Please fill out all yellow cells as completely as possible. Use pick lists where provided. For more information on the NCDOT Stormwater Management Plan form, please refer to the document, NCDOT Stormwater Best Management Practices Toolbox (2014).
If the project drains to multiple water bodies, please drag the print area down such that Water Bodies 2 through 6 print on Page 2

North Carolina Department of Transportation
Highway Stormwater Program
STORMWATER MANAGEMENT PLAN
FOR NCDOT PROJECTS

(Version 2.08; Released April 2018)

WBS Element:	34232.1.6	TIP No.:	I-4400BB	County(ies):	Henderson	Page 1 of 10

General Project Information

WBS Element:	34232.1.6	**TIP Number:**	I-4400BB	**Project Type:**	Roadway Widening	**Date:** 3/27/2019
NCDOT Contact:	Wanda H. Austin, PE CPM	**Contractor / Designer:**	Jon Ford, PE			
Address:	253 Webster Road Sylva, NC 28779	**Address:**	1800 Associates Lane, Suite E Charlotte, NC 28217			
Phone:	828-586-2141	**Phone:**	704-357-0488			
Email:	whaustin@ncdot.gov	**Email:**	jcford@vaughnmelton.com			
City/Town:	Hendersonville	**County(ies):**	Henderson			
River Basin(s):	French Broad	**CAMA County?**	No			
Wetlands within Project Limits?	Yes					

Project Description

Project Length (lin. miles or feet):	5.11	**Surrounding Land Use:**	Suburban
	Proposed Project	**Existing Site**	
Project Built-Upon Area (ac.)	ac.	ac.	
Typical Cross Section Description:	6-lane divided interstate highway with a closed median and shoulders	4-lane divided interstate highway with a grass median and shoulders	
Annual Avg Daily Traffic (veh/hr/day):	Design/Future: 117,900 Year: 2040	Existing: 72,000 Year: 2019	

General Project Narrative: (Description of Minimization of Water Quality Impacts)

I-4400BB involves the widening of Interstate I-26 from a 4-lane, median-divided facility to a 6-lane, median-divided facility from US 64 (Chimney Rock Road) to a point approximately 1,000 ft west of Naples Road (SR 1534), allowing it to tie into STIP Project I-4400C. The existing typical section is a 4-lane, median-divided facility consisting of 12-foot travel lanes with grassed median. Existing roadway will be replaced with a 6-lane, median-divided facility consisting of 12-foot travel lanes with paved median. Jurisdictional features including wetlands and streams and a crossing of Clear Creek are present within project limits. The proposed roadway improvements will require the majority of the existing drainage system to be replaced and new roadway ditches. Rip Rap pads were used at pipes outlets throughout the project to reduce water velocities into wetlands and jurisdictional streams. The Sediment and Erosion Control Plan for I-4400BB has been designed using Environmentally Sensitive Area (ESA) criteria for jurisdictional streams flowing into the French Broad River. ESA designation requires special procedures to be followed for construction activities within 50' of each designated stream. Post Construction Stormwater Program will be implemented throughout I-4400BB and the additional sections of the I-4400 corridor to the maximum extent practical.

Waterbody Information

Surface Water Body (1):	SAZ - UT to Cherry Branch	**NCDWR Stream Index No.:**	6-55-11-15		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C		
		Supplemental Classification:	None		
Other Stream Classification:	None				
Impairments:	None				
Aquatic T&E Species?	No	Comments:			
NRTR Stream ID:	SAZ	**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)					

WBS Element: 34232.1.6 **TIP No.:** I-4400BB **County(ies):** Henderson

Additional Waterbody Information

Surface Water Body (2):	SBA - UT to Cherry Branch		**NCDWR Stream Index No.:**	6-55-11-15	
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C		
		Supplemental Classification:	None		
Other Stream Classification:	None				
Impairments:	None				
Aquatic T&E Species?	No	Comments:			
NRTR Stream ID:	SBA			**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)					

Surface Water Body (3):	SBC - Allen Branch		**NCDWR Stream Index No.:**	6-55-11-14	
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C		
		Supplemental Classification:	None		
Other Stream Classification:	None				
Impairments:	None				
Aquatic T&E Species?	No	Comments:			
NRTR Stream ID:	SBC			**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)					

Surface Water Body (4):	SBD- Clear Creek		**NCDWR Stream Index No.:**	6-55-11-(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?	No	Comments:			
NRTR Stream ID:	SBD			**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?**	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)					

Surface Water Body (5):	SBE - UT Tributary to Clear Creek		**NCDWR Stream Index No.:**	6-55-11-(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?	No	Comments:			
NRTR Stream ID:	SBE			**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)					

WBS Element: 34232.1.6 **TIP No.:** I-4400BB **County(ies):** Henderson

Additional Waterbody Information

Surface Water Body (6):	SBF - UT Tributary to Mud Creek		**NCDWR Stream Index No.:**	6-55	
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C		
		Supplemental Classification:	None		
Other Stream Classification:	None				
Impairments:	None				
Aquatic T&E Species?	No	Comments:			
NRTR Stream ID:	SBF			**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)					

Surface Water Body (7):	SBG - UT Tributary to Mud Creek		**NCDWR Stream Index No.:**	6-55	
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C		
		Supplemental Classification:	None		
Other Stream Classification:	None				
Impairments:	None				
Aquatic T&E Species?	No	Comments:			
NRTR Stream ID:	SBG			**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)					

Surface Water Body (8):	SBH - UT Tributary to Mud Creek		**NCDWR Stream Index No.:**	6-55	
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C		
		Supplemental Classification:	None		
Other Stream Classification:	None				
Impairments:	None				
Aquatic T&E Species?	No	Comments:			
NRTR Stream ID:	SBH			**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)					

Surface Water Body (9):	SBI - UT Tributary to Mud Creek		**NCDWR Stream Index No.:**	6-55	
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C		
		Supplemental Classification:	None		
Other Stream Classification:	None				
Impairments:	None				
Aquatic T&E Species?	No	Comments:			
NRTR Stream ID:	SBI			**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)					

WBS Element: 34232.1.6 **TIP No.:** I-4400BB **County(ies):** Henderson

Additional Waterbody Information

Surface Water Body (10):	SBY - UT Tributary to Mud Creek		**NCDWR Stream Index No.:**	6-55	
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C		
		Supplemental Classification:	None		
Other Stream Classification:	None				
Impairments:	None				
Aquatic T&E Species?	No	Comments:			
NRTR Stream ID:	SBY			**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)					

Surface Water Body (11):	SBO - UT Tributary to Mud Creek		**NCDWR Stream Index No.:**	6-55	
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C		
		Supplemental Classification:	None		
Other Stream Classification:	None				
Impairments:	None				
Aquatic T&E Species?	No	Comments:			
NRTR Stream ID:	SBO			**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)					

Surface Water Body (12):	SBP - Featherstone Creek		**NCDWR Stream Index No.:**	6-55-12	
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C		
		Supplemental Classification:	None		
Other Stream Classification:	None				
Impairments:	None				
Aquatic T&E Species?	No	Comments:			
NRTR Stream ID:	SBP			**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)					

Surface Water Body (13):	SBQ - UT Tributary to Mud Creek		**NCDWR Stream Index No.:**	6-55	
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C		
		Supplemental Classification:	None		
Other Stream Classification:	None				
Impairments:	None				
Aquatic T&E Species?	No	Comments:			
NRTR Stream ID:	SBQ			**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)					

WBS Element: 34232.1.6 **TIP No.:** I-4400BB **County(ies):** Henderson

Additional Waterbody Information

Surface Water Body (14):	SBR - UT To Mud Creek		**NCDWR Stream Index No.:**	6-55	
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C		
		Supplemental Classification:	None		
Other Stream Classification:	None				
Impairments:	None				
Aquatic T&E Species?	No	Comments:			
NRTR Stream ID:	SBR			**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)					

Surface Water Body (15):	SBS - UT To Mud Creek		**NCDWR Stream Index No.:**	6-55	
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C		
		Supplemental Classification:	None		
Other Stream Classification:	None				
Impairments:	None				
Aquatic T&E Species?	No	Comments:			
NRTR Stream ID:	SBS			**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)					

Surface Water Body (16):	SBT - UT TO Byers Creek		**NCDWR Stream Index No.:**	6-55-13	
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C		
		Supplemental Classification:	None		
Other Stream Classification:	None				
Impairments:	None				
Aquatic T&E Species?	No	Comments:			
NRTR Stream ID:	SBT			**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)					

Surface Water Body (17):	SBU - Byers Creek		**NCDWR Stream Index No.:**	6-55-13	
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C		
		Supplemental Classification:	None		
Other Stream Classification:	None				
Impairments:	None				
Aquatic T&E Species?	No	Comments:			
NRTR Stream ID:	SBU			**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)					

WBS Element: 34232.1.6 **TIP No.:** I-4400BB **County(ies):** Henderson

Additional Waterbody Information

Surface Water Body (18):	SBV - UT to Byers Creek		**NCDWR Stream Index No.:**	6-55-13	
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C		
		Supplemental Classification:	None		
Other Stream Classification:	None				
Impairments:	None				
Aquatic T&E Species?	No	Comments:			
NRTR Stream ID:	SBV			**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)					

Surface Water Body (19):	SBX - UT to Mud Creek		**NCDWR Stream Index No.:**	6-55	
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C		
		Supplemental Classification:	None		
Other Stream Classification:	None				
Impairments:	None				
Aquatic T&E Species?	No	Comments:			
NRTR Stream ID:	SBX			**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)					

Surface Water Body (20):	SBN - UT to Mud Creek		**NCDWR Stream Index No.:**	6-55	
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C		
		Supplemental Classification:	None		
Other Stream Classification:	None				
Impairments:	None				
Aquatic T&E Species?	No	Comments:			
NRTR Stream ID:	SBN			**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)					

Surface Water Body (21):	SBZ - UT to Mud Creek		**NCDWR Stream Index No.:**	6-55	
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C		
		Supplemental Classification:	None		
Other Stream Classification:	None				
Impairments:	None				
Aquatic T&E Species?	No	Comments:			
NRTR Stream ID:	SBZ			**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)					

WBS Element: 34232.1.6 **TIP No.:** I-4400BB **County(ies):** Henderson

Additional Waterbody Information

Surface Water Body (22):	SFW - Mud Creek		**NCDWR Stream Index No.:**	6-55	
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C		
		Supplemental Classification:	None		
Other Stream Classification:	None				
Impairments:	None				
Aquatic T&E Species?	No	Comments:			
NRTR Stream ID:	SFW			**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)					

Surface Water Body (23):	SCB - UT to Byers Creek		**NCDWR Stream Index No.:**	6-55-13	
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C		
		Supplemental Classification:	None		
Other Stream Classification:	None				
Impairments:	None				
Aquatic T&E Species?	No	Comments:			
NRTR Stream ID:	SCB			**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)					

Surface Water Body (24):	SCJ - UT to Byers Creek		**NCDWR Stream Index No.:**	6-55-13	
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C		
		Supplemental Classification:	None		
Other Stream Classification:	None				
Impairments:	None				
Aquatic T&E Species?	No	Comments:			
NRTR Stream ID:	SCJ			**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)					

Surface Water Body (25):	SCA - UT to Byers Creek		**NCDWR Stream Index No.:**	6-55-13	
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C		
		Supplemental Classification:	None		
Other Stream Classification:	None				
Impairments:	None				
Aquatic T&E Species?	No	Comments:			
NRTR Stream ID:	SCA			**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)					

WBS Element: 34232.1.6 **TIP No.:** I-4400BB **County(ies):** Henderson

Additional Waterbody Information

Surface Water Body (26):	SCD - UT to Byers Creek		**NCDWR Stream Index No.:**	6-55-13	
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C		
		Supplemental Classification:	None		
Other Stream Classification:	None				
Impairments:	None				
Aquatic T&E Species?	No	Comments:			
NRTR Stream ID:	SCD			**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)					

Surface Water Body (27):	SCG - UT to Byers Creek		**NCDWR Stream Index No.:**	6-55-13	
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C		
		Supplemental Classification:	None		
Other Stream Classification:	None				
Impairments:	None				
Aquatic T&E Species?	No	Comments:			
NRTR Stream ID:	SCG			**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)					

Surface Water Body (28):	SCH - UT to Byers Creek		**NCDWR Stream Index No.:**	6-55-13	
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C		
		Supplemental Classification:	None		
Other Stream Classification:	None				
Impairments:	None				
Aquatic T&E Species?	No	Comments:			
NRTR Stream ID:	SCH			**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)					

Surface Water Body (29):	SCM - UT to Byers Creek		**NCDWR Stream Index No.:**	6-55-13	
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C		
		Supplemental Classification:	None		
Other Stream Classification:	None				
Impairments:	None				
Aquatic T&E Species?	No	Comments:			
NRTR Stream ID:	SCM			**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)					

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 2.08; Released April 2018)

WBS Element: 34232.1.6 **TIP No.:** I-4400BB **County(ies):** Henderson

Swales

Sheet No.	Station & Coordinates (Road and Non Road Projects)	Surface Water Body	Base Width (ft)	Front Slope (H:1)	Back Slope (H:1)	Drainage Area (ac)	Recommended Treatm't Length (ft)	Actual Length (ft)	Longitudinal Slope (%)	Q2 (cfs)	V2 (fps)	Q10 (cfs)	V10 (fps)	Rock Checks Used	BMP Associated w/ Buffer Rules?
8	-Y2- Sta. 24+80 RT 35.3542, -82.4545	(5)SBE - UT Tributary to	2.0	2.0	2.0	0.7	70	285	7.00%	1.7	1.1	2.4	1.3	No	No
14	-L- Sta. 526+05 LT 35.3724, -82.4728	(12)SBP - Featherstone	2.0	3.0	3.0	0.6	60	140	0.97%	1.3	0.4	1.8	0.5	No	No
14	-L- Sta. 525+60 RT 35.3727, -82.4722	(12)SBP - Featherstone	2.0	3.0	3.0	0.8	80	130	1.43%	1.8	0.6	2.5	0.7	No	No
16	-L- Sta. 552+00 LT 35.3774, -82.4790	(11)SBO - UT Tributary	0.0	2.0	2.0	0.9	90	120	7.20%	3.2	2.1	4.4	2.4	No	No
18	-L- Sta. 573+80 RT 35.3813, -82.4844	(15)SBS - UT To Mud	2.0	2.0	2.0	14.5	1450	150	1.10%	26.0	2.4	35.2	2.7	No	No

Additional Comments

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 2.08; Released April 2018)

WBS Element: **TIP No.:** I-4400BB **County(ies):** Henderson

Preformed Scour Holes and Energy Dissipators

Sheet No.	Station & Coordinates (Road and Non Road Projects)	Surface Water Body	Energy Dissipator Type	Riprap Type	Drainage Area (ac)	Conveyance Structure	Pipe/Structure Dimensions (in)	Q10 (cfs)	V10 (fps)	BMP Associated w/ Buffer Rules?
7	-L- Sta. 419+70 RT 35.3493, -82.4518	(3)SBC - Allen Branch	Riprap Energy Dissipator Basin	Class I	8.7	Pipe	30	28.0	3.5	N/A
7	-L- Sta. 421+98 RT 35.3497, -82.4524	(4)SBD- Clear Creek	Riprap Energy Dissipator Basin	Class I	1.6	Pipe	15	7.1	2.5	N/A
10	-L- Sta. 456+25 LT 35.3577, -82.4583	(10)SBY - UT Tributary to	Riprap Energy Dissipator Basin	Class I	7.1	Pipe	30	24.0	3.3	N/A
10	-L- Sta. 456+72 LT 35.3578, -82.4584	(10)SBY - UT Tributary to	Riprap Energy Dissipator Basin	Class I	9.5	Pipe	54	26.1	3.4	N/A
12	-L- Sta. 496+00 LT 35.3662, -82.4662	(7)SBG - UT Tributary to	PSH	Class 'B'	1.1	Pipe	15	6.2	0.9	N/A
13	-L- Sta. 499+77 RT 35.3674, -82.4665	WAH	Riprap Energy Dissipator Basin	Class 'B'	0.3	Pipe	15	1.6	1.7	N/A
17	-L- Sta. 558+00 LT 35.3781, -82.4808	(20)SBN - UT to Mud Creek	Riprap Energy Dissipator Basin	Class I	16.2	Pipe	36	29.4	3.5	N/A
18	-L- Sta. 572+75 LT 35.3807, -82.4847	(9)SBI - UT Tributary to	Riprap Energy Dissipator Basin	Class I	39.5	Culvert	66	108.5	4.9	N/A
21	-L- 609+75 LT 35.3900, -82.4910	(1)Byers Creek	PSH	Class 'B'	1.2	Pipe	15	6.0	N/A	No

Additional Comments

* Refer to the NCDOT Best Management Practices Toolbox (2014), NCDOT Standards, the Federal Highway Administration (FHWA) Hydraulic Engineering Circular No. 14 (HEC-14), Third Edition, Hydraulic Design of Energy Dissipators for Culverts and Channels (July 2006), as applicable, for design guidance and criteria.

7/24/2017

TIP PROJECT: I-4400BB

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

HENDERSON COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-4400BB	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
34232.1.6	NHP-0026(015)	I-4400BB (P.E.)
34232.2.10	NHP-0026(015)	I-4400BB (R/W/UTIL)
34232.3.8	NHP-0026(015)	I-4400BB (CONST.)

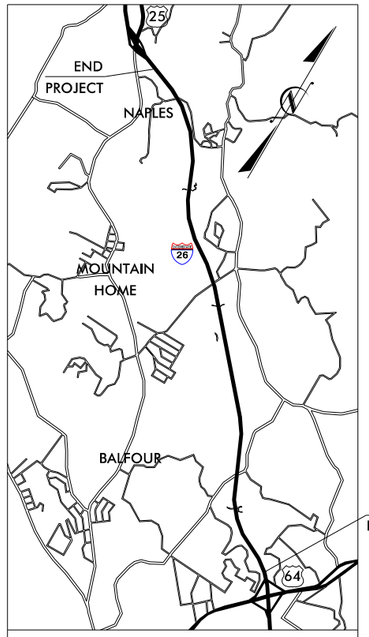
PERMIT DRAWING
SHEET 14 OF 77

LOCATION: I-26 FROM 0.05MI NORTH OF US 64
TO 0.5MI SOUTH OF US 25 (ASHEVILLE HIGHWAY)

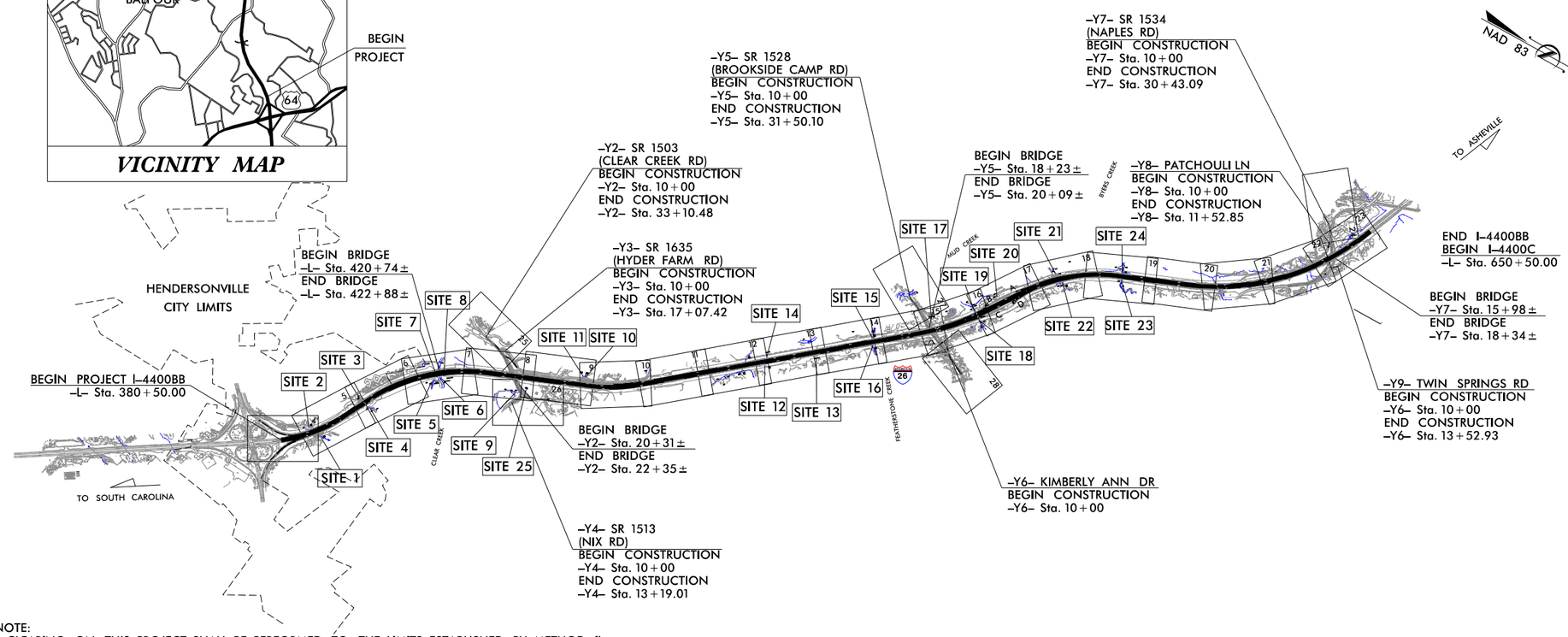
TYPE OF WORK: DRAINAGE, PAVING, GRADING, STRUCTURES

WETLAND AND SURFACE WATER IMPACTS PERMIT

CP4C Meeting Plans
3/27/2019



VICINITY MAP



NOTE:
1. CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.
2. THIS PROJECT IS PARTIALLY WITHIN THE MUNICIPAL BOUNDARIES OF THE CITY OF HENDERSONVILLE.
3. THIS IS A CONTROLLED- ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES.

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CONTRACT:

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2019 = 63,900
ADT 2040 = 91,000
K = 10%
D = 55%
T = 15% *
V = 70 MPH
* TTST = 11% DUAL 4%

FUNC CLASS = INTERSTATE
STATEWIDE TIER

PROJECT LENGTH

TOTAL LENGTH OF ROADWAY TIP PROJECT
I-4400BB = 5.073 MI

TOTAL LENGTH OF STRUCTURES OF TIP PROJECT
I-4400BB = 0.041 MI

TOTAL LENGTH OF TIP PROJECT
I-4400BB = 5.114 MI

NOTE: LENGTHS WERE CALCULATED USING THE WBL ALIGNMENT

Prepared in the Office of:
HNTB
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
November 2018

LETTING DATE:
June 18, 2019

JOSEPH OLSON, P.E.
PROJECT ENGINEER

JEFF HESS, P.E.
PROJECT DESIGN ENGINEER

WANDA AUSTIN, P.E.
NCDOT CONTACT

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

7/24/2017
I4400C_RDY_TSH.dgn
3:11 PM

HNTB
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

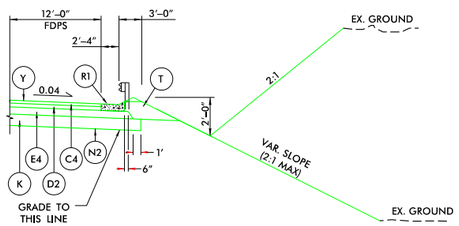
PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	2A-5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 047262 ENGINEER MATTHEW J. KIRBY

PERMIT DRAWING
SHEET 2 OF 77

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

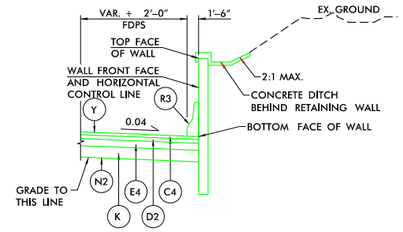
REVISIONS



SHOULDER BERM GUTTER AND GUARDRAIL DETAIL

USE IN CONJUNCTION WITH TYPICAL SECTIONS NO. 1, 2, 3 & 4

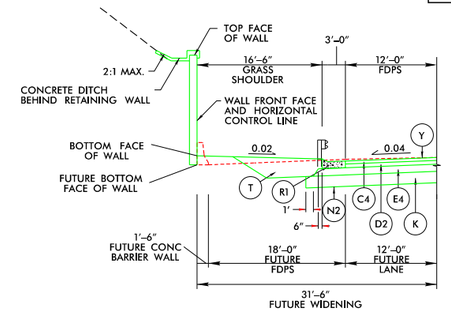
–Y1RPA– STA. 11+53.00 TO STA. –L– 389+34.25 LT (INVERT)
–Y1RPD– STA. 11+80.00 TO –L– STA. 400+97.00 RT
–L– STA. 399+99.00 TO STA. 405+36.50 LT (INVERT)
–L– STA. 403+13.00 TO STA. 408+73.00 RT
–L– STA. 419+53.00 TO STA. 420+26.23 LT (INVERT)
–L– STA. 423+23.12 TO STA. 463+16.00 LT (INVERT)
–L– STA. 436+43.00 TO STA. 440+68.00 RT
–L– STA. 450+90.00 TO STA. 462+40.00 RT
–L– STA. 470+71.25 TO STA. 473+15.00 LT (INVERT)
–L– STA. 475+50.00 TO STA. 480+25.00 RT
–L– STA. 483+90.00 TO STA. 500+00.00 RT
–L– STA. 488+48.00 TO STA. 519+10.50 LT (INVERT)
–L– STA. 506+12.50 TO STA. 513+25.00 RT
–L– STA. 518+61.00 TO STA. 528+73.50 RT
–L– STA. 524+75.00 TO STA. 548+50.00 LT (INVERT)
–L– STA. 535+83.00 TO STA. 541+33.00 RT
–L– STA. 540+68.00 TO 548+52.00 LT (INVERT)
–L– STA. 546+93.00 TO –WEIGH C– STA. 11+15.50 RT
–WEIGH A– STA. 13+31 TO STA. 590+80.50 LT (INVERT)
–L– STA. 566+00.00 TO STA. 588+37.50 RT
–L– STA. 596+25.00 TO STA. 612+50.00 RT
–L– STA. 606+00.00 TO STA. 614+02.00 LT (INVERT)
–L– STA. 616+65.00 TO STA. 617+80.00 RT
–L– STA. 619+00.00 TO STA. 620+87.50 LT (INVERT)
–L– STA. 625+12.50 TO STA. 627+00.00 RT
–L– STA. 627+49.00 TO STA. 636+50.00 LT (INVERT)
–L– STA. 635+37.50 TO STA. 646+50.00 RT
–L– STA. 638+87.50 STA. 650+50.00 LT (INVERT)



CUT WALL DETAIL

USE IN CONJUNCTION WITH TYPICAL SECTION NO.2

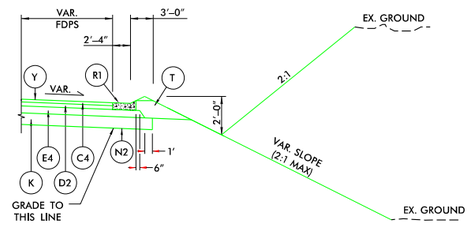
–L– STA. 408+73.00 TO STA. 418+48.43 RT
–L– STA. 424+97.92 TO STA. 429+13.00 RT
–L– STA. 533+52.00 TO STA. 538+96.00 LT



OFFSET CUT WALL WITH SHOULDER BERM GUTTER AND GUARDRAIL DETAIL

USE IN CONJUNCTION WITH TYPICAL SECTION NO.2

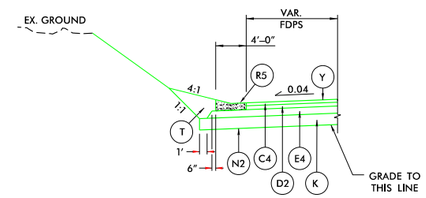
–L– STA. 437+77.00 TO STA. 439+51.00 LT
–L– STA. 438+79.00 TO STA. 440+65.00 RT (INVERT)
–L– STA. 533+52.00 TO STA. 540+68.00 LT
–L– STA. 539+30.00 TO STA. 541+29.00 RT (INVERT)
–L– STA. 637+28.00 TO STA. 639+55.00 RT (INVERT)
–L– STA. 638+98.00 TO STA. 640+91.00 LT



SHOULDER BERM GUTTER DETAIL

USE IN CONJUNCTION WITH TYPICAL SECTION NO. 2

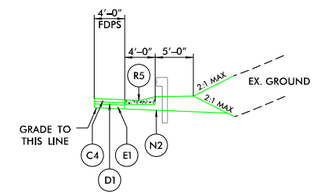
–L– STA. 624+00.00 TO STA. 625+12.50 RT



EXPRESSWAY GUTTER DETAIL

USE IN CONJUNCTION WITH TYPICAL SECTION NO. 2, 5 & 8

–L– STA. 463+36.00 TO STA. 470+25.00 LT
–L– STA. 618+00.00 TO STA. 623+80.00 RT (INVERT)
–Y2– STA. 12+40.00 TO STA. 14+00.00 LT (EXCLUDE MILLED RUMBLE STRIPS)
–Y5– STA. 26+25.00 TO STA. 31+80.00 RT (INVERT & EXCLUDE MILLED RUMBLE STRIPS)



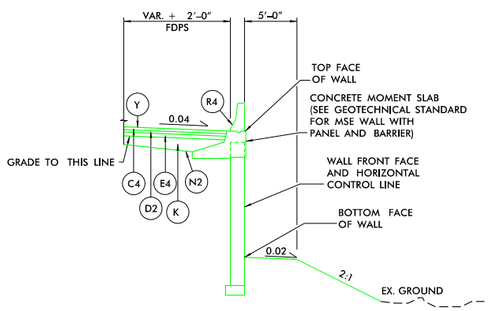
EXPRESSWAY GUTTER DETAIL

USE IN CONJUNCTION WITH TYPICAL SECTION NO. 2 & NO. 3

–Y1RPD– STA. 11+80.00 TO STA. 14+39.00 LT

A1	13.0" PCCP
C1	1.25" S9.5B
C3	3" S9.5B
C4	3" S9.5C
C5	1.5" S9.5C
D1	2.5" I19.0C
D2	4" I19.0C
E1	4" B25.0C
E2	5" B25.0C
E3	5.5" B25.0C
E4	7.25" B25.0C
K	12" CLASS IV SUBGRADE STABILIZATION
N1	NONWOVEN GEOTEXTILE INTERLAYER
N2	GEOTEXTILE FOR SOIL STABILIZATION
R1	CONC. SHOULDER BERM GUTTER
R2	DOUBLE FACED SINGLE SLOPED CONC. BARRIER
R3	SINGLE FACED CONC. BARRIER
R4	SINGLE FACED BARRIER W/ MOMENT SLAB
R5	EXPRESSWAY GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	MILLING 1.5" DEPTH
Y	MILLED RUMBLE STRIPS

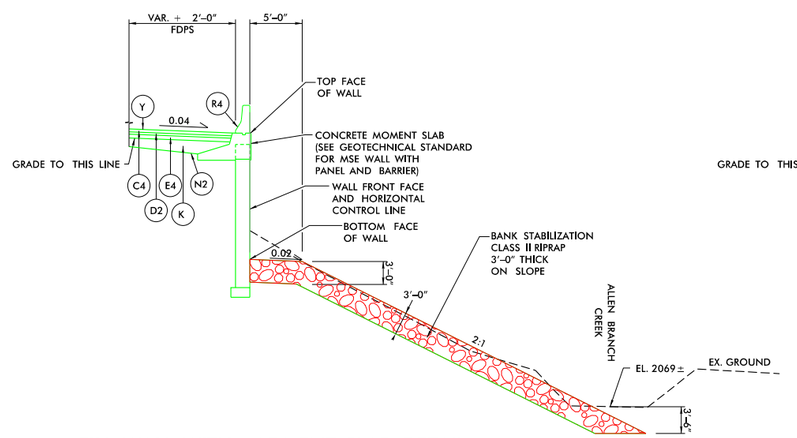
PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE



FILL WALL WITH MOMENT SLAB DETAIL

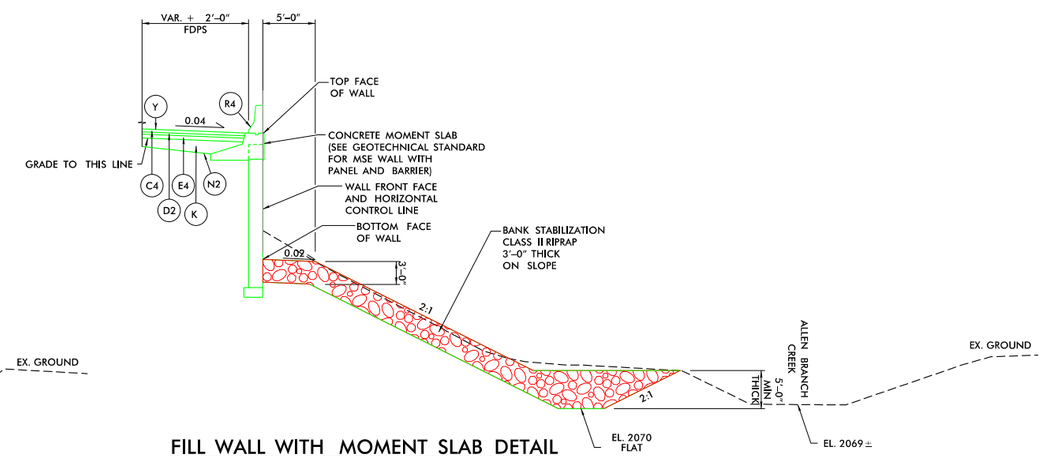
USE IN CONJUNCTION WITH TYPICAL SECTIONS NO. 2 & 11

–L– STA. 400+97.00 TO STA. 403+13.00 RT
–L– STA. 422+99.22 TO STA. 424+14.01 RT
–Y7– STA. 19+97.00 TO STA. 25+75.00 RT (EXCLUDE MILLED RUMBLE STRIPS)



FILL WALL WITH MOMENT SLAB DETAIL

USE IN CONJUNCTION WITH TYPICAL SECTION NO. 2
–L– STA. 419+88.42 TO STA. 420+52.62 RT



FILL WALL WITH MOMENT SLAB DETAIL

USE IN CONJUNCTION WITH TYPICAL SECTION NO. 2
–L– STA. 418+48.43 RT TO STA. 419+88.42 RT
–L– STA. 420+52.62 RT TO STA. 420+57.44 RT

$$PEN-TABLE$$
$$$$STYLES$$
$$$$$$$$$$DGNS$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$
$$SCALE$$
$$ENVIRONMENT$$

8/17/99

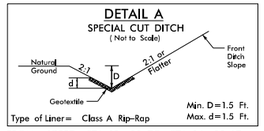
REVISIONS

HNTB NORTH CAROLINA, P.C. 343 E. Six Forks Road, Suite 200 Raleigh, North Carolina 27609 NC License NO: C-1554	PROJECT REFERENCE NO.	SHEET NO.
	I-4400BB	2D-1
	R/W SHEET NO.	
	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

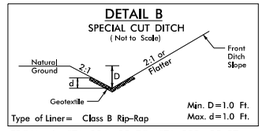
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 3 OF 77

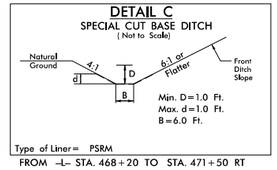
DITCH DETAILS



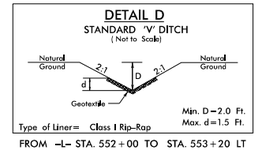
FROM –Y1RPD– STA. 12+00 TO STA. 14+00 LT



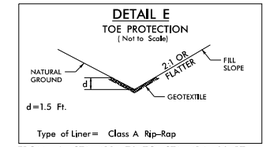
FROM –L– STA. 396+25 TO STA. 399+25 RT



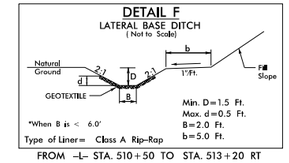
FROM –L– STA. 468+20 TO STA. 471+50 RT



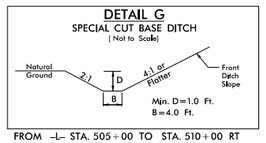
FROM –L– STA. 552+00 TO STA. 553+20 LT



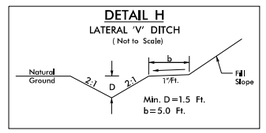
FROM –L– STA. 492+70 TO STA. 494+00 RT



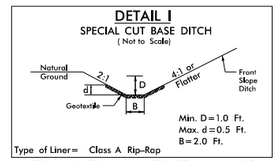
FROM –L– STA. 510+50 TO STA. 513+20 RT



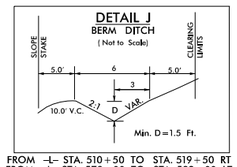
FROM –L– STA. 505+00 TO STA. 510+00 RT



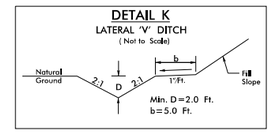
FROM –Y2– STA. 23+00 TO STA. 26+00 LT



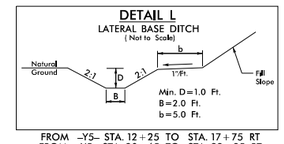
FROM –L– STA. 510+00 TO STA. 510+50 RT



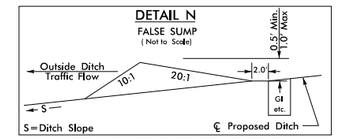
FROM –L– STA. 510+50 TO STA. 519+50 RT
FROM –L– STA. 579+00 TO STA. 582+00 LT



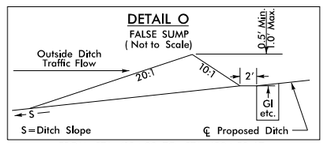
FROM –L– STA. 529+75 TO STA. 531+50 LT



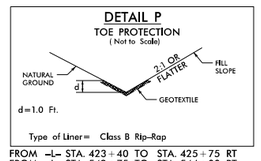
FROM –Y5– STA. 12+25 TO STA. 17+75 RT
FROM –Y5– STA. 20+65 TO STA. 22+35 RT
FROM –Y5– STA. 13+50 TO STA. 16+50 LT
FROM –Y5– STA. 28+00 TO STA. 30+50 LT
FROM –Y5– STA. 20+60 TO STA. 22+75 LT



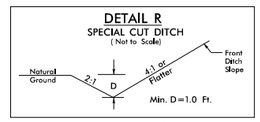
FROM STA. 439+50 TO STA. 447+50 LT



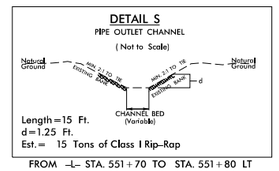
FROM STA. 410+00 TO STA. 420+50 LT



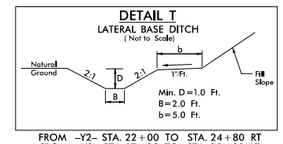
FROM –L– STA. 423+40 TO STA. 425+75 RT
FROM –L– STA. 542+75 TO STA. 544+00 RT
FROM –L– STA. 545+25 TO STA. 546+50 RT
FROM –L– STA. 567+00 TO STA. 567+75 RT
FROM –L– STA. 583+00 TO STA. 583+50 LT
FROM –Y2– STA. 17+25 TO STA. 20+20 LT
FROM –Y5– STA. 16+50 TO STA. 18+15 LT
FROM –Y5– STA. 20+60 TO STA. 22+75 LT



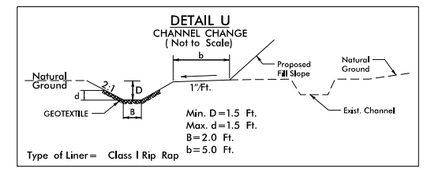
FROM –Y2– STA. 10+00 TO STA. 10+75 RT
FROM –Y2– STA. 29+00 TO STA. 30+00 RT



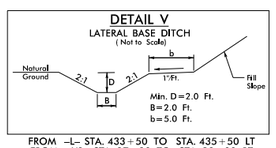
FROM –L– STA. 551+70 TO STA. 551+80 LT



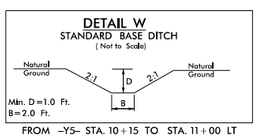
FROM –Y2– STA. 22+00 TO STA. 24+80 RT
FROM –Y2– STA. 17+25 TO STA. 20+00 LT
FROM –Y3– STA. 11+00 TO STA. 14+00 IT



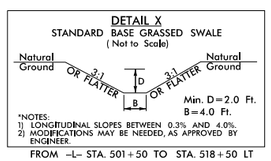
FROM –L– STA. 583+75 TO STA. 585+00 LT



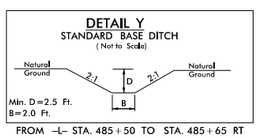
FROM –L– STA. 433+50 TO STA. 435+50 LT
FROM –Y2– STA. 27+30 TO STA. 29+00 RT



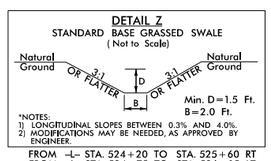
FROM –Y5– STA. 10+15 TO STA. 11+00 LT



FROM –L– STA. 501+50 TO STA. 518+50 LT

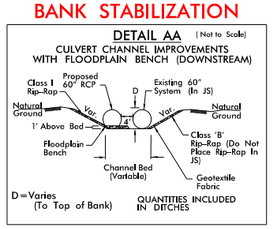


FROM –L– STA. 485+50 TO STA. 485+65 RT

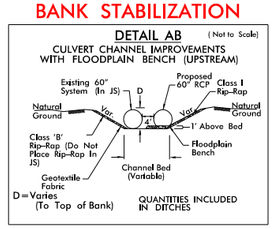


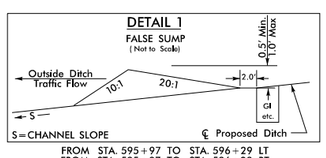
FROM –L– STA. 524+20 TO STA. 525+60 RT
FROM –L– STA. 524+75 TO STA. 526+05 LT

BANK STABILIZATION

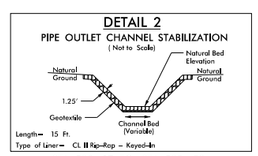


BANK STABILIZATION

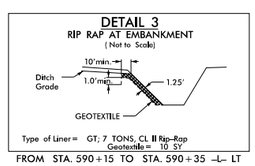




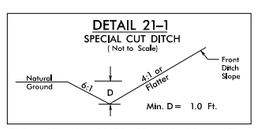
FROM STA. 595+97 TO STA. 596+29 LT
FROM STA 595+97 TO STA. 596+29 RT
FROM STA. 602+46 TO STA. 602+63 LT



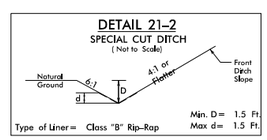
STA. 590+17 TO STA. 590+02



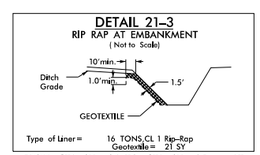
FROM STA. 590+15 TO STA. 590+35 –L– LT



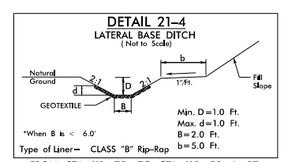
FROM STA. 614+50 TO STA. 615+30 –L– LT



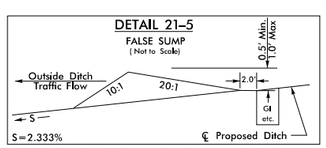
FROM STA. 615+30 to 616+00 –L– LT



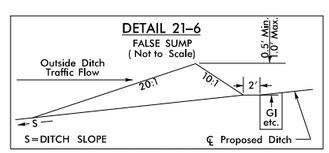
FROM STA. 611+64 TO STA. 611+85 –L– RT



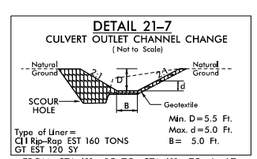
FROM STA. 611+75 TO STA. 613+50 –L– RT



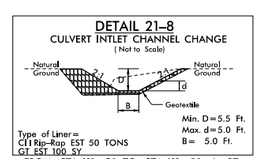
FROM STA. 620+80 TO STA. 621+00 –L– LT



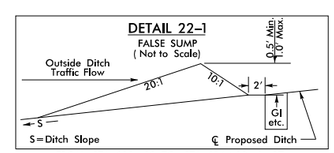
FROM STA. 616+43 TO STA. 616+63 –L– RT



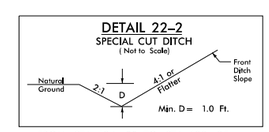
FROM STA.611+35 TO STA.611+75 –L– LT



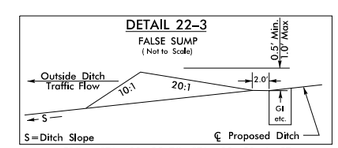
FROM STA.611+50 TO STA.611+80 –L– RT



FROM STA. 623+80 TO STA. 624+00 –L– RT
FROM STA. 635+30 TO STA. 635+60 –L– LT
FROM STA. 636+50 TO STA. 636+80 –L– LT



FROM STA. 624+00 TO STA. 623+25



FROM STA. 629+25 TO STA. 629+50 –L– RT
FROM STA. 635+27 TO STA. 635+55 –L– RT
FROM STA. 22+05 TO STA. 22+30–Y7– LT

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R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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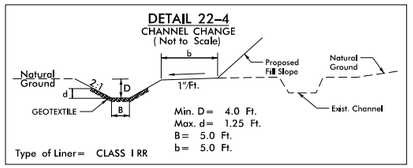
SHEET 4 OF 77

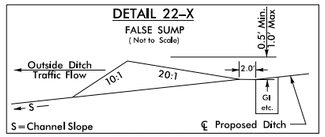
DITCH DETAILS

DETAIL 22–4
CHANNEL CHANGE
(Not to Scale)



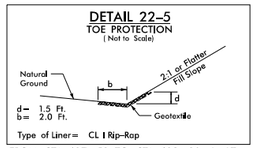
FROM STA. 10+00 TO STA. 30+00 48" OUTFALL
FROM STA. 10+00 TO STA 40+00 48" INLET

DETAIL 22–X
FALSE SUMP
(Not to Scale)



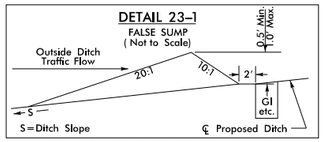
FROM STA. 629+25 TO STA. 629+50 –L– LT

DETAIL 22–5
TOE PROTECTION
(Not to Scale)



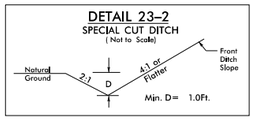
FROM STA. 627+52 TO STA. 628+20 –L– LT

DETAIL 23–1
FALSE SUMP
(Not to Scale)



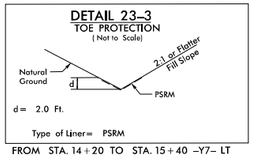
FROM STA. 637+52 TO STA. 637+85 –L– LT

DETAIL 23–2
SPECIAL CUT DITCH
(Not to Scale)



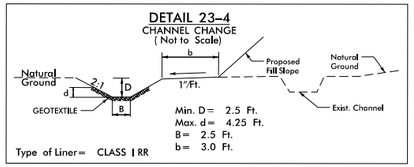
FROM STA. 641+00 TO STA. 642+22 –L– RT

DETAIL 23–3
TOE PROTECTION
(Not to Scale)



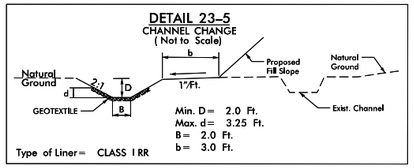
FROM STA. 14+20 TO STA. 15+40 –Y7– LT

DETAIL 23–4
CHANNEL CHANGE
(Not to Scale)



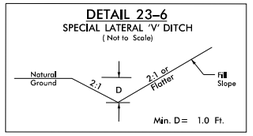
FROM STA. 646+10 TO STA. 646+30

DETAIL 23–5
CHANNEL CHANGE
(Not to Scale)



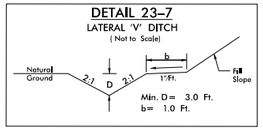
FROM STA. 648+66 TO STA. 648+86

DETAIL 23–6
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



FROM STA. 643+50 TO STA. 645+00 –L– RT
FROM STA. 642+28 TO STA. 643+50 –L– RT

DETAIL 23–7
LATERAL 'V' DITCH
(Not to Scale)



FROM STA. 645+00 TO STA. 646+50 –L– RT

8/17/99

REVISIONS

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WETLAND & STREAM IMPACTS

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

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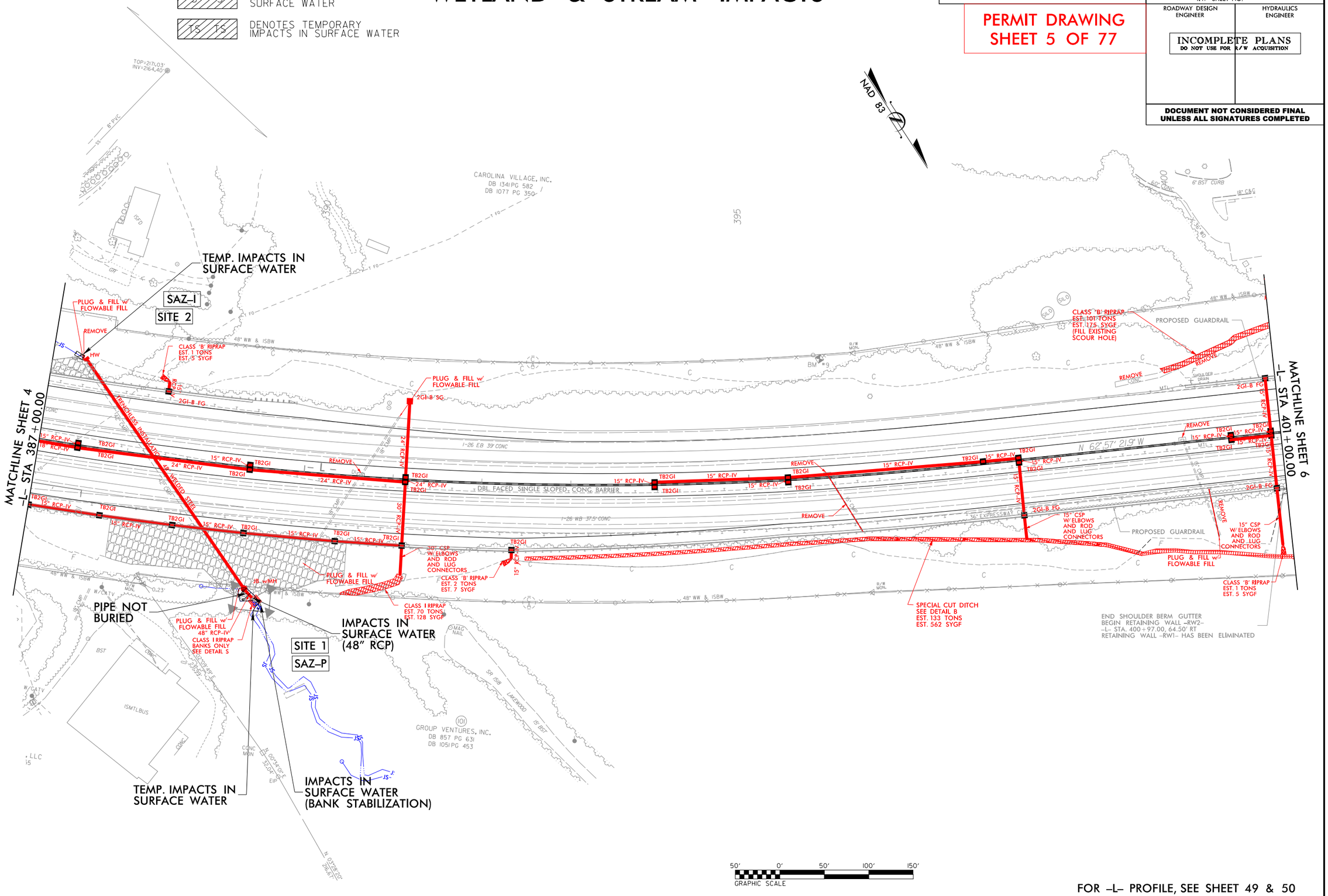

FOR -L- PROFILE, SEE SHEET 49 & 50

REVISIONS

$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$$$USERNAME$$$$
$$$SCALE$$
$$ENVIRONMENT$$

WETLAND & STREAM IMPACTS

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

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R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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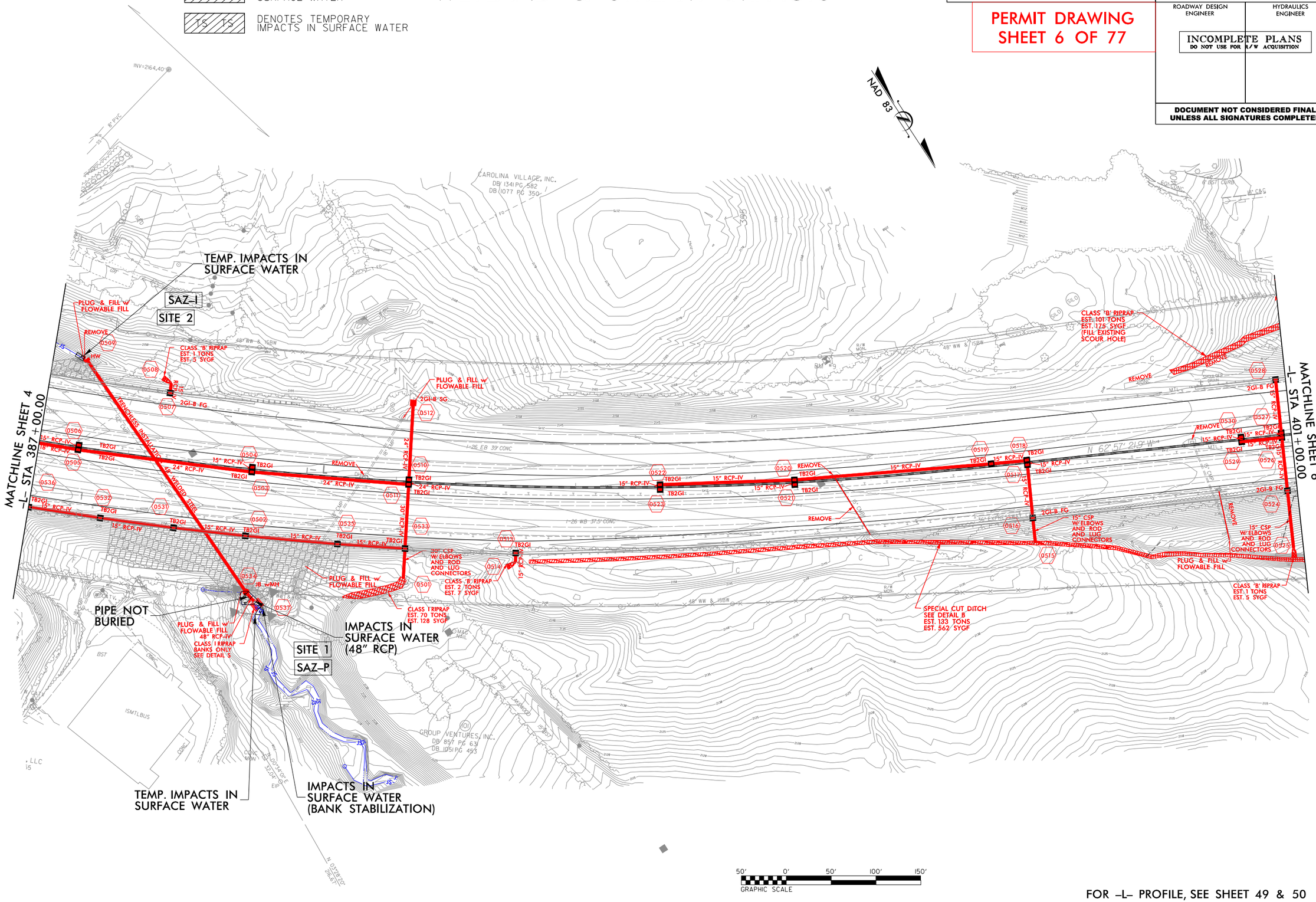
SHEET 6 OF 77



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REVISIONS

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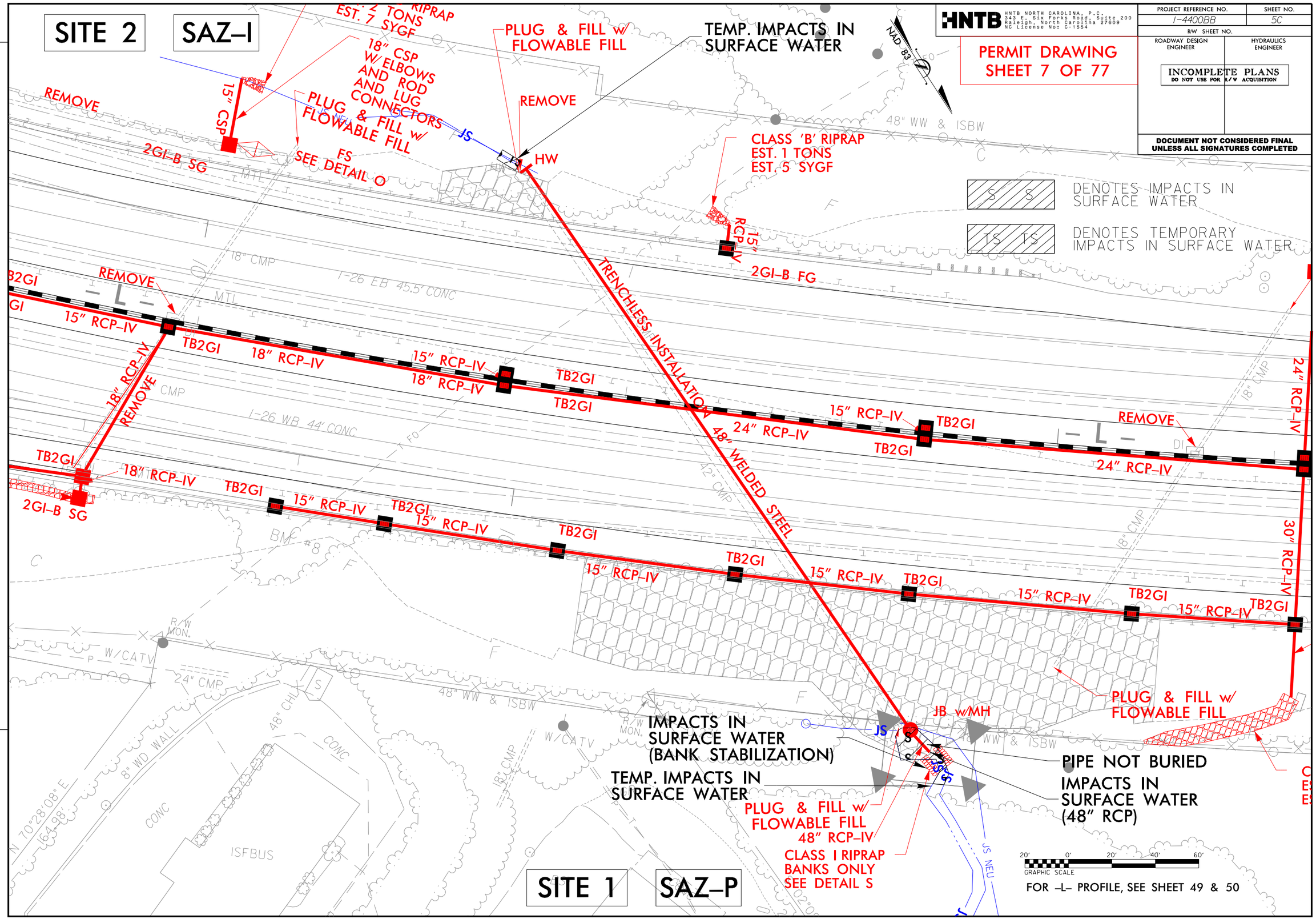
$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$$
$$$$$$USERNAME$$$$$$
$$SCALE$$
$$ENVIRONMENT$$


SITE 2
SAZ–I
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R/W SHEET NO.
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SHEET 7 OF 77
NAD 83
TEMP. IMPACTS IN SURFACE WATER
PLUG & FILL w/ FLOWABLE FILL
REMOVE
18" CSP W/ ELBOWS AND ROD AND LUG CONNECTORS
15" CSP
PLUG & FILL w/ FLOWABLE FILL
SEE DETAIL O
2GI-B SG
HW
CLASS 'B' RIPRAP
EST. 1 TONS
EST. 5 SYGF
15" RCP-IV
2GI-B FG
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
TRENCHLESS INSTALLATION
48" WELDED STEEL
15" RCP-IV
18" RCP-IV
24" RCP-IV
30" RCP-IV
TB2GI
2GI-B SG
PLUG & FILL w/ FLOWABLE FILL
JB w/MH
IMPACTS IN SURFACE WATER (BANK STABILIZATION)
TEMP. IMPACTS IN SURFACE WATER
PIPE NOT BURIED
IMPACTS IN SURFACE WATER (48" RCP)
PLUG & FILL w/ FLOWABLE FILL
48" RCP-IV
CLASS I RIPRAP BANKS ONLY SEE DETAIL S
GRAPHIC SCALE
FOR –L– PROFILE, SEE SHEET 49 & 50
SITE 1
SAZ–P
REVISIONS

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SHEET 8 OF 77

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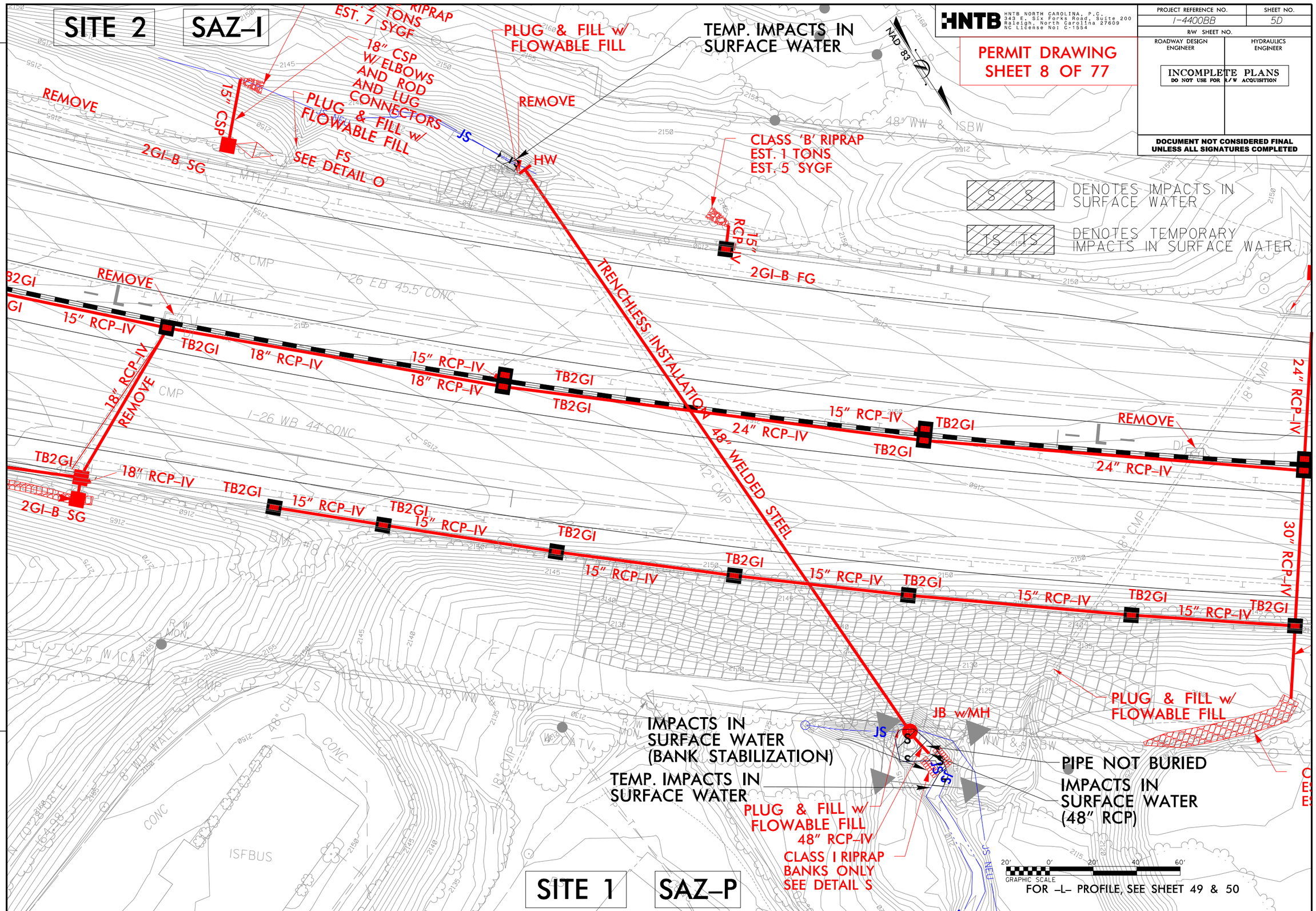


FOR –L– PROFILE, SEE SHEET 49 & 50

$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$
$$$USERNAME$$$$
$$SCALE$$
$$ENVIRONMENT$$

WETLAND & STREAM IMPACTS

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

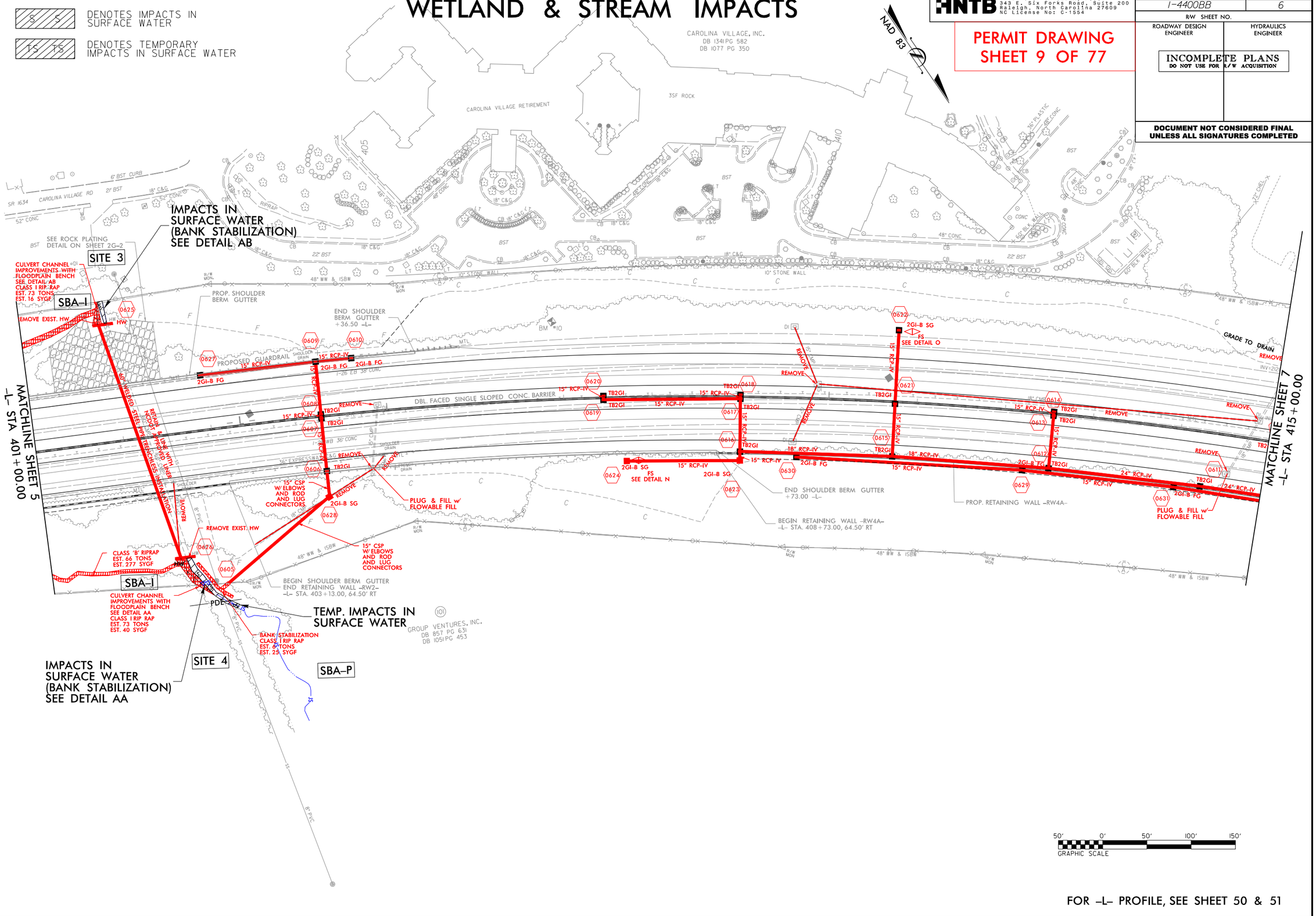
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PERMIT DRAWING
SHEET 9 OF 77

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



FOR -L- PROFILE, SEE SHEET 50 & 51

REVISIONS

$$$$$$SYSTIME$$$$
$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$$$USERNAME$$$$
$$SCALE$$
$$ENVIRONMENT$$

WETLAND & STREAM IMPACTS

▨ S S DENOTES IMPACTS IN SURFACE WATER

▨ TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

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SHEET 10 OF 77

PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	6
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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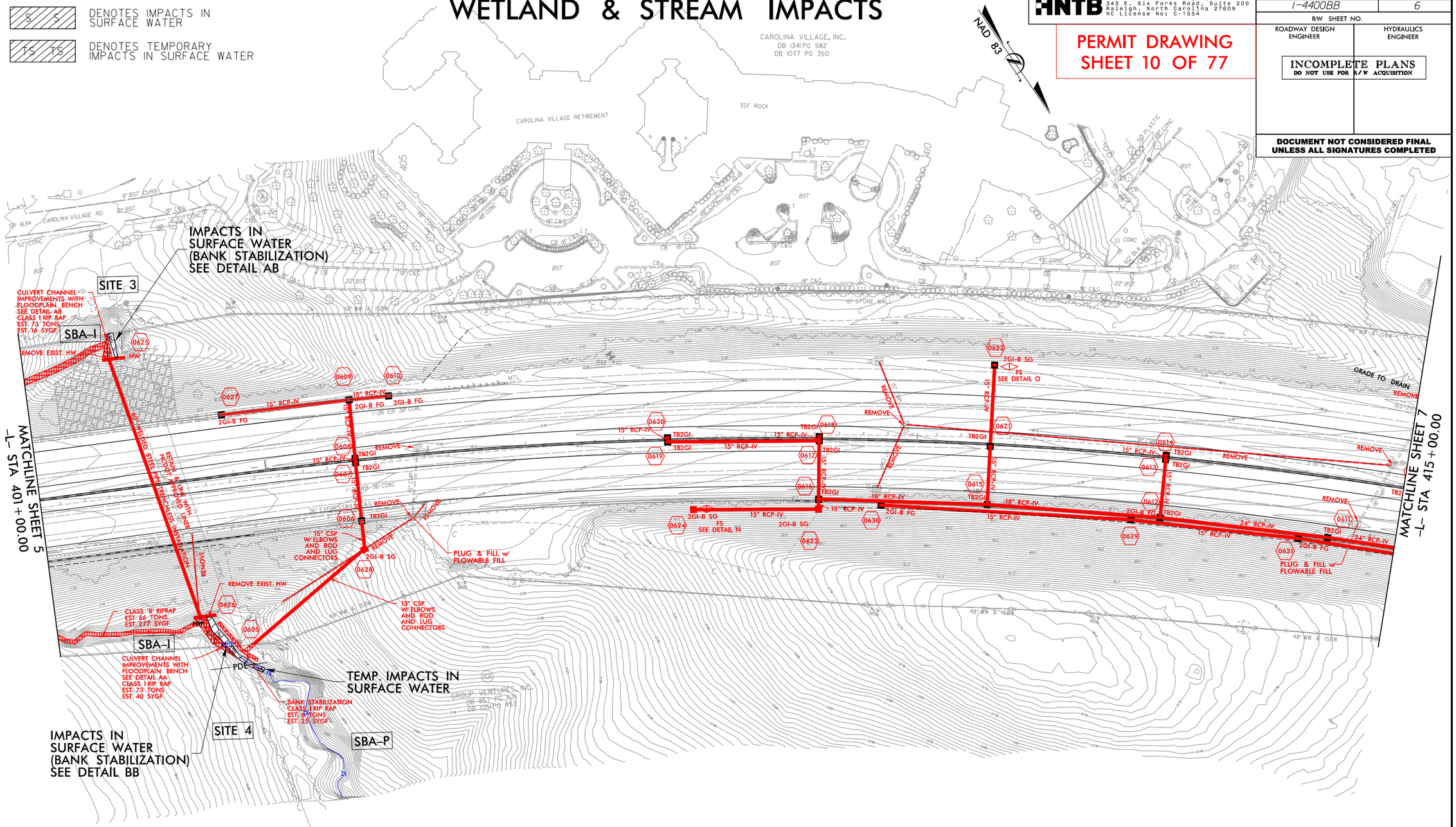
REVISIONS



FOR -L- PROFILE, SEE SHEET 50 & 51

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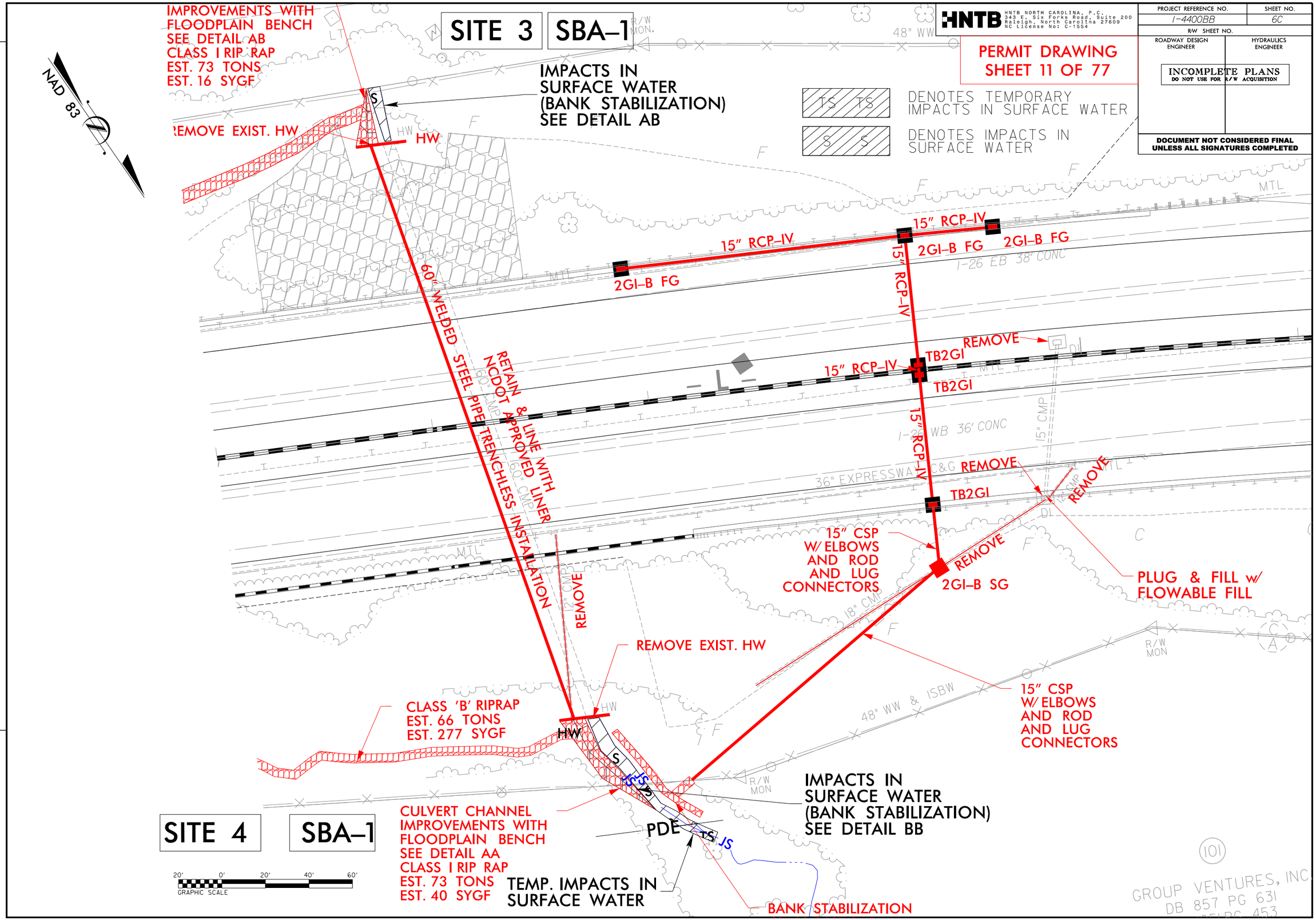
$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$$
$$$USERNAME$$$
$$SCALE$$
$$ENVIRONMENT$$


SITE 3
SBA–1
IMPROVEMENTS WITH FLOODPLAIN BENCH SEE DETAIL AB CLASS I RIP RAP EST. 73 TONS EST. 16 SYGF
REMOVE EXIST. HW
HW
IMPACTS IN SURFACE WATER (BANK STABILIZATION) SEE DETAIL AB
NAD 83
TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER
S S DENOTES IMPACTS IN SURFACE WATER
15" RCP–IV
2GI–B FG
60" WELDED STEEL PIPE TRENCHLESS INSTALLATION
RETAIN NCDOT & LINE WITH LINER APPROVED
I–26 EB 38' CONC
REMOVE
TB2GI
I–26 WB 36' CONC
36" EXPRESSWAY C&G
15" CSP W/ ELBOWS AND ROD AND LUG CONNECTORS
2GI–B SG
PLUG & FILL w/ FLOWABLE FILL
REMOVE EXIST. HW
CLASS 'B' RIPRAP EST. 66 TONS EST. 277 SYGF
48" WW & ISBW
IMPACTS IN SURFACE WATER (BANK STABILIZATION) SEE DETAIL BB
CULVERT CHANNEL IMPROVEMENTS WITH FLOODPLAIN BENCH SEE DETAIL AA CLASS I RIP RAP EST. 73 TONS EST. 40 SYGF
PDE
TEMP. IMPACTS IN SURFACE WATER
BANK STABILIZATION
SITE 4
SBA–1
GRAPHIC SCALE
GROUP VENTURES, INC.
DB 857 PG 631
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SHEET 11 OF 77
PROJECT REFERENCE NO.
I-4400BB
SHEET NO.
6C
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
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REVISIONS

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PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	6D
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
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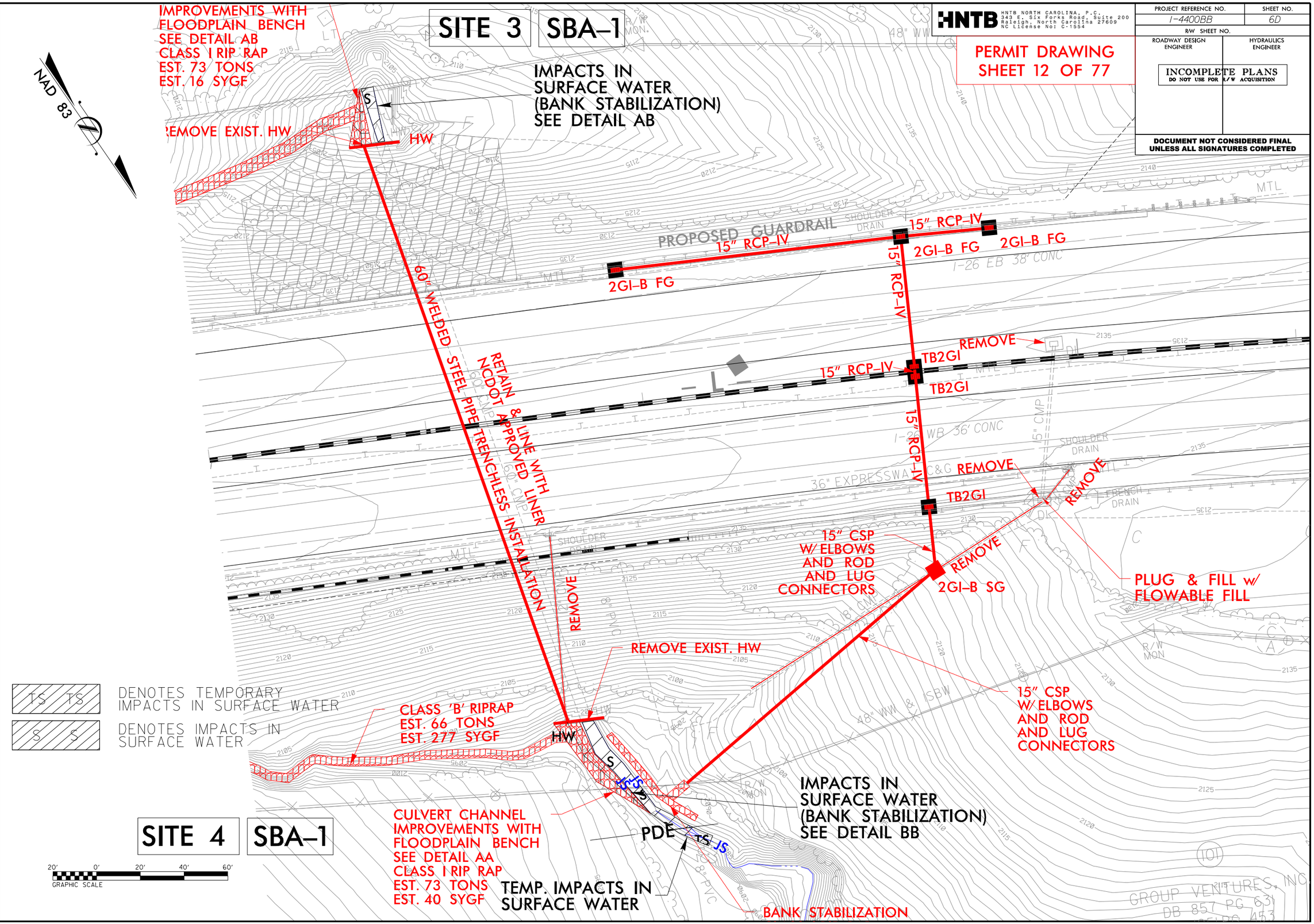
SHEET 12 OF 77



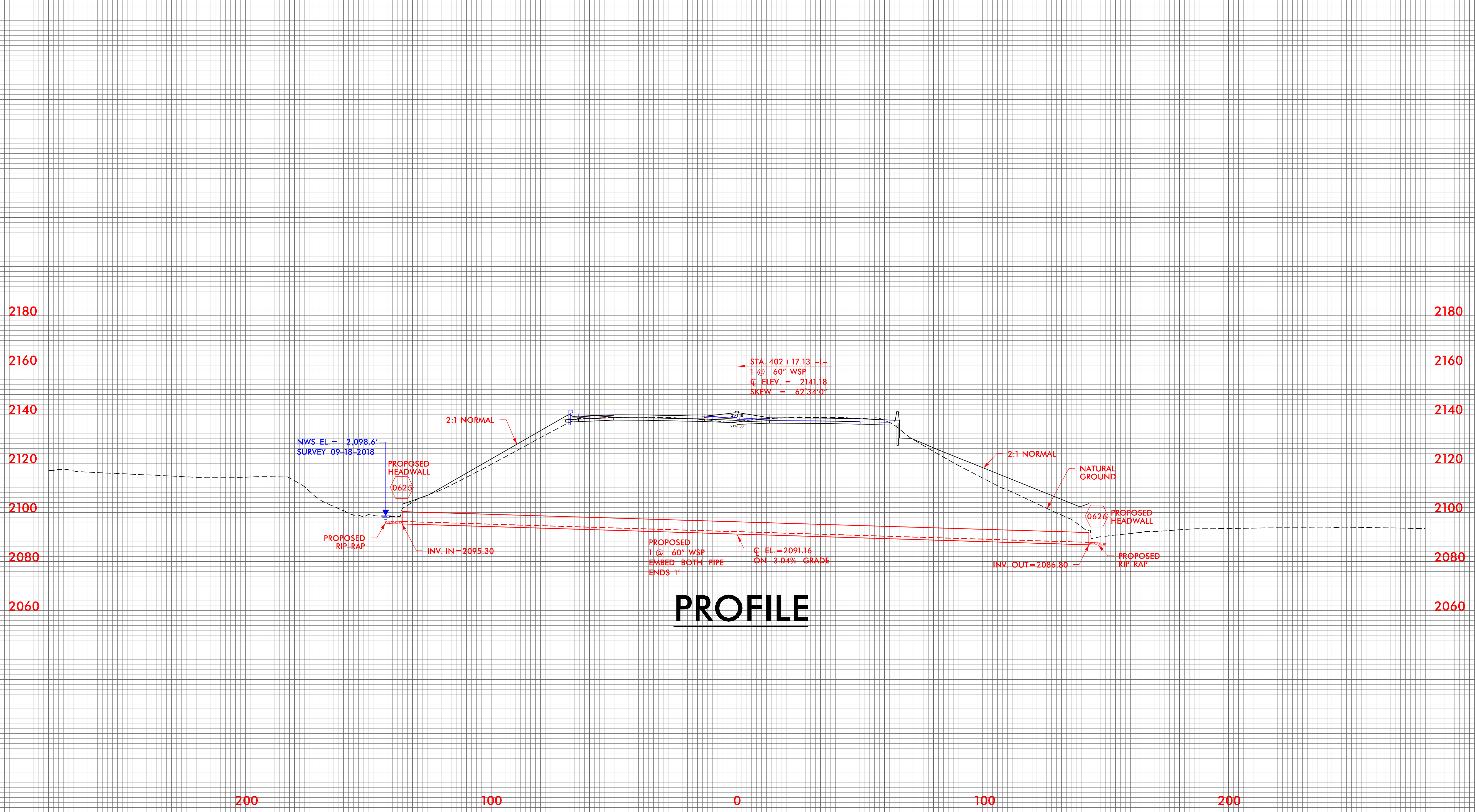
REVISIONS

$$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$
$$$$$$USERNAME$$$$
$$SCALE$$
$$ENVIRONMENT$$

6/23/16

PROJ. REFERENCE NO.	SHEET NO.
I-4400BB	6E

PERMIT DRAWING
SHEET 13 OF 77



PROFILE

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

HENDERSON COUNTY
PROJECT: I-4400BB
I-26
I-26 BETWEEN US 64 (CHIMNEY ROCK ROAD)
TO WEST OF NAPLES ROAD (SR1534)

WETLAND & STREAM IMPACTS

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

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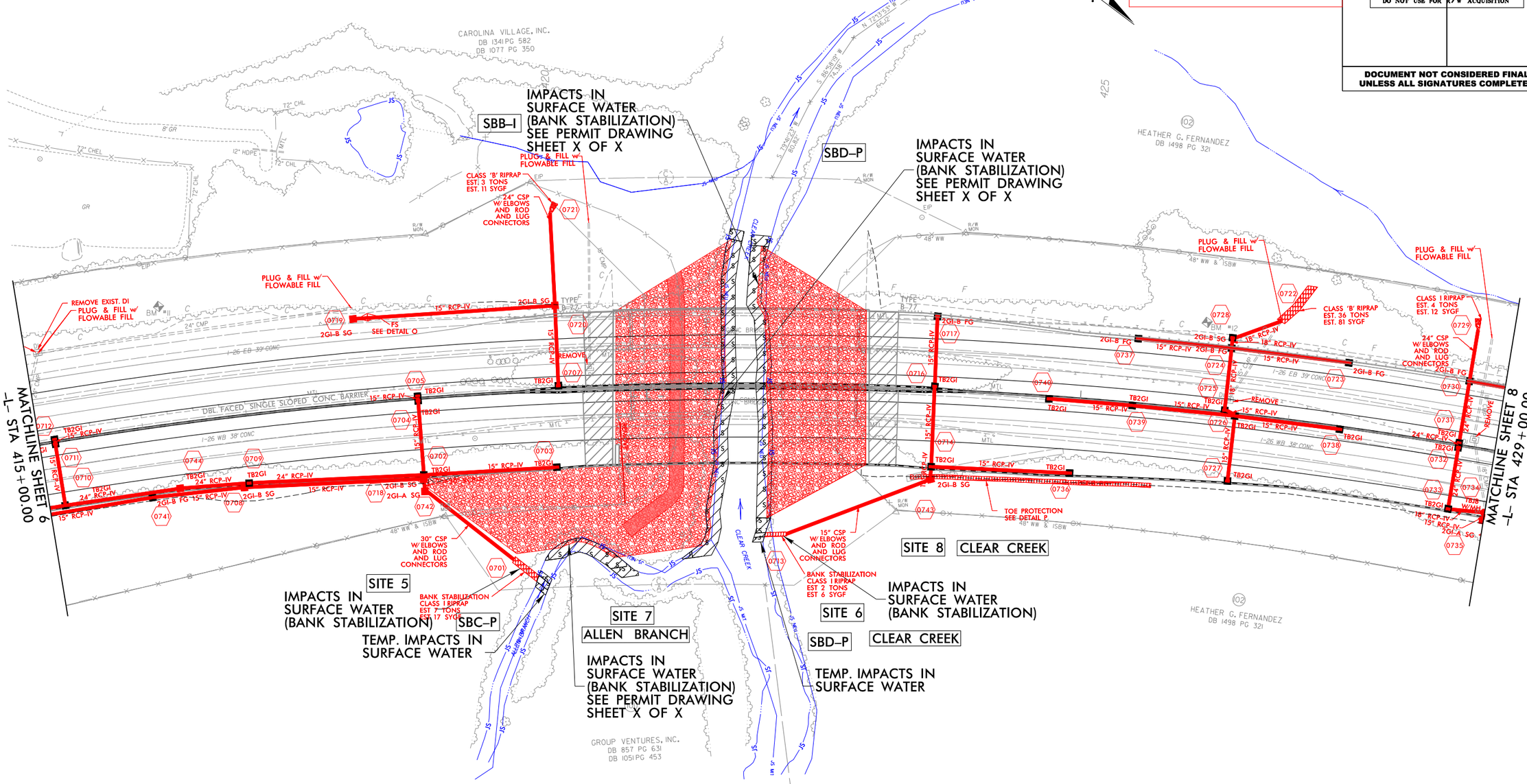
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	7
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

PERMIT DRAWING
SHEET 14 OF 77



50' 0' 50' 100' 150'
GRAPHIC SCALE

FOR -L- PROFILE, SEE SHEET 51 & 52

REVISIONS

$$$$$SYSTIME$$$$
$$$$$$$$$$$$$$$$ODN$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$
$$SCALE$$
$$ENVIRONMENT$$

WETLAND & STREAM IMPACTS

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

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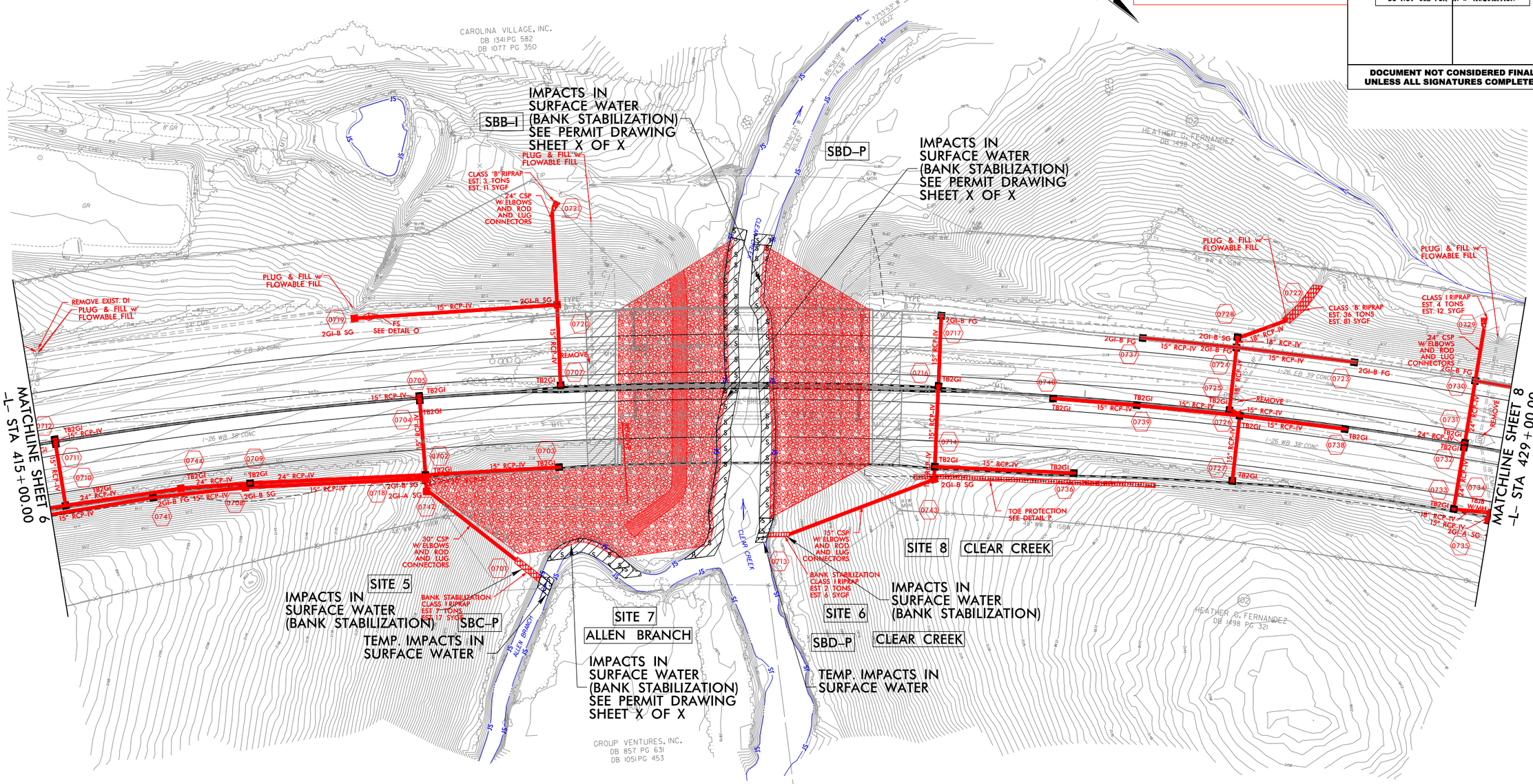
PERMIT DRAWING
SHEET 15 OF 77

PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	7
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



FOR -L- PROFILE, SEE SHEET 51 & 52

REVISIONS

$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$USERNAME$$$
$$SCALE$$
$$ENVIRONMENT$$

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PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	7C
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

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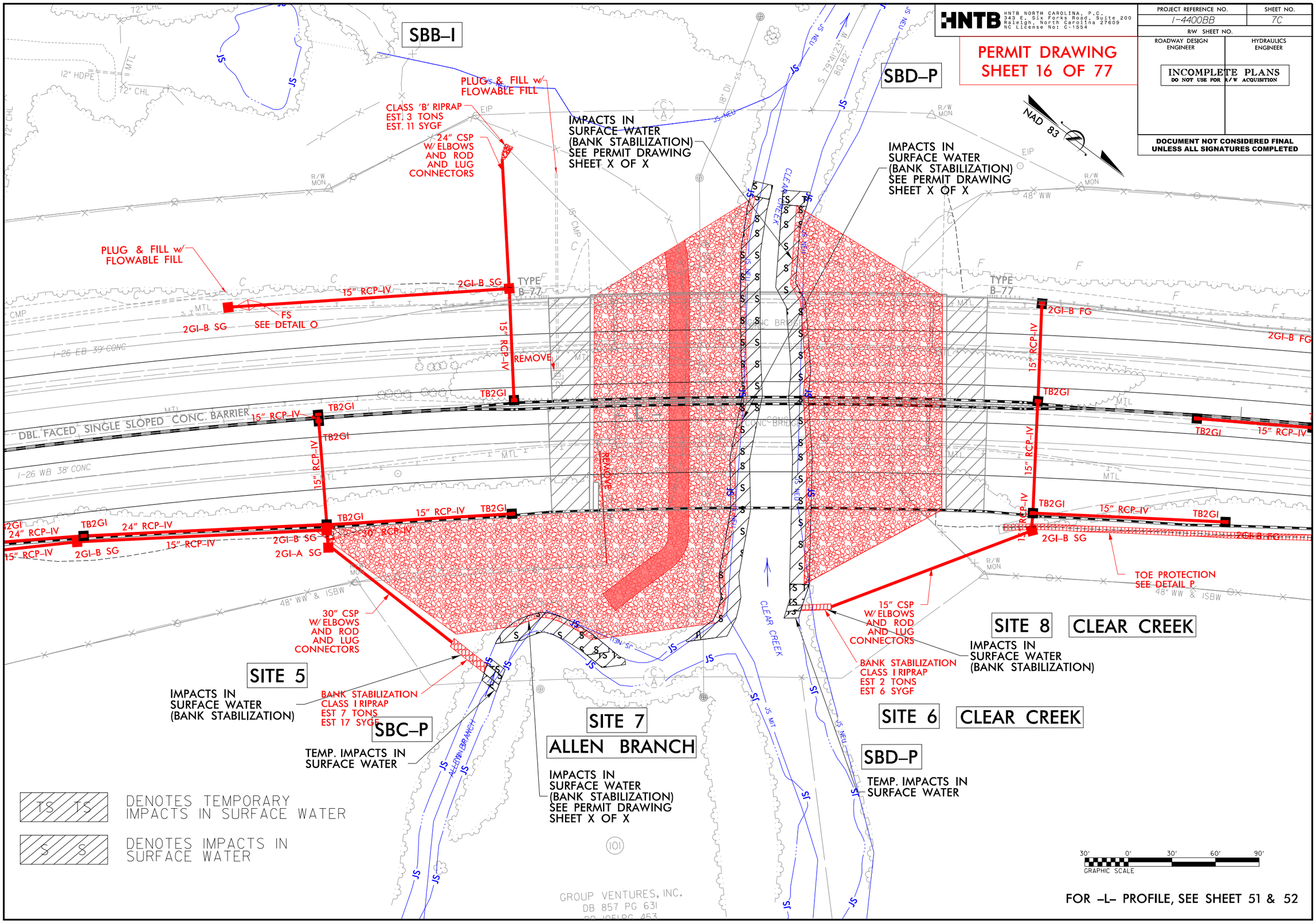
PERMIT DRAWING
SHEET 16 OF 77



FOR -L- PROFILE, SEE SHEET 51 & 52

$$$$$SYSTIME$$$$
$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$USERNAME$$$
$$SCALE$$
$$ENVIRONMENT$$

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PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	7D
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

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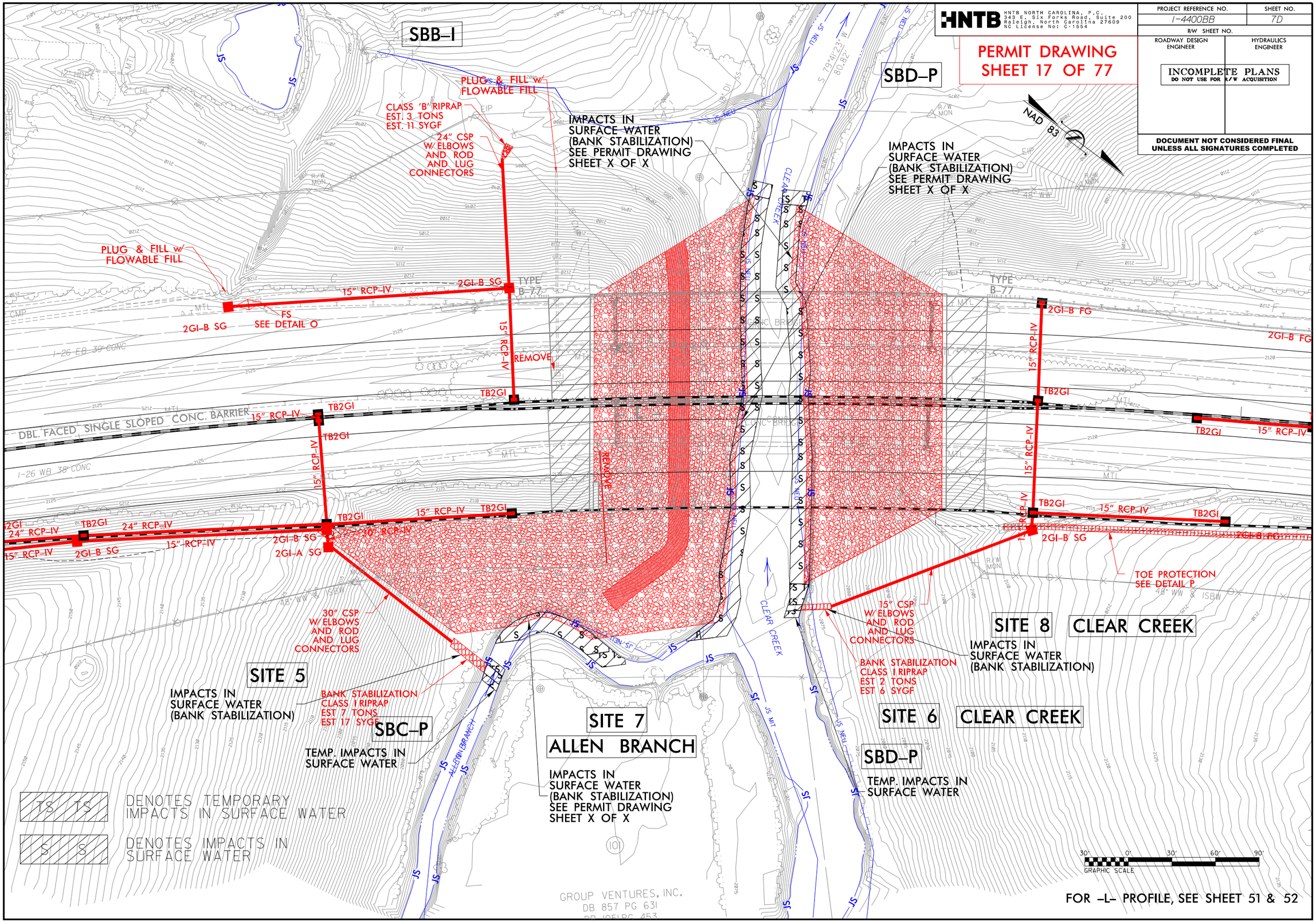
PERMIT DRAWING
SHEET 17 OF 77



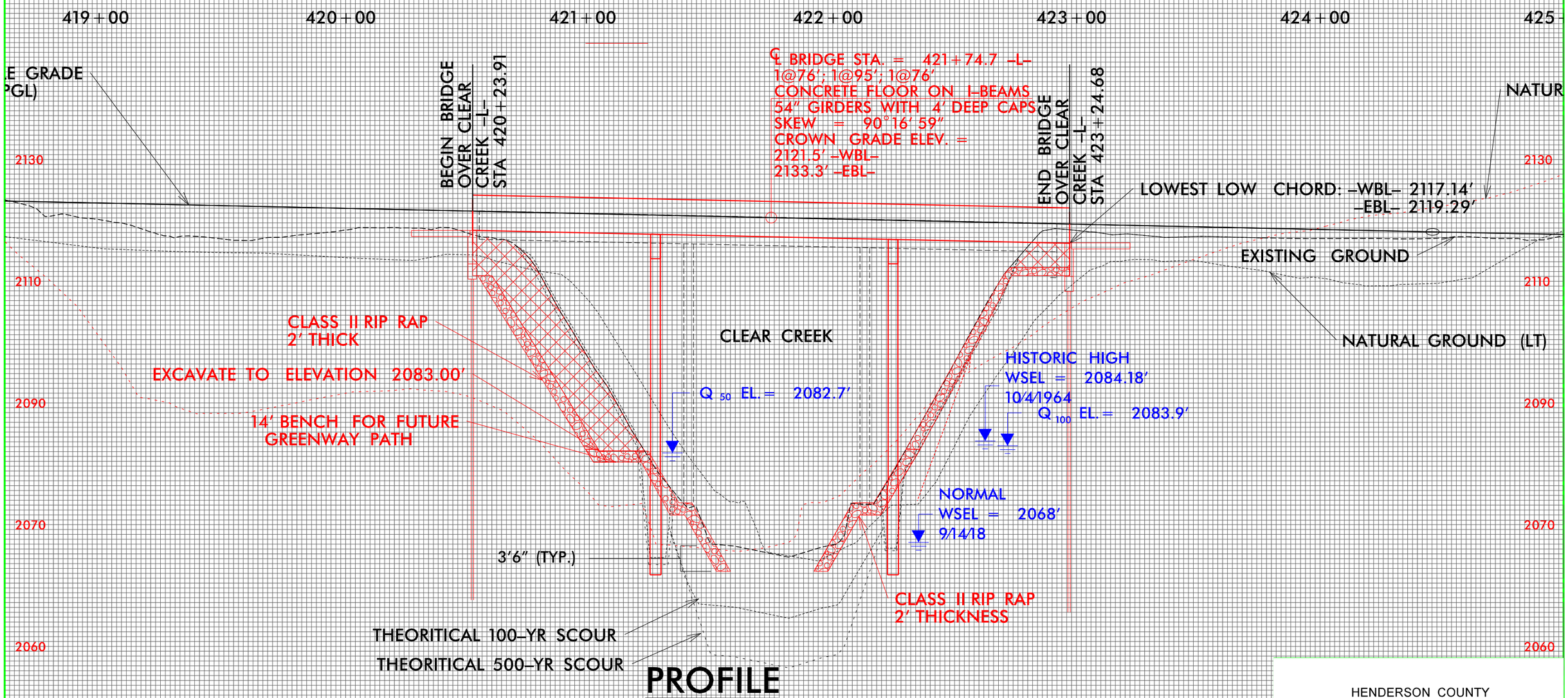
FOR -L- PROFILE, SEE SHEET 51 & 52

$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$
$$SCALE$$
$$ENVIRONMENT$$

6/23/16

PROJ. REFERENCE NO.	SHEET NO.
I-4400BB	7E

PERMIT DRAWING
SHEET 18 OF 77

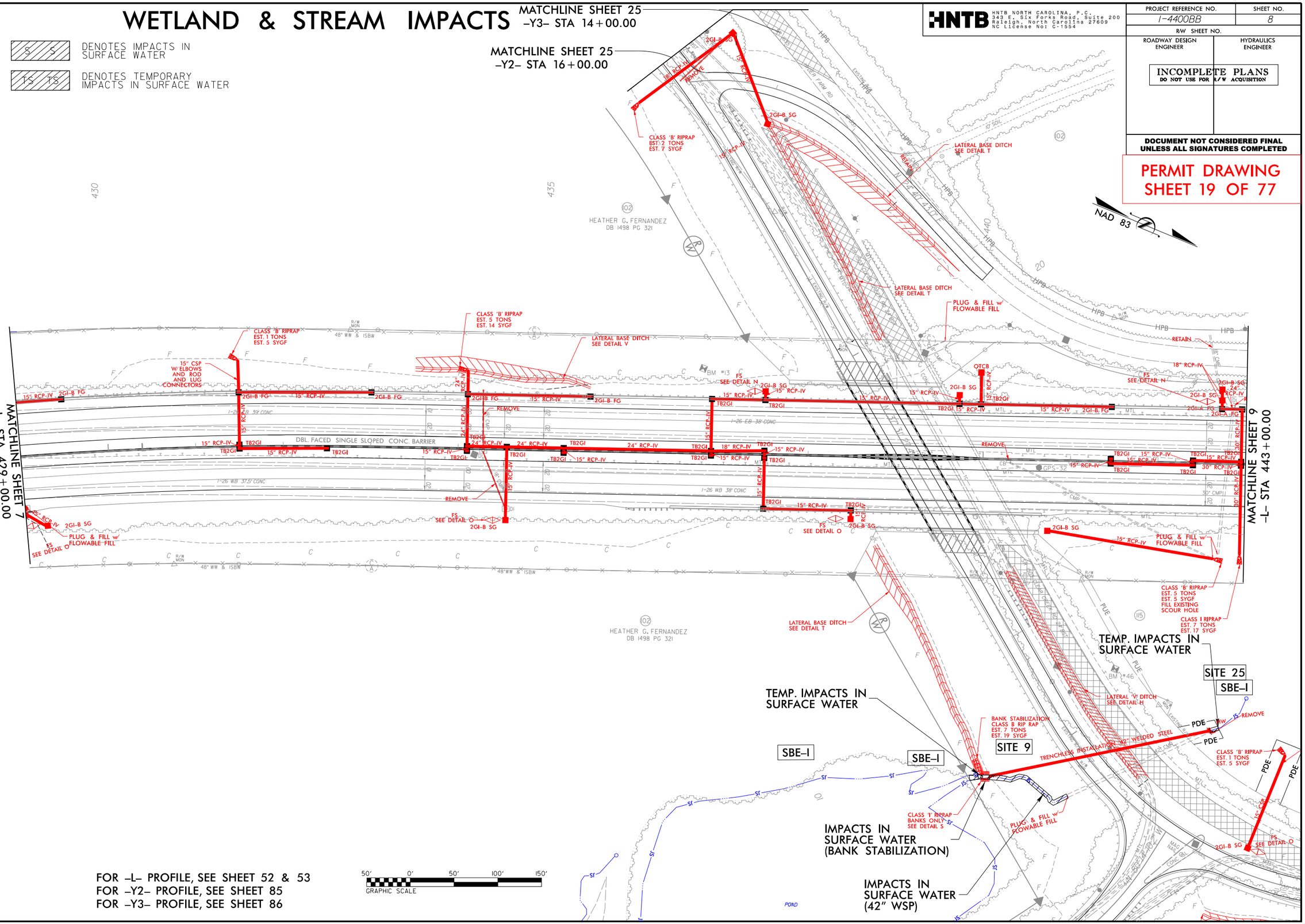


HENDERSON COUNTY
PROJECT: I-4400BB
I-26

WETLAND & STREAM IMPACTS

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER



FOR -L- PROFILE, SEE SHEET 52 & 53
FOR -Y2- PROFILE, SEE SHEET 85
FOR -Y3- PROFILE, SEE SHEET 86

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PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	8
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

PERMIT DRAWING
SHEET 19 OF 77

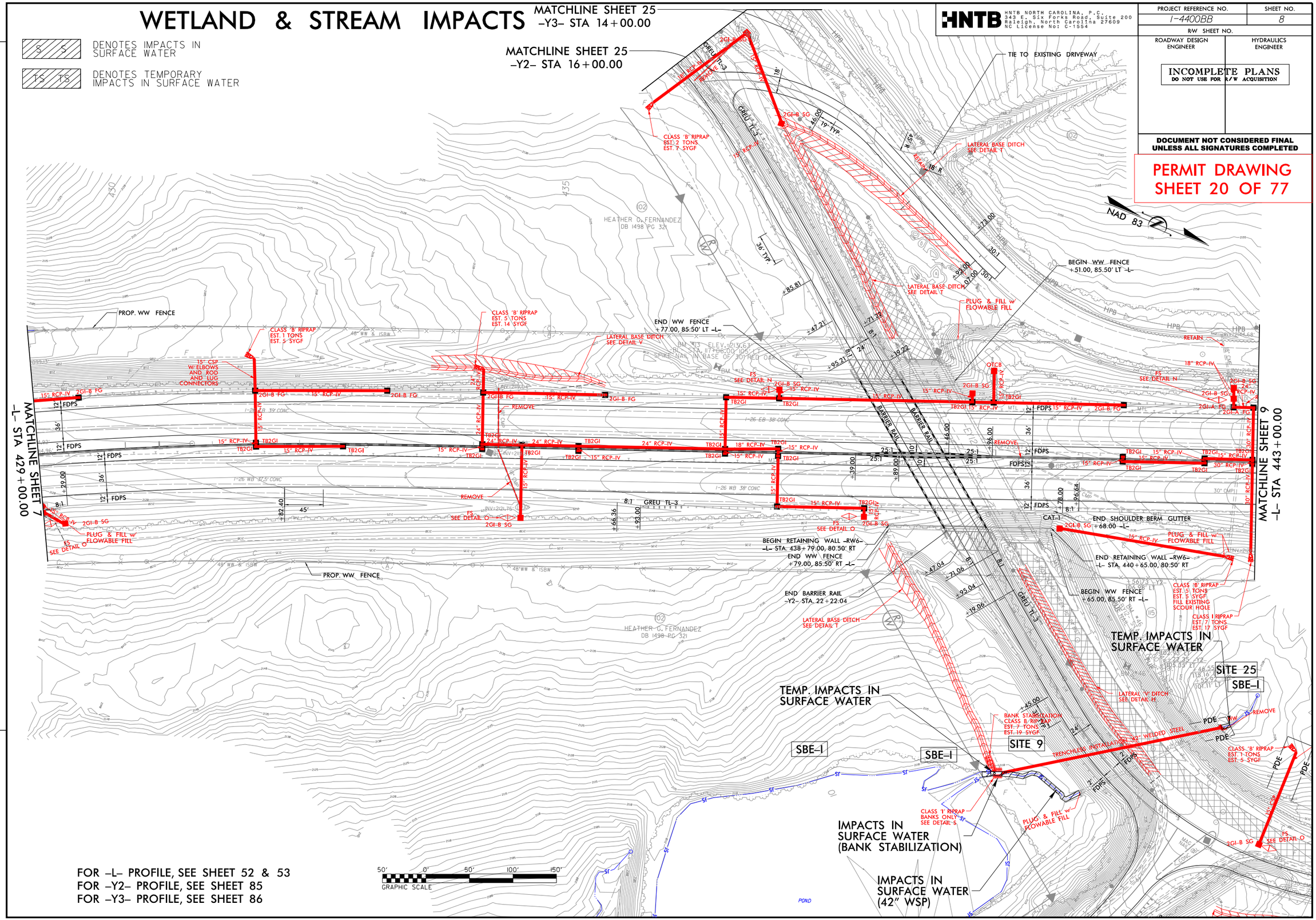
REVISIONS

$$$$$$SYSTIME$$$$
$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$$$USERNAME$$$$
$$SCALE$$
$$ENVIRONMENT$$

WETLAND & STREAM IMPACTS

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER



FOR –L– PROFILE, SEE SHEET 52 & 53
FOR –Y2– PROFILE, SEE SHEET 85
FOR –Y3– PROFILE, SEE SHEET 86

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PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

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PERMIT DRAWING
SHEET 20 OF 77

REVISIONS

$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$$$USERNAME$$$$$
$$SCALE$$
$$ENVIRONMENT$$

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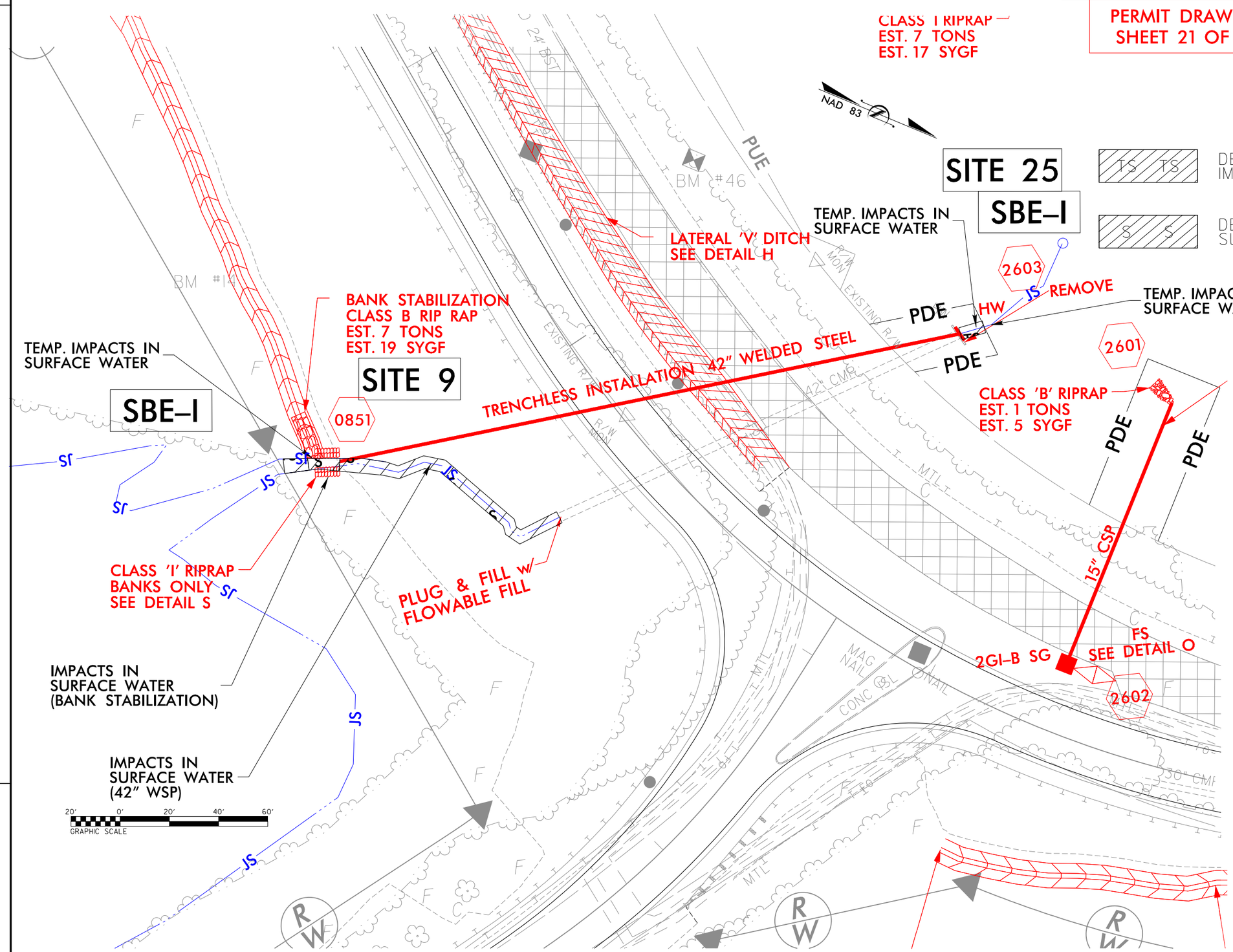
PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	8C
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 21 OF 77



FOR -L- PROFILE, SEE SHEET 52 & 53
FOR -Y2- PROFILE, SEE SHEET 85
FOR -Y3- PROFILE, SEE SHEET 86

REVISIONS

$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$
$$SCALE$$
$$ENVIRONMENT$$

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PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	8D
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

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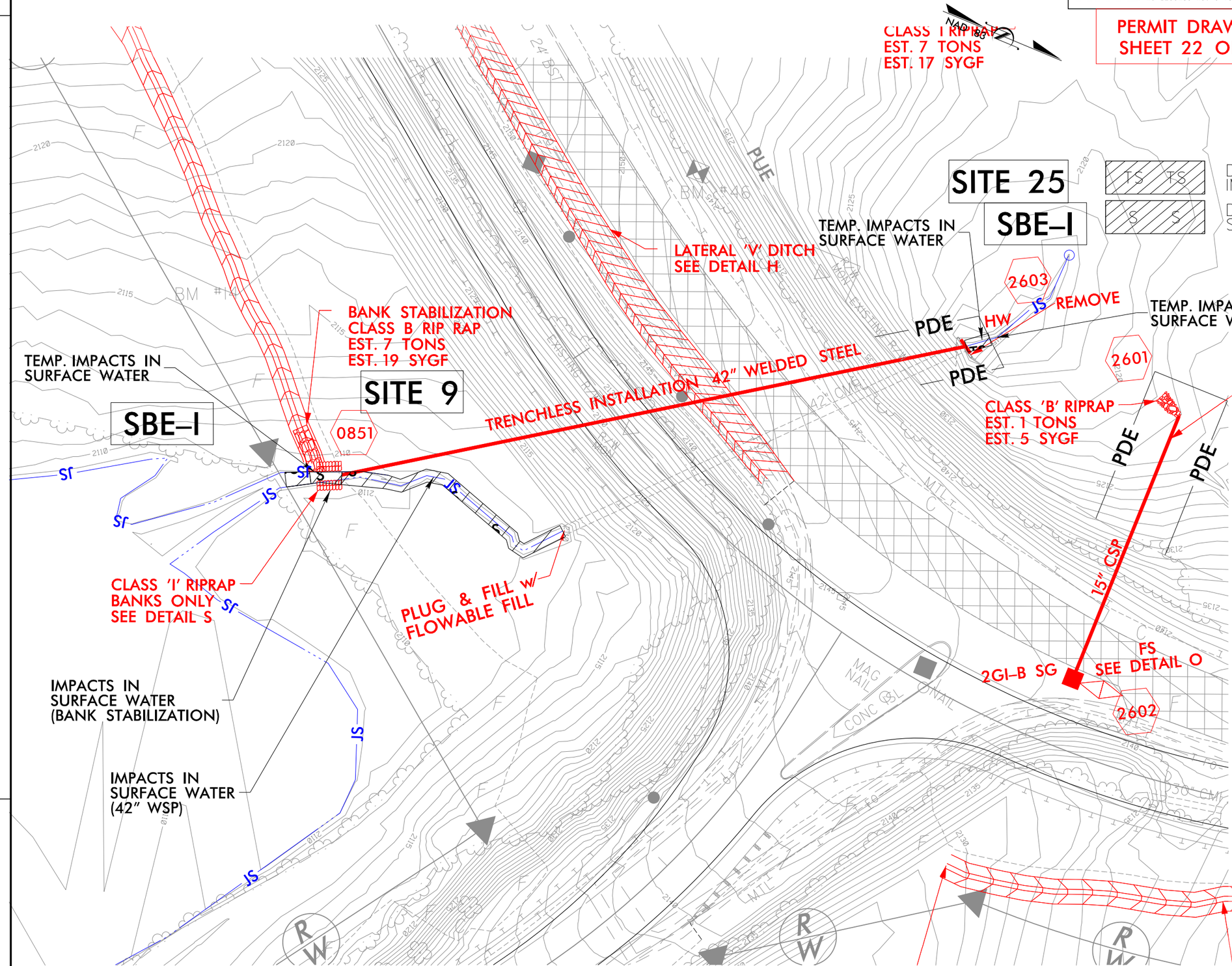
PERMIT DRAWING
SHEET 22 OF 77



FOR –L– PROFILE, SEE SHEET 52 & 53
FOR –Y2– PROFILE, SEE SHEET 85
FOR –Y3– PROFILE, SEE SHEET 86

REVISIONS

$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$
$$SCALE$$
$$ENVIRONMENT$$

WETLAND & STREAM IMPACTS

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

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PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

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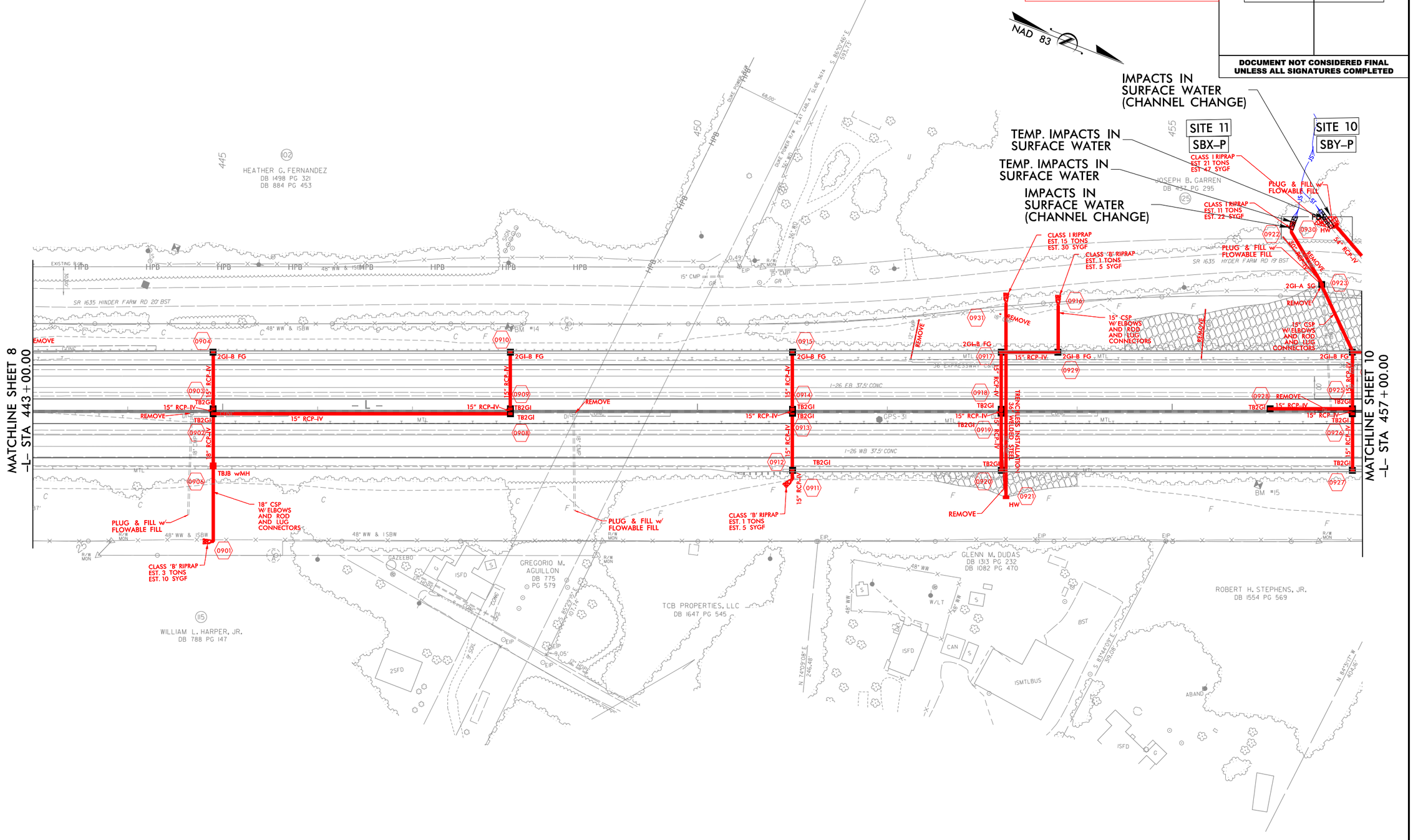
PERMIT DRAWING
SHEET 23 OF 77



FOR -L- PROFILE, SEE SHEET 53 & 54

REVISIONS

$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$$$USERNAME$$$$
$$$SCALE$$
$$ENVIRONMENT$$

WETLAND & STREAM IMPACTS

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

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PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

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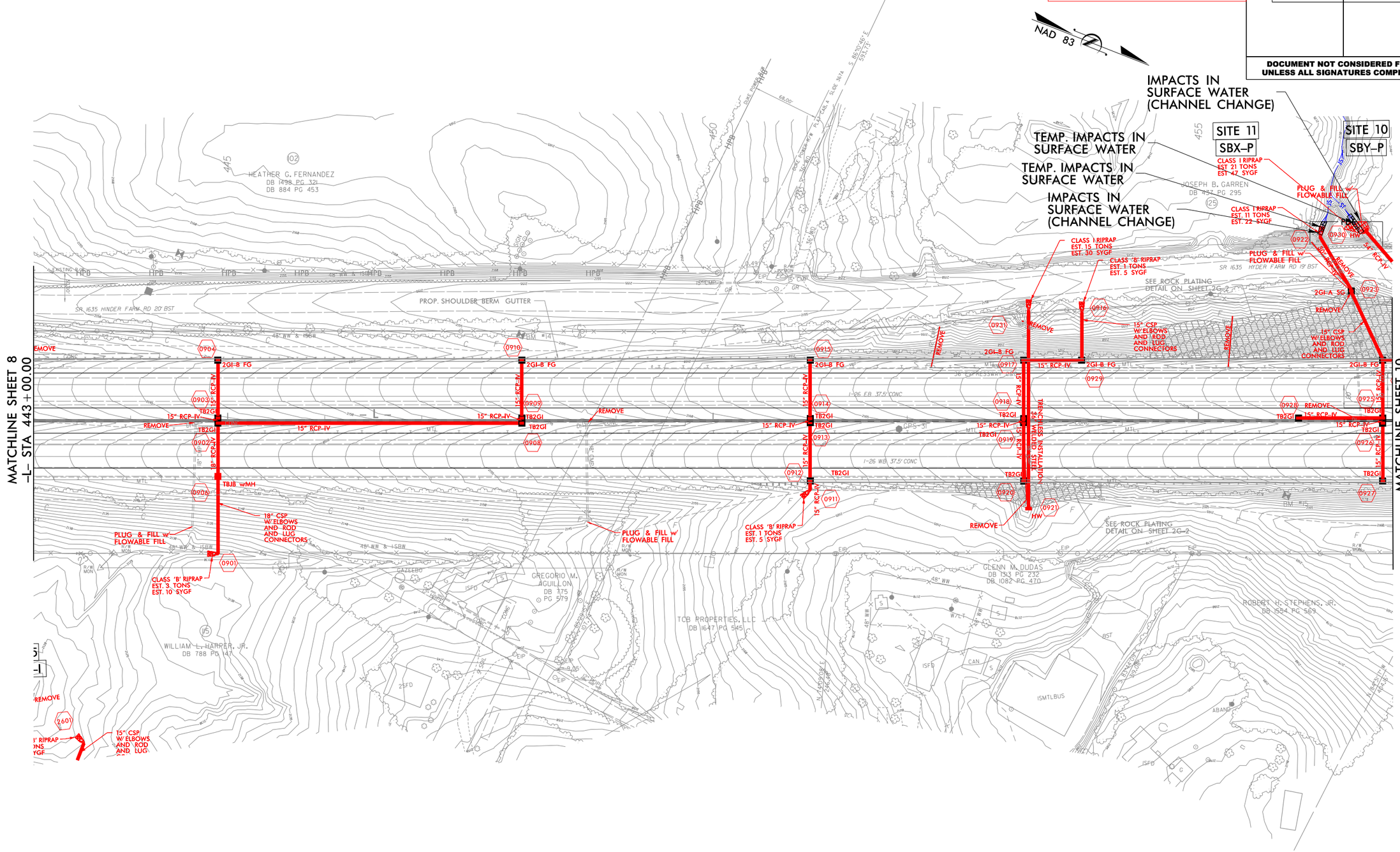
PERMIT DRAWING
SHEET 24 OF 77



FOR -L- PROFILE, SEE SHEET 53 & 54

REVISIONS

$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$
$$$$$$$$USERNAME$$$$
$$$$SCALE$$
$$ENVIRONMENT$$

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PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	9C
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

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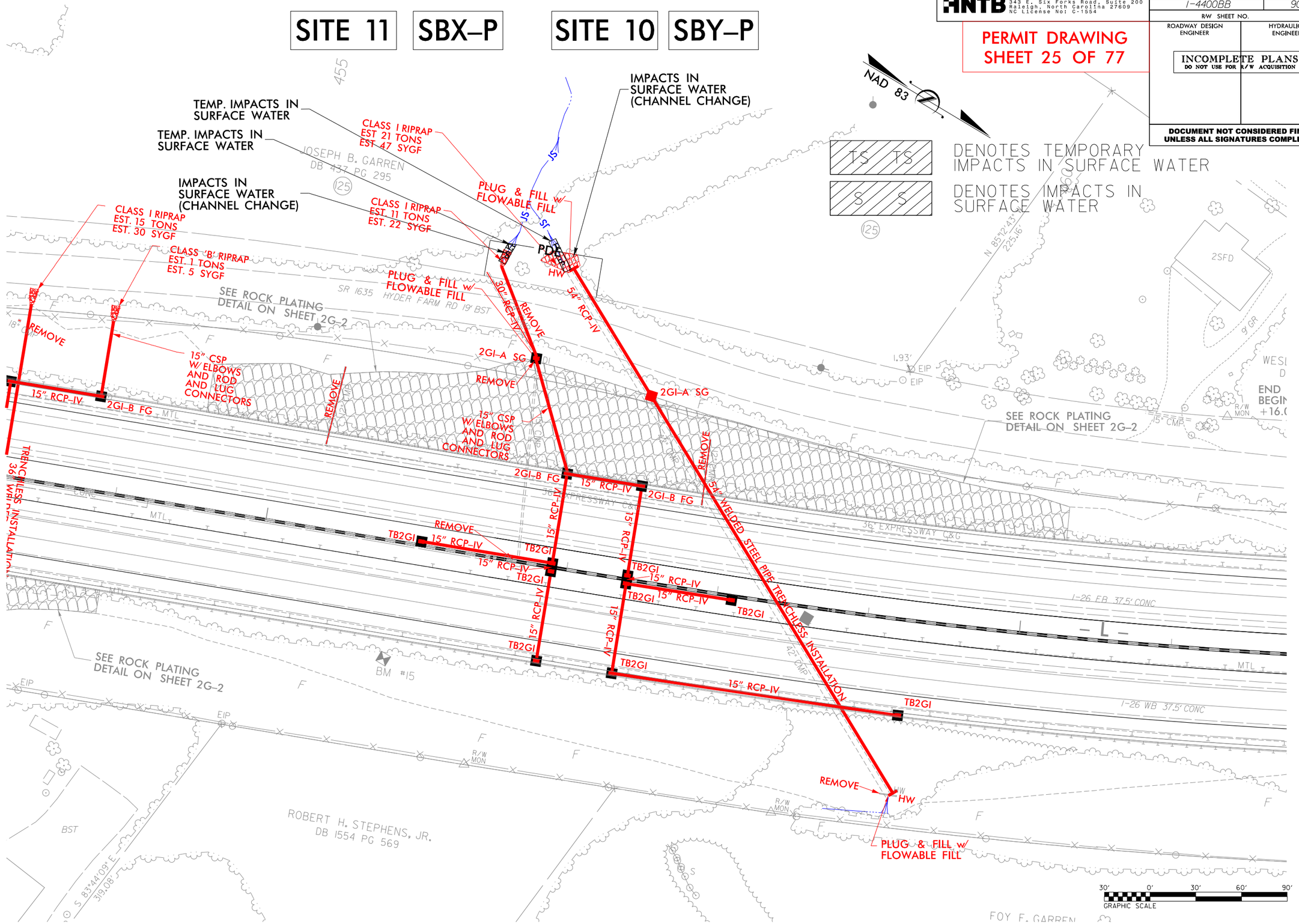
PERMIT DRAWING
SHEET 25 OF 77



REVISIONS

$$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$$$USERNAME$$$$
$$SCALE$$
$$ENVIRONMENT$$

HNTB NORTH CAROLINA, P.C.
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PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	9D
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

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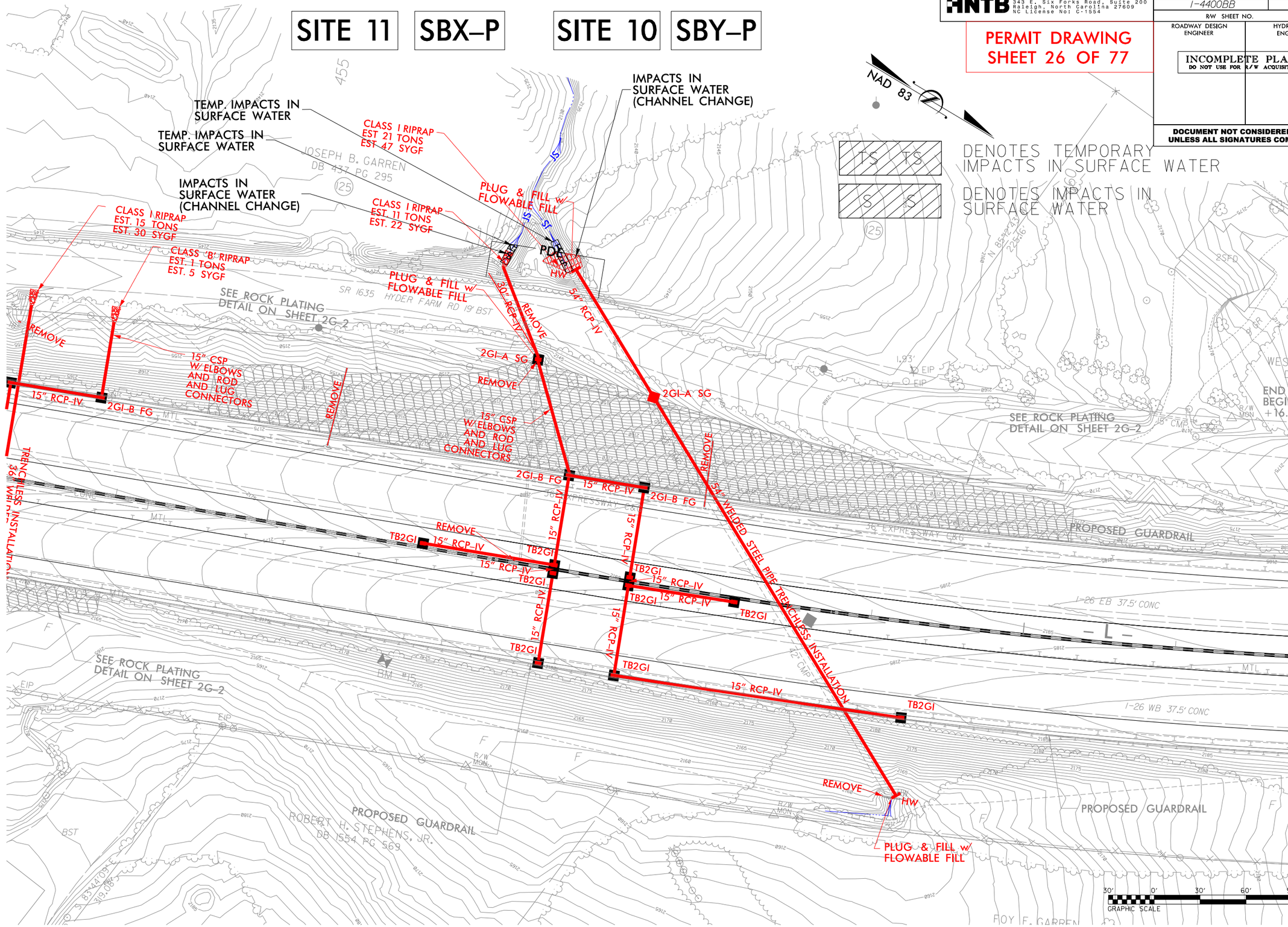
SHEET 26 OF 77



$$$$SYSTIME$$$$
$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$
$$SCALE$$
$$ENVIRONMENT$$

WETLAND & STREAM IMPACTS

HNTB
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PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	12

R/W SHEET NO.

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PERMIT DRAWING
SHEET 27 OF 77

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL
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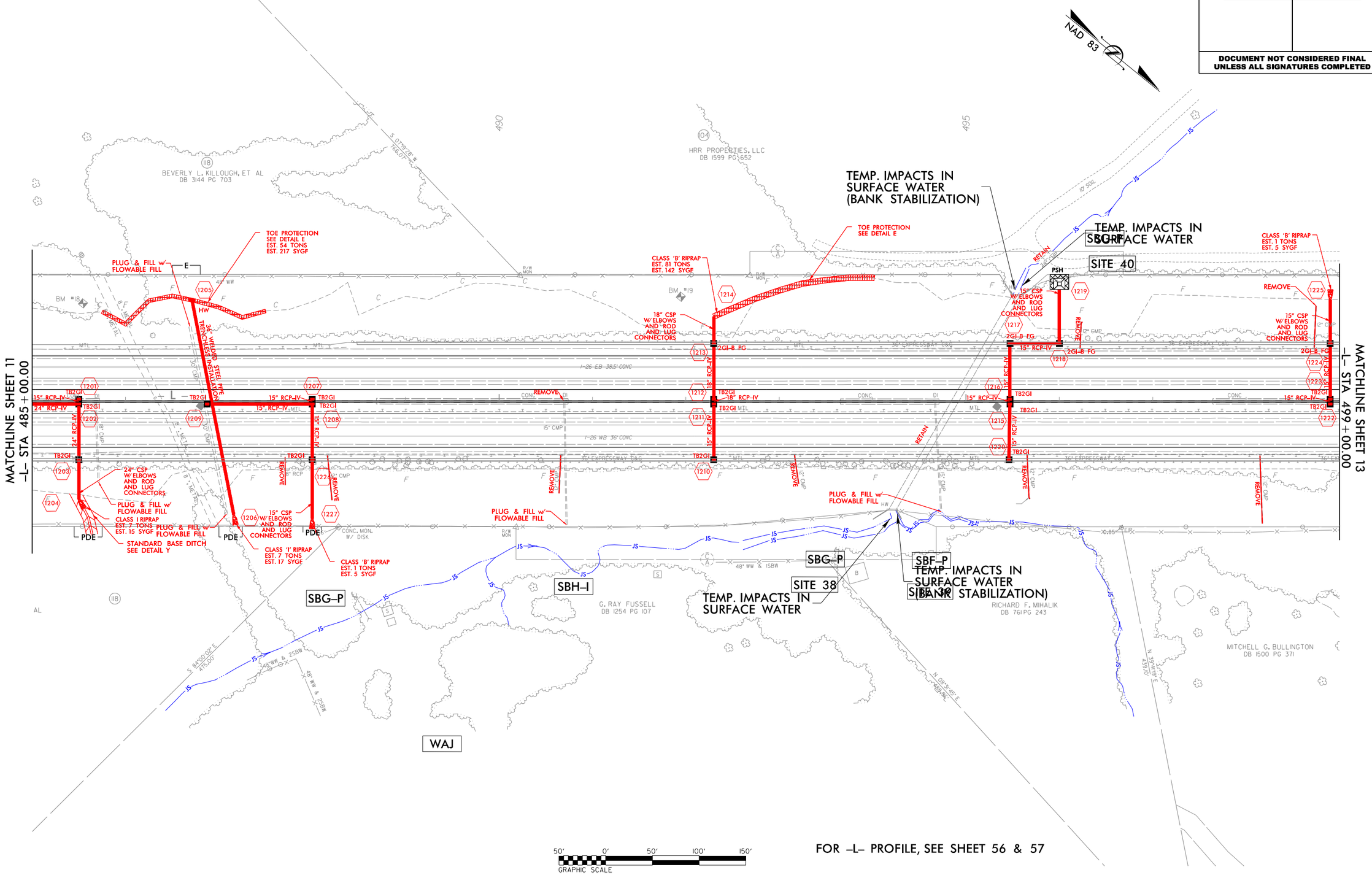
REVISIONS



FOR -L- PROFILE, SEE SHEET 56 & 57

WETLAND & STREAM IMPACTS

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PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
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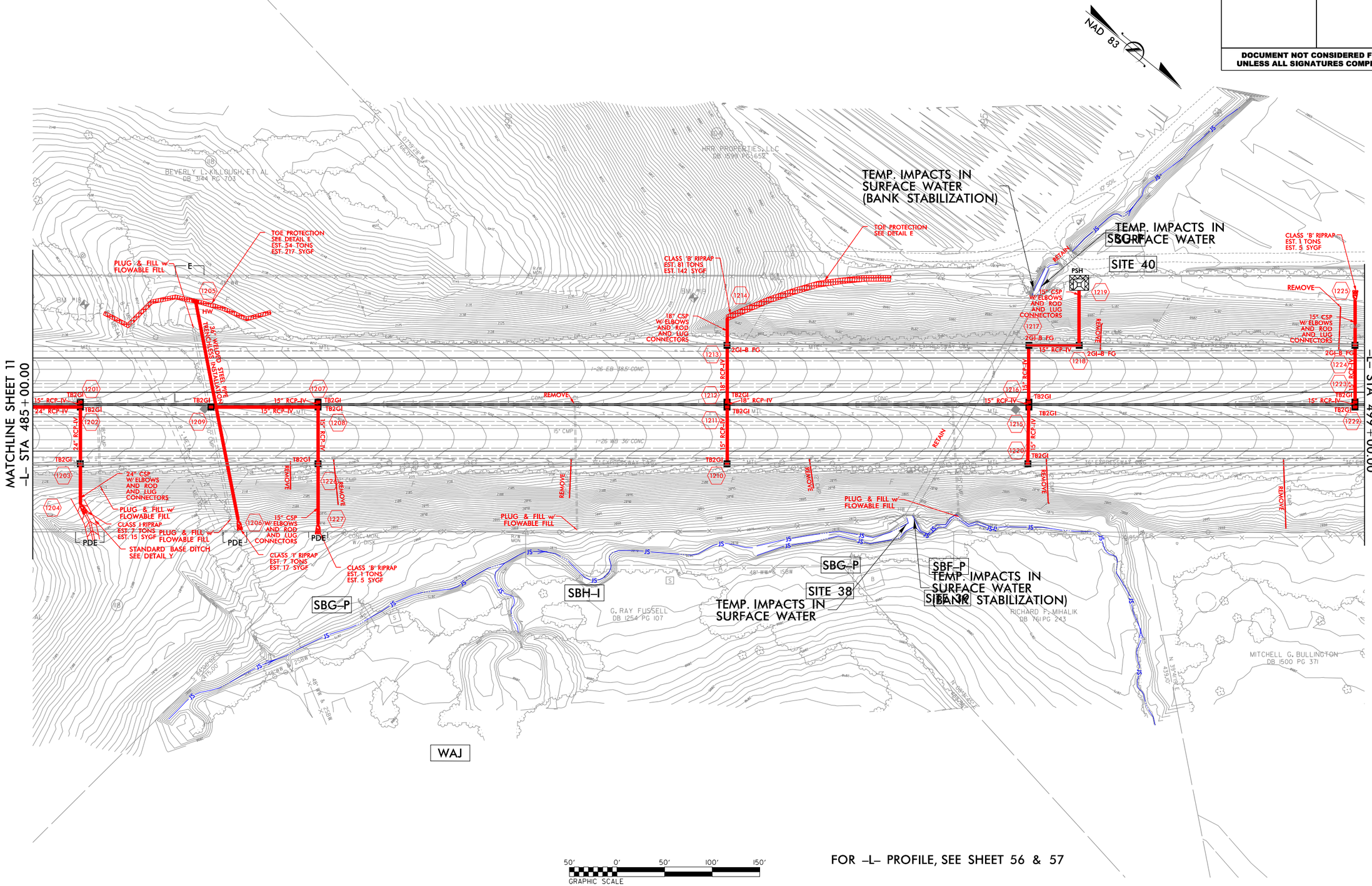
PERMIT DRAWING
SHEET 28 OF 77



FOR -L- PROFILE, SEE SHEET 56 & 57

REVISIONS

$$$$SYSTIME$$$$
$$$$USERNAME$$$$
$$$$SCALE$$$$
$$ENVIRONMENT$$

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PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	12C

RW SHEET NO.

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

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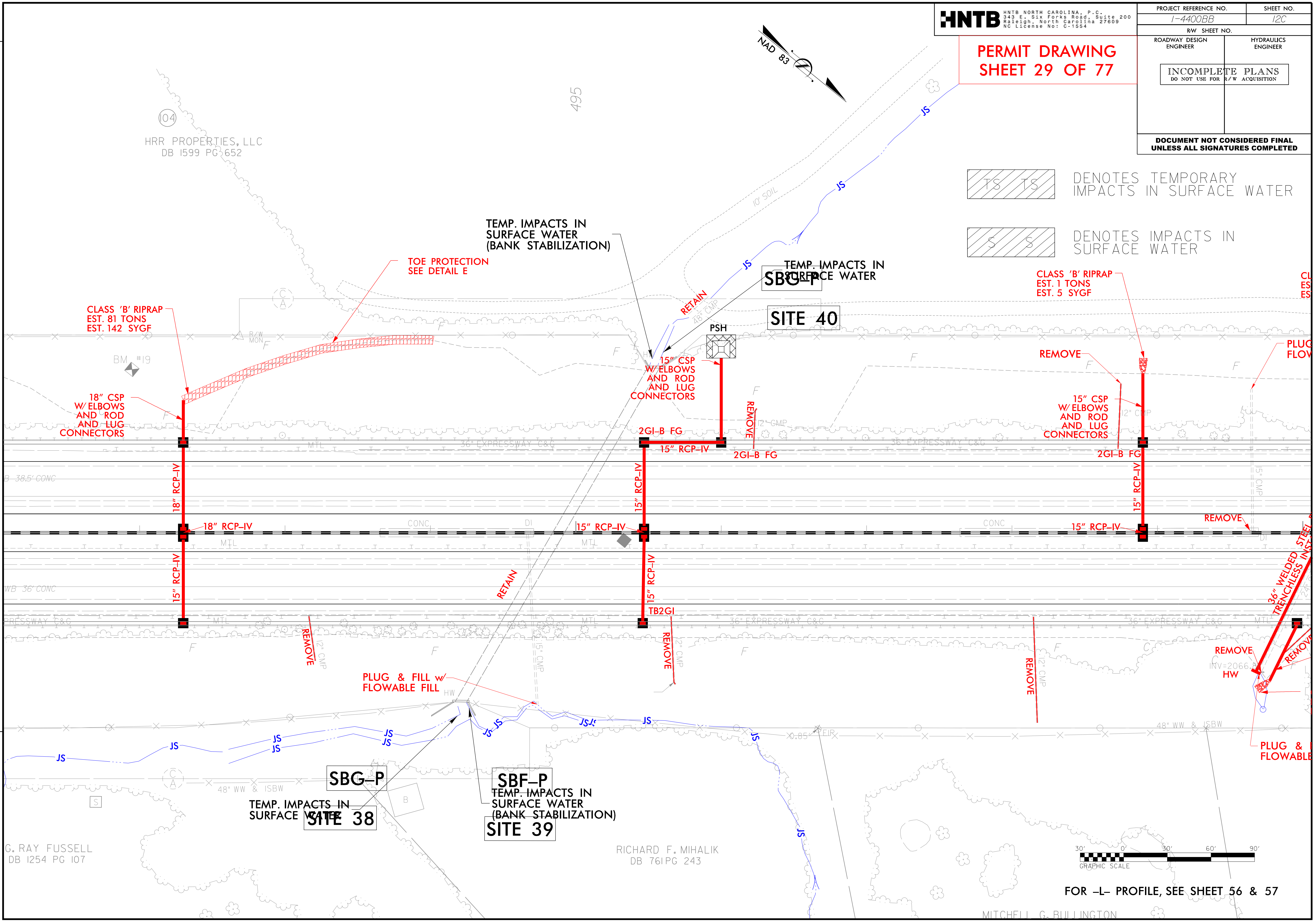
PERMIT DRAWING
SHEET 29 OF 77

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



FOR -L- PROFILE, SEE SHEET 56 & 57

REVISIONS

$$$$SYSTIME$$$$
$$$$DGN$$$$
$$$$USERNAME$$$$
$$SCALE$$
$$ENVIRONMENT$$

HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
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PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	I2D

R/W SHEET NO.

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

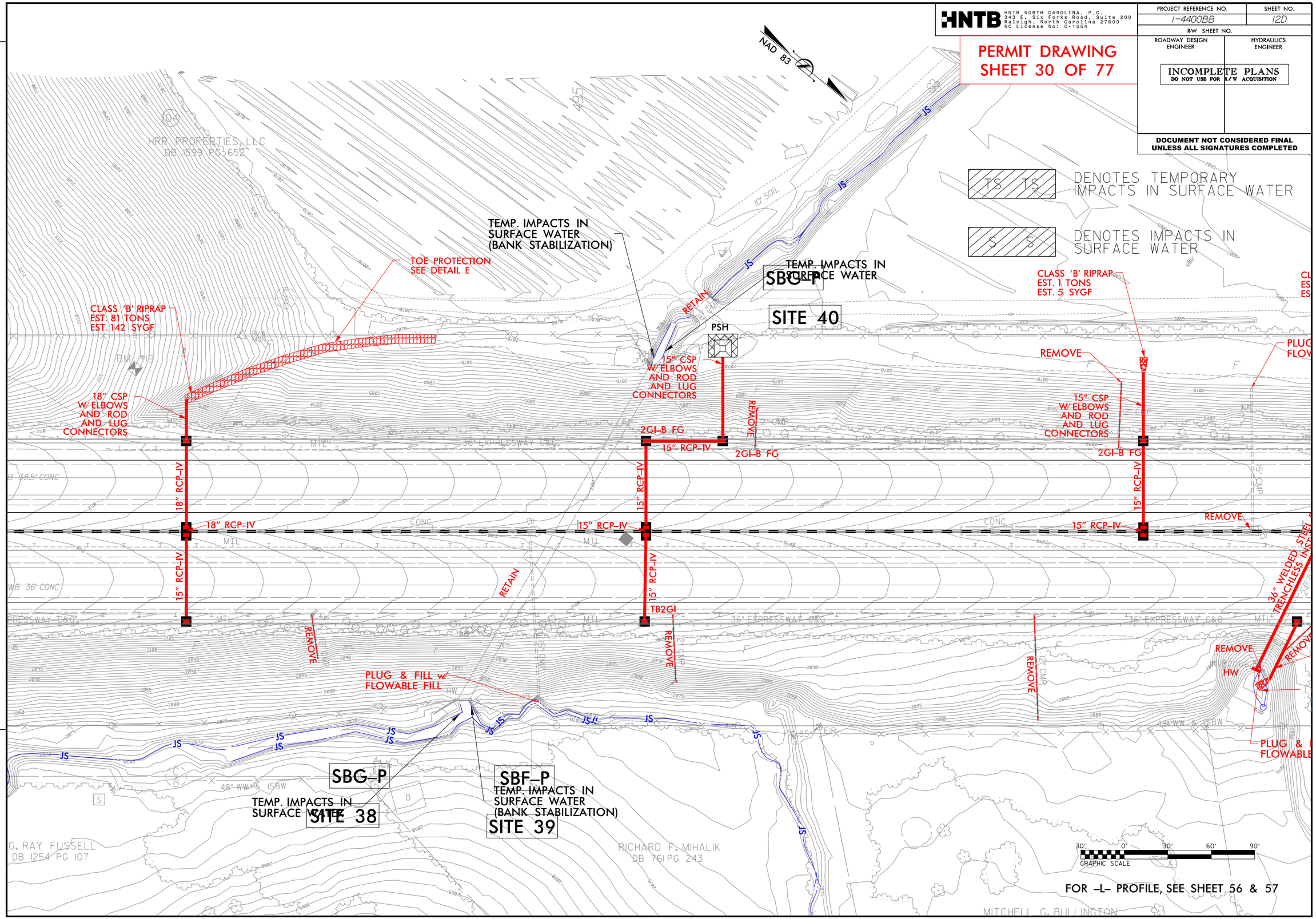
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 30 OF 77

▨ TS TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER

▨ S S — DENOTES IMPACTS IN SURFACE WATER



FOR -L- PROFILE, SEE SHEET 56 & 57

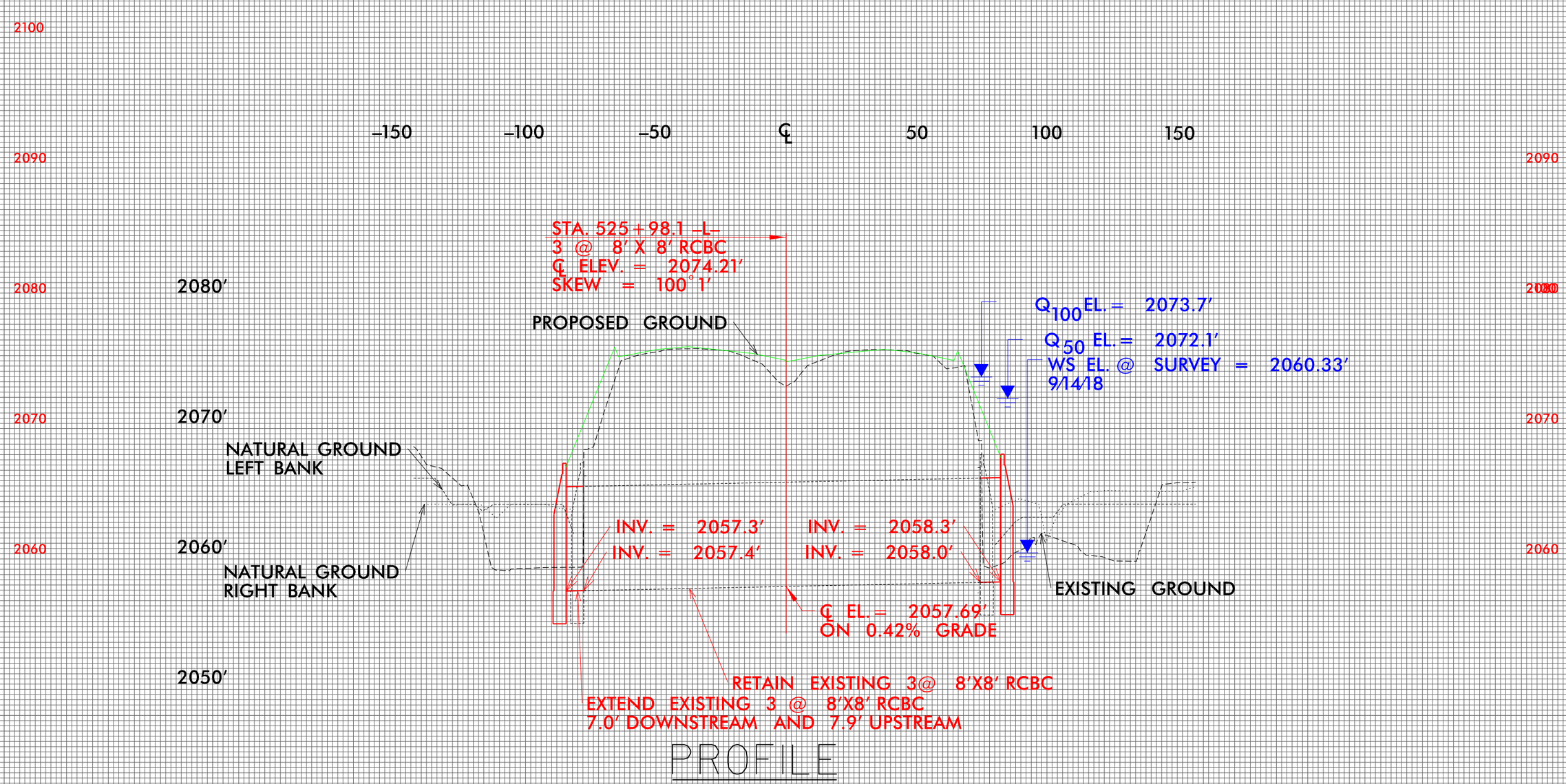
REVISIONS

$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$
$$SCALE$$
$$ENVIRONMENT$$

6/23/16

PROJ. REFERENCE NO.	SHEET NO.
I-4400BB	12E

PERMIT DRAWING
SHEET 31 OF 77



PROFILE

BUNCOMBE & HENDERSON COUNTY
PROJECT: I-4400C
I-26
I-26 BETWEEN US 64 (CHIMNEY ROCK ROAD)
TO WEST OF NAPLES ROAD (SR1534)

$$$$$SYSTIME$$$$$
$$$$$DGN$$$$$
$$$$$DATE$$$$$
$$$$$USER$$$$$

WETLAND & STREAM IMPACTS

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

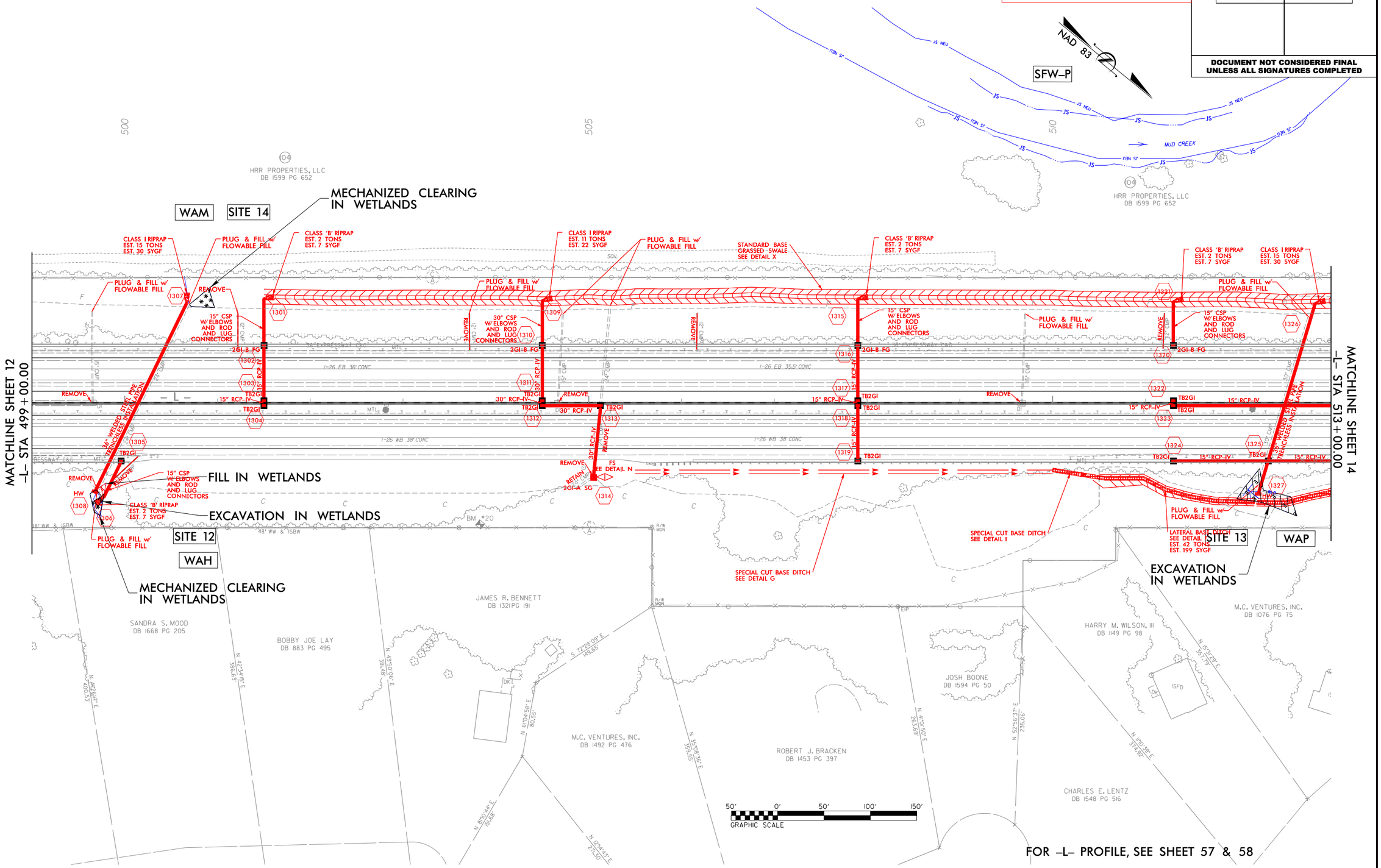
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 32 OF 77



FOR -L- PROFILE, SEE SHEET 57 & 58

REVISIONS

$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$
$$$USERNAME$$$
$$SCALE$$
$ENVIRONMENT$$

WETLAND & STREAM IMPACTS

S S — DENOTES IMPACTS IN SURFACE WATER

TS TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER

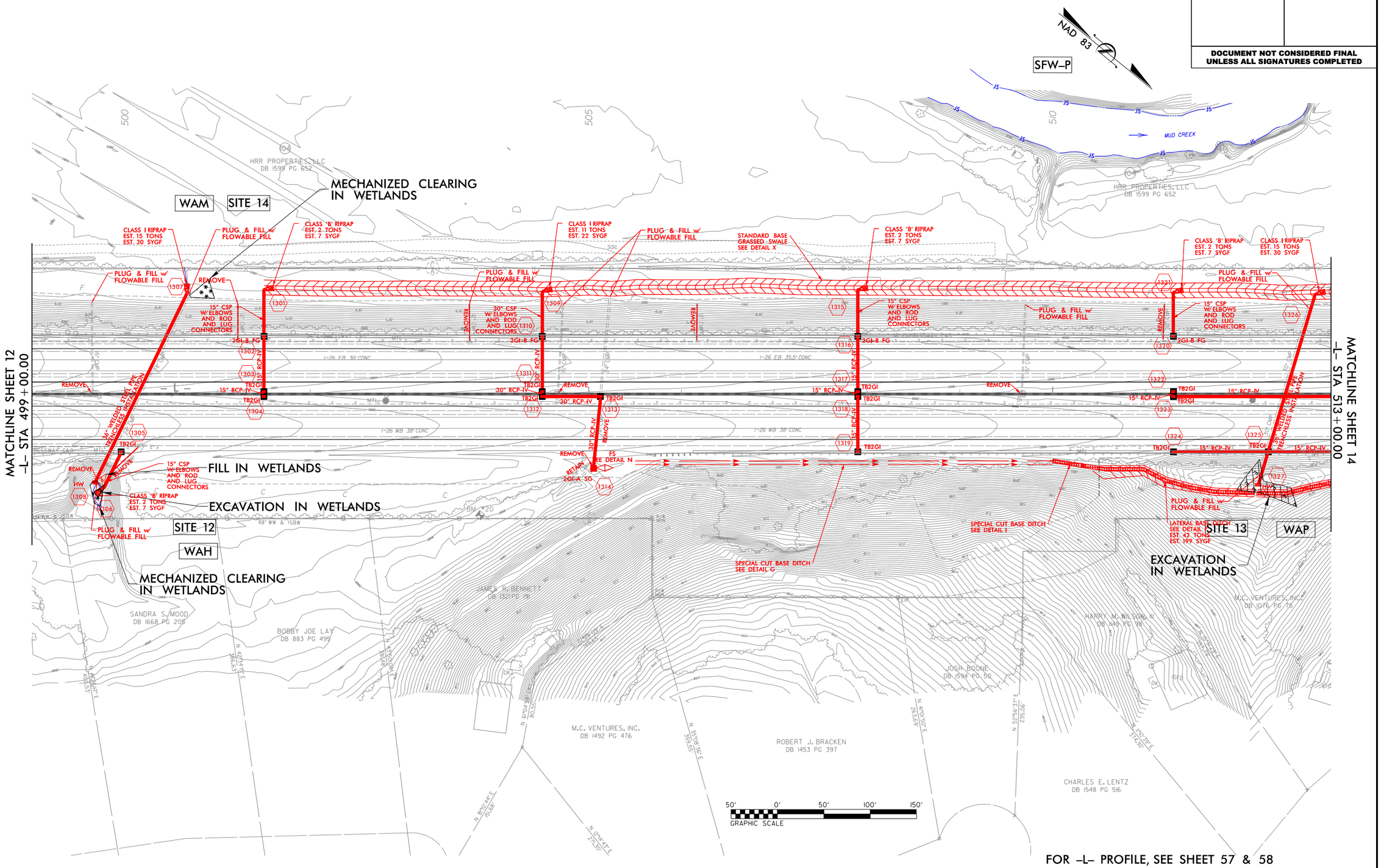
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 33 OF 77



FOR -L- PROFILE, SEE SHEET 57 & 58

REVISIONS

$$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$
$$$$$$USERNAME$$$$
$$$SCALE$$
$$ENVIRONMENT$$

WETLAND & STREAM IMPACTS

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

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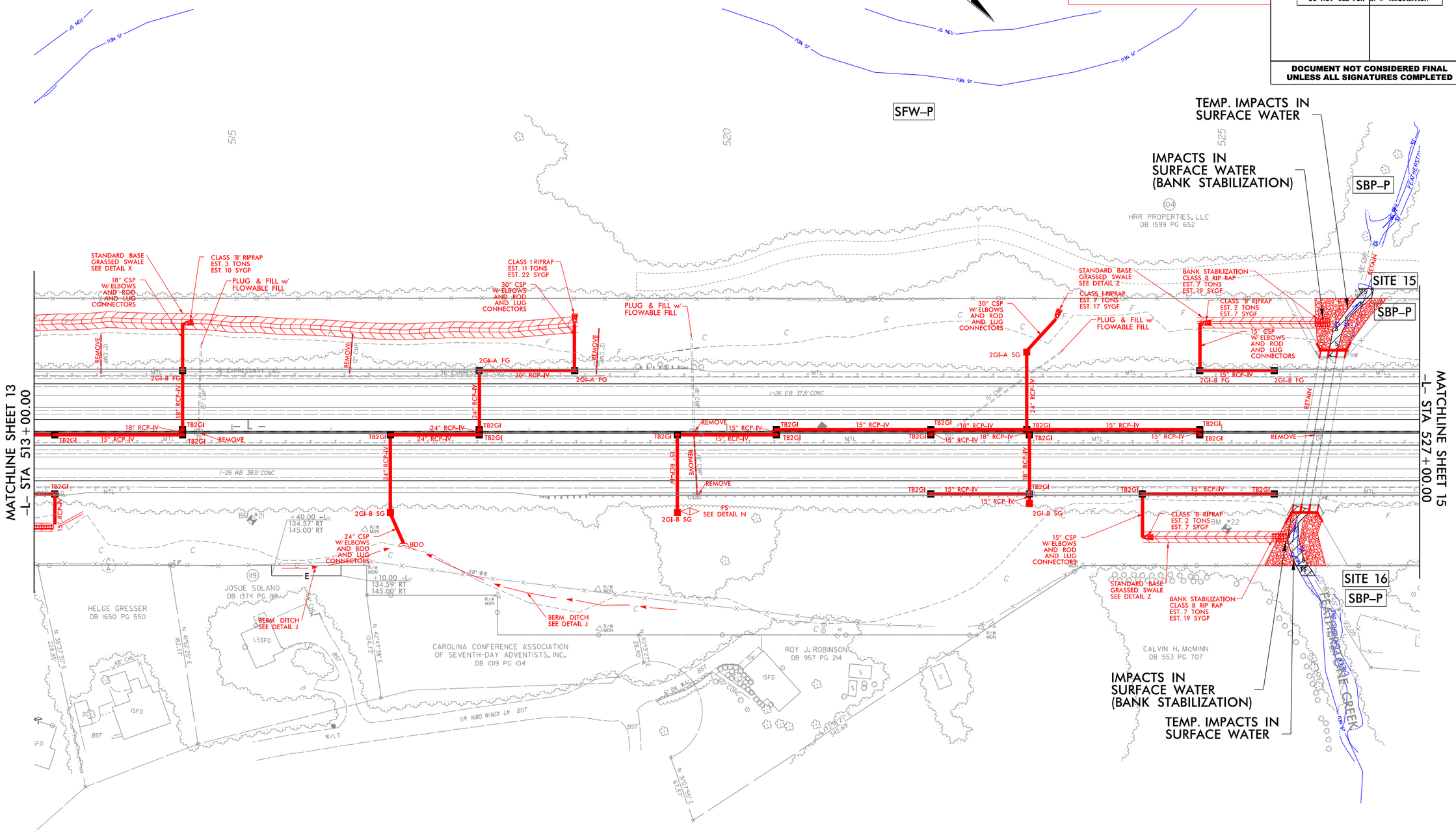
PERMIT DRAWING
SHEET 34 OF 77

PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



FOR -L- PROFILE, SEE SHEET 58 & 59

$$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$$$$USERNAME$$$$
$$SCALE$$
$$ENVIRONMENT$$

WETLAND & STREAM IMPACTS

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

HNTB NORTH CAROLINA, P.C.
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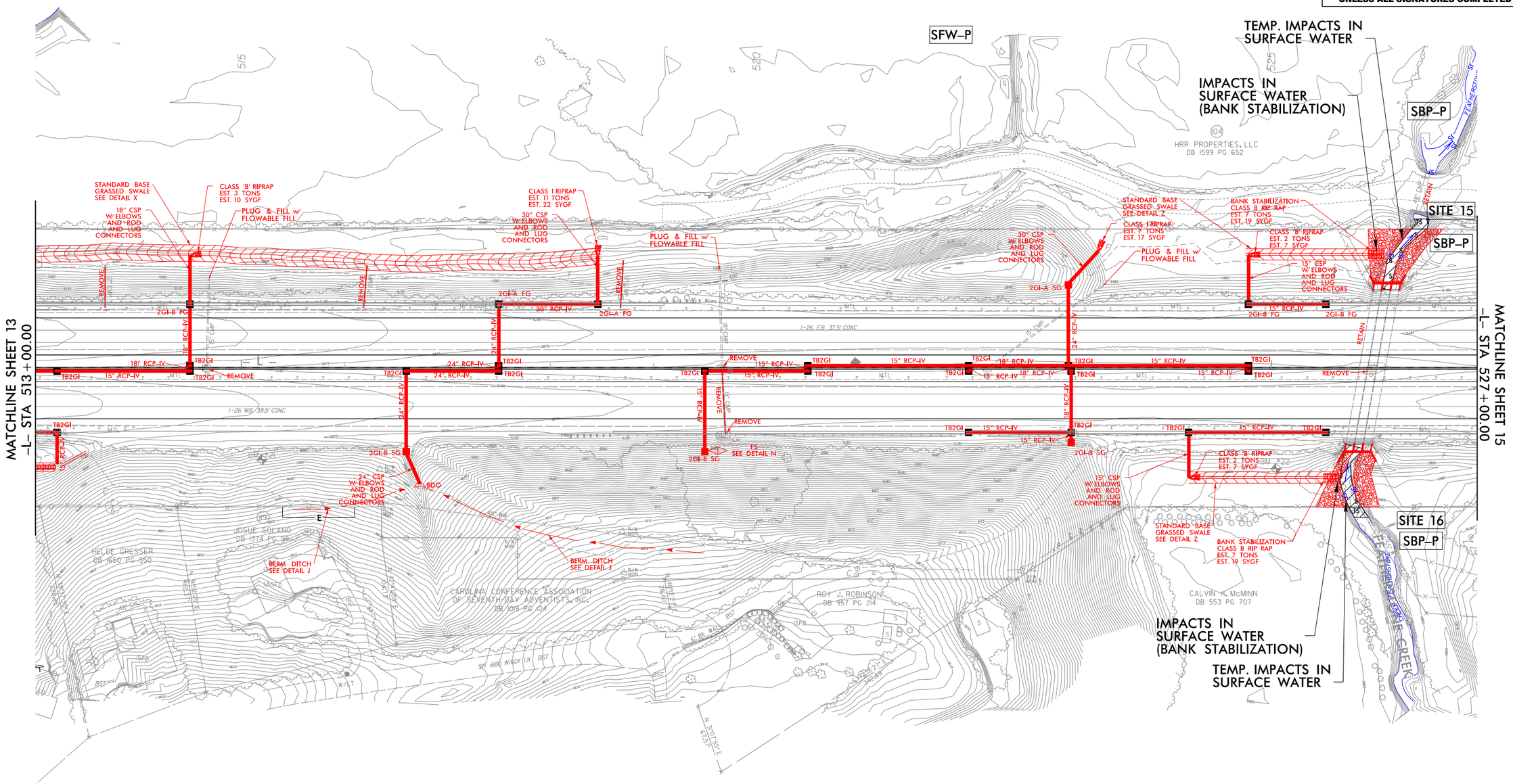
PERMIT DRAWING
SHEET 35 OF 77

PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



FOR -L- PROFILE, SEE SHEET 58 & 59

$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$$$USERNAME$$$$
$$SCALE$$
$$ENVIRONMENT$$

HNTB NORTH CAROLINA, P.C.
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Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	14C
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

PERMIT DRAWING
SHEET 36 OF 77

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S S DENOTES IMPACTS IN SURFACE WATER

SITE 15 SBP-P

NAD 83

HRR PROPERTIES, LLC
DB 1599 PG 652

TEMP. IMPACTS IN SURFACE WATER

IMPACTS IN SURFACE WATER (BANK STABILIZATION)

FEATHERSTONE CREEK

STANDARD BASE GRASSED SWALE SEE DETAIL Z

CLASS I RIPRAP EST. 7 TONS EST. 17 SYGF

30" CSP W/ ELBOWS AND ROD AND LUG CONNECTORS

PLUG & FILL w/ FLOWABLE FILL

BANK STABILIZATION CLASS B RIP RAP EST. 7 TONS EST. 19 SYGF

CLASS 'B' RIPRAP EST. 2 TONS EST. 7 SYGF

15" CSP W/ ELBOWS AND ROD AND LUG CONNECTORS

CLASS 'B' RIPRAP EST. 1 TONS EST. 5 SYGF

15" CSP W/ ELBOWS AND ROD AND LUG CONNECTORS

LATERAL 'V' DITCH SEE DETAIL K

CLASS I RIPRAP EST. 11 TONS EST. 22 SYGF

30" RCP-IV

PLUG & FILL w/ FLOWABLE FILL

2GI-A SG

2GI-B FG

2GI-B FG

2GI-B FG

2GI-A FG

24" RCP-IV

15" RCP-IV

18" RCP-IV

TB2GI

18" RCP-IV

15" RCP-IV

15" RCP-IV

15" RCP-IV

15" RCP-IV

REMOVE

REMOVE

RETAIN

RETAIN

48" CMP

15" CMP

2GI-B SG

CLASS 'B' RIPRAP EST. 2 TONS EST. 7 SYGF

15" CSP W/ ELBOWS AND ROD AND LUG CONNECTORS

STANDARD BASE GRASSED SWALE SEE DETAIL Z

BANK STABILIZATION CLASS B RIP RAP EST. 7 TONS EST. 19 SYGF

IMPACTS IN SURFACE WATER (BANK STABILIZATION)

TEMP. IMPACTS IN SURFACE WATER

CALVIN H. McMINN
DB 553 PG 707

DENISE E. BARNWELL
DB 1564 PG 306

S 34°37'59" E
192.50'

SITE 16 SBP-P

GRAPHIC SCALE 30' 0' 30' 60' 90'

FOR -L- PROFILE, SEE SHEET 58 & 59

$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$USERNAME$$$
$$SCALE$$
$$ENVIRONMENT$$

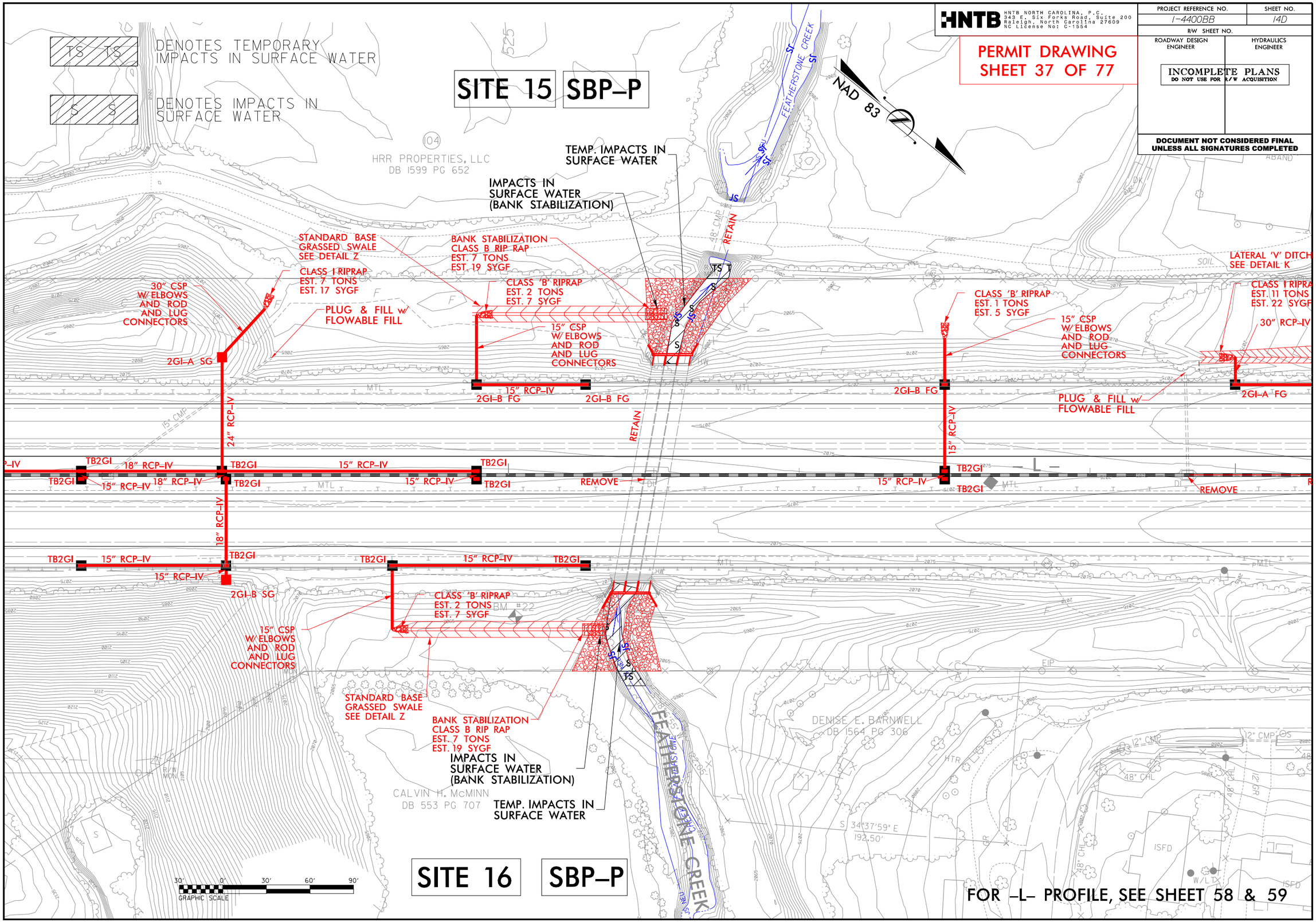
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	14D
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

PERMIT DRAWING
SHEET 37 OF 77



FOR -L- PROFILE, SEE SHEET 58 & 59

$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$$$USERNAME$$$$$
$$SCALE$$
$ENVIRONMENT$$

WETLAND & STREAM IMPACTS

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

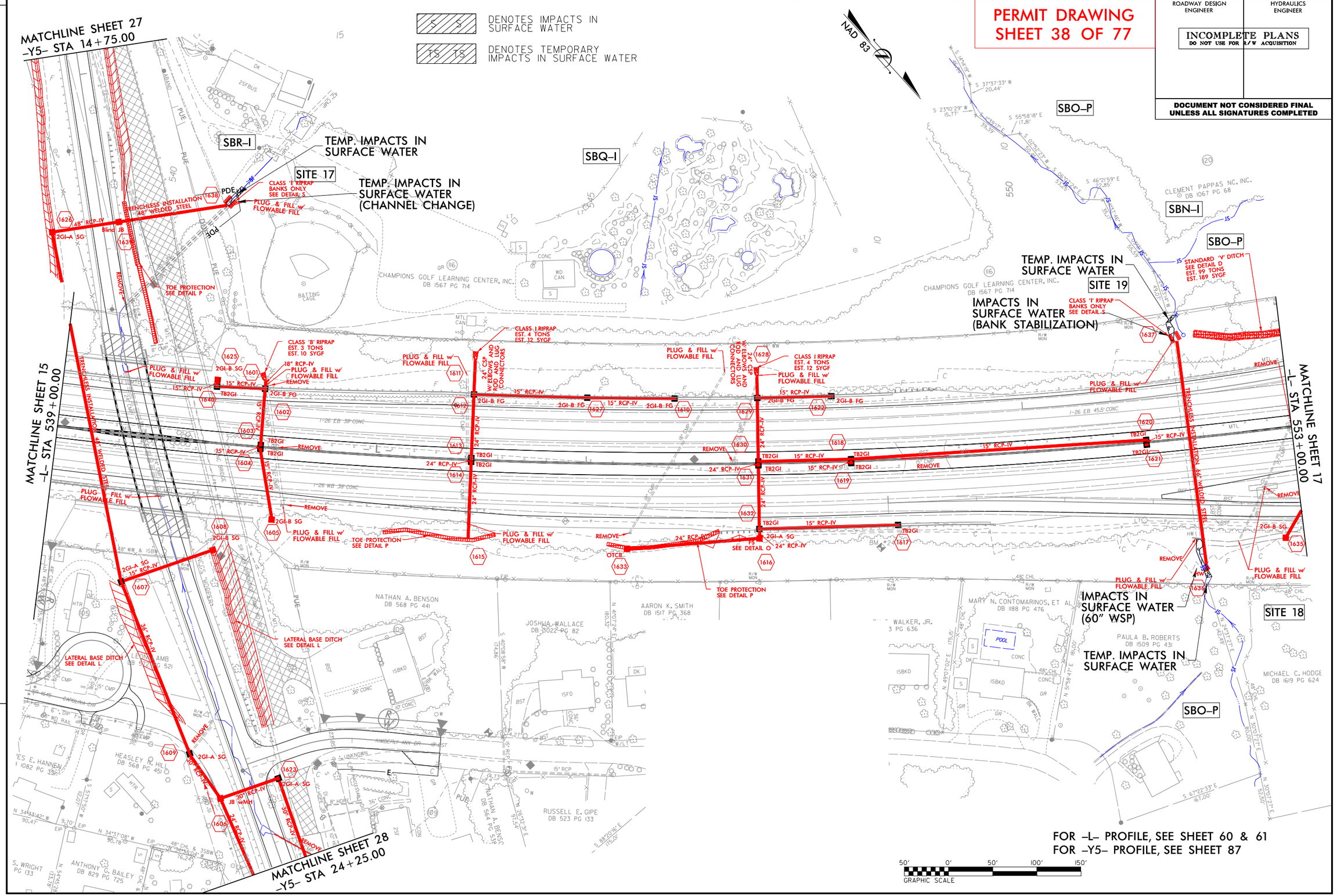
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 38 OF 77



FOR -L- PROFILE, SEE SHEET 60 & 61
FOR -Y5- PROFILE, SEE SHEET 87

REVISIONS

$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$
$$$$$$USERNAME$$$$
$$SCALE$$
$$ENVIRONMENT$$

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NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	16
R/W SHEET NO.	

PERMIT DRAWING
SHEET 39 OF 77

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

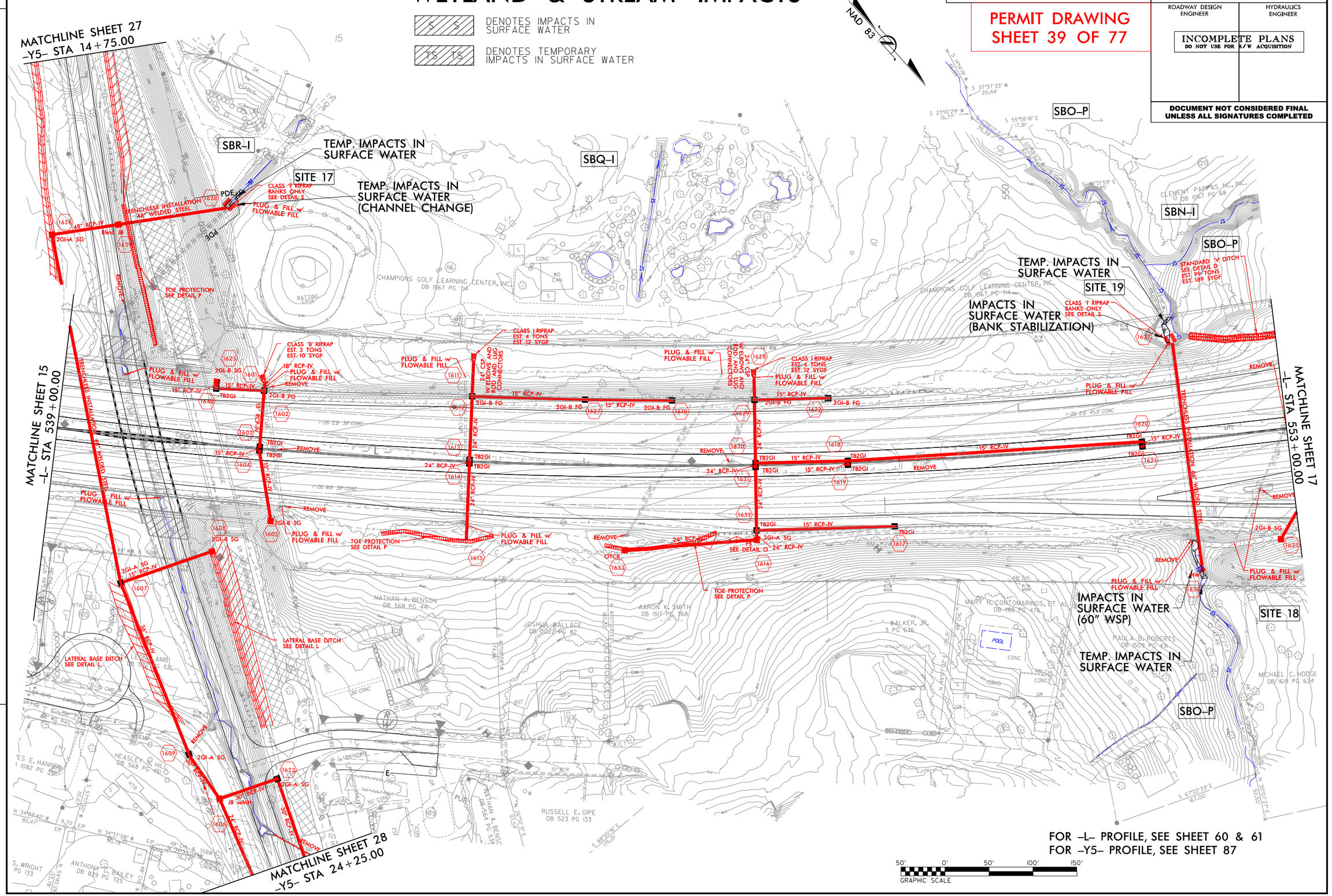
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

WETLAND & STREAM IMPACTS

▨ DENOTES IMPACTS IN SURFACE WATER

▨ DENOTES TEMPORARY IMPACTS IN SURFACE WATER



FOR -L- PROFILE, SEE SHEET 60 & 61
FOR -Y5- PROFILE, SEE SHEET 87

HNTB NORTH CAROLINA, P.C.
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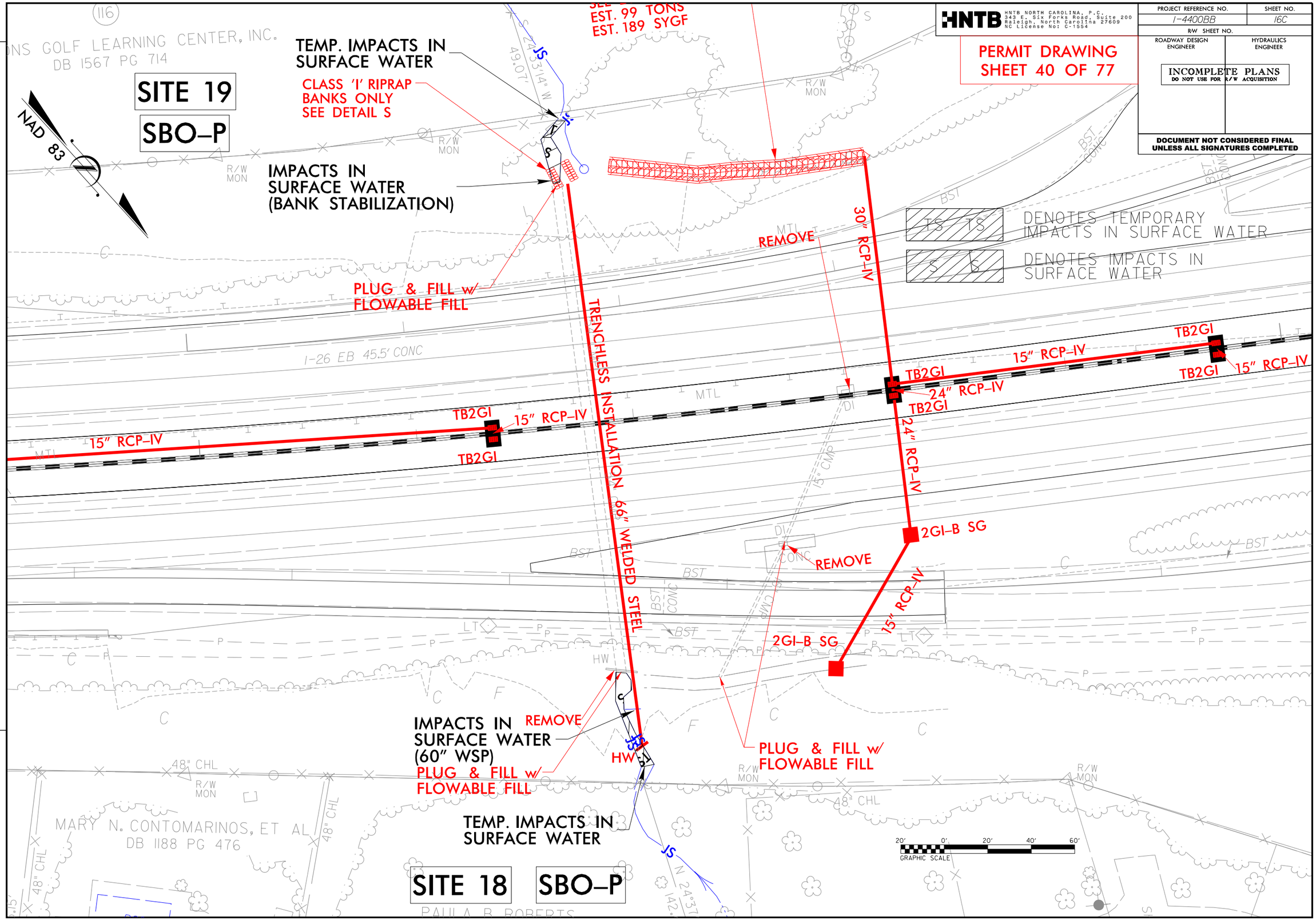
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	16C
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

PERMIT DRAWING
SHEET 40 OF 77



REVISIONS

$$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$$USERNAME$$$$
$$SCALE$$
$$ENVIRONMENT$$

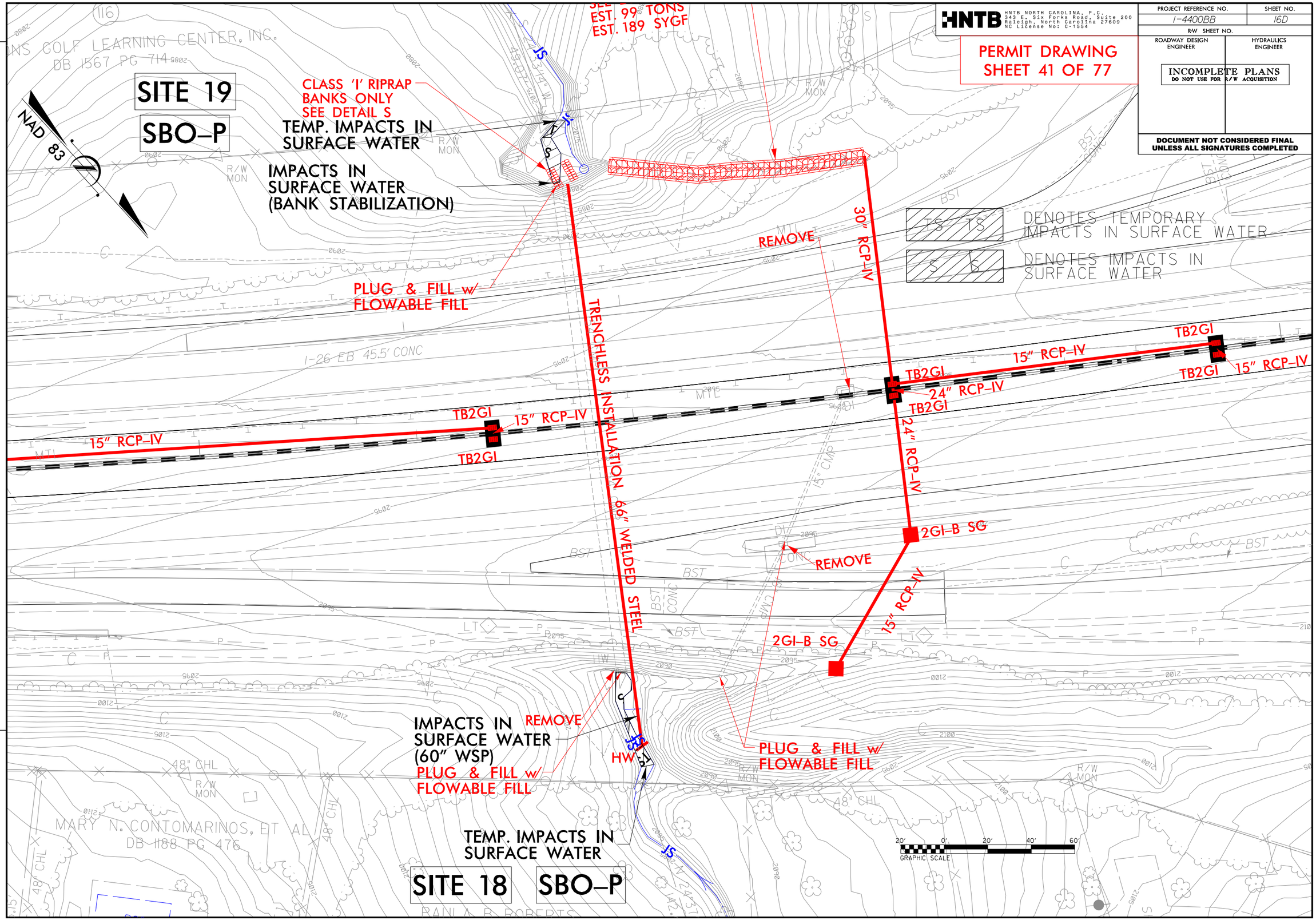
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	16D
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

PERMIT DRAWING
SHEET 41 OF 77



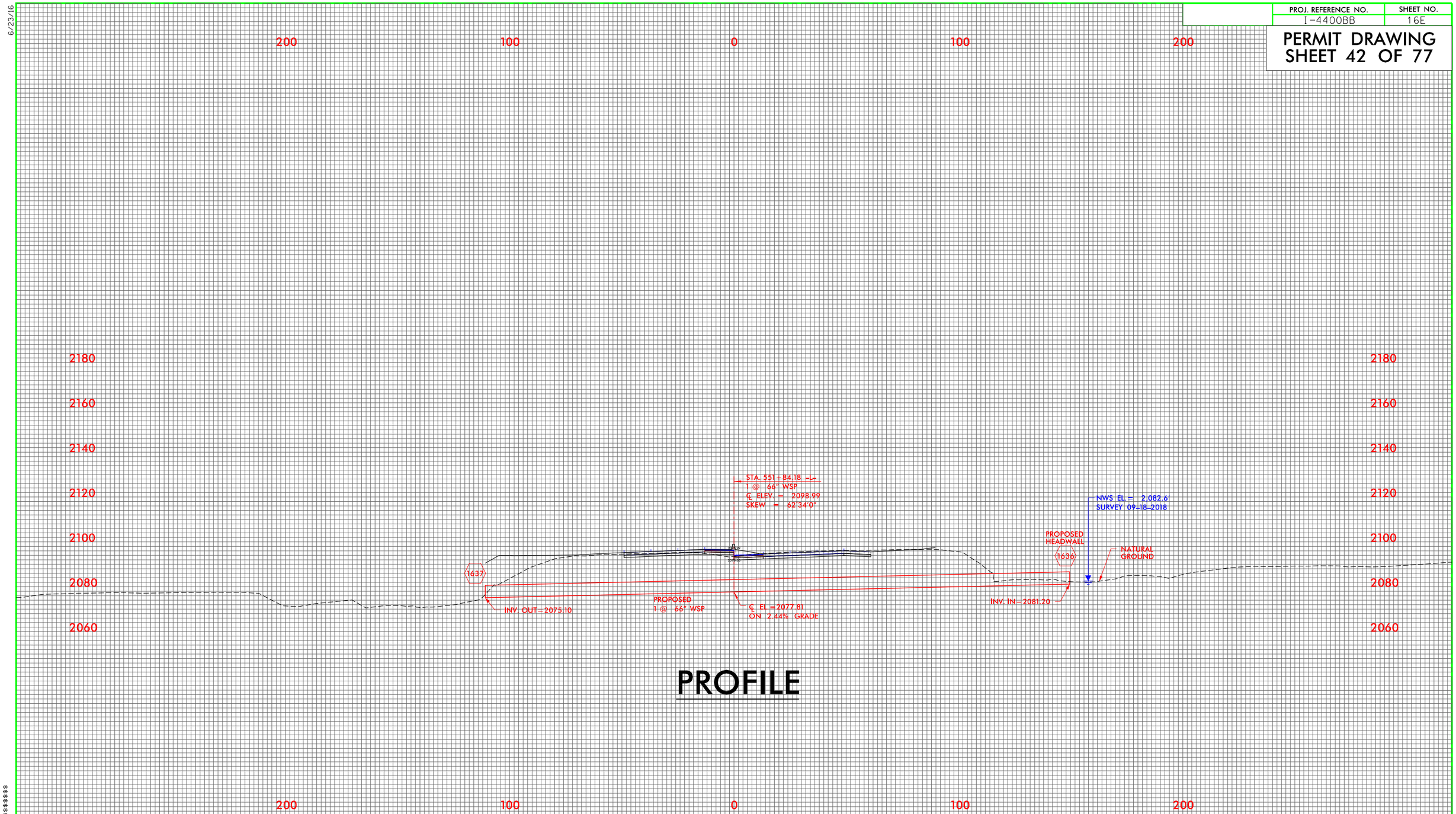
REVISIONS

$$$$$$SYSTIME$$$$$$
$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$
$$SCALE$$
$$ENVIRONMENT$$

6/23/16

PROJ. REFERENCE NO.	SHEET NO.
I-4400BB	16E

PERMIT DRAWING
SHEET 42 OF 77



PROFILE

BUNCOMBE & HENDERSON COUNTY
PROJECT: I-4400C
I-26
I-26 BETWEEN US 64 (CHIMNEY ROCK ROAD)
TO WEST OF NAPLES ROAD (SR1534)

$$$$SYSTIME$$$$
$$$$SYSTIME$$$$
$$$$EXT$$$$
$$$$EXT$$$$
$$$$DGN$$$$
$$$$DGN$$$$
$$$$REF$$$$
$$$$REF$$$$
$$$$REF$$$$
$$$$REF$$$$

WETLAND & STREAM IMPACTS

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

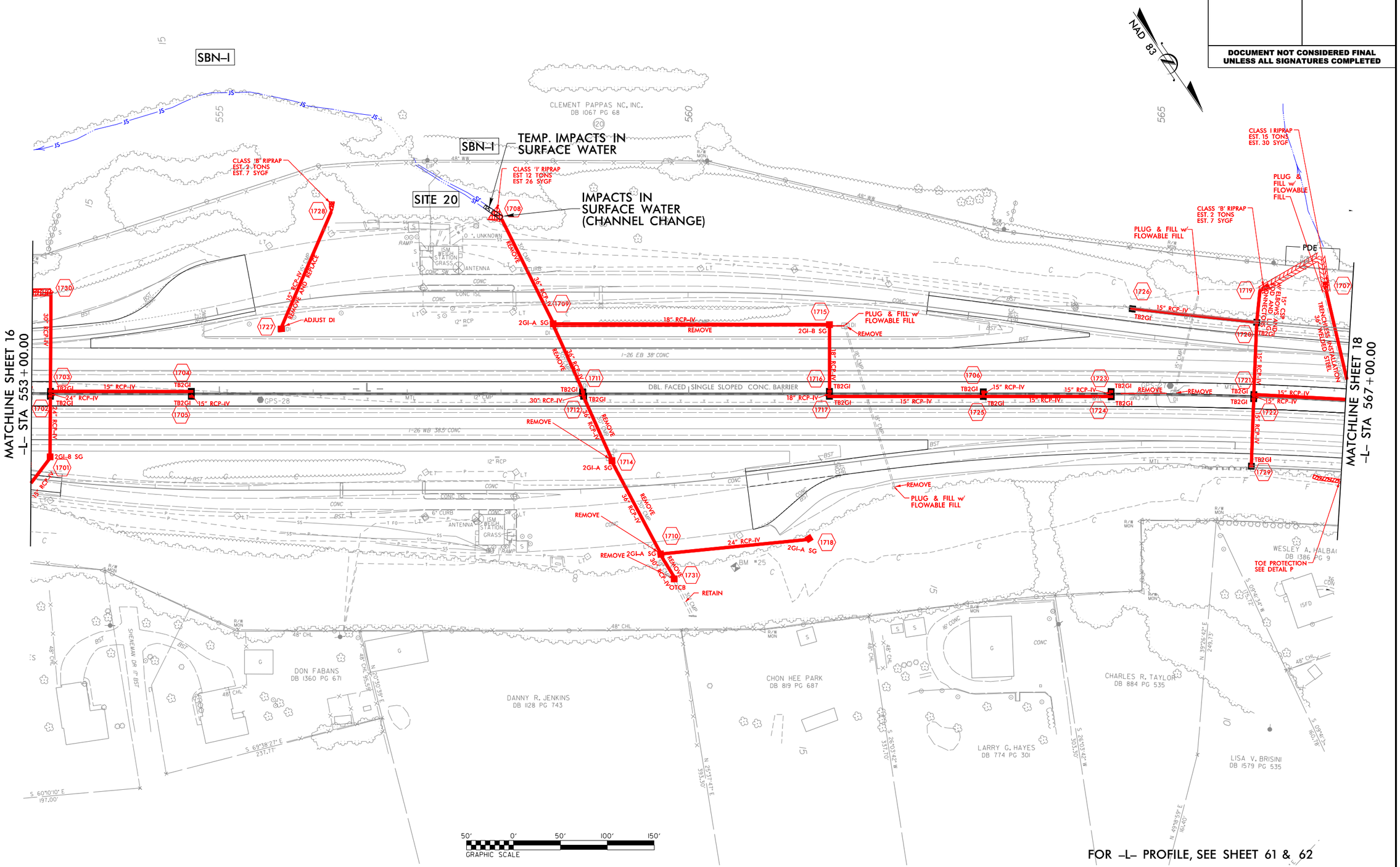
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	17
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

PERMIT DRAWING
SHEET 43 OF 77



FOR -L- PROFILE, SEE SHEET 61 & 62

REVISIONS

$$$$$SYSTIME$$$$
$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$$USERNAME$$$$
$$SCALE$$
$$ENVIRONMENT$$

WETLAND & STREAM IMPACTS

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
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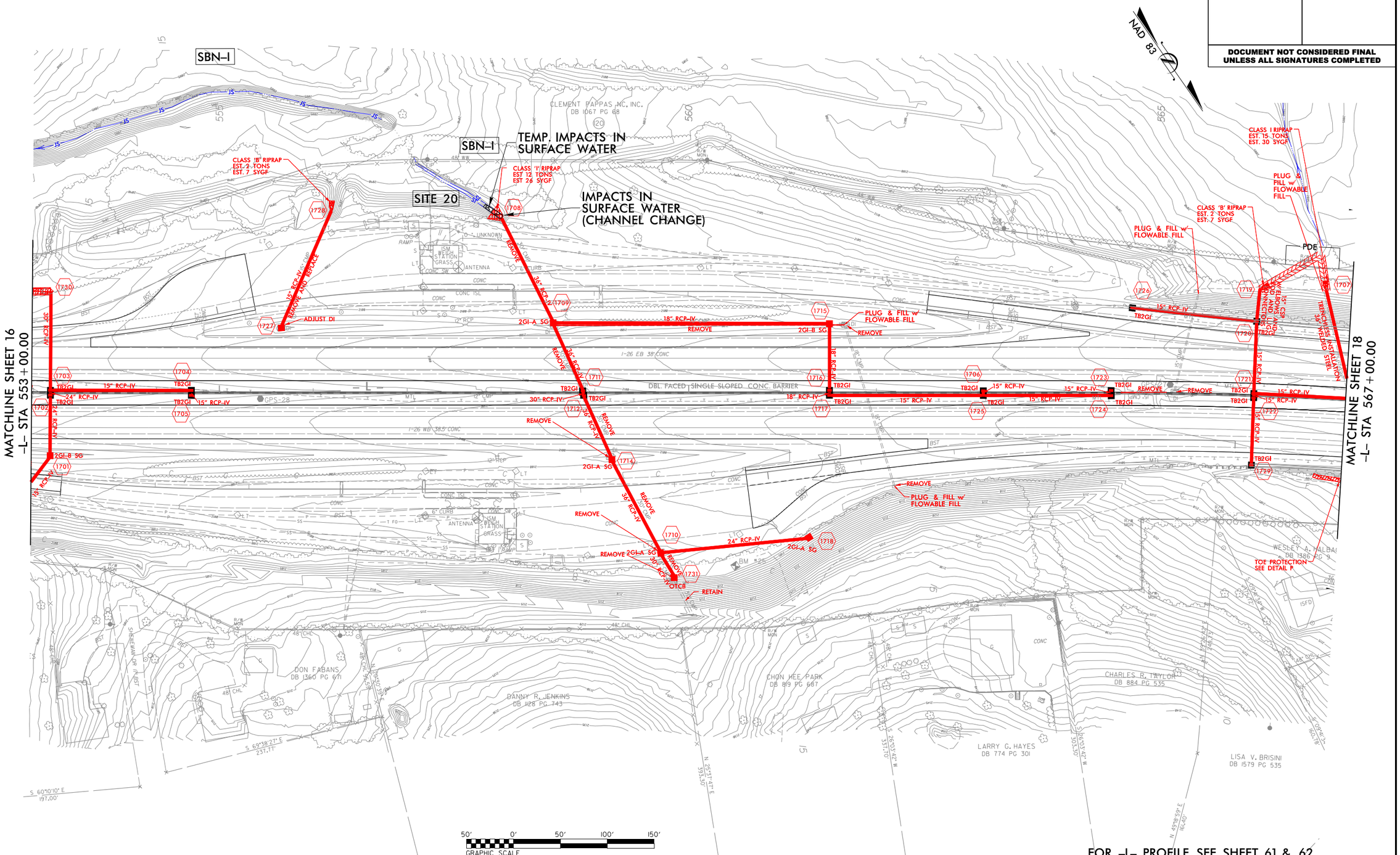
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	17
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

PERMIT DRAWING
SHEET 44 OF 77



FOR -L- PROFILE, SEE SHEET 61 & 62

REVISIONS

$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$
$$$USERNAME$$$
$$SCALE$$
$$ENVIRONMENT$$

HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

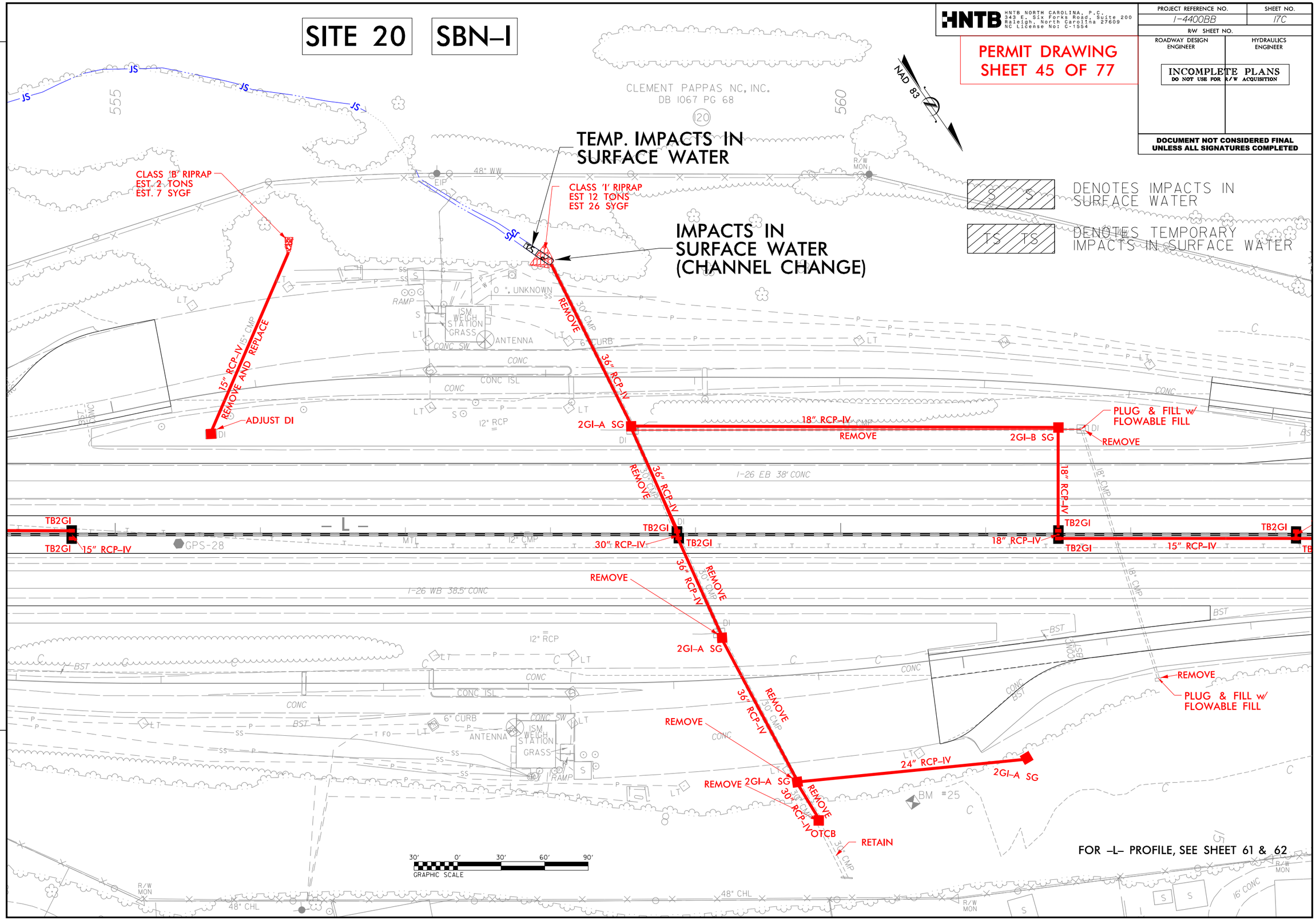
PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	I7C
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 45 OF 77

SITE 20 SBN-I



FOR -L- PROFILE, SEE SHEET 61 & 62

REVISIONS

$$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$
$$$$$USERNAME$$$$$
$$SCALE$$
$$ENVIRONMENT$$

HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

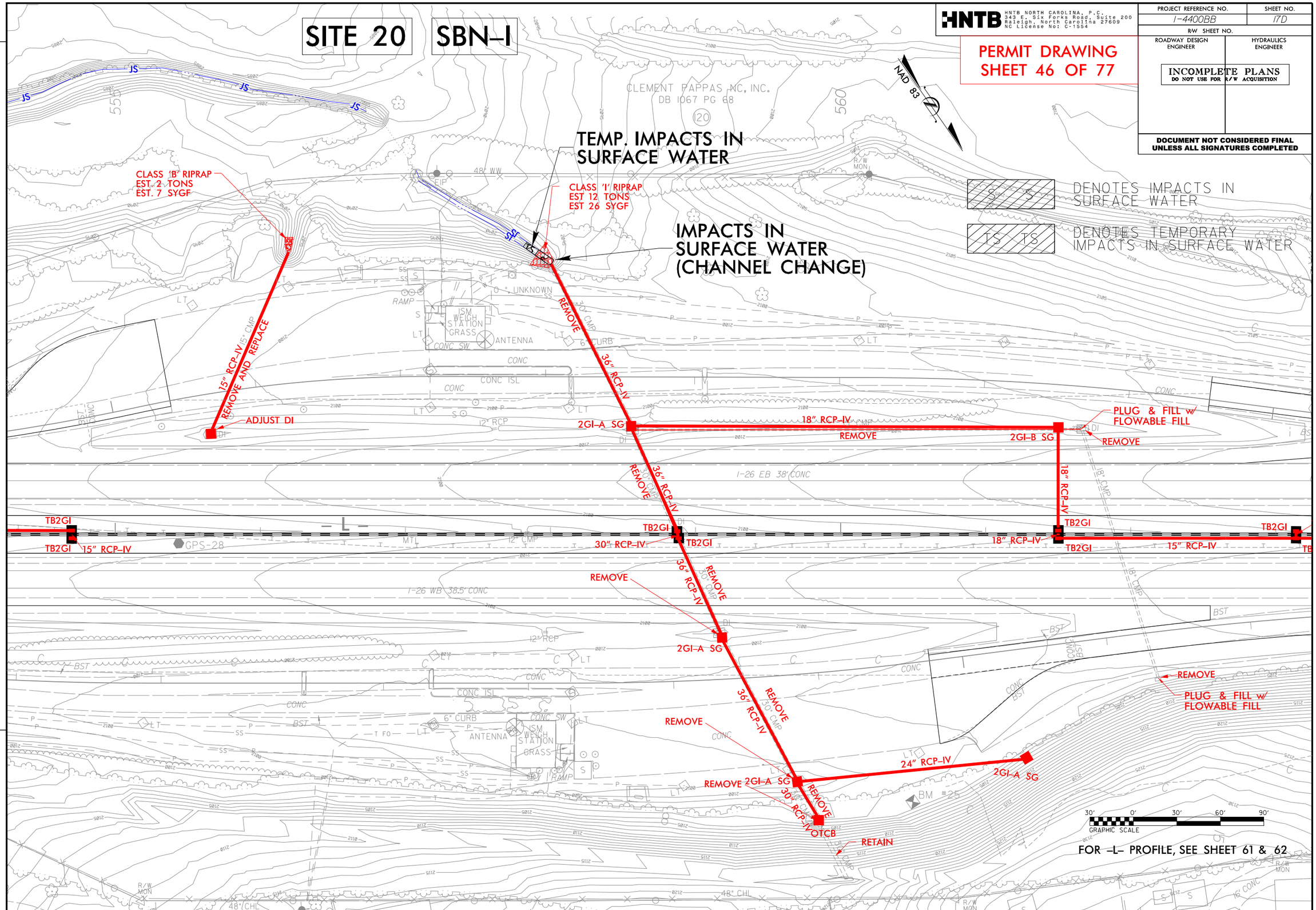
PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	17D
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 46 OF 77

SITE 20 SBN-1



REVISIONS

$$$$$$$$SYSTIME$$$$$$$$
$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$$$$
$$$$$$$$USERNAME$$$$$$$$
$$$$$$SCALE$$$$$$
$$$$ENVIRONMENT$$$$

WETLAND & STREAM IMPACTS

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

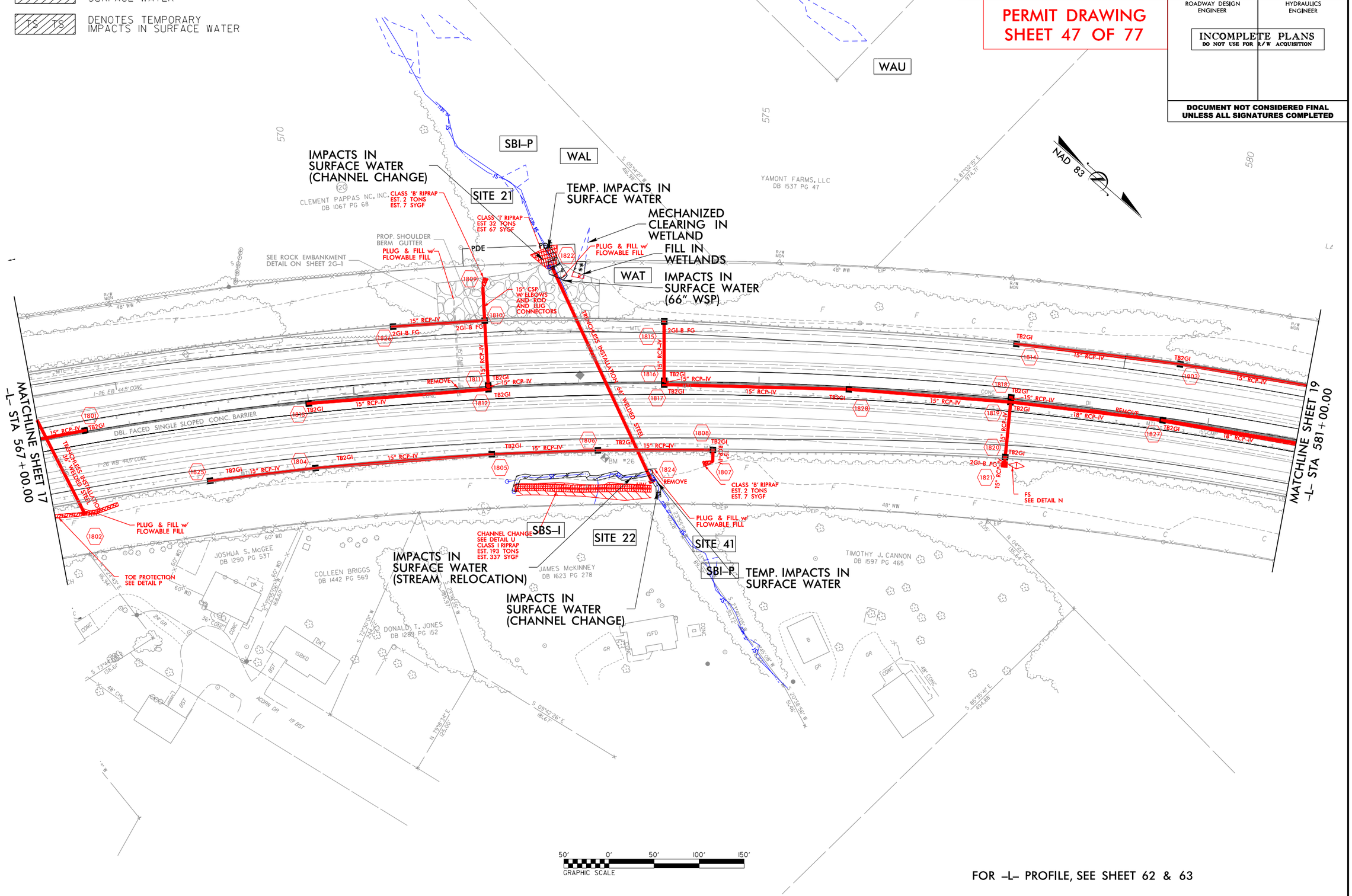
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	18
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

PERMIT DRAWING
SHEET 47 OF 77



FOR -L- PROFILE, SEE SHEET 62 & 63

REVISIONS

$$$$$SYSTIME$$$$
$$$$$$$$$$$$$$$$ODN$$$$$$$$$$$$$$$$$$$$
$$$USERNAME$$$
$$SCALE$$
$ENVIRONMENT$$

WETLAND & STREAM IMPACTS

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

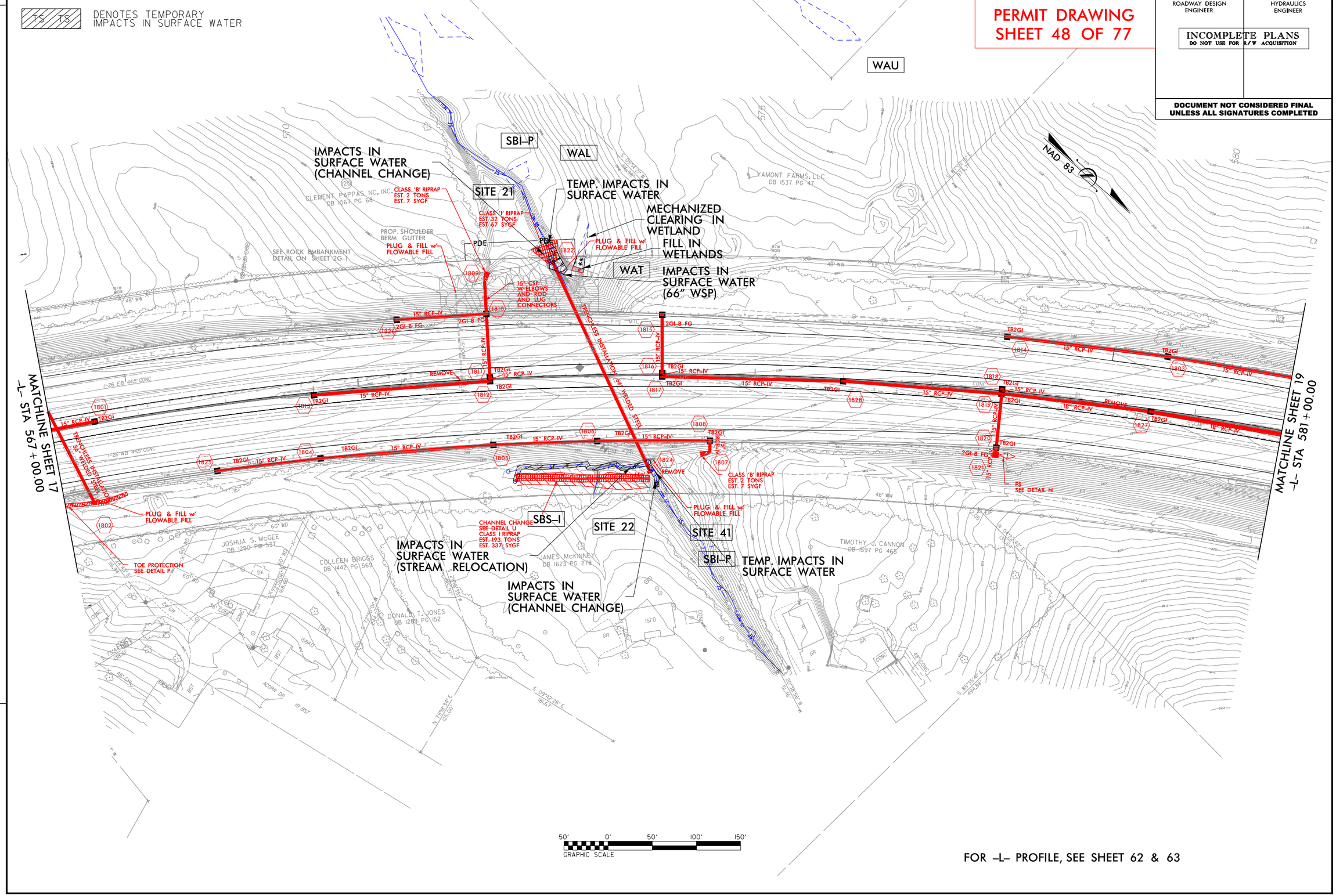
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	18
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

PERMIT DRAWING
SHEET 48 OF 77



FOR -L- PROFILE, SEE SHEET 62 & 63

REVISIONS

$$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$$$USERNAME$$$$
$$$SCALE$$
$$ENVIRONMENT$$

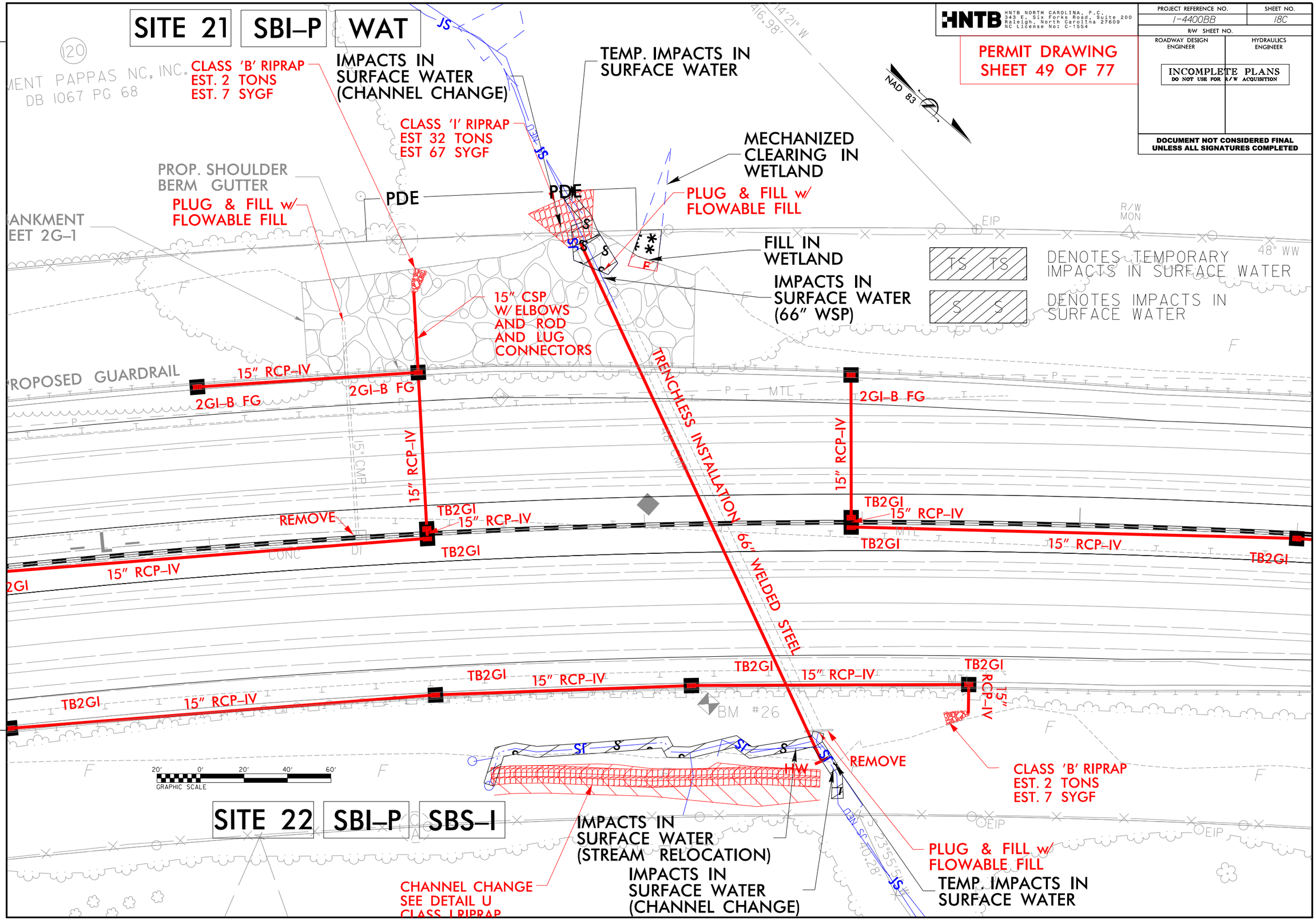
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

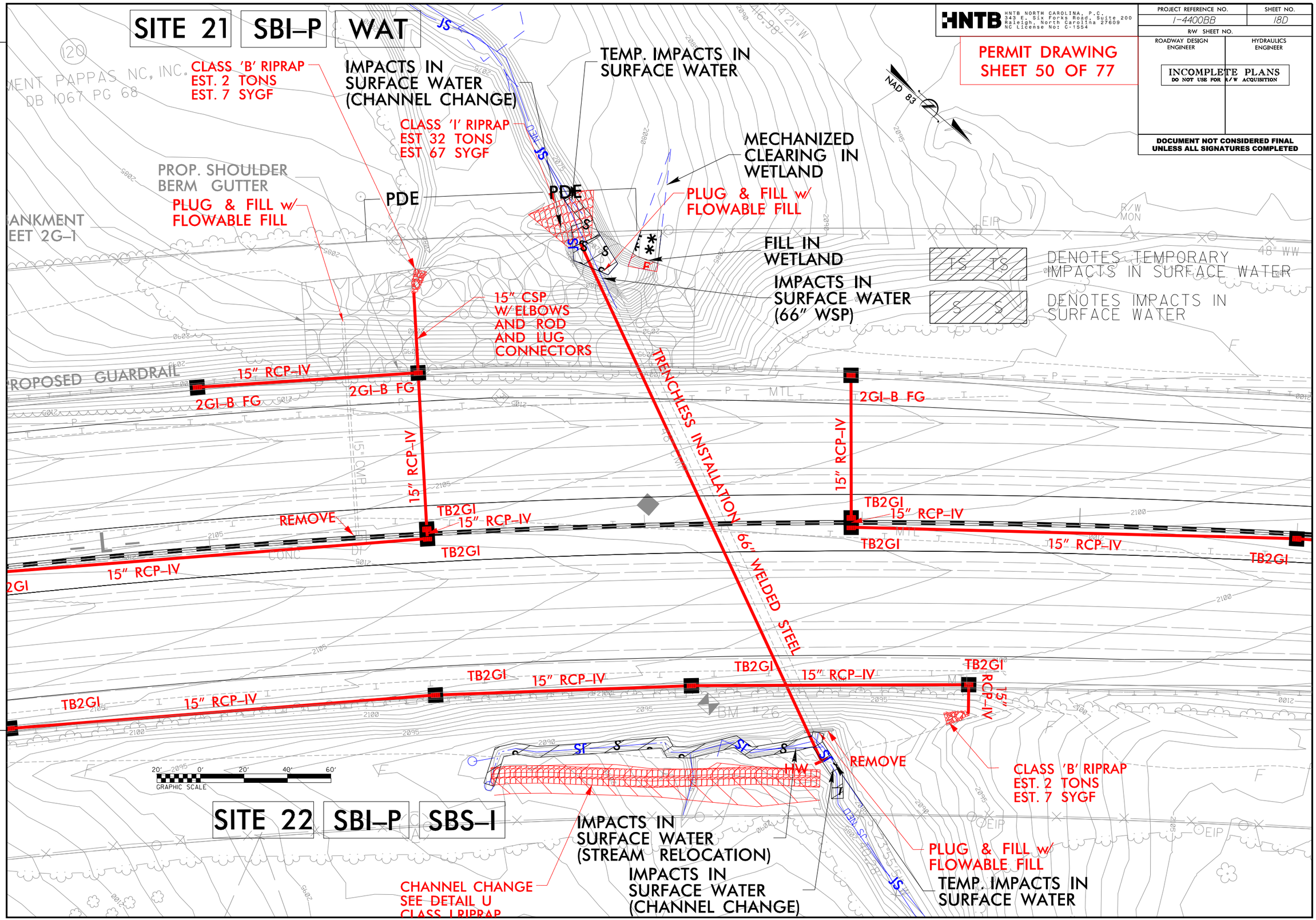
PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	18C
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 49 OF 77





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Raleigh, North Carolina 27609
NC License No: C-1554

PERMIT DRAWING
SHEET 50 OF 77

PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	18D
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

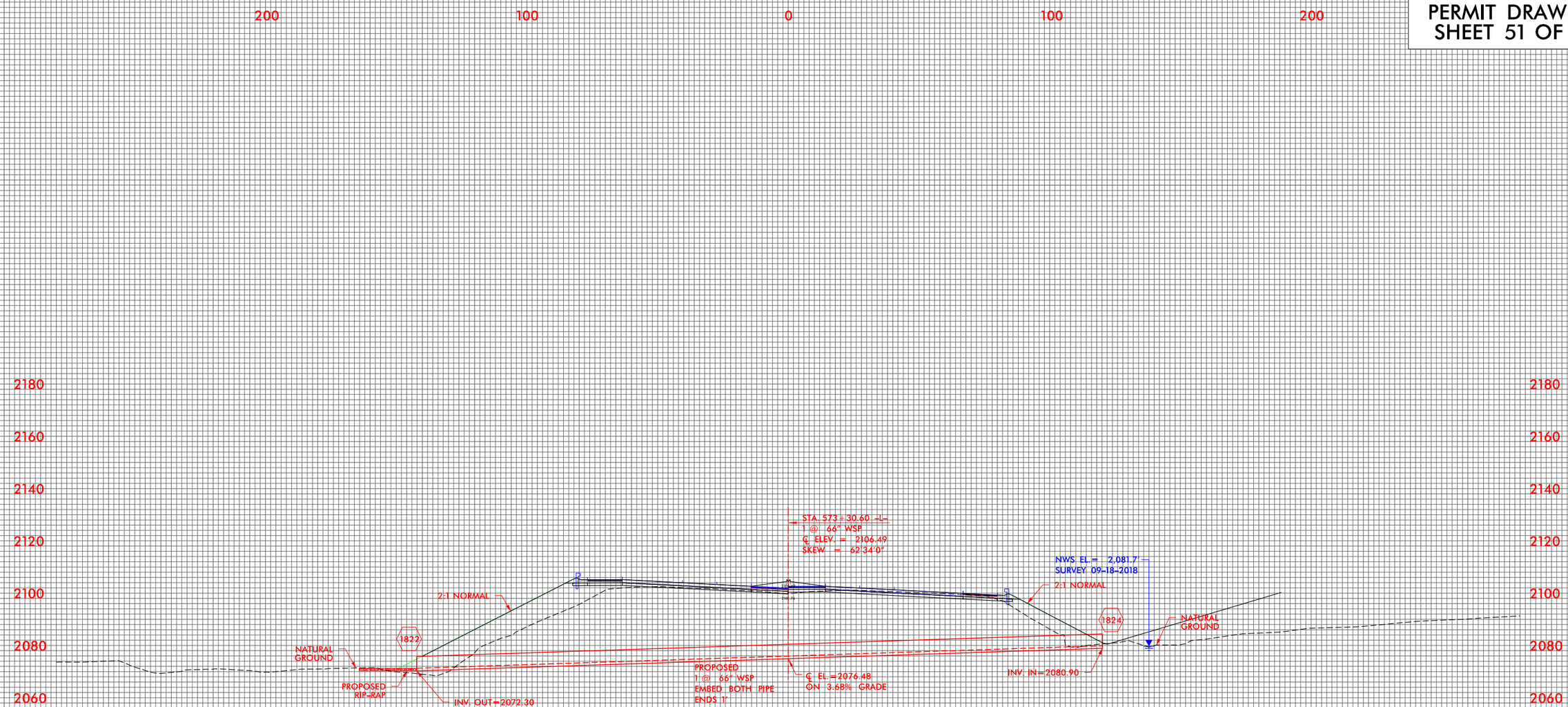
REVISIONS

$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$$
$$$$$$USERNAME$$$$$
$$$SCALE$$$
$$ENVIRONMENT$$

6/23/16

PROJ. REFERENCE NO.	SHEET NO.
I-4400BB	18E

PERMIT DRAWING
SHEET 51 OF 77



PROFILE

BUNCOMBE & HENDERSON COUNTY
PROJECT: I-4400C
I-26
I-26 BETWEEN US 64 (CHIMNEY ROCK ROAD)
TO WEST OF NAPLES ROAD (SR1534)

$$$$SYSTIME$$$$
$$$$SYSTIME$$$$
$$$$DGN$$$$
$$$$DGN$$$$
$$$$DATE$$$$
$$$$DATE$$$$

WETLAND & STREAM IMPACTS

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

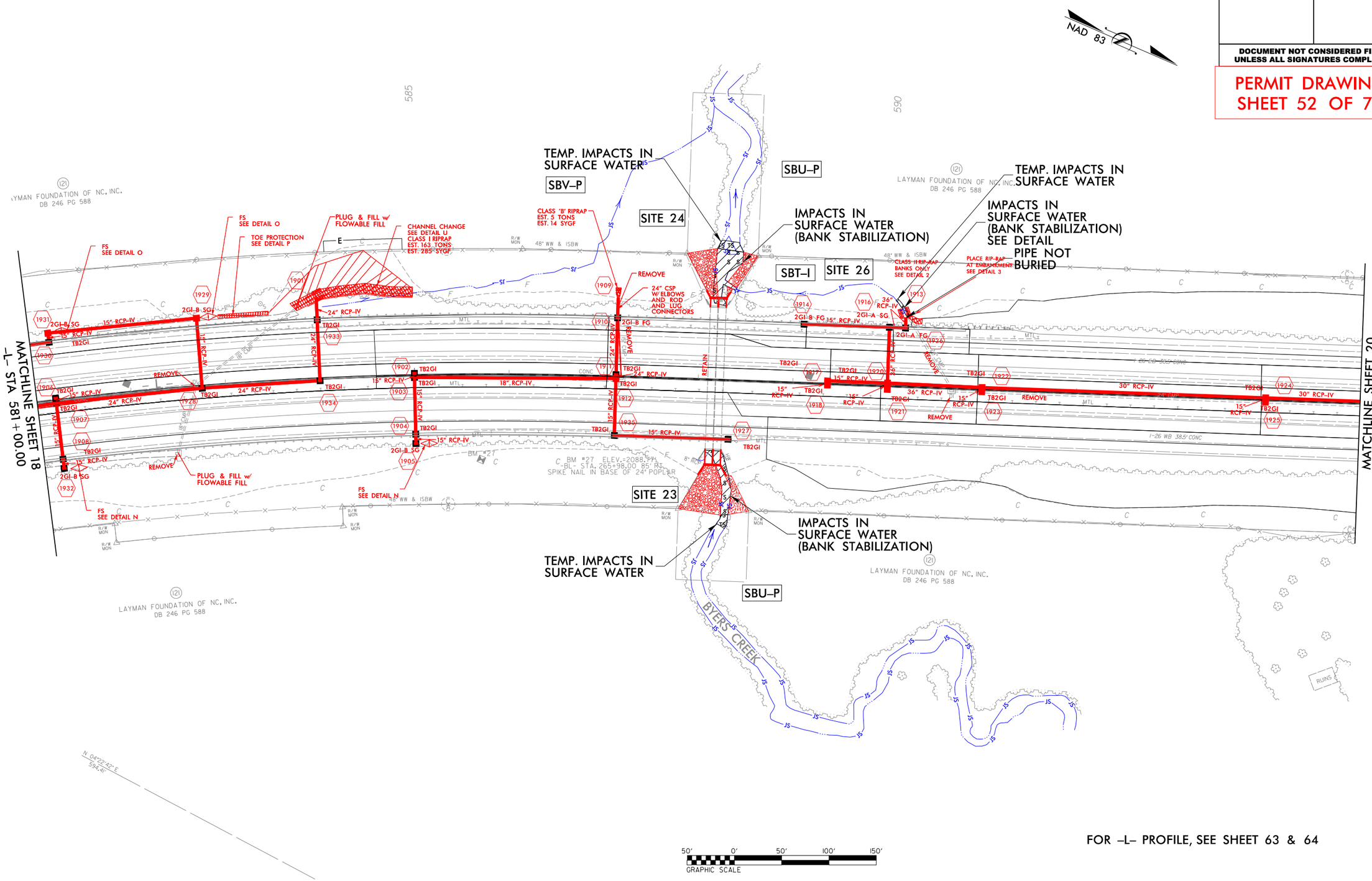
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	19
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

PERMIT DRAWING
SHEET 52 OF 77



FOR -L- PROFILE, SEE SHEET 63 & 64

REVISIONS

$$$$SYSTIME$$$$
$$$$DGN$$$$
$$$$USERNAME$$$$
$$SCALE$$
$$ENVIRONMENT$$

WETLAND & STREAM IMPACTS

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

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Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	19

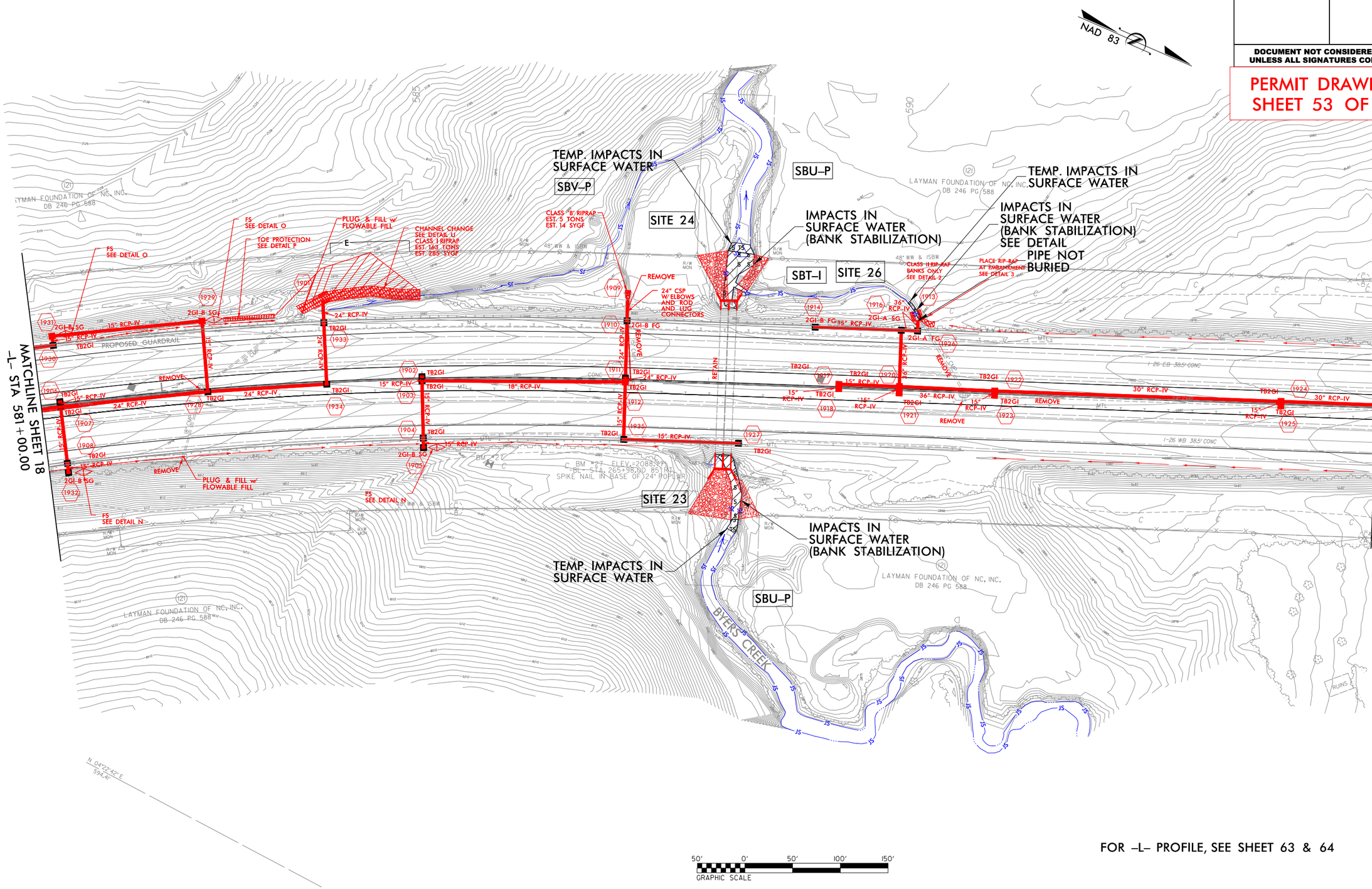
R/W SHEET NO.

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 53 OF 77



FOR -L- PROFILE, SEE SHEET 63 & 64

REVISIONS

$$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$
$$$$$$$USERNAME$$$$
$$$SCALE$$
$$ENVIRONMENT$$

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NC License No: C-1554

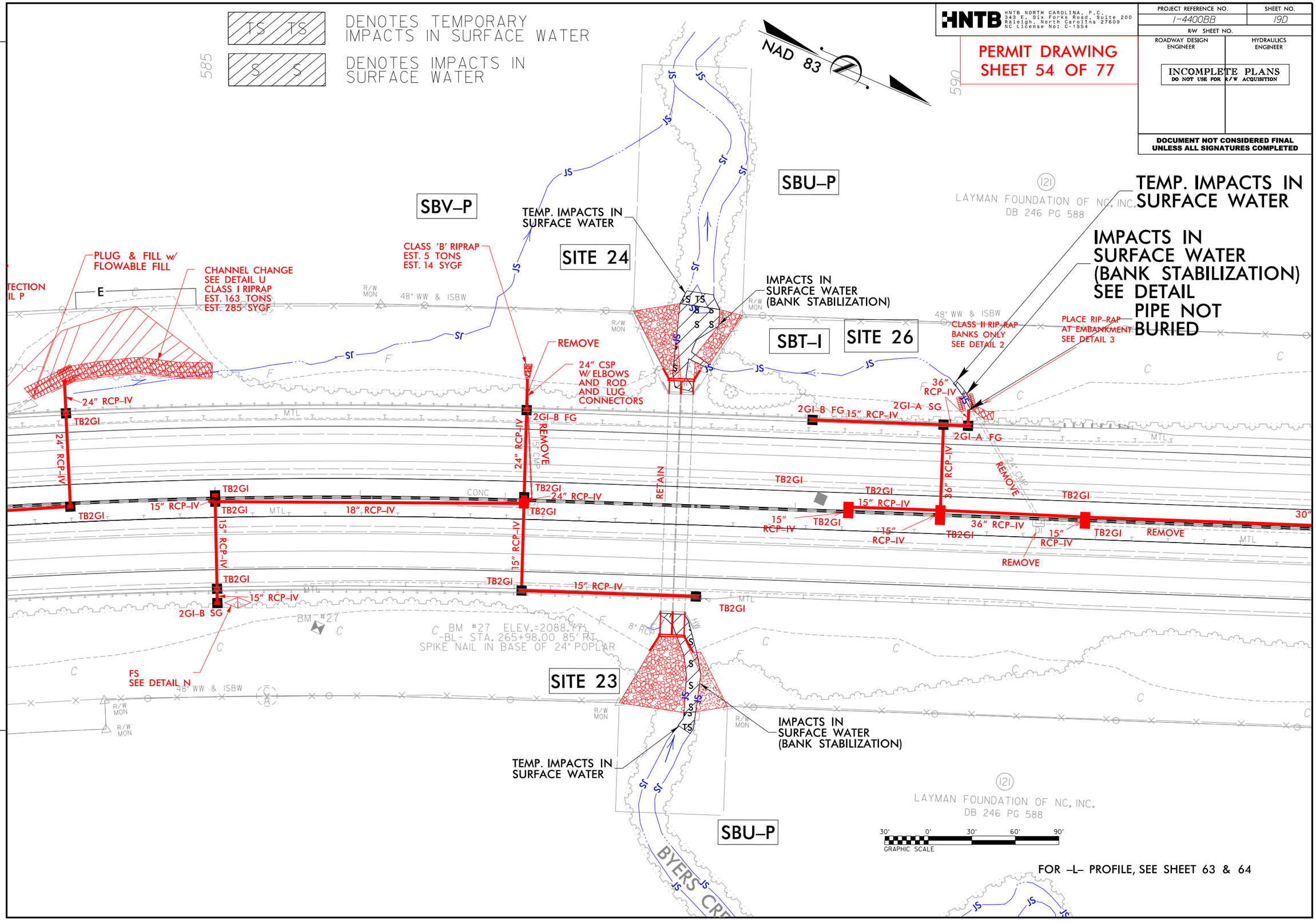
PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	19D
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING
SHEET 54 OF 77

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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



FOR -L- PROFILE, SEE SHEET 63 & 64

REVISIONS

$$$$$SYSTIME$$$$
$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$
$$$USERNAME$$$$
$$SCALE$$
$$ENVIRONMENT$$

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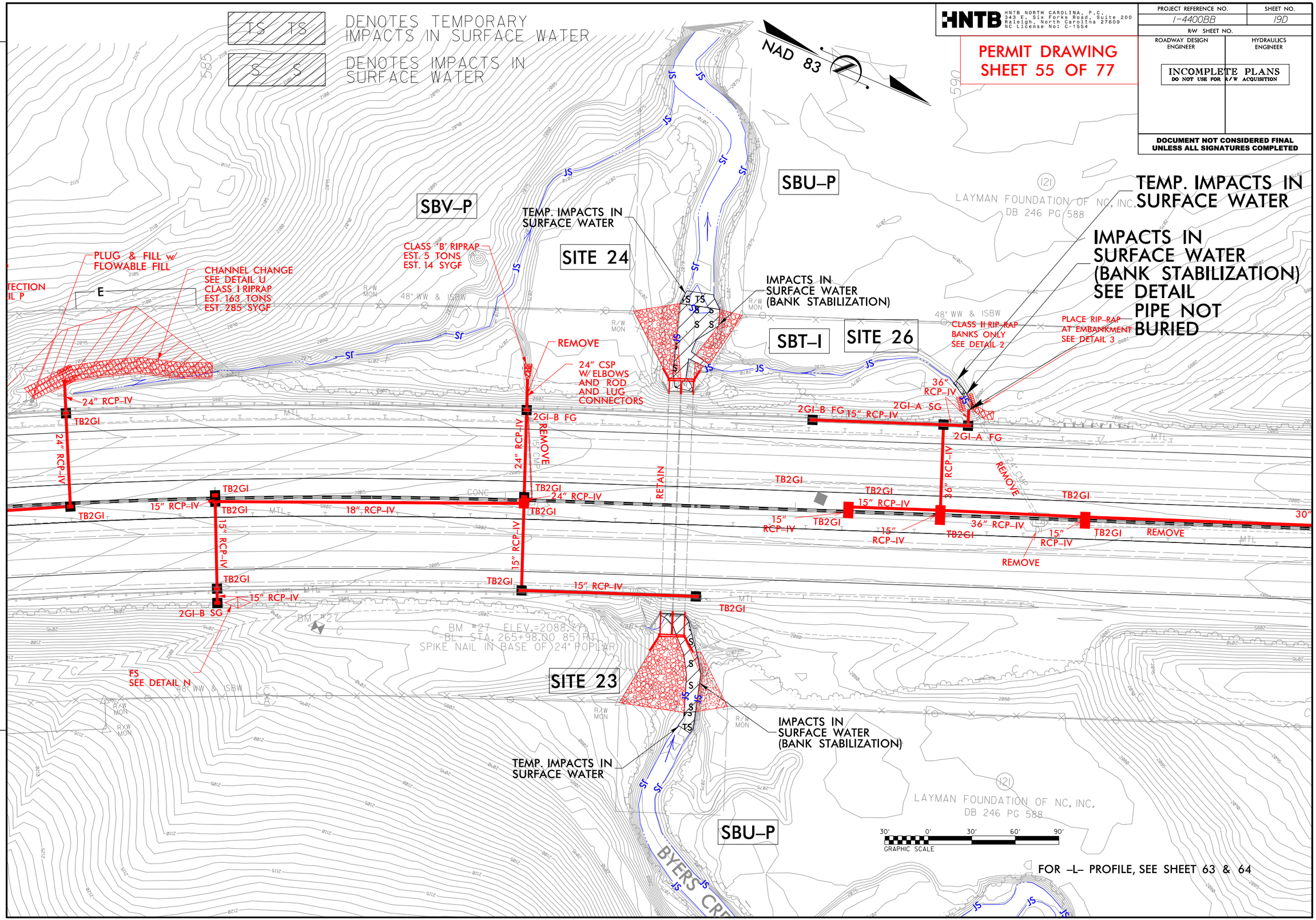
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	19D
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

PERMIT DRAWING
SHEET 55 OF 77



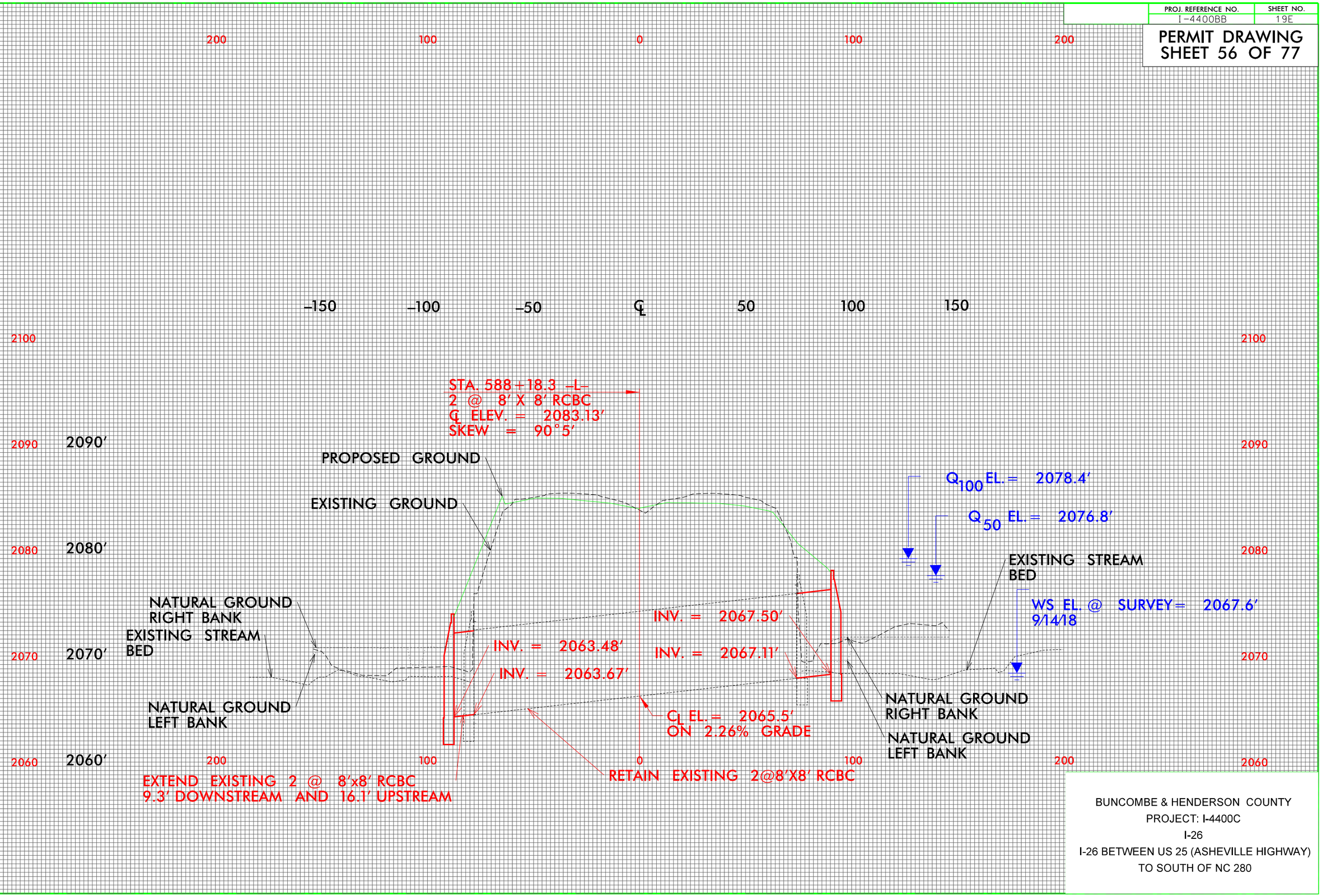
REVISIONS

$$$$$$$$SYSTIME$$$$
$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$$$$$USERNAME$$$$
$$$SCALE$$
$$ENVIRONMENT$$

6/23/16

PROJ. REFERENCE NO.	SHEET NO.
I-4400BB	19E

PERMIT DRAWING
SHEET 56 OF 77



BUNCOMBE & HENDERSON COUNTY
PROJECT: I-4400C
I-26
I-26 BETWEEN US 25 (ASHEVILLE HIGHWAY)
TO SOUTH OF NC 280

$$$$SYSTIME$$$$
$$$$USER$$$$
$$$$DGN$$$$

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Raleigh, North Carolina 27609
NC License No: C-1554

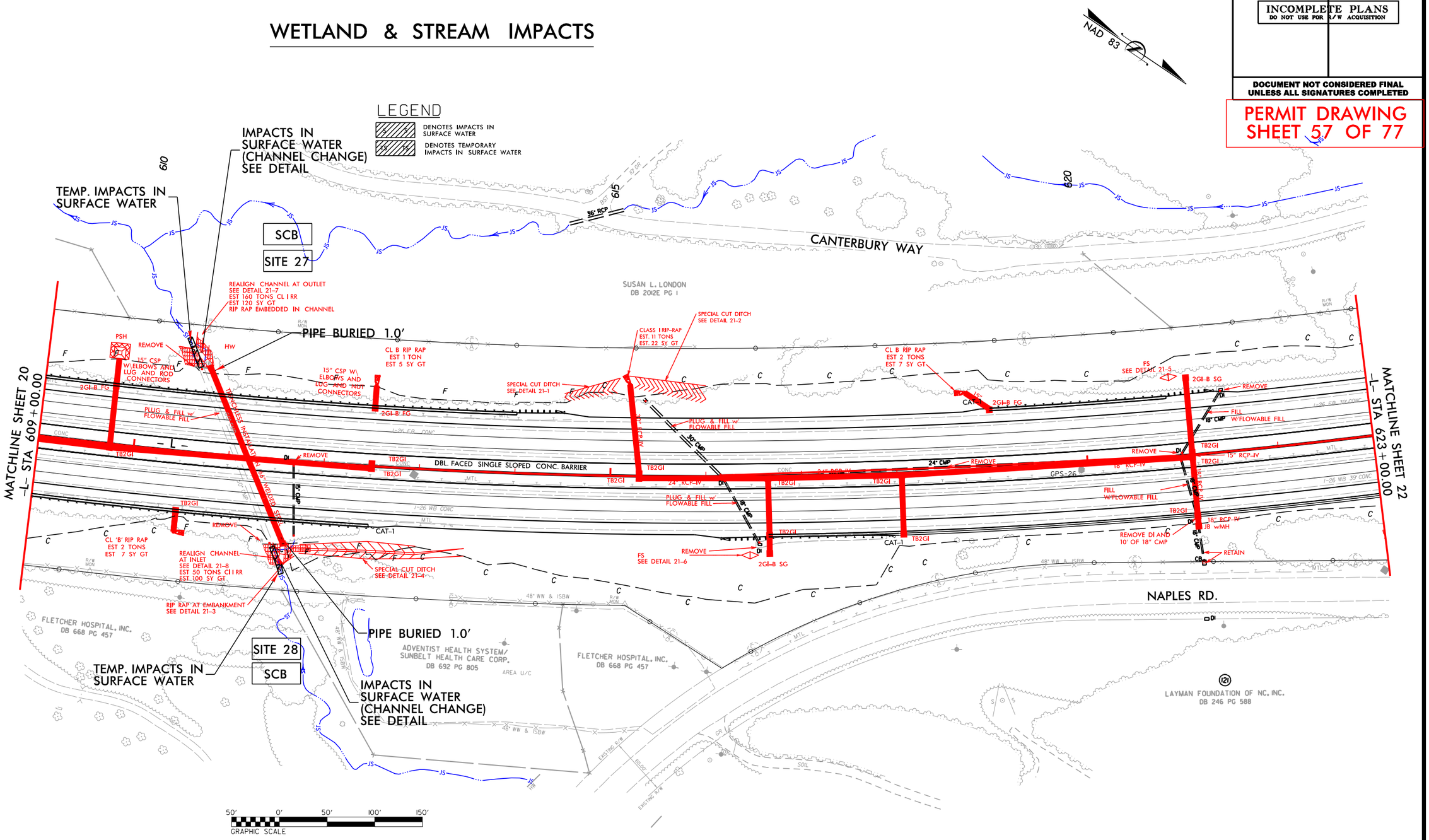
PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	21
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 57 OF 77

WETLAND & STREAM IMPACTS



FOR -L- PROFILE, SEE SHEET 65 & 66

REVISIONS

3/27/2019
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$$SCALE$$
$$ENVIRONMENT$$

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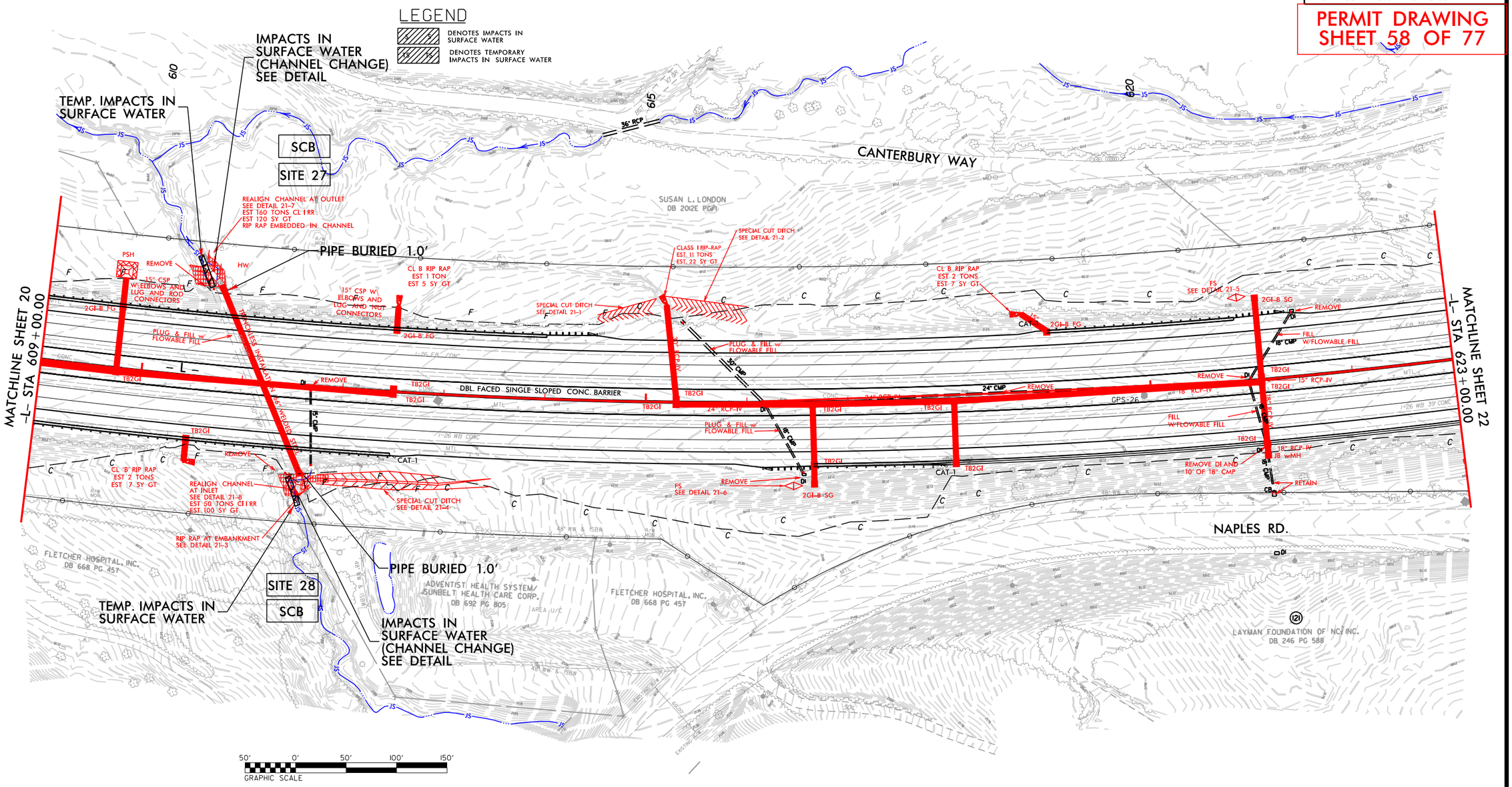
PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	21
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 58 OF 77

WETLAND & STREAM IMPACTS



FOR -L- PROFILE, SEE SHEET 65 & 66

REVISIONS

3/27/2019
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$$SCALES$$
$$ENVIRONMENT$$

HNTB NORTH CAROLINA, P.C.
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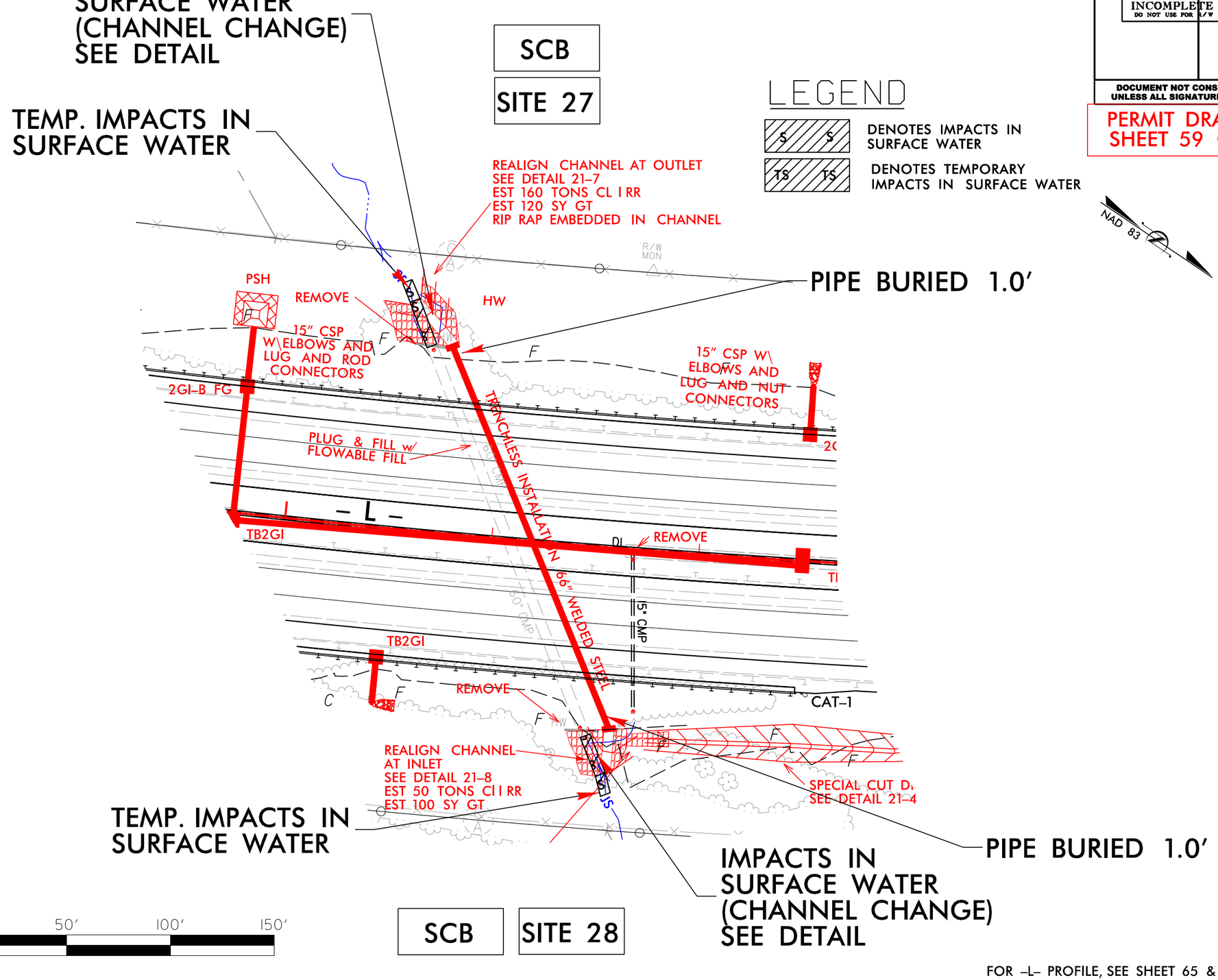
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	21
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

PERMIT DRAWING
SHEET 59 OF 77



FOR -L- PROFILE, SEE SHEET 65 & 66

REVISIONS

3/27/2019
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$$SCALE$$
$$ENVIRONMENT$$

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Raleigh, North Carolina 27609
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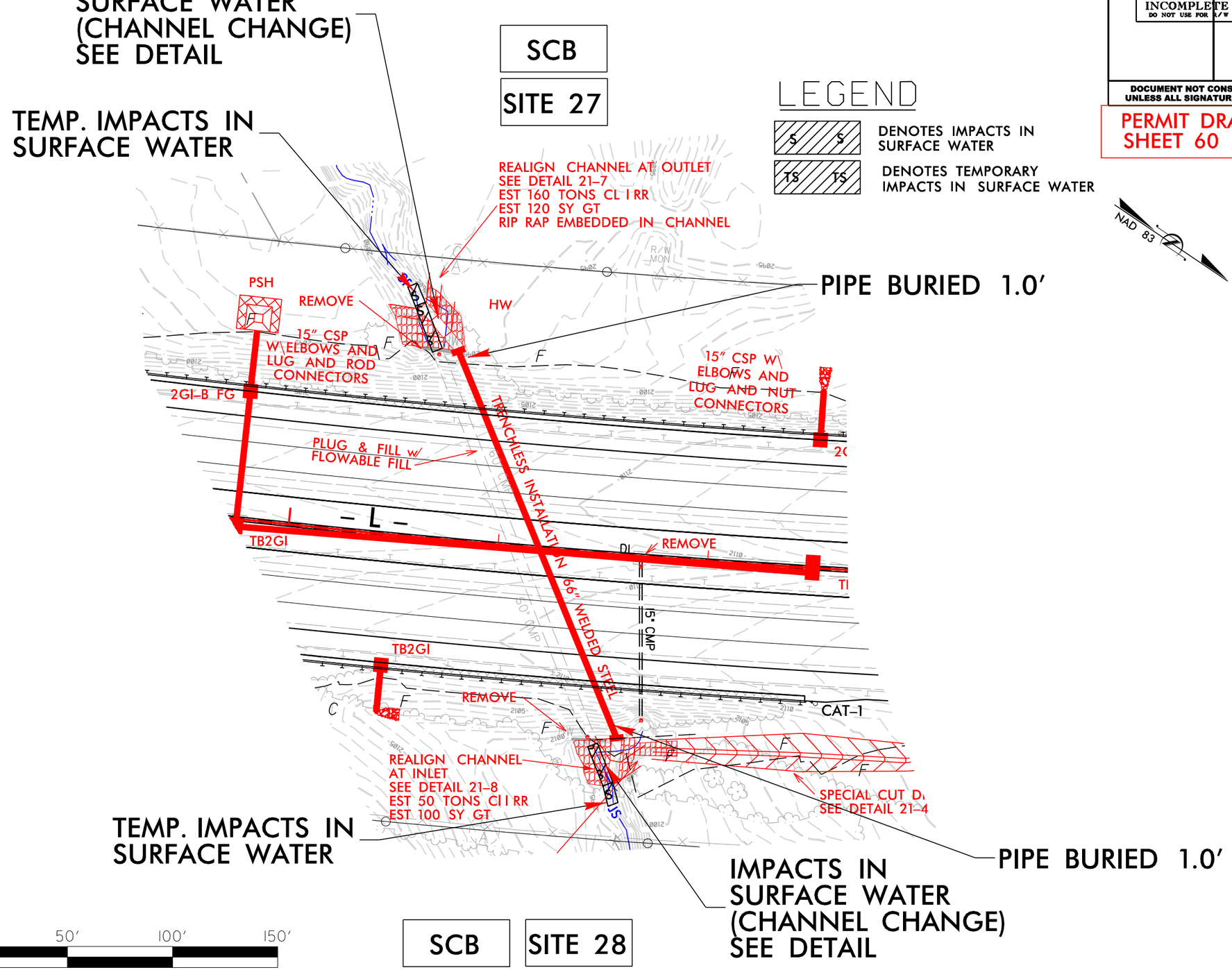
PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	21
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 60 OF 77



FOR -L- PROFILE, SEE SHEET 65 & 66

REVISIONS

3/27/2019
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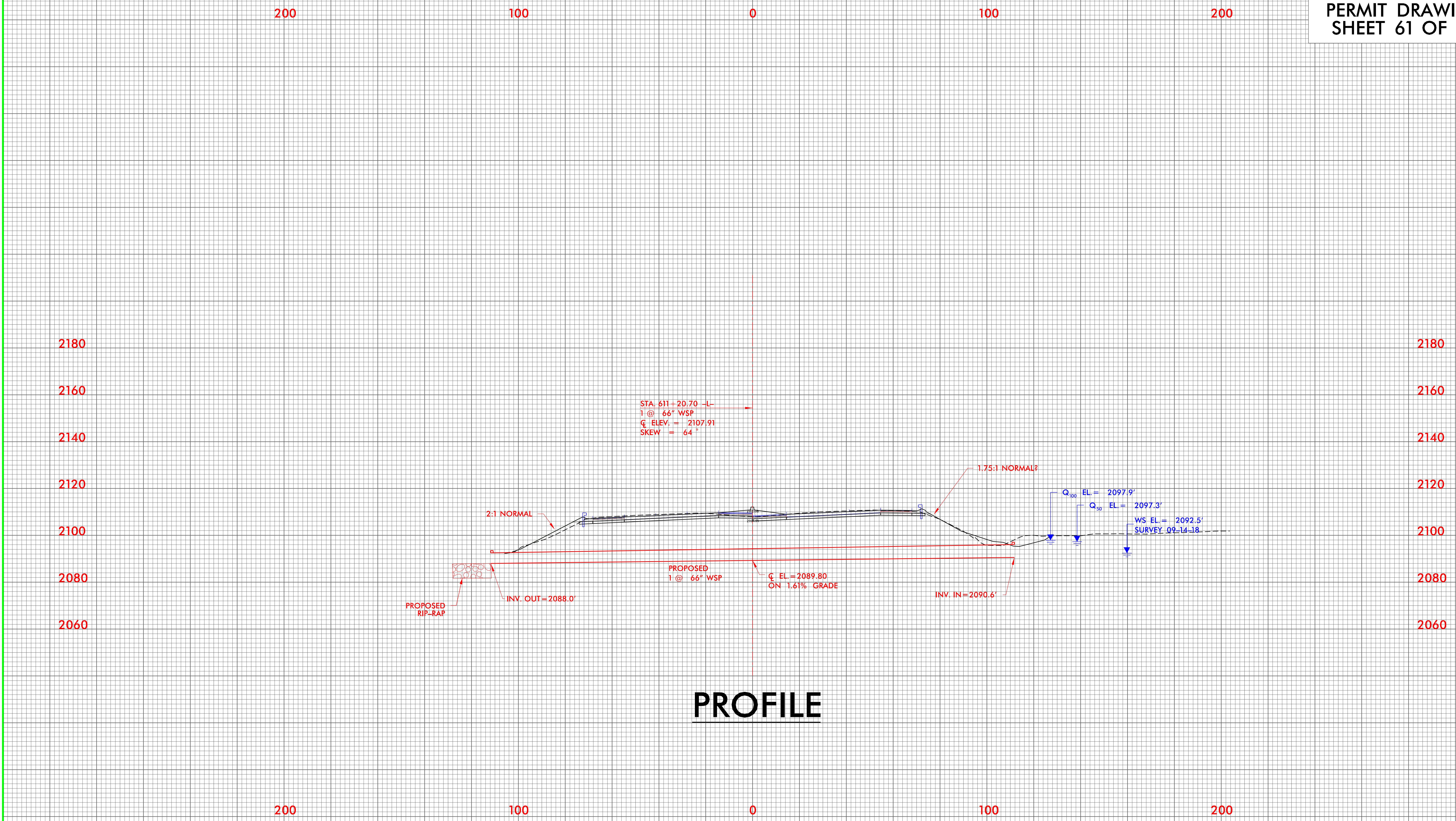
$$ENVIRONMENT$$

PROJ. REFERENCE NO.	SHEET NO.
I-4400BB	21E

PERMIT DRAWING
SHEET 61 OF 77



PROFILE

BUNCOMBE & HENDERSON COUNTY
PROJECT: I-4400C
I-26
I-26 BETWEEN US 64 (CHIMNEY ROCK ROAD)
TO WEST OF NAPLES ROAD (SR1534)

6/23/16
$$$$$$SYSTIME$$$$$$
$$$$$$$$$$$$$DGN$$$$$$$$$$$$$
$$$$$$USERNAME$$$$$$

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PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	22
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

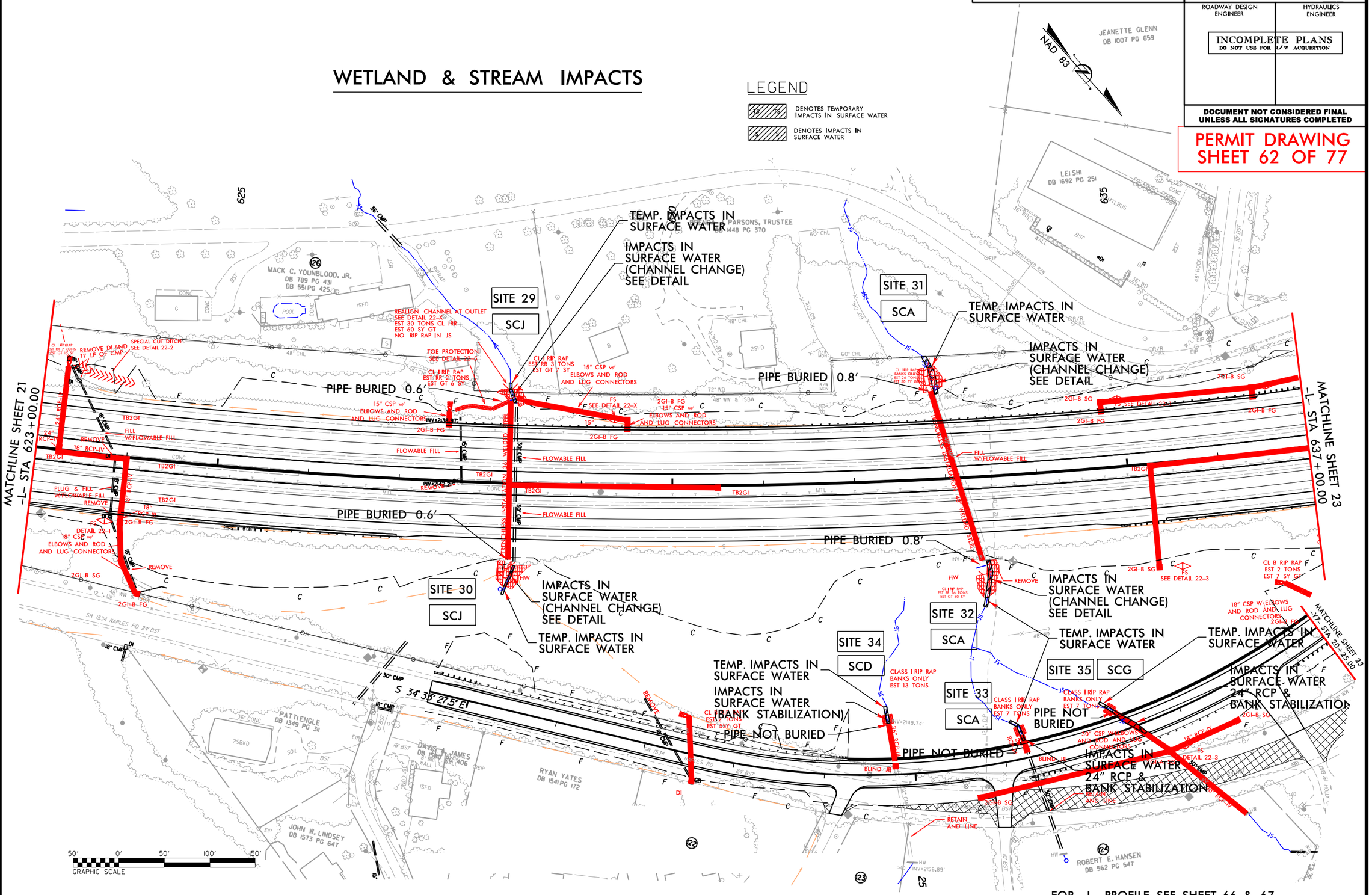
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 62 OF 77

WETLAND & STREAM IMPACTS

LEGEND

- DENOTES TEMPORARY IMPACTS IN SURFACE WATER
- DENOTES IMPACTS IN SURFACE WATER



FOR -L- PROFILE, SEE SHEET 66 & 67

REVISIONS

3/27/2019
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$$$$USER$$$$
$$$$ENVIRONMENT$$$$

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PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	22
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

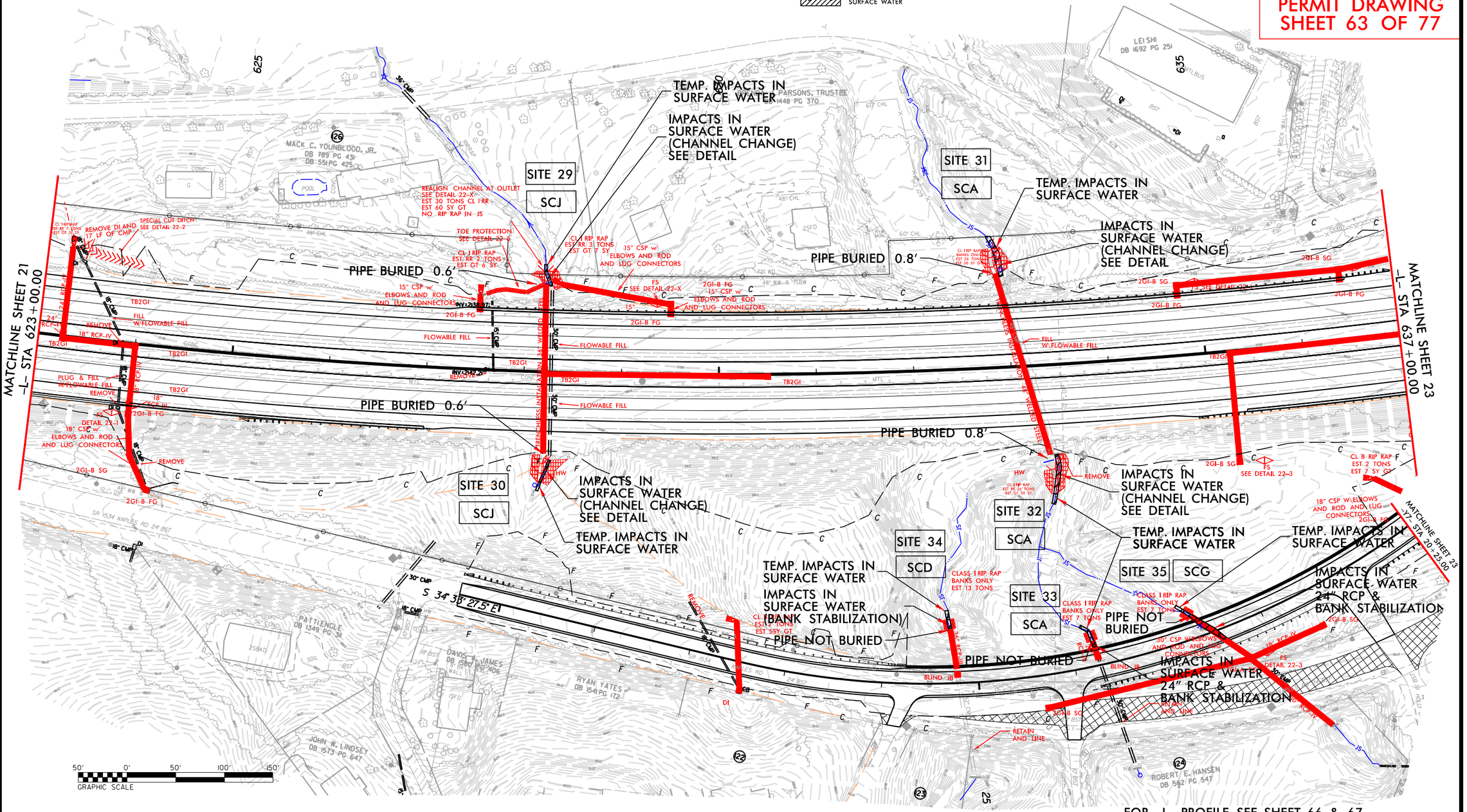
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 63 OF 77

WETLAND & STREAM IMPACTS

LEGEND

- DENOTES TEMPORARY IMPACTS IN SURFACE WATER
- DENOTES IMPACTS IN SURFACE WATER



FOR -L- PROFILE, SEE SHEET 66 & 67

REVISIONS

3/27/2019
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$$$$ENVIRONMENT$$$$

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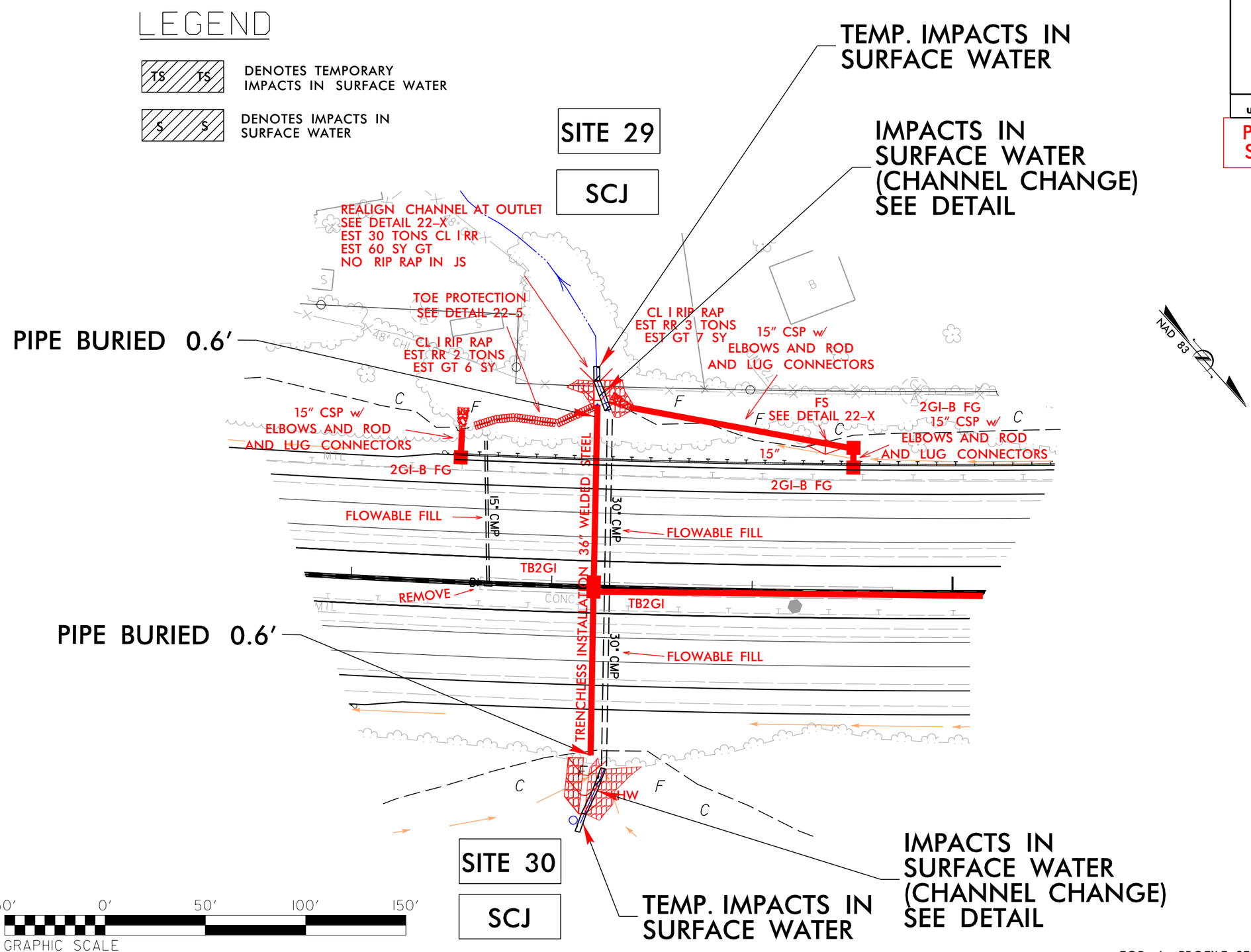
PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	22
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 64 OF 77



FOR -L- PROFILE, SEE SHEET 63 & 64

REVISIONS

3/27/2019
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$$CALS$$
$$ENVIRONMENT$$

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PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	22
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

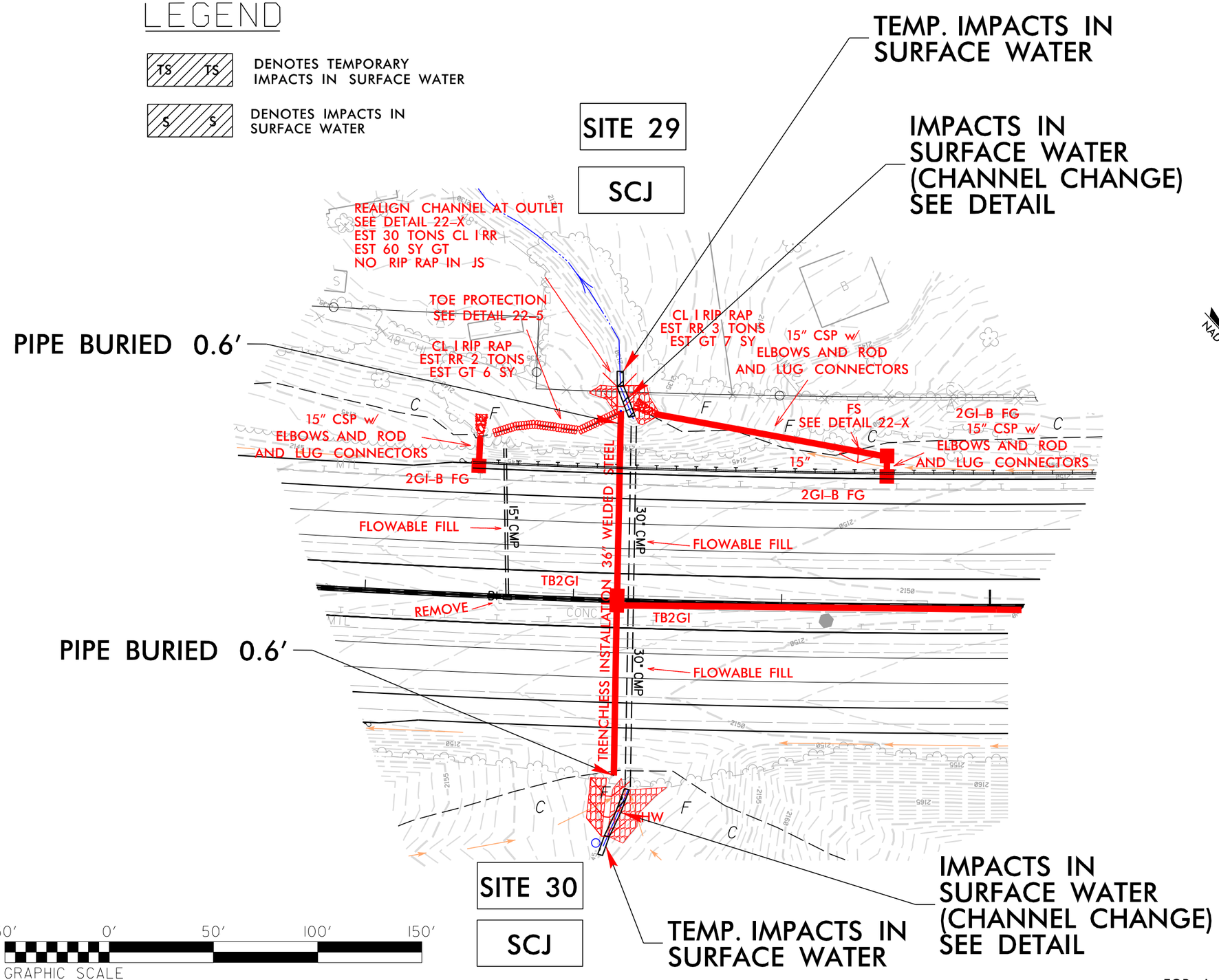
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 65 OF 77

LEGEND

TS TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S S — DENOTES IMPACTS IN SURFACE WATER



FOR -L- PROFILE, SEE SHEET 63 & 64

REVISIONS

3/27/2019
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$$CALS$$
$$ENVIRONMENT$$

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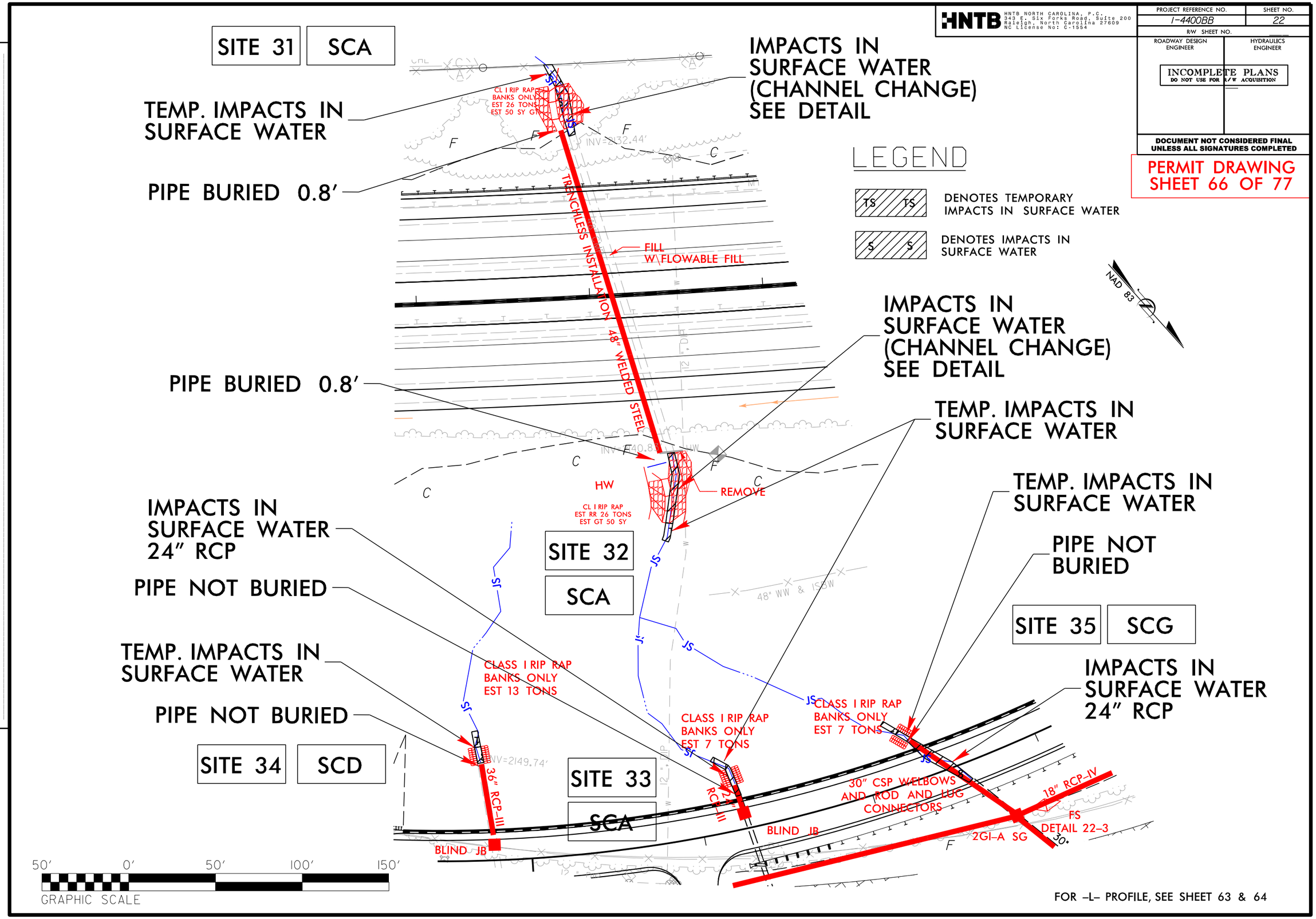
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	22
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 66 OF 77



FOR –L– PROFILE, SEE SHEET 63 & 64

REVISIONS

3/27/2019
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$$SCALE$$
$$ENVIRONMENT$$

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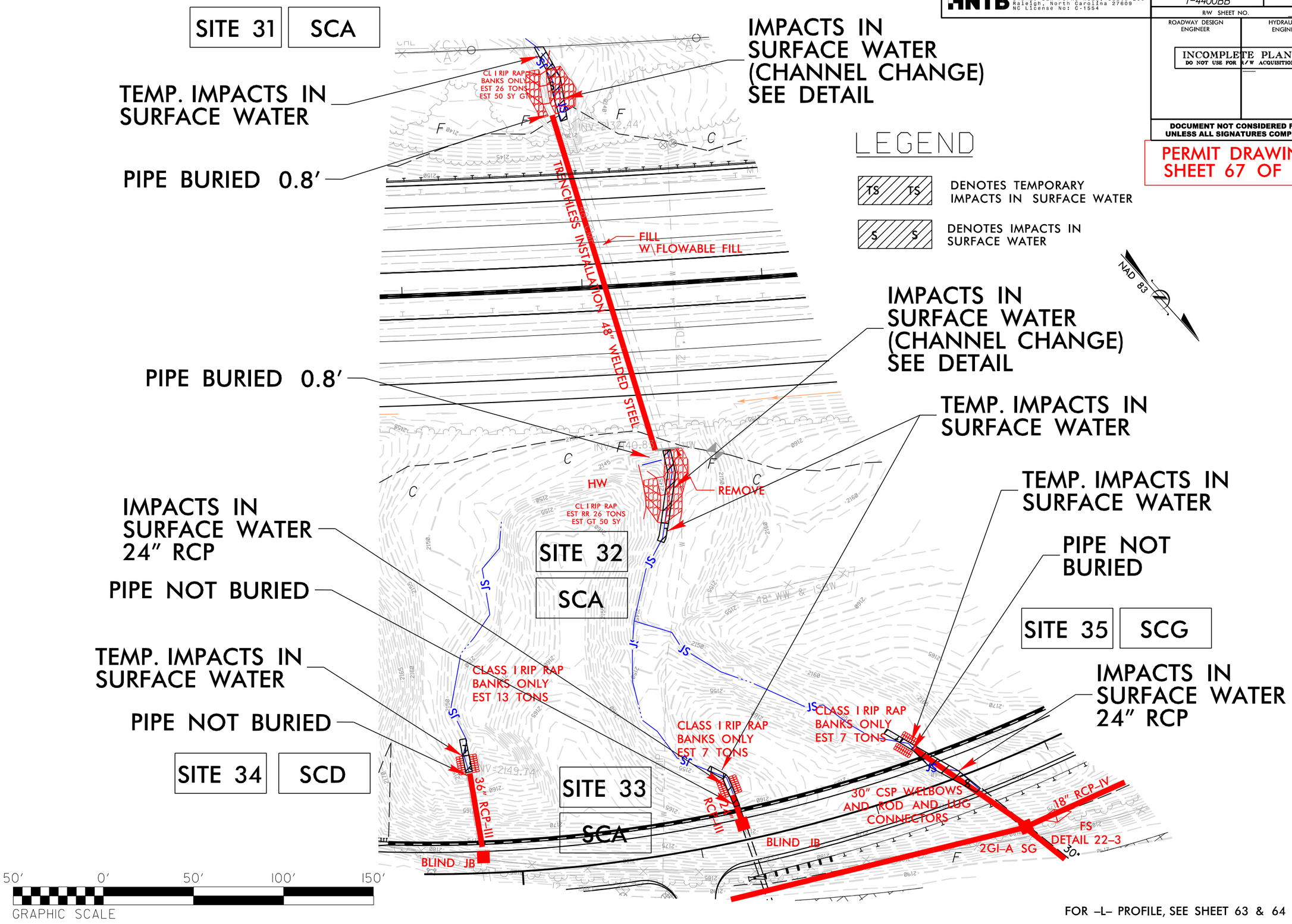
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	22
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 67 OF 77



FOR –L– PROFILE, SEE SHEET 63 & 64

REVISIONS

3/27/2019
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$$SCALE$$
$$ENVIRONMENT$$

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Raleigh, North Carolina 27609
NC License No: C-1554

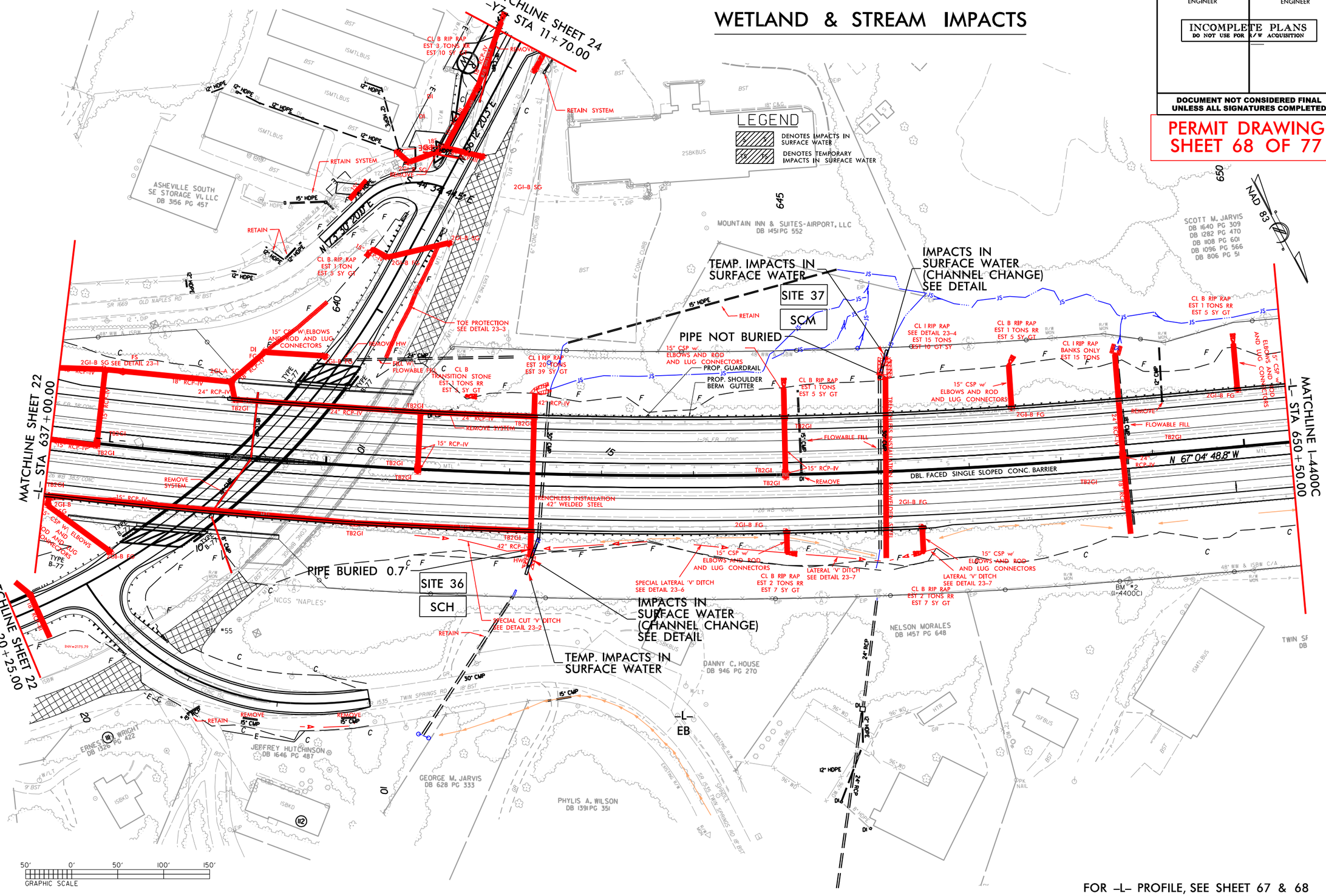
PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	23
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 68 OF 77

WETLAND & STREAM IMPACTS



FOR -L- PROFILE, SEE SHEET 67 & 68
FOR -Y7- PROFILE, SEE SHEET 89

REVISIONS

3/27/2019
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$$$$CELL$$$$
$$$$ENVIRONMENT$$$$

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Raleigh, North Carolina 27609
NC License No: C-1554

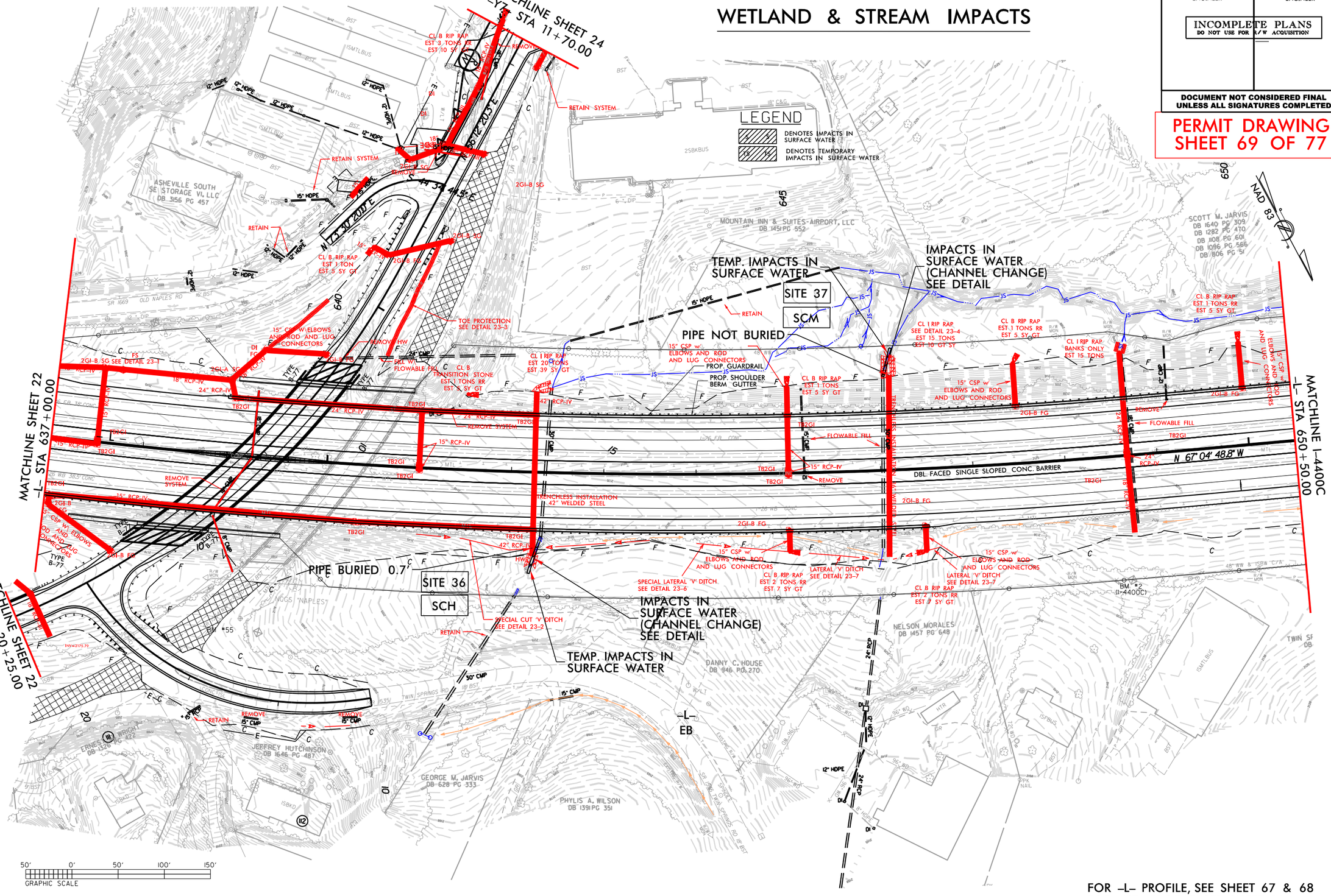
PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	23
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 69 OF 77

WETLAND & STREAM IMPACTS



FOR -L- PROFILE, SEE SHEET 67 & 68
FOR -Y7- PROFILE, SEE SHEET 89

REVISIONS

3/27/2019
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$$$$CLIENT$$
$$$$ENVIRONMENT$$

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Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	23
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

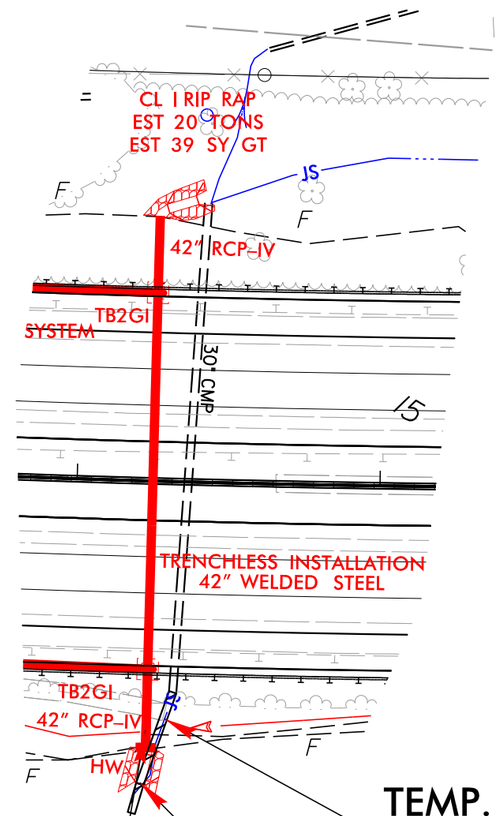
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

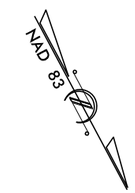
PERMIT DRAWING
SHEET 70 OF 77

LEGEND

S S — DENOTES IMPACTS IN SURFACE WATER

TS TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER





TEMP. IMPACTS IN SURFACE WATER

SITE 36 | SCH

PIPE BURIED 0.7'

IMPACTS IN SURFACE WATER (CHANNEL CHANGE) SEE DETAIL

50' 0' 50' 100' 150'
GRAPHIC SCALE

FOR –L– PROFILE, SEE SHEET 67 & 68
FOR –Y7– PROFILE, SEE SHEET 89

REVISIONS

3/27/2019
:\I4400BB_HYD_PRM_PSH_23_SITE 36_ENL_NO CONT.dgn
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$$SCALE$$
$$ENVIRONMENT$$

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Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	23
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

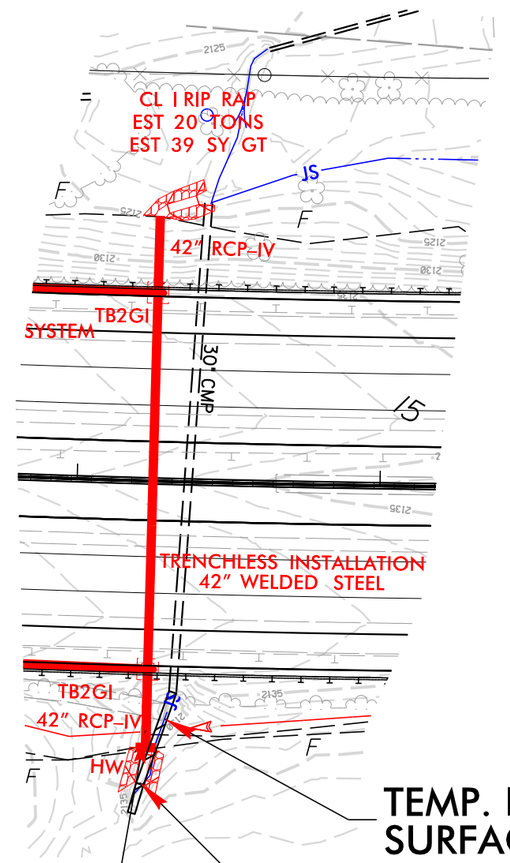
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 71 OF 77

LEGEND

S — DENOTES IMPACTS IN SURFACE WATER

TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER



NAD 83

TEMP. IMPACTS IN SURFACE WATER

SITE 36

SCH

PIPE BURIED 0.7'

IMPACTS IN SURFACE WATER (CHANNEL CHANGE) SEE DETAIL

50' 0' 50' 100' 150'
GRAPHIC SCALE

FOR –L– PROFILE, SEE SHEET 67 & 68
FOR –Y7– PROFILE, SEE SHEET 89

REVISIONS

3/27/2019
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10:47:03 PM
$$SCALE$$
$$ENVIRONMENT$$

HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	23
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 72 OF 77

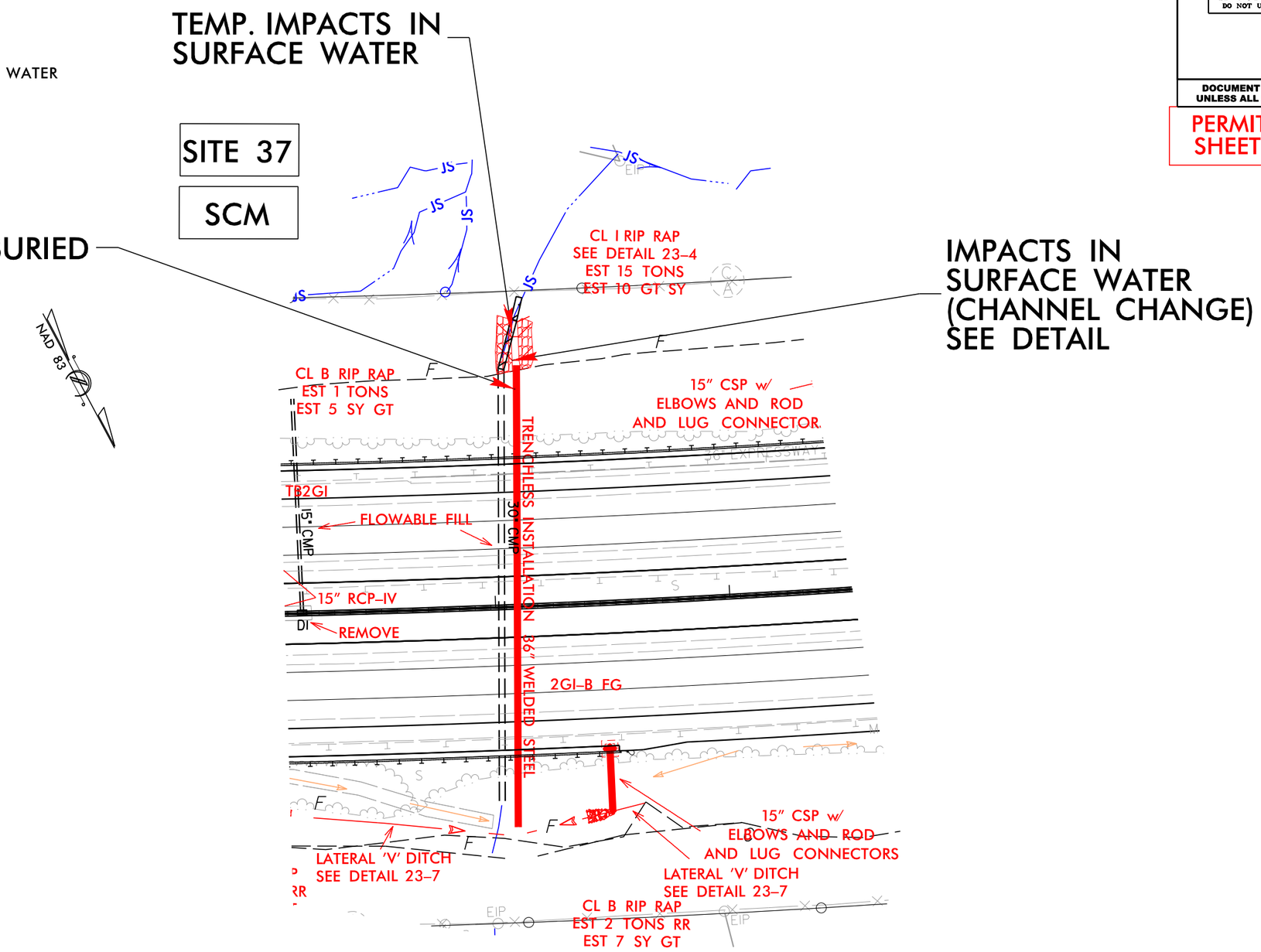
LEGEND

S S — DENOTES IMPACTS IN SURFACE WATER

TS TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER

SITE 37

SCM



50' 0' 50' 100' 150'
GRAPHIC SCALE

FOR -L- PROFILE, SEE SHEET 67 & 68
FOR -Y7- PROFILE, SEE SHEET 89

REVISIONS

3/27/2019
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$$SCALE$$
$$ENVIRONMENT$$

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INCOMPLETE PLANS
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PERMIT DRAWING
SHEET 73 OF 77

LEGEND

S S — DENOTES IMPACTS IN SURFACE WATER

TS TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER

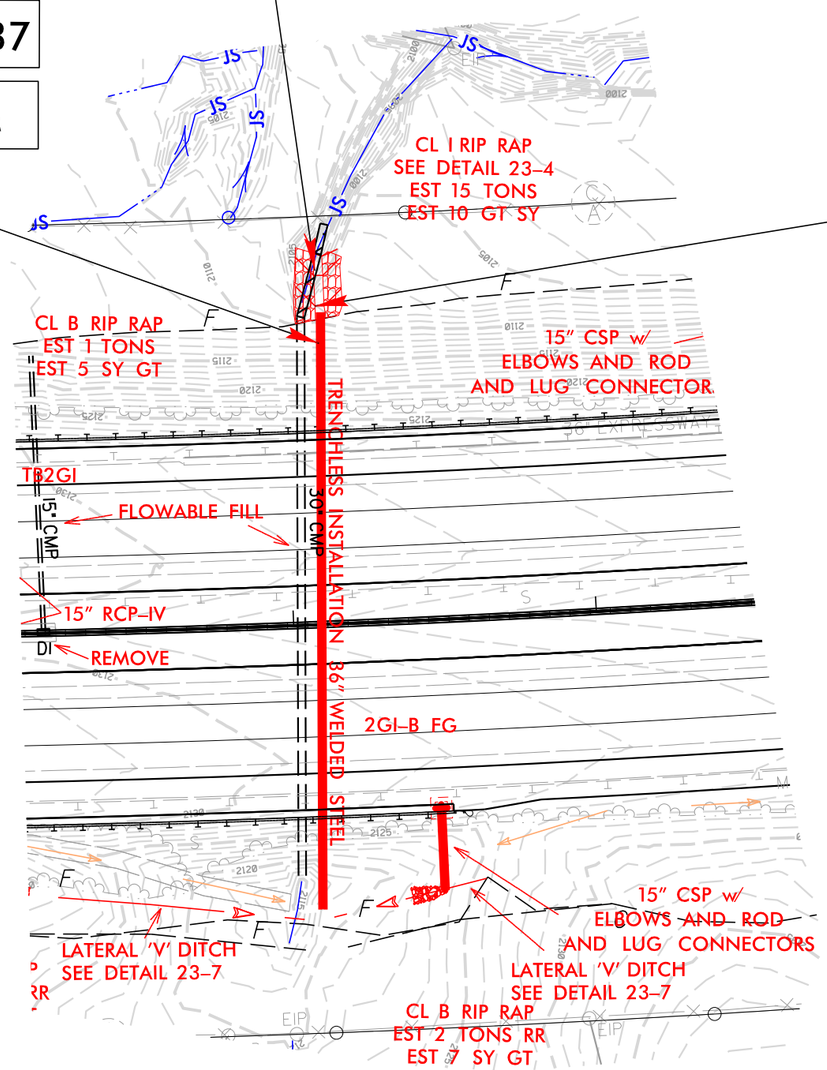
TEMP. IMPACTS IN SURFACE WATER

SITE 37

SCM

PIPE NOT BURIED

IMPACTS IN SURFACE WATER (CHANNEL CHANGE) SEE DETAIL



50' 0' 50' 100' 150'
GRAPHIC SCALE

FOR -L- PROFILE, SEE SHEET 67 & 68
FOR -Y7- PROFILE, SEE SHEET 89

REVISIONS

3/27/2019
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$$ENVIRONMENT$$

WETLAND & STREAM IMPACTS

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

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Raleigh, North Carolina 27609
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PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	26
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
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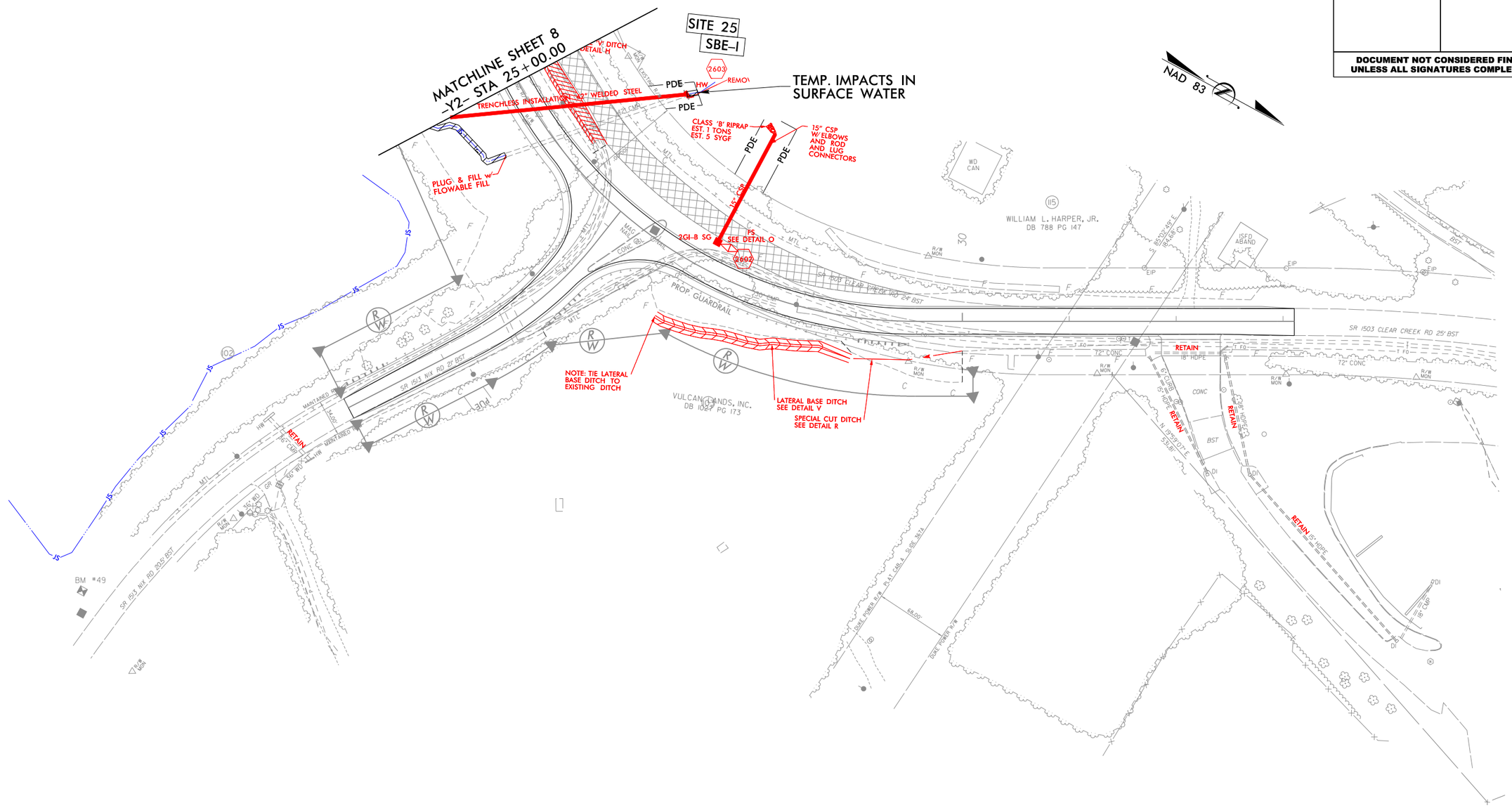
PERMIT DRAWING
SHEET 74 OF 77



FOR -Y2- PROFILE, SEE SHEET 85
FOR -Y4- PROFILE, SEE SHEET 86

REVISIONS

$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$
$$SCALE$$
$$ENVIRONMENT$$

WETLAND & STREAM IMPACTS

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

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PERMIT DRAWING
SHEET 75 OF 77

PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	26
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

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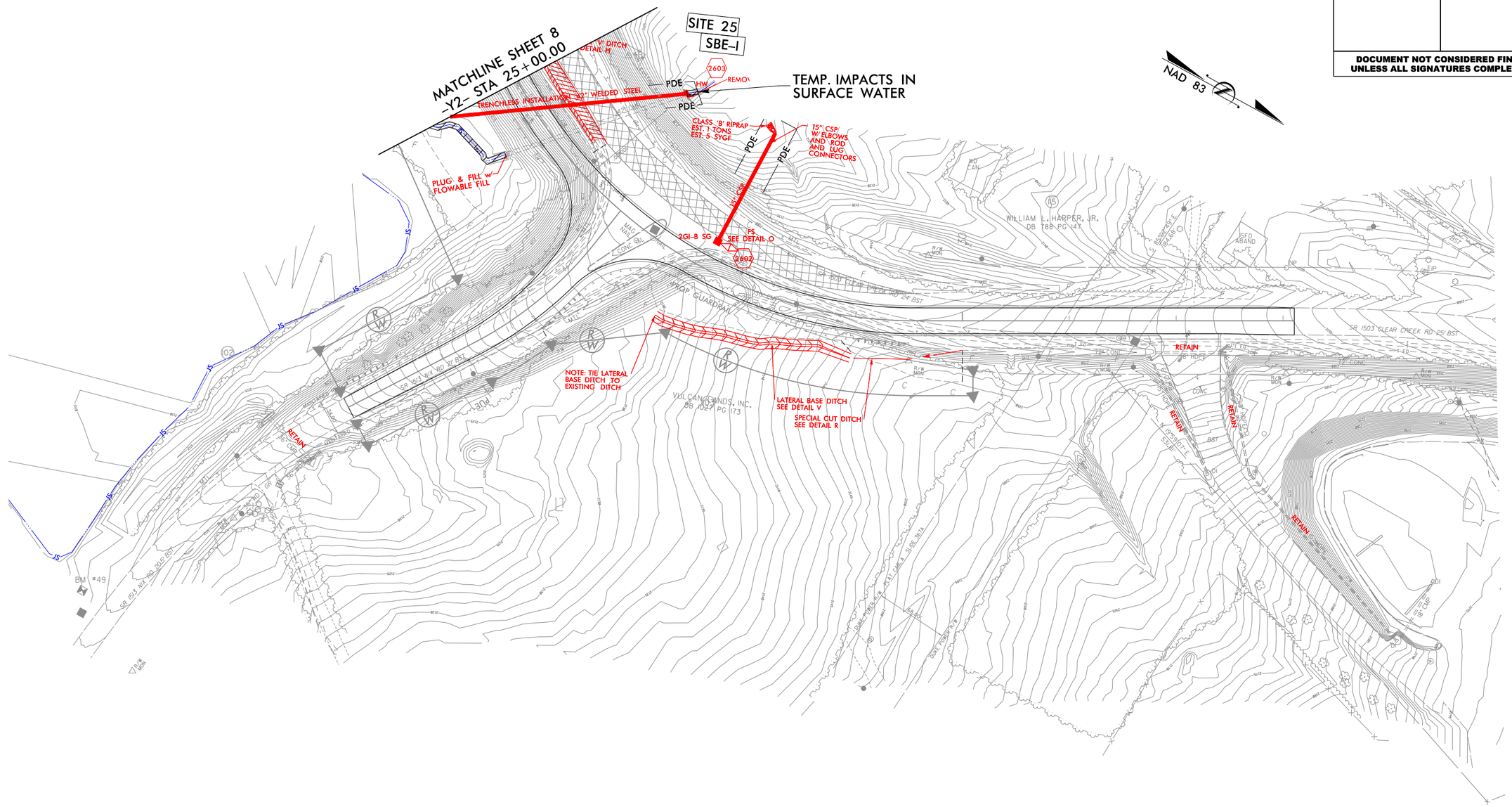

50' 0' 50' 100' 150'
GRAPHIC SCALE

FOR -Y2- PROFILE, SEE SHEET 85
FOR -Y4- PROFILE, SEE SHEET 86

REVISIONS

$$$$$SYSTIME$$$$
$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$USERNAME$$$
$$SCALE$$
$$ENVIRONMENT$$

WETLAND AND SURFACE WATER IMPACTS SUMMARY

Site No.	Stream Name Stream ID	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	UT to Cherry Branch / SAZ	L 389+41 to 389+62 RT	Proposed 48" WSP								31	10	
2	UT to Cherry Branch / SAZ	L 387+24 to 387+34 LT	Proposed 48" WSP and Headwall									10	
3	UT to Cherry Branch / SBA	L 401+94 to 401+97 LT	Bank Stabilization at intlet of Proposed 60" WSP								26		
4	UT to Cherry Branch / SBA	L 402+53 to 403+06 RT	Bank Stabilization at outlet of Proposed 60" WSP								68	10	
5	Allen Branch / SBC	L 419+71 to 419+82 RT	Bank Stabilization at outlet of Proposed 30" CSP								6	10	
6	Clear Creek / SBD	L 421+86 LT to 421+86 RT	Bridge Bank Stabilization								568	40	
7	Allen Branch / SBC	L 419+79 to 420+72 RT	Bank Stabilization at fill slope due to Roadway Widening								87	16	
8	Clear Creek / SBD	L 421+86 to 421+96 RT	Bank Stabilization at outlet of Proposed 15" CSP								4	10	
9	UT to Clear Creek / SBE	L 440+14 to 441+05 RT	Proposed 42" WSP								106		
9	UT to Clear Creek / SBE	L 439+92 to 440+14 RT	Bank Stabilization at outlet of Proposed 42" WSP								12	10	
10	UT to Mud Creek / SBY	L 456+53 to 456+69 LT	Channel Change*1 at Outlet of Proposed 54" RCP								16	7	
11	UT to Mud Creek / SBX	L 456+25 to 456+30 LT	Channel Change*1 at Outlet of Proposed 30" RCP								10	5	
12	WAH	L 499+69 to 499+80 RT	Fill in Wetland due to Roadway Widening	< 0.01									
12	WAH	L 499+63 to 499+77 RT	Proposed 36" CSP and Rip Rap from Proposed 15" CSP in Wetland			< 0.01							
12	WAH	L 499+63 to 499+77 RT	Mechanized Clearing in Wetland due to Roadway Widening				< 0.01						
13	WAP	L 511+99 to 512+63 RT	Fill and Proposed 2' Lat. Base ditch in Wetlands Due to Roadway Widening			0.02	< 0.01						
14	WAM	L 500+70 to 500+97 LT	Mechanized Clearing in Wetland due to Roadway Widening				< 0.01						
15	Featherstone Creek / SBP	L 526+12 to 526+13 LT	Existing 8'x8' Triple Barrel RCBC Extension Due to Roadway Widening								7		
15	Featherstone Creek / SBP	L 526+13 to 526+46 LT	Bank Stabilization along Featherstone Creek Due to Culvert Extension								64	10	
16	Featherstone Creek / SBP	L 525+79 to 525+84 RT	Existing 8'x8' Triple Barrel RCBC Extension Due to Roadway Widening								8		
16	Featherstone Creek / SBP	L 525+79 to 525+82 RT	Bank Stabilization along Featherstone Creek Due to Culvert Extension								55	10	
17	UT to Mud Creek / SBR	Y5 16+72 to 16+55 LT	Bank Stabilization at outlet of Proposed 48" WSP								16	10	
18	UT to Mud Creek / SBO	L 551+83 to 551+90 RT	Proposed 66" WSP								38	10	
19	UT to Mud Creek / SBO	L 551+76 to 551+81 LT	Bank Stabilization at outlet of Proposed 66" WSP								22	10	
20	UT to Mud Creek / SBN	L 557+81 to 558+00 LT	Channel Change*1 at Outlet of Proposed 36" RCP								13	10	
21	UT to Mud Creek / SBI	L 572+69 to 572+75 LT	Channel Change*1 at Outlet of Proposed 66" WSP								22	4	
21	UT to Mud Creek / SBI	L 572+75 to 572+87 LT	Proposed 66" WSP								19		
21	WAL	L 572+96 to 573+09 LT	Fill in Wetland due to Roadway Widening	< 0.01									
21	WAL	L 572+96 to 573+09 LT	Mechanized Clearing in Wetland due to Roadway Widening				< 0.01						
22	UT to Mud Creek / SBS	L 572+23 to 573+77 RT	Stream relocated to Proposed 2' Lateral Base Ditch due to Roadway Widening								168		
23	Byers Creek / SBU	L to RT	Existing 10'x8' Double Barrel RCBC Extension Due to Roadway Widening								15		
23	Byers Creek / SBU	L to RT	Bank Stabilization along Featherstone Creek Due to Culvert Extension								54	10	
24	Byers Creek / SBU	L to LT	Existing 10'x8' Double Barrel RCBC Extension Due to Roadway Widening								10		
24	Byers Creek / SBU	L to LT	Bank Stabilization along Featherstone Creek Due to Culvert Extension								48	10	
TOTALS*:				< 0.01		0.03	0.02				1493	212	

*Rounded totals are sum of actual impacts

NOTES:
*1: Emedding Riprap
*2: No Riprap in Channel

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
3/27/2019
Henderson County
I-4400BB

Revised 2018 Feb

WETLAND AND SURFACE WATER IMPACTS SUMMARY

Site No.	Stream Name Stream ID	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)
25	UT to Clear Creek / SBE	Y2 26+20 to 26+29 LT	Proposed 42" WSP and Headwall									10	
26	UT to Byers Creek / SBT	L 590+00 to 590+20 LT	Bank Stabilization at outlet of Proposed 36" RCP								12	10	
26	UT to Byers Creek / SBT	L 588+23 to 588+37 LT	Bank Stabilization along UT to Byers Creek Due to Culvert Extension								15		
27	UT to Byers Creek / SCB	L 610+50 to 610+75 LT	Channel Change*1 between outlet of Existing 60" CMP and proposed 66" WSP								23	10	
28	UT to Byers Creek / SCB	L 611+30 to 611+65 RT	Channel Change*2 between inlet of Existing 60" CMP and proposed 66" WSP								20	10	
29	UT to Byers Creek / SCJ	L 628+20 to 628+35 LT	Channel Change*2 between outlet of Existing 30" CMP and proposed 36" WSP								15	7	
30	UT to Byers Creek / SCJ	L 628+20 to 628+35 RT	Channel Change*2 between inlet of Existing 30" CMP and proposed 36" WSP								25	10	
31	UT to Byers Creek / SCA	L 632+90 to 633+10 LT	Channel Change*2 between outlet of Existing 48" CMP and proposed 48" WSP								30	14	
32	UT to Byers Creek / SCA	L 633+20 to 633+30 RT	Channel Change*2 between inlet of Existing 48" CMP and proposed 48" WSP								40	10	
33	UT to Byers Creek / SCA	L 23+60 to 23+75 RT (-Y7-)	Bank Stabilization at outlet of Proposed 24" RCP								18	10	
34	UT to Byers Creek / SCD	L 25+25 to 25+35 RT (-Y7-)	Bank Stabilization at outlet of Proposed 36" RCP								10	10	
35	UT to Byers Creek / SCG	L 21+50 to 21+75 RT (-Y7-)	Bank Stabilization at outlet of Proposed 30" RCP								51	10	
36	UT to Byers Creek / SCH	L 642+20 to 642+30 RT	Channel Change*2 between inlet of Existing 30" CMP and proposed 42" WSP								10	10	
37	UT to Byers Creek / SCM	L 646+05 to 646+15 LT	Channel Change*2 between outlet of Existing 30" CMP and proposed 36" WSP								10	10	
38	UT to Mud Creek / SBG	L 493+81 to 494+22 RT	Bank Stabilization along UT to Mud Creek								39	10	
39	UT to Mud Creek / SBF	L 494+27 to 494+50 RT	Bank Stabilization along UT to Mud Creek								12	10	
40	UT to Mud Creek / SBG	L 495+54 to 495+78 LT	Bank Stabilization along UT to Mud Creek								48		
41	UT to Mud Creek / SBI	L 573+76 to 573+81 RT	Proposed 66" WSP								12		
41	UT to Mud Creek / SBI	L 573+81 to 573+88 RT	Bank Stabilization along UT to Mud Creek								16	10	
TOTALS*:											406	161	
TOTALS FOR I-4700:				#VALUE!		0.03	0.82				2956	1601	

*Rounded totals are sum of actual impacts

NOTES:
Site 40: Impacts of interior bents are 400 SF
*1: Emedding Riprap
*2: No Riprap in Channel

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