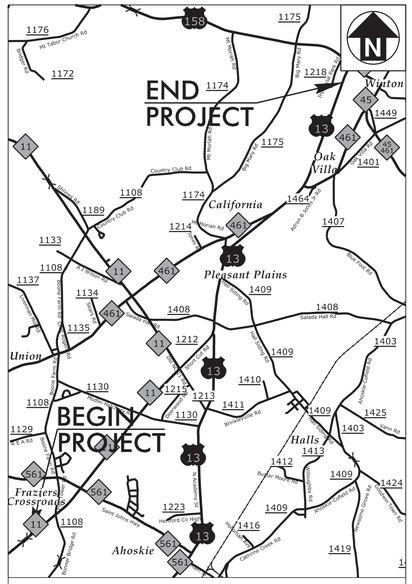
09/08/19

TIP PROJECT: R–5311B

See Sheet 1A For Index of Sheets



VICINITY MAP

25% PLANS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

HERTFORD COUNTY

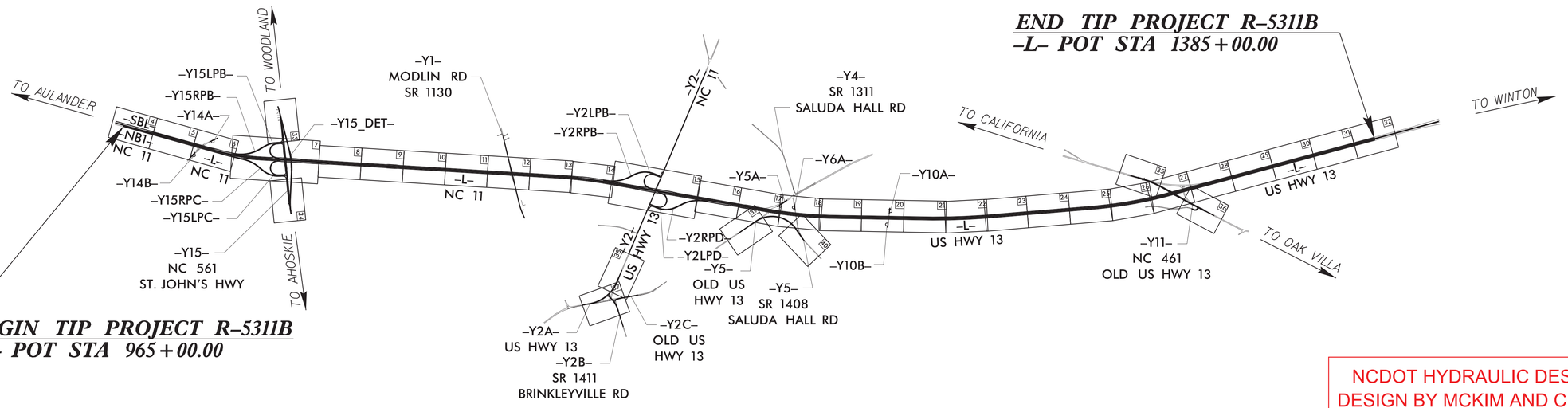
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R–5311B	1	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
45449.1.FS3		P.E.	

LOCATION: IMPROVEMENTS TO US 13 /NC 11 FROM NC 11 /NC 561 NEAR AHOSKIE TO US 13 /NC 45 NEAR WINTON

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

NAD 83/NSRS 2007

END TIP PROJECT R–5311B
–L– POT STA 1385+00.00



BEGIN TIP PROJECT R–5311B
–L– POT STA 965+00.00

NCDOT HYDRAULIC DESIGN
DESIGN BY MCKIM AND CREED
SUBMITTED FOR 4B MEETING

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD _.

THIS IS A CONTROLLED–ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES.

CONTRACT:

GRAPHIC SCALES

PLANS: 50 25 0 50 100

PROFILE (HORIZONTAL): 50 25 0 50 100

PROFILE (VERTICAL): 10 5 0 10 20

DESIGN DATA

ADT 2020 = 10,890
ADT 2035 = 12,200
K = 9 %
D = 55 %
T = 16 % *
V = 70 MPH
* TTST = 11% DUAL = 5%
FUNC CLASS =
MINOR ARTERIAL
REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R–5311B = 7.955 MILES

TOTAL LENGTH OF TIP PROJECT R–5311B = 7.955 MILES

Prepared In the Office of:

MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
(919) 552-2253
(919) 552-2254 (Fax)
www.mottmac.com/americas
LICENSE NO. F-0669

McKIM&CREED
NC LICENSE #F-1222
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL. (910) 343-1048 FAX. (910) 790-8282

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
AUGUST 15, 2019

LETTING DATE:
MAY 18, 2021

DAVID C. WALLER, PE
PROJECT ENGINEER

JORDAN A. WOODARD, PE
PROJECT DESIGN ENGINEER

BARRY HOBBS, PE
NCDOT CONTACT DIVISION 1

HYDRAULICS ENGINEER

P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

P.E.
SIGNATURE:

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

13:21:38
R:\Roadway\Proj\r5311b_rdy_tsh.dgn
rfe8413

12/2/2016

PROJECT REFERENCE NO.	SHEET NO.
R-5311B	1-B

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 Easement Pin and Cap
- New Permanent Easement Pin and Cap
- Vertical Benchmark
- Existing Right of Way Marker
- Existing Right of Way Line
- New Right of Way Line (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.)

6/2/99

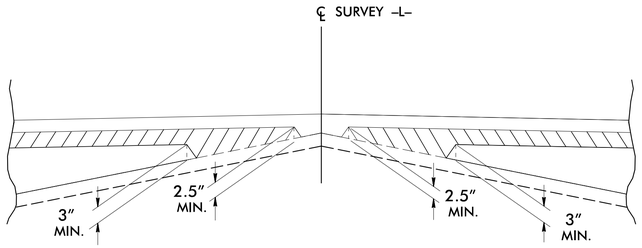
PROJECT REFERENCE NO.	SHEET NO.
R-5311B	2A-1
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

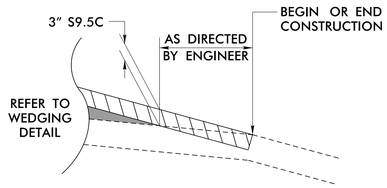
MOTT MACDONALD I & E, LLC
LICENSE NO. F-0669

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/bmercsos



Detail Showing Method of Wedging (W)



MILLING DETAIL
DETAIL SHOWING PROFILE VIEW

NOTE: AWAITING PAVEMENT DESIGN

PAVEMENT SCHEDULE
~~PRELIMINARY PAVEMENT DESIGN~~

C1	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.	J1	PROP. 8" AGGREGATE BASE COURSE.	U	EXISTING PAVEMENT.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.	R1	1'-6" CONCRETE CURB AND GUTTER.	V	MILLING BITUMINOUS PAVEMENT, 3" DEPTH.
D1	PROP. APPROX. 2½" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.	R2	2'-6" CONCRETE CURB AND GUTTER.	W	VARIABLE DEPTH ASPHALT PAVEMENT. (SEE WEDGING DETAIL)
D2	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	R3	2'-9" CONCRETE CURB AND GUTTER	NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.	
D3	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2½" IN DEPTH OR GREATER THAN 4" IN DEPTH.	R4	18" CONCRETE CURB AND GUTTER, SEE DETAIL 'A' SHEET NO. 2A-9		
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	R5	5" MONOLITHIC CONCRETE ISLAND (KEYED-IN)		
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH.	T	EARTH MATERIAL.		

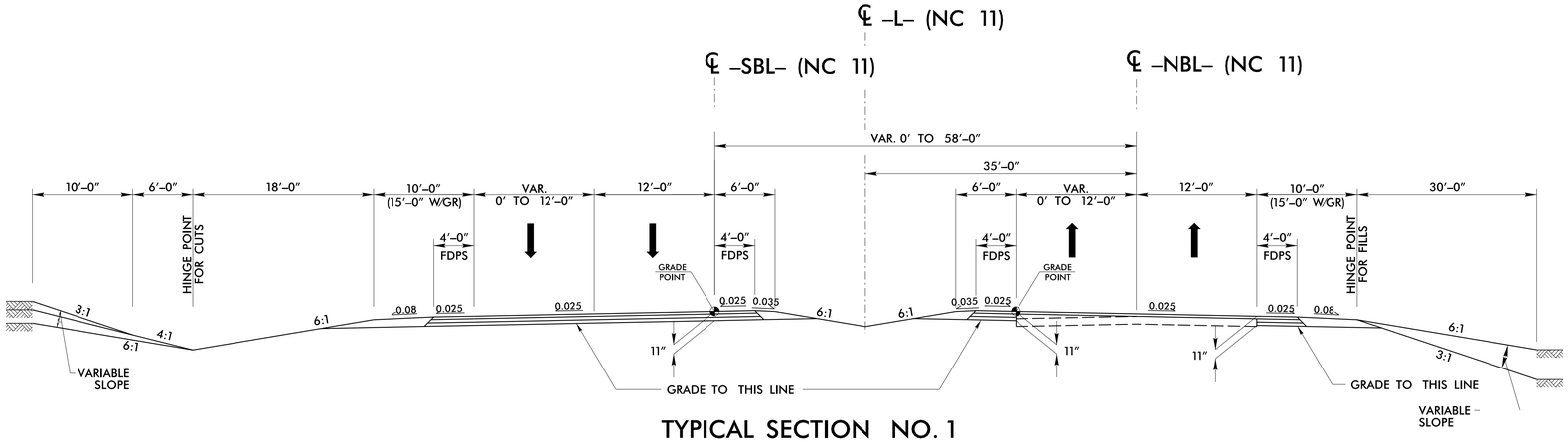
I:\2246
R:\2246 Roadway\Proj\r-5311b_rdy_typ.dgn
11:08:13

6/2/99

PAVEMENT SCHEDULE FINAL PAVEMENT DESIGN	
C1	3" S9.5C
C2	VAR. S9.5C
D1	2.5" I19.0C
D2	4" I19.0C
D3	VAR. I19.0C
E1	4" B25.0C
E2	VAR. B25.0C
J1	8" ABC
R1	1'-6" C & G
R2	2'-6" C & G
R3	2'-9" C & G
R4	18" C & G
R5	5" MONO. ISLAND
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V	MILLING
W	WEDGING

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

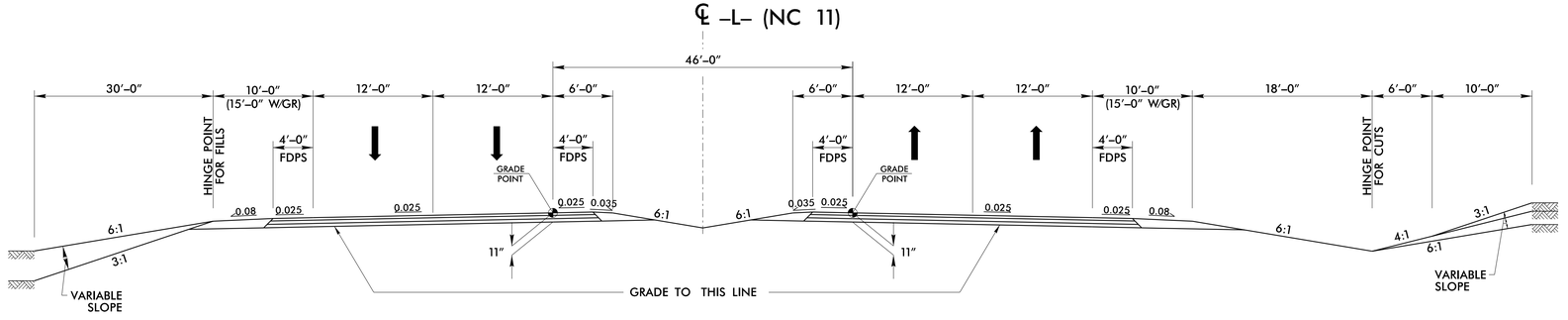
NOTE: AWAITING PAVEMENT DESIGN



TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1:

–SBL– STA 10+00.00 TO 27+53.60
–NBL– STA 10+00.00 TO 27+52.32



TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2:
–L– STA 981+67.52 TO 1346+00.00

*WIDTH AND LOCATION OF EXISTING PAVEMENT VARIES. (SEE PLANS)

NOTE: FOR VARIABLE SLOPES SEE CROSS-SECTIONS.
FOR TAPERS AND AUXILIARY LANES SEE PLAN VIEW.
FOR ISLAND LIMITS SEE PLAN VIEW.

PROJECT REFERENCE NO.	SHEET NO.
R-5311B	2A-2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

MOTT MACDONALD I & E, LLC
LICENSE NO. F-0669

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

13246
R:\Projects\Proj\r-5311b_rdy_typ.dgn
rlbland

6/2/99

PAVEMENT SCHEDULE FINAL PAVEMENT DESIGN	
C1	3″ S9.5C
C2	VAR. S9.5C
D1	2.5″ I19.0C
D2	4″ I19.0C
D3	VAR. I19.0C
E1	4″ B25.0C
E2	VAR. B25.0C
J1	8″ ABC
R1	1′-6″ C & G
R2	2′-6″ C & G
R3	2′-9″ C & G
R4	18″ C & G
R5	5″ MONO. ISLAND
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V	MILLING
W	WEDGING

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

NOTE: AWAITING PAVEMENT DESIGN

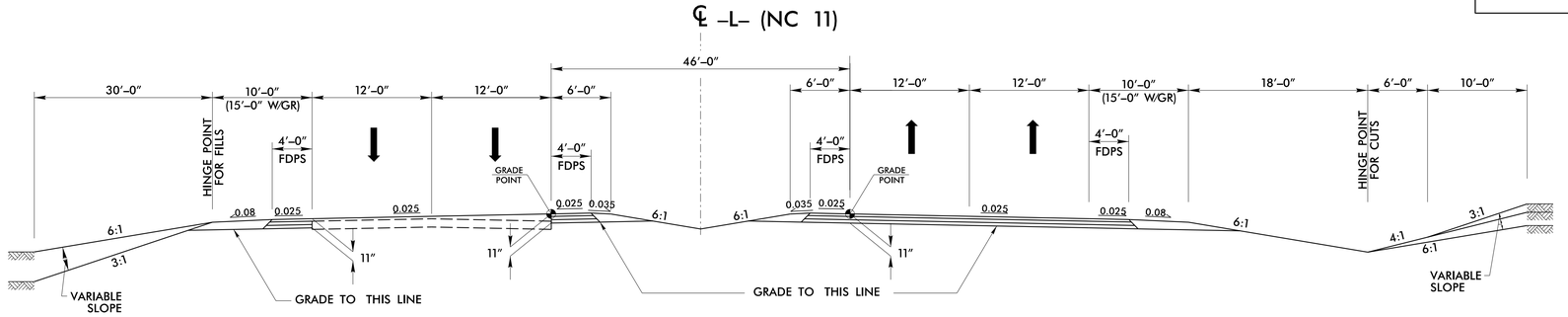
PROJECT REFERENCE NO.	SHEET NO.
R-5311B	2A-3
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

MOTT MACDONALD I & E, LLC
LICENSE NO. F-0669

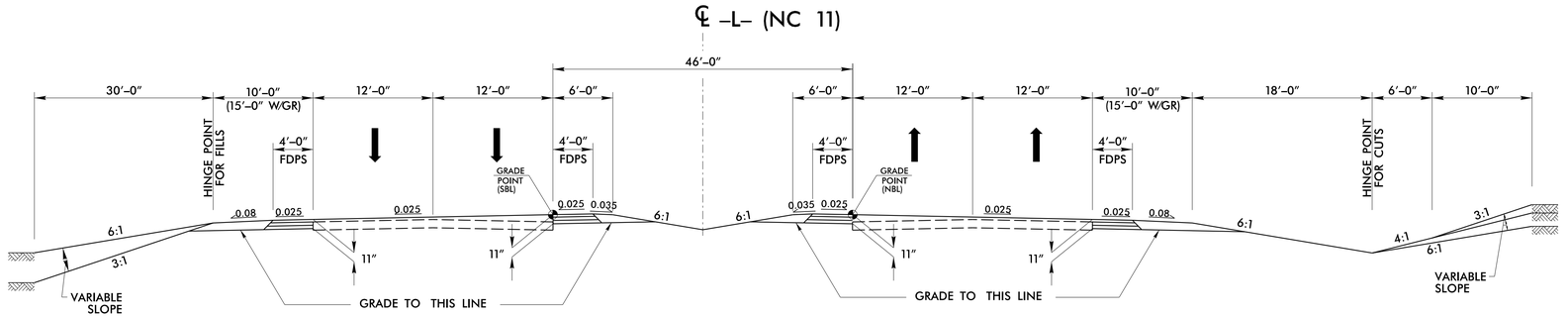
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas



TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3:
–L– STA 1346+00.00 TO 1379+45.00



TYPICAL SECTION NO. 4

USE TYPICAL SECTION NO. 4:
–L– STA 1379+45.00 TO 1385+00.00

*WIDTH AND LOCATION OF EXISTING PAVEMENT VARIES. (SEE PLANS)

NOTE: FOR VARIABLE SLOPES SEE CROSS-SECTIONS.
FOR TAPERS AND AUXILIARY LANES SEE PLAN VIEW.
FOR ISLAND LIMITS SEE PLAN VIEW.

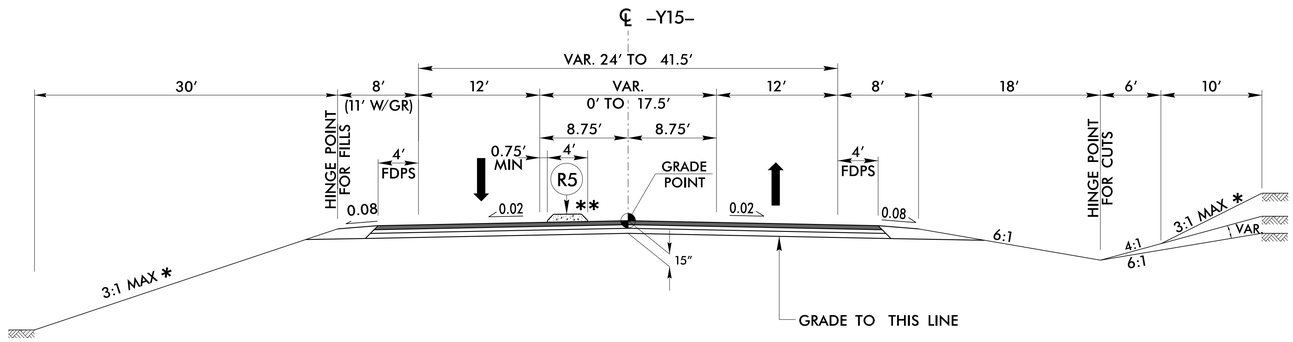
13:20:47
R:\Roadway\Proj\r-5311b_rdy_typ.dgn
rtell413

6/2/99

PAVEMENT SCHEDULE FINAL PAVEMENT DESIGN	
C1	3″ S9.5C
C2	VAR. S9.5C
D1	2.5″ I19.0C
D2	4″ I19.0C
D3	VAR. I19.0C
E1	4″ B25.0C
E2	VAR. B25.0C
J1	8″ ABC
R1	1′-6″ C & G
R2	2′-6″ C & G
R3	2′-9″ C & G
R4	18″ C & G
R5	5″ MONO. ISLAND
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V	MILLING
W	WEDGING

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

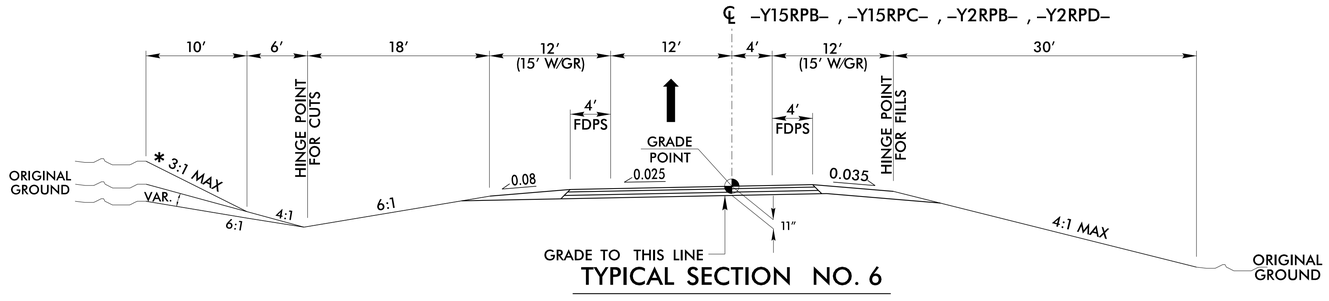
NOTE: AWAITING PAVEMENT DESIGN



* 4:1 MAX INSIDE INTERCHANGE
** LOCATION AND WIDTH OF ISLAND VARIES, SEE PLANS.

TYPICAL SECTION NO. 5

USE TYPICAL SECTION NO. 5:
–Y15– STA 15+00.00 TO 27+05.30 +/– (BEGIN BRIDGE)
–Y15– STA 28+85.60 +/– (END BRIDGE) TO 43+00.00



TYPICAL SECTION NO. 6

* 4:1 MAX INSIDE INTERCHANGE

USE TYPICAL SECTION NO. 6:
–Y15RPB– STA 10+00.00 TO 28+30.19
–Y15RPC– STA 10+00.00 TO 20+04.83
–Y2RPB– STA 10+00.00 TO 17+40.85
–Y2RPD– STA 10+00.00 TO 28+88.44

*WIDTH AND LOCATION OF EXISTING PAVEMENT VARIES. (SEE PLANS)

NOTE: FOR VARIABLE SLOPES SEE CROSS–SECTIONS.
FOR TAPERS AND AUXILIARY LANES SEE PLAN VIEW.
FOR ISLAND LIMITS SEE PLAN VIEW.

PROJECT REFERENCE NO.	SHEET NO.
R-5311B	2A-4
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

MOTT MACDONALD I & E, LLC
LICENSE NO. F-0669

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

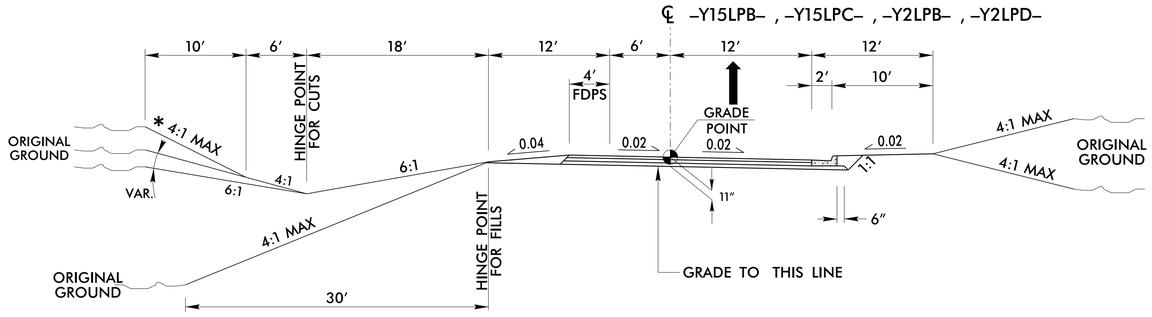
I:\2247
R:\Roadway\Proj\r-5311b_rdy_typ.dgn
11:08:43

6/2/99

PAVEMENT SCHEDULE FINAL PAVEMENT DESIGN	
C1	3″ S9.5C
C2	VAR. S9.5C
D1	2.5″ I19.0C
D2	4″ I19.0C
D3	VAR. I19.0C
E1	4″ B25.0C
E2	VAR. B25.0C
J1	8″ ABC
R1	1′-6″ C & G
R2	2′-6″ C & G
R3	2′-9″ C & G
R4	18″ C & G
R5	5″ MONO. ISLAND
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V	MILLING
W	WEDGING

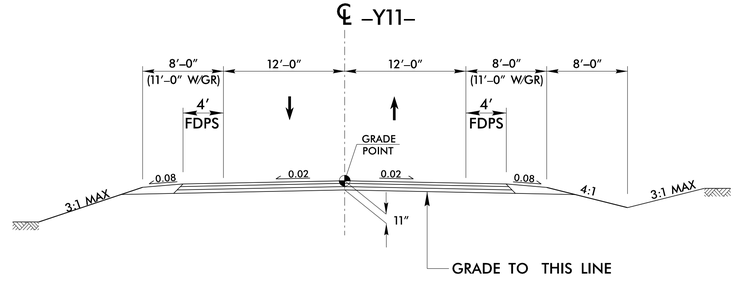
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

NOTE: AWAITING PAVEMENT DESIGN



TYPICAL SECTION NO. 7

USE TYPICAL SECTION NO. 7:
–Y15LPB– STA 10+00.00 TO 20+44.25
–Y15LPC– STA 10+00.00 TO 21+60.24
–Y2LPB– STA 10+00.00 TO 17+66.57
–Y2LPD– STA 10+00.00 TO 17+66.57



TYPICAL SECTION NO. 8

USE TYPICAL SECTION NO. 8:
–Y11– STA 12+50.00 TO 24+17.20 +/– (BEGIN BRIDGE)
–Y11– STA 26+35.00 +/– (END BRIDGE) TO 37+50.00

PROJECT REFERENCE NO.	SHEET NO.
R-5311B	2A-5
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

MOTT MACDONALD I & E, LLC
LICENSE NO. F-0669

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

i:\2148
8\348dwg\Proj\r5311b_rdy_typ.dgn
11:08:13

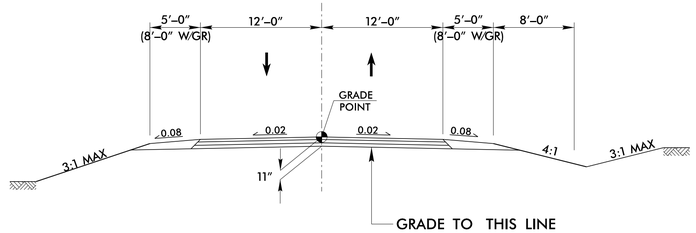
6/2/99

PAVEMENT SCHEDULE FINAL PAVEMENT DESIGN	
C1	3" S9.5C
C2	VAR. S9.5C
D1	2.5" I19.0C
D2	4" I19.0C
D3	VAR. I19.0C
E1	4" B25.0C
E2	VAR. B25.0C
J1	8" ABC
R1	1'-6" C & G
R2	2'-6" C & G
R3	2'-9" C & G
R4	18" C & G
R5	5" MONO. ISLAND
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V	MILLING
W	WEDGING

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

NOTE: AWAITING PAVEMENT DESIGN

℄ –Y5–, –Y2A–, –Y2B–, –Y2C–

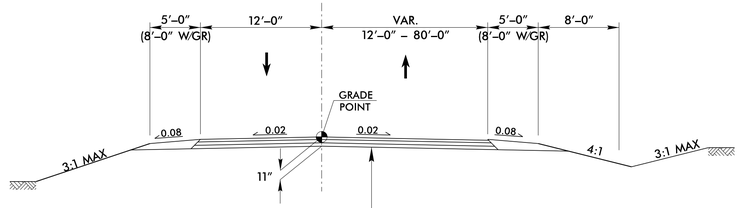


TYPICAL SECTION NO. 9

USE TYPICAL SECTION NO. 9:

–Y5– STA 14+50.00 TO 39+00.00
–Y2A– STA 11+50.00 TO 26+00.00
–Y2B– STA 10+00.00 TO 16+50.00
–Y2C– STA 10+00.00 TO 13+00.00

℄ –Y14A–, –Y14B–, –Y5A–, –Y6A–, –Y10A–, –Y10B–

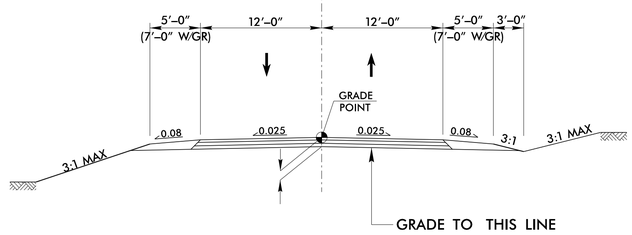


TYPICAL SECTION NO. 10

USE TYPICAL SECTION NO. 10:

–Y14A– STA 10+70.59 TO 11+87.67
–Y14B– STA 11+13.12 TO 12+28.87
–Y5A– STA 10+69.41 TO 13+30.02
–Y6A– STA 10+62.60 TO 11+78.43
–Y10A– STA 10+12.39 TO 11+28.26
–Y10B– STA 10+12.39 TO 11+28.56

℄ –Y15_DET–



TYPICAL SECTION NO. 11

USE TYPICAL SECTION NO. 11:

–Y15_DET– STA 10+00.00 TO 44+63.98

*WIDTH AND LOCATION OF EXISTING PAVEMENT VARIES. (SEE PLANS)

NOTE: FOR VARIABLE SLOPES SEE CROSS-SECTIONS.
FOR TAPERS AND AUXILIARY LANES SEE PLAN VIEW.
FOR ISLAND LIMITS SEE PLAN VIEW.

PROJECT REFERENCE NO.	SHEET NO.
R-5311B	2A-6
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

MOTT MACDONALD I & E, LLC
LICENSE NO. F-0669

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

i32448
R:\Roadway\Proj\r-5311b_rdy_typ.dgn
rle81d13

6/12/99

SHEAR POINT DIAGRAM

–L– /–Y15– INTERCHANGE

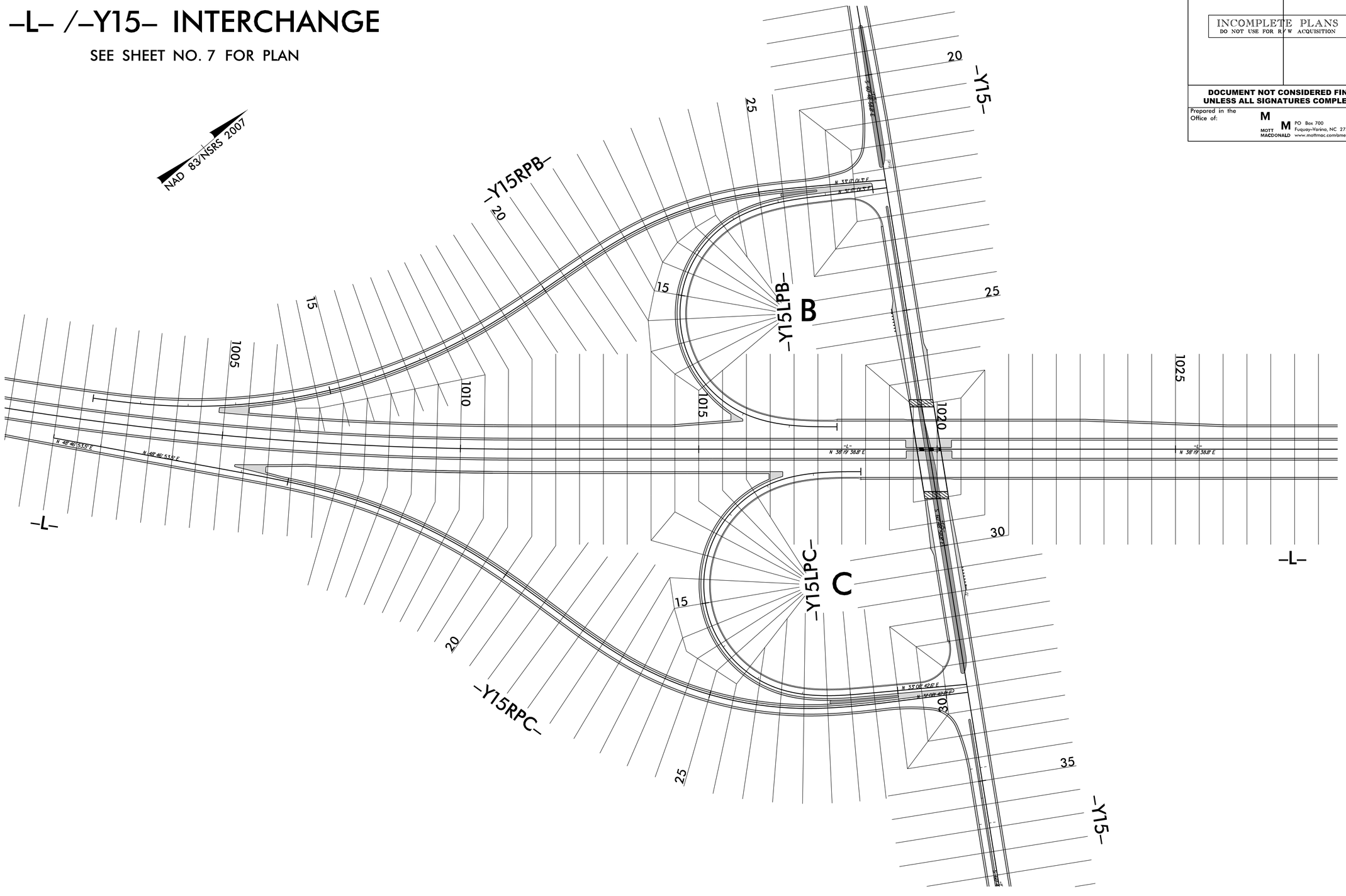
SEE SHEET NO. 7 FOR PLAN

PROJECT REFERENCE NO.	SHEET NO.
R-5311B	2B-1
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Office of:
MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas



13:21:50
R:\Roadway\Projects\r-5311b_rdy_psh\02B-1.dgn
Plotted: 4/14/

8/12/99

SHEAR POINT DIAGRAM

–L– /–Y2– INTERCHANGE

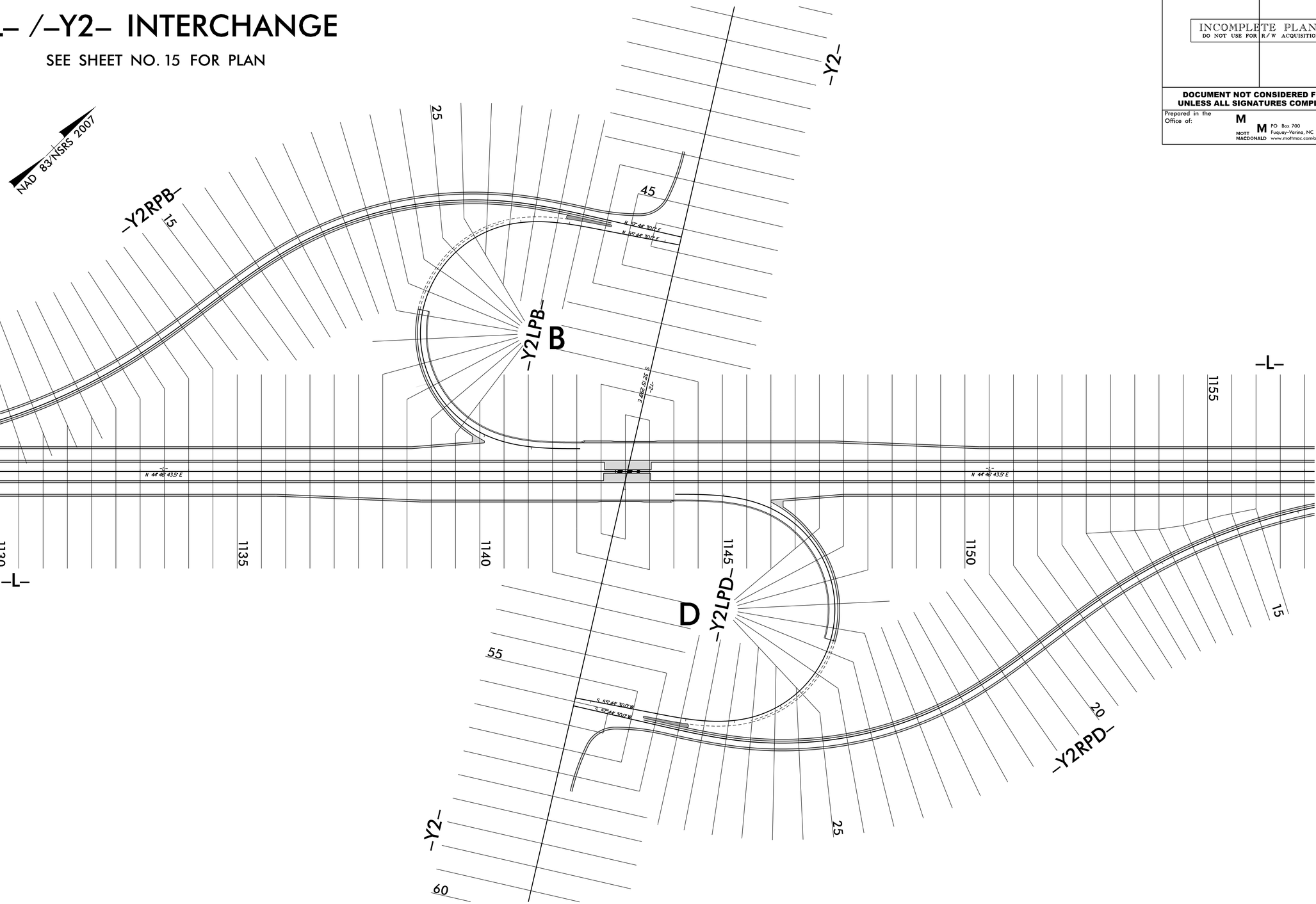
SEE SHEET NO. 15 FOR PLAN

PROJECT REFERENCE NO.	SHEET NO.
R-5311B	2B-2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Office of:
MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas



13:21:51
R:\Roadway\Proj\r-5311b_rdy_pst\02B-2.dgn
ehamrick

8/17/99

REVISIONS

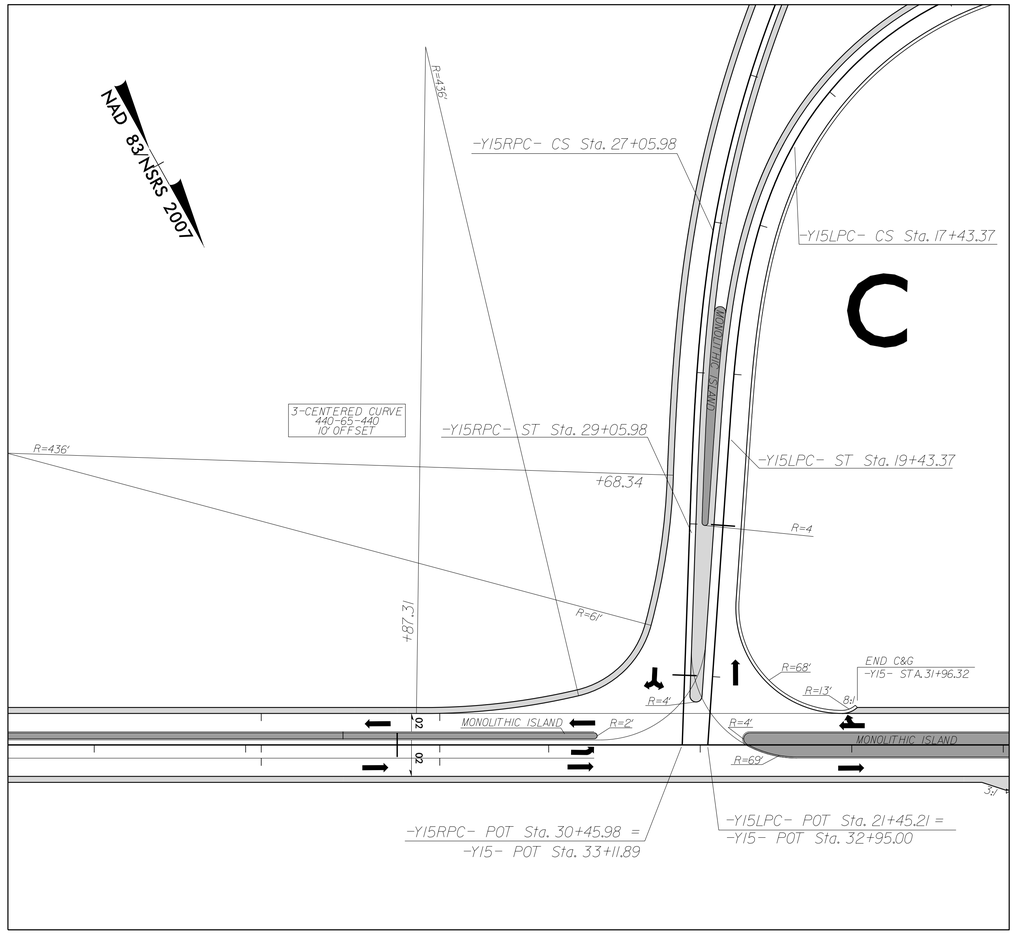
PROJECT REFERENCE NO.	SHEET NO.
U-5311B	2B-3
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

MOTT MACDONALD I & E, LLC
LICENSE NO. F-0669

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Office of:
MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

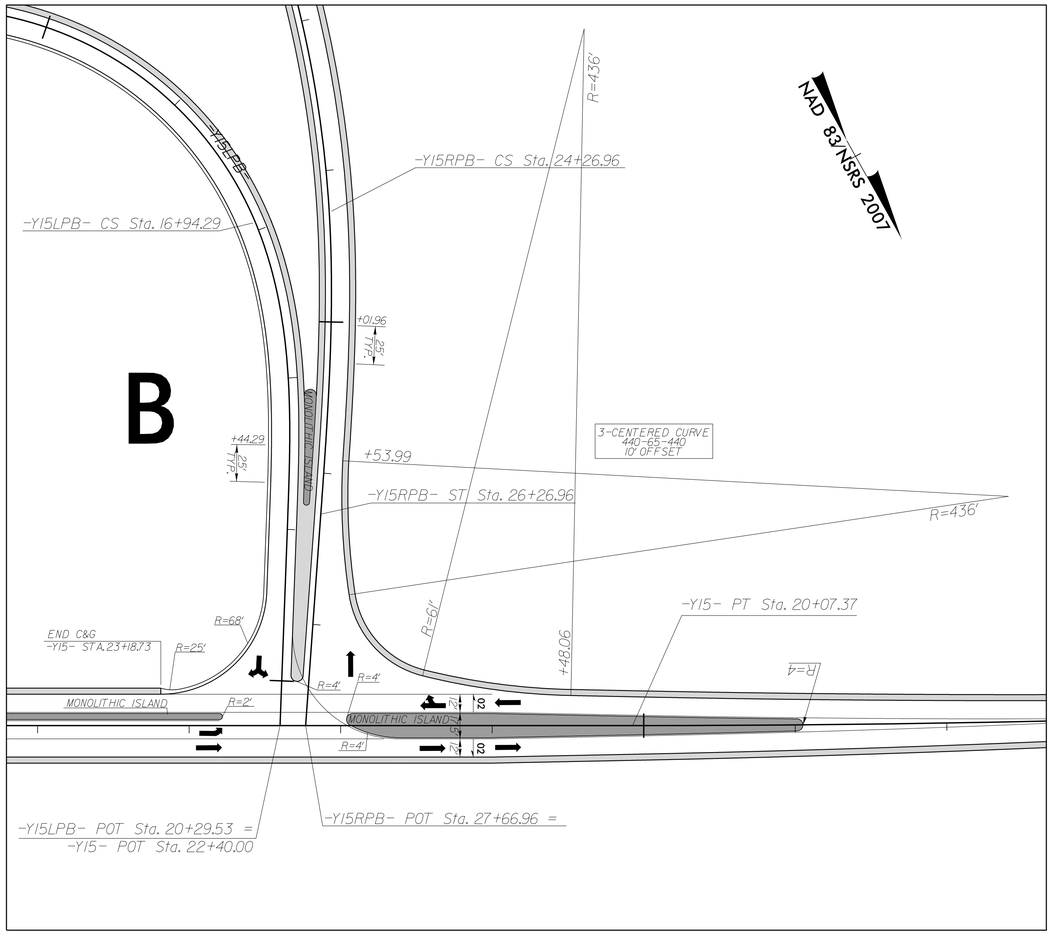


INTERSECTION DETAIL

-Y15- /-Y15RPC- /-Y12LPC-

SEE SHEET NO. 7 FOR PLAN

50 0 50 100
PLANS



INTERSECTION DETAIL

-Y15- /-Y15RPB- /-Y15LPB-

SEE SHEET NO. 7 FOR PLAN

50 0 50 100
PLANS

13:20:52
R:\5311b_Roadway\Proj\r-5311b_rdy_det_int-1.dgn
mbell413

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-5311B	2B-4
R/W SHEET NO.	

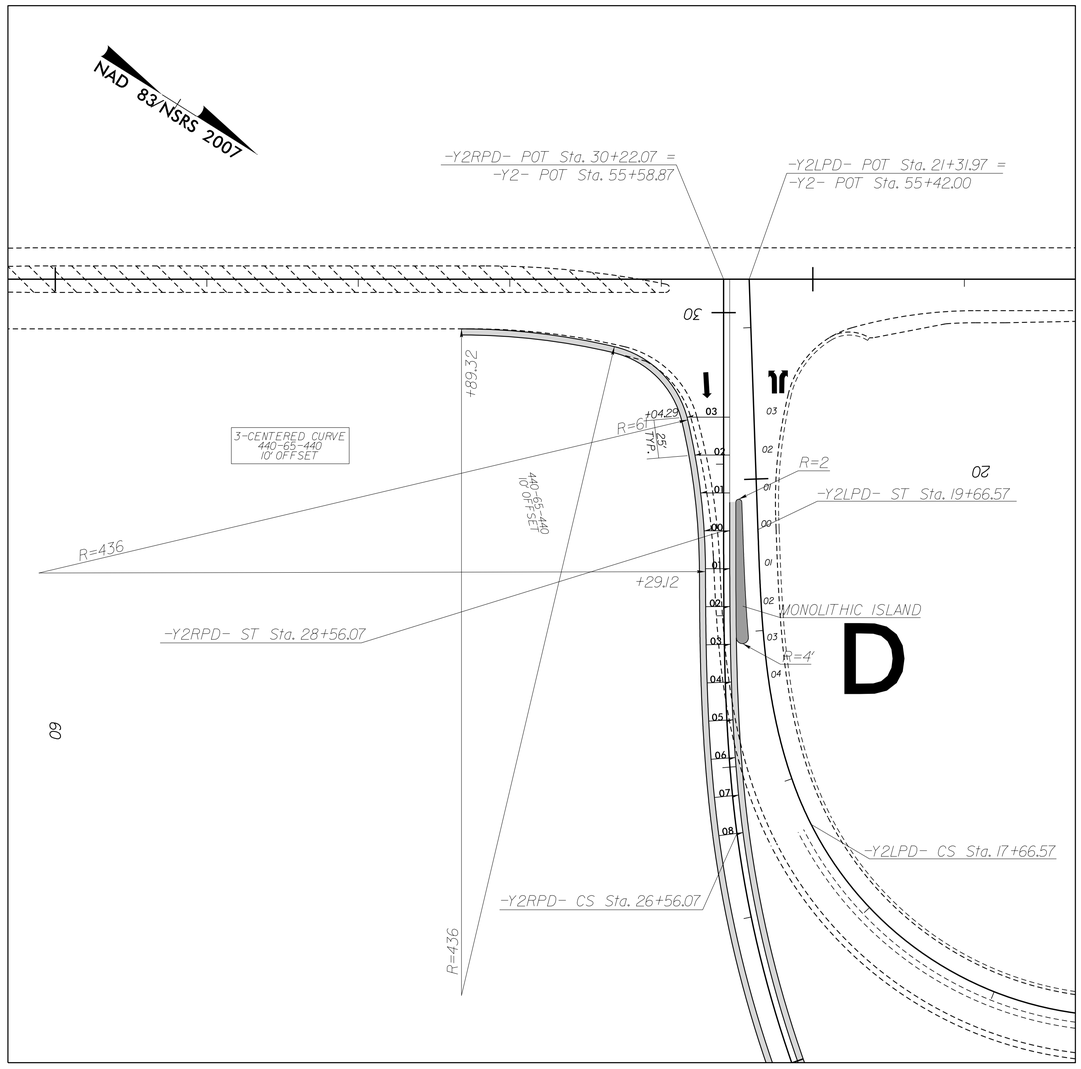
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

MOTT MACDONALD I & E, LLC
LICENSE NO. F-0669

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Office of:
MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

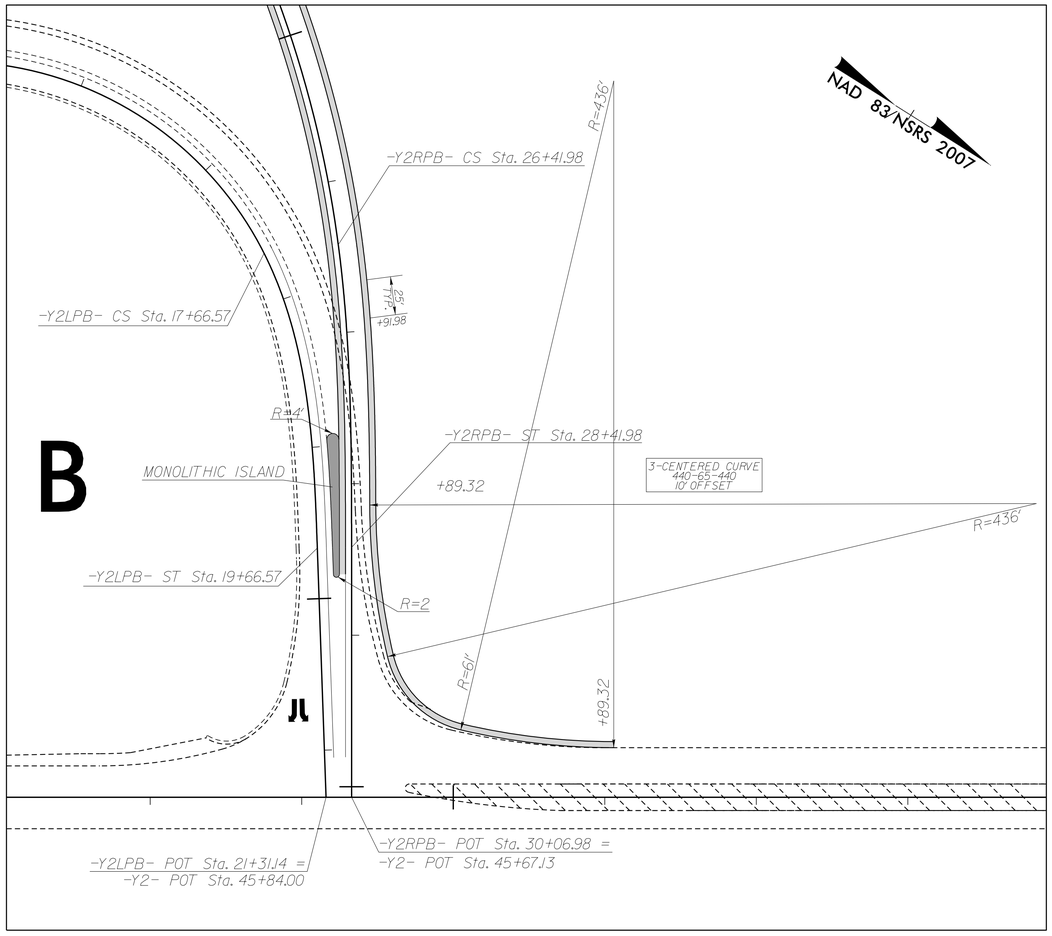


INTERSECTION DETAIL

–Y2– /–Y2RPD– /–Y2LPD–

SEE SHEET NO. 15 FOR PLAN

50 0 50 100
PLANS



INTERSECTION DETAIL

–Y2– /–Y2RPB– /–Y2LPB–

SEE SHEET NO. 15 FOR PLAN

50 0 50 100
PLANS

13:2:54
P:\Roadway\Proj\r5311b_rdy_det_int-2.dgn
rlee8143

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-5311B	2B-5
R/W SHEET NO.	

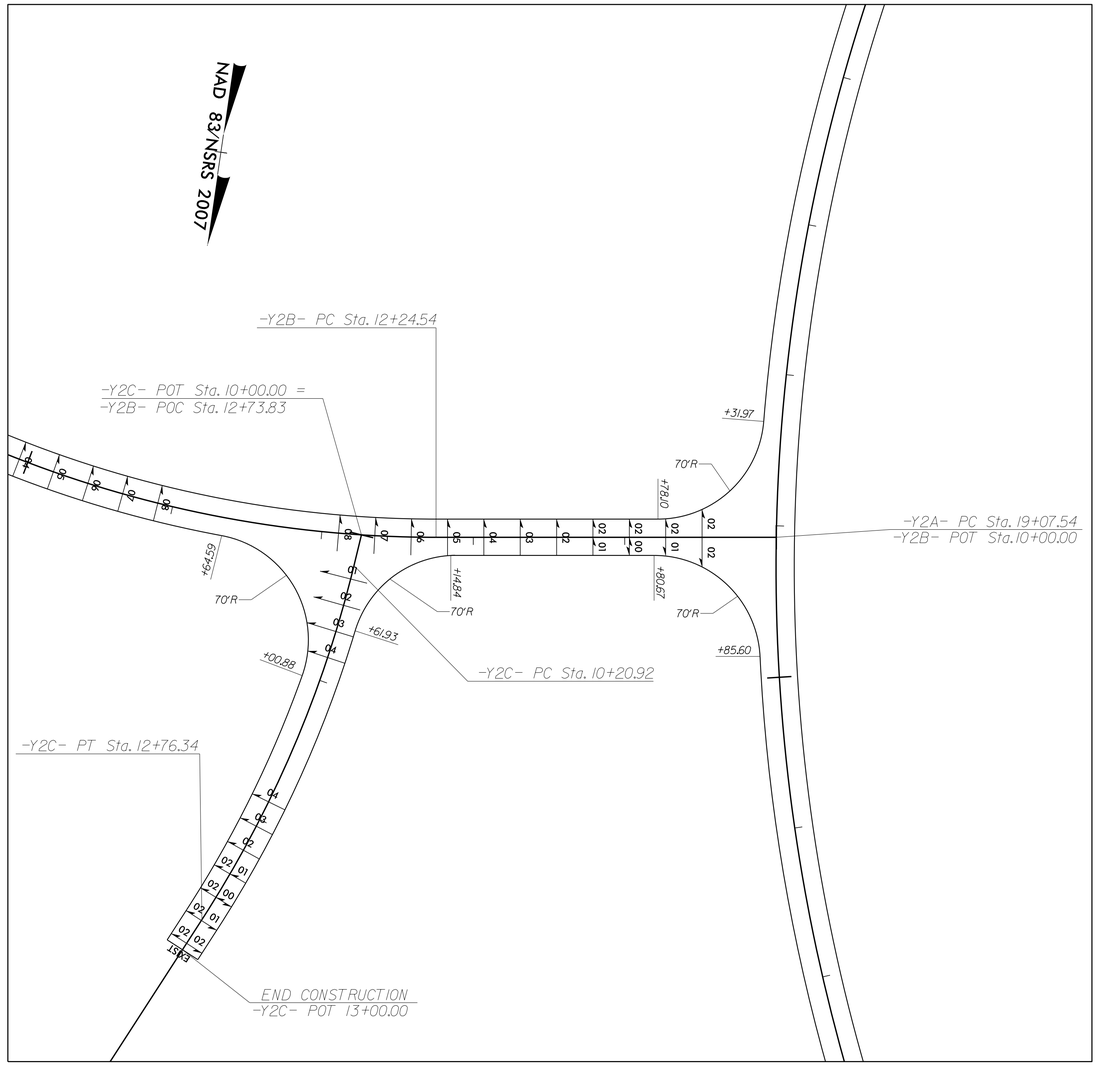
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

MOTT MACDONALD I & E, LLC
LICENSE NO. F-0669

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Office of:
MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas



INTERSECTION DETAIL

–Y2A– /–Y2B– /–Y2C–

SEE SHEET NO. 37 FOR PLAN

50 0 50 100
PLANS

13:26:56
R:\Highway\Proj\r-5311b_rdy_det_int-3.dgn
tlebrun

PROJECT REFERENCE	SHEET NO.
R-5311B	2B-6
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

MOTT MACDONALD I & E, LLC
LICENSE NO. F-0669

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Office of:

MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com

McKIM & CREED
NC BRANCH #1132
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL. (910) 343-1368 FAX. (910) 790-8282

VERTICAL SCALE 5' 0 5' 10'
HORIZONTAL SCALE 25' 0 25' 50'

NAD 83/NSRS 2007

-Y15-

PI Sta 10+15.00	PI Sta 12+05.41	PI Sta 17+22.63
△ = 2° 27' 19.9" (RT)	△ = 9° 32' 57.5" (RT)	△ = 2° 36' 38.7" (RT)
D = 8° 11' 06.4"	D = 2° 43' 42.1"	D = 0° 27' 30.1"
L = 30.00'	L = 350.00'	L = 569.58'
T = 15.00'	T = 175.41'	T = 284.84'
R = 700.00'	R = 2,100.00'	R = 12,500.00'
		SE = NC

BEGIN CONSTRUCTION
-Y15_DET- POT Sta. 10+00.00 =
-Y15- POC Sta. 11+56.24

BEGIN GRADE
-Y15_DET- POT Sta. 12+31.66 =
-Y15- POT Sta. 13+87.01

-Y15- PC Sta. 10+00.00
-Y15- PCC Sta. 10+30.00
-Y15- PT Sta. 13+80.00
-Y15- PC Sta. 14+37.79
-Y15- PT Sta. 20+07.37

MATCHLINE -Y15_DET- STA. 22+50.00

W. HUGH JONES, JR.
DB 537 PG 509

SEMAAN EL-KHOURY, ET UX
DB 674 PG 127
PC 1 PG 145

HARRELL ENTERPRISES
DB 790, PG 399
PC 2 PG 22A

HARRELL ENTERPRISES
DB 467 PG 232
PC 2 PG 22A

ST JOHNS HIGHWAY 26' PAVED ROADWAY
NC 561

-Y15_DET- S 69° 31' 55.5" E
-Y15- S 60° 48' 58.8" E
S 63° 25' 37.5" E

N 46°18'50" W 223.70'
S 39°26'50" W 201.75'
N 25°53'39" E 258.02'
S 27°52'26" W 205.24'

BEGIN PROFILE
-Y15_DET- STA. 12+31.66
-Y15- STA. 13+87.01 OFF. 12.73' LT
EL = 62.64'

PI = 14+00.00
EL = 60.90'
VC = 200'
K = 108
V = 50 MPH

(−)1.0336%
(+)0.8263%

70
60
50
40
10
11
12
13
14
15
16
17
18
19
20
21
22

10/29/2018
7:57:51 AM
R:\Roadway\Proj\r-5311b_rdy_psh02B-6.dgn
wel78449

PROJECT REFERENCE	SHEET NO.
R-5311B	2B-7
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

MOTT MACDONALD I & E, LLC
LICENSE NO. F-0669

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Office of:
MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com

McKIM & CREED
NC BRANCH OFFICE
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL. (910) 343-1368 FAX. (910) 790-8282

VERTICAL SCALE 5' 0 5' 10'
HORIZONTAL SCALE 25' 0 25' 50'

NAD 83/NSRS 2007

-Y15_DET- PC Sta. 23+41.61

-Y15_DET- POC Sta. 26+85.96 =
-L- POT Sta. 1021+79.38

-Y15_DET- POC Sta. 27+22.07 =
-EL- POT Sta.70+83.03

-Y15_DET- PT Sta. 30+87.08

-Y15_DET-
PI Sta 27+17.13
Δ = 17° 05' 06.0" (RT)
D = 2° 17' 30.6"
L = 745.47'
T = 375.52'
R = 2,500.00'
SE = 0.025
RO = 50'

130' TAPER | 200' FULL | 207' FULL | 130' TAPER

MATCHLINE -Y15_DET- STA. 22+50.00

MATCHLINE -Y15_DET- STA. 36+00.00

-Y15_DET-
S 69° 31' 55.5" E

-Y15_DET
S 52° 26' 49.5" E

-Y15-
S 60° 48' 58.8" E

-L-
N 38° 19' 38.8" E

N 31° 08' 42.6" E

NC 561 ST JOHNS HIGHWAY 26' PAVED ROADWAY

WOODS

1020

30" RCP W/FES

24" RCP W/FES

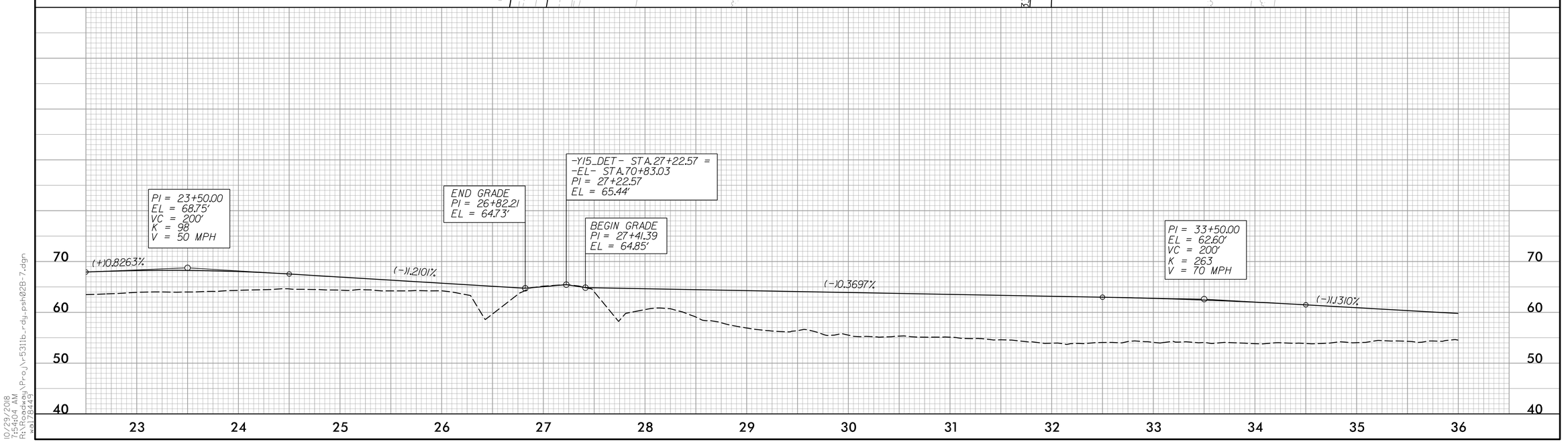
36" CMP W/FES

24" RCP

12" PVC

BL-79

BY15_3



10/29/2018
7:54:04 AM
R:\Roadway\Proj\r-5311b_rdy_psh02B-7.dgn
wa178449

PROJECT REFERENCE	SHEET NO.
R-5311B	2B-8
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

MOTT MACDONALD I & E, LLC
LICENSE NO. F-0669

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Office of:
MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com

McKIM & CREED
NC BRANCH #C-125
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL. (910) 343-1368 FAX. (910) 790-8282

VERTICAL SCALE 5' 0 5' 10'
HORIZONTAL SCALE 25' 0 25' 50'

NAD 83/NSRS 2007

-Y15_DET- PC Sta. 40+12.99

END GRADE
-Y15_DET- POC Sta. 41+80.10 =
-Y15- POC Sta. 43+09.18

-Y15_DET-
PI Sta 42+39.49
△ = 13° 11' 00.5" (LT)
D = 2° 55' 23.7"
L = 450.99'
T = 226.49'
R = 1,960.00'
SE = EXISTING

END CONSTRUCTION
-Y15_DET- PT Sta. 44+63.98 =
-Y15- POC Sta. 45+92.89

-Y15- PT Sta. 45+71.24

-Y15- PC Sta. 41+37.05

-DET-
PI Sta 43+54.26
△ = 4° 35' 08.1" (LT)
D = 1° 03' 22.1"
L = 434.18'
T = 217.21'
R = 5,425.00'

MATCHLINE -Y15_DET- STA. 36+00.00

-Y15_DET
S 52° 26' 49.5" E

-Y15-
S 60° 48' 58.8" E

-Y15-4

-Y15- 38+77.65
200.32' (LT)

120' UTILITY EASEMENT
DB 346 PG 305

RW MON

EXISTING R/W

ROBERT GLENN COOKE, JR.
DB 554 PG 639

WHOLESALE PARTS LTD
DB 397 PG 331
PB 4 PG 62

36" ELECTRIC W/METAL POSTS

TO AHOSKIE

ST JOHNS HIGHWAY
28' PAVED ROADWAY
NC 561

LINDA BAZEMORE, ET AL
DB 417 PG 602
ESTATE FILE 03E PG 108

UNKNOWN

UTILITY AND ACCESS EASEMENT

ACCESS EASEMENT

LIBERTY FREE WILL BAPTIST CHURCH
DB 442 PG 75
PC 1 PG 2D

LIBERTY FREE WILL BAPTIST CHURCH
DB 442 PG 77
PC 1 PG 2D

TOWN OF AHOSKIE
DB 418 PG 422

WOODS

24" RCP

18" RCP

12" PVC

END PROFILE
-Y15_DET- STA. 41+80.10
-Y15- STA. 43+09.18 OFF. 13.12' LT
EL = 54.72'

PI = 40+75.00
EL = 54.40'
VC = 200'
K = 139
V = 60 MPH

(-)11.13.10%

+10.30.45%

70
60
50
40

36 37 38 39 40 41 42 43 44

10/29/2018
7:49:56 AM
R:\Roadway\Proj\r-5311b_rdy_psh02B-8.dgn
wal78449

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-5311B	4

R/W SHEET NO.

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

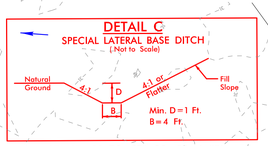
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

McKIM & CREED
NC LICENSE #P1122
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL. (910) 343-0188 FAX (910) 790-8282

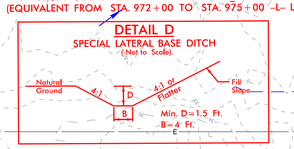
FOR -L_SB1- PROFILE SEE SHEET 41
FOR -L_NB1- PROFILE SEE SHEET 41

DETAIL C
SPECIAL LATERAL BASE DITCH
(Not to Scale)



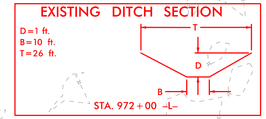
FROM STA. 17+00 TO STA. 20+00 -L_SBL- LT
(EQUIVALENT FROM STA. 972+00 TO STA. 975+00 -L- LT)

DETAIL D
SPECIAL LATERAL BASE DITCH
(Not to Scale)



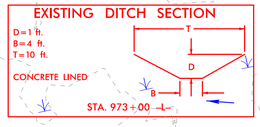
FROM STA. 15+00 TO STA. 17+00 -L_SBL- LT
(EQUIVALENT FROM STA. 970+00 TO STA. 972+00 -L- LT)

EXISTING DITCH SECTION
D=1 ft.
B=10 ft.
T=26 ft.



STA. 972+00 -L-

EXISTING DITCH SECTION
D=1 ft.
B=4 ft.
T=10 ft.
CONCRETE LINED



STA. 973+00 -L-

EXISTING DITCH SECTION
D=1 ft.
B=0 ft.
T=8. ft.
CONCRETE LINED

STA. 975+00 -L-

-L_SBL-

PI Sta 13+97.19
△ = 3° 47' 29.3" (LT)
D = 0° 28' 38.9'
L = 794.08'
T = 397.19'
R = 12,000.00'
SE = NC

PI Sta 22+74.02
△ = 3° 47' 29.3" (RT)
D = 0° 23' 42.5'
L = 959.52'
T = 479.93'
R = 14,500.00'
SE = NC

NAD 83/NSRS 2007

SHIRLEY S. PIERCE, JR., ET UX
DB 416 PG 688
PC 1 PG 175C

120' UTILITY EASEMENT
DB 346 PG 305

N 75° 53' 40" W
80.01'

0.6' EIP TO R/W
0.65' MON TO EIP

EIP
CONC MON

60' WW

EXISTING R/W

-EL- 10+00.76
229.73' (LT)

-L- POT Sta. 961+97.51

-L_SBL- PC Sta. 10+00.00 =
-L_NBL- POT Sta. 10+00.00 =
-L- POT Sta. 965+00.00, 35' RT

BEGIN TIP PROJECT R-5311B
-L- POT STA. 965+00.00

50' TAPER TO EXIST

WOODS

RS311B-T1

NC II 32' PAVED ROADWAY

TO AULANDER

EXIST 12' 12'

025

025

N 50° 27' 25.0" E -NBL-

TBM-A
31010 ELEVATION = 40.01
N 931438 E 2579638
BL STATION 13+38.00 203 RIGHT
TBM-A RR SPIKE IN BASE OF 30" PINE

FENCE DISTROYED

-EL- 10+00.20
0.00' (RT.)

SHIRLEY S. PIERCE JR., ET UX
DB 416 PG 688
PC 1 PG 175C

ROBERT GLENN COOKE, JR.
DB 521 PG 941

S 14°30'08" E
502.16'

S 14°29'10" E

CHRISTINE CHAMBLEE
DB 644 PG 508
PC 1 PG 37A

-EL- 20+00.75
229.95 (LT.)

RW MON

Sta. = 17+00-SBL- LT
Q= 23.0 cfs
V= 3.9 fps
d= 0.8'
s= 1.9%
n= 0.035
Liner = NA

DA=15.14 acre
Tc=30 min
I10=3.7 in/hr
c=0.41
Q10=22.9 cfs

-L_SBL- PRC Sta. 17+94.08

SPECIAL LATERAL BASE DITCH
SEE DETAIL C

720' LANE TAPER

Sta. = 15+00 -SBL- LT
Q= 24.0 cfs
V= 7.0 fps
d= 1.3'
s= 0.3%
n= 0.035
Liner = NA

DA=15.80 acre
Tc=30 min
I10=3.7 in/hr
c=0.41
Q10=24.0 cfs

SPECIAL LATERAL BASE DITCH
SEE DETAIL D

CL B RIP-RAP
EST 2 TONS
EST 7 SY GT

+0.5333%

0402

0401

2GI

15'

300' LANE TAPER

100

-EL- 20+00.9
220.26 (RT.)

S 63°23'09" E
233.80'

MATCHLINE -L- STA 975+00.00
SEE SHEET NO. 5

$$$$$$SYSTIME$$$$$$
$$$$$$DGN$$$$$$$$$$$$$$$$$$
$$$$$$USERNAME$$$$$$$$$$$$$$

R5311B_hyd_psh04.dgn 2/26/2019 5:03:17 PM

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-5311B	5

R/W SHEET NO.

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

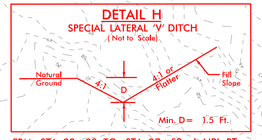
MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

McKIM & CREED
NC LICENSE #F-1222
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL. (910) 343-1545 FAX. (910) 790-8282

FOR –L_SB1– PROFILE SEE SHEETS 41 & 42
FOR –L_NB1– PROFILE SEE SHEETS 41 & 42
FOR –L– PROFILE SEE SHEET 43

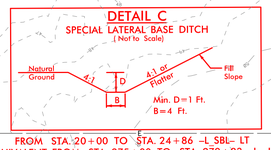
-L_SBL-
PI Sta 22+74.02
Δ = 3° 47' 29.3" (RT)
D = 0° 23' 42.5"
L = 959.52'
T = 479.93'
R = 14,500.00'
SE = NC

DETAIL H
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



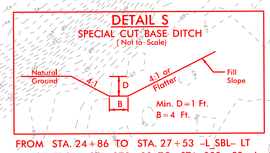
FRM STA. 22+83 TO STA. 27+52 –L_NBL–RT
(EQUIVALENT FROM STA. 977+83 TO STA. 989+00 –L– RT)
FROM STA. 982+52 TO STA. 989+00 –L– RT

DETAIL C
SPECIAL LATERAL BASE DITCH
(Not to Scale)



FROM STA. 20+00 TO STA. 24+86 –L_SBL– LT
(EQUIVALENT FROM STA. 975+00 TO STA. 979+83 –L– LT)

DETAIL S
SPECIAL CUT BASE DITCH
(Not to Scale)



FROM STA. 24+86 TO STA. 27+53 –L_SBL– LT
(EQUIVALENT FROM STA. 979+83 TO STA. 982+52 –L– LT)
FROM STA. 982+52 TO STA. 989+00 –L– LT

NAD 83/NSRS 2007

MATCHLINE –L– STA 975+00.00
SEE SHEET NO. 4

MATCHLINE –L– STA 989+00.00
SEE SHEET NO. 6

CHRISTINE CHAMBLEE
DB 644 PG 508
PC 1PG 37A

120' UTILITY EASEMENT
DB 346 PG 365

Sta =26+00 –L_SBL– LT
Q= 17.4 cfs
V= 2.3 fps
d= 1.0'
s= 0.5%
n= 0.035
Liner= NA
DA=11.5 acre
Tc=20 min
i10=3.7 in/hr
c=0.41
Q10=17.4 cfs

EL= 30+00.19
230.14 (LT.)

EXISTING R/W
60" WW
RW. MON.
EXISTING R/W
EIP
720' LANE TAPER
+0.5333%
CL B RIP-RAP
EST 2 TONS
EST 7 SY GT
SPECIAL LATERAL BASE DITCH
SEE DETAIL C
SPECIAL CUT BASE DITCH
SEE DETAIL S
WOODS
0502
0504
0503
0507
FS
2GI
-L-
N 50° 27' 25.0" E
-NBL-
BL-74
PROP. MED. CABLE GUIDERAIL
NC 11' 32' PAVED ROADWAY
SPECIAL LATERAL DITCH
SEE DETAIL H
0506
0508
CL B RIP-RAP
EST 2 TONS
EST 7 SY GT
-L_SBL- PT Sta. 27+53.60.23' RT LB =
-L_NBL- POT Sta. 27+52.32.35' LT LB =
-L- POT Sta.982+52.32 LA
300' LANE TAPER
Sta. = 977+83 -L- LT
Q= 11.0 cfs
V= 4.2 fps
d= 0.8
s= 3.4%
n= 0.035
Liner= N/A
DA=4.41 acre
Tc=10 min
i10=6.1 in/hr
c=0.41
Q10=11.0 cfs
Sta. = 980+00 -L- LT
Q= 9.9 cfs
V= 2.0 fps
d= 1.1'
s= 0.5%
n= 0.035
Liner= N/A
DA=3.98 acre
Tc=10 min
i10=6.1 in/hr
c=0.41
Q10=9.9 cfs
CLARENCE W. LASSITER, ET AL
DB 559 PG 534
CLARENCE W. LASSITER, ET AL
DB 408 PG 544
0.49' EIP TO R/W
S 12°42'26" E
50.48'
N 87°45'06" W
302.47'
N 87°45'06" W
1810.04'
0.03' R/W TO EIP
VIR
5000N
975
980
985
20
25
00
+00

$$$$SYSTIME$$$$
$$$$USERNAME$$$$
$$$$DGN$$$$

R5311B_hyd_psh05.dgn 2/26/2019 5:04:02 PM

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-5311B	6
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

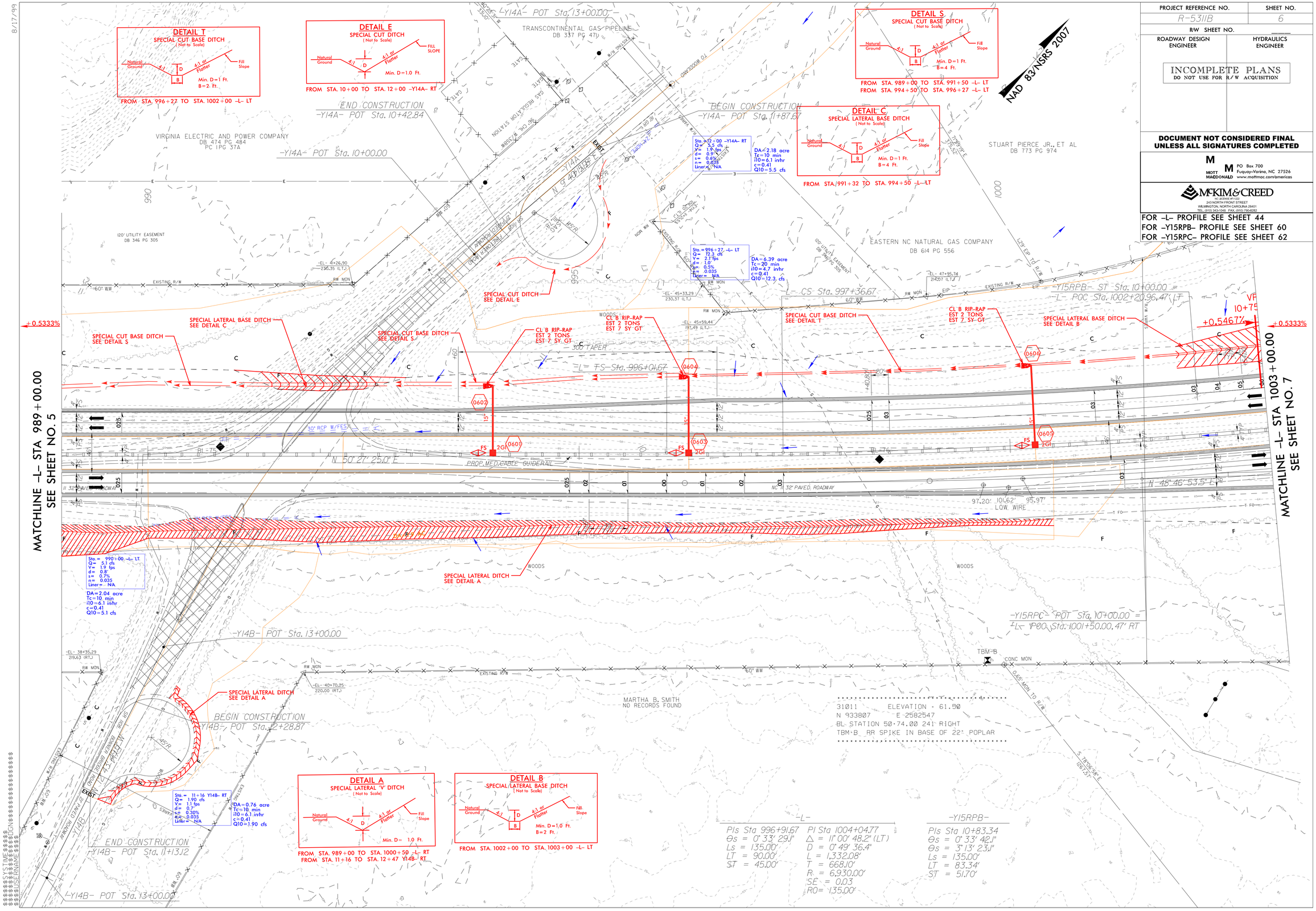
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

McKIM & CREED
NC LICENSE #C-1222
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL. (910) 343-1081 FAX. (910) 790-8282

FOR –L– PROFILE SEE SHEET 44
FOR –Y15RPB– PROFILE SEE SHEET 60
FOR –Y15RPC– PROFILE SEE SHEET 62



REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-5311B	7
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

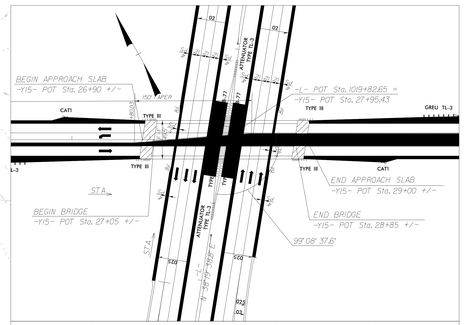
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

M MOCK ROBERTSON MACKEY & MOSS, P.A. 300 Spring Building, Suite 904 West, 8 Spring Street, Asheville, NC 28801 (828) 254-1951 www.mockmoss.com

MKM&CREED
NC BUSINESS LIC. C-3917
NC BOARD OF EXAMINERS FOR ENGINEERS AND SURVEYORS
NC BOARD OF LICENSING OF GEOLOGISTS

FOR –L– PROFILE SEE SHEETS 44 & 45
FOR –Y15– PROFILE SEE SHEETS 59 & 60
FOR –Y15RPB– PROFILE SEE SHEETS 60 & 61
FOR –Y15LPB– PROFILE SEE SHEET 61
FOR –Y15RPC– PROFILE SEE SHEET 62
FOR –Y15LPC– PROFILE SEE SHEET 63
FOR INTERSECTION DETAILS, SEE SHEET 28-3
FOR STRUCTURE PLANS, SEE SHEETS SR-1 THRU SR-4



BRIDGE PAVEMENT RELATIONSHIP SKETCH

TRAFFIC DIAGRAM
ADT 2021 7600 10900
ADT 2041 9700 13900
US 13 (NC 11)
4500 5100
7200 7700
2000 2600
4800 5700
7100 7700
4200 4700

MATCHLINE –L– STA 1003+00.00 SEE SHEET NO. 6

MATCHLINE –Y15– STA 21+00.00 SEE SHEET NO. 33

MATCHLINE –L– STA 1031+00.00 SEE SHEET NO. 8

MATCHLINE –Y15– STA 35+00.00 SEE SHEET NO. 34

NAD 83/NSRS 2007

DETAIL A
SPECIAL LAGRADE "V" DITCH
(Not to Scale)
Min. D= 1.0 Ft.
#FROM STA. 1006+00 TO STA. 1008+00 –L– LT
FROM STA. 18+50 TO STA. 20+50 –Y15RPC– LT
FROM STA. 16+00 TO STA. 23+00 –Y15RPB– LT
FROM STA. 1008+00 TO STA. 1010+00 –L– LT
FROM STA. 1010+92 TO STA. 1012+00 –L– RT
FROM STA. 21+00 TO STA. 24+00 –Y15– LT
FROM STA. 12+92 TO STA. 15+50 –Y15LPB– LT
FROM STA. 12+96 TO STA. 20+00 –Y15LPC– LT

DETAIL C
SPECIAL LATERAL BASE DITCH
(Not to Scale)
Min. D=1.0 Ft.
FROM STA. 1000+37 TO STA. 1029+39 –L– LT

DETAIL D
STANDARD BASE DITCH
(Not to Scale)
Min. D=1.0 Ft.
FROM STA. 1033+00, TO STA. 1033+50 –L– RT

DETAIL B
SPECIAL LATERAL BASE DITCH
(Not to Scale)
Min. D=1.0 Ft.
FROM STA. 1008+00 TO STA. 1010+00 –L– LT
FROM STA. 1015+50 TO STA. 1018+91 –L– LT
FROM STA. 1002+00 TO STA. 1006+20 –L– LT
FROM STA. 1030+82 TO STA. 1033+00 –L– RT
FROM STA. 20+50 TO STA. 23+61 –Y15RPC– LT
FROM STA. 23+00 TO STA. 26+90 –Y15RPB– LT

GRAPHIC SCALE
50 0 50 100
PLANS

LOCATION: INTERCHANGE AT NC 11 & NC 561 (ST. JOHNS HWY)
TIP NO.: R-5311B
COUNTY: HERTFORD
DESIGNED BY:
CHECKED BY:
DATE:

R5311B_hyd_psh07.dgn 2/26/2019 5:07:58 PM

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-5311B	8
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

McKIM & CREED
NC LICENSE #F-1222
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL. (910) 343-1545 FAX. (910) 790-4282

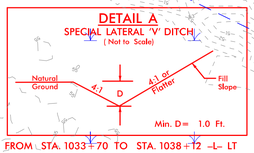
FOR –L– PROFILE SEE SHEETS 45 & 46

NAD 83/NSRS 2007

MATCHLINE –L– STA 1031+00.00
SEE SHEET NO. 7

MATCHLINE –L– STA 1045+00.00
SEE SHEET NO. 9

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



FROM STA. 1033+70 TO STA. 1038+12 –L– LT

W. HUGH JONES, JR.
DB 553 PG 82
PC 1PG 170A

ROBERT GLENN COOKE, JR.
DB 554 PG 639

-EL- 80+54.53
3/9.48 (LT.)
RW MON
EXISTING R/W
N 23°31'36" E
2107.59'
1035
1040
1045
60" WW
WLB
-EL- 85+52.86
209.94 (LT.)
-EL- 89+99.91
187.68 (LT.)
WOODS

Sta. = 1033+70 –L– LT
Q= 3.1 cfs
V= 1.0 fps
d= 0.9'
s= 0.2%
n= 0.035
Liner= NA

DA=1.23 acre
Tc=10 min
i10=6.1 in/hr
c=0.41
Q10=3.1 cfs

CL B RIP-RAP
EST 1 TONS
EST 5 SY GT

CL B RIP-RAP
EST 2 TONS
EST 7 SY GT

SPECIAL LATERAL DITCH
SEE DETAIL A

CL B RIP-RAP
EST 1 TONS
EST 5 SY GT

CL B RIP-RAP
EST 1 TONS
EST 5 SY GT

-0.3027%

0802
0803
0804
0805
0806
0807
0808
15"
2GI
FSII
BL-BL

PROP. MED. CABLE GUIDERAIL

N 38°19'38.8" E

300' TAPER

TBM-C
RW MON
-EL- 89+08.99
247.64 (RT.)

-EL- 82+24.13
439.39 (RT.)

31014 ELEVATION = 59.70
N 936935 E 2585189
BL STATION 91+39.00 267 RIGHT
TBM-C RR SPIKE IN BASE OF 20" PINE

ROBERT GLENN COOKE, JR.
DB 554 PG 639

$$$$SYSTIME$$$$
$$$$USERNAME$$$$
$$$$DGN$$$$

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-5311B	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

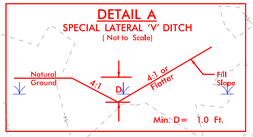
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

McKIM & CREED
NC LICENSE #F-1222
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL: (910) 343-1646 FAX: (910) 790-4282

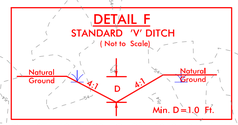
FOR –L– PROFILE SEE SHEET 46

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



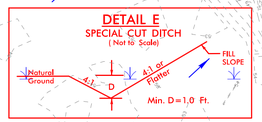
FROM STA. 1054+60 TO STA. 1058+00 –L– LT
FROM STA. 1058+86 TO STA. 1059+00 –L– LT

DETAIL F
STANDARD 'V' DITCH
(Not to Scale)



FROM STA. 1050+00 TO STA. 1050+24 –L– LT

DETAIL E
SPECIAL CUT DITCH
(Not to Scale)



FROM STA. 1047+29 TO STA. 1050+00 –L– LT
FROM STA. 1053+50 TO STA. 1054+45 –L– LT

NAD 83/NSRS 2007

SAG
1056+85.81
-0.3027%
+0.4815%

MATCHLINE –L– STA 1045+00.00
SEE SHEET NO. 8

MATCHLINE –L– STA 1059+00.00
SEE SHEET NO. 10

1045 1050 1055

EXCAVATION
SEE DETAIL
EST 135 CY DDE
CL II RIP RAP
EST 55 TONS
EST 60 SY GT

Sta.=1050+24.50 –L– LT
Q= 1.4 cfs
V= 1.1 fps
d= 0.6'
s= 0.35%
n= 0.035
Liner= NA

DA=0.58 acre
Tc=10 min
i10=6.1 in/hr
c=0.41
Q10=1.4 cfs

Sta.=1054+60 –L– LT
Q= 1.4 cfs
V= 1.2 fps
d= 0.5'
s= 0.5%
n= 0.035
Liner= NA

DA=0.56 acre
Tc=10 min
i10=6.1 in/hr
c=0.41
Q10=1.4 cfs

Sta.=1054+45 –L– LT
Q= 1.8 cfs
V= 1.5 fps
d= 0.6'
s= 0.7%
n= 0.035
Liner= NA

DA=0.73 acre
Tc=10 min
i10=6.1 in/hr
c=0.41
Q10=1.8 cfs

ROBERT GLENN COOKE, JR.
DB 554 PG 639

EDITH E. TAYLOR, ET AL
DB 754 PG 846

WILLIAM D. BURDEN III, ET AL
DB 431 PG 257

SPECIAL CUT DITCH
SEE DETAIL E

60" WW STANDARD 'V' DITCH
SEE DETAIL F

SPECIAL LATERAL DITCH
SEE DETAIL A

CL B RIP-RAP
EST 2 TONS
EST 7 SY GT

CL B RIP-RAP
EST 1 TONS
EST 5 SY GT

CL B RIP-RAP
EST 2 TONS
EST 7 SY. GT

CL B RIP-RAP
EST 2 TONS
EST 7 SY. GT

EXISTING R/W
R/W MARKER
RW MON
EL= 99+99.65
180.32' (LT.)
EL= 99+99.86
219.41' (RT.)
WOODS
WLB
WLB-F
WLB-C
WLB-T FO
60" WW
4.62' EIP TO R/W
EIP
S 00°22'32" W
1895.86'
S 12°37'17" E
1853.20'
N 08°19'38" E
2284.29'
N 38°19'38.8" E
BL-83
BL-84
PROPOSED MEDIAN CABLE GUIDERAIL
NC 11 32' PAVED ROADWAY
CONC. HW
2-5'X 7' RCBC
REMOVE EXISTING CONCRETE DITCH
REMOVE 3 @ 42" CMP AND 2 HEADWALLS
RETAIN CONCRETE DITCH
RETAIN CONCRETE DITCH
EXCAVATION
SEE DETAIL
EST 100 CY DDE
CL II RIP RAP
EST 60 TONS
EST 90 SY GT
BEGIN SBG +95 LT
BEGIN SBG +25 RT
END SBG +28 LT
END SBG +55 RT
GREU TL-3
CAT-1
2GI
FR
FS
BS
0901
0902
0903
0904
0905
0906
0907
0909
0910
POINT OF BEGIN STA 1056+65.81

Sta.= 1055+95 –L– RT
Q10= 38.5 cfs
V10= 7.8 fps
d10= 1.3'
s= 0.8%
n= 0.035
Liner= N/A

DA=10.74 acre
Tc=25 min
i10=4.2 in/hr
i2=3.1 in/hr
c=0.41
Q10=18.5 cfs
Q2=13.7 cfs

Sta.= 1055+95 –L– RT
Q2= 13.7 cfs
V2= 2.6 fps
d2= 1.2'
s= 0.8%
n= 0.035
Liner= N/A

Sta.= 1056+50 –L– RT
Q= 4.7 cfs
V= 1.8 fps
d= 0.8'
s= 0.6%
n= 0.035
Liner= N/A

DA=1.88 acre
Tc=10 min
i10=6.1 in/hr
c=0.41
Q10=4.7 cfs

TBM-D

3105 ELEVATION = 55.71
N 938390 E 2586295
BL STATION 109+65.00 234 RIGHT
TBM D RR SPIKE IN BASE OF 40" OAK

$$$$USERNAME$$$$ $$$$DGN$$$$ $$$$SYSTIME$$$$

R5311B_hyd_psh09.dgn 2/26/2019 5:10:29 PM

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-5311B	10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

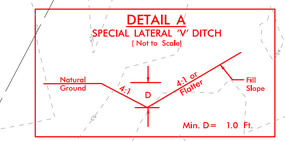
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

McKIM & CREED
NC LICENSE #P1122
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL: (910) 343-1545 FAX: (910) 750-6292

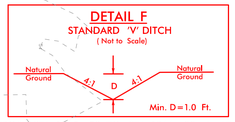
FOR –L– PROFILE SEE SHEETS 46 & 47

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



FROM STA. 1059+00 TO STA. 1059+25 –L– LT
FROM STA. 1066+00 TO STA. 1067+61 –L– LT
FROM STA. 1067+72 TO STA. 1071+00 –L –LT
FROM STA. 1072+50 TO STA. 1073+00 –L –LT

DETAIL F
STANDARD 'V' DITCH
(Not to Scale)



FROM STA. 1065+50 TO STA. 1066+00 –L– LT
FROM STA. 1071+00 TO STA. 1071+72 –L– LT

NAD 83/NSRS 2007

CREST
1067+71.79
+0.4815% -0.6396%

ROBERT GLENN COOKE, JR.
DB 554 PG 639

EDITH E. TAYLOR, ET AL
DB 754 PG 846

WEYERHAEUSER
DB 772 PG 344

WILLIAM D. BURDEN III, ET AL
DB 431 PG 257

1060 1065 1070

N 23°55'27" W 142.52'
N 23°55'27" W 128.00'
N 78°00'00" E 207.81'
N 38° 19' 38.8" E

Sta.=1058+88 –L– LT
Q10= 2.6 cfs
V10= 2.8 fps
d10= 0.5'
s= 3.3%
n= 0.035
Liner= CL B RIP RAP

DA=1.02 acre
Tc=10 min
I10=6.1 in/hr
c=0.41
Q10=2.6 cfs

Sta.=1065+50 –L– LT
Q= 1.0 cfs
V= 0.9 fps
d= 0.5'
s= 0.4%
n= 0.035
Liner= NA

DA=0.38 acre
Tc=10 min
I10=6.1 in/hr
c=0.41
Q10=1.0 cfs

Sta.= 1071+72–L– LT
Q= 2.1 cfs
V= 1.7 fps
d= 0.6'
s= 0.9%
n= 0.035
Liner= NA

DA=0.86acre
Tc=10 min
I10=6.1 in/hr
c=0.41
Q10=2.1cfs

DA=0.42 AC

SPECIAL LATERAL DITCH SEE DETAIL A
CL B RIP-RAP EST 1 TONS EST 5 SY GT
STANDARD 'V' DITCH SEE DETAIL F
SPECIAL LATERAL DITCH SEE DETAIL A
STANDARD 'V' DITCH SEE DETAIL F
SPECIAL LATERAL DITCH SEE DETAIL A
CL B RIP-RAP EST 12 TONS EST 57 SY GT

1002 1004 1003 1001 1010 1011

EIP
60" WW
RW MON
EXISTING R/W
-EL- 109+99.99 180.50 (RT.)
-EL- 109+99.66 219.49 (RT.)
-EL- 109+99.89 219.69 (RT.)
WOODS
BL-85
2GI
FS
15"
025
12' 12'
4%
4%
NC 11 32' PAVED ROADWAY
NC HWY 11 – 32' BST
PROPOSED MEDIAN CABLE GUIDERAIL
T FO
W
F
C
WLB
TBM-1

HIGH POINT STA.1067+71.79

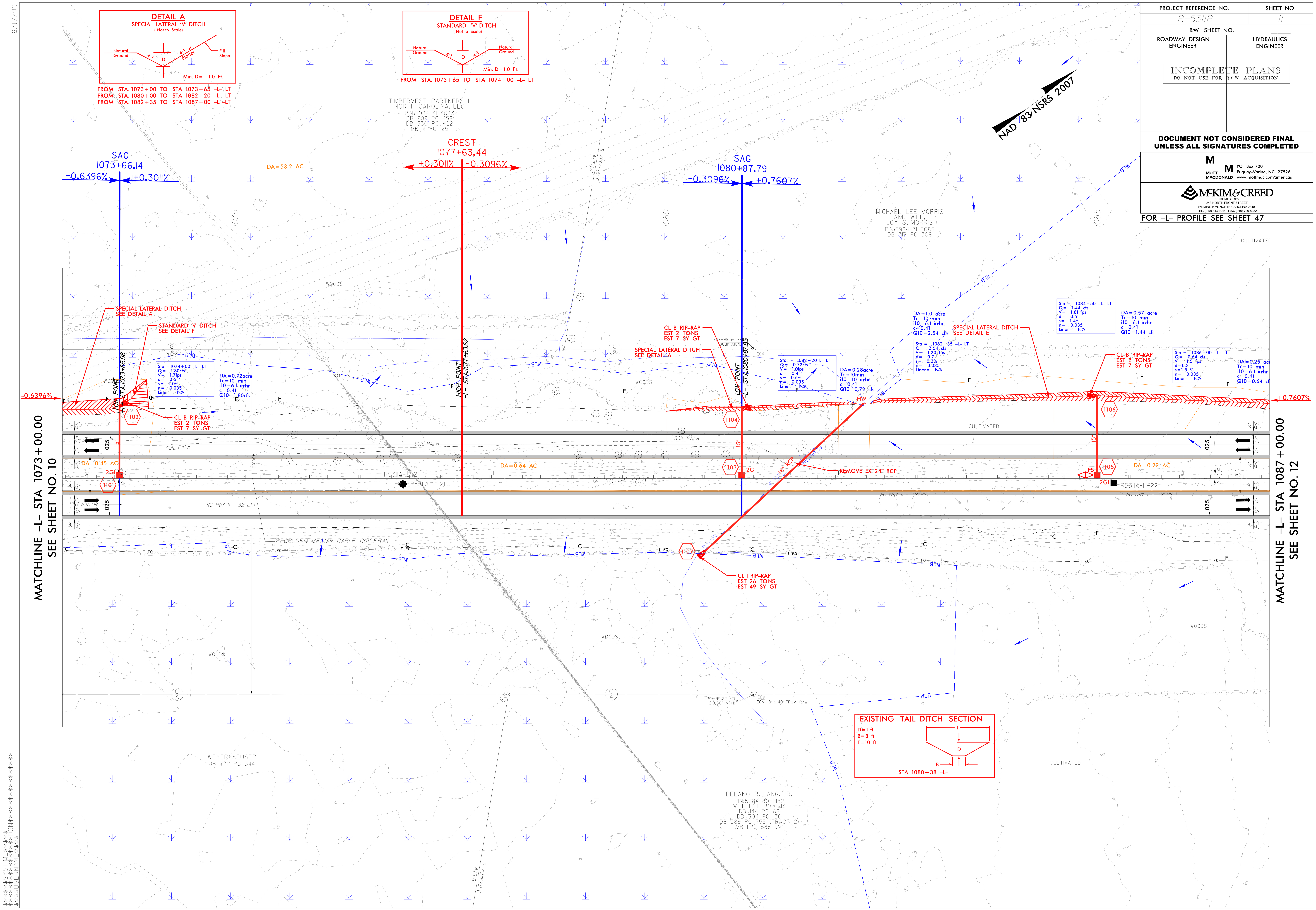
+0.4815%

-0.6396%

MATCHLINE –L– STA 1059+00.00
SEE SHEET NO. 9

MATCHLINE –L– STA 1073+00.00
SEE SHEET NO. 11

$$$$SYSTIME$$$$
$$$$USERNAME$$$$ $$$$DGN$$$$


PROJECT REFERENCE NO. R-5311B
SHEET NO. 11
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
MOTT MACDONALD
PO Box 700 Fuquay-Varina, NC 27526 www.mottmac.com/americas
McKIM&CREED
NC LICENSE #F-1222
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL. (910) 343-1048 FAX. (910) 790-8282
FOR -L- PROFILE SEE SHEET 47
NAD 83/NSRS 2007
DETAIL A
SPECIAL LATERAL 'V' DITCH
(Not to Scale)
Natural Ground
4:1
D
4:1 or Flatter
Fill Slope
Min. D= 1.0 Ft.
FROM STA. 1073+00 TO STA. 1073+65 -L- LT
FROM STA. 1080+00 TO STA. 1082+20 -L- LT
FROM STA. 1082+35 TO STA. 1087+00 -L -LT
DETAIL F
STANDARD 'V' DITCH
(Not to Scale)
Natural Ground
Min. D=1.0 Ft.
FROM STA. 1073+65 TO STA. 1074+00 -L- LT
TIMBERVEST PARTNERS II
NORTH CAROLINA, LLC
PIN:5984-41-4043
DB 688 PG 459
DB 330 PG 422
MB 4 PG 125
SAG
1073+66.14
-0.6396%
+0.3011%
CREST
1077+63.44
+0.3011%
-0.3096%
SAG
1080+87.79
-0.3096%
+0.7607%
DA=53.2 AC
MICHAEL LEE MORRIS
AND WIFE,
JOY S. MORRIS
PIN:5984-71-3085
DB 718 PG 309
SPECIAL LATERAL DITCH
SEE DETAIL A
STANDARD V DITCH
SEE DETAIL F
Sta.=1074+00 -L- LT
Q= 1.80cfs
V= 1.7fps
d= 0.5
s= 1.0%
n= 0.035
Liner= N/A
DA=0.72acre
Tc=10 min
i10=6.1 in/hr
c=0.41
Q10=1.80cfs
LOW POINT -L- STA.1073+65.98
CL B RIP-RAP
EST 2 TONS
EST 7 SY GT
HIGH POINT -L- STA.1077+63.62
CL B RIP-RAP
EST 2 TONS
EST 7 SY GT
SPECIAL LATERAL DITCH
SEE DETAIL A
LOW POINT -L- STA.1080+87.95
Sta.= 1082+20-L- LT
Q= 0.72cfs
V= 1.0fps
d= 0.4
s= 0.5%
n= 0.035
Liner= N/A
DA=0.28acre
Tc=10min
i10=10 in/hr
c=0.41
Q10=0.72 cfs
DA=1.0 acre
Tc=10 min
i10=6.1 in/hr
c=0.41
Q10=2.54 cfs
Sta.= 1082+35 -L- LT
Q= 2.54 cfs
V= 1.20 fps
d= 0.7'
s= 0.3%
n= 0.035
Liner= N/A
SPECIAL LATERAL DITCH
SEE DETAIL E
Sta.= 1084+50 -L- LT
Q= 1.44 cfs
V= 1.81 fps
d= 0.5'
s= 1.4%
n= 0.035
Liner= N/A
DA=0.57 acre
Tc=10 min
i10=6.1 in/hr
c=0.41
Q10=1.44 cfs
CL B RIP-RAP
EST 2 TONS
EST 7 SY GT
Sta.= 1086+00 -L- LT
Q= 0.64 cfs
V= 1.5 fps
d=0.3'
s=1.5 %
n= 0.035
Liner= N/A
DA=0.25 acre
Tc=10 min
i10=6.1 in/hr
c=0.41
Q10=0.64 cfs
+0.7607%
-0.6396%
1101
1102
1103
1104
1105
1106
1107
2GI
FS
HW
15"
48" RCP
24" RCP
REMOVE EX 24" RCP
DA=0.45 AC
DA=0.64 AC
DA=0.22 AC
R5311A-L-21
R5311A-L-22
N 38°19'38.8" E
NC HWY 11 - 32' BST
TO WINTON
SOIL PATH
WOODS
CULTIVATED
PROPOSED MEDIAN CABLE GUIDERAIL
CL I RIP-RAP
EST 26 TONS
EST 49 SY GT
INV.=50.11
INV.=50.39
299+99.56 -EL-
299+99.62 -EL-
219.60' (MON)
ECM
ECM IS 0.40' FROM R/W
S 41°54'23" E
467.78'
S 42°11'23" E
476.60'
1075
1080
1085
WEYERHAEUSER
DB 772 PG 344
DELANO R. LANG, JR.
PIN:5984-80-2182
WILL FILE 89-E-13
DB 144 PG 68
DB 304 PG 150
DB 389 PG 755 (TRACT 2)
MB 1PG 588 1/2
EXISTING TAIL DITCH SECTION
D=1 ft.
B=8 ft.
T=10 ft.
STA. 1080+38 -L-
MATCHLINE -L- STA 1073+00.00
SEE SHEET NO. 10
MATCHLINE -L- STA 1087+00.00
SEE SHEET NO. 12
8/17/99

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-5311B	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

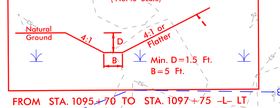
MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

MCKIM & CREED
NC LICENSE #1230
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL. (910) 343-1548 FAX (910) 7964282

FOR –L– PROFILE SEE SHEETS 47 & 48
FOR –Y1– PROFILE SEE SHEET 72

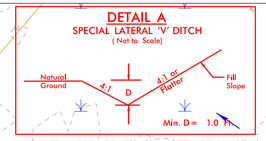
NAD 83/NSRS 2007

DETAIL J
SPECIAL LATERAL BASE DITCH
(Not to Scale)



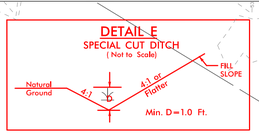
FROM STA. 1095+70 TO STA. 1097+75 –L– LT
FROM STA. 1097+75 TO STA. 1097+75 –L– LT

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



FROM STA. 1087+00 TO STA. 1087+55 –L– LT
FROM STA. 1091+05 TO STA. 1093+50 –L–RT
FROM STA. 1087+55 TO STA. 1093+40 –L– LT

DETAIL E
SPECIAL CUT DITCH
(Not to Scale)



FROM STA. 1097+75 TO STA. 1101+00 –L –LT

MATCHLINE –L– STA 1087+00.00
SEE SHEET NO. 11

MATCHLINE –L– STA 1101+00.00
SEE SHEET NO. 13

CREST
1087+55.22
+0.7607% -0.3000%

SAG
1099+49.96
-0.3000% +0.3011%

HIGH POINT
–L– STA 1087+55.15

EXISTING PROJECT TO BE COMPLETED BY OTHERS. (R-5311A)

TIMBERVEST PARTNERS II
NORTH CAROLINA, LLC

DELANO R. LANG, JR.
PIN:5984-81-2737
DB 153 PG 517
WILL FILE 89-E-13
MB 1PG 588 1/2

MICHAEL LEE MORRIS
AND WIFE,
JOY S. MORRIS
PIN:5984-71-9444
DB 718 PG 312

DELANO R. LANG, JR.
PIN:5984-80-2182
WILL FILE 89-E-13
DB 144 PG 68
DB 304 PG 150
DB 389 PG 755 (TRACT 2)
MB 1PG 588 1/2

DELANO R. LANG, JR.
PIN:5984-80-2182
DB 389 PG 755222
WILL FILE 89-E-13
MB 1PG 588 1/2

CULTIVATED
WOODS
PROP. 47" WW FENCE
TIE TO EXISTING C/A FENCE
SR 1130 WOLFPEN GROVE CHURCH ROAD
SR 1130 WOLFPEN GROVE CHURCH ROAD WIDTH 18'
SINGLE FACED CONC. BARRIER (STD. 862.01)
NC HWY II – 32' BST
PROPOSED MEDIAN CABLE GUIDERAIL
REMOVE EX 24" RCP
COLLAR AND EXTEND
REMOVE EX 24" RCP
GRADE TO DRAIN
USE 4:1 SECONDARY GRID AT SLOPE TRANSITIONS FROM 2:1 TO 2.75:1 AT BRIDGE. SEE PSH 2G-1,2G-2 AND 3G

SPECIAL LATERAL DITCH
SEE DETAIL A

SPECIAL LATERAL BASE DITCH
SEE DETAIL J

STANDARD BASE DITCH
SEE DETAIL J

SPECIAL CUT DITCH
SEE DETAIL E

CL B RIP-RAP
EST 5 TONS
EST 14 SY GT

TOE PROTECTION
CLASS B RIP RAP
SEE DETAIL Q

CL B RIP-RAP
EST 7 TONS
EST 22 SY GT

TB 2GI
15" RCP
45° W/2 ELBOWS

ATTENUATOR TYPE TL-3
TYPE B-77

Sta.=1091+10 –L– LT
Q= 1.6 cfs
V= 1.72 fps
d= 0.5'
s= 1.14%
n= 0.035
Liner= NA

DA=0.63 acre
Tc=10 min
i10=6.1 in/hr
c=0.41
Q10=1.6 cfs

Sta.= 1097+75–L– LT
Q= 22 cfs
V= 1.30 fps
d= 1.5'
s= 0.098%
n= 0.035
Liner= NA

DA=8.28acre
Tc= min
i10= in/hr
c=0.41
Q10=22cfs

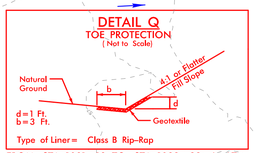
Sta.=1091+05 –L– RT
Q= 1.20 cfs
V= 0.77 fps
d= 0.6'
s= 0.16%
n= 0.035
Liner= NA

DA=0.48 acre
Tc=10 min
i10=6.1 in/hr
c=0.41
Q10=1.20 cfs

DA=0.63 AC
DA=0.28 AC
DA=0.64 AC
DA=5.9 AC

–L– POT Sta.1095+14.45 =
–Y1– POT Sta.25+12.22

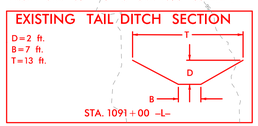
DETAIL Q
TOE PROTECTION
(Not to Scale)



Type of Liner= Class B Rip-Rap

FROM STA. 1091+18 TO STA. 1093+83 –L– LT

EXISTING TAIL DITCH SECTION



STA. 1091+00 –L–

$$$$USERNAME$$$$
$$$$SYSTIME$$$$
$$$$DGNS$$$$

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-5311B	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

McKIM & CREED
NC LICENSE #P-1222
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL: (910) 343-1548 FAX: (910) 7954262

FOR -L- PROFILE SEE SHEET 48

DETAIL E
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground, 4:1, D, 4:1 or Flatter, FILL SLOPE
Min. D = 1.0 Ft.
FROM STA. 1101+00 TO STA. 1101+50 -L- LT

DETAIL A
SPECIAL LATERAL 'V' DITCH
(Not to Scale)
Natural Ground, 4:1, D, 4:1 or Flatter, Fill Slope
Min. D = 1.0 Ft.
FROM STA. 1101+50 TO STA. 1103+50 -L- LT
FROM STA. 1113+00 TO STA. 1115+00 -L- LT

DETAIL F
STANDARD 'V' DITCH
(Not to Scale)
Natural Ground, 4:1, D, 4:1, Natural Ground
Min. D = 1.0 Ft.
FROM STA. 1103+50 TO STA. 1103+99 -L- LT

DETAIL U
SPECIAL LATERAL 'V' DITCH
(Not to Scale)
Natural Ground, 4:1, d, D, 4:1 or Flatter, Fill Slope, Geotextile
Min. D = 1 Ft.
Max. d = 1 Ft.
Type of Liner = CLASS B Rip-Rap
FROM STA. 1112+55 TO STA. 1113+00 -L- LT

NAD 83/NSRS 2007

TIMBERVEST PARTNERS II
NORTH CAROLINA, LLC
PIN:5984-83-2802
DB 688 PG 459
DB 332 PG 148

N 69°19'43" E
600.90'

TIMBERVEST PARTNERS II
NORTH CAROLINA, LLC
PIN:5984-72-4841
DB 688 PG 459
MB 4 PG 125

RACHAEL MODLIN
PIN:5994-21-0506
DB 400 PG 599

DELANO R. LANG, JR.

S 21°16'15" W
1005.15'

N 21°16'15" E
1005.15'

S 25°00'00" W
325.00'

N 25°00'00" E
325.00'

CREST
1110+83.08
+0.3011% -0.3004%

1110

1105

1115

RUINS

Sta. = 1103+99-L- LT
Q = 1.05 cfs
V = 1.6 fps
d = 0.4'
s = 1.34%
n = 0.035
Liner = NA

DA = 0.42acre
Tc = 10min
i10 = 6.1in/hr
c = 0.41
Q10 = 1.05 cfs

Sta. = 1112+55 -L- LT
Q = 2.0 cfs
V = 4.4 fps
d = 0.3'
s = 12.3%
n = 0.035
Liner = CLASS B RIP RAP

DA = 0.80acre
Tc = 10min
i10 = 6.1in/hr
c = 0.41
Q10 = 2.0 cfs

Sta. = 1113+00 -L- LT
Q = 1.7 cfs
V = 1.1 fps
d = 0.6'
s = 0.3%
n = 0.035
Liner = NA

DA = 0.70acre
Tc = 10min
i10 = 6.1in/hr
c = 0.41
Q10 = 1.7 cfs

SPECIAL LATERAL DITCH
SEE DETAIL A

STANDARD V DITCH
SEE DETAIL F

CL B RIP-RAP
EST 2 TONS
EST 7 SY GT

TAIL DITCH
SEE DETAIL F

CL B RIP RAP PAD
EST. 5 TONS
EST. 14 SY GEOTEXTILE

TIE TO EXISTING DITCH

SPECIAL LATERAL DITCH
SEE DETAIL U

CL B RIP-RAP
EST 2 TONS
EST 7 SY GT

SPECIAL LATERAL DITCH
SEE DETAIL A

1302 1303 1304 1305 1306 1307 1308 1309

36" RCP
EQ. PIPE

30" RCP

15"

2GI

FS

WLB

F

T FO

B TM

WOODS

EXISTING R/W

HIGH POINT
-L- STA. 1110+82.62

ECM 330+54.08 -EL- 220.00'

OVERLAY EXISTING ROAD
-EL- STA 310+00.00 TO 355+00.00

-L- PC Sta. 1110+70.96

-EL- TS Sta. 330+54.08

-EL- SC Sta. 332+54.08

TBM-3

R5311A-L-24

NC HWY 11 - 32' BST

PROPOSED MEDIAN CABLE GUIDERAIL
R5311A-L-25

DA = 0.33 AC

DA = 0.28 AC

N 38°18'11" E

N 38°19'38.8" E

DELANO R. LANG, JR.
N 21°30' W
327.08'
1109.5
253.62'

RACHAEL MODLIN
PIN:5994-21-0506
DB 400 PG 599

*BEGIN SECTION 2 REVIEW REQUEST

-L-
PI Sta 1118+88.14
Δ = 6° 27' 04.7" (RT)
D = 0° 23' 42.5"
L = 1,632.65'
T = 817.19'
R = 14,500.00'
SE = NC

MATCHLINE -L- STA 1101+00.00
SEE SHEET NO. 12

MATCHLINE -L- STA 1115+00.00
SEE SHEET NO. 14

$$$$USERNAME$$$$
$$$$SYSTIME$$$$
$$$$DGN$$$$

R5311B_hyd_psh13.dgn 2/25/2019 11:26:20 AM

PROJECT REFERENCE NO.	SHEET NO.
R-5311B	14

R/W SHEET NO. ____

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

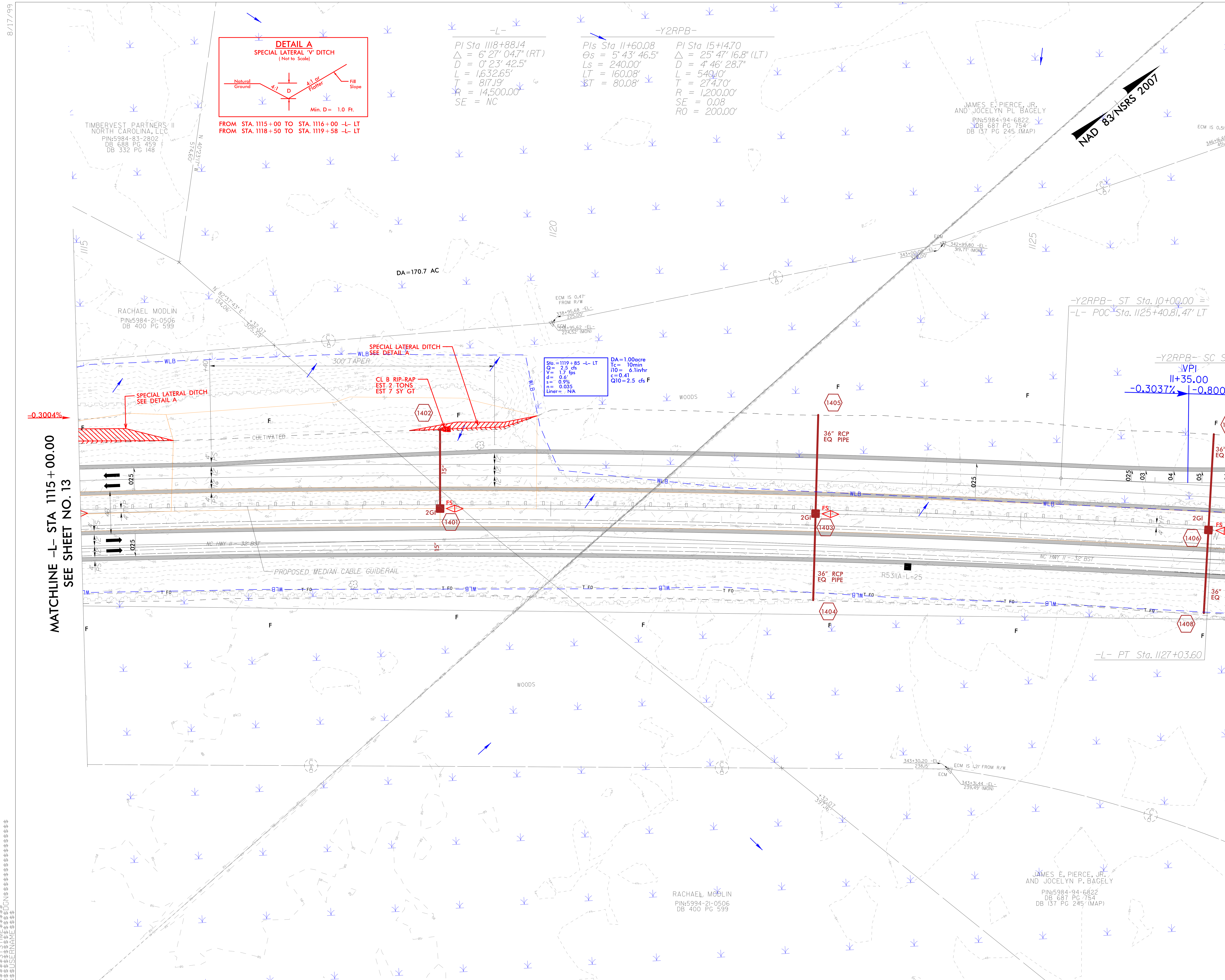
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

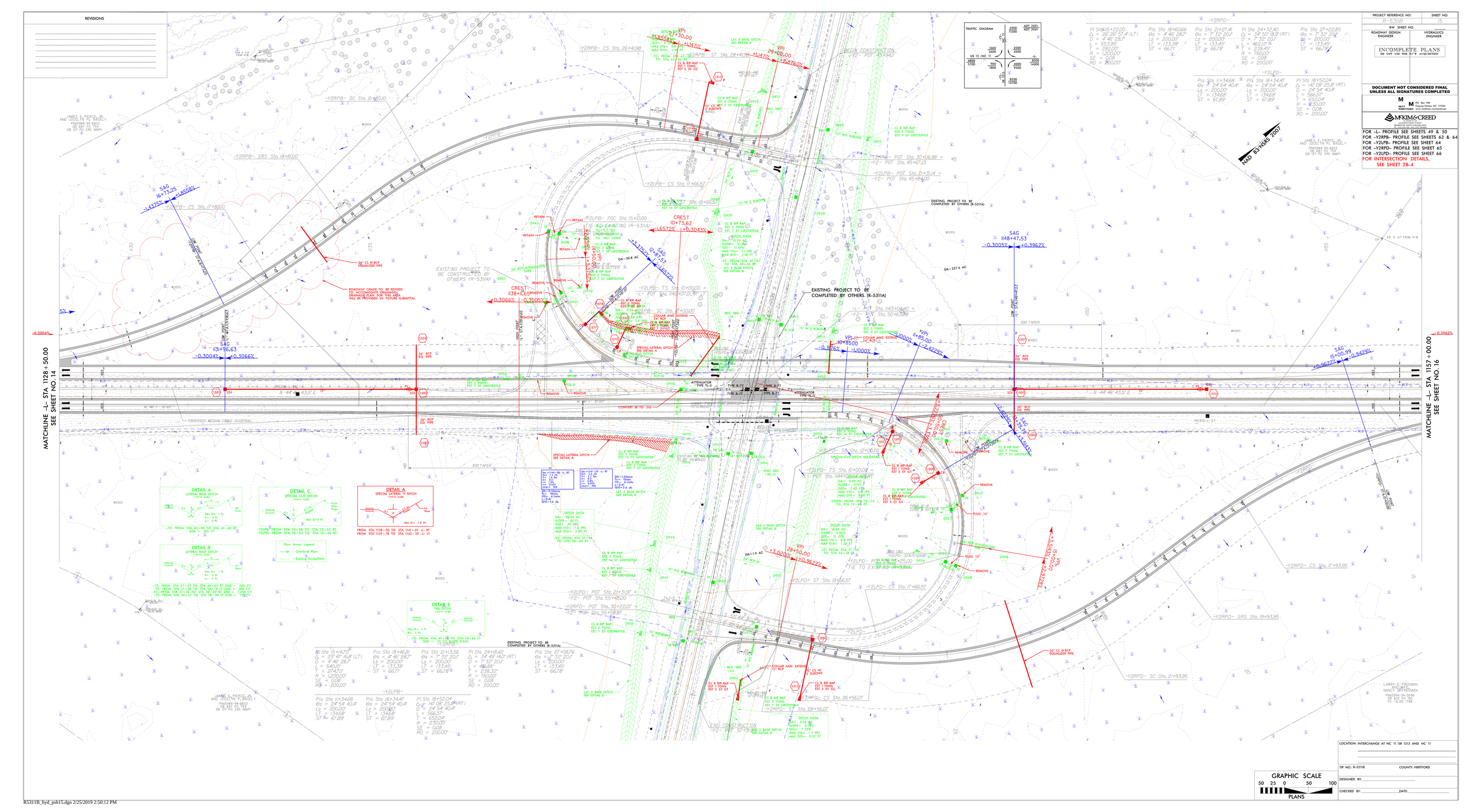
MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

McKIM & CREED
NC LICENSE #F-1222
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL. (910) 343-1048 FAX. (910) 790-8282

FOR -L- PROFILE SEE SHEETS 48 & 49
FOR -Y2RPB- PROFILE SEE SHEET 63



R5311B_hyd_psh14.dgn 2/25/2019 12:27:28 PM



R5311B_hyd_psh15.dgn 2/25/2019 2:50:12 PM

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-5311B	16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

McKIM & CREED
NC LICENSE #P-1222
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL: (910) 343-1048 FAX: (910) 790-8282

FOR –L– PROFILE SEE SHEET 50
FOR –Y2RPD– PROFILE SEE SHEET 65

MATCHLINE –L– STA 1157+00.00
SEE SHEET NO. 15

MATCHLINE –L– STA 1171+00.00
SEE SHEET NO. 17

NAD 83/NSRS 2007

CREST
1167+02.45
+0.3962% -0.3412%

VPI
11+50.00
-0.9429% -0.4133%

+0.3962%

-0.3412%

TOMMY V. CASTELOW
AND WIFE,
MELISSA A. CASTELOW
PIN:5994-27-7837
DB 719 PG 94
PC I SLIDE 178E

CL B RIP-RAP
EST 1 TONS
EST 5 SY GT

36" RCP
EQ PIPE

WOODS

EXISTING R/W

HIGH POINT
–L– STA 1167+02.45

TBM–D

N 44°46'43.5" E

R5311A-L-28

R5311A-L-29

PROPOSED MEDIAN CABLE GUIDERAIL

AT&T MILITARY BASE INTERCONNECT FIBER OPTIC 2 CABLES WITH 4 EMPTY DUCTS

SHOULDER CUT ROAD 32' BST

30' TYP.

300' TAPER

–Y2RPD– SC Sta. 12+40.00

–Y2RPD– ST Sta. 10+00.00 =
–L– POT Sta. 1160+83.49, 47' RT

–Y2RPD–

PIs Sta 11+60.08
Θs = 5° 43' 46.5"
Ls = 240.00'
LT = 160.08'
ST = 80.08'

PI Sta 15+22.00
Δ = 26° 26' 57.4" (LT)
D = 4° 46' 28.7"
L = 553.95'
T = 282.00'
R = 1,200.00'
SE = 0.08
RO = 240.00'

EIP @ EIP IS 2.60' FROM R/W

185+08.02 -EL-
247.77' (MON)

185+08.09 -EL-
247.67'

186+99.75 -EL-
240.03' (MON)

187+02.51 -EL-
240.98'

TOMMY V. CASTELOW
AND WIFE,
MELISSA A. CASTELOW
PIN:5994-27-7837
DB 719 PG 94
PC I SLIDE 178E

SYSTIME $$$$
DGN $$$$
ENAME $$$$

R5311B_hyd_psh16.dgn 2/25/2019 11:32:41 AM

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-5311B	17
RW SHEET NO.	

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

MCKIM & CREED
NC LICENSE #P-0222
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL: (910) 343-1548 FAX: (910) 790-8282

FOR –L– PROFILE SEE SHEETS 50 & 51
FOR –Y5– PROFILE SEE SHEETS 66 & 67

NAD 83/NSRS 2007

–Y5–
PI Sta 27+35.75
△ = 92° 50' 56.3" (RT)
D = 5° 58' 05.9'
L = 1,555.76'
T = 1,008.96'
R = 960.00'
SE = 0.08
RO = 208'
TR = 52'

–L–
PI Sta 1191+79.73
△ = 8° 57' 09.8" (LT)
D = 0° 23' 42.5'
L = 2,265.69'
T = 1,135.15'
R = 14,500.00'
SE = NC

EXISTING DITCH SECTION
D=0.8 ft.
B=0 ft.
T=7 ft.
STA. 1173+50 –L– LT
STA. 1174+50 –L– LT

EXISTING HEAD DITCH SECTION
D=1 ft.
B=8 ft.
T=13 ft.
STA. 1174+00 –L– LT

EXISTING TAIL DITCH SECTION
D=2 ft.
B=10 ft.
T=13 ft.
STA. 1173+25 –L– RT

DETAIL A
SPECIAL LATERAL 'V' DITCH
(Not to Scale)
Natural Ground, 4:1, D, 4:1 or Flatter, Fill Slope
Min. D= 1.0 Ft.
FROM STA. 1173+35 TO STA. 1179+50 –L– RT
FROM STA. 1182+50 TO STA. 1185+00 –L– LT

DETAIL R
SPECIAL LATERAL BASE DITCH
(Not to Scale)
Natural Ground, 4:1, D, 4:1 or Flatter, Fill Slope, B
Min. D=1.5 Ft.
B=3 Ft.
FROM STA. 1174+35 TO STA. 1180+00 –L– LT

DETAIL Q
TOE PROTECTION
(Not to Scale)
Natural Ground, 4:1 or Flatter Fill Slope, b, d, Geotextile
d=1 Ft.
b=3 Ft.
Type of Liner= Class B Rip-Rap
FROM STA. 1172+86 TO STA. 1174+22 –L– LT
FROM STA. 1182+00 TO STA. 1185+00 –L– RT
FROM STA. 22+50 TO STA. 25+50 –Y5– LT

DETAIL F
STANDARD 'V' DITCH
(Not to Scale)
Natural Ground, 4:1, D, 4:1, Natural Ground
Min. D=1.0 Ft.
FROM STA. 1181+00 TO STA. 1185+00 –L– RT
FROM STA. 25+00 TO STA. 25+50 –Y5– RT

DETAIL M
SPECIAL LATERAL 'V' DITCH
(Not to Scale)
Natural Ground, 3:1, D, 3:1 or Flatter, Fill Slope
Min. D= 1.0 Ft.
FROM STA. 20+00 TO STA. 21+50–Y5– LT
FROM STA. 20+00 TO STA. 21+50–Y5– RT
FROM STA. 22+00 TO STA. 25+00–Y5– RT

TOMMY V. CASTELOW
AND WIFE
MELISSA A. CASTELOW
PIN:5994-27-7837
DB 719 PG 94
PC 1SLIDE 178E

–Y5A– POT Sta. 10+00.00

–L– PC Sta. 1180+44.58

MATCHLINE –L– STA 1171+00.00
SEE SHEET NO. 16

MATCHLINE –L– STA 1185+00.00
SEE SHEET NO. 18

MATCHLINE –Y5– STA 20+00.00
SEE SHEET NO. 39

–0.3412%

Sta.= 1174+35 –L– LT
Q= 11.15 cfs
V= 1.2 fps
d= 1.23'
s= 0.11%
n= 0.035
Liner= NA
DA=4.5 acre
Tc=10 min
i10=6.1 in/hr
c=0.41
Q10=11.15 cfs

Sta.= 1183+00 –L– LT
Q= 0.82 cfs
V= 1.4 fps
d= 0.4'
s= 1.0%
n= 0.035
Liner= NA
DA=0.33 acre
Tc=10 min
i10=6.1 in/hr
c=0.41
Q10=0.82 cfs

Sta.= 1173+35 –L– RT
Q= 4.39 cfs
V= 1.3 fps
d= 0.9'
s= 0.3%
n= 0.035
Liner= NA
DA=1.78 acre
Tc=10 min
i10=6.1 in/hr
c=0.41
Q10=4.39 cfs

Sta.= 1176+00 –L– RT
Q= 2.89 cfs
V= 1.2 fps
d= 0.8'
s= 0.3%
n= 0.035
Liner= NA
DA=1.15 acre
Tc=10 min
i10=6.1 in/hr
c=0.41
Q10=2.89 cfs

SPECIAL LATERAL DITCH SEE DETAIL R
SPECIAL LATERAL DITCH SEE DETAIL A
SPECIAL LATERAL DITCH SEE DETAIL M
TOE PROTECTION CLASS B RIP RAP SEE DETAIL Q
COLLAR AND EXTEND 3 @ 36" RCP
BEGIN SBG STA 1173+50
END SBG STA 1175+50
GREU TL-3
CAT-I
REMOVE HEADWALL
RETAIN 3 @ 36" RCP
END SBG STA 1174+00
BEGIN SBG STA 1171+60
JURISDICTIONAL RIP-RAP
CL B RIP-RAP EST 2 TONS EST 7 SY GT
STANDARD 'V' DITCH SEE DETAIL F
CL B RIP-RAP EST 4 TONS EST 7 SY GT

PROPOSED MEDIAN CABLE GUIDERAIL
PROPOSED WOVEN WIRE
SR 1212,SHORT CUT ROAD 32' BST
R5311A-L-30
R5311A-L-31
CULTIVATED
WOODS
EXISTING R/W
WILLIAM JESSE BOONE III
DB 741PG 904
BYA-343
N 44° 46' 43.5" E
0.35128 FT

$SYSTIME$
DGN
$USERNAME$

R5311B_hyd_psh17.dgn 2/25/2019 2:54:45 PM

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-5311B	18
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

McKIM & CREED
NC LICENSE #P-1222
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL. (910) 343-1045 FAX. (910) 790-4282

FOR –L– PROFILE SEE SHEET 51
FOR –Y5– PROFILE SEE SHEETS 66 & 67

NAD 83/NSRS 2007

-Y5A- POT Sta. 14+00.00

END CONSTRUCTION
-Y5A- POT Sta. 13+30.02

BEGIN CONSTRUCTION
-Y5A- POT Sta. 10+50.61

-Y6A- POT Sta. 10+00.00

BEGIN CONSTRUCTION
-Y6A- POT Sta. 10+62.20

END CONSTRUCTION
-Y6A- POT Sta. 11+94.48

-Y6A- POT Sta. 12+50.00

-Y6A- POT Sta. 12+50.00

JULIET VINSON
DB 633 PG 388

TOMMY V. CASTELOW
DB 719 PG 94
PC 1 SL 178E

ISSKO

LEROY DOUGLAS, II
PIN:5994-48-5657
DB 627 PG 657

MARY A. POLLINGER
PIN:5994-59-0045
DB 678 PG 807
PC 1SLIDE 129A

ALLAN F. DUNN, SR.
AND WIFE,
REBECCA K. DUNN
PIN:5994-48-5372
DB 629 PG 163
PC 1SLIDE 129A

WILLIAM JESSE BOONE III
DB 741PG 904

ALLAN F. DUNN, SR.
AND WIFE,
REBECCA K. DUNN
PIN:5994-48-5372
DB 629 PG 163
PC 1SLIDE 129A

RETAIN

RETAIN

PROPOSED WOVEN WIRE FENCE

PROPOSED MEDIAN CABLE GUIDERAIL

PROPOSED WOVEN WIRE FENCE

GRADE TO DRAIN R/W

SPECIAL LATERAL DITCH
SEE DETAIL A

SPECIAL LATERAL DITCH
SEE DETAIL A

SPECIAL LATERAL DITCH
SEE DETAIL A

TOE PROTECTION
SEE DETAIL Q

TOE PROTECTION
SEE DETAIL Q

STANDARD 'V' DITCH
SEE DETAIL F

JURISDICTIONAL RIP-RAP

CL B RIP-RAP
EST 1 TONS
EST 5 SY GT

CREST
28+71.90
+0.3000%
-0.9482%

-0.3412%

-0.3412%

+0.3187%

Sta. = 1185+15 –L– LT
Q = 2.50 cfs
V = 1.2 fps
d = 0.7'
s = 0.2%
n = 0.035
Liner = N/A
DA = 1.00 acre
Tc = 10 min
I10 = 6.1 in/hr
c = 0.41
Q10 = 2.50 cfs

Sta. = 1189+55 –L– LT
Q = 1.89 cfs
V = 0.9 fps
d = 0.7'
s = 0.2%
n = 0.035
Liner = N/A
DA = 0.90 acre
Tc = 10 min
I10 = 6.1 in/hr
c = 0.41
Q10 = 1.89 cfs

Sta. = 1190+66 –L– RT
Q = 1.45 cfs
V = 1.3 fps
d = 0.5'
s = 0.63%
n = 0.035
Liner = N/A
DA = 0.58 acre
Tc = 10 min
I10 = 6.1 in/hr
c = 0.41
Q10 = 1.45 cfs

Sta. = 25+83 –Y5– RT
Q = 1.97 cfs
V = 0.7 fps
d = 0.9'
s = 0.1%
n = 0.035
Liner = N/A
DA = 0.79 acre
Tc = 10 min
I10 = 6.1 in/hr
c = 0.41
Q10 = 1.97 cfs

–Y5–
PI Sta 26+84.04
Δ = 89° 50' 09.5" (RT)
D = 5° 58' 05.9"
L = 1,505.22'
T = 957.26'
R = 960.00'
SE = 0.08
RO = 208'
TR = 52'

–L–
PI Sta 1191+79.73
Δ = 8° 57' 09.8" (LT)
D = 0° 23' 42.5"
L = 2,265.69'
T = 1,135.15'
R = 14,500.00'
SE = NC

DETAIL Q
TOE PROTECTION
(Not to Scale)

Natural Ground
b
d
4:1 or Flatter Fill Slope
Geotextile
d = 1 Ft.
b = 3 Ft.
Type of Liner = Class B Rip-Rap

FROM STA. 1185+00 TO STA. 1185+50 –L– RT
FROM STA. 25+50 TO STA. 26+00 –Y5– LT

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

Natural Ground
4:1
D
4:1 or Flatter
Fill Slope
Min. D = 1.0 Ft.

FROM STA. 1190+66 TO STA. 1193+00 –L– RT
FROM STA. 1189+55 TO STA. 1192+00 –L– LT
FROM STA. 1185+00 TO STA. 1185+15 –L– LT

DETAIL F
STANDARD 'V' DITCH
(Not to Scale)

Natural Ground
4:1
D
4:1
Natural Ground
Min. D = 1.0 Ft.

FROM STA. 1185+00 TO STA. 1186+10 –L– RT
FROM STA. 25+50 TO STA. 25+83 –Y5– RT

MATCHLINE –L– STA 1185+00.00
SEE SHEET NO. 17

MATCHLINE –L– STA 1198+50.00 SEE SHEET NO. 19

MATCHLINE –Y5– STA 30+00.00
SEE SHEET NO. 40

$$$$USERNAME$$$$ $$$$SYSTIME$$$$

R5311B_hyd_psh18.dgn 2/25/2019 2:32:07 PM

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-5311B	19

RW SHEET NO. ____

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

McKIM & CREED
NC LICENSE #P-1222
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL. (910) 343-1081 FAX. (910) 790-8282

FOR –L– PROFILE SEE SHEETS 51 & 52

NAD 83/NSRS 2007

MATCHLINE –L– STA 1198+50.00
SEE SHEET NO. 18

MATCHLINE –L– STA 1212+00.00
SEE SHEET NO. 20

SAG
13+63.42
+0.3187%

+0.3187%

LOW POINT
–L– STA 1198+63.42

1200 1205 1210

MARY A. POLLINGER
PIN:5994-53-0043
DB 678 PG 807
PC 1SLIDE 129A

MARK A. POLLINGER
DB 678 PG 807
PC 1SL 129A

–L– PT Sta. 1203+10.27

STEPHEN R. HALL
DB 342 PG 594

PROPOSED WOVEN WIRE FENCE

CLIFTON KEENE, HEIRS
WB F/369
MB 4 PG 63

BARBARA M. WILSON
DB 727 PG 597
MB 4 PG 63

JANICE M. AVANT
DB 380 PG 350

RUDOLPH WILLIAMS
DB 430 PG 255

N 89°29'59" W
1340.09'

S 90°00'00" E
1340.09'

EIR

WOODS

1905 1906 1901 1902 1903 1904 1907 1908 1909

66" RCP BURIED

15" RCP

36" RCP EQ PIPE

2GI

FS

BM-44

BL-45

BL-46

TBM-18

–L–
N 35° 49' 33.7" E

N 89°29'59" E
1340.09'

N 90°00'00" W
1586.00'

N 90°00'00" W
1586.01'

EXIST R/W

PROPOSED MEDIAN CABLE GUIDERAIL

JURISDICTIONAL RIP-RAP

CL B RIP-RAP
EST 1 TONS
EST 3 SY GT

PROPOSED WOVEN WIRE FENCE 48" WW W/ISBW

30x40.90 EYE
1426.85' (L)

–L–
PI Sta 1191+79.73
Δ = 8° 57' 09.8" (LT)
D = 0° 23' 42.5"
L = 2,265.69'
T = 1,135.15'
R = 14,500.00'
SE = NC

EXIST R/W

$$$$SYSTIME$$$$
$$$$USERNAME$$$$
R5311B_hyd_psh19.dgn 2/25/2019 2:42:30 PM

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-5311B	20
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

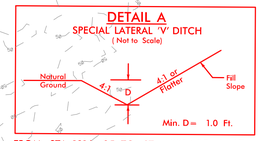
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

McKIM & CREED
NC LICENSE #P-1222
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL. (910) 343-1345 FAX. (910) 790-4282

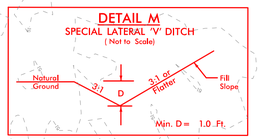
FOR –L– PROFILE SEE SHEET 52

DETAIL A
SPECIAL LATERAL "V" DITCH
(Not to Scale)



FROM STA. 1216+25 TO STA. 1221+35 –L– LT
FROM STA. 9+43 TO STA. 12+25 –Y10B– RT
FROM STA. 10+20 TO STA. 11+20 –Y10B –LT

DETAIL M
SPECIAL LATERAL "V" DITCH
(Not to Scale)



FROM STA. 10+00 TO STA. 11+70–Y10A– LT

NAD 83/NSRS 2007

MATCHLINE –L– STA 1212+00.00
SEE SHEET NO. 19

MATCHLINE –L– STA 1226+00.00
SEE SHEET NO. 21

HIGH POINT
–L– STA 1225+19.94

+0.3187%

-0.3005%

SONNY KANGALEE
DB 555 PG 616

EVELYN JORNER
DB 541 PG 285

JANICE M. AVANT
DB 380 PG 350

FRANK DUDLEY AVANT
DB 573 PG 292

SAMUEL KEENE, HEIRS

PATTIE REVELLE KEENE
DB 280 PG 467

STEPHEN R. HALL
DB 342 PG 594

WALLACE E. HALL

THEODORE MORINGS JR.
DB 644 PG 524
PC I SL 146A

BEGIN CONSTRUCTION
–Y10A– POT Sta. 10+12.39

END CONSTRUCTION
–Y10A– POT Sta. 11+33.80

–Y10A– POT Sta. 10+00.00

–Y10A– POT Sta. 12+00.00

END CONSTRUCTION
–Y10B– POT Sta. 11+35.99

BEGIN CONSTRUCTION
–Y10B– POT Sta. 10+12.39

–Y10B– POT Sta. 12+00.00

–Y10B– POT Sta. 10+00.00

–L–
N 35°49'33.7" E

N 41°50'03" E 200.20'
S 41°54'16" W 199.82'
N 41°48'39" W 100.04'
S 41°49'29" W 199.94'
S 41°54'58" E 199.83'
N 44°51'42" E 1010.00'
S 41°54'56" W 80.00'
N 41°54'56" E 80.00'
N 80°00'00" W 137.45'
N 81°08'31" W 205.78'
N 52°18'32" E 162.00'
N 37°35'32" E 582.73'
S 52°18'32" W 397.67'
N 48°02'40" E 162.80'
N 54°26'59" E 99.91'
N 51°49'22" E 220.00'
N 53°29'46" W 79.94'
N 35°47'52" W 123.52'
N 48°11'51" W 45.13'

+/- 3 GRAVES

PROPOSED WOVEN WIRE FENCE

SPECIAL LATERAL DITCH
SEE DETAIL A

SPECIAL LATERAL DITCH
SEE DETAIL M

DITCH DESIGNED BASED ON EXISTING ELEVATIONS. –Y10A– WILL NEED TO BE RAISED TO ACCOMMODATE DITCH.

DITCH DESIGNED BASED ON EXISTING ELEVATIONS. –Y10B– WILL NEED TO BE RAISED TO ACCOMMODATE LT DITCH.

GRADE TO DRAIN

REMOVE EX 15" RCP

CL B RIP-RAP
EST 1 TONS
EST 5 SY GT

CL B RIP-RAP
EST 2 TONS
EST 7 SY GT

PROPOSED MEDIAN CABLE GUIDERAIL

Sta. = 1221+35 –L– LT
Q= 3.56 cfs
V= 1.3 fps
d= 0.8'
s= 0.33%
n= 0.035
Liner= N/A
DA=1.67 acre
Tc=10 min
i10=6.1 in/hr
c=0.41
Q10=3.56 cfs

Sta. = 11+70 –Y10A– LT
Q= 1.05 cfs
V= 1.0 fps
d= 0.6'
s= 0.33%
n= 0.035
Liner= N/A
DA=0.42 acre
Tc=10 min
i10=6.1 in/hr
c=0.41
Q10=1.05 cfs

Sta. = 10+20 –Y10B– LT
Q= 1.28 cfs
V= 0.83 fps
d= 0.6'
s= 0.19%
n= 0.035
Liner= N/A
DA=0.60 acre
Tc=10 min
i10=6.1 in/hr
c=0.41
Q10=1.28 cfs

Sta. = 9+43 –Y10B– RT
Q= 2.31 cfs
V= 0.76 fps
d= 0.9'
s= 0.1%
n= 0.035
Liner= N/A
DA=1.08 acre
Tc=10 min
i10=6.1 in/hr
c=0.41
Q10=2.31 cfs

BL-47
FS
2001
2002
2003
2004
2GI
15"
48.6'
48.4'
48.3 EXIST
48.1'
47.7'
45°R
ISFD ABAND
WATER
WOODS
DEBRIS
GR
PROPOSED
WLB
F
PS
4' PS
12'
4' PAVED
025

\$\$\$\$USERNAME\$\$\$\$
\$\$\$\$SYSTIME\$\$\$\$
\$\$\$\$DGN\$\$\$\$

R5311B_hyd_psh20.dgn 2/25/2019 2:40:30 PM

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-5311B	21
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

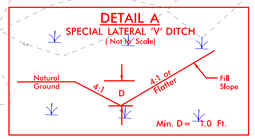
MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

McKIM & CREED
NC LICENSE #F-1222
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL: (910) 343-1081 FAX: (910) 790-8282

FOR –L– PROFILE SEE SHEETS 52 & 53

–L–
PI Sta 1243+92.79
Δ = 5° 47' 01.5" (LT)
D = 0° 15' 46.2"
L = 2,200.63'
T = 1,101.25'
R = 21,800.00'
SE = NC

DETAIL A
SPECIAL LATERAL "V" DITCH
(Not to Scale)



FROM STA. 1226+55 TO STA. 1231+70 –L– RT

NAD 83/NSRS 2007

MATCHLINE –L– STA 1226+00.00
SEE SHEET NO. 20

MATCHLINE –L– STA 1240+00.00
SEE SHEET NO. 22

–0.3005%

–L– PC Sta. 1232+91.55

LOANCARE
DB 759 PG 264
PC 1 SL 124A

NORFLEET V. HALL JR.
DB 708 PG 482

THEODORE MORINGS, JR.
DB 644 PG 584
PC 1 SL 146A

PROPOSED WOVEN WIRE FENCE

PROPOSED MEDIAN CABLE GUIDERAIL

SPECIAL LATERAL DITCH
SEE DETAIL A

CL B RIP-RAP
EST 1 TONS
EST 5 SY GT

CL I RIP-RAP
EST 26 TONS
EST 49 SY GT

CL B RIP-RAP
EST 1 TONS
EST 5 SY GT

BEGIN SBG
STA 1230+74

END SBG
STA 1233+01

BEGIN SBG
STA 1229+70

END SBG
STA 1231+93

GREU TL-3

CAT-1

54" RCP
BURIED 1'

36" RCP
EQ PIPE

HW

BL-49

BL-50

TBM-1B

N 39°49'33.7" E

N 63°35'09" W
234.59'

N 55°20'00" W
293.33'

N 57°40'21" E
477.17'

N 36°56'42" E
132.53'

N 38°12'22" E
176.57'

Sta. = 1231+70 -L- RT
Q = 8.3 cfs
V = 1.2 fps
d = 1.3'
s = 0.2%
n = 0.035
Liner = N/A

DA = 3.32 acre
Tc = 10 min
I10 = 6.1 in/hr
c = 0.41
Q10 = 8.3 cfs

WOODS
WOOD POLES
WLB
ETW
F
FS
2GI
8sl
025

2101 2102 2103 2104 2105 2106 2107 2108 2109 2110 2111

@@SYSTIME@@
@@DGN@@
@@USERNAME@@
R5311B_hyd_psh21.dgn 2/25/2019 12:32:25 PM

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-5311B	22
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

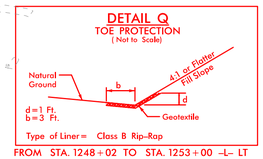
MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

McKIM & CREED
NC LICENSE #P-1322
240 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL: (910) 343-1345 FAX: (910) 790-8282

FOR –L– PROFILE SEE SHEET 53

–L–
PI Sta 1243+92.79
△ = 5°47' 01.6" (LT)
D = 0° 15' 46.2"
L = 2,200.63'
T = 1,101.25'
R = 21,800.00'
SE = NC

DETAIL Q
TOE PROTECTION
(Not to Scale)



Type of Liner = Class B Rip-Rap
FROM STA. 1248+02 TO STA. 1253+00 –L– LT

NAD 83/NSRS 2007

SAG
1247+10.49
-0.3005%
+0.3636%

1240
1245
1250

MATCHLINE –L– STA 1240+00.00
SEE SHEET NO. 21

MATCHLINE –L– STA 1253+00.00
SEE SHEET NO. 23

PROPOSED WOVEN WIRE FENCE
PROPOSED MEDIAN CABLE GUIDERAIL
PROPOSED WOVEN WIRE FENCE

NORFLEET V. HALL JR.
DB 708 PG 482
CULT

BYRUM'S FARM SERVICE CENTER INC
DB 576 PG 661
CULT

NORFLEET V. HALL, JR.
DB 708 PG 482
PB 4 PG 90

TOE PROTECTION
CLASS B RIP RAP
SEE DETAIL Q

CL B RIP-RAP
EST 1 TONS
EST 5 SY GT

CL B RIP-RAP
EST 1 TONS
EST 5 SY GT

36" RCP
EQ PIPE

36" RCP
EQ PIPE

2201
2202
2203
2204
2205
2206
2207

2GI-D
2GI
2GI

FS

BL -5I
BL -52
TBM -20

LOW POINT –L– STA 1247+10.49

S 54°11'55" E
228.00'

S 54°11'55" E
228.00'

WOODS
F
025
4"PS 12"

\$\$SYSTIME\$\$
\$\$USERNAME\$\$
\$\$DGNFILE\$\$

R5311B_hyd_psh22.dgn 2/25/2019 12:03:18 PM

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-5311B	23
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

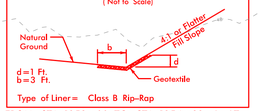
MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

McKIM & CREED
NC LICENSE #F-1222
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL. (910) 343-1548 FAX. (910) 790-8282

FOR –L– PROFILE SEE SHEETS 53 & 54

–L–
PI Sta 1243+92.79
Δ = 5° 47' 01.6" (LT)
D = 0° 15' 46.2"
L = 2,200.63'
T = 1,101.25'
R = 21,800.00'
SE = NC

DETAIL Q
TOE PROTECTION
(Not to Scale)



Type of Liner = Class B Rip-Rap
FROM STA. 1253+00 TO STA. 1254+32 –L– LT

NAD 83/NSRS 2007

CREST
1254+98.95
+0.3636% -0.3039%

–L– PT Sta. 1254+92.17

BYRUM'S FARM SERVICE CENTER INC
DB 576 PG 661

PROPOSED WOVEN WIRE FENCE

TOE PROTECTION CLASS B RIP RAP SEE DETAIL Q

+0.3636%

–0.3039%

HIGH POINT –L– STA 1254+98.95

WOODS

BL-53

BL-54

–L–
N 30° 02' 32" E

230
2G
FS
15"
2302
CL B RIP-RAP
EST 1 TONS
EST .5 SY GT

PROPOSED MEDIAN CABLE GUIDERAIL

*END SECTION 2 REVIEW REQUEST

MATCHLINE –L– STA 1253+00.00
SEE SHEET NO. 22

MATCHLINE –L– STA 1267+00.00
SEE SHEET NO. 24

$$$$USERNAME$$$$
$$$$SYSTIME$$$$
$$$$DGN$$$$

R5311B_hyd_psh23.dgn 2/25/2019 12:03:51 PM

PROJECT REFERENCE NO.	SHEET NO.
R-5311B	23

R/W SHEET NO.

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

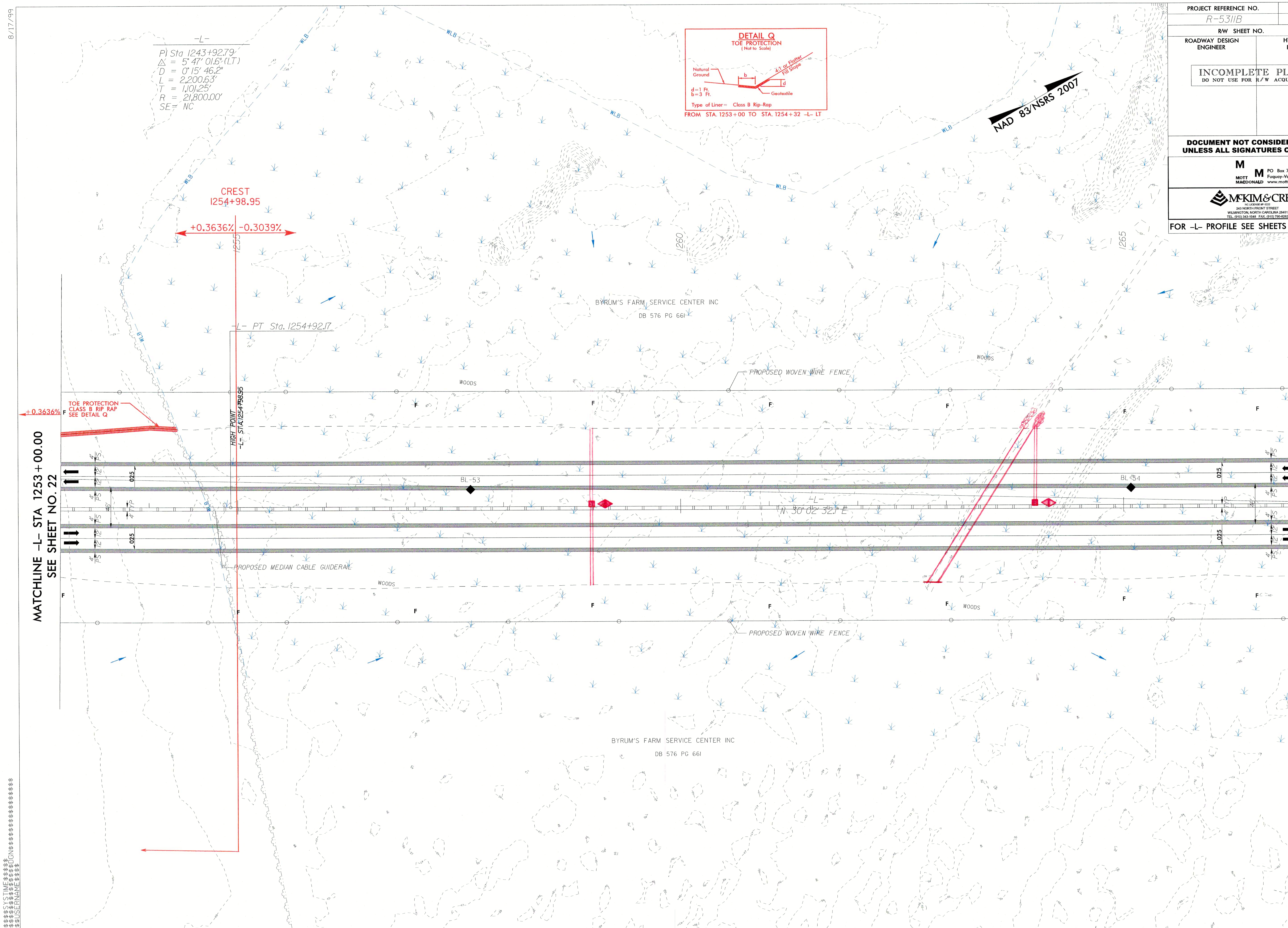
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

McKIM&CREED
NC LICENSE #F-1222
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL. (910) 343-1048 FAX. (910) 790-8282

FOR -L- PROFILE SEE SHEETS 53 & 54



$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

R5311B_hyd_psh23.dgn 2/25/2019 2:29:20 PM

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-5311B	24
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

McKIM & CREED
NC LICENSE #P-1125
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL: (910) 343-1648 FAX: (910) 790-8282

FOR -L- PROFILE SEE SHEETS 54 & 55

NAD 83/NSRS 2007

SAG
1273+00.40
-0.3039% +0.3015%

MATCHLINE -L- STA 1267+00.00
SEE SHEET NO. 23

MATCHLINE -L- STA 1281+00.00
SEE SHEET NO. 25

-0.3039%

+0.3015%

1270

1275

1280

BYRUM'S FARM SERVICE CENTER INC
DB 576 PG 661

WOODS

PROPOSED WOVEN WIRE FENCE

LOW POINT
-L- STA 1273+00.40

BL-55

TBM-Z

-L-
N 30° 02' 32" E

PROPOSED MEDIAN CABLE GUIDERAIL

S 76° 19' 03" W
204.10'

S 60° 57' 44" W
204.10'

N 08° 40' 44" E
489.00'

N 03° 56' 44" E
86.60'

N 76° 25' 46" E
269.00'

TRIEU MINH VO
DB 762 PG 166
PB 4 PG 171

E. R. EVANS & SONS, INC
DB 749 PG 917

F

025

$$$$SYSTIME$$$$
$$$$USERNAME$$$$

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-5311B	25
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

McKIM & CREED
NC LICENSE # 1313
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL. (910) 343-1048 FAX. (910) 790-8282

FOR –L– PROFILE SEE SHEET 55

–L–
PI Sta 1301+50.13
Δ = 10° 18' 17.1" (LT)
D = 0° 23' 42.5"
L_s = 2,607.85'
T = 1,307.45'
R = 14,500.00'
SE = NC

NAD 83/NSRS 2007

+0.3015%

MATCHLINE –L– STA 1281+00.00
SEE SHEET NO. 24

MATCHLINE –L– STA 1295+00.00
SEE SHEET NO. 26

1285 1290 1295

–L– PC Sta. 1288+42.68

N 30° 02' 32.1" E

PROPOSED WOVEN WIRE FENCE

PROPOSED MEDIAN CABLE GUIDERAIL

RUDY W. BERRY
DB 470 PG 784

DELORES HARRELL CRAWFORD
DB 340 PG 442

TRIEU MINH VO
DB 762 PG 166
PB 4 PG 171

DELORES HARRELL CRAWFORD
DB 340 PG 442
(MAP) DB 87 PG 635

MARTHA K. LEAMAN
DB 685 PG 649
(MAP) DB 87 PG 635

WILLIAM T. PORTER, ET AL
WB 86-E-179
(NO DEED FOUND)

WOODS

F

EIP

PBM 28

BL 57

$$$$USERNAME$$$$
$$$$SYSTIME$$$$

R5311B_hyd_psh25.dgn 2/25/2019 1:59:00 PM

8/17/99

-L-
PI Sta 1301+50.13
Δ = 10° 18' 17.1" (LT)
D = 0° 23' 42.5"
L = 2,607.85'
T = 1,307.45'
R = 14,500.00'
SE = NC

NAD 83/NSRS 2007

CREST
1300+30.24
+0.3015% -0.3000%

DELORES HARRELL CRAWFORD
DB 340 PG 442

MAYBELLE K. WEAVER HEIRS
WB 88E/158

MARTHA K. LEAMAN
DB 685 PG 649

WILLIAM PORTER, ET AL
WB 86-E-179
(NO DEED FOUND)

MAYBELLE K. WEAVER HEIRS
WB 88-E-158
(MAP) DB 87 PG 635
(NO DEED FOUND)

GENEVA JONES BOWE
DB 452 PG 797

WILLIAM O. PORTER

WLB

EXIST R/W

48" WW W/ISBW

PROPOSED WOVEN WIRE FENCE

TIE TO EXISTING FENCE

PROPOSED MEDIAN CABLE GUIDERAIL

CUTOVER

WOODS

FENCE DISTURBED

ECM

ECM (DISTURBED)

HIGH POINT
-L- STA 1300+30.24

BL-58

BL-59

BL-60

N 30°48'29" W
74.97'

N 27°36'48" E
214.42'

N 26°40'05" E
199.34'

N 26°40'21" E
566.96'

+0.3015%

-0.3000%

1295

1300

1305

MATCHLINE -L- STA 1295+00.00
SEE SHEET NO. 25

MATCHLINE -L- STA 1308+00.00
SEE SHEET NO. 27

PROJECT REFERENCE NO.	SHEET NO.
R-5311B	26
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

McKIM & CREED
NC LICENSE #1131
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL: (910) 343-1049 FAX: (910) 790-8282

FOR -L- PROFILE SEE SHEETS 55 & 56

$$$$$$SYSTIME$$$$$$
$$$$$$USERNAME$$$$$$DGN$$$$$$$$$$$$$$$$$$$$

8.17.99

PROJECT REFERENCE NO.	SHEET NO.
R-5311B	27
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MOTT MACDONALD — PO Box 700, Fuquay-Varina, NC 27526, www.mottmac.com/americas

McKIM & CREED — NC LICENSE #P-1022, 243 NORTH FRONT STREET, WILMINGTON, NORTH CAROLINA 28401, TEL. (910) 343-1345 FAX. (910) 790-4282

FOR -L- PROFILE SEE SHEET 56
FOR -Y11- PROFILE SEE SHEET 71

NAD 83/NSRS 2007

MATCHLINE -Y11- STA 19+00.00
SEE SHEET NO. 35

MATCHLINE -L- STA 1308+00.00
SEE SHEET NO. 26

MATCHLINE -L- STA 1322+00.00
SEE SHEET NO. 28

MATCHLINE -Y11- STA 30+00.00
SEE SHEET NO. 36

WALTER T. WHEELER
DB 394 PG 547

LINDA DALE WEAVER
DB 44/PG 411

CHARLES H. SAWYER, HEIRS
WILL FILE 1A/1676

BERNICE S. MARSH
DB 475 PG 296

-Y11- PT Sta. 22+45.90

-L- PT Sta. 1314+50.53

-L- POT Sta. 1315+68.50 =
-Y11- POT Sta. 25+26.12

-Y11- PC Sta. 28+95.40

-0.3000%

CREST
25+22.51
+3.65261%
-3.95021%

PROPOSED MEDIAN CABLE GUIDERAIL

SINGLE FACED CONC. BARRIER (STD.862.01)

ATTENUATOR TYPE TL-3

TYPE B-77

GRADE TO DRAIN

GREU TL-3

TYPE III

BL +60

BL +62

N 19° 44' 15.0" E

N 64° 44' 15.0" E

24" RCP

WOODS

W.L.B.

BM-23

PI Sta 17+88.68
Δ = 13° 31' 54.5" (RT)
D = 1° 28' 22.4"
L = 918.72'
T = 461.51'
R = 3,890.00'
SE = 0.04
RO = 110'
TR = 55'

PI Sta 30+91.06
Δ = 2° 39' 21.6" (LT)
D = 0° 40' 43.9"
L = 391.25'
T = 195.66'
R = 8,440.00'
SE = 0.02
RO = 55'
TR = 55'

BRIDGE PAVEMENT RELATIONSHIP SKETCH

BEGIN APPROACH SLAB
-Y11- POT Sta. 23+96 +/-

BEGIN BRIDGE
-Y11- POT Sta. 24+11 +/-

END BRIDGE
-Y11- POT Sta. 26+41 +/-

END APPROACH SLAB
-Y11- POT Sta. 26+56 +/-

-L- POT Sta. 1315+68.50 =
-Y11- POT Sta. 25+26

135° 00' 00"

SITE 2

STA

USER NAME = $USER
PLOT SCALE = $$SCALE
PLOT DATE = $$DATE

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-5311B	28
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

MCKIM & CREED
NC LICENSE # C-0205
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL. (910) 343-1568 FAX. (910) 790-8282

FOR -L- PROFILE SEE SHEETS 56 & 57

NAD 83/NSRS 2007

MATCHLINE -L- STA 1322+00.00
SEE SHEET NO. 27

MATCHLINE -L- STA 1336+00.00
SEE SHEET NO. 29

-0.3000%

MILLS FAMILY PROPERTIES, LLC
DB 675 PG 124
MB 4 PG 124

MILLS FAMILY PROPERTIES, LLC
DB 694 PG 357
PC 1 SL 78C

DAVID C. SAWYER
DB 631 PG 672
PC 1 SL 173F

ZACKIS PRIESTER
DB 69[illegible]
PC 1 SL [illegible]

WOODS

GRASS

CONC

PROPOSED MEDIAN CABLE GUIDERAIL

US 13 32' BST

N 19°44'15.0" E

N 85°16'46" E
232.32'

TBM-24

R5311-13

R5311-14

-3.9502'

35+0

VPI

WLB

EXIST R/W

48" WW W/ISBW

ECM

T FO

025

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-5311B	29
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

McKIM & CREED
NC LICENSE #P-1202
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL. (910) 343-1065 FAX. (910) 790-8282

FOR –L– PROFILE SEE SHEET 57

NAD 83/NSRS 2007

SAG
1338+50.00
-0.3000%
+0.3000%

CREST
1342+80.00
+0.3000%
-0.3000%

MILLS FAMILY PROPERTIES, LLC
DB 694 PG 357
PC I SL 78C

MILLS FAMILY PROPERTIES, LLC
DB 675 PG 272

WLB
EXIST R/W
ECM
WOODS
T FO
48" WW W/SBW
PROPOSED MEDIAN CABLE GUIDERAIL
N 19°44'15.0"E
BL-63
TBM-25
LOW POINT
HIGH POINT
–L– STA.1338+50.00
–L– STA.1342+80.00
-0.3000%

MATCHLINE –L– STA 1336+00.00
SEE SHEET NO. 28

MATCHLINE –L– STA 1350+00.00
SEE SHEET NO. 30

$$$$SYSTEM$$$$
$$$$DGN$$$$
$$$$USERNAME$$$$

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-5311B	30
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

McKIM & CREED
NC LICENSE #P-1000
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL. (910) 343-1068 FAX. (910) 790-8262

FOR –L– PROFILE SEE SHEETS 57 & 58

NAD 83/NSRS 2007

SAG
1353+20.00
-0.3000%
+0.3000%

CREST
1360+00.00
+0.3000%
-0.3000%

MILLS FAMILY PROPERTIES, LLC
DB 694 PG 357
PC 1 SL 78C

GREENETEGRITTY LAND INVESTMENT
DB 735 PG 132

ERIC CARLTON NICKENS
PC 1 SL 194C

WOODS

BENJAMIN GADSDEN

EXIST R/W

48" WW W/ISBW

ECM

LOW POINT
–L– STA.1353+20.00

HIGH POINT
–L– STA.1360+00.00

US 13 32' BST

N 19° 44' 15.0" E

PROPOSED MEDIAN CABLE GUIDERAIL

N 32°59'52" W
206.00'

N 82°40'26" W
152.47'

S 35°47'28" E
627.43'

S 84°43'58" E
237.71'

MATCHLINE –L– STA 1350+00.00
SEE SHEET NO. 29

MATCHLINE –L– STA 1364+00.00
SEE SHEET NO. 31

R5311B hyd psh31.dgn 2/25/2019 2:05:19 PM

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-5311B	32
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

McKIM & CREED
NC LICENSE #P-1322
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL. (910) 343-1545 FAX. (910) 790-8282

FOR –L– PROFILE SEE SHEET 58

NAD 83/NSRS 2007

CREST (NB)
1380+20.00

CREST (SB)
1382+00.00

SAG (NB)
1384+25.00

+0.3000% -0.3000%

-0.3000% +0.3000%

+0.3000%

.00

S 80°28'57" W
202.38'

0.06' EIP TO R/W

1.37' EIP TO R/W

N 18°20'30" W
165.72'

N 18°19'07" W
199.53'

S 52°04'10" W
98.50'

S 59°55'41" W
20.00'

0.27' EIP TO R/W

0.56' ECM TO R/W

CHAM PROPERTIES, LLC
DB 750 PG 660

CLYDE P. RUFFIN
DB 632 PG 746
PC I SL 116E

BARNHILL CONTRACTING COMPANY
DB 719 PG 872
PC I PG 179A

WOODS

WLB

GTM

EIP

ECM

F

G

T FO

1380

1390

END TIP PROJECT R-5311B
–L– POT STA. 1385+00.00

50' TAPER TO EXIST

EXIST

025

TOP=42.99'

TOP=43.74'

N 19°44'15.0" E

HIGH POINT
–L– STA. 1382+00.00

PROPOSED MEDIAN CABLE GUIDERAIL

MARGARET HALL
DB 651PG 352

DA=77.8 AC

MATCHLINE –L– STA 1378+00.00
SEE SHEET NO. 31

$$$$$$$XSTIME$$$$$$$
$$$$$$$USERNAME$$$$$$$

R5311B_hyd_psh32.dgn 2/25/2019 2:06:06 PM

PROJECT REFERENCE NO.	SHEET NO.
R-5311B	33
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

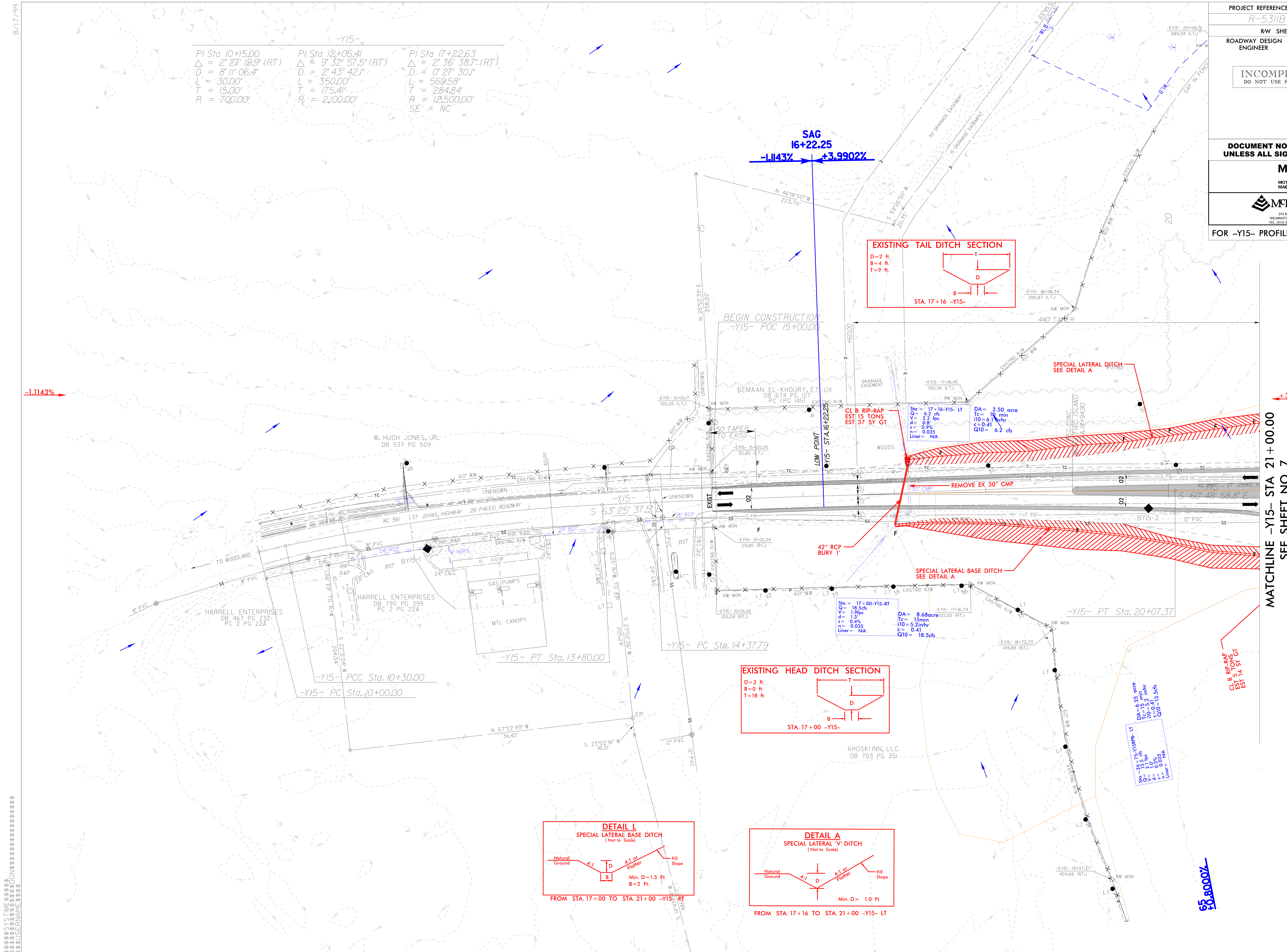
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

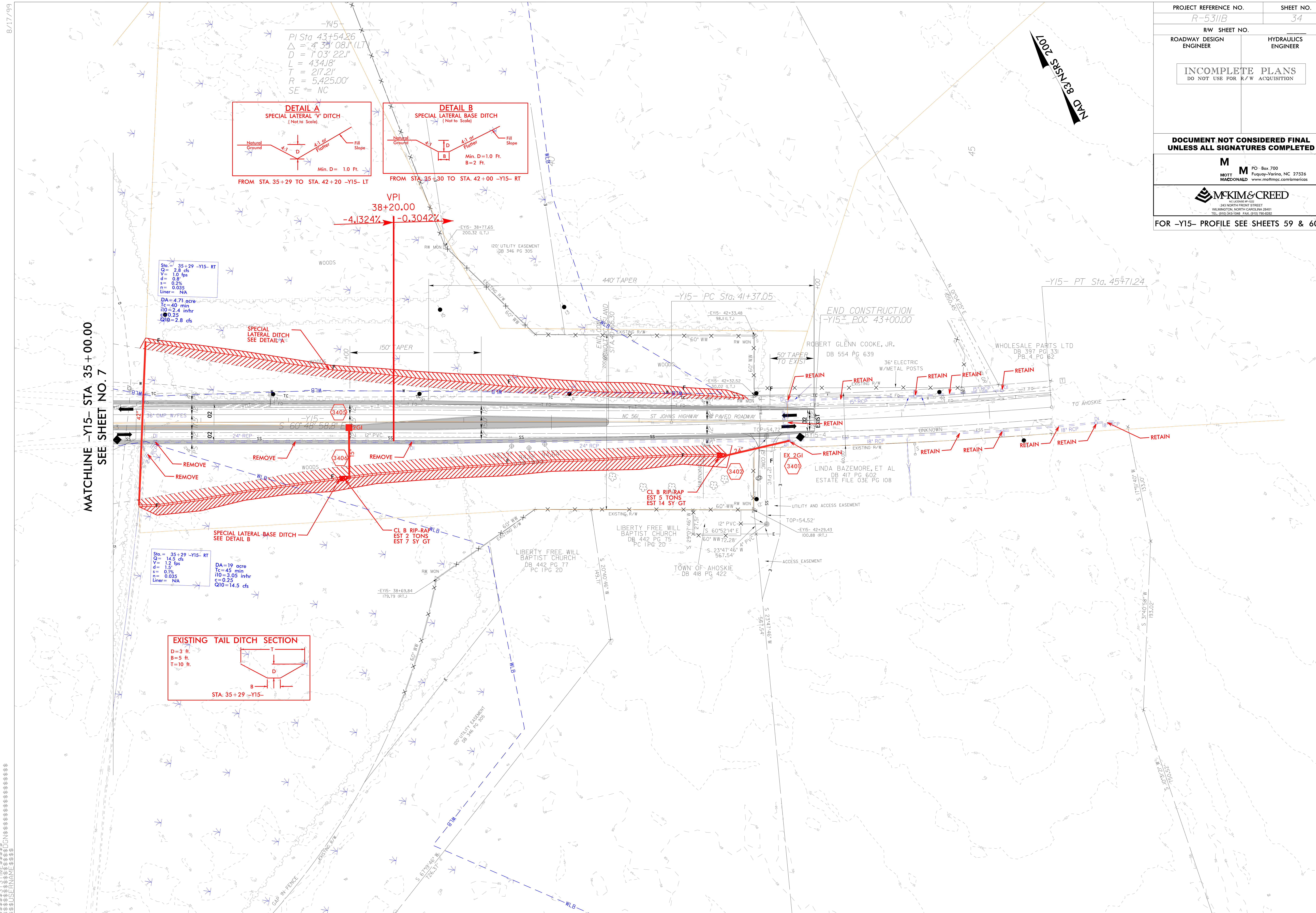
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

McKIM&CREED
NC LICENSE #F-1222
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL. (910) 343-1048 FAX. (910) 790-8282

FOR -Y15- PROFILE SEE SHEET 59





PROJECT REFERENCE NO.	SHEET NO.
R-5311B	34
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

McKIM & CREED
NC LICENSE #F-1222
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL. (910) 343-1048 FAX. (910) 790-8282

FOR -Y15- PROFILE SEE SHEETS 59 & 60

8/17/99

$$$$$$$$SYSTIME$$$$$$$$
$$$$$$$$$$$DGN$$$$$$$$$$$$$$
$$$$$$$USERNAME$$$$

R5311B_hyd_psh34.dgn 2/26/2019 5:19:35 PM

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-5311B	35
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

McKIM & CREED
NC LICENSE #F-1220
240 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL. (910) 343-1545 FAX. (910) 793-4262

FOR –Y11– PROFILE SEE SHEET 68

NAD 83/NSRS 2007

VPI
14+35.00
+0.9568% | +3.6526%

–Y11–
PI Sta 17+88.68
Δ = 13° 31' 54.5" (RT)
D = 1° 28' 22.4"
L = 918.72'
T = 461.51'
R = 3,890.00'
SE = 0.04
RO = 110'
TR = 55'

–Y11– POT Sta. 10+00.00

BEGIN CONSTRUCTION
–Y11– Sta.12+50.00

–Y11– PC Sta. 13+27.78

SHEILA W. HENDRIX
CORDY JORDAN JR.
CORDY JORDAN, HEIRS
WALTER T. WHEELER
DB 394 PG 347
MICHAEL D. PERRY
DB 446 PG 90
MARTHA K. LEAMAN
DB 685 PG 649
SHEILA W. HENDRIX
DB 561 PG 625
CHARITY J. HARRELL
CONNIE H. BOWSER
DB 512 PG 604
SHEILA W. HENDRIX
WB 88E/158
MAYBELLE K. WEAVER HEIRS
WB 88E/158

BLIA-430
BLIA-431
BLIA-40
TBM-27

MATCHLINE –Y11– STA 19+00.00
SEE SHEET NO. 27

5311B_hyd_psh35.dgn 2/25/2019 2:09:36 PM

8.17.99

PROJECT REFERENCE NO.	SHEET NO.
R-5311B	36
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

McKIM & CREED
NC LICENSE #P-1322
363 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL. (910) 343-1065 FAX. (910) 790-8282

FOR –Y11– PROFILE SEE SHEETS 68 & 69
FOR –Y11A– PROFILE SEE SHEET 71

NAD 83/NSRS 2007

MATCHLINE –Y11– STA 30+00.00
SEE SHEET NO. 27

–L–
PI Sta 1301+50.13
Δ = 10° 18' 17.1" (LT)
D = 0° 23' 42.5"
L = 2,607.85'
T = 1,307.45'
R = 14,500.00'
SE = NC

VPI
35+05.00
-3.9502% -0.5020%

–Y11– POT Sta. 34+99.66
–Y11A– POT Sta. 10+00.00
–Y11– PT Sta. 32+86.65
–Y11– POT Sta. 40+94.90
–Y11– PC Sta. 10+39.92
–Y11A– PT Sta. 11+86.33
–Y11A– POT Sta. 12+76.80
END CONSTRUCTION –Y11– Sta. 37+50.00
END CONSTRUCTION –Y11A– Sta. 12+50.00
SAG 1338+50.00 -2.7176% +0.5300%

–Y11–
PI Sta 30+91.06
Δ = 2° 39' 21.6" (LT)
D = 0° 40' 43.9"
L = 391.25'
T = 195.66'
R = 8,440.00'
SE = 0.02
RO = 55'
TR = 55'

–Y11A–
PI Sta 11+29.79
Δ = 83° 52' 45.7" (RT)
D = 57° 17' 44.8"
L = 146.40'
T = 89.85'
R = 100.00'
SEE PLAN

ZACK I.S. PRIESTER
DB 694 PG 357
PC 1 SL 157J

JAMES EDWARD WRIGHT

DAVID C. SAWYER
DB 631PG 672
PC 1 SL 173E

DAVID C. SAWYER
DB 631PG 672
PC 1 SL 173F

DAVID C. & MAREEN SAWYER
DB 631PG 672
PC 1 SL 173F

DAVID C. SAWYER
DB 631PG 672
PC 1 SL 173F

BERNICE S. MARSH
DB 475 PG 294

WILLIAM O. PORTER
WB 86E/179

PAULINE NEWSOME JONES
DB 267 PG 535

LULA M. SMITH
DB 349 PG 9

WALTER G. JONES

SHEILA TOBE
DB 580 PG 134

VIOLA M. SOLOMON
DB 412 PG 147

DELORIS ASKEW
DB 375 PG 88

LINDA MARIE OUTLAW
WB 06E/242

A MARIE OUTLAW
WB 06E/242

LAMP POST

TBM-26
TOP=46.74'
TOP=46.61'
TOP=47.11'
TOP=47.35'
TOP=47.07'

N 62°28'38" E 84.56'
N 62°28'38" E 125.15'
N 62°28'38" E 125.11'
N 62°28'38" 124.87'
N 85°36'41" E 282.51'
S 00°25'07" W 256.83'
S 00°27'27" W 246.01'
N 68°31'26" E 316.50'
N 27°22'48" W 83.99'
N 32°31'59" W 345.20'
N 32°31'59" W 345.45'
N 32°31'59" W 345.32'
N 62°04'53.4" E
S 32°34'01" E
S 48°21'51" E
S 27°52'33" E 102.35'
S 31°08'32" E 154.25'
S 28°09'34" E 218.38'
S 28°09'34" E 21.70'
S 58°51'28" W 112.42'
N 62°15'58" E 127.24'
S 21°50'59" E 200.00'
S 29°05'59" E 200.45'
S 21°50'59" E 200.00'
S 21°52'32" E 200.00'

22+74.98 -EY12- 60.00 LT
22+52.09 -EY12- 60.00 LT
22+74.98 -EY12- 60.00 RT
22+73.76 -EY12- 60.00 RT
17+54.09 -EY12- 87.32 LT
17+40.89 -EY12- 253.25 LT
17+38.45 -EY12- 255.79 LT
13+51.08 -EY12- 77.54 LT
14+34.91 -EY12- 60.00 LT
15+66.17 -EY12- 48.00 LT
15+73.28 -EY12- 48.00 RT
10+79.13 -EY12- 65.00 LT
11+17.58 -EY12- 50.01 LT
8+92.79 -EY12- 50.01 LT

0.33' R/W TO EIP
0.07' EIR TO R/W
0.17' R/W TO EIR
0.23' R/W TO EIR
0.41' R/W TO EIR
0.89' R/W TO EIR
EIP R/W TO EIP

50' TAPER TO EXIST
EXIST R/W
EXIST
48" WW/ISBW
18" RCP
24" RCP
6" PVC
8" PVC
12" CMP
15" CMP
18" CMP
24" CMP
30" CMP
36" CMP
42" CMP
60" CMP
CONC
ISBKD
WOODS
HTR
ECM
WM
SS
FH
EIR
EIP
FFP
DISTURBED
NC 46 OLD HWY 13 28' BST

R5311B_hyd_psh36.dgn 2/25/2019 2:11:17 PM

PROJECT REFERENCE NO.	SHEET NO.
R-5311B	37

R/W SHEET NO. ____

ROADWAY DESIGN ENGINEER — HYDRAULICS ENGINEER

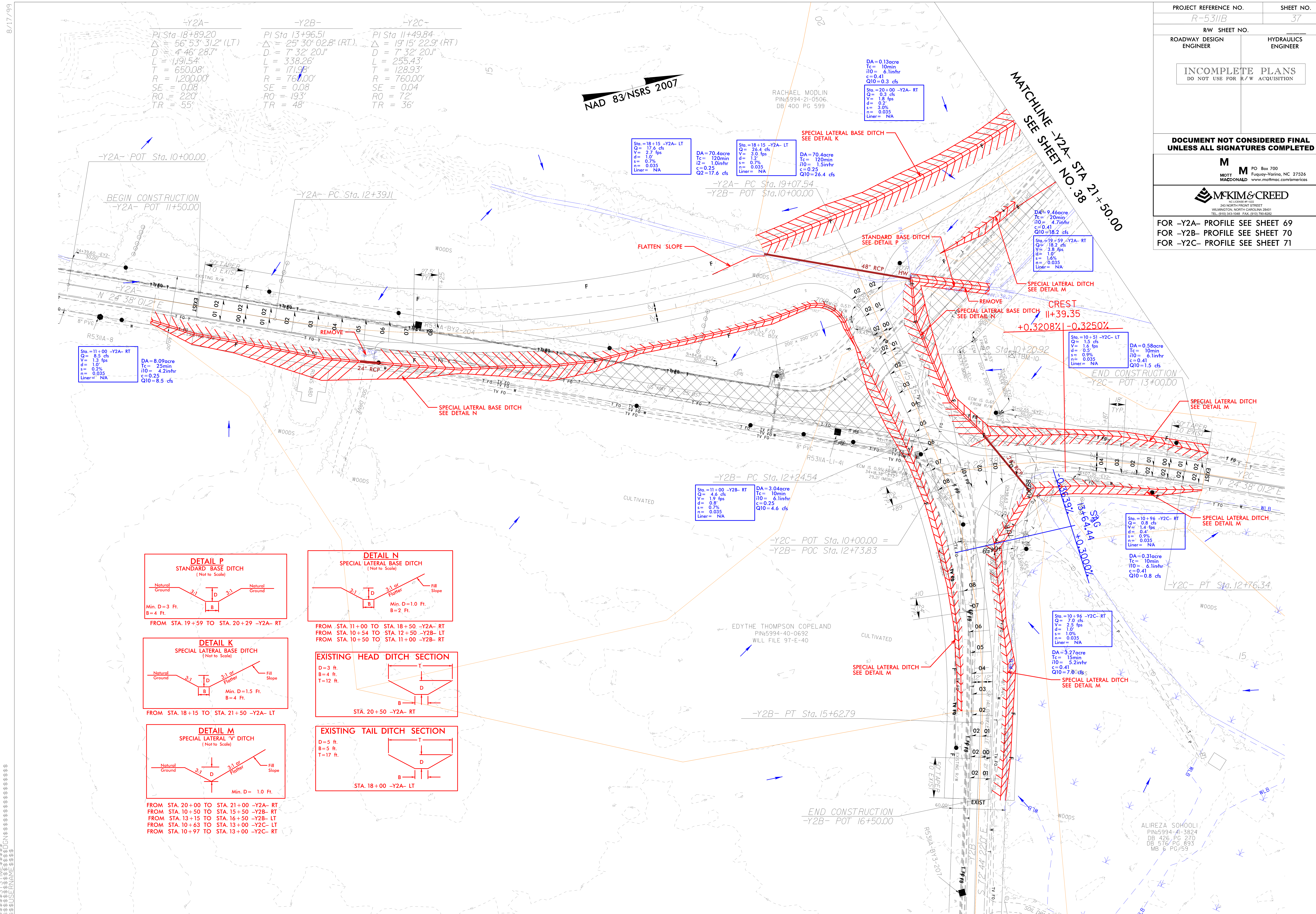
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

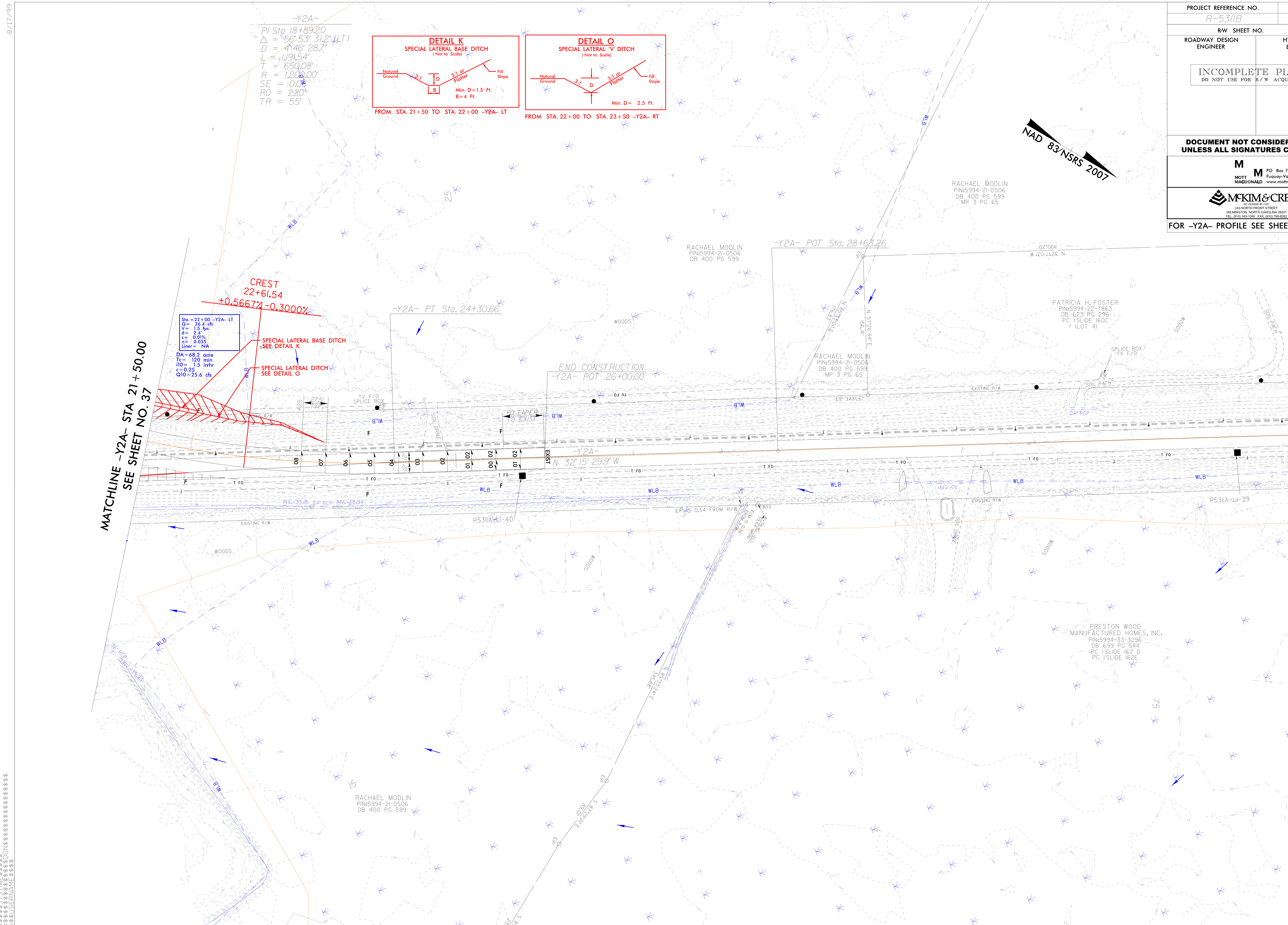
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

McKIM&CREED
NC LICENSE #F-1222
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL. (910) 343-1048 FAX. (910) 790-8282

FOR -Y2A- PROFILE SEE SHEET 69
FOR -Y2B- PROFILE SEE SHEET 70
FOR -Y2C- PROFILE SEE SHEET 71





PROJECT REFERENCE NO.	SHEET NO.
R-5311B	38

R/W SHEET NO.

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

McKIM&CREED
NC LICENSE #F-1222
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL. (910) 343-1048 FAX. (910) 790-8282

FOR -Y2A- PROFILE SEE SHEETS 69 & 70

$$$$SYSTIME$$$$ $$$$$$DGN$$$$$$$$$$$$$$$$$$$$$$ $$$$USERNAME$$$$

R5311B_hyd_psh38.dgn 2/25/2019 11:45:03 AM

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-5311B	39
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

McKIM & CREED
NC LICENSE #P-1222
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL: (910) 343-1548 FAX: (910) 790-8282

FOR -Y5- PROFILE SEE SHEET 66

NAD 83/NSRS 2007

TOMMY V. CASTELOW
AND WIFE,
MELISSA A. CASTELOW
PIN:5994-27-7837
DB 719 PG 94
PC 1 SLIDE 178E

DA=52.3 AC

WOODS

CULTIVATED

-Y5- POT Sta. 10+00.00

BEGIN CONSTRUCTION
-Y5- POT 14+50.00

Sta.= 15+50 -Y5- LT
Q= 1.50 cfs
V= 0.80 fps
d= 0.8'
s= 0.13%
n= 0.035
Liner= N/A

DA=0.60 acre
Tc=10 min
i10=6.1 in/hr
c=0.41
Q10=1.50 cfs

PROPOSED WOVEN WIRE FENCE

50' TAPER TO EXIST

EXIST

-Y5-

US 13 25' BSL N 0° 36' 56.8" E

8" PVC

36" WOOD

18" HDPE

RETAIN

SPECIAL LATERAL DITCH
SEE DETAIL M

BY-301

BY-300

BY-342

48" WW W/ISBW

EXISTING R/W

Sta.= 17+50 -Y5- RT
Q= 1.70 cfs
V= 0.75 fps
d= 0.9'
s= 0.1%
n= 0.035
Liner= N/A

DA=0.68 acre
Tc=10 min
i10=6.1 in/hr
c=0.41
Q10=1.70 cfs

MATCHLINE -Y5- STA 20+00.00
SEE SHEET NO. 17

ISFD (ABAND.)

ISFD

ROY G. REYNOLDS
DB 630 PG 224

S 89°58'41" E 138.41'

N 00°13'43" E 138.39'

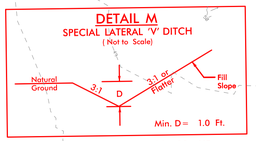
N 88°47'17" W 156.00'

-Y5- PC Sta. 17+26.79

WILLIAM JESSE BOONE III
DB 741 PG 904

WILLIAM JESSE BOONE III
DB 741 PG 904

DETAIL M
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



FROM STA. 15+50 TO STA. 20+00 -Y5- LT
FROM STA. 17+50 TO STA. 20+00 -Y5- RT

-Y5-
PI Sta. 26+84.04
△ = 89° 50' 09.5" (RT)
D = 5° 58' 05.9"
L = 1,505.22'
T = 957.26'
R = 960.00'
SE = 0.08
R0 = 208'
TR = 52'

SYSTIME $$$$$$$$
SYSDATE $$$$$$$$
USERNAME $$$$$$$$

R5311B_hyd_psh39.dgn 2/25/2019 11:45:57 AM

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-5311B	40
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

McKIM & CREED
NC LICENSE #F-1222
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL. (910) 343-1081 FAX. (910) 790-8282

FOR -Y5- PROFILE SEE SHEET 67

NAD 83/NSRS 2007

SEE SHEET NO. 18

MATCHLINE -Y5- STA 30+00.00
SEE SHEET NO. 18

MARK A. POLLINGER
DB 676 PG 807
PC 15 SLIDE 129A

STEPHEN R. HALL
DB 342 PG 594

ALLAN F. DUNN, SR.
AND WIFE,
REBECCA K. DUNN
PIN:5994-48-5372
DB 629 PG 163
PC 15 SLIDE 129A

WILLIAM JESSE BOONE III
DB 741 PG 904

WILLIAM JESSE BOONE III
DB 741 PG 904

-Y5- PC Sta. 36+04.28

END CONSTRUCTION
-Y5- POT 36+50.00

-Y5- PT Sta. 37+20.64

-Y5- PT Sta. 32+32.01

-Y5-

PI Sta 26+84.04	PI Sta 36+62.55
△ = 89° 50' 09.5" (RT)	△ = 7° 49' 28.3" (LT)
D = 5° 58' 05.9"	D = 6° 43' 28.7"
L = 1505.22'	L = 116.36'
T = 957.26'	T = 58.27'
R = 960.00'	R = 852.03'
SE = 0.08	SE = 0.08
RO = 208'	RO = 208'
TR = 52'	TR = 52'

-EY6-

SR 1408 SALUDA HALL RD 21' BST

BY2-320 8" PVC

CL I RIP-RAP
EST 17 TONS
EST 38 SY GT

REMOVE EX 18" HDPE

RETAIN

TBM-17

40' RCP BURIED 1'

8" PVC

50' TAPER TO EXIST 26' TYP

S 86°34'26" W 572.58'

S 03°25'34" E 38.54'

N 81°12'00" W 1600.00'

N 08°48'00" W 264.46'

SYSTEM\$\$\$\$\$\$\$\$\$\$
USERNAME\$\$\$\$\$\$\$\$\$\$

R5311B_hyd_psh40.dgn 2/25/2019 11:46:54 AM

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-5111B	41

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

MOTT MACDONALD I & E, LLC
LICENSE NO. F-0669

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Office of:

MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

McKIM & CREED
NC LICENSE #1035
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL. (910) 343-1081 FAX. (910) 790-8282

-L_SBL-

BEGIN PROFILE
-L_SBL- STA.10+00.00
EL = 40.58'

PI = 10+90.00
EL = 40.71'
VC = 150'
K = 191
V = 70 MPH

(+)0.3667%

(+)1.3092%

PI = 22+26.56
EL = 55.59'
VC = 300'
K = 381
V = 80 MPH

(+)1.3092%

(+)0.30%

(+)1.90%

BEGIN DITCH GRADE LT
-L_SBL- STA. 15+00
EL = 31.5'

DITCH PI GRADE LT
-L_SBL- STA. 17+00
EL = 32.1'

-L_NBL-

BEGIN PROFILE
-L_NBL- STA.10+00.00
EL = 40.38'

PI = 10+90.00
EL = 40.65'
VC = 180'
K = 191
V = 70 MPH

(+)0.3000%

(+)1.2430%

PI = 23+00.00
EL = 55.69'
VC = 300'
K = 422
V = 80 MPH

(+)1.2430%

(+)0.5328%

(+)3.60%

BEGIN DITCH GRADE RT
-L_NBL- STA. 22+83 RT
EL = 41.3'

-L_SBL- PLAN SEE SHEETS 4 & 5
-L_NBL- PLAN SEE SHEETS 4 & 5

$$$$SYSTEM$$$$
$$$$ALIGNMENT$$$$
$$$$PROFILE$$$$
$$$$SUPERELEVATION$$$$
$$$$CROSS SECTION$$$$

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-5111B	42

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

MOTT MACDONALD I & E, LLC
LICENSE NO. F-0669

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Office of:

MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

McKIM & CREED
NC LICENSE #1-0205
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL. (910) 343-1081 FAX. (910) 790-8282

-L_SBL-

END PROFILE
-L_SBL- STA. 27+53.60 =
-L- STA. 982+52.32, 23' LT
EL = 58.40'

PI = 22+26.56
EL = 55.59'
VC = 300'
K = 3.87
V = 60 MPH

(+)0.5332%

(+)0.54%

(+)1.90%

DITCH PI GRADE LT
-L_SBL- STA. 26+00
EL = 49.2'

END DITCH GRADE LT
-L_SBL- STA. 27+53.60
EL = 50.0'

-L_NBL-

END PROFILE
-L_NBL- STA. 27+52.32
-L- STA. 982+52.32, 35' RT
EL = 58.10'

PI = 23+00.00
EL = 55.69'
VC = 300'
K = 422
V = 60 MPH

(+)0.5328%

(+)0.35%

(+)3.60%

(+)1.00%

DITCH PI GRADE RT
-L_NBL- STA. 24+50 RT
EL = 47.3'

DITCH PI GRADE RT
-L_NBL- STA. 27+00 RT
EL = 49.8'

END DITCH GRADE RT
-L_NBL- STA. 27+52.32 RT
EL = 50.0'

-L_SBL- PLAN SEE SHEET 5
-L_NBL- PLAN SEE SHEET 5

$$$$SYSTEM$$$$
$$$$USERNAME$$$$DGN$$$$$$$$$$$$$$$$$$$$

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-5111B	43

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

MOTT MACDONALD I & E, LLC
LICENSE NO. F-0669

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Office of:

MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

McKIM & CREED
A SUBSIDIARY OF MOTT MACDONALD
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL. (910) 343-1081 FAX. (910) 790-8282

962 963 964 965 966 967 968 969 970 971 972 973 974

10 20 30 40 50 60 70

BEGIN PROFILE
-L- STA. 982+52.32 =
-L_SB1- STA. 27+53.60, 23' LT =
-L_NB1- STA. 27+52.32, 35' RT =
EL = 58.40'

(+)0.5333%

(+)0.54%

(+)0.35%

BEGIN DITCH GRADE LT
-L- STA. 982+52
EL = 50.0'

BEGIN DITCH GRADE RT
-L- STA. 982+52
EL = 50.0'

-L- PLAN SEE SHEET 5

975 976 977 978 979 980 981 982 983 984 985 986 987 988

10 20 30 40 50 60 70

$$$$SYSTEM$$$$
$$$$SCENARIO$$$$DGN$$$$$$$$$$$$$$$$

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-5118	44

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

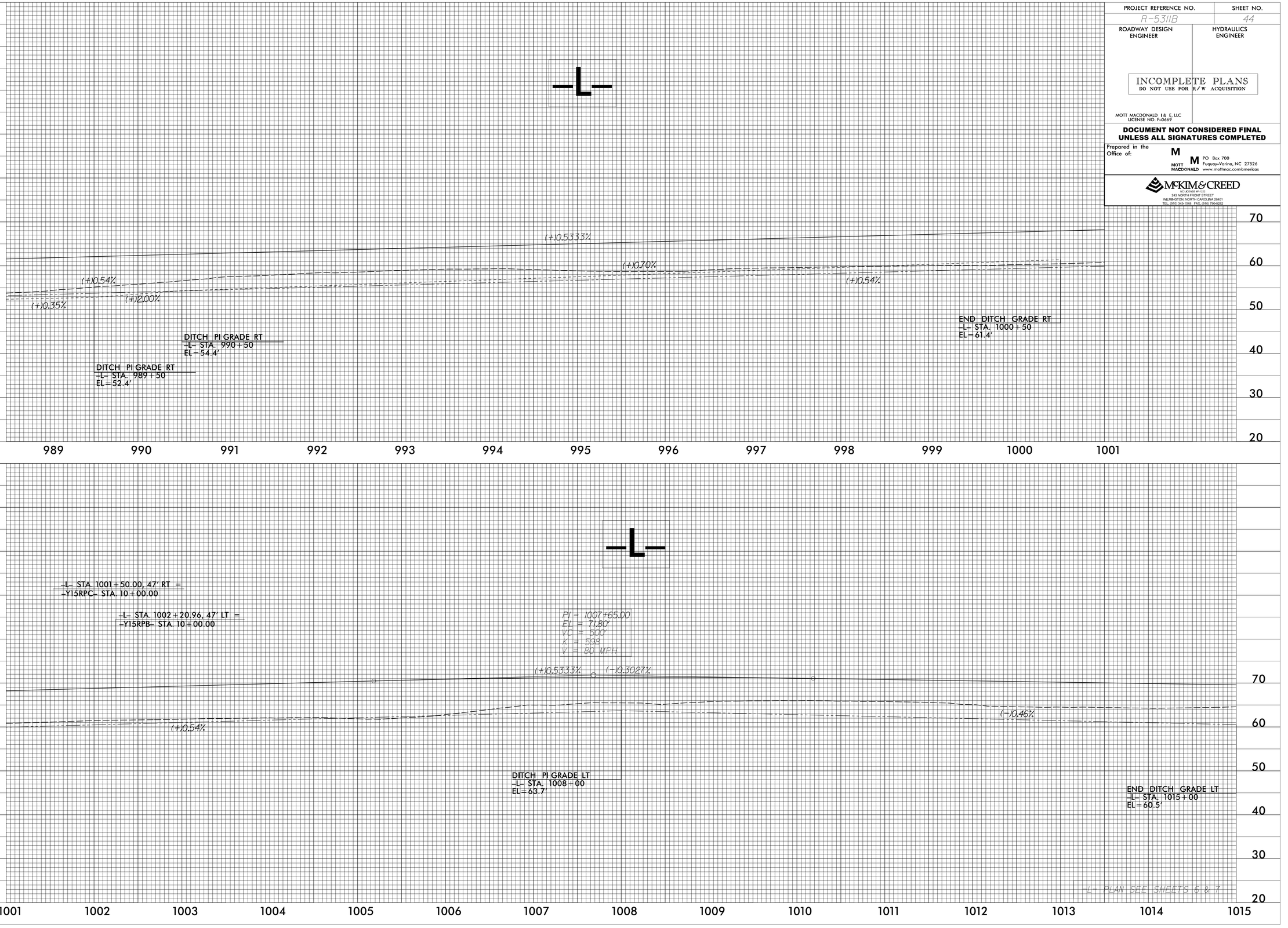
MOTT MACDONALD I & E, LLC
LICENSE NO. F-0669

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Office of:

MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

McKIM & CREED
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL. (910) 343-1081 FAX. (910) 790-8282



$$$$SYSTEM$$$$
$$$$USERNAME$$$$DGN$$$$$$$$$$$$$$$$$$

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-5111B	45

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

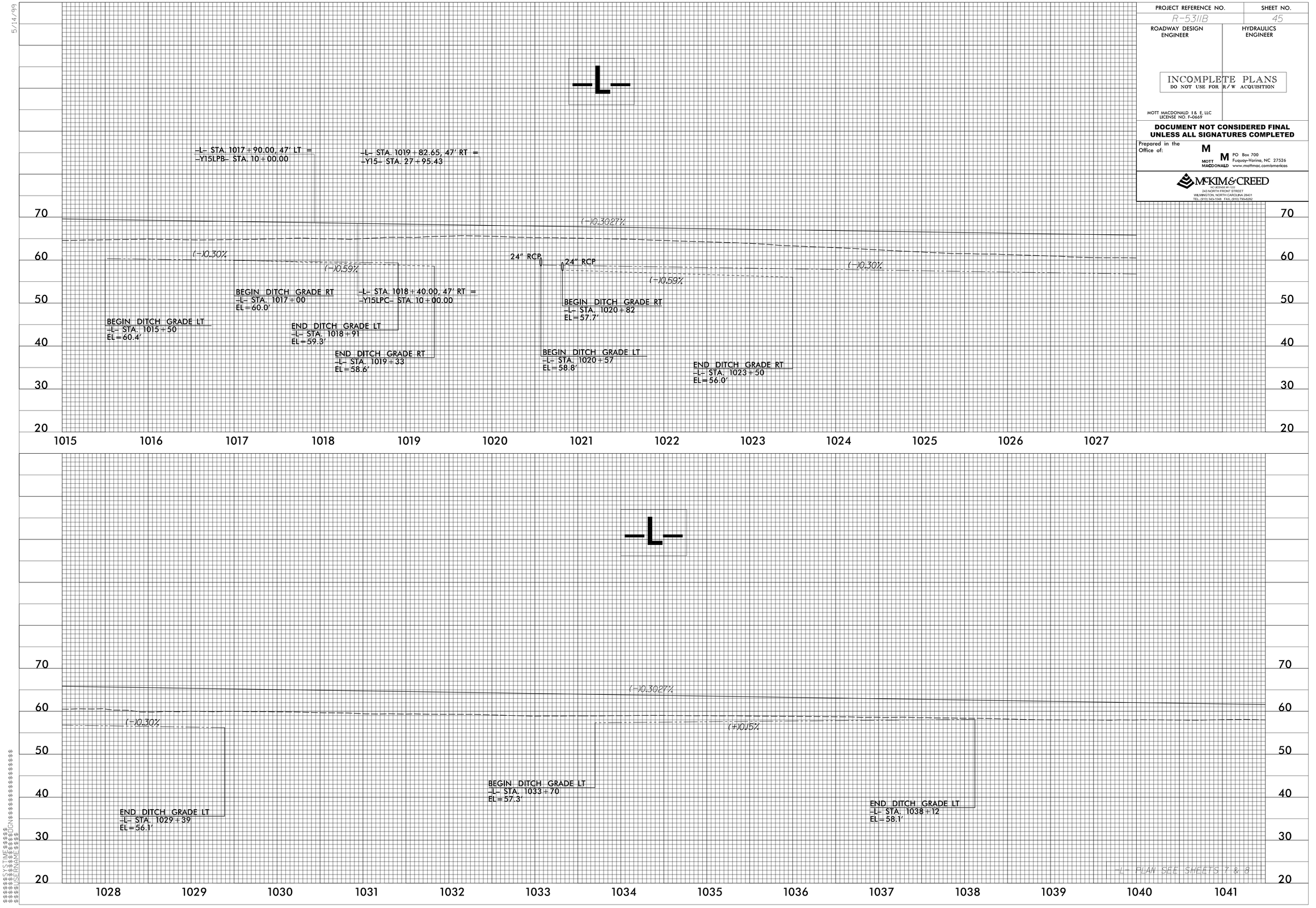
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

MOTT MACDONALD I & E, LLC
LICENSE NO. F-0669

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Office of:
MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

McKIM & CREED
A SEPARATE FIRM
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL. (910) 343-1081 FAX. (910) 790-8282



$$$$$SYSTEM$$$$$
$$$$$USER NAME$$$$$DGN$$$$$$$$$$$$$$$$$$$$

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-5111B	46

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

MOTT MACDONALD I & E, LLC
LICENSE NO. F-0669

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Office of:

MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

McKIM & CREED
ENGINEERS, P.A. 1220
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL. (910) 343-1568 FAX. (910) 790-8282

-L-

(-)0.3027%

(-)0.38%

(-)1.92%

BEGIN DITCH GRADE LT
-L- STA. 1047+29
EL=55.8'

END DITCH GRADE LT
-L- STA. 1050+24
EL=54.5'

BEGIN DITCH GRADE LT
-L- STA. 1053+50
EL=53.9'

-L-

PI = 1057+20.00
EL = 56.80'
VC = 300'
K = 383
V = 80 MPH

PI = 1068+00.00
EL = 62.00'
VC = 400'
K = 357
V = 75 MPH

(-)1.92%

(+)0.50%

(-)0.3027%

(+)0.4815%

(+)3.08%

(+)0.42%

(-)0.90%

(+)0.4815%

BEGIN DITCH GRADE LT
-L- STA. 1054+60
EL=51.0'

END DITCH GRADE LT
-L- STA. 1054+45
EL=52.0'

END DITCH GRADE LT
-L- STA. 1058+00
EL=52.7'

END DITCH GRADE LT
-L- STA. 1059+50
EL=53.9'

BEGIN DITCH GRADE LT
-L- STA. 1058+88
EL=52.0'

BEGIN DITCH GRADE LT
-L- STA. 1065+50
EL=55.6'

END DITCH GRADE LT
-L- STA. 1067+61
EL=56.6'

BEGIN DITCH GRADE LT
-L- STA. 1067+72
EL=56.6'

-L- PLAN SEE SHEETS 8,9,& 10

70 60 50 40 30 20

1042 1043 1044 1045 1046 1047 1048 1049 1050 1051 1052 1053 1054 1055

1054 1055 1056 1057 1058 1059 1060 1061 1062 1063 1064 1065 1066 1067 1068

$$$$$SYSTIME$$$$$
$$$$$USERNAME$$$$$DGN$$$$$$$$$$$$$$$$$$

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-5111B	47

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

MOTT MACDONALD I & E, LLC
LICENSE NO. F-0669

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Office of:

MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

McKIM & CREED
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL. (910) 343-1081 FAX. (910) 790-8282

-L-

PI = 1068+00.00
EL = 62.00'
VC = 400'
K = 357
V = 75 MPH

(+)0.6396%

(-)0.85%

PI = 1073+30.00
EL = 58.61'
VC = 200'
K = 215
V = 75 MPH

(-)0.6396%

(+)0.3011%

(-)1.00%

PI = 1077+65.00
EL = 59.92'
VC = 200'
K = 327
V = 75 MPH

(+)0.3011%

(+)0.3096%

BEGIN DITCH GRADE LT
-L- STA. 1072+50
EL=54.50'

END DITCH GRADE LT
-L- STA. 1074+00
EL=53.0'

END DITCH GRADE LT
-L- STA. 1071+72
EL=53.1'

BEGIN DITCH GRADE LT
-L- STA. 1080+00
EL=53.0'

70 60 50 40 30 20

1068 1069 1070 1071 1072 1073 1074 1075 1076 1077 1078 1079 1080

PIPE HYDRAULIC DATA
48" RCP STA.1081+38 -L-

DRAINAGE AREA	=	53.2	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	73.6	CFS
DESIGN HW ELEVATION	=	54.0	FT
100 YEAR DISCHARGE	=	81.0	CFS
100 YEAR HW ELEVATION	=	54.5	FT
OVERTOPPING FREQUENCY	=	>100,<500	YRS
OVERTOPPING DISCHARGE	=	95.0	CFS
OVERTOPPING ELEVATION	=	55.8	FT

PIPE HYDRAULIC DATA
36" RCP STA.1091+05 -L-

DRAINAGE AREA	=	6.37	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	10.7	CFS
DESIGN HW ELEVATION	=	52.8	FT
100 YEAR DISCHARGE	=	11.6	CFS
100 YEAR HW ELEVATION	=	52.9	FT
OVERTOPPING FREQUENCY	=	>500	YRS
OVERTOPPING DISCHARGE	=	50.0	CFS
OVERTOPPING ELEVATION	=	63.2	FT

-L-

PI = 1081+30.00
EL = 58.79'
VC = 200'
K = 187'
V = 70 MPH

(+)0.3096%

(+)0.7607%

(-)1.14%

48" RCP

(+)1.16%

PI = 1086+90.00
EL = 63.05'
VC = 300'
K = 283'
V = 70 MPH

(+)0.7607%

(+)0.3000%

(+)1.40%

(+)1.50%

(-)1.14%

36" RCP

(+)0.22%

(+)0.16%

END DITCH GRADE LT
-L- STA. 1082+20
EL=50.5'

BEGIN DITCH GRADE LT
-L- STA. 1082+35
EL=50.5'

DITCH PI GRADE LT
-L- STA. 1084+50
EL=51.6'

DITCH PI GRADE LT
-L- STA. 1086+00
EL=53.7'

DITCH PI GRADE LT
-L- STA. 1087+55
EL=56.0'

BEGIN DITCH GRADE RT
-L- STA. 1091+05
EL=51.6'

BEGIN DITCH GRADE LT
-L- STA. 1091+15
EL=52.1'

END DITCH GRADE LT
-L- STA. 1091+10
EL=51.9'

END DITCH GRADE LT
-L- STA. 1093+40
EL=52.6'

END DITCH GRADE RT
-L- STA. 1093+50
EL=51.9'

-L- PLAN SEE SHEETS 10,11,& 12

70 60 50 40 30 20

1081 1082 1083 1084 1085 1086 1087 1088 1089 1090 1091 1092 1093 1094

$$$$SYSTIME$$$$
$$$$USERNAME$$$$DGN$$$$$$$$$$$$$$$$$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-5311B	48

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

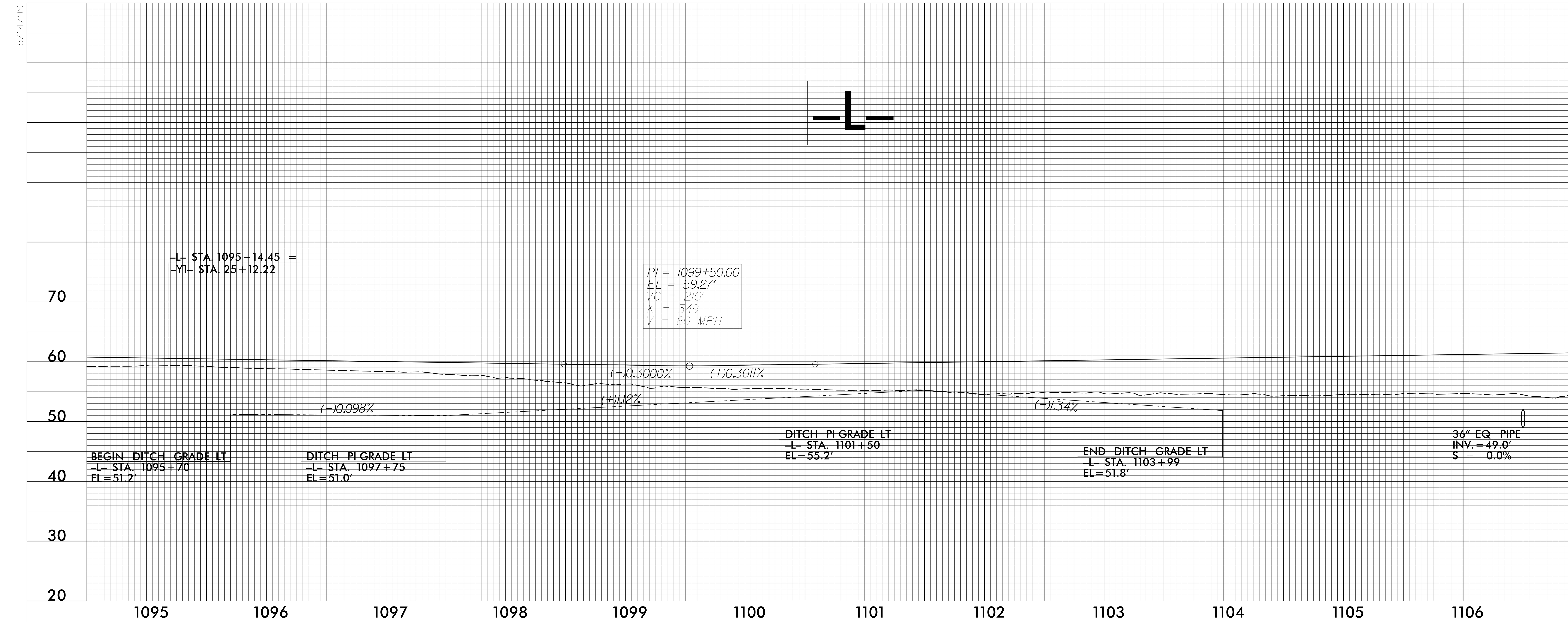
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

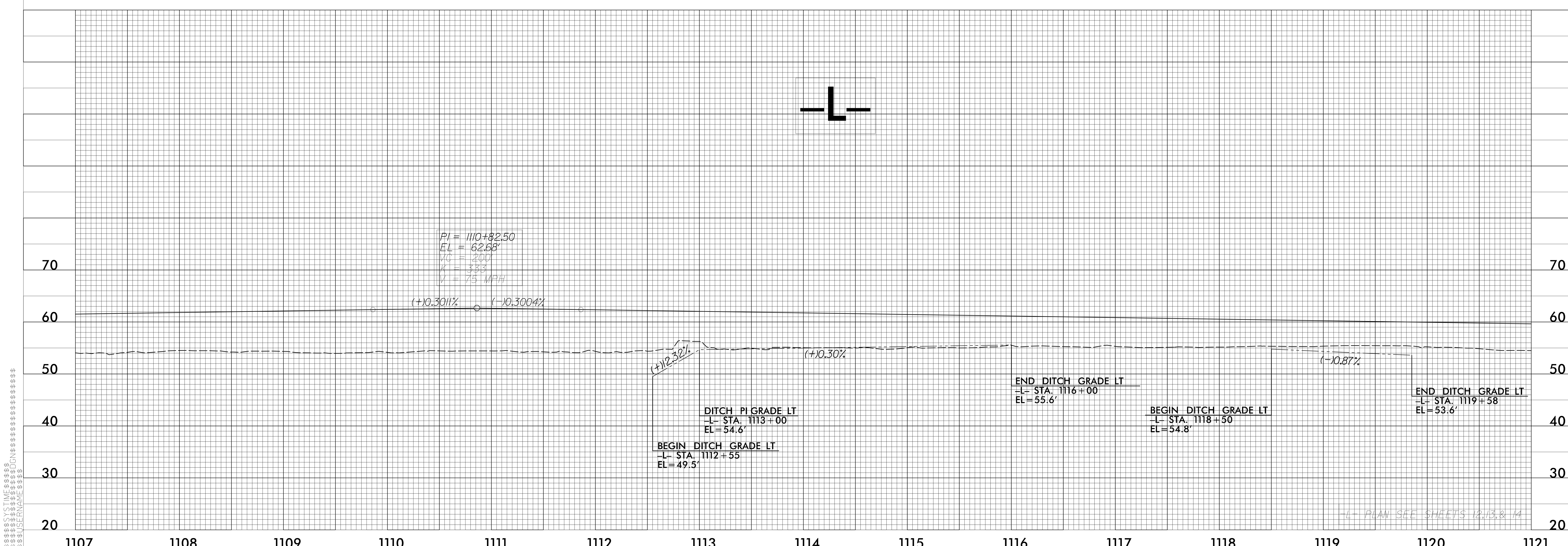
MOTT MACDONALD I & E, LLC
LICENSE NO. F-0669

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Office of:
MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

McKIM & CREED
NC LICENSE #F-1222
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL. (910) 343-1048 FAX. (910) 790-8282





5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-5311B	49
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

MOTT MACDONALD I & E, LLC
LICENSE NO. F-0669

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Office of:
MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

McKIM & CREED
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL. (910) 343-1081 FAX. (910) 790-8282

-L- STA. 1125+40.81, 47' LT =
-Y2RPB- STA. 10+00.00

PI = 1132+00.00
EL = 56.32'
VC = 550'
K = 108'
V = 80 MPH

(+)0.3004%
(+)0.3066%

36" EQ. PIPE
INV. = 48.7'
S = 0.03%

36" EQ. PIPE
INV. = 48.8'
S = 0.13%

15" RCP
INV. = 51.8'
S = 0.5%

PI = 1138+10.00
EL = 58.19'
VC = 330'
K = 544
V = 80 MPH

(+)0.3066%
(-)0.3005%

-L- STA. 1142+07.01, 47' LT =
-Y2LPB- STA. 10+00.00

-L- STA. 1143+04.40 =
-Y2- STA. 50+63.08

PI = 1148+75.00
EL = 54.99'
VC = 400'
K = 574
V = 80 MPH

15" RCP
INV. = 49.8
S = 0.5%

36" EQ. PIPE
INV. = 46.4'
S = 0.3%

(-)1.00%
(-)2.78%
(-)0.15%

BEGIN DITCH GRADE RT
-L- STA. 1138+50
EL = 50.3'

BEGIN DITCH GRADE LT
-L- STA. 1139+78
EL = 46.1'

DITCH PI GRADE RT
-L- STA. 1140+00
EL = 48.8'

END DITCH GRADE RT
-L- STA. 1141+39
EL = 44.9'

END DITCH GRADE LT
-L- STA. 1142+30
EL = 45.7'

-L- STA. 1144+02.64, 47' RT =
-Y2LPD- STA. 10+00.00

-L- PLAN SEE SHEETS 14 & 15

$$$$SYSTEM$$$$
$$$$SEWERAGE$$$$DRAINAGE$$$$

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-5111B	50

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

MOTT MACDONALD I & E, LLC
LICENSE NO. F-0669

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Office of:
MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

McKIM & CREED
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL. (910) 343-1081 FAX. (910) 790-8282

PI = 1148+75.00
EL = 54.99'
VC = 400'
K = 574
V = 80 MPH

(-)0.3005% (+)0.3962%

36" EQ PIPE
INV. = 46.8'
S = 0.2%

36" EQ PIPE
INV. = 46.6'
S = 0.3%

PI = 1166+95.00
EL = 62.20'
VC = 200'
K = 271
V = 70 MPH

(+)0.3962% (-)0.3412%

(+)0.20%

3@ 36" RCP

-L- STA. 1160+83.49, 47' RT =
-Y2RPD- STA. 10+00.00

BEGIN DITCH GRADE RT
-L- STA. 1173+35
EL = 47.0'

PIPE HYDRAULIC DATA
3 @ 36" RCP STA. 1173+79 -L-

DRAINAGE AREA	=	84.4	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	84.4	CFS
DESIGN HW ELEVATION	=	52.8	FT
100 YEAR DISCHARGE	=	92.9	CFS
100 YEAR HW ELEVATION	=	52.8	FT
OVERTOPPING FREQUENCY	=	>100,<500	YRS
OVERTOPPING DISCHARGE	=	55	CFS
OVERTOPPING ELEVATION	=	58.2	FT

-L- PLAN SEE SHEETS 15,16,& 17

70 60 50 40 30 20

1148 1149 1150 1151 1152 1153 1154 1155 1156 1157 1158 1159 1160 1161

1160 1161 1162 1163 1164 1165 1166 1167 1168 1169 1170 1171 1172 1173 1174

$$$$SYTIME$$$$
$$$$USERNAME$$$$DGN$$$$$$$$$$$$$$$$$$

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-5111B	51

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

MOTT MACDONALD I & E, LLC
LICENSE NO. F-0669

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Office of:

MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

McKIM & CREED
NC LICENSE #1035
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL. (910) 343-1081 FAX. (910) 790-8282

70 60 50 40 30 20

1174 1175 1176 1177 1178 1179 1180 1181 1182 1183 1184 1185 1186 1187

(-)0.34I2%

(+)0.20%

(+)0.30%

(+)0.11%

BEGIN DITCH GRADE LT
-L- STA. 1174+35
EL=45.5'

DITCH PI GRADE RT
-L- STA. 1176+00
EL=47.5'

END DITCH GRADE RT
-L- STA. 1179+50
EL=48.5'

END DITCH GRADE LT
-L- STA. 1180+00
EL=46.2'

(-)1.00%

(-)0.20%

BEGIN DITCH GRADE LT
-L- STA. 1182+50
EL=47.6'

DITCH PI GRADE LT
-L- STA. 1183+00
EL=47.1'

END DITCH GRADE LT
-L- STA. 1185+15
EL=46.7'

70 60 50 40 30 20 10

1187 1188 1189 1190 1191 1192 1193 1194 1195 1196 1197 1198 1199 1200

PIPE HYDRAULIC DATA
36" RCP STA.1189+76 -L-

DRAINAGE AREA	=	22.2	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	37.3	CFS
DESIGN HW ELEVATION	=	48.7	FT
100 YEAR DISCHARGE	=	40.4	CFS
100 YEAR HW ELEVATION	=	48.7	FT
OVERTOPPING FREQUENCY	=	>100,<500	YRS
OVERTOPPING DISCHARGE	=	85	CFS
OVERTOPPING ELEVATION	=	52.6	FT

36" RCP
(+)0.20%

(+)0.20%
(+)0.63%

BEGIN DITCH GRADE LT
-L- STA. 1189+55
EL=45.8'

BEGIN DITCH GRADE RT
-L- STA. 1190+66
EL=45.0'

END DITCH GRADE LT
-L- STA. 1192+00
EL=46.3'

END DITCH GRADE RT
-L- STA. 1193+00
EL=46.5'

PI = 1198+60.00
EL = 51.40'
VC = 200'
K = 30.3
V = 80 MPH

(-)0.3412%

(+)0.3187%

15" RCP
INV. = 46.1'
S = 0.3%

36" EQ. PIPE
INV. = 43.8
S = 0.0%

-L- PLAN SEE SHEETS 17,18,& 19

70 60 50 40 30 20 10

1187 1188 1189 1190 1191 1192 1193 1194 1195 1196 1197 1198 1199 1200

$$$$SYSTIME$$$$
$$$$USERNAME$$$$DGN$$$$$$$$$$$$$$$$$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-5311B	52

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

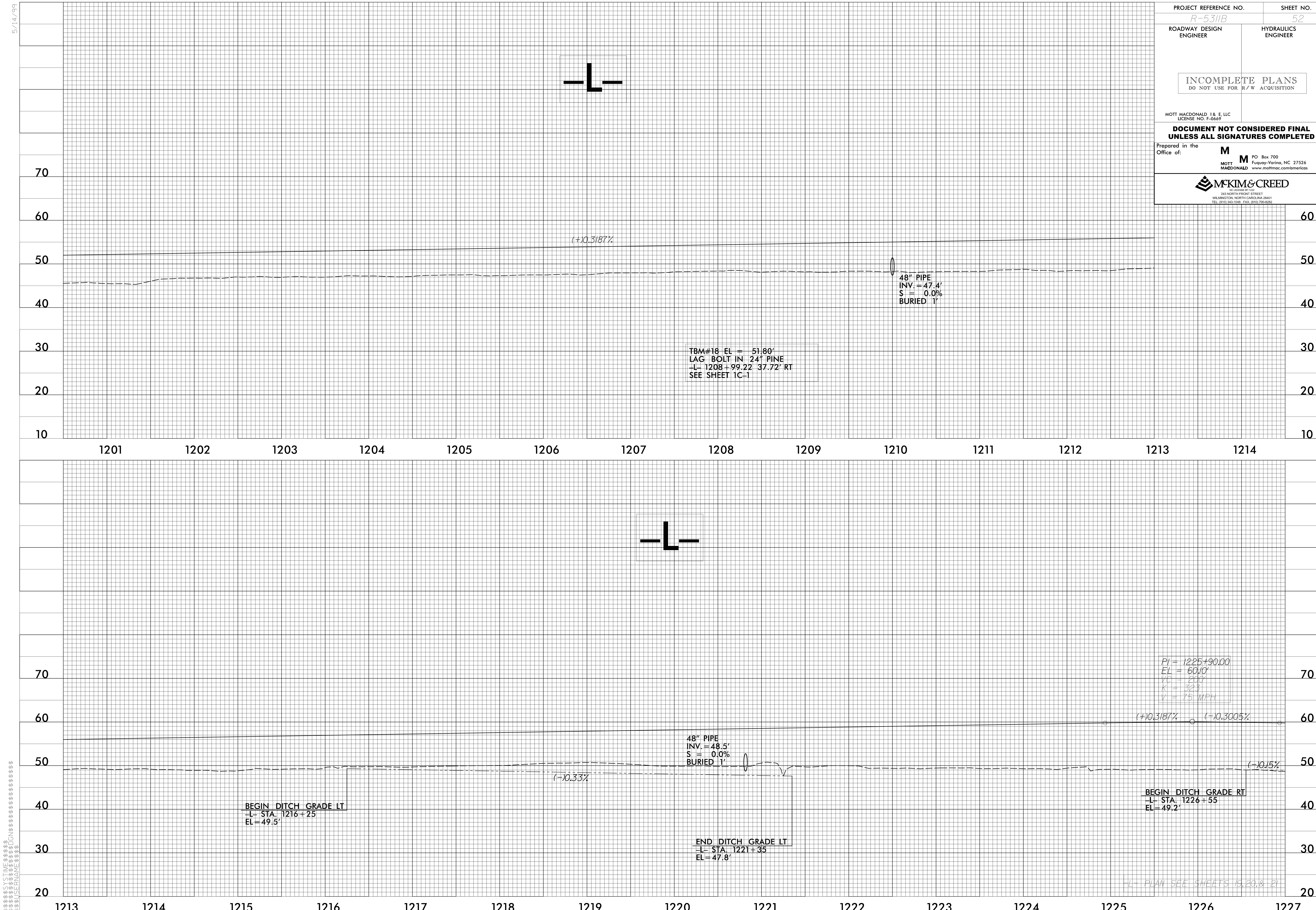
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

MOTT MACDONALD I & E, LLC
LICENSE NO. F-0669

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Office of:
MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

McKIM & CREED
NC LICENSE #F-1222
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL. (910) 343-1048 FAX. (910) 790-8282



5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-5111B	53

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

MOTT MACDONALD I & E, LLC
LICENSE NO. F-0669

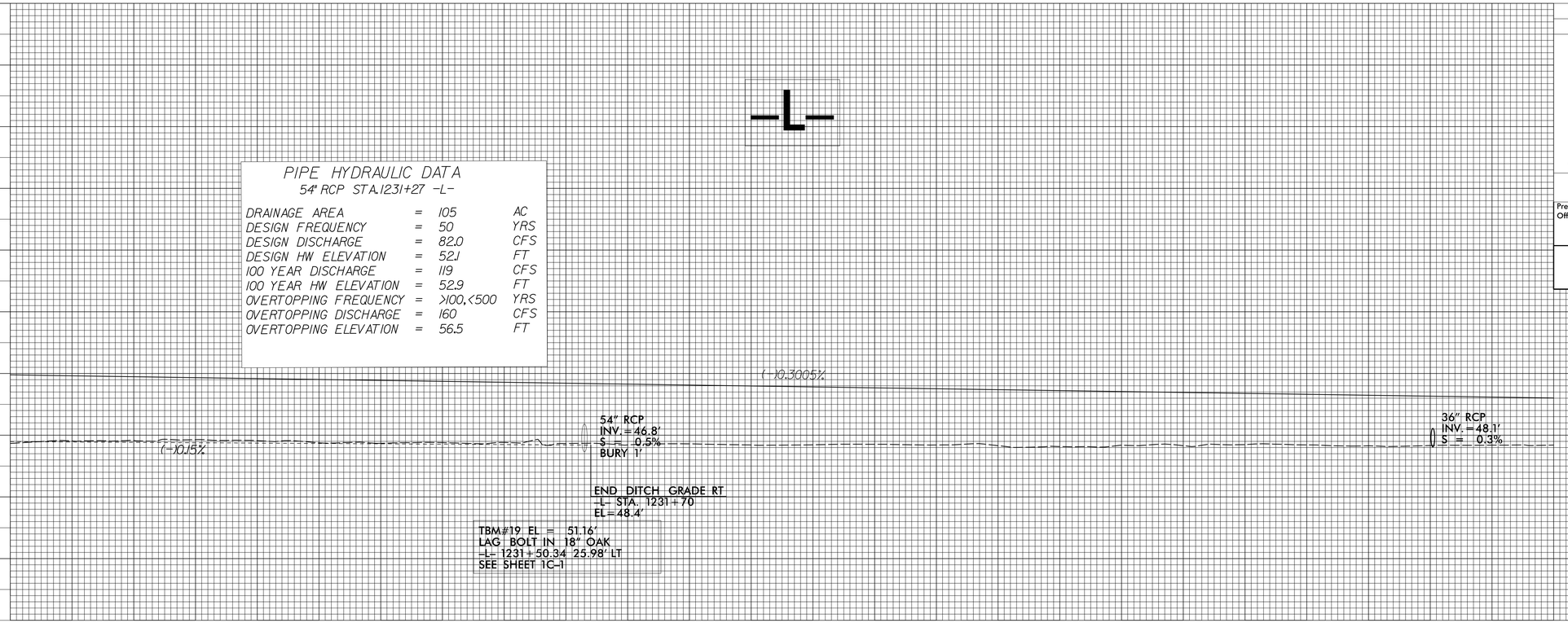
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

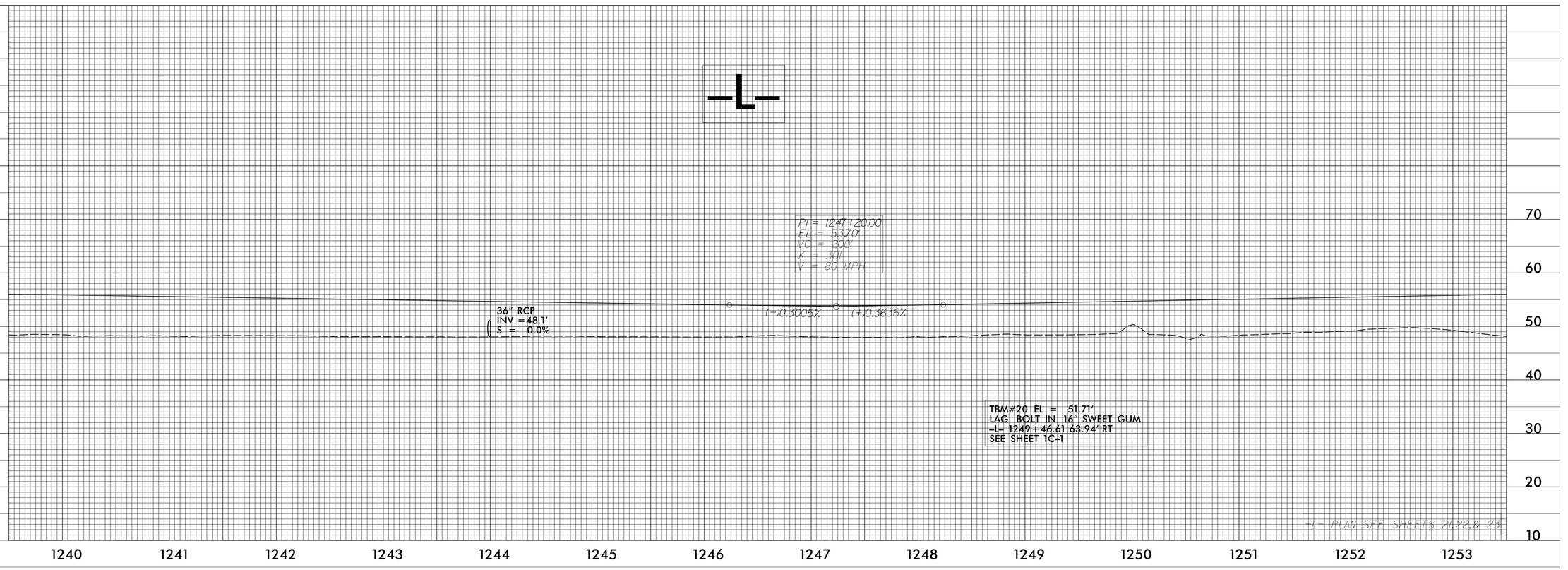
Prepared in the Office of:
MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

McKIM & CREED
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL. (910) 343-1081 FAX. (910) 790-8282

PIPE HYDRAULIC DATA
54" RCP STA.1231+27 -L-

DRAINAGE AREA	=	105	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	82.0	CFS
DESIGN HW ELEVATION	=	52.1	FT
100 YEAR DISCHARGE	=	119	CFS
100 YEAR HW ELEVATION	=	52.9	FT
OVERTOPPING FREQUENCY	=	>100,<500	YRS
OVERTOPPING DISCHARGE	=	160	CFS
OVERTOPPING ELEVATION	=	56.5	FT





$$$$SYTMES$$$$
$$$$USERNAME$$$$DGN$$$$$$$$$$$$$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-5311B	54

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

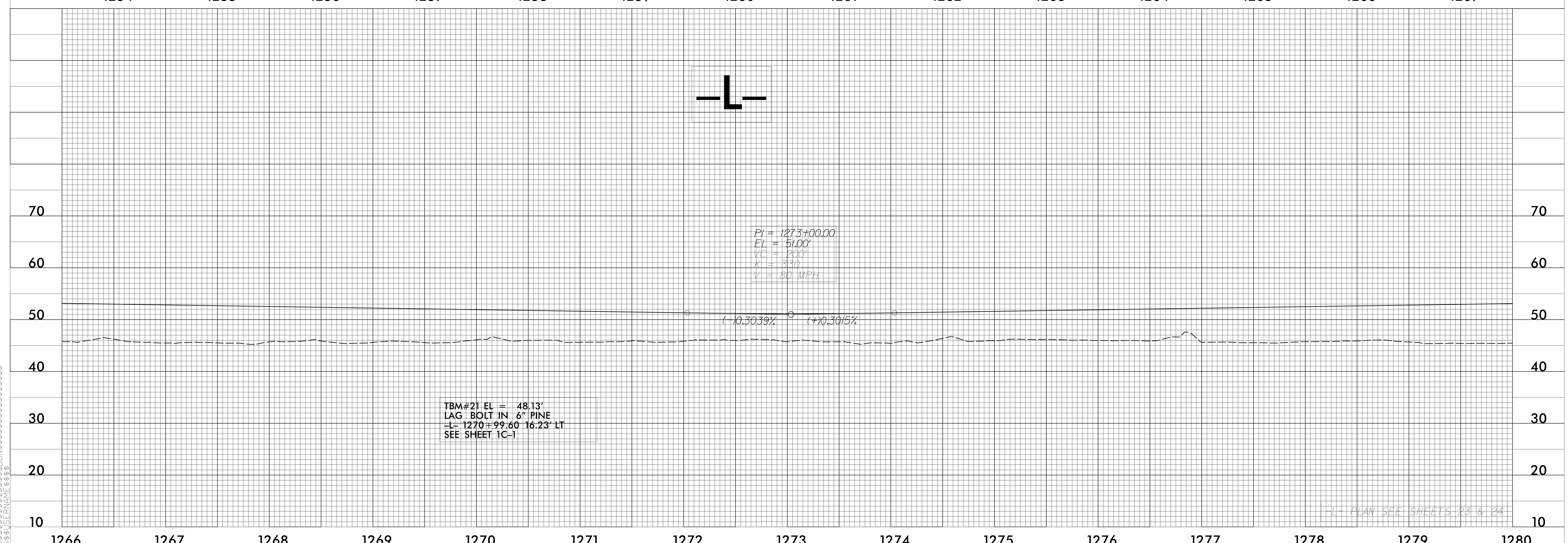
MOTT MACDONALD I & E, LLC
LICENSE NO. F-0669

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Office of:

MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

McKIM & CREED
NC LICENSE #F-1222
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL. (910) 343-1048 FAX. (910) 790-8282



5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-5311B	55

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

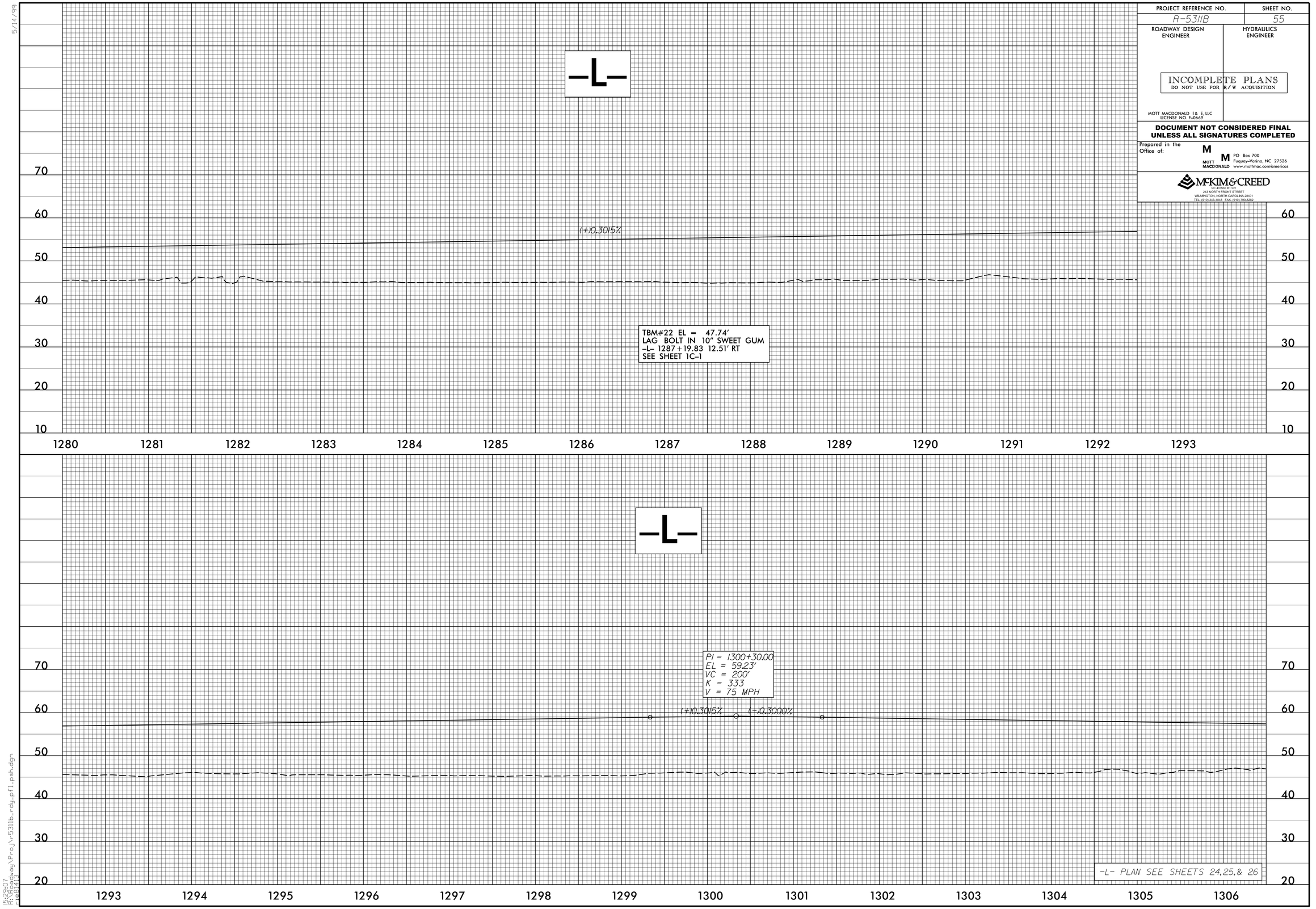
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

MOTT MACDONALD I & E, LLC
LICENSE NO. F-0669

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Office of:
MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

McKIM & CREED
INCORPORATED
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL. (910) 343-1068 FAX. (910) 790-8282



5/28/07
R:\Roadway\Proj\r-5311b_rdy_pfl_psh.dgn
rlabelle

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-5311B	56

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

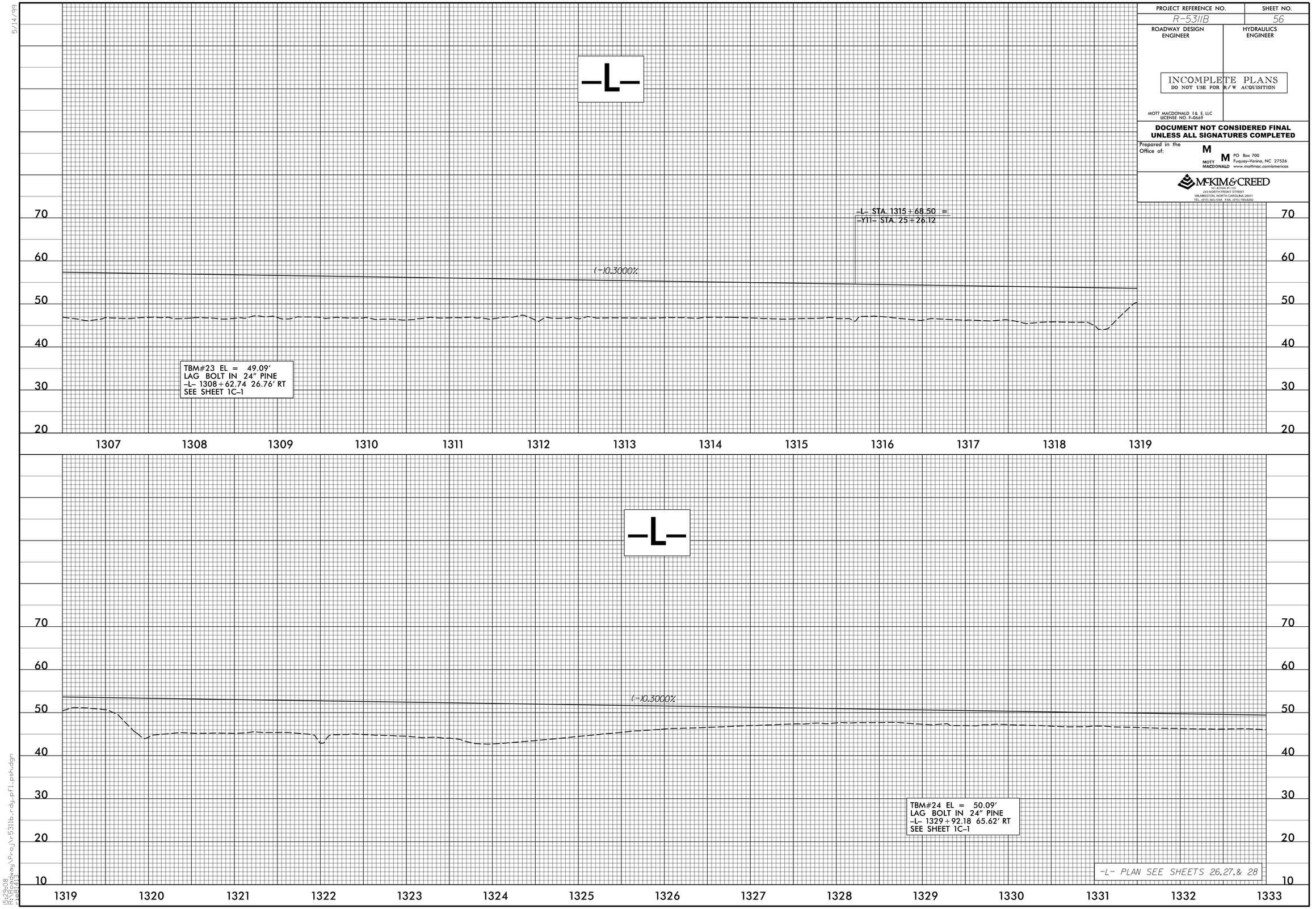
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

MOTT MACDONALD I & E, LLC
LICENSE NO. F-0669

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Office of:
MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

McKIM & CREED
INCORPORATED
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL. (910) 343-1068 FAX. (910) 790-8282



15:28:08
R:\Projects\Raleigh\Proj\r-5311b_rdy_pfl_psh.dgn
tlee
(08143)

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-5311B	57

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

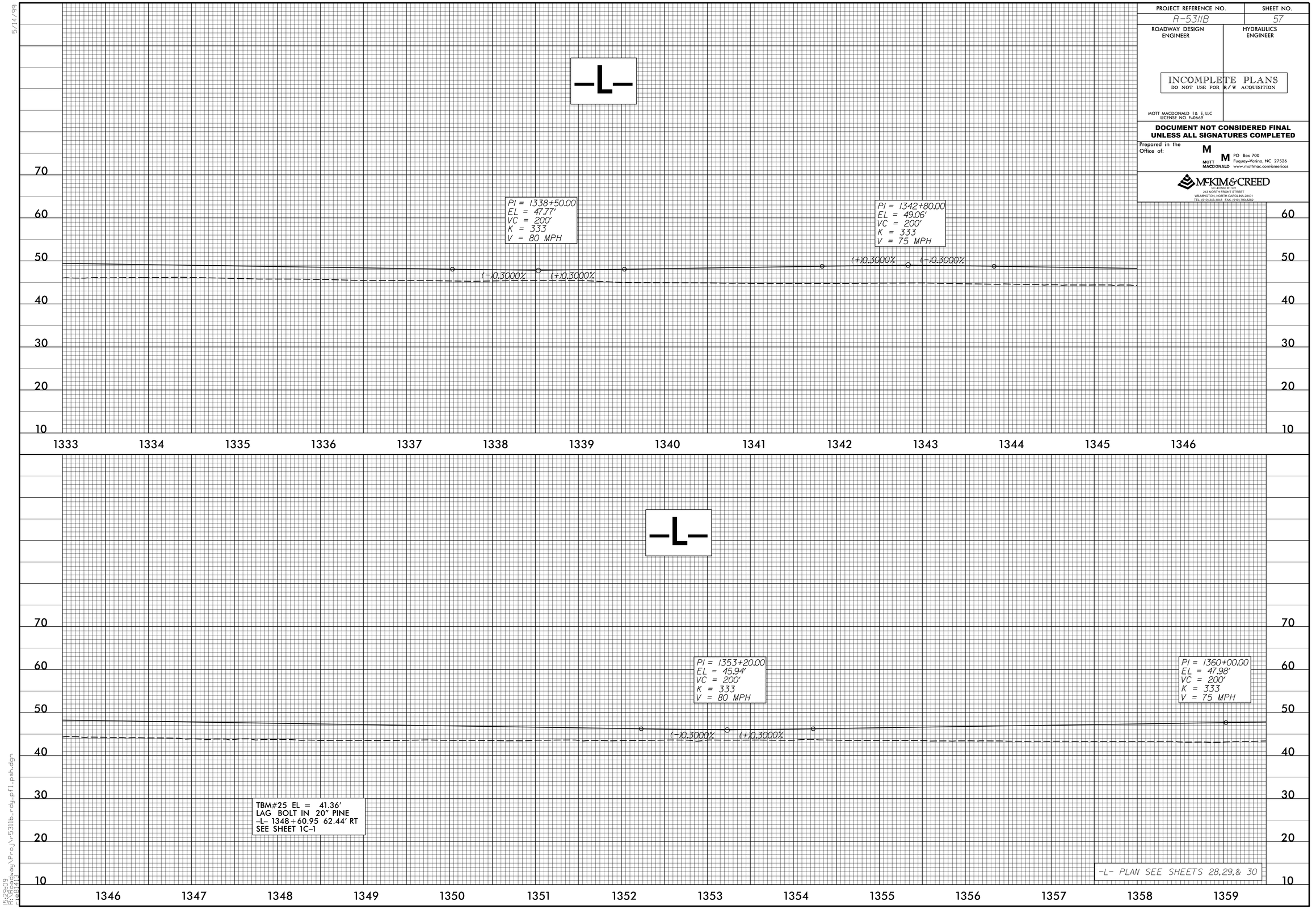
MOTT MACDONALD I & E, LLC
LICENSE NO. F-0669

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Office of:

MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

McKIM & CREED
INCORPORATED
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL. (910) 343-1068 FAX. (910) 790-8282



5/28/09
R:\Raleigh\Proj\r-5311b_rdy_pfl_psh.dgn
tlb8143

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-5311B	58

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

MOTT MACDONALD I & E, LLC
LICENSE NO. F-0669

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Office of:

MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

McKIM & CREED
INCORPORATED
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL. (910) 343-1068 FAX. (910) 790-8282

-L-

PI = 1360+00.00
EL = 47.98'
VC = 200'
K = 333
V = 75 MPH

(+)0.3000% (-)0.3000%

PI = 1366+50.00
EL = 46.03'
VC = 200'
K = 333
V = 80 MPH

(-)0.3000% (+)0.3000%

TBM#29 EL = 44.92'
LAG BOLT IN 15" PINE
-L- 1369+79.40 144.70' LT
SEE SHEET 1C-1

-L-

PI = 1373+90.00
EL = 48.25'
VC = 200'
K = 333
V = 75 MPH

(+)0.3000% (-)0.3000%

PI = 1377+90.00
EL = 47.05'
VC = 200'
K = 333
V = 80 MPH

(-)0.3000% (+)0.3000%

BEGIN SPLIT GRADES
-L- STA.1379+45.00,23' LT (SB LANES
-L- STA.1379+45.00,23' RT (NB LANES
EL.47.51

(+)0.3000% (+)0.3000%(SB)

(NB LANES)
PI = 1380+20.00
EL = 47.74'
VC = 150'
K = 250
V = 70 MPH

(SB LANES)
PI = 1382+00.00
EL = 48.28'
VC = 200'
K = 333
V = 76 MPH

(+)0.3000% (-)0.3000%

(-)0.3000% (NB)

(NB LANES)
PI = 1384+25.00
EL = 46.52'
VC = 150'
K = 250
V = 80 MPH

(+)0.3000%(SB)

(+)0.3000% (NB)

47.38

END GRADE
-L- 1385+00.00 ,23' LT (SB LANES)
EL.47.38

END GRADE
-L- 1385+00.00 ,23' RT (NB LANES)
EL.46.75

-L- PLAN SEE SHEETS 30,31,& 32

15:28:09
R:\Raleigh\Proj\r-5311b_rdy_pfl_psh.dgn
tlee

PROJECT REFERENCE NO.	SHEET NO.
R-5311B	59

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

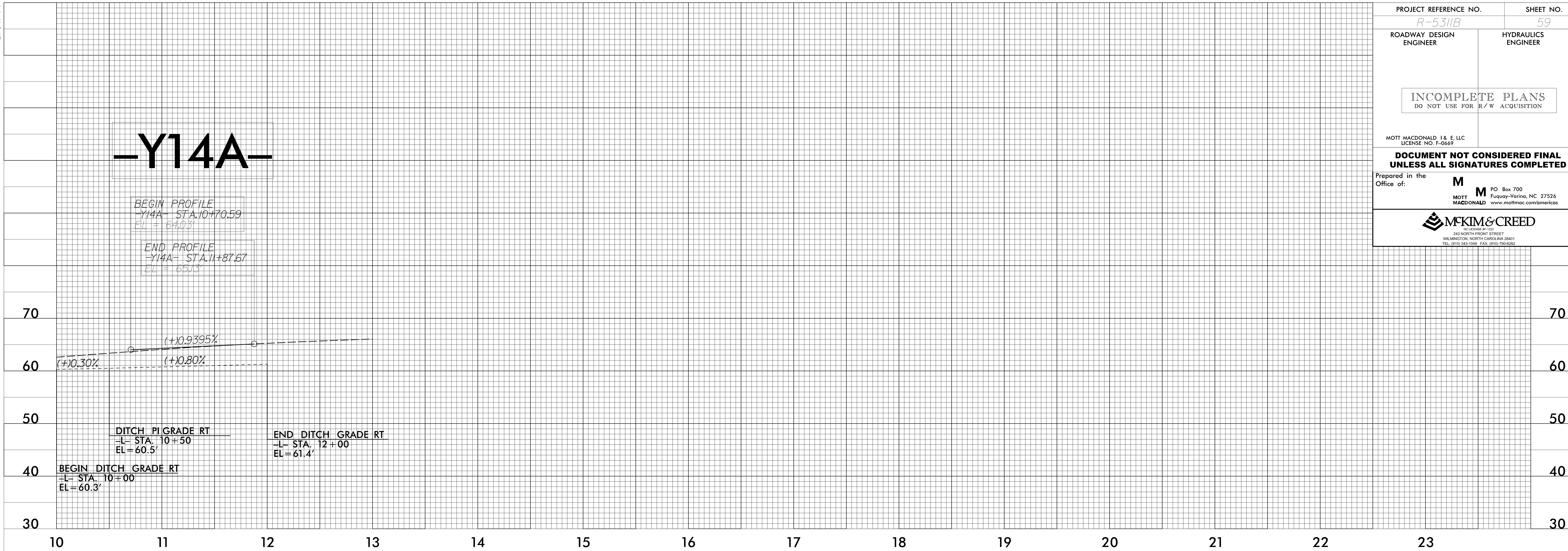
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

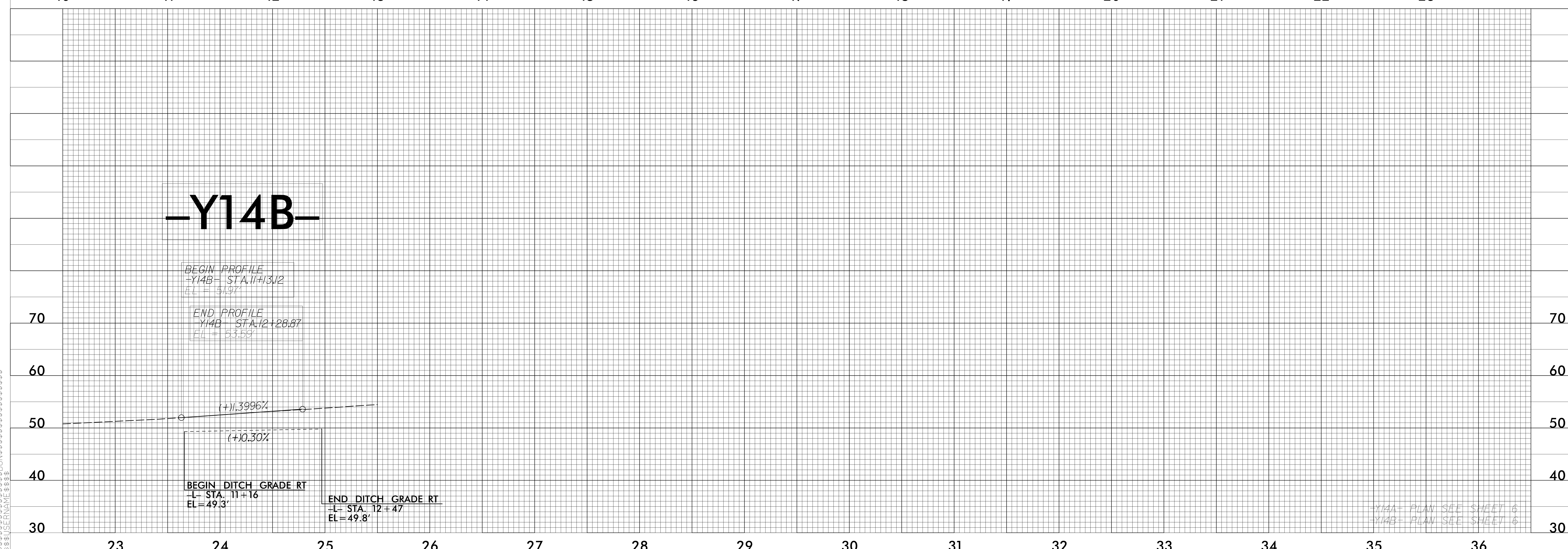
MOTT MACDONALD I & E, LLC
LICENSE NO. F-0669

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Office of:
MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

McKIM & CREED
NC LICENSE #F-1222
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL. (910) 343-1048 FAX. (910) 790-8282





-Y14A- PLAN SEE SHEET 6
-Y14B- PLAN SEE SHEET 6

5/14/99

$$$$$$SYSTIME$$$$$ $$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$ $$$$$$USERNAME$$$$$

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-5111B	60

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

MOTT MACDONALD I & E, LLC
LICENSE NO. F-0669

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Office of:

MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

McKIM & CREED
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL. (910) 343-1081 FAX. (910) 790-8282

-Y15-

PIPE HYDRAULIC DATA
42" RCP STA. 17+08 -Y15-

DRAINAGE AREA	=	33.4	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	43.4	CFS
DESIGN HW ELEVATION	=	57.7	FT
100 YEAR DISCHARGE	=	48.4	CFS
100 YEAR HW ELEVATION	=	58.1	FT
OVERTOPPING FREQUENCY	=	>25,<50	YRS
OVERTOPPING DISCHARGE	=	43.0	CFS
OVERTOPPING ELEVATION	=	57.7	FT

BEGIN PROFILE
-Y15- STA. 15+00.00
EL = 61.2'

PI = 17+80.00
EL = 58.00'
VC = 560'
K = 110
V = 50 MPH

-Y15- STA. 22+40.00 =
-Y15LPB- STA. 20+44.25

-Y15- STA. 22+23.13 =
-Y15RPB- STA. 28+30.19

(+)3.990%
(-)11.143%
(+)0.40%
(+)0.90%
42" RCP

BEGIN DITCH GRADE RT
-Y15- STA. 17+00
EL=56.0'

BEGIN DITCH GRADE LT
-Y15- STA. 17+16
EL=55.0'

END DITCH GRADE RT
-Y15- STA. 21+00
EL=57.6'

PIPE HYDRAULIC DATA
24" RCP STA. 26+58 -Y15-

DRAINAGE AREA	=	4.8	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	12.4	CFS
DESIGN HW ELEVATION	=	61.2	FT
100 YEAR DISCHARGE	=	13.3	CFS
100 YEAR HW ELEVATION	=	61.3	FT
OVERTOPPING FREQUENCY	=	>500	YRS
OVERTOPPING DISCHARGE	=	85.0	CFS
OVERTOPPING ELEVATION	=	93.3	FT

PI = 28+00.00
EL = 98.70'
VC = 110'
K = 87
V = 50 MPH

-Y15-

PIPE HYDRAULIC DATA
18" RCP STA. 28+99 -Y15-

DRAINAGE AREA	=	0.5	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	1.6	CFS
DESIGN HW ELEVATION	=	59.3	FT
100 YEAR DISCHARGE	=	1.7	CFS
100 YEAR HW ELEVATION	=	59.3	FT
OVERTOPPING FREQUENCY	=	>500	YRS
OVERTOPPING DISCHARGE	=	43.0	CFS
OVERTOPPING ELEVATION	=	90.5	FT

(+)3.990%
(-)14.324%

-Y15- STA. 32+95.00 =
-Y15LPC- STA. 21+60.24

-Y15- STA. 33+11.89 =
-Y15RPC- STA. 31+98.17

-Y15- STA. 27+95.43 =
-L- STA. 1019+82.65

(+)0.90%
(+)1.00%

BEGIN DITCH GRADE RT
-Y15- STA. 23+11
EL=58.6'

END DITCH GRADE RT
-Y15- STA. 26+00
EL=61.5'

END DITCH GRADE LT
-Y15- STA. 26+00
EL=63.0'

24" RCP

18" RCP

(+)0.20%
(+)0.10%
42" RCP

BEGIN DITCH GRADE RT
-Y15- STA. 35+30
EL=50.0'

DITCH PI GRADE LT
-Y15- STA. 35+35
EL=51.6'

-Y15 - PLAN SHEETS 17 & 33

$$$$SYSTIME$$$$
$$$$USERNAME$$$$DGN$$$$$$$$$$$$$$$$$$$$

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-5118	61

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

MOTT MACDONALD I & E, LLC
LICENSE NO. F-0669

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Office of:
MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

McKIM & CREED
A GEORGE W. McKIM COMPANY
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL. (910) 343-1081 FAX. (910) 790-8282

PIPE HYDRAULIC DATA
48" RCP STA. 35+33 -Y15-

DRAINAGE AREA	=	53.2	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	73.6	CFS
DESIGN HW ELEVATION	=	54.0	FT
100 YEAR DISCHARGE	=	81.0	CFS
100 YEAR HW ELEVATION	=	54.5	FT
OVERTOPPING FREQUENCY	=	>100, <500	YRS
OVERTOPPING DISCHARGE	=	95.0	CFS
OVERTOPPING ELEVATION	=	55.8	FT

-Y15-

END PROFILE
-Y15- STA. 43+00.00
EL = 55.09'

PI = 38+20.00
EL = 56.55'
VC = 400'
K = 1104
V = 60 MPH

(-)4.1324%
(-)0.3042%
(+)0.20%
(+)0.10%

END DITCH GRADE RT
-Y15- STA. 42+00
EL = 50.7'

END DITCH GRADE LT
-Y15- STA. 42+20
EL = 53.0'

-Y15RPB-

BEGIN PROFILE
-Y15RPB- STA. 10+00.00 =
-L- STA. 1002+20.96, 47' LT
EL = 65.18'

PI = 10+75.00
EL = 68.59'
VC = 70'
K = 288
V = 70 MPH

PI = 12+00.00
EL = 68.97'
VC = 180'
K = 249
V = 70 MPH

PI = 16+00.00
EL = 67.30'
VC = 200'
K = 164
V = 65 MPH

PI = 19+00.00
EL = 69.70'
VC = 200'
K = 155
V = 60 MPH

(+)0.5467%
(+)0.3049%
(-)0.4175%
(-)0.4175%
(+)0.8000%
(+)0.8000%
(-)0.4909%
(-)0.70%
(-)1.00%
(-)0.30%
24" RCP
(-)0.50%

BEGIN DITCH GRADE LT
-Y15RPB- STA. 16+00
EL = 63.8'

BEGIN DITCH GRADE RT
-Y15RPB- STA. 18+00
EL = 62.4'

DITCH PI GRADE RT
-Y15RPB- STA. 19+50
EL = 60.2'

DITCH PI GRADE LT
-Y15RPB- STA. 20+60
EL = 60.5'

END DITCH GRADE RT
-Y15RPB- STA. 23+00
EL = 59.5'

PIPE HYDRAULIC DATA
24" RCP STA. 23+00-Y15RPB-

DRAINAGE AREA	=	3.8	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	7.2	CFS
DESIGN HW ELEVATION	=	61.4	FT
100 YEAR DISCHARGE	=	7.7	CFS
100 YEAR HW ELEVATION	=	61.5	FT
OVERTOPPING FREQUENCY	=	>500	YRS
OVERTOPPING DISCHARGE	=	39.0	CFS
OVERTOPPING ELEVATION	=	66.8	FT

-Y15- PLAN SEE SHEET 34
-Y15RPB- PLAN SEE SHEETS 6 & 7

$$$$SYSTIME$$$$
$$$$USERNAME$$$$DGN$$$$$$$$$$$$$$$$$$$$

5/14/99

-Y15RPB-

END PROFILE
-Y5RPB- STA.27+46.15 =
-Y15- STA.22+21.65 , 20.75'
EL = 75.27'

-Y5RPB- STA.27+66.96 =
-Y15- STA.22+23.13
EL = 75.68'

PI = 24+50.00
EL = 67.00'
VC = 350'
K = 107
V = 50 MPH

(+)2.7722%
(−)0.4909%
(+)2.7722%
(−)0.50%

END DITCH GRADE LT
-Y15RPB- STA. 26+75
EL=57.7'

PROJECT REFERENCE NO.	SHEET NO.
R-5311B	62
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

MOTT MACDONALD I & E, LLC
LICENSE NO. F-0669

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Office of:
MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

McKIM & CREED
NC LICENSE #1-0205
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL. (910) 343-1081 FAX. (910) 790-8282

-Y15LPB-

BEGIN PROFILE
-Y15LPB- STA.10+00.00 =
-L- STA.107+90.00,47' LT
EL = 68.10'

PI = 111+30.00
EL = 68.49'
VC = 150'
K = 74
V = 45 MPH

PI = 13+10.00
EL = 65.40'
VC = 100'
K = 108
V = 50 MPH

PI = 16+40.00
EL = 62.80'
VC = 300'
K = 64
V = 35 MPH

PI = 18+40.00
EL = 70.65'
VC = 100'
K = 124
V = 55 MPH

END PROFILE
-Y15LPB- STA.20+08.77 =
-Y15- STA.22+39.24 , 20.75'
EL = 75.91'

-Y15LPB- STA.20+29.53 =
-Y15- STA.22+40.00
EL = 76.35'

(+)0.3000%
(−)1.7167%
(−)1.7167%
(−)0.7879%
(−)0.7879%
(+)3.9250%
(+)3.9250%
(+)3.1167%
(−)0.30%
(+)0.30%

24" RCP
18" RCP
18" RCP

BEGIN DITCH GRADE RT
-Y15LPB- STA. 13+50
EL=60.7'

DITCH PI GRADE RT
-Y15LPB- STA. 16+32
EL=60.0'

END DITCH GRADE RT
-Y15LPB- STA. 19+09
EL=60.7'

PIPE HYDRAULIC DATA
24" RCP STA.12+84-Y15LPB-

DRAINAGE AREA	=	3.3	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	10.1	CFS
DESIGN HW ELEVATION	=	62.2	FT
100 YEAR DISCHARGE	=	10.9	CFS
100 YEAR HW ELEVATION	=	62.3	FT
OVERTOPPING FREQUENCY	=	>500	YRS
OVERTOPPING DISCHARGE	=	35.0	CFS
OVERTOPPING ELEVATION	=	65.8	FT

PIPE HYDRAULIC DATA
18" RCP STA.15+98-Y15LPB-

DRAINAGE AREA	=	2.3	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	7.2	CFS
DESIGN HW ELEVATION	=	61.7	FT
100 YEAR DISCHARGE	=	7.7	CFS
100 YEAR HW ELEVATION	=	61.8	FT
OVERTOPPING FREQUENCY	=	>500	YRS
OVERTOPPING DISCHARGE	=	13.0	CFS
OVERTOPPING ELEVATION	=	62.7	FT

PIPE HYDRAULIC DATA
18" RCP STA.19+44-Y15LPB-

DRAINAGE AREA	=	1.5	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	4.5	CFS
DESIGN HW ELEVATION	=	59.8	FT
100 YEAR DISCHARGE	=	4.9	CFS
100 YEAR HW ELEVATION	=	59.8	FT
OVERTOPPING FREQUENCY	=	>500	YRS
OVERTOPPING DISCHARGE	=	25.0	CFS
OVERTOPPING ELEVATION	=	72.2	FT

-Y15RPB- PLAN SEE SHEETS 6 & 7
-Y15LPB- PLAN SEE SHEET 7

$$$$SYSTIME$$$$
$$$$USERNAME$$$$DGN$$$$$$$$$$$$$$$$$$$$

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-5111B	63

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

MOTT MACDONALD I & E, LLC
LICENSE NO. F-0669

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Office of:

MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

McKIM & CREED
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL. (910) 343-1081 FAX. (910) 790-8282

-Y15RPC-

BEGIN PROFILE
-Y15RPC- STA. 10+00.00 =
-L- STA. 1001+50.00, 47' RT
EL = 69.24'

PI = 14+50.00
EL = 72.23'
VC = 200'
K = 178
V = 60 MPH

(+)0.6644%

(-)0.4602%

PIPE HYDRAULIC DATA
24" RCP STA. 23+61 -Y15RPC-

DRAINAGE AREA	=	4.4	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	13.6	CFS
DESIGN HW ELEVATION	=	56.0	FT
100 YEAR DISCHARGE	=	14.6	CFS
100 YEAR HW ELEVATION	=	56.1	FT
OVERTOPPING FREQUENCY	=	>500	YRS
OVERTOPPING DISCHARGE	=	56.0	CFS
OVERTOPPING ELEVATION	=	70.2	FT

PI = 20+15.00
EL = 69.63'
VC = 300'
K = 329
V = >80 MPH

(-)0.4602%

(+)0.4527%

(-)1.96%

(-)0.50%

BEGIN DITCH GRADE LT
-Y15RPC- STA. 18+50
EL=59.5'

DITCH PI LT
-Y15RPC- STA. 20+50
EL=55.6'

70 60 50 40 30 20

10 11 12 13 14 15 16 17 18 19 20 21 22 23

-Y15RPC-

END PROFILE
-Y15RPC- STA. 30+25.22 =
-Y15- STA. 33+11.19, 20.75
EL = 77.96'

-Y15RPC- STA. 30+45.98 =
-Y15- STA. 33+11.89
EL = 77.55'

PI = 29+25.00
EL = 73.75'
VC = 150'
K = 51
V = 35 MPH

(+)0.4527%

(+)3.4025%

24" RCP

24" RCP

END DITCH GRADE LT
-Y15RPC- STA. 23+61
EL=54.0'

PIPE HYDRAULIC DATA
24" RCP STA. 26+96 -Y15RPC-

DRAINAGE AREA	=	4.6	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	14.2	CFS
DESIGN HW ELEVATION	=	55.8	FT
100 YEAR DISCHARGE	=	15.3	CFS
100 YEAR HW ELEVATION	=	55.9	FT
OVERTOPPING FREQUENCY	=	>500	YRS
OVERTOPPING DISCHARGE	=	56.0	CFS
OVERTOPPING ELEVATION	=	71.3	FT

-Y15RPC- PLAN SEE SHEETS 6 & 7

70 60 50 40 30 20

23 24 25 26 27 28 29 30 31

$$$$SYSTIME$$$$
$$$$USERNAME$$$$DGN$$$$$$$$$$$$$$$$$$$$

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-5111B	64

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

MOTT MACDONALD I & E, LLC
LICENSE NO. F-0669

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Office of:

MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

McKIM & CREED
LICENSE #1035
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL. (910) 343-1081 FAX. (910) 790-8282

-Y15LPC-

BEGIN PROFILE
-Y15LPC- STA. 10+00.00 =
-L- STA. 1018+40.00, 47' RT.
EL = 67.95'

PI = 11+50.00
EL = 68.40'
VC = 200'
K = 74
V = 45 MPH

PI = 14+50.00
EL = 61.20'
VC = 300'
K = 91
V = 35 MPH

PI = 17+50.00
EL = 71.80'
VC = 300'
K = 106
V = 50 MPH

PI = 20+00.00
EL = 73.14'
VC = 200'
K = 62
V = 35 MPH

END PROFILE
-Y15LPC- STA. 21+24.41 =
-Y15- STA. 32+93.56 , 20.75'
EL = 78.24'

-Y15LPC- STA. 21+45
-Y15- STA. 32+95.00
EL = 78.24'

(+)0.3000%
(−)2.4000%
(−)2.4000%
(+)3.4667%
(−)11.99%
(−)0.40%
(+)3.4667%
(+)0.6160%
(+)0.6160%
(+)3.8180%
(+)0.40%

24" RCP

BEGIN DITCH GRADE LT
-Y15LPC- STA. 12+76
EL=59.2'

DITCH PI LT
-Y15LPC- STA. 15+00
EL=54.8'

DITCH PI LT
-Y15LPC- STA. 18+05
EL=53.7'

END DITCH GRADE LT
-Y15LPC- STA. 20+05
EL=54.5'

-Y2RPB-

BEGIN PROFILE
-Y2RPB- STA. 10+00.00 =
-L- STA. 1125+40.81, 47' LT
EL = 59.76'

PI = 11+35.00
EL = 57.25'
VC = 30'
K = 16
V = 60 MPH

PI = 12+90.00
EL = 56.05'
VC = 180'
K = 282
V = 70 MPH

PI = 16+90.00
EL = 50.50'
VC = 320'
K = 91
V = 50 MPH

(+)0.3037%
(−)0.8000%
(−)0.8000%
(−)1.4375%
(−)1.4375%
(+)1.8558%

36" EQ. PIPE
INV. = 47.9'
S = 0.2%

-Y15LPC- PLAN SEE SHEET 7
-Y2RPB- PLAN SEE SHEETS 14 & 15

$$$$SYSTEM$$$$
$$$$USERNAME$$$$DGN$$$$$$$$$$$$$$$$$$$$

5/14/99

-Y2RPB-

END PROFILE
-Y2RPB- STA. 29+86.23 =
-Y2- STA. 45+67.13 , 20.75' LT
EL = 74.03'

END PROFILE
-Y2RPB- STA. 30+06.98 =
-Y2- STA. 45+67.13
EL = 74.44'

PI = 27+30.00
EL = 69.60'
VC = 150'
K = 212
V = 65 MPH

PI = 29+00.00
EL = 71.55'
VC = 150'
K = 87
V = 45 MPH

(+)1.8558%
(+)1.1471%
(+)1.1471%
(+)2.8760%
(+)2.8760%
(+)1.9759%

PROJECT REFERENCE NO.	SHEET NO.
R-5311B	65

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

MOTT MACDONALD I & E, LLC
LICENSE NO. F-0669

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Office of:
MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

McKIM & CREED
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL. (910) 343-1081 FAX. (910) 790-8282

-Y2LPB-

BEGIN PROFILE
-Y2LPB- STA. 10+00.00 =
-L- STA. 1142+07.01, 47' LT
EL = 56.40'

-Y2LPB- STA. 15+10.00 =
TIE TO EXISTING (R-5311A)

PI = 11+15.00
EL = 56.75'
VC = 120'
K = 61
V = 45 MPH

PI = 13+20.00
EL = 53.35'
VC = 190'
K = 38
V = 30 MPH

PI = 14+50.00
EL = 57.74'
VC = 70'
K = 83
V = 50 MPH

(+)0.3043%
(-)1.6572%
(-)1.6572%
(+)3.3752%
(+)2.5318%
(+)2.5318%
(+)1.9075%

TO BE CONSTRUCTED BY OTHERS (R-5311A)

COLLAR AND EXTEND
24" RCP
S = 0.2%

-Y2RPB- PLAN SEE SHEETS 14 & 15
-Y2LPB- PLAN SEE SHEET 15

$$$$SYSTEM$$$$
$$$$USERNAME$$$$DGN$$$$$$$$$$$$$$$$$$$$

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-5311B	66

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

MOTT MACDONALD I & E, LLC
LICENSE NO. F-0669

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Office of:
MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

McKIM & CREED
A SUBSIDIARY OF MOTT MACDONALD
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL. (910) 343-1081 FAX. (910) 790-8282

-Y2RPD-

BEGIN PROFILE
-Y2RPD- STA. 10+00.00 =
-L- STA. 1160+83.49 47' RT
EL = 59.18'

PI = 11+50.00
EL = 58.56'
VC = 170'
K = 132
V = 55 MPH

(-)0.4133%

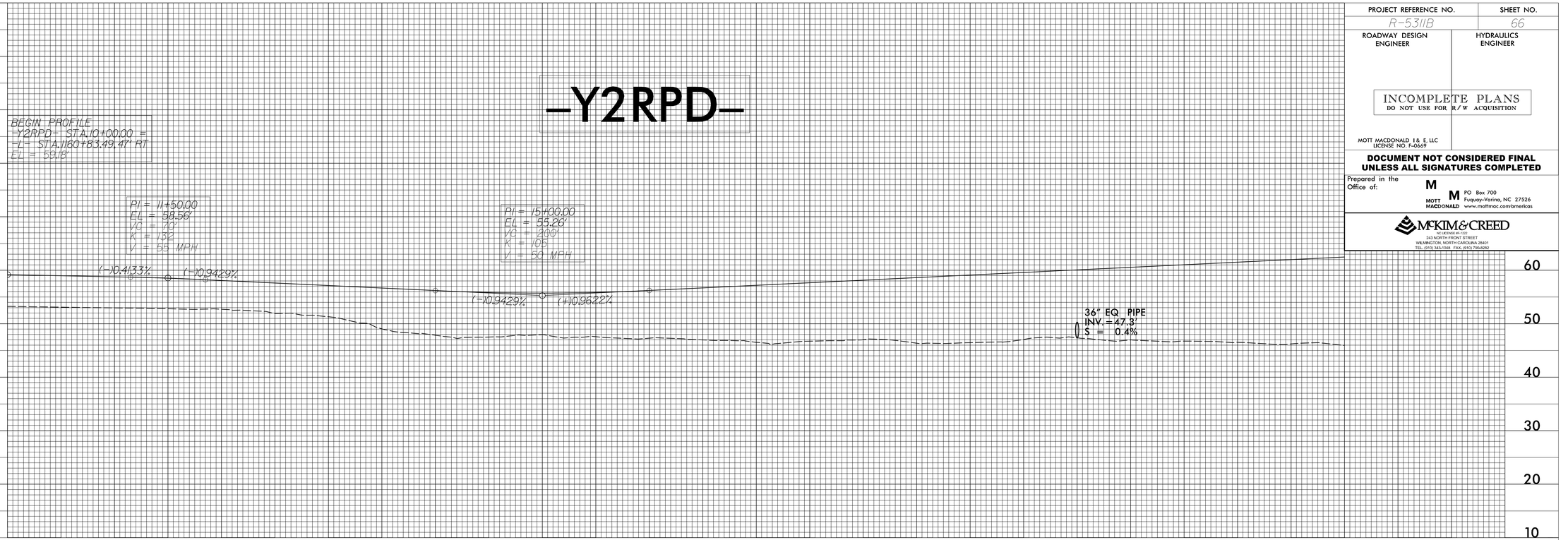
(-)0.9429%

PI = 15+00.00
EL = 55.28'
VC = 200'
K = 105
V = 50 MPH

(-)0.9429%

(+)0.9622%

36" EQ. PIPE
INV. = 47.3'
S = 0.4%



-Y2RPD-

END PROFILE
-Y2RPD- STA. 30+01.32 =
-Y2- STA. 55+58.87 ,20.75' RT
EL = 72.82'

-Y2RPD- STA. 30+22.07 =
-Y2- STA. 55+58.87
EL = 73.28'

PI = 28+50.00
EL = 68.25'
VC = 250'
K = 121
V = 50 MPH

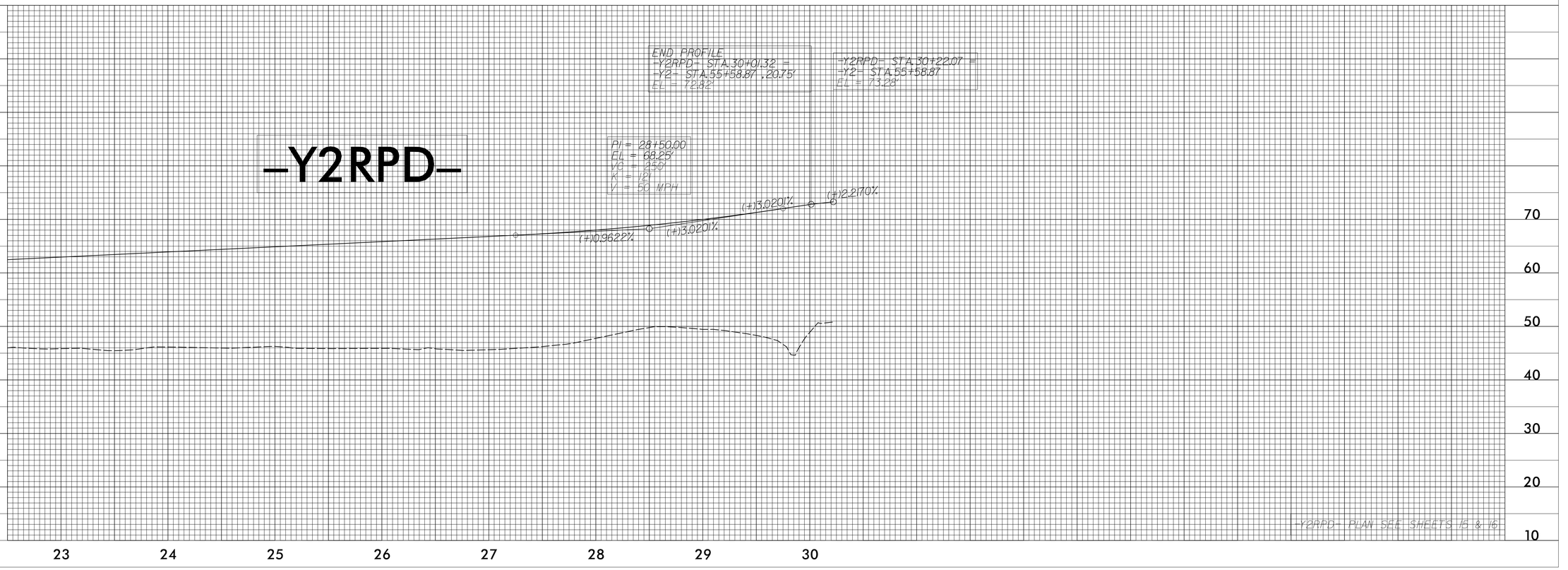
(+)0.9622%

(+)3.0201%

(+)3.0201%

(+)2.2170%

-Y2RPD- PLAN SEE SHEETS 15 & 16



$$$$SYSTIME$$$$
$$$$USERNAME$$$$DGN$$$$$$$$$$$$$$$$

5/14/99

-Y2LPD-

BEGIN PROFILE
-Y2LPD- STA. 10+00.00 =
-L- STA. 1144+62.64, 47' RT
EL = 55.8'

PI = 10+85.00
EL = 55.54'
VC = 90'
K = 115
V = 55 MPH

PI = 11+85.00
EL = 54.44'
VC = 110'
K = 83
V = 50 MPH

PI = 13+60.00
EL = 50.20'
VC = 220'
K = 37
V = 30 MPH

PI = 15+00.00
EL = 55.12'
VC = 90'
K = 92
V = 50 MPH

(-)0.3176%
(-)1.0000%
(-)2.4229%
(-)2.4229%
(+)3.5143%
(+)3.5143%
(+)2.9728%

TO BE CONSTRUCTED BY OTHERS (R-5311A)

-Y2LPD- STA. 15+25.00
TIE TO EXISTING (R-5311A)

-Y5-

BEGIN PROFILE
-Y5- STA. 14+50.00
EL = 49.19'

BEGIN DITCH GRADE LT
-Y5- STA. 15+50
EL = 46.9'

BEGIN DITCH GRADE RT
-Y5- STA. 17+50
EL = 47.1'

(+)0.3000%
(+)0.13%
(+)0.10%

END DITCH GRADE RT
-Y5- STA. 21+50
EL = 47.5'

END DITCH GRADE LT
-Y5- STA. 21+50
EL = 47.6'

BEGIN DITCH GRADE RT
-Y5- STA. 22+00
EL = 46.2'

-Y2LPD- PLAN SEE SHEET 15
-Y5- PLAN SEE SHEETS 17 & 39

PROJECT REFERENCE NO.	SHEET NO.
R-5311B	67

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

MOTT MACDONALD I & E, LLC
LICENSE NO. F-0669

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Office of:

MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

McKIM & CREED
NC LICENSE #1035
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL. (910) 343-1081 FAX. (910) 790-8282

$$$$SYSTEM$$$$
$$$$USERNAME$$$$
$$$$DGN$$$$

5/14/99

-Y5-

PROJECT REFERENCE NO.	SHEET NO.
R-5111B	68
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

MOTT MACDONALD I & E, LLC
LICENSE NO. F-0669

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Office of:
MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

McKIM & CREED
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL. (910) 343-1081 FAX. (910) 790-8282

PIPE HYDRAULIC DATA
42" RCP STA. 32+75 -Y5-

DRAINAGE AREA	= 28.4	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 42.7	CFS
DESIGN HW ELEVATION	= 45.8	FT
100 YEAR DISCHARGE	= 51.7	CFS
100 YEAR HW ELEVATION	= 46.5	FT
OVERTOPPING FREQUENCY	= >100, <500	YRS
OVERTOPPING DISCHARGE	= 65	CFS
OVERTOPPING ELEVATION	= 47.9	FT

PI = 28+00.00
EL = 53.84'
VC = 300'
K = 240
V = 65 MPH

(+)0.3000%

(-)0.9482%

(-)0.10%

END DITCH GRADE RT
-Y5- STA. 25+83
EL = 45.8'

42" RCP
INV = 42.3'
S = 0.32%
BURIED 1'

END PROFILE
-Y5- STA. 36+50.00
EL = 45.78

TBM#17 EL = 49.50'
LAG BOLT IN 15" SWEET GUM
-Y5- 37+09.94 33.00' RT
SEE SHEET 1C-1

-Y5- PLAN SEE SHEETS 17, 18 & 40

$$$$SYSTEM$$$$
$$$$USERNAME$$$$DGN$$$$$$$$$$$$$$$$

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-5111B	69

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

MOTT MACDONALD I & E, LLC
LICENSE NO. F-0669

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Office of:
MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

McKIM & CREED
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL. (910) 343-1081 FAX. (910) 790-8282

-Y5A-

BEGIN PROFILE
-Y5A- STA.10+69.41
EL = 51.04'

END PROFILE
-Y5A- STA.13+30.02
EL = 50.25'

(-)0.303%

-Y6A-

BEGIN PROFILE
-Y6A- STA.10+62.60
EL = 48.43'

END PROFILE
-Y6A- STA.11+78.43
EL = 48.28'

PI = 11+40.00
EL = 48.16'
VC = 150'
K = 76
V = 40 MPH

(-)0.3488% (+)0.3123%

-Y5A- PLAN SEE SHEETS 17 & 18
-Y6A- PLAN SEE SHEET 16

$$$$SYSTIME$$$$
$$$$USERNAME$$$$DGN$$$$$$$$$$$$$$$$$$$$

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-5311B	70

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

MOTT MACDONALD I & E, LLC
LICENSE NO. F-0669

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Office of:
MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

McKIM & CREED
A GEORGE B. MCKIM FIRM
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL. (910) 343-1081 FAX. (910) 790-8282

-Y10A-

BEGIN PROFILE
-Y10A- STA. 10+12.39
EL = 50.86'

END PROFILE
-Y10A- STA. 11+28.26
EL = 51.21'

(+)0.302%

(-)0.33%

BEGIN DITCH GRADE LT
-Y10A- STA. 10+00
EL = 48.5'

END DITCH GRADE LT
-Y10A- STA. 11+70
EL = 47.7'

-Y10B-

BEGIN PROFILE
-Y10B- STA. 10+12.39
EL = 50.9'

END PROFILE
-Y10B- STA. 11+28.56
EL = 51.26'

(+)0.301%

(-)0.19%

(-)0.10%

END DITCH GRADE RT
-Y10B- STA. 12+25
EL = 47.8'

END DITCH GRADE LT
-Y10B- STA. 11+20
EL = 48.3'

-Y10A- PLAN SEE SHEET 20
-Y10B- PLAN SEE SHEET 20

$$$$SYSTEM$$$$
$$$$USERNAME$$$$DGN$$$$$$$$$$$$$$$$$$$$

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-5311B	7I

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

MOTT MACDONALD I & E, LLC
LICENSE NO. F-0669

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Office of:

MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

McKIM & CREED
INCORPORATED
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL. (910) 343-1068 FAX. (910) 790-8282

-Y11-

BEGIN PROFILE
-Y11- STA.12+50.00
EL = 48.33'

PI = 14+35.00
EL = 50.10'
VC = 370'
K = 137
V = 60 MPH

(+)0.9568%

(+)3.6526%

PI = 25+00.00
EL = 89.00'
VC = 1,150'
K = 151
V = 60 MPH

TBM#27 EL = 49.10'
LAG BOLT IN 24" PINE
-Y11- 13+05.84 66.62' RT
SEE SHEET 1C-1

10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

90 80 70 60 50 40 30

-Y11-

PI = 25+00.00
EL = 89.00'
VC = 1,150'
K = 151
V = 60 MPH

(+)3.6526%

(-)3.9502%

PI = 35+05.00
EL = 49.30'
VC = 470'
K = 136
V = 60 MPH

(-)3.9502%

(+)0.5020%

-Y11- STA. 34+99.66 =
-Y11A- STA. 10+00.00

-Y11- PLAN SEE SHEETS 27,35,& 36

23 24 25 26 27 28 29 30 31 32 33 34 35 36

90 80 70 60 50 40 30

15:28:17
R:\Roadway\Proj\r-5311b_rdy_pfl_psh.dgn
11-08-13

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-5118	72

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

MOTT MACDONALD I & E, LLC
LICENSE NO. F-0669

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Office of:
MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

McKIM & CREED
A SUBSIDIARY OF MACTEC
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL. (910) 343-1081 FAX. (910) 790-8282

-Y11-

END PROFILE
-Y11- STA. 37+50.00
EL = 48.07'

(+)0.5020%

TBM#26 EL = 49.37'
LAG BOLT IN 18" PINE
-Y11- 37+89.62 31.65' LT
SEE SHEET 1C-1

-Y2A-

PIPE HYDRAULIC DATA
48" RCP STA. 18+76 -Y2A-

DRAINAGE AREA	=	36.7	AC
DESIGN FREQUENCY	=	25	YRS
DESIGN DISCHARGE	=	79.7	CFS
DESIGN HW ELEVATION	=	42.1	FT
100 YEAR DISCHARGE	=	94.7	CFS
100 YEAR HW ELEVATION	=	42.4	FT
OVERTOPPING FREQUENCY	=	>100,<500	YRS
OVERTOPPING DISCHARGE	=	160	CFS
OVERTOPPING ELEVATION	=	45.8	FT

BEGIN PROFILE
Y2A STA. 11+50.00
EL = 43.61'

-Y2A- STA. 19+07.54 =
-Y2B- STA. 10+00.00

PI = 22+00.00
EL = 49.56'
VC = 400'
K = 162
V = 80 MPH

(+)0.5667%
(-)0.3000%
(+)0.17%
(+)3.00%
(+)0.69%
(+)0.10%
48" RCP

BEGIN DITCH GRADE RT
-Y2A- STA. 11+00
EL=39.5'

END DITCH GRADE RT
-Y2A- STA. 18+00
EL=40.6'

BEGIN DITCH GRADE LT
-Y2A- STA. 18+15
EL=37.2'

BEGIN DITCH GRADE RT
-Y2A- STA. 20+00
EL=40.2'

END DITCH GRADE RT
-Y2A- STA. 21+00
EL=43.2

DITCH PI LT
-Y2A- STA. 22+50
EL=43.2'

END DITCH GRADE LT
-Y2A- STA. 23+50
EL=43.3'

-Y11- PLAN SEE SHEET 36
-Y2A- PLAN SEE SHEETS 37 & 38

$$$$SYSTEM$$$$
$$$$USER NAME$$$$
$$$$DGN$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-5311B	73

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

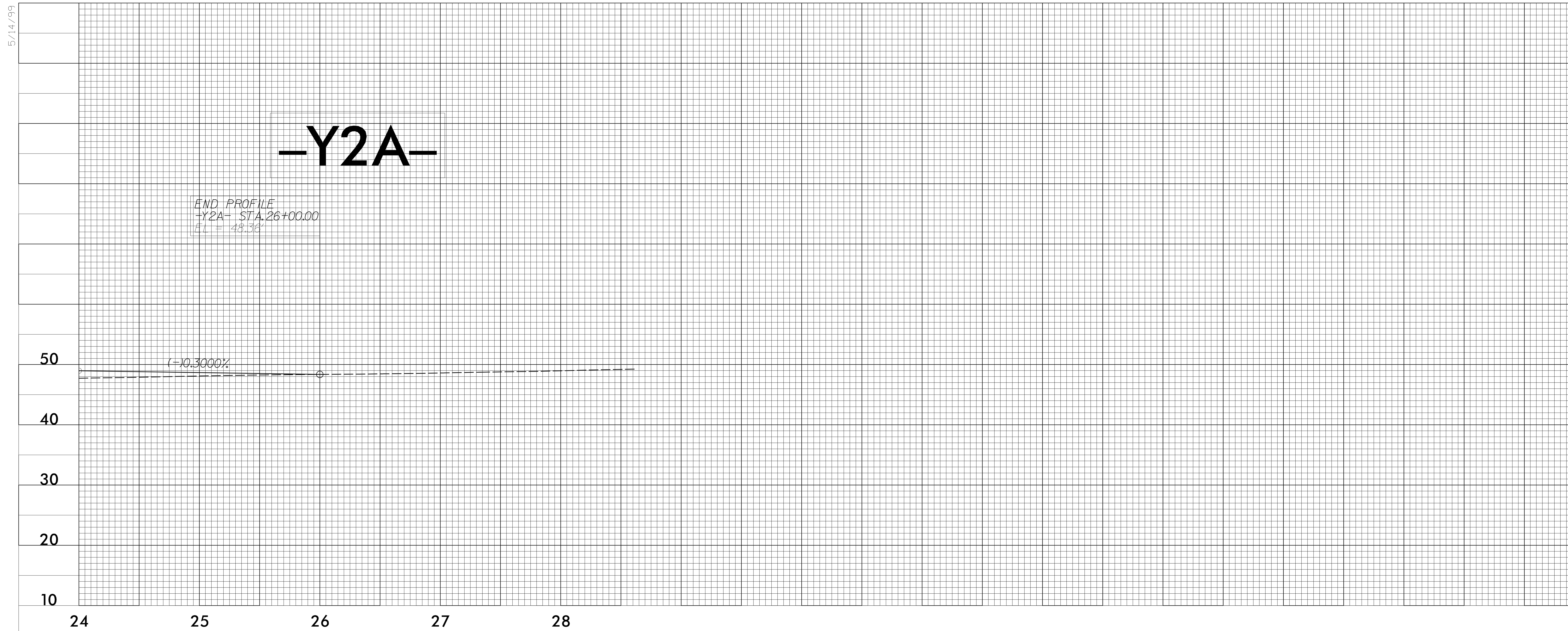
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

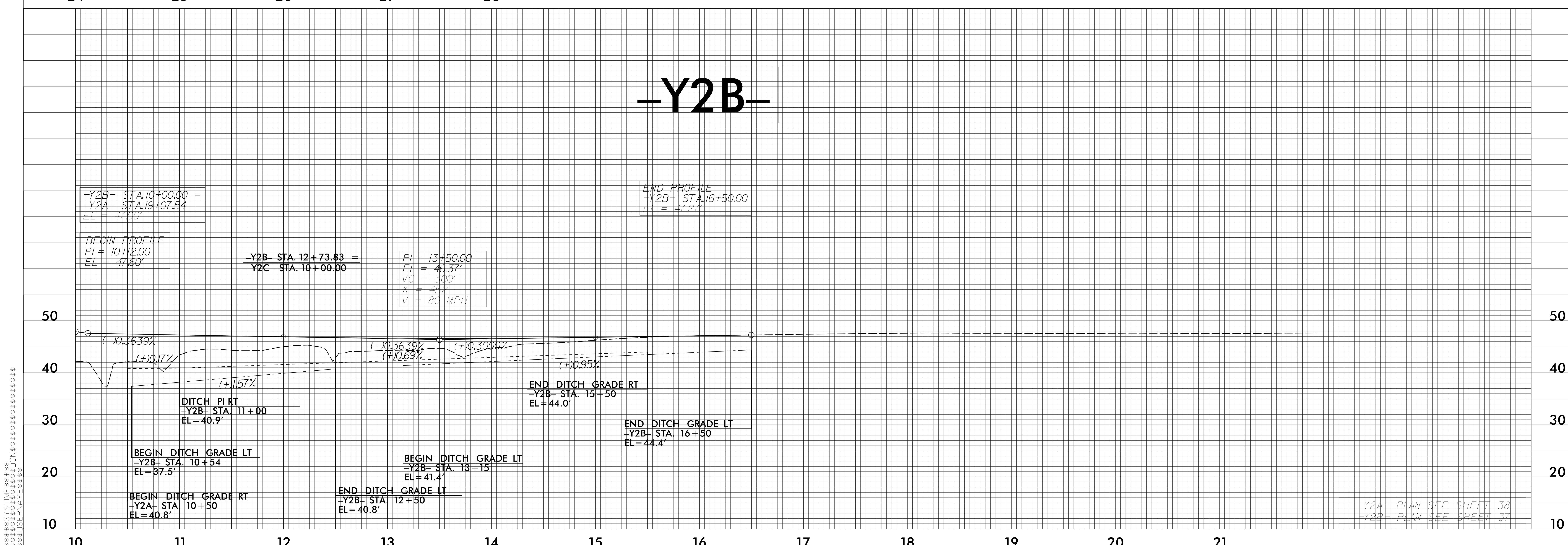
MOTT MACDONALD I & E, LLC
LICENSE NO. F-0669

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

Prepared in the Office of:
MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

McKIM & CREED
NC LICENSE #F-1222
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL. (910) 343-1048 FAX. (910) 790-8282





5/14/99

-Y2C-

-Y2C- STA.10+00.00 =
-Y2B- STA.12+73.83
EL = 46.71'

BEGIN PROFILE
PI = 10+12.8
EL = 46.40'

END PROFILE
-Y2C- STA.13+00.00
EL = 46.29'

PI = 11+40.00
EL = 46.81'
VC = 200'
K = 310
V = 75 MPH

(+)0.3208%
(-)0.3250%
(+)0.3268%
(+)0.93%
(+)0.88%
24" RCP

BEGIN DITCH GRADE RT
-Y2C- STA. 10+97
EL=41.4'

BEGIN DITCH GRADE LT
-Y2C- STA. 10+63
EL=40.8'

END DITCH GRADE RT
-Y2C- STA. 13+00
EL=43.3'

END DITCH GRADE LT
-Y2C- STA. 13+00
EL=43.0'

PIPE HYDRAULIC DATA
24" RCP STA. 10+74 -Y2C-

DRAINAGE AREA	=	8.4	AC
DESIGN FREQUENCY	=	25	YRS
DESIGN DISCHARGE	=	12.2	CFS
DESIGN HW ELEVATION	=	43.4	FT
100 YEAR DISCHARGE	=	14.3	CFS
100 YEAR HW ELEVATION	=	43.6	FT
OVERTOPPING FREQUENCY	=	>100,<500	YRS
OVERTOPPING DISCHARGE	=	25	CFS
OVERTOPPING ELEVATION	=	44.8	FT

PROJECT REFERENCE NO.	SHEET NO.
R-5311B	74

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

MOTT MACDONALD I & E, LLC
LICENSE NO. F-0669

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Office of:

MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

McKIM & CREED
NC LICENSE #1035
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL. (910) 343-1081 FAX. (910) 790-8282

-Y11A-

-Y11A- STA.10+00.00 =
-Y11- STA.34+99.66
EL = 51.45'

BEGIN PROFILE
PI = 10+12.01
EL = 51.16'

END PROFILE
-Y11A- STA.12+50.00
EL = 47.94'

PI = 11+50.00
EL = 47.41'
VC = 200'
K = 62
V = 35 MPH

(-)2.7176%
(-)2.7176%
(+)0.5300%

-Y2C- PLAN SEE SHEET 37

$$$$SYSTEM$$$$
$$$$ENGINEERING$$$$
$$$$SCENARIO$$$$