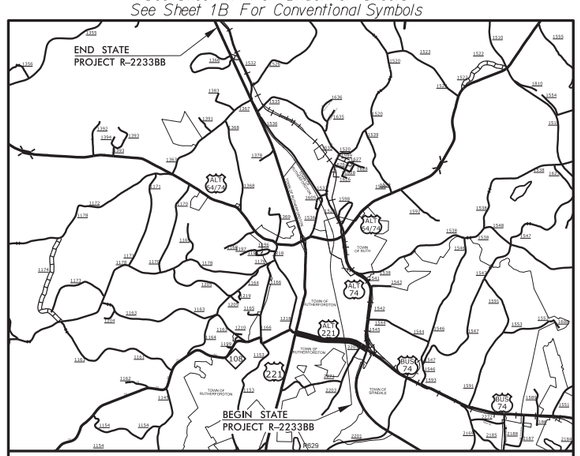
09/08/99

TIP PROJECT: R-2233BB

CONTRACT: C204397

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



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

RUTHERFORD COUNTY

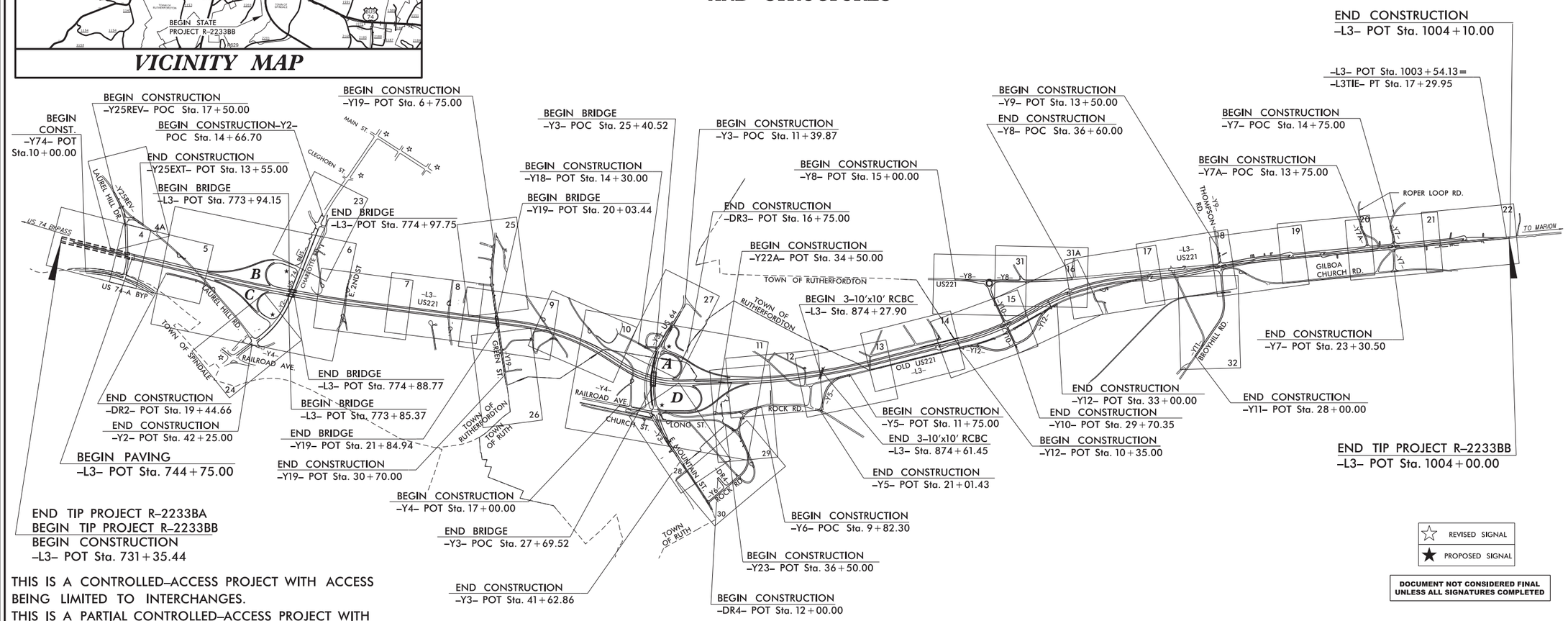
LOCATION: US 221 SOUTH OF US 74 BUSINESS (CHARLOTTE ROAD) TO NORTH OF SR 1366 (ROPER LOOP ROAD)

TYPE OF WORK: GRADING, DRAINAGE, PAVING, RETAINING WALL AND STRUCTURES

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2233BB	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
34400.1.S5		PE
34400.2.5		R/W
34400.2.7		UTIL.
34400.3.4		CONST.

REVISED 7/21/2021



END TIP PROJECT R-2233BA
BEGIN TIP PROJECT R-2233BB
BEGIN CONSTRUCTION
-L3- POT Sta. 731+35.44

THIS IS A CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES.
THIS IS A PARTIAL CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO POINTS AS SHOWN ON THE PLANS.

☆ REVISED SIGNAL
★ PROPOSED SIGNAL

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NCDOT CONTACT: NATHAN ADIMA, P.E.

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2020 = 13300
ADT 2040 = 14500
K = 9 %
D = 60 %
T = 9 % *
V = 70 MPH
* TTST 5% DUAL 4%
FUNC CLASS =
ARTERIAL
REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-2233BB = 5.140 MILES
LENGTH STRUCTURE TIP PROJECT R-2233BB = 0.026 MILES
TOTAL LENGTH TIP PROJECT R-2233BB = 5.166 MILES

STRUCTURE LENGTH BASED ON -L3- NB STATIONING.

PLANS PREPARED FOR NCDOT BY:

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JULY 28, 2017

LETTING DATE:
DECEMBER 21, 2021

DENNIS J. MORY, P.E.
PROJECT ENGINEER

BRYAN LAMBETH, P.E.
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDOR P.E.

SIGNATURE:

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY P.E.

SIGNATURE:

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

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12/2/2016

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	1B

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale

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

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
- 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
- Proposed Lateral, Tail, Head Ditch — FLOW
- False Sump

RAILROADS:

- Standard Gauge — CSX TRANSPORTATION
- 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 Easment 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 — RW
- New Right of Way Line with Pin and Cap — RW
- New Right of Way Line with Concrete or Granite R/W Marker — RW
- New Control of Access Line with Concrete C/A Marker — CA
- Existing Control of Access — CA
- New Control of Access — CA
- 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
- Proposed Guardrail
- Existing Cable Guiderail
- Proposed Cable Guiderail
- Equality Symbol
- Pavement Removal

VEGETATION:

- Single Tree
- Single Shrub
- 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*)
- U/G Water Line LOS C (S.U.E*)
- U/G Water Line LOS D (S.U.E*)
- Above Ground Water Line — A/G Water

TV:

- TV Pedestal — C
- TV Tower
- U/G TV Cable Hand Hole — HH
- 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:

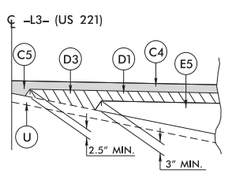
- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line — SS
- Above Ground Sanitary Sewer — A/G Sanitary Sewer
- SS Forced Main Line LOS B (S.U.E.*) — FSS
- SS Forced Main Line LOS C (S.U.E.*) — FSS
- SS Forced Main Line LOS D (S.U.E.*) — FSS

MISCELLANEOUS:

- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box — S
- Utility Unknown U/G Line LOS B (S.U.E.*) — ?UTL
- 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.

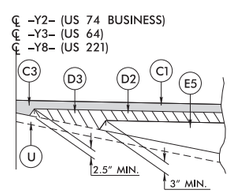
PAVEMENT SCHEDULE (FINAL)

ITEM	DESCRIPTION	ITEM	DESCRIPTION	ITEM	DESCRIPTION
A1	7″ CONCRETE TRUCK APRON	E4	PROP. APPROX. 5.0″ ASPHALT CONCRETE BASE COURSE,TYPE B25.0C, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YARD.	R4	PROPOSED 2′-0″ MODIFIED VALLEY GUTTER
C1	PROP. APPROX. 1.5″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YARD.	E5	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YARD PER 1″ DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 3″ OR GREATER THAN 5.5″ IN DEPTH.	R5	PROPOSED 8″ x 12″ CONCRETE CURB
C2	PROP. APPROX. 3″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YARD IN EACH OF TWO LAYERS.	J1	PROP. 6″ AGGREGATE BASE COURSE	R6	PROPOSED CONCRETE EXPRESSWAY GUTTER
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YARD PER 1″ IN DEPTH TO BE PLACED IN LAYERS NOT TO EXCEED 1.5″ IN DEPTH.	J2	PROP. 8″ AGGREGATE BASE COURSE	S	4″ CONCRETE SIDEWALK
C4	PROP. APPROX. 3.0″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YARD IN EACH OF TWO LAYERS.	K1	PROP. CHEMICAL STABILIZATION (SOIL-CEMENT BASE/LIME-TREATED SOIL). BASE TREATED WITH CEMENT AT A RATE OF 56 LBS. PER SQ. YARD @ 7″ DEPTH OR SOIL TREATED WITH LIME AT A RATE OF 24 LBS. PER SQ. YARD @ 8″ DEPTH.	T	EARTH
C5	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YARD PER 1″ IN DEPTH TO BE PLACED IN LAYERS NOT TO EXCEED 2″ IN DEPTH.	K2	PROP. 8″ CLASS IV SUBGRADE STABILIZATION	U	EXISTING PAVEMENT
D1	PROP. APPROX. 2.5″ ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YARD.	N1	GEOTEXTILE FOR SOIL STABILIZATION	V1	INCIDENTAL MILLING (SEE MILLING DETAIL V1)
D2	PROP. APPROX. 4.0″ ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YARD.	N2	GEOTEXTILE FOR PAVEMENT STABILIZATION	V2	INCIDENTAL MILLING (SEE MILLING DETAIL V2)
D3	PROP. VAR. DEPTH ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YARD PER 1″ DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 2.5″ OR GREATER THAN 4″ IN DEPTH.	P	PRIME COAT AT THE NORMAL APPLICATION RATE OF 0.35 GAL. PER SQ. YARD	V3	1.5 ″ PAVEMENT MILLING
E1	PROP. APPROX. 3.0″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YARD.	R1	2′-6″ CONCRETE CURB AND GUTTER	V4	0″ TO 3″ PAVEMENT MILLING
E2	PROP. APPROX. 4.0″ ASPHALT CONCRETE BASE COURSE,TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YARD.	R2	SHOULDER BERM GUTTER (SBG)	Z	MILLED RUMBLE STRIP
E3	PROP. APPROX. 4.5″ ASPHALT CONCRETE BASE COURSE,TYPE B25.0C, AT AN AVERAGE RATE OF 513 LBS. PER SQ. YARD.	R3	5″ MONOLITHIC CONCRETE ISLAND (KEYED IN)	W1 / W2 / W3	VARIABLE DEPTH ASPHALT (SEE WEDGING DETAILS ON THIS SHEET)



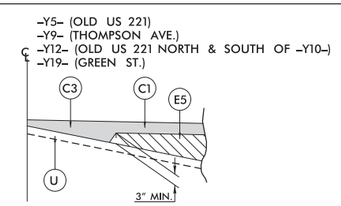
WEDGING DETAIL – W1

USE IN CONJUNCTION WITH TS Nos. 5 & 5A



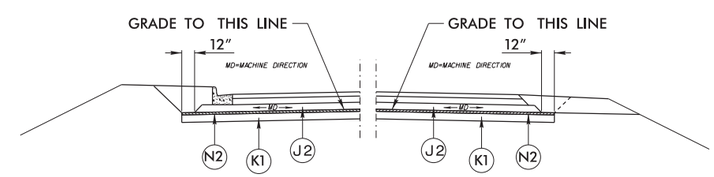
WEDGING DETAIL – W2

USE IN CONJUNCTION WITH TS Nos. 6, 7A, & 19A



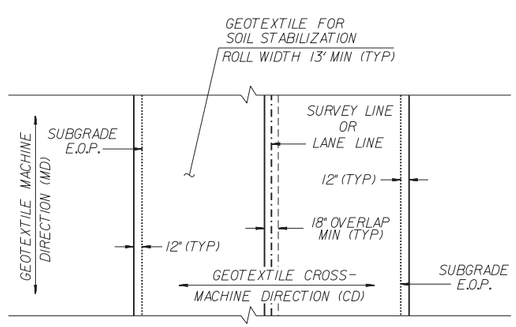
WEDGING DETAIL – W3

USE IN CONJUNCTION WITH TS No. 8A, 15 & 20



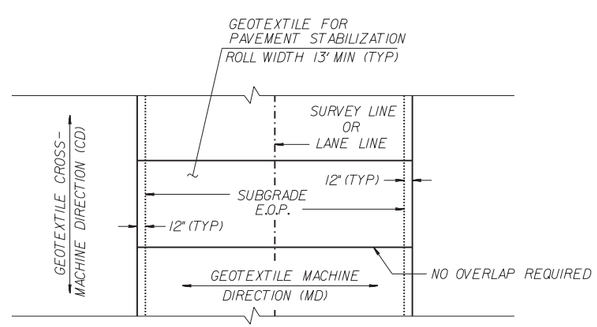
DETAIL FOR CHEMICAL STABILIZATION–GEOTEXTILE FOR PAVEMENT STABLIZATION WITH ABC

USE IN CONJUNCTION WITH TYPICAL SECTIONS No.1, 5, 13, & 14 WHERE GEOTEXTILE IS REQUIRED. FOR LOCATIONS SEE SHEET 3G–1.



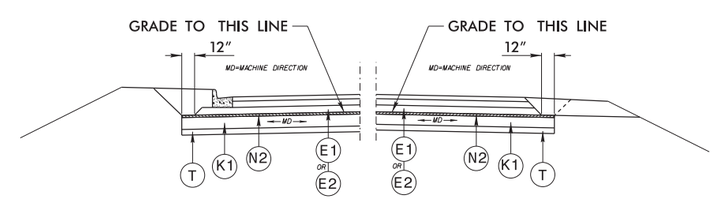
GEOTEXTILE FOR SOIL STABILIZATION PLACEMENT (PLAN VIEW)

(100% COVERAGE REQUIRED)



GEOTEXTILE FOR PAVEMENT STABILIZATION PLACEMENT (PLAN VIEW)

(100% COVERAGE REQUIRED)



DETAIL FOR CHEMICAL STABILIZATION–GEOTEXTILE FOR PAVEMENT STABLIZATION WITH ASPHALT BASE

USE IN CONJUNCTION WITH TYPICAL SECTIONS No. 7, 7A, 8, 9, 9A, 9B, 10, 12, 15, 16, 17, 18 19, 19A, 21, 22 & 23 WHERE GEOTEXTILE IS REQUIRED. FOR LOCATIONS SEE SHEET 3G–1.

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	2A–1

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY

PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 024964 ENGINEER JOSEPH T. HOLLAND

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. P-0929

NC DEPARTMENT OF TRANSPORTATION
PAVEMENT MANAGEMENT UNIT
1593 MAIL SERVICE CENTER
RALEIGH, NC 27699-1593

NOTES:

1. ALL PAVEMENT EDGE SLOPES ARE 1:1 UNLESS OTHERWISE NOTED.
2. USE 4:1 MAX SLOPES ON THE INSIDE OF INTERCHANGE AREAS.
3. SEE PLANS FOR LOCATION OF ACCELERATION AND DECELERATION LANES.
4. SEE PLANS FOR LOCATION OF TURN LANE AND INTERSECTION TURNOUTS.
5. SEE PLANS FOR LOCATION OF ALL PAVEMENT TAPERS.
6. ALL DRIVEWAY RADII ARE 10′ UNLESS SHOWN OTHERWISE ON PLANS.

6/2/99
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6/2/99

PAVEMENT SCHEDULE (FINAL)

ITEM	DESCRIPTION	ITEM	DESCRIPTION	ITEM	DESCRIPTION	ITEM	DESCRIPTION	ITEM	DESCRIPTION	ITEM	DESCRIPTION	ITEM	DESCRIPTION	ITEM	DESCRIPTION
A1	7" CONCRETE	C4	3" S9.5C	D3	VAR DEPTH I19.0C	E4	5" B25.0C	K1	CHEMICAL STABILIZATION: 7" SOIL-CEMENT BASE OR 8"LIME-TREATED SOIL	R1	2'-6" CONCRETE CURB & GUTTER	R5	8"x12" CONCRETE CURB	U	EXIST. PAVEMENT
C1	1.5" S9.5B	C5	VAR DEPTH S9.5C	E1	3" B25.0C	E5	VAR DEPTH B25.0C	K2	8" CLASS IV SUBGRADE STABILIZATION	R2	SHOULDER BERM GUTTER	R6	CONCRETE EXPRESSWAY GUTTER	Z	MILLED RUMBLE STRIP
C2	3" S9.5B	D1	2.5" I19.0C	E2	4" B25.0C	J1	6" ABC	N1	GEOTEXTILE FOR SOIL STABILIZATION	R3	5" CONC. ISLAND	S	4" CONC. SIDEWALK	V1	V2	V3	V4	PAVEMENT MILLING
C3	VAR DEPTH S9.5B	D2	4" I19.0C	E3	4.5" B25.0C	J2	8" ABC	N2	GEOTEXTILE FOR PAVEMENT STABILIZATION	P	PRIME COAT	R4	2' MODIFIED VALLEY GUTTER	T	EARTH	W1	W2	W3	VARIABLE DEPTH PAVEMENT WEDGING

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	2A-2

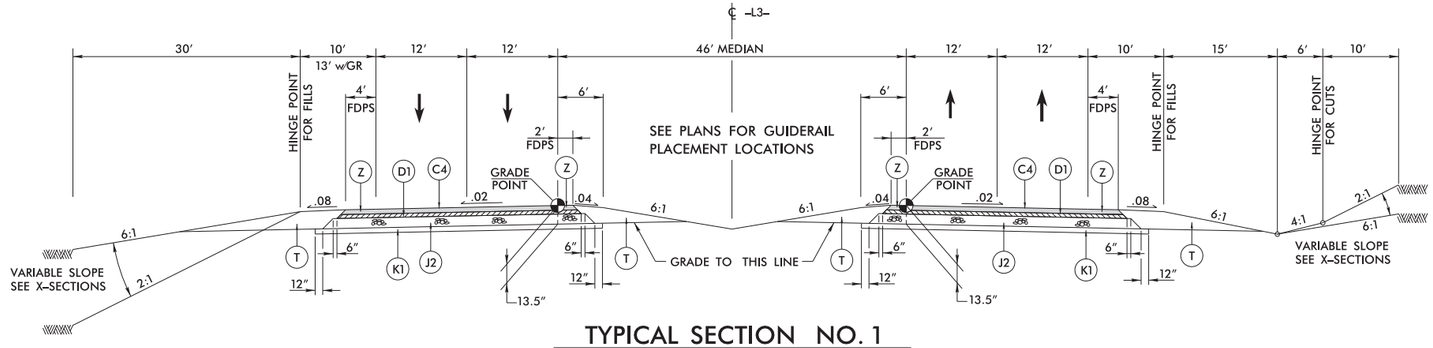
ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY

PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 024964 ENGINEER JOSEPH T. HOLLAND

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. P-0929

NC DEPARTMENT OF TRANSPORTATION
PAVEMENT MANAGEMENT UNIT
1593 MAIL SERVICE CENTER
RALEIGH, NC 27699-1593



TYPICAL SECTION NO. 1

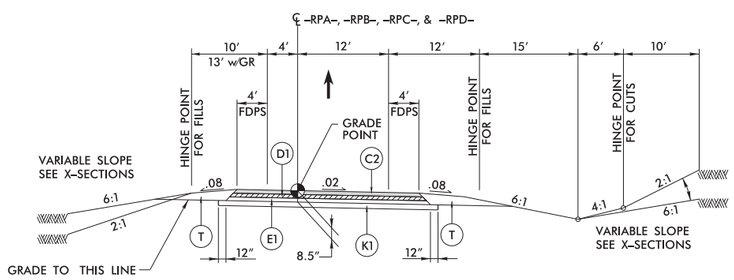
NOTE: SEE SHEET 2A-9 FOR THE GRADING ONLY
TYPICAL SECTION FROM -L3- 732+00.00 TO -L3- 743+00

SOUTHBOUND LANES

-L3- 744+75.00 TO -L3- 773+94.15 (BRIDGE)
-L3- 774+97.75 (BRIDGE) TO -L3- 948+00.00

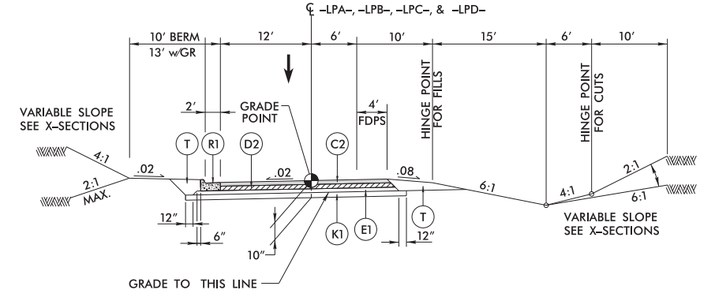
NORTHBOUND LANES

-L3- 744+75.00 TO -L3- 773+85.37 (BRIDGE)
-L3- 774+88.77 (BRIDGE) TO -L3- 955+00.00



TYPICAL SECTION NO. 2

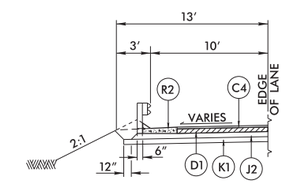
-RPA- 14+53.78 TO -RPA- 23+94.24 -RPB- 13+70.55 TO -RPB- 25+50.13
-RPC- 14+56.68 TO -RPC- 23+71.04 -RPD- 13+36.43 TO -RPD- 24+00.00



NOTE: USE -L3- PAVEMENT DESIGN IN ALL GORE AREAS

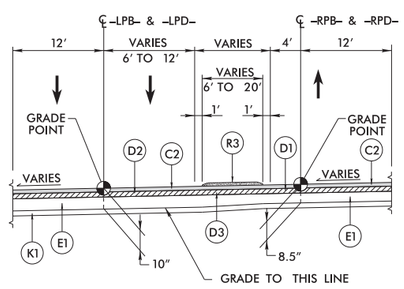
TYPICAL SECTION NO. 3

-LPA- 11+61.84 TO -LPA- 16+31.16 -LPB- 12+89.84 TO -LPB- 17+01.04
-LPC- 11+83.18 TO -LPC- 16+33.37 -LPD- 15+12.97 TO -LPD- 19+71.53



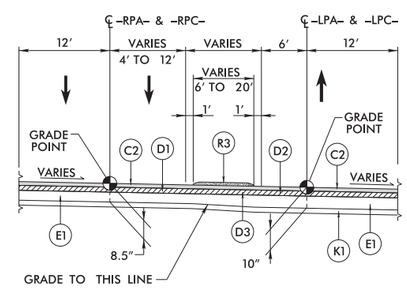
DETAIL FOR SHOULDER BERM GUTTER

USE IN CONJUNCTION WITH -L3- TYPICAL SECTION No.1



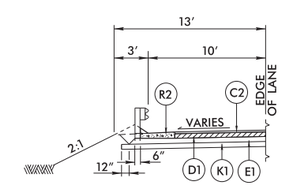
TYPICAL SECTION NO. 4

-LPB- 17+01.04 TO -LPB- 21+72.55 -LPD- 19+71.53 TO -LPD- 26+53.27
-RPB- 25+50.13 TO -RPB- 30+40.47 -RPD- 24+00.00 TO -RPD- 30+87.27



TYPICAL SECTION NO. 4A

-LPC- 16+33.37 TO -LPC- 19+61.65 -LPA- 16+31.16 TO -LPA- 19+53.84
-RPC- 23+71.04 TO -RPC- 27+03.60 -RPA- 23+94.24 TO -RPA- 27+23.95



DETAIL FOR SHOULDER BERM GUTTER

USE IN CONJUNCTION WITH -RPD- TYPICAL SECTION No. 2

8/17/2016 4:23:05 PM
USER: jdoggett

6/2/99

PAVEMENT SCHEDULE (FINAL)

ITEM	DESCRIPTION	ITEM	DESCRIPTION	ITEM	DESCRIPTION	ITEM	DESCRIPTION	ITEM	DESCRIPTION	ITEM	DESCRIPTION	ITEM	DESCRIPTION	ITEM	DESCRIPTION
A1	7" CONCRETE	C4	3" S9.5C	D3	VAR DEPTH I19.0C	E4	5" B25.0C	K1	CHEMICAL STABILIZATION: 7" SOIL-CEMENT BASE OR 8"LIME-TREATED SOIL	R1	2'-6" CONCRETE CURB & GUTTER	R5	8"x12" CONCRETE CURB	U	EXIST. PAVEMENT
C1	1.5" S9.5B	C5	VAR DEPTH S9.5C	E1	3" B25.0C	E5	VAR DEPTH B25.0C	K2	8" CLASS IV SUBGRADE STABILIZATION	R2	SHOULDER BERM GUTTER	R6	CONCRETE EXPRESSWAY GUTTER	Z	MILLED RUMBLE STRIP
C2	3" S9.5B	D1	2.5" I19.0C	E2	4" B25.0C	J1	6" ABC	N1	GEOTEXTILE FOR SOIL STABILIZATION	R3	5" CONC. ISLAND	S	4" CONC. SIDEWALK	V1	PAVEMENT MILLING
C3	VAR DEPTH S9.5B	D2	4" I19.0C	E3	4.5" B25.0C	J2	8" ABC	N2	GEOTEXTILE FOR PAVEMENT STABILIZATION	P	PRIME COAT	R4	2' MODIFIED VALLEY GUTTER	T	EARTH
														V2	
														V3	
														V4	
														W1	
														W2	
														W3	

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	2A-3

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY

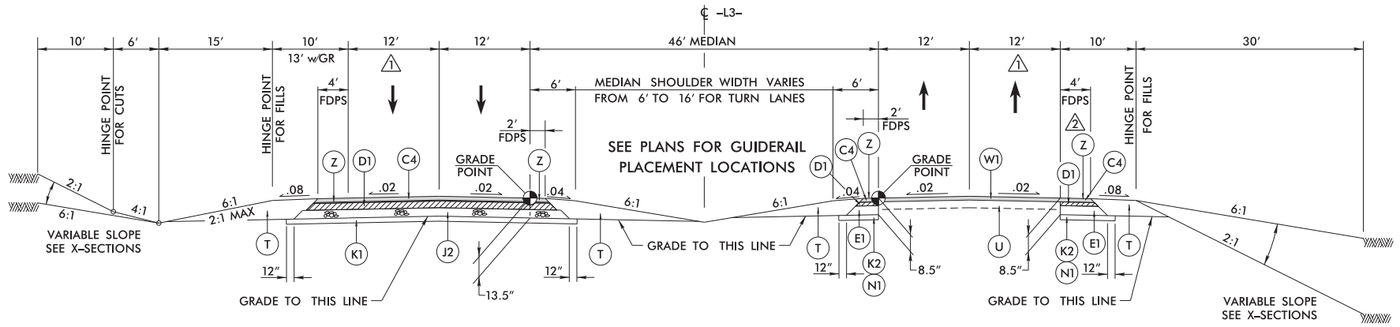
PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 024964 ENGINEER JOSEPH T. HOLLAND

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. P-0929

NC DEPARTMENT OF TRANSPORTATION
PAVEMENT MANAGEMENT UNIT
1593 MAIL SERVICE CENTER
RALEIGH, NC 27699-1593



1 PAVEMENT WIDTH VARIES FROM 12′ TO 30′ FOR SUPERSTREET BULB-OUTS.

2 PAVEMENT WIDENING WIDTH VARIES FROM 4′ TO 22′ FOR SUPERSTREET BULB-OUTS.

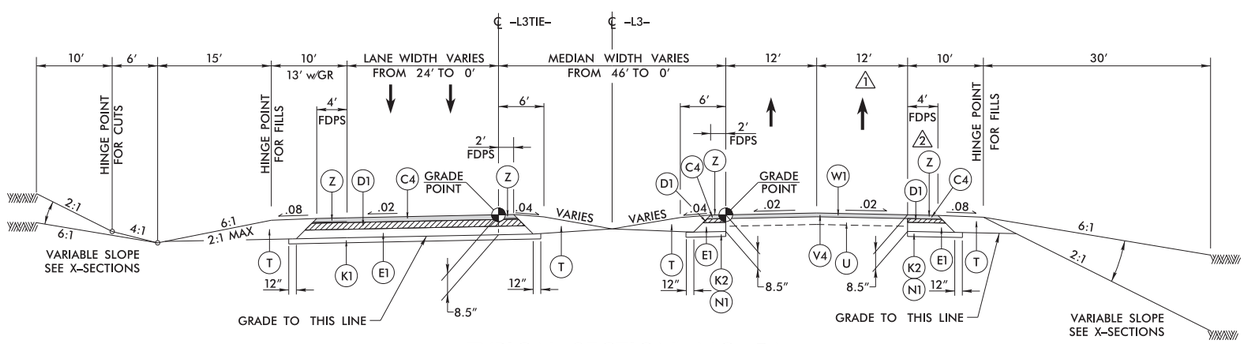
TYPICAL SECTION NO. 5

SOUTHBOUND LANES

-L3- 948+00.00 TO -L3- 952+00.00
(PAVEMENT WEDGING FROM 0′ TO 24′)
-L3- 952+00.00 TO -L3- 996+27.26
(FULL DEPTH PAVEMENT)

NORTHBOUND LANES

-L3- 955+00.00 TO -L3- 996+27.26



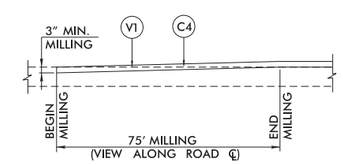
TYPICAL SECTION NO. 5A

SOUTHBOUND LANES

-L3TIE- 10+00.00 TO -L3TIE- 17+29.95

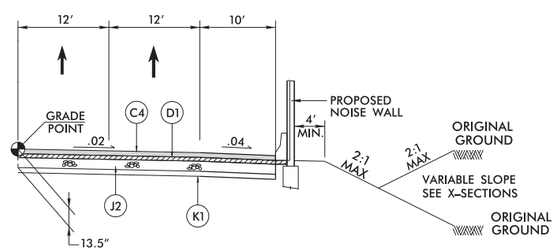
NORTHBOUND LANES

-L3- 996+27.26 TO -L3- 1004+00.00



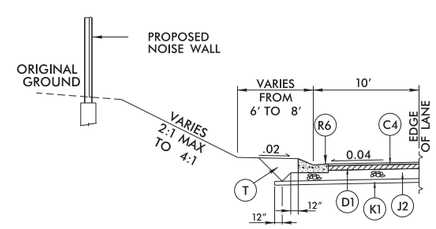
INCIDENTAL MILLING DETAIL – V1

USE IN CONJUNCTION WITH TYPICAL SECTION No. 5A
-L3- 1003+25.00 TO -L3- 1004+00.00



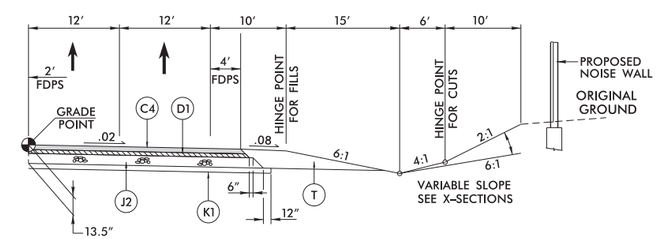
DETAIL NO. 1 FOR NOISE WALLS

USE IN CONJUNCTION WITH -L3- TYPICAL SECTION No.1



DETAIL NO. 2 FOR NOISE WALLS

USE IN CONJUNCTION WITH -L3- TYPICAL SECTION No.1



DETAIL NO. 3 FOR NOISE WALLS

USE IN CONJUNCTION WITH -L3- TYPICAL SECTION No.1

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USER: dmory

6/2/99

PAVEMENT SCHEDULE (FINAL)

ITEM	DESCRIPTION	ITEM	DESCRIPTION	ITEM	DESCRIPTION	ITEM	DESCRIPTION	ITEM	DESCRIPTION	ITEM	DESCRIPTION	ITEM	DESCRIPTION	ITEM	DESCRIPTION
A1	7" CONCRETE	C4	3" S9.5C	D3	VAR DEPTH I19.0C	E4	5" B25.0C	K1	CHEMICAL STABILIZATION: 7" SOIL-CEMENT BASE OR 8"LIME-TREATED SOIL	R1	2'-6" CONCRETE CURB & GUTTER	R5	8"x12" CONCRETE CURB	U	EXIST. PAVEMENT
C1	1.5" S9.5B	C5	VAR DEPTH S9.5C	E1	3" B25.0C	E5	VAR DEPTH B25.0C	K2	8" CLASS IV SUBGRADE STABILIZATION	R2	SHOULDER BERM GUTTER	R6	CONCRETE EXPRESSWAY GUTTER	Z	MILLED RUMBLE STRIP
C2	3" S9.5B	D1	2.5" I19.0C	E2	4" B25.0C	J1	6" ABC	N1	GEOTEXTILE FOR SOIL STABILIZATION	R3	5" CONC. ISLAND	S	4" CONC. SIDEWALK	V1	PAVEMENT MILLING
C3	VAR DEPTH S9.5B	D2	4" I19.0C	E3	4.5" B25.0C	J2	8" ABC	N2	GEOTEXTILE FOR PAVEMENT STABILIZATION	P	PRIME COAT	R4	2' MODIFIED VALLEY GUTTER	T	EARTH

ITEM	DESCRIPTION
V2	PAVEMENT MILLING
V3	VARIABLE DEPTH PAVEMENT WEDGING
W1	
W2	
W3	

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	2A-4

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY

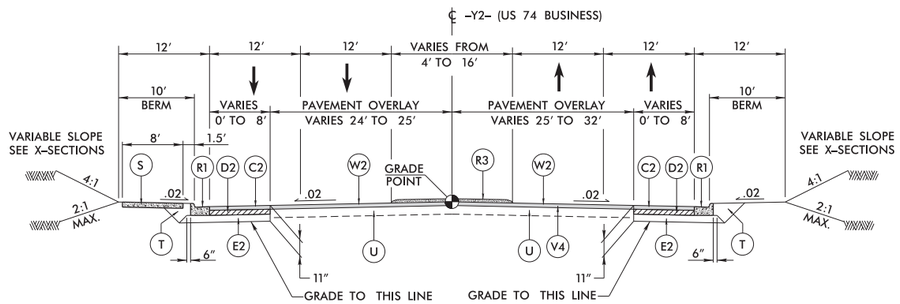
PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 024964 ENGINEER JOSEPH T. HOLLAND

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

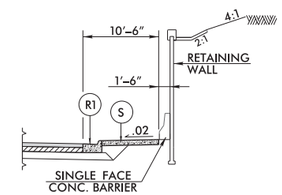
Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. P-0929

NC DEPARTMENT OF TRANSPORTATION
PAVEMENT MANAGEMENT UNIT
1593 MAIL SERVICE CENTER
RALEIGH, NC 27699-1593



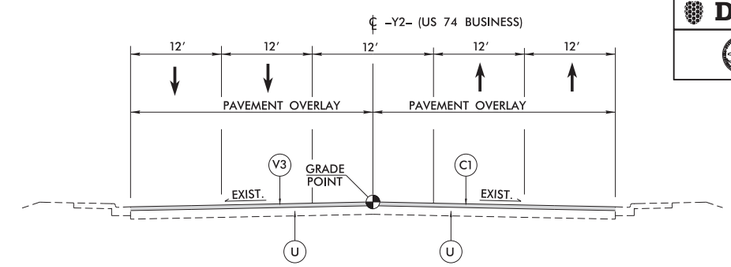
TYPICAL SECTION NO. 6

-Y2- 17+25.00 TO -Y2- 42+25.00



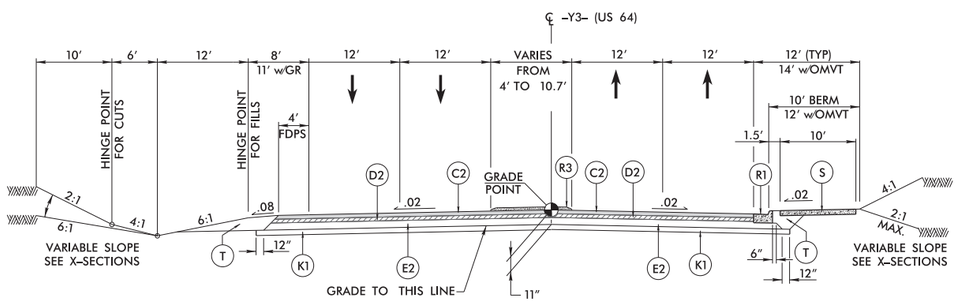
PROPOSED RETAINING WALL

-Y2- 27+67+/- TO -Y2- 31+45+/- - EASTBOUND
-Y2- 28+41+/- TO -Y2- 30+91+/- - WESTBOUND
NOTE: SIDEWALK ON WESTBOUND SIDE ONLY.
SEE BRIDGE PLANS FOR WALL LOCATION & DETAILS



TYPICAL SECTION NO. 6A

-Y2- 14+66.70 TO -Y2- 17+25.00
-Y2- 40+49.83 TO -Y2- 42+25.00



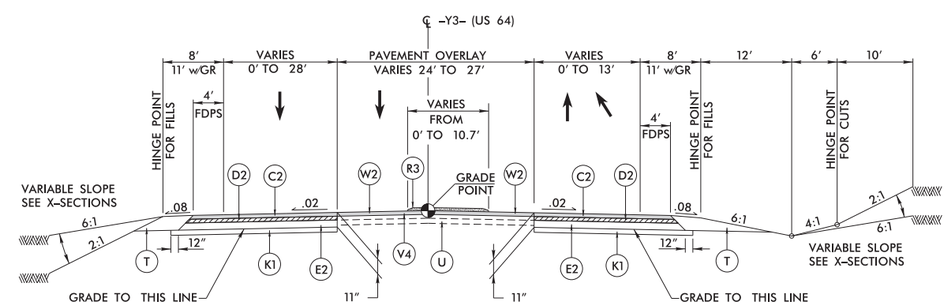
TYPICAL SECTION NO. 7

WESTBOUND LANES

-Y3- 14+75.00 TO -Y3- 25+40.52 BRIDGE
-Y3- 27+69.52 BRIDGE TO -Y3- 37+25.00

EASTBOUND LANES

-Y3- 14+75.00 TO -Y3- 25+40.52 BRIDGE
-Y3- 27+69.52 BRIDGE TO -Y3- 32+05.00
(SEE DETAIL FOR OMVT THIS SHEET)



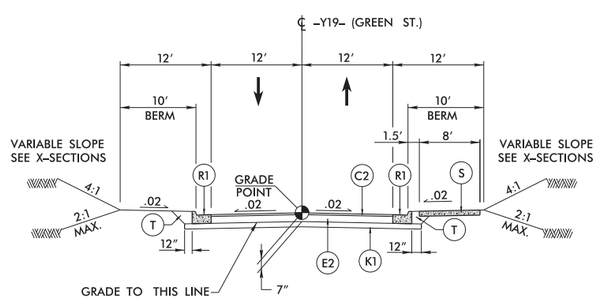
TYPICAL SECTION NO. 7A

WESTBOUND LANES

-Y3- 13+10.00 TO -Y3- 14+75.00
-Y3- 37+25.00 TO -Y3- 41+50.00

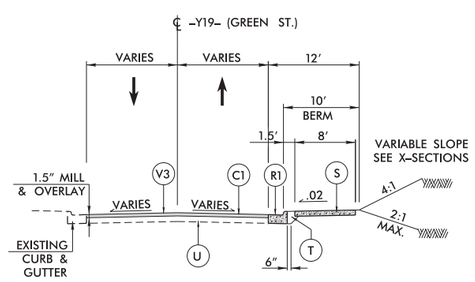
EASTBOUND LANES

-Y3- 13+10.00 TO -Y3- 14+75.00
-Y3- 33+96.00 TO -Y3- 39+88.56
-Y3- 40+67.67 TO -Y3- 41+50.00



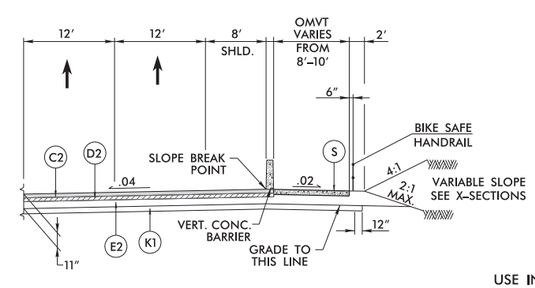
TYPICAL SECTION NO. 8

-Y19- 12+75.00 TO -Y19- 20+03.44 (BRIDGE)
-Y19- 21+84.94 (BRIDGE) TO -Y19- 28+50.00



TYPICAL SECTION NO. 8A

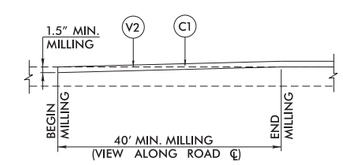
-Y19- 6+75.00 TO -Y19- 12+75.00 SIDEWALK - RIGHT
-Y19- 28+50.00 TO -Y19- 30+20.73 CURB & GUTTER /NO SIDEWALK - LEFT



OVER MOUNTAIN VICTORY TRAIL (OMVT)

-Y3- EASTBOUND LANES

-Y3- 21+60.55 TO -Y3- 25+40.52 BRIDGE
-Y3- 27+69.52 BRIDGE TO -Y3- 32+05.00



INCIDENTAL MILLING DETAIL - V2

USE INCONJUNCTION WITH ALL -Y- LINE TIE-INS
-Y3- 13+10.00 TO -Y3- 13+50.00
-Y3- 41+10.00 TO -Y3- 41+50.00

USE INCONJUNCTION WITH TS No. 7
-Y3- 21+53.59 TO -Y3- 31+35.00 (CONCRETE VERTICAL BARRIER)
-Y3- 22+00.00 TO -Y3- 25+40.52 BRIDGE (BIKE SAFE HANDRAIL-RIGHT)
-Y3- 27+69.52 BRIDGE TO -Y3- 31+35.00 (BIKE SAFE HANDRAIL-RIGHT)
-Y3- 24+50.00 TO -Y3- 25+00.00 WIDTH VARIES FROM 10' TO 8'
-Y3- 28+00.00 TO -Y3- 28+50.00 WIDTH VARIES FROM 8' TO 10'
SIDEWALK WIDTH IS 8' ON THE PROPOSED BRIDGE.
SEE CROSS SECTIONS & BRIDGE PLANS.

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USER: JDOBIE

6/2/99

PAVEMENT SCHEDULE (FINAL)

ITEM	DESCRIPTION	ITEM	DESCRIPTION	ITEM	DESCRIPTION	ITEM	DESCRIPTION	ITEM	DESCRIPTION	ITEM	DESCRIPTION	ITEM	DESCRIPTION	ITEM	DESCRIPTION
A1	7" CONCRETE	C4	3" S9.5C	D3	VAR DEPTH I19.0C	E4	5" B25.0C	K1	CHEMICAL STABILIZATION: 7" SOIL-CEMENT BASE OR 8"LIME-TREATED SOIL	R1	2'-6" CONCRETE CURB & GUTTER	R5	8"x12" CONCRETE CURB	U	EXIST. PAVEMENT
C1	1.5" S9.5B	C5	VAR DEPTH S9.5C	E1	3" B25.0C	E5	VAR DEPTH B25.0C	K2	8" CLASS IV SUBGRADE STABILIZATION	R2	SHOULDER BERM GUTTER	R6	CONCRETE EXPRESSWAY GUTTER	Z	MILLED RUMBLE STRIP
C2	3" S9.5B	D1	2.5" I19.0C	E2	4" B25.0C	J1	6" ABC	N1	GEOTEXTILE FOR SOIL STABILIZATION	R3	5" CONC. ISLAND	S	4" CONC. SIDEWALK	V1	PAVEMENT MILLING
C3	VAR DEPTH S9.5B	D2	4" I19.0C	E3	4.5" B25.0C	J2	8" ABC	N2	GEOTEXTILE FOR PAVEMENT STABILIZATION	P	PRIME COAT	R4	2' MODIFIED VALLEY GUTTER	T	EARTH

ITEM	DESCRIPTION
V2	VARIABLE DEPTH PAVEMENT WEDGING
W1	
W2	
W3	

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	2A-5

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY

PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 024964 ENGINEER JOSEPH T. HOLLAND

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
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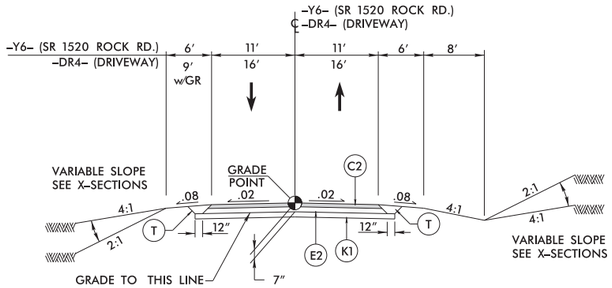
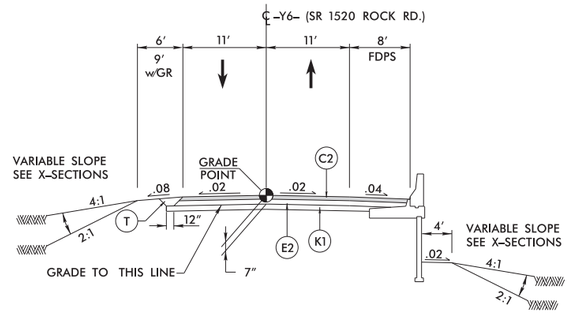
NC COA No. F-0929

NC DEPARTMENT OF TRANSPORTATION
PAVEMENT MANAGEMENT UNIT
1593 MAIL SERVICE CENTER
RALEIGH, NC 27699-1593



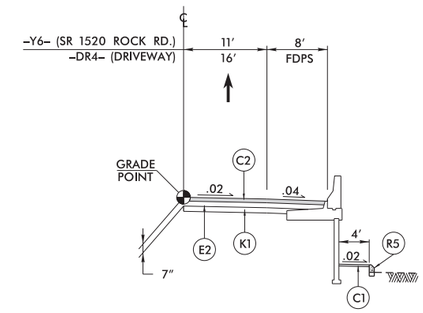
TYPICAL SECTION NO. 9

-Y6- 10+00.00 TO -Y6- 25+92.57
-Y6- 26+12.41 TO -Y6- 33+21.90
-DR4- 12+00.00 TO -DR4- 14+17.87
NOTE - STABILIZATION NOT REQUIRED FOR DRIVEWAY -DR4-



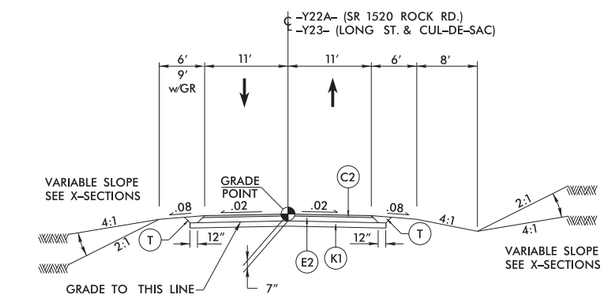
TYPICAL SECTION NO. 9A

-Y6- 26+60.00 TO -Y6- 27+11.00 - RIGHT
-Y6- 26+25.06 TO -Y6- 26+64.31 (FDPS - RIGHT)



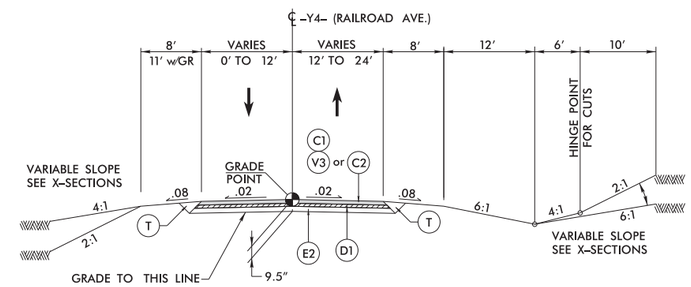
TYPICAL SECTION NO. 9B

-Y6- 27+11.00 TO -Y6- 26+60.00 - RIGHT
-DR4 13+14.00 TO 13+97.10 - LEFT
NOTE - STABILIZATION NOT REQUIRED FOR DRIVEWAY -DR4-



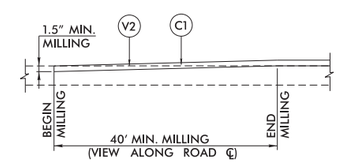
TYPICAL SECTION NO. 10

-Y22A- 34+50.00 TO -Y22A- 40+24.15
-Y23- 36+60.00 TO -Y23- 39+33.33



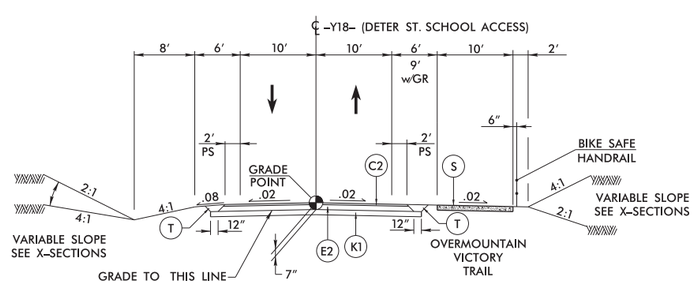
TYPICAL SECTION NO. 11

-Y4- 17+00.00 TO -Y4- 18+50.00 - LEFT (MILL & OVERLAY)
-Y4- 18+50.00 TO -Y4- 23+45.84



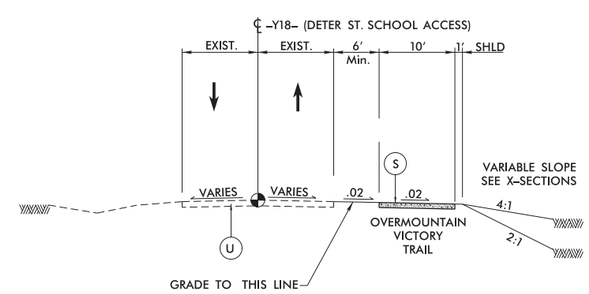
INCIDENTAL MILLING DETAIL - V2

USE INCONJUNCTION WITH ALL -Y- LINE TIE-INS
-Y23- 36+60.00 TO -Y23- 37+00.00



TYPICAL SECTION NO. 12

-Y18- 14+30.00 TO -Y18- 18+11.97
-Y18- 15+50.00 TO -Y18- 16+50.00 - RIGHT w/HANDRAIL



TYPICAL SECTION NO. 12A

-Y18- 10+30.42 TO -Y18- 14+30.00

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USER: JJONES

6/2/99

PAVEMENT SCHEDULE (FINAL)

ITEM	DESCRIPTION	ITEM	DESCRIPTION	ITEM	DESCRIPTION	ITEM	DESCRIPTION	ITEM	DESCRIPTION	ITEM	DESCRIPTION	ITEM	DESCRIPTION	ITEM	DESCRIPTION
A1	7" CONCRETE	C4	3" S9.5C	D3	VAR DEPTH I19.0C	E4	5" B25.0C	K1	CHEMICAL STABILIZATION: 7" SOIL-CEMENT BASE OR 8"LIME-TREATED SOIL	R1	2'-6" CONCRETE CURB & GUTTER	R5	8"x12" CONCRETE CURB	U	EXIST. PAVEMENT
C1	1.5" S9.5B	C5	VAR DEPTH S9.5C	E1	3" B25.0C	E5	VAR DEPTH B25.0C	K2	8" CLASS IV SUBGRADE STABILIZATION	R2	SHOULDER BERM GUTTER	R6	CONCRETE EXPRESSWAY GUTTER	Z	MILLED RUMBLE STRIP
C2	3" S9.5B	D1	2.5" I19.0C	E2	4" B25.0C	J1	6" ABC	N1	GEOTEXTILE FOR SOIL STABILIZATION	R3	5" CONC. ISLAND	S	4" CONC. SIDEWALK	V1	V2
C3	VAR DEPTH S9.5B	D2	4" I19.0C	E3	4.5" B25.0C	J2	8" ABC	N2	GEOTEXTILE FOR PAVEMENT STABILIZATION	P	PRIME COAT	R4	2' MODIFIED VALLEY GUTTER	T	EARTH

ITEM				DESCRIPTION
			U	EXIST. PAVEMENT
			Z	MILLED RUMBLE STRIP
V3	V4			PAVEMENT MILLING
	W1	W2	W3	VARIABLE DEPTH PAVEMENT WEDGING

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	2A-6

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY

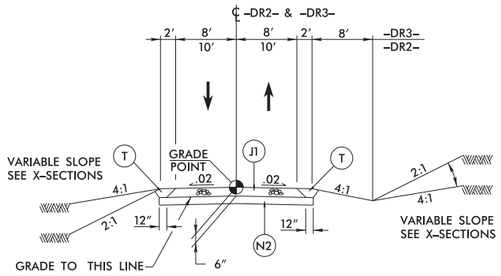
PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 024964 ENGINEER JOSEPH T. HOLLAND

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

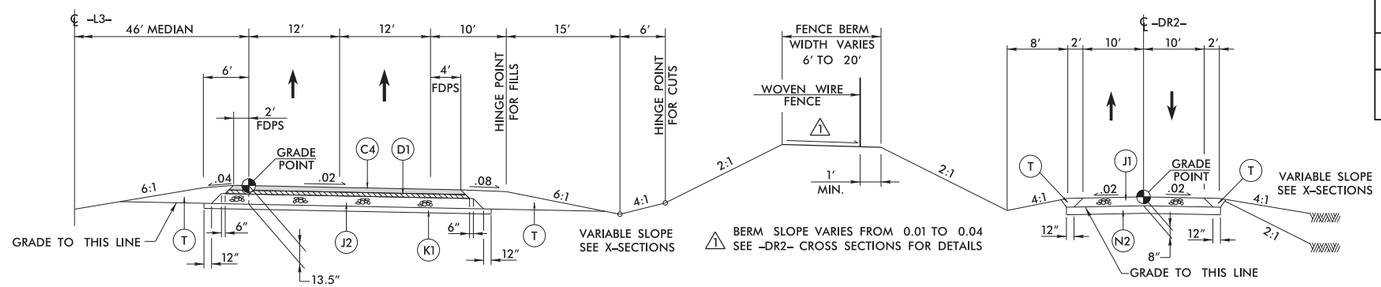
Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. P-0929

NC DEPARTMENT OF TRANSPORTATION
PAVEMENT MANAGEMENT UNIT
1593 MAIL SERVICE CENTER
RALEIGH, NC 27699-1593



TYPICAL SECTION NO. 13

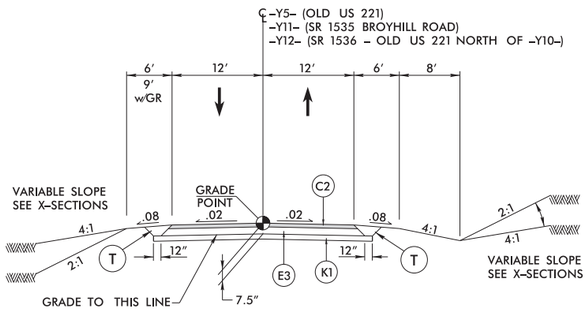
-DR2- 9+67.72 TO -DR2- 19+44.66
-DR3- 10+25.16 TO -DR3- 16+75.00



TYPICAL SECTION 14

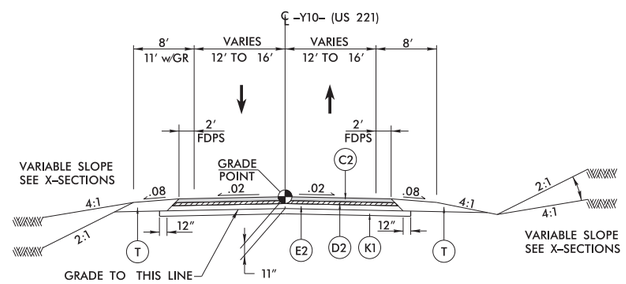
WOVEN WIRE FENCE BERM DETAIL

-L3- 751+20.89 TO -L3- 759+00.00 NORTHBOUND LANES
-DR2- 11+80.00 TO -DR2- 19+44.00



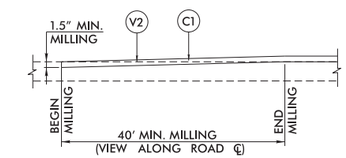
TYPICAL SECTION NO. 15

-Y5- 11+75.00 TO -Y5- 21+01.44
-Y11- 10+47.29 TO -Y11- 28+00.00
-Y12- 11+25.00 TO -Y12- 33+00.00



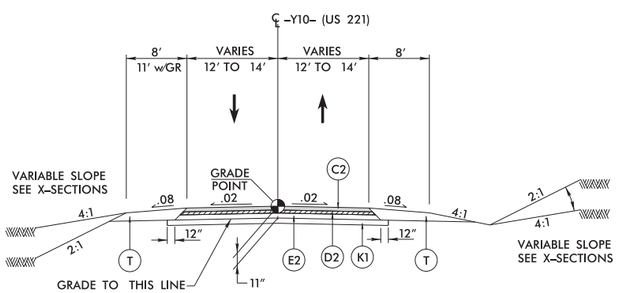
TYPICAL SECTION NO. 16

-Y10- 20+58.96 TO -Y10- 24+81.26 - LEFT
-Y10- 20+58.96 TO -Y10- 24+81.26 - RIGHT



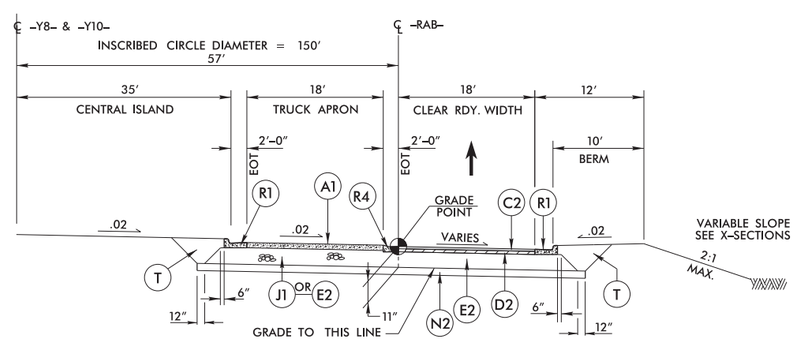
INCIDENTAL MILLING DETAIL - V2

USE INCONJUNCTION WITH ALL -Y- LINE TIE-INS
-Y5- 11+75.00 TO -Y5- 12+15.00
-Y12- 11+25.00 TO -Y12- 11+65.00
-Y12- 32+60.00 TO -Y12- 33+00.00



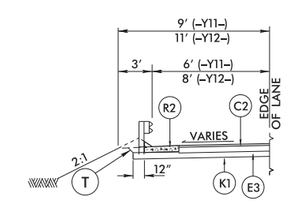
TYPICAL SECTION NO. 17

-Y10- 26+75.30 TO -Y10- 29+70.35 - RIGHT
-Y10- 26+75.66 TO -Y10- 29+70.35 - LEFT



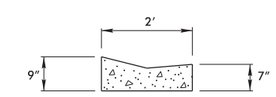
TYPICAL SECTION NO. 18

ROUNDABOUT -RAB-
-RAB- STA 0+00.00 TO -RAB- STA 3+58.14



DETAIL FOR SHOULDER BERM GUTTER

USE IN CONJUNCTION WITH TYPICAL SECTION No. 15



DETAIL FOR MODIFIED VALLEY GUTTER

USE IN CONJUNCTION WITH TYPICAL SECTION No. 18
FOR ROUNDABOUT TRUCK APRON

8/17/2021 4:23:17 PM
R-2233BB_RDY_TYP_2A-6.DGN
USER: gmorris

6/2/99

PAVEMENT SCHEDULE (FINAL)

ITEM	DESCRIPTION	ITEM	DESCRIPTION	ITEM	DESCRIPTION	ITEM	DESCRIPTION	ITEM	DESCRIPTION	ITEM	DESCRIPTION	ITEM	DESCRIPTION	ITEM	DESCRIPTION
A1	7" CONCRETE	C4	3" S9.5C	D3	VAR DEPTH I19.0C	E4	5" B25.0C	K1	CHEMICAL STABILIZATION: 7" SOIL-CEMENT BASE OR 8"LIME-TREATED SOIL	R1	2'-6" CONCRETE CURB & GUTTER	R5	8"x12" CONCRETE CURB	U	EXIST. PAVEMENT
C1	1.5" S9.5B	C5	VAR DEPTH S9.5C	E1	3" B25.0C	E5	VAR DEPTH B25.0C	K2	8" CLASS IV SUBGRADE STABILIZATION	R2	SHOULDER BERM GUTTER	R6	CONCRETE EXPRESSWAY GUTTER	Z	MILLED RUMBLE STRIP
C2	3" S9.5B	D1	2.5" I19.0C	E2	4" B25.0C	J1	6" ABC	N1	GEOTEXTILE FOR SOIL STABILIZATION	R3	5" CONC. ISLAND	S	4" CONC. SIDEWALK	V1	PAVEMENT MILLING
C3	VAR DEPTH S9.5B	D2	4" I19.0C	E3	4.5" B25.0C	J2	8" ABC	N2	GEOTEXTILE FOR PAVEMENT STABILIZATION	P	PRIME COAT	R4	2' MODIFIED VALLEY GUTTER	T	EARTH

ITEM	DESCRIPTION
V2	VARIABLE DEPTH PAVEMENT WEDGING
W1	
W2	
W3	

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	2A-7

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY

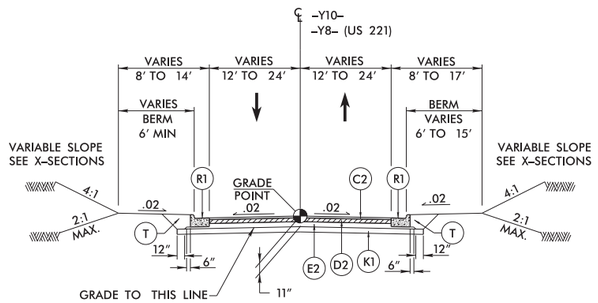
PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 024964 ENGINEER JOSEPH T. HOLLAND

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

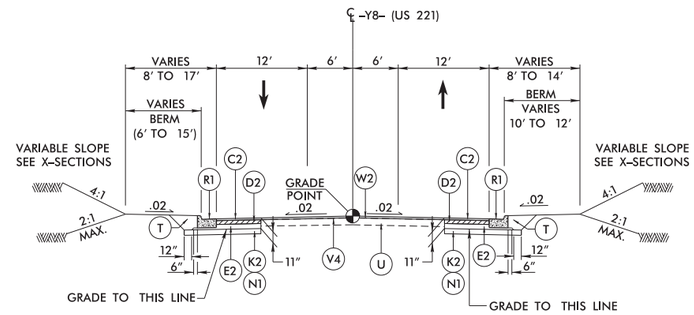
Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. P-0929

NC DEPARTMENT OF TRANSPORTATION
PAVEMENT MANAGEMENT UNIT
1593 MAIL SERVICE CENTER
RALEIGH, NC 27699-1593



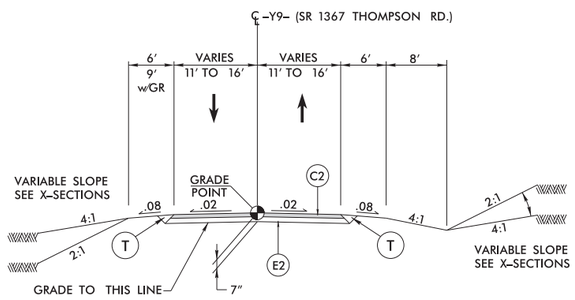
TYPICAL SECTION NO. 19

-Y8- 15+00.00 TO -Y8- 20+57.13
-Y10- 18+30.59 TO -Y10- 20+58.16



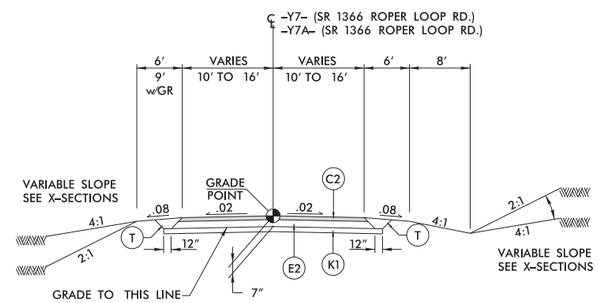
TYPICAL SECTION NO. 19A

-Y8- 22+07.13 TO -Y8- 36+60.00



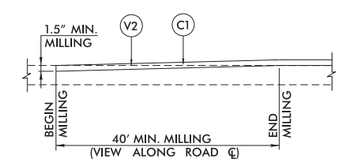
TYPICAL SECTION NO. 20

-Y9- 13+50.00 TO -Y9- 16+53.96



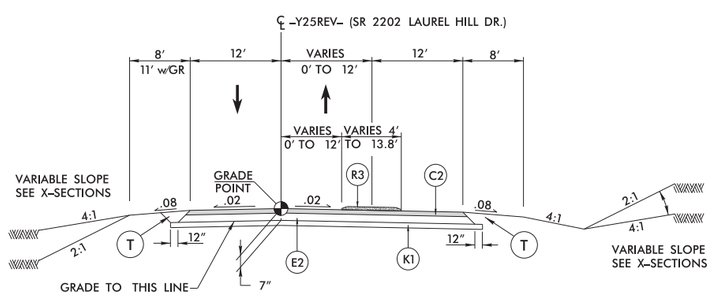
TYPICAL SECTION NO. 21

-Y7- 14+75.00 TO -Y7- 23+08.78
-Y7A- 13+75.00 TO -Y7A- 17+98.84



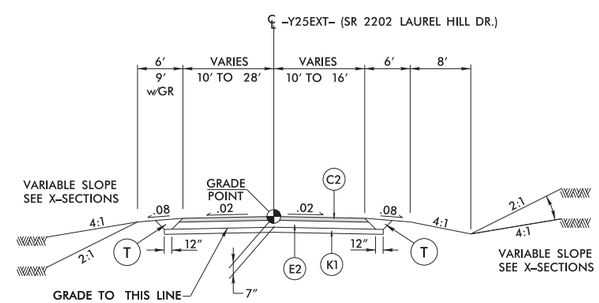
INCIDENTAL MILLING DETAIL – V2

USE INCONJUNCTION WITH ALL -Y- LINE TIE-INS
-Y7- 14+75.00 TO -Y7- 15+15.00
-Y7A- 13+75.00 TO -Y7A- 14+15.00
-Y8- 15+00.00 TO -Y8- 15+40.00
-Y8- 36+20.00 TO -Y8- 36+60.00
-Y9- 13+50.00 TO -Y9- 13+90.00
-Y25EXT- 13+00.00 TO -Y25EXT- 13+55.00



TYPICAL SECTION NO. 22

-Y25REV- 17+50.00 TO -Y25REV- 33+28.28



TYPICAL SECTION NO. 23

-Y25EXT- 10+12.00 TO -Y25EXT- 13+00.00

8/17/2021 4:23:20 PM
USER: dmory
R-2233BB_RDY_TYP_2A-7.DGN

6/2/99

PAVEMENT SCHEDULE (FINAL)

ITEM	DESCRIPTION	ITEM	DESCRIPTION	ITEM	DESCRIPTION	ITEM	DESCRIPTION	ITEM	DESCRIPTION	ITEM	DESCRIPTION	ITEM	DESCRIPTION	ITEM				DESCRIPTION
A1	7" CONCRETE	C4	3" S9.5C	D3	VAR DEPTH I19.0C	E4	5" B25.0C	K1	CHEMICAL STABILIZATION: 7" SOIL-CEMENT BASE OR 8"LIME-TREATED SOIL	R1	2'-6" CONCRETE CURB & GUTTER	R5	8"x12" CONCRETE CURB				U	EXIST. PAVEMENT
C1	1.5" S9.5B	C5	VAR DEPTH S9.5C	E1	3" B25.0C	E5	VAR DEPTH B25.0C	K2	8" CLASS IV SUBGRADE STABILIZATION	R2	SHOULDER BERM GUTTER	R6	CONCRETE EXPRESSWAY GUTTER				Z	MILLED RUMBLE STRIP
C2	3" S9.5B	D1	2.5" I19.0C	E2	4" B25.0C	J1	6" ABC	N1	GEOTEXTILE FOR SOIL STABILIZATION	R3	5" CONC. ISLAND	S	4" CONC. SIDEWALK	V1	V2	V3	V4	PAVEMENT MILLING
C3	VAR DEPTH S9.5B	D2	4" I19.0C	E3	4.5" B25.0C	J2	8" ABC	N2	GEOTEXTILE FOR PAVEMENT STABILIZATION	P	PRIME COAT	R4	2' MODIFIED VALLEY GUTTER	T	EARTH	W1	W2	W3	VARIABLE DEPTH PAVEMENT WEDGING

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	2A-8

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY

PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 024964 ENGINEER JOSEPH T. HOLLAND

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Dewberry
2610 WYCLIFF ROAD
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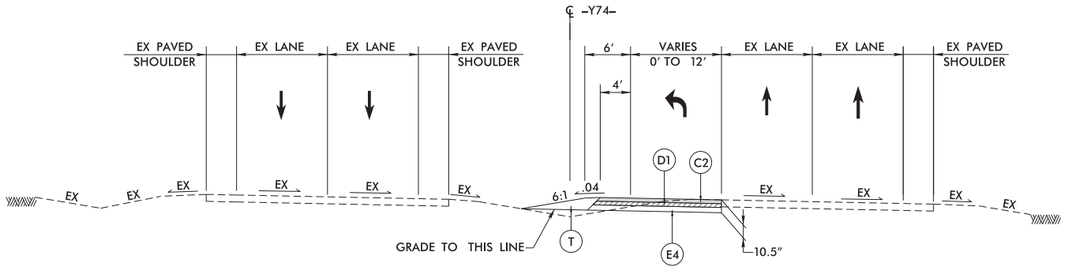
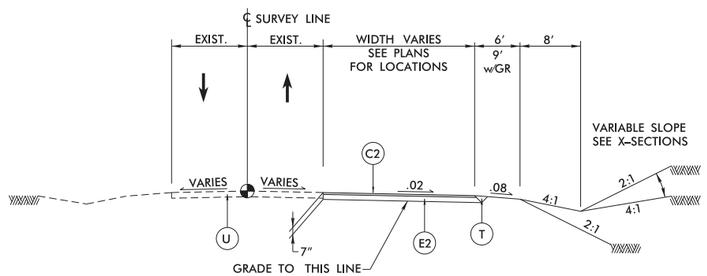
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

NC DEPARTMENT OF TRANSPORTATION
PAVEMENT MANAGEMENT UNIT
1593 MAIL SERVICE CENTER
RALEIGH, NC 27699-1593



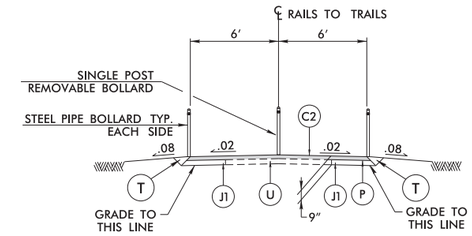
TYPICAL SECTION NO. 24

-Y74- 10+00.00 TO -Y74- 17+89.51

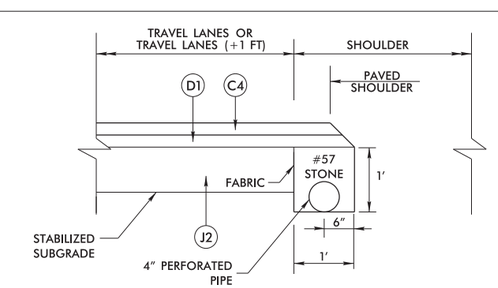


TYPICAL SECTION NO. 25

CUL-DE-SACS & STREET CONNECTIONS

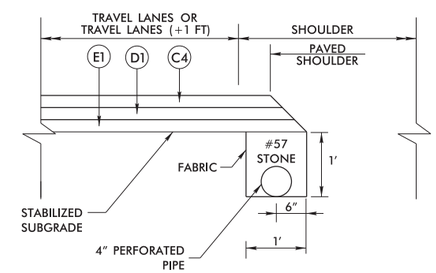


RAILS TO TRAILS PAVEMENT CONNECTIONS			
LOCATION	DESCRIPTION	PAVING LENGTH	BOLLARD LOCATIONS
-Y6- 14+11 LT.	EXISTING TRAIL IS 7' GRAVEL	LENGTH = 30'	PLACE 38' LT.
-Y6- 14+48 RT.	EXISTING TRAIL IS 7' GRAVEL	LENGTH = 24'	PLACE 32' RT.
-Y11- 14+82 RT.	EXISTING TRAIL IS 12' PAVED	LENGTH = 21'	PLACE 35' RT.
-Y11- 14+82 LT.	EXISTING TRAIL IS 12' PAVED	LENGTH = 21'	PLACE 35' LT.
-TR1-	EXISTING TRAIL IS 12' PAVED	LENGTH = 176'	SEE SHEET 11
-TR2-	EXISTING TRAIL IS 7' GRAVEL	LENGTH = 150'	SEE SHEET 11



SHOULDER DRAIN DETAIL WITH ABC

NOT TO SCALE



SHOULDER DRAIN DETAIL B25.0C

NOT TO SCALE

NOTE: SEE SHEET 3B-4 FOR STATION LOCATIONS AND QUANTITY SUMMARY.

CUL-DE-SACS			
LABEL	STREET	CENTER	PAVING LIMITS
-CUL1-	LAUREL HILL RD.	-Y25- 15+70.10 (20.25' RT.)	-Y25- 15+00.65
-CUL2-	LAUREL HILL RD.	-DR2- 10+34.38 (23.69' RT.)	-Y25- 25+16.69
-CUL3-	EAST 2ND ST.	-Y16- 13+03.91 (20.92' LT.)	-Y16- 12+32.17
-CUL4-	EAST 2ND ST.	-Y16- 17+82.39 (19.25' RT.)	-Y16- 18+55.84
-CUL5-	COLLETT ST.	-Y17- 13+21.98 (20.16' RT.)	-Y17- 12+52.47
-CUL6-	COLLETT ST.	-Y17- 17+78.13 (17.44' LT)	-Y17- 18+50.00
-CUL7-	REESE ST.	-Y20- 11+92.83 (20.91' LT.)	-Y20- 11+23.32
-CUL8-	SOUTHERN ST.	-Y21- 17+36.58 (22.04' RT.)	-Y21- 16+64.63
-CUL9-	LONG ST.	-Y23- 25+93.98 (22.00' RT.)	-Y23- 26+64.82
-CUL10-	ROCK RD.	-Y22A- 34+80.00 (19.00' LT.)	-Y22A- 39+96.06
-CUL13-	GILBOA CHURCH RD.	-Y42- 14+45.32 (21.36' RT.)	-Y42- 15+46.08
-CUL14-	SOUTHERN ST.	-L3- 839+94.99 (150.79' RT.)	-L3- 840+01.33 (211.66' RT)
-CUL11-	OLD US 221	-Y12- 41+97.56 (21.19' LT)	-Y12- 41+28.01
-CUL15-	LONG ST.	-Y23A- 45+53.87 (21.00' RT.)	-Y23A- 46+28.28
-CUL16-	OLD CHARLOTTE RD.	-L3- 779+79.91 (226.59' LT.)	-L3- 779+38.74 (289.42' LT.)

STREET CONNECTIONS		
LABEL	DESCRIPTION	LOCATION
-STCON1-	OAK ST. TO REECE ST.	-Y20- 13+72.71 TO -Y20- 16+56.66
-STCON2-	HILDERBRAND DR. TO HUDGEN'S LAKE DR.	-L3- 871+07.28 (131.42' LT.) TO -L3- 871+55.28 (147.40' LT.)
-STCON3-	SASAFFRAS DR. TO RIDGELAND DR.	-L3- 896+53.63 (129.30' LT.) TO -L3- 896+89.24 (185.15' LT.)
-STCON4-	CHURCH ST. TO SANDY WOODS LN.	-Y23- 21+23.17 TO -Y23- 21+52.30 (43.68' RT.)
-STCON5-	US 221 TO GOLD HILL MISSIONARY BAPTIST CHURCH	-L3- 941+22.37 (127.71' LT.) TO -L3- 944+44.60 (129.15' LT.)

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USER: cjones

6/2/99

PAVEMENT SCHEDULE (FINAL)

ITEM	DESCRIPTION	ITEM	DESCRIPTION	ITEM	DESCRIPTION	ITEM	DESCRIPTION	ITEM	DESCRIPTION	ITEM	DESCRIPTION	ITEM	DESCRIPTION	ITEM	DESCRIPTION
A1	7″ CONCRETE	C4	3″ S9.5C	D3	VAR DEPTH I19.0C	E4	5″ B25.0C	K1	CHEMICAL STABILIZATION: 7″ SOIL-CEMENT BASE OR 8″LIME-TREATED SOIL	R1	2′-6″ CONCRETE CURB & GUTTER	R5	8″x12″ CONCRETE CURB	U	EXIST. PAVEMENT
C1	1.5″ S9.5B	C5	VAR DEPTH S9.5C	E1	3″ B25.0C	E5	VAR DEPTH B25.0C	K2	8″ CLASS IV SUBGRADE STABILIZATION	R2	SHOULDER BERM GUTTER	R6	CONCRETE EXPRESSWAY GUTTER	Z	MILLED RUMBLE STRIP
C2	3″ S9.5B	D1	2.5″ I19.0C	E2	4″ B25.0C	J1	6″ ABC	N1	GEOTEXTILE FOR SOIL STABILIZATION	R3	5″ CONC. ISLAND	S	4″ CONC. SIDEWALK	V1	PAVEMENT MILLING
C3	VAR DEPTH S9.5B	D2	4″ I19.0C	E3	4.5″ B25.0C	J2	8″ ABC	N2	GEOTEXTILE FOR PAVEMENT STABILIZATION	P	PRIME COAT	R4	2′ MODIFIED VALLEY GUTTER	T	EARTH

ITEM	DESCRIPTION
V2	VARIABLE DEPTH PAVEMENT WEDGING
V3	
V4	
W1	
W2	
W3	

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	2A-9

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY

PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 024964 ENGINEER JOSEPH T. HOLLAND

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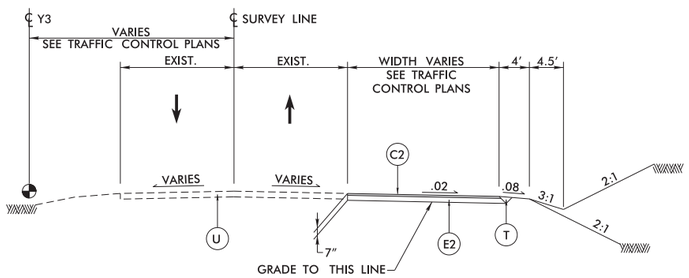
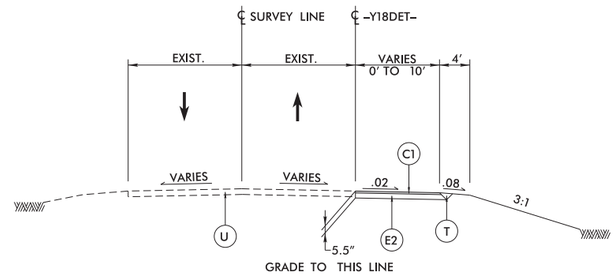
NC COA No. P-0929

NC DEPARTMENT OF TRANSPORTATION
PAVEMENT MANAGEMENT UNIT
1593 MAIL SERVICE CENTER
RALEIGH, NC 27699-1593



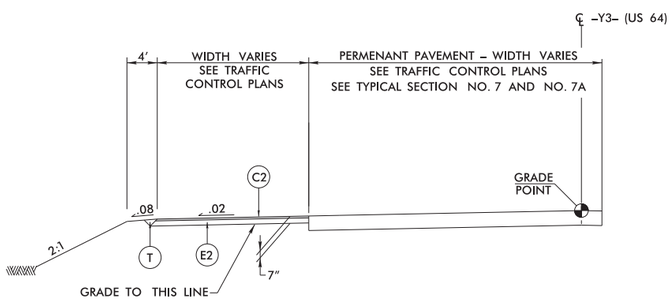
TYPICAL SECTION NO. 26

TEMPORARY PAVEMENT FROM
–Y3– 13+75.00 TO 23+00.00 RT



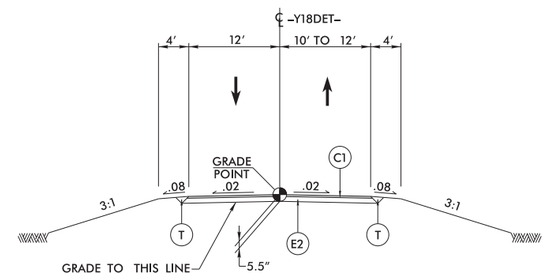
TYPICAL SECTION NO. 28

TEMPORARY PAVEMENT FROM
–Y18DET– 10+00.00 TO 10.76.97



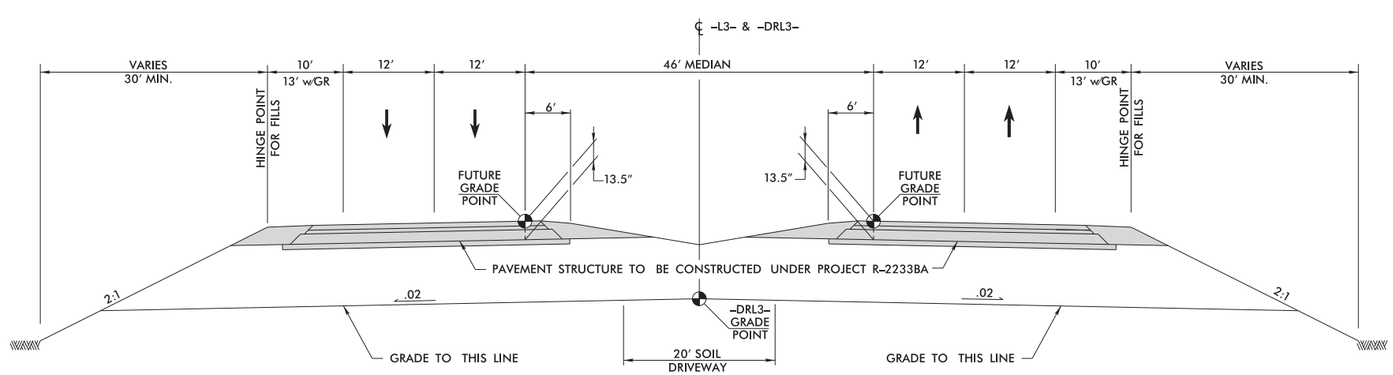
TYPICAL SECTION NO. 27

TEMPORARY PAVEMENT FROM
–Y3– 12+50.00 TO 19+50.00



TYPICAL SECTION NO. 29

TEMPORARY PAVEMENT FROM
–Y18DET– 10+76.97 TO 13+80.03



TYPICAL SECTION NO. 30

GRADING ONLY

SOUTHBOUND LANES

–L3– 733+30.00 TO –L3– 743+21.39

NORTHBOUND LANES

–L3– 733+30.00 TO –L3– 743+21.39

8/17/2021 4:23:25 PM
USER: dmorry
FILE: R-2233BB_PDY_TYP_2A-9.DGN

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

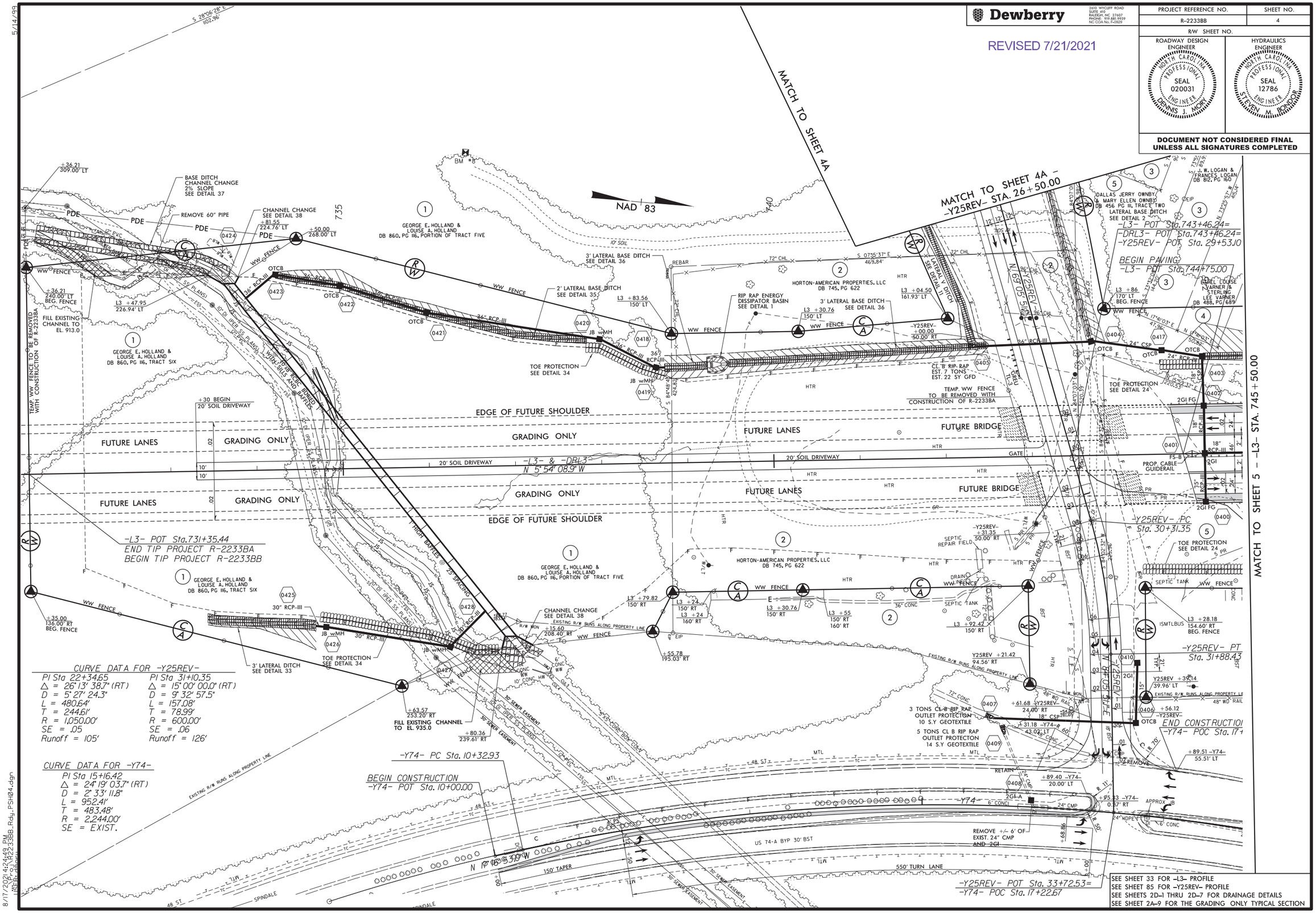
REVISED 7/21/2021

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	4
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORAN

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDOR

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



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R-2233BB_Rdy_PSH04.dgn
5/14/99

5/14/99

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	4A
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDS

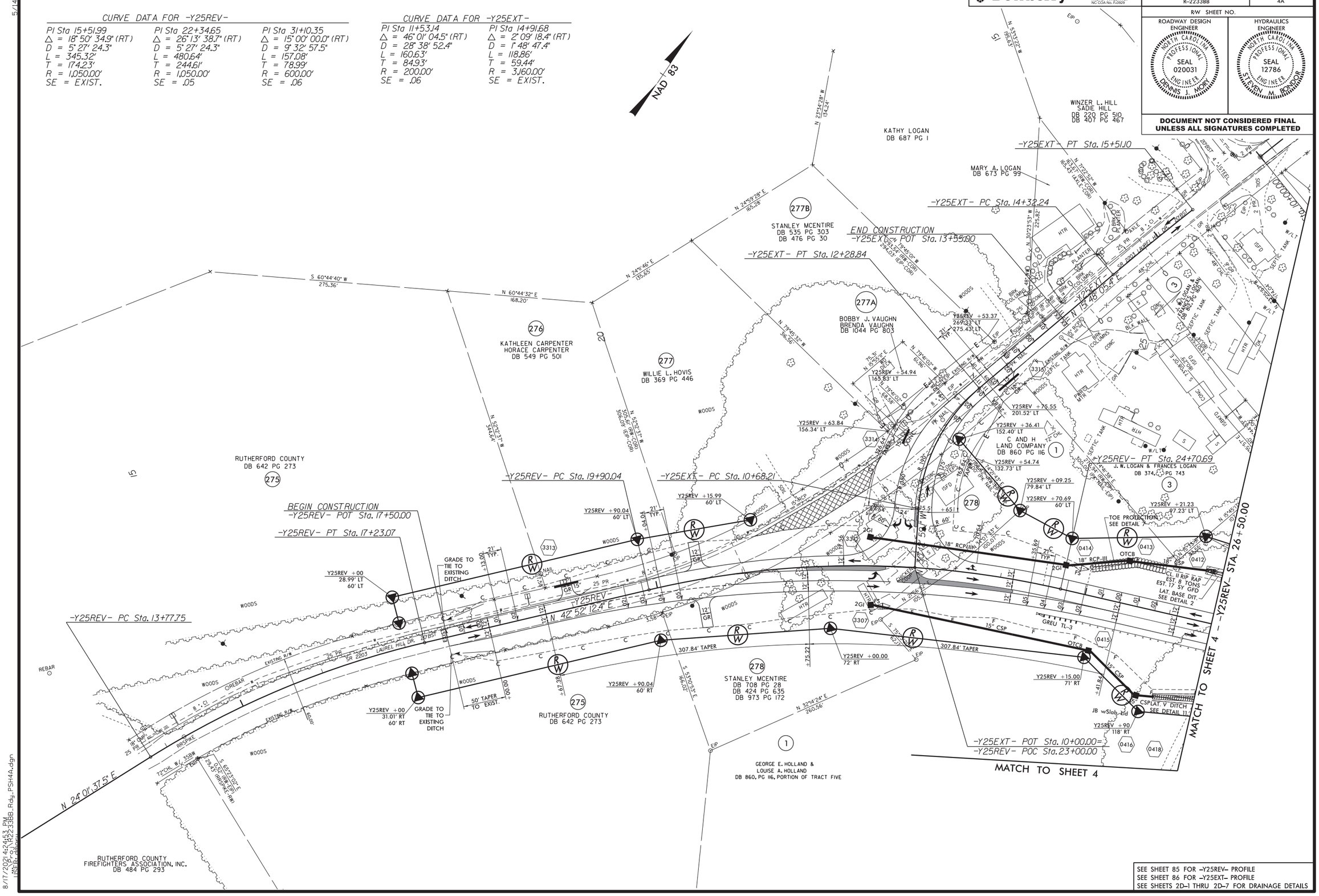
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CURVE DATA FOR -Y25REV-

PI Sta 15+51.99	PI Sta 22+34.65	PI Sta 31+10.35
△ = 18° 50' 34.9" (RT)	△ = 26° 13' 38.7" (RT)	△ = 15° 00' 00.0" (RT)
D = 5° 27' 24.3"	D = 5° 27' 24.3"	D = 9° 32' 57.5"
L = 345.32'	L = 480.64'	L = 157.08'
T = 174.23'	T = 244.61'	T = 78.99'
R = 1,050.00'	R = 1,050.00'	R = 600.00'
SE = EXIST.	SE = .05	SE = .06

CURVE DATA FOR -Y25EXT-

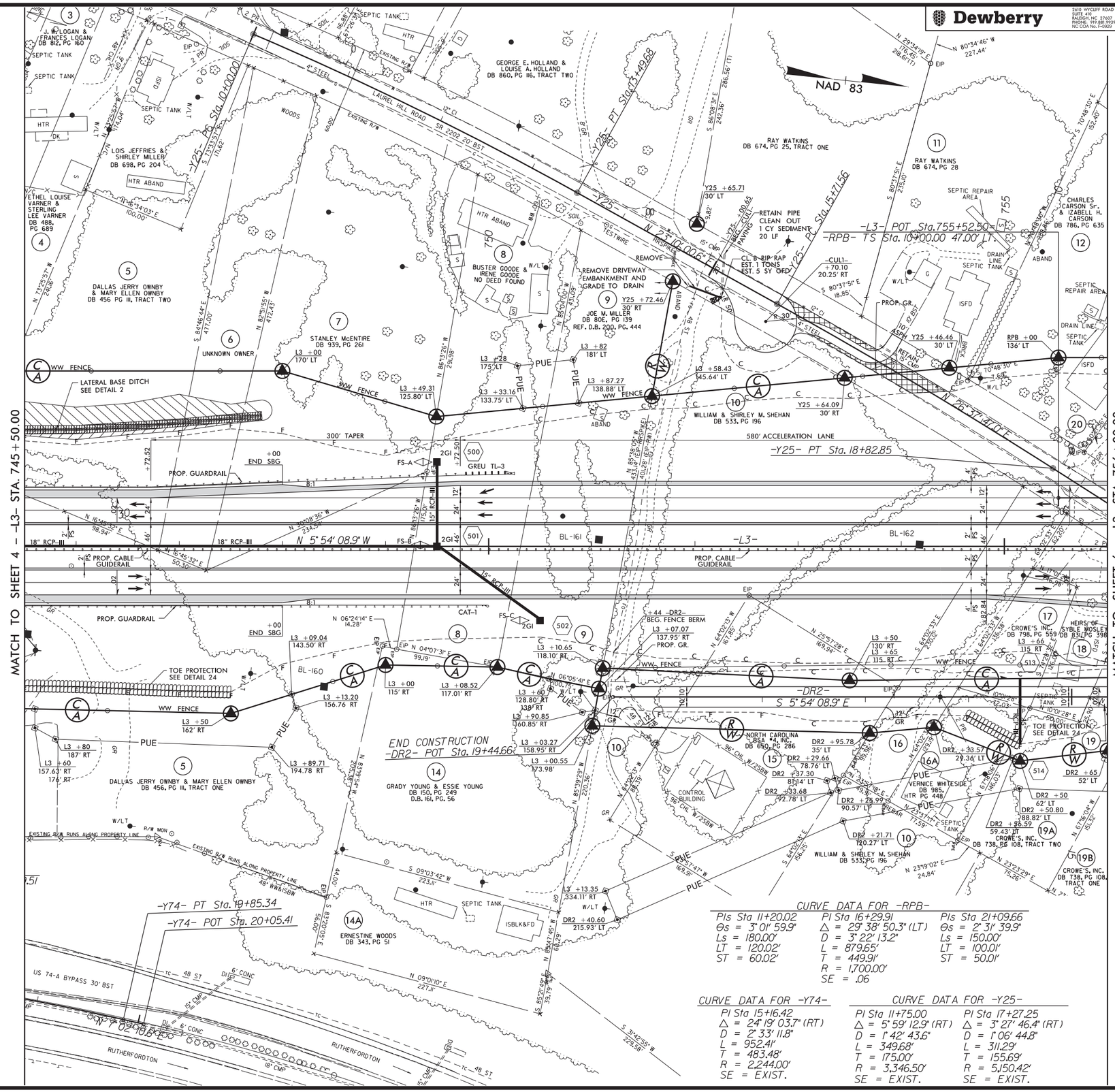
PI Sta 11+53.14	PI Sta 14+91.68
△ = 46° 01' 04.5" (RT)	△ = 2° 09' 18.4" (RT)
D = 28° 38' 52.4"	D = 1° 48' 47.4"
L = 160.63'	L = 118.86'
T = 84.93'	T = 59.44'
R = 200.00'	R = 3,160.00'
SE = .06	SE = EXIST.



SEE SHEET 85 FOR -Y25REV- PROFILE
SEE SHEET 86 FOR -Y25EXT- PROFILE
SEE SHEETS 2D-1 THRU 2D-7 FOR DRAINAGE DETAILS

8/17/2021 4:24:53 PM
USER: cmorris
R-2233BB_Rdy_PSH4A.dgn

5/14/99



PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	5
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CURVE DATA FOR -RPB-

PI Sta 11+20.02	PI Sta 16+29.91	PI Sta 21+09.66
Θs = 3° 01' 59.9"	Δ = 29° 38' 50.3" (LT)	Θs = 2° 31' 39.9"
Ls = 180.00'	D = 3° 22' 13.2"	Ls = 150.00'
LT = 120.02'	L = 879.65'	LT = 100.01'
ST = 60.02'	T = 449.91'	ST = 50.01'
	R = 1,700.00'	
	SE = .06	

CURVE DATA FOR -Y74-

PI Sta 15+16.42
Δ = 24° 19' 03.7" (RT)
D = 2° 33' 11.8"
L = 952.41'
T = 483.48'
R = 2,244.00'
SE = EXIST.

CURVE DATA FOR -Y25-

PI Sta 11+75.00	PI Sta 17+27.25
Δ = 5° 59' 12.9" (RT)	Δ = 3° 27' 46.4" (RT)
D = 1° 42' 43.6"	D = 1° 06' 44.8"
L = 349.68'	L = 311.29'
T = 175.00'	T = 155.69'
R = 3,346.50'	R = 5,150.42'
SE = EXIST.	SE = EXIST.

SEE SHEET 34 FOR -L3- PROFILE
SEE SHEET 56 FOR -RPB- PROFILE
SEE SHEET 85 FOR -Y25REV- PROFILE
SEE SHEET 86 FOR -DR2- PROFILE
SEE SHEETS 2D-1 THRU 2D-7 FOR DRAINAGE DETAILS

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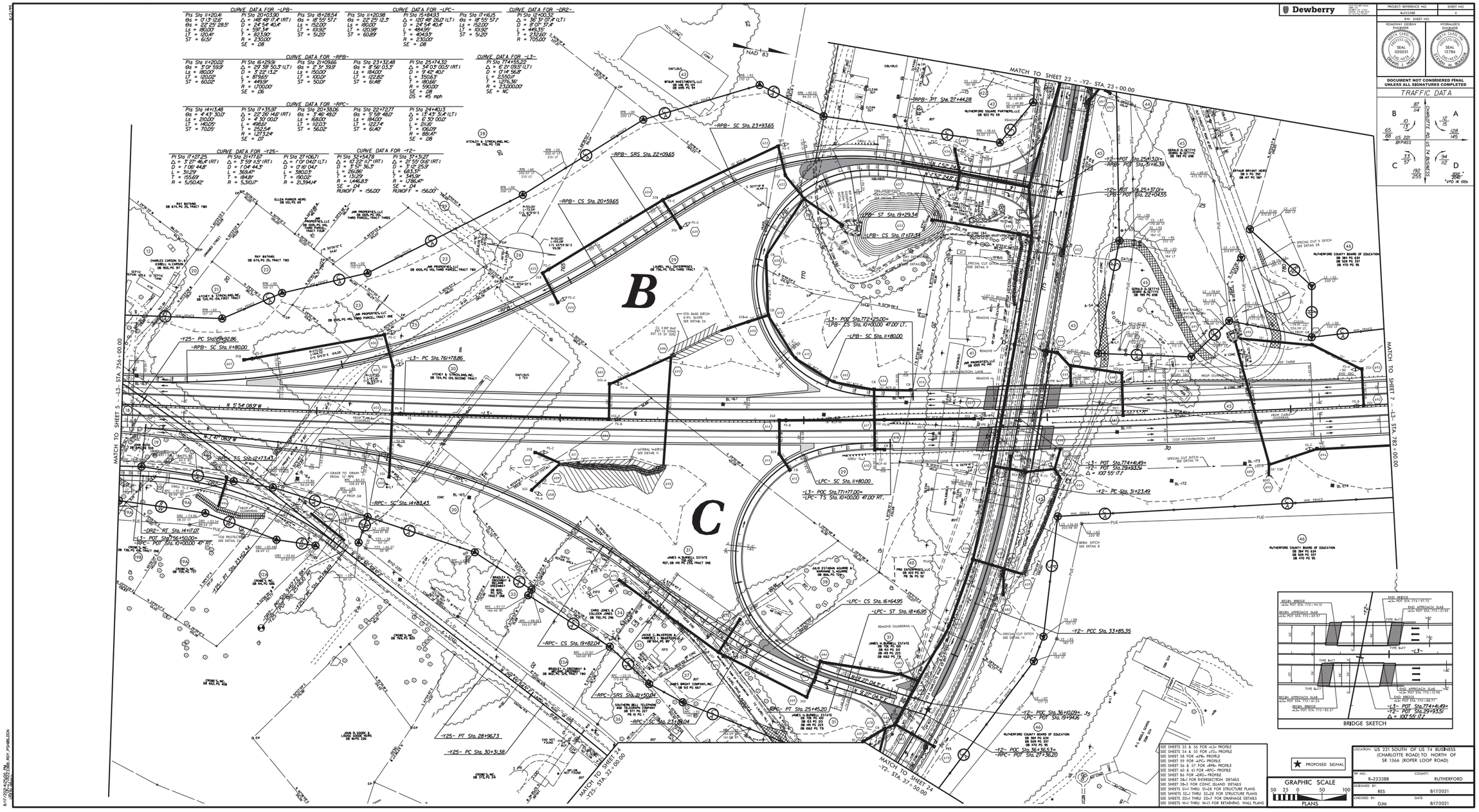
ISFP: ...2233BB_RDY_PSH05.DGN


Dewberry
PROJECT REFERENCE NO.
R-2233BB
SHEET NO.
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
SEAL 020031
SEAL 12786
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
TRAFFIC DATA
CHARLOTTE RD. US 74 BUSINESS
US 221 BYPASS
*VPD IN 100s
CURVE DATA FOR -LPB-
CURVE DATA FOR -LPC-
CURVE DATA FOR -DR2-
CURVE DATA FOR -RPB-
CURVE DATA FOR -L3-
CURVE DATA FOR -RPC-
CURVE DATA FOR -Y25-
CURVE DATA FOR -Y2-
MATCH TO SHEET 23 -Y2- STA. 23+00.00
MATCH TO SHEET 7 -L3- STA. 782+00.00
MATCH TO SHEET 5 -L3- STA. 756+00.00
MATCH TO SHEET 24 -Y25- STA. 32+00.00
MATCH TO SHEET 24 -Y2- STA. 37+50.00
NAD 83
B
C
-RPB- SC Sta. 23+93.65
-RPB- SRS Sta. 22+09.65
-RPB- CS Sta. 20+59.65
-Y25- PC Sta. 29+92.86
-RPB- SC Sta. 11+80.00
-L3- PC Sta. 761+78.86
-L3- SC Sta. 756+00.00
-RPC- SC Sta. 14+83.43
-DR2- RT Sta. 14+17.17
-L3- POT Sta. 756+50.00= -RPC- POT Sta. 10+00.00 47.17 RT.
-Y25- PT Sta. 21+19.34
-Y25- PC Sta. 21+67.34
-Y25- PT Sta. 28+96.73
-Y25- PC Sta. 30+31.38
-RPC- CS Sta. 19+82.04
-RPC- SRS Sta. 21+50.04
-RPC- SC Sta. 21+79.04
-RPC- PT Sta. 25+45.20
-LPC- SC Sta. 11+80.00
-L3- POC Sta. 771+77.00= -LPC- TS Sta. 10+00.00 47.00 RT.
-LPC- CS Sta. 16+64.95
-LPC- ST Sta. 18+16.95
-L3- POC Sta. 772+25.00= -LPB- CS Sta. 10+00.00 47.00 LT.
-LPB- SC Sta. 11+80.00
-LPB- ST Sta. 19+29.54
-LPB- CS Sta. 17+77.54
-RPB- PT Sta. 27+44.28
-Y2- POT Sta. 25+13.01= -RPB- POT Sta. 51+16.38
-Y2- POT Sta. 25+37.01= -LPB- POT Sta. 22+04.55
-L3- POT Sta. 774+41.49= -Y2- POT Sta. 29+93.51 Δ = 100°55'17"
-Y2- PC Sta. 31+23.49
-Y2- PCC Sta. 33+85.35
-Y2- POC Sta. 36+10.05= -LPC- POT Sta. 19+34.16
-Y2- POC Sta. 36+36.53= -RPC- POT Sta. 27+36.20
BRIDGE SKETCH
SEE SHEETS 35 & 35 FOR -L3- PROFILE
SEE SHEETS 54 & 55 FOR -Y2- PROFILE
SEE SHEET 58 FOR -LPB- PROFILE
SEE SHEET 59 FOR -LPC- PROFILE
SEE SHEET 56 & 57 FOR -RPB- PROFILE
SEE SHEET 60 & 61 FOR -RPC- PROFILE
SEE SHEET 86 FOR -DR2- PROFILE
SEE SHEET 28-1 FOR INTERSECTION DETAILS
SEE SHEET 28-2 FOR CONC. ISLAND DETAILS
SEE SHEETS 51-1 THRU 51-28 FOR STRUCTURE PLANS
SEE SHEETS 52-1 THRU 52-28 FOR STRUCTURE PLANS
SEE SHEETS 20-1 THRU 20-7 FOR DRAINAGE DETAILS
SEE SHEETS W4-1 THRU W4-11 FOR RETAINING WALL PLANS
PROPOSED SIGNAL
GRAPHIC SCALE
50 25 0 50 100
PLANS
LOCATION: US 221 SOUTH OF US 74 BUSINESS (CHARLOTTE ROAD) TO NORTH OF SR 1366 (ROPER LOOP ROAD)
TIP NO.: R-2233BB
COUNTY: RUTHERFORD
DESIGNED BY: RES
8/17/2021
CHECKED BY: DJM
DATE: 8/17/2021

5/14/99

Dewberry

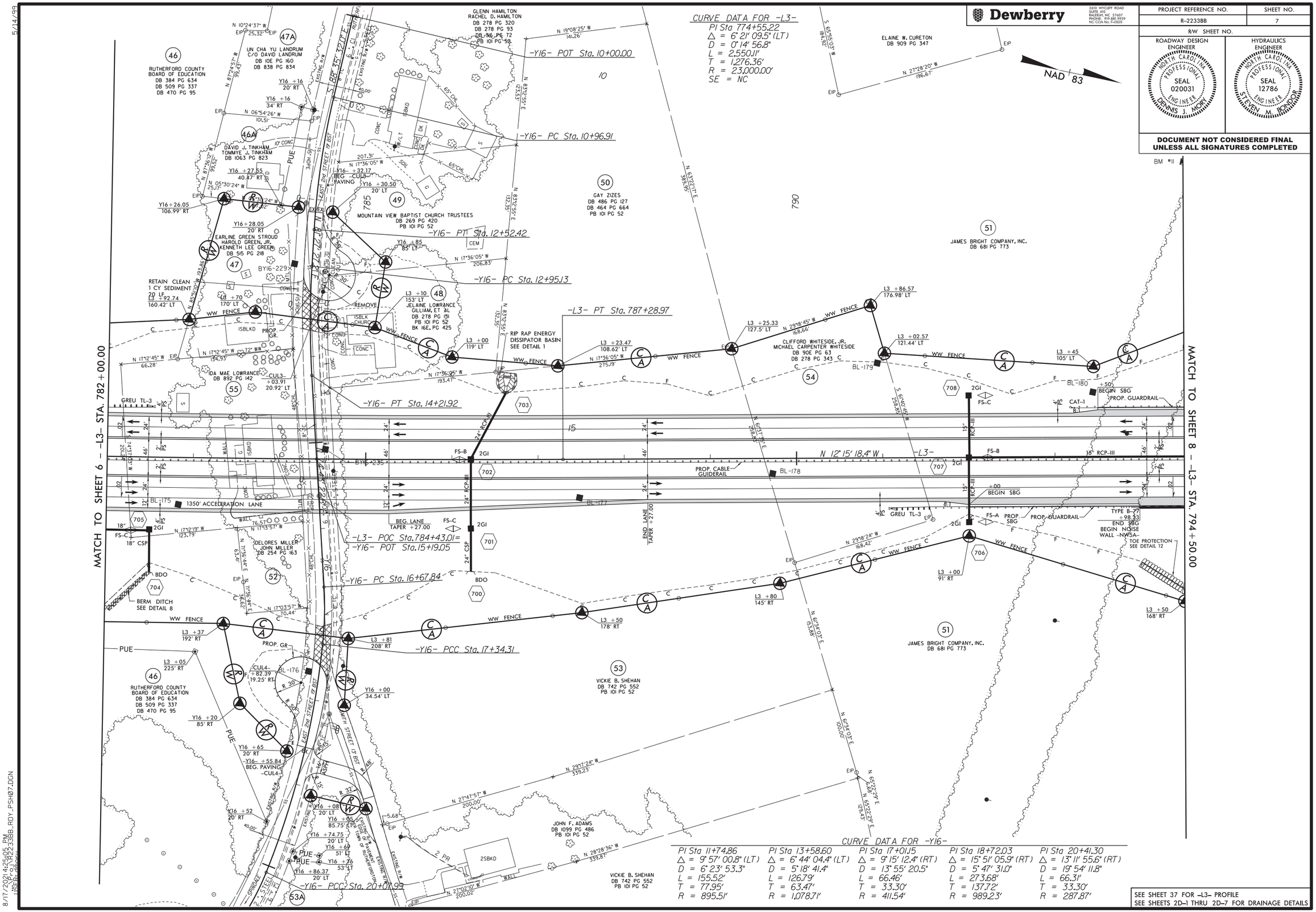
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	7
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDOR

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



SEE SHEET 37 FOR –L3– PROFILE
SEE SHEETS 2D–1 THRU 2D–7 FOR DRAINAGE DETAILS

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5/14/99

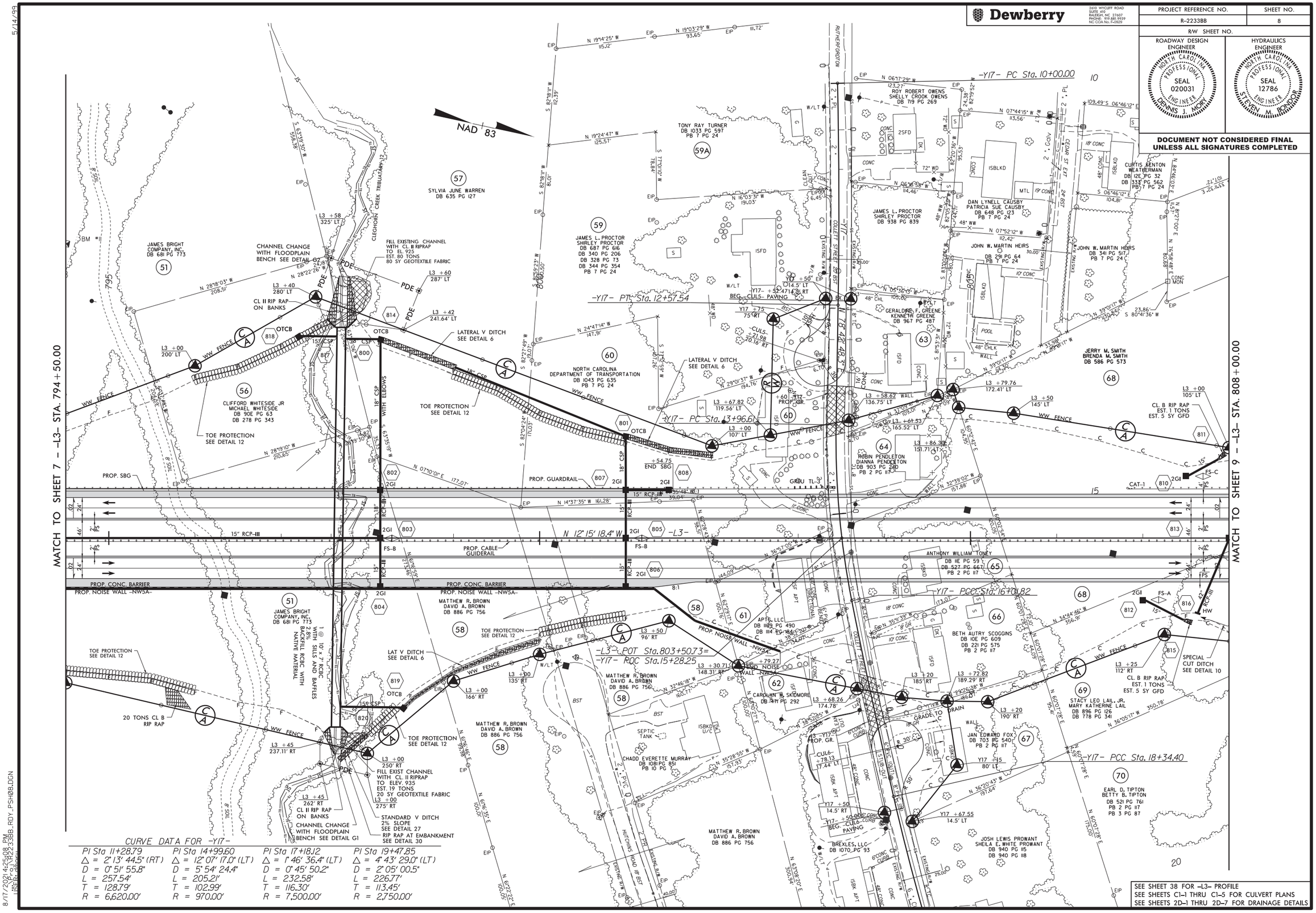
Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	8
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORRY

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDOR

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



SEE SHEET 38 FOR –L3– PROFILE
SEE SHEETS C1–1 THRU C1–5 FOR CULVERT PLANS
SEE SHEETS 2D–1 THRU 2D–7 FOR DRAINAGE DETAILS

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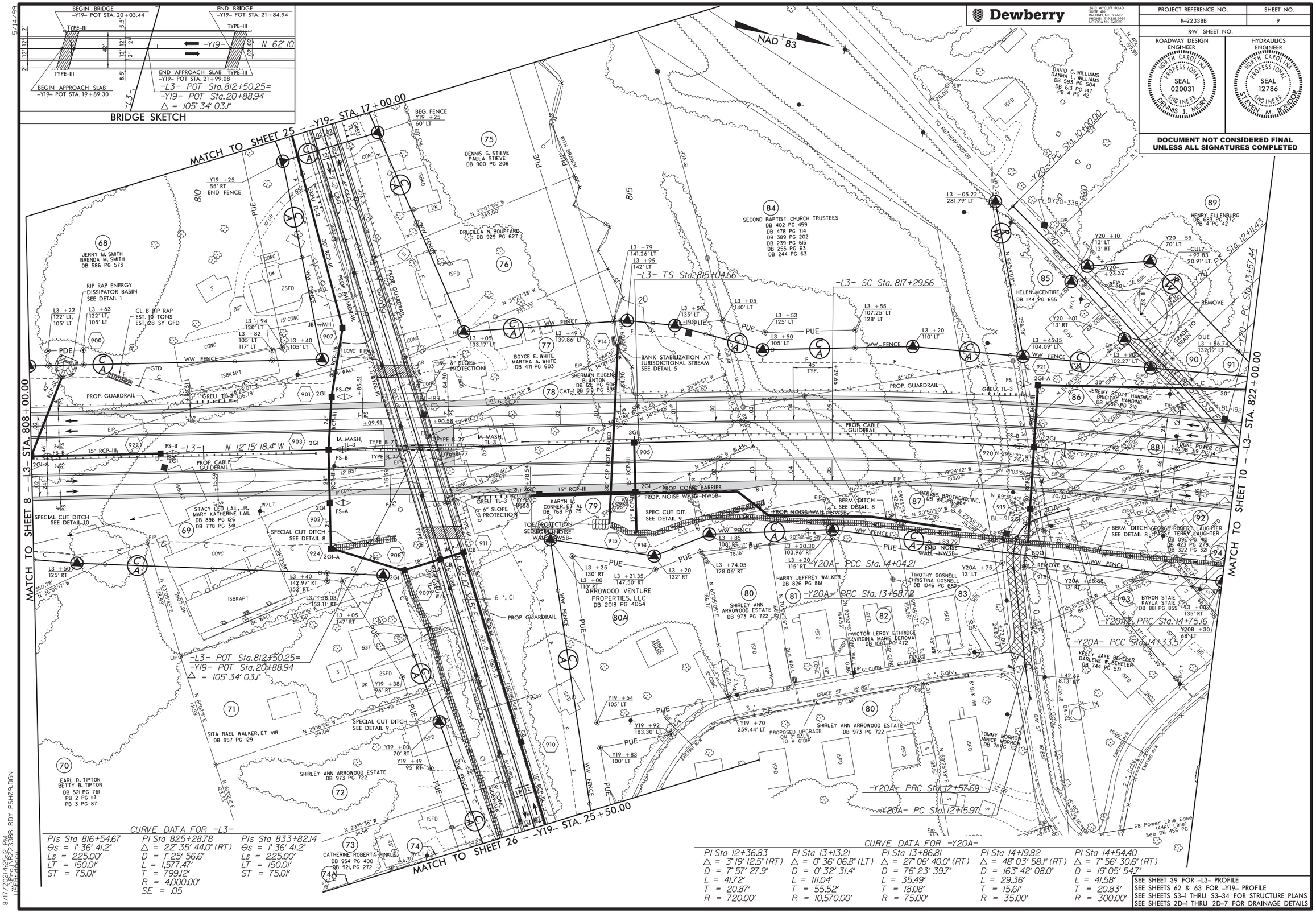
R-2233BB_RDY_PSH08.DGN
USER: cbrown



Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	9
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORRY

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEE SHEET 39 FOR -L3- PROFILE
SEE SHEETS 62 & 63 FOR -Y19- PROFILE
SEE SHEETS S3-1 THRU S3-34 FOR STRUCTURE PLANS
SEE SHEETS 2D-1 THRU 2D-7 FOR DRAINAGE DETAILS

5/14/99

8/17/2021 4:52:12 PM
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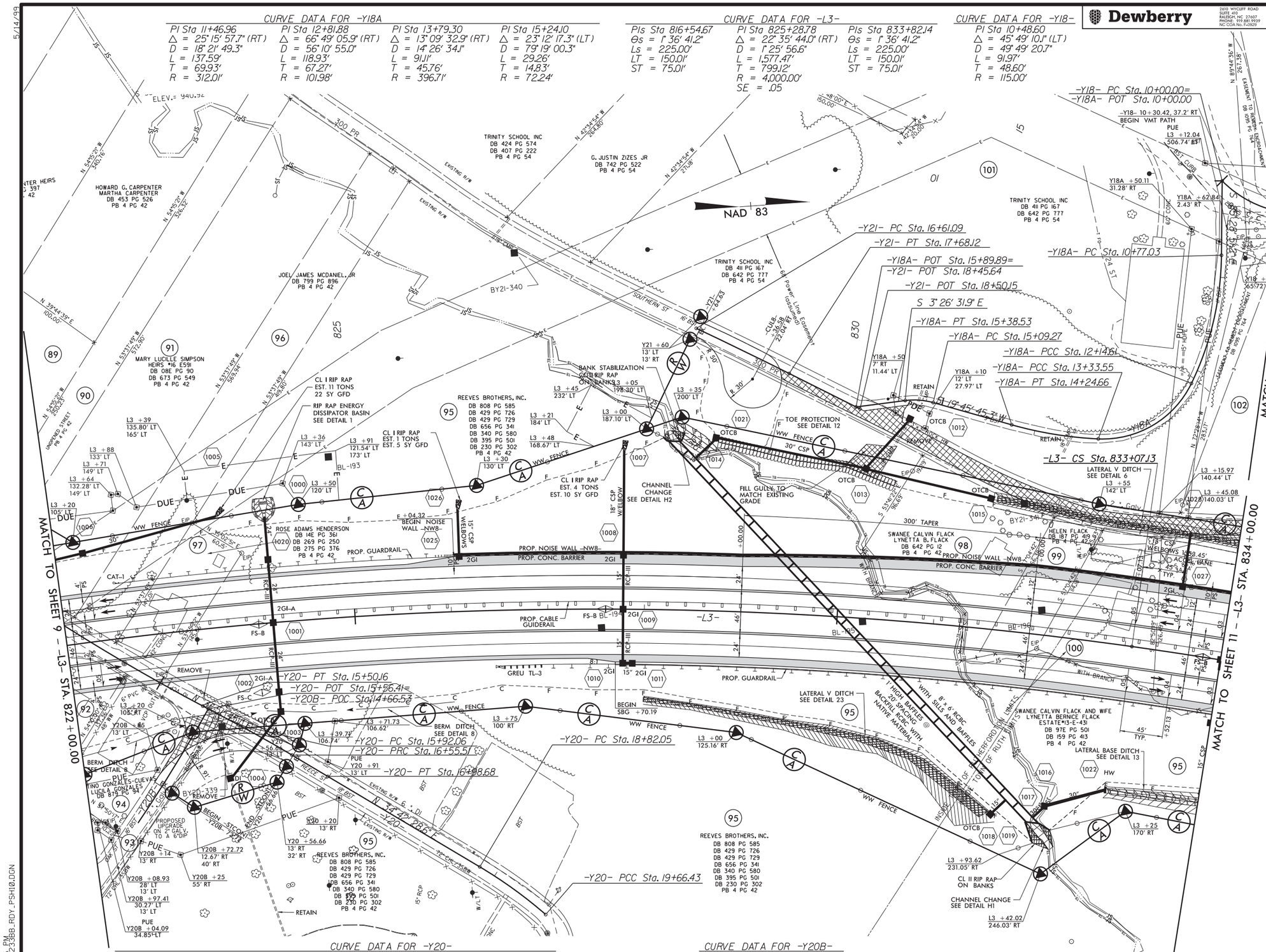
FILE: R-2233BB_RDY_PSH09.DGN

5/14/99



CURVE DATA FOR –Y18A

PI Sta 11+46.96	PI Sta 12+81.88	PI Sta 13+79.30	PI Sta 15+24.10
Δ = 25° 15' 57.7" (RT)	Δ = 66° 49' 05.9" (RT)	Δ = 13° 09' 32.9" (RT)	Δ = 23° 12' 17.3" (LT)
D = 18° 21' 49.3"	D = 56° 10' 55.0"	D = 14° 26' 34.1"	D = 79° 19' 00.3"
L = 137.59'	L = 118.93'	L = 91.11'	L = 29.26'
T = 69.93'	T = 67.27'	T = 45.76'	T = 14.83'
R = 312.01'	R = 101.98'	R = 396.71'	R = 72.24'

CURVE DATA FOR –L3–

PIs Sta 816+54.67	PI Sta 825+28.78	PIs Sta 833+82.14
Θs = 1° 36' 41.2"	Δ = 22° 35' 44.0" (RT)	Θs = 1° 36' 41.2"
Ls = 225.00'	D = 1° 25' 56.6"	Ls = 225.00'
LT = 150.01'	L = 1,577.47'	LT = 150.01'
ST = 75.01'	T = 799.12'	ST = 75.01'
	R = 4,000.00'	
	SE = .05	

CURVE DATA FOR –Y18–

PI Sta 10+48.60
Δ = 45° 49' 10.1" (LT)
D = 49° 49' 20.7"
L = 91.97'
T = 48.60'
R = 115.00'

CURVE DATA FOR –Y20–

PI Sta 14+53.86	PI Sta 16+23.79	PI Sta 16+77.10	PI Sta 19+24.35
Δ = 5° 05' 18.8" (LT)	Δ = 3° 01' 45.6" (RT)	Δ = 0° 11' 02.1" (LT)	Δ = 10° 17' 09.7" (RT)
D = 2° 38' 25.3"	D = 4° 46' 28.7"	D = 0° 25' 33.6"	D = 12° 11' 26.1"
L = 192.72'	L = 63.45'	L = 43.18'	L = 84.38'
T = 96.42'	T = 31.73'	T = 21.59'	T = 42.30'
R = 2,170.00'	R = 1,200.00'	R = 13,450.00'	R = 470.00'

CURVE DATA FOR –Y20B–

PI Sta 13+53.77
Δ = 7° 38' 04.0" (LT)
D = 3° 22' 49.0"
L = 225.85'
T = 113.09'
R = 1,695.00'

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	10
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEE SHEET 40 FOR –L3– PROFILE
SEE SHEET 74 FOR –Y18– PROFILE
SEE SHEETS C2-1 THRU C2-5 FOR CULVERT PLANS
SEE SHEETS 2D-1 THRU 2D-7 FOR DRAINAGE DETAILS

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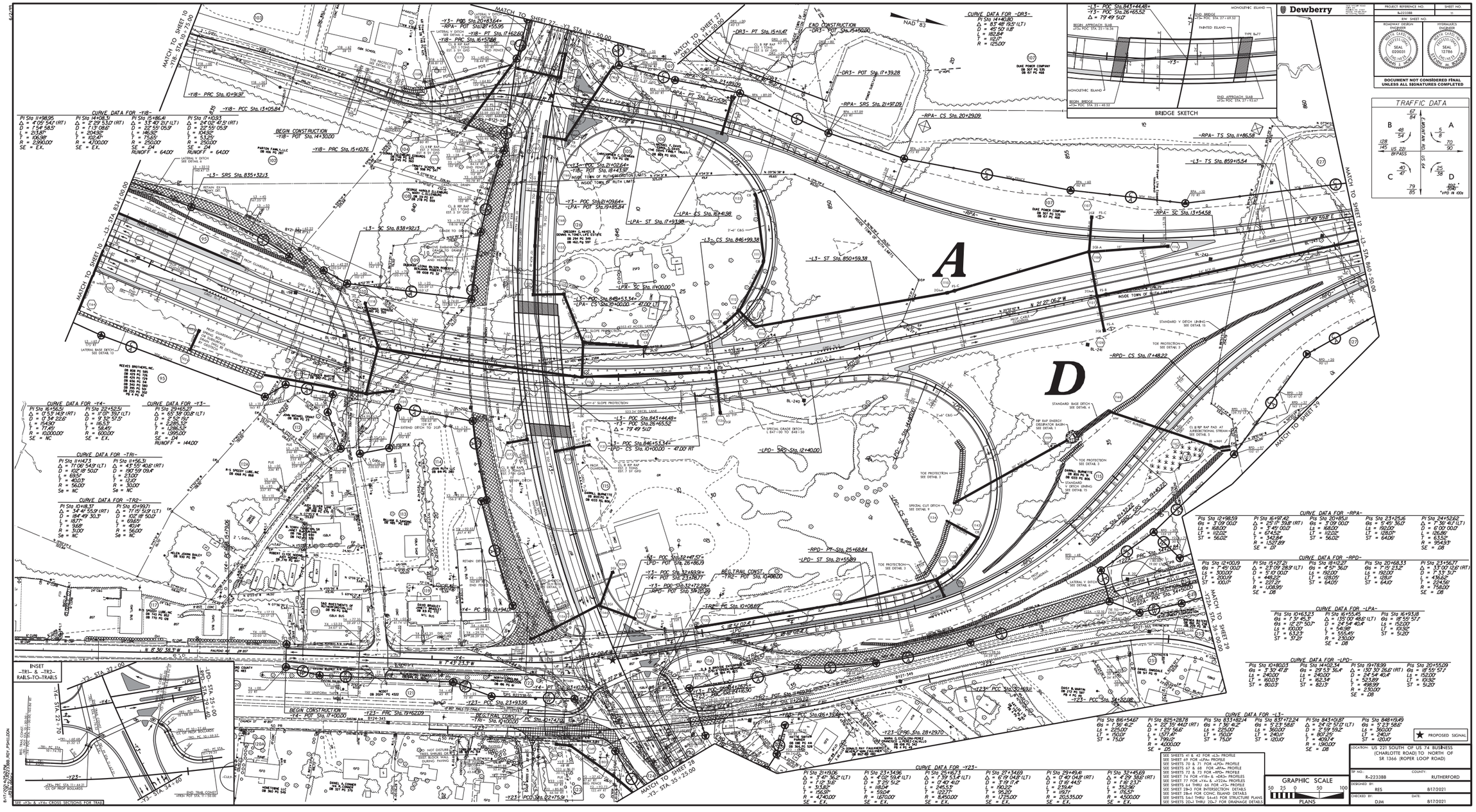
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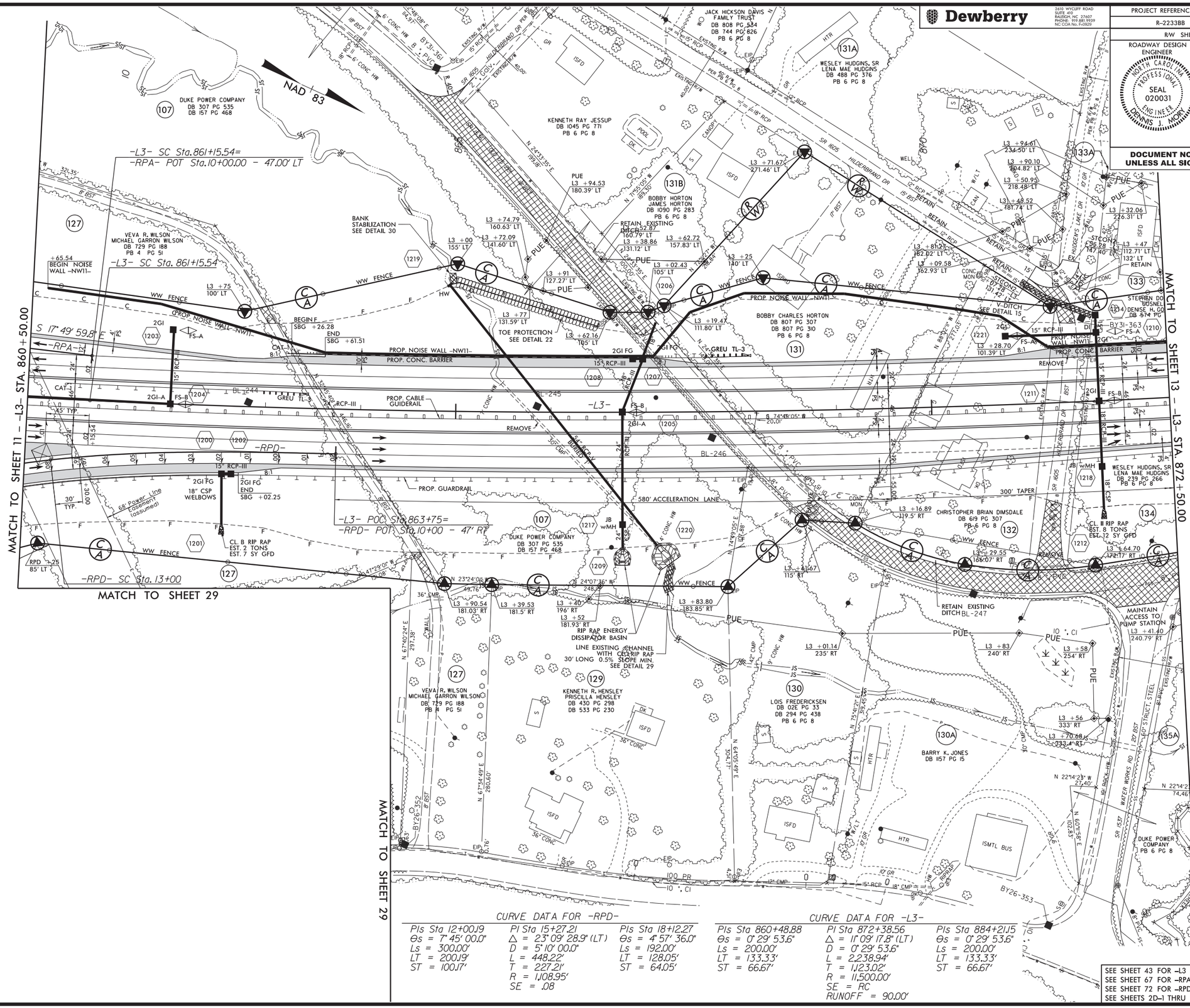
MATCH TO SHEET 27
MATCH TO SHEET 12
MATCH TO SHEET 29
MATCH TO SHEET 28
MATCH TO SHEET 23
NAD 83
A
D
BEGIN CONSTRUCTION
END CONSTRUCTION
BEG TRAIL CONST.
BRIDGE SKETCH
TRAFFIC DATA
INSET
-TR1- & -TR2-
RAILS-TO-TRAILS
CURVE DATA FOR -Y8-
CURVE DATA FOR -Y4-
CURVE DATA FOR -Y3-
CURVE DATA FOR -TR1-
CURVE DATA FOR -TR2-
CURVE DATA FOR -RPA-
CURVE DATA FOR -RPD-
CURVE DATA FOR -LPA-
CURVE DATA FOR -LPD-
CURVE DATA FOR -L3-
CURVE DATA FOR -DR3-
DUKE POWER COMPANY
DB 307 PG 535
DB 67 PG 468
SEE <Y3> & <Y4> CROSS SECTIONS FOR TRAIL
PROPOSED SIGNAL
GRAPHIC SCALE
PLANS
Dewberry
PROJECT REFERENCE NO.
SHEET NO.
R-2233BB
11
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
SEAL 020031
SEAL 12786
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
LOCATION: US 221 SOUTH OF US 74 BUSINESS (CHARLOTTE ROAD) TO NORTH OF SR 1366 (ROPER LOOP ROAD)
TIP NO.: R-2233BB
COUNTY: RUTHERFORD
DESIGNED BY: RES 8/17/2021
CHECKED BY: DJM
DATE: 8/17/2021

5/14/99



Dewberry

2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	12
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CURVE DATA FOR -RPD-

PIs Sta 12+00.19	PI Sta 15+27.21	PIs Sta 18+12.27
Θs = 1° 45' 00.0"	Δ = 23° 09' 28.9" (LT)	Θs = 4° 57' 36.0"
Ls = 300.00'	D = 5° 10' 00.0"	Ls = 192.00'
LT = 200.19'	L = 448.22'	LT = 128.05'
ST = 100.17'	T = 227.21'	ST = 64.05'
	R = 1,108.95'	
	SE = .08	

CURVE DATA FOR -L3-

PIs Sta 860+48.88	PI Sta 872+38.56	PIs Sta 884+21.15
Θs = 0° 29' 53.6"	Δ = 11° 09' 17.8" (LT)	Θs = 0° 29' 53.6"
Ls = 200.00'	D = 0° 29' 53.6"	Ls = 200.00'
LT = 133.33'	L = 2,238.94'	LT = 133.33'
ST = 66.67'	T = 1,123.02'	ST = 66.67'
	R = 11,500.00'	
	SE = RC	
	RUNOFF = 90.00'	

SEE SHEET 43 FOR -L3 PROFILE
SEE SHEET 67 FOR -RPA- PROFILE
SEE SHEET 72 FOR -RPD- PROFILE
SEE SHEETS 2D-1 THRU 2D-7 FOR DRAINAGE DETAILS

8/17/2021 4:25:27 PM
R2233BB_RDY_PSH12.DGN

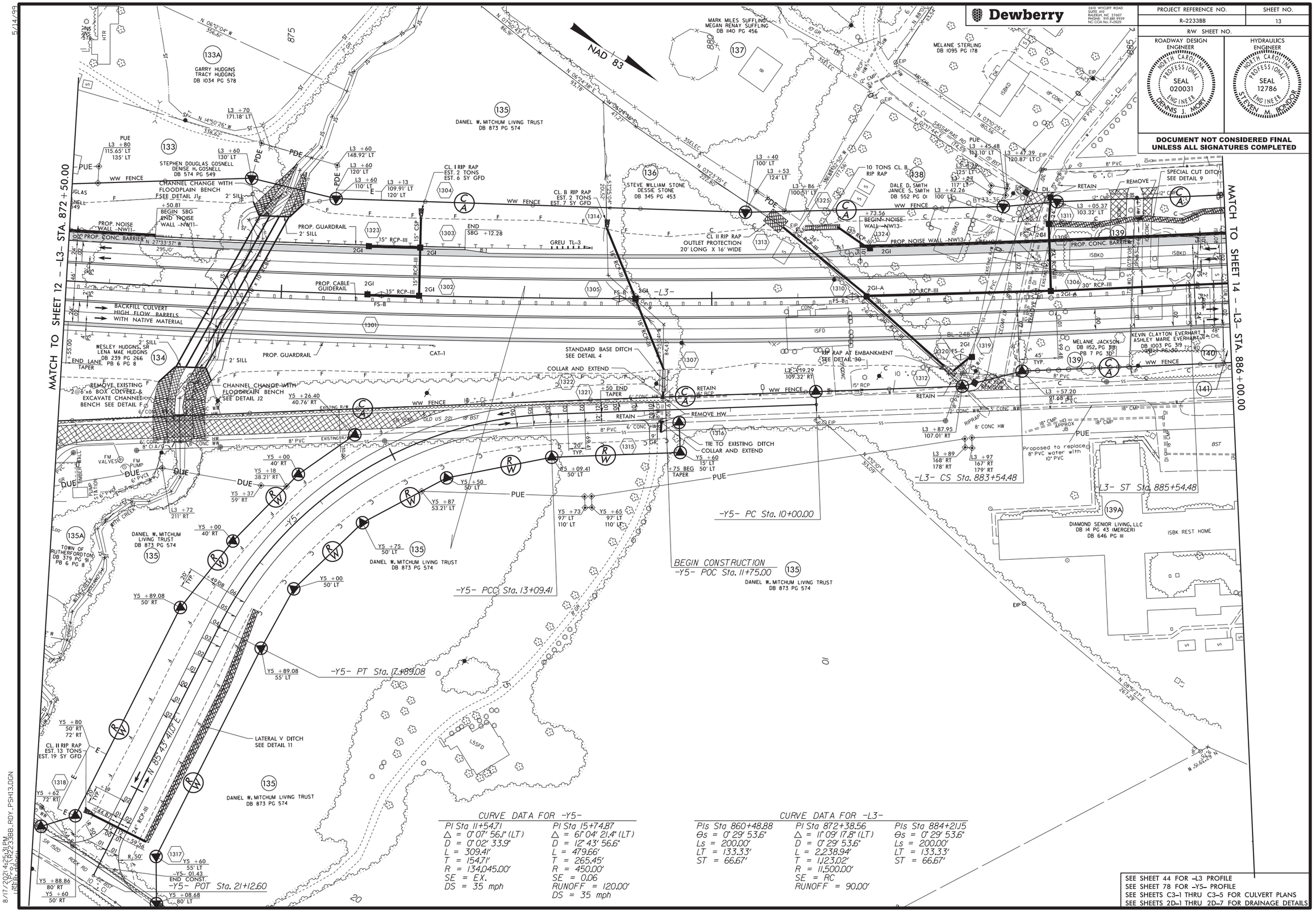
Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	13
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



CURVE DATA FOR -Y5-

PI Sta 11+54.71	PI Sta 15+74.87
Δ = 0° 07' 56.1" (LT)	Δ = 61° 04' 21.4" (LT)
D = 0° 02' 33.9"	D = 12° 43' 56.6"
L = 309.41'	L = 479.66'
T = 154.71'	T = 265.45'
R = 134,045.00'	R = 450.00'
SE = EX.	SE = 0.06
DS = 35 mph	RUNOFF = 120.00'
	DS = 35 mph

CURVE DATA FOR -L3-

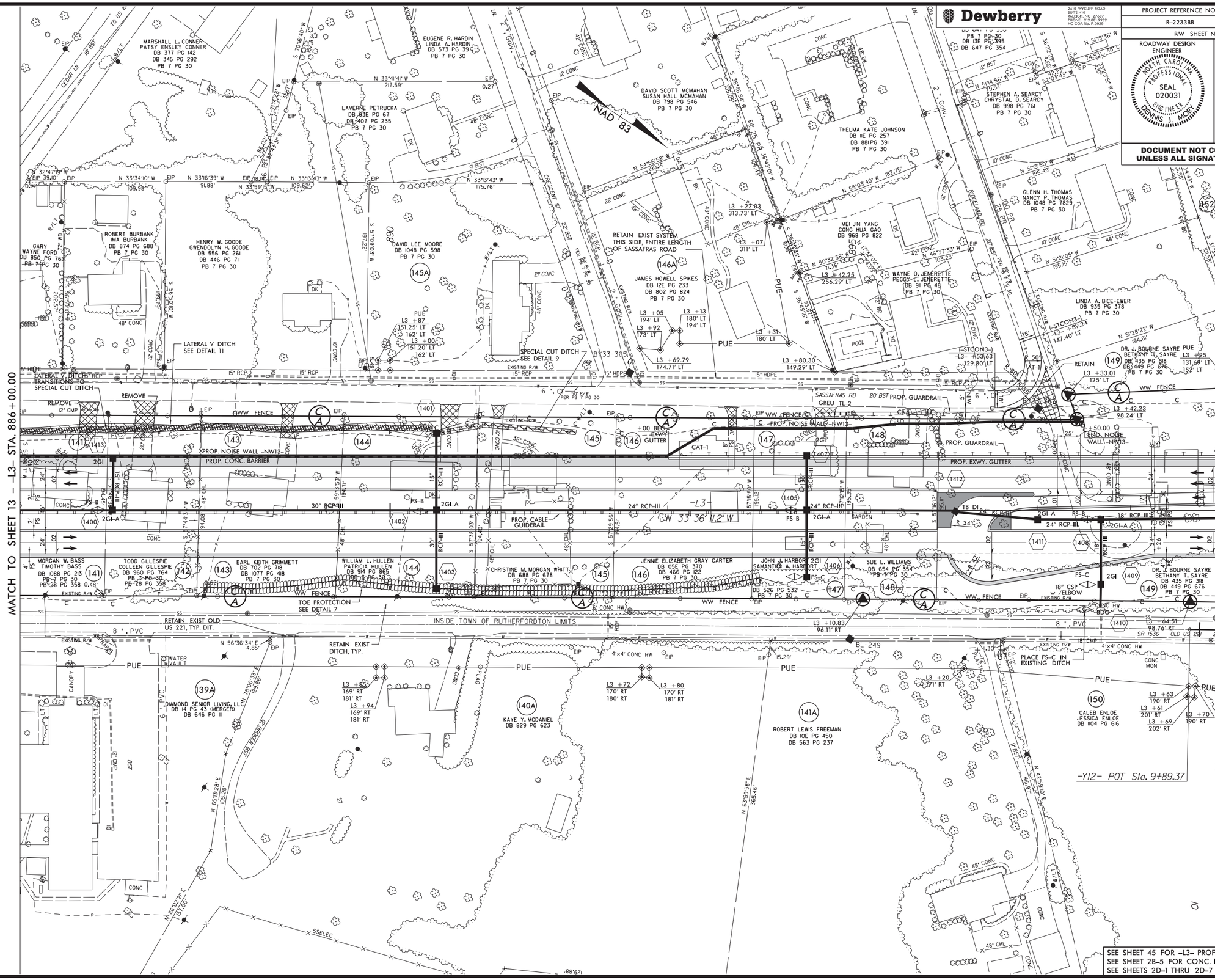
PIs Sta 860+48.88	PI Sta 872+38.56	PIs Sta 884+21.15
Θs = 0° 29' 53.6"	Δ = 11° 09' 17.8" (LT)	Θs = 0° 29' 53.6"
Ls = 200.00'	D = 0° 29' 53.6"	Ls = 200.00'
LT = 133.33'	L = 2,238.94'	LT = 133.33'
ST = 66.67'	T = 1,123.02'	ST = 66.67'
	R = 11,500.00'	
	SE = RC	
	RUNOFF = 90.00'	

SEE SHEET 44 FOR -L3 PROFILE
SEE SHEET 78 FOR -Y5- PROFILE
SEE SHEETS C3-1 THRU C3-5 FOR CULVERT PLANS
SEE SHEETS 2D-1 THRU 2D-7 FOR DRAINAGE DETAILS

5/14/99

8/17/2021 4:25:31 PM
R2233BB_RDY_PSH13.DGN
USER: gbowden

5/14/99



Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	14
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDS

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8/17/2021 4:25:35 PM
USER: cdavis
R-2233BB_RDY_PSH14.DGN

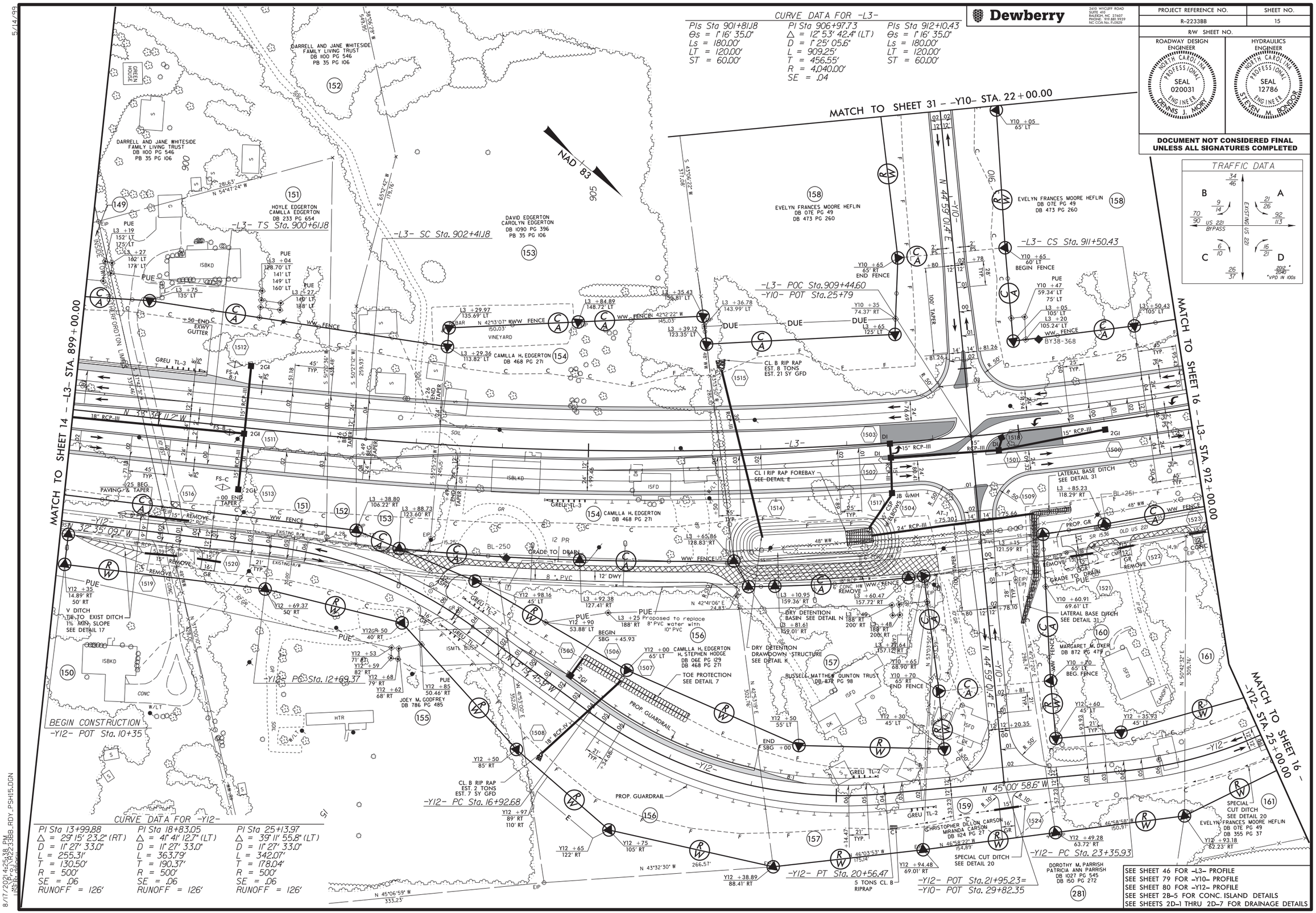
Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	15
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



CURVE DATA FOR -L3-

PIs Sta 901+81.18	PI Sta 906+97.73	PIs Sta 912+10.43
Θs = 1° 16' 35.0"	Δ = 12° 53' 42.4" (LT)	Θs = 1° 16' 35.0"
Ls = 180.00'	D = 1° 25' 05.6"	Ls = 180.00'
LT = 120.00'	L = 909.25'	LT = 120.00'
ST = 60.00'	T = 456.55'	ST = 60.00'
	R = 4,040.00'	
	SE = .04	

CURVE DATA FOR -Y12-

PI Sta 13+99.88	PI Sta 18+83.05	PI Sta 25+13.97
Δ = 29° 15' 23.2" (RT)	Δ = 41° 41' 12.7" (LT)	Δ = 39° 11' 55.8" (LT)
D = 11° 27' 33.0"	D = 11° 27' 33.0"	D = 11° 27' 33.0"
L = 255.31'	L = 363.79'	L = 342.07'
T = 130.50'	T = 190.37'	T = 178.04'
R = 500'	R = 500'	R = 500'
SE = .06	SE = .06	SE = .06
RUNOFF = 126'	RUNOFF = 126'	RUNOFF = 126'

5/14/99

8/17/2021 4:25:38 PM
USER: cbrock
FILE: R-2233BB_RDY_PSH15.DGN

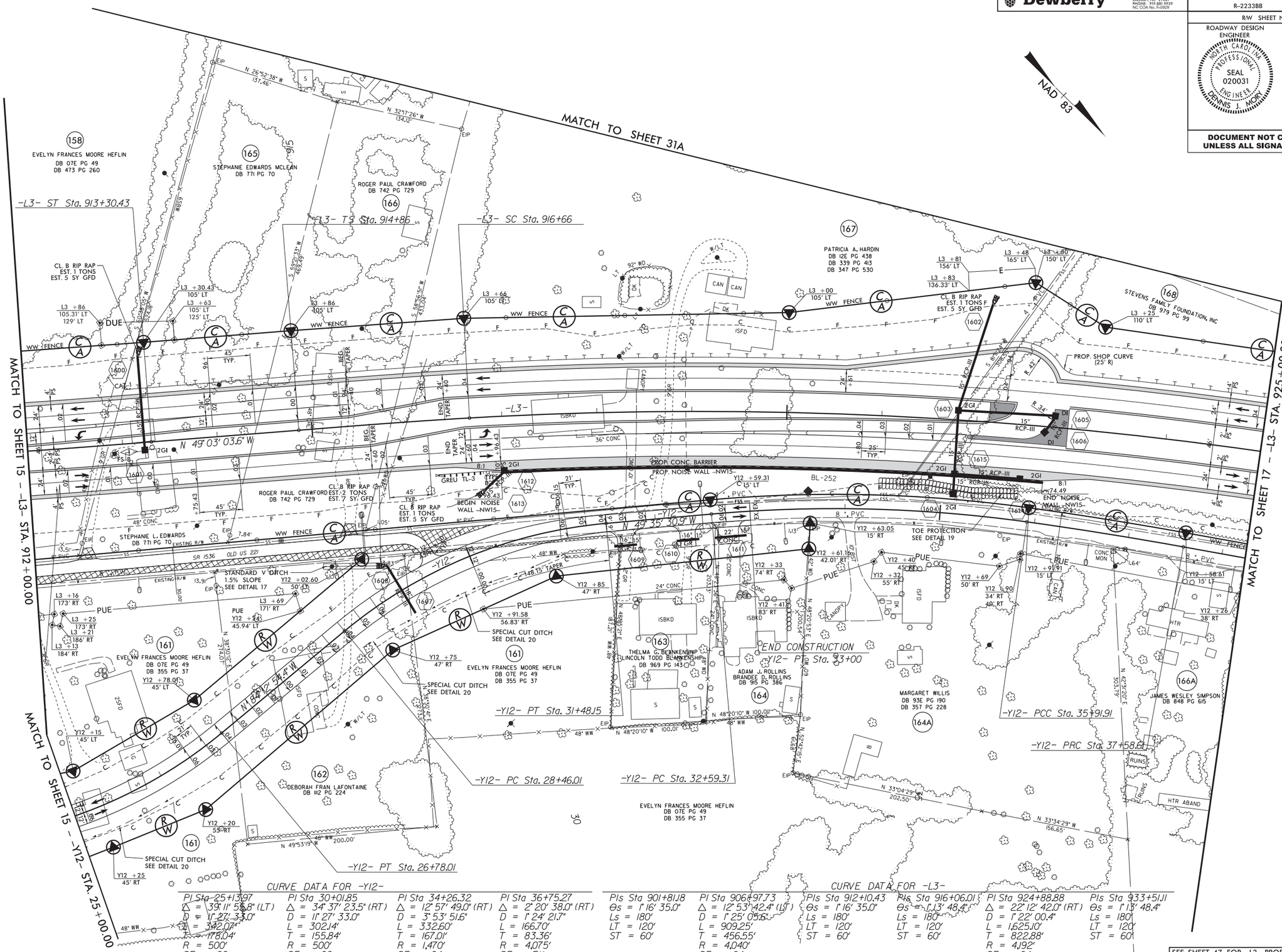
Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	16
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDOR

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



CURVE DATA FOR -Y12-

PI Sta 25+13.97	PI Sta 30+01.85	PI Sta 34+26.32	PI Sta 36+75.27
Δ = 39° 11' 58.8" (LT)	Δ = 34° 37' 23.5" (RT)	Δ = 12° 57' 49.0" (RT)	Δ = 2° 20' 38.0" (RT)
D = 11° 27' 33.0"	D = 11° 27' 33.0"	D = 3° 53' 51.6"	D = 1° 24' 21.7"
L = 342.07'	L = 302.14'	L = 332.60'	L = 166.70'
T = 178.04'	T = 155.84'	T = 167.01'	T = 83.36'
R = 500'	R = 500'	R = 1,470'	R = 4,075'
SE = .06	SE = .06	SE = .04	SE = EX.
RUNOFF = 126'	RUNOFF = 126'	RUNOFF = 84'	

CURVE DATA FOR -L3-

PIs Sta 901+81.18	PI Sta 906+97.73	PIs Sta 912+10.43	PIs Sta 916+06.01	PI Sta 924+88.88	PIs Sta 933+51.11
θs = 1° 16' 35.0"	Δ = 12° 53' 42.4" (LT)	θs = 1° 16' 35.0"	θs = 1° 13' 48.4"	Δ = 22° 12' 42.0" (RT)	θs = 1° 13' 48.4"
Ls = 180'	D = 1° 25' 05.6"	Ls = 180'	Ls = 180'	D = 1° 22' 00.4"	Ls = 180'
LT = 120'	L = 909.25'	LT = 120'	LT = 120'	L = 1,625.10'	LT = 120'
ST = 60'	T = 456.55'	ST = 60'	ST = 60'	T = 822.88'	ST = 60'
	R = 4,040'			R = 4,192'	
	SE = .04			SE = .04	

SEE SHEET 47 FOR -L3- PROFILE
SEE SHEET 80 FOR -Y12- PROFILE
SEE SHEET 2B-5 FOR CONC. ISLAND DETAILS
SEE SHEETS 2D-1 THRU 2D-7 FOR DRAINAGE DETAILS

8/17/2021 4:25:42 PM
USER: dbondor
FILE: R-2233BB_RDY_PSH16.DGN

5/14/99

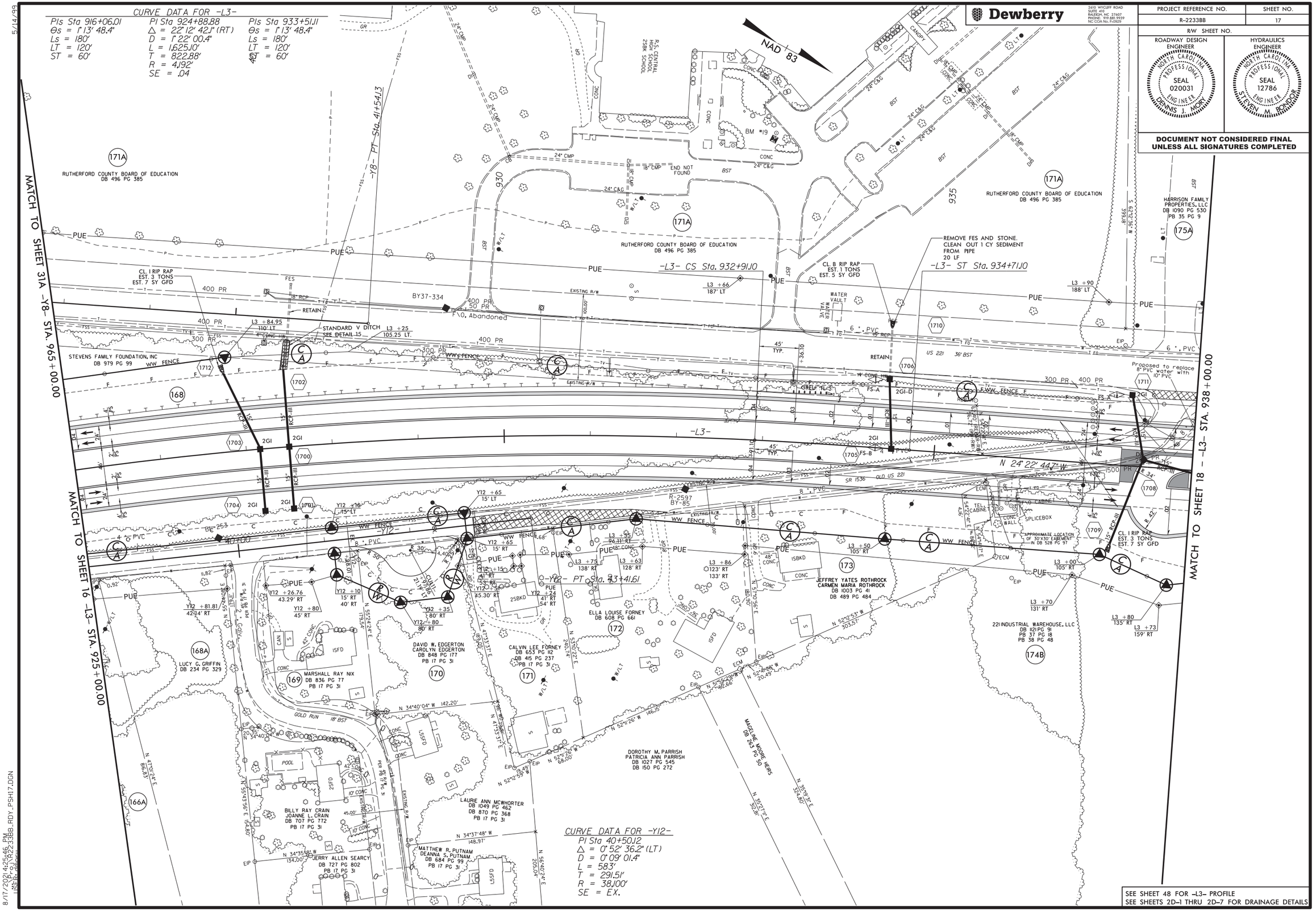
PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	17
R/W SHEET NO.	

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9929
NC COA No. F-0929

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDOR

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



SEE SHEET 48 FOR -L3- PROFILE
SEE SHEETS 2D-1 THRU 2D-7 FOR DRAINAGE DETAILS

8/17/2021 4:25:46 PM
USER: CWILLIAMS
R-2233BB_RDY_PSH17.DGN

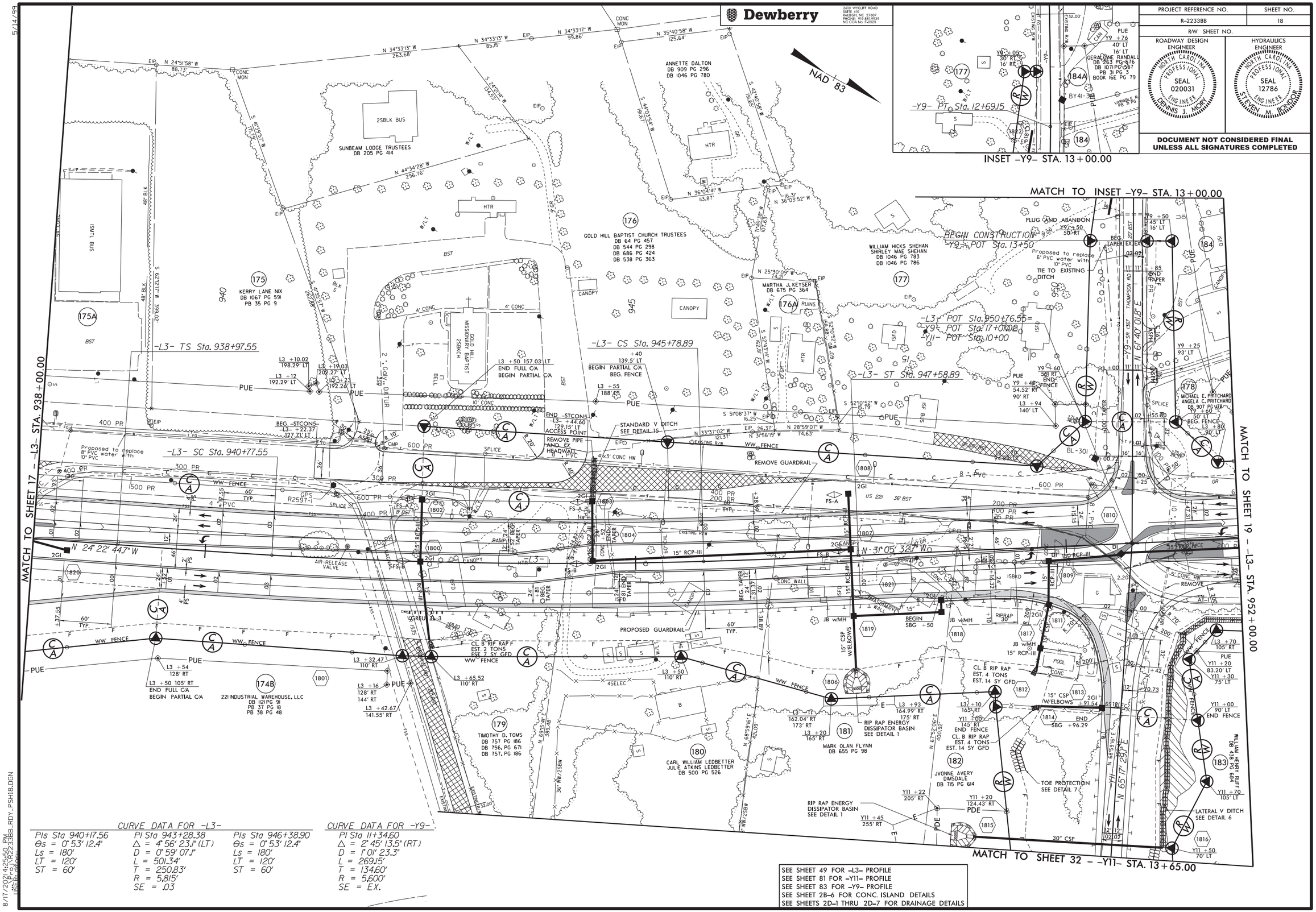
Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	18
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORRY

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



CURVE DATA FOR –L3–

PIs Sta 940+17.56	PI Sta 943+28.38	PIs Sta 946+38.90
Θs = 0° 53' 12.4"	Δ = 4° 56' 23.1" (LT)	Θs = 0° 53' 12.4"
Ls = 180'	D = 0° 59' 07.1"	Ls = 180'
LT = 120'	L = 501.34'	LT = 120'
ST = 60'	T = 250.83'	ST = 60'
	R = 5,815'	
	SE = .03	

CURVE DATA FOR –Y9–

PI Sta 11+34.60
Δ = 2° 45' 13.5" (RT)
D = 1° 01' 23.3"
L = 269.15'
T = 134.60'
R = 5,600'
SE = EX.

SEE SHEET 49 FOR –L3– PROFILE
SEE SHEET 81 FOR –Y11– PROFILE
SEE SHEET 83 FOR –Y9– PROFILE
SEE SHEETS 2B–6 FOR CONC. ISLAND DETAILS
SEE SHEETS 2D–1 THRU 2D–7 FOR DRAINAGE DETAILS

5/14/99

8/17/2021 4:25:50 PM
USER: dmorry
R-2233BB_RDY_PSH18.DGN

5/14/99

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	19
R/W SHEET NO.	

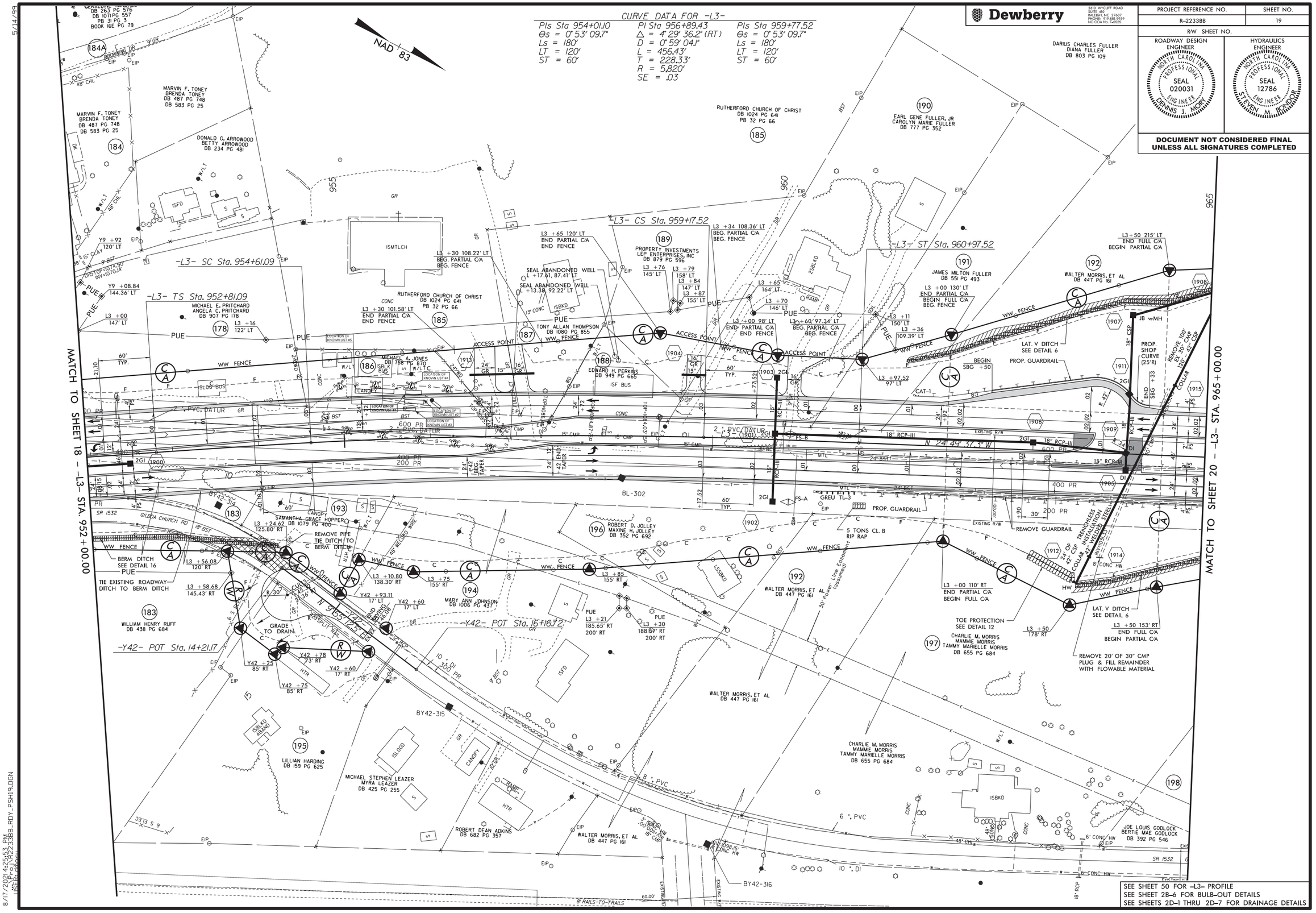
ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CURVE DATA FOR -L3-

PIs Sta 954+01.10	PI Sta 956+89.43	PIs Sta 959+77.52
Θs = 0° 53' 09.7"	Δ = 4° 29' 36.2" (RT)	Θs = 0° 53' 09.7"
Ls = 180'	D = 0° 59' 04.1"	Ls = 180'
LT = 120'	L = 456.43'	LT = 120'
ST = 60'	T = 228.33'	ST = 60'
	R = 5,820'	
	SE = .03	



SEE SHEET 50 FOR -L3- PROFILE
SEE SHEET 2B-6 FOR BULB-OUT DETAILS
SEE SHEETS 2D-1 THRU 2D-7 FOR DRAINAGE DETAILS

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USER: dpm
R2233BB_RDY_PSH19.DGN

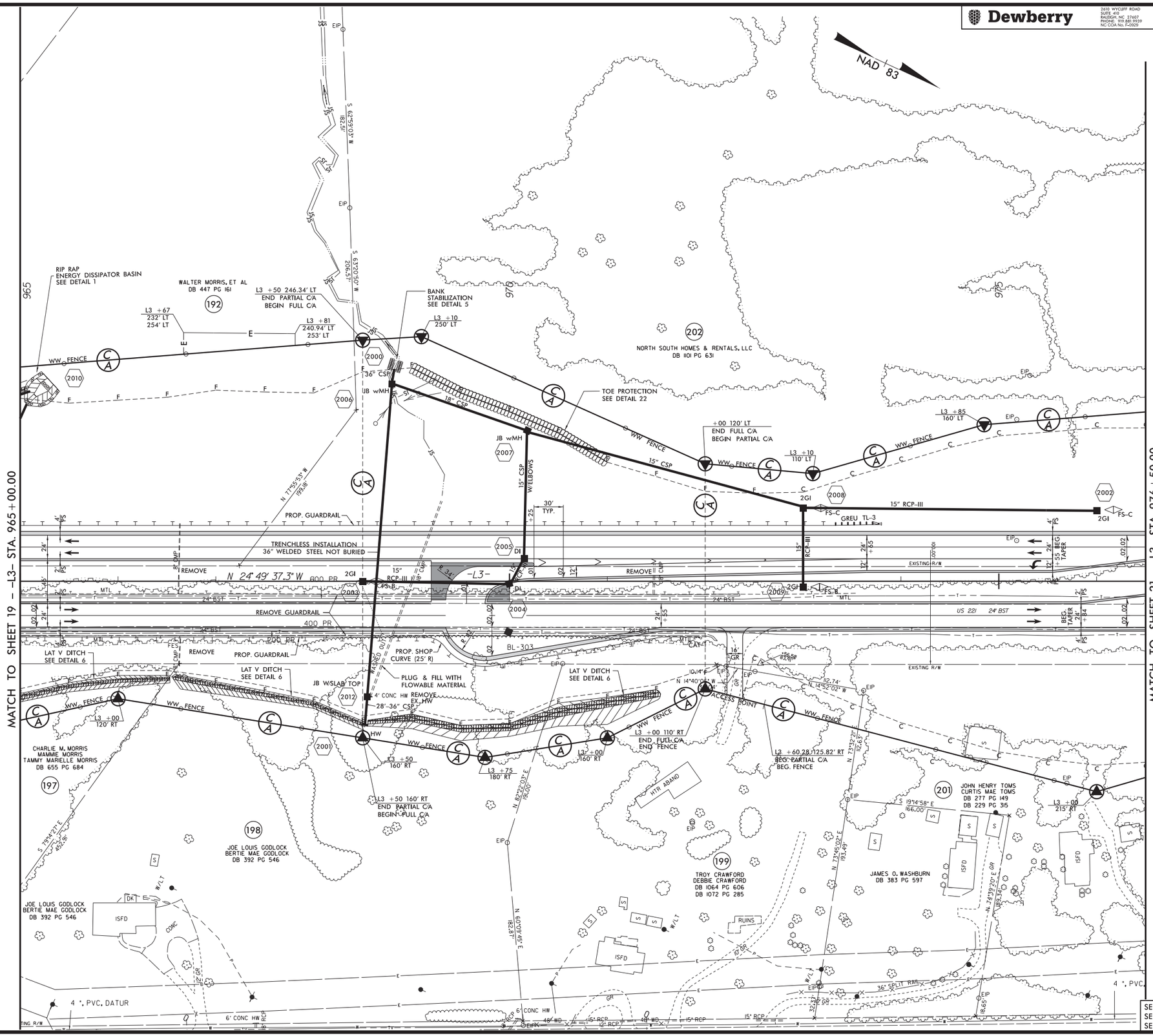
Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	20
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORAN

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDOR

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



SEE SHEET 51 FOR –L3– PROFILE
SEE SHEET 2B-7 FOR BULB-OUT DETAILS
SEE SHEETS 2D-1 THRU 2D-7 FOR DRAINAGE DETAILS

5/14/99

8/17/2021 4:25:57 PM
C:\PW_WORK\dot\r2233bb_rdy_psh20.dgn
USER: cpoole

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	21
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORRY

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDOR

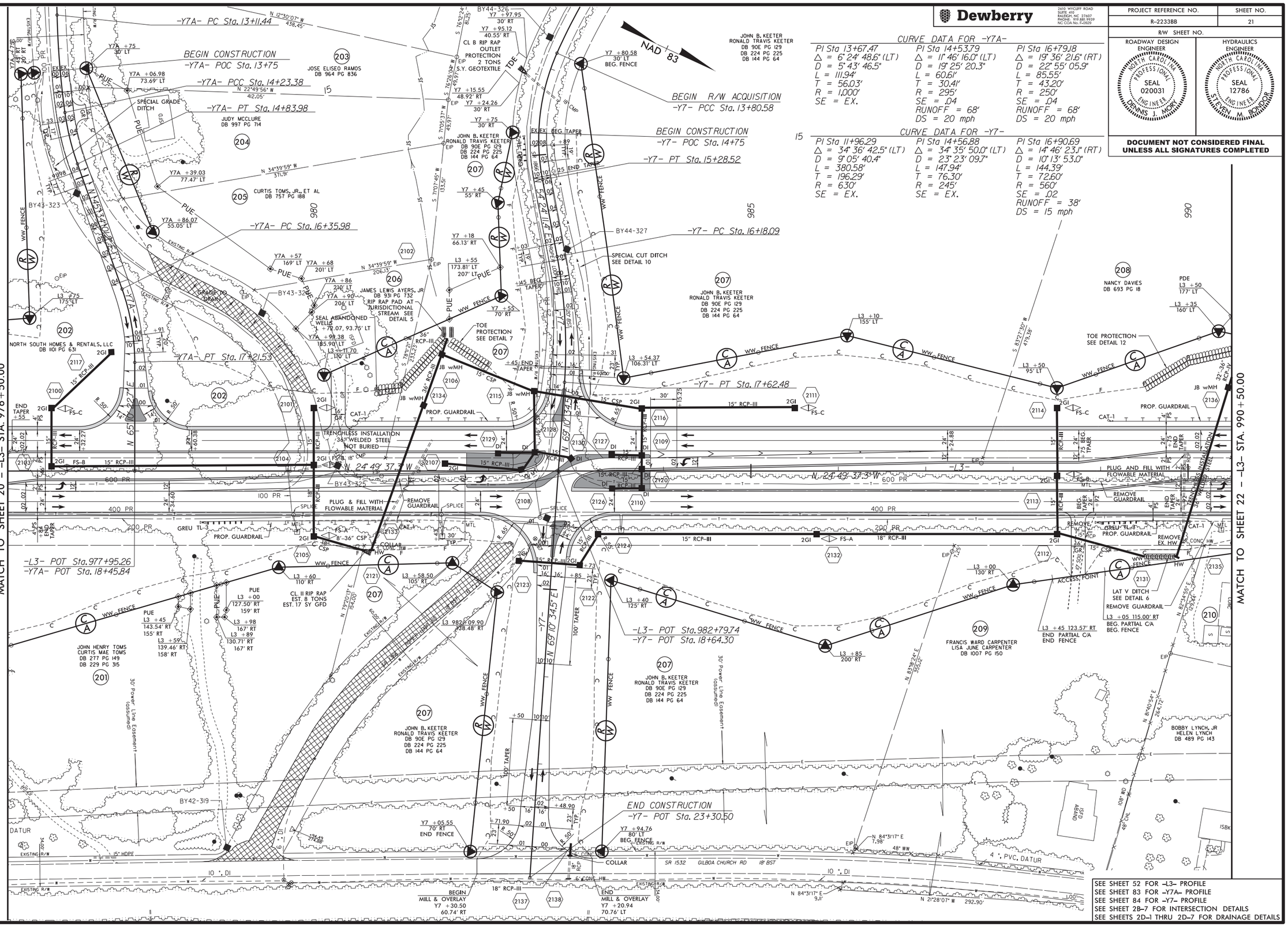
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CURVE DATA FOR -Y7A-

PI Sta 13+67.47	PI Sta 14+53.79	PI Sta 16+79.18
△ = 6° 24' 48.6" (LT)	△ = 11° 46' 16.0" (LT)	△ = 19° 36' 21.6" (RT)
D = 5° 43' 46.5"	D = 19° 25' 20.3"	D = 22° 55' 05.9"
L = 111.94'	L = 60.61'	L = 85.55'
T = 56.03'	T = 30.41'	T = 43.20'
R = 1,000'	R = 295'	R = 250'
SE = EX.	SE = .04	SE = .04
	RUNOFF = 68'	RUNOFF = 68'
	DS = 20 mph	DS = 20 mph

CURVE DATA FOR -Y7-

PI Sta 11+96.29	PI Sta 14+56.88	PI Sta 16+90.69
△ = 34° 36' 42.5" (LT)	△ = 34° 35' 50.0" (LT)	△ = 14° 46' 23.1" (RT)
D = 9° 05' 40.4"	D = 23° 23' 09.7"	D = 10° 13' 53.0"
L = 380.58'	L = 147.94'	L = 144.39'
T = 196.29'	T = 76.30'	T = 72.60'
R = 630'	R = 245'	R = 560'
SE = EX.	SE = EX.	SE = .02
		RUNOFF = 38'
		DS = 15 mph



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USER: gbondor

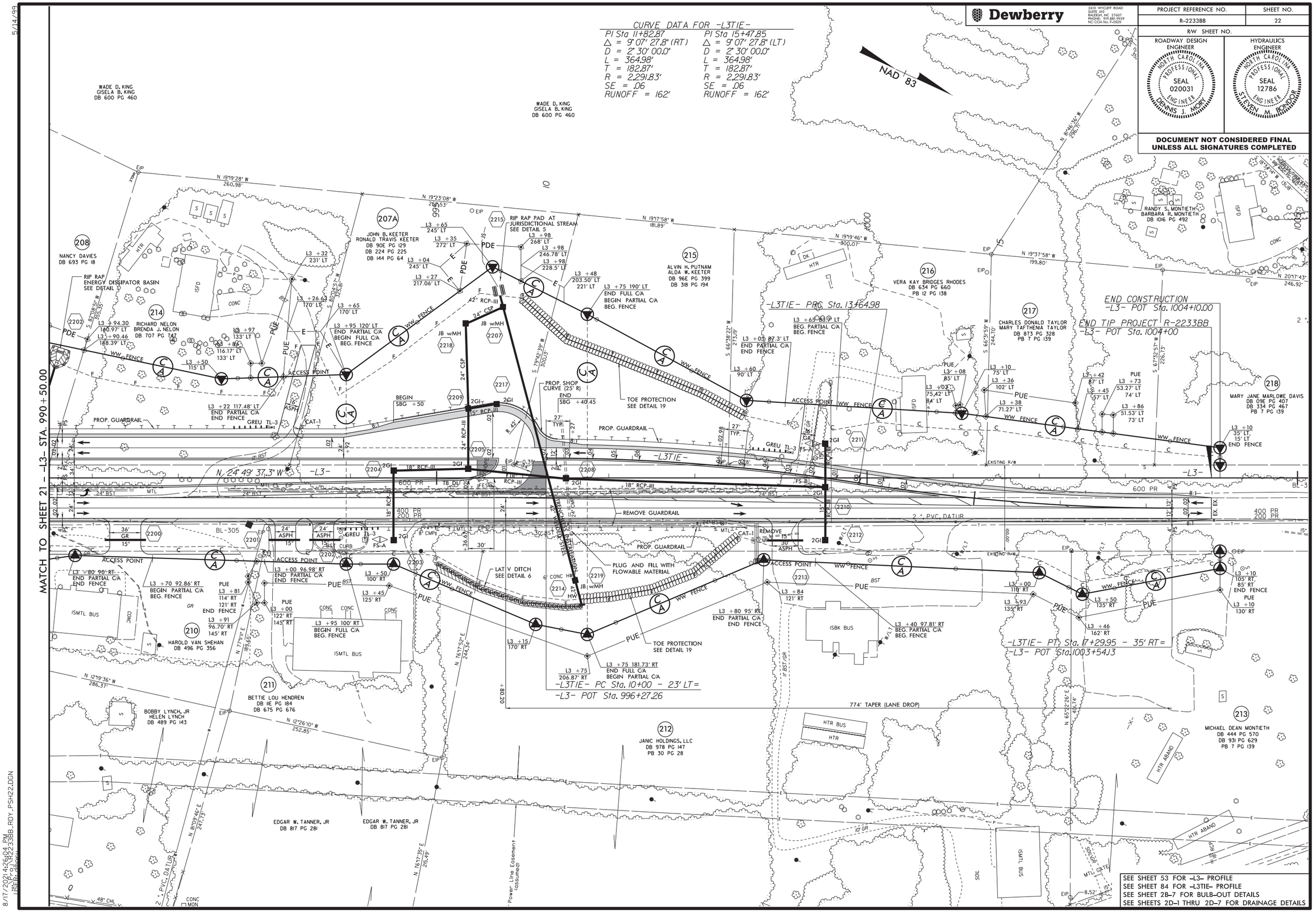
Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	22
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDOR

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



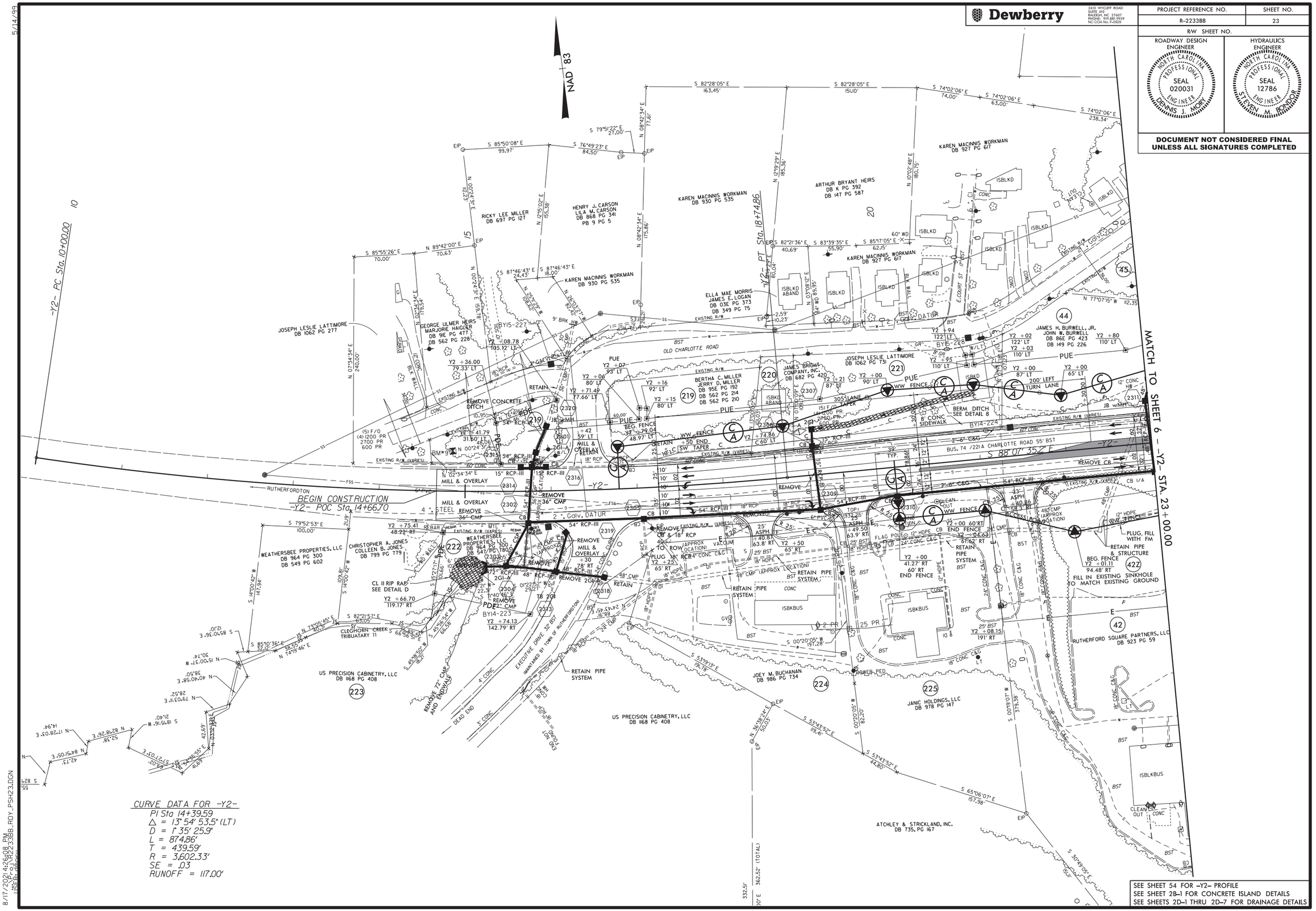
Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	23
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDOR

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



5/14/99

8/17/2021 4:26:08 PM
USER: cbondor
FILE: R-2233BB_RDY_PSH23.DGN

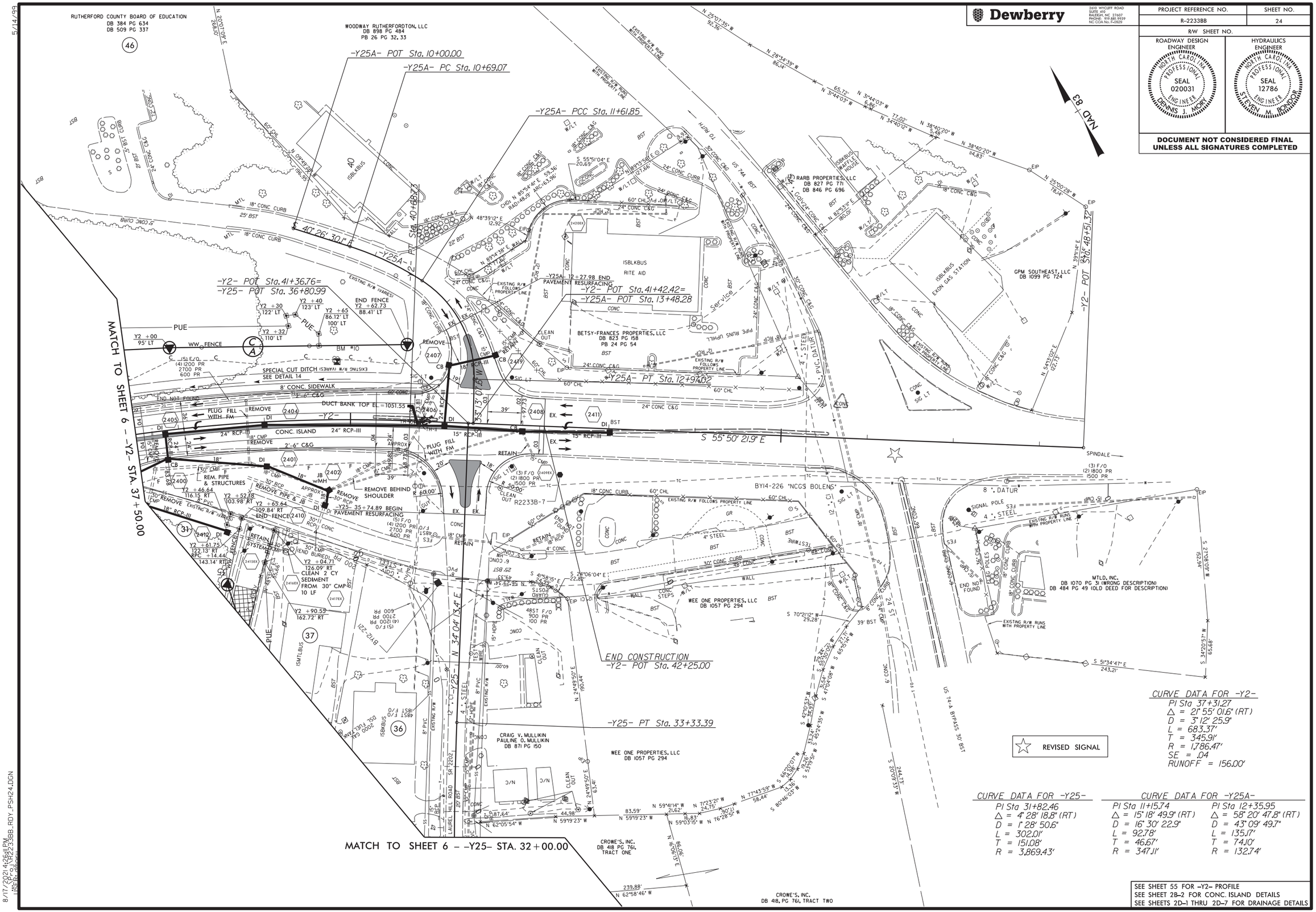
Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	24
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDOR

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



REVISED SIGNAL

CURVE DATA FOR -Y2-
PI Sta 37+31.27
Δ = 21° 55' 01.6" (RT)
D = 3° 12' 25.9"
L = 683.37'
T = 345.91'
R = 1,786.47'
SE = .04
RUNOFF = 156.00'

CURVE DATA FOR -Y25-
PI Sta 31+82.46
Δ = 4° 28' 18.8" (RT)
D = 1° 28' 50.6"
L = 302.01'
T = 151.08'
R = 3,869.43'

CURVE DATA FOR -Y25A-

PI Sta 11+15.74	PI Sta 12+35.95
Δ = 15° 18' 49.9" (RT)	Δ = 58° 20' 47.8" (RT)
D = 16° 30' 22.9"	D = 43° 09' 49.7"
L = 92.78'	L = 135.17'
T = 46.67'	T = 74.10'
R = 347.11'	R = 132.74'

SEE SHEET 55 FOR -Y2- PROFILE
SEE SHEET 2B-2 FOR CONC. ISLAND DETAILS
SEE SHEETS 2D-1 THRU 2D-7 FOR DRAINAGE DETAILS

5/14/99
8/17/2021 4:26:11 PM
R-2233BB_RDY_PSH24.DGN
USER: gbondor

5/14/99

Dewberry

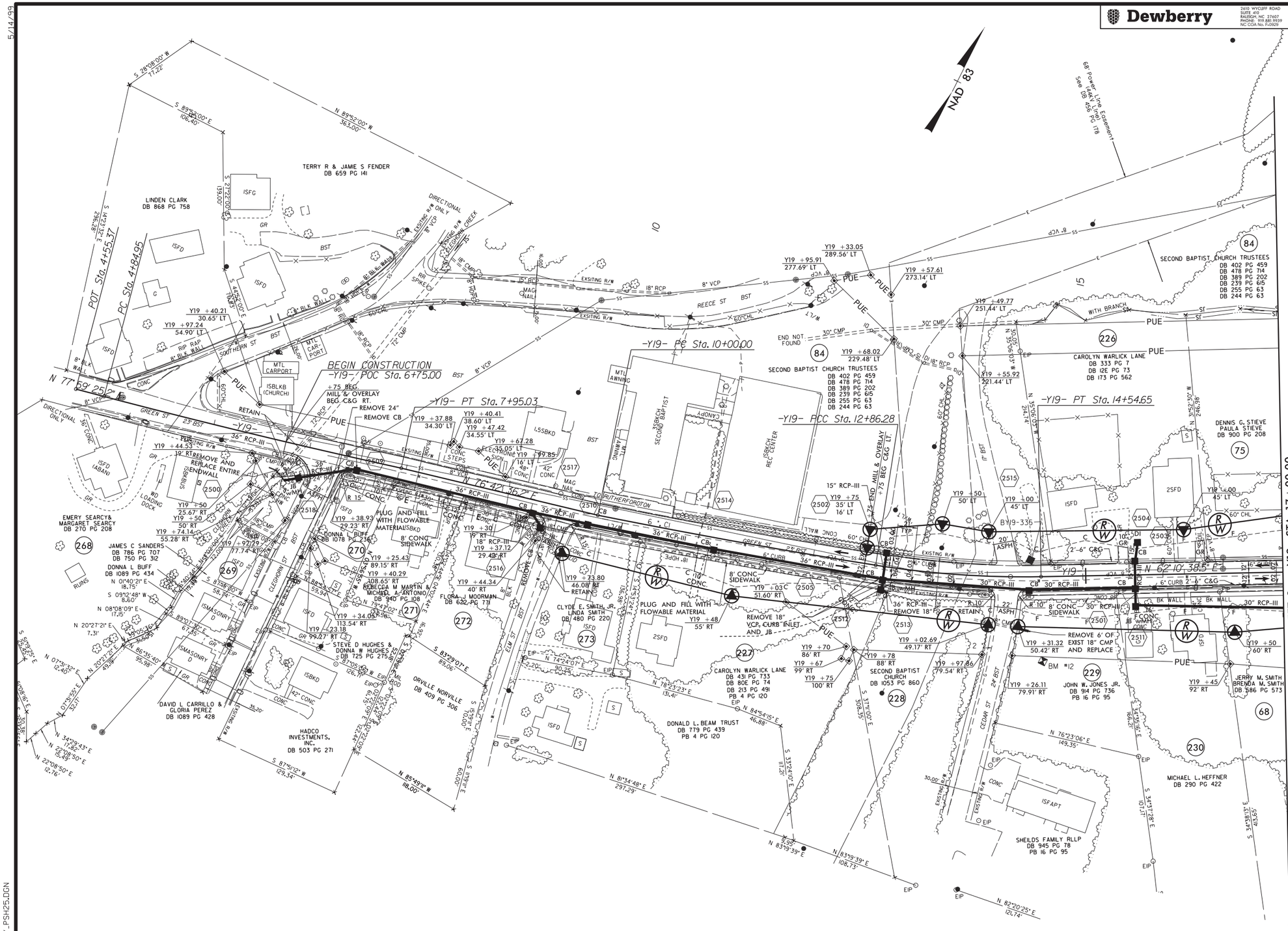
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9929
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	25
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDOR

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



CURVE DATA FOR -Y19-

PI Sta 6+40.01	PI Sta 11+43.16	PI Sta 13+70.68
Δ = 2° 22' 07.7" (LT)	Δ = 2° 20' 35.7" (LT)	Δ = 10° 06' 04.4" (LT)
D = 0° 45' 50.2"	D = 0° 49' 06.6"	D = 5° 59' 58.4"
L = 310.08'	L = 286.28'	L = 168.37'
T = 155.06'	T = 143.16'	T = 84.40'
R = 7,500.00'	R = 7,000.00'	R = 955.00'
SE = EX.	SE = EX.	SE = EX.

SEE SHEET 62 FOR -Y19- PROFILE
SEE SHEETS 2D-1 THRU 2D-7 FOR DRAINAGE DETAILS

8/17/2021 4:26:25 PM
R2233BB_RDY_PSH25.DGN
USER: cbondor

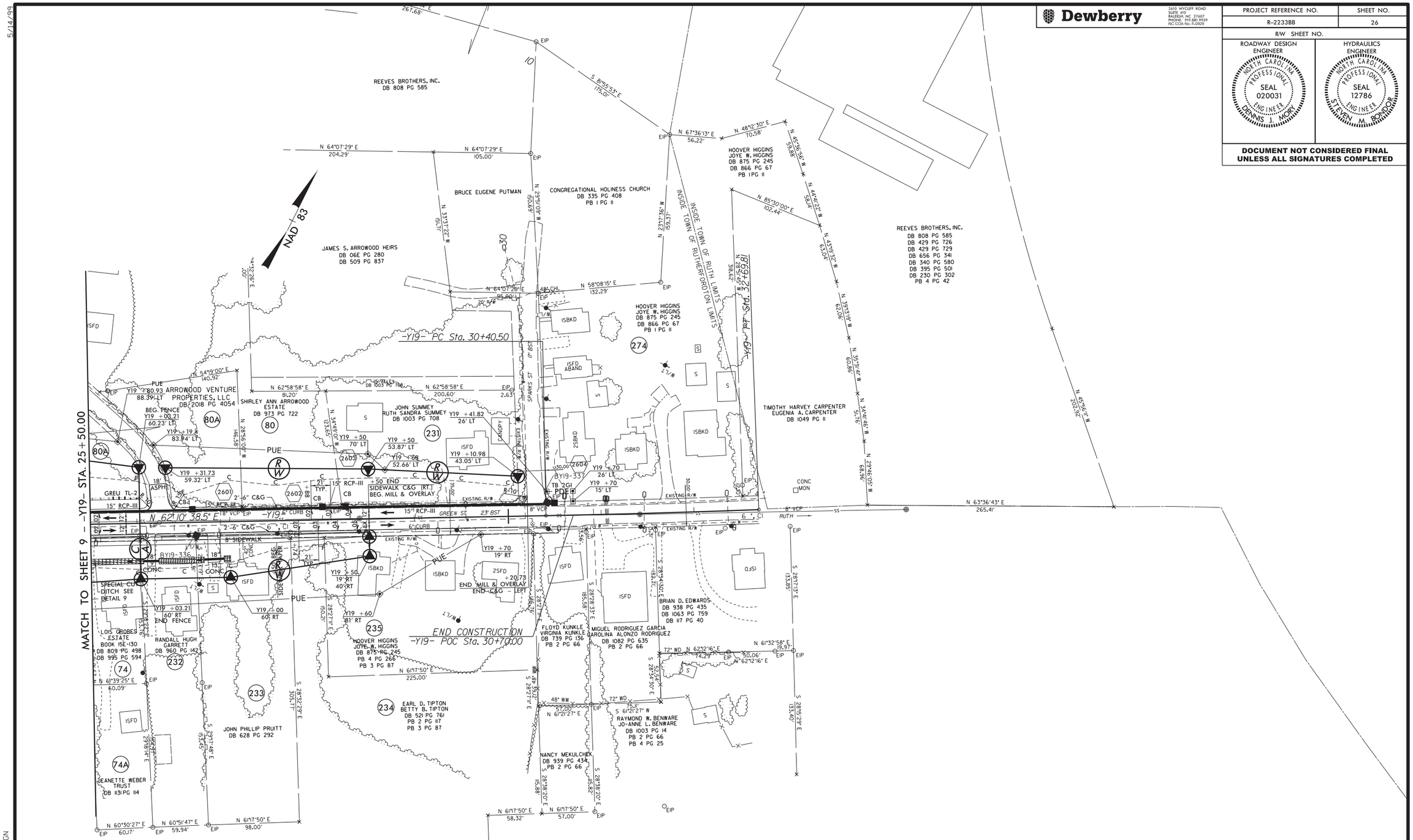
Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	26
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDOR

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



CURVE DATA FOR -Y19-
PI Sta 31+55.16
Δ = 1° 05' 41.6" (LT)
D = 0° 28' 38.9"
L = 229.31'
T = 114.66'
R = 12,000.00'
SE = NC

SEE SHEET 63 FOR -Y19- PROFILE
SEE SHEETS 2D-1 THRU 2D-7 FOR DRAINAGE DETAILS

5/14/99

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R-2233BB_RDY_PSH26.DGN

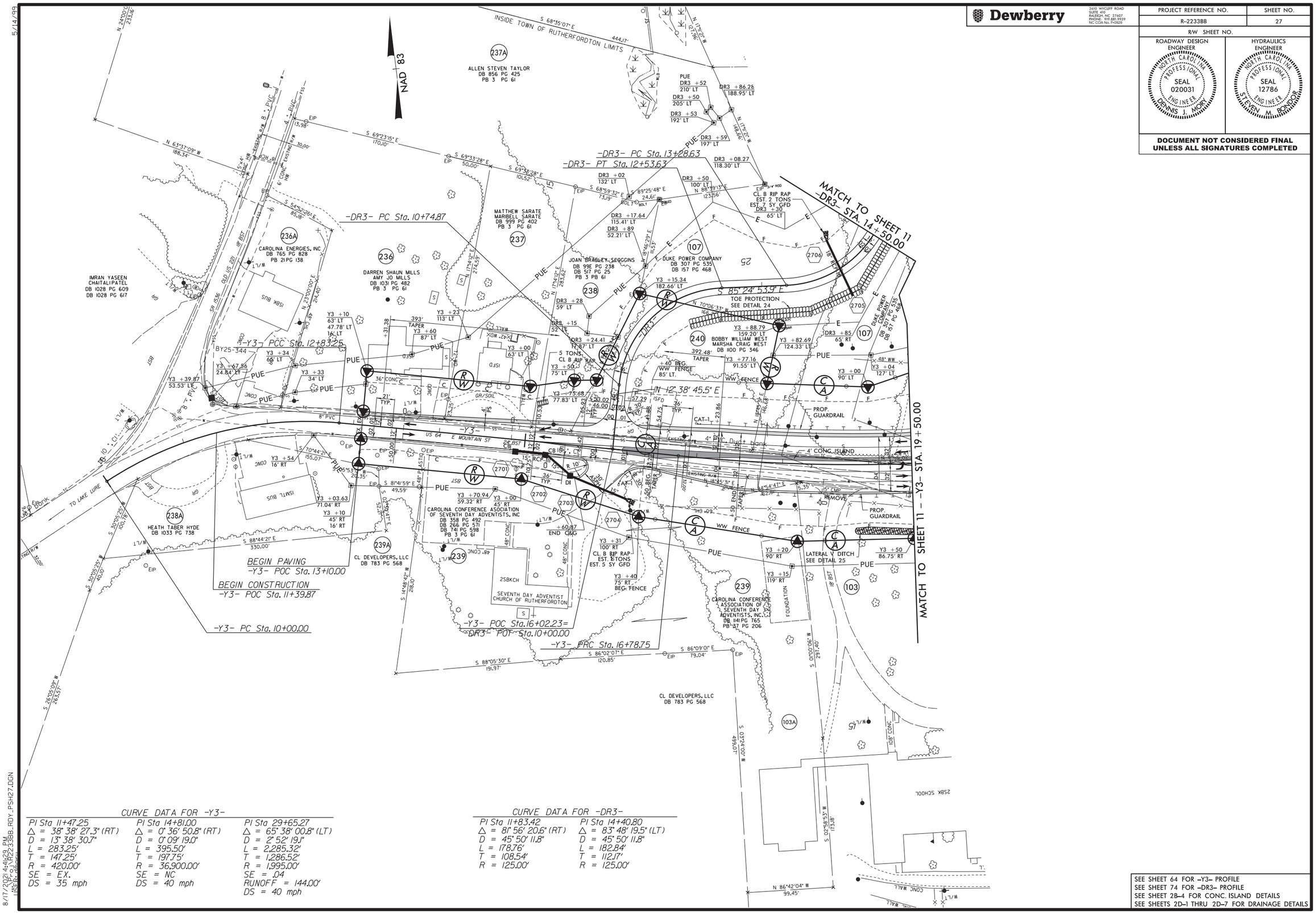
Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	27
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDOR

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



CURVE DATA FOR -Y3-

PI Sta 11+47.25	PI Sta 14+81.00	PI Sta 29+65.27
Δ = 38° 38' 27.3" (RT)	Δ = 0° 36' 50.8" (RT)	Δ = 65° 38' 00.8" (LT)
D = 13° 38' 30.7"	D = 0° 09' 19.0"	D = 2° 52' 19.1"
L = 283.25'	L = 395.50'	L = 2,285.32'
T = 147.25'	T = 197.75'	T = 1,286.52'
R = 420.00'	R = 36,900.00'	R = 1,995.00'
SE = EX.	SE = NC	SE = .04
DS = 35 mph	DS = 40 mph	RUNOFF = 144.00'
		DS = 40 mph

CURVE DATA FOR -DR3-

PI Sta 11+83.42	PI Sta 14+40.80
Δ = 81° 56' 20.6" (RT)	Δ = 83° 48' 19.5" (LT)
D = 45° 50' 11.8"	D = 45° 50' 11.8"
L = 178.76'	L = 182.84'
T = 108.54'	T = 112.17'
R = 125.00'	R = 125.00'

SEE SHEET 64 FOR -Y3- PROFILE
SEE SHEET 74 FOR -DR3- PROFILE
SEE SHEET 2B-4 FOR CONC. ISLAND DETAILS
SEE SHEETS 2D-1 THRU 2D-7 FOR DRAINAGE DETAILS

5/14/99
8/17/2021 4:41:22 PM
R2233BB_RDY_PSH27.DGN
USER: cbarnes

5/14/99

CURVE DATA FOR -Y3-
PI Sta 29+65.27
△ = 65° 38' 00.8" (LT)
D = 2° 52' 19.1"
L = 2,285.32'
T = 1,286.52'
R = 1,995.00'
SE = .04
RUNOFF = 144.00'

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	28
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORAN

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDS

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R2233BB_PROJ_2-33BB_RDY_PSH28.DGN
USER: dpowell

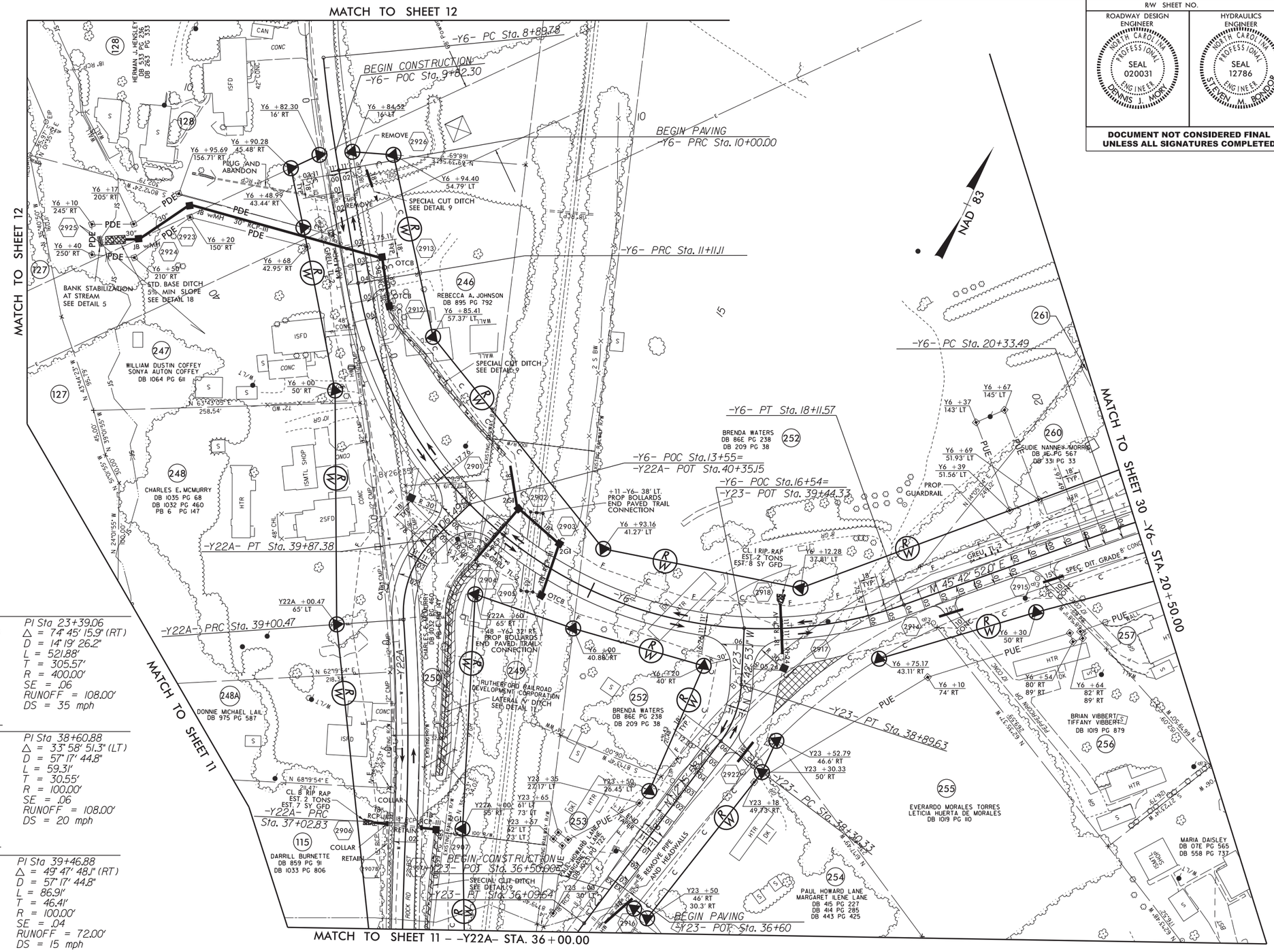
Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	29
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORRY

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDOR

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



CURVE DATA FOR -Y6-

PI Sta 10+55.56	PI Sta 15+90.64	PI Sta 23+39.06
△ = 0° 45' 51.3" (RT)	△ = 100° 20' 01.8" (LT)	△ = 74° 45' 15.9" (RT)
D = 0° 41' 16.2"	D = 14° 19' 26.2"	D = 14° 19' 26.2"
L = 111.11'	L = 700.46'	L = 521.88'
T = 55.56'	T = 479.53'	T = 305.57'
R = 8,330.00'	R = 400.00'	R = 400.00'
SE = EX.	SE = .06	SE = .06
DS = 35 mph	RUNOFF = 108.00'	RUNOFF = 108.00'
	DS = 35 mph	DS = 35 mph

CURVE DATA FOR -Y23-

PI Sta 32+45.69	PI Sta 35+18.06	PI Sta 38+60.88
△ = 4° 29' 38.6" (RT)	△ = 30° 01' 05.5" (RT)	△ = 33° 58' 51.3" (LT)
D = 1° 16' 23.7"	D = 16° 00' 15.9"	D = 57° 17' 44.8"
L = 352.96'	L = 187.56'	L = 59.31'
T = 176.57'	T = 95.99'	T = 30.55'
R = 4,500.00'	R = 358.00'	R = 100.00'
SE = EX.	SE = EX.	SE = .06
DS = 35 mph	DS = 20 mph	RUNOFF = 108.00'
		DS = 20 mph

CURVE DATA FOR -Y22A-

PI Sta 35+65.41	PI Sta 38+01.76	PI Sta 39+46.88
△ = 4° 35' 36.2" (RT)	△ = 6° 44' 25.9" (LT)	△ = 49° 47' 48.1" (RT)
D = 1° 40' 13.6"	D = 3° 24' 37.7"	D = 57° 17' 44.8"
L = 274.98'	L = 197.64'	L = 86.91'
T = 137.56'	T = 98.94'	T = 46.41'
R = 3,430.00'	R = 1,680.00'	R = 100.00'
SE = EX.	SE = EX.	SE = .04
DS = 35 mph	DS = 35 mph	RUNOFF = 72.00'
		DS = 15 mph

CURVE DATA FOR -Y23A-

PI Sta 44+55.25	PI Sta 45+75.10	PI Sta 46+84.50	PI Sta 48+15.42
△ = 1° 32' 38.7" (RT)	△ = 6° 33' 34.4" (RT)	△ = 19° 55' 51.0" (RT)	△ = 35° 04' 00.6" (RT)
D = 1° 09' 35.4"	D = 6° 09' 39.0"	D = 17° 54' 17.8"	D = 23° 52' 23.7"
L = 133.13'	L = 106.47'	L = 111.31'	L = 146.89'
T = 66.57'	T = 53.29'	T = 56.23'	T = 75.83'
R = 4,940.00'	R = 930.00'	R = 320.00'	R = 240.00'
SE = EX.	SE = EX.	SE = EX.	SE = EX.

SEE SHEETS 75 & 76 FOR -Y6- PROFILE
SEE SHEET 77 FOR -Y22A- PROFILE
SEE SHEET 77 FOR -Y23- PROFILE
SEE SHEETS 2D-1 THRU 2D-7 FOR DRAINAGE DETAILS

5/14/99

8/17/2021 4:26:28 PM
R2233BB_RDY_PSH29.DGN
USER: cwolf

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	30
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORRY

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDOR

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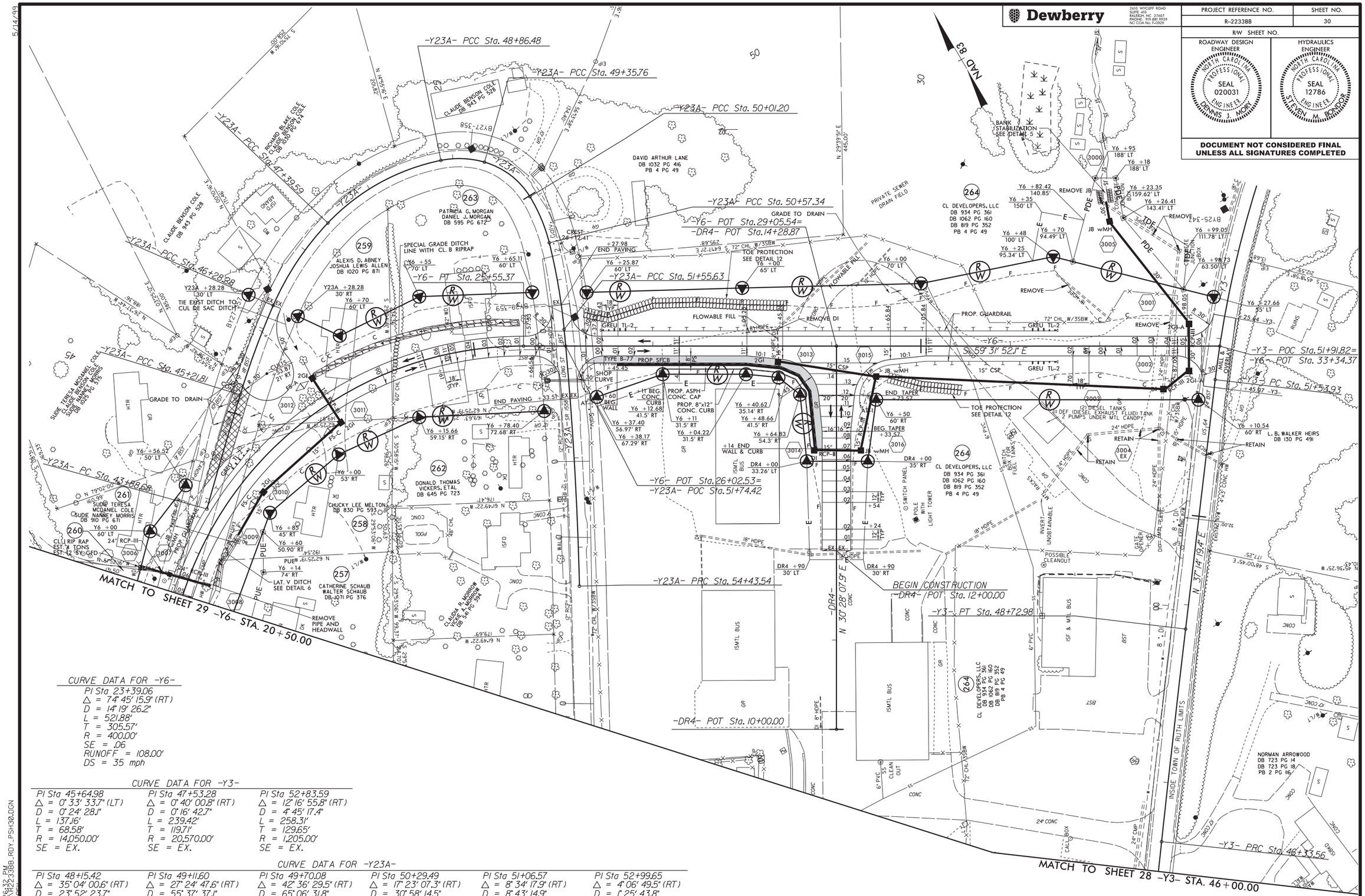

CURVE DATA FOR -Y6-

PI Sta 23+39.06
△ = 74° 45' 15.9" (RT)
D = 14° 19' 26.2"
L = 521.88'
T = 305.57'
R = 400.00'
SE = .06
RUNOFF = 108.00'
DS = 35 mph

CURVE DATA FOR -Y3-

PI Sta 45+64.98	PI Sta 47+53.28	PI Sta 52+83.59
△ = 0° 33' 33.7" (LT)	△ = 0° 40' 00.8" (RT)	△ = 12° 16' 55.8" (RT)
D = 0° 24' 28.1"	D = 0° 16' 42.7"	D = 4° 45' 17.4"
L = 137.16'	L = 239.42'	L = 258.31'
T = 68.58'	T = 119.71'	T = 129.65'
R = 14,050.00'	R = 20,570.00'	R = 1,205.00'
SE = EX.	SE = EX.	SE = EX.

CURVE DATA FOR -Y23A-

PI Sta 48+15.42	PI Sta 49+11.60	PI Sta 49+70.08	PI Sta 50+29.49	PI Sta 51+06.57	PI Sta 52+99.65
△ = 35° 04' 00.6" (RT)	△ = 27° 24' 47.6" (RT)	△ = 42° 36' 29.5" (RT)	△ = 17° 23' 07.3" (RT)	△ = 8° 34' 17.9" (RT)	△ = 4° 06' 49.5" (RT)
D = 23° 52' 23.7"	D = 55° 37' 37.1"	D = 65° 06' 31.8"	D = 30° 58' 14.5"	D = 8° 43' 14.9"	D = 1° 25' 43.8"
L = 146.89'	L = 49.28'	L = 65.44'	L = 56.13'	L = 98.29'	L = 287.91'
T = 75.83'	T = 25.12'	T = 34.32'	T = 28.28'	T = 49.24'	T = 144.02'
R = 240.00'	R = 103.00'	R = 88.00'	R = 185.00'	R = 657.00'	R = 4,010.00'
SE = EX.	SE = EX.	SE = EX.	SE = EX.	SE = EX.	SE = EX.

SEE SHEET 76 FOR -DR4- PROFILE
SEE SHEETS 75 & 76 FOR -Y6- PROFILE
SEE SHEETS 2D-1 THRU 2D-7 FOR DRAINAGE DETAILS
SEE SHEETS W-1 THRU W-11 FOR RETAINING WALL PLANS

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Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	31
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDOR

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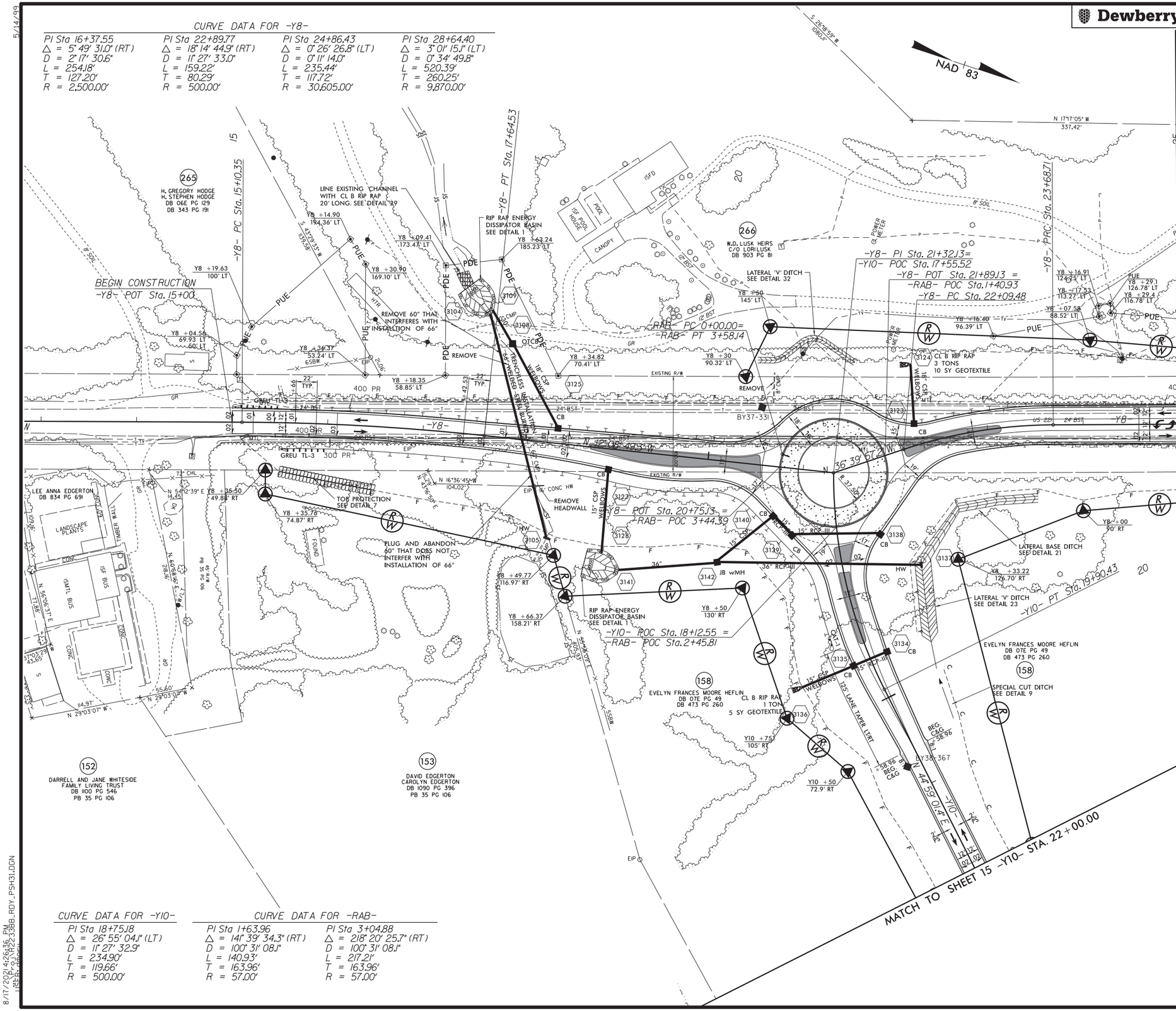

CURVE DATA FOR -Y8-

PI Sta 16+37.55	PI Sta 22+89.77	PI Sta 24+86.43	PI Sta 28+64.40
Δ = 5° 49' 31.0" (RT)	Δ = 18° 14' 44.9" (RT)	Δ = 0° 26' 26.8" (LT)	Δ = 3° 01' 15.1" (LT)
D = 2° 17' 30.6"	D = 11° 27' 33.0"	D = 0° 11' 14.0"	D = 0° 34' 49.8"
L = 254.18'	L = 159.22'	L = 235.44'	L = 520.39'
T = 127.20'	T = 80.29'	T = 117.72'	T = 260.25'
R = 2,500.00'	R = 500.00'	R = 30,605.00'	R = 9,870.00'

CURVE DATA FOR -Y10-

PI Sta 18+75.18
Δ = 26° 55' 04.1" (LT)
D = 11° 27' 32.9"
L = 234.90'
T = 119.66'
R = 500.00'

CURVE DATA FOR -RAB-

PI Sta 1+63.96	PI Sta 3+04.88
Δ = 141° 39' 34.3" (RT)	Δ = 218° 20' 25.7" (RT)
D = 100° 31' 08.1"	D = 100° 31' 08.1"
L = 140.93'	L = 217.21'
T = 163.96'	T = 163.96'
R = 57.00'	R = 57.00'

SEE SHEET 78 & 79 FOR -Y8- PROFILE
SEE SHEET 79 FOR -Y10- PROFILE
SEE SHEET 79 FOR -RAB- PROFILE
SEE SHEETS 2D-1 THRU 2D-7 FOR DRAINAGE DETAILS

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R-2233BB_RDY_PSH31.DGN

5/14/99

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	31A
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORRY

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDOR

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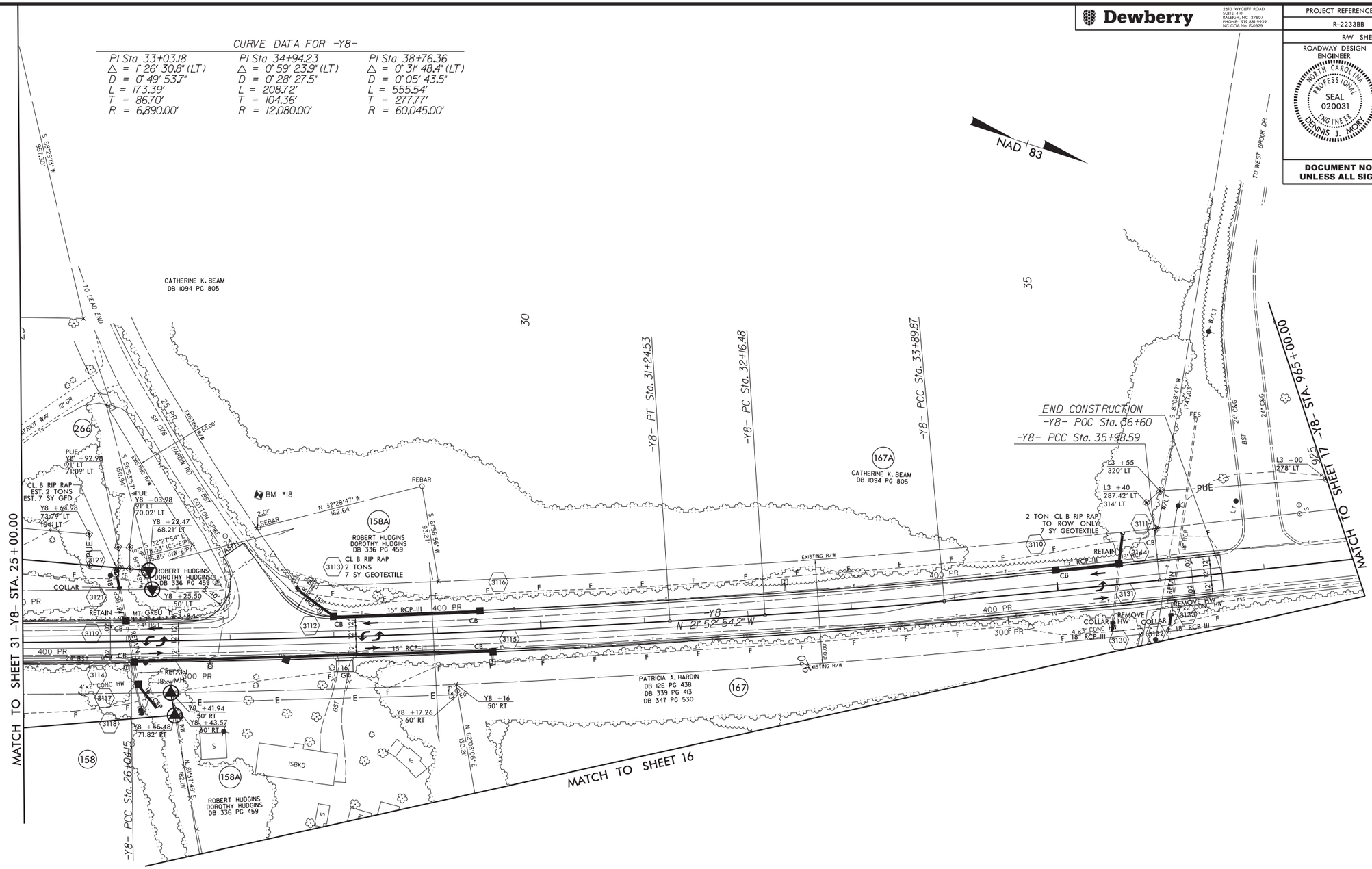
CURVE DATA FOR -Y8-

PI Sta 33+03.18	PI Sta 34+94.23	PI Sta 38+76.36
△ = 1° 26' 30.8" (LT)	△ = 0° 59' 23.9" (LT)	△ = 0° 31' 48.4" (LT)
D = 0° 49' 53.7"	D = 0° 28' 27.5"	D = 0° 05' 43.5"
L = 173.39'	L = 208.72'	L = 555.54'
T = 86.70'	T = 104.36'	T = 277.77'
R = 6,890.00'	R = 12,080.00'	R = 60,045.00'



SEE SHEETS 78 & 79 FOR -Y8- PROFILE
SEE SHEETS 2D-1 THRU 2D-7 FOR DRAINAGE DETAILS

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R-2233BB_RDY_PSH31A.DGN
USER: cjones

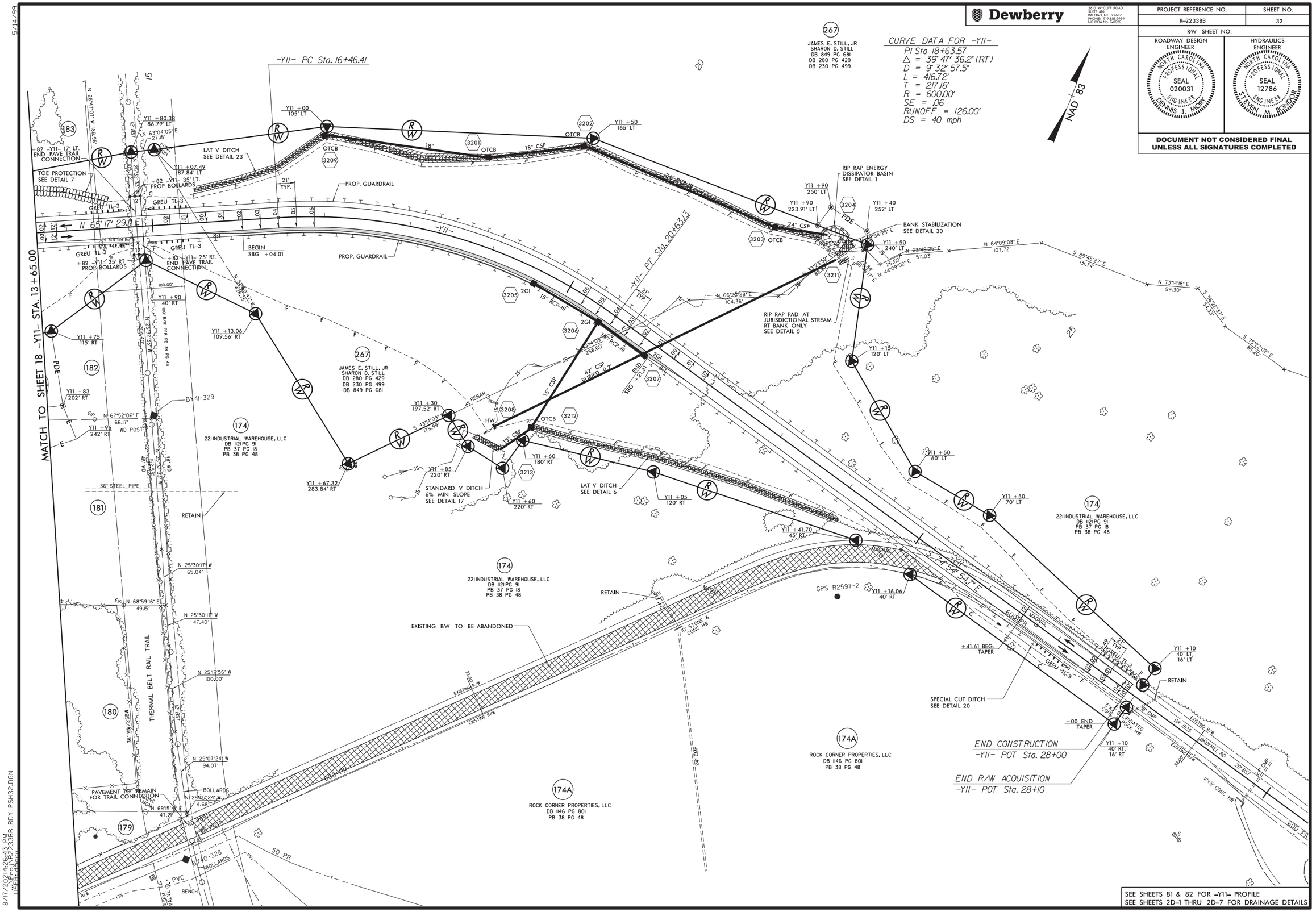
Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	32
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORRY

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDOR

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



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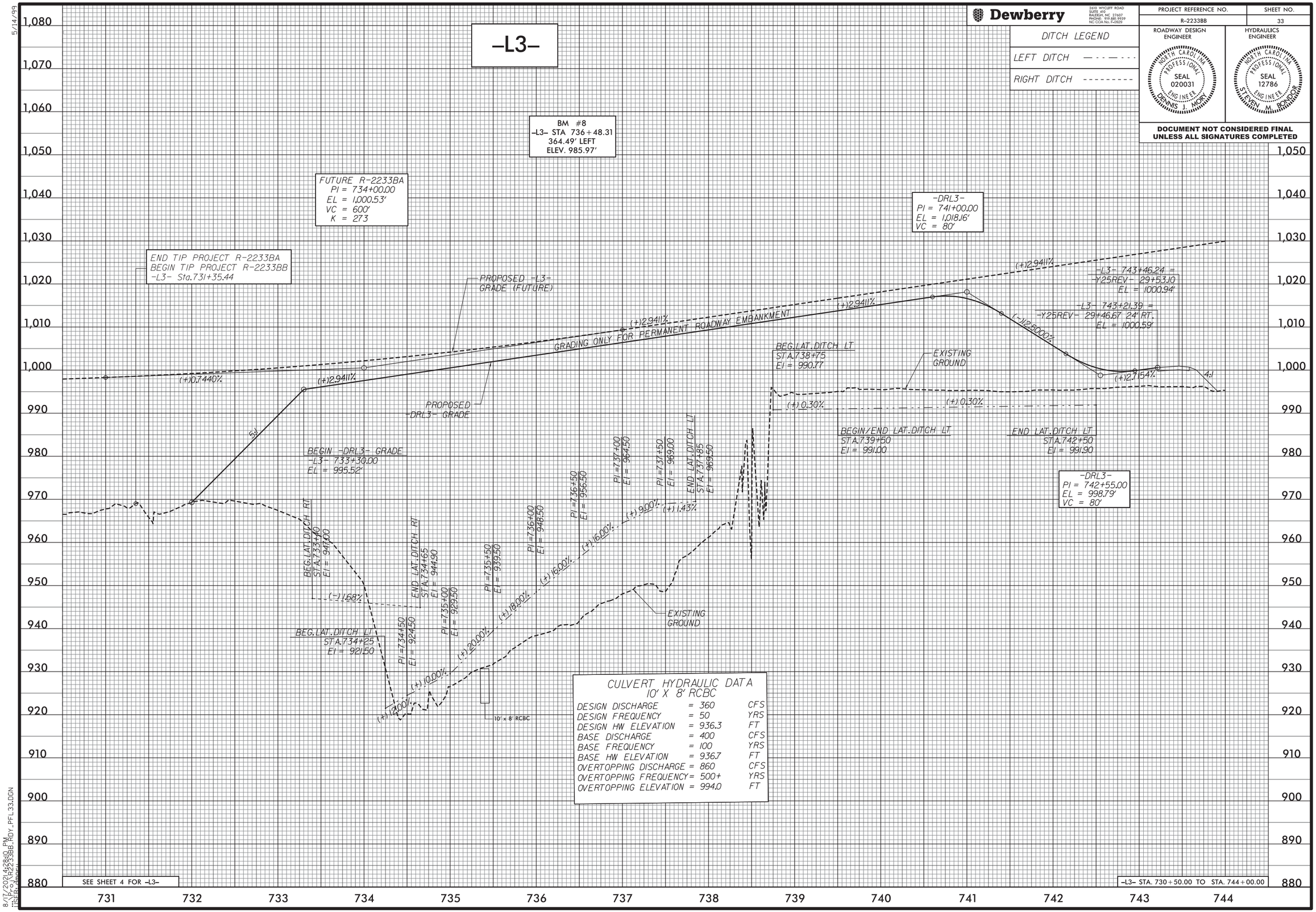
5/14/99



Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

DITCH LEGEND	
LEFT DITCH	— · · — · · —
RIGHT DITCH	- - - - - - - - -

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	33

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDURANT

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8/17/2021 4:28:10 PM
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USER: smorris

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Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	34

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY

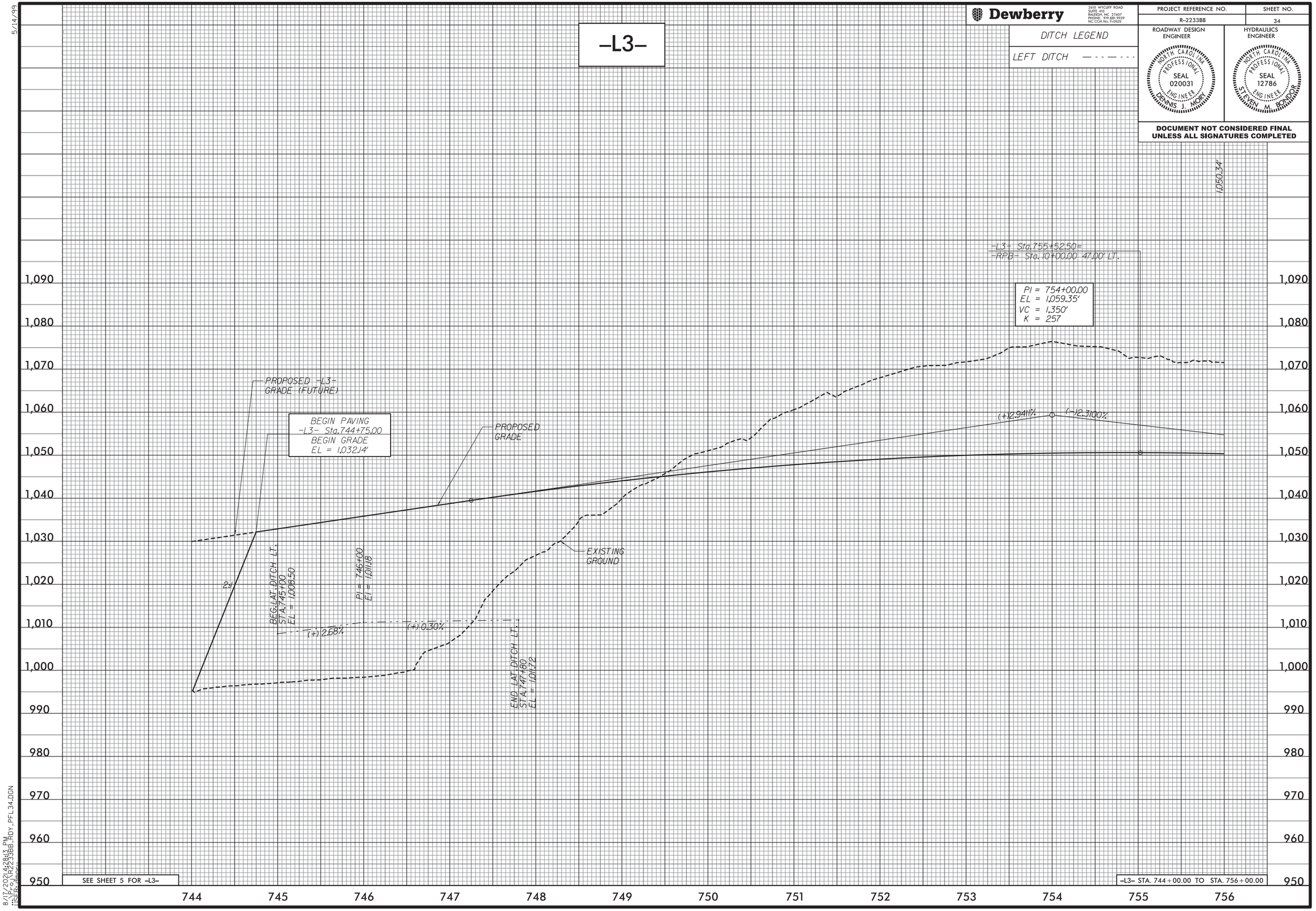
HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDURANT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DITCH LEGEND

LEFT DITCH — - - — - - -

–L3–



SEE SHEET 5 FOR –L3–

–L3– STA. 744+00.00 TO STA. 756+00.00

8/17/2021 4:28:13 PM
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USER: dmorry

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Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	35

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDURANT

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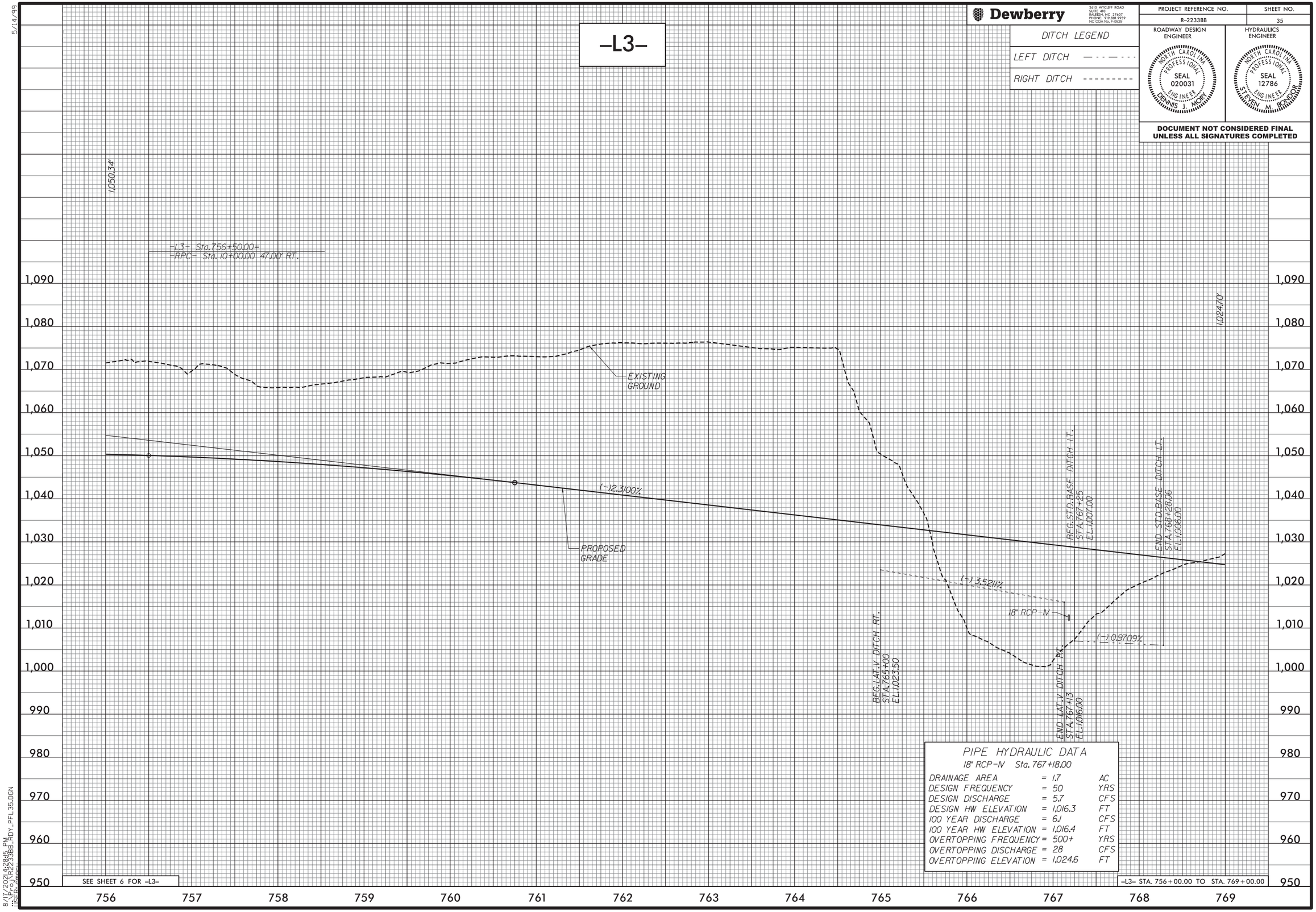
DITCH LEGEND

LEFT DITCH — - - — - - -

RIGHT DITCH - - - - - - - - -

–L3–



PIPE HYDRAULIC DATA
18" RCP-IV Sta. 767+18.00

DRAINAGE AREA	=	1.7	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	5.7	CFS
DESIGN HW ELEVATION	=	1,016.3	FT
100 YEAR DISCHARGE	=	6.1	CFS
100 YEAR HW ELEVATION	=	1,016.4	FT
OVERTOPPING FREQUENCY	=	500+	YRS
OVERTOPPING DISCHARGE	=	28	CFS
OVERTOPPING ELEVATION	=	1,024.6	FT

SEE SHEET 6 FOR –L3–

–L3– STA. 756+00.00 TO STA. 769+00.00

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c:\pwworking\dot\d0432885\R-2233BB_MOY_PFL35.DGN
USER: smoyer

5/14/99

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	36

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDURANT

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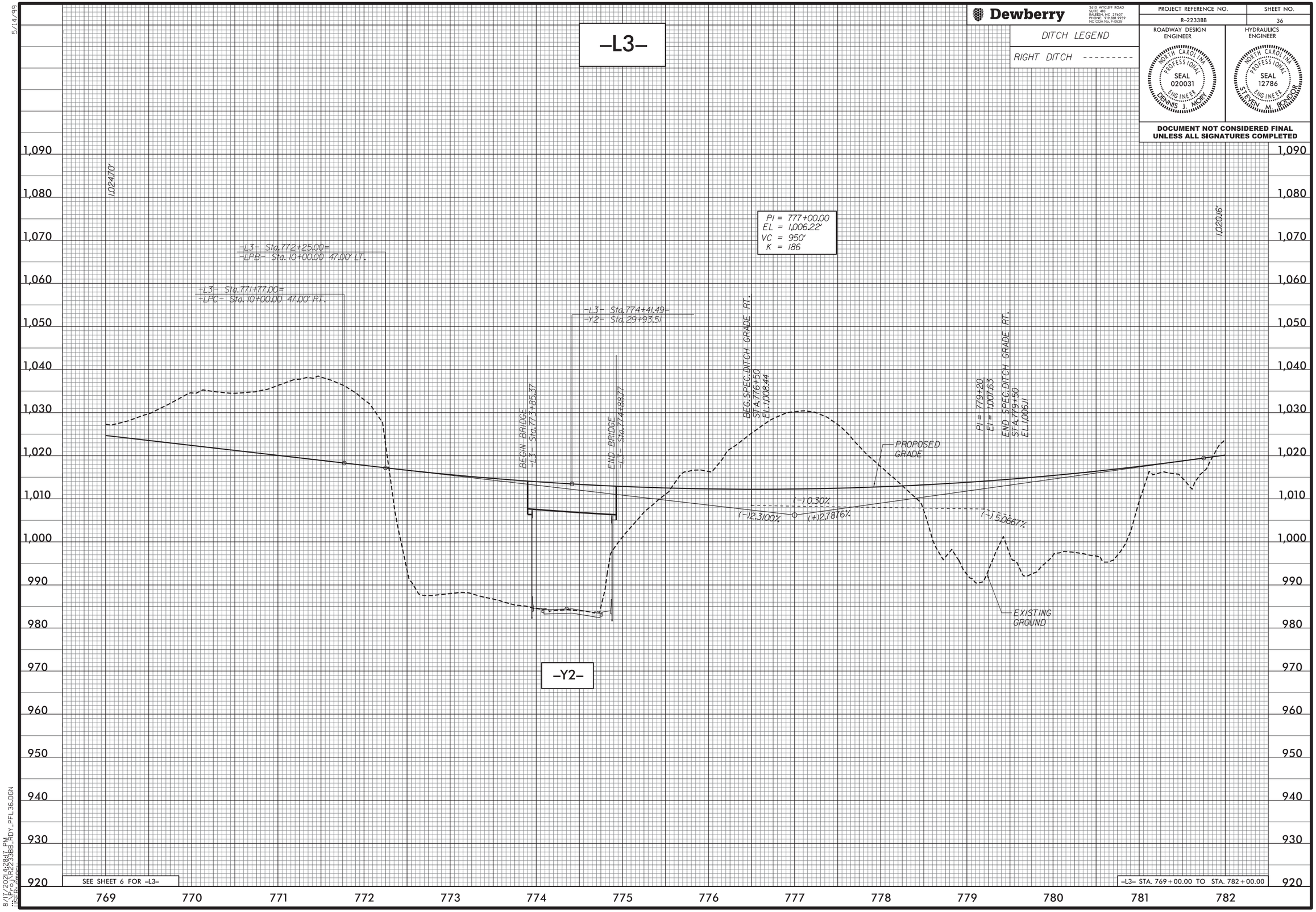
DITCH LEGEND

RIGHT DITCH ---------



SEE SHEET 6 FOR -L3-

-L3- STA. 769+00.00 TO STA. 782+00.00

8/17/2021 4:28:17 PM
USER: smorris

5/14/99

Dewberry

2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	37

ROADWAY DESIGN ENGINEER

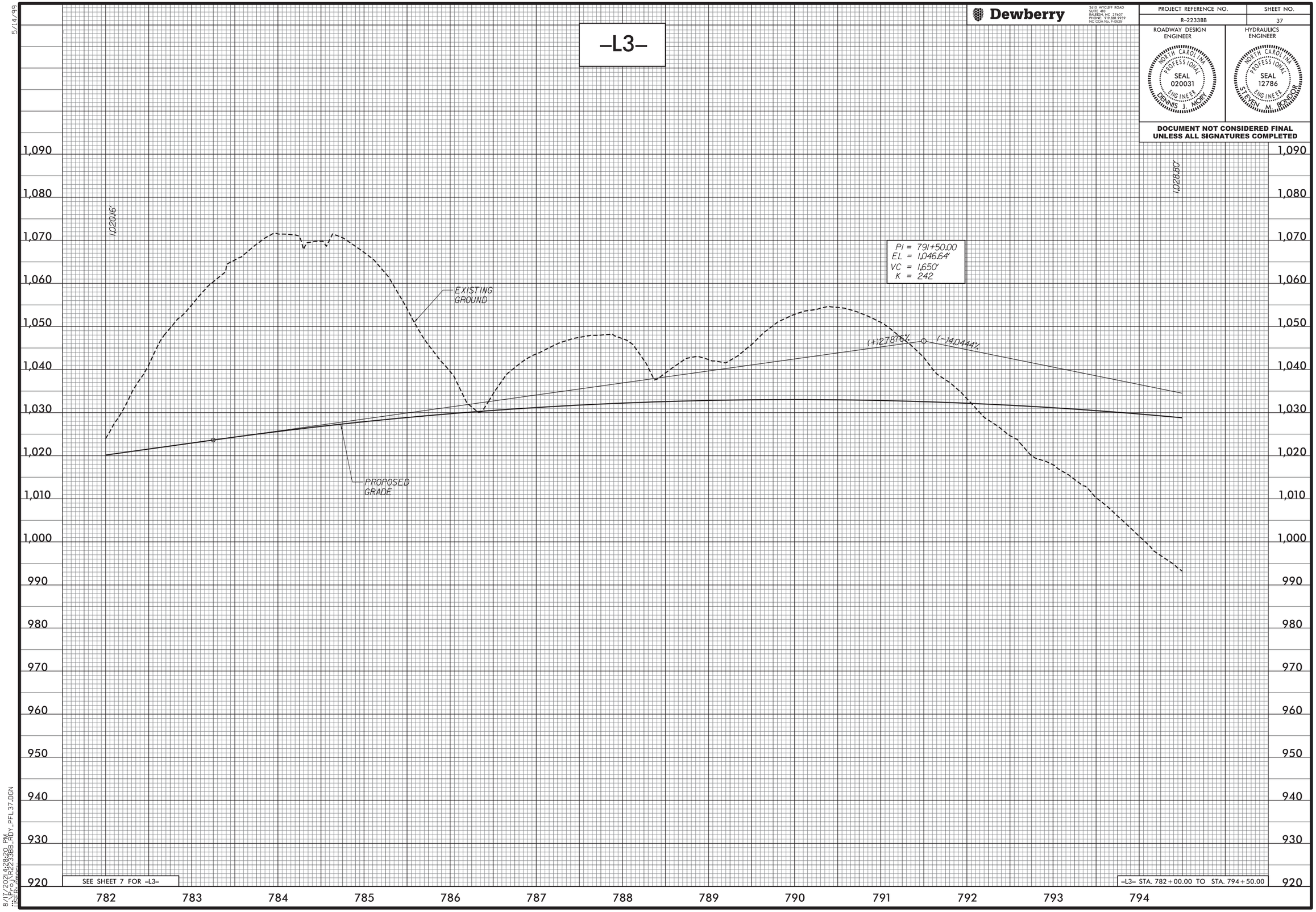
NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDURANT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

–L3–



SEE SHEET 7 FOR –L3–

–L3– STA. 782+00.00 TO STA. 794+50.00

8/17/2021 4:28:20 PM
USER: SMBONDURANT
R-2233BB_RDY_PFL37.DGN

5/14/99

Dewberry

2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	38

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY

HYDRAULICS ENGINEER

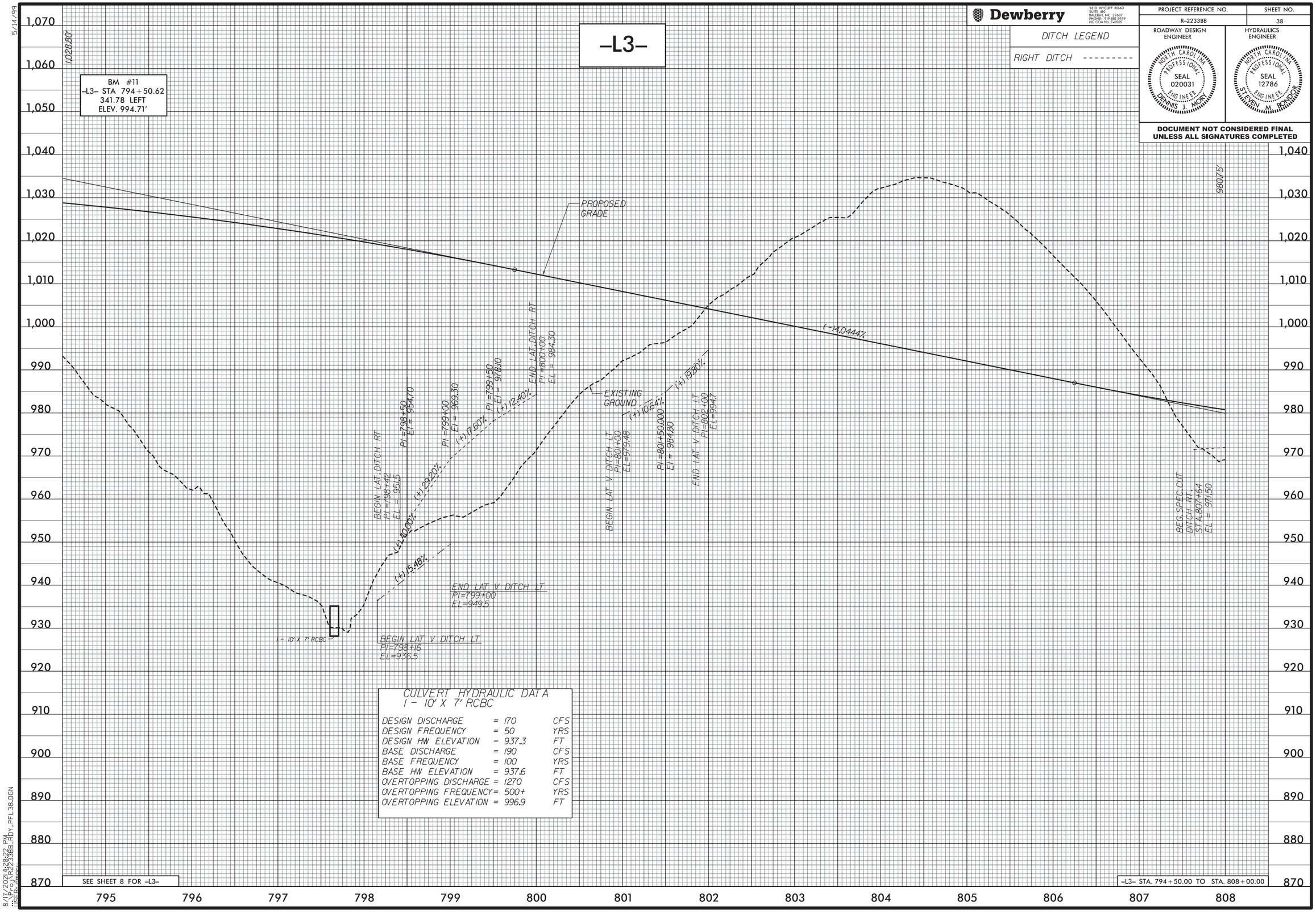
NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDURANT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DITCH LEGEND

RIGHT DITCH ---------

–L3–



CULVERT HYDRAULIC DATA
1 - 10' X 7' RCBC

DESIGN DISCHARGE	=	170	CFS
DESIGN FREQUENCY	=	50	YRS
DESIGN HW ELEVATION	=	937.3	FT
BASE DISCHARGE	=	190	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	937.6	FT
OVERTOPPING DISCHARGE	=	1270	CFS
OVERTOPPING FREQUENCY	=	500+	YRS
OVERTOPPING ELEVATION	=	996.9	FT

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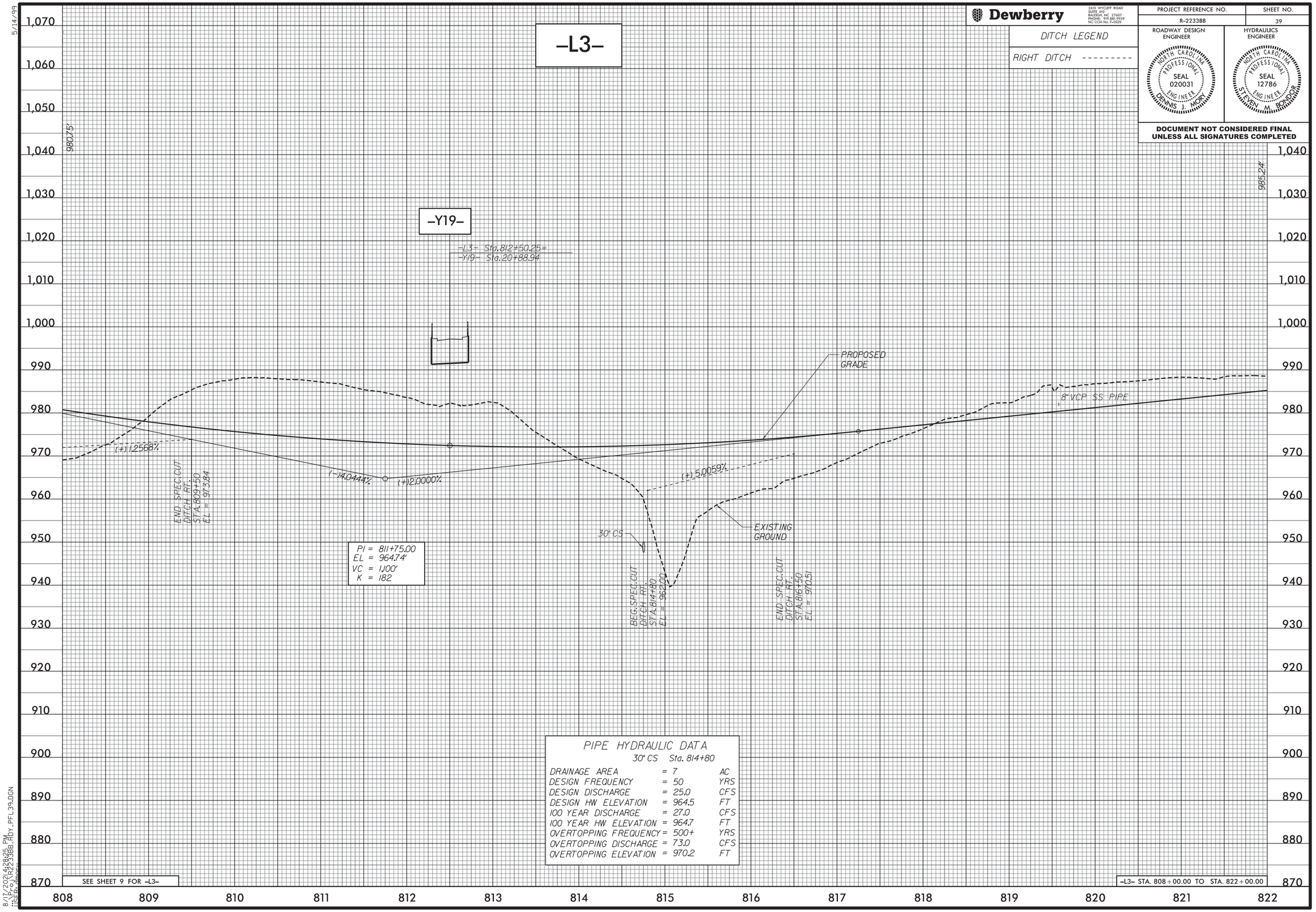

PIPE HYDRAULIC DATA

30" CS Sta. 814+80

DRAINAGE AREA	=	7	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	25.0	CFS
DESIGN HW ELEVATION	=	964.5	FT
100 YEAR DISCHARGE	=	27.0	CFS
100 YEAR HW ELEVATION	=	964.7	FT
OVERTOPPING FREQUENCY	=	500+	YRS
OVERTOPPING DISCHARGE	=	73.0	CFS
OVERTOPPING ELEVATION	=	970.2	FT

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9929
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	39

DITCH LEGEND

RIGHT DITCH ---------

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDURANT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	40

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDURANT

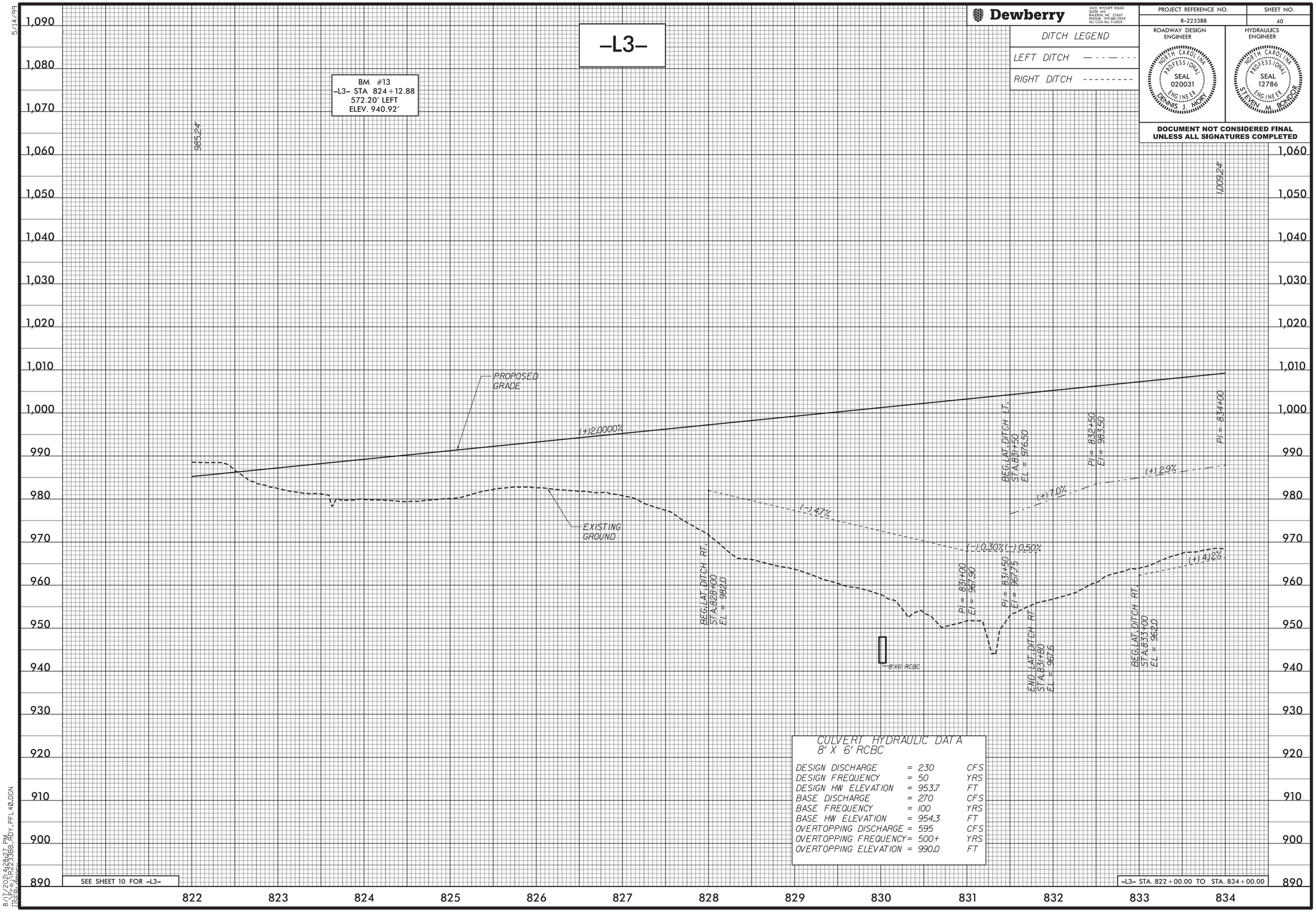
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DITCH LEGEND

LEFT DITCH — - - — - -

RIGHT DITCH - - - - - - - - -

-L3-



CULVERT HYDRAULIC DATA
8' X 6' RCBC

DESIGN DISCHARGE	=	230	CFS
DESIGN FREQUENCY	=	50	YRS
DESIGN HW ELEVATION	=	953.7	FT
BASE DISCHARGE	=	270	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	954.3	FT
OVERTOPPING DISCHARGE	=	595	CFS
OVERTOPPING FREQUENCY	=	500+	YRS
OVERTOPPING ELEVATION	=	990.0	FT

SEE SHEET 10 FOR -L3-

-L3- STA. 822+00.00 TO STA. 834+00.00

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5/14/99

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	41

DITCH LEGEND

RIGHT DITCH ---------

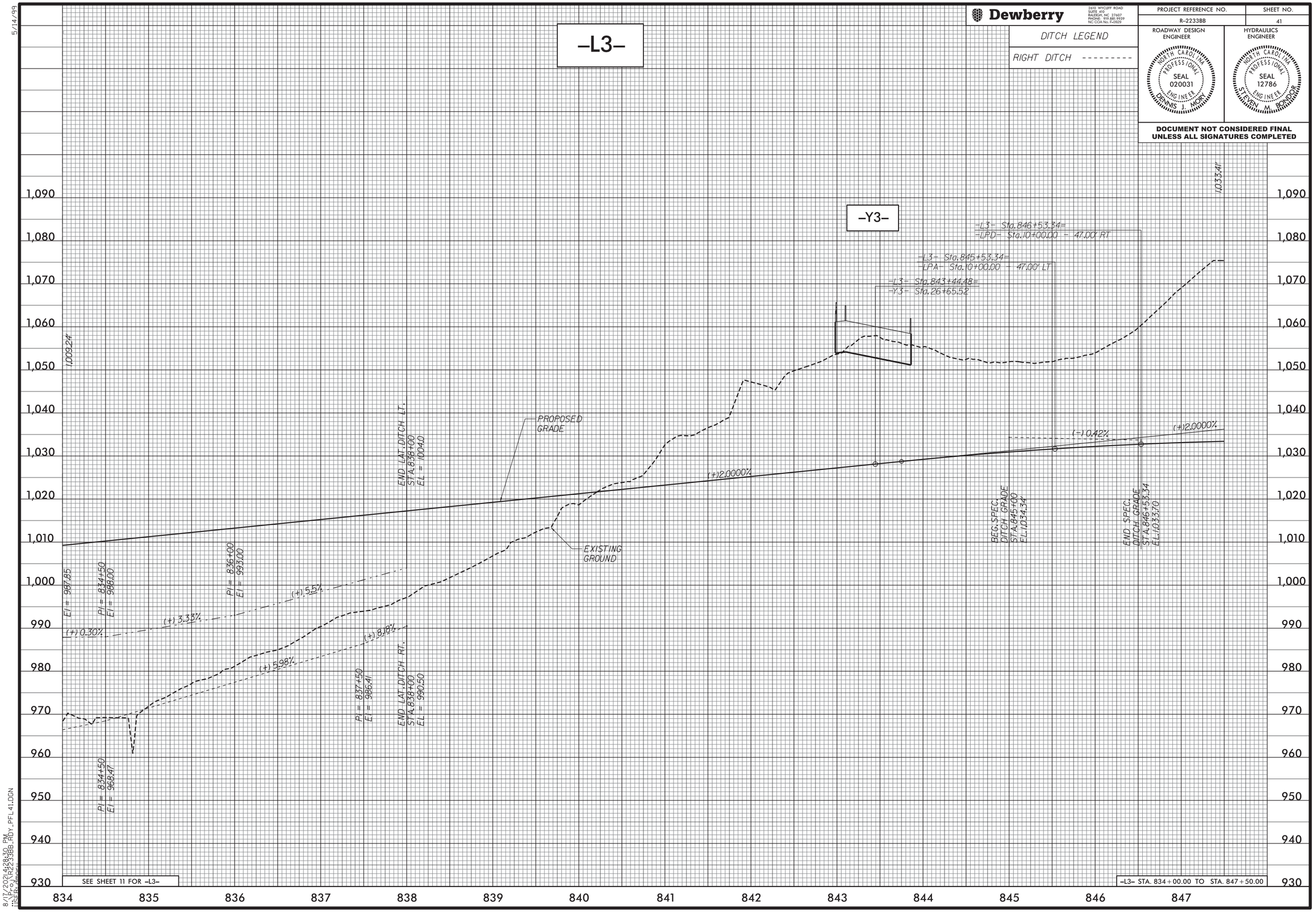
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDURANT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



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5/14/99

Dewberry

2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	42

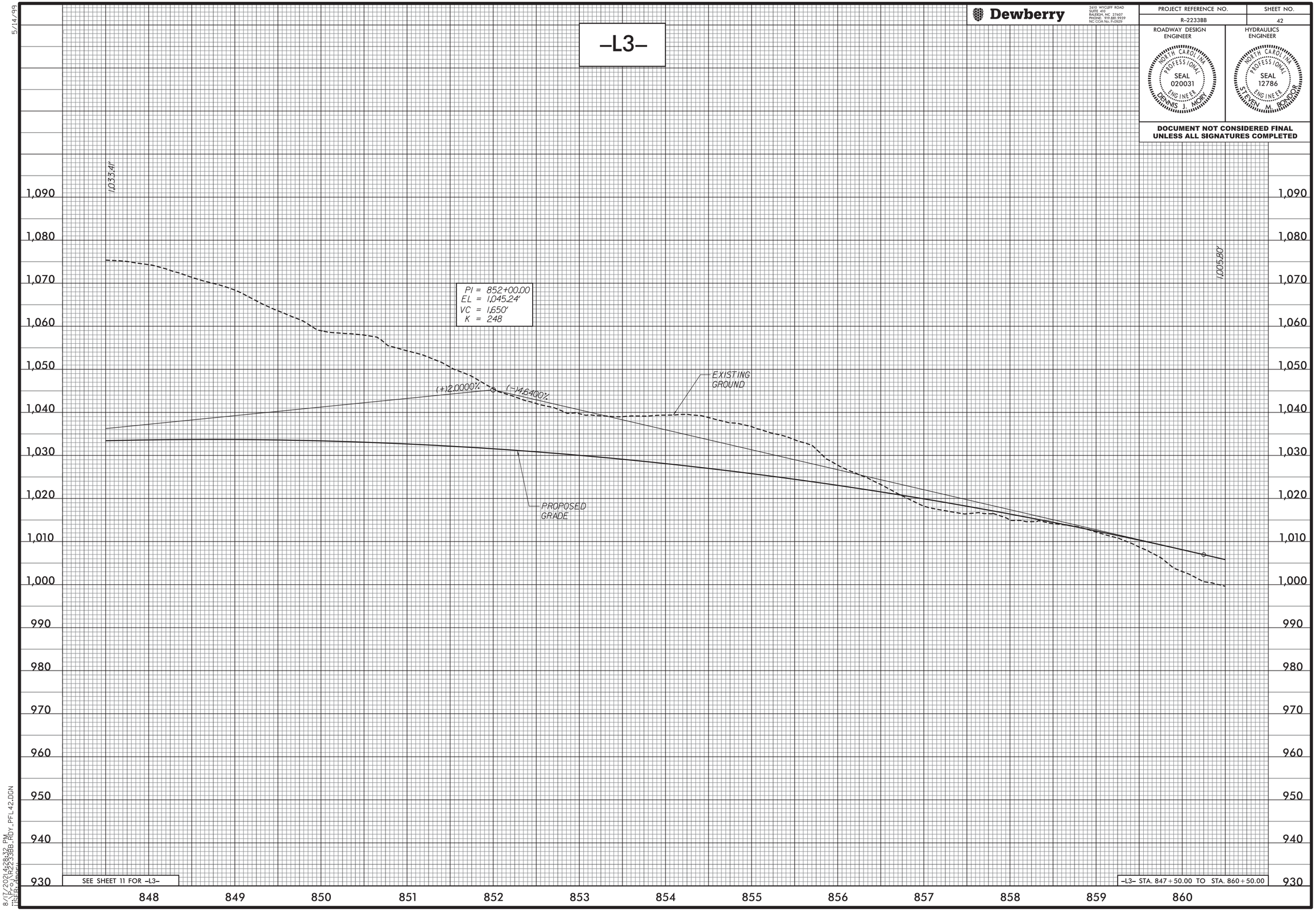
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDURANT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



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5/14/99

Dewberry

2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	43

ROADWAY DESIGN ENGINEER

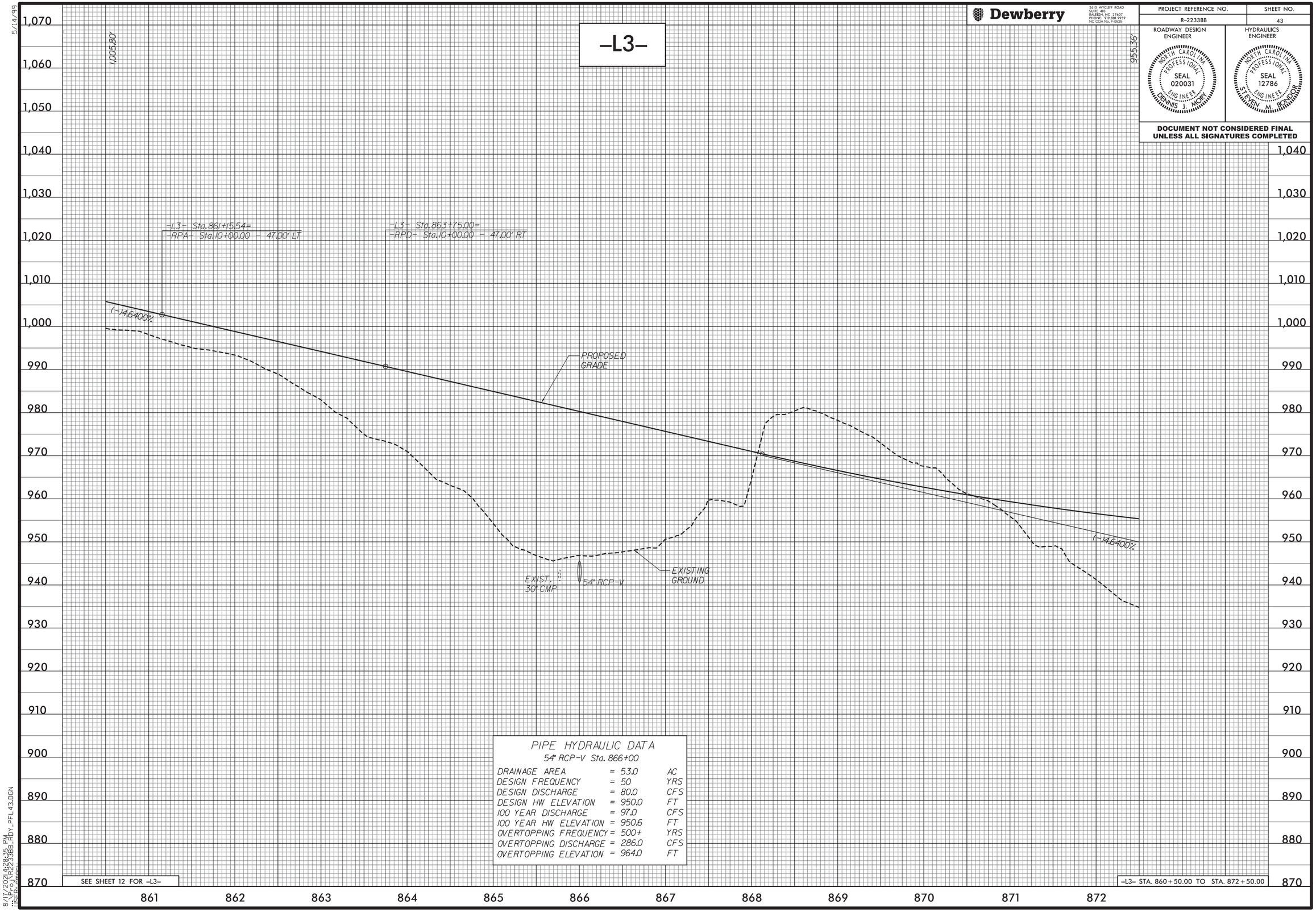
NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDURANT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-L3-



PIPE HYDRAULIC DATA

54" RCP-V Sta. 866+00

DRAINAGE AREA	=	53.0	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	80.0	CFS
DESIGN HW ELEVATION	=	950.0	FT
100 YEAR DISCHARGE	=	97.0	CFS
100 YEAR HW ELEVATION	=	950.6	FT
OVERTOPPING FREQUENCY	=	500+	YRS
OVERTOPPING DISCHARGE	=	286.0	CFS
OVERTOPPING ELEVATION	=	964.0	FT

SEE SHEET 12 FOR -L3-

-L3- STA. 860+50.00 TO STA. 872+50.00

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USER: smoore

5/14/99

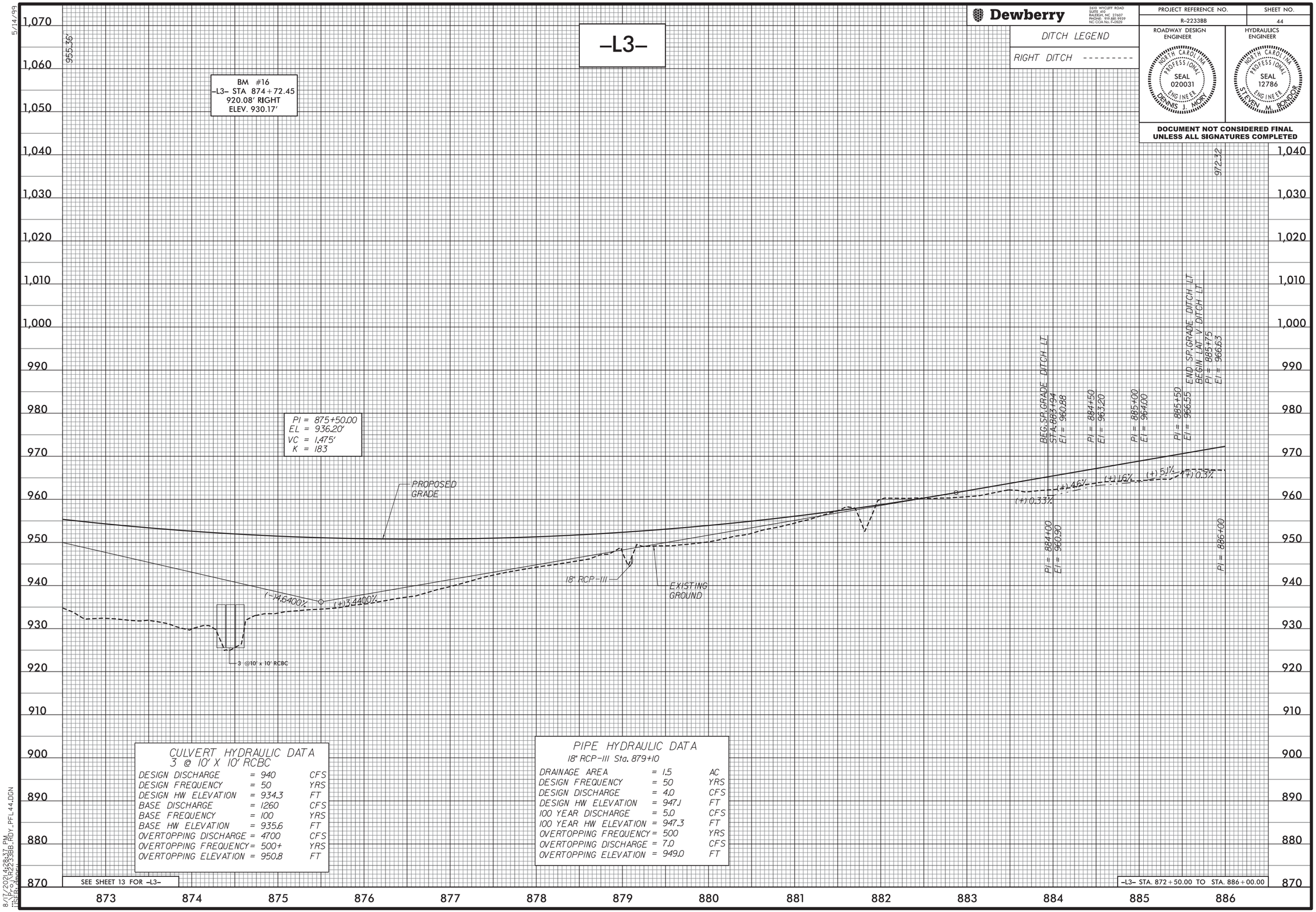
Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	44

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDURANT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



CULVERT HYDRAULIC DATA
3 @ 10' X 10' RCBC

DESIGN DISCHARGE	=	940	CFS
DESIGN FREQUENCY	=	50	YRS
DESIGN HW ELEVATION	=	934.3	FT
BASE DISCHARGE	=	1260	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	935.6	FT
OVERTOPPING DISCHARGE	=	4700	CFS
OVERTOPPING FREQUENCY	=	500+	YRS
OVERTOPPING ELEVATION	=	950.8	FT

PIPE HYDRAULIC DATA
18" RCP-III Sta. 879+10

DRAINAGE AREA	=	1.5	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	4.0	CFS
DESIGN HW ELEVATION	=	947.1	FT
100 YEAR DISCHARGE	=	5.0	CFS
100 YEAR HW ELEVATION	=	947.3	FT
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING DISCHARGE	=	7.0	CFS
OVERTOPPING ELEVATION	=	949.0	FT

SEE SHEET 13 FOR –L3–

–L3– STA. 872+50.00 TO STA. 886+00.00

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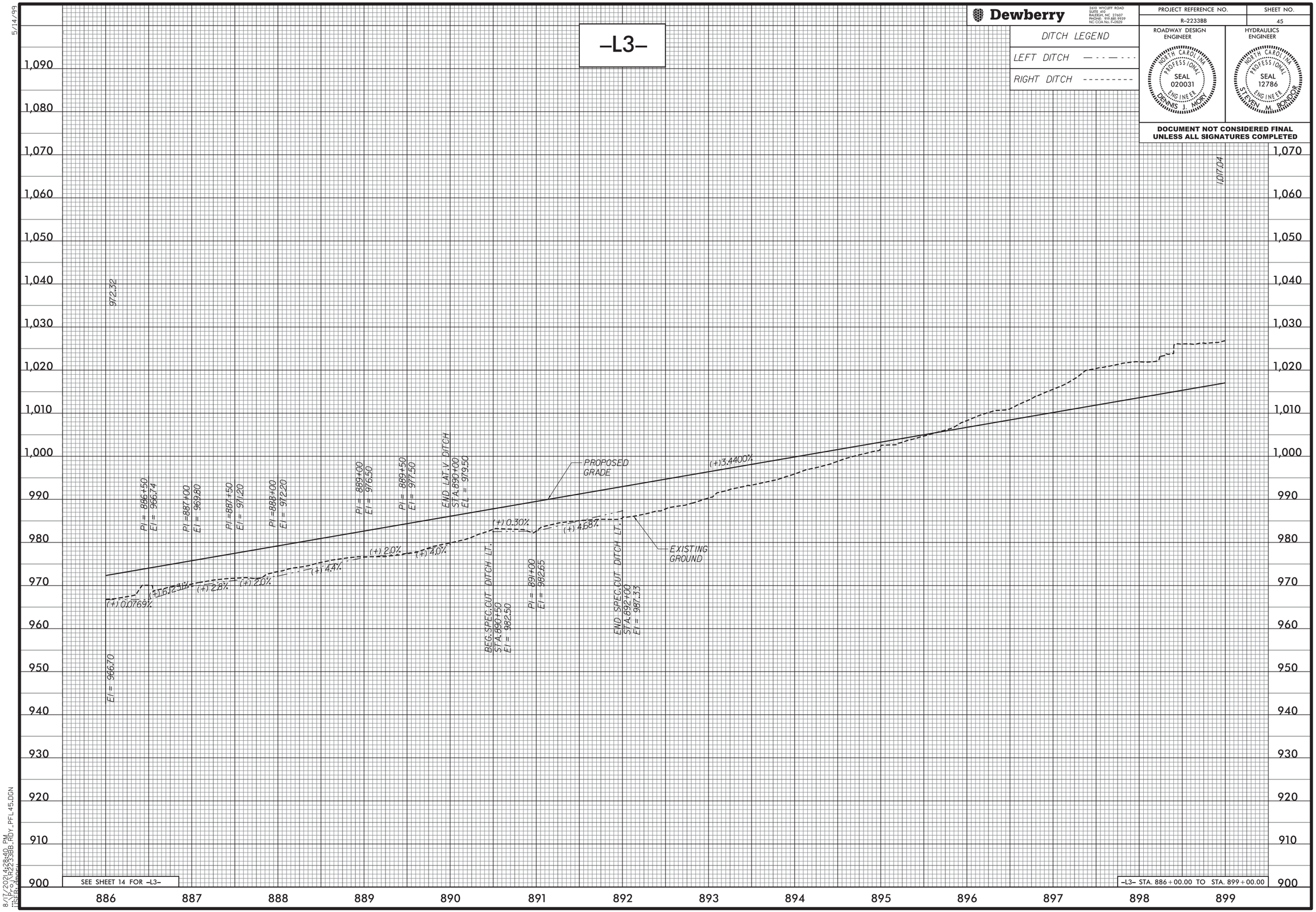

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

DITCH LEGEND

LEFT DITCH — - - — - - -

RIGHT DITCH - - - - - - - - -

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	45

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDURANT

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Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	46

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY

HYDRAULICS ENGINEER

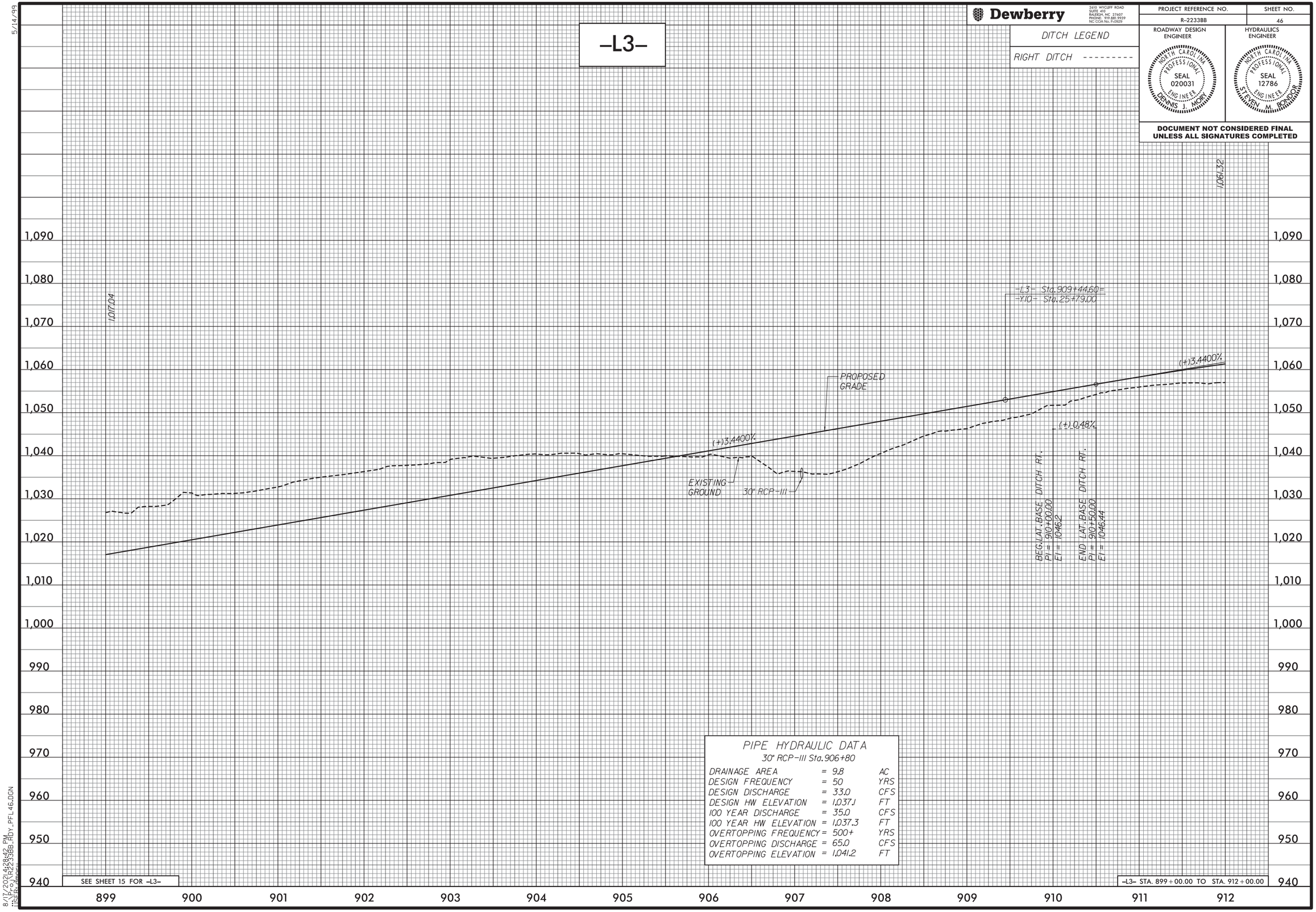
NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDURANT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

–L3–

DITCH LEGEND

RIGHT DITCH ---------



PIPE HYDRAULIC DATA

30" RCP–III Sta. 906+80

DRAINAGE AREA	=	9.8	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	33.0	CFS
DESIGN HW ELEVATION	=	1,037.1	FT
100 YEAR DISCHARGE	=	35.0	CFS
100 YEAR HW ELEVATION	=	1,037.3	FT
OVERTOPPING FREQUENCY	=	500+	YRS
OVERTOPPING DISCHARGE	=	65.0	CFS
OVERTOPPING ELEVATION	=	1,041.2	FT

SEE SHEET 15 FOR –L3–

–L3– STA. 899+00.00 TO STA. 912+00.00

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Dewberry

2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	47

ROADWAY DESIGN ENGINEER

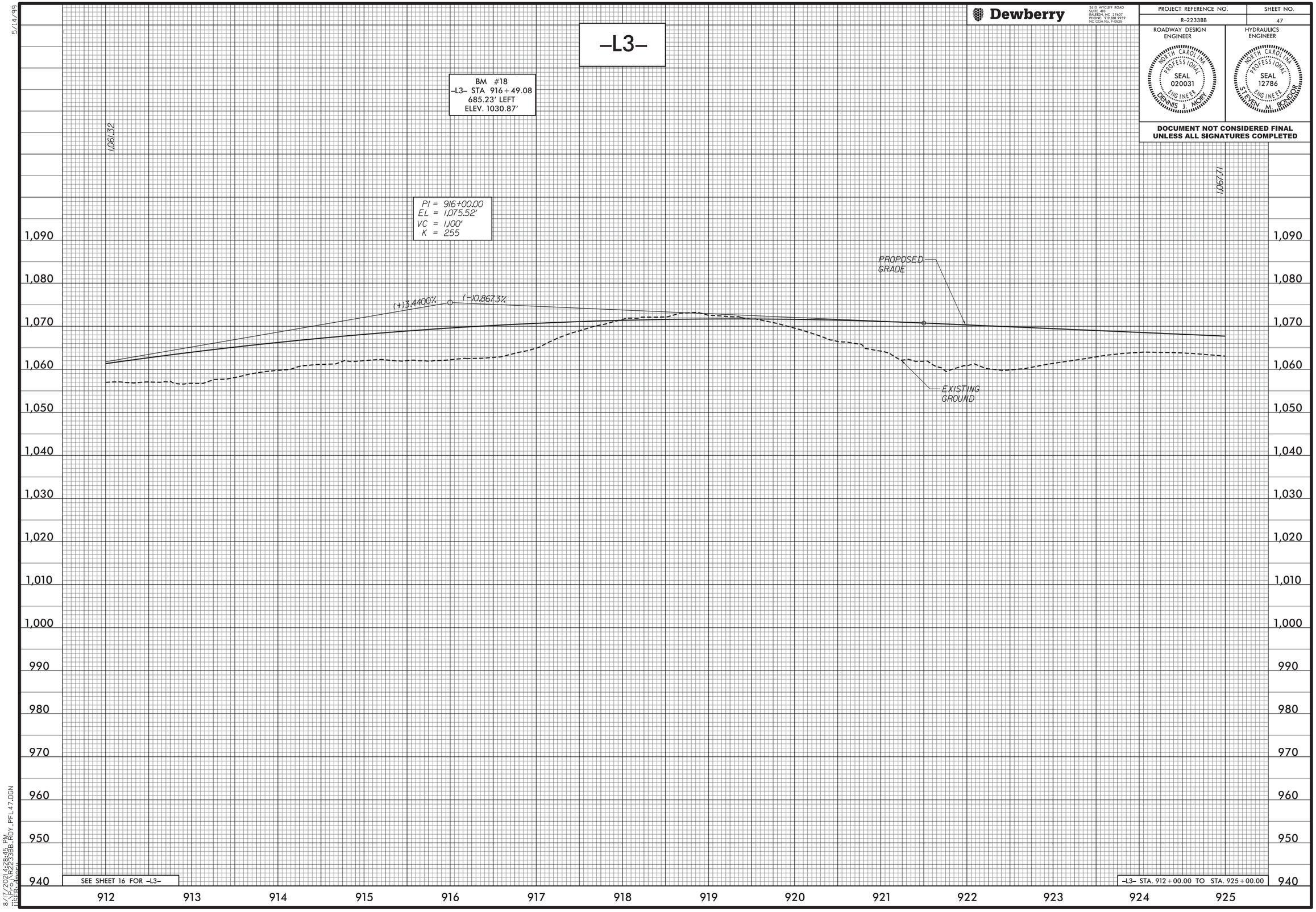
NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDURANT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

–L3–



SEE SHEET 16 FOR –L3–

–L3– STA. 912+00.00 TO STA. 925+00.00

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Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	48

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDURANT

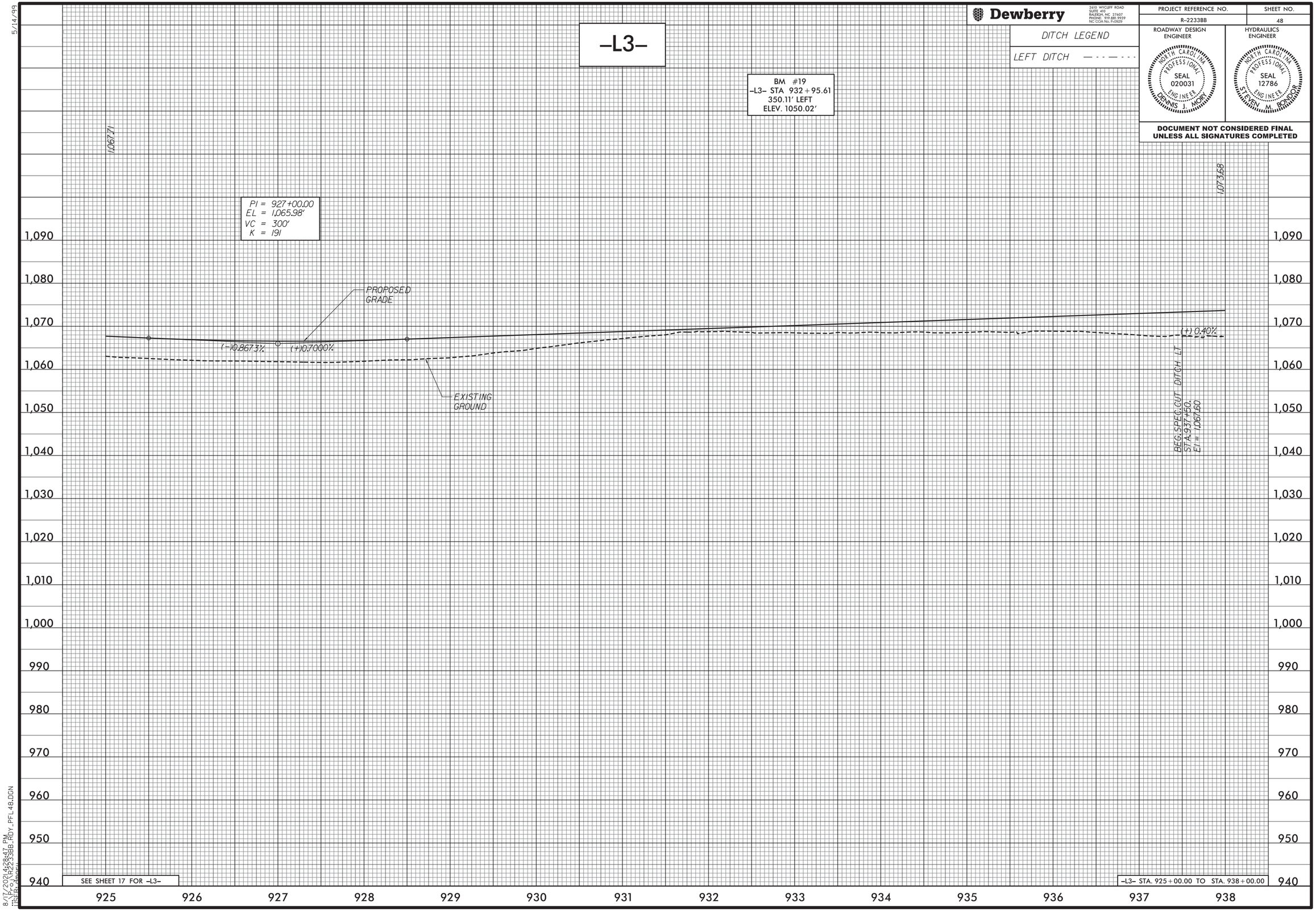
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DITCH LEGEND

LEFT DITCH — - - — - - -

–L3–

BM #19
–L3– STA 932+95.61
350.11' LEFT
ELEV. 1050.02'



SEE SHEET 17 FOR –L3–

–L3– STA. 925+00.00 TO STA. 938+00.00

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Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	49

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDURANT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DITCH LEGEND

LEFT DITCH — - - — - - -

-L3-

1,073.68

1,068.38'

PI = 944+50.00
EL = 1,078.23'
VC = 200'
K = 286

-L3- Sta. 950+76.55=
-Y9- Sta. 17+01.02
-Y11- Sta. 10+00.00

PROPOSED GRADE

(+) 0.40%

(+) 5.0%

(-)0.7000%

(+)1.3990%

(+)1.3990%

EXISTING GROUND

PI =941+00
EI = 1,069.00

END SPEC.CUT DITCH LT
STA.941+50
EI = 1,071.50

1,090 1,080 1,070 1,060 1,050 1,040 1,030 1,020 1,010 1,000 990 980 970 960 950 940

938 939 940 941 942 943 944 945 946 947 948 949 950 951 952

SEE SHEET 18 FOR -L3-

-L3- STA. 938+00.00 TO STA. 952+00.00

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Dewberry

2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9929
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	50

ROADWAY DESIGN ENGINEER

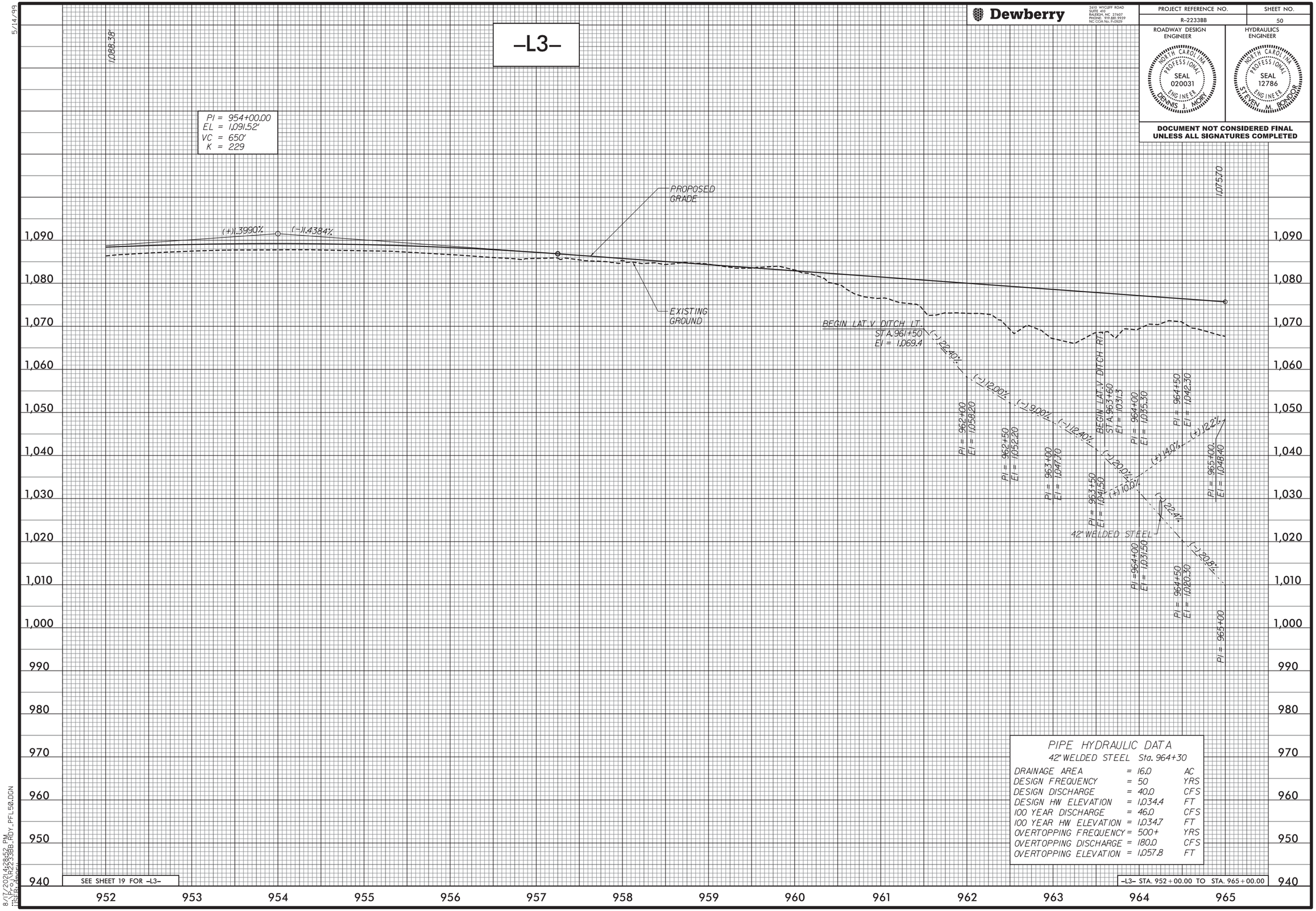
NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDURANT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-L3-



PIPE HYDRAULIC DATA

42" WELDED STEEL Sta. 964+30

DRAINAGE AREA	=	16.0	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	40.0	CFS
DESIGN HW ELEVATION	=	1,034.4	FT
100 YEAR DISCHARGE	=	46.0	CFS
100 YEAR HW ELEVATION	=	1,034.7	FT
OVERTOPPING FREQUENCY	=	500+	YRS
OVERTOPPING DISCHARGE	=	180.0	CFS
OVERTOPPING ELEVATION	=	1,057.8	FT

SEE SHEET 19 FOR -L3-

-L3- STA. 952+00.00 TO STA. 965+00.00

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USER: JJONES

5/14/99

Dewberry

2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	51

DITCH LEGEND

RIGHT DITCH ---------

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDURANT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

–L3–

BM #21
–L3– STA 971+03.46
501.07' LEFT
ELEV. 1083.30'

PI = 966+00.00
EL = 1,074.26'
VC = 200'
K = 710

PI = 969+00.00
EL = 1,069.10'
VC = 200'
K = 256

PI = 972+00.00
EL = 1,066.28'
VC = 250'
K = 543

1,075.70

1,069.98

PROPOSED GRADE

(–)1.4384% (–)1.7200% (–)1.7200% (–)0.9400% (–)0.9400% (–)1.4000%

BEGIN LAT.V DITCH RT.
STA.996+54
El = 1055.74

END LAT.V DITCH
STA.968+53
EL = 1,028.6

EXISTING GROUND

(–)8.27% (–)0.3237% (–)0.8% (–)12.2% (–)22.0% (+)9.8% (+)4.1% (+)0.30% (+)6.0% (+)10.0% (+)3.4% (+)6.6% (+)0.40%

PI = 965+00.00
El = 1,048.40

PI = 965+50
El = 1,053.30

PI = 966+00
El = 1,055.35

STA.966+50 El = 1,055.50

STA.966+69 El = 1,054.45

PI = 967+00
El = 1,051.30

PI = 967+50
El = 1,045.90

PI = 968+00
El = 1,039.80

PI = 969+00
El = 1,031.20

PI = 969+50
El = 1,036.20

PI = 970+00
El = 1,037.90

PI = 970+50
El = 1,041.20

END LAT.V DITCH RT.
STA.971+50
El = 1,041.60

END LAT.V DITCH RT.
STA.966+53
El = 1,055.01

END LAT.V DITCH LT.
STA.965+10
El = 1,009.0

BEG.LAT.V DITCH RT.
STA.968+55
El = 1,028.50

EXIST. 18" CMP

36" WELDED STEEL

(–)9.0%

El = 1,009.90

PIPE HYDRAULIC DATA

36" WELDED STEEL Sta. 968+64

DRAINAGE AREA	=	14.0	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	29.0	CFS
DESIGN HW ELEVATION	=	1031.6	FT
100 YEAR DISCHARGE	=	35.0	CFS
100 YEAR HW ELEVATION	=	1,032.1	FT
OVERTOPPING FREQUENCY	=	500+	YRS
OVERTOPPING DISCHARGE	=	122.0	CFS
OVERTOPPING ELEVATION	=	1,057.6	FT

1,090 1,080 1,070 1,060 1,050 1,040 1,030 1,020 1,010 1,000 990 980 970 960 950 940

965 966 967 968 969 970 971 972 973 974 975 976

SEE SHEET 20 FOR –L3–

–L3– STA. 965+00.00 TO STA. 976+50.00

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USER: smcurrin

5/14/99

Dewberry

2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9929
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	52

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDURANT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-L3-

BM #22
-L3- STA 983+16.40
621.23' LEFT
ELEV. 990.41'

1,059.98

1,040.59

PI = 989+00.00
EL = 1,042.48'
VC = 200'
K = 1429

-L3- Sta.977+95.26=
-Y7A- Sta. 18+45.84

-L3- Sta.982+79.74=
-Y7- Sta. 18+64.30

PROPOSED GRADE

EXISTING GROUND

(-)1.4000%

(-)1.2600%

(-)3.0769%

BEGIN LAT.V DITCH RT.
STA.989+50
El = 1028.1

END LAT.V DITCH RT.
STA.989+89
El = 1,023.0

36" WELDED STEEL

36" WELDED STEEL

1,090 1,080 1,070 1,060 1,050 1,040 1,030 1,020 1,010 1,000 990 980 970 960 950 940

977 978 979 980 981 982 983 984 985 986 987 988 989 990

PIPE HYDRAULIC DATA
36" WELDED STEEL Sta.981+00

DRAINAGE AREA	= 9.0	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 26	CFS
DESIGN HW ELEVATION	= 1,037.6	FT
100 YEAR DISCHARGE	= 28.0	CFS
100 YEAR HW ELEVATION	= 1,037.7	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 102.0	CFS
OVERTOPPING ELEVATION	= 1,050.5	FT

PIPE HYDRAULIC DATA
36" WELDED STEEL Sta. 990+18

DRAINAGE AREA	= 10.3	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 34.0	CFS
DESIGN HW ELEVATION	= 1,026.2	FT
100 YEAR DISCHARGE	= 37.0	CFS
100 YEAR HW ELEVATION	= 1,026.5	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 100.0	CFS
OVERTOPPING ELEVATION	= 1,037.7	FT

SEE SHEET 21 FOR -L3-

-L3- STA. 976+50.00 TO STA. 990+50.00

8/17/2021 4:28:57 PM
R:\Projects\R2233BB_RDY_PFL52.DGN
USER: JJONES

5/14/99

1,040.59

–L3–

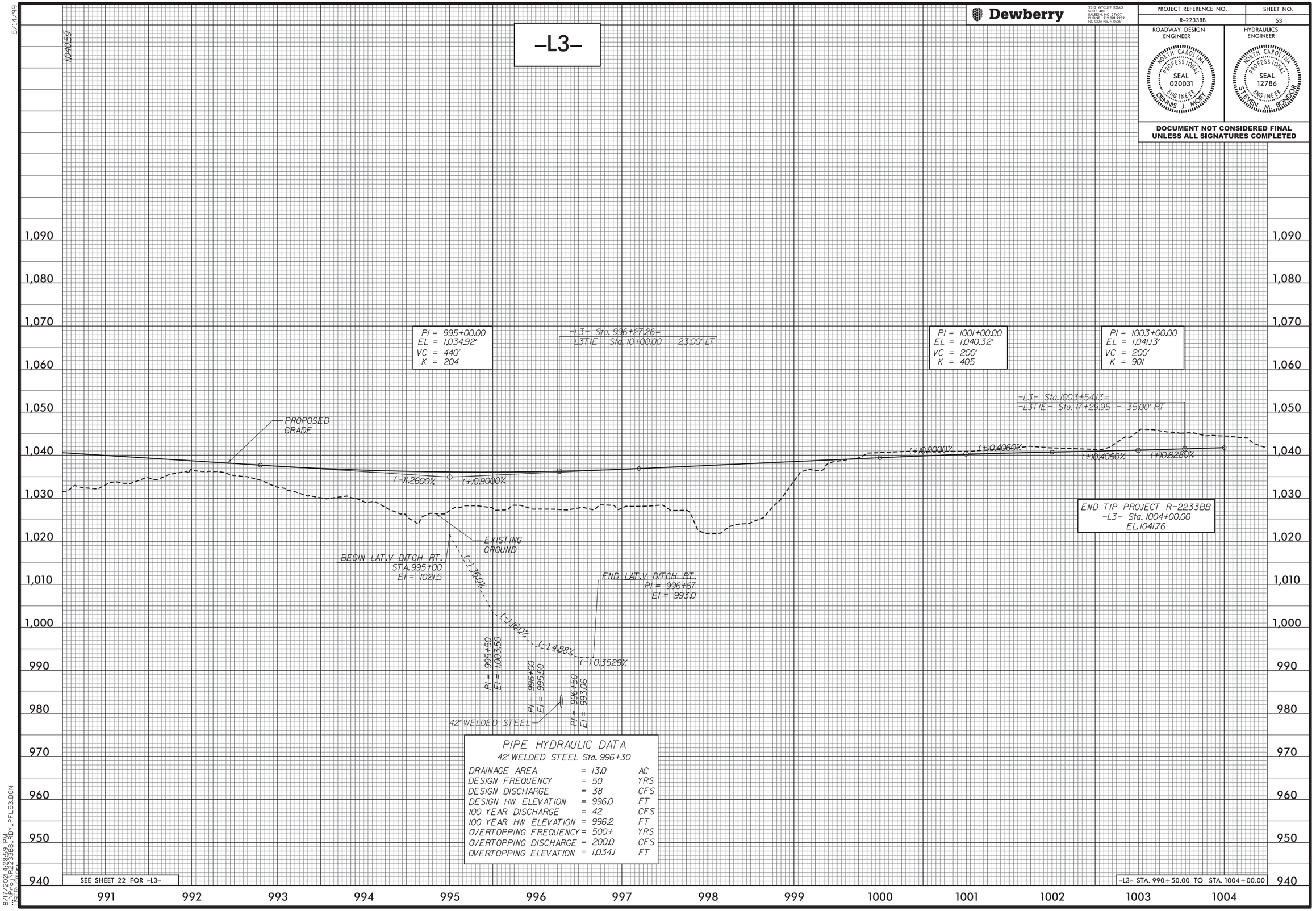
Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9929
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	53

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDURANT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



PIPE HYDRAULIC DATA

42" WELDED STEEL Sta. 996+30

DRAINAGE AREA	=	13.0	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	38	CFS
DESIGN HW ELEVATION	=	996.0	FT
100 YEAR DISCHARGE	=	42	CFS
100 YEAR HW ELEVATION	=	996.2	FT
OVERTOPPING FREQUENCY	=	500+	YRS
OVERTOPPING DISCHARGE	=	200.0	CFS
OVERTOPPING ELEVATION	=	1,034.1	FT

8/17/2021 4:28:58 PM
R:\Roadway\Proj\R2233bb_Rdy_PFL53.DGN
USER: dmorr

5/14/99

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	54

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY

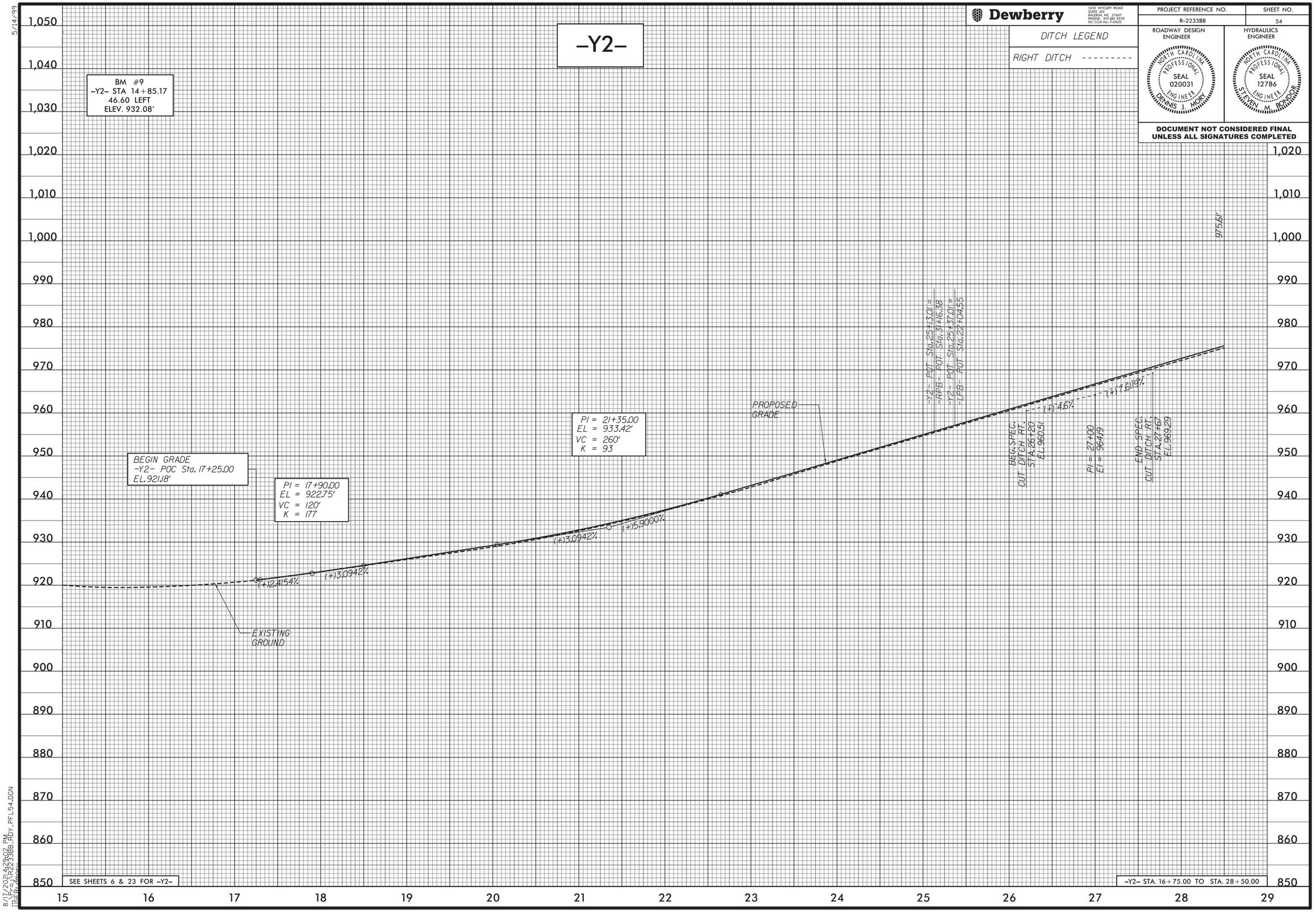
HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDURANT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DITCH LEGEND

RIGHT DITCH ---------



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USER: JJONES

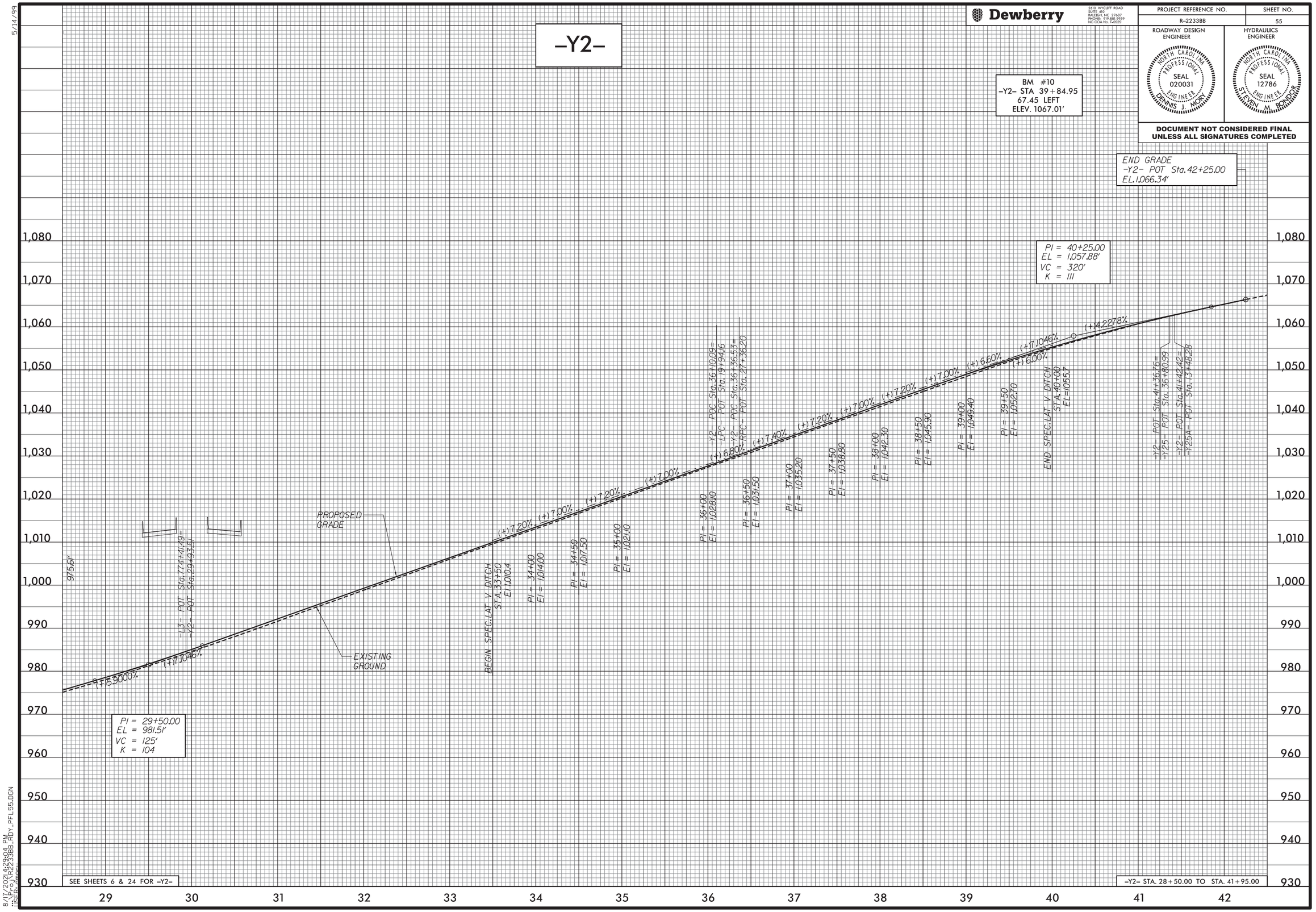
Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9929
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	55

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDURANT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



SEE SHEETS 6 & 24 FOR -Y2-

-Y2- STA. 28+50.00 TO STA. 41+95.00

5/14/99

8/17/2021 4:29:04 PM
R:\Roadway\Proj\R2233BB_RDY_PFL55.DGN
USER: cjones

5/14/99

Dewberry

2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	56

ROADWAY DESIGN ENGINEER

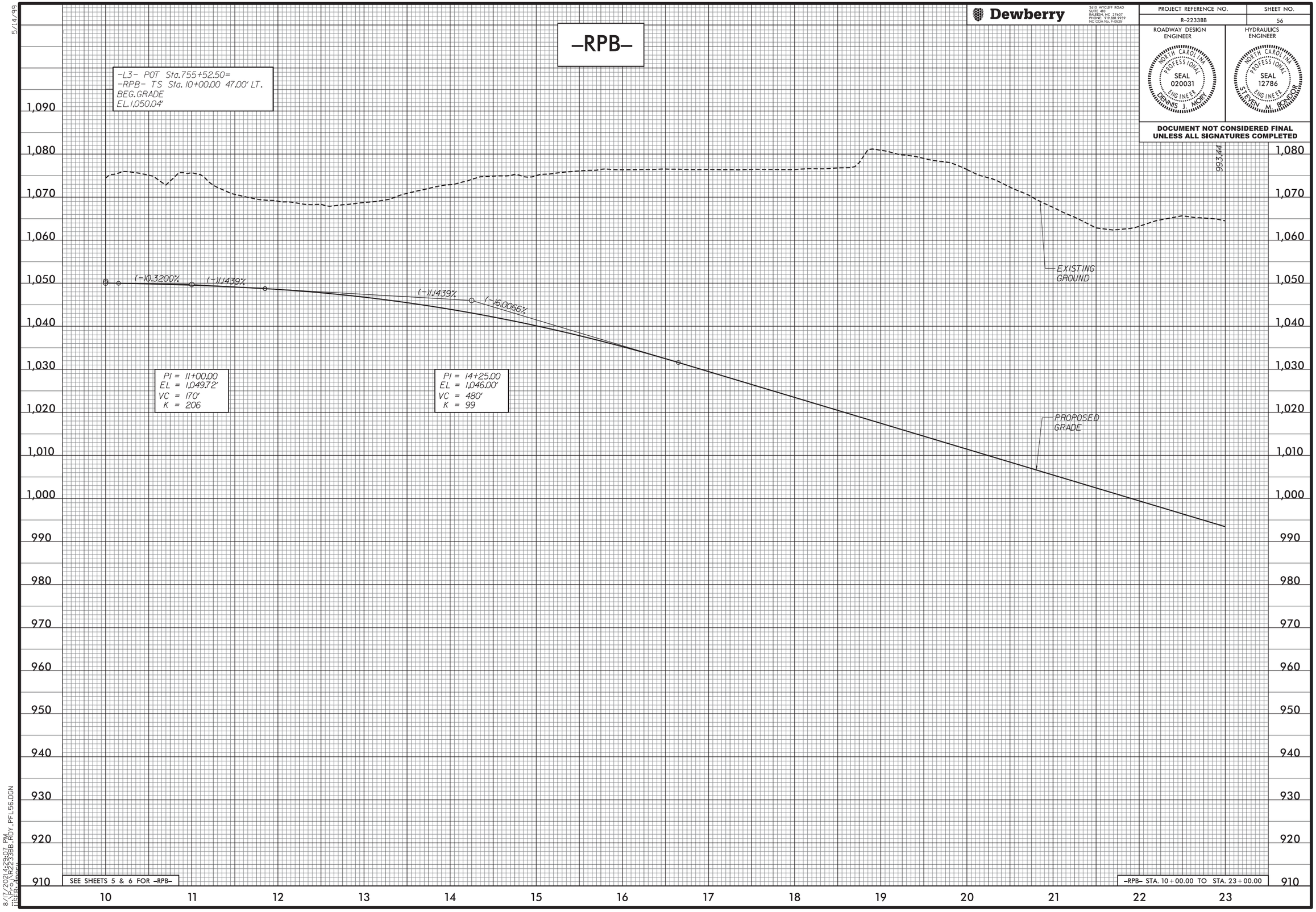
NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDURANT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

–RPB–



SEE SHEETS 5 & 6 FOR –RPB–

–RPB– STA. 10+00.00 TO STA. 23+00.00

8/17/2021 3:07 PM
R-2233BB_RDY_PFL56.DGN
USER: 4900EU

5/14/99

Dewberry

2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	57

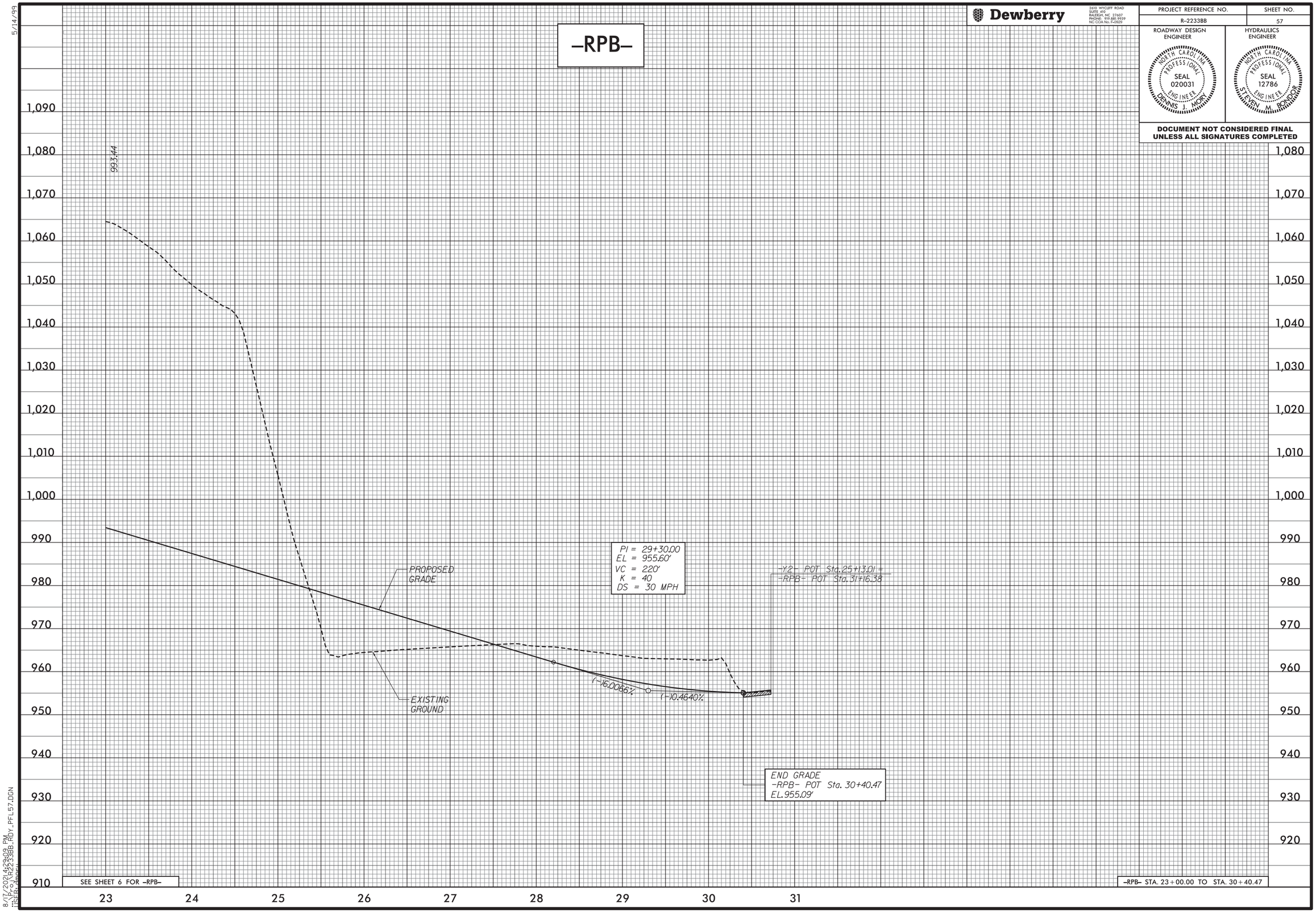
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDURANT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



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USER: gmoreu

5/14/99

Dewberry

2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	58

ROADWAY DESIGN ENGINEER

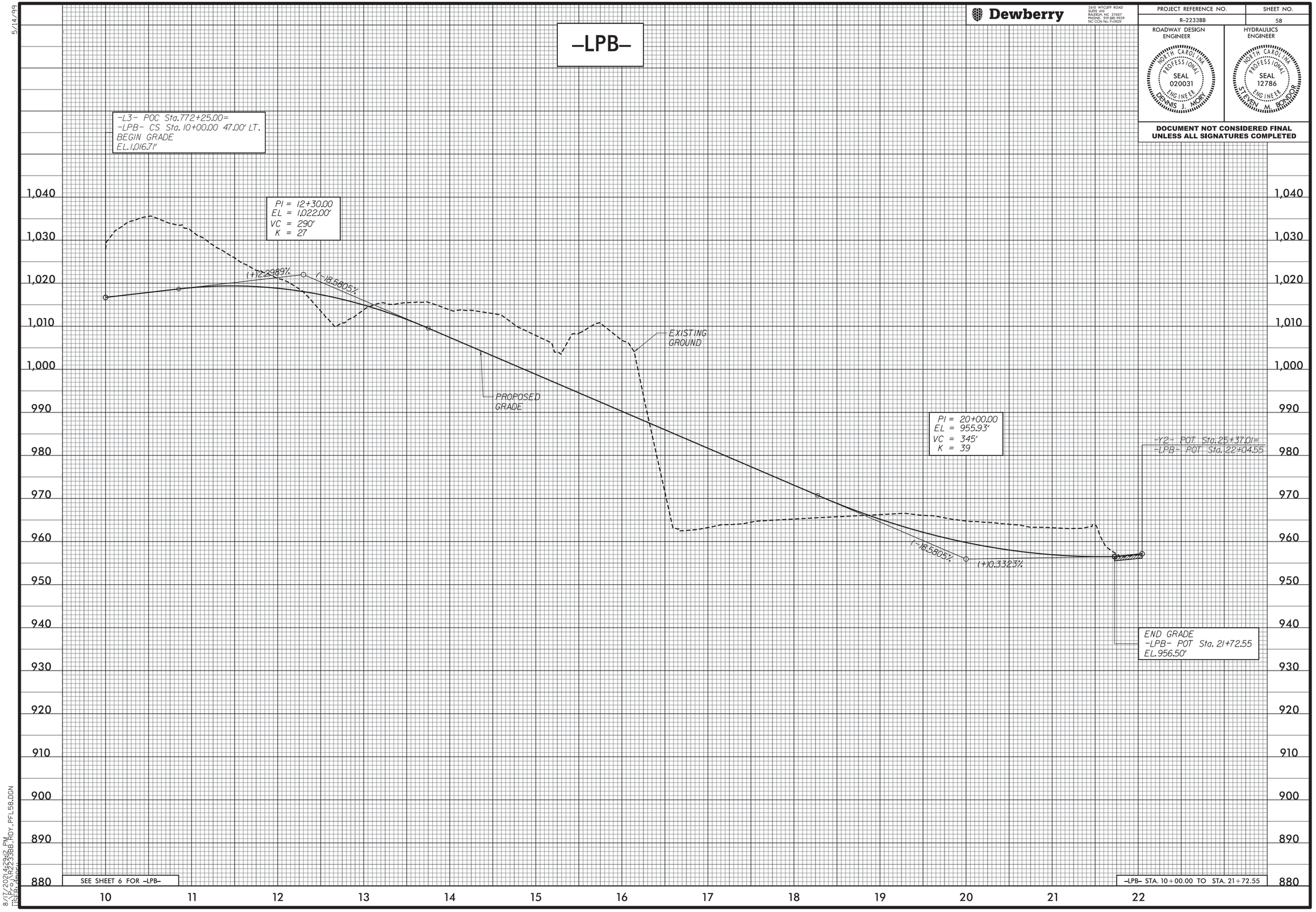
NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDURANT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-LPB-



SEE SHEET 6 FOR -LPB-

-LPB- STA. 10+00.00 TO STA. 21+72.55

8/17/2021 2:23:2 PM
R-2233BB_HDY_PFL58.DGN
USER: Q.ADEU

5/14/99

Dewberry

2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	59

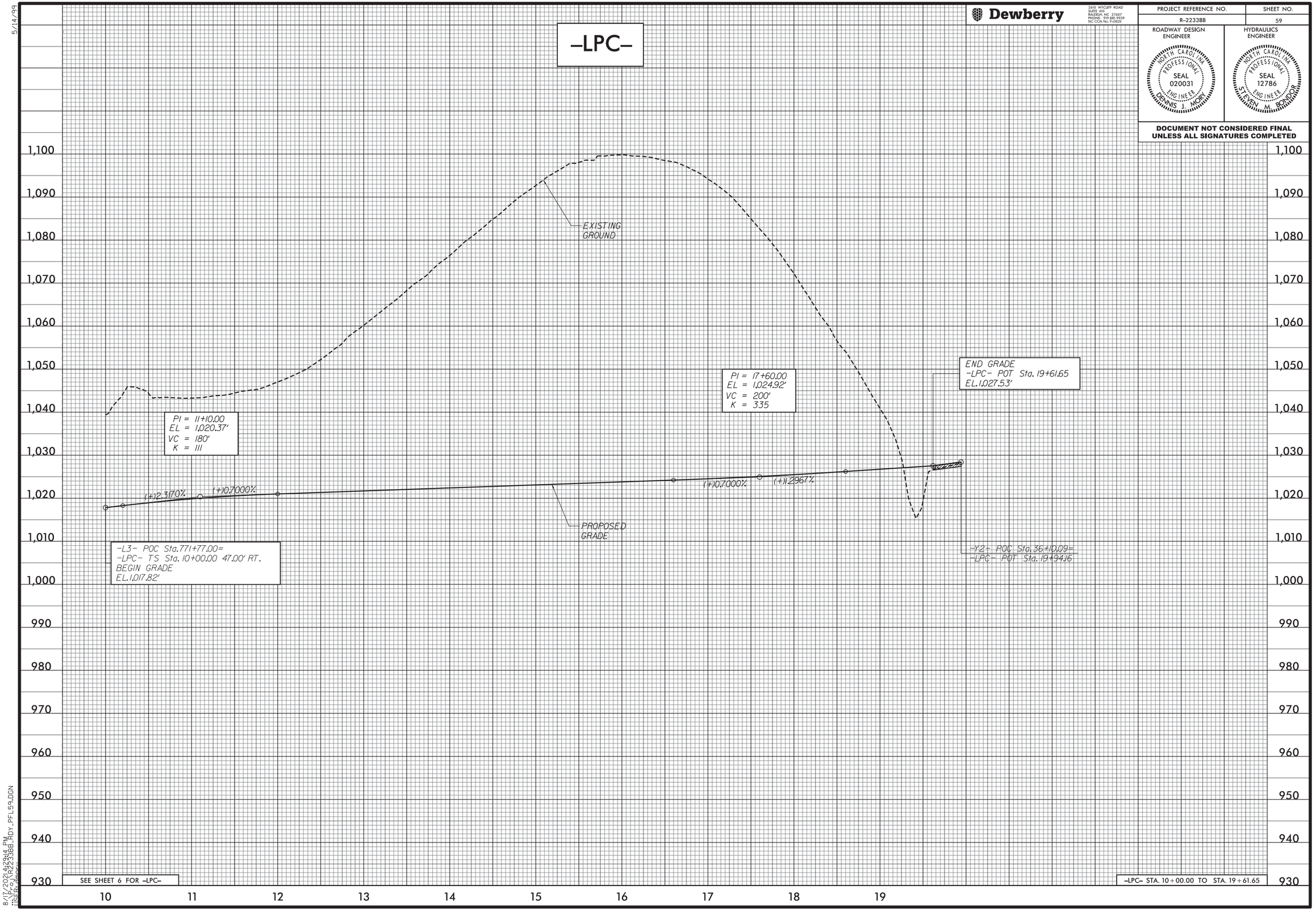
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDURANT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



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USER: 4900EJ

5/14/99

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	60

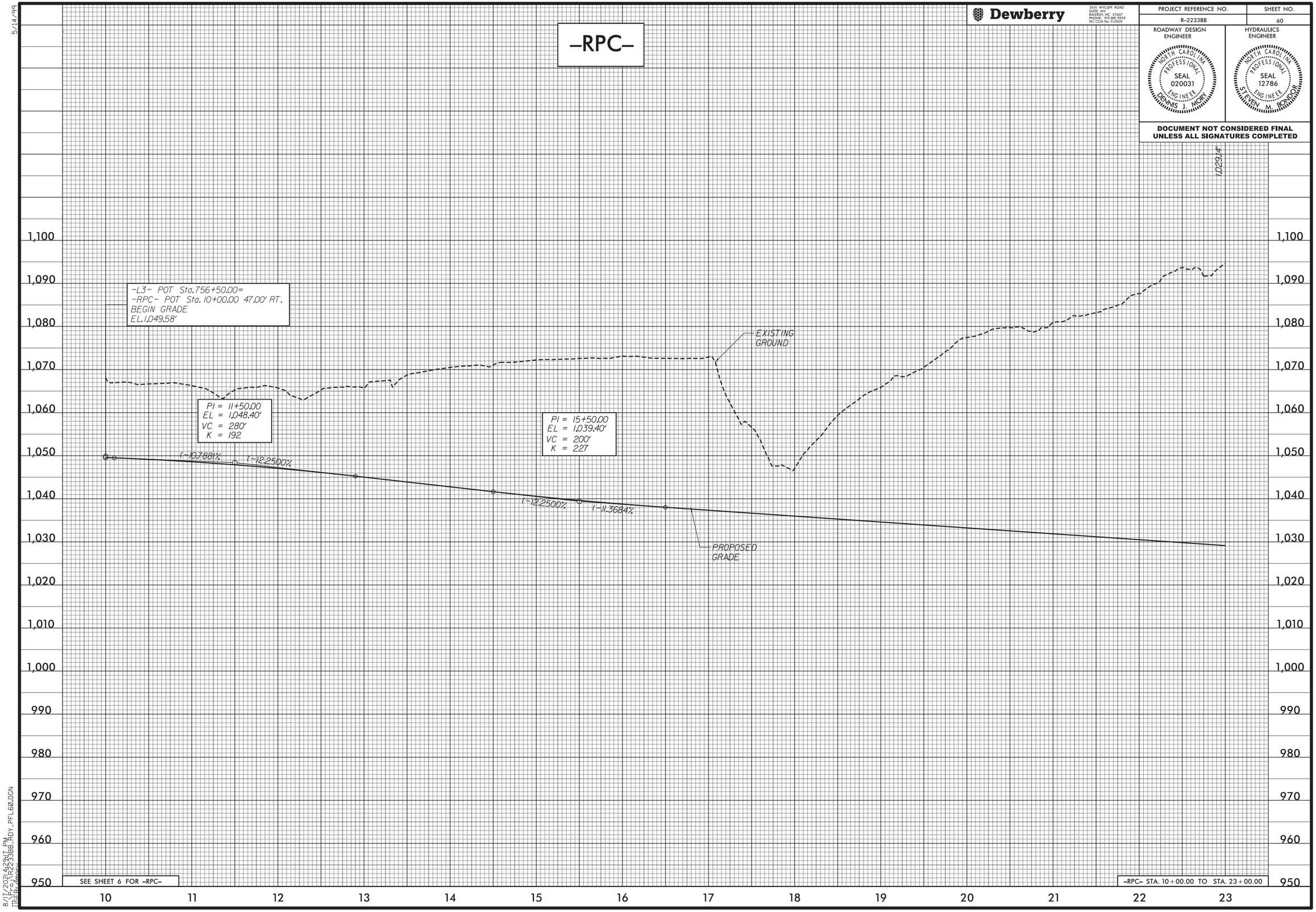
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDURANT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



SEE SHEET 6 FOR -RPC-

-RPC- STA. 10+00.00 TO STA. 23+00.00

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USER: smoore

5/14/99

Dewberry

2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	61

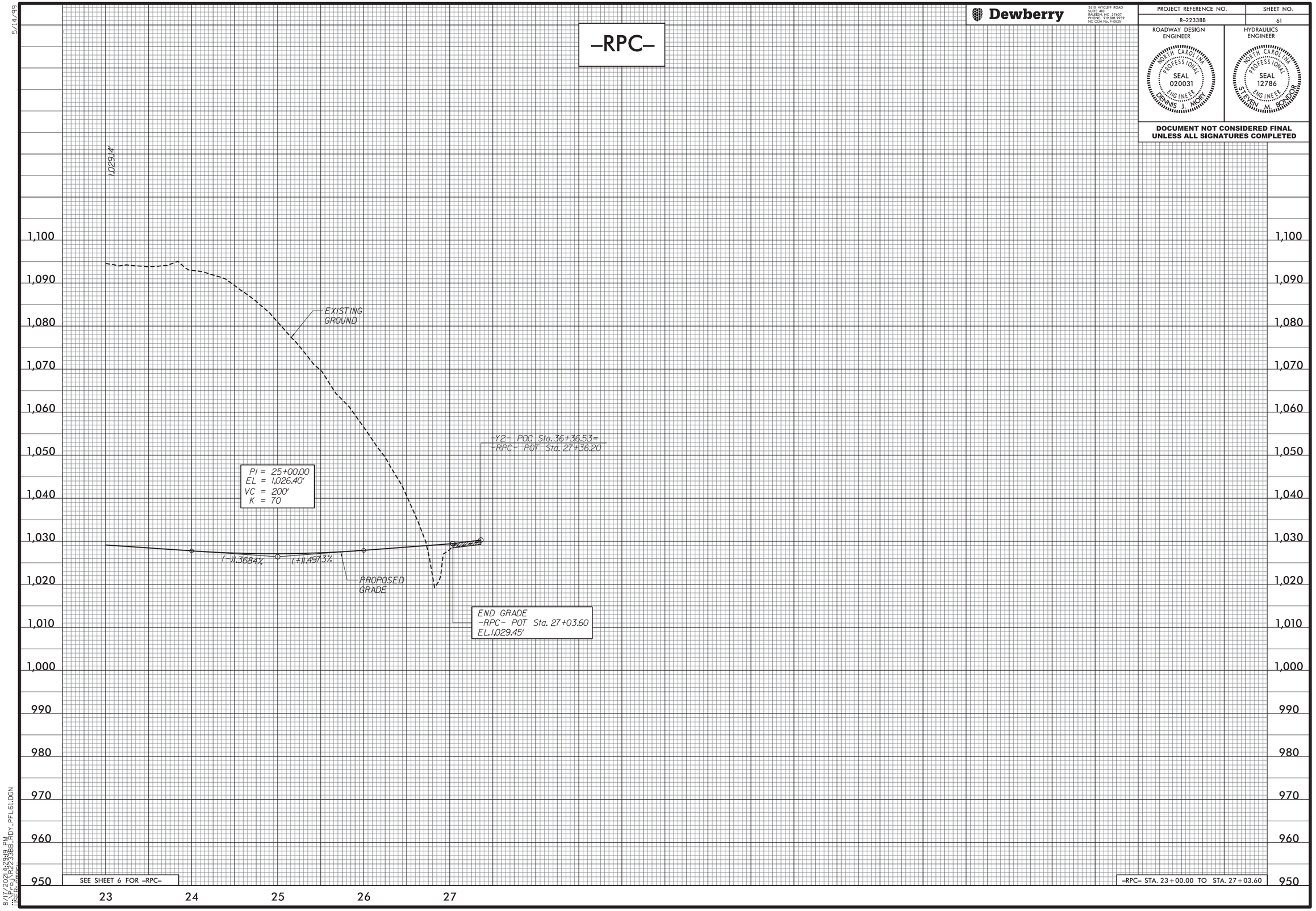
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDURANT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



SEE SHEET 6 FOR -RPC-

-RPC- STA. 23+00.00 TO STA. 27+03.60

8/18/2021 2:33 PM
R-2233BB_RDY_PFL61.DGN
USER: gmoreu

5/14/99

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	62

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDURANT

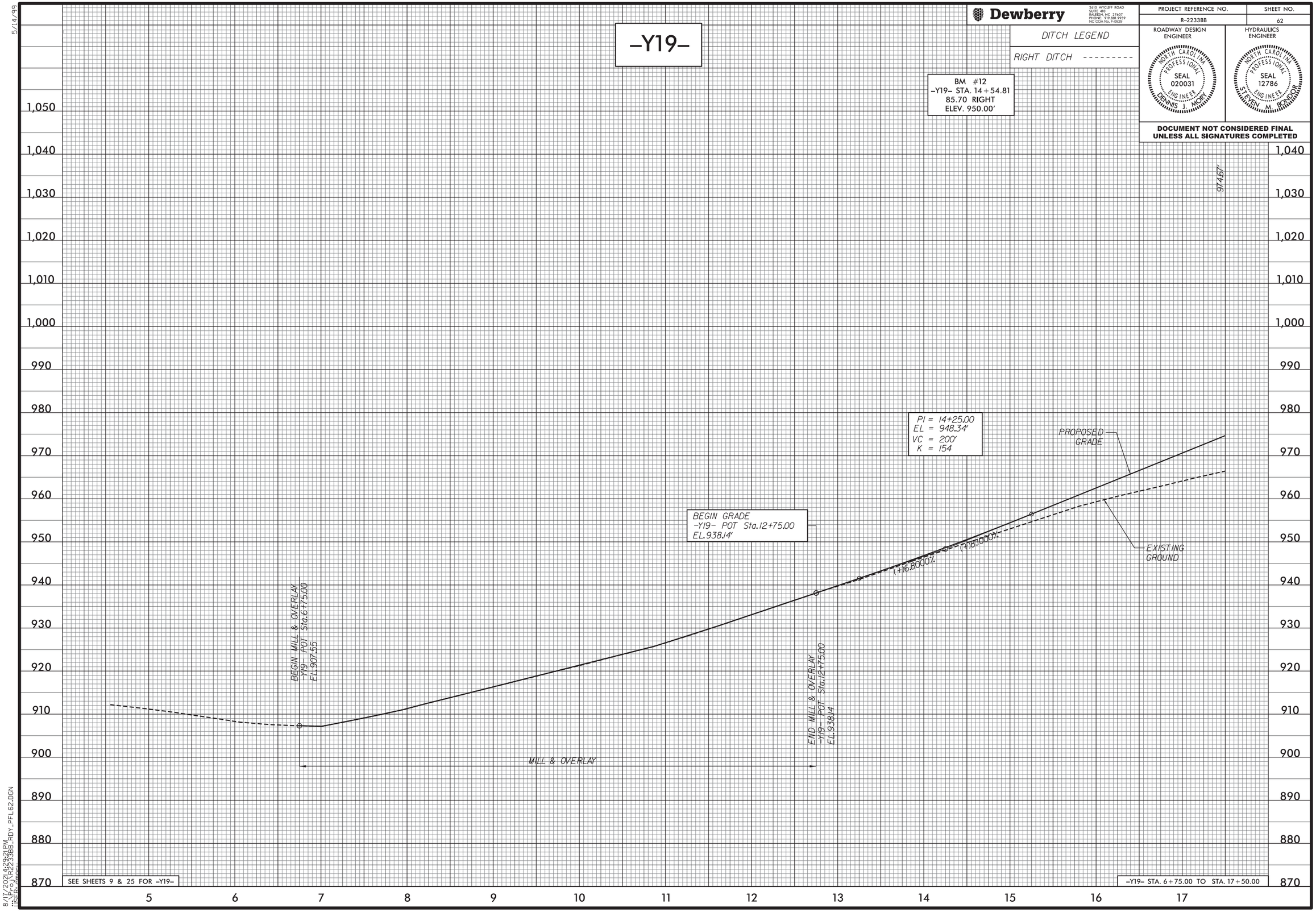
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DITCH LEGEND

RIGHT DITCH ---------

-Y19-

BM #12
-Y19- STA. 14+54.81
85.70 RIGHT
ELEV. 950.00'



SEE SHEETS 9 & 25 FOR -Y19-

-Y19- STA. 6+75.00 TO STA. 17+50.00

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c:\pwworking\dot\d0313\R2233BB_RDY_PFL62.DGN
USER: 4906

5/14/99

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	63

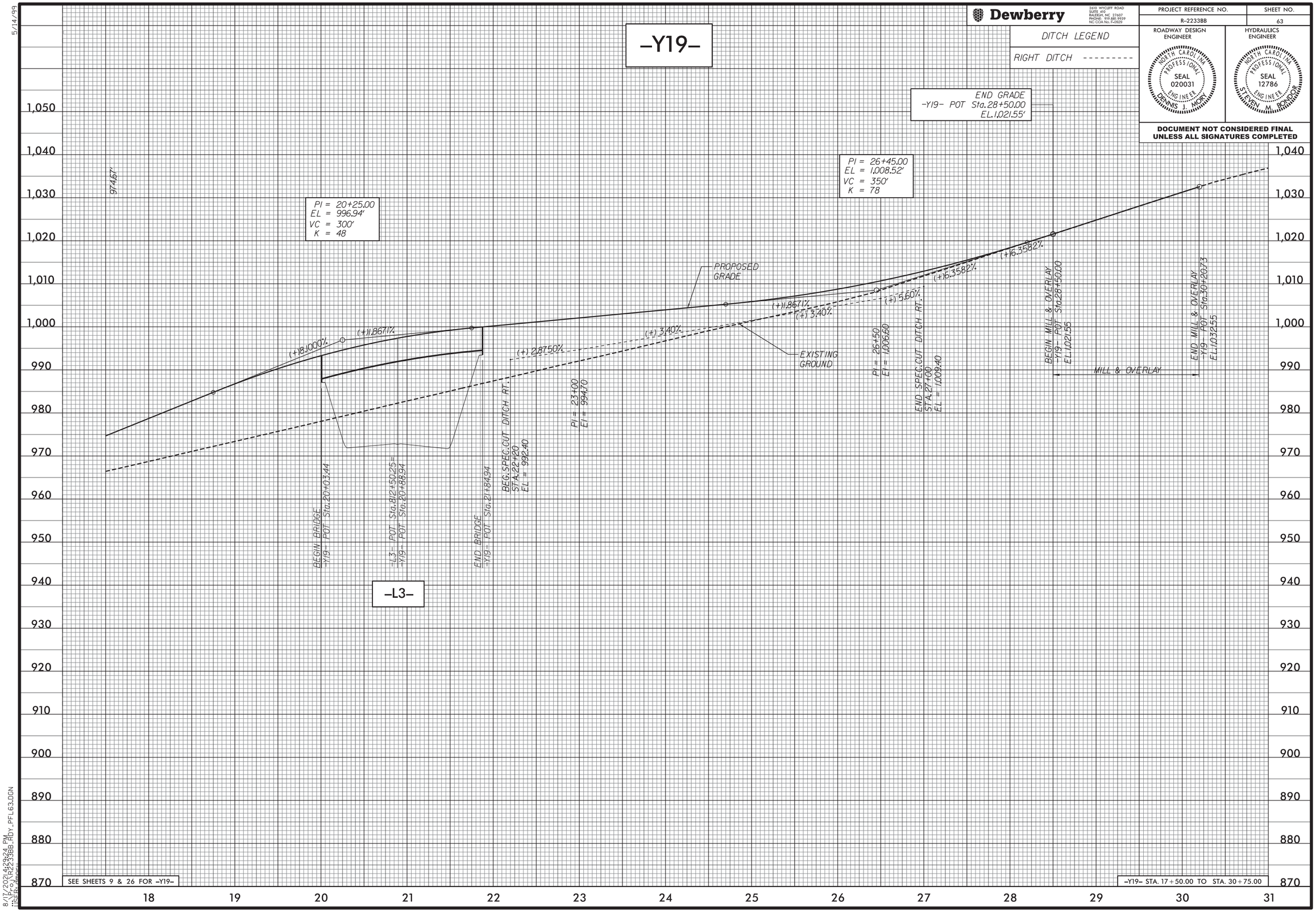
ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDURANT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DITCH LEGEND

RIGHT DITCH ---------



SEE SHEETS 9 & 26 FOR -Y19-

-Y19- STA. 17+50.00 TO STA. 30+75.00

8/17/2021 4:29:24 PM
USER: smorris

5/14/99

Dewberry

2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	64

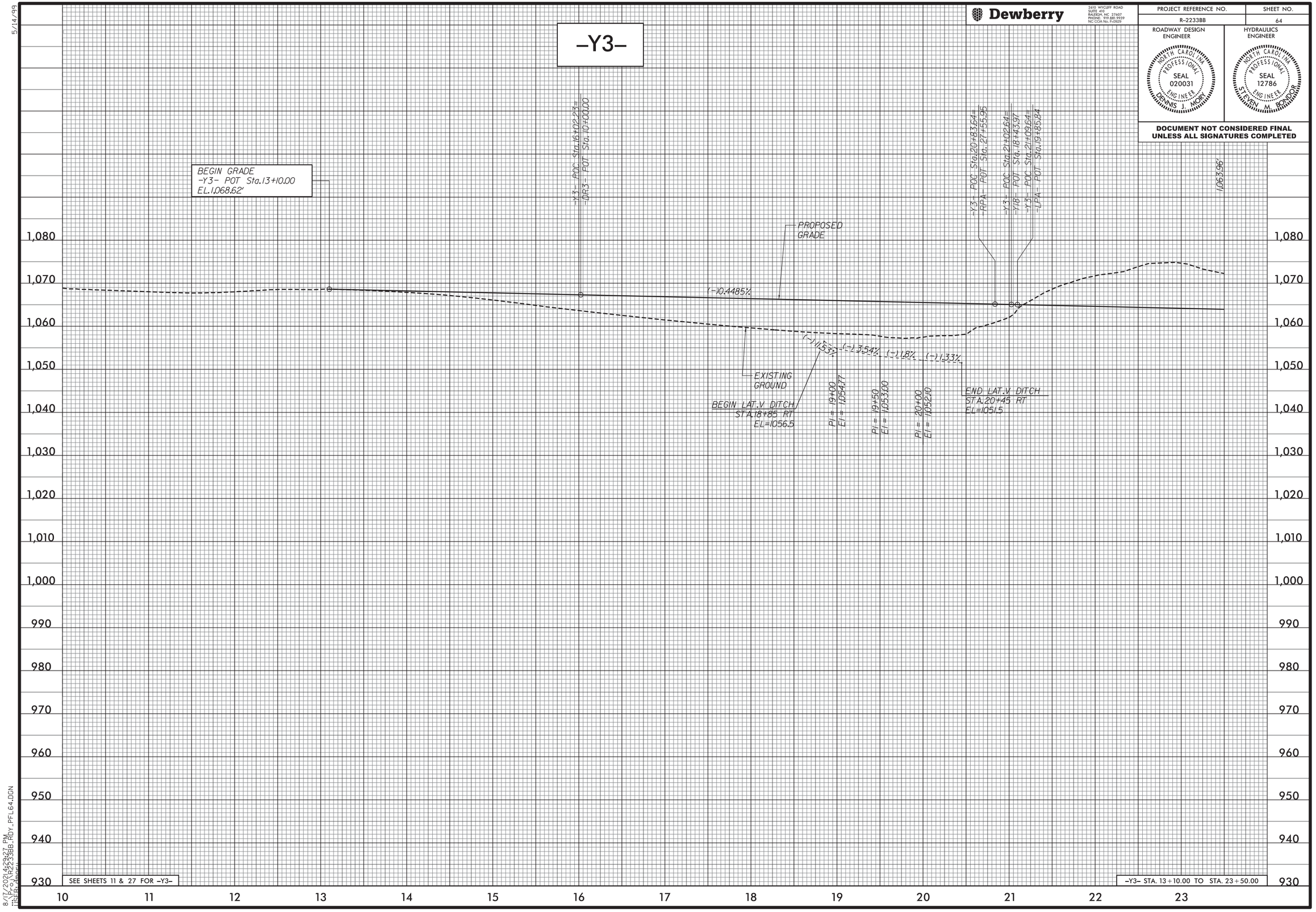
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDURANT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



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USER: Q00EU

5/14/99

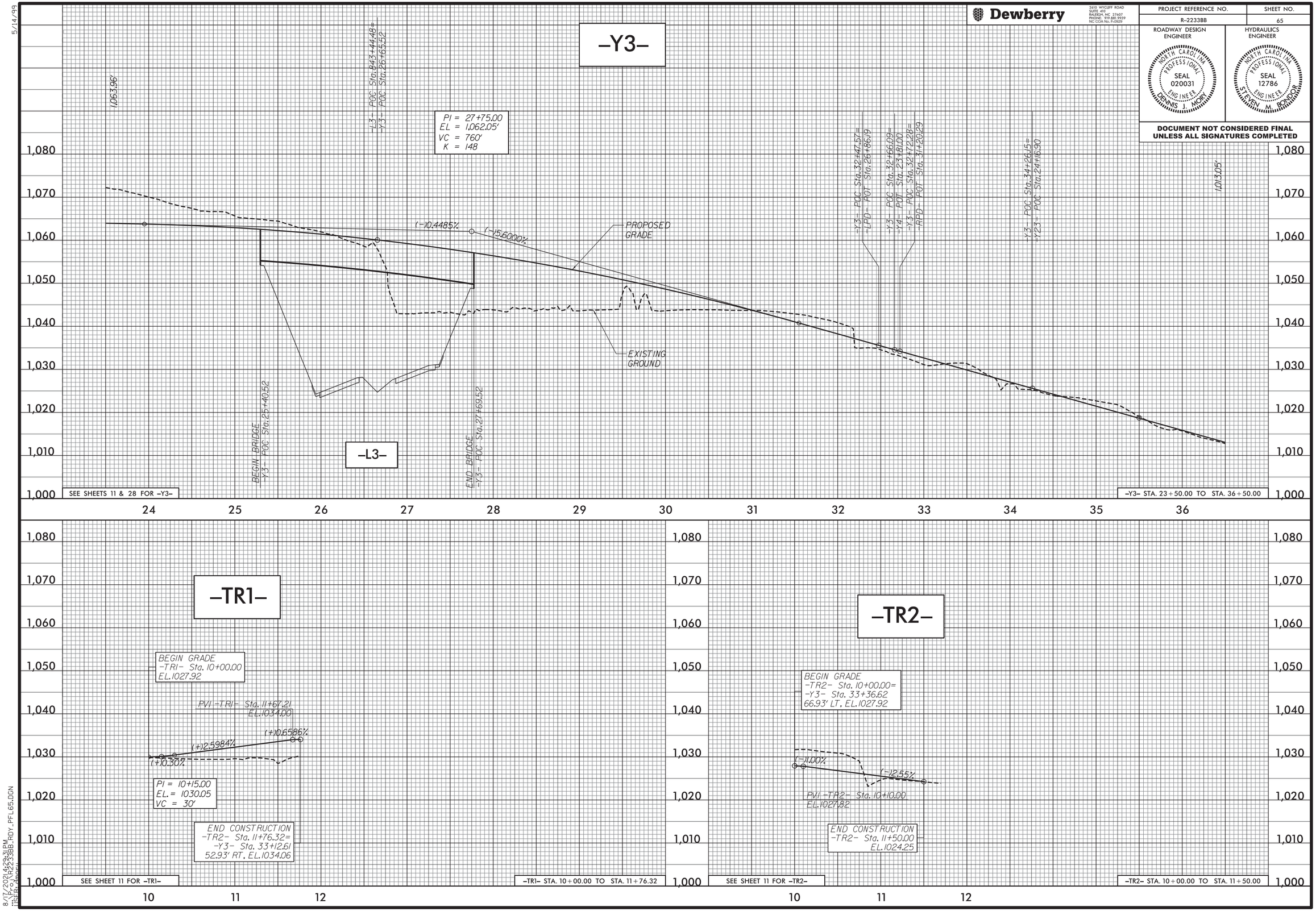
Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9929
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	65

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDURANT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



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USER: dmory

5/14/99

Dewberry

2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	66

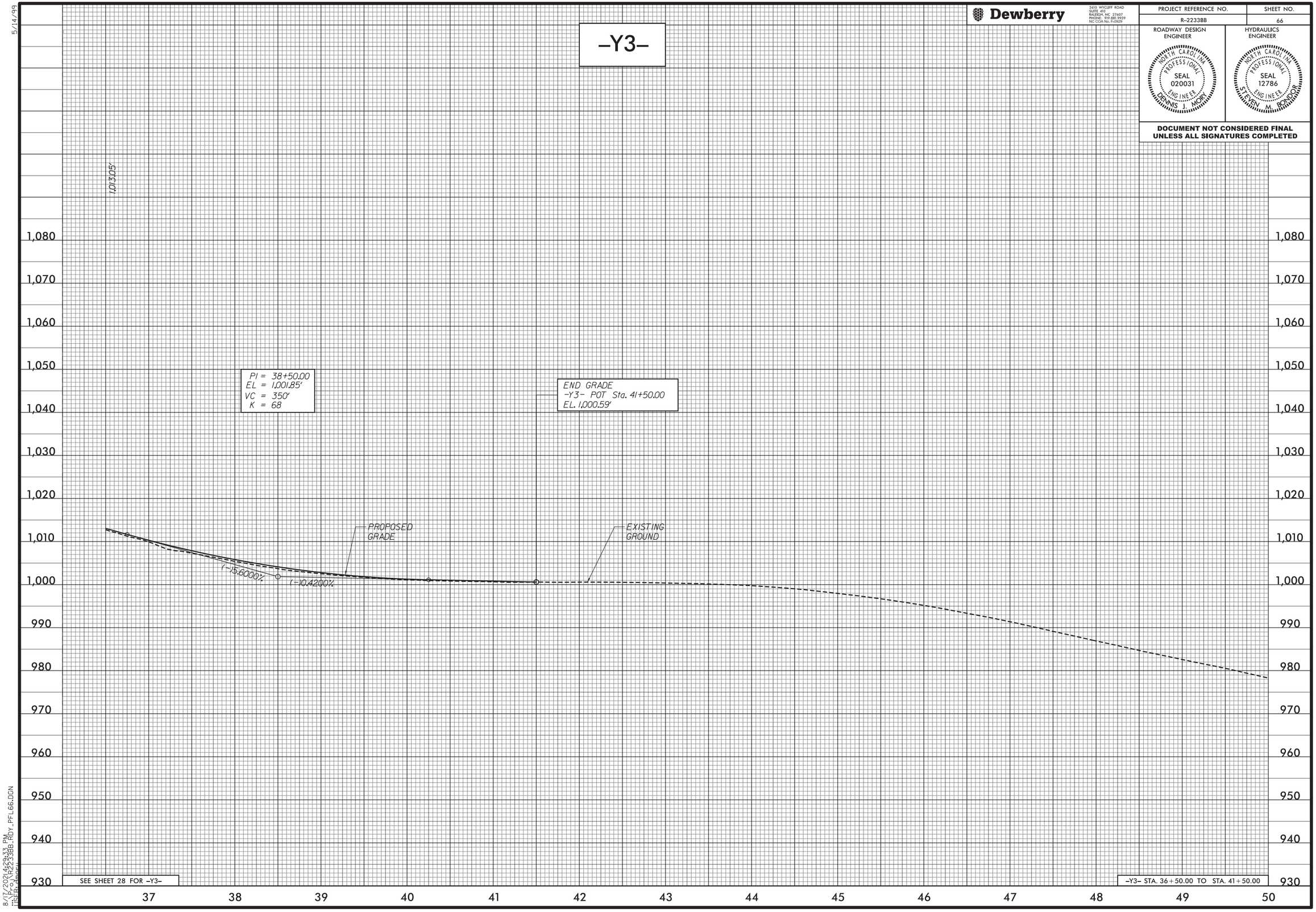
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDURANT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



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USER: Q00EU

5/14/99

Dewberry

2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9929
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	67

ROADWAY DESIGN ENGINEER

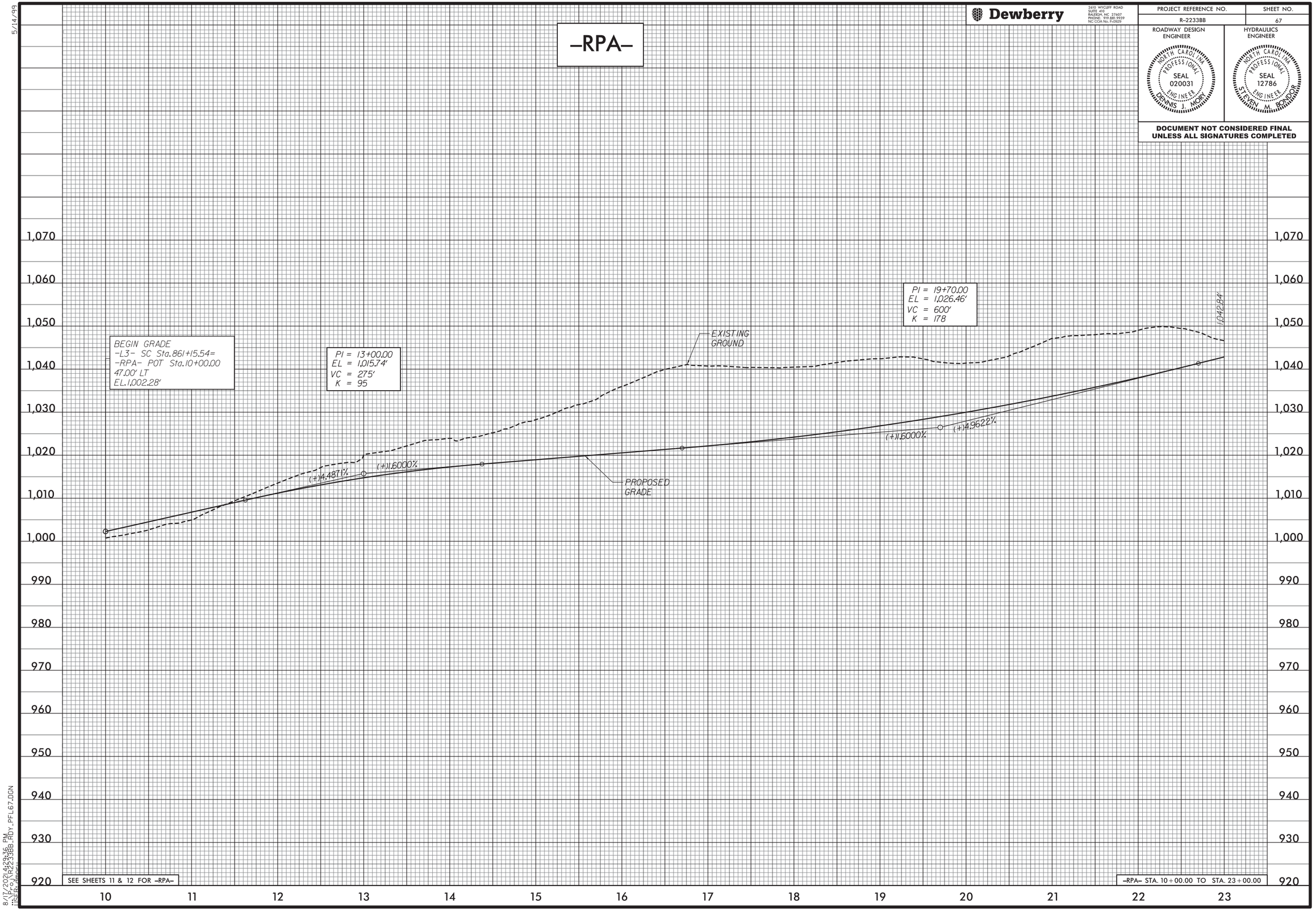
NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDURANT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-RPA-



SEE SHEETS 11 & 12 FOR -RPA-

-RPA- STA. 10+00.00 TO STA. 23+00.00

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R-2233BB_RDY_PFL67.DGN
USER: gadeu

5/14/99

Dewberry

2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	68

ROADWAY DESIGN ENGINEER

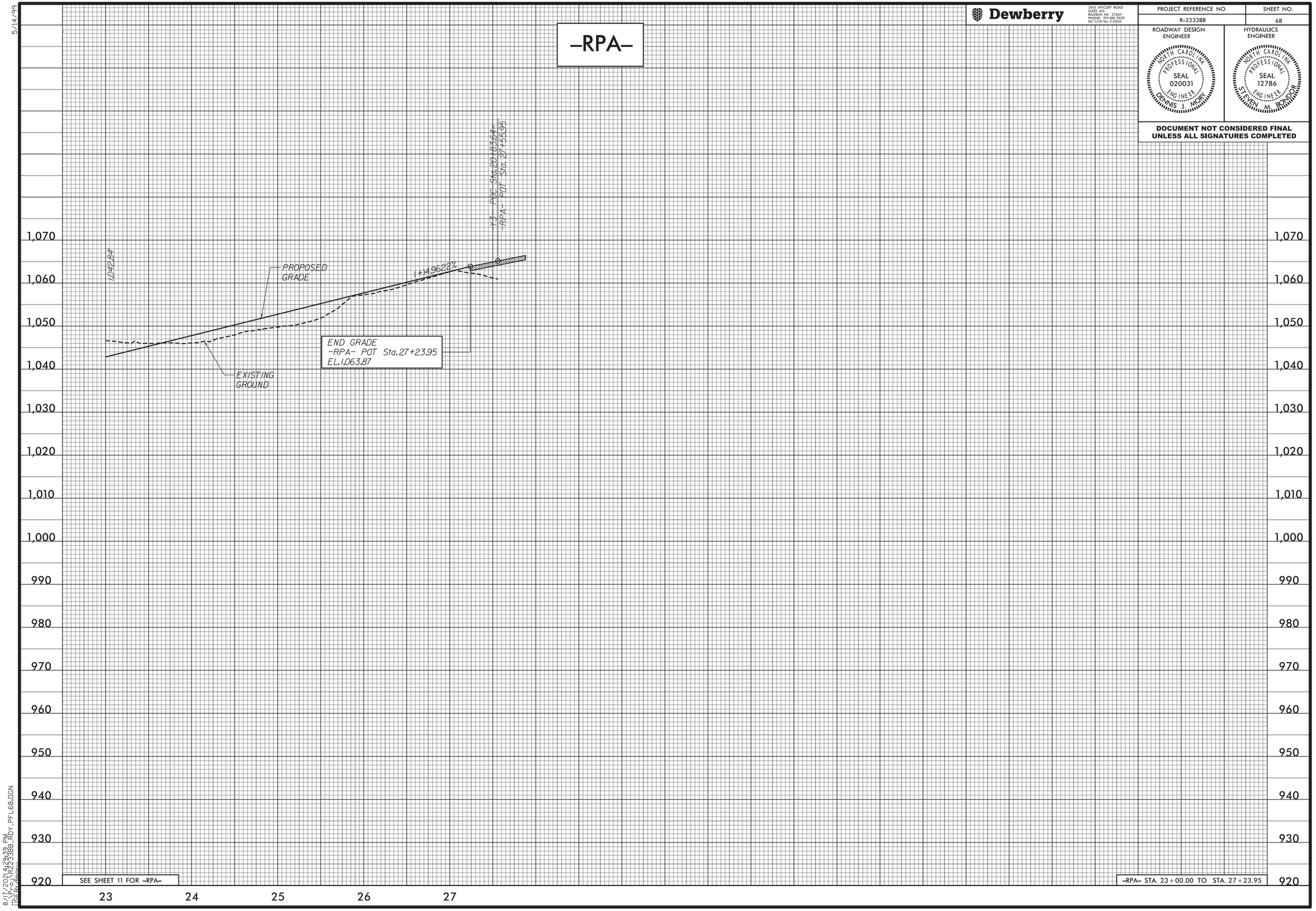
NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDURANT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-RPA-



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USER: Q00EU

5/14/99

Dewberry

2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	69

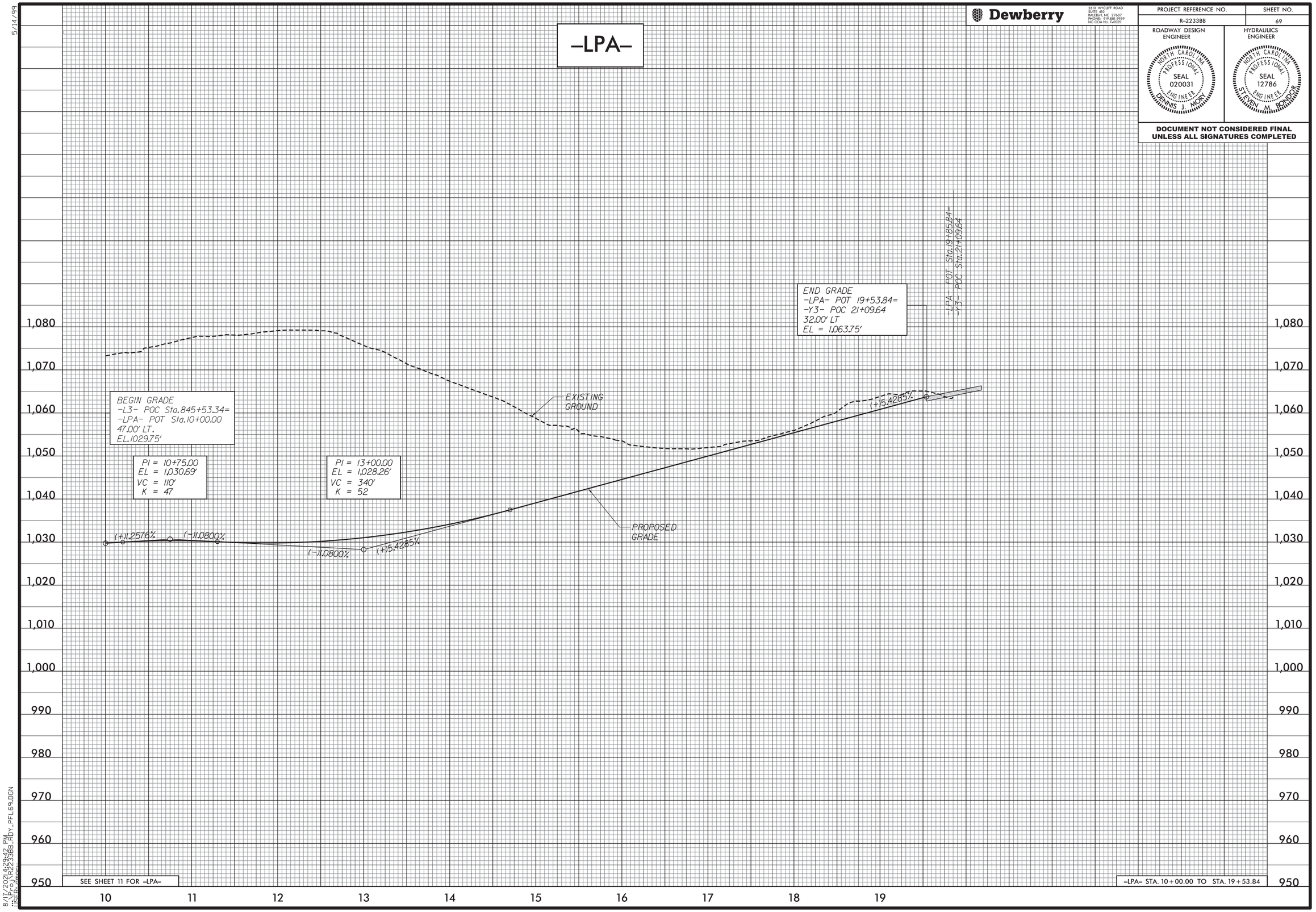
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDURANT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



SEE SHEET 11 FOR -LPA-

-LPA- STA. 10+00.00 TO STA. 19+53.84

8/17/2021 4:29:42 PM
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USER: JJONES

5/14/99

-LPD-

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	70

DITCH LEGEND

RIGHT DITCH ---------

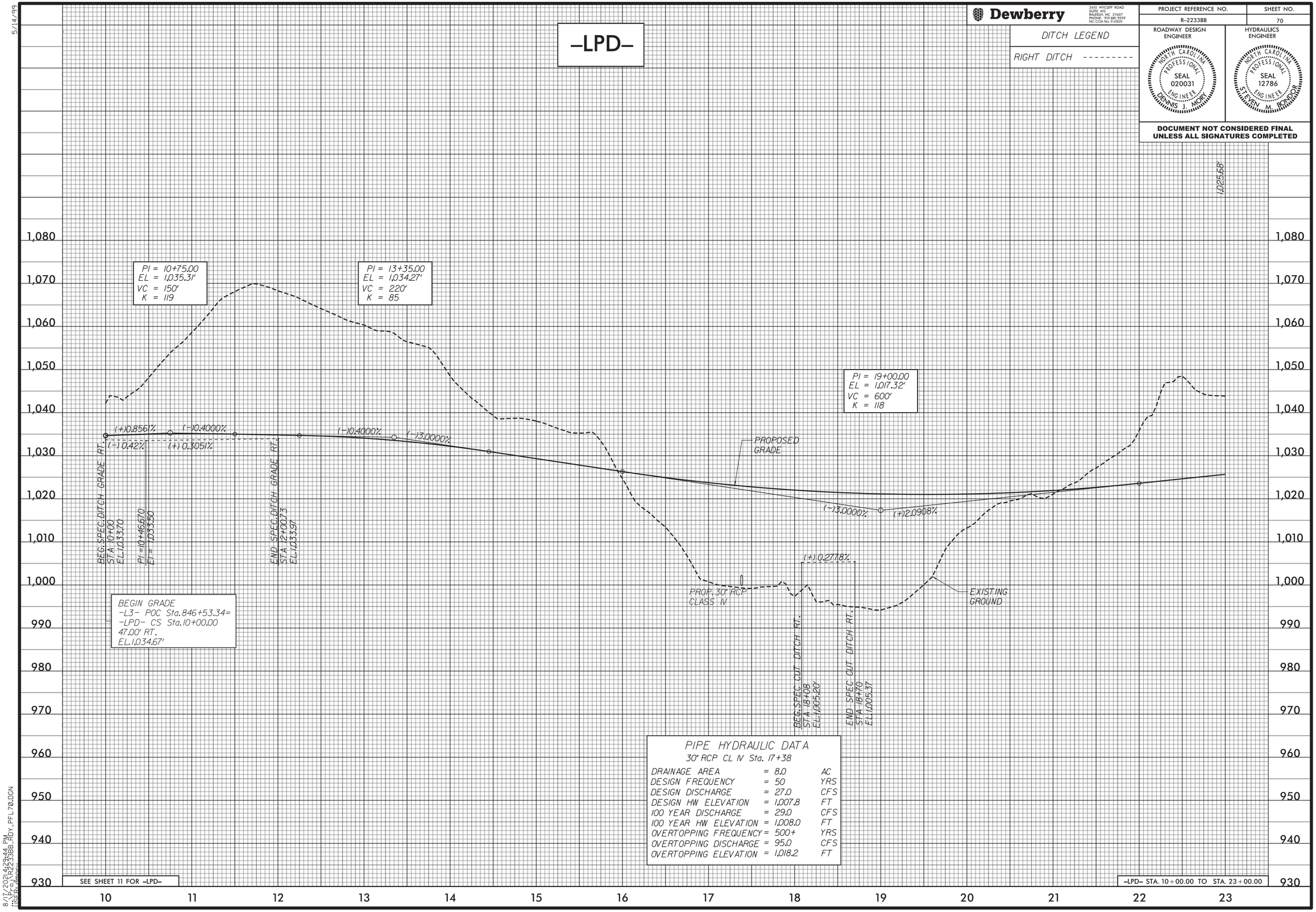
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDURANT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



PIPE HYDRAULIC DATA
30" RCP CL IV Sta. 17+38

DRAINAGE AREA	=	8.0	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	27.0	CFS
DESIGN HW ELEVATION	=	1,007.8	FT
100 YEAR DISCHARGE	=	29.0	CFS
100 YEAR HW ELEVATION	=	1,008.0	FT
OVERTOPPING FREQUENCY	=	500+	YRS
OVERTOPPING DISCHARGE	=	95.0	CFS
OVERTOPPING ELEVATION	=	1,018.2	FT

SEE SHEET 11 FOR -LPD-

-LPD- STA. 10+00.00 TO STA. 23+00.00

8/17/2021 4:29:44 PM
R-2233BB_RDY_PFL70.DGN
USER: jmorris

5/14/99

Dewberry

2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	71

ROADWAY DESIGN ENGINEER

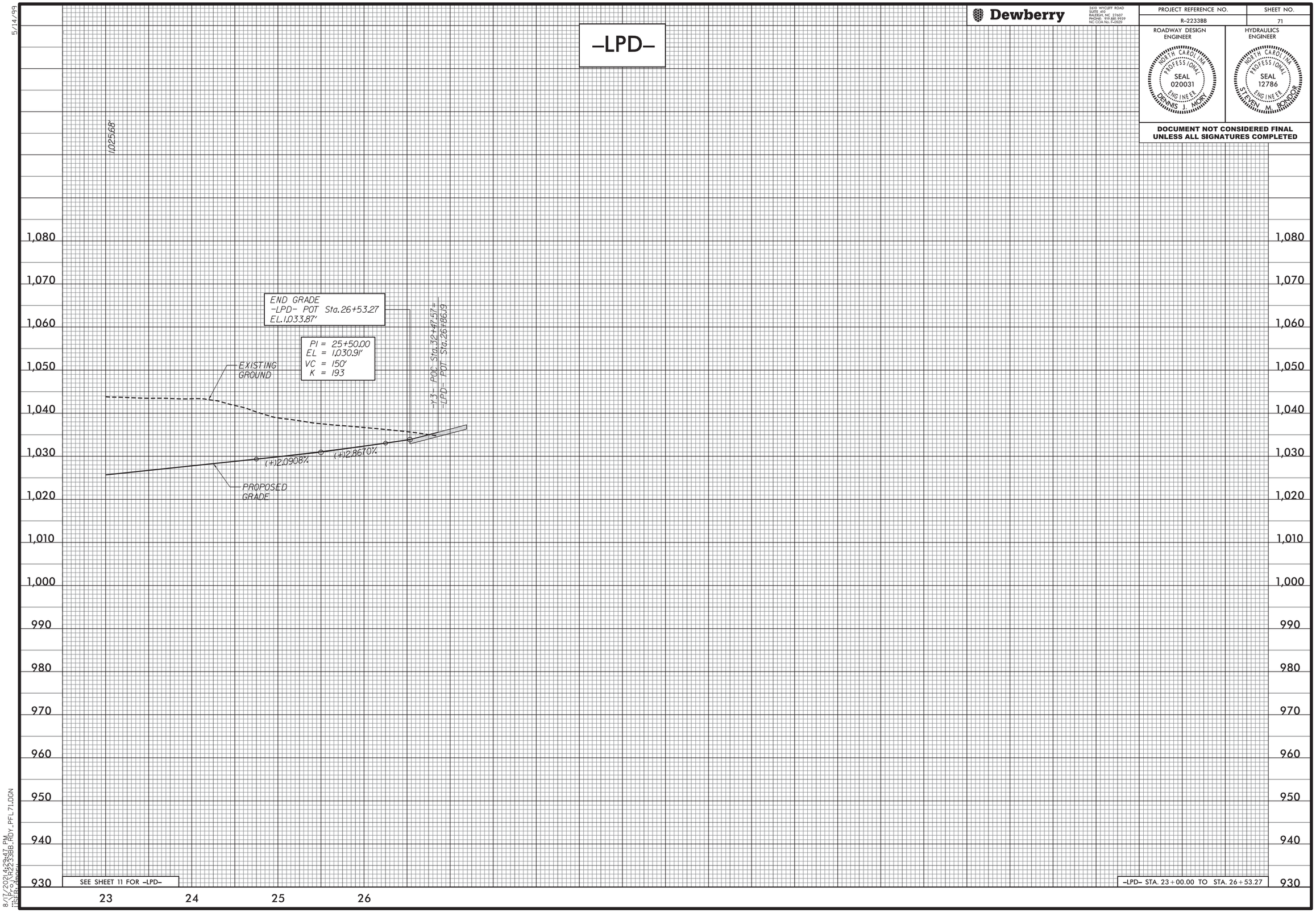
NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDURANT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-LPD-



SEE SHEET 11 FOR -LPD-

-LPD- STA. 23+00.00 TO STA. 26+53.27

8/17/2021 4:29:47 PM
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USER: J.Mory

5/14/99

–RPD–

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	72

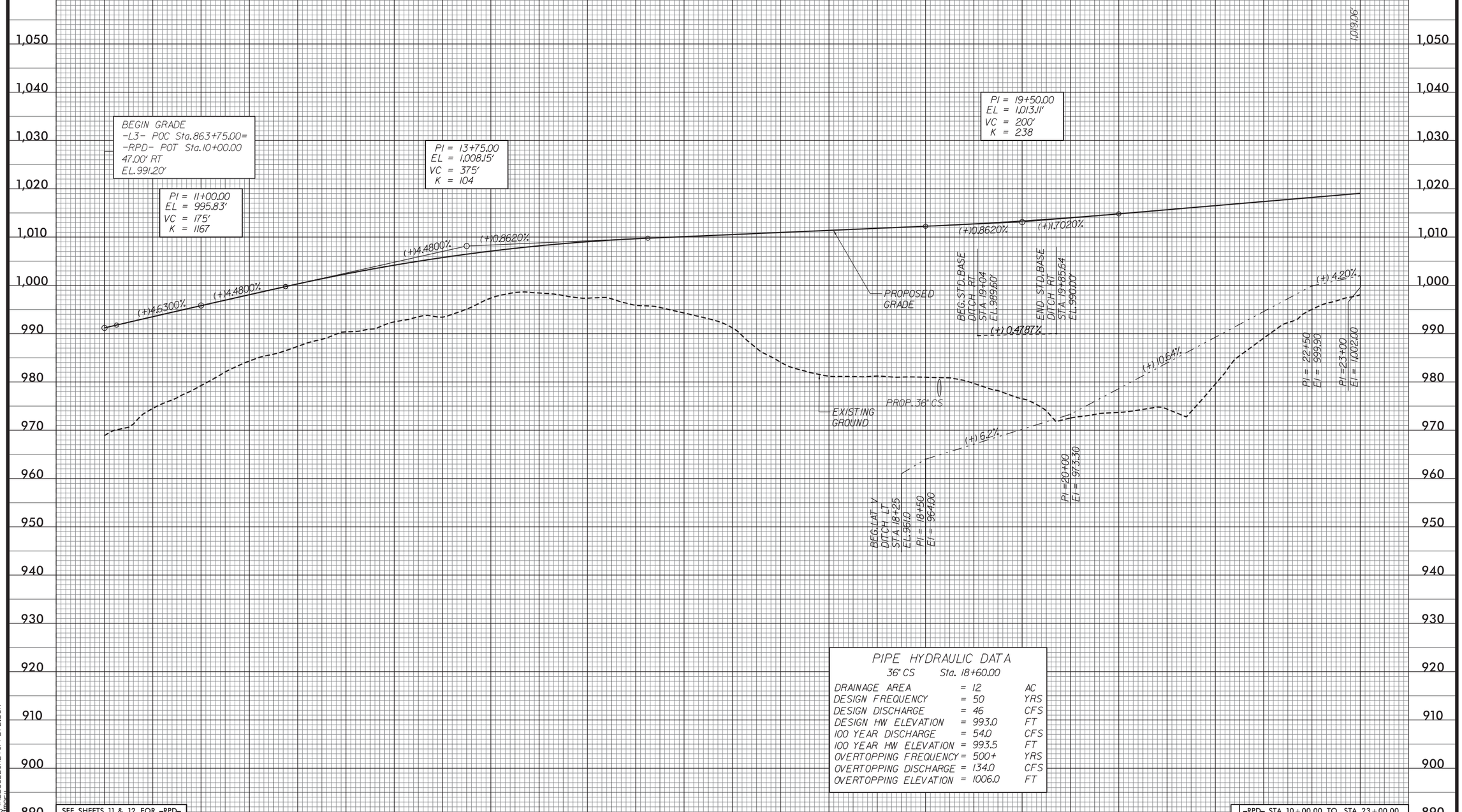
ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDURANT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DITCH LEGEND

RIGHT DITCH ---------



PIPE HYDRAULIC DATA

36" CS Sta. 18+60.00

DRAINAGE AREA	=	12	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	46	CFS
DESIGN HW ELEVATION	=	993.0	FT
100 YEAR DISCHARGE	=	54.0	CFS
100 YEAR HW ELEVATION	=	993.5	FT
OVERTOPPING FREQUENCY	=	500+	YRS
OVERTOPPING DISCHARGE	=	134.0	CFS
OVERTOPPING ELEVATION	=	1006.0	FT

SEE SHEETS 11 & 12 FOR –RPD–

–RPD– STA. 10+00.00 TO STA. 23+00.00

8/17/2021 2:35:50 PM
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USER: Q00EU

5/14/99

Dewberry

2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	73

ROADWAY DESIGN ENGINEER

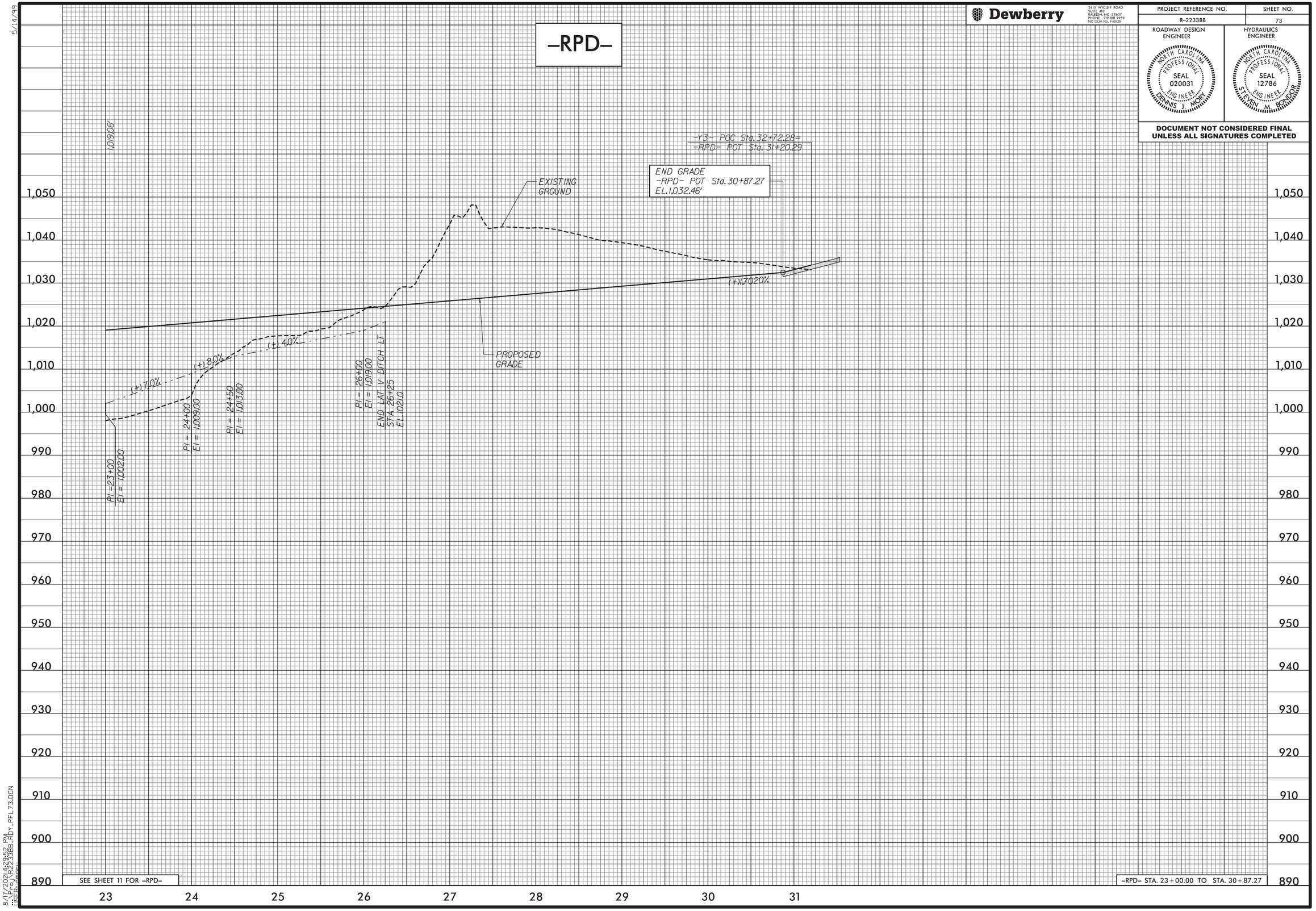
NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDURANT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-RPD-



SEE SHEET 11 FOR -RPD-

-RPD- STA. 23+00.00 TO STA. 30+87.27

8/17/2021 3:52 PM
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USER: 4900EU

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	74

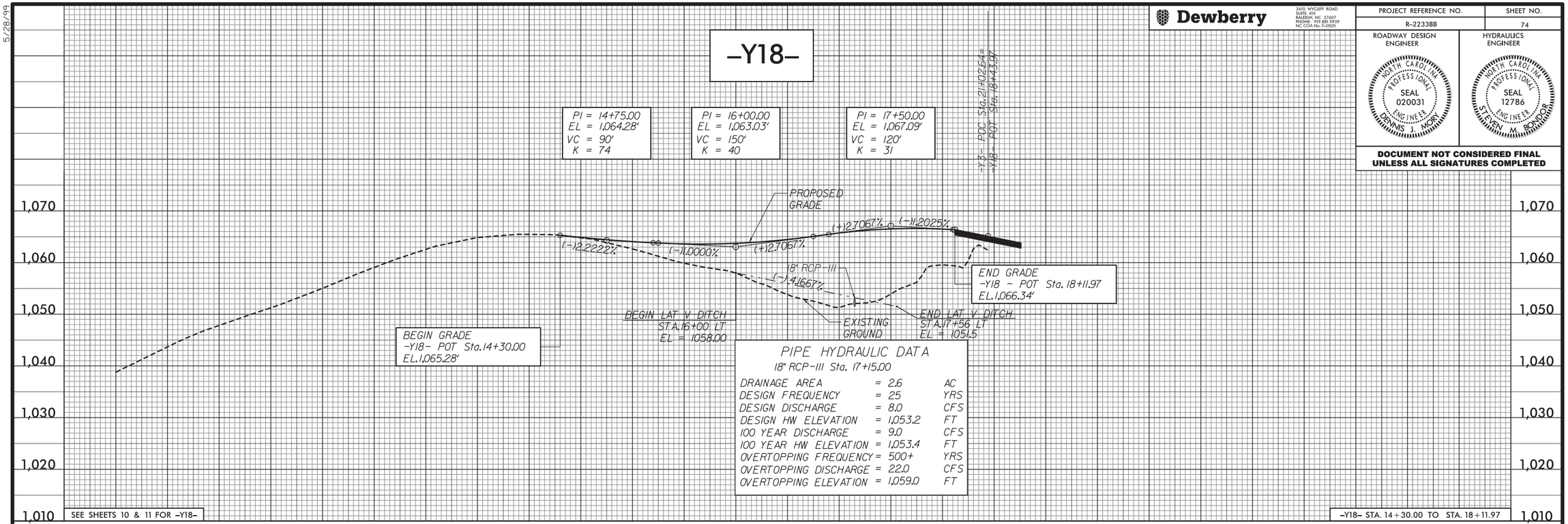
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORIN

HYDRAULICS ENGINEER

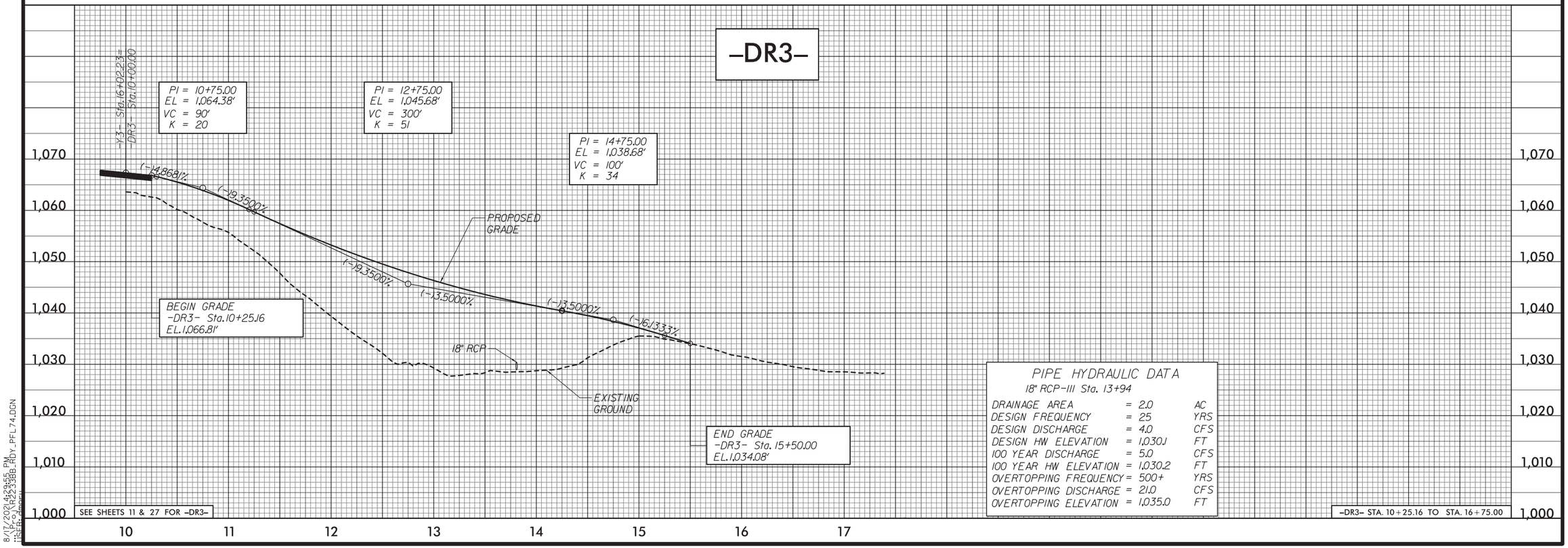
NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDOR

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



SEE SHEETS 10 & 11 FOR -Y18-

-Y18- STA. 14+30.00 TO STA. 18+11.97



SEE SHEETS 11 & 27 FOR -DR3-

-DR3- STA. 10+25.16 TO STA. 16+75.00

5/28/99
8/17/2021 4:29:55 PM
R-2233BB_RDY_PFL74.DGN
USER: smorin

5/14/99

–Y6–

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

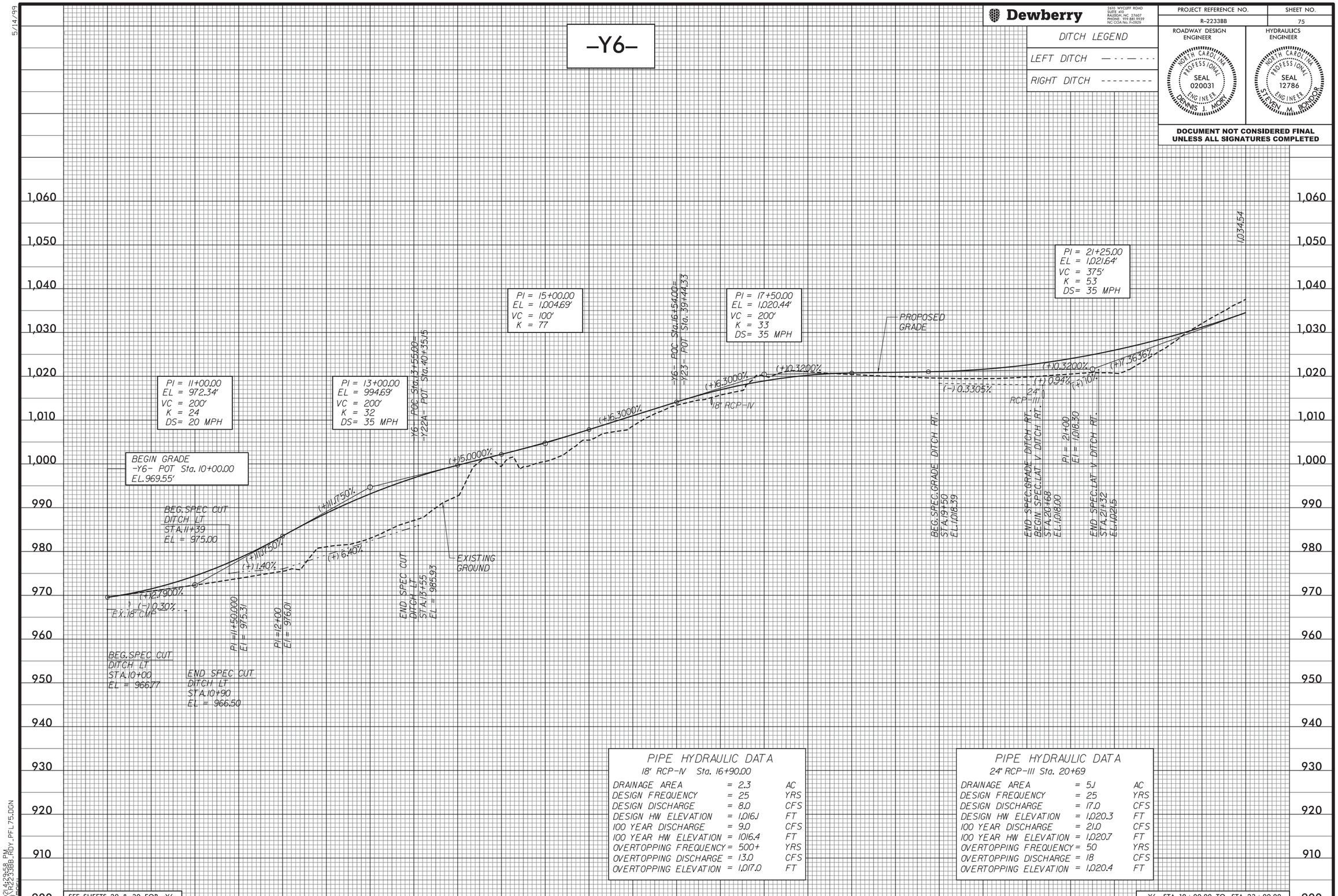
PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	75

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDURANT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DITCH LEGEND
LEFT DITCH — · · — · · —
RIGHT DITCH - - - - - - - - -



PIPE HYDRAULIC DATA
18" RCP-IV Sta. 16+90.00

DRAINAGE AREA	=	2.3	AC
DESIGN FREQUENCY	=	25	YRS
DESIGN DISCHARGE	=	8.0	CFS
DESIGN HW ELEVATION	=	1,016.1	FT
100 YEAR DISCHARGE	=	9.0	CFS
100 YEAR HW ELEVATION	=	1016.4	FT
OVERTOPPING FREQUENCY	=	500+	YRS
OVERTOPPING DISCHARGE	=	13.0	CFS
OVERTOPPING ELEVATION	=	1,017.0	FT

PIPE HYDRAULIC DATA
24" RCP-III Sta. 20+69

DRAINAGE AREA	=	5.1	AC
DESIGN FREQUENCY	=	25	YRS
DESIGN DISCHARGE	=	17.0	CFS
DESIGN HW ELEVATION	=	1,020.3	FT
100 YEAR DISCHARGE	=	21.0	CFS
100 YEAR HW ELEVATION	=	1,020.7	FT
OVERTOPPING FREQUENCY	=	50	YRS
OVERTOPPING DISCHARGE	=	18	CFS
OVERTOPPING ELEVATION	=	1,020.4	FT

SEE SHEETS 29 & 30 FOR –Y6–

–Y6– STA. 10+00.00 TO STA. 23+00.00

8/17/2021 4:23:58 PM
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USER: SDOBELL

5/14/99

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	76

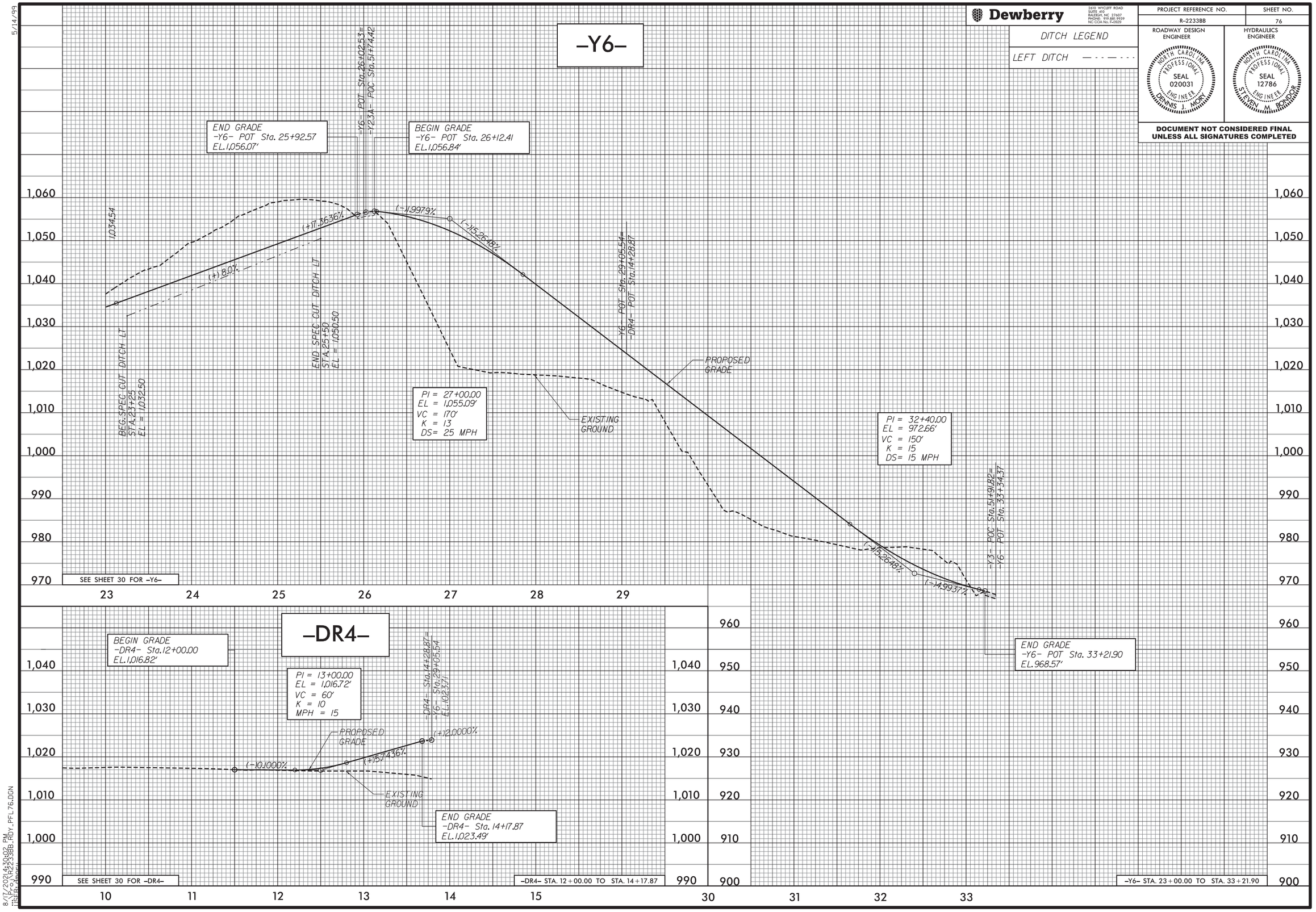
ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDURANT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DITCH LEGEND

LEFT DITCH — - - — - - -



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5/28/99

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	77

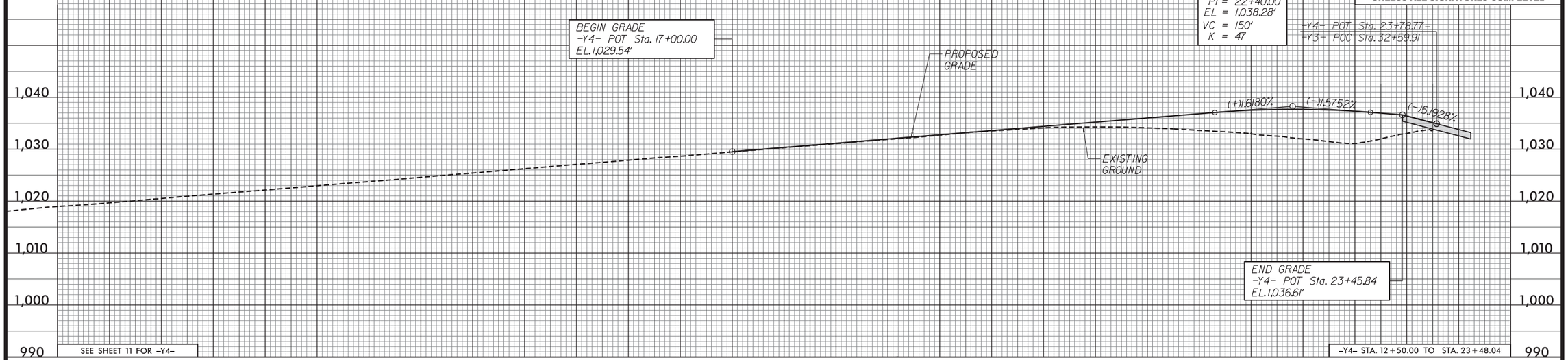
ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORIN

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDOR

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DITCH LEGEND
LEFT DITCH — · · — · · —
RIGHT DITCH - - - - - - - - -

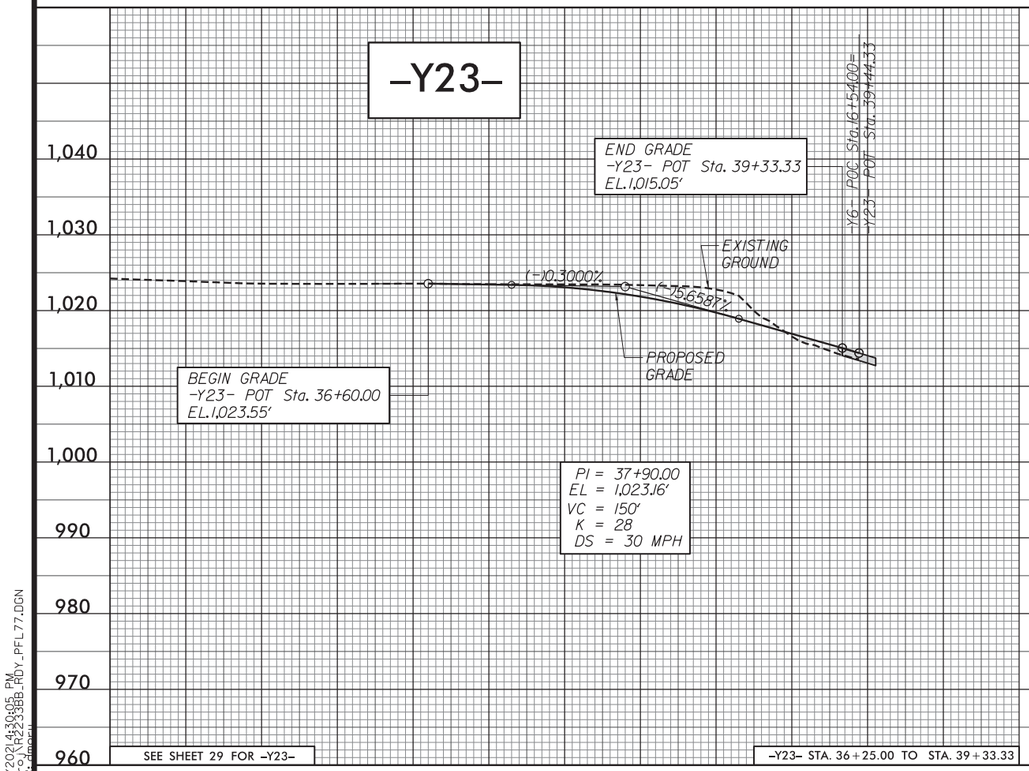
-Y4-



SEE SHEET 11 FOR -Y4-

-Y4- STA. 12+50.00 TO STA. 23+48.04

-Y23-

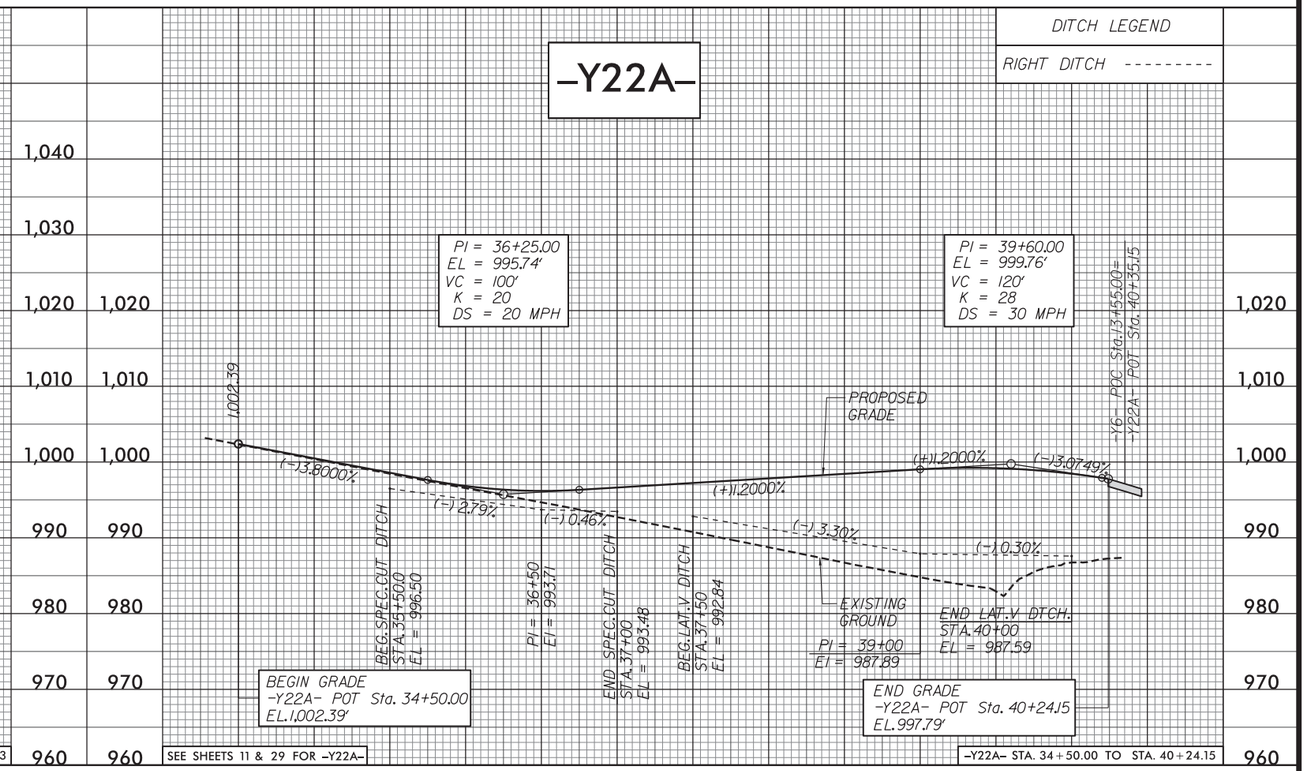


SEE SHEET 29 FOR -Y23-

-Y23- STA. 36+25.00 TO STA. 39+33.33

-Y22A-

DITCH LEGEND
RIGHT DITCH - - - - - - - - -



SEE SHEETS 11 & 29 FOR -Y22A-

-Y22A- STA. 34+50.00 TO STA. 40+24.15

8/17/2021 4:33:05 PM
USER: Jmorin

5/28/99

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	78

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORIN

HYDRAULICS ENGINEER

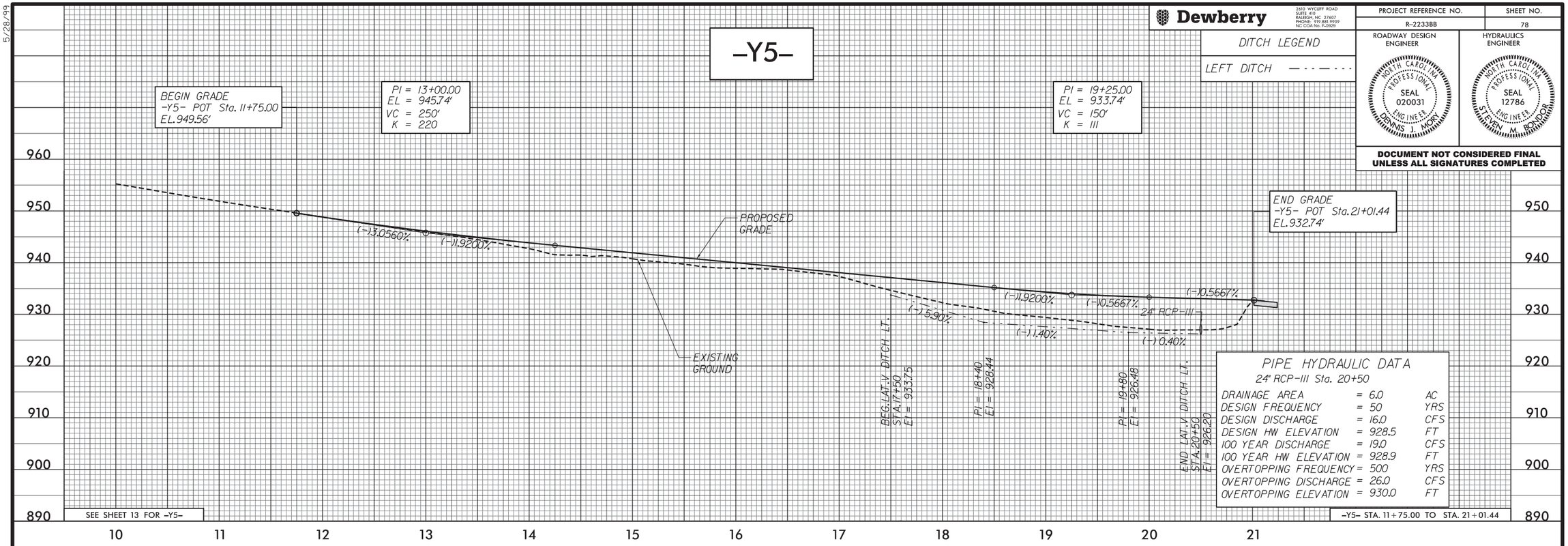
NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDOR

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DITCH LEGEND

LEFT DITCH — - - — - - -

-Y5-



PIPE HYDRAULIC DATA

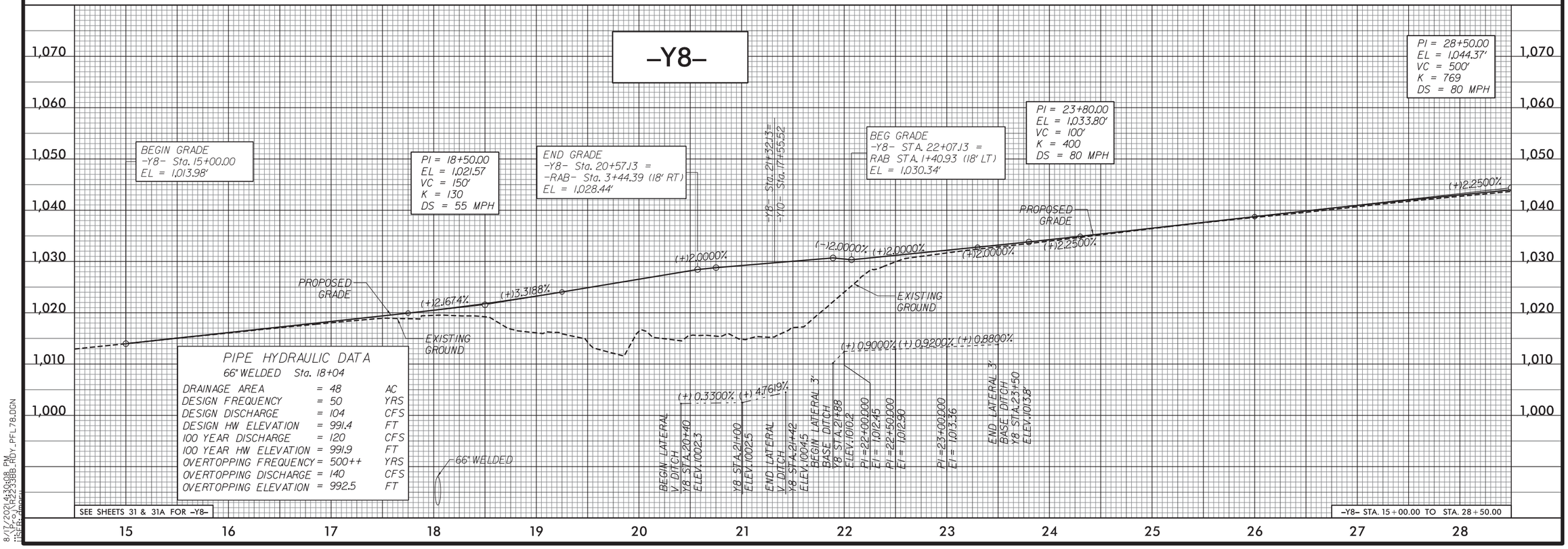
24" RCP-III Sta. 20+50

DRAINAGE AREA	=	6.0	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	16.0	CFS
DESIGN HW ELEVATION	=	928.5	FT
100 YEAR DISCHARGE	=	19.0	CFS
100 YEAR HW ELEVATION	=	928.9	FT
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING DISCHARGE	=	26.0	CFS
OVERTOPPING ELEVATION	=	930.0	FT

SEE SHEET 13 FOR -Y5-

-Y5- STA. 11+75.00 TO STA. 21+01.44

-Y8-



PIPE HYDRAULIC DATA

66" WELDED Sta. 18+04

DRAINAGE AREA	=	48	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	104	CFS
DESIGN HW ELEVATION	=	991.4	FT
100 YEAR DISCHARGE	=	120	CFS
100 YEAR HW ELEVATION	=	991.9	FT
OVERTOPPING FREQUENCY	=	500++	YRS
OVERTOPPING DISCHARGE	=	140	CFS
OVERTOPPING ELEVATION	=	992.5	FT

SEE SHEETS 31 & 31A FOR -Y8-

-Y8- STA. 15+00.00 TO STA. 28+50.00

8/17/2021 4:33:08 PM
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USER: smorin

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	79

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORA

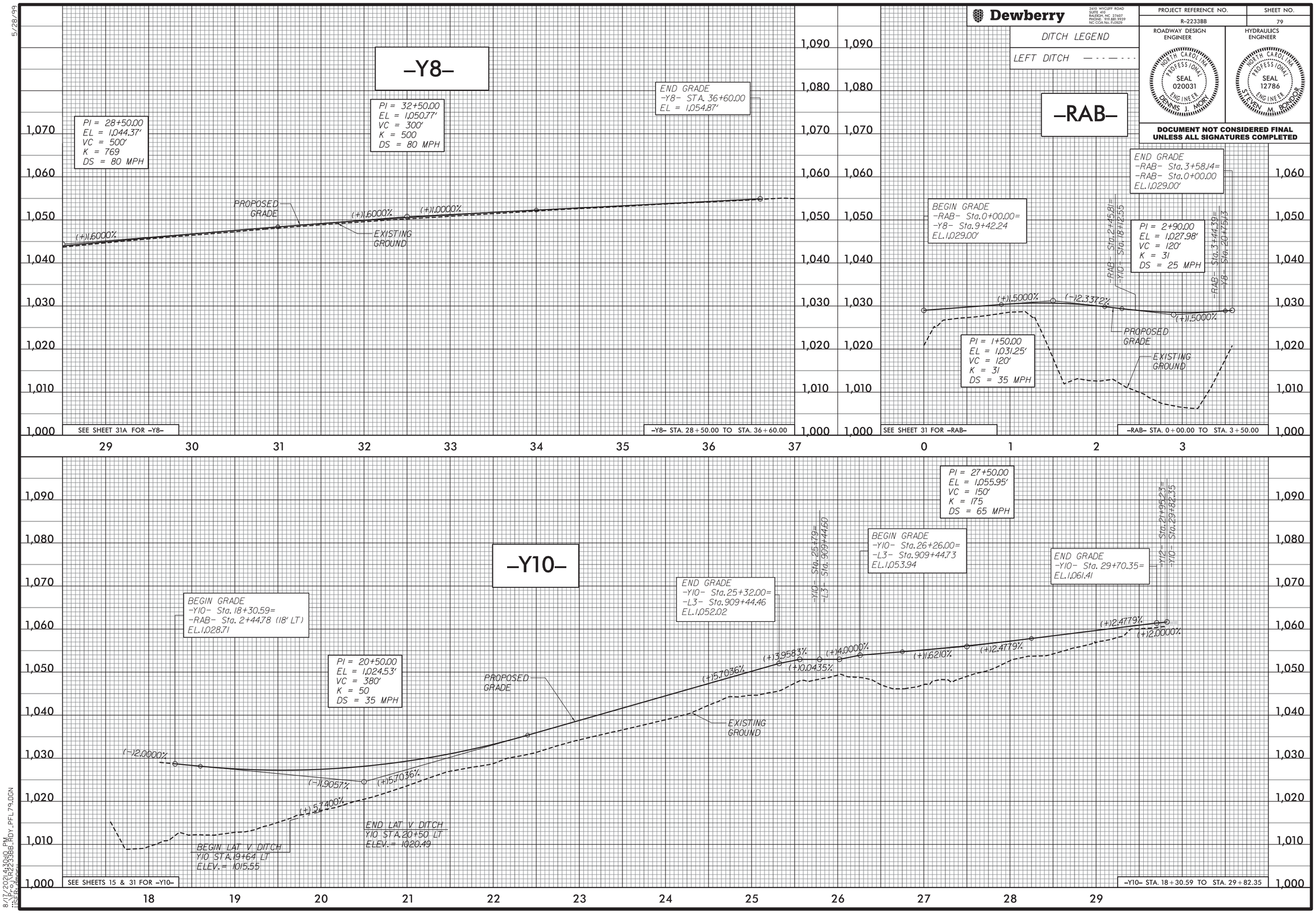
HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDOR

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DITCH LEGEND

LEFT DITCH — - - — - - -



5/28/99

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USER: smorris

5/28/99

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

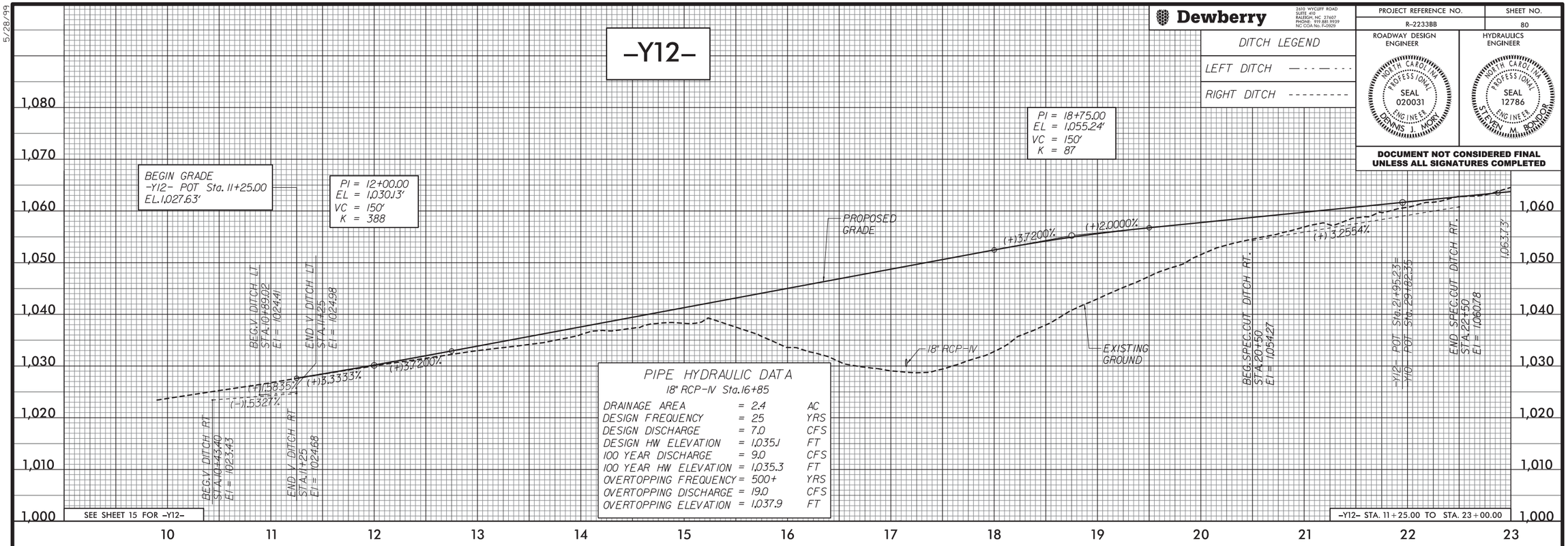
PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	80

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORIN

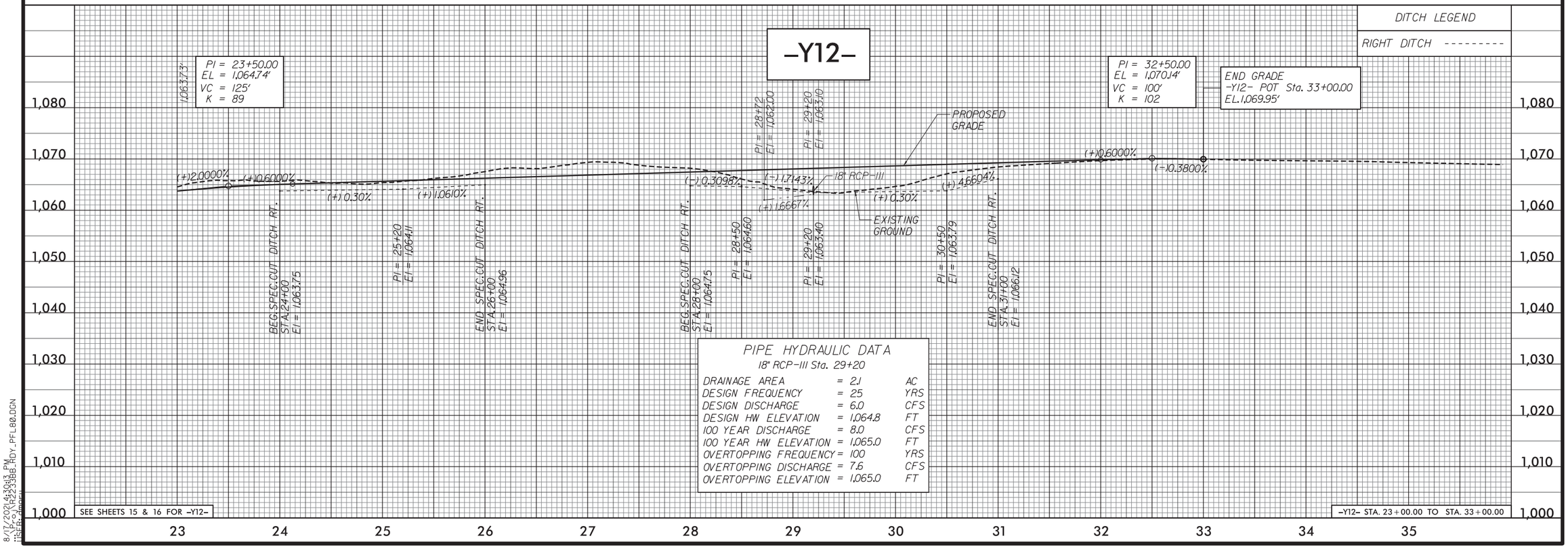
HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDOR

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DITCH LEGEND
LEFT DITCH — · · — · · —
RIGHT DITCH - - - - - - - - -



DITCH LEGEND
RIGHT DITCH - - - - - - - - -



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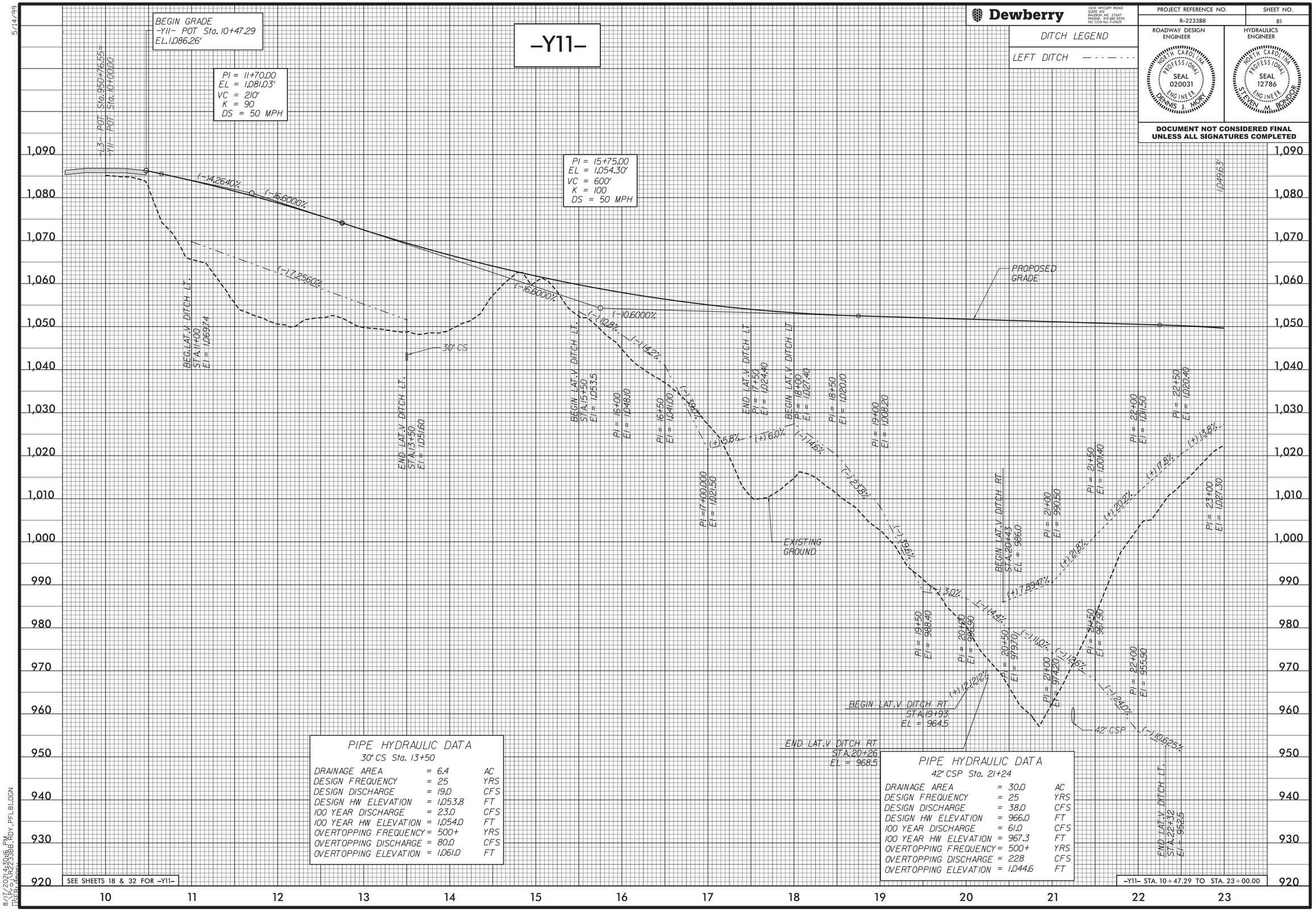

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

DITCH LEGEND

LEFT DITCH — - - — - - -

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	81

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDURANT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PIPE HYDRAULIC DATA
30" CS Sta. 13+50

DRAINAGE AREA	= 6.4	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 19.0	CFS
DESIGN HW ELEVATION	= 1,053.8	FT
100 YEAR DISCHARGE	= 23.0	CFS
100 YEAR HW ELEVATION	= 1,054.0	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 80.0	CFS
OVERTOPPING ELEVATION	= 1,061.0	FT

PIPE HYDRAULIC DATA
42" CSP Sta. 21+24

DRAINAGE AREA	= 30.0	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 38.0	CFS
DESIGN HW ELEVATION	= 966.0	FT
100 YEAR DISCHARGE	= 61.0	CFS
100 YEAR HW ELEVATION	= 967.3	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 228	CFS
OVERTOPPING ELEVATION	= 1,044.6	FT

SEE SHEETS 18 & 32 FOR -Y11-

-Y11- STA. 10+47.29 TO STA. 23+00.00

8/17/2021 4:30:46 PM
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USER: dmory

5/14/99

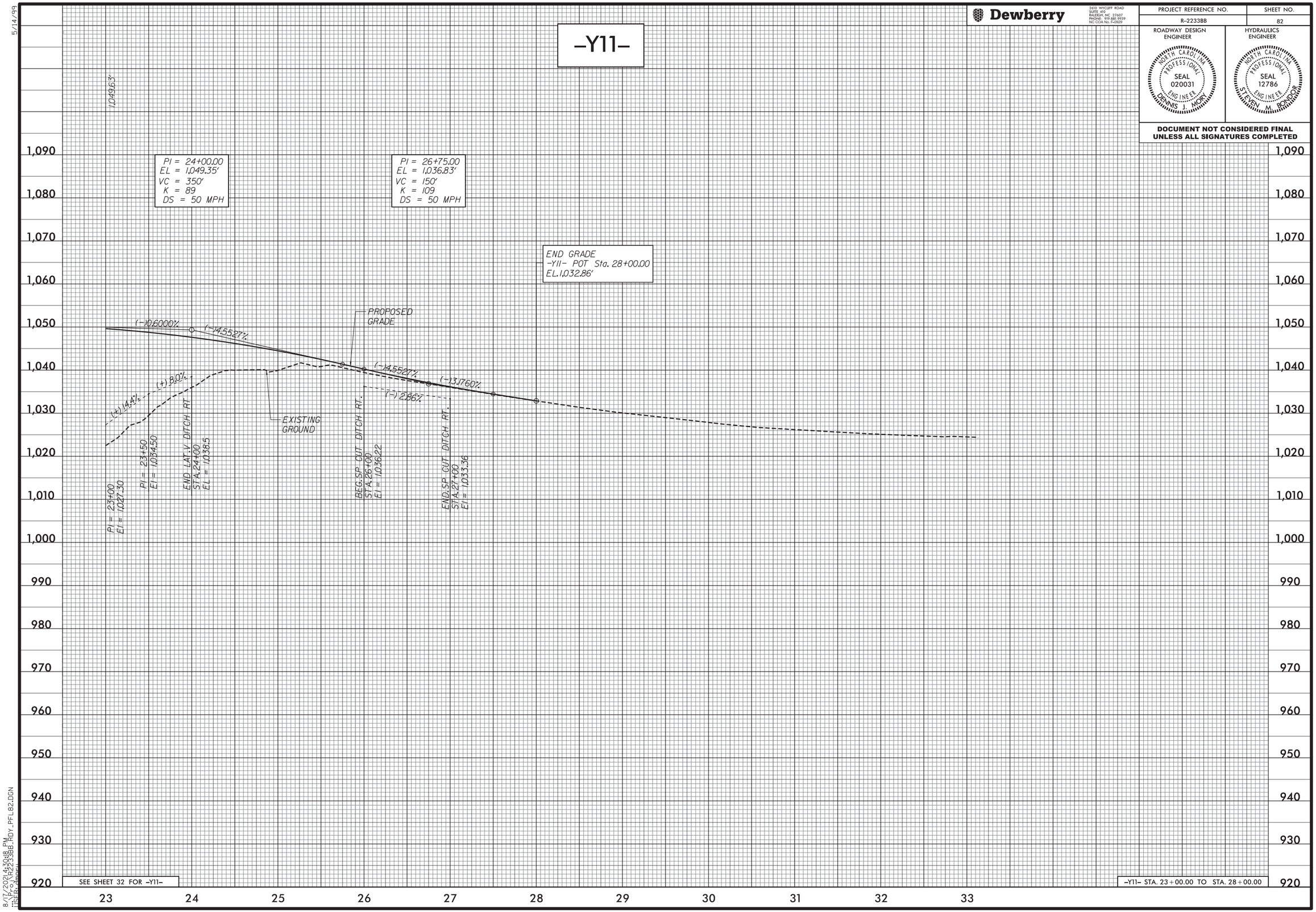
Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9929
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	82

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDURANT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



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USER: cjones

5/28/99

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

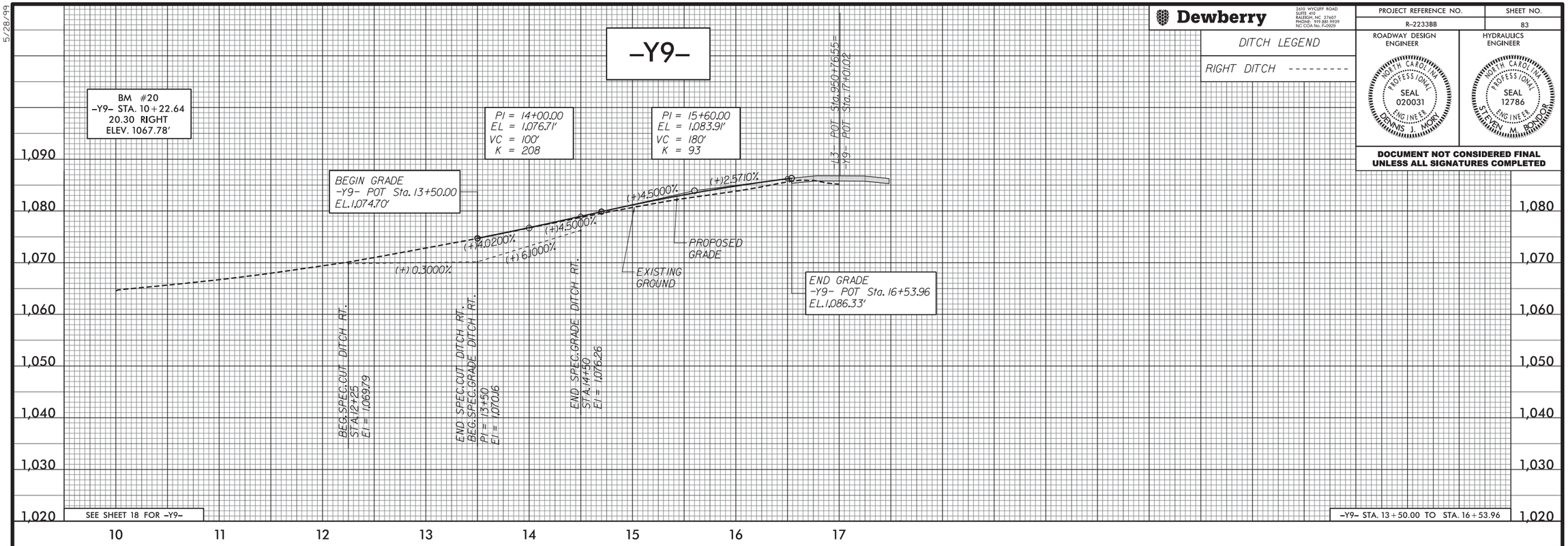
PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	83

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORIN

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDOR

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

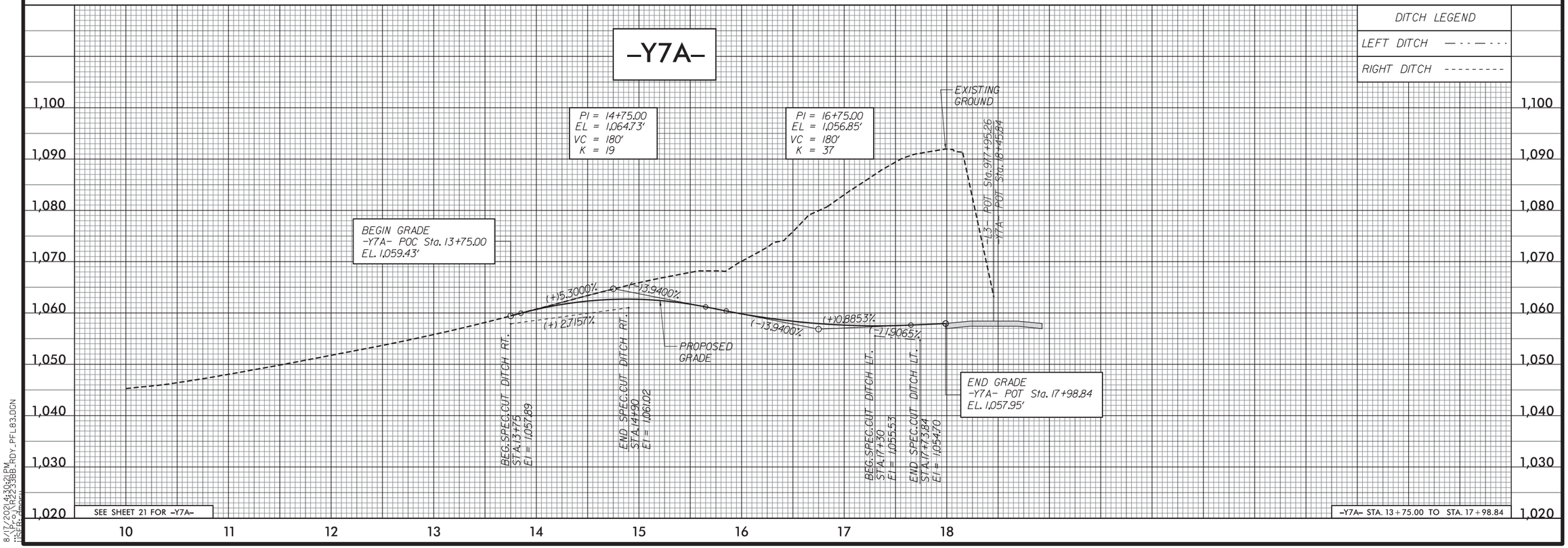
DITCH LEGEND
RIGHT DITCH ---------



SEE SHEET 18 FOR -Y9-

-Y9- STA. 13+50.00 TO STA. 16+53.96

DITCH LEGEND
LEFT DITCH — - - — - - -
RIGHT DITCH ---------



SEE SHEET 21 FOR -Y7A-

-Y7A- STA. 13+75.00 TO STA. 17+98.84

8/17/2021 4:33:21 PM
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USER: jmorin

5/28/99

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

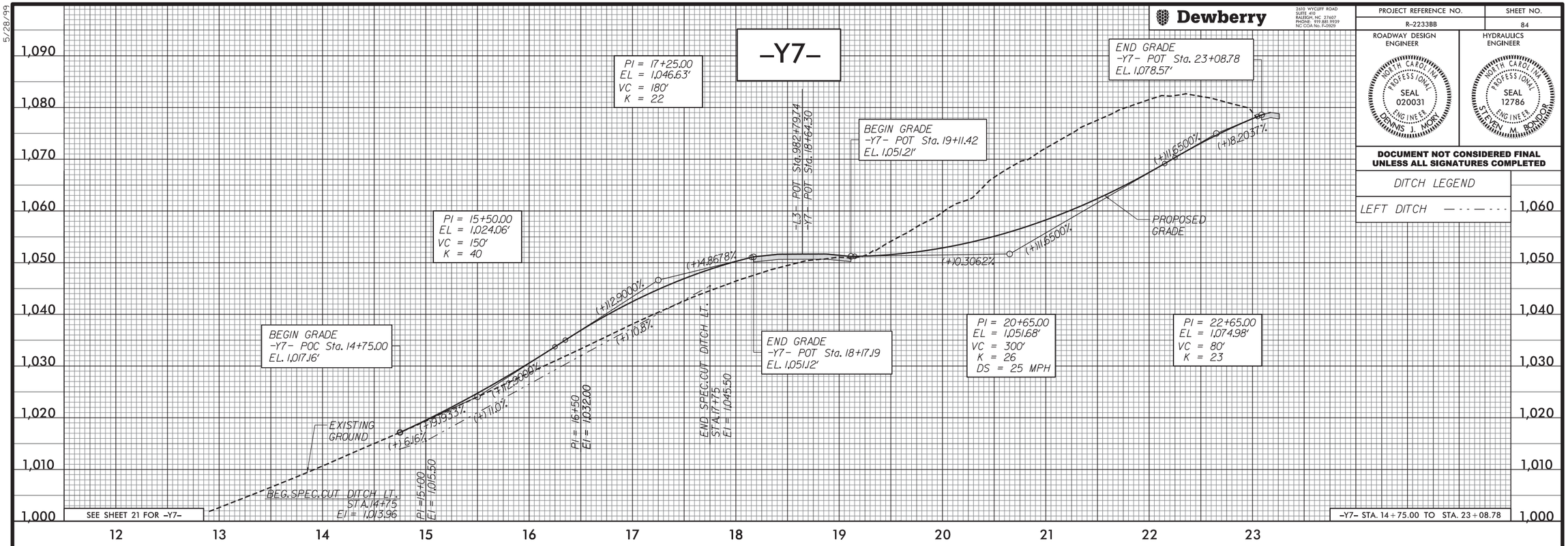
PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	84

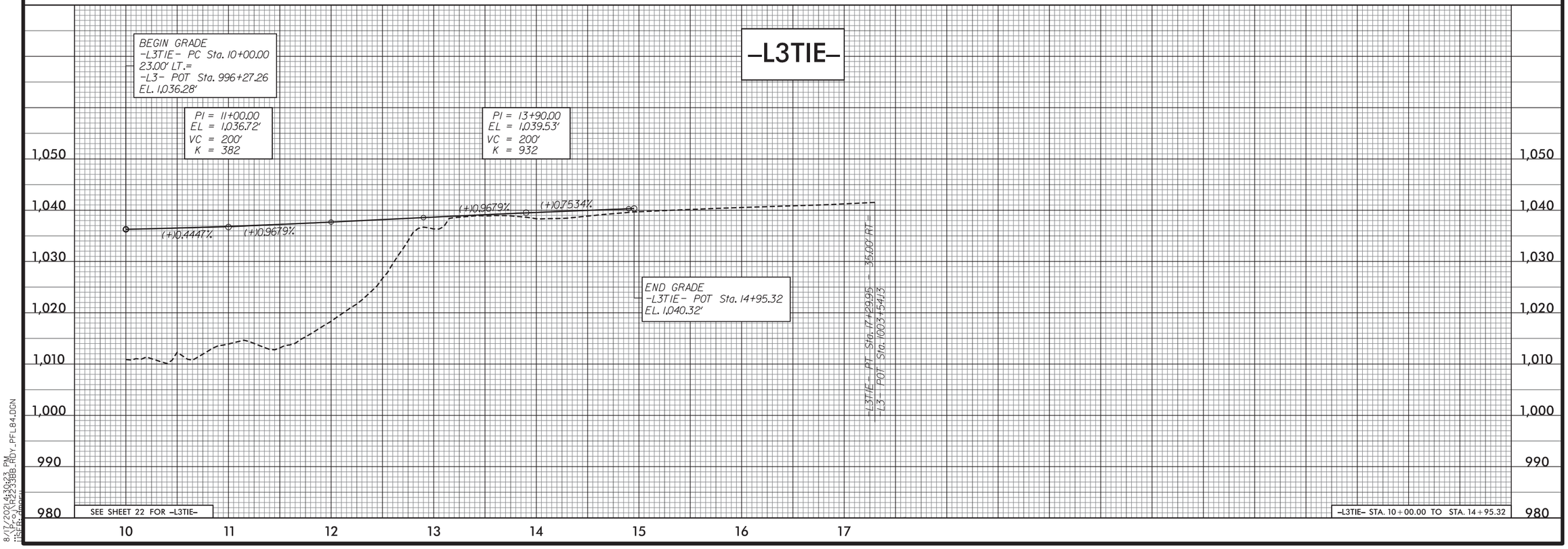
ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORIN

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDOR

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DITCH LEGEND
LEFT DITCH — - - — - - -





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USER: smorin

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	85

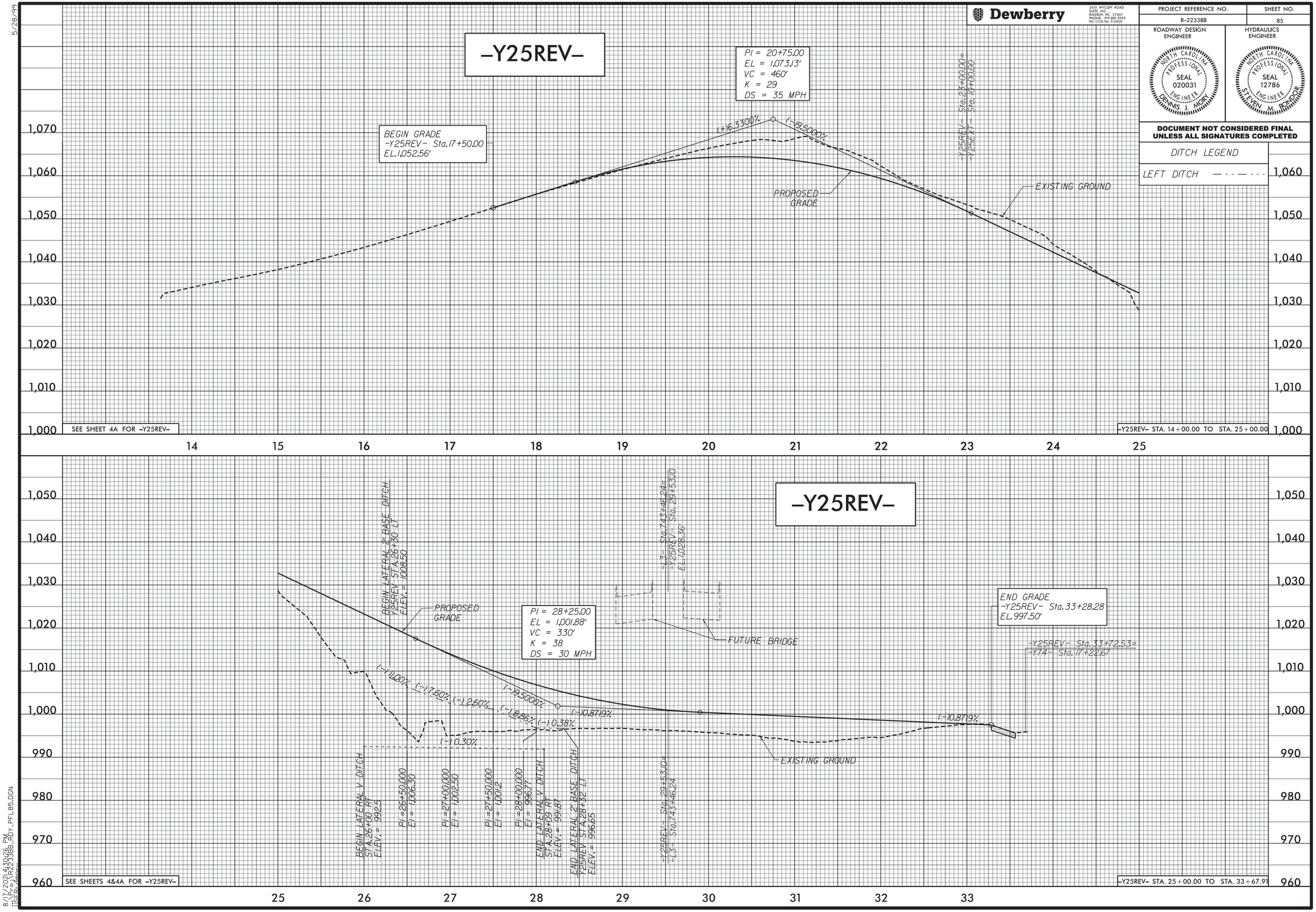
ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORI

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDOR

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DITCH LEGEND

LEFT DITCH — - - — - - -



5/28/99

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USER: smorris

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2233BB	86

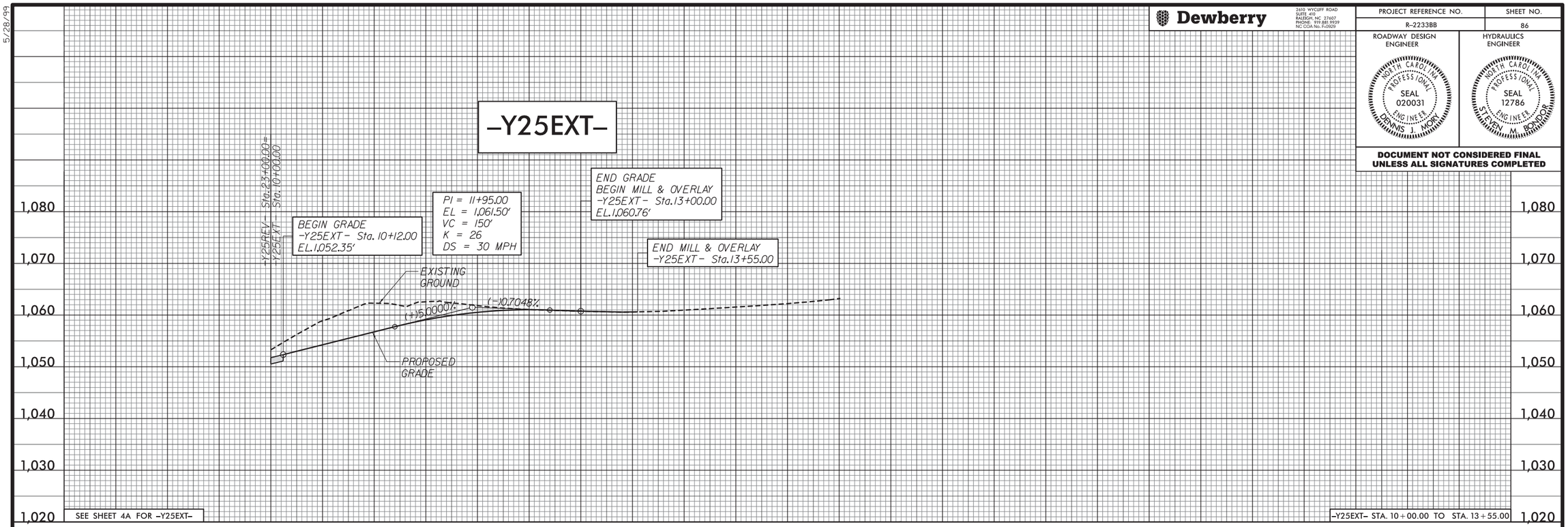
ROADWAY DESIGN ENGINEER

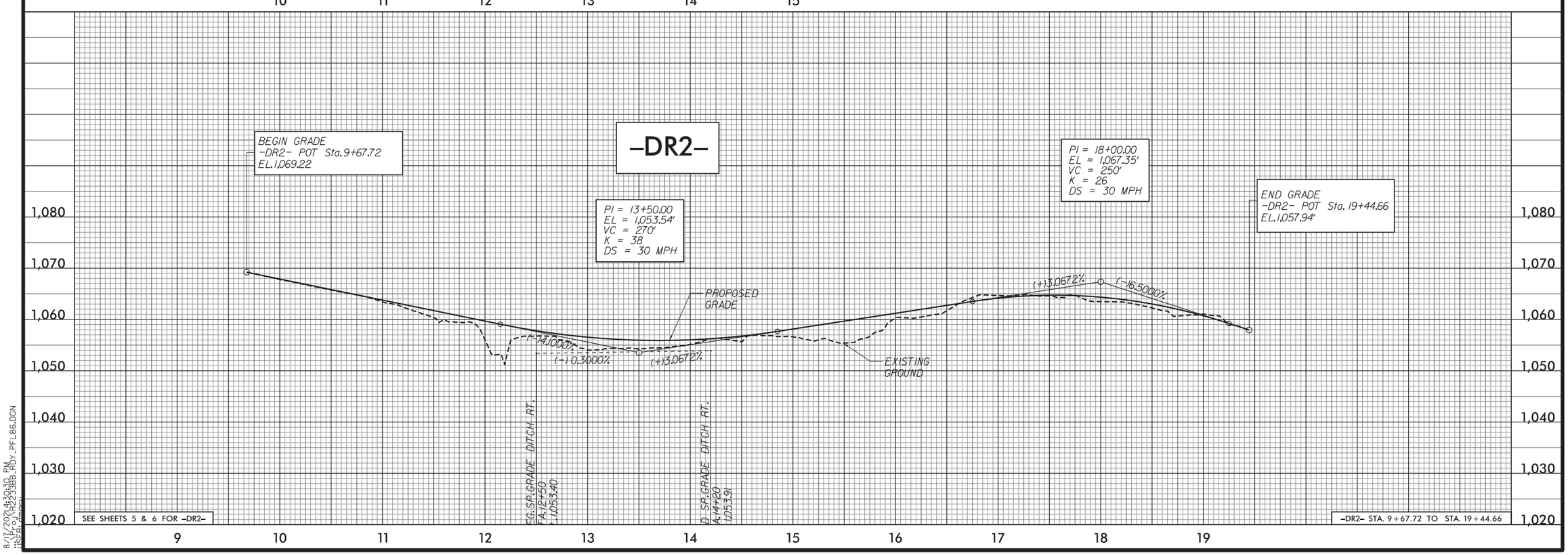
NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORR

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 12786 ENGINEER STEVEN M. BONDOR

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED





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USER: jmorr