



North Carolina Department of Transportation

Highway Stormwater Program
STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS



(Version 2.08; Released April 2018)

WBS Element: 41499.1.2 TIP No.: R-5020A County(ies): Columbus Page 1 of 2

General Project Information

WBS Element:	41499.1.2	TIP Number:	R-5020A	Project Type:	Roadway Widening	Date:	3/12/2019
NCDOT Contact:	Steven Kendall, PE		Contractor / Designer:	Brad T. Smith, EI			
Address:	NCDOT Division 6 558 Gillespie Street (P.O. Box 1150) Fayetteville, NC 28302		Address:	Sungate Design Group, PA 905 Jones Franklin Road Raleigh, NC 27606			
	Phone:	(910) 364-0603		Phone:	(919) 859-2243		
	Email:	sdkendall@ncdot.gov		Email:	bsmith@sungatedesign.com		
City/Town:	Whiteville		County(ies):	Columbus			
River Basin(s):	Lumber		CAMA County?	No			
Wetlands within Project Limits?	Yes						

Project Description

Project Length (lin. miles or feet):	3.112 Mi.	Surrounding Land Use:	Medium and low density residential, business, and industrial.					
	Proposed Project		Existing Site					
Project Built-Upon Area (ac.)	38.5	ac.	21.6	ac.				
Typical Cross Section Description:	-L- (US 701): One 14' travel lane and one 12' travel lane in each direction (four travel lanes total) with 2'-6" curb and gutter drainage, sidewalk, and a concrete island.			-L- (US 701): Two 12' travel lanes with grass shoulders and grass roadway ditches on both sides.				
Annual Avg Daily Traffic (veh/hr/day):	Design/Future:	26,900	Year:	2040	Existing:	21,650	Year:	2020
General Project Narrative: (Description of Minimization of Water Quality Impacts)	<p>The R-5020A project involves widening existing US-701 south of Whiteville, improving intersections, and replacing bridges along with other improvements to adjacent roadways, including replacing an undersized culvert under US-701 Business. Curb and gutter drainage has replaced existing roadway ditches. Rip rap dissipation has been incorporated at drainage pipe outlets and outfalls where applicable. Proposed cross pipes in jurisdictional streams will be buried. In areas adjacent to wetlands, 3:1 roadway fill slopes were used to reduce wetland impacts. There are two existing major structures crossing waterways within the project limits that will be replaced. The first proposed structure is a 3 span (1@45', 1@55', 1@45') 36" girder bridge with 4' end bent caps over Soules Swamp. The proposed bridge will have spill-through abutments. In the area of the causeway and bridge, 10' of mechanized clearing will be provided to allow enough room for the contractor to successfully construct the proposed slopes. In the project limits, Soules Swamp is a FEMA detailed study area with non-encroachment widths established. The second proposed structure is a 9'x7' RCBC buried 1' on UT to Richardson Swamp, which is not in a FEMA study area. Both structures have been designed to have as little environmental and surface water impacts as is practicable.</p>							

Waterbody Information

Surface Water Body (1):	Deep Branch		NCDWR Stream Index No.:	15-4-8-6				
NCDWR Surface Water Classification for Water Body	Primary Classification:	Class C						
	Supplemental Classification:	Swamp Waters (Sw)						
Other Stream Classification:								
Impairments:	None							
Aquatic T&E Species?	No	Comments:						
NRTR Stream ID:							Buffer Rules in Effect:	N/A
Project Includes Bridge Spanning Water Body?	No	Deck Drains Discharge Over Buffer?	N/A	Dissipator Pads Provided in Buffer?				N/A
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)			(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)			
(If yes, provide justification in the General Project Narrative)								



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WBS Element: 41499.1.2 TIP No.: R-5020A County(ies): Columbus Page 2 of 2

Additional Waterbody Information

Surface Water Body (2):	Richardson Swamp		NCDWR Stream Index No.:	15-4-9	
NCDWR Surface Water Classification for Water Body	Primary Classification:		Class C		
	Supplemental Classification:		Swamp Waters (Sw)		
Other Stream Classification:					
Impairments:	None				
Aquatic T&E Species?	No	Comments:			
NRTR Stream ID:				Buffer Rules in Effect:	N/A
Project Includes Bridge Spanning Water Body?	No	Deck Drains Discharge Over Buffer?	N/A	Dissipator Pads Provided in Buffer?	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)	
(If yes, provide justification in the General Project Narrative)					

Surface Water Body (3):	Soules Swamp		NCDWR Stream Index No.:	15-4-8	
NCDWR Surface Water Classification for Water Body	Primary Classification:		Class C		
	Supplemental Classification:		Swamp Waters (Sw)		
Other Stream Classification:					
Impairments:	None				
Aquatic T&E Species?	No	Comments:			
NRTR Stream ID:				Buffer Rules in Effect:	N/A
Project Includes Bridge Spanning Water Body?	Yes	Deck Drains Discharge Over Buffer?	N/A	Dissipator Pads Provided in Buffer?	
Deck Drains Discharge Over Water Body?	No	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)	
(If yes, provide justification in the General Project Narrative)					

Surface Water Body (4):			NCDWR Stream Index No.:		
NCDWR Surface Water Classification for Water Body	Primary Classification:				
	Supplemental Classification:				
Other Stream Classification:					
Impairments:					
Aquatic T&E Species?		Comments:			
NRTR Stream ID:				Buffer Rules in Effect:	
Project Includes Bridge Spanning Water Body?		Deck Drains Discharge Over Buffer?		Dissipator Pads Provided in Buffer?	
Deck Drains Discharge Over Water Body?		(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)	
(If yes, provide justification in the General Project Narrative)					

Surface Water Body (5):			NCDWR Stream Index No.:		
NCDWR Surface Water Classification for Water Body	Primary Classification:				
	Supplemental Classification:				
Other Stream Classification:					
Impairments:					
Aquatic T&E Species?		Comments:			
NRTR Stream ID:				Buffer Rules in Effect:	
Project Includes Bridge Spanning Water Body?		Deck Drains Discharge Over Buffer?		Dissipator Pads Provided in Buffer?	
Deck Drains Discharge Over Water Body?		(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)	
(If yes, provide justification in the General Project Narrative)					

09.08/99

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

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS COLUMBUS COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-5020A	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
41499.1.2	N.A.	P.E.	
41499.2.2	N.A.	RW	
41499.2.4	N.A.	UTIL.	
41499.3.2	N.A.	CONST.	

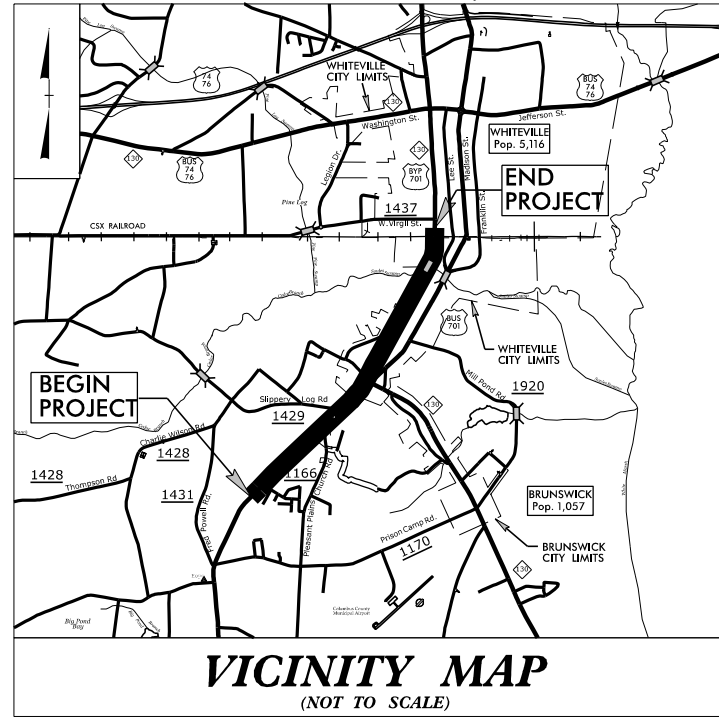
**LOCATION: US 701 BYPASS (MADISON STREET-JK POWELL BLVD.)
FROM SOUTH OF SR 1166 (PLEASANT PLAINS CHURCH ROAD) TO SR 1437 (VIRGIL AVENUE)**

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

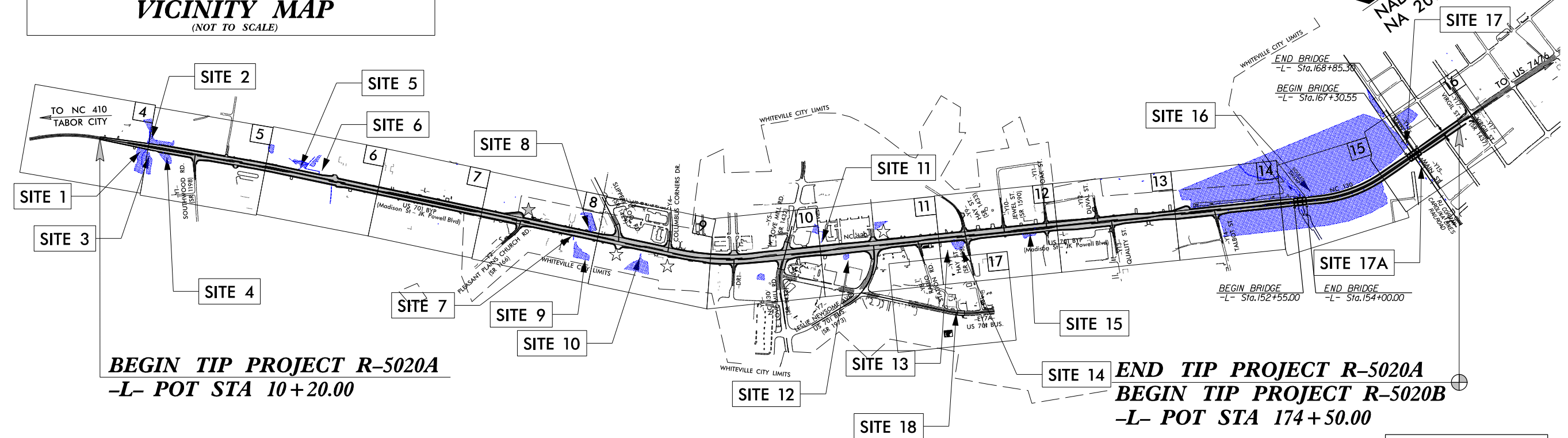
90% REVIEW PLANS

**PERMIT DRAWING
SHEET 1 OF 40**

TIP PROJECT: R-5020A



**PRELIMINARY
WETLAND AND SURFACE WATER IMPACTS PERMIT**



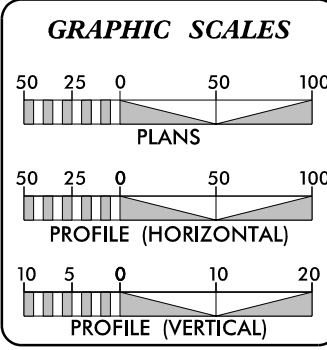
NOTE:
1. THIS IS A PARTIAL CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO POINTS AS SHOWN ON THE PLANS.

**INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION**

- ☆ REVISED SIGNAL
- ★ PROPOSED SIGNAL



CONTRACT:



DESIGN DATA

ADT 2020 =	21,650
ADT 2040 =	26,900
K =	8 %
D =	3 %
T =	5 % *
V =	50 MPH

* (TTST = 2% + DUAL 3%)

FUNC CLASS = URBAN ARTERIAL
REGIONAL TIER

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT R-5020A =	3.055 MILES
LENGTH OF STRUCTURE TIP PROJECT R-5020A =	0.057 MILES
TOTAL LENGTH OF TIP PROJECT R-5020A =	3.112 MILES

Prepared in the Office of:
KCI Associates of N.C., P.A.
4505 Falls of Neuse Road, Suite 400
Raleigh, NC 27609
Phone (919) 783-9214
Fax (919) 783-9266

Plans Prepared For:
DIVISION OF HIGHWAYS
558 Gillespie St.
Fayetteville NC, 28301

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
FEBRUARY 16, 2018

LETTING DATE:
FEBRUARY 18, 2020

NCDOT CONTACT: CRAIG A. FREEMAN, P.E.
PROJECT ENGINEER - DIVISION 6

CHARLES L. FLOWE, P.E.
PROJECT ENGINEER

BARRY C. SMITH, P.E.
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.



ROADWAY DESIGN ENGINEER

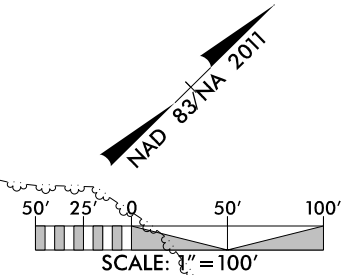
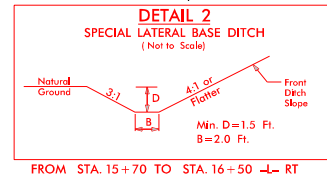
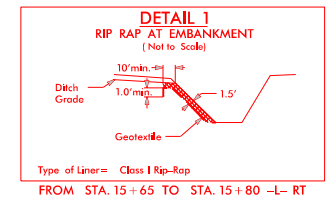
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**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

9/5/2019
R-5020A_Hyd_prm_wet_psh_01.dgn
jnarvey

8/17/99

PROJECT REFERENCE NO. <i>R-5020A</i>		SHEET NO. 4
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		
 KCI <small>Engineers • Planners • Scientists • Construction Managers 4505 Falls of Neuse Road, Suite 400 Raleigh, NC 27609-6270 Phone (919) 783-9214 • Fax (919) 783-9266</small>		
 SUNGATE DESIGN GROUP, P.A. <small>805 JONES FRANKLIN ROAD RALEIGH, NORTH CAROLINA 27605 TEL (919) 858-2243 ENG. FIRM LICENSE NO. C-690</small>		

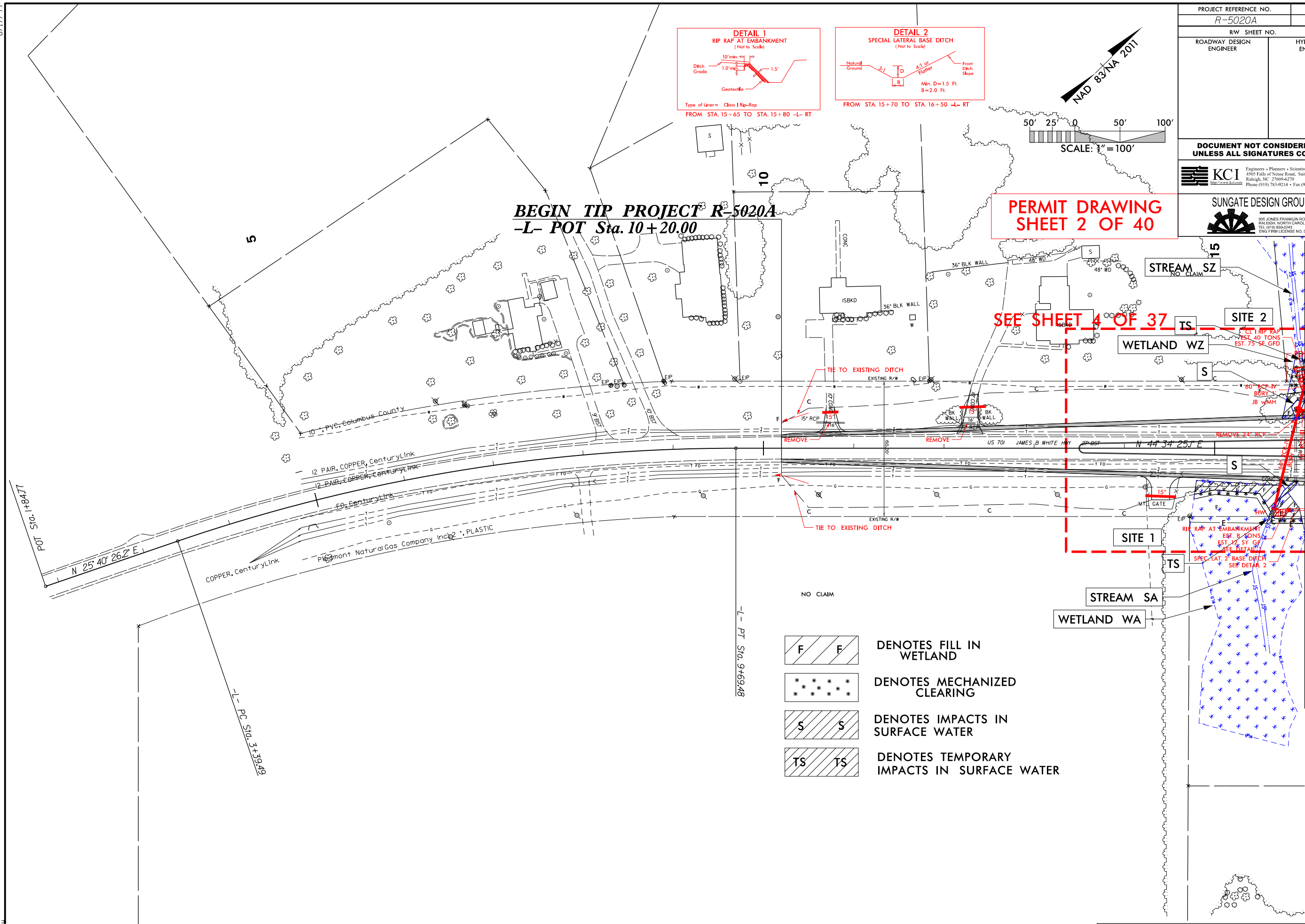





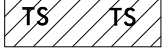
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-L- POT Sta. 10+20.00

PERMIT DRAWING
SHEET 2 OF 40

SEE SHEET 4 OF 37

MATCHLINE -L- STA. 16+00 SEE SHEET 5





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

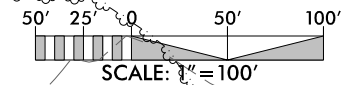
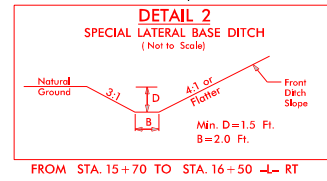
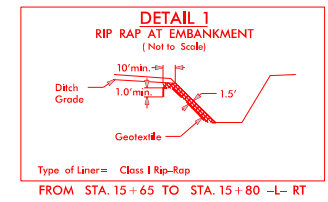
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ROW REV.11 - 02/18/19 - Removed TCE from Parcel 1. (BCS)

R5/2019
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FOR -L- PROFILE, SEE SHEET 18
FOR RIGHT-OF-WAY DATA, SEE SHEET RW-4

8/17/99

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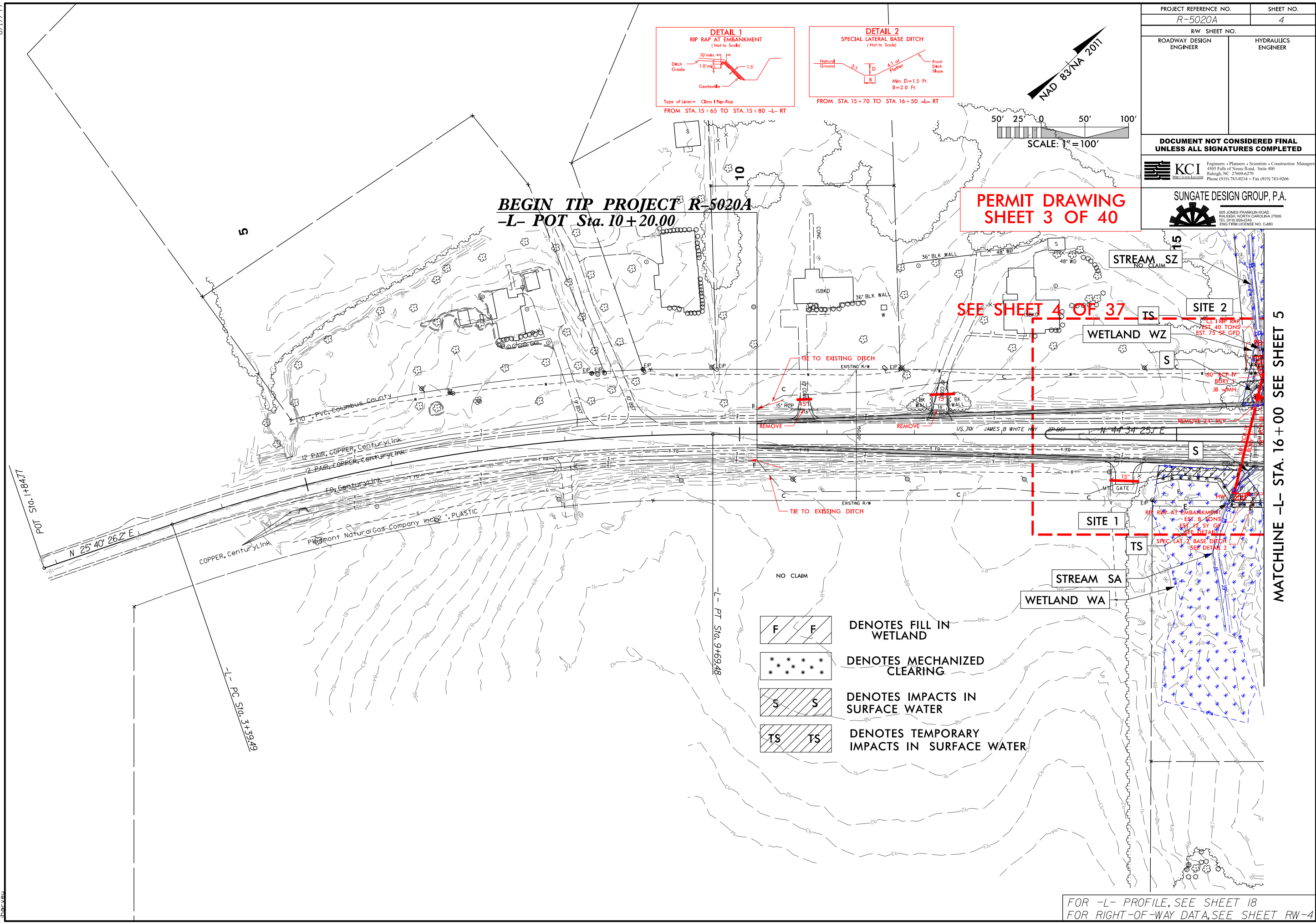
PERMIT DRAWING
SHEET 3 OF 40




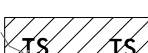
SEE SHEET 4 OF 37

MATCHLINE -L- STA. 16+00 SEE SHEET 5

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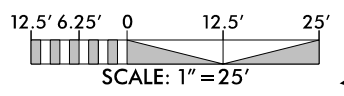
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-  DENOTES FILL IN WETLAND
-  DENOTES MECHANIZED CLEARING
-  DENOTES IMPACTS IN SURFACE WATER
-  DENOTES TEMPORARY IMPACTS IN SURFACE WATER

FOR -L- PROFILE, SEE SHEET 18
FOR RIGHT-OF-WAY DATA, SEE SHEET RW-4

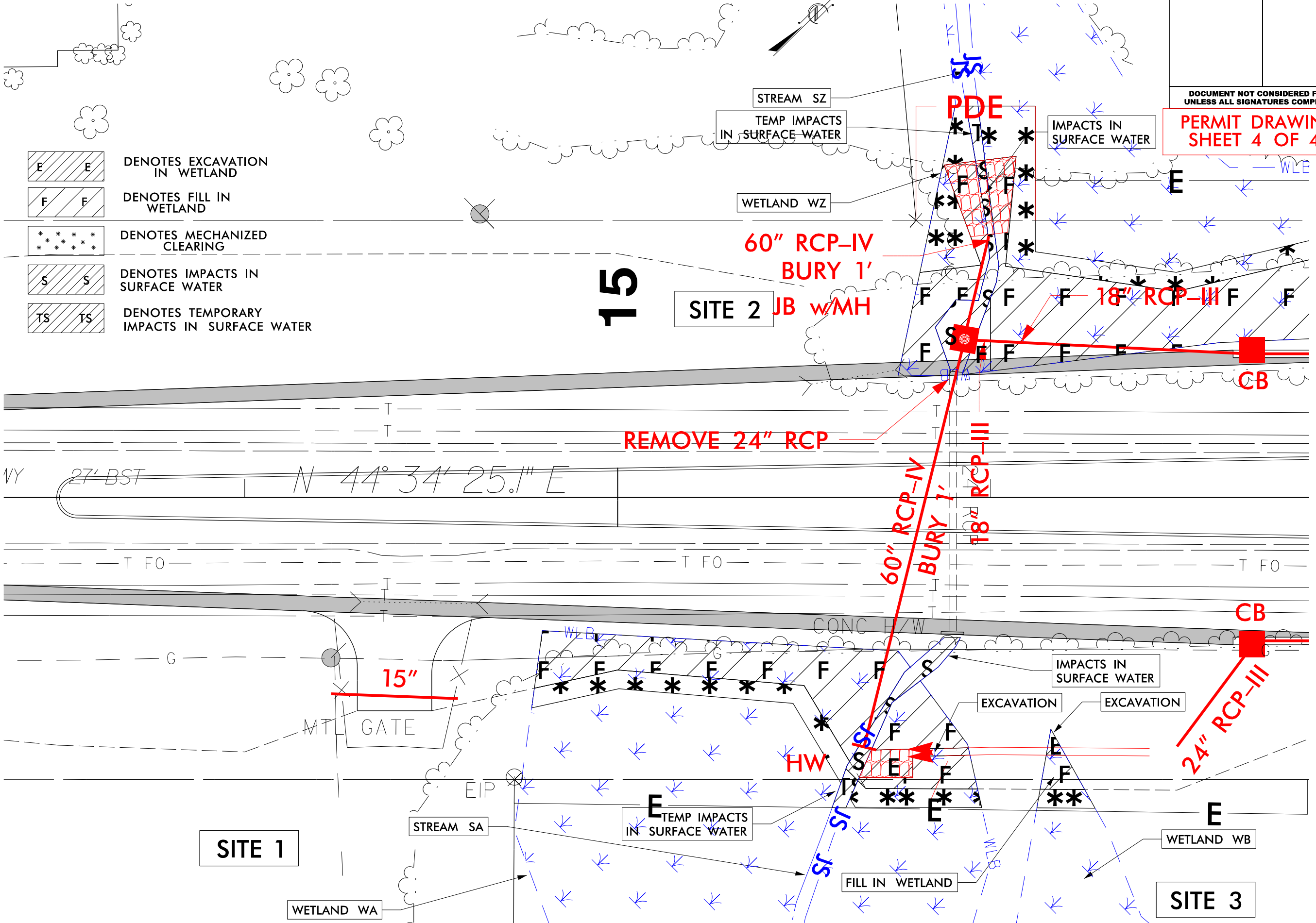
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PROJECT REFERENCE NO. R-5020A	SHEET NO.
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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UNLESS ALL SIGNATURES COMPLETED

**PERMIT DRAWING
SHEET 4 OF 40**



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

15

SITE 2 JB w/MH

60" RCP-IV
BURY 1'

18" RCP-III

REMOVE 24" RCP

60" RCP-IV
BURY 1'

18" RCP-III

24" RCP-III

SITE 1

SITE 3

STREAM SA

TEMP IMPACTS
IN SURFACE WATER

IMPACTS IN
SURFACE WATER

EXCAVATION

EXCAVATION

HW

FILL IN WETLAND

WETLAND WB

WETLAND WA

STREAM SZ

TEMP IMPACTS
IN SURFACE WATER

WETLAND WZ

IMPACTS IN
SURFACE WATER

WLE

CB

CB

VY

27' BST

N 44° 34' 25.1" E

T FO

T FO

T FO

G

MTL GATE

EIP

WL B

CONC H/W

EXCAVATION

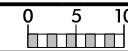
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JS

JS

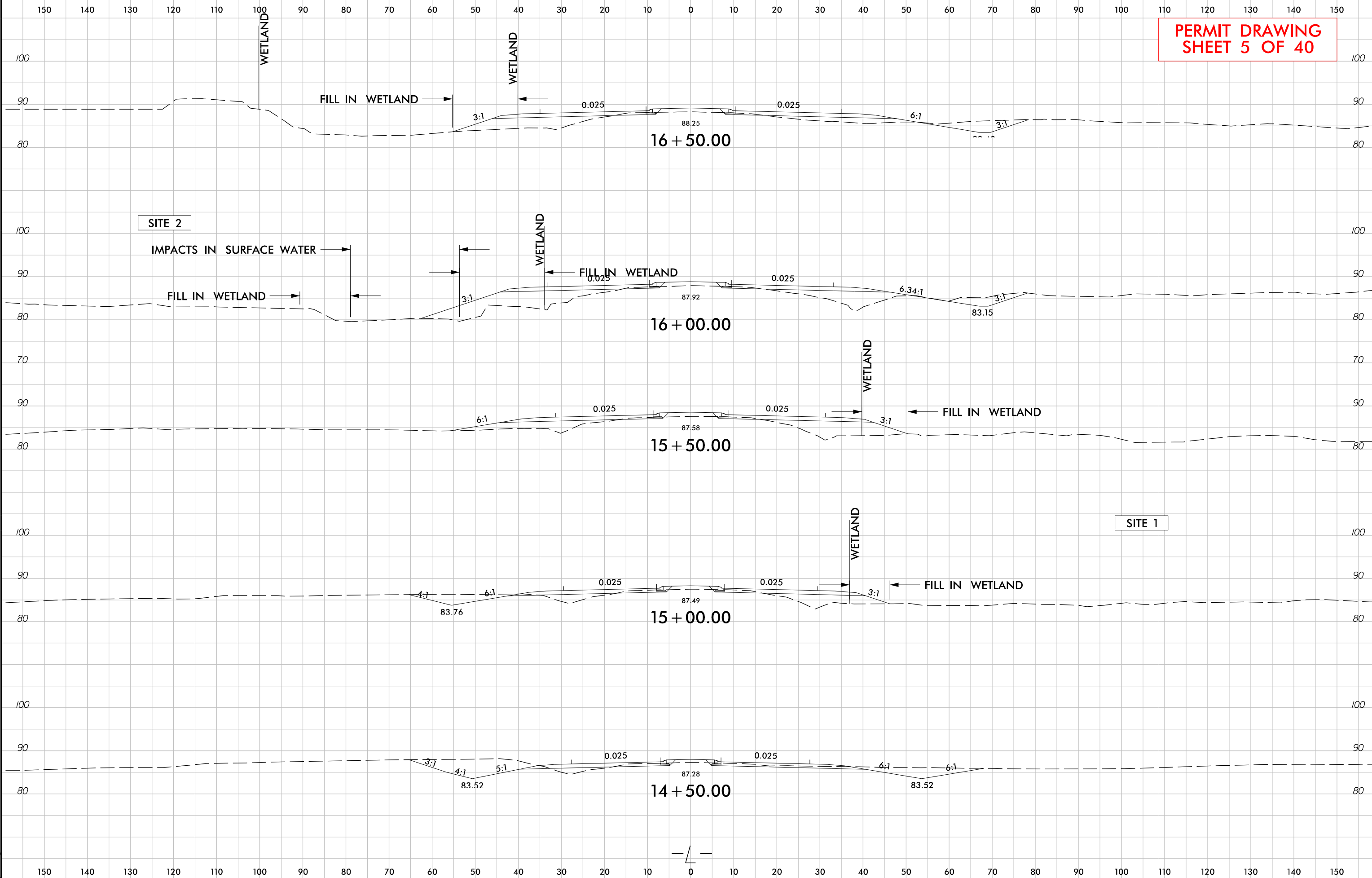
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6/23/16



PROJ. REFERENCE NO.
R-5020A

SHEET NO.
X-3

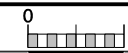


**PERMIT DRAWING
SHEET 5 OF 40**

SITE 2

SITE 1

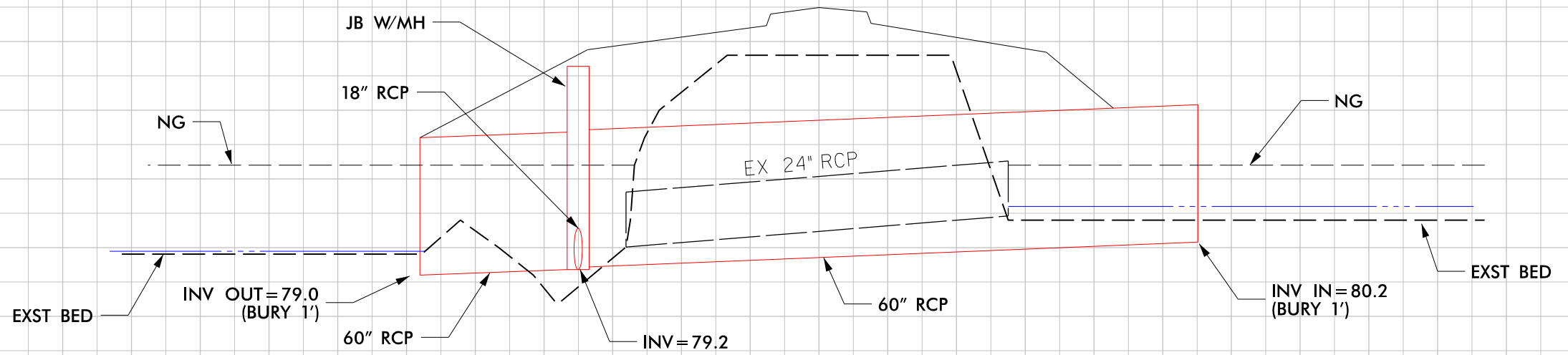
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jbarvey



**PERMIT DRAWING
SHEET 6 OF 40**

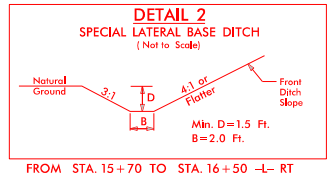
CL STA 15+82 -L-
60" RCP

95
90
85
80
75

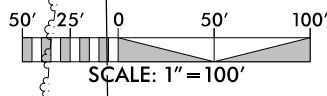


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R/5/2019 Hyd_prm_wet_psh_05.dgn



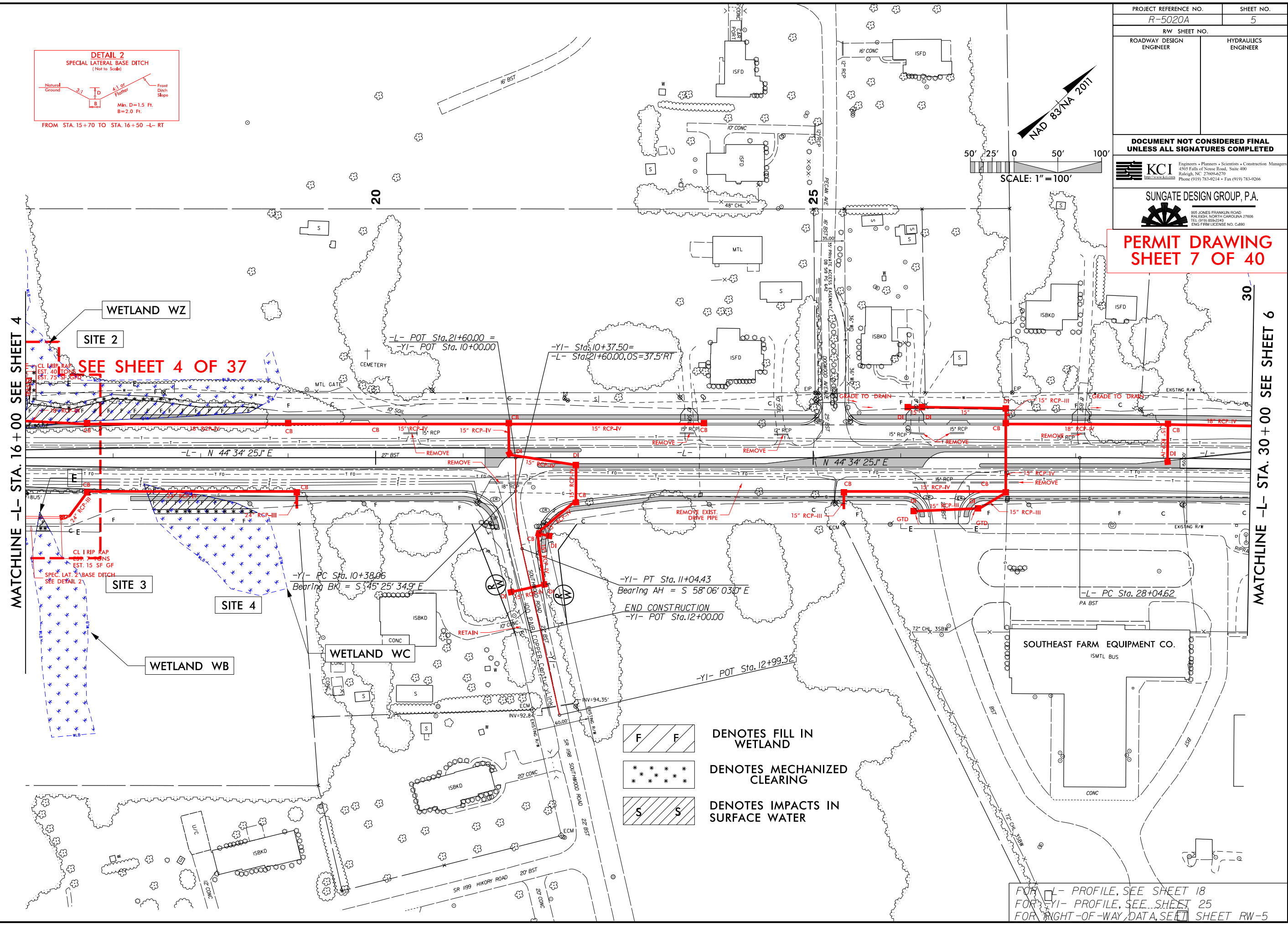
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RW SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	
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SUNGATE DESIGN GROUP, P.A. 805 JONES FRANKLIN ROAD RALEIGH, NORTH CAROLINA 27605 TEL (919) 868-2243 ENG. FIRM LICENSE NO. C-690	



**PERMIT DRAWING
SHEET 7 OF 40**

MATCHLINE -L- STA. 16+00 SEE SHEET 4


MATCHLINE -L- STA. 30+00 SEE SHEET 6

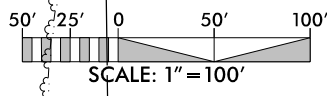
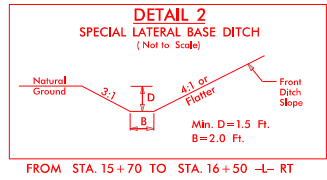


- DENOTES FILL IN WETLAND
- DENOTES MECHANIZED CLEARING
- DENOTES IMPACTS IN SURFACE WATER

FOR -L- PROFILE, SEE SHEET 18
FOR -YI- PROFILE, SEE SHEET 25
FOR RIGHT-OF-WAY DATA, SEE SHEET RW-5

B.17/99

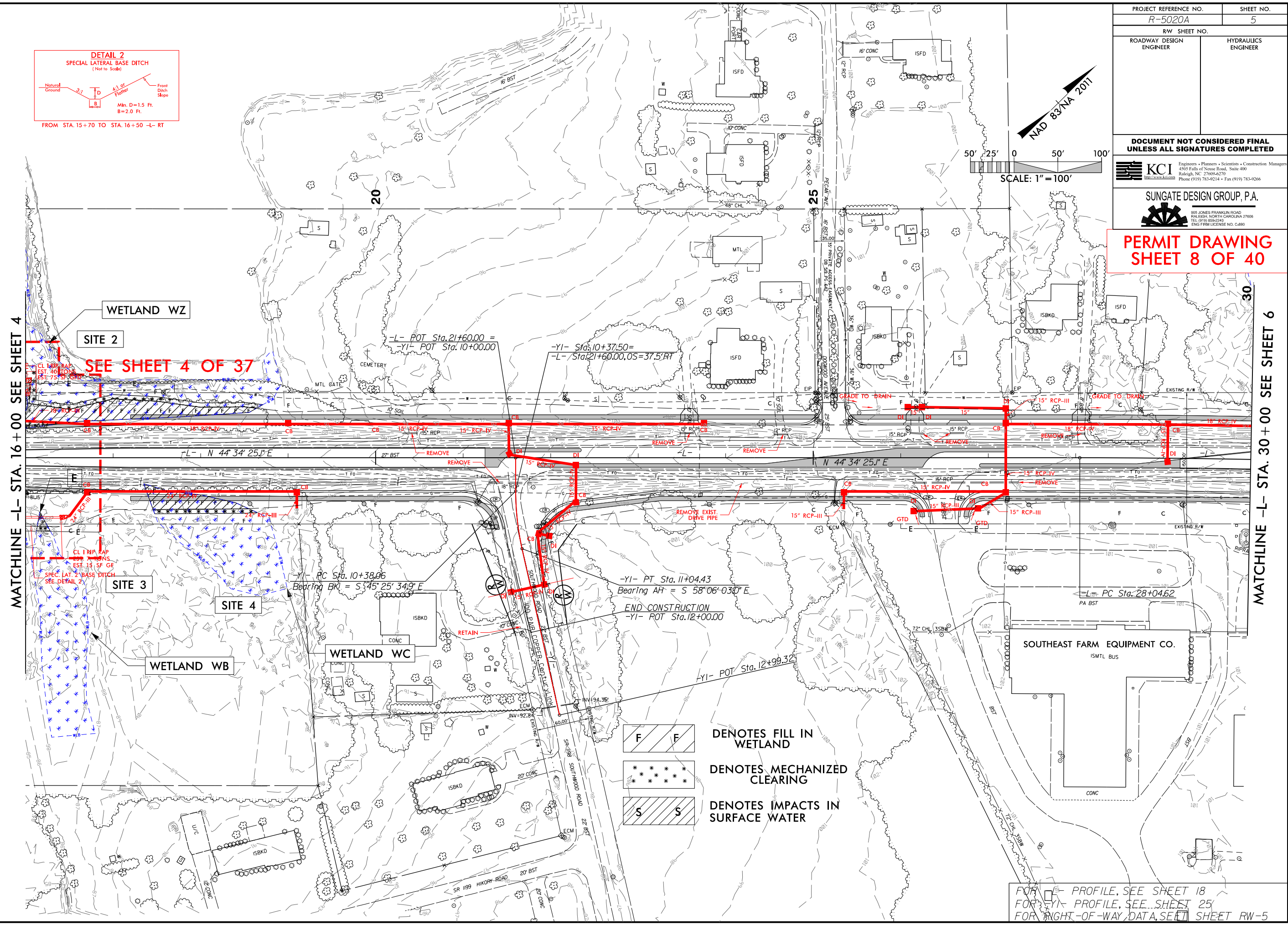
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RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
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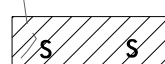


PERMIT DRAWING SHEET 8 OF 40

MATCHLINE -L- STA. 16+00 SEE SHEET 4

MATCHLINE -L- STA. 30+00 SEE SHEET 6



-  DENOTES FILL IN WETLAND
-  DENOTES MECHANIZED CLEARING
-  DENOTES IMPACTS IN SURFACE WATER

FOR PROFILE, SEE SHEET 18
 FOR -YI- PROFILE, SEE SHEET 25
 FOR RIGHT-OF-WAY DATA, SEE SHEET RW-5

R:\5\2019_Hyd_prm_wet_psh_05A.dgn

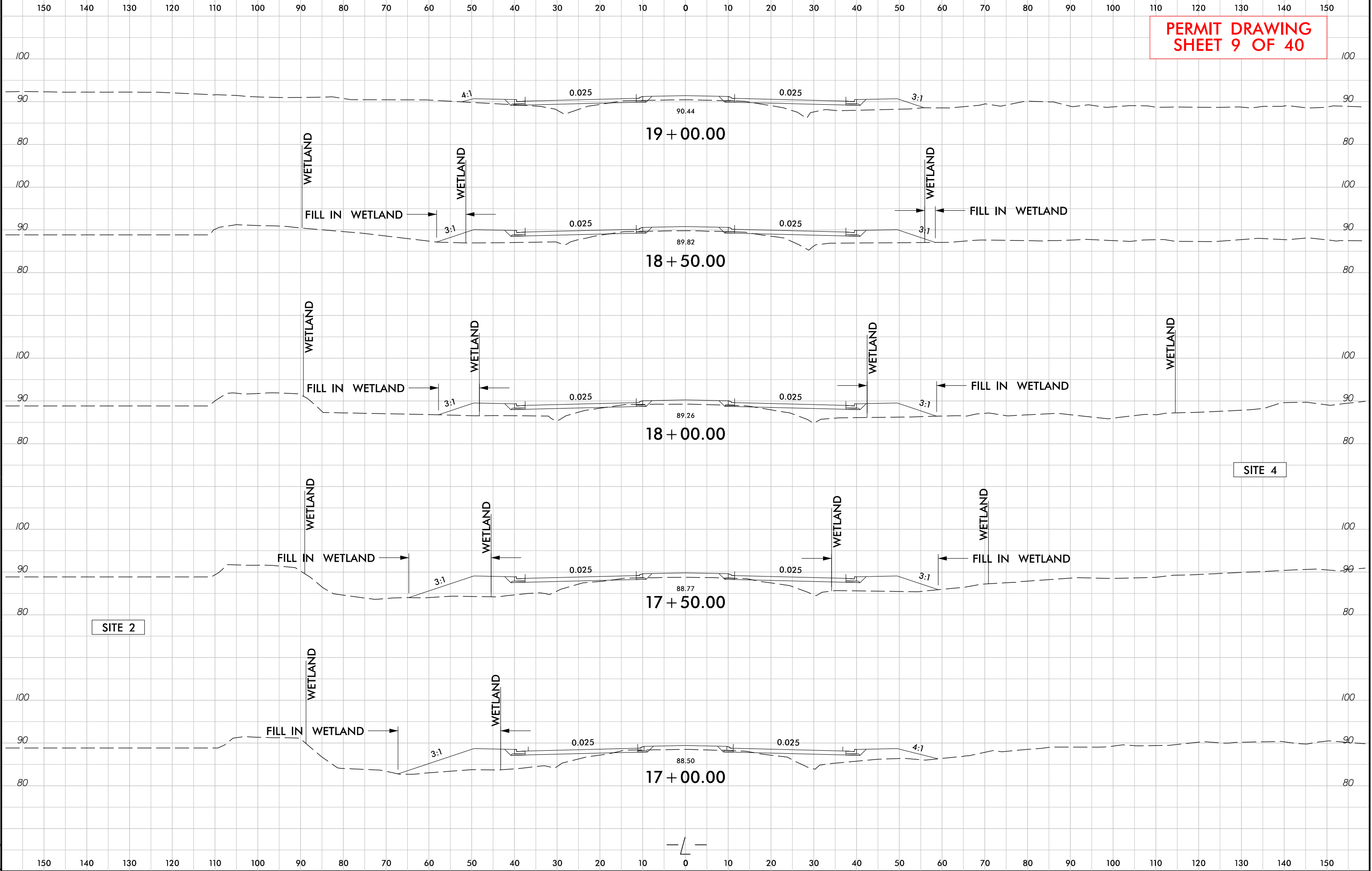
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PROJ. REFERENCE NO.
R-5020A

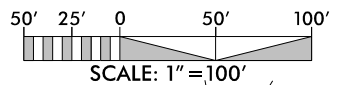
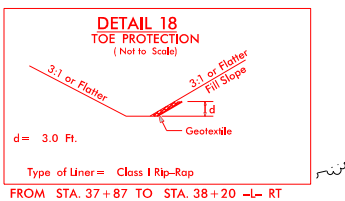
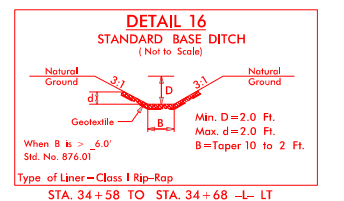
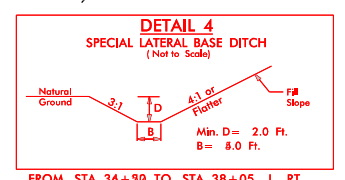
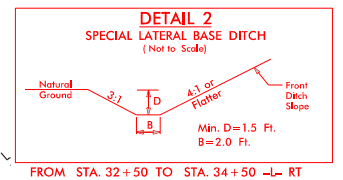
SHEET NO.
X-4

**PERMIT DRAWING
SHEET 9 OF 40**



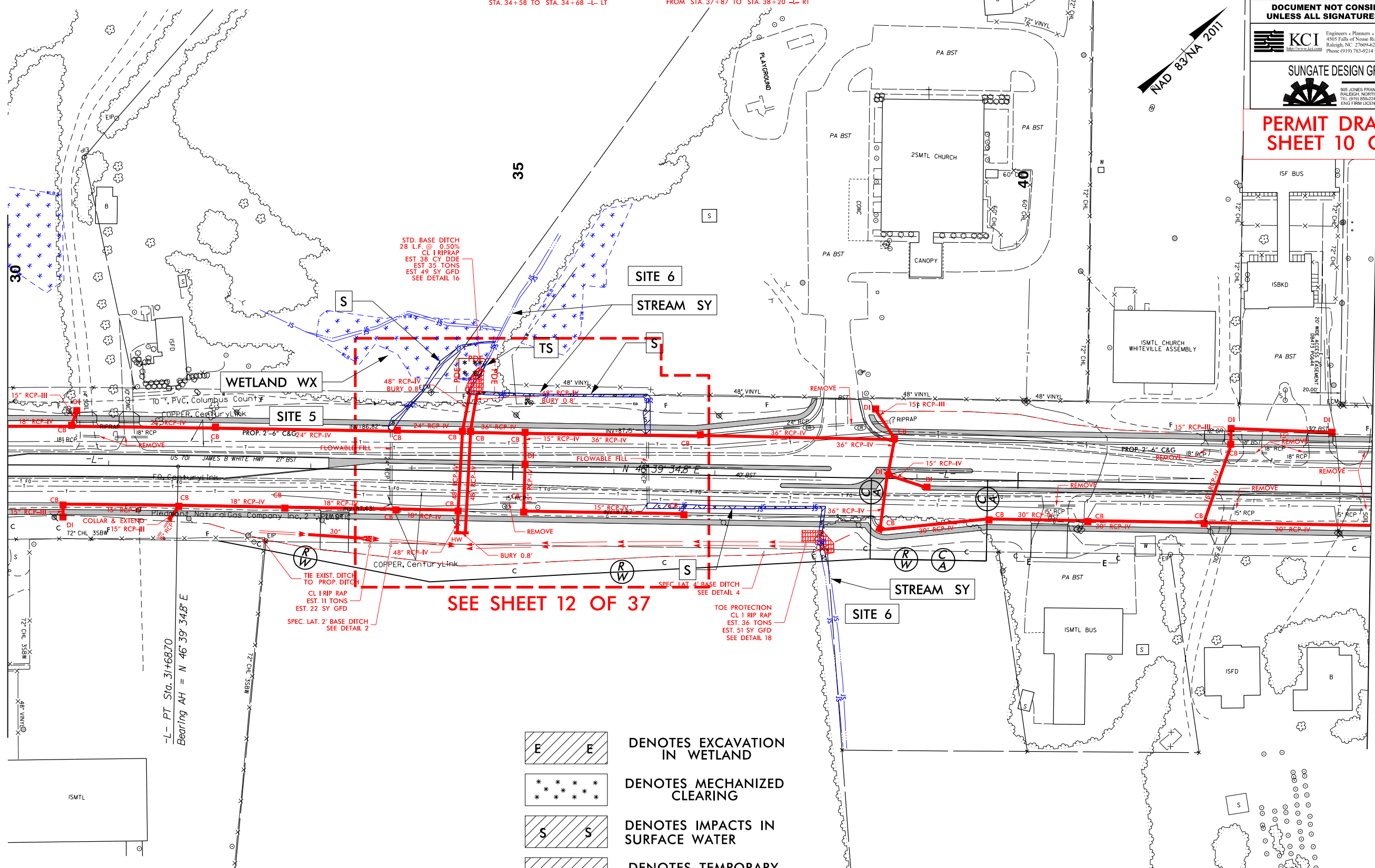
9/15/2019
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jbarvey

PERMIT DRAWING SHEET 10 OF 40

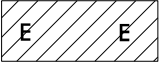





MATCHLINE -L- STA. 30+00 SEE SHEET 5

MATCHLINE -L- STA. 43+50 SEE SHEET 7

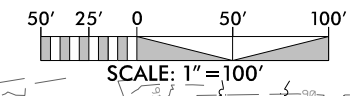
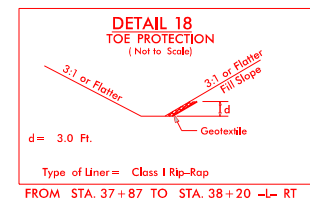
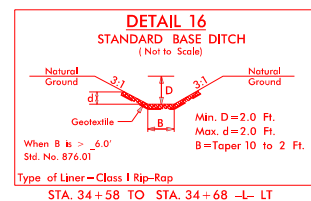
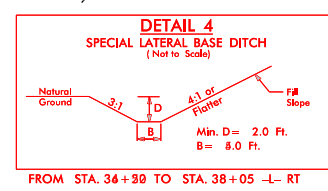
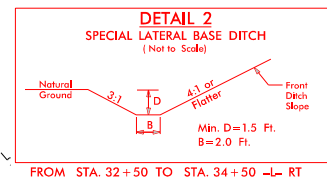


SEE SHEET 12 OF 37

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

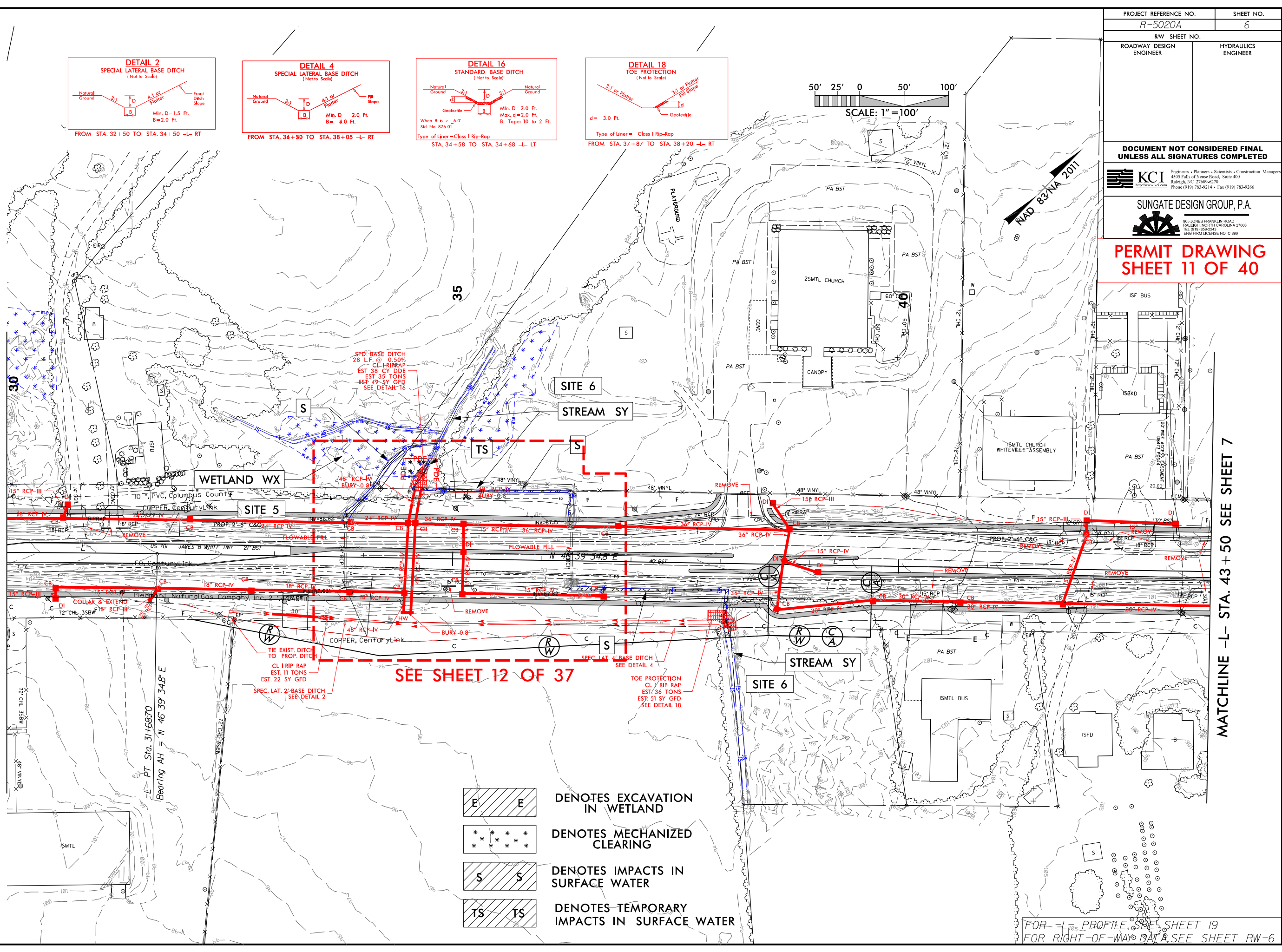
FOR -L- PROFILE, SEE SHEET 19
FOR RIGHT-OF-WAY DATA, SEE SHEET RW-6

PERMIT DRAWING SHEET 11 OF 40


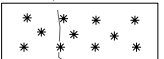
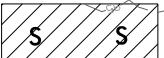
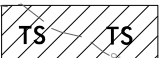


MATCHLINE -L- STA. 30+00 SEE SHEET 5

MATCHLINE -L- STA. 43+50 SEE SHEET 7



SEE SHEET 12 OF 37

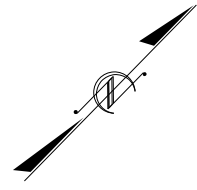
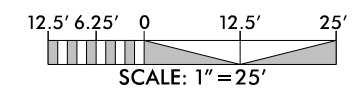
-  DENOTES EXCAVATION IN WETLAND
-  DENOTES MECHANIZED CLEARING
-  DENOTES IMPACTS IN SURFACE WATER
-  DENOTES TEMPORARY IMPACTS IN SURFACE WATER

FOR -L- PROFILE, SEE SHEET 19
FOR RIGHT-OF-WAY DATA, SEE SHEET RW-6

8/17/99
R5/2019
R5020A_Hyd_prm_wet_psh_06B-View-1.dgn

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

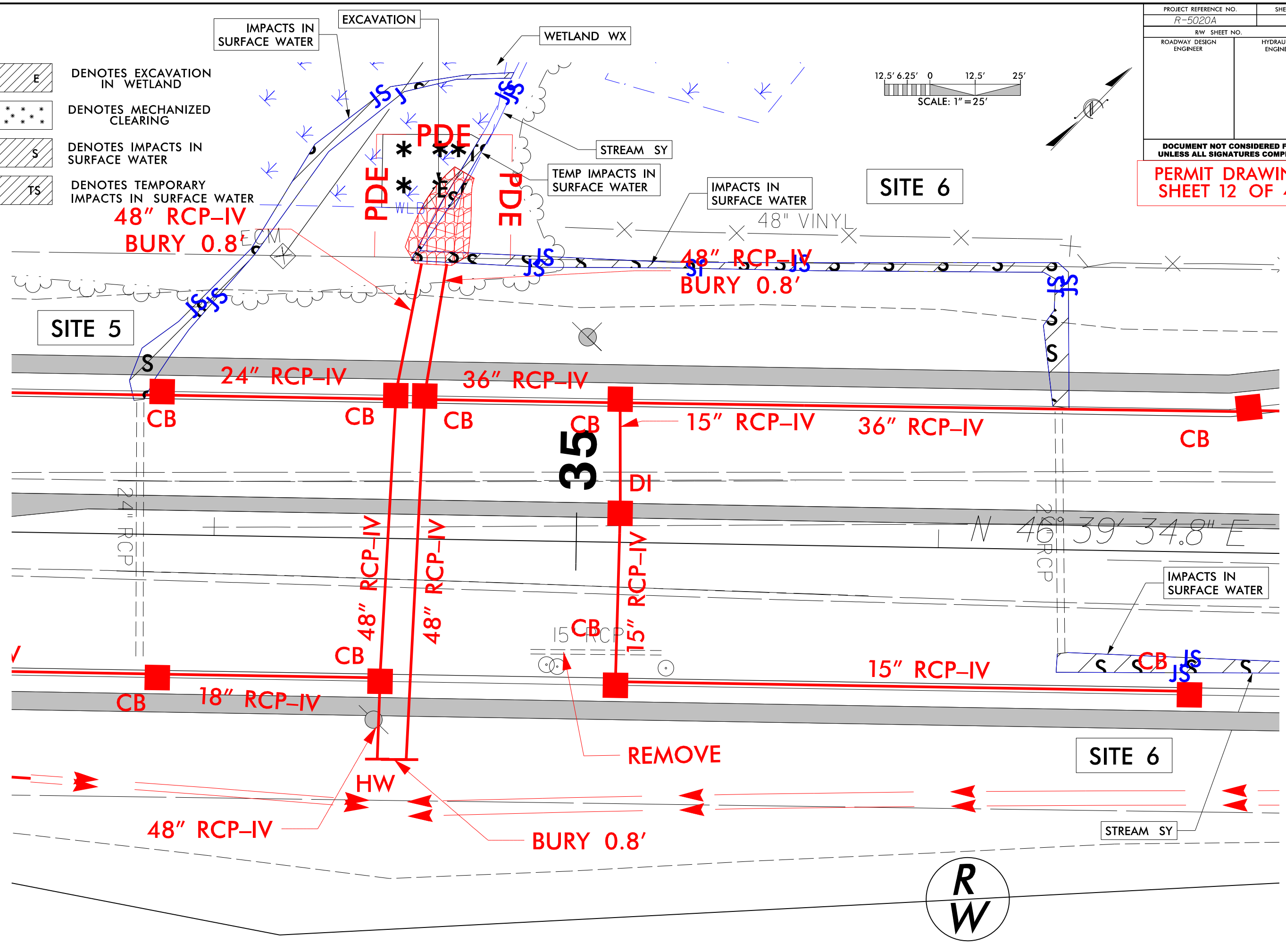
IMPACTS IN SURFACE WATER
EXCAVATION
WETLAND WX
STREAM SY
TEMP IMPACTS IN SURFACE WATER
IMPACTS IN SURFACE WATER



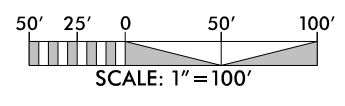
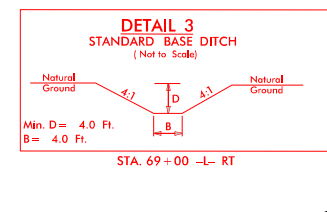
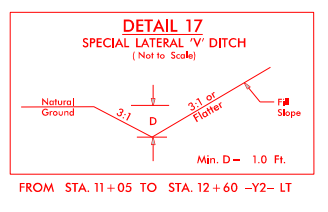
PROJECT REFERENCE NO. R-5020A	SHEET NO.
RW SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

**PERMIT DRAWING
SHEET 12 OF 40**



8/17/09
R:\52019_Hyd_prm_wet_psh_08.dgn



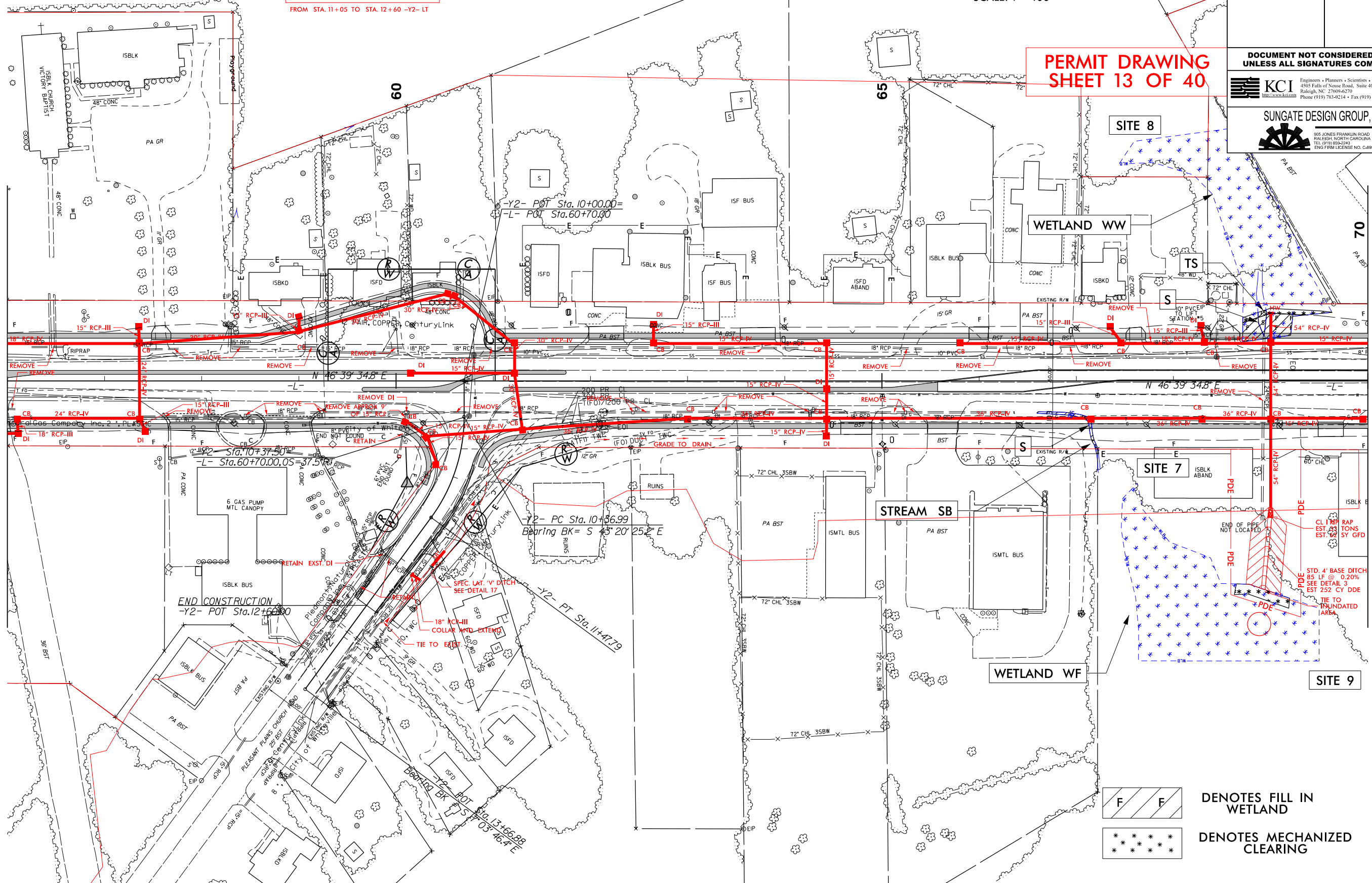
NAD 83/NA 2011

PROJECT REFERENCE NO. R-5020A	SHEET NO. 8
R/W SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
 KCI <small>Engineers • Planners • Scientists • Construction Managers</small> <small>4505 Falls of Neuse Road, Suite 400</small> <small>Raleigh, NC 27609-6270</small> <small>Phone (919) 783-9214 • Fax (919) 783-9266</small>	
 SUNGATE DESIGN GROUP, P.A. <small>805 JONES FRANKLIN ROAD</small> <small>RALEIGH, NORTH CAROLINA 27606</small> <small>TEL (919) 868-2943</small> <small>ENG. FIRM LICENSE NO. C-690</small>	

PERMIT DRAWING SHEET 13 OF 40

MATCHLINE -L- STA. 56+00 SEE SHEET 7

MATCHLINE -L- STA. 70+00 SEE SHEET 9



DENOTES FILL IN WETLAND

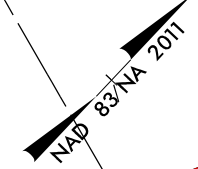
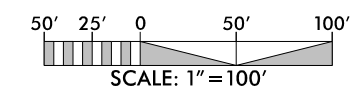
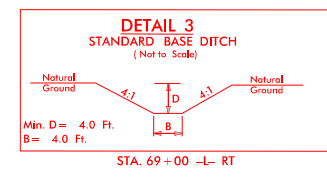
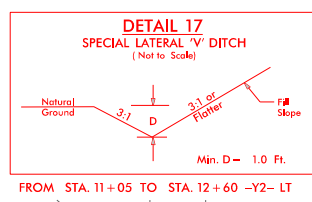
DENOTES MECHANIZED CLEARING

FOR -L- PROFILE, SEE SHEET 20
 FOR -Y2- PROFILE, SEE SHEET 25
 FOR RIGHT-OF-WAY DATA, SEE SHEET RW-8

8/17/09
R:\52019_Hyd_prm_wet_psh_08A.dgn

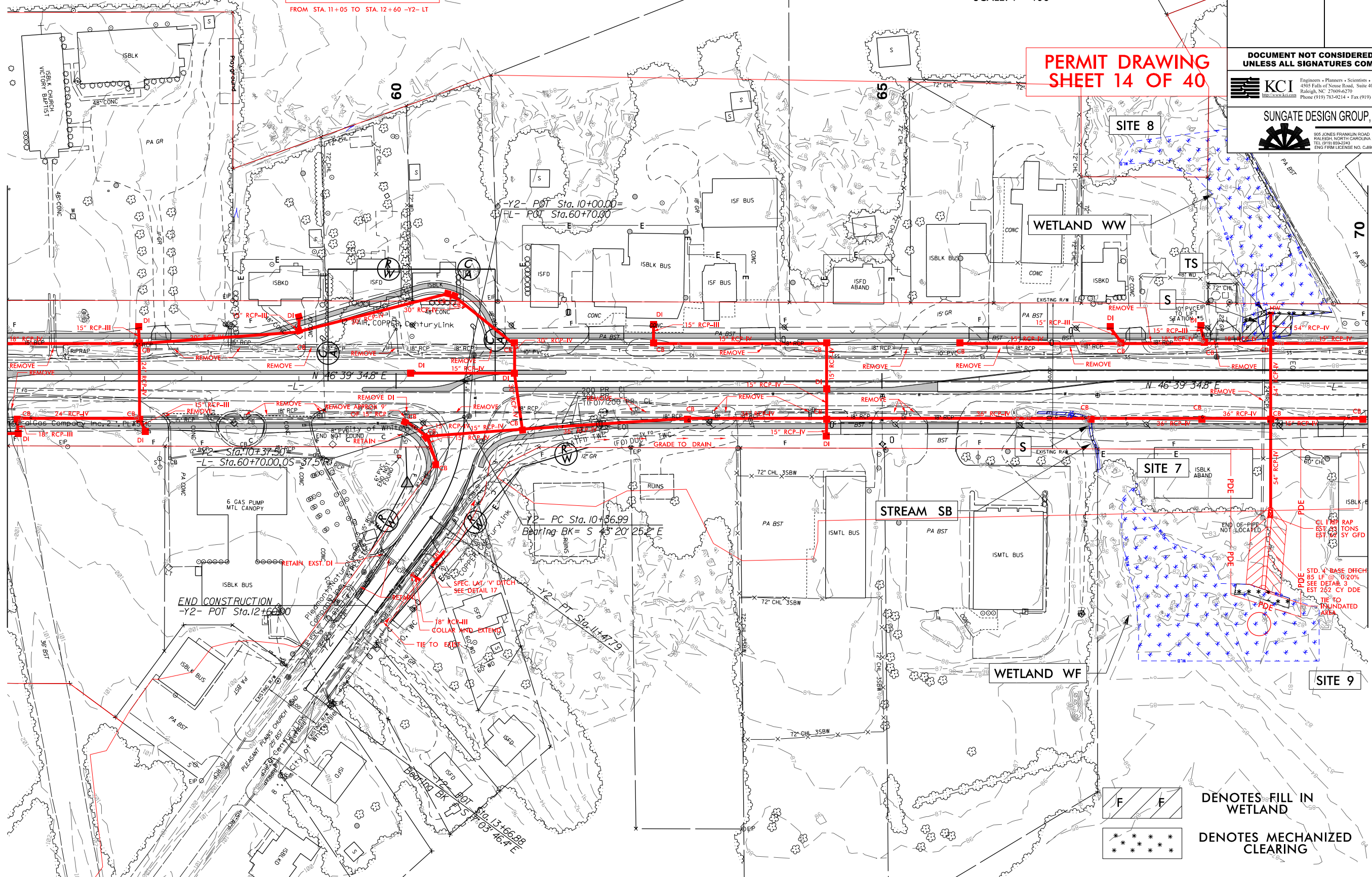
MATCHLINE -L- STA. 56+00 SEE SHEET 7

MATCHLINE -L- STA. 70+00 SEE SHEET 9



PROJECT REFERENCE NO. R-5020A	SHEET NO. 8
RW SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
KCI Engineers • Planners • Scientists • Construction Managers 4505 Falls of Neuse Road, Suite 400 Raleigh, NC 27609-4270 Phone (919) 783-9214 • Fax (919) 783-9266	
SUNGATE DESIGN GROUP, P.A. 805 JONES FRANKLIN ROAD RALEIGH, NORTH CAROLINA 27606 TEL (919) 868-2243 ENG. FIRM LICENSE NO. C-690	

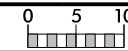
PERMIT DRAWING
SHEET 14 OF 40



DENOTES FILL IN WETLAND
 DENOTES MECHANIZED CLEARING

FOR -L- PROFILE, SEE SHEET 20
FOR -Y2- PROFILE, SEE SHEET 25
FOR RIGHT-OF-WAY DATA, SEE SHEET RW-8

6/23/16

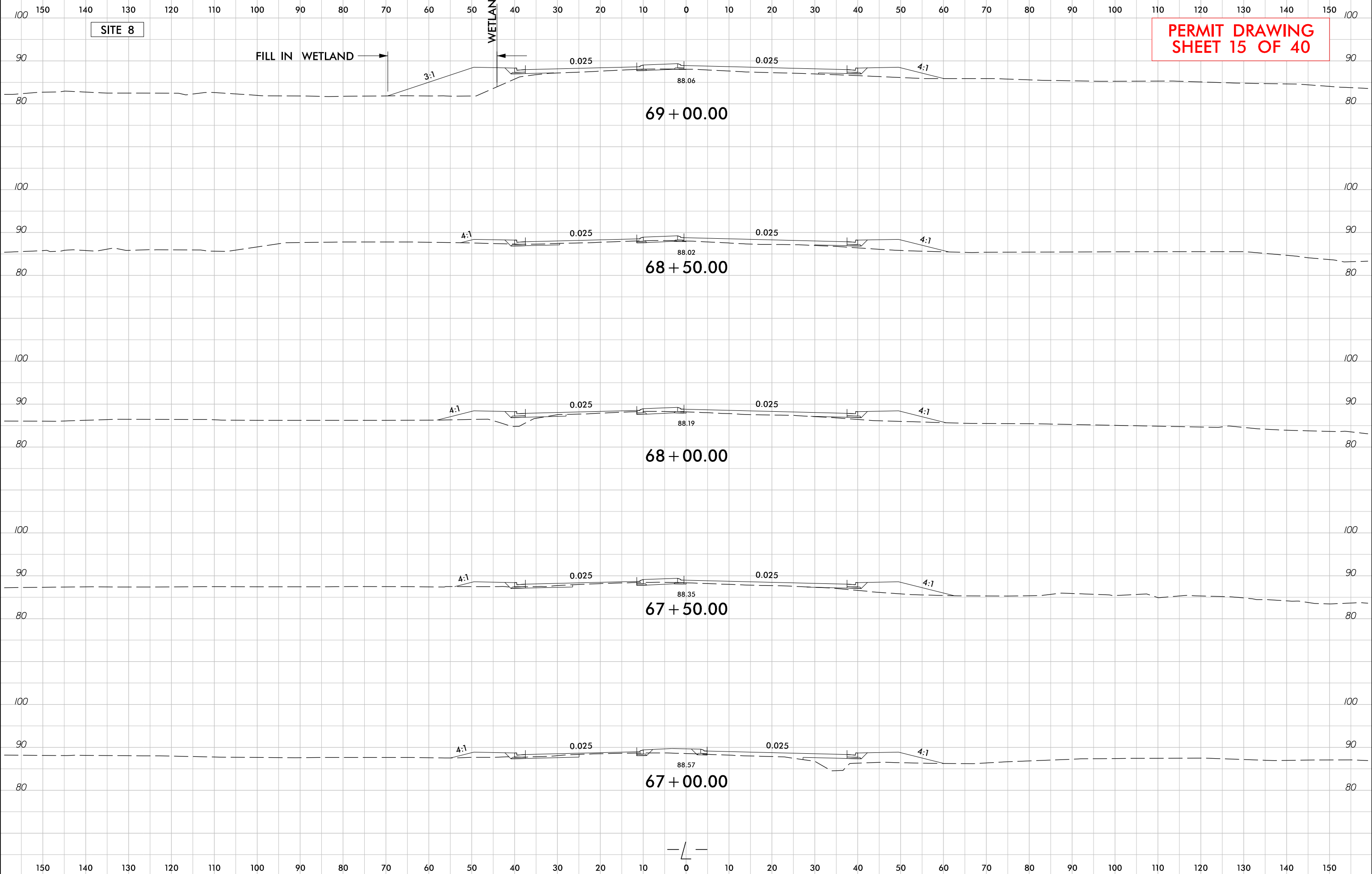


PROJ. REFERENCE NO.
R-5020A

SHEET NO.
X-22

SITE 8

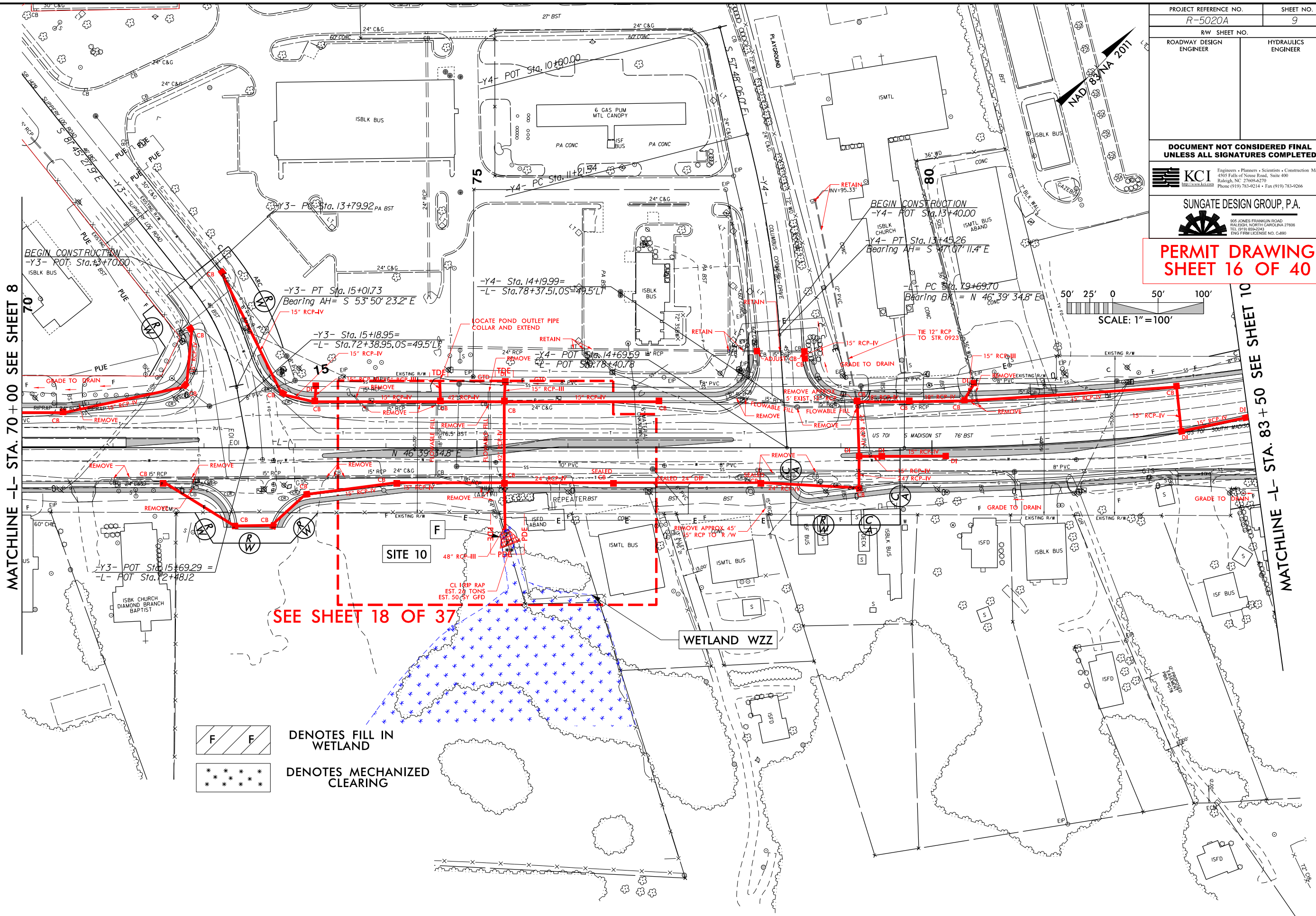
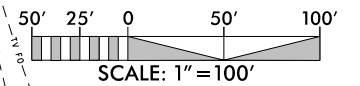
PERMIT DRAWING
SHEET 15 OF 40



9/15/2019
R5020A_Hyd_prm_wet_psh_08B_xpl.dgn
jbarvey

PROJECT REFERENCE NO. R-5020A	SHEET NO. 9
RW SHEET NO. ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<p>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</p>	
<p>KCI Engineers • Planners • Scientists • Construction Managers 4505 Falls of Neuse Road, Suite 400 Raleigh, NC 27609-4270 Phone (919) 783-9214 • Fax (919) 783-9266</p>	
<p>SUNGATE DESIGN GROUP, P.A. 805 JONES FRANKLIN ROAD RALEIGH, NORTH CAROLINA 27605 TEL (919) 868-2943 ENG FIRM LICENSE NO. C-690</p>	

**PERMIT DRAWING
SHEET 16 OF 40**



MATCHLINE -L- STA. 70 + 00 SEE SHEET 8

MATCHLINE -L- STA. 83 + 50 SEE SHEET 10

F F DENOTES FILL IN WETLAND

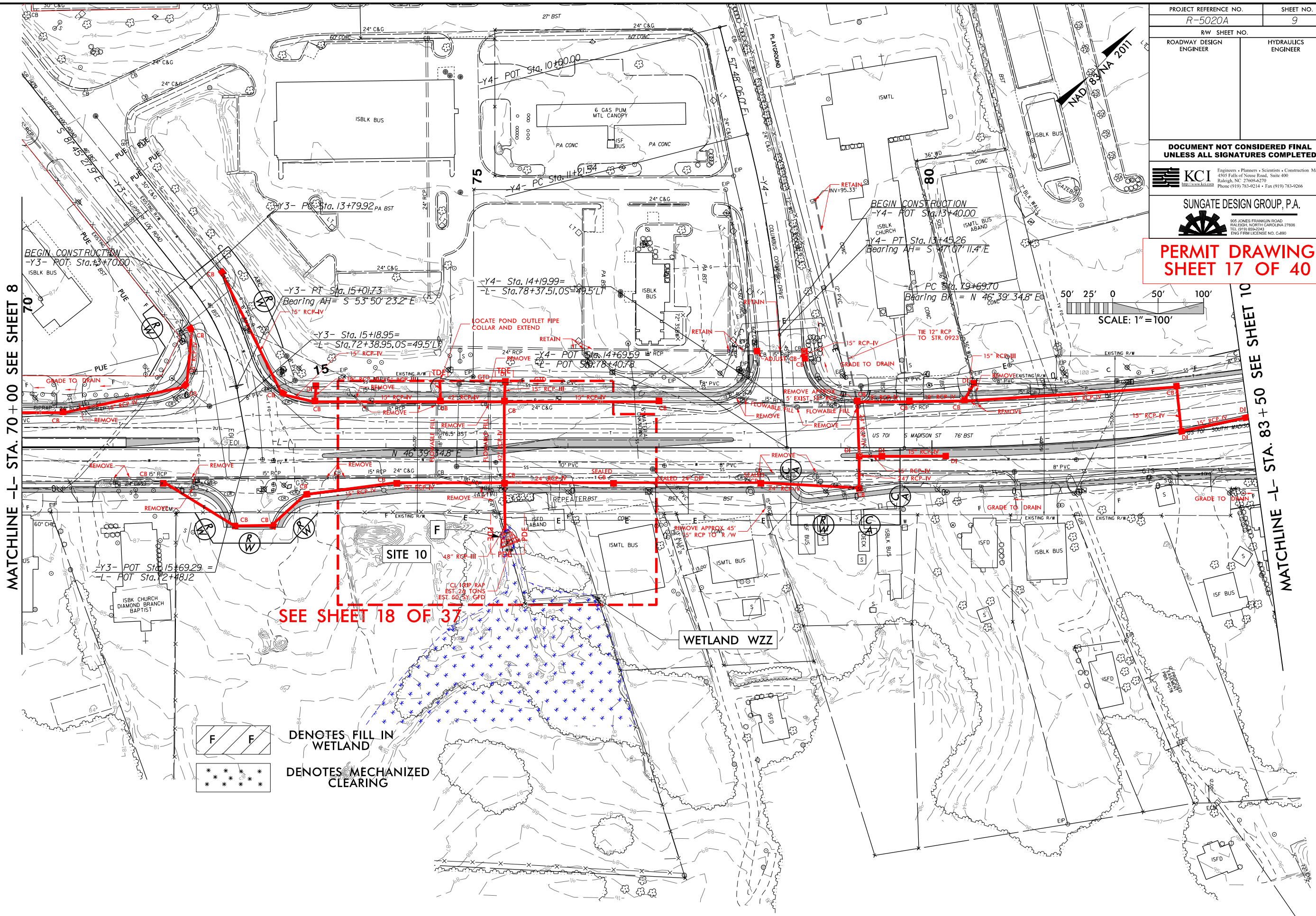
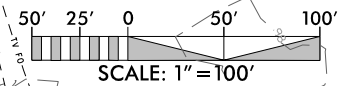
*** * * * *** DENOTES MECHANIZED CLEARING

FOR -L- PROFILE, SEE SHEET 20
FOR -Y3-, -Y4- PROFILE, SEE SHEET 25
FOR RIGHT-OF-WAY DATA, SEE SHEET RW-9

8/17/99 R-5020A-Hyd-prm-wet-psh_09.dgn

PROJECT REFERENCE NO. R-5020A	SHEET NO. 9
RW SHEET NO. ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<p>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</p>	
<p>KCI Engineers • Planners • Scientists • Construction Managers 4505 Falls of Neuse Road, Suite 400 Raleigh, NC 27609-4270 Phone (919) 783-9214 • Fax (919) 783-9266</p>	
<p>SUNGATE DESIGN GROUP, P.A. 805 JONES FRANKLIN ROAD RALEIGH, NORTH CAROLINA 27605 TEL (919) 868-2943 ENG FIRM LICENSE NO. C-690</p>	

PERMIT DRAWING SHEET 17 OF 40



MATCHLINE -L- STA. 70 + 00 SEE SHEET 8

MATCHLINE -L- STA. 83 + 50 SEE SHEET 10

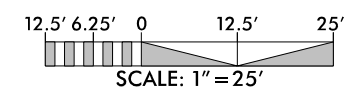
SEE SHEET 18 OF 37

F DENOTES FILL IN WETLAND
***** DENOTES MECHANIZED CLEARING

FOR -L- PROFILE, SEE SHEET 20
 FOR -Y3-, -Y4- PROFILE, SEE SHEET 25
 FOR RIGHT-OF-WAY DATA, SEE SHEET RW-9

8/17/99 R:\5/2019_Hyd_perm_wet_09A.dgn

8/17/99

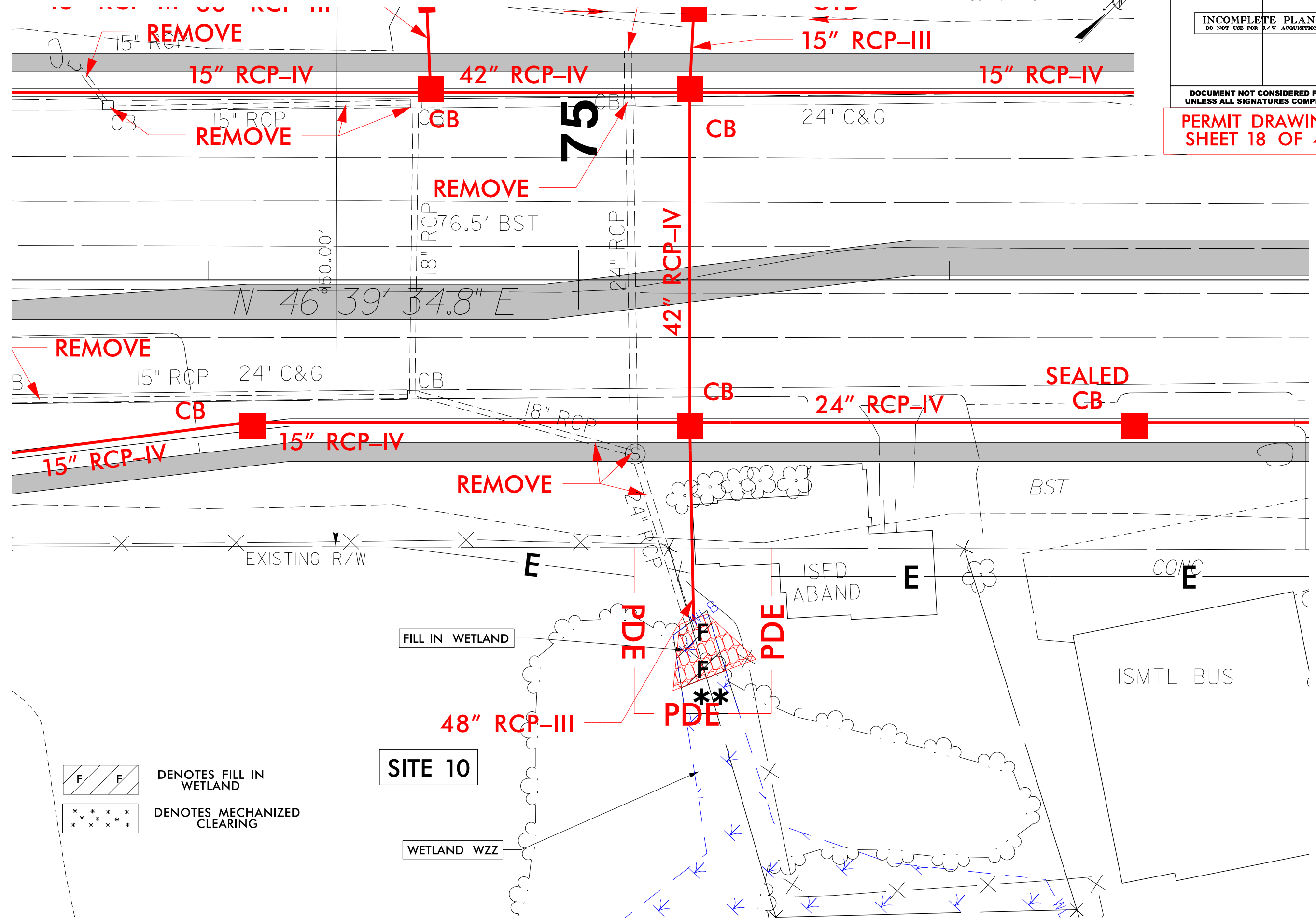


PROJECT REFERENCE NO. R-5020A	SHEET NO.
RW SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 18 OF 40

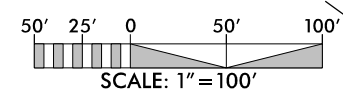
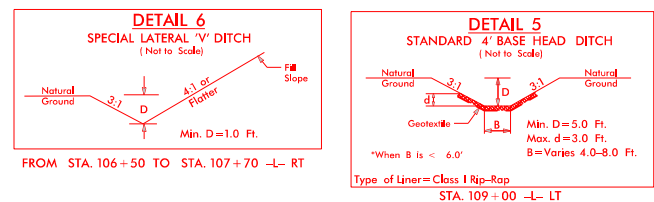


DENOTES FILL IN WETLAND
 DENOTES MECHANIZED CLEARING

R/5/2019 R-5020A_Hyd_prm_wet_psh_09B-View-1.in.dgn

8/17/99

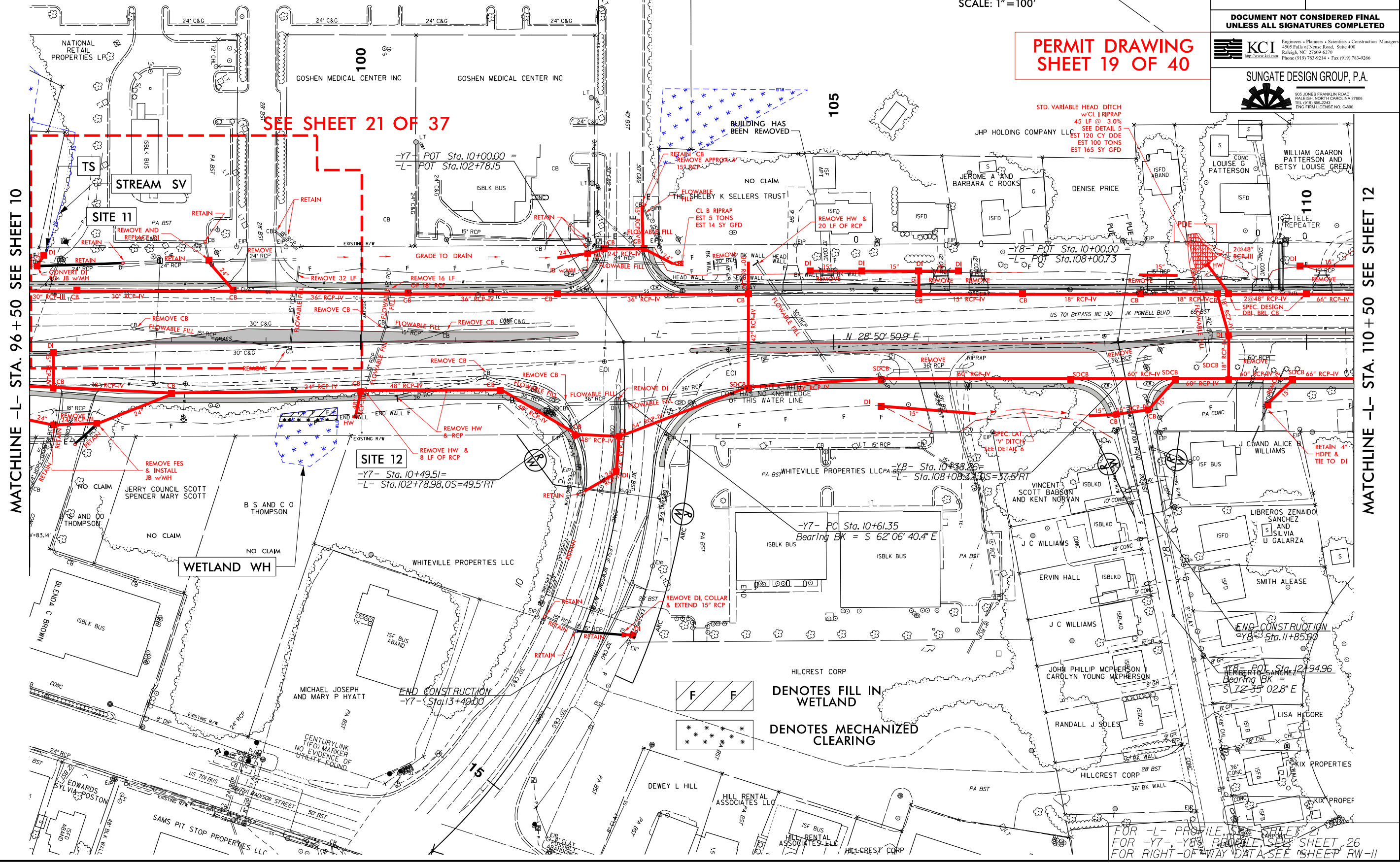
PROJECT REFERENCE NO. R-5020A		SHEET NO. 11	
RW SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			



PERMIT DRAWING SHEET 19 OF 40

MATCHLINE -L- STA. 96+50 SEE SHEET 10

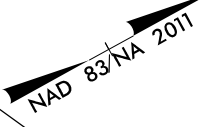
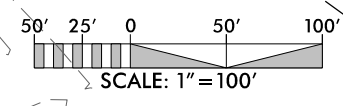
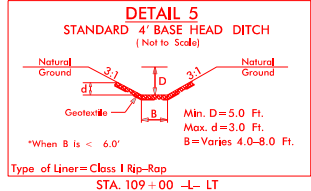
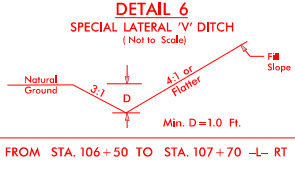
MATCHLINE -L- STA. 110+50 SEE SHEET 12



ROW REV.12 - 02/22/19 - Removed TCE from Parcel 98, (BCS)
ROW REV.14 - 06/18/19 - Removed TCE from Parcel 47, (BCS)

R05/2019
R5020A_Hyd.prm...wet.psh.11.dgn

8/17/99

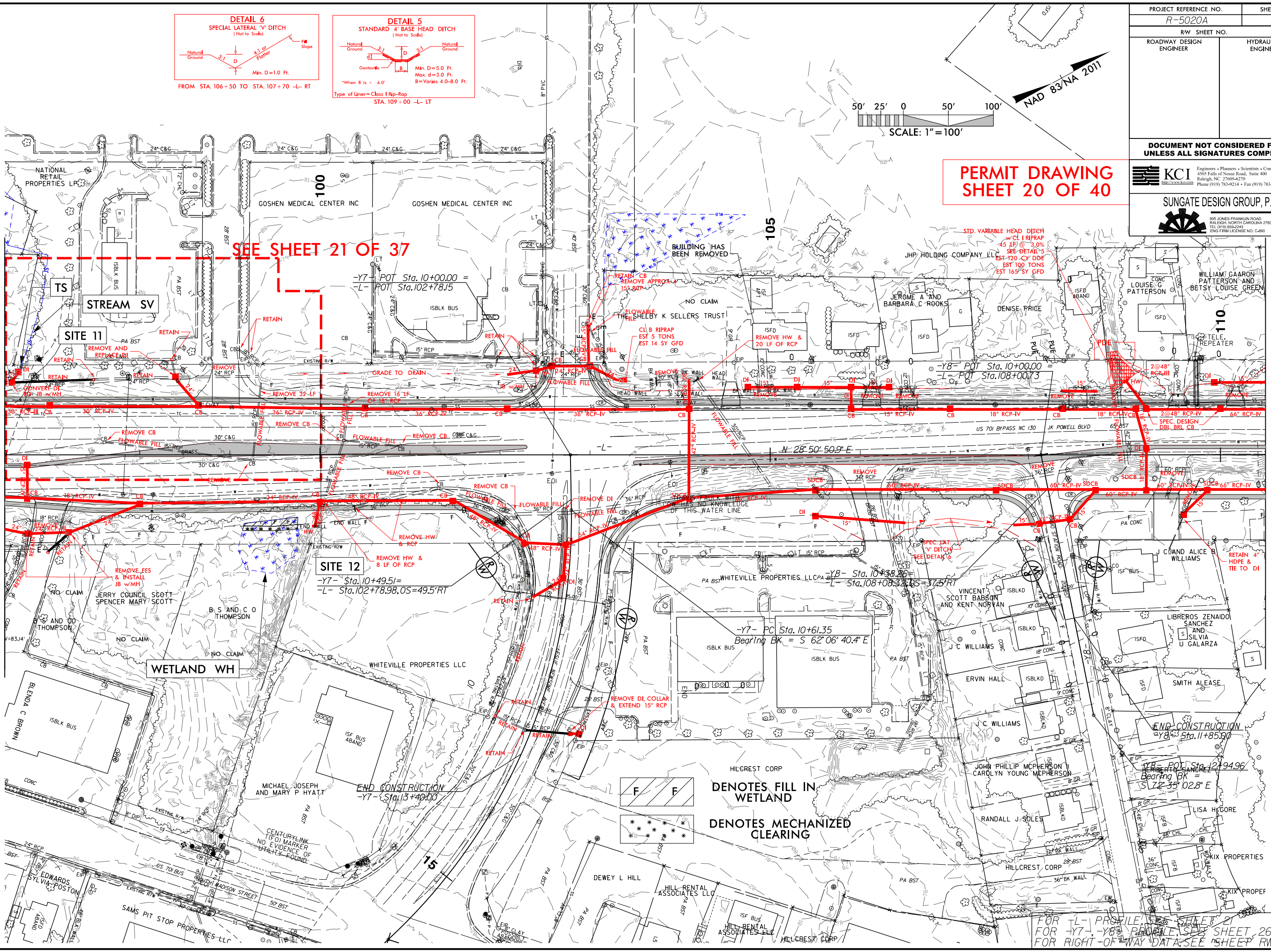


PROJECT REFERENCE NO. R-5020A		SHEET NO. 11	
RW SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			
 KCI Engineers • Planners • Scientists • Construction Managers 4505 Falls of Neuse Road, Suite 400 Raleigh, NC 27609-6270 Phone (919) 783-9214 • Fax (919) 783-9266		 SUNGATE DESIGN GROUP, P.A. 805 JONES FRANKLIN ROAD RALEIGH, NORTH CAROLINA 27606 TEL (919) 868-2243 ENG. FIRM LICENSE NO. C-690	

**PERMIT DRAWING
SHEET 20 OF 40**

MATCHLINE -L- STA. 96+50 SEE SHEET 10

MATCHLINE -L- STA. 110+50 SEE SHEET 12



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ROW REV.14 - 06/18/19 - Removed TCE from Parcel 47, (BCS)

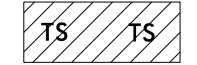
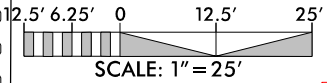
8/5/2019
R5020A_Hyd.prm_wet.psh_11A.dgn

FOR TL- PROFILE SEE SHEET 21
FOR -Y7-, -Y8- PROFILE SEE SHEET 26
FOR RIGHT-OF-WAY DATA SEE SHEET RW-11

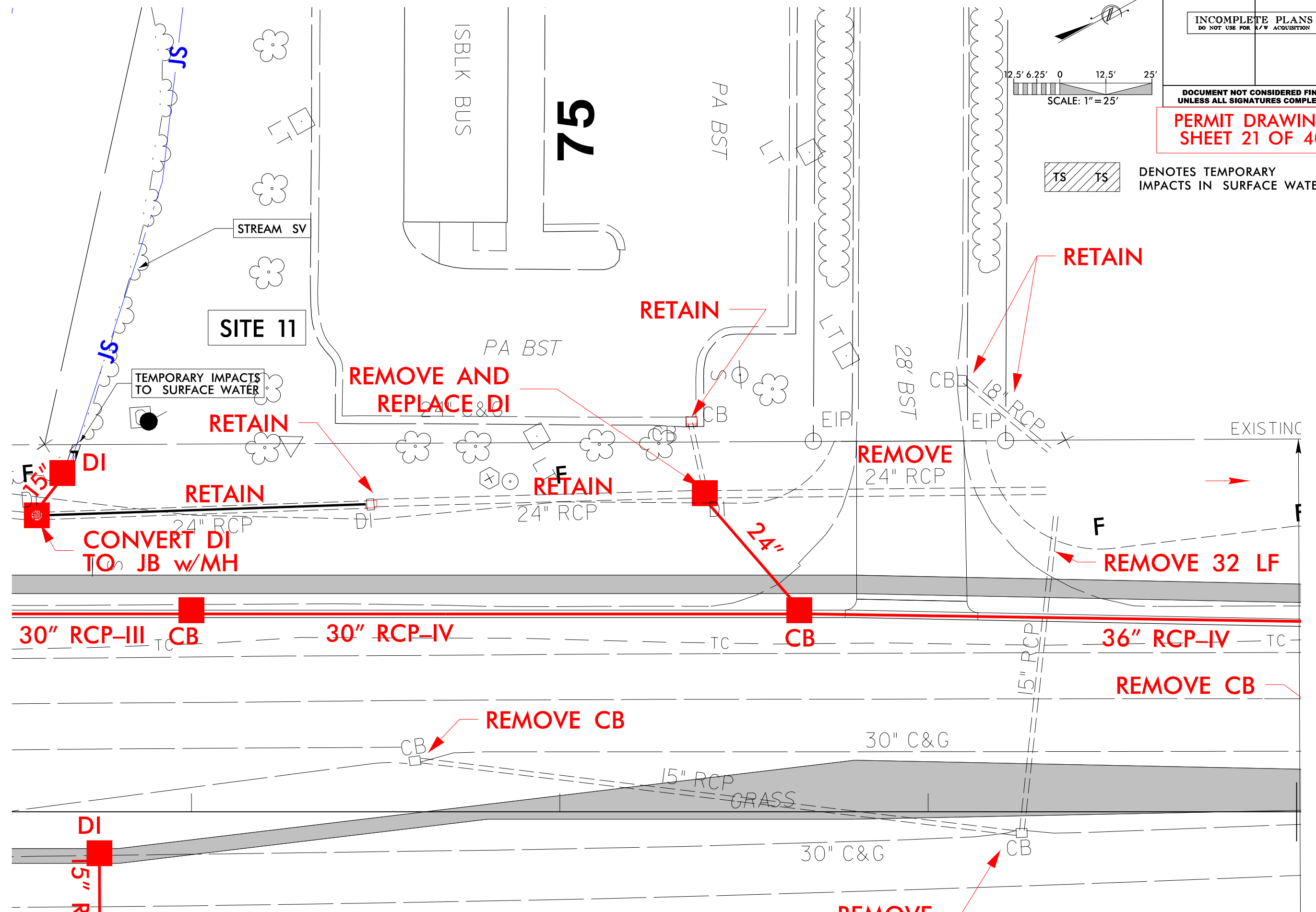
PROJECT REFERENCE NO. R-5020A		SHEET NO.	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER		
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION			

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

**PERMIT DRAWING
SHEET 21 OF 40**



TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER



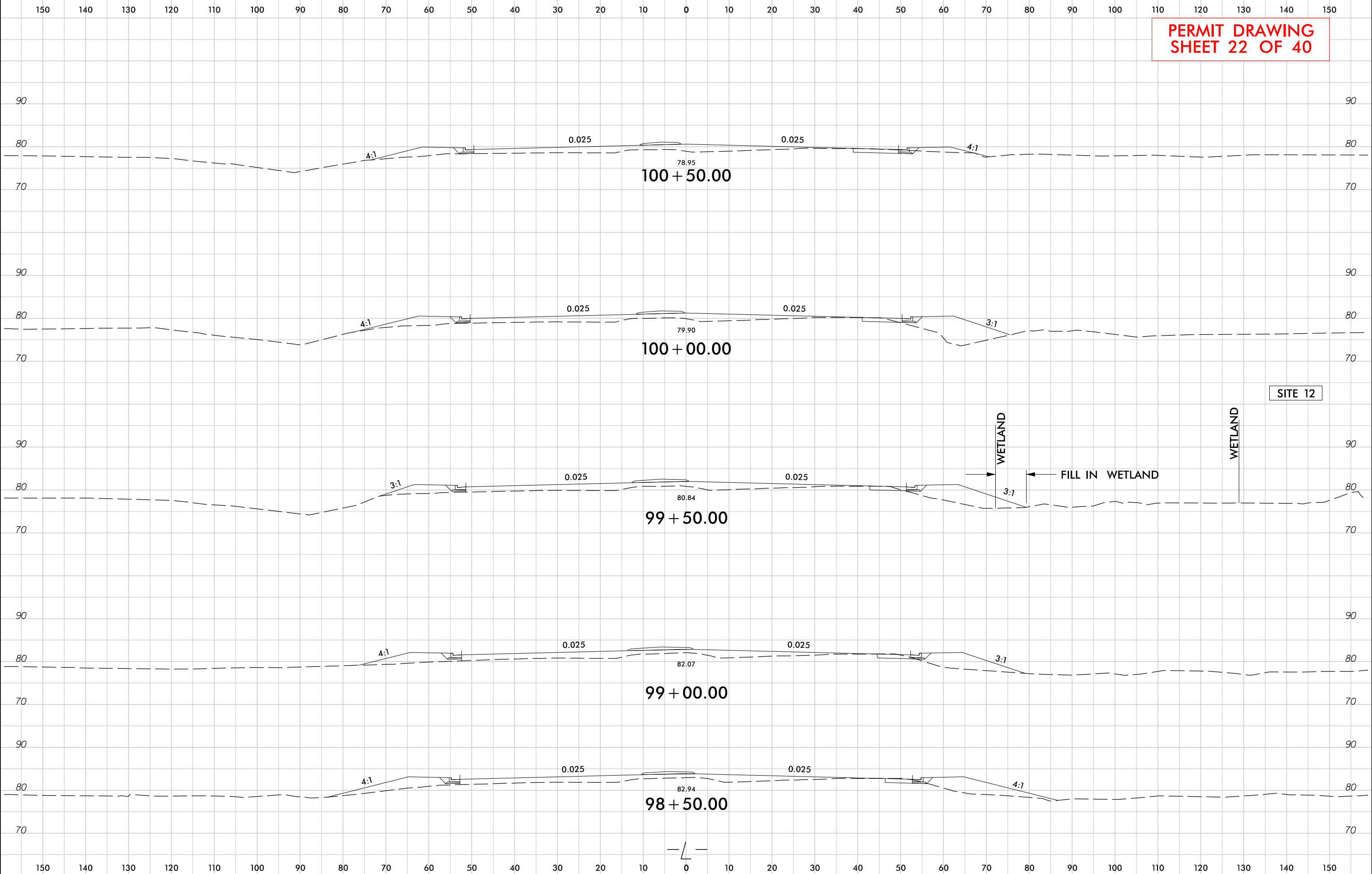
6/23/16



PROJ. REFERENCE NO.
R-5020A

SHEET NO.
X-34

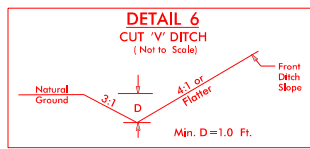
**PERMIT DRAWING
SHEET 22 OF 40**



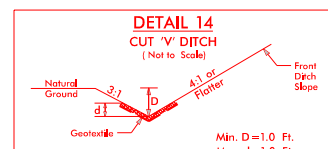
SITE 12

9/15/2019
R5020A_Hyd_prm_wet_psh_11C_xpl.dgn
jbarvey

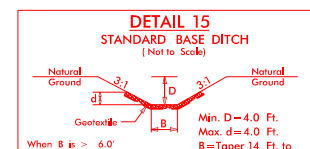
8/17/09
R:\52019_Hyd_prm_wet_psh_12.dgn
12.dwg



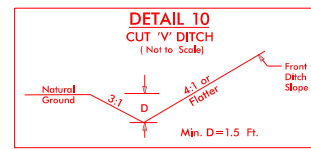
FROM STA. 13+50 TO STA. 14+40 -Y9- RT
FROM STA. 12+45 TO STA. 14+85 -Y9- LT
FROM STA. 114+30 TO STA. 114+85 -L- LT
FROM STA. 115+78 TO STA. 116+50 -L- LT
FROM STA. 115+00 TO STA. 118+00 -L- RT
FROM STA. 12+25 TO STA. 13+28 -Y10- LT
FROM STA. 118+75 TO STA. 120+00 -L- LT
FROM STA. 123+75 TO STA. 128+00 -L- RT



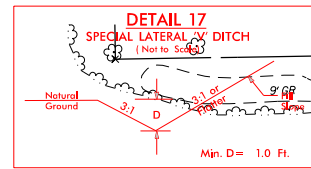
FROM STA. 114+30 TO STA. 115+00 -L- RT



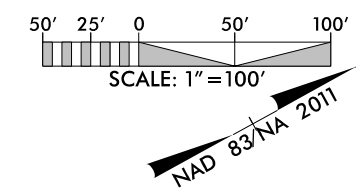
FROM STA. 111+64 -L- RT



FROM STA. 16+80 TO STA. 18+00 -Y9- LT



FROM STA. 19+20 TO STA. 20+00 -L- RT

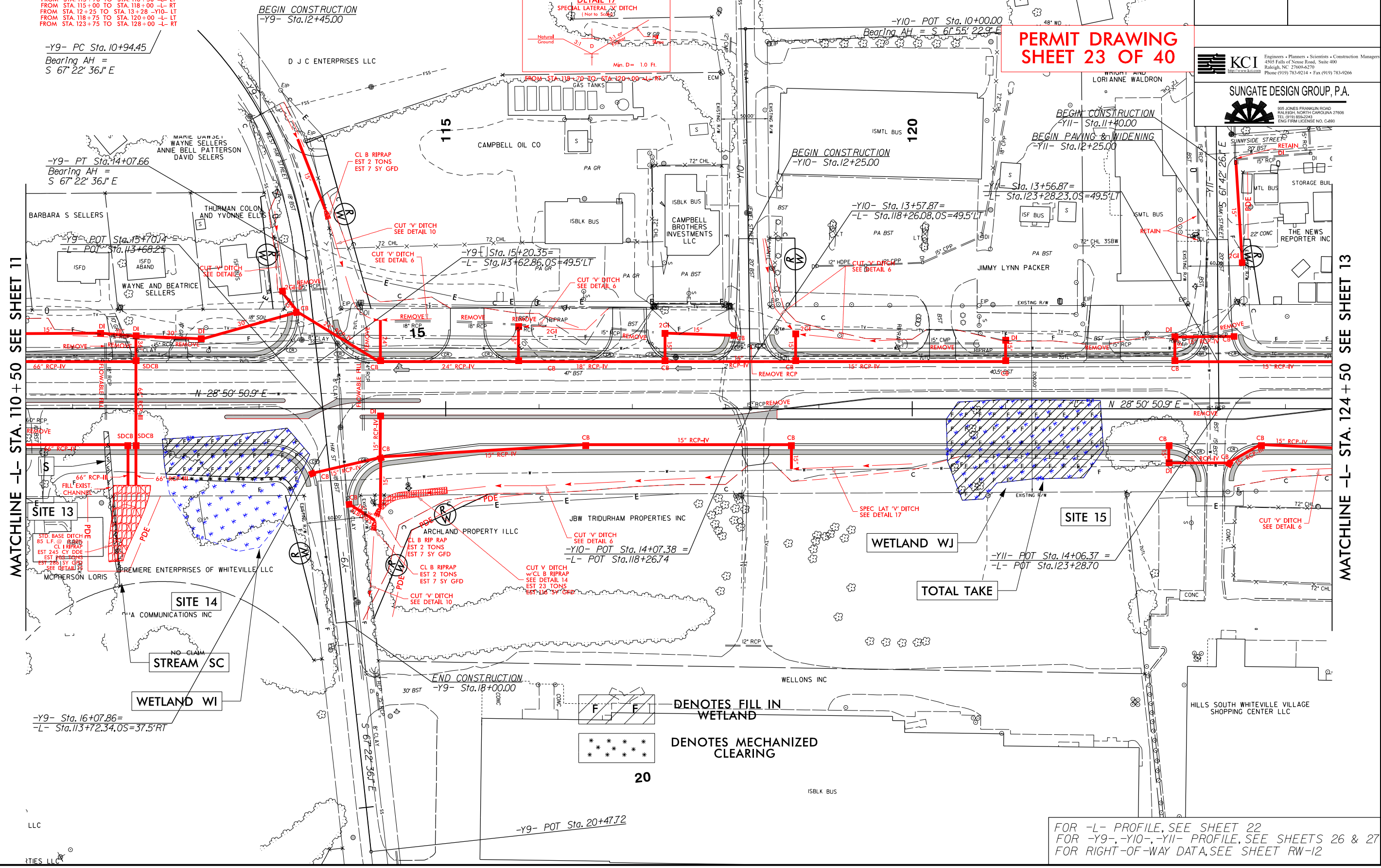


PROJECT REFERENCE NO. R-5020A	SHEET NO. 12
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

**PERMIT DRAWING
SHEET 23 OF 40**

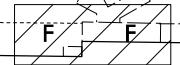
KCI
Engineers • Planners • Scientists • Construction Managers
4505 Falls of Neuse Road, Suite 400
Raleigh, NC 27609-4270
Phone (919) 783-9214 • Fax (919) 783-9266

SUNGATE DESIGN GROUP, P.A.
805 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL: (919) 868-2243
ENG. PERM. LICENSE NO. C-690



MATCHLINE -L- STA. 110+50 SEE SHEET 11

MATCHLINE -L- STA. 124+50 SEE SHEET 13



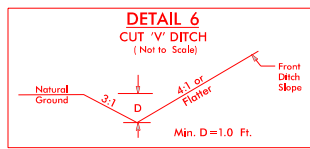
DENOTES FILL IN WETLAND



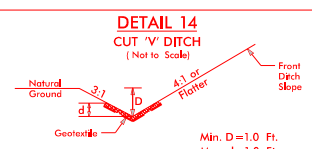
DENOTES MECHANIZED CLEARING

FOR -L- PROFILE, SEE SHEET 22
FOR -Y9-, -Y10-, -Y11- PROFILE, SEE SHEETS 26 & 27
FOR RIGHT-OF-WAY DATA, SEE SHEET RW-12

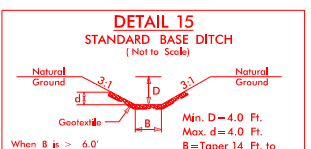
B.17/99
R-5020A_Hyd_prm_wet_psh_12a.dgn



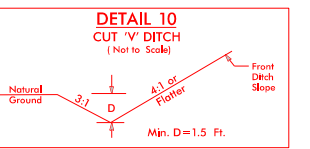
FROM STA. 13+50 TO STA. 14+40 -Y9- RT
FROM STA. 12+45 TO STA. 14+85 -Y9- LT
FROM STA. 114+30 TO STA. 114+85 -L- LT
FROM STA. 115+78 TO STA. 116+50 -L- LT
FROM STA. 115+00 TO STA. 118+00 -L- RT
FROM STA. 12+25 TO STA. 13+28 -Y10- LT
FROM STA. 118+75 TO STA. 120+00 -L- LT
FROM STA. 123+75 TO STA. 128+00 -L- RT



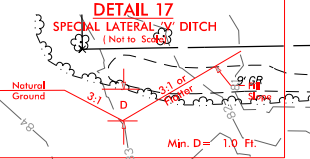
FROM STA. 114+30 TO STA. 115+00 -L- RT



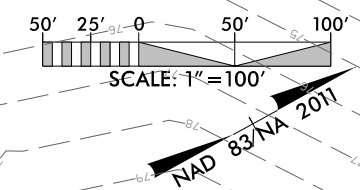
FROM STA. 111+64 -L- RT



FROM STA. 16+80 TO STA. 18+00 -Y9- LT



FROM STA. 119+70 TO STA. 120+00 -L- RT



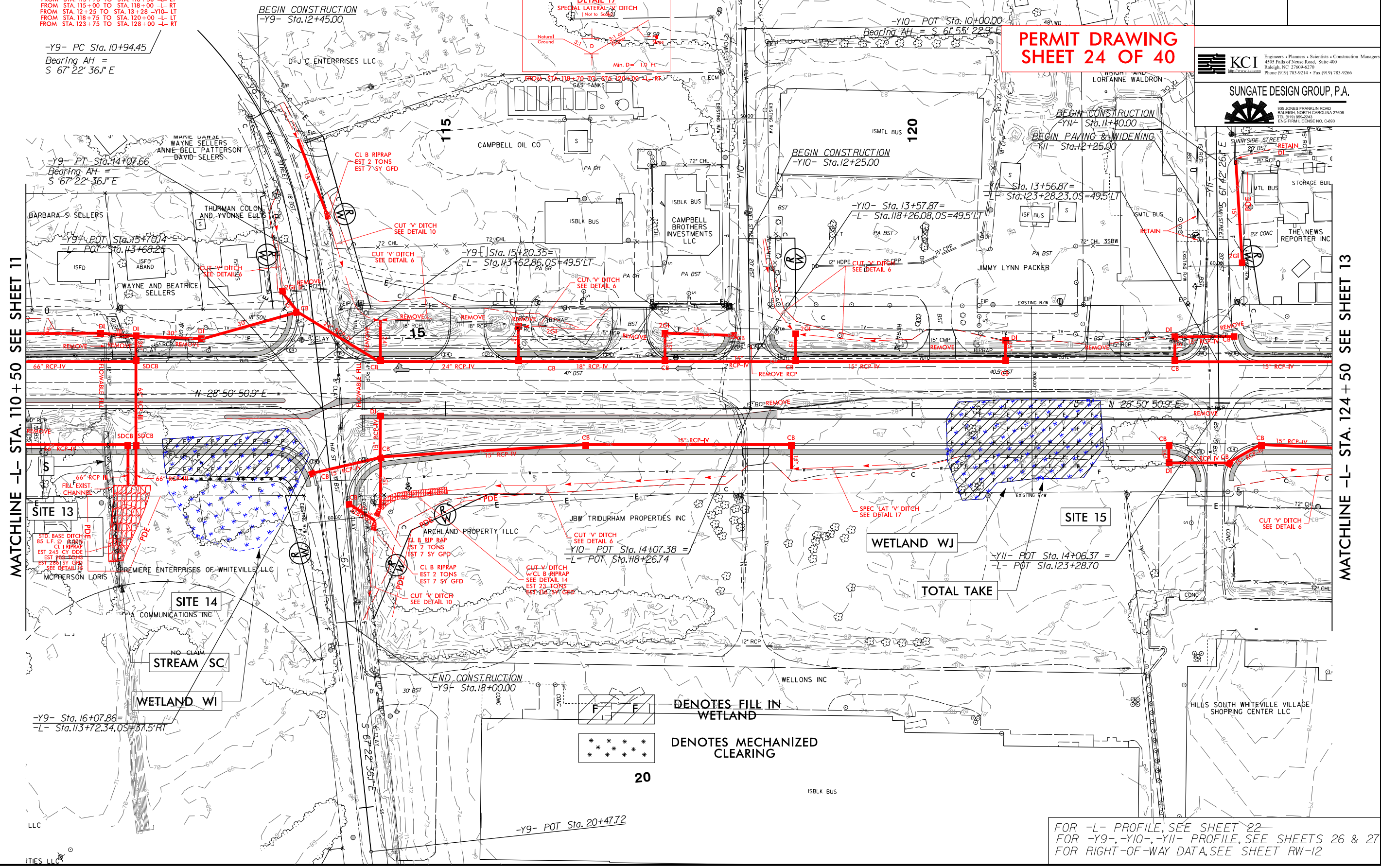
NAD 83/NA 2011

PROJECT REFERENCE NO. R-5020A	SHEET NO. 12
RW SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	

PERMIT DRAWING
SHEET 24 OF 40

KCI
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805 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 869-4243
ENG. FIRM LICENSE NO. C-690



MATCHLINE -L- STA. 110+50 SEE SHEET 11

MATCHLINE -L- STA. 124+50 SEE SHEET 13

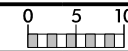


DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

FOR -L- PROFILE, SEE SHEET 22
FOR -Y9-, -Y10-, -Y11- PROFILE, SEE SHEETS 26 & 27
FOR RIGHT-OF-WAY DATA, SEE SHEET RW-12

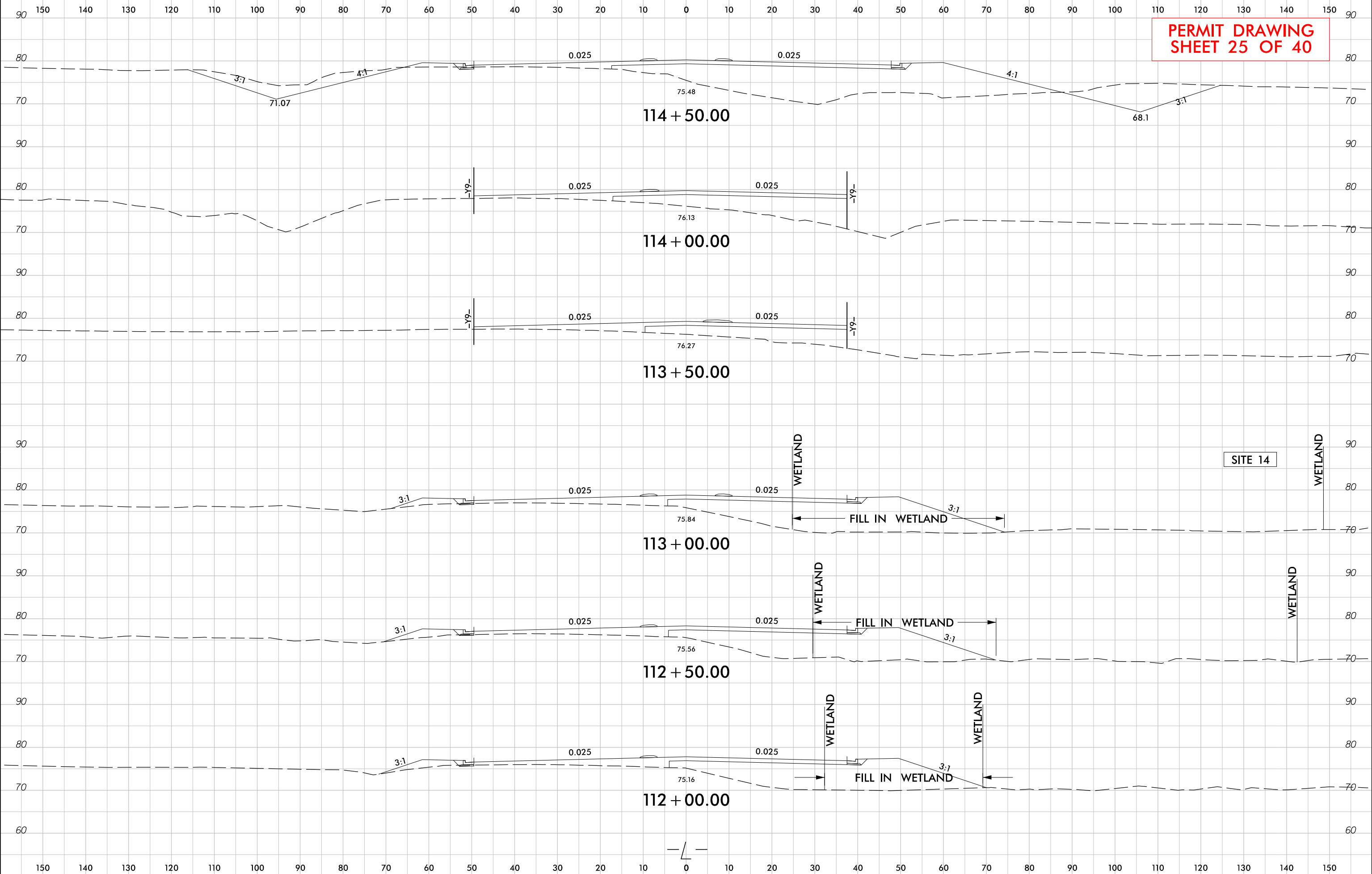
6/23/16



PROJ. REFERENCE NO.
R-5020A

SHEET NO.
X-39

**PERMIT DRAWING
SHEET 25 OF 40**



9/15/2019
R5020A_Hyd_prm_wet_psh_12E_xpl.dgn
jbarvey

6/23/16

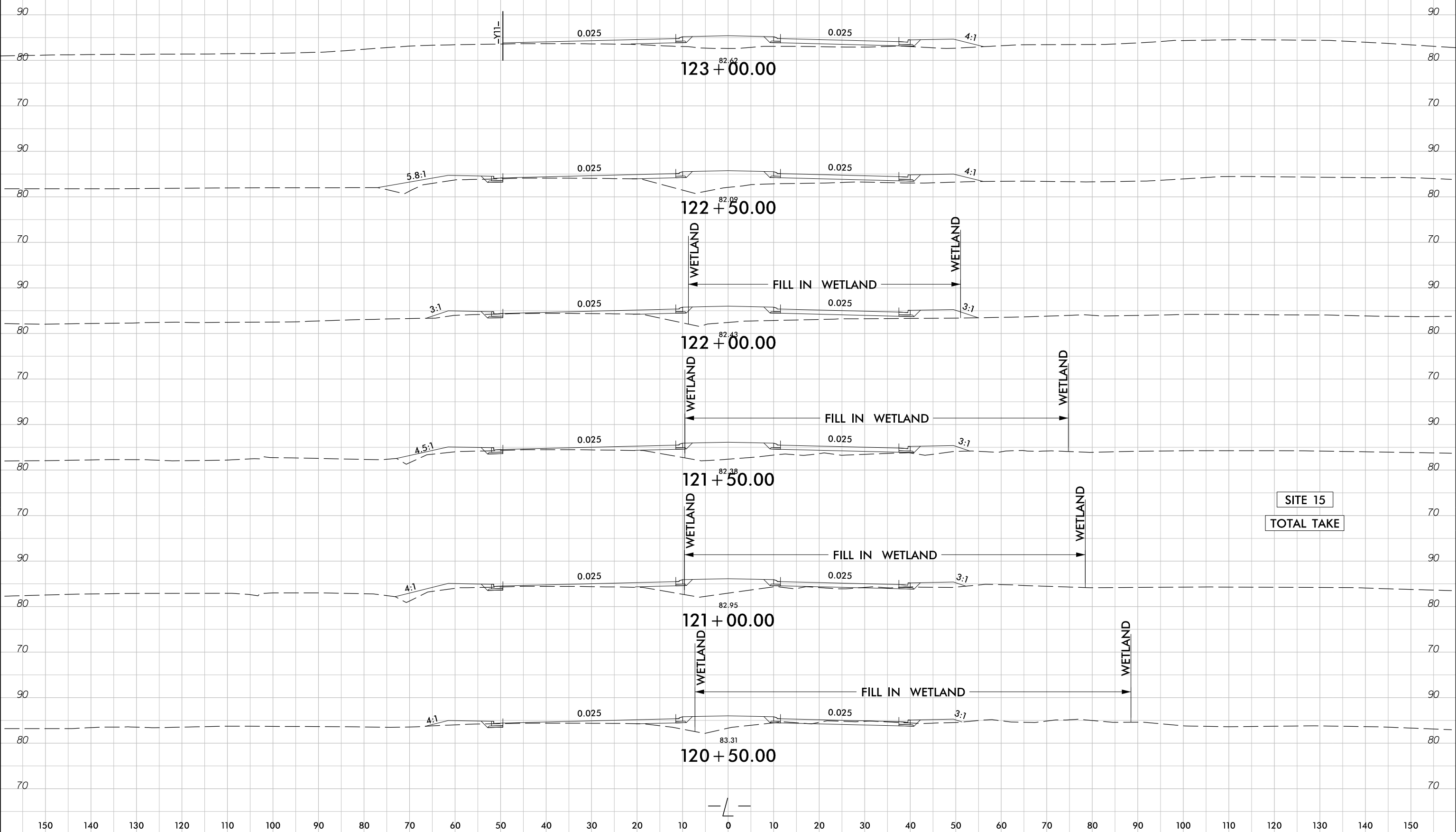


PROJ. REFERENCE NO.
R-5020A

SHEET NO.
X-42

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**PERMIT DRAWING
SHEET 26 OF 40**



SITE 15
TOTAL TAKE

9/15/2019
R5020A_Hyd_prm_wet_psh_12C_xpl.dgn
jbarvey

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8/17/99

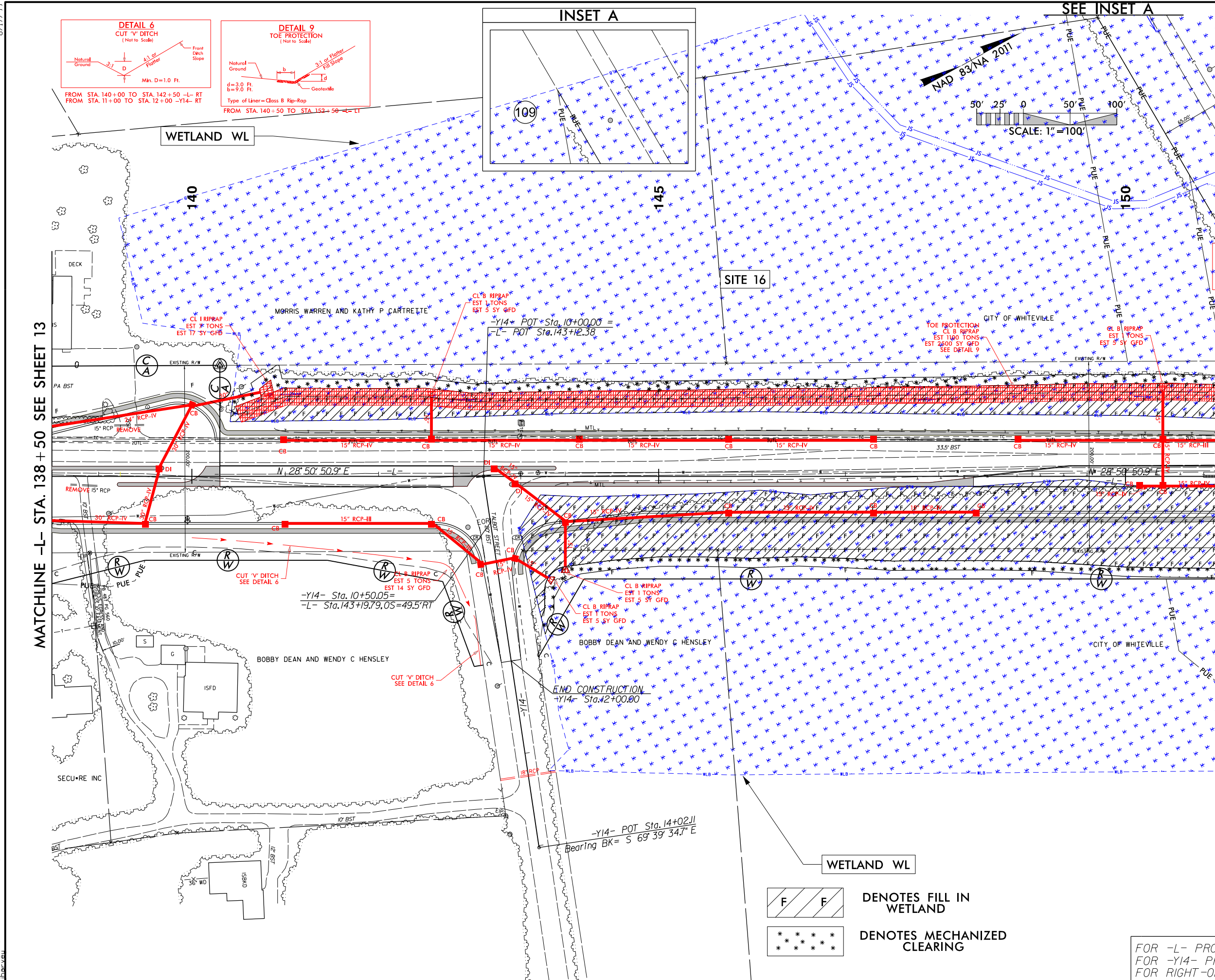
PROJECT REFERENCE NO. R-5020A	SHEET NO. 14
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

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SUNGATE DESIGN GROUP, P.A.
805 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27605
TEL. (919) 868-2943
ENG. FIRM LICENSE NO. C-680

**PERMIT DRAWING
SHEET 27 OF 40**



MATCHLINE -L- STA. 138 + 50 SEE SHEET 13

MATCHLINE -L- STA. 151 + 00 SEE SHEET 15

ROW REV. 6 - 10/08/18 - Added CA on Parcel 72, (BCS)
 ROW REV. 13 - 06/03/19 - Added Parcel 109, Added PUE on Parcels 75 and 109, (BCS)
 ROW REV. 14 - 06/24/19 - Added PUE on Parcels 71 and 73, (BCS)

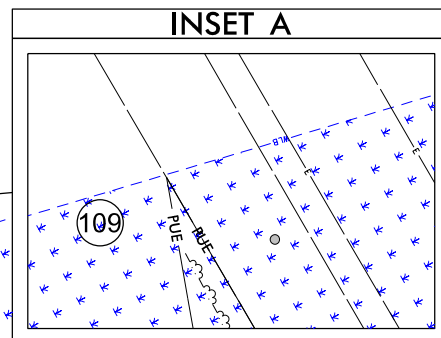
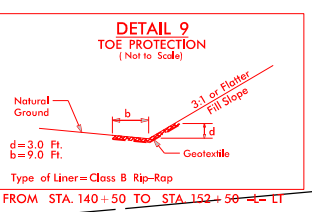
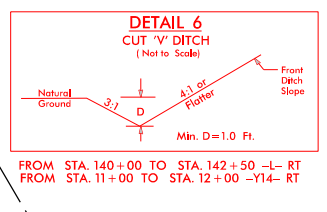
R15/23/19
 R5020A_Hyd_prm_wet_psh_14.dgn
 DWG

WETLAND WL

	DENOTES FILL IN WETLAND
	DENOTES MECHANIZED CLEARING

FOR -L- PROFILE, SEE SHEET 23
 FOR -Y14- PROFILE, SEE SHEET 27
 FOR RIGHT-OF-WAY DATA, SEE SHEET RW-14

8/17/99
 ROW REV.6 - 10/08/18 - Added CA on Parcel 72. (BCS)
 ROW REV.13 - 06/03/19 - Added Parcel 109. Added PUE on Parcels 75 and 109. (BCS)
 ROW REV.14 - 06/24/19 - Added PUE on Parcels 71 and 73. (BCS)
 R15/2319_Hyd_prm_wet_psh_14A.dgn
 10/20/20



SEE INSET A

PROJECT REFERENCE NO. R-5020A	SHEET NO. 14
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

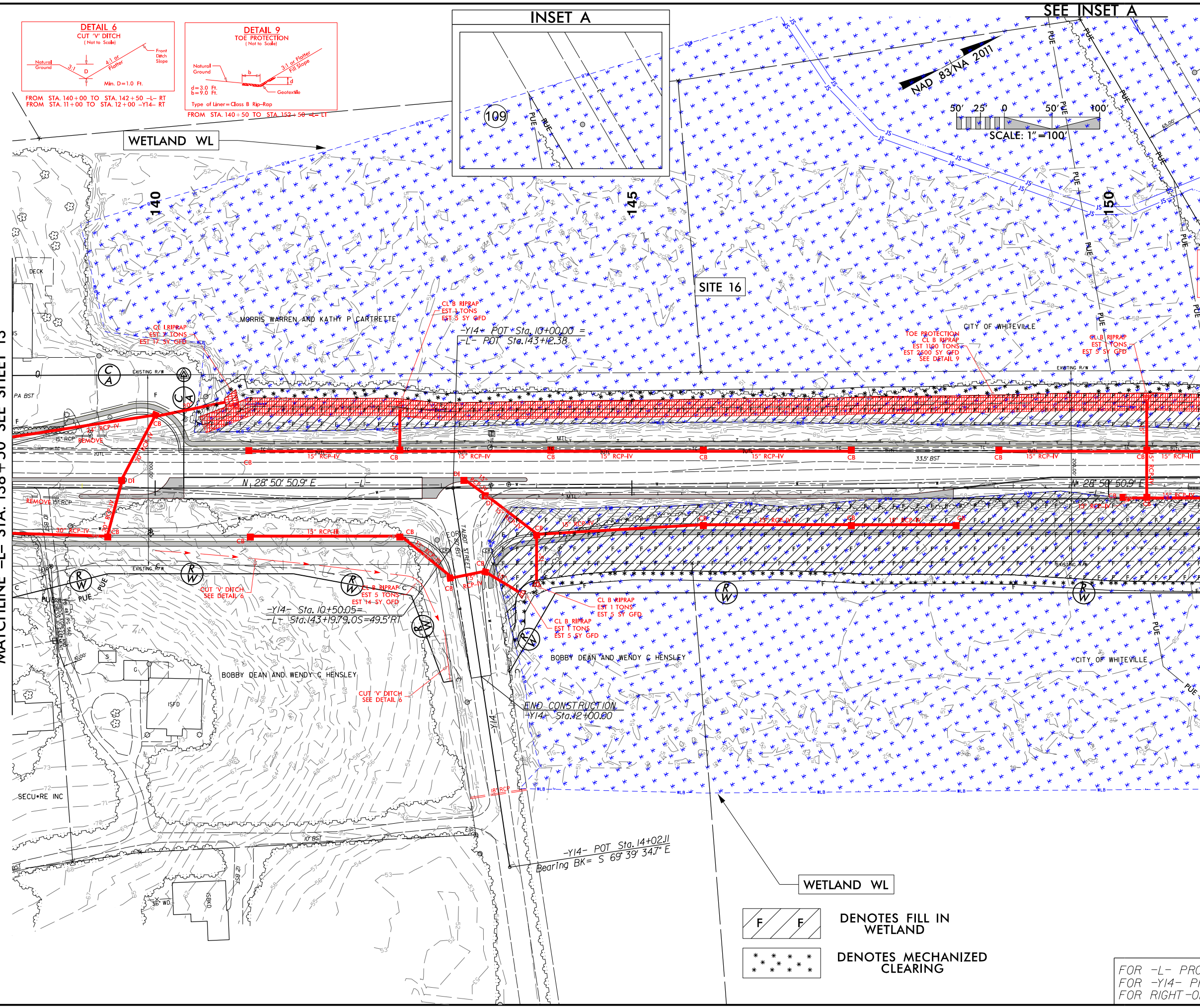
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 4505 Falls of Neuse Road, Suite 400
 Raleigh, NC 27609-6270
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 805 JONES FRANKLIN ROAD
 RALEIGH, NORTH CAROLINA 27605
 TEL. (919) 858-2243
 ENG. FIRM LICENSE NO. C-690

**PERMIT DRAWING
 SHEET 28 OF 40**

MATCHLINE -L- STA. 138+50 SEE SHEET 13

MATCHLINE -L- STA. 151+00 SEE SHEET 15




WETLAND WL

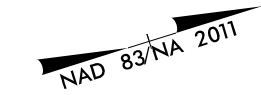
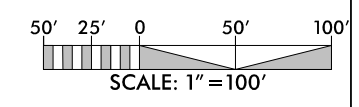
	DENOTES FILL IN WETLAND
	DENOTES MECHANIZED CLEARING

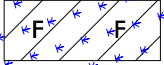
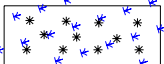
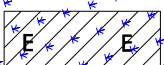
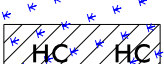
FOR -L- PROFILE, SEE SHEET 23
 FOR -Y14- PROFILE, SEE SHEET 27
 FOR RIGHT-OF-WAY DATA, SEE SHEET RW-14

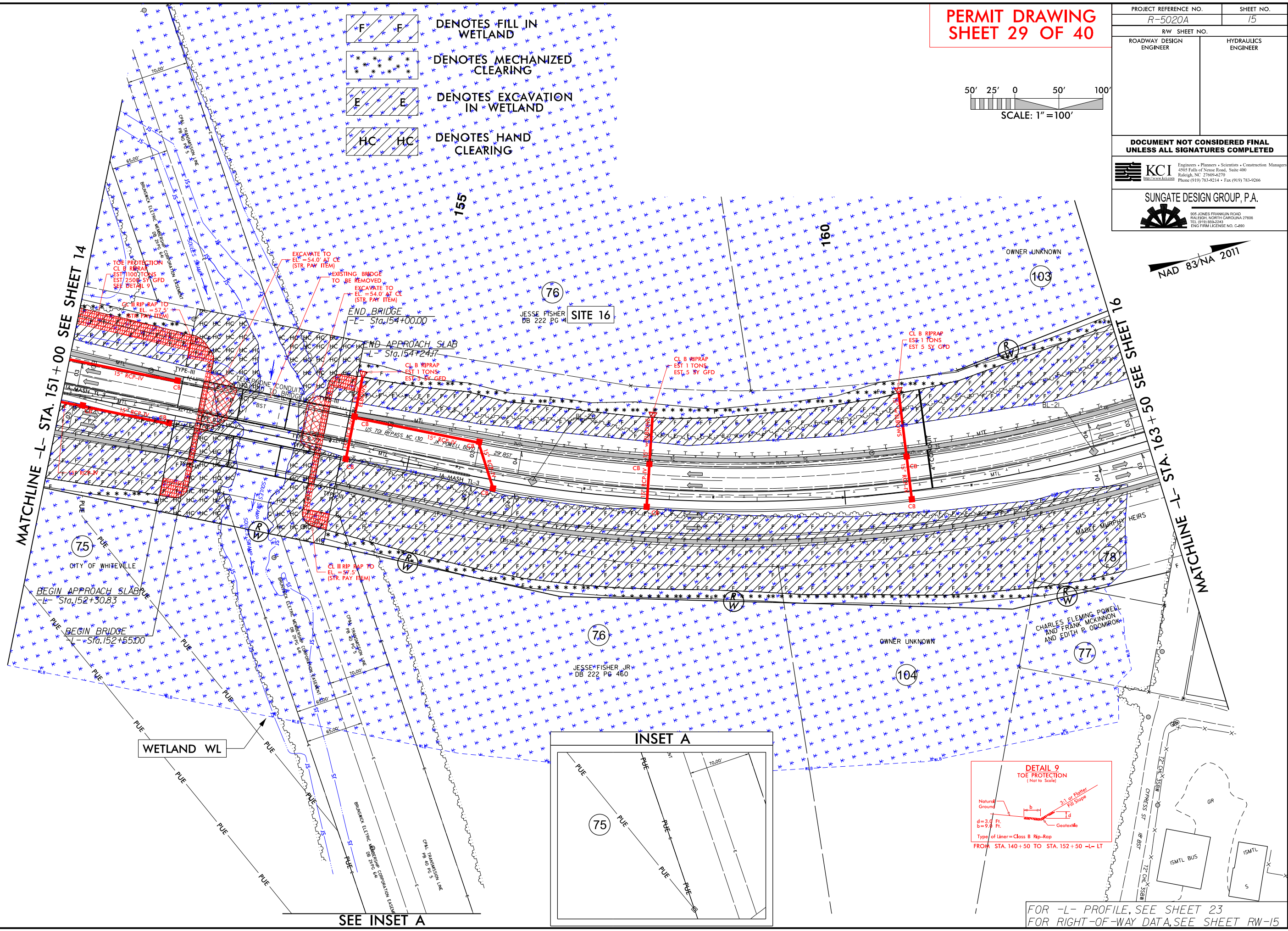
8/17/99

PERMIT DRAWING SHEET 29 OF 40

PROJECT REFERENCE NO. R-5020A		SHEET NO. 15	
RW SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			
 KCI <small>Engineers • Planners • Scientists • Construction Managers 4505 Falls of Neuse Road, Suite 400 Raleigh, NC 27609-6270 Phone (919) 783-9214 • Fax (919) 783-9266</small>		SUNGATE DESIGN GROUP, P.A. <small>805 JONES FRANKLIN ROAD RALEIGH, NORTH CAROLINA 27605 TEL (919) 868-2943 ENG FIRM LICENSE NO. C-690</small>	

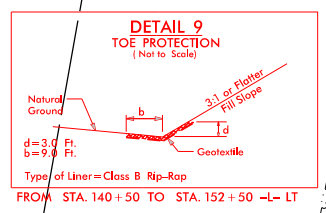
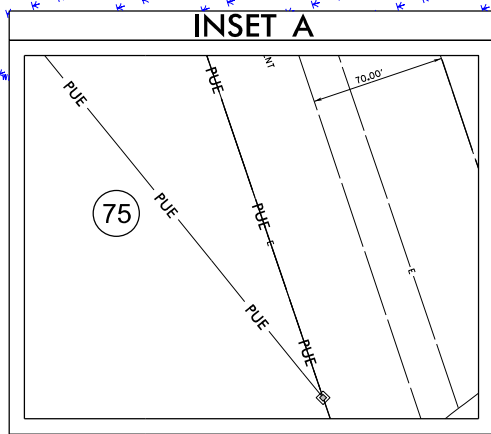


-  DENOTES FILL IN WETLAND
-  DENOTES MECHANIZED CLEARING
-  DENOTES EXCAVATION IN WETLAND
-  DENOTES HAND CLEARING



MATCHLINE -L- STA. 151+00 SEE SHEET 14

SEE SHEET 16
MATCHLINE -L- STA. 163+50




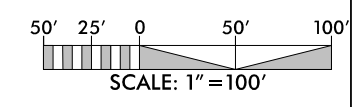
FOR -L- PROFILE, SEE SHEET 23
 FOR RIGHT-OF-WAY DATA, SEE SHEET RW-15

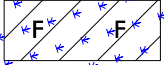
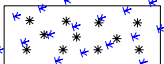
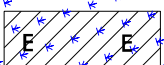
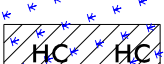
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 8/17/99

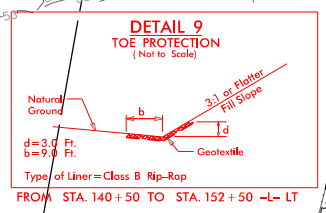
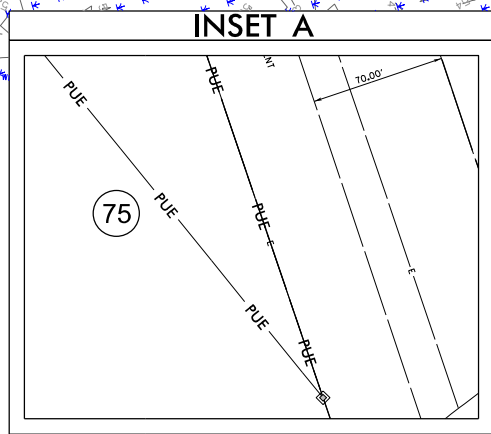
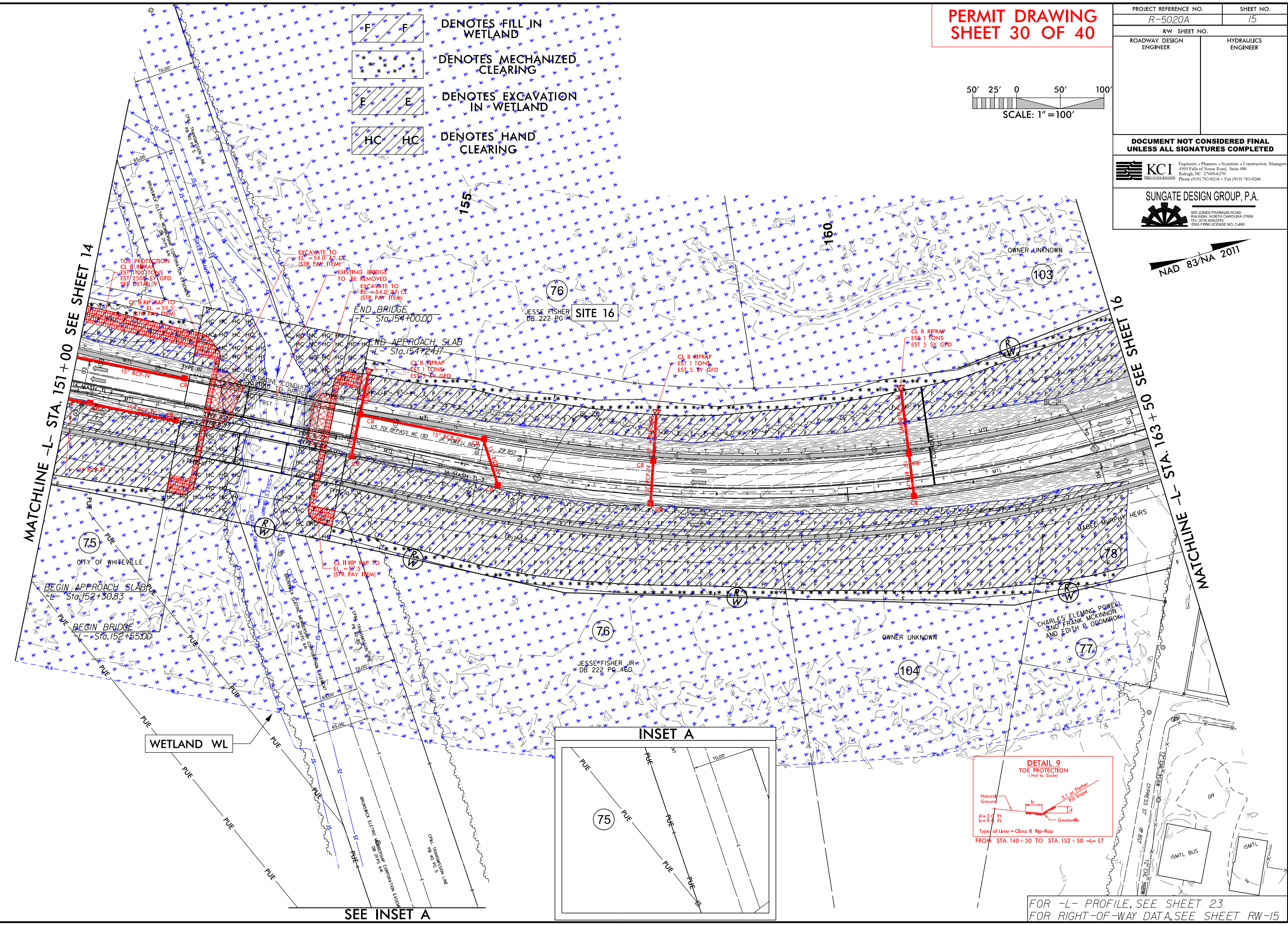
8/17/99

PERMIT DRAWING SHEET 30 OF 40

PROJECT REFERENCE NO. R-5020A		SHEET NO. 15	
RW SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			
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-  DENOTES FILL IN WETLAND
-  DENOTES MECHANIZED CLEARING
-  DENOTES EXCAVATION IN WETLAND
-  DENOTES HAND CLEARING



FOR -L- PROFILE, SEE SHEET 23
 FOR RIGHT-OF-WAY DATA, SEE SHEET RW-15

R45/2019 Hyd_prm_wet_15A.dgn
 R5020A Hyd_prm_wet_15A.dgn
 8/17/99

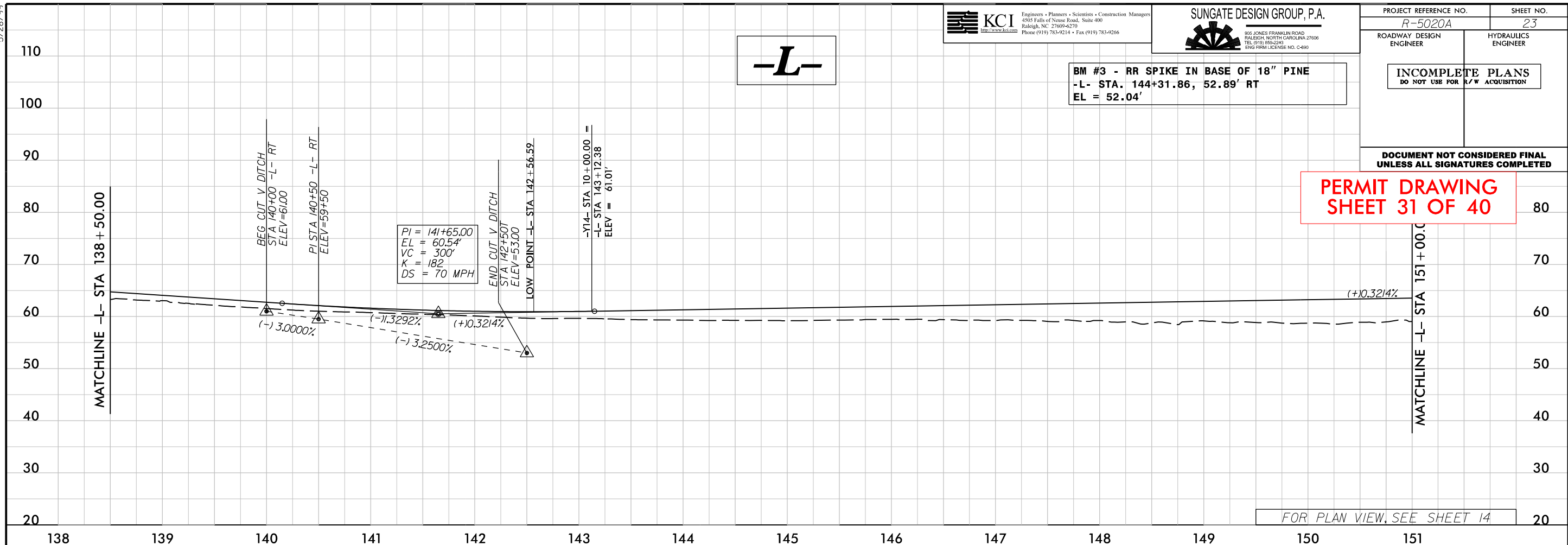
5/28/99

PROJECT REFERENCE NO. <i>R-5020A</i>	SHEET NO. <i>23</i>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

BM #3 - RR SPIKE IN BASE OF 18" PINE
-L- STA. 144+31.86, 52.89' RT
EL = 52.04'

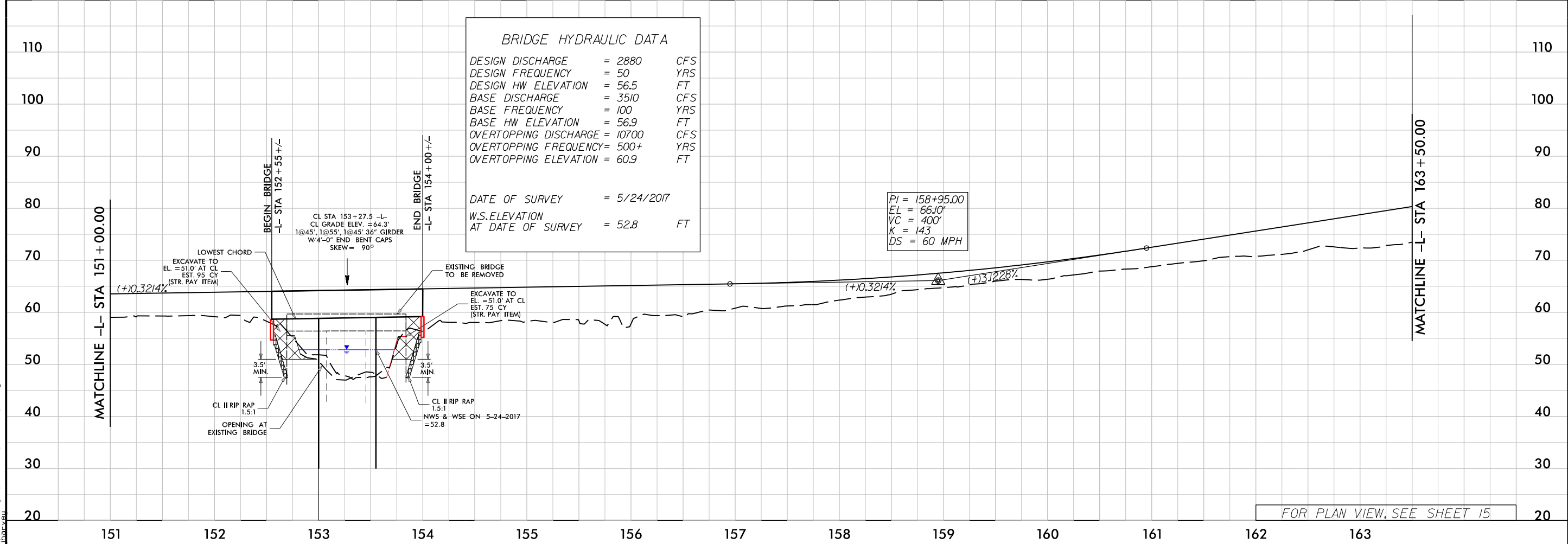
-L-

PERMIT DRAWING
SHEET 31 OF 40



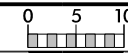
BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 2880	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 56.5	FT
BASE DISCHARGE	= 3510	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 56.9	FT
OVERTOPPING DISCHARGE	= 10700	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 60.9	FT
DATE OF SURVEY	= 5/24/2017	
W.S. ELEVATION AT DATE OF SURVEY	= 52.8	FT



R:\5/2019\Hyd-prm-wet-psh-15B-pl1.dgn

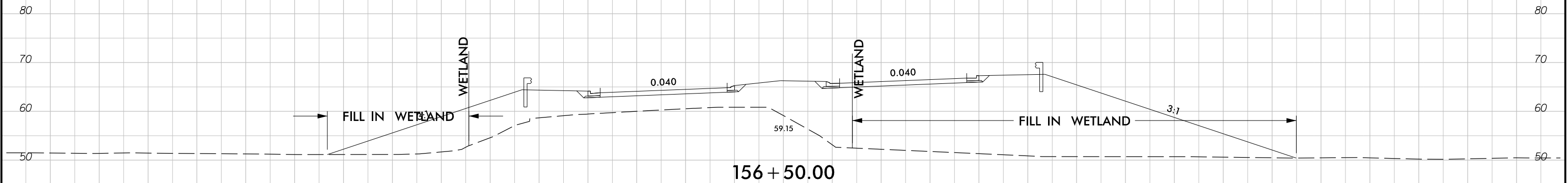
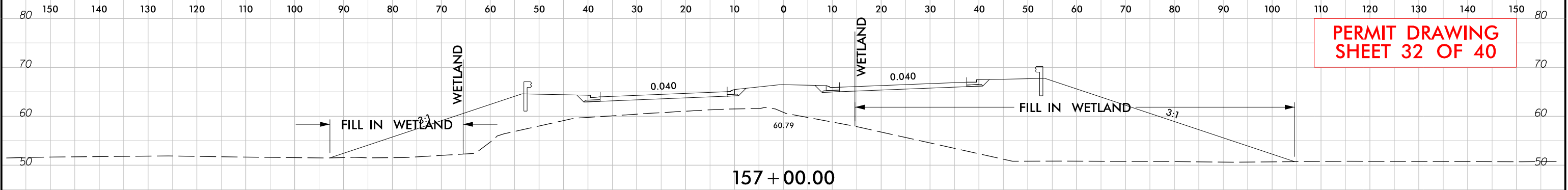
6/23/16



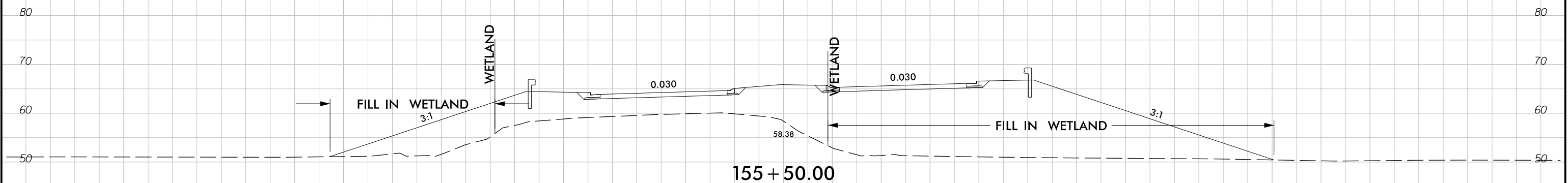
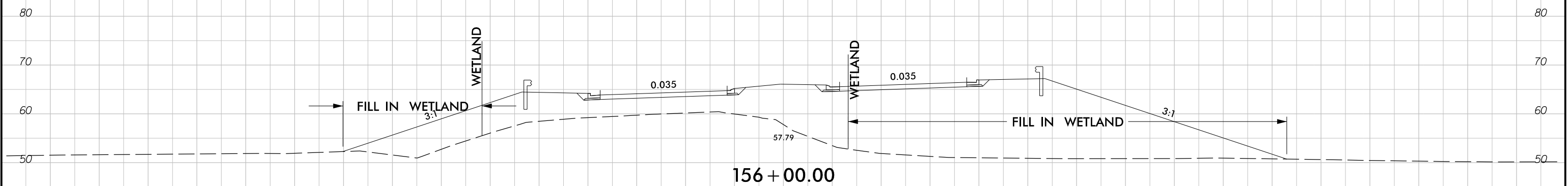
PROJ. REFERENCE NO.
R-5020A

SHEET NO.
X-56

**PERMIT DRAWING
SHEET 32 OF 40**



SITE 16



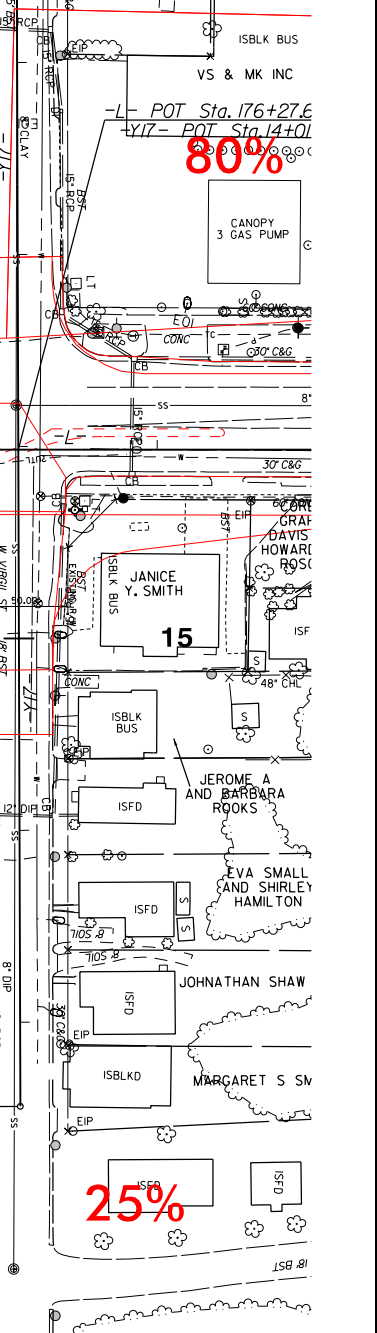
9/15/2019
R5020A_Hyd_prm_wet_psh_15C_xpl.dgn
jbarvey

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

8/17/99

PROJECT REFERENCE NO. R-5020A	SHEET NO. 16
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<p>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</p> <p>KCI Engineers • Planners • Scientists • Construction Managers 4505 Falls of Neuse Road, Suite 400 Raleigh, NC 27609-6270 Phone (919) 783-9214 • Fax (919) 783-9266</p> <p>SUNGATE DESIGN GROUP, P.A. 805 JONES FRANKLIN ROAD RALEIGH, NORTH CAROLINA 27605 TEL (919) 868-2343 ENG FIRM LICENSE NO. C-690</p>	

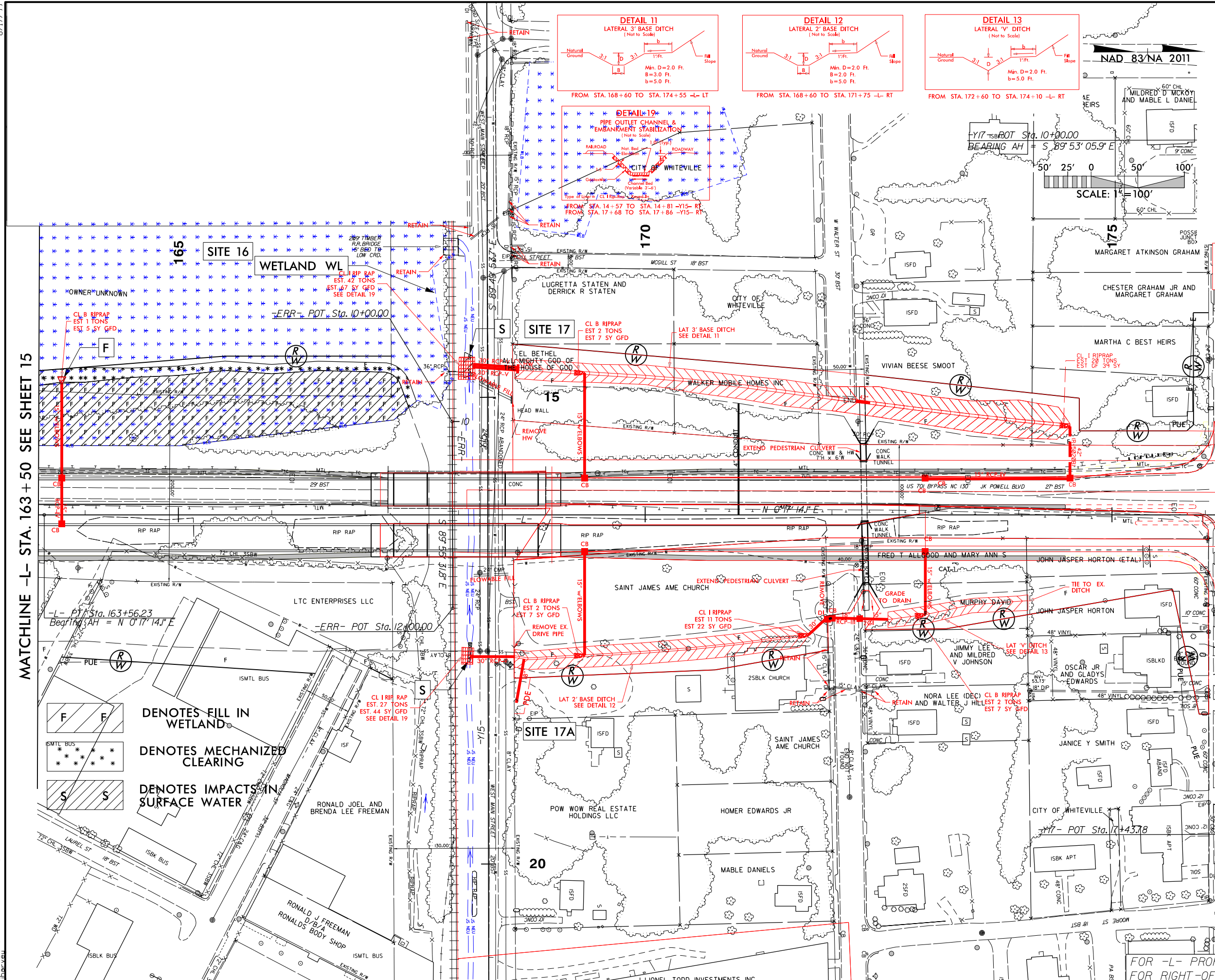
PERMIT DRAWING SHEET 33 OF 40



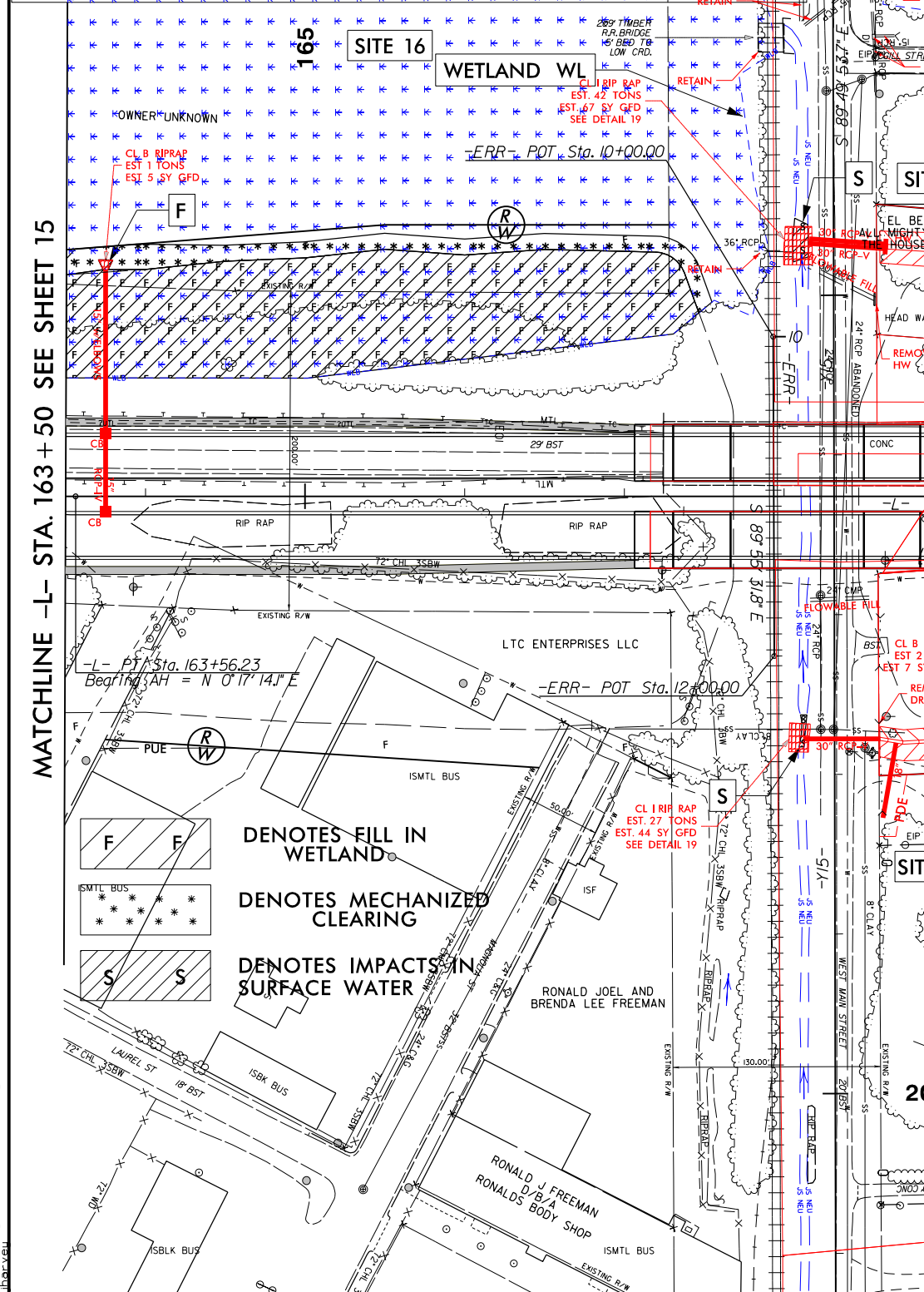
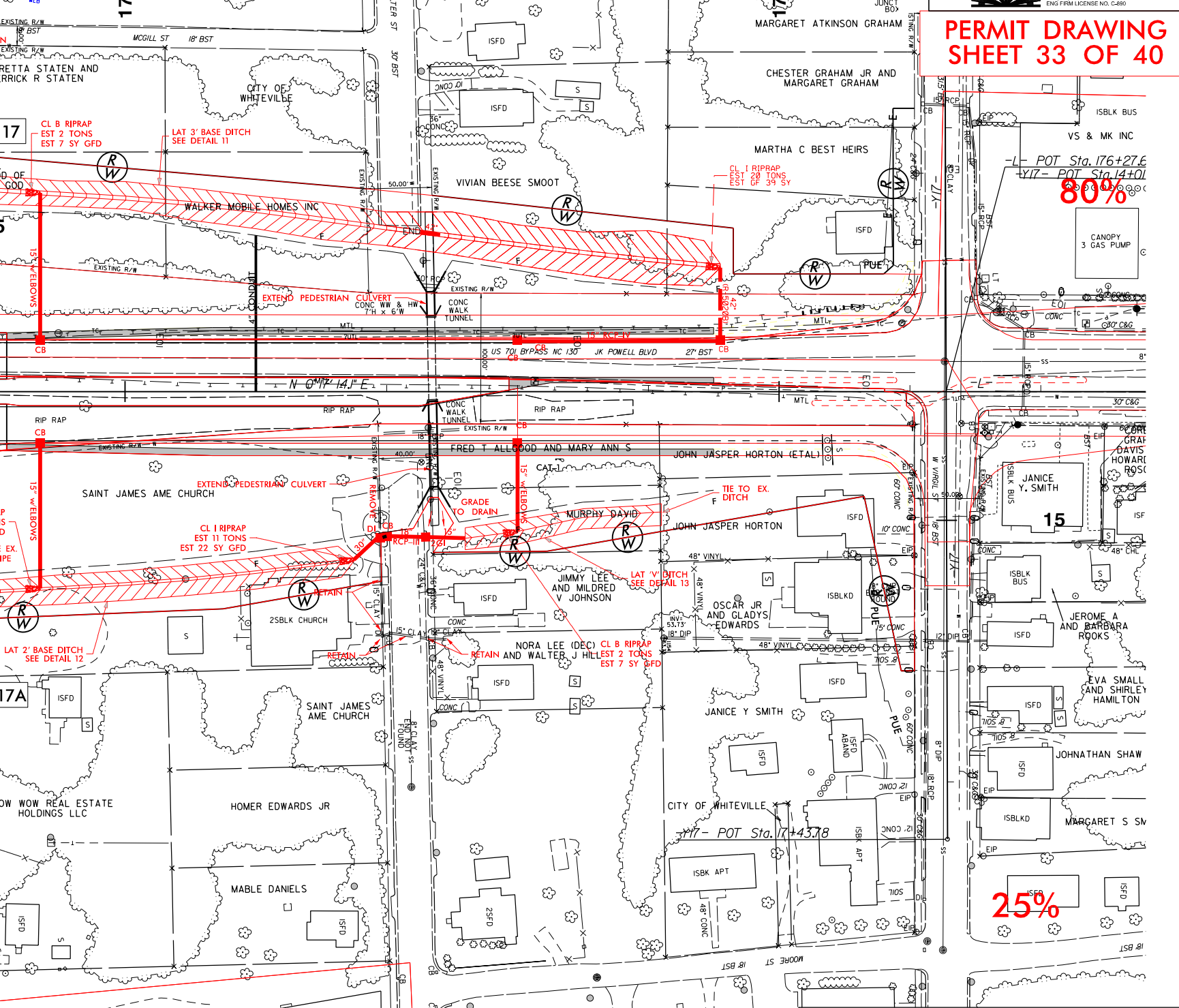
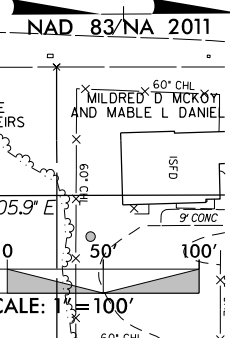
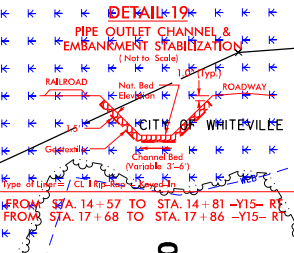
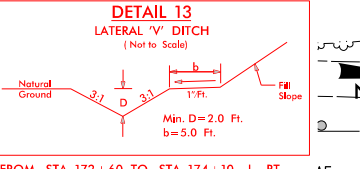
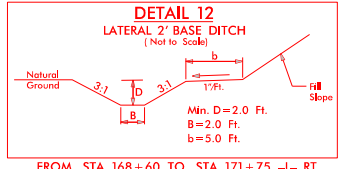
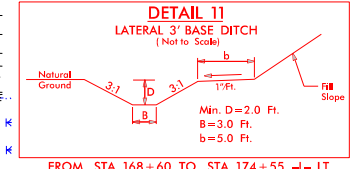
FOR -L- PROFILE, SEE SHEET 24
FOR RIGHT-OF-WAY DATA, SEE SHEET RW-16

MATCHLINE -L- STA. 163 + 50 SEE SHEET 15

R:\5\2019_Hyd_prrm_wet_psh_16.dgn



- F** DENOTES FILL IN WETLAND
- M** DENOTES MECHANIZED CLEARING
- S** DENOTES IMPACTS IN SURFACE WATER



8/17/99

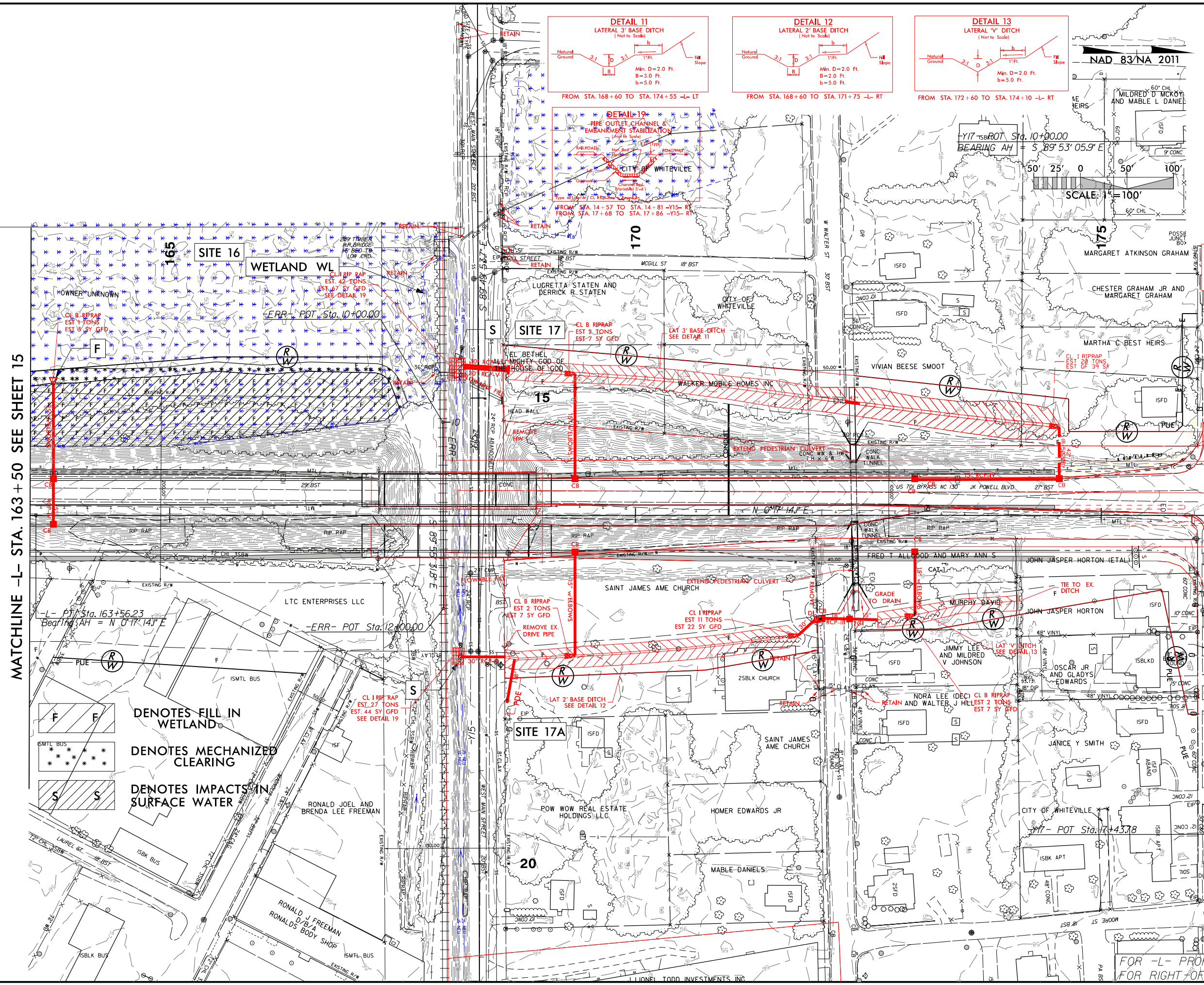
PROJECT REFERENCE NO. R-5020A	SHEET NO. 16
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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4505 Falls of Neuse Road, Suite 400
Raleigh, NC 27609-4270
Phone (919) 783-9214 • Fax (919) 783-9266

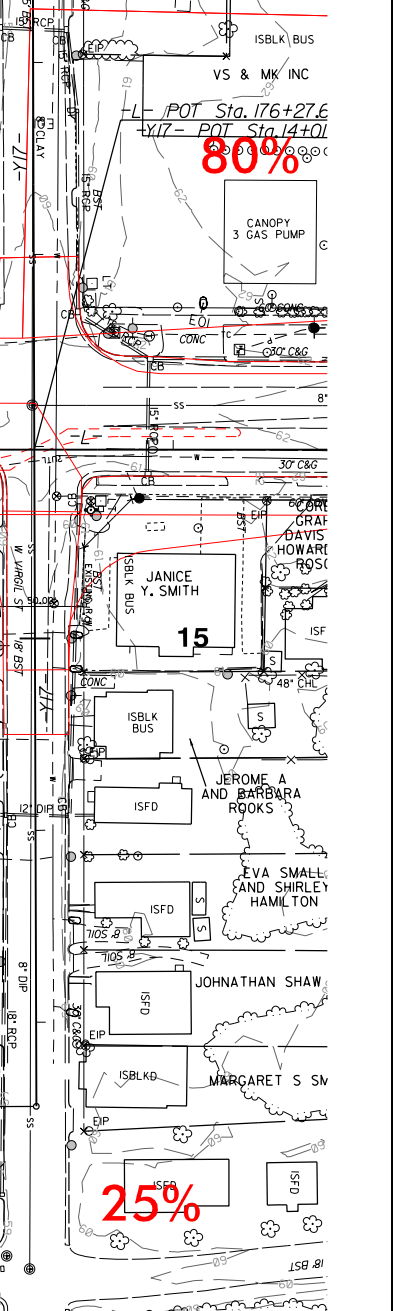
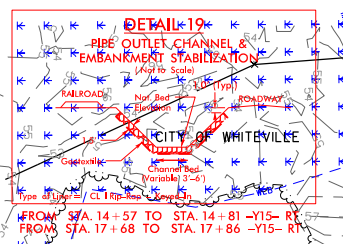
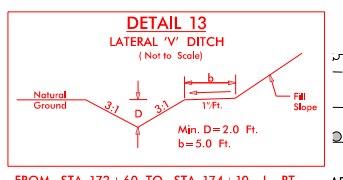
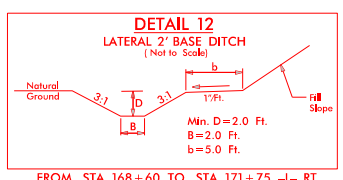
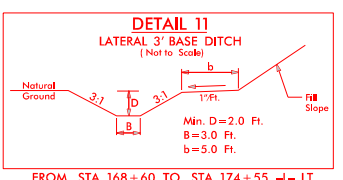
SUNGATE DESIGN GROUP, P.A.
805 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 858-2243
ENG. FIRM LICENSE NO. C-490

PERMIT DRAWING SHEET 34 OF 40



MATCHLINE -L- STA. 163+50 SEE SHEET 15

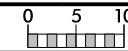
- DENOTES FILL IN WETLAND
- DENOTES MECHANIZED CLEARING
- DENOTES IMPACTS IN SURFACE WATER



FOR -L- PROFILE, SEE SHEET 24
FOR RIGHT OF WAY DATA, SEE SHEET RW-16

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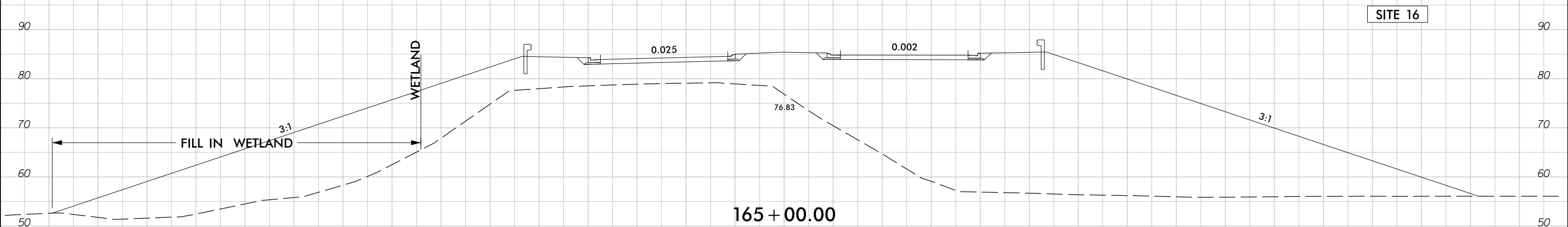
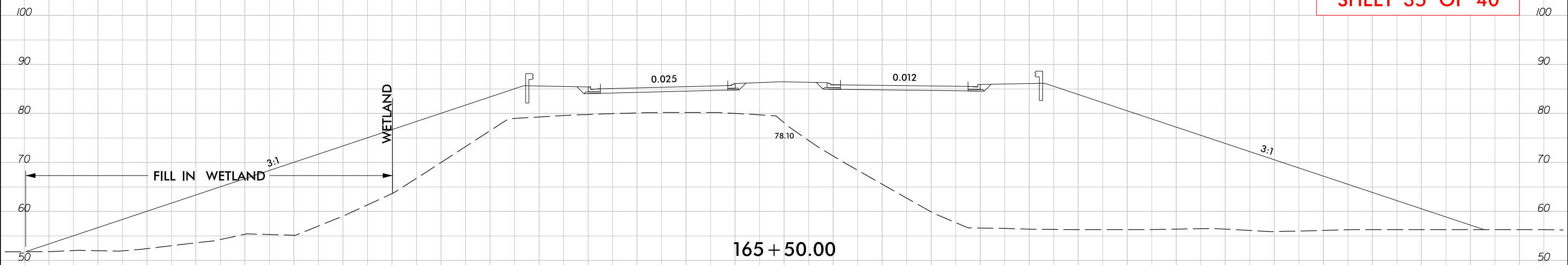
6/23/16



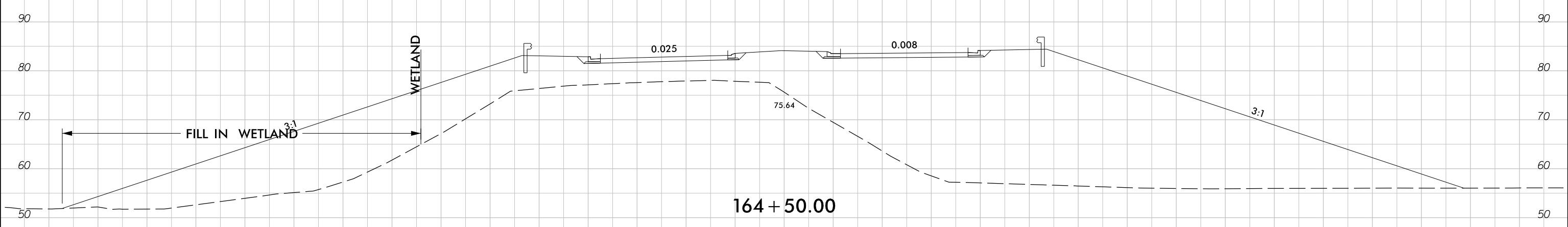
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**PERMIT DRAWING
SHEET 35 OF 40**



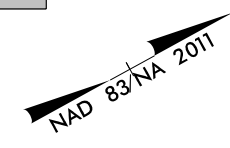
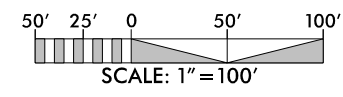
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9/15/2019
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jbarvey

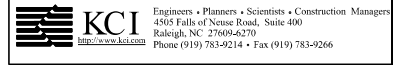
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8/17/09



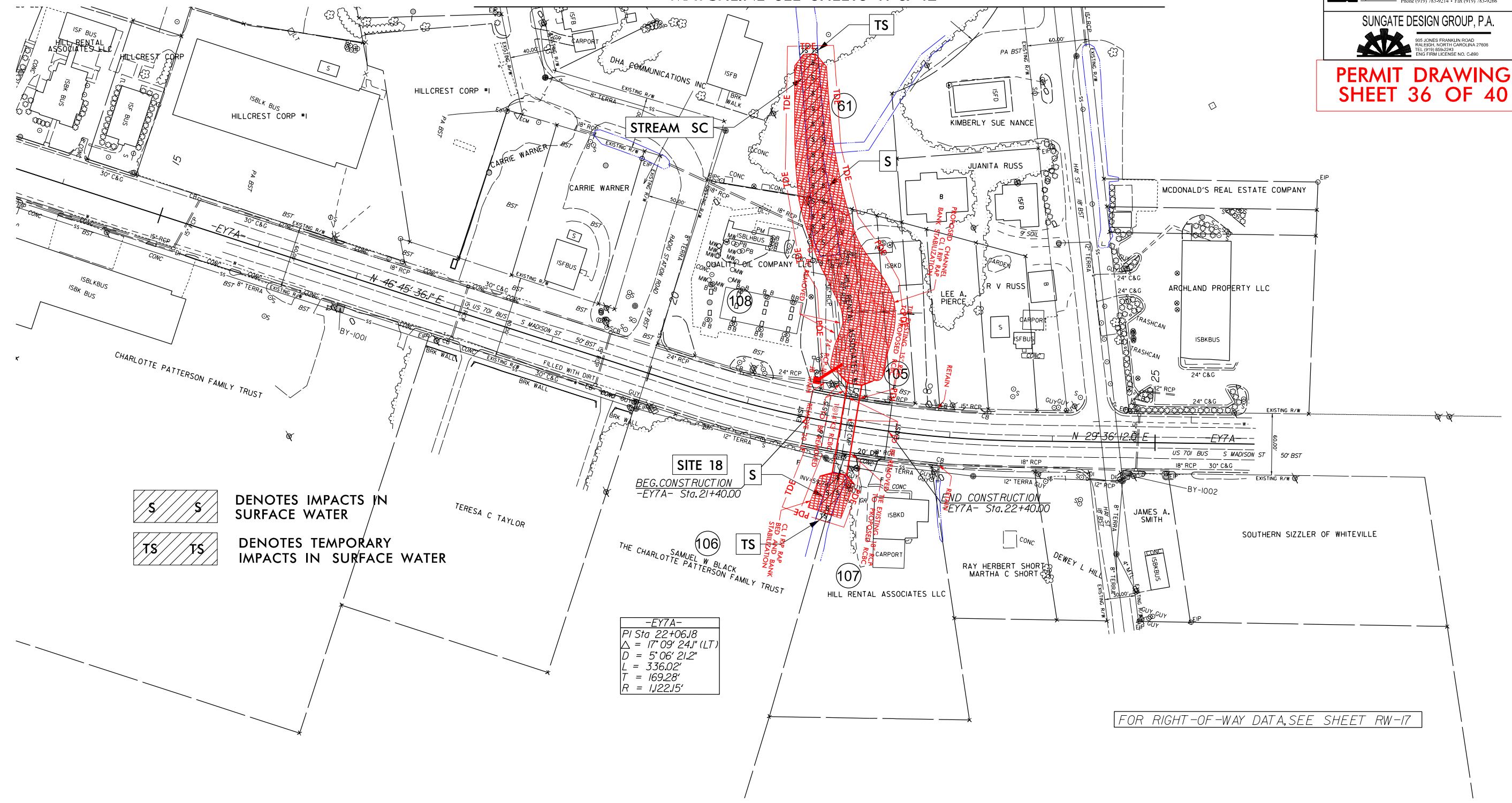
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RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

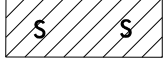
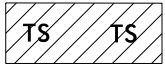
**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**



**PERMIT DRAWING
SHEET 36 OF 40**

MATCHLINE SEE SHEETS 11 & 12



 DENOTES IMPACTS IN SURFACE WATER
 DENOTES TEMPORARY IMPACTS IN SURFACE WATER

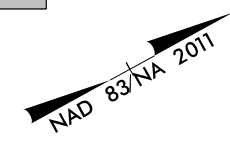
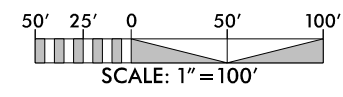
-EYTA-
 PI Sta 22+06.18
 $\Delta = 17^{\circ} 09' 24.1''$ (LT)
 D = 5' 06" 21.2"
 L = 336.02'
 T = 169.28'
 R = 1,122.15'

FOR RIGHT-OF-WAY DATA, SEE SHEET RW-17

R:\5\2019_R5020A_Hyd_prm_wet_psh_17.dgn
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 17

8/17/09

R:\5/2019_R5020A_Hyd_prm_wet_psh_17A.dgn



PROJECT REFERENCE NO. <i>R-5020A</i>	SHEET NO. <i>17</i>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

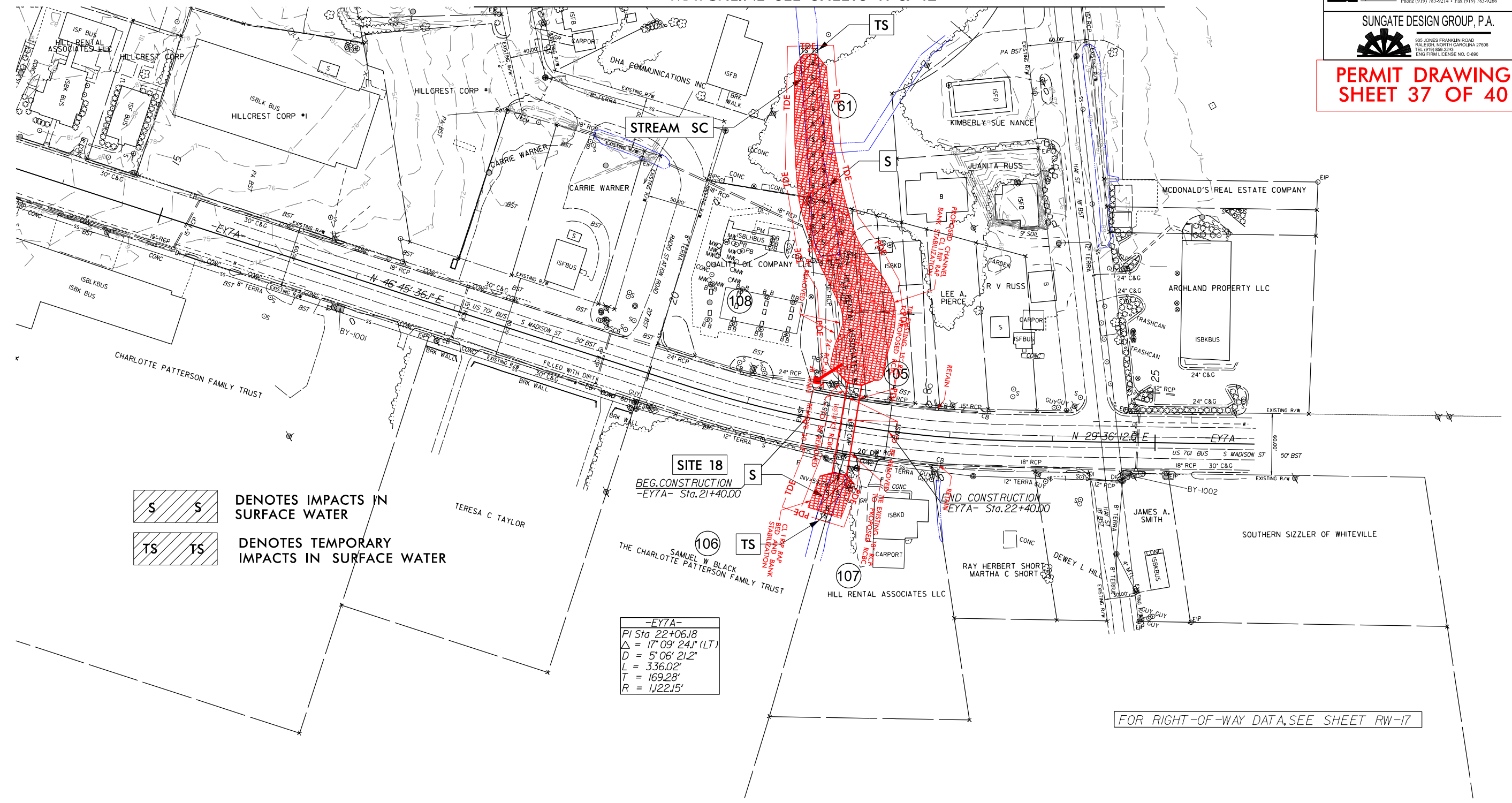
**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

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805 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27605
TEL (919) 868-2243
ENG FIRM LICENSE NO. C-690

**PERMIT DRAWING
SHEET 37 OF 40**

MATCHLINE SEE SHEETS 11 & 12

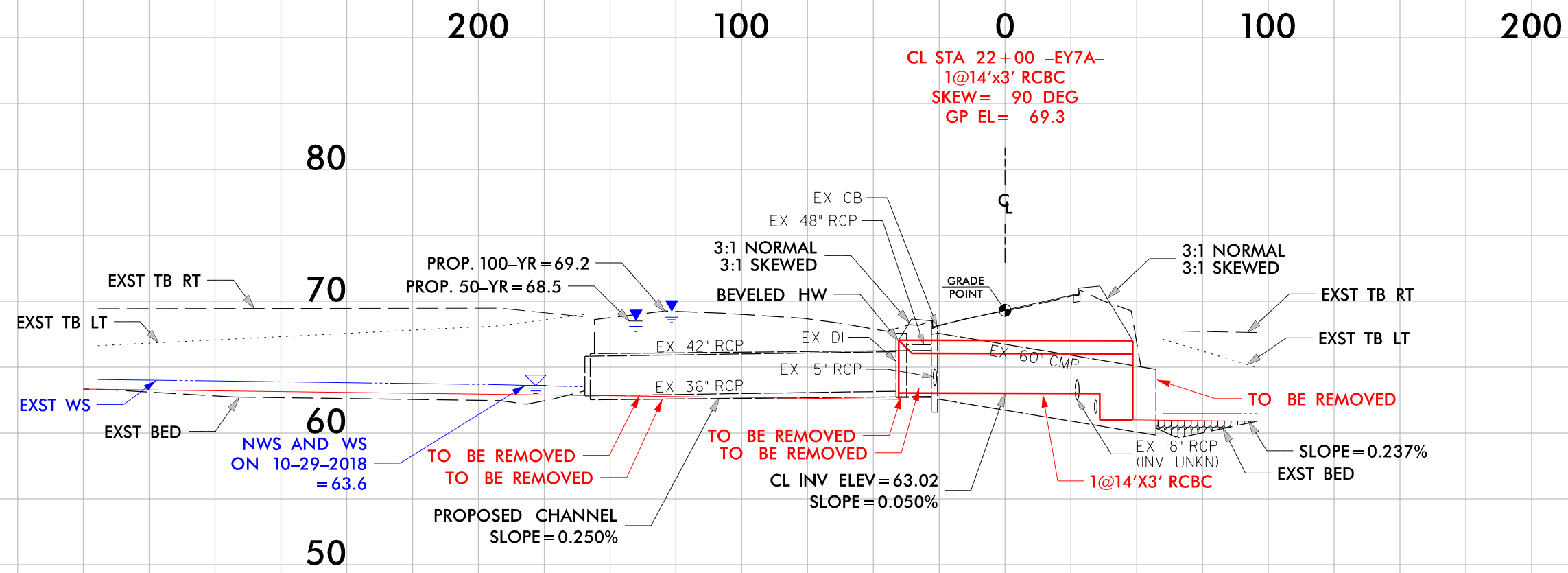
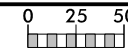


S S DENOTES IMPACTS IN SURFACE WATER
TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

-EYTA-
PI Sta 22+06.18
 $\Delta = 17^{\circ} 09' 24.1''$ (LT)
D = 5' 06" 21.2"
L = 336.02'
T = 169.28'
R = 1,122.15'

FOR RIGHT-OF-WAY DATA, SEE SHEET RW-17

6/23/16



WETLAND AND SURFACE WATER IMPACTS SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS					SURFACE WATER 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)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	14+75 to 15+97-L-RT	60" RCP	0.06		< 0.01	0.03		< 0.01	< 0.01	38	8	
	15+65 to 15+79 -L-RT	BANK STABILIZATION								8		
2	15+75 to 18+80-L-LT	ROADWAY FILL	0.15			0.07		< 0.01	< 0.01	60	15	
	15+88 to 16+08-L-LT	BANK STABILIZATION								20		
3	16+12 to 16+28-L-RT	ROADWAY FILL	< 0.01		< 0.01	< 0.01						
4	17+35 to 18+78-L-RT	ROADWAY FILL	0.05		0.03							
5	33+76 to 34+10-L-LT	ROADWAY FILL						0.01		146		
6	34+45 to 38+12-L-	2 AT 48" RCP						0.03	< 0.01	403	25	
	34+53 to 34+69-L-LT	BANK STABILIZATION								58		
7	66+69 to 67.23-L-RT	ROADWAY FILL						< 0.01	< 0.01	76	15	
8	68+71 to 69+63-L-LT	ROADWAY FILL	0.03			0.02		< 0.01	< 0.01	21	5	
9	68+63 to 69+20-L-RT	DITCH OUTLET				0.01						
10	75+26 to 75+43-L-RT	42" RCP	< 0.01			< 0.01						
11	96+66 to 96+70-L-LT	DRAINAGE INLET							< 0.01		7	
12	99+12 to 99+75-L-RT	ROADWAY FILL	0.01			0.01						
13	111+33 to 111+52-L-RT	ROADWAY FILL						0.01	< 0.01	81	12	
	111+42 to 111+50--L-RT	BANK STABILIZATION								58		
14	111+96 to 113+54-L-RT	ROADWAY FILL	0.16			0.03						
15	120+37 to 122+05-L-	ROADWAY FILL	0.33									
16	140+41 to 167+55-L-	ROADWAY FILL	5.40			1.03						
	152+31 to 154+24 -L-	BRIDGE	0.16		0.02		0.46					
17	14+52 to 14+79-Y15-RT	PIPE OUTLET						< 0.01				
17A	17+63 to 17+83-Y15RT	PIPE OUTLET						< 0.01				
TOTALS*:			6.34		0.06	1.21	0.46	0.07	< 0.01	969	87	0

*Rounded totals are sum of actual impacts

NOTES:

Site 15: Wetlands will be a total take and has been accounted for in summary
 Site 16: Each bent has 5 piers of 24" Diam, 4 bents=20 piers=62.8 SF=0.001 AC

NC DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 9-05-2019
 COLUMBUS COUNTY
 R-5020A
 41499.1.2

WETLAND AND SURFACE WATER IMPACTS SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS					SURFACE WATER 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)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
18	22+00 -EY7A-	14'x3' RCBC										
	20+43 to 21+57-EY7A-LT	INLET CHANNEL						0.09	< 0.01	197	8	
	21+86 to 22+07-EY7A-RT	OUTLET CHANNEL						0.01	< 0.01	41	8	
TOTALS*:								0.10	< 0.01	238	16	0

*Rounded totals are sum of actual impacts

NOTES:

Site 15: Wetlands will be a total take and has been accounted for in summary
 Site 16: Each bent has 5 piers of 24" Diam, 4 bents=20 piers=62.8 SF=0.001 AC

NC DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 9-05-2019
 COLUMBUS COUNTY
 R-5020A
 41499.1.2
 SHEET 40 OF 40