STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

BEVERLY EAVES PERDUE
GOVERNOR

EUGENE A. CONTI, JR.
SECRETARY

July 30, 2012

US Army Corps of Engineers
Raleigh Regulatory Field Office
3331 Heritage Trade Dr., Suite 105
Wake Forest, NC 27587

Attention: Eric Alsmeyer
NCDOT Coordinator, Division 5

Subject: **Application for the Modification to the Section 404 Individual Permit and Section 401 Water Quality Certification** for US 501 from NC 49 in Roxboro to SR 1602 (Jesse Banks Road) in Person County, Division 5. Federal Aid Project No. STP-501(11), WBS Element No. 34406.2.3, TIP No. R-2241A.

Reference: Section 404 Individual Permit, issued June 6, 2012 USACE Action ID 2009-00439
Section 401 Individual Water Quality Certification, April 5, 2012, NCDENR-DWQ Water Quality Certification Project No. 20120073

$540.00 Debit WBS Element 34506.1.1

Dear Sir:

The North Carolina Department of Transportation (NCDOT) proposes to improve US 501 to a multilane facility from Roxboro to the Virginia State line. This project has 3 sections, A, B and C. Section A has independent utility from the others so it is being permitted separately. Sections B and C are post-year lets. Section A of this project (4.46 miles) will provide a small amount of widening along NC 49 then will take off on new location until it merges with Halifax Road (SR 1521) and then with US 501 to SR 1602 (Jesse Banks Road). The widening section of NC 49 will be a 5-lane curb and gutter. The new location segment and widening of Halifax Road and US 501 to SR 1602 will be 4-lane divided with a shoulder section.

This permit modification request is for revisions to the permit drawings and plan sheets and additional impacts to streams for items that were accidentally left off the drawings from previous meetings and a revision to Utility Site 1. Included with the permit modification is this cover letter, revised Stormwater management plan and revised permit drawings 3, 3a, 4, 5, 16, 17, 27, 28, 35, 36, 37, 38, 39, 40, 45, 46, 47, 48 of 48, revised Utility Site 1 drawings and revised plan sheets 4, 8, 15, 19, 20 and 22.

MAILING ADDRESS:
NC DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS
NATURAL ENVIRONMENT SECTION
1598 MAIL SERVICE CENTER
RALEIGH NC 27699-1598

TELEPHONE: 919-707-6000
FAX: 919-212-5785
WEBSITE: WWW.NCDOT.ORG

LOCATION:
CENTURY CENTER BLDG. B.
1020 BIRCH RIDGE DR.
RALEIGH NC 27610

The revised design does not compromise NCDOT's compliance with the existing permit conditions. The revision has been evaluated for compliance with the avoidance/minimization criteria and is in compliance with all previous issues, including the following:

- Protected Species
- Aquatic Life passage
- FEMA compliance
- Cultural Resources.

Permit Drawing 3 of 48 (Plan Sheet 2-H)

-Detail 20 has been revised to reflect use of different size class of rip rap on the streambank based on the size of the pipe.
-Pre-formed scour holes at 25+80, 35+10 and 50+80 have been deleted from the project.
-An energy dissipator at 24+80 has been deleted from the project.
-Permanent Soil Reinforcement Matting added to the two other Energy Dissipators to help transition to natural ground.

New Permit Drawing 3a of 48(Plan Sheet 2H-2)

-Details 21-26 have been added to the project.
-New inlet channel details have been added that describe placement of different size classes of rip rap on the streambank based on the size of the pipe.
-New detail for construction of the low flow channel and flood plain sills has been added.
-Rip rap has been added to the benches of the multi-barrel detail

Site 1, Permit Drawings 4 and 5 of 48 (Plan Sheet 4)

-Rip rap has been depicted along the full limits of the streambank grading along the east bank at the culvert inlet.
-No changes to stream impacts have occurred.

Site 6, Permit Drawing 16 and 17 of 48 (Plan Sheet 8)

-Rip rap on both streambanks at the pipe outlet has been extend to the full limits of the flow line and back slope of Lateral 0.6 m base ditch lined with Class B rip rap. This has resulted in the following change to jurisdictional impacts:

- increase of 7 linear feet of existing permanent channel impacts due to streambank stabilization and a decrease of 10 linear feet of existing temporary channel impacts. The stream impact summary sheet has been revised to reflect this change.
- Total streambank stabilization impacts now total 23 feet and temporary impacts total 20 feet. This stream did not require any mitigation.

-A pre-formed scour hole located at 25+80 Lt has been deleted and replace with a rip rap pad. Note that there are no jurisdictional features located in this area.

Site 11, Permit Drawing 27 and 28 of 48 (Plan Sheet 15)

-Rip rap has been added on both streambanks at the pipe inlet to provide long-term stability. This is necessary due to the presence of a headwall installed at the pipe inlet. This has resulted in the following change to jurisdictional impacts:

- increase of 16 linear feet of existing permanent channel impacts due to streambank stabilization and a decrease of 17 linear feet of existing temporary channel impacts. The stream impact summary sheet has been revised to reflect this change.
- Total streambank stabilization impacts now total 52 feet and temporary impacts total 85 feet. This stream required mitigation.

Permit Drawing 35 and 36 of 48 (Plan Sheet 19)

The hydraulic design at this location has been slightly revised at this location.

- Revised the 200 PVC near Structure 1909 to tie to Junction Box.
- Shifted the outlet of the 200 PVC to the rip rap of the lateral base ditch near Structure 1903.
- Near Structure 1907, Class B rip rap checks were eliminated on natural ground. Also near Structure 1907, the rip rap on the banks of the lateral base ditch was changed to Class II.
- Near Structure 1910, the rip rap on the banks of the lateral base ditch was changed to Class II.
- Permanent soil reinforcement matting was added to the lateral base ditch on the right side.
- This has resulted in no changes to stream impacts.

Site 17, Permit Drawing 37 of 48 (Plan Sheet 20)

-Rip rap on both streambanks at the pipe inlet has been extended to go past the outlet of the adjacent 375 mm pipe structure. This will provide long-term stability of the streambank at this location. This has resulted in the following change of impacts:

- decrease of 2 linear feet of existing permanent channel impacts due to a recalculation of fill impacts, increase of 31 linear feet of existing permanent channel impacts due to streambank stabilization and a decrease of 39 linear feet of existing temporary channel impacts. The stream impact summary sheet has been revised to reflect this change.
- Total streambank stabilization impacts now total 67 feet and temporary impacts total 23 feet.

Site 18, Permit Drawing 39 of 48 (Plan Sheet 22)

-Class B rip rap depicted at tail end of the Special Lateral 0.6 m Base Ditch has been slightly extended to the edge of the flow line of the stream channel. Additionally, Class I rip rap pads have been added in the flow line of the channel at the outlet of the 750 mm and 900 mm pipe structures. The rip rap pads will be countersunk below the flow line of the channel to prevent formation of scour washes in the downstream channel. This has resulted in the following change of impacts:

- decrease of 10 linear feet of existing permanent channel impacts due to a recalculation of fill impacts, increase of 32 linear feet of existing permanent channel impacts due to streambank stabilization and a decrease of 22 linear feet of existing temporary channel impacts. The stream impact summary sheet has been revised to reflect this change.
- Total streambank stabilization impacts now total 42 feet and temporary impacts total 181 feet.

Utility Site 1, Permit Drawings 1 and 2 of 2 (Plan Sheet 5)

-Due to the phasing of the culvert at this site the gas main needs to be relocated for constructability issues. The gas main will be put between the water and sewer lines and all three will be constructed at the same time. The gas main will increase the temporary stream impacts at this site by 2 feet.

MITIGATION

With this modification there was a decrease of 12 feet of permanent fill to streams requiring mitigation, an increase of 86 feet of streambank stabilization and a decrease of 86 feet of temporary impacts (Table 1). Only streams at Sites 11, 17 and 18 required mitigation. The stream at Site 6 did not require mitigation. See attached revised Table 2 from the Permit Application.

Table 1. Changes in impacts and mitigation.

	Permanent Stream Fill (ft)	Streambank Stabilization (ft)	Temporary Stream Impacts (ft)	Permanent stream Impacts Requiring Mitigation[1]
Original Permit Impacts	**3,393**	**439**	**858**	**3,196**
Permit Modification Impacts	**3,381**	**525**	**772**	**3,184**
Increase(+)/ Decrease(-)	**-12**	**+86**	**-86**	**-12**

[1]Required mitigation from USACE

Required mitigation by NCDWQ is now 3,666 feet. Required mitigation for USACE is now 3,184 feet. The USACE mitigation (2:1) still exceeds NCDWQ's required mitigation. No additional mitigation is proposed.

REGULATORY APPROVALS

Application is hereby made for a modification to the Department of the Army Section 404 Individual Permit as required for the above-described activities for the proposed TIP project R-2241A. We are also hereby requesting a Modification to the Individual Section 401 Water Quality Certification from the Division of Water Quality. In compliance with Section 143-215.3D(e) of the NCAC, we will provide $540 to act as payment for processing the Section 401 permit. We are providing five copies of this application to the North Carolina Department of Environment and Natural Resources, Division of Water Quality, for their review and approval.

A copy of this application will be posted on the NCDOT website at http://www.ncdot.org/doh/preconstruct/pe/neu/Permit.html. If you have any questions or need additional information, please call Rachelle Beauregard at 919-707-6105.

Sincerely,

for E. L. Lusk

Gregory J. Thorpe, Ph.D., Manager
Project Development and Environmental Analysis Unit

Cc: NCDOT Standard Permit Application Distribution List

Revised Table 2. R-2241A Streams Impacted

Permit Site No.	Stream ID in EA[1]	JD Package ID	Stream Name	Intermittent/ Perennial	Permanent Impacts		Temporary Impacts	Impacts requiring mitigation[3]
1	S-13	1A	Marlowe Creek	Perennial	Fill	138	26	138
					SBS[2]	125		
Utility Site 1	S-13	1A	Marlowe Creek	Perennial	0		8	0
3	*	2A	UT to Marlowe Creek	Intermittent	Fill	23	0	0
4	S-14	3A	UT to Marlowe Creek	Perennial	Fill	112	39	112
					SBS	59		
6	*	4A	UT to Marlowe Creek	Intermittent	Fill	23	20	0
					SBS	23		
7A	S-16	4AA	UT to Marlowe Creek	Perennial	Fill	518	108	518
					SBS	82		
7B	S-16	4AB	UT to Marlowe Creek	Intermittent	Fill	59	0	0
8	*	8A	UT to Marlowe Creek	Perennial	Fill	194	36	194
					SBS	13		
9	*	9A	UT to Marlowe Creek	Perennial	Fill	279	33	279
					SBS	16		
10	S-29	10A, 11A	UT to Mitchell Creek	Both Intermittent	Fill	92	43	0
					SBS	20		
11	S-30	12A	UT to Mitchell Creek	Perennial	Fill	282	85	282
					SBS	52		
13	S-23	14A	UT to Mitchell Creek	Perennial	Fill	246	72	246
14	S-24	15A, 16A	UT to Mitchell Creek	Both Perennial	Fill	262	23	262
					SBS	13		
15	S-25	17A	Mitchell Creek	Perennial	Fill	653	75	653
					SBS	13		
17	*	2B	UT to Mitchell Creek	Perennial	Fill	146	23	146
					SBS	67		
18	*	3B, 4B	UT to Mill Creek	Both Perennial	Fill	354	181	354**
					SBS	42		
Total					**Fill**	**3,381**	**772**	**3,184**
					SBS	**525**		

*Not stated in EA **The 42 feet of mitigation for SBS required mitigation from DWQ but not counted here because total mitigation for the USACE exceeds DWQ mitigation

[1]Location IDs are a best guess based on EA map

[2]Stream Bank Stabilization [3]Mitigation required by USACE

NCDOT Highway Stormwater PROGRAM

Released: July 2010 (DRAFT)

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

Version 1.1

Revised 6/15/12

General Project Information

Project No.:	R-2241A		**Date:**	10/11/2011	
City/Town:	Roxboro		**Designer:**	SDG	
County(ies):	Person County		**Project Manager:**	WHW	
River Basin(s):	**Roanoke**		**CAMA County?**	no	**TVA County?** no
Primary Receiving Water:	Marlowe Creek, Mitchell Creek, Mill Creek		**NCDWQ Stream Index:**	22-58-12-6, 22-58-12-6-3, 22-58-15-2	
NCDWQ Surface Water Classification for Primary Receiving Water		**Primary:**	Class C		
		Supplemental:			
Other Stream Classification:					
303(d) Stream?	yes	**Type(s) of Impairment:**	Marlowe Creek	Ecological/ Biological	Integrity Benthos
State Stormwater Permit Required?	no	**If yes, why?**			
Could the Project Impact Threatened or Endangered Species?			no		
Description:					
Anadromous Fish Present?	**no**				
Description:					
Buffer Rules in Effect?	no		**Buffer Rules:**		

Existing Site

Description of Existing Project Area:	Rural Farmland, Rolling Hills
Average Daily Traffic (existing):	21,725
Existing Cross Section:	2-Lane Shoulder Section
Surrounding Land Use:	Farming, Agriculture
General Comments:	

Project Description

Description of Proposed Project:	New Location 4-Lane Divided Highway		
Average Daily Traffic (proposed):	34,142		
Proposed Cross-Section:	5-Lane Curb and Gutter, 4-Lane Divided Highway		
Interchange Modification:	no	**Median Type:**	Turn Lane, Grass Median
North Terminus:	Existing US 501		
South Terminus:	Existing US 501/NC49 Intersection		
Project Length (lin. miles/feet):	4.46 Miles	**Added Impervious Area (ac.):**	29 ac
General Comments:			

Environmental Summary

Riparian Buffer and Jurisdictional Stream Impacts and Associated SCMs

Station	Stream Name	Stream Type	Jurisdict. Stream	Buffer?	Classific-ation?	Proposed Structure	SCM Type	Checklist Complete?	DA (ac.)	Q_2 (ft^3/s)	Q_{10} (ft^3/s)	WQv^c (ft^3)
13+28 to 13+62 -L-	Marlowe Creek	Perennial		No	Class C	3 @ 3m x 3m RCBC 450mm to PSH	preformed scour hole	no	2	6.4	8.5	
19+21 to 19+23 -L- RT	UT to Marlowe Creek			No	Class C	Fill	no	no				
20+84 to 20+89 -L-	UT to Marlowe Creek	Perennial		No	Class C	2 @ 2.4m x 2.4m RCBC	swale	no	1.4	3	3.9	
24+98 to 25+10 -L- RT	UT to Marlowe Creek			No	Class C	900mm RCP	swale	no	1.9	5.3	6.9	
34+93 to 36+38 -L-	UT to Marlowe Creek	Perennial		No	Class C	2.7m x 1.8m RCBC 450mm to PSH	preformed scour hole	no	1.8	4.3	5.7	
37+33 to 37+55 -L-	UT to Marlowe Creek			No	Class C	1050mm RCP	swale	no	2.5	5.6	7.4	
40+05 to 40+70 -L-	UT to Marlowe Creek			No	Class C	1500mm RCP	swale	no	10.1	22	29	
11+55 to 11+82 -Y13- LT	UT to Mitchell Creek			No	Class C	900mm CSP	no	no				
50+41 to 51+25 -L-	UT to Mitchell Creek			No	Class C	1200mm RCP 450mm to PSH	preformed scour hole	no	1	2.1	2.8	
53+13 to 53+79 -L-	UT to Michell Creek			No	Class C	900mm RCP	swale	no	3.3	6.4	8.5	
57+12 to 57+55 -L-	UT to Mitchell Creek			No	Class C	1200mm RCP	swale	no	8.1	15.7	20.7	
63+41 to 66+32 -L-	Mitchell Creek			No	Class C	1350mm RCP 375mm to PSH	preformed scour hole	no	0.5	1.1	1.4	
64+72 to 64+99 -L- LT	UT to Mitchell Creek			No	Class C	Pond Removal	no	no				
67+35 to 69+11 -L-	UT to Mitchell Creek			No	Class C	1350mm RCP	swale	no	10.8	22	29	
76+03 to 76+90 -L-	UT to Mill Creek			No	Class C	750mm/900mm RCP	swale	no	6.4	12.9	17	
77+72 to 79+54 -L-	UT to Mill Creek			No	Class C	Fill	no	no				

General Comments:

Jurisdictional Wetlands

Station	Type of Impact	Minimization of Impact
15+12 to 15+59 -L- LT	Fill, Excavation and Mechanized Clearing in wetland	3:1 Fill Slopes
20+89 to 21+45 -L-	Fill and Mechanized Clearing in wetland	2:1 Fill Slopes
34+93 to 36+38 -L-	Fill in wetland	2:1 Fill Slopes
37+33 to 37+55 -L-	Fill, Excavation and Mechanized Clearing in wetland	2:1 Fill Slopes
50+41 to 51+25 -L-	Fill in wetland	2:1 Fill Slopes
51+47 to 51+91 -L-	Fill in wetland	2:1 Fill Slopes
53+13 to 53+79 -L-	Fill, Excavation and Mechanized Clearing in wetland	2:1 Fill Slopes
57+12 to 57+55 -L-	Fill in wetland	2:1 Fill Slopes
63+41 to 66+32 -L-	Fill and Mechanized Clearing in wetland	2:1 Fill Slopes
67+35 to 69+11 -L-	Fill, Excavation and Mechanized Clearing in wetland	3:1 Fill Slopes
78+00 to 79+08 -L-	Fill and Mechanized Clearing in wetland	3:1 Fill Slopes

General Comments:

RALPH WHITEHEAD ASSOCIATES
CONSULTING ENGINEERS
P.O. BOX 9964
CHARLOTTE, NORTH CAROLINA 28213

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-2241A	2H-2
R /W SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

METRIC

NOT TO SCALE

CONST.REV.

R /W REV.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DETAIL
(NOT TO SCALE)

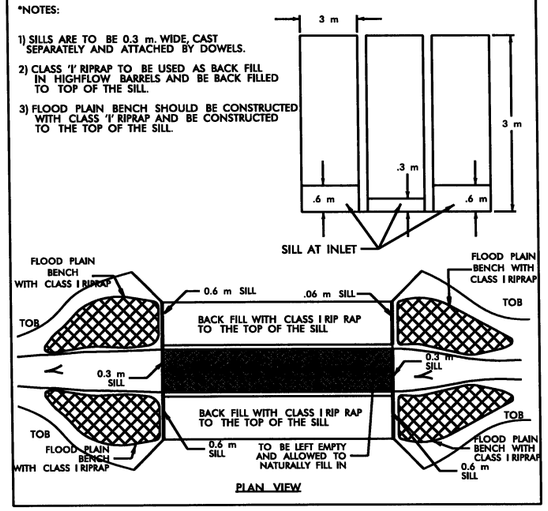
MULTI-BARREL – FOR 2 OR 3 BARRELS GENERAL DETAIL LOW FLOW CHANNEL AND FLOOD PLAIN SILLS

*NOTES:

1) SILLS ARE TO BE 0.3 m. WIDE, CAST SEPARATELY AND ATTACHED BY DOWELS.

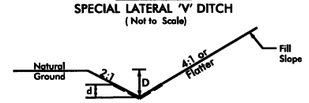
2) CLASS 'I' RIPRAP TO BE USED AS BACK FILL IN HIGHFLOW BARRELS AND BE BACK FILLED TO TOP OF THE SILL.

3) FLOOD PLAIN BENCH SHOULD BE CONSTRUCTED WITH CLASS 'I' RIPRAP AND BE CONSTRUCTED TO THE TOP OF THE SILL.



PLAN VIEW

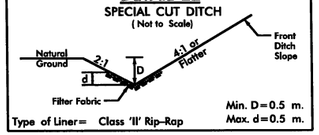
DETAIL 21
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Min. D=0.5 m.
Max. d=0.5 m.

Type of Liner= PSRM

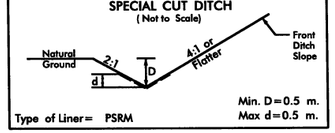
DETAIL 22
SPECIAL CUT DITCH
(Not to Scale)



Min. D=0.5 m.
Max. d=0.5 m.

Type of Liner= Class 'II' Rip-Rap

DETAIL 23
SPECIAL CUT DITCH
(Not to Scale)



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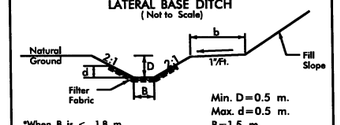
Max d=0.5 m.

Type of Liner= PSRM

DETAIL 24
LATERAL BASE DITCH
(Not to Scale)

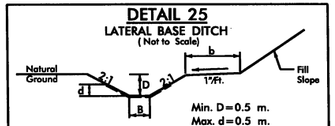


Min. D=0.5 m.
Max. d=0.5 m.
B=1.5 m.
b=1.2 m.

*When B is < 1.8 m

Type of Liner= Class 'II' Rip-Rap

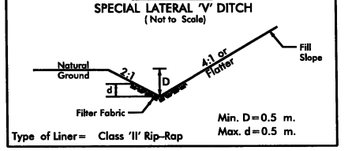
DETAIL 25
LATERAL BASE DITCH
(Not to Scale)



Min. D=0.5 m.
Max. d=0.5 m.
B=1.5 m.
b=0.9 m.

Type of Liner= PSRM

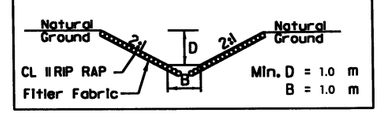
DETAIL 26
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Min. D=0.5 m.
Max. d=0.5 m.

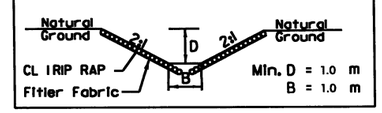
Type of Liner= Class 'II' Rip-Rap

INLET CHANNEL DETAIL
STRUCTURES/PIPES ≥ 900mm



Min. D = 1.0 m
B = 1.0 m

INLET CHANNEL DETAIL
STRUCTURES/PIPES < 900mm



Min. D = 1.0 m
B = 1.0 m

Revised 7/5/12

Permit Drawing
Sheet 39 of 48

RALPH WHITEHEAD ASSOCIATES
CONSULTING ENGINEERS
P.O. BOX 33654
CHARLOTTE, NORTH CAROLINA 28235

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-2241A	2H
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ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

METRIC

NOT TO SCALE

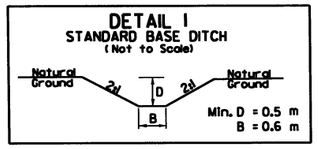
CONST.REV.

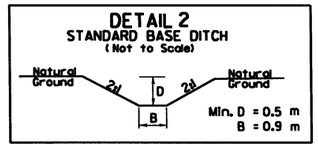
R /W REV.

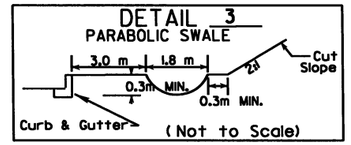
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

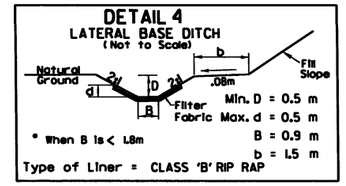
Revised 7/5/12

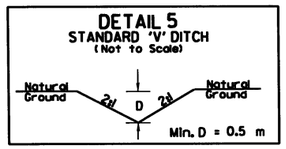
Permit Drawing
Sheet 3 of 48

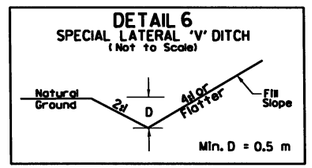


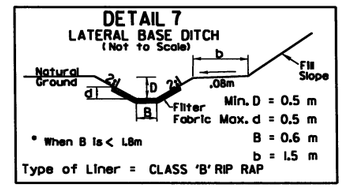


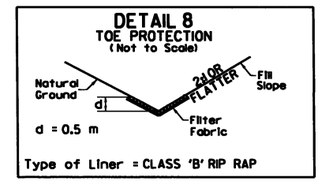


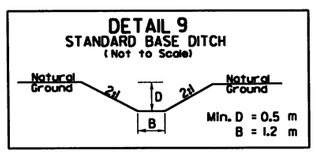


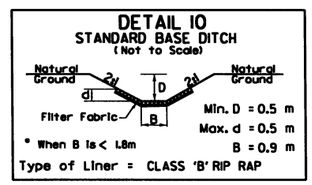


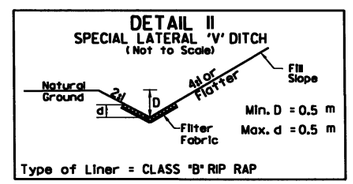


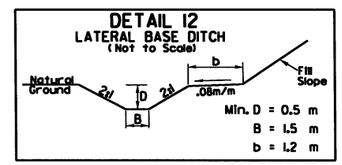


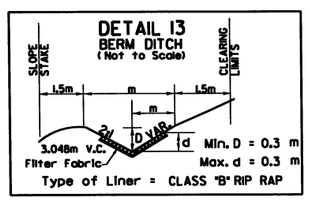


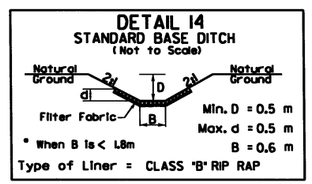


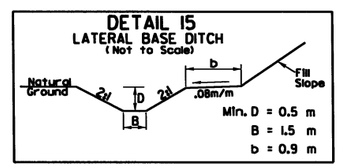


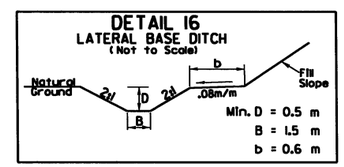


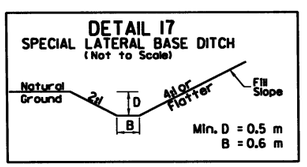


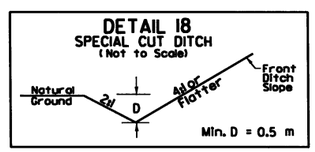


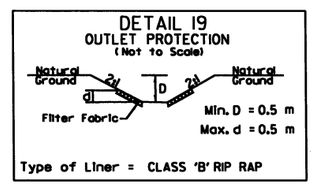


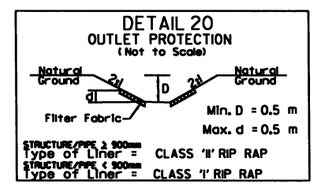


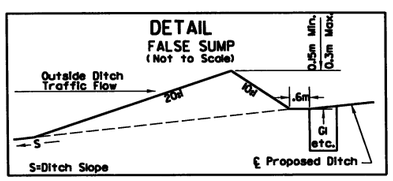


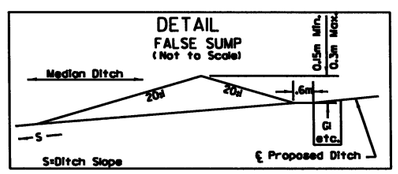


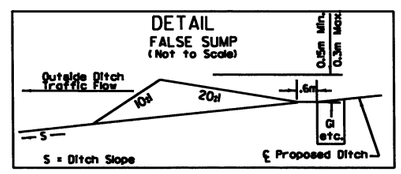




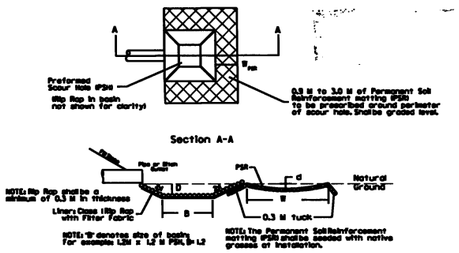






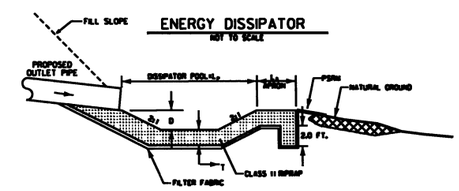


PREFORMED SCOUR HOLE
(Not to Scale)

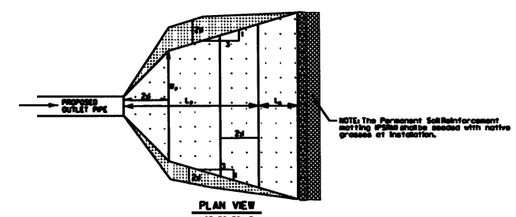


STATION	B M	D M	W_{PSR} M	d M	CLASS I RIP RAP MTONS	DDE (CU M)	FILTER FABRIC (SQ M)
13+80-L-	1.4	.5	1.5	0.15	8.2	11.5	1.2
33+60 -L-	1.4	.5	1.5	0.15	8.2	11.5	1.2
36+60 -L-	1.4	.5	1.5	0.15	8.2	11.5	1.2
48+30 -L-	1.8	.5	1.5	0.15	11.5	15	1.7
50+26 -L-	1.4	.5	1.5	0.15	8.2	11.5	1.2
52+00 -L-	1.2	.5	1.5	0.15	6.5	10.0	1.0
66+60 -L-	1.2	.5	1.5	0.15	6.5	10.0	1.0

ENERGY DISSIPATOR
NOT TO SCALE



PROFILE
NOT TO SCALE



PLAN VIEW
NOT TO SCALE

STATION	L_P M	W_P M	L_A M	T M	D M	CLASS I RIP RAP MTONS	DDE (CU M)	FILTER FABRIC (SQ M)
20+70 -L-	8.0	5.0	1.8	.6	1.0	110	86	75
39+80 -L-	7.0	4.3	2.0	.6	1.0	120	95	85

$SYSTIME$
$PROJECT$
$USERNAME$

STV / Ralph Whitehead Associates, Inc.
1000 West Hazelhed St. Ste 200
Charlotte, NC 28208
NC License Number F-0991

REVISIONS

08-02-11-	PARCEL 16: PROPERTY LINE MODIFIED & REMOVED SHED. ADDED UNDERGROUND DRAIN LINE & MANHOLES PARCEL 16A: ADDED NEW PARCEL BETWEEN 16 & 17 REVISED OWNER NAME ON PARCELS 4,9,11,16 PARCEL 10: REVISED DRIVEWAY CONNECTION & MODIFIED PROPOSED CHAIN LINK FENCE
08-16-11-	PARCEL 12: 10.8M DRIVEWAY SHIFTED TO WEST SIDE OF PROPERTY
09-09-11-	PARCELS 8 & 8A COMBINED, REVISED OWNER NAME
10-07-11-	REVISED PARCEL BOUNDRIES FOR PARCEL 16 AND 16A
10-07-11-	ADDED SUBSURFACE DRAINAGE FOR PARCEL 16 AND 16A
10-27-11-	PARCEL 11: ADDED PDE FOR DRAINAGE STRUCTURE
10-31-11-	PARCEL 7: ADDED R/W AND MODIFIED TEMPORARY EASEMENTS

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR "JKA PANEL 13"
WITH NAD 83 STATE PLANE GRID COORDINATES OF NORTHING: 300205.115(m) EASTING: 616308.868(m)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 1.000077057
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "JKA PANEL 13" TO -L- POT STATION 10+20.000 IS
S 40° 03' 09.53" W 6729.835 (m)
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NGVD 29

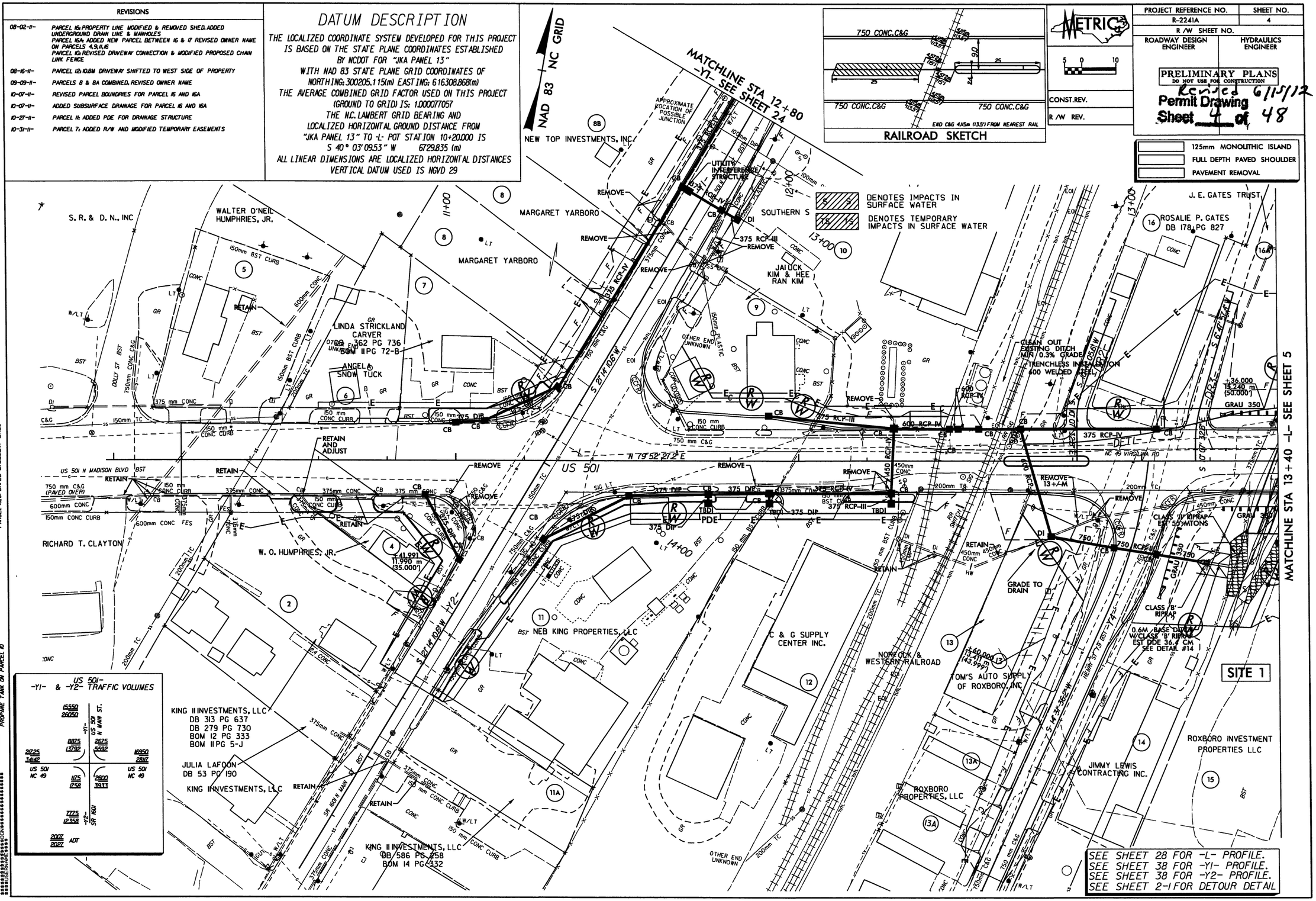
PROJECT REFERENCE NO.	SHEET NO.
R-2241A	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
Revised 6/15/12
Permit Drawing
Sheet 4 of 48

CONST. REV.
R/W REV.

METRIC
5 0 10

125mm MONOLITHIC ISLAND
FULL DEPTH PAVED SHOULDER
PAVEMENT REMOVAL



06-23-02 - PULLED SLOPE STAKES IN, REVISED EASEMENT. AND ADDED DRIVE ON PARCEL 14

06-04-08 - MOVED DRIVEWAY ON PARCEL 6, STEEPENED FILL ON PARCEL 14 DRIVEWAY, RECON SLOPE ON PARCEL 16, REVISED EASEMENT FROM PARCEL 16 TO PARCEL 14, REDUCED ROW AND TCE ON PARCEL 4, RELOCATED TCE ON PARCEL 9,13, REDUCED CONCRETE CURB, ROW & TCE ON PARCEL 11, MAKE CHANGE ON PARCEL 13, PARCEL 11 NAME CHANGE, ADDED PARCEL 13A, PARCEL 10, AND CREATED NEW PARCEL 13A

06-24-08 - MOVED ROW MONUMENTS ON PARCEL 15, TIGHTENED SLOPE STAKE LINE TO AVOID BALLARDS.

02-18-09 - REMOVED PIPE EMPTYING INTO RAILROAD DITCH, ADDED 2 PIPES AND 1 CB TO CONNECT TO PIPE ON PARCEL 13

10-17-09 - ELIMINATED EASEMENT FROM WITHIN BOLLARDS AT PROPANE TANK ON PARCEL 10

06-21-10 - PARCEL 11 NO CLAIM, REMOVED PARCEL NUMBER PARCELS 6,15, REVISED PARCEL NAME PARCELS 8,8A, REVISED ROW IN RAILROAD BY SURVEY PARCELS 10,12, LOCATED SIGN

09-20-10 - MODIFIED RIGHT TURN LANE STORAGE LENGTH AND RAILROAD SKETCH
PARCEL 9, REVISED CURB AND GUTTER, ADJUSTED RW
PARCEL 10, REVISED TCE, ADDED 4 CHAIN LINK FENCE AND GATE.
PARCEL 10, ADDED 3 CHAIN LINK FENCE AND GATE.
REDUCED GUARDRAIL LIMITS, UPDATED NOTES.
UPDATED RW AND EASEMENT TIE-WS
PARCEL 12, REVISED CURB AND GUTTER
PARCEL 13, UPDATED NOTES AND GUTTER
PARCEL 16, CHANGED TWO 6M DRIVEWAYS INTO TURN OUT DRIVEWAYS, UPDATED RW AND EASEMENT TIE-WS

09-28-10 - PARCEL 6, REVISED PARCEL INFORMATION PARCEL 16, UPDATED EASEMENT LINES

STV / Ralph Whitehead Associates, Inc.
1000 West Morehead, Suite 200
Charlotte, NC 28208
NC License Number F-0991

REVISIONS

08-02-11-	PARCEL 16: PROPERTY LINE MODIFIED & REMOVED SHED. ADDED UNDERGROUND DRAIN LINE & MANHOLES PARCEL 16A: ADDED NEW PARCEL BETWEEN 16 & 17 REVISED OWNER NAME ON PARCELS 4,9,11,16 PARCEL 10: REVISED DRIVEWAY CONNECTION & MODIFIED PROPOSED CHAIN LINK FENCE
08-16-11-	PARCEL 12: 10.8M DRIVEWAY SHIFTED TO WEST SIDE OF PROPERTY
09-09-11-	PARCELS 8 & 8A COMBINED, REVISED OWNER NAME
10-07-11-	REVISED PARCEL BOUNDRIES FOR PARCEL 16 AND 16A
10-07-11-	ADDED SUBSURFACE DRAINAGE FOR PARCEL 16 AND 16A
10-27-11-	PARCEL 11: ADDED PDE FOR DRAINAGE STRUCTURE
10-31-11-	PARCEL 7: ADDED R/W AND MODIFIED TEMPORARY EASEMENTS

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR "JKA PANEL 13"
WITH NAD 83 STATE PLANE GRID COORDINATES OF NORTHING: 300205.1 115(m) EASTING: 616308.868(m).
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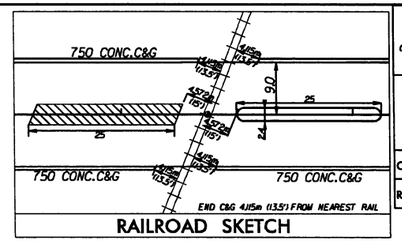
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NGVD 29



RAILROAD SKETCH

METRIC
5 0 10

PROJECT REFERENCE NO.	SHEET NO.
R-2241A	4
R /W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 5 of 48
Revised 6/15/12

CONST.REV.
R /W REV.

125mm MONOLITHIC ISLAND
FULL DEPTH PAVED SHOULDER
PAVEMENT REMOVAL

DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER

MATCHLINE STA 12+80 -Y1- SEE SHEET 24

MATCHLINE STA 13+40 -L- SEE SHEET 5

NAD 83 NC GRID

US 501 -Y1- & -Y2- TRAFFIC VOLUMES

	-Y1- US 501 N MAIN ST.	-Y2- SR 1601
US 501 NC 49	15550 / 26050	8875 / 13792
US 501 NC 49	16950 / 28117	2675 / 4592
-Y1- US 501 N MAIN ST.	21725 / 34142	1175 / 1758
-Y2- SR 1601	2600 / 3933	7775 / 12358
ADT	2007 / 2027	

SEE SHEET 28 FOR -L- PROFILE.
SEE SHEET 38 FOR -Y1- PROFILE.
SEE SHEET 38 FOR -Y2- PROFILE.
SEE SHEET 2-I FOR DETOUR DETAIL

06-21-10 - PARCEL 1: NO CLAIM, REMOVED PARCEL NUMBER PARCELS 6,15: REVISED PARCEL NAME PARCELS 8,9: LOCATED R/W OF ROAD BY SURVEY PARCELS 10,12: LOCATED SIGN

06-23-10 - PARCEL 1: NO CLAIM, REMOVED PARCEL NUMBER PARCELS 6,15: REVISED PARCEL NAME PARCELS 8,9: LOCATED R/W OF ROAD BY SURVEY PARCELS 10,12: LOCATED SIGN

09-20-10 - MODIFIED RIGHT TURN LANE STORAGE LENGTH AND MODIFIED RIGHT TURN LANE SHOULDER TO CURB AND GUTTER. ADJUSTED RW AND EASEMENT TIE-INS PARCEL 9: REVISED CURB AND GUTTER. ADJUSTED RW AND EASEMENT TIE-INS PARCEL 10: ADDED A CHAIN LINK FENCE AND GATE. REDUCED GUARDRAIL LIMITS. UPDATED NOTES. UPDATED RW AND EASEMENT TIE-INS PARCEL 12: REVISED CURB AND GUTTER PARCEL 13A: UPDATED NOTES PARCEL 13: CHANGED TWO SW DRIVEWAYS INTO TURN OUT DRIVEWAYS. UPDATED RW AND EASEMENT TIE-INS

09-28-10 - PARCEL 6: REVISED PARCEL INFORMATION PARCEL 16: UPDATED EASEMENT LINES

09-29-10 - PARCEL 1: NO CLAIM, REMOVED PARCEL NUMBER PARCELS 6,15: REVISED PARCEL NAME PARCELS 8,9: LOCATED R/W OF ROAD BY SURVEY PARCELS 10,12: LOCATED SIGN

06-23-09 - PILLIED SLOPE STAKES IN. REVISED EASEMENT. AND ADDED DRIVE ON PARCEL 14

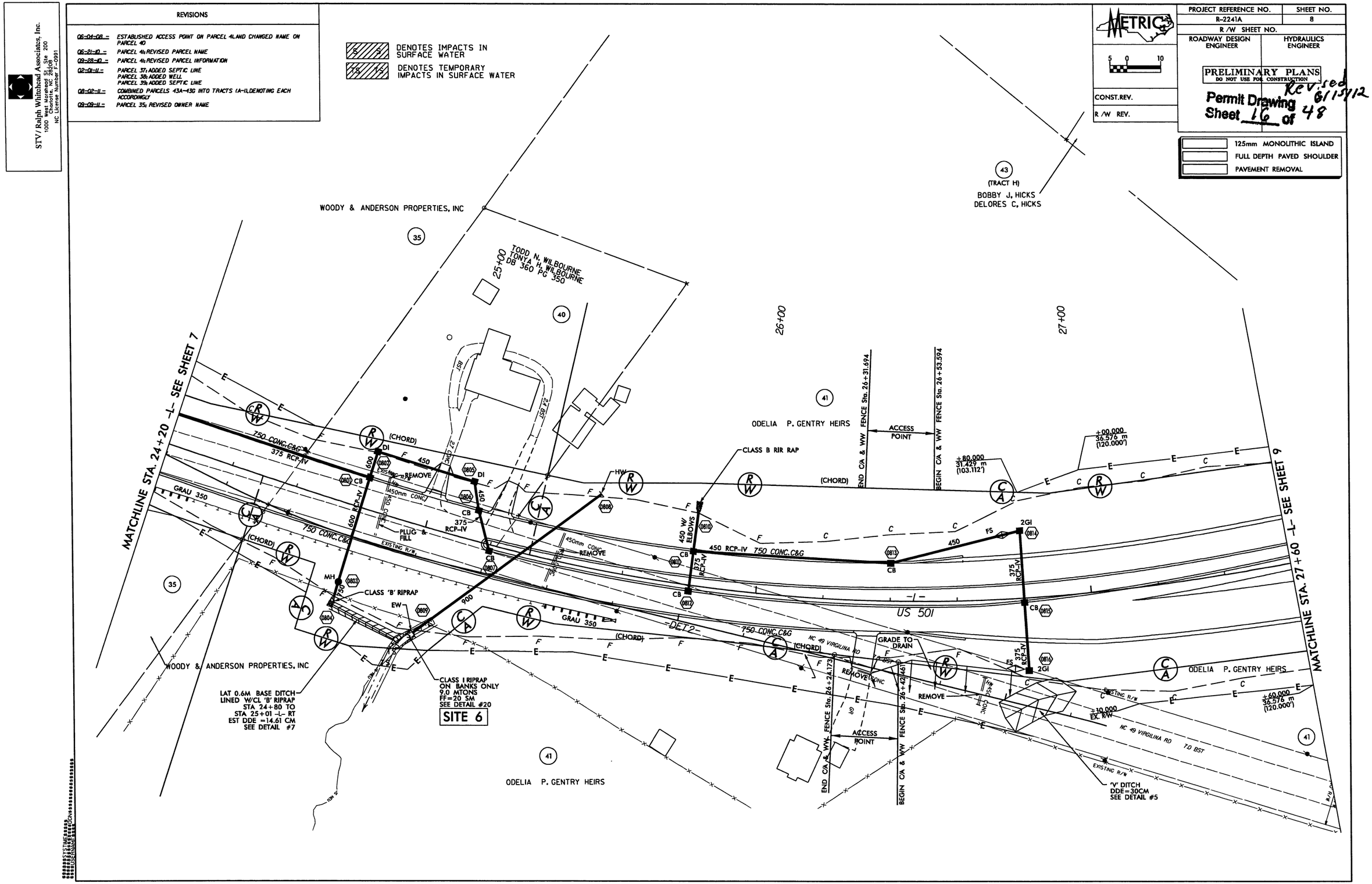
06-04-09 - MOVED DRIVEWAY ON PARCEL 10. STEEPENED FILL ON PARCEL 14. DRIVEWAY RECONNECTION ON PARCEL 16. REMOVED EASEMENT FROM PARCEL 1. REDUCED PARCEL 9. REMOVED TCE FROM PARCEL 9. REDUCED PARCEL 9, 13. REDUCED CONCRETE CURB. ROW & TCE ON PARCEL 11. NAME CHANGE ON PARCEL 2. 3.5/9/9. PLACED GUARDRAIL TO PROTECT PARKS ON PARCEL 11. ADDED RW AND EASEMENT TIE-INS

06-24-09 - MOVED ROW MONUMENTS ON PARCEL 15. TIGHTENED SLOPE STAKE LINE TO WOOD BALLARDS.

02-18-09 - REMOVED PIPE EMPTYING INTO RAILROAD DITCH. ADDED 2 PIPES AND 1 CB TO CONNECT TO PIPE ON PARCEL 13

02-12-09 - ELIMINATED EASEMENT FROM WITHIN BOLLARDS AT PROPANE TANK ON PARCEL 10

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



STV / Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste 200
Charlotte, NC 28208
NC License Number F-0991
REVISIONS
06-04-08 – ESTABLISHED ACCESS POINT ON PARCEL 41, AND CHANGED NAME ON PARCEL 40
06-21-10 – PARCEL 41: REVISED PARCEL NAME
09-28-10 – PARCEL 41: REVISED PARCEL INFORMATION
02-01-11 – PARCEL 37: ADDED SEPTIC LINE
PARCEL 38: ADDED WELL
PARCEL 39: ADDED SEPTIC LINE
08-02-11 – COMBINED PARCELS 43A–43G INTO TRACTS (A–I), DENOTING EACH ACCORDINGLY
09-09-11 – PARCEL 35: REVISED OWNER NAME
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
METRIC
PROJECT REFERENCE NO.
R-2241A
SHEET NO.
8
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
Revised 6/15/12
Permit Drawing
Sheet 16 of 48
CONST. REV.
R/W REV.
125mm MONOLITHIC ISLAND
FULL DEPTH PAVED SHOULDER
PAVEMENT REMOVAL
WOODY & ANDERSON PROPERTIES, INC
TODD N. WILBOURNE
TONYA H. WILBOURNE
DB 360 PG 350
25+00
26+00
27+00
(TRACT H)
BOBBY J. HICKS
DELORES C. HICKS
ODELIA P. GENTRY HEIRS
MATCHLINE STA. 24+20 -L- SEE SHEET 7
MATCHLINE STA. 27+60 -L- SEE SHEET 9
CLASS B RIR RAP
ACCESS POINT
END C/A & WW FENCE Sta. 26+31.694
BEGIN C/A & WW FENCE Sta. 26+53.594
+80.000
31.429 m
(103.112')
+00.000
36.576 m
(120.000')
+60.000
36.576 m
(120.000')
+10.000
EX. R/W
US 501
-DET 2-
GRAU 350
750 CONC.C&G
375 RCP-IV
600 RCP-IV
450 RCP-IV
450 W/ ELBOWS
PLUG & FILL
REMOVE
CLASS 'B' RIPRAP
LAT 0.6M BASE DITCH LINED W/CL 'B' RIPRAP STA 24+80 TO STA 25+01 -L- RT EST DDE =14.61 CM SEE DETAIL #7
CLASS I RIPRAP ON BANKS ONLY 9.0 MTONS FF=20 SM SEE DETAIL #20
SITE 6
GRADE TO DRAIN
NC 49 VIRGILINA RD
NC 49 VIRGILINA RD 7.0 BST
EXISTING R/W
'V' DITCH DDE=30CM SEE DETAIL #5

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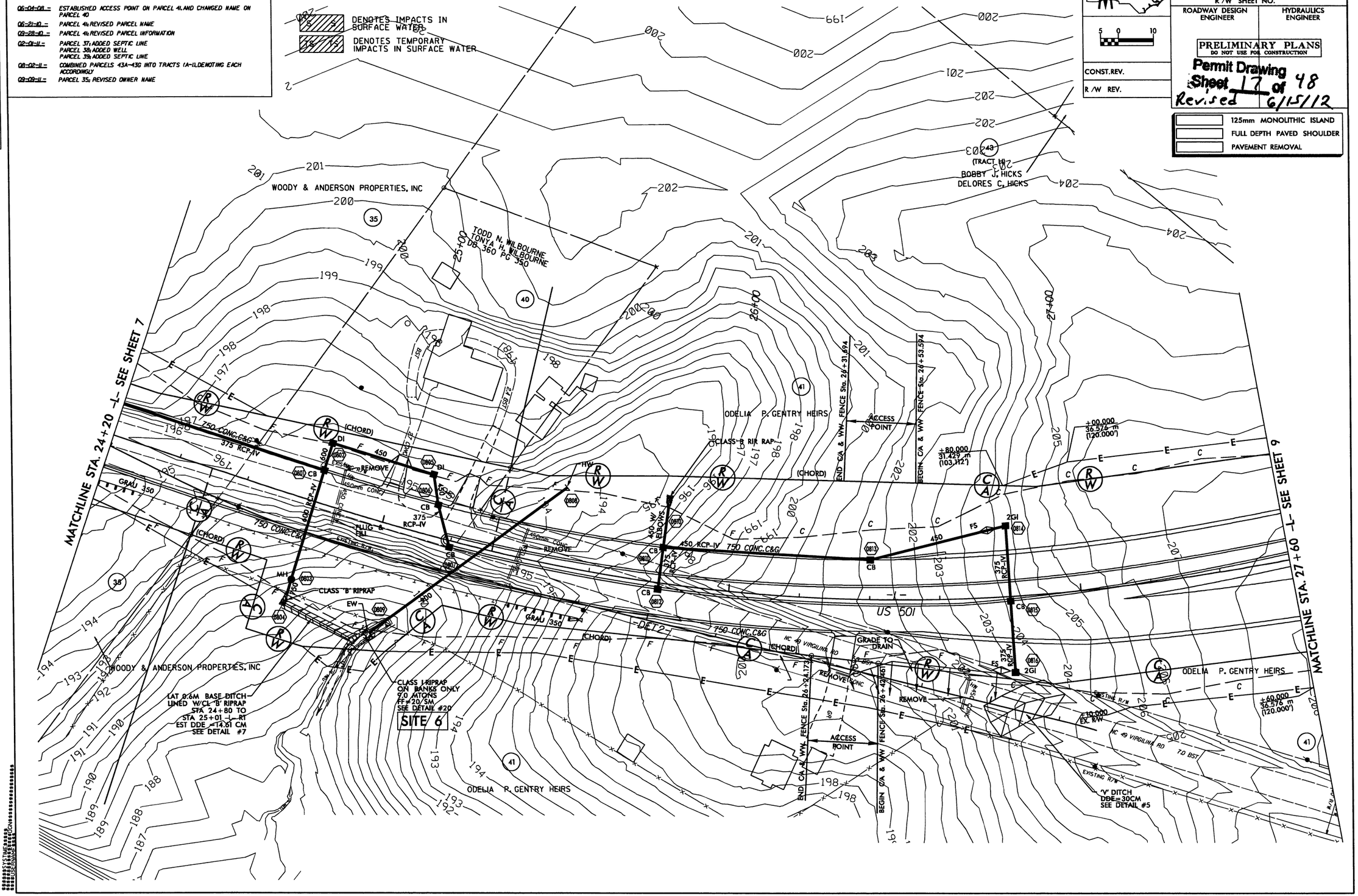
1000 West Morehead St. Ste 200
Charlotte, NC 28208
NC License Number F-0991

REVISIONS

06-04-08 -	ESTABLISHED ACCESS POINT ON PARCEL 41, AND CHANGED NAME ON PARCEL 40
06-21-10 -	PARCEL 41; REVISED PARCEL NAME
09-28-10 -	PARCEL 41; REVISED PARCEL INFORMATION
02-01-11 -	PARCEL 37; ADDED SEPTIC LINE PARCEL 38; ADDED WELL PARCEL 39; ADDED SEPTIC LINE
06-02-11 -	COMBINED PARCELS 43A-43G INTO TRACTS (A-I), DENOTING EACH ACCORDINGLY
09-09-11 -	PARCEL 35; REVISED OWNER NAME



METRIC

PROJECT REFERENCE NO.	SHEET NO.
R-2241A	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 17 of 48
Revised 6/15/12

CONST. REV.

R/W REV.

- 125mm MONOLITHIC ISLAND
- FULL DEPTH PAVED SHOULDER
- PAVEMENT REMOVAL

STV/Ralph Whitehead Associates, Inc.
1000 Westgate Drive, Suite 200
Charlotte, NC 28206
NC License Number F-0991

REVISIONS

06-04-08 -	NAME CHANGE ON PARCEL 79, AND ESTABLISHED ACCESS POINT ON PARCEL 77,78
06-21-10 -	PARCELS 77,78; REVISED PARCEL NAME
09-28-10 -	PARCEL 78; REVISED PARCEL INFORMATION
08-02-11 -	CHANGED PROPERTY OWNER INFORMATION ON PARCEL 79
09-09-11 -	PARCEL 76 & 78; REVISED OWNER NAME/ PARCEL INFORMATION

PROJECT REFERENCE NO.	SHEET NO.
R-2241A	15
R /W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

5 0 10

CONST.REV.

R /W REV.

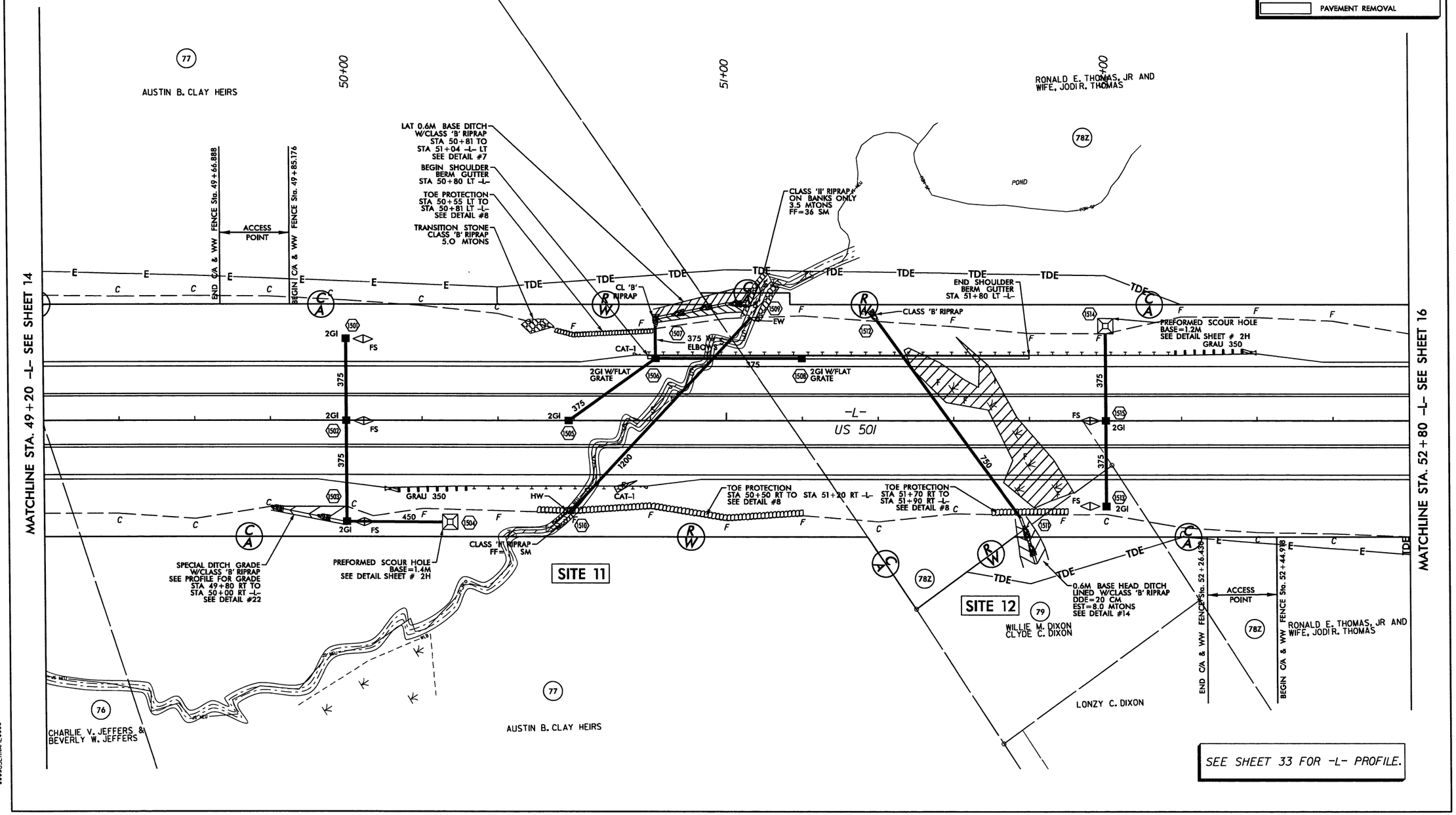
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 27 of 48
Revised 6/15/12

125mm MONOLITHIC ISLAND
FULL DEPTH PAVED SHOULDER
PAVEMENT REMOVAL

NAD 83 NC GRID

DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER



STV / Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste 200
Charlotte, NC 28208
NC License Number F-0991

REVISIONS	
06-04-08 -	NAME CHANGE ON PARCEL 79, AND ESTABLISHED ACCESS POINT ON PARCEL 77,78
06-21-10 -	PARCELS 77,78; REVISED PARCEL NAME
09-28-10 -	PARCEL 78; REVISED PARCEL INFORMATION
08-02-11 -	CHANGED PROPERTY OWNER INFORMATION ON PARCEL 79
09-09-11 -	PARCEL 76 & 78; REVISED OWNER NAME/ PARCEL INFORMATION

PROJECT REFERENCE NO.	SHEET NO.
R-2241A	15
R /W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

5 0 10

CONST.REV.

R /W REV.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83 NC GRID

F F DENOTES FILL IN WETLAND

S S DENOTES IMPACTS IN SURFACE WATER

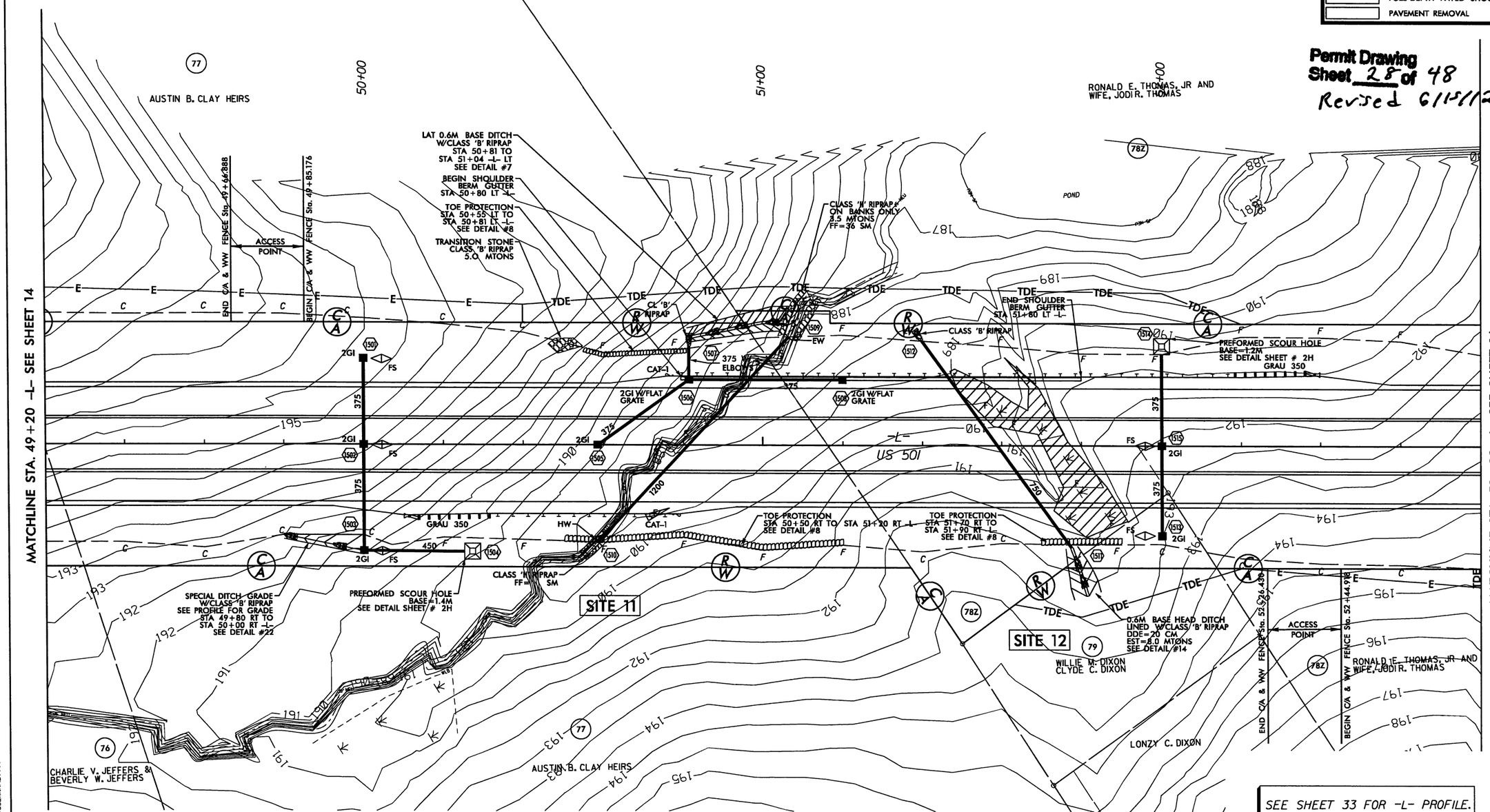
TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

125mm MONOLITHIC ISLAND

FULL DEPTH PAVED SHOULDER

PAVEMENT REMOVAL

Permit Drawing
Sheet 28 of 48
Revised 6/15/12



STV/Ralph Whitehead Associates, Inc.
1000 Westgate Drive, Ste 200
Charlotte, NC 28208
NC License Number F-0991

REVISIONS

06-04-08 –	NEW PARCEL 87A, AND PROPERTY LINE CHANGE ON PARCEL 87
06-21-10 –	PARCEL 82: LOCATED FENCE PARCEL 87A: LOCATED SHED, GARAGE, MOBILE HOME, REVISED PARCEL NAME PARCEL 90: REVISED PARCEL NAME
08-02-11 –	COMBINED PARCEL 87A WITH PARCEL 87 CHANGED PROPERTY INFORMATION ON PARCEL 89
09-09-11 –	PARCEL 87: REVISED OWNER NAME
10-27-11 –	PARCEL 85, 86, 87Z AND 89Z: MODIFIED C/A, FENCE, AND TEMPORARY EASEMENTS

METRIC

5 0 10

CONST.REV.

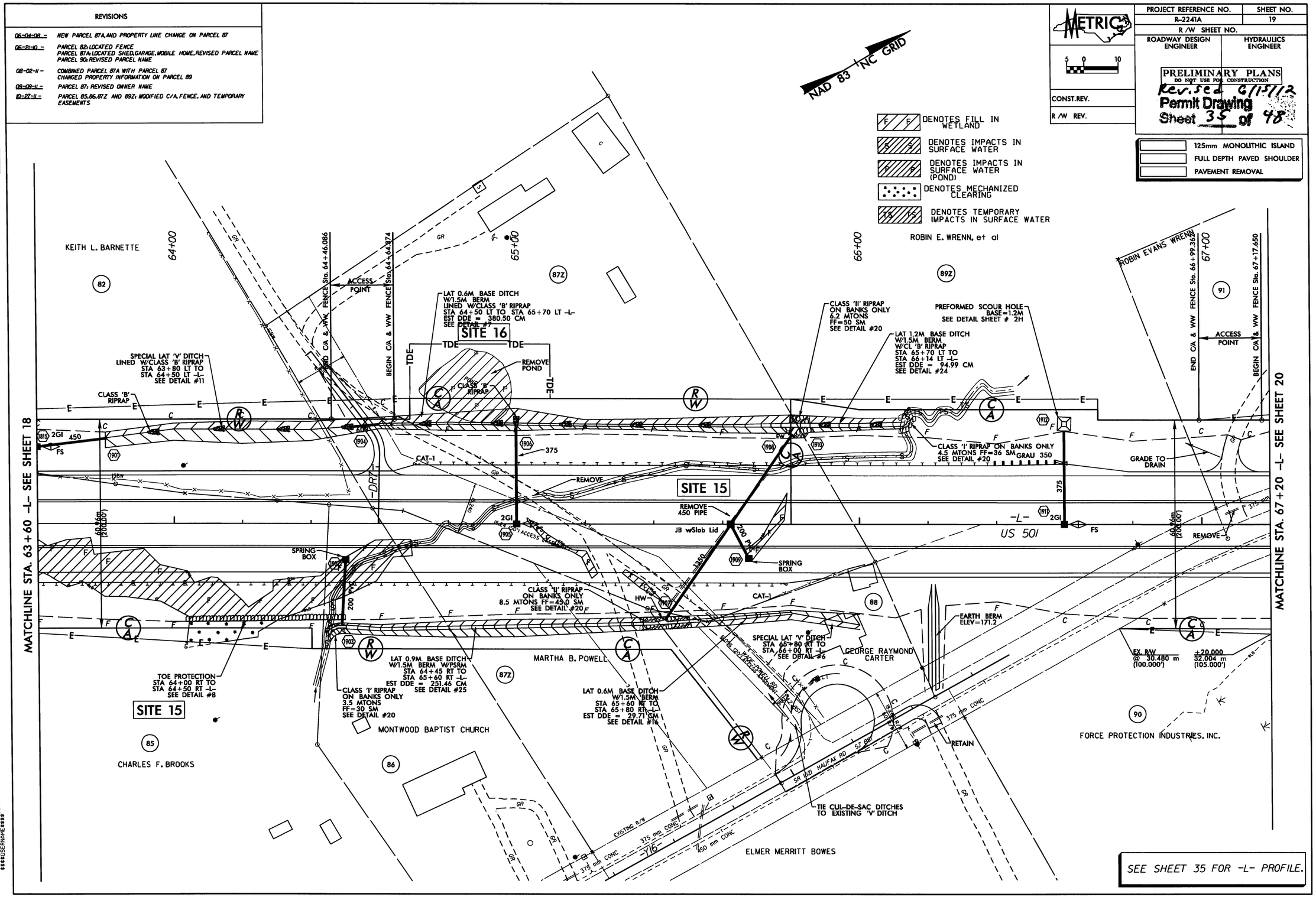
R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2241A	19
R /W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
Rev. Sed 6/15/12
Permit Drawing
Sheet 35 of 48

125mm MONOLITHIC ISLAND
FULL DEPTH PAVED SHOULDER
PAVEMENT REMOVAL

F F DENOTES FILL IN WETLAND
S S DENOTES IMPACTS IN SURFACE WATER
P P DENOTES IMPACTS IN SURFACE WATER (POND)
DENOTES MECHANIZED CLEARING
TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER



SEE SHEET 35 FOR -L- PROFILE.

STV/Ralph Whitehead Associates, Inc.
1000 Westgate Drive, Suite 200
Charlotte, NC 28208
NC License Number F-0991

REVISIONS

06-04-08 –	NEW PARCEL 87A, AND PROPERTY LINE CHANGE ON PARCEL 87
06-21-10 –	PARCEL 82: LOCATED FENCE PARCEL 87A: LOCATED SHED, GARAGE, MOBILE HOME, REVISED PARCEL NAME PARCEL 90: REVISED PARCEL NAME
08-02-11 –	COMBINED PARCEL 87A WITH PARCEL 87 CHANGED PROPERTY INFORMATION ON PARCEL 89
09-09-11 –	PARCEL 87: REVISED OWNER NAME
10-27-11 –	PARCEL 85, 86, 87Z AND 89Z: MODIFIED C/A, FENCE, AND TEMPORARY EASEMENTS

PROJECT REFERENCE NO.	SHEET NO.
R-2241A	19
R /W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

5 0 10

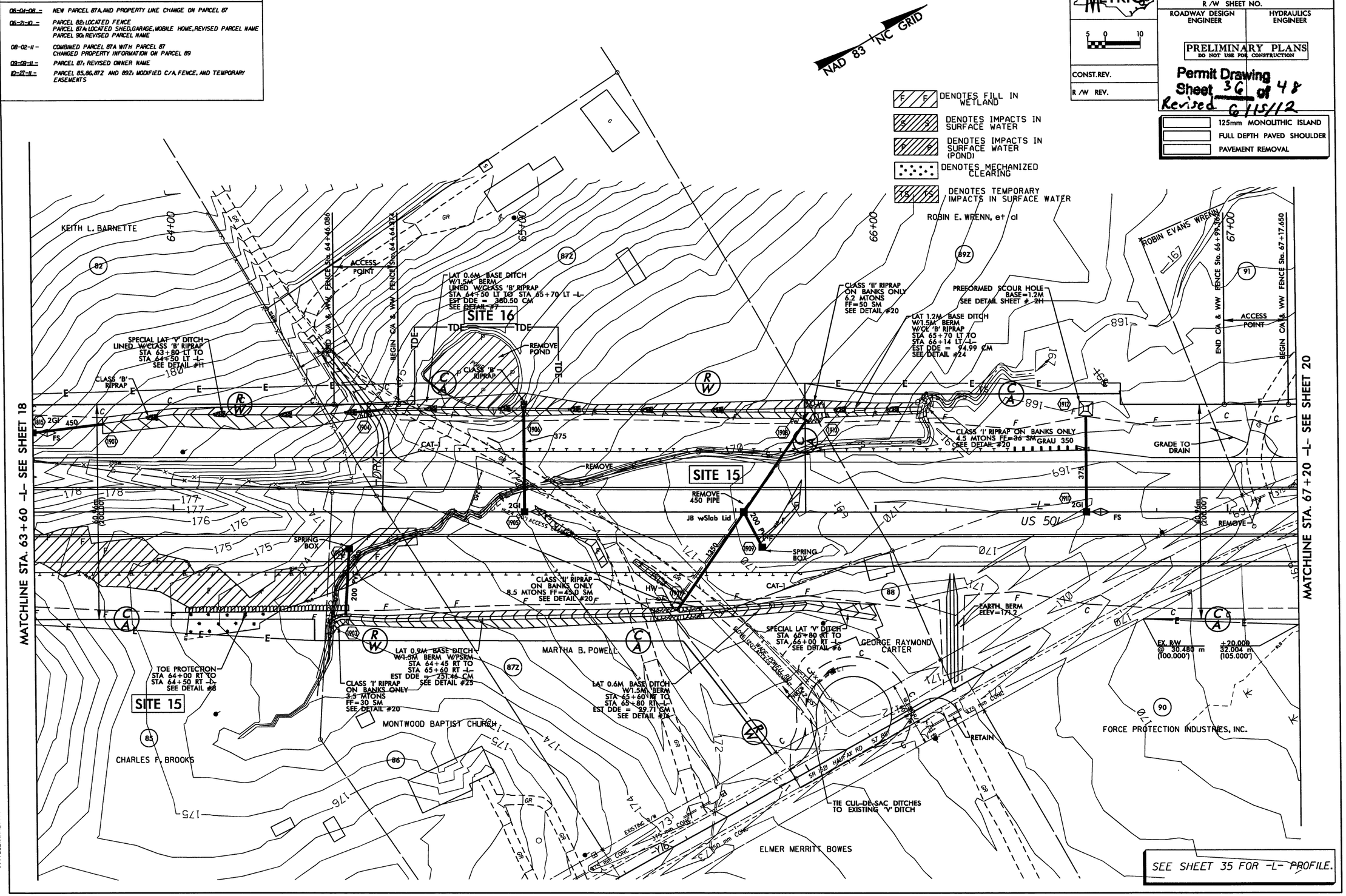
CONST. REV.

R /W REV.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 36 of 48
Revised 6/15/12

- 125mm MONOLITHIC ISLAND
- FULL DEPTH PAVED SHOULDER
- PAVEMENT REMOVAL



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Charlotte, NC 28208
NC License Number F-0991

PROJECT REFERENCE NO.	SHEET NO.
R-2241A	20
R /W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

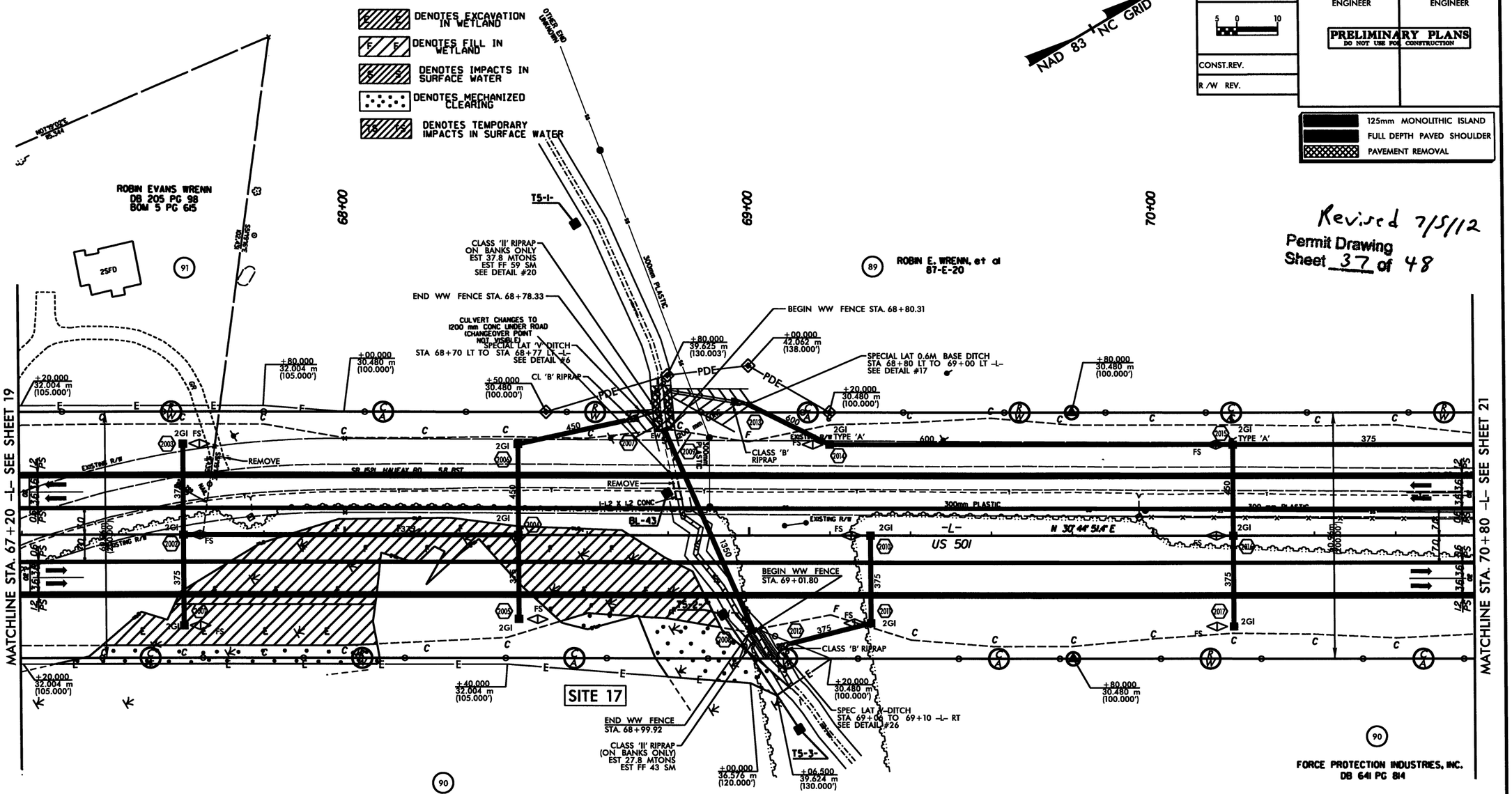
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONST.REV.
R /W REV.

METRIC 5 0 10

125mm MONOLITHIC ISLAND
FULL DEPTH PAVED SHOULDER
PAVEMENT REMOVAL

Revised 7/5/12
Permit Drawing
Sheet 37 of 48



SEE SHEET 36 FOR -L- PROFILE

STV/Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License Number F-0991

PROJECT REFERENCE NO.	SHEET NO.
R-2241A	20
R /W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

5 0 10

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONST.REV.

R /W REV.

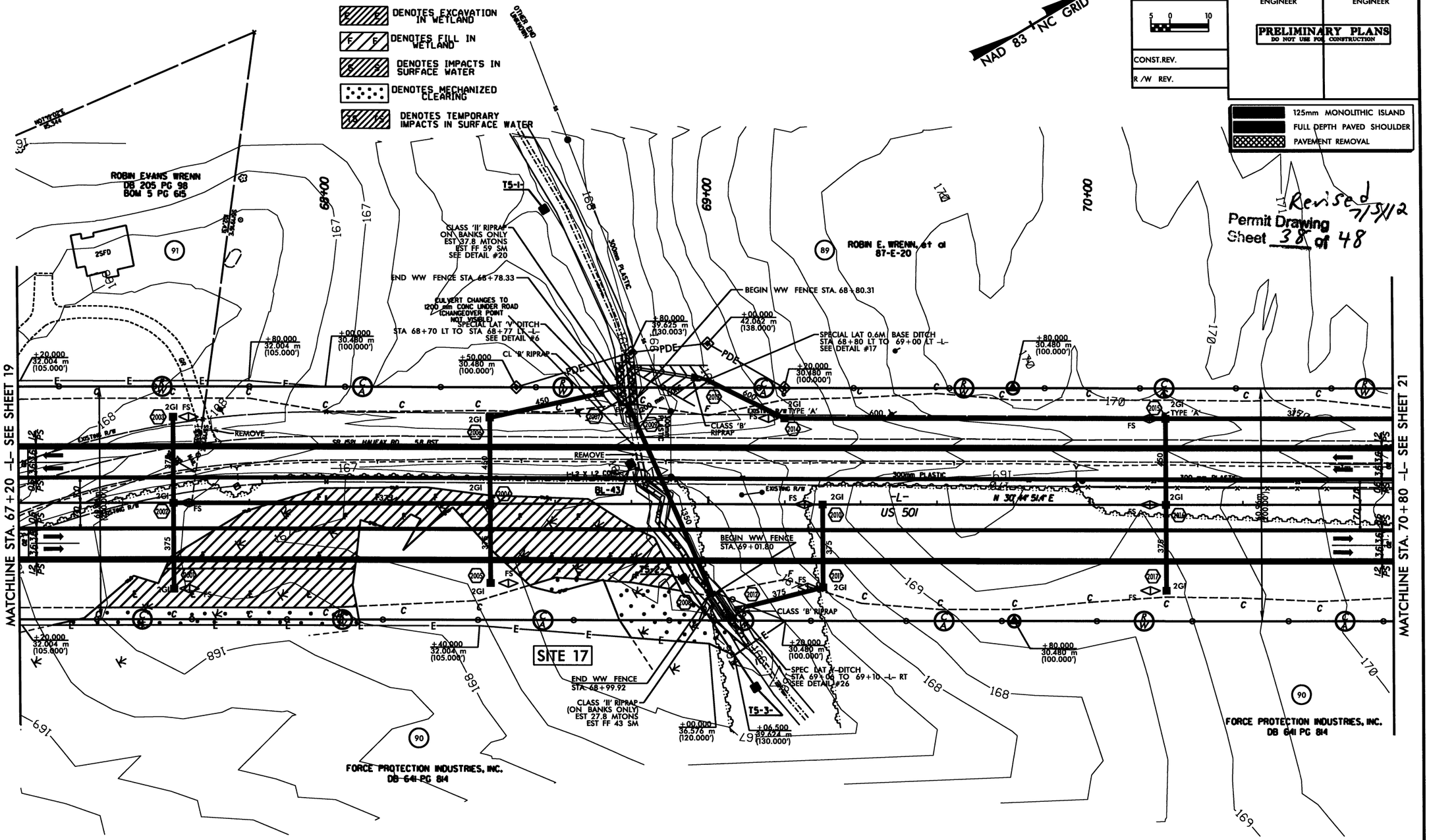
DENOTES EXCAVATION IN WETLAND
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
DENOTES MECHANIZED CLEARING
DENOTES TEMPORARY IMPACTS IN SURFACE WATER

125mm MONOLITHIC ISLAND
FULL DEPTH PAVED SHOULDER
PAVEMENT REMOVAL

NAD 83 NC GRID

Revised 7/5/12

Permit Drawing
Sheet 38 of 48



SEE SHEET 36 FOR -L- PROFILE

STV/ Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License Number F-0991

METRIC

PROJECT REFERENCE NO.	SHEET NO.
R-2241A	22
R /W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

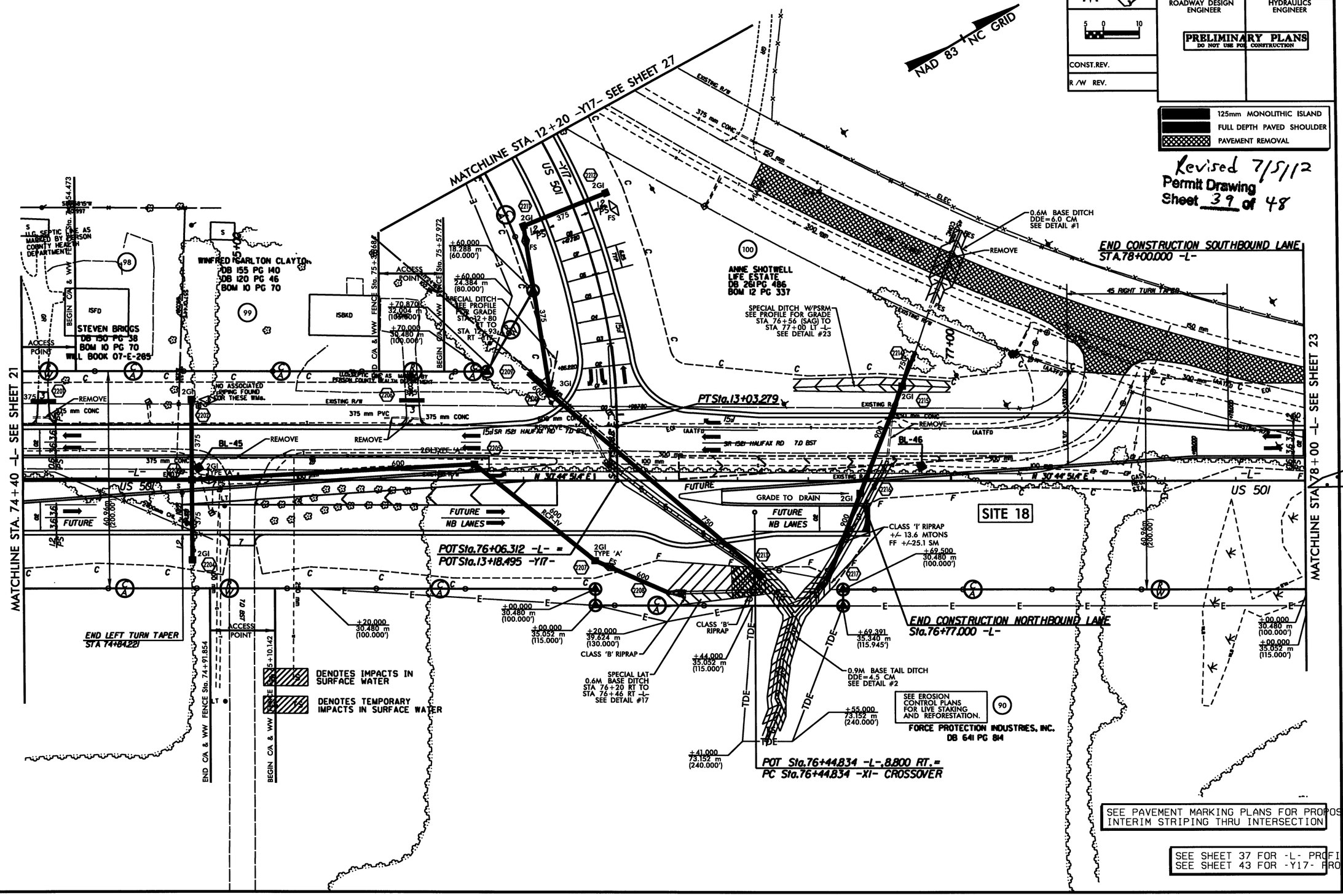
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONST.REV.

R /W REV.

125mm MONOLITHIC ISLAND
FULL DEPTH PAVED SHOULDER
PAVEMENT REMOVAL

Revised 7/5/12
Permit Drawing
Sheet 39 of 48



STV/Ralph Whitehead Associates, Inc.
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Charlotte, NC 28208
NC License Number F-0891

METRIC

PROJECT REFERENCE NO.	SHEET NO.
R-2241A	22
R /W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

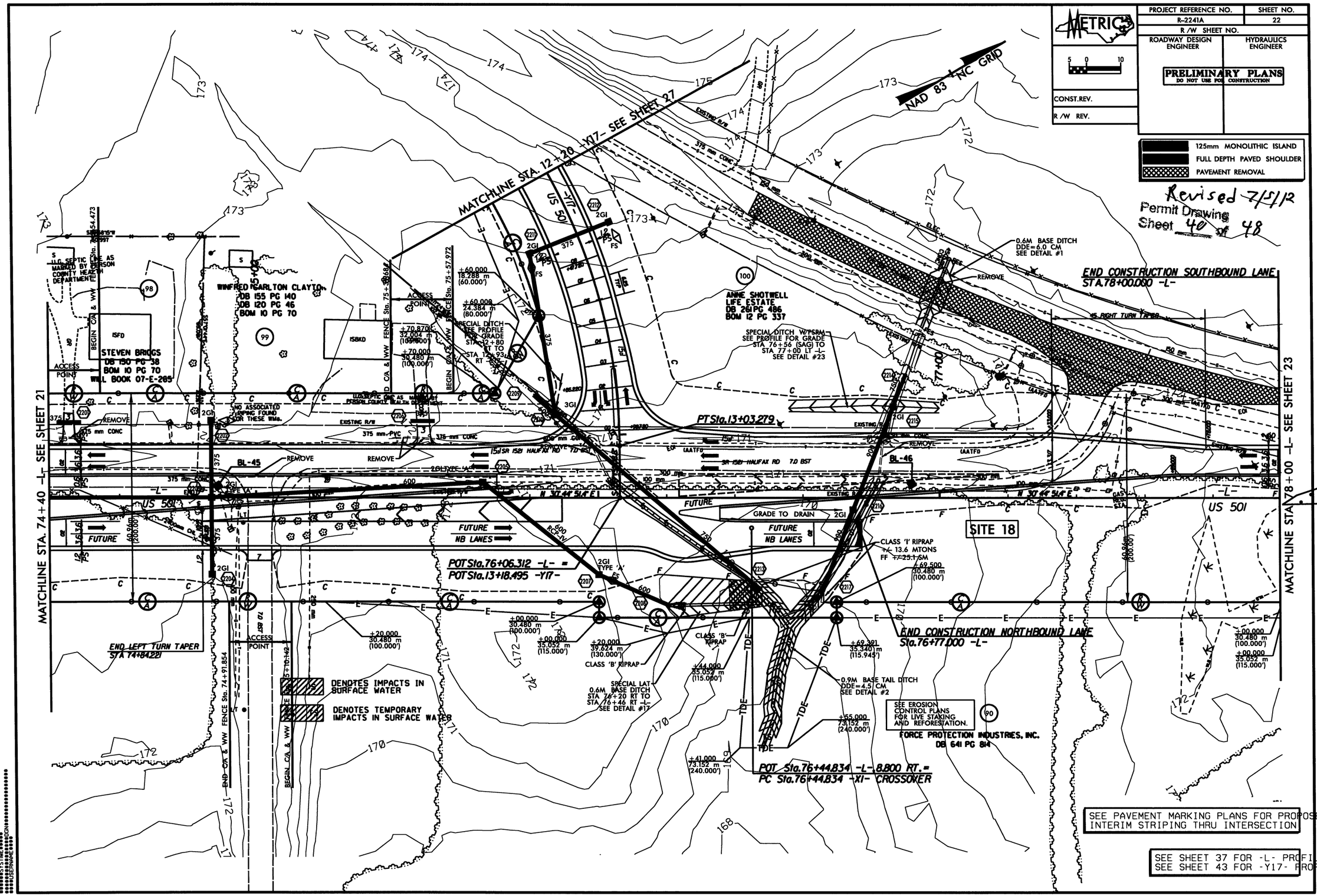
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONST.REV.

R /W REV.

125mm MONOLITHIC ISLAND
FULL DEPTH PAVED SHOULDER
PAVEMENT REMOVAL

Revised 7/5/12
Permit Drawing
Sheet 40 of 48



WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS: Permanent Fill In Wetlands (ha)	Temp. Fill In Wetlands (ha)	Excavation in Wetlands (ha)	Mechanized Clearing in Wetlands (ha)	Hand Clearing in Wetlands (ha)	SURFACE WATER IMPACTS: Permanent SW impacts (ha)	Temp. SW impacts (ha)	Existing Channel Impacts Permanent (m)	Existing Channel Impacts Temp. (m)	Natural Stream Design (m)
1	13+28/13+62 -L-	3@3mx3m RCBC						0.012	0.002	42	8	
	Stream Bank Stabilization							0.013		38		
2	15+12/15+59 -L- LT	750mm CSP	0.045		0.004	0.025						
3 *	19+21/19+23 -L- RT	Fill						<0.001		7		
4	20+84/20+89 -L-	2@2.4mx2.4m RCBC						0.010	0.005	34	12	
	Stream Bank Stabilization							0.010		18		
5	20+89/21+45 -L-	Fill	0.089			0.023						
6 *	24+98/25+10 -L- RT	900mm RCP						0.001	0.001	7	6	
	Stream Bank Stabilization							0.002		7		
7A	34+93/36+38 -L-	2.7mx1.8m RCBC	0.051			0.002		0.012	0.003	158	33	
	Stream Bank Stabilization							0.007		25		
7B *	35+38/35+51 -L- LT	Fill						0.001		18		
8	37+33/37+55 -L-	1050mm RCP	0.008		0.002	0.012		0.004	0.001	59	11	
	Stream Bank Stabilization							0.001		4		
9	40+05/40+70 -L-	1500mm RCP						0.017	0.002	85	10	
	Stream Bank Stabilization							0.002		5		
10 *	11+55/11+82 -Y13- LT	900mm CSP						0.003	0.002	28	13	
	Stream Bank Stabilization							0.001		6		
11	50+41/51+25 -L-	1200mm RCP	0.001					0.008	0.004	86	26	
	Stream Bank Stabilization							0.003		16		
12	51+47/51+91 -L-	750mm RCP	0.047									
13	53+13/53+79 -L-	900mm RCP	0.070		0.001	0.027		0.005	0.001	75	22	
TOTALS:			0.311		0.007	0.089		0.112	0.021	718	141	

* Note: Stream Impacts are Non-Mitigatable.

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PERSON COUNTY
WBS - 34406.1.1 (R-2241A)

SHEET 45 of 48 Rev. 7/16/2012

WHE Revised 5/21/2008

WETLAND PERMIT IMPACT SUMMARY

			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ha)	Temp. Fill In Wetlands (ha)	Excavation in Wetlands (ha)	Mechanized Clearing in Wetlands (ha)	Hand Clearing in Wetlands (ha)	Permanent SW impacts (ha)	Temp. SW impacts (ha)	Existing Channel Impacts Permanent (m)	Existing Channel Impacts Temp. (m)	Natural Stream Design (m)
14	57+12/57+55 -L-	1200mm RCP	0.036		0.002			0.007	0.001	80	7	
	Stream Bank Stabilization							0.002		4		
15	63+41/66+32 -L-	1350mm RCP	0.144			0.013		0.012	0.001	199	23	
	Stream Bank Stabilization							0.002		4		
16	64+72/64+99 -L- LT	Pond Removal						0.041				
17	67+35/69+11 -L-	1350 RCP	0.191		0.061	0.074		0.005	0.002	45	7	
	Stream Bank Stabilization							0.006		20		
18 *	76+03/76+90 -L-	750mm/900mm RCP						0.009	0.005	108	55	
	Stream Bank Stabilization							<0.001		13		
19	77+72/79+54 -L-	Fill	0.003			0.039						
TOTALS:			0.374		0.063	0.126		0.084	0.009	473	92	
TOTALS:			0.685		0.070	0.215		0.196	0.030	1191	233	

* Note: Stream Impacts are Non-Mitigatable.

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PERSON COUNTY
WBS - 34406.1.1 (R-2241A)

SHEET 46 of 48 Rev. 7/16/2012

WHE Revised 5/21/2008

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS: Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	SURFACE WATER IMPACTS: Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	13+28/13+62 -L-	3@3mx3m RCBC						0.03	<0.01	138	26	
	Stream Bank Stabilization							0.03		125		
2	15+12/15+59 -L- LT	750mm CSP	0.11		0.01	0.06						
3 *	19+21/19+23 -L- RT	Fill						<0.01		23		
4	20+84/20+89 -L-	2@2.4mx2.4m RCBC						0.02	0.01	112	39	
	Stream Bank Stabilization							0.02		59		
5	20+89/21+45 -L-	Fill	0.22			0.06						
6 *	24+98/25+10 -L- RT	900mm RCP						<0.01	<0.01	23	20	
	Stream Bank Stabilization							<0.01		23		
7A	34+93/36+38 -L-	2.7mx1.8m RCBC	0.13			<0.01		0.03	0.01	518	108	
	Stream Bank Stabilization							0.02		82		
7B *	35+38/35+51 -L- LT	Fill						<0.01		59		
8	37+33/37+55 -L-	1050mm RCP	0.02		<0.01	0.03		0.01	<0.01	194	36	
	Stream Bank Stabilization							<0.01		13		
9	40+05/40+70 -L-	1500mm RCP						0.04	<0.01	279	33	
	Stream Bank Stabilization							<0.01		16		
10 *	11+55/11+82 -Y13- LT	900mm CSP						0.01	<0.01	92	43	
	Stream Bank Stabilization							<0.01		20		
11	50+41/51+25 -L-	1200mm RCP	<0.01					0.02	0.01	282	85	
	Stream Bank Stabilization							0.01		52		
12	51+47/51+91 -L-	750mm RCP	0.12									
13	53+13/53+79 -L-	900mm RCP	0.17		<0.01	0.07		0.01	<0.01	246	72	
SUB TOTALS:			0.77		0.01	0.21		0.26	0.03	2356	463	

* Note: Stream Impacts are Non-Mitigatable.

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PERSON COUNTY
WBS - 34406.1.1 (R-2241A)

SHEET 47 of 48 Rev. 7/16/2012

ATN Revised 3/31/05

WETLAND PERMIT IMPACT SUMMARY

			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
14	57+12/57+55 -L-	1200mm RCP	0.09		<0.01			0.02	<0.01	262	23	
	Stream Bank Stabilization							<0.01		13		
15	63+41/66+32 -L-	1350mm RCP	0.36			0.03		0.03	<0.01	653	75	
	Stream Bank Stabilization							<0.01		13		
16	64+72/64+99 -L- LT	Pond Removal						0.10				
17	67+35/69+11 -L-	1350 RCP	0.47		0.15	0.18		0.01	<0.01	146	23	
	Stream Bank Stabilization							0.01		67		
18 *	76+03/76+90 -L-	750mm/900mm RCP						0.02	0.01	354	181	
	Stream Bank Stabilization							<0.01		42		
19	77+72/79+54 -L-	Fill	0.01			0.10						
SUB TOTALS:			0.92		0.15	0.31		0.20	0.01	1551	303	
TOTALS:			1.69		0.16	0.53		0.45	0.04	3906	765	

* Note: Stream Impacts are Non-Mitigatable.

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PERSON COUNTY
WBS - 34406.1.1 (R-2241A)

SHEET 48 of 48 Rev. 7/16/2012

ATN Revised 3/31/05

UTILITY IMPACTS PERMIT IMPACT SUMMARY Revised 7/6/2012

			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	13+50/13+67	10" SEWER									3.000	
1	13+50/13+67	8" WATER									3.000	
1	13+50/13+67	4" GAS MAIN									2.000	
TOTALS:			0.00		0.00	0.00					8	

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PERSON COUNTY
WBS - 34406.1.1 (R-2241A)

SHEET 1 of 2 Rev. 7/6/2012

ATN Revised 3/31/05

STV / Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste 200
Charlotte, North Carolina 28208
NC License Number F-0991

REVISED 7/6/2012 ADD GAS MAIN

06-JUL-2012 13:28
R:\Utilities\Proj\R2241A_UTL_SITE_1_PERMIT.dgn
ktlane AT UCLA4801

PROJECT REFERENCE NO.	SHEET NO.
R-2241A	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

5 0 10

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONST.REV.

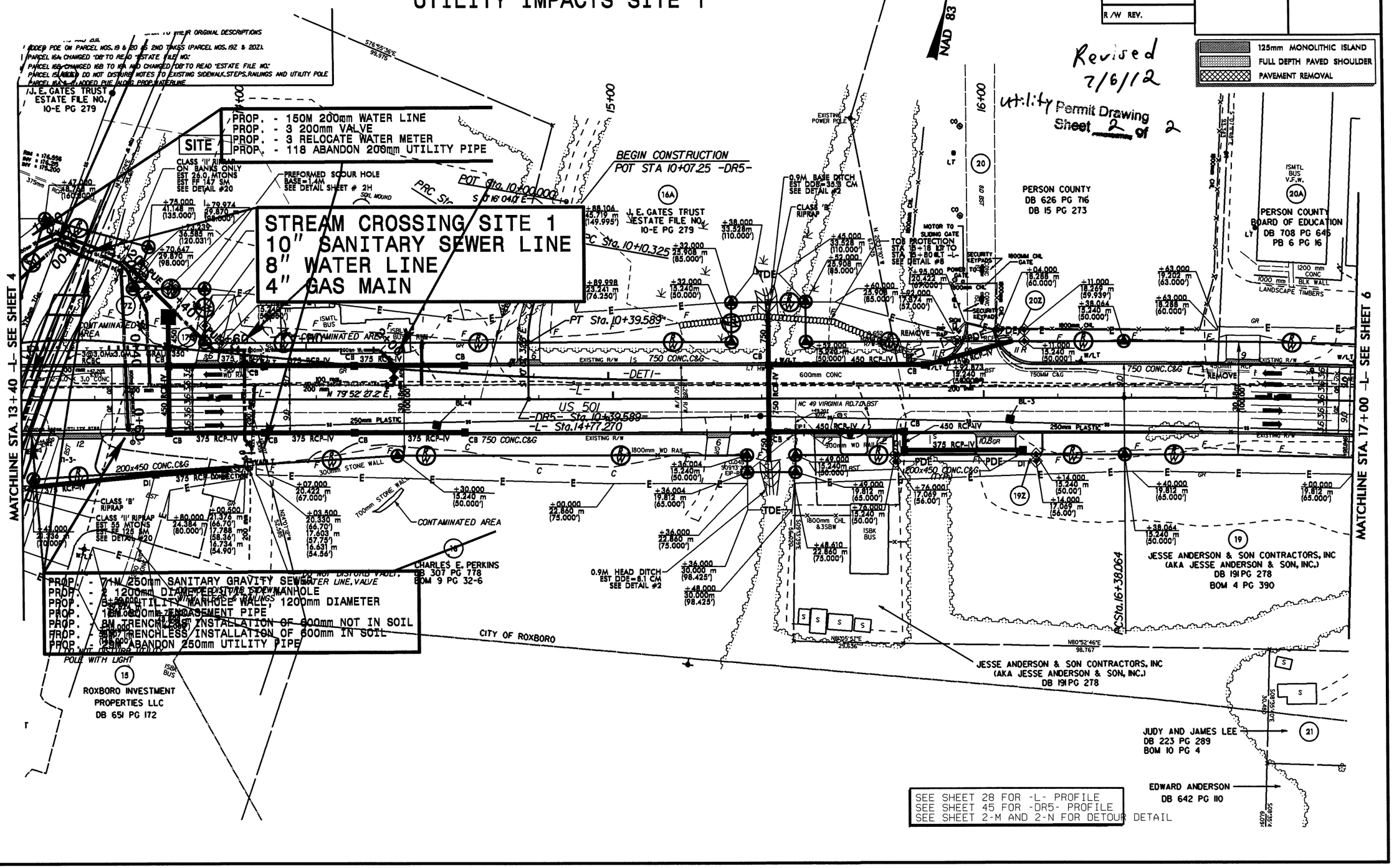
R/W REV.

125mm MONOLITHIC ISLAND
FULL DEPTH PAVED SHOULDER
PAVEMENT REMOVAL

Revised 7/6/12

Utility Permit Drawing
Sheet 2 of 2

UTILITY IMPACTS SITE 1

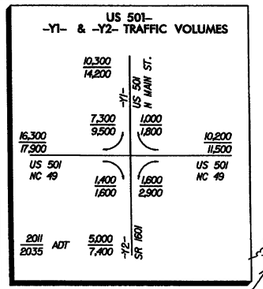


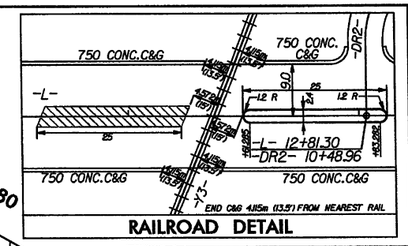
STV / Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License Number F-0991

REVISIONS

08-02-11-	PARCEL 16: PROPERTY LINE MODIFIED & REMOVED SHED, ADDED UNDERGROUND DRAIN LINE & MANHOLES PARCEL 16A: ADDED NEW PARCEL BETWEEN 16 & 17 REVISED OWNER NAME ON PARCELS 4,9,11,16 PARCEL 10: REVISED DRIVEWAY CONNECTION & MODIFIED PROPOSED CHAIN LINK FENCE
08-16-11-	PARCEL 12: 10.8M DRIVEWAY SHIFTED TO WEST SIDE OF PROPERTY
09-09-11-	PARCELS 8 & 8A COMBINED, REVISED OWNER NAME
10-07-11-	REVISED PARCEL BOUNDRIES FOR PARCEL 16 AND 16A
10-07-11-	ADDED SUBSURFACE DRAINAGE FOR PARCEL 16 AND 16A
11-07-11-	PARCEL 11: ADDED PDE FOR DRAINAGE STRUCTURE
11-07-11-	PARCEL 7: ADDED R/W AND MODIFIED TEMPORARY EASEMENTS
01-03-12-	PARCEL 12: REVISED DRIVEWAY GRADE (10%) FOR TRUCK ACCESS
01-12-12-	PARCEL 16A CHANGED "DB" TO READ "ESTATE FILE NO."
03-06-12	PARCEL 16A: ADDED PUE ALONG PROP. WATERLINE.
06-29-12	PARCEL 22: REVISED DRIVEWAY PROFILE AND MODIFIED TEMPORARY EASEMENT

US 501 -Y1- & -Y2- TRAFFIC VOLUMES





RAILROAD DETAIL

DESIGN EXCEPTION FOR VERTICAL SIGHT DISTANCE AND SAG VERTICAL "K" FACTOR ON -L-, APPROVED 10-07-05

METRIC
5 0 10

CONST. REV.

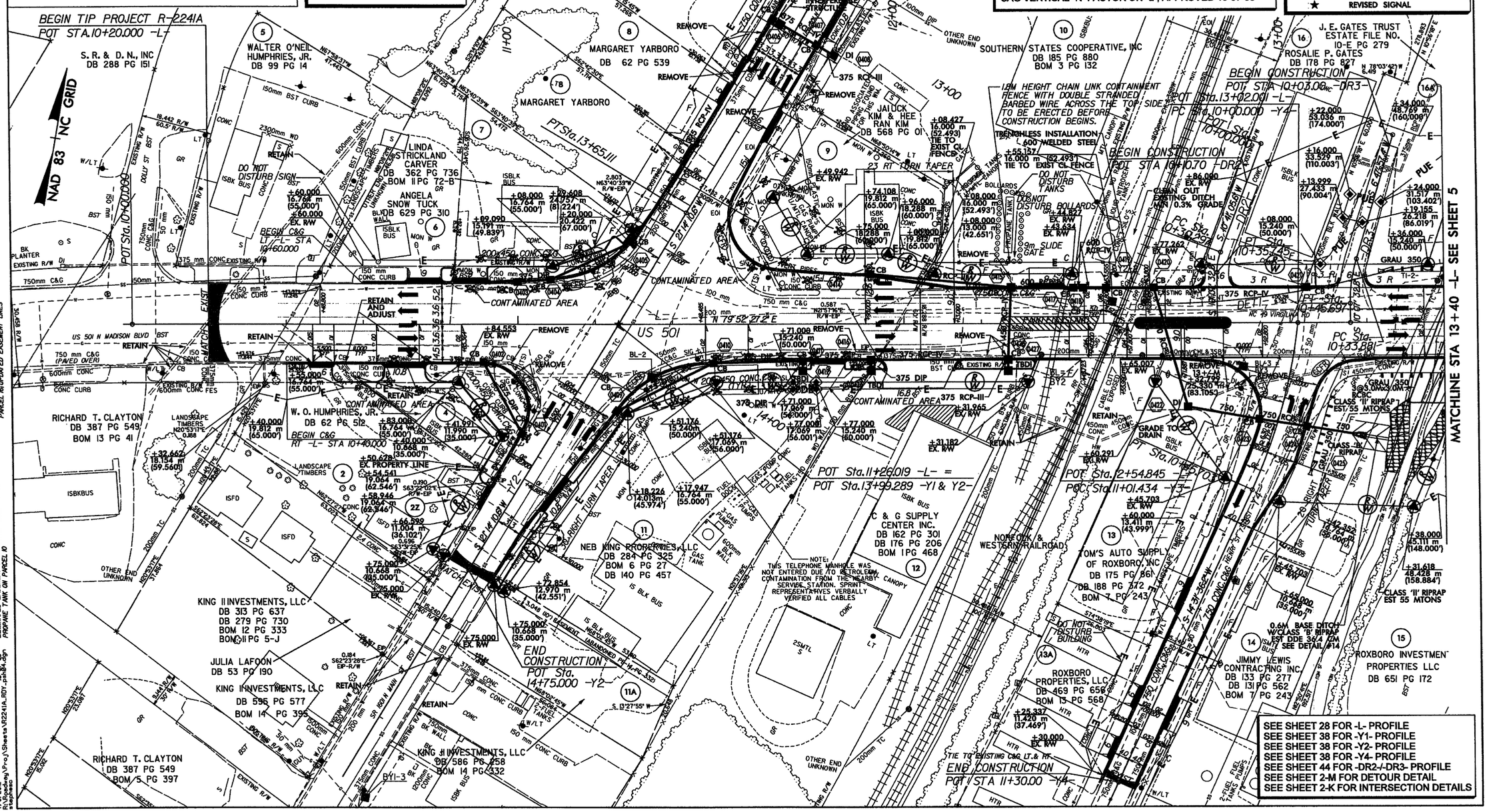
R/W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2241A	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Revised 7/5/12

125mm MONOLITHIC ISLAND
FULL DEPTH PAVED SHOULDER
PAVEMENT REMOVAL
★ REVISED SIGNAL



06-21-10 - PARCEL 1: NO CLAIM, REMOVED PARCEL NUMBER
PARCELS 6,15: REVISED PARCEL NAME
PARCELS 6,9: LOCATED R/W OF ROAD BY SURVEY
PARCELS 10,12: LOCATED SIGN
09-20-10 - MODIFIED RIGHT TURN LANE STORAGE LENGTH AND ADJUSTED RIGHT TURN LANE
PARCEL 9: REVISED CURB AND GUTTER, ADJUSTED RW AND EASEMENT TIE-INS
PARCEL 10: ADDED A CHAIN LINK FENCE AND GATE, REMOVED DRIVEWAY NOTES, UPDATED RW AND EASEMENT TIE-INS
PARCEL 12: REVISED CURB AND GUTTER
PARCEL 13: UPDATED NOTES
PARCEL 14: REVISED DRIVEWAYS INTO TURN OUT, REVISED RW AND EASEMENT TIE-INS
PARCEL 16: UPDATED RW AND EASEMENT LINES
09-28-10 - PARCEL 6: REVISED PARCEL INFORMATION
PARCEL 16: UPDATED EASEMENT LINES
06-25-07 - PULLED SLOPE STAKES IN REVISED EASEMENT, ADDED DRIVEWAY PROFILE FOR PARCEL 14
06-04-08 - MOVED DRIVEWAY ON PARCEL 4, STEPPED FILL ON PARCEL 14, DRIVEWAY REDONNECTION ON PARCEL 16, REMOVED EASEMENT FROM PARCEL 1, & REDUCED R/W AND U.E. ON PARCEL 2, REMOVED CURB & TCE ON PARCEL 3, ADDED CONCRETE CURB, R/W & TCE ON PARCEL 11, NAME CHANGE ON PARCEL 2, 3, 9, 9A, PLACED GUARDRAIL TO PROTECT TANKS ON PARCEL 6, AND CREATED NEW PARCEL 12A
06-24-08 - REMOVED DRIVEWAYS, ADDED BALLARDS, WIDENED SLOPE STAKE LINE TO AVOID BALLARDS.
02-18-09 - REMOVED PIPE EMPTYING INTO RAILROAD DITCH, ADDED 2 PIPES AND 10B TO CONNECT TO PIPE ON PARCEL 13
10-07-09 - ELIMINATED EASEMENT FROM WITHIN BOLLARDS AT PROPANE TANK ON PARCEL 10

7/6/2012
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Sheet 4

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METRIC
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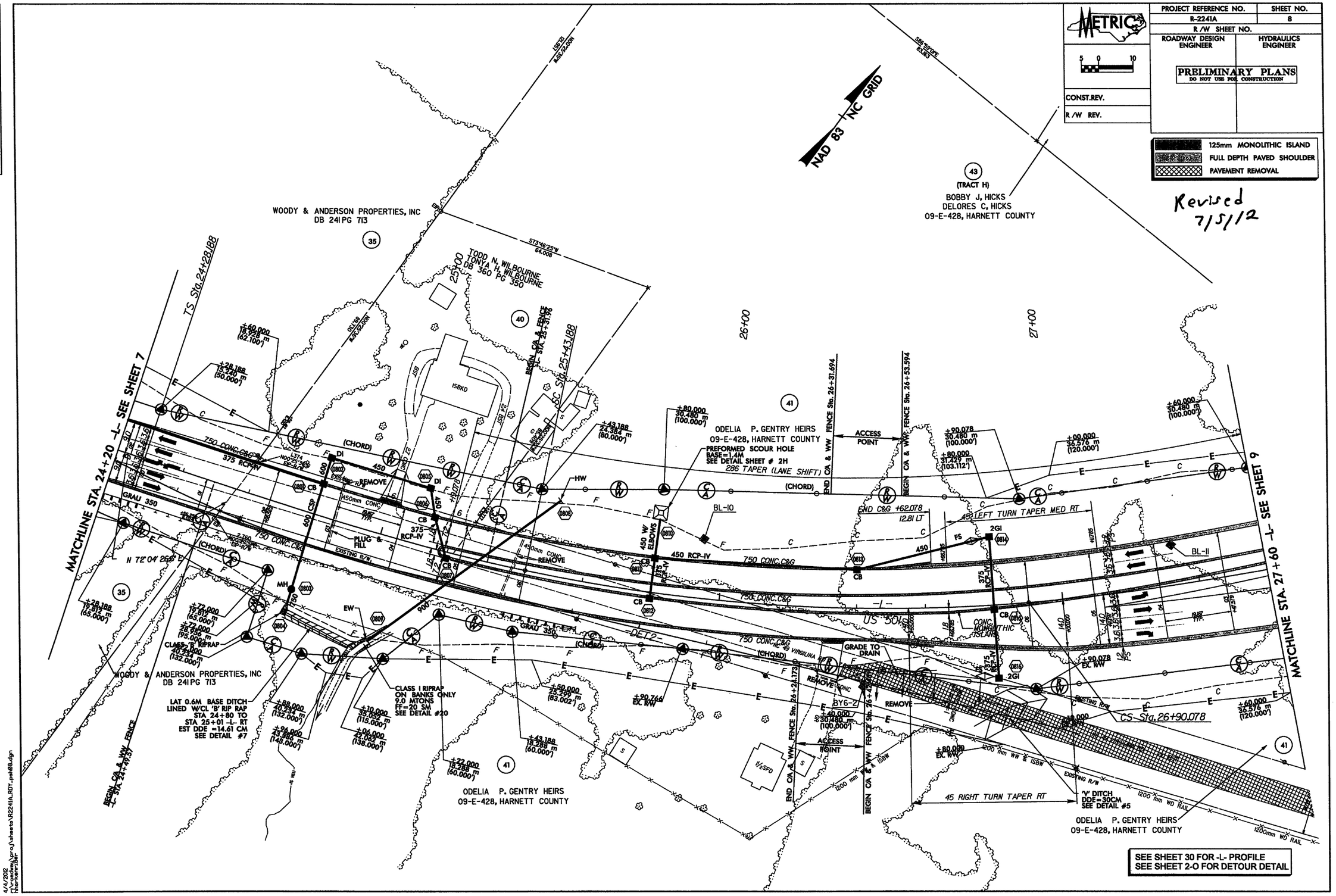
PROJECT REFERENCE NO.	SHEET NO.
R-2241A	8
R /W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONST.REV.
R /W REV.

125mm MONOLITHIC ISLAND
FULL DEPTH PAVED SHOULDER
PAVEMENT REMOVAL

Revised 7/5/12



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PROJECT REFERENCE NO.	SHEET NO.
R-2241A	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

5 0 10

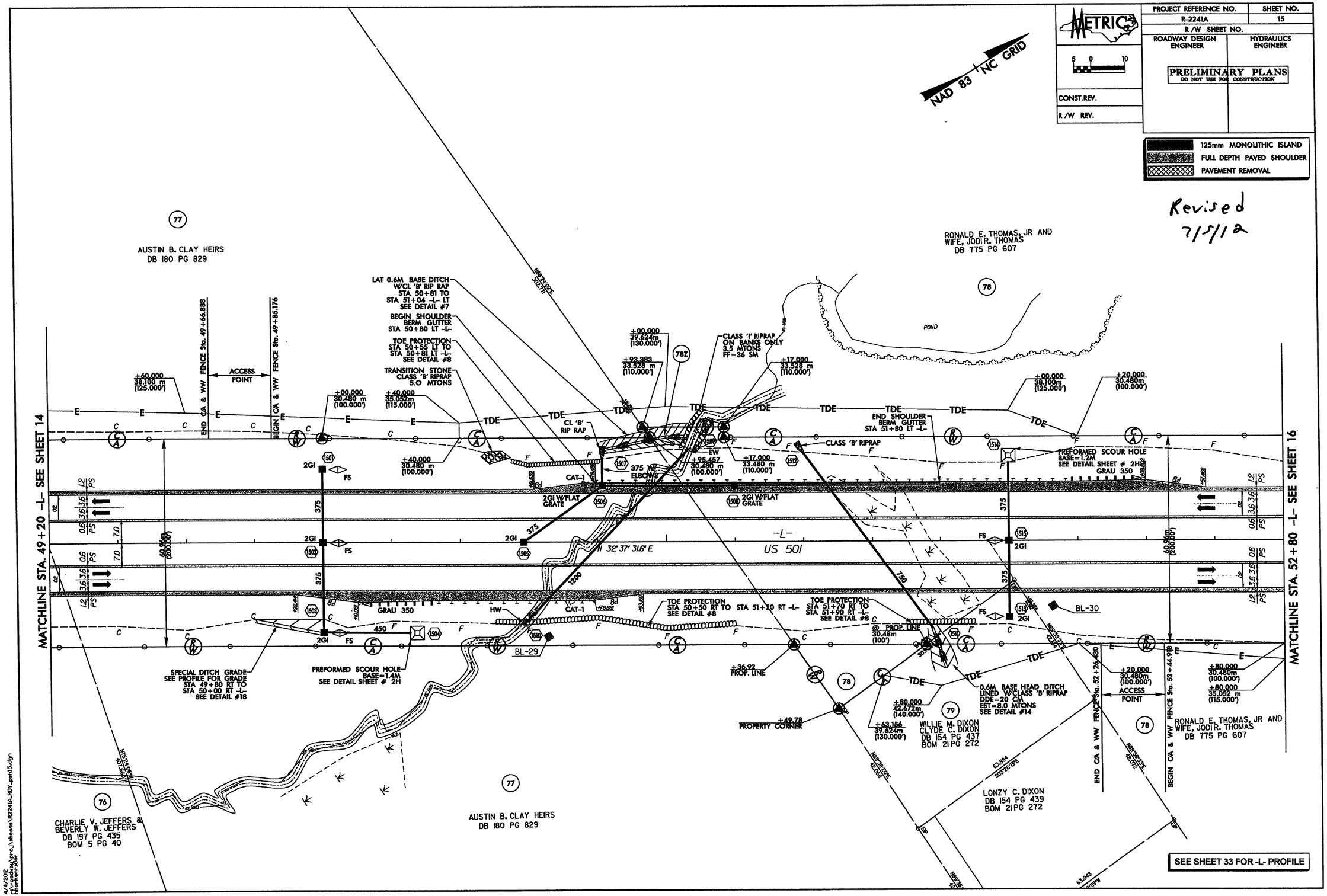
CONST.REV.

R/W REV.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

125mm MONOLITHIC ISLAND
FULL DEPTH PAVED SHOULDER
PAVEMENT REMOVAL

Revised 7/5/12



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Wake Forest, NC 27587
NC License Number F-0991

REVISIONS

06-04-08 -	NEW PARCEL 87A AND PROPERTY LINE CHANGE ON PARCEL 87
06-21-10 -	PARCEL 82: LOCATED FENCE PARCEL 87A: LOCATED SHED, GARAGE, MOBILE HOME, REVISED PARCEL NAME PARCEL 90: REVISED PARCEL NAME
08-02-11 -	COMBINED PARCEL 87A WITH PARCEL 87 CHANGED PROPERTY INFORMATION ON PARCEL 89
09-09-11 -	PARCEL 87: REVISED OWNER NAME
11-28-11 -	CHANGED PARCEL NUMBER FROM 87 TO 87Z
11-28-11 -	CHANGED PARCEL NUMBER FROM 89 TO 89Z
11-28-11 -	PARCEL 85, 86, 87Z AND 89Z: MODIFIED C/A, FENCE, AND TEMPORARY EASEMENTS
01-03-12-	CONVERTED PARCEL NOS. 87Z AND 89Z BACK TO THEIR ORIGINAL DESCRIPTIONS (PARCEL NOS. 87 AND 89).
01-03-12-	MODIFIED ROW C/A, FENCE AND TEMPORARY EASEMENTS ON PARCEL NOS. 85, 86, AND 87 AND 89 AS 2ND TAKES (PARCEL NOS. 87Z AND 89Z).
06-29-12-	PARCEL 87Y: MODIFIED TEMPORARY EASEMENT

METRIC

PROJECT REFERENCE NO.	SHEET NO.
R-2241A	19
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
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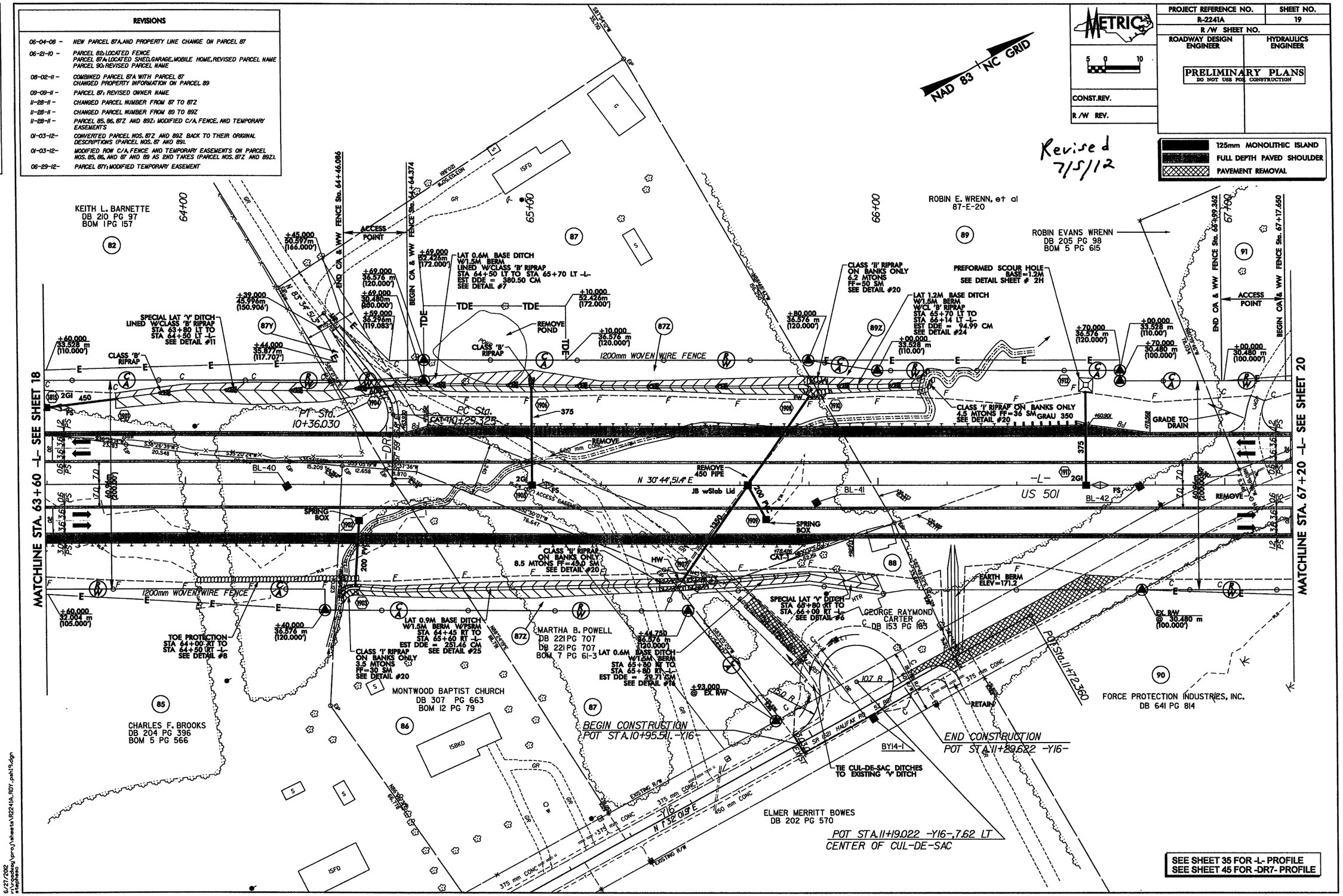
CONST. REV.

R/W REV.

Revised 7/5/12

125mm MONOLITHIC ISLAND
FULL DEPTH PAVED SHOULDER
PAVEMENT REMOVAL



SEE SHEET 35 FOR -L- PROFILE
SEE SHEET 45 FOR -DR7- PROFILE

6/27/2012
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METRIC

PROJECT REFERENCE NO.	SHEET NO.
R-2241A	20
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
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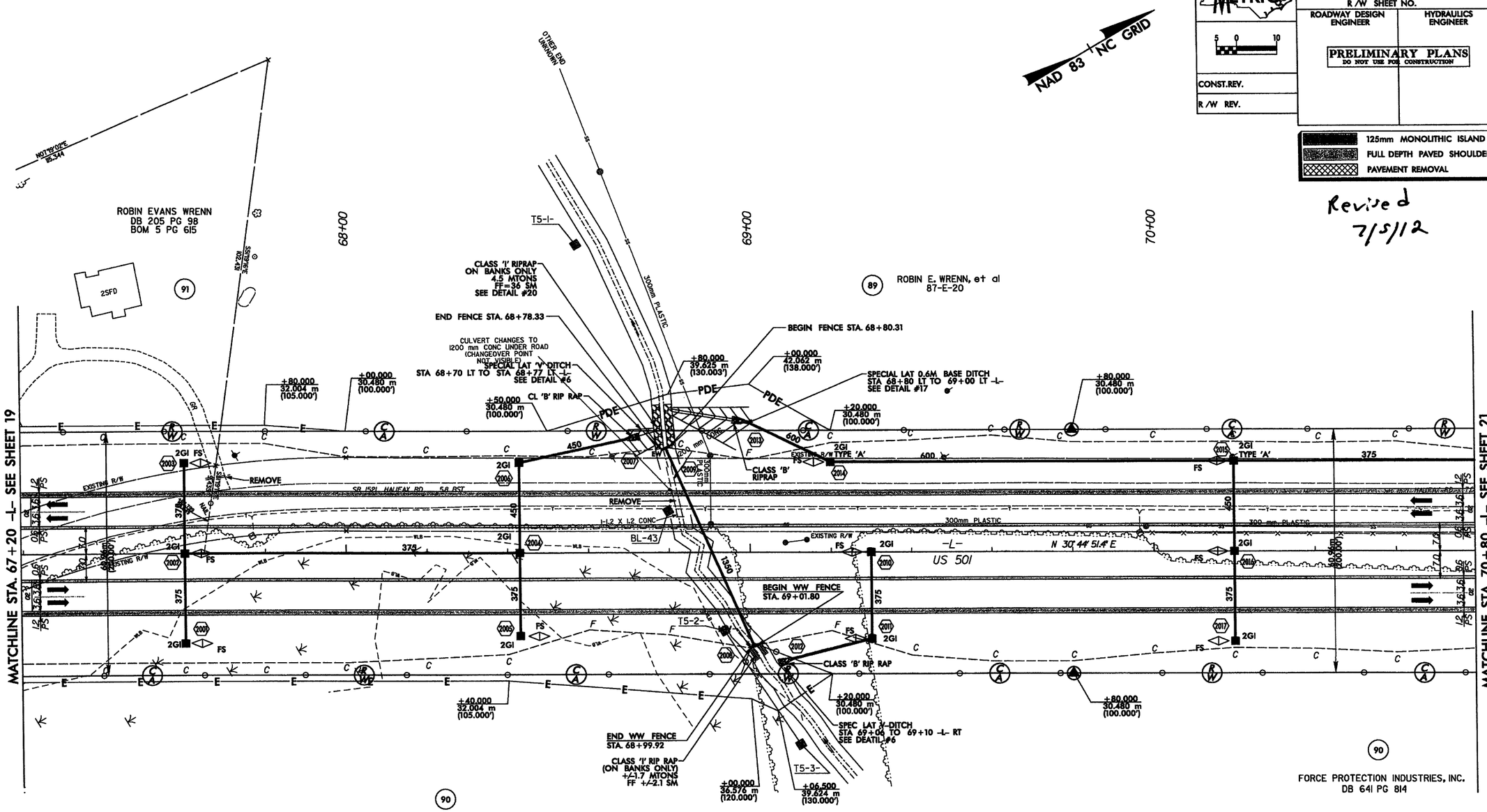
CONST.REV.

R/W REV.

125mm MONOLITHIC ISLAND
FULL DEPTH PAVED SHOULDER
PAVEMENT REMOVAL

Revised 7/5/12



SEE SHEET 36 FOR -L- PROFILE

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PROJECT REFERENCE NO.	SHEET NO.
R-2241A	22
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
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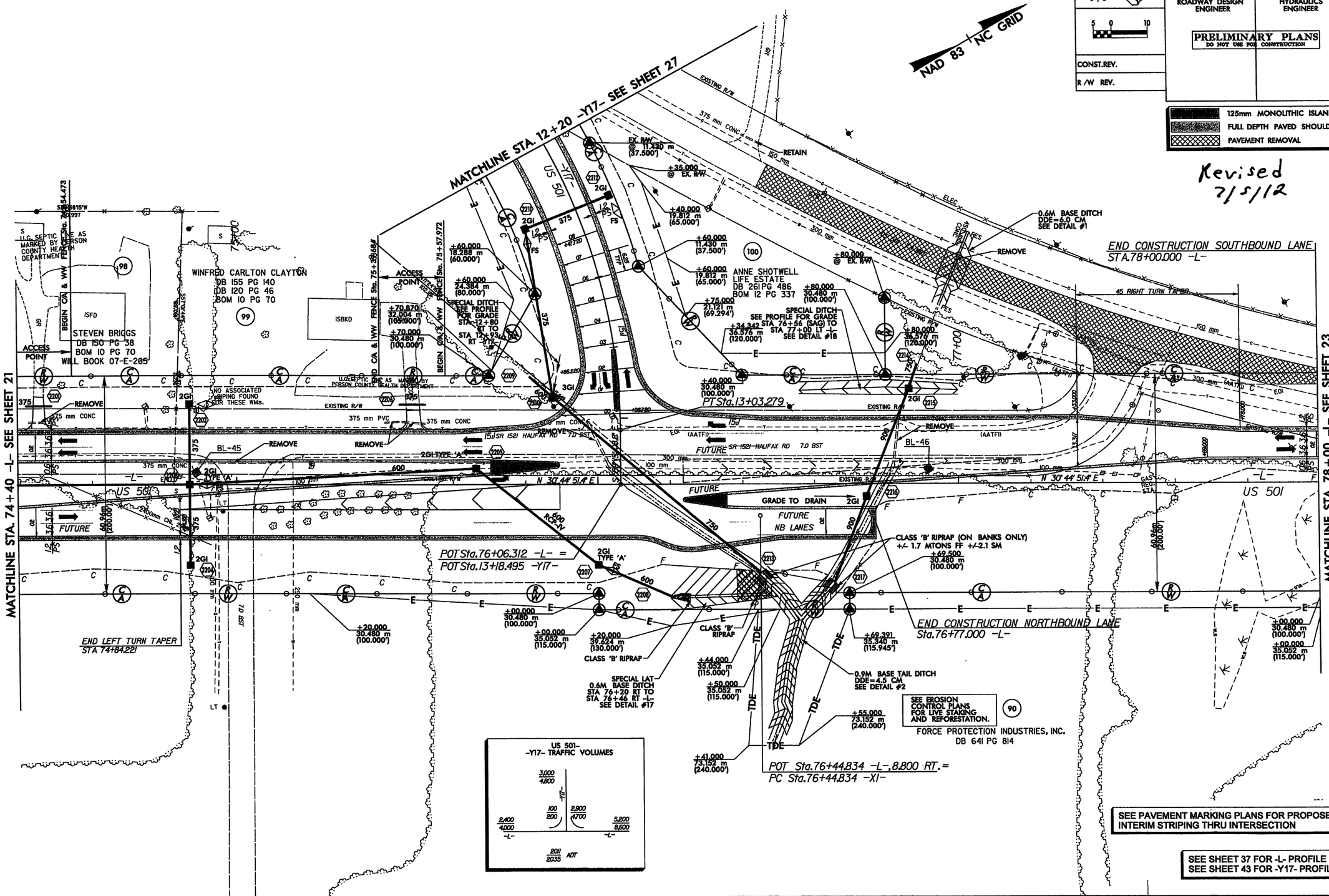
CONST. REV.

R/W REV.

METRIC 5 0 10

125mm MONOLITHIC ISLAND
FULL DEPTH PAVED SHOULDER
PAVEMENT REMOVAL

Revised 7/5/12



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