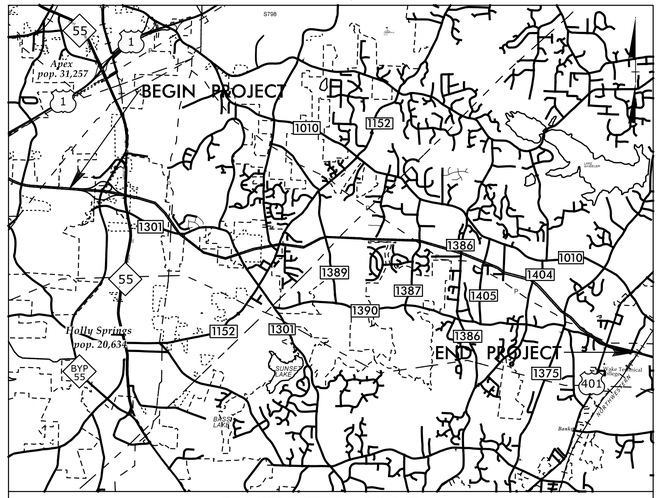
09/08/99

TIP PROJECT: R-2721

CONTRACT:

See Sheet 1B For Conventional Symbols



VICINITY MAP

65% SUBMITTAL

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

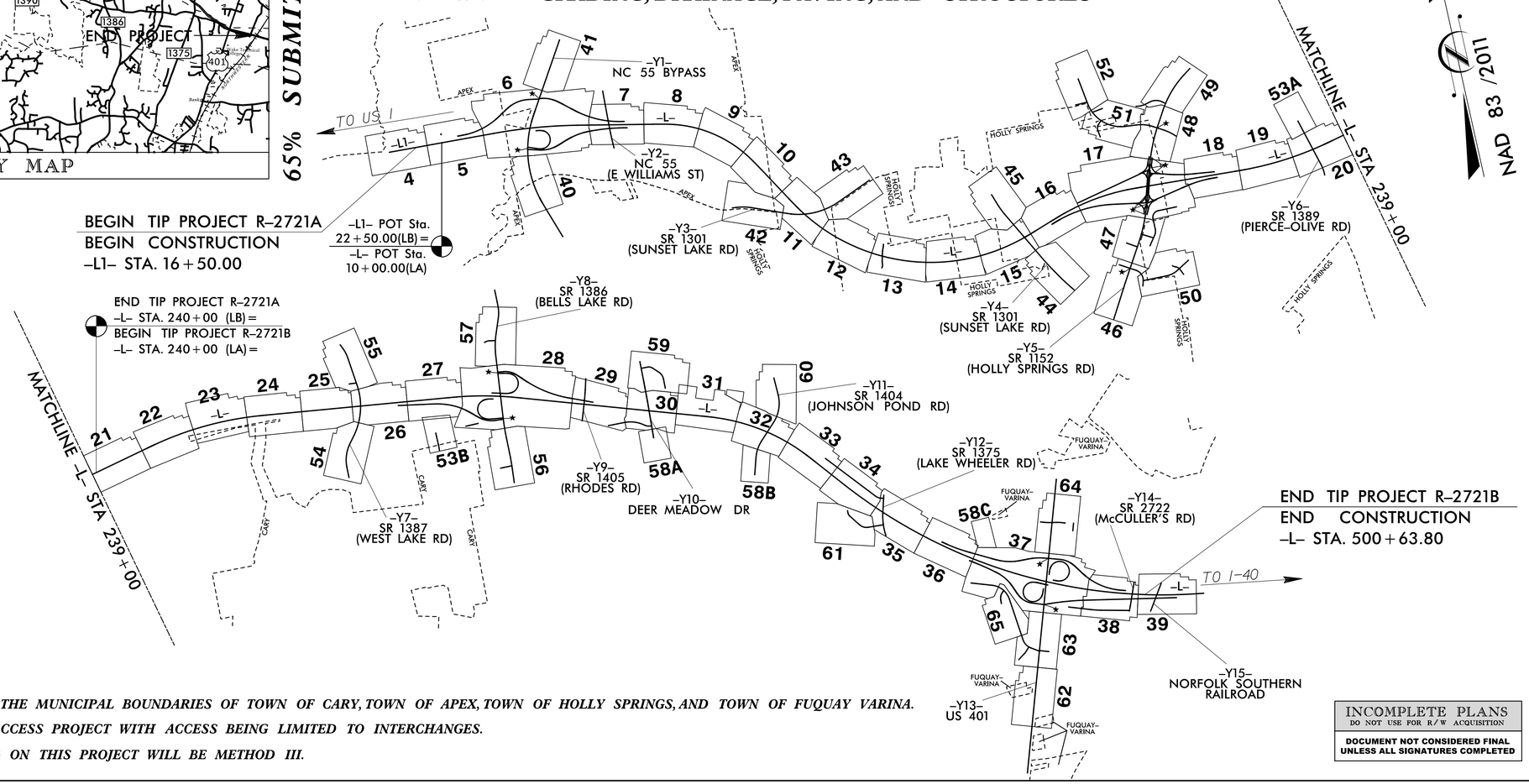
WAKE COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2721	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
37673.3.GV3 (A)	NHP-0540(041)	PE, R/W
37673.4.GV3 (B)		PE, R/W

LOCATION: COMPLETE 540 – FROM WEST OF NC55 TO EAST OF HWY 401

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



THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF TOWN OF CARY, TOWN OF APEX, TOWN OF HOLLY SPRINGS, AND TOWN OF FUQUAY VARINA.
THIS IS A CONTROLLED ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES.
CLEARING AND GRUBBING ON THIS PROJECT WILL BE METHOD III.

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

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 2018 = 28,200
ADT 2040 = 66,400
K = 12 %
D = 65 %
T = 11 % *
V = 75 MPH
* TTST = 7% DUAL 4%

FUNC CLASS = INTERSTATE
STATEWIDE TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-2721 = 9.406 Miles
LENGTH STRUCTURES = 0.195 Miles
TOTAL LENGTH TIP PROJECT R-2721 = 9.211 Miles

Prepared In the Office of:

LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
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(919)571-7111
NC License Number F-0159

ECOLOGICAL ENGINEERING
NC FIRM LICENSE No: F-1148
1151 SE Cary Parkway
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Cary, NC 27518
(919) 557-4929

SUNGATE DESIGN GROUP, P.A.
909 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243
NC FIRM LICENSE NO. C-990

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: February 18, 2020

LETTING DATE: February 18, 2020

Brian K. Eason, PE
PROJECT ENGINEER

Christina L. Yokeley, EI
PROJECT DESIGN ENGINEER

Dennis Jernigan, PE
NCDOT CONTACT

HYDRAULICS ENGINEER

P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

P.E.
SIGNATURE:

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

6/7/2018
R2721_RDY_TSH_01.dgn
cyokeley

12/2/2016

PROJECT REFERENCE NO.	SHEET NO.
R-2721	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 — HH
- U/G Telephone Cable LOS B (S.U.E.*) — T
- U/G Telephone Cable LOS C (S.U.E.*) — T
- U/G Telephone Cable LOS D (S.U.E.*) — T
- U/G Telephone Conduit LOS B (S.U.E.*) — TC
- U/G Telephone Conduit LOS C (S.U.E.*) — TC
- U/G Telephone Conduit LOS D (S.U.E.*) — TC
- U/G Fiber Optics Cable LOS B (S.U.E.*) — T FO
- U/G Fiber Optics Cable LOS C (S.U.E.*) — T FO
- U/G Fiber Optics Cable LOS D (S.U.E.*) — T FO

WATER:

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

TV:

- TV Pedestal — 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:

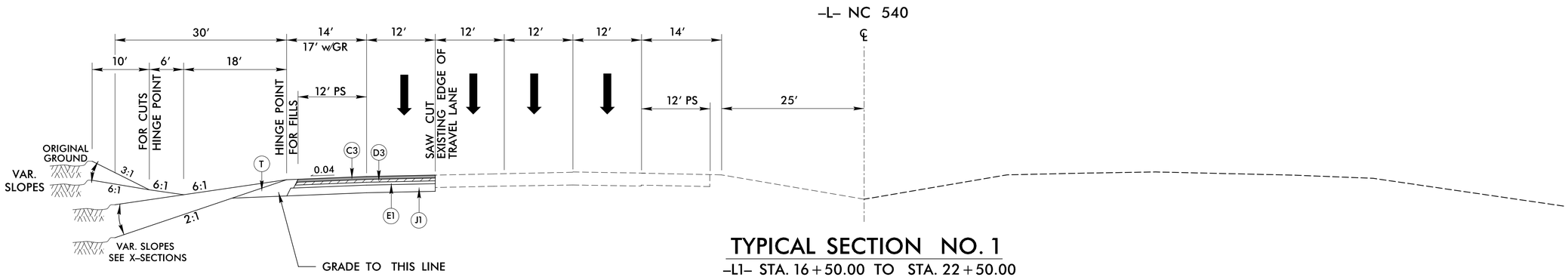
- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box — S
- Utility Unknown U/G Line LOS B (S.U.E.*) — ?UTL
- U/G Tank; Water, Gas, Oil
- Underground Storage Tank, Approx. Loc. — UST
- A/G Tank; Water, Gas, Oil
- Geoenvironmental Boring
- U/G Test Hole LOS A (S.U.E.*)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

51499

PAVEMENT SCHEDULE (PAVEMENT DESIGN PENDING)

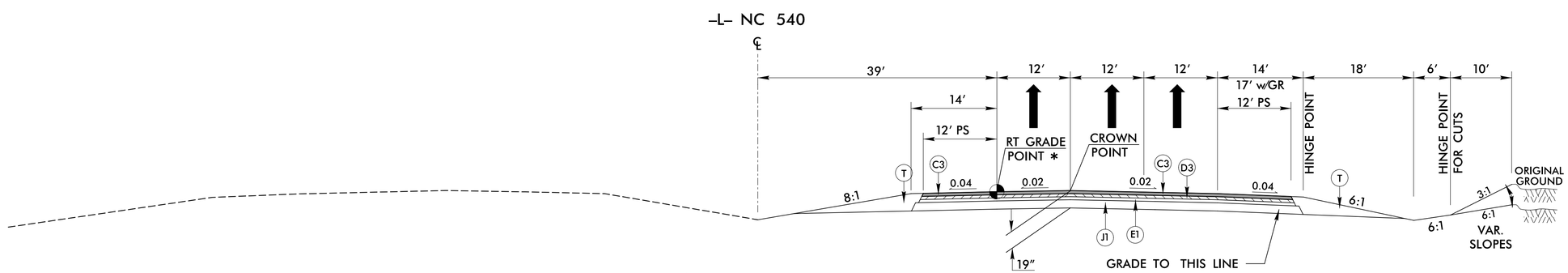
A1	13.5″ PORTLAND CEMENT CONCRETE PAVEMENT WITH DOWELS.	E1	PROP. APPROX. 4″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	R2	2′-6″ CONCRETE CURB AND GUTTER.
A2	11″ PORTLAND CEMENT CONCRETE PAVEMENT.	E2	PROP. APPROX. 4″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	R3	5″ MONOLITHIC CONCRETE ISLAND.
C1	PROP. APPROX. 1½″ ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5B, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD.	E3	PROP. APPROX. 8″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	S	4″ CONCRETE SIDEWALK.
C2	PROP. APPROX. 3″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	J1	PROP. 8″ AGGREGATE BASE COURSE.	T	EARTH MATERIAL.
C3	PROP. APPROX. 3″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	J2	PROP. 10″ AGGREGATE BASE COURSE.	U	EXISTING PAVEMENT.
D1	PROP. APPROX. 2½″ ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.	J3	PROP. 6″ AGGREGATE BASE COURSE.	V	MILLING
D3	PROP. APPROX. 4″ ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	R1	1′-6″ CONCRETE CURB AND GUTTER.	W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAILS)
D4	PROP. APPROX. 4″ ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.				

NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE



TYPICAL SECTION NO. 1

–L1– STA. 16+50.00 TO STA. 22+50.00
–L– STA. 10+00.00 TO STA. 21+00.00



TYPICAL SECTION NO. 2

–L– STA. 21+00.00 TO STA. 37+00.00

* USE –L_RT– PROFILE

NOTES:
1. USE 4:1 SLOPES INSIDE INTERCHANGE
2. THROUGH PAVEMENT SECTION SHALL EXTEND TO THE BACK OF GORE AT ALL RAMPS AND LOOPS.

LOCHNER
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(919)571-7111
NC License Number F-0159

PROJECT REFERENCE NO.	SHEET NO.
R-2721	2A-1
RW SHEET NO.	

ROADWAY DESIGN ENGINEER

PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

6/7/2018
R2721_RDY_TYP_02A.dgn
cwakeley

514499

PAVEMENT SCHEDULE	
A1	13½" PCCP
A2	11" PCCP
C1	1¼" SF9.5A
C2	3" S9.5B
C3	3" S9.5C
D1	2½" I19.0B
D2	3" I19.0C
D3	4" I19.0C
D4	4" I19.0B
E1	4" B25.0C
E2	4" B25.0B
E3	8" B25.0C
J1	8" ABC
J2	10" ABC
J3	6" ABC
R1	1'-6" C & G
R2	2'-6" C & G
R3	5" MCI
S	4" SIDEWALK
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V	MILLING
W	WEDGING

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2840 PLAZA PLACE, SUITE 202
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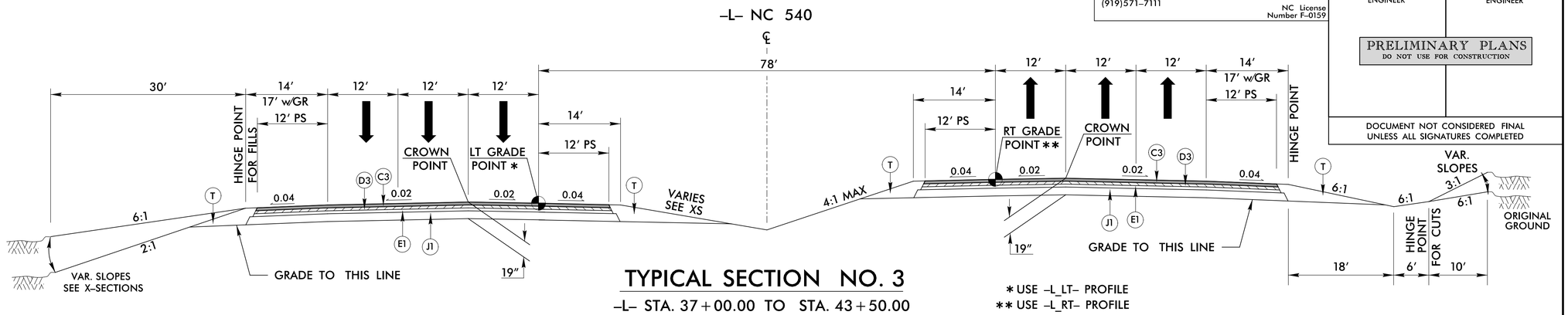
NC License Number F-0159

PROJECT REFERENCE NO.	SHEET NO.
R-2721	2A-2
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

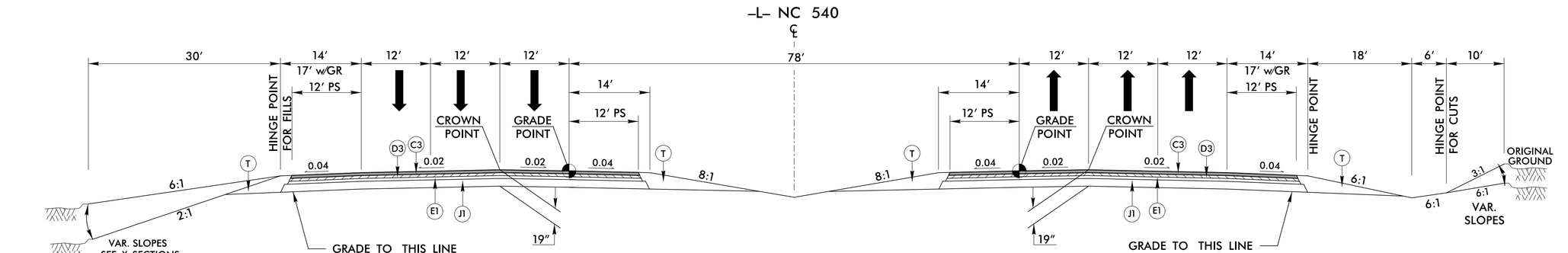
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



TYPICAL SECTION NO. 3

–L– STA. 37+00.00 TO STA. 43+50.00

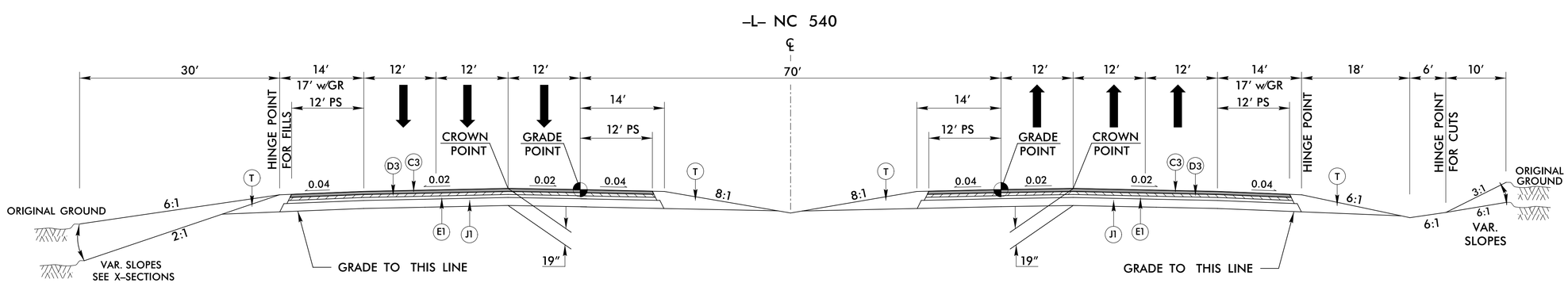
* USE –L_LT– PROFILE
** USE –L_RT– PROFILE



TYPICAL SECTION NO. 4

–L– STA. 43+50.00 TO STA. 55+27.23

TRANSITION FROM TYPICAL NO. 4 AND NO. 5 AT THE FOLLOWING LOCATIONS (SEE PLANS):
–L– STA. 55+27.23 TO STA. 58+27.23



TYPICAL SECTION NO. 5

–L– STA. 58+27.23 TO STA. 500+63.80

NOTES:
1. USE 4:1 SLOPES INSIDE INTERCHANGE
2. THROUGH PAVEMENT SECTION SHALL EXTEND TO THE BACK OF GORE AT ALL RAMPS AND LOOPS.

6/7/2018
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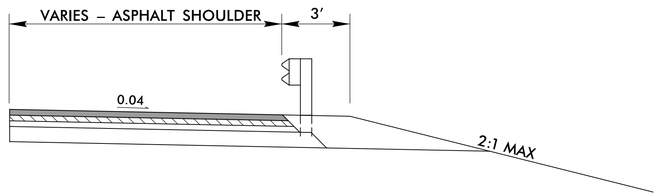
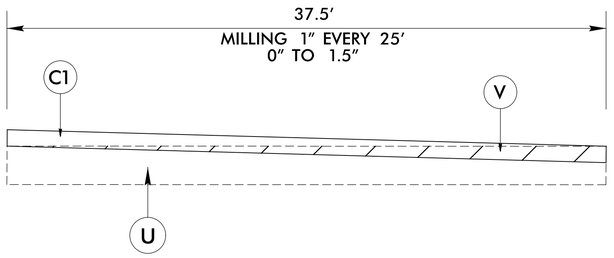
PAVEMENT SCHEDULE	
A1	13½" PCCP
A2	11" PCCP
C1	1¼" SF9.5A
C2	3" S9.5B
C3	3" S9.5C
D1	2½" I19.0B
D2	3" I19.0C
D3	4" I19.0C
D4	4" I19.0B
E1	4" B25.0C
E2	4" B25.0B
E3	8" B25.0C
J1	8" ABC
J2	10" ABC
J3	6" ABC
R1	1'-6" C & G
R2	2'-6" C & G
R3	5" MCI
S	4" SIDEWALK
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V	MILLING
W	WEDGING



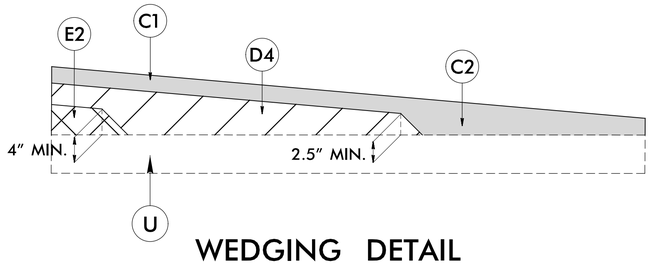
GUARDRAIL DETAIL

DETAIL SHOWING SHOULDER PAVEMENT AT GUARDRAIL
(USE IN CONJUNCTION WITH TYPICAL SECTIONS NO. 1 THRU 5)



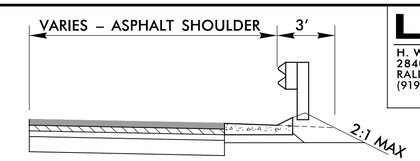
MILLING DETAIL

USE MILLING DETAIL AT RESURFACING TIES



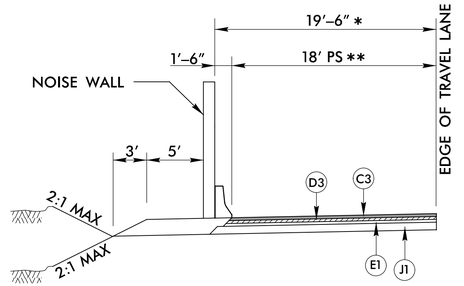
WEDGING DETAIL

Wedging Detail For Resurfacing



SHOULDER BERM GUTTER (SBG) DETAIL

DETAIL SHOWING SHOULDER PAVEMENT AT SBG
(USE IN CONJUNCTION WITH TYPICAL SECTIONS NO. 1 THRU 5)

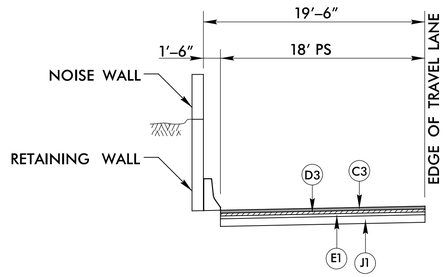


* 7'–6" IN AUXILARY LANE LOCATIONS

** 6' IN AUXILARY LANE LOCATIONS

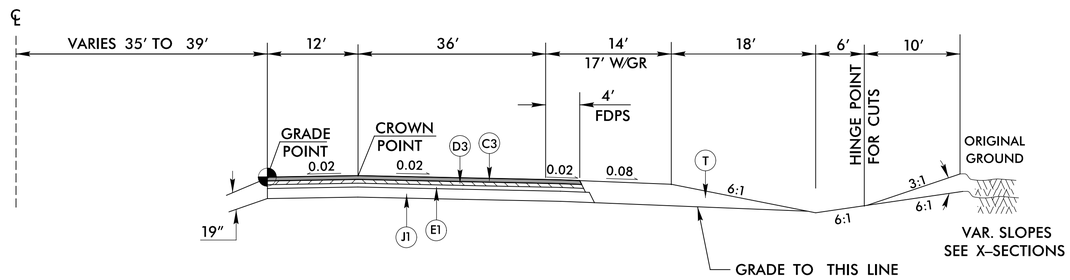
NOISE WALL DETAIL

SHOULDER CONSTRUCTION DETAIL WITH BARRIER AND NOISE WALL.
THIS TYPICAL IS TO BE USED IN FILL LOCATIONS.
(USE IN CONJUNCTION WITH TYPICAL SECTION NO. 5)
SEE PLAN FOR LOCATIONS



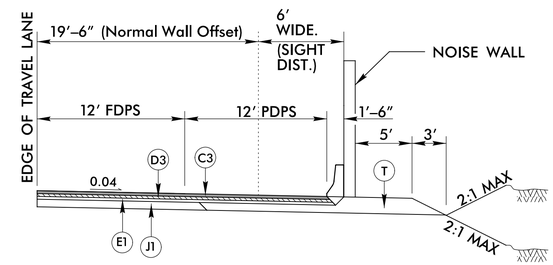
NOISE WALL /RETAINING WALL DETAIL

SHOULDER CONSTRUCTION DETAIL WITH BARRIER, RETAINING WALL,
AND NOISE WALL.
(USE IN CONJUNCTION WITH TYPICAL SECTION NO. 5)
SEE PLAN FOR LOCATIONS



ACCELERATION/DECELERATION LANE DETAIL

MAINLINE PAVEMENT WITH ACCELERATION / DECELERATION LANES
(USE IN CONJUNCTION WITH TYPICAL SECTIONS NO. 1 THRU 5)
SEE PLAN FOR LOCATIONS



NOISE WALL PLACEMENT FOR SIGHT DISTANCE DETAIL

SHOULDER CONSTRUCTION DETAIL WITH NOISE WALL OFFSET
FOR SIGHT DISTANCE.
(USE IN CONJUNCTION WITH TYPICAL SECTION NO. 5)
SEE PLAN FOR LOCATIONS

NOTES:

1. USE 4:1 SLOPES INSIDE INTERCHANGE
2. THROUGH PAVEMENT SECTION SHALL EXTEND TO THE BACK OF GORE AT ALL RAMPS AND LOOPS.

6/7/2018
R2721_RDY_TYP_02A.dgn
cookelev

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PROJECT REFERENCE NO.	SHEET NO.
R-2721	2A-3
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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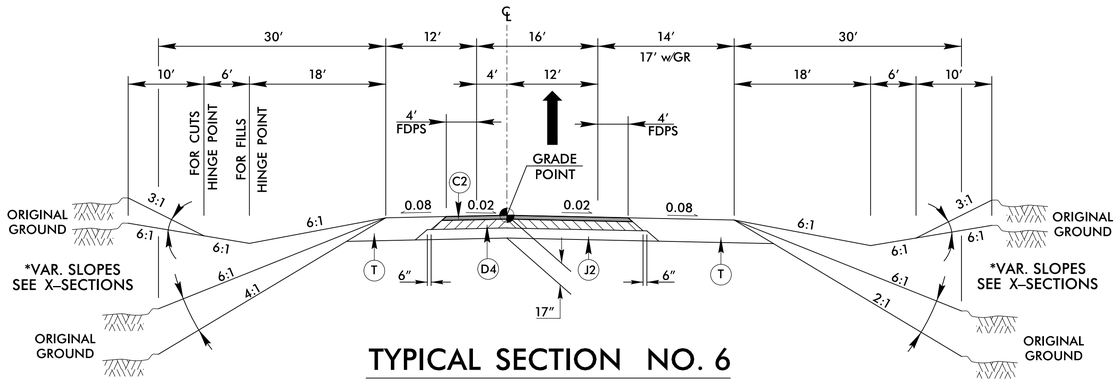
PROJECT REFERENCE NO.	SHEET NO.
R-2721	2A-4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

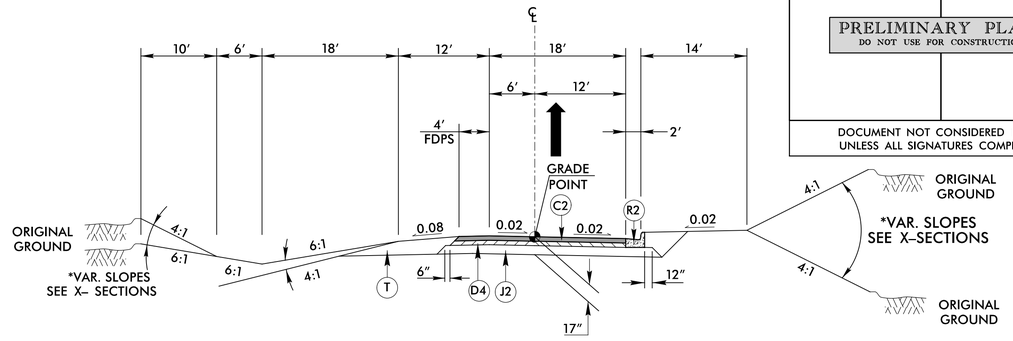
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



TYPICAL SECTION NO. 6

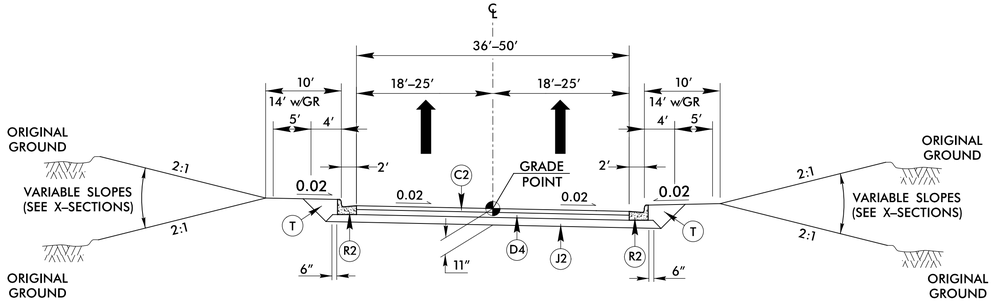
–Y1RPB– (MIRROR) STA. 10+00 TO STA 29+29.73
–Y1RPC– STA. 10+00.00 TO STA. 29+41.66
–Y5RPA– STA. 10+00.00 TO STA. 25+28.01
–Y5RPB– (MIRROR) 10+00.00 TO STA. 28+42.94
–Y5RPC– STA. 10+00.00 TO STA. 32+83.50
–Y5RPD– (MIRROR) STA. 10+00.00 TO STA. 27+59.61
–Y8RPA– STA. 10+00.00 TO STA. 33+93.13
–Y8RPC– STA. 10+00.00 TO STA. 35+55.90
–Y13RPA– STA. 10+00.00 TO STA. 29+73.70
–Y13RPB– (MIRROR) STA. 10+00.00 TO STA. 33+15.63
–Y13RPC– STA. 10+00.00 TO STA. 30+61.34
–Y13RPD– (MIRROR) STA. 17+30.00 TO STA. 40+64.78



TYPICAL SECTION NO. 7

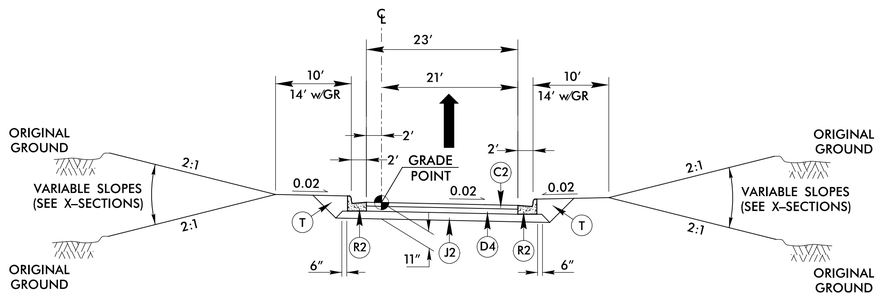
–Y1LPB– STA. 10+00.00 TO STA. 20+51.00
–Y8LPA– (MIRROR) STA. 10+00.00 TO STA. 23+57.69
–Y8LPC– (MIRROR) STA. 10+00.00 TO STA. 22+22.65
–Y13LPA– (MIRROR) STA. 10+00.00 TO STA. 23+08.70
–Y13LPC– (MIRROR) STA. 10+00.00 TO STA. 25+14.64

PAVEMENT SCHEDULE	
A1	13½″ PCCP
A2	11″ PCCP
C1	1¼″ SF9.5A
C2	3″ S9.5B
C3	3″ S9.5C
D1	2½″ I19.0B
D2	3″ I19.0C
D3	4″ I19.0C
D4	4″ I19.0B
E1	4″ B25.0C
E2	4″ B25.0B
E3	8″ B25.0C
J1	8″ ABC
J2	10″ ABC
J3	6″ ABC
R1	1′-6″ C & G
R2	2′-6″ C & G
R3	5″ MCI
S	4″ SIDEWALK
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V	MILLING
W	WEDGING



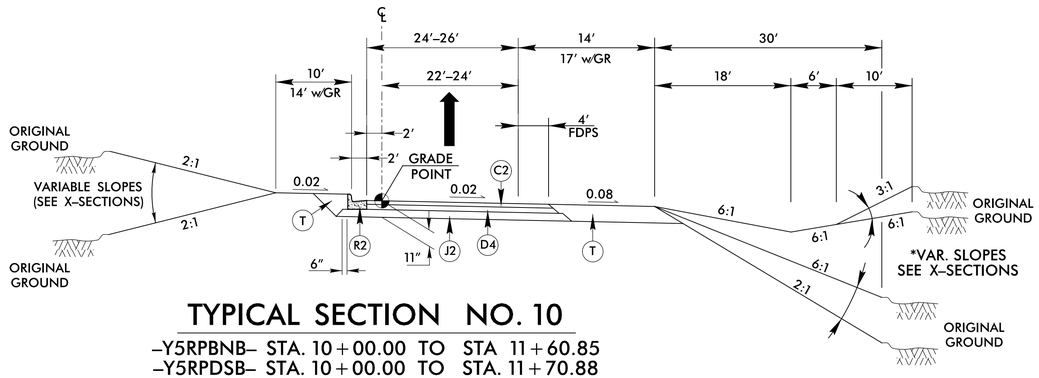
TYPICAL SECTION NO. 8

–Y5RPANB– STA. 10+00.00 TO STA 12+80.96
–Y5RPASB– STA. 10+00.00 TO STA. 10+66.87
–Y5RPCNB– STA. 10+00.00 TO STA. 12+04.08
–Y5RPCSB– STA. 10+00.00 TO STA. 12+27.74



TYPICAL SECTION NO. 9

–Y5RPBSB– STA. 10+00.00 TO STA 12+39.50
–Y5RPDNB– STA. 10+00.00 TO STA. 12+31.71



TYPICAL SECTION NO. 10

–Y5RPBNB– STA. 10+00.00 TO STA 11+60.85
–Y5RPDSB– STA. 10+00.00 TO STA. 11+70.88

NOTE: USE 4:1 SLOPES INSIDE INTERCHANGE

6/7/2018
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cooksey

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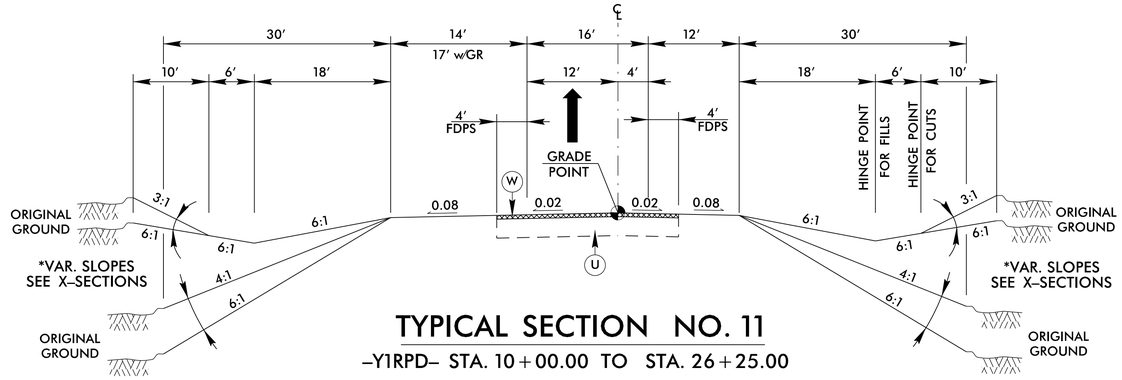
LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
(919)571-7111
NC License Number F-0159

PROJECT REFERENCE NO.	SHEET NO.
R-2721	2A-5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

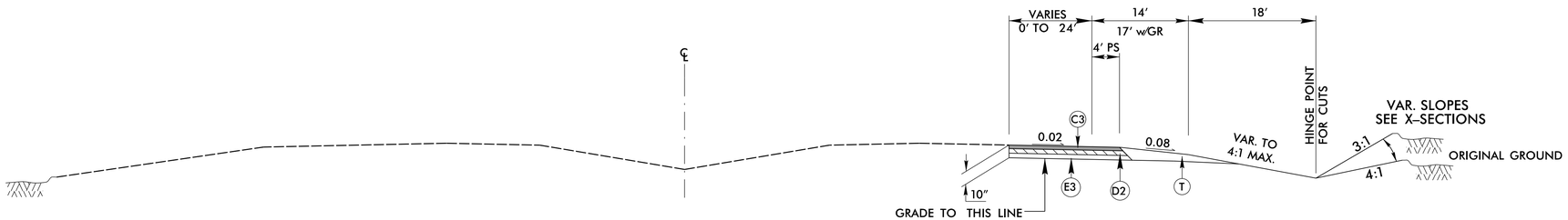
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



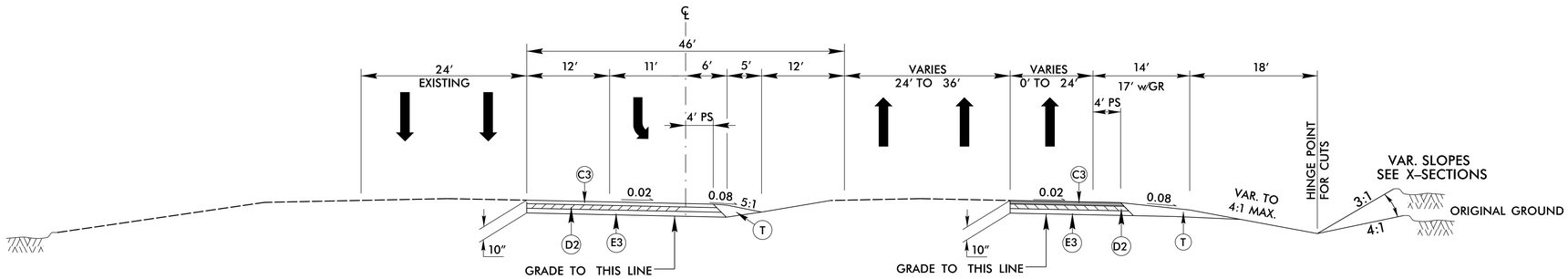
TYPICAL SECTION NO. 11

–Y1RPD– STA. 10+00.00 TO STA. 26+25.00



TYPICAL SECTION NO. 12

–Y1– STA. 28+00 TO STA. 32+50.86



TYPICAL SECTION NO. 13

–Y1– STA. 32+50.86 TO STA. 44+89.18

PAVEMENT SCHEDULE	
A1	13½″ PCCP
A2	11″ PCCP
C1	1¼″ SF9.5A
C2	3″ S9.5B
C3	3″ S9.5C
D1	2½″ I19.0B
D2	3″ I19.0C
D3	4″ I19.0C
D4	4″ I19.0B
E1	4″ B25.0C
E2	4″ B25.0B
E3	8″ B25.0C
J1	8″ ABC
J2	10″ ABC
J3	6″ ABC
R1	1′-6″ C & G
R2	2′-6″ C & G
R3	5″ MCI
S	4″ SIDEWALK
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V	MILLING
W	WEDGING

NOTE: USE 4:1 SLOPES INSIDE INTERCHANGE

6/8/2018
R-2721_RDY_TYP_02A.dgn
BEASON

514.99

PAVEMENT SCHEDULE	
A1	13½″ PCCP
A2	11″ PCCP
C1	1¼″ SF9.5A
C2	3″ S9.5B
C3	3″ S9.5C
D1	2½″ I19.0B
D2	3″ I19.0C
D3	4″ I19.0C
D4	4″ I19.0B
E1	4″ B25.0C
E2	4″ B25.0B
E3	8″ B25.0C
J1	8″ ABC
J2	10″ ABC
J3	6″ ABC
R1	1′-6″ C & G
R2	2′-6″ C & G
R3	5″ MCI
S	4″ SIDEWALK
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V	MILLING
W	WEDGING

LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
(919)571-7111
NC License Number F-0159

PROJECT REFERENCE NO.	SHEET NO.
R-2721	2A-6
RW SHEET NO.	

ROADWAY DESIGN ENGINEER

PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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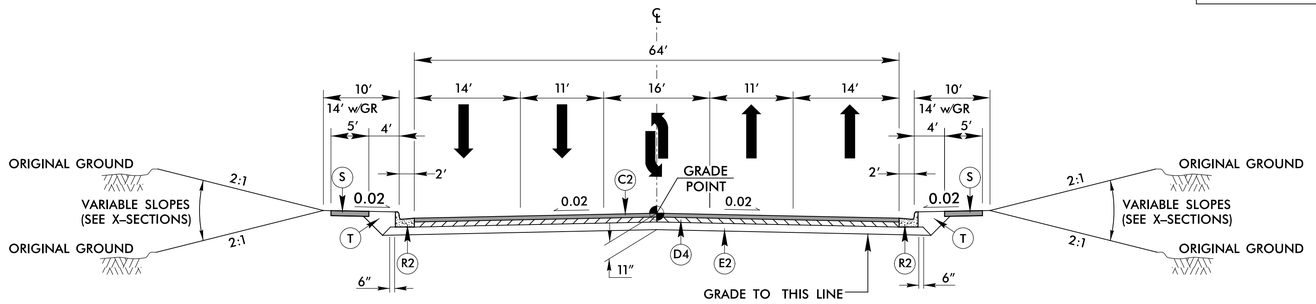
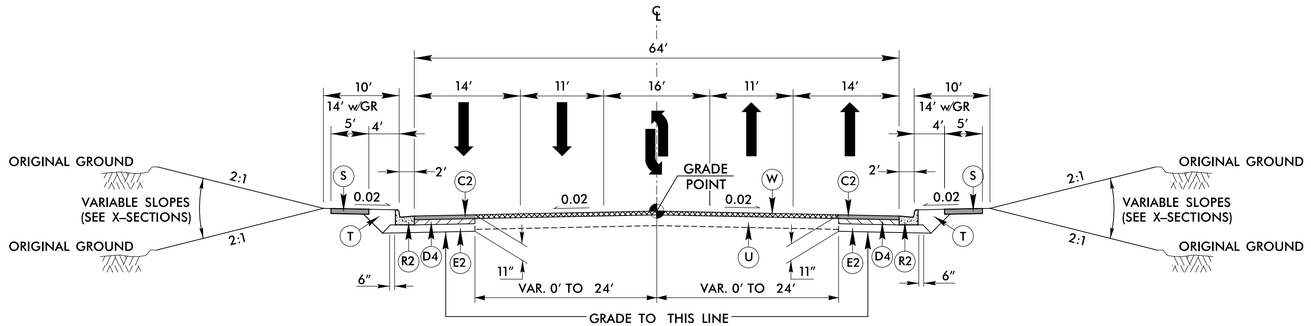


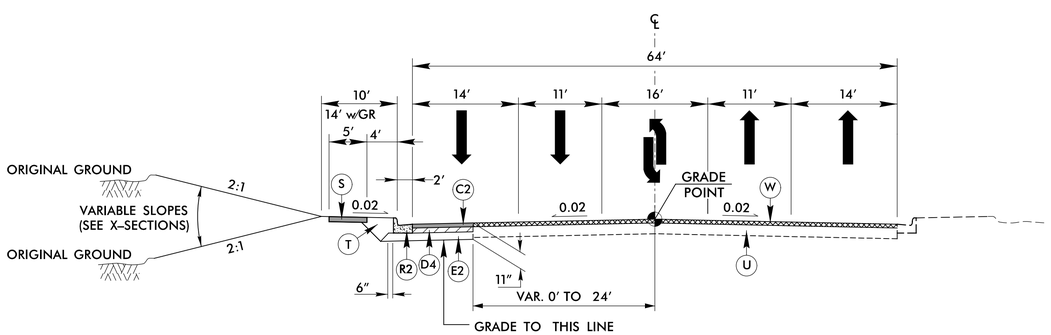
TYPICAL SECTION NO. 14

–Y3– STA. 20+25.00 TO STA. 32+00.00
–Y4– STA. 20+00.00 TO STA. 29+50.00



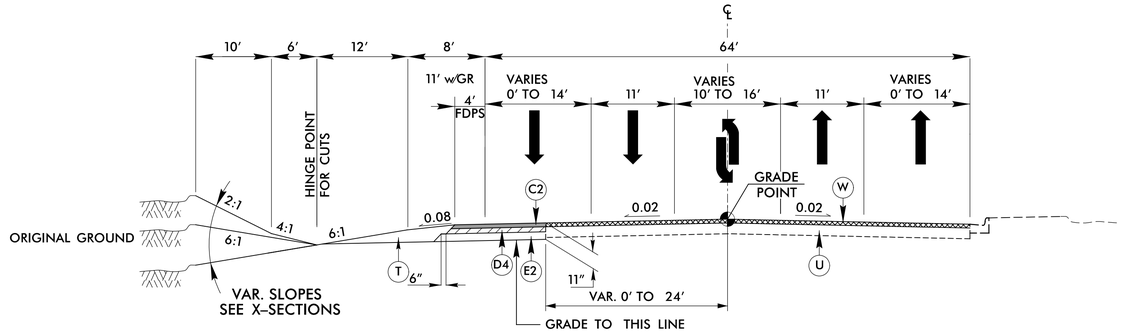
TYPICAL SECTION NO. 15

–Y3– STA. 10+00.00 TO STA. 20+25.00
–Y3– STA. 32+00.00 TO STA. 37+91.07
–Y4– STA. 14+24.58 TO STA. 20+00.00
–Y4– STA. 29+50.00 TO STA. 32+33.57



TYPICAL SECTION NO. 16

–Y4– STA. 32+33.57 TO STA. 34+00.00



TYPICAL SECTION NO. 17

–Y4– STA. 34+00.00 TO STA. 37+00.00

NOTE: USE 4:1 SLOPES INSIDE INTERCHANGE

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cvakalev

514.99

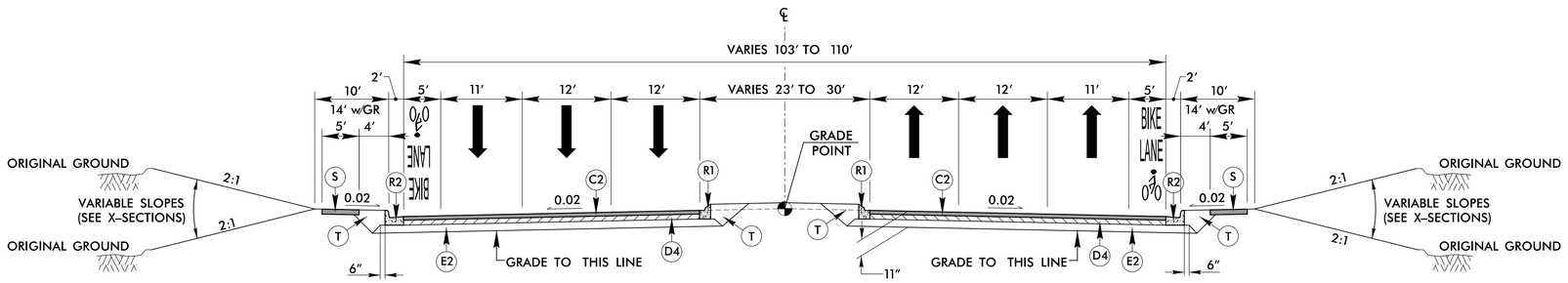
PAVEMENT SCHEDULE	
A1	13½″ PCCP
A2	11″ PCCP
C1	1¼″ SF9.5A
C2	3″ S9.5B
C3	3″ S9.5C
D1	2½″ I19.0B
D2	3″ I19.0C
D3	4″ I19.0C
D4	4″ I19.0B
E1	4″ B25.0C
E2	4″ B25.0B
E3	8″ B25.0C
J1	8″ ABC
J2	10″ ABC
J3	6″ ABC
R1	1′-6″ C & G
R2	2′-6″ C & G
R3	5″ MCI
S	4″ SIDEWALK
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V	MILLING
W	WEDGING

LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
(919)571-7111
NC License Number F-0159

PROJECT REFERENCE NO.	SHEET NO.
R-2721	2A-7
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

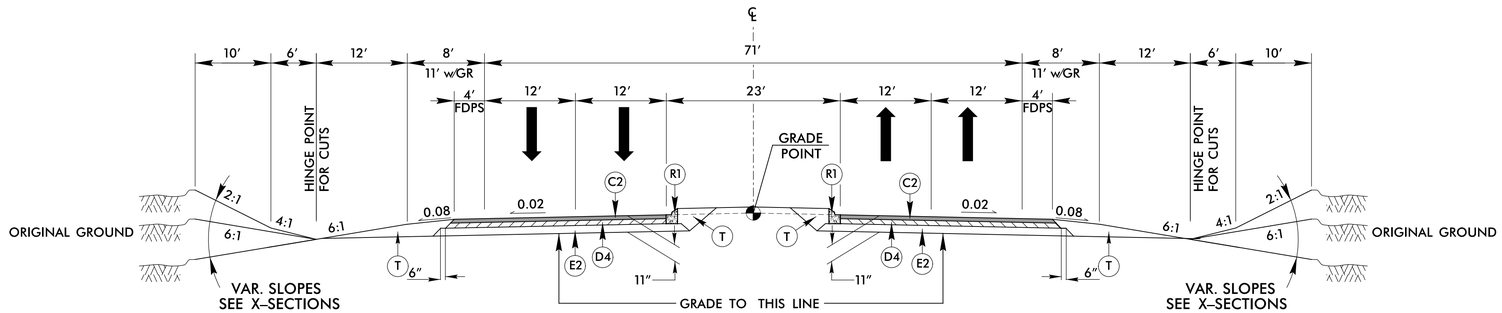
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



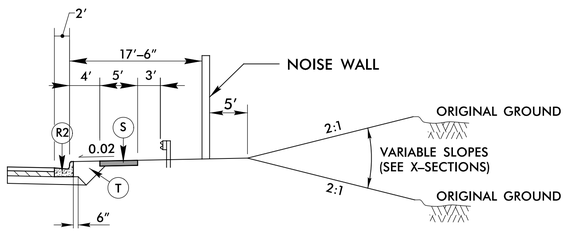
TYPICAL SECTION NO. 18

–Y5– STA. 11+78.16 TO STA. 56+56.61



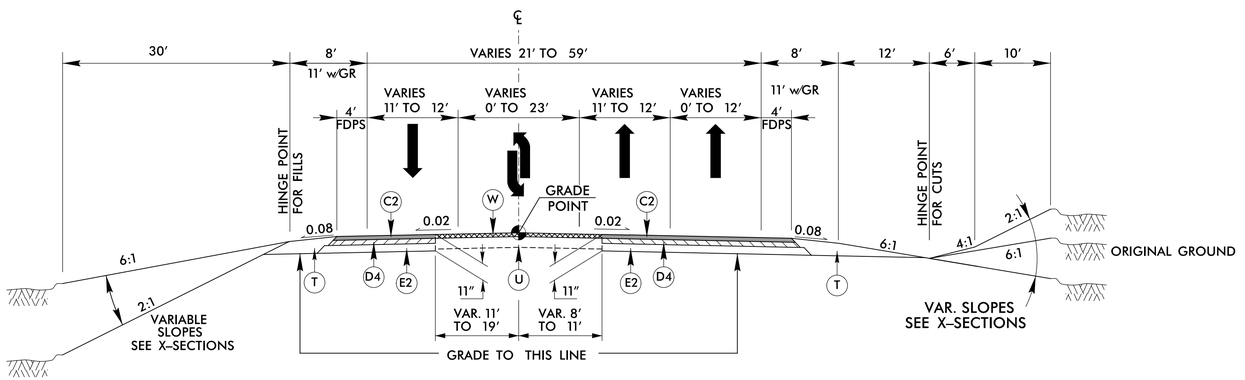
TYPICAL SECTION NO. 19

–Y5– STA 56+56.61 TO STA 62+21.22



NOISE WALL DETAIL

BERM CONSTRUCTION DETAIL WITH GUARDRAIL AND NOISE WALL (USE IN CONJUNCTION WITH TYPICAL SECTION NO. 20)
–Y5– STA. 31+54.15 TO STA. 37+53.99
–Y5– STA. 47+48.32 TO STA. 56+02.15



TYPICAL SECTION NO. 20

–Y5– STA. 62+21.22 TO STA. 72+00.00

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cvokaldy

51499

PAVEMENT SCHEDULE	
A1	13½" PCCP
A2	11" PCCP
C1	1¼" SF9.5A
C2	3" S9.5B
C3	3" S9.5C
D1	2½" I19.0B
D2	3" I19.0C
D3	4" I19.0C
D4	4" I19.0B
E1	4" B25.0C
E2	4" B25.0B
E3	8" B25.0C
J1	8" ABC
J2	10" ABC
J3	6" ABC
R1	1'-6" C & G
R2	2'-6" C & G
R3	5" MCI
S	4" SIDEWALK
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V	MILLING
W	WEDGING

LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
(919)571-7111
NC License Number F-0159

PROJECT REFERENCE NO.	SHEET NO.
R-2721	2A-8
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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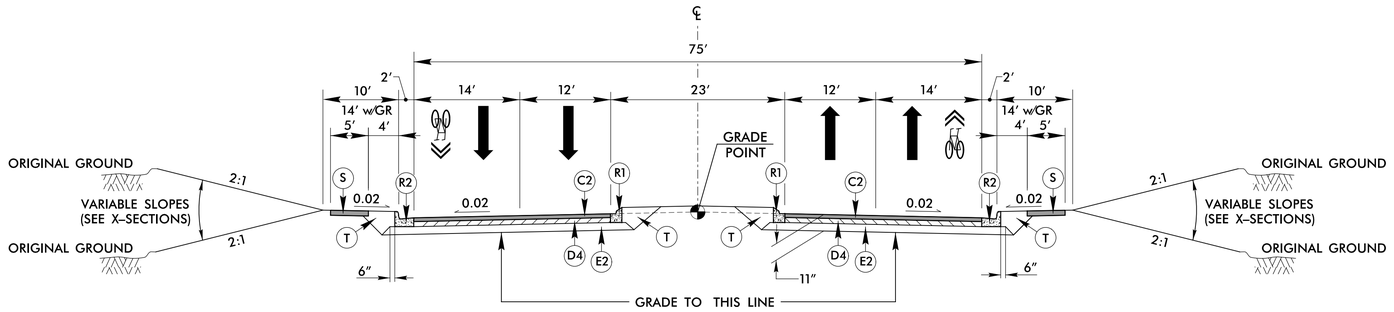
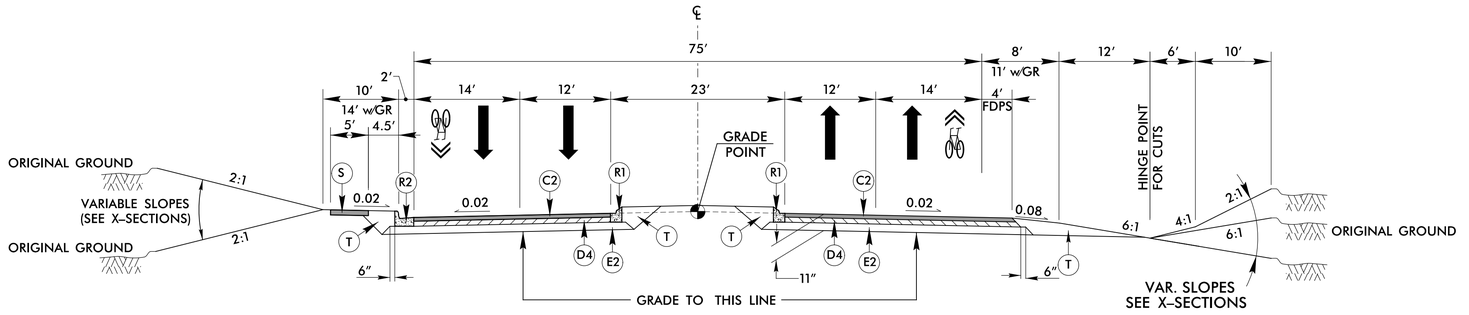


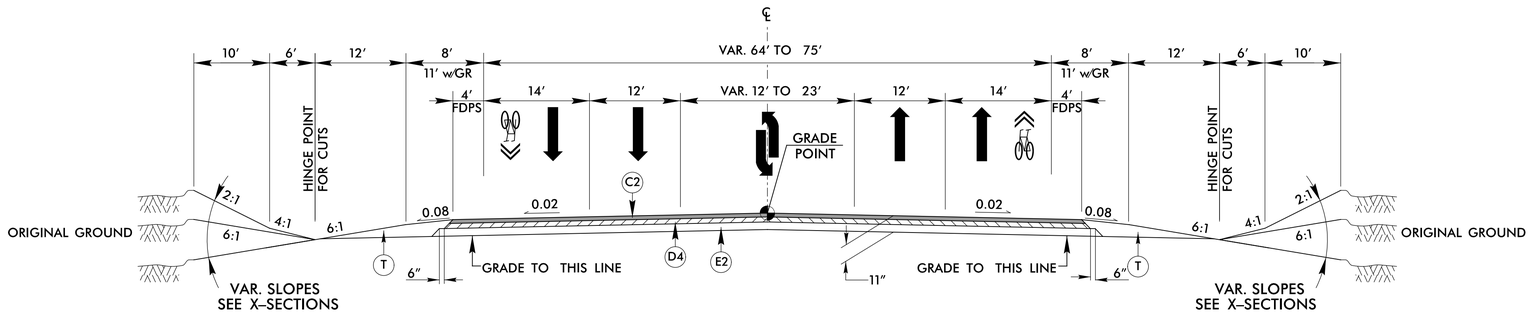
TYPICAL SECTION NO. 21

–Y5A– STA. 10+39.00 TO STA. 17+00.00



TYPICAL SECTION NO. 22

–Y5A– STA 17+00.00 TO STA 23+63.53



TYPICAL SECTION NO. 23

–Y5A– STA. 23+63.53 TO STA. 31+00.00

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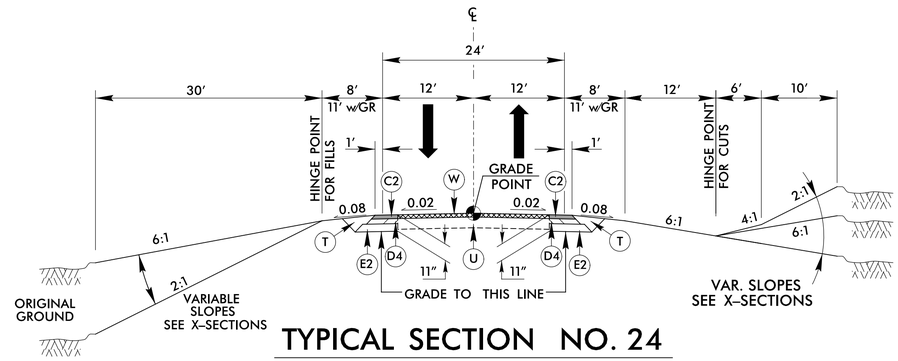
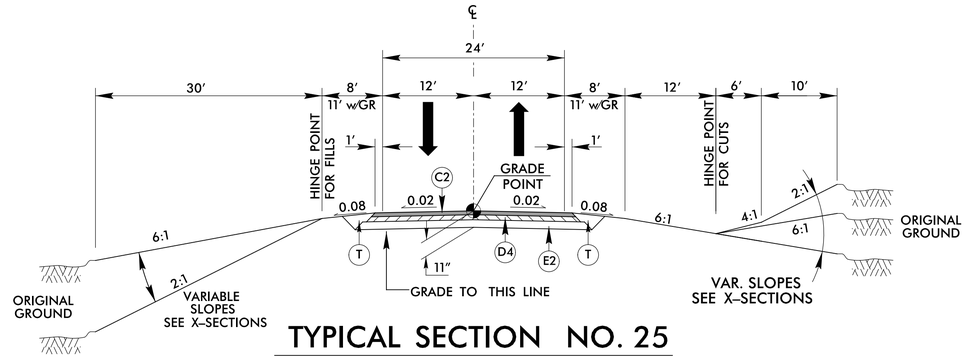
514.99

PAVEMENT SCHEDULE	
A1	13½" PCCP
A2	11" PCCP
C1	1¼" SF9.5A
C2	3" S9.5B
C3	3" S9.5C
D1	2½" I19.0B
D2	3" I19.0C
D3	4" I19.0C
D4	4" I19.0B
E1	4" B25.0C
E2	4" B25.0B
E3	8" B25.0C
J1	8" ABC
J2	10" ABC
J3	6" ABC
R1	1'-6" C & G
R2	2'-6" C & G
R3	5" MCI
S	4" SIDEWALK
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V	MILLING
W	WEDGING



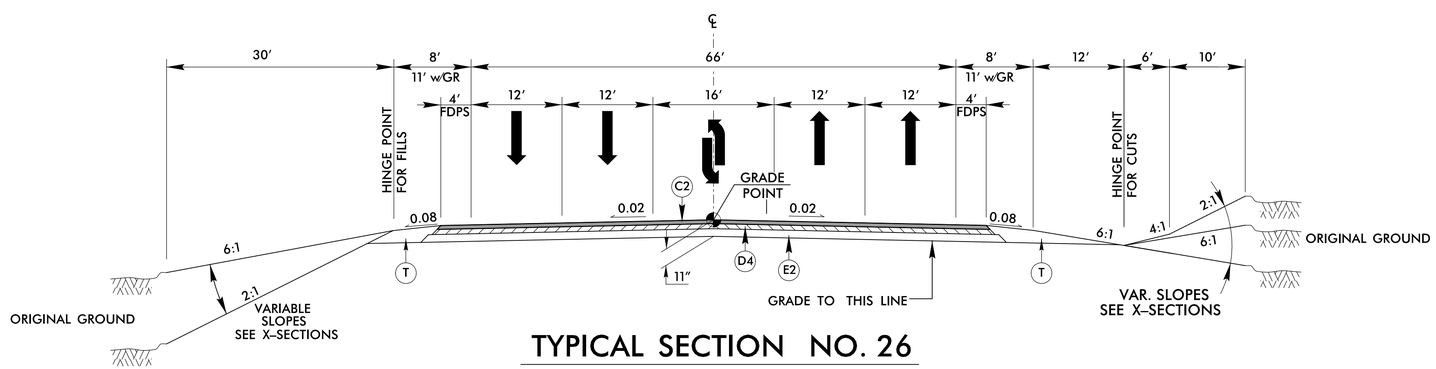
TYPICAL SECTION NO. 24

–Y6– STA. 12+50.00 TO STA. 13+60.00
–Y6– STA. 21+30.00 TO STA. 22+50.00



TYPICAL SECTION NO. 25

–Y6– STA. 13+60.00 TO STA. 21+30.00



TYPICAL SECTION NO. 26

–Y7– STA. 28+62.18 TO STA. 37+50.00

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H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
(919)571-7111
NC License Number F-0159

PROJECT REFERENCE NO.	SHEET NO.
R-2721	2A-9
RW SHEET NO.	

ROADWAY DESIGN ENGINEER | PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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cpokeley

51499

PAVEMENT SCHEDULE	
A1	13½" PCCP
A2	11" PCCP
C1	1¼" SF9.5A
C2	3" S9.5B
C3	3" S9.5C
D1	2½" I19.0B
D2	3" I19.0C
D3	4" I19.0C
D4	4" I19.0B
E1	4" B25.0C
E2	4" B25.0B
E3	8" B25.0C
J1	8" ABC
J2	10" ABC
J3	6" ABC
R1	1'-6" C & G
R2	2'-6" C & G
R3	5" MCI
S	4" SIDEWALK
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V	MILLING
W	WEDGING

LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
(919)571-7111
NC License Number F-0159

PROJECT REFERENCE NO.	SHEET NO.
R-2721	2A-10
RW SHEET NO.	

ROADWAY DESIGN ENGINEER | PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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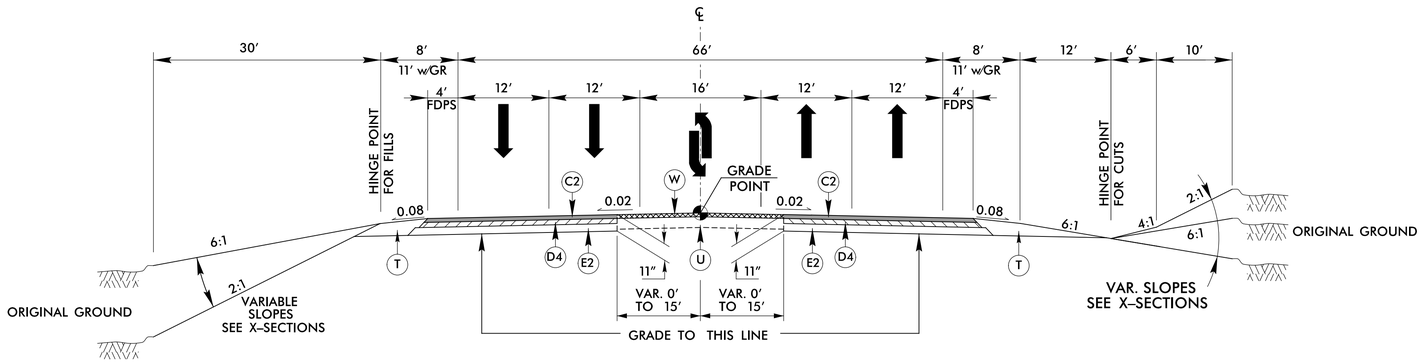

TYPICAL SECTION NO. 27

–Y7– STA. 10+00.00 TO STA. 25+44.90
–Y7– STA. 37+50.00 TO STA. 40+85.00

TYPICAL SECTION NO. 28

–Y8– STA. 24+50.00 TO STA. 38+00.00

TYPICAL SECTION NO. 29

–Y8– STA. 12+00.00 TO STA. 24+50.00
–Y8– STA. 38+00.00 TO STA. 50+00.00

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cwakeley

51499

PAVEMENT SCHEDULE	
A1	13½" PCCP
A2	11" PCCP
C1	1¼" SF9.5A
C2	3" S9.5B
C3	3" S9.5C
D1	2½" I19.0B
D2	3" I19.0C
D3	4" I19.0C
D4	4" I19.0B
E1	4" B25.0C
E2	4" B25.0B
E3	8" B25.0C
J1	8" ABC
J2	10" ABC
J3	6" ABC
R1	1'-6" C & G
R2	2'-6" C & G
R3	5" MCI
S	4" SIDEWALK
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V	MILLING
W	WEDGING

LOCHNER
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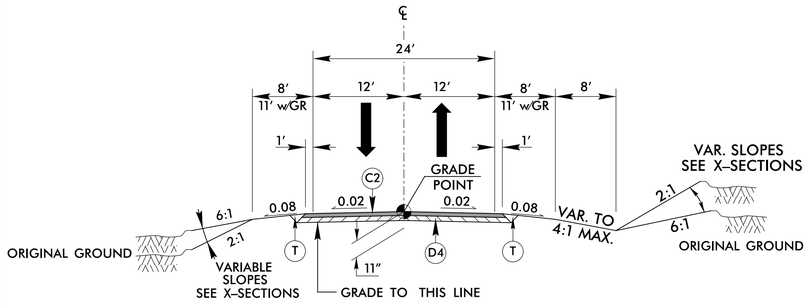
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
(919)571-7111
NC License Number F-0159

PROJECT REFERENCE NO.	SHEET NO.
R-2721	2A-11
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

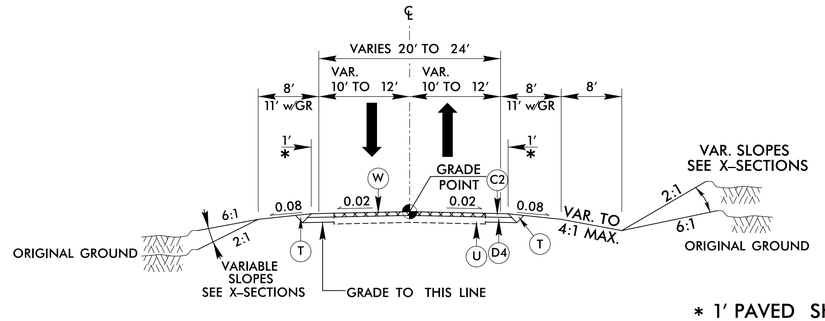
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



TYPICAL SECTION NO. 30

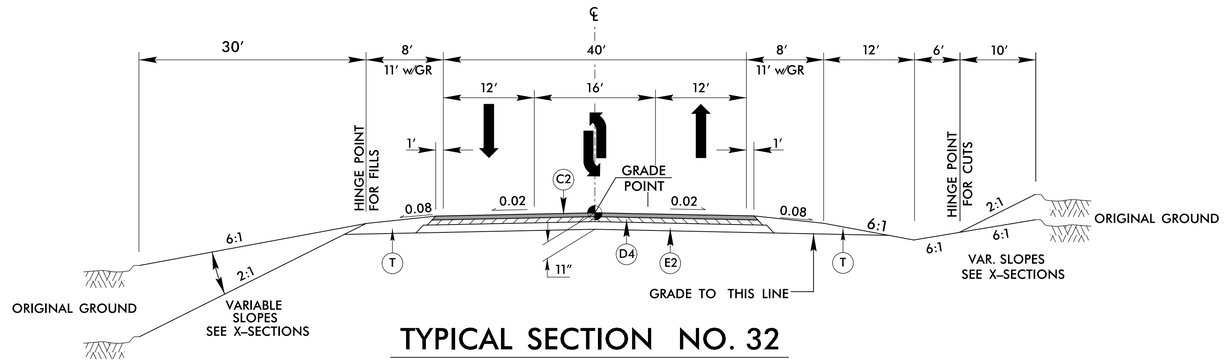
–Y10– STA. 11+15.00 TO STA. 22+50.00



TYPICAL SECTION NO. 31

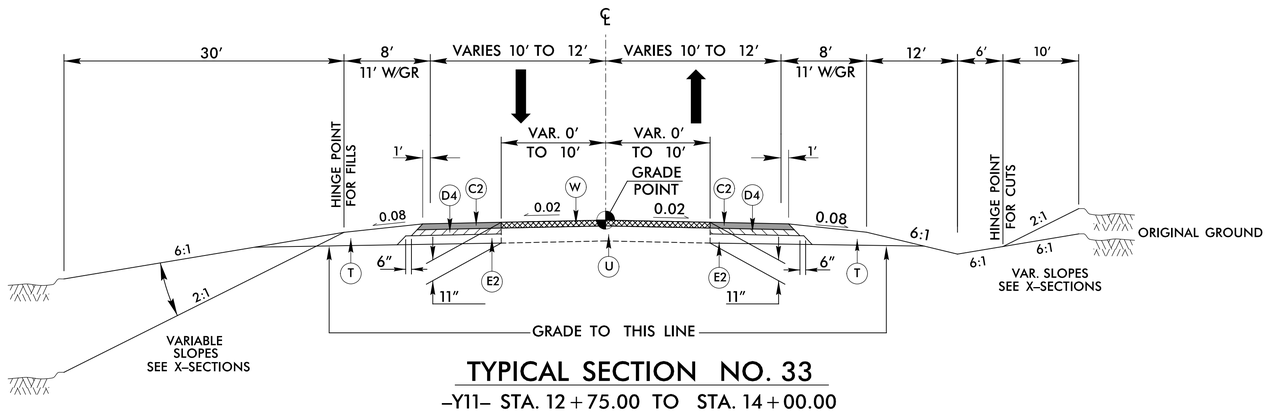
–Y10– STA. 10+50.00 TO STA. 11+15.00
–Y10– STA. 21+50.00 TO STA. 22+50.00
–Y14A– STA. 10+50.00 TO STA. 24+25.19

* 1' PAVED SHOULDER IN THE FOLLOWING STATION RANGES:
–Y10– STA. 10+50.00 TO STA. 11+15.00
–Y10– STA. 21+50.00 TO STA. 22+50.00



TYPICAL SECTION NO. 32

–Y11– STA. 14+00.00 TO STA. 28+75.00



TYPICAL SECTION NO. 33

–Y11– STA. 12+75.00 TO STA. 14+00.00
–Y11– STA. 28+75.00 TO STA. 31+50.00

6/7/2018
R2721_RDY_TYP_02A.dgn
cookelev

51499

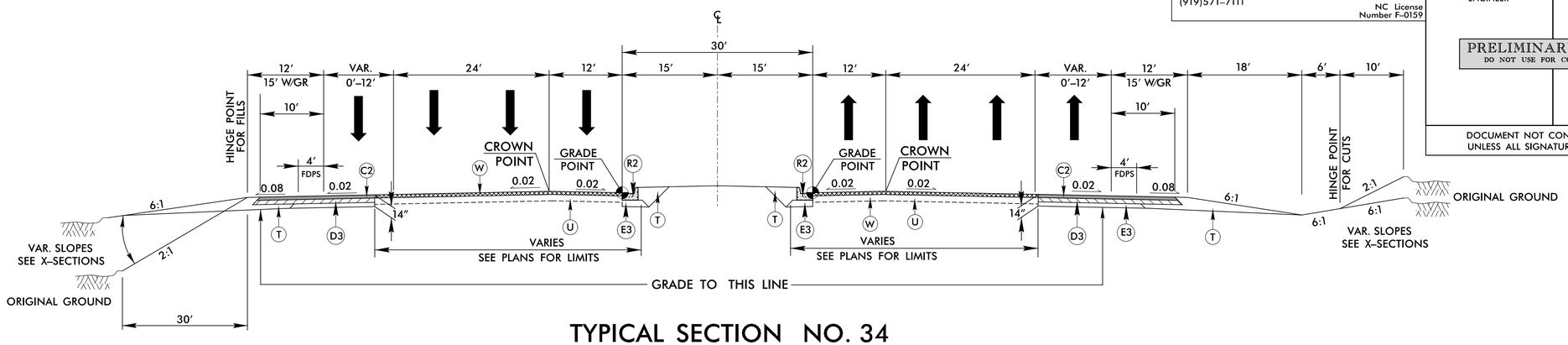
PAVEMENT SCHEDULE	
A1	13½" PCCP
A2	11" PCCP
C1	1¼" SF9.5A
C2	3" S9.5B
C3	3" S9.5C
D1	2½" I19.0B
D2	3" I19.0C
D3	4" I19.0C
D4	4" I19.0B
E1	4" B25.0C
E2	4" B25.0B
E3	8" B25.0C
J1	8" ABC
J2	10" ABC
J3	6" ABC
R1	1'-6" C & G
R2	2'-6" C & G
R3	5" MCI
S	4" SIDEWALK
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V	MILLING
W	WEDGING

LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
(919)571-7111
NC License Number F-0159

PROJECT REFERENCE NO.	SHEET NO.
R-2721	2A-12
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

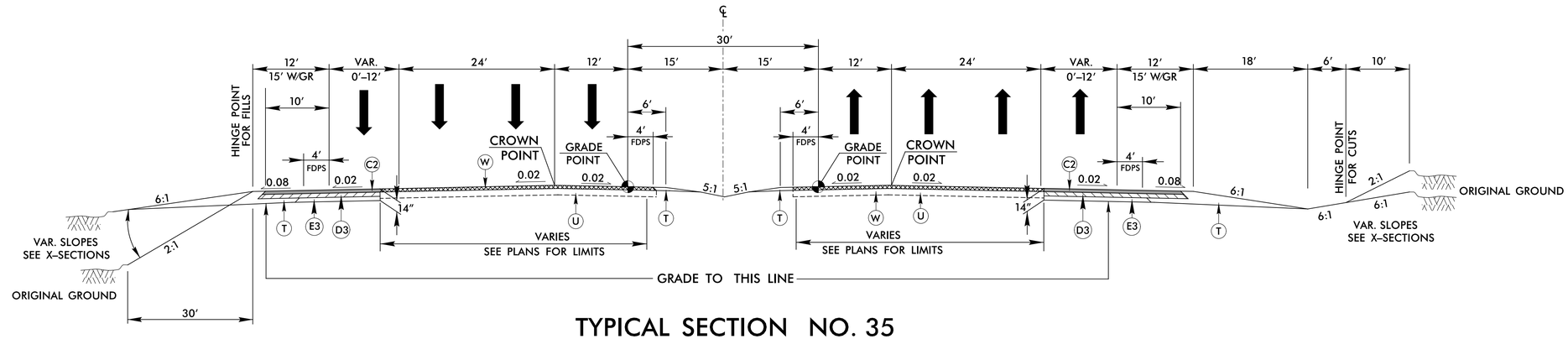
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



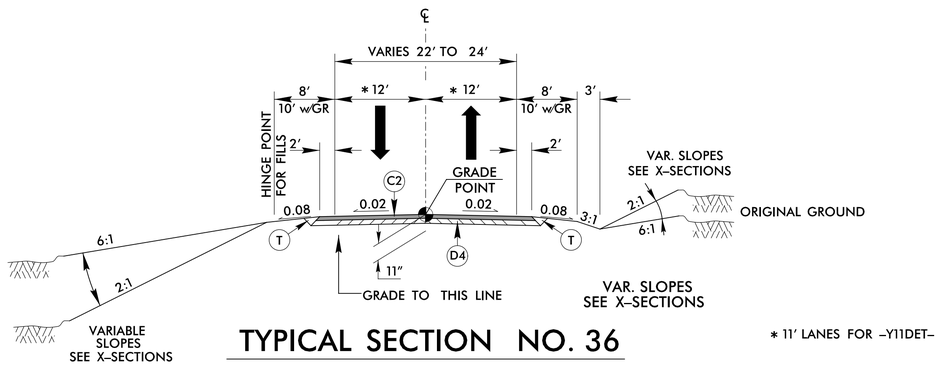
TYPICAL SECTION NO. 34

–Y13– STA 29+90.00 TO STA 72+00.00



TYPICAL SECTION NO. 35

–Y13– STA 72+00.00 TO STA 73+00.00



TYPICAL SECTION NO. 36

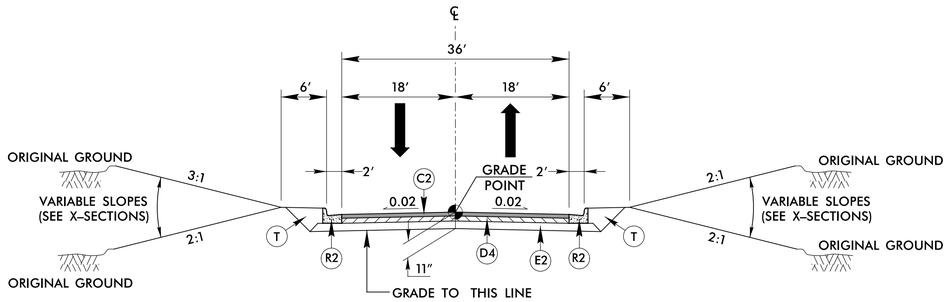
* 11′ LANES FOR –Y11DET–

–Y3DET– STA 10+00.00 TO STA 35+61.95
–Y4DET– STA 10+00.00 TO STA 24+04.39
–Y5DET– STA 10+00.00 TO STA 46+39.23
–Y6DET– STA 10+00.00 TO STA 24+00.00
–Y7DET– STA 11+00.00 TO STA 23+41.93
–Y8DET– STA 11+00.00 TO STA 32+00.00
–Y11DET– STA 10+74.39 TO STA 23+75.00

6/7/2018
R2721_RDY_TYP_02A.dgn
cwakeley

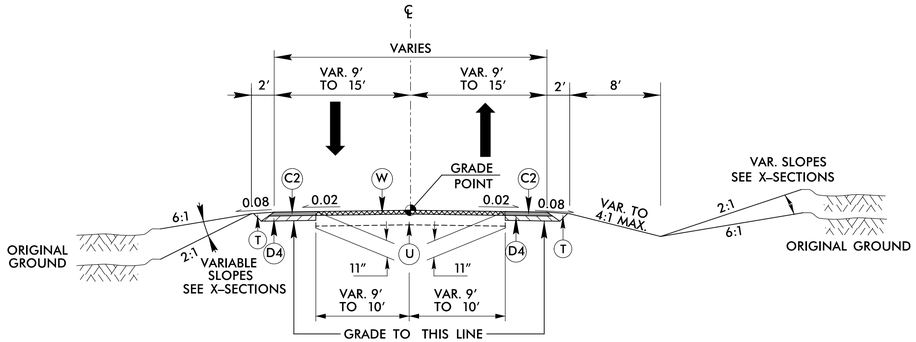
514499

PAVEMENT SCHEDULE	
A1	13½" PCCP
A2	11" PCCP
C1	1¼" SF9.5A
C2	3" S9.5B
C3	3" S9.5C
D1	2½" I19.0B
D2	3" I19.0C
D3	4" I19.0C
D4	4" I19.0B
E1	4" B25.0C
E2	4" B25.0B
E3	8" B25.0C
J1	8" ABC
J2	10" ABC
J3	6" ABC
R1	1'-6" C & G
R2	2'-6" C & G
R3	5" MCI
S	4" SIDEWALK
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V	MILLING
W	WEDGING



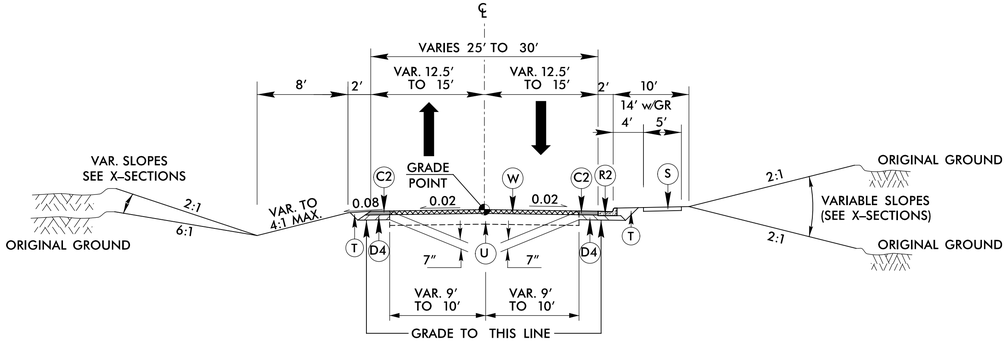
TYPICAL SECTION NO. 37

–Y5I– STA. 10+51.50 TO STA. 15+87.44
–Y5J– STA. 10+18.41 TO STA. 21+92.30



TYPICAL SECTION NO. 39

–Y5B– STA. 10+39.00 TO STA. 14+00.00
–Y5C– STA. 11+00.00 TO STA. 12+26.39
–Y5D– STA. 10+25.00 TO STA. 12+25.86
–Y5E– STA. 10+51.50 TO STA. 12+87.56
–Y5F– STA. 11+50.00 TO STA. 20+50.00
–Y5G– STA. 13+25.00 TO STA. 16+99.32
–Y5K– STA. 10+22.85 TO STA. 11+50.00
–Y8C– STA. 11+25.00 TO STA. 12+36.63
–Y8D– STA. 11+50.00 TO STA. 12+54.87
–Y13C– STA. 10+25.00 TO STA. 13+11.75
–Y13E– STA. 10+75.00 TO STA. 15+00.00



TYPICAL SECTION NO. 41

–Y5L– STA. 11+50.00 TO STA. 12+40.71

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PROJECT REFERENCE NO.	SHEET NO.
R–2721	2A–13
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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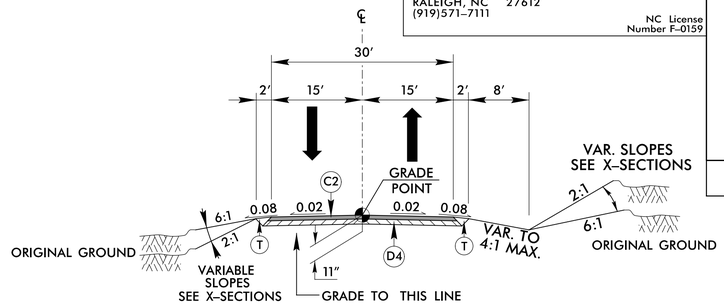
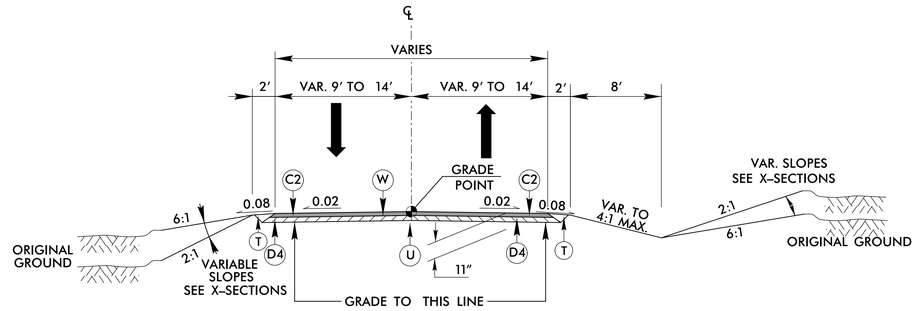


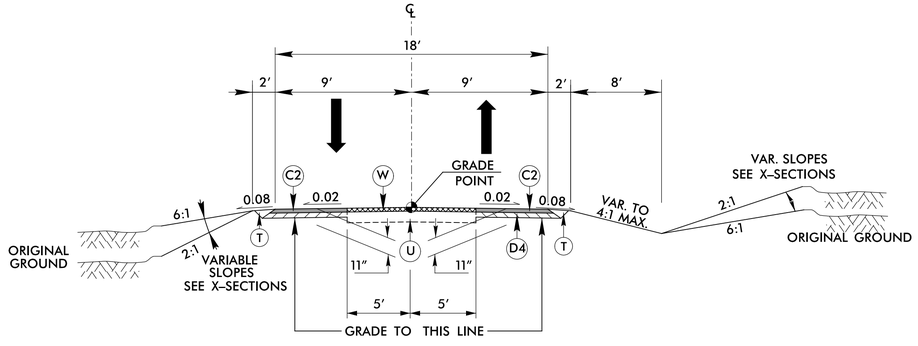
TYPICAL SECTION NO. 38

–Y5H– STA. 11+50.00 TO STA. 13+81.80



TYPICAL SECTION NO. 40

–Y5M– STA. 10+50.00 TO STA. 11+48.51
–Y5M– STA. 11+85.02 TO STA. 12+75.00
–Y8A– STA. 11+00.00 TO STA. 13+99.83
–Y8B– STA. 10+09.61 TO STA. 13+09.75
–Y10A– STA. 10+60.00 TO STA. 20+23.05
–Y10B– STA. 11+00.00 TO STA. 18+59.70
–Y12A– STA. 10+68.34 TO STA. 26+62.98
–Y12B– STA. 10+62.01 TO STA. 16+50.00
–Y13B– STA. 10+09.50 TO STA. 11+60.22
–Y13D– STA. 11+05.00 TO STA. 13+56.33



TYPICAL SECTION NO. 42

–Y12B– STA. 16+50.00 TO STA. 20+02.74

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cvakilev

514499

PAVEMENT SCHEDULE	
A1	13½" PCCP
A2	11" PCCP
C1	1¼" SF9.5A
C2	3" S9.5B
C3	3" S9.5C
D1	2½" I19.0B
D2	3" I19.0C
D3	4" I19.0C
D4	4" I19.0B
E1	4" B25.0C
E2	4" B25.0B
E3	8" B25.0C
J1	8" ABC
J2	10" ABC
J3	6" ABC
R1	1'-6" C & G
R2	2'-6" C & G
R3	5" MCI
S	4" SIDEWALK
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V	MILLING
W	WEDGING

LOCHNER
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2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
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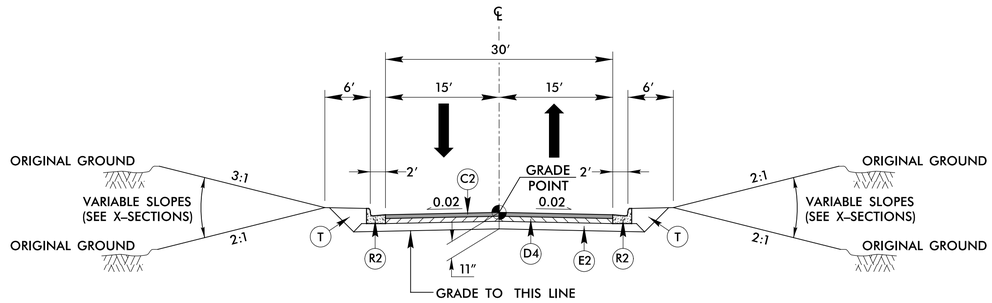
NC License Number F-0159

PROJECT REFERENCE NO.	SHEET NO.
R-2721	2A-14
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

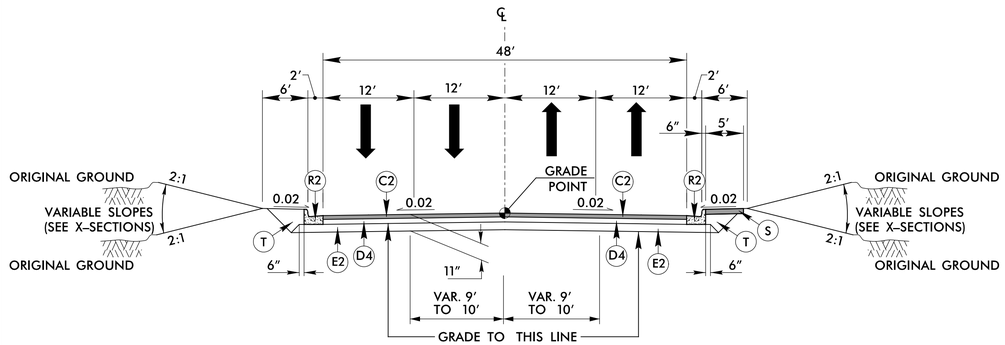
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



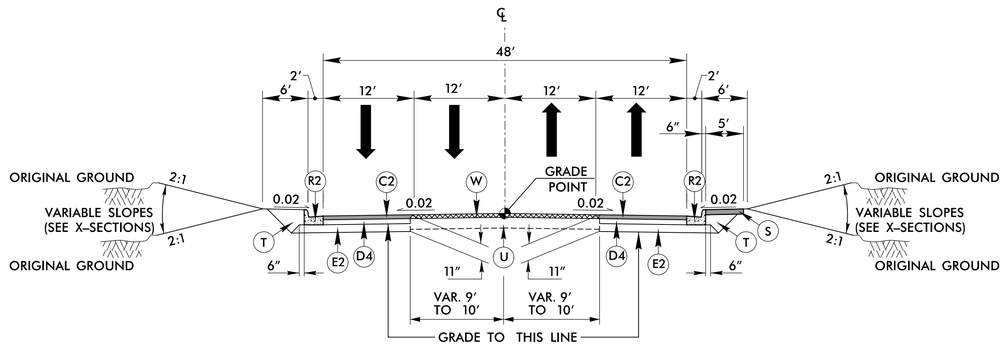
TYPICAL SECTION NO. 43

–Y13D– STA. 11+05.00 TO STA. 13+56.33



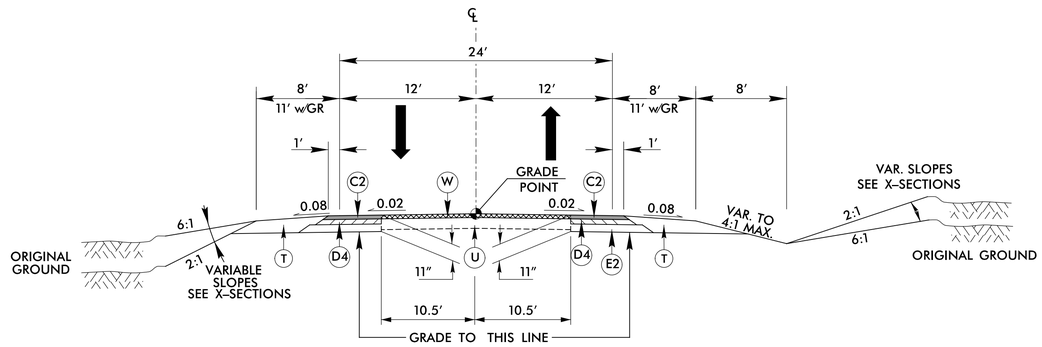
TYPICAL SECTION NO. 44

–Y13F– STA. 10+62.98 TO STA. 11+75.00



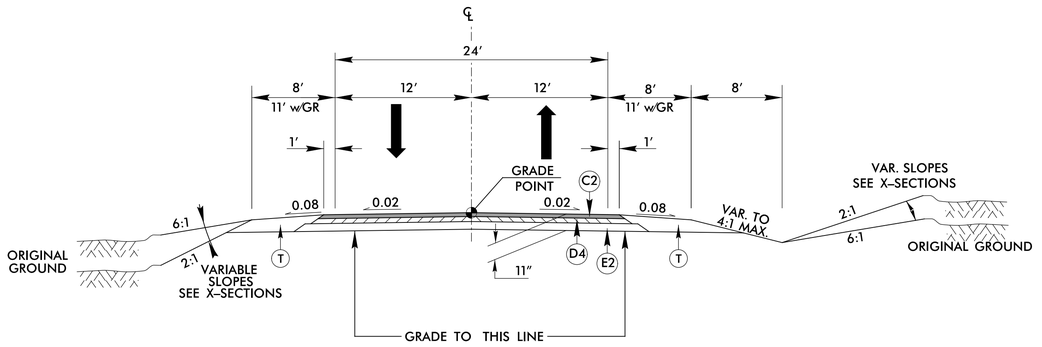
TYPICAL SECTION NO. 45

–Y13F– STA. 11+75.00 TO STA. 12+01.04



TYPICAL SECTION NO. 46

–Y13A– STA. 31+90.00 TO STA. 35+00.00



TYPICAL SECTION NO. 47

–Y13A– STA. 10+52.81 TO STA. 31+90.00

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R2721_RDY_TYP_02A.dgn
cooksley

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H. W. LOCHNER, INC.
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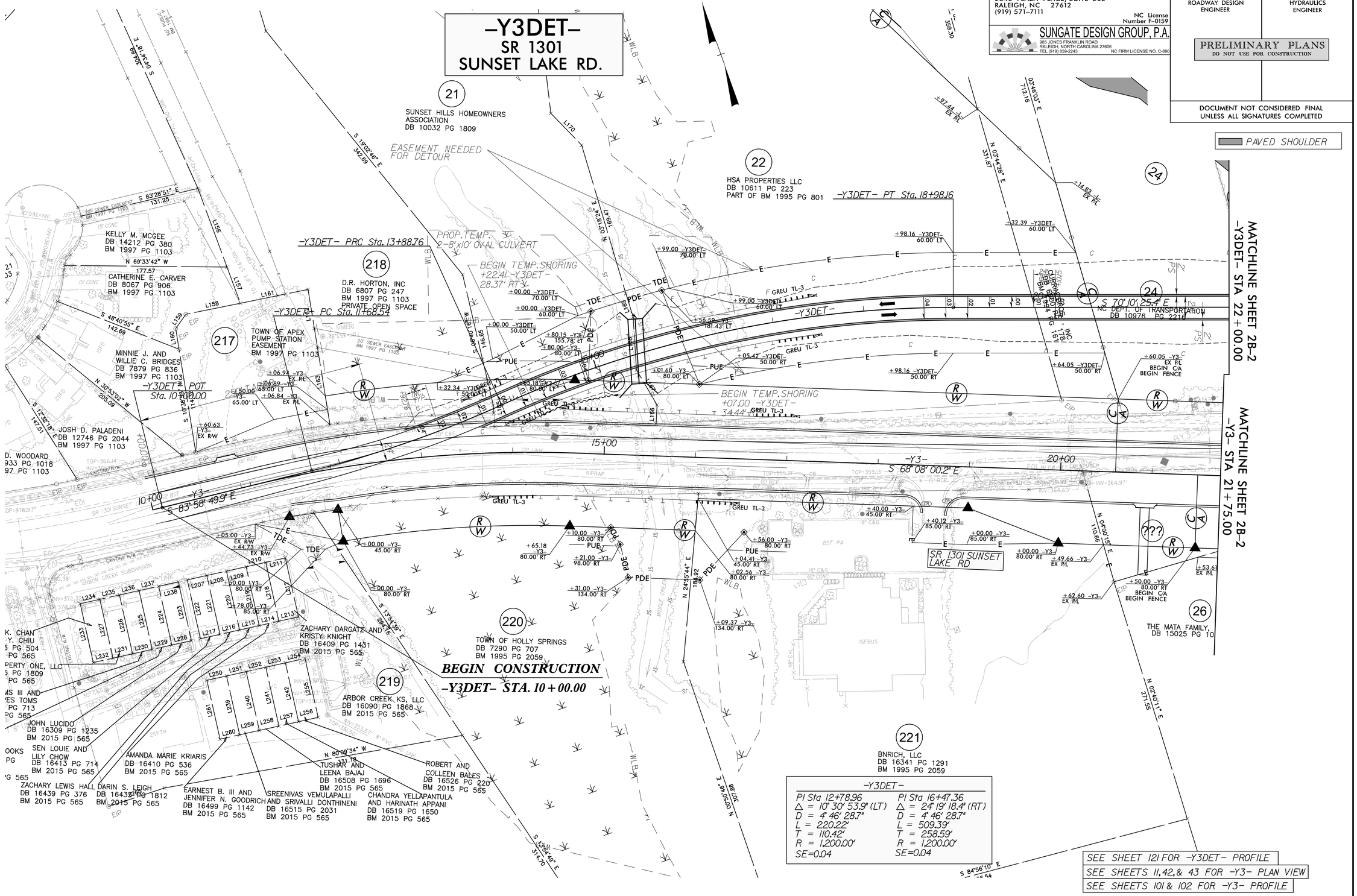
(919) 571-7111
NC License Number F-0159
SUNGATE DESIGN GROUP, P.A.
905 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243
NC FIRM LICENSE NO. C-890

PROJECT REFERENCE NO.	SHEET NO.
R-2721	2B-1
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



-Y3DET-

PI Sta 12+78.96	PI Sta 16+47.36
Δ = 10° 30' 53.9" (LT)	Δ = 24° 19' 18.4" (RT)
D = 4° 46' 28.7"	D = 4° 46' 28.7"
L = 220.22'	L = 509.39'
T = 110.42'	T = 258.59'
R = 1,200.00'	R = 1,200.00'
SE=0.04	SE=0.04

51499

6/7/2018
R2721_RDY_DET_02B-1.dgn
cyokeley

514.99

–Y3DET–
SR 1301
SUNSET LAKE RD.

COMPLETE 540

20,200

6,500

SUNSET LAKE RD

2018 ADT

LOCHNER
H. W. LOCHNER, INC.
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RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243
NC FIRM LICENSE NO. C-890

PROJECT REFERENCE NO.	SHEET NO.
R–2721	2B–2
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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PAVED SHOULDER

END CONSTRUCTION
–Y3DET– STA. 35 + 61.95

–Y3DET– PC STA 32+53.67

BEGIN TEMP. SHORING +42.60 –Y3DET– 22.00' RT

END TEMP. SHORING +04.40 –Y3DET– 22.00' RT

MATCHLINE SHEET 2B-1 –Y3DET– STA 22+00.00

MATCHLINE SHEET 2B-1 –Y3– STA 21+75.00

SR 1301 SUNSET LAKE RD

SEE SHEETS 121 FOR –Y3DET– PROFILE
SEE SHEETS 11, 42, & 43 FOR –Y3– PLAN VIEW
SEE SHEETS 101 & 102 FOR –Y3– PROFILE

–Y3DET–
PI Sta 32+53.67
△ = 43° 49' 55.7" (LT)
D = 6° 44' 26.4"
L = 650.26'
T = 341.97'
R = 850.00'
SE=0.04

6/7/2018
R2721_RDY_DET_02B-2.dgn
cwakeley

514.99

–Y4DET–
SR 1301
SUNSET LAKE RD.

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905 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243
NC FIRM LICENSE NO. C-890

PROJECT REFERENCE NO.	SHEET NO.
R–2721	2B–3
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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PAVED SHOULDER

VIJAY NIDUMOLU AND VENKATA VISSA
DB 16290 PG 1216
BM 2015 PG 801

JOHN AND ZULMA MCGRATH
DB 16401 PG 906
BM 2015 PG 801

WILLIAM LOCKLEY
DB 14708 PG 384
BM 1998 PG 133

228 60' ACCESS EASEMENT BM 1978 PG 518; 60' CP&L EASEMENT DB 5006 PG 428

229 CARRIE LOCKLEY
DB 2642 PG 392
BM 1998 PG 133

232 MARY AND KARL WELLS
DB 3805 PG 129
BM 1998 PG 133

233 KENNETH AND CYNETHIA REYNOLDS
DB 5088 PG 1306
BM 1998 PG 133

THOMAS AND BRANDY MARTIN
DB 15812 PG 1621
BM 2008 PG 1398

GRAHAM RAINES, SR
DB 2420 PG 663
BM 1959 PG 167

GRAHAM RAINES, JR
DB 4113 PG 474
BM 1959 PG 167

PULTE HOME CORPORATION
DB 16272 PG 1987
BM 2008 PG 1398

227 WOODCREEK NEIGHBORHOOD ASSN
DB 13337 PG 2374
BM 2008 PG 1398

WOODCREEK NEIGHBORHOOD ASSN
DB 13338 PG 1672
BM 2008 PG 1398

231 WILLIAM LOCKLEY
DB 14708 PG 384
BM 1998 PG 133

230 FURMAN AND DEBORAH BECKWITH
DB 5614 PG 293
BM 1991 PG 1252
BM 1998 PG 133

239 FURMAN AND DEBORAH BECKWITH
DB 5614 PG 293
BM 1991 PG 1252

CLYDE DRIVE
50' PRIVATE R/W
BM 1998 PG 133

CHARLES MCKOY
DB 4001 PG 63
NO PLAT ON FILE

53

54

SR 1301 SUNSET LAKES DR

–Y4DET– PC Sta. 10+00.00

BEGIN CONSTRUCTION
–Y4DET– STA. 10+00.00

–Y4DET– PRC Sta. 13+72.39

MATCHLINE SHEET 2B-4
–Y4– STA. 24+50.00

MATCHLINE SHEET 2B-4
–Y4DET– STA. 15+50.00

234 JAMES AND EVELYN BREWINGTON
DB 3613 PG 948
BM 1967 PG 101

235 MUSETTE MCLAIN
DB 4618 PG 871
BM 1967 PG 101

236 GHEYATH MAJEED
DB 14044 PG 1462
BM 1967 PG 101

237 KARL WELLS
DB 8691 PG 644
BM 1967 PG 101

238 BETTY SCOTT
DB 12256 PG 1751
BM 1967 PG 101

STEPHANIE UTLEY
DB 2252 PG 519
BM 1967 PG 101

EMMA LEACH
DB 1952 PG 661
BM 1967 PG 101

TAWFIQ ABDEL–GHANI AND SULEIMAN ASAD
DB 6368 PG 440
NO PLAT ON FILE

TAWFIQ ABDEL–GHANI
DB 5751
NO PLAT ON FILE

52

–Y4DET–	
PI Sta 11+90.12	PI Sta 17+49.60
Δ = 28° 26' 55.2" (RT)	Δ = 53° 24' 00.0" (LT)
D = 7° 38' 22.0"	D = 7° 38' 22.0"
L = 372.39'	L = 699.00'
T = 190.12'	T = 377.21'
R = 750.00'	R = 750.00'
SE = 0.04	SE = 0.04

SEE SHEET 122 FOR –Y4DET– PROFILE
SEE SHEET 102 FOR –Y4– PROFILE
SEE SHEET 44 & 15 FOR –Y4– PLAN VIEW

6/7/2018
R2721_RDY_DET_02B-3.dgn
cookelay

514.99

–Y4DET–
SR 1301
SUNSET LAKE RD.

COMPLETE 540

20,200

10,700

SUNSET LAKE RD

2018 ADT

LOCHNER
H. W. LOCHNER, INC.
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NC License Number F–0159

SUNGATE DESIGN GROUP, P.A.
905 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243
NC FIRM LICENSE NO. C-890

PROJECT REFERENCE NO.	SHEET NO.
R–2721	2B–4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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MATCHLINE SHEET 2B–3
–Y4DET– STA. 15+50.00

MATCHLINE SHEET 2B–3
–Y4DET– STA. 24+50.00

–Y4DET–

–Y4– STA. 24+04.39

END CONSTRUCTION
–Y4DET– STA. 24+04.39

–Y4DET– PT Sta. 24+04.39

END TEMP. SHORING
+90.00 –Y4DET–,
17.00' LT

–Y4DET– PRC
Sta. 20+71.40

BEGIN TEMP. SHORING
+73.80 –Y4DET–,
31.5' LT

PAVED SHOULDER

–Y4DET–	
PI Sta 17+49.60	PI Sta 22+40.68
Δ = 53° 24' 00.0" (LT)	Δ = 25° 26' 20.2" (RT)
D = 1° 38' 22.0"	D = 1° 38' 22.0"
L = 699.00'	L = 332.99'
T = 377.21'	T = 169.29'
R = 750.00'	R = 750.00'
SE = 0.04	SE = 0.04

SEE SHEET 122 FOR –Y4DET– PROFILE
SEE SHEET 102 FOR –Y4– PROFILE
SEE SHEET 45 & 15 FOR –Y4– PLAN VIEW

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R2721_RDY_DET_02B-4.dgn
cwakeley

514.99

–Y5DET–
SR 1152
HOLLY SPRINGS RD.

LOCHNER

H. W. LOCHNER, INC.
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905 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243
NC FIRM LICENSE NO. C-890

PROJECT REFERENCE NO.	SHEET NO.
R–2721	2B–5
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PAVED SHOULDER

MATCHLINE SHEET 2B-6 –Y5DET– STA. 19+00.00

MATCHLINE SHEET 2B-6 –Y5– STA. 40+50.00

SEE SHEET 122 & 123 FOR –Y5DET– PROFILE
SEE SHEET 103 & 104 FOR –Y5– PROFILE
SEE SHEET 47 & 17 FOR –Y5– PLAN VIEW

–Y5DET–		
PI Sta 10+92.89	PI Sta 14+00.78	PI Sta 19+17.74
Δ = 3° 10' 35.3" (LT)	Δ = 32° 00' 00.0" (LT)	Δ = 29° 15' 00.0" (RT)
D = 1° 42' 37.2"	D = 7° 38' 22.0"	D = 4° 46' 28.7"
L = 185.72'	L = 418.88'	L = 612.61'
T = 92.89'	T = 215.06'	T = 313.14'
R = 3,350.00'	R = 750.00'	R = 1,200.00'
V = 45mph	V = 45mph	V = 45mph
SE = Exist.	SE = 0.04	SE = 0.04

6/7/2018
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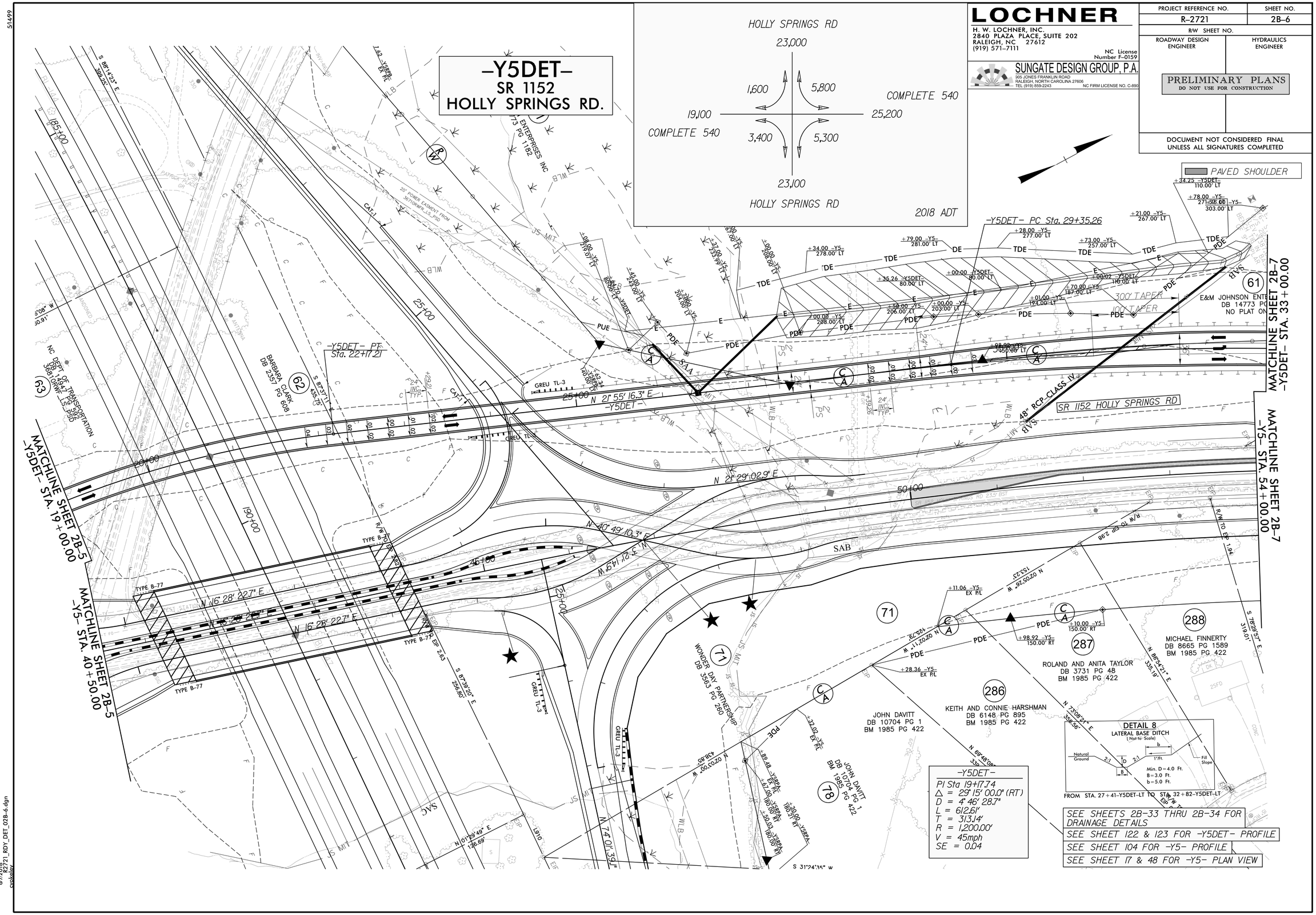
cookslev



LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
(919) 571-7111
NC License Number F-0159

SUNGATE DESIGN GROUP, P.A.
905 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243
NC FIRM LICENSE NO. C-890

PROJECT REFERENCE NO.	SHEET NO.
R-2721	2B-6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

514/99

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cvokelev

PROJECT REFERENCE NO.	SHEET NO.
R-2721	2B-7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

LOCHNER
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RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243
NC FIRM LICENSE NO. C-890

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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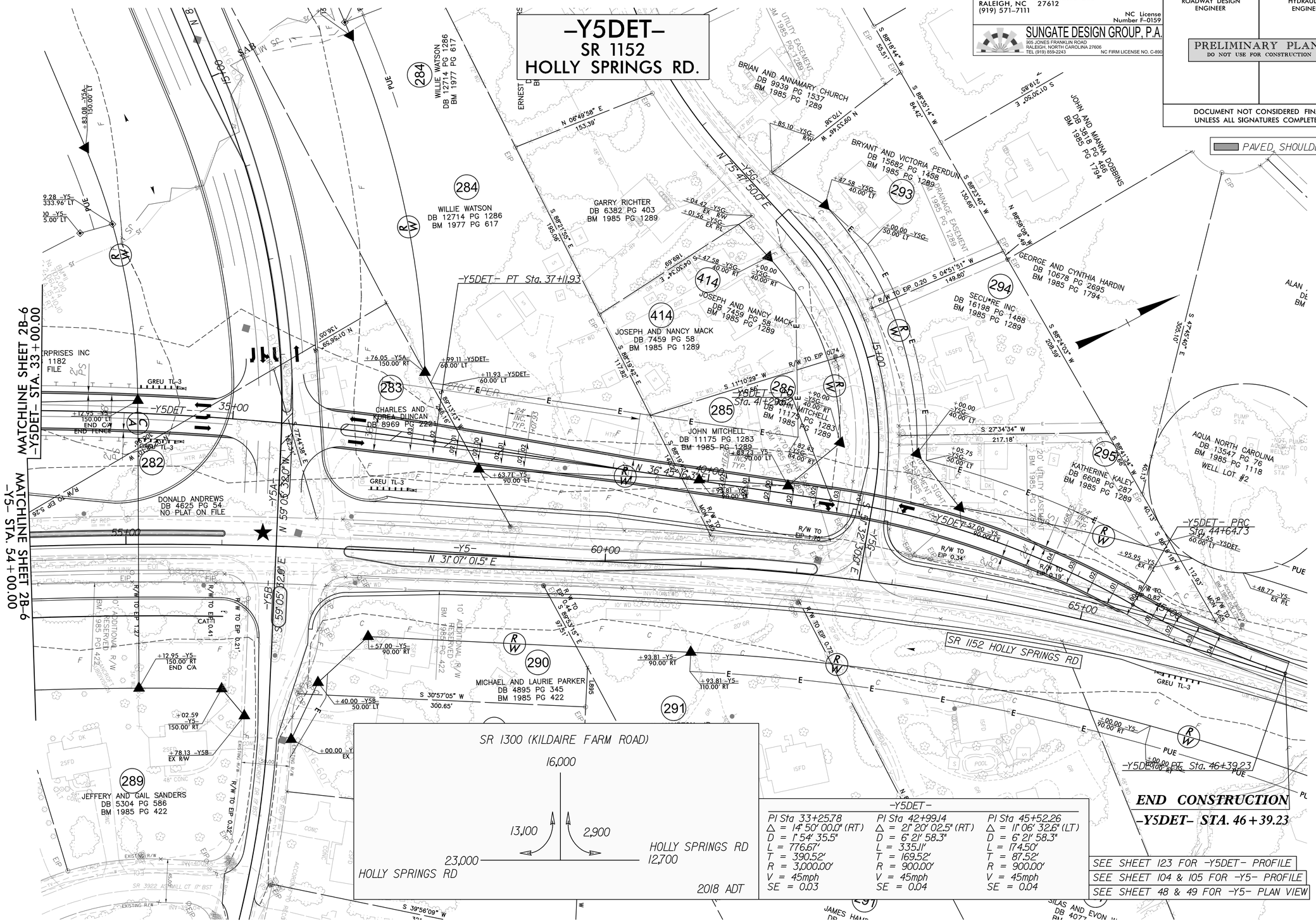

-Y5DET-

PI Sta 33+25.78	PI Sta 42+99.14	PI Sta 45+52.26
Δ = 14° 50' 00.0" (RT)	Δ = 21° 20' 02.5" (RT)	Δ = 11° 06' 32.6" (LT)
D = 1° 54' 35.5"	D = 6° 21' 58.3"	D = 6° 21' 58.3"
L = 776.67'	L = 335.11'	L = 174.50'
T = 390.52'	T = 169.52'	T = 87.52'
R = 3,000.00'	R = 900.00'	R = 900.00'
V = 45mph	V = 45mph	V = 45mph
SE = 0.03	SE = 0.04	SE = 0.04

SEE SHEET 123 FOR -Y5DET- PROFILE
SEE SHEET 104 & 105 FOR -Y5- PROFILE
SEE SHEET 48 & 49 FOR -Y5- PLAN VIEW

51499

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51499

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RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243
NC FIRM LICENSE NO. C-890

PROJECT REFERENCE NO.	SHEET NO.
R-2721	2B-8
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PAVED SHOULDER

COMPLETE 540

26,400

5,200

PIERCE OLIVE RD

2018 ADT

-Y6DET-
SR 1389
PIERCE-OLIVE RD.

-Y6DET- POT Sta. 10+00.00
-Y6DET- PC Sta. 10+43.13
-Y6DET- PRC Sta. 14+68.00
-Y6DET- PRC Sta. 20+94.43
-Y6DET- PT Sta. 23+99.61

BEGIN TEMP. SHORING +24.30 -Y6DET-, 22.10' RT
END TEMP. SHORING +34.60 -Y6DET-, 24.00' RT
BEGIN TEMP. SHORING +79.00 -Y6DET-, 23.2' RT
END TEMP. SHORING +83.60 -Y6DET-, 16.40' LT

100' TAPER

SR 1389 PIERCE-OLIVE RD

QUAD TRI LLC
OLIVE, MARTHA
DB 16161 PG 1089
BM 1979 PG 361

50' POWER LINE EASEMENT BM 1979 PG 361

BEGIN CONSTRUCTION
-Y6DET- STA. 10+00.00

END CONSTRUCTION
-Y6DET- STA. 24+00.00

-Y6DET-		
PI Sta 12+64.91	PI Sta 17+98.27	PI Sta 22+48.90
Δ = 40° 34' 18.6" (LT)	Δ = 44° 51' 54.9" (RT)	Δ = 21° 51' 23.7" (LT)
D = 9° 32' 57.5"	D = 7° 09' 43.1"	D = 7° 09' 43.1"
L = 424.87'	L = 626.44'	L = 305.18'
T = 221.78'	T = 330.27'	T = 154.47'
R = 600.00'	R = 800.00'	R = 800.00'
V = 40mph	V = 45mph	V = 45mph
SE = 0.04	SE = 0.04	SE = 0.04

SEE SHEET 124 FOR -Y6DET- PROFILE
SEE SHEET 109 FOR -Y6- PROFILE
SEE SHEET 20 FOR -Y6- PLAN VIEW

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514.99

–Y7DET–
SR 1387
WEST LAKE RD.

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(919) 571–7111
NC License Number F–0159

ECOLOGICAL ENGINEERING
NC FIRM LICENSE Noc F-1148
1151 SE Cary Parkway
Suite 101
Cary, NC 27518
(919) 557-0929

PROJECT REFERENCE NO.	SHEET NO.
R–2721	2B–9
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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PAVED SHOULDER

320 TAYLOR, PAUL H, OLIVE D
DB 6806 PG 868
BM 1984 PG 609

321 VANHULST, PAMELA
DB 14333 PG 2712
BM 1987 PG 751

322 MILLER, WILLIAM B, JEANNE S
DB 4974 PG 19

323 DUMAYAS, EMBERLY R, PAT J
DB 15650 PG 740
BM 1987 PG 751

324 POINDEXTER, RANDALL D & POINDEXTER, BRANDY A
DB 11302 PG 1245
BM 1987 PG 751

DUMAYAS, EMBERLY R, PAT J
DB 15650 PG 740
BM 1987 PG 751

POINDEXTER, RANDALL D & POINDEXTER, BRANDY A
DB 11302 PG 1245
BM 1987 PG 751

328 WRENN, DEBORAH K
DB 9198 PG 797
BM 1987 PG 751

RT, JOHN T, KATHLEEN D
DB 7598 PG 640
BM 1987 PG 751

MOTHY H, JOAN D
748 PG 689
87 PG 751

329 POWELL, JOHN ARCHIE
DB 11694 PG 1168
BM 1987 PG 751

POWELL, JOHN ARCHIE
DB 11694 PG 1168
BM 1987 PG 751

MCSWAIN, MICHAEL A
DB 4583 PG 183
BM 1987 PG 751

108 PERRY, BRENDA W
DB. 9022 PG 1372
BM 1987 PG 751

105 PERRY, BRENDA W
DB 9022 PG 1372
BM 1987 PG 751

RANTA, MARK & RANTA, NAN
DB 9588 PG 1
BM 1987 PG

NC DEPARTMENT O
DB 11464

SR 1387 WEST LAKE RD

–Y7DET– POT Sta. 10+00.00

–Y7DET– PRC Sta. 11+00.43

–Y7DET– PRC Sta. 16+92.27

–Y7DET– PRC Sta. 20+22.15

BEGIN CONSTRUCTION
–Y7DET– STA. 11+00.00

MATCHLINE SHEET 2B–10
–Y7– STA. 24+00.00
–Y7DET– STA. 21+00.00

SEE SHEET 124 FOR –Y7DET– PROFILE
SEE SHEET 110 FOR –Y7– PROFILE
SEE SHEET 54 & 26 FOR –Y7– PLAN VIEW

COMPLETE 540
26,400
9,600
WEST LAKE RD
2018 ADT

–Y7DET–		
PI Sta 14+12.73	PI Sta 18+59.92	PI Sta 21+84.51
Δ = 45° 12' 49.9" (LT)	Δ = 25° 12' 01.9" (RT)	Δ = 24° 25' 47.4" (LT)
D = 7° 38' 22.0"	D = 7° 38' 22.0"	D = 7° 38' 22.0"
L = 591.85'	L = 329.87'	L = 319.79'
T = 312.30'	T = 167.65'	T = 162.36'
R = 750.00'	R = 750.00'	R = 750.00'
V = 45mph	V = 45mph	V = 45mph
SE = 0.04	SE = 0.04	SE = 0.04

6/7/2018
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cookelev

PROJECT REFERENCE NO.	SHEET NO.
R-2721	2B-10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

LOCHNER

H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
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(919) 571-7111

NC License Number F-0159

ECOLOGICAL ENGINEERING
NC FIRM LICENSE No: F-1148
1151 SE Cary Parkway
Suite 101
Cary, NC 27518
(919) 557-0929

PRELIMINARY PLANS
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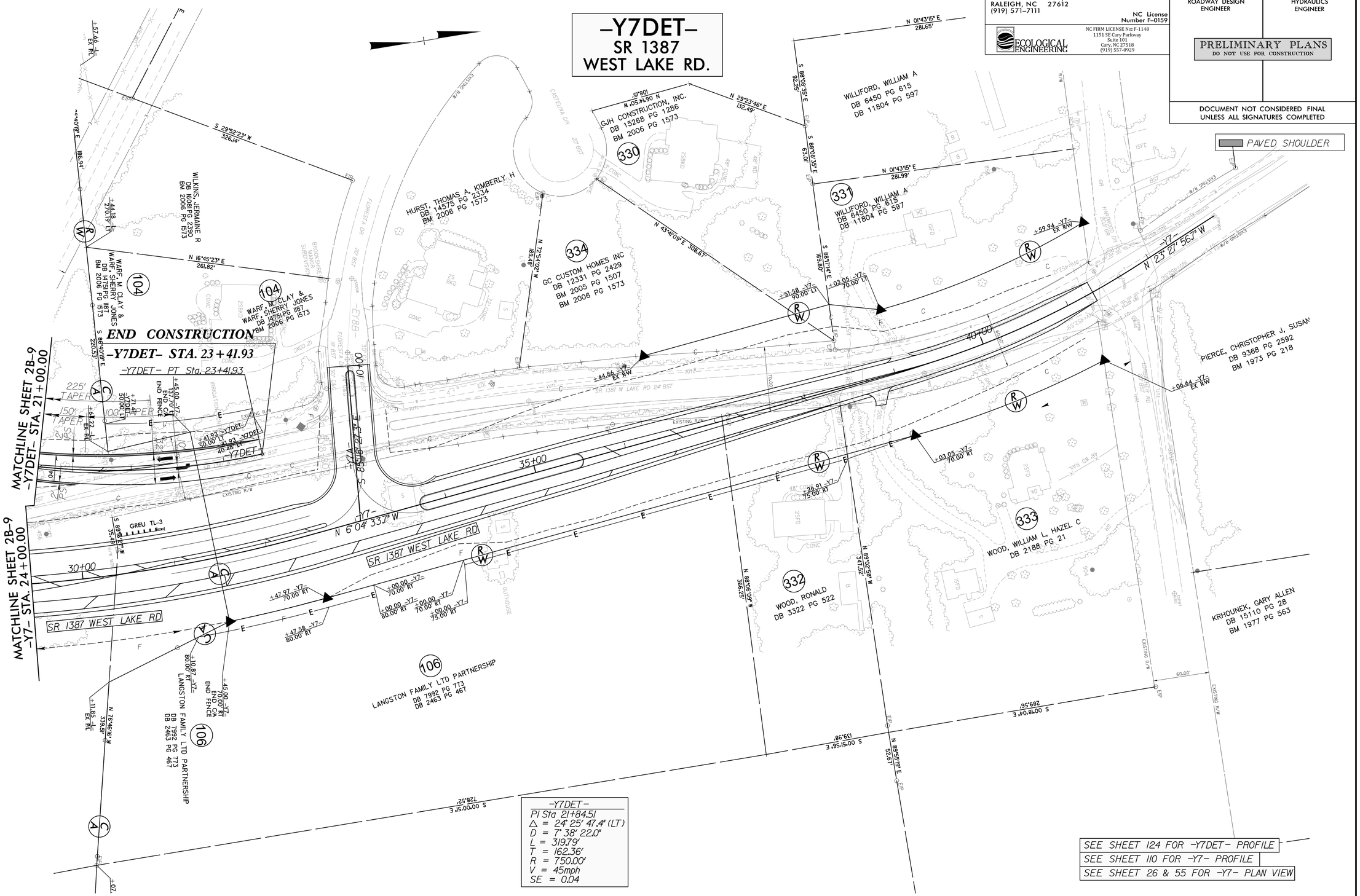

-Y7DET-
PI Sta 21+84.51
Δ = 24° 25' 47.4" (LT)
D = 7° 38' 22.0"
L = 319.79'
T = 162.36'
R = 750.00'
V = 45mph
SE = 0.04

SEE SHEET 124 FOR -Y7DET- PROFILE
SEE SHEET 110 FOR -Y7- PROFILE
SEE SHEET 26 & 55 FOR -Y7- PLAN VIEW

514/99

6/7/2018
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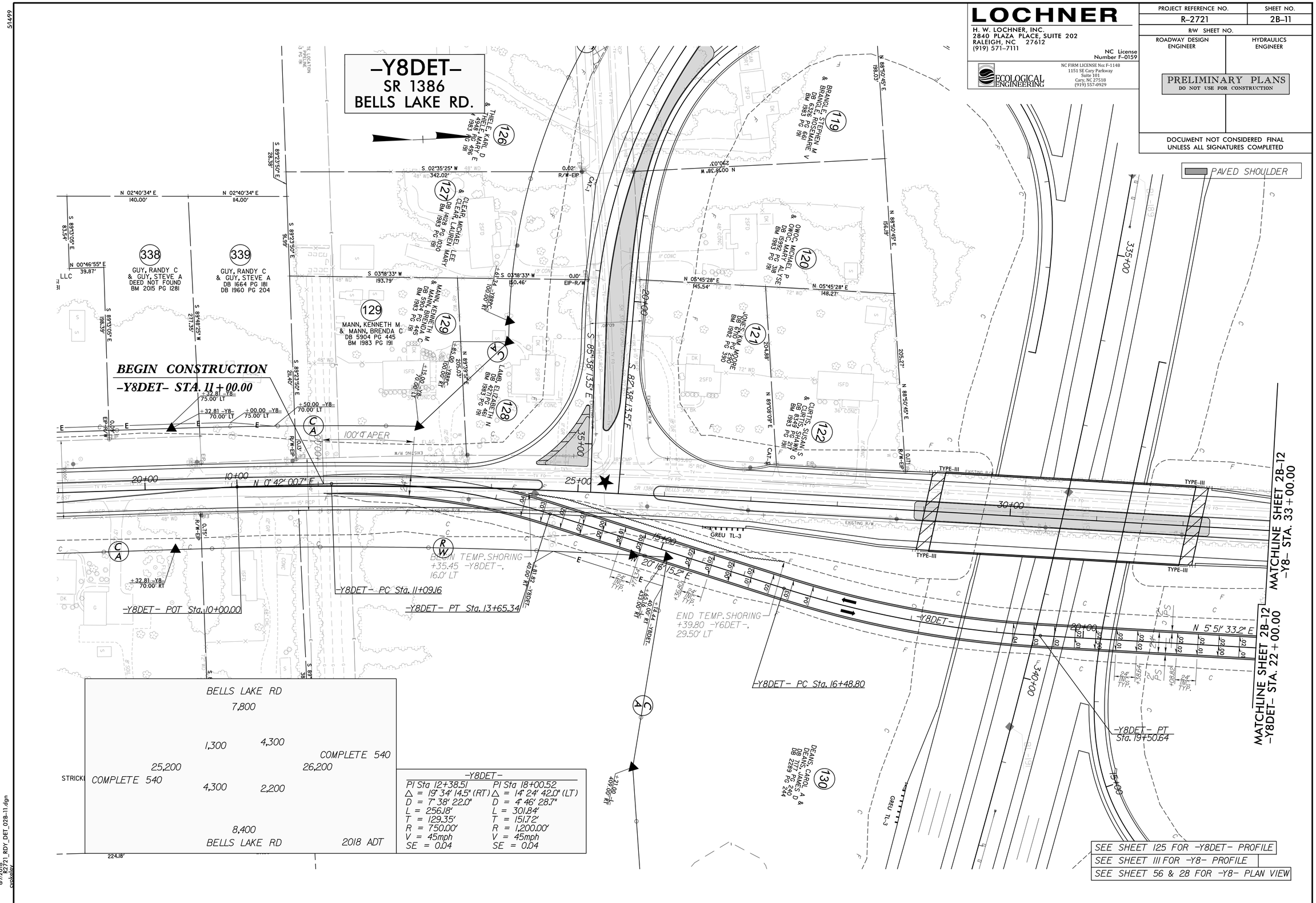
cvokeley



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1151 SE Cary Parkway
Suite 101
Cary, NC 27518
(919) 557-0929
PROJECT REFERENCE NO.
R-2721
SHEET NO.
2B-11
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
-Y8DET-
SR 1386
BELLS LAKE RD.
PAVED SHOULDER
BEGIN CONSTRUCTION
-Y8DET- STA. 11+00.00
100' TAPER
GUY, RANDY C & GUY, STEVE A DEED NOT FOUND BM 2015 PG 1281
GUY, RANDY C & GUY, STEVE A DB 1664 PG 181 DB 1960 PG 204
MANN, KENNETH M & MANN, BRENDA C DB 5904 PG 445 BM 1983 PG 191
BRANGLE, STEPHEN M & BRANGLE, ROSEMARIE V DB 6326 PG 661 BM 1983 PG 191
OWOC, MICHAEL P & OWOC, MARY ALYSE DB 15992 PG 318 BM 1983 PG 191
JONES, KIM MOORE DB 6710 PG 290 BM 1982 PG 390
CURTIS, SUSAN S & CURTIS, SHAWN G DB 8349 PG 217 BM 1983 PG 191
LAMB, ELIZABETH N DB 4271 PG 461 BM 1983 PG 191
THIELE, KARL D & THIELE, MARY E DB 4948 PG 496 BM 1983 PG 191
CLEAR, MICHAEL LEE & CLEAR, LAUREN MARY DB 14128 PG 1030 BM 1983 PG 191
DEANS, CAROL A & DEANS, JAMES D DB 7177 PG 240 DB 2289 PG 244
BEGIN TEMP. SHORING +35.45 -Y8DET-, 16.0' LT
END TEMP. SHORING +39.80 -Y6DET-, 29.50' LT
-Y8DET- POT Sta. 10+00.00
-Y8DET- PC Sta. 11+09.16
-Y8DET- PT Sta. 13+65.34
-Y8DET- PC Sta. 16+48.80
-Y8DET- PT Sta. 19+50.64
N 0° 42' 00.7" E
N 5° 51' 33.2" E
S 85° 38' 13.5" E
S 82° 38' 13.5" E
MATCHLINE SHEET 2B-12 -Y8- STA. 33+00.00
MATCHLINE SHEET 2B-12 -Y8DET- STA. 22+00.00
BELLS LAKE RD
7,800
1,300
4,300
COMPLETE 540
25,200
26,200
COMPLETE 540
4,300
2,200
8,400
BELLS LAKE RD
2018 ADT
-Y8DET-
PI Sta 12+38.51
Δ = 19° 34' 14.5" (RT)
D = 7° 38' 22.0"
L = 256.18'
T = 129.35'
R = 750.00'
V = 45mph
SE = 0.04
PI Sta 18+00.52
Δ = 14° 24' 42.0" (LT)
D = 4° 46' 28.7"
L = 301.84'
T = 151.72'
R = 1,200.00'
V = 45mph
SE = 0.04
SEE SHEET 125 FOR -Y8DET- PROFILE
SEE SHEET 111 FOR -Y8- PROFILE
SEE SHEET 56 & 28 FOR -Y8- PLAN VIEW

LOCHNER

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ECOLOGICAL ENGINEERING
NC FIRM LICENSE Noc F-1148
1151 SE Cary Parkway
Suite 101
Cary, NC 27518
(919) 557-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2721	2B-12
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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PAVED SHOULDER

-Y8DET-
SR 1386
BELLS LAKE RD.

RHODES, CLAYBONE C & RHODES, PANSY R
DB 2289 PG 245 — 109

NC DEPT OF TRANSPORTATION
DB 14624 PG 187 — 110

HUNT, JR. DONALD G
DB 15664 PG 1064
BM 2000 PG 1545

ANOVER, RAY & ANOVER, ANDREA
DB 15268 PG 1070
BM 2000 PG 1544 — 111

WILLIAMS, SEYDRIC L& WILLIAMS, MEKEISHA P
DB 15448 PG 1828
BM 2000 PG 1544 — 112

GREER, THOMAS C & GREER, SUSAN J P
DB 12003 PG 316
BM 2000 PG 1544 — 347

PRICE, BARNEY K & PRICE, KIM B
DB 12202 PG 1969
BM 2000 PG 1544 — 348

ANDREWS, MARK P & ANDREWS, MARY C
DB 1467 PG 726
BM 2000 PG 1544 — 349

PIEZER, KEVIN W & PIEZER, HEATHER L
DB 15284 PG 1682
BM 2000 PG 1544 — 350

CONTERELLI, PORTIA L & CONTERELLI, JOHN A
DB 14816 PG 1489
BM 2000 PG 1544

BRENINGMEYER, LAURIE
DB 16060 PG 2241
BM 2000 PG 1544 — 351

MCNAIR, GRE & MCNAIR,
DB 11011 PG 1
BM 2000 PG — 352

WILLIAMS, SEYDRIC L & WILLIAMS, MEKEISHA P
DB 15448 PG 1828
BM 2000 PG 1544 — 113

STEGEMAN, SANDRA JO & STEGEMAN, JERRY LYNN
DB 11503 PG 2047
BM 1984 PG 1616 — 114

PALMER, MARK A & PALMER, MARY C
DB 16172 PG 83
BM 1986 PG 155 — 357

BAKER, JOHN R & BAKER, MARSHA P
DB 3767 PG 201
BM 1984 PG 1616 — 356

THAMES, RICHA
DB 12161 PG 19C
BM 1992 PG 15
BM 1988 PG 15 — 358

DEANS, CAROL ARBUSHITIS & DEANS, JAMES DAVID
DB 3659 PG 827
BM 1985 PG 2307 — 118

IM, KANG HEE
DB 11867 PG 1302
BM 2001 PG 407 — 115

PEARSALL, JASON
DB 13672 PG 2435
BM 2001 PG 407

WILLIAMS, GEORGE W & WILLIAMS, JAN W
DB 8513 PG 2631
BM 2001 PG 407

DELGIUDICE, ANTHONY & DELGIUDICE, THERESA A
DB 15948 PG 706
BM 2001 PG 407

BM#24
N: 701,797
E: 2,076,298
-BY9- STA. 34+11.39
O/S 263.80' LT
ELEV.= 408.94'
BENCH TIE IN BASE OF 10" PINE

MATCHLINE SHEET 2B-11
-Y8- STA. 33+00.00

MATCHLINE SHEET 2B-11
-Y8DET- STA. 22+00.00

-Y8DET- PC Sta. 22+20.82

-Y8DET- PT Sta. 25+61.59

-Y8DET- PC Sta. 28+05.58

END CONSTRUCTION
-Y8DET- STA. 32+00.00

-Y8DET- PT Sta. 33+47.16

-Y8DET-

PI Sta 23+92.36	PI Sta 29+42.29	PI Sta 32+11.97
Δ = 16° 16' 13.5" (LT)	Δ = 20° 39' 39.9" (RT)	Δ = 10° 21' 23.1" (RT)
D = 4° 46' 28.7"	D = 7° 38' 22.0"	D = 3° 49' 11.0"
L = 340.77'	L = 270.45'	L = 271.13'
T = 171.54'	T = 136.71'	T = 135.94'
R = 1,200.00'	R = 750.00'	R = 1,500.00'
V = 45mph	V = 45mph	V = 45mph
SE = 0.04	SE = 0.04	SE = 0.04

SEE SHEET 125 FOR -Y8DET- PROFILE
SEE SHEET 111 & 112 FOR -Y8- PROFILE
SEE SHEET 28 & 56 FOR -Y8- PLAN VIEW

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51499

–Y11DET–
SR 1404 JOHNSON POND RD.

BEGIN CONSTRUCTION
–Y11DET– STA. 10+74.39

END CONSTRUCTION
–Y11DET– STA. 23+75.00

–YIIDET– POT Sta. 10+00.00

–YIIDET– PRC Sta. 15+52.94

–YIIDET– PT Sta. 19+78.94

–YIIDET– PC Sta. 23+72.94

N 16° 36' 14.1" E

N 45° 28' 18.1" E

N 26° 53' 19.2" E

SR 1404 JOHNSON POND RD

100' TAPER

BEGIN TEMP. SHORING –Y11DET–, 37.20' LT

END TEMP. SHORING –YIIDET–, 27.50' LT

BEGIN TEMP. SHORING –YIIDET–, 25.00' LT

END TEMP. SHORING –YIIDET–, 25.00' LT

GREU TL-3

TYPE III

TYPE B-77

EXISTING R/W

PAVED SHOULDER

JS MITS

COMPLETE 540

27,200

3,100

JOHNSON POND RD

2018 ADT

–YIIDET–		
PI Sta 13+29.75	PI Sta 17+73.35	PI Sta 24+20.73
Δ = 49° 48' 40.6" (RT)	Δ = 37° 31' 35.5" (LT)	Δ = 14° 44' 02.8" (LT)
D = 10° 25' 02.7"	D = 8° 48' 53.0"	D = 15° 30' 00.0"
L = 478.15'	L = 425.73'	L = 95.06'
T = 255.37'	T = 220.81'	T = 47.79'
R = 550.00'	R = 650.00'	R = 369.65'
V = 40mph	V = 40mph	V = EXIST.
SE = 0.04	SE = 0.04	SE = EXIST.

SEE SHEET 126 FOR –YIIDET– PROFILE
SEE SHEET 114 & 115 FOR –YII– PROFILE
SEE SHEET 32 & 58 FOR –YII– PLAN VIEW

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NC FIRM LICENSE Noc F-1148
1151 SE Cary Parkway
Suite 101
Cary, NC 27518
(919) 557-0929

PROJECT REFERENCE NO.	SHEET NO.
R–2721	2B–13
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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NC FIRM LICENSE No: F-1148
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(919) 557-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2721	2B-14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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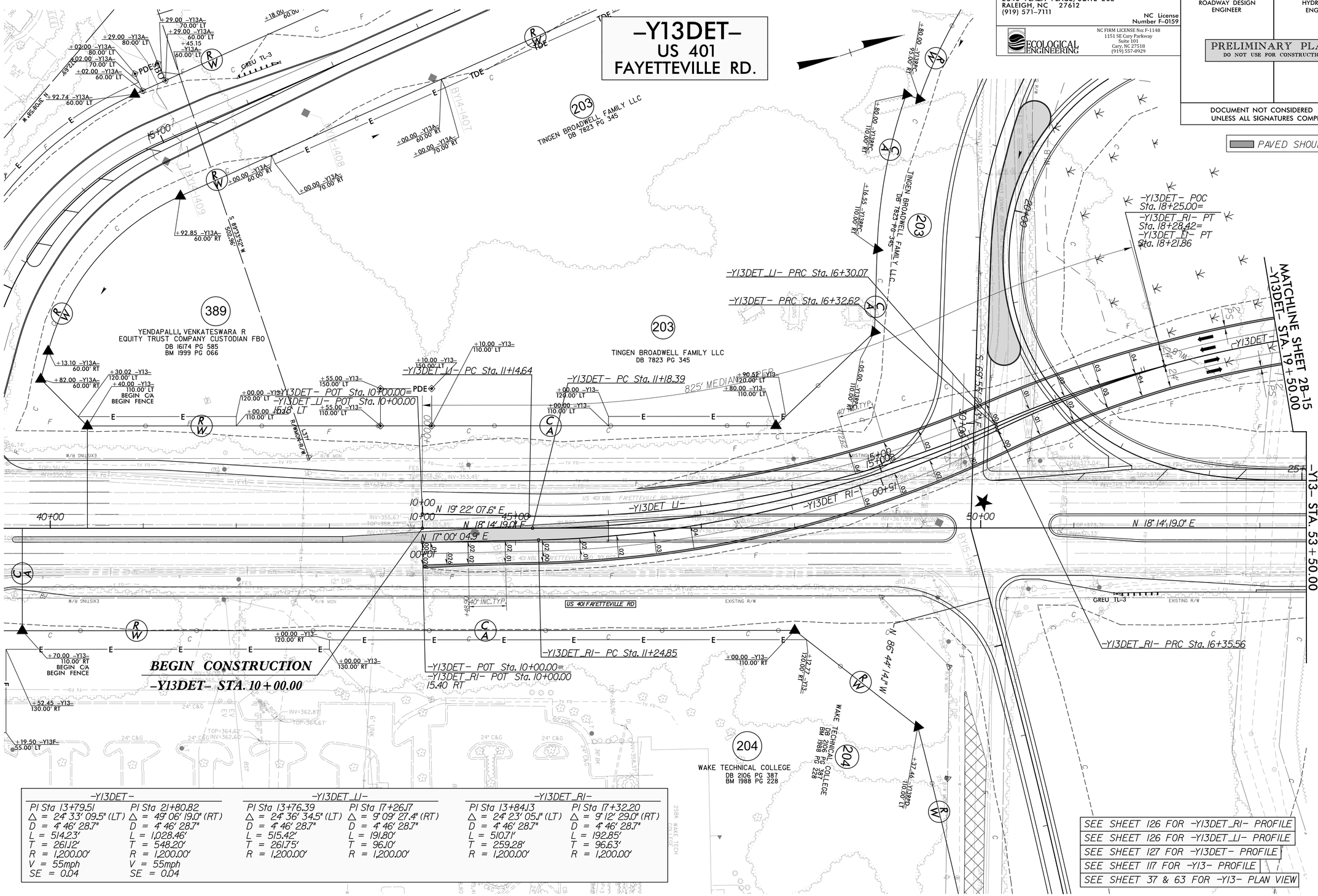
PAVED SHOULDER



-Y13DET-		-Y13DET_LI-		-Y13DET_RI-	
PI Sta 13+79.51	PI Sta 21+80.82	PI Sta 13+76.39	PI Sta 17+26.17	PI Sta 13+84.13	PI Sta 17+32.20
△ = 24° 33' 09.5" (LT)	△ = 49° 06' 19.0" (RT)	△ = 24° 36' 34.5" (LT)	△ = 9° 09' 27.4" (RT)	△ = 24° 23' 05.1" (LT)	△ = 9° 12' 29.0" (RT)
D = 4° 46' 28.7"	D = 4° 46' 28.7"	D = 4° 46' 28.7"	D = 4° 46' 28.7"	D = 4° 46' 28.7"	D = 4° 46' 28.7"
L = 514.23'	L = 1,028.46'	L = 515.42'	L = 191.80'	L = 510.71'	L = 192.85'
T = 261.12'	T = 548.20'	T = 261.75'	T = 96.10'	T = 259.28'	T = 96.63'
R = 1,200.00'	R = 1,200.00'	R = 1,200.00'	R = 1,200.00'	R = 1,200.00'	R = 1,200.00'
V = 55mph	V = 55mph				
SE = 0.04	SE = 0.04				

SEE SHEET 126 FOR -Y13DET_RI- PROFILE
SEE SHEET 126 FOR -Y13DET_LI- PROFILE
SEE SHEET 127 FOR -Y13DET- PROFILE
SEE SHEET 117 FOR -Y13- PROFILE
SEE SHEET 37 & 63 FOR -Y13- PLAN VIEW

514/99

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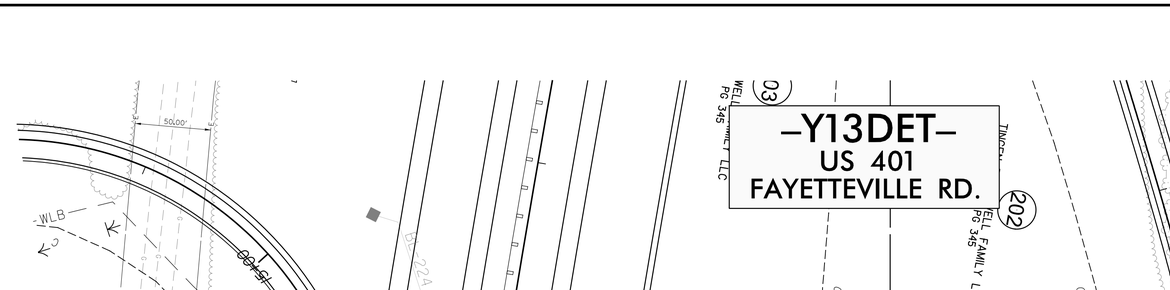
cyokeley

514.99



LOCHNER

H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
(919) 571-7111

NC License Number F-0159

ECOLOGICAL ENGINEERING
NC FIRM LICENSE No: F-1148
1151 SE Cary Parkway
Suite 101
Cary, NC 27518
(919) 557-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2721	2B-15

RW SHEET NO.

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PAVED SHOULDER

–Y13DET–
US 401 FAYETTEVILLE RD.

MATCHLINE SHEET 2B-14
–Y13DET– STA. 19+50.00

MATCHLINE SHEET 2B-14
–Y13– STA. 53+50.00

–Y13DET– POC Sta. 24+75.00=
–Y13DET_L2– PC Sta. 10+00.00=
–Y13DET_R2– PC Sta. 10+00.00

–Y13DET_R2– PRC Sta. 11+86.56

–Y13DET_L2– PRC Sta. 11+85.12

–Y13DET– POT Sta. 26+12.38

–Y13DET_L2– PT Sta. 17+03.19

–Y13DET– POT Sta. 33+00.00=
–Y13DET_L2– POT Sta. 18+21.91
15.45' LT

–Y13DET– PT Sta. 31+75.30

–Y13DET– POT Sta. 33+12.38

–Y13DET_R2– PT Sta. 17+00.35

END CONSTRUCTION
–Y13DET– Sta. 33+00.00
–Y13DET– POT Sta. 33+00.00=
–Y13DET_R2– POT Sta. 18+28.38
15.11 RT

–Y13DET–		–Y13DET_L2–		–Y13DET_R2–	
PI Sta 21+80.82	PI Sta 29+22.20	PI Sta 10+92.74	PI Sta 14+48.25	PI Sta 10+93.47	PI Sta 14+47.45
Δ = 49° 06' 19.0" (RT)	Δ = 24° 33' 09.5" (LT)	Δ = 8° 50' 19.1" (RT)	Δ = 24° 44' 09.8" (LT)	Δ = 8° 54' 27.0" (RT)	Δ = 24° 31' 54.7" (LT)
D = 4° 46' 28.7"	D = 4° 46' 28.7"	D = 4° 46' 28.7"	D = 4° 46' 28.7"	D = 4° 46' 28.7"	D = 4° 46' 28.7"
L = 1,028.46'	L = 514.23'	L = 185.12'	L = 518.07'	L = 186.56'	L = 513.79'
T = 548.20'	T = 261.12'	T = 92.74'	T = 263.14'	T = 93.47'	T = 260.89'
R = 1,200.00'	R = 1,200.00'	R = 1,200.00'	R = 1,200.00'	R = 1,200.00'	R = 1,200.00'
V = 55mph	V = 55mph				
SE = 0.04	SE = 0.04				

SEE SHEET 127 FOR –Y13DET_R2– PROFILE
SEE SHEET 127 FOR –Y13DET_L2– PROFILE
SEE SHEET 127 FOR –Y13DET– PROFILE
SEE SHEET 117 FOR –Y13– PROFILE
SEE SHEET 37 & 64 FOR –Y13– PLAN VIEW

6/7/2018
R2721_RDY_DET_02B-15.dgn
cvoskuil

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2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
NC License
Number F-0159

PROJECT REFERENCE NO.	SHEET NO.
R-2721	2B-16
RW SHEET NO.	

ROADWAY DESIGN ENGINEER

PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

SHEETS 2B-16 THROUGH 2B-24 HELD FOR SHEAR POINT DIAGRAMS

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R2721_RDY_02B-16PlaceHolder_ShearPointDiagram.dgn
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-L- OVER -Y1-

-L- POC Sta. 31+10.55=
-Y1- POT Sta. 37+56.06
△ = 108°02'02.16"

BEGIN BRIDGE
-L- STA. 30+31 ±

30+00

39.0'
VARIES 10'-16.74' PS
48.0'
VARIES 6'-14' PS
.02
48.0'
64.0'

END BRIDGE
-L- STA. 31+77 ±

-L-
39.0'
12.0' PS
48.0'
2.5' C&G
.02
.03
.04
.05
.06

SEE SHEET 67 FOR BRIDGE PROFILE

-L- OVER -Y2-

15+00

BEGIN BRIDGE
-L- STA. 49+11 ±

-L- POT Sta. 49+75.34=
-Y2- POT Sta. 15+56.34
△ = 79°27'37.04

BEGIN FENCE
-YIRPC- 73.33' LT
19.42' RT

-Y2- PT Sta. 17+87.59

-Y2- N 12°09'37.1" E

.07
.02
.02
57.6'
72.0'

-YIRPC- SC Sta. 12+05.00
-YIRPC- ST Sta. 10+00.00
75.00' LT

.07
.06
.05
.04
.03
.02

10+00

-YIRPC-
-Y2- POC Sta. 16+50.78=
-YIRPC- POC Sta. 13+75.76
△ 107°05' 36.70"

.02
.02

39.0'

50+00

-Y2- PC Sta. 15+95.96

END BRIDGE
-L- STA. 50+75 ±

-L-

S 78° 10' 00.1" E

FUTURE ROADWAY

BEGIN BRIDGE
-L- STA. 49+25 ±

39.0'

-Y2- POT Sta. 14+68.78=
-YIRPB- POC Sta. 14+10.51
△ 96° 35' 10.37"

00+51

.02
.02
.04
54.8'
77.4'

END BRIDGE
-L- STA. 50+89 ±

-YIRPB- SC Sta. 12+00.00

.04
.03
.02

00+01

-L- POT Sta. 54+01.62
-YIRPB- ST Sta. 10+00.00
75.00' RT

SEE SHEET 68 FOR BRIDGE PROFILE

15+00

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LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
(919) 571-7111
NC License Number F-0159

PROJECT REFERENCE NO.	SHEET NO.
R-2721	2B-25
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

514.99

-L- OVER MIDDLE CREEK

BEGIN BRIDGE
-L- STA. 82 + 66 ±

END FENCE
+20.13 -L-
84.42' LT

-L- CS Sta. 83+79.88

BEGIN FENCE
+54.35 -L-
84.42' LT

END BRIDGE
-L- STA. 85 + 01 ±

.08 .07 .06 .06 36.0' 58.0' 35.0' .06 .05

-L- 85+00 -L-

35.0'

BEGIN BRIDGE
-L- STA. 83 + 36 ±

.08 .07 .06 .06 36.0' 70.0'

END BRIDGE
-L- STA. 85 + 71 ±

.06 .05

SEE SHEET 69 FOR BRIDGE PROFILE

-Y3- OVER -L-

.04

25+00

-L-

END BRIDGE
-Y3- STA. 29 + 02 ±

5' SIDEWALK

-Y3-

.03 66.0' 81.0'

30+00

BEGIN BRIDGE
-Y3- STA. 25 + 47 ±

-L- POC Sta.103+53.19=
-Y3- POC Sta.27+12.96
△ = 133°23'27.16"

5' SIDEWALK

105+00

SEE SHEET 101 FOR BRIDGE PROFILE

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cvokaliev

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PROJECT REFERENCE NO.	SHEET NO.
R-2721	2B-26
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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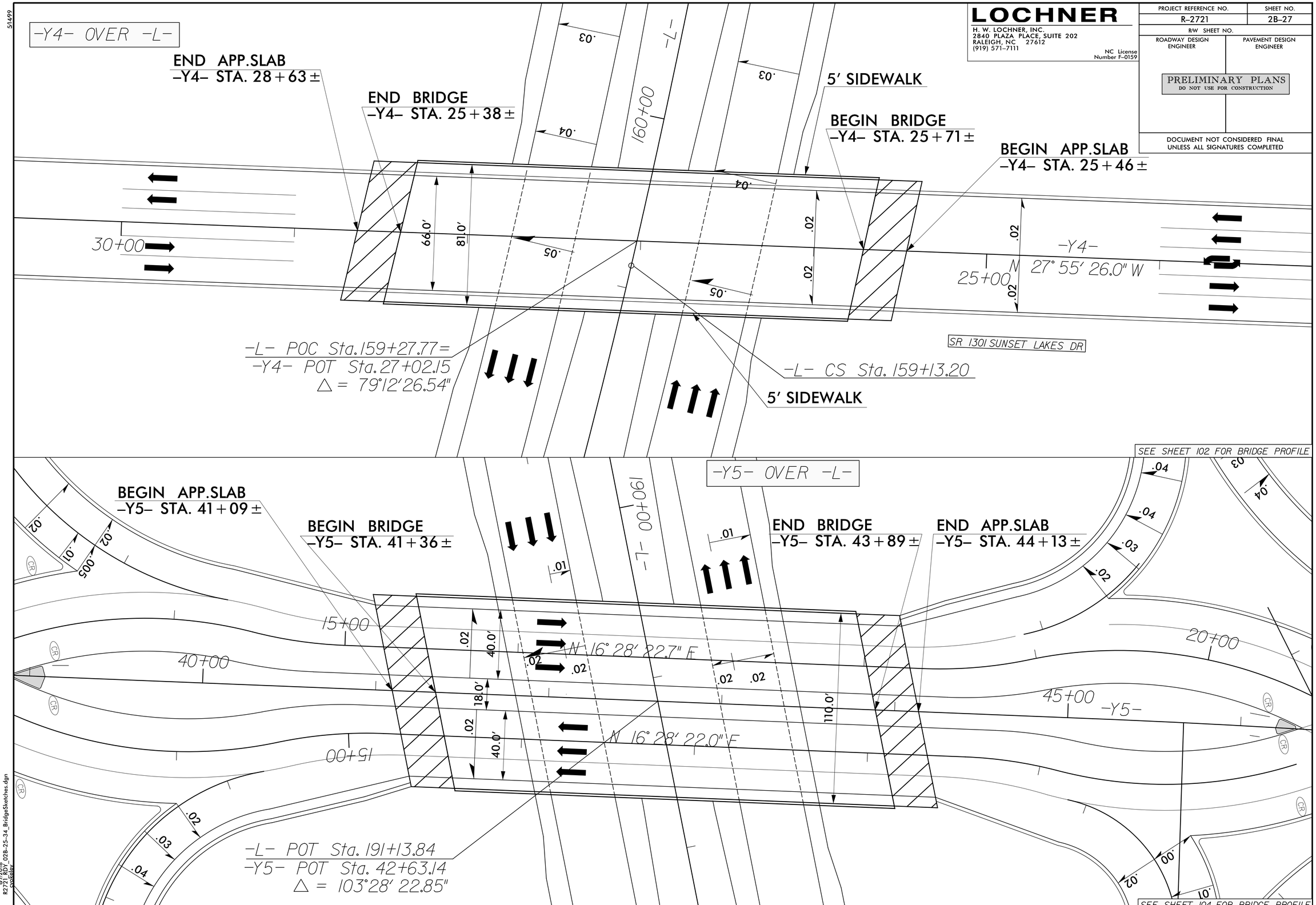

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PROJECT REFERENCE NO.	SHEET NO.
R-2721	2B-27
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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cvokaley

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-Y6- OVER -L-

BEGIN BRIDGE
-Y6- STA. 15+38±

BEGIN APP.SLAB
-Y6- STA. 15+28±

SR 1389 PIERCE-OLIVE RD

END BRIDGE
-Y6- STA. 17+98±

END APP.SLAB
-Y6- STA. 18+13±

-L-

.05 .03 .04 .01 .00 .02 .01 .02

15+00

.02 .02 24.0' 40.0'

-Y6-
N 15° 21' 10.0" W

20+00

-Y6- PT Sta. 14+76.32

-L- POC Sta. 231+09.54
-Y6- POT Sta. 16+65.83
△ = 84°46'56.15"

SEE SHEET 109 FOR BRIDGE PROFILE

-Y7- OVER -L-

S 82° 50' 00.4" E

-L-

BEGIN BRIDGE
-Y7- STA. 26+14±

TYPE-III

30+00

SR 1387 WEST LAKE RD

25+00

.05

50'

64.0'

305+00

83.0'

END BRIDGE
-Y7- STA. 28+81±

TYPE-III

GREU TL-3

-L- POT Sta. 304+98.17=
-Y7- POC Sta. 27+46.89
△ = 95°02'38.28"

SEE SHEET 110 FOR BRIDGE PROFILE

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cvaskalay

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(919) 571-7111
NC License Number F-0159

PROJECT REFERENCE NO.	SHEET NO.
R-2721	2B-28
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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–Y8– OVER –L–

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NC License Number F–0159

PROJECT REFERENCE NO.	SHEET NO.
R–2721	2B–29
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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–Y8– N 5° 51' 46.5" E

BEGIN BRIDGE
–Y8– STA. 29 + 15 ±

–L– POC Sta. 338+11.04
–Y8– POT Sta. 30+60.37
△ = 80°16'02.82"

END BRIDGE
–Y8– STA. 32 + 05 ±

–Y8– POT Sta. 31+32.99
–Y8LPA– POT Sta. 11+89.66

–Y8LPA– SRS Sta. 12+50.00

30+00

.02 .02 71.0' 90.0' 23.0' .08 .02 .10 .00 .10 .02 .08

–L–

SEE SHEET 111 FOR BRIDGE PROFILE

–L– OVER UT MIDDLE CREEK & WETLAND "WBF"

BEGIN BRIDGE
–L– STA. 346 + 23 ±

END BRIDGE
–L– STA. 348 + 93 ±

345+00

.02 .02 .02 36.0' 58.0' 35.0'

350+00

.02 .02 .02 48.0' 64.0' 35.0'

BEGIN BRIDGE
–L– STA. 346 + 23 ±

+13.00 –L–
93.42' RT

END BRIDGE
–L– STA. 348 + 93 ±

SEE SHEET 79 FOR BRIDGE PROFILE

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-Y8RPA- OVER UT MIDDLE CREEK & WETLAND "WBF"

LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
(919) 571-7111
NC License Number F-0159

PROJECT REFERENCE NO.	SHEET NO.
R-2721	2B-30
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-Y8RPA- CS Sta. 26+15.28

.05 .06 .06

25+00

16.0' 26.0'

TYPE B-77

20+00

BEGIN BRIDGE
-Y8RPA- STA. 25+15±

END BRIDGE
-Y8RPA- STA. 20+75±

TYPE B-77

SEE SHEET 85 FOR BRIDGE PROFILE

-Y10- OVER -L-

SR 1578 DEER MEADOW DR

-Y10A- PRC Sta. 18+67.45

-Y10A- PT Sta. 20+23.18

S 87° 20' 00.0" E

.02 .02 .01 .00 .01 .03

20+00

.02 .02 -L- .02 .02

END BRIDGE
-Y10- STA. 17+74±

20+00

BEGIN BRIDGE
-Y10- STA. 15+11±

.02 .02 24.0' 30.0'

15+00

-Y10-
N 2° 55' 45.8" E

-Y10- PC Sta. 18+63.27

-L- POT Sta. 373+28.66
-Y10- POT Sta. 16+40.97
△ = 74°35'46.47"

-Y10A- POT Sta. 20+43.05
-Y10- POT Sta. 12+81.61
△ = 89°44'14.24"

SEE SHEET 113 FOR BRIDGE PROFILE

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2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
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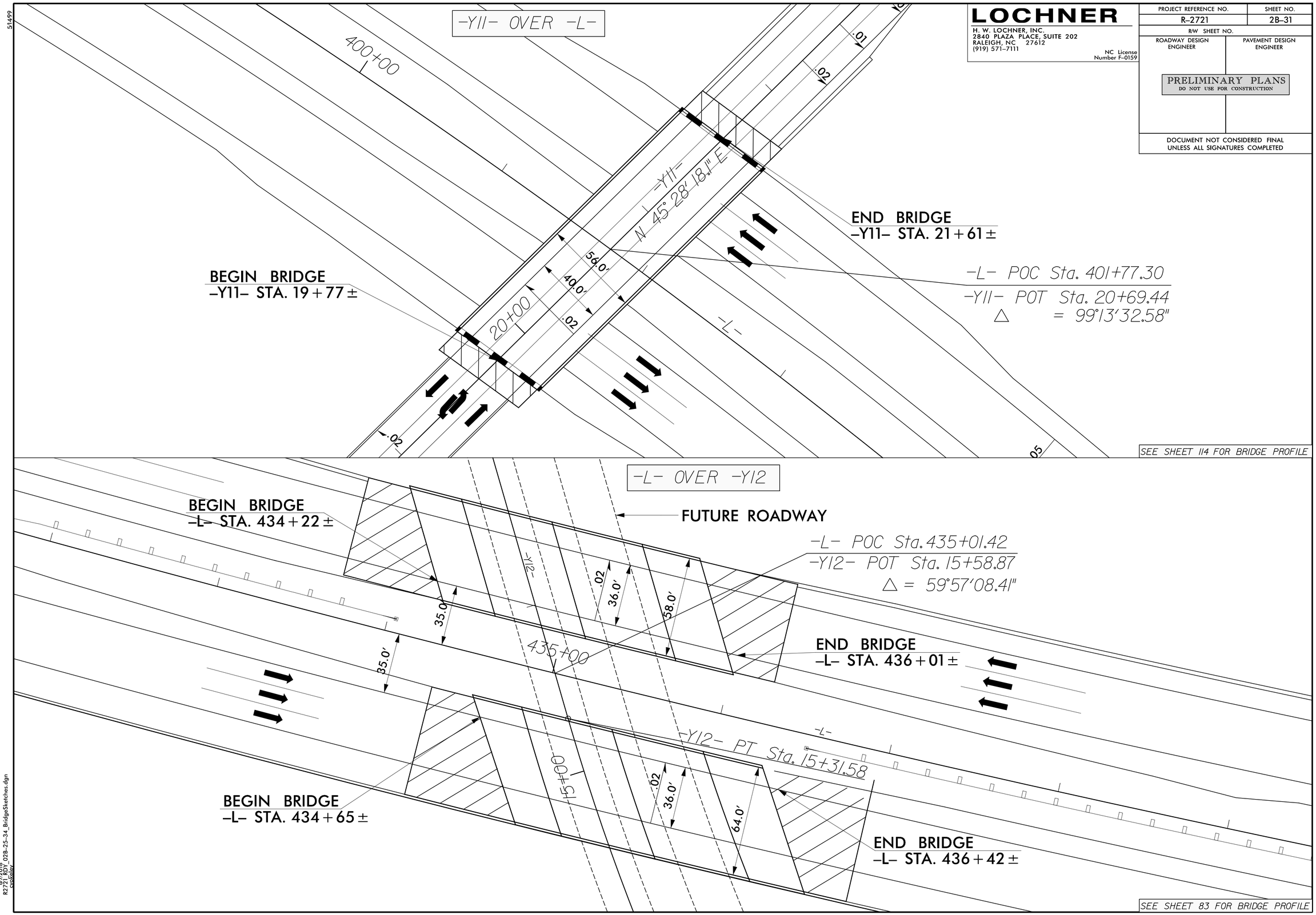
NC License Number F-0159

PROJECT REFERENCE NO.	SHEET NO.
R-2721	2B-31
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



SEE SHEET 114 FOR BRIDGE PROFILE

SEE SHEET 83 FOR BRIDGE PROFILE

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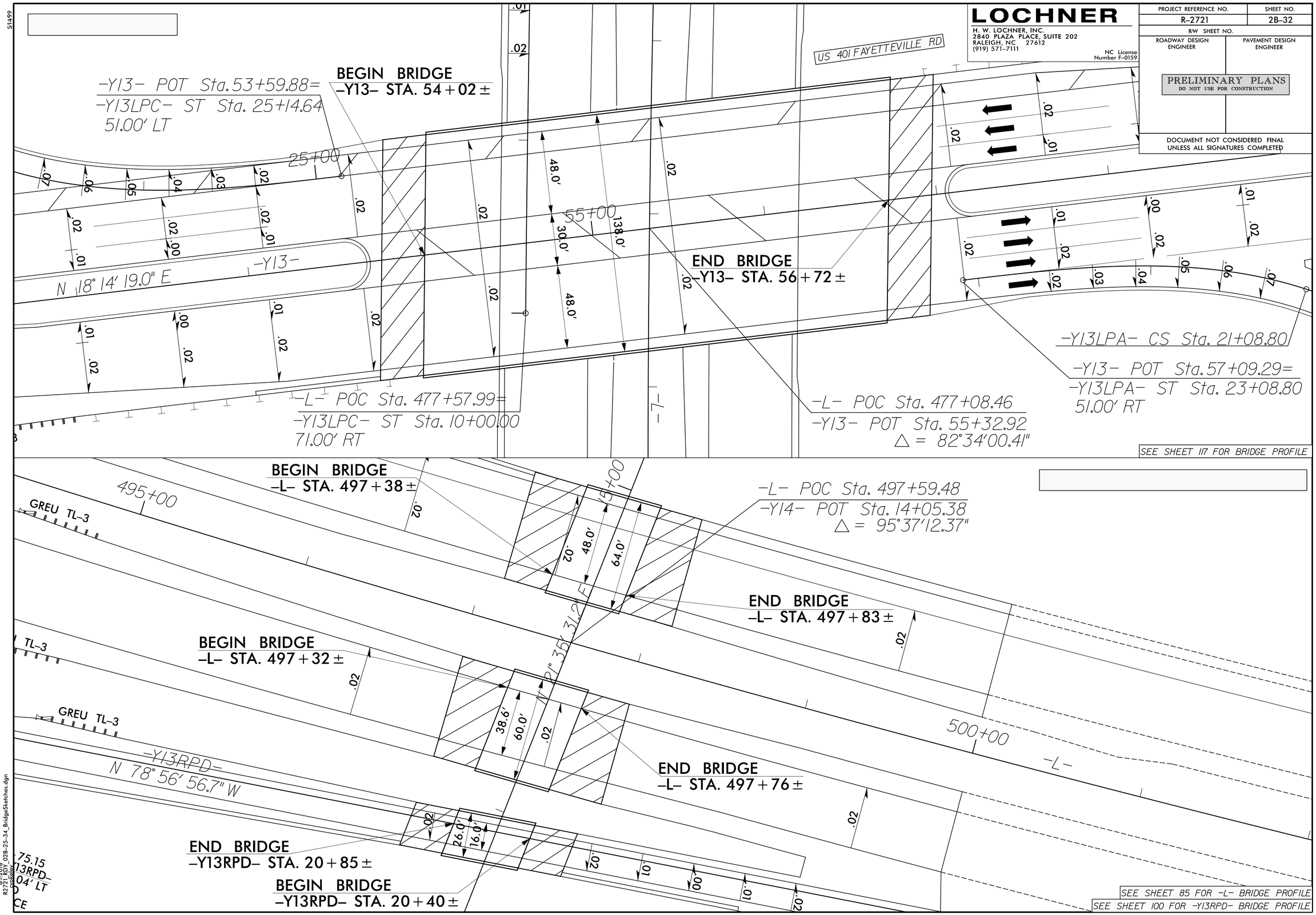
cvokelev



LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
(919) 571-7111
NC License Number F-0159
PROJECT REFERENCE NO.
R-2721
SHEET NO.
2B-32
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
PAVEMENT DESIGN ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
US 401 FAYETTEVILLE RD
-Y13- POT Sta. 53+59.88=
-Y13LPC- ST Sta. 25+14.64
51.00' LT
BEGIN BRIDGE
-Y13- STA. 54+02±
25+00
55+00
N 18° 14' 19.0" E
-Y13-
END BRIDGE
-Y13- STA. 56+72±
-Y13LPA- CS Sta. 21+08.80
-Y13- POT Sta. 57+09.29=
-Y13LPA- ST Sta. 23+08.80
51.00' RT
-L- POC Sta. 477+57.99=
-Y13LPC- ST Sta. 10+00.00
71.00' RT
-L- POC Sta. 477+08.46
-Y13- POT Sta. 55+32.92
△ = 82°34'00.41"
SEE SHEET 117 FOR BRIDGE PROFILE
BEGIN BRIDGE
-L- STA. 497+38±
495+00
GREU TL-3
-L- POC Sta. 497+59.48
-Y14- POT Sta. 14+05.38
△ = 95°37'12.37"
END BRIDGE
-L- STA. 497+83±
BEGIN BRIDGE
-L- STA. 497+32±
N 21° 35' 31.2" E
500+00
-L-
-Y13RPD-
N 78° 56' 56.7" W
END BRIDGE
-L- STA. 497+76±
END BRIDGE
-Y13RPD- STA. 20+85±
BEGIN BRIDGE
-Y13RPD- STA. 20+40±
SEE SHEET 85 FOR -L- BRIDGE PROFILE
SEE SHEET 100 FOR -Y13RPD- BRIDGE PROFILE

51499

SUNGATE DESIGN GROUP, P.A.
905 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243
NC FIRM LICENSE NO. C-890

PROJECT REFERENCE NO.	SHEET NO.
R–2721	2B–33
RW SHEET NO.	

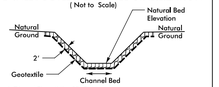
ROADWAY DESIGN ENGINEER

PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

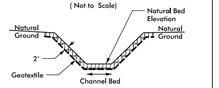
DETAIL 1A
PIPE INLET/OUTLET CHANNEL STABILIZATION
(Not to Scale)



Length = 4xDia. of Pipe (Min. 10 Ft.)
Type of Liner on Banks = CLASS I Rip-Rap – Keyed-In
Type of Liner in Channel Bed = CLASS I Rip-Rap – Keyed-In

STA. 21+79 –L1– LT
STA. 52+77 –L– RT
STA. 59+98 –L– LT
STA. 209+82 –L– RT
STA. 211+03 –L– LT
STA. 24+55 –Y5RPB– LT
STA. 19+96 –Y5RPC– RT

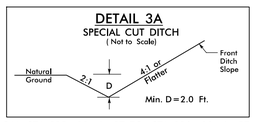
DETAIL 2A
PIPE INLET/OUTLET CHANNEL STABILIZATION
(Not to Scale)



Length = 4xDia. of Pipe (Min. 10 Ft.)
Type of Liner on Banks = CLASS II Rip-Rap – Keyed-In
Type of Liner in Channel Bed = CLASS I Rip-Rap – Keyed-In

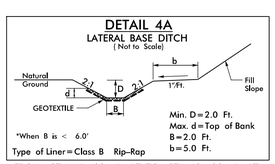
STA. 29+15 –Y1– LT

DETAIL 3A
SPECIAL CUT DITCH
(Not to Scale)



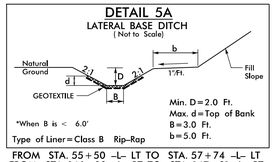
FROM STA. 185+00 –L– RT TO STA. 186+00 –L– RT
FROM STA. 232+00 –L– RT TO STA. 234+50 –L– RT
FROM STA. 68+36 –Y5– RT TO STA. 69+50 –Y5– RT
FROM STA. 70+34 –Y5– LT TO STA. 71+00 –Y5– LT
FROM STA. 18+49 –Y5A– RT TO STA. 25+00 –Y5A– RT
FROM STA. 26+61 –Y5A– RT TO STA. 28+00 –Y5A– RT
FROM STA. 14+75 –Y5F– LT TO STA. 17+00 –Y5F– LT
FROM STA. 18+00 –Y5F– RT TO STA. 19+30 –Y5F– RT
FROM STA. 18+50 –Y5F– LT TO STA. 19+21 –Y5F– LT

DETAIL 4A
LATERAL BASE DITCH
(Not to Scale)



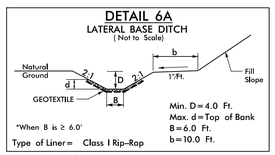
FROM STA. 15+32 –L– LT TO STA. 18+28 –L– LT
FROM STA. 50+42 –L– LT TO STA. 55+50 –L– LT
FROM STA. 77+00 –L– RT TO STA. 79+03 –L– RT
FROM STA. 148+32 –L– RT TO STA. 154+01 –L– RT
FROM STA. 204+38 –L– RT TO STA. 205+59 –L– RT
FROM STA. 210+00 –L– LT TO STA. 211+02 –L– LT
FROM STA. 211+70 –L– LT TO STA. 213+00 –L– LT
FROM STA. 50+50 –Y5– RT TO STA. 55+95 –Y5– RT
FROM STA. 66+61 –Y5– LT TO STA. 68+41 –Y5– LT
FROM STA. 68+60 –Y5– LT TO STA. 70+50 –Y5– LT
FROM STA. 18+93 –Y5NB– LT TO STA. 24+08 –Y5RPB– RT
FROM STA. 11+80 –Y5A– RT TO STA. 15+11 –Y5A– RT

DETAIL 5A
LATERAL BASE DITCH
(Not to Scale)



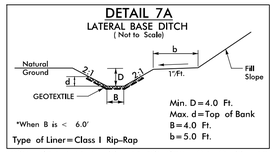
FROM STA. 55+50 –L– LT TO STA. 57+74 –L– LT
FROM STA. 146+00 –L– RT TO STA. 147+31 –L– RT

DETAIL 6A
LATERAL BASE DITCH
(Not to Scale)



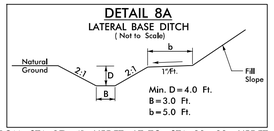
FROM STA. 65+47 –L– LT TO STA. 76+13 –L– LT
FROM STA. 80+63 –L– RT TO STA. 82+26 –L– RT
FROM STA. 201+90 –L– LT TO STA. 204+00 –L– LT

DETAIL 7A
LATERAL BASE DITCH
(Not to Scale)



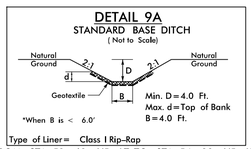
FROM STA. 47+75 –Y5– LT TO STA. 52+79 –Y5– LT

DETAIL 8A
LATERAL BASE DITCH
(Not to Scale)



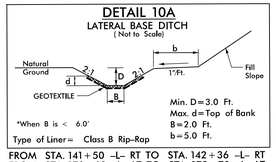
FROM STA. 27+41 –Y5DET– LT TO STA. 32+82 –Y5DET– LT

DETAIL 9A
STANDARD BASE DITCH
(Not to Scale)



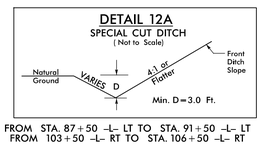
FROM STA. 52+62 –Y5– LT TO STA. 54+98 –Y5– LT
FROM STA. 68+56 –Y5– LT TO STA. 69+50 –Y5– LT

DETAIL 10A
LATERAL BASE DITCH
(Not to Scale)



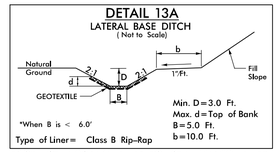
FROM STA. 141+50 –L– RT TO STA. 142+36 –L– RT
FROM STA. 170+68 –L– LT TO STA. 173+70 –L– LT

DETAIL 12A
SPECIAL CUT DITCH
(Not to Scale)



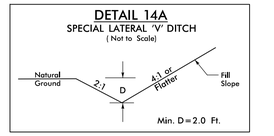
FROM STA. 87+50 –L– LT TO STA. 91+50 –L– LT
FROM 103+50 –L– RT TO STA. 106+50 –L– RT

DETAIL 13A
LATERAL BASE DITCH
(Not to Scale)



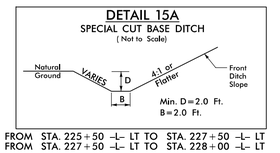
FROM STA. 196+50 –L– LT TO STA. 199+92 –L– LT

DETAIL 14A
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



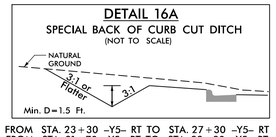
FROM STA. 13+51 –Y1LPB– LT TO STA. 15+00 –Y1LPB– LT
FROM STA. 18+88 –Y1RPC– LT TO STA. 19+85 –Y1RPC– LT
FROM STA. 19+50 –Y6– RT TO STA. 21+50 –Y6– RT
FROM STA. 18+50 –Y6– RT TO STA. 19+50 –Y6– RT

DETAIL 15A
SPECIAL CUT DITCH
(Not to Scale)



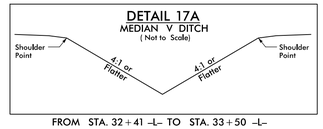
FROM STA. 225+50 –L– LT TO STA. 227+50 –L– LT
FROM STA. 227+50 –L– LT TO STA. 228+00 –L– LT

DETAIL 16A
SPECIAL BACK OF CURB CUT DITCH
(NOT TO SCALE)



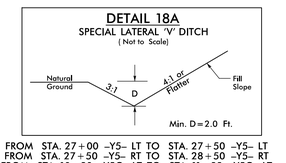
FROM STA. 23+30 –Y5– RT TO STA. 27+30 –Y5– RT
FROM STA. 31+70 –Y5– RT TO STA. 33+80 –Y5– RT
FROM STA. 11+00 –Y5I– LT TO STA. 13+51 –Y5I– LT
FROM STA. 14+00 –Y5I– LT TO STA. 10+66 –Y5J– LT
FROM STA. 10+66 –Y5J– LT TO STA. 15+50 –Y5J– LT

DETAIL 17A
MEDIAN 'V' DITCH
(Not to Scale)



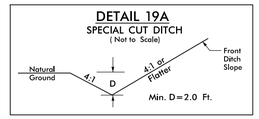
FROM STA. 32+41 –L– TO STA. 33+50 –L–

DETAIL 18A
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



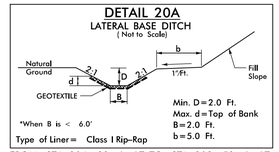
FROM STA. 27+00 –Y5– LT TO STA. 27+50 –Y5– LT
FROM STA. 27+50 –Y5– RT TO STA. 28+50 –Y5– RT
FROM STA. 10+80 –Y5C– LT TO STA. 11+89 –Y5C– LT
FROM STA. 11+00 –Y5C– RT TO STA. 27+50 –Y5– LT

DETAIL 19A
SPECIAL CUT DITCH
(Not to Scale)



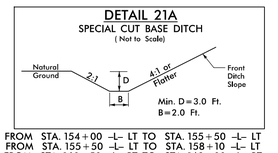
FROM STA. 228+50 –L– LT TO STA. 230+50 –L– LT
FROM STA. 232+00 –L– RT TO STA. 234+50 –L– RT
FROM STA. 12+50 –Y6– LT TO STA. 13+75 –Y6– LT

DETAIL 20A
LATERAL BASE DITCH
(Not to Scale)



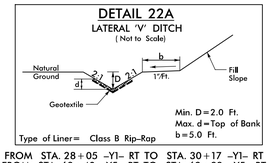
FROM STA. 204+32 –L– LT TO STA. 208+52 –L– LT
FROM STA. 204+38 –L– RT TO STA. 205+59 –L– RT
FROM STA. 209+73 –L– RT TO STA. 210+50 –L– RT
FROM STA. 15+84 –Y3– RT TO STA. 16+43 –Y3– RT
FROM STA. 24+00 –Y5RPB– LT TO STA. 24+54 –Y5RPB– LT
FROM STA. 23+86 –Y5RPD– RT TO STA. 25+12 –Y5RPD– RT

DETAIL 21A
SPECIAL CUT DITCH
(Not to Scale)



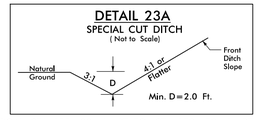
FROM STA. 154+00 –L– LT TO STA. 155+50 –L– LT
FROM STA. 155+50 –L– LT TO STA. 158+10 –L– LT
FROM STA. 160+50 –L– RT TO STA. 163+00 –L– RT

DETAIL 22A
LATERAL 'V' DITCH
(Not to Scale)



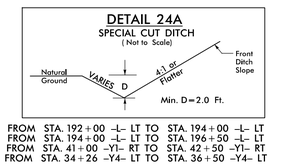
FROM STA. 28+05 –Y1– RT TO STA. 30+17 –Y1– RT
FROM STA. 68+40 –Y5– RT TO STA. 69+83 –Y5– RT
FROM STA. 69+05 –Y5– LT TO STA. 70+34 –Y5– LT

DETAIL 23A
SPECIAL CUT DITCH
(Not to Scale)



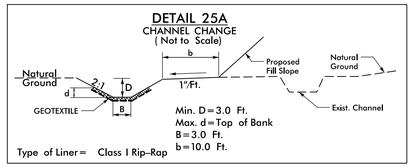
FROM STA. 155+00 –L– RT TO STA. 158+50 –L– RT
FROM STA. 160+50 –L– RT TO STA. 163+00 –L– RT
FROM STA. 14+00 –Y5G– RT TO STA. 14+33 –Y5G– RT
FROM STA. 14+00 –Y5G– LT TO STA. 14+44 –Y5G– LT

DETAIL 24A
SPECIAL CUT DITCH
(Not to Scale)



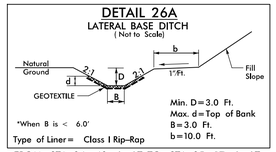
FROM STA. 192+00 –L– LT TO STA. 194+00 –L– LT
FROM STA. 194+00 –L– LT TO STA. 196+50 –L– LT
FROM STA. 41+00 –Y1– RT TO STA. 42+50 –Y1– RT
FROM STA. 34+26 –Y4– LT TO STA. 36+50 –Y4– LT

DETAIL 25A
CHANNEL CHANGE
(Not to Scale)



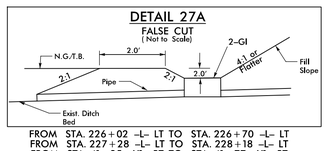
FROM STA. 83+25 –L– LT TO STA. 85+39 –L– LT

DETAIL 26A
LATERAL BASE DITCH
(Not to Scale)



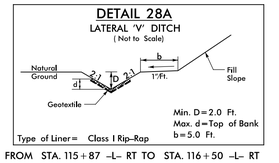
FROM STA. 84+48 –L– LT TO STA. 85+17 –L– LT

DETAIL 27A
FALSE CUT
(Not to Scale)



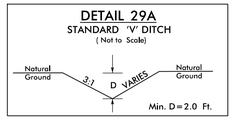
FROM STA. 226+02 –L– LT TO STA. 226+70 –L– LT
FROM STA. 227+28 –L– LT TO STA. 228+18 –L– LT
FROM STA. 41+25 –Y1– RT TO STA. 41+77 –Y1– RT
FROM STA. 24+50 –Y1RPB– RT TO STA. 26+50 –Y1RPB– RT
FROM STA. 27+00 –Y1RPB– RT TO STA. 28+50 –Y1RPB– RT

DETAIL 28A
LATERAL 'V' DITCH
(Not to Scale)



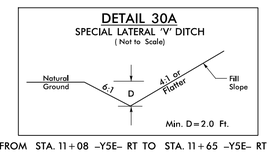
FROM STA. 115+87 –L– RT TO STA. 116+50 –L– RT

DETAIL 29A
STANDARD 'V' DITCH
(Not to Scale)



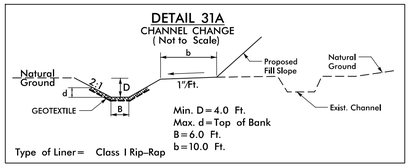
FROM STA. 12+50 –Y4– RT TO STA. 13+85 –Y4– RT

DETAIL 30A
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



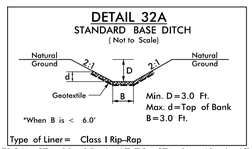
FROM STA. 11+08 –Y5E– RT TO STA. 11+65 –Y5E– RT

DETAIL 31A
CHANNEL CHANGE
(Not to Scale)



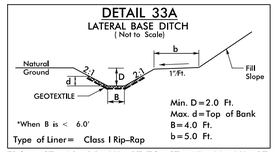
FROM STA. 65+47 –L– LT TO STA. 76+13 –L– LT
FROM STA. 80+75 –L– RT TO STA. 81+89 –L– RT

DETAIL 32A
STANDARD BASE DITCH
(Not to Scale)



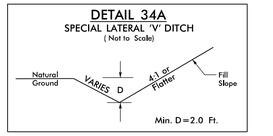
FROM STA. 83+25 –L– LT TO STA. 84+48 –L– LT
FROM STA. 85+17 –L– LT TO STA. 85+39 –L– LT

DETAIL 33A
LATERAL BASE DITCH
(Not to Scale)



FROM STA. 16+26 –Y5– RT TO STA. 17+00 –Y5– RT

DETAIL 34A
SPECIAL LATERAL 'V' DITCH
(Not to Scale)

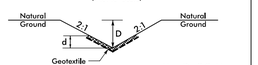


FROM STA. 24+00 –Y1RPB– RT TO STA. 29+50 –Y1RPB– RT

6/7/2018
R2721_RDY_02B-33-36_DrainageDetails.dgn
cvokeley

514.99

DETAIL 36A
STANDARD 'V' DITCH
(Not to Scale)



Type of Liner= Class B Rip–Rap

FROM STA. 40+83 –L– LT TO STA. 43+50 –L– LT

DETAIL 41A
STANDARD BASE DITCH
(Not to Scale)

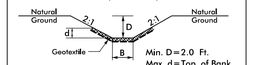


*When B is < 6.0'

Type of Liner= Class II Rip–Rap

FROM STA. 10+11 –Y5RANB– RT TO STA. 13+06 –Y5RANB– RT

DETAIL 37A
STANDARD BASE DITCH
(Not to Scale)

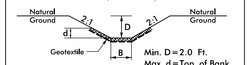


*When B is < 6.0'

Type of Liner= Class II Rip–Rap

STA. 87+00 –L– RT

DETAIL 42A
STANDARD BASE DITCH
(Not to Scale)

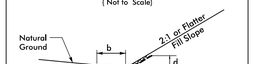


*When B is < 6.0'

Type of Liner= Class I Rip–Rap

FROM STA. 225+86 –L– RT TO STA. 225+99 –L– RT

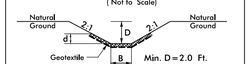
DETAIL 38A
TOE PROTECTION
(Not to Scale)



Type of Liner= Class B Rip–Rap

FROM STA. 48+92 –L– RT TO STA. 49+77 –L– RT
FROM STA. 52+30 –L– RT TO STA. 52+95 –L– RT
FROM STA. 58+10 –L– RT TO STA. 60+50 –L– RT
FROM STA. 68+00 –L– RT TO STA. 71+00 –L– RT
FROM STA. 79+95 –L– LT TO STA. 81+01 –L– LT
FROM STA. 81+24 –L– LT TO STA. 81+79 –L– LT
FROM STA. 75+65 –L– RT TO STA. 77+00 –L– RT
FROM STA. 85+66 –L– LT TO STA. 87+50 –L– LT
FROM STA. 86+62 –L– RT TO STA. 89+50 –L– RT
FROM STA. 115+53 –L– RT TO STA. 115+82 –L– RT
FROM STA. 124+67 –L– LT TO STA. 128+00 –L– LT
FROM STA. 126+06 –L– RT TO STA. 127+39 –L– RT
FROM STA. 139+80 –L– RT TO STA. 141+48 –L– RT
FROM STA. 141+19 –L– RT TO STA. 142+50 –L– RT
FROM STA. 145+24 –L– LT TO STA. 147+66 –L– LT
FROM STA. 150+00 –L– LT TO STA. 152+96 –L– LT
FROM STA. 166+00 –L– RT TO STA. 167+85 –L– RT
FROM STA. 166+60 –L– LT TO STA. 168+59 –L– LT
FROM STA. 211+06 –L– LT TO STA. 211+72 –L– LT
FROM STA. 225+14 –L– RT TO STA. 226+47 –L– RT
FROM STA. 226+16 –L– LT TO STA. 226+59 –L– LT
FROM STA. 227+39 –L– LT TO STA. 227+93 –L– LT
FROM STA. 12+00 –Y3– RT TO STA. 15+28 –Y3– RT
FROM STA. 13+66 –Y3– LT TO STA. 15+09 –Y3– LT
FROM STA. 16+33 –Y5– LT TO STA. 17+94 –Y5– LT
FROM STA. 17+26 –Y5– RT TO STA. 19+30 –Y5– RT
FROM STA. 18+00 –Y5F– RT TO STA. 19+30 –Y5F– RT
FROM STA. 11+70 –Y5RPBSB– LT TO STA. 12+45 –Y5RPBSB– LT
FROM STA. 18+40 –Y5RPC– RT TO STA. 20+18 –Y5RPC– RT
FROM STA. 13+18 –Y5RPD– LT TO STA. 15+20 –Y5RPD– LT

DETAIL 43A
STANDARD BASE DITCH
(Not to Scale)



*When B is < 6.0'

Type of Liner= Class I Rip–Rap

FROM STA. 29+95 –Y1– RT TO STA. 30+23 –Y1– RT
FROM STA. 15+10 –Y5A– RT TO STA. 15+29 –Y5A– RT

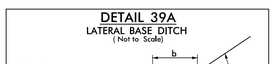
DETAIL 44A
STANDARD 'V' DITCH
(Not to Scale)



Type of Liner= Class I Rip–Rap

FROM STA. 227+46 –L– LT TO STA. 227+50 –L– LT

DETAIL 39A
LATERAL BASE DITCH
(Not to Scale)



*When B is < 6.0'

Type of Liner=Class I Rip–Rap

FROM STA. 55+50 –L– LT TO STA. 57+74 –L– LT

DETAIL 45A
STANDARD BASE DITCH
(Not to Scale)



*When B is < 6.0'

Type of Liner= Class II Rip–Rap

FROM STA. 11+20 –Y5RPBSB– LT TO STA. 12+52 –Y5RPBSB– LT

DETAIL 40A
STANDARD BASE DITCH
(Not to Scale)



*When B is < 6.0'

Type of Liner= Class I Rip–Rap

FROM STA. 148+22 –L– RT TO STA. 148+37 –L– RT
FROM STA. 150+74 –L– LT TO STA. 150+93 –L– LT
FROM STA. 226+29 –L– LT TO STA. 226+38 –L– LT

DETAIL 46A
STANDARD BASE DITCH
(Not to Scale)

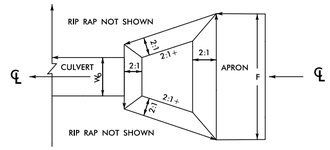


FROM STA. 21+86 –Y5J– LT TO STA. 22+24 –Y5J– LT

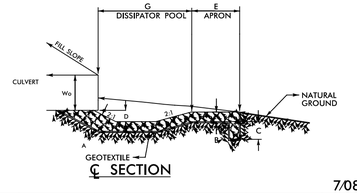
DETAIL 47A
RIP–RAPPED ENERGY DISSIPATOR BASIN

DIM. (ft)	RIP RAP BASIN # 1		
A	3.5		
B	2.3		
C	1.5		
D	1.1		
E	5.6		
F	13.6		
G	11.1		

ALL DIMENSIONS APPROXIMATE



PLAN



℄ SECTION

BASIN #	LOCATION (AT OUTLET)
1	15+17–Y5I–RT

7/08

STA. 15+17 –Y5I– RT

SUNGATE DESIGN GROUP, P.A.
905 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243 NC FIRM LICENSE NO. C-890

PROJECT REFERENCE NO.	SHEET NO.
R–2721	2B–34
RW SHEET NO.	

ROADWAY DESIGN ENGINEER

PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

6/7/2018
R2721_RDY_02B-33-36_DrainageDetails.dgn
cpokelay

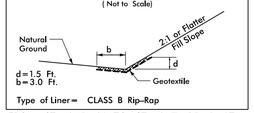
ECOLOGICAL ENGINEERING
NC FIRM LICENSE No: F-1148
1151 SE Cary Parkway
Suite 101
Cary, NC 27518
(919) 557-0929

PROJECT REFERENCE NO.	SHEET NO.
R–2721	2B–35
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DETAIL 1B
TOE PROTECTION
(Not to Scale)

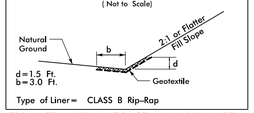


d=1.5 Ft.
b=3.0 Ft.

Type of Liner= CLASS B Rip–Rap

FROM STA. 245+80 TO STA. 247+95 –L– LT
FROM STA. 244+00 TO STA. 247+32 –L– RT
FROM STA. 280+00 TO STA. 281+95 –L– RT
FROM STA. 281+25 TO STA. 282+20 –L– LT
FROM STA. 314+75 TO STA. 316+75 –L– RT
FROM STA. 323+40 TO STA. 324+75 –L– RT
FROM STA. 321+85 TO STA. 325+30 –L– LT
FROM STA. 364+59 TO STA. 365+80 L– LT
FROM STA. 365+90 TO STA. 366+55 L– LT
FROM STA. 384+35 TO STA. 386+73 –L– RT
FROM STA. 412+00 TO STA. 415+25 L– LT
FROM STA. 412+90 TO STA. 415+90 L– RT
FROM STA. 420+75 TO STA. 421+80 –L– RT
FROM STA. 422+00 TO STA. 424+50 –L– LT

DETAIL 1B. CONT
TOE PROTECTION
(Not to Scale)

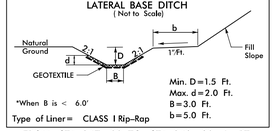


d=1.5 Ft.
b=3.0 Ft.

Type of Liner= CLASS B Rip–Rap

FROM STA. 437+00 TO STA. 441+35 –L– RT
FROM STA. 438+70 TO STA. 439+65 –L– LT
FROM STA. 460+40 TO STA. 464+75 –L– RT
FROM STA. 459+00 TO STA. 463+50 –L– LT
FROM STA. 495+00 TO STA. 496+00 L– LT
FROM STA. 15+76 TO STA. 17+50 –Y12A– LT
FROM STA. 16+00 TO STA. 17+70 –Y12A– RT
FROM STA. 32+00 TO STA. 33+90 –Y13– LT
FROM STA. 27+10 TO STA. 28+90 –Y8RPC– RT
FROM STA. 18+40 TO STA. 20+00 –Y13RPA– LT

DETAIL 2B
LATERAL BASE DITCH
(Not to Scale)



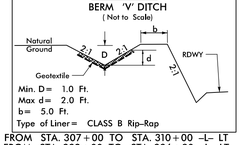
Min. D=1.5 Ft.
Max. d=2.0 Ft.
B=3.0 Ft.
b=5.0 Ft.

*When B is < 6.0'

Type of Liner= CLASS I Rip–Rap

FROM STA. 247+00 TO STA. 249+80 –L– RT
FROM STA. 311+05 TO STA. 314+75 –L– RT

DETAIL 3B
BERM 'V' DITCH
(Not to Scale)

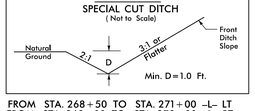


Min. D= 1.0 Ft.
Max d= 2.0 Ft.
b= 5.0 Ft.

Type of Liner= CLASS B Rip–Rap

FROM STA. 307+00 TO STA. 310+00 –L– LT
FROM STA. 332+00 TO STA. 336+90 –L– LT
FROM STA. 15+50 TO STA. 17+20 –Y8LPA– LT

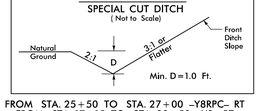
DETAIL 4B
SPECIAL CUT DITCH
(Not to Scale)



Min. D=1.0 Ft.

FROM STA. 268+50 TO STA. 271+00 –L– LT
FROM STA. 269+00 TO STA. 278+00 –L– RT
FROM STA. 293+00 TO STA. 295+35 –L– LT
FROM STA. 293+00 TO STA. 294+50 –L– RT
FROM STA. 302+50 TO STA. 304+00 –L– RT
FROM STA. 302+50 TO STA. 304+00 –L– LT
FROM STA. 332+00 TO STA. 333+50 –L– LT
FROM STA. 367+40 TO STA. 369+00 –L– LT
FROM STA. 389+00 TO STA. 389+50 –L– RT
FROM STA. 419+50 TO STA. 420+50 –L– LT
FROM STA. 34+50 TO STA. 41+34 –Y7– RT
FROM STA. 10+00 TO STA. 12+45 –Y7– RT
FROM STA. 12+50 TO STA. 16+50 –Y7– LT

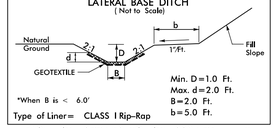
DETAIL 4B Cont.
SPECIAL CUT DITCH
(Not to Scale)



Min. D=1.0 Ft.

FROM STA. 25+50 TO STA. 27+00 –Y8RPC– RT
FROM STA. 17+15 TO STA. 23+50 –Y8– RT
FROM STA. 17+15 TO STA. 23+50 –Y8– RT
FROM STA. 12+00 TO STA. 16+50 –Y8– RT
FROM STA. 12+00 TO STA. 22+50 –Y8– LT
FROM STA. 36+00 TO STA. 38+50 –Y8– LT
FROM STA. 39+00 TO STA. 41+00 –Y8– RT
FROM STA. 41+75 TO STA. 45+00 –Y8– RT
FROM STA. 43+80 TO STA. 49+50 –Y8– RT
FROM STA. 18+00 TO STA. 18+50 –Y10B– RT
FROM STA. 18+00 TO STA. 18+50 –Y10B– LT
FROM STA. 26+50 TO STA. 26+99 –Y11– LT
FROM STA. 26+99 TO STA. 27+50 –Y11– LT
FROM STA. 31+13 TO STA. 32+00 –Y11– RT
FROM STA. 17+25 TO STA. 18+30 –Y12– LT
FROM STA. 24+50 TO STA. 26+00 –Y12A– RT
FROM STA. 10+00 TO STA. 10+43 –Y12B– LT
FROM STA. 14+02 TO STA. 14+27 –Y12B– LT

DETAIL 5B
LATERAL BASE DITCH
(Not to Scale)



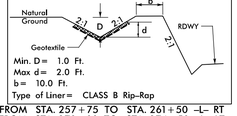
Min. D=1.0 Ft.
Max. d=2.0 Ft.
B=2.0 Ft.
b=5.0 Ft.

*When B is < 6.0'

Type of Liner= CLASS I Rip–Rap

FROM STA. 277+50 TO STA. 280+75 –L– LT
FROM STA. 330+12 TO STA. 332+00 –L– LT

DETAIL 6B
STANDARD BASE DITCH
(Not to Scale)



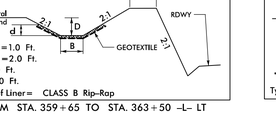
Min. D=1.0 Ft.
Max. d=2.0 Ft.
B=3.0 Ft.

*When B is < 6.0'

Type of Liner= CLASS I Rip–Rap

FROM STA. 280+30 TO STA. 280+80 –L– LT
AT STA. 295+35 –L– LT
AT STA. 295+15 –L– RT
AT STA. 314+60 –L– LT
AT STA. 15+05 –Y13A– RT
FROM STA. 314+75 TO STA. 315+00 –L– RT
FROM STA 364+50 TO STA. 364+75 –L– RT

DETAIL 7B
LATERAL BASE DITCH
(Not to Scale)



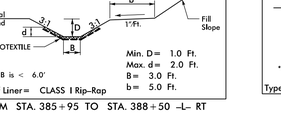
Min. D=1.0 Ft.
Max. d=2.0 Ft.
B=3.0 Ft.
b=5.0 Ft.

*When B is < 6.0'

Type of Liner= CLASS I Rip–Rap

FROM STA. 277+50 TO STA. 280+75 –L– LT

DETAIL 8B
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



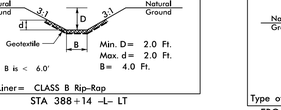
Min. D=1.0 Ft.
Max. d=2.0 Ft.

Type of Liner= CLASS B Rip–Rap

FROM STA. 294+50 TO STA. 295+16 –L– RT
FROM STA. 314+00 TO STA. 315+50 –L– LT
FROM STA. 382+00 TO STA. 382+23 –L– RT
FROM STA. 423+50 TO STA. 425+50 –L– RT

FROM STA. 38+42 TO STA. 41+42 –Y7– LT
FROM STA. 17+20 TO STA. 18+69 –Y8LPA– LT
FROM STA. 29+00 TO STA. 30+33 –Y8RPA– LT
FROM STA. 11+00 TO STA. 14+83 –Y10– RT
FROM STA. 18+00 TO STA. 20+00 –Y10– RT
FROM STA. 11+50 TO STA. 15+05 –Y13A– RT

DETAIL 9B
SPECIAL LATERAL 'V' DITCH
(Not to Scale)

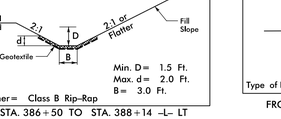


Min. D=1.0 Ft.
Max. d=2.0 Ft.

Type of Liner= CLASS I Rip–Rap

FROM STA. 295+18 TO STA. 296+50 –L– RT
FROM STA. 295+35 TO STA. 296+50 –L– LT
FROM STA. 385+00 TO STA. 386+50 L LT
FROM STA. 11+00 TO STA. 12+25 –Y13A– LT
FROM STA. 12+25 TO STA. 13+37 –Y13D– RT

DETAIL 10B
BERM BASE DITCH
(Not to Scale)

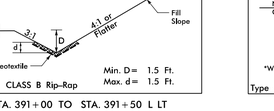


Min. D=1.0 Ft.
Max. d=2.0 Ft.
B=2.0 Ft.
b=5.0 Ft.

Type of Liner= CLASS B Rip–Rap

FROM STA. 302+50 –L– LT TO STA. 29+75 –Y7– LT
FROM STA. 359+65 TO STA. 363+50 –L– LT

DETAIL 11B
SPECIAL CUT DITCH
(Not to Scale)

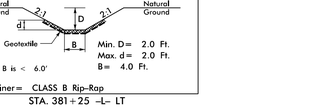


Min. D=1.0 Ft.
Max. d=2.0 Ft.

Type of Liner= CLASS B Rip–Rap

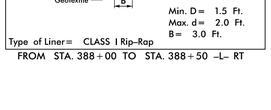
FROM STA. 313+00 TO STA. 314+00 –L– LT
FROM STA. 33+50 TO STA. 38+43 –Y7– LT
FROM STA. 15+50 TO STA. 16+50 –Y8LPA– RT
FROM STA. 23+50 TO STA. 27+00 –Y13A– LT

DETAIL 12B
MEDIAN 'V' DITCH
(Not to Scale)



FROM STA. 28+00 TO STA. 28+50 Y8RPA
FROM STA. 350+15 TO STA. 355+00 –L– LT
FROM STA. 28+00 TO STA. 28+50 –Y8RPA– LT
FROM STA. 487+25 TO STA. 489+50 –L– LT
FROM STA. 12+29 TO 13+15 Y13LPA– RT

DETAIL 13B
LATERAL 'V' DITCH
(Not to Scale)

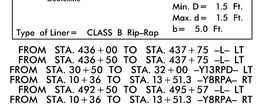


Min. D=1.0 Ft.
Max. d=2.0 Ft.
B=5.0 Ft.

Type of Liner= CLASS B Rip–Rap

FROM STA. 32+22 TO STA. 36+00 –Y8– LT
FROM STA. 12+60 TO STA. 15+50 –Y8LPC– LT
FROM STA. 29+19 TO STA. 32+00 –Y8RPC– LT
FROM STA. 27+00 TO STA. 28+00 –Y8RPA– LT
FROM STA. 420+90 TO STA. 423+50 –L– RT
FROM STA. 421+50 TO STA. 422+00 –L– LT
FROM STA. 30+16 TO STA. 31+50 –Y13RPD– RT

DETAIL 14B
STANDARD BASE DITCH
(Not to Scale)



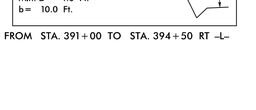
Min. D=1.0 Ft.
Max. d=2.0 Ft.
B=2.0 Ft.

*When B is < 6.0'

Type of Liner= CLASS I Rip–Rap

AT STA 331+95 –L– RT
AT STA 14+00 –Y8LPC– RT
STA. 495+59 –L– LT

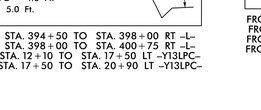
DETAIL 15B
CULVERT INLET AND OUTLET CHANNEL STABILIZATION
(Not to Scale)



Length (Inlet)= 40 Ft.
Length (Outlet)= 250 Ft.
Type of Liner= CL T Rip–Rap – Keyed–In

AT STA. 28+45 –Y8RPC–

DETAIL 16B
STANDARD BASE DITCH
(Not to Scale)



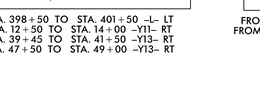
Min. D=1.0 Ft.
Max. d=2.0 Ft.
B=2.0 Ft.

*When B is < 6.0'

Type of Liner= CLASS B Rip–Rap

AT STA. 27+50 –Y8RPA– RT
AT STA. 451+40 –L– LT
FROM STA. 434+50 TO STA. 435+70 –L– RT
AT STA. 19+50 –Y12– RT
FROM STA. 13+12 TO STA. 18+90 –Y12– RT
FROM STA. 11+37 TO STA. 13+88.6 –Y12– LT
AT STA. 15+12 –Y13A– LT

DETAIL 17B
STANDARD BASE DITCH
(Not to Scale)



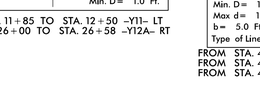
Min. D=1.0 Ft.
Max. d=2.0 Ft.
B=3.0 Ft.

*When B is < 6.0'

Type of Liner= CLASS B Rip–Rap

FROM STA. 27+10 TO STA. 24+25 –Y8RPA– RT

DETAIL 18B
STANDARD 'V' DITCH
(Not to Scale)

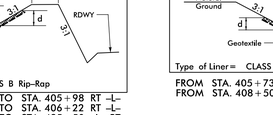


Min. D=1.0 Ft.
Max. d=2.0 Ft.

Type of Liner= CLASS B Rip–Rap

FROM STA. 349+35 TO STA. 351+00 –L– RT
FROM STA. 434+86 TO STA. 436+00 –L– LT
STA. 432+19 –L– RT

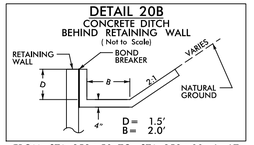
DETAIL 19B
SPECIAL CUT DITCH
(Not to Scale)



Min. D=1.0 Ft.

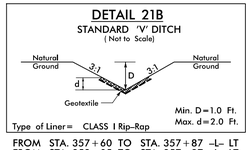
FROM STA. 315+50 TO STA. 317+50 –L– LT
FROM STA. 351+00 TO STA. 353+00 –L– RT
FROM STA. 10+55 TO STA. 13+00 –Y12A–
FROM STA. 26+00 TO STA. 26+50 –Y13RPB– LT
FROM STA. 472+50 TO STA. 473+00 –L– RT
FROM STA. 28+50 TO STA. 29+50 –Y13A– RT
FROM STA. 51+50 –Y13– RT TO STA. 40+00 –Y13RPD– RT
FROM STA. 20+50 –Y13– RT TO STA. 22+50 –Y13RPC– LT
FROM STA. 29+50 TO STA. 31+50 –Y13– LT
FROM STA. 29+98 TO STA. 30+50 –Y13– RT
FROM STA. 69+71 TO STA. 72+50 –Y13– RT

DETAIL 20B
CONCRETE DITCH BEHIND RETAINING WALL
(Not to Scale)



FROM STA. 353+50 TO STA. 359+00 –L– LT

DETAIL 21B
STANDARD 'V' DITCH
(Not to Scale)

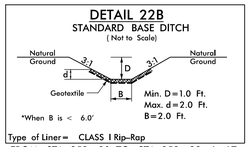


Min. D=1.0 Ft.
Max. d=2.0 Ft.

Type of Liner= CLASS I Rip–Rap

FROM STA. 357+60 TO STA. 357+87 –L– LT
FROM STA. 358+05 TO STA. 357+87 –L– LT
FROM STA. 25+68 TO STA. 25+04 –Y13A– RT
AT STA 16+58 –Y8RPA– RT

DETAIL 22B
STANDARD BASE DITCH
(Not to Scale)



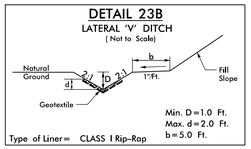
Min. D=1.0 Ft.
Max. d=2.0 Ft.
B=2.0 Ft.

*When B is < 6.0'

Type of Liner= CLASS I Rip–Rap

FROM STA 352+90 TO STA. 353+33 –L– LT
AT STA 357+87 –L– LT

DETAIL 23B
LATERAL 'V' DITCH
(Not to Scale)

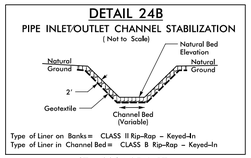


Min. D=1.0 Ft.
Max. d=2.0 Ft.
b=5.0 Ft.

Type of Liner= CLASS I Rip–Rap

FROM STA. 13+15 TO STA. 15+50 –Y10A– LT

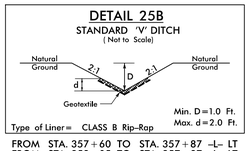
DETAIL 24B
PIPE INLET/OUTLET CHANNEL STABILIZATION
(Not to Scale)



Type of Liner on Banks= CLASS II Rip–Rap – Keyed–In
Type of Liner in Channel Bed= CLASS B Rip–Rap – Keyed–In

STA 386+05 L RT
STA. 13+36 –Y10A– RT
STA. 13+15 –Y10A– LT

DETAIL 25B
STANDARD 'V' DITCH
(Not to Scale)

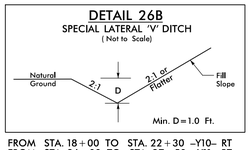


Min. D=1.0 Ft.
Max. d=2.0 Ft.

Type of Liner= CLASS B Rip–Rap

FROM STA. 357+60 TO STA. 357+87 –L– LT
FROM STA. 358+05 TO STA. 357+87 –L– LT
FROM STA. 310+45 TO STA. 311+15 –L– RT
FROM STA. 34+80 TO STA. 35+32 –Y8– RT

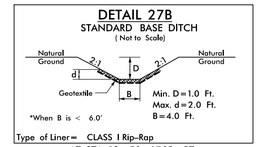
DETAIL 26B
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Min. D=1.0 Ft.

FROM STA. 18+00 TO STA. 22+30 –Y10– RT
FROM STA. 26+00 TO STA. 27+50 –Y11– RT
FROM STA. 27+50 TO STA. 30+50 –Y11– RT
FROM STA. 12+50 TO STA. 16+50 –Y11– LT
FROM STA. 11+00 TO STA. 11+82 –Y13E– LT

DETAIL 27B
STANDARD BASE DITCH
(Not to Scale)



Min. D=1.0 Ft.
Max. d=2.0 Ft.
B=4.0 Ft.

*When B is < 6.0'

Type of Liner= CLASS I Rip–Rap

AT STA. 18+50 –Y10B– RT
AT STA. 422+85 –L– LT

DETAIL 28B
BERM 'V' DITCH
(Not to Scale)

Min. D= 1.0 Ft.
Max d= 2.0 Ft.
b= 10.0 Ft.

Type of Liner= CLASS B Rip–Rap

FROM STA. 257+75 TO STA. 261+50 –L– RT
FROM STA. 270+00 TO STA. 274+50 –L– LT

DETAIL 29B
BERM BASE DITCH
(Not to Scale)

Min. D=1.0 Ft.
Max. d=2.0 Ft.
B=2.0 Ft.
b=10.0 Ft.

Type of Liner= CLASS B Rip–Rap

FROM STA. 359+65 TO STA. 363+50 –L– LT

DETAIL 30B
LATERAL BASE DITCH
(Not to Scale)

Min. D= 1.0 Ft.
Max. d= 2.0 Ft.
B= 3.0 Ft.
b= 5.0 Ft.

*When B is < 6.0'

Type of Liner= CLASS I Rip–Rap

FROM STA. 385+95 TO STA. 388+50 –L– RT

DETAIL 31B
STANDARD BASE DITCH
(Not to Scale)

Min. D= 2.0 Ft.
Max. d= 2.0 Ft.
B= 4.0 Ft.

*When B is < 6.0'

Type of Liner= CLASS B Rip–Rap

STA 388+14 –L– LT

DETAIL 32B
SPECIAL LATERAL BASE DITCH
(Not to Scale)

Min. D= 1.5 Ft.
Max. d= 2.0 Ft.
B= 3.0 Ft.

Type of Liner= Class B Rip–Rap

FROM STA. 386+50 TO STA. 388+14 –L– LT

DETAIL 33B
SPECIAL LATERAL 'V' DITCH
(Not to Scale)

Min. D= 1.5 Ft.
Max. d= 1.5 Ft.

Type of Liner= CLASS B Rip–Rap

FROM STA. 391+00 TO STA. 391+50 L LT

DETAIL 34B
STANDARD BASE DITCH
(Not to Scale)

Min. D= 2.0 Ft.
Max. d= 2.0 Ft.
B= 4.0 Ft.

*When B is < 6.0'

Type of Liner= CLASS B Rip–Rap

STA. 381+25 –L– LT

DETAIL 35B
SPECIAL LATERAL BASE DITCH
(Not to Scale)

Min. D= 1.5 Ft.
Max. d= 2.0 Ft.
B= 3.0 Ft.

Type of Liner= CLASS I Rip–Rap

FROM STA. 388+00 TO STA. 388+50 –L– RT

DETAIL 36B
LATERAL 'V' DITCH
(Not to Scale)

Min. D= 1.5 Ft.
Max. d= 1.5 Ft.
b= 5.0 Ft.

Type of Liner= CLASS B Rip–Rap

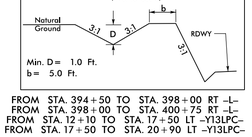
FROM STA. 436+00 TO STA. 437+75 –L– LT
FROM STA. 436+50 TO STA. 437+75 –L– LT
FROM STA. 30+50 TO STA. 32+00 –Y13RPD– LT
FROM STA. 10+36 TO STA. 13+51.3 –Y8RPA– RT
FROM STA. 492+50 TO STA. 495+57 –L– LT
FROM STA. 10+36 TO STA. 13+51.3 –Y8RPA– RT

DETAIL 37B
BERM 'V' DITCH
(Not to Scale)

Min. D= 1.0 Ft.
b= 10.0 Ft.

FROM STA. 391+00 TO STA. 394+50 RT –L–

DETAIL 38B
BERM 'V' DITCH
(Not to Scale)



Min. D= 1.0 Ft.
b= 5.0 Ft.

FROM STA. 394+50 TO STA. 398+00 RT –L–
FROM STA. 398+00 TO STA. 400+75 RT –L–
FROM STA. 12+10 TO STA. 17+50 LT –Y13LPC–
FROM STA. 17+50 TO STA. 20+90 LT –Y13LPC–

DETAIL 39B
SPECIAL CUT DITCH
(Not to Scale)

Min. D= 1.0 Ft.

FROM STA. 398+50 TO STA. 401+50 –L– LT
FROM STA. 12+50 TO STA. 14+00 –Y11– RT
FROM STA. 39+45 TO STA. 41+50 –Y13– RT
FROM STA. 47+50 TO STA. 49+00 –Y13– RT

DETAIL 40B
STANDARD 'V' DITCH
(Not to Scale)

Min. D= 1.0 Ft.

FROM STA. 11+85 TO STA. 12+50 –Y11– LT
FROM STA. 26+00 TO STA. 26+58 –Y12A– RT

DETAIL 41B
BERM 'V' DITCH
(Not to Scale)

Min. D= 1.0 Ft.
Max d= 1.0 Ft.
b= 5.0 Ft.

Type of Liner= CLASS B Rip–Rap

FROM STA. 405+73 TO STA. 405+98 RT –L–
FROM STA. 405+98 TO STA. 406+22 RT –L–
FROM STA. 479+00 TO STA. 485+50 –L– RT

DETAIL 42B
STANDARD 'V' DITCH
(Not to Scale)

Min. D= 1.0 Ft.
Max. d= 1.0 Ft.

Type of Liner= CLASS B Rip–Rap

FROM STA. 405+73 TO STA. 405+98 –L– RT
FROM STA. 408+50 TO STA. 409+00 –L– LT

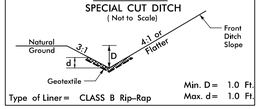
51499

ECOLOGICAL ENGINEERING
NC FIRM LICENSE No: F-1148
1151 SE Cary Parkway
Suite 101
Cary, NC 27518
(919) 557-0929

PROJECT REFERENCE NO.	SHEET NO.
R–2721	2B–36
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

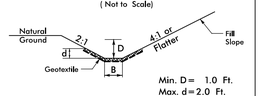
DETAIL 43B
SPECIAL CUT DITCH
(Not to Scale)



Min. D = 1.0 Ft.
Max. d = 1.0 Ft.
Type of Liner = CLASS B Rip–Rap

FROM STA. 23+50 TO STA. 27+00 –Y13A– LT

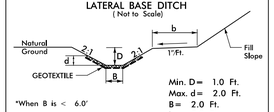
DETAIL 44B
SPECIAL LATERAL BASE DITCH
(Not to Scale)



Min. D = 1.0 Ft.
Max. d = 2.0 Ft.
B = 2.0 Ft.
Type of Liner = CLASS B Rip–Rap

FROM STA. 408+50 TO STA. 411+50 –L– RT
FROM STA. 416+50 TO STA. 417+50 –L– LT

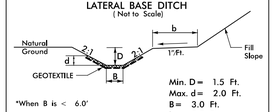
DETAIL 45B
LATERAL BASE DITCH
(Not to Scale)



Min. D = 1.0 Ft.
Max. d = 2.0 Ft.
B = 2.0 Ft.
*When B is < 6.0'
b = 5.0 Ft.
Type of Liner = CLASS B Rip–Rap

FROM STA. 411+50 TO STA. 412+50 –L– RT
FROM STA. 416+50 TO STA. 413+65 –L– LT
FROM STA. 432+00 TO STA. 434+50 –L– RT
FROM STA. 444+00 TO STA. 453+89 –L– LT
FROM STA. 444+00 TO STA. 453+89 –L– LT
FROM STA. 439+68 TO STA. 444+00 –L– LT

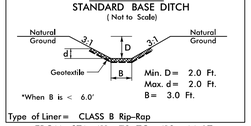
DETAIL 46B
LATERAL BASE DITCH
(Not to Scale)



Min. D = 1.5 Ft.
Max. d = 2.0 Ft.
B = 3.0 Ft.
*When B is < 6.0'
b = 5.0 Ft.
Type of Liner = CLASS B Rip–Rap

FROM STA. 412+50 TO STA. 415+40 –L– RT

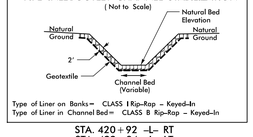
DETAIL 47B
STANDARD BASE DITCH
(Not to Scale)



Min. D = 2.0 Ft.
Max. d = 2.0 Ft.
B = 3.0 Ft.
*When B is < 6.0'
Type of Liner = CLASS B Rip–Rap

FROM STA. 411+73 TO STA. 413+44 LT
STA. 413+69 LT

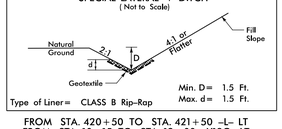
DETAIL 48B
PIPE INLET/OUTLET CHANNEL STABILIZATION
(Not to Scale)



Type of Liner on Banks = CLASS I Rip–Rap – Keyed–In
Type of Liner in Channel Bed = CLASS B Rip–Rap – Keyed–In

STA. 420+92 –L– RT
STA. 422+84 –L– LT
STA. 16+74 –Y12A– LT
STA. 423+27 –L– LT
STA. 439+88 –L– RT

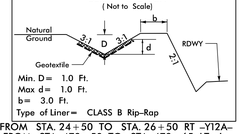
DETAIL 49B
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Min. D = 1.5 Ft.
Max. d = 1.5 Ft.
Type of Liner = CLASS B Rip–Rap

FROM STA. 420+50 TO STA. 421+50 –L– LT
FROM STA. 10+15 TO STA. 12+00 –Y13C– LT
FROM STA. 65+34 TO STA. 66+00 –Y13– LT

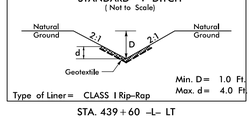
DETAIL 50B
BERM 'V' DITCH
(Not to Scale)



Min. D = 1.0 Ft.
Max d = 1.0 Ft.
b = 3.0 Ft.
Type of Liner = CLASS B Rip–Rap

FROM STA. 24+50 TO STA. 26+50 RT –Y12A–
FROM STA. 478+50 TO STA. 478+65 LT –L–
FROM STA. 13+15 TO STA. 16+37 LT –Y13LPA–

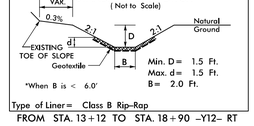
DETAIL 51B
STANDARD 'V' DITCH
(Not to Scale)



Min. D = 1.0 Ft.
Max. d = 4.0 Ft.
Type of Liner = CLASS I Rip–Rap

STA. 439+60 –L– LT

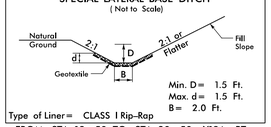
DETAIL 52B
STANDARD BASE DITCH
(Not to Scale)



Min. D = 1.5 Ft.
Max. d = 1.5 Ft.
B = 2.0 Ft.
*When B is < 6.0'
Type of Liner = Class B Rip–Rap

FROM STA. 13+12 TO STA. 18+90 –Y12– RT

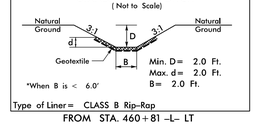
DETAIL 53B
SPECIAL LATERAL BASE DITCH
(Not to Scale)



Min. D = 1.5 Ft.
Max. d = 1.5 Ft.
B = 2.0 Ft.
Type of Liner = CLASS I Rip–Rap

FROM STA. 18+50 TO STA. 20+50 –Y13A– RT

DETAIL 54B
STANDARD BASE DITCH
(Not to Scale)



Min. D = 2.0 Ft.
Max. d = 2.0 Ft.
B = 2.0 Ft.
*When B is < 6.0'
Type of Liner = CLASS B Rip–Rap

FROM STA. 460+81 –L– LT

DETAIL 55B
STANDARD BASE DITCH
(Not to Scale)

Min. D = 2.0 Ft.
Max. d = 2.0 Ft.
B = 4.0 Ft.
*When B is < 6.0'
Type of Liner = CLASS I Rip–Rap

FROM STA. 27+24 TO STA. 31+28 –Y13A– RT

DETAIL 56B
SPECIAL LATERAL BASE DITCH
(Not to Scale)

Min. D = 1.0 Ft.
Max. d = 2.0 Ft.
B = 2.0 Ft.
Type of Liner = CLASS I Rip–Rap

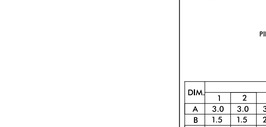
FROM STA. 24+50 TO STA. 25+50 –Y13RPB– LT

DETAIL 57B
LATERAL BASE DITCH
(Not to Scale)

Min. D = 1.0 Ft.
Max. d = 2.0 Ft.
B = 2.0 Ft.
*When B is < 6.0'
b = 5.0 Ft.
Type of Liner = CLASS B Rip–Rap

FROM STA. 388+14 TO STA. 391+50 L LT
FROM STA. 461+00 TO STA. 466+00 –L– LT
FROM STA. 13+51.3 TO STA. 18+12.5 –Y8RPA– RT

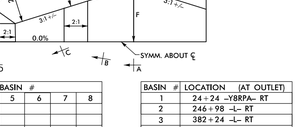
DETAIL 58B
SPECIAL LATERAL BASE DITCH
(Not to Scale)



Min. D = 3.0 Ft.
Max. d = 3.0 Ft.
B = 4.0 Ft.
Type of Liner = CLASS I Rip–Rap

FROM STA. 485+00 TO STA. 486+68 –L– RT

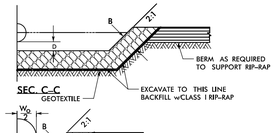
DETAIL 59B
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Min. D = 1.0 Ft.
Max. d = 1.0 Ft.
Type of Liner = CLASS B Rip–Rap

FROM STA. 32+00 TO STA. 33+50 –Y13RPD– LT

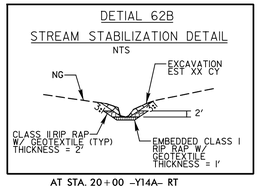
DETAIL 60B
BERM 'V' DITCH
(Not to Scale)



Min. D = 1.0 Ft.
Max d = 1.0 Ft.
b = 3.0 Ft.
Type of Liner = CLASS I Rip–Rap

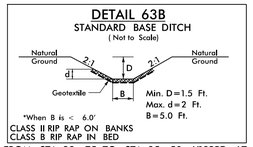
FROM STA. 479+00 TO STA. 482+50 RT –L–

DETIAL 62B
STREAM STABILIZATION DETAIL
NTS



AT STA. 20+00 –Y14A– RT

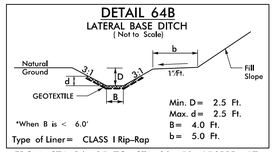
DETAIL 63B
STANDARD BASE DITCH
(Not to Scale)



Min. D = 1.5 Ft.
Max. d = 2 Ft.
B = 5.0 Ft.
*When B is < 6.0'
CLASS II RIP RAP ON BANKS
CLASS B RIP RAP IN BED

FROM STA. 23+75 TO STA. 25+50 –Y13RPD– LT
FROM STA. 25+50 TO STA 26+20 –Y13RPD– LT

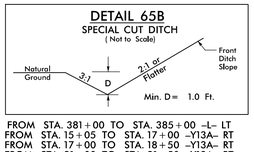
DETAIL 64B
LATERAL BASE DITCH
(Not to Scale)



Min. D = 2.5 Ft.
Max. d = 2.5 Ft.
B = 4.0 Ft.
*When B is < 6.0'
b = 5.0 Ft.
Type of Liner = CLASS I Rip–Rap

FROM STA. 26+25 TO STA. 30+50 –Y13RPD– LT

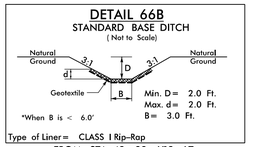
DETAIL 65B
SPECIAL CUT DITCH
(Not to Scale)



Min. D = 1.0 Ft.

FROM STA. 381+00 TO STA. 385+00 –L– LT
FROM STA. 15+05 TO STA. 17+00 –Y13A– RT
FROM STA. 17+00 TO STA. 18+50 –Y13A– RT
FROM STA. 21+00 TO STA. 21+50 –Y13A– RT
FROM STA. 28+50 TO STA. 29+50 –Y13A– RT

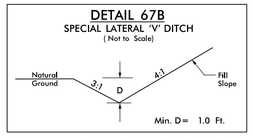
DETAIL 66B
STANDARD BASE DITCH
(Not to Scale)



Min. D = 2.0 Ft.
Max. d = 2.0 Ft.
B = 3.0 Ft.
*When B is < 6.0'
Type of Liner = CLASS I Rip–Rap

FROM STA. 43+88 –Y13– LT
FROM STA. 31+75 –Y13– LT

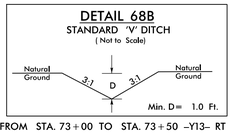
DETAIL 67B
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Min. D = 1.0 Ft.

FROM STA. 13+50 TO STA. 15+50 –Y13E– RT

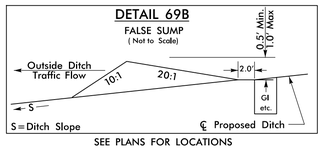
DETAIL 68B
STANDARD 'V' DITCH
(Not to Scale)



Min. D = 1.0 Ft.

FROM STA. 73+00 TO STA. 73+50 –Y13– RT

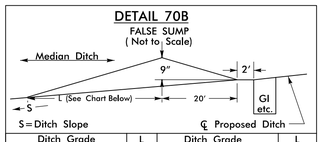
DETAIL 69B
FALSE SUMP
(Not to Scale)



S = Ditch Slope ℄ Proposed Ditch

SEE PLANS FOR LOCATIONS

DETAIL 70B
FALSE SUMP
(Not to Scale)

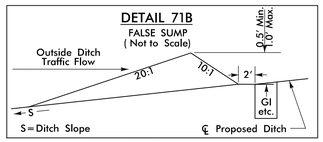


S = Ditch Slope ℄ Proposed Ditch

Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

SEE PLANS FOR LOCATIONS

DETAIL 71B
FALSE SUMP
(Not to Scale)



S = Ditch Slope ℄ Proposed Ditch

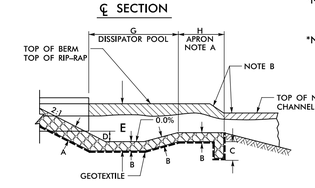
SEE PLANS FOR LOCATIONS

DETAIL 72B
RIP–RAPPED ENERGY DISSIPATOR BASIN

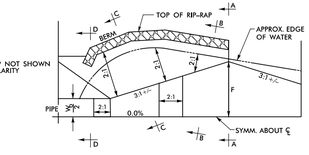
*NOTE A: IF EXIT VELOCITY OF BASIN IS SPECIFIED, EXTEND BASIN AS REQUIRED TO OBTAIN SUFFICIENT CROSS SECTIONAL AREA AT SECTION A–A SUCH THAT Q des/(CROSS SECTION AREA AT SEC. A–A) = SPECIFIED VELOCITY.

*NOTE B: WARP BASIN TO CONFORM TO NATURAL STREAM. CHANNEL TOP OF RIP–RAP IN FLOOR OF BASIN SHOULD BE AT SAME ELEVATION OR LOWER THAN NATURAL CHANNEL BOTTOM AT SEC. A–A. PROVIDE SMOOTH TRANSITION FROM END OF APRON TO NATURAL CHANNEL WIDTH.

℄ SECTION



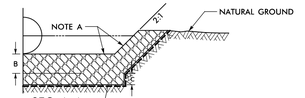
HALF PLAN



DIM.	RIP RAP BASIN #							
	1	2	3	4	5	6	7	8
A	3.0	3.0	3.0					
B	1.5	1.5	2.0					
C	2.0	2.0	2.0					
D	1.5	1.5	3.0					
E	3.0	3.0	6.5					
F	5.0	8.0	16.0					
G	9.0	13.0	27.0					
H	3.0	7.0	14.0					

*ALL DIMENSIONS APPROXIMATE IN FT

BASIN #	LOCATION (AT OUTLET)
1	24+24 –Y8RPA– RT
2	246+98 –L– RT
3	382+24 –L– RT
4	
5	
6	
7	
8	



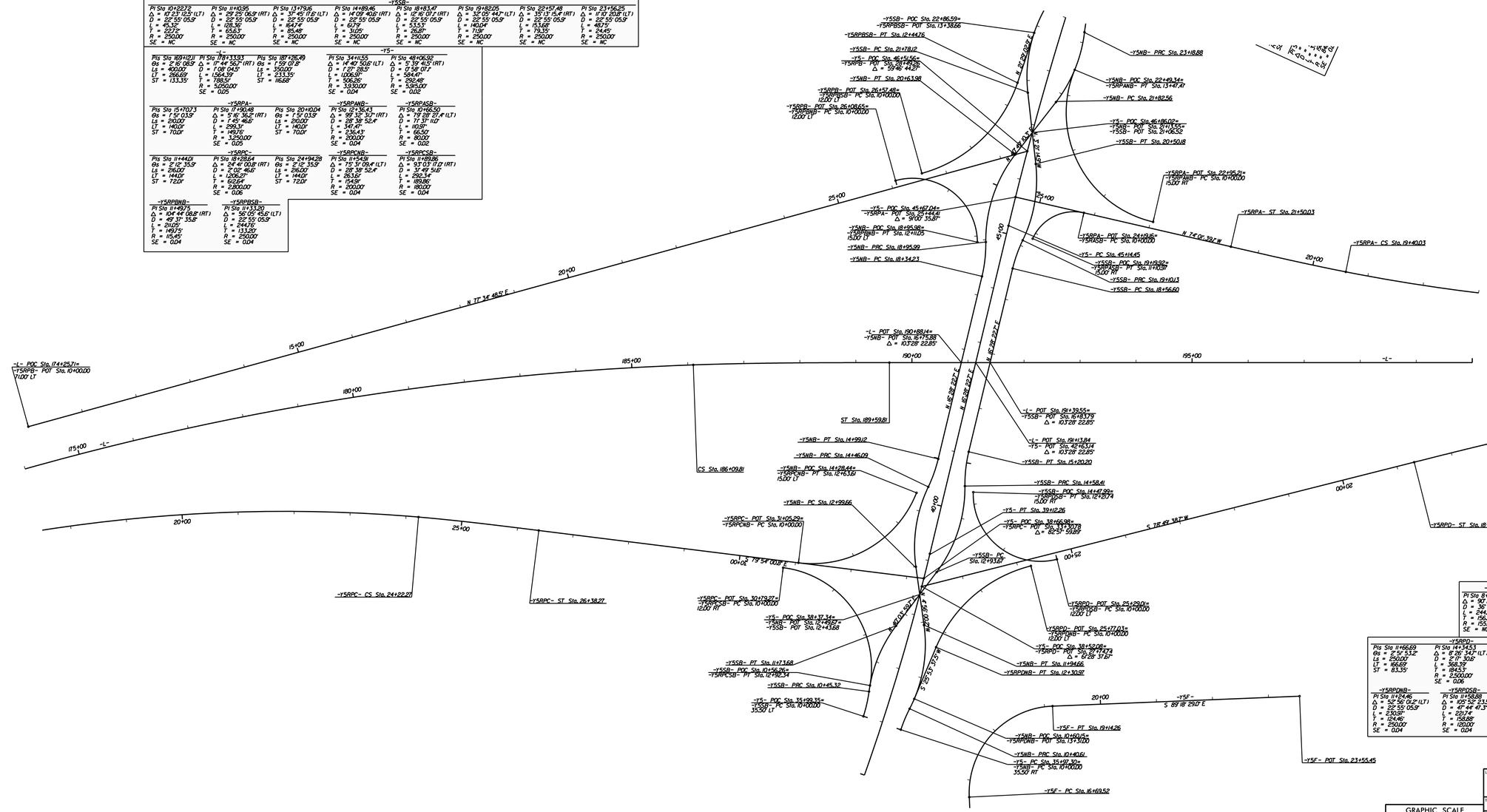
NOTE:
Wo = DIAMETER OF PIPE, WIDTH OF BOX OR SPAN OF PIPE–ARCH CULVERTS

AT STA 24+24 –Y8RPA– RT
AT STA 246+98 –L– RT
AT STA 382+24 –L– RT

6/7/2018
R2721_RDY_02B-33-36_DrainageDetails.dgn
cvaskalay

REVISIONS

-Y5- INTERCHANGE ALIGNMENT DETAIL



-Y5NB-

PI Sta 10+20.35 Δ = 9°18' 26.5" (RT) D = 22°55' 05.9" L = 40.61' T = 20.35' R = 250.00' SE = NC	PI Sta 11+20.17 Δ = 35°18' 20.6" (LT) D = 22°55' 05.9" L = 154.05' T = 79.56' R = 250.00' SE = NC	PI Sta 13+75.04 Δ = 33°33' 13.8" (RT) D = 22°55' 05.9" L = 146.43' T = 75.38' R = 250.00' SE = NC	PI Sta 14+72.31 Δ = 12°09' 10.9" (LT) D = 22°55' 05.9" L = 53.03' T = 26.60' R = 250.00' SE = NC	PI Sta 18+65.57 Δ = 14°09' 16.0" (LT) D = 22°55' 05.9" L = 61.76' T = 31.04' R = 250.00' SE = NC	PI Sta 19+83.39 Δ = 18°30' 03.6" (RT) D = 22°55' 05.9" L = 80.73' T = 40.73' R = 250.00' SE = NC	PI Sta 22+45.96 Δ = 37°14' 32.2" (LT) D = 22°55' 05.9" L = 136.12' T = 69.90' R = 250.00' SE = NC	PI Sta 23+42.83 Δ = 10°56' 41.4" (RT) D = 22°55' 05.9" L = 47.76' T = 23.95' R = 250.00' SE = NC

-Y5SB-

PI Sta 10+22.72 Δ = 10°23' 12.5" (LT) D = 22°55' 05.9" L = 45.35' T = 22.72' R = 250.00' SE = NC	PI Sta 11+01.95 Δ = 29°25' 06.9" (RT) D = 22°55' 05.9" L = 128.36' T = 65.63' R = 250.00' SE = NC	PI Sta 13+79.16 Δ = 37°45' 11.8" (LT) D = 22°55' 05.9" L = 164.74' T = 85.48' R = 250.00' SE = NC	PI Sta 14+89.46 Δ = 14°09' 40.6" (RT) D = 22°55' 05.9" L = 61.79' T = 31.05' R = 250.00' SE = NC	PI Sta 18+83.47 Δ = 12°16' 07.1" (RT) D = 22°55' 05.9" L = 53.53' T = 26.81' R = 250.00' SE = NC	PI Sta 19+82.05 Δ = 32°05' 44.7" (LT) D = 22°55' 05.9" L = 140.04' T = 71.91' R = 250.00' SE = NC	PI Sta 22+57.48 Δ = 35°13' 15.4" (RT) D = 22°55' 05.9" L = 153.66' T = 79.35' R = 250.00' SE = NC	PI Sta 23+56.25 Δ = 11°10' 20.8" (LT) D = 22°55' 05.9" L = 48.75' T = 24.49' R = 250.00' SE = NC

-Y5-

PIs Sta 169+12.11 Gs = 2°16' 08.9" Ls = 400.00' LT = 266.69' ST = 133.35'	PI Sta 178+33.93 Δ = 17° 44' 56.7" (RT) D = 7°09' 04.5" L = 1,564.39' T = 788.51' R = 5,050.00' SE = 0.05	PIs Sta 187+26.49 Gs = 1°59' 01.8" Ls = 350.00' LT = 233.35' ST = 116.68'
PI Sta 34+11.55 Δ = 14°40' 50.6" (LT) D = 1°27' 29.5" L = 1,006.87' T = 506.25' R = 3,930.00' SE = 0.04	PI Sta 48+06.92 Δ = 5° 39' 41.5" (RT) D = 1°58' 07.1" L = 584.47' T = 292.48' R = 5,815.00' SE = 0.02	

-Y5RPA-

PIs Sta 15+70.73 Gs = 1°59' 03.9" Ls = 250.00' LT = 140.01' ST = 70.01'	PI Sta 17+90.48 Δ = 5° 16' 16.2" (RT) D = 1°45' 46.5" L = 299.31' T = 149.76' R = 3,250.00' SE = 0.05	PIs Sta 20+10.24 Gs = 1°59' 03.9" Ls = 250.00' LT = 140.01' ST = 70.01'

-Y5RPANB-

PI Sta 12+36.43 Δ = 99° 10' 30" (RT) D = 28° 38' 52.4" L = 347.47' T = 236.43' R = 200.00' SE = 0.04	PI Sta 18+46.50 Δ = 79° 28' 27.4" (LT) D = 71° 37' 11.0" L = 103.97' T = 65.50' R = 80.00' SE = 0.02	

-Y5RPC-

PIs Sta 11+44.01 Gs = 2°12' 35.9" Ls = 250.00' LT = 144.01' ST = 72.01'	PI Sta 18+28.64 Δ = 24° 41' 00.8" (RT) D = 5° 05' 45.6" L = 1,206.27' T = 611.64' R = 2,800.00' SE = 0.06	PIs Sta 24+94.28 Gs = 2°12' 35.9" Ls = 250.00' LT = 144.01' ST = 72.01'

-Y5RPCNB-

PI Sta 11+54.91 Δ = 75° 51' 09.4" (LT) D = 28° 38' 52.4" L = 265.16' T = 154.91' R = 200.00' SE = 0.04		

-Y5RPCSB-

PI Sta 11+89.26 Δ = 93° 03' 17.0" (RT) D = 31° 49' 51.6" L = 292.34' T = 189.86' R = 180.00' SE = 0.04		

-Y5RPBNB-

PI Sta 11+49.75 Δ = 104° 44' 08.8" (RT) D = 45° 37' 35.8" L = 211.05' T = 149.75' R = 115.45' SE = 0.04	PI Sta 11+33.20 Δ = 50° 05' 45.8" (LT) D = 22° 55' 05.9" L = 244.76' T = 131.20' R = 250.00' SE = 0.04

-Y5RPBSB-

-Y5F-

PI Sta 8+20.79 Δ = 90° 28' 05.2" (RT) D = 36° 37' 54.4" L = 246.74' T = 156.27' R = 155.00' SE = NC

-Y5RPD-

PIs Sta 11+66.69 Gs = 2°54' 53.2" Ls = 250.00' LT = 166.69' ST = 83.35'	PI Sta 14+34.53 Δ = 8°26' 34.7" (LT) D = 2°17' 30.6" L = 368.39' T = 184.53' R = 2,500.00' SE = 0.06	PIs Sta 17+09.75 Gs = 2°54' 53.2" Ls = 250.00' LT = 166.69' ST = 83.35'

-Y5RPDNB-

PI Sta 11+24.46 Δ = 52°56' 04.2" (LT) D = 22°55' 05.9" L = 230.97' T = 124.46' R = 250.00' SE = 0.04

-Y5RPDSB-

PI Sta 11+58.88 Δ = 105°52' 23.5" (RT) D = 47°44' 47.3" L = 220.74' T = 138.88' R = 120.00' SE = 0.04

LOCHNER
M. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
(919) 571-7711
NC License Number P-0133
SUNGATE DESIGN GROUP, P.A.
NC FIRM LICENSE NO. C-3745

PROJECT REFERENCE NO.	SHEET NO.
R-2721	2B-37
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

LOCATION:
-Y5- SR 1152 (HOLLY SPRINGS ROAD)
INTERCHANGE CURVE DATA DETAIL

TIP NO.: R-2721 COUNTY: WAKE
DESIGNED BY: CLY
CHECKED BY: BKE DATE: 06/01/18

GRAPHIC SCALE
0 NTS
PLANS

SEE SHEET 1T FOR PLAN VIEW.

6/5/2018
10:49:22 AM
K:\Projects\R-2721\Roadway\Sheets\R-2721_1T Interchange Detail.dgn
jlockhart

PROJ. REFERENCE NO.	SHEET NO.
R-2721	3A-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PARCEL INDEX SHEET

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
1	6	GEORGE WILLIAMS & JULIA PULLEN HUGHES
2	6,7	MAINER T & UVA R. HOLLAND
3	6,7	NC TURNPIKE AUTHORITY
4	6	HOPE COMMUNITY CHURCH OF NC, INC
5	6,7	PAULINE PENNINGTON
6	7	NC TURNPIKE AUTHORITY
7	7	MAINER T & UVA R. HOLLAND
8	7	IGNACIO RODRIGUEZ IBARRA
9	7	DARRIN F. MCCLAIN (PER GIS)
10	7,8,9	NC DEPARTMENT OF TRANSPORTATION
11	7	HARVEY L. MONTAGUE
12	7	MCI ENTERPRISES, LLC
13	7	WORD OF TRUTH CHURCH OF GOD
14	7	NC DEPARTMENT OF TRANSPORTATION
15	7,8	BESSIE H. JONES
16	7,8	MCI ENTERPRISES
17	8	CSP COMMUNITY OWNER, LLC
18	8,9	HSA PROPERTIES LLC
19	9	TRIANGLE GREENWAYS COUNCIL
20		NOT USED
21	9,10,42	SUNSET HILLS HOMEOWNERS ASSOCIATION
22	10,42	HSA PROPERTIES LLC
23	10,11	CURRIN BROS., INC
24	10,11,42	NC DEPARTMENT OF TRANSPORTATION
25	10,11	50' EASEMENT COLONIAL PIPELINE
26	10,11,42,43	THE MATA FAMILY, LLC
27	10,11	50' EASEMENT COLONIAL PIPELINE
28	11	JORDAN C. AND CALLIE E. HESS
29	11	JAMES C. AND LIAN LIU WALKER
30	11,12,43	BENOIT K. AND ALYSA DANETTE DAGADU
31	12	HOLLY SPRINGS RESIDENTIAL PROPERTIES LLC
32	12	HOLLY SPRINGS RESIDENTIAL PROPERTIES LLC
33	12	M/I HOMES OF RALEIGH, LLC
34	32,58	WILLIAMS, KINSTON & WILLIAMS, EULA M
35	12	M/I HOMES OF RALEIGH, LLC
36	12	HOLLY SPRINGS RESIDENTIAL PROPERTIES LLC
37	12	NC DEPARTMENT OF TRANSPORTATION
38	12,13	NC DEPARTMENT OF TRANSPORTATION
39	13,14	NC DEPARTMENT OF TRANSPORTATION
40	14	NATALIE AND THOMAS BROOKS
41	14	NC DEPARTMENT OF TRANSPORTATION
42	32	WILLIAMS, JW HEIRS
43	14,15	BENJAMIN McDONALD
44	14,15	WILLIAM AND BERTHA TURNER
45	14,15	WILLIAM GRIFFIN
46	14,15	JAMES TURNER AND WILLIAM TURNER
47	14,15	H&B STEPHENSON FAMILY LLC
48	15,45	BULL LAND INC
49	15	CHARLES McKOY
50	15,16,17,45	NC DEPARTMENT OF TRANSPORTATION
51	15,16	TAWFIQ ABDEL-GHANI AND SULEIMAN ASAD
52	15,16,44	TAWFIQ ABDEL-GHANI AND SULEIMAN ASAD
53	15,44	CHARLES McKOY
54	15,44	TAWFIQ ABDEL-GHANI AND SULEIMAN ASAD
55	16	CDP LEASING INC
56	16	WILL PIERSON & KAYLEE JAJUBOWSKI
57	16,17	SYLVIA SAMS
58	17	E&M JOHNSON ENTERPRISES INC
59	17	SYLVIA SAMS
60	17	E&M JOHNSON ENTERPRISES INC

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
61	17,48,51	E&M JOHNSON ENTERPRISES INC
62	17	BARBARA CLARK
63	17	NC DEPARTMENT OF TRANSPORTATION
64	17	E&M JOHNSON ENTERPRISES INC
65	17	E&M JOHNSON ENTERPRISES INC
66	17,47	E&M JOHNSON ENTERPRISES INC
67	17	XUEZHOU DING
68	17,47	GWENDOLYN MORRIS
69	17	JOHN AND DAVID GENSINGER
70	17	WONDER DAY PARTNERSHIP
71	17,48	WONDER DAY PARTNERSHIP
72	17	XUEZHOU DING
73	17	SECU*RE INC
74	17	AQUA NORTH CAROLINA
75	17	NC DEPARTMENT OF TRANSPORTATION
76	17	TRUDY WILLIAMS
77	17	WILLIAM JOHNSON, JR
78	17	JOHN DAVITT
79	17	MARGARET SUTTON MATTHEWS
80	17	NC DEPARTMENT OF TRANSPORTATION
81	17	NC DEPARTMENT OF TRANSPORTATION
82	17	NC DEPARTMENT OF TRANSPORTATION
83	17	DEBORAH AND MICHAEL BAKER
84	17	PERRY & ASSOCIATES
85	17,18	THOMAS AND DEBORAH ATKINSON
86	17,18	NC DEPARTMENT OF TRANSPORTATION
87	17,18	NC DEPARTMENT OF TRANSPORTATION
88	17	SEAN AND ANNA STARR
89	18	FRANS OUDSHOORN
90	18	KAREN JETTON
91	18	THOMAS AND SUSAN SLUCHAK
92	18,19,20,21,22,53	QUAD TRI LLC; OLIVE, MARTHA
93	18	GEORGE BOGER
94	22	QUAD TRI LLC
95	22,23,24,25	NC DEPARTMENT OF TRANSPORTATION
96	22,23,24	TOWN OF CARY
97	24	KLEIN, WILLIS S & KLEIN, JEAN CREWS
98	24	KLEIN, WILLIS S & KLEIN, JEAN CREWS
99	23,24	HAYNES, ALEX L
100	23,24	ROACH, GREGORY & ROACH, JANET
101	24	COATS, LARRY L
102	24	LAWSON, MICHAEL JR
103	24	THE COLE FAMILY TRUST
104	25,26,55	WARF, M CLAY & WARF, SHERRY JONES
105	24,25,26	NC DEPARTMENT OF TRANSPORTATION
106	26,55	LANGSTON FAMILY LTD PARTNERSHIP
107	26,27	RHODES, PANSY P
108	26,54	PERRY, BRENDA W
109	227,28	RHODES, CLAYBONE C & RHODES, PANSY R
110	27,28	NC DEPARTMENT OF TRANSPORTATION
111	28	ANOVER, RAY & ANOVER, ANDREA
112	28,57	WILLIAMS, SEYDRIC L & WILLIANS, MEKEISHA P
113	28	GRAPPLER INVESTMENTS LLC
114	28,57	STEGEMAN, SANDRA JO & STEGEMAN, JERRY LYNN
115	28	IM, KANG HEE
116	28	WILLIE L YATES HEIRS
117	28,28	BUFFALOE, JOHN MICHAEL
118	28	DEANS, CAROL ARBUSHITIS & DEANS, JAMES DAVID
119	28	BRANGLE, STEPHEN M & BRANGLE, ROSE MARIE V
120	28	OWOC, MICHAEL P & OWOC, MARY ALYSE

PROJ. REFERENCE NO.	SHEET NO.
R-2721	3A-2

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PARCEL INDEX SHEET

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
121	28	JONES, KIM MOORE
122	28	CURTIS, SUSAN S & CURTIS, SHAWN G
123	28	CONVERSANO, FRANK & CONVERSANO, SARA H
124	28	HILTON, DENNIS R & HILTON, SHARON M
125	28	MULLIN II, CHARLES E & MULLIN, JULIA D
126	28	THEILE, KARL D & THEIL, MARY E
127	28	CLEAR, MICHAEL LEE & CLEAR, LAUREN MARY
128	28	LAMB, ELIZABETH N
129	28	MANN, KENNETH M & MANN, BRENDA MARY
130	28	DANS, CAROL A AND DEANS, JAMES D
131	29	BUFFALOE, JOHN MICHAEL
132	29,30	HORTON, MADIE HARRIS
133	29	GARCIA, DANIEL RODRIGUEZ & RODRIGUEZ, ANA M
134	29	SMITH, BRYYA D & SMITH MELINDA H
135	29	DELGADO, CARLOS A & DELGADO, ZOILA A
136	29,30	PRIOR CONCTRUCTION CO INC
137	29	GRESSLER, JOYCE ANN & GRESSLER, CARL FREDERICK III
138	29,30	PRIOR CONCTRUCTION CO INC
139	30	McKINNEY, DOUGLAS M & McKINNEY, KIMBERLY P
140	30	WOOTEN, ANNETTE & WOOTEN, TIM
141	30	MILLER, MARY C
142	30,59	CARR, MICHAEL A
143	30	NC DEPARTMENT OF TRANSPORTATION
144	30	NC DEPARTMENT OF TRANSPORTATION
145	30	WISEMAN JR, MOSE B & WISEMAN, MARTHA D
146	30	DEAN, ANTHONY L & DEAN, CAROLYN H
147	30,59	SINICROPE, JACQUELINE H & HINKLE, JOHN R
148	30,31	PASSNER, LAURA LYNNE
149	30,31	RUTHERFORD, NEIL A. & RUTHERFORD, JOY E.
150	30,31	NC DEPARTMENT OF TRANSPORTATION
151	30	WARREN JR, LEON S & WARREN, BETTY O
152	30	NC DEPARTMENT OF TRANSPORTATION
153	30	NC DEPARTMENT OF TRANSPORTATION
154	30	COLEMAN, GRANT V & COLEMAN, SUSAN G
155	30	SAMJLAGIC, NIJAZ & SAMJLAGIC, MIRSADA
156	30	SMITH, WILLIAM ELWOOD & SMITH, MELANIE H
157	30	BROWSER, MARIA R
158	30,31	MILLS, WILLIE B & MILLS, EVE L
159	30	PRIOR CONCTRUCTION CO INC
160	30	GRISEL, BRYAN & GRISEL, CANDACE
161	30,58	LOW, MARY CAMILLA
162	30,58	NEWMAN, KELLIE & NEWMAN, JOHN
163	31	OOR, PATRICIA G
164	31	RICE, DAVID A & RICE, DANNIELLE S
165	31,60	COATS II, GLEN R & COATS, KAREN W
166	31	ATKINS, STEVEN A & ATKINS, JOHN LEE II
167	31,32	ATKINS, STEVEN A & ATKINS, JOHN LEE II
168	31,32	WOODARD, DAVID LAMONT & BAILEY, PEGGY WOODARD
169	32	COUNCIL, VERONICA WILLIAMS
170	32,60	ENNIS, MICHAEL A
171	32,33,60	ENNIS & ATKINS NURSERY
172	32	WILLIAMS, J W HEIRS
173	32	WILLIAMS, CATHERINE HEIRS
174	32	WILLIAMS, KINSTON D & WILLIAMS, EULA
175	32	ENNIS, TERRY LANE
176	32,58	ENNIS, TERRY LANE
177	32,33	ENNIS, TERRY LANE
178	33,34	ARNOLD, WINIFRED W
179	34	BEAVERS, WAYNE M
180	34	BEAVERS, WAYNE M

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
181	34,35,61	BEAVERS, WAYNE M
182	34	BEAVERS, WAYNE M
183	34,61	WALTON, HELLEN A
184	34,35	WALTON, HELLEN A
185	35	ARNOLD, WINIFRED W & ARNOLD, WINIFRED W
186	34,35	WALTON, HELLEN A
187	34	WALTON, JUDY W
188	34,35,61	O'BRYANT, PATRIC C & O'BRYANT, HUBERT A
189	35,61	ARNOLD, WINIFRED W & ARNOLD, WINIFRED W
190	35,36	SEARS, NANCY S & SEARS, JAMES M
191	35,36	STEPHENS, HURBERT B
192	36,37	NC DEPARTMENT OF TRANSPORTATION
193	36,37	BLACKBURN, WANDA B
194	37	HANSFORD, KENNETHH & HANSFORD, SHARON C
195	37	HANSFORD, KENNETHH & HANSFORD, SHARON C
196	37	NOEL, MICHAEL L & NOEL, CONNIE M
197	37	BAGWELL, ANNETTE
198	37,64	GUIN JR. WILLIAM AUTHUR
199	37	HAMRICK, GETTIS G & HAMRICK, PHYLLIS J
200	37	BROADWELL, THOMAS M
201	37,64	GOODMAN JR, MALCOM E & GOODMAN, PENNY B
202	37	TINGEN BROADWELL FAMILY LLC
203	37,38	TINGEN BROADWELL FAMILY LLC
204	37,38,62,63	WAKE TECHNICAL COLLEGE
205	38	HOLLOWAY, RUBY
206	38,39	SMITH, KENNETH BRYANT
207	38	LAWRENCE BASS HEIRS
208	38,39	CIRCLE M PROPERTIES INC
209	38	BARDEN, GENE & BARDEN, VIRGINIA
210	38	RHODES, R LEONARD
211	38	RHODES, RONALD D
212	38	MERRILL, DEBORAH D & MERRILL, FRANK T
213	38,39	RHODES, RAYMOND LEONARD
214	38,39	RHODES, RAYMOND LEONARD
215	40	R MARKHAM & RUTH B STEWART MELISSA S & ANTHONY K WOODELL
216	6,40	ANTHONY K WOODELL & MELISSA S WOODELL
217	42	TOWN OF APEX PUMP STATION EASEMENT
218	42	D.R. HORTON, INC
219	42	ARBOR CREEK KS, LLC
220	42	TOWN OF HOLLY SPRINGS
221	42	BNRICH, LLC
222	43	MEA D. & THERESE A BOUA
223	43	FAUSTINO S, AND MARIA ELENA S MADRAZO
224	43	GERALD D AND SARAH R SYLVER
225	43	DUANE AND KRISTEN JEWELL
226	43	HOLLY SPRINGS RESIDENTIAL PROPERTIES
227	44	WOODCREEK NEIGHBORHOOD ASSN
228	44	CP&L ACCESS EASEMENT
229	44	CARRIE LOCKLEY
230	44	FURMAN AND DEBORAH BECKWITH
231	44	WILLIAM LOCKLEY
232	44	MARL AND KARL WELLS
233	44	CLYDE DRIVE 50' PRIVATE R/W
234	44	JAMES AND EVELYN BREWINGTON
235	44	MUSETTE McLAIN
236	44	GHEYATH MAJEED
237	44	KARL WELLS
238	44	BETTY SCOTT
239	44	FURMAN AND DEBORAH BECKWITH
240	45	JOHN ARRINGTON

PROJ. REFERENCE NO.	SHEET NO.
R-2721	3A-3

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PARCEL INDEX SHEET

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
241	45	BULL LAND INC
242	45	HENRY AND MARY EDWARDS
243	45	LENORA EDWARDS
244	45	TRUSHABEN PATEL AND RAHUL KHARVA
245	45	JASON AND MELISSA MURPHY
246	45	ELBERT AND LONA POOLE
247	46	SIV-J LLC
248	46	SIV-J LLC
249	46	J&D PEACOCK PROPERTIES LLC
250	46	J&D PEACOCK PROPERTIES LLC
251	46	J&D PEACOCK PROPERTIES LLC
252	46	UNKNOWN - NO DEED ON FILE
253	46	PAULINE FRAZIER
254	46	LOCKHOLLY LLC
255	46	BETTY AND EARLE MOORE
256	46	DONALD AND MARGARET McNEAL
257	46	LOCKHOLLY LLC
258	46,47	LOCKHOLLY LLC
259	46	ROSEN HOLLY SPRINGS II LLC
260	46	ROSEN HOLLY SPRINGS II
261	46,50	JORDAN REAL ESTATE HOLDINGS LLC
262	46,50	TA PROPERTIES LLC
263	46,50	TA PROPERTIES LLC
264	46,50	TA PROPERTIES LLC
265	46,50	WADE AND ORA BURT
266	46,47	WILLIAM & WADE BURT
267	47	LOCKHOLLY LLC
268	47	JENNIFER AND CLAYTON PERSON
269	47	MAYFIELD WOODARD
270	47	OSCAR HARRIS
271	47	ANDERSON HARRIS
272	47	ANDERSON AND EFFIE HARRIS
273	47	ANNA REYNOLDS
274	47	RAYMOND AND WILLIAM COUNCIL
275	47	LEN COUNCIL
276	47	P K HONEYCUTT
277	47	LYNETT PALMER AND ANDREW WOODARD
278	47	HAROLD AND PATRICIA CLAPPER
279	47	MARK SNITH
280	47	PROPERTY ACQUISITION AND LEASE LLC
281	47	RANABIR AND TINKU SAHA
282	48	ANDREWS, DONALD R
283	48	CHARLES AND KOREA DUNCAN
284	48,51	WILLIE WATSON
285	48,49	JOHN MITCHELL
286	48	KEITH AND CONNIE HARSMAN
287	48	ROLAND AND ANITA TAYLOR
288	48	MICHAEL FINNERTY
289	48	JEFFERY AND GAIL SANDERS
290	48	MICHAEL AND LAURIE PARKER
291	48,49	JAMES HAMPTON, JR
292	48	AMY AND WILLIAM PATTERSON
293	49	BRYANT AND VICTORIA PERDUN
294	49	SECU*RE INC
295	49	KATHERINE KALEY
296	49	HALLMARK INVESTORS
297	49	SILAS AND EVON WARD
298	49	CHARLES AND LINDA PULLIAM
299	50	WIGGINS, BEULAH J
300	50	ARTEGA, JOSE, MARIA LOURDES

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
301	50	BURL, PRESTON C, NANCY C
302	50	JONES, SHELTON LOUIS
303	50	HOOKER, FRANCES
304	50	ARTEGA CONSTRUCTION, INC
305	50	BENITEZ, OLGA, BERNARDO
306	51	ALICE WATSON
307	51,52	SCOTS LAUREL HOMEOWNERS ASSOC INC
308	51	THAMOTHARAMPILLAI SIVARAJ
309	51	NANCY WILSON
310	51	SCOTT AND ANGELA COULTER
311	51,52	ANNA AND SEAN STARR
312	52	TRIANGLE COMMUNITY CHURCH OF FUQUAY VARINA
313	52	THOMAS MONGERO
314	53	BLAKESLEY, SUSAN E
315	53	BARNES, PATRICK SHANE & WALLAGE, LINWOOD RAY
316	54	JAMISON PARK COMMUNITY ASSOC, INC
317	54	BEVERIDGE, EDWARD K. TRACI H
318	54	GREER, THOMAS C, PAMELA H
319	54	LARSON, LINDA G
320	54	TAYLOR, PAUL H, OLIVE D
321	54	VANHULST, PAMELA
322	54	MILLER, WILLIAM B, JEANNE S
323	54	DUMAYAS, EMBERLY R, PAT J
324	54	POINDEXTER, RANDALL D & POINDEXTER, BRANDY A
325	54	ZIMBRO, RYANN. ANDREW M
326	54	PLATTS, PAUL K JR. MICHEAL A
327	54	BRADY, NATHAN P. ALISON L
328	54	WRENN, DEBORAH K
329	26,54	POWELL, JOHN ARCHIE
330	55	GJH CONSTRUCTION, INC
331	55	WILLIFORD, WILLIAM A
332	55	WOOD, RONALD
333	55	WOOD, WILLIAM L, HAZEL C
334	55	GC CUSTOM HOMES INC
335	56	NORRIS, JOYCE W DAVIS, PATRICIA NORRIS
336	56	THOMAS-GRAZIOLI, CATHERINE
337	56	JH/MH HOLDINGS LLC
338	56	GUY, RANDY C & GUY, STEVE A
339	56	GUY, RANDY C & GUY, STEVE A
340	56	SQUIRE, ANN K
341	56	STEWART, RONNIE & STEWART, WILMA
342	56	STEWART, CHRISTOPHER N & STEWARE, THERESA P
343	56	BLUI LLC
344	56	RICKY ALLEN BLEVINS TRUST TWILAH KNOTTS BLEVINS TRUST
345	56	STRICKLAND SR, RALPH HERBERT
346	56	HOGAN, RICHARD P & HOGAN, MARY C
347	57	GREER, THOMAS C & GREER, SUSAN J P
348	57	PRICE, BARNEY K & PRICE, KIM B
349	57	ANDREWS, MARK P & ANDREWS, MARY C
350	57	PIEZER, KEVIN W & PIEZER, HEATHER L
351	57	BRENINGMEYER, LAURIE
352	57	McNAIR, GRETCHEN & McNAIR, JERRY
353	57	GUILLORY, LARRY J & GUILLORY, NATASHA
354	57	CLARKE, ROBERT LEE & CLARKE, AMY LORI
355	57	ELEZAJ, ANTONIO & ELEZAJ, YADIRA
356	57	BAKER, JOHN R & MARSHA P
357	57	PALMER, MARK A & PALMER, MARY C
358	57	THAMES, RICHARD
359	57	COCHRAN, KEVIN & COCHRAN, TAMMY HALL
360	57	WOODMAN JR, MARC

PROJ. REFERENCE NO.	SHEET NO.
R-2721	3A-4

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PARCEL INDEX SHEET

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
361	58	RILEY, TERRY B & RILEY, DONLAD B
362	58	DICK, MICHAEL C
363	58	WOODARD, DAVID LAMONT & BAILEY, PEGGY WOODARD
364	58	ENNIS, JERRY L
365	58	ENNIS, JOSEPH LEO
366	58	ENNIS, JOSEPH LEO & ENNIS, YVONNE GOWER
367	58	ENNIS, JOSEPH LEO
368	59	COSTON, WILLIAM D
369	59	STAPLETON, MARTIN C
370	59	CESPEDES, MERQUIADES
371	59	JONES, THADDEUS E JR
372	59	SALACKI, JOSEPH S III
373	59	PRIOR CONST SO INC
374	59	CAPITAL MATCH, LLC
375	59	McCLOUD, DONNA
376	59	BARNES, CHARLES SCOTT
377	59	McRAY, ERIC ROBERT
378	59	VINES, KENNETH & VINES, JUDY W
379	60	ATKINS II, JOHN LEE & ATKINS, JOYCE C
380	60	ATKINS II, JOHN LEE & ATKINS, JOYCE C
381	60	ATKINS, STEVEN A & ATKINS, JOHN LEE II
382	60	ATKINS, STEVEN A & ATKINS, JOHN LEE II
383	60	ATKINS, STEVEN A & ATKINS, JOHN LEE II
384	60	ATKINS, STEVEN A & ATKINS, NEIL CONNER
385	60	GRAY, TONY A & GRAY, JASON N
386	62	FUQUAY VARINA STORAGE LLC
387	62	UTLEY, BOBBY LEE
388	63	CHANDLER RIDGE LTD PTNRP
389	63	YENDAPALLI, VENKATESWARA R EQUITY TRUST COMPANY CUSTODIAN FBO
390	64	LUCAS, KENNETH A
391	64	LUCAS, KENNETH A
392	64	NASH, ANNE MARIE
393	64	NASH, ANNE MARIE
394	64	RADLOFF, JILL R
395	64	BAKER, ROGER LEON
396	64	SAVAGE, JAMES P & SAVAGE REBECCA
397	64	TINGEN BROADWELL FAMILY LLC
398	64	LUBIE L LEWIS HEIRS
399	64	NOLASCO, GERBER ALVARADO
400	64	SPIVEY, JUDITH G
401	64	DUERS, JOHNATHAN G
402	64	GOODMAN, MALCOME & GOODMAN, SHELBY W
403	64	HOLDER JR, DAVID F
404	65	PARARELLA, DIEGO MAXIMILIANO KOWALSKI, SHANNON KAY
405	65	LEFLER, NANCY X
406	65	HILL BAILEY, LINDA SUE & BAILEY, WILLIAM DAVE
407	65	BRAGG, KAYCE & BRAGG, GREGORY
408	65	THOMAS, JEANNINE E
409	5	GREENWAY WASTE SOLUTIONS
410	35	BANKS FAMILY FARM LLC
411	37,65	WOODS OF ASHBURY ASSOC. INC
412	40	ANTHONY K. WADDEL AND MELISSA S. WOODELL
413	47	BRYAN AND RENEE EAVES
414	49	JOSEPH AND NANCY MACK
415	64	WEST, GEORGE DAVIS & WEST, BARBARA S
416	64	CHESSON, DONALD N, BILLIE M
417	64	TINGEN BROADWELL FAMILY LLC
418	64	CARRAWAY, PEGGY T
419	58	ARENEGA, DANIEL G & KELLY C.

PARCEL No.	SHEET No.	PROPERTY OWNER NAME

6/4/99

COMPUTED BY: CLY DATE: 6/5/2018
CHECKED BY: BKE DATE: 6/6/2018
REVISED BY: CLY DATE: 6/7/2018

NOTE: Earthwork quantities are calculated by the Roadway Design Unit. These earthwork quantities are based in part on subsurface data provided by the Geotechnical Engineering Unit.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SUMMARY OF EARTHWORK

IN CUBIC YARDS

PROJECT REFERENCE NO.	SHEET NO.
R-2721	3B-1

LOCATION	EXCAVATION TOTAL UNCLASSIFIED	EXCAVATION UNDERCUT	EMBT + %	BORROW	TOTAL WASTE
SUMMARY 1 (R-2721A)					
-L1- LEFT 16+50 TO 22+50	694	-	2,731	2,037	-
-L- LEFT 10+00 TO 22+50	1,655	-	3,584	1,929	-
-L- RIGHT 20+50 TO 30+00	661	-	5,915	5,254	-
-Y1RPD- 16+00 TO 26+25	582	-	658	76	-
TOTAL SUMMARY #1	3,592	-	12,888	9,296	-
SUMMARY 2 (R-2721A)					
-L- RIGHT 32+00 TO 39+00	2,631	-	51,571	48,940	-
-L- RIGHT 39+00 TO 40+50	4,956	-	4,014	4,014	4,956
-L- RIGHT 40+50 TO 49+21	-	-	109,511	109,511	-
-L- LEFT 37+00 TO 39+00	680	-	132	-	548
-L- LEFT 39+00 TO 40+50	1	-	5,278	5,277	-
-L- LEFT 40+50 TO 49+21	-	-	87,394	87,394	-
-Y1- 28+00 TO 45+00	2,133	-	8,845	6,712	-
-Y1RPB- 22+50 TO 33+86	14,661	-	24,162	9,551	-
-Y1LPB- 13+00 TO 15+00	183	-	4,850	4,667	-
-Y1LPB- 15+00 TO 16+00	82	-	752	752	82
-Y1RPC- 18+50 TO 29+00	81,274	-	1,544	1,544	81,274
-Y1RPC- 29+00 TO 30+42	3024	-	215	-	2,809
TOTAL SUMMARY #2	109,575	-	298,268	278,363	89,669
SUMMARY 3 (R-2721A)					
-L- LEFT 50+81 TO 83+01	-		504,828	504,828	-
-L- RIGHT 50+81 TO 83+01	-	-	354,871	354,871	-
TOTAL SUMMARY #3	-	-	859,699	859,699	-
SUMMARY 4 (R-2721A)					
-L- LEFT 85+36 TO 115+50	468,877	-	13,535	-	455,342
-L- RIGHT 85+36 TO 115+50	327,623	-	17028	-	310595
-Y3- 10+00 TO 25+48	888	-	17,771	16,883	-
-Y3- 29+03 TO 38+00	1,388	-	2,263	875	-
-Y3DET- 13+00 TO 34+00	14,572	-	6,221	-	8,351
TOTAL SUMMARY #4	813,348	-	56,818	17,758	774,288
SUMMARY 5 (R-2721A)					
-L- LEFT 115+50 TO 145+00	149,734	-	65,852	-	83,882
-L- RIGHT 115+50 TO 145+00	63,989	-	107,424	43,435	-
-Y3A- 11+00 TO 15+50	70	-	107	37	-
TOTAL SUMMARY #5	213,793	-	173,383	43,472	83,882
SUMMARY 6 (R-2721A)					
-L- LEFT 145+50 TO 175+50	95,481	-	134,599	39,118	-
-L- RIGHT 145+50 TO 175+50	73,395	-	166,313	92,918	-
-Y4- 14+25 TO 25+71	138	-	7,966	7,828	-
-Y4- 28+39 TO 37+00	568	-	1,735	1,167	-
-Y4DET- 10+50 TO 23+00	3,276	-	4,888	1,612	-
TOTAL SUMMARY #6	172,858	-	315,500	142,642	-

LOCATION	EXCAVATION UNCLASSIFIED EXCAVATION	EXCAVATION UNDERCUT	EMBT + %	BORROW	TOTAL WASTE
SUMMARY 7 (R-2721A)					
-L- LEFT 175+00 TO 205+50	196,757	-	365,738	168,981	-
-L- RIGHT 175+50 TO 205+50	180,728	-	147,772	-	32,956
-Y5RPB- 22+50 TO 27+50	1,316	-	30,044	28,728	-
-Y5RPC- 21+50 TO 32+00	33,665	-	5,537	-	28,128
-Y5RPD- 18+00 TO 26+50	3,143	-	35,912	32,769	-
-Y5RPCNB- 11+00 TO 11+50	513	-	13	-	500
-Y5- 11+78 TO 41+37	10,054	-	53,024	42,970	-
-Y5C- 11+00 TO 12+26	80	-	83	3	-
-Y5D- 10+25 TO 12+26	-	-	382	382	-
-Y5E- 10+52 TO 12+88	15	-	13	-	2
-Y5F- 11+50 TO 20+50	771	-	241	-	530
-Y5I- 10+52 TO 15+87	6,316	-	62	-	6,254
-Y5J- 10+18 TO 21+90	3,314	-	205	-	3,109
-Y5M- 10+50 TO 11+49	71	-	-	-	71
-Y5M- 11+85 TO 12+75	35	-	2	-	33
-Y5- 43+90 TO 72+00	22,157	-	373,926	352,087	-
-Y5A- 10+39 TO 31+00	2,263	-	133,120	130,857	-
-Y5B- 10+39 TO 14+00	132	-	259	127	-
-Y5G- 13+25 TO 16+99	2,605	-	-	-	2,605
-Y5H- 11+50 TO 13+82	3	-	638	635	-
-Y5K- 10+23 TO 11+50	12	-	64	52	-
-Y5L- 11+50 TO 12+41	27	-	41	14	-
-Y5DET- 13+64 TO 45+08	14,457	-	93,658	79,201	-
TOTAL SUMMARY #7	478,434	-	1,240,735	836,488	74,187
SUMMARY 8 (R-2721A)					
-L- LEFT 205+00 TO 240+00	270,993	-	83,236	-	187,757
-L- RIGHT 205+50 TO 240+00	181,387	-	110,222	-	71,165
-Y6- 12+50 TO 15+38	247	-	601	354	-
-Y6- 17+99 TO 22+50	524	-	2,276	1,752	-
-Y6DET- 11+00 TO 13+50	352	-	6,642	6,290	-
TOTAL SUMMARY #8	453,503	-	202,978	8,397	258,922
SUMMARY 9 (R-2721A)					
-Y3DET- REMOVAL	5,184	-	-	-	5,184
-Y4DET- REMOVAL	4,073	-	-	-	4,073
-Y5DET- REMOVAL	78,048	-	-	-	78,048
-Y6DET- REMOVAL	5,535	-	-	-	5,535
TOTAL SUMMARY #9	92,840	-	-	-	92,840

LOCATION	EXCAVATION TOTAL UNCLASSIFIED	EXCAVATION UNDERCUT	EMBT + %	BORROW	TOTAL WASTE
TOTAL SUMMARIES 1-9 (R-2721A)	2,337,943	-	3,160,270	2,196,115	1,373,788
LOSS DUE TO CLEARING & GRUBBING	-23,379	-	-	-	-23,379
WASTE IN LIEU OF BORROW (1%)		-	-	-1,171,257	-1,171,257
EST.5% TO REPLACE TOP SOIL ON BORROW PIT		-	-	51,243	-
R-2721A PROJECT TOTAL	2,314,564	-	-	1,076,101	179,152
SAY	2,315,000	-	-	1,077,000	180,000
* SEE 3B-2 FOR R-2721B EARTHWORK					

6/7/2018
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mgoss1ad

6/4/99

COMPUTED BY: CLY DATE: 6/5/2018
CHECKED BY: BKE DATE: 6/6/2018
REVISED BY: CLY DATE: 6/7/2018

NOTE: Earthwork quantities are calculated by the Roadway Design Unit. These earthwork quantities are based in part on subsurface data provided by the Geotechnical Engineering Unit.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SUMMARY OF EARTHWORK

IN CUBIC YARDS

PROJECT REFERENCE NO.	SHEET NO.
R-2721	3B-2

LOCATION	EXCAVATION TOTAL UNCLASSIFIED	EXCAVATION UNDERCUT	EMBT + %	BORROW	TOTAL WASTE
SUMMARY 10 (R-2721B)					
-L- LEFT 240+00 TO 270+00	250,456	-	62,112	-	188,344
-L- RIGHT 240+00 TO 270+00	272,770	-	61,691	-	211,079
TOTAL SUMMARY #10	523,226	-	123,803	-	399,423
SUMMARY 11 (R-2721B)					
-L- LEFT 270+00 TO 300+00	91,755	-	59,513	-	32,242
-L- RIGHT 270+00 TO 300+00	72,746	-	55,502	-	17,244
TOTAL SUMMARY #11	164,501	-	115,015	-	49,486
SUMMARY 12 (R-2721B)					
-L- LEFT 300+00 TO 330+00	117,614	-	66,930	-	50,684
-L- RIGHT 300+00 TO 330+00	90,053	-	105,955	15,902	-
-Y7- 10+00 TO 25+70	4,943	-	4,266	-	677
-Y7- 28+37 TO 41+30	3,578	-	6,976	3,398	-
-Y7A- 10+00 TO 11+47	12	-	67	55	-
-Y7DET- 12+31 TO 22+03	7,403	-	43	-	7,360
TOTAL SUMMARY #12	223,603	-	184,237	19,355	58,721
SUMMARY 13 (R-2721B)					
-L- LEFT 330+00 TO 346+22	37,147		9,770	-	27,377
-L- RIGHT 330+00 TO 346+22	27,937	-	21,376	-	6,561
-Y8RPA- 19+00 TO 20+75	40	-	1,878	1,838	-
-Y8RPA- 25+15 TO 33+93	296	-	20,072	19,776	-
-Y8LPA- 15+50 TO 18+50	2,150	-	527	-	1,623
-Y8RPC- 22+00 TO 35+00	2,557	-	74,698	72,141	-
-Y8LPC- 13+00 TO 15+50	19	-	7,656	7,637	-
-Y8- 12+00 TO 29+17	2,132	-	14,993	12,861	-
-Y8A- 11+00 TO 13+50	496	-	84	-	412
-Y8D- 11+50 TO 12+55	29	-	43	14	-
-Y8- 32+05 TO 50+00	2,015	-	15,098	13,083	-
-Y8C- 11+25 TO 12+37	14	-	6	-	8
-Y8DET- 12+51 TO 29+00	6,822	-	362	-	6,460
TOTAL SUMMARY #13	81,654	-	166,564	127,350	42,441
SUMMARY 14 (R-2721B)					
-L- LEFT 348+97 TO 379+00	190,582	-	13,733	-	176,849
-L- RIGHT 348+97 TO 379+00	132,025	-	19,566	-	112,459
-Y10- 10+50 TO 15+12	165	-	3,484	3319	-
-Y10- 17+75 TO 22+50	178	-	2,890	2,712	-
-Y10A- 10+60 TO 20+23	712	-	8,324	7,612	-
-Y10B- 11+00 TO 18+60	2,994	-	126	-	2,868
TOTAL SUMMARY #14	326,656	-	48,122	13,643	292,176
SUMMARY 15 (R-2721B)					
-L- LEFT 379+00 TO 409+00	115,566	-	20,350	-	95,216
-L- RIGHT 379+00 TO 409+00	166,812	-	28,876	-	137,936
-Y11- 12+00 TO 19+78	233	-	4,630	4,397	-
-Y11- 21+61 TO 31+50	1,030	-	6,650	5,620	-
-Y11DET- 11+82 TO 22+86	1,685	-	941	-	744
TOTAL SUMMARY #15	285,326	-	61,446	10,017	233,897

LOCATION	EXCAVATION UNCLASSIFIED EXCAVATION	EXCAVATION UNDERCUT	EMBT + %	BORROW	TOTAL WASTE
SUMMARY 16 (R-2721B)					
-L- LEFT 409+00 TO 434+43	1,154	-	106,618	105,464	-
-L- RIGHT 409+00 TO 434+43	577	-	118,174	117,597	-
-Y12- 14+00 TO 18+00	108	-	176	68	-
-Y12A- 10+68 TO 26+63	2,219	-	3,800	1,581	-
-Y12B- 10+00 TO 20+21	179	-	1,001	822	-
TOTAL SUMMARY #16	4,237	-	229,769	225,532	-
SUMMARY 17 (R-2721B)					
-L- LEFT 436+21 TO 466+50	18	-	497,504	497,486	-
-L- RIGHT 436+21 TO 466+50	-	-	530,804	530,804	-
TOTAL SUMMARY #17	18	-	1,028,309	1,028,291	-
SUMMARY 18 (R-2721B)					
-L- LEFT 466+50 TO 497+35	168,059	-	131,933	-	36126
-L- RIGHT 466+50 TO 497+35	132,555	-	246,442	113887	-
-Y13RPA- 18+50 TO 29+74	36,139	-	3,400	-	32739
-Y13LPA- 13+00 TO 16+00	16,688	-	-	-	16688
-Y13RPB- 26+50 TO 35+90	12,266	-	924	-	11342
-Y13RPC- 20+00 TO 30+61	25,137	-	832	-	24305
-Y13LPC- 15+00 TO 17+50	11,029	-	-	-	11029
-Y13RPD- 30+00 TO 40+65	1,344	-	23,872	22528	-
-Y13- 29+90 TO 54+02	11,016	-	13,091	2075	-
-Y13A- 10+53 TO 35+00	10,842	-	18,386	7544	-
-Y13C- 10+25 TO 13+12	108	-	67	-	41
-Y13D- 11+05 TO 13+56	27	-	3,008	2981	-
-Y13F- 10+63 TO 12+01	471	-	11	-	460
-Y13- 56+72 TO 73+00	5,787	-	6,788	1001	-
-Y13B- 10+00 TO 11+54	182	-	2	-	180
-Y13E- 10+75 TO 12+05	37	-	8	-	29
-Y13E- 12+53 TO 15+50	68	-	246	178	-
-Y13DET- 10+00 TO 33+00	4,226	-	11,814	7588	-
-Y14A- 10+50 TO 24+00	387	-	521	134	-
TOTAL SUMMARY #18	436,368	-	461,345	157,916	132,939
SUMMARY 19 (R-2721B)					
-L- LEFT 497+79 TO 500+64	-	-	22,472	22,472	-
-L- RIGHT 497+79 TO 500+64	-	-	27,618	27,618	-
TOTAL SUMMARY #19	-	-	50,090	50,090	-
SUMMARY 20 (R-2721B)					
-Y7DET- REMOVAL	36	-	-	-	36
-Y8DET- REMOVAL	302	-	-	-	302
-Y11DET- REMOVAL	784	-	-	-	784
-Y13DET- REMOVAL	9,845	-	-	-	9,845
TOTAL SUMMARY #20	10,967	-	-	-	10,967

LOCATION	EXCAVATION TOTAL UNCLASSIFIED	EXCAVATION UNDERCUT	EMBT + %	BORROW	TOTAL WASTE
TOTAL SUMMARIES 10-20 (R-2721B)	2,056,556	-	2,468,700	1,632,194	1,220,050
LOSS DUE TO CLEARING & GRUBBING	-20,566	-	-	-	-20,566
WASTE IN LIEU OF BORROW (1%)		-	-	-1,188,517	-1,188,517
EST.5% TO REPLACE TOP SOIL ON BORROW PIT		-	-	22,184	-
R-2721B PROJECT TOTAL	2,035,990	-	-	465,861	10,967
SAY	2,036,000	-	-	466,000	11,000
R-2721A	2,315,000	-	-	1,077,000	180,000
R-2721B	2,036,000	-	-	466,000	11,000
GRAND R-2721 TOTAL	4,351,000	-	-	1,543,000	191,000

6/7/2018
R2721_RDY_PSH03B-1_EW.dgn
mckaiti

51499

LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
(919) 571-7111
NC License Number F-0159

SUNGATE DESIGN GROUP, P.A.
305 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243 NC FIRM LICENSE NO. C-890

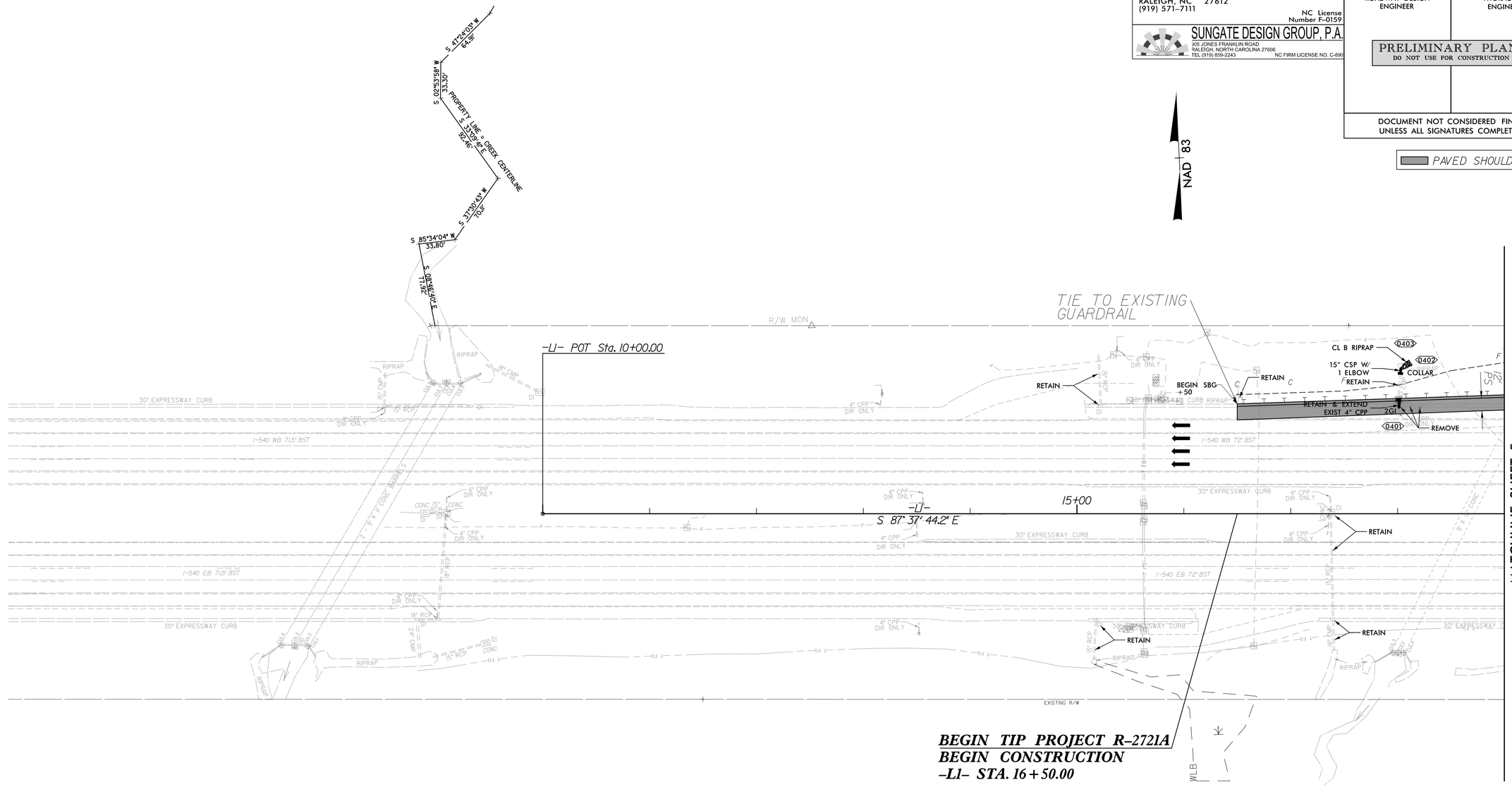
PROJECT REFERENCE NO.	SHEET NO.
R-2721	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PAVED SHOULDER

NAD 83



BEGIN TIP PROJECT R-2721A
BEGIN CONSTRUCTION
-L1- STA. 16+50.00

CULVERT #4
TWO BARRELS

	NORTH	EAST	ELEV.
CUL1	705371.31	2043859.78	278.13
CUL2	705371.94	2043848.39	278.11
CUL3	705372.11	2043846.56	278.12
CUL4	705373.02	2043835.07	278.10
CE1	705372.44	2043847.29	287.17
HW1	705372.37	2043847.47	289.38
CUL5	705611.63	2044012.69	279.12
CUL6	705612.07	2044001.30	280.14
CUL7	705612.18	2043999.38	281.11
CUL8	705612.67	2043987.52	281.14

CULVERT #5
ONE BARREL

	NORTH	EAST	ELEV.
CUL1	705579.79	2045015.97	288.31
CUL2	705579.46	2045026.32	288.34
CE1	705579.43	2045020.45	299.42
HW1	705579.45	2045020.46	299.41
CUL3	705323.16	2044874.02	284.29
CUL4	705322.75	2044884.20	284.30
CE2	705323.39	2044878.96	293.30

SEE SHEET 2B-33 THRU 2B-34 FOR DRAINAGE DETAILS

SEE SHEET 66 FOR -L1- PROFILE

6/7/2018
R-2721_RDY_PSH_04.dgn
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51499

PROJECT REFERENCE NO.	SHEET NO.
R-2721	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

LOCHNER
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SUNGATE DESIGN GROUP, P.A.
305 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243 NC FIRM LICENSE NO. C-890

PRELIMINARY PLANS
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NAD 83

PAVED SHOULDER

-YIRPD-

PIs Sta 11+50.04	PI Sta 16+15.96	PIs Sta 20+67.96
Θs = 3° 52' 58.8"	Δ = 26° 30' 19.8" (LT)	Θs = 3° 52' 58.8"
Ls = 225.00'	D = 3° 27' 05.6"	Ls = 225.00'
LT = 150.04'	L = 767.93'	LT = 150.04'
ST = 75.03'	T = 390.96'	ST = 75.03'
	R = 1,660.00'	
	SE = 0.06	

409
GREENWAY WASTE SOLUTIONS
OF APEX LLC
DB 9099 PG 1045

MATCHLINE SHEET 4
-L1- STA 19+00.00

MATCHLINE SHEET 6
-L- STA 20+00.00

MATCHLINE SHEET 6
-YIRPD- STA 16+00.00

-L1- POT Sta.22+50.00(BK)=
-L- POT Sta. 10+00.00(AH)

-L- POT Sta. 14+02.00=
-YIRPD- ST Sta. 10+00.00
87.00' LT

-YIRPD- SC Sta. 12+25.00

SFF
CL I RIPRAP
LENGTH=11 FT
SEE DETAIL 1A

LAT 2' BASE DITCH w/CL B RIPRAP
SEE DETAIL 4A

+56.00 -L1- 186.00' LT
+56.00 -L1- EX R/W
+84.00 -L1- 189.00' LT
+92.00 -L1- EX R/W
+47.00 -YIRPD- 104.00' LT
+91.00 -YIRPD- EX R/W
+06.00 -YIRPD- 109.00' LT
+32.00 -YIRPD- 102.00' LT
+67.00 -YIRPD- 106.00' LT
+02.00 -YIRPD- EX R/W

TDE
CL I RIPRAP
CL B RIPRAP
REMOVE
RETAIN
EXTEND EXIST 1@9'X10 RCBC
15" W/ 2 ELBOWS
JB wMH
24" CSP W/ELBOW
COLLAR
REMOVE 6 FT EXIST 15" RCP JB wMH
END SBG +50
GREU TL-3
2GI
2GI-A
15"
12" PS
18" RCP
24" RCP
36" BST
48" WW
EXISTING R/W PER STATE PROJECT REF# R-2635A
R/W MON
U/C
RIPRAP
JS MT
I-540 WBL WESTERN WAKE FREEWAY 74' CONC
I-540 EBL WESTERN WAKE FREEWAY 60' CONC
12' CONC
24' CONC
15' CONC
MTL
JRB
0501 0502 0503 0504 0505 0506 0507 0508 0509 0510 0511 0512 0513

20+00 -L1- S 87° 37' 44.2" E
15+00 -L- S 87° 37' 44.2" E
BL-10

SEE SHEET 2B-33 THRU 2B-34 FOR DRAINAGE DETAILS

SEE SHEET 66 FOR -L- PROFILE
SEE SHEET 66 FOR -L1- PROFILE
SEE SHEET 88 FOR -YIRPD- PROFILE

GREENWAY WASTE SOLUTIONS
OF APEX LLC
DB 9099 PG 1039
DB 14463 PG 0571
DB 16061 PG 2298
BM 2002 PG 1159

6/7/2018
R2721_RDY_PSH_05.dgn
cvalerio

REVISIONS

LOCHNER
H. W. LOCHNER, INC.
3840 PLAZA PLACE, SUITE 202
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(919) 571-7111

NC License Number P-0159

SUNGATE DESIGN GROUP, P.A.
1000 CENTRE PARK DRIVE, SUITE 200
CARY, NORTH CAROLINA 27513
PH: (919) 460-1243 NC FIRM LICENSE NO. C-2683

PROJECT REFERENCE NO.	SHEET NO.
R-2721	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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NAD 83

NC 55 BYPASS
36,000 / 60,800
600 / 5,300 — 4,500 / 10,300 — COMPLETE 540
26,800 / 66,400 — 17,500 / 49,300
WESTERN WAKE FREEWAY
14,900 / 31,300 — 3,300 / 10,800
45,600 / 85,700
NC 55 BYPASS
2018 ADT / 2040 ADT

-YIRPD-

Pls Sta 11+50.04	Pl Sta 16+15.36	Pls Sta 20+67.36	Pls Sta 24+40.33	Pl Sta 27+11.86
θs = 3°.52'.58.8"	Δ = 26°.30'.19.8" (LT)	θs = 3°.52'.58.8"	θs = 17°.30'.00.0"	Δ = 31°.15'.36.8" (RT)
Ls = 225.00'	D = 3°.27'.05.6"	Ls = 225.00'	Ls = 280.00	D = 7°.30'.00.0"
LT = 150.04'	L = 767.33'	LT = 150.04'	LT = 187.00'	L = 466.80'
ST = 75.03'	T = 390.96'	ST = 75.03'	ST = 93.63'	T = 237.73'
	R = 1,750.00'			R = 765.94'
	SE = 0.06			SE = 0.07'

-YIRPC-

Pls Sta 11+36.68	Pl Sta 16+55.93	Pls Sta 21+62.87	Pls Sta 26+19.78	Pl Sta 29+18.51
θs = 2°.41'.38.2"	Δ = 63°.22'.25.2" (RT)	θs = 2°.41'.38.2"	θs = 11°.56'.11.8"	Δ = 18°.41'.54.8" (LT)
Ls = 205.00'	D = 3°.37'.41"	Ls = 205.00'	Ls = 300.00'	D = 7°.57'.21.9"
LT = 136.68'	L = 886.33'	LT = 136.68'	LT = 201.46'	L = 236.23'
ST = 68.35'	T = 450.93'	ST = 68.35'	ST = 100.42'	T = 119.8'
	R = 1,680.00'			R = 730.00'
	SE = 0.07'			SE = 0.01'

-YILPB-

Pls Sta 11+33.80	Pl Sta 17+87.14	Pls Sta 17+90.79	Pls Sta 19+58.61	Pl Sta 30+33.29	Pls Sta 40+15.06
θs = 0°.27'.48.8"	Δ = 139°.59'.54.4" (RT)	θs = 25°.46'.25.4"	θs = 3°.30'.00.0"	Δ = 43°.19'.08.0" (RT)	θs = 3°.30'.00.0"
θs = 25°.46'.26.0"	D = 25°.46'.25.4"	Ls = 130.00'	Ls = 300.00'	D = 5.83'.00.0"	Ls = 300.00'
Ls = 200.00'	L = 522.71'	LT = 134.89'	LT = 200.04'	L = 1,896.46'	LT = 200.04'
LT = 133.80'	T = 597.14'	ST = 68.08'	ST = 100.04'	T = 975.15'	ST = 100.04'
ST = 69.34'	R = 214.00'			R = 2,455.53'	
	SE = 0.08				

-YIRPB-

Pls Sta 11+33.34	Pl Sta 15+14.61	Pls Sta 19+45.05	Pl Sta 21+83.57	Pls Sta 24+27.79	Pls Sta 27+52.56	Pl Sta 29+93.11
θs = 1°.16'.03.7"	Δ = 6°.00'.00.0" (LT)	θs = 1°.16'.01.4"	Δ = 11°.49'.05.9" (LT)	θs = 5°.09'.03.8"	θs = 8°.39'.03.0"	Δ = 26°.15'.34.2" (RT)
Ls = 200.00'	D = 1°.16'.03.7"	Ls = 200.00'	D = 3°.49'.11.3"	Ls = 270.00'	Ls = 201.00'	D = 7°.57'.21.9"
LT = 133.34'	L = 628.32'	LT = 200.00'	L = 309.40'	LT = 180.08'	LT = 144.84'	L = 330.85'
ST = 66.82'	T = 314.25'	ST = 83.39'	T = 155.25'	ST = 90.01'	ST = 72.49'	T = 168.39'
	R = 4,500.00'		R = 1,500.00'			R = 720.00'
	SE = 0.04		SE = 0.01'			SE = 0.01'

-L-

Pl Sta 32+41.00	
Δ = 9°.27'.44.4" (RT)	
D = 17.59'.16.9"	
L = 1,361.77'	
T = 963.4'	
R = 12,200.00'	
SE = 0.02'	

-Y1-

Pls Sta 30+33.29	Pls Sta 40+15.06				
Δ = 43°.19'.08.0" (RT)	θs = 3°.30'.00.0"				
D = 5.83'.00.0"	Ls = 300.00'				
L = 1,896.46'	LT = 200.04'				
T = 975.15'	ST = 100.04'				
R = 2,455.53'					

-YIRPB-

Pls Sta 30+33.29	Pl Sta 31+45.55				
Δ = 91°.10'.24"					

-YIRPB-

Pls Sta 32+40.86	Pl Sta 34+42.59				
Δ = 92°.44'.42.3"					

-YILPB-

Pls Sta 12+00.00	Pl Sta 19+22.71				
Δ = 90°.00'.00.0"					
D = 11°.27'.09.2"					
L = 508.12'					
T = 320.00'					
R = 500.00'					
SE = 0.04'					

-YIRPB-

Pls Sta 31+55.55	Pl Sta 34+25.68				
Δ = 92°.44'.42.3"					

SEE SHEET 2B-33 THRU 2B-34 FOR DRAINAGE DETAILS	SEE SHEET 67 FOR -L- PROFILE
SEE SHEET 2B-25 FOR BRIDGE SKETCH	SEE SHEET 108 FOR -Y1- PROFILE
	SEE SHEET 88 FOR -YIRPD- PROFILE
	SEE SHEET 86 FOR -YIRPB- PROFILE
	SEE SHEET 87 FOR -YIRPC- PROFILE
	SEE SHEET 88 FOR -YILPB- PROFILE

★ PROPOSED SIGNAL
PAVED SHOULDER
PAVEMENT REMOVAL

GRAPHIC SCALE
50 25 0 50 100
PLANS

LOCATION:
TIP NO. R-2721 COUNTY: WAKE
DESIGNED BY:
CHECKED BY: DATE:

6/7/2018
R-2721_BKY_PSH_SIA.dgn
cwallen

51499

LOCHNER

H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
(919) 571-7111

NC License Number F-0159

SUNGATE DESIGN GROUP, P.A.
305 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243 NC FIRM LICENSE NO. C-890

PROJECT REFERENCE NO.	SHEET NO.
R-2721	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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PAVED SHOULDER

NAD 83

END CONSTRUCTION
-Y2- STA. 19+75.00

-YIRPB-

PI Sta 11+33.35	PI Sta 14+17.52	PI Sta 16+89.57
Θs = 2° 46' 04.5"	Δ = 11° 59' 50.3" (LT)	Θs = 1° 23' 01.0"
Ls = 200.00'	D = 2° 46' 04.5"	Θs = 2° 59' 04.2"
LT = 133.35'	L = 433.44'	Ls = 100.00'
ST = 66.68'	T = 217.52'	LT = 56.13'
	R = 2,070.00'	ST = 43.92'
	SE = 0.07	

-YIRPC-

PI Sta 14+60.68	PI Sta 16+31.98	PI Sta 17+90.91
Θs = 2° 50' 13.6"	Δ = 5° 41' 45.3" (RT)	Θs = 1° 23' 01.0"
Ls = 205.00'	D = 2° 46' 04.5"	Θs = 2° 59' 04.2"
LT = 136.68'	L = 205.78'	Ls = 100.00'
ST = 68.35'	T = 102.98'	LT = 56.13'
	R = 2,070.00'	ST = 43.92'
	SE = 0.07	

-Y2- POC Sta.16+50.78=
-YIRPC- POC Sta. 13+75.76
Δ 107°05' 36.70"

-Y2- POT Sta.15+56.34
Δ = 79°27'37.04

-Y2- POT Sta.49+75.34=

-Y2- POT Sta.14+68.78=
-YIRPB- POC Sta. 14+10.51
Δ 96° 35' 10.37"

-Y2- PC Sta. 15+95.96

-Y2- PT Sta. 13+54.88

-Y2- PC Sta. 11+18.81
N 1° 24' 41.7" W

-Y2- PT Sta. 16+71.59

-YIRPC- SC Sta. 12+05.00

-L- POT Sta. 53+33.40
-YIRPC- ST Sta. 10+00.00
75.00' LT

-L- POT Sta. 54+01.62
-YIRPB- ST Sta. 10+00.00
75.00' RT

-YIRPB- SC Sta. 12+00.00

-YIRPB- OS Sta. 18+28.32

BEGIN CONSTRUCTION
-Y2- STA. 13+72.00

BEGIN NOISEWALL 1
END FENCE
-L- STA. 53+00.00

BEGIN BRIDGE
-L- STA. 49+20.89

END BRIDGE
-L- STA. 50+80.73
N 1° 17' 37.0" E

-Y2- TO BE WIDENED IN THE FUTURE

-YIRPC- STA 17+00.00

-YIRPB- STA 14+00.00

MATCHLINE SHEET 6
-L- STA 45+00.00

MATCHLINE SHEET 8
-L- STA 58+00.00

300' TAPER

300' MEDIAN TAPER

NC 55 E WILLIAMS ST

(3) NC TURNPIKE AUTHORITY
DB 14122 PG 831

(5) PAULINE PENNINGTON
271.00 DB 2403 PG 365
REFERENCE FROM ADJOINER MAPS
KATHERINE & WILLIAM H. JR BLOUNT
ESTATE 08 E 904
PER NCDOT PROJ #R-2635A

(6) R/W TO MON 0.19'

(7) MAINER T & UVA R. HOLLAND
DB 3242 PG 750

(2) MAINER T & UVA R. HOLLAND
DB 1807 PG 253

LORENE DOBBS
DB 16509 PG 394
DB 16334 PG 1873

PEGGY S. CANNADY
DB 3214 PG 488

(8) IGNACIO RODRIGUEZ IBARRA
DB 15590 PG 990
BM 1995 PG 613

HARVEY L. MONTAGUE
DB 7031 PG 143
BM 1996 PG 842

(12) MCI ENTERPRISES, LLC
DB 13240 PG 1979
BM 1996 PG 842

(13) WORD OF TRUTH CHURCH OF GOD
DB 8681 PG 971
≠BM 1987 PG 589

MCI ENTERPRISES, LLC
DB 13870 PG 1904
BM 1987 PG 589

(16) MCI ENTERPRISES, LLC
DB 14445 PG 292
BM 1987 PG 589

(14) NCDOT
DB 10223 PG 1804
BM 1987 PG 589

(15) BESSIE H. JONES
DB 7196 PG 98
BM 1987 PG 589

(11)

(10)

(9) DARRIN F. MCCLAIN (PER GIS)
HEIR OF HENRY E. MCCLAIN
LISTED IN DB 1952 PG 512
BM 1995 PG 613

DAVID C. AND TERENA R. ROBINSON
DB 9020 PG 1000
BM 2000 PG 1820

EDWARD G. AND PATRICIA D. KILEY
DB 11563 PG 1303
BM 2000 PG 1820

JAMES BASIL BAKIS
DB 15386 PG 1720
BM 2000 PG 1820

LI AND QUIHUA XU
DB 16314 PG 522
BM 2000 PG 1820

DAVID M. & BETHANY ROLLINS
DB 15236 PG 1504
BM 2000 PG 1820

REBECCA SUSAN CATCHINGS
DB 14299 PG 1008
BM 2000 PG 1820

-Y2-

PI Sta 12+36.87	PI Sta 16+33.78
Δ = 2° 42' 18.7" (RT)	Δ = 0° 52' 00.1" (RT)
D = 1° 08' 45.3"	D = 1° 08' 45.3"
L = 236.07'	L = 75.63'
T = 118.06'	T = 37.82'
R = 5,000.00'	R = 5,000.00'

SEE SHEET 2B-33 THRU 2B-34 FOR DRAINAGE DETAILS

SEE SHEET 2B-25 FOR BRIDGE SKETCH

SEE SHEET 87 FOR -YIRPC- PROFILE

SEE SHEET 86 FOR -YIRPB- PROFILE

SEE SHEET 68 FOR -L- PROFILE

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cooleky

LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
(919) 571-7111
NC License Number F-0159

SUNGATE DESIGN GROUP, P.A.
905 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243
NC FIRM LICENSE NO. C-890

PROJECT REFERENCE NO.	SHEET NO.
R-2721	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

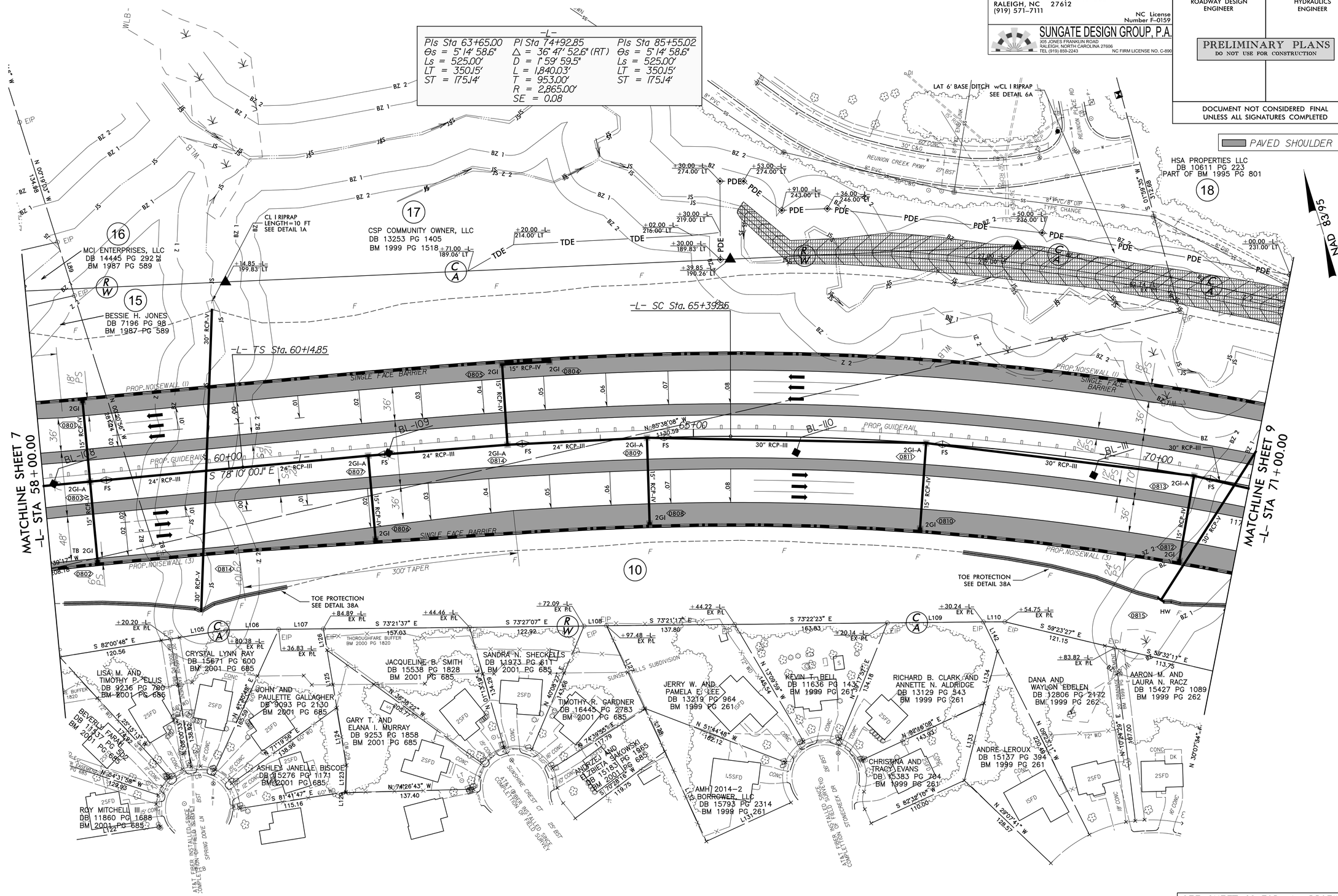
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PAVED SHOULDER

-L-

PIs Sta 63+65.00	PI Sta 74+92.85	PIs Sta 85+55.02
Θs = 5° 14' 58.6"	Δ = 36° 47' 52.6" (RT)	Θs = 5° 14' 58.6"
Ls = 525.00'	D = 1° 59' 59.5"	Ls = 525.00'
LT = 350.15'	L = 1,840.03'	LT = 350.15'
ST = 175.14'	T = 953.00'	ST = 175.14'
	R = 2,865.00'	
	SE = 0.08	



SEE SHEET 68 FOR -L- PROFILE
SEE SHEET 2B-33 THRU 2B-34 FOR DRAINAGE DETAILS

5/1499
6/7/2018
R2721_RDY_PSH_08.dgn
cvokeley

51499

-L-		
PIs Sta 63+65.00	PI Sta 74+92.85	PIs Sta 85+55.02
Θs = 5°14' 58.6"	△ = 36° 47' 52.6" (RT)	Θs = 5°14' 58.6"
Ls = 525.00'	D = 1° 59' 59.5"	Ls = 525.00'
LT = 350.15'	L = 1,840.03'	LT = 350.15'
ST = 175.14'	T = 953.00'	ST = 175.14'
	R = 2,865.00'	
	SE = 0.08	

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NC License Number F-0159

SUNGATE DESIGN GROUP, P.A.
305 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243 NC FIRM LICENSE NO. C-890

PROJECT REFERENCE NO.	SHEET NO.
R-2721	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PAVED SHOULDER

18
HSA PROPERTIES LLC
DB 10611 PG 223
PART OF BM 1995 PG 801

19
TRIANGLE GREENWAYS COUNCIL
DB 15545 PG 1140

MATCHLINE SHEET 8 -L- STA 71+00.00

MATCHLINE SHEET 10 -L- STA 83+00.00

LAT 6' BASE DITCH w/CL I RIPRAP SEE DETAIL 6A

PROPOSED 14'x10' RCBC FOR GREENWAY CROSSING

END NOISEWALL 1 BEGIN FENCE -L- STA 80+05.37

1@6'X8' RCBC

30" RCP-III

18" PS

15" RCP-IV

30" RCP-V

PROP. NOISEWALL (1)

PROP. NOISEWALL (2)

PROP. NOISEWALL (3)

SINGLE FACE BARRIER

PROP. GUIDERAIL

PROP. GUARDRAIL TYPE B-77

TYPE B-77

TOE PROTECTION SEE DETAIL 38A

CL B RIPRAP

LAT 2' BASE DITCH w/CL B RIPRAP SEE DETAIL 4A

LAT 6' BASE DITCH w/CL I RIPRAP SEE DETAIL 6A

30" W/ 2 ELBOWS

15" W/ 2 ELBOWS

JB w/MH

END FENCE -L- 84+42.12 LT

PROP. 47" WW FENCE

GREU TL-3

SANITARY SEWER EASEMENT

8" SSP

24" DIP

WLB

WL

NAD 83

JAMES AND DONNA MULLEN DB 10374 PG 378 BM 1999 PG 262

MATTHEW J. KRETIV AND MELISSA M. DIFONDI DB 13245 PG 917 BM 1999 PG 262

DAVID L. AND ELIZABETH G. LUCAS DB 8626 PG 493 BM 1999 PG 262

CLIFFORD J. BARTH DB 8678 PG 1074 BM 1999 PG 262

STEVEN DICKENS DB 8626 PG 406 BM 1999 PG 262

JARED AND AMANDA MESTLER DB 11857 PG 329 BM 1999 PG 262

NEAL GOODWIN DB 1162 PG 1100 BM 1999 PG 262

BRADLEY O. AND DIANA T. RINGLIEN DB 8443 PG 1762 BM 1999 PG 262

COREY A. NORTON DB 15816 PG 2334 BM 1999 PG 262

SUNSET HILLS HOMEOWNERS' ASSOC. DB 8368 PG 1161 BM 1999 PG 262

WILLIAM D. HAYES AND KIMBERLY A. BURRELL DB 8607 PG 1287 BM 1999 PG 262

"SUNSET HILLS HOMEOWNERS' ASSOC." DB 8102 PG 2584 BM 1998 PG 817

THORNCREST DR

AT&T FIBER INSTALLED SINCE COMPLETION OF FIELD SURVEY

SEE SHEET 2B-33 THRU 2B-34 FOR DRAINAGE DETAILS

SEE SHEET 2B-26 FOR BRIDGE SKETCH

SEE SHEET 69 FOR -L- PROFILE

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cookeley

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SUNGATE DESIGN GROUP, P.A.
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RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243 NC FIRM LICENSE NO. C-890

PROJECT REFERENCE NO.	SHEET NO.
R-2721	10
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PAVED SHOULDER

NAD 83

-L-
PIs Sta 63+65.00 Θs = 5°14' 58.6" Ls = 525.00' LT = 350.15' ST = 175.14'
PI Sta 74+92.85 Δ = 36° 47' 52.6" (RT) D = 1° 59' 59.5" L = 1,840.03' T = 953.00' R = 2,865.00' SE = 0.08
PIs Sta 85+55.02 Θs = 5°14' 58.6" Ls = 525.00' LT = 350.15' ST = 175.14'

MATCHLINE SHEET 9
-L- STA 83+00.00

MATCHLINE SHEET 11
-L- STA 96+00.00

JACLYN AND JEREMY KRING
DB 16241 PG 2621
BM 2003 PG 735

CURRIN BROS., INC.
DB 8000 PG 178
BM 1994 PG 161

TRIANGLE GREENWAYS COUNCIL
DB 15545 PG 1140

DERRICK P. AND MICHELLE G. ARQUIETT
DB 16117 PG 2160
BM 2003 PG 735

BRIAN L. AND DEANNA C. HAMILTON
DB 10931 PG 494
BM 2003 PG 735

LOUIS C. III AND SHIRLEY R. DAVIS
DB 11209 PG 222
BM 2003 PG 735

TIANLIN AND JUHONG LIU WANG
DB 11047 PG 2475
BM 2003 PG 735

NC DEPT. OF TRANSPORTATION
DB 10976 PG 2216

HSA PROPERTIES LLC
DB 10611 PG 223
PART OF BM 1995 PG 801

SUNSET HILLS HOMEOWNERS ASSOCIATION
DB 10032 PG 1809

SUNSET HILLS HOMEOWNERS ASSOCIATION
DB 8102 PG 2684
BM 1998 PG 817

30' GUIED & GUYLESS EASEMENT BM 1998 PG 817

30' COLONIAL PIPELINE EASEMENT APPROXIMATE LOCATION DB 10538 PG 1 BM 1994 PG 161

-L- CS Sta. 83+79.88
BEGIN BRIDGE -L- STA.83+01.00
END BRIDGE -L- STA.85+36.00
-L- ST Sta. 89+04.88
END NOISEWALL (3) BEGIN FENCE -L- STA.93+75.86

STANDARD BASE DITCH SEE DETAIL 32A
TOE PROTECTION SEE DETAIL 38A
SPEC CUT V-DITCH SEE DETAIL 12A
TAIL DITCH w/CL II RIPRAP SEE DETAIL 37A
BEGIN FENCE 84.42' LT TYPE B-77
PROP. GUARDRAIL
PROP. GUIDERAIL
PROP. NOISEWALL (3)
SINGLE FACE BARRIER
PROP. TOLL GANTRY
PROP. 47" WW FENCE
PROP. 41" WW FENCE
EX. 42" WW FENCE
66" INC. TYP.
JB w/MH
PDE

S 40°47'41" E 660.92
S 32°51'17" E 285.01
N 32°48'24" W 141.82
N 32°47'46" W 228.95
N 32°48'29" W 111.41
S 36°03'59" E 452.59
S 35°56'26" E 229.36
S 26°49'19" E 569.25
S 30° 52' 10.3" E
N 04°29'32" E 248.25
N 04°29'43" E 382.92
N 04°29'18" E 229.27
N 57°17'57" E 227.32
N 55°41'46" E 233.33
N 55°41'40" E 216.78
N 04°29'18" E 288.58
N 04°29'46" E 374.24
N 03°44'28" E 359.30
N 03°46'03" E 712.18
N 03°44'28" E 337.87
N 17°57'15" W 232.24
N 13°50'04" W 137.68
N 42°17' E 61.55
N 13°50'04" W 168.22

+17.43 -L- EX P/L
+96.59 -L- EX P/L
+02.34 -L- EX P/L
+44.08 -L- EX P/L
+72.90 -L- EX P/L
+84.26 -L- EX P/L
+94.06 -L- EX P/L
+85.00 -L- EX P/L
+04.00 -L- 195.06' RT
+24.00 -L- EX P/L
+24.00 -L- 195.04' RT
+29.62 -L- EX P/L
+97.44 -L- EX P/L

SEE SHEET 2B-33 THRU 2B-34 FOR DRAINAGE DETAILS
SEE SHEET 2B-26 FOR BRIDGE SKETCH
SEE SHEET 69 FOR -L- PROFILE

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cvskelley

514499

-L-		-Y3-	
PIs Sta 100+44.44	PI Sta 135+13.37	PIs Sta 160+19.88	PI Sta 29+80.33
Θs = 2° 03' 19.6"	△ = 74° 01' 23.9" (LT)	Θs = 2° 03' 19.6"	△ = 44° 13' 37.0" (LT)
Ls = 320.00'	D = 1° 17' 04.8"	Ls = 320.00'	D = 3° 28' 20.9"
LT = 213.35'	L = 5,762.10'	LT = 213.35'	L = 1,273.64'
ST = 106.68'	T = 3,362.27'	ST = 106.68'	T = 670.45'
	R = 4,460.00'		R = 1,650.00'
	SE = 0.05		SE = 0.04

LOCHNER

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NC License Number F-0159

SUNGATE DESIGN GROUP, P.A.
935 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243 NC FIRM LICENSE NO. C-890

PROJECT REFERENCE NO.	SHEET NO.
R-2721	11
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PAVED SHOULDER

NAD 83

MATCHLINE SHEET 43
-Y3- STA 32+00.00

MATCHLINE SHEET 10
-L- STA 96+00.00

MATCHLINE SHEET 42
-Y3- STA 22+00.00

MATCHLINE SHEET 12
-L- STA 109+00.00

ALVIN L. AND STACEY CARTER COLEY
DB 11000 PG 1424
BM 2003 PG 735

SCOTT A. AND JENNIFER B. LANGFELDT
DB 15785 PG 2350
BM 2003 PG 735

ANDREW J. AND MELISSA R. FELTON
DB 15383 PG 1834
BM 2003 PG 734

LIZA M. RIVERA
DB 14370 PG 1271
BM 2003 PG 734

JOHN C. VOLPI
DB 11023 PG 1181
BM 2003 PG 734

NASIM AHMED
DB 16311 PG 144
BM 2003 PG 734

JORDAN C. AND CALLIE E. HESS
DB 15832 PG 2575
BM 2003 PG 734

JAMES C. AND LIAN LIU WALKER
DB 15924 PG 751
BM 2003 PG 734

BENOIT K. AND ALYSIA DANETTE DAGADU
DB 16008 PG 2285
BM 2003 PG 734

NC DEPT. OF TRANSPORTATION
DB 10976 PG 2216

THE MATA FAMILY, LLC
DB 15025 PG 109

EASEMENT NEEDED FOR DETOUR

PROP. GUARDRAIL

PROP. 47" WW FENCE

BERM DITCH
STA. 102+00 – 103+90 -L- LT

BEGIN NOISEWALL (6)
END FENCE
-L- STA.108+39.08

END BRIDGE
-Y3- STA.29+02.86

BEGIN BRIDGE
-Y3- STA.25+47.84

-L- TS Sta. 98+31.10

-L- SC Sta. 101+51.10

-L- POC Sta.103+53.19=
-Y3- POC Sta.27+12.96
△ = 133°23'27.16"

-Y3- PC Sta. 23+09.88

SR 1501/SUNSET LAKE RD

5' CONC. SIDEWALK

2'-6" C&G

PROP. 6' WW FENCE

SPEC CUT V-DITCH SEE DETAIL 12A

S 30° 52' 10.3" E

S 68° 08' 00.2" E

S 87°52'39" E
1403.07

S 88°27'07" E
35.74'

N 32°12'18" W
150.18

N 32°11'29" W
127.32

N 32°10'46" W
134.24

SEE SHEET 2B-33 THRU 2B-34 FOR DRAINAGE DETAILS	SEE SHEET 101 FOR -Y3- PROFILE
SEE SHEET 2B-26 FOR BRIDGE SKETCH	SEE SHEET 70 FOR -L- PROFILE

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cvakley

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PROJECT REFERENCE NO.	SHEET NO.
R-2721	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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NC License Number F-0159

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RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243 NC FIRM LICENSE NO. C-890

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PAVED SHOULDER

NAD 83

-L-		
Pls Sta 100+44.44	Pl Sta 135+13.37	Pls Sta 160+19.88
Θs = 2° 03' 19.6"	Δ = 74° 01' 23.9" (LT)	Θs = 2° 03' 19.6"
Ls = 320.00'	D = 1° 17' 04.8"	Ls = 320.00'
LT = 213.35'	L = 5,762.10'	LT = 213.35'
ST = 106.68'	T = 3,362.27'	ST = 106.68'
	R = 4,460.00'	
	SE = 0.05	

MATCHLINE SHEET 11 -L- STA 109+00.00

MATCHLINE SHEET 13 -L- STA 122+00.00

RIVER FALLS DR

BM 2008 PG 1093

HOLLY SPRINGS RESIDENTIAL PROPERTIES LLC DB 13944 PG 1037 BM 2008 Pg 1093

31 HOLLY SPRINGS RESIDENTIAL PROPERTIES LLC DB 13944 PG 1037 BM 2008 PG 1093

M/I HOMES OF RALEIGH LLC DB 16402 PG 1933 BM 2008 PG 1093

KEVIN AND SUSAN CASSANO DB 16453 PG 512 BM 2008 PG 1093

SCHANTEL AND RODERICK BOUKNIGHT DB 16367 PG 1685 BM 2008 PG 1093

ROBERT AND JENNIFER SMITH DB 16233 PG 2590 BM 2008 PG 1093

MICHAEL AND PAMELA WHITE DB 16165 PG 2048 BM 2008 PG 1093

MAURICE AND JAMILA MINGA DB 16102 PG 287 BM 2008 PG 1093

M/I HOMES OF RALEIGH LLC DB 15601 PG 346 BM 2008 PG 1093

M/I HOMES OF RALEIGH LLC DB 15932 PG 2113 BM 2008 PG 1093

BERM DITCH STA. 108+80 -L- 111+00 -L- LT

BERM DITCH STA. 116+00 -L- 117+50 -L- LT

26 THE MATA FAMILY, LLC DB 15025 PG 109

27 THE MATA FAMILY, LLC DB 15025 PG 109

36 HOLLY SPRINGS RESIDENTIAL PROPERTIES LLC DB 13944 PG 1037 BM 2008 PG 1093

37 NC DEPT OF TRANSPORTATION DB 14305 PG 1789 BM 2007 PG 2789

38 NC DEPT OF TRANSPORTATION DB 14305 PG 1789 BM 2007 PG 2789

??? 25' COMMON OPEN SPACE BM 2008 PG 1093

20' TOWN OF HOLLY SPRINGS WATERLINE EASEMENT BM 2011 PG 72

50' TEMPORARY ACCESS & AT-WILL ENCROACHMENT EASEMENT BM 2007 PG 2789 BM 2011 PG 72

50' I-540 C-255 BUFFER BM 2016 PG 455

20' TYPE A-20 PERIMETER BUFFER BM 2016 PG 455

HOLLY SPRINGS RESIDENTIAL PROPERTIES LLC DB 13944 PG 1037 BM 2016 PG 455

M/I HOMES OF RALEIGH LLC DB 16402 PG 1933 BM 2016 PG 455

32 HOLLY SPRINGS RESIDENTIAL PROPERTIES LLC DB 13944 PG 1037 BM 2016 PG 455

33 RETAIN

34 RETAIN

35 RETAIN

M/I HOMES OF RALEIGH LLC DB 16203 PG 838 BM 2012 PG 128

M/I HOMES OF RALEIGH LLC DB 16033 PG 51 BM 2012 PG 128

M/I HOMES OF RALEIGH LLC DB 15932 PG 2113 BM 2012 PG 128

YAN QIN DB 16360 PG 1467 BM 2012 PG 128

BEGIN NOISEWALL (7)
BEGIN FENCE
-L- STA.116+18.07

PROP.NOISEWALL (6)

PROP. 47" WW FENCE

PROP. GUIDERAIL

PROP. GUARDRAIL

PROP.NOISEWALL (7)

TOE PROTECTION SEE DETAIL 38A

CL I RIPRAP

LAT V-DITCH w/CL I RIPRAP SEE DETAIL 28A

DAYLIGHT DITCH

GRADE TO DRAIN (GTD)

GREU TL-3

42" RCP-III

18" RCP-III

15" RCP-III

36" W/ 2 ELBOWS

18" W/ 2 ELBOWS

2GI-A

2GI

2GI-B

2GI-D

SEE SHEET 2B-33 THRU 2B-34 FOR DRAINAGE DETAILS

SEE SHEET 70 FOR -L- PROFILE

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51499

LOCHNER
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SUNGATE DESIGN GROUP, P.A.
305 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243 NC FIRM LICENSE NO. C-890

PROJECT REFERENCE NO.	SHEET NO.
R-2721	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PAVED SHOULDER

-L-

PIs Sta 100+44.44	PI Sta 135+13.37	PIs Sta 160+19.88
Θs = 2°03'19.6"	△ = 74°01'23.9" (LT)	Θs = 2°03'19.6"
Ls = 320.00'	D = 1°17'04.8"	Ls = 320.00'
LT = 213.35'	L = 5,762.10'	LT = 213.35'
ST = 106.68'	T = 3,362.27'	ST = 106.68'
	R = 4,460.00'	
	SE = 0.05	

-Y3A-

PI Sta 10+73.35	PI Sta 11+36.60	PI Sta 14+27.12	PI Sta 14+87.78
△ = 30°57'35.7" (LT)	△ = 16°27'52.9" (RT)	△ = 11°54'38.3" (RT)	△ = 11°15'57.3" (LT)
D = 36°57'54.1"	D = 36°57'54.1"	D = 19°05'54.9"	D = 19°05'54.9"
L = 83.75'	L = 44.54'	L = 62.36'	L = 58.99'
T = 42.93'	T = 22.43'	T = 31.29'	T = 29.59'
R = 155.00'	R = 155.00'	R = 300.00'	R = 300.00'

63 DAN

LAWRENCE AND JULIA BOURDEAU
DB 6446 PG 107
BM 1994 PG 887
BM 2006 PG 2537
BM 2007 PG 2789

PABLO AND SUSAN LIZARAZO
DB 16260 PG 2560
BM 2008 PG 1093

HOLLY SPRINGS RESIDENTIAL PROPERTIES LLC
DB 13944 PG 1037
BM 2008 PG 1093

END CONSTRUCTION
-Y3A- STA. 15+50.00

-Y3A- POT Sta. 15+56.64
-Y3A- PT Sta. 15+17.18
-Y3A- PRC Sta. 14+58.19
-Y3A- PC Sta. 13+95.82

PROPOSED 14'x10' RCBC FOR GREENWAY CROSSING

20' TOWN OF HOLLY SPRINGS SANITARY SEWER EASEMENT BM 2011 PG 72

50' I-540 C-255 BUFFER BM 2008 PG 1093

25' COMMON OPEN SPACE BM 2008 PG 2053

30' PUBLIC AT-WILL GREENWAY ENCROACHMENT EASEMENT

TOE PROTECTION SEE DETAIL 38A

GRADE TO DRAIN (GTD)

PROP. 47" WW FENCE

PROP. NOISEWALL (6)

SINGLE FACE BARRIER

PROP. GUARDRAIL

PROP. GUIDERAIL

PROP. RETAINING WALL

CL B RIPRAP

1@6'X8' RCBC

15" CAT 1 TYPE B-77

END SBG +76

24" RCP-III

15" RCP-IV

18" RCP-III

GREU TL-3

MATCHLINE SHEET 12
-L- STA 122+00.00

MATCHLINE SHEET 14
-L- STA 135+00.00

38
NC DEPT OF TRANSPORTATION
DB 14305 PG 1789
BM 2007 PG 2789

39
NC DEPT OF TRANSPORTATION
DB 14191 PG 1914
BM 2007 PG 2789

BEGIN CONSTRUCTION
-Y3A- STA. 10+65.00

-Y3A- PT Sta. 11+58.72
-Y3A- PRC Sta. 11+14.18
-Y3A- PC Sta. 10+30.42
-Y3A- POT Sta. 10+00.00

M/I HOMES OF RALEIGH LLC
DB 15852 PG 965
BM 2012 PG 128

M/I HOMES OF RALEIGH LLC
DB 15724 PG 1031
BM 2012 PG 128

M/I HOMES OF RALEIGH LLC
DB 16135 PG 1638
BM 2012 PG 128

HOLLY SPRINGS RESIDENTIAL PROPERTIES LLC
DB 13944 PG 1037
BM 2012 PG 128

KEMING CAO
DB 16252 PG 2234
BM 2014 PG 1634

EDWIN WITTIG
DB 16127 PG 2199
BM 2014 PG 1634

BISHAN YE
DB 16222 PG 1636
BM 2014 PG 1634

ANNA FLORIAN
DB 15867 PG 603
BM 2014 PG 293

JOHN LANGAKER
DB 15874 PG 784
BM 2014 PG 293

LEAH NORMANN
DB 16050 PG 1524
BM 2014 PG 1634

DALE AND NANCY LEE
DB 16127 PG 2268
BM 2014 PG 1634

LIJIE LIN
DB 16069 PG 541
BM 2014 PG 1634

DEREK MCCONNACHIE
DB 16252 PG 818
BM 2014 PG 1634

TAYLOR MORRISON OF CAROLINAS INC
DB 16094 PG 627
BM 2014 PG 293

CORY ROYSTER
DB 16149 PG 1148

VICTOR AND KIMBERLEY POWLEY
DB 16057 PG 2221

JINGXU HE AND YAN YAN ZHANG
DB 16032 PG 1011
BM 2014 PG 293

ALEX AMBROSE
DB 15867 PG 645
BM 2014 PG 293

MYSTIC PINE PL

MAYFIELD DR

SEE SHEET 2B-33 THRU 2B-34 FOR DRAINAGE DETAILS

SEE SHEET 71 FOR -L- PROFILE

SEE SHEET 103 FOR -Y3A- PROFILE

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cpoksley

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LOCHNER

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(919) 571-7111

NC License Number F-0159

SUNGATE DESIGN GROUP, P.A.
305 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243 NC FIRM LICENSE NO. C-890

PROJECT REFERENCE NO.	SHEET NO.
R-2721	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PAVED SHOULDER

-L-
Pls Sta 100+44.44
Θs = 2° 03' 19.6"
Ls = 320.00'
LT = 213.35'
ST = 106.68'

PI Sta 135+13.37
Δ = 7° 41' 23.9" (LT)
D = 1° 17' 04.8"
L = 5,762.10'
T = 3,362.27'
R = 4,460.00'
SE = 0.05

Pls Sta 160+19.88
Θs = 2° 03' 19.6"
Ls = 320.00'
LT = 213.35'
ST = 106.68'

NAD 83

HOLLY SPRINGS RESIDENTIAL PROPERTIES LLC
DB 12402 PG 2252
BM 2006 PG 2537
BM 2007 2789

WALLACE FARRINGTON
DB 2951 PG 472
BM 1978 PG 518

39 NC DEPT OF TRANSPORTATION
DB 14191 PG 1914
BM 2007 PG 2789

40 NATALIE AND THOMAS BROOKS
DB 4175 PG 585

43 BENJAMIN MCDONALD
DB 2988 PG 625
BM 1978 PG 518 (TRACT A)

44 WILLIAM AND BERTHA TURNER
DB 3383 PG 168
BM 1978 PG 518 (PORTION OF TRACT B)

45 WILLIAM GRIFFIN
DB 4585 PG 638
BM 1978 PG 518 (PORTION OF TRACT B)

46 JAMES TURNER AND WILLIAM TURNER
24' WB 3259 PG 431
BM 1978 PG 518 (PORTION OF TRACT B)

47 H&B STEPHENSON FAMILY LLC
DB 15001 PG 1411
BM 1978 PG 518 (PORTION OF TRACT B)

41 NC DEPT OF TRANSPORTATION
DB 11977 PG 1151
BM 1981 PG 1000

BRIDGET GWALTNEY
DB 15919 PG 2094
BM 2014 PG 293

TAYLOR MORRISON OF CAROLINAS INC
DB 16094 PG 627
BM 2014 PG 293

DIANE COX
DB 15887 PG 1775
BM 2014 PG 293

ALLISON AND STEVEN HARRIS
DB 15901 PG 522
BM 2014 PG 293

WOODCREEK NEIGHBORHOOD ASSN INC
DB 12453 PG 863
BM 2006 PG 2537

HOLLY SPRINGS RESIDENTIAL PROPERTIES LLC
DB 12402 PG 2252
BM 2011 PG 608

MATTHEW AND HEATHER JONES
DB 16187 PG 168
BM 2011 PG 608

TIMOTHY REINHARDT AND APRIL SMITH
DB 15670 PG 401
BM 2011 PG 608

ERIN KAMM
DB 15908 PG 2120
BM 2014 PG 293

END NOISEWALL (6)
BEGIN FENCE
-L- STA 137+71.11

PROP. 47" WW FENCE

PROP. NOISEWALL (6)

PROP. GUARDRAIL

PROP. GUIDERAIL

SINGLE FACE BARRIER

1@6'X8' RCBC

TOE PROTECTION SEE DETAIL 38A

LAT 3' BASE DITCH w/CL B RIPRAP SEE DETAIL 10A

LAT 3' BASE DITCH w/CL B RIPRAP SEE DETAIL 5A

30" W/ 2 ELBOWS

GREU TL-3

BEGIN FENCE +90.49 -L- 127.47' LT

END FENCE +68.46 -L- 127.39' LT

END FENCE +91.85 -L- 130.94' LT

BEGIN FENCE +19.33 -L- 130.83' LT

BEGIN SBG +95

MATCHLINE SHEET 13 -L- STA 122+00.00

MATCHLINE SHEET 15 -L- STA 148+00.00

SEE SHEET 7I FOR -L- PROFILE

6/7/2018
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cooksley

51499

-L-		
PIs Sta 100+44.44	PI Sta 135+13.37	PIs Sta 160+19.88
Θs = 2°03'19.6"	Δ = 74°01'23.9" (LT)	Θs = 2°03'19.6"
Ls = 320.00'	D = 1°17'04.8"	Ls = 320.00'
LT = 213.35'	L = 5,762.10'	LT = 213.35'
ST = 106.68'	T = 3,362.27'	ST = 106.68'
	R = 4,460.00'	
	SE = 0.05	

LOCHNER

H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
(919) 571-7111

NC License Number F-0159

SUNGATE DESIGN GROUP, P.A.
305 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243 NC FIRM LICENSE NO. C-890

PROJECT REFERENCE NO.	SHEET NO.
R-2721	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PAVED SHOULDER

NAD 83

MATCHLINE SHEET 45
-Y4- STA 31+00.00

MATCHLINE SHEET 14
-L- STA 148+00.00

MATCHLINE SHEET 16
-L- STA 161+00.00

MATCHLINE SHEET 44
-Y4- STA 23+00.00

43 BENJAMIN MCDONALD
DB 2988 PG 625
BM 1978 PG 518 (TRACT A)

44 WILLIAM AND BERTHA TURNER
DB 3383 PG 168
BM 1978 PG 518 (PORTION OF TRACT B)

45 WILLIAM GRIFFIN
DB 4585 PG 638
BM 1978 PG 518 (PORTION OF TRACT B)

46 JAMES TURNER AND WILLIAM TURNER
DB 3259 PG 431
BM 1978 PG 518 (PORTION OF TRACT B)

47 H&B STEPHENSON FAMILY LLC
DB 15001 PG 1411
BM 1978 PG 518 (PORTION OF TRACT B)

48 BULL LAND INC
DB 13172 PG 2095
NO PLAT ON FILE

49 CHARLES MCKOY
DB 3322 PG 487
NO PLAT ON FILE

50 NC DEPT OF TRANSPORTATION
DB 9459 PG 2436
NO PLAT ON FILE
43201I_PSD

51 TAWFIQ DABBELL (GTD)
GRADEWAY
AND SULEIMAN ASAD
DB 5846 PG 95
NO PLAT ON FILE

52 CHARLES MCKOY
DB 4001 PG 63
NO PLAT ON FILE

53 MICHAEL A. & DEIDRE M BRICE
DB 8381 PG 2184
BM 1997 PG 1765

54 ABDELWAHED DARSI
DB 16438 PG 67
BM 1997 PG 1765

-L- POC Sta.159+27.77
-Y4- POT Sta.27+02.15
Δ = 7°12'26.54"

-L- CS Sta. 159+13.20

BEGIN NOISEWALL (8)
END FENCE
-L- STA.159+72.45

END BRIDGE
-Y4- STA.28+38.73

END NOISEWALL (7)
BEGIN FENCE
-L- STA.158+60.87

BEGIN BRIDGE
-Y4- STA.25+71.27

SPEC CUT 2' BASE DITCH SEE DETAIL 21A

SPEC CUT V-DITCH SEE DETAIL 23A

HEAD DITCH w/CL I RIPRAP SEE DETAIL 40A

TOE PROTECTION SEE DETAIL 38A

TAIL DITCH w/CL I RIPRAP SEE DETAIL 40A

LAT 2' BASE DITCH w/CL B RIPRAP SEE DETAIL 4A

BERM DITCH STA. 155+00 – 158+91 -L- RT

5' CONC. SIDEWALK
2'-6" C&G
EASEMENT NEEDED FOR DETOUR

PROP. 47" WW FENCE
PROP. GUARDRAIL
PROP. GUIDERAIL
PROP. NOISEWALL (7)
SINGLE FACE BARRIER

REMOVE 8

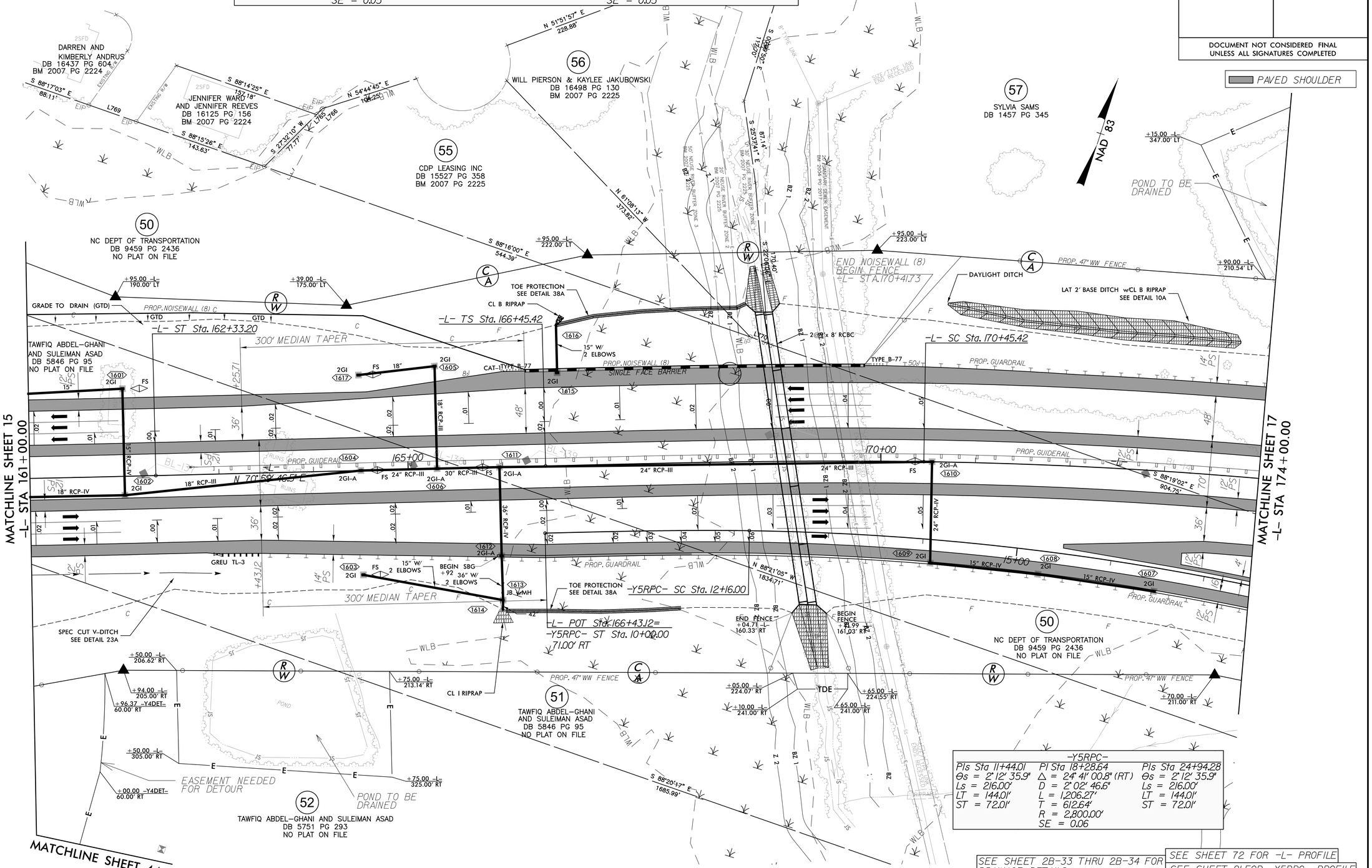
SR 1301 SUNSET LAKES DR

R/W TO EIP 2.03
R/W TO EIP 0.34

SEE SHEET 2B-33 THRU 2B-34 FOR DRAINAGE DETAILS
SEE SHEET 72 FOR -L- PROFILE
SEE SHEET 2B-27 FOR BRIDGE SKETCH
SEE SHEET 102 FOR -Y4- PROFILE

6/7/2018
R2721_RDY_PSH_15.dgn
cookelay

-L-					
PIs Sta 100+44.44	PI Sta 135+13.37	PIs Sta 160+19.88	PIs Sta 169+12.11	PI Sta 178+33.93	PIs Sta 187+26.49
Θs = 2° 03' 19.6"	Δ = 74° 01' 23.9" (LT)	Θs = 2° 03' 19.6"	Θs = 2° 16' 08.9"	Δ = 17° 44' 56.7" (RT)	Θs = 1° 59' 07.8"
Ls = 320.00'	D = 1° 17' 04.8"	Ls = 320.00'	Ls = 400.00'	D = 1° 08' 04.5"	Ls = 350.00'
LT = 213.35'	L = 5,762.10'	LT = 213.35'	LT = 266.69'	L = 1,564.39'	LT = 233.35'
ST = 106.68'	T = 3,362.27'	ST = 106.68'	ST = 133.35'	T = 788.51'	ST = 116.68'
	R = 4,460.00'			R = 5,050.00'	
	SE = 0.05			SE = 0.05	



-Y5RPC-		
PIs Sta 11+44.01	PI Sta 18+28.64	PIs Sta 24+94.28
Θs = 2° 12' 35.9"	Δ = 24° 41' 00.8" (RT)	Θs = 2° 12' 35.9"
Ls = 216.00'	D = 2° 02' 46.6"	Ls = 216.00'
LT = 144.01'	L = 1,206.27'	LT = 144.01'
ST = 72.01'	T = 612.64'	ST = 72.01'
	R = 2,800.00'	
	SE = 0.06	

SEE SHEET 2B-33 THRU 2B-34 FOR DRAINAGE DETAILS

SEE SHEET 72 FOR -L- PROFILE

SEE SHEET 91 FOR -Y5RPC- PROFILE

LOCHNER
H. W. LOCHNER, INC.
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RALEIGH, NC 27612
(919) 571-7111
NC License Number F-0159
SUNGATE DESIGN GROUP, P.A.
905 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243
NC FIRM LICENSE NO. C-890

PROJECT REFERENCE NO.	SHEET NO.
R-2721	16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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6/7/2018
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cyokeley

REVISIONS

LOCHNER
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(919) 571-7111
NC License Number P-0193

SUNGATE DESIGN GROUP, P.A.
NC FIRM LICENSE NO. C-3963

PROJECT REFERENCE NO.	SHEET NO.
R-2721	17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

MATCHLINE SHEET 48 -YS- STA 49+00.00

MATCHLINE SHEET 18 -L- STA 200+00.00

MATCHLINE SHEET 16 -L- STA 174+00.00

MATCHLINE SHEET 47 -YSF- STA 16+50.00

MATCHLINE SHEET 47 -YS- STA 36+00.00

-YSRPA- STA 17+00.00

-YSF- STA 20+87.50

END BRIDGE -YS- STA 43+94.71

BEGIN BRIDGE STA 43+36.52

BEGIN NOISEWALL (U-I) -YSRPD- STA 23+95.00

END NOISEWALL (U-I) -YSRPD- STA 24+95.00

57 SYLVIA SIMS DB 1457 PG 345

58 E&M JOHNSON ENTERPRISES INC DB 14772 PG 1182 3671ORMFR_LS_PSD

59 SYLVIA SIMS ETUX DB 1510 PG 55

60 E&M JOHNSON ENTERPRISES INC DB 14773 PG 1182 BM 1987 PG 101

61 E&M JOHNSON ENTERPRISES INC DB 14772 PG 1182 BM 1987 PG 101

62 BARBARA CLARK DB 5207 PG 608

63 NC DEPT OF TRANSPORTATION DB 14632 PG 1019 3671ORMFR_LS_PSD

64 E&M JOHNSON ENTERPRISES INC DB 14772 PG 1182 BM 1987 PG 101

65 E&M JOHNSON ENTERPRISES INC DB 14773 PG 1182

66 E&M JOHNSON ENTERPRISES INC DB 14773 PG 1182

67 XUEZHOU DING DB 12081 PG 2040 BM 1970 PG 230

68 LAWSON TOM MORRIS DB 5063 PG 181 BM 1970 PG 230

69 JOHN AND DAVID GENSINGER DB 9111 PG 1883 BM 1970 PG 230

70 WONDER DAY PARTNERSHIP DB 3063 PG 200 NO PLAT ON FILE

71 JOHN DAVITT DB 10704 PG 1 BM 1985 PG 422

72 XUEZHOU DING DB 14848 PG 955 BM 1970 PG 230

73 SECUPRE INC DB 16036 PG 244 BM 1970 PG 230

74 AQUA SOUTH CAROLINA INC DB 13547 PG 78 BM 1970 PG 230

75 NC DEPT OF TRANSPORTATION DB 14632 PG 1019 BM 1970 PG 230

76 DB 11729 PG 1356 BM 1970 PG 230

77 WILLIAM PROPST DB 5128 PG 775 BM 1970 PG 230

78 NC DEPT OF TRANSPORTATION DB 15482 PG 881 BM 1970 PG 230

79 MARGARET SUTTON MATTHEWS DB 13968 PG 330 BM 1970 PG 230

80 NC DEPT OF TRANSPORTATION DB 14632 PG 1019 BM 1970 PG 230

81 NC DEPT OF TRANSPORTATION DB 15482 PG 858 BM 1970 PG 230

82 NC DEPT OF TRANSPORTATION DB 15482 PG 881 BM 1970 PG 230

83 DEBORAH AND MICHAEL BAKER DB 9008 PG 2807 BM 1985 PG 422

84 PERRY & ASSOCIATES DB 3381 PG 684 BM 1985 PG 422

85 THOMAS AND DEBORAH ATKINSON DB 3417 PG 169 BM 1985 PG 422

86 NC DEPT OF TRANSPORTATION DB 14632 PG 1019 BM 1970 PG 230

87 NC DEPT OF TRANSPORTATION DB 14632 PG 1019 BM 1970 PG 230

88 JOHN SMITH DB 8281 PG 786 BM 1970 PG 230

DEBRA ANN WHITT SMITH DB 4478 PG 75 BM 1970 PG 230

LEATHA MORRIS DB 4820 PG 161 BM 1970 PG 230

JOSEPHYNE C DUKE DB 15155 PG 2062 BM 1970 PG 230

JOHN AND DAVID GENSINGER DB 9111 PG 1883 BM 1970 PG 230

KENNETH SULLIVAN DB 6944 PG 667 BM 1970 PG 230

HOWINGTON PROPERTIES LLC DB 15944 PG 2827 BM 1970 PG 230

POND TO BE DRAINED

PROP. 47' BW FENCE

PROP. GUARDRAIL

PROP. GUIDERAIL

PROP. NOISEWALL (U-I)

5' CONC. SIDEWALK

5' CONC. SIDEWALK

5' CONC. SIDEWALK

PROP. GUARDRAIL

PROP. GUARDRAIL

PROP. GUARDRAIL

PROP. GUARDRAIL

PROP. GUIDERAIL

PROP. GUIDERAIL

PROP. GUIDER

LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
(919) 571-7111
NC License Number F-0159

SUNGATE DESIGN GROUP, P.A.
305 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243 NC FIRM LICENSE NO. C-890

PROJECT REFERENCE NO.	SHEET NO.
R-2721	18
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

51499

-L-

PIs Sta 213+65.98	PI Sta 224+24.88	PIs Sta 234+63.56
Θs = 0° 53' 01.5"	Δ = 14° 20' 34.6" (LT)	Θs = 0° 46' 23.8"
Ls = 240.00'	D = 0° 44' 11.2"	Ls = 210.00'
LT = 160.00'	L = 1,947.58'	LT = 140.00'
ST = 80.00'	T = 978.91'	ST = 70.00'
	R = 7,780.00'	
	SE = 0.03	

-Y5RPA-

PIs Sta 15+70.73	PI Sta 17+90.48	PIs Sta 20+10.04
Θs = 1° 51' 03.9"	Δ = 5° 16' 36.2" (RT)	Θs = 1° 51' 03.9"
Ls = 210.00'	D = 1° 45' 46.6"	Ls = 210.00'
LT = 140.01'	L = 299.31'	LT = 140.01'
ST = 70.01'	T = 149.76'	ST = 70.01'
	R = 3,250.00'	
	SE = 0.05	

-Y5RPD-

PIs Sta 11+66.69	PI Sta 14+34.53	PIs Sta 17+01.75
Θs = 2° 51' 53.2"	Δ = 8° 26' 34.7" (LT)	Θs = 2° 51' 53.2"
Ls = 250.00'	D = 2° 17' 30.6"	Ls = 250.00'
LT = 166.69'	L = 368.39'	LT = 166.69'
ST = 83.35'	T = 184.53'	ST = 83.35'
	R = 2,500.00'	
	SE = 0.06	

AQUA NORTH CAROLINA, INC.
DB 13547 PG 76
BM 1985 PG 422

88 SEAN AND ANNA STARR
DB 16115PG 1817
BM 1985 PG 979
20' DRAINAGE EASEMENT SCALED FROM BM 1985 PG 422

85 THOMAS AND DEBORAH ATKINSON
DB 3617 PG 259
BM 1985 PG 422

89 FRANS OUDSHOORN
DB 11206 PG 1841
BM 1985 PG 979

90 KAREN JETTON
DB 13384 PG 865
BM 1985 PG 979

91 THOMAS ANS SUSAN SLUCHAK
DB 4600 PG 170
BM 1985 PG 979

92 QUAD TRI LLC
OLIVE, MARTHA
DB 16161 PG 1089
BM 1979 PG 361

86 NC DEPT OF TRANSPORTATION
DB 14837 PG 1018
BM 1970 PG 230

87 NC DEPT OF TRANSPORTATION
DB 14837 PG 1018
BM 1970 PG 230

93 GEORGE I BOGER
DB 8619 PG 627
BM 1970 PG 230

-Y5RPA- TS Sta. 14+30.72
-Y5RPA- SC Sta. 16+40.72
-Y5RPA- STA 17+00.00
-Y5RPD- CS Sta. 16+18.39
-Y5RPD- SC Sta. 12+50.00
-L- POT Sta. 207+09.24= -Y5RPA- POT Sta. 10+00.00 71.00' LT
-L- POT Sta. 207+54.92= -Y5RPD- ST Sta. 10+00.00 71.00' RT
T/S Sta. 212+05.98

MATCHLINE SHEET 17 -L- STA 200+00.00
MATCHLINE SHEET 19 -L- STA 213+00.00

PAVED SHOULDER

SEE SHEET 89 FOR -Y5RPA- PROFILE
SEE SHEET 92 FOR -Y5RPD- PROFILE
SEE SHEET 73 FOR -L- PROFILE

SEE SHEET 2B-33 THRU 2B-34 FOR DRAINAGE DETAILS

6/7/2018
cookelw
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PROJECT REFERENCE NO.	SHEET NO.
R-2721	19
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
(919) 571-7111
NC License Number F-0159

SUNGATE DESIGN GROUP, P.A.
905 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243
NC FIRM LICENSE NO. C-890

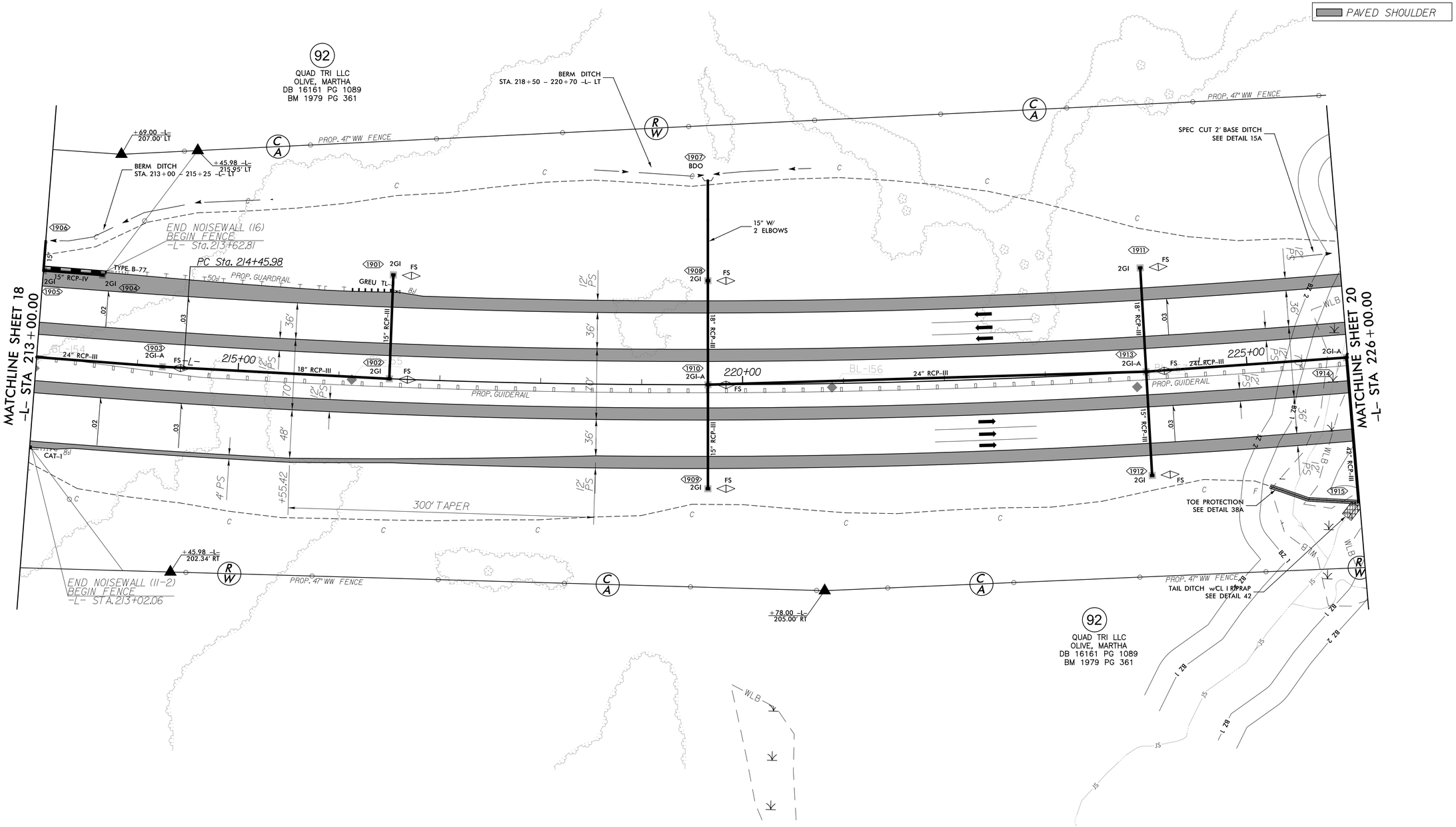
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-L-		
PIs Sta 213+65.98	PI Sta 224+24.88	PIs Sta 234+63.56
Θs = 0° 53' 01.5"	Δ = 14° 20' 34.6" (LT)	Θs = 0° 46' 23.8"
Ls = 240.00'	D = 0° 44' 11.2"	Ls = 210.00'
LT = 160.00'	L = 1,947.58'	LT = 140.00'
ST = 80.00'	T = 978.91'	ST = 70.00'
	R = 7,780.00'	
	SE = 0.03	

NAD 83

PAVED SHOULDER



SEE SHEET 2B-33 THRU 2B-34 FOR DRAINAGE DETAILS

SEE SHEET 73 FOR -L- PROFILE

5/14/99

6/7/2018
R2721_RDY_PSH_19.dgn
cvokeley

51499

LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
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(919) 571-7111
NC License Number F-0159

SUNGATE DESIGN GROUP, P.A.
305 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243 NC FIRM LICENSE NO. C-890

PROJECT REFERENCE NO.	SHEET NO.
R-2721	20
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PAVED SHOULDER

NAD 83

MATCHLINE SHEET 53
-Y6- STA 21+00.00

MATCHLINE SHEET 19
-L- STA 226+00.00

MATCHLINE SHEET 21
-L- STA 239+00.00

EASEMENT NEEDED FOR DETOUR

92
QUAD TRI LLC
OLIVE, MARTHA
DB 16161 PG 1089
BM 1979 PG 361

92
QUAD TRI LLC
DB 16161 PG 089
BM 1979 PG 361

END BRIDGE
-Y6- STA 17+98.99

END BRIDGE
-Y6- STA 15+38.37

-L- POC Sta. 231+09.54
-Y6- POT Sta. 16+65.83
Δ = 84°46'56.15"

-L- CS Sta. 233+93.56

-L- ST Sta. 236+03.56

-Y6- PT Sta. 14+76.32

-Y6- PRC Sta. 12+82.77

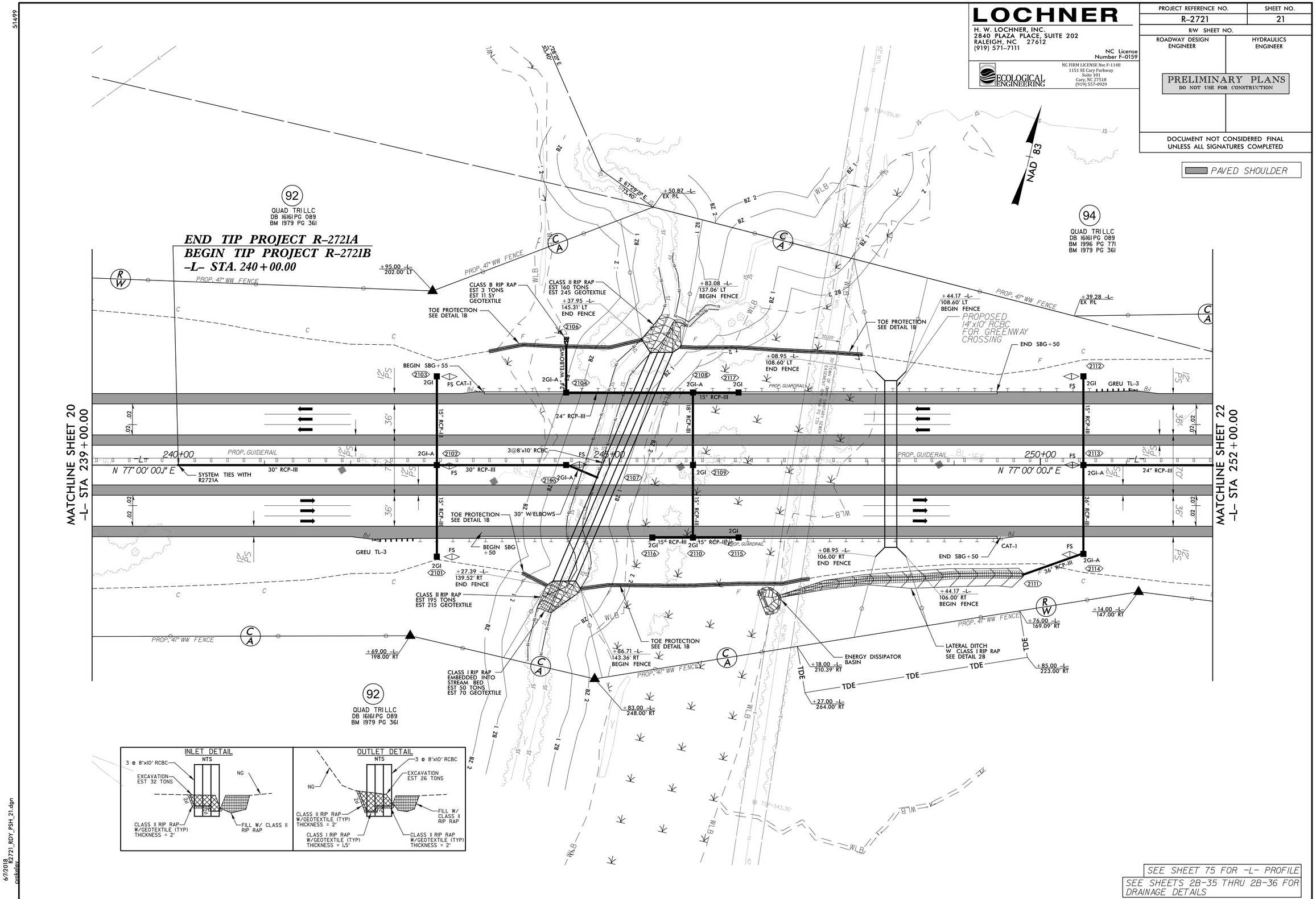
BEGIN CONSTRUCTION
-Y6- STA. 12+00.00

-L-		
PIs Sta 213+65.98	PI Sta 224+24.88	PIs Sta 234+63.56
Θs = 0° 53' 01.5"	Δ = 14° 20' 34.6" (LT)	Θs = 0° 46' 23.8"
Ls = 240.00'	D = 0° 44' 11.2"	Ls = 210.00'
LT = 160.00'	L = 1,947.58'	LT = 140.00'
ST = 80.00'	T = 978.91'	ST = 70.00'
	R = 7,780.00'	
	SE = 0.03	

-Y6-	-Y6-
PI Sta 11+42.63	PI Sta 13+79.55
Δ = 18° 29' 14.3" (LT)	Δ = 0° 55' 26.8" (RT)
D = 6° 32' 16.4"	D = 0° 28' 38.9"
L = 282.77'	L = 193.55'
T = 142.63'	T = 96.78'
R = 876.36'	R = 12,000.00'

SEE SHEET 2B-33 THRU 2B-34 FOR DRAINAGE DETAILS
SEE SHEET 109 FOR -Y6- PROFILE
SEE SHEET 2B-28 FOR BRIDGE SKETCH
SEE SHEET 75 FOR -L- PROFILE

6/7/2018
R2721_RDY_PSH_20.dgn
cookelev


LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
(919) 571-7111
NC License Number F-0159
ECOLOGICAL ENGINEERING
NC FIRM LICENSE No: F-1148
1151 SE Cary Parkway
Suite 101
Cary, NC 27518
(919) 557-0929
PROJECT REFERENCE NO.
R-2721
SHEET NO.
21
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
PAVED SHOULDER
NAD 83
END TIP PROJECT R-2721A
BEGIN TIP PROJECT R-2721B
-L- STA. 240+00.00
92
QUAD TRI LLC
DB 16161 PG 089
BM 1979 PG 361
94
QUAD TRI LLC
DB 16161 PG 089
BM 1996 PG 771
BM 1979 PG 361
MATCHLINE SHEET 20
-L- STA 239+00.00
MATCHLINE SHEET 22
-L- STA 252+00.00
PROP. 47" WW FENCE
PROP. GUIDERAIL
PROP. GUARDRAIL
N 77° 00' 00.1" E
240+00
245+00
250+00
SYSTEM TIES WITH R2721A
CLASS B RIP RAP EST 3 TONS EST 11 SY GEOTEXTILE
CLASS II RIP RAP EST 160 TONS EST 245 GEOTEXTILE
CLASS II RIP RAP EST 195 TONS EST 215 GEOTEXTILE
CLASS I RIP RAP EMBEDDED INTO STREAM BED EST 50 TONS EST 70 GEOTEXTILE
TOE PROTECTION SEE DETAIL 1B
PROPOSED 14'x10' RCBC FOR GREENWAY CROSSING
ENERGY DISSIPATOR BASIN
LATERAL DITCH W CLASS I RIP RAP SEE DETAIL 2B
BEGIN SBG+55
END SBG+50
BEGIN SBG +50
3@8'x10' RCBC
30" RCP-III
24" RCP-III
15" RCP-III
18" RCP-III
36" RCP-III
24" W/ELBOWS
30" W/ELBOWS
+95.00 -L- 202.00' LT
+50.87 -L- EX P/L
+83.08 -L- 137.06' LT BEGIN FENCE
+37.95 -L- 145.31' LT END FENCE
+44.17 -L- 108.60' LT BEGIN FENCE
+39.28 -L- EX P/L
+08.95 -L- 108.60' LT END FENCE
+08.95 -L- 106.00' RT END FENCE
+27.39 -L- 139.52' RT END FENCE
+44.17 -L- 106.00' RT BEGIN FENCE
+14.00 -L- 147.00' RT
+76.00 -L- 169.09' RT
+69.00 -L- 198.00' RT
+66.71 -L- 143.36' RT BEGIN FENCE
+18.00 -L- 210.39' RT
+85.00 -L- 223.00' RT
+83.00 -L- 248.00' RT
+27.00 -L- 264.00' RT
INLET DETAIL
NTS
3 @ 8'x10' RCBC
EXCAVATION EST 32 TONS
NG
CLASS II RIP RAP W/GEOTEXTILE (TYP) THICKNESS = 2'
FILL W/ CLASS II RIP RAP
OUTLET DETAIL
NTS
3 @ 8'x10' RCBC
EXCAVATION EST 26 TONS
NG
CLASS II RIP RAP W/GEOTEXTILE (TYP) THICKNESS = 2'
CLASS I RIP RAP W/GEOTEXTILE (TYP) THICKNESS = 1.5'
FILL W/ CLASS II RIP RAP
CLASS II RIP RAP W/GEOTEXTILE (TYP) THICKNESS = 2'
SEE SHEET 75 FOR -L- PROFILE
SEE SHEETS 2B-35 THRU 2B-36 FOR DRAINAGE DETAILS
5/1499
6/7/2018
R2721_RDY_PSH_21.dgn
cvokeley

51499

-L-		
PIs Sta 254+60.65	PI Sta 268+06.07	PIs Sta 281+29.00
Θs = 0° 46' 23.8"	Δ = 18° 37' 12.0" (RT)	Θs = 0° 46' 23.8"
Ls = 210.00'	D = 0° 44' 11.2"	Ls = 210.00'
LT = 140.00'	L = 2,528.35'	LT = 140.00'
ST = 70.00'	T = 1,275.42'	ST = 70.00'
	R = 7,780.00'	

NAD 83

LOCHNER

H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
(919) 571-7111
NC License Number F-0159

ECOLOGICAL ENGINEERING
NC FIRM LICENSE No: F-1148
1151 SE Cary Parkway
Suite 101
Cary, NC 27518
(919) 557-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2721	22
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PAVED SHOULDER

94
QUAD TRI LLC
DB 16161 PG 1089
BM 1996 PG 771
BM 1979 PG 361

SALZ, DON & SALZ, LE
DB 10794 PG 1151
BM 2003 PG 1860

+78.92 -L- EX PL
+55.00 -L- 250.00' LT
N 02°35'20" W 8.41'
N 02°35'20" W 349.05'

PROP. 47" WW FENCE
-L- TS Sta. 253+20.65
-L- SC Sta. 255+30.65
S 88°30'21" E 1850.29'
N 77° 00' 00.1" E
BL-166
BL-167
PROP. GUIDERAIL
24" RCP-III
15" RCP-III
18" RCP-III
18" W ELBOWS
255+00
260+00
2GI-A
2GI
FS
2201
2203
2204
2205
2206
2207
2208
12' PS
36'
70'
BEGIN NOISEWALL (19-1)
END FENCE
-L- STA 254+69.09
PROP. NOISEWALL (19-1)
BDO
2202
BERM DITCH SEE DETAIL 28B

MATCHLINE SHEET 21
-L- STA 252+00.00

MATCHLINE SHEET 23
-L- STA 265+00.00

95
NC DEPARTMENT OF TRANSPORTATION

N 03°06'16" E 40.79'
N 03°06'16" E 98.44'
+34.55 -L- EX PL
N 03°06'16" E 108.83'

96
TOWN OF CARY
DB 8305 PG 1939
BM 3004 PG 1785
BM 1999 PG 761

JAMISON PARK COMMUNITY ASSOC INC
DB 12804 PG 1561
BM 2002 PG 519-521

S 86°00'00" W 283.70'

92
QUAD TRI LLC
DB 16161 PG 089
BM 1979 PG 361

SEE SHEET 76 FOR -L- PROFILE
SEE SHEETS 2B-35 THRU 2B-36 FOR DRAINAGE DETAILS

6/7/2018
R2721_RDY_PSH_22.dgn
cvolsky

514.99

-L-		
Pls Sta 254+60.65	Pl Sta 268+06.07	Pls Sta 281+29.00
Θs = 0° 46' 23.8"	Δ = 18° 37' 12.0" (RT)	Θs = 0° 46' 23.8"
Ls = 210.00'	D = 0° 44' 11.2"	Ls = 210.00'
LT = 140.00'	L = 2,528.35'	LT = 140.00'
ST = 70.00'	T = 1,275.42'	ST = 70.00'
	R = 7,780.00'	
	SE = 0.03	

NAD 83

LOCHNER

H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
(919) 571-7111
NC License Number F-0159

ECOLOGICAL ENGINEERING
NC FIRM LICENSE Noc F-1148
1151 SE Cary Parkway
Suite 101
Cary, NC 27518
(919) 557-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2721	23
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PAVED SHOULDER

97 KLEIN, WILLIS S & KLEIN, JEAN CREWS
DB 7608 PG 932
DB 1994 PG 1918

98 KLEIN, WILLIS S & KLEIN, JEAN
DB 15988 PG 1121
BM 1994 PG 1918

SALZ, DONALD & SALZ, LEONA
DB 10794 PG 1130
BM 2003 PG 1860

KLEIN, WILLIS S & KLEIN, JEAN
DB 15988 PG 1121
BM 2000 PG 2286

DILLON, GREGORY & DILLON, KATHLEEN
DB 8704 PG 2685
BM 2000 PG 2286

SMITH, JULIE WOMBLE & SMITH, DONALD BRADLEY
DB 10134 PG 2280
BM 1998 PG 2010

MARCANO, FRANK & MARCANO, YANIERE
DB 11647 PG 2473
BM 1998 PG 2010

SOUTH LAKE SUBDIVISION

99 HAYNES, ALEX L
DB 8687 PG 2627
BM 1998 PG 2010

100 ROACH, GREGORY & ROACH, JANET
DB 12631 PG 1609
BM 1998 PG 2010

95 NC DEPARTMENT OF TRANSPORTATION

96 TOWN OF CARY
DB 8305 PG 1939
BM 3004 PG 1785
BM 1999 PG 761

JAMISON PARK COMMUNITY ASSOC INC
DB 12804 PG 1561
BM 2002 PG 519-521

MATCHLINE SHEET 22 -L- STA 265+00.00

MATCHLINE SHEET 24 -L- STA 278+00.00

BEGIN NOISEWALL (18)
END FENCE
-L- Sta. 266+04.01

PROP. NOISEWALL (18)

PROP. NOISEWALL (19-1)

PROP. GUIDERAIL

PROP. GUARDRAIL

SPECIAL CUT DITCH SEE DETAIL 4B

BERM DITCH SEE DETAIL 28B

2' LATERAL DITCH W/CLASS I RIP RAP SEE DETAIL 5B

2303 BDO

2304 2GI-A

2309 2GI FS

CAT-1 TYPE B-77

2302 FS 2GI-A

2305 2GI-A FS

2308 2GI-A FS

2301 FS 2GI

2306 2GI FS

2307 2GI

30" RCP-III

36" RCP-III

15" RCP-III

18" RCP-III

GREU TL-3

270+00

275+00

+85.00 -L- 430.00' LT

+00.00 -L- 410.00' LT

+60.00 -L- 205.22' LT

+45.16 -L- EX P/L

+42.11 -L- EX P/L

+57.21 -L- EX P/L

+54.40 -L- EX P/L

+27.94 -L- EX P/L

+90.21 -L- EX P/L

N 87°46'27" E 274.54'

N 87°46'01" E 377.65'

S 09°23'19" W 28.33'

N 87°46'41" E 118.84'

N 87°46'41" E 100.53'

S 78°28'21" E 76.87'

S 78°28'21" E 294.86'

N 87°54'29" W 2172.46'

N 86°00'00" E 1121.72'

S 86°19'42" E 475.28'

S 73°13'28" W 110.15'

S 73°13'03" W 30.38'

N 86°21'08" W 143.67'

SEE SHEET 76 FOR -L- PROFILE

SEE SHEETS 2B-35 THRU 2B-36 FOR DRAINAGE DETAILS

6B2018
R2721_RDY_PSH_23.dgn
REASON

51499

-L-		
PIs Sta 254+60.65	PI Sta 268+06.07	PIs Sta 281+29.00
Θs = 0° 46' 23.8"	Δ = 18° 37' 12.0" (RT)	Θs = 0° 46' 23.8"
Ls = 210.00'	D = 0° 44' 11.2"	Ls = 210.00'
LT = 140.00'	L = 2,528.35'	LT = 140.00'
ST = 70.00'	T = 1,275.42'	ST = 70.00'
	R = 7,780.00'	
	SE = 0.03	

NAD 83

LOCHNER

H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
(919) 571-7111
NC License Number F-0159

ECOLOGICAL ENGINEERING
NC FIRM LICENSE No: F-1148
1151 SE Cary Parkway
Suite 101
Cary, NC 27518
(919) 557-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2721	24
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PAVED SHOULDER

MATCHLINE SHEET 23
-L- STA 278+00.00

MATCHLINE SHEET 25
-L- STA 291+00.00

100 ROACH, GREGORY & ROACH, JANET
DB 12631 PG 1609
BM 1998 PG 2010

101 COATS, LARRY L
DB 8946 PG 954

CARROLL, DAN S & CARROLL, RITA M
DB 14029 PG 1156
BM 2006 PG 1572

95 NC DEPARTMENT OF TRANSPORTATION

96 TOWN OF CARY
DB 8305 PG 1939
BM 3004 PG 1785
BM 1999 PG 761

102 LAWSON, MICHAEL JR
DB 9391 PG 875
BM 1984 PG 609

103 THE COLE FAMILY TRUST
DB 7300 PG 93
BM 1984 PG 609

NC DEPARTMENT OF TRANSPORTATION
DB 1464 PG 2254

HUGHES, TODD M & HUGHES, STEPHANIE A
DB 12975 PG 1589
BM 2001 PG 2061

BECKETT, GRANT S & BECKETT, STEPHANIE C
DB 11864 PG 2517
BM 2001 PG 2061

SOUTHWICK, DANIEL F & SOUTHWICK, LISA C
DB 9855 PG 2495
BM 2001 PG 2061

JAMISON PARK COMMUNITY ASSOC INC
DB 12804 PG 1561
BM 2002 PG 519-521

WEINBERG, JILL & WEINBERG, CRAIG
DB 10825 PG 1483
BM 2002 PG 519-521

CS Sta. 280+59.00
ST Sta. 282+69.00
END NOISEWALL (I8) -L- Sta. 282+97.04
BEGIN SBG+75

280+00 285+00 290+00

PROP. GUIDERAIL
PROP. GUARDRAIL
PROP. NOISEWALL (I9-I)
PROP. 47" WW FENCE
TYPE B-77
SINGLE FACE BARRIER
GREU TL-3
CAT-1
TYPE B-77

36" RCP-III
24" RCP-III
18" RCP-III
15" RCP-III
2@7'x8' RCBC

3' LATERAL DITCH W/CLASS I RIP RAP SEE DETAIL 7B
3' STANDARD BASE DITCH W/CLASS I RIP RAP SLOPE=3% SEE DETAIL 6B
2' LATERAL DITCH W/CLASS I RIP RAP SEE DETAIL 5B
CLASS II RIP RAP EST 115 TONS EST 180 SY GEOTEXTILE
CLASS B RIP RAP EST 2 TONS EST 7 SY GEOTEXTILE
TOE PROTECTION SEE DETAIL 1B
CLASS I RIP RAP EST 3 TONS EST 7 SY GEOTEXTILE
CLASS II RIP RAP EST 100 TONS EST 175 SY GEOTEXTILE
CLASS I RIP RAP EMBEDDED INTO STREAM BED EST 50 TONS EST 96 SY GEOTEXTILE

INLET DETAIL
NTS

OUTLET DETAIL
NTS

SEE SHEET 77 FOR -L- PROFILE

SEE SHEETS 2B-35 THRU 2B-36 FOR DRAINAGE DETAILS

6/7/2018
R2721_RDY_PSH_24.dgn
cvalsley

51499

LOCHNER

H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
(919) 571-7111
NC License Number F-0159

ECOLOGICAL ENGINEERING
NC FIRM LICENSE No: F-1148
1151 SE Cary Parkway
Suite 101
Cary, NC 27518
(919) 557-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2721	25
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PAVED SHOULDER

NAD 83

MATCHLINE SHEET 24 -L- STA 291+00.00

MATCHLINE SHEET 26 -L- STA 303+00.00

CARROLL, DAN S & CARROLL, RITA M DB 14005 PG 1156 BM 2006 PG 1572

GJH CONSTRUCTION INC DB 12371 PG 1876 BM 2006 PG 1573

QUEEN, JASON & QUEEN, KEISHA DB 14094 PG 1389 BM 2006 PG 1573

GOODWIN JR, KENNETH JOHN & GOODWIN, ELIZABETH HOLLIN DB 13814 PG 379 BM 2006 PG 1573

WILKINS, JERMAINE R DB 16081 PG 2390 BM 2006 PG 1573

104

WARF, M CLAY & WARF, SHERRY JONES DB 14751 PG 1187 BM 2006 PG 1573

95

NC DEPARTMENT OF TRANSPORTATION

105

NC DEPARTMENT OF TRANSPORTATION

DB 11464 PG 2254

DUMAYAS, EMBERLY R, PAT J DB 15650 PG 740 BM 1987 PG 751

POINDEXTER, RANDALL D & POINDEXTER, BRANDY A DB 11302 PG 1245 BM 1987 PG 751

TAYLOR, PAUL H TRUSTEE
TAYLOR, OLIVE D TRUSTEE

ELLINGTON, MARY FRANCES

S 01°50'48" W 24.18'

N 01°50'20" E 216.45'

S 03°20'41" W 165.59'

S 53°04'49" E 100.04'

S 53°09'54" E 236.31'

S 29°52'23" W 326.04'

N 16°45'23" E 266.82'

S 85°23'46" E 150.13'

S 85°24'39" E 107.94'

S 86°41'56" E 42.16'

S 86°40'16" E 212.62'

S 86°40'19" E 429.61'

S 86°40'19" E 186.94'

S 86°40'19" E 220.53'

N 75°48'11" W 132.90'

N 77°17'38" W 1259.43'

N 89°21'25" W 783.33'

N 89°21'25" W 247.00'

N 00°41'46" E 149.46'

S 82° 50' 00.4" E

+66.98 EX P/L

+74.81 EX P/L

+16.87 EX P/L

+29.02 EX P/L

+57.66 EX P/L

+44.18 270.19' LT

+83.34 -L- EX P/L

PROP. 47" WW FENCE

PROP. NOISEWALL (19-1)

END NOISEWALL (19-1)
BEGIN FENCE
-L- STA 293+91.38

PROP. TOLL GANTRY

PROP. GUARDRAIL

PROP. GUIDERAIL

GREU TL-3

CAT-1

SPECIAL CUT DITCH SEE DETAIL 4B

TAIL DITCH W/CLASS I RIP RAP EST DDE=XX CY SLOPE=5.0% SEE DETAIL 6B

SPECIAL LATERAL V DITCH W/CLASS I RIP RAP SEE DETAIL 9B

SPECIAL LATERAL V DITCH W/CLASS B RIP RAP SEE DETAIL 8B

TAIL DITCH W/CLASS I RIP RAP EST DDE=2 CY EST 5 TONS EST 15 SY GEOTEXTILE SLOPE=2.0% SEE DETAIL 6B

BERM DITCH SEE DETAIL 10B

BDO

2GI

2GI-A

FS

24" RCP-III

42" RCP-III

36" RCP-III

15" RCP-III

18" COLONIAL PIPELINE

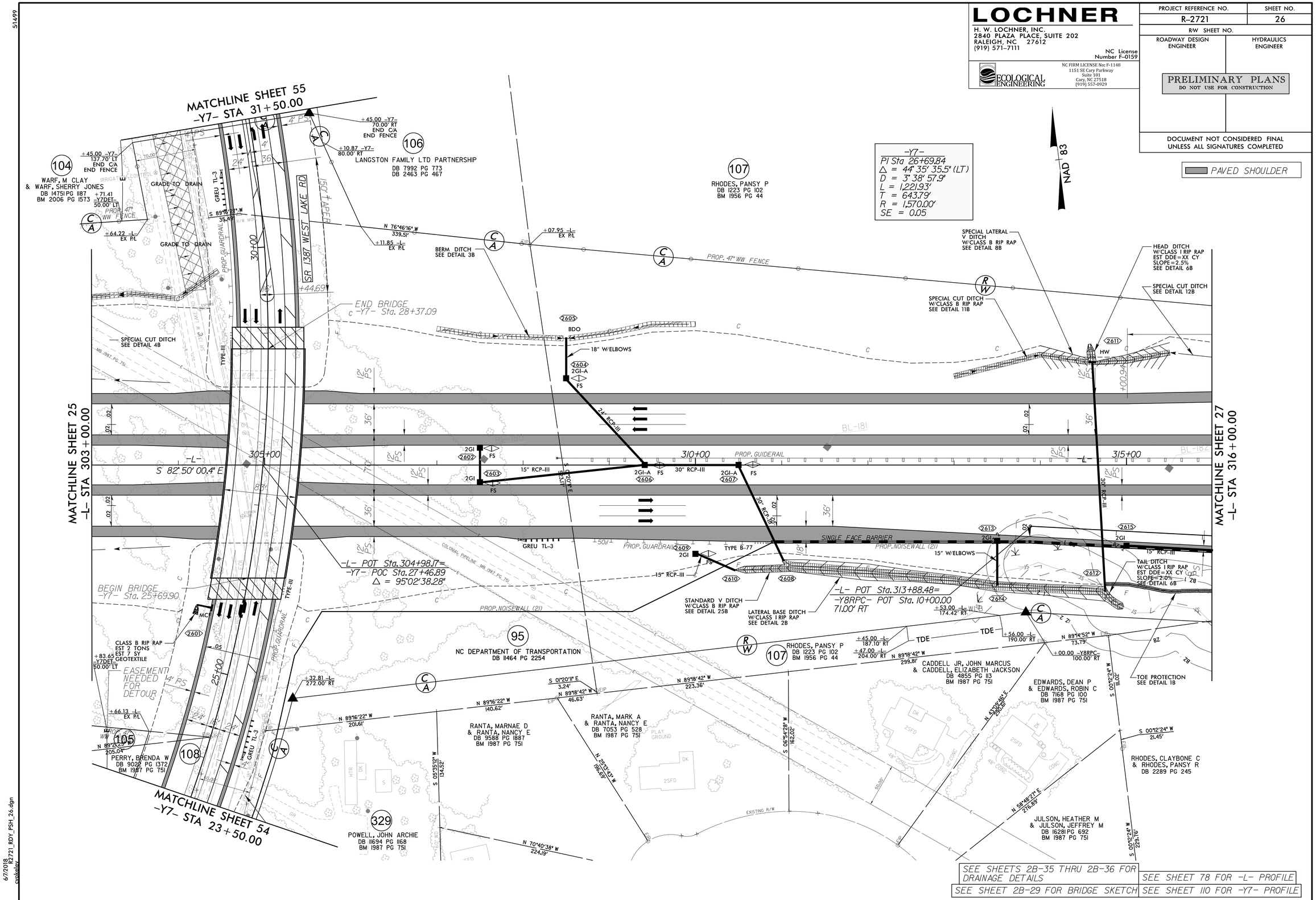
295+00

300+00

SEE SHEET 77 FOR -L- PROFILE

SEE SHEETS 2B-35 THRU 2B-36 FOR DRAINAGE DETAILS

6/7/2018
R2721_RDY_PSH_25.dgn
cokeley



LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
(919) 571-7111
NC License Number F-0159
ECOLOGICAL ENGINEERING
NC FIRM LICENSE No: F-1148
1151 SE Cary Parkway
Suite 101
Cary, NC 27518
(919) 557-0929
PROJECT REFERENCE NO.
R-2721
SHEET NO.
26
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
PAVED SHOULDER
-Y7-
PI Sta 26+69.84
Δ = 44° 35' 35.5" (LT)
D = 3° 38' 57.9"
L = 1,221.93'
T = 643.79'
R = 1,570.00'
SE = 0.05
NAD 83
MATCHLINE SHEET 55
-Y7- STA 31+50.00
MATCHLINE SHEET 25
-L- STA 303+00.00
MATCHLINE SHEET 27
-L- STA 316+00.00
MATCHLINE SHEET 54
-Y7- STA 23+50.00
104
WARF, M CLAY & WARF, SHERRY JONES
DB 14751 PG 1187
BM 2006 PG 1573
106
LANGSTON FAMILY LTD PARTNERSHIP
DB 7992 PG 773
DB 2463 PG 467
107
RHODES, PANSY P
DB 1223 PG 102
BM 1956 PG 44
95
NC DEPARTMENT OF TRANSPORTATION
DB 11464 PG 2254
108
PERRY, BRENDA W
DB 9022 PG 1372
BM 1987 PG 751
329
POWELL, JOHN ARCHIE
DB 11694 PG 1168
BM 1987 PG 751
RANTA, MARNAE D & RANTA, NANCY E
DB 9588 PG 1887
BM 1987 PG 751
RANTA, MARK A & RANTA, NANCY E
DB 7053 PG 528
BM 1987 PG 751
CADDELL JR, JOHN MARCUS & CADDELL, ELIZABETH JACKSON
DB 4855 PG 113
BM 1987 PG 751
EDWARDS, DEAN P & EDWARDS, ROBIN C
DB 7168 PG 100
BM 1987 PG 751
RHODES, CLAYBONE C & RHODES, PANSY R
DB 2289 PG 245
JULSON, HEATHER M & JULSON, JEFFREY M
DB 16281 PG 692
BM 1987 PG 751
SR 1387 WEST LAKE RD
END BRIDGE
-Y7- Sta. 28+37.09
BEGIN BRIDGE
-Y7- Sta. 25+69.90
-L- POT Sta. 304+98.17=
-Y7- POC Sta. 27+46.89
Δ = 95°02'38.28"
-L- POT Sta. 313+88.48=
-Y8RPC- POT Sta. 10+00.00
71.00' RT
SINGLE FACE BARRIER
PROP. 47" WW FENCE
PROP. GUIDERAIL
PROP. NOISEWALL (21)
PROP. GUARDRAIL
GRADE TO DRAIN
SPECIAL CUT DITCH SEE DETAIL 4B
BERM DITCH SEE DETAIL 3B
SPECIAL LATERAL V DITCH W/CLASS B RIP RAP SEE DETAIL 8B
SPECIAL CUT DITCH W/CLASS B RIP RAP SEE DETAIL 11B
HEAD DITCH W/CLASS I RIP RAP EST DDE=XX CY SLOPE=2.5% SEE DETAIL 6B
SPECIAL CUT DITCH SEE DETAIL 12B
TAIL DITCH W/CLASS I RIP RAP EST DDE=XX CY SLOPE=2.0% SEE DETAIL 6B
TOE PROTECTION SEE DETAIL 1B
STANDARD V DITCH W/CLASS B RIP RAP SEE DETAIL 25B
LATERAL BASE DITCH W/CLASS I RIP RAP SEE DETAIL 2B
CLASS B RIP RAP EST 2 TONS EST 7 SY GEOTEXTILE
EASEMENT NEEDED FOR DETOUR
SEE SHEETS 2B-35 THRU 2B-36 FOR DRAINAGE DETAILS
SEE SHEET 78 FOR -L- PROFILE
SEE SHEET 2B-29 FOR BRIDGE SKETCH
SEE SHEET 110 FOR -Y7- PROFILE

LOCHNER
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(919) 571-7111
NC License Number F-0159

ECOLOGICAL ENGINEERING
NC FIRM LICENSE No: F-1148
1151 SE Cary Parkway
Suite 101
Cary, NC 27518
(919) 557-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2721	27
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

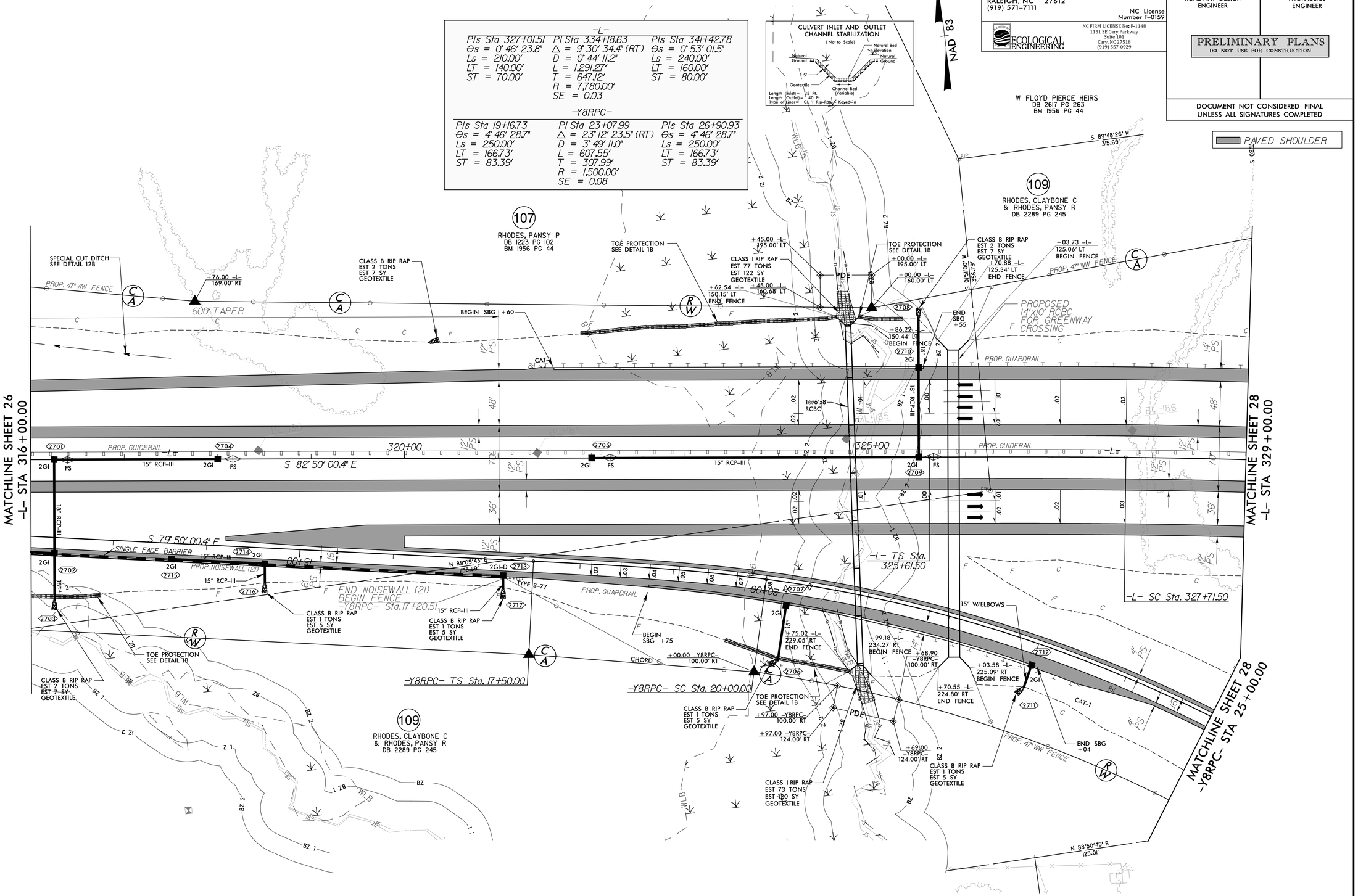
PAVED SHOULDER

-L-

PIs Sta 327+01.51	PI Sta 334+18.63	PIs Sta 341+42.78
Θs = 0° 46' 23.8"	Δ = 9° 30' 34.4" (RT)	Θs = 0° 53' 01.5"
Ls = 210.00'	D = 0° 44' 11.2"	Ls = 240.00'
LT = 140.00'	L = 1,291.27'	LT = 160.00'
ST = 70.00'	T = 647.12'	ST = 80.00'
	R = 7,780.00'	
	SE = 0.03	

-Y8RPC-

PIs Sta 19+16.73	PI Sta 23+07.99	PIs Sta 26+90.93
Θs = 4° 46' 28.7"	Δ = 23° 12' 23.5" (RT)	Θs = 4° 46' 28.7"
Ls = 250.00'	D = 3° 49' 11.0"	Ls = 250.00'
LT = 166.73'	L = 607.55'	LT = 166.73'
ST = 83.39'	T = 307.99'	ST = 83.39'
	R = 1,500.00'	
	SE = 0.08	



SEE SHEETS 2B-35 THRU 2B-36 FOR DRAINAGE DETAILS

SEE SHEET 78 FOR -L- PROFILE

SEE SHEET 95 FOR -Y8RPC- PROFILE

5/14/99
6/7/2018 R2721_RDY_PSH_27.dgn
cvokeley

REVISIONS

LOCHNER
H. W. LOCHNER, INC.
3840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
(919) 571-7111

NC License Number P-0159

GEOLOGICAL ENGINEERING

NC FIRM LICENSE No C-199
1111 W Cary Parkway
Suite 202
Cary, NC 27513
(919) 557-5400

PROJECT REFERENCE NO.	SHEET NO.
R-2721	28
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CULVERT INLET AND OUTLET CHANNEL STABILIZATION

Inlet Rock Apron
Outlet Rock Apron
Length Bottom = W + 2L
Length Top = W + 2L + 2(1.5 x Depth of Culvert) Or 2 Rip Rap + Reveals

MATCHLINE SHEET 57
-Y8- STA 38+00.00

MATCHLINE SHEET 27
-L- STA 329+00.00

MATCHLINE SHEET 27
-Y8RPC- STA 25+00.00

MATCHLINE SHEET 56
-Y8- STA 23+00.00

MATCHLINE SHEET 29
-L- STA 355+00.00

NORTH

-Y8-
PI Sta 23+00.32	PI Sta 327+01.51	PI Sta 334+18.63	PI Sta 341+42.78
Δ = 5°06'20.1" (RT)	Δe = 0°46'23.8"	Δ = 9°30'34.4" (RT)	Δe = 1°53'01.5"
D = 1°57'17.7"	Le = 200.00'	D = 1°44'11.2"	Le = 200.00'
L = 534.66'	Lt = 140.00'	L = 1,256.27'	Lt = 160.00'
T = 267.52'	St = 70.00'	T = 629.52'	St = 80.00'
R = 6,000.00'		R = 3,780.00'	
SE = 0.02		SE = 0.03	

-Y8RPA-
PI Sta 16+00.51	PI Sta 21+46.31	PI Sta 26+18.96	PI Sta 29+82.23	PI Sta 31+56.58
Δe = 2°06'51.2"	Δ = 80°08'12.7" (RT)	Δe = 2°06'51.2"	Δe = 15°54'55.8"	Δ = 22°56'12.2" (LT)
Le = 200.00'	D = 2°06'51.2"	Le = 200.00'	Le = 250.00'	D = 12°43'56.6"
Lt = 133.34'	L = 947.71'	Lt = 133.34'	Lt = 187.35'	L = 180.14'
St = 66.68'	T = 618.11'	St = 66.68'	St = 93.95'	T = 91.25'
	R = 41.00'			R = 450.00'
	SE = 0.06			SE = 0.08

-Y8RPB-
PI Sta 18+19.73	PI Sta 23+07.99	PI Sta 28+99.93	PI Sta 32+91.07	PI Sta 37+27.27
Δe = 4°46'28.7"	Δ = 53°15'23.5" (RT)	Δe = 4°46'28.7"	Δe = 9°35'57.5"	Δ = 59°00'36.8" (LT)
Le = 250.00'	D = 3°49'11.0"	Le = 200.00'	Le = 200.00'	D = 9°32'57.5"
Lt = 166.73'	L = 607.59'	Lt = 166.73'	Lt = 133.53'	L = 303.79'
St = 83.39'	T = 327.39'	St = 83.39'	St = 66.84'	T = 155.23'
	R = 1,500.00'			R = 600.00'
	SE = 0.08			SE = 0.08

-Y8LPA-
PI Sta 10+83.34	PI Sta 14+19.32	PI Sta 19+14.02	PI Sta 20+75.06
Δe = 11°54'44.4"	Δe = 31°08'20.4"	Δ = 107°53'35.2" (LT)	Δe = 31°08'20.4"
Le = 250.00'	Le = 250.00'	D = 24°54'40.4"	Le = 250.00'
Lt = 166.67'	Lt = 169.32'	L = 489.31'	Lt = 169.32'
St = 83.34'	St = 85.75'	T = 414.20'	St = 85.75'
		R = 230.00'	
		SE = 0.08	

-Y8LPC-
PI Sta 11+67.15	PI Sta 16+79.76	PI Sta 18+43.27	
Δe = 0°53'07.8"	Δ = 123°49'23.3" (LT)	Δe = 31°08'20.4"	
Ge = 31°10'56.7"	D = 24°54'40.4"	Le = 250.00'	
Le = 250.00'	L = 496.54'	Lt = 169.32'	
Lt = 167.15'	T = 405.76'	St = 85.75'	
St = 88.59'	R = 230.00'		
	SE = 0.08		

-Y8RPC-
PI Sta 26+90.93	PI Sta 29+98.01	PI Sta 32+92.71		
Δe = 4°46'28.7"	Δe = 9°35'57.5"	Δ = 59°00'36.8" (LT)		
Le = 200.00'	Le = 200.00'	D = 9°32'57.5"		
Lt = 166.73'	Lt = 133.53'	L = 303.79'		
St = 83.39'	St = 66.84'	T = 155.23'		
		R = 600.00'		
		SE = 0.08		

BELLS LAKE RD
7,800 / 11,000
1,300 / 2,600
4,300 / 7,200
25,200 / 60,300
26,200 / 58,400
COMPLETE 540
COMPLETE 540
4,300 / 8,500
2,200 / 2,400
8,400 / 13,200
BELLS LAKE RD
2018 ADT
2040 ADT

SEE SHEETS 2B-35 & 2B-36 FOR DRAINAGE DETAILS
SEE SHEET 2B-29 & 2B-33 FOR BRIDGE SKETCHES
SEE SHEET 111 FOR -Y8- PROFILE
SEE SHEET 79 FOR -L- PROFILE
SEE SHEET 93 FOR -Y8LPA- PROFILE
SEE SHEET 93 FOR -Y8LPC- PROFILE
SEE SHEET 94 FOR -Y8RPA- PROFILE
SEE SHEET 95 FOR -Y8RPC- PROFILE

★ PROPOSED SIGNAL
PAVED SHOULDER
PAVEMENT REMOVAL

GRAPHIC SCALE
0
PLANS

LOCATION:	
TIP NO.:	COUNTY:
DESIGNED BY:	
CHECKED BY:	DATE:

51499

LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
(919) 571-7111
NC License Number F-0159

ECOLOGICAL ENGINEERING
NC FIRM LICENSE No: F-1148
1151 SE Cary Parkway
Suite 101
Cary, NC 27518
(919) 557-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2721	29
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PAVED SHOULDER

INLET DETAIL
NTS
EXCAVATION = 25 CY
1@ 6' x 8' RCBC
NG
CLASS I RIP RAP W/ GEOTEXTILE (TYP) THICKNESS = 1.5'
CLASS II RIP RAP W/GEOTEXTILE(TYP) THICKNESS = 2'

OUTLET DETAIL
NTS
EXCAVATION = 22 CY
1@ 6' x 8' RCBC
NG
CLASS I RIP RAP W/ GEOTEXTILE (TYP) THICKNESS = 1.5'
CLASS II RIP RAP W/GEOTEXTILE(TYP) THICKNESS = 2'

-Y9-

PI Sta 15+73.07	PI Sta 18+66.15
Δ = 2° 33' 28.9" (LT)	Δ = 2° 38' 33.1" (LT)
D = 1° 32' 54.7"	D = 1° 01' 56.5"
L = 165.19'	L = 255.97'
T = 82.61'	T = 128.01'
R = 3,700.00'	R = 5,550.00'
SE = NC	SE = NC

-Y8RPA-

Pls Sta 16+00.91	PI Sta 21+46.31	Pls Sta 26+81.96
Θs = 2° 06' 51.2"	Δ = 20° 02' 12.7" (RT)	Θs = 2° 06' 51.2"
Ls = 200.00'	D = 2° 06' 51.2"	Ls = 200.00'
LT = 133.34'	L = 947.71'	LT = 133.34'
ST = 66.68'	T = 478.75'	ST = 66.68'
	R = 2,710.00'	
	SE = 0.06	

117 BUFFALOE, JOHN MICHAEL DB 2924 PG 683

131 BUFFALOE, JOHN MICHAEL DB 3048 PG 899

132 HORTON, MADIE HARRIS DB 2449 PG 478

133 GARCIA, DANIEL RODRIGUEZ & RODRIGUEZ, ANA M DB 14007 PG 1564 BM 1979 PG 716

134 SMITH, BRYAN D & SMITH, MELINDA H DB 7438 PG 302 BM 1979 PG 716

135 DELGADO, CARLOS A & DELGADO, ZOILA A DB 8259 PG 234 BM 1979 PG 716

136 PRIOR CONSTRUCTION CO INC DB 1939 PG 716 BM 1979 PG 716

137 GRESSLER, JOYCE ANN & CARL FREDERICK III DB 013626 PG 1342

138 PRIOR CONSTRUCTION CO INC DB 1939 PG 716 BM 1979 PG 716

PITTMAN, CORNELIA J DB 12972 PG 2024 BM 1979 PG 716

DECOLA, RICHARD A DB 11011PG 470 BM 1979 PG 716

MCLAMB, DONALD W SR & MCLAMB, DEBORAH SP DB 3174 PG 147 BM 1979 PG 716

STANDARD V DITCH W/CLASS I RIP RAP 0.3% SLOPE SEE DETAIL 21B

2' BASE DITCH W/CLASS I RIP RAP 0.3% SLOPE SEE DETAIL 22B

CONCRETE DITCH SEE DETAIL 20B

-Y9- PC Sta. 17+38.14

N 16° 12' 28.9" E

-Y9- PT Sta. 16+55.65

+00.00 -Y8RPA- 200.00' RT

+47.00 -Y8RPA- 203.00' RT

+90.00 -Y8RPA- 195.00' RT

+00.00 -Y8RPA- 125.00' RT

+50.00 -Y8RPA- 120.00' RT

+20.00 -L- 190.00' LT

15" RCP-III

+30.00 -Y8RPA- 130.00' RT

BERM DITCH SEE DETAIL 29B

-Y9- POT Sta. 14+76.68
-Y8RPA- POT Sta. 12+01.10
= 93°41'01.43"

-Y8RPA- TS Sta. 14+67.57

-Y9- PC Sta. 14+90.46

-L- POT Sta.359+88.39
-Y8RPA- POT Sta. 10+00.00
71.00' LT

-Y8RPA-
N 67° 33' 00.7" W

S 71° 40' 00.7" E

MATCHLINE SHEET 28 -L- STA 355+00.00

MATCHLINE SHEET 30 -L- STA 365+00.00

MATCHLINE SHEET 30 -Y10A- STA 14+00.00

END NOISEWALL (25) -L- STA 365+78.81

TOE PROTECTION SEE DETAIL 1B

PROP. 47" WW FENCE

PROP. NOISEWALL (25)

PROP. GUARDRAIL

PROP. GUIDERAIL

SPECIAL CUT DITCH SEE DETAIL 4B

CLASS B RIP RAP EST 3 TON EST 10 SY GEOTEXTILE

CLASS I RIP RAP EMBEDDED INTO STREAM BED EST 25 TONS EST 60 SY GEOTEXTILE

CLASS II RIP RAP EST 95 TONS EST 120 SY GEOTEXTILE

+71.88 -L- 103.36' LT BEGIN FENCE

+53.13 -L- 102.70' LT END FENCE CAT-1

1@6'x8' RCBC

36" RCP-III

36" W/ELBOWS +93.83 -L- 111.91' RT BEGIN FENCE

+75.09 -L- 112.58' RT END FENCE

+28.00 -L- 160.11' RT

+84.99 -L- 162.28' RT

+25.00 -L- 158.36' RT

CLASS II RIP RAP EST 205 TONS EST 127 SY GEOTEXTILE

CLASS B RIP RAP EST 2 TONS EST 7 SY GEOTEXTILE

3' BASE DITCH W/CLASS I RIP RAP 0.6% SLOPE SEE DETAIL 6B

-Y10A- PC Sta. 13+83.69

+83.69 -Y10A- 50.00' LT

LATERAL V DITCH W/CLASS I RIP RAP SEE DETAIL 23B

+45.00 -Y10A- 50.00' LT HW

PIPE INLET CHANNEL STABILIZATION SEE DETAIL 24B SLOPE = 4.5% EST DDE = ? CY

+91.00 -L- 279.00' RT

+43.00 -Y10A- 50.00' LT

+96.08 -L- 284.00' RT

+48.83 -Y10A- EX R/W

-Y10A- POT Sta. 10+00.00

BEGIN CONSTRUCTION

-Y10A- STA. 10+50.00

PIPE OUTLET CHANNEL STABILIZATION SEE DETAIL 24B SLOPE = 5.0% EST DDE = ? CY

+20.00 -Y10A- 50.00' RT

+20.00 -Y10A- 80.00' RT

+55.00 -Y10A- 50.00' RT

+55.00 -Y10A- 80.00' RT

+40.00 -Y10A- EX R/W

+13.00 -L- 174.89' RT

600' TAPER

+53.00 -L- 172.60' RT

+55.00 -Y9- 67.00' RT

+55.00 -Y9- 72.00' LT

+08.84 -Y9- 29.86' RT

+89.65 -Y9- 30.14' LT

S 88°54'11" E 298.22'

S 88°46'05" E 298.17'

S 88°31'51" E 326.85'

N 18° 45' 59.9" E

-Y9-

-Y10A-
PI Sta 16+34.32
Δ = 36° 57' 23.7" (RT)
D = 7° 38' 22.0"
L = 483.76'
T = 250.63'
R = 750.00'
SE = NC

SEE SHEET 80 FOR -L- PROFILE
SEE SHEET 113 FOR -Y10A- PROFILE
SEE SHEET 95 FOR -Y8RPA- PROFILE
SEE SHEETS 2B-35 THRU 2B-36 FOR DRAINAGE DETAILS

6/7/2018
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cooksley

51499

MATCHLINE SHEET 59
-Y10- STA 21+00.00

MATCHLINE SHEET 29
-L- STA 368+00.00
-Y10A- STA 14+00.00

MATCHLINE SHEET 31
-L- STA 379+75.00

MATCHLINE SHEET 58
-Y10- STA 12+00.00

-Y10-
PI Sta 19+83.36
△ = 1° 08' 48.2" (LT)
D = 0° 28' 38.9"
L = 240.17'
T = 120.09'
R = 12,000.00'
SE = NC

-Y10- PC Sta. 18+63.27
BEGIN NOISEWALL (27)
-L- STA. 373+23.94

-Y10- POT Sta. 20+43.05
-Y10- POT Sta. 12+81.61
△ = 89° 44' 14.24"

-Y10- PT Sta. 20+23.18

-L- POT Sta. 373+28.66
-Y10- POT Sta. 16+40.97
△ = 74° 35' 46.47"

-Y10A- PRC Sta. 18+67.45

BEGIN BRIDGE
-Y10- STA. 15+11.85

END BRIDGE
-Y10- STA. 17+14.66

-Y10A-

PI Sta 16+34.32	PI Sta 19+47.93
△ = 36° 57' 23.7" (RT)	△ = 35° 41' 23.7" (LT)
D = 7° 38' 22.0"	D = 22° 55' 05.9"
L = 483.76'	L = 155.73'
T = 250.63'	T = 80.48'
R = 750.00'	R = 250.00'
SE = NC	SE = 0.03

142 CARR, MICHAEL A
NO DEED FOUND
BK DB 4303 PG 356
BM 1977 PG 289

141 MILLER, MARY C
DB 11973 PG 619
BM 1976 PG 119

132 HORTON, MADIE HARRIS
DB 2449 PG 478

140 WOOTEN, ANNETTE & WOOTEN, TIM
DB 11800 PG 888
BM 1976 PG 119

139 MCKINNEY, DOUGLAS M & MCKINNEY, KIMBERLY P
DB 3032 PG 968
BM 1976 PG 119

147 SINICROPE, JACQUELINE H & HINKEL, JOHN R
NO DEED FOUND
BM 1976 PG 119

HINKEL, JOHN R
NO DEED FOUND
BM 1976 PG 119

146 DEAN, ANTHONY L & DEAN, CAROLYN H
DB 13653 PG 2408
BM 1987 PG 836

TUTOR, KARON GALE & TUTOR, SHARON DALE
DB 12388 PG 1973
BM 1987 PG 836

PRICE, ELISE & & PRICE, CHRISTOPHER MATISON
DB 16289 PG 2500
BM 1987 PG 836

148 PASSNER, LAURA LYNNE
DB 16386 PG 2781
BM 1987 PG 836

149 RUTHERFORD, NEAL A. & RUTHERFORD, JOY E.
DB 15277 PG 1211
BM 1987 PG 836

143 NC DEPARTMENT OF TRANSPORTATION
DB 11679 PG 1282
BM 1987 PG 836

144 NC DEPARTMENT OF TRANSPORTATION
DB 11004 PG 1498
BM 1987 PG 836

145 WISEMAN JR, MOSE B & WISEMAN, MARTHA D
DB 4185 PG 001
BM 1987 PG 836

150 NC DEPARTMENT OF TRANSPORTATION
DB 8081 PG 1131
BM 1987 PG 836

151 WARREN JR, LEON S & WARREN, BETTY O
DB 3159 PG 31
BM 1976 PG 119

153 NC DEPARTMENT OF TRANSPORTATION
DB 9322 PG 1061
BM 1987 PG 836

154 COLEMAN, GRANT V & COLEMAN, SUSAN C
DB 4255 PG 337
BM 1987 PG 836

152 NC DEPARTMENT OF TRANSPORTATION
DB 11691 PG 1628
BM 1976 PG 119

136 PRIOR CONSTRUCTION CO INC
NO DEED FOUND
WELL SITE
BM 1979 PG 716

155 SAMJLAGIC, NIJAZ & SAMJLAGIC, MIRSADA
DB 10888 PG 2749
BM 1976 PG 119

156 SMITH, WILLIAM ELWOOD & SMITH, MELANIE H
DB 5635 PG 44
BM 1987 PG 836

157 BOWSER, MARIA R
DB 13745 PG 1947
BM 1987 PG 836

158 MILLS, WILLIE B & MILLS, EVA L
DB 4496 PG 29
BM 1987 PG 836

160 GRISEL, BRYAN & GRISEL, CANDACE
DB 13196 PG 1903

159 PRIOR CONSTRUCTION CO INC
DB 2304 PG 320
BM 1979 PG 716

138 PRIOR CONSTRUCTION CO INC
DB 2304 PG 320
BM 1979 PG 716

161 LOW, MARY CAMILLA
DB ? PG ?

162 NEWMAN, KELLIE & NEWMAN JOHN
DB ? PG ?

UREY, DAWN ROCHELLE
DB 5511 PG 001
BM 1987 PG 836

PALLADI & PALLAD
DB 56
BM 19

SEE SHEETS 2B-35 THRU 2B-36 FOR DRAINAGE DETAILS
SEE SHEET 80 FOR -L- PROFILE
SEE SHEET 113 FOR -Y10- PROFILE
SEE SHEET 2B-30 FOR BRIDGE SKETCH
SEE SHEET 113 FOR -Y10A- PROFILE

PAVED SHOULDER

NAD 83

LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
(919) 571-7111
NC License Number F-0159

ECOLOGICAL ENGINEERING
NC FIRM LICENSE No: F-1148
1151 SE Cary Parkway
Suite 101
Cary, NC 27518
(919) 557-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2721	30
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

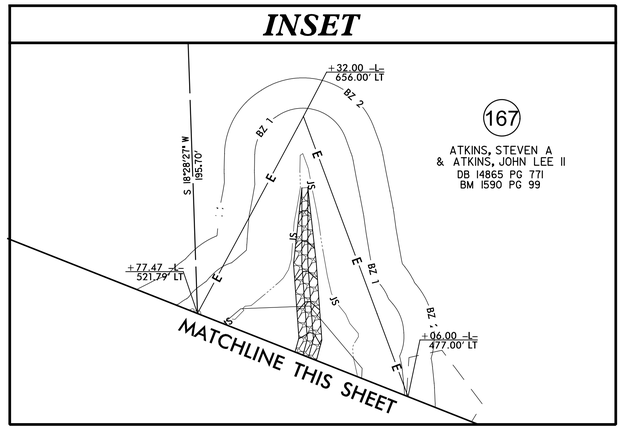
6/7/2018
R-2721_RDY_PSH_30.dgn
cvokeley

514.99

-L-		
PIs Sta 388+02.52	PI Sta 400+67.41	PIs Sta 412+86.04
Θs = 2° 11' 14.4"	△ = 28° 07' 31.0" (RT)	Θs = 2° 11' 14.4"
Ls = 350.00'	D = 1° 14' 59.7"	Ls = 350.00'
LT = 233.35'	L = 2,250.19'	LT = 233.35'
ST = 116.68'	T = 1,148.24'	ST = 116.68'
	R = 4,584.00'	
	SE = 0.05	

POND SHALL BE DRAINED IN ACCORDANCE WITH THE "POND DRAINAGE PLAN REQUIREMENT" SPECIAL PROVISION. POND MUCK SHALL BE REMOVED TO A DEPTH DETERMINED BY THE ENGINEER AND DISPOSED OF IN ACCORDANCE WITH THE "WASTE AND BORROW SOURCES" SPECIAL PROVISION. REMOVED MUCK SHALL BE REPLACED WITH A SUITABLE MATERIAL APPROVED BY THE ENGINEER TO SUPPORT THE INSTALLATION OF PROPOSED RIP RAP LINED CHANNELS.

INSET



167
ATKINS, STEVEN A
& ATKINS, JOHN LEE II
DB 14865 PG 771
BM 1590 PG 99

N 21°27'09" E 250.35'
N ANN
N 69°38'35" W 259.11'
+69.00 -L- 442.00' LT
+47.00 -L- 424.00' LT
STANDARD BASE DITCH SEE DETAIL 34B SLOPE = 3.1% DDE = XX CY
163
ORR, PATRICIA G
DB 15426 PG 1785
BM 1987 PG 836
+39.00 -L- 383.00' LT
S 22°05'35" E 253.52'
S 22°05'35" E 150.00'
+95.00 -L- 337.50' LT
148
PASSNER, LAURA LYNNE
DB 16386 PG 2781
BM 1987 PG 836
S 69°00'48" E 393.22'
149
RUTHERFORD, NEAL A. & RUTHERFORD, JOY E.
DB 15277 PG 1211
BM 1987 PG 836
+97.00 -L- EX P/L
+95.00 -L- 163.61' LT
+60.11 -L- EX P/L
S 86°28'58" E 119.93'
158
MILLS, WILLIE B & MILLS, EVA L
DB 4496 PG 29
BM 1987 PG 836
S 6°50'38" E 50.00'
N 6°50'38" W 50.00'

51499

-L-		
PI Sta 388+02.52	PI Sta 400+67.41	PI Sta 412+86.04
Es = 2° 11' 14.4"	Δ = 28° 07' 31.0" (RT)	Es = 2° 11' 14.4"
Ls = 350.00'	D = 1° 14' 59.7"	Ls = 350.00'
LT = 233.35'	L = 2,250.19'	LT = 233.35'
ST = 116.68'	T = 1,148.24'	ST = 116.68'
	R = 4,584.00'	
	SE = 0.05	

-Y11-	-Y11-
PI Sta 16+11.47	PI Sta 26+99.71
Δ = 28° 52' 04.0" (RT)	Δ = 46° 49' 01.8" (LT)
D = 6° 52' 41.7"	D = 6° 52' 41.7"
L = 419.70'	L = 680.66'
T = 214.40'	T = 360.62'
R = 833.00'	R = 833.00'
SE = 0.06	SE = 0.06

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PROJECT REFERENCE NO.	SHEET NO.
R-2721	32
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
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PAVED SHOULDER

NAD 83

MATCHLINE SHEET 60
-Y11- STA 25+00.00

MATCHLINE SHEET 31
-L- STA 394+00.00

MATCHLINE SHEET 33
-L- STA 407+00.00

MATCHLINE SHEET 58
-Y11- STA 16+00.00

167 ATKINS, STEVEN A & ATKINS, JOHN LEE II
DB 14865 PG 771
DB 1590 PG 99

42 WILLIAMS, J W HEIRS
DB 1000 PG 001
BM 1979 PG 261

169 COUNCIL, VERONICA WILLIAMS
DB 3923 PG 276
BM 1986 PG 285

170 ENNIS, MICHAEL A
DB 8587 PG 1553

171 ENNIS & ATKINS NURSERY
DB 4263 PG 438

172 WILLIAMS, J W HEIRS
DEED NOT FOUND
~~BM 1986 PG 285~~

174 WILLIAMS, KINSTON D & WILLIAMS, EULA
DB 2769 PG 721
BM 1979 PG 261

173 WILLIAMS, CATHERINE HEIRS
NO DEED FOUND
BM 1979 PG 261

168 WOODARD, DAVID LAMONT & BAILEY, PEGGIE WOODARD
DB 4123 PG 797
BM 2006 PG 111
BM 2001PG 23

PERKINS, ALTHEA W & PERKINS, TIMOTHY L
DB 11828 PG 191
BM 2006 PG 111

34 WILLIAMS, KINSTON D & WILLIAMS, EULA M
DB 15904 PG 293
BM 1989 PG 1244

175 ENNIS, TERRY LANE
DB 2865 PG 184

176 ENNIS, TERRY LANE
DB 8209 PG 1288

177 ENNIS, TERRY LANE
DB 8209 PG 1288

-L- PC Sta. 23+39.09
-L- POC Sta. 401+77.30
-Y11- POT Sta. 20+69.44
Δ = 99°13'32.58"
BEGIN BRIDGE
-Y11- STA.19+77.63
-Y11- PT Sta. 18+16.76
END BRIDGE
-Y11- STA.21+61.01
END NOISEWALL (27)
-L- Sta.394+85.02
END NOISEWALL (28)
-L- STA.394+56.24
EASEMENT NEEDED FOR DETOUR
EASEMENT NEEDED FOR DETOUR

CLASS B RIP RAP
EST 1 TON
EST 5 SY GEOTEXTILE
SPECIAL CUT DITCH
SEE DETAIL 39B
BEGIN SBG +72
END SBG +54
BEGIN SBG +80
BERM 'V' DITCH
SEE DETAIL 38B
STANDARD 'V' DITCH
SEE DETAIL 42B
SLOPE = 0.079 FT/FT
EST DDE =
EST XX TONS
EST XX SY GEOTEXTILE

PROP. 47" WW FENCE
PROP. GUIDERAIL
PROP. GUARDRAIL
GREU TL-3
TYPE B-77
TYPE III
TYPE IV
15" RCP-III
15" RCP-IV
18" RCP-IV
18" WELBOWS
24" WELBOWS
30" MEDIAN TAPER
SR 1404 JOHNSON PND RD
SR 1404 JOHNSON MILL RD
BDO
PDE
EX P/L
TDE
RW
CA

SEE SHEET 81 FOR -L- PROFILE
SEE SHEET 114 FOR -Y11- PROFILE
SEE SHEET 2B-31 FOR BRIDGE SKETCH
SEE SHEETS 2B-35 THRU 2B-36 FOR DRAINAGE DETAILS

6/7/2018
cookelw
R2721_RDY_PSH_32.dgn

51499

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PROJECT REFERENCE NO.	SHEET NO.
R-2721	33
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ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
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PAVED SHOULDER

NAD 83

171
ENNIS & ATKINS NURSERY
DB 4263 PG 438

177
ENNIS, JOSEPH LEO
& ENNIS, YVONNE GOWER
DB 6436 PG 436

178
ARNOLD, WINIFRED W
DB 13383 PG 540
BM 2008 PG 1492

POND SHALL BE DRAINED IN ACCORDANCE WITH THE "POND DRAINAGE PLAN REQUIREMENT" SPECIAL PROVISION. POND MUCK SHALL BE REMOVED TO A DEPTH DETERMINED BY THE ENGINEER AND DISPOSED OF IN ACCORDANCE WITH THE "WASTE AND BORROW SOURCES" SPECIAL PROVISION. REMOVED MUCK SHALL BE REPLACED WITH A SUITABLE MATERIAL APPROVED BY THE ENGINEER TO SUPPORT THE INSTALLATION OF PROPOSED RIP RAP LINED CHANNELS.

+50.00 -L- 465.00' LT

FIRST 55'- SLOPE= 0.061 FT/FT

STANDARD BASE DITCH
SEE DETAIL 47B
SLOPE = 0.0045 FT/FT
EST = DDE
EST = TONS
EST = GEOTEXTILE

POND TO BE DRAINED

+00.00 -L- 310.00' LT

BANK STABILIZATION
CLASS II RIP RAP
EST 250 TONS
EST 225 SY GEOTEXTILE

CLASS I RIP RAP
EMBEDDED INTO
STREAM BED
EST 22 TONS
EST 85 SY GEOTEXTILE

CLASS B RIP RAP
EST 2 TON
EST 7 SY GEOTEXTILE

STANDARD 'V' DITCH
SEE DETAIL 42B
SLOPE = 0.035 FT/FT
DDE = ?

SPECIAL CUT DITCH
SEE DETAIL 43B

+50.00 -L- 220.00' LT

FIRST 50'- SLOPE= 0.078 FT/FT

STANDARD BASE DITCH
SEE DETAIL 47B
SLOPE = 0.018 FT/FT
EST = DDE
EST = TONS
EST = GEOTEXTILE

-L- CS Sta. 411+69.36

TOE PROTECTION
SEE DETAIL 1B

+90.00 -L- 135.58' LT

+28.00 -L- 166.00' LT

+28.00 -L- 141.48' LT

PDE

+00.00 -L- 166.00' LT

+00.00 -L- 145.56' LT

PROPOSED 2@6'x5' RCBC

+19.36 -L- 153.00' LT

LATERAL BASE DITCH
SEE DETAIL 45B

-Y12A- POT Sta. 10+00.00

BEGIN CONSTRUCTION
-Y12A- STA. 10+50.00

+50.00 -Y12A- 50.00' LT

CLASS B RIP RAP
EST 1 TON
EST 5 SY GEOTEXTILE

SPECIAL CUT DITCH
SEE DETAIL 19B

-Y12A-
S 40° 23' 15.1" E

+50.00 -Y12A- 59.02' RT

3310 SPECIAL LATERAL BASE DITCH SEE DETAIL 44B +04.00 -L- 154.00' LT

SPECIAL CUT DITCH
SEE DETAIL 4B

+32.00 -L- 143.00' LT

PROP. 47" WW FENCE

N 85°59'45" E 148.97'

+69.36 -L- 135.00' LT

+56.05 -L- 130.51' LT
END FENCE

+82.69 -L- 135.85' LT
BEGIN FENCE

PROP. GUARDRAIL

TOE PROTECTION
SEE DETAIL 1B

-L- ST Sta. 415+19.36

S 85°53'32" E 530.58'

3309 2GI

15" RCP-IV

3311 24" 2GI-A

CAT-1

3314 2GI

15" RCP-IV

3318 2GI

24" RCP-III

END SBG+08

BEGIN SBG+25

3307 2GI GREU TL-3

S 39° 10' 00.9" E

3313 CAT-1

PROP. GUARDRAIL

3315 2GI

18" RCP-III

CAT-1

3316 2GI

3317

END SBG+18

BEGIN SBG+55

CLASS B RIP RAP
EST 2 TON
EST 7 SY GEOTEXTILE

+67.00 -L- 173.67' RT

+67.00 -L- 262.00' RT

+39.00 -L- 262.00' RT

TDE

TDE

TDE

MATCHLINE SHEET 32
-L- STA 407+00.00

410+00

415+00

MATCHLINE SHEET 34
-L- STA 420+00.00

3302 2GI FS

3304 2GI FS

3305 2GI

3306

3307 2GI FS

3308 2GI

3312 2GI

2GI-A 24" 3301 24" 3303

GREU TL-3

BEGIN SBG+00

SLOPE=3.5%

SLOPE=0.9%

1@7'x8' RCBC

SPECIAL LATERAL BASE DITCH
SEE DETAIL 44B

+69.36 -L- 189.00' RT

+12.00 -L- 166.00' RT

+04.00 -L- 186.00' RT

PROP. 47" WW FENCE

TOE PROTECTION
SEE DETAIL 1B

+18.24 -L- 135.92' RT
END FENCE

+41.74 -L- 132.49' RT
BEGIN FENCE

TOE PROTECTION
SEE DETAIL 1B

+75.00 -L- 184.32' RT

+75.00 -L- 195.00' RT

LATERAL BASE DITCH
SEE DETAIL 46B

+19.36 -L- 183.00' RT

+85.00 -L- 195.00' RT

+85.00 -L- 181.08' RT

+56.00 -L- 179.00' RT

Q10 = 340 CFS
V10 = 9.0 FTS
Q50 = 460 CFS
V50 = 9.6 FTS

PROP. TOLL GANTRY

PROP. 47" WW FENCE

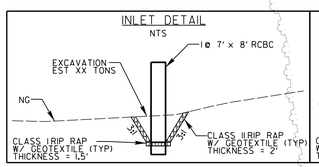
CLASS I RIP RAP
EMBEDDED INTO
STREAM BED
EST 35 TONS
EST 105 SY
GEOTEXTILE

CLASS II RIP RAP
EST 210 TONS
EST 235 SY
GEOTEXTILE

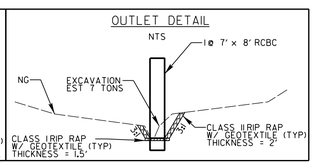
-L-

PIs Sta 388+02.52	PI Sta 400+67.41	PIs Sta 412+86.04
Θs = 2° 11' 14.4"	Δ = 28° 07' 31.0" (RT)	Θs = 2° 11' 14.4"
Ls = 350.00'	D = 1° 14' 59.7"	Ls = 350.00'
LT = 233.35'	L = 2,250.19'	LT = 233.35'
ST = 116.68'	T = 1148.24'	ST = 116.68'
	R = 4,584.00'	
	SE = 0.05	

INLET DETAIL
NTS



OUTLET DETAIL
NTS



177
ENNIS, JOSEPH LEO
& ENNIS, YVONNE GOWER
DB 6436 PG 436

178
ARNOLD, WINIFRED W
DB 13383 PG 540
BM 2008 PG 1492

SEE SHEETS 2B-35 THRU 2B-36 FOR DRAINAGE DETAILS

SEE SHEET 82 FOR -L- PROFILE

SEE SHEET 115 FOR -Y12A- PROFILE

6820IB
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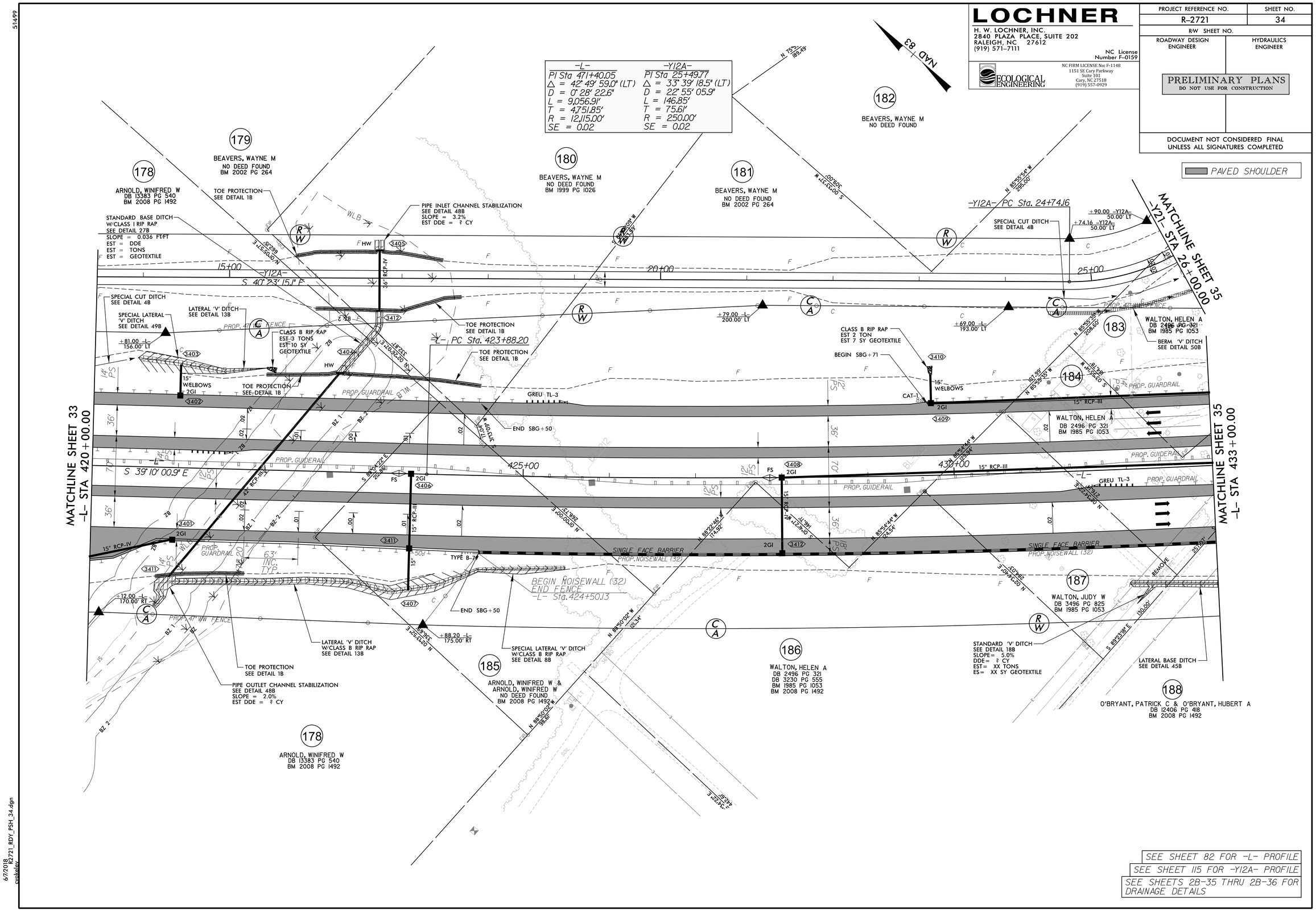
BEASON



LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
(919) 571-7111
NC License Number F-0159
ECOLOGICAL ENGINEERING
NC FIRM LICENSE No: F-1148
1151 SE Cary Parkway
Suite 101
Cary, NC 27518
(919) 557-0929
PROJECT REFERENCE NO.
R-2721
SHEET NO.
34
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
PAVED SHOULDER
-L-
PI Sta 471+40.05
Δ = 42° 49' 59.0" (LT)
D = 0° 28' 22.6"
L = 9,056.91'
T = 4,751.85'
R = 12,115.00'
SE = 0.02
-Y12A-
PI Sta 25+49.77
Δ = 33° 39' 18.5" (LT)
D = 22° 55' 05.9"
L = 146.85'
T = 75.61'
R = 250.00'
SE = 0.02
NAD 83
MATCHLINE SHEET 33 -L- STA 420+00.00
MATCHLINE SHEET 35 -Y21- STA 26+00.00
MATCHLINE SHEET 35 -L- STA 433+00.00
178 ARNOLD, WINIFRED W DB 13383 PG 540 BM 2008 PG 1492
179 BEAVERS, WAYNE M NO DEED FOUND BM 2002 PG 264
180 BEAVERS, WAYNE M NO DEED FOUND BM 1999 PG 1026
181 BEAVERS, WAYNE M NO DEED FOUND BM 2002 PG 264
182 BEAVERS, WAYNE M NO DEED FOUND
183 WALTON, HELEN A DB 2496 PG 321 BM 1985 PG 1053
184 WALTON, HELEN A DB 2496 PG 321 BM 1985 PG 1053
185 ARNOLD, WINIFRED W & ARNOLD, WINIFRED W NO DEED FOUND BM 2008 PG 1492
186 WALTON, HELEN A DB 2496 PG 321 DB 3230 PG 555 BM 1985 PG 1053 BM 2008 PG 1492
187 WALTON, JUDY W DB 3496 PG 825 BM 1985 PG 1053
188 O'BRYANT, PATRICK C & O'BRYANT, HUBERT A DB 12406 PG 418 BM 2008 PG 1492
-Y12A- PC Sta. 24+74.16
-L- PC Sta. 423+88.20
BEGIN NOISEWALL (32) END FENCE -L- Sta. 424+50.13
BEGIN SBG+71
END SBG+50
SINGLE FACE BARRIER PROP. NOISEWALL (32)
PROP. GUIDERAIL
PROP. GUARDRAIL
PROP. 47" WW FENCE
PROP. 47" FENCE
STANDARD BASE DITCH W/CLASS I RIP RAP SEE DETAIL 27B SLOPE = 0.036 FT/FT EST = DDE EST = TONS EST = GEOTEXTILE
PIPE INLET CHANNEL STABILIZATION SEE DETAIL 48B SLOPE = 3.2% EST DDE = ? CY
SPECIAL CUT DITCH SEE DETAIL 4B
SPECIAL LATERAL 'V' DITCH SEE DETAIL 49B
LATERAL 'V' DITCH SEE DETAIL 13B
CLASS B RIP RAP EST 3 TONS EST 10 SY GEOTEXTILE
TOE PROTECTION SEE DETAIL 1B
CLASS B RIP RAP EST 2 TON EST 7 SY GEOTEXTILE
BERM 'V' DITCH SEE DETAIL 50B
STANDARD 'V' DITCH SEE DETAIL 18B SLOPE= 5.0% DDE= ? CY EST= XX TONS ES= XX SY GEOTEXTILE
LATERAL BASE DITCH SEE DETAIL 45B
PIPE OUTLET CHANNEL STABILIZATION SEE DETAIL 48B SLOPE = 2.0% EST DDE = ? CY
SPECIAL LATERAL 'V' DITCH W/CLASS B RIP RAP SEE DETAIL 8B
15" W/ELBOWS
15" RCP-IV
15" RCP-III
15" RCP-II
15" RCP-I
36" RCP-IV
42" RCP-III
63' INC. TYP.
TYPE B-7
GREU TL-3
SEE SHEET 82 FOR -L- PROFILE
SEE SHEET 115 FOR -Y12A- PROFILE
SEE SHEETS 2B-35 THRU 2B-36 FOR DRAINAGE DETAILS

51499

-Y12-	-Y12-	-L-
PI Sta 11+63.90	PI Sta 14+11.17	PI Sta 471+40.05
Δ = 8° 31' 18.7" (RT)	Δ = 10° 28' 54.7" (RT)	Δ = 42° 49' 59.0" (LT)
D = 3° 22' 13.2"	D = 4° 20' 26.1"	D = 0° 28' 22.6"
L = 252.85'	L = 241.49'	L = 9,056.91'
T = 126.66'	T = 121.08'	T = 4,751.85'
R = 1,700.00'	R = 1,320.00'	R = 12,115.00'
SE = NC	SE = NC	SE = 0.02

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ECOLOGICAL ENGINEERING
NC FIRM LICENSE No: F-1148
1151 SE Cary Parkway
Suite 101
Cary, NC 27518
(919) 557-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2721	35
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PAVED SHOULDER

NAD 83

410 BANKS FAMILY FARM LLC
DB 14347 PG 0135
BoM 'B' PG 10

-Y12A- PT Sta. 26+21.01

STANDARD BASE DITCH
SEE DETAIL 16B
SLOPE = 0.09 FT/FT
EST DDE = XX CY

-Y12- POT Sta. 19+61.01

END CONSTRUCTION
-Y12A- STA. 26+62.98

SPECIAL CUT DITCH
SEE DETAIL 4B
+61.01 -Y12- EX R/W

BEAVERS, WAYNE M
NO DEED FOUND
BM 2002 PG 264

181

-Y12A- STA 26+00.00

STANDARD 'V' DITCH
SEE DETAIL 40B
SLOPE = 0.0454 FT/FT
EST DDE = XX CY

24" RCP-V

+00.00 -Y12- EX R/W

STANDARD BASE DITCH
SEE DETAIL 52B
SLOPE = 0.004 FT/FT
EST DDE = XX CY

+55.68 -Y12- 60.00' RT

-Y12- POT Sta. 18+87.33

-Y12A- POT Sta. 26+75.76
Δ = 90°26'12.3"

GRADE TO DRAIN

STANDARD BASE DITCH
W/CLASS B RIP RAP
SEE DETAIL 16B

+33.76 -L- 179.00' LT
+26.38 -Y12- 60.00' RT

STANDARD 'V' DITCH
SLOPE=0.8%
SEE DETAIL 18B

SPECIAL CUT DITCH
SEE DETAIL 4
+60.67 -L- 179.00' LT

WALTON, HELEN A
DB 2496 PG 321
BM 1985 PG 1053

183

END SBG + 69'

N 15° 31' 14.3" E 1007.08'

-L- POC Sta.435+01.42
-Y12- POT Sta. 15+58.87
Δ = 59°57'08.4"

BEGIN SBG + 26

TYPE B-77

15" RCP-III

2GI

15" W/ELBOWS

PROP. GUARDRAIL

184

-L- 435+00

-L- 440+00

-L- 445+00

-Y12- PT Sta. 15+31.58

MCF

PROP. GUIDERAIL

SINGLE FACE BARRIER

PROP. NOISEWALL (32)

BEGIN BRIDGE
-L- STA. 434+42.87

END BRIDGE
-L- STA. 436+15.16

FUTURE WIDENING

SPECIAL CUT DITCH
SEE DETAIL 4B

GREU TL-3

+52.62 -L- EX R/W

-Y12- PCC Sta. 12+90.09

+13.22 -L- 175.00' RT

188

LATERAL BASE DITCH
SEE DETAIL 45B

+79.07 -Y12- 40.00' LT

+78.14 -L- EX R/W

O'BRYANT, PATRICK C & O'BRYANT, HUBERT A
DB 12406 PG 418
BM 2008 PG 1492

STANDARD BASE DITCH
W/CLASS B RIP RAP
SEE DETAIL 16B

+02.64 -Y12B- 30.00' LT

+92.40 -Y12- 40.00' LT

CLASS I RIP RAP
EST 10 TONS
EST 23 SY GEOTEXTILE

-Y12- POC Sta. 12+63.56=
-Y12B- POT Sta. 20+31.83

TOE PROTECTION
SEE DETAIL 18B

END CONSTRUCTION
-Y12B- STA. 20+20.59

+01.55 -Y12B- EX R/W

CLASS I RIP RAP
EST 15 TONS
EST 30 SY GEOTEXTILE

PIPE OUTLET CHANNEL STABILIZATION
SEE DETAIL 48B
SLOPE = 0.3%
EST DDE = ? CY

-Y12- PC
Sta. 10+37.25
S 87°24'24" E
265.75'

-Y12- POT Sta. 10+00.00

+33.50 -Y12- 50.00' LT

+37.78 -Y12- 50.00' LT

189

ARNOLD, WINIFRED W
DB 2056 PG 562
BM 1977 PG 855
BM 2008 PG 1492

N 3° 28' 59.2" W

+12.53 -Y12- 30.00' RT

ROGERS, PATRICK THOMAS
& ROGERS, DEBORAH WILLIAMS
DB 13785 PG 1181
BM 1989 PG 763

191

STEPHENS, HERBERT B
DB 3314 PG 85

410 BANKS FAMILY FARM LLC
DB 14347 PG 0135
BoM 'B' PG 10

STANDARD 'V' DITCH
SEE DETAIL 51B
SLOPE = 25.0%
EST DDE = CY
EST XX TONS
EST XX SY

LATERAL V DITCH
W/CLASS B RIP RAP
SEE DETAIL 36B

LATERAL BASE DITCH
SEE DETAIL 45B

PROP. 47" WW FENCE

LATERAL BASE DITCH
SEE DETAIL 45B

300' TAPER

190

MATCHLINE SHEET 34
-L- STA 433+00.00

MATCHLINE SHEET 36
-L- STA 446+00.00

MATCHLINE SHEET 61
-Y12B- STA 18+00.00

SEE SHEET 83 FOR -L- PROFILE
SEE SHEET 129 FOR -Y12- PROFILE
SEE SHEET 115 FOR -Y12A- PROFILE
SEE SHEET 2B-3I FOR BRIDGE SKETCH
SEE SHEET 116 FOR -Y12B- PROFILE

6/7/2018
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cookelev

LOCHNER
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Suite 101
Cary, NC 27518
(919) 557-0929

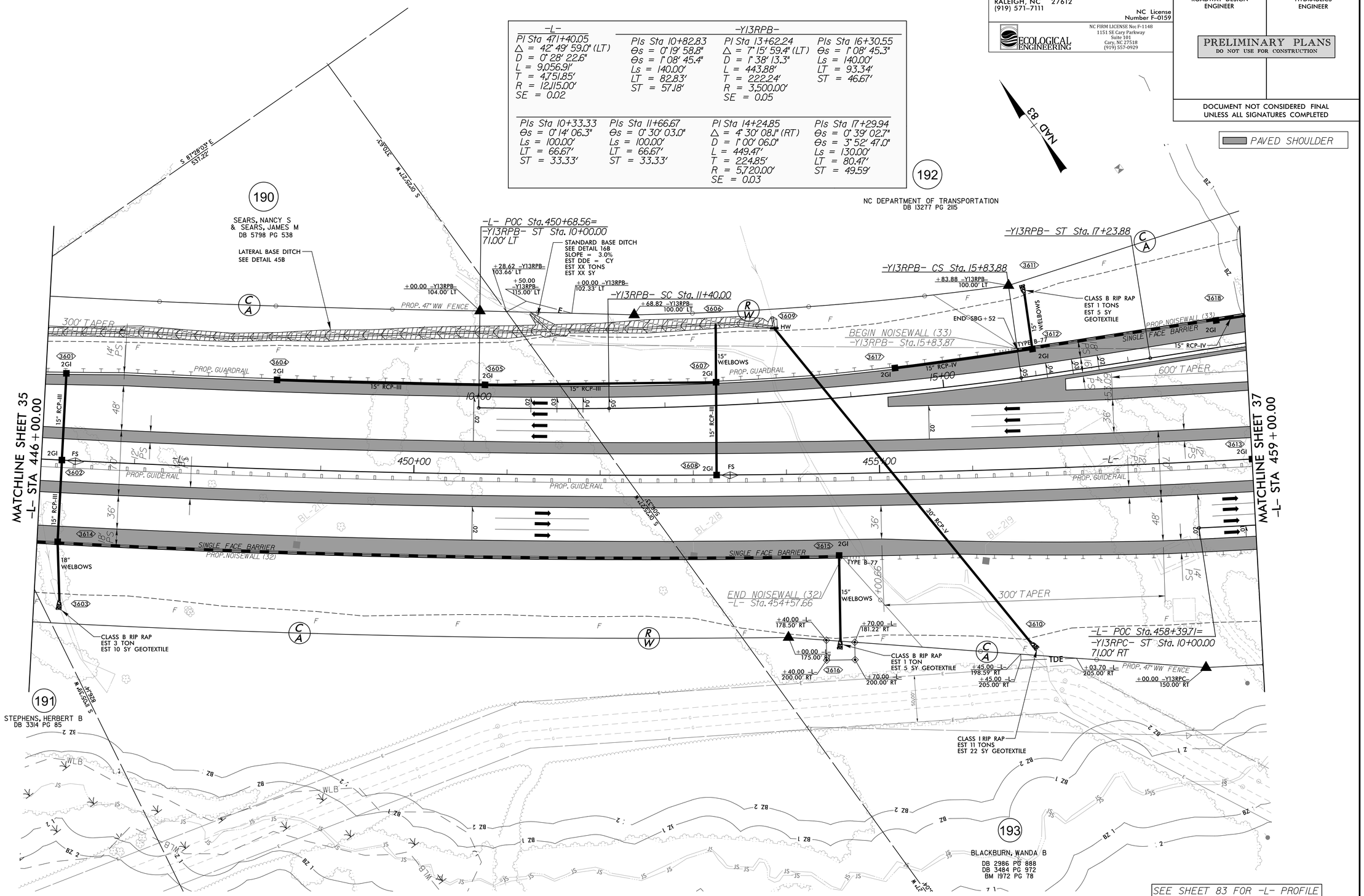
PROJECT REFERENCE NO.	SHEET NO.
R-2721	36
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PAVED SHOULDER

-L-	-Y13RPB-		
PI Sta 471+40.05 Δ = 42° 49' 59.0" (LT) D = 0° 28' 22.6" L = 9,056.91' T = 4,751.85' R = 12,115.00' SE = 0.02	PIs Sta 10+82.83 Θs = 0° 19' 58.8" Θs = 1° 08' 45.4" Ls = 140.00' LT = 82.83' ST = 57.18'	PI Sta 13+62.24 Δ = 7° 15' 59.4" (LT) D = 1° 38' 13.3" L = 443.88' T = 222.24' R = 3,500.00' SE = 0.05	PIs Sta 16+30.55 Θs = 1° 08' 45.3" Ls = 140.00' LT = 93.34' ST = 46.67'
PIs Sta 10+33.33 Θs = 0° 14' 06.3" Ls = 100.00' LT = 66.67' ST = 33.33'	PIs Sta 11+66.67 Θs = 0° 30' 03.0" Ls = 100.00' LT = 66.67' ST = 33.33'	PI Sta 14+24.85 Δ = 4° 30' 08.1" (RT) D = 1° 00' 06.0" L = 449.47' T = 224.85' R = 5,720.00' SE = 0.03	PIs Sta 17+29.94 Θs = 0° 39' 02.7" Θs = 3° 52' 47.0" Ls = 130.00' LT = 80.47' ST = 49.59'



SEE SHEET 83 FOR -L- PROFILE
SEE SHEET 98 FOR -Y13RPB- PROFILE
SEE SHEET 99 FOR -Y13RPC- PROFILE
SEE SHEETS 2B-35 THRU 2B-36 FOR DRAINAGE DETAILS

5/14/99
6/7/2018 R2721_RDY_PSH_36.dgn
cvokeley

REVISIONS

US 401
38,100
57,500
3,900
8,700
3,400
4,000
COMPLETE 540
25,200
58,400
25,900
53,400
COMPLETE 540
5,900
14,200
10,000
13,800
46,800
73,100
US 401
2018 ADT
2040 ADT

-L-
PI Sta 471+40.25
Δ = 42° 49' 59.0" (LT)
D = 17° 28' 22.0"
Lc = 327.90'
L = 340.56'
T = 174.01'
R = 328.00'
SE = 0.08

-Y13LPA-
PI Sta 1+33.51
Θs = 0° 27' 40.3"
Θs = 24° 55' 35.4"
Ls = 200.00'
LT = 133.34'
ST = 69.21'

PI Sta 11+43.01
Δ = 25° 25' 38.8" (LT)
D = 24° 54' 40.4"
L = 906.87'
T = 457.71'
R = 230.00'
SE = 0.08

PI Sta 21+76.69
Θs = 24° 54' 40.4"
Ls = 200.00'
LT = 133.48'
ST = 67.89'

-Y13LPC-
PI Sta 10+66.62
Θs = 0° 28' 12.8"
Ls = 200.00'
LT = 133.33'
ST = 66.67'

PI Sta 13+34.68
Θs = 24° 54' 40.4"
Ls = 200.00'
LT = 133.48'
ST = 67.89'

PI Sta 19+18.45
Δ = 227° 50' 48.3" (LT)
D = 24° 54' 40.4"
L = 914.64'
T = 518.45'
R = 230.00'
SE = 0.08

PI Sta 23+82.53
Θs = 24° 54' 40.4"
Ls = 200.00'
LT = 134.68'
ST = 67.89'

PI Sta 11+51.39
Θs = 0° 34' 13.5"
Θs = 4° 39' 45.8"
Ls = 240.00'
LT = 151.36'
ST = 88.82'

-Y13RPA-
PI Sta 16+34.79
Δ = 69° 56' 11.4" (RT)
D = 3° 52' 16.8"
L = 771.05'
T = 394.79'
R = 1480.00'
SE = 0.07

PI Sta 20+49.66
Θs = 4° 38' 44.2"
Ls = 240.00'
LT = 160.06'
ST = 80.05'

PI Sta 24+12.01
Θs = 12° 30' 03.2"
Ls = 240.00'
LT = 160.40'
ST = 80.36'

PI Sta 28+17.22
Δ = 25° 43' 45.2" (LT)
D = 17° 25' 00.7"
L = 246.59'
T = 125.61'
R = 330.00'
SE = 0.08

-Y13RPB-
PI Sta 23+69.87
Θs = 4° 46' 28.7"
Ls = 205.00'
LT = 136.72'
ST = 68.38'

PI Sta 26+26.34
Δ = 11° 03' 50.7" (LT)
D = 4° 39' 29.5"
L = 373.48'
T = 186.92'
R = 1230.00'
SE = 0.08

PI Sta 28+18.01
Θs = 4° 46' 28.7"
Ls = 205.00'
LT = 136.72'
ST = 68.38'

PI Sta 31+53.34
Θs = 4° 59' 56.8"
Ls = 205.00'
LT = 136.71'
ST = 68.37'

PI Sta 33+43.21
Δ = 10° 31' 29.4" (RT)
D = 4° 51' 26.4"
L = 240.64'
T = 120.62'
R = 1230.00'
SE = 0.08

-Y13RPC-
PI Sta 1+40.32
Θs = 0° 34' 13.5"
Θs = 4° 39' 45.8"
Ls = 240.00'
LT = 151.36'
ST = 88.82'

PI Sta 16+34.79
Δ = 69° 56' 11.4" (RT)
D = 3° 52' 16.8"
L = 771.05'
T = 394.79'
R = 1480.00'
SE = 0.07

PI Sta 20+49.66
Θs = 4° 38' 44.2"
Ls = 240.00'
LT = 160.06'
ST = 80.05'

PI Sta 24+12.01
Θs = 12° 30' 03.2"
Ls = 240.00'
LT = 160.40'
ST = 80.36'

PI Sta 28+17.22
Δ = 25° 43' 45.2" (LT)
D = 17° 25' 00.7"
L = 246.59'
T = 125.61'
R = 330.00'
SE = 0.08

-Y13A-
PI Sta 28+11.84
Δ = 65° 31' 12.2" (LT)
D = 11° 46' 49.5"
Ls = 553.29'
LT = 311.29'
T = 310.59'
R = 485.00'
SE = 0.06

-Y13RPC-
PI Sta 10+33.33
Θs = 0° 14' 06.3"
Ls = 100.00'
LT = 66.67'
ST = 33.33'

PI Sta 11+66.67
Θs = 0° 30' 03.0"
Ls = 100.00'
LT = 66.67'
ST = 33.33'

PI Sta 14+24.85
Δ = 4° 30' 08.1" (RT)
D = 1° 00' 06.0"
L = 449.47'
T = 224.85'
R = 5720.00'
SE = 0.03

PI Sta 17+25.94
Θs = 0° 39' 08.7"
Θs = 3° 56' 47.0"
Ls = 150.00'
LT = 80.41'
ST = 49.59'

PI Sta 19+42.28
Δ = 15° 15' 00.0" (RT)
D = 5° 58' 05.9"
L = 352.54'
T = 182.80'
R = 960.00'
SE = 0.08

PI Sta 21+70.42
Θs = 6° 01' 03.4"
Ls = 205.00'
LT = 136.73'
ST = 68.41'

PI Sta 24+74.35
Θs = 13° 54' 55.8"
Ls = 250.00'
LT = 167.35'
ST = 83.95'

PI Sta 28+19.09
Δ = 33° 10' 59.3" (LT)
D = 12° 43' 56.6"
L = 280.62'
T = 144.08'
R = 450.00'
SE = 0.09

MATCHLINE SHEET 58
MATCHLINE SHEET 64
-Y13- STA 62+00.00
MATCHLINE SHEET 36
-L- STA 459+00.00
MATCHLINE SHEET 65
-Y13A- STA 29+00.00
MATCHLINE SHEET 63
-Y13- STA 48+00.00
MATCHLINE SHEET 38
-L- STA 487+00.00
MATCHLINE SHEET 39
-Y13RPD- STA 32+00.00
MATCHLINE SHEET 40
-Y14A- STA 19+00.00
-Y13RPA- SC Sta. 24+91.61
-Y13RPA- PT Sta. 27+38.59
-Y13RPA- SRS Sta. 22+51.61
-Y13RPA- CS Sta. 20+11.81
-Y13RPA- STA 19+00.00
-Y13LPA- CS Sta. 21+08.80
-Y13LPA- SC Sta. 12+00.00
-Y13LPA- ST Sta. 10+00.00
-L- POC Sta. 418+65.14
-L- POC Sta. 477+08.46
-Y13- POT Sta. 55+32.92
Δ = 82°34'00.A"
-L- POC Sta. 471+51.38
-Y13LPC- ST Sta. 10+00.00
-Y13LPC- SRS Sta. 12+00.00
-Y13LPC- SC Sta. 14+00.00
-Y13LPC- CS Sta. 23+08.01
-Y13LPC- SRS Sta. 17+00.00
-Y13LPC- SC Sta. 17+79.41
-Y13LPC- CS Sta. 16+49.40
-Y13LPC- SRS Sta. 25+07.07
-Y13LPC- SC Sta. 25+57.01
-Y13LPC- CS Sta. 23+43.64
-Y13LPC- PT Sta. 28+17.63
-Y13RPB- SC Sta. 32+12.83
-Y13RPB- SRS Sta. 30+18.83
-Y13RPB- CS Sta. 28+18.23
-Y13RPB- TS Sta. 22+73.15
-Y13RPB- SC Sta. 24+38.15
-Y13RPB- ST Sta. 34+74.07
-Y13RPB- POT Sta. 33+78.67
-Y13- POT Sta. 60+84.65
-Y13RPA- POT Sta. 30+12.70
-Y13RPB- POT Sta. 33+78.67
-Y13- POT Sta. 57+09.29
-Y13LPA- ST Sta. 23+08.80
51.00' RT
-Y13- POT Sta. 49+89.28
-Y13RPC- POT Sta. 31+12.36
-Y13RPD- POT Sta. 41+29.99
-Y13- POT Sta. 53+93.88
-Y13LPC- ST Sta. 25+14.24
51.00' LT
-Y13RPD- SC Sta. 32+01.50
-Y13RPD- CS Sta. 39+37.46
-Y13RPD- ST Sta. 40+37.46
-Y14A- POT Sta. 10+00.00
BEGIN BRIDGE -Y13- STA 54+02.00
END BRIDGE -Y13- STA 56+71.83
-Y13A- POT Sta. 35+52.56
-Y13A- STA. 35+37.50
END CONSTRUCTION
-Y14A- STA. 10+50.00
BEGIN CONSTRUCTION
-Y14A- STA. 10+50.00
N 77° 19' 36.8" W
S 87° 44' 04.8" E
S 73° 42' 28.4" E
S 10° 48' 39.1" E
S 69° 55' 24.1" E
N 86° 44' 14.4" W
N 77° 19' 36.8" W
S 87° 44' 04.8" E
S 73° 42' 28.4" E
S 10° 48' 39.1" E
S 69° 55' 24.1" E
N 86° 44' 14.4" W
R=1230.00'
R=1480.00'
R=960.00'
R=450.00'
R=330.00'
R=230.00'
R=5720.00'
R=5730.00'
R=2050.00'
R=1530.00'
R=1470.00'
R=1540.00'
R=1550.00'
R=1560.00'
R=1570.00'
R=1580.00'
R=1590.00'
R=1600.00'
R=1610.00'
R=1620.00'
R=1630.00'
R=1640.00'
R=1650.00'
R=1660.00'
R=1670.00'
R=1680.00'
R=1690.00'
R=1700.00'
R=1710.00'
R=1720.00'
R=1730.00'
R=1740.00'
R=1750.00'
R=1760.00'
R=1770.00'
R=1780.00'
R=1790.00'
R=1800.00'
R=1810.00'
R=1820.00'
R=1830.00'
R=1840.00'
R=1850.00'
R=1860.00'
R=1870.00'
R=1880.00'
R=1890.00'
R=1900.00'
R=1910.00'
R=1920.00'
R=1930.00'

514.99

-Y13RPA-		
PIs Sta 11+51.32	PI Sta 16+34.79	PIs Sta 20+91.66
Θs = 0° 34' 13.5"	△ = 29° 52' 17.4" (RT)	Θs = 4° 38' 44.2"
Θs = 4° 38' 45.8"	D = 3° 52' 16.8"	Ls = 240.00'
Ls = 240.00'	L = 771.61'	LT = 160.06'
LT = 151.32'	T = 394.79'	ST = 80.05'
ST = 88.82'	R = 1,480.00'	
	SE = 0.07	

-L-
PI Sta 47+40.05
△ = 42° 49' 59.0" (LT)
D = 0° 28' 22.6"
L = 9,056.91'
T = 4,751.85'
R = 12,115.00'
SE = 0.02

-Y13RPD-		
PIs Sta 31+68.16	PI Sta 35+69.92	PIs Sta 39+70.79
Θs = 0° 27' 56.9"	△ = 6° 51' 23.5" (LT)	Θs = 0° 27' 56.9"
Ls = 100.00'	D = 0° 55' 53.9"	Ls = 100.00'
LT = 66.67'	L = 735.96'	LT = 66.67'
ST = 33.33'	T = 368.42'	ST = 33.33'
	R = 6,150.00'	
	SE = 0.02	

-Y14A-
PI Sta 16+40.61
△ = 5° 58' 17.0" (LT)
D = 2° 39' 53.7"
L = 224.07'
T = 112.14'
R = 2,150.00'
SE = NC

LOCHNER

H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
(919) 571-7111

NC License Number F-0159

ECOLOGICAL ENGINEERING
NC FIRM LICENSE No: F-1148
1151 SE Cary Parkway
Suite 101
Cary, NC 27518
(919) 557-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2721	38
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PAVED SHOULDER

NAD 83

MATCHLINE SHEET 37
-L- STA 487+00.00

MATCHLINE SHEET 39
-L- STA 499+00.00

-Y13RPA- STA 19+00.00

-Y13RPD- STA 32+00.00

-Y14A- STA 13+00.00

203 TINGEN BROADWELL FAMILY, LLC DB 7823 PG 345

205 HOLLOWAY, RUBY DB 13571 PG 508 BM 1992 PG 453

206 SMITH, KENNETH BRYANT NO DEED FOUND

207 CIRCLE M PROPERTIES, INC DB 13485 PG 2572 BM 2009 PG 335

LAWRENCE BASS HEIRS NO DEED FOUND

209 BARDEN, GENE & BARDEN, VIRGINIA DB 2090 PG 298

213 RHODES, RAYMOND LEONARD DB 3605 PG 664 BM 1985 PG 1682

211 RHODES, RONALD D DB 2737 PG 719

212 MERRILL, DEBROAH D & MERRILL, FRANK T DB 6025 PG 489

210 RHODES, R LEONARD NO DEED FOUND BM 1985 PG 1682

214 RHODES, RAYMOND LEONARD DB 2124 PG 371

204 WAKE TECHNICAL COLLEGE DB 2106 PG 387 BM 1988 PG 228

CLASS II RIP RAP EST 170 TONS EST 240 SY GEOTEXTILE
+42.32 -Y13RPA- 46.49' RT BEGIN FENCE

CLASS I RIP RAP EMBEDDED INTO STREAM BED EST 65 TONS EST 120 SY GEOTEXTILE
+96.11 -Y13RPA- 55.83' RT END FENCE

STANDARD V DITCH SEE DETAIL 21B

LATERAL BASE DITCH SEE DETAIL 57B

-Y13RPA- SC Sta. 12+40.00
+40.00 -Y13RPA- 100.00' RT

LATERAL 'V' DITCH SEE DETAIL 36B CHORD

CLASS I RIP RAP EMBEDDED INTO STREAM BED EST 37 TONS EST 82 SY GEOTEXTILE

+75.70 -Y13RPA- 136.00' RT
+76.81 -Y13RPA- 120.00' RT
+78.04 -Y13RPA- 102.11' RT

TOE PROTECTION SEE DETAIL 1B

+48.59 -Y13RPA- 86.12' RT BEGIN FENCE

+35.00 -Y13RPA- 102.66' RT

+31.36 -Y13RPA- 84.61' RT END FENCE

-Y14- POT Sta. 16+80.46

CLASS II RIP RAP EST 92 TONS EST 128 SY GEOTEXTILE

+08.00 -Y13RPA- 136.00' RT

+08.00 -Y13RPA- 120.00' RT

-L- POT Sta. 495+92.92=
-Y13RPA- ST Sta. 10+00.00
71.00' LT

+08.00 -Y13RPA- 100.26' RT
+00.00 -Y13RPA- 100.00' RT

+49.22 -L- 171.00' LT

+10.45 171.00' LT

-L- POC Sta. 497+59.46
-Y14- POT Sta. 14+05.38
△ = 95° 37' 12.37"

BEGIN SBG +13
CLASS B RIP RAP EST 1 TON EST 5 SY GEOTEXTILE

END SBG RPA BEGIN SBG +12 -L-

RETAIN

REMOVE

TDE

PDE

PUE

PROP. 47" WW FENCE

PROP. GUARDRAIL

PROP. GUIDERAIL

2@6'x8' RCBC

2@7'x7' RCBC

15" RCP-III

18" RCP-III

15" RCP-IV

15" W/ELBOWS

18" W/ELBOWS

TYPE B-77

MGS

GREU TL-3

BEGIN BRIDGE
Sta. 497+79.08

END BRIDGE
-L- Sta. 497+79.08

BEGIN BRIDGE
-Y13RPD- Sta. 20+40.93

END BRIDGE
-Y13RPD- Sta. 20+85.68

-Y13RPD- TS Sta. 31+01.50

-Y14- PI Sta. 11+25.51

-Y14- POT Sta. 10+10.67
-Y14A- POT Sta. 24+34.33
△ = 79° 44' 23.27"

-Y14- POT Sta. 10+00.00

-Y14A- PC Sta. 15+28.47

-Y14A- PT Sta. 17+52.54

600' TAPER

RETAIN SYSTEM

CLASS II RIP RAP EST 38 TONS EST 125 SY GEOTEXTILE

CLASS II RIP RAP EST 45 TONS EST 80 SY GEOTEXTILE

CLASS I RIP RAP EMBEDDED INTO STREAM BED EST 31 TONS EST 65 SY GEOTEXTILE

CLASS I RIP RAP EMBEDDED INTO STREAM BED EST 30 TONS EST 75 SY GEOTEXTILE

CLASS I RIP RAP EMBEDDED INTO STREAM BED EST 25 TONS EST 55 SY GEOTEXTILE

CLASS I RIP RAP EMBEDDED INTO STREAM BED EST 42 TONS EST 82 SY GEOTEXTILE

STANDARD BASE DITCH W/CLASS II RIP RAP ON BANKS AND CLASS I RIP RAP IN BED EST DDE=XX CY SLOPE = 0.016 FT/FT SEE DETAIL 63B

STANDARD BASE DITCH W/CLASS II RIP RAP ON BANKS AND CLASS I RIP RAP IN BED EST DDE=XX CY SLOPE = 0.027 FT/FT SEE DETAIL 63B

LATERAL 'V' DITCH W/CLASS I RIP RAP SEE DETAIL 36B

LATERAL 'V' DITCH SEE DETAIL 36B

LATERAL 'V' DITCH SEE DETAIL 13B

MEDIAN DITCH SEE DETAIL 12B

LATERAL BASE DITCH SEE DETAIL 64B

CLASS B RIP RAP EST 1 TON EST 5 SY GEOTEXTILE

CLASS II RIP RAP EST 60 TONS EST 80 SY GEOTEXTILE

CLASS II RIP RAP EST 92 TONS EST 128 SY GEOTEXTILE

END CONSTRUCTION
-Y14A- STA. 24+25.19

END CONSTRUCTION
-Y14A- STA. 24+25.19

SEE SHEET 85 FOR -L- PROFILE
SEE SHEET 120 FOR -Y14A- PROFILE
SEE SHEET 97 FOR -Y13RPA- PROFILE
SEE SHEETS 99 & 100 FOR -Y13RPD- PROFILE
SEE SHEETS 2B-32 FOR BRIDGE SKETCH
SEE SHEETS 2B-35 THRU 2B-36 FOR DRAINAGE DETAILS

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51499

LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
(919) 571-7111
NC License Number F-0159

ECOLOGICAL ENGINEERING
NC FIRM LICENSE No: F-1148
1151 SE Cary Parkway
Suite 101
Cary, NC 27518
(919) 557-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2721	39
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PAVED SHOULDER

-L-
PI Sta 471+40.05
Δ = 42° 49' 59.0" (LT)
D = 0° 28' 22.6"
L = 9,056.91'
T = 4,751.85'
R = 12,115.00'
SE = 0.02

NAD 83

R2721-28

208
CIRCLE M PROPERTIES INC
DB 13485 PG 2572
BM 2009 PG 335

-Y15- POT Sta. 17+00.00
N 33°13'05" E
286.44'
S 88°42'19" E
56.82'
100.00'

END SBG+00
TIE TO R-2828
END PAVING & GRADING
BEGIN GRADING ONLY
+74.31 -L-
171.00' LT
S 81°06'39" E
380.15'
PROP. 47" WW FENCE
+97.78 -L-
200.56' LT
+51.36 -L-
EX R/W
END C/A
S 75°24'44" E
52.70'

END TIP PROJECT R-2721B
BEGIN TIP PROJECT R-2828
-L- STA. 500+00.00

MATCHLINE SHEET 38
-L- STA 499+00.00

PROP. GUARDRAIL
48'
70'
36'
02
02
02
SBG
F
500+00
-L-

213
RHODES, RAYMOND LEONARD
DB 3605 PG 664
BM 1985 PG 1682

TIE TO R-2828
S 68°17'06" E
433.82'
PROP. 47" WW FENCE
+00.62 -Y13RPD-
EX R/W
END C/A

-L- POC Sta.503+39.23
-Y15- POT Sta.14+06.94
Δ = 110°14'02.29"

END CONSTRUCTION
-L- STA. 500+63.80

-Y15-
N 33°27'50.5" E

-Y15- POT Sta. 10+00.00

214
RHODES, RAYMOND LEONARD
DB 2124 PG 371

-Y13RPD-
N 78°56'56.7" W

-L- POC Sta.508+00.00=
-Y13RPD- POT Sta. 10+00.00
71.00' RT

-L- POT Sta. 512+00.00

505+00
510+00
BL-232
BL-233
BL-234
R2721-29

WLB

SEE SHEET 85 FOR -L- PROFILE
SEE SHEETS 2B-35 THRU 2B-36 FOR DRAINAGE DETAILS

6/7/2018
R2721_RDY_PSH_39.dgn
cookelev

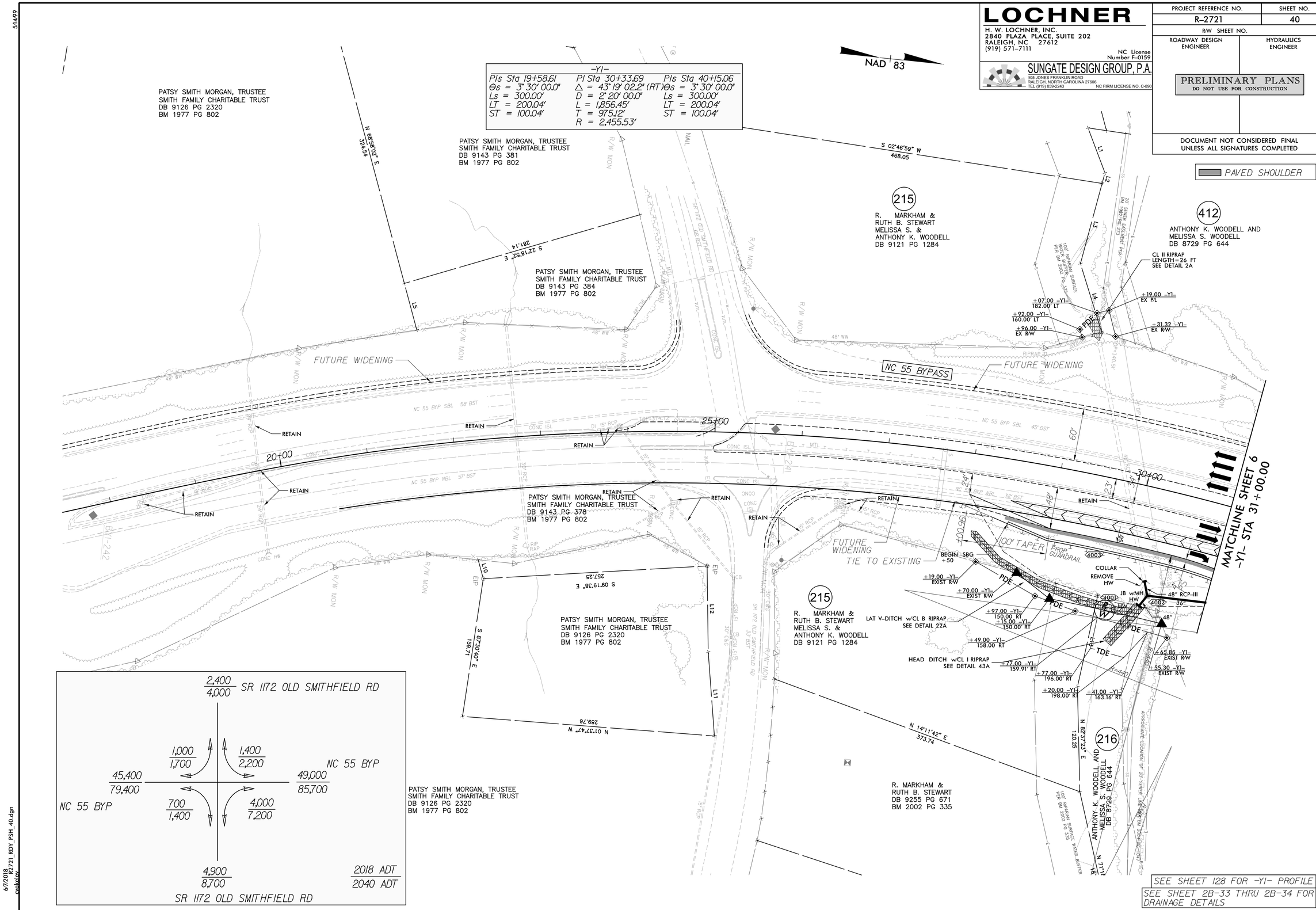
LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
(919) 571-7111
NC License Number F-0159
SUNGATE DESIGN GROUP, P.A.
905 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243
NC FIRM LICENSE NO. C-890

PROJECT REFERENCE NO.	SHEET NO.
R-2721	40
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PAVED SHOULDER



SEE SHEET 128 FOR -Y1- PROFILE
SEE SHEET 2B-33 THRU 2B-34 FOR DRAINAGE DETAILS

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6/7/2018
R2721_RDY_PSH_40.dgn
cvokeley

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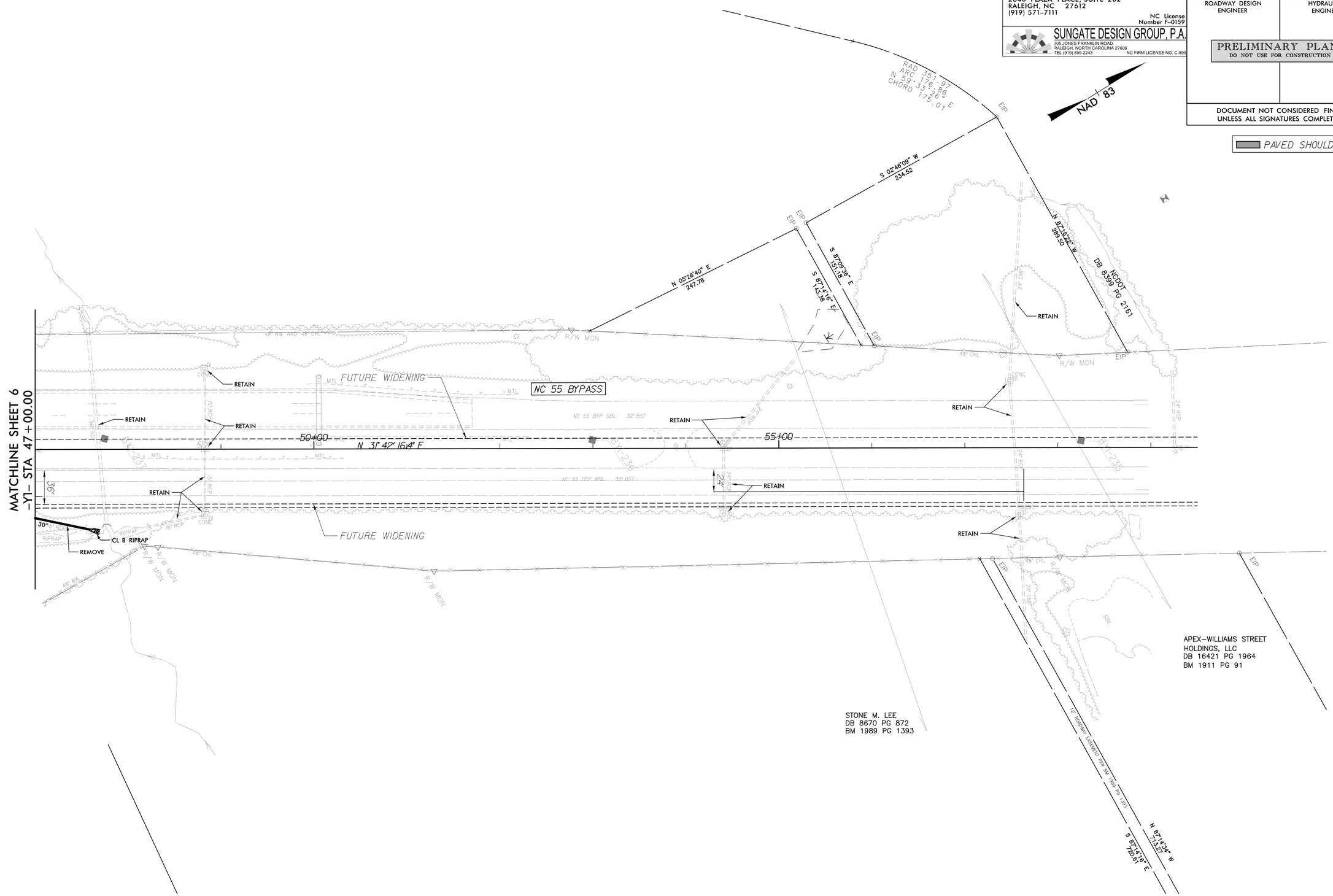
PROJECT REFERENCE NO.	SHEET NO.
R-2721	41
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PAVED SHOULDER



5/14/99

6/7/2018
R2721_RDY_PSH_41.dgn
cvokeley

514.99

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RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243
NC FIRM LICENSE NO. C-890

PROJECT REFERENCE NO.	SHEET NO.
R-2721	42
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PAVED SHOULDER

NAD 83

-Y3-
PI Sta 12+86.55
Δ = 15° 50' 49.7" (RT)
D = 4° 24' 26.5"
L = 359.56'
T = 180.94'
R = 1,300.00'
SE = 0.04

-Y3- PC Sta. 11+05.62

-Y3- PT Sta. 14+65.18

-Y3- Sta. 10+00.00

BEGIN CONSTRUCTION -Y3- STA. 10+00.00

MATCHLINE SHEET 11 -Y3- STA 22+00.00

MATCHLINE SHEET 11

21 SUNSET HILLS HOMEOWNERS ASSOCIATION DB 10032 PG 1809

22 HSA PROPERTIES LLC DB 10611 PG 223 PART OF BM 1995 PG 801

218 D.R. HORTON, INC DB 6807 PG 247 BM 1997 PG 1103 PRIVATE OPEN SPACE

217 TOWN OF APEX PUMP STATION EASEMENT BM 1997 PG 1103

220 TOWN OF HOLLY SPRINGS DB 7290 PG 707 BM 1995 PG 2059

219 ARBOR CREEK KS, LLC DB 16090 PG 1868 BM 2015 PG 565

221 BNRICH, LLC DB 16341 PG 1291 BM 1995 PG 2059

24 NC DEPT. OF TRANSPORTATION DB 10976 PG 2216

26 THE MATA FAMILY, LLC DB 15025 PG 109

CURRIN BROS., INC DB 6000 PG 178 BM 1994 PG 161

KELLY M. MCGEE DB 14212 PG 380 BM 1997 PG 1103

CATHERINE E. CARVER DB 8067 PG 906 BM 1997 PG 1103

MINNIE J. AND WILLIE C. BRIDGES DB 7879 PG 836 BM 1997 PG 1103

JOSH D. PALADENI DB 12746 PG 2044 BM 1997 PG 1103

CHAD D. WOODARD DB 10933 PG 1018 BM 1997 PG 1103

CHARLIE K. CHAN AND IRIS Y. CHIU DB 16305 PG 504 BM 2015 PG 565

OSE PROPERTY ONE, LLC DB 16305 PG 1809 BM 2015 PG 565

FRANK TOMS III AND LAURA DAVES TOMS DB 16311 PG 713 BM 2015 PG 565

ZACHARY DARGATZ AND KRISTY KNIGHT DB 16409 PG 1431 BM 2015 PG 565

JOHN LUCIDO DB 16309 PG 1235 BM 2015 PG 565

RAQUEL BROOKS DB 16323 PG 2131 BM 2015 PG 565

SEN LOUIE AND LILY CHOW DB 16413 PG 714 BM 2015 PG 565

AMANDA MARIE KRIARIS DB 16410 PG 536 BM 2015 PG 565

ZACHARY LEWIS HALL DB 16439 PG 376 BM 2015 PG 565

DARIN S. LEIGH DB 16433 PG 1812 BM 2015 PG 565

EARNEST B. III AND JENNIFER N. GOODRICH DB 16499 PG 1142 BM 2015 PG 565

SREENIVAS VEMULAPALLI AND SRIVALLI DONTHINENI DB 16515 PG 2031 BM 2015 PG 565

TUSHAR AND LEENA BAJAJ DB 16508 PG 1696 BM 2015 PG 565

CHANDRA YELLAPANTULA AND HARINATH APPANI DB 16519 PG 1650 BM 2015 PG 565

ROBERT AND COLLEEN BALES DB 16526 PG 220 BM 2015 PG 565

EASEMENT NEEDED FOR DETOUR

TOE PROTECTION SEE DETAIL 38A

CL B RIPRAP

LAT 2' BASE DITCH w/CL I RIPRAP SEE DETAIL 20A

700' LANE TAPER

200' MEDIAN

SR 1301 SUNSET LAKE RD

SEE SHEET 2B-33 THRU 2B-34 FOR DRAINAGE DETAILS | SEE SHEET 2B-27 FOR BRIDGE SKETCH | SEE SHEET 101 FOR -Y3- PROFILE

6/7/2018
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cyoakley

LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
(919) 571-7111
NC License Number F-0159

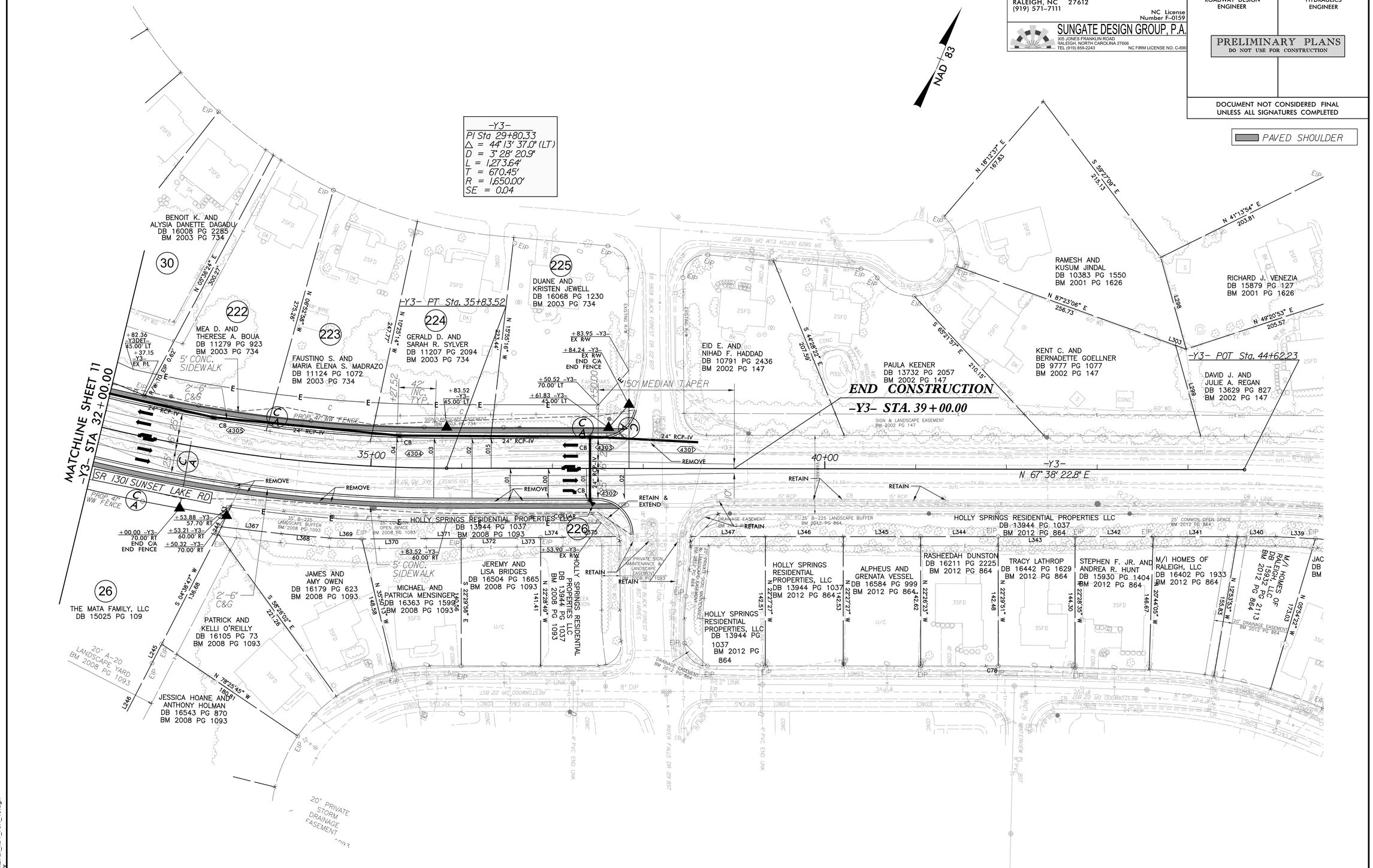
SUNGATE DESIGN GROUP, P.A.
905 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243 NC FIRM LICENSE NO. C-890

PROJECT REFERENCE NO.	SHEET NO.
R-2721	43
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PAVED SHOULDER

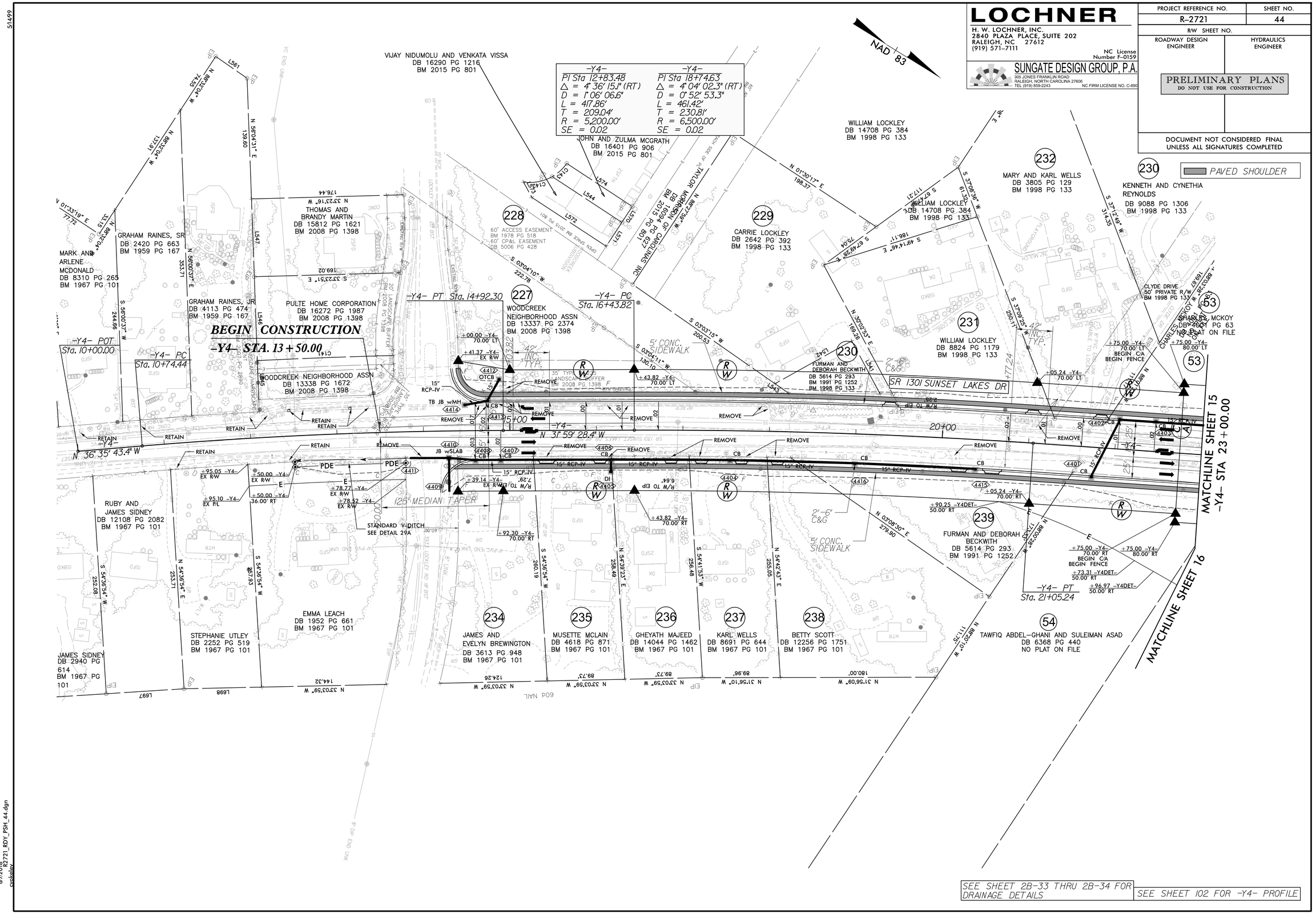


SEE SHEET 2B-33 THRU 2B-34 FOR DRAINAGE DETAILS

SEE SHEETS 101 & 102 FOR -Y3- PROFILE

5/1499

6/7/2018
R2721_RDY_PSH_43.dgn
cvokley



LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
(919) 571-7111
NC License Number F-0159
SUNGATE DESIGN GROUP, P.A.
905 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243
NC FIRM LICENSE NO. C-890
PROJECT REFERENCE NO.
R-2721
SHEET NO.
44
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
PAVED SHOULDER
NAD 83
-Y4-
PI Sta 12+83.48
△ = 4° 36' 15.1" (RT)
D = 1° 06' 06.6"
L = 417.86'
T = 209.04'
R = 5,200.00'
SE = 0.02
-Y4-
PI Sta 18+74.63
△ = 4° 04' 02.3" (RT)
D = 0° 52' 53.3"
L = 461.42'
T = 230.81'
R = 6,500.00'
SE = 0.02
VIJAY NIDUMOLU AND VENKATA VISSA
DB 16290 PG 1216
BM 2015 PG 801
JOHN AND ZULMA MCGRATH
DB 16401 PG 906
BM 2015 PG 801
WILLIAM LOCKLEY
DB 14708 PG 384
BM 1998 PG 133
MARY AND KARL WELLS
DB 3805 PG 129
BM 1998 PG 133
KENNETH AND CYNETHIA REYNOLDS
DB 9088 PG 1306
BM 1998 PG 133
THOMAS AND BRANDY MARTIN
DB 15812 PG 1621
BM 2008 PG 1398
GRAHAM RAINES, SR
DB 2420 PG 663
BM 1959 PG 167
MARK AND ARLENE MCDONALD
DB 8310 PG 265
BM 1967 PG 101
GRAHAM RAINES, JR
DB 4113 PG 474
BM 1959 PG 167
PULTE HOME CORPORATION
DB 16272 PG 1987
BM 2008 PG 1398
BEGIN CONSTRUCTION
-Y4- STA. 13+50.00
-Y4- POT
Sta. 10+00.00
-Y4- PC
Sta. 10+74.44
WOODCREEK NEIGHBORHOOD ASSN
DB 13338 PG 1672
BM 2008 PG 1398
-Y4- PT Sta. 14+92.30
-Y4- PC
Sta. 16+43.82
WOODCREEK NEIGHBORHOOD ASSN
DB 13337 PG 2374
BM 2008 PG 1398
CARRIE LOCKLEY
DB 2642 PG 392
BM 1998 PG 133
WILLIAM LOCKLEY
DB 14708 PG 384
BM 1998 PG 133
WILLIAM LOCKLEY
DB 8824 PG 1179
BM 1998 PG 133
FURMAN AND DEBORAH BECKWITH
DB 5614 PG 293
BM 1991 PG 1252
BM 1998 PG 133
SR 1301 SUNSET LAKES DR
CLYDE DRIVE
50' PRIVATE R/W
BM 1998 PG 133
CHARLES MCKOY
DB 4001 PG 63
NO PLAT ON FILE
MATCHLINE SHEET 15
-Y4- STA 23+00.00
MATCHLINE SHEET 16
N 36° 35' 43.4" W
N 31° 59' 28.4" W
125' MEDIAN TAPER
STANDARD V-DITCH
SEE DETAIL 29A
RUBY AND JAMES SIDNEY
DB 12108 PG 2082
BM 1967 PG 101
STEPHANIE UTLEY
DB 2252 PG 519
BM 1967 PG 101
EMMA LEACH
DB 1952 PG 661
BM 1967 PG 101
JAMES SIDNEY
DB 2940 PG 614
BM 1967 PG 101
JAMES AND EVELYN BREWINGTON
DB 3613 PG 948
BM 1967 PG 101
MUSETTE MCLAIN
DB 4618 PG 871
BM 1967 PG 101
GHEYATH MAJEED
DB 14044 PG 1462
BM 1967 PG 101
KARL WELLS
DB 8691 PG 644
BM 1967 PG 101
BETTY SCOTT
DB 12256 PG 1751
BM 1967 PG 101
FURMAN AND DEBORAH BECKWITH
DB 5614 PG 293
BM 1991 PG 1252
-Y4- PT
Sta. 21+05.24
TAWFIQ ABDEL-GHANI AND SULEIMAN ASAD
DB 6368 PG 440
NO PLAT ON FILE
SEE SHEET 2B-33 THRU 2B-34 FOR DRAINAGE DETAILS
SEE SHEET 102 FOR -Y4- PROFILE

LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
(919) 571-7111
NC License Number F-0159

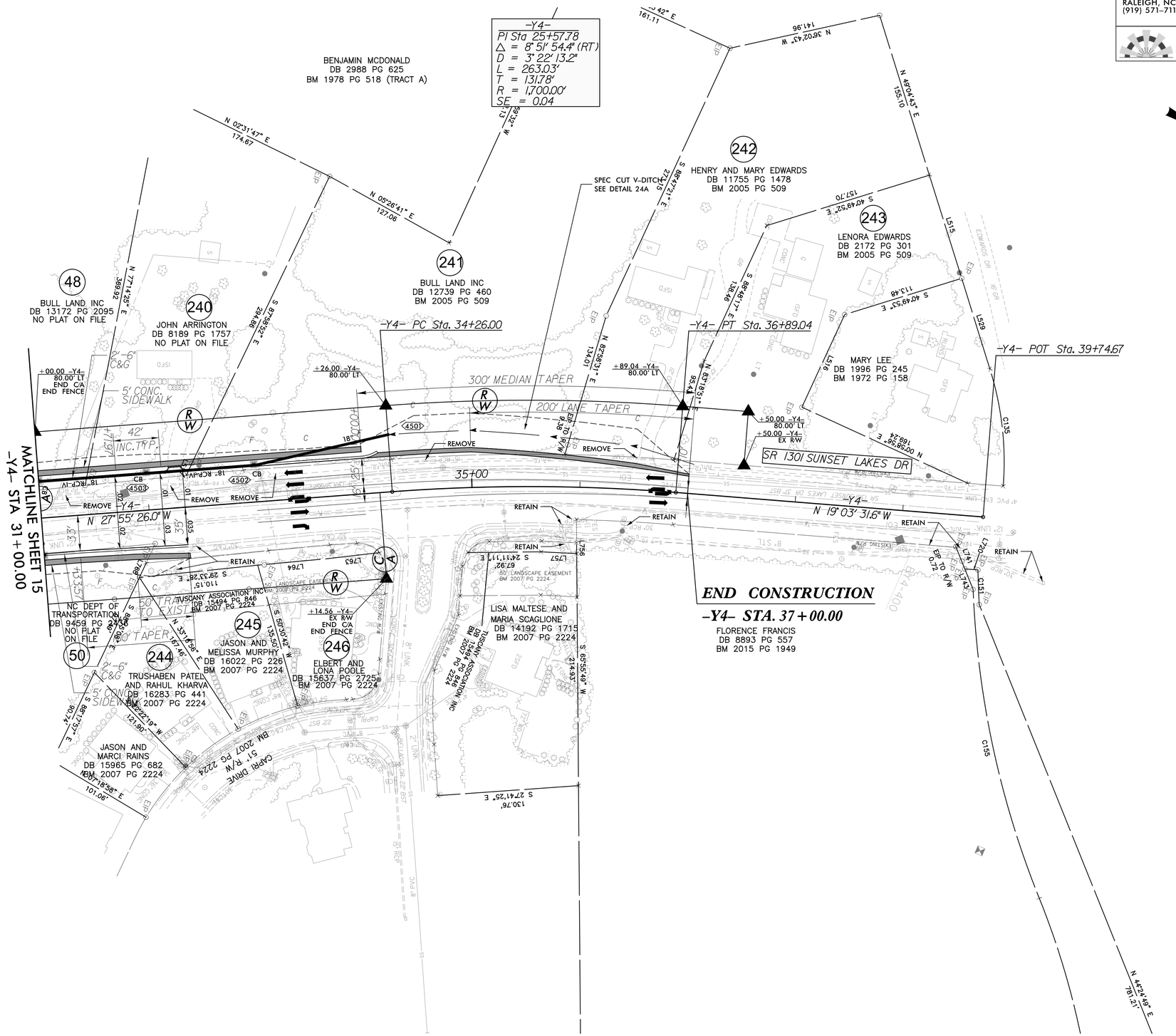
SUNGATE DESIGN GROUP, P.A.
905 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243
NC FIRM LICENSE NO. C-890

PROJECT REFERENCE NO.	SHEET NO.
R-2721	45
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PAVED SHOULDER



SEE SHEET 2B-33 THRU 2B-34 FOR DRAINAGE DETAILS

SEE SHEET 102 FOR -Y4- PROFILE

5/14/99

6/7/2018
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cvokeley

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LOCHNER

H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
(919) 571-7111

NC License Number F-0159

SUNGATE DESIGN GROUP, P.A.
205 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243 NC FIRM LICENSE NO. C-890

PROJECT REFERENCE NO.	SHEET NO.
R-2721	46
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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PAVED SHOULDER

PROPOSED SIGNAL

NAD 83

WIGGINS, BEULAH DB 3187 PG 444 BM 1973 PG 362

-Y5-
PI Sta 18+49.00
△ = 0° 59' 09.6" (RT)
D = 0° 52' 53.3"
L = 111.86'
T = 55.93'
R = 6,500.00'
SE = 0.02

-Y5I-
PI Sta 13+41.97
△ = 76° 23' 50.3" (RT)
D = 22° 55' 05.9"
L = 333.35'
T = 196.72'
R = 250.00'
SE = 0.02

BEGIN CONSTRUCTION
-Y5- STA. 10+00.00
-Y5D- POT Sta. 10+00.00

BEGIN CONSTRUCTION
-Y5- STA. 11+58.52

-Y5- POT Sta. 10+00.00

-Y5- PT Sta. 19+04.92

-Y5- PC Sta. 17+93.07

-Y5D- POT Sta.22+67.19=
-Y5D- POT Sta.12+65.36
-Y5I- POT Sta.10+00.00
△ = 89° 37' 43.7"

MATCHLINE SHEET 47
-Y5- STA 24+00.00

MATCHLINE SHEET 50
-Y5I- STA 13+00.00

-Y5I- Sta. 11+45.25

247 SIV-J LLC DB 15455 PG 1906 BM 1967 PG 101
248 SIV-J LLC DB 15427 PG 2022 BM 1967 PG 101
249 J&D PEACOCK PROPERTIES LLC DB 11678 PG 81 BM 1967 PG 101
250 J&D PEACOCK PROPERTIES LLC DB 11678 PG 81 BM 1967 PG 101
251 J&D PEACOCK PROPERTIES LLC DB 11678 PG 81 BM 1967 PG 101
252 UNKNOWN NO DEED ON FILE BM 1967 PG 101 BM 1959 PG 167
253 PAULINE FRAZIER DB 1854 PG 428 BM 1967 PG 101
254 LOCKHOLLY LLC DB 11922 PG 1404 BM 1967 PG 101
255 BETTY AND EARLIE MOORE DB 1754 PG 101 BM 1959 PG 167
256 DONALD AND MARGARET MCNEILL DB 15418 PG 1273 BM 1959 PG 167
257 LOCKHOLLY LLC DB 12961 PG 439 BM 1959 PG 167
258 LOCKHOLLY LLC DB 12961 PG 439 BM 1959 PG 167
259 ROSEN HOLLY SPRINGS II LLC DB 14422 PG 2164 BM 2005 PG 2440
260 ROSEN HOLLY SPRINGS LLC DB 14422 PG 2156 BM 2005 PG 2440
261 JORDAN REAL ESTATE HOLDINGS LLC DB 14287 PG 696 BM 2016 PG 340
262 TA PROPERTIES LLC DB 12899 PG 1660 BM 1967 PG 101
263 TA PROPERTIES LLC DB 12899 PG 1660 BM 1967 PG 101
264 TA PROPERTIES LLC DB 12899 PG 1660 BM 1959 PG 167
265 WADE & ORA BURT DB 12826 PG 1645 BM 1959 PG 167
266 WILLIAM & WADE BURT DB 8816 PG 1835 BM 1959 PG 167

AMERICAN PROPERTIES HOLDINGS LLC DB 11189 PG 1527 BM 2011 PG 109
PARMINDER AND PARDEEP SANDHAR DB 16338 PG 908 BM 1967 PG 101 BM 2004 PG 446
CVS 5886 NC LLC DB 10203 PG 570 BM 2003 PG 666 BM 2004 PG 446
CREEK CLUB, LTD DB 16566 PG 2624 BM 2005 PG 2440

20' TOWN OF HOLLY SPRINGS SANITARY SEWER EASEMENT DB 8688 PG 116
20' TOWN OF HOLLY SPRINGS SANITARY SEWER EASEMENT DB 8688 PG 116 BM 2005 PG 1874
TOWN OF HOLLY SPRINGS SANITARY SEWER EASEMENT BM 2004 PG 446
PERMANENT DRAINAGE EASEMENT BM 2004 PG 446
VARIABLE WIDTH TOWN OF HOLLY SPRINGS UTILITY EASEMENT BM 2005 PG 1874
VARIABLE WIDTH TOWN OF HOLLY SPRINGS UTILITY EASEMENT BM 2005 PG 1874
24' WIDE CROSS-ACCESS EASEMENT BM 2003 PG 666

TOE PROTECTION SEE DETAIL 38A
LAT 4 BASE DITCH w/CL I RIPRAP SEE DETAIL 33A
SPEC BACK OF CURB CUT DITCH SEE DETAIL 16A
175' TRANSITION FROM 30' TO 23' MEDIAN
150' TAPER
125' TAPER
5' CONC. SIDEWALK
5' CONC. SDWK
2'-6" C&G
24" TYP.
2-9'x8' RCBC
18" W/ 2 ELBOWS
15" W/ 2 ELBOWS
REMOVE
RETAIN
TB JB w/MH
SR 1152 HOLLY SPRINGS RD

SEE SHEET 103 FOR -Y5- PROFILE
SEE SHEET 106 FOR -Y5D- PROFILE
SEE SHEET 108 FOR -Y5I- PROFILE
SEE SHEET 2B-33 THRU 2B-34 FOR DRAINAGE DETAILS

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R-2721_RDY_PSH_46.dgn
cookelev

51499

LOCHNER	PROJECT REFERENCE NO.	SHEET NO.
H. W. LOCHNER, INC. 2840 PLAZA PLACE, SUITE 202 RALEIGH, NC 27612 (919) 571-7111 NC License Number F-0159	R-2721	47
SUNGATE DESIGN GROUP, P.A. 305 JONES FRANKLIN ROAD RALEIGH, NORTH CAROLINA 27606 TEL (919) 859-2243 NC FIRM LICENSE NO. C-890	R/W SHEET NO.	
	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
	PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
	DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

PAVED SHOULDER

-Y5-	-Y5F-
PI Sta 34+11.55	PI Sta 3+46.58
△ = 14° 40' 50.6" (LT)	△ = 36° 05' 40.1" (LT)
D = 1° 27' 28.5"	D = 24° 54' 40.4"
L = 1,006.97'	L = 144.89'
T = 506.26'	T = 74.94'
R = 3,930.00'	R = 230.00'
SE = 0.03	SE = NC

NAD 83

MATCHLINE SHEET 46
-Y5- STA 24+00.00

MATCHLINE SHEET 17
-Y5- STA 36+00.00

MATCHLINE SHEET 17
-Y5F- STA 16+50.00

BEGIN CONSTRUCTION
-Y5C- STA. 11+62.50

BEGIN CONSTRUCTION
-Y5F- STA. 11+12.50

-Y5C- POT Sta. 10+00.00

-Y5- POC Sta. 31+15.36=
-Y5E- POT Sta. 10+00.00
△ = 91°20' 34.17"

-Y5- POC Sta. 28+01.68=
-Y5C- POT Sta. 12+65.90
△ = 91°09' 14.71"

-Y5E- POT Sta. 12+99.65=
-Y5F- POT Sta. 12+00.04
△ = 96°53' 04.02"

-Y5- PC Sta. 29+05.29

-Y5F- PC Sta. 12+71.64

-Y5F- PT Sta. 14+16.53

BEGIN NOISEWALL (II-I)
-Y5- Sta. 31+54.15

SR 1152 HOLLY SPRINGS RD

SEE SHEET 103 FOR -Y5- PROFILE	
SEE SHEET 106 FOR -Y5C- PROFILE	
SEE SHEET 2B-33 THRU 2B-34 FOR DRAINAGE DETAILS	SEE SHEET 106 FOR -Y5E- PROFILE
	SEE SHEET 106 FOR -Y5F- PROFILE

6/7/2018
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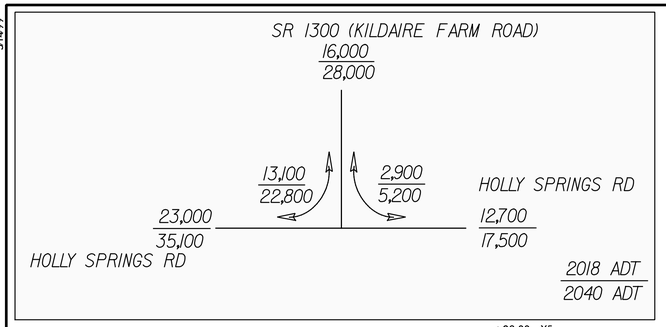
cooksey

51499



LOCHNER

H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
(919) 571-7111
NC License Number F-0159

SUNGATE DESIGN GROUP, P.A.
205 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243 NC FIRM LICENSE NO. C-890

PROJECT REFERENCE NO.	SHEET NO.
R-2721	48
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
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PAVED SHOULDER

PROPOSED SIGNAL

SEE SHEET 2B-33 THRU 2B-34 FOR DRAINAGE DETAILS

SEE SHEET Y5 FOR -I04- PROFILE

SEE SHEET Y5A FOR -I05- PROFILE

SEE SHEET Y5B FOR -I056- PROFILE

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cvolaiv

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PROJECT REFERENCE NO.	SHEET NO.
R-2721	49
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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PAVED SHOULDER

NAD 83

BEGIN CONSTRUCTION
-Y5G- STA. 12+87.50

END CONSTRUCTION
-Y5- STA. 72+50.00

-Y5G- PT Sta. 12+45.82
-Y5G- PC Sta. 13+47.58

-Y5-
PI Sta 65+81.04
Δ = 23° 55' 15.6" (RT)
D = 2° 29' 28.0"
L = 960.25'
T = 487.22'
R = 2,300.00'
SE = 0.04

-Y5G-
PI Sta 11+24.08
Δ = 26° 12' 33.6" (LT)
D = 10° 44' 58.8"
L = 243.82'
T = 124.08'
R = 533.00'
SE = NC

-Y5G-
PI Sta 15+08.42
Δ = 52° 39' 40.0" (RT)
D = 17° 37' 46.1"
L = 298.71'
T = 160.84'
R = 325.00'
SE = 0.04

-Y5- POC Sta.62+65.48=
-Y5G- POT Sta. 17+34.87
Δ = 87°04'30"

-Y5- PT Sta. 70+54.06

-Y5- POT Sta. 72+73.53

MATCHLINE SHEET 48
-Y5- STA 62+00.00

SR 1152 HOLLY SPRINGS RD

600' LANE DROP AND MEDIAN TRANSITION

BRIAN AND ANNAMARY CHURCH
DB 9939 PG 1537
BM 1985 PG 1289

293
BRYANT AND VICTORIA PERDUN
DB 15682 PG 1458
BM 1985 PG 1289

294
SECU*RE INC
DB 16198 PG 1488
BM 1985 PG 1289

GEORGE AND CYNTHIA HARDIN
DB 10678 PG 2695
BM 1985 PG 1794

ALAN AND JENNIFER CLEGG
DB 5616 PG 368
BM 1985 PG 1794

WILLIAM AND BETSY HINE
DB 4153 PG 210
BM 1986 PG 1040

GARY AND JEAN WINGLER
DB 4185 PG 397
BM 1986 PG 1040

414
JOSEPH AND NANCY MACK
DB 7459 PG 58
BM 1985 PG 1289

285
JOHN MITCHELL
DB 11175 PG 1283
BM 1985 PG 1289

295
KATHERINE KALEY
DB 6608 PG 287
BM 1985 PG 1289

AQUA NORTH CAROLINA
DB 13547 PG 76
BM 1985 PG 1118
WELL LOT #2

296
HALLMARK INVESTORS
DB 3435 PG 936
BM 1985 PG 1118

RUSSELL MILLER AND
KIMBERLY KORB
DB 16622 PG 237
BM 1986 PG 1040

298
CHARLES AND LINDA PULLIAM
DB 5594 PG 147
BM 1977 PG 617
BM 1980 PG 539

297
SILAS AND EVON WARD
DB 4077 PG 726
BM 1977 PG 617

291
JAMES HAMPTON, JR.
DB 2846 PG 209
BM 1977 PG 617
BM 1980 PG 539

ST MARYS BAPTIST CHURCH
DB 2375 PG 577

20' ACCESS EASEMENT
BM 1985 PG 1794

APPROXIMATE LOCATION OF 30' DRAINAGE EASEMENT SCALED FROM BM 1986 PG 1040

EASEMENT NEEDED FOR DETOUR

65+00
70+00
75+00
80+00

SEE SHEET 2B-33 THRU 2B-34 FOR DRAINAGE DETAILS

SEE SHEET 105 FOR -Y5- PROFILE
SEE SHEET 107 FOR -Y5G- PROFILE

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cvalsley

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SUNGATE DESIGN GROUP, P.A.
905 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243
NC FIRM LICENSE NO. C-890

PROJECT REFERENCE NO.	SHEET NO.
R-2721	50
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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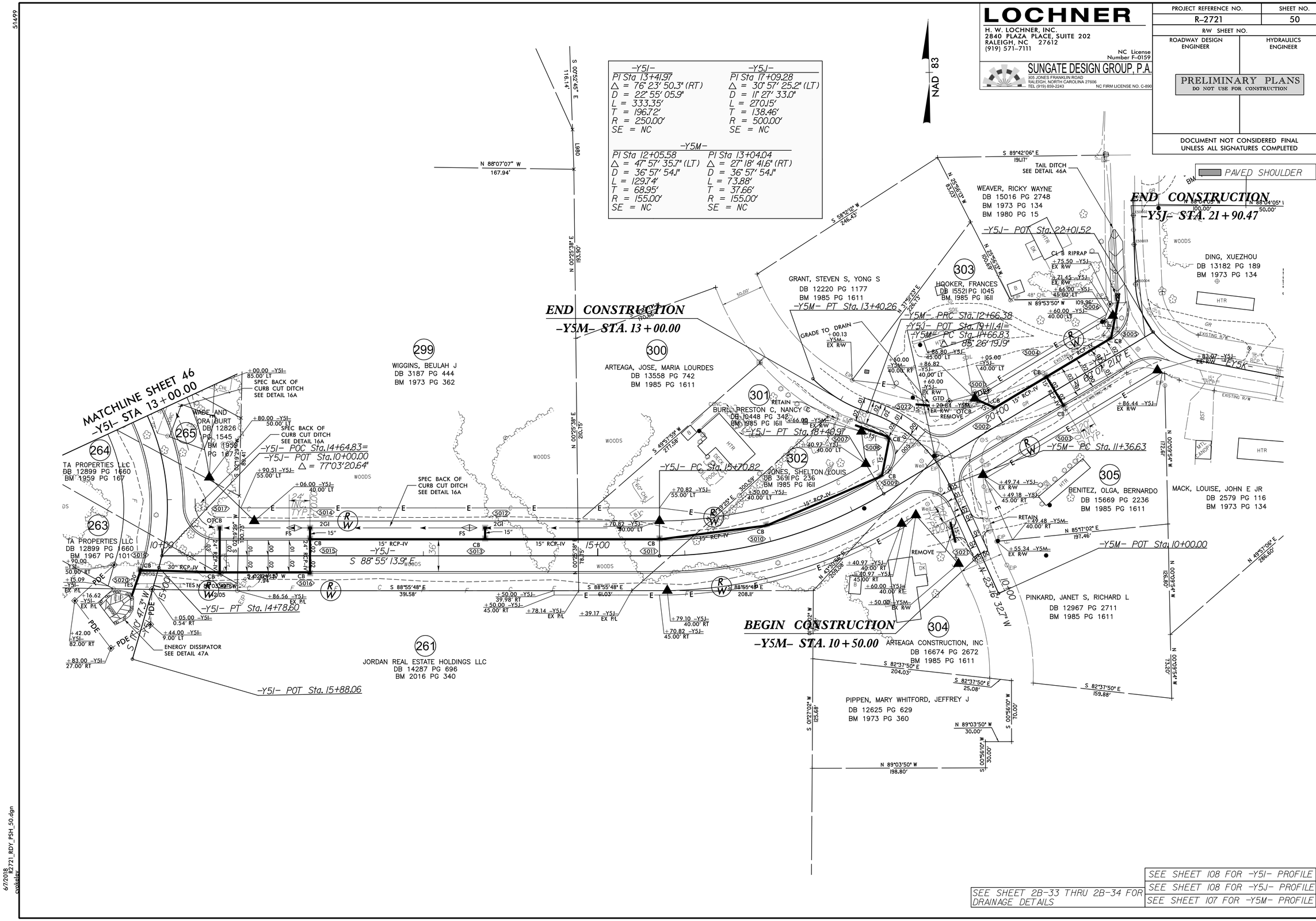

SEE SHEET 2B-33 THRU 2B-34 FOR DRAINAGE DETAILS	SEE SHEET 108 FOR -Y5I- PROFILE
	SEE SHEET 108 FOR -Y5J- PROFILE
	SEE SHEET 107 FOR -Y5M- PROFILE

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cyokeley

-Y5A-		-Y5H-
PI Sta 12+99.12	PI Sta 24+20.15	PI Sta 12+42.53
△ = 25° 31' 34.3" (LT)	△ = 76° 21' 48.0" (RT)	△ = 54° 39' 04.5" (RT)
D = 6° 49' 15.3"	D = 6° 49' 15.3"	D = 36° 57' 54.1"
L = 374.23'	L = 1,119.54'	L = 147.85'
T = 190.27'	T = 660.58'	T = 80.09'
R = 840.00'	R = 840.00'	R = 155.00'
SE = 0.06	SE = 0.06	SE = 0.02

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905 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243 NC FIRM LICENSE NO. C-890

PROJECT REFERENCE NO.	SHEET NO.
R-2721	51
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
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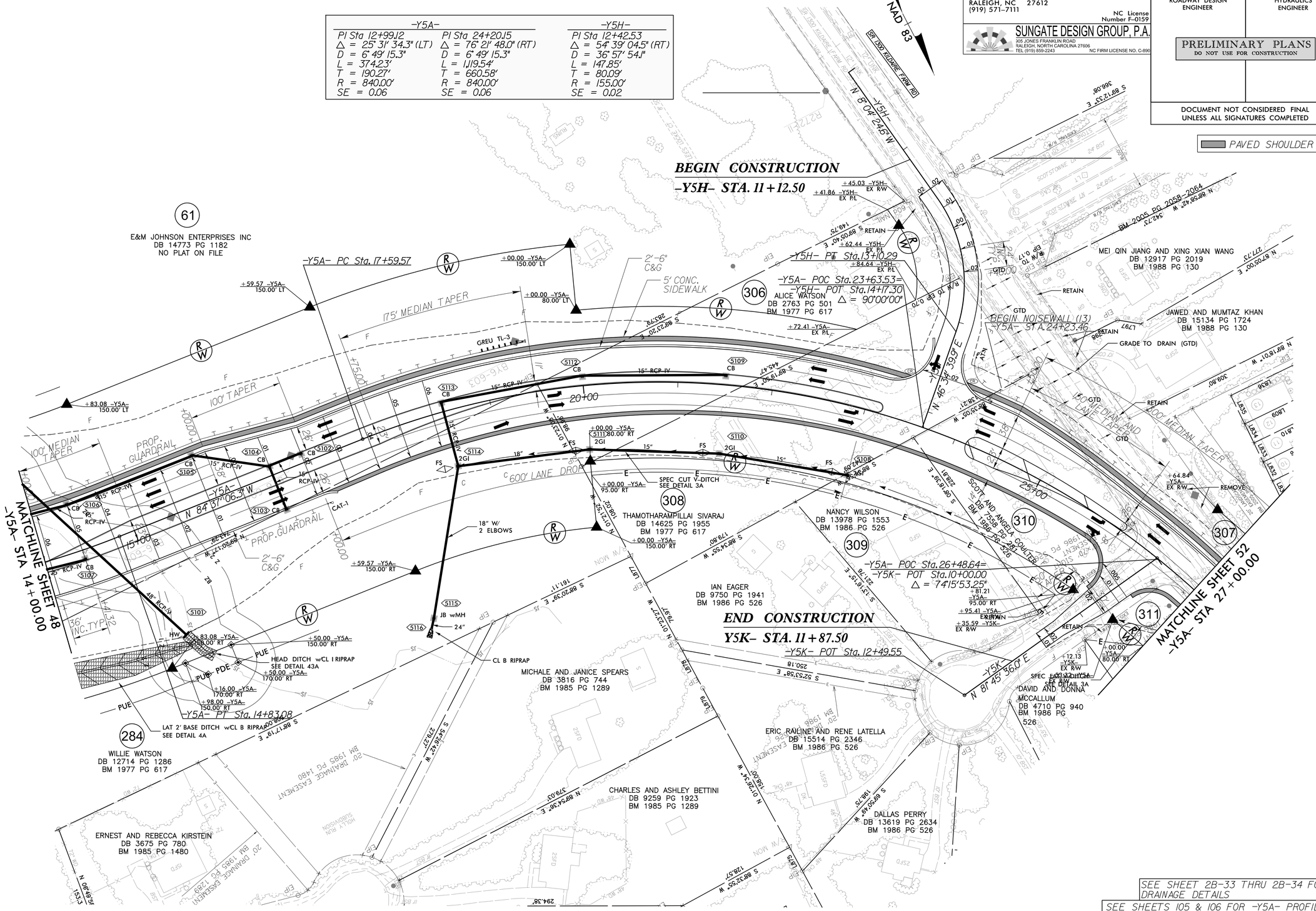
PAVED SHOULDER



SEE SHEET 2B-33 THRU 2B-34 FOR DRAINAGE DETAILS
SEE SHEETS 105 & 106 FOR -Y5A- PROFILE
SEE SHEET 107 FOR -Y5H- PROFILE
SEE SHEET 108 FOR -Y5K- PROFILE

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cvokeley

51499

-Y5A-	-Y5L-
PI Sta 24+20.15	PI Sta 11+06.45
Δ = 76° 21' 48.0" (RT)	Δ = 2° 04' 48.0" (LT)
D = 6° 49' 15.3"	D = 1° 54' 35.5"
L = 1,119.54'	L = 108.91'
T = 660.58'	T = 54.46'
R = 840.00'	R = 3,000.00'
SE = 0.06	SE = NC

DANIEL AND LASHELLE PIERRE
DB 16412 PG 1451
BM 2005 PG 2062

CARLA AND DERECK FUGLEBERG
DB 12143 PG 1323
BM 2005 PG 2062

307
SCOTS LAUREL HOMEOWNERS ASSOC INC
DB 12841 PG 2137
BM 2007 PG 2694
BM 2005 PG 2058-2064

-Y5L- POT Sta. 10+00.00

-Y5L- PC Sta. 10+51.99

BEGIN CONSTRUCTION
-Y5L- STA. 11+12.50

S 01°57'23" W
800.08'

312
TRIANGLE COMMUNITY CHURCH
OF FUQUAY VARINA
DB 8892 PG 764

-Y5L- PT Sta. 11+60.90

SPEC CUT V-DITCH
SEE DETAIL 24A

END CONSTRUCTION
-Y5A- STA. 31+00.00

SR 1300 KILDAIRE FARM RD

-Y5A- N 8° 15' 18.3" W

-Y5A- POT Sta. 35+02.99

MATCHLINE SHEET 51
-Y5A- STA 27+00.00

-Y5A- PT Sta. 28+79.11

311
ANNA AND SEAN STARR
DB 16115 PG 1820
BM 1986 PG 526

-Y5A- POT Sta. 29+19.69=
-Y5L- POT Sta. 12+72.89
Δ = 83°49'29.70"

SHAYNE AND CHRISTINE ROIX
DB 5023 PG 491
BM 1985 PG 1118

313
THOMAS MONGERO
DB 15744 PG 1675
BM 1985 PG 1118

DAVID AND DONNA MCCALLUM
DB 4710 PG 940
BM 1986 PG 526

PAUL AND STEFANIE ZIZZO
DB 11648 PG 1787
BM 1991 PG 69

ESTHER FLEISCHHACKER
DB 16238 PG 1220
BM 1985 PG 1118

SIDNEY AND JANICE ELSTON
DB 15728 PG 1093
BM 1986 PG 526

JOHN AND ROSARIO GRAVINO
DB 11257 PG 2734
BM 1985 PG 1118
BM 1991 PG 69

PAVED SHOULDER

NAD 83

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2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
(919) 571-7111
NC License Number F-0159

SUNGATE DESIGN GROUP, P.A.
305 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243 NC FIRM LICENSE NO. C-890

PROJECT REFERENCE NO.	SHEET NO.
R-2721	52
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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SEE SHEET 2B-33 THRU 2B-34 FOR DRAINAGE DETAILS
SEE SHEET 106 FOR -Y5A- PROFILE
SEE SHEET 108 FOR -Y5L- PROFILE

SEE SHEET 2B-33 THRU 2B-34 FOR DRAINAGE DETAILS

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cooklew

LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
(919) 571-7111
NC License Number F-0159

ECOLOGICAL ENGINEERING
NC FIRM LICENSE No: F-1148
1151 SE Cary Parkway
Suite 101
Cary, NC 27518
(919) 557-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2721	53
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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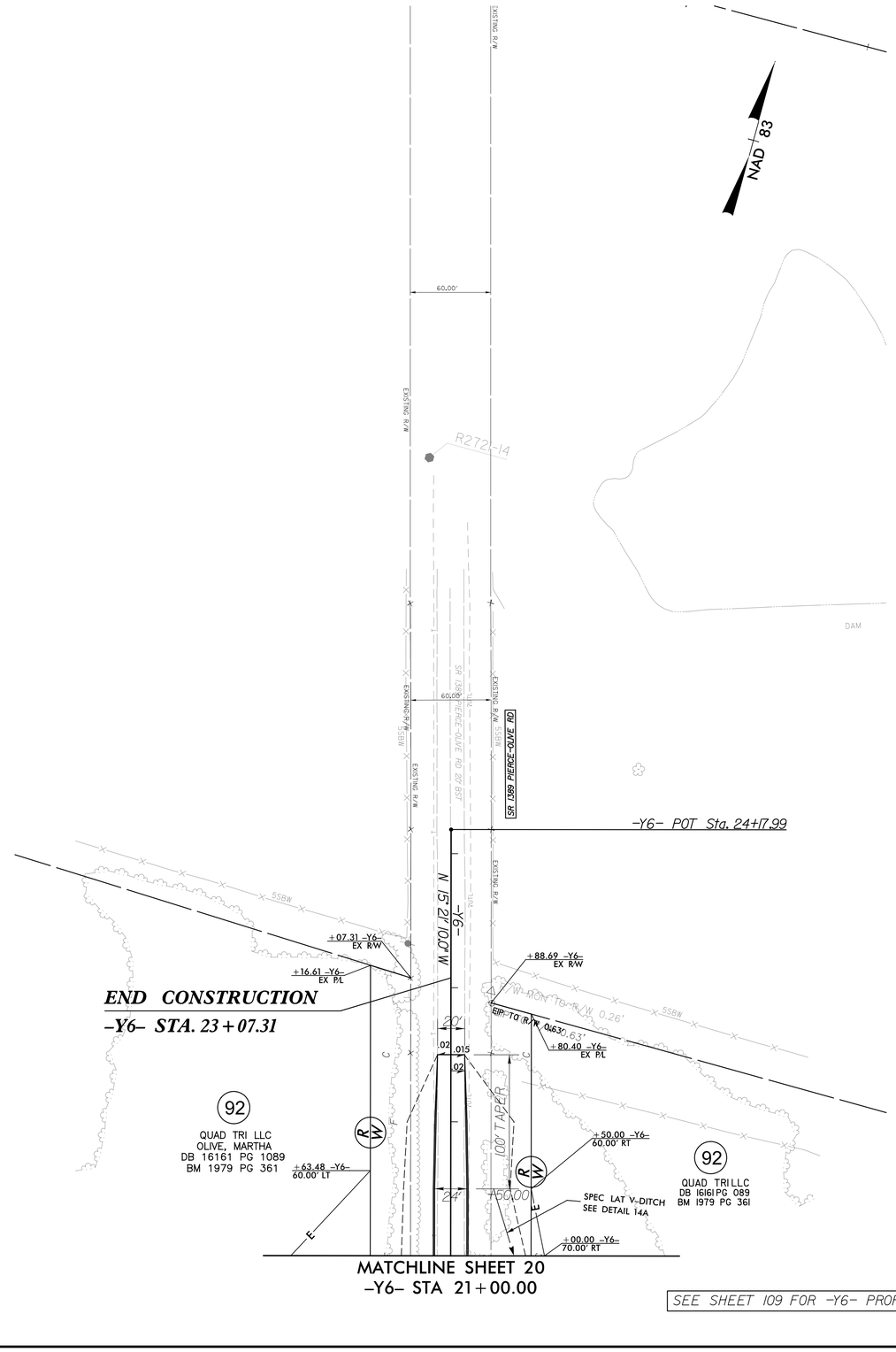
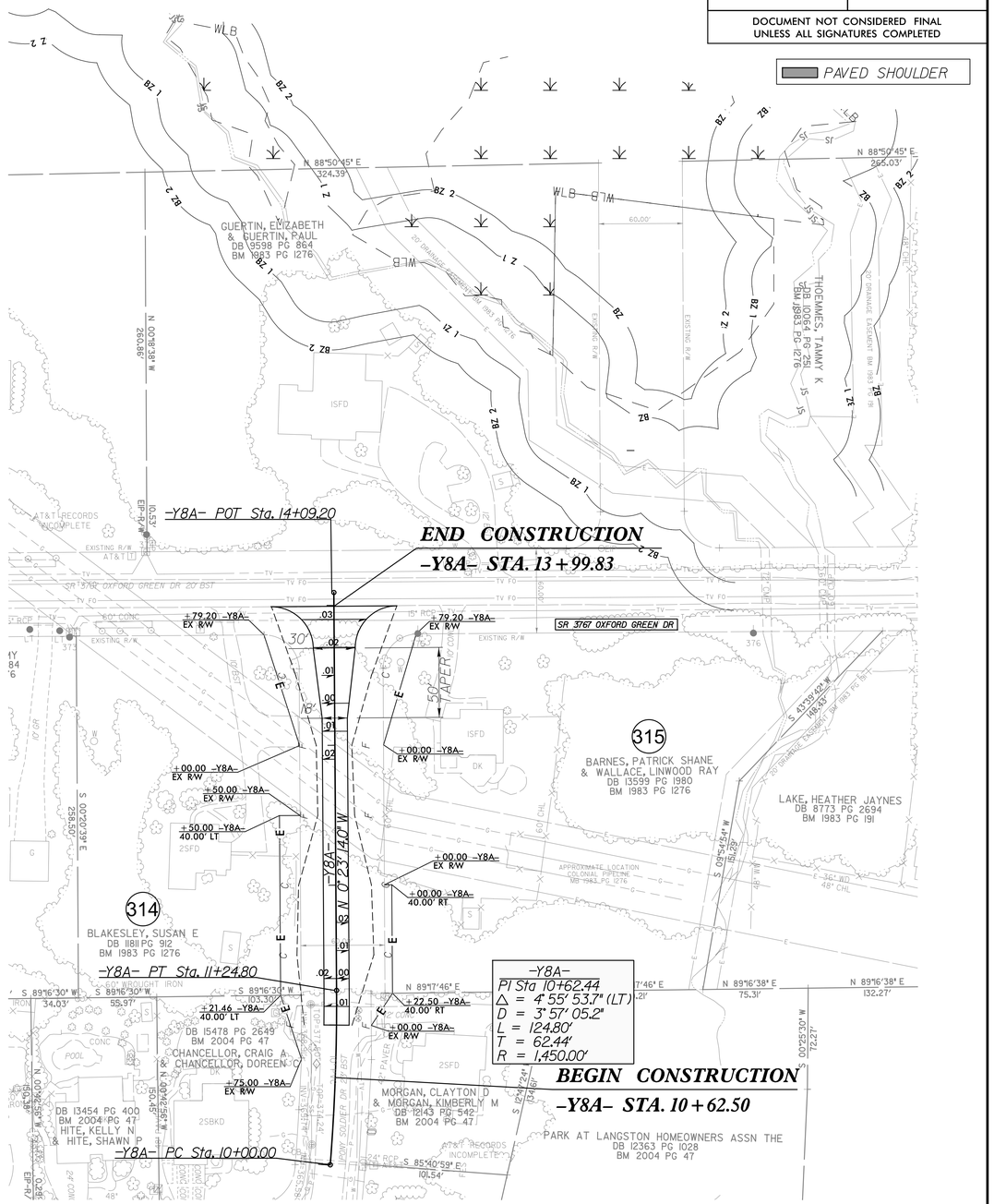


SEE SHEET 109 FOR -Y6- PROFILE



SEE SHEET 112 FOR -Y8A- PROFILE
SEE SHEET 112 FOR -Y8B- PROFILE

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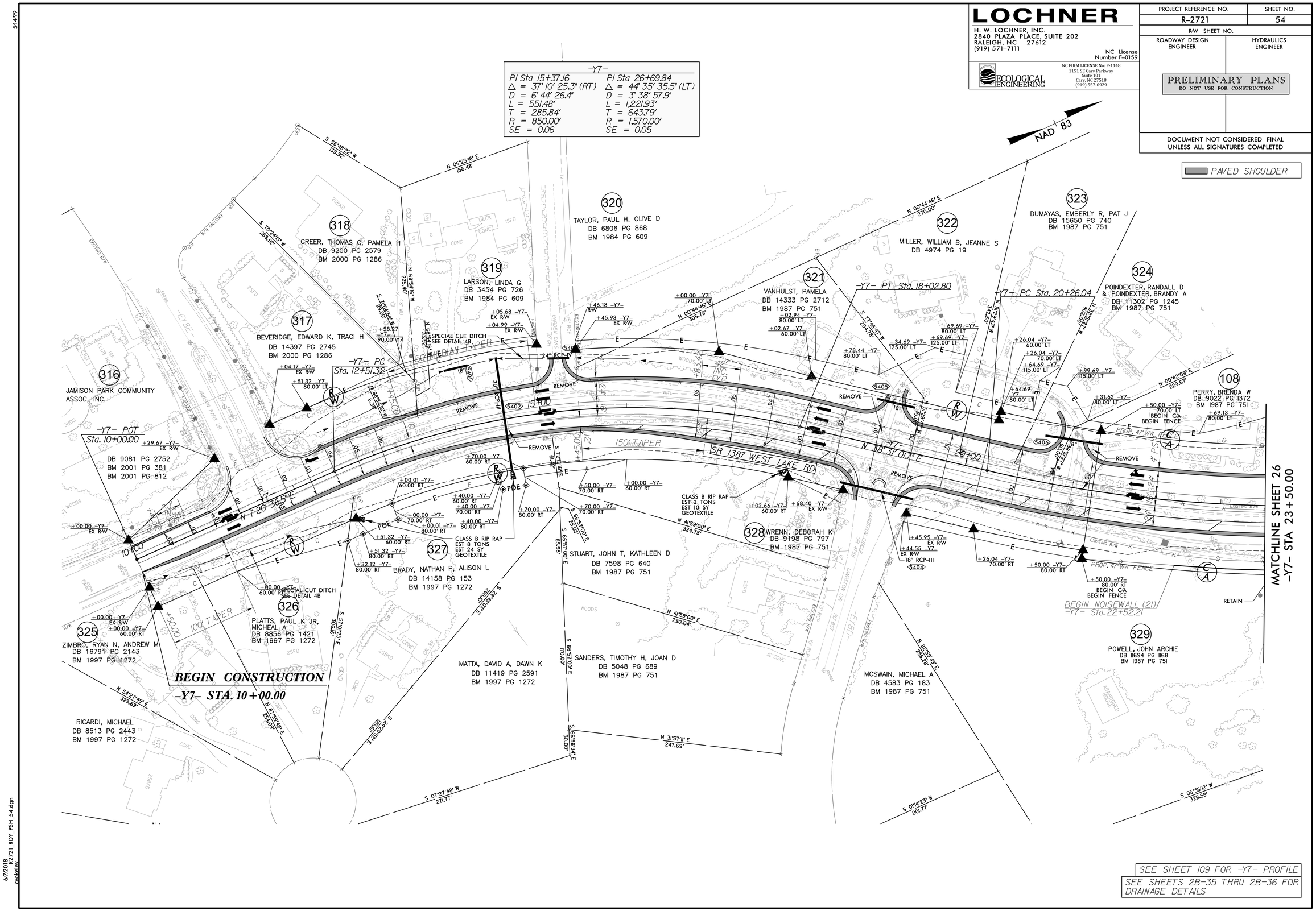
cvokeley



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2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
(919) 571-7111
NC License Number F-0159
ECOLOGICAL ENGINEERING
NC FIRM LICENSE No: F-1148
1151 SE Cary Parkway
Suite 101
Cary, NC 27518
(919) 557-0929
PROJECT REFERENCE NO.
R-2721
SHEET NO.
54
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
PAVED SHOULDER
-Y7-
PI Sta 15+37.16
△ = 37° 10' 25.3" (RT)
D = 6° 44' 26.4"
L = 551.48'
T = 285.84'
R = 850.00'
SE = 0.06
PI Sta 26+69.84
△ = 44° 35' 35.5" (LT)
D = 3° 38' 57.9"
L = 1,221.93'
T = 643.79'
R = 1,570.00'
SE = 0.05
NAD 83
318 GREER, THOMAS C, PAMELA H
DB 9200 PG 2579
BM 2000 PG 1286
319 LARSON, LINDA G
DB 3454 PG 726
BM 1984 PG 609
320 TAYLOR, PAUL H, OLIVE D
DB 6806 PG 868
BM 1984 PG 609
321 VANHULST, PAMELA
DB 14333 PG 2712
BM 1987 PG 751
322 MILLER, WILLIAM B, JEANNE S
DB 4974 PG 19
323 DUMAYAS, EMBERLY R, PAT J
DB 15650 PG 740
BM 1987 PG 751
324 POINDEXTER, RANDALL D & POINDEXTER, BRANDY A
DB 11302 PG 1245
BM 1987 PG 751
317 BEVERIDGE, EDWARD K, TRACI H
DB 14397 PG 2745
BM 2000 PG 1286
316 JAMISON PARK COMMUNITY ASSOC, INC
-Y7- POT Sta. 10+00.00
DB 9081 PG 2752
BM 2001 PG 381
BM 2001 PG 812
-Y7- PC Sta. 12+51.32
-Y7- PT Sta. 18+02.80
-Y7- PC Sta. 20+26.04
108 PERRY, BRENDA W
DB 9022 PG 1372
BM 1987 PG 751
SR 1387 WEST LAKE RD
150' TAPER
100' TAPER
CLASS B RIP RAP EST 3 TONS EST 10 SY GEOTEXTILE
CLASS B RIP RAP EST 8 TONS EST 24 SY GEOTEXTILE
327 BRADY, NATHAN P, ALISON L
DB 14158 PG 153
BM 1997 PG 1272
328 WRENN, DEBORAH K
DB 9198 PG 797
BM 1987 PG 751
STUART, JOHN T, KATHLEEN D
DB 7598 PG 640
BM 1987 PG 751
326 PLATTS, PAUL K JR, MICHEAL A
DB 8856 PG 1421
BM 1997 PG 1272
325 ZIMBRO, RYAN N, ANDREW M
DB 16791 PG 2143
BM 1997 PG 1272
BEGIN CONSTRUCTION
-Y7- STA. 10+00.00
MATTA, DAVID A, DAWN K
DB 11419 PG 2591
BM 1997 PG 1272
SANDERS, TIMOTHY H, JOAN D
DB 5048 PG 689
BM 1987 PG 751
MCSWAIN, MICHAEL A
DB 4583 PG 183
BM 1987 PG 751
329 POWELL, JOHN ARCHIE
DB 11694 PG 1168
BM 1987 PG 751
RICARDI, MICHAEL
DB 8513 PG 2443
BM 1997 PG 1272
BEGIN NOISEWALL (21)
-Y7- Sta. 22+52.21
MATCHLINE SHEET 26
-Y7- STA 23+50.00
SEE SHEET 109 FOR -Y7- PROFILE
SEE SHEETS 2B-35 THRU 2B-36 FOR DRAINAGE DETAILS

LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
(919) 571-7111
NC License Number F-0159

ECOLOGICAL ENGINEERING
NC FIRM LICENSE No: F-1148
1151 SE Cary Parkway
Suite 101
Cary, NC 27518
(919) 557-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2721	55
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

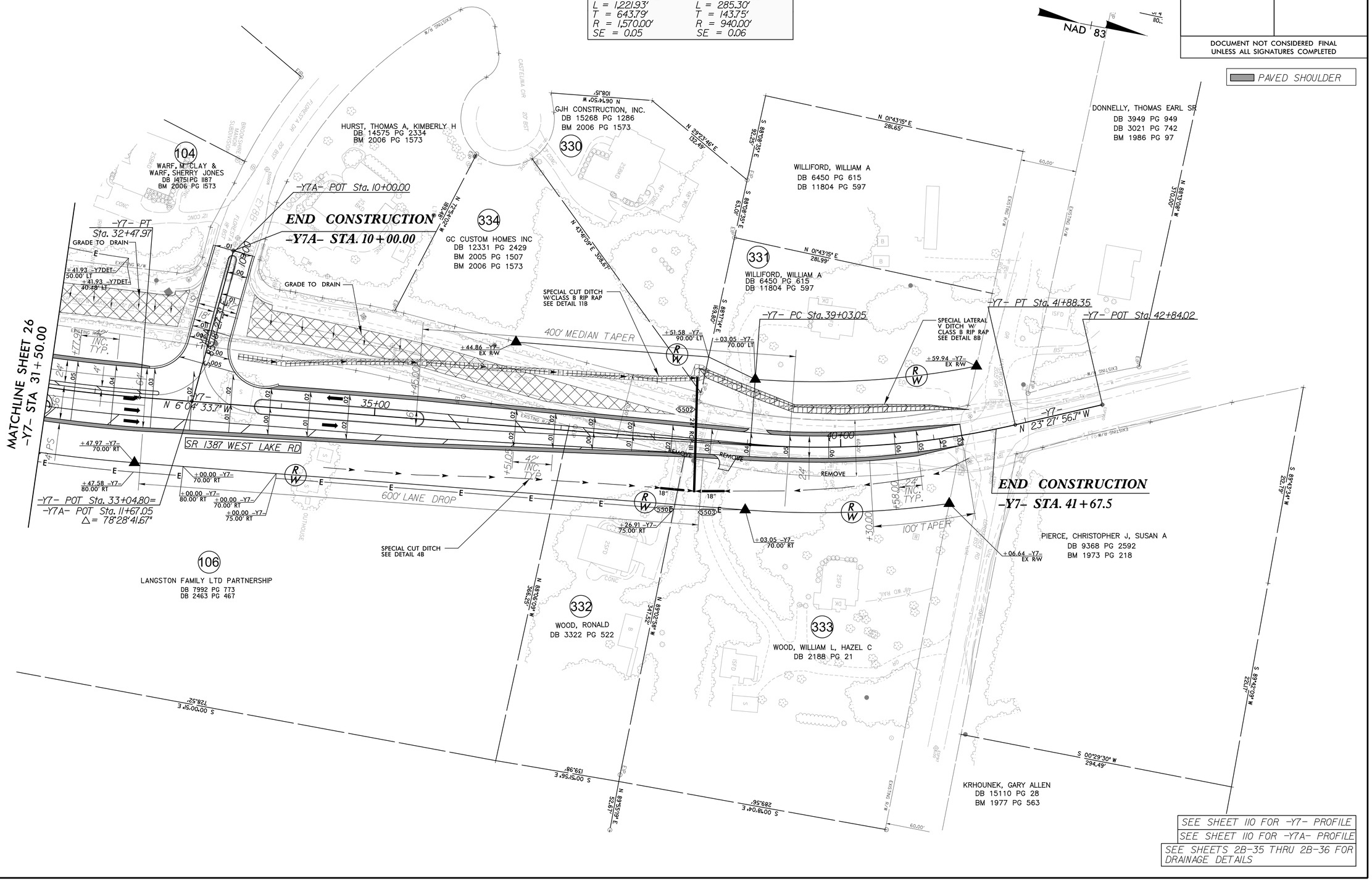
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PAVED SHOULDER

-Y7-

PI Sta 26+69.84	PI Sta 40+46.80
△ = 44° 35' 35.5" (LT)	△ = 17° 23' 23.0" (LT)
D = 3° 38' 57.9"	D = 6° 05' 43.1"
L = 1,221.93'	L = 285.30'
T = 643.79'	T = 143.75'
R = 1,570.00'	R = 940.00'
SE = 0.05	SE = 0.06



SEE SHEET 110 FOR -Y7- PROFILE
SEE SHEET 110 FOR -Y7A- PROFILE
SEE SHEETS 2B-35 THRU 2B-36 FOR DRAINAGE DETAILS

5/14/99
6/7/2018
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cvokeley

51499

-Y8-	-Y8-
PI Sta 15+17.78	PI Sta 23+00.32
Δ = 3°58'05.6" (LT)	Δ = 5°06'20.1" (RT)
D = 0°58'16.0"	D = 0°57'17.7"
L = 408.63'	L = 534.66'
T = 204.39'	T = 267.50'
R = 5,900.00'	R = 6,000.00'

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NC FIRM LICENSE No: F-1148
1151 SE Cary Parkway
Suite 101
Cary, NC 27518
(919) 557-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2721	56
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

PAVED SHOULDER

MATCHLINE SHEET 28
-Y7- STA 23+00.00

SEE SHEET 111 FOR -Y8- PROFILE
SEE SHEET 112 FOR -Y8D- PROFILE
SEE SHEETS 2B-35 THRU 2B-36 FOR DRAINAGE DETAILS

6/7/2018
R2721_RDY_PSH_56.dgn
cookelew

51499

-Y8-	-Y8-	-Y8-	-Y8C-
PI Sta 42+82.85	PI Sta 50+29.38	PI Sta 52+20.68	PI Sta 10+71.11
Δ = 14° 51' 20.9" (RT)	Δ = 15° 45' 25.6" (LT)	Δ = 4° 11' 57.4" (LT)	Δ = 28° 38' 39.8" (RT)
D = 2° 51' 53.2"	D = 6° 44' 26.4"	D = 2° 47' 41.7"	D = 28° 38' 52.4"
L = 518.57'	L = 233.76'	L = 150.25'	L = 99.99'
T = 260.75'	T = 117.62'	T = 75.16'	T = 51.06'
R = 2,000.00'	R = 850.00'	R = 2,050.00'	R = 200.00'

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Cary, NC 27518
(919) 557-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2721	57
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

PAVED SHOULDER

-Y8C- POT Sta. 10+00.00
N 72° 19' 31.2" E
-Y8C- PC Sta. 10+20.05

BEGIN CONSTRUCTION -Y8C- STA. 10+87.50

-Y8- PC Sta. 40+22.10
-Y8- PT Sta. 45+40.67
-Y8- PC Sta. 49+11.76
-Y8- PCC Sta. 51+45.52

END CONSTRUCTION -Y8- STA. 50+80.80

-Y8- POC Sta. 43+81.16=
-Y8C- POT Sta. 12+60.22 Δ = 84°49'14.26"

-Y8- N 20° 43' 07.4" E

MATCHLINE SHEET 28 -Y8- STA 38+00.00

SR 1386 BELLS LAKE RD

BY-PASS

112 WILLIAMS, SEYDRIC L & WILLIAMS, MEKEISHA P DB 15448 PG 1828 BM 2000 PG 1544

347 GREER, THOMAS C & GREER, SUSAN J P DB 12003 PG 316 BM 2000 PG 1544

348 PRICE, BARNEY K & PRICE, KIM B DB 12202 PG 1969 BM 2000 PG 1544

349 ANDREWS, MARK P & ANDREWS, MARY C DB 14671 PG 726 BM 2000 PG 1544

350 PIEZER, KEVIN W & PIEZER, HEATHER L DB 15284 PG 1682 BM 2000 PG 1544

351 BRENINGMEYER, LAURIE DB 16060 PG 2241 BM 2000 PG 1544

352 MCNAIR, GRETCHEN & MCNAIR, JERRY DB 11011 PG 1255 BM 2000 PG 1544

353 GUILLORY, LARRY J & GUILLORY, NATASHA DB 13447 PG 848 BM 2000 PG 1544

354 CLARKE, ROBERT LEE & CLARKE, AMY LORI DB 15222 PG 2482 BM 2000 PG 1544

355 ELEZAJ, ANTONIO & ELEZAJ, YADIRA DB 16060 PG 2136 BM 2000 PG 1544

356 BAKER, JOHN R & BAKER, MARSHA P DB 3767 PG 201 BM 1984 PG 1616

357 PALMER, MARK A & PALMER, MARY C DB 16172 PG 83 BM 1986 PG 155

358 THAMES, RICHARD DB 12161 PG 1902 BM 1992 PG 195 BM 1988 PG 1542

359 COCHRAN, KEVIN & COCHRAN, TAMMY HALL DB 8760 PG 28 BM 1986 PG 939

360 DB 15706 PG 1235 BM 2001 PG 407 WOODMAN, JR, MARC

114 STEGEMAN, SANDRA JO & STEGEMAN, JERRY LYNN DB 11503 PG 2047 BM 1984 PG 1616

TOMOS, LARRY & TOMOS, ANDREIA DB 12637 PG 1738 BM 2000 PG 1544

CLARK, SHEILA D & CLARK, WILLIAM P DB 15828 PG 1888 BM 2000 PG 1544

NELSON, JACK W DB 12461 PG 1145 BM 2001 PG 407

BYRD, ROY EARL & BYRD, KATRINA SANDRA DB 10364 PG 408 BM 2001 PG 407

THE STRICKLAND-TAYAO FAMILY TRUST DB 15071 PG 1072 BM 2001 PG 407

PEARSALL, JASON DB 13672 PG 2435 BM 2001 PG 407

WILLIAMS, GEORGE W & WILLIAMS, JAN W DB 8513 PG 2631 BM 2001 PG 407

DELGIUDICE, ANTHONY & DELGIUDICE, THERESA A DB 15948 PG 706 BM 2001 PG 407

CONTERELLI, PORTIA L & CONTERELLI, JOHN A DB 14816 PG 1489 BM 2000 PG 1544

EASEMENT NEEDED FOR RETAIN

SPECIAL CUT DITCH SEE DETAIL 4B

CLASS B RIP RAP EST 7 TONS EST 7 SY GEOTEXTILE

CLASS B RIP RAP EST 3 TONS EST 10 SY GEOTEXTILE

CLASS B RIP RAP EST 6 TONS EST 20 SY GEOTEXTILE

150' TAPER

350' MEDIAN TAPER

100' TAPER

SEE SHEET 112 FOR -Y8- PROFILE
SEE SHEET 112 FOR -Y8C- PROFILE
SEE SHEETS 2B-35 THRU 2B-36 FOR DRAINAGE DETAILS

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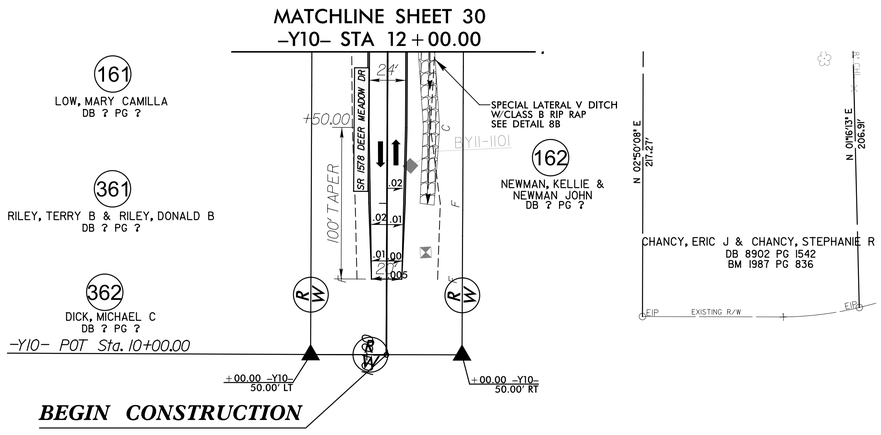
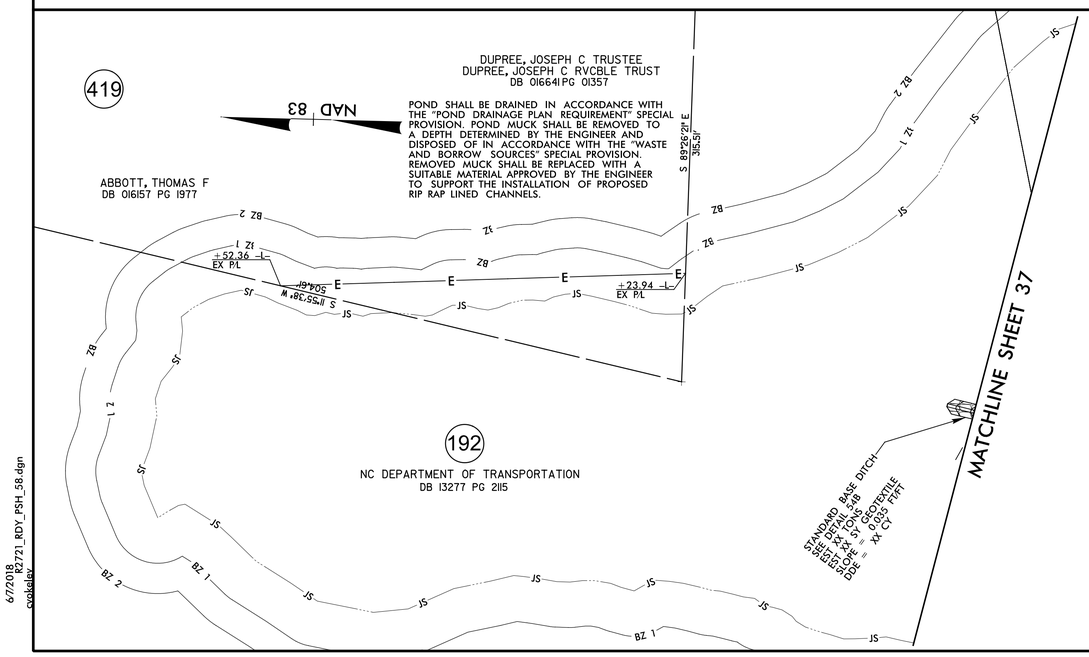


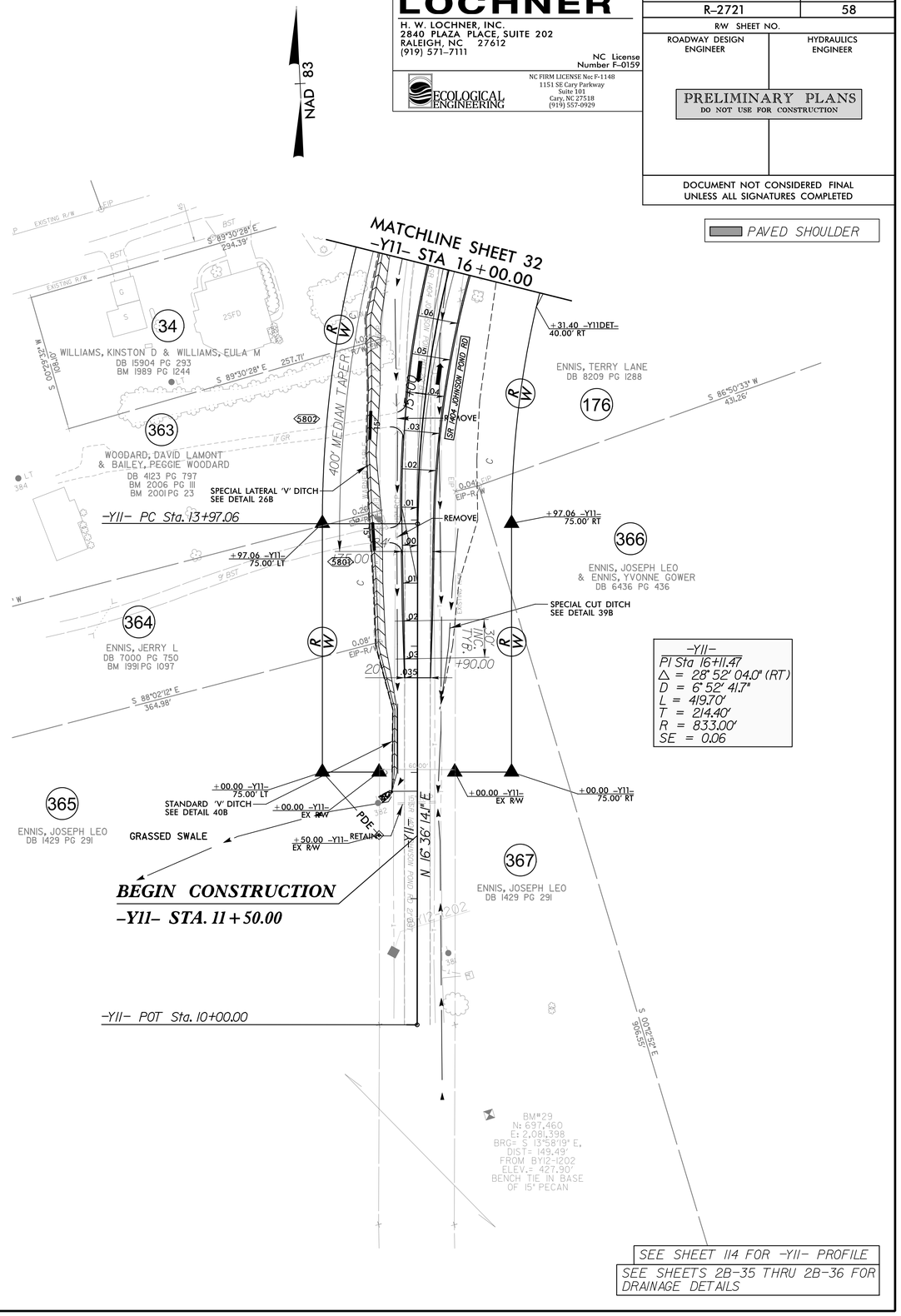
SEE SHEET 113 FOR -Y10- PROFILE

SEE SHEETS 2B-35 THRU 2B-36 FOR DRAINAGE DETAILS



SEE SHEET 114 FOR -Y11- PROFILE

SEE SHEETS 2B-35 THRU 2B-36 FOR DRAINAGE DETAILS



PAVED SHOULDER

LOCHNER

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ECOLOGICAL ENGINEERING
NC FIRM LICENSE No: F-1148
1151 SE Cary Parkway
Suite 101
Cary, NC 27518
(919) 557-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2721	58
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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cvolsky

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PROJECT REFERENCE NO.	SHEET NO.
R-2721	59
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
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NAD 83

PAVED SHOULDER

-Y10-	-Y10B-	
PI Sta 23+32.61	PI Sta 13+22.17	PI Sta 16+59.20
Δ = 0° 04' 52.5" (LT)	Δ = 45° 53' 44.5" (LT)	Δ = 44° 00' 36.1" (LT)
D = 0° 08' 35.7"	D = 22° 55' 05.9"	D = 35° 48' 35.5"
L = 56.72'	L = 200.26'	L = 122.90'
T = 28.36'	T = 105.85'	T = 64.66'
R = 40,000.00'	R = 250.00'	R = 160.00'

BEGIN CONSTRUCTION -Y10- STA. 10+59.80

-Y10- POT Sta. 28+18.84

-Y10- POT Sta. 26+59.76=

-Y10B- POT Sta. 18+69.71

-Y10B- PT Sta. 17+17.44

-Y10B- PC Sta. 15+94.54

-Y10B- PT Sta. 14+16.58

-Y10B- PC Sta. 12+16.32

-Y10B- POT Sta. 10+00.00

-Y10- PT Sta. 23+60.97

-Y10- PC Sta. 23+04.25

END CONSTRUCTION -Y10- STA. 23+00.00

BEGIN CONSTRUCTION -Y10B- STA. 10+62.58

-Y10- PT Sta. 21+03.45

MATCHLINE SHEET 30 -Y10- STA 21+00.00

SEE SHEET 113 FOR -Y10- PROFILE

SEE SHEET 114 FOR -Y10B- PROFILE

SEE SHEETS 2B-35 THRU 2B-36 FOR DRAINAGE DETAILS

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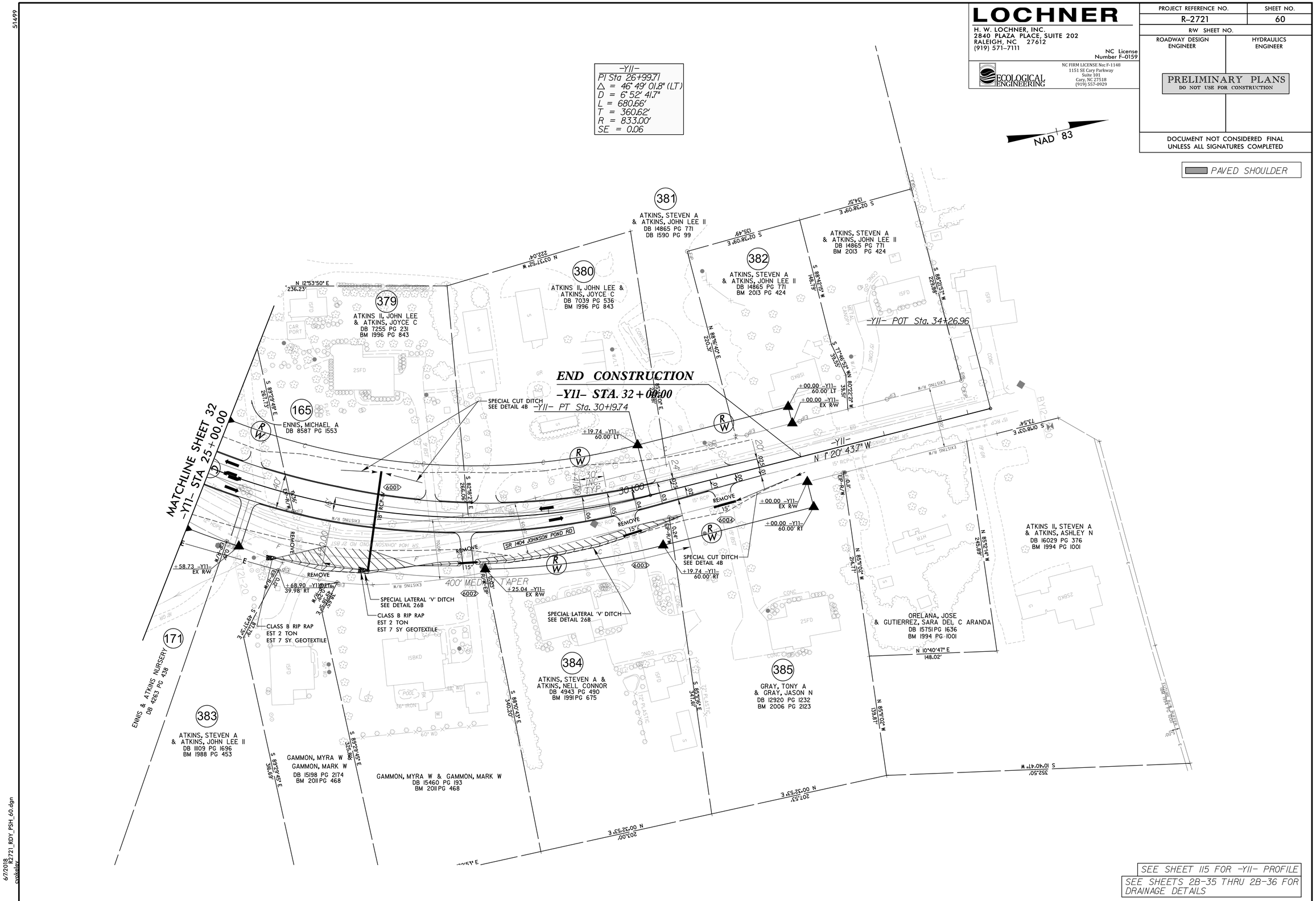
cookelev



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1151 SE Cary Parkway
Suite 101
Cary, NC 27518
(919) 557-0929
PROJECT REFERENCE NO.
R-2721
SHEET NO.
60
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
PAVED SHOULDER
-Y11-
PI Sta 26+99.71
Δ = 46° 49' 01.8" (LT)
D = 6° 52' 41.7"
L = 680.66'
T = 360.62'
R = 833.00'
SE = 0.06
NAD 83
-Y11- POT Sta. 34+26.96
END CONSTRUCTION
-Y11- STA. 32+00.00
-Y11- PT Sta. 30+19.74
MATCHLINE SHEET 32
-Y11- STA 25+00.00
SPECIAL CUT DITCH SEE DETAIL 4B
SPECIAL LATERAL 'V' DITCH SEE DETAIL 26B
CLASS B RIP RAP EST 2 TON EST 7 SY GEOTEXTILE
SR 1404 JOHNSON POND RD
400' MEDIAN TAPER
REMOVE
ATKINS, STEVEN A & ATKINS, JOHN LEE II DB 14865 PG 771 DB 1590 PG 99
ATKINS, STEVEN A & ATKINS, JOHN LEE II DB 14865 PG 771 BM 2013 PG 424
ATKINS II, JOHN LEE & ATKINS, JOYCE C DB 7039 PG 536 BM 1996 PG 843
ATKINS II, JOHN LEE & ATKINS, JOYCE C DB 7255 PG 231 BM 1996 PG 843
ENNIS, MICHAEL A DB 8587 PG 1553
ENNIS & ATKINS NURSERY DB 4263 PG 438
ATKINS, STEVEN A & ATKINS, JOHN LEE II DB 11109 PG 1696 BM 1988 PG 453
GAMMON, MYRA W GAMMON, MARK W DB 15198 PG 2174 BM 2011 PG 468
GAMMON, MYRA W & GAMMON, MARK W DB 15460 PG 193 BM 2011 PG 468
ATKINS, STEVEN A & ATKINS, NELL CONNOR DB 4943 PG 490 BM 1991 PG 675
GRAY, TONY A & GRAY, JASON N DB 12920 PG 1232 BM 2006 PG 2123
ORELANA, JOSE & GUTIERREZ, SARA DEL C ARANDA DB 15751 PG 1636 BM 1994 PG 1001
ATKINS II, STEVEN A & ATKINS, ASHLEY N DB 16029 PG 376 BM 1994 PG 1001
SEE SHEET 115 FOR -Y11- PROFILE
SEE SHEETS 2B-35 THRU 2B-36 FOR DRAINAGE DETAILS

51499

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Suite 101
Cary, NC 27518
(919) 557-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2721	61
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PAVED SHOULDER

NAD 83

BEGIN CONSTRUCTION
-Y12B- STA. 10+00.00

-Y12B-

PI Sta 10+98.36	PI Sta 15+67.57
△ = 36° 26' 50.5" (LT)	△ = 51° 24' 45.3" (LT)
D = 49° 49' 20.7"	D = 22° 55' 05.9"
L = 73.15'	L = 224.33'
T = 37.86'	T = 120.35'
R = 115.00'	R = 250.00'
SE = NC	SE = NC

STANDARD BASE DITCH
SEE DETAIL ?
SLOPE= 0.4%
DDE= ? CY
EST= XX TONS
ES= XX SY GEOTEXTILE

+00.00 -Y12B- 30.00' RT
+30.00 -Y12B- 30.00' RT
+00.00 -Y12B- 30.00' LT
-Y12B- POT Sta. 10+00.00
S 0° 55' 54" W
STANDARD CUT DITCH
SEE DETAIL 4B
186
6101
+60.50 -Y12B- 30.00' LT
-Y12B- PC Sta. 10+60.50
+30.00 -Y12B- 99.70' RT
PDE
+60.50 -Y12B- 30.00' RT
PDE
24" RCP-IV
CLASS B RIP RAP
EST 100 TONS
EST 14 SY GEOTEXTILE
+00.00 -Y12B- 30.00' RT
-Y12B- PT Sta. 11+33.65
+00.00 -Y12B- 30.00' LT
+50.00 -Y12B- 60.00' LT
S 89°23'18" E 423.19'
60' PRIVATE EASEMENT (BM 1985 PG 1053)
+85.00 -Y12B- 60.00' LT
+97.50 -Y12B- 35.00' LT
+00.00 -Y12B- 30.00' LT
188
O'BRYANT, PATRICK C & O'BRYANT, HUBERT A
DB 12406 PG 418
BM 2008 PG 1492
O'BRYANT, PATRICK C
DB 12406 PG 418
BM 2008 PG 1492
+40.00 -Y12B- 60.00' RT
+70.00 -Y12B- 60.00' RT
+95.00 -Y12B- 35.00' RT
+00.00 -Y12B- 30.00' RT
S 35° 30' 53" E
-Y12B- PC Sta. 14+47.22
+47.22 -Y12B- 30.00' LTS
S 87°27'04" E 793.94'
-Y12B- PT Sta. 16+71.55
+71.55 -Y12B- 30.00' LT
+00.62 -Y12B- 30.00' LT
6102
18" RCP-III
15400
+47.22 -Y12B- 30.00' RT
+47.22 -Y12B- 35.00' RT
+70.00 -Y12B- 30.00' RT
+30.00 -Y12B- 30.00' RT
+30.00 -Y12B- 45.00' RT
PDE
+55.00 -Y12B- 45.00' RT
+55.00 -Y12B- 30.00' RT
CLASS B RIP RAP
EST 2 TON
EST 7 SY GEOTEXTILE
-Y12B- S 86° 55' 39.0" E 1598.39'
+71.55 -Y12B- 30.00' RT
MATCHLINE SHEET 35
-Y12B- STA 18+00.00
189
ARNOLD, WINIFRED W
DB 2056 PG 562
BM 1977 PG 855
BM 2008 PG 1492
WALTON, JONATHAN BRUCE
DB 13267 PG 216
BM 2008 PG 1552
WETHERILL, TED J
DB 10732 PG 1122
BM 1986 PG 884
THOMAS, MAXINE GERALD & JORDAN, CLAUDIA
DB 15005 PG 1997
60' INGRESS/EGRESS EASEMENT (BM 1986 PG 2222)
50' COLONIAL PIPELINE EASEMENT (DB 1560 PG 479)
N 85°47'04" W 105.41'
N 86°23'41" W 19.60'
N 85°54'26" W 138.61'
N 85°52'59" W 219.96'
N 02°54'49" E 384.85'
N 02°35'20" E 384.32'
S 02°54'49" W 384.85'
S 02°35'20" W 384.32'
N 85°44'44" W 139.94'
N 85°44'44" W 220.06'
S 85°58'51" E 346.43'
S 87°27'46" E 123.90'
N 02°46'53" W 87.08'

SEE SHEET 116 FOR -Y12B- PROFILE
SEE SHEETS 2B-35 THRU 2B-36 FOR DRAINAGE DETAILS

6/7/2018
R2721_RDY_PSH_61.dgn
cookele

51499

LOCHNER

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(919) 557-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2721	62
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PAVED SHOULDER

NAD 83

MATCHLINE SHEET 63
-Y13- STA 35+00.00

BEGIN CONSTRUCTION
-Y13- STA. 20+40.00

JENKINS PROPERTIES LIMITED PARTNERSHIP
DB 15785 PG 2765
BM 2014 PG 775
BM 1955 PG 088

JENKINS PROPERTIES L.P
DB 16137 PG 2722
BM 2016 PG 445

AMPLE FINANCIAL SERVICES LLC
DB 15447 PG 1741
BM 1955 PG 88

E 85 TRANSPORT LLC
DB 14582 PG 2563
BM 1955 PG 88

386
FUQUAY VARINA STORAGE LLC
DB 2192 PG 386
BM 15690 PG 539

388
CHANDLER RIDGE LTD PTNRP
DB 8320 PG 1870
BM 1999 PG 066

387
UTLEY, BOBBY LEE
& UTLEY, THELMA T
DB 2192 PG 386

204
WAKE TECHNICAL COLLEGE
DB 2106 PG 387
BM 1988 PG 228

WAKE TECHNICAL COMMUNITY COLLEGE
DB 10556 PG 2358
BM 1955 PG 88

WAKE TECHNICAL COMMUNITY COLLEGE TRUSTEES
DB 8106 PG 1500
BM 1998 PG 1193

TRUSTEES OF WAKE TECHNICAL COMMUNITY COLLEGE
DB 16071PG 284

WAKE TECHNICAL COMMUNITY COLLEGE FOUNDATION INC
DB 16063 PG 2259

US 401 FAYETTEVILLE RD

BEGIN NOISEWALL (35-1)
-Y13- STA.34+67.64

END NOISEWALL (35-2)
-Y13- STA.33+90.00

BEGIN NOISEWALL (35-3)
-Y13- STA.32+10.00

STANDARD BASE DITCH
W/CLASS I RIP RAP
SEE DETAIL 66B
EST ? TONS
EST ? SY GEOTEXTILE
SLOPE = 0.046%

SPECIAL CUT DITCH
SEE DETAIL 19B

TOE PROTECTION
SEE DETAIL 1B

RETAIN SYSTEM

REMOVE

REMOVE SYSTEM

PIPE COVERED WITH RIPRAP

25+00

30+00

-Y13-
N 18°14'19.0" E

S 18°16'23" W 104.42'
S 85°18'39" E 149.55'
S 88°38'28" E 151.81'
S 02°10'54" W 94.40'
S 02°10'54" W 25.12'
S 89°46'53" W 188.91'
S 89°46'53" W 306.39'
N 89°35'52" W 48.76'
S 89°37'24" W 319.02'
N 89°37'54" E 343.35'
S 11°25'43" W 141.94'
N 89°47'43" E 146.20'
N 89°27'25" E 163.91'
N 89°54'49" E 425.40'
N 88°54'49" E 410.54'
S 89°59'12" E 446.08'
N 04°49'06" E 323.30'
N 87°52'34" W 359.03'
S 18°14'29" W 233.69'
0.42' R/W-EIP
0.07' R/W-EIP
0.35' R/W-EIP
0.08' R/W-EIP
0.05' R/W-EIP
0.08' R/W-EIP
0.42' R/W-EIP

+40.00 -Y13- 110.00' LT
+40.00 -Y13- EX R/W
+75.00 -Y13- 155.00' LT
+43.01 -Y13- 155.00' LT
+45.00 -Y13- 148.79' LT
+45.00 -Y13- 110.00' LT
+10.00 -Y13- 110.00' LT
+85.85 -Y13- EX R/W
+05.00 -Y13- 160.00' LT
+05.00 -Y13- 110.00' LT
+70.00 -Y13- 160.00' LT
+70.00 -Y13- 110.00' LT
+50.00 -Y13- 110.00' RT
+50.00 -Y13- 120.00' RT

6204 6205 6206 6207 6208 6209 6210 6211 6212 6213 6214 6215 6216 6217 6218

15" RCP-IV
18" RCP-IV
24" RCP-IV
30" RCP-IV
36" RCP-IV
48" RCP-IV
60" CONC
2GI
2GI-A
JB w/MH
CB
DI
EIP
EOTCB
POE
POB
PVC
SS
TV FO
T FO
UGT
UGTC
ZUTL
ZUTC
FES
MCNC, 2" CONDUIT
EXISTING R/W
SR 2801 TECH RD
SR 2801 TECH RD BST
US 401 SBL FAYETTEVILLE RD BST VARIES
30' CP&L EASEMENT
30' C&G
24" CONC
BUS STOP

SEE SHEET 116 FOR -Y13- PROFILE
SEE SHEETS 2B-35 THRU 2B-36 FOR DRAINAGE DETAILS

6/7/2018
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cvolelax

514499

LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
(919) 571-7111
NC License Number F-0159

ECOLOGICAL ENGINEERING
NC FIRM LICENSE No: F-1148
1151 SE Cary Parkway
Suite 101
Cary, NC 27518
(919) 557-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2721	63
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

PAVED SHOULDER
PROPOSED SIGNAL

BEGIN CONSTRUCTION
-Y13D- STA. 11+00.00

-Y13D- N 55°16'00.0" E

-Y13D- POT Sta. 10+00.00

-Y13D- PC Sta. 11+94.19

-Y13D- PT Sta. 12+94.26
△ = 18.75
-Y13D- 70.00' LT

-Y13A- PT Sta. 14+92.74
92.74 -Y13A- 60.00' LT

MATCHLINE SHEET 65
-Y13A- STA 16+00.00

RETAIN
RETAIN SYSTEM
RETAIN

CHANDLER RIDGE LTD PTNRP
DB 8320 PG 1870
BM 1999 PG 066
388
3SFAPT

REMOVE +/-5' OF 15" RCP

SPECIAL LATERAL 'V' DITCH
SEE DETAIL 9B

-Y13A- POC Sta. 12+68.41=
-Y13D- POT Sta. 13+82.33
△ = 90°00'00.0"

END NOISEWALL (35-1)
-Y13A- STA. 12+00.00

TOE PROTECTION
SEE DETAIL 1B

300' TAPER

REMOVE

CB 6306
18" RCP-IV
30" RCP-IV
150' TAPER
N 45°19'21" E
S 44°40'39" E
S 89°56'44" W 502.36'
S 33°33'52" W 502.36'

TAIL DITCH W/CLASS I RIP RAP
EST DDE = XX CY
SLOPE = 6.3%
SEE DETAIL 16B

HEAD DITCH W/CLASS I RIP RAP
EST DDE = XX CY
SLOPE = 9.4%
SEE DETAIL 6B

PROP. GUARDRAIL
400' MEDIAN TAPER
H15.00
H14.37

SPECIAL LATERAL 'V' DITCH
SEE DETAIL 8B

389
YENDAPALLI, VENKATESWARA R
EQUITY TRUST COMPANY CUSTODIAN FBO
DB 16174 PG 585
BM 1999 PG 066

-Y13A- PC Sta. 12+13.10
200' TAPER

STANDARD BASE DITCH W/CLASS I RIP RAP
SEE DETAIL 66B
EST 9 TONS
EST 9 SY GEOTEXTILE
SLOPE = 0.014%
CLASS I RIP RAP
EST 11 TONS
EST 22 SY GEOTEXTILE

203
TINGEN BROADWELL FAMILY LLC
DB 7823 PG 345

400' MEDIAN TAPER

PROP. WW FENCE
PDE
6316

MATCHLINE SHEET 62
-Y13- STA 35+00.00

MATCHLINE SHEET 37
-Y13- STA 48+00.00

US 401 SBL FAYETTEVILLE RD 30' BST
US 401 NBL FAYETTEVILLE RD 30' BST
US 401 FAYETTEVILLE RD
EXISTING R/W
R/W MON

CURB CUT
REMOVE
40+00
45+00
N 18°14'19.0" E
REMOVE SYSTEM
24" RCP-IV
15" RCP-IV
18" RCP-IV

JB w/MH
6302 2GI
6301
6303 2GI
6304 CB
6305 CB
6306 CB
6307
6308 CB
6309 DI
6310 2GI
6311 DI
6312 DI
6313 2GI
6314 DI
6315 DI
6316 PDE
6317 2GI
6318
6319 CB
6320 CB
6321
6322

-Y13- POT Sta. 38+84.75
-Y13A- POT Sta. 10+00.00
△ = 105°01'26.97"

-Y13- POT Sta. 38+97.51
-Y13F- POT Sta. 10+00.00
△ = 90°00'00.01"

-Y13F- POT Sta. 12+19.50

SPECIAL CUT DITCH
SEE DETAIL 39B

CLASS B RIP RAP
EST 2 TONS
EST 5 SY GEOTEXTILE

RETAIN SYSTEM

204
WAKE TECHNICAL COLLEGE
DB 2106 PG 387
BM 1988 PG 228

END CONSTRUCTION
-Y13F- STA. 12+01.04

WAKE TECH WAY
5,400 / 8,100

400 / 2,400	3,700 / 5,100	US 401 46,800 / 73,100
40,200 / 63,000		
US 401	1,200 / 1,700	4,500 / 9,100

WAKE TECH WAY 7,000 / 11,400 — 2018 ADT / 2040 ADT

-Y13A-	-Y13D-
PI Sta 13+62.89	PI Sta 12+44.41
△ = 50° 51' 50.2" (RT)	△ = 11° 56' 38.9" (LT)
D = 18° 11' 20.9"	D = 11° 56' 11.8"
L = 279.64'	L = 100.06'
T = 149.79'	T = 50.21'
R = 315.00'	R = 480.00'
SE = 0.06	SE = NC

SEE SHEETS 2B-35 THRU 2B-36 FOR DRAINAGE DETAILS
SEE SHEET 118 FOR -Y13A- PROFILE | SEE SHEET 119 FOR -Y13D- PROFILE
SEE SHEETS 116 & 117 FOR -Y13- PROFILE | SEE SHEET 120 FOR -Y13F- PROFILE

6/7/2018
R2721_RDY_PSH_63.dgn
cookley

51499

LOCHNER	PROJECT REFERENCE NO.	SHEET NO.
H. W. LOCHNER, INC. 2840 PLAZA PLACE, SUITE 202 RALEIGH, NC 27612 (919) 571-7111 NC License Number F-0159	R-2721	64
ECOLOGICAL ENGINEERING NC FIRM LICENSE No: F-1148 1151 SE Cary Parkway Suite 101 Cary, NC 27518 (919) 557-0929	R/W SHEET NO.	
	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
	PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
	DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

PAVED SHOULDER

BEGIN CONSTRUCTION
-Y13E- STA. 10+37.50

NAD 83

MATCHLINE SHEET 37
-Y13- STA 62+00.00

-Y13E- POT Sta. 10+00.00

-Y13E- PC Sta. 10+77.51

-Y13E- PT Sta. 11+05.68

-Y13- POT Sta. 69+34.40

-Y13E- POT Sta. 12+68.23
Δ = 83°17'47.79"

END CONSTRUCTION
-Y13- STA. 74+00.00

-Y13E- PC Sta. 13+67.64

-Y13E- PCC Sta. 14+86.83

-Y13E- PT Sta. 15+22.72

END CONSTRUCTION
-Y13E- STA. 15+50.00

-Y13B- POT Sta. 10+00.00

-Y13B- POT Sta. 11+61.11

BEGIN CONSTRUCTION
-Y13B- STA. 10+00.00

END CONSTRUCTION
-Y13B- STA. 11+54.37

-Y13E-		
PI Sta 11+41.68	PI Sta 14+27.31	PI Sta 15+31.02
Δ = 7° 20' 37.2" (LT)	Δ = 6° 49' 45.9" (RT)	Δ = 0° 15' 40.9" (RT)
D = 5° 43' 46.5"	D = 5° 43' 46.5"	D = 0° 17' 44.6"
L = 128.17'	L = 119.20'	L = 88.38'
T = 64.17'	T = 59.67'	T = 44.19'
R = 1,000.00'	R = 1,000.00'	R = 19,375.76'
SE = NC	SE = NC	SE = NC

SEE SHEETS 2B-35 THRU 2B-36 FOR DRAINAGE DETAILS

SEE SHEET 117 & 118 FOR -Y13- PROFILE
SEE SHEET 119 FOR -Y13B- PROFILE
SEE SHEET 120 FOR -Y13E- PROFILE

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-Y13A-	-Y13C-
PI Sta 28+11.84	PI Sta 12+06.32
Δ = 65° 21' 12.2" (LT)	Δ = 51° 37' 52.7" (RT)
D = 11° 48' 48.8"	D = 23° 52' 23.7"
L = 553.21'	L = 216.27'
T = 311.09'	T = 116.10'
R = 485.00'	R = 240.00'
SE = 0.06	

LOCHNER

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ECOLOGICAL ENGINEERING
NC FIRM LICENSE Noc F-1148
1151 SE Cary Parkway
Suite 101
Cary, NC 27518
(919) 557-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2721	65
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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PAVED SHOULDER

NAD 83

BEGIN CONSTRUCTION
-Y13C- STA. 10+00.00

-Y13C- POT Sta. 10+00.00

MATCHLINE SHEET 63
-Y13A- STA 16+00.00

MATCHLINE SHEET 37
-Y13A- STA 29+00.00

-Y13A- POC Sta. 27+43.92

-Y13C- POT Sta. 13+23.75

-Y13C- PC Sta. 10+90.22

-Y13C- PT Sta. 13+06.49

-Y13A- PC Sta. 25+00.76

N 21°08' 18.7" E

S 14°27'38" W 189.66'

S 11°52'55" W 89.56'

S 11°52'27" W 96.42'

S 15°40' W 97.59'

S 74°17'33" E

S 14°27'38" W 189.66'

S 11°52'55" W 89.56'

S 11°52'27" W 96.42'

S 15°40' W 97.59'

411 WOODS OF ASHBURY ASSOC INC
DB 4054 PG 736
BM 1986 PG 977

PAPARELLA, DIEGO MAXIMILIANO & KOWALSKI, SHANNON KAY
DB 14726 PG 2694
BM 1987 PG 715

404 405 406 407 408

HILL-BAILEY, LINDA SUE & BAILEY, WILLIAM DAVE
DB 15784 PG 428
BM 1986 PG 978

WEST, TROY L & CORBETT, SARAH A
DB 13893 PG 2511
BM 1987 PG 715

BEATY, GREER B
DB 13234 PG 1872
BM 1987 PG 715

VINING, NAOMI J & VINING, FORREST R
DB 12244 PG 213
BM 1987 PG 715

HUTCHINSON, JAMES E & HUTCHINSON, KELLIE W
DB 7048 PG 867
BM 1987 PG 715

RAMIREZ, LUIS & RAMIREZ, MARSHA
DB 9944 PG 128
BM 1987 PG 715

JENNINGS, CHRISTOPHER J & JENNINGS, ANGELINA M
DB 11601 PG 1626
BM 1987 PG 715

BRAGG, KAYCE & BRAGG, GREGORY
DB 16281 PG 2511
BM 1987 PG 715

THOMAS, JEANNINE E
DB 15397 PG 1459
BM 1986 PG 978

SDWELL, MEILIAN & SDWELL, WILLIAM A
DB 11717 PG 322
BM 1987 PG 715

411 WOODS OF ASHBURY ASSOC INC
DB 4054 PG 736
BM 1986 PG 977

203 TINGEN BROADWELL FAMILY LLC
DB 7823 PG 345

SPECIAL CUT DITCH SEE DETAIL 65B

SPECIAL LATERAL BASE DITCH SEE DETAIL 53B

SPECIAL CUT 'V' DITCH W/CLASS B RIP RAP SEE DETAIL 43B

STANDARD 'V' DITCH SEE DETAIL 21B
EST DDE = ?
EST TONS = ?
EST SY = ?
SLOPE = 0.094 FT/FT

CLEAN OUT AND RETAIN PIPE

CLASS I RIP RAP
EST 11 TONS
EST 22 SY GEOTEXTILE

CLASS I RIP RAP

150' TAPER

400' MEDIAN TAPER

GREU TL-3

20100

N 5° 52' 23.9" W

95100

SR 4027 REGATE LANE N BSL

EXISTING R/W

PROPOSED R/W

EXISTING CL

PROPOSED CL

EX R/W

0.27' R/W-EIP

11.3' EL

SEE SHEETS 2B-35 THRU 2B-36 FOR DRAINAGE DETAILS

SEE SHEETS 118 & 119 FOR -Y13A- PROFILE

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cyokley

LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
(919) 571-7111
NC License Number F-0159
SUNGATE DESIGN GROUP, P.A.
905 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243
NC FIRM LICENSE NO. C-890

PROJECT REFERENCE NO.	SHEET NO.
R-2721	66
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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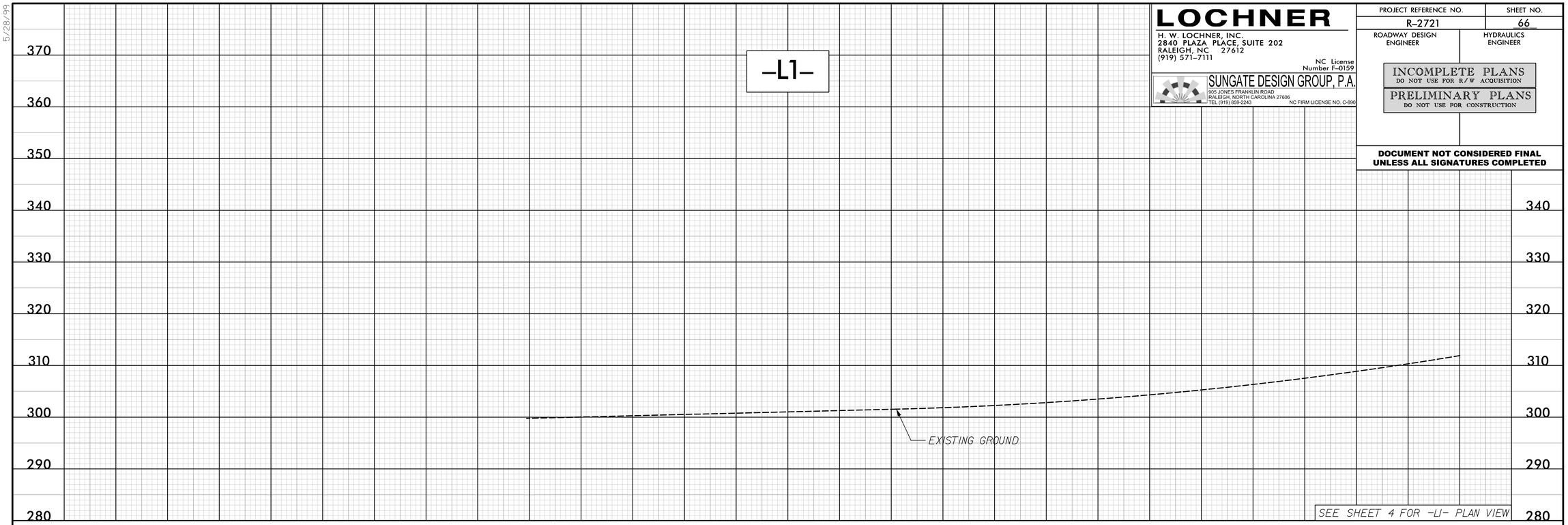

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LOCHNER

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2840 PLAZA PLACE, SUITE 202
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(919) 571-7111

NC License
Number F-0159

SUNGATE DESIGN GROUP, P.A.
905 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243 NC FIRM LICENSE NO. C-890

PROJECT REFERENCE NO.	SHEET NO.
R-2721	67
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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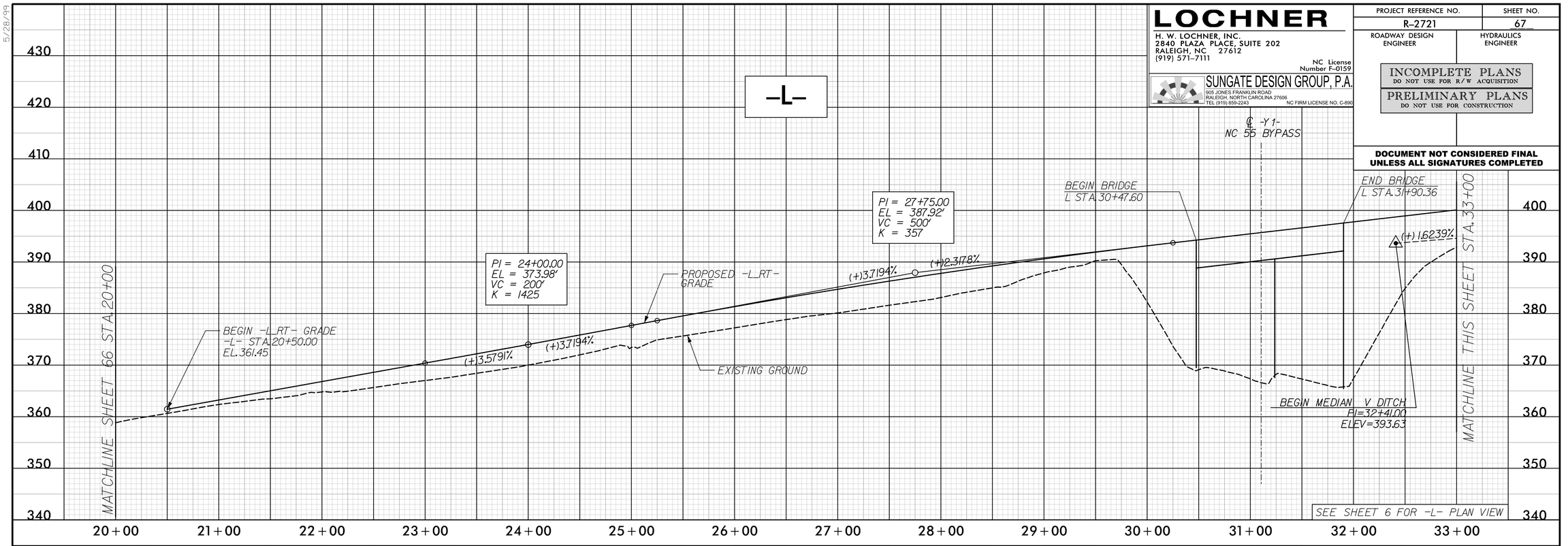

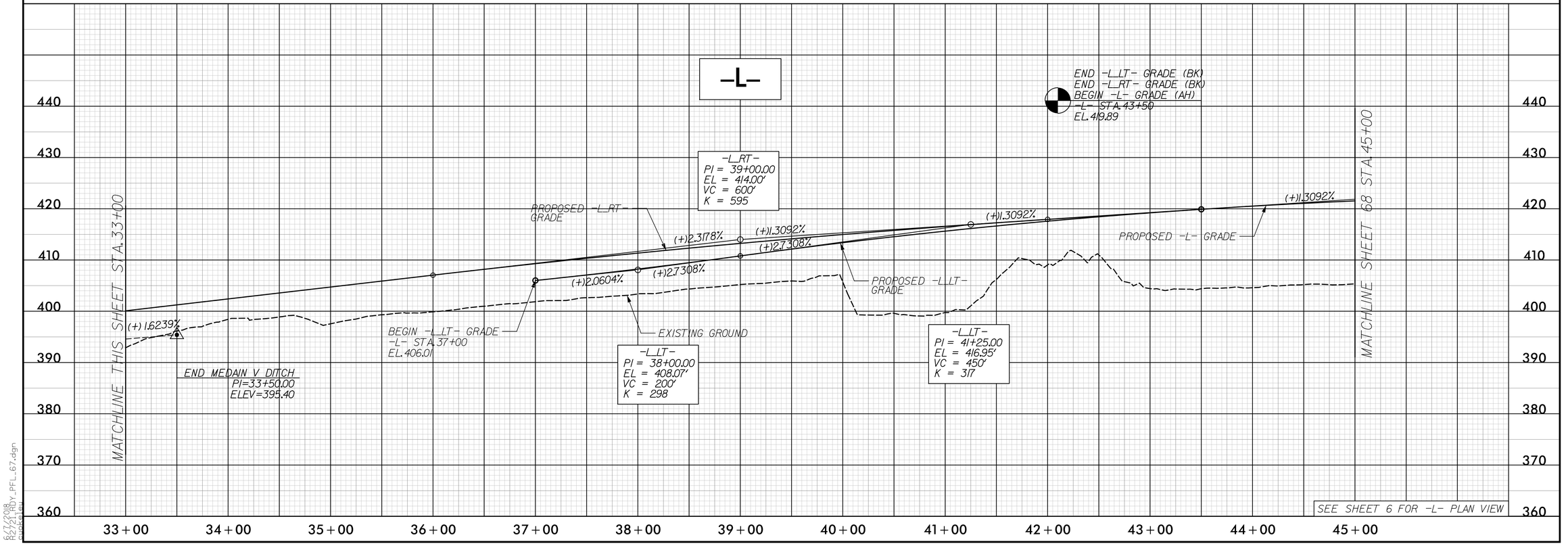

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LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
(919) 571-7111
NC License Number F-0159
SUNGATE DESIGN GROUP, P.A.
905 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243
NC FIRM LICENSE NO. C-890

PROJECT REFERENCE NO.	SHEET NO.
R-2721	68
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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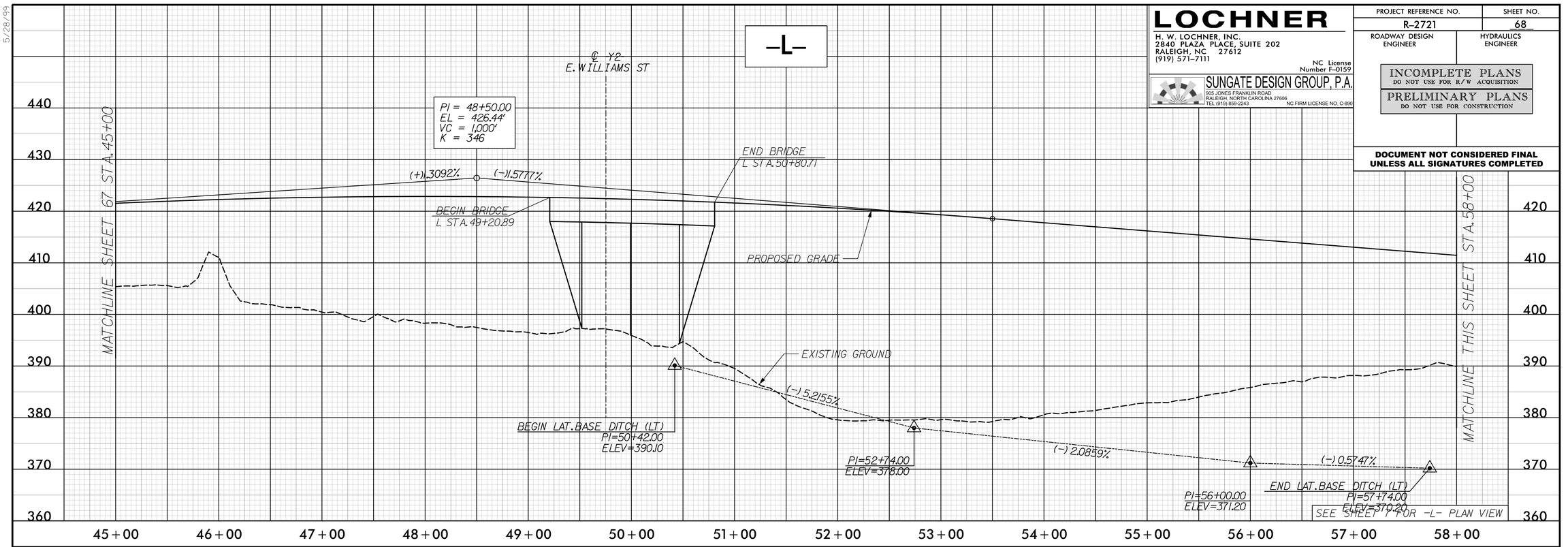

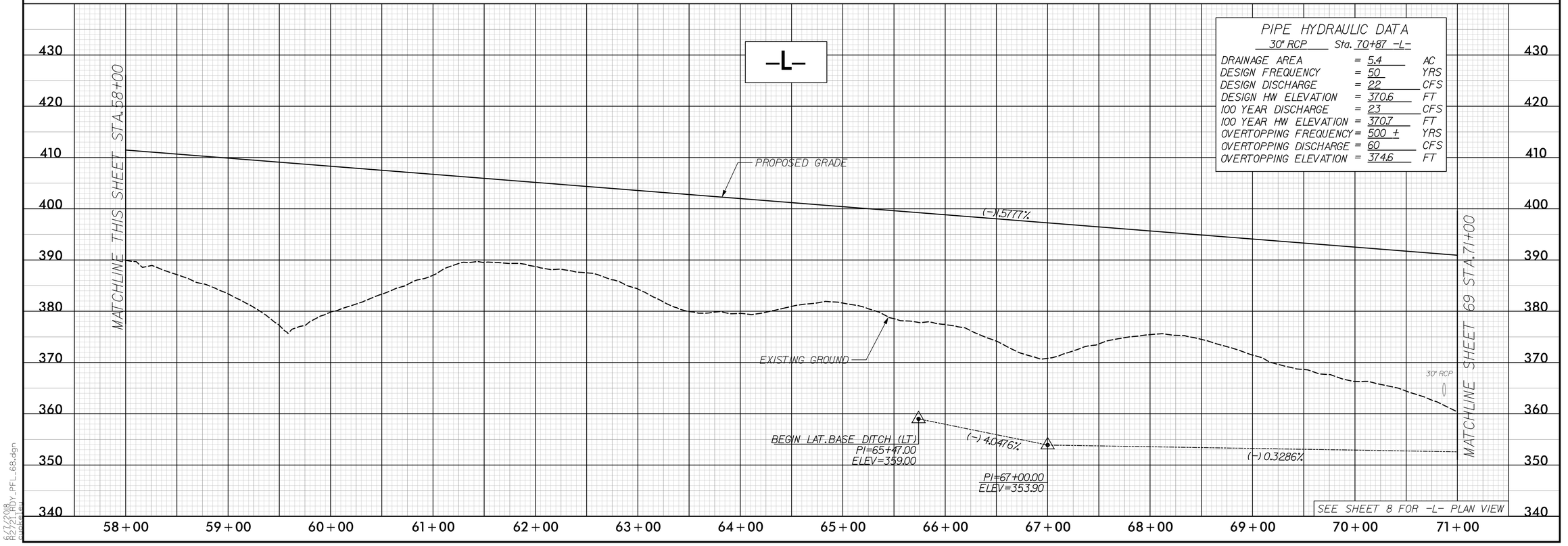

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LOCHNER

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SUNGATE DESIGN GROUP, P.A.
905 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243
NC FIRM LICENSE NO. C-890

PROJECT REFERENCE NO.	SHEET NO.
R-2721	69
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
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CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 260	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 357.9	FT
BASE DISCHARGE	= 280	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 358.2	FT
OVERTOPPING DISCHARGE	= 680	CFS
OVERTOPPING FREQUENCY	= ≥ 500	YRS
OVERTOPPING ELEVATION	= 364.2	FT

STRUCTURE HYDRAULIC DATA

DESIGN DISCHARGE	= 2600	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 354.1	FT
BASE DISCHARGE	= 2800	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 354.4	FT
OVERTOPPING DISCHARGE	= 9700	CFS
OVERTOPPING FREQUENCY	= 500 +	YRS
OVERTOPPING ELEVATION	= 361.2	FT

-L-

PI = 77+00.00
EL = 381.47'
VC = 500'
K = 498

(-)1.5777%

(-)12.5826%

PROPOSED GRADE

PI = 85+75.00
EL = 358.88'
VC = 1050'
K = 243

PROPOSED 14'X10' RCBC FOR GREENWAY CROSSING

MATCHLINE SHEET 68 STA.71+00

BEGIN LAT.BASE DITCH (RT)
PI=77+00.00
ELEV=352.40

PROPOSED 1@6'x8' RCBC

(-) 0.3286%

(-) 2.8000%

(-) 0.6990%

(-) 3.3784%

(-) 0.5317%

EXISTING GROUND

END LAT.BASE DITCH (LT)
PI=76+13.00
ELEV=350.90

PI=78+00.00
ELEV=349.6040

END LAT.BASE DITCH (RT)
PI=79+03.00
ELEV=348.88

BEGIN LAT.BASE DITCH (RT)
PI=80+75.00
ELEV=346.67

PI=81+00.00
ELEV=345.67

END LAT.BASE DITCH (RT)
PI=82+26.00
ELEV=345.00

MATCHLINE THIS SHEET STA.83+00

SEE SHEET 9 FOR -L- PLAN VIEW

71+00 72+00 73+00 74+00 75+00 76+00 77+00 78+00 79+00 80+00 81+00 82+00 83+00 84+00

410 400 390 380 370 360 350 340 330 320

-L-

MATCHLINE THIS SHEET STA.83+00

BEGIN BRIDGE
L STA.83+01.00

END BRIDGE
L STA.85+36.00

PI = 85+75.00
EL = 358.88'
VC = 1,050'
K = 341

(-)2.5826%

(+)0.5000%

(+) 0.3000%

LOW SIDE LOW CHORD

1.5:1 NORMAL 2:1 SKEWED

3.5' MIN.

(+) 0.3257%

(+) 2.564%

8.5' MIN.

EXISTING GROUND

PROPOSED GRADE

PI STA 87+50 -L- LT
ELEV=357.05

PI STA 91+50 -L- LT
ELEV=358.25

END STD.BASE DITCH
PI=85+39.00
ELEV=346.07

PI=85+00.00
ELEV=345.07

BEGIN STD.BASE DITCH (LT)
PI=83+25.00
ELEV=344.50

℄ TOLL GANTRY

℄ TOLL GANTRY

MATCHLINE THIS SHEET TO STA.96+00

SEE SHEET 10 FOR -L- PLAN VIEW

83+00 84+00 85+00 86+00 87+00 88+00 89+00 90+00 91+00 92+00 93+00 94+00 95+00 96+00

410 400 390 380 370 360 350 340 330 320

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H. W. LOCHNER, INC.
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RALEIGH, NC 27612
(919) 571-7111
NC License Number F-0159

SUNGATE DESIGN GROUP, P.A.
905 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243 NC FIRM LICENSE NO. C-890

PROJECT REFERENCE NO.	SHEET NO.
R-2721	70
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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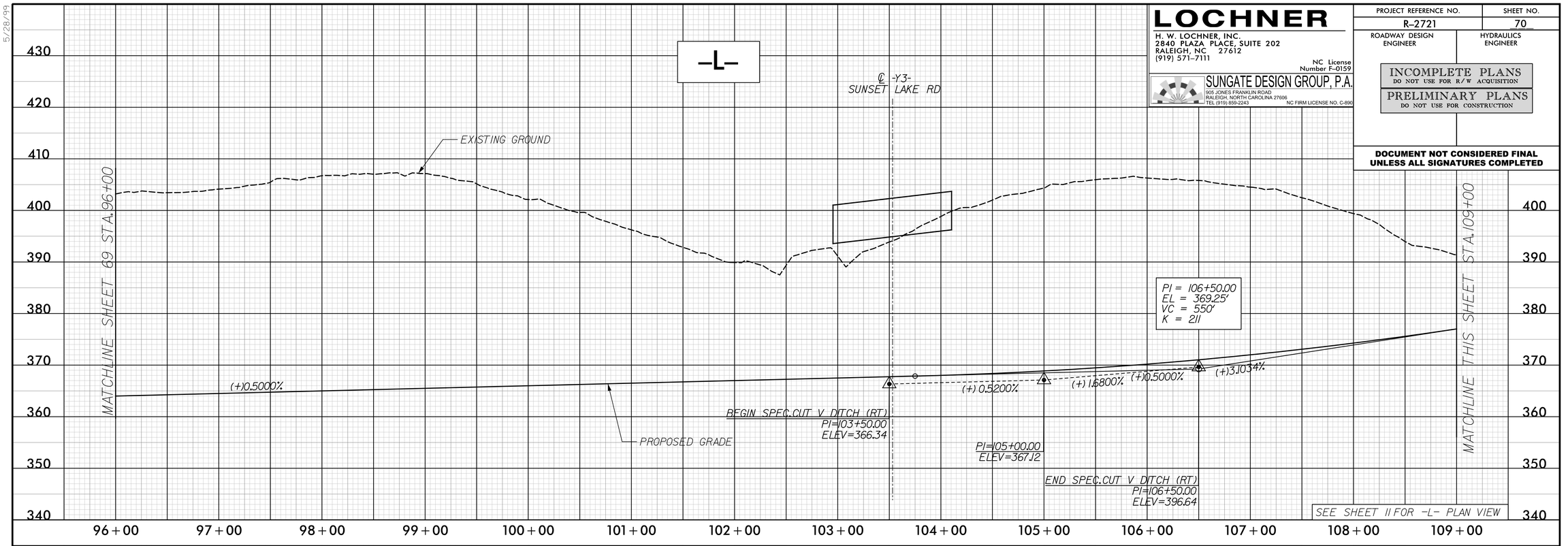

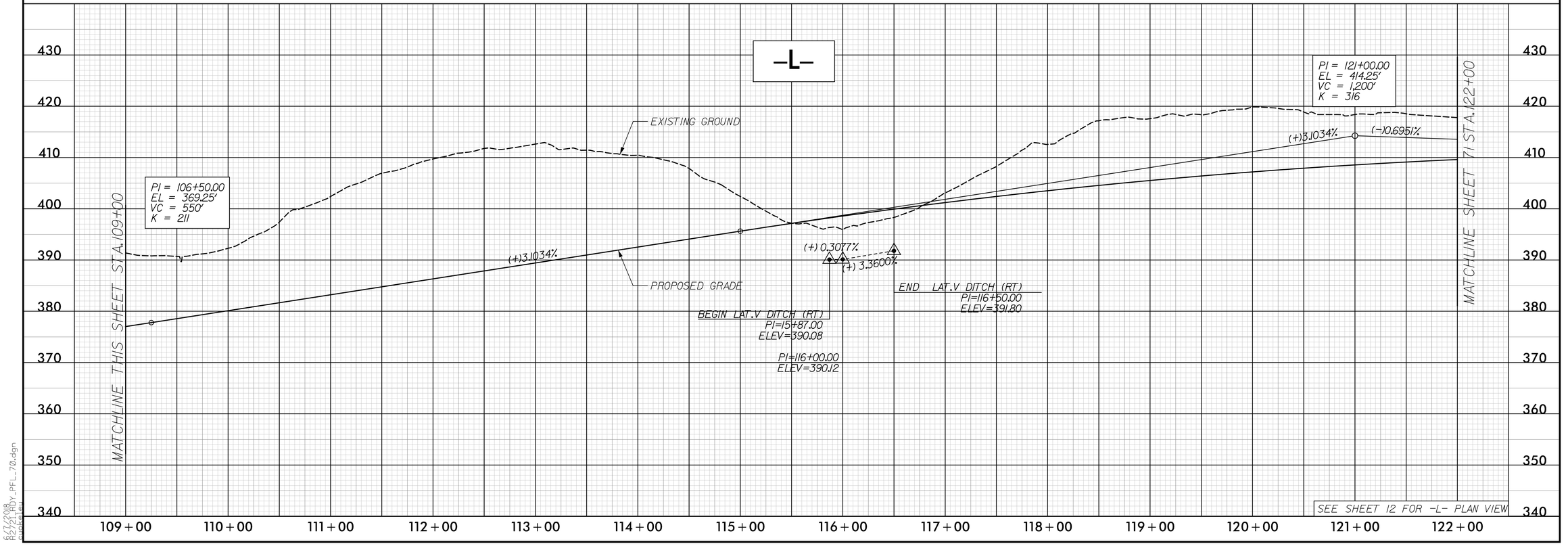

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R2721_LOCHNER_PFL_70.dgn
dwaskelu

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LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
(919) 571-7111
NC License Number F-0159

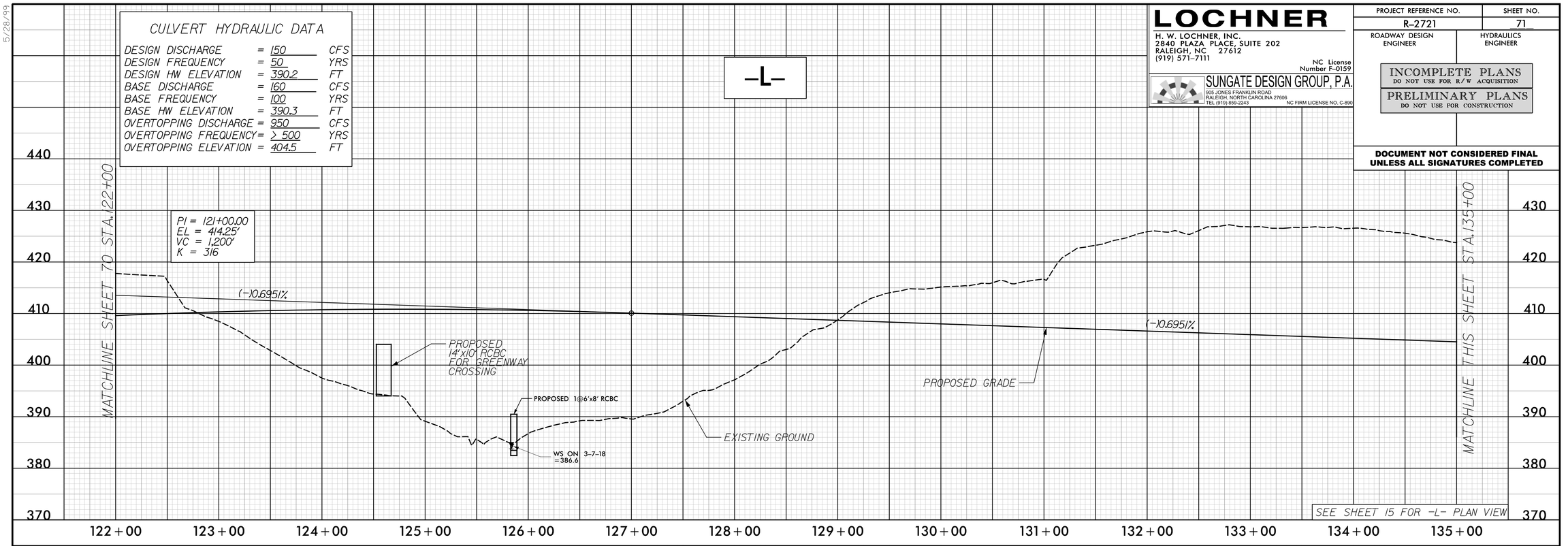
SUNGATE DESIGN GROUP, P.A.
905 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243 NC FIRM LICENSE NO. C-890

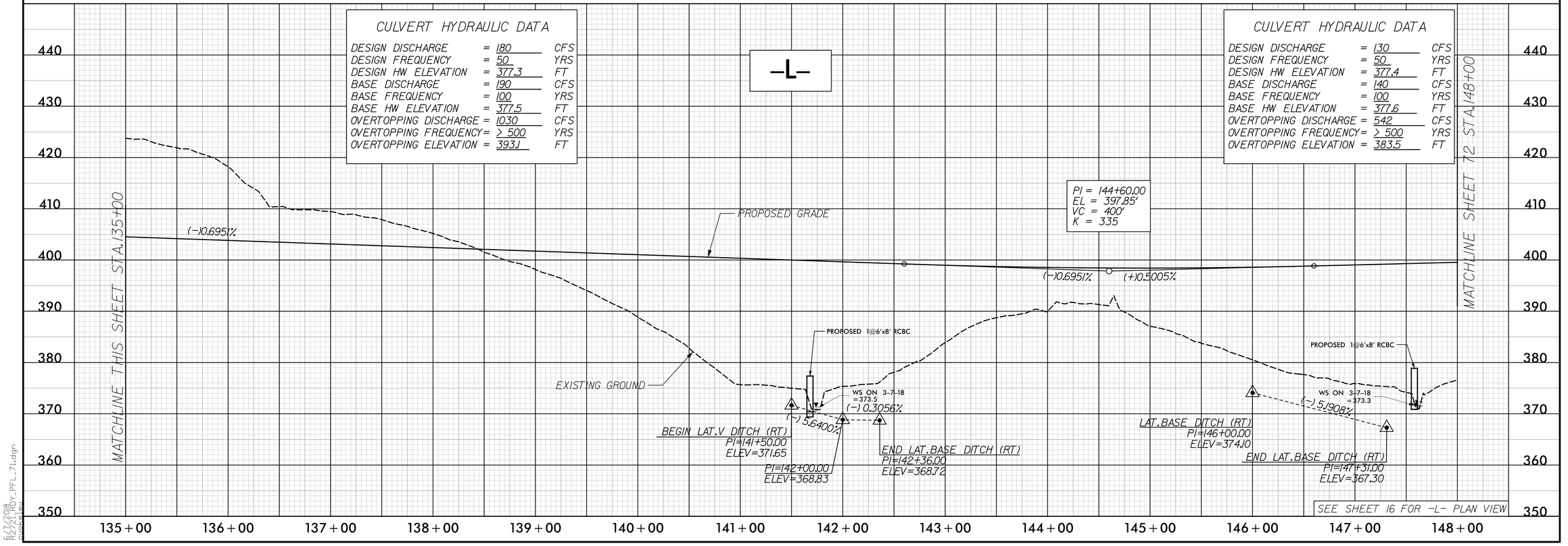
PROJECT REFERENCE NO.	SHEET NO.
R-2721	71
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED





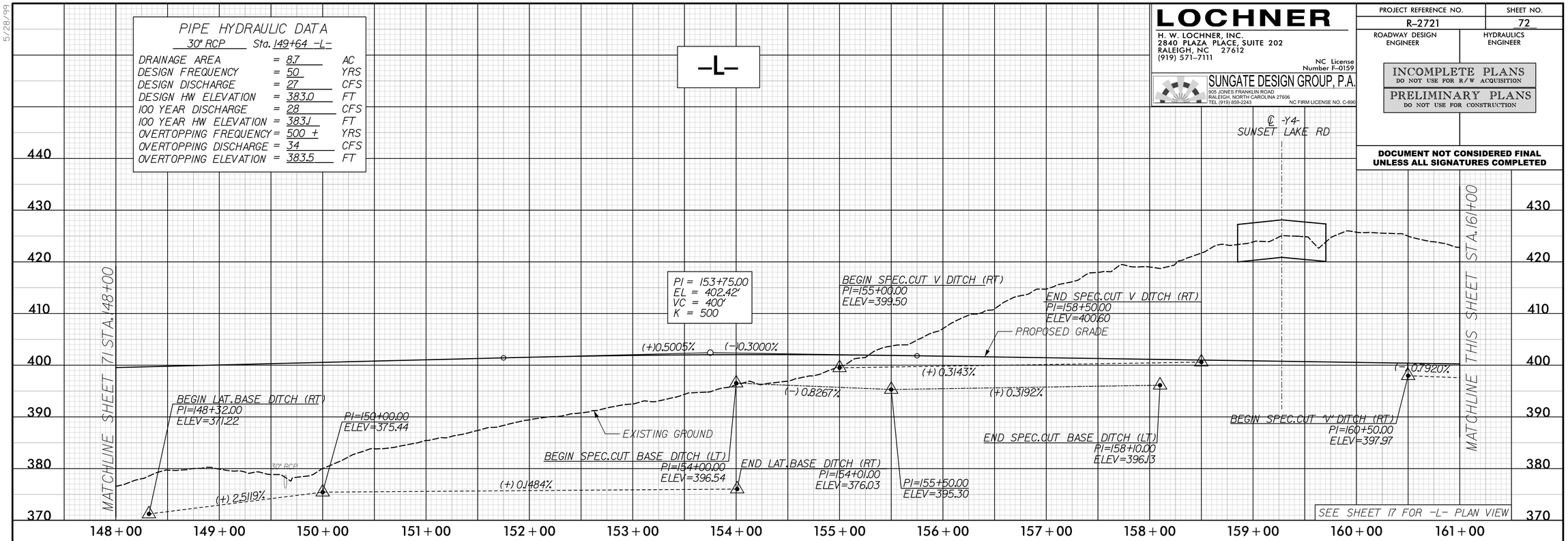
8/7/2018
R2721_HY_PFL_71.dgn
dwalker

LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
(919) 571-7111
NC License Number F-0159
SUNGATE DESIGN GROUP, P.A.
905 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243
NC FIRM LICENSE NO. C-890

PROJECT REFERENCE NO.	SHEET NO.
R-2721	72
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



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R2721_RDY_PFL_72.dgn
cuckeley

5/28/99

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2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
(919) 571-7111

NC License
Number F-0159

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905 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
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PROJECT REFERENCE NO.	SHEET NO.
R-2721	73

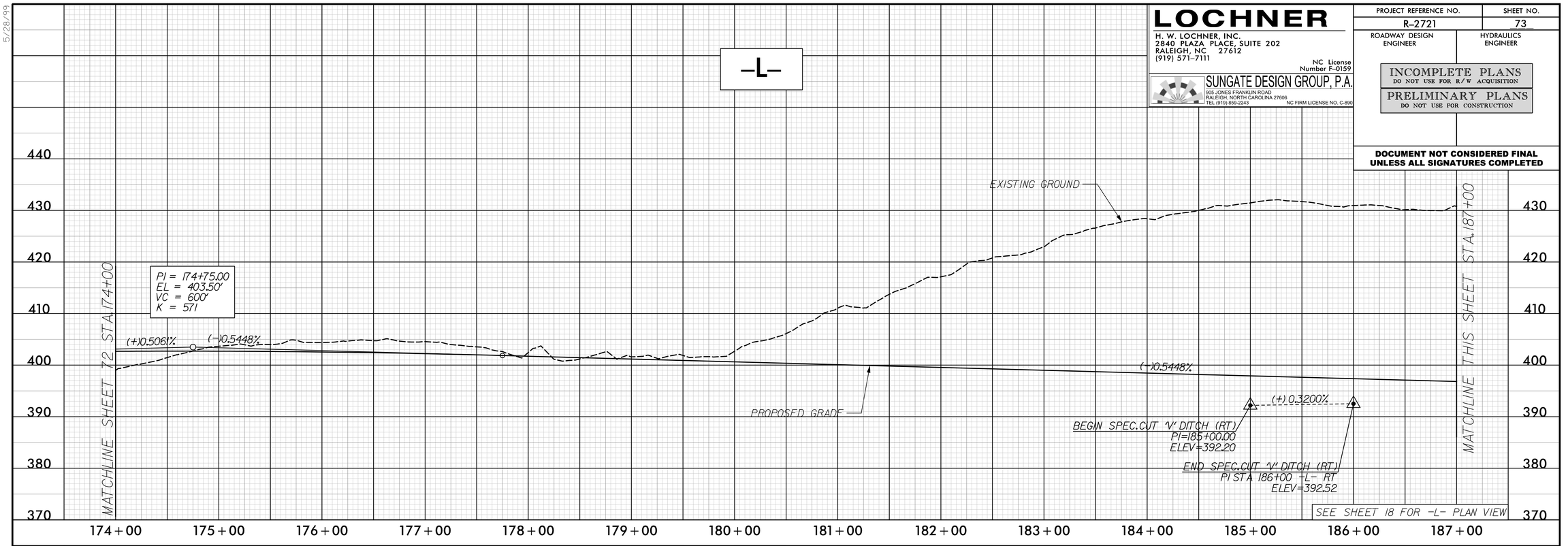
ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



6/7/2018
R2721_GRADY_PFL_73.dgn
cwickerham

5/28/99

CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 1049	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 347.6	FT
BASE DISCHARGE	= 1287	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 348.4	FT
OVERTOPPING DISCHARGE	= 3850	CFS
OVERTOPPING FREQUENCY	= 500 +	YRS
OVERTOPPING ELEVATION	= 369.0	FT

PIPE HYDRAULIC DATA

30" RCP Sta. 149+64 -L-

DRAINAGE AREA	= 8.7	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 27	CFS
DESIGN HW ELEVATION	= 383.0	FT
100 YEAR DISCHARGE	= 28	CFS
100 YEAR HW ELEVATION	= 383.1	FT
OVERTOPPING FREQUENCY	= 500 +	YRS
OVERTOPPING DISCHARGE	= 34	CFS
OVERTOPPING ELEVATION	= 383.5	FT

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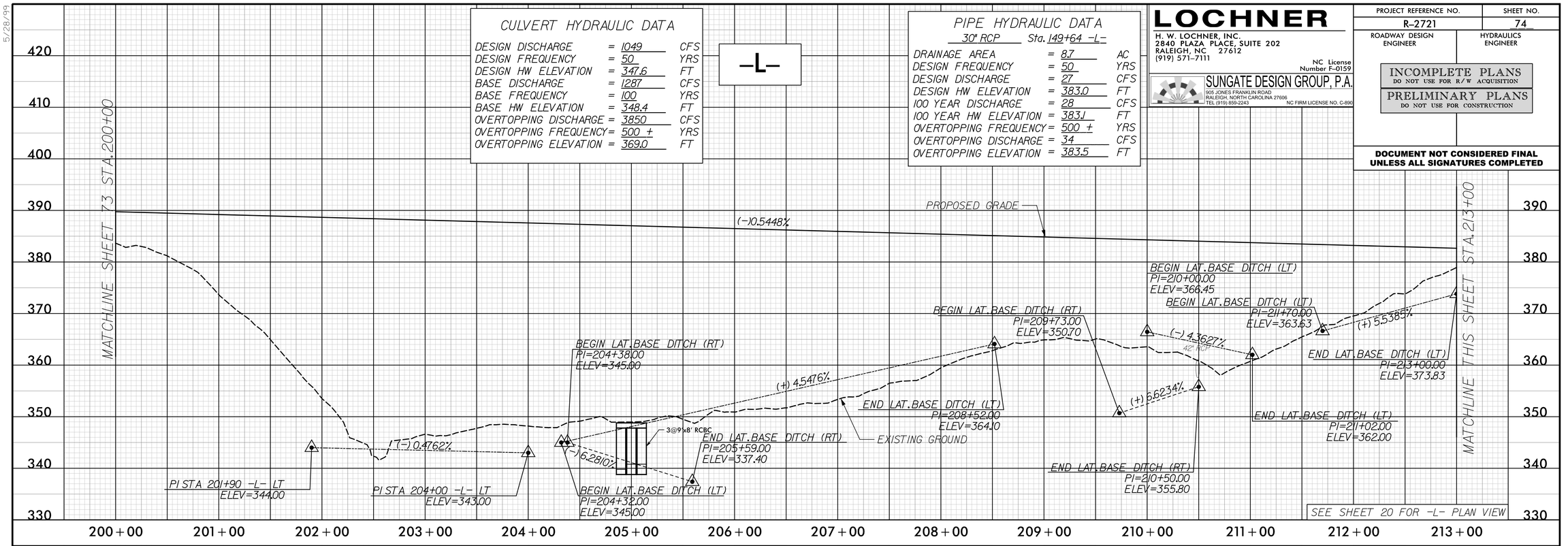
905 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243 NC FIRM LICENSE NO. C-890

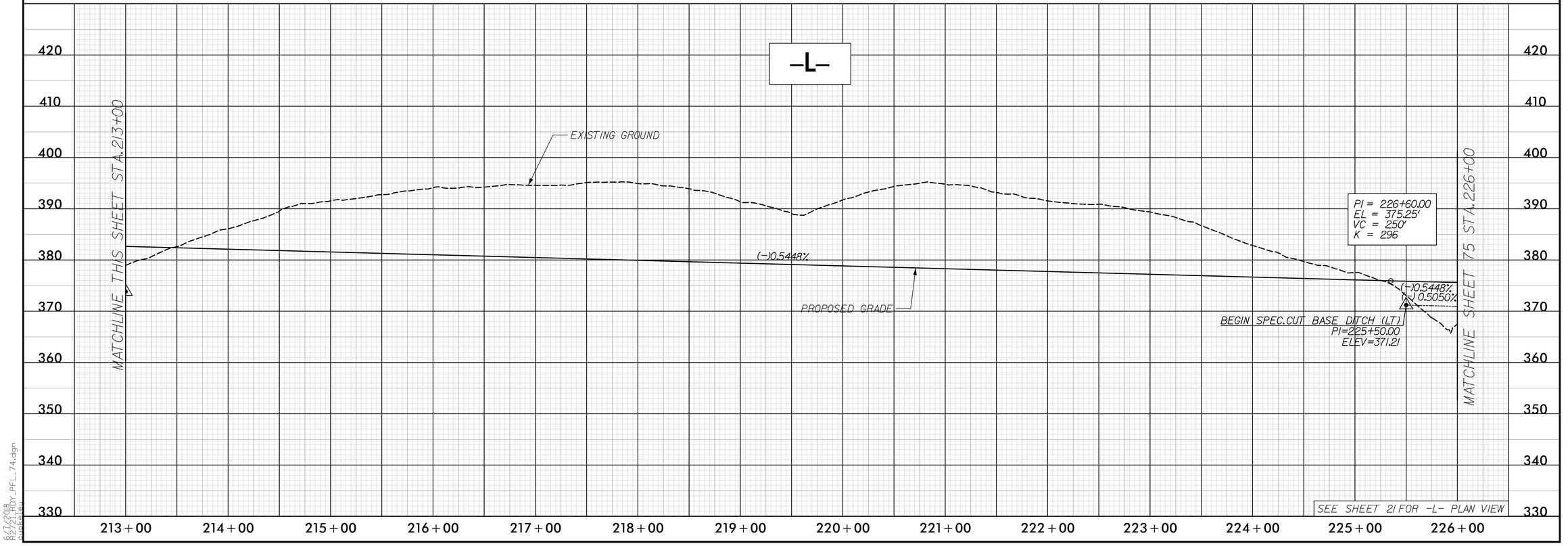
PROJECT REFERENCE NO.	SHEET NO.
R-2721	74
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED





6/7/2018
R2721_HY_PFL_74.dgn
cwickel

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H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
(919) 571-7111
NC License Number F-0159

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905 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243 NC FIRM LICENSE NO. C-890

PROJECT REFERENCE NO.	SHEET NO.
R-2721	75
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
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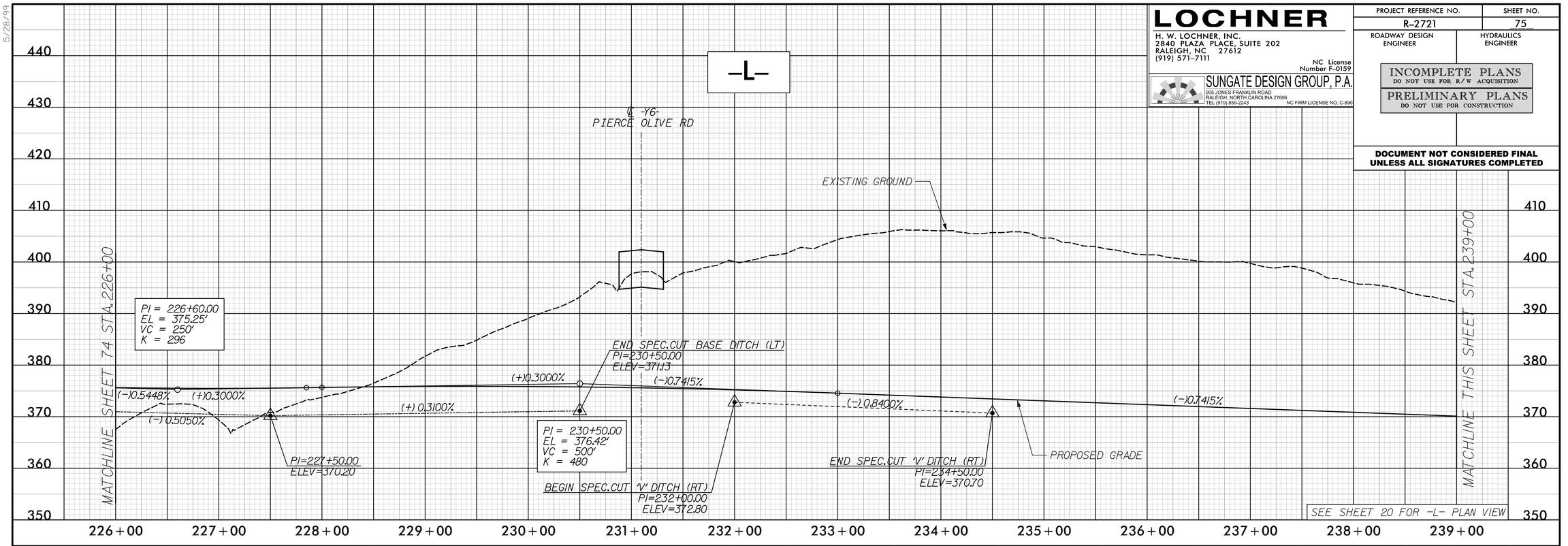
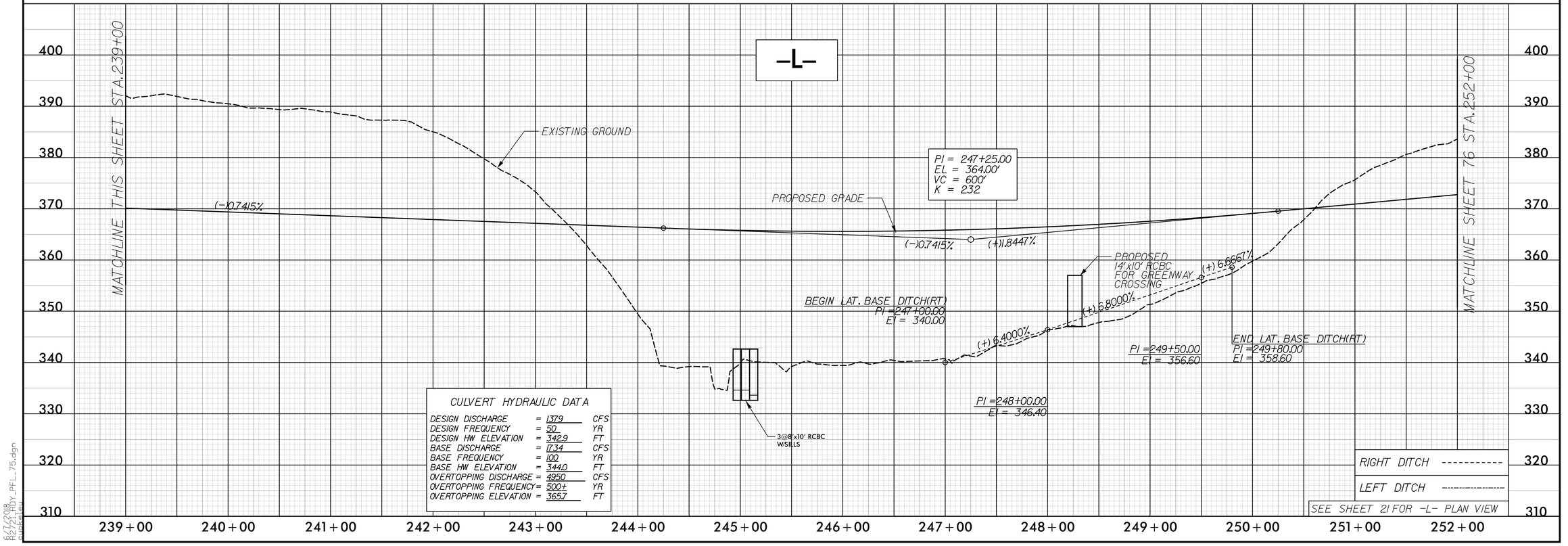
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED





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R2721_HWY_PFL_75.dgn
cruckelew

5/28/99

LOCHNER

H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
(919) 571-7111
NC License Number F-0159

ECOLOGICAL ENGINEERING
NC FIRM LICENSE No: F-1148
1151 SE Cary Parkway
Suite 101
Cary, NC 27518
(919) 557-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2721	76

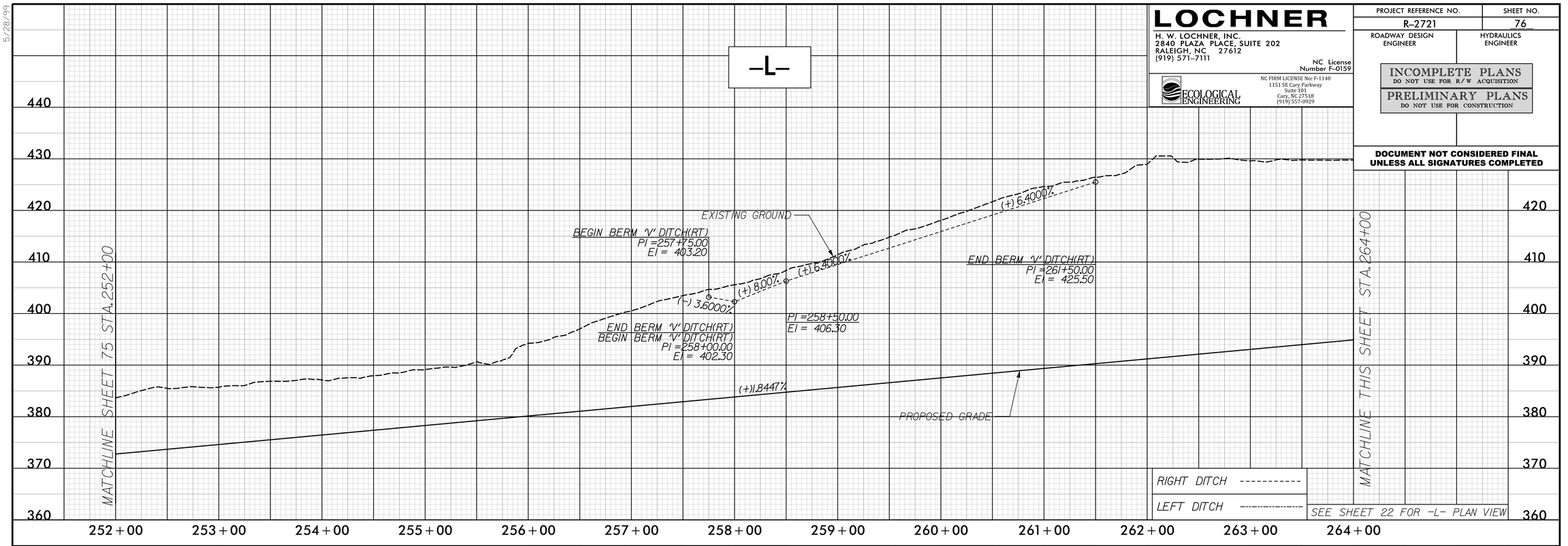
ROADWAY DESIGN ENGINEER

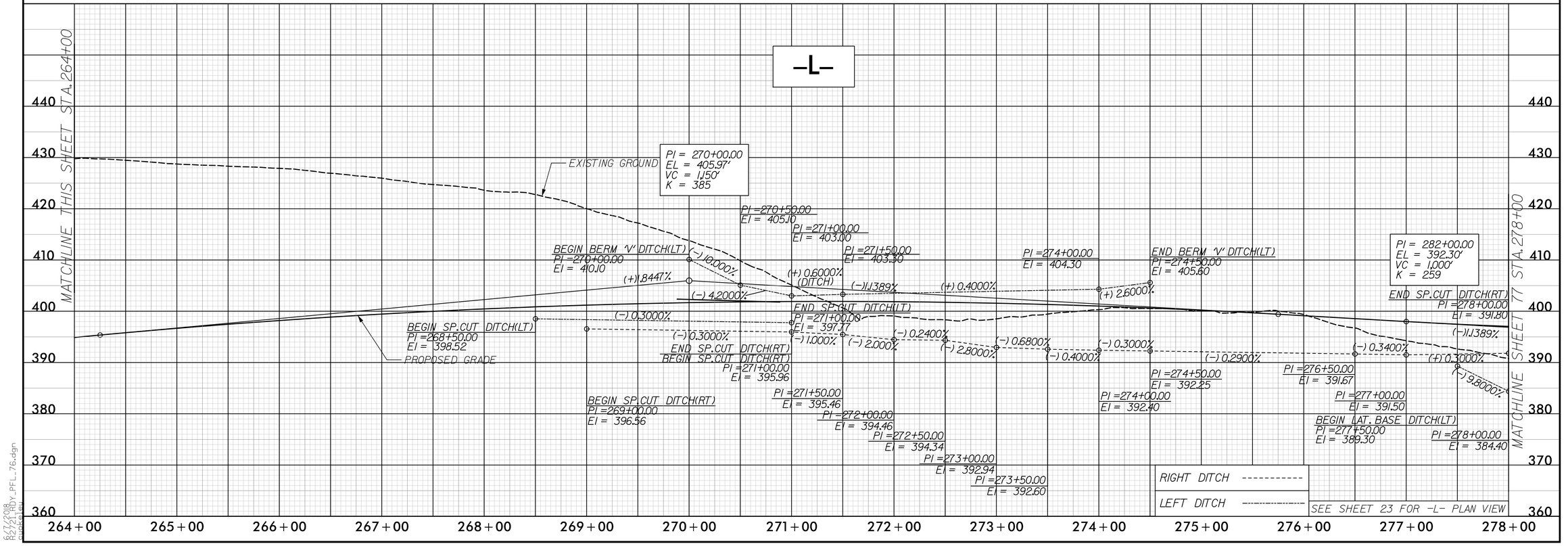
HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED





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R2721_HWY_PFL_76.dgn
dwoksieh

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LOCHNER

H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
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(919) 571-7111

NC License Number F-0159

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NC FIRM LICENSE No: F-1148
1151 SE Cary Parkway
Suite 101
Cary, NC 27518
(919) 557-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2721	77
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
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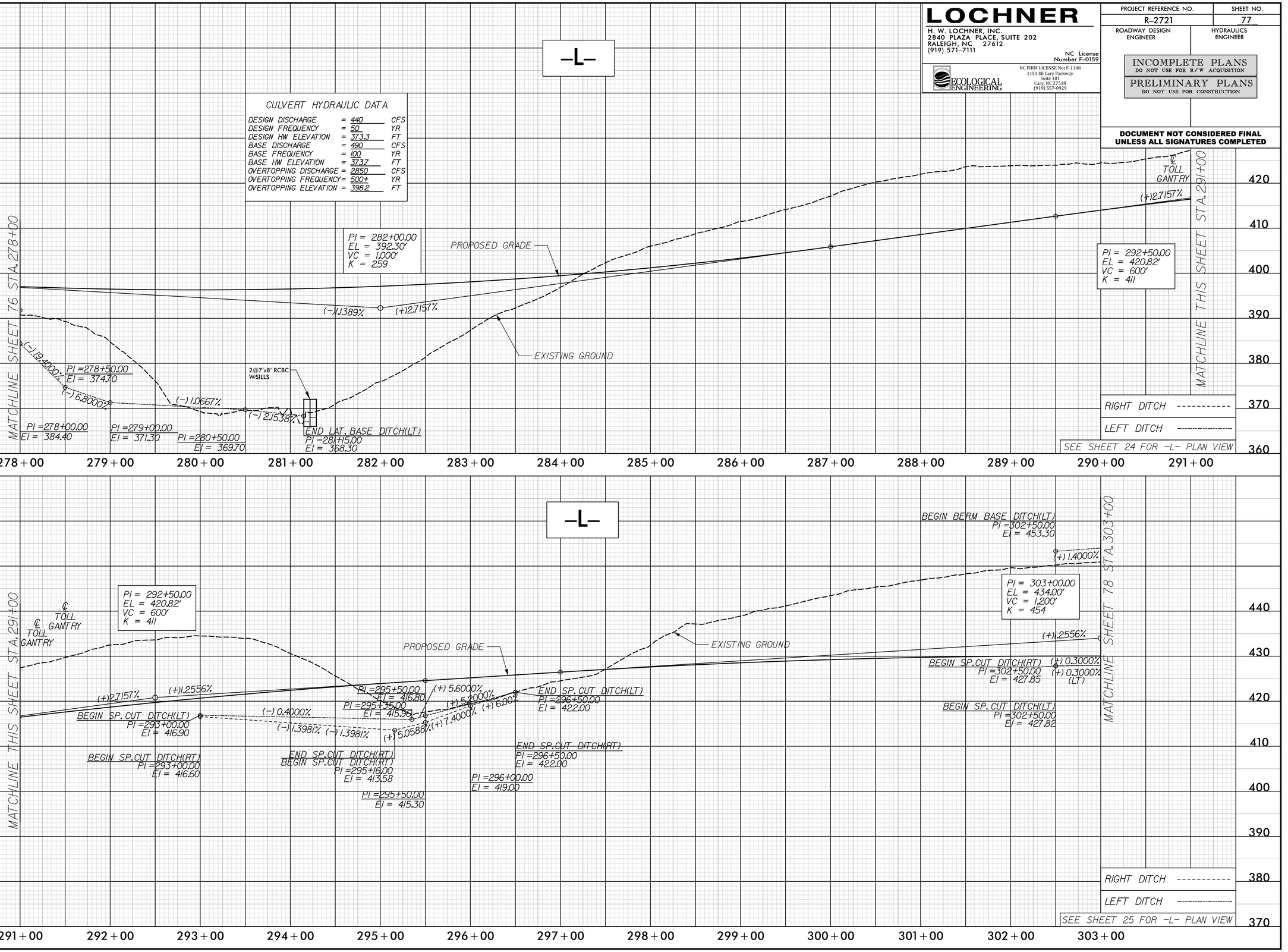
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-L-

CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 440	CFS
DESIGN FREQUENCY	= 50	YR
DESIGN HW ELEVATION	= 373.3	FT
BASE DISCHARGE	= 490	CFS
BASE FREQUENCY	= 100	YR
BASE HW ELEVATION	= 373.7	FT
OVERTOPPING DISCHARGE	= 2850	CFS
OVERTOPPING FREQUENCY	= 500+	YR
OVERTOPPING ELEVATION	= 398.2	FT



R-2721_2018_ROADWAY_PFL_77.dgn
5/21/2018
dwalker

LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
(919) 571-7111
NC License Number F-0159

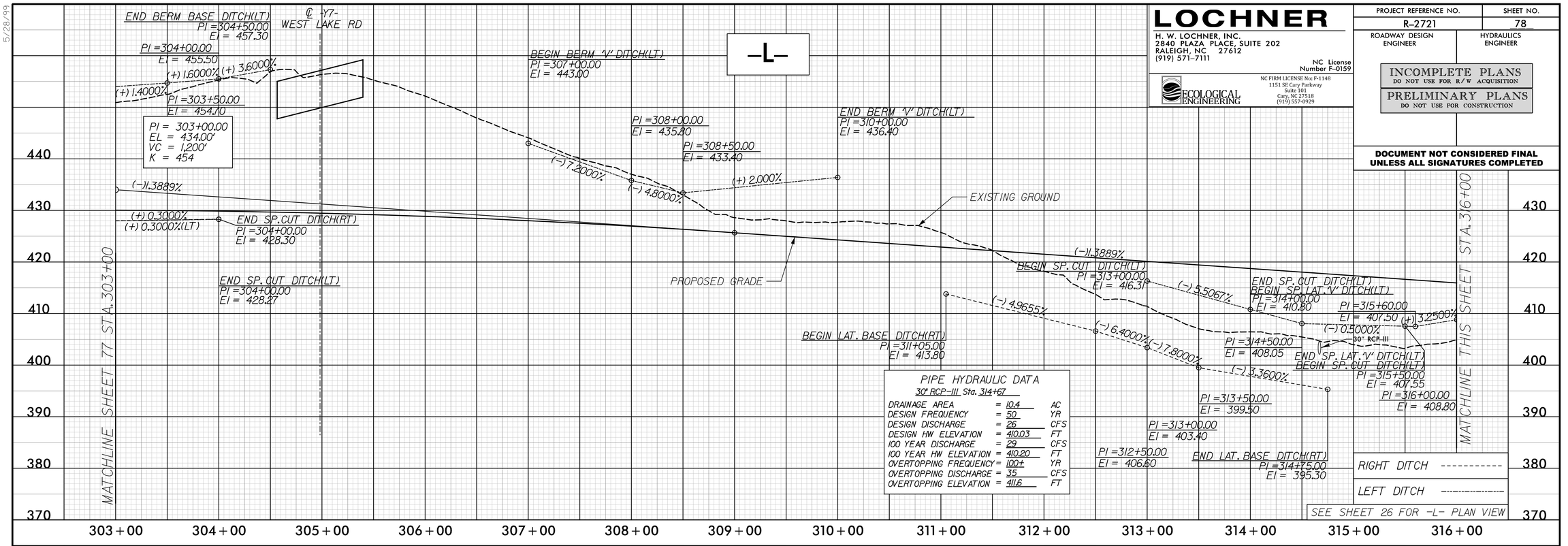
ECOLOGICAL ENGINEERING
NC FIRM LICENSE No: F-1148
1151 SE Cary Parkway
Suite 101
Cary, NC 27518
(919) 557-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2721	78
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

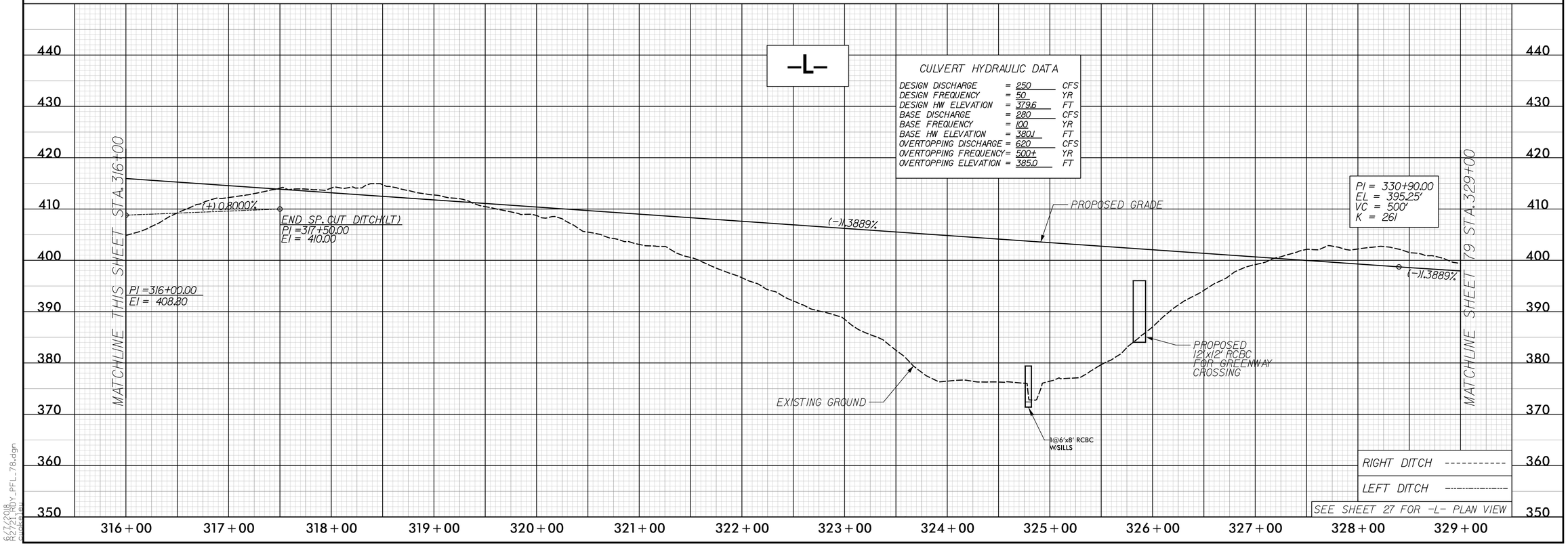
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



PIPE HYDRAULIC DATA
30" RCP-III Sta. 314+67

DRAINAGE AREA	= 10.4	AC
DESIGN FREQUENCY	= 50	YR
DESIGN DISCHARGE	= 26	CFS
DESIGN HW ELEVATION	= 410.03	FT
100 YEAR DISCHARGE	= 29	CFS
100 YEAR HW ELEVATION	= 410.20	FT
OVERTOPPING FREQUENCY	= 100+	YR
OVERTOPPING DISCHARGE	= 35	CFS
OVERTOPPING ELEVATION	= 411.6	FT



CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 250	CFS
DESIGN FREQUENCY	= 50	YR
DESIGN HW ELEVATION	= 379.6	FT
BASE DISCHARGE	= 280	CFS
BASE FREQUENCY	= 100	YR
BASE HW ELEVATION	= 380.1	FT
OVERTOPPING DISCHARGE	= 620	CFS
OVERTOPPING FREQUENCY	= 500+	YR
OVERTOPPING ELEVATION	= 385.0	FT

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cuckeley

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NC License Number F-0159

ECOLOGICAL ENGINEERING
NC FIRM LICENSE No: F-1148
1151 SE Cary Parkway
Suite 101
Cary, NC 27518
(919) 557-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2721	79
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
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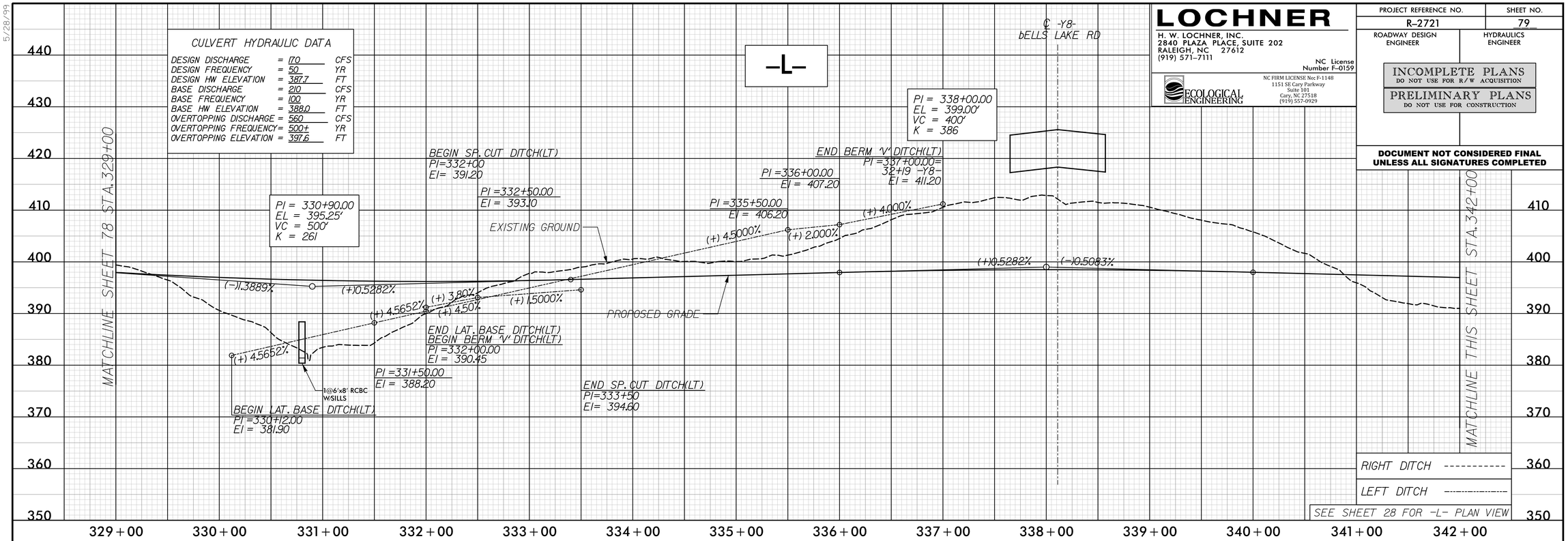
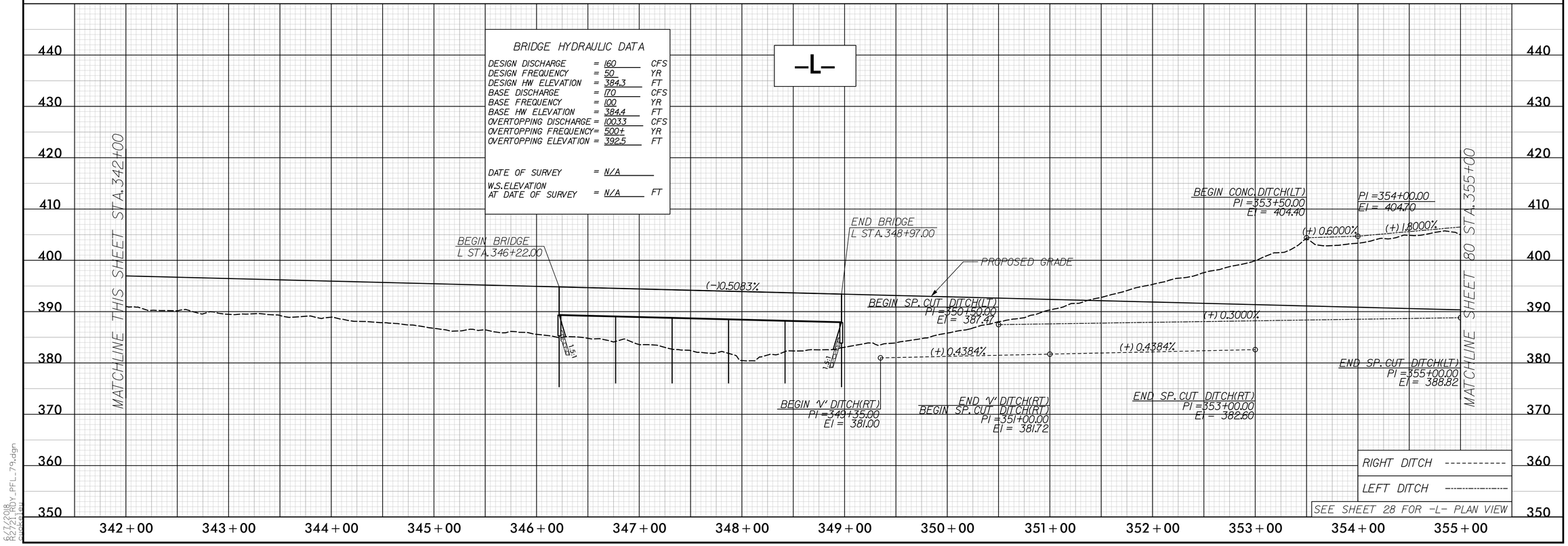
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED





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(919) 571-7111
NC License Number F-0159

ECOLOGICAL ENGINEERING
NC FIRM LICENSE No: F-1148
1151 SE Cary Parkway
Suite 101
Cary, NC 27518
(919) 557-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2721	80
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
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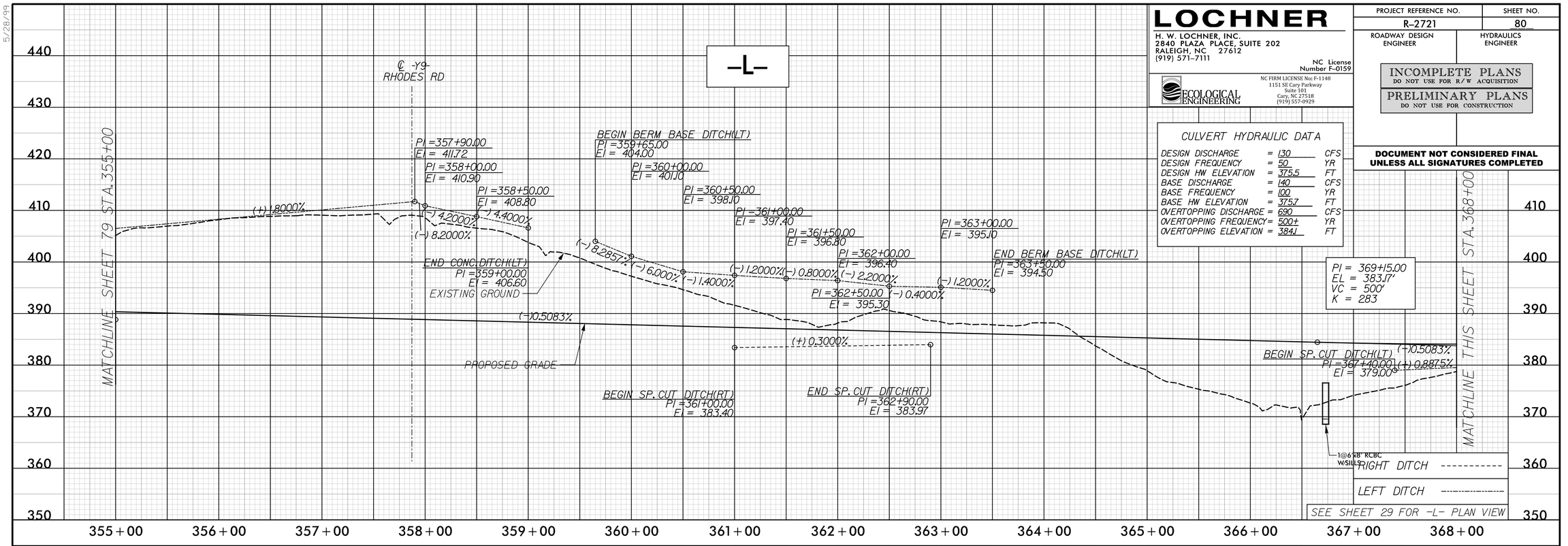
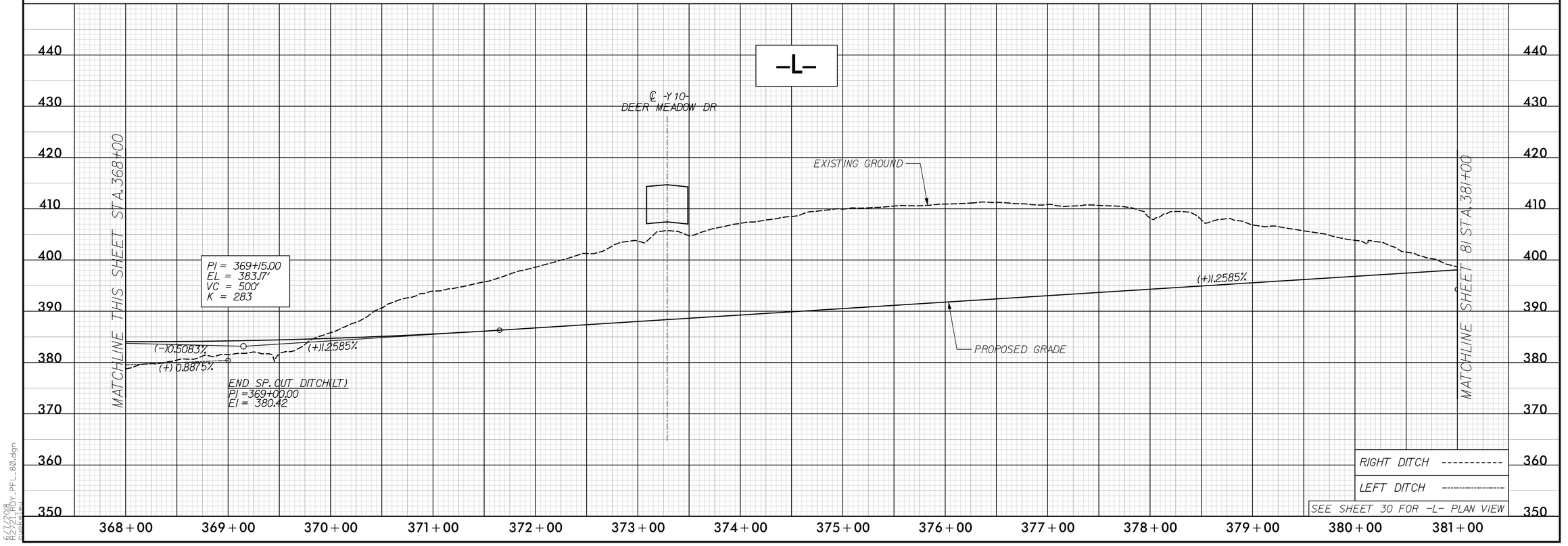
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 130	CFS
DESIGN FREQUENCY	= 50	YR
DESIGN HW ELEVATION	= 375.5	FT
BASE DISCHARGE	= 140	CFS
BASE FREQUENCY	= 100	YR
BASE HW ELEVATION	= 375.7	FT
OVERTOPPING DISCHARGE	= 690	CFS
OVERTOPPING FREQUENCY	= 500+	YR
OVERTOPPING ELEVATION	= 384.1	FT





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(919) 571-7111
NC License Number F-0159

ECOLOGICAL ENGINEERING
NC FIRM LICENSE No: F-1148
1151 SE Cary Parkway
Suite 101
Cary, NC 27518
(919) 557-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2721	81
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
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PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

–L–

MATCHLINE SHEET 80 STA.381+00

MATCHLINE THIS SHEET STA.394+00

PIPE HYDRAULIC DATA
42" RCP-IV Sta. 381+76

DRAINAGE AREA	= 29.1	AC
DESIGN FREQUENCY	= 50	YR
DESIGN DISCHARGE	= 65	CFS
DESIGN HW ELEVATION	= 394.5	FT
100 YEAR DISCHARGE	= 70	CFS
100 YEAR HW ELEVATION	= 394.8	FT
OVERTOPPING FREQUENCY	= 500+	YR
OVERTOPPING DISCHARGE	= 91	CFS
OVERTOPPING ELEVATION	= 396.0	FT

PIPE HYDRAULIC DATA
48" RCP-IV Sta. 387+15

DRAINAGE AREA	= 44.4	AC
DESIGN FREQUENCY	= 50	YR
DESIGN DISCHARGE	= 90	CFS
DESIGN HW ELEVATION	= 397.5	FT
100 YEAR DISCHARGE	= 100	CFS
100 YEAR HW ELEVATION	= 398.0	FT
OVERTOPPING FREQUENCY	= 100+	YR
OVERTOPPING DISCHARGE	= 105	CFS
OVERTOPPING ELEVATION	= 398.1	FT

PI = 386+50.00
EL = 405.00'
VC = 500'
K = 659

BEGIN BERM 'V' DITCH(RT)
PI =391+00.00
EI = 420.52
(+) 1.7600%

PROPOSED GRADE

BEGIN SP. CUT DITCH(RT)
PI =389+00.00
EI = 401.15
(+)1.2585%
(+)0.5000%

EXISTING GROUND

END SP. CUT DITCH(RT)
PI =389+50.00
EI = 401.00
(–) 0.3000%

END SP. LAT. BASE DITCH(RT)
PI =388+50.00
EI = 394.85
(–) 1.1752%
(+) 1.1047%

END LAT. BASE DITCH(LT)
PI =391+50.00
EI = 393.21
(+) 2.3000%

(+) 1.9200%
(–) 0.3000%
BEGIN SP. LAT. 'V' DITCH(RT)
PI =382+00.00
EI = 387.80
(–) 0.3043%
42" RCP-IV
END SP. LAT. 'V' DITCH(RT)
PI =382+23.00
EI = 387.73
PI =381+50.00
EI = 395.24
BEGIN SP. CUT DITCH(LT)
PI =381+00.00
EI = 394.28

(+) 5.1400%
PI =383+50.00
EI = 394.64
(–) 5.7800%
PI =384+50.00
EI = 399.78
END SP. CUT DITCH(LT)
BEGIN SP. LAT. 'V' DITCH(LT)
PI =385+00.00
EI = 396.89

(+) 4.8000%
48" RCP-IV
BEGIN LAT. BASE DITCH(RT)
PI =385+95.00
EI = 383.53

(+) 3.8800%
END SP. LAT. 'V' DITCH(LT)
BEGIN LAT. BASE DITCH(LT)
PI =388+14.00
EI = 393.20
END LAT. BASE DITCH(RT)
BEGIN SP. LAT. BASE DITCH(RT)
PI =387+50.00
EI = 390.97
PI =389+00.00
EI = 394.15

381+00 382+00 383+00 384+00 385+00 386+00 387+00 388+00 389+00 390+00 391+00 392+00 393+00 394+00

RIGHT DITCH ----------
LEFT DITCH ----------
SEE SHEET 31 FOR –L– PLAN VIEW

–L–

℄ -Y11- JOHNSON POND RD

MATCHLINE THIS SHEET STA.394+00

MATCHLINE SHEET 82 STA.407+00

END BERM 'V' DITCH(RT)
BEGIN BERM 'V' DITCH(RT)
PI =394+50.00
EI = 426.68
(+) 1.7600%
(–) 0.3000%

END BERM 'V' DITCH(RT)
BEGIN BERM 'V' DITCH(RT)
PI =398+00.00
EI = 425.63
(+) 1.8000%

END BERM 'V' DITCH(RT)
PI =400+75.00
EI = 430.58

PI = 400+00.00
EL = 411.75'
VC = 950'
K = 936

EXISTING GROUND

END SP. CUT DITCH(LT)
PI =401+50.00
EI = 412.01

(+)0.5000%
(–)0.5147%
(+) 0.9700%
(+) 0.9700%

PROPOSED GRADE

BEGIN SP. CUT DITCH(LT)
PI =398+50.00
EI = 409.10

END BERM 'V' DITCH(RT)
PI =406+22.00
EI = 420.30
BEGIN BERM 'V' DITCH(RT)
PI =405+13.00
EI = 423.40
(–) 2.5000%
(+) 0.4167%
END BERM 'V' DITCH(RT)
BEGIN BERM 'V' DITCH(RT)
PI =405+98.00
EI = 420.20

394+00 395+00 396+00 397+00 398+00 399+00 400+00 401+00 402+00 403+00 404+00 405+00 406+00 407+00

RIGHT DITCH ----------
LEFT DITCH ----------
SEE SHEET 32 FOR –L– PLAN VIEW

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cwickstein

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LOCHNER

H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
(919) 571-7111
NC License Number F-0159

ECOLOGICAL ENGINEERING
NC FIRM LICENSE No: F-1148
1151 SE Cary Parkway
Suite 101
Cary, NC 27518
(919) 557-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2721	82
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-L-

MATCHLINE SHEET 81 STA. 407+00

MATCHLINE THIS SHEET STA. 420+00

CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 170	CFS
DESIGN FREQUENCY	= 50	YR
DESIGN HW ELEVATION	= 383.6	FT
BASE DISCHARGE	= 190	CFS
BASE FREQUENCY	= 100	YR
BASE HW ELEVATION	= 383.9	FT
OVERTOPPING DISCHARGE	= 1335	CFS
OVERTOPPING FREQUENCY	= 500+	YR
OVERTOPPING ELEVATION	= 403.8	FT

PROPOSED GRADE

EXISTING GROUND

BEGIN SP. CUT DITCH(LT)
PI =407+50.00
EI = 406.50

(-) 3.5000%

END SP. CUT DITCH(LT)
PI =408+50.00
EI = 403.00

BEGIN SP. LAT. DITCH(RT)
PI =408+50.00
EI = 397.05

(-) 0.3000%

PI =410+50.00
EI = 396.45

(-) 4.4400%

PI =412+50.00
EI = 388.17

(-) 6.3000%

PI =413+00.00
EI = 385.02

BEGIN LAT. BASE DITCH(LT)
PI =413+65.00
EI = 379.51

1@7'x8' RCBC W/SILLS

(-) 3.6000%

(+) 0.2941%

(+) 3.2800%

(-) 3.0556%

PI =414+50.00
EI = 379.76

END SP. LAT. DITCH(RT)
BEGIN LAT. DITCH(RT)
PI =414+50.00
EI = 379.62

PI =415+00.00
EI = 381.40

(+) 7.7000%

END LAT. DITCH(RT)
PI =415+40.00
EI = 376.87

(+) 0.6500%

END LAT. BASE DITCH(LT)
BEGIN SP LAT. BASE DITCH(LT)
PI =416+50.00
EI = 392.95

(-)0.5147%

(+)1.0961%

(-) 2.9200%

BEGIN SP. CUT DITCH(LT)
PI =419+50.00
EI = 399.36

END SP. LAT. BASE DITCH(LT)
PI =417+50.00
EI = 393.80

PI = 419+00.00
EL = 401.97'
VC = 500'
K = 310

℄ TOLL GANTRY

℄ TOLL GANTRY

RIGHT DITCH ----------

LEFT DITCH ----------

SEE SHEET 33 FOR -L- PLAN VIEW

440 430 420 410 400 390 380 370

407+00 408+00 409+00 410+00 411+00 412+00 413+00 414+00 415+00 416+00 417+00 418+00 419+00 420+00

-L-

MATCHLINE THIS SHEET STA. 420+00

MATCHLINE SHEET 83 STA. 433+00

PIPE HYDRAULIC DATA

42" RCP-III Sta. 421+93

DRAINAGE AREA	= 17.3	AC
DESIGN FREQUENCY	= 50	YR
DESIGN DISCHARGE	= 43	CFS
DESIGN HW ELEVATION	= 393.96	FT
100 YEAR DISCHARGE	= 45	CFS
100 YEAR HW ELEVATION	= 394.06	FT
OVERTOPPING FREQUENCY	= 500+	YR
OVERTOPPING DISCHARGE	= 118	CFS
OVERTOPPING ELEVATION	= 401.15	FT

PROPOSED GRADE

EXISTING GROUND

PI = 419+00.00
EL = 401.97'
VC = 500'
K = 310

(+)1.0961%

(-) 2.9200%

END SP. CUT DITCH(LT)
BEGIN SP. LAT. 'V' DITCH(LT)
PI =421+50.00
EI = 393.52

(-) 0.6400%

END SP. LAT. 'V' DITCH(LT)
PI =422+00.00
EI = 393.20

42" RCP-III

(+) 6.3000%

(+) 1.8091%

PI =422+00.00
EI = 385.59

BEGIN LAT. 'V' DITCH(RT)
PI =420+90.00
EI = 383.60

(+) 6.3000%

(+) 2.9900%

END LAT. 'V' DITCH(RT)
BEGIN SP. LAT. 'V' DITCH(RT)
PI =424+50.00
EI = 401.34

END SP. LAT. 'V' DITCH(RT)
PI =425+50.00
EI = 404.33

PI = 432+75.00
EL = 417.04'
VC = 1,000'
K = 395

(+)1.0961%

(-)1.4335%

BEGIN LAT. BASE DITCH(RT)
PI =432+00.00
EI = 398.35

RIGHT DITCH ----------

LEFT DITCH ----------

SEE SHEET 34 FOR -L- PLAN VIEW

440 430 420 410 400 390 380 370

420+00 421+00 422+00 423+00 424+00 425+00 426+00 427+00 428+00 429+00 430+00 431+00 432+00 433+00

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dwoodley

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(919) 571-7111
NC License Number F-0159

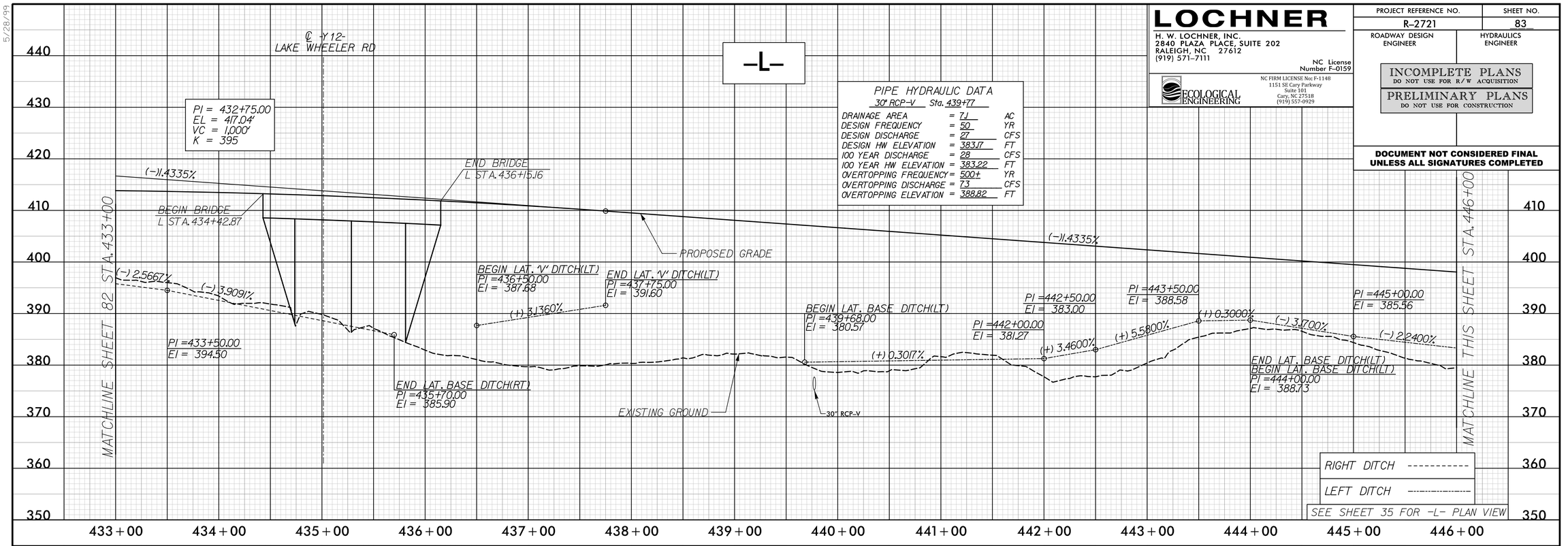
ECOLOGICAL ENGINEERING
NC FIRM LICENSE No: F-1148
1151 SE Cary Parkway
Suite 101
Cary, NC 27518
(919) 557-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2721	83
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

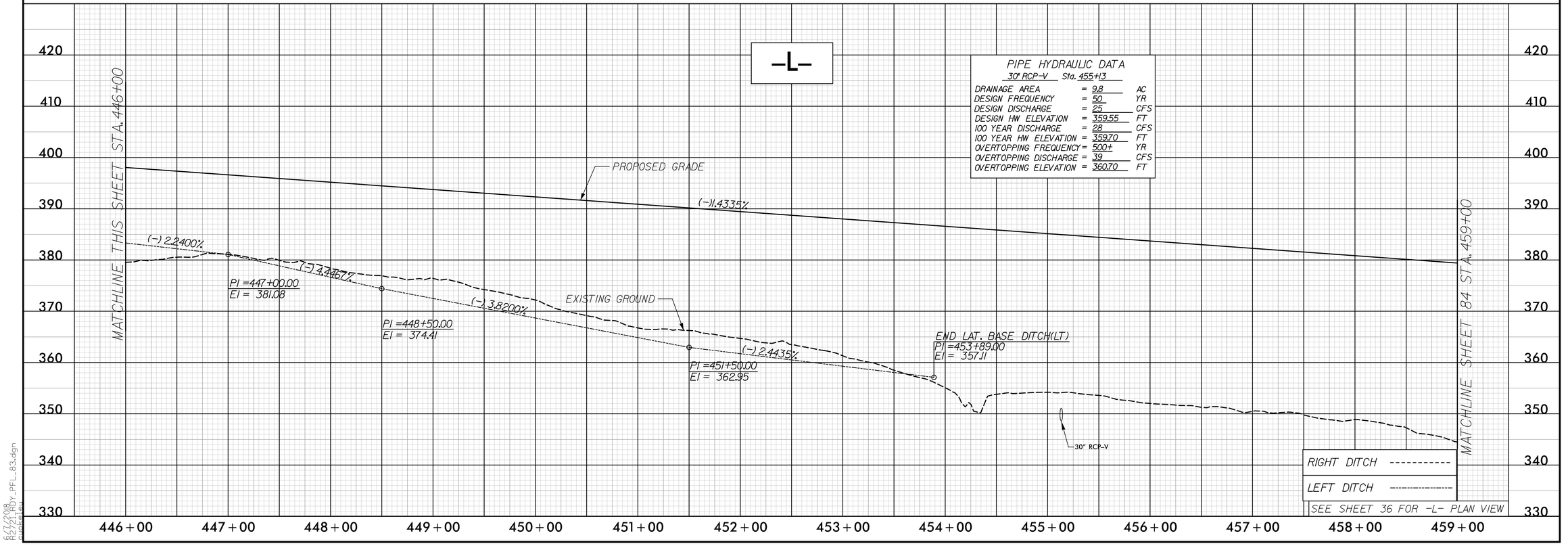
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



PIPE HYDRAULIC DATA
30" RCP-V Sta. 439+77

DRAINAGE AREA	= 7.1	AC
DESIGN FREQUENCY	= 50	YR
DESIGN DISCHARGE	= 27	CFS
DESIGN HW ELEVATION	= 383.17	FT
100 YEAR DISCHARGE	= 28	CFS
100 YEAR HW ELEVATION	= 383.22	FT
OVERTOPPING FREQUENCY	= 500+	YR
OVERTOPPING DISCHARGE	= 73	CFS
OVERTOPPING ELEVATION	= 388.82	FT



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dwalker

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PROJECT REFERENCE NO.	SHEET NO.
R-2721	84

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

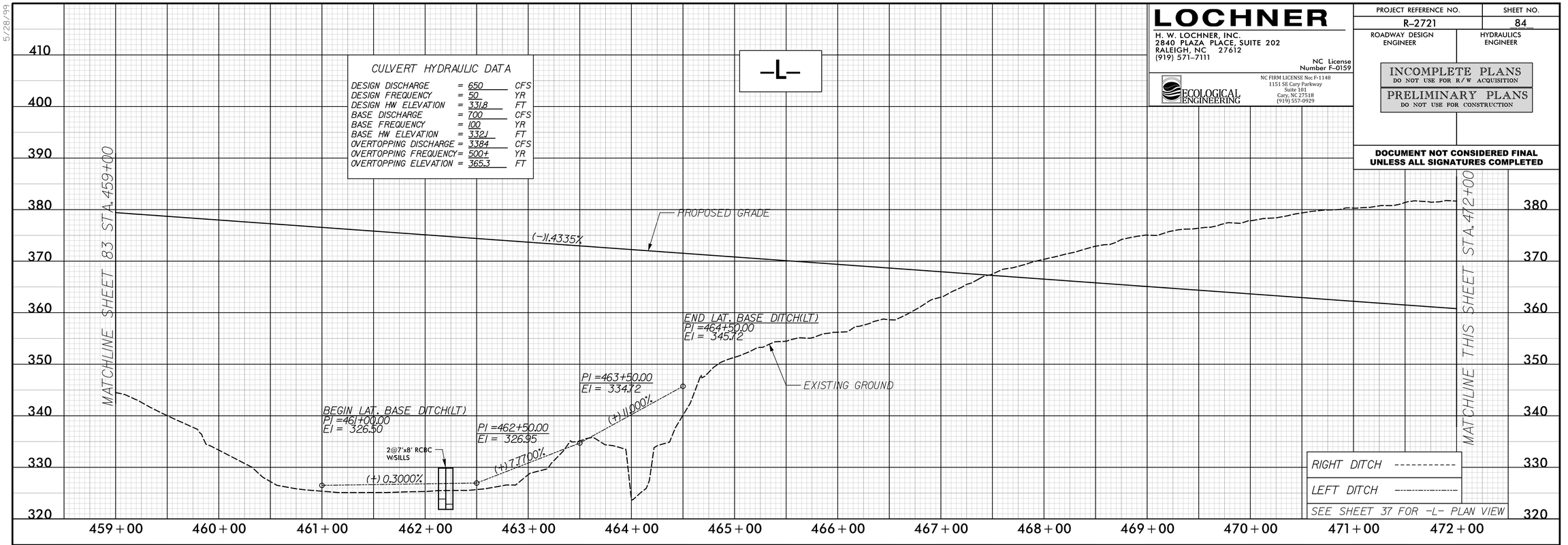
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

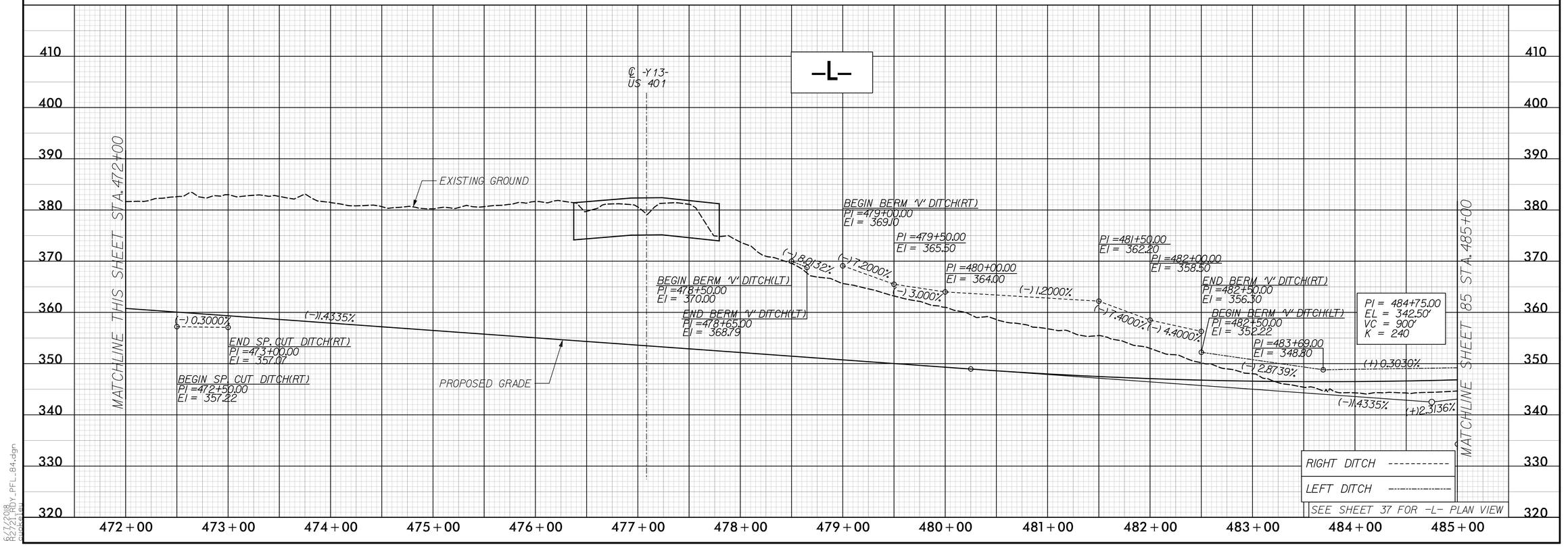
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 650	CFS
DESIGN FREQUENCY	= 50	YR
DESIGN HW ELEVATION	= 331.8	FT
BASE DISCHARGE	= 700	CFS
BASE FREQUENCY	= 100	YR
BASE HW ELEVATION	= 332.1	FT
OVERTOPPING DISCHARGE	= 3384	CFS
OVERTOPPING FREQUENCY	= 500+	YR
OVERTOPPING ELEVATION	= 365.3	FT





R-2721BA_SUMMARY_PFL_84.dgn
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(919) 557-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2721	85
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-L-

CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 230	CFS
DESIGN FREQUENCY	= 50	YR
DESIGN HW ELEVATION	= 335.5	FT
BASE DISCHARGE	= 250	CFS
BASE FREQUENCY	= 100	YR
BASE HW ELEVATION	= 335.7	FT
OVERTOPPING DISCHARGE	= 1140	CFS
OVERTOPPING FREQUENCY	= 500+	YR
OVERTOPPING ELEVATION	= 342.7	FT

CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 85	CFS
DESIGN FREQUENCY	= 50	YR
DESIGN HW ELEVATION	= 333.7	FT
BASE DISCHARGE	= 95	CFS
BASE FREQUENCY	= 100	YR
BASE HW ELEVATION	= 333.9	FT
OVERTOPPING DISCHARGE	= 600	CFS
OVERTOPPING FREQUENCY	= 500+	YR
OVERTOPPING ELEVATION	= 342.7	FT

PI = 495+65.00
EL = 367.72'
VC = 600'
K = 409

℄ -Y14-
McCULLER'S RD

END BRIDGE
L STA. 497+79.08

BEGIN BRIDGE
L STA. 497+34.87

MATCHLINE SHEET 84 STA. 485+00

PI = 484+75.00
EL = 342.50'
VC = 900'
K = 240

END BERM 'V' DITCH(LT)
PI = 486+00.00
EL = 349.50

(+) 0.3030%

(+)2.3136%

(+) 2.0889%

PROPOSED GRADE

(+)2.3136%

(+)0.8474%

END MEDIAN DITCH(M)
PI = 489+50.00
EL = 345.22

BEGIN MEDIAN DITCH(M)
PI = 487+25.00
EL = 340.52

(-) 0.2976%

BEGIN SP. LAT. BASE DITCH(RT)
PI = 485+00.00
EL = 334.29

END SP. LAT. BASE DITCH(RT)
PI = 486+68.00
EL = 333.79

EXISTING GROUND

2@6'x8' RCBC W/SILLS

2@6'x8' RCBC W/SILLS

MATCHLINE THIS SHEET STA. 498+25

RIGHT DITCH ----------
LEFT DITCH ----------
MEDIAN DITCH --------

SEE SHEET 38 FOR -L- PLAN VIEW

485+00 486+00 487+00 488+00 489+00 490+00 491+00 492+00 493+00 494+00 495+00 496+00 497+00 498+00

320 330 340 350 360 370 380 390 400 410

-L-

MATCHLINE THIS SHEET STA. 498+25

PI = 495+65.00
EL = 367.72'
VC = 600'
K = 409

PI = 500+00.00
EL = 371.41'

END GRADE R-272(
-L- STA. 500+00.00
EL. 371.41

BEGIN BRIDGE
L STA. 502+71.62

℄ -Y15-
NORFOLK SOUTHERN RAILROAD

END BRIDGE
L STA. 504+28.64

PI = 506+00.00
EL = 376.49'
VC = 300'
K = 423

PI = 509+50.00
EL = 381.94'
VC = 300'
K = 412

(+)0.8474%

PROPOSED GRADE

(-)15.00%

TO BE CONSTRUCTED
UNDER R-2828

(+)0.8474%

(+)1.5561%

(+)1.5561%

(+)0.8281%

EXISTING GROUND

SEE SHEET 39 FOR -L- PLAN VIEW

499+00 500+00 501+00 502+00 503+00 504+00 505+00 506+00 507+00 508+00 509+00 510+00 511+00 512+00

320 330 340 350 360 370 380 390 400 410

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NC License Number F-0159

SUNGATE DESIGN GROUP, P.A.
905 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243 NC FIRM LICENSE NO. C-890

PROJECT REFERENCE NO.	SHEET NO.
R-2721	86
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-Y1RPB-

BEGIN GRADE
-YIRPB- STA.10+00.00
EL.417.49

PI = 15+35.00
EL = 425.93'
VC = 950'
K = 268

(+)1.5770%

(-)1.9660%

PROPOSED GRADE

EXISTING GROUND

(-)1.9660%

(-)4.5899%

PI = 21+75.00
EL = 413.35'
VC = 330'
K = 126

MATCHLINE THIS SHEET STA.23+00

SEE SHEET 6 & 7 FOR -YIRPB- PLAN VIEW

10+00 11+00 12+00 13+00 14+00 15+00 16+00 17+00 18+00 19+00 20+00 21+00 22+00 23+00

430 420 410 400 390 380 370 360

-Y1RPB-

MATCHLINE THIS SHEET STA.23+00

(-)4.5899%

PROPOSED GRADE

BEGIN LAT.V-DITCH (RT)
PI STA 24+00
ELEV=399.60

PI = 21+75.00
EL = 413.35'
VC = 330'
K = 126

(-)4.8000%

EXISTING GROUND

END LAT.V-DITCH (RT)
PI STA 29+50
ELEV=373.20

PI = 32+00.00
EL = 366.30'
VC = 260'
K = 44

PI = 33+74.46
EL = 368.57'

(-)4.5899%

(+)1.3000%

(+)1.3000%

(+)4.9986%

END GRADE
-YIRPB- STA.33+86.48
EL.369.17

SEE SHEET 6 & 7 FOR -YIRPB- PLAN VIEW

23+00 24+00 25+00 26+00 27+00 28+00 29+00

430 420 410 400 390 380 370 360 350 340

8/7/2018
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rbuckley

5/28/99

–Y1RPC–

BEGIN GRADE
–YIRPC– STA. 10+00.00
EL. 418.57

PI = 12+25.00
EL = 422.01'
VC = 410'
K = 210

(+)1.5300%

(–)0.4233%

PI = 17+80.00
EL = 419.66'
VC = 690'
K = 152

(–)0.4233%

(–)4.9725%

PROPOSED GRADE

EXISTING GROUND

2.2258%

(–) 0.2571%

PI STA 18+88 –YIRPC– LT
ELEV=403.74

PI STA 19+50 –YIRPC– LT
ELEV=402.36

PI STA 19+85 –YIRPC– LT
ELEV=402.27

MATCHLINE THIS SHEET STA. 23+00

SEE SHEET 6 & 7 FOR –YIRPC– PLAN VIEW

430 420 410 400 390 380 370 360 350 340

10+00 11+00 12+00 13+00 14+00 15+00 16+00 17+00 18+00 19+00 20+00 21+00 22+00 23+00

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TEL (919) 859-2243
NC FIRM LICENSE NO. C-890

PROJECT REFERENCE NO.	SHEET NO.
R-2721	87
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
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PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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MATCHLINE THIS SHEET STA. 23+00

–Y1RPC–

EXISTING GROUND

PROPOSED GRADE

PI = 29+00.00
EL = 363.97'
VC = 220'
K = 49

PI = 30+41.99
EL = 363.26'

END GRADE
–YIRPC– STA. 30+50.94
EL. 363.41

(+) 0.3067%

(–)4.9725%

(–)0.5000%

(–)0.5000%

(+)1.7305%

PI STA 26+75 –YIRPC– LT
ELEV=366.62

PI STA 27+50 –YIRPC– LT
ELEV=366.85

SEE SHEET 6 & 7 FOR –YIRPC– PLAN VIEW

430 420 410 400 390 380 370 360 350 340

23+00 24+00 25+00 26+00 27+00 28+00 29+00

8/7/2018
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cruskeli

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TEL (919) 859-2243
NC FIRM LICENSE NO. C-890

PROJECT REFERENCE NO.	SHEET NO.
R-2721	88
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
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PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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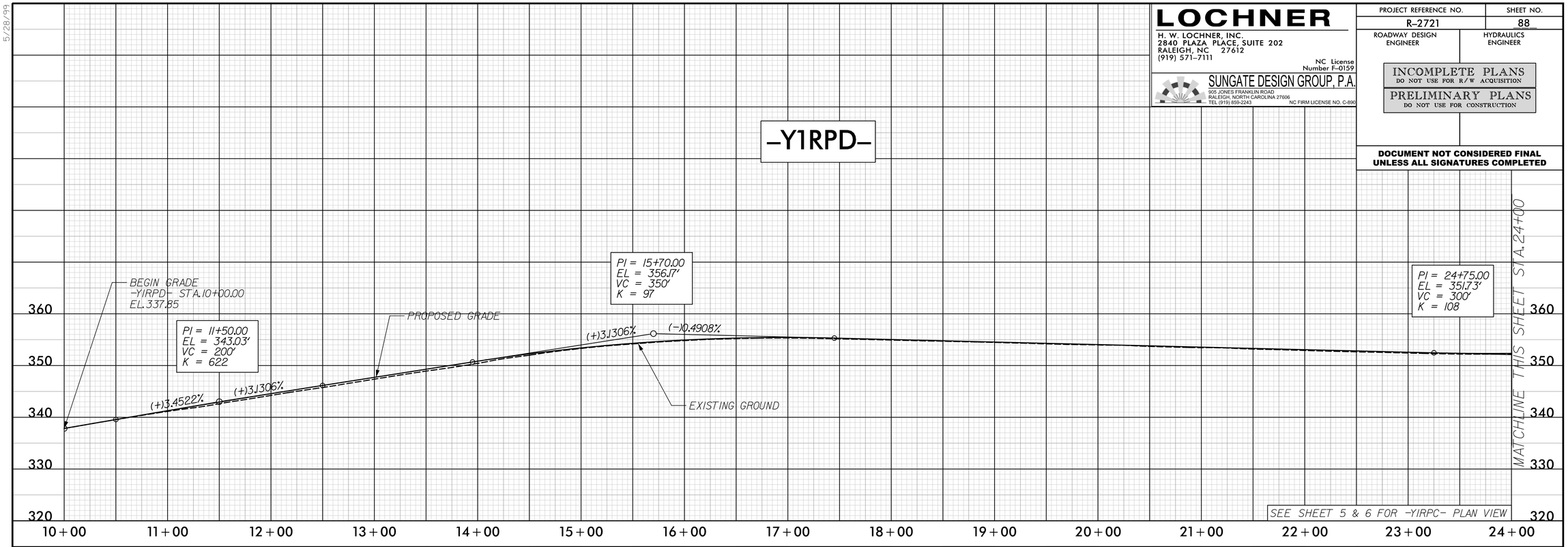

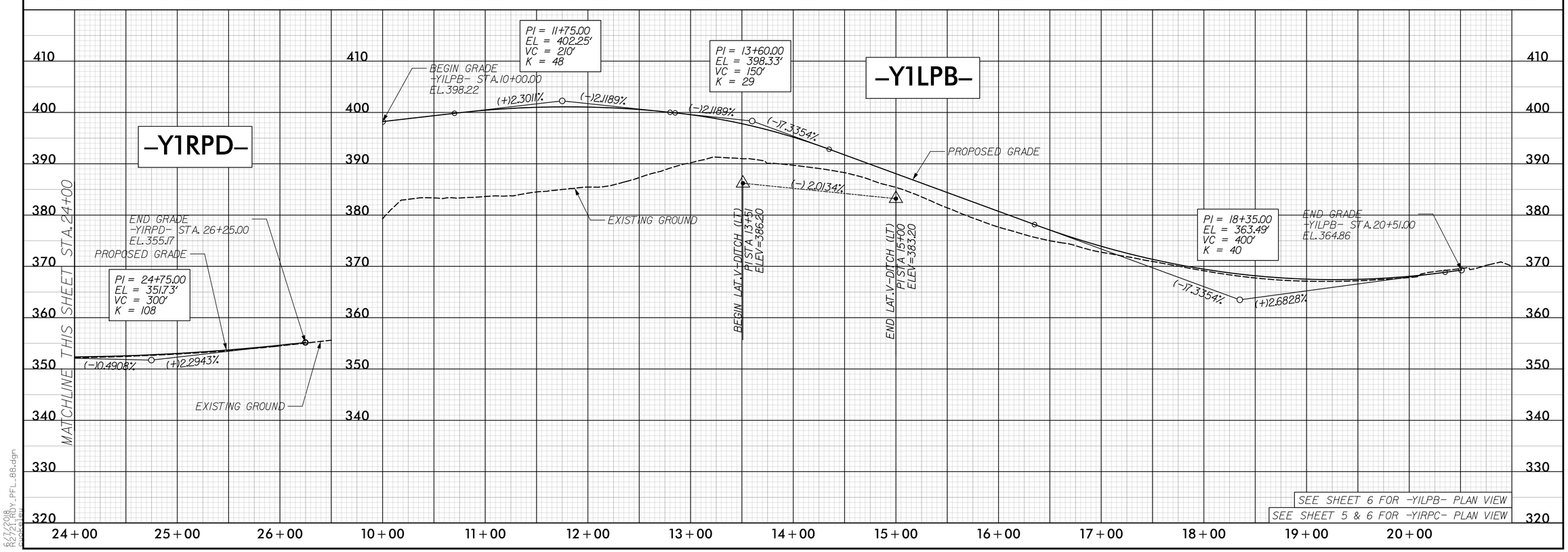

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cuckeley

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905 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243
NC FIRM LICENSE NO. C-890

PROJECT REFERENCE NO.	SHEET NO.
R-2721	89
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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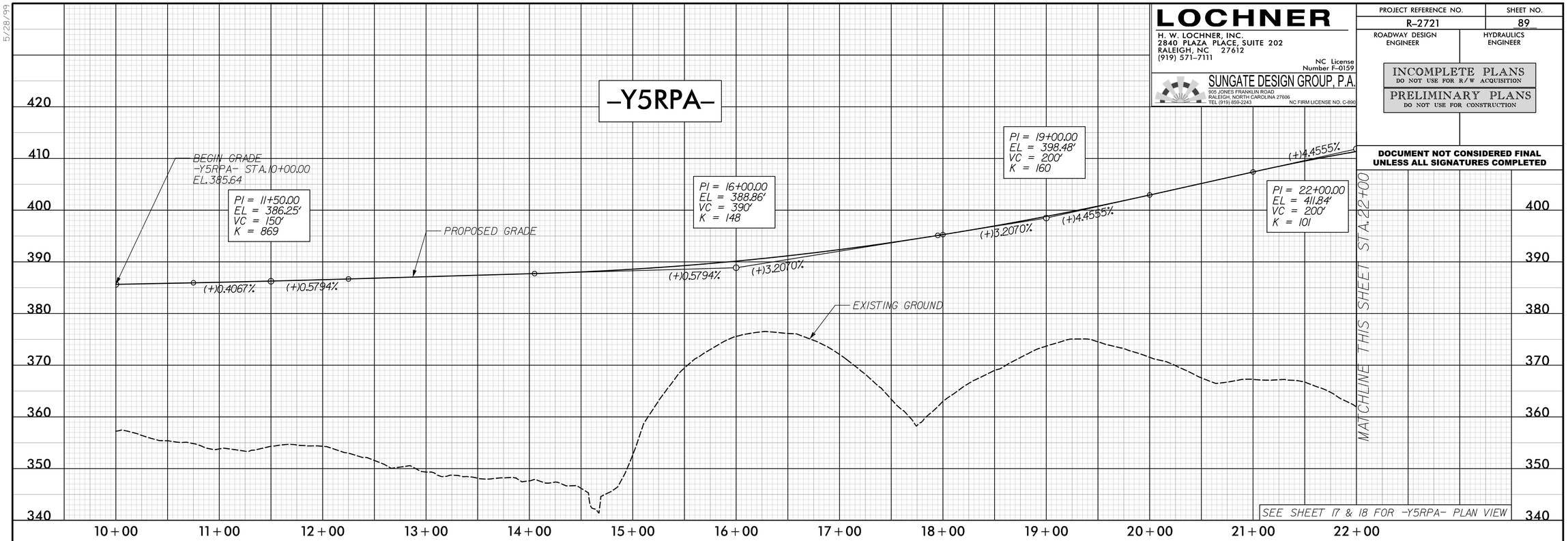

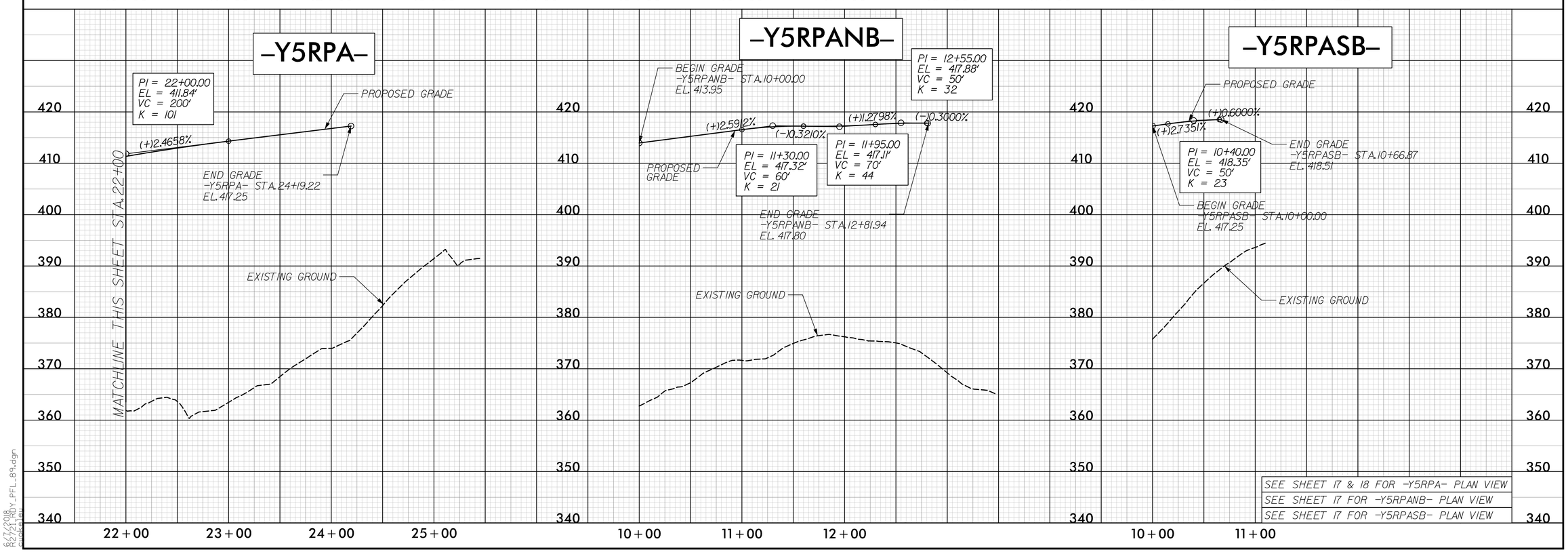

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Number F-0159

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RALEIGH, NORTH CAROLINA 27606
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PROJECT REFERENCE NO.	SHEET NO.
R-2721	90

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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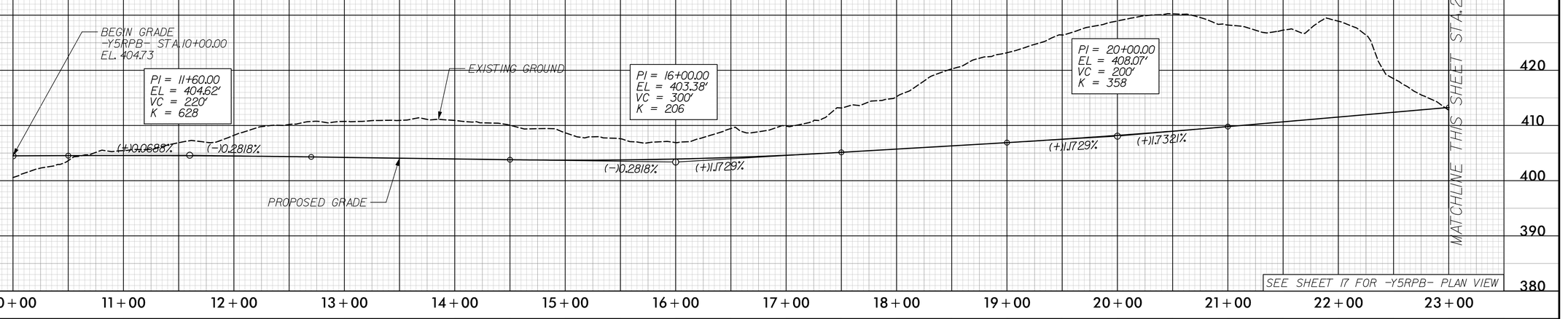
-Y5RPB-

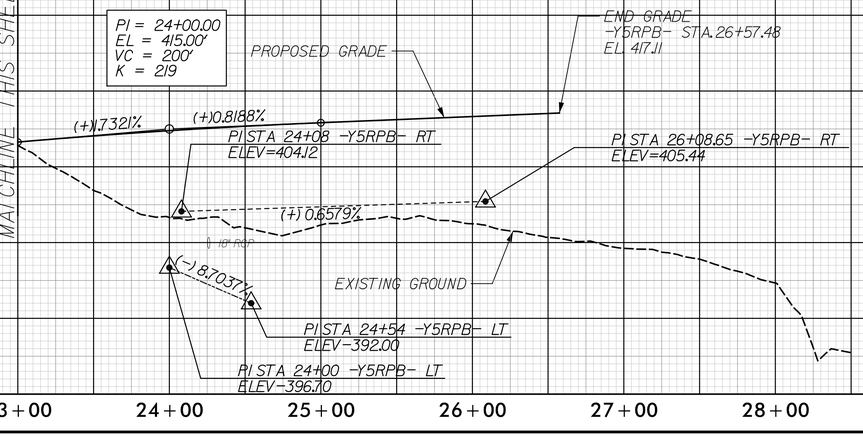


PIPE HYDRAULIC DATA

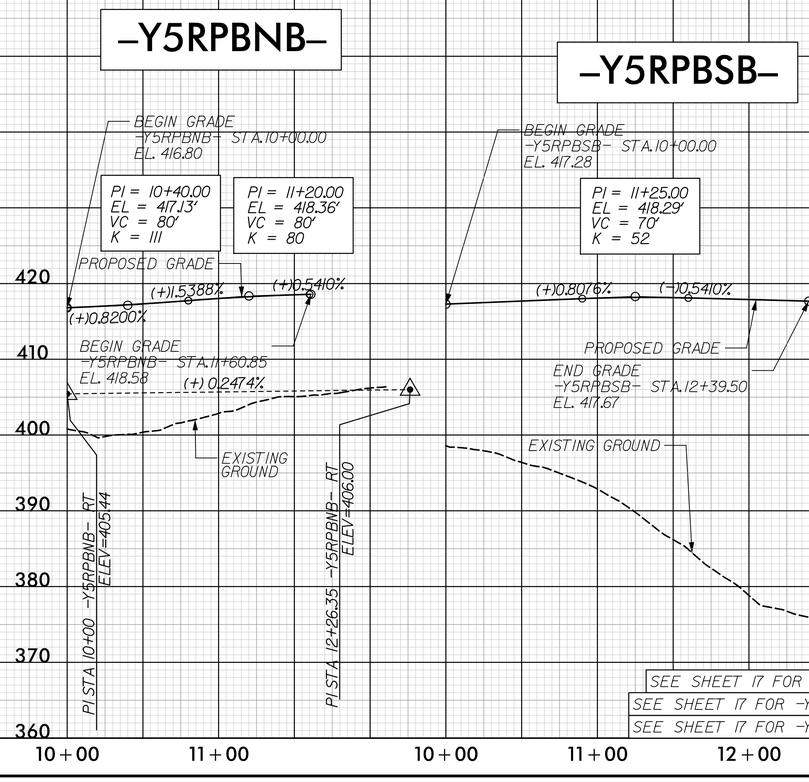
18" RCP Sta. 24+26 -Y5RPB-

DRAINAGE AREA	= 1.2	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 3	CFS
DESIGN HW ELEVATION	= 405.0	FT
100 YEAR DISCHARGE	= 3.2	CFS
100 YEAR HW ELEVATION	= 405.0	FT
OVERTOPPING FREQUENCY	= 500 +	YRS
OVERTOPPING DISCHARGE	= 23	CFS
OVERTOPPING ELEVATION	= 414.1	FT

-Y5RPB-



-Y5RPBNB-



-Y5RPBSB-

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PROJECT REFERENCE NO.	SHEET NO.
R-2721	91

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-Y5RPC-

BEGIN GRADE
-Y5RPC- STA.10+00.00
EL. 398.83

PI = 12+00.00
EL = 399.50'
VC = 180'
K = 267

PI = 14+00.00
EL = 398.81'
VC = 150'
K = 248

PI = 17+50.00
EL = 399.74'
VC = 250'
K = 199

(+)0.3327%
(-)0.3414%
(-)0.3414%
(+)0.2645%
(+)0.2645%
(+)1.5194%

PROPOSED GRADE

EXISTING GROUND

MATCHLINE THIS SHEET STA.23+00

SEE SHEET 16 & 17 FOR -Y5RPC- PLAN VIEW

430 420 410 400 390 380 370 360

10+00 11+00 12+00 13+00 14+00 15+00 16+00 17+00 18+00 19+00 20+00 21+00 22+00 23+00

-Y5RPC-

EXISTING GROUND

(+)1.5194%

PROPOSED GRADE

END GRADE
-Y5RPC- STA.31+05.29
EL. 420.33

MATCHLINE THIS SHEET STA.23+00

-Y5RPCNB-

BEGIN GRADE
-Y5RPCNB- STA.10+00.00
EL. 420.33

PI = 11+55.00
EL = 422.04'
VC = 70'
K = 39

(+)1.1000%
(-)0.7029%

PROPOSED GRADE

BEGIN GRADE
-Y5RPCNB- STA.12+04.08
EL. 421.69

EXISTING GROUND

SEE SHEET 17 FOR -Y5RPCNB- PLAN VIEW
SEE SHEET 16 & 17 FOR -Y5RPC- PLAN VIEW

430 420 410 400 390 380 370 360

23+00 24+00 25+00 26+00 27+00 28+00 29+00 30+00 31+00 32+00 10+00 11+00 12+00

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R2721_GRADY_PFL_91.dgn
cwickert

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–Y5RPCSB–

BEGIN GRADE
–Y5RPCSB– STA.10+00.00
EL. 419.70

EXISTING GROUND

PI = 11+95.00
EL = 422.60'
VC = 60'
K = 30

(+)1.49117%

(–)0.5000%

PROPOSED GRADE

END GRADE
–Y5RPCSB– STA.12+27.74
EL. 422.44

–Y5RPDNB–

BEGIN GRADE
–Y5RPDNB– STA.10+00.00
EL. 419.79

PROPOSED GRADE

PI = 11+45.00
EL = 423.00'
VC = 100'
K = 40

(+)2.2132%

(–)0.3000%

BEGIN GRADE
–Y5RPDNB– STA.12+31.71
EL. 422.74

EXISTING GROUND

–Y5RPDSB–

BEGIN GRADE
–Y5RPDSB– STA.10+00.00
EL. 418.51

PI = 11+20.00
EL = 421.69'
VC = 100'
K = 31

(+)2.6500%

(–)0.5503%

PROPOSED GRADE

END GRADE
–Y5RPDSB– STA.11+70.88
EL. 421.41

EXISTING GROUND

–Y5RPD–

BEGIN GRADE
–Y5RPD– STA.10+00.00
EL. 385.38

PROPOSED GRADE

PI = 12+75.00
EL = 386.85'
VC = 310'
K = 367

(+)0.5335%

(–)0.3111%

EXISTING GROUND

MATCHLINE THIS SHEET STA.14+25

–Y5RPD–

PI = 16+80.00
EL = 385.59'
VC = 500'
K = 117

(–)0.3111%

(+)3.9647%

EXISTING GROUND

MATCHLINE THIS SHEET STA.14+25

PROPOSED GRADE

PI = 24+70.00
EL = 416.91'
VC = 200'
K = 127

(+)3.9647%

(+)2.3869%

BEGIN GRADE
–Y5RPD– STA.25+77.03
EL. 419.46

PI STA 23+86 –Y5RPD– RT
ELEV=377.10

(+) 8.0952%

PI STA 25+12 –Y5RPD– RT
ELEV=387.30

SEE SHEET 17 FOR –Y5RPCSB– PLAN VIEW
SEE SHEET 17 FOR –Y5RPDNB– PLAN VIEW
SEE SHEET 17 FOR –Y5RPDSB– PLAN VIEW
SEE SHEET 17 & 18 FOR –Y5RPD– PLAN VIEW

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TEL (919) 859-2243 NC FIRM LICENSE NO. C-890

PROJECT REFERENCE NO.	SHEET NO.
R-2721	92
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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cwickert

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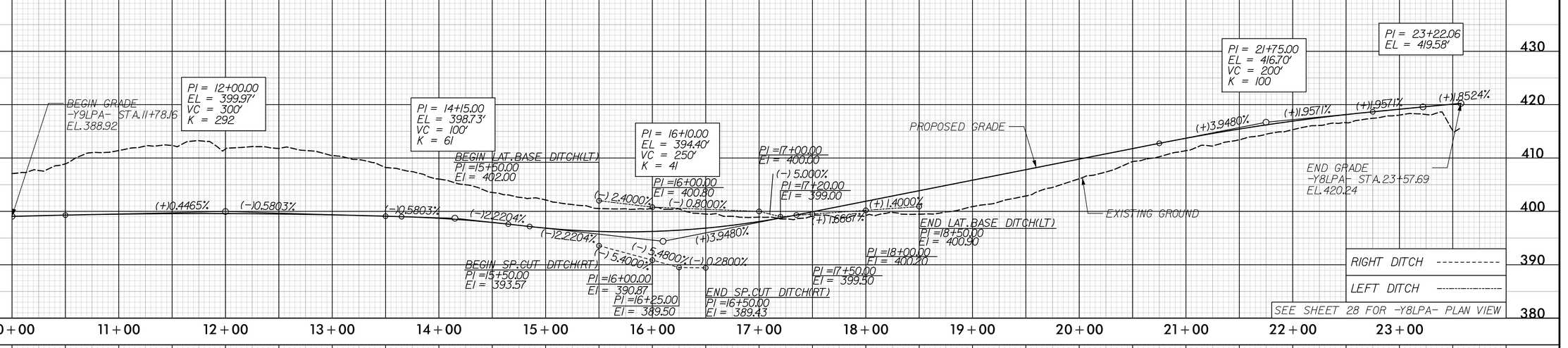
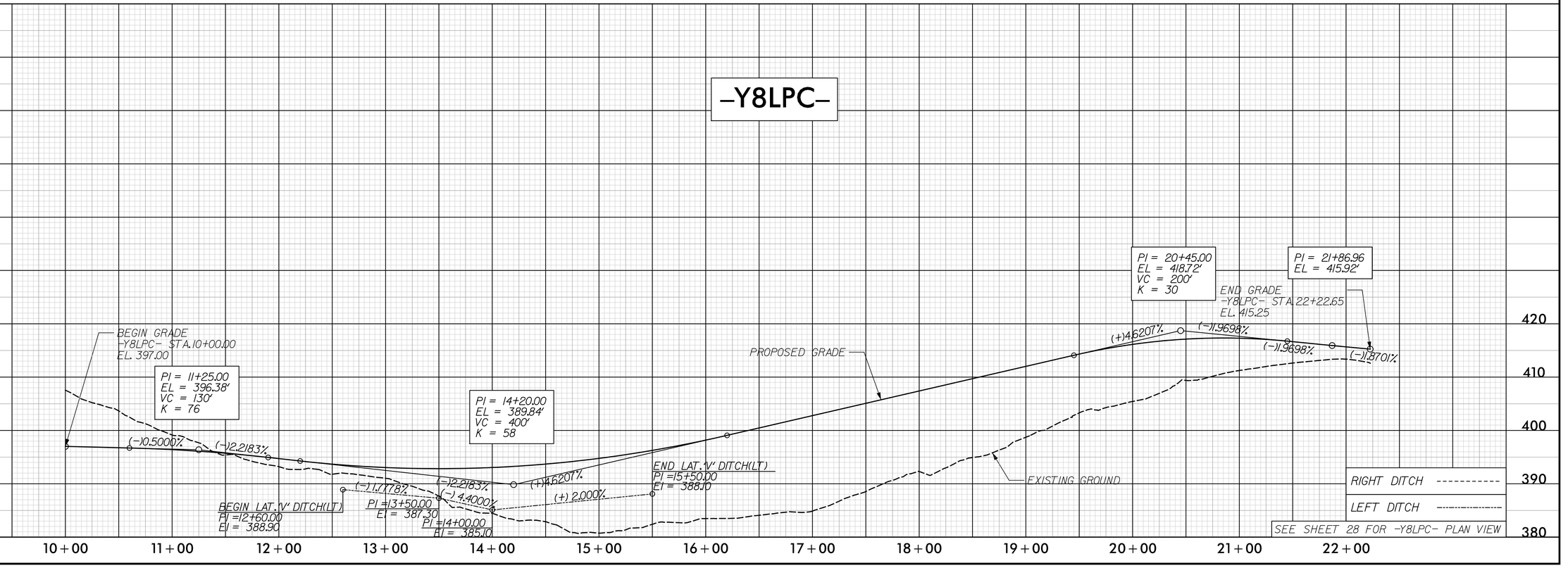
–Y8LPA–



–Y8LPC–



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(919) 557-0929

PROJECT REFERENCE NO.	SHEET NO.
R–2721	93

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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PROJECT REFERENCE NO.	SHEET NO.
R-2721	94
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
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PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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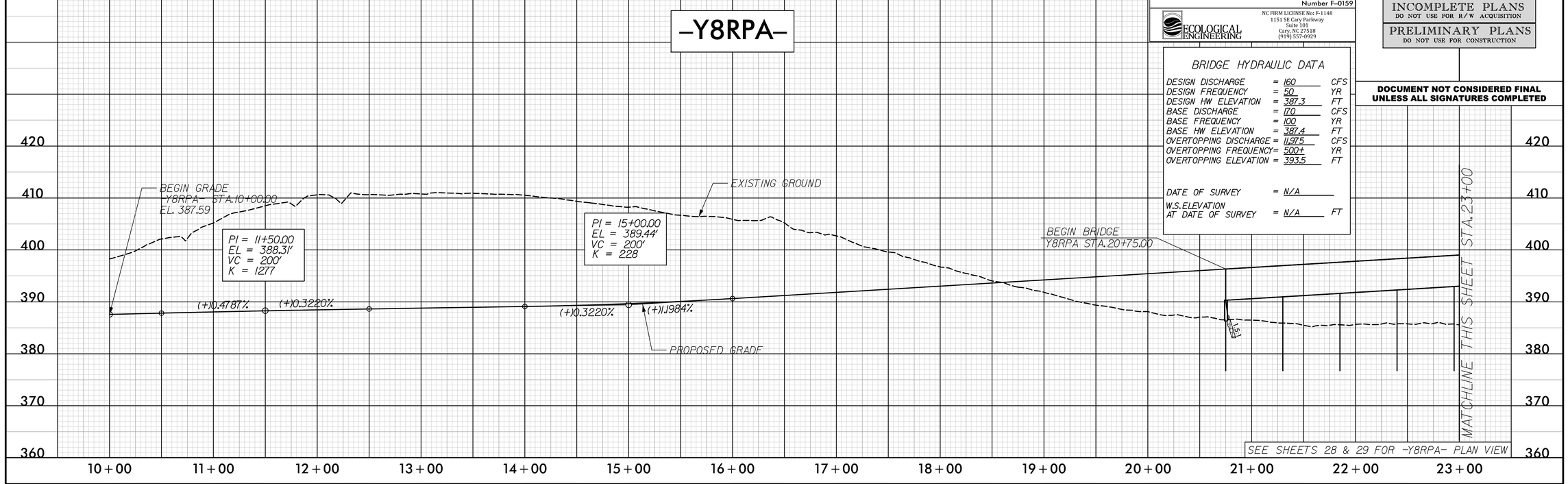
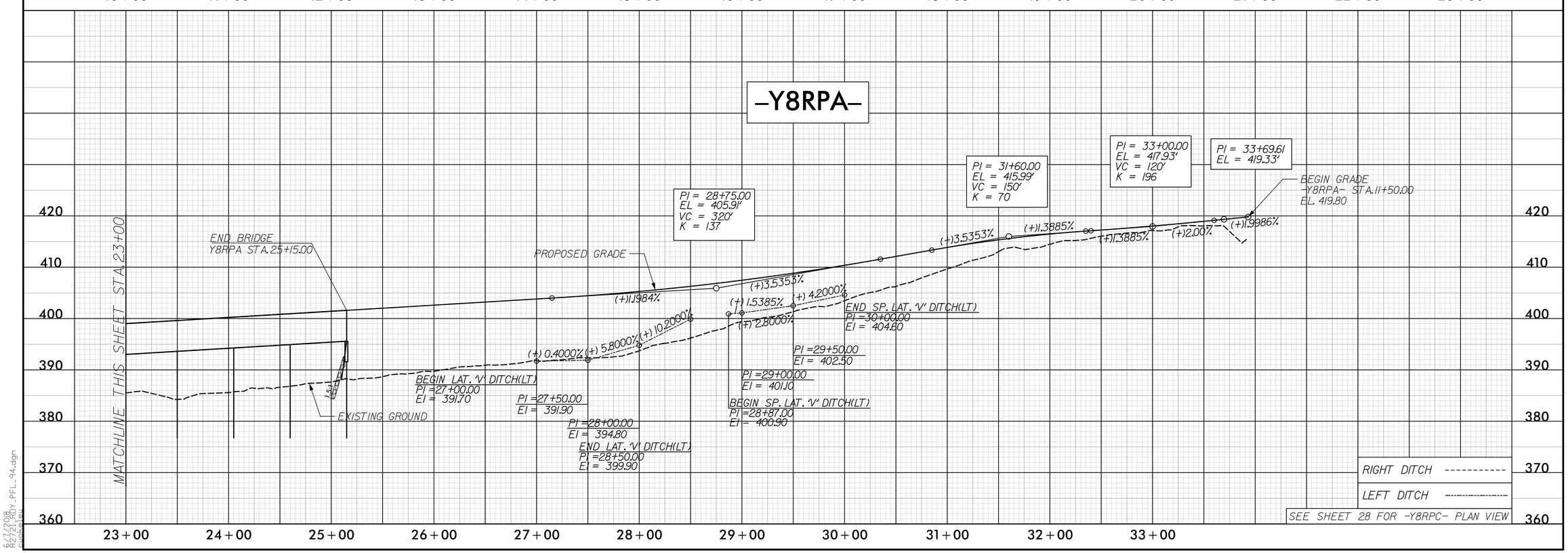
BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 160	CFS
DESIGN FREQUENCY	= 50	YR
DESIGN HW ELEVATION	= 387.3	FT
BASE DISCHARGE	= 170	CFS
BASE FREQUENCY	= 100	YR
BASE HW ELEVATION	= 387.4	FT
OVERTOPPING DISCHARGE	= 11,975	CFS
OVERTOPPING FREQUENCY	= 500+	YR
OVERTOPPING ELEVATION	= 393.5	FT
DATE OF SURVEY	= N/A	
W.S. ELEVATION AT DATE OF SURVEY	= N/A	FT





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–Y8RPC–

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(919) 557-0929

PROJECT REFERENCE NO.	SHEET NO.
R–2721	95
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
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PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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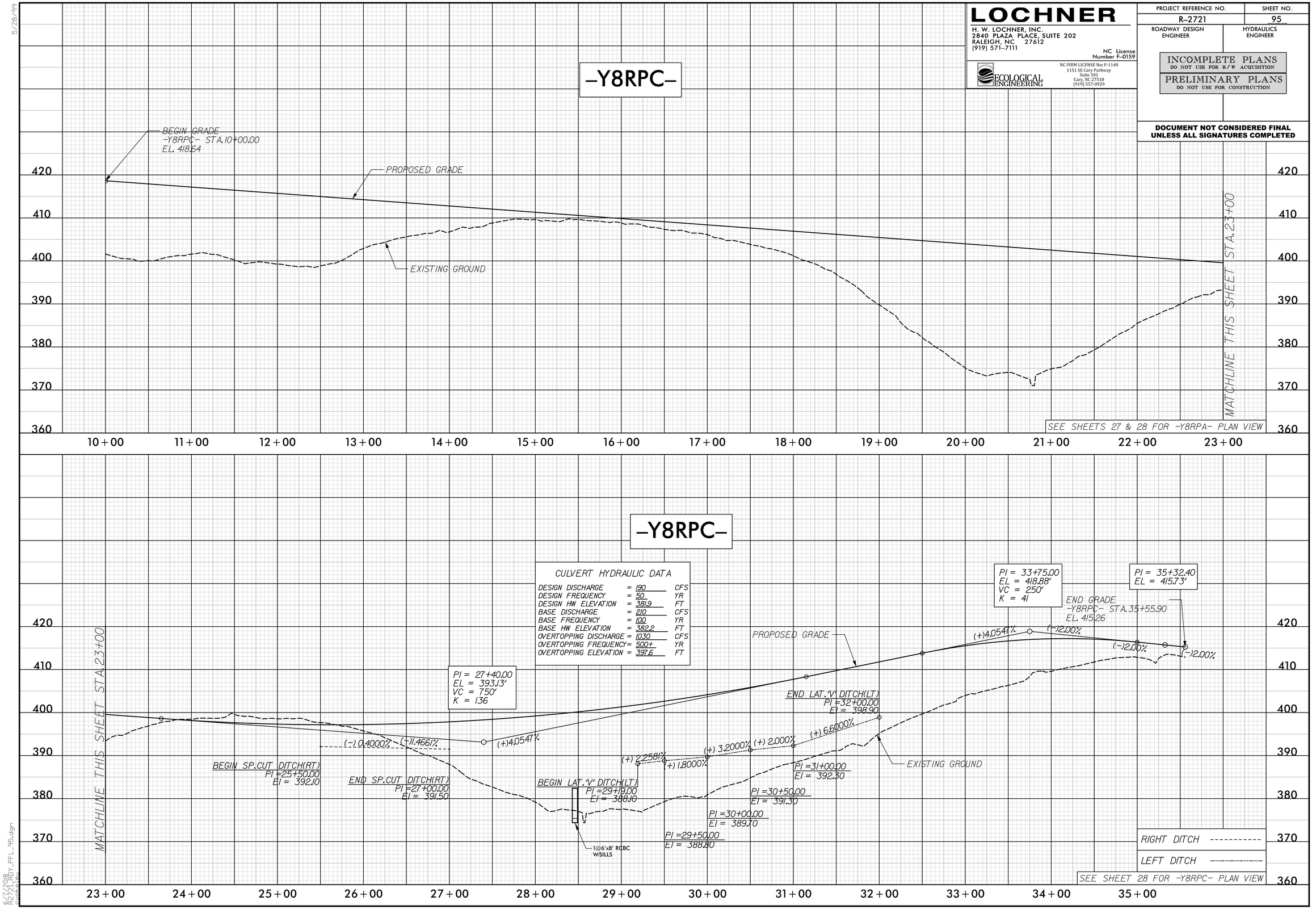

–Y8RPC–

CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 190	CFS
DESIGN FREQUENCY	= 50	YR
DESIGN HW ELEVATION	= 381.9	FT
BASE DISCHARGE	= 210	CFS
BASE FREQUENCY	= 100	YR
BASE HW ELEVATION	= 382.2	FT
OVERTOPPING DISCHARGE	= 1030	CFS
OVERTOPPING FREQUENCY	= 500+	YR
OVERTOPPING ELEVATION	= 397.6	FT

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cruskelu

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–Y13LPA–

BEGIN BERM 'V' DITCH(LT)
PI =10+00.00
EI = 368.19

BEGIN GRADE
–Y13LPA– STA.10+00.00
EL.350.52

PI = 11+20.00
EL = 348.80'
VC = 160'
K = 108

PI =11+55.00
EI = 359.18

PI =10+94.800
EI = 362.00

EXISTING GROUND

END BERM 'V' DITCH(LT)
BEGIN BERM 'V' DITCH(LT)
PI =13+15.00
EI = 357.99

PI = 14+00.00
EL = 340.63'
VC = 400'
K = 39

PI =15+50.00
EI = 365.49

END BERM 'V' DITCH(LT)
PI =16+37.00
EI = 368.80

PI = 19+80.00
EL = 382.63'
VC = 300'
K = 49

PROPOSED GRADE

END SP. CUT DITCH(RT)
PI =13+15.00
EI = 342.00

BEGIN SP. CUT DITCH(RT)
PI =12+29.00
EI = 345.13

PI = 21+80.00
EL = 384.77'
VC = 100'
K = 47

END GRADE
–Y13LPA– STA.23+08.80
EL.383.39

(–) 7.1624%
(–) 4.6844%
(–) 0.7437%
(+) 3.1872%
(+) 3.8046%
(+)7.2401%
(+)1.0706%
(+)1.0706%
(–)1.0669%
(–)1.4335%
(–)2.9186%
(–) 3.6395%
(–)2.9186%
(+)7.2401%

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RIGHT DITCH ----------
LEFT DITCH ----------
SEE SHEET 37 FOR –Y13LPA– PLAN VIEW

–Y13LPC–

BEGIN BERM 'V' DITCH(LT)
PI =12+00.00
EI = 372.10

EXISTING GROUND

PI = 14+80.00
EL = 359.59'
VC = 150'
K = 166

BEGIN GRADE
–Y13LPC– STA.10+00.00
EL.353.50

PI = 12+65.00
EL = 357.30'
VC = 150'
K = 407

PI =17+50.00
EI = 370.50

PI = 19+10.00
EL = 368.04'
VC = 150'
K = 199

BEGIN BERM 'V' DITCH(LT)
PI =12+00.00
EI = 371.30

PI = 21+55.00
EL = 371.01'
VC = 230'
K = 90

PI = 23+60.00
EL = 378.74'
VC = 150'
K = 51

PROPOSED GRADE

END SP. CUT DITCH(RT)
PI =15+00.00
EI = 357.33

BEGIN SP. CUT DITCH(RT)
PI =14+50.00
EI = 357.07

(–) 0.2909%
(+) 0.2353%
(+)1.4335%
(+)1.0646%
(+)1.0646%
(+) 0.5200%
(+)1.9661%
(+)1.9661%
(+)1.2111%
(+)1.2111%
(+)3.7703%

MATCHLINE SHEET 97 STA.23+00

RIGHT DITCH ----------
LEFT DITCH ----------
SEE SHEET 37 FOR –Y13LPC– PLAN VIEW

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Suite 101
Cary, NC 27518
(919) 557-0929

PROJECT REFERENCE NO.	SHEET NO.
R–2721	96

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
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PROJECT REFERENCE NO.	SHEET NO.
R-2721	97

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

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PRELIMINARY PLANS
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-Y13LPC-

END GRADE
-Y13LPC- STA. 25+14.64
EL. 380.04

PI = 23+60.00
EL = 378.74'
VC = 150'
K = 51

PROPOSED GRADE
(+)0.8400%
(+)3.7703%
EXISTING GROUND

MATCHLINE SHEET 96 STA. 23+00

-Y13RPA-

BEGIN GRADE
-Y13RPA- STA. 10+00.00
EL. 366.33

PI = 11+75.00
EL = 363.69'
VC = 300'
K = 212

(-)11.5120%
(-)12.9251%
PROPOSED GRADE

PI = 20+30.00
EL = 338.68'
VC = 1,000'
K = 126

MATCHLINE THIS SHEET STA. 20+00

(+) 4.8938%
(+) 0.9662%
(-) 1.4720%
(-) 1.4720%
(-) 0.6538%
(-)12.9251%

BEGIN LAT. 'V' DITCH(RT)
PI =10+36.00
EI = 331.60

PI =11+44.300
EI = 336.90

END LAT. 'V' DITCH(RT.)
BEGIN LAT. BASE DITCH(RT.)
PI =13+51.300
EI = 338.96

EXISTING GROUND

PI =16+67.200
EI = 334.25

END LAT. BASE DITCH(RT.)
PI =18+12.50
EI = 330.30

RIGHT DITCH ---------- LEFT DITCH ----------

SEE SHEET 37 FOR -Y13LPA- PLAN VIEW
SEE SHEET 38 FOR -Y13RPA- PLAN VIEW

23+00 24+00 25+00 10+00 11+00 12+00 13+00 14+00 15+00 16+00 17+00 18+00 19+00 20+00

390 380 370 360 350 340 330 320

-Y13RPA-

END GRADE
-Y13RPA- STA. 29+73.70
EL. 386.69

EXISTING GROUND

PROPOSED GRADE

PI = 20+30.00
EL = 338.68'
VC = 1,000'
K = 126

MATCHLINE THIS SHEET STA. 20+00

(-)12.9251%
(+)4.9815%

SEE SHEETS 37 & 38 FOR -Y13RPA- PLAN VIEW

20+00 21+00 22+00 23+00 24+00 25+00 26+00 27+00 28+00 29+00

390 380 370 360 350 340 330 320

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dwickert

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PROJECT REFERENCE NO.	SHEET NO.
R-2721	98
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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PRELIMINARY PLANS
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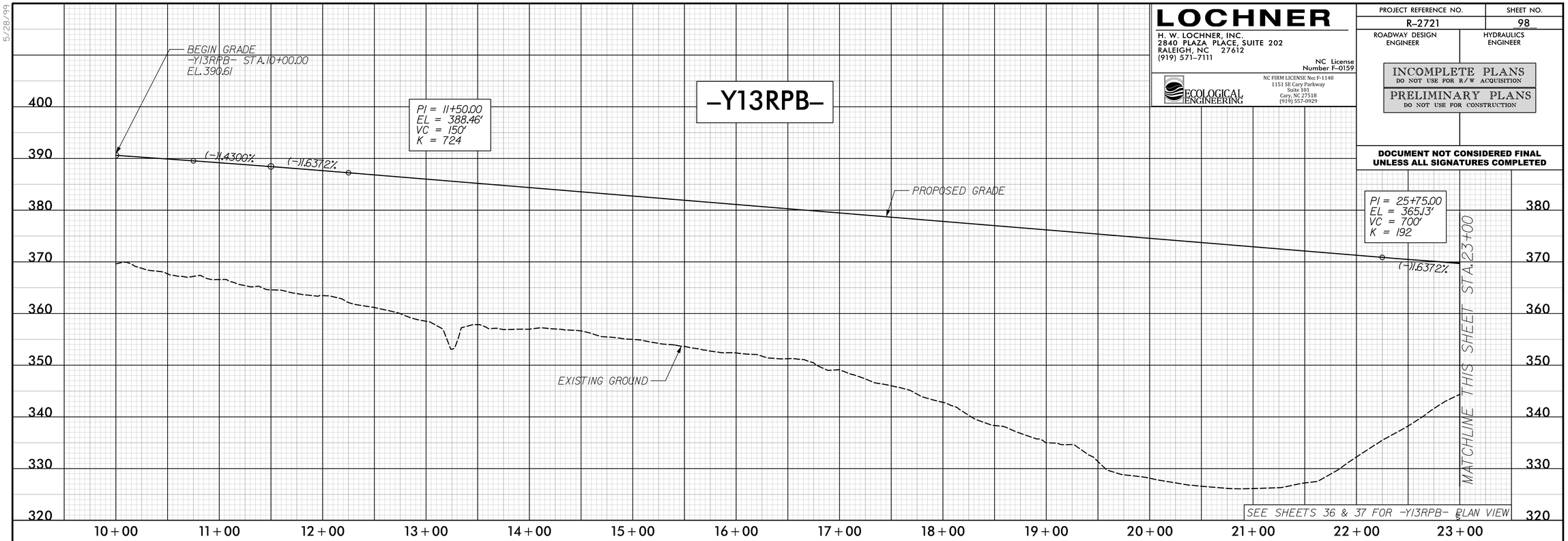

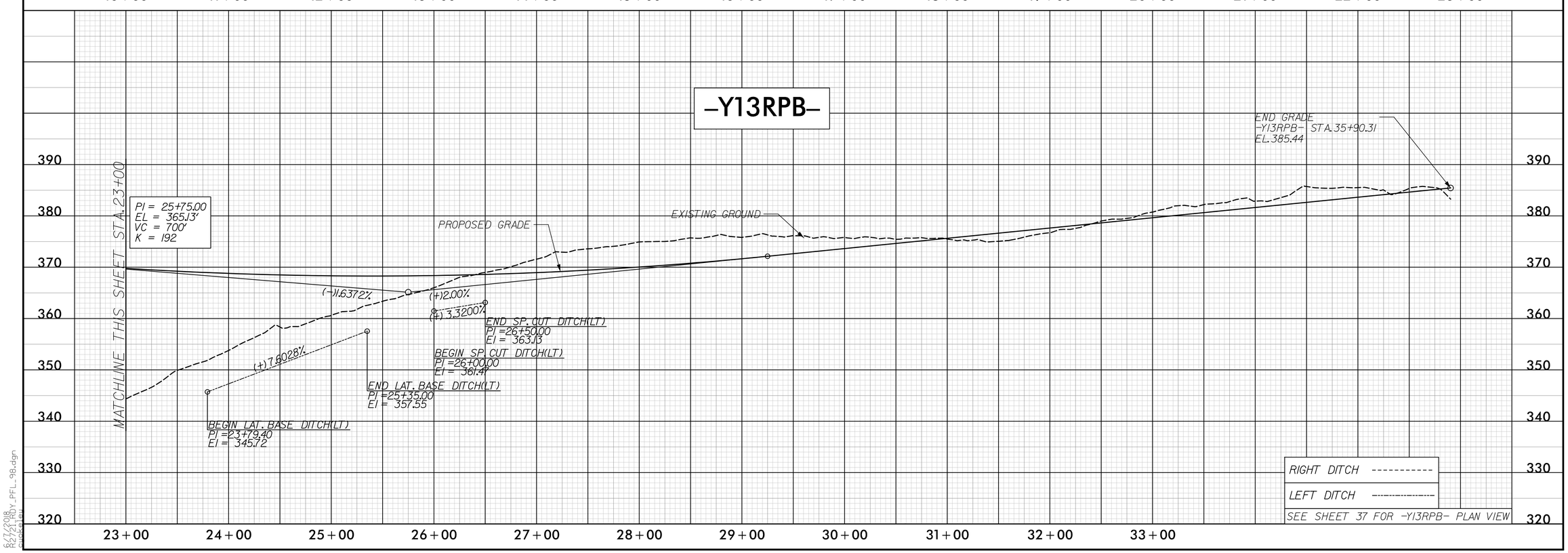

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(919) 557-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2721	99
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
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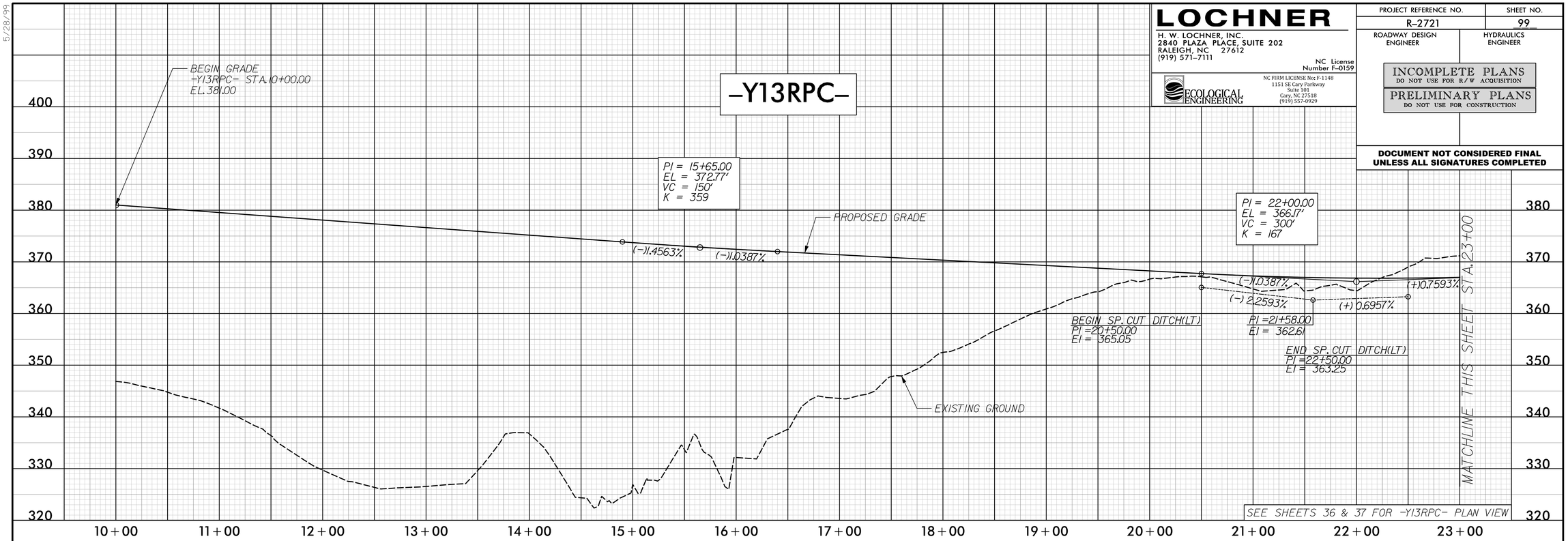

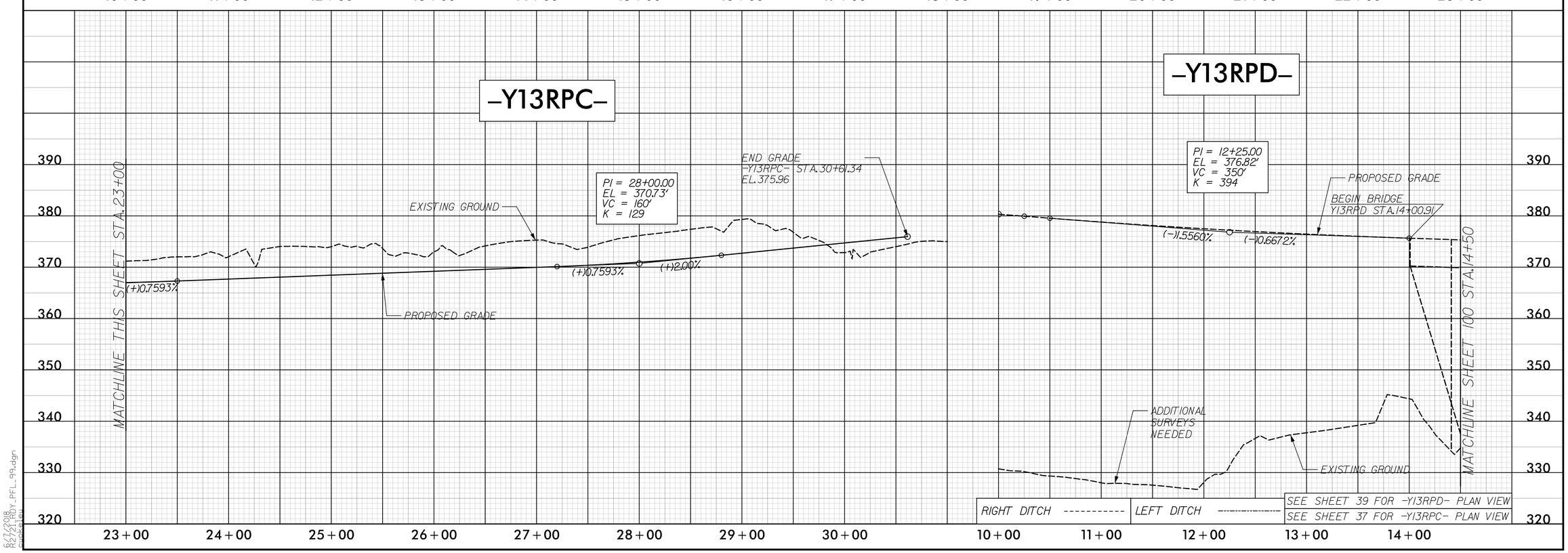

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–Y13RPD–

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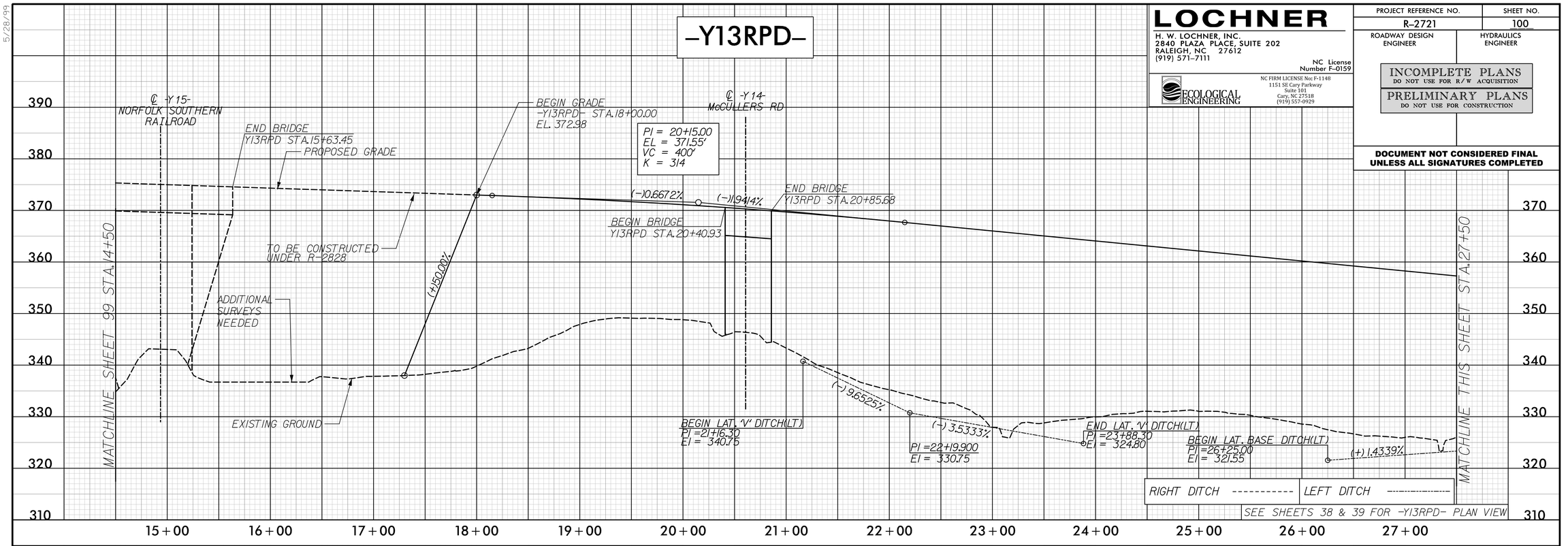
Cary, NC 27518
(919) 557-0929

PROJECT REFERENCE NO.	SHEET NO.
R–2721	100
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

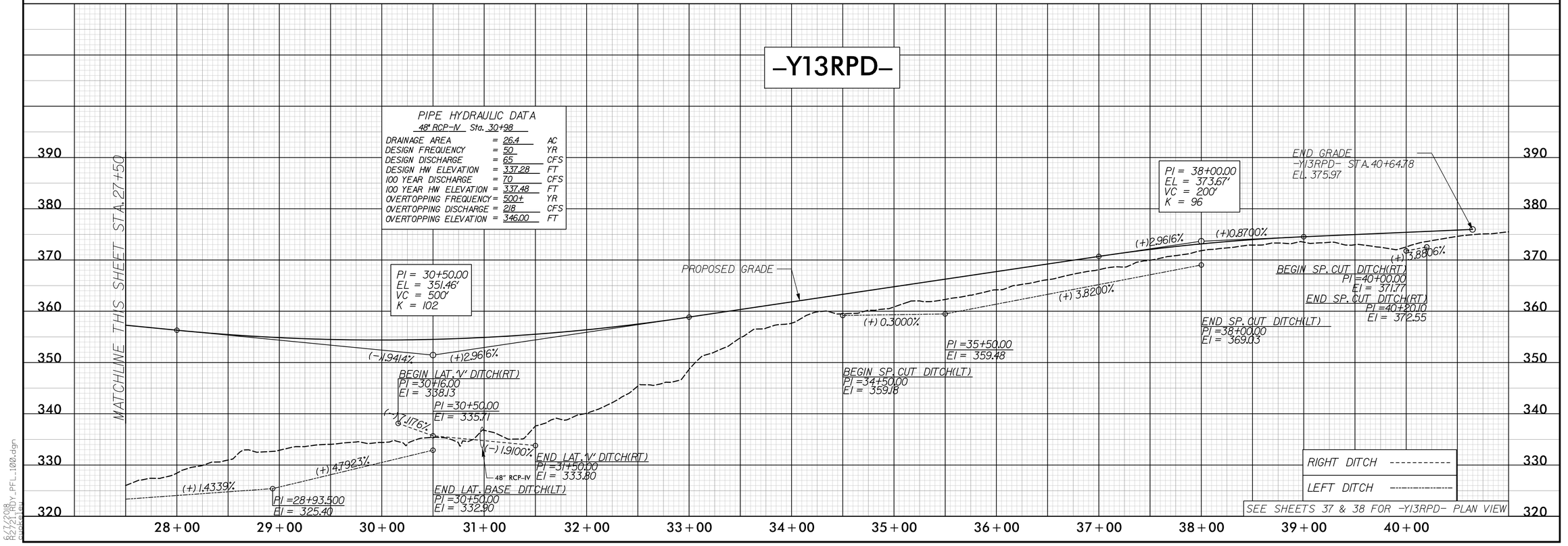
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



–Y13RPD–



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dwoodell

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CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 2600	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 350.6	FT
BASE DISCHARGE	= 2800	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 351.1	FT
OVERTOPPING DISCHARGE	= 4000	CFS
OVERTOPPING FREQUENCY	= 500 +	YRS
OVERTOPPING ELEVATION	= 354.5	FT

–Y3–
SUNSET LAKE RD

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905 JONES FRANKLIN ROAD
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TEL (919) 859-2243
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PROJECT REFERENCE NO.	SHEET NO.
R-2721	101
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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BEGIN GRADE
–Y3– STA.10+00.00
EL.366.09

PI = 11+30.00
EL = 356.82'
VC = 260'
K = 48
V = 30mph

(–)17.1328%

(–)1.6646%

EXISTING GROUND

END BRIDGE
Y3 STA.16+02.37

EXISTING CULVERTS TO BE REMOVED

BEGIN BRIDGE
Y3 STA.15+12.37

PROPOSED GRADE

PI = 16+30.00
EL = 348.50'
VC = 700'
K = 97

(–)1.6646%

(+)10.8475%

(+)5.5409%

WS. ELEV. ON 3-7-18 = 343.1'

4@12'x8' RCBC

BEGIN LAT 2' BASE DITCH (RT)
PI STA 15+84
ELEV=344.00

END LAT 2' BASE DITCH (RT)
PI STA 16+43
ELEV=344.50

PI = 24+85.00
EL = 395.88'
VC = 1,000'
K = 355

(+)5.5409%

MATCHLINE THIS SHEET STA.23+00

SEE SHEETS 11 & 42 FOR –Y3– PLAN VIEW

10+00 11+00 12+00 13+00 14+00 15+00 16+00 17+00 18+00 19+00 20+00 21+00 22+00 23+00

410 400 390 380 370 360 350 340 330 320

–Y3–
SUNSET LAKE RD

MATCHLINE THIS SHEET STA.23+00

PI = 24+85.00
EL = 395.88'
VC = 1,000'
K = 355

(+)2.7279%

BEGIN BRIDGE
Y3 STA.25+47.84

℄ -L-
COMPLETE 540

END BRIDGE
Y3 STA.29+02.86

EXISTING GROUND

PI = 32+00.00
EL = 415.38'
VC = 150'
K = 1733

(+)2.7279%

(+)2.8145%

PROPOSED GRADE

PI = 34+25.00
EL = 421.71'
VC = 150'
K = 212

(+)2.8145%

(+)3.5226%

MATCHLINE SHEET 102 STA.36+00

SEE SHEETS 11 & 43 FOR –Y3– PLAN VIEW

23+00 24+00 25+00 26+00 27+00 28+00 29+00 30+00 31+00 32+00 33+00 34+00 35+00 36+00

440 430 420 410 400 390 380 370 360

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cwickelgren

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–Y3–
SUNSET LAKE RD

PI = 37+00.00
EL = 431.40'
VC = 150'
K = 478

PROPOSED GRADE

(+)3.5226%

(+)3.2088%

END GRADE
–Y3– STA. 37+91.07
EL. 434.32

EXISTING GROUND

MATCHLINE SHEET 101 STA. 36+00

–Y4–
SUNSET LAKE RD

BEGIN GRADE
–Y4– STA. 14+24.58
EL. 415.94

PI = 15+25.00
EL = 418.26'
VC = 150'
K = 248

(+)2.3085%

(+)1.7039%

PROPOSED GRADE

PI = 22+50.00
EL = 430.62'
VC = 400'
K = 177

(+)1.7039%

(–)0.5523%

EXISTING GROUND

MATCHLINE THIS SHEET STA. 23+50

SEE SHEETS 15 & 44 FOR –Y4– PLAN VIEW

36+00 37+00 15+00 16+00 17+00 18+00 19+00 20+00 21+00 22+00 23+00

440 430 420 410 400 390 380

MATCHLINE THIS SHEET STA. 23+50

PI = 22+50.00
EL = 430.62'
VC = 400'
K = 177

PROPOSED GRADE

BEGIN BRIDGE
Y4 STA. 25+71.27

℄ -L-
COMPLETE 540

END BRIDGE
Y4 STA. 28+38.73

PI = 30+40.00
EL = 426.25'
VC = 350'
K = 263

(–)0.5523%

(+)0.7761%

END GRADE
BEGIN MILL & REPLACE
–Y4– STA. 32+33.57
EL. 427.76

EXISTING GROUND

BEGIN CUT V-DITCH (LT)
PI STA 34+26
ELEV=428.06

(+) 0.9107%

END MILL & REPLACE
Y4 STA. 37+00.00
EL. 432.70

END CUT V-DITCH (LT)
PI STA 36+50
ELEV=430.10

24+00 25+00 26+00 27+00 28+00 29+00 30+00 31+00 32+00 33+00 34+00 35+00 36+00 37+00

440 430 420 410 400 390 380

LOCHNER

H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
(919) 571–7111
NC License Number F–0159

SUNGATE DESIGN GROUP, P.A.
905 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243 NC FIRM LICENSE NO. C-890

PROJECT REFERENCE NO.	SHEET NO.
R–2721	102
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
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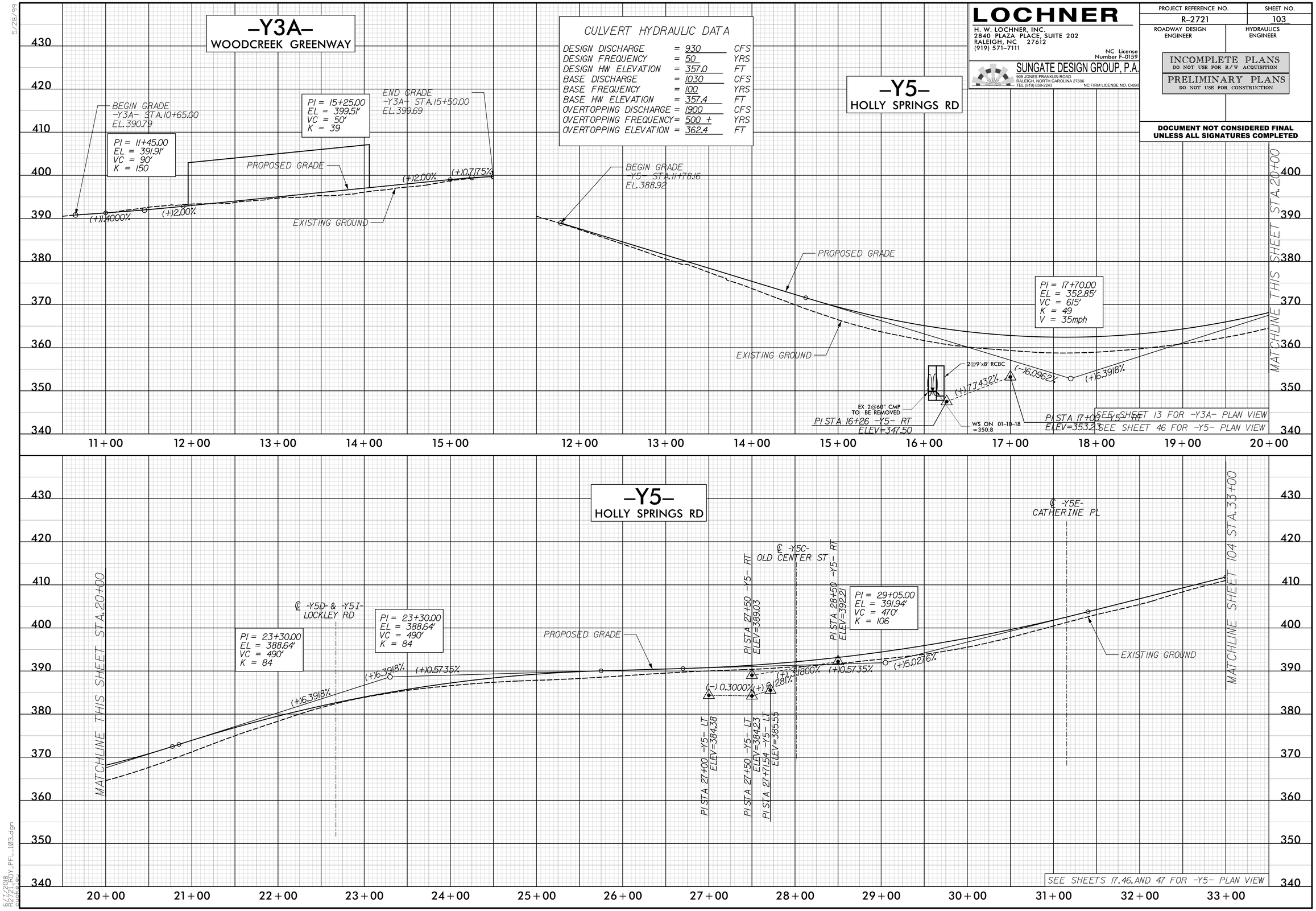

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905 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243
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PROJECT REFERENCE NO.	SHEET NO.
R-2721	103
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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PRELIMINARY PLANS
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cuckeley

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RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243
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PROJECT REFERENCE NO.	SHEET NO.
R-2721	104
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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PRELIMINARY PLANS
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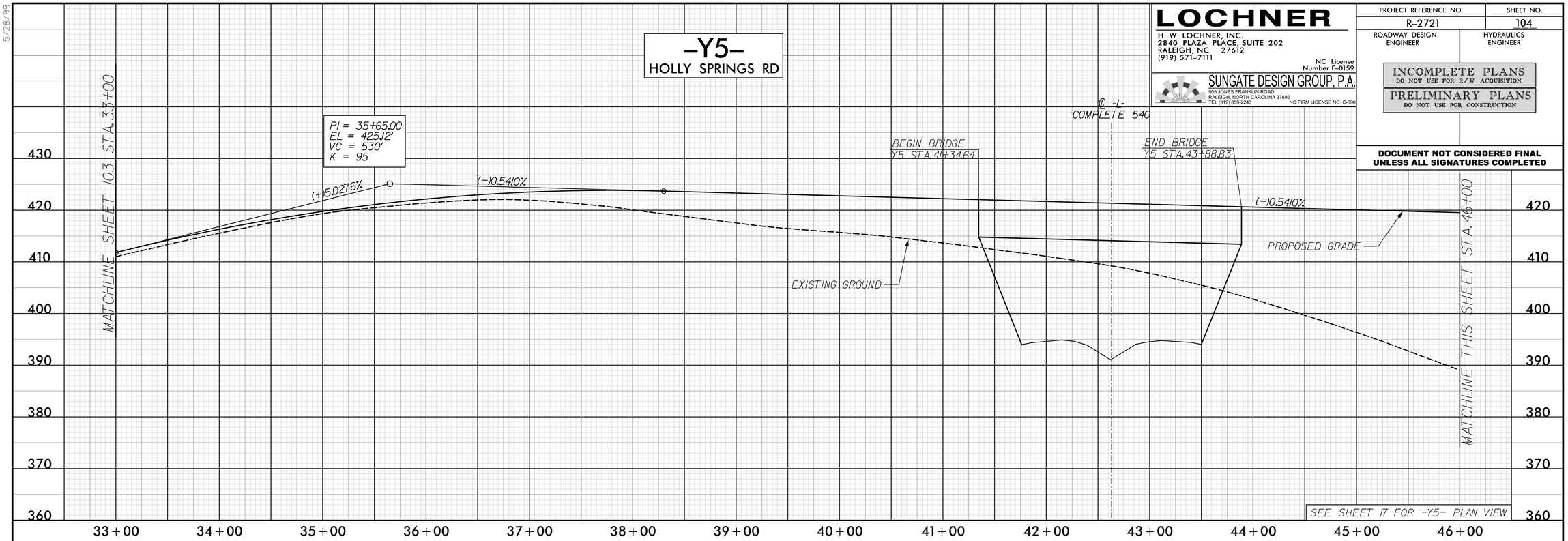

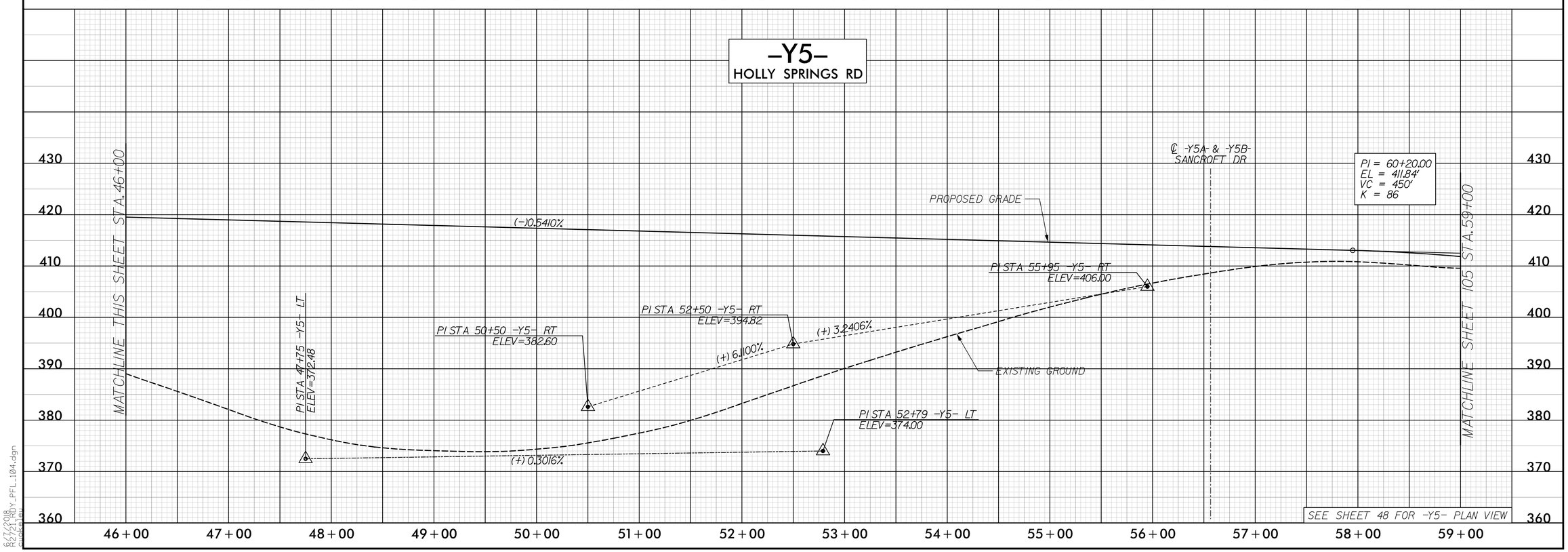

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RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243
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PROJECT REFERENCE NO.	SHEET NO.
R-2721	105
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
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PRELIMINARY PLANS
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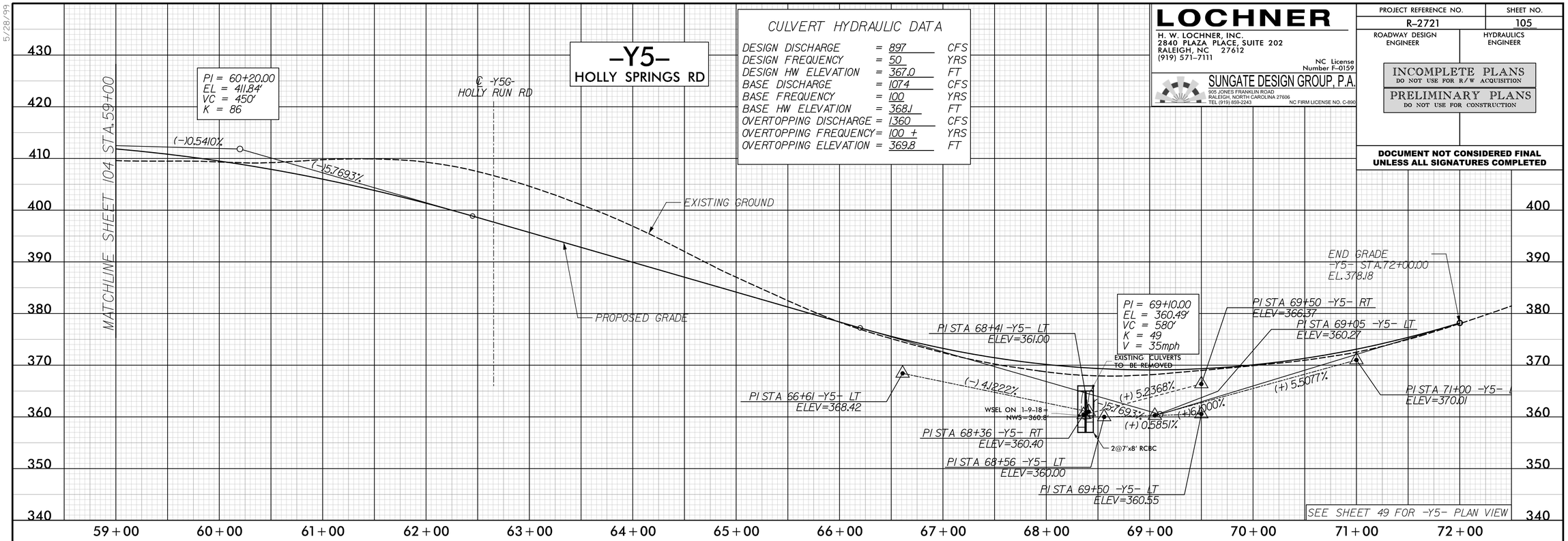

CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 897	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 367.0	FT
BASE DISCHARGE	= 1074	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 368.1	FT
OVERTOPPING DISCHARGE	= 1360	CFS
OVERTOPPING FREQUENCY	= 100 +	YRS
OVERTOPPING ELEVATION	= 369.8	FT

PIPE HYDRAULIC DATA
48" RCP Sta. 14+61 -Y5A-

DRAINAGE AREA	= 22	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 70	CFS
DESIGN HW ELEVATION	= 394.5	FT
100 YEAR DISCHARGE	= 75	CFS
100 YEAR HW ELEVATION	= 394.7	FT
OVERTOPPING FREQUENCY	= 500 +	YRS
OVERTOPPING DISCHARGE	= 240	CFS
OVERTOPPING ELEVATION	= 411.4	FT

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–Y5A–
KILDAIRE FARM RD

℄ -Y5H-

℄ -Y5K-
AVIARY CT

℄ -Y5L-
WESS DR

MATCHLINE SHEET 105 STA.23+00

PI = 24+85.00
EL = 446.89'
VC = 250'
K = 158

PROPOSED GRADE

(+)2.1082%

(+)0.5282%

(+)1.8500%

EXISTING GROUND

PI STA 25+00 –Y5A– RT
ELEV=435.10

PI STA 26+61 –Y5A– RT
ELEV=439.00

(+) 0.7662%

(+) 4.5161%

PI STA 27+38 –Y5A– RT
ELEV=439.59

PI STA 28+00 –Y5A– RT
ELEV=442.39

END GRADE
–Y5A– STA.31+00.00
EL. 450.14

–Y5B–
SANCROFT DR

BEGIN GRADE
–Y5B– STA.10+39.00
EL. 412.63

PI = 11+10.00
EL = 410.50'
VC = 100'
K = 58

PROPOSED GRADE

PI = 12+75.00
EL = 408.40'
VC = 170'
K = 32

(–)13.00%

(–)11.2707%

(–)11.2707%

(–)16.6059%

EXISTING GROUND

END GRADE
–Y5B– STA.14+00.00
EL. 400.14

SEE SHEET 48 FOR –Y5B– PLAN VIEW

SEE SHEETS 51 & 52 FOR –Y5A– PLAN VIEW

–Y5C–
OLD CENTER ST

END GRADE
–Y5C– STA.12+26.39
EL. 391.39

BEGIN GRADE
–Y5C– STA.11+00.00
EL. 392.96

PI = 11+65.00
EL = 390.16'
VC = 110'
K = 17

PROPOSED GRADE

(+)4.3045%

(+)2.00%

(–)5.9854%

EXISTING GROUND

PI STA 11+87.38 –Y5C– RT
ELEV=385.55

PI STA 11+00 –Y5C– RT
ELEV=390.78

–Y5D–
LOCKLEY RD

BEGIN GRADE
–Y5D– STA.10+25.00
EL. 371.48

PI = 11+00.00
EL = 373.43'
VC = 140'
K = 26

PI = 12+00.00
EL = 381.34'
VC = 50'
K = 8

PROPOSED GRADE

(+)2.6000%

(+)7.9031%

(+)2.00

END GRADE
–Y5D– STA.12+25.86
EL. 381.86

EXISTING GROUND

–Y5E–
CATHERINE PL

BEGIN GRADE
–Y5E– STA.10+51.50
EL. 403.79

PROPOSED GRADE

PI = 10+90.00
EL = 405.52'
VC = 70'
K = 44

PI = 12+50.00
EL = 415.29'
VC = 70'
K = 17

(+)4.5000%

(+)6.1039%

(+)6.1039%

(+)8.6491%

(+)2.00%

EXISTING GROUND

PI STA 11+08 –Y5E– RT
ELEV=403.07

PI STA 11+65 –Y5E– RT
ELEV=408.00

END GRADE
–Y5E– STA.12+87.56
EL. 416.04

SEE SHEET 47 FOR –Y5C– PLAN VIEW

SEE SHEET 46 FOR –Y5D– PLAN VIEW

SEE SHEET 47 FOR –Y5E– PLAN VIEW

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905 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243
NC FIRM LICENSE NO. C-890

PROJECT REFERENCE NO.	SHEET NO.
R–2721	106
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
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PRELIMINARY PLANS
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–Y5F–

PI = 12+00.00
EL = 416.86'
VC = 100'
K = 23

℄ -Y5F-
CATHERINE PL

BEGIN GRADE
-Y5F- STA.11+50.00
EL. 414.89

(+)3.9400%

(–)0.5000%

PROPOSED GRADE

EXISTING GROUND

(–) 0.5022%

PI STA 14+75 -Y5F- LT
ELEV=413.13

PI STA 17+00 -Y5F- LT
ELEV=412.00

PI = 18+40.00
EL = 413.66'
VC = 140'
K = 23

(–)0.5000%

PI STA 18+00 -Y5F- RT
ELEV=411.31

(+) 5.0400%

(–) 4.8538%

(+) 16.5447%

(–) 1.6667%

PI STA 18+50 -Y5F- LT
ELEV=409.87

PI STA 19+00 -Y5F- LT
ELEV=407.35

PI STA 19+21 -Y5F- LT
ELEV=407.00

PI STA 19+30 -Y5F- RT
ELEV=405.00

BEGIN GRADE
Y5F STA.20+50.00
EL. 399.92

SEE SHEETS 17 & 47 FOR -Y5F- PLAN VIEW

–Y5G–
HOLLY RUN RD

BEGIN GRADE
-Y5G- STA.13+75.00
EL. 414.59

PI STA 14+00 -Y5G- RT
ELEV=409.17

END GRADE
-Y5G- STA.16+99.32
EL. 399.34

EXISTING GROUND

PI STA 14+33 -Y5G- RT
ELEV=407.03

(–) 6.4849%

(+) 8.3162%

(–)4.0727%

PROPOSED GRADE

PI STA 14+44 -Y5G- LT
ELEV=405.51

PI STA 14+00 -Y5G- LT
ELEV=409.17

–Y5H–

PI = 12+50.00
EL = 446.06'
VC = 120'
K = 83

PI = 13+50.00
EL = 448.00'
VC = 50'
K = 7

PROPOSED GRADE

(+)0.5000%

(+)1.9435%

(–)5.00%

EXISTING GROUND

BEGIN GRADE
-Y5H- STA.11+50.00
EL. 445.56

END GRADE
-Y5H- STA.13+81.80
EL. 446.40

–Y5M–

PI = 11+00.00
EL = 407.45'
VC = 90'
K = 48

℄ -Y5J-

BEGIN GRADE
-Y5M- STA.11+85.02
EL. 408.49

PI = 12+45.00
EL = 409.68'
VC = 60'
K = 26

BEGIN GRADE
-Y5M- STA.10+50.00
EL. 407.30

(+)0.3054%

(+)2.1645%

(+)1.9793%

(–)0.3000%

END GRADE
-Y5M- STA.11+48.82
EL. 408.51

PROPOSED GRADE

EXISTING GROUND

END GRADE
Y5M STA.12+75.00
EL. 409.59

SEE SHEET 49 FOR -Y5G- PLAN VIEW
SEE SHEET 51 FOR -Y5H- PLAN VIEW
SEE SHEET 50 FOR -Y5M- PLAN VIEW

420 410 400 390 380 370 360

14 + 00 15 + 00 16 + 00 12 + 00 13 + 00 11 + 00 12 + 00

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RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243
NC FIRM LICENSE NO. C-890

PROJECT REFERENCE NO.	SHEET NO.
R-2721	107
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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PRELIMINARY PLANS
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PROJECT REFERENCE NO.	SHEET NO.
R-2721	108
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
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PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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-Y5I-

BEGIN GRADE
-Y5I- STA. 10+51.50
EL. 381.63

EXISTING GROUND

PI = 14+25.00
EL = 389.35'
VC = 300'
K = 37

END GRADE
-Y5I- STA. 15+87.44
EL. 379.43

℄ -Y5J-

(+)2.0673%

(-)6.1059%

PROPOSED GRADE

ADDITIONAL SURVEYS NEEDED

-Y5K-
AVIARY CT

PROPOSED GRADE

PI = 10+65.00
EL = 444.50'
VC = 80'
K = 15

(-)4.5000%

(-)9.8274%

BEGIN GRADE
-Y5K- STA. 10+22.85
EL. 414.89

BEGIN GRADE
-Y5K- STA. 11+50.00
EL. 436.15

EXISTING GROUND

-Y5L-
NESS DR

END GRADE
-Y5L- STA. 12+40.71
EL. 451.03

PROPOSED GRADE

PI = 11+75.00
EL = 448.21'
VC = 50'
K = 20

(+)10.6700%

(+)3.1898%

(+)2.1106%

PI = 12+20.00
EL = 449.64'
VC = 40'
K = 37

BEGIN GRADE
-Y5L- STA. 11+50.00
EL. 448.04

EXISTING GROUND

SEE SHEET 51 FOR -Y5K- PLAN VIEW
SEE SHEET 52 FOR -Y5L- PLAN VIEW
SEE SHEETS 46 & 50 FOR -Y5I- PLAN VIEW

-Y5J-

PI = 19+00.00
EL = 409.37'
VC = 150'
K = 48

℄ -Y5M-

PI = 15+65.00
EL = 401.40'
VC = 150'
K = 242

BEGIN GRADE
-Y5J- STA. 10+18.42
EL. 385.01

ADDITIONAL SURVEYS NEEDED

(+)2.9981%

(+)2.3782%

PROPOSED GRADE

(+)2.3782%

(-)0.7523%

BEGIN GRADE
-Y5J- STA. 21+90.47
EL. 407.19

EXISTING GROUND

SEE SHEET 50 FOR -Y5J- PLAN VIEW

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–Y6–
PIERCE OLIVE RD

PIPE HYDRAULIC DATA
18" RCP Sta. 19+50 –Y6–

DRAINAGE AREA	= 1.5	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 8.0	CFS
DESIGN HW ELEVATION	= 397.7	FT
100 YEAR DISCHARGE	= 9.0	CFS
100 YEAR HW ELEVATION	= 397.8	FT
OVERTOPPING FREQUENCY	= 500 +	YRS
OVERTOPPING DISCHARGE	= 15	CFS
OVERTOPPING ELEVATION	= 399.0	FT

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PROJECT REFERENCE NO.	SHEET NO.
R–2721	109
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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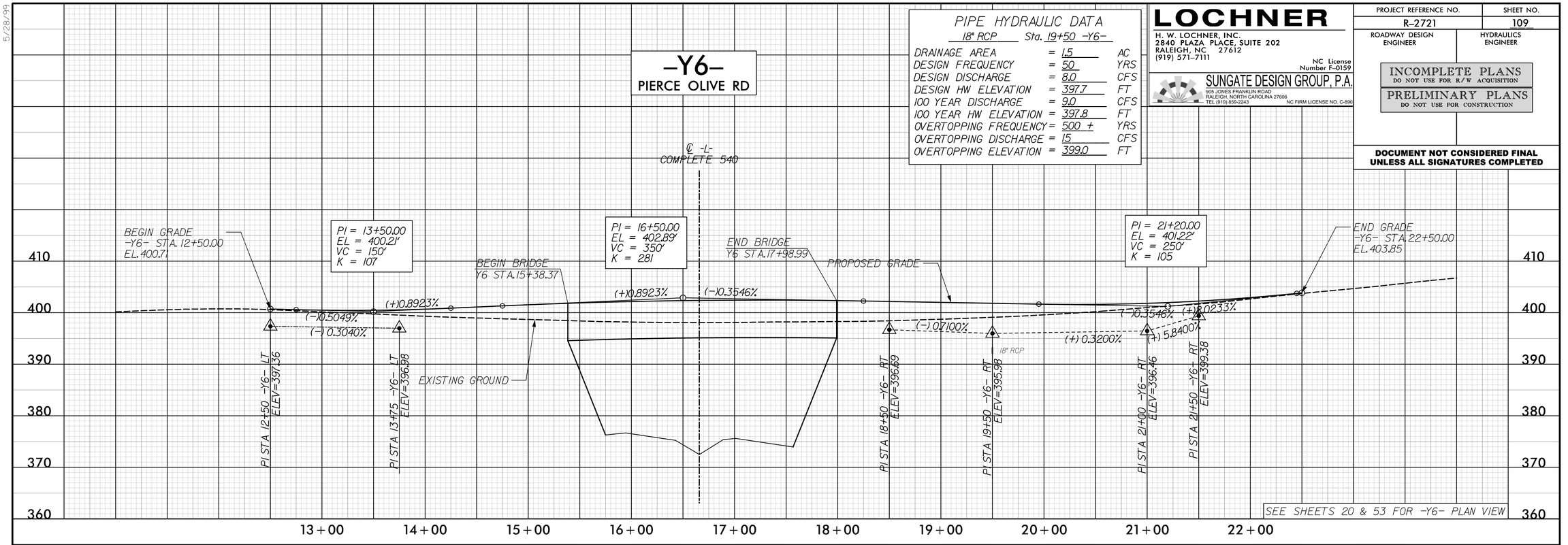
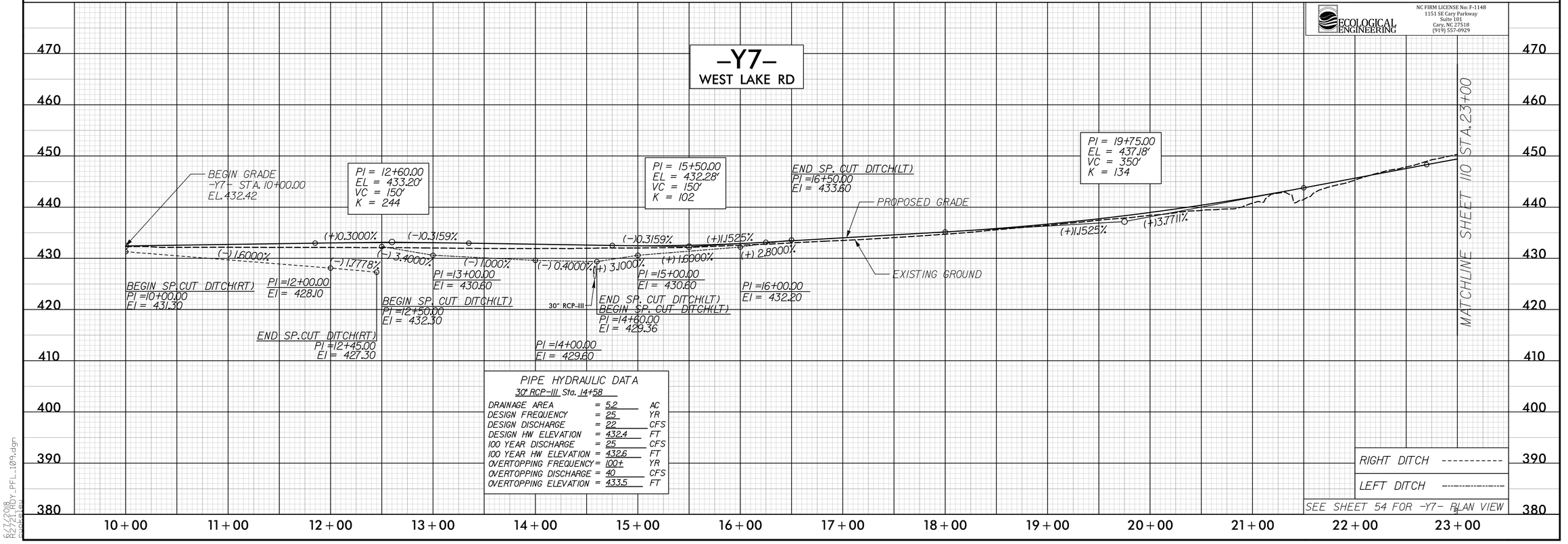


SEE SHEETS 20 & 53 FOR –Y6– PLAN VIEW

–Y7–
WEST LAKE RD

ECOLOGICAL ENGINEERING
NC FIRM LICENSE No: F-1148
1151 SE Cary Parkway
Suite 101
Cary, NC 27518
(919) 557-0929



PIPE HYDRAULIC DATA
30" RCP–III Sta. 14+58

DRAINAGE AREA	= 5.2	AC
DESIGN FREQUENCY	= 25	YR
DESIGN DISCHARGE	= 22	CFS
DESIGN HW ELEVATION	= 432.4	FT
100 YEAR DISCHARGE	= 25	CFS
100 YEAR HW ELEVATION	= 432.6	FT
OVERTOPPING FREQUENCY	= 100+	YR
OVERTOPPING DISCHARGE	= 40	CFS
OVERTOPPING ELEVATION	= 433.5	FT

SEE SHEET 54 FOR –Y7– PLAN VIEW

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ECOLOGICAL ENGINEERING
NC FIRM LICENSE No: F-1148
1151 SE Cary Parkway
Suite 101
Cary, NC 27518
(919) 557-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2721	110
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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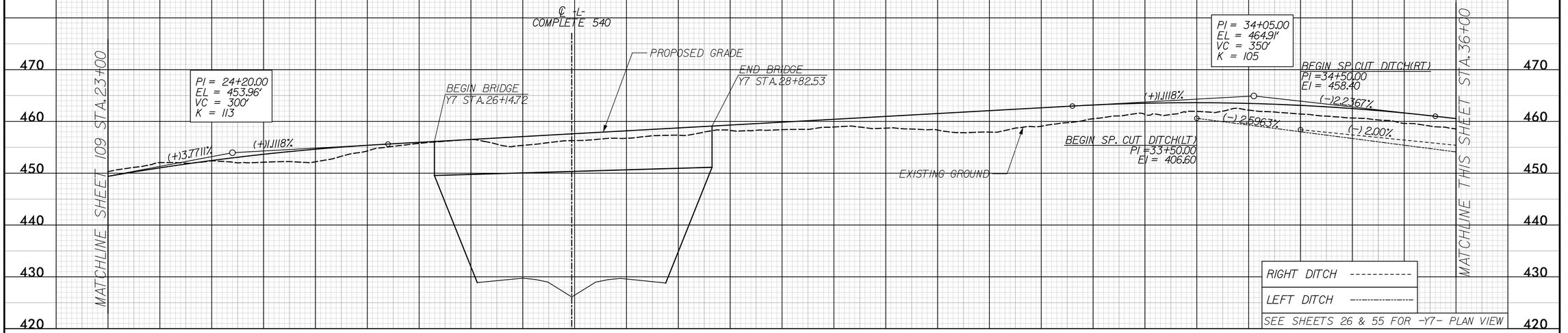
-Y7-
WEST LAKE RD

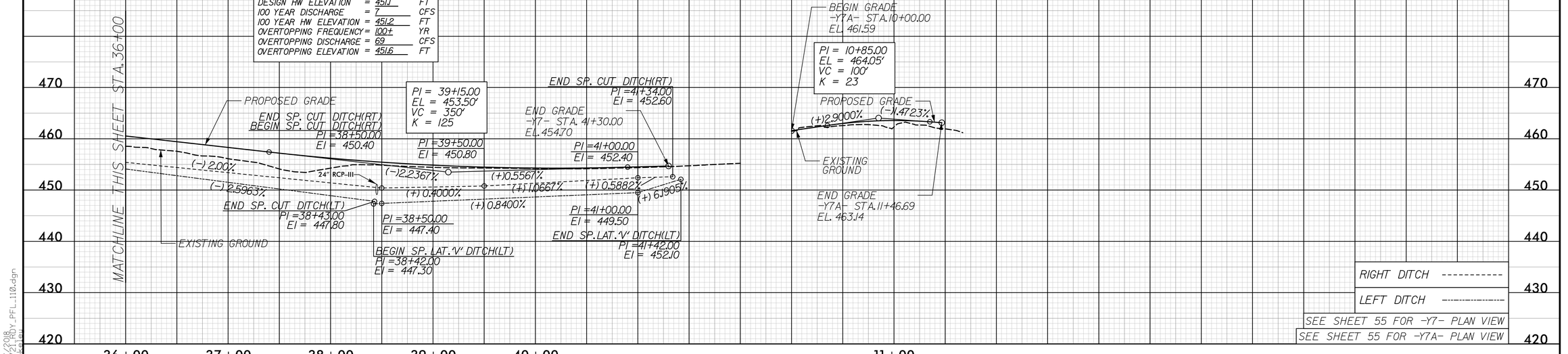


-Y7-
WEST LAKE RD

PIPE HYDRAULIC DATA
24" RCP-III Sta. 38+45

DRAINAGE AREA	= 2.0	AC
DESIGN FREQUENCY	= 25	YR
DESIGN DISCHARGE	= 6	CFS
DESIGN HW ELEVATION	= 451.1	FT
100 YEAR DISCHARGE	= 7	CFS
100 YEAR HW ELEVATION	= 451.2	FT
OVERTOPPING FREQUENCY	= 100+	YR
OVERTOPPING DISCHARGE	= 69	CFS
OVERTOPPING ELEVATION	= 451.6	FT

-Y7A-
FLORESTA DR



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ECOLOGICAL ENGINEERING
NC FIRM LICENSE No: F-1148
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Suite 101
Cary, NC 27518
(919) 557-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2721	111
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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-Y8-
BELLS LAKE RD

℄ -Y8D-
TRUELOVE DR

BEGIN SP.CUT DITCH(LT)
PI =12+00.00
EI = 405.38

BEGIN GRADE
-Y8- STA. 12+00.00
EL. 407.84

PI =13+50.00
EI = 406.80

(+) 0.5500%
(+) 2.4000%
(+) 0.4600%

PI =13+00.00
EI = 405.80

BEGIN SP.CUT DITCH(RT)
PI =12+00.00
EI = 405.14

END SP.CUT DITCH(RT)
PI =16+50.00
EI = 409.80

(+) 1.00%

BEGIN SP.CUT DITCH(RT)
PI =17+15.00
EI = 409.05

PROPOSED GRADE

(+) 0.5800%
(+) 0.3858%

PI = 20+75.00
EL = 415.76'
VC = 400'
K = 283

(+)0.905%
(-)0.5074%
(+) 1.4000%

PI =20+00.00
EI = 409.80

END SP.CUT DITCH(LT)
PI =22+50.00
EI = 413.30

(+) 0.3858%

PI = 25+00.00
EL = 413.60'
VC = 370'
K = 115

END SP.CUT DITCH(RT)
PI =23+50.00
EI = 411.50

(-)0.5074%

EXISTING GROUND

MATCHLINE THIS SHEET STA. 25+00

RIGHT DITCH ----------
LEFT DITCH ----------
SEE SHEETS 56 & 28 FOR -Y8- PLAN VIEW

440 430 420 410 400 390 380
12+00 13+00 14+00 15+00 16+00 17+00 18+00 19+00 20+00 21+00 22+00 23+00 24+00 25+00

-Y8-
BELLS LAKE RD

℄ -L-
COMPLETE 540

MATCHLINE THIS SHEET STA. 25+00

PI = 25+00.00
EL = 413.60'
VC = 370'
K = 115

(+)2.7016%

EXISTING GROUND

BEGIN BRIDGE
Y8 STA. 29+15.79

PI = 30+70.00
EL = 429.00'
VC = 620'
K = 143

(+)2.7016%
(-)1.6447%

END BRIDGE
Y8 STA. 32+05.19

PROPOSED GRADE

(+) 0.6656%

BEGIN LAT. 'V' DITCH(LT)
PI =32+19.00 = 337+00 -L-
EI = 411.20

PI = 36+60.00
EL = 419.30'
VC = 150'
K = 131

(-)1.6447%
(-)0.5000%

END LAT. 'V' DITCH(LT)
BEGIN SP. CUT DITCH(LT)
PI =36+00.00
EI = 413.74

MATCHLINE SHEET III STA. 38+00

RIGHT DITCH ----------
LEFT DITCH ----------
SEE SHEET 28 FOR -Y8- PLAN VIEW

440 430 420 410 400 390 380
25+00 26+00 27+00 28+00 29+00 30+00 31+00 32+00 33+00 34+00 35+00 36+00 37+00 38+00

R-2721B
R-2721BPLY_PFL_111.dgn
dwoskalew

LOCHNER
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RALEIGH, NC 27612
(919) 571-7111
NC License Number F-0159

ECOLOGICAL ENGINEERING
NC FIRM LICENSE No: F-1148
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(919) 557-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2721	112

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-Y8-
BELLS LAKE RD

PIPE HYDRAULIC DATA
18" RCP-III, Sta. 41+76

DRAINAGE AREA	= 21	AC
DESIGN FREQUENCY	= 25	YR
DESIGN DISCHARGE	= 7	CFS
DESIGN HW ELEVATION	= 418.5	FT
100 YEAR DISCHARGE	= 8	CFS
100 YEAR HW ELEVATION	= 418.7	FT
OVERTOPPING FREQUENCY	= 100+	YR
OVERTOPPING DISCHARGE	= 12	CFS
OVERTOPPING ELEVATION	= 419.3	FT

MATCHLINE SHEET III STA. 38+00

PI = 40+35.00
EL = 417.42'
VC = 230'
K = 118

(+) 0.6656%

(-)10.5000%

(-) 0.8000%

(+)1.4521%

BEGIN SP. CUT DITCH(RT)
PI =39+00.00
EI = 414.80

END SP. CUT DITCH(LT)
PI =38+50.00
EI = 415.40

END SP. CUT DITCH(RT)
PI =41+00.00
EI = 413.20

EXISTING GROUND

PROPOSED GRADE

(+) 0.4000%

(+) 1.7000%

PI =42+00.00
EI = 417.10

BEGIN SP. CUT DITCH(LT)
PI =41+75.00
EI = 417.00

18" RCP-III

PI =43+50.00
EI = 419.65

℄ -Y8C-
BELLS POINTE CT

(+)1.7000%

(+) 0.5000%

(+) 3.0000%

PI =44+00.00
EI = 420.50

PI =44+00.00
EI = 418.60

BEGIN SP. CUT DITCH(RT)
PI =43+80.00
EI = 418.50

END SP. CUT DITCH(LT)
PI =45+00.00
EI = 423.50

(+)1.6000%

(+) 4.00%

PI =47+00.00
EI = 423.40

PI =47+50.00
EI = 425.40

(+)1.8000%

(+)1.4521%

(+) 3.4000%

(+)1.2316%

PI =49+00.00
EI = 428.10

END SP. CUT DITCH(RT)
PI =49+50.00
EI = 429.80

BEGIN GRADE
-Y8- STA. 50+00.00
EL. 431.25

PI = 49+15.00
EL = 430.20'
VC = 150'
K = 680

RIGHT DITCH ----------

LEFT DITCH ----------

SEE SHEET 57 FOR -Y8- PLAN VIEW

38+00 39+00 40+00 41+00 42+00 43+00 44+00 45+00 46+00 47+00 48+00 49+00 50+00

440 430 420 410 400 390 380

-Y8A-
PONY SOLDIER DR

BEGIN GRADE
-Y8A- STA. 11+00.00
EL. 377.02

PI = 11+60.00
EL = 379.70'
VC = 100'
K = 27

(+)4.4599%

(+)8.2025%

PROPOSED GRADE

PI = 12+80.00
EL = 389.54'
VC = 120'
K = 13

END GRADE
-Y8A- STA. 13+99.83
EL. 388.03

(+)8.2025%

(-)1.2641%

EXISTING GROUND

-Y8B-

BEGIN GRADE
-Y8B- STA. 10+00.00
EL. 373.45

PI = 11+00.00
EL = 372.51'
VC = 100'
K = 66

(-)1.0398%

(+)0.4720%

PROPOSED GRADE

EXISTING GROUND

END GRADE
-Y8B- STA. 13+09.75
EL. 373.45

-Y8C-
BELLS POINTE CT

EXISTING GROUND

(+)0.3000%

PROPOSED GRADE

(-)0.7454%

PI = 12+00.00
EL = 423.87'
VC = 60'
K = 57

BEGIN GRADE
-Y8C- STA. 11+25.00
EL. 423.64

END GRADE
-Y8C- STA. 12+36.63
EL. 423.99

-Y8D-
TRUELOVE DR

PI = 12+25.00
EL = 409.08'
VC = 50'
K = 22

EXISTING GROUND

(-)1.3524%

PROPOSED GRADE

(+)0.9437%

BEGIN GRADE
-Y8D- STA. 11+50.00
EL. 410.09

END GRADE
-Y8D- STA. 12+54.87
EL. 409.36

SEE SHEET 53 FOR -Y8A- PLAN VIEW
SEE SHEET 53 FOR -Y8B- PLAN VIEW
SEE SHEET 57 FOR -Y8C- PLAN VIEW
SEE SHEET 56 FOR -Y8D- PLAN VIEW

11+00 12+00 13+00 11+00 12+00 13+00 12+00 12+00

440 430 420 410 400 390 380 370 360 350 340

5/28/99

R-2721 BY_PFL_112.dgn
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dwaskelu

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PROJECT REFERENCE NO.	SHEET NO.
R-2721	113
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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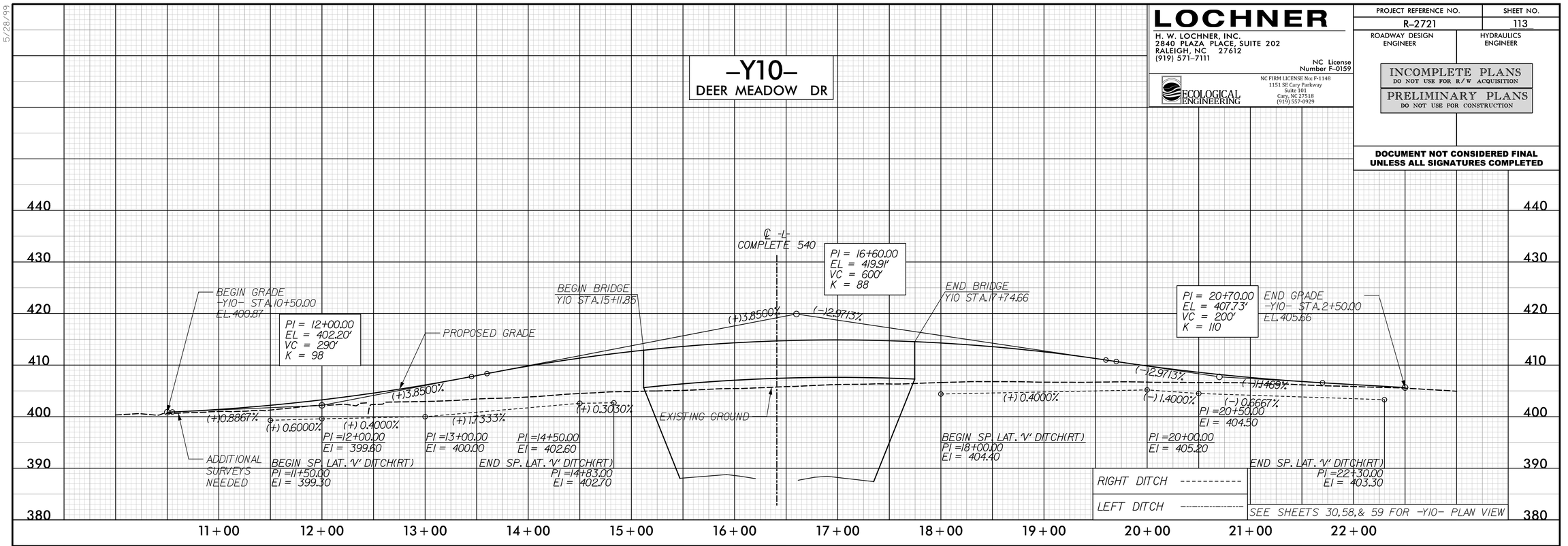

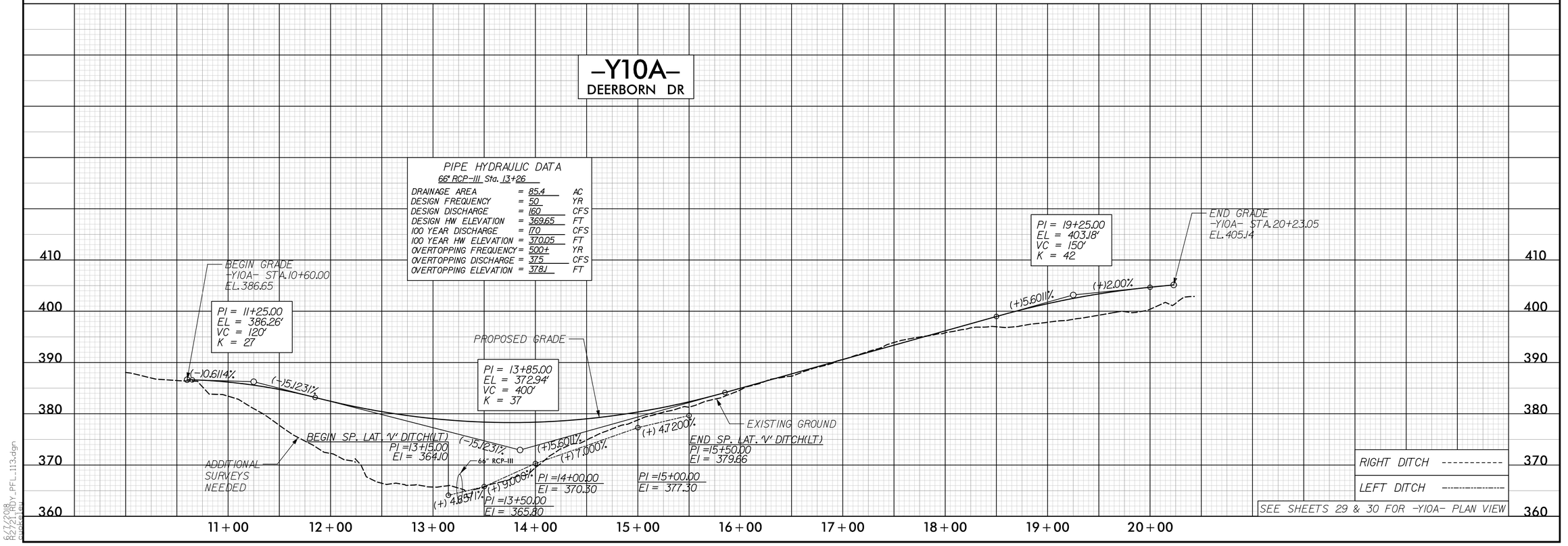

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cuckeley

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–Y10B–
PINESLOPE DR

BEGIN GRADE
–Y10B– STA.10+00.00
EL.419.66

PI = 13+15.00
EL = 422.88'
VC = 130'
K = 65

PI = 14+50.00
EL = 422.21'
VC = 120'
K = 21

ADDITIONAL SURVEYS NEEDED

EXISTING GROUND

PROPOSED GRADE

PI = 17+80.00
EL = 401.77'
VC = 150'
K = 22

(+)1.4982%
(–)0.5000%
(–)0.5000%
(–)6.9333%
(–)6.9333%
(+)0.7063%
(–) 3.6000%
(–) 4.2000%

30" RCP–IV

END GRADE
–Y10B– STA.18+59.70
EL. 402.33

BEGIN SP. CUT DITCH(LT)
PI =18+00.00
EI = 399.90

BEGIN SP. CUT DITCH(RT)
PI =18+00.00
EI = 399.90

END SP. CUT DITCH(LT)
PI =18+50.00
EI = 398.10

END SP. CUT DITCH(RT)
PI =18+50.00
EI = 397.80

PIPE HYDRAULIC DATA
30" RCP–IV Sta. 18+48

DRAINAGE AREA	= 5.2	AC
DESIGN FREQUENCY	= 25	YR
DESIGN DISCHARGE	= 22	CFS
DESIGN HW ELEVATION	= 400.3	FT
100 YEAR DISCHARGE	= 25	CFS
100 YEAR HW ELEVATION	= 400.5	FT
OVERTOPPING FREQUENCY	= 100+	YR
OVERTOPPING DISCHARGE	= 45	CFS
OVERTOPPING ELEVATION	= 402.2	FT

RIGHT DITCH ----------
LEFT DITCH ----------

SEE SHEET 59 FOR –Y10B– PLAN VIEW

–Y11–
JOHNSON POND RD

BEGIN GRADE
Y11 STA.12+75.00
EL.425.99

PI = 13+85.00
EL = 427.49'
VC = 220'
K = 99

PI = 17+20.00
EL = 439.48'
VC = 360'
K = 85

BEGIN BRIDGE
Y11 STA.19+77.73

℄ –L–
COMPLETE 540

PROPOSED GRADE

END BRIDGE
Y11 STA.21+61.10

(+)1.3985%
(+)3.5790%
(+)3.5790%
(–)0.6537%
(+) 3.1700%
(+) 1.9200%
(+) 0.2957%

EXISTING GROUND

PI =13+00.00
EI = 422.35

PI =14+50.00
EI = 425.23

END LAT. 'V' DITCH(LT)
PI =16+50.00
EI = 431.57

GIN LAT. 'V' DITCH(LT)
=11+85.00
= 422.01

RIGHT DITCH ----------
LEFT DITCH ----------

SEE SHEETS 32 & 58 FOR –Y11– PLAN VIEW

MATCHLINE SHEET 115 STA.25+00

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PROJECT REFERENCE NO.	SHEET NO.
R–2721	114

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
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PRELIMINARY PLANS
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cruckelew

5/28/99

–Y11–
JOHNSON POND RD

PI = 27+00.00
EL = 433.07'
VC = 200'
K = 151

BEGIN SP. CUT DITCH(LT)
PI =26+50.00
EI = 429.64

END SP. CUT DITCH(LT)
BEGIN SP. CUT DITCH(LT)
PI =26+99.00
EI = 428.61

END SP. CUT DITCH(LT)
PI =27+50.00
EI = 429.76

PROPOSED GRADE

END GRADE
–Y11– STA. 31+50.00
EL. 436.11

(–)0.6537%
(–)2.1020%
(+) 2.2549%
(+) 3.7000%
(+)0.6732%
(+) 1.4100%
(+) 1.4900%
(+) 0.3000%

18" RCP–IV

PI =27+00.00
EI = 427.34

PI =27+50.00
EI = 429.19

END SP. LAT. 'V' DITCH(RT)
PI =30+50.00
EI = 433.42

EXISTING GROUND

BEGIN SP. LAT. 'V' DITCH(RT)
PI =26+00.00
EI = 427.04

BEGIN SP. LAT. 'V' DITCH(RT)
PI =31+13.00
EI = 433.60

END SP. LAT. 'V' DITCH(RT)
PI =32+00.00
EI = 434.90

MATCHLINE SHEET 114 STA. 25+00

MATCHLINE THIS SHEET STA. 15+50

PIPE HYDRAULIC DATA
18" RCP–IV Sta. 26+99

DRAINAGE AREA	= 1.9	AC
DESIGN FREQUENCY	= 25	YR
DESIGN DISCHARGE	= 7	CFS
DESIGN HW ELEVATION	= 430.2	FT
100 YEAR DISCHARGE	= 8	CFS
100 YEAR HW ELEVATION	= 430.3	FT
OVERTOPPING FREQUENCY	= 100+	YR
OVERTOPPING DISCHARGE	= 10	CFS
OVERTOPPING ELEVATION	= 431.2	FT

–Y12A–

PI = 12+00.00
EL = 407.11'
VC = 200'
K = 32

BEGIN GRADE
–Y12A– STA. 10+60.00
EL. 400.75

PROPOSED GRADE

(+)4.8290%
(–)11.5094%
(+) 1.3306%

BEGIN SP. CUT DITCH(LT)
PI =10+55.00
EI = 400.00

END SP. CUT DITCH(LT)
PI =13+00.00
EI = 403.26

EXISTING GROUND

RIGHT DITCH ----------
LEFT DITCH ----------

SEE SHEET 60 FOR –Y11– PLAN VIEW
SEE SHEET 61 FOR –Y12A– PLAN VIEW

MATCHLINE THIS SHEET STA. 15+50

–Y12A–

PI = 16+50.00
EL = 400.31'
VC = 200'
K = 61

PROPOSED GRADE

(+)1.7961%
(–)12.00%
(–)1.5094%
(+)1.7961%

EXISTING GROUND

36" RCP–IV

PI = 20+75.00
EL = 407.95'
VC = 150'
K = 40

BEGIN BERM 'V' DITCH(RT)
PI =24+50.00
EI = 400.79

END SP. CUT DITCH(LT)
PI =26+46.00
EI = 393.60

BEGIN SP. CUT DITCH(LT)
PI =26+00.00
EI = 395.24

END GRADE
–Y12A– STA. 26+62.98
EL. 396.19

(–) 4.1400%
(–) 3.5652%
(–) 3.4000%
(–) 3.4444%

BEGIN SP. CUT DITCH(RT)
PI =24+50.00
EI = 398.11

END SP. CUT DITCH(RT)
PI =26+00.00
EI = 393.01

24" RCP–V

PI =26+50.00
EI = 391.31

END BERM 'V' DITCH(RT)
PI =26+59.00
EI = 391.00

RIGHT DITCH ----------
LEFT DITCH ----------

SEE SHEETS 34 & 35 FOR –Y12A– PLAN VIEW

MATCHLINE THIS SHEET STA. 15+50

PIPE HYDRAULIC DATA
36" RCP–IV Sta. 16+74

DRAINAGE AREA	= 13.0	AC
DESIGN FREQUENCY	= 25	YR
DESIGN DISCHARGE	= 42	CFS
DESIGN HW ELEVATION	= 394.2	FT
100 YEAR DISCHARGE	= 48	CFS
100 YEAR HW ELEVATION	= 394.6	FT
OVERTOPPING FREQUENCY	= 100+	YR
OVERTOPPING DISCHARGE	= 59	CFS
OVERTOPPING ELEVATION	= 395.3	FT

PIPE HYDRAULIC DATA
24" RCP–V Sta. 26+48

DRAINAGE AREA	= 4.7	AC
DESIGN FREQUENCY	= 25	YR
DESIGN DISCHARGE	= 14	CFS
DESIGN HW ELEVATION	= 395.6	FT
100 YEAR DISCHARGE	= 16	CFS
100 YEAR HW ELEVATION	= 395.8	FT
OVERTOPPING FREQUENCY	= 50	YR
OVERTOPPING DISCHARGE	= 15	CFS
OVERTOPPING ELEVATION	= 395.7	FT

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PROJECT REFERENCE NO.	SHEET NO.
R–2721	115
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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dwaskiewicz

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PROJECT REFERENCE NO.	SHEET NO.
R-2721	116

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

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-Y12B-

PIPE HYDRAULIC DATA
24" RCP-IV Sta. 10+43

DRAINAGE AREA	2.7	AC
DESIGN FREQUENCY	25	YR
DESIGN DISCHARGE	11.4	CFS
DESIGN HW ELEVATION	398.3	FT
100 YEAR DISCHARGE	13	CFS
100 YEAR HW ELEVATION	398.5	FT
OVERTOPPING FREQUENCY	100+	YR
OVERTOPPING DISCHARGE	20	CFS
OVERTOPPING ELEVATION	400.1	FT

PIPE HYDRAULIC DATA
18"RCP-III Sta. 15+32

DRAINAGE AREA	1.5	AC
DESIGN FREQUENCY	25	YR
DESIGN DISCHARGE	6.3	CFS
DESIGN HW ELEVATION	395.8	FT
100 YEAR DISCHARGE	7.2	CFS
100 YEAR HW ELEVATION	399.0	FT
OVERTOPPING FREQUENCY	100+	YR
OVERTOPPING DISCHARGE	20	CFS
OVERTOPPING ELEVATION	399.3	FT

PIPE HYDRAULIC DATA
30" RCP-IV Sta. 20+09

DRAINAGE AREA	5.7	AC
DESIGN FREQUENCY	25	YR
DESIGN DISCHARGE	20	CFS
DESIGN HW ELEVATION	386.2	FT
100 YEAR DISCHARGE	23	CFS
100 YEAR HW ELEVATION	386.4	FT
OVERTOPPING FREQUENCY	100+	YR
OVERTOPPING DISCHARGE	23	CFS
OVERTOPPING ELEVATION	287.4	FT

PI = 10+55.00
EL = 399.94'
VC = 110'
K = 32

PI = 12+10.00
EL = 403.62'
VC = 200'
K = 56

PI = 16+75.00
EL = 398.15'
VC = 100'
K = 160

PI = 18+00.00
EL = 395.90'
VC = 90'
K = 58

PI = 19+20.00
EL = 391.88'
VC = 80'
K = 46

BEGIN GRADE
-Y12B- STA.10+00.00
EL.400.54'

24" RCP-IV

(+)2.3741%

(-)11.1757%

PROPOSED GRADE

(-)11.0943%

(+)2.3741%

(-) 3.4884%

END SP. CUT DITCH(LT)
PI =10+43.00
EI = 396.80

BEGIN SP. CUT DITCH(LT)
PI =10+00.00
EI = 398.30

18" RCP-III

EXISTING GROUND

(-)11.1757%

(-)11.8020%

(-)11.8020%

(-)3.3482%

(-)5.0814%

END GRADE
-Y12B- STA.20+20.59
EL.386.77'

30" RCP-IV

RIGHT DITCH ----------

LEFT DITCH ----------

SEE SHEETS 35 & 61 FOR -Y12B- PLAN VIEW

11+00 12+00 13+00 14+00 15+00 16+00 17+00 18+00 19+00 20+00

-Y13-
US 401

℄ -Y13A-

PI = 38+20.00
EL = 362.84'
VC = 680'
K = 121
SSD = 510'
V = 55mph

(+)5.2422%

(-)0.3888%

358.33

(-)0.2976%

BEGIN SP. CUT DITCH(RT)
PI =39+45.00
EI = 358.33

MATCHLINE SHEET 117 STA.40+50

BEGIN GRADE
-Y13- STA.29+90.00
EL.320.05

PI = 30+75.00
EL = 323.79'
VC = 170'
K = 202

PROPOSED GRADE

EXISTING GROUND

BEGIN SP. CUT DITCH(RT)
PI =29+98.00
EI = 318.00

(+)4.4000%

(+)5.2422%

(+) 2.4808%

(+) 5.2000%

END SP. CUT DITCH(LT)
PI =31+50.00
EI = 324.00

END SP. CUT DITCH(RT)
PI =30+50.00
EI = 319.29

BEGIN SP. CUT DITCH(LT)
PI =29+50.00
EI = 313.60

RIGHT DITCH ----------

LEFT DITCH ----------

SEE SHEETS 62 & 63 FOR -Y13- PLAN VIEW

30+00 31+00 32+00 33+00 34+00 35+00 36+00 37+00 38+00 39+00 40+00

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dwaskelew

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–Y13–
US 401

PI = 38+20.00
EL = 362.84'
VC = 680'
K = 121

PI = 44+25.00
EL = 360.49'
VC = 530'
K = 147

PI = 49+25.00
EL = 376.55'
VC = 400'
K = 178

(–)0.3888%
(–)0.2976%
(+)3.2118%
(–)0.3886%
(–)1.9800%
(+)0.9648%
(+) 2.7867%

PROPOSED GRADE
EXISTING GROUND

END SP. CUT DITCH(RT)
PI =41+50.00
EI = 357.72

BEGIN SP. CUT DITCH(RT)
PI =47+50.00
EI = 369.92

END SP. CUT DITCH(RT)
PI =49+00.00
EI = 366.95

BEGIN SP. CUT DITCH(RT)
PI =50+75.00
EI = 372.55

END SP. CUT DITCH(RT)
PI =51+50.00
EI = 374.64

MATCHLINE SHEET 116 STA.40+50

MATCHLINE THIS SHEET STA.53+50

400 390 380 370 360 350 340 330 320

41+00 42+00 43+00 44+00 45+00 46+00 47+00 48+00 49+00 50+00 51+00 52+00 53+00

RIGHT DITCH ----------
LEFT DITCH ----------

SEE SHEETS 37 & 63 FOR –Y13– PLAN VIEW

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PROJECT REFERENCE NO.	SHEET NO.
R–2721	117
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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–Y13–
US 401

PI = 58+85.00
EL = 385.81'
VC = 200'
K = 301

℄ -L-
COMPLETE 540

BEGIN BRIDGE
Y13 STA.54+01.81

END BRIDGE
Y13 STA.56+72.15

(+)0.9648%
(+)0.3000%
(+)1.6818%

PROPOSED GRADE
EXISTING GROUND

BEGIN SP. CUT DITCH(RT)
PI =65+34.00
EI = 377.78

END SP. CUT DITCH(RT)
PI =66+00.00
EI = 378.89

MATCHLINE THIS SHEET STA.53+50

MATCHLINE SHEET 118 STA.66+50

400 390 380 370 360 350 340

54+00 55+00 56+00 57+00 58+00 59+00 60+00 61+00 62+00 63+00 64+00 65+00 66+00

RIGHT DITCH ----------
LEFT DITCH ----------

SEE SHEETS 37 & 64 FOR –Y13– PLAN VIEW

R-2721B
R-2721C
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–Y13–
US 401

℄ -Y13E-

PI = 67+50.00
EL = 388.40'
VC = 150'
K = 350

MATCHLINE SHEET 117 STA. 66+50

(+)0.3000%

(+)0.7282%

EXISTING GROUND

(+)1.6207%

PI =70+00.00
EI = 384.59

BEGIN SP. CUT DITCH(RT)
PI =69+71.00
EI = 384.12

PROPOSED GRADE

(+)1.5880%

END GRADE
-Y13- STA. 73+00.00
EL. 392.40

(+)0.7282%

END SP. CUT DITCH(RT)
PI =72+50.00
EI = 388.56

67+00 68+00 69+00 70+00 71+00 72+00 73+00

400 390 380 370 360 350 340 330 320

RIGHT DITCH ----------
LEFT DITCH ----------
SEE SHEET 64 FOR -Y13- PLAN VIEW

–Y13A–

BEGIN GRADE
-Y13A- STA.10+00.00
EL. 358.97

PI = 11+25.00
EL = 357.53'
VC = 120'
K = 29
SSD = 322'
V = 35mph

℄ -Y13D-
CHANDLER RIDGE CIR

(-)2.0000%

(-)6.1147%

BEGIN SP. LAT. 'V' DITCH(LT)
PI =11+00.00
EI = 354.89

(-)8.5520%

(-)5.6000%

BEGIN SP. LAT. 'V' DITCH(RT)
PI =11+50.00
EI = 348.25

PI =12+00.00
EI = 345.45

END SP. LAT. 'V' DITCH(LT)
PI =12+25.00
EI = 344.20

(-)3.6000%

(-)6.1147%

EXISTING GROUND

PROPOSED GRADE

PI = 14+75.00
EL = 336.12'
VC = 580'
K = 66

(+)2.6128%

END SP. LAT. 'V' DITCH(RT)
BEGIN SP. CUT DITCH(RT)
PI =15+05.00
EI = 334.47

36" RCP-III

PIPE HYDRAULIC DATA
36" RCP-III Sta. 15+08

DRAINAGE AREA	= 9.6	AC
DESIGN FREQUENCY	= 25	YR
DESIGN DISCHARGE	= 41	CFS
DESIGN HW ELEVATION	= 337.5	FT
100 YEAR DISCHARGE	= 46	CFS
100 YEAR HW ELEVATION	= 337.89	FT
OVERTOPPING FREQUENCY	= 100+	YR
OVERTOPPING DISCHARGE	= 69	CFS
OVERTOPPING ELEVATION	= 339.45	FT

(+)3.0410%

END SP. CUT DITCH(RT)
BEGIN SP. CUT DITCH(RT)
PI =17+00.00
EI = 340.40

(-)2.0000%

30" RCP-III

END SP. CUT DITCH(RT)
BEGIN LAT. BASE DITCH(RT)
PI =18+50.00
EI = 337.40

PIPE HYDRAULIC DATA
30" RCP-III Sta. 18+22

DRAINAGE AREA	= 5.8	AC
DESIGN FREQUENCY	= 25	YR
DESIGN DISCHARGE	= 21	CFS
DESIGN HW ELEVATION	= 339.6	FT
100 YEAR DISCHARGE	= 24	CFS
100 YEAR HW ELEVATION	= 339.8	FT
OVERTOPPING FREQUENCY	= 100+	YR
OVERTOPPING DISCHARGE	= 25	CFS
OVERTOPPING ELEVATION	= 340.43	FT

(+)2.2500%

PI =19+50.00
EI = 339.65

(+)5.000%

END LAT. BASE DITCH(RT)
PI =20+50.00
EI = 344.85

PI = 24+10.00
EL = 360.55'
VC = 550'
K = 78

(-)0.3000%

END SP. CUT DITCH(RT)
PI =21+50.00
EI = 350.87

BEGIN SP. CUT DITCH(RT)
PI =21+00.00
EI = 351.02

MATCHLINE SHEET 119 STA. 23+00

11+00 12+00 13+00 14+00 15+00 16+00 17+00 18+00 19+00 20+00 21+00 22+00 23+00

360 350 340 330 320

RIGHT DITCH ----------
LEFT DITCH ----------
SEE SHEETS 63 & 65 FOR -Y13A- PLAN VIEW

LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
(919) 571-7111
NC License Number F-0159

ECOLOGICAL ENGINEERING
NC FIRM LICENSE No: F-1148
1151 SE Cary Parkway
Suite 101
Cary, NC 27518
(919) 557-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2721	118

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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Suite 101
Cary, NC 27518
(919) 557-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2721	119
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
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PRELIMINARY PLANS
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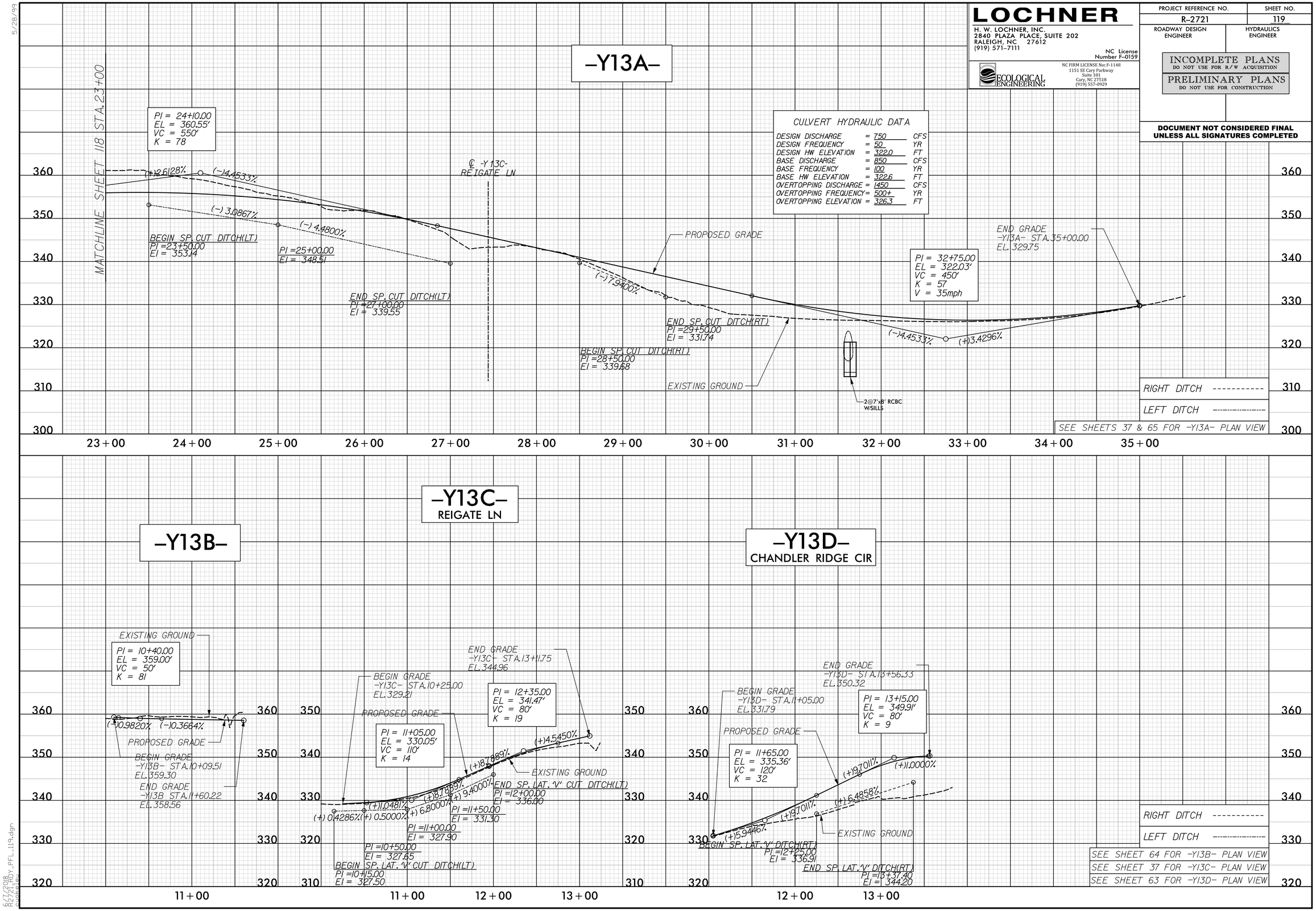

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–Y13E–

PI = 11+35.00
EL = 391.08'
VC = 50'
K = 35

BEGIN GRADE
–Y13E– STA.13+19.56
EL.389.55

PI = 13+50.00
EL = 387.42'
VC = 50'
K = 8

END GRADE
–Y13E– STA.12+04.77
EL.389.21

END GRADE
–Y13E– STA.15+50.00
EL.368.53

PI = 14+65.00
EL = 371.76'
VC = 170'
K = 17

EXISTING GROUND

PROPOSED GRADE

(–)1.2539%
(–)2.6831%
(–)5.3049%
(–)17.08%
(–)13.6161%
(–)12.3000%
(–)10.5000%
(–)8.7200%
(–)4.4400%
(–)13.8000%

END SP. LAT. 'V' DITCH(LT)
PI =11+00.00
EI = 386.10

BEGIN SP. LAT. 'V' DITCH(LT)
PI =11+00.00
EI = 390.45

BEGIN GRADE
–Y13E– STA.10+75.00
EL.391.83

BEGIN SP. LAT. 'V' DITCH(RT)
PI =13+50.00
EI = 384.50

PI =14+00.00
EI = 378.35

PI =14+50.00
EI = 373.10

PI =15+00.00
EI = 368.74

END SP. LAT. 'V' DITCH(RT)
PI =15+50.00
EI = 366.52

–Y13F–
WAKE TECH WAY

EXISTING GROUND

PI = 11+05.00
EL = 360.47'
VC = 80'
K = 19

PI = 11+70.00
EL = 365.22'
VC = 50'
K = 7

PROPOSED GRADE

(+)0.3500%
(+)7.3094%
(+)3.00%

END GRADE
–Y13F– STA.12+01.04
EL.365.32

BEGIN GRADE
–Y13F– STA.10+62.98
EL.359.20

–Y14A–
OLD McCULLERS RD

BEGIN GRADE
–Y14A– STA.10+50.00
EL.361.72

PI = 12+00.00
EL = 357.98'
VC = 200'
K = 98

(–)2.4967%
(–)4.5382%
PROPOSED GRADE

MATCHLINE SHEET 120 STA.14+00

RIGHT DITCH ----------
LEFT DITCH ----------

SEE SHEET 64 FOR –Y13E– PLAN VIEW
SEE SHEET 63 FOR –Y13F– PLAN VIEW
SEE SHEETS 37 & 38 FOR –Y14A– PLAN VIEW

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1151 SE Cary Parkway
Suite 101
Cary, NC 27518
(919) 557-0929

PROJECT REFERENCE NO.	SHEET NO.
R–2721	120
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
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PRELIMINARY PLANS
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MATCHLINE SHEET 120 STA.14+00

–Y14A–
OLD McCULLERS RD

CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 310	CFS
DESIGN FREQUENCY	= 50	YR
DESIGN HW ELEVATION	= 323.0	FT
BASE DISCHARGE	= 340	CFS
BASE FREQUENCY	= 100	YR
BASE HW ELEVATION	= 323.3	FT
OVERTOPPING DISCHARGE	= 1000	CFS
OVERTOPPING FREQUENCY	= 500+	YR
OVERTOPPING ELEVATION	= 327.7	FT

EXISTING GROUND

PI = 18+30.00
EL = 329.42'
VC = 200'
K = 60

PI = 21+35.00
EL = 325.81'
VC = 380'
K = 51

PI = 23+80.00
EL = 341.12'
VC = 90'
K = 40

(–)14.5382%
(–)1.1844%
(–)1.1844%
(+)6.2503%
(+)6.2503%
(+)4.0031%

END GRADE
–Y14A– STA.24+25.19
EL.342.93

SEE SHEETS 37 & 38 FOR –Y14A– PLAN VIEW

SUNGATE DESIGN GROUP, P.A.
905 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243
NC FIRM LICENSE NO. C-890

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dwaskelu

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905 JONES FRANKLIN ROAD
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TEL (919) 859-2243
NC FIRM LICENSE NO. C-890

PROJECT REFERENCE NO.	SHEET NO.
R-2721	121
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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PRELIMINARY PLANS
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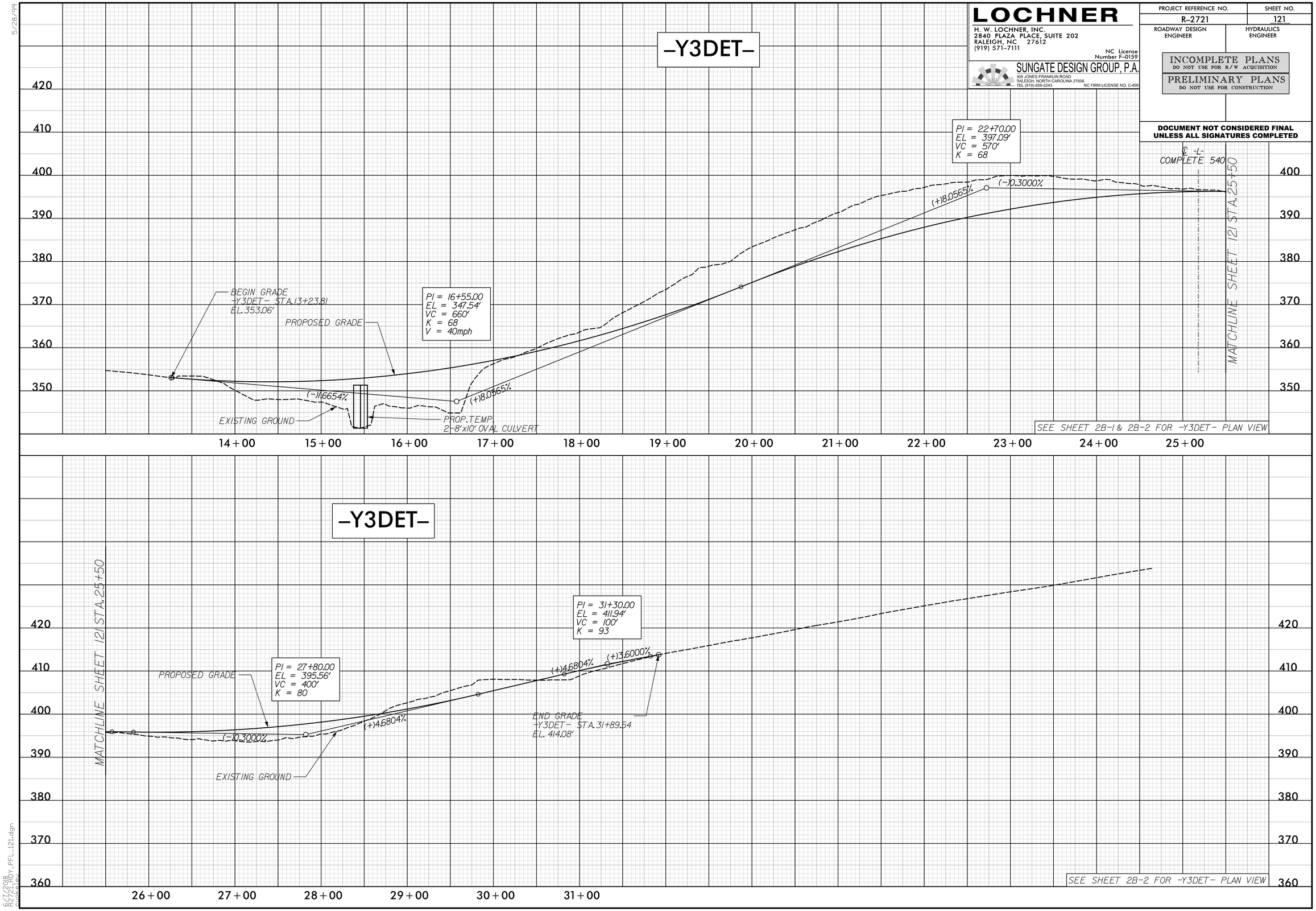

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PROJECT REFERENCE NO.	SHEET NO.
R-2721	122
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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PRELIMINARY PLANS
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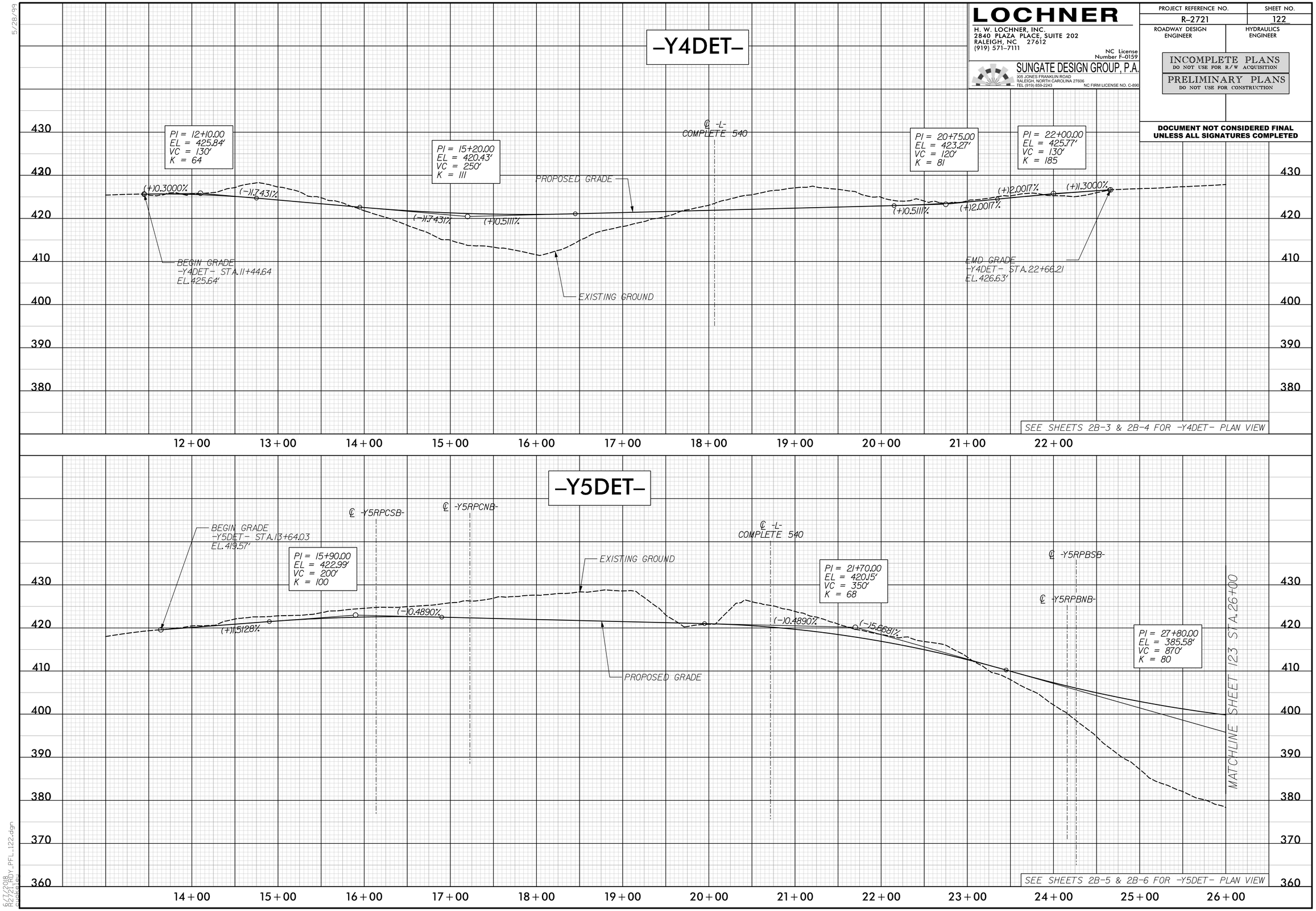

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PROJECT REFERENCE NO.	SHEET NO.
R-2721	123
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
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PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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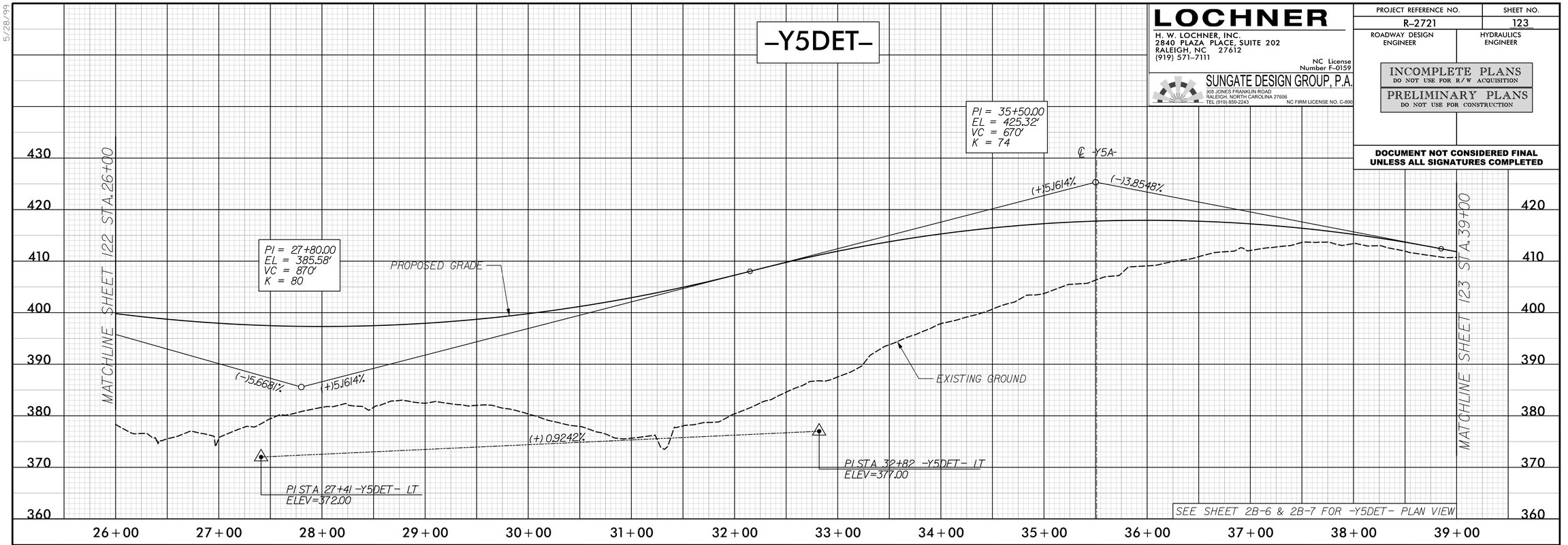

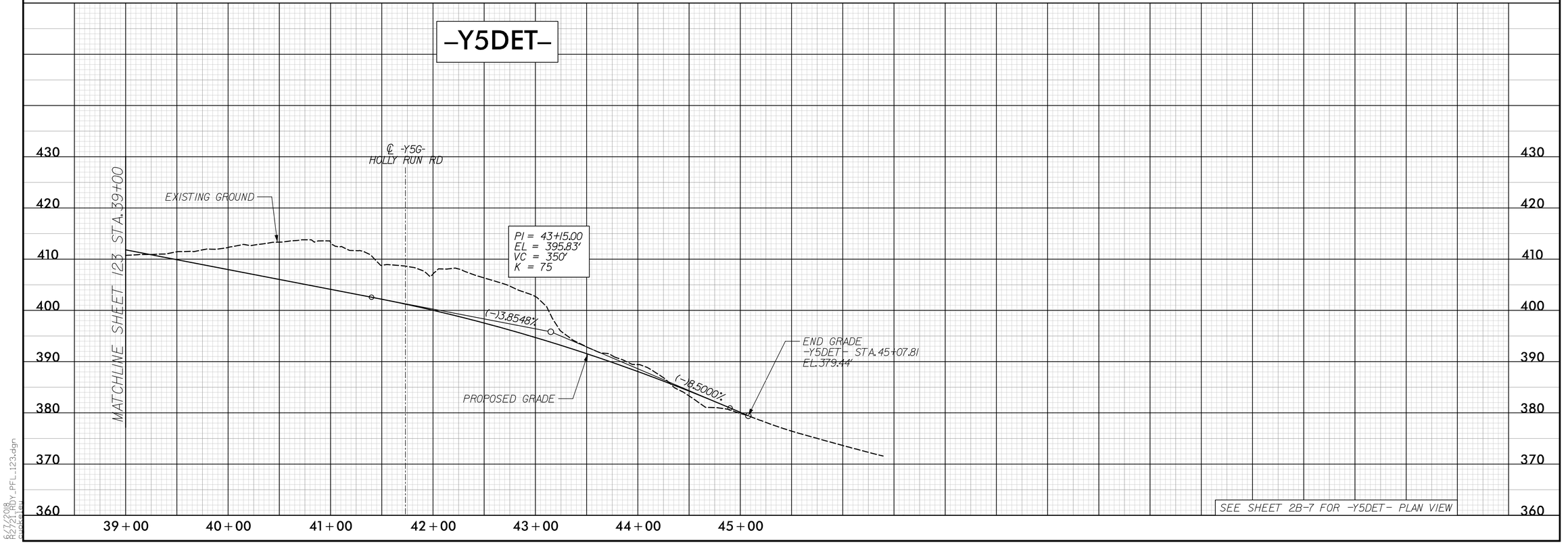

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NC FIRM LICENSE No: F-1148
1151 SE Cary Parkway
Suite 101
Cary, NC 27518
(919) 557-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2721	124
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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PRELIMINARY PLANS
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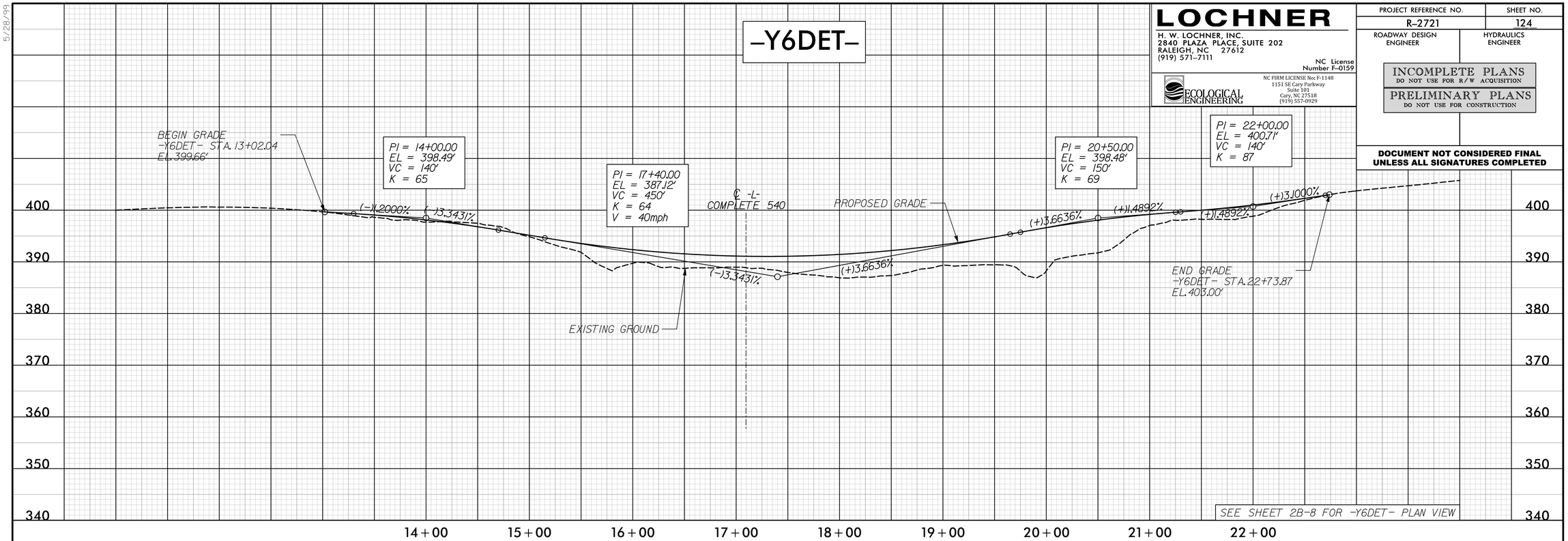

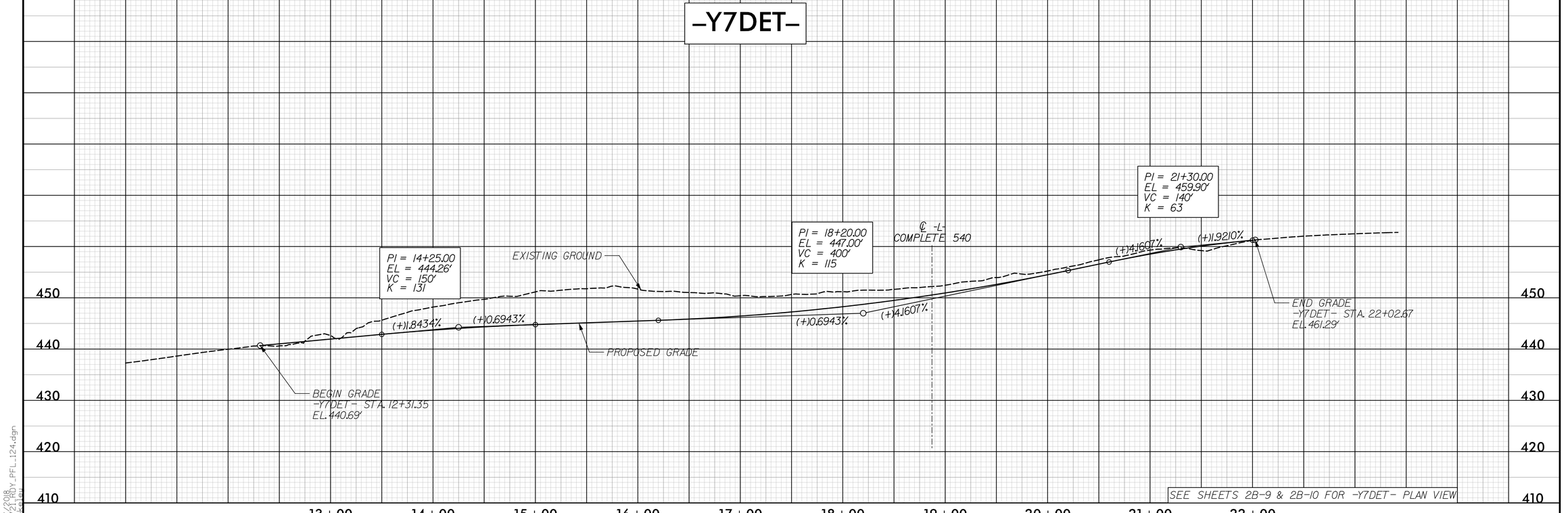

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PROJECT REFERENCE NO.	SHEET NO.
R-2721	125
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
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PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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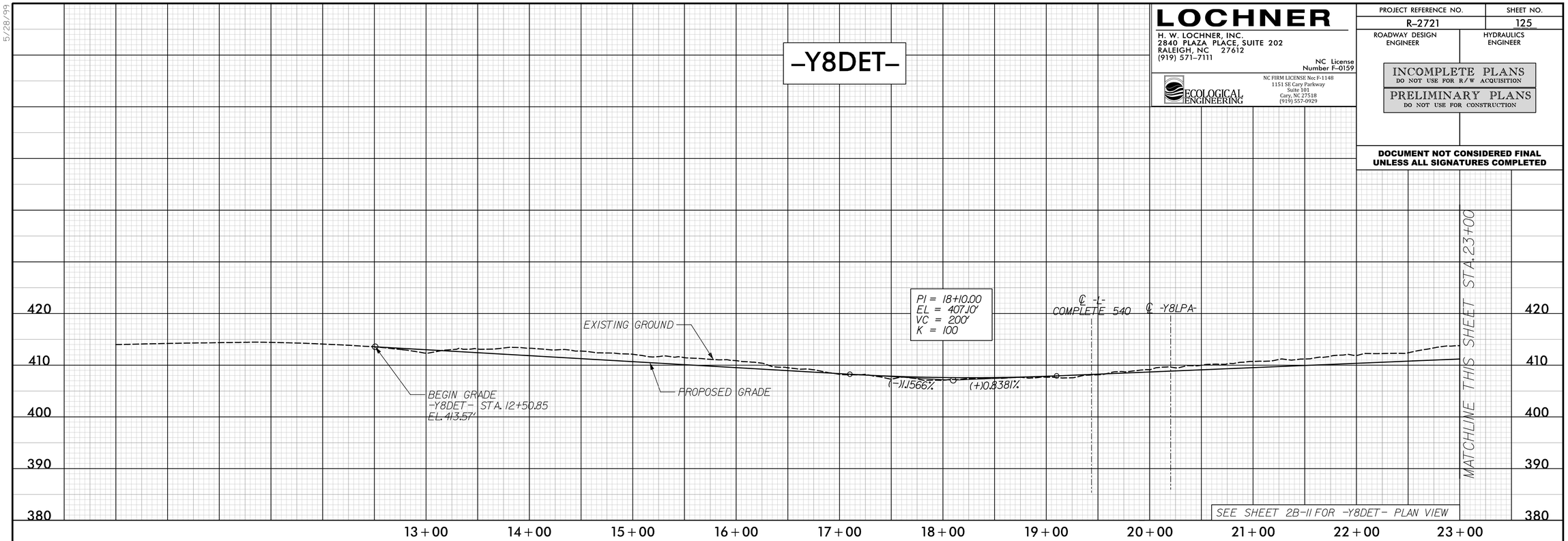

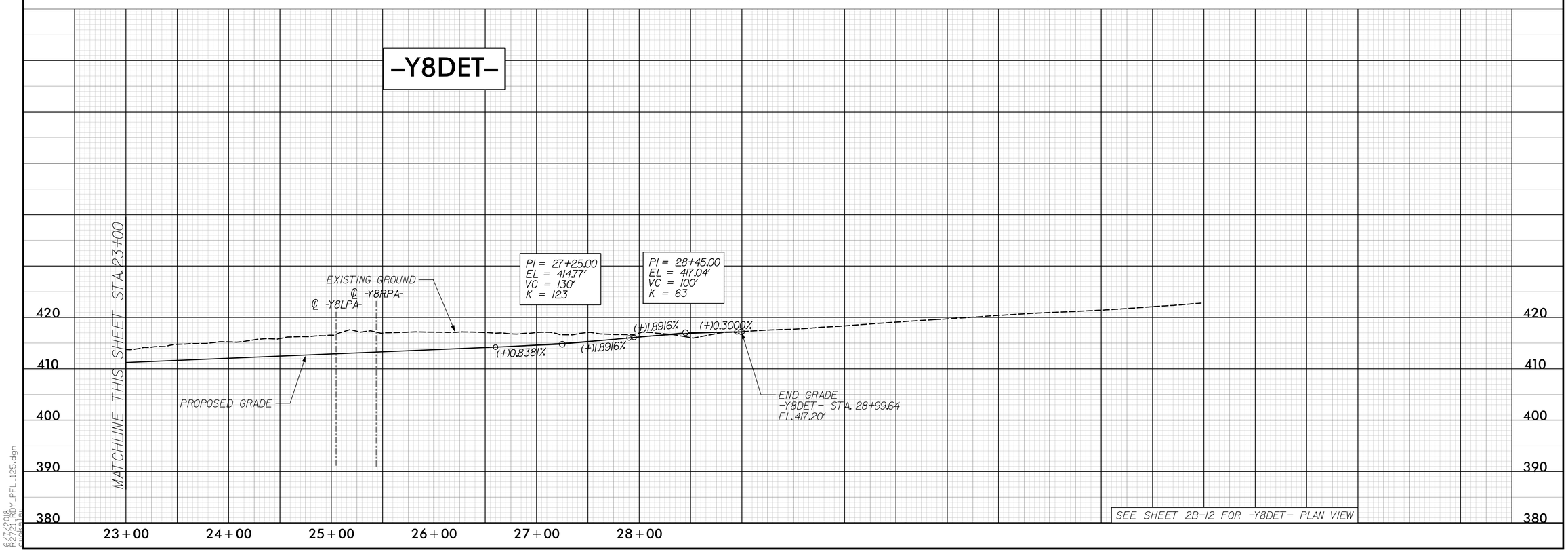

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1151 SE Cary Parkway
Suite 101
Cary, NC 27518
(919) 557-0929

PROJECT REFERENCE NO.	SHEET NO.
R-2721	126
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
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PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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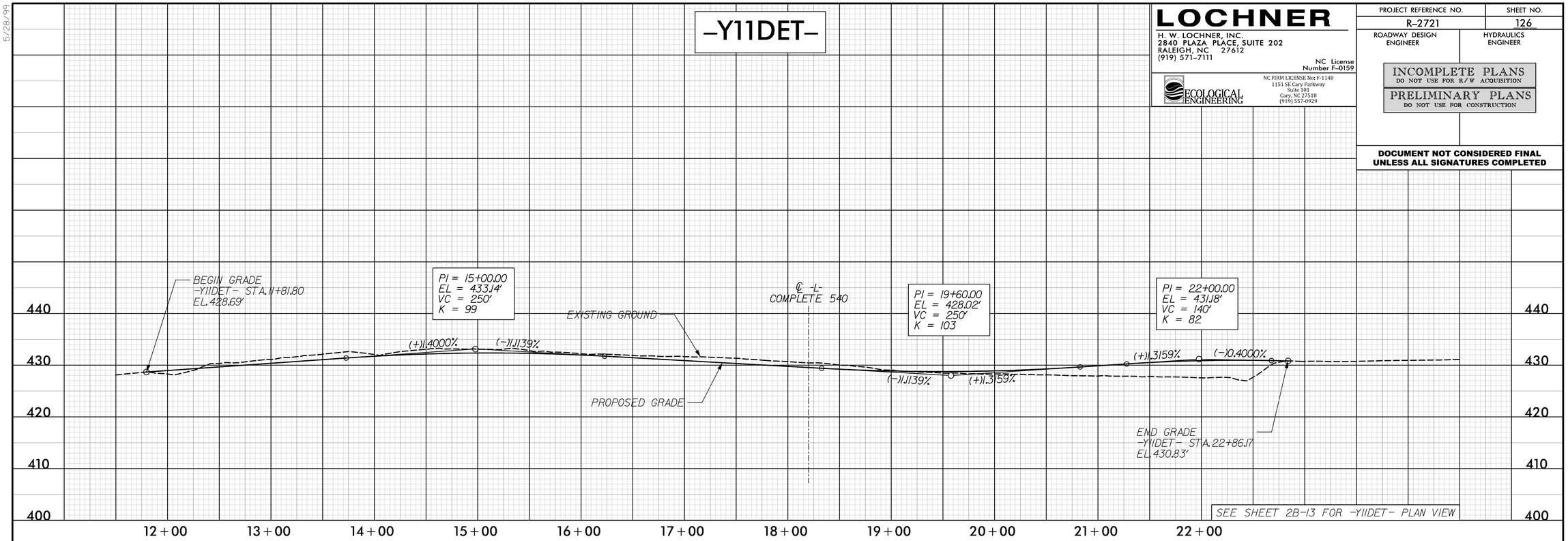

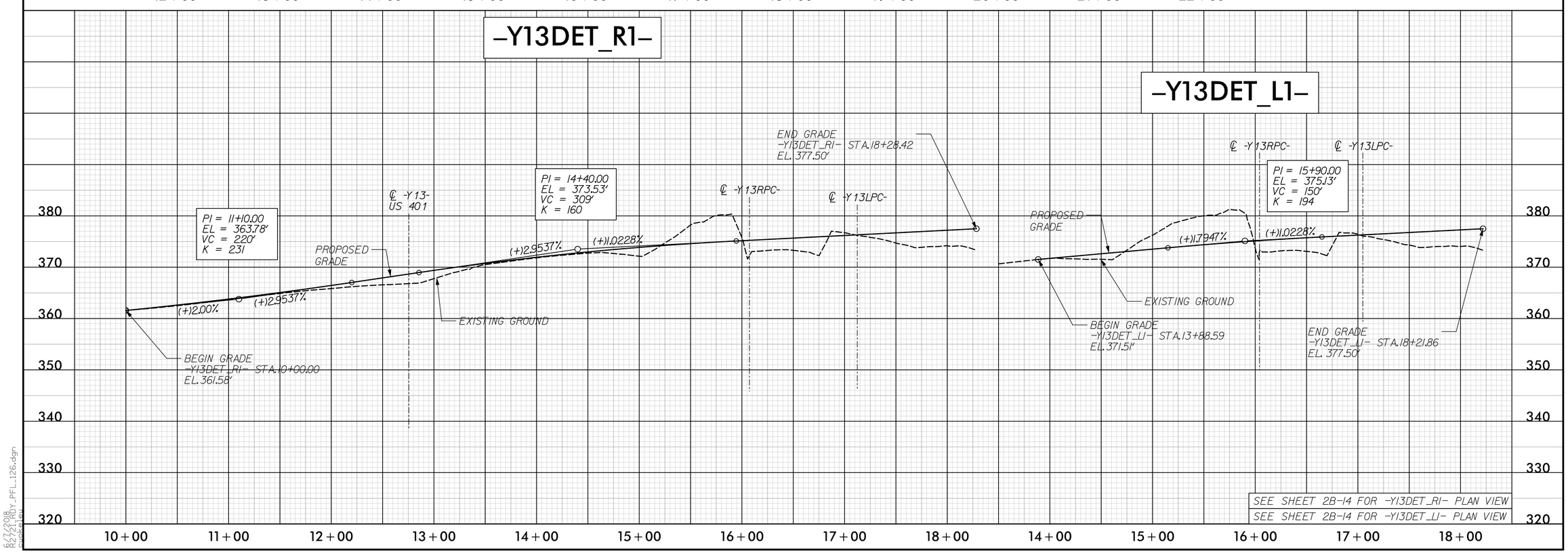

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–Y13DET–

℄ -L-
COMPLETE 540

℄ -Y13LPC-

BEGIN GRADE
-Y13DET- STA.18+25.00
EL. 377.50'

PI = 19+60.00
EL = 378.88'
VC = 270'
K = 97

PROPOSED GRADE

PI = 22+90.00
EL = 391.41'
VC = 350'
K = 65

(+)3.7976%

(−)1.5745%

(+)1.0228%

(+)3.7976%

END GRADE
-Y13DET- STA.24+75.00
EL. 388.50'

EXISTING GROUND

390
380
370
360
350
340
330

19+00 20+00 21+00 22+00 23+00 24+00

–Y13DET_L2–

PI = 12+85.00
EL = 384.02'
VC = 270'
K = 88

℄ -Y13RPA-

END GRADE
-Y13DET_L2- STA.14+23.26
EL. 386.09'

(−)1.5727%

(+)1.5000%

PROPOSED GRADE

EXISTING GROUND

BEGIN GRADE
-Y13DET_L2- STA.10+00.00
EL. 388.50'

SEE SHEET 2B-15 FOR -Y13DET_L2- PLAN VIEW

SEE SHEET 2B-14 & 2B-15 FOR -Y13DET- PLAN VIEW

10+00 11+00 12+00 13+00 14+00

–Y13DET_R2–

PI = 12+45.00
EL = 384.65'
VC = 230'
K = 82

℄ -Y13RPA-

PI = 14+20.00
EL = 386.79'
VC = 120'
K = 145

℄ -Y13-
US 401

END GRADE
-Y13DET_R2- STA.18+28.38
EL. 388.42'

PROPOSED GRADE

(−)1.5727%

(+)1.2253%

(+)1.2253%

(+)0.4000%

BEGIN GRADE
-Y13DET_R2- STA.10+00.00
EL. 388.50'

EXISTING GROUND

390
380
370
360
350
340

10+00 11+00 12+00 13+00 14+00 15+00 16+00 17+00 18+00

SEE SHEET 2B-15 FOR -Y13DET_R2- PLAN VIEW

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PROJECT REFERENCE NO.	SHEET NO.
R-2721	127
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
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905 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243
NC FIRM LICENSE NO. C-890

PROJECT REFERENCE NO.	SHEET NO.
R-2721	128
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
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PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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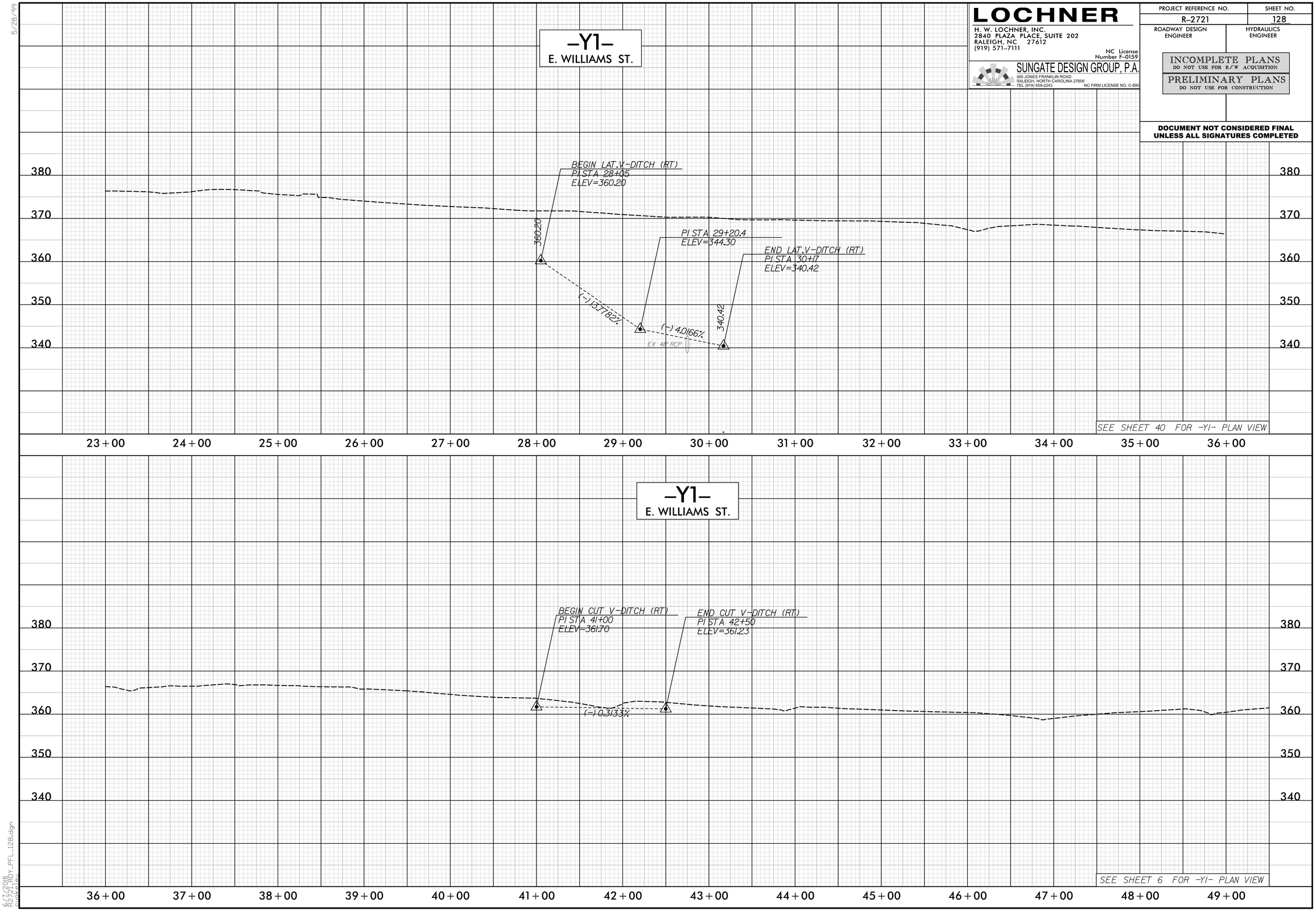

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PROJECT REFERENCE NO.	SHEET NO.
R-2721	129
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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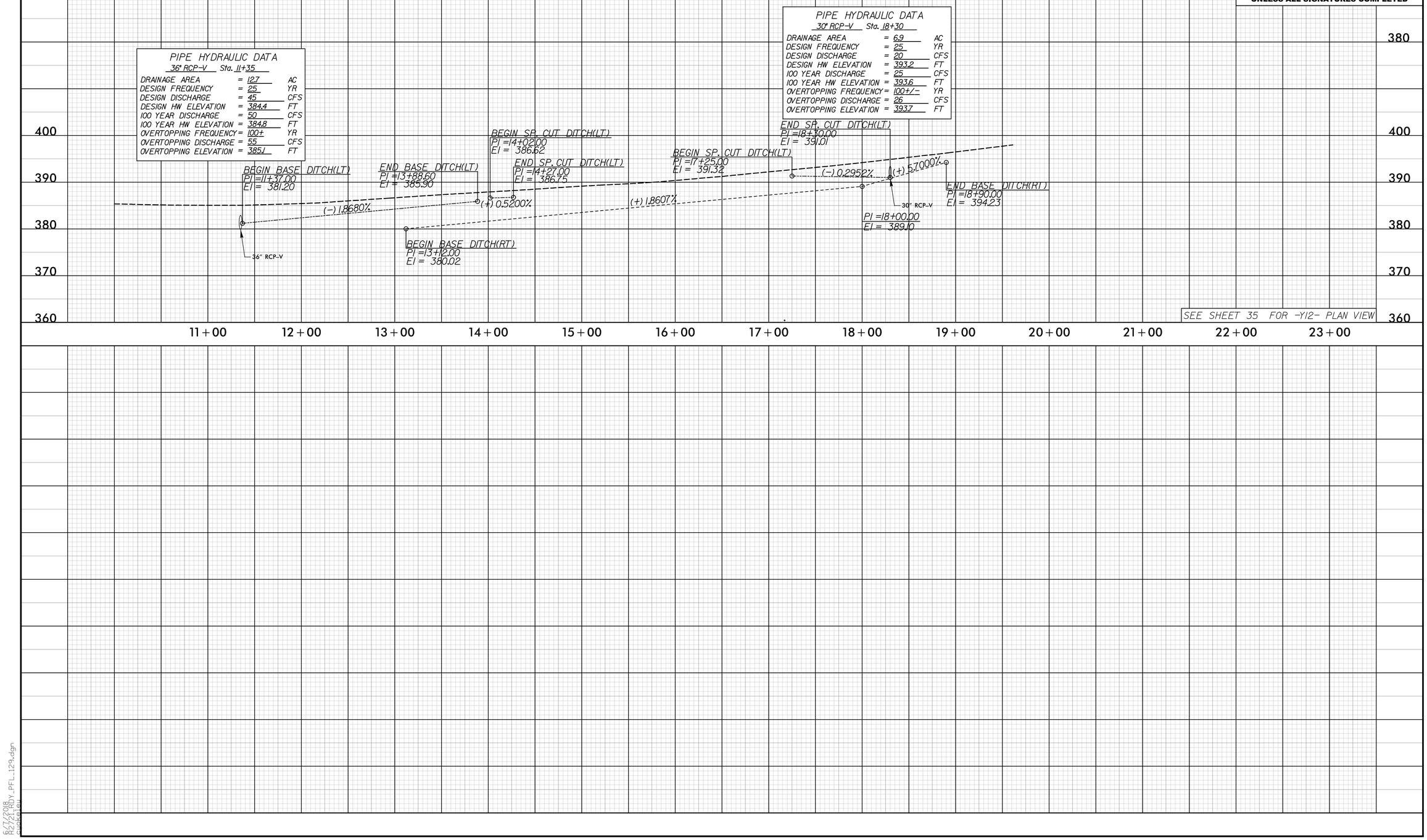
-Y12-
LAKE WHEELER RD



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R2721_RDY_PFL_129.dgn
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STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2828	TS	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
6.401079	STP-540(20)	PE

PERMIT DRAWING
SHEET 1 OF 105

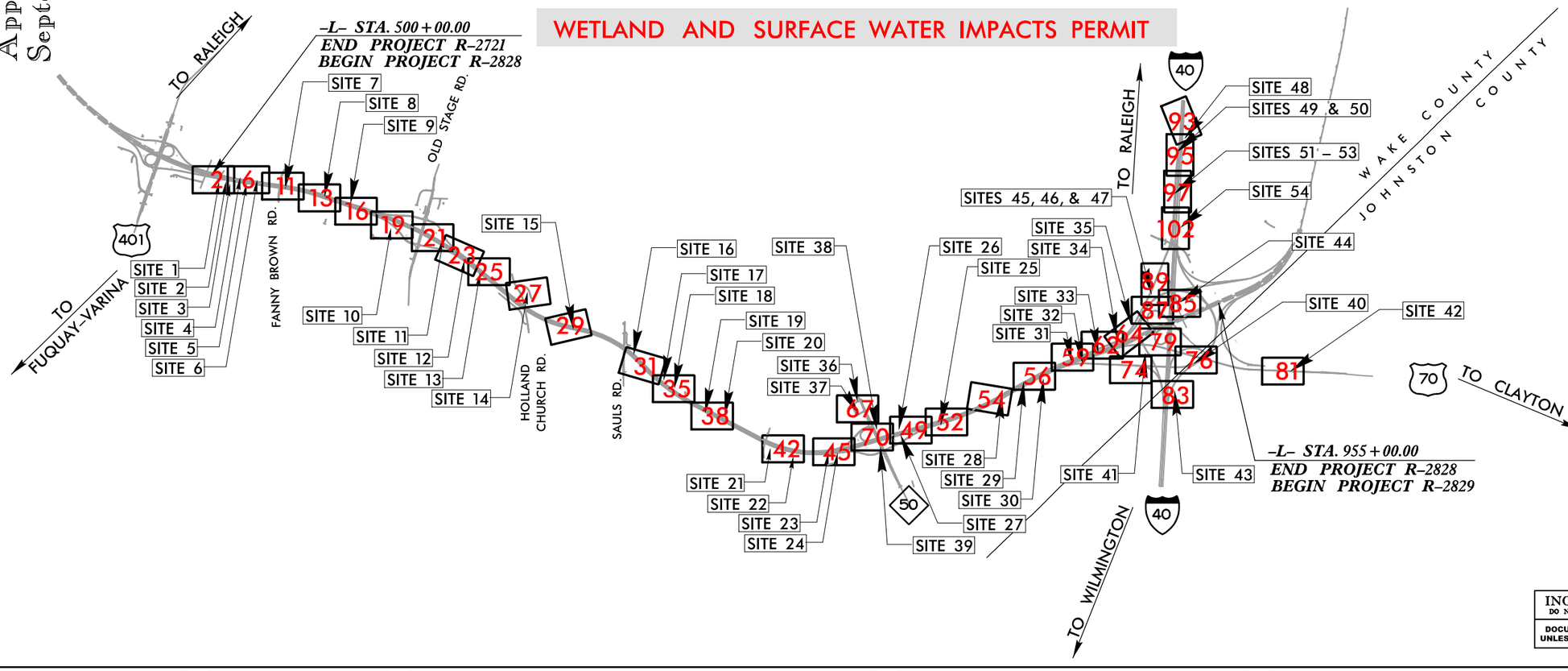
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WAKE & JOHNSTON COUNTY

LOCATION: COMPLETE 540 – FROM EAST OF HWY 401 TO EAST OF I-40

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

WETLAND AND SURFACE WATER IMPACTS PERMIT



INCOMPLETE PLANS
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Approved Preliminary Design
September 2017

TIP PROJECT: R-2828

CONTRACT:

09/08/99

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davidcooper

GRAPHIC SCALES

50 25 0 50 100
PLANS

15 7.5 0 15 30
PROFILE (HORIZONTAL)

15 7.5 0 15 30
PROFILE (VERTICAL)

DESIGN DATA

ADT 2016 = 28,400
ADT 2040 = 53,400
DHV = 12 %
D = 65 %
T = 11 % *
V = 75 MPH
* TTST 7% DUAL 4%
FUNC. CLASS. = INTERSTATE

PROJECT LENGTH

LENGTH ROADWAY STATE TIP PROJECT R-2828 = 8.617 Miles
TOTAL LENGTH STATE TIP PROJECT R-2828 = 8.617 Miles

Prepared In the Offices of:

LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
(919)571-7111
NC License Number F-0159

NC FIRM LICENSE No F-1148
1151 SE Cary Parkway, Suite 101
Cary, NC 27518
(919) 557-0929
ECOLOGICAL ENGINEERING

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:

LETTING DATE:

BRIAN K. EASON, PE
PROJECT ENGINEER

PROJECT DESIGN ENGINEER

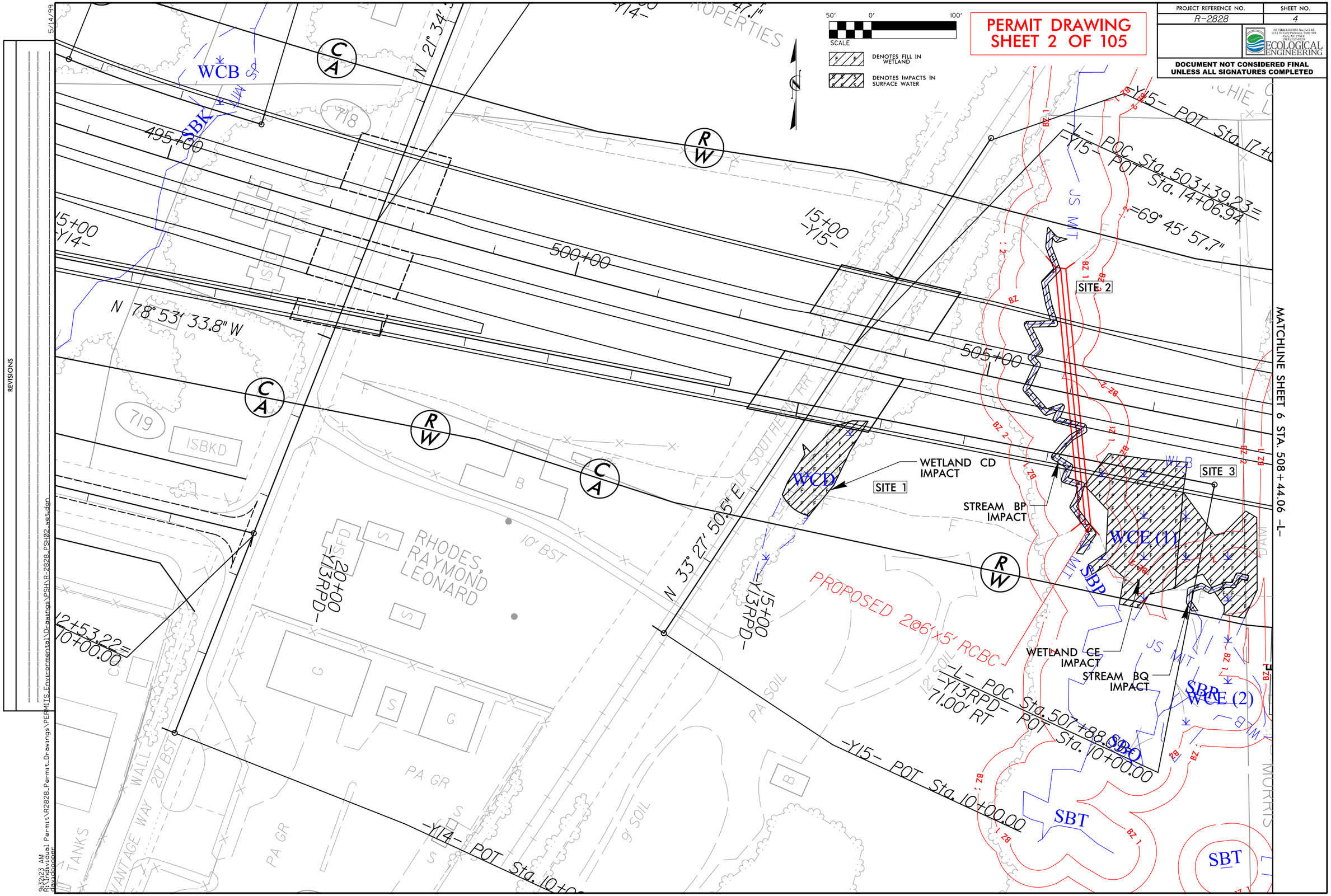
HYDRAULICS ENGINEER

P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

P.E.
SIGNATURE:

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION


PERMIT DRAWING
SHEET 2 OF 105
PROJECT REFERENCE NO.
R-2828
SHEET NO.
4
ECOLOGICAL ENGINEERING
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
SCALE
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
MATCHLINE SHEET 6 STA. 508+44.06 -L-
REVISIONS
WCB
SBK
495+00
500+00
505+00
N 78° 53' 33.8" W
N 21° 34'
N 33° 27' 50.5" E
15+00 -Y15-
15+00 -Y14-
20+00 -Y13RPD-
15+00 -Y13RPD-
12+53.22= 10+00.00
-Y15- POT Sta. 17+0
-L- POC Sta. 503+39.23=
-Y15- POT Sta. 14+06.94
=69° 45' 57.7"
-L- POC Sta. 507+88.00
-Y13RPD- POT Sta. 10+00.00
71.00' RT
-Y15- POT Sta. 10+00.00
-Y14- POT Sta. 10+0
PROPOSED 2@6'x5' RCBC
WETLAND CD IMPACT
SITE 1
SITE 2
SITE 3
STREAM BP IMPACT
WETLAND CE IMPACT
STREAM BQ IMPACT
WCD
WCE (1)
WCE (2)
SBP
SBO
SBT
RHODES, RAYMOND LEONARD
PROPERTIES
SOUTHERN RR
10' BST
20' BST
9' SOIL
PA GR
PA SOIL
MURRIS
TANKS
WALL
WANTAGE WAY
5/14/99
9:32:23 AM
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PROJECT REFERENCE NO.	SHEET NO.
R-2828	4

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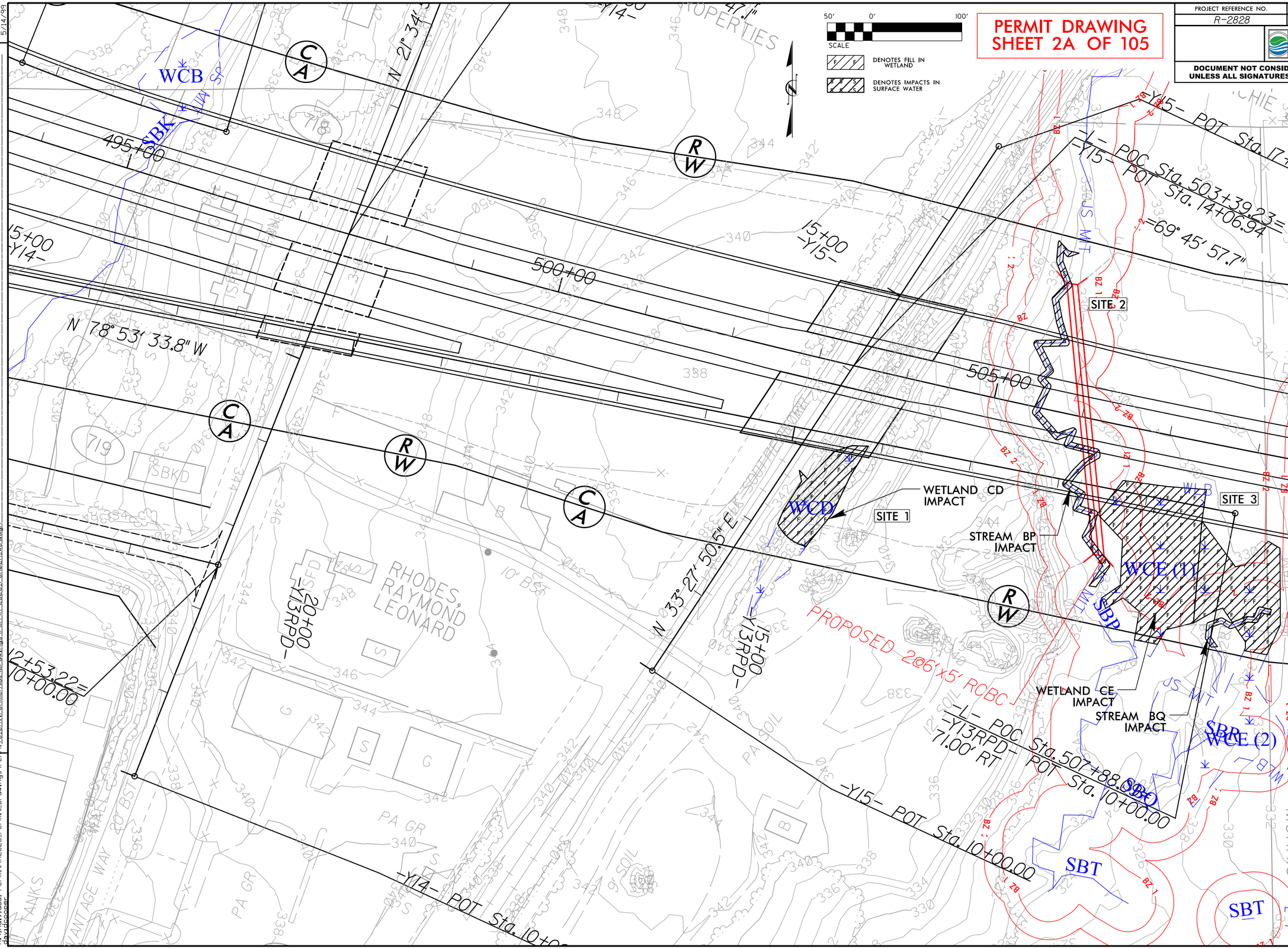

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PROJECT REFERENCE NO.	SHEET NO.
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ECOLOGICAL ENGINEERING

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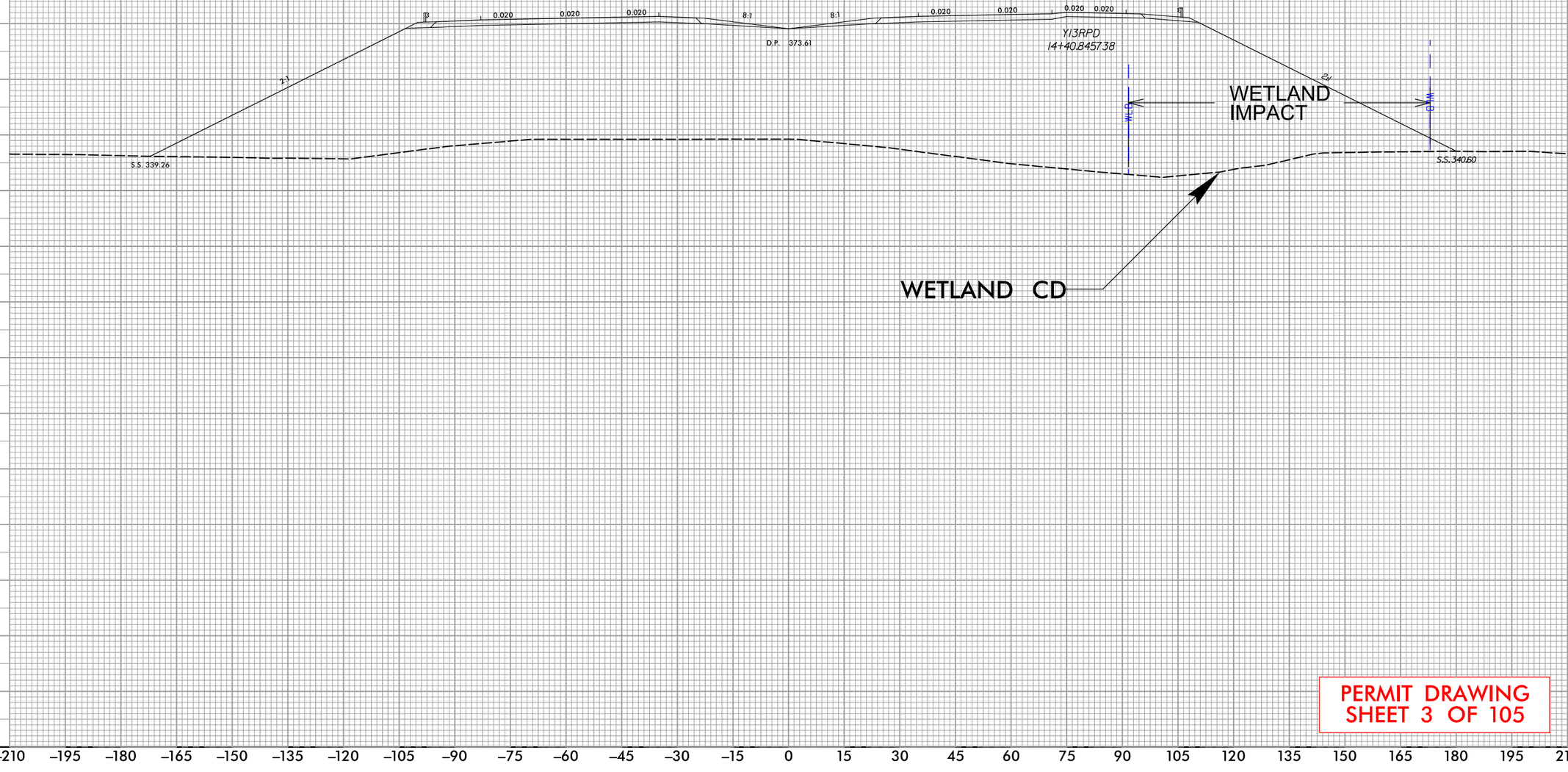
CROSS–SECTION A–A
SITE 1, WETLAND CD
STATION 503+50 –L–



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REVISIONS

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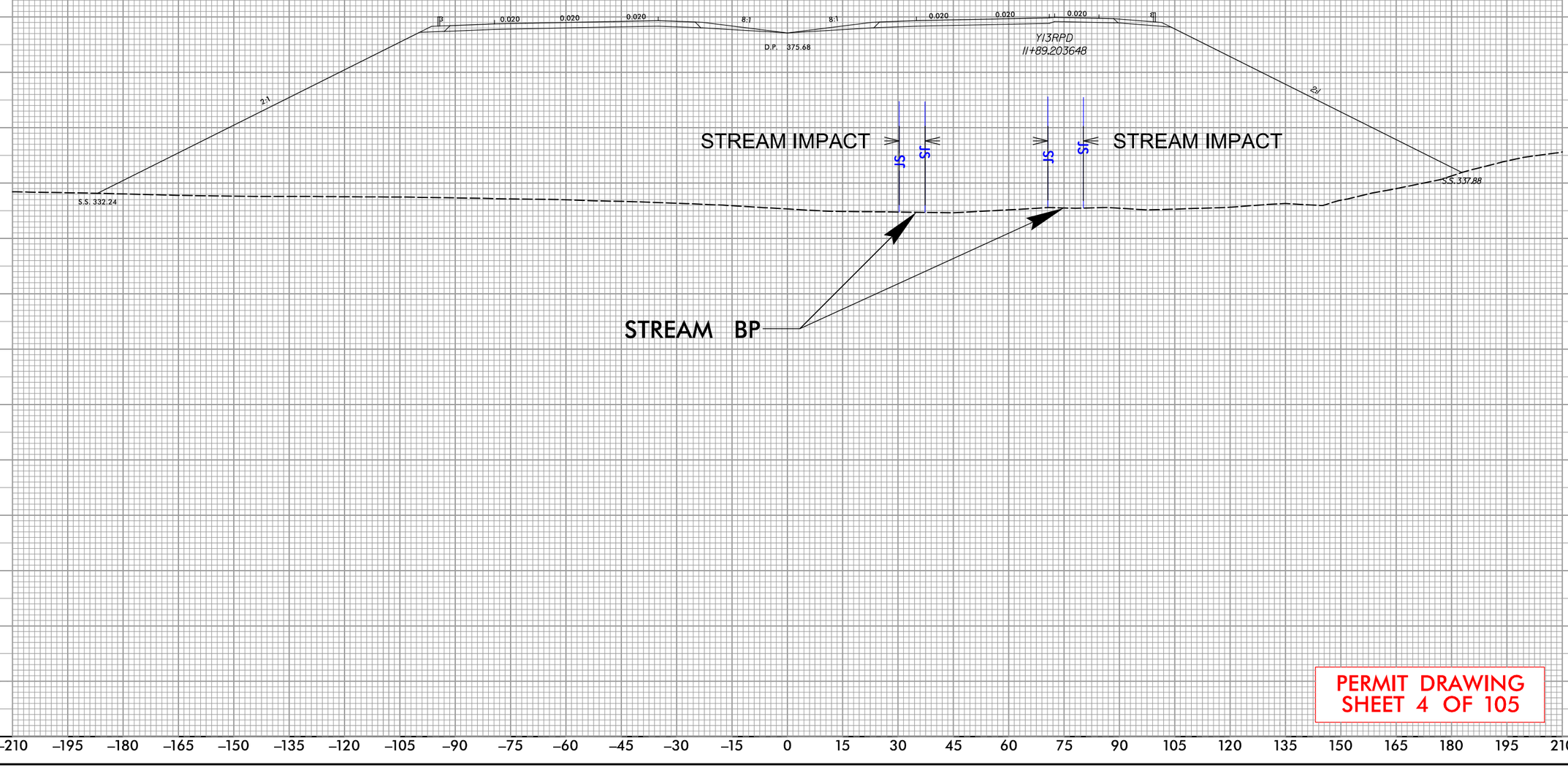
CROSS–SECTION B–B
SITE 2, STREAM BP
STATION 506+00 –L–



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PROJECT REFERENCE NO.	SHEET NO.
R-2828	

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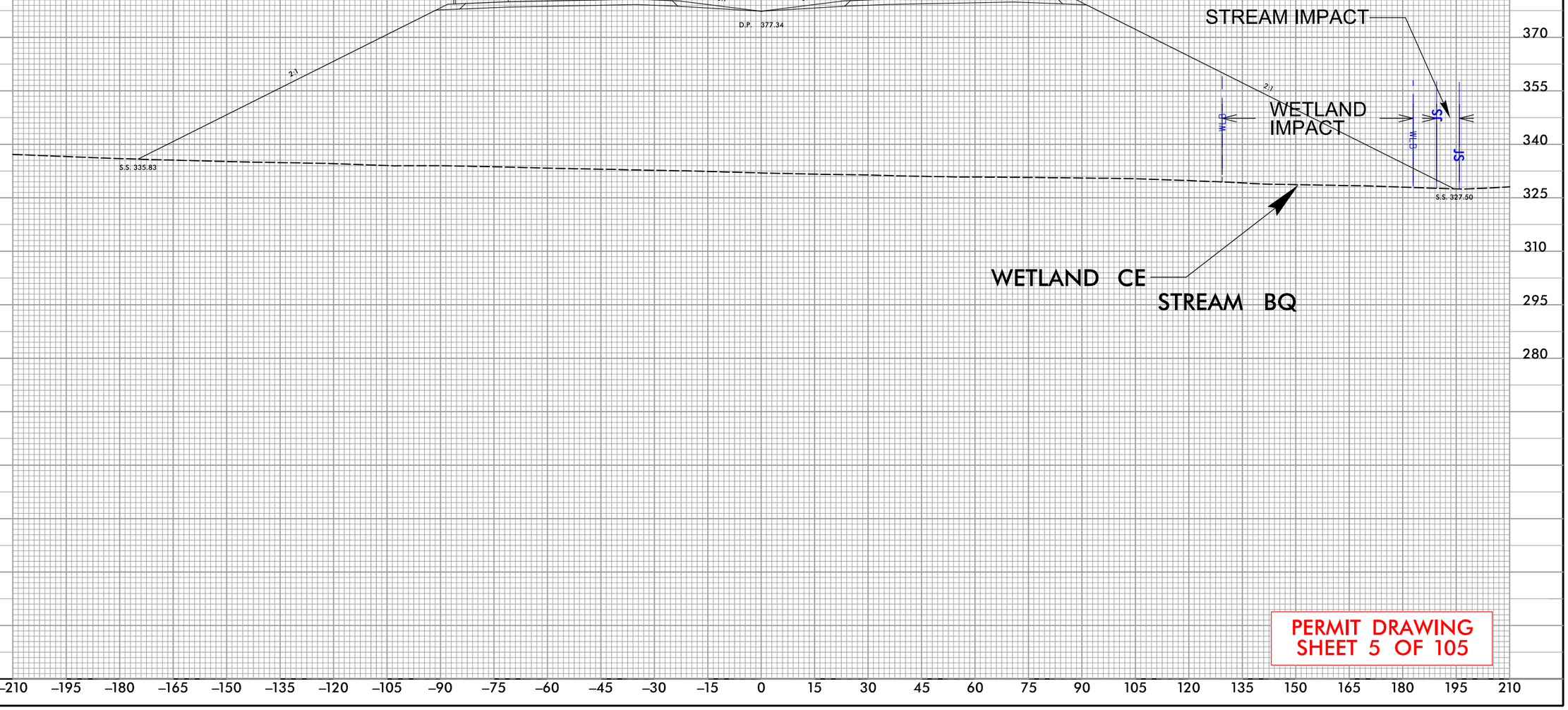
CROSS-SECTION C-C
SITE 3, WETLAND CE & STREAM BQ
STATION 508+00 -L-



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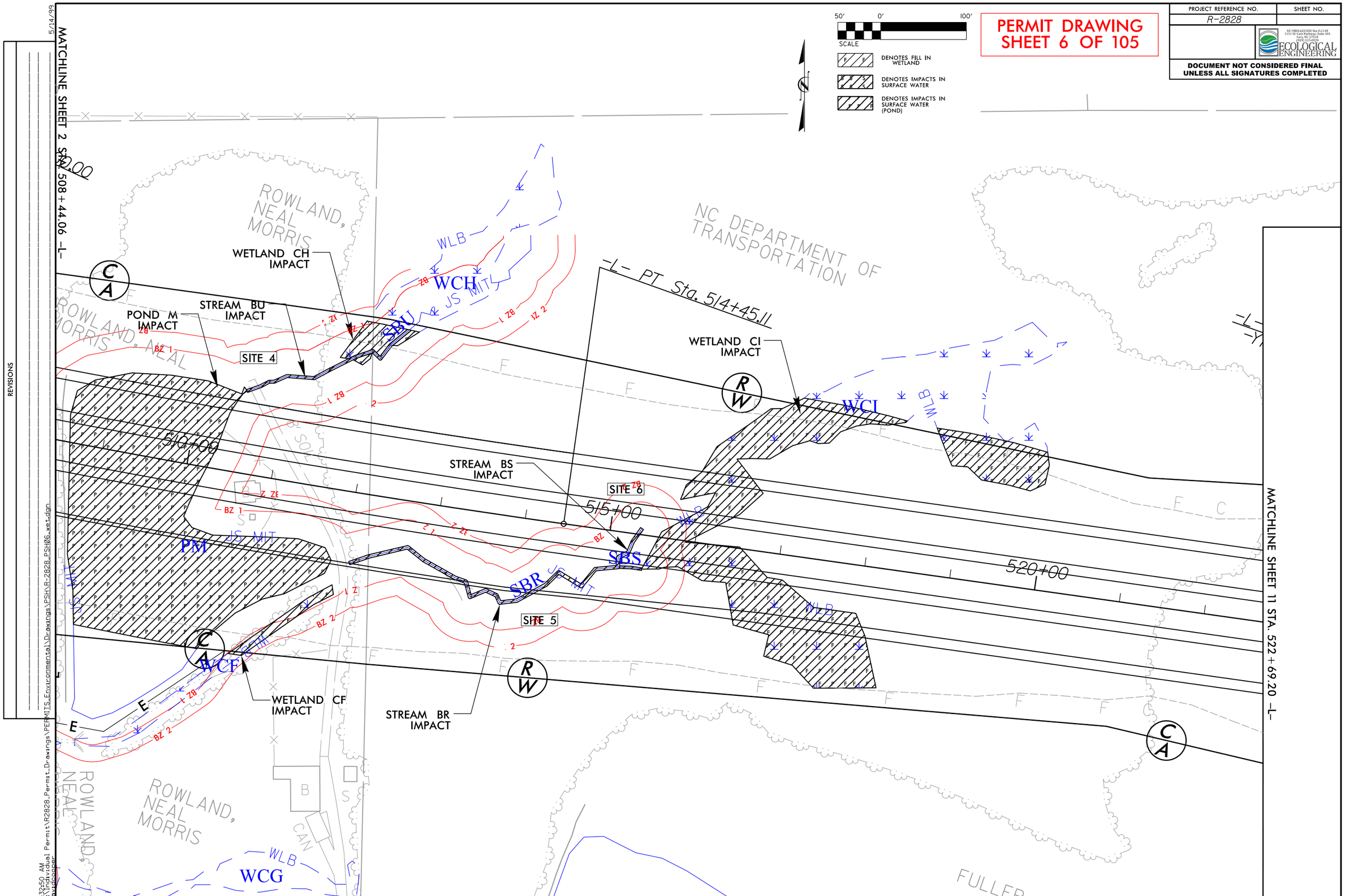
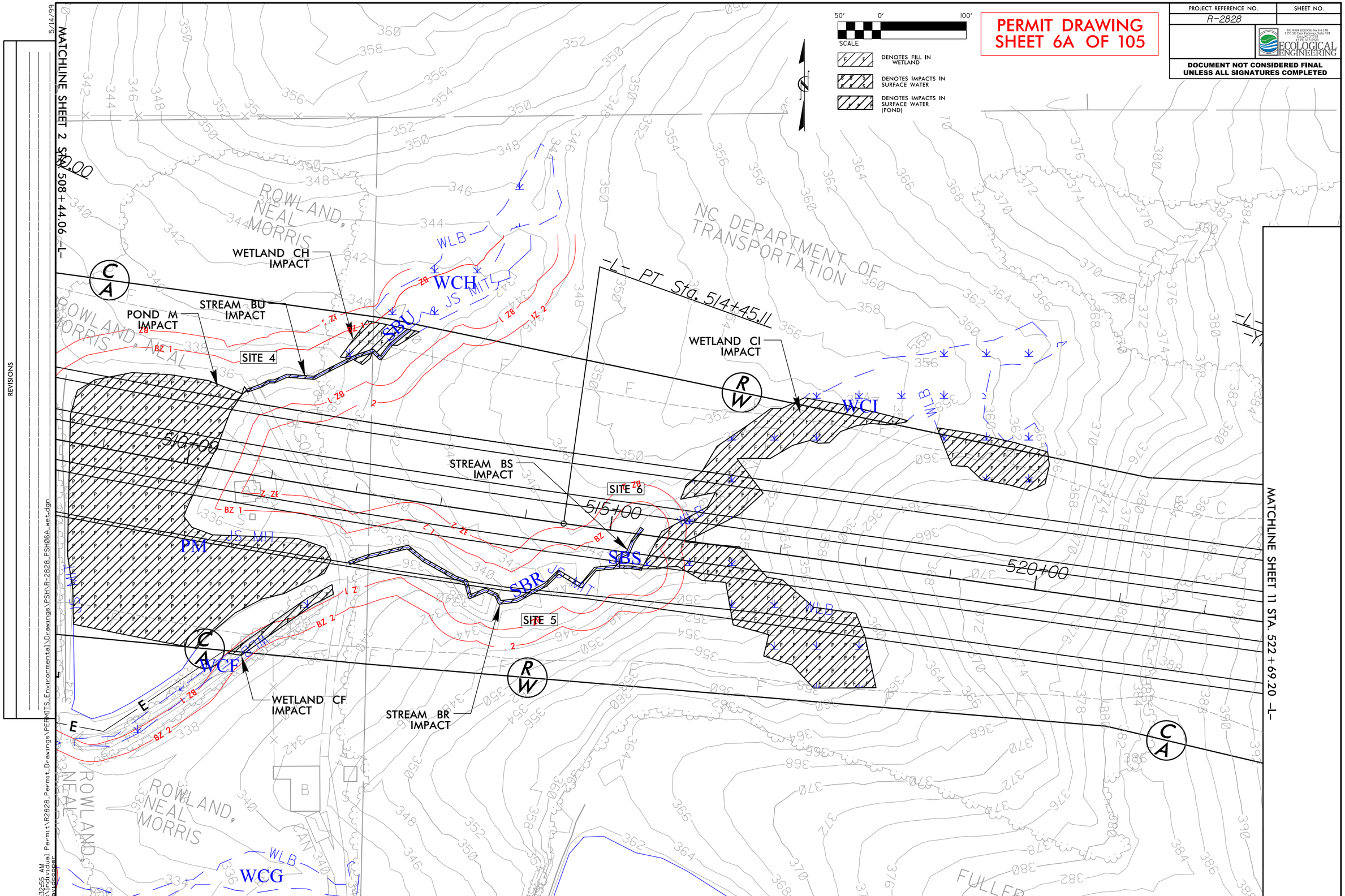


PROJECT REFERENCE NO.
R-2828
SHEET NO.
ECOLOGICAL ENGINEERING
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
PERMIT DRAWING
SHEET 6 OF 105
SCALE
50' 0' 100'
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
DENOTES IMPACTS IN SURFACE WATER (POND)
MATCHLINE SHEET 2 STA. 508+44.06 -L-
MATCHLINE SHEET 11 STA. 522+69.20 -L-
REVISIONS
5/14/99
ROWLAND, NEAL MORRIS
NC DEPARTMENT OF TRANSPORTATION
WETLAND CH IMPACT
POND M IMPACT
STREAM BU IMPACT
SITE 4
WCH
SBU
WLB
JS MIT
-L- PT Sta. 514+45.11
WETLAND CI IMPACT
WCI
STREAM BS IMPACT
SITE 6
515+00
510+00
520+00
PM
SBS
SBR
SITE 5
WCF
WETLAND CF IMPACT
STREAM BR IMPACT
WCG
FULLER



PERMIT DRAWING
SHEET 6A OF 105
PROJECT REFERENCE NO.
R-2828
SHEET NO.
ECOLOGICAL ENGINEERING
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
SCALE
50' 0' 100'
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
DENOTES IMPACTS IN SURFACE WATER (POND)
MATCHLINE SHEET 2 STA. 508+44.06 -L-
MATCHLINE SHEET 11 STA. 522+69.20 -L-
REVISIONS
5/14/99
ROWLAND, NEAL MORRIS
NC DEPARTMENT OF TRANSPORTATION
WETLAND CH IMPACT
STREAM BU IMPACT
POND M IMPACT
SITE 4
WCH
SBU
WLB
JS MIT
-L- PT Sta. 514+45.11
WETLAND CI IMPACT
WCI
STREAM BS IMPACT
SITE 6
515+00
520+00
510+00
PM
SBS
SBR
SITE 5
WCF
WETLAND CF IMPACT
STREAM BR IMPACT
WCG
FULLER

PROJECT REFERENCE NO.	SHEET NO.
R-2828	

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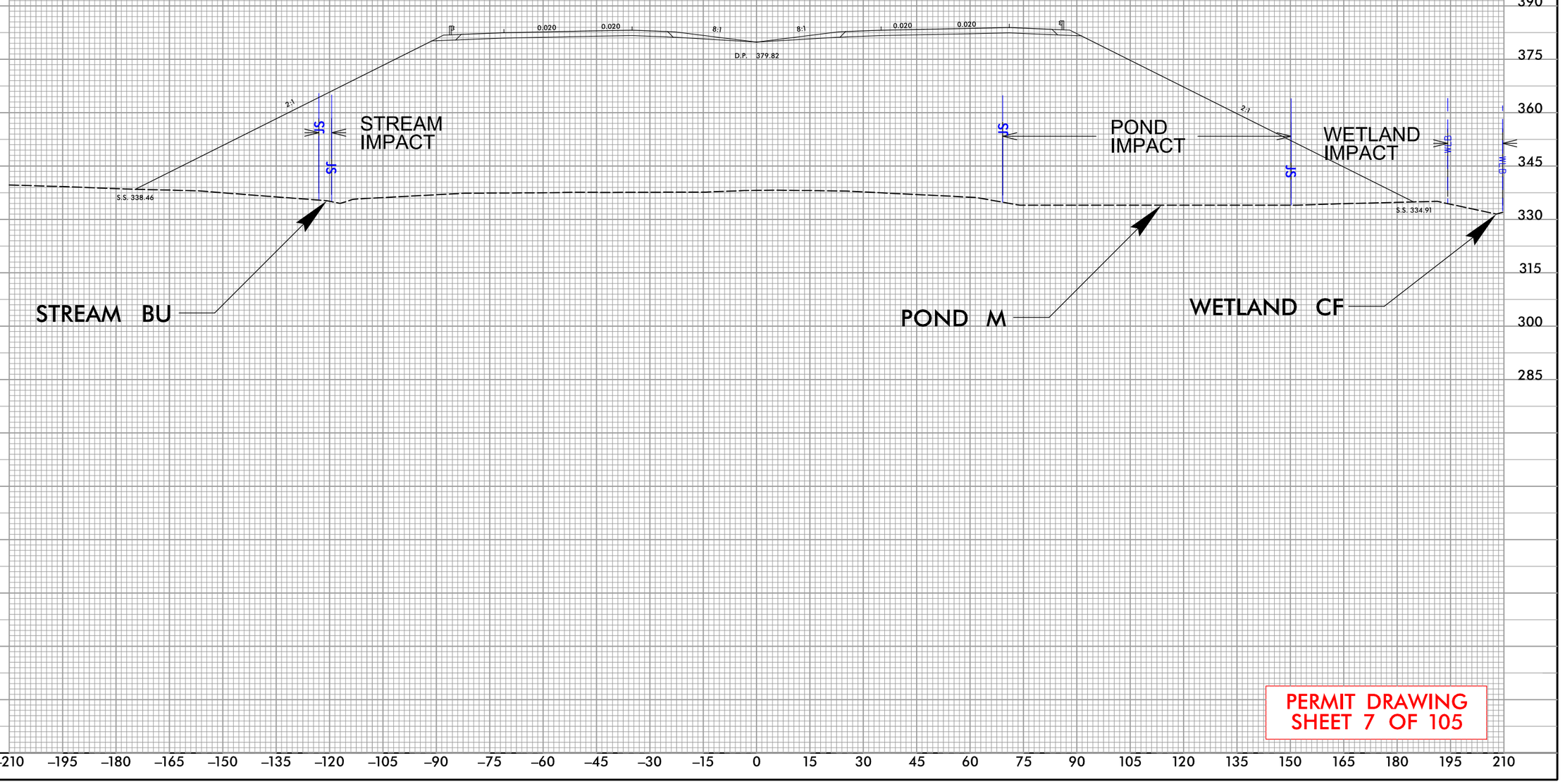
CROSS–SECTION D–D
SITES 4 & 5, STREAM BU, POND M, & WETLAND CF STATION 511+00 –L–



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SHEET 7 OF 105

REVISIONS

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CROSS–SECTION E–E
SITE 4, WETLAND CH & STREAM BU
STATION 512 + 00 –L–

PROJECT REFERENCE NO.	SHEET NO.
R-2828	

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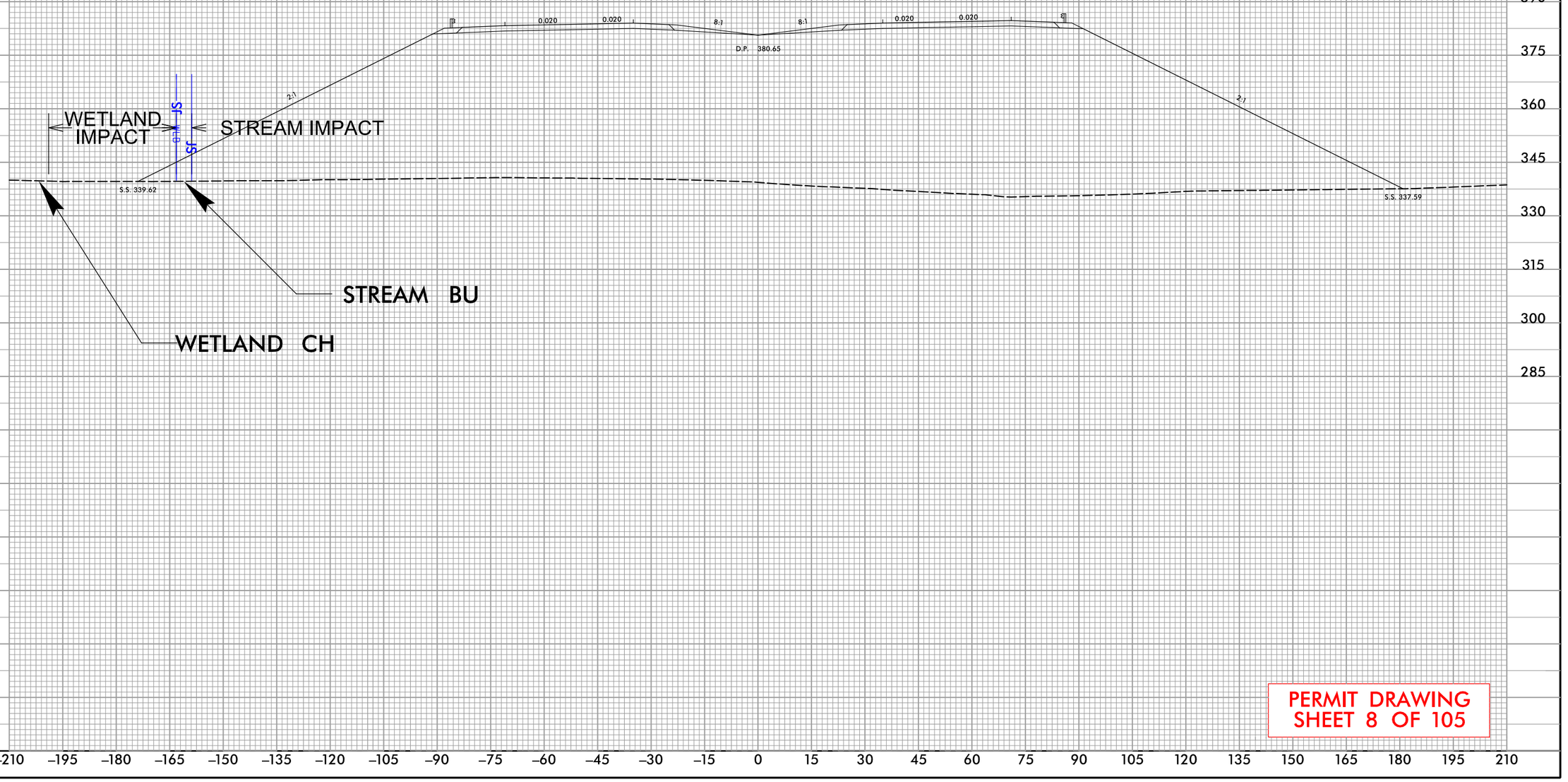

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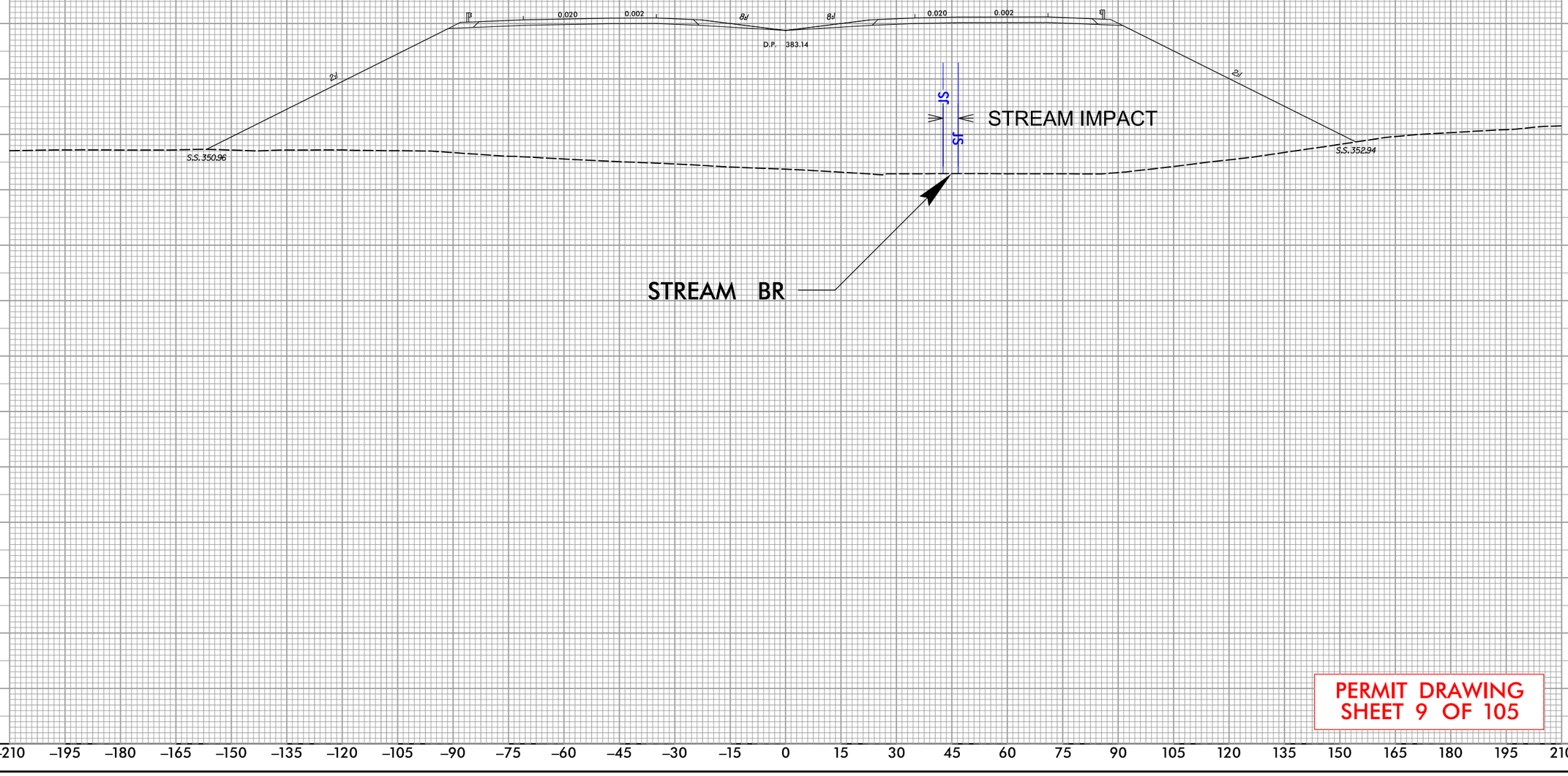
CROSS–SECTION F–F
SITE 5, STREAM BR
STATION 515+00 –L–



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SHEET 9 OF 105

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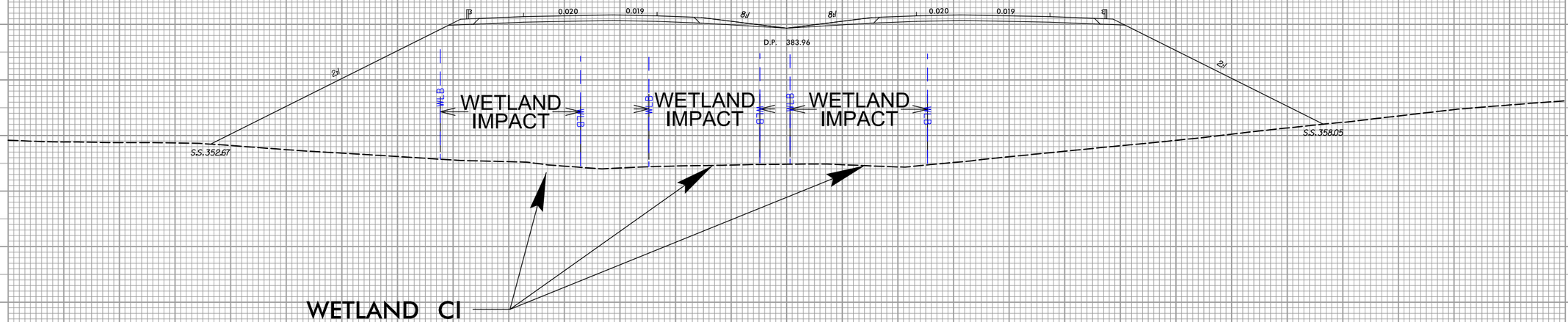
CROSS–SECTION G–G
SITE 5, WETLAND CI
STATION 516+00 –L–



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SHEET 10 OF 105

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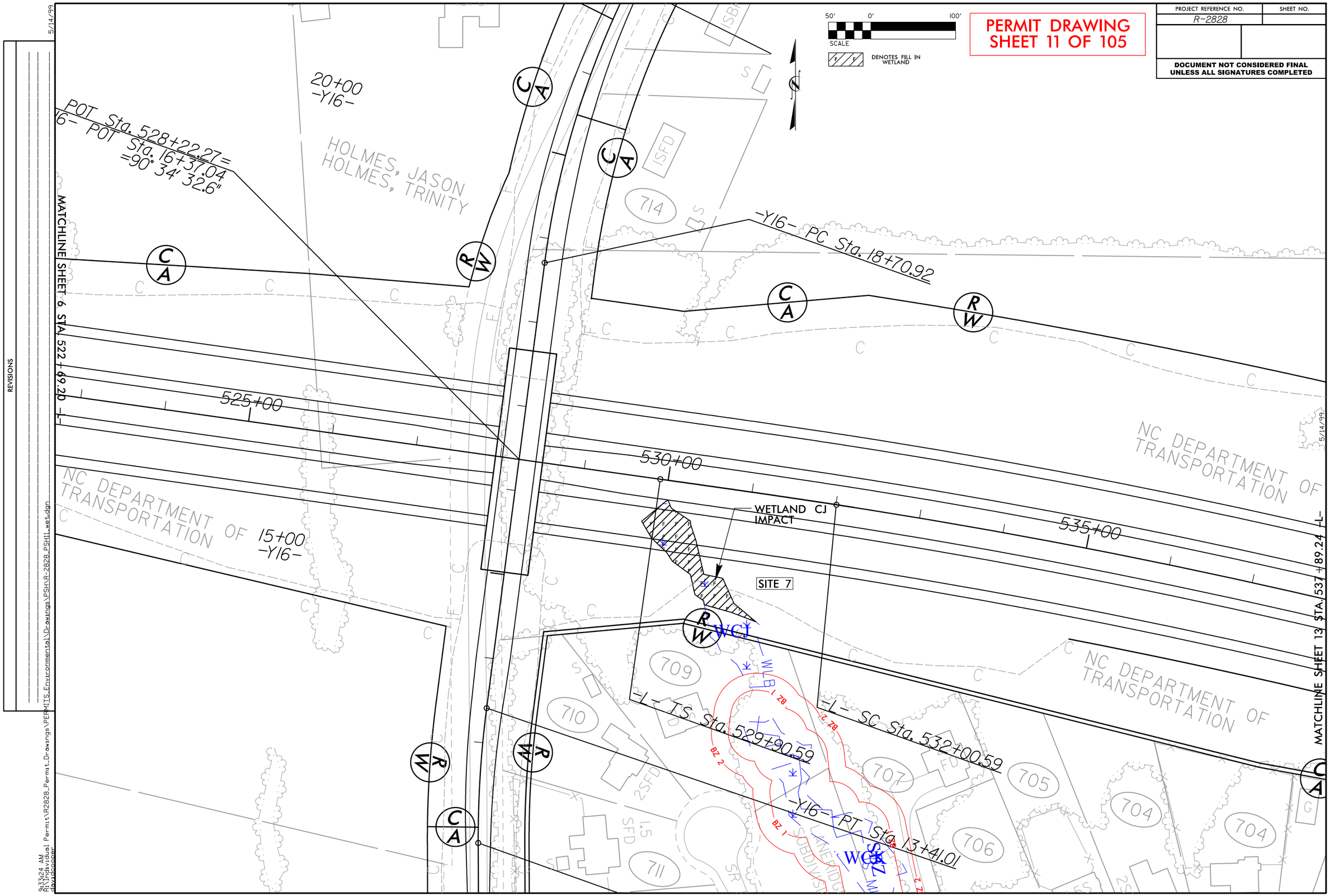

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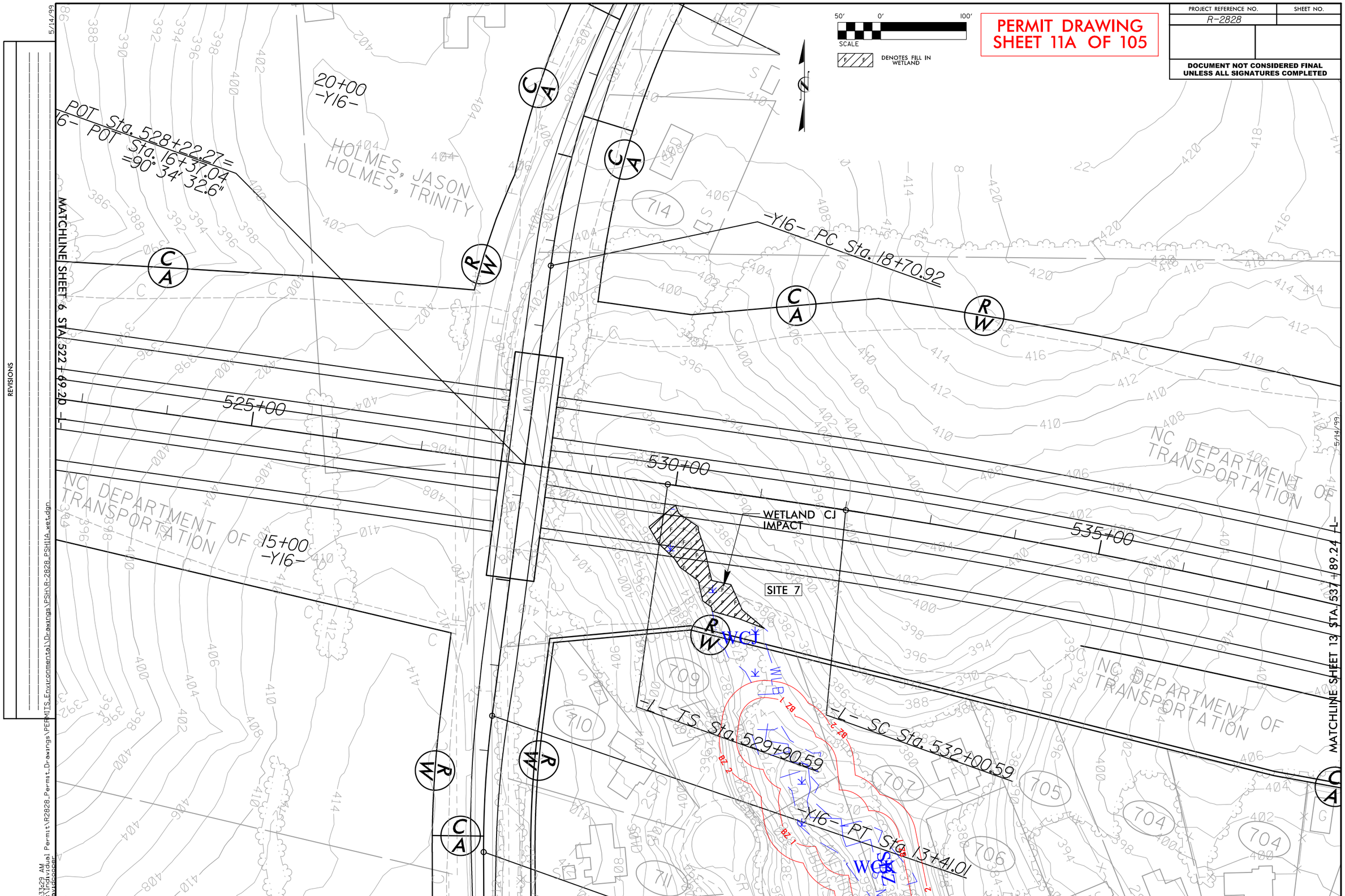
SHEET 11 OF 105
PROJECT REFERENCE NO.
R-2828
SHEET NO.
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
50' 0' 100'
SCALE
DENOTES FILL IN WETLAND
20+00
-Y16-
POT Sta. 528+22.27=
16- POT Sta. 16+37.04
=90° 34' 32.6"
HOLMES, JASON
HOLMES, TRINITY
-Y16- PC Sta. 18+70.92
525+00
530+00
535+00
15+00
-Y16-
NC DEPARTMENT OF TRANSPORTATION
WETLAND CJ IMPACT
SITE 7
-L- TS Sta. 529+90.59
-L- SC Sta. 532+00.59
-Y16- PT Sta. 13+41.01
MATCHLINE SHEET 6 STA. 522+69.20 -L-
MATCHLINE SHEET 13 STA. 537+89.24 -L-
REVISIONS
5/14/99



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SHEET 11A OF 105
PROJECT REFERENCE NO.
R-2828
SHEET NO.
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
50' 0' 100'
SCALE
DENOTES FILL IN WETLAND
20+00
-Y16-
POT Sta. 528+22.27=
16- POT Sta. 16+37.04
=90° 34' 32.6"
HOLMES, JASON
HOLMES, TRINITY
-Y16- PC Sta. 18+70.92
525+00
530+00
535+00
15+00
-Y16-
NC DEPARTMENT OF TRANSPORTATION
WETLAND CJ IMPACT
SITE 7
-L- TS Sta. 529+90.59
-L- SC Sta. 532+00.59
-Y16- PT Sta. 13+41.01
MATCHLINE SHEET 6 STA. 522+69.20 -L-
MATCHLINE SHEET 13 STA. 537+89.24 -L-
REVISIONS
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PROJECT REFERENCE NO.	SHEET NO.
R-2828	

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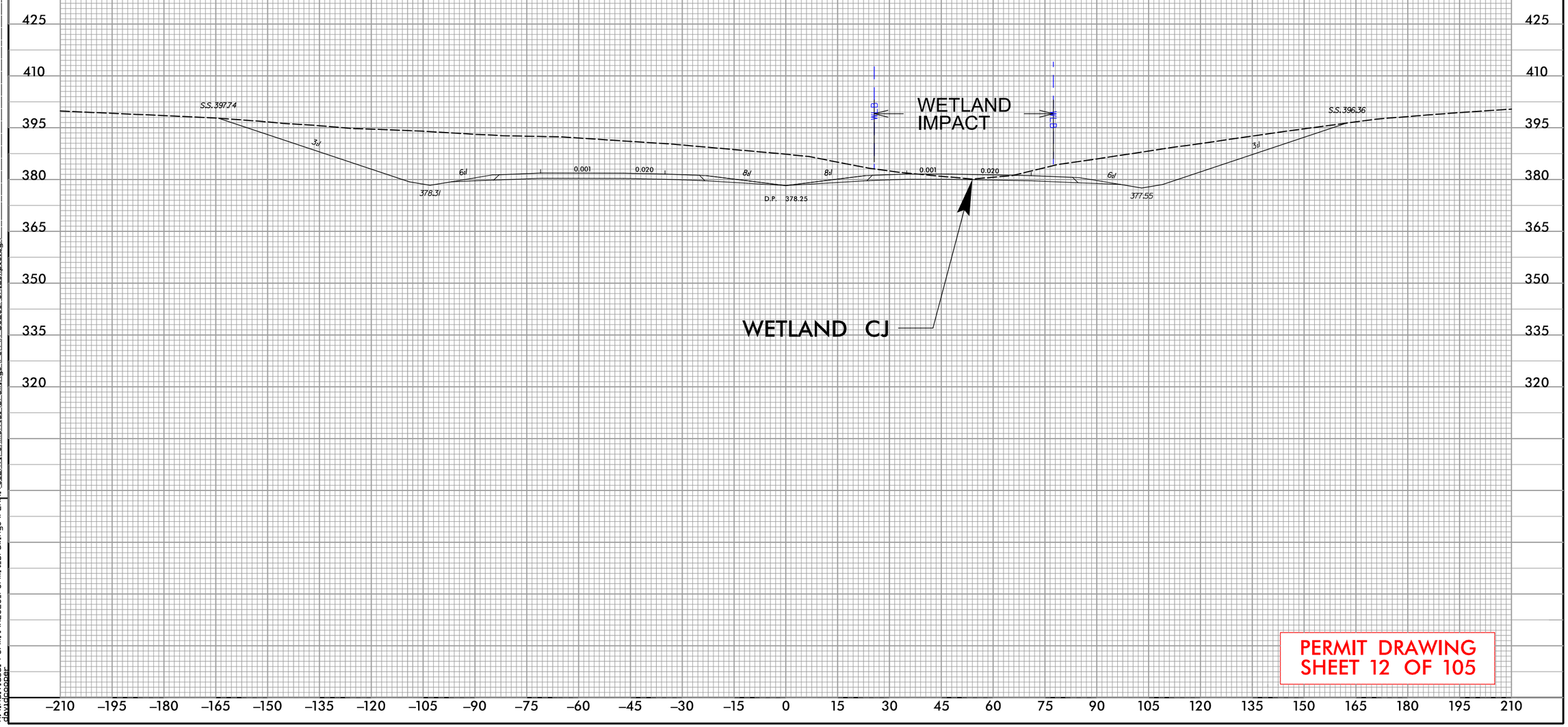
CROSS–SECTION H–H
SITE 7, WETLAND CJ
STATION 530+00 –L–



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SHEET 12 OF 105

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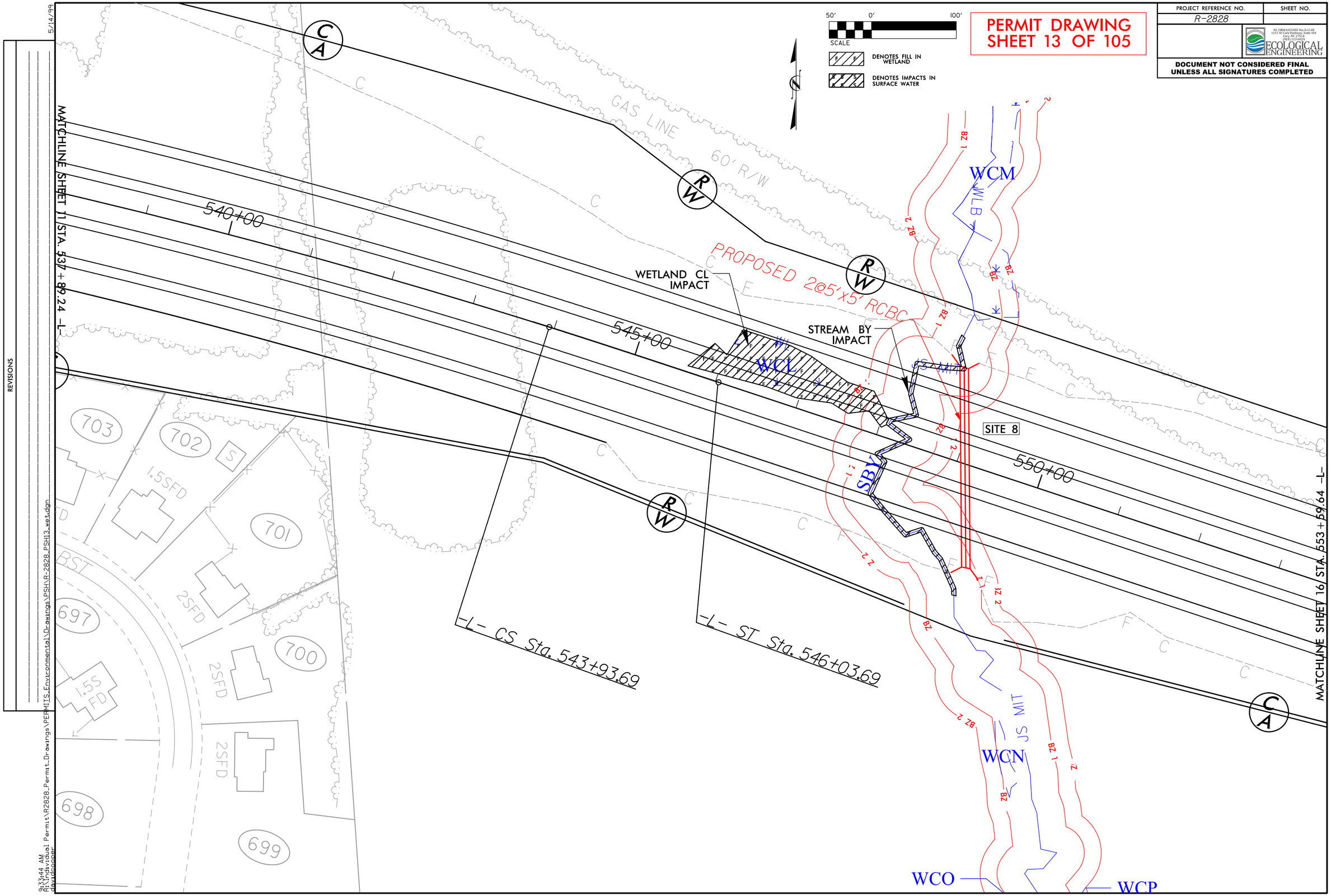

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SHEET 13 OF 105
PROJECT REFERENCE NO.
R-2828
SHEET NO.
ECOLOGICAL ENGINEERING
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
SCALE
50' 0' 100'
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
MATCHLINE SHEET 11 STA. 537+89.24 -L-
MATCHLINE SHEET 16 STA. 553+59.64 -L-
GAS LINE 60' R/W
PROPOSED 2@5'x5' RCBC
WETLAND CL IMPACT
STREAM BY IMPACT
SITE 8
WCM
WCL
SBY
WCN
WCO
WCP
JS MIT
WLB
540+00
545+00
550+00
-L- CS Sta. 543+93.69
-L- ST Sta. 546+03.69
703
702
701
700
697
698
699
1.5SFD
2SFD
1.5S FD
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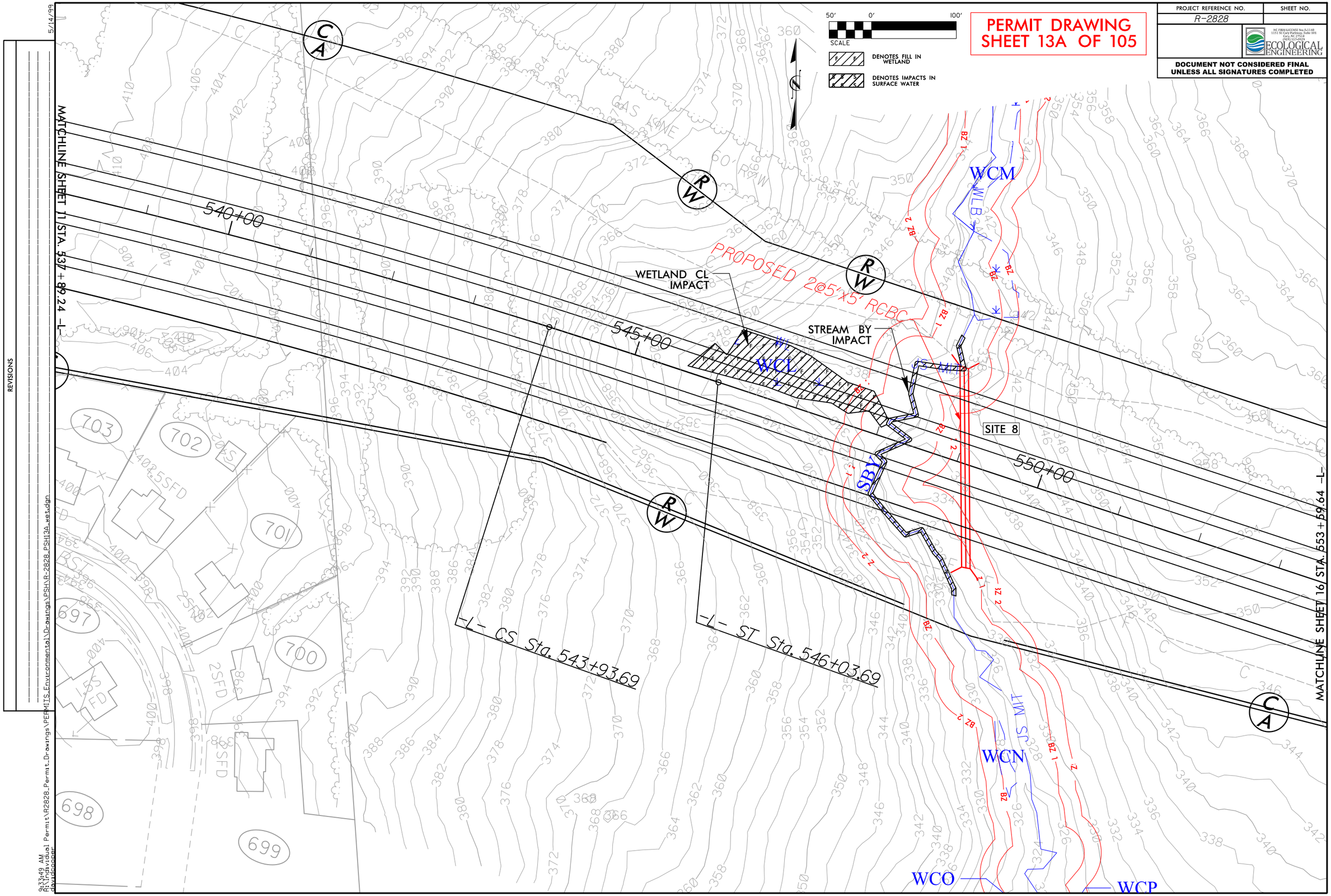

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SHEET 13A OF 105
PROJECT REFERENCE NO.
R-2828
SHEET NO.
ECOLOGICAL ENGINEERING
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
50' 0' 100'
SCALE
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
MATCHLINE SHEET 11 STA. 537+89.24 -L-
MATCHLINE SHEET 16 STA. 553+59.64 -L-
540+00
545+00
550+00
WETLAND CL IMPACT
STREAM BY IMPACT
PROPOSED 2@5'x5' RCBC
WCL
WCM
WCN
WCO
WCP
SITE 8
SBY
-L- CS Sta. 543+93.69
-L- ST Sta. 546+03.69
REVISIONS
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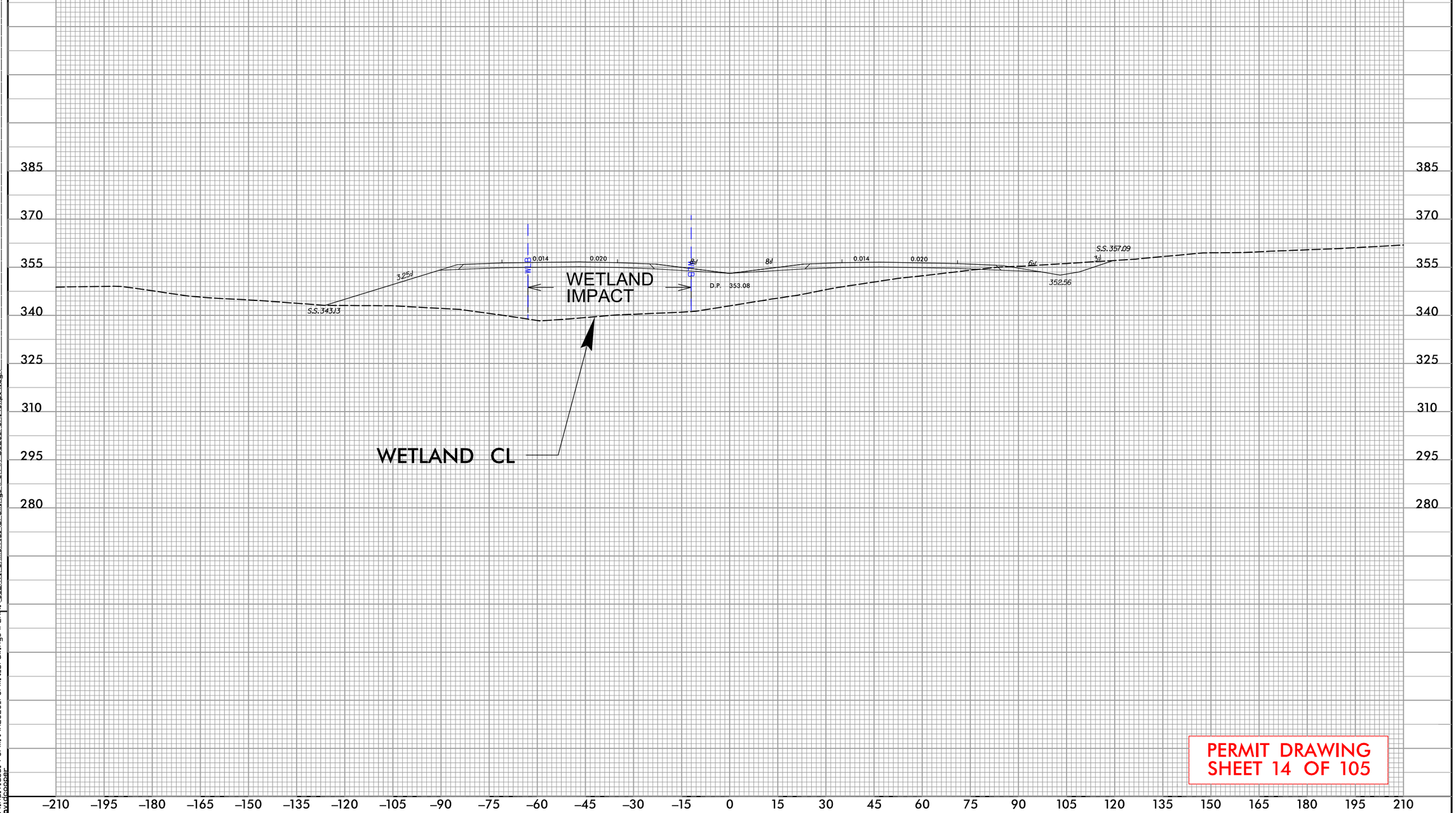
CROSS–SECTION I–I
SITE 8, WETLAND CL
STATION 547+00 –L–



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SHEET 14 OF 105

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ECOLOGICAL ENGINEERING

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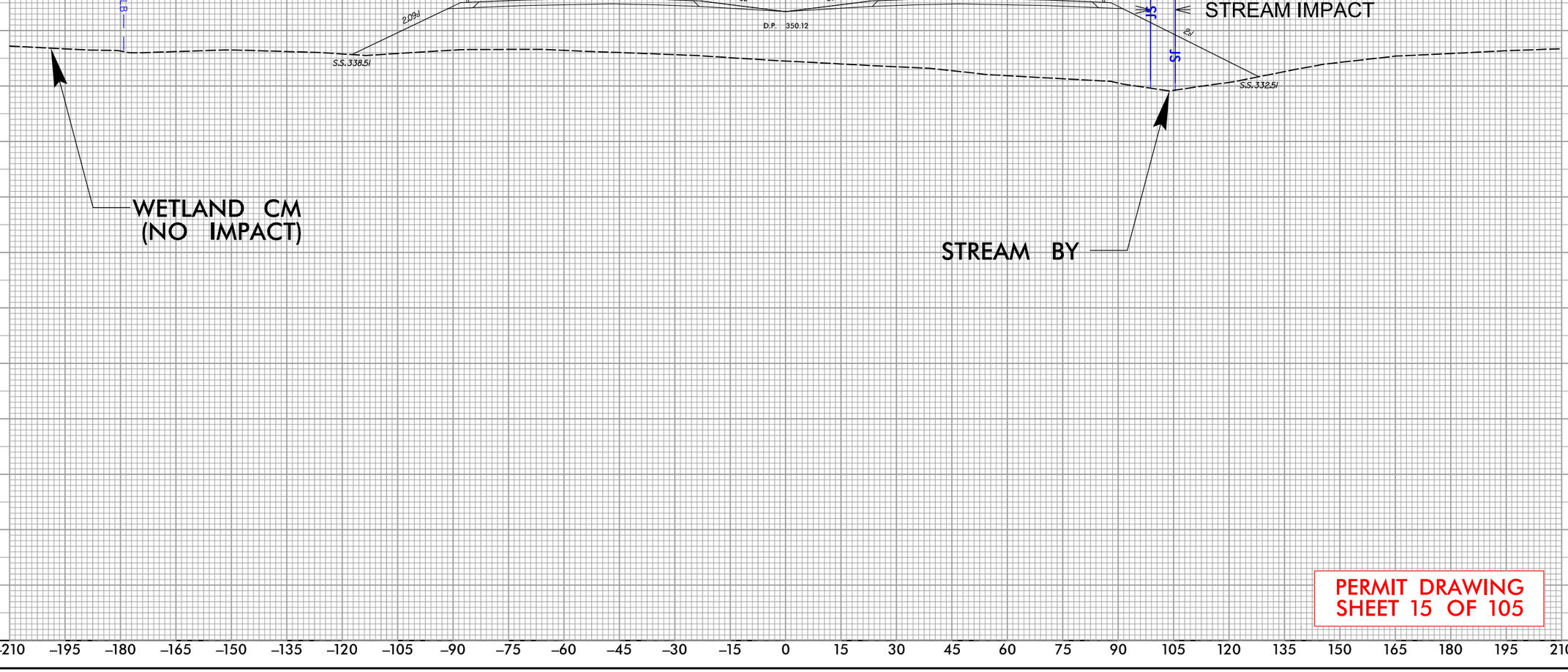
CROSS–SECTION J–J
SITE 8, STREAM BY
STATION 549+00 –L–



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SHEET 15 OF 105

REVISIONS
5/14/99

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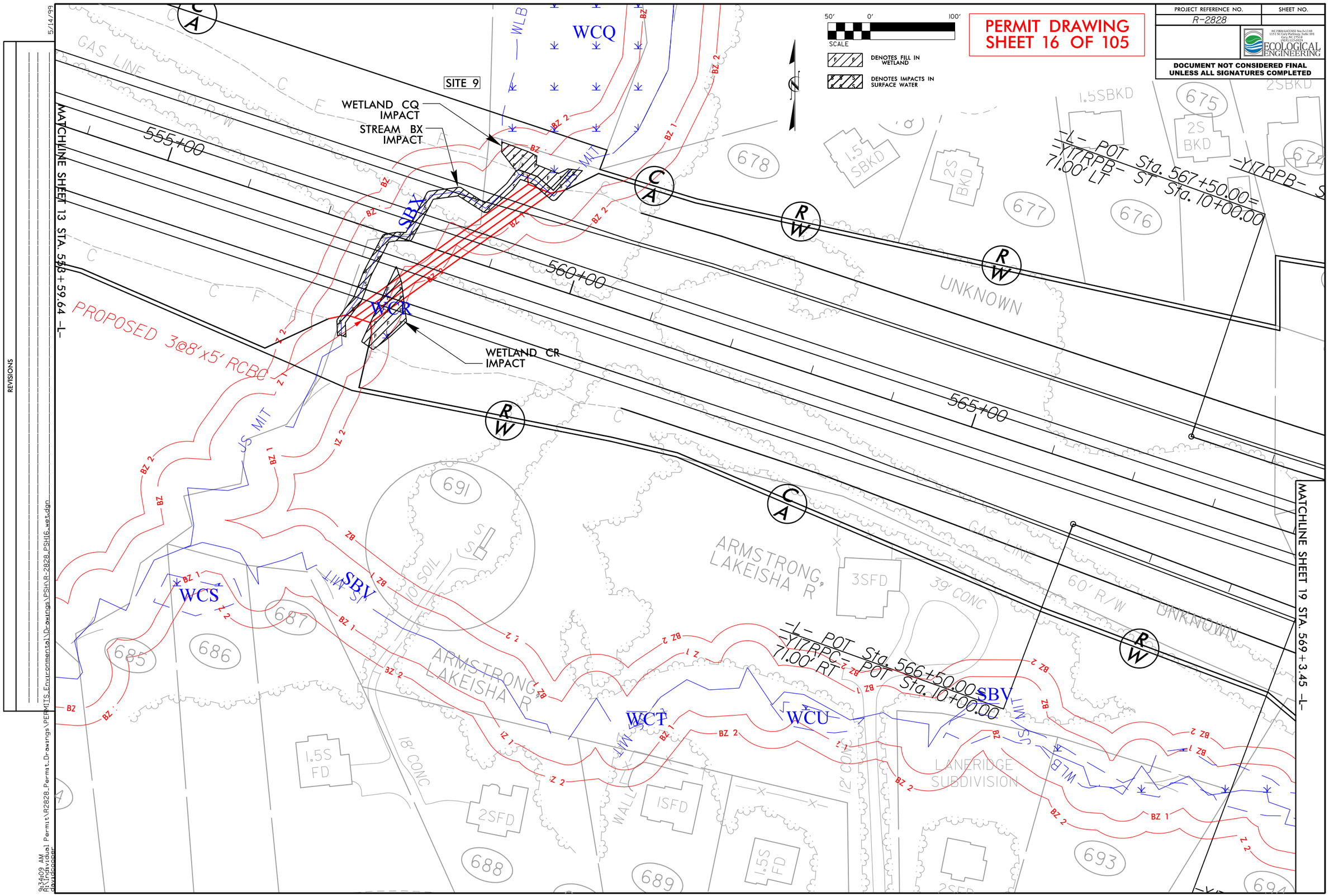
davidcooper



PERMIT DRAWING
SHEET 16 OF 105
PROJECT REFERENCE NO.
R-2828
SHEET NO.
ECOLOGICAL ENGINEERING
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
SCALE
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
SITE 9
WETLAND CQ IMPACT
STREAM BX IMPACT
WETLAND CR IMPACT
WCQ
WCR
WCS
WCT
WCU
SBX
SBV
555+00
560+00
565+00
PROPOSED 3@8'x5' RCBC
-L- POT Sta. 567+50.00= -Y17RPB- ST Sta. 10+00.00 71.00' LT
-L- POT Sta. 566+50.00= -Y17RPC- POT Sta. 10+00.00 71.00' RT
MATCHLINE SHEET 13 STA. 553+59.64 -L-
MATCHLINE SHEET 19 STA. 569+3.45 -L-
GAS LINE 60' R/W
UNKNOWN
ARMSTRONG, LAKEISHA R
LANERIDGE SUBDIVISION
REVISIONS
5/14/99
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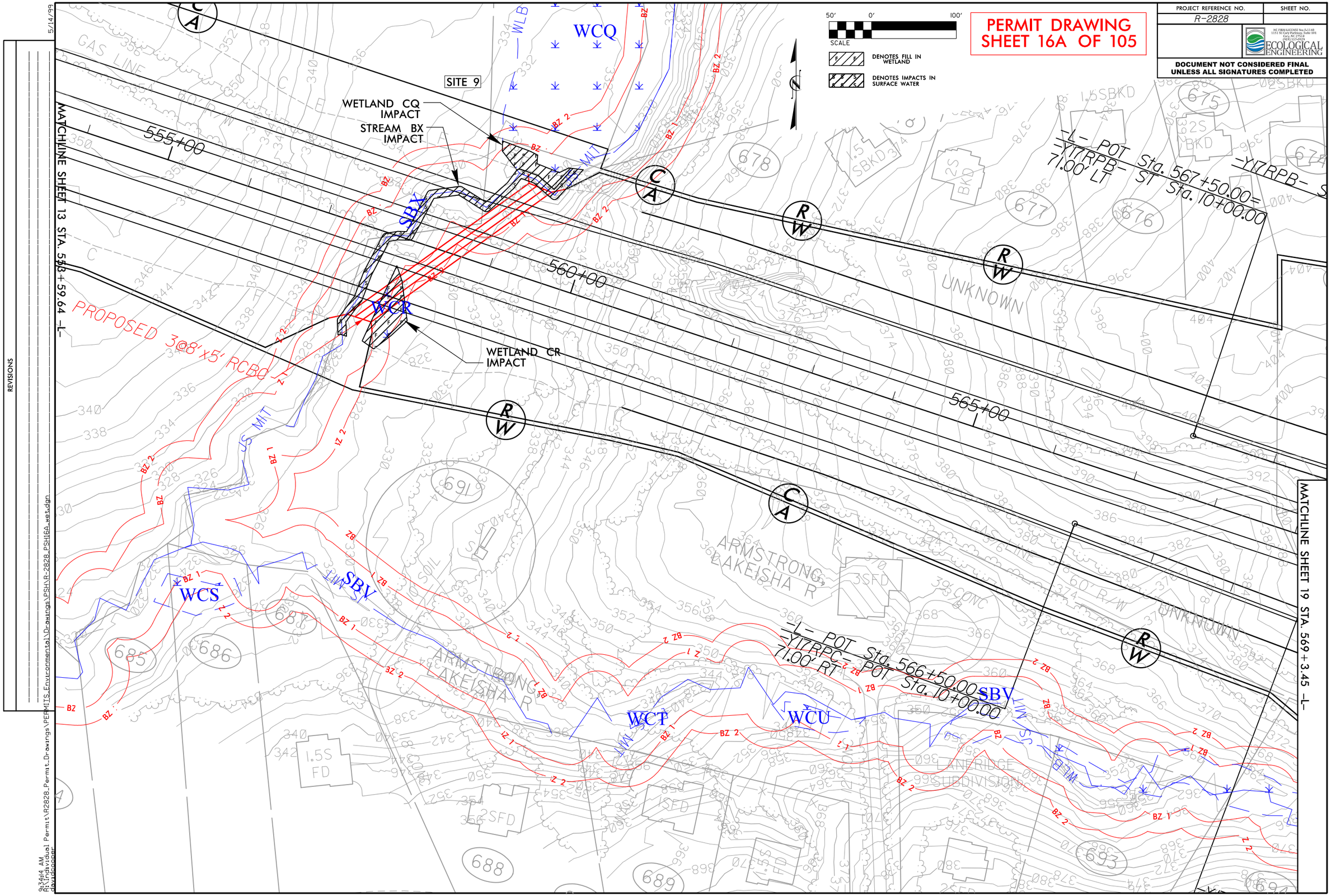
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SHEET 16A OF 105
PROJECT REFERENCE NO.
R-2828
SHEET NO.
ECOLOGICAL ENGINEERING
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
SCALE
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
SITE 9
WETLAND CQ IMPACT
STREAM BX IMPACT
WETLAND CR IMPACT
PROPOSED 3@8'x5' RCBC
-L- POT Sta. 567+50.00= -Y17RPB- ST Sta. 10+00.00 71.00' LT
-L- POT Sta. 566+50.00= -Y17RPC- POT Sta. 10+00.00 71.00' RT
MATCHLINE SHEET 13 STA. 553+59.64 -L-
MATCHLINE SHEET 19 STA. 569+3.45 -L-
555+00
560+00
565+00
WCQ
WCR
WCS
WCT
WCU
SBX
SBV
ARMSTRONG LAKEISHA R
UNKNOWN
GAS LINE
REVISIONS
5/14/99
9:34:14 AM
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PROJECT REFERENCE NO.	SHEET NO.
R-2828	

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Cary, NC 27518
(919) 557-5909
ECOLOGICAL ENGINEERING

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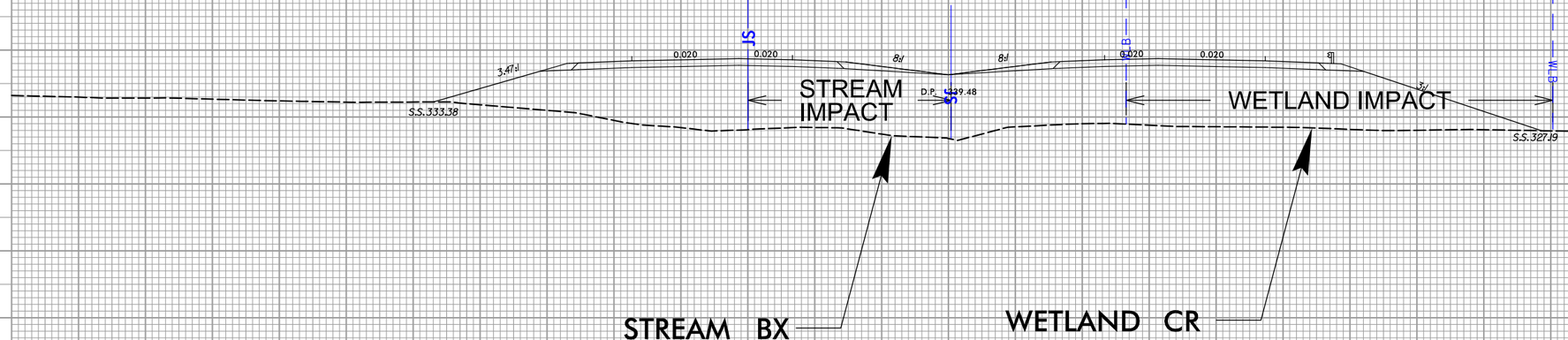
CROSS–SECTION K–K
SITE 9, WETLAND CR & STREAM BX
STATION 558+00 –L–



PERMIT DRAWING
SHEET 17 OF 105

REVISIONS

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PROJECT REFERENCE NO.	SHEET NO.
R-2828	

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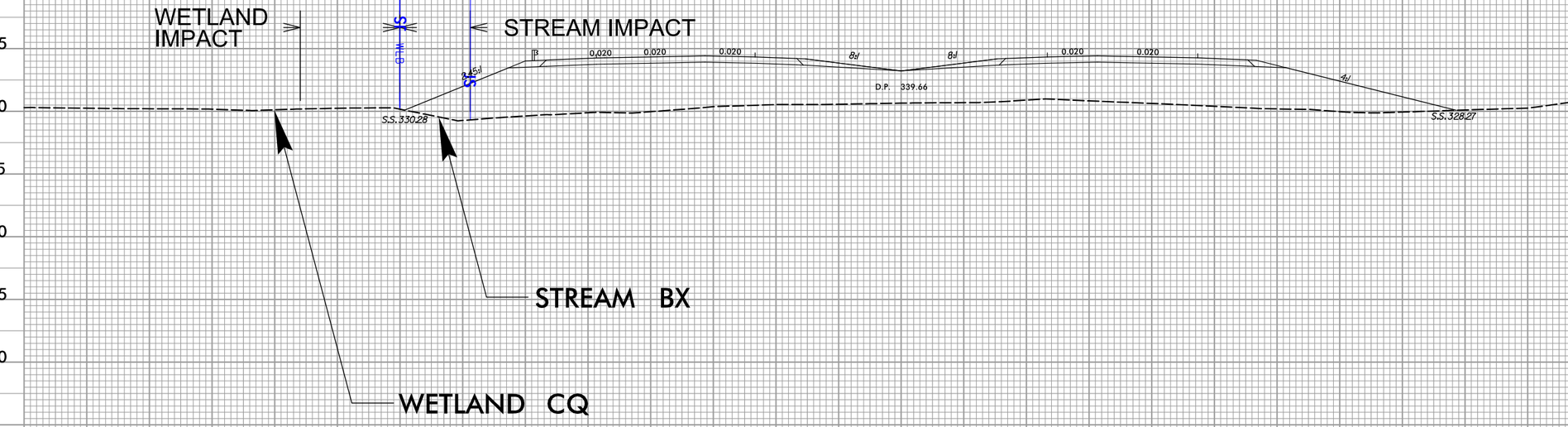
CROSS–SECTION L–L
SITE 9, WETLAND CQ & STREAM BX
STATION 559+00 –L–



PERMIT DRAWING
SHEET 18 OF 105

REVISIONS 5/14/99

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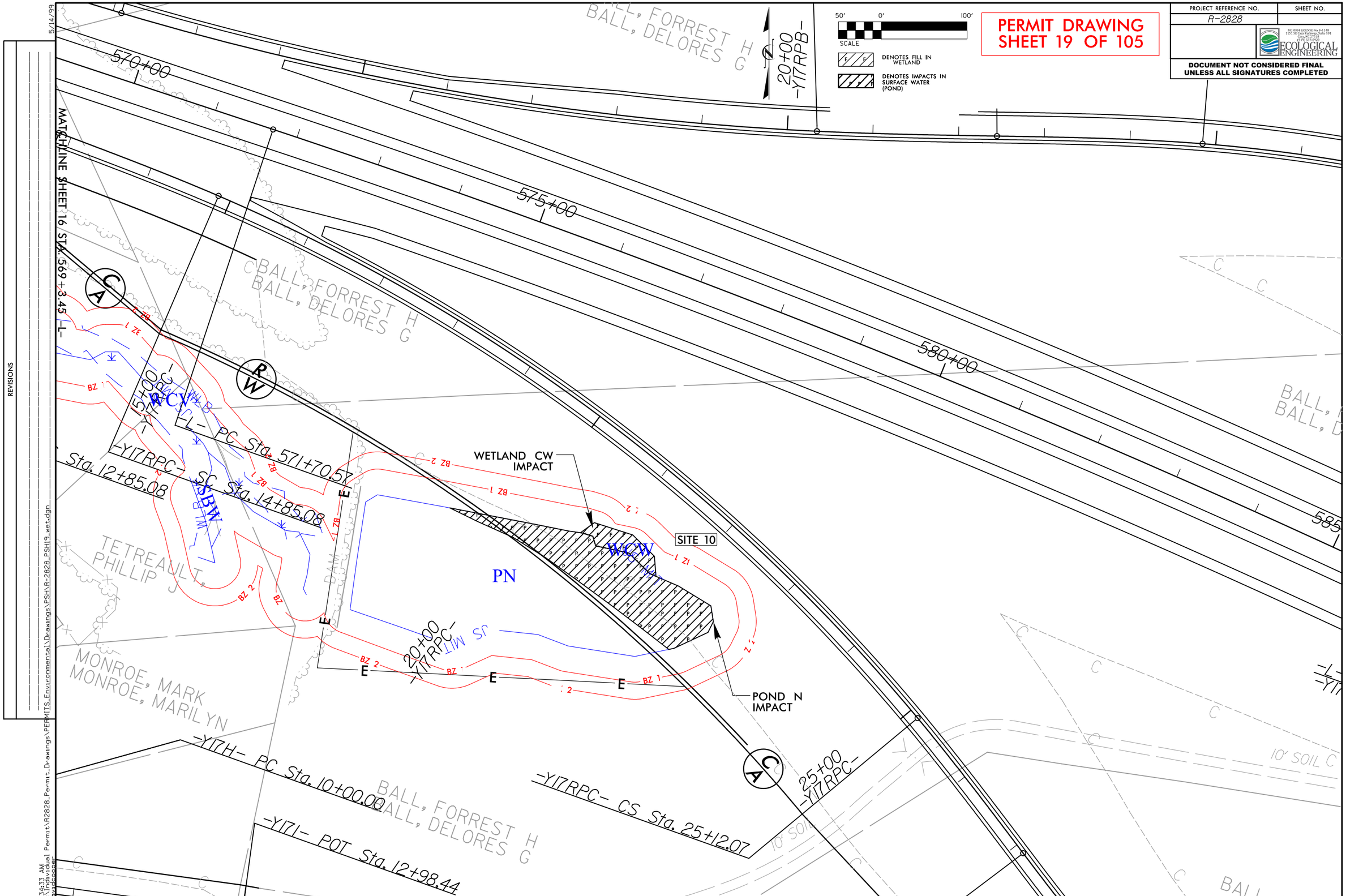

PERMIT DRAWING
SHEET 19 OF 105
PROJECT REFERENCE NO.
R-2828
SHEET NO.
ECOLOGICAL ENGINEERING
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
SCALE
50' 0' 100'
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER (POND)
MATCHLINE SHEET 16 STA. 569+3.45 -L-
570+00
575+00
580+00
585
20+00 -Y17RPB-
25+00 -Y17RPC-
20+00 -Y17RPC-
15+00 -Y17RPC-
-L- PC Sta. 571+70.57
-Y17RPC- SC Sta. 14+85.08
Sta. 12+85.08
-Y17H- PC Sta. 10+00.00
-Y17I- POT Sta. 12+98.44
-Y17RPC- CS Sta. 25+12.07
WETLAND CW IMPACT
POND N IMPACT
SITE 10
PN
WCW
SBW
WCV
BALL, FORREST H
BALL, DELORES G
TETREAULT, PHILLIP J
MONROE, MARK
MONROE, MARILYN
10' SOIL
REVISIONS
5/14/99
9:34:33 AM
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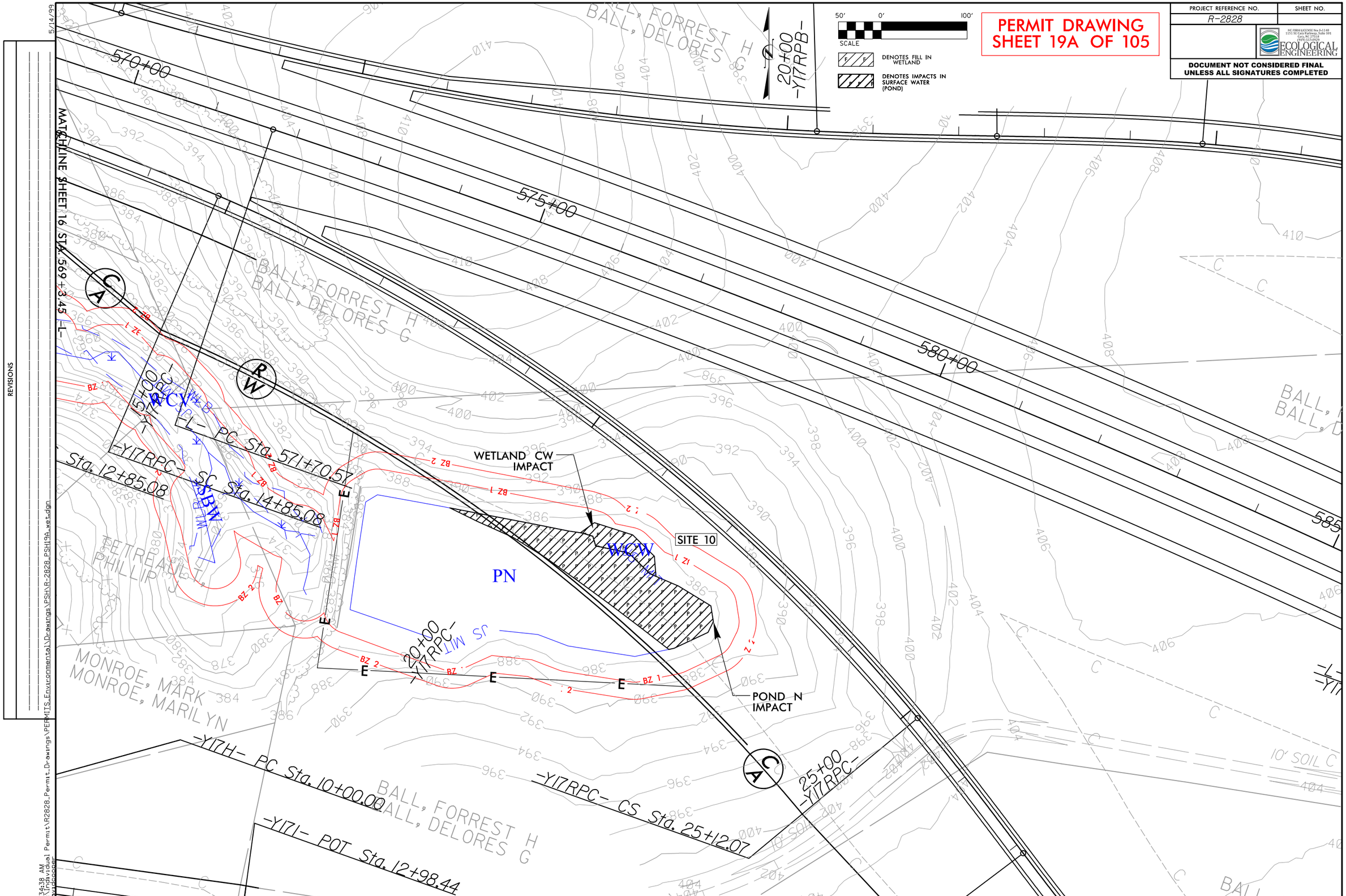

PERMIT DRAWING
SHEET 19A OF 105
PROJECT REFERENCE NO.
R-2828
SHEET NO.
ECOLOGICAL ENGINEERING
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
SCALE
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER (POND)
MATCHLINE SHEET 16 STA. 569+3.45 -L-
REVISIONS
570+00
575+00
580+00
585
20+00 -Y17RPB-
15+00 -Y17RPC-
20+00 -Y17RPC-
25+00 -Y17RPC-
-L- PC Sta. 571+70.57
-Y17RPC- SC Sta. 14+85.08
Sta. 12+85.08
-Y17H- PC Sta. 10+00.00
-Y17I- POT Sta. 12+98.44
-Y17RPC- CS Sta. 25+12.07
WETLAND CW IMPACT
POND N IMPACT
SITE 10
PN
WCW
SBW
WCY
BALL, FORREST H
BALL, DELORES G
TETREAULT, PHILLIP J
MONROE, MARK
MONROE, MARILYN
10' SOIL

PROJECT REFERENCE NO.	SHEET NO.
R-2828	

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1515 SE Cary Parkway, Suite 101
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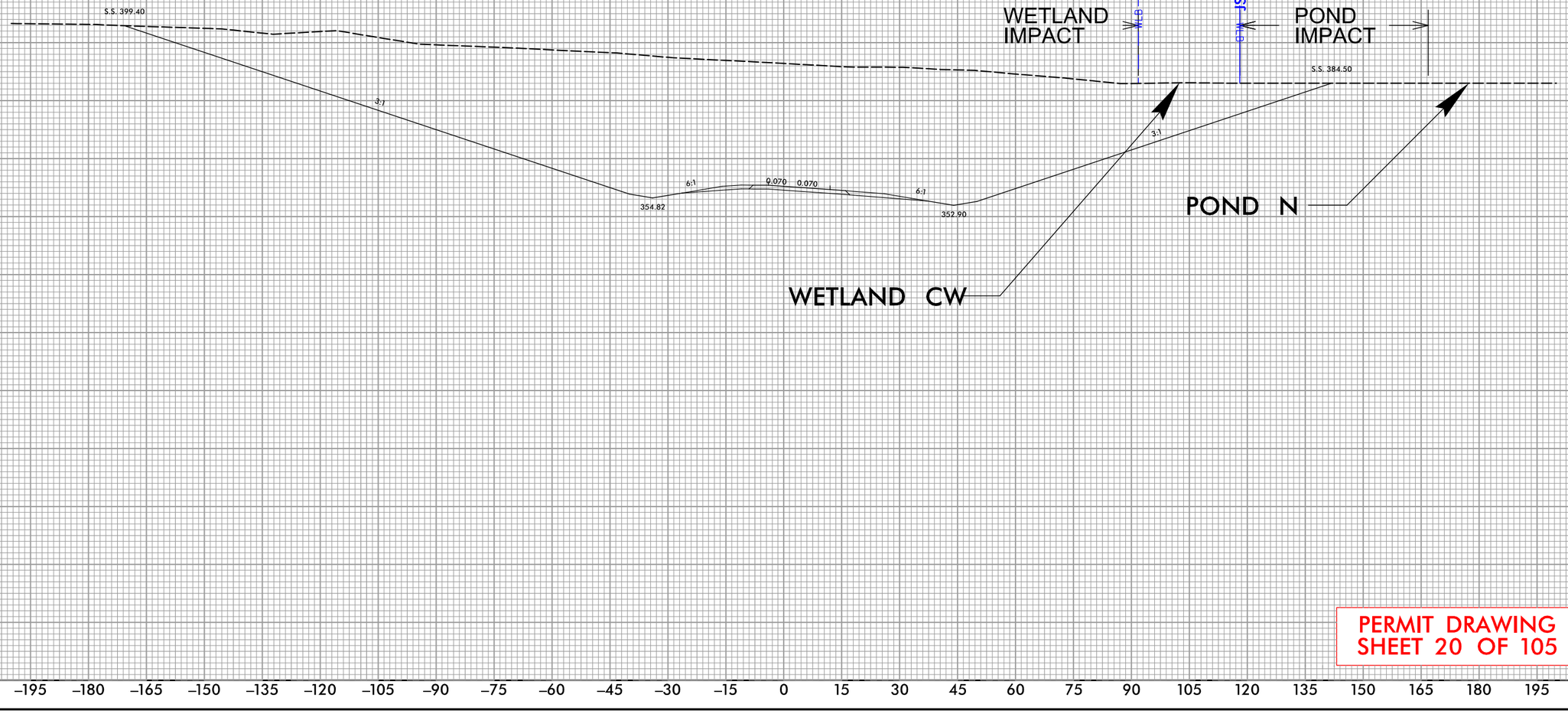
CROSS–SECTION M–M
SITE 10, WETLAND CW & POND N
STATION 21+00 –Y17RPC–



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SHEET 20 OF 105

REVISIONS

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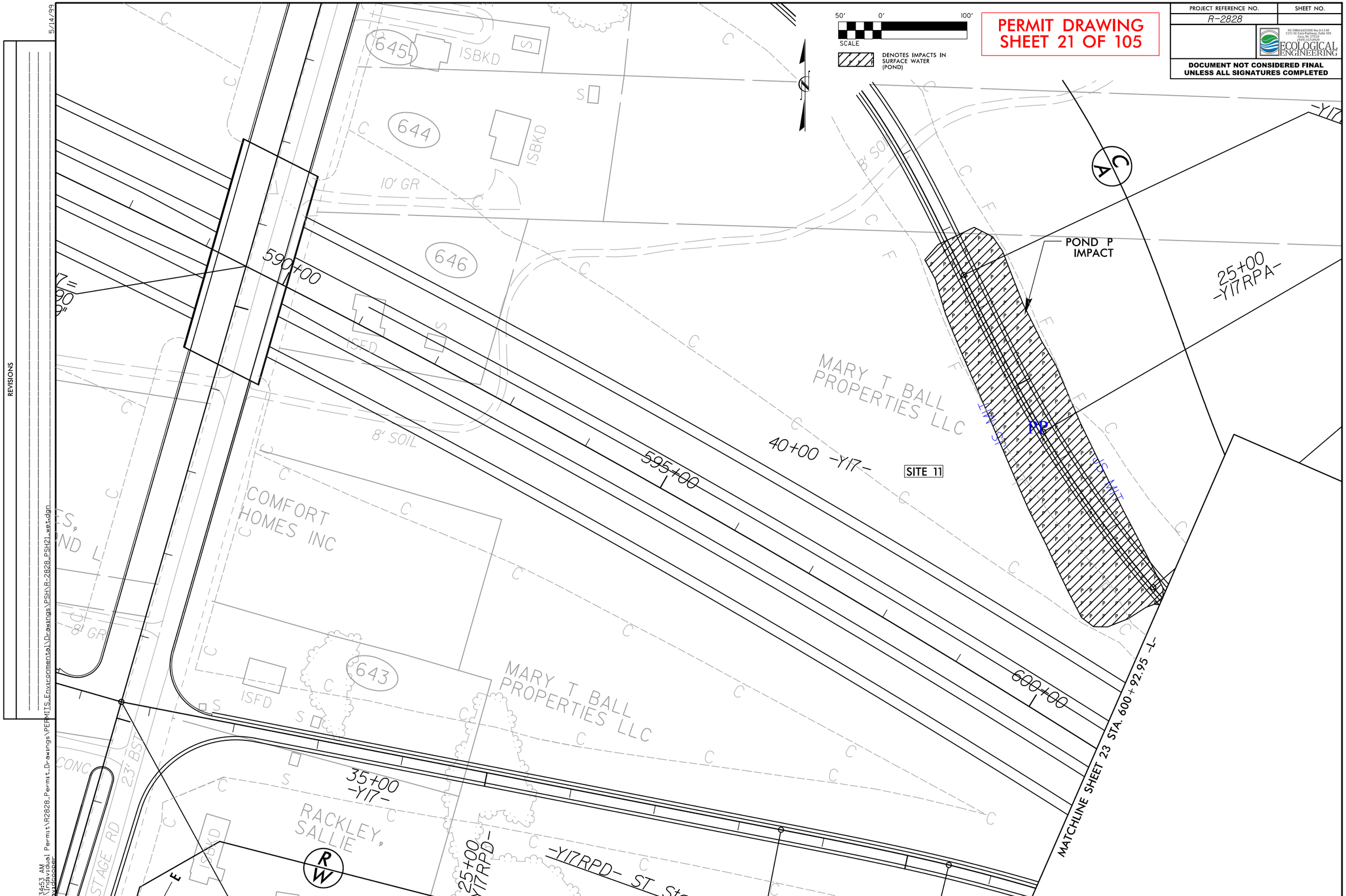

PERMIT DRAWING
SHEET 21 OF 105
PROJECT REFERENCE NO.
R-2828
SHEET NO.
ECOLOGICAL ENGINEERING
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
50' 0' 100'
SCALE
DENOTES IMPACTS IN SURFACE WATER (POND)
POND P IMPACT
SITE 11
MARY T BALL PROPERTIES LLC
COMFORT HOMES INC
RACKLEY, SALLIE
590+00
595+00
600+00
40+00 -Y17-
35+00 -Y17-
25+00 -Y17RPA-
25+00 -Y17RPD-
-Y17RPD- ST Sta
MATCHLINE SHEET 23 STA. 600+92.95 -L-
STAGE RD
23' BST
8' SOIL
10' GR
ISBKD
ISFD
645
644
646
643
C
A
R
W
REVISIONS
5/14/99
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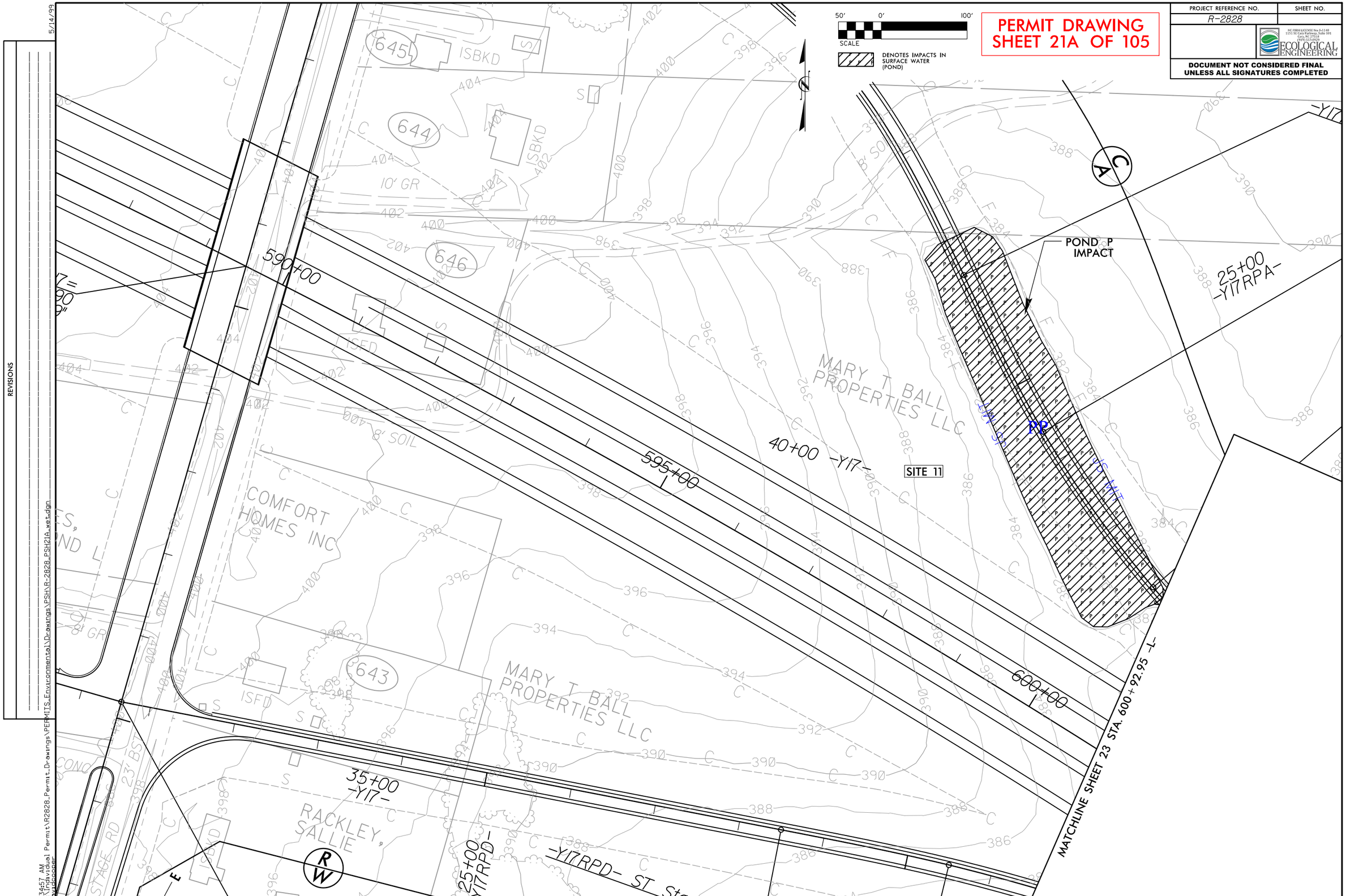

PERMIT DRAWING
SHEET 21A OF 105
PROJECT REFERENCE NO.
R-2828
SHEET NO.
ECOLOGICAL ENGINEERING
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
50' 0' 100'
SCALE
DENOTES IMPACTS IN SURFACE WATER (POND)
POND P IMPACT
SITE 11
MARY T BALL PROPERTIES LLC
COMFORT HOMES INC
RACKLEY, SALLIE
590+00
595+00
600+00
40+00 -Y17-
35+00 -Y17-
25+00 -Y17RPA-
25+00 -Y17RPD-
-Y17RPD- ST Sta
MATCHLINE SHEET 23 STA. 600+92.95 -L-
REVISIONS
5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-2828	

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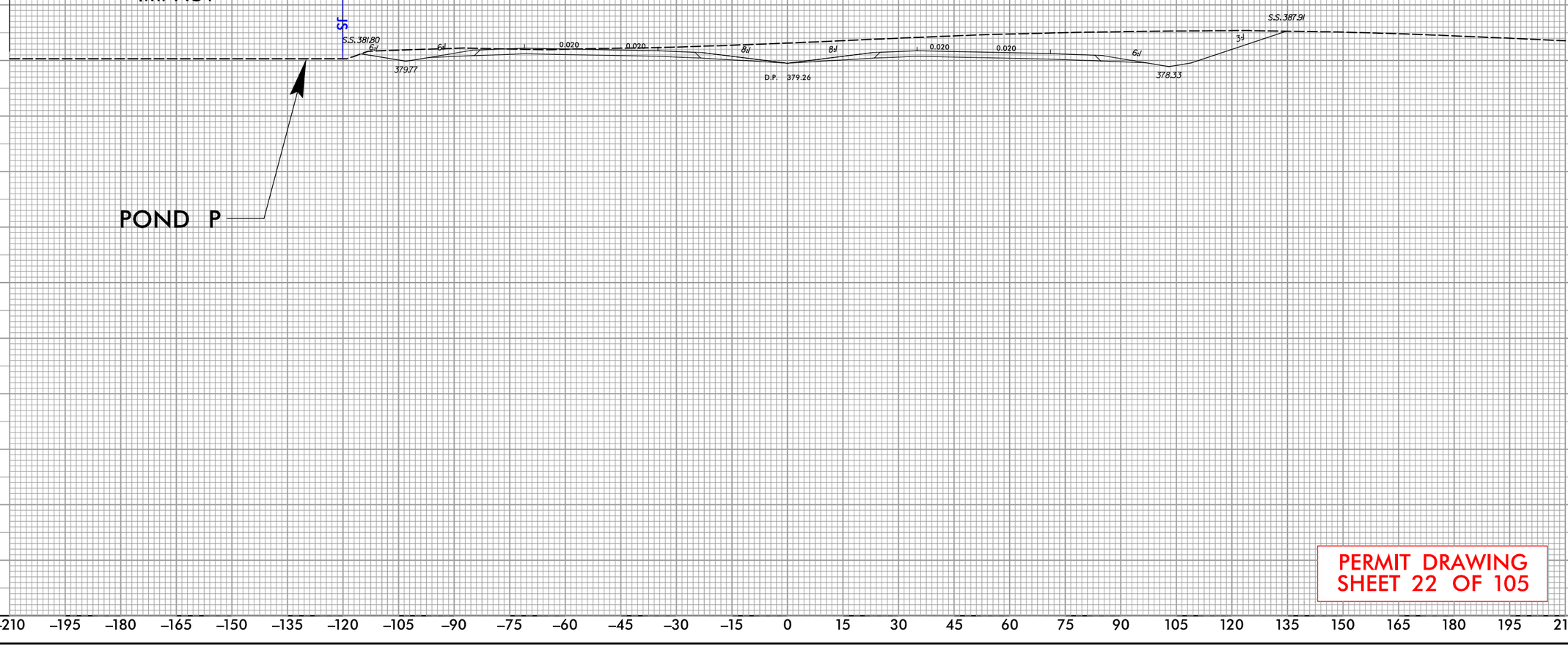
CROSS–SECTION N–N
SITE 11, POND P
STATION 600+00 –L–



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SHEET 22 OF 105

REVISIONS

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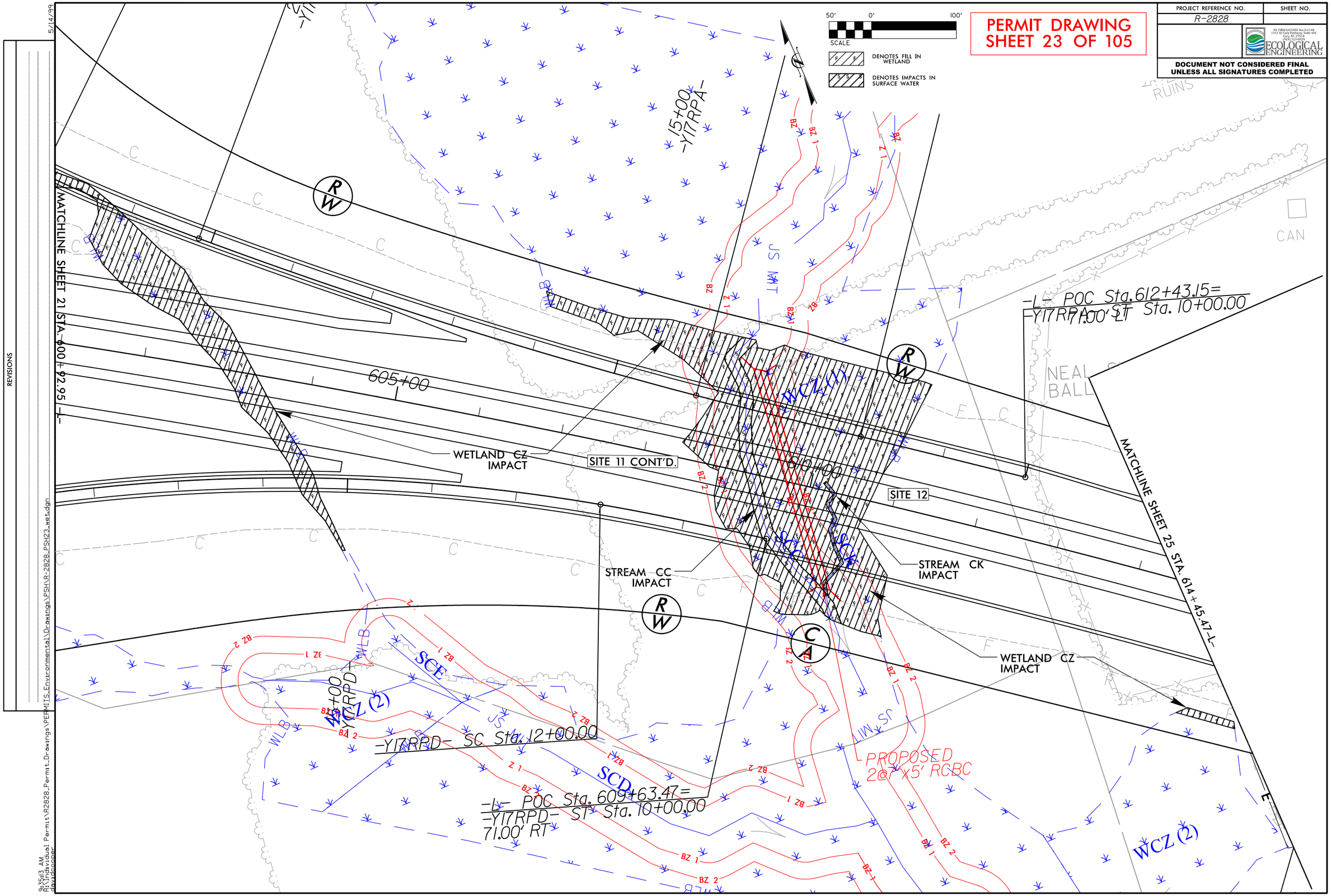
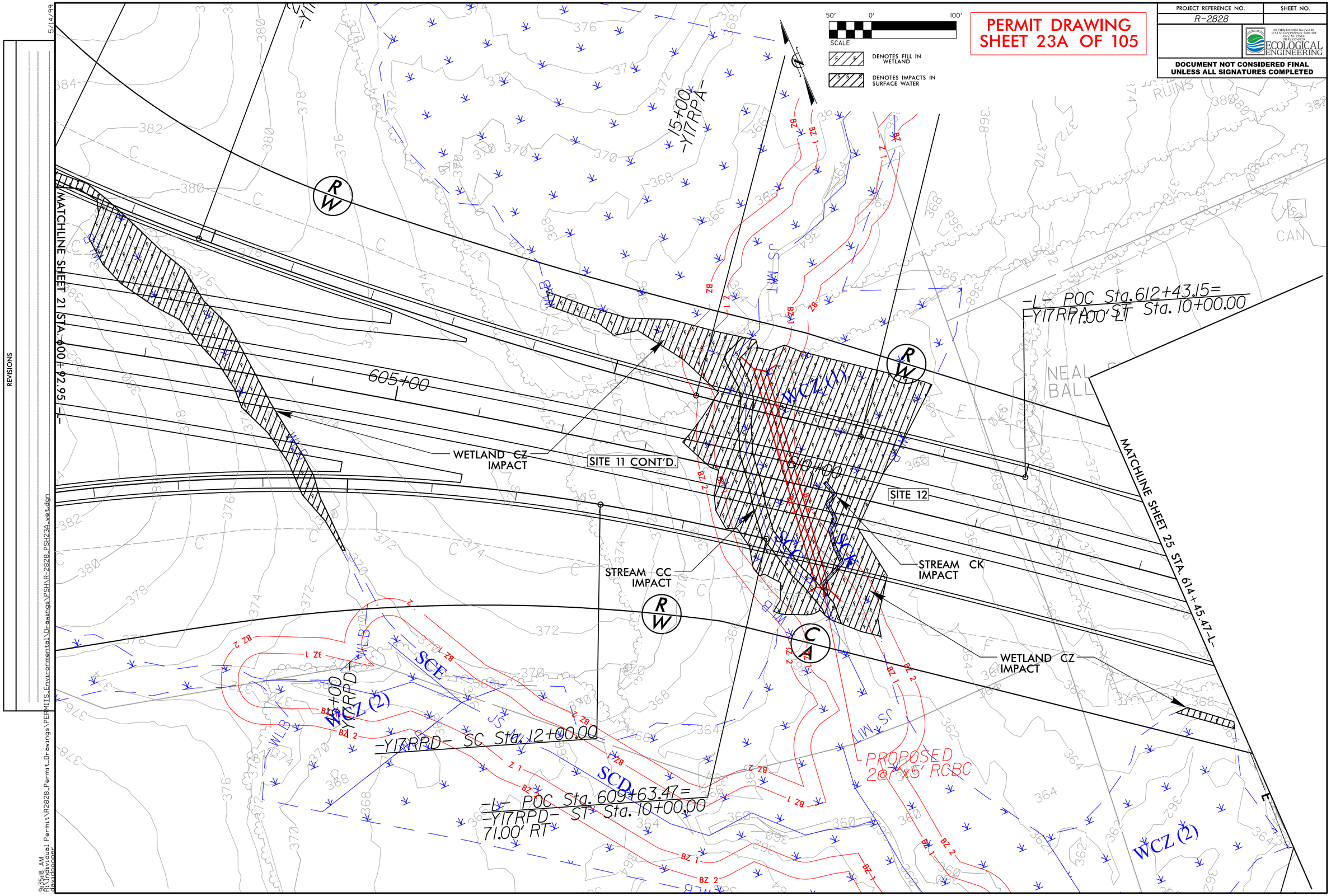


PROJECT REFERENCE NO.
R-2828
SHEET NO.
ECOLOGICAL ENGINEERING
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
PERMIT DRAWING
SHEET 23 OF 105
SCALE
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
MATCHLINE SHEET 21 STA. 600+92.95 -L-
MATCHLINE SHEET 25 STA. 614+45.47 -L-
605+00
610+00
WETLAND CZ IMPACT
SITE 11 CONT'D.
SITE 12
STREAM CC IMPACT
STREAM CK IMPACT
WETLAND CZ IMPACT
-L- POC Sta. 612+43.15=
-Y17RPA- ST Sta. 10+00.00
71.00' LT
-Y17RPD- SC Sta. 12+00.00
-L- POC Sta. 609+63.47=
-Y17RPD- ST Sta. 10+00.00
71.00' RT
PROPOSED 2@7'x5' RCBC
WCZ (1)
WCZ (2)
SCE
SCD
SCK
SCL
RUINS
CAN
NEAL BALL
REVISIONS
5/14/99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SHEET 23A OF 105
PROJECT REFERENCE NO.
R-2828
SHEET NO.
ECOLOGICAL ENGINEERING
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
50' 0' 100'
SCALE
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
MATCHLINE SHEET 21 STA. 600+92.95 -L-
MATCHLINE SHEET 25 STA. 614+45.47 -L-
605+00
610+00
WETLAND CZ IMPACT
SITE 11 CONT'D.
SITE 12
STREAM CC IMPACT
STREAM CK IMPACT
WETLAND CZ IMPACT
-L- POC Sta. 612+43.15=
-Y17RPA- ST Sta. 10+00.00
71.00' LT
-Y17RPD- SC Sta. 12+00.00
-L- POC Sta. 609+63.47=
-Y17RPD- ST Sta. 10+00.00
71.00' RT
PROPOSED 2@ 7'x5' RCBC
WCZ (1)
WCZ (2)
SCE
SCD
SCK
NEAL BALL
RUINS
CAN
REVISIONS
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PROJECT REFERENCE NO.	SHEET NO.
R-2828	

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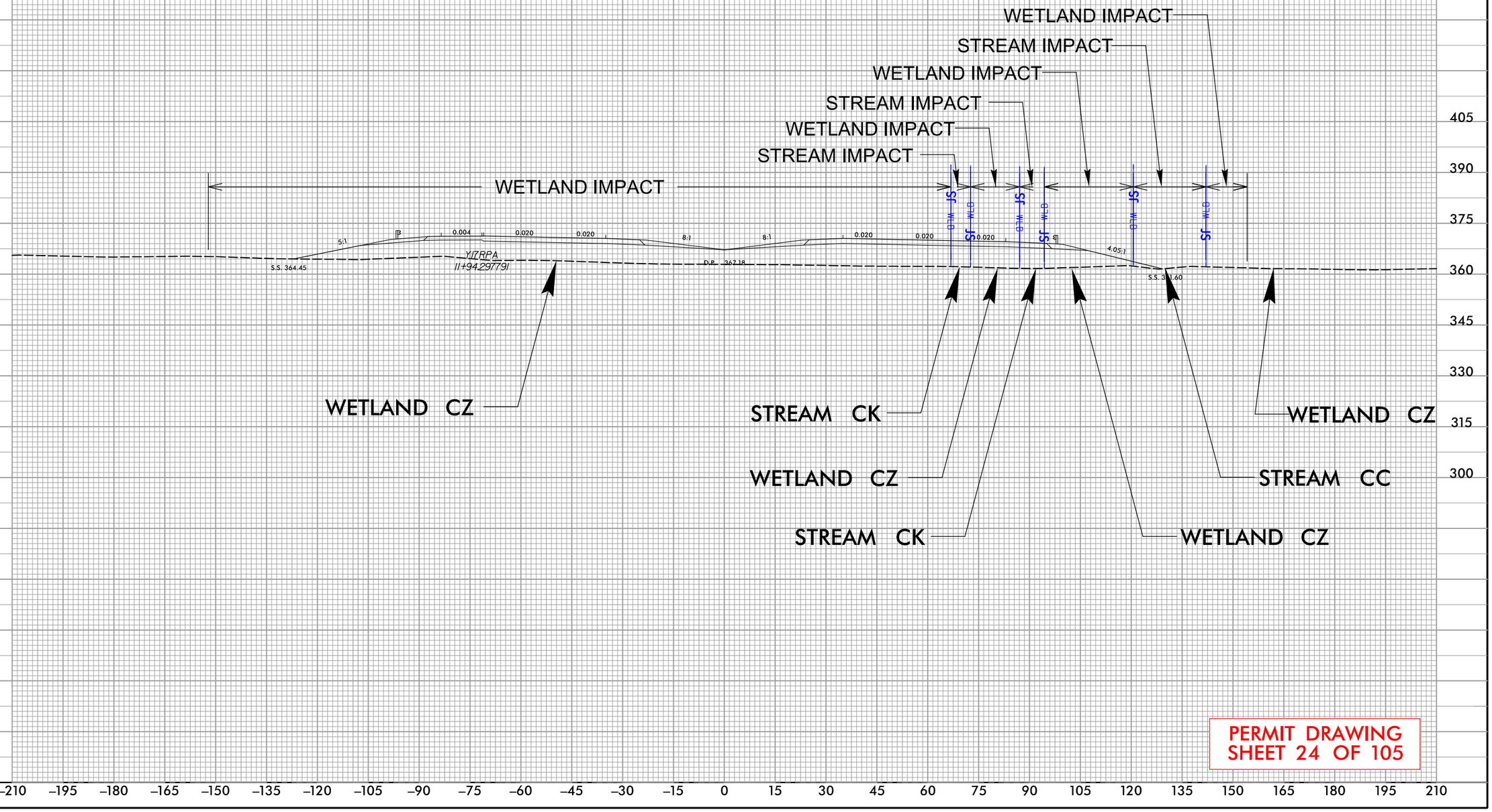
CROSS-SECTION O-O, SITES 11 & 12, WETLAND CZ, STREAM CC, & STREAM CK STATION 610+50 -L-



PERMIT DRAWING
SHEET 24 OF 105

REVISIONS

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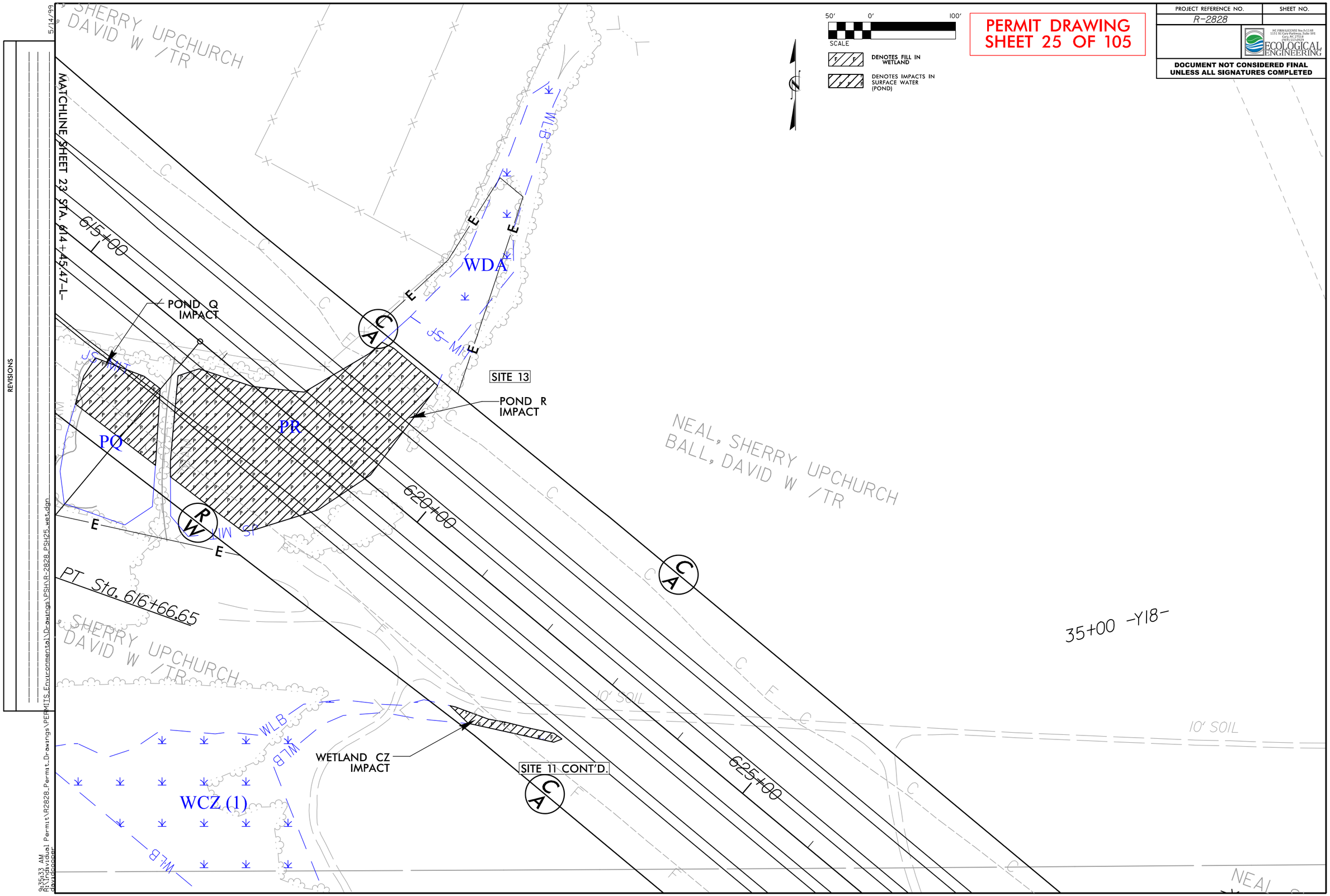

PERMIT DRAWING
SHEET 25 OF 105
PROJECT REFERENCE NO.
R-2828
SHEET NO.
ECOLOGICAL ENGINEERING
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
50' 0' 100'
SCALE
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER (POND)
MATCHLINE SHEET 23 STA. 614+45.47-L-
SHERRY UPCHURCH DAVID W /TR
NEAL, SHERRY UPCHURCH BALL, DAVID W /TR
615+00
620+00
625+00
POND Q IMPACT
POND R IMPACT
SITE 13
SITE 11 CONT'D.
WETLAND CZ IMPACT
WDA
PQ
PR
WCZ (1)
PT Sta. 616+66.65
35+00 -Y18-
10' SOIL
WLB
JS-MIT
REVISIONS
5/14/99
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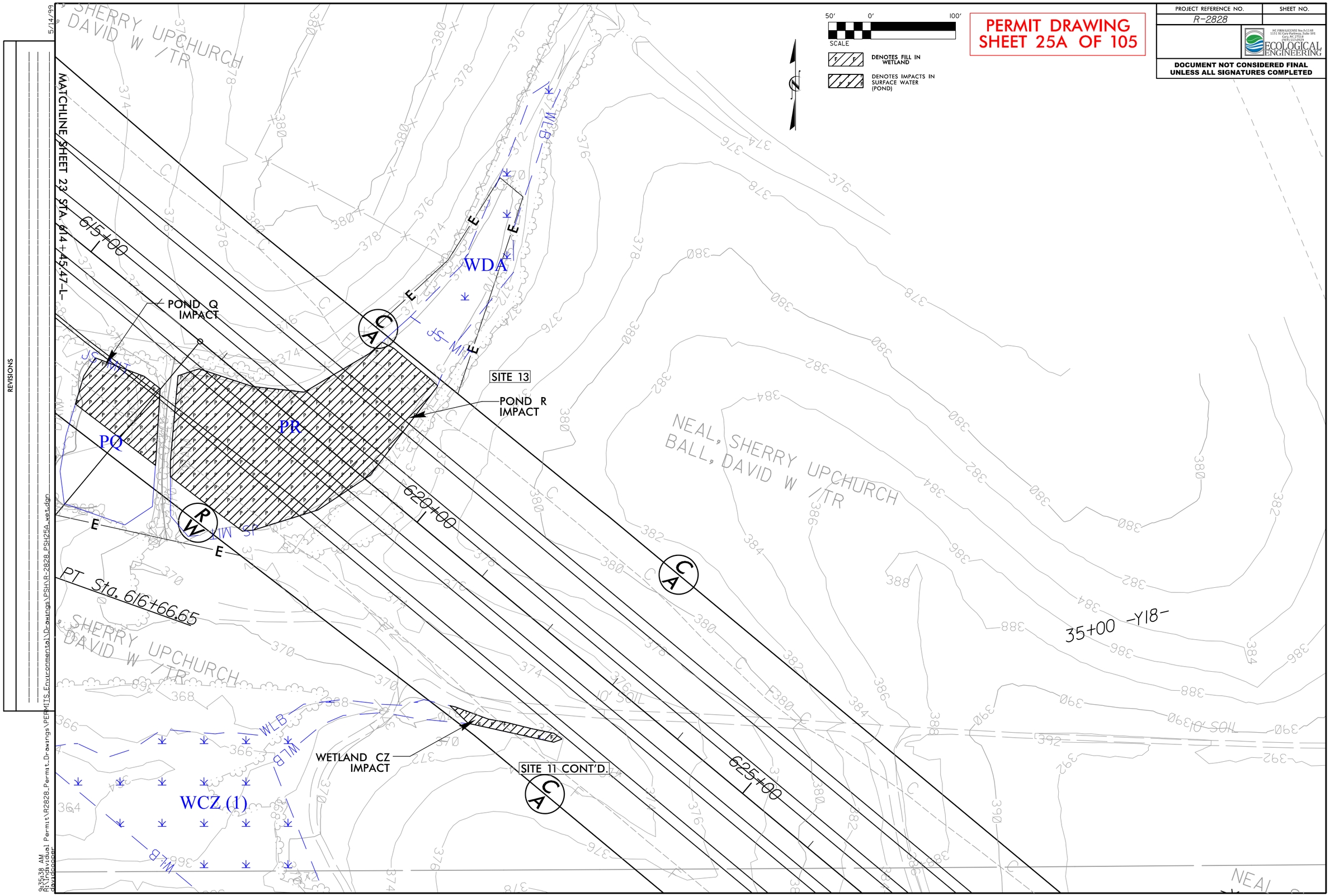
davidcooper



PERMIT DRAWING
SHEET 25A OF 105
PROJECT REFERENCE NO.
R-2828
SHEET NO.
ECOLOGICAL ENGINEERING
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
SCALE
50' 0' 100'
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER (POND)
MATCHLINE SHEET 23 STA. 614+45.47-L-
SHERRY UPCHURCH DAVID W /TR
NEAL, SHERRY UPCHURCH BALL, DAVID W /TR
POND Q IMPACT
POND R IMPACT
SITE 13
SITE 11 CONT'D.
WETLAND CZ IMPACT
WDA
PQ
PR
WCZ (1)
615+00
620+00
625+00
PT Sta. 616+66.65
35+00 -Y18-
10' SOIL
REVISIONS
5/14/99
9:35:38 AM
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PROJECT REFERENCE NO.	SHEET NO.
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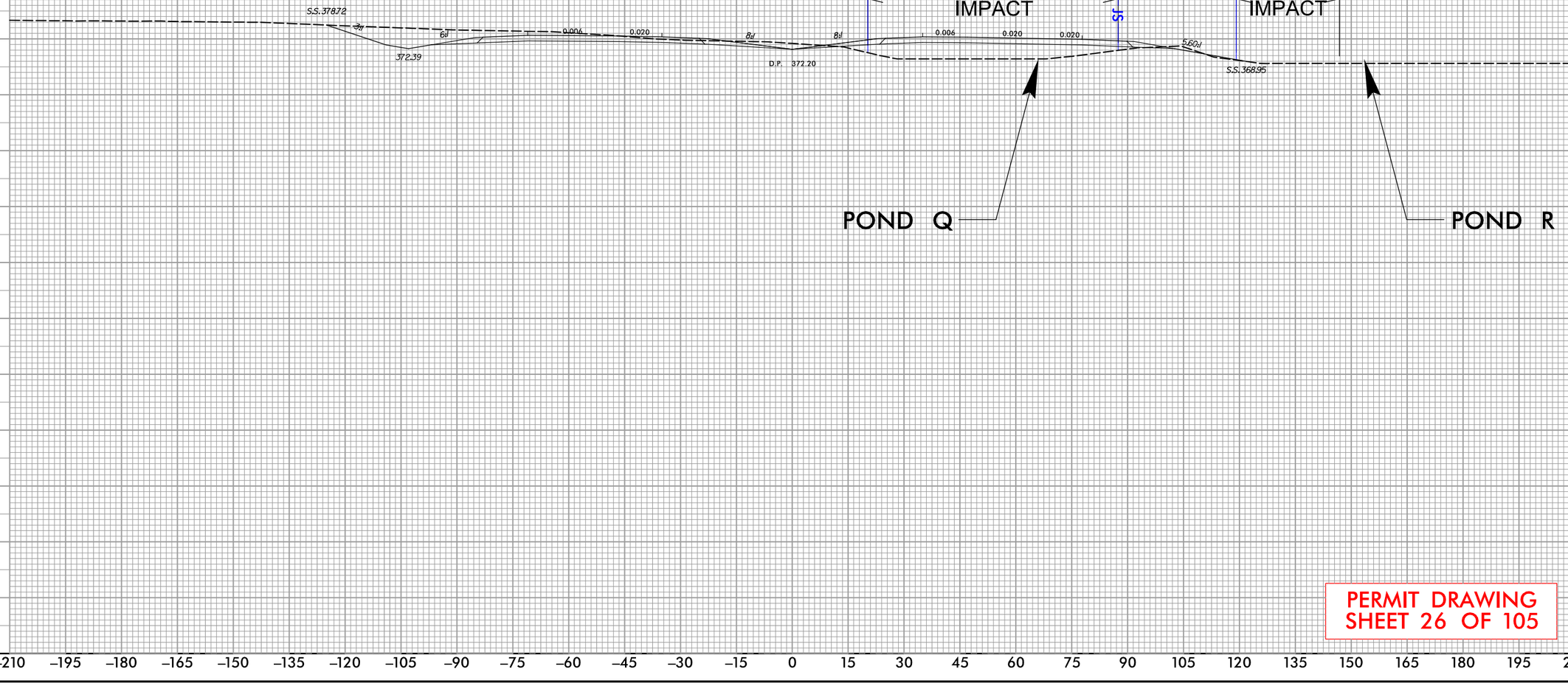
CROSS–SECTION P–P
SITE 13, PONDS Q & R
STATION 617+00 –L–



PERMIT DRAWING
SHEET 26 OF 105

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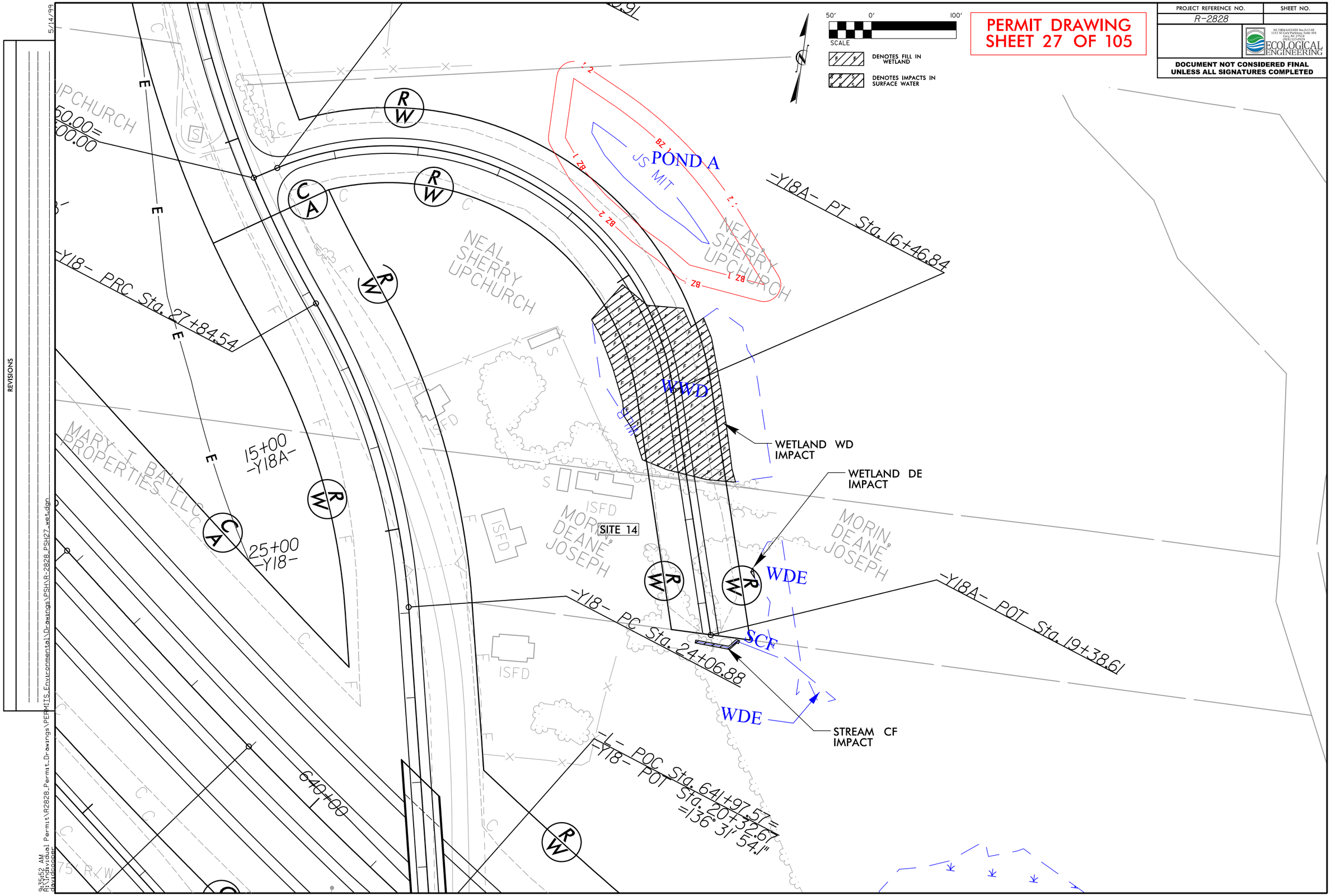
davidcooper



PERMIT DRAWING
SHEET 27 OF 105
PROJECT REFERENCE NO.
R-2828
SHEET NO.
ECOLOGICAL ENGINEERING
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
SCALE
50' 0' 100'
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
POND A
JS MIT
NEAL, SHERRY UPCHURCH
-Y18A- PT Sta. 16+46.84
-Y18- PRC Sta. 27+84.54
WWD
WETLAND WD IMPACT
WETLAND DE IMPACT
MARY T. BALL PROPERTIES LLC
15+00 -Y18A-
25+00 -Y18-
ISFD
MORIN, DEANE JOSEPH
SITE 14
WDE
-Y18A- POT Sta. 19+38.61
-Y18- PC Sta. 24+06.88
SCF
WDE
STREAM CF IMPACT
-L- POC Sta. 641+97.57=
-Y18- POT Sta. 20+32.67
=136° 31' 54.1"
640+00
REVISIONS
5/14/99
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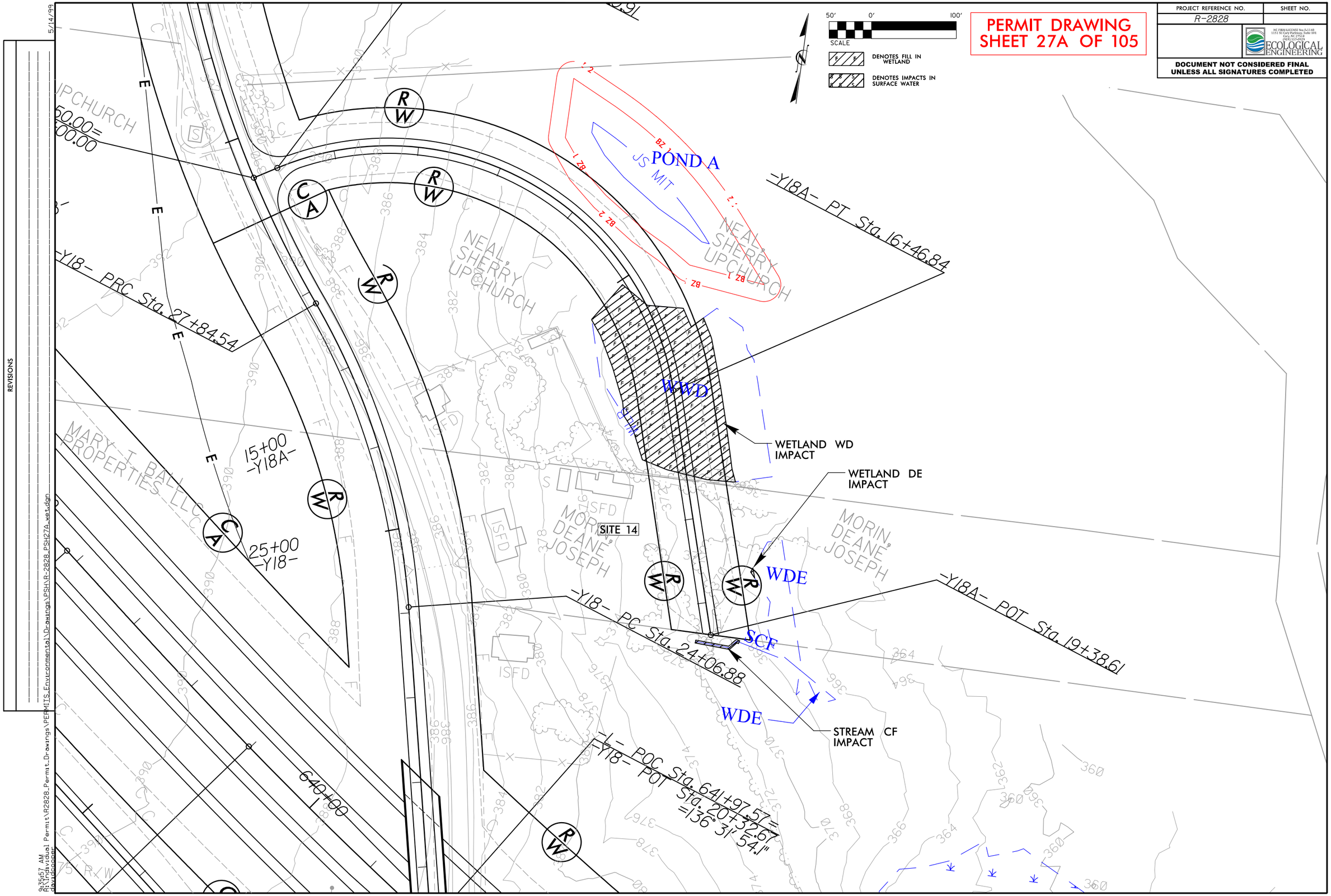
davidcooper



PERMIT DRAWING
SHEET 27A OF 105
PROJECT REFERENCE NO.
R-2828
SHEET NO.
ECOLOGICAL ENGINEERING
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
50' 0' 100'
SCALE
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
POND A
JS MIT
NEAL, SHERRY UPCHURCH
-Y18A- PT Sta. 16+46.84
-Y18- PRC Sta. 27+84.54
WWD
WETLAND WD IMPACT
WETLAND DE IMPACT
MORIN, DEANE JOSEPH
SITE 14
WDE
SCF
-Y18A- POT Sta. 19+38.61
-Y18- PC Sta. 24+06.88
STREAM CF IMPACT
-Y18- POC Sta. 641+97.57=
-Y18- POT Sta. 20+32.67
=136° 31' 54.1"
15+00 -Y18A-
25+00 -Y18-
640+00
MARY T. BALL PROPERTIES LLC
UPCHURCH
ISFD
REVISIONS
5/14/99
9:35:57 AM
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PROJECT REFERENCE NO.	SHEET NO.
R-2828	

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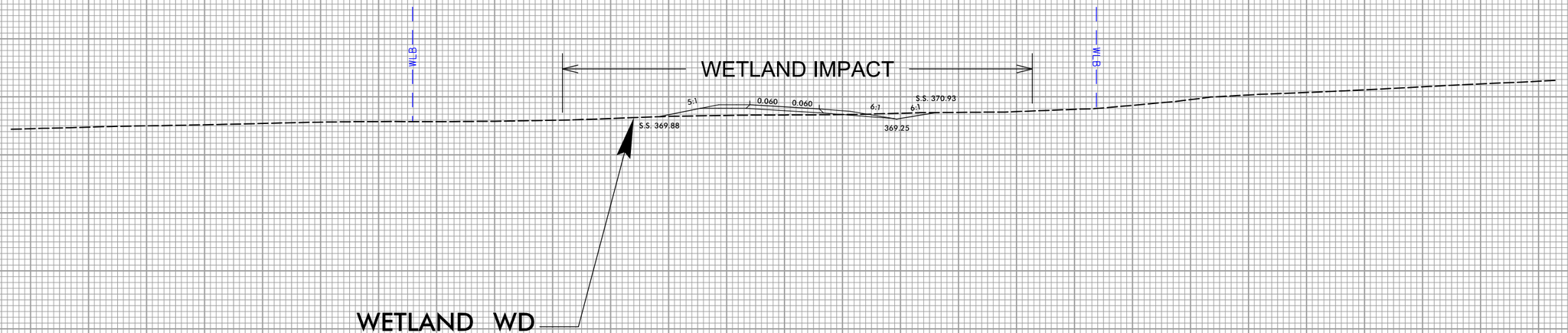
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CROSS–SECTION BM–BM
SITE 14, WETLAND WD
STATION 16 + 00 –Y18A–



PERMIT DRAWING
SHEET 28 OF 105

REVISIONS
5/14/99

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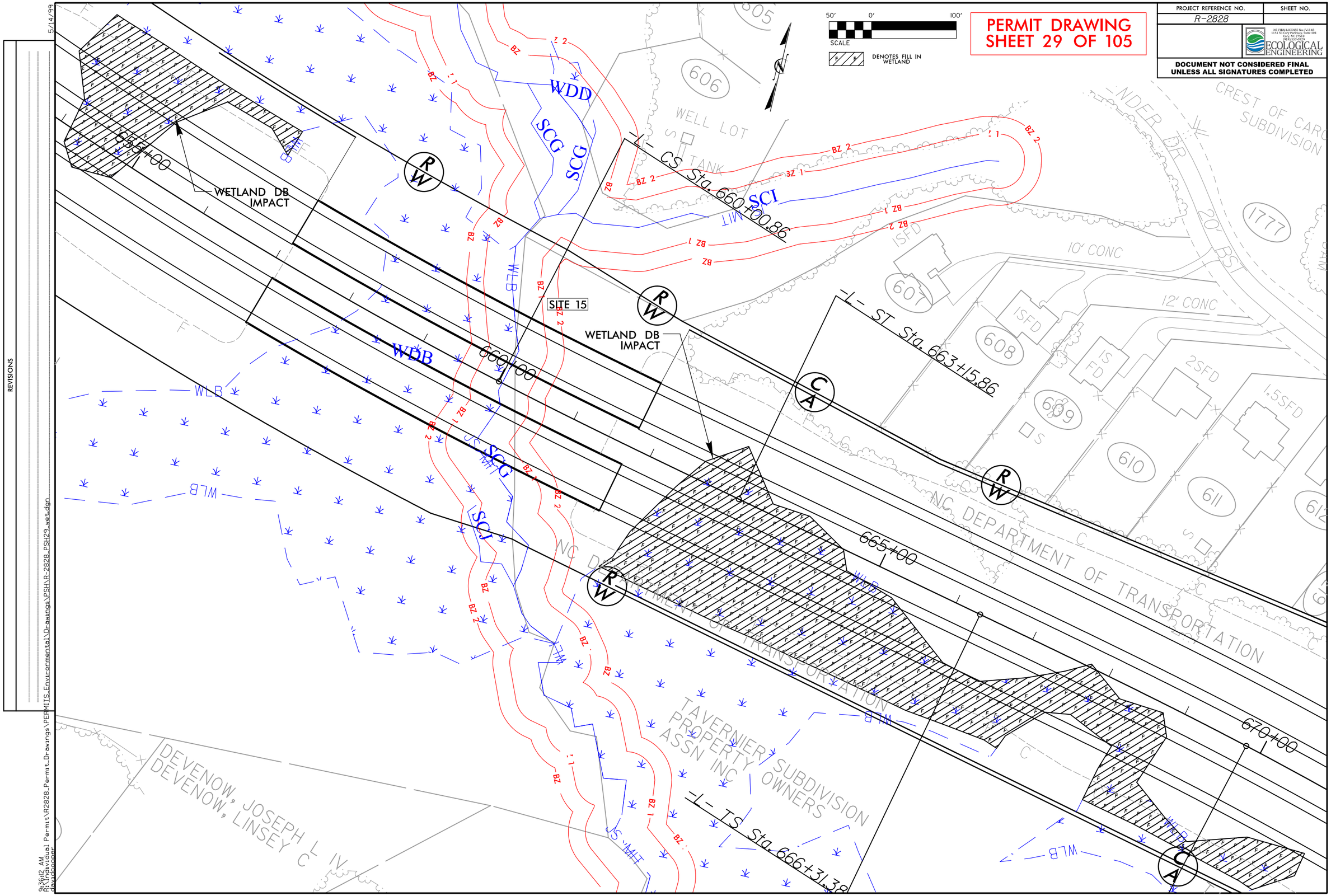
davidcooper



PERMIT DRAWING
SHEET 29 OF 105
PROJECT REFERENCE NO.
R-2828
SHEET NO.
ECOLOGICAL ENGINEERING
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
50' 0' 100'
SCALE
DENOTES FILL IN WETLAND
WETLAND DB IMPACT
WETLAND DB IMPACT
SITE 15
-L- CS Sta. 660+00.86
-L- ST Sta. 663+15.86
-L- TS Sta. 666+31.38
655+00
660+00
665+00
670+00
WDD
SCG
SCI
WDB
WLB
BZ 1
BZ 2
606
607
608
609
610
611
1777
WELL LOT
TANK
10' CONC
12' CONC
2SFD
1.5SFD
ISFD
CREST OF CARO SUBDIVISION
NC DEPARTMENT OF TRANSPORTATION
TAVERNIER SUBDIVISION PROPERTY OWNERS ASSN INC
DEVENOW, JOSEPH L IV
DEVENOW, LINSEY C
REVISIONS
5/14/99
9:36:12 AM
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davidcooper

PROJECT REFERENCE NO.	SHEET NO.
R-2828	

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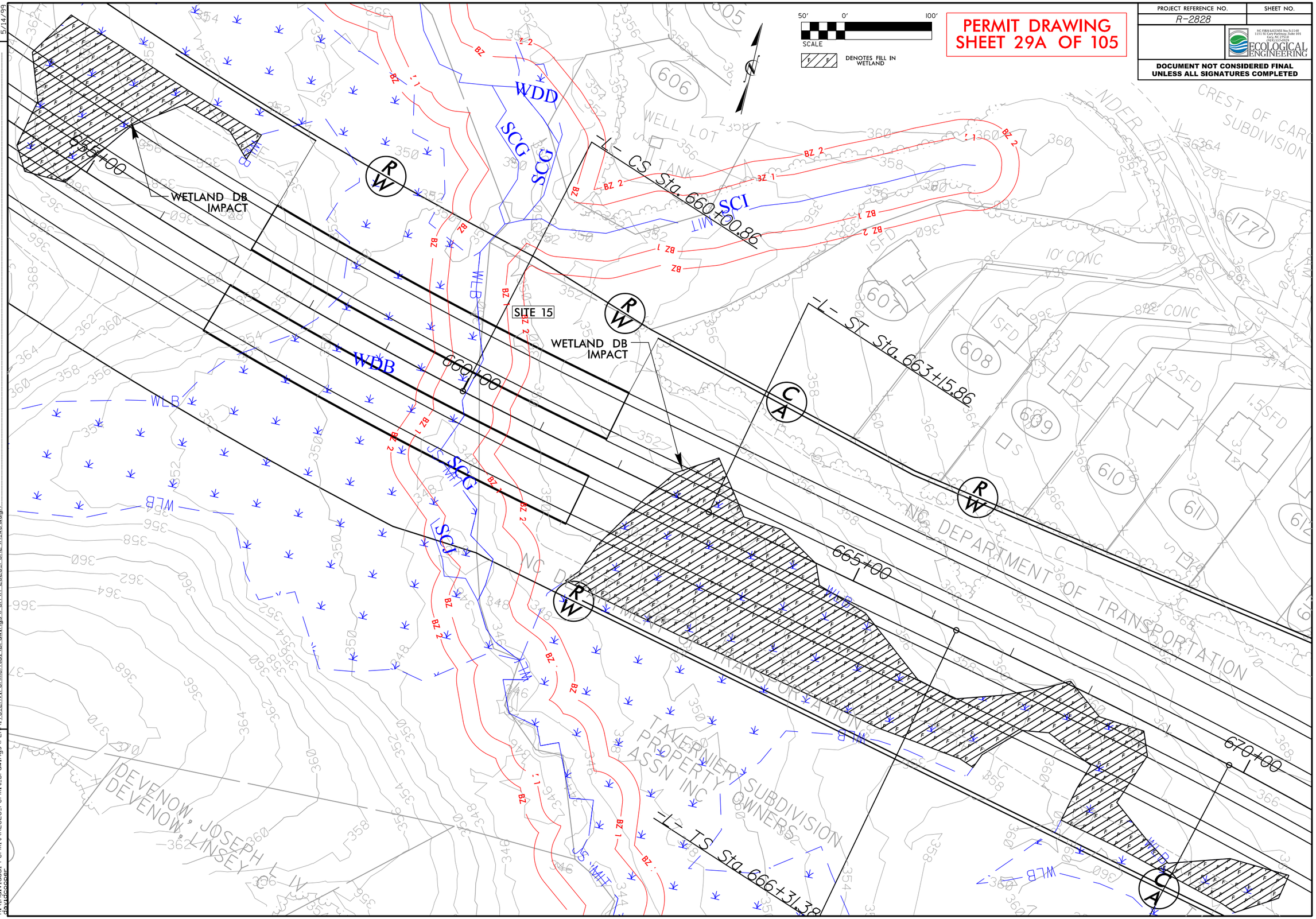
PERMIT DRAWING SHEET 29A OF 105



REVISIONS

5/14/99

9:36:17 AM
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davidcooper

PROJECT REFERENCE NO.	SHEET NO.
R-2828	

NC FIRM LICENSE No F-1148
1151 SE Cary Parkway, Suite 101
Cary, NC 27518
(919) 555-0920

ECOLOGICAL ENGINEERING

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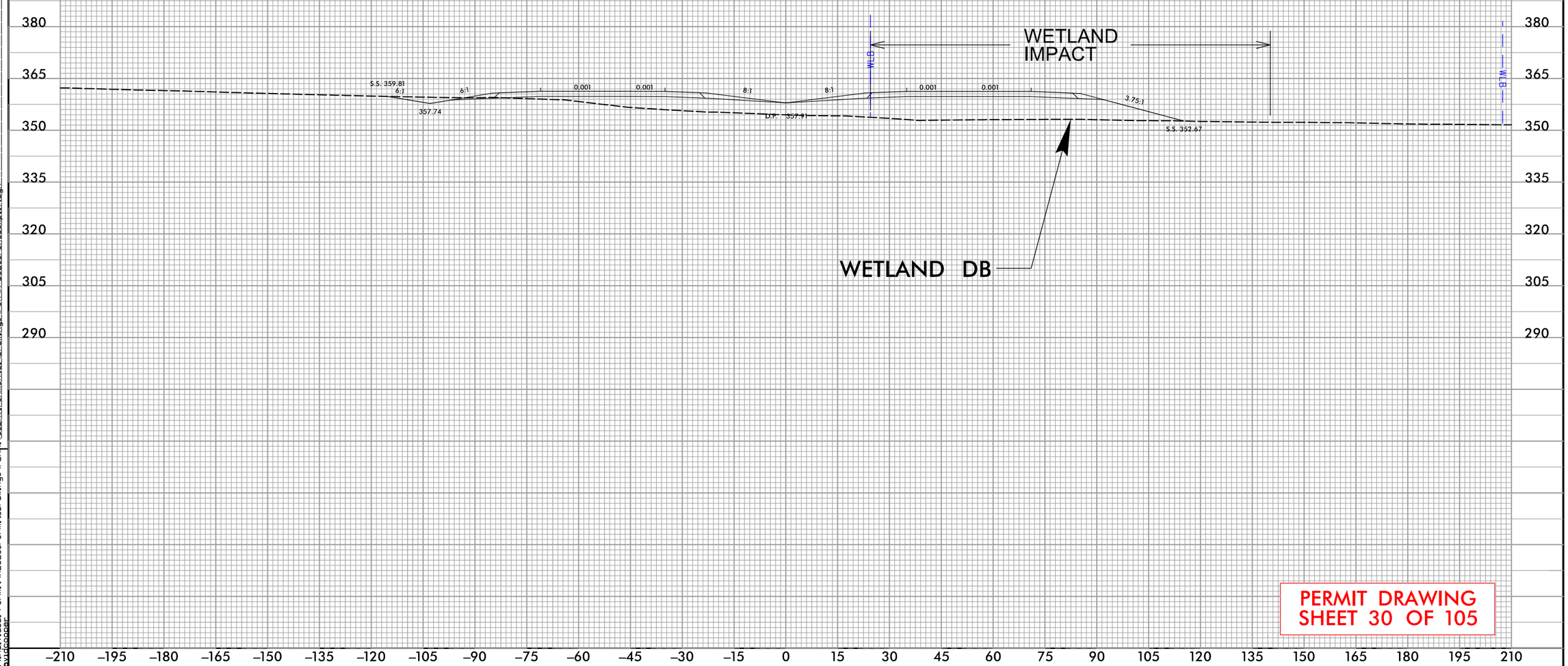
CROSS–SECTION Q–Q
SITE 15, WETLAND DB
STATION 665+00 –L–



PERMIT DRAWING
SHEET 30 OF 105

REVISIONS

5/14/99

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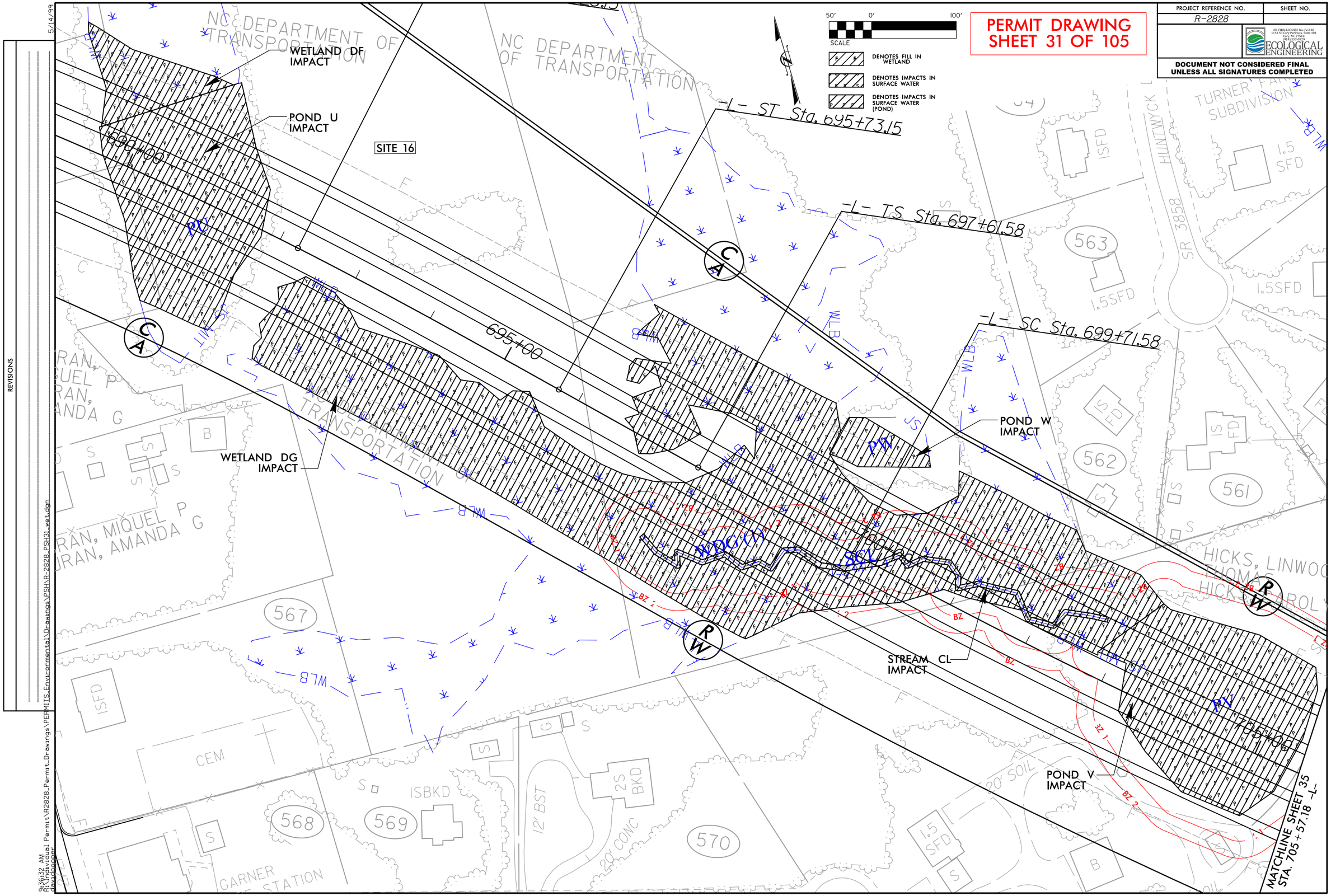
davidcooper



PERMIT DRAWING
SHEET 31 OF 105
PROJECT REFERENCE NO.
R-2828
SHEET NO.
ECOLOGICAL ENGINEERING
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
50' 0' 100'
SCALE
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
DENOTES IMPACTS IN SURFACE WATER (POND)
NC DEPARTMENT OF TRANSPORTATION
WETLAND DF IMPACT
POND U IMPACT
SITE 16
-L- ST Sta. 695+73.15
-L- TS Sta. 697+61.58
-L- SC Sta. 699+71.58
695+00
POND W IMPACT
WETLAND DG IMPACT
STREAM CL IMPACT
POND V IMPACT
WDG(1)
SCL
PU
PW
PV
MATCHLINE SHEET 35 STA. 705+57.18 -L-
REVISIONS
5/14/99
9:36:32 AM
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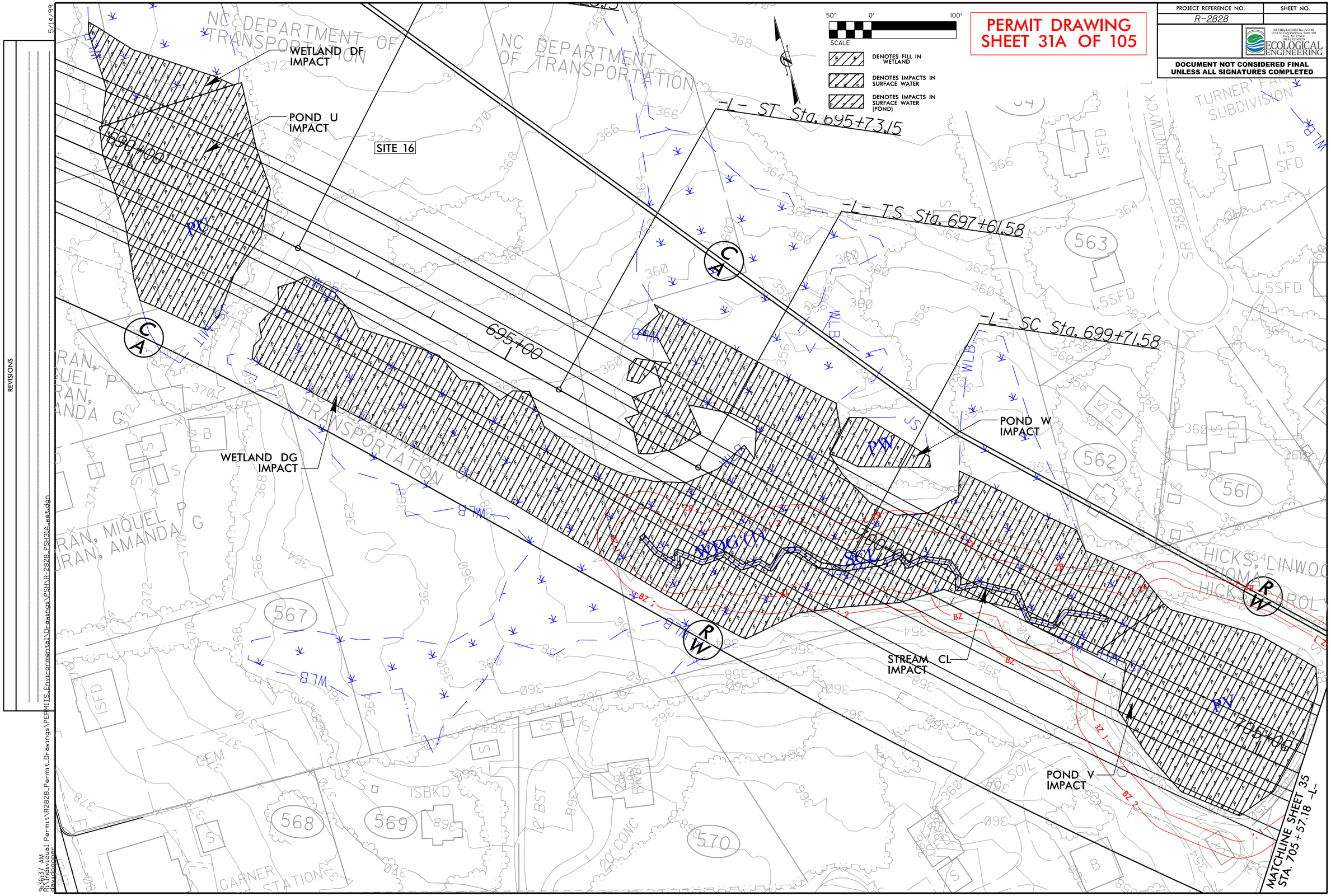
davidcooper



PERMIT DRAWING
SHEET 31A OF 105
PROJECT REFERENCE NO.
R-2828
SHEET NO.
ECOLOGICAL ENGINEERING
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
SCALE
50' 0' 100'
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
DENOTES IMPACTS IN SURFACE WATER (POND)
WETLAND DF IMPACT
POND U IMPACT
SITE 16
-L- ST Sta. 695+73.15
-L- TS Sta. 697+61.58
-L- SC Sta. 699+71.58
695+00
POND W IMPACT
WETLAND DG IMPACT
STREAM CL IMPACT
POND V IMPACT
MATCHLINE SHEET 35 STA. 705+57.18 -L-
NC DEPARTMENT OF TRANSPORTATION
TURNER PARK SUBDIVISION
HICKS, LINWOOD THOMAS
HICKS, CAROL
GARNER STATION
REVISIONS
5/14/99
9:36:37 AM
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davidcooper

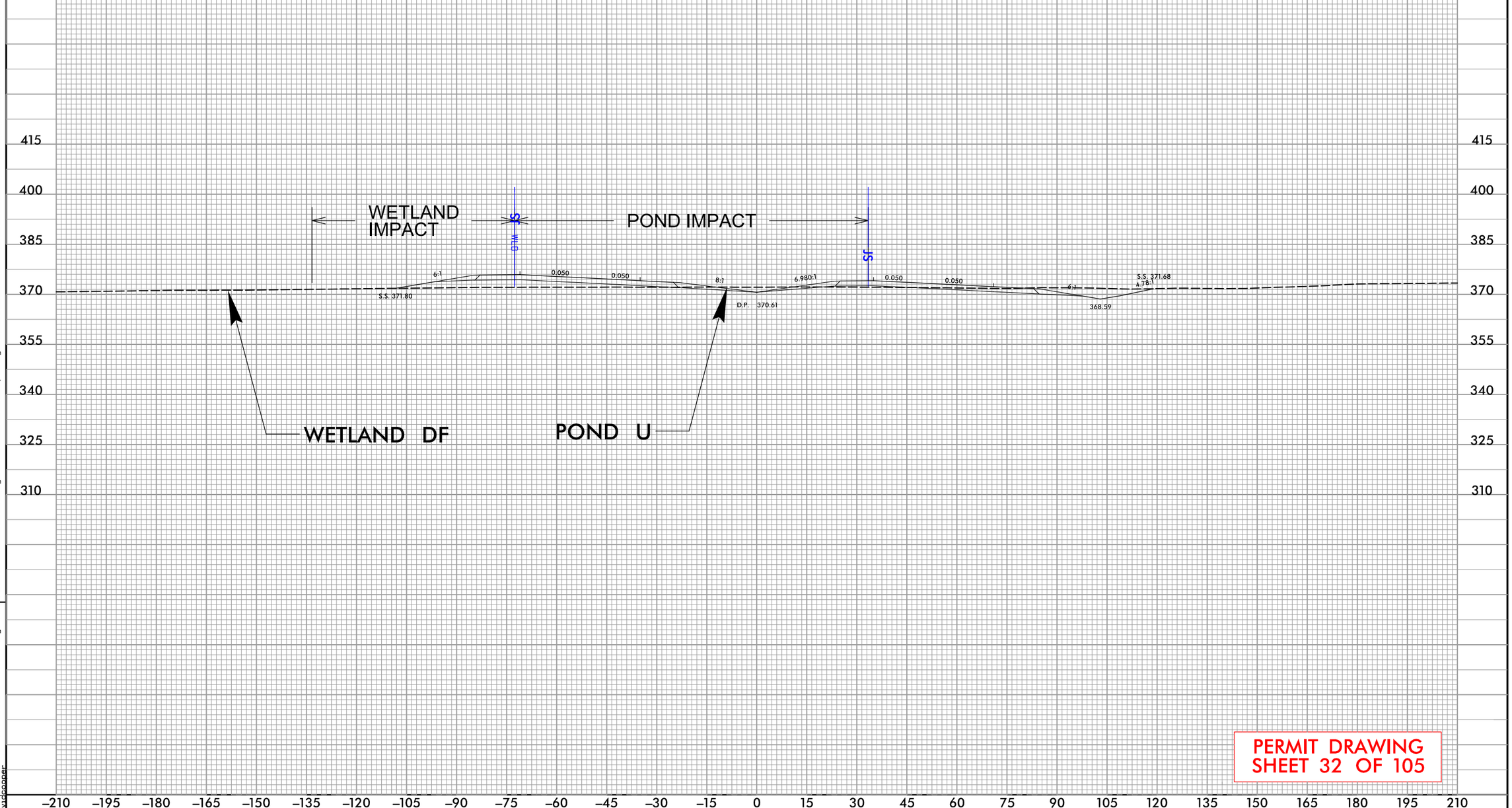
PROJECT REFERENCE NO.	SHEET NO.
R-2828	

NC FIRM LICENSE No F-1148
1151 SE Cary Parkway, Suite 101
Cary, NC 27518
(919) 557-0920

ECOLOGICAL ENGINEERING

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CROSS–SECTION R–R
SITE 16, WETLAND DF & POND U
STATION 690+00 –L–



PERMIT DRAWING
SHEET 32 OF 105

REVISIONS

5/14/99

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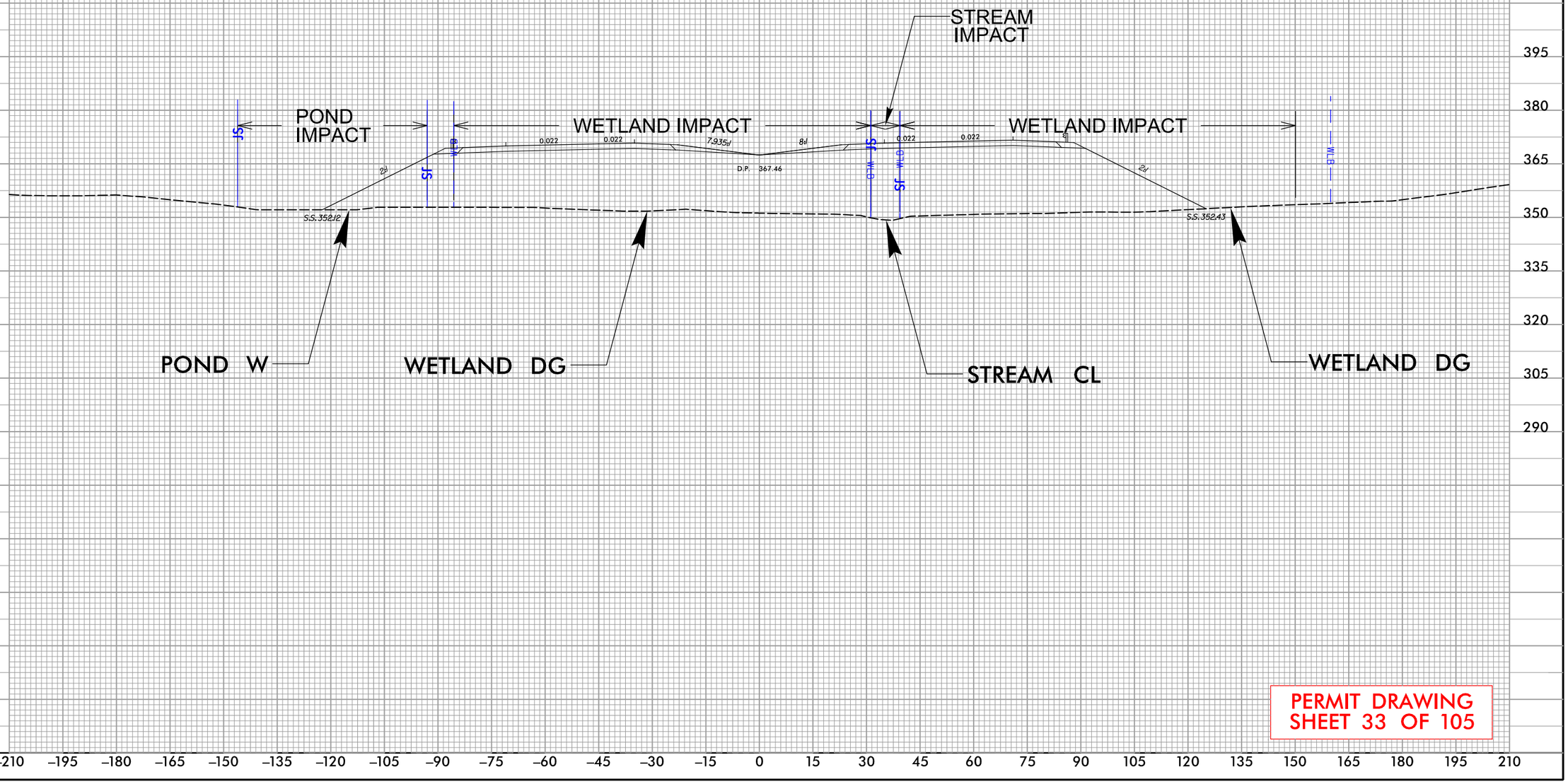
davidcooper

PROJECT REFERENCE NO.	SHEET NO.
R-2828	

NC FIRM LICENSE No: F-1148
1515 SE Cary Parkway, Suite 101
Cary, NC 27518
(919) 557-5909
ECOLOGICAL ENGINEERING

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CROSS–SECTION S–S
SITE 16, WETLAND DG, STREAM CL, & POND W STATION 699+00 –L–



PERMIT DRAWING
SHEET 33 OF 105

REVISIONS

5/14/99

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davidcooper

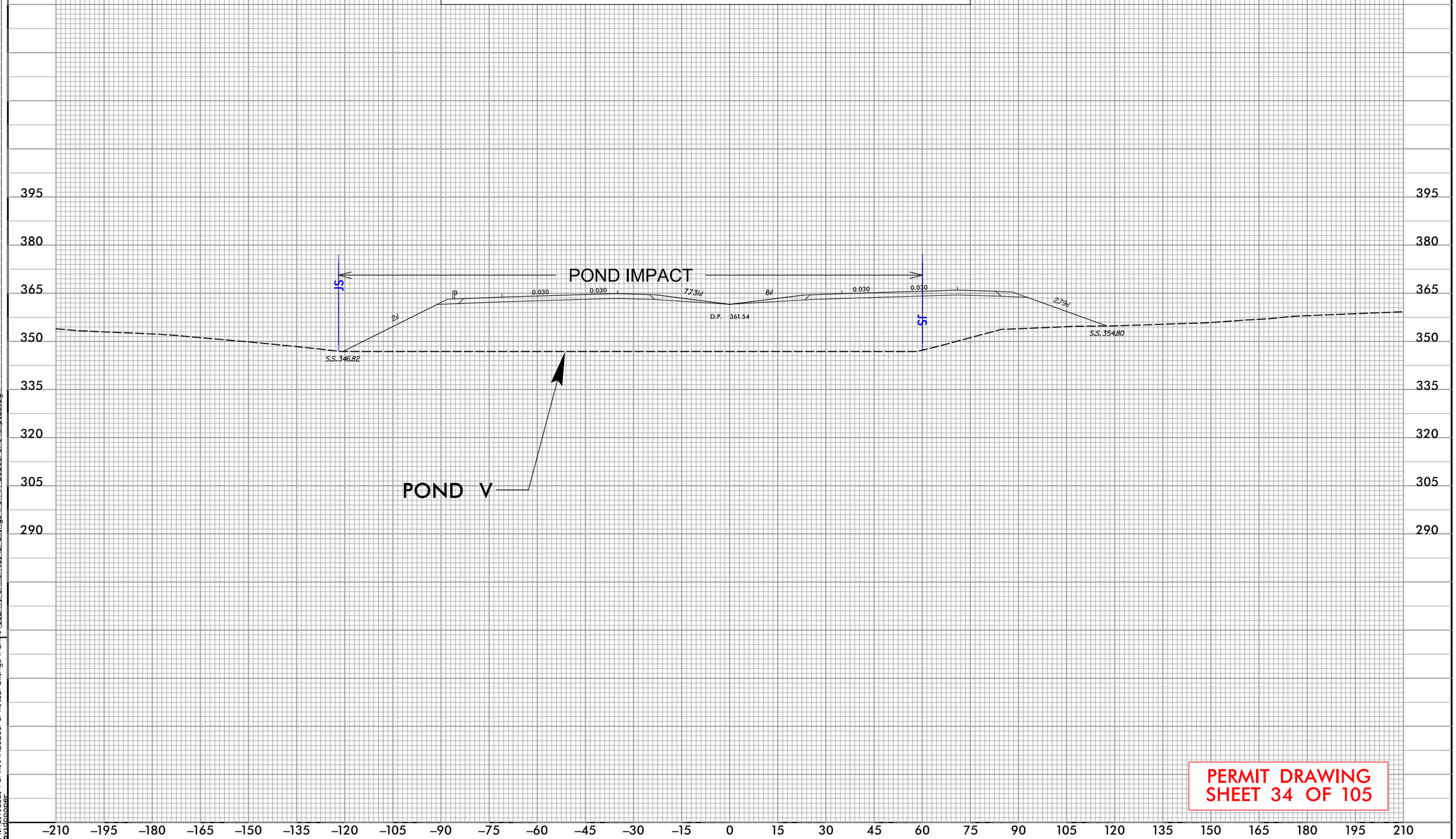
PROJECT REFERENCE NO.	SHEET NO.
R-2828	

NC FIRM LICENSE No F-1148
1151 SE Cary Parkway, Suite 101
Cary, NC 27518
(919) 555-0920

ECOLOGICAL ENGINEERING

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CROSS–SECTION T–T
SITE 16, POND V
STATION 704+00 –L–



PERMIT DRAWING
SHEET 34 OF 105

REVISIONS

5/14/99

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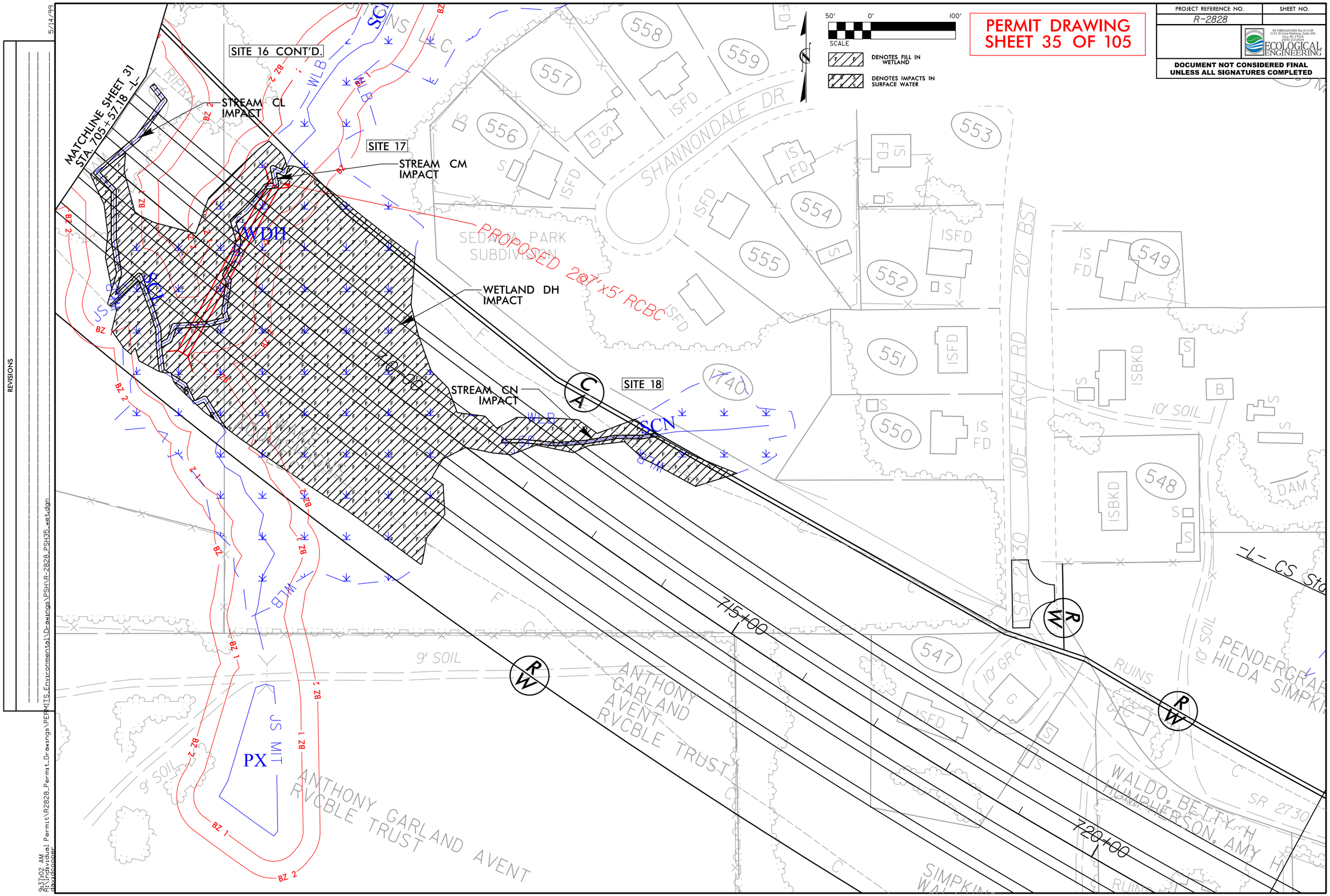
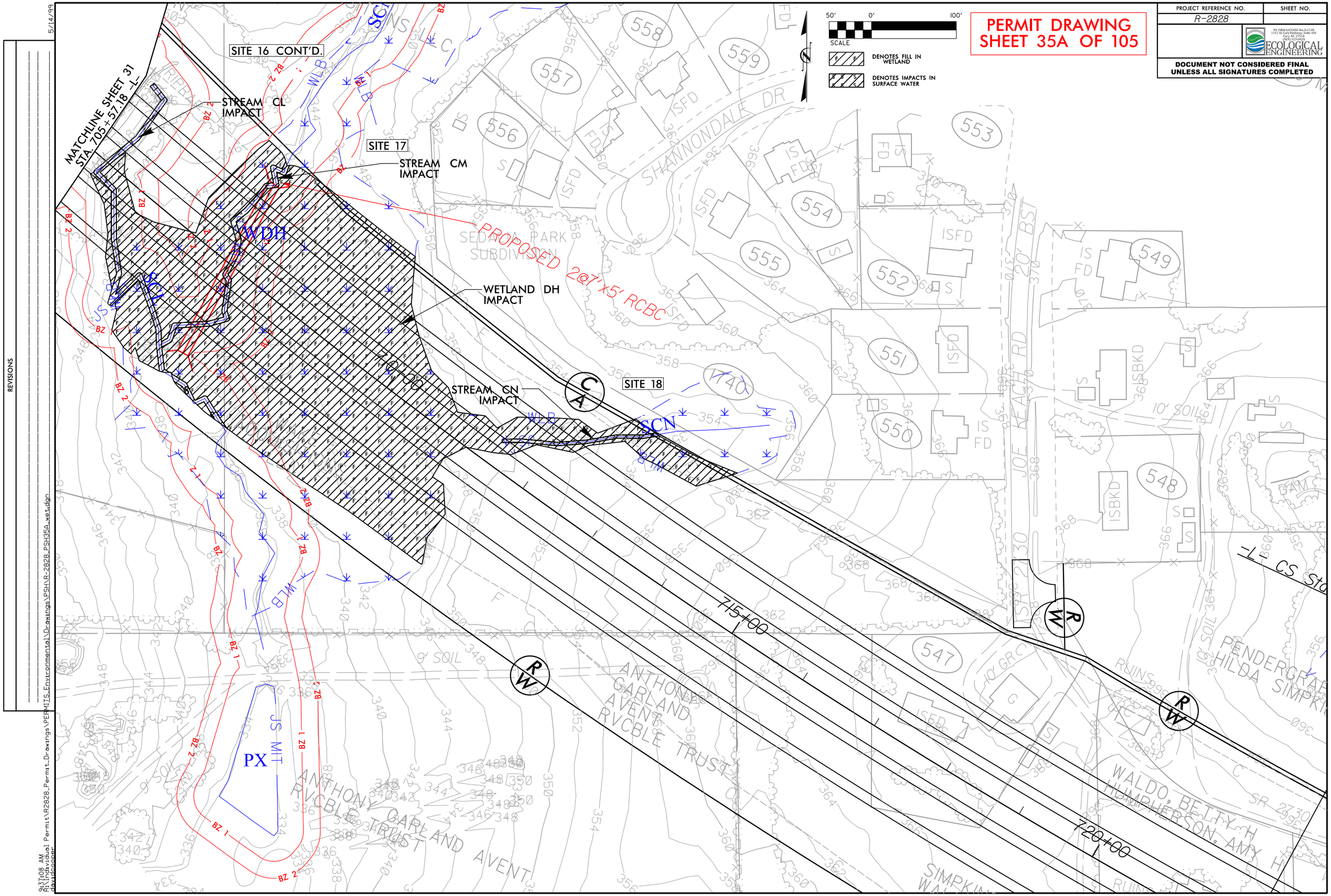
davidcooper



PERMIT DRAWING
SHEET 35 OF 105
PROJECT REFERENCE NO.
R-2828
SHEET NO.
ECOLOGICAL ENGINEERING
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
SCALE
50' 0' 100'
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
SITE 16 CONT'D.
SITE 17
SITE 18
MATCHLINE SHEET 31 STA. 705+57.18 -L-
STREAM CL IMPACT
STREAM CM IMPACT
WETLAND DH IMPACT
STREAM CN IMPACT
PROPOSED 2@7'x5' RCBC
SEDALIA PARK SUBDIVISION
SHANNONDALE DR
JOE LEACH RD
20' BST
SR 2730
715+00
720+00
ANTHONY GARLAND AVENT RVCBLE TRUST
WALDO, BETTY H
HUMPHERSON, AMY H
PENDERGRAF HILDA SIMPKI
-L- CS Sta
9' SOIL
10' SOIL
DAM
RUINS
PX
JS MIT
WDH
SCN
WLB
BZ 1
BZ 2
REVISIONS
5/14/99
9:37:02 AM
R:\Individual Permit\R2828_Permit_Drawings\PERMITS_Environmental\Drawings\PSH\R-2828_PSH35_wet.dgn



REVISIONS

5/14/99

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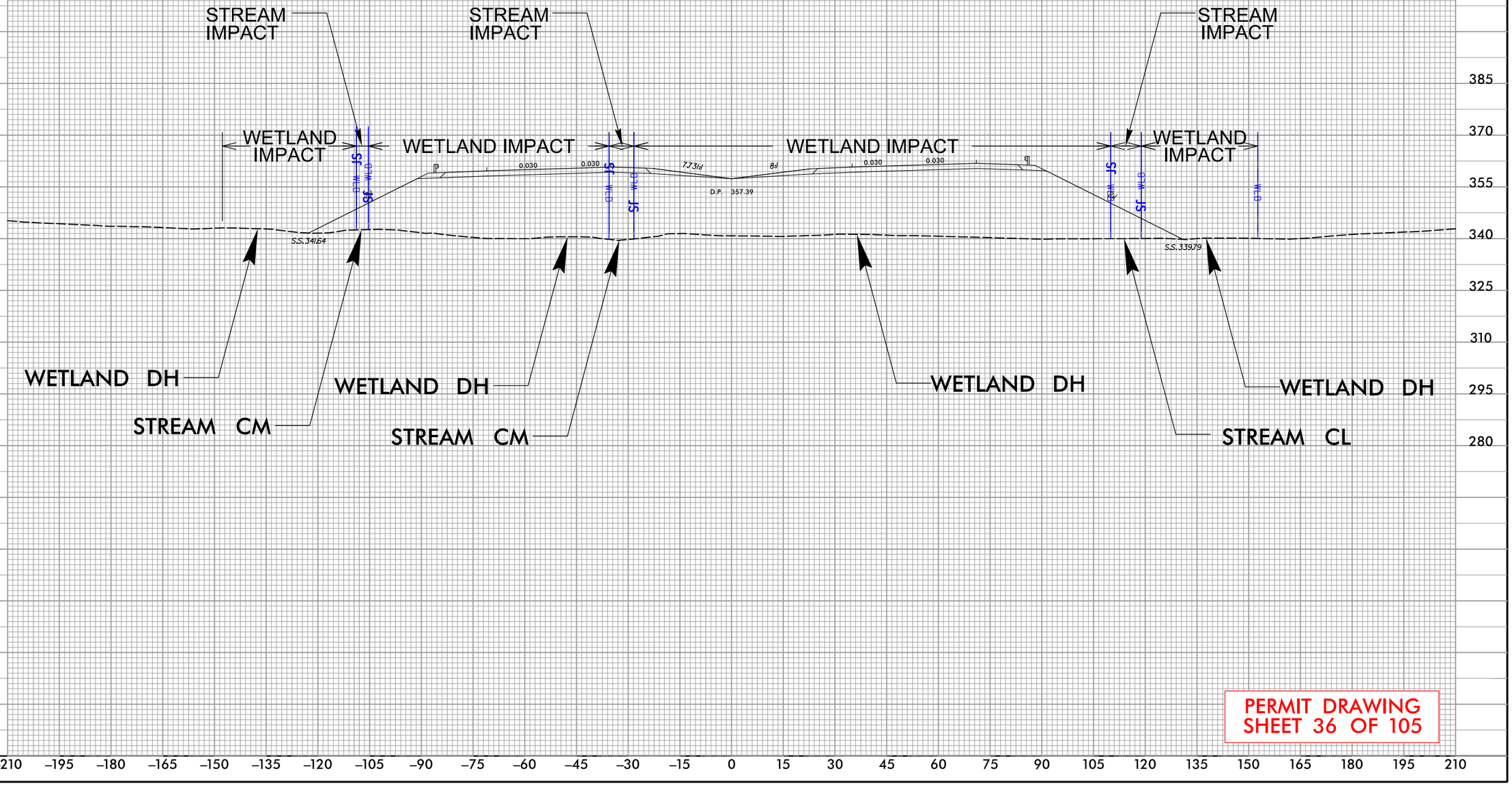
davidcooper

PROJECT REFERENCE NO.	SHEET NO.
R-2828	

NC FIRM LICENSE No: F-1148
1555 SE Cary Parkway, Suite 101
Cary, NC 27511
(919) 557-5409
ECOLOGICAL ENGINEERING

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CROSS–SECTION U–U, SITES 16 & 17, WETLAND DH, STREAM CL, & STREAM CM STATION 707+50 –L–



PERMIT DRAWING
SHEET 36 OF 105

REVISIONS 5/14/99

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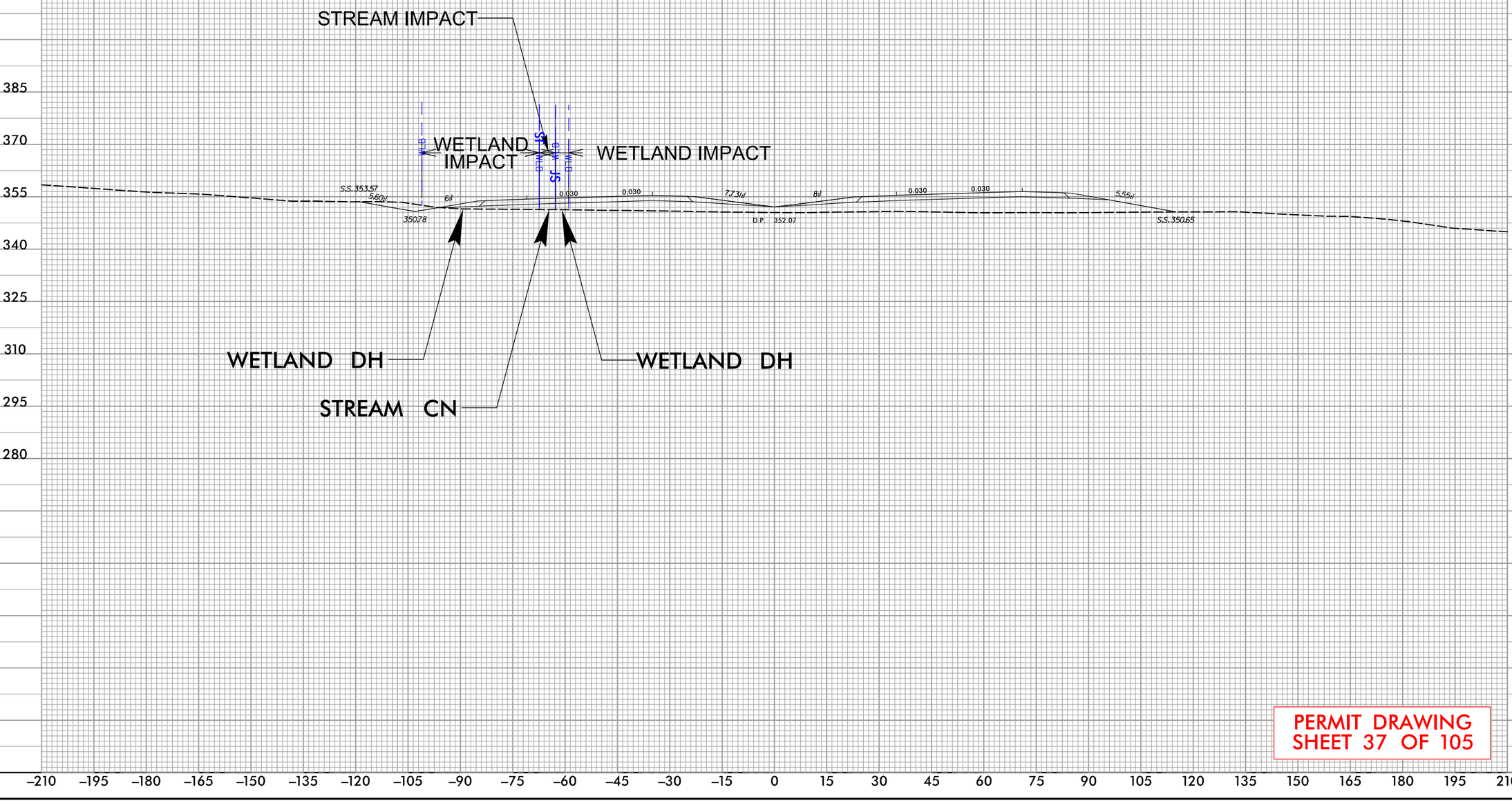
davidcooper

PROJECT REFERENCE NO.	SHEET NO.
R-2828	

NC FIRM LICENSE No: F-1148
1555 SE Cary Parkway, Suite 101
Cary, NC 27518
(919) 557-5909
ECOLOGICAL ENGINEERING

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CROSS–SECTION V–V
SITE 18, WETLAND DH & STREAM CN
STATION 712 + 00 –L–



PERMIT DRAWING
SHEET 37 OF 105

REVISIONS
5/14/99

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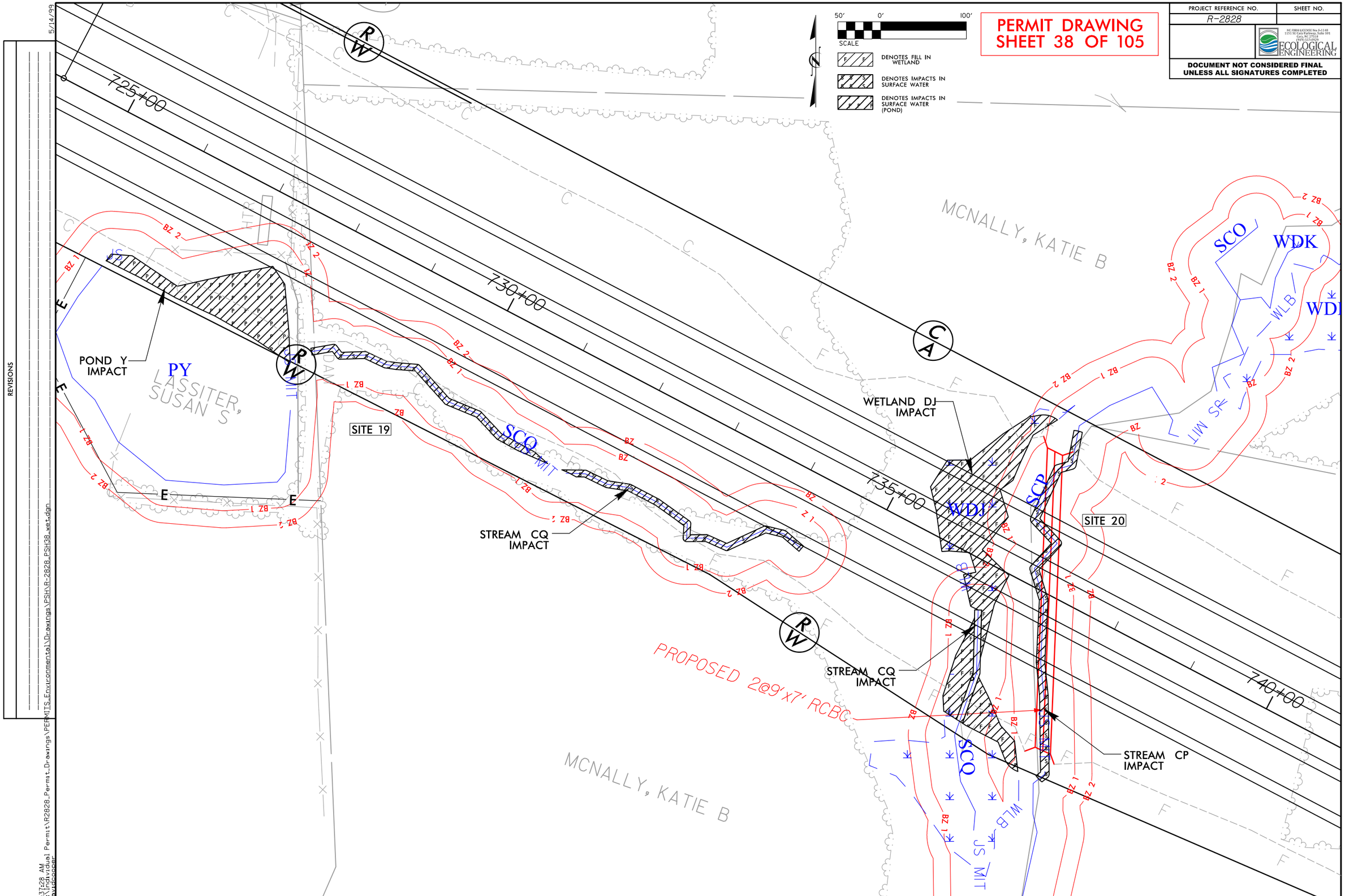
davidcooper



PERMIT DRAWING
SHEET 38 OF 105
PROJECT REFERENCE NO.
R-2828
SHEET NO.
ECOLOGICAL ENGINEERING
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
50' 0' 100'
SCALE
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
DENOTES IMPACTS IN SURFACE WATER (POND)
725+00
730+00
735+00
740+00
MCNALLY, KATIE B
MCNALLY, KATIE B
POND Y IMPACT
PY
LASSITER, SUSAN S
SITE 19
SITE 20
SCO
WDK
WDJ
SCP
WETLAND DJ IMPACT
STREAM CQ IMPACT
STREAM CQ IMPACT
STREAM CP IMPACT
PROPOSED 2@9'x7' RCBC
REVISIONS
5/14/99
9:37:28 AM
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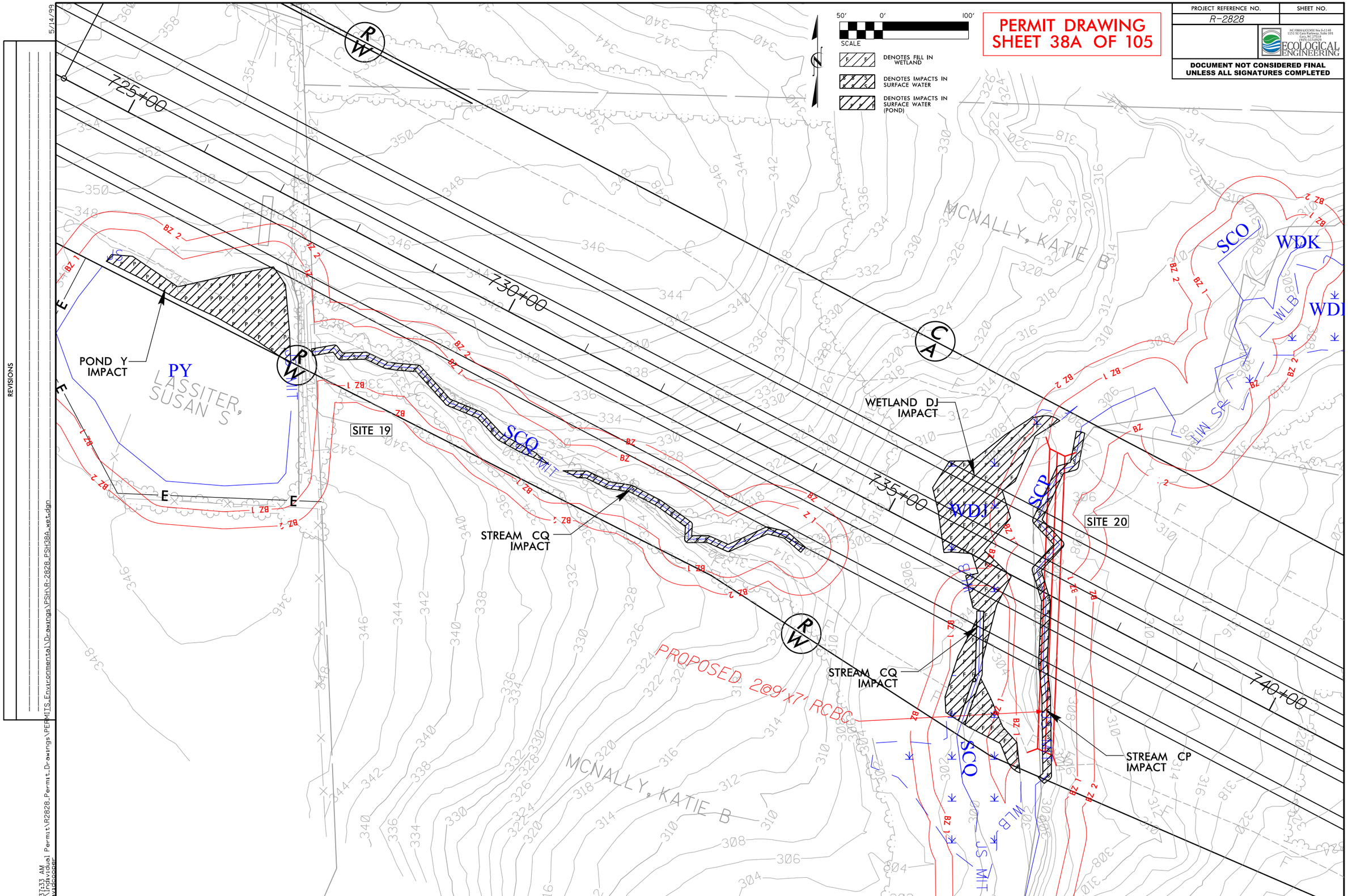
davidcooper



PERMIT DRAWING
SHEET 38A OF 105
PROJECT REFERENCE NO.
R-2828
SHEET NO.
ECOLOGICAL ENGINEERING
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
50' 0' 100'
SCALE
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
DENOTES IMPACTS IN SURFACE WATER (POND)
725+00
730+00
735+00
740+00
POND Y IMPACT
PY
LASSITER, SUSAN S
SITE 19
SITE 20
SCQ
WDJ
SCP
WDK
WETLAND DJ IMPACT
STREAM CQ IMPACT
STREAM CQ IMPACT
STREAM CP IMPACT
PROPOSED 2@9'x7' RCBC
MCNALLY, KATIE B
MCNALLY, KATIE B
REVISIONS
5/14/99
9:37:33 AM
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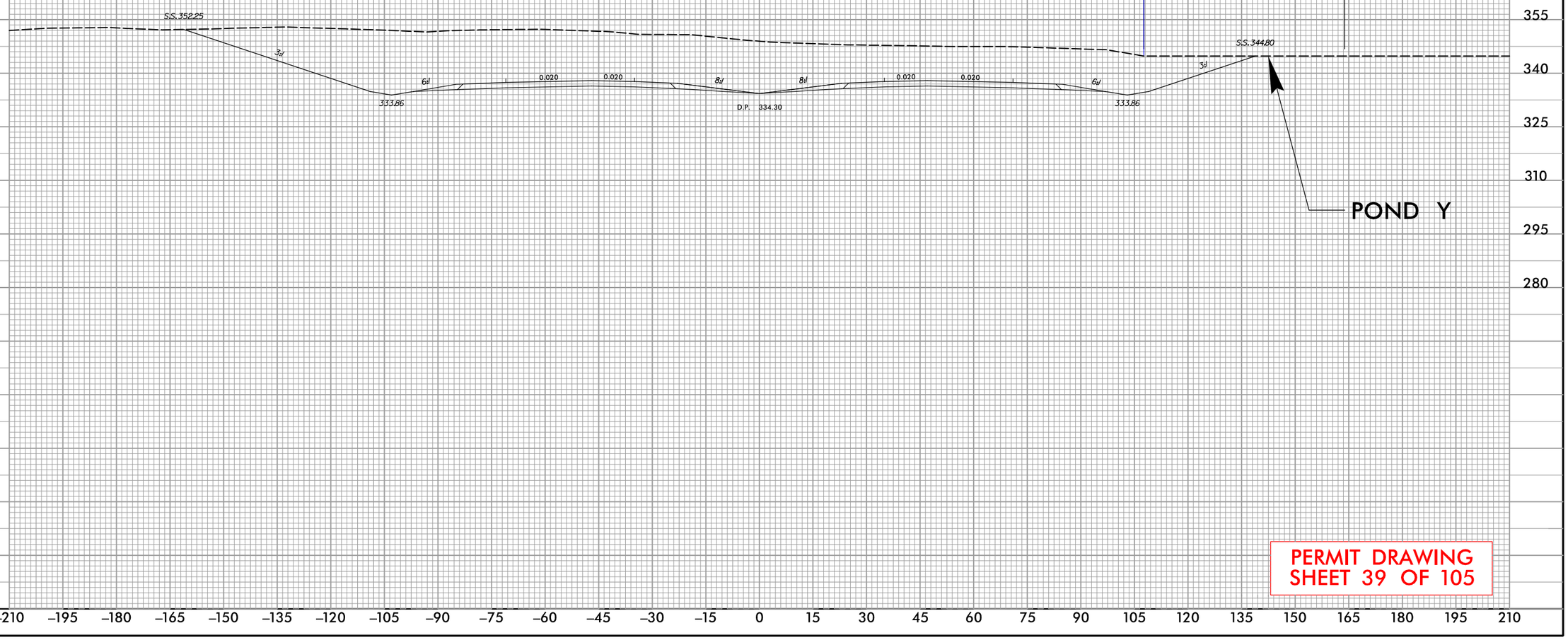
davidcooper

PROJECT REFERENCE NO.	SHEET NO.
R-2828	

NC FIRM LICENSE No: F-1148
1515 SE Cary Parkway, Suite 101
Cary, NC 27518
(919) 557-5909
ECOLOGICAL ENGINEERING

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CROSS–SECTION W–W
SITE 19, POND Y
STATION 727+00 –L–



PERMIT DRAWING
SHEET 39 OF 105

REVISIONS
5/14/99

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davidcooper

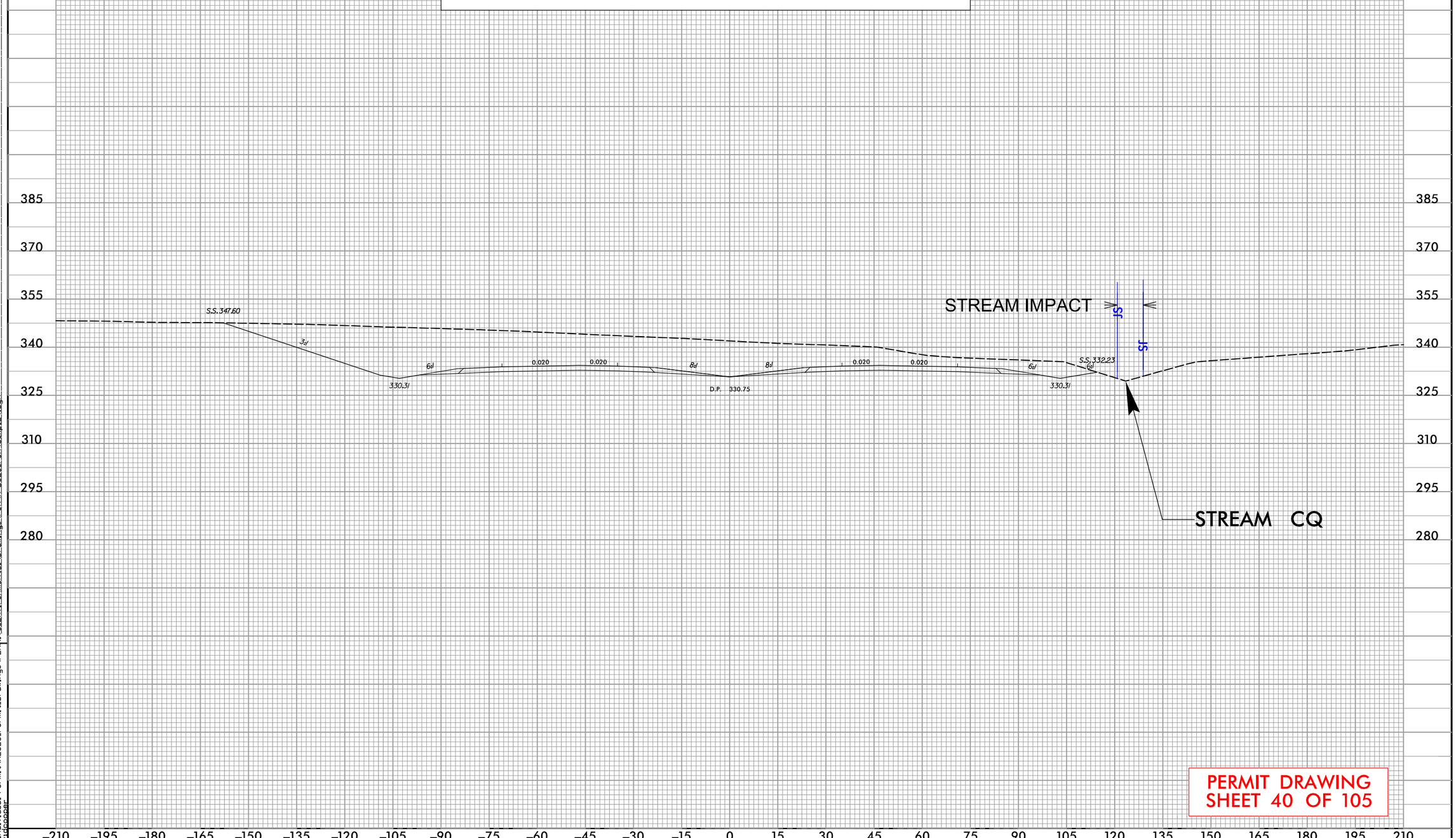
PROJECT REFERENCE NO.	SHEET NO.
R-2828	

NC FIRM LICENSE No F-1148
1151 SE Cary Parkway, Suite 101
Cary, NC 27518
(919) 553-9920

ECOLOGICAL ENGINEERING

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CROSS–SECTION X–X
SITE 19, STREAM CQ
STATION 730+00 –L–



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SHEET 40 OF 105

REVISIONS

5/14/99

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davidcooper

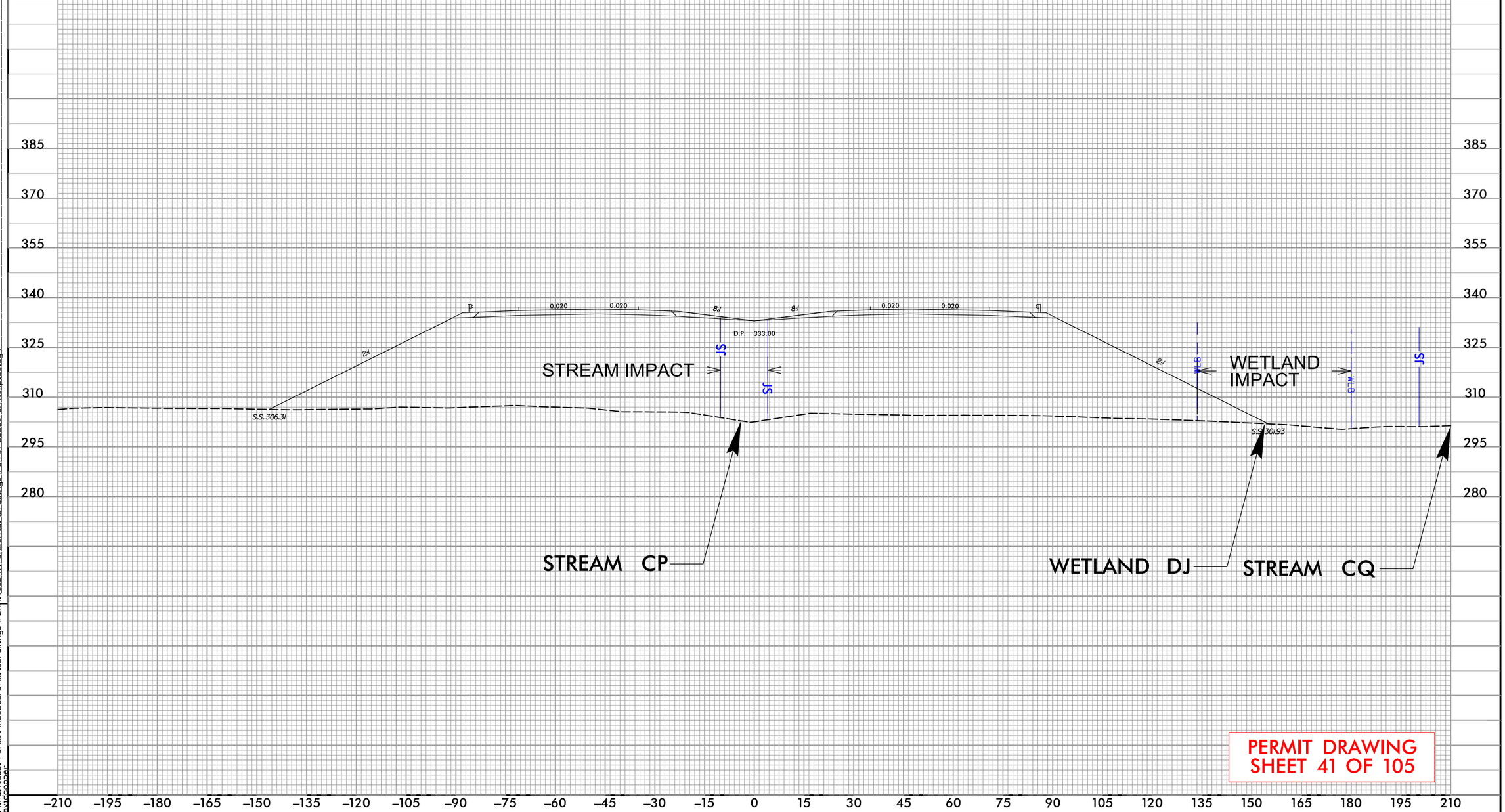
PROJECT REFERENCE NO.	SHEET NO.
R-2828	

NC FIRM LICENSE No F-1148
1151 SE Cary Parkway, Suite 101
Cary, NC 27518
(919) 555-0920

ECOLOGICAL ENGINEERING

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CROSS–SECTION Y–Y
SITE 20, WETLAND DJ, STREAM CP, & STREAM CQ STATION 737+00 –L–



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SHEET 41 OF 105

REVISIONS

5/14/99

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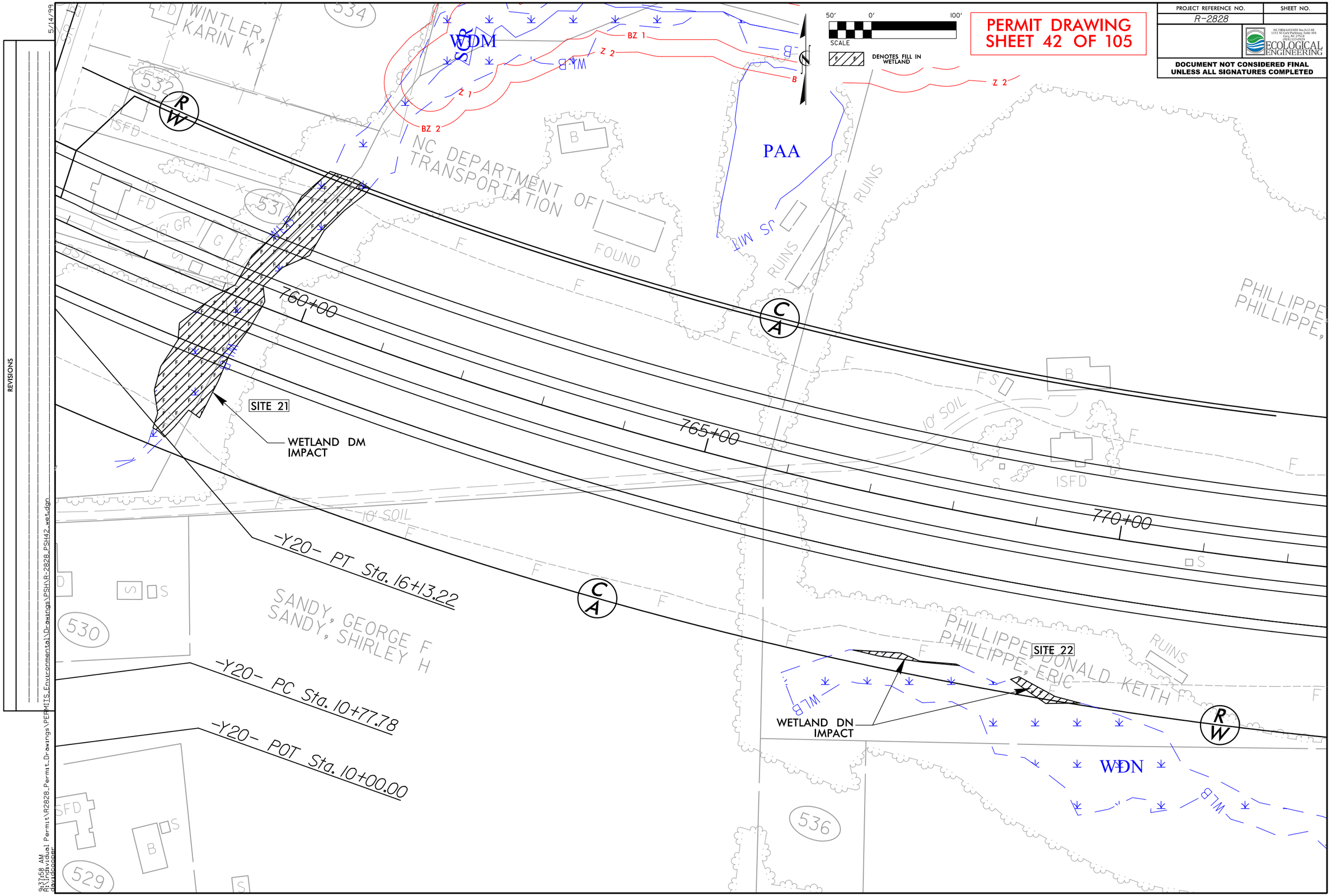
davidcooper



PERMIT DRAWING
SHEET 42 OF 105
PROJECT REFERENCE NO.
R-2828
SHEET NO.
ECOLOGICAL ENGINEERING
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
50' 0' 100'
SCALE
DENOTES FILL IN WETLAND
WDM
PAA
WDN
NC DEPARTMENT OF TRANSPORTATION
WINTLER, KARIN K
SANDY, GEORGE F
SANDY, SHIRLEY H
PHILLIPPE, DONALD KEITH
PHILLIPPE, ERIC
PHILLIPPE, PHILLIPPE,
SITE 21
SITE 22
WETLAND DM IMPACT
WETLAND DN IMPACT
760+00
765+00
770+00
-Y20- PT Sta. 16+13.22
-Y20- PC Sta. 10+77.78
-Y20- POT Sta. 10+00.00
BZ 1
BZ 2
Z 1
Z 2
RUINS
FOUND
10' SOIL
ISFD
WLB
534
532
531
530
529
536
REVISIONS
5/14/99
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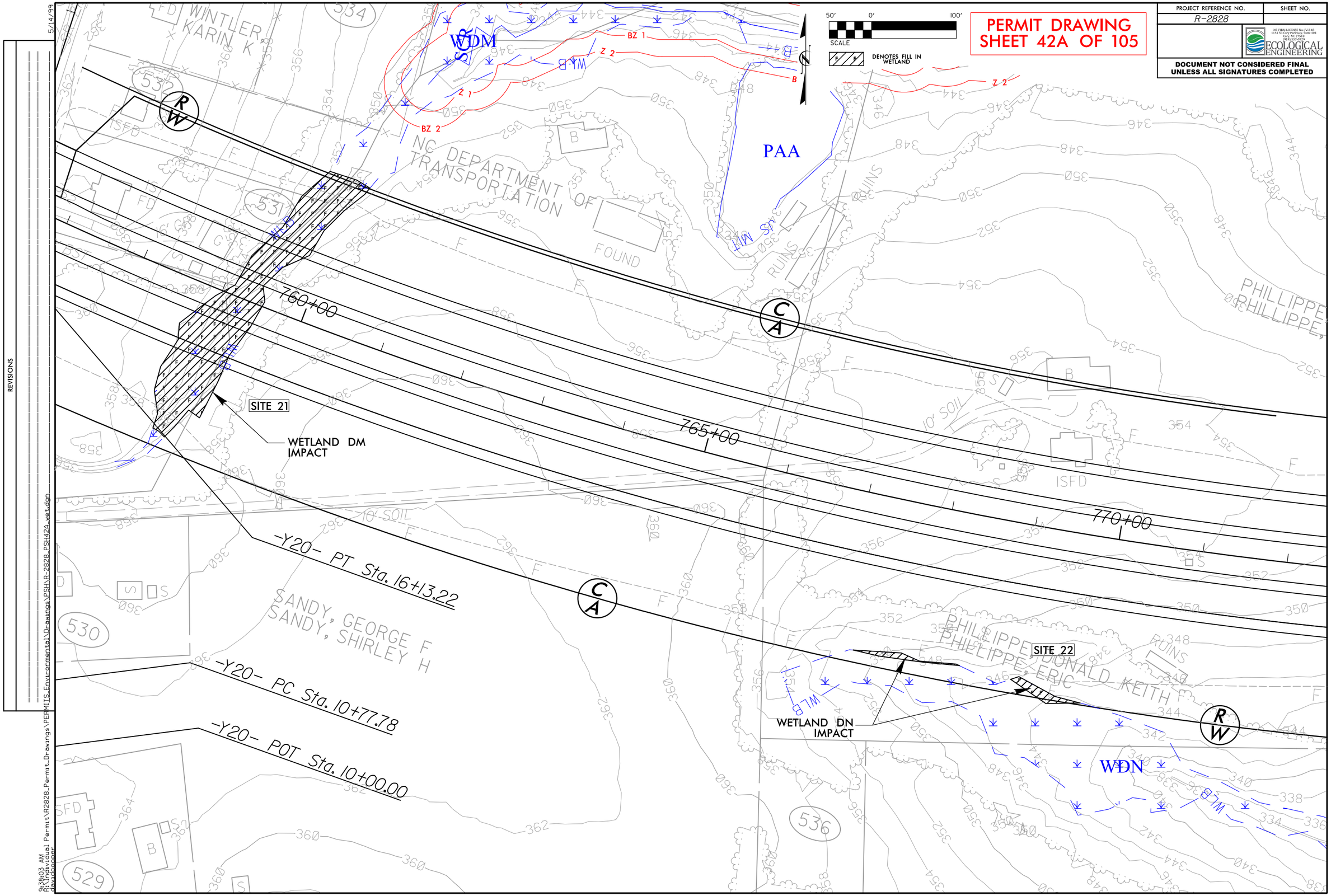
davidcooper



PERMIT DRAWING
SHEET 42A OF 105
PROJECT REFERENCE NO.
R-2828
SHEET NO.
ECOLOGICAL ENGINEERING
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
50' 0' 100'
SCALE
DENOTES FILL IN WETLAND
WDM
PAA
WDN
BZ 1
BZ 2
Z 1
Z 2
NC DEPARTMENT OF TRANSPORTATION
WINTLER, KARIN K
SANDY, GEORGE F
SANDY, SHIRLEY H
PHILLIPPE, DONALD KEITH
PHILLIPPE, ERIC
PHILLIPPE
FOUND
RUINS
ISFD
760+00
765+00
770+00
SITE 21
SITE 22
WETLAND DM IMPACT
WETLAND DN IMPACT
-Y20- PT Sta. 16+13.22
-Y20- PC Sta. 10+77.78
-Y20- POT Sta. 10+00.00
REVISIONS
5/14/99
9:38:03 AM
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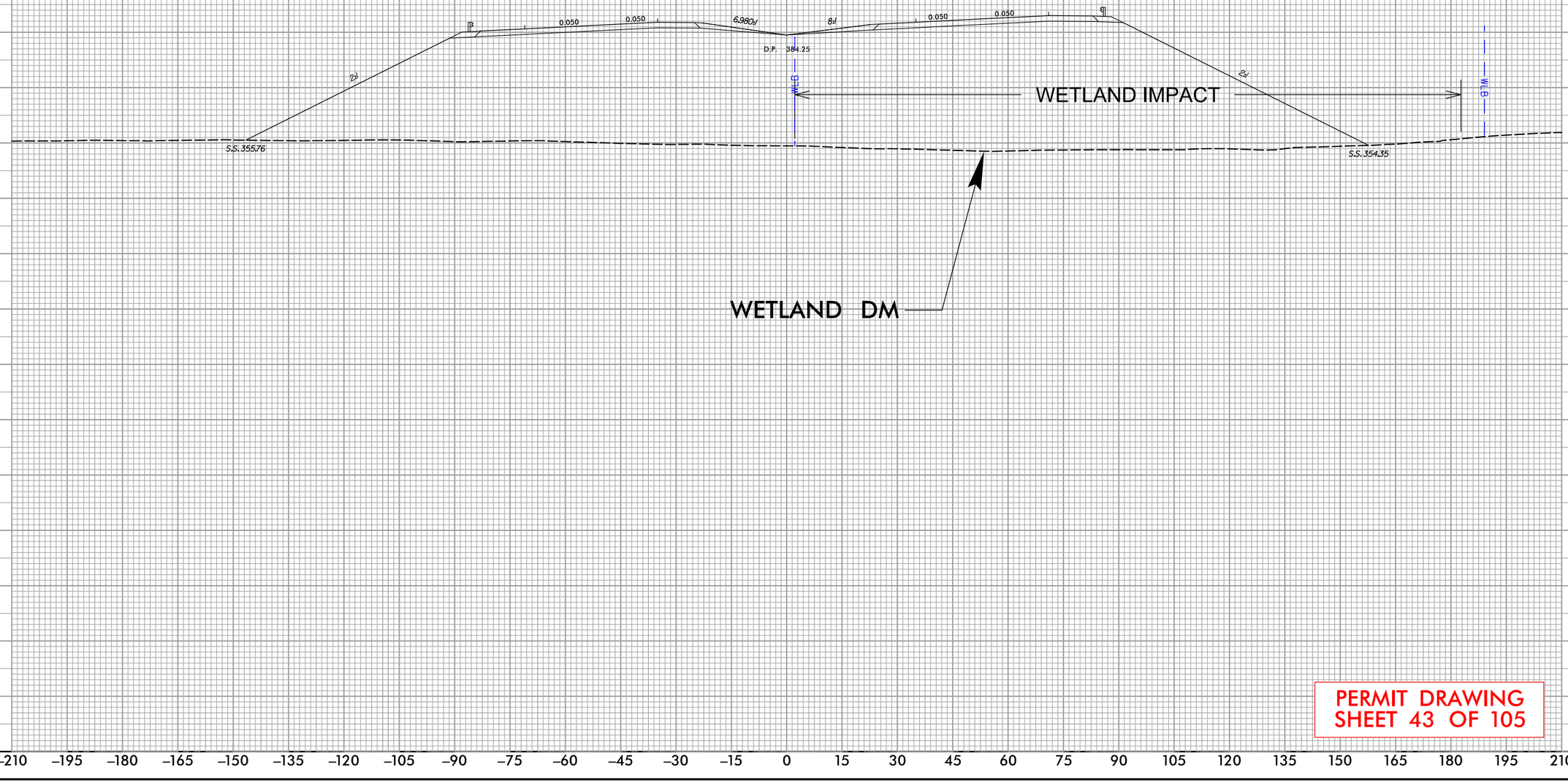
davidcooper

PROJECT REFERENCE NO.	SHEET NO.
R-2828	

NC FIRM LICENSE No: F-1148
1515 SE Gary Parkway, Suite 101
Garner, NC 27529
(919) 553-6906
ECOLOGICAL ENGINEERING

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CROSS–SECTION Z–Z
SITE 21, WETLAND DM
STATION 759+00 –L–



PERMIT DRAWING
SHEET 43 OF 105

REVISIONS
5/14/99

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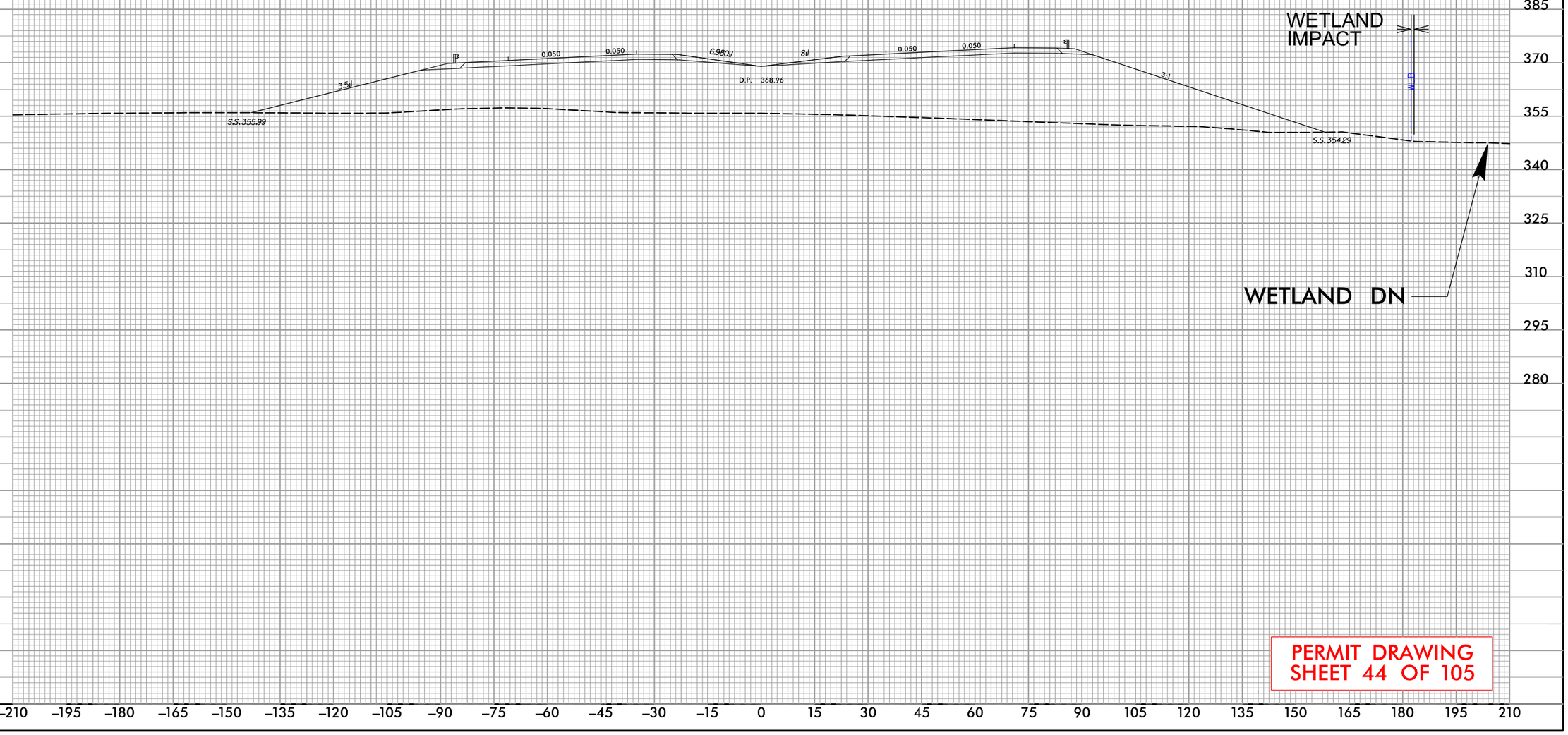
davidcooper

PROJECT REFERENCE NO.	SHEET NO.
R-2828	

NC FIRM LICENSE No: F-1148
1555 SE Cary Parkway, Suite 101
Cary, NC 27518
(919) 551-4900
ECOLOGICAL ENGINEERING

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CROSS–SECTION AA–AA
SITE 22, WETLAND DN
STATION 768+00 –L–



PERMIT DRAWING
SHEET 44 OF 105

REVISIONS
5/14/99

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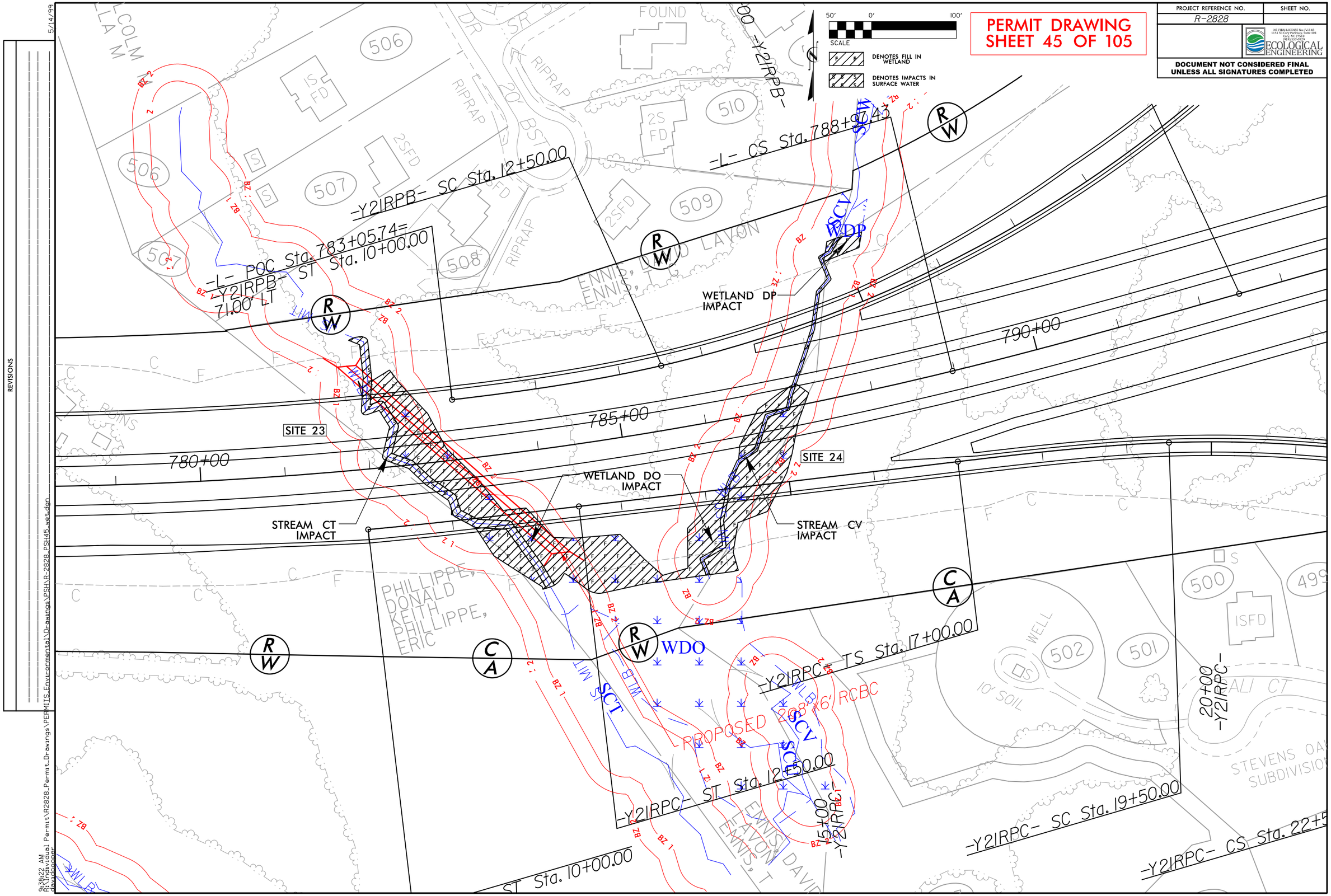
davidcooper


PERMIT DRAWING
SHEET 45 OF 105
PROJECT REFERENCE NO.
R-2828
SHEET NO.
ECOLOGICAL ENGINEERING
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
SCALE
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
-L- POC Sta. 783+05.74=
-Y21RPB- ST Sta. 10+00.00
71.00' LT
-Y21RPB- SC Sta. 12+50.00
-L- CS Sta. 788+97.43
-Y21RPC- TS Sta. 17+00.00
-Y21RPC- ST Sta. 12+50.00
-Y21RPC- SC Sta. 19+50.00
-Y21RPC- CS Sta. 22+5
ST Sta. 10+00.00
780+00
785+00
790+00
SITE 23
SITE 24
WETLAND DP IMPACT
WETLAND DO IMPACT
STREAM CT IMPACT
STREAM CV IMPACT
PROPOSED 208'x6' RCBC
WDO
WDP
SCT
SCV
PHILLIPPE, DONALD KEITH
PHILLIPPE, ERIC
ENNIS, DAVID LAVON
ENNIS, T
STEVENS OAK SUBDIVISION
10' SOIL
WELL
ISFD
FOUND
RIPRAP
506
507
508
509
510
500
501
502
R W
C A
REVISIONS
5/14/99
9:38:22 AM
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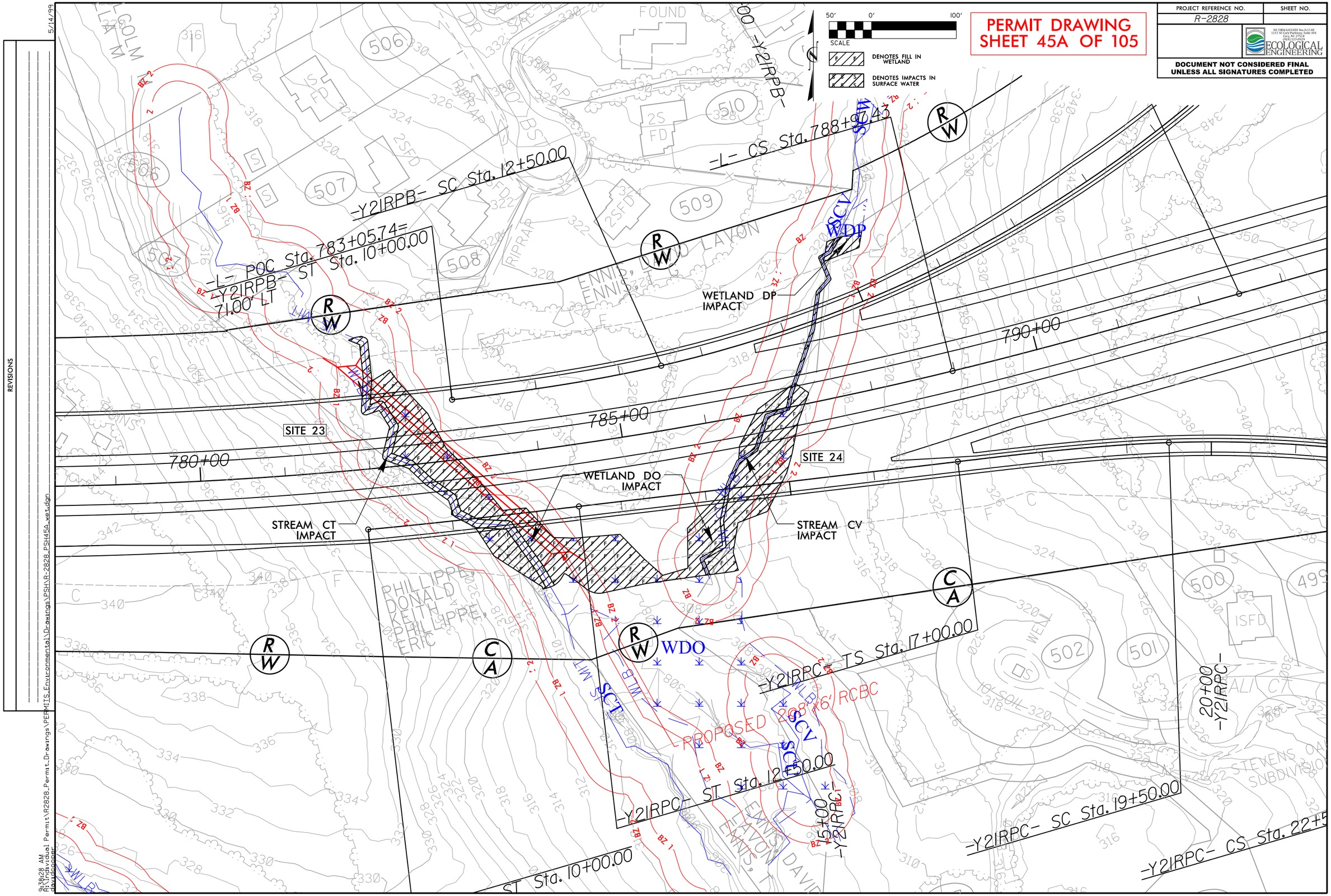
davidcooper


PERMIT DRAWING
SHEET 45A OF 105
PROJECT REFERENCE NO.
R-2828
SHEET NO.
ECOLOGICAL ENGINEERING
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
50' 0' 100'
SCALE
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
-L- POC Sta. 783+05.74=
-Y21RPB- ST Sta. 10+00.00
71.00' LT
-Y21RPB- SC Sta. 12+50.00
-L- CS Sta. 788+97.43
WETLAND DP IMPACT
WETLAND DO IMPACT
STREAM CT IMPACT
STREAM CV IMPACT
SITE 23
SITE 24
780+00
785+00
790+00
-Y21RPC- TS Sta. 17+00.00
-Y21RPC- ST Sta. 12+50.00
-Y21RPC- SC Sta. 19+50.00
-Y21RPC- CS Sta. 22+5
ST Sta. 10+00.00
PROPOSED 208'x6' RCBC
WDO
WDP
SCV
SCT
20+00 -Y21RPC-
15+00 -Y21RPC-
REVISIONS
5/14/99
9:38:28 AM
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davidcooper

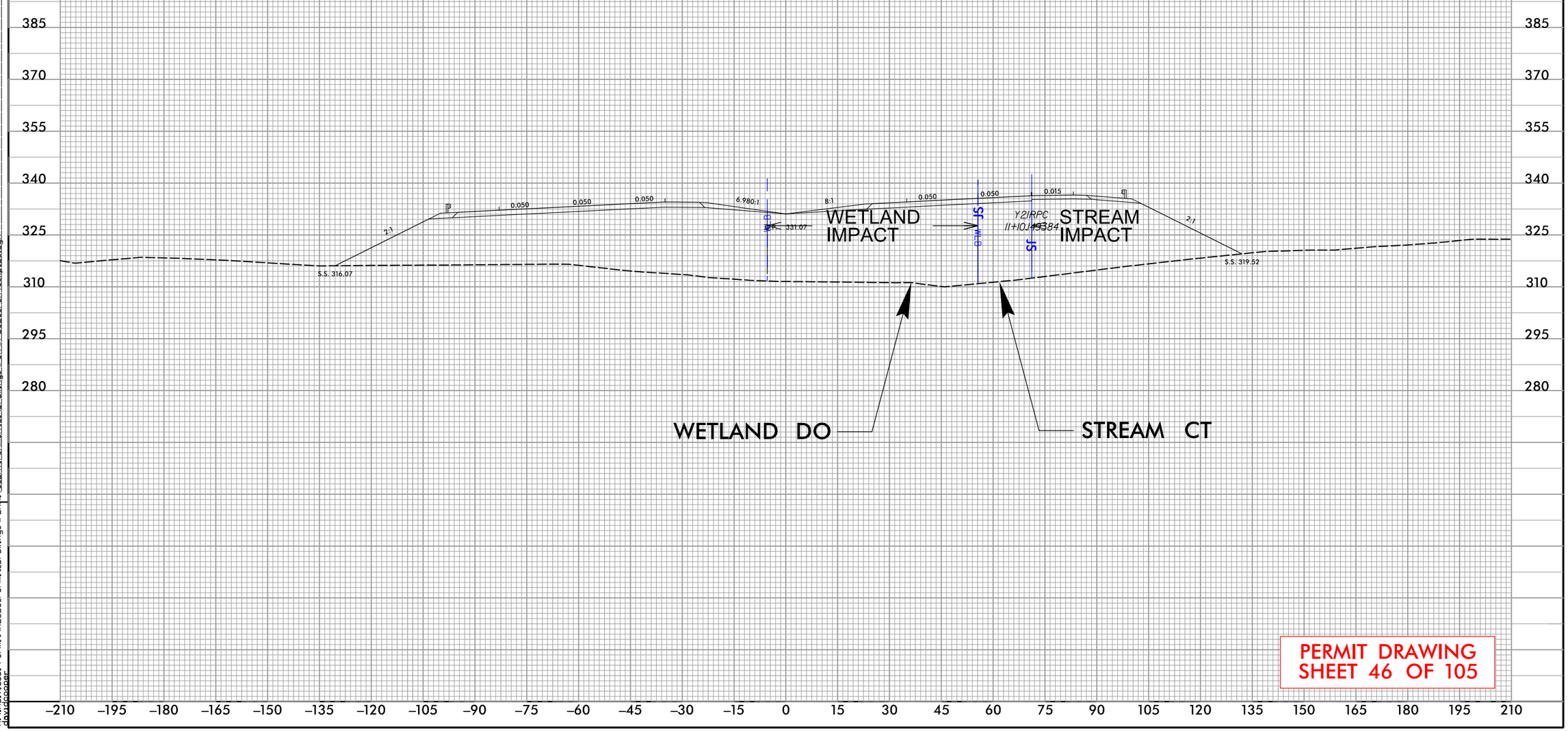
PROJECT REFERENCE NO.	SHEET NO.
R-2828	

NC FIRM LICENSE No F-1148
1151 SE Cary Parkway, Suite 101
Cary, NC 27518
(919) 555-0920

ECOLOGICAL ENGINEERING

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CROSS–SECTION AB–AB
SITE 23, WETLAND DO & STREAM CT
STATION 783+00 –L–



PERMIT DRAWING
SHEET 46 OF 105

REVISIONS

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PROJECT REFERENCE NO.	SHEET NO.
R-2828	

ECOLOGICAL ENGINEERING

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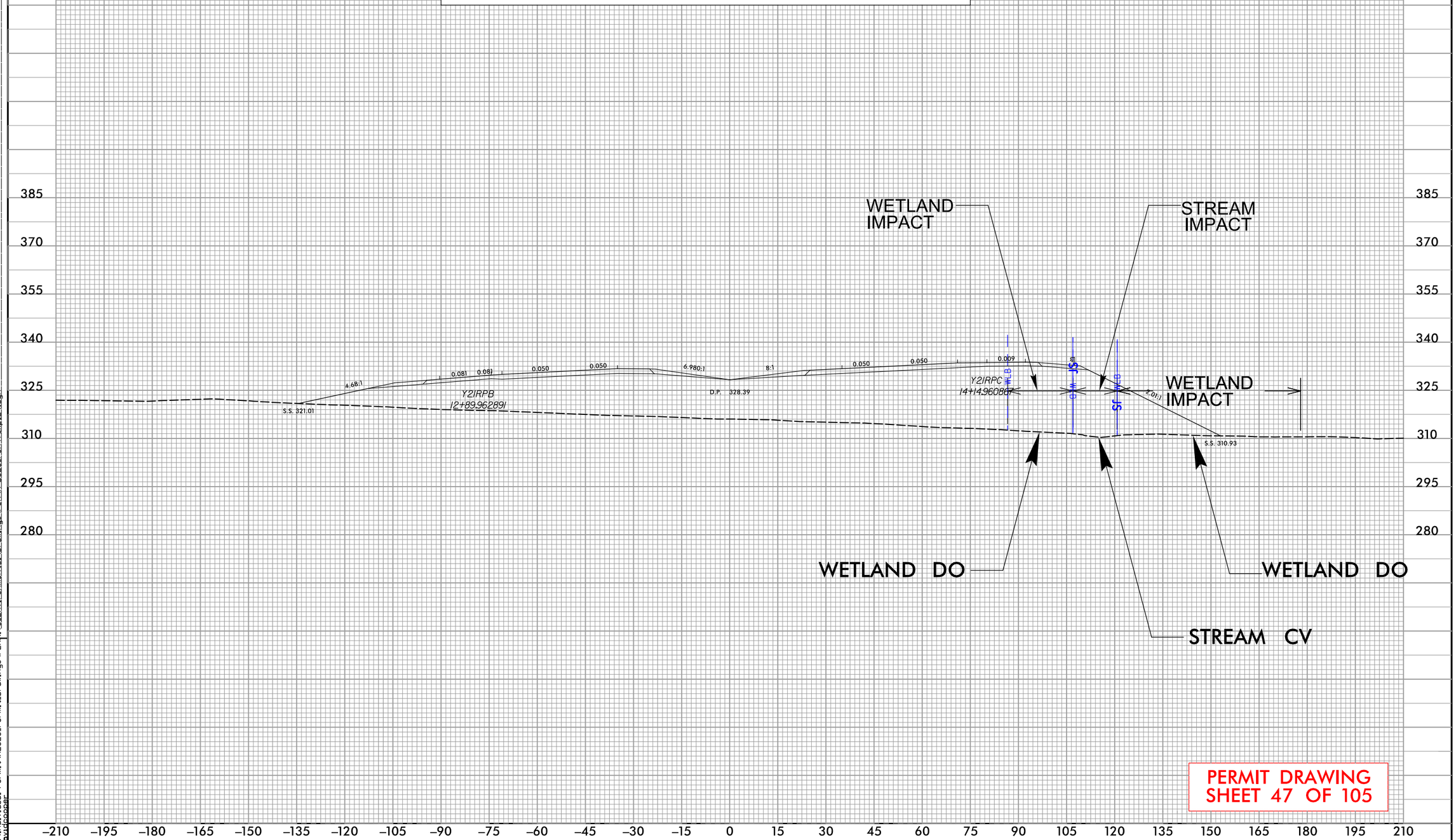
CROSS-SECTION AC-AC SITES 23 & 24, WETLAND DO & STREAM CV STATION 786+00 -L-



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SHEET 47 OF 105

REVISIONS

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R-2828	

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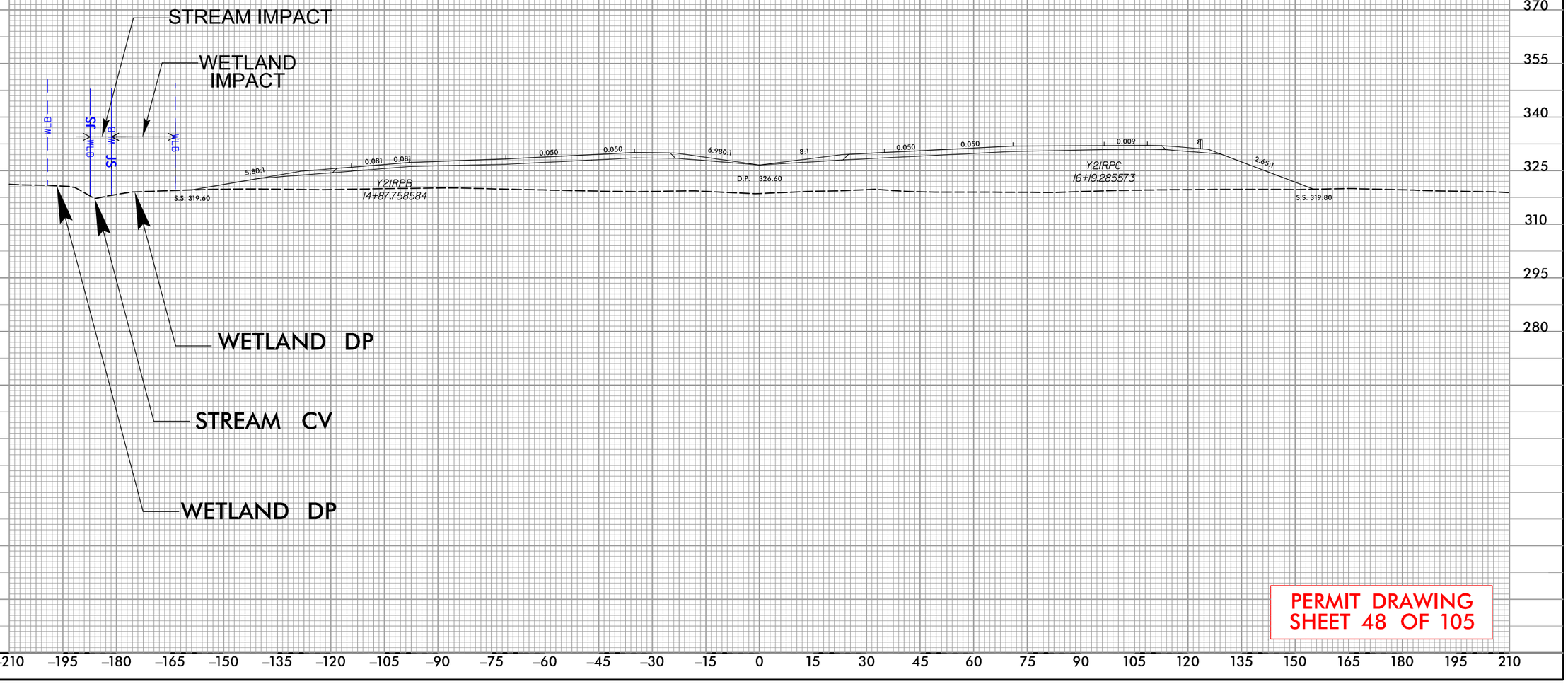
CROSS–SECTION AD–AD
SITE 24, WETLAND DP & STREAM CV
STATION 788+00 –L–



PERMIT DRAWING
SHEET 48 OF 105

REVISIONS
5/14/99

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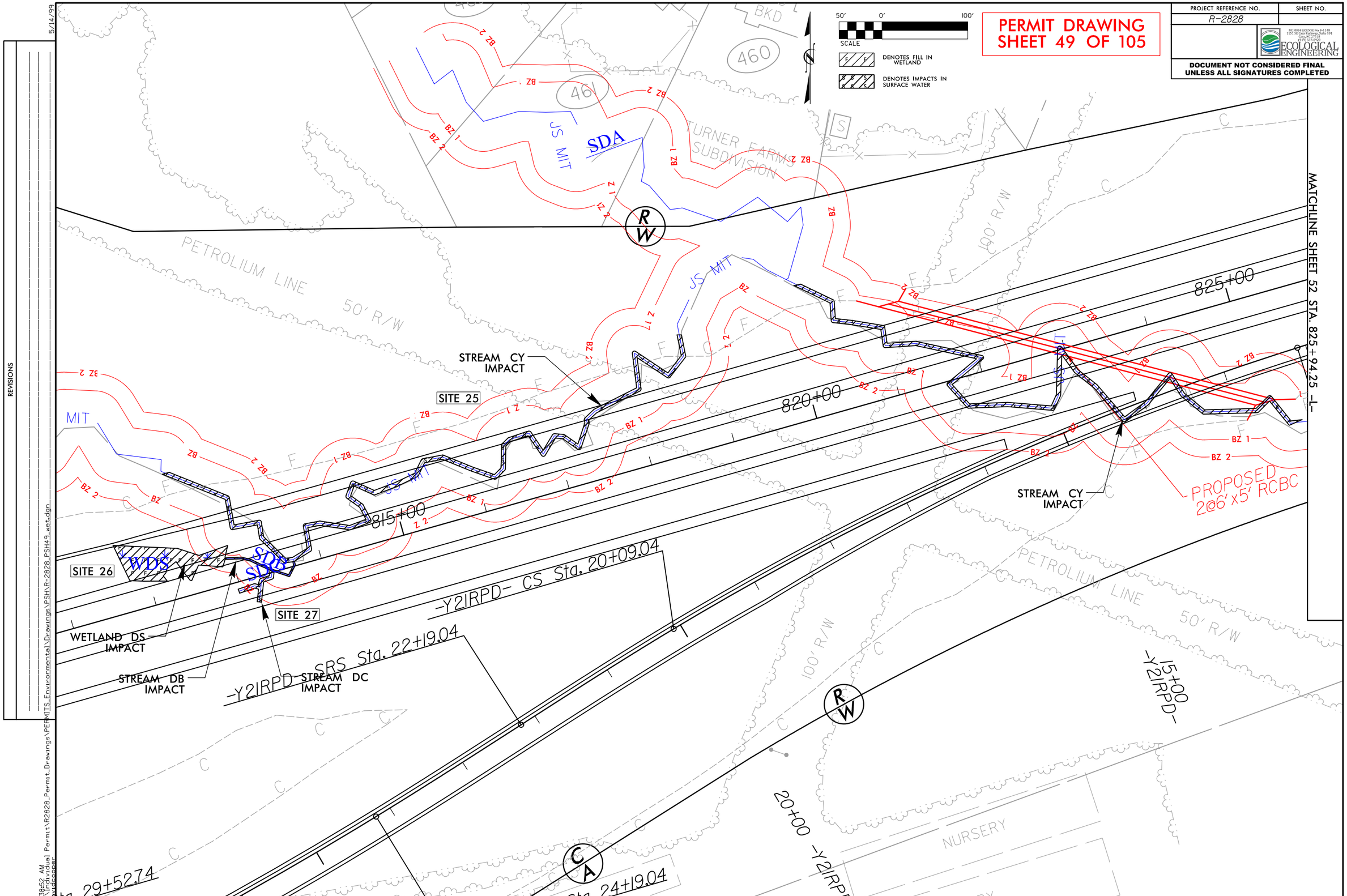
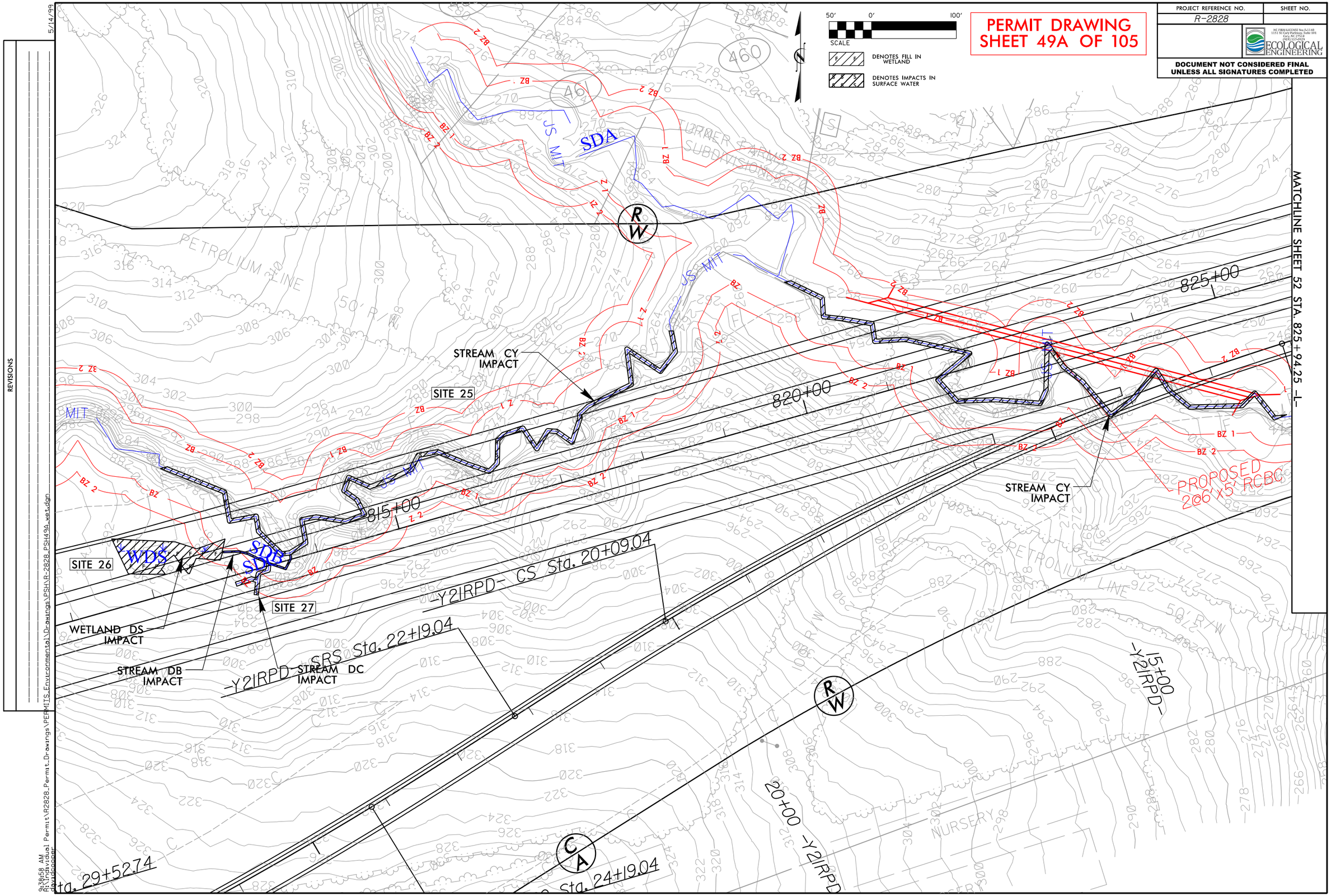
davidcooper



PERMIT DRAWING
SHEET 49 OF 105
PROJECT REFERENCE NO.
R-2828
SHEET NO.
ECOLOGICAL ENGINEERING
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
SCALE
50' 0' 100'
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
MATCHLINE SHEET 52 STA. 825+94.25 -L-
TURNER FARMS SUBDIVISION
PETROLIUM LINE
50' R/W
100' R/W
JS MIT
SDA
SDB
WDS
STREAM CY IMPACT
SITE 25
SITE 26
SITE 27
WETLAND DS IMPACT
STREAM DB IMPACT
STREAM DC IMPACT
-Y21RPD- CS Sta. 20+09.04
-Y21RPD- SRS Sta. 22+19.04
825+00
820+00
815+00
PROPOSED 2@6'x5' RCBC
15+00 -Y21RPD-
20+00 -Y21RPD
NURSERY
Sta. 24+19.04
Sta. 29+52.74
460
461
REVISIONS
5/14/99



REVISIONS

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R-2828	

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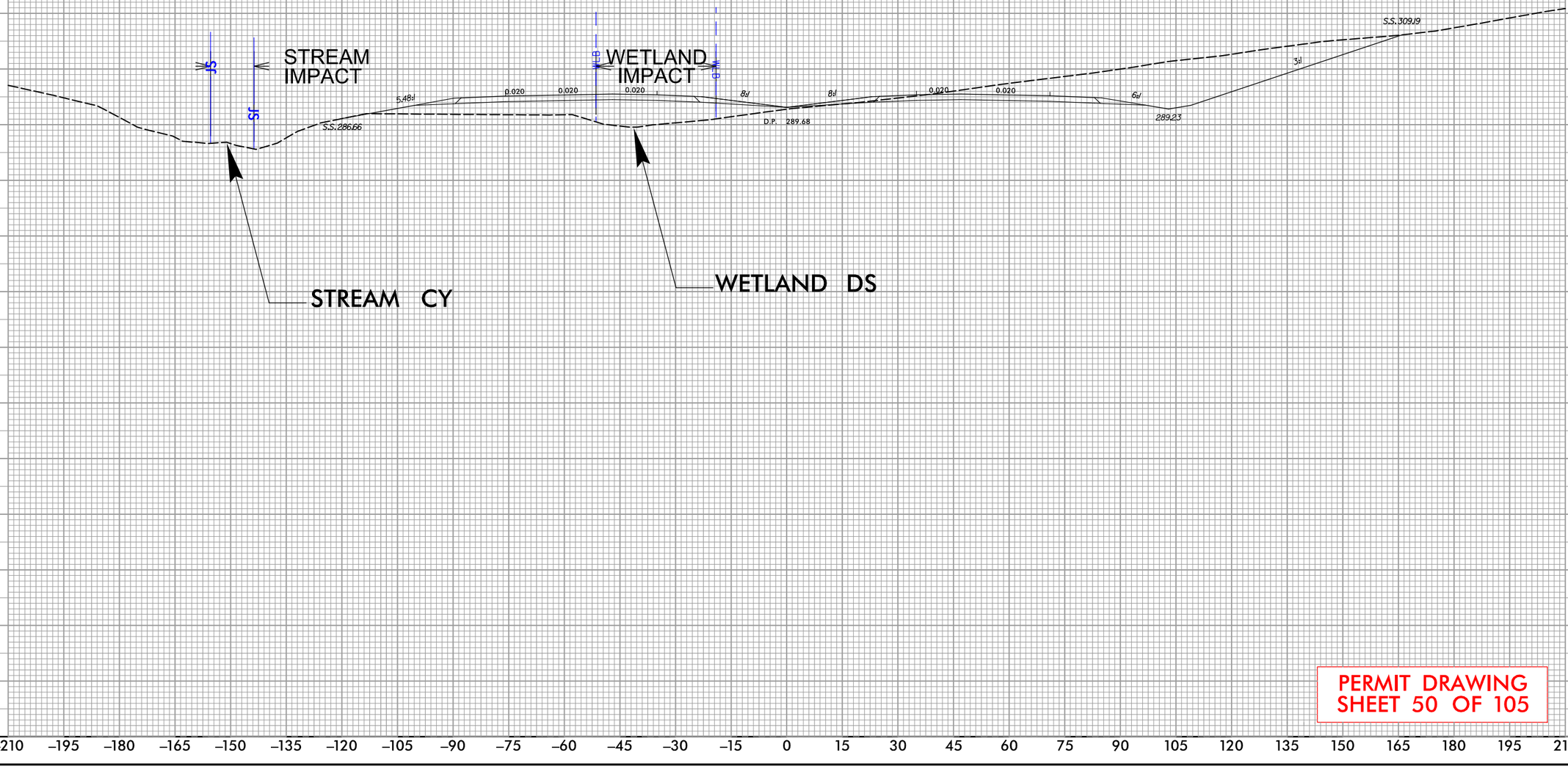
CROSS–SECTION AE–AE, SITES 25 & 26, WETLAND DS & STREAM CY STATION 812+50 –L–



PERMIT DRAWING
SHEET 50 OF 105

REVISIONS
5/14/99

9:39:05 AM
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R-2828	

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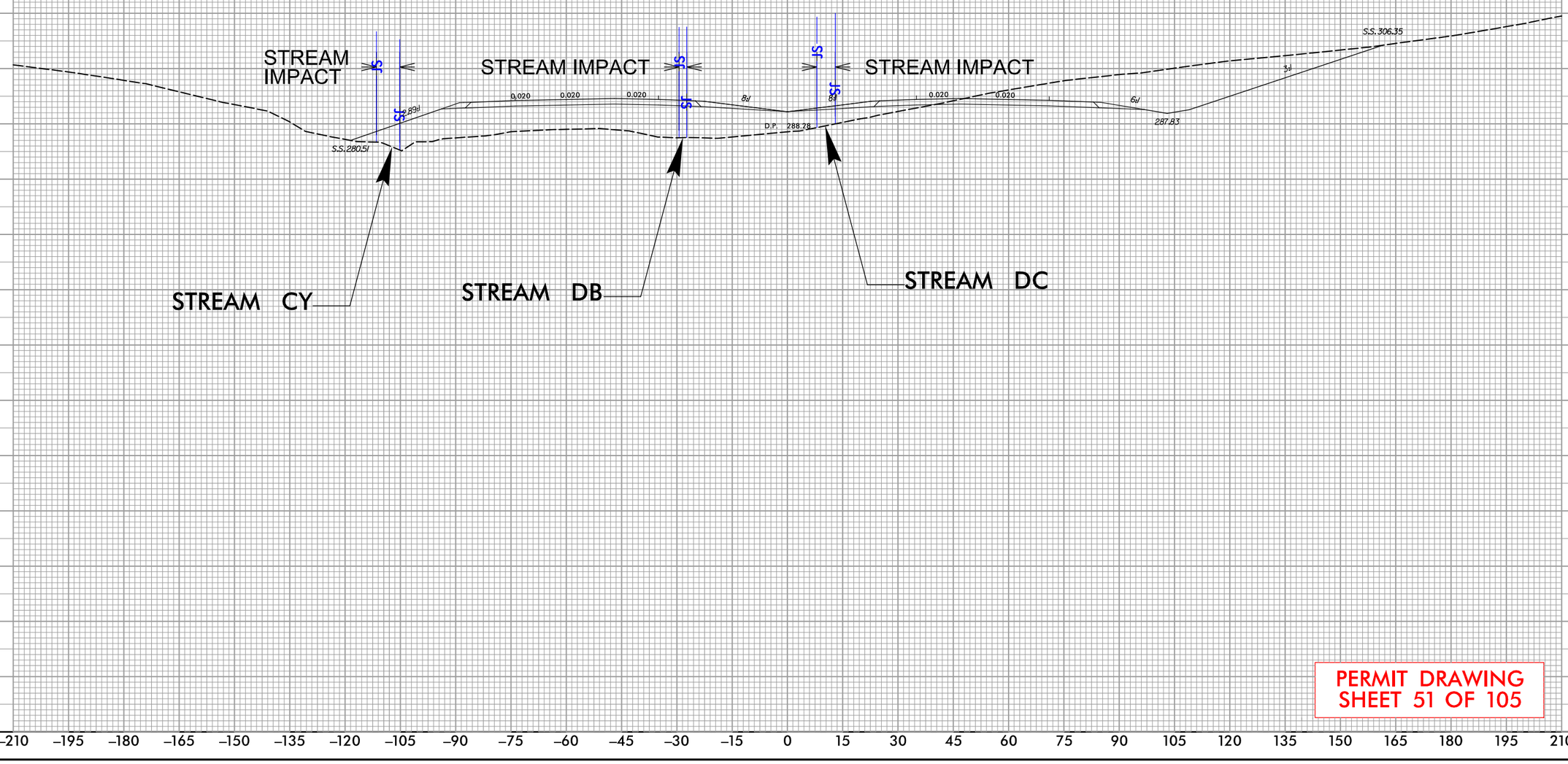
CROSS–SECTION AF–AF, SITES 25, 26, & 27, STREAM CY, STREAM DC, & STREAM DB STATION 813+00 –L–



PERMIT DRAWING
SHEET 51 OF 105

REVISIONS

5/14/99

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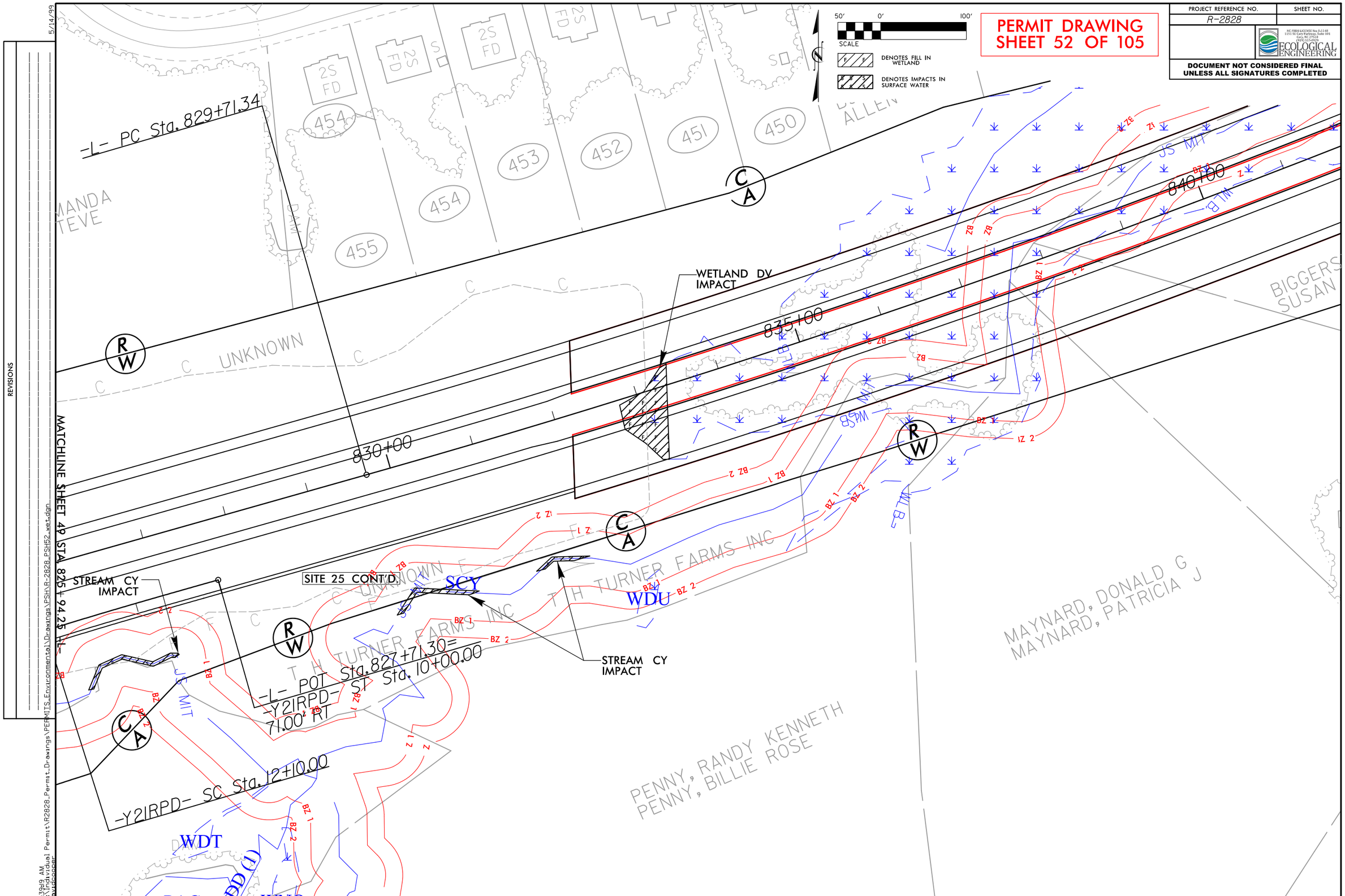
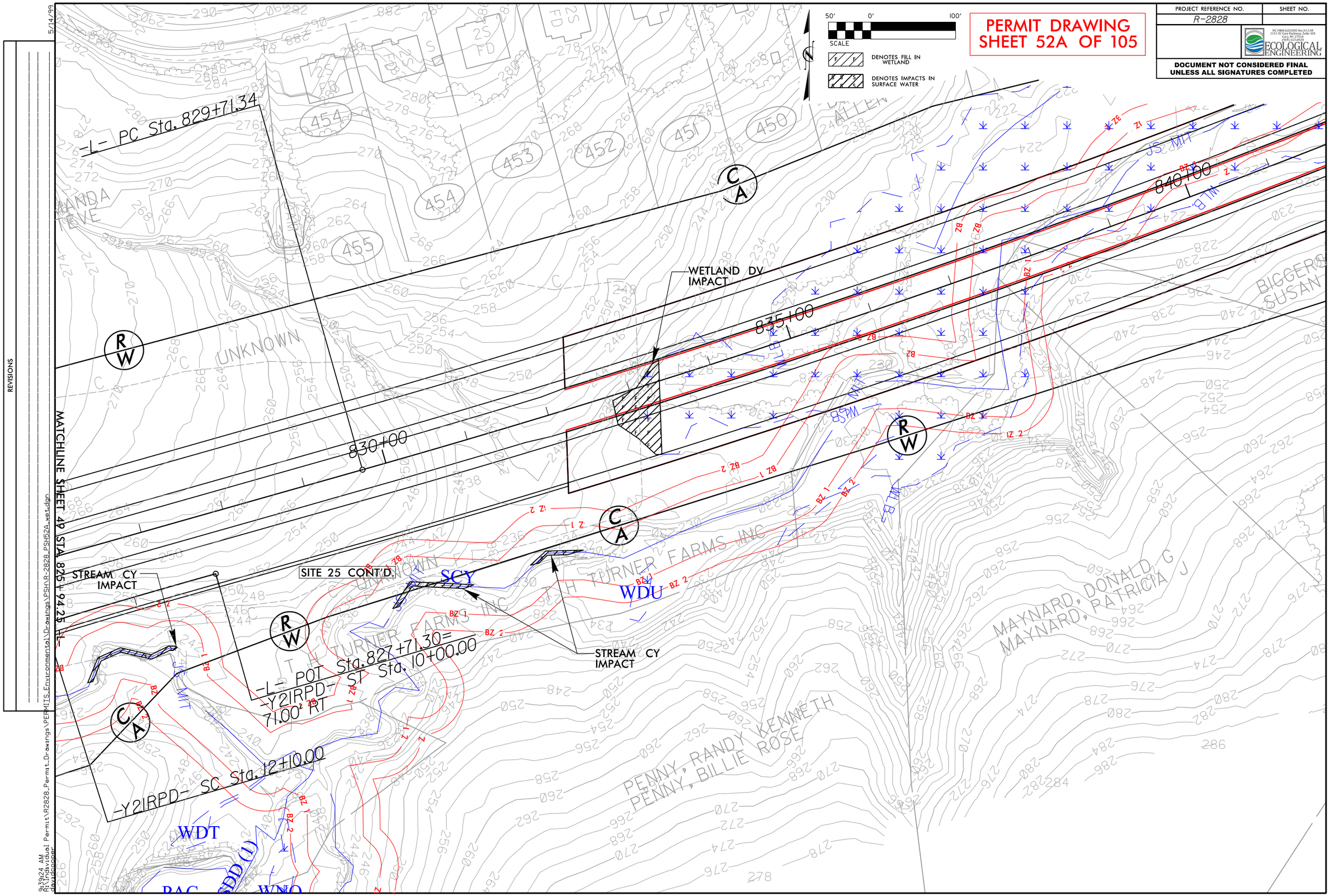


PERMIT DRAWING
SHEET 52 OF 105
PROJECT REFERENCE NO.
R-2828
SHEET NO.
ECOLOGICAL ENGINEERING
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
50' 0' 100'
SCALE
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
-L- PC Sta. 829+71.34
WETLAND DV IMPACT
835+00
840+00
830+00
MATCHLINE SHEET 49 STA. 825+94.25 -L-
STREAM CY IMPACT
SITE 25 CONT'D.
SCY
WDU
WDT
-L- POT Sta. 827+71.30=
-Y21RPD- ST Sta. 10+00.00
71.00' RT
-Y21RPD- SC Sta. 12+10.00
UNKNOWN
T H TURNER FARMS INC
MAYNARD, DONALD G
MAYNARD, PATRICIA J
PENNY, RANDY KENNETH
PENNY, BILLIE ROSE
BIGGERS SUSAN
REVISIONS
5/14/99



PERMIT DRAWING
SHEET 52A OF 105
PROJECT REFERENCE NO.
R-2828
SHEET NO.
ECOLOGICAL ENGINEERING
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
50' 0' 100'
SCALE
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
-L- PC Sta. 829+71.34
WETLAND DV IMPACT
835+00
830+00
840+00
STREAM CY IMPACT
SITE 25 CONT'D.
SCY
WDU
WDT
-L- POT Sta. 827+71.30=
-Y21RPD- ST Sta. 10+00.00
71.00' RT
-Y21RPD- SC Sta. 12+10.00
MATCHLINE SHEET 49 STA. 825+94.25 -L-
UNKNOWN
TURNER FARMS INC
MAYNARD, DONALD G
MAYNARD, PATRICIA J
PENNY, RANDY KENNETH
PENNY, BILLIE ROSE
BIGGERS SUSAN
REVISIONS
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9:39:24 AM
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davidcooper

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1151 SE Cary Parkway, Suite 101
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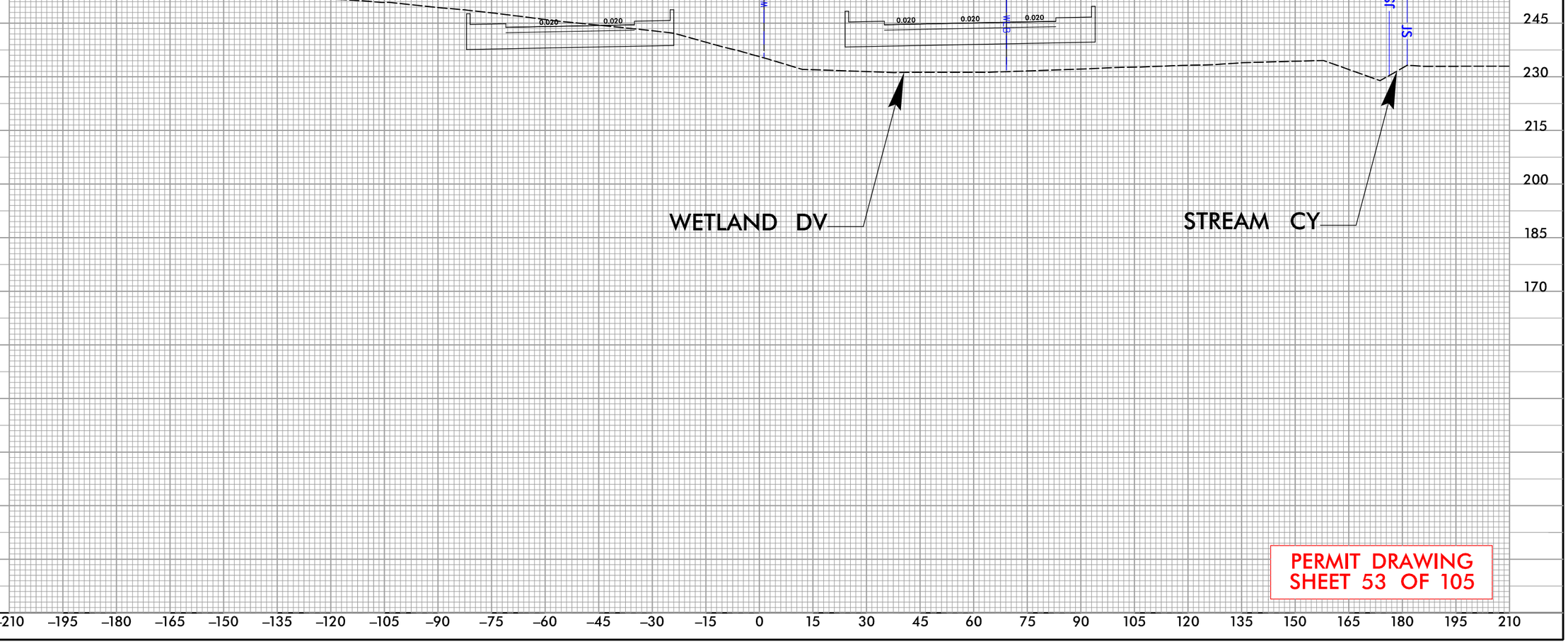
CROSS–SECTION AG–AG
SITE 25, WETLAND DV & STREAM CY
STATION 833+00 –L–



PERMIT DRAWING
SHEET 53 OF 105

REVISIONS
5/14/99

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davidcooper

PROJECT REFERENCE NO.	SHEET NO.
R-2828	

ECOLOGICAL ENGINEERING

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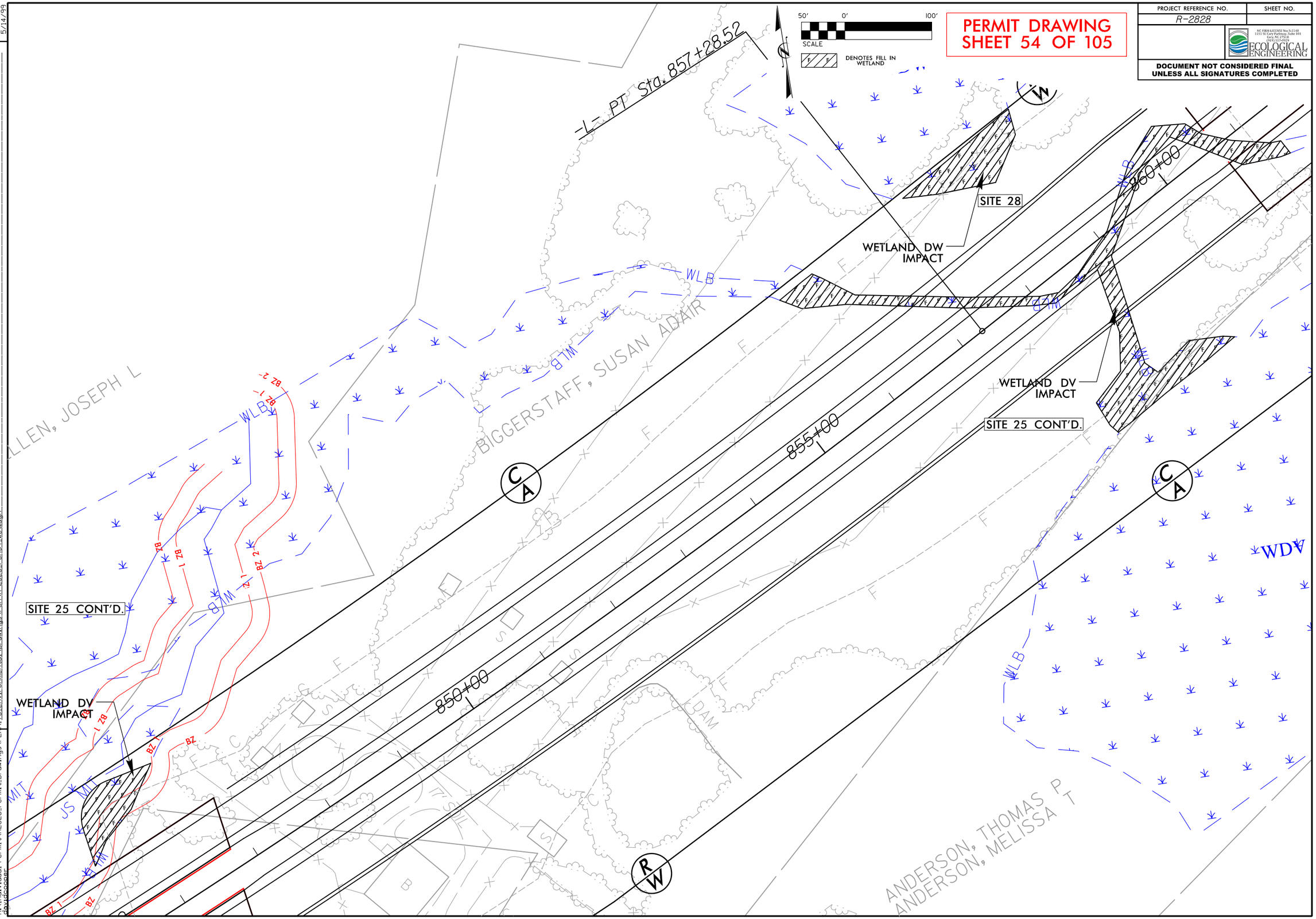
PERMIT DRAWING SHEET 54 OF 105



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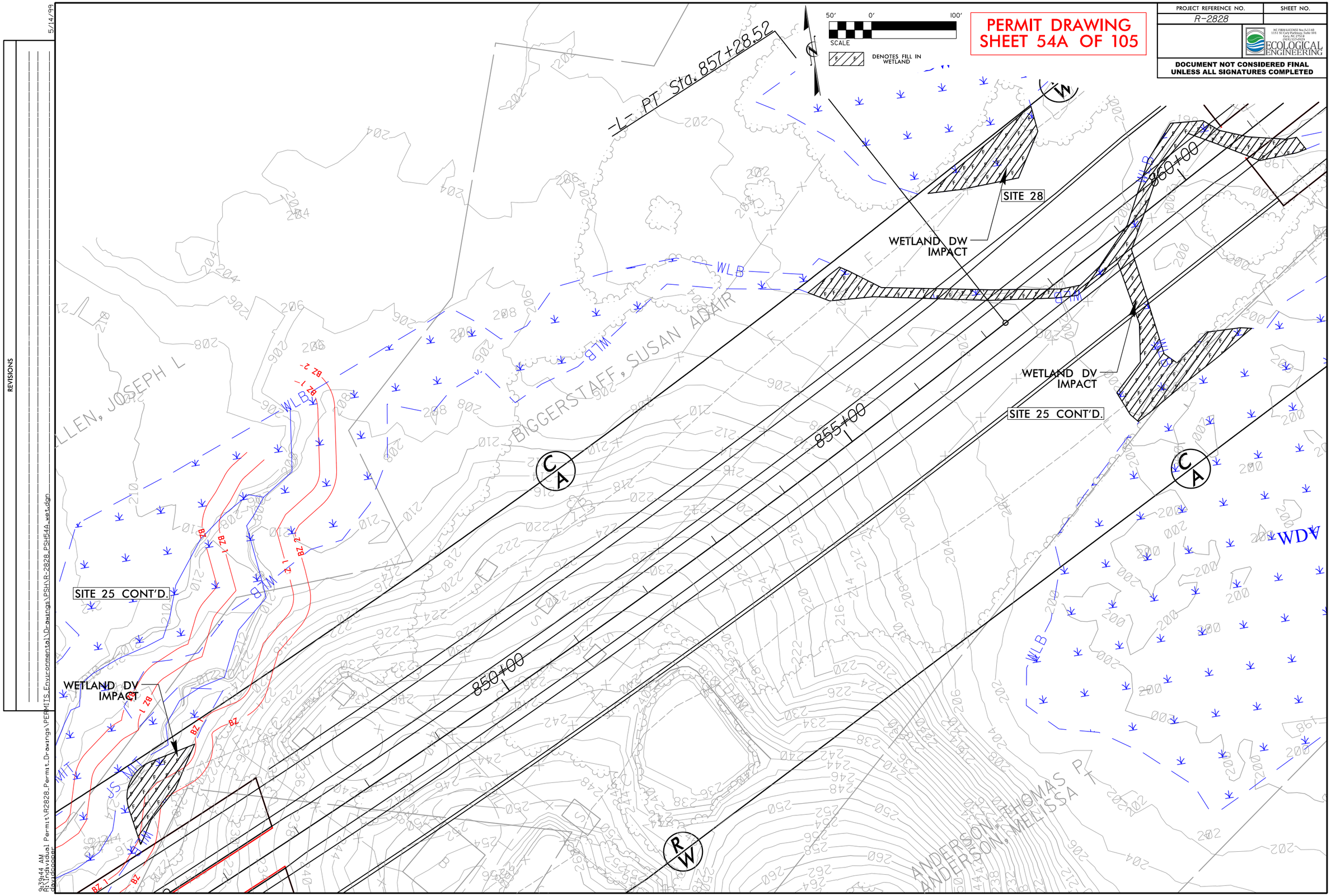
davidcooper



PERMIT DRAWING
SHEET 54A OF 105
PROJECT REFERENCE NO.
R-2828
SHEET NO.
ECOLOGICAL ENGINEERING
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
50' 0' 100'
SCALE
DENOTES FILL IN WETLAND
-L- PT Sta. 857+28.52
SITE 28
WETLAND DW IMPACT
WETLAND DV IMPACT
SITE 25 CONT'D.
SITE 25 CONT'D.
WETLAND DV IMPACT
860+00
855+00
850+00
WLB
WDV
BIGGERSTAFF, SUSAN ADAIR
ANDERSON, THOMAS P
ANDERSON, MELISSA T
C A
R W
REVISIONS
5/14/99
9:39:44 AM
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PROJECT REFERENCE NO.	SHEET NO.
R-2828	

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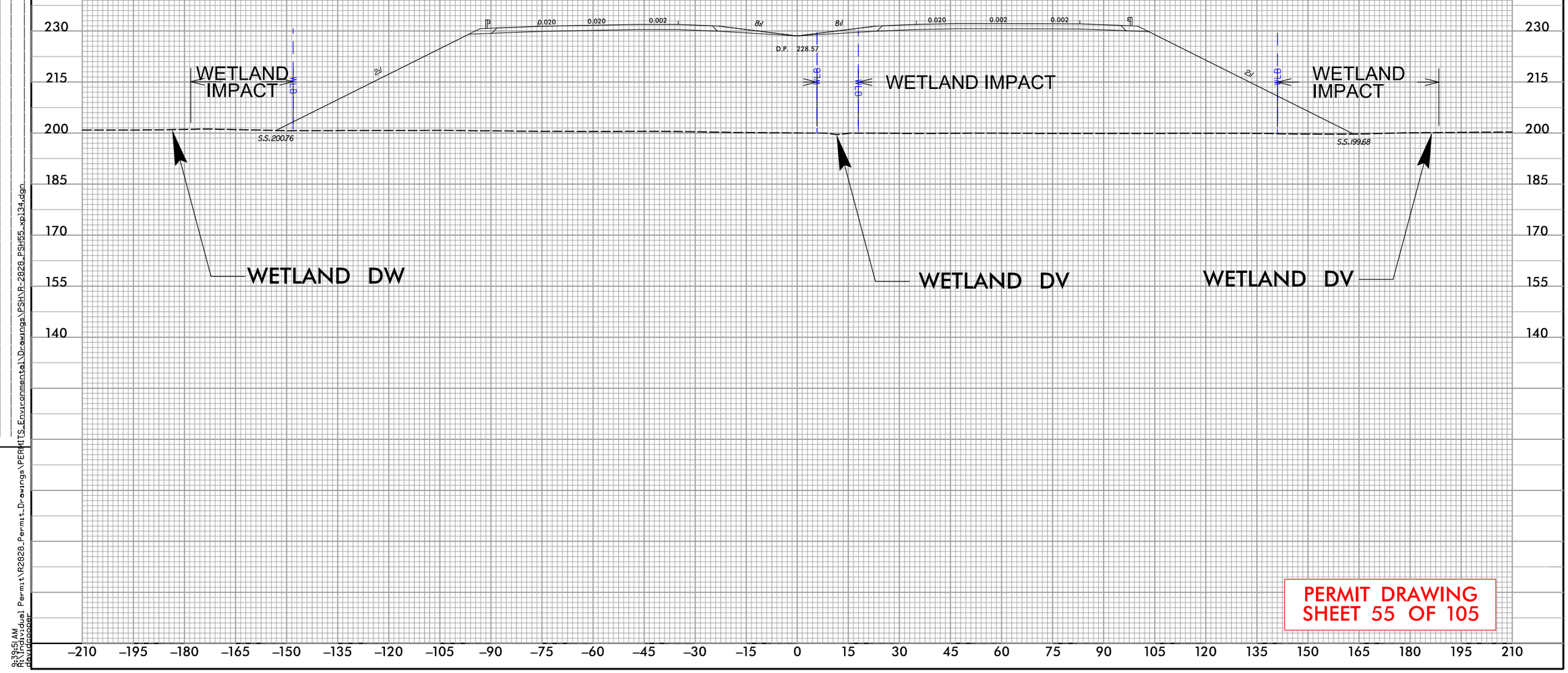
CROSS–SECTION AH–AH SITES 25 & 28, WETLAND DV & WETLAND DW STATION 858+00 –L–



PERMIT DRAWING
SHEET 55 OF 105

REVISIONS

5/14/99

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PROJECT REFERENCE NO.	SHEET NO.
R-2828	

ECOLOGICAL ENGINEERING

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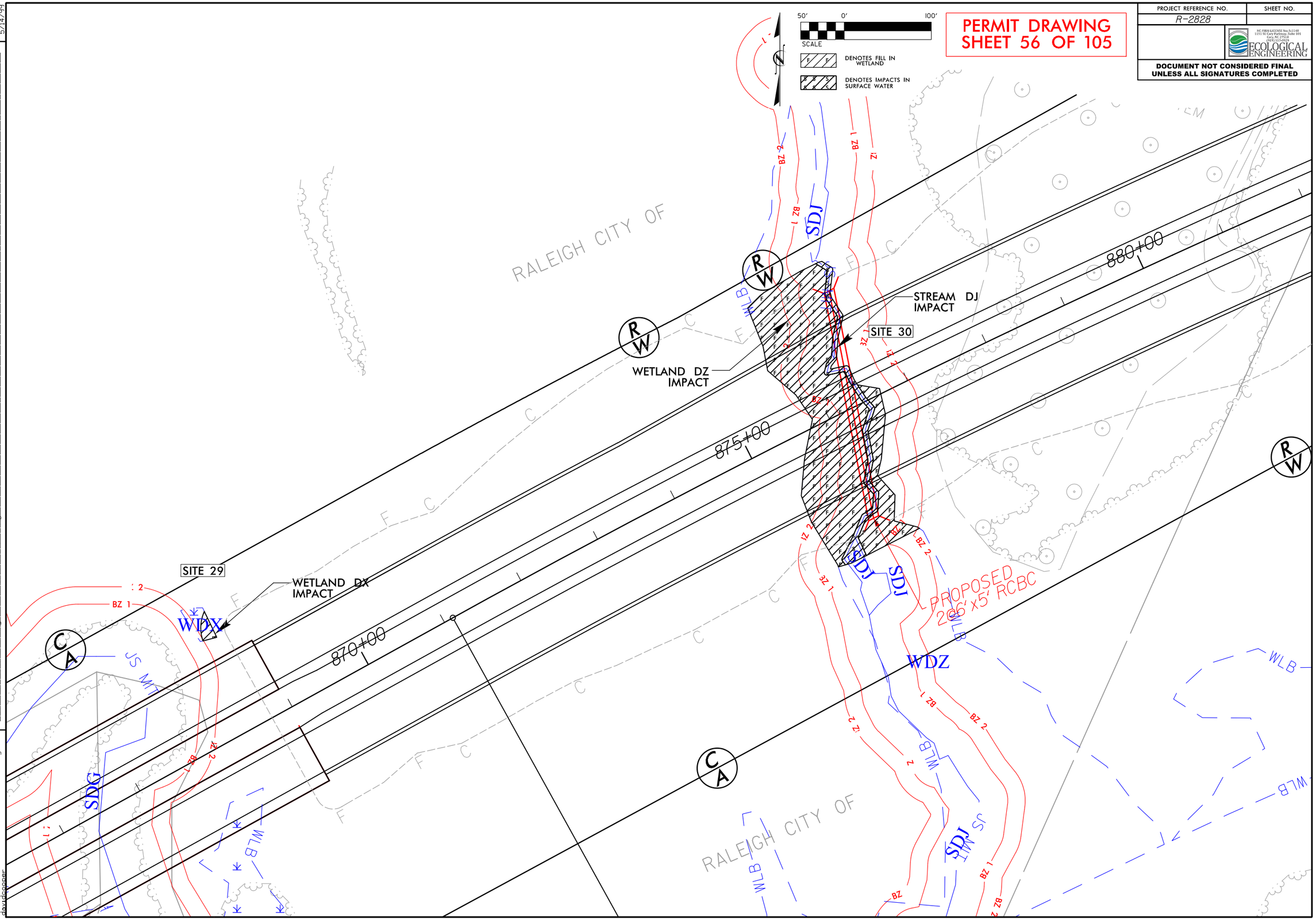
PERMIT DRAWING SHEET 56 OF 105



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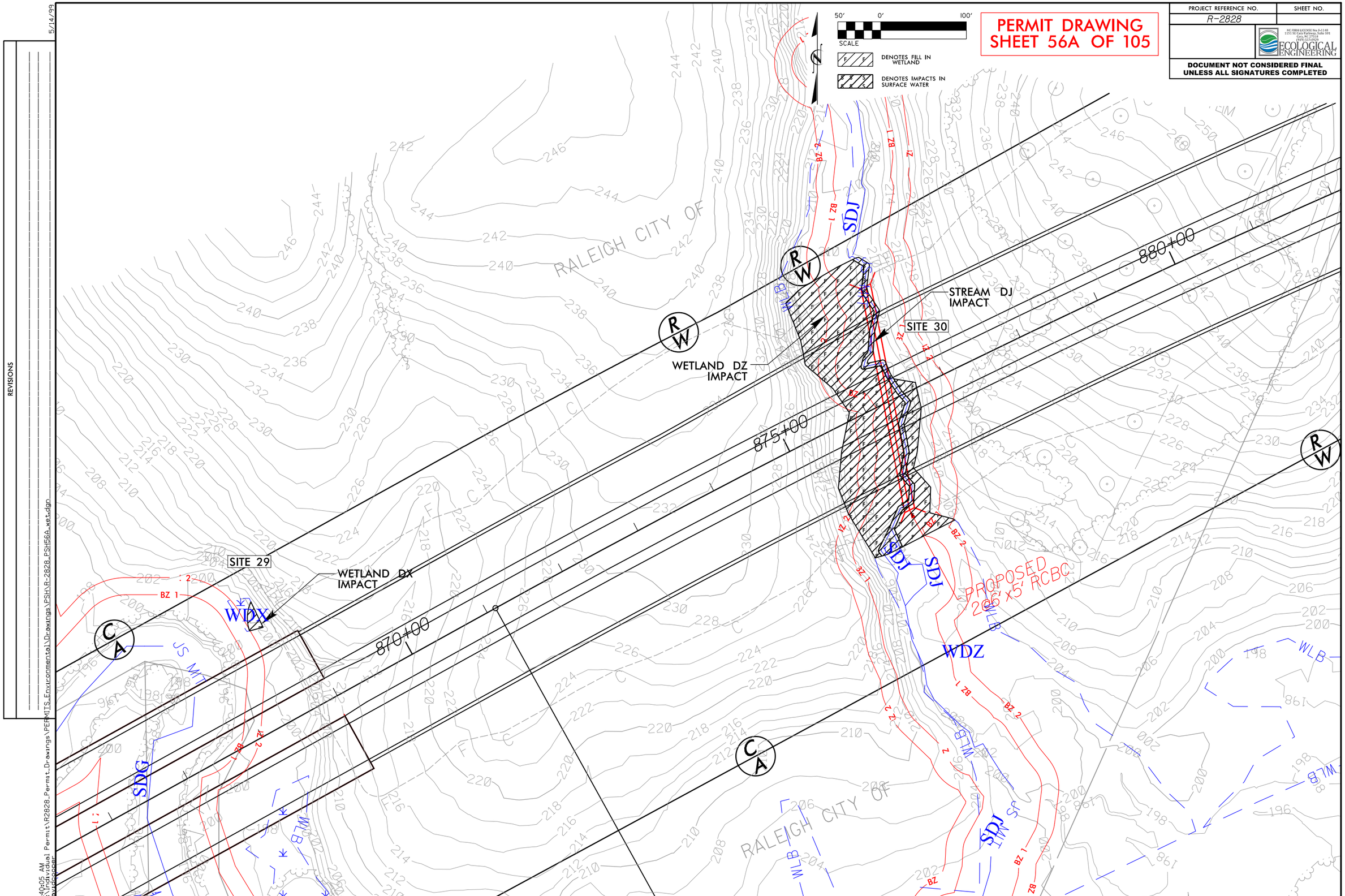

PERMIT DRAWING
SHEET 56A OF 105
PROJECT REFERENCE NO.
R-2828
SHEET NO.
ECOLOGICAL ENGINEERING
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
50' 0' 100'
SCALE
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
RALEIGH CITY OF
STREAM DJ IMPACT
SITE 30
WETLAND DZ IMPACT
SITE 29
WETLAND DX IMPACT
WDX
WDZ
SDJ
SDG
PROPOSED 206' x 5' RCBC
870+00
875+00
880+00
R W
C A
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CROSS–SECTION AI–AI
SITE 29, WETLAND DX
STATION 868+50 –L–

PROJECT REFERENCE NO.	SHEET NO.
R-2828	

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ECOLOGICAL ENGINEERING

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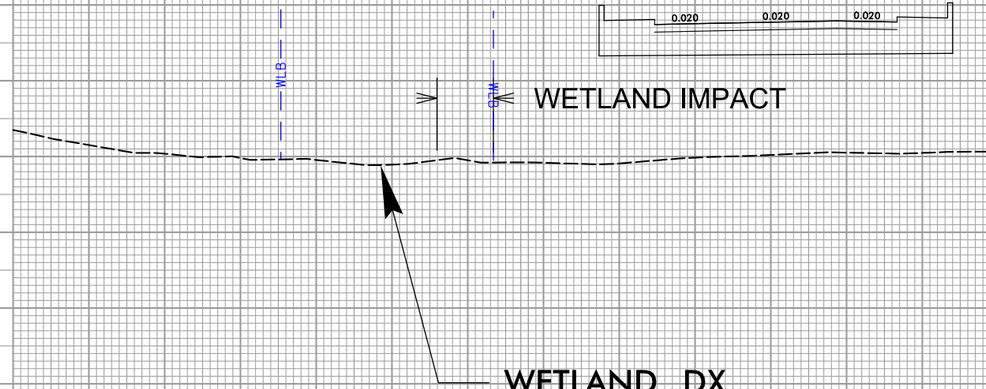

245 230 215 200 185 170 155 140

–210 –195 –180 –165 –150 –135 –120 –105 –90 –75 –60 –45 –30 –15 0 15 30 45 60 75 90 105 120 135 150 165 180 195 210

PERMIT DRAWING
SHEET 57 OF 105

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5/14/99

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PROJECT REFERENCE NO.	SHEET NO.
R-2828	

ECOLOGICAL ENGINEERING

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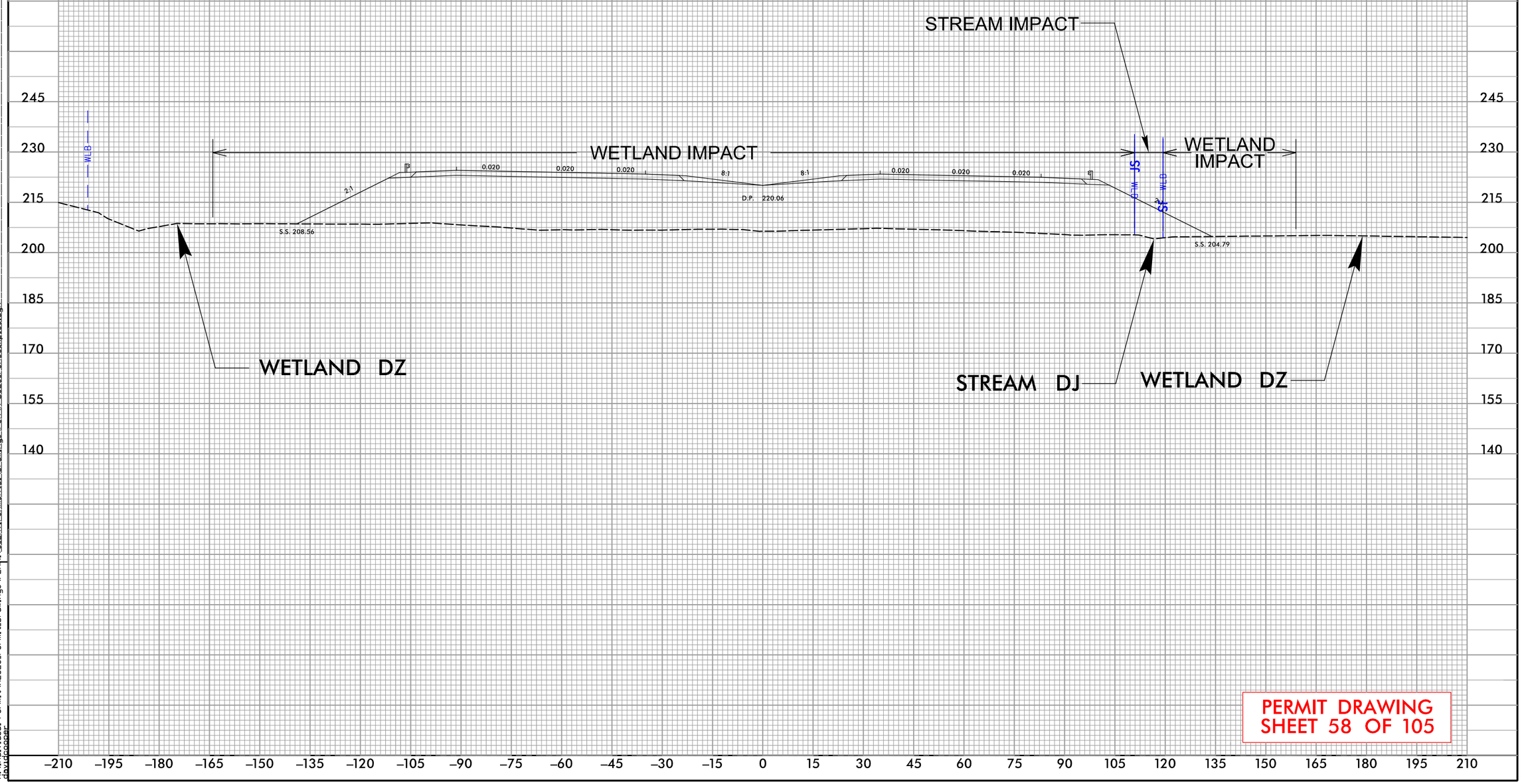
CROSS–SECTION AJ–AJ
SITE 30, WETLAND DZ & STREAM DJ
STATION 876+00 –L–



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SHEET 58 OF 105

REVISIONS

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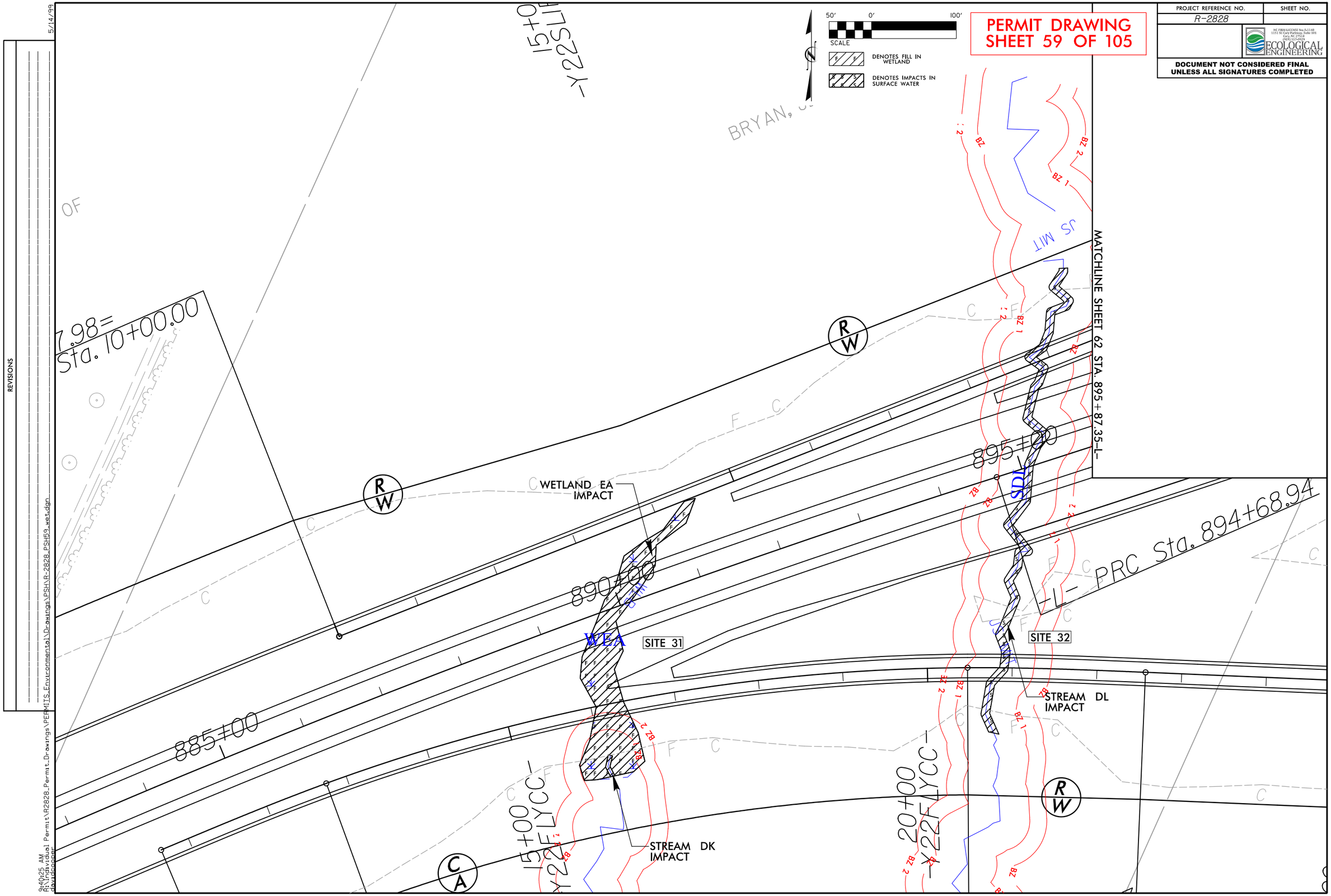

PERMIT DRAWING
SHEET 59 OF 105
PROJECT REFERENCE NO.
R-2828
SHEET NO.
ECOLOGICAL ENGINEERING
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
50' 0' 100'
SCALE
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
MATCHLINE SHEET 62 STA. 895+87.35-L-
WETLAND EA IMPACT
STREAM DK IMPACT
STREAM DL IMPACT
SITE 31
SITE 32
WEA
SDL
-L- PRC Sta. 894+68.94
7.98= Sta. 10+00.00
885+00
890+00
895+00
15+00 -Y22FLYCC-
20+00 -Y22FLYCC-
BRYAN,
JS MIT
REVISIONS
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9:40:25 AM
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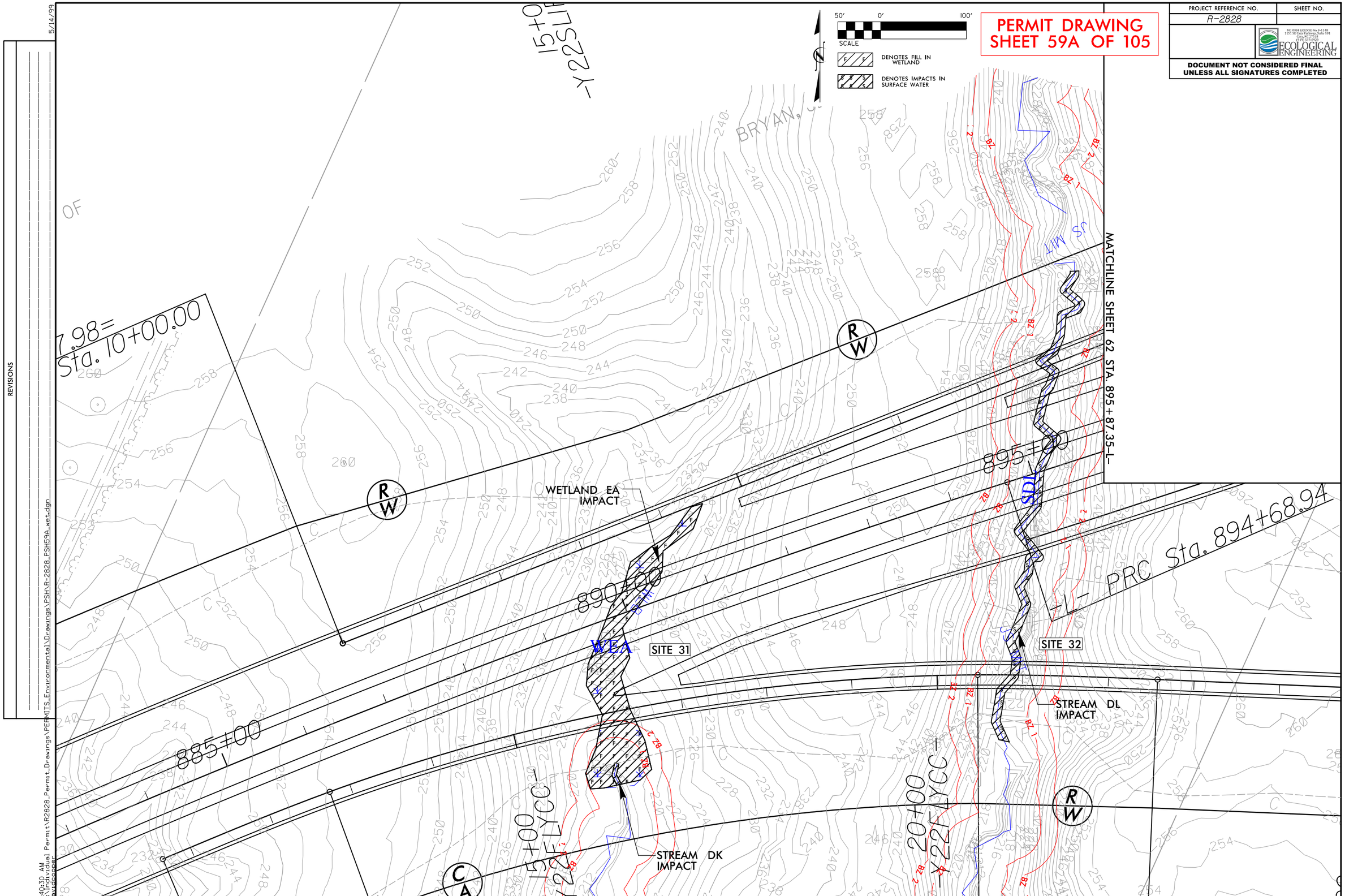
davidcooper



PERMIT DRAWING
SHEET 59A OF 105
PROJECT REFERENCE NO.
R-2828
SHEET NO.
ECOLOGICAL ENGINEERING
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
SCALE
50' 0' 100'
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
MATCHLINE SHEET 62 STA. 895+87.35-L-
WETLAND EA IMPACT
STREAM DK IMPACT
STREAM DL IMPACT
SITE 31
SITE 32
WEA
SDL
JS MIT
-L- PRC Sta. 894+68.94
7.98= Sta. 10+00.00
885+00
890+00
895+00
15+00 Y22FLYCC
20+00 Y22FLYCC
R W
C A
REVISIONS
5/14/99
9:40:30 AM
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PROJECT REFERENCE NO.	SHEET NO.
R-2828	

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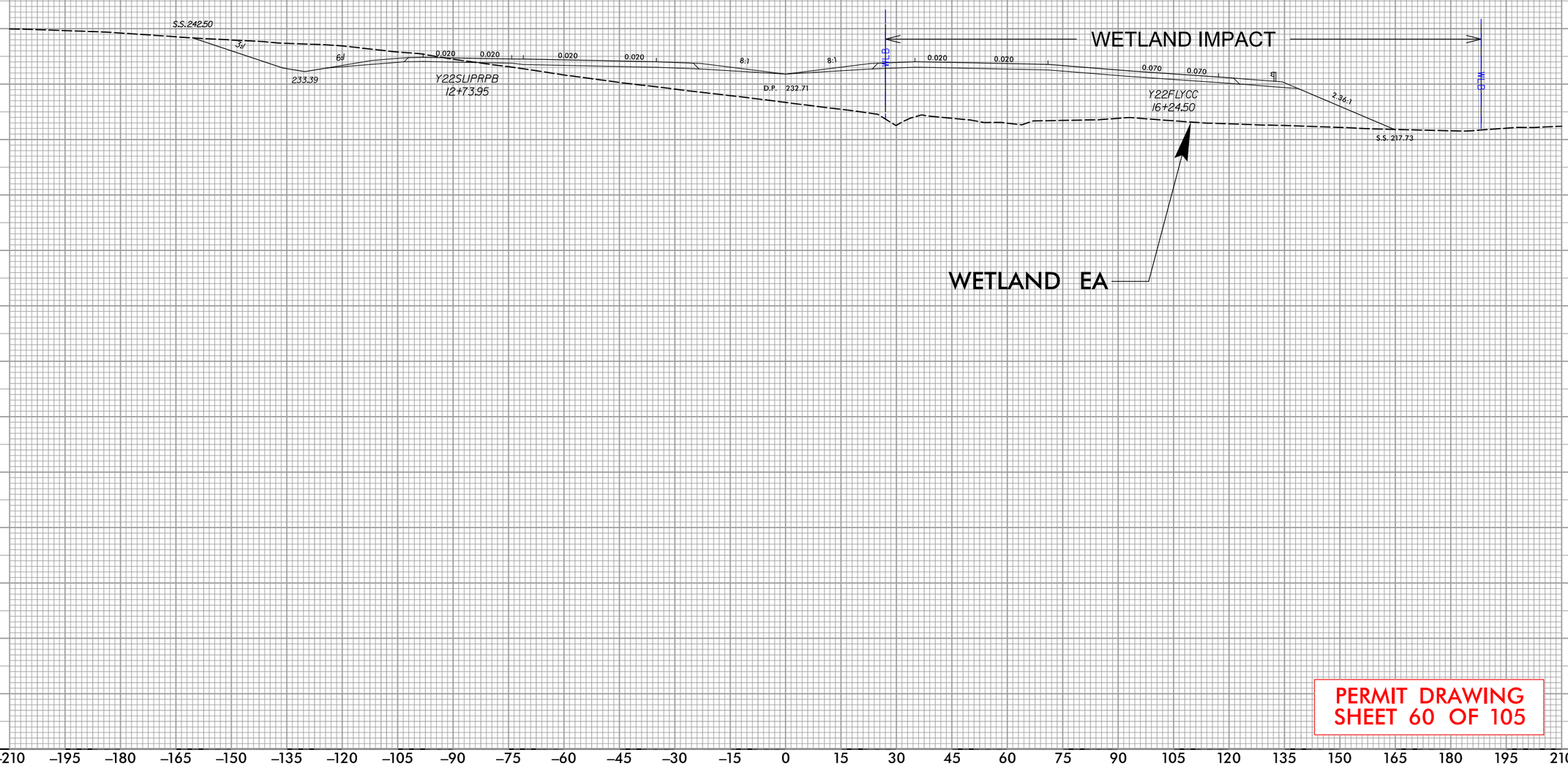
CROSS–SECTION AK–AK
SITE 31, WETLAND EA
STATION 889+50 –L–



PERMIT DRAWING
SHEET 60 OF 105

REVISIONS
5/14/99

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R-2828	

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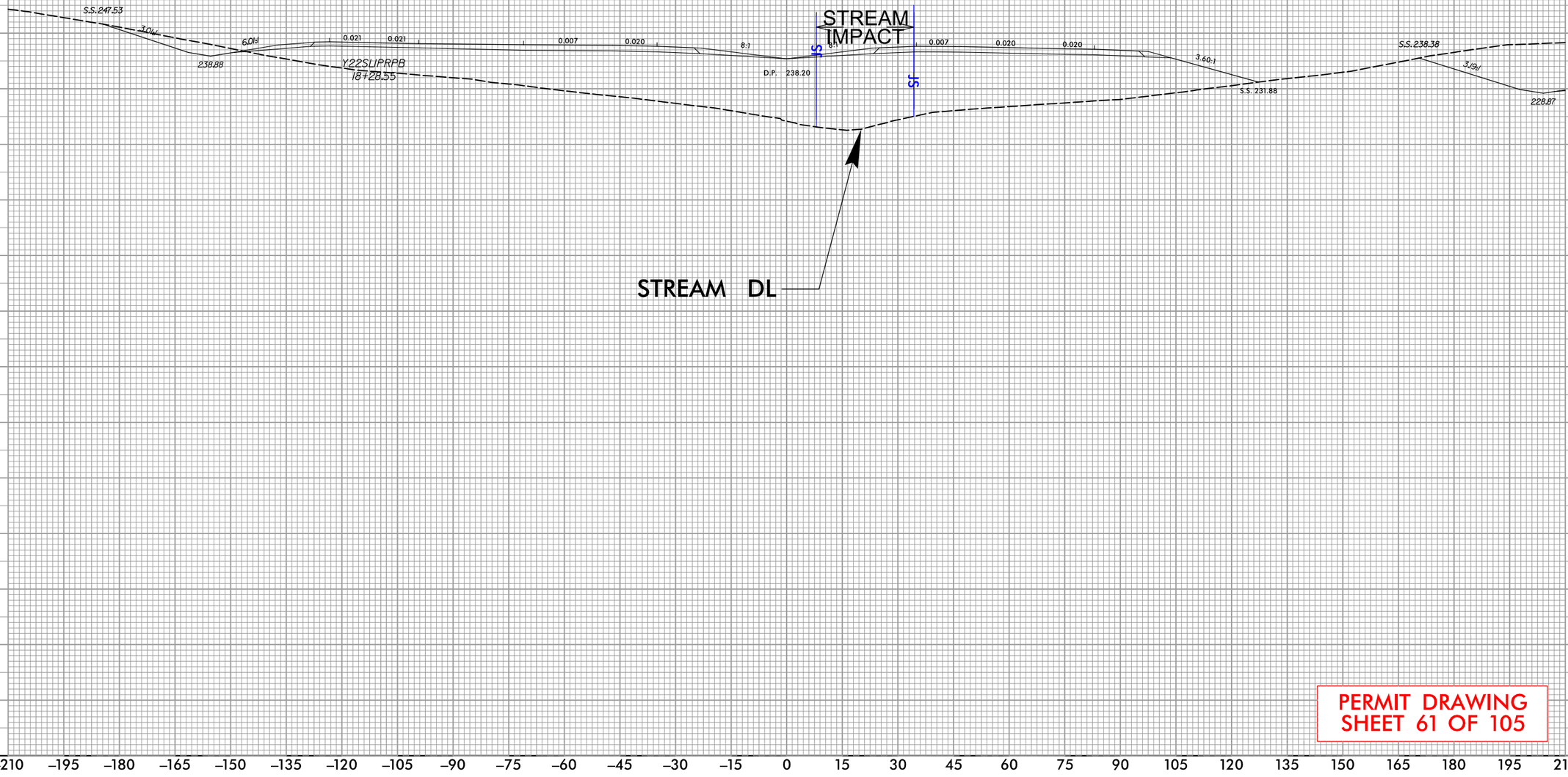
ECOLOGICAL ENGINEERING

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CROSS–SECTION AL–AL
SITE 32, STREAM DL
STATION 895+00 –L–



PERMIT DRAWING
SHEET 61 OF 105

REVISIONS
5/14/99

9:40:41 AM
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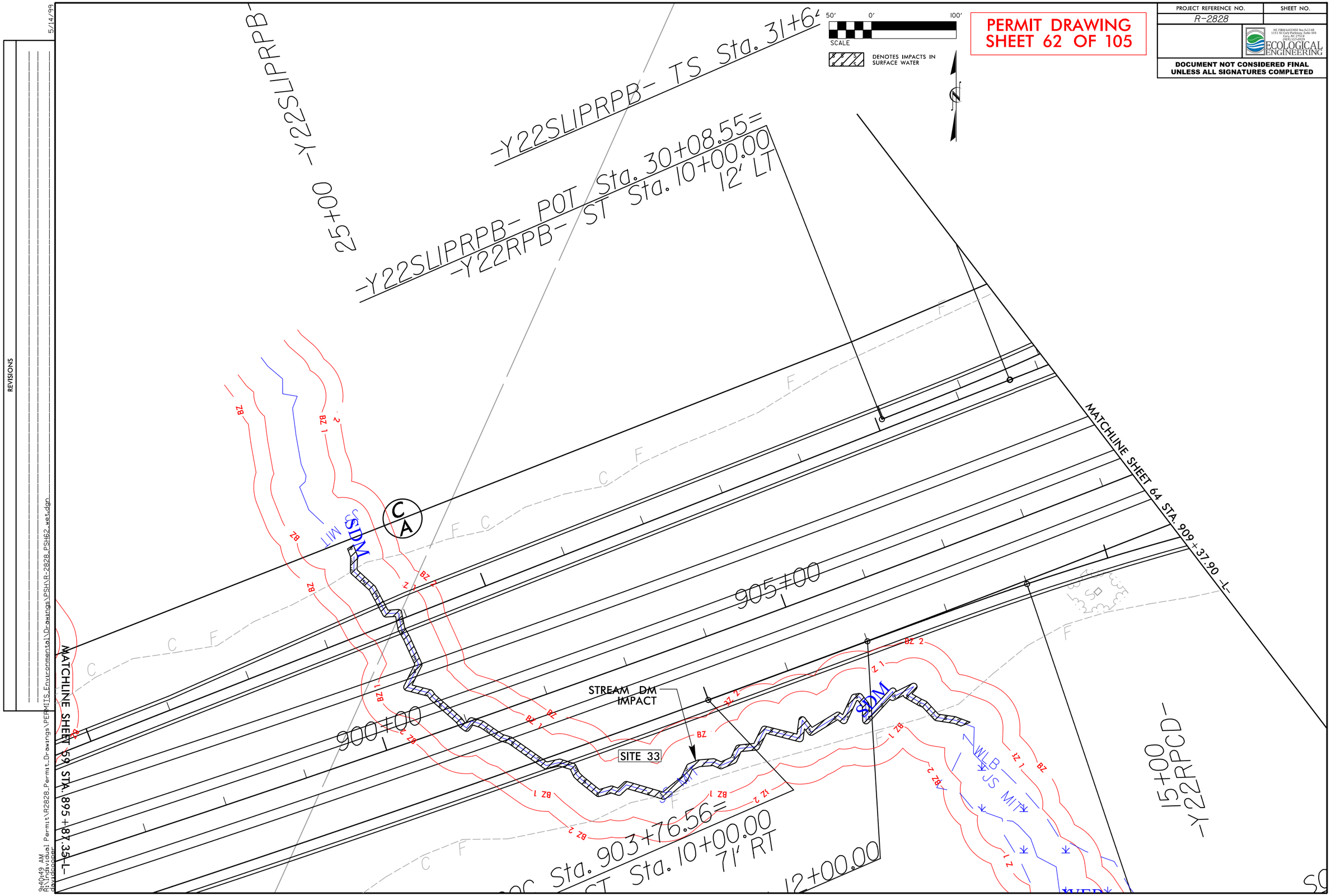
davidcooper



PERMIT DRAWING
SHEET 62 OF 105
PROJECT REFERENCE NO.
R-2828
SHEET NO.
ECOLOGICAL ENGINEERING
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
50' 0' 100'
SCALE
DENOTES IMPACTS IN SURFACE WATER
-Y22SLIPRPB- TS Sta. 31+64
25+00 -Y22SLIPRPB-
-Y22SLIPRPB- POT Sta. 30+08.55=
-Y22RPB- ST Sta. 10+00.00
12' LT
MATCHLINE SHEET 64 STA. 909+37.90 -L-
MATCHLINE SHEET 59 STA. 895+87.35-L-
905+00
900+00
STREAM DM IMPACT
SITE 33
SDM
WLB
JS MIT
Sta. 903+76.56=
Sta. 10+00.00
71' RT
12+00.00
15+00
-Y22RPCD-
REVISIONS
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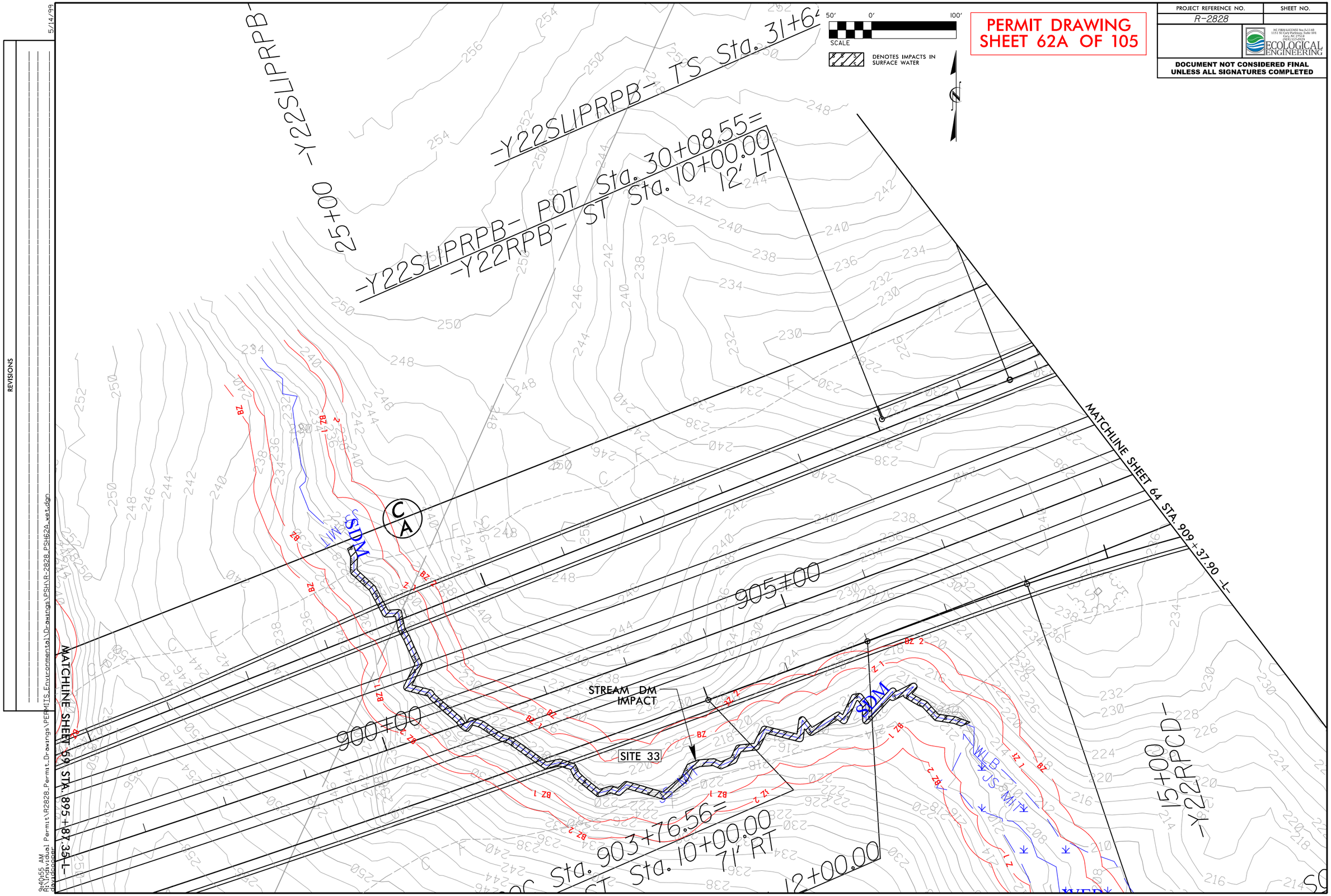

PERMIT DRAWING
SHEET 62A OF 105
PROJECT REFERENCE NO.
R-2828
SHEET NO.
ECOLOGICAL ENGINEERING
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
50' 0' 100'
SCALE
DENOTES IMPACTS IN SURFACE WATER
-Y22SLIPRPB- TS Sta. 31+62
-Y22SLIPRPB- POT Sta. 30+08.55=
-Y22RPB- ST Sta. 10+00.00
12' LT
25+00 -Y22SLIPRPB-
MATCHLINE SHEET 64 STA. 909+37.90 -L-
MATCHLINE SHEET 59 STA. 895+87.35 -L-
905+00
900+00
STREAM DM IMPACT
SITE 33
SDM
Sta. 903+76.56=
Sta. 10+00.00
71' RT
12+00.00
15+00 -Y22RPCD-
REVISIONS
5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-2828	

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Cary, NC 27518
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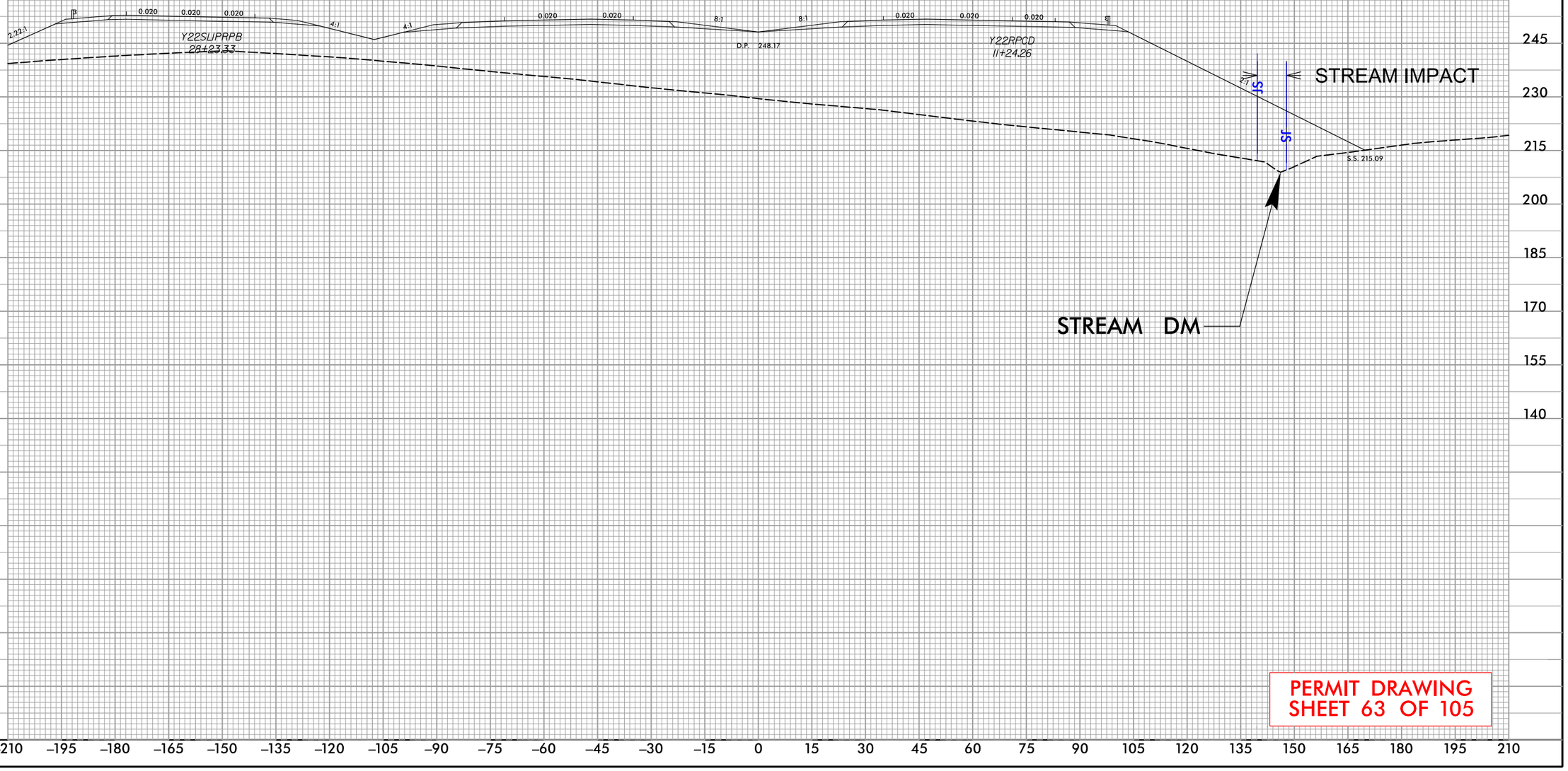
CROSS–SECTION AM–AM
SITE 33, STREAM DM
STATION 905+00 –L–



PERMIT DRAWING
SHEET 63 OF 105

REVISIONS

5/14/99

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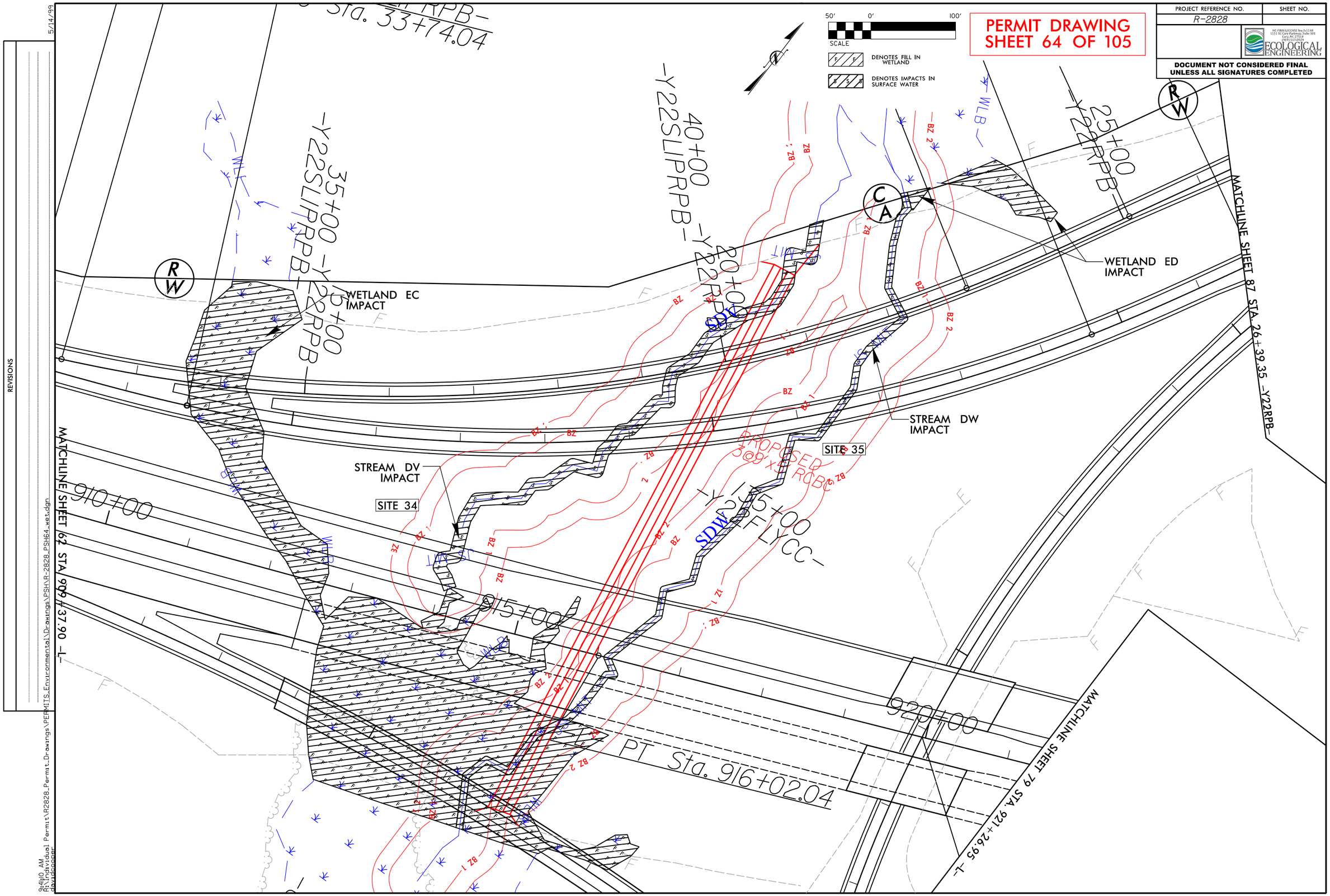
davidcooper



REVISIONS

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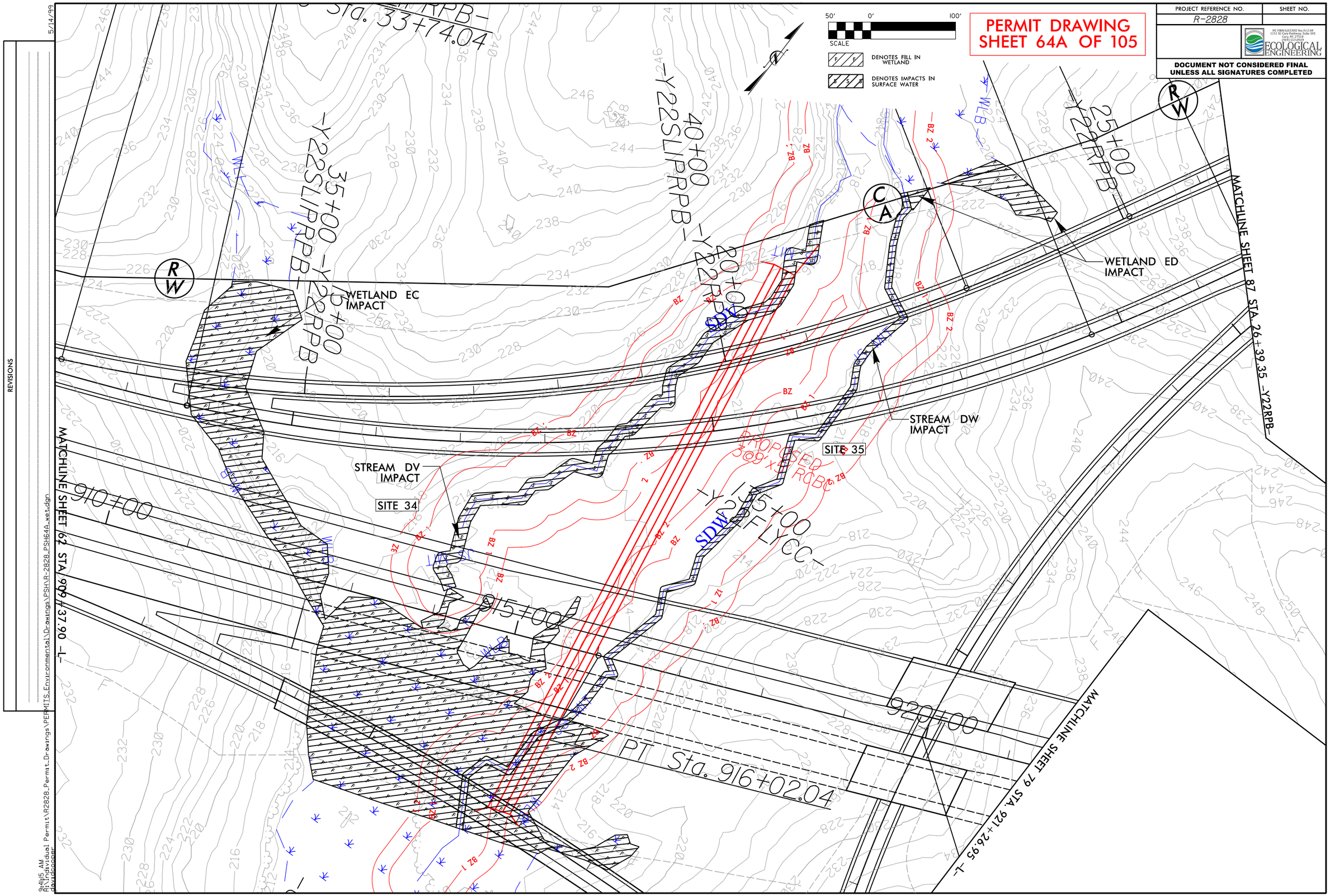
davidcooper



REVISIONS

5/14/99

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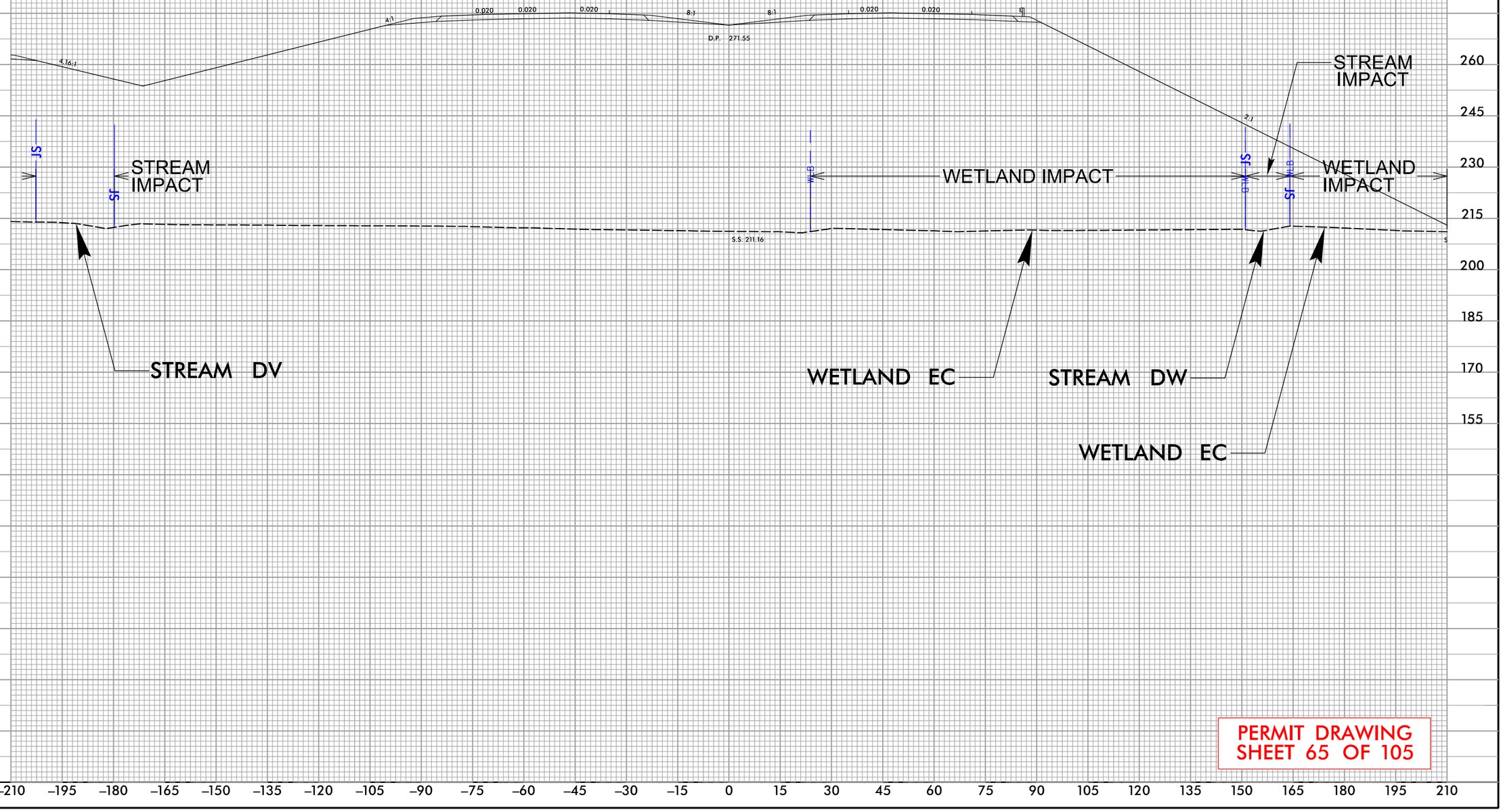
davidcooper

PROJECT REFERENCE NO.	SHEET NO.
R-2828	

ECOLOGICAL ENGINEERING

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CROSS–SECTION AN–AN, SITES 34 & 35, WETLAND EC, STREAM DV, & STREAM DW STATION 915+00 –L–



PERMIT DRAWING
SHEET 65 OF 105

REVISIONS

5/14/99

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R-2828	

NC FIRM LICENSE No.F-1148
1515 SE Cary Parkway, Suite 101
Cary, NC 27518
(919) 557-5909
ECOLOGICAL ENGINEERING

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CROSS–SECTION BB–BB
SITE 35, WETLAND ED
STATION 24+00 –Y22RPB–

REVISIONS
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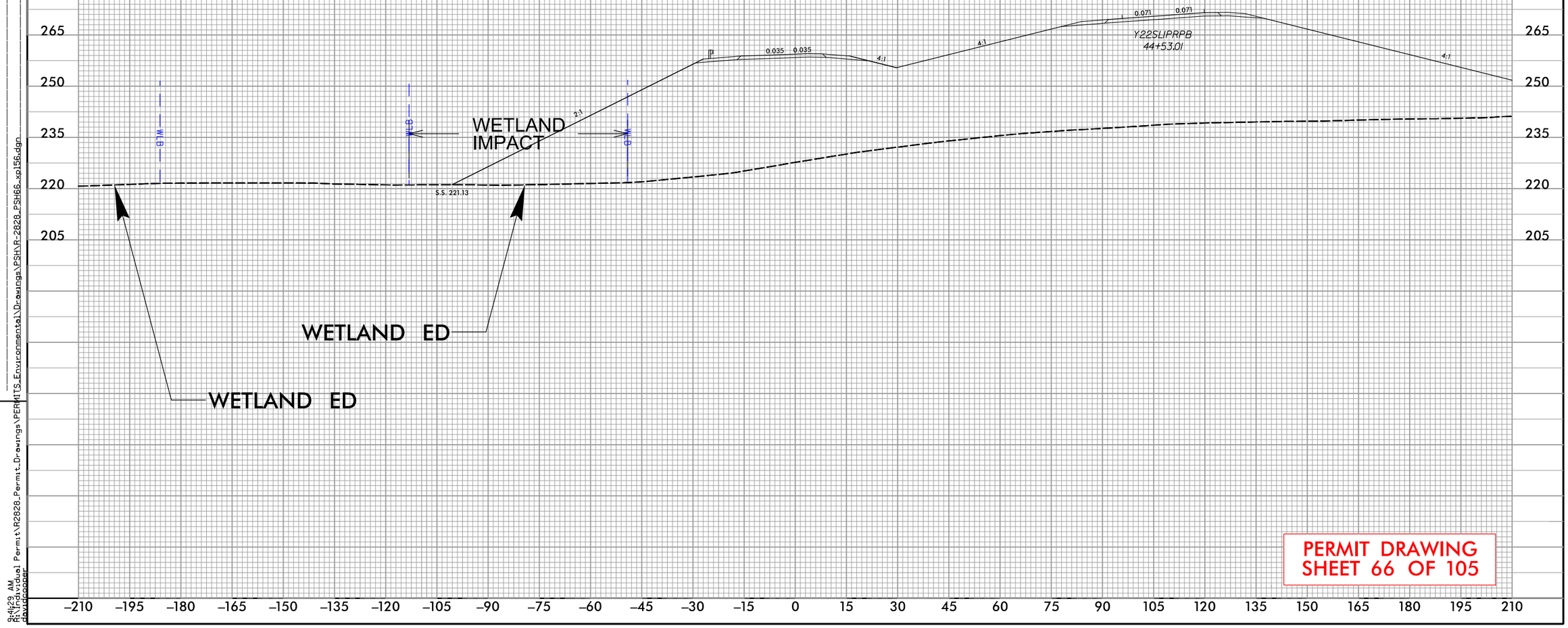

PERMIT DRAWING
SHEET 66 OF 105

9:41:29 AM
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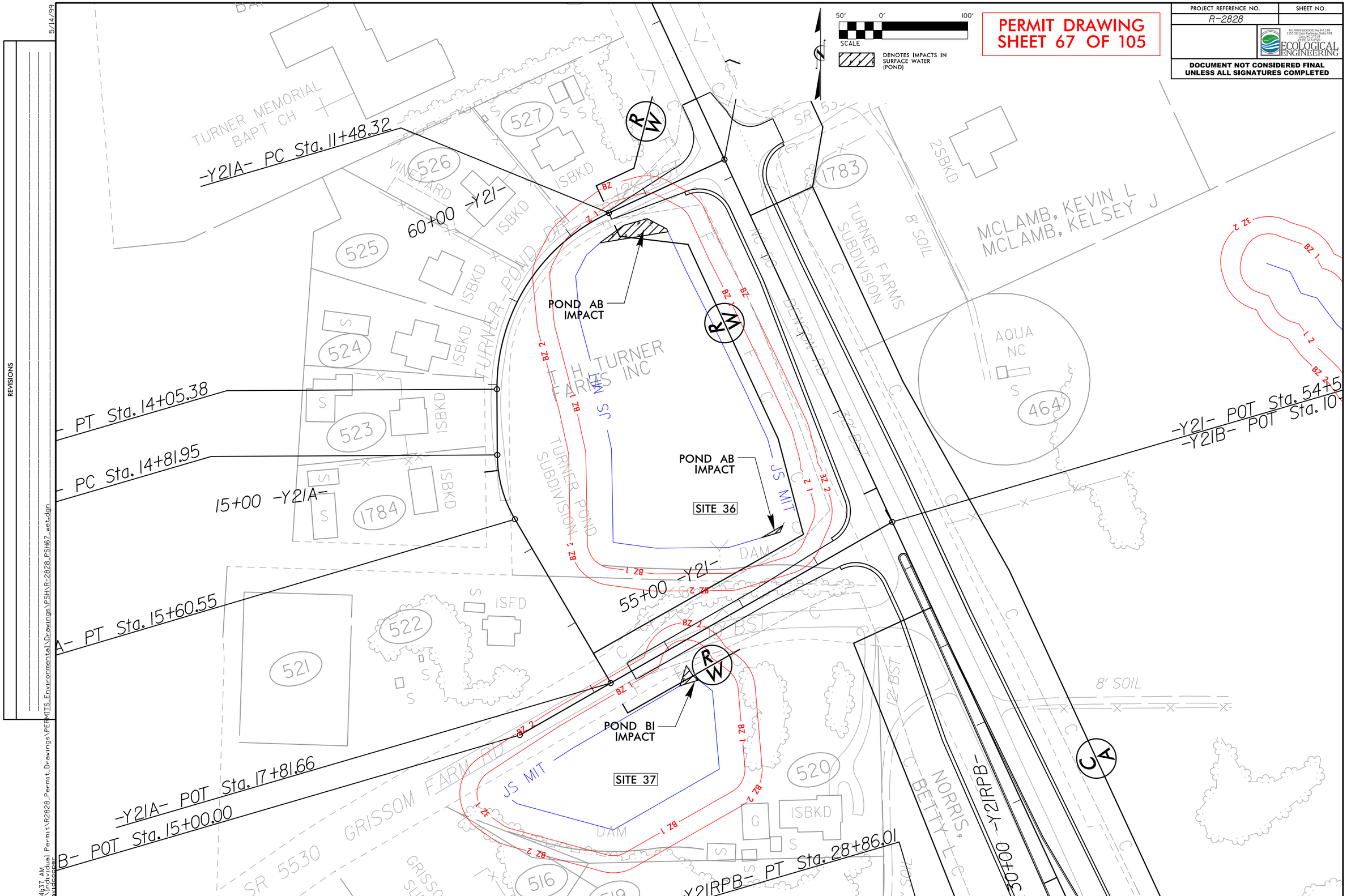
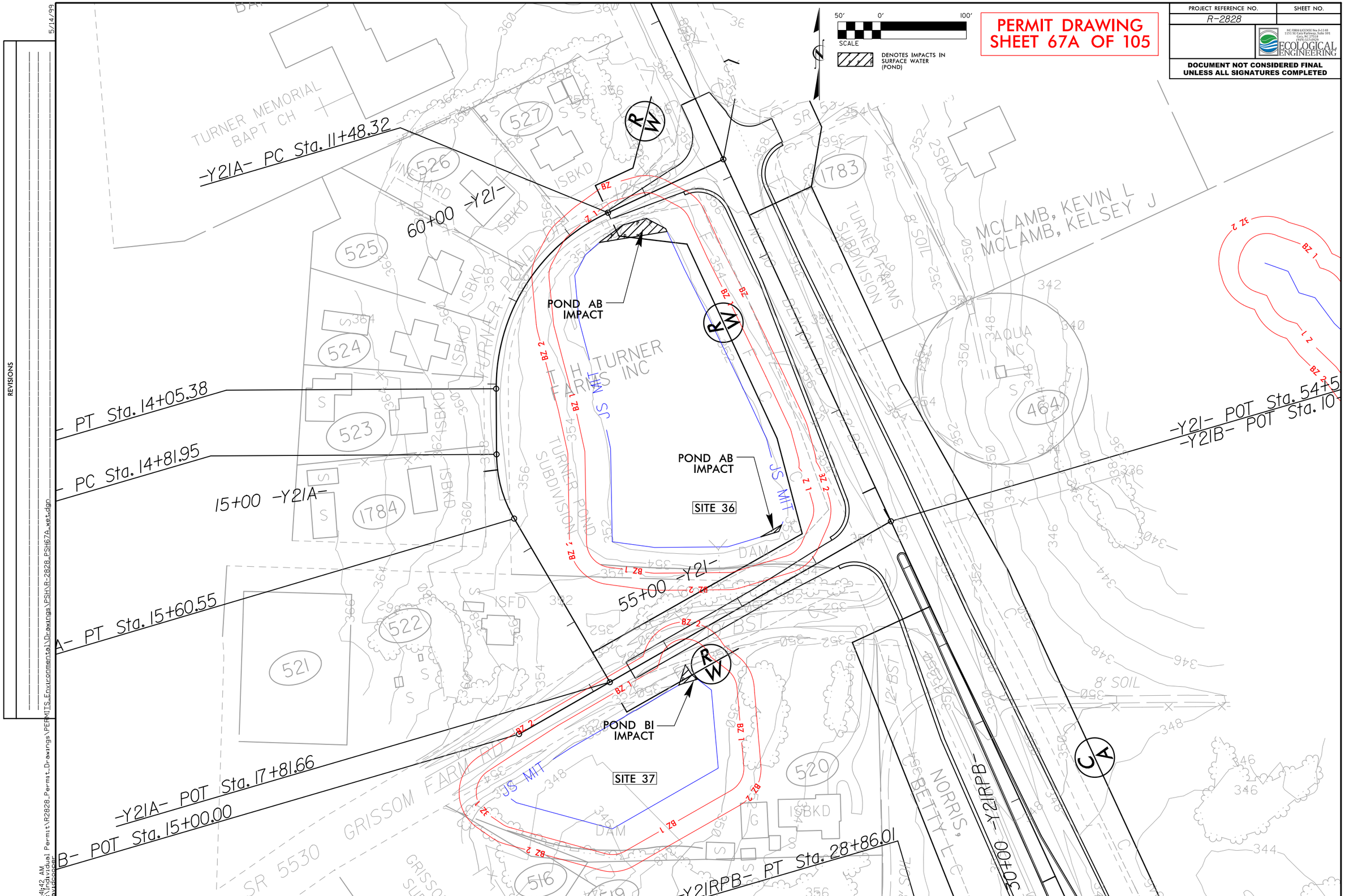
davidcooper



PERMIT DRAWING
SHEET 67 OF 105
PROJECT REFERENCE NO.
R-2828
SHEET NO.
ECOLOGICAL ENGINEERING
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
SCALE
50' 0' 100'
DENOTES IMPACTS IN SURFACE WATER (POND)
TURNER MEMORIAL BAPT CH
-Y21A- PC Sta. 11+48.32
60+00 -Y21-
PT Sta. 14+05.38
PC Sta. 14+81.95
15+00 -Y21A-
A- PT Sta. 15+60.55
55+00 -Y21-
-Y21A- POT Sta. 17+81.66
B- POT Sta. 15+00.00
-Y21RPB- PT Sta. 28+86.01
30+00 -Y21RPB-
-Y21- POT Sta. 54+5
-Y21B- POT Sta. 10
POND AB IMPACT
POND AB IMPACT
SITE 36
POND BI IMPACT
SITE 37
TURNER POND DR
TURNER POND SUBDIVISION
TURNER FARMS SUBDIVISION
TURNER FARMS INC
MCLAMB, KEVIN L
MCLAMB, KELSEY J
AQUA NC
NORRIS, BETTY L
GRISSOM FARM RD
SR 5530
JS MIT
DAM
ISBKD
ISFD
8' SOIL
12' BST
32' BST



REVISIONS

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davidcooper

PROJECT REFERENCE NO.	SHEET NO.
R-2828	

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1151 SE Cary Parkway, Suite 101
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(919) 557-0920

ECOLOGICAL ENGINEERING

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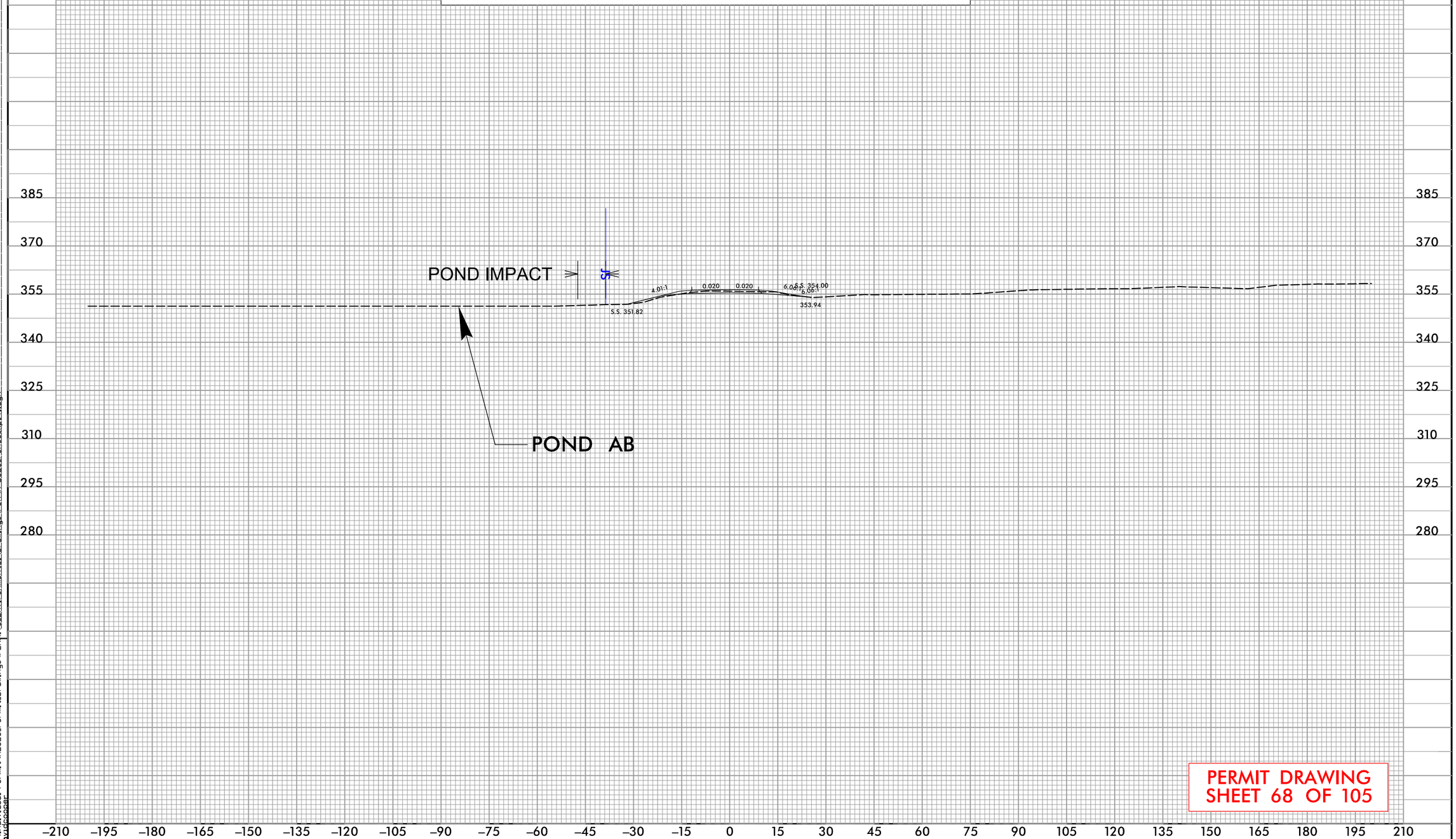
CROSS–SECTION AO–AO
SITE 36, POND AB
STATION 11+00 –Y21A–



PERMIT DRAWING
SHEET 68 OF 105

REVISIONS

5/14/99

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davidcooper

PROJECT REFERENCE NO.	SHEET NO.
R-2828	

NC FIRM LICENSE No: F-1148
1515 SE Cary Parkway, Suite 101
Cary, NC 27518
(919) 557-5909
ECOLOGICAL ENGINEERING

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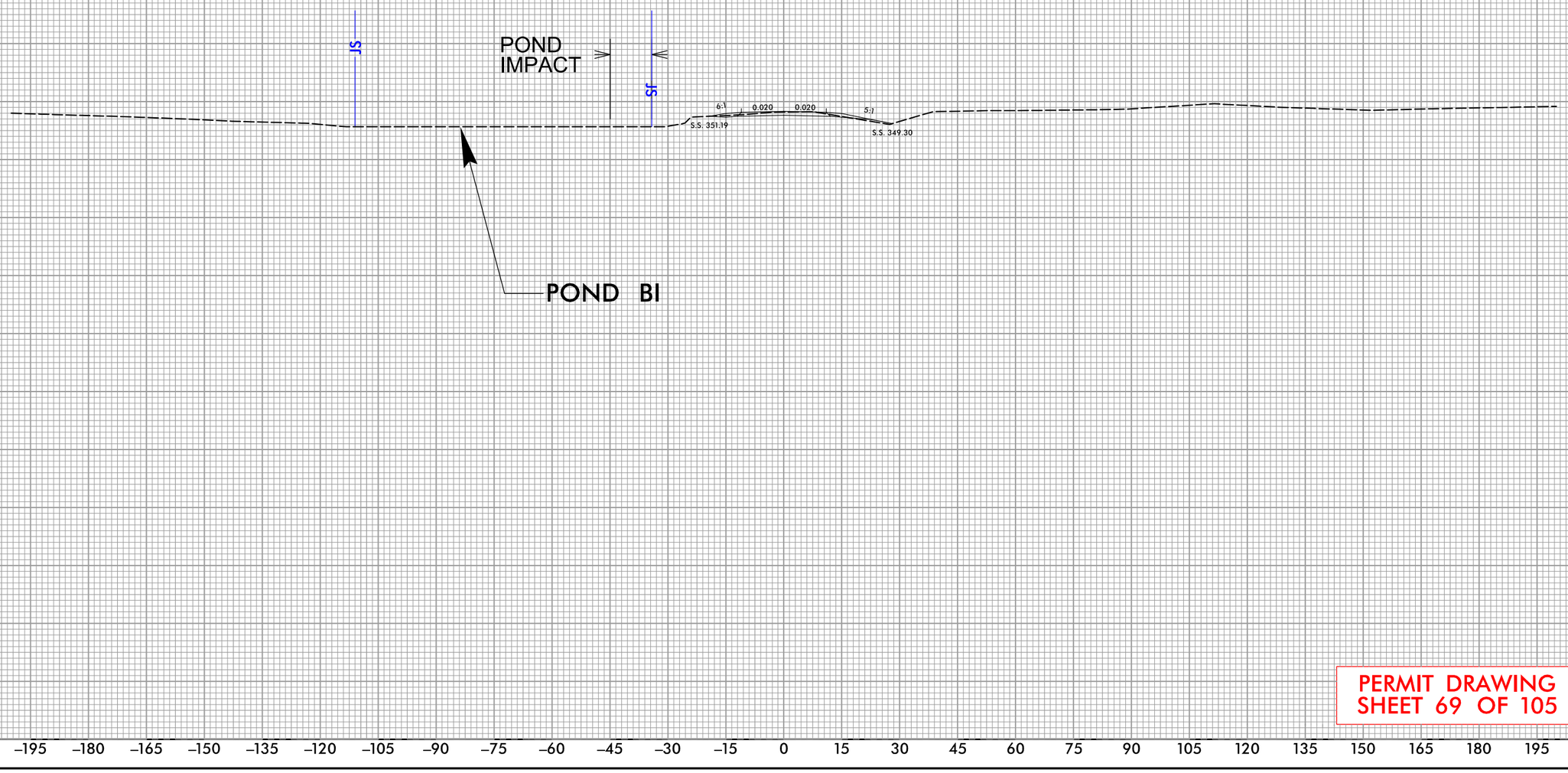
CROSS–SECTION AP–AP
SITE 37, POND BI
STATION 13+00 –Y21B–



PERMIT DRAWING
SHEET 69 OF 105

REVISIONS

5/14/99

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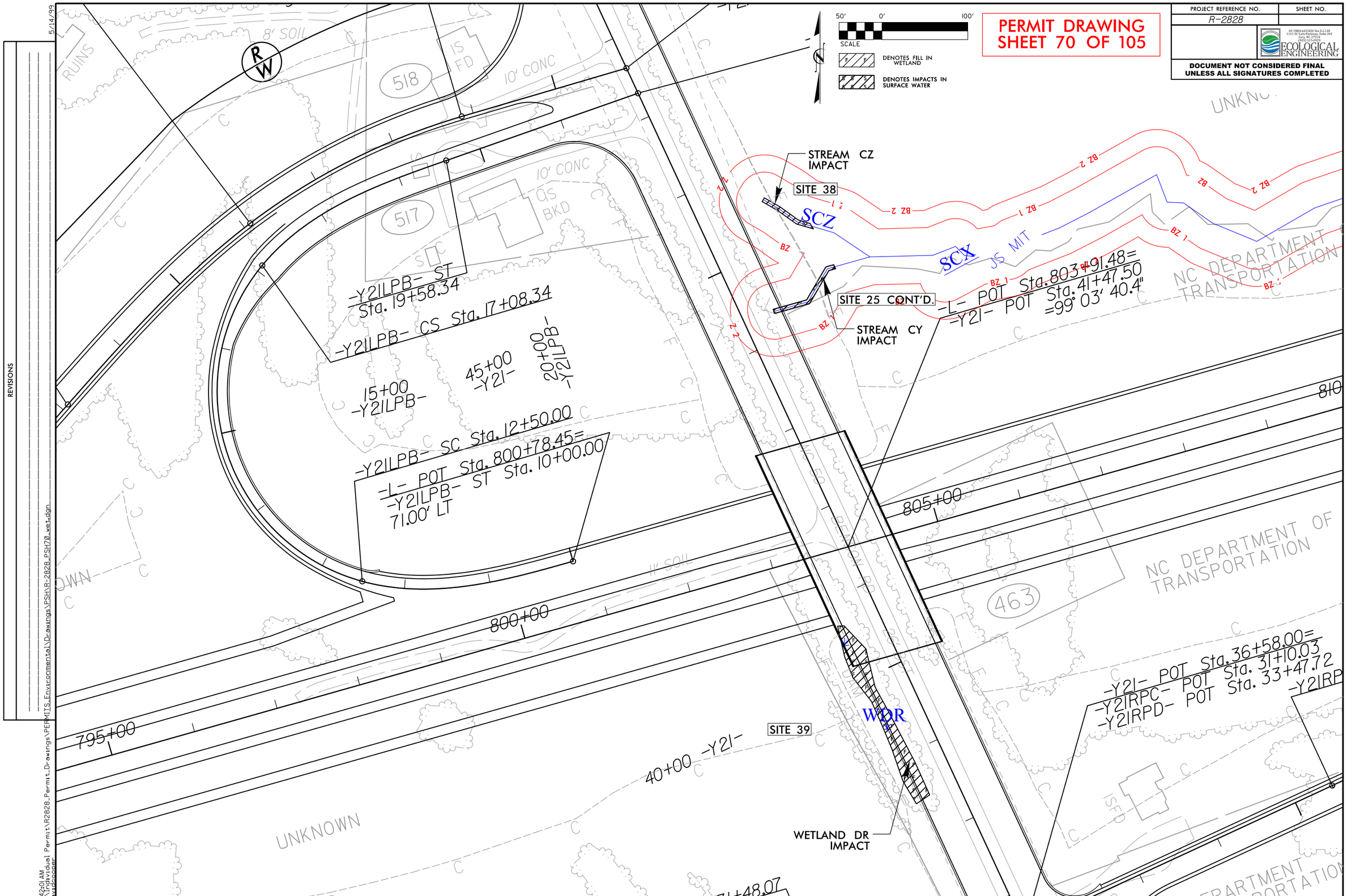
davidcooper



REVISIONS

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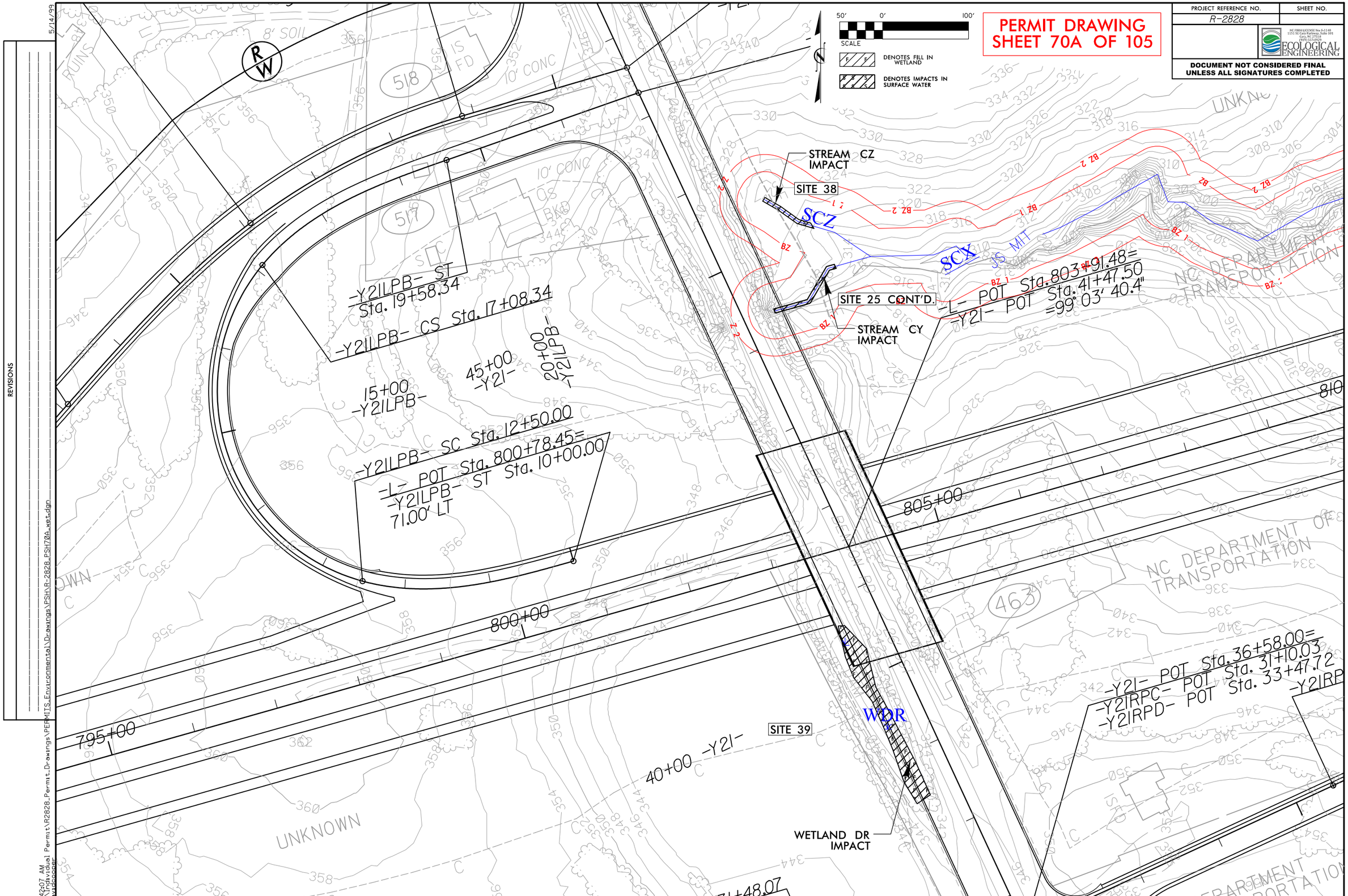
davidcooper



PERMIT DRAWING
SHEET 70A OF 105
PROJECT REFERENCE NO.
R-2828
SHEET NO.
ECOLOGICAL ENGINEERING
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
50' 0' 100'
SCALE
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
STREAM CZ IMPACT
SITE 38
SCZ
SCX
SITE 25 CONT'D.
STREAM CY IMPACT
-L- POT Sta. 803+91.48=
-Y21- POT Sta. 41+47.50
=99° 03' 40.4"
-Y21LPB- ST
Sta. 19+58.34
-Y21LPB- CS Sta. 17+08.34
15+00
-Y21LPB-
45+00
-Y21-
20+00
-Y21LPB-
-Y21LPB- SC Sta. 12+50.00
-L- POT Sta. 800+78.45=
-Y21LPB- ST Sta. 10+00.00
71.00' LT
805+00
800+00
795+00
40+00 -Y21-
SITE 39
WDR
WETLAND DR IMPACT
-Y21- POT Sta. 36+58.00=
-Y21RPC- POT Sta. 31+10.03
-Y21RPD- POT Sta. 33+47.72
31+48.07
NC DEPARTMENT OF TRANSPORTATION
UNKNOWN
REVISIONS
5/14/99
9:42:07 AM
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PROJECT REFERENCE NO.	SHEET NO.
R-2828	

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ECOLOGICAL ENGINEERING

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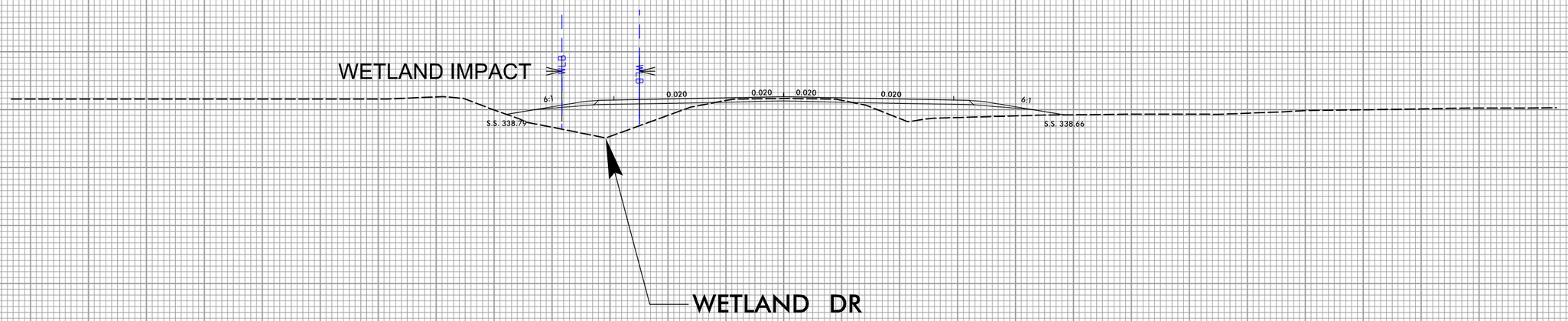
CROSS–SECTION AQ–AQ
SITE 39, WETLAND DR
STATION 40+00 –Y21–



PERMIT DRAWING
SHEET 71 OF 105

REVISIONS
5/14/99

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davidcooper

385 370 355 340 325 310 295 280

–210 –195 –180 –165 –150 –135 –120 –105 –90 –75 –60 –45 –30 –15 0 15 30 45 60 75 90 105 120 135 150 165 180 195 210

PROJECT REFERENCE NO.	SHEET NO.
R-2828	

NC FIRM LICENSE No: F-1148
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Cary, NC 27511
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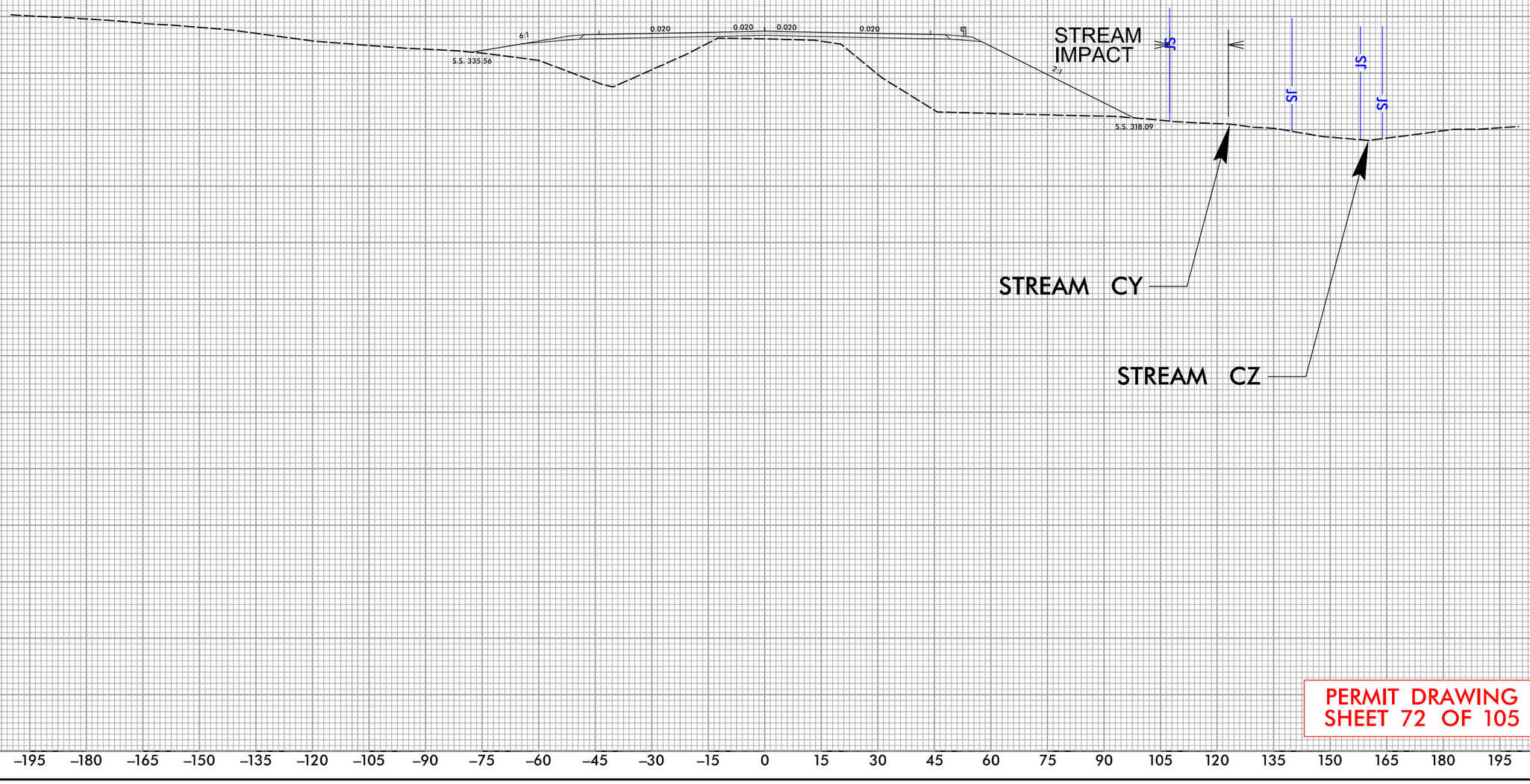
ECOLOGICAL ENGINEERING

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CROSS–SECTION AR–AR, SITES 25 & 38, STREAM CY & STREAM CZ STATION 44+50 –Y21–



PERMIT DRAWING
SHEET 72 OF 105

REVISIONS
5/14/99

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davidcooper

PROJECT REFERENCE NO.	SHEET NO.
R-2828	

ECOLOGICAL ENGINEERING

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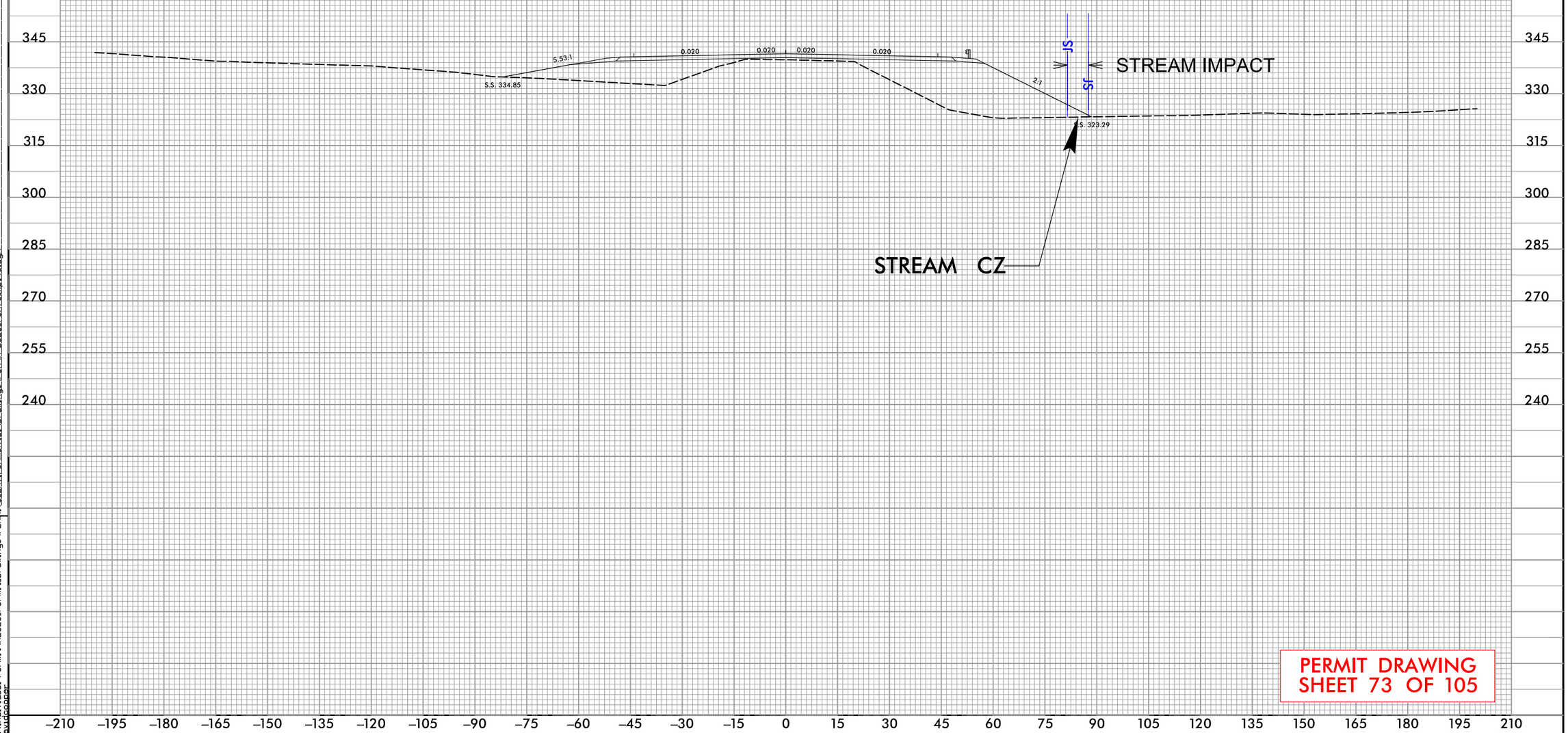
CROSS–SECTION AS–AS
SITE 38, STREAM CZ
STATION 45+50 –Y21–



PERMIT DRAWING
SHEET 73 OF 105

REVISIONS

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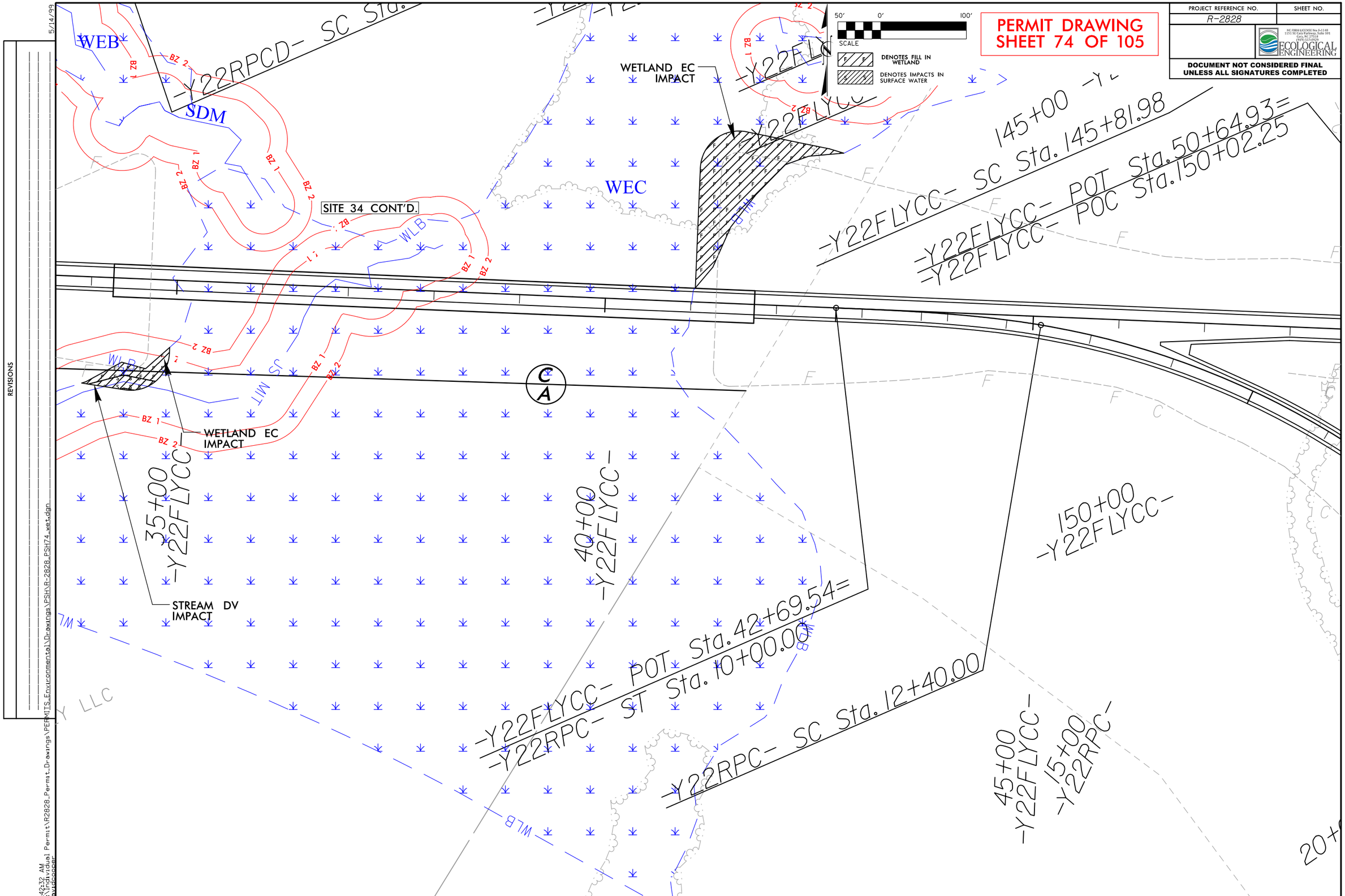
davidcooper



PERMIT DRAWING
SHEET 74 OF 105
PROJECT REFERENCE NO.
R-2828
SHEET NO.
ECOLOGICAL ENGINEERING
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
50' 0' 100'
SCALE
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
WEB
SDM
WEC
WLB
SITE 34 CONT'D.
WETLAND EC IMPACT
STREAM DV IMPACT
-Y22RPCD- SC Sta.
-Y22FLYCC- SC Sta. 145+81.98
-Y22FLYCC- POT Sta. 50+64.93=
-Y22FLYCC- POC Sta. 150+02.25
-Y22FLYCC- POT Sta. 42+69.54=
-Y22RPC- ST Sta. 10+00.00
-Y22RPC- SC Sta. 12+40.00
35+00 -Y22FLYCC-
40+00 -Y22FLYCC-
145+00 -Y22FLYCC-
150+00 -Y22FLYCC-
45+00 -Y22FLYCC-
15+00 -Y22RPC-
BZ 1
BZ 2
C
A
REVISIONS
5/14/99
9:42:32 AM
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davidcooper

PERMIT DRAWING
SHEET 74A OF 105

PROJECT REFERENCE NO.	SHEET NO.
R-2828	

NC FIRM LICENSE No: P-1148
1151 SE Cary Parkway, Suite 101
Cary, NC 27518
(919) 557-0939
ECOLOGICAL ENGINEERING

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50' 0' 100'
SCALE

DENOTES FILL IN WETLAND

DENOTES IMPACTS IN SURFACE WATER

SITE 34 CONT'D.

WEB

SDM

WEC

WLB

WETLAND EC IMPACT

WETLAND EC IMPACT

STREAM DV IMPACT

-Y22RPCD- SC Sta.

-Y22FLYCC- SC Sta. 145+81.98

-Y22FLYCC- POT Sta. 50+64.93=

-Y22FLYCC- POC Sta. 150+02.25

-Y22FLYCC- 145+00

-Y22FLYCC- 35+00

-Y22FLYCC- 40+00

-Y22FLYCC- 150+00

-Y22RPC- ST Sta. 10+00.00

-Y22RPC- POT Sta. 42+69.54=

-Y22RPC- SC Sta. 12+40.00

-Y22FLYCC- 45+00

-Y22RPC- 15+00

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davidcooper

CROSS–SECTION AT–AT
SITE 34, WETLAND EB, WETLAND EC, STREAM DM, & STREAM DV
STATION 34+50 –Y22FLYCC–

PROJECT REFERENCE NO.	SHEET NO.
R-2828	

NC FIRM LICENSE No: F-1148
1555 SE Cary Parkway, Suite 101
Cary, NC 27518
(919) 557-5909
ECOLOGICAL ENGINEERING

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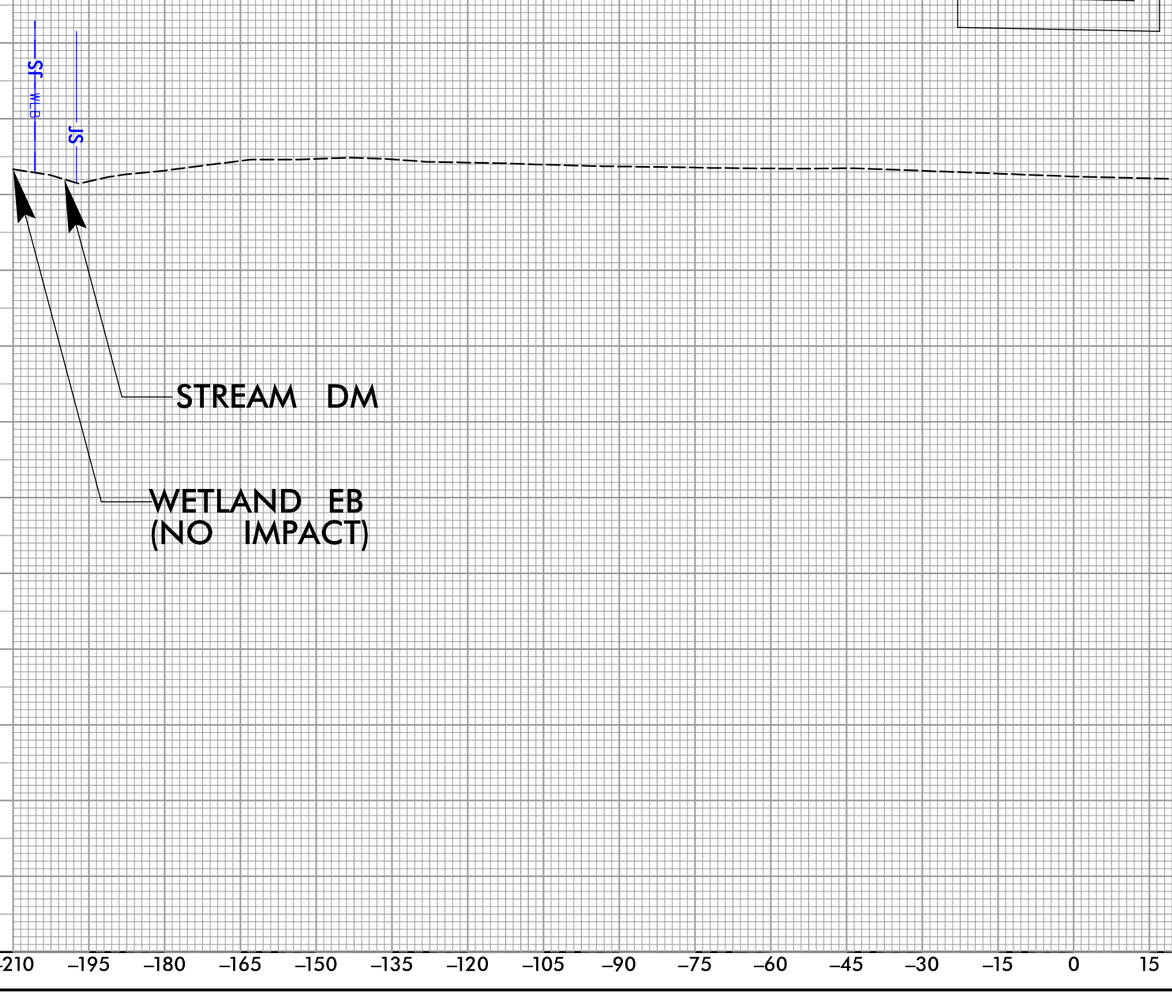

PERMIT DRAWING
SHEET 75 OF 105

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davidcooper

PERMIT DRAWING
SHEET 76 OF 105

PROJECT REFERENCE NO.	SHEET NO.
R-2828	

NC FIRM LICENSE No: P-1148
1151 SE Cary Parkway, Suite 101
Cary, NC 27518
(919) 557-0939
ECOLOGICAL ENGINEERING

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

50' 0' 100'
SCALE

DENOTES FILL IN WETLAND

DENOTES IMPACTS IN SURFACE WATER

REVISIONS
5/14/99

SITE 40

WETLAND EW IMPACT

STREAM ET IMPACT

WETLAND EV IMPACT

POC Sta. 56+47.18= POC Sta. 14+41.67

-Y22RPD- Sta. 30+77.23

-Y22FLYCC- SC Sta. 60+79.59

-Y22RPDFLY- SRS Sta. 33+77.23

-Y22FLYCC- POC Sta. 69+10.50= -Y22RPDFLY- ST Sta. 35+57.23 12.00' RT

-Y22RPD- CS Sta. 31+41.46

-Y22RPD- ST Sta. 33+56.46

9:42:52 AM
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davidconner

PERMIT DRAWING
SHEET 76A OF 105

PROJECT REFERENCE NO.	SHEET NO.
R-2828	

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1151 SE Cary Parkway, Suite 101
Cary, NC 27518
(919) 557-0939
ECOLOGICAL ENGINEERING

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

50' 0' 100'
SCALE

DENOTES FILL IN WETLAND

DENOTES IMPACTS IN SURFACE WATER

REVISIONS

5/14/99

WEX

WEV

WEU

SITE 40

WETLAND EW IMPACT

STREAM ET IMPACT

WETLAND EV IMPACT

-Y22RPD- CS Sta. 31+41.46

-Y22RPD- ST Sta. 33+56.46

-Y22RPDFLY- CRS Sta. 33+77.23

-Y22FLYCC- POC Sta. 69+10.50=

-Y22FLYCC- ST Sta. 35+57.23

12.00' RT

-Y22FLYCC- SC Sta. 60+79.59

POC Sta. 56+47.18=

POC Sta. 14+41.67

WAKE COUNTY
JOHNSTON COUNTY

9:42:57 AM
R:\Projects\Annual Permit\R2828_Permit_Drawings\PERMITS_Environmental\Drawings\PSH\R-2828_PSH76A_set.dgn
davidconner

PROJECT REFERENCE NO.	SHEET NO.
R-2828	

ECOLOGICAL ENGINEERING

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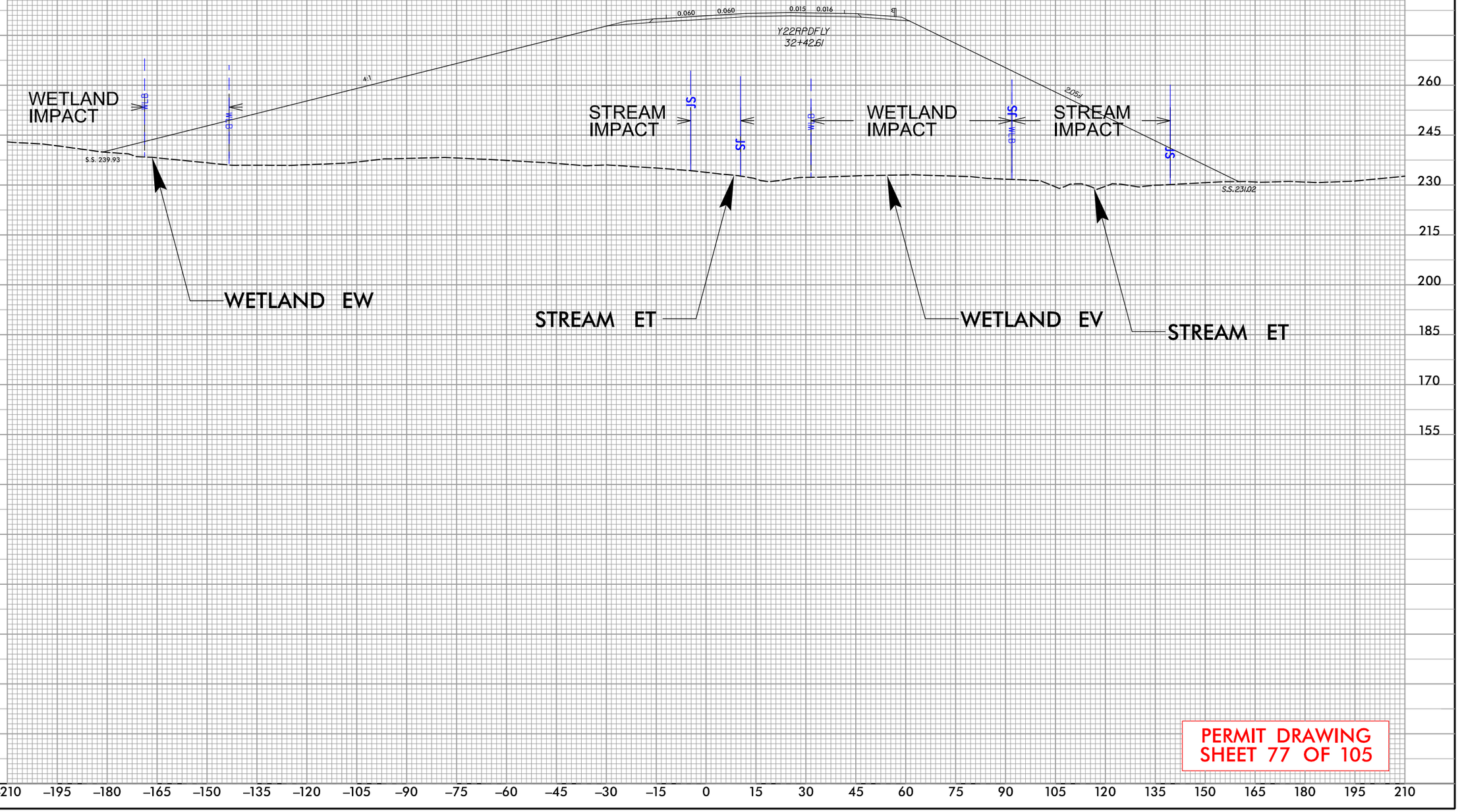
CROSS-SECTION AU-AU
SITE 40, WETLAND EV, WETLAND EW, & STREAM ET
STATION 66+00 -Y22FLYCC-



PERMIT DRAWING
SHEET 77 OF 105

REVISIONS

5/14/99

9:43:04 AM
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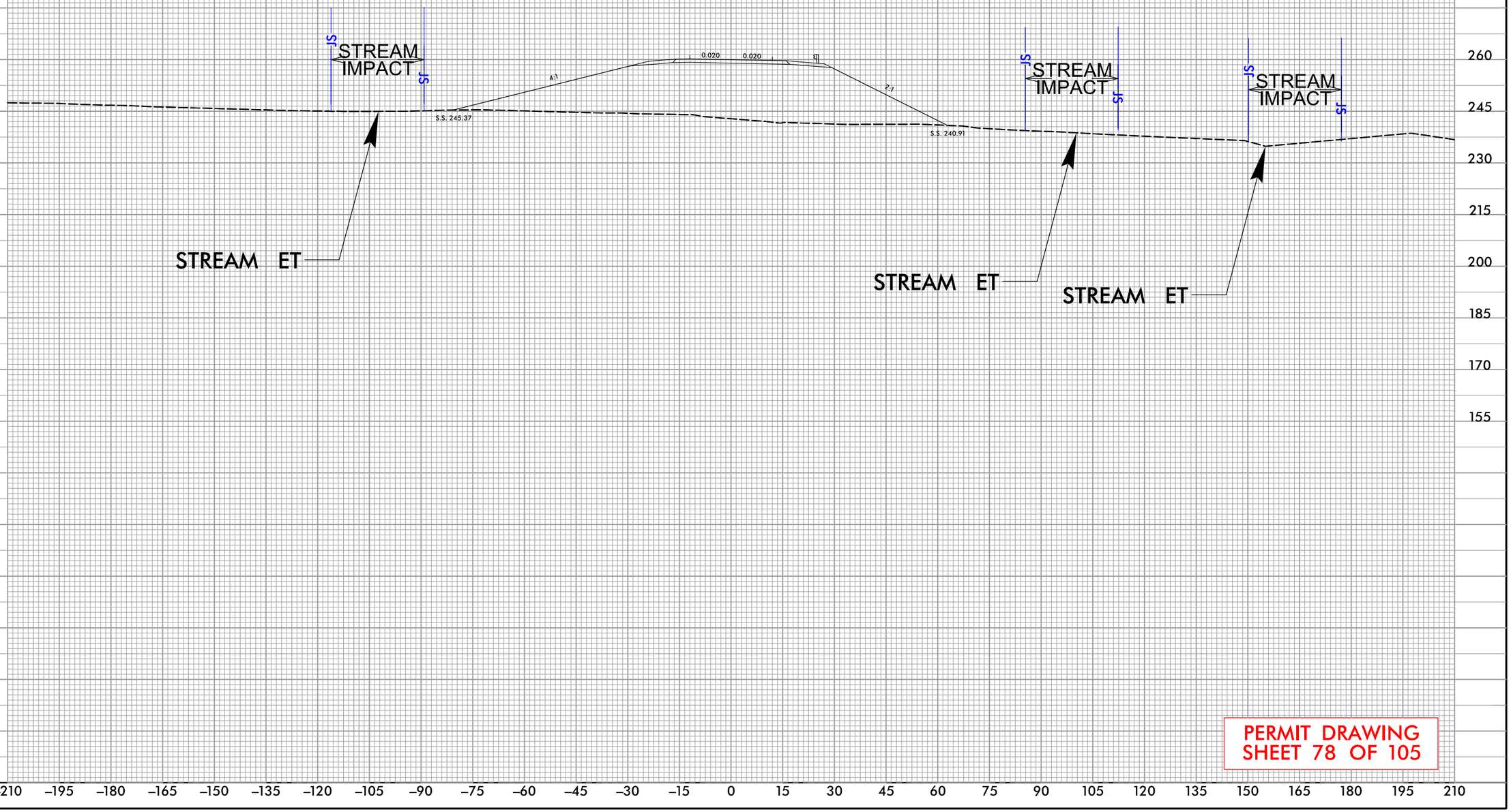
davidcooper

PROJECT REFERENCE NO.	SHEET NO.
R-2828	

NC FIRM LICENSE No.F-1148
1515 SE Gary Parkway, Suite 101
Garner, NC 27529
(919) 553-6906
ECOLOGICAL ENGINEERING

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CROSS–SECTION AW–AW
SITE 40, STREAM ET
STATION 47+50 –Y22RPCD–



PERMIT DRAWING
SHEET 78 OF 105

REVISIONS

5/14/99

9:43:08 AM
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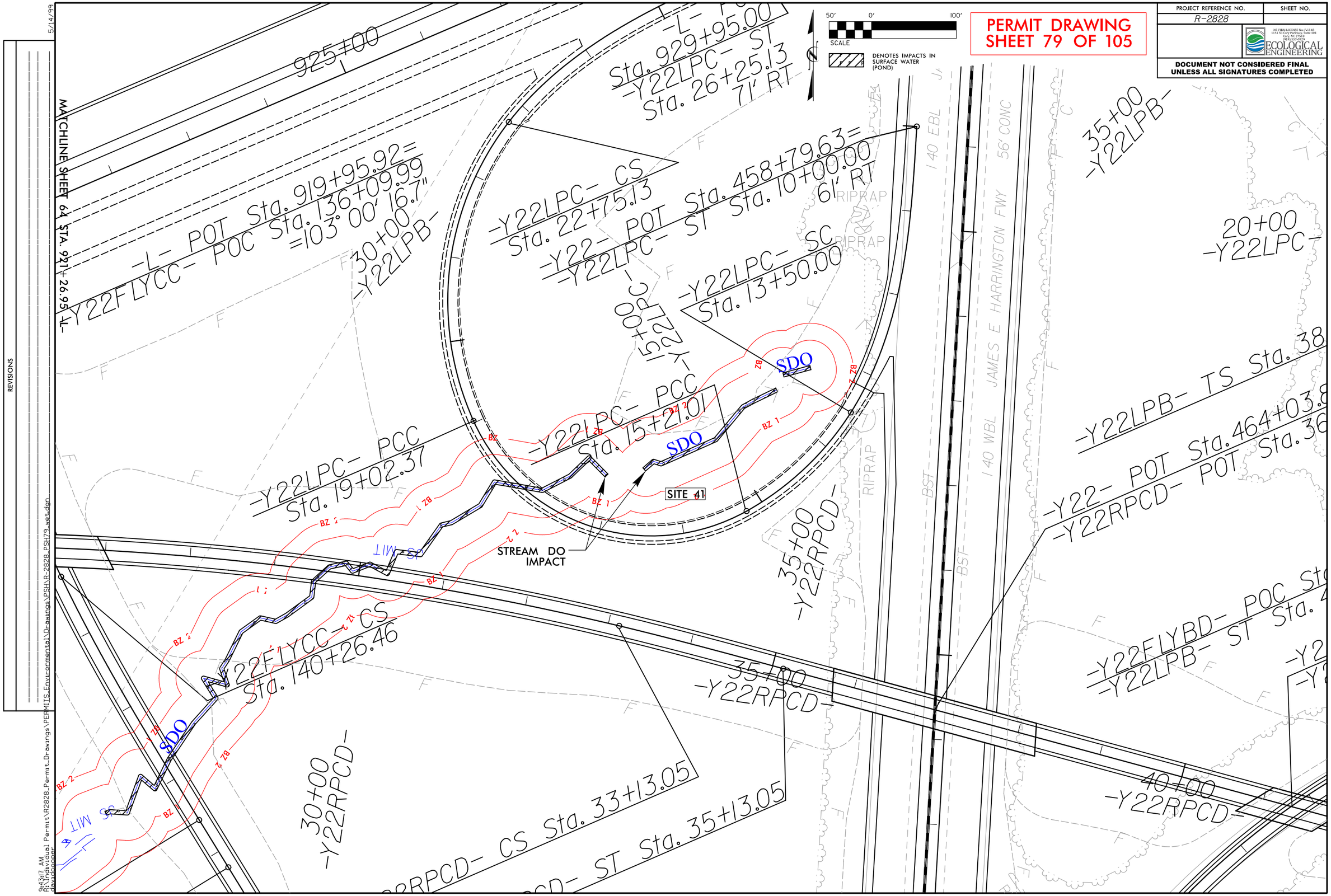
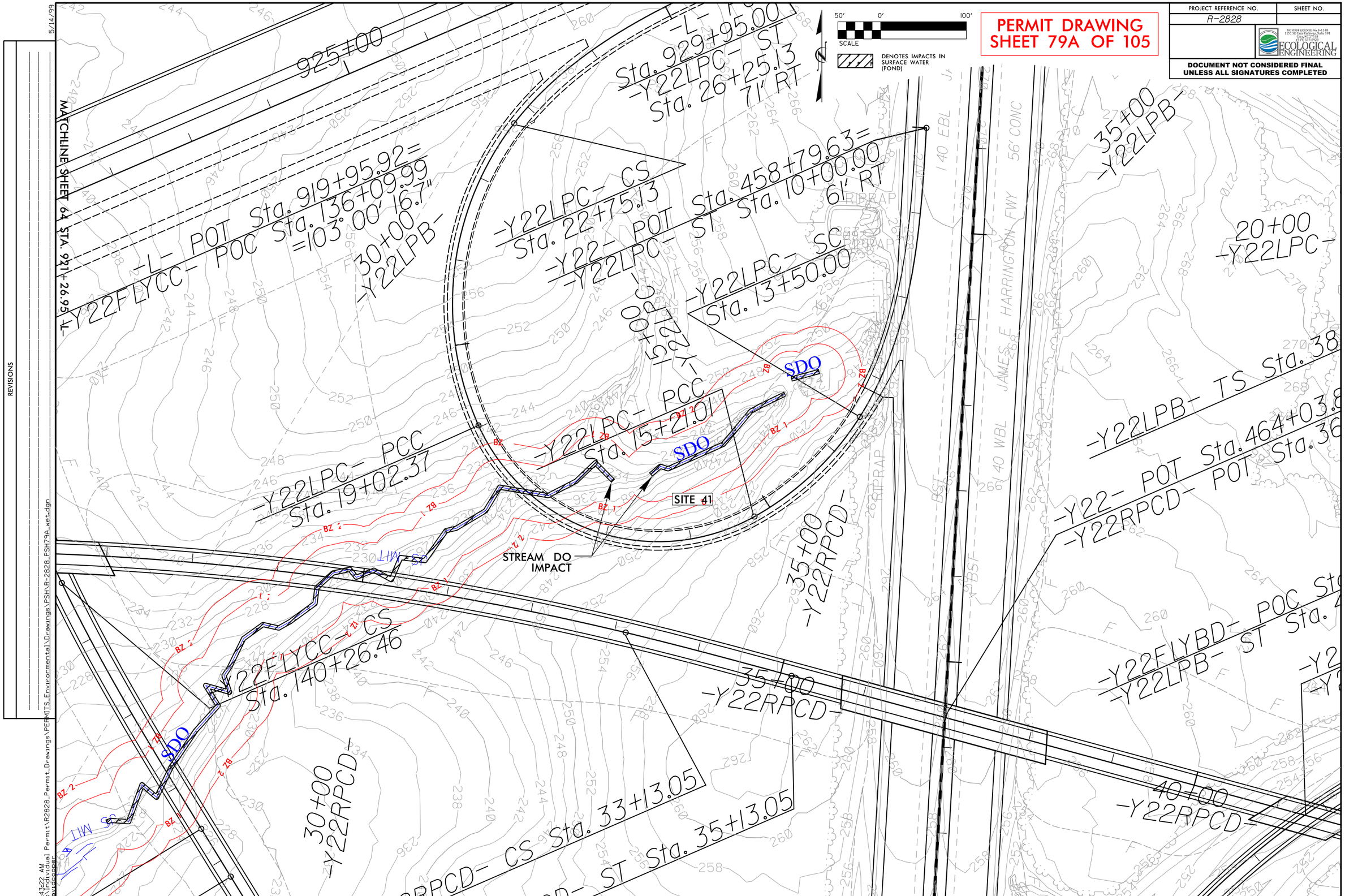
davidcooper



PERMIT DRAWING
SHEET 79 OF 105
PROJECT REFERENCE NO.
R-2828
SHEET NO.
ECOLOGICAL ENGINEERING
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
50' 0' 100'
SCALE
DENOTES IMPACTS IN SURFACE WATER (POND)
MATCHLINE SHEET 64 STA. 921+26.95 -L-
REVISIONS
5/14/99
925+00
-L- POT Sta. 919+95.92=
-Y22FLYCC- POC Sta. 136+09.99
=103° 00' 16.7"
30+00
-Y22LPB-
-Y22LPC- CS
Sta. 22+75.13
-Y22- POT Sta. 458+79.63=
-Y22LPC- ST Sta. 10+00.00
61' RT
-Y22LPC- SC
Sta. 13+50.00
15+00
-Y22LPC-
-Y22LPC- PCC
Sta. 15+21.01
-Y22LPC- PCC
Sta. 19+02.37
-Y22FLYCC- CS
Sta. 140+26.46
-Y22LPB- TS Sta. 38
-Y22- POT Sta. 464+03.8
-Y22RPCD- POT Sta. 36
-Y22FLYBD- POC Sta
-Y22LPB- ST Sta.
35+00
-Y22LPB-
20+00
-Y22LPC-
35+00
-Y22RPCD-
35+00
-Y22RPCD-
30+00
-Y22RPCD-
40+00
-Y22RPCD-
-Y22RPCD- CS Sta. 33+13.05
-Y22RPCD- ST Sta. 35+13.05
SDO
SITE 41
STREAM DO IMPACT
RIPRAP
I 40 EBL
I 40 WBL
JAMES E HARRINGTON FWY
56' CONC
BST
BZ 1
BZ 2



PERMIT DRAWING
SHEET 79A OF 105
PROJECT REFERENCE NO.
R-2828
SHEET NO.
ECOLOGICAL ENGINEERING
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
50' 0' 100'
SCALE
DENOTES IMPACTS IN SURFACE WATER (POND)
MATCHLINE SHEET 64 STA. 921+26.95 -L-
REVISIONS
5/14/99
925+00
-L- POT Sta. 919+95.92=
-Y22FLYCC- POC Sta. 136+09.99
=103° 00' 16.7"
30+00
-Y22LPB-
-Y22LPC- CS
Sta. 22+75.13
-Y22- POT Sta. 458+79.63=
-Y22LPC- ST Sta. 10+00.00
61' RT
-Y22LPC- SC
Sta. 13+50.00
15+00
-Y22LPC-
Sta. 929+95.00
-Y22LPC- ST
Sta. 26+25.13
71' RT
35+00
-Y22LPB-
20+00
-Y22LPC-
-Y22LPB- TS Sta. 38
-Y22LPC- PCC
Sta. 19+02.37
-Y22LPC- PCC
Sta. 15+21.01
SDO
SITE 41
STREAM DO IMPACT
35+00
-Y22RPCD-
-Y22- POT Sta. 464+03.8
-Y22RPCD- POT Sta. 36
-Y22FLYBD- POC Sta
-Y22LPB- ST Sta.
-Y22FLYCC- CS
Sta. 140+26.46
35+00
-Y22RPCD-
40+00
-Y22RPCD-
30+00
-Y22RPCD-
-Y22RPCD- CS Sta. 33+13.05
-Y22RPCD- ST Sta. 35+13.05
I 40 EBL
I 40 WBL
JAMES E HARRINGTON FWY
56' CONC
RIPRAP
BST
BZ 1
BZ 2

PROJECT REFERENCE NO.	SHEET NO.
R-2828	

NC FIRM LICENSE No.F-1148
1151 SE Cary Parkway, Suite 101
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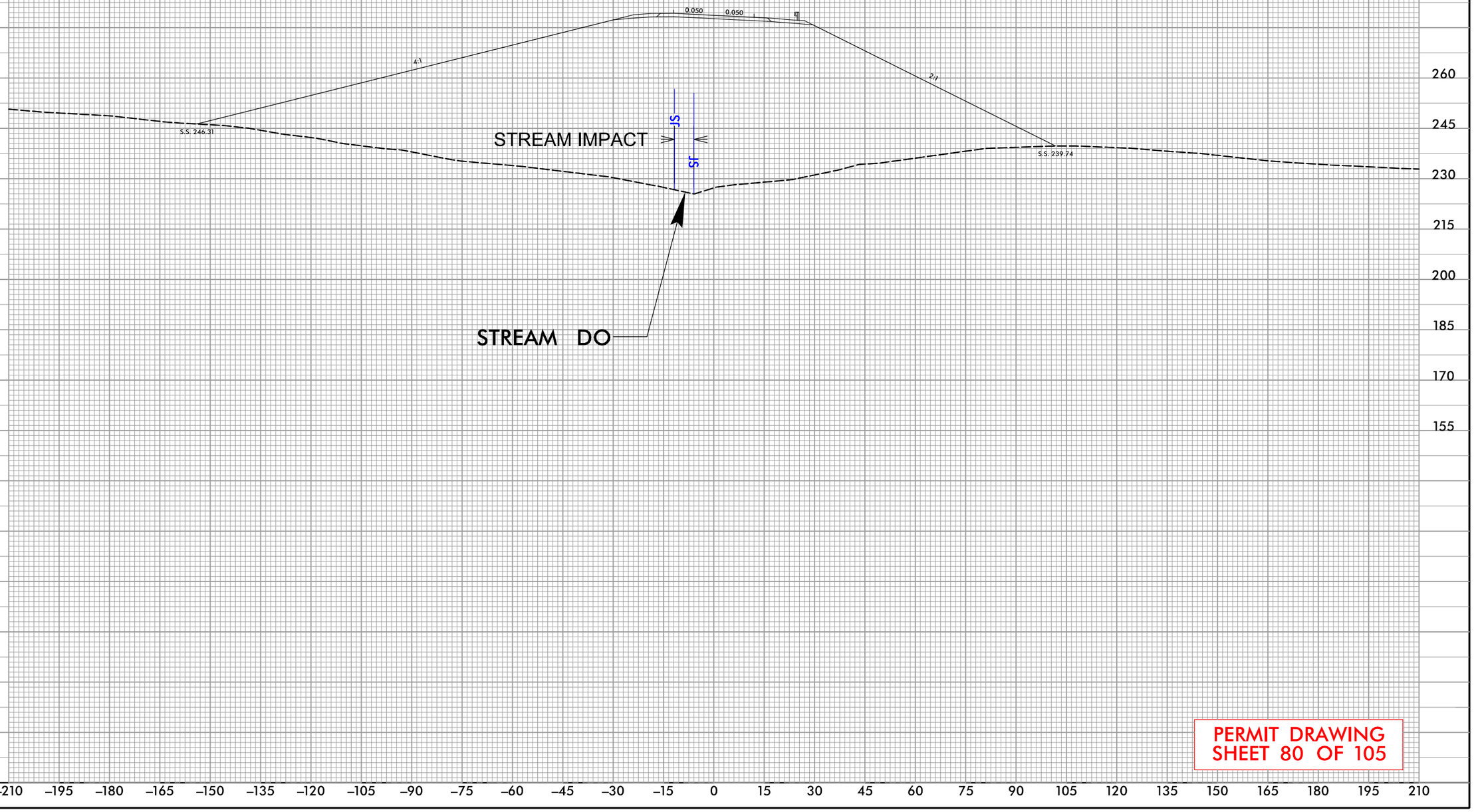
CROSS–SECTION AV–AV
SITE 41, STREAM DO
STATION 30+00 –Y22RPCD–



PERMIT DRAWING
SHEET 80 OF 105

REVISIONS
5/14/99

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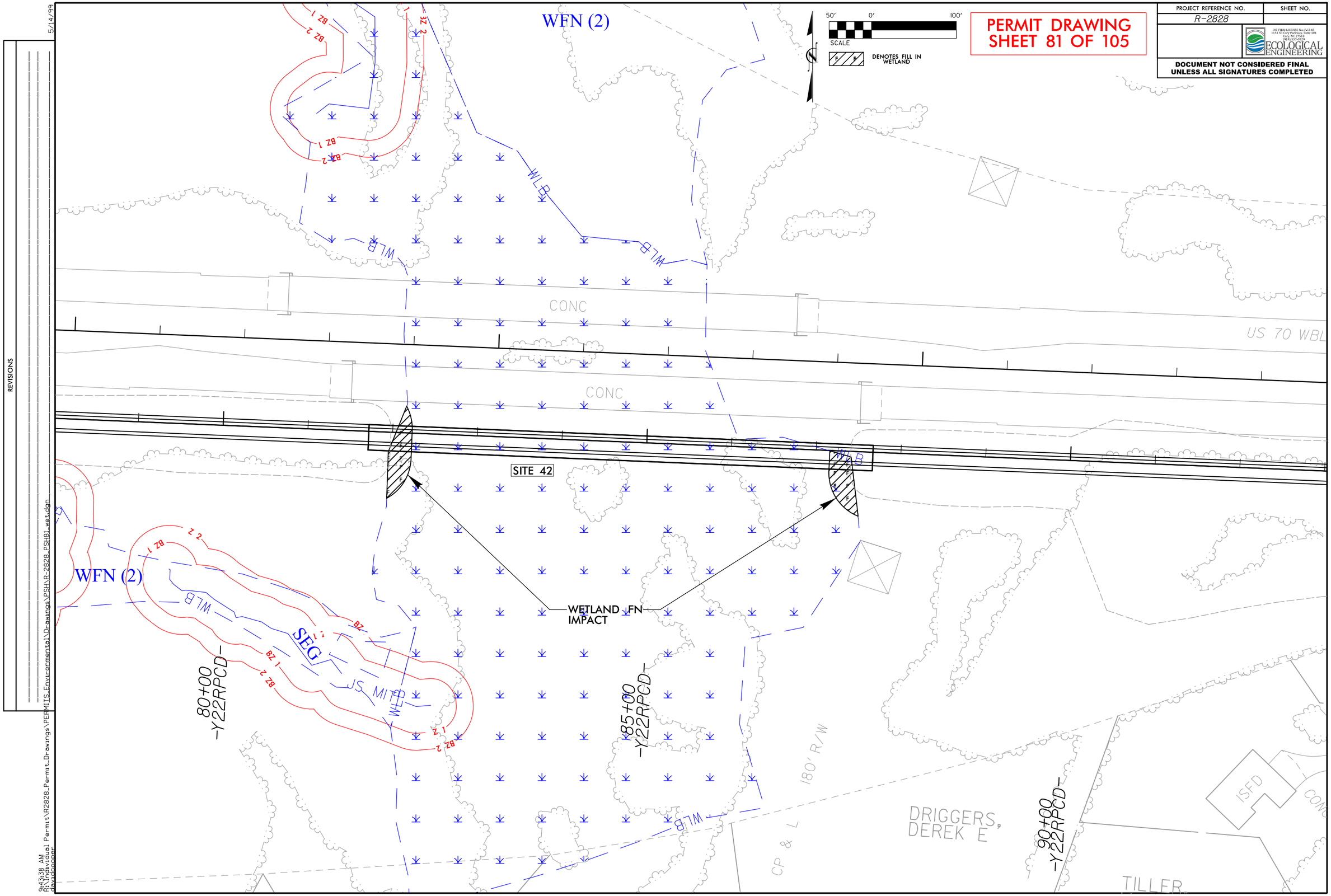
davidcooper



PROJECT REFERENCE NO.
R-2828
SHEET NO.
ECOLOGICAL ENGINEERING
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
PERMIT DRAWING
SHEET 81 OF 105
50' 0' 100'
SCALE
DENOTES FILL IN WETLAND
WFN (2)
WFN (2)
CONC
CONC
US 70 WBL
SITE 42
WETLAND FN IMPACT
SEG
80+00 -Y22RPCD-
85+00 -Y22RPCD-
90+00 -Y22RPCD-
180' R/W
CP & L
DRIGGERS, DEREK E
ISFD
TILLER
REVISIONS
5/14/99
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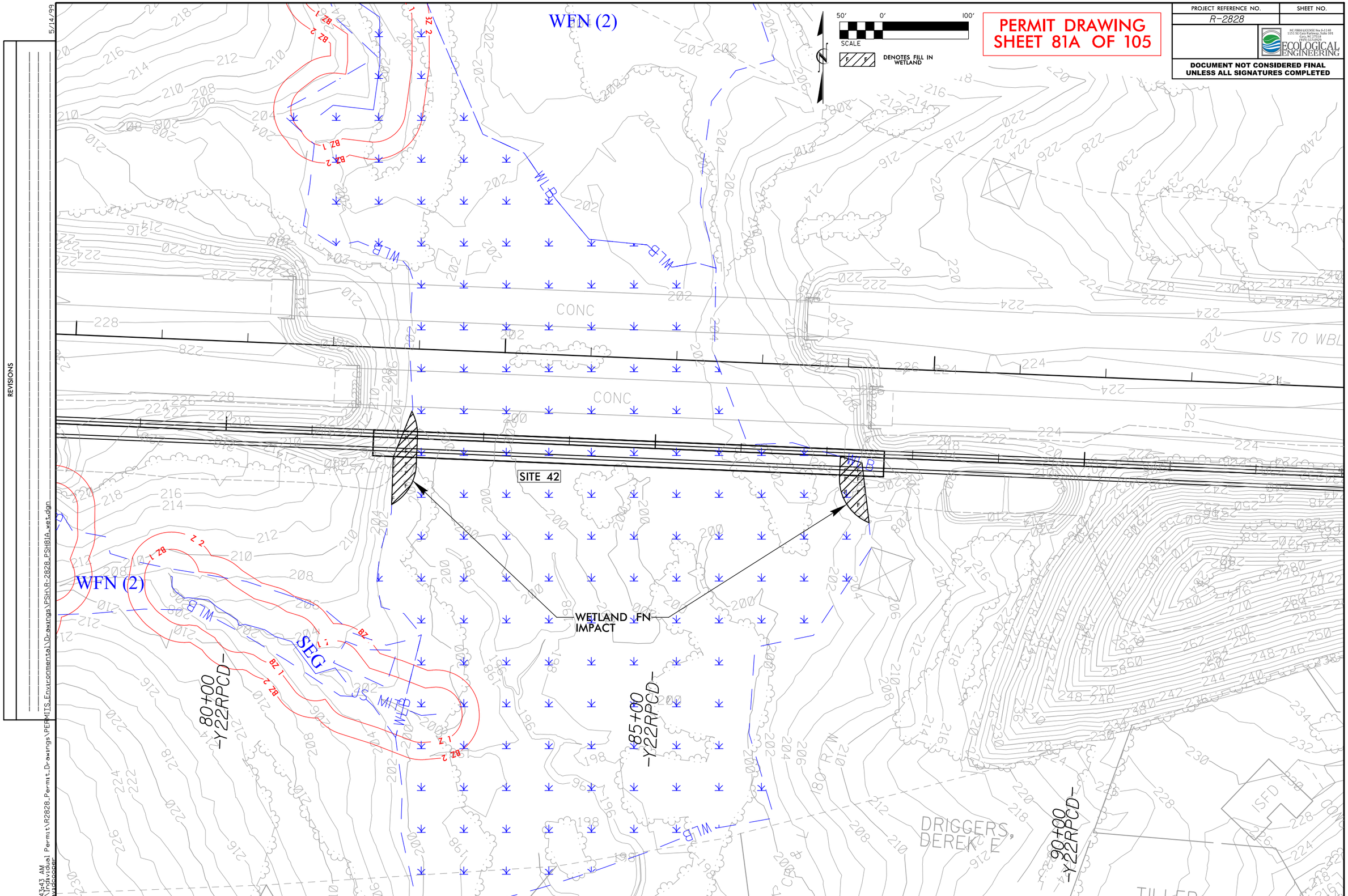
davidcooper



PERMIT DRAWING
SHEET 81A OF 105
PROJECT REFERENCE NO.
R-2828
SHEET NO.
ECOLOGICAL ENGINEERING
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
50' 0' 100'
SCALE
DENOTES FILL IN WETLAND
WFN (2)
WFN (2)
CONC
CONC
US 70 WBL
SITE 42
WETLAND FN IMPACT
SEG
80+00 -Y22RPCD-
85+00 -Y22RPCD-
90+00 -Y22RPCD-
DRIGGERS, DEREK E
TILLER
ISFD
REVISIONS
5/14/99
9:43:43 AM
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R-2828	

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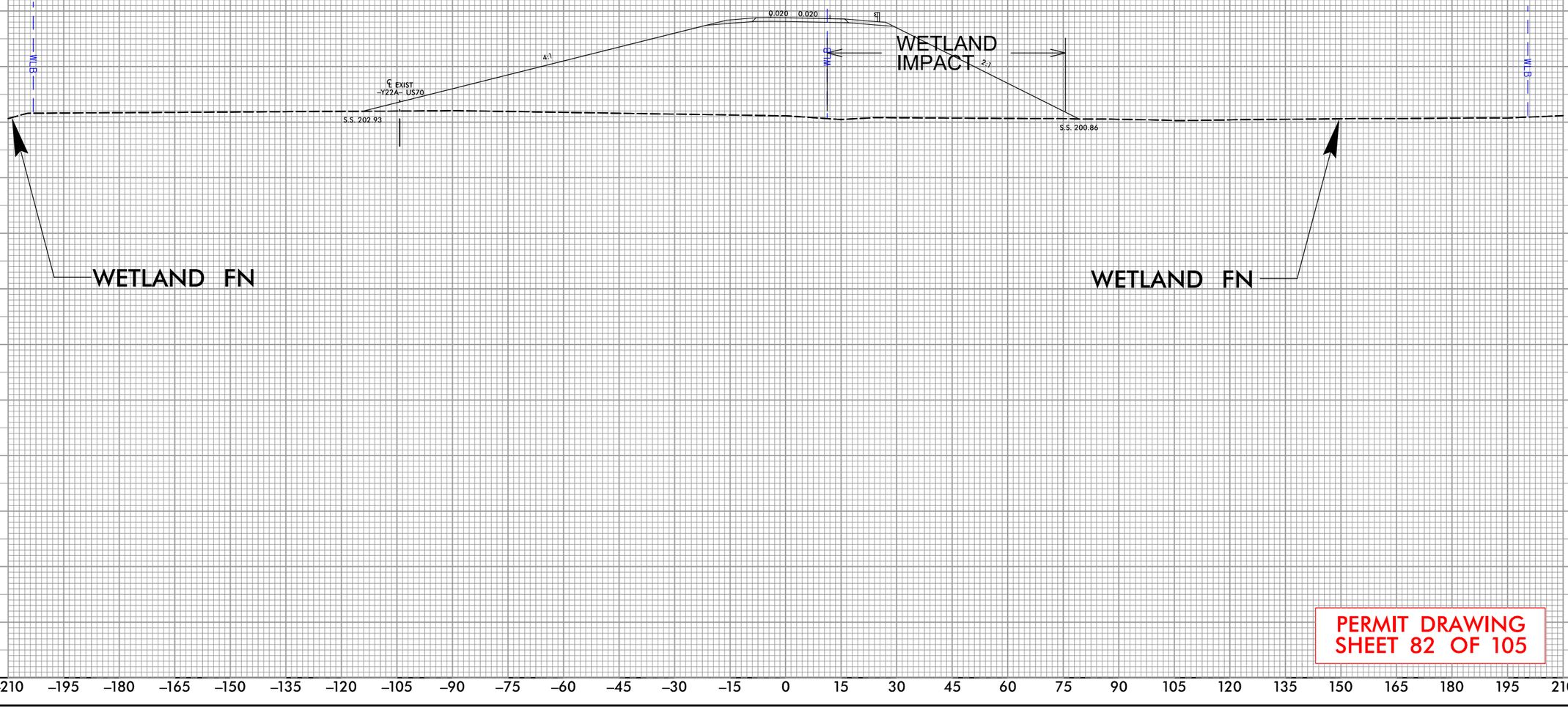
CROSS–SECTION AX–AX
SITE 42, WETLAND FN
STATION 82 + 00 –Y22RPCD–



PERMIT DRAWING
SHEET 82 OF 105

REVISIONS
5/14/99

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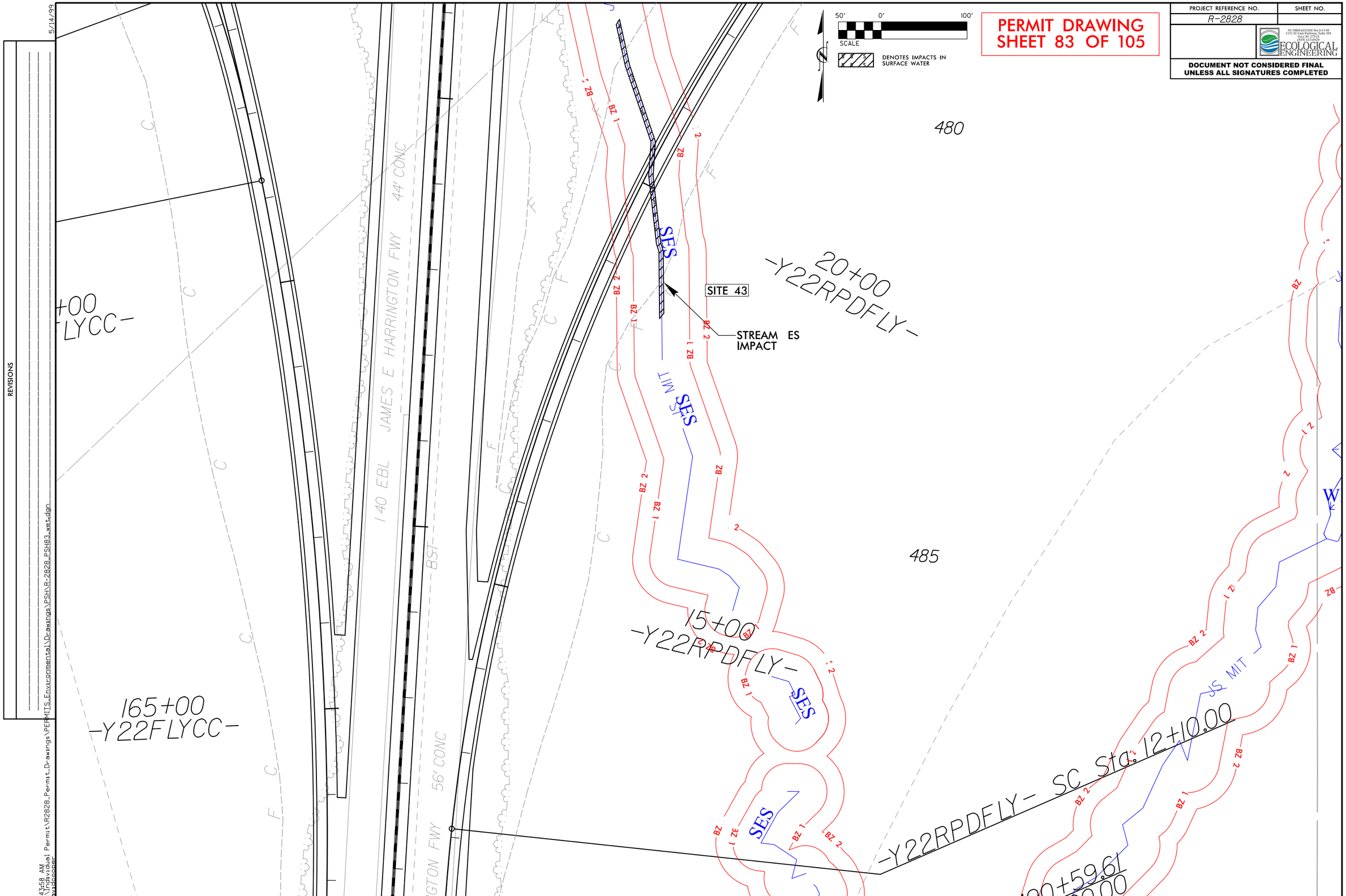
davidcooper



PERMIT DRAWING
SHEET 83 OF 105
PROJECT REFERENCE NO.
R-2828
SHEET NO.
ECOLOGICAL ENGINEERING
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
50' 0' 100'
SCALE
DENOTES IMPACTS IN SURFACE WATER
480
485
SITE 43
STREAM ES IMPACT
SES
JS MIT
20+00
-Y22RPDFLY-
15+00
-Y22RPDFLY-
165+00
-Y22FLYCC-
+00
FLYCC-
JAMES E HARRINGTON FWY
44' CONC
I 40 EBL
BST
56' CONC
-Y22RPDFLY- SC Sta. 12+10.00
490+59.61
REVISIONS
5/14/99
9:43:58 AM
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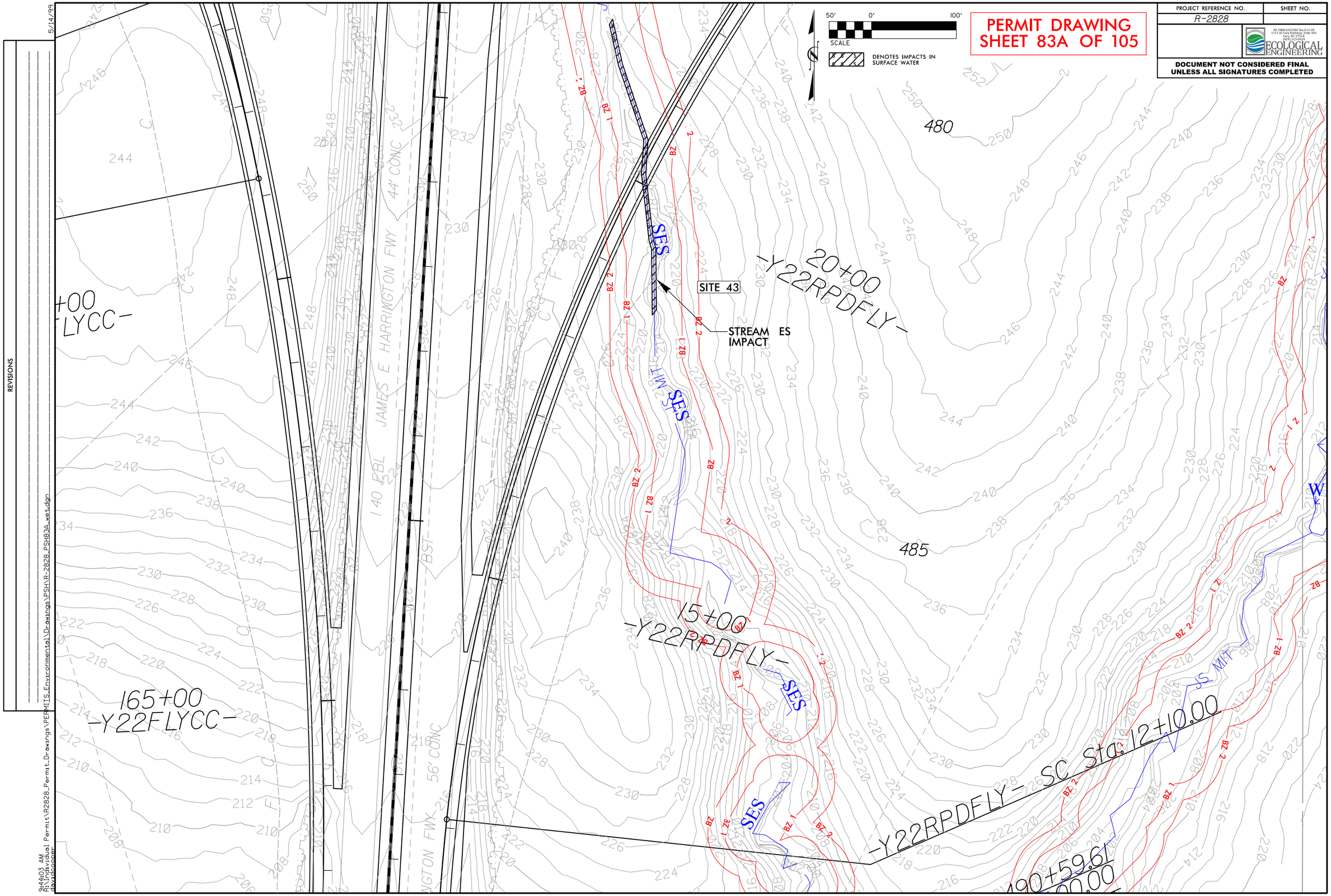
davidcooper



PERMIT DRAWING
SHEET 83A OF 105
PROJECT REFERENCE NO.
R-2828
SHEET NO.
ECOLOGICAL ENGINEERING
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
50' 0' 100'
SCALE
DENOTES IMPACTS IN SURFACE WATER
SITE 43
STREAM ES IMPACT
SES
20+00
-Y22RPDFLY-
15+00
-Y22RPDFLY-
165+00
-Y22FLYCC-
-Y22RPDFLY- SC Sta. 12+10.00
490+59.61
480
485
JAMES E HARRINGTON FWY
I 40 EBL
44' CONC
56' CONC
JS MIT
REVISIONS
5/14/99
9:44:03 AM
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PROJECT REFERENCE NO.	SHEET NO.
R-2828	

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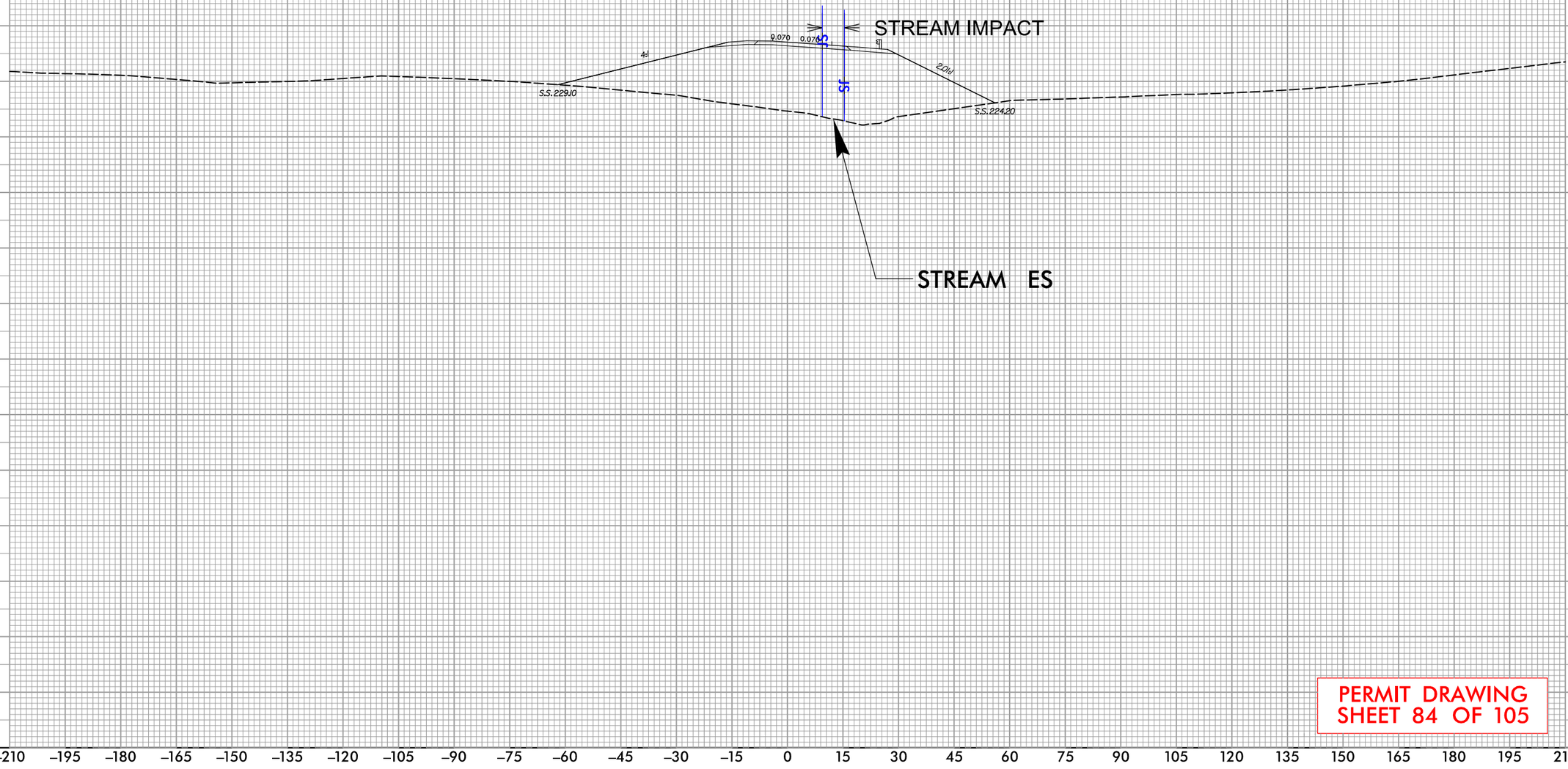
CROSS–SECTION AY–AY
SITE 43, STREAM ES
STATION 20+00 –Y22RPDFLY–



PERMIT DRAWING
SHEET 84 OF 105

REVISIONS
5/14/99

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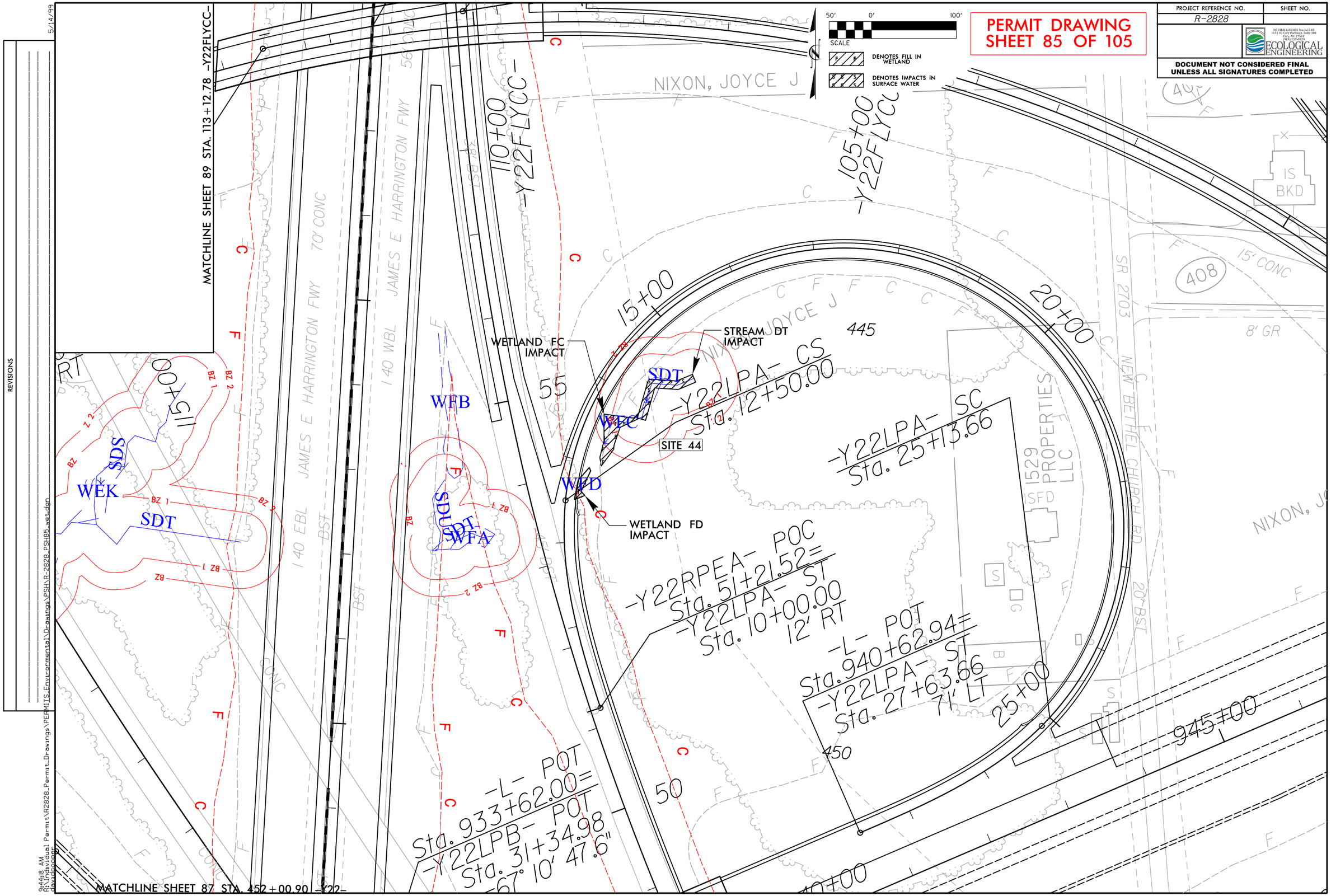
davidcooper



PERMIT DRAWING
SHEET 85 OF 105
PROJECT REFERENCE NO.
R-2828
SHEET NO.
ECOLOGICAL ENGINEERING
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
SCALE
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
MATCHLINE SHEET 89 STA. 113+12.78 -Y22FLYCC-
MATCHLINE SHEET 87 STA. 452+00.90 -Y22-
NIXON, JOYCE J
JAMES E HARRINGTON FWY
I 40 WBL
I 40 EBL
70' CONC
56' CONC
38' BST
BST
CONC
SR 2703
NEW BETHEL CHURCH RD
20' BST
15' CONC
8' GR
IS BKD
408
445
450
55
50
WETLAND FC IMPACT
STREAM DT IMPACT
WETLAND FD IMPACT
SITE 44
WFB
WFC
WFD
WFA
WEK
SDS
SDT
SDU
-Y22LPA- CS
Sta. 12+50.00
-Y22LPA- SC
Sta. 25+13.66
-Y22RPEA- POC
Sta. 51+21.52=
-Y22LPA- ST
Sta. 10+00.00
12' RT
-L- POT
Sta. 940+62.94=
-Y22LPA- ST
Sta. 27+63.66
71' LT
-L- POT
Sta. 933+62.00=
-Y22LPB- POT
Sta. 31+34.98
-67° 10' 47.6"
-Y22FLYCC-
110+00
105+00
115+00
20+00
25+00
945+00
REVISIONS
5/14/99
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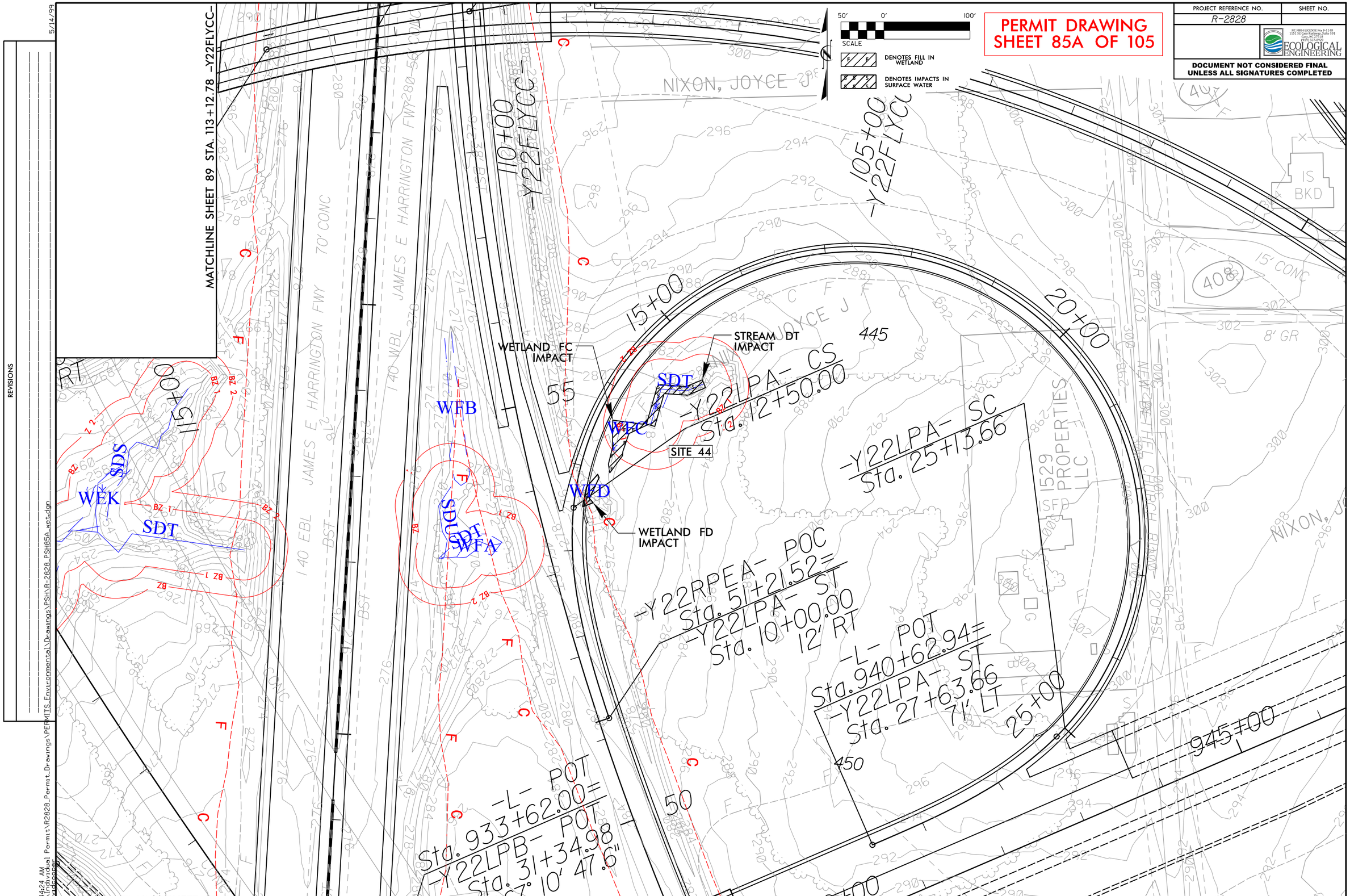

REVISIONS

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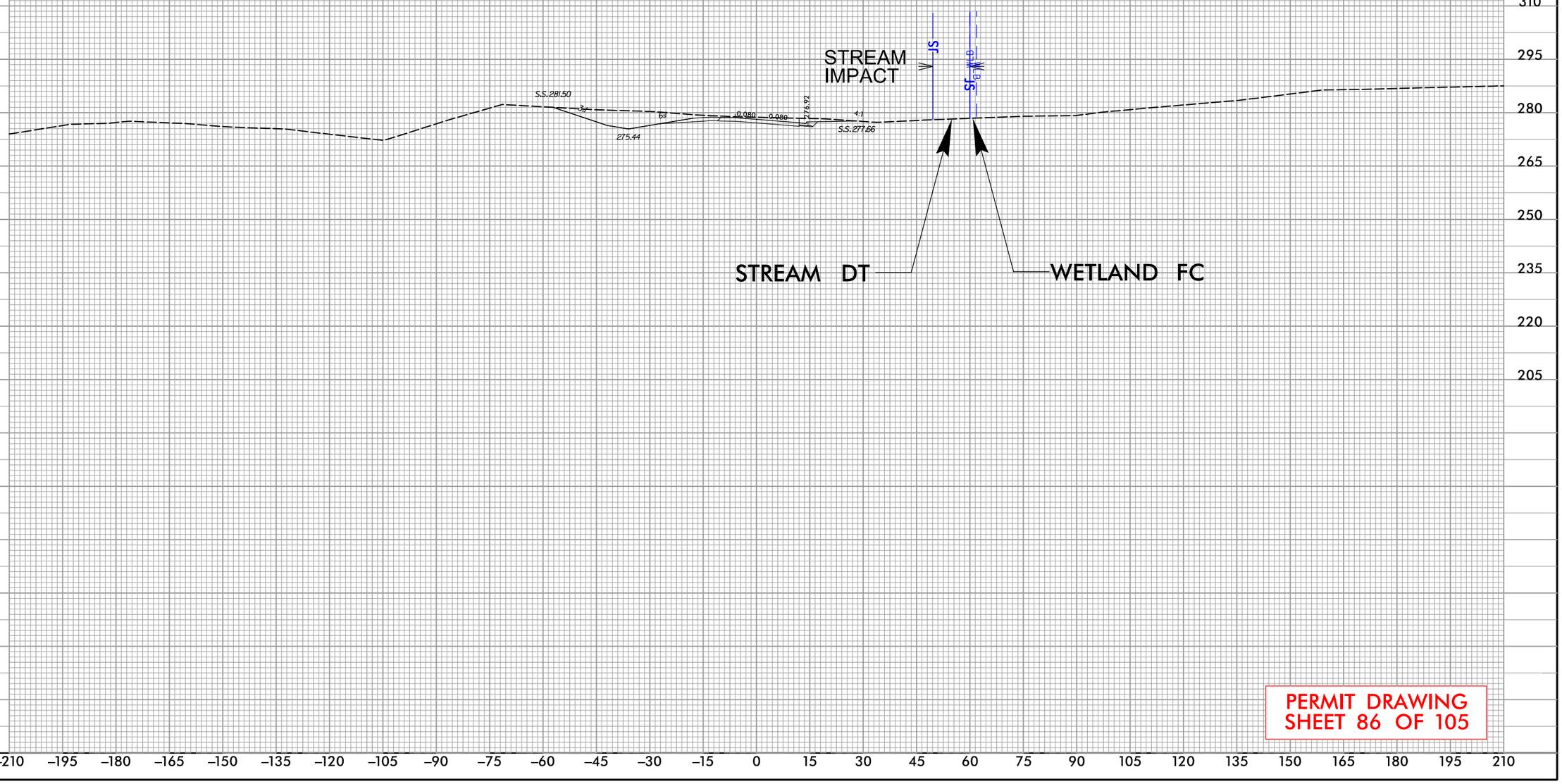
CROSS–SECTION AZ–AZ
SITE 44, WETLAND FC & STREAM DT
STATION 14+00 –Y22LPA–



PERMIT DRAWING
SHEET 86 OF 105

REVISIONS

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PROJECT REFERENCE NO.	SHEET NO.
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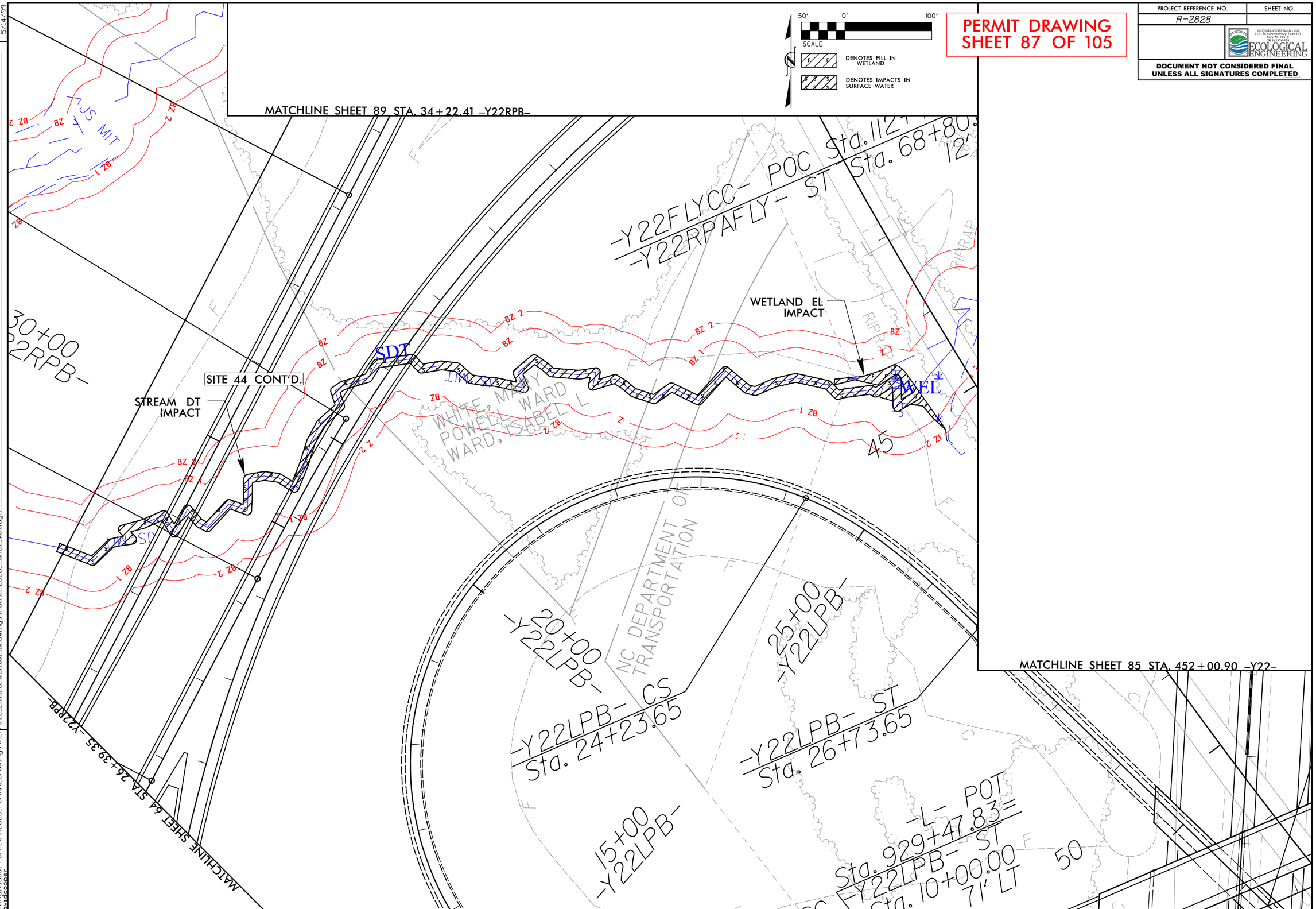
PERMIT DRAWING SHEET 87 OF 105



REVISIONS

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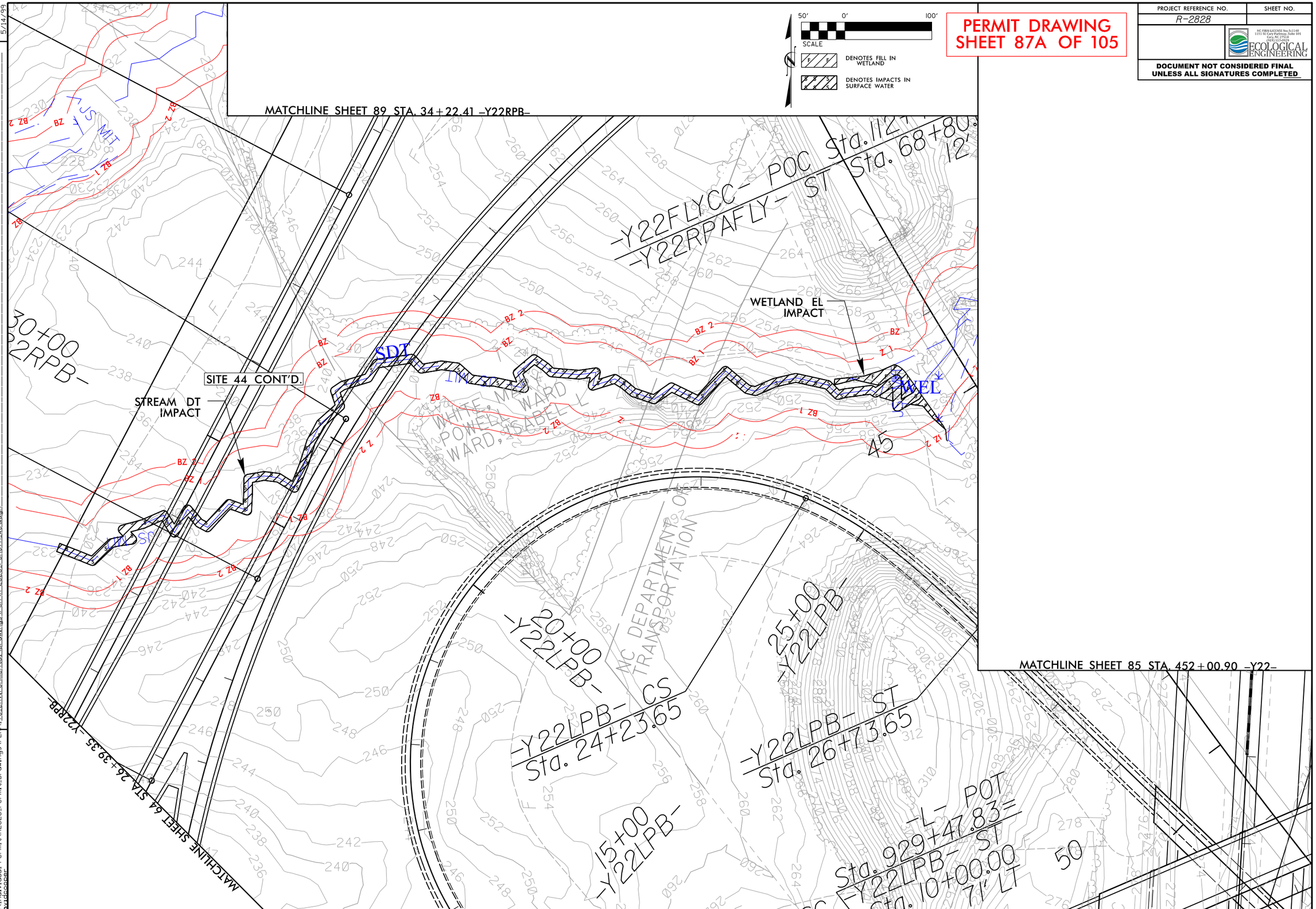
PERMIT DRAWING SHEET 87A OF 105



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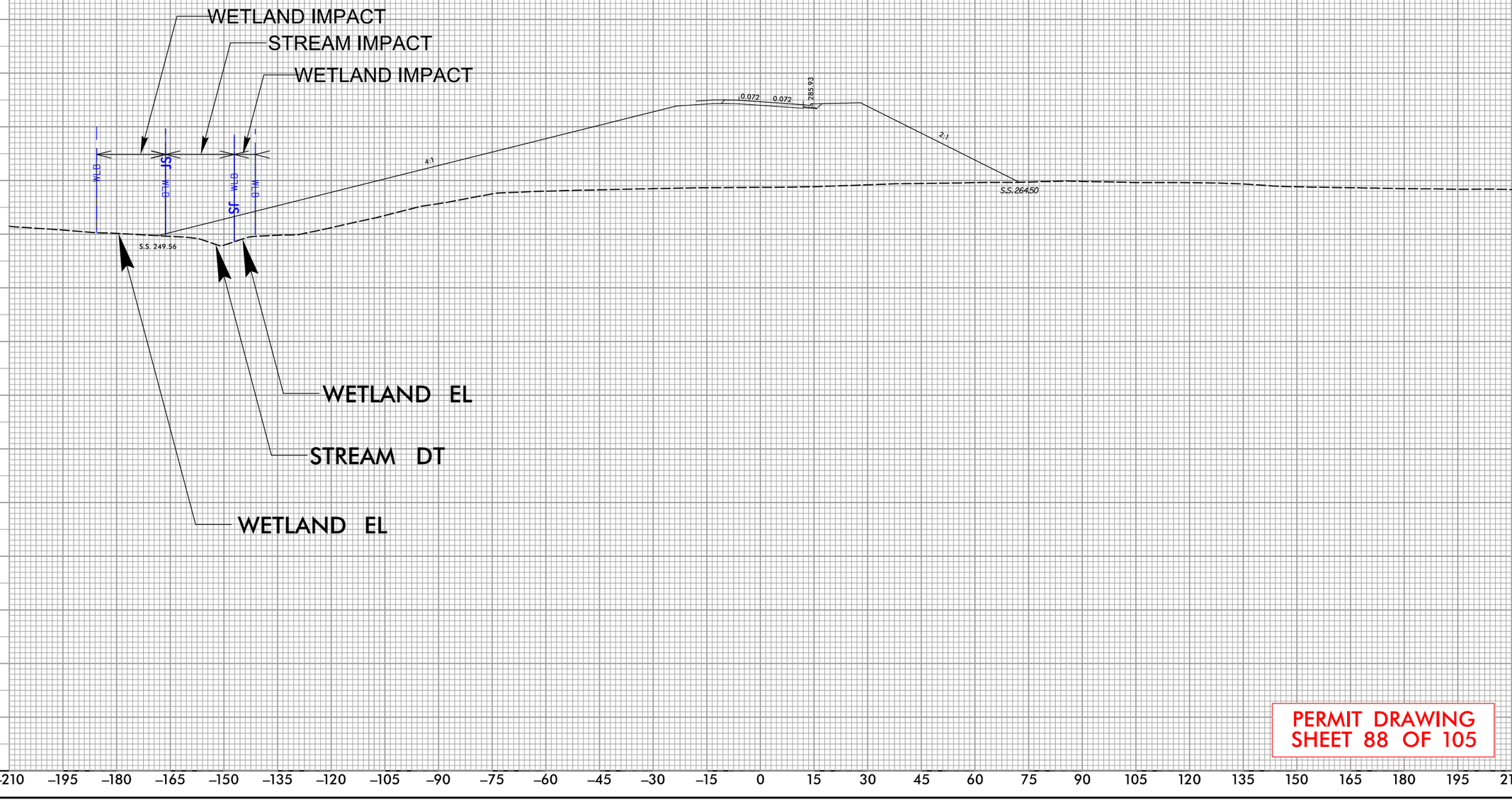
CROSS–SECTION BA–BA
SITE 44, WETLAND EL & STREAM DT
STATION 24+50 –Y22LPB–



PERMIT DRAWING
SHEET 88 OF 105

REVISIONS
5/14/99

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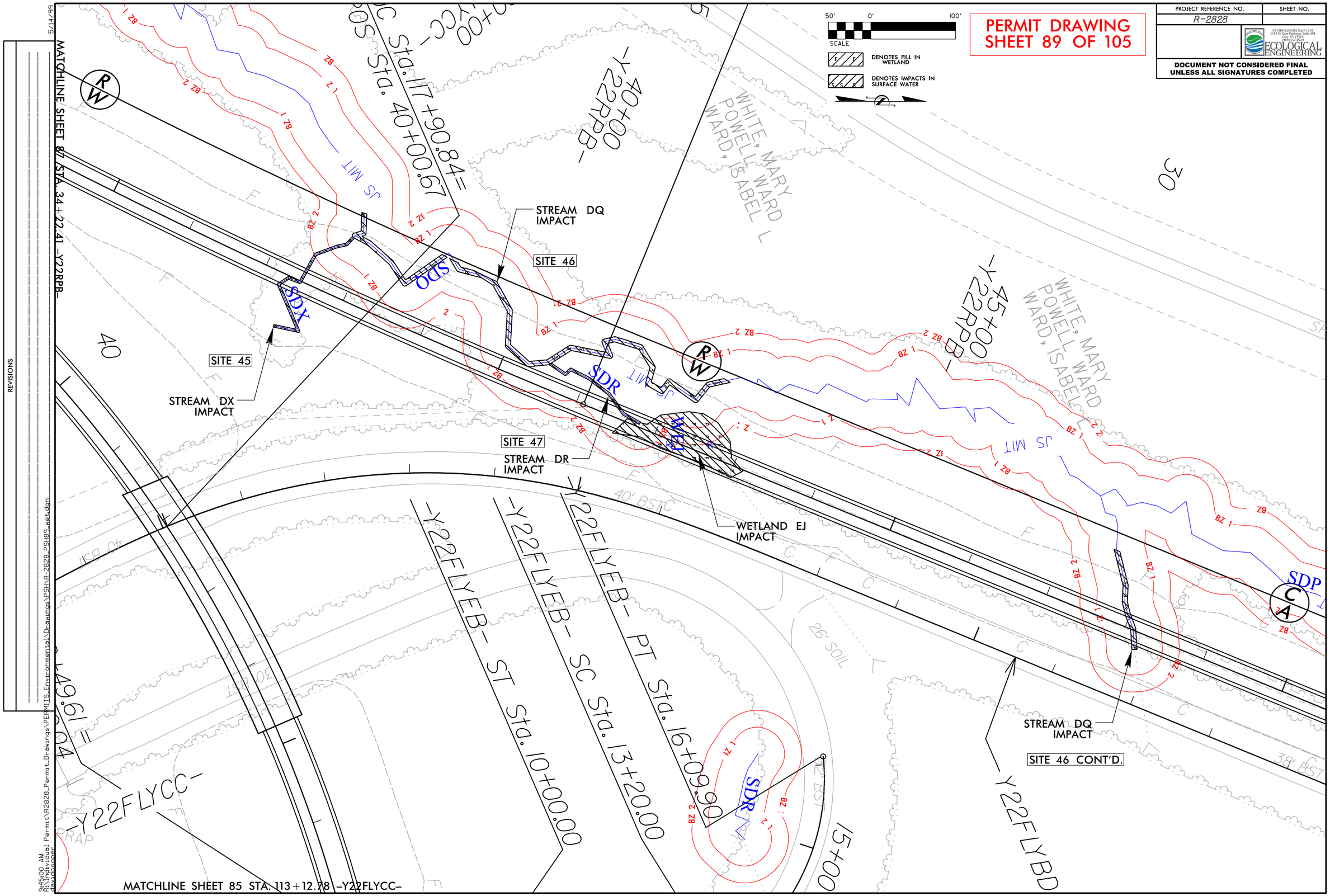

PERMIT DRAWING
SHEET 89 OF 105
PROJECT REFERENCE NO.
R-2828
SHEET NO.
ECOLOGICAL ENGINEERING
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
SCALE
50' 0' 100'
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
MATCHLINE SHEET 87 STA. 34+22.41 -Y22RPB-
MATCHLINE SHEET 85 STA. 113+12.78 -Y22FLYCC-
STREAM DQ IMPACT
SITE 46
SITE 45
STREAM DX IMPACT
SITE 47
STREAM DR IMPACT
WETLAND EJ IMPACT
STREAM DQ IMPACT
SITE 46 CONT'D.
SDX
SDO
SDR
SDP
WHITE, MARY
POWELL WARD
WARD, ISABEL L
-Y22FLYEB- ST Sta. 10+00.00
-Y22FLYEB- SC Sta. 13+20.00
-Y22FLYEB- PT Sta. 16+09.90
-Y22FLYCC-
Y22FLYBD
40+00 -Y22RPB-
45+00 -Y22RPB-
15+00
40' BST
26' SOIL
38' BST
30' BST
40
30
REVISIONS
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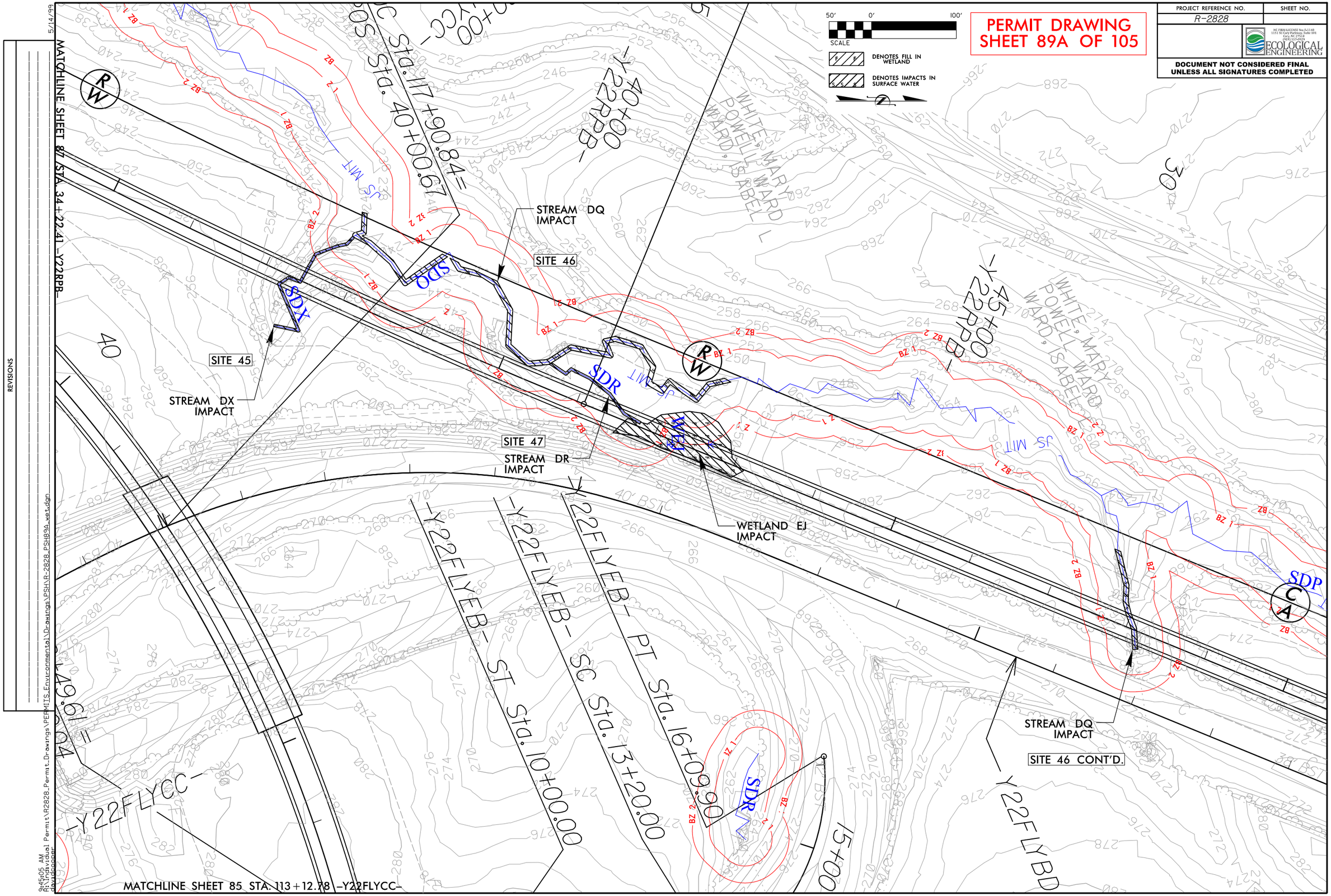

PERMIT DRAWING
SHEET 89A OF 105
PROJECT REFERENCE NO.
R-2828
SHEET NO.
ECOLOGICAL ENGINEERING
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
50' 0' 100'
SCALE
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
MATCHLINE SHEET 87 STA. 34+22.41 -Y22RPB-
MATCHLINE SHEET 85 STA. 113+12.78 -Y22FLYCC-
STREAM DQ IMPACT
SITE 46
SITE 45
STREAM DX IMPACT
SITE 47
STREAM DR IMPACT
WETLAND EJ IMPACT
STREAM DQ IMPACT
SITE 46 CONT'D.
SDX
SDQ
SDR
SDP
WHITE, MARY POWELL WARD WARD, ISABEL L
-Y22FLYEB- ST Sta. 10+00.00
-Y22FLYEB- SC Sta. 13+20.00
-Y22FLYEB- PT Sta. 16+09.90
-Y22FLYCC-
-Y22FLYBD
-Y22RPB-
40+00
45+00
15+00
40' BSTC
REVISIONS
5/14/99
9:45:05 AM
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R-2828	

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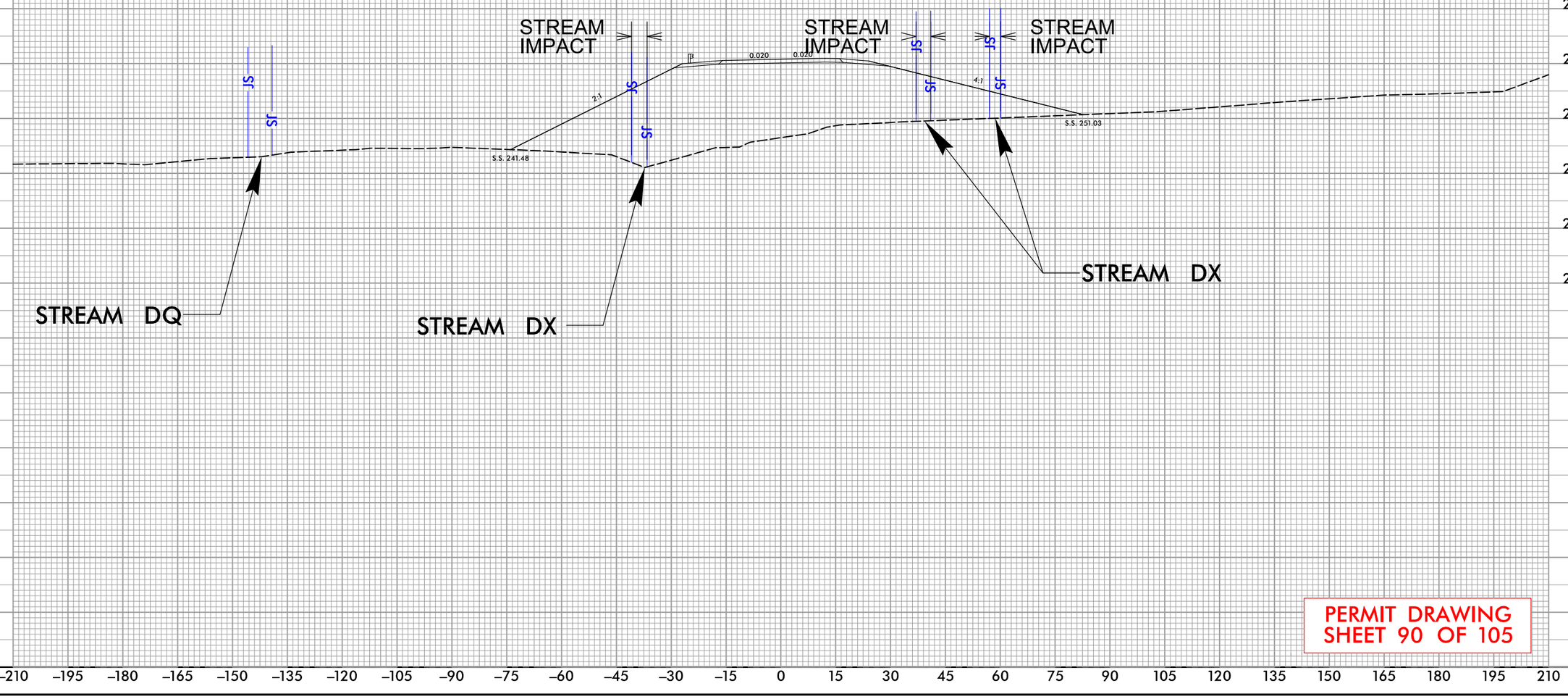
CROSS–SECTION BC–BC
SITE 45, STREAM DQ & STREAM DX
STATION 37+50 –Y22RPB–



PERMIT DRAWING
SHEET 90 OF 105

REVISIONS
5/14/99

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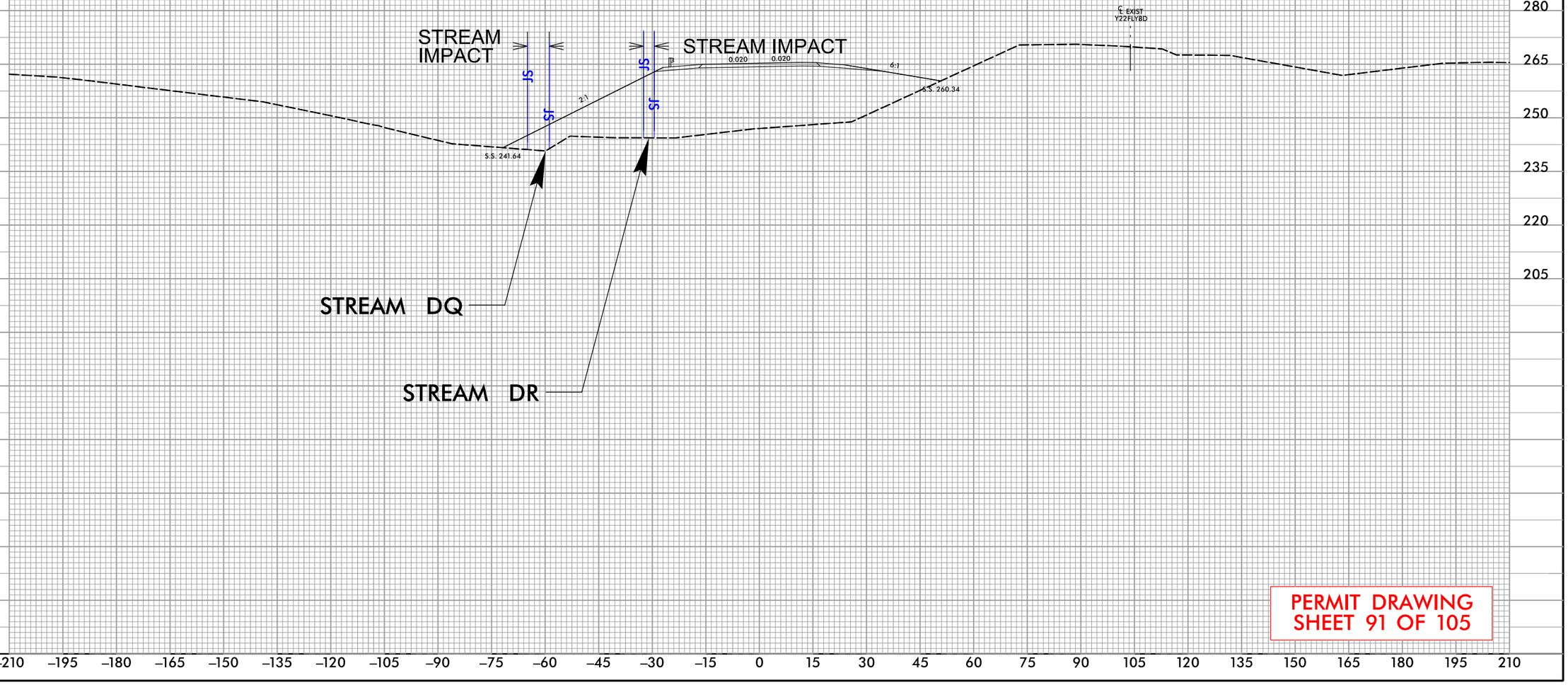
CROSS–SECTION BD–BD, SITES 46 & 47, STREAM DQ & STREAM DR STATION 41+00 –Y22RPB–



PERMIT DRAWING
SHEET 91 OF 105

REVISIONS

5/14/99

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davidcooper

PROJECT REFERENCE NO.	SHEET NO.
R-2828	

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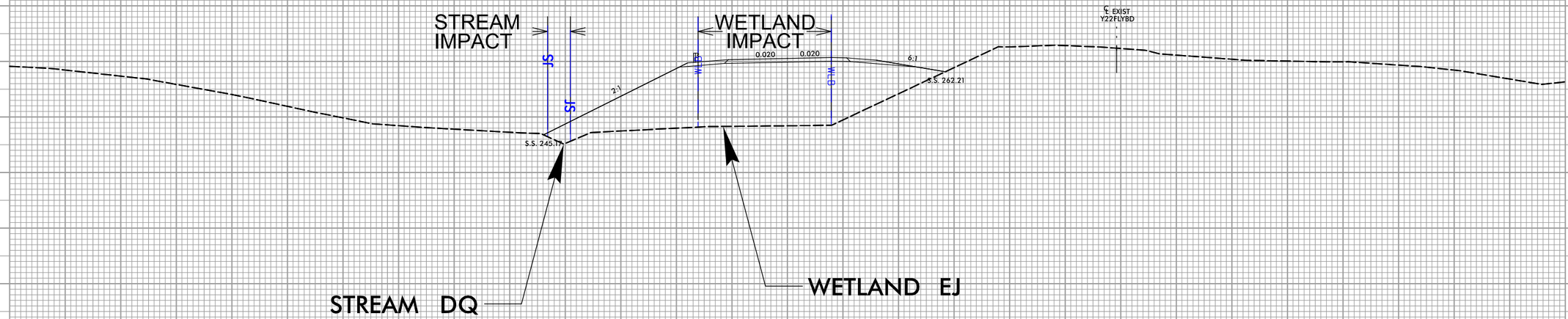
CROSS–SECTION BE–BE, SITES 46 & 47, WETLAND EJ & STREAM DQ STATION 42+00 –Y22RPB–



PERMIT DRAWING
SHEET 92 OF 105

REVISIONS 5/14/99

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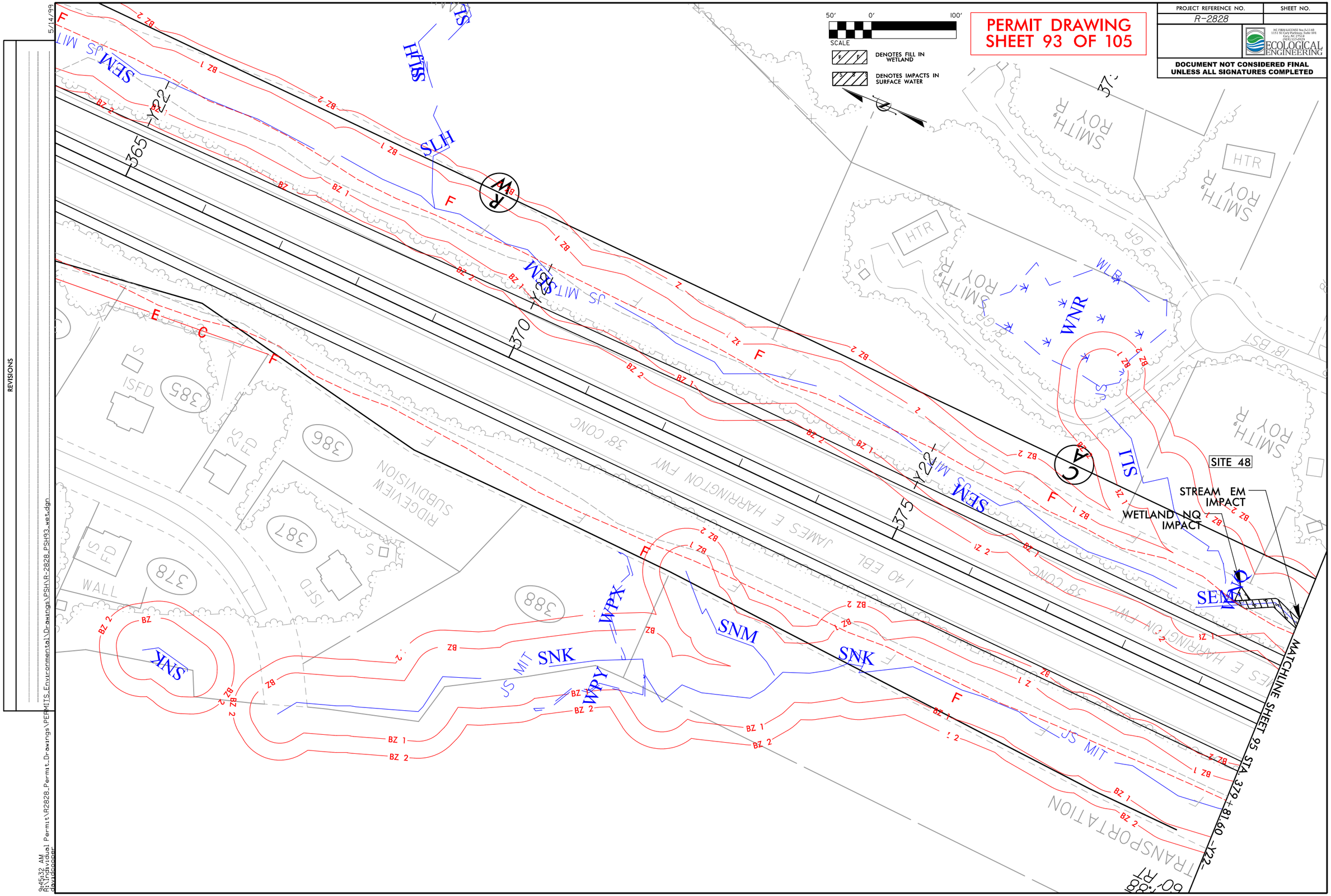
davidcooper



PERMIT DRAWING
SHEET 93 OF 105
PROJECT REFERENCE NO.
R-2828
SHEET NO.
ECOLOGICAL ENGINEERING
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
50' 0' 100'
SCALE
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
SITE 48
STREAM EM IMPACT
WETLAND NQ IMPACT
MATCHLINE SHEET 95 STA. 379+81.60 -Y22-
REVISIONS
5/14/99
9:45:32 AM
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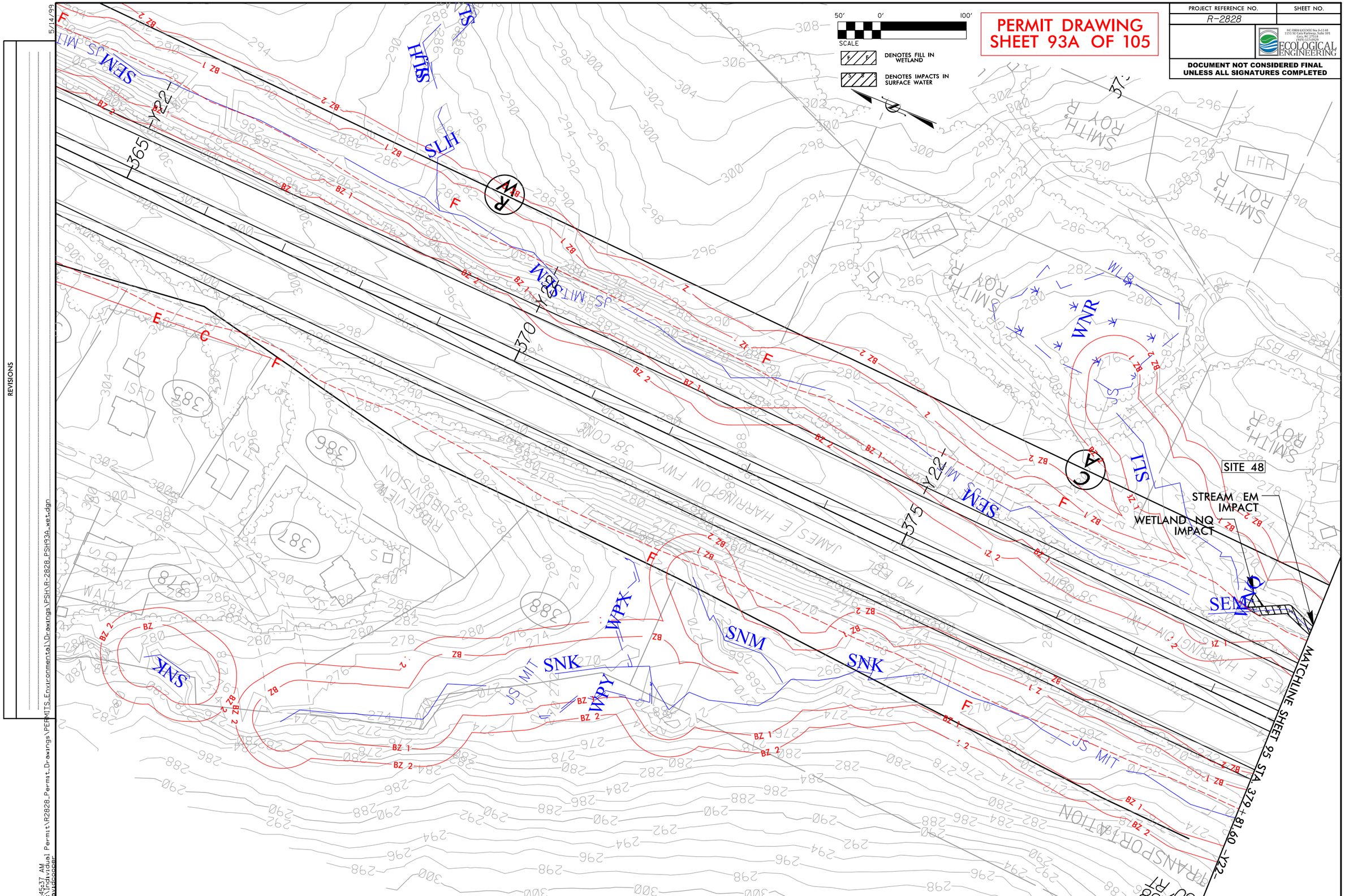
davidcooper



PERMIT DRAWING
SHEET 93A OF 105
PROJECT REFERENCE NO.
R-2828
SHEET NO.
ECOLOGICAL ENGINEERING
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
50' 0' 100'
SCALE
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
SITE 48
STREAM EM IMPACT
WETLAND NQ IMPACT
MATCHLINE SHEET 95 STA. 379+81.60 -Y22-
REVISIONS
5/14/99
9:45:37 AM
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davidcooper

PROJECT REFERENCE NO.	SHEET NO.
R-2828	

ECOLOGICAL ENGINEERING

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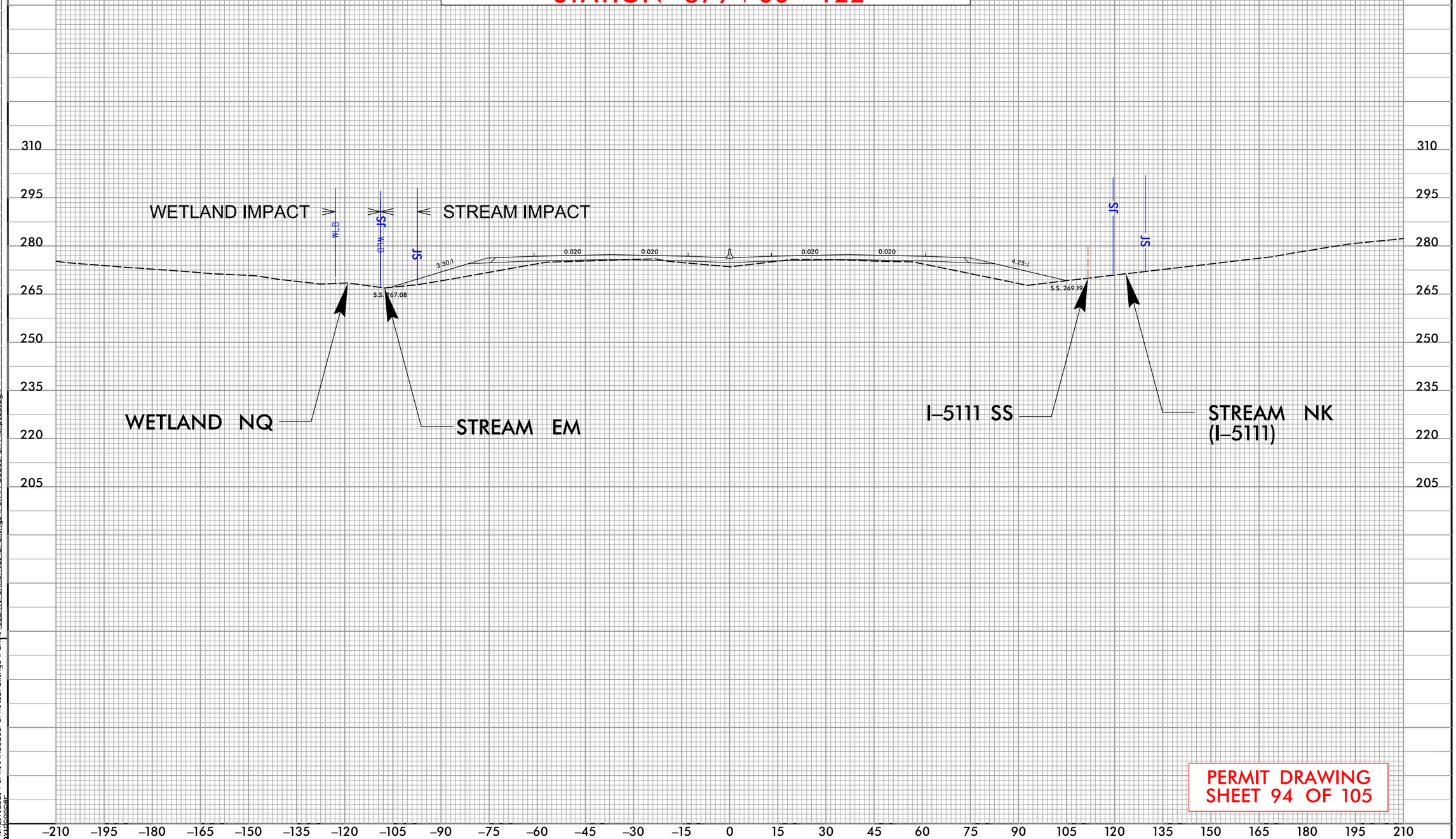
CROSS-SECTION BF-BF
SITE 48, WETLAND NQ, STREAM EM, & STREAM NK
STATION 379+00 -Y22-



PERMIT DRAWING
SHEET 94 OF 105

REVISIONS

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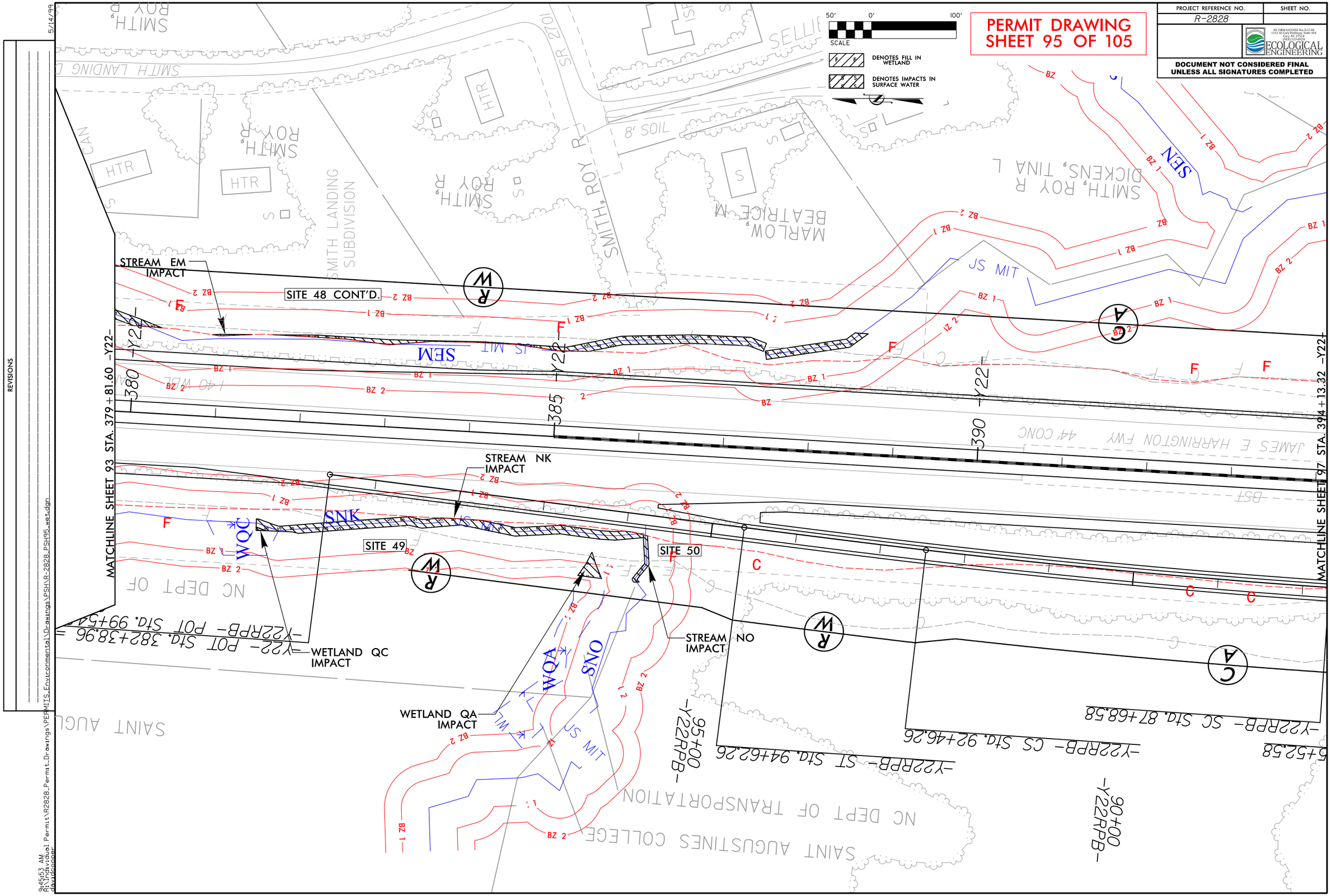
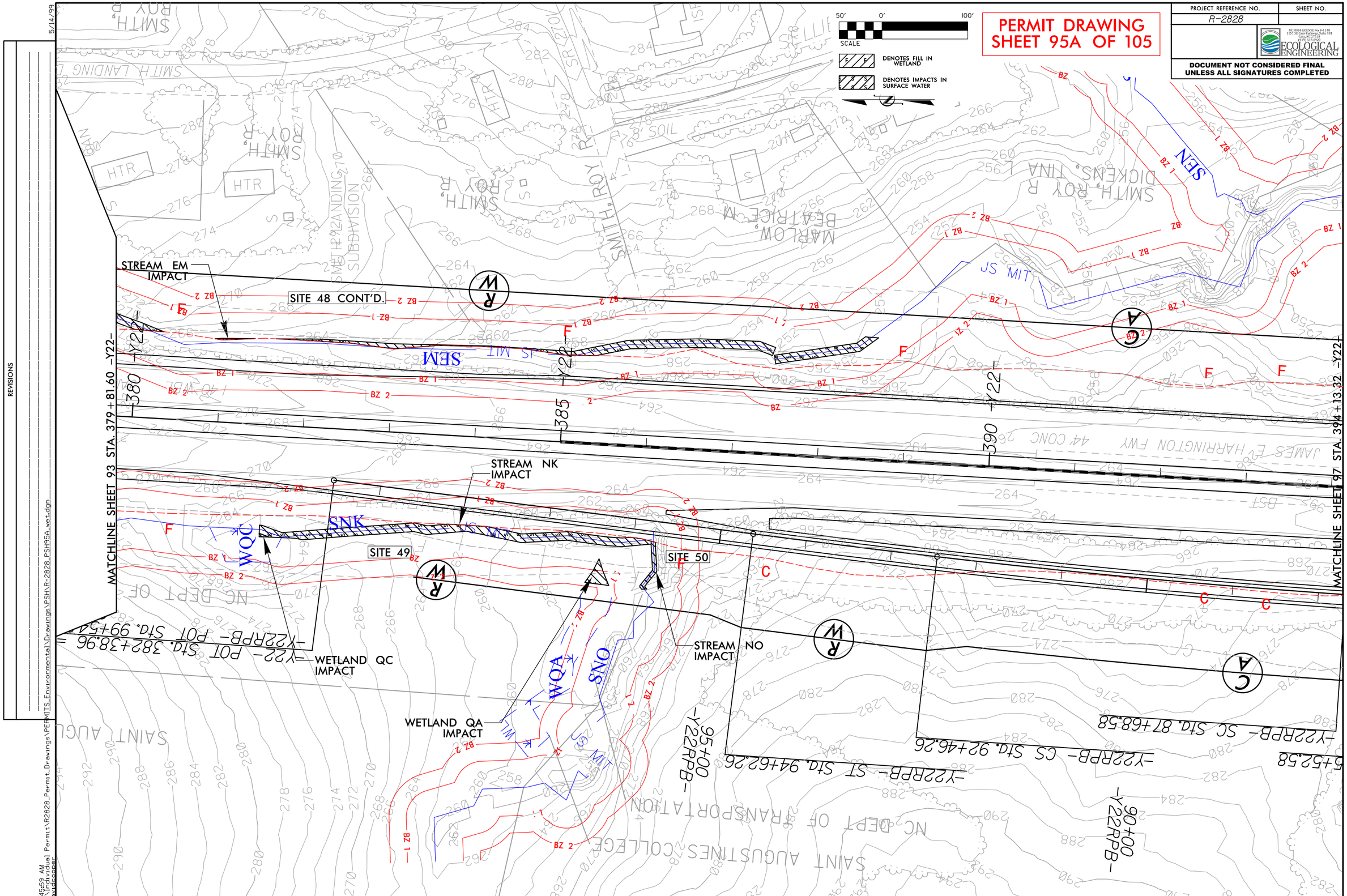


PERMIT DRAWING
SHEET 95 OF 105
PROJECT REFERENCE NO.
R-2828
SHEET NO.
ECOLOGICAL ENGINEERING
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
SCALE
50' 0' 100'
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
STREAM EM IMPACT
SITE 48 CONT'D.
STREAM NK IMPACT
SITE 49
SITE 50
WETLAND QC IMPACT
STREAM NO IMPACT
WETLAND QA IMPACT
MATCHLINE SHEET 93 STA. 379+81.60 -Y22-
MATCHLINE SHEET 97 STA. 394+13.32 -Y22-
SMITH LANDING SUBDIVISION
SMITH, ROY R
MARLOW, BEATRICE M
SMITH, ROY R DICKENS, TINA L
JAMES E HARRINGTON FWY
NC DEPT OF TRANSPORTATION
SAINT AUGUSTINES COLLEGE
-Y22RPB- POT Sta. 99+54
-Y22- POT Sta. 382+38.96
-Y22RPB- ST Sta. 94+62.26
-Y22RPB- CS Sta. 92+46.26
-Y22RPB- SC Sta. 87+68.58
95+00 -Y22RPB-
90+00 -Y22RPB-
REVISIONS
5/14/99



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ECOLOGICAL ENGINEERING

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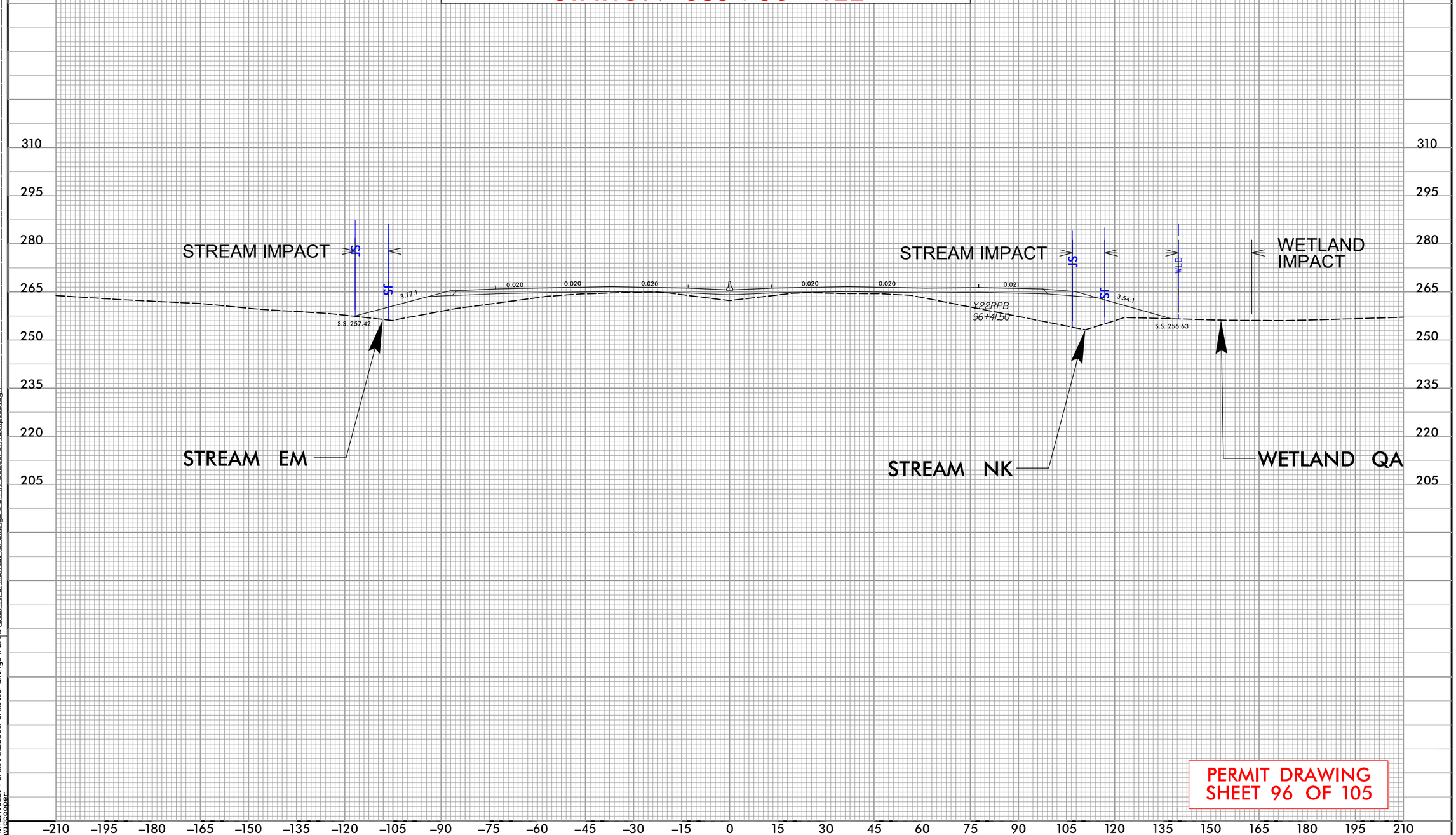
CROSS–SECTION BG–BG
SITES 48 & 49, WETLAND QA, STREAM EM, & STREAM NK
STATION 385+50 –Y22–



PERMIT DRAWING
SHEET 96 OF 105

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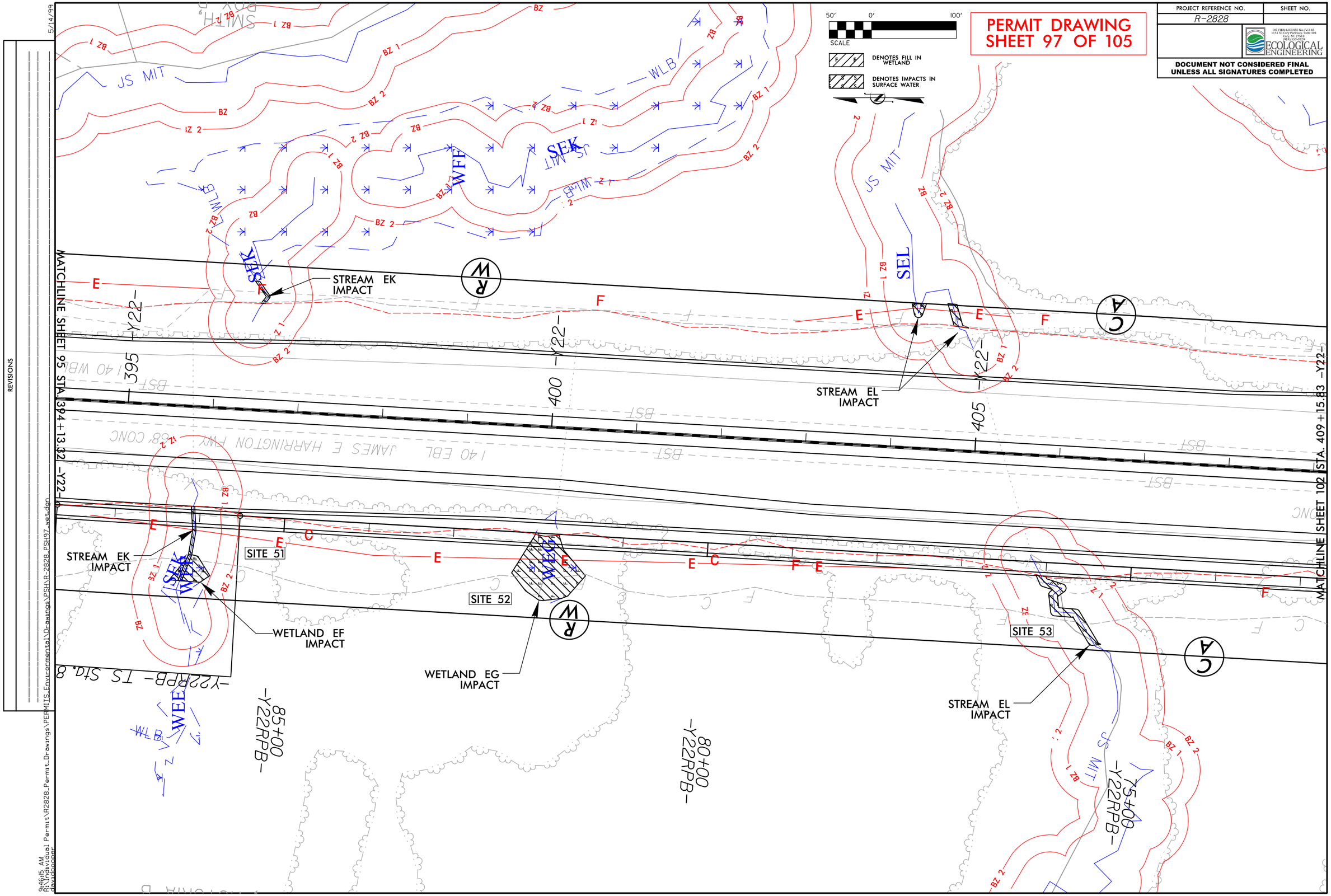
PERMIT DRAWING
SHEET 97 OF 105
PROJECT REFERENCE NO.
R-2828
SHEET NO.
ECOLOGICAL ENGINEERING
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
50' 0' 100'
SCALE
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
MATCHLINE SHEET 95 STA. 394+13.32 -Y22-
MATCHLINE SHEET 102 STA. 409+15.83 -Y22-
STREAM EK IMPACT
STREAM EL IMPACT
WETLAND EF IMPACT
WETLAND EG IMPACT
SITE 51
SITE 52
SITE 53
JS MIT
WLB
WFF
SEK
SEL
WEE
395 -Y22-
400 -Y22-
405 -Y22-
85+00 -Y22RPB-
80+00 -Y22RPB-
75+00 -Y22RPB-
-Y22RPB- TS Sta. 8
I 40 EBL JAMES E HARRINGTON FWY
68' CONC
BST
REVISIONS
5/14/99
9:46:15 AM
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PROJECT REFERENCE NO.	SHEET NO.
R-2828	

NC FIRM LICENSE No P-1148
1151 SE Cary Parkway, Suite 101
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PERMIT DRAWING SHEET 97A OF 105

50' 0' 100'
SCALE

DENOTES FILL IN WETLAND

DENOTES IMPACTS IN SURFACE WATER

STREAM EK IMPACT

STREAM EL IMPACT

WETLAND EF IMPACT

WETLAND EG IMPACT

SITE 51

SITE 52

SITE 53

MATCHLINE SHEET 95 STA. 394+13.32 -Y22-

MATCHLINE SHEET 102 STA. 409+15.83 -Y22-

-Y22RPB- TS Sta. 8

85+00 -Y22RPB-

80+00 -Y22RPB-

75+00 -Y22RPB-

395 -Y22-

400 -Y22-

405 -Y22-

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CROSS–SECTION BH–BH
SITE 51, WETLAND EF & WETLAND FF
STATION 396+00 –Y22–

REVISIONS

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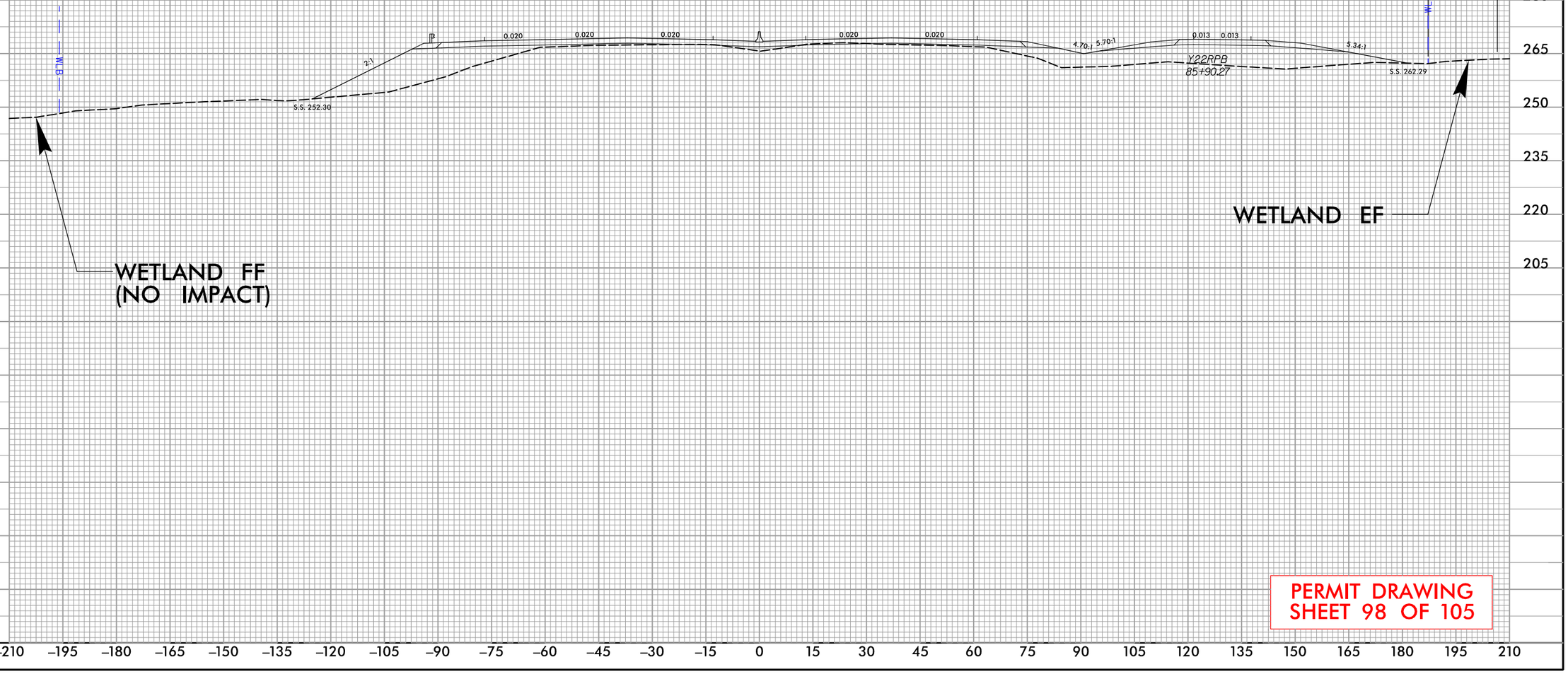

PERMIT DRAWING
SHEET 98 OF 105

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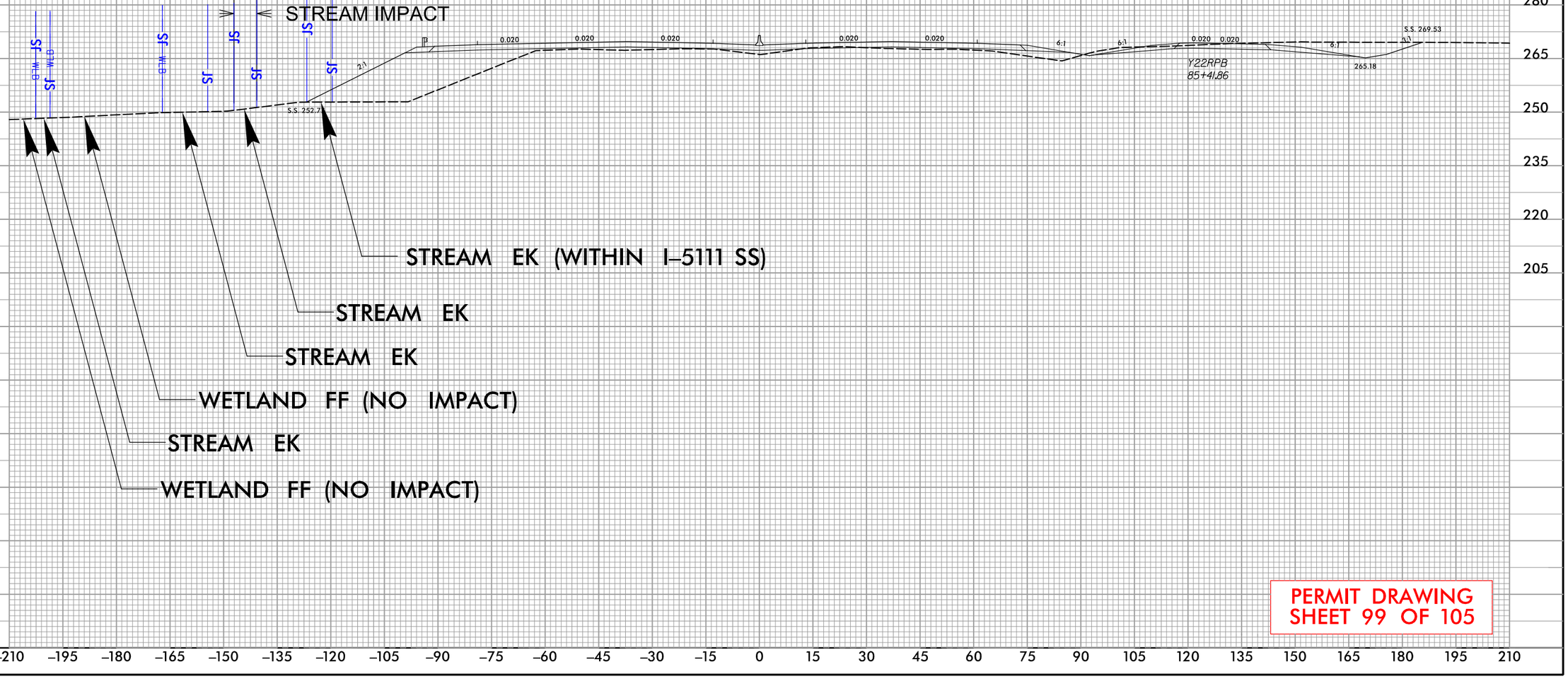
CROSS–SECTION BI–BI
SITE 51, WETLAND FF & STREAM EK
STATION 396+50 –Y22–



PERMIT DRAWING SHEET 99 OF 105

REVISIONS

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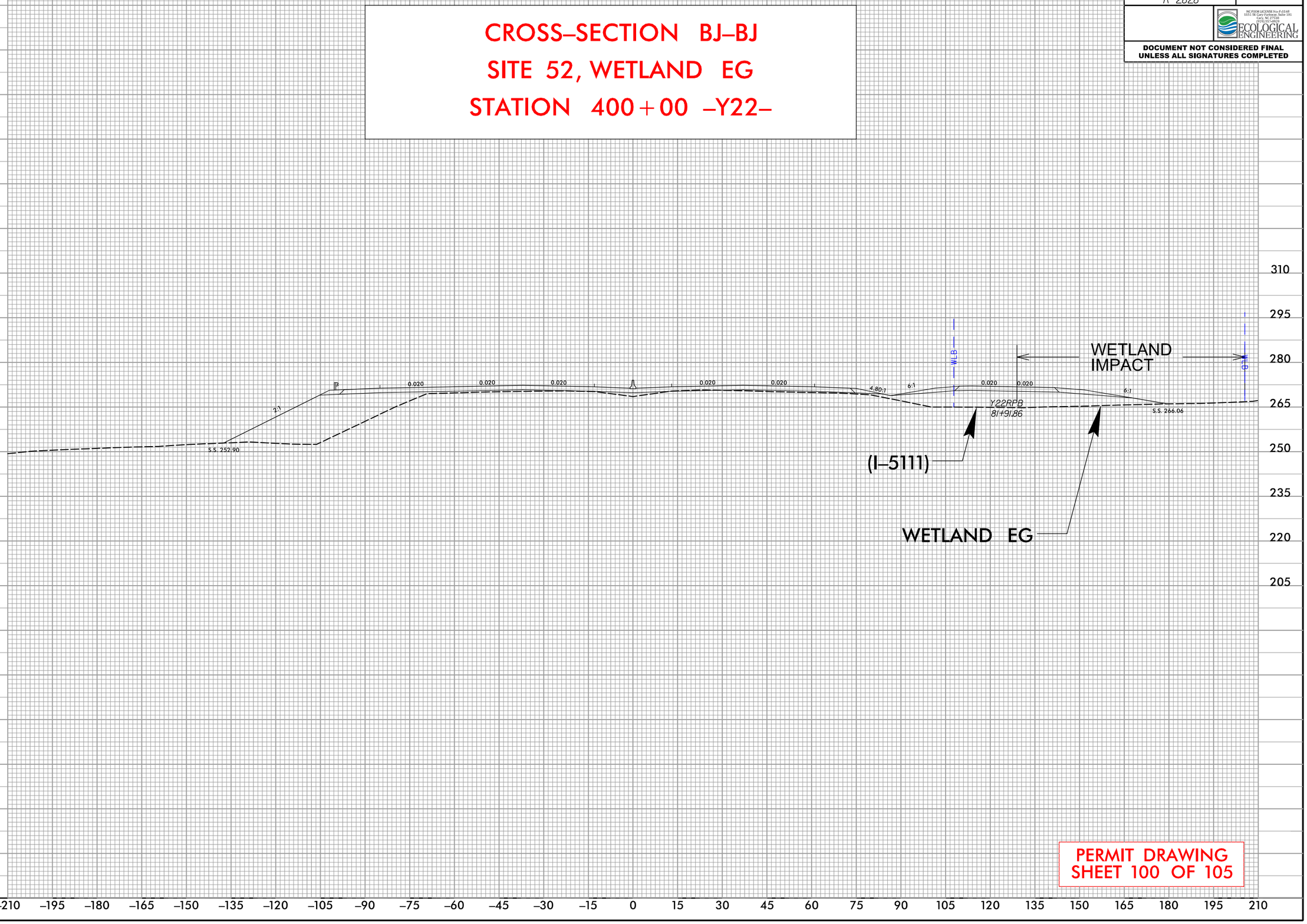
CROSS–SECTION BJ–BJ
SITE 52, WETLAND EG
STATION 400+00 –Y22–



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SHEET 100 OF 105

REVISIONS

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PROJECT REFERENCE NO.	SHEET NO.
R-2828	

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ECOLOGICAL ENGINEERING

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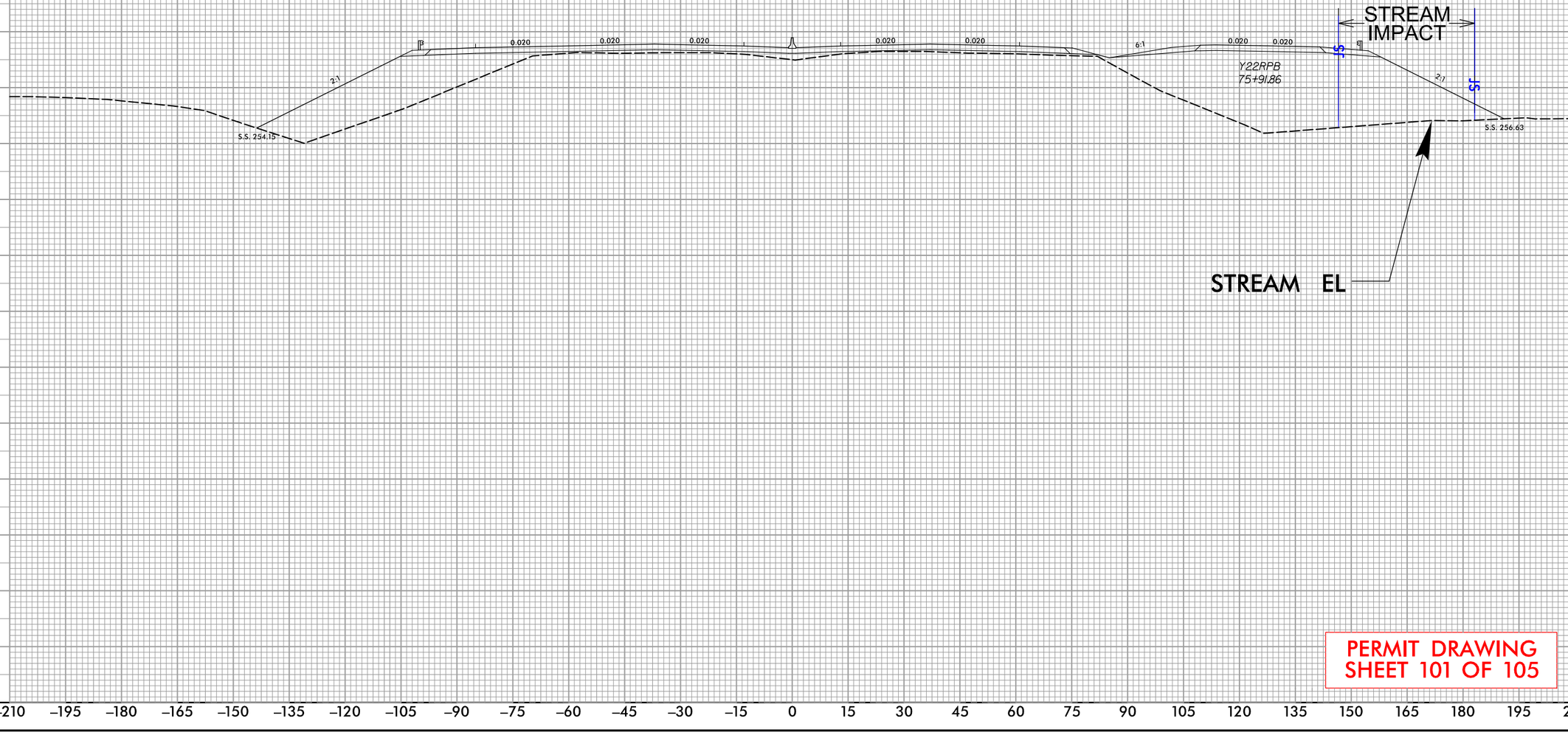
CROSS–SECTION BK–BK
SITE 53, STREAM EL
STATION 406+00 –Y22–



PERMIT DRAWING
SHEET 101 OF 105

REVISIONS
5/14/99

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PERMIT DRAWING
SHEET 102 OF 105

PROJECT REFERENCE NO.	SHEET NO.
R-2828	

NC FIRM LICENSE No: P-1148
1151 SE Cary Parkway, Suite 101
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50' 0' 100'
SCALE

DENOTES IMPACTS IN SURFACE WATER

REVISIONS
5/14/99

MATCHLINE SHEET 97 STA. 409+15.83 -Y22-

SITE 54

STREAM EV IMPACT

WETLAND

SEWER MITIGATION

GAS LINE

60' R/W

-Y22- POT Sta. 420+62.55=
-Y22SLIPRPA- ST Sta. 41+99.32
73' LT

-Y22SLIPRPA- CS Sta. 39+59.32

-Y22B- PT Sta. 17+25.17

-Y22RPB- ST Sta. 66+74.52

-Y22B- PC Sta. 22+91.42

-Y22B- PT Sta. 24+70.96

-Y22- 410

-Y22- 415

-Y22- 420

-Y22- 425

-Y22- 430

40+00

65+00 -Y22RPB-

70+00 -Y22RPB-

-Y22- 435

-Y22- 440

-Y22- 445

-Y22- 450

-Y22- 455

-Y22- 460

-Y22- 465

-Y22- 470

-Y22- 475

-Y22- 480

-Y22- 485

-Y22- 490

-Y22- 495

-Y22- 500

-Y22- 505

-Y22- 510

-Y22- 515

-Y22- 520

-Y22- 525

-Y22- 530

-Y22-

PROJECT REFERENCE NO.	SHEET NO.
R-2828	

NC FIRM LICENSE No P-1148
1151 SE Cary Parkway, Suite 101
Cary, NC 27518
(919) 515-0929
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DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 102A OF 105

50' 0' 100'
SCALE

DENOTES IMPACTS IN SURFACE WATER

REVISIONS

5/14/99

MATCHLINE SHEET 97 STA. 409+15.83 -Y22-

SITE 54

STREAM EV IMPACT

-Y22- PC Sta. 22+91.42

-Y22RPB- ST Sta. 66+74.52

-Y22- PT Sta. 24+70.96

-Y22SLPRPA- CS Sta. 39+59.32

-Y22SLPRPA- ST Sta. 41+99.32

-Y22- POT Sta. 42+62.55

-Y22B- PT Sta. 17+25.12

-Y22RPA-

-Y22LPRPA-

-Y22RPB-

-Y22B-

-Y22-

410+00

415+00

420+00

65+00

70+00

40+00

SEV JS MIT

SEV MIT

WETLAND

BZ 1

BZ 2

BZ

E

C

F

R

W

A

CAS LINE

JAMES E HARRINGTON FWY

I 40 WEB

I 40 EBL

BST

GAS LINE

RUINS

9:46:56 AM
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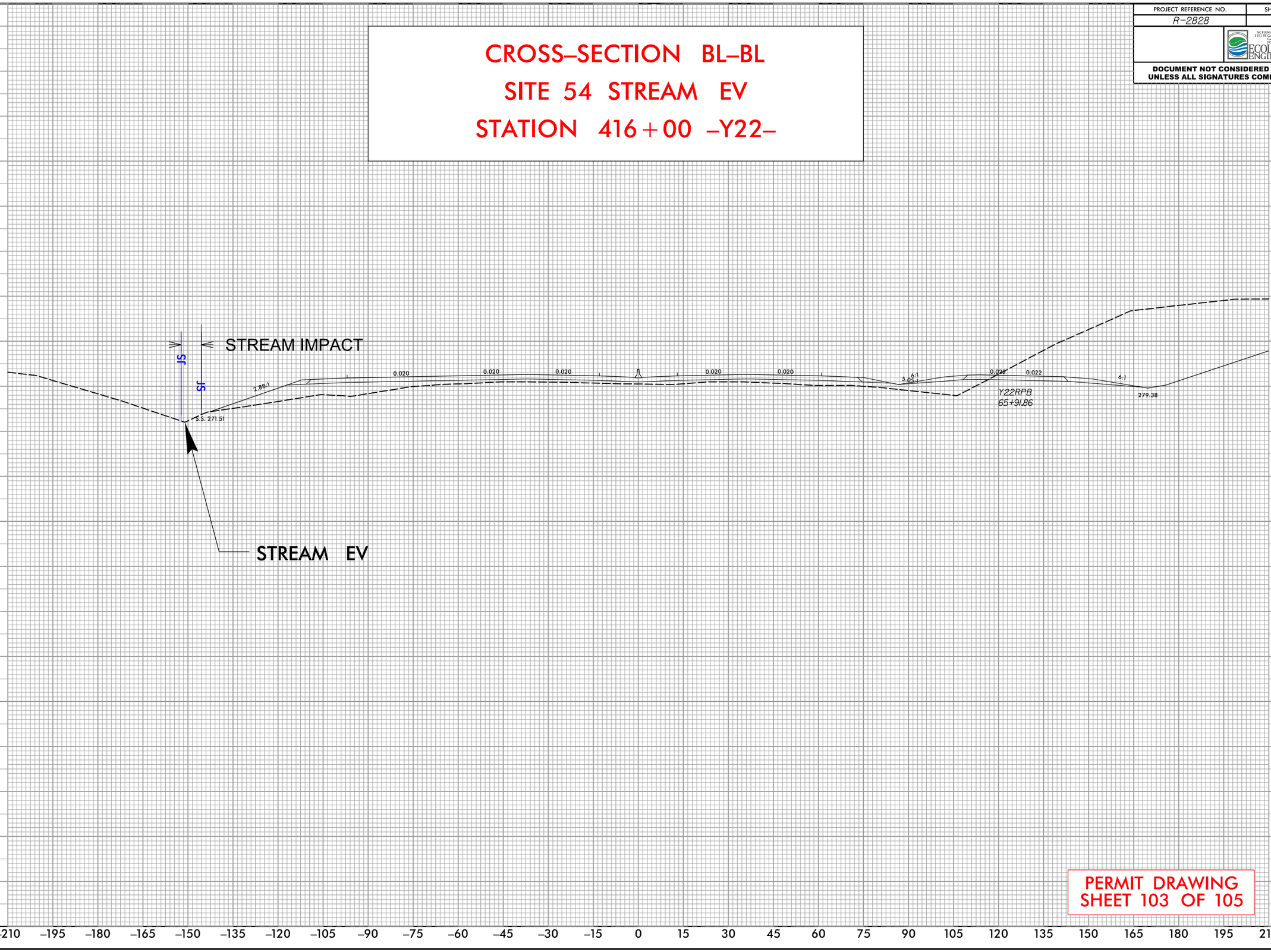
User:davidcooper

PROJECT REFERENCE NO.	SHEET NO.
R-2828	

NC FIRM LICENSE No.F-1148
1151 SE Cary Parkway, Suite 101
Cary, NC 27518
(919) 557-5909
ECOLOGICAL ENGINEERING

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CROSS–SECTION BL–BL
SITE 54 STREAM EV
STATION 416+00 –Y22–



PERMIT DRAWING
SHEET 103 OF 105

REVISIONS
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WETLAND AND SURACE WATER IMPACTS SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS: Permanent Fill In Wetlands (ac)	Permanent Fil In Isolated Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	SURFACE WATER IMPACTS: Permanent SW impacts (Pond) (ac)	Permanent SW impacts (Isolated Pond) (ac)	Permanent SW impacts (Stream) (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	503+50 -L-	ROADWAY FILL		0.11											
2	506+00 -L-	2@6'x5' RCBC									0.09		576		
3	506+00-L-/508+00-L-	ROADWAY FILL	0.53								0.19		107		
4	508+50-L-/512+00-L-	ROADWAY FILL	0.05						1.36		0.02		218		
5	511+00-L-/520+00-L-	ROADWAY FILL	0.87								0.04		431		
6	515+00-L-	ROADWAY FILL									< 0.01		28		
7	530+00-L-/531+00-L-	ROADWAY FILL	0.11												
8	545+00-L-/549+00-L-	2@5'X5' RCBC	0.22								0.06		493		
9	557+00-L-/560+00-L-	3@8'X5' RCBC	0.09								0.10		430		
10	575+00-L-/579+00-L-	ROADWAY FILL	0.04						0.31						
11	596+00-L-/623+00-L-	2@7'X5' RCBC	1.80						1.04		0.13		377		
12	16+00 -Y18A-	ROADWAY FILL									0.01		168		
13	615+50-L-/620+00-L-	ROADWAY FILL							1.14						
14	5+00-Y18A-/17+50-Y18A	ROADWAY FILL	0.55								< 0.01		55		
15	653+50-L-/671+00-L-	ROADWAY FILL	2.41												
16	689+00-L-/709+00-L-	ROADWAY FILL	3.78						1.92		0.16		1252		
17	706+00-L-/714+00-L-	2@7'X5' RCBC	2.79								0.04		330		
18	711+00-L-/713+00-L-	ROADWAY FILL									0.02		183		
19	725+50-L-/737+00-L-	ROADWAY FILL							0.21		0.14		761		
20	737+00-L-/738+00-L-	2@9'X7' RCBC	0.41								0.10		451		
21	758+50-L-/760+00-L-	ROADWAY FILL	0.42												
22	767+00-L-/769+00-L-	ROADWAY FILL	0.02												
23	782+00-L-/787+00-L-	2@8'X6' RCBC	0.70								0.10		442		
24	785+50-L-/787+00-L-	ROADWAY FILL	0.02								0.04		470		
25	804+00-L-/861+50-L-	2@6'X5' RCBC, BRIDGE	0.62								0.26		2250		
26	811+50-L-/814+00-L-	ROADWAY FILL	0.08								< 0.01		99		
27	813+00-L-/813+50-L-	ROADWAY FILL									< 0.01		79		
TOTALS* THIS SHEET:			15.51	0.11					5.99		1.51		9200		
TOTALS* ENTIRE R-2828:			**19.30**	**0.30**	**0**	**0**	**0**	**0**	**5.99**	**0.02**	**3.62**	**0.00**	**20086**	**0**	**0**

*Rounded totals are sum of actual impacts

NOTES:

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
JULY 2018
WAKE & JOHNSTON COUNTIES
TIP R-2828
STATE PROJ. # 6.401079

Revised 2016 09 09

WETLAND AND SURACE WATER IMPACTS SUMMARY

			WETLAND IMPACTS						SURFACE WATER IMPACTS						
Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Permanent Fill In Isolated Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (Pond) (ac)	Permanent SW impacts (Isolated Pond) (ac)	Permanent SW impacts (Stream) (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
28	857+50-L-/859+50-L-	ROADWAY FILL	0.12												
29	868+50-L-/869+00-L-	BRIDGE	< 0.01												
30	875+00-L-/877+00-L-	2@6'X5' RCBC	0.61								0.06		442		
31	889+00-L-/891+00-L-	ROADWAY FILL	0.28								< 0.01		26		
32	894+00-L-/896+00-L-	ROADWAY FILL									0.15		656		
33	900+00-L-/907+00-L-	ROADWAY FILL									0.20		1092		
34	910+00-L-/917+00-L-	3@9'X5' RCBC	2.33								0.27		777		
35	915+00-L-/918+00-L-	ROADWAY FILL	0.09								0.19		1051		
36	55+00-Y21-/59+00-Y21-	ROADWAY FILL								0.02					
37	54+00-Y21-	ROADWAY FILL							< 0.01						
38	45+00-Y21-/46+00-Y21	ROADWAY FILL									< 0.01		65		
39	38+50-Y21-/41+00-Y21-	ROADWAY FILL		0.09											
40	47+00-Y22RPCD-/49+00-Y22RPCD-	ROADWAY FILL	0.04								0.31		919		
41	29+00-Y22RPCD-/31+00-Y22RPCD-	ROADWAY FILL									0.13		1129		
42	82+00-Y22RPCD-/87+50-Y22RPCD-	BRIDGE	0.09												
43	8+00-Y22RPDFLY-/21+00-Y22RPDFLY	ROADWAY FILL									0.04		350		
44	15+00-Y22LPA-/29+00-Y22RPB-	ROADWAY FILL	0.06								0.33		1469		
45	37+00-Y22RPB-/37+00-Y22RPB-	ROADWAY FILL									0.01		209		
46	38+00-Y22RPB-/48+00-Y22RPB-	ROADWAY FILL									0.11		792		
47	40+50-Y22RPB-/43+00-Y22RPB-	ROADWAY FILL	0.13								< 0.01		139		
48	379+00-Y22-/389+00-Y22-	ROADWAY FILL	< 0.01								0.13		868		
49	381+50-Y22-/386+00-Y22-	ROADWAY FILL	< 0.01								0.10		456		
50	386+00-Y22-/386+50-Y22-	ROADWAY FILL	< 0.01								< 0.01		61		
51	396+00-Y22-/397+00-Y22-	ROADWAY FILL	0.02								0.01		123		
52	400+00-Y22-	ROADWAY FILL		0.10											
53	404+00-Y22-/406+00-Y22-	ROADWAY FILL									0.04		183		
54	415+50-Y22-/416+50-Y22-	ROADWAY FILL									0.01		78		
TOTALS* THIS SHEET:			3.79	0.19					< 0.01	0.02	2.11		10886		
TOTAl	**ENTIRE R-2828:**		**19.30**	**0.30**	**0**	**0**	**0**	**0**	**5.99**	**0.02**	**3.62**	**0.00**	**20086**	**0**	**0**

*Rounded totals are sum of actual impacts

NOTES:

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
JULY 2018
WAKE & JOHNSTON COUNTIES
TIP R-2828
STATE PROJ. # 6.401079
SHEET 105 OF 105

Revised 2016 09 09