



North Carolina Department of Transportation

Highway Stormwater Program
STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS



(Version 2.07; Released October 2016)

WBS Element:	34497.1.F56	TIP No.:	R-2707E	County(ies):	Cleveland	Page	1	of	3
General Project Information									
WBS Element:	34497.1.F56	TIP Number:	R-2707E	Project Type:	New Location	Date:	2/20/2018		
NCDOT Contact:	Paul Atkinson, PE			Contractor / Designer:	Brian Elam, PE				
	Address:	NCDOT Hydraulics Unit 1590 Mail Service Raleigh, NC 27699-1590				Address:	Sungate Design Group, PA 905 Jones Franklin Road Raleigh, NC 27606		
	Phone:	919-707-6707				Phone:	919-859-2243 ext. 207		
	Email:	patkinson@ncdot.gov				Email:	belam@sungatedesign.com		
City/Town:	Shelby			County(ies):	Cleveland				
River Basin(s):	Broad			CAMA County?	No				
Wetlands within Project Limits?	Yes								
Project Description									
Project Length (lin. miles or feet):	2.63	Surrounding Land Use:	Urban, Residential, Light Industrial						
	Proposed Project			Existing Site					
Project Built-Up Area (ac.)	43.0	ac.	25.0 ac.						
Typical Cross Section Description:	-L-: 34' grassed ditch median with 6:1 side slopes. 2 paved lanes (total 24' wide) with 12' outside shoulder (15' with guardrail, 10' paved) and 6' inside shoulder (4' paved) in each direction. Varying fill and cut slopes (see project XSC's for detailed information).			Existing US 74 (-L-): 2 paved lanes (total 24') with 15' grassed median, 10' outside and 6' insides shoulders					
Annual Avg Daily Traffic (veh/hr/day):	Design/Future:	59,200	Year:	2040	Existing:	41,600	Year:	2019	
General Project Narrative: (Description of Minimization of Water Quality Impacts)	The R-2707E project involves constructing the section of proposed US 74 (Shelby bypass) from west of SR 2238 (Long Branch Road) to west of SR 1001. There are no major structures involved with the construction of R-2707E. Dry detention basins are utilized at locations throughout the project to attenuate increased peak flows and provide water quality treatment. 2:1 and 1.5:1 slopes will be used in areas to reduce impacts to surrounding wetlands and jurisdictional streams. Existing drainage patterns have been maintained to the extent practicable.								
Waterbody Information									
Surface Water Body (1):	Buffalo Creek			NCDWR Stream Index No.:	9-53-(5)				
NCDWR Surface Water Classification for Water Body	Primary Classification:	Class C							
	Supplemental Classification:	None							
Other Stream Classification:	None								
Impairments:	None								
Aquatic T&E Species?	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?	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)									



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WBS Element:	34497.1.F56	TIP No.:	R-2707E	County(ies):	Cleveland	Page	2	of	3
Additional Waterbody Information									
Surface Water Body (2):	Potts Creek			NCDWR Stream Index No.:	9-53-6-3				
NCDWR Surface Water Classification for Water Body		Primary Classification:	Class C						
		Supplemental Classification:	None						
Other Stream Classification:	None								
Impairments:	None								
Aquatic T&E Species?			Comments:						
NRTR Stream ID:					Buffer Rules in Effect:		N/A		
Project Includes Bridge Spanning Water Body?	No		Deck Drains Discharge Over Buffer?	No		Dissipator Pads Provided in Buffer?		N/A	
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)							

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Highway Stormwater Program STORMWATER MANAGEMENT PLAN FOR NCDOT PROJECTS

WBS Element: 34497.1.F56

TIP No.: R-2707E

County(ies): Cleveland

Page 3 of 3

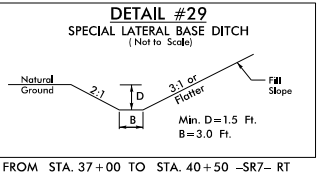
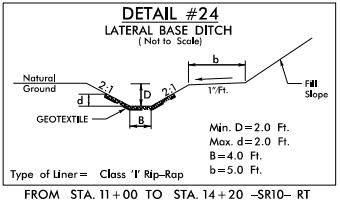
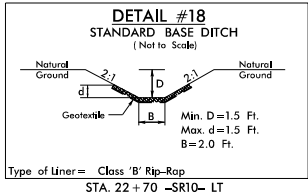
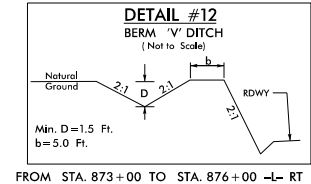
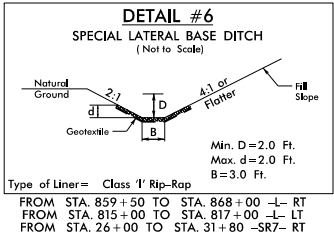
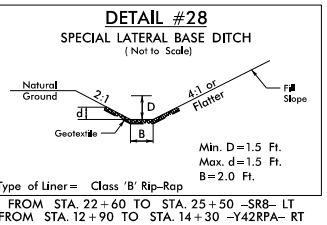
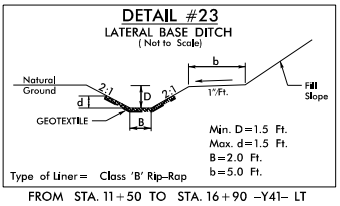
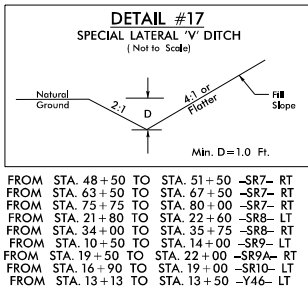
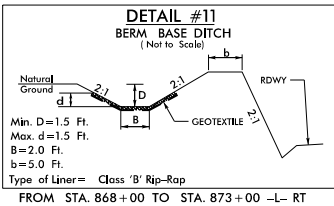
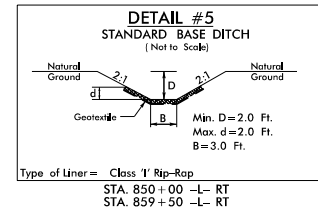
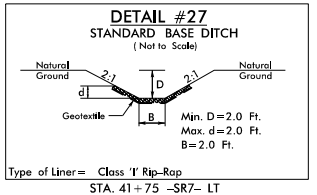
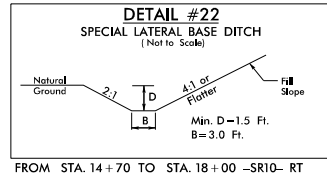
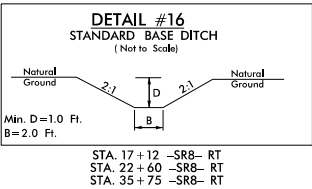
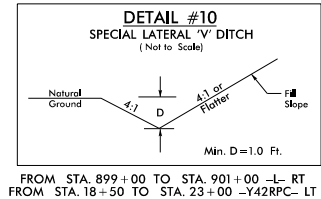
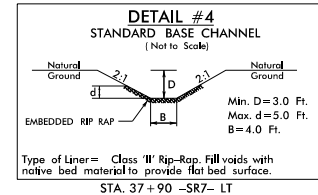
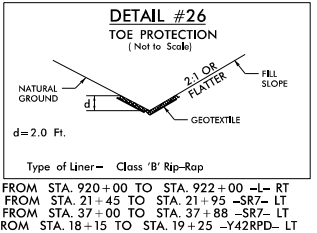
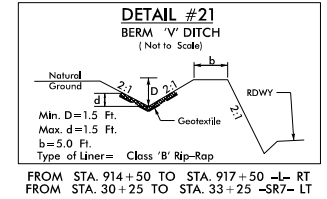
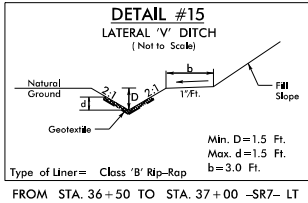
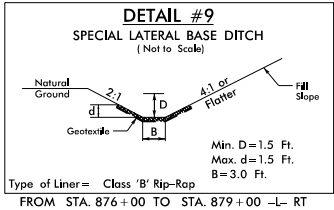
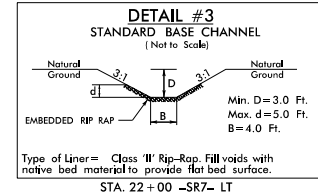
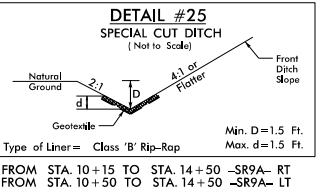
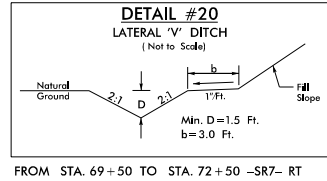
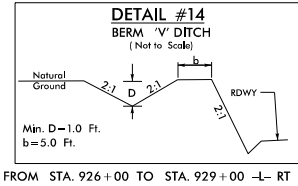
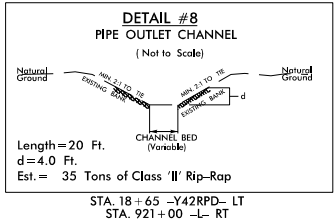
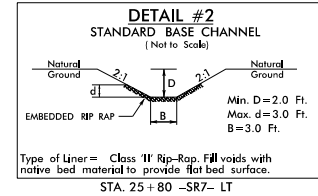
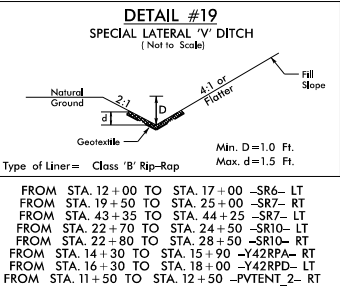
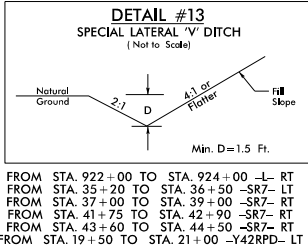
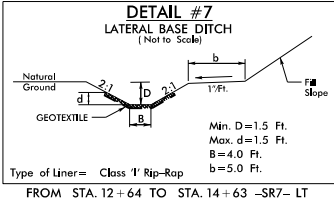
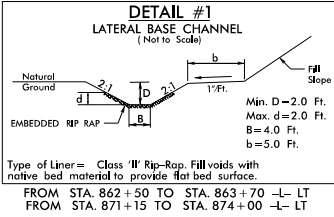
Other Best Management Practices

[illegible]

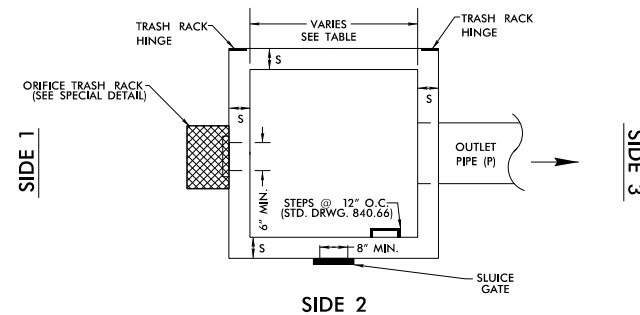
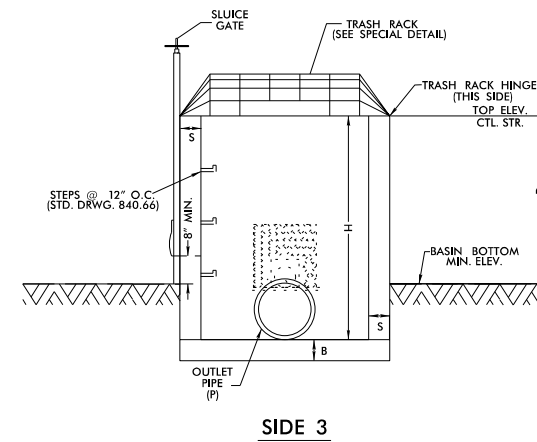
Additional Comments

PERMIT DRAWING SHEET 2 OF 22

PROJECT REFERENCE NO.	SHEET NO.
R-2707E	2D-1
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



NOT TO SCALE

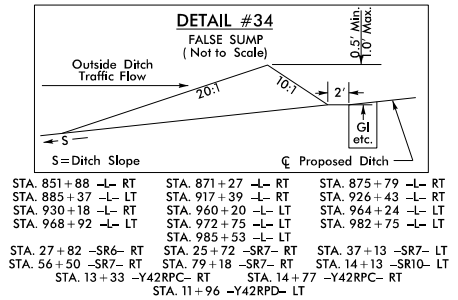
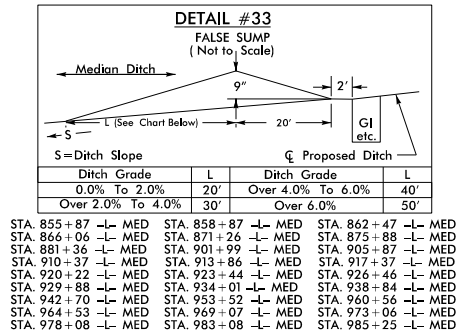
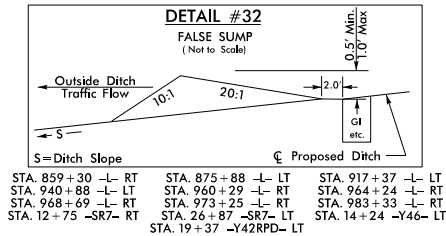
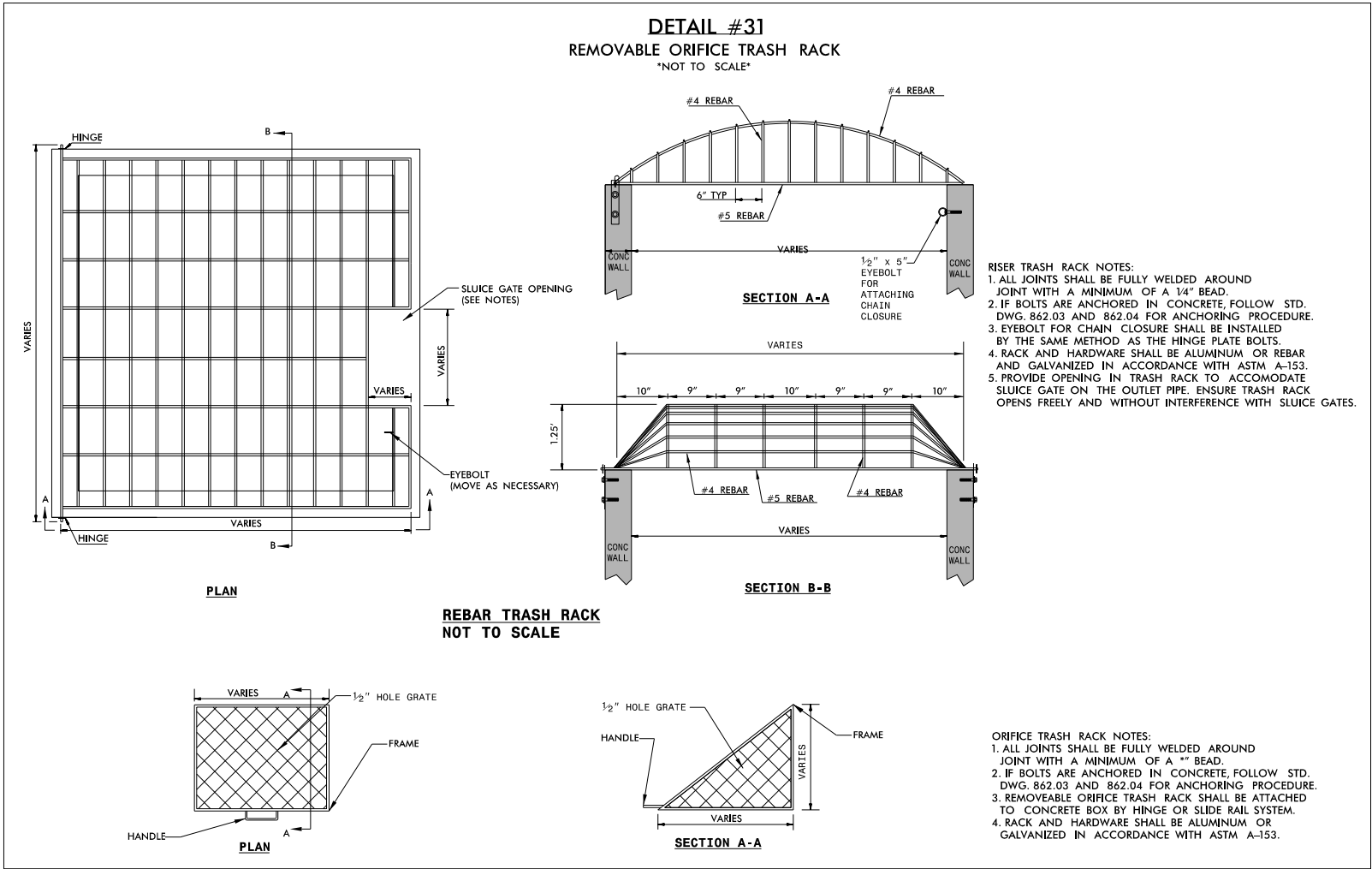


- NOTES:
1. TOP ELEVATION OF CONTROL STRUCTURE (WEIR ELEVATION) SHOULD BE SET AT THE WQV ELEVATION.
 2. 15" MINIMUM DIAMETER FOR OUTLET PIPE.
 3. 2" MINIMUM DIAMETER ORIFICE. IF ORIFICE IS GREATER THAN 6", A STEEL PLATE IS NOT REQUIRED.
 4. NO BEDDING MATERIAL TO BE USED. THEREFORE, DO NOT FOLLOW STANDARD DRAWINGS FOR METHOD OF PIPE INSTALLATION FOR OUTLET PIPE THROUGH EMBANKMENT.
 5. SLUICE GATE IS FOR MAINTENANCE AND SHOULD REMAIN CLOSED DURING NORMAL OPERATION. A GATE VALVE MAY BE USED IN LIEU OF THE 8" SLUICE GATE.
 6. SLUICE GATE SHALL PROVIDE WATER-TIGHT SEAL. PROVIDE ADEQUATE CLEARANCE FOR GATE OPERATION AND FOR PROPER SEATING OF GATE OVER PIPE.
 7. SELECT BOX STANDARD AS REQUIRED TO ACCOMMODATE SLUICE GATE AND ORIFICE TRASH RACK WIDTH.
 8. ENSURE TRASH RACK OPENS FREELY AND WITHOUT INTERFERENCE WITH SLUICE GATE.
 9. ADJUST FOOTER DIMENSIONS AS NEEDED FOR ANTI-FLOTATION.
 10. PAYMENT OF TRASH RACKS ARE INCIDENTAL TO BASIN DRAWDOWN STRUCTURE.

TRASH RACK NOT SHOWN FOR CLARITY

MINIMUM DIMENSIONS FOR DRY DETENTION BASIN DRAWDOWN STRUCTURE											
STATION	STRUCTURE NUMBER	S (INCHES) 6" MIN.	B (INCHES) 6" MIN.	BASIN BOTTOM MINIMUM ELEV.	TOP ELEVATION CONTROL STRUCTURE	MAX. STORAGE DEPTH(D) FEET	INV. ELEV. CTL. STR.	CTL. STR. DIMENSIONS (W x L x H)	ORIFICE DIAMETER (O) INCHES	ORIFICE INV. ELEV.	OUTLET PIPE DIAMETER(P) INCHES
896 + 75 -L- RT	0630	6"	18"	772.0	775.0	3.0'	770.0	5.0' X 5.0' X 5.0'	2.0"	772.0	24"
19 + 22 -Y42RPB- LT	0619	6"	18"	764.0	768.0	4.0'	762.0	5.0' X 5.0' X 6.0'	2.0"	724.0	24"
20 + 25 -Y42RPC- RT	0635	6"	18"	773.0	775.0	2.0'	770.0	5.0' X 5.0' X 5.0'	2.0"	773.0	24"

PROJECT REFERENCE NO.	SHEET NO.
R-2707E	2D-3
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



PERMIT DRAWING SHEET 5 OF 22

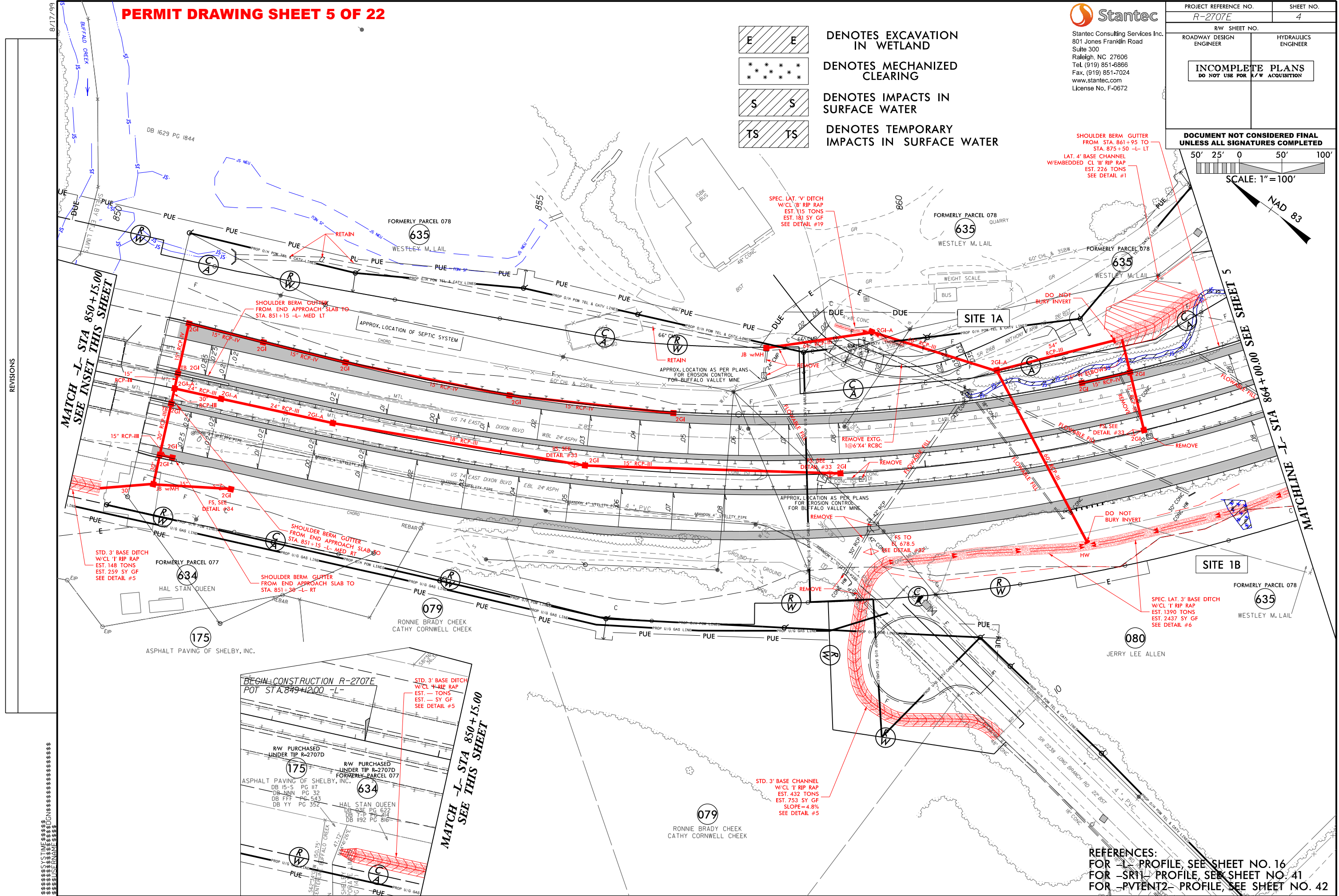
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PROJECT REFERENCE NO.	SHEET NO.
R-2707E	4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	

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- E E** DENOTES EXCAVATION
IN WETLAND
- * * * *** DENOTES MECHANIZED
CLEARING
- S S** DENOTES IMPACTS IN
SURFACE WATER
- TS TS** DENOTES TEMPORARY
IMPACTS IN SURFACE WATER



REFERENCES:
FOR -L- PROFILE, SEE SHEET NO. 16
FOR -SR1- PROFILE, SEE SHEET NO. 41
FOR -PVNT2- PROFILE, SEE SHEET NO. 42

PERMIT DRAWING SHEET 6 OF 22

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PROJECT REFERENCE NO. <i>R-2707E</i>		SHEET NO. 4	
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ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION			

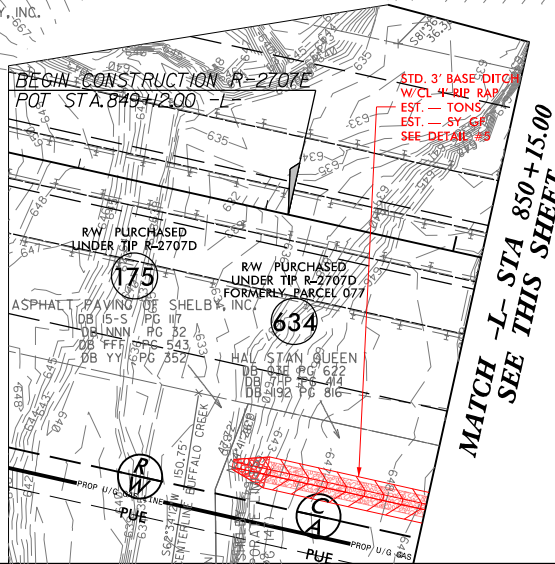
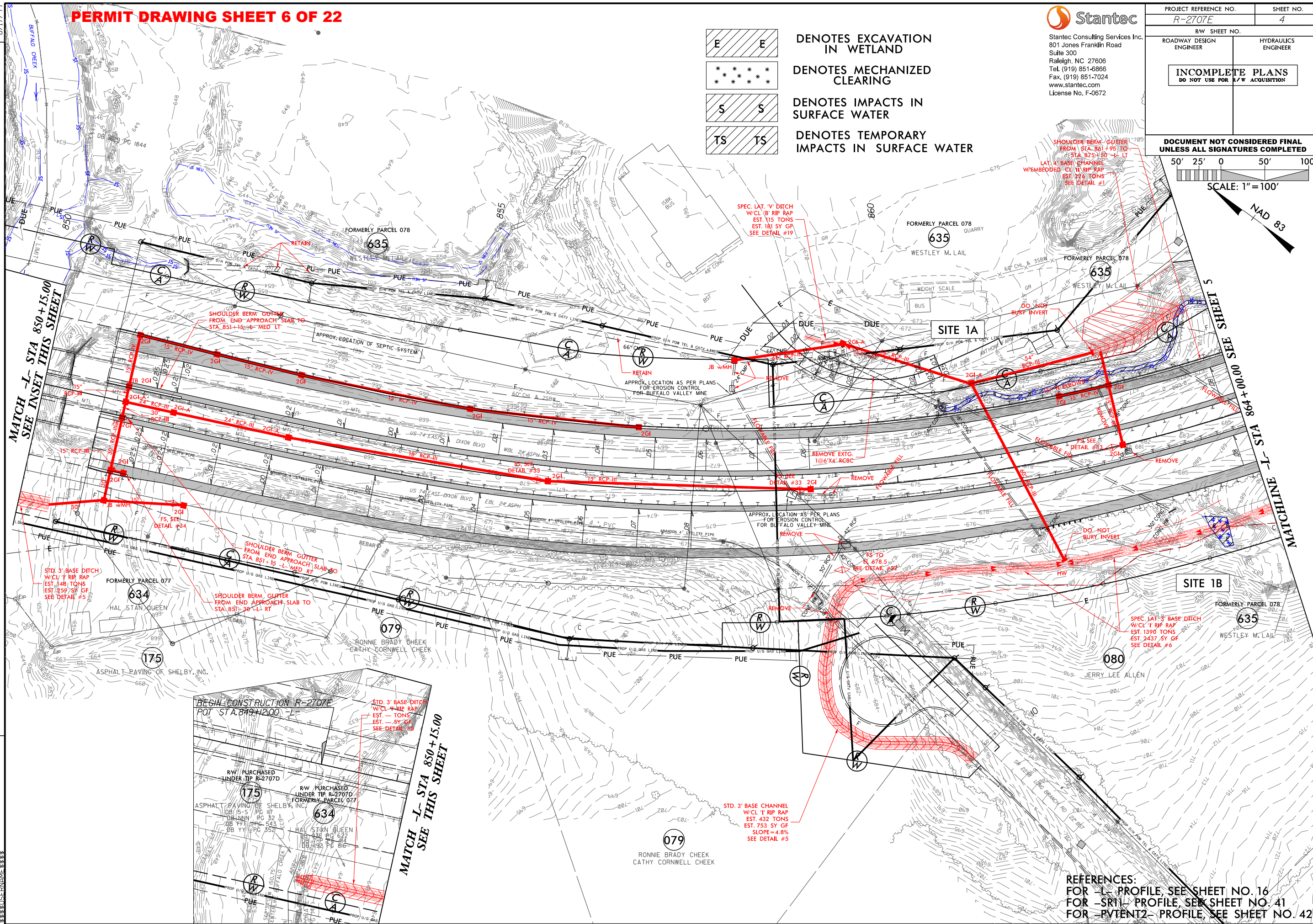
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50' 25' 0 50' 100'

SCALE: 1"=100'

NAD 83

- E E DENOTES EXCAVATION
IN WETLAND
- * * * * * DENOTES MECHANIZED
CLEARING
- S S DENOTES IMPACTS IN
SURFACE WATER
- TS TS DENOTES TEMPORARY
IMPACTS IN SURFACE WATER

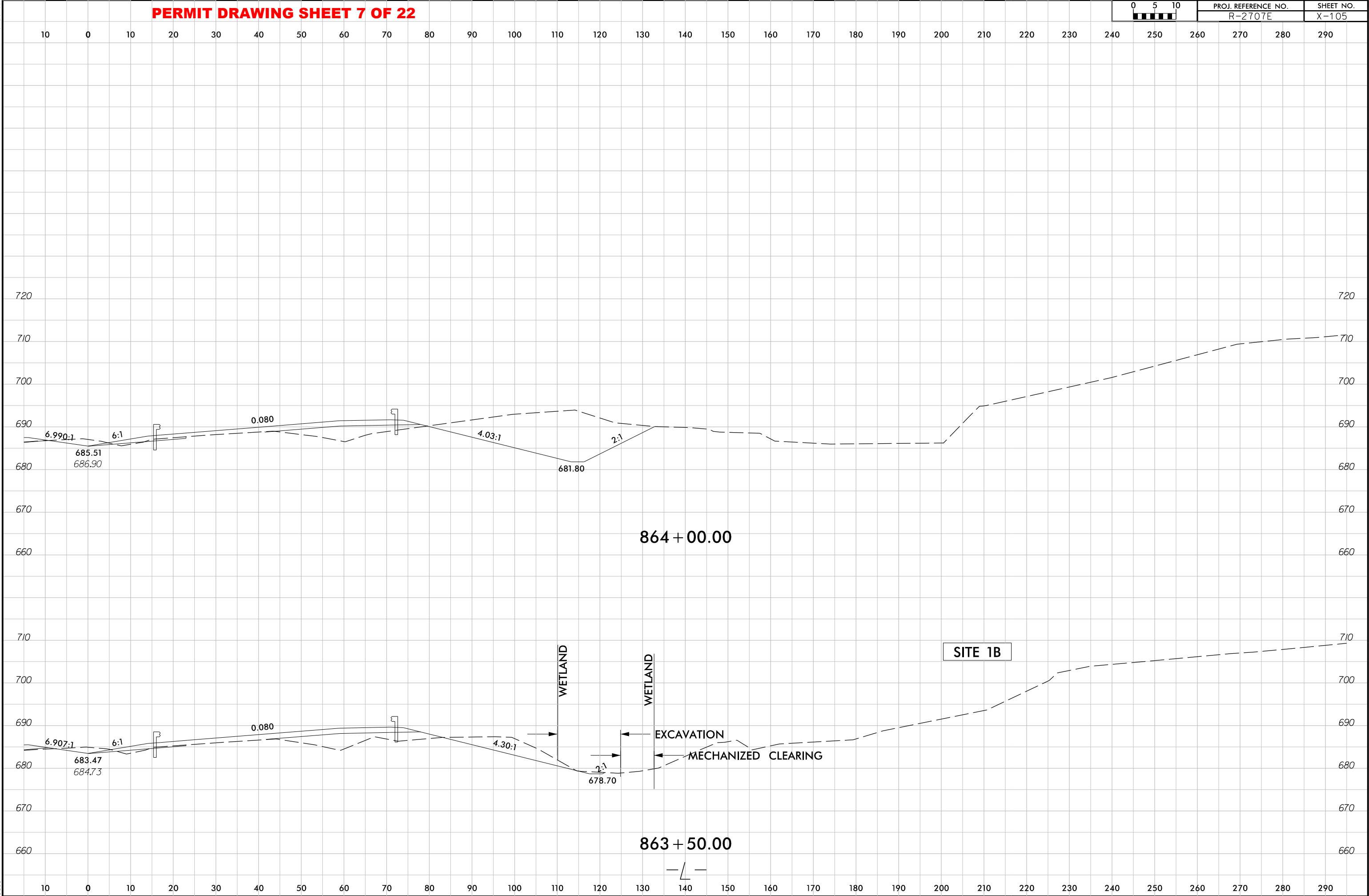


REFERENCES:
FOR -L- PROFILE, SEE SHEET NO. 16
FOR -SR11- PROFILE, SEE SHEET NO. 41
FOR -PVNT2- PROFILE, SEE SHEET NO. 42

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PERMIT DRAWING SHEET 7 OF 22

05 0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2707E	X-105

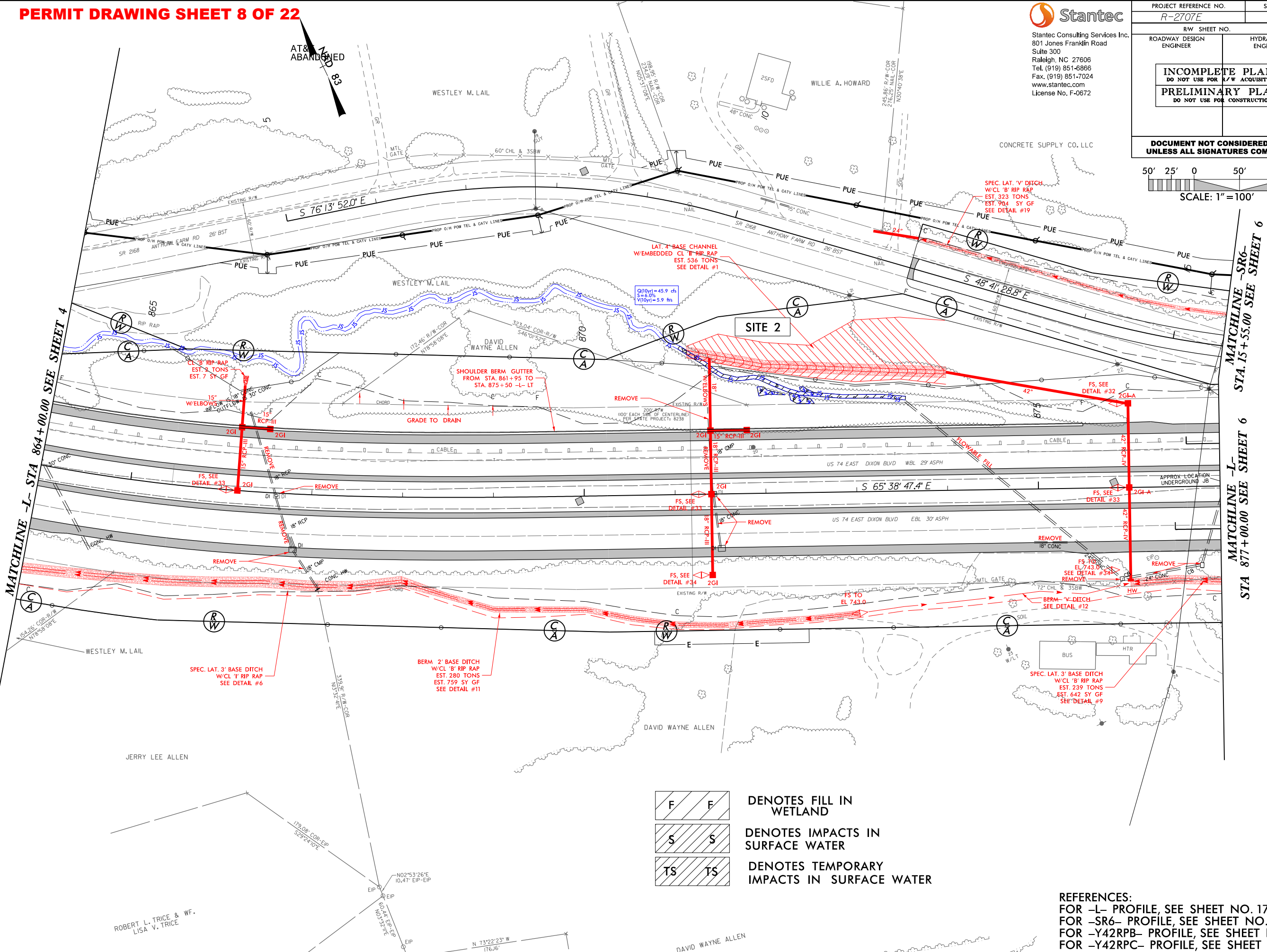
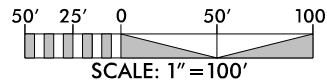


PERMIT DRAWING SHEET 8 OF 22



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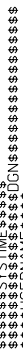
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R-2707E		5	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION			
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
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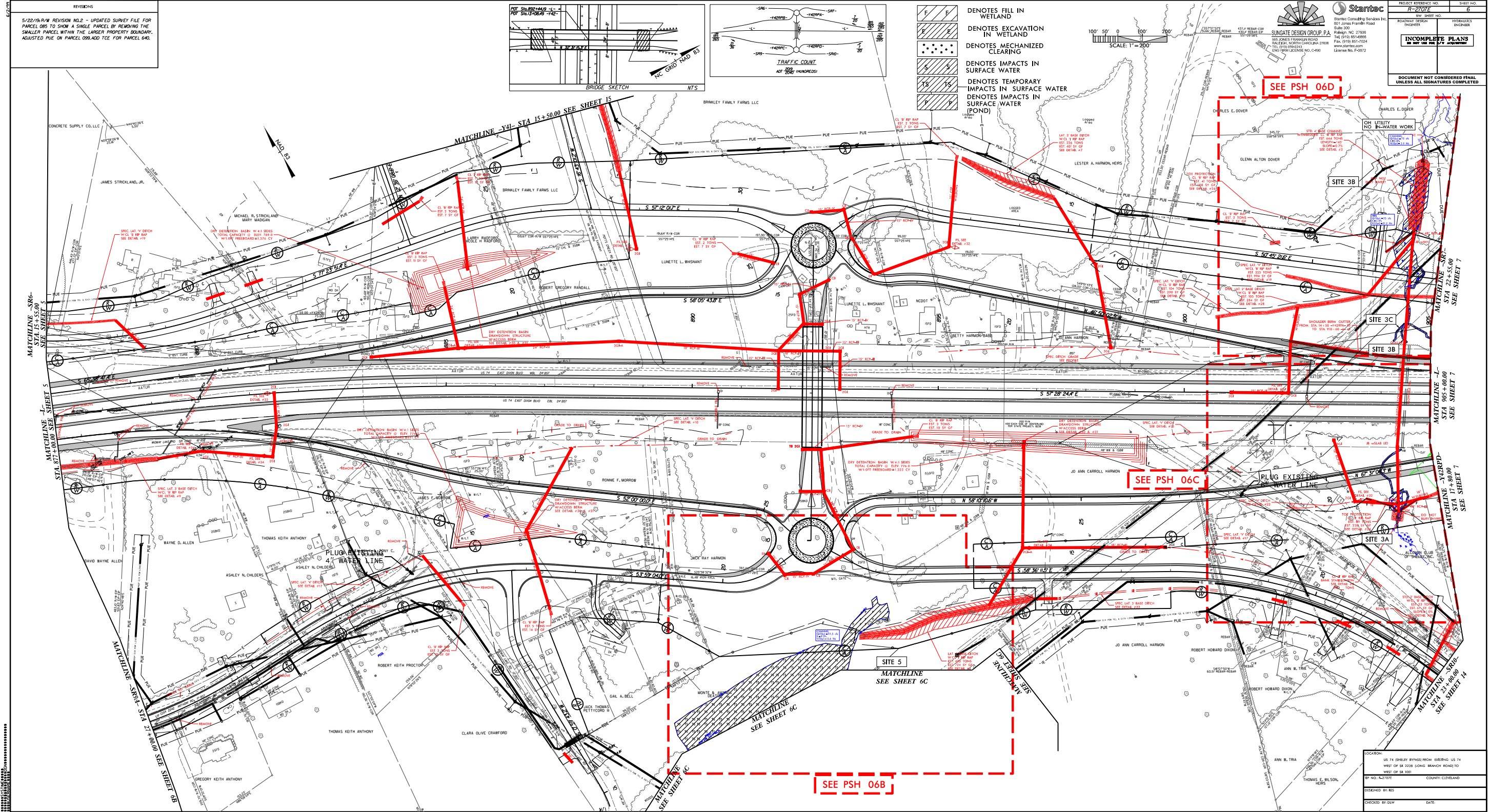


F	F
S	S
TS	TS

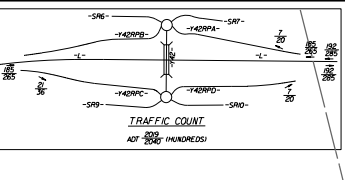
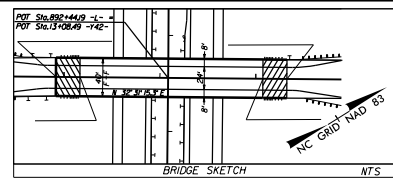
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER

REFERENCES:
FOR -L- PROFILE, SEE SHEET NO. 17
FOR -SR6- PROFILE, SEE SHEET NO. 34
FOR -Y42RPB- PROFILE, SEE SHEET NO. 28
FOR -Y42RPC- PROFILE, SEE SHEET NO. 29

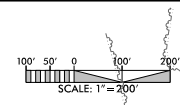




REVISIONS	
5/22/19 R/W REVISION NO. 2 - UPDATED SURVEY FILE FOR PARCEL 065 TO SHOW A SINGLE PARCEL BY REMOVING THE SMALLER PARCEL WITHIN THE LARGER PROPERTY BOUNDARY. ADJUSTED PUE ON PARCEL 065 TO TCE FOR PARCEL 640.	



- Denotes FILL IN WETLAND
- Denotes EXCAVATION IN WETLAND
- Denotes MECHANIZED CLEARING
- Denotes IMPACTS IN SURFACE WATER
- Denotes TEMPORARY IMPACTS IN SURFACE WATER
- Denotes IMPACTS IN SURFACE WATER (POND)



Stantec
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100 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27608
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License No. F-50872

PROJECT REFERENCE NO. **R-2707C**

ROADWAY DESIGN
INCHES

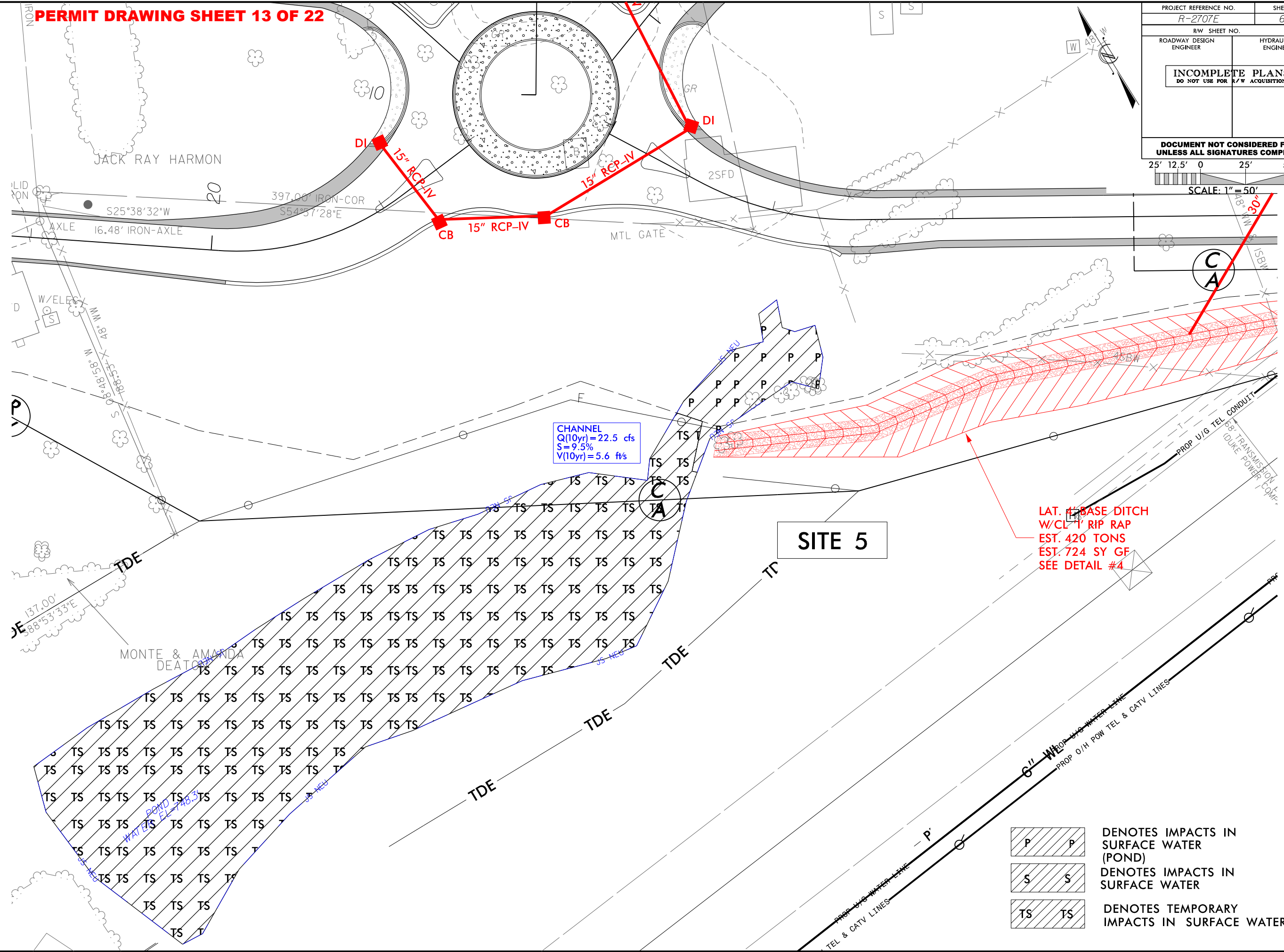
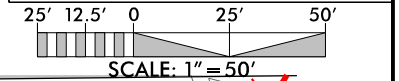
INCOMPLETE PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

LOCATION:	US 74 (SHIRLEY BYPASS FROM ENTERING US 74 WEST OF SR 2226 (LONG BRANCH ROAD) TO WEST OF SR 100)	COUNTY: CLEVELAND
DESIGNED BY:	RES	
CHECKED BY:	DEW	DATE:

PERMIT DRAWING SHEET 13 OF 22

PROJECT REFERENCE NO.		SHEET NO.	
R-2707E		6B	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION			
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			



- | | | |
|--|----|--|
| | P | DENOTES IMPACTS IN SURFACE WATER (POND) |
| | S | |
| | TS | DENOTES TEMPORARY IMPACTS IN SURFACE WATER |
| | TS | |

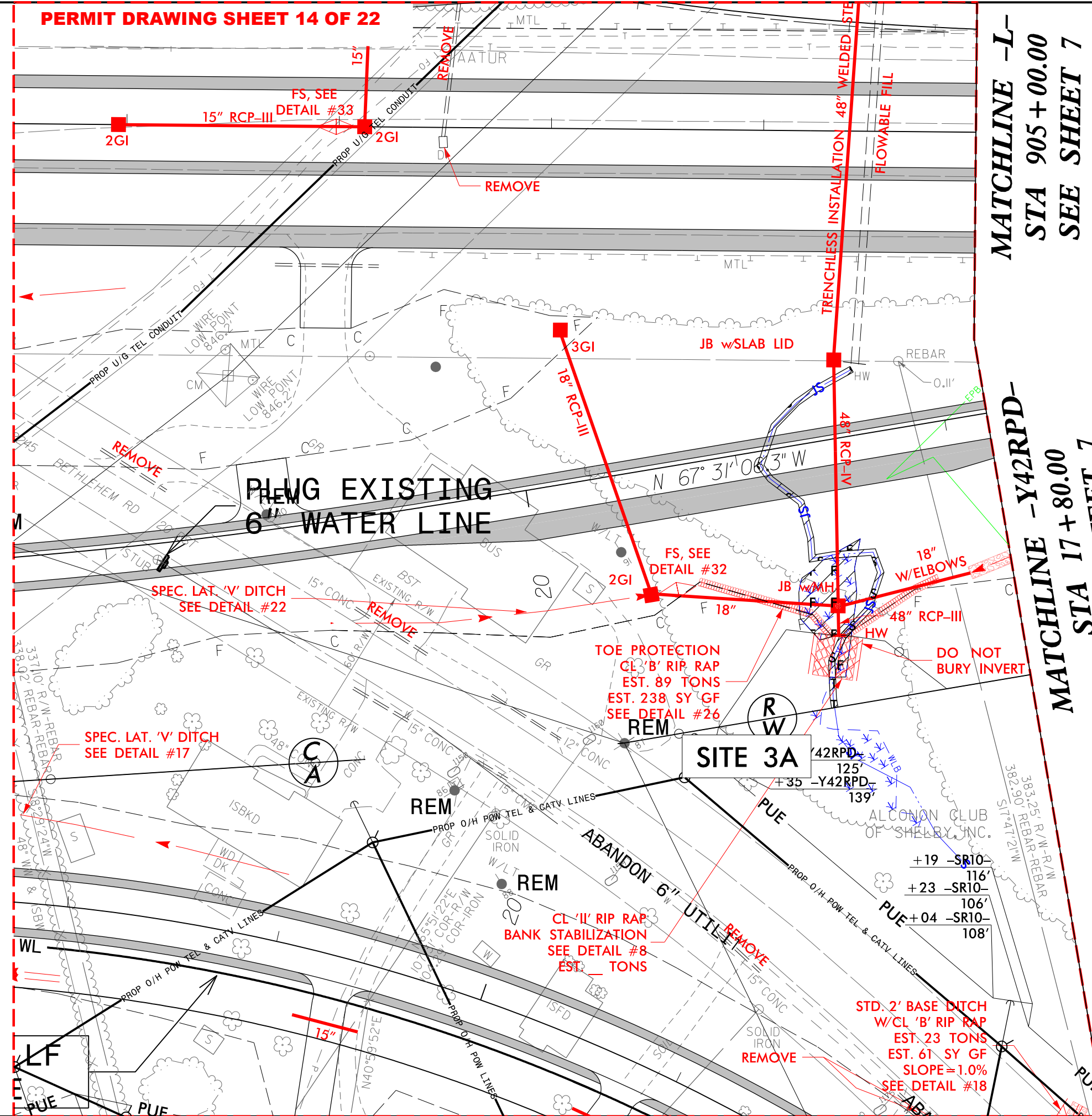
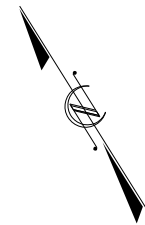
8/17/99

PERMIT DRAWING SHEET 14 OF 22

MATCHLINE -L-
STA 905+00.00
SEE SHEET 7

MATCHLINE -Y42RPD-
STA 17+80.00
SEE SHEET 7

PROJECT REFERENCE NO. R-2707E	SHEET NO. 6C
R/W SHEET NO. ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
25' 12.5' 0 25' 50' SCALE: 1" = 50'	



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

PERMIT DRAWING SHEET 15 OF 22

CHARLES E. DOVER

CHARLES E. DOVER

GLENN ALTON DOVER

OH UTILITY
NO IN-WATER WORK

STD. 4' BASE CHANNEL
W/EMBEDDED CL 'II' RIP RAP
EST. 644 TONS
LENGTH=145'
SLOPE=0.7%
SEE DETAIL #3

CHANNEL
Q(10yr)=75 cfs
S=2.0%
V(10yr)=3.9 ft/s

SITE 3B

DO NOT
BURY INVERT

CL 'B' RIP RAP
EST. 2 TONS
EST. 7 SY GF

PIPE
Q(10yr)= 75 cfs
S=4.5%
V(10yr)=21.2 ft/s

SPEC. LAT. 'V' DITCH
W/CL 'B' RIP RAP
EST. 355 TONS
EST. 994 SY GF
SEE DETAIL #19

SPEC. LAT. 2' BASE DITCH
W/CL 'B' RIP RAP
EST. 105 TONS
EST. 284 SY GF
SEE DETAIL #28

SHOULDER BERM GUTTER
FROM STA. 14+50 -Y42RPA- RT
TO STA. 910+60 -L- LT

SITE 3C

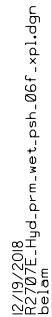
SITE 3D

SITE 3B

MATCHLINE -SR7-
STA 22+55.00
SEE SHEET 7

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

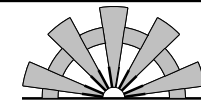
PROJECT REFERENCE NO. <i>R-2707E</i>		SHEET NO. <i>6D</i>	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION			
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25' 12.5' 0 25' 50'			
SCALE: 1" = 50'			



8/17/99

REVISIONS

8/17/99

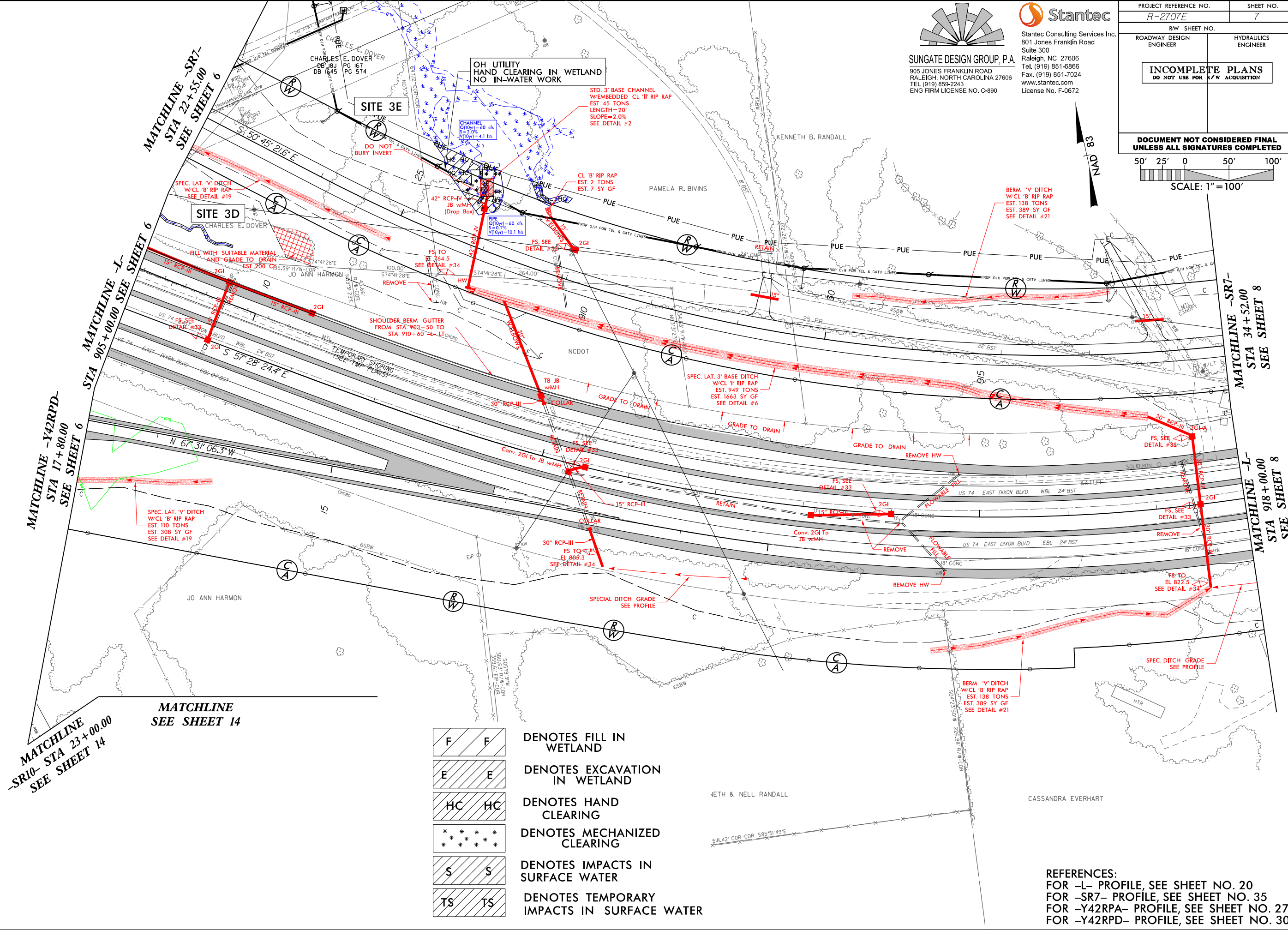
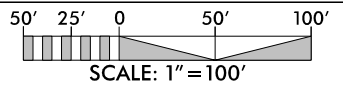


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Fax. (919) 851-7024
www.stantec.com
License No. F-0672

PROJECT REFERENCE NO.		SHEET NO.
R-2707E		7
RW SHEET NO.		HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER		
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION		



F	F
E	E
HC	HC
*	*
S	S
TS	TS

DENOTES FILL IN WETLAND

DENOTES EXCAVATION IN WETLAND

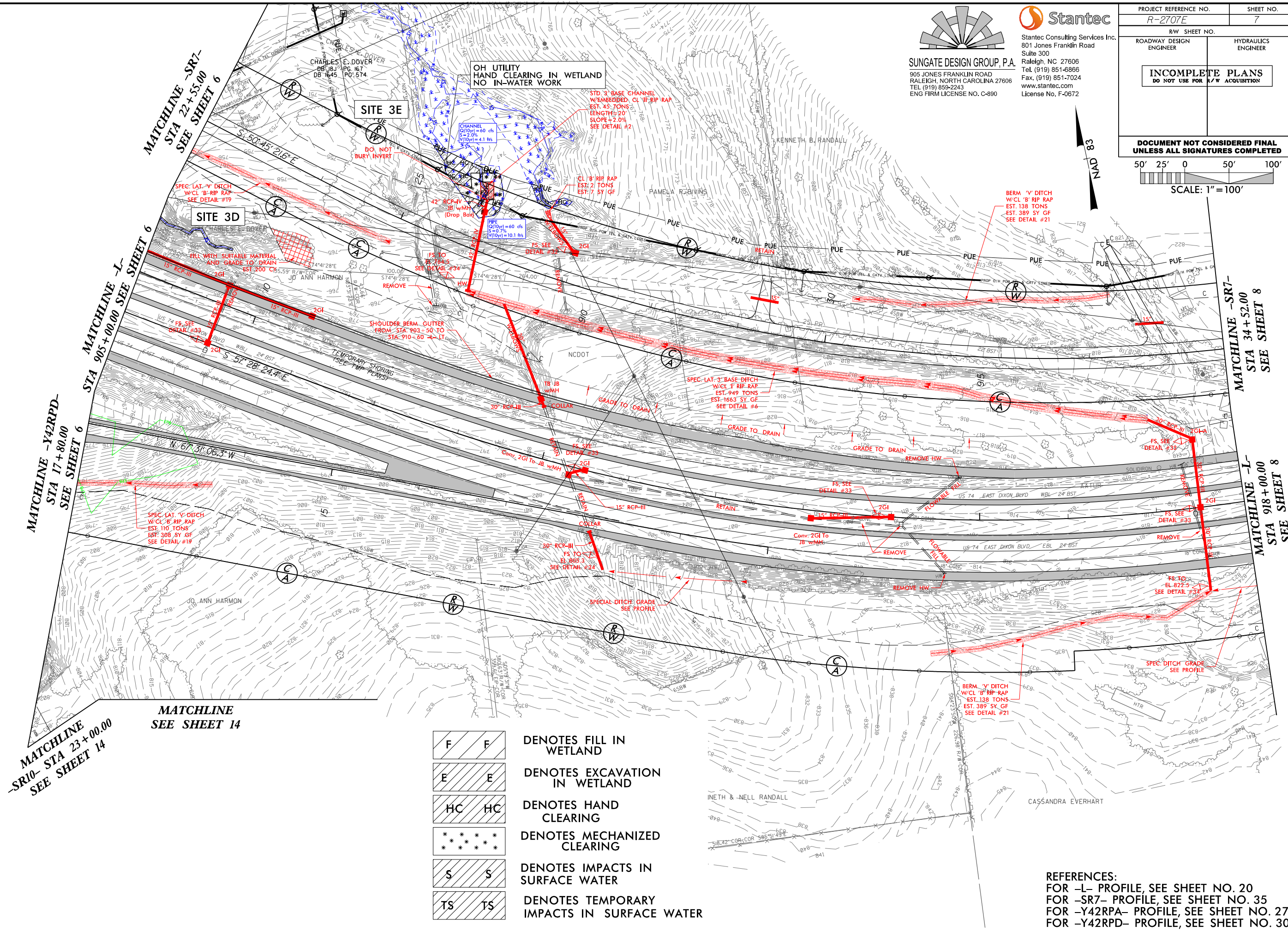
DENOTES HAND CLEARING

DENOTES MECHANIZED CLEARING

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

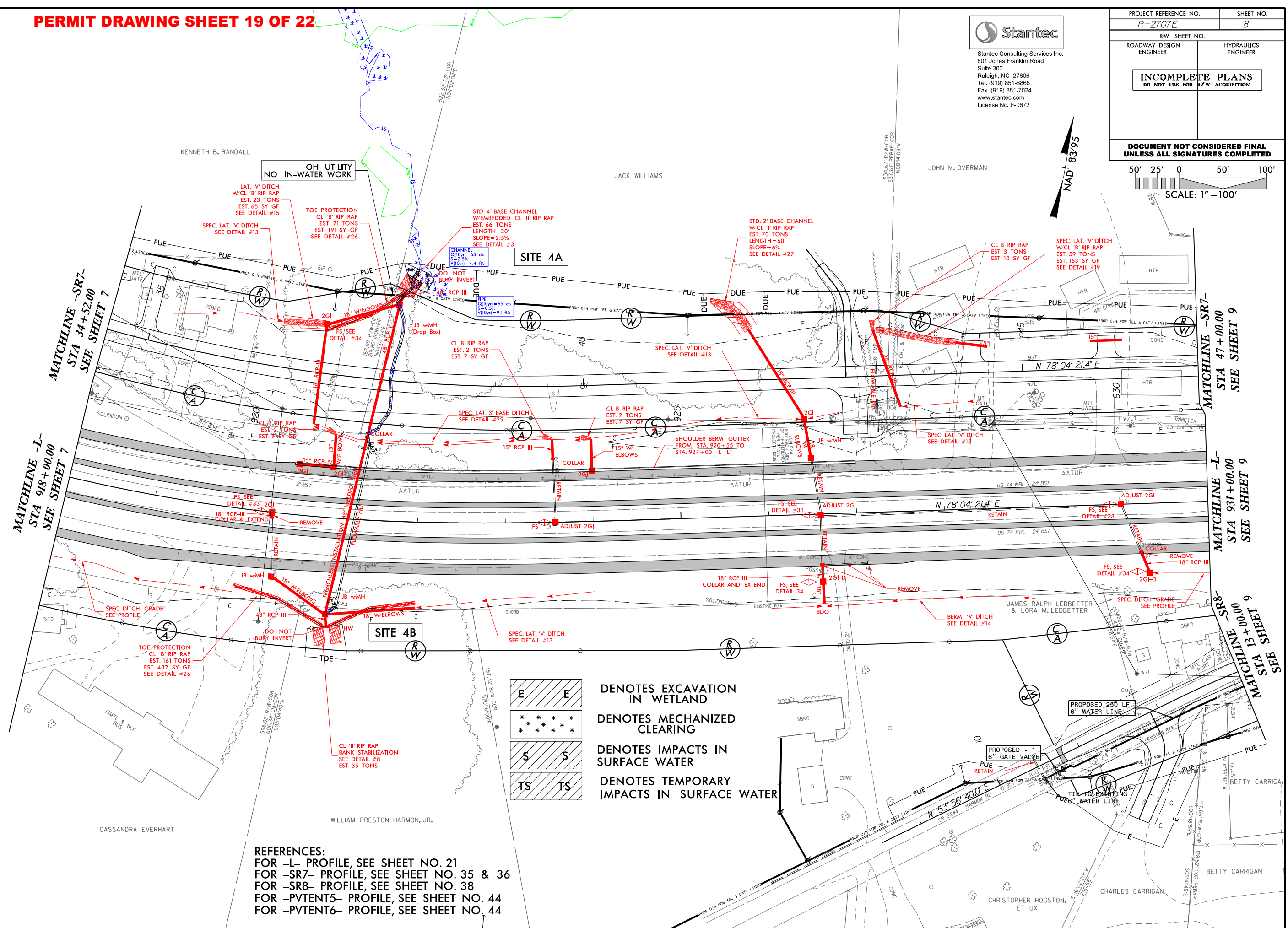
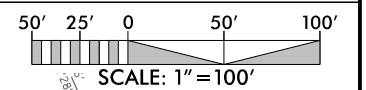
REFERENCES:
FOR -L- PROFILE, SEE SHEET NO. 20
FOR -SR7- PROFILE, SEE SHEET NO. 35
FOR -Y42RPA- PROFILE, SEE SHEET NO. 27
FOR -Y42RPD- PROFILE, SEE SHEET NO. 30



REFERENCES:
FOR -L- PROFILE, SEE SHEET NO. 20
FOR -SR7- PROFILE, SEE SHEET NO. 35
FOR -Y42RPA- PROFILE, SEE SHEET NO. 27
FOR -Y42RPD- PROFILE, SEE SHEET NO. 30



PROJECT REFERENCE NO.		SHEET NO.
R-2707E		8
RW SHEET NO.		
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION		
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		



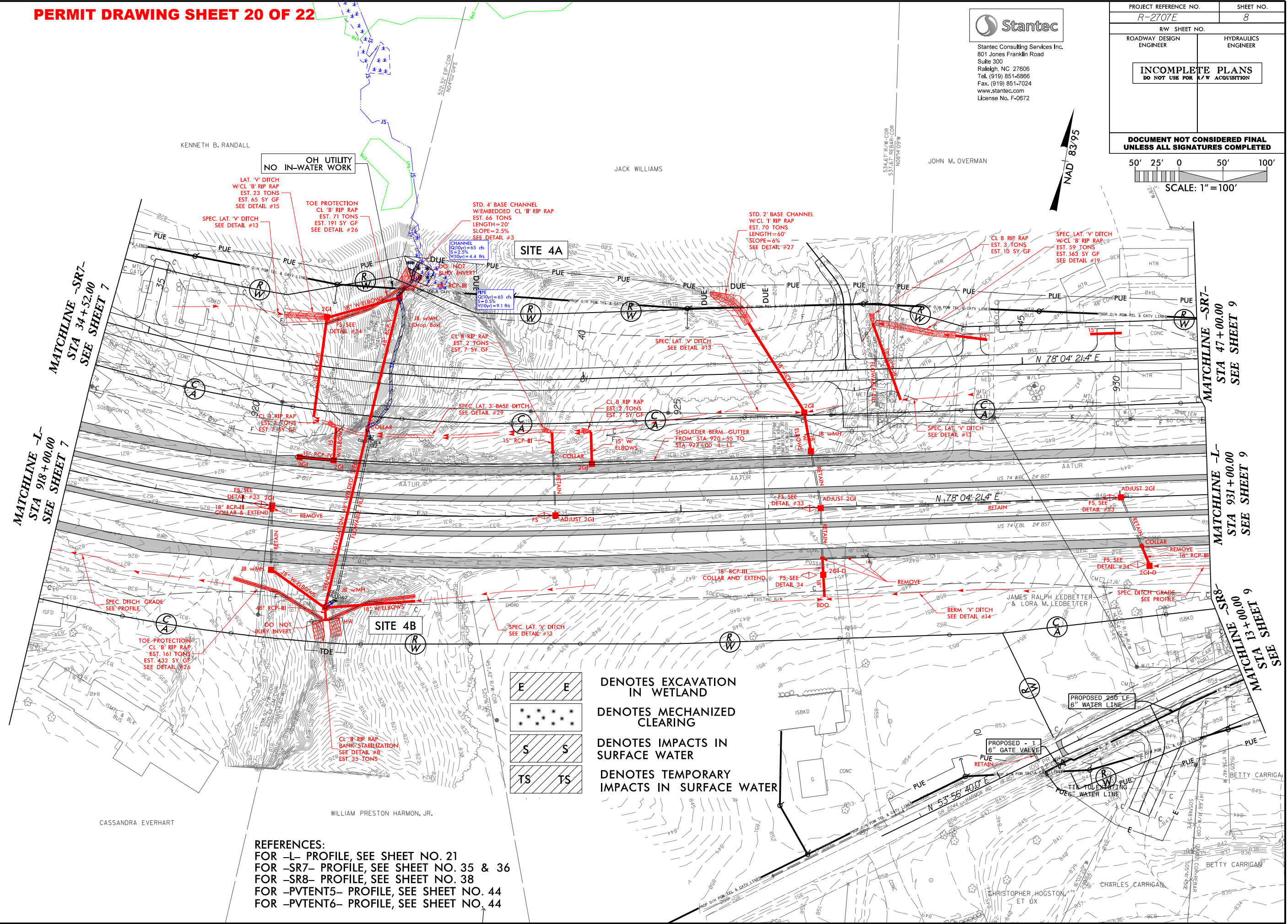
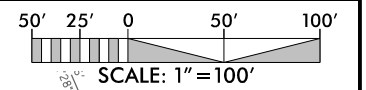
- DENOTES EXCAVATION IN WETLAND
- DENOTES MECHANIZED CLEARING
- DENOTES IMPACTS IN SURFACE WATER
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER

REFERENCES:
FOR -L- PROFILE, SEE SHEET NO. 21
FOR -SR7- PROFILE, SEE SHEET NO. 35 & 36
FOR -SR8- PROFILE, SEE SHEET NO. 38
FOR -PVTENT5- PROFILE, SEE SHEET NO. 44
FOR -PVTENT6- PROFILE, SEE SHEET NO. 44

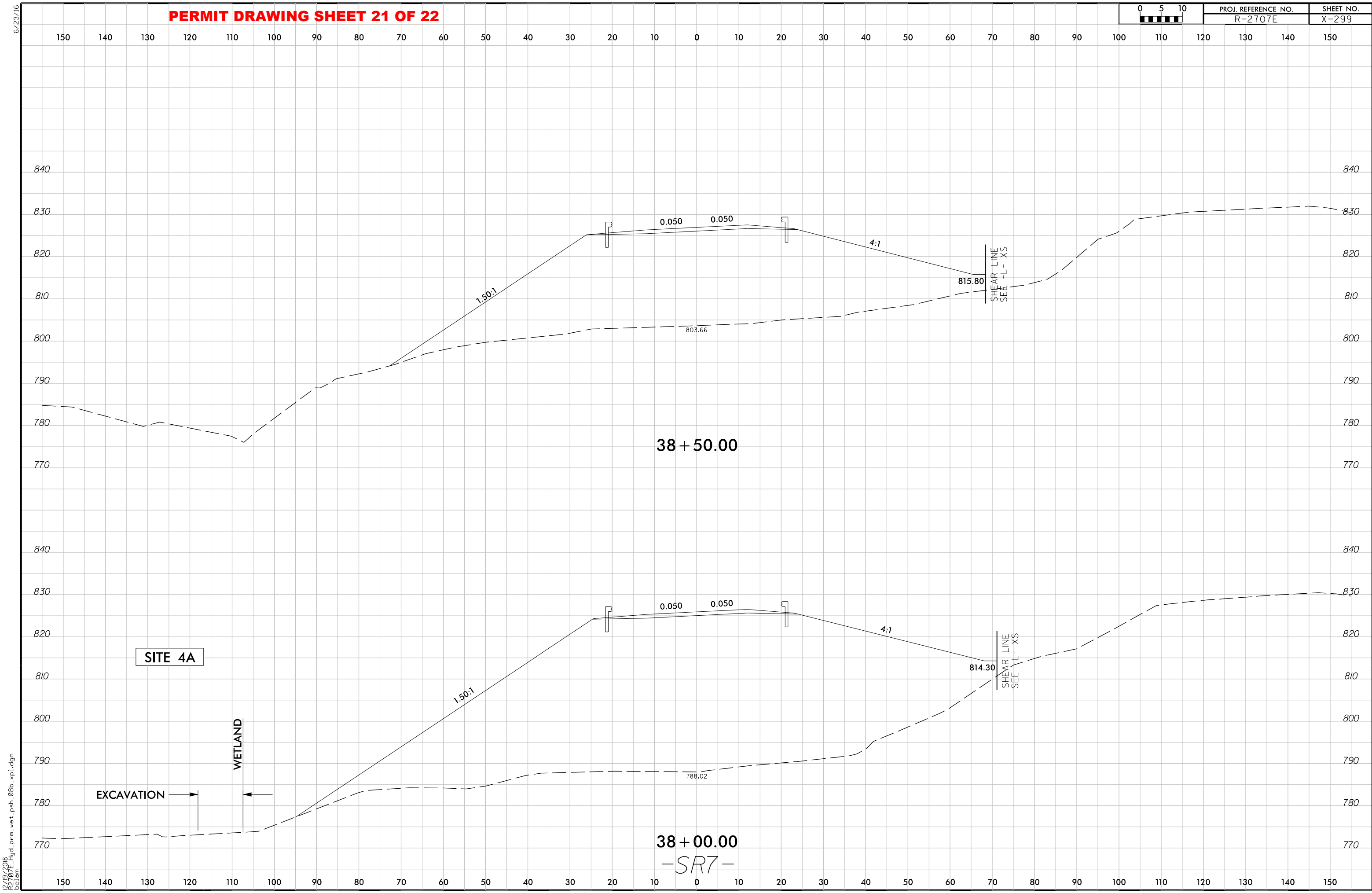
PERMIT DRAWING SHEET 20 OF 22



PROJECT REFERENCE NO. <i>R-2707E</i>		SHEET NO. <i>8</i>	
R/W SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION			
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REFERENCES:
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FOR -SR8- PROFILE, SEE SHEET NO. 38
FOR -PVTENT5- PROFILE, SEE SHEET NO. 44
FOR -PVTENT6- PROFILE, SEE SHEET NO. 44



WETLAND AND SURACE WATER IMPACTS 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)
1A	860+55 to 863+90-L-LT	54" RCP						0.03	< 0.01	336	28	
1B	863+28 to 863+51-L-RT	LATERAL DITCH			0.02							
2	871+05 to 873+50-L-LT	ROADWAY FILL	< 0.01					0.02	< 0.01	253	10	
3A	18+36 to 18+98-Y42RPD-	48" RCP	0.02					0.01	< 0.01	193	14	
		BANK STABILIZATION						< 0.01		20		
3B	21+58 to 23+47-SR7-	48" RCP	0.08					0.01		191		
		OUTLET CHANNEL			0.12			< 0.01	< 0.01	7	19	
3C	21+82 to 22+00-SR7-RT	ROADWAY FILL						< 0.01		43		
3D	22+00 to 22+12-SR7-RT	ROADWAY FILL						0.01		159		
3E	25+39 to 26+00-SR7-LT	42" RCP	0.01					< 0.01		9		
		OUTLET CHANNEL			< 0.01	0.02		< 0.01	< 0.01	24	10	
		OH UTILITY					0.03					
4A	37+54 to 38+18-SR7-	48" RCP						0.01		192		
		OUTLET CHANNEL			< 0.01	0.01		< 0.01	< 0.01	21	11	
4B	921+00 to 921+15-L-LT	48" RCP						< 0.01		16		
5	10+86 to 11+33-SR10-RT	ROADWAY FILL (POND)						0.06	0.87			
SHEET TOTALS*:			0.13		0.14	0.03	0.03	0.18	0.88	1464	92	0

*Rounded totals are sum of actual impacts

NOTES:

Site 1B: Total Take Wetland

Site 3B: Total Take Wetland

Site 5: JS Non-Mitigable Pond.

NC DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

8-31-22

CLEVELAND

R-2707E

34497.1.F56

SHEET

22

OF

22