 Engineers | Construction Managers | Planners | Scientists  
 www.rkk.com  
 Responsive People | Creative Solutions



5/14/99

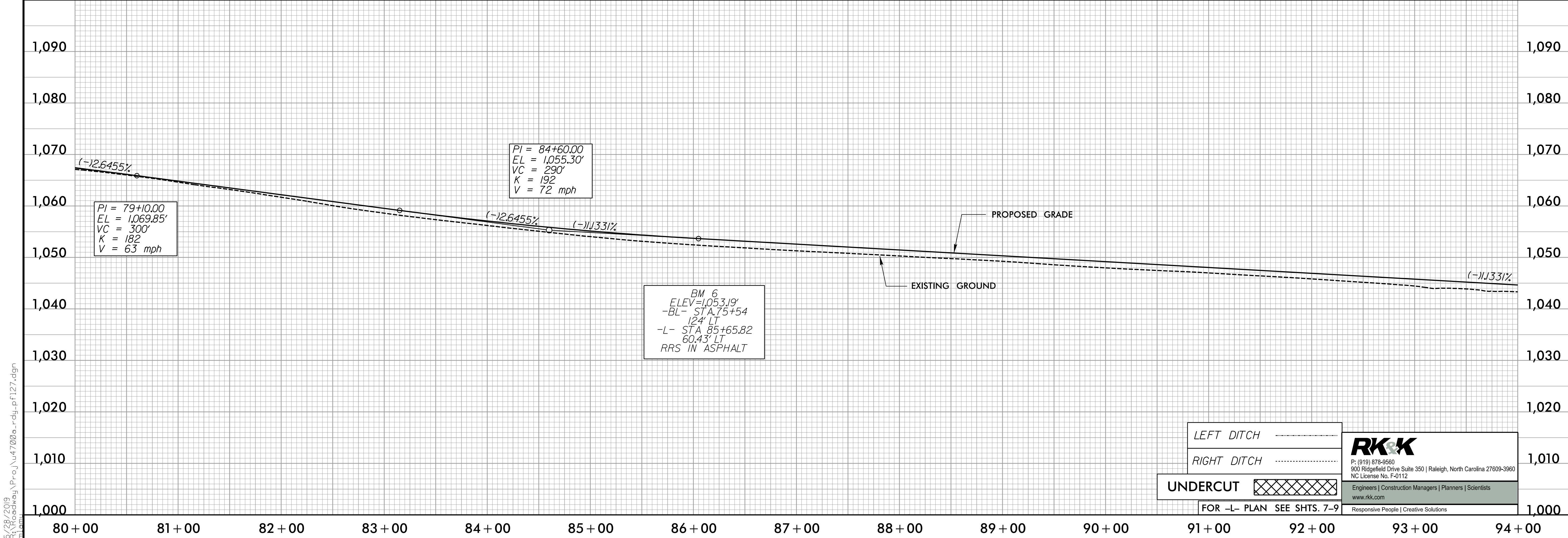
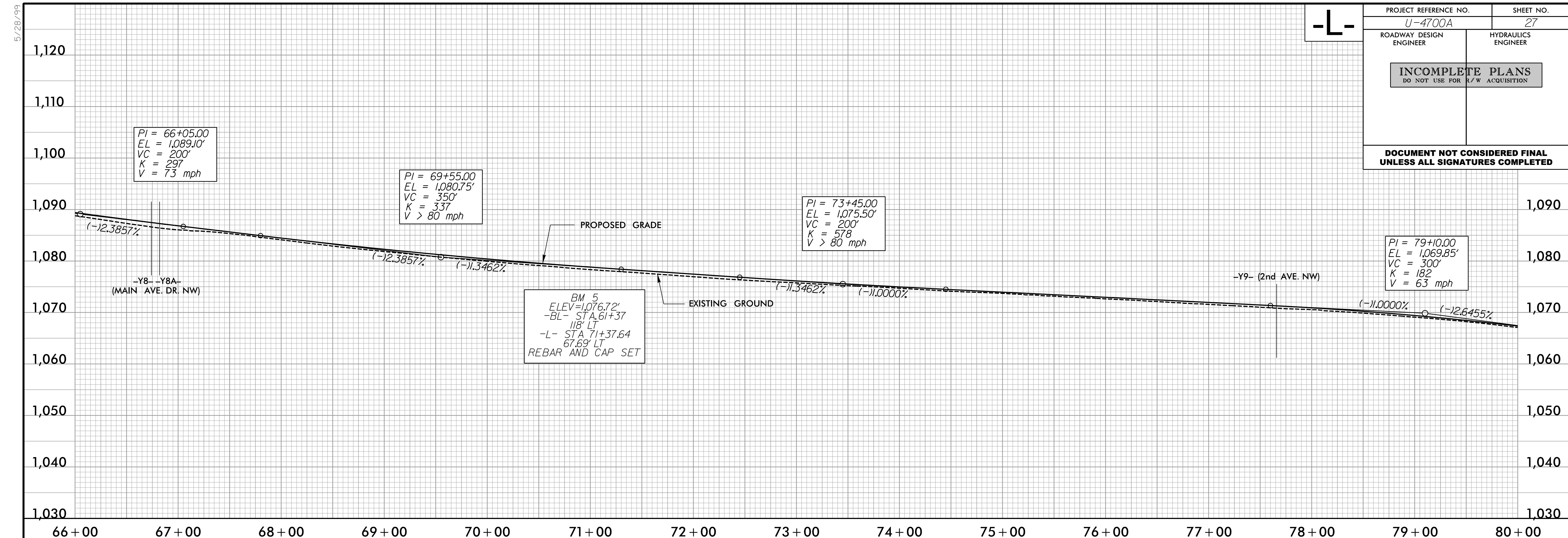
F:\2019\Roadway\Proj\U4700a\_rdy\_p126A.dgn

LEFT DITCH	-----
RIGHT DITCH	-----
UNDERCUT	XXXXXX

FOR -L- PLAN SEE SHT. 6

**RK&K**  
P: (819) 878-9560  
900 Ridgely Drive Suite 350 | Raleigh, North Carolina 27609-3960  
NC License No. F-0112  
Engineers | Construction Managers | Planners | Scientists  
www.rk.com  
Responsive People | Creative Solutions

PROJECT REFERENCE NO. U-4700A	SHEET NO. 27
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION	
<b>DOCUMENT NOT CONSIDERED FINAL</b> UNLESS ALL SIGNATURES COMPLETED	



5/28/2019  
 F:\2019\Roadway\ProJ\U47000a\_rdy\_p127.dgn

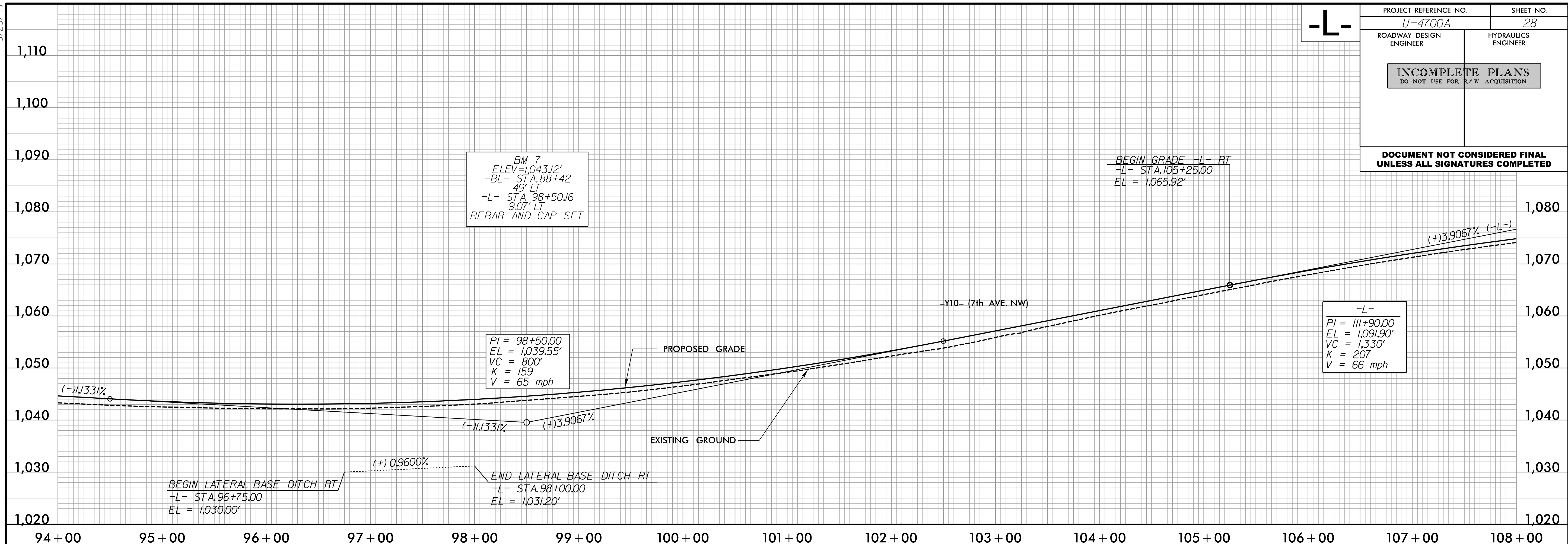
**RK&K**  
 P: (919) 878-9560  
 900 Ridgely Drive Suite 350 | Raleigh, North Carolina 27609-3960  
 NC License No. F-0112  
 Engineers | Construction Managers | Planners | Scientists  
 www.rkk.com  
 Responsive People | Creative Solutions

5/28/99

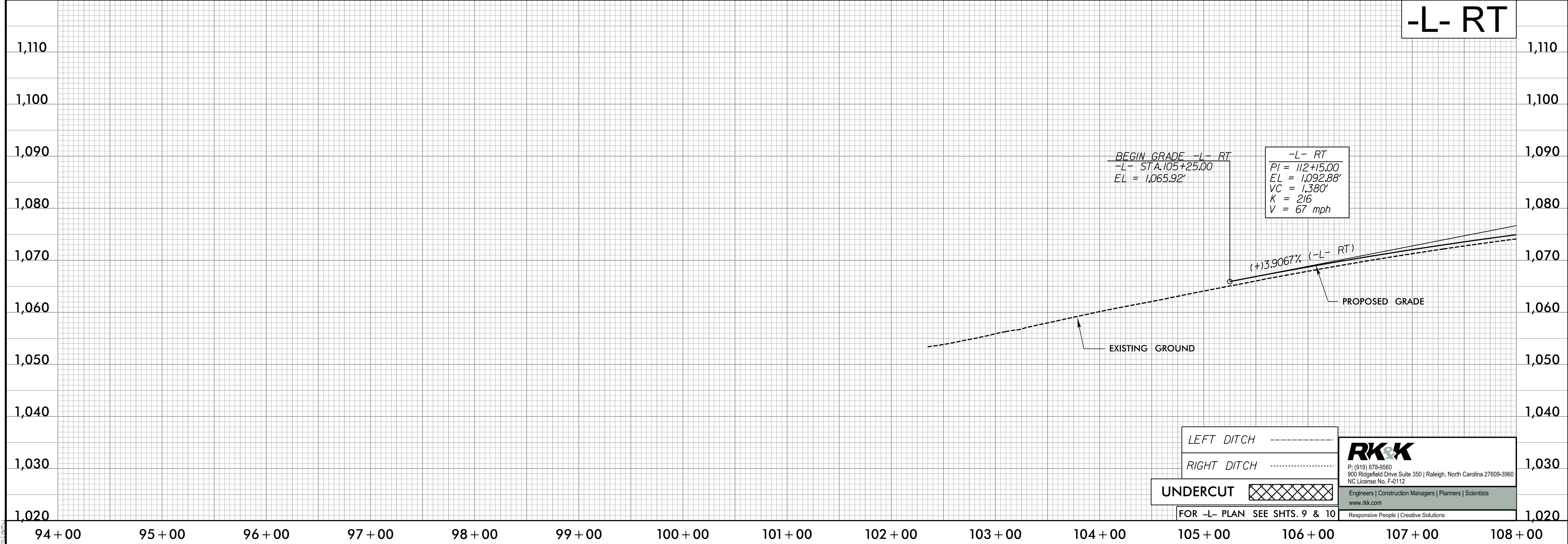
-L-

PROJECT REFERENCE NO. U-4700A	SHEET NO. 28
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION	

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



-L- RT



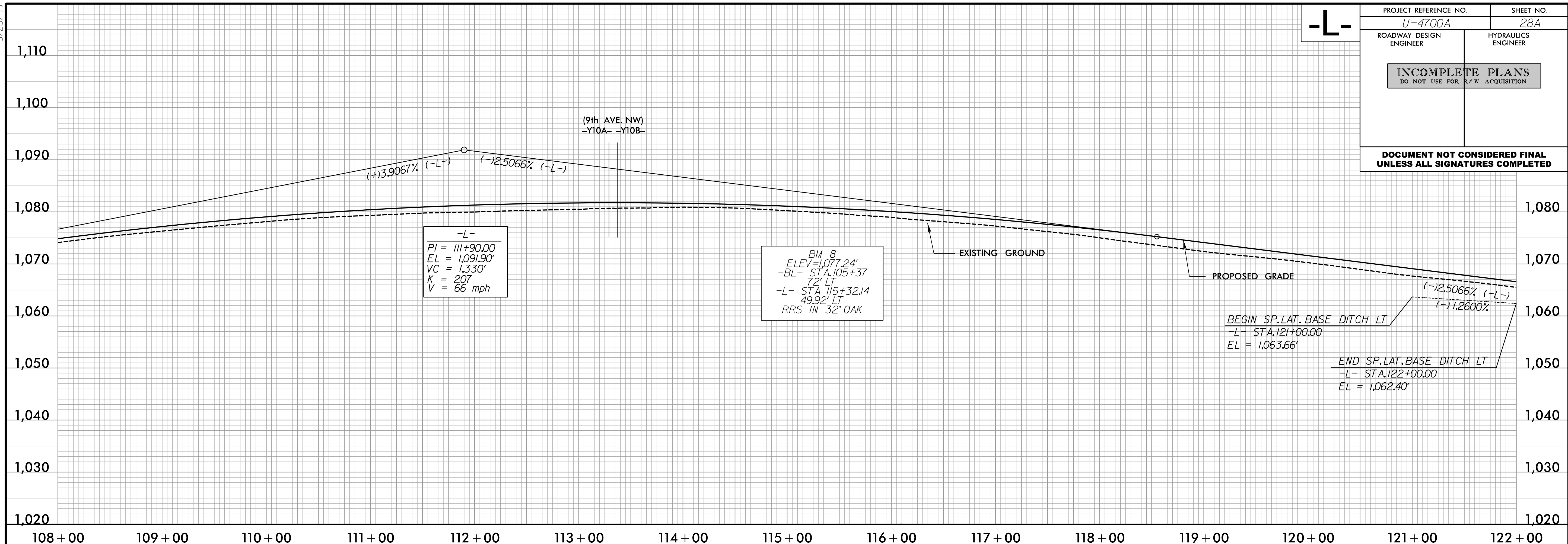
**RK&K**  
 P: (819) 878-9560  
 900 Ridgely Drive Suite 350 | Raleigh, North Carolina 27609-3960  
 NC License No. F-0112  
 Engineers | Construction Managers | Planners | Scientists  
 www.rkk.com  
 Responsive People | Creative Solutions

F:\28\2018\5/28/2018\5/28/2018\Proj\4700a\_rdy\_r128.dgn

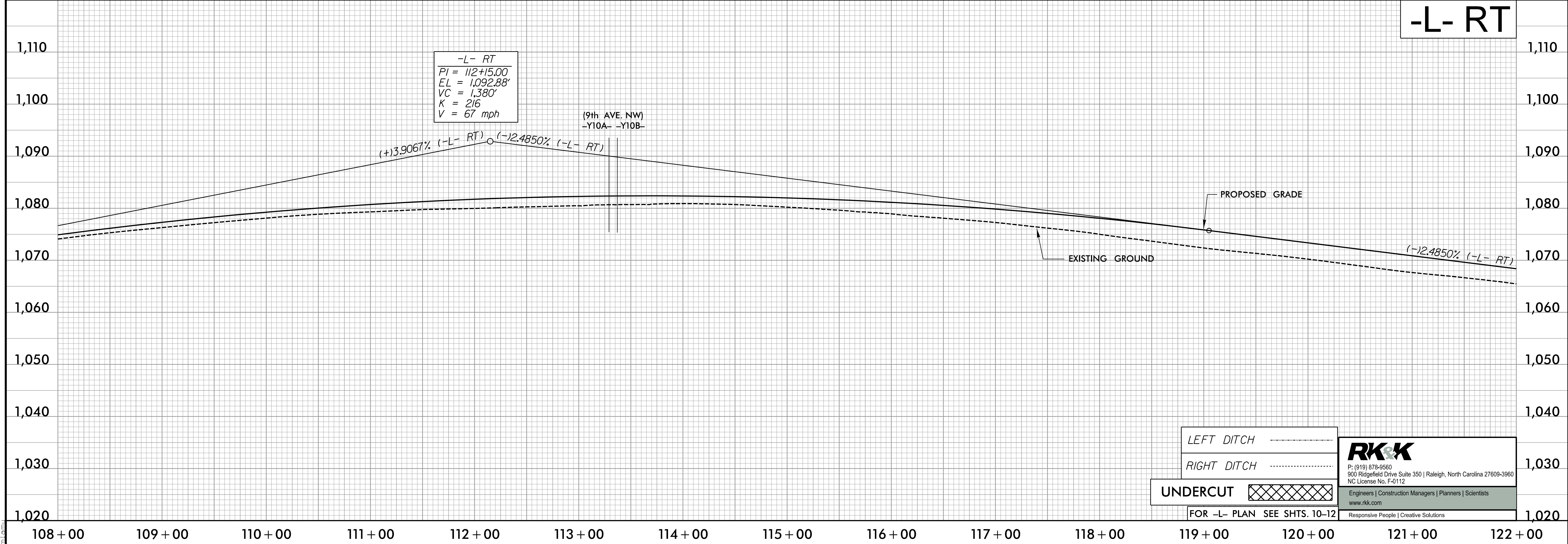
5/28/99

-L-

PROJECT REFERENCE NO. U-4700A	SHEET NO. 28A
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION	
<b>DOCUMENT NOT CONSIDERED FINAL</b> UNLESS ALL SIGNATURES COMPLETED	



-L- RT



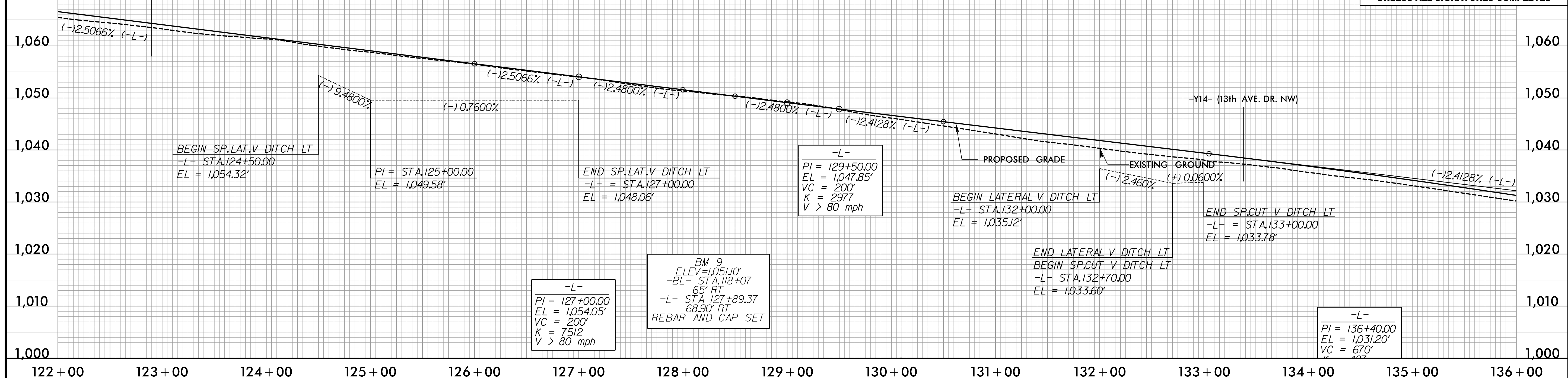
F:\28\2018\Projects\U-4700a\_rdy\_r128A.dgn

**RK&K**  
 P: (919) 878-9560  
 900 Ridgely Drive Suite 350 | Raleigh, North Carolina 27609-3960  
 NC License No. F-0112  
 Engineers | Construction Managers | Planners | Scientists  
 www.rkk.com  
 Responsive People | Creative Solutions

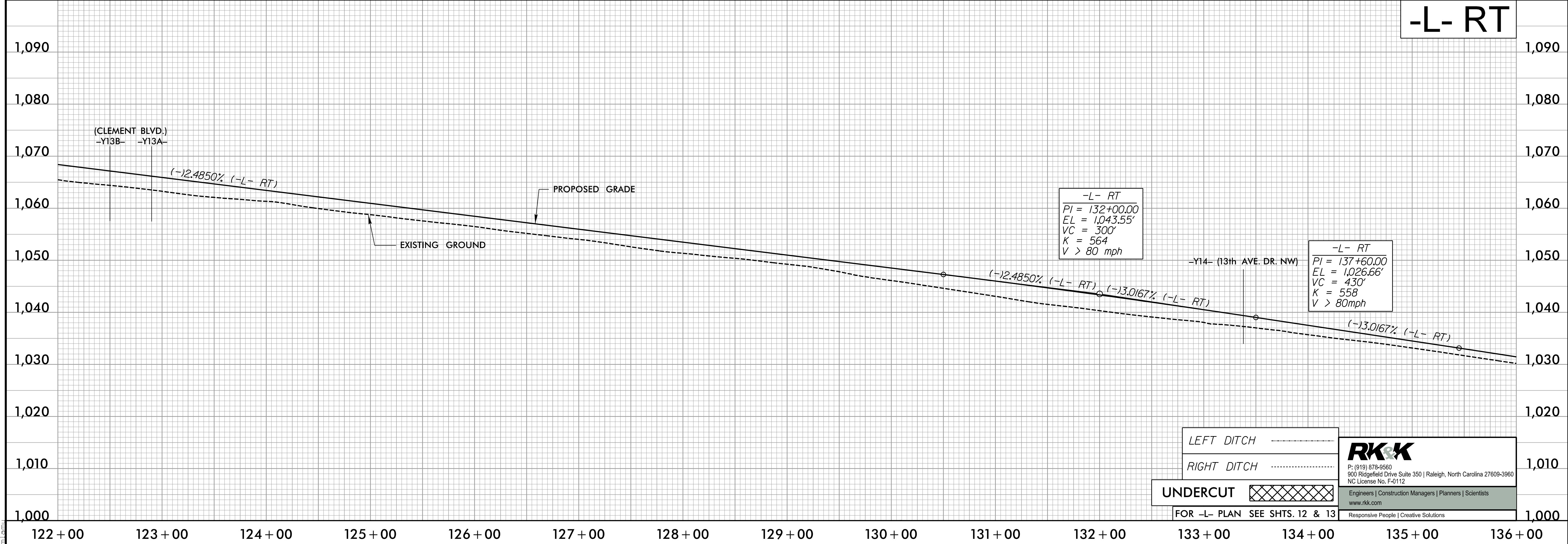
5/28/2019

-L-

PROJECT REFERENCE NO. U-4700A	SHEET NO. 29
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION	
<b>DOCUMENT NOT CONSIDERED FINAL</b> UNLESS ALL SIGNATURES COMPLETED	



-L- RT



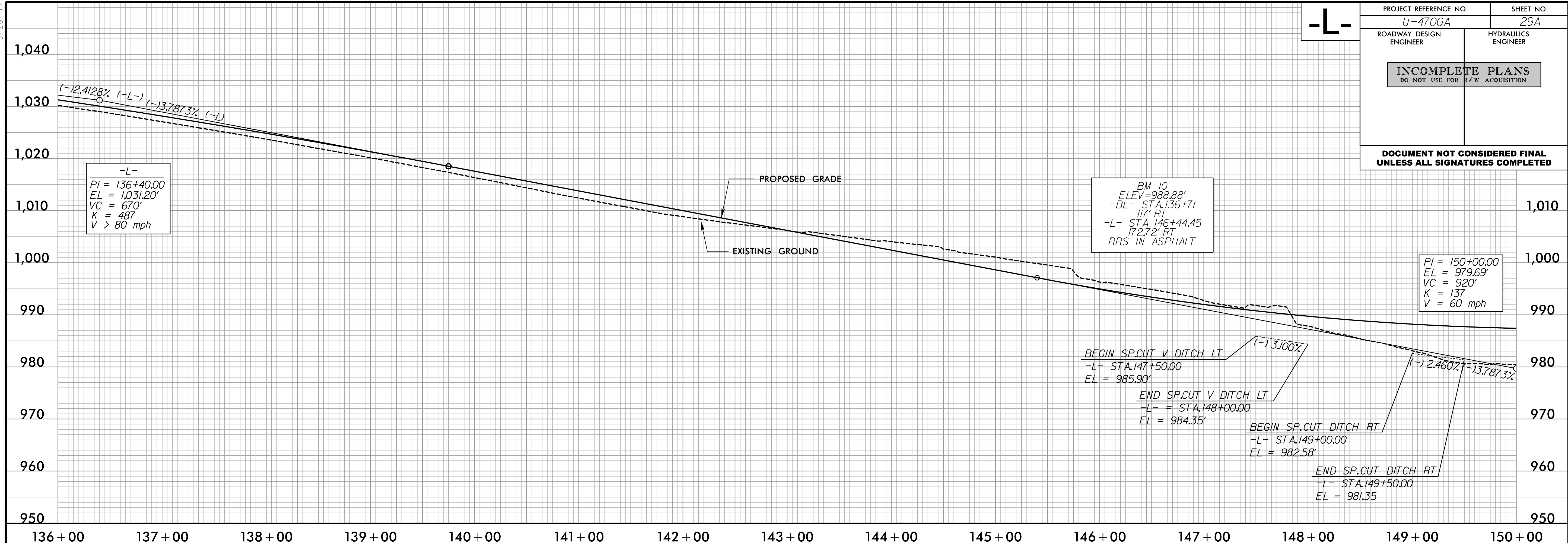
F:\28\2019\5/28/2019\Roadway\Proj\U47000a\_rdy\_of129.dgn

**RK&K**  
 P: (919) 878-9560  
 900 Ridgely Drive Suite 350 | Raleigh, North Carolina 27609-3960  
 NC License No. F-0112  
 Engineers | Construction Managers | Planners | Scientists  
 www.rk.com  
 Responsive People | Creative Solutions

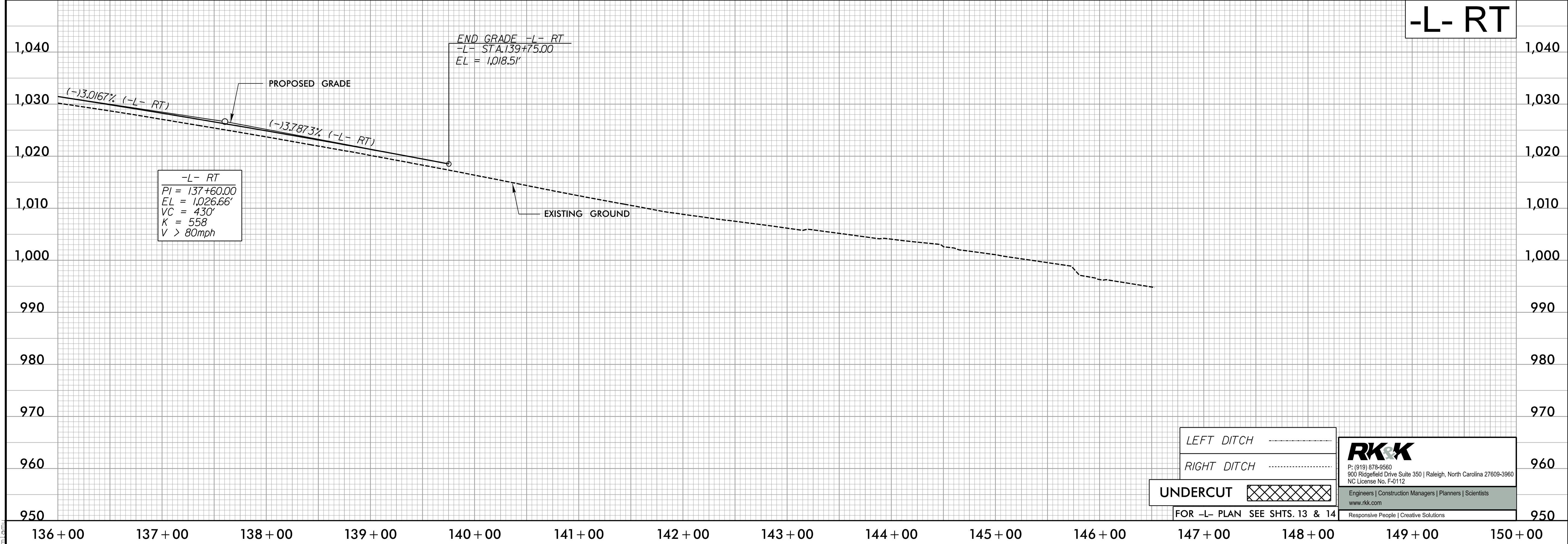
5/28/99

-L-

PROJECT REFERENCE NO. U-4700A	SHEET NO. 29A
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION	
<b>DOCUMENT NOT CONSIDERED FINAL</b> UNLESS ALL SIGNATURES COMPLETED	



-L- RT



LEFT DITCH	.....
RIGHT DITCH	.....
UNDERCUT	XXXXXX

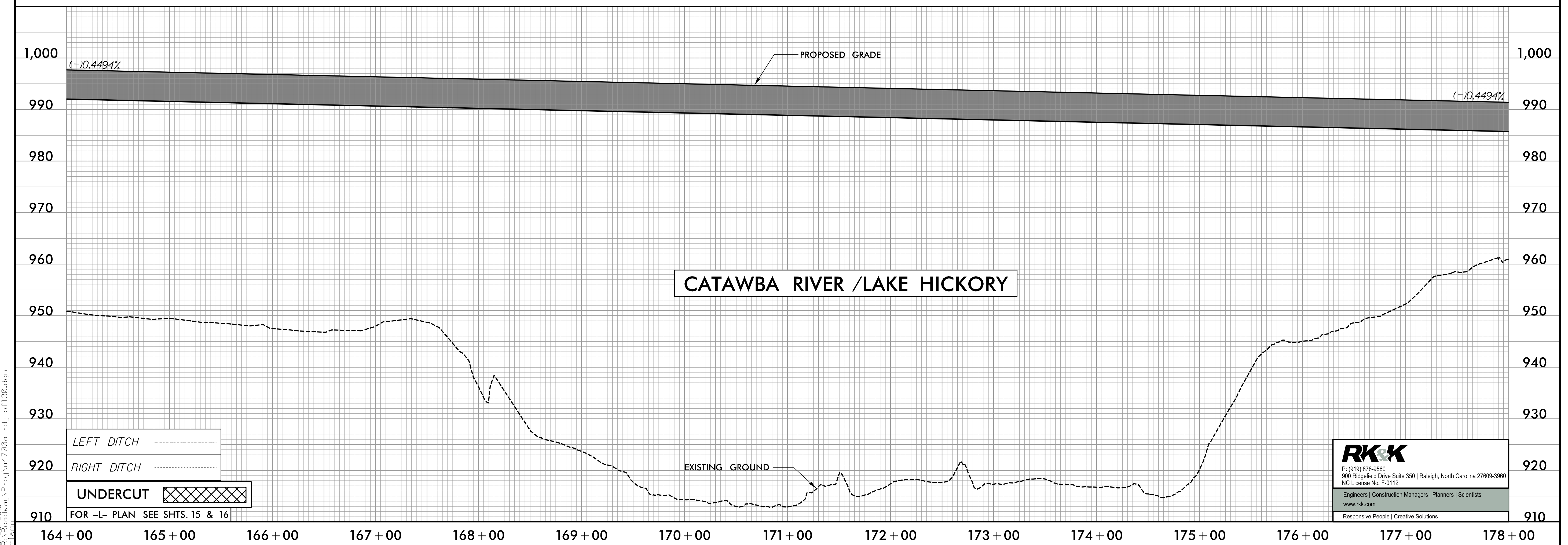
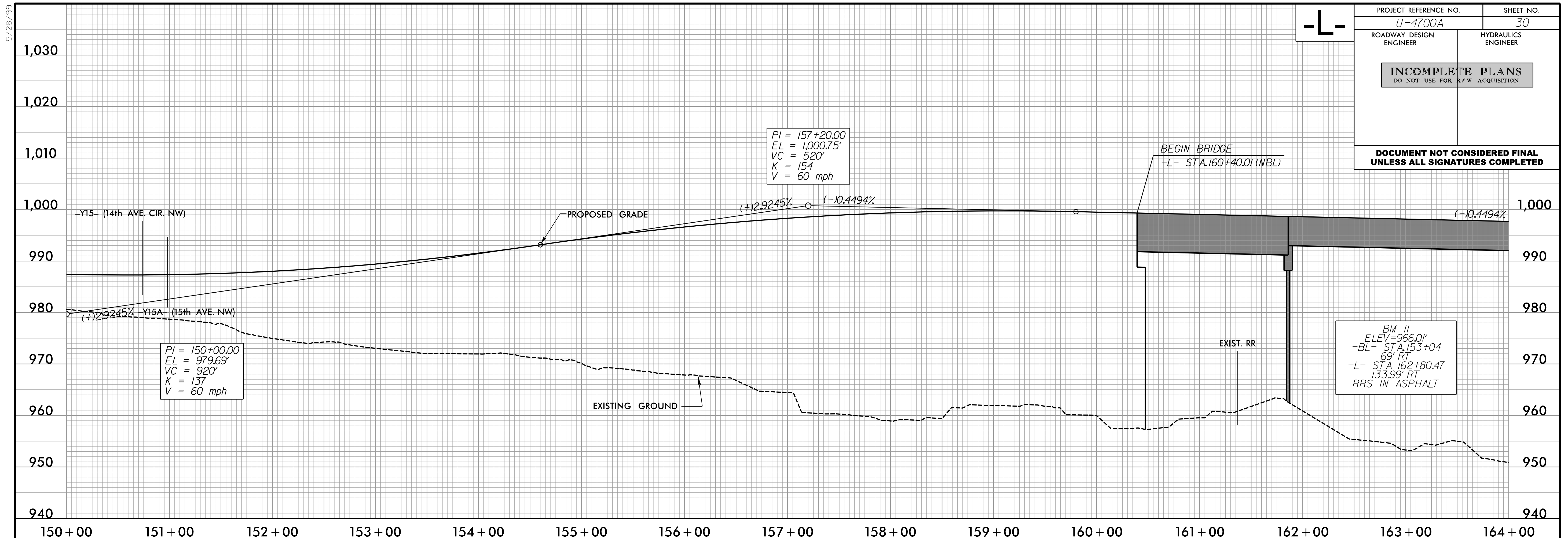
FOR -L- PLAN SEE SHTS. 13 & 14

**RK&K**  
P: (919) 878-9560  
900 Ridgeland Drive Suite 350 | Raleigh, North Carolina 27609-3960  
NC License No. F-0112  
www.rkk.com  
Engineers | Construction Managers | Planners | Scientists  
Responsive People | Creative Solutions

F:\28\2018\Projects\47000a\_rdy\_r129a.dgn

-L-

PROJECT REFERENCE NO. U-4700A	SHEET NO. 30
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION	
<b>DOCUMENT NOT CONSIDERED FINAL</b> UNLESS ALL SIGNATURES COMPLETED	



**RK&K**  
 P: (819) 878-9560  
 900 Ridgely Drive Suite 350 | Raleigh, North Carolina 27609-3960  
 NC License No. F-0112  
 Engineers | Construction Managers | Planners | Scientists  
 www.rkk.com  
 Responsive People | Creative Solutions

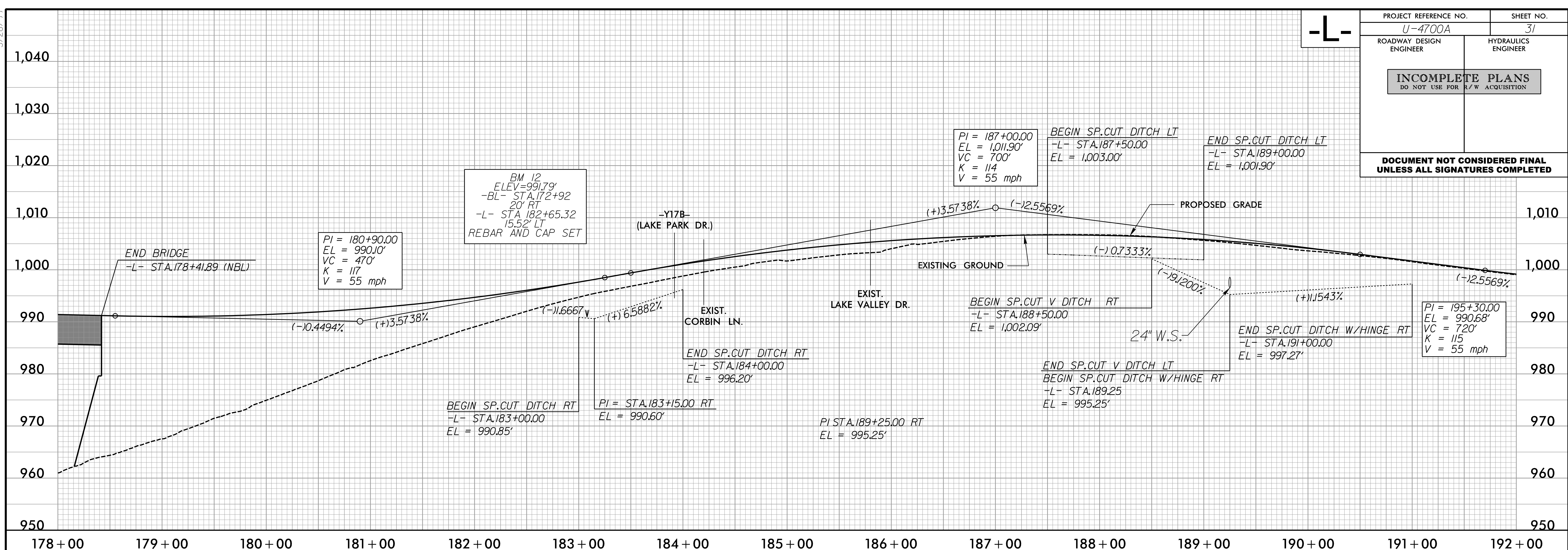
5/28/99  
 F:\2019\Projects\U-4700A-rdy-pl130.dgn



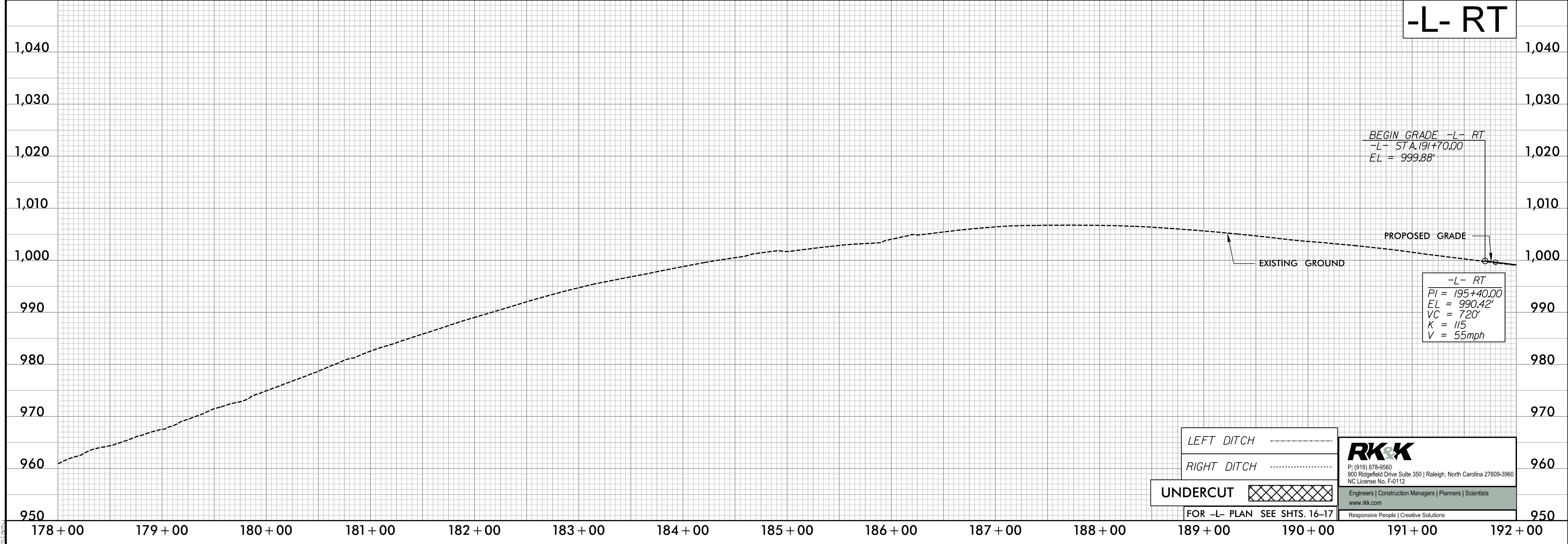
5/28/99

-L-

PROJECT REFERENCE NO. U-4700A	SHEET NO. 31
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION	
<b>DOCUMENT NOT CONSIDERED FINAL</b> UNLESS ALL SIGNATURES COMPLETED	



-L- RT



LEFT DITCH	-----
RIGHT DITCH	-----
UNDERCUT	XXXXXX

FOR -L- PLAN SEE SHTS. 16-17

**RK&K**  
 P: (819) 878-9560  
 900 Ridgely Drive Suite 350 | Raleigh, North Carolina 27609-3960  
 NC License No. F-0112  
 Engineers | Construction Managers | Planners | Scientists  
 www.rkk.com  
 Responsive People | Creative Solutions

F:\2009\Projects\U47000a\_rdy\_rf131.dgn

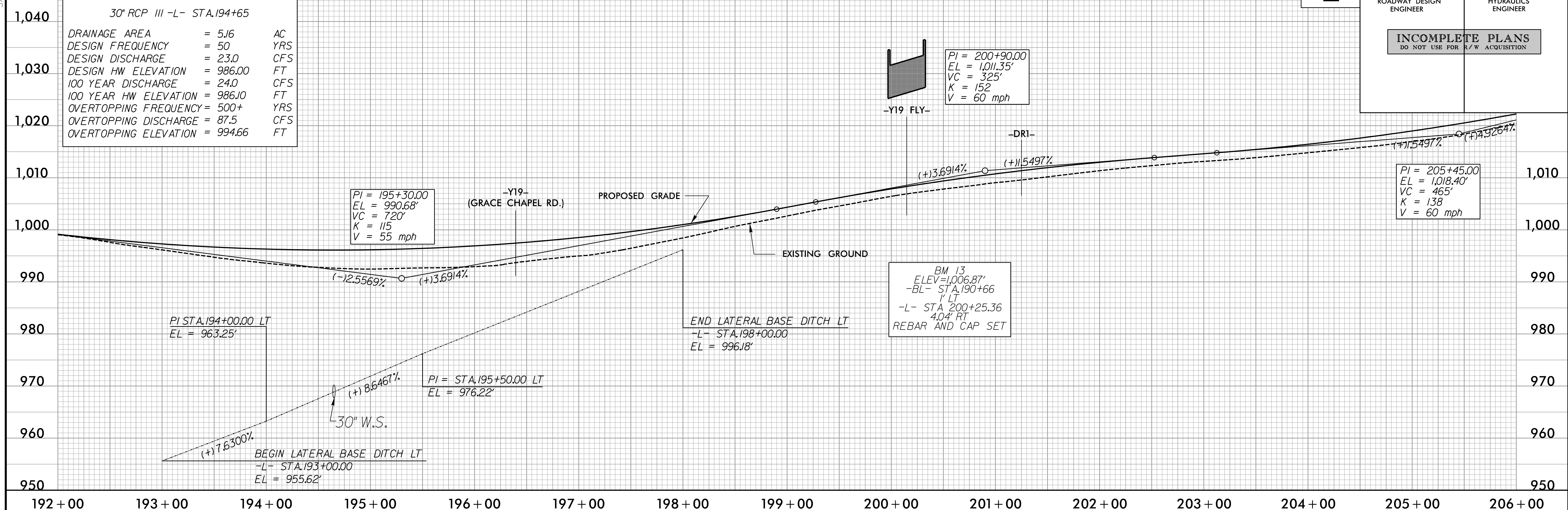
5/28/2019

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

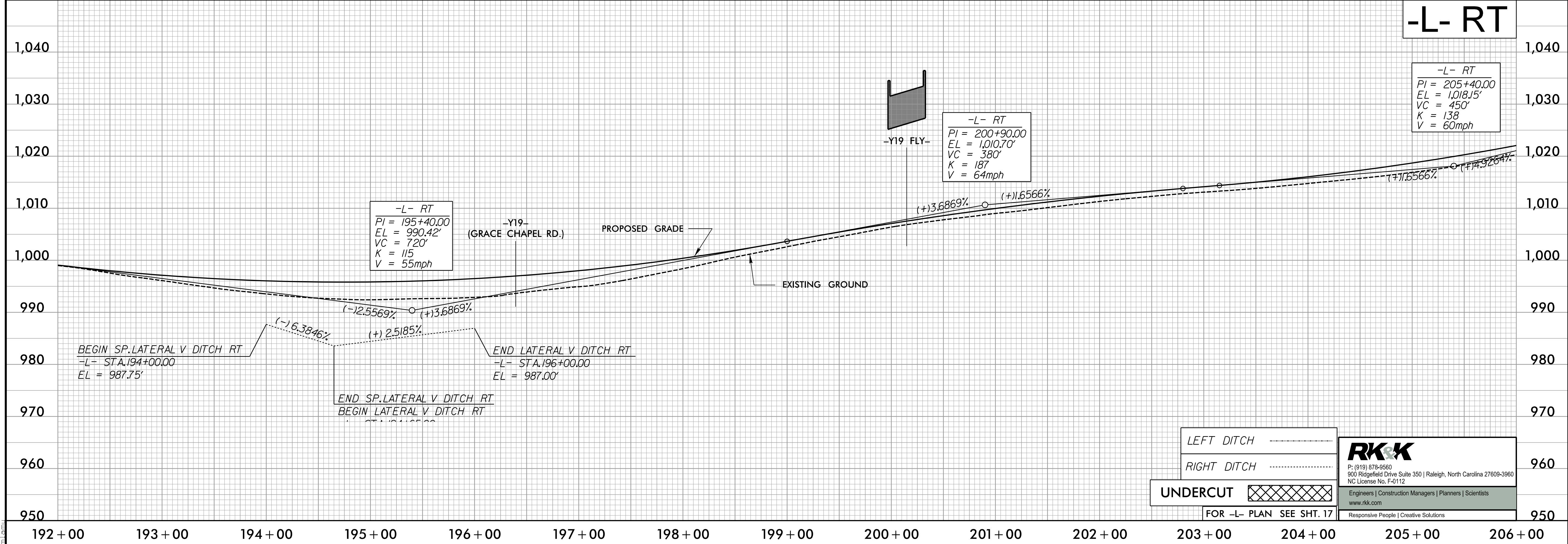
PROJECT REFERENCE NO. <i>U-4700A</i>	SHEET NO. <i>31A</i>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION	

**PIPE HYDRAULIC DATA**  
30" RCP III -L- STA.194+65

DRAINAGE AREA	= 5.16	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 23.0	CFS
DESIGN HW ELEVATION	= 986.00	FT
100 YEAR DISCHARGE	= 24.0	CFS
100 YEAR HW ELEVATION	= 986.10	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 87.5	CFS
OVERTOPPING ELEVATION	= 994.66	FT



**-L- RT**



LEFT DITCH

RIGHT DITCH

**UNDERCUT**

FOR -L- PLAN SEE SHT. 17

**RK&K**

P: (919) 878-9560  
900 Ridgeway Drive Suite 350 | Raleigh, North Carolina 27609-3960  
NC License No. F-0112

Engineers | Construction Managers | Planners | Scientists  
www.rkk.com  
Responsive People | Creative Solutions

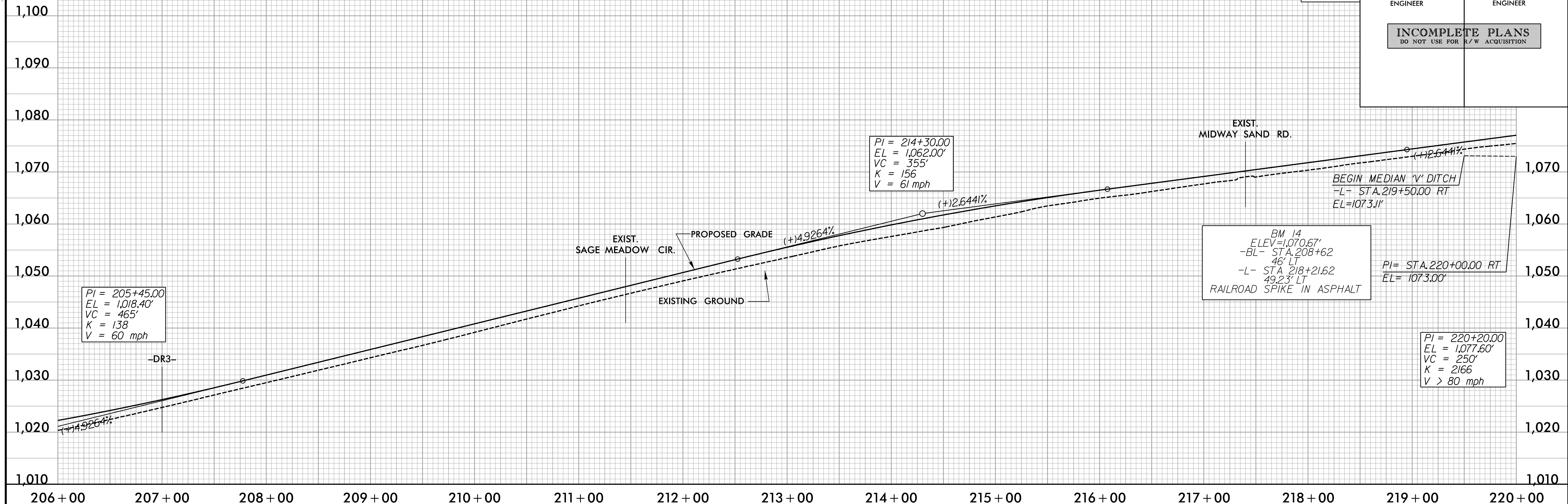
F:\2019\Projects\U-4700A-Roadway\Drawings\Profile\131A.dgn

5/28/99

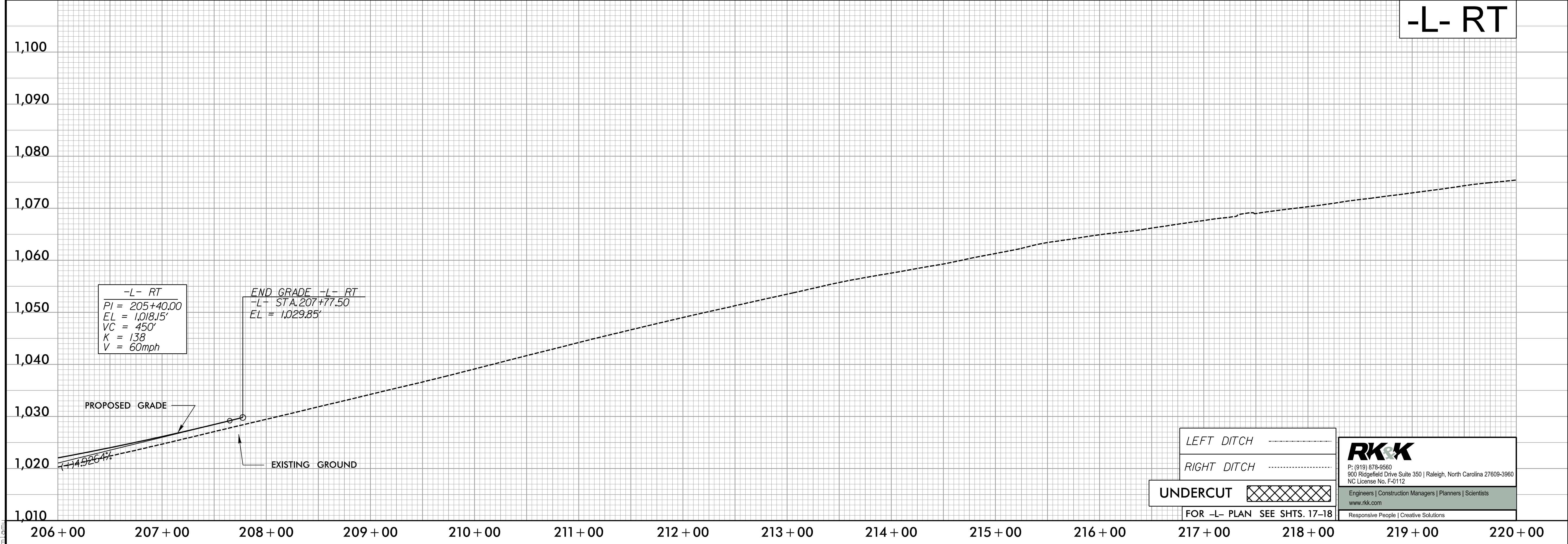
DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

-L-

PROJECT REFERENCE NO. U-4700A	SHEET NO. 32
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION	



-L- RT

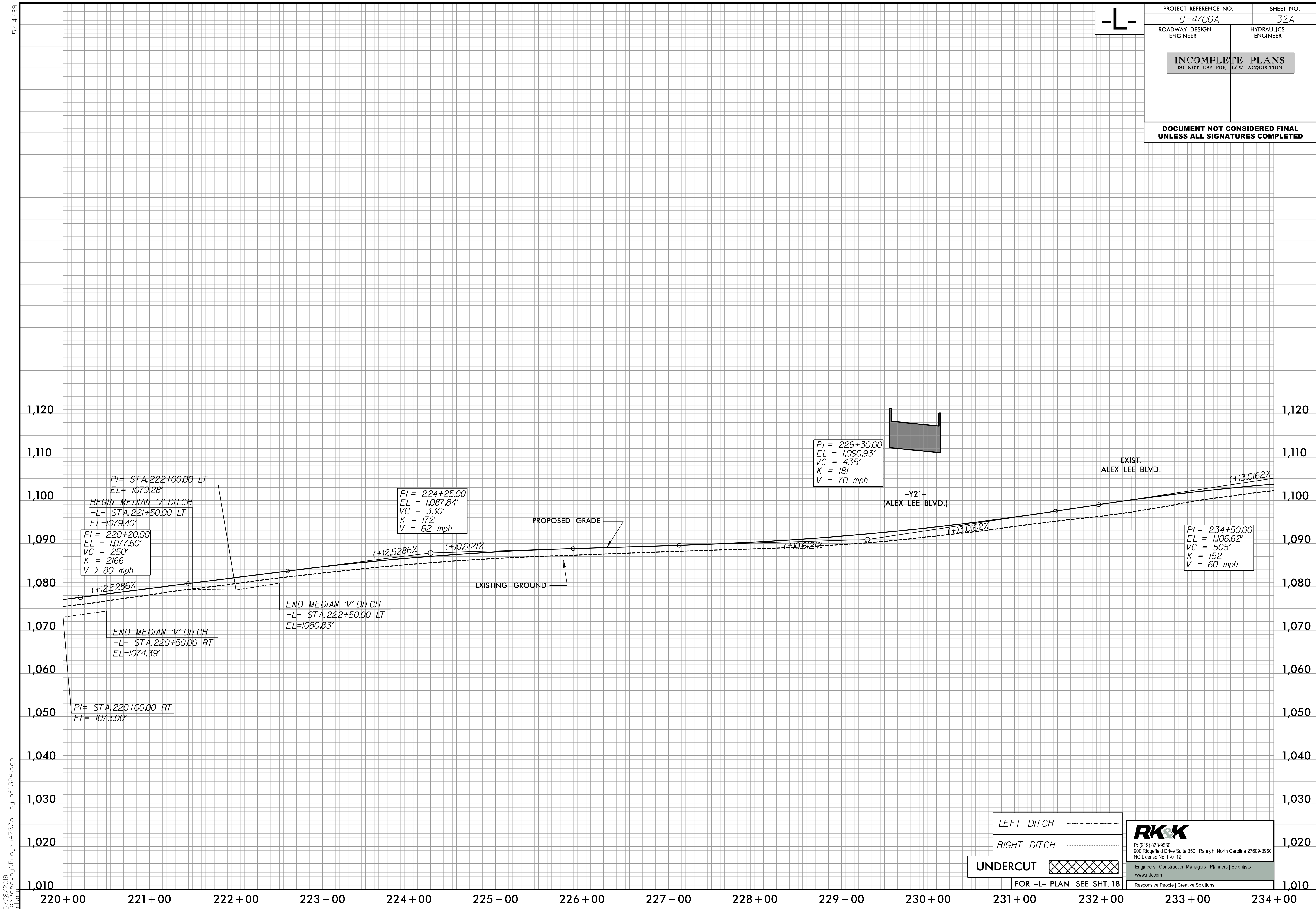


LEFT DITCH .....  
 RIGHT DITCH .....  
**UNDERCUT** [Hatched Box]  
 FOR -L- PLAN SEE SHTS. 17-18

**RK&K**  
 P: (919) 878-9560  
 900 Ridgely Drive Suite 350 | Raleigh, North Carolina 27609-3960  
 NC License No. F-0112  
 Engineers | Construction Managers | Planners | Scientists  
 www.rkk.com  
 Responsive People | Creative Solutions

5/28/2018  
R:\Projects\U-4700A\Drawings\132.dgn

PROJECT REFERENCE NO. U-4700A		SHEET NO. 32A	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION			
<b>DOCUMENT NOT CONSIDERED FINAL</b> UNLESS ALL SIGNATURES COMPLETED			



5/14/99

F:\2019\Projects\U-4700A\rdy\_p132A.dgn

LEFT DITCH	.....
RIGHT DITCH	.....
UNDERCUT	XXXXXX

FOR -L- PLAN SEE SHT. 18

**RK&K**

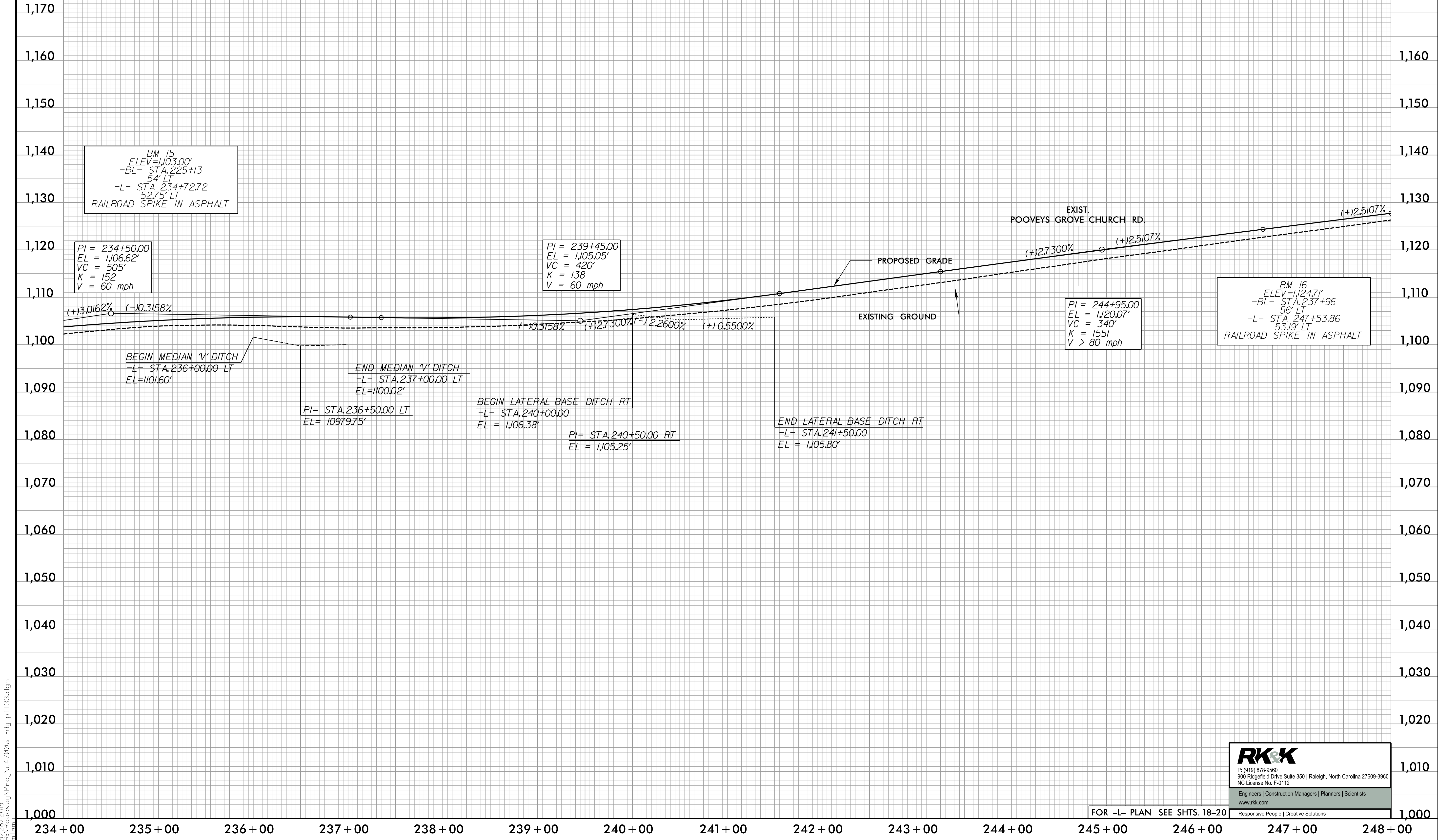
P: (919) 878-9560  
900 Ridgeway Drive Suite 350 | Raleigh, North Carolina 27609-3960  
NC License No. F-0112

Engineers | Construction Managers | Planners | Scientists  
www.rkk.com  
Responsive People | Creative Solutions

5/14/99

-L-

PROJECT REFERENCE NO. U-4700A	SHEET NO. 33
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION	
<b>DOCUMENT NOT CONSIDERED FINAL</b> UNLESS ALL SIGNATURES COMPLETED	

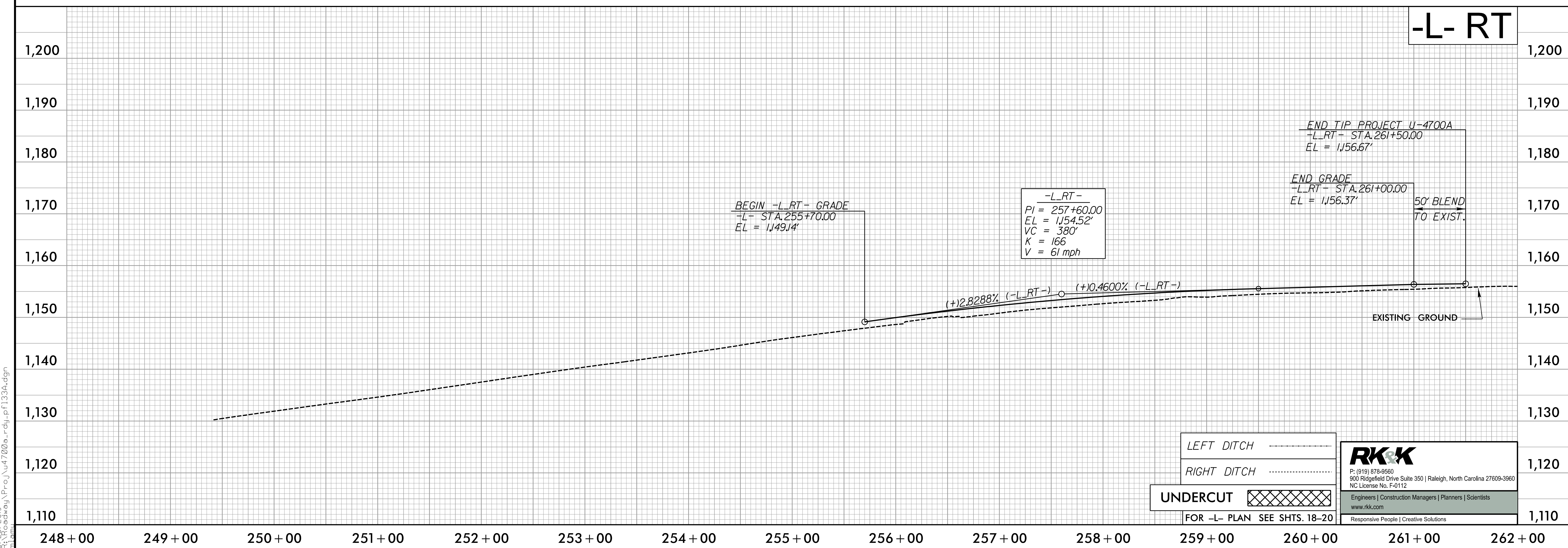
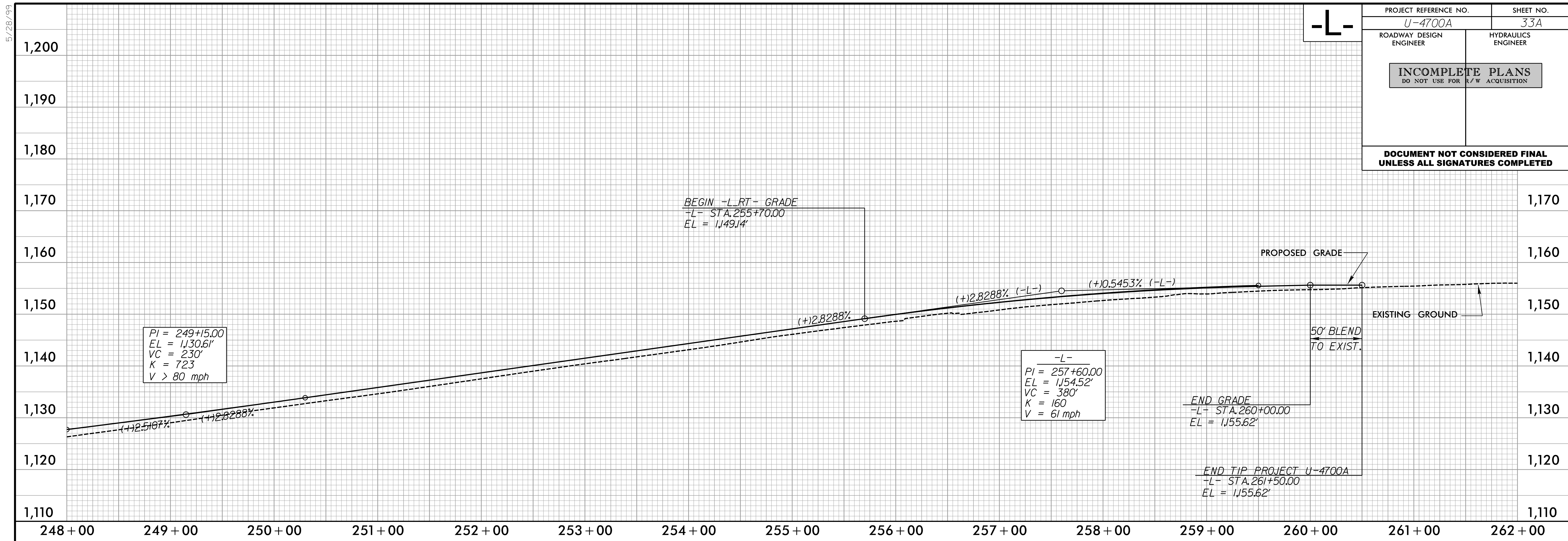


R:\2008\0514\0514\Proj\U4700a-rdy-pl133.dgn

**RK&K**  
 P: (819) 878-9560  
 900 Ridgely Drive Suite 350 | Raleigh, North Carolina 27609-3960  
 NC License No. F-0112  
 Engineers | Construction Managers | Planners | Scientists  
 www.rkk.com  
 Responsive People | Creative Solutions

FOR -L- PLAN SEE SHTS. 18-20

PROJECT REFERENCE NO. U-4700A		SHEET NO. 33A	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION			
<b>DOCUMENT NOT CONSIDERED FINAL</b> UNLESS ALL SIGNATURES COMPLETED			



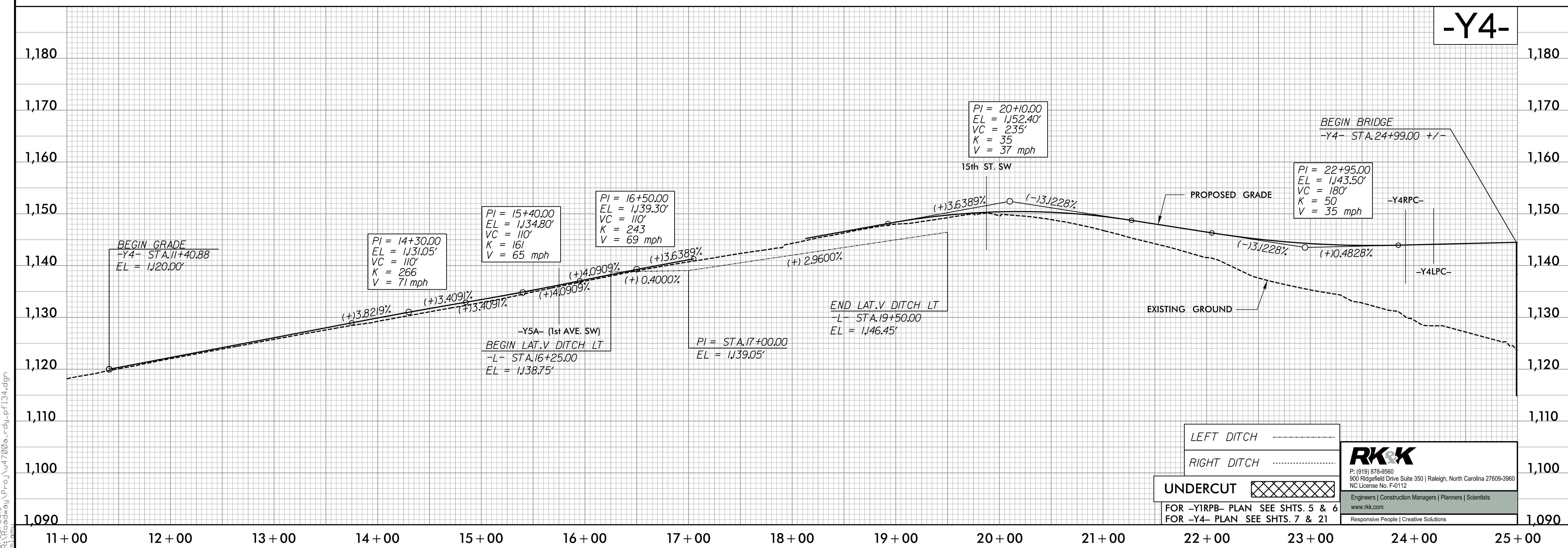
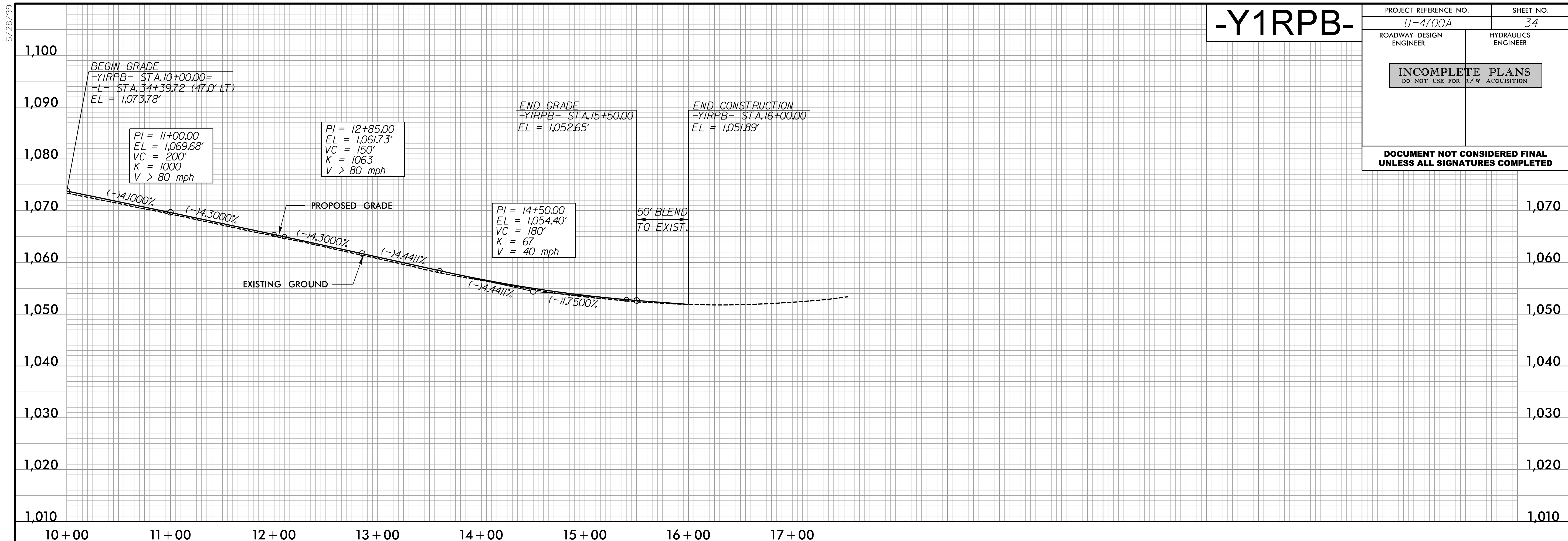
LEFT DITCH .....  
 RIGHT DITCH .....  
**UNDERCUT** [Cross-hatched box]  
 FOR -L- PLAN SEE SHTS. 18-20

**RK&K**  
 P: (819) 878-9560  
 900 Ridgely Drive Suite 350 | Raleigh, North Carolina 27609-3960  
 NC License No. F-0112  
 Engineers | Construction Managers | Planners | Scientists  
 www.rkk.com  
 Responsive People | Creative Solutions

5/28/99  
 P:\2019\Roadway\Proj\U47000a\_rdy\_p133a.dgn

# -Y1RPB-

PROJECT REFERENCE NO. U-4700A	SHEET NO. 34
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION	
<b>DOCUMENT NOT CONSIDERED FINAL</b> UNLESS ALL SIGNATURES COMPLETED	



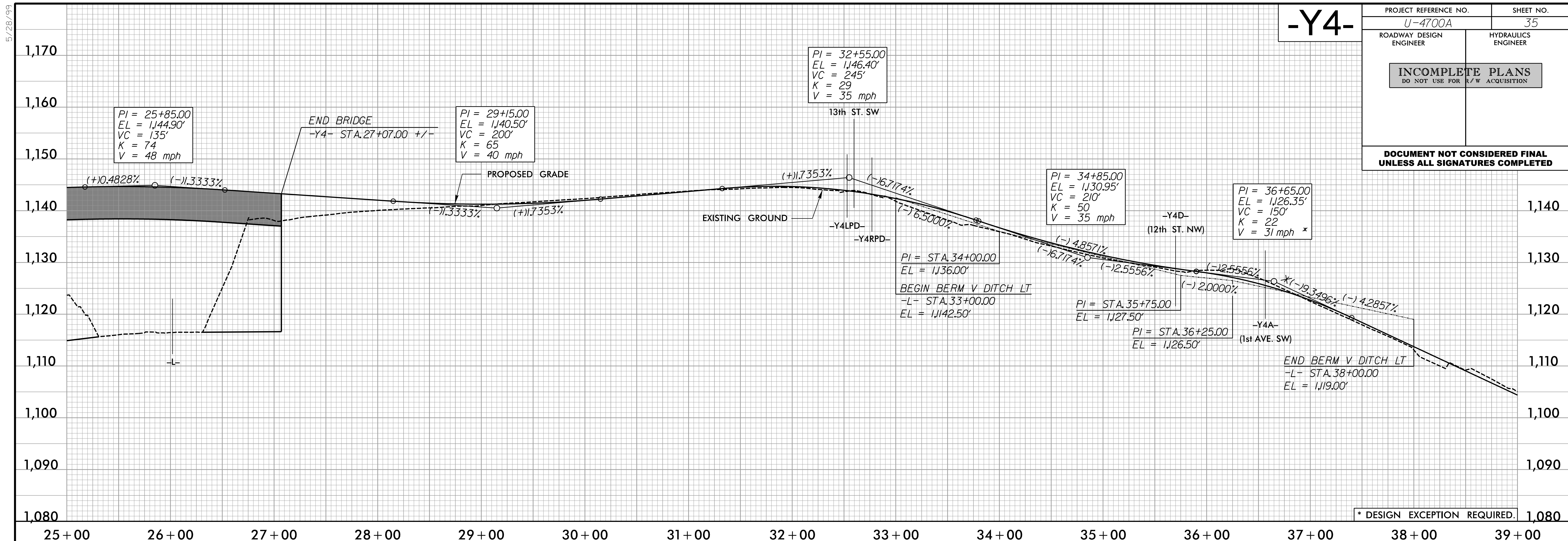
LEFT DITCH .....  
 RIGHT DITCH .....  
**UNDERCUT** [Cross-hatch pattern]  
 FOR -Y1RPB- PLAN SEE SHTS. 5 & 6  
 FOR -Y4- PLAN SEE SHTS. 7 & 21

**RK&K**  
 P: (819) 878-9560  
 900 Ridgely Drive Suite 350 | Raleigh, North Carolina 27609-3960  
 NC License No. F-0112  
 Engineers | Construction Managers | Planners | Scientists  
 www.rk.com  
 Responsive People | Creative Solutions

5/28/99  
 F:\2019\2019\Roadway\Proj\4700a\_rdy\_p134.dgn

-Y4-

PROJECT REFERENCE NO. U-4700A	SHEET NO. 35
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION	
<b>DOCUMENT NOT CONSIDERED FINAL</b> UNLESS ALL SIGNATURES COMPLETED	



LEFT DITCH .....  
 RIGHT DITCH .....  
**UNDERCUT** [Cross-hatch pattern]  
 FOR -Y4- PLAN SEE SHTS. 7 & 22

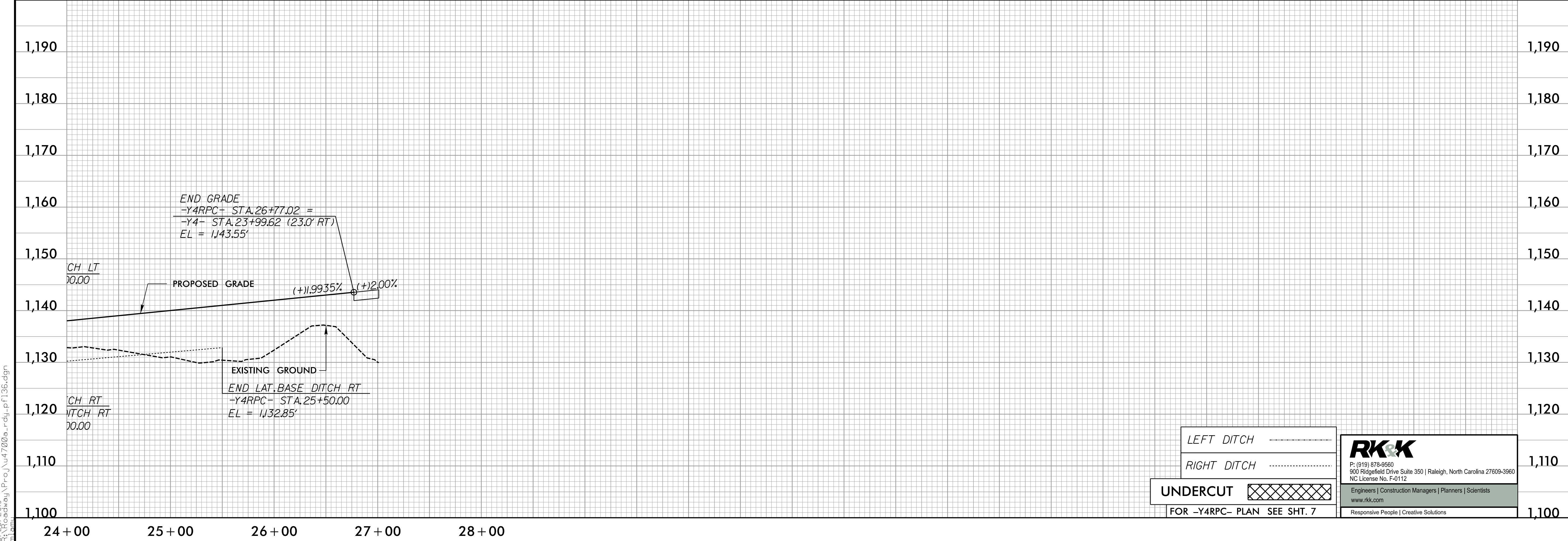
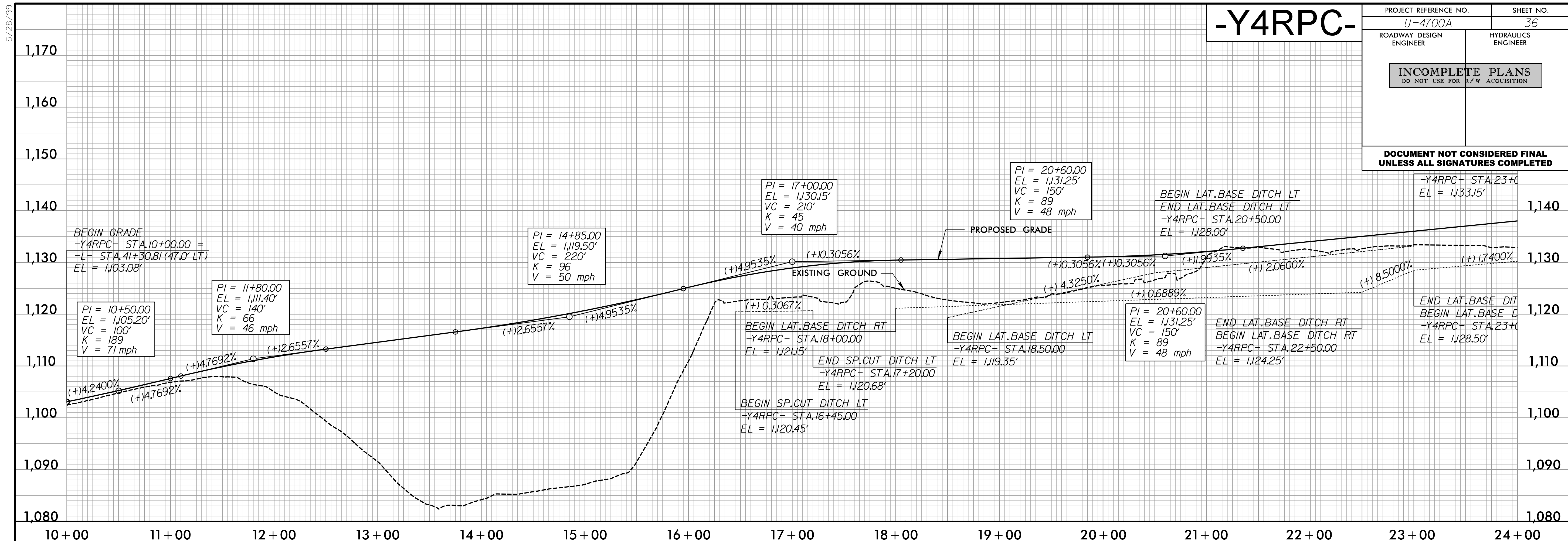
**RK&K**  
 P: (819) 878-9560  
 900 Ridgeway Drive Suite 350 | Raleigh, North Carolina 27609-3960  
 NC License No. F-0112  
 Engineers | Construction Managers | Planners | Scientists  
 www.rkk.com  
 Responsive People | Creative Solutions

5/28/2019  
 F:\2019\2019\Roadway\Proj\U47000a\_rdy\_p135.dgn



# -Y4RPC-

PROJECT REFERENCE NO. U-4700A	SHEET NO. 36
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION	
<b>DOCUMENT NOT CONSIDERED FINAL</b> UNLESS ALL SIGNATURES COMPLETED	



5/28/99  
5/28/2019  
C:\Users\pcoj\OneDrive\Projects\U47000a-rdy-pl136.dgn

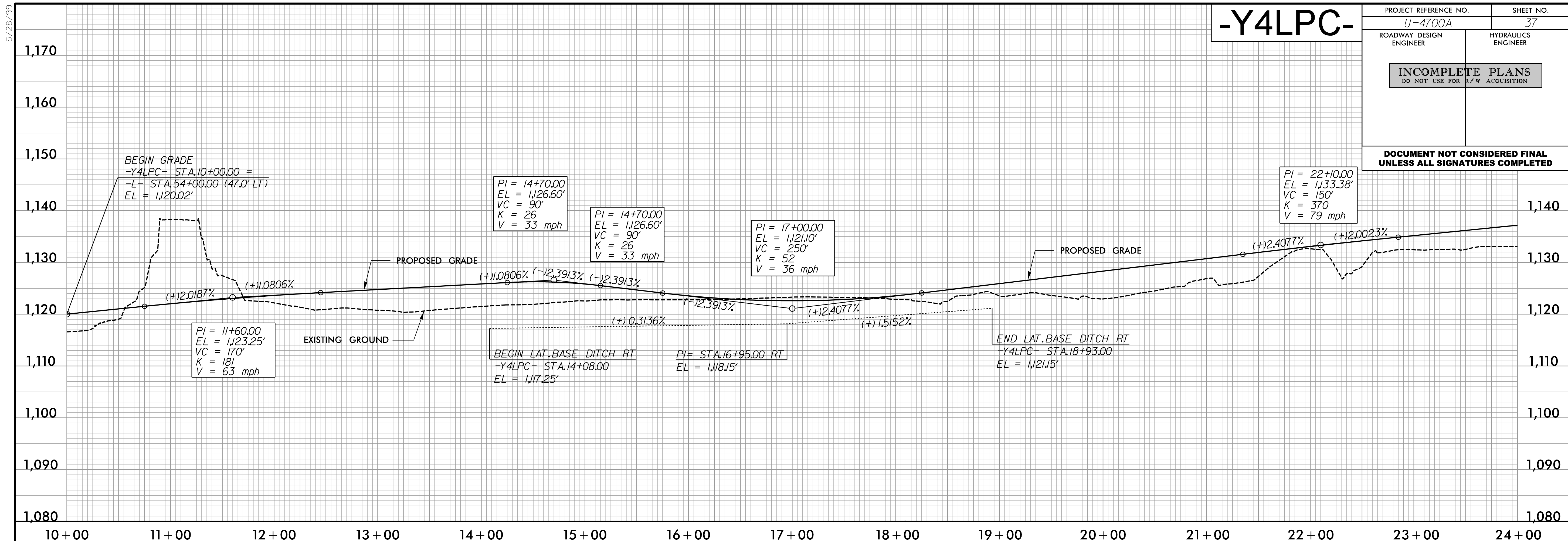
LEFT DITCH  
RIGHT DITCH  
**UNDERCUT**  
FOR -Y4RPC- PLAN SEE SHT. 7

**RK&K**  
P: (819) 878-9560  
900 Ridgely Drive Suite 350 | Raleigh, North Carolina 27609-3960  
NC License No. F-0112  
Engineers | Construction Managers | Planners | Scientists  
www.rk.com  
Responsive People | Creative Solutions

# -Y4LPC-

PROJECT REFERENCE NO. U-4700A	SHEET NO. 37
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION	

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

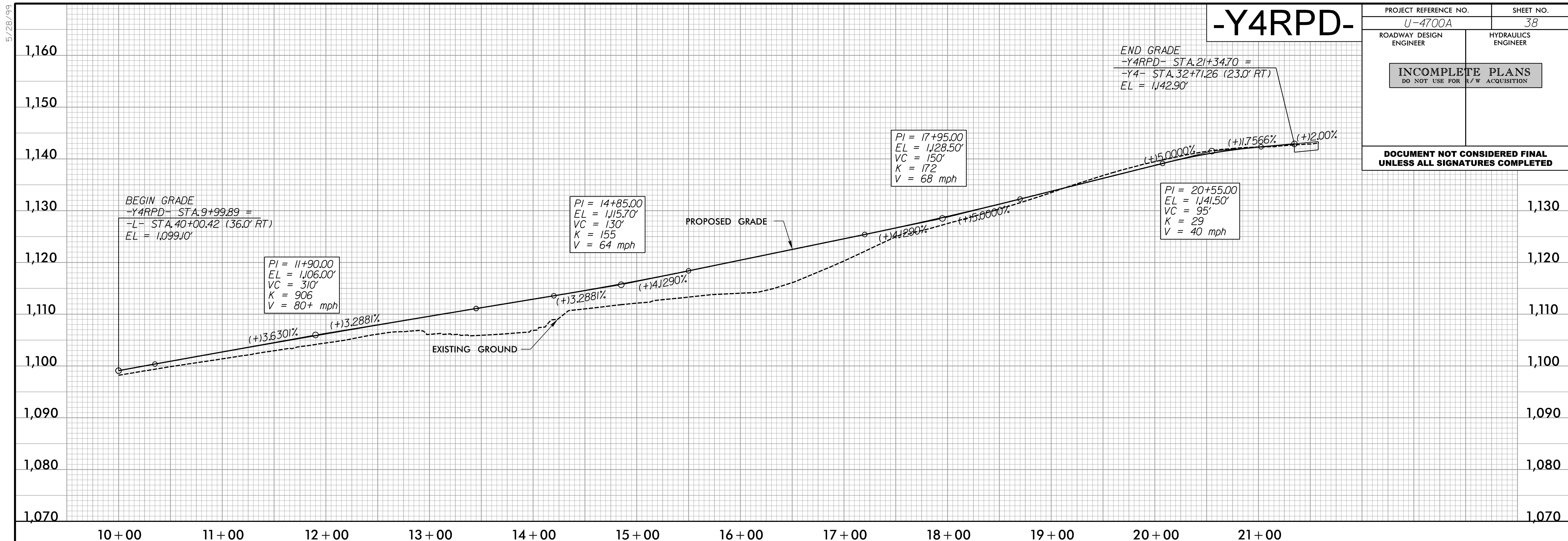


**RK&K**  
P: (819) 878-9560  
900 Ridgeland Drive Suite 350 | Raleigh, North Carolina 27609-3960  
NC License No. F-0112  
Engineers | Construction Managers | Planners | Scientists  
www.rkk.com  
Responsive People | Creative Solutions

5/28/09  
F:\2009\Projects\U-4700A-rdy-pl137.dgn

PROJECT REFERENCE NO. U-4700A	SHEET NO. 38
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION	
<b>DOCUMENT NOT CONSIDERED FINAL</b> UNLESS ALL SIGNATURES COMPLETED	

# -Y4RPD-



END GRADE  
-Y4RPD- STA. 21+34.70 =  
-Y4- STA. 32+71.26 (23.0' RT)  
EL = 1,142.90'

PI = 17+95.00  
EL = 1,128.50'  
VC = 150'  
K = 172  
V = 68 mph

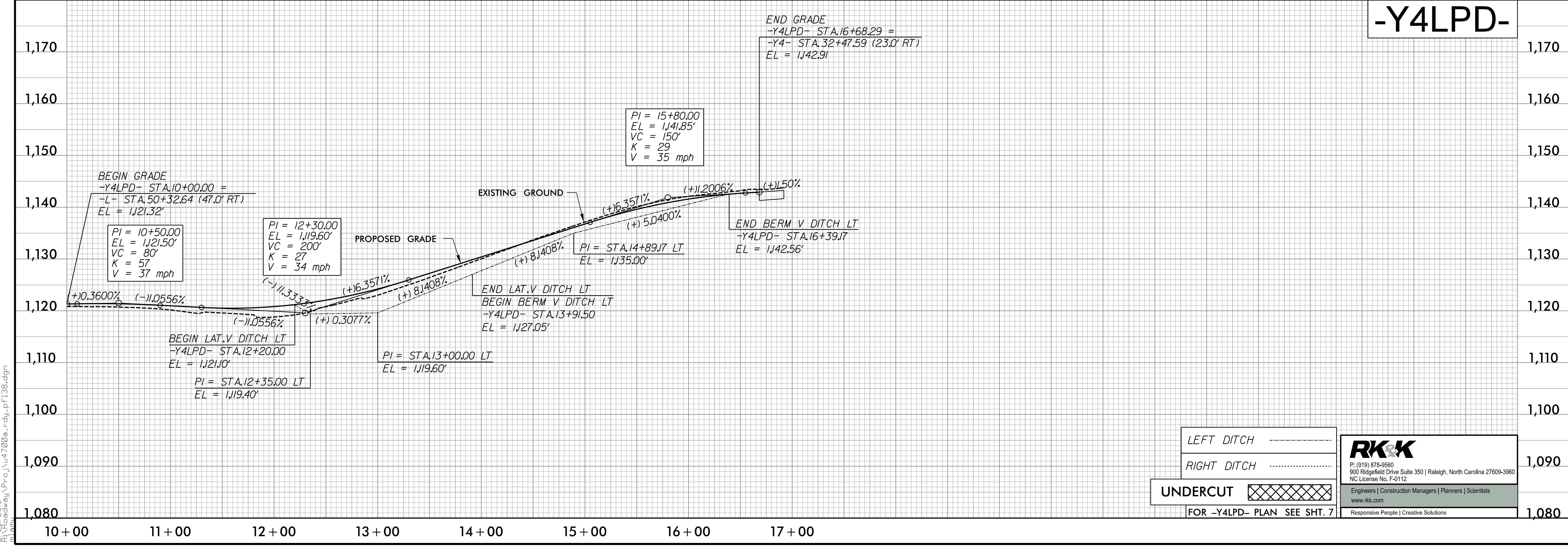
PI = 14+85.00  
EL = 1,115.70'  
VC = 130'  
K = 155  
V = 64 mph

PI = 11+90.00  
EL = 1,106.00'  
VC = 310'  
K = 906  
V = 80+ mph

BEGIN GRADE  
-Y4RPD- STA. 9+99.89 =  
-L- STA. 40+00.42 (36.0' RT)  
EL = 1,099.10'

PI = 20+55.00  
EL = 1,141.50'  
VC = 95'  
K = 29  
V = 40 mph

# -Y4LPD-



END GRADE  
-Y4LPD- STA. 16+68.29 =  
-Y4- STA. 32+47.59 (23.0' RT)  
EL = 1,142.91'

PI = 15+80.00  
EL = 1,141.85'  
VC = 150'  
K = 29  
V = 35 mph

PI = 12+30.00  
EL = 1,119.60'  
VC = 200'  
K = 27  
V = 34 mph

PI = 10+50.00  
EL = 1,121.50'  
VC = 80'  
K = 57  
V = 37 mph

BEGIN GRADE  
-Y4LPD- STA. 10+00.00 =  
-L- STA. 50+32.64 (47.0' RT)  
EL = 1,121.32'

END BERM V DITCH LT  
-Y4LPD- STA. 16+39.17  
EL = 1,142.56'

END LAT. V DITCH LT  
BEGIN BERM V DITCH LT  
-Y4LPD- STA. 13+91.50  
EL = 1,127.05'

BEGIN LAT. V DITCH LT  
-Y4LPD- STA. 12+20.00  
EL = 1,121.10'

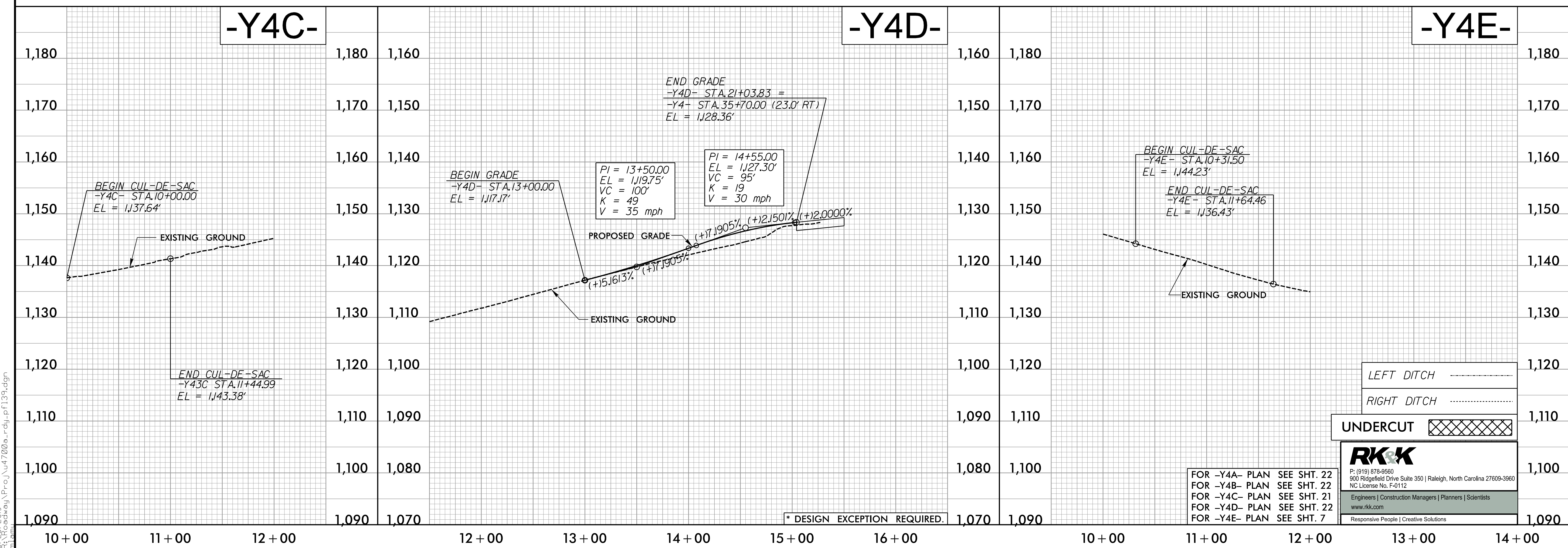
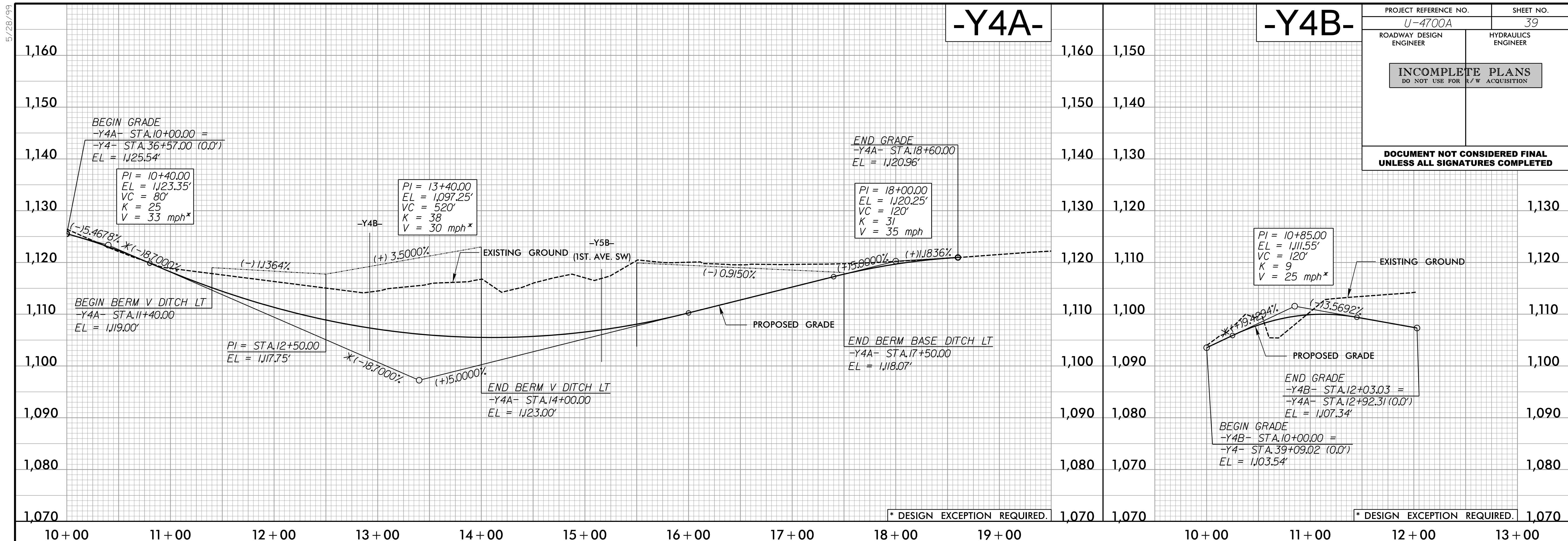
PI = STA. 12+35.00 LT  
EL = 1,119.40'

PI = STA. 13+00.00 LT  
EL = 1,119.60'

LEFT DITCH .....  
RIGHT DITCH .....  
**UNDERCUT** [Hatched Box]  
FOR -Y4LPD- PLAN SEE SHT. 7

**RK&K**  
P: (819) 878-9560  
900 Ridgeland Drive Suite 350 | Raleigh, North Carolina 27609-3960  
NC License No. F-0112  
Engineers | Construction Managers | Planners | Scientists  
www.rkk.com  
Responsive People | Creative Solutions

5/28/99  
5/28/2019  
C:\Users\perry\OneDrive\Projects\U47000a-rdy-pl138.dgn



LEFT DITCH

RIGHT DITCH

UNDERCUT

**RK&K**

P: (819) 878-9560  
900 Ridgely Drive Suite 350 | Raleigh, North Carolina 27609-3960  
NC License No. F-0112

Engineers | Construction Managers | Planners | Scientists  
www.rk.com

Responsive People | Creative Solutions

FOR -Y4A- PLAN SEE SHT. 22  
FOR -Y4B- PLAN SEE SHT. 22  
FOR -Y4C- PLAN SEE SHT. 21  
FOR -Y4D- PLAN SEE SHT. 22  
FOR -Y4E- PLAN SEE SHT. 7

5/28/09

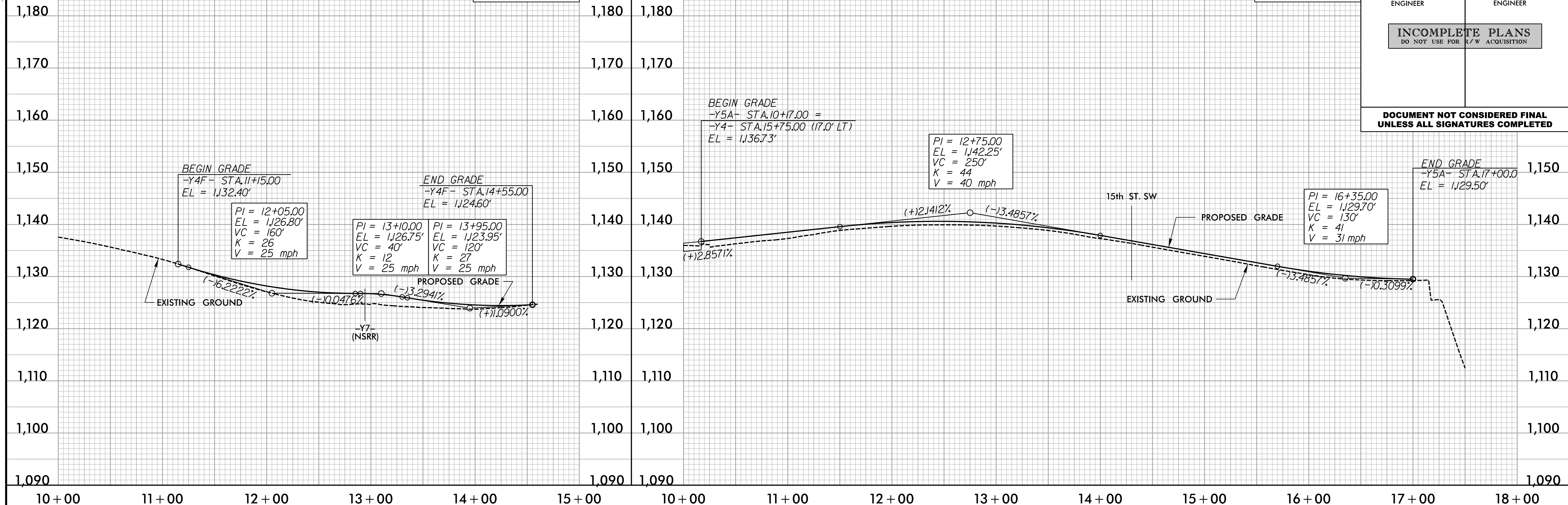
R:\2009\Roadway\Proj\U47000a\_rdy\_p139.dgn

5/28/99

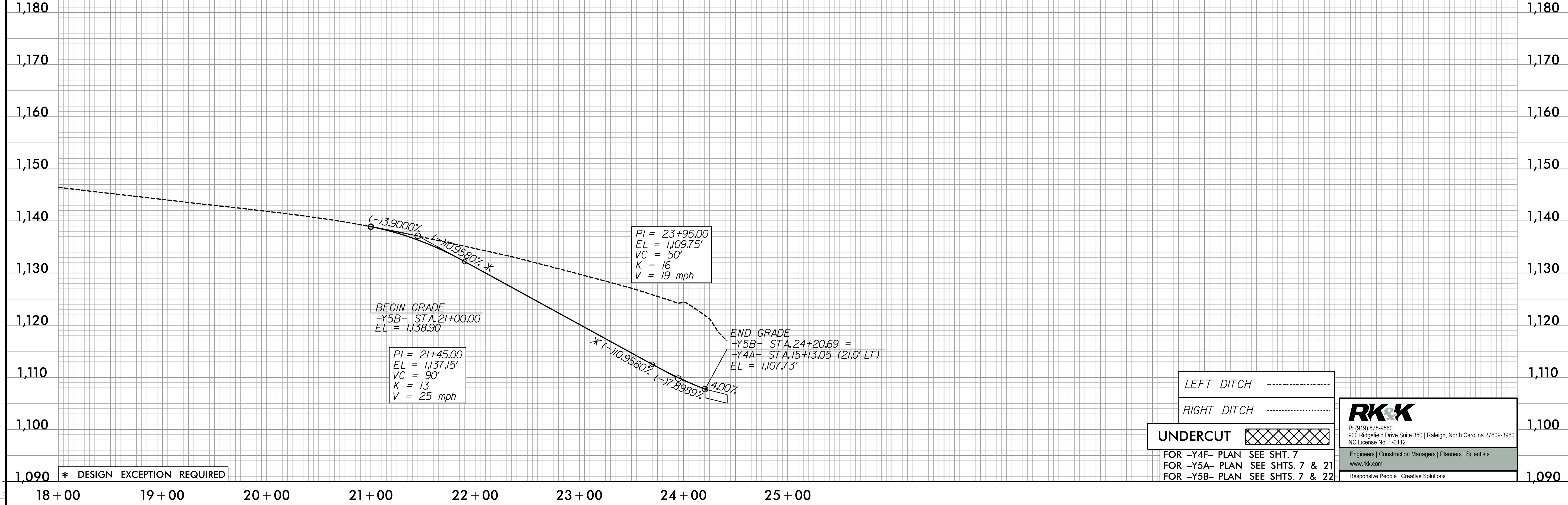
# -Y4F-

# -Y5A-

PROJECT REFERENCE NO. U-4700A	SHEET NO. 40
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION	
<b>DOCUMENT NOT CONSIDERED FINAL</b> UNLESS ALL SIGNATURES COMPLETED	



# -Y5B-



LEFT DITCH	.....
RIGHT DITCH	.....
UNDERCUT	XXXXXX
FOR -Y4F- PLAN SEE SHT. 7	
FOR -Y5A- PLAN SEE SHTS. 7 & 21	
FOR -Y5B- PLAN SEE SHTS. 7 & 22	

**RK&K**  
 P: (819) 878-9560  
 900 Ridgely Drive Suite 350 | Raleigh, North Carolina 27609-3960  
 NC License No. F-0112  
 Engineers | Construction Managers | Planners | Scientists  
 www.rkk.com  
 Responsive People | Creative Solutions

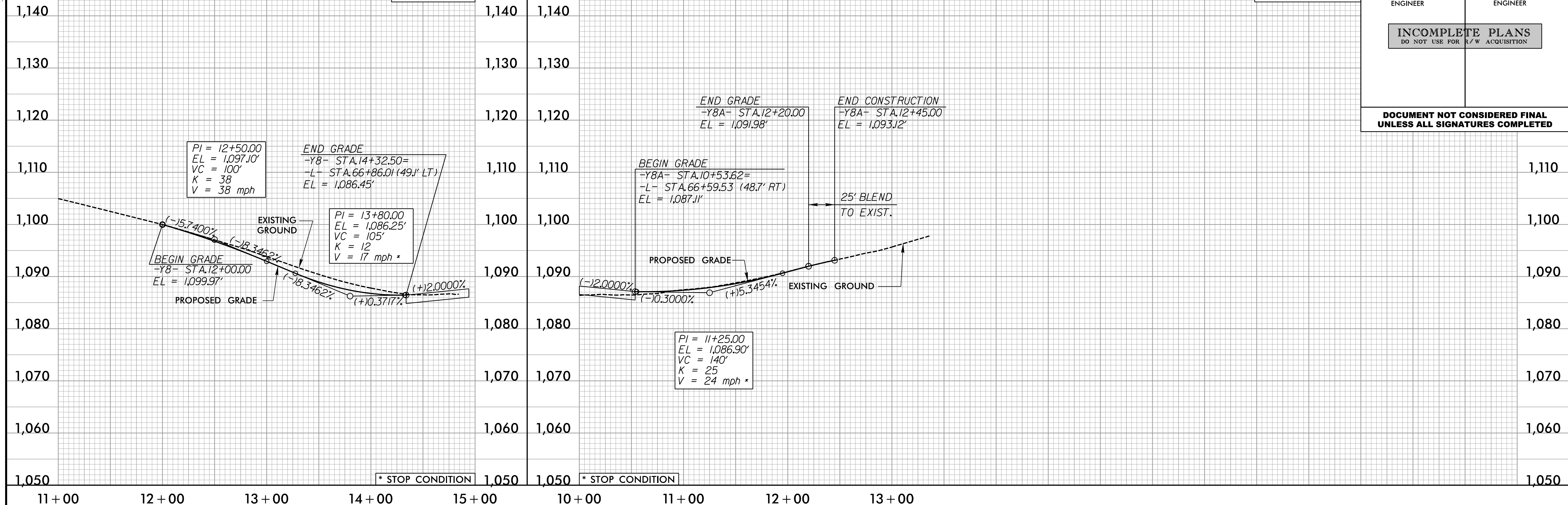
5/28/2019 10:49:00 AM \\p01\proj\4700a\rdy\_p1140.dgn

5/28/99

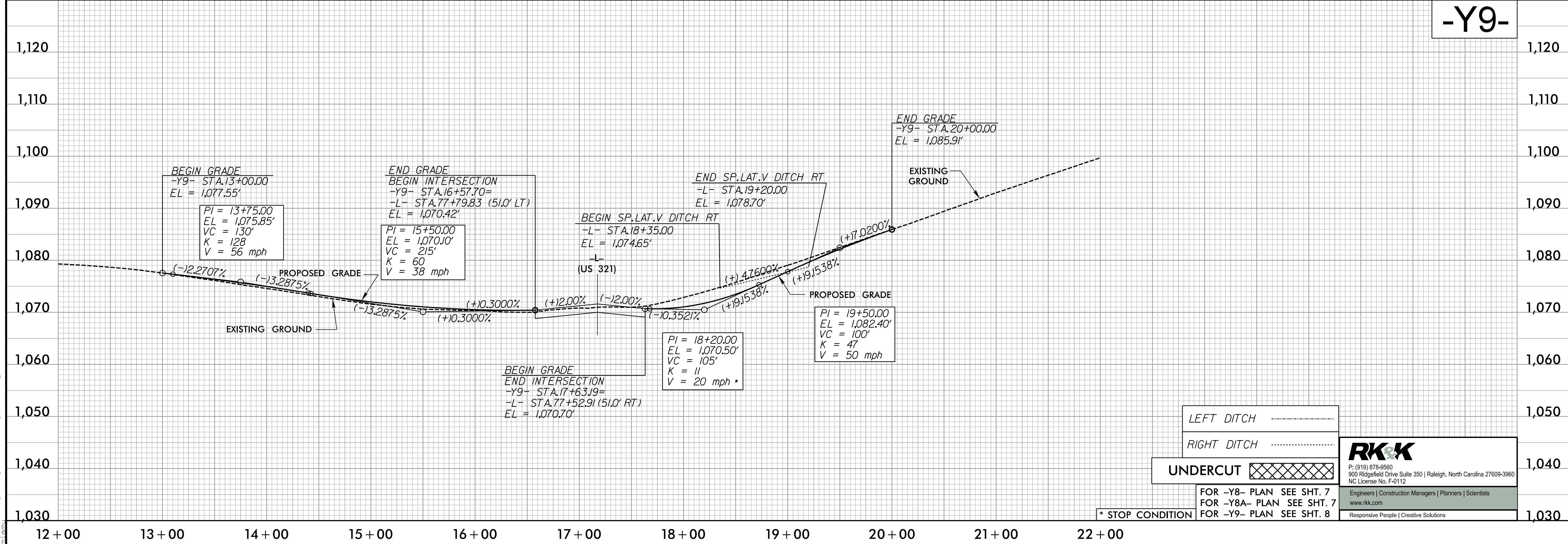
# -Y8-

# -Y8A-

PROJECT REFERENCE NO. U-4700A	SHEET NO. 41
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION	
<b>DOCUMENT NOT CONSIDERED FINAL</b> UNLESS ALL SIGNATURES COMPLETED	



# -Y9-



LEFT DITCH -----

RIGHT DITCH -----

UNDERCUT

FOR -Y8- PLAN SEE SHT. 7  
FOR -Y8A- PLAN SEE SHT. 7  
FOR -Y9- PLAN SEE SHT. 8

**RK&K**

P: (819) 878-9560  
900 Ridgeland Drive Suite 350 | Raleigh, North Carolina 27609-3960  
NC License No. F-0112

Engineers | Construction Managers | Planners | Scientists  
www.rkk.com  
Responsive People | Creative Solutions

5/28/2019 10:49:00 AM C:\prowork\prowork\4700a\_rdy\_p141.dgn

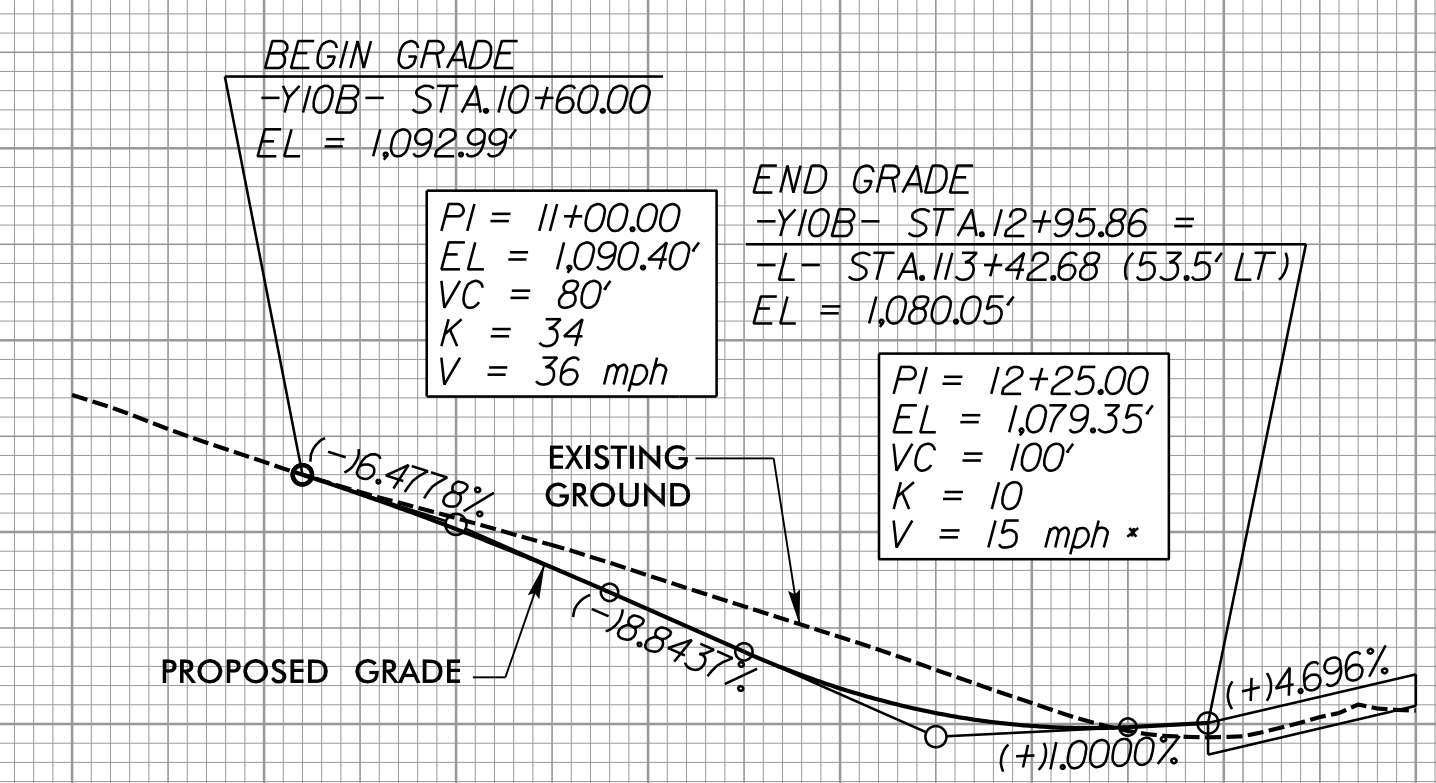
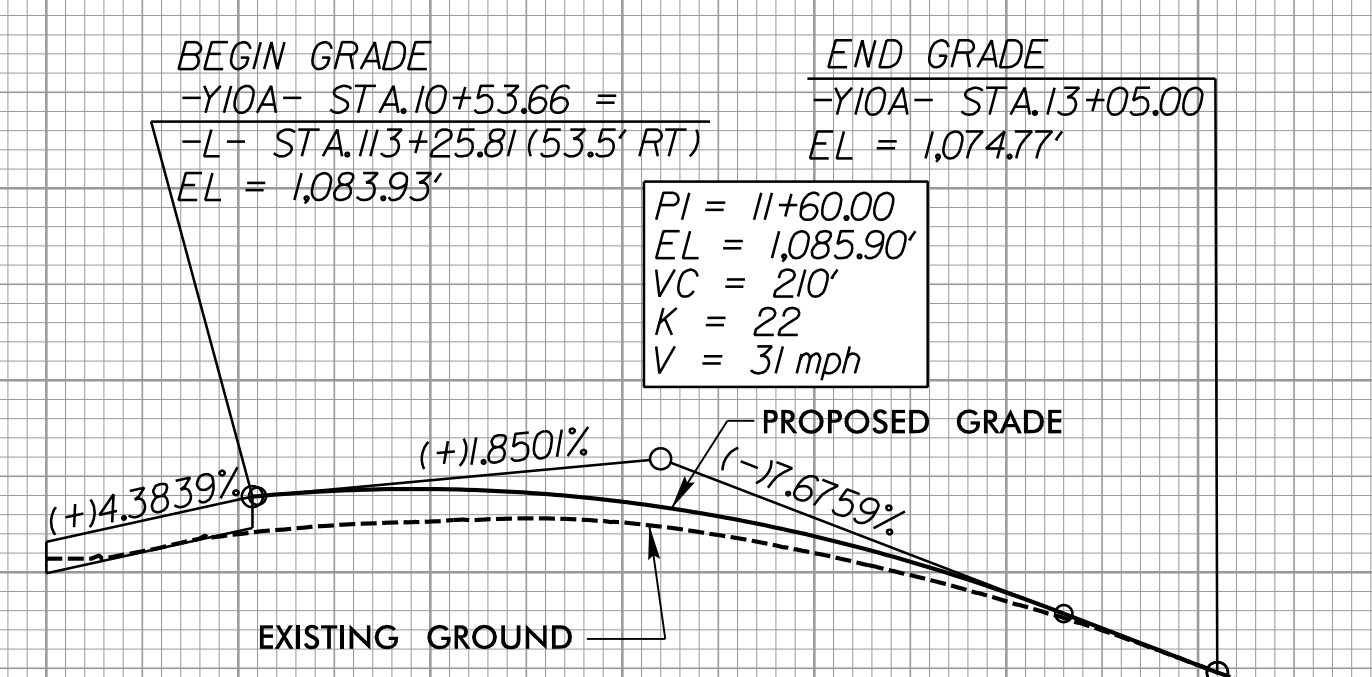
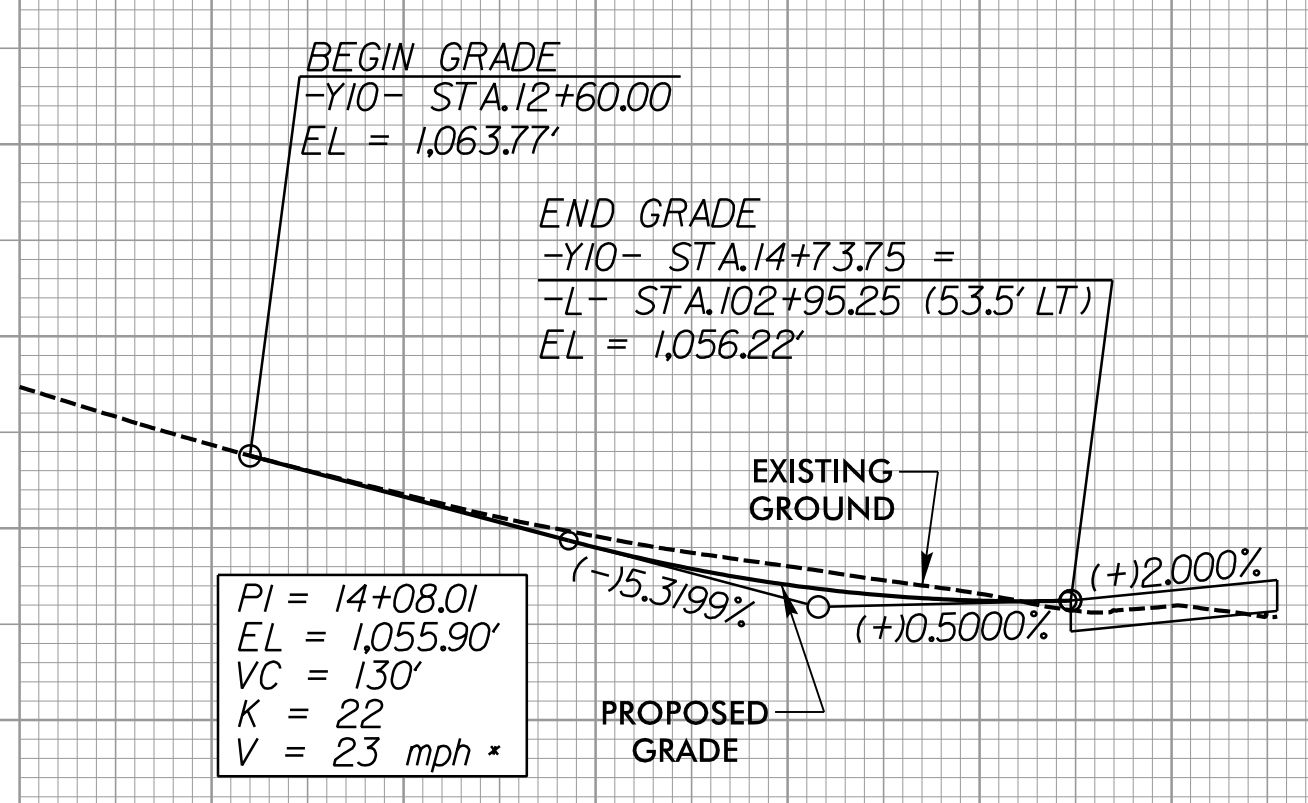
5/28/99

# -Y10-

# -Y10A-

# -Y10B-

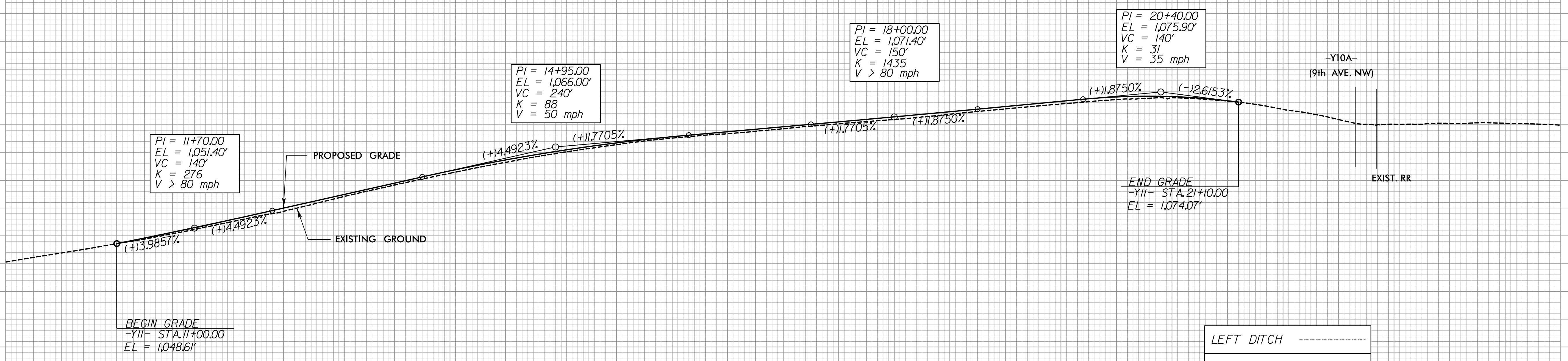
PROJECT REFERENCE NO. U-4700A	SHEET NO. 42
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION	
<b>DOCUMENT NOT CONSIDERED FINAL</b> UNLESS ALL SIGNATURES COMPLETED	



\* STOP CONDITION

\* STOP CONDITION

# -Y11-



LEFT DITCH -----

RIGHT DITCH -----

UNDERCUT

**RK&K**

P: (819) 878-9560  
900 Ridgeway Drive Suite 350 | Raleigh, North Carolina 27609-3960  
NC License No. F-0112

Engineers | Construction Managers | Planners | Scientists  
www.rk.com

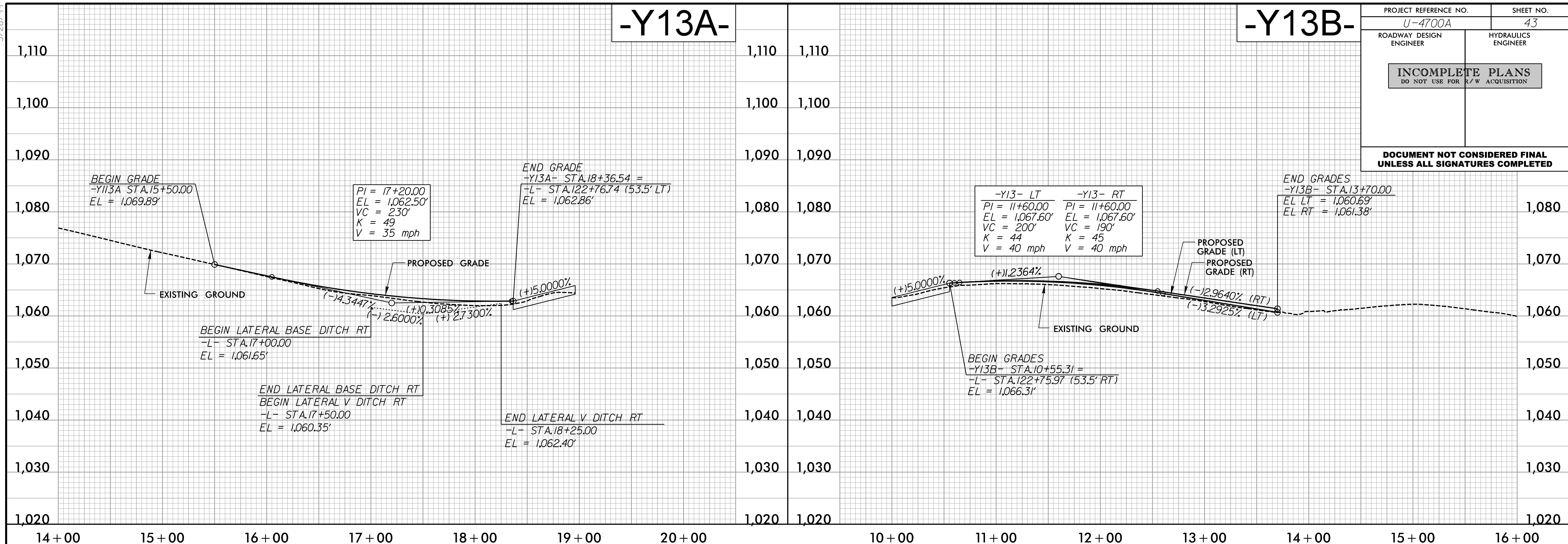
Responsive People | Creative Solutions

FOR -Y10- PLAN SEE SHT. 10  
FOR -Y10A- PLAN SEE SHT. 11  
FOR -Y10B- PLAN SEE SHT. 11  
FOR -Y11- PLAN SEE SHTS. 10-11

5/28/2019 10:49:00 AM C:\p01\4700a\rdy\_p\142.dgn

# -Y13A-

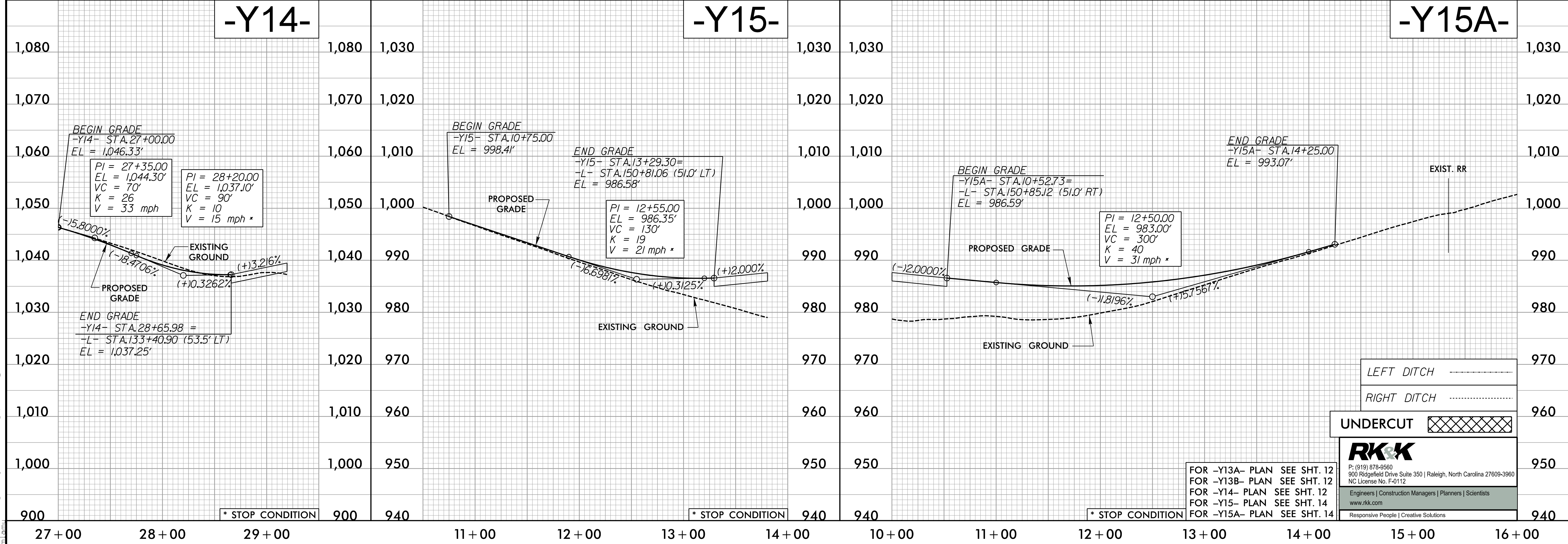
# -Y13B-



# -Y14-

# -Y15-

# -Y15A-



5/28/99  
 5/28/2019  
 C:\Users\perry\OneDrive\Documents\U-4700A-rdy-pl143.dgn

FOR -Y13A- PLAN SEE SHT. 12  
 FOR -Y13B- PLAN SEE SHT. 12  
 FOR -Y14- PLAN SEE SHT. 12  
 FOR -Y15- PLAN SEE SHT. 14  
 FOR -Y15A- PLAN SEE SHT. 14

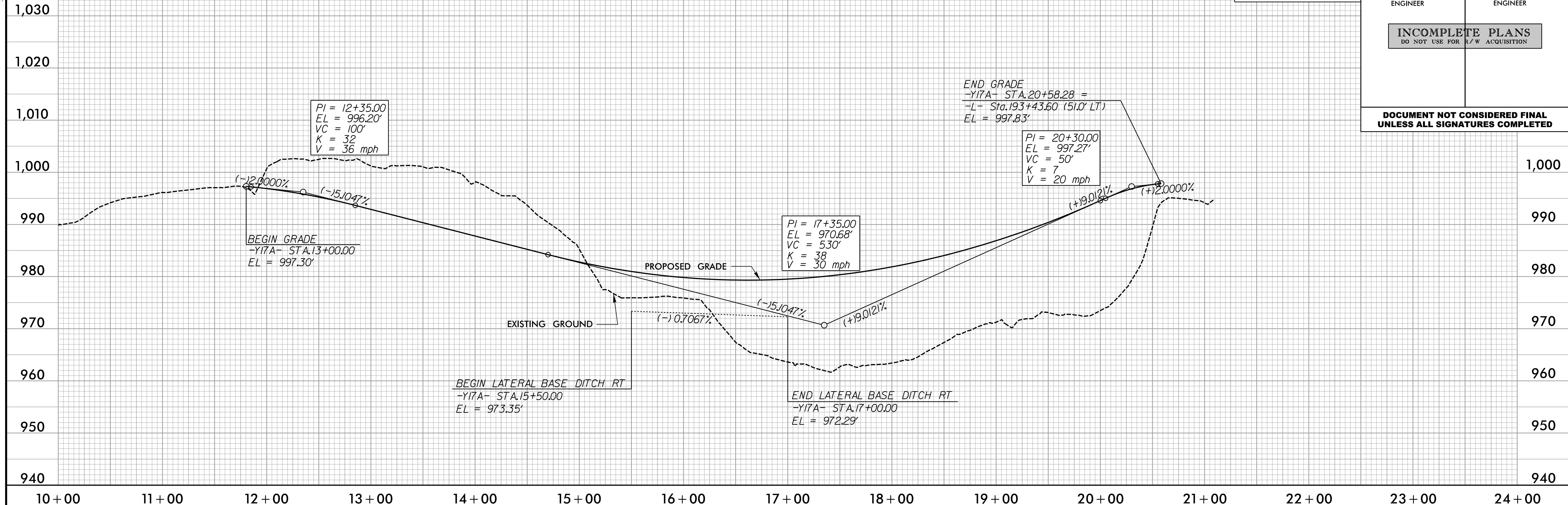
**RK&K**  
 P: (819) 878-9560  
 900 Ridgely Drive Suite 350 | Raleigh, North Carolina 27609-3960  
 NC License No. F-0112  
 Engineers | Construction Managers | Planners | Scientists  
 www.rk.com  
 Responsive People | Creative Solutions



5/28/99

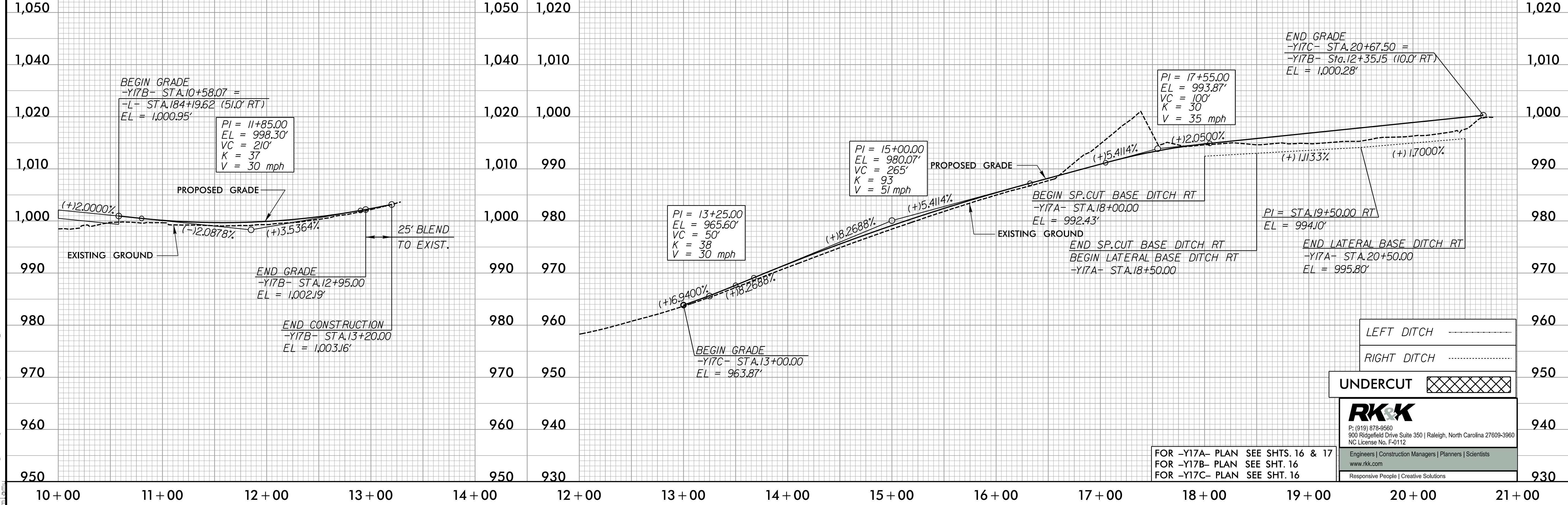
# -Y17A-

PROJECT REFERENCE NO. U-4700A	SHEET NO. 44
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION	
<b>DOCUMENT NOT CONSIDERED FINAL</b> UNLESS ALL SIGNATURES COMPLETED	



# -Y17B-

# -Y17C-



LEFT DITCH	.....
RIGHT DITCH	.....
UNDERCUT	XXXXXX

**RK&K**  
 P: (819) 878-9560  
 900 Ridgely Drive Suite 350 | Raleigh, North Carolina 27609-3960  
 NC License No. F-0112  
 Engineers | Construction Managers | Planners | Scientists  
 www.rkk.com  
 Responsive People | Creative Solutions

FOR -Y17A- PLAN SEE SHTS. 16 & 17  
 FOR -Y17B- PLAN SEE SHT. 16  
 FOR -Y17C- PLAN SEE SHT. 16

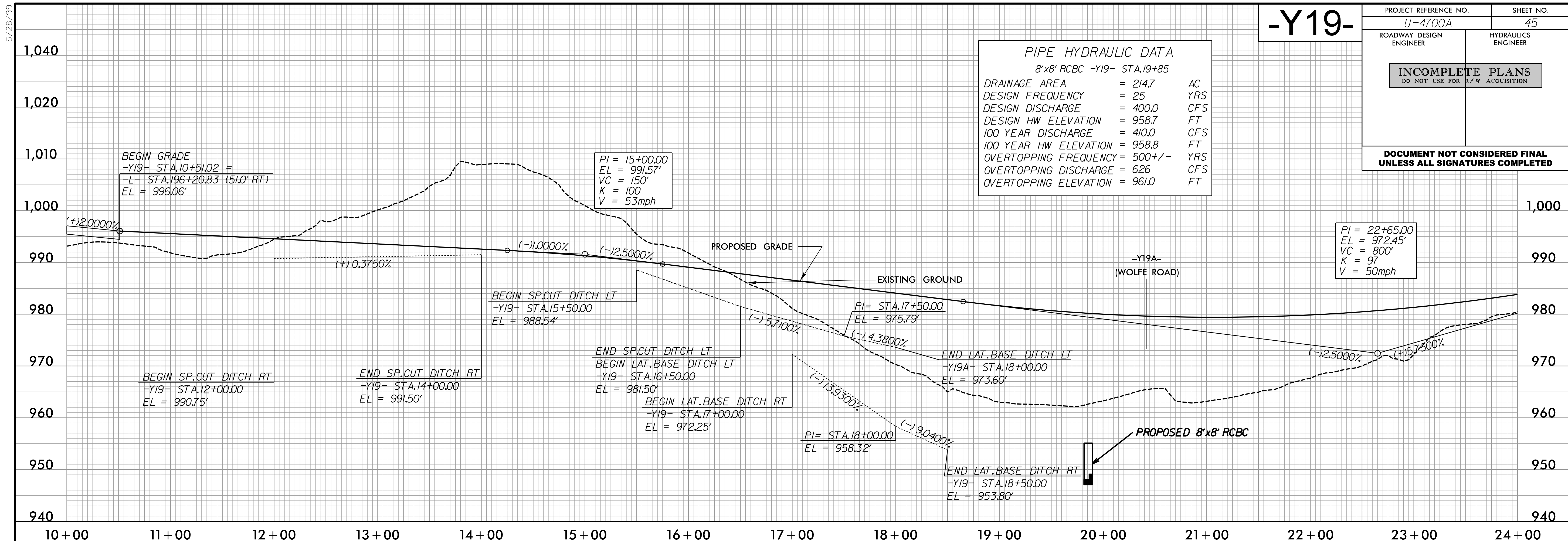
5/28/2019 10:49:00 AM P:\proj\47000a\_rdy\_p1144.dgn

# -Y19-

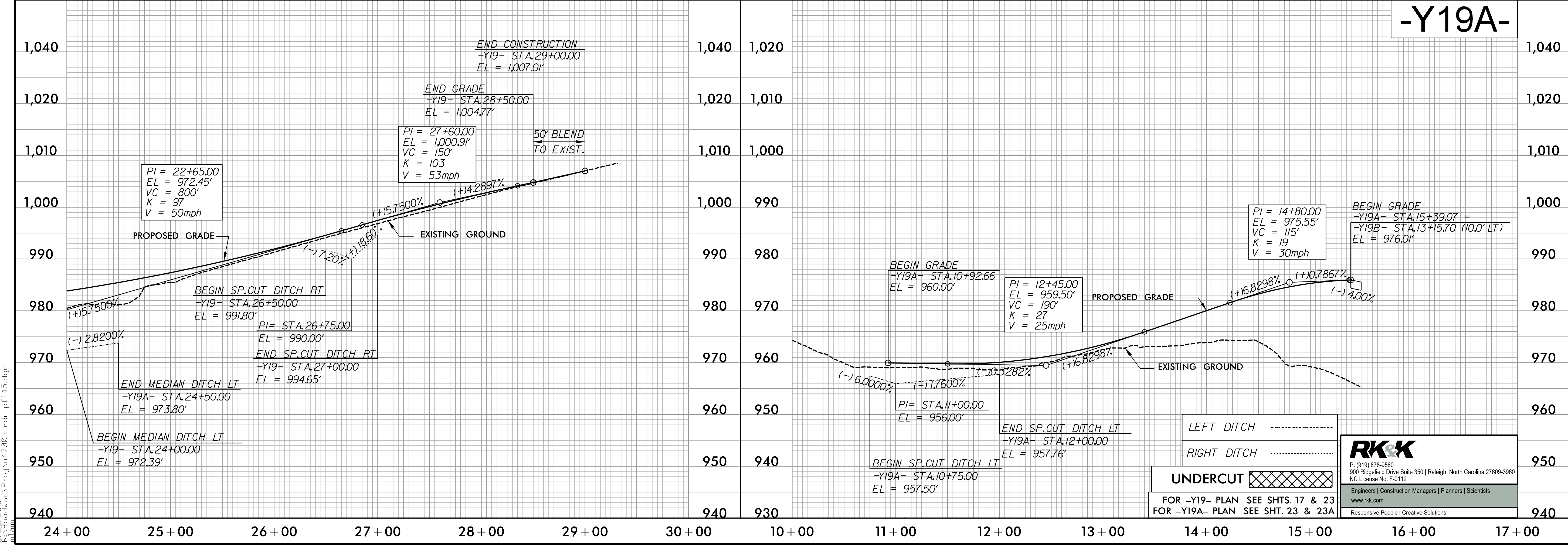
PROJECT REFERENCE NO. U-4700A	SHEET NO. 45
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION	
<b>DOCUMENT NOT CONSIDERED FINAL</b> UNLESS ALL SIGNATURES COMPLETED	

**PIPE HYDRAULIC DATA**  
8'x8' RCBC -Y19- STA.19+85

DRAINAGE AREA	= 214.7	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 400.0	CFS
DESIGN HW ELEVATION	= 958.7	FT
100 YEAR DISCHARGE	= 410.0	CFS
100 YEAR HW ELEVATION	= 958.8	FT
OVERTOPPING FREQUENCY	= 500+/-	YRS
OVERTOPPING DISCHARGE	= 626	CFS
OVERTOPPING ELEVATION	= 961.0	FT



# -Y19A-



**UNDERCUT**

LEFT DITCH .....  
RIGHT DITCH .....

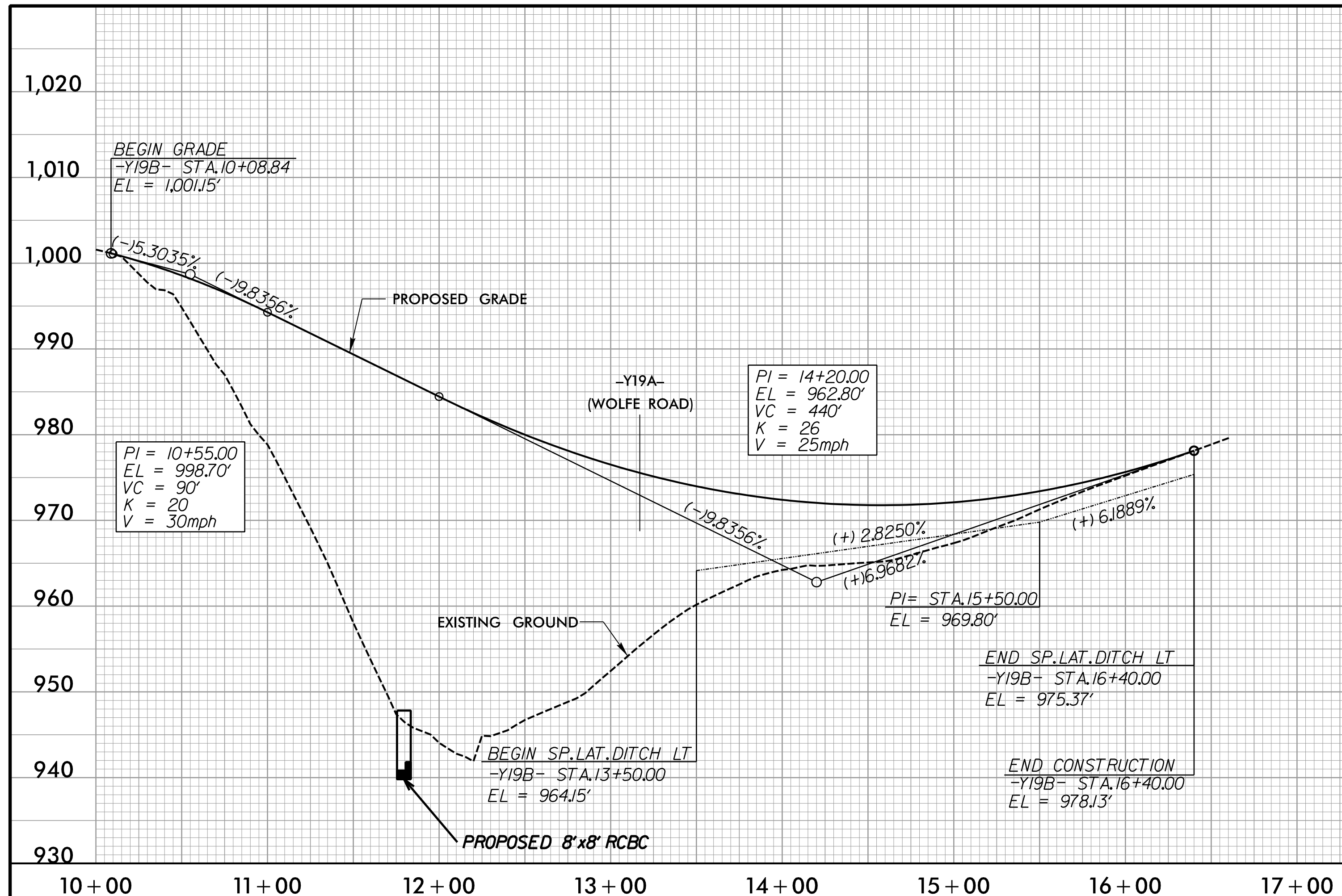
FOR -Y19- PLAN SEE SHTS. 17 & 23  
FOR -Y19A- PLAN SEE SHTS. 23 & 23A

**RK&K**  
P: (819) 878-9560  
900 Ridgely Drive Suite 350 | Raleigh, North Carolina 27609-3960  
NC License No. F-0112  
www.rkk.com  
Engineers | Construction Managers | Planners | Scientists  
Responsive People | Creative Solutions

5/28/99  
F:\2019\Roadway\Proj\4700a\_rdy\_p145.dgn

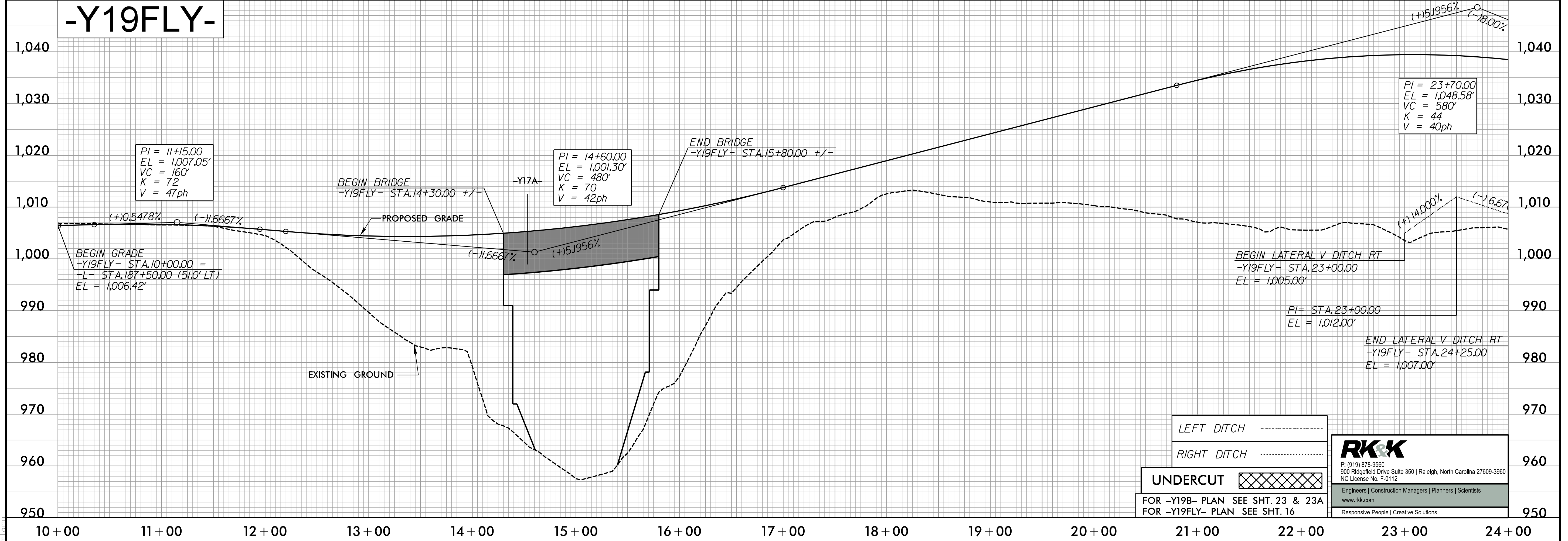
# -Y19B-

PROJECT REFERENCE NO. U-4700A	SHEET NO. 46
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION	
<b>DOCUMENT NOT CONSIDERED FINAL</b> UNLESS ALL SIGNATURES COMPLETED	



**PIPE HYDRAULIC DATA**  
8'x8' RCBC -Y19B- STA.11+79.5

DRAINAGE AREA	= 240.8	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 430.0	CFS
DESIGN HW ELEVATION	= 949.9	FT
100 YEAR DISCHARGE	= 450.0	CFS
100 YEAR HW ELEVATION	= 950.2	FT
OVERTOPPING FREQUENCY	= 500 +/-	YRS
OVERTOPPING DISCHARGE	= 1335	CFS
OVERTOPPING ELEVATION	= 971.8	FT



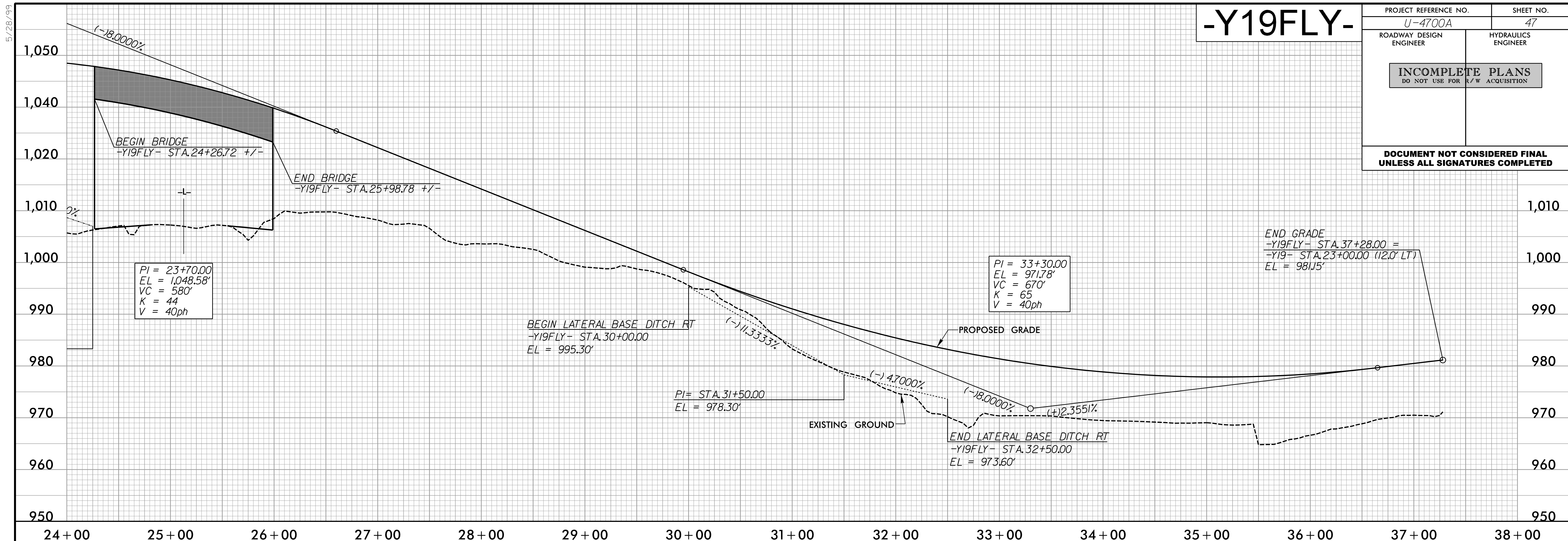
LEFT DITCH .....  
RIGHT DITCH .....  
UNDERCUT [Hatched Box]  
FOR -Y19B- PLAN SEE SHT. 23 & 23A  
FOR -Y19FLY- PLAN SEE SHT. 16

**RK&K**  
P: (819) 878-9560  
900 Ridgeway Drive Suite 350 | Raleigh, North Carolina 27609-3960  
NC License No. F-0112  
Engineers | Construction Managers | Planners | Scientists  
www.rk.com  
Responsive People | Creative Solutions

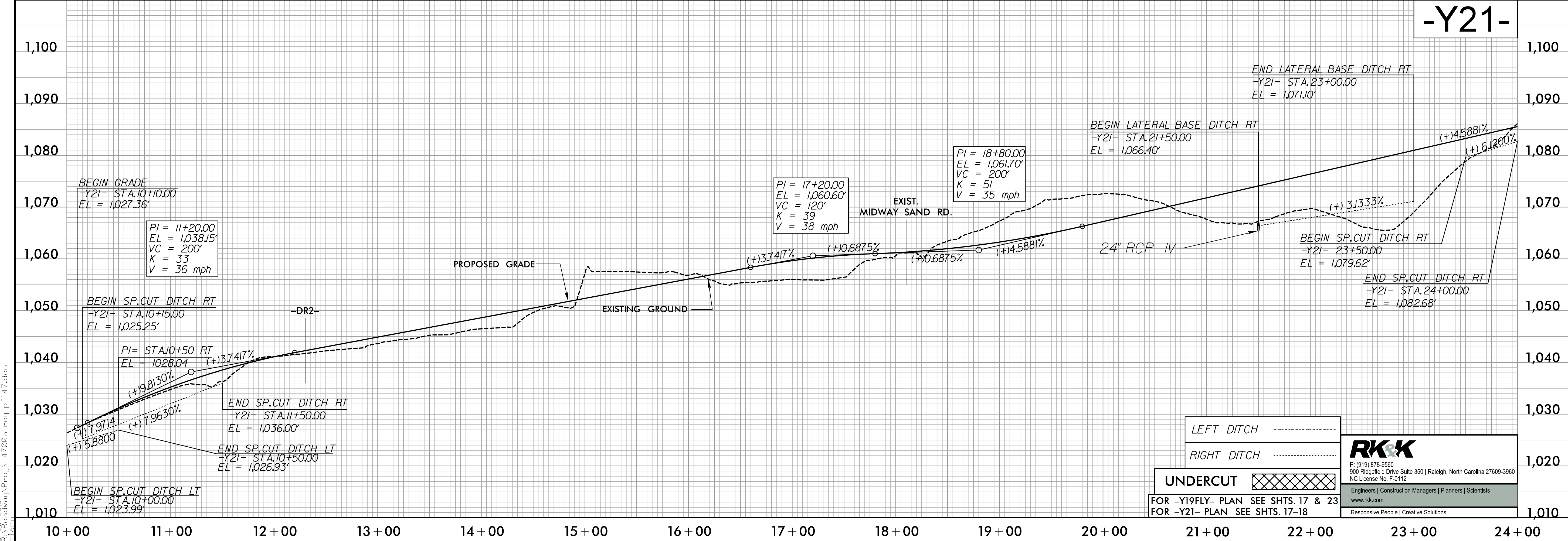
R:\2019\2019\Roadway\ProJ\U4700a\_rdy\_p1146.dgn

# -Y19FLY-

PROJECT REFERENCE NO. U-4700A	SHEET NO. 47
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION	
<b>DOCUMENT NOT CONSIDERED FINAL</b> UNLESS ALL SIGNATURES COMPLETED	



# -Y21-



LEFT DITCH	.....
RIGHT DITCH	.....
UNDERCUT	XXXXXX

FOR -Y19FLY- PLAN SEE SHTS. 17 & 23  
FOR -Y21- PLAN SEE SHTS. 17-18

**RK&K**  
P: (819) 878-9560  
900 Ridgely Drive Suite 350 | Raleigh, North Carolina 27609-3960  
NC License No. F-0112  
www.rk.com  
Engineers | Construction Managers | Planners | Scientists  
Responsive People | Creative Solutions

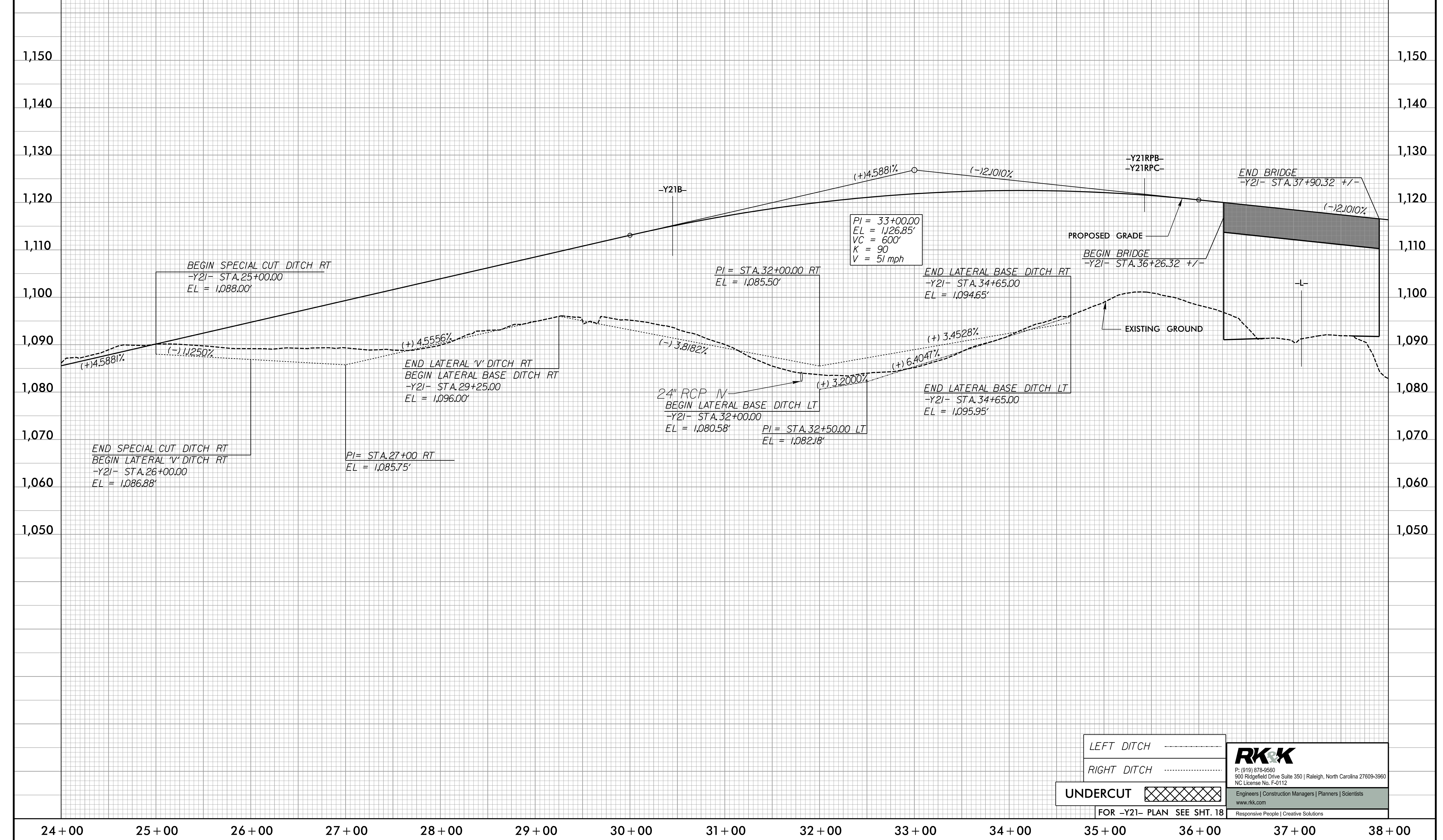
5/28/99  
5/28/2019  
C:\p02\roadway\p02\4700a-rdy-pl147.dgn

-Y21-

PROJECT REFERENCE NO. U-4700A	SHEET NO. 48
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION	

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

5/28/99

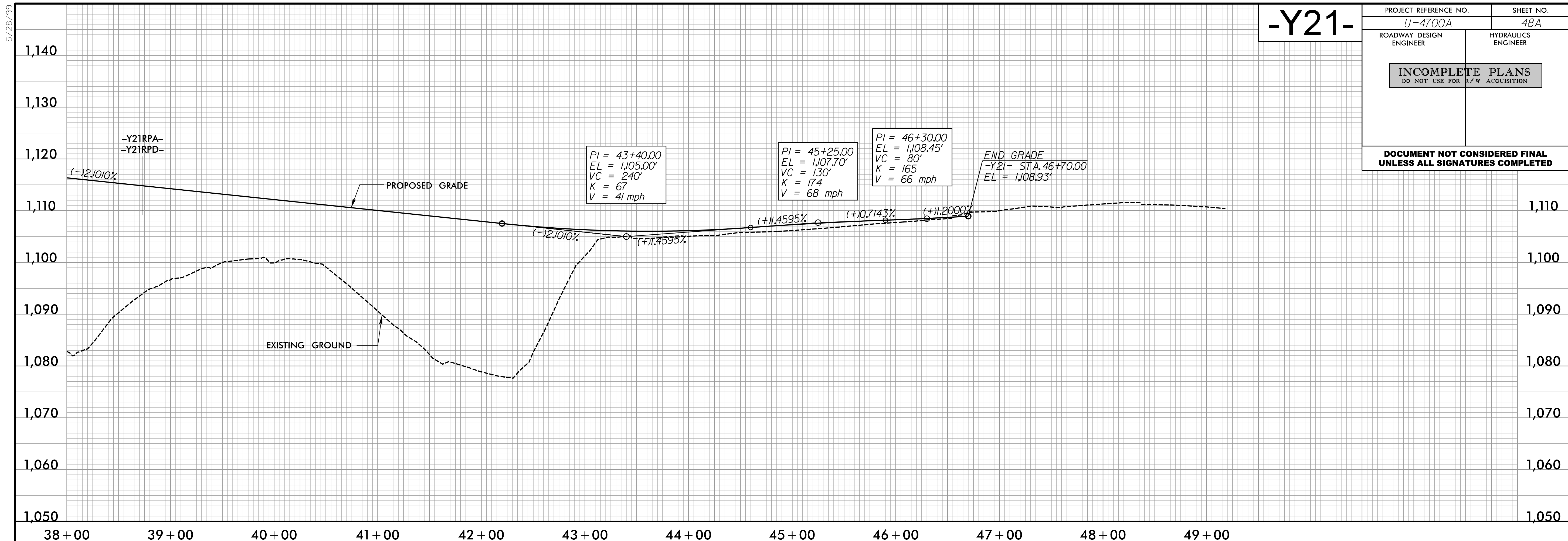


LEFT DITCH .....  
 RIGHT DITCH .....  
 UNDERCUT [Cross-hatch pattern]  
 FOR -Y21- PLAN SEE SHT. 18

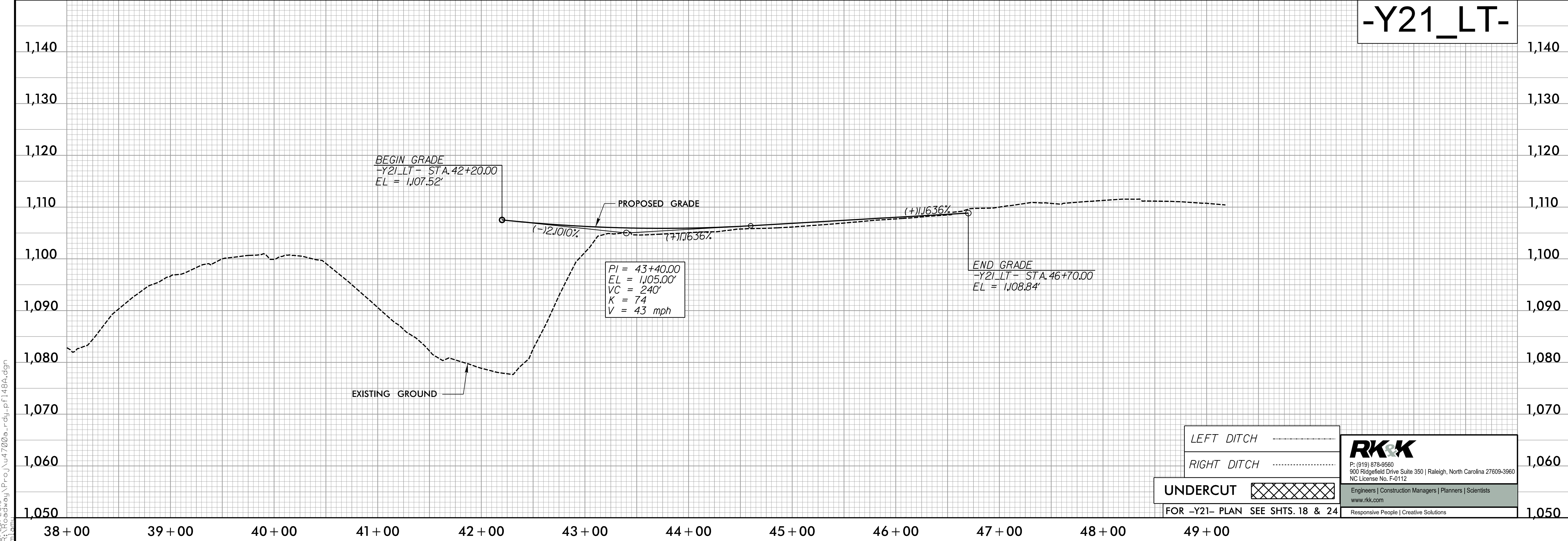
**RK&K**  
 P: (819) 878-9560  
 900 Ridgeland Drive Suite 350 | Raleigh, North Carolina 27609-3960  
 NC License No. F-0112  
 Engineers | Construction Managers | Planners | Scientists  
 www.rkk.com  
 Responsive People | Creative Solutions

-Y21-

PROJECT REFERENCE NO. U-4700A	SHEET NO. 48A
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION	
<b>DOCUMENT NOT CONSIDERED FINAL</b> UNLESS ALL SIGNATURES COMPLETED	



-Y21\_LT-



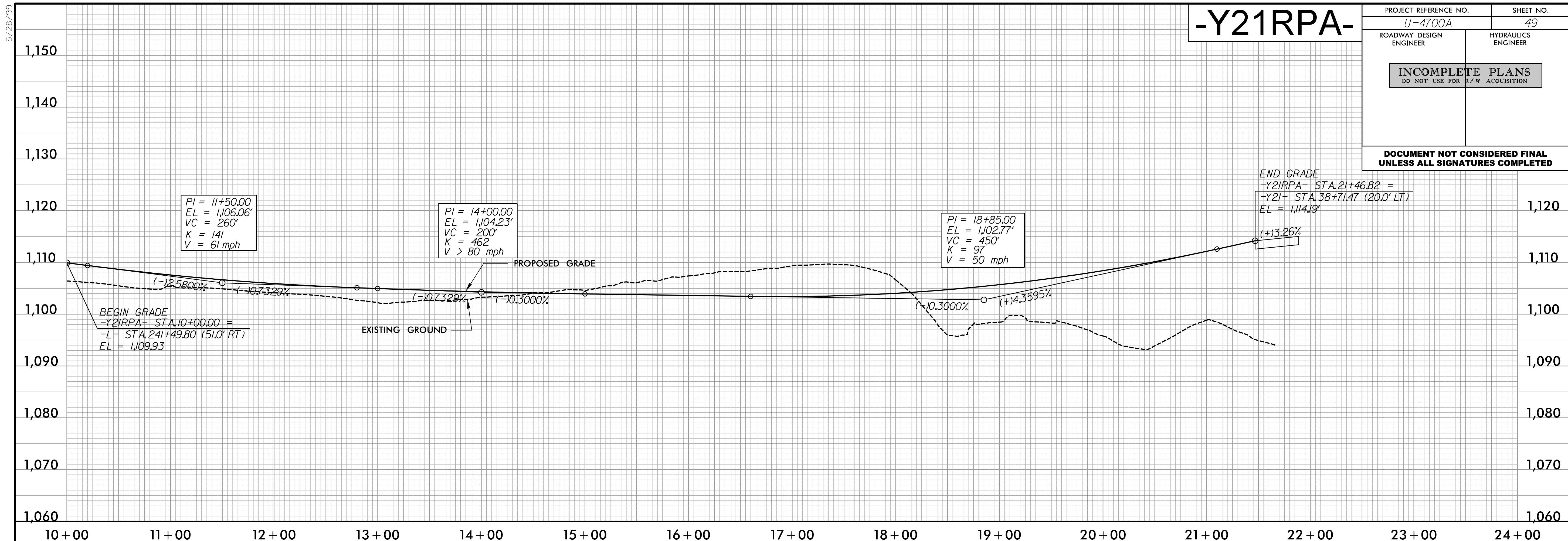
LEFT DITCH .....  
 RIGHT DITCH .....  
**UNDERCUT** [Cross-hatch pattern]  
 FOR -Y21- PLAN SEE SHTS. 18 & 24

**RK&K**  
 P: (919) 878-9560  
 900 Ridgely Drive Suite 350 | Raleigh, North Carolina 27609-3960  
 NC License No. F-0112  
 Engineers | Construction Managers | Planners | Scientists  
 www.rkk.com  
 Responsive People | Creative Solutions

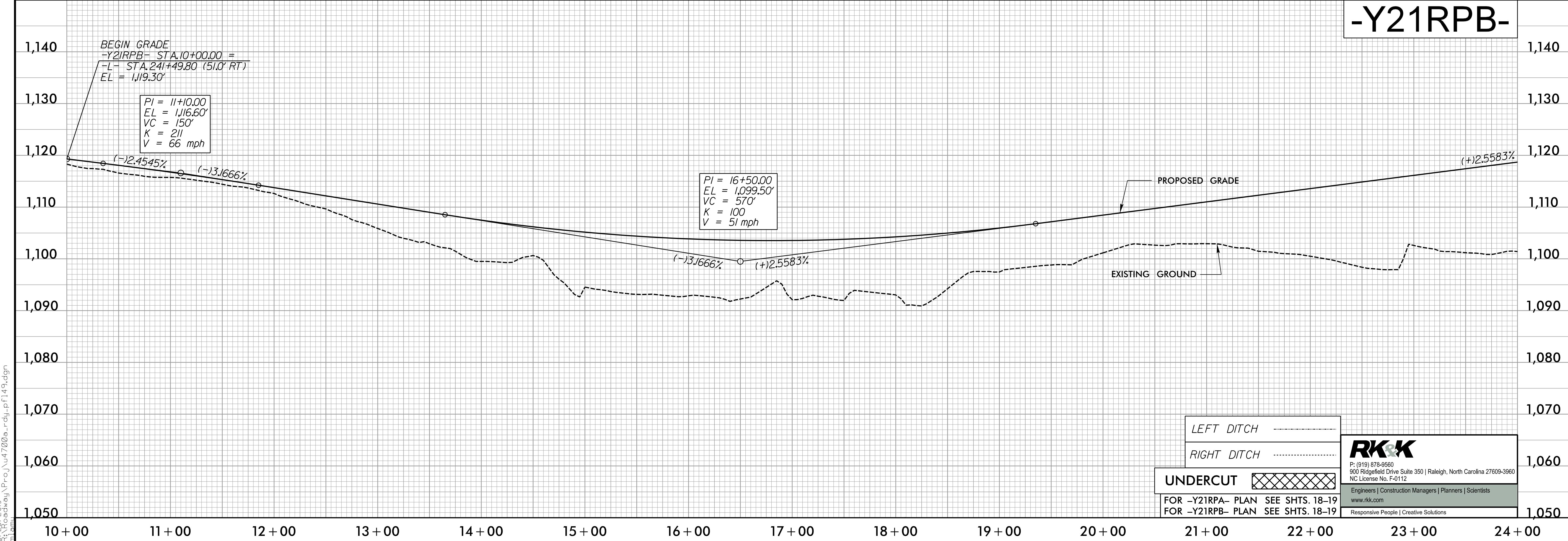
5/28/99  
 F:\2019\Roadway\Proj\4700a-rdy-pl148a.dgn  
 11/14/2019

PROJECT REFERENCE NO. U-4700A	SHEET NO. 49
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION	
<b>DOCUMENT NOT CONSIDERED FINAL</b> UNLESS ALL SIGNATURES COMPLETED	

# -Y21RPA-



# -Y21RPB-



**RK&K**  
 P: (819) 878-9560  
 900 Ridgeway Drive Suite 350 | Raleigh, North Carolina 27609-3960  
 NC License No. F-0112  
 Engineers | Construction Managers | Planners | Scientists  
 www.rkk.com  
 Responsive People | Creative Solutions

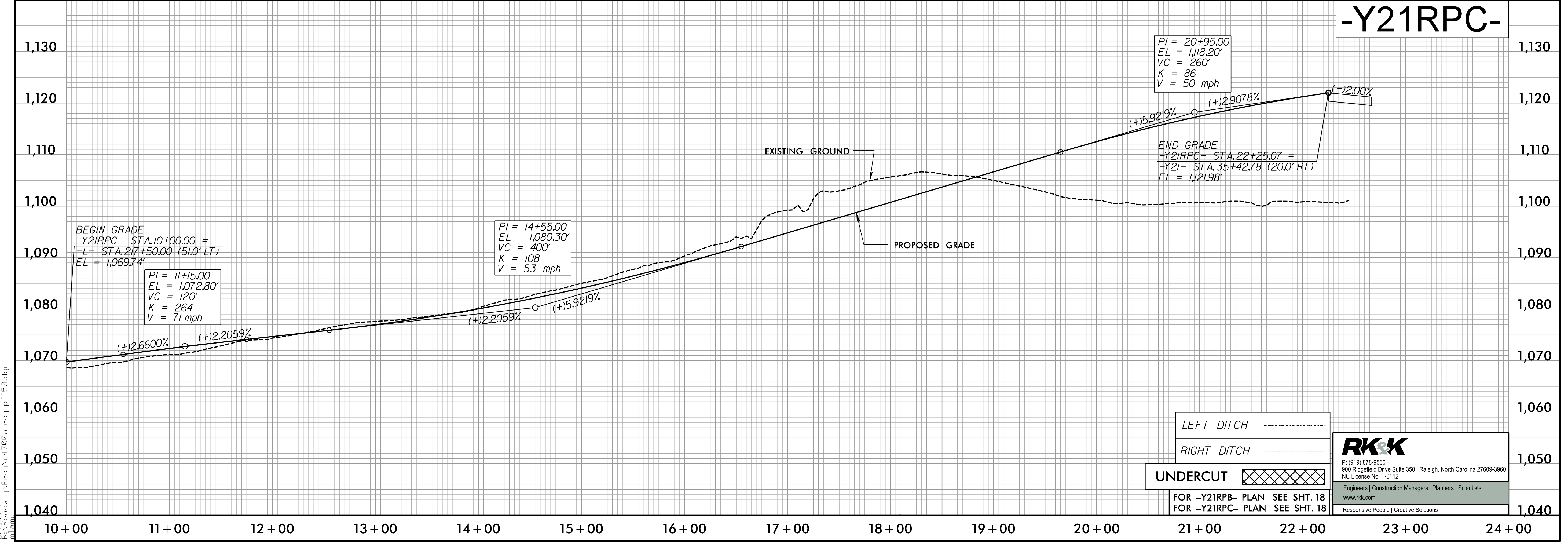
5/28/99  
 F:\2019\Roadway\ProJ\4700a-rdy-pl149.dgn  
 11/14/2019

# -Y21RPB-

PROJECT REFERENCE NO. <i>U-4700A</i>	SHEET NO. <i>50</i>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION	
<b>DOCUMENT NOT CONSIDERED FINAL</b> UNLESS ALL SIGNATURES COMPLETED	



# -Y21RPC-



LEFT DITCH .....  
 RIGHT DITCH .....  
**UNDERCUT** [Cross-hatched symbol]  
 FOR -Y21RPB- PLAN SEE SHT. 18  
 FOR -Y21RPC- PLAN SEE SHT. 18

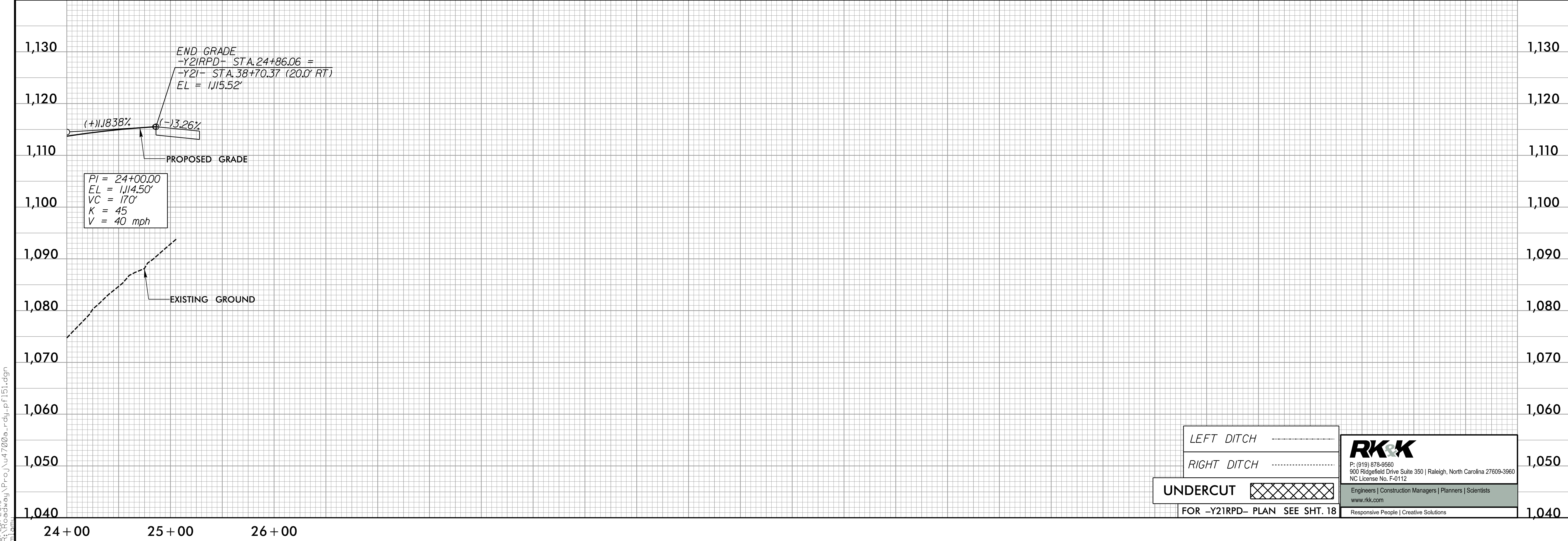
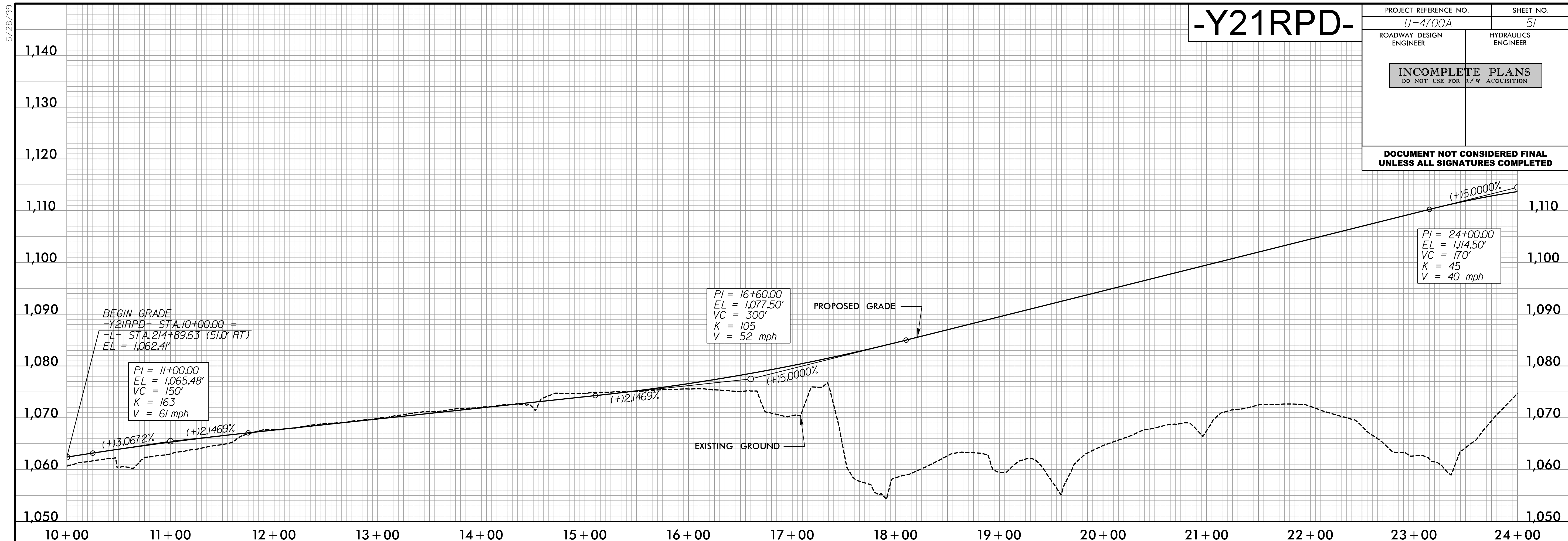
**RK&K**  
 P: (819) 878-9560  
 900 Ridgely Drive Suite 350 | Raleigh, North Carolina 27609-3960  
 NC License No. F-0112  
 Engineers | Construction Managers | Planners | Scientists  
 www.rkk.com  
 Responsive People | Creative Solutions

5/28/09  
 F:\2009\05\09\Roadway\Proj\U4700a\_rdy\_p1150.dgn  
 11/24/2019



# -Y21RPD-

PROJECT REFERENCE NO. U-4700A	SHEET NO. 51
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION	
<b>DOCUMENT NOT CONSIDERED FINAL</b> UNLESS ALL SIGNATURES COMPLETED	



LEFT DITCH .....  
RIGHT DITCH .....  
**UNDERCUT** [Cross-hatched symbol]  
FOR -Y21RPD- PLAN SEE SHT. 18

**RK&K**  
P: (919) 878-9560  
900 Ridgeway Drive Suite 350 | Raleigh, North Carolina 27609-3960  
NC License No. F-0112  
Engineers | Construction Managers | Planners | Scientists  
www.rkk.com  
Responsive People | Creative Solutions

5/28/99  
F:\2019\19-000\Roadway\Proj\U47000a-rdy-pl151.dgn

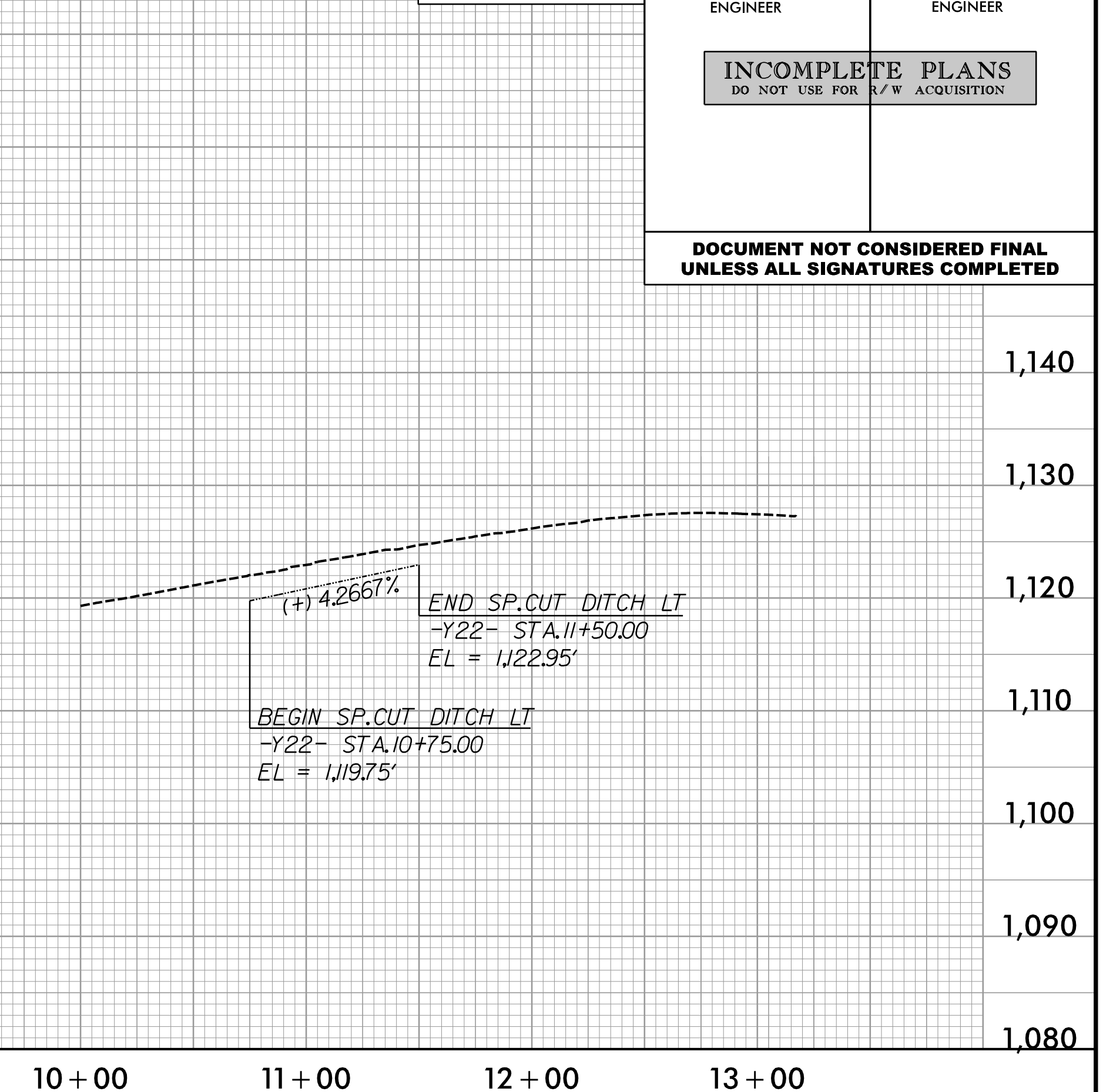
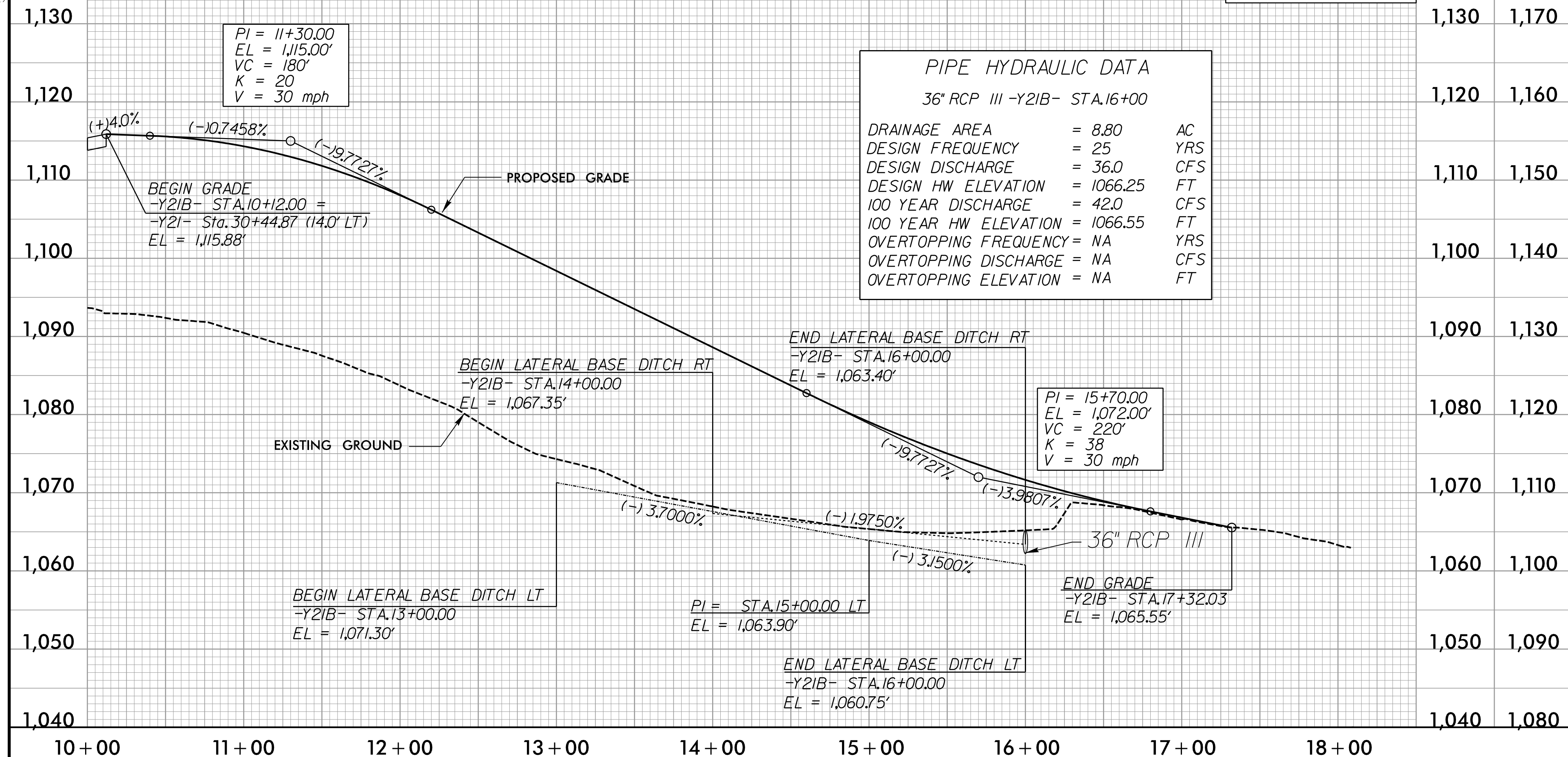
5/28/99

5/28/2019  
C:\pwworking\pco\4700a\_rdy\_p152.dgn

# -Y21B-

# -Y22-

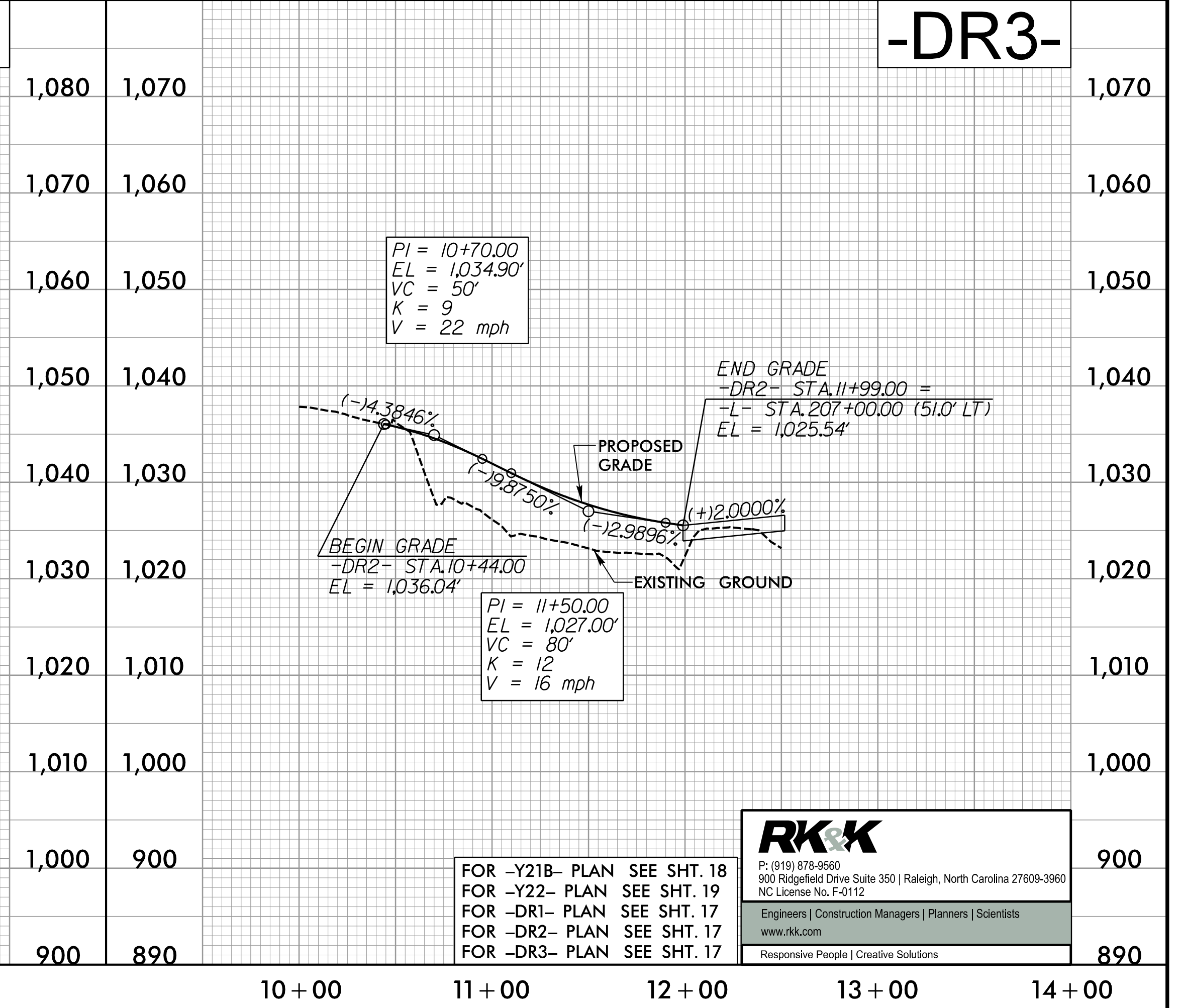
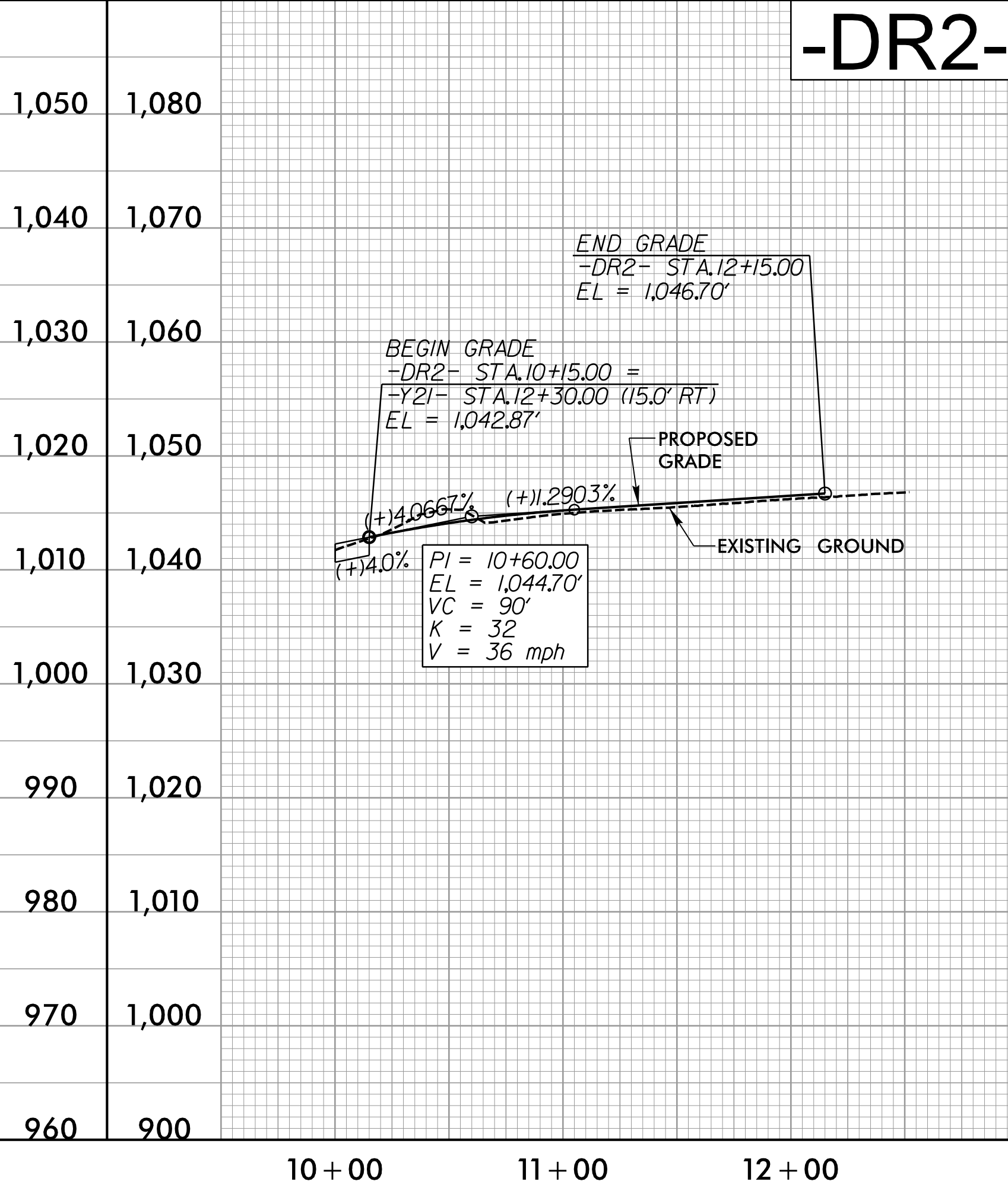
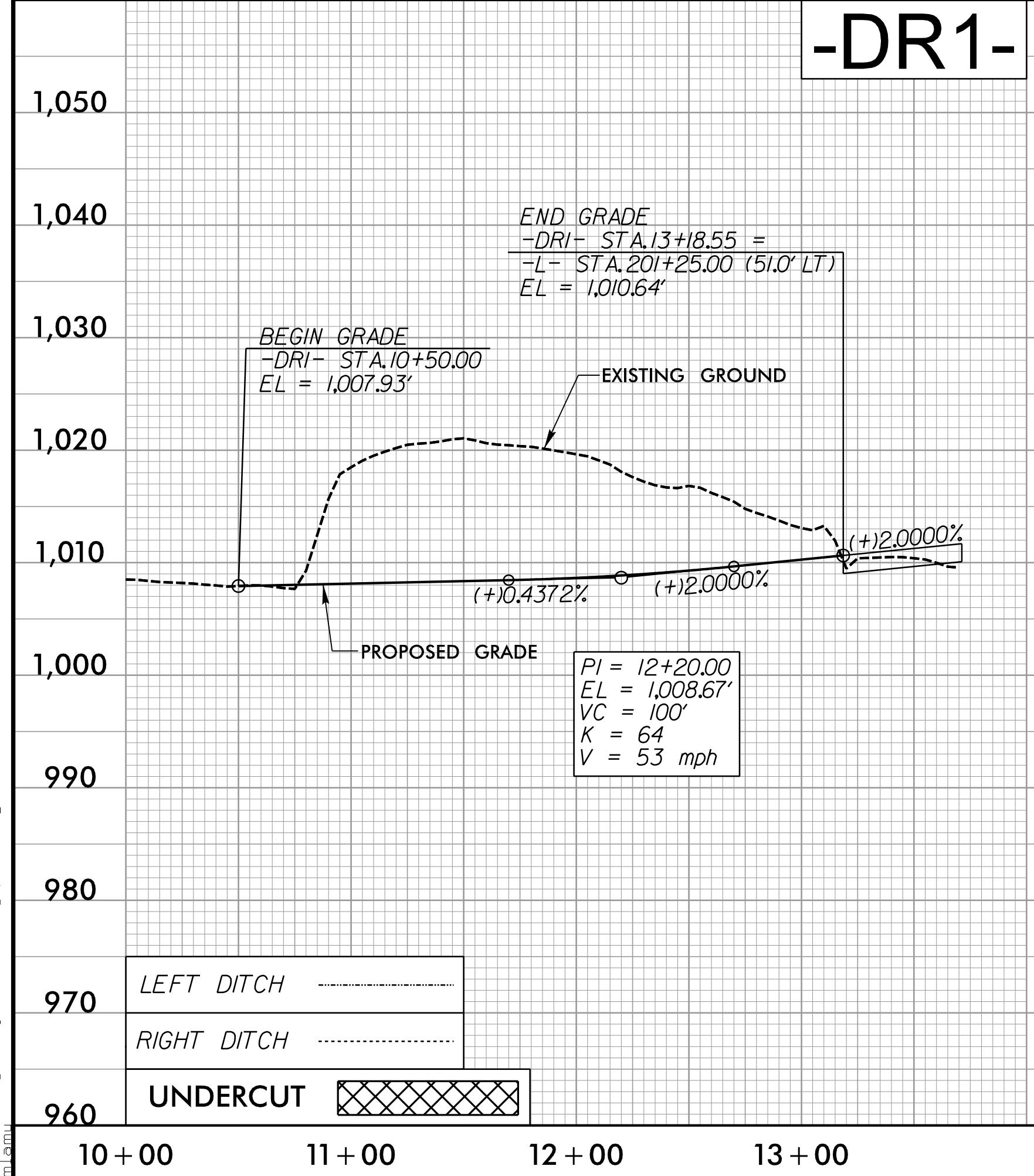
PROJECT REFERENCE NO. U-4700A	SHEET NO. 52
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION	
<b>DOCUMENT NOT CONSIDERED FINAL</b> UNLESS ALL SIGNATURES COMPLETED	



# -DR1-

# -DR2-

# -DR3-



970	LEFT DITCH	-----
970	RIGHT DITCH	-----
960	UNDERCUT	XXXXXX

FOR -Y21B- PLAN SEE SHT. 18  
 FOR -Y22- PLAN SEE SHT. 19  
 FOR -DR1- PLAN SEE SHT. 17  
 FOR -DR2- PLAN SEE SHT. 17  
 FOR -DR3- PLAN SEE SHT. 17

**RK&K**  
 P: (819) 878-9560  
 900 Ridgfield Drive Suite 350 | Raleigh, North Carolina 27609-3960  
 NC License No. F-0112  
 Engineers | Construction Managers | Planners | Scientists  
 www.rk.com  
 Responsive People | Creative Solutions

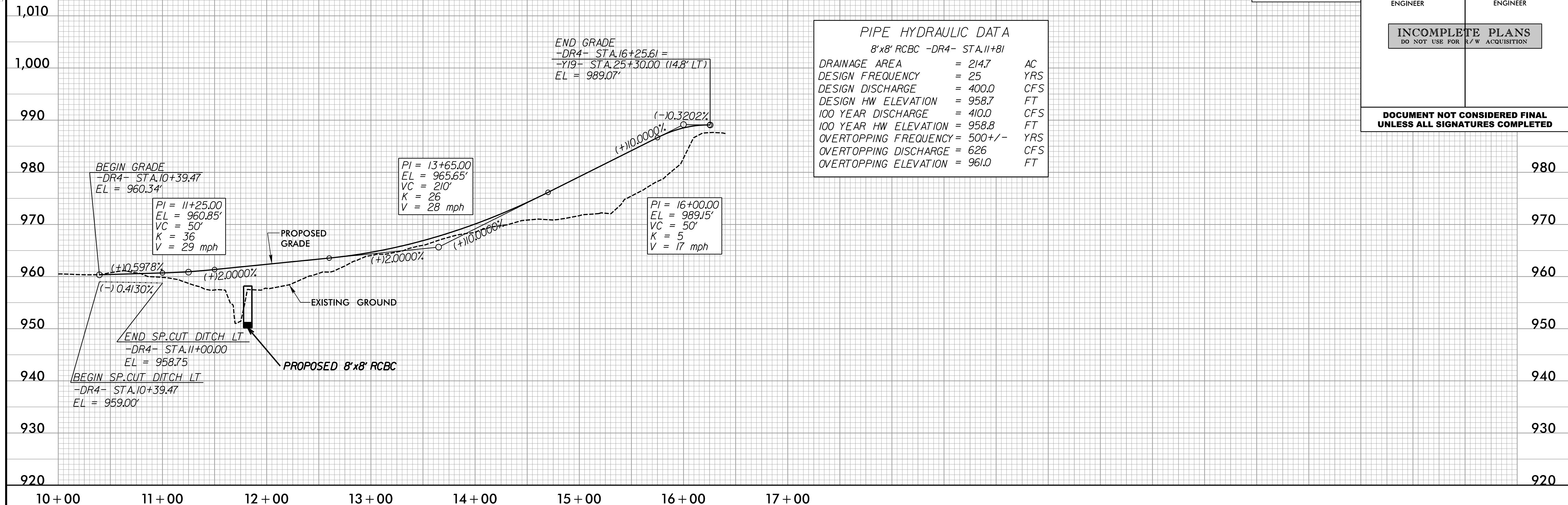
-DR4-

PROJECT REFERENCE NO. U-4700A	SHEET NO. 53
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION	
<b>DOCUMENT NOT CONSIDERED FINAL</b> UNLESS ALL SIGNATURES COMPLETED	

**PIPE HYDRAULIC DATA**  
8"x8" RCBC -DR4- STA.11+81

DRAINAGE AREA	= 214.7	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 400.0	CFS
DESIGN HW ELEVATION	= 958.7	FT
100 YEAR DISCHARGE	= 410.0	CFS
100 YEAR HW ELEVATION	= 958.8	FT
OVERTOPPING FREQUENCY	= 500+/-	YRS
OVERTOPPING DISCHARGE	= 626	CFS
OVERTOPPING ELEVATION	= 961.0	FT

5/28/99



5/28/2019  
C:\Users\pcoj\OneDrive\Projects\U47000a\_rdy\_pf153.dgn

LEFT DITCH	.....
RIGHT DITCH	.....
<b>UNDERCUT</b>	
FOR -DR4- PLAN SEE SHT. 23	

**RK&K**  
P: (819) 878-9560  
900 Ridgely Drive Suite 350 | Raleigh, North Carolina 27609-3960  
NC License No. F-0112  
Engineers | Construction Managers | Planners | Scientists  
www.rkk.com  
Responsive People | Creative Solutions