



Transportation

PAT McCrory
Governor

NICHOLAS J. TENNYSON
Secretary

August 9, 2016

U. S. Army Corps of Engineers
Regulatory Field Office
151 Patton Avenue, Room 208
Asheville, NC 28801-5006

ATTN: Ms. Crystal Amschler
NCDOT Coordinator

Subject: **Application for Section 404 Nationwide Permit 33** for the proposed replacement of Bridge No. 103 over Dutch Buffalo Creek on NC 49 in Cabarrus County, Federal Aid Project No. NHPP-0049(32), Division 10, TIP No. B-5548.

Dear Madam:

The North Carolina Department of Transportation (NCDOT) proposes to replace Bridge No. 103 over Dutch Buffalo Creek with a 180' long, three-span bridge downstream of the existing alignment. Due to heavy traffic volumes on NC 49, traffic will be maintained on the current structure during construction.

As a result of the removal of the existing bridge, and the construction of the new bridge, temporary work pads will be required resulting in 0.06 acre (76 feet) of temporary stream impact to Dutch Buffalo Creek.

Please see enclosed copies of the Pre-Construction Notification (PCN), stormwater management plan, permit drawings and design plans for the above-referenced project. The Categorical Exclusion (CE) was completed on July 14, 2015 and distributed shortly thereafter. Additional copies are available upon request.

This project calls for a letting date of January 17, 2017 and a review date of November 29, 2016; however, the let date may advance as additional funding becomes available.

A copy of this permit application and its distribution list will be posted on the NCDOT Website at: <http://connect.ncdot.gov/resources/Environmental>. If you have any questions or need additional information, please call Michael Turchy at (919) 707-6157.

Sincerely,


for Philip S. Harris III, P.E., C.P.M.
Natural Environment Section Head

cc:
NCDOT Permit Application Standard Distribution List

 Nothing ComparesSM



Office Use Only:
Corps action ID no. _____
DWQ project no. _____
Form Version 1.3 Dec 10 2008

Pre-Construction Notification (PCN) Form

A. Applicant Information

1. Processing

1a. Type(s) of approval sought from the Corps:	☒ Section 404 Permit ☐ Section 10 Permit
1b. Specify Nationwide Permit (NWP) number: 33 or General Permit (GP) number:	
1c. Has the NWP or GP number been verified by the Corps?	☐ Yes ☒ No
1d. Type(s) of approval sought from the DWQ (check all that apply): ☐ 401 Water Quality Certification – Regular ☐ Non-404 Jurisdictional General Permit ☐ 401 Water Quality Certification – Express ☐ Riparian Buffer Authorization	
1e. Is this notification solely for the record because written approval is not required?	For the record only for DWQ 401 Certification: ☒ Yes ☐ No
For the record only for Corps Permit: ☐ Yes ☒ No	
1f. Is payment into a mitigation bank or in-lieu fee program proposed for mitigation of impacts? If so, attach the acceptance letter from mitigation bank or in-lieu fee program.	☐ Yes ☒ No
1g. Is the project located in any of NC's twenty coastal counties. If yes, answer 1h below.	☐ Yes ☒ No
1h. Is the project located within a NC DCM Area of Environmental Concern (AEC)?	☐ Yes ☒ No

2. Project Information

2a. Name of project:	Replacement of Bridge 103 over Dutch Buffalo Creek on NC 49
2b. County:	Cabarrus
2c. Nearest municipality / town:	Mount Pleasant
2d. Subdivision name:	<i>not applicable</i>
2e. NCDOT only, T.I.P. or state project no:	B-5548

3. Owner Information

3a. Name(s) on Recorded Deed:	North Carolina Department of Transportation
3b. Deed Book and Page No.	<i>not applicable</i>
3c. Responsible Party (for LLC if applicable):	<i>not applicable</i>
3d. Street address:	1598 Mail Service Center
3e. City, state, zip:	Raleigh, NC 27699-1598
3f. Telephone no.:	(919) 707-6157
3g. Fax no.:	(919) 212-5785
3h. Email address:	maturchy@ncdot.gov

4. Applicant Information (if different from owner)	
4a. Applicant is:	☐ Agent ☐ Other, specify:
4b. Name:	<i>not applicable</i>
4c. Business name (if applicable):	
4d. Street address:	
4e. City, state, zip:	
4f. Telephone no.:	
4g. Fax no.:	
4h. Email address:	
5. Agent/Consultant Information (if applicable)	
5a. Name:	<i>not applicable</i>
5b. Business name (if applicable):	
5c. Street address:	
5d. City, state, zip:	
5e. Telephone no.:	
5f. Fax no.:	
5g. Email address:	

B. Project Information and Prior Project History	
1. Property Identification	
1a. Property identification no. (tax PIN or parcel ID):	<i>not applicable</i>
1b. Site coordinates (in decimal degrees):	Latitude: 35.427075 (DD.DDDDDD) Longitude: - 80.410561 (-DD.DDDDDD)
1c. Property size:	2 acres
2. Surface Waters	
2a. Name of nearest body of water (stream, river, etc.) to proposed project:	Dutch Buffalo Creek
2b. Water Quality Classification of nearest receiving water:	C
2c. River basin:	Yadkin-Pee Dee
3. Project Description	
3a. Describe the existing conditions on the site and the general land use in the vicinity of the project at the time of this application: The land use within the vicinity of the project consists of about 60% forest land, 10% developed or disturbed lands (roadsides and residential areas), and 30% cultivated land (agricultural fields and pastures).	
3b. List the total estimated acreage of all existing wetlands on the property: zero	
3c. List the total estimated linear feet of all existing streams (intermittent and perennial) on the property: 1,500	
3d. Explain the purpose of the proposed project: The purpose of this project is to replace a functiononally obseolete and structurally deficient bridge.	
3e. Describe the overall project in detail, including the type of equipment to be used: The project involves replacing a 119-foot three-span bridge with a 180-foot three-span bridge downstream of the existing alignment. Due to high traffic volumes on NC 49, traffic will use the existing structure during construcion. Standard road building equipment, such as trucks, dozers, and cranes will be used.	
4. Jurisdictional Determinations	
4a. Have jurisdictional wetland or stream determinations by the Corps or State been requested or obtained for this property / project (including all prior phases) in the past? Comments:	☐ Yes ☒ No ☐ Unknown
4b. If the Corps made the jurisdictional determination, what type of determination was made?	☐ Preliminary ☐ Final
4c. If yes, who delineated the jurisdictional areas? Name (if known):	Agency/Consultant Company: Other:
4d. If yes, list the dates of the Corps jurisdictional determinations or State determinations and attach documentation. See 4a above.	
5. Project History	
5a. Have permits or certifications been requested or obtained for this project (including all prior phases) in the past?	☐ Yes ☒ No ☐ Unknown
5b. If yes, explain in detail according to "help file" instructions.	
6. Future Project Plans	
6a. Is this a phased project?	☐ Yes ☒ No
6b. If yes, explain.	

C. Proposed Impacts Inventory						
1. Impacts Summary						
1a. Which sections were completed below for your project (check all that apply):						
☐ Wetlands		☒ Streams - tributaries		☐ Buffers		
☐ Open Waters		☐ Pond Construction				
2. Wetland Impacts						
If there are wetland impacts proposed on the site, then complete this question for each wetland area impacted.						
2a. Wetland impact number – Permanent (P) or Temporary (T)	2b. Type of impact	2c. Type of wetland (if known)	2d. Forested	2e. Type of jurisdiction (Corps - 404, 10 DWQ – non-404, other)	2f. Area of impact (acres)	
Site 1 ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ		
2g. Total wetland impacts						
2h. Comments: Rounded total is sum of actual impacts. All wetlands riparian.						
3. Stream Impacts						
If there are perennial or intermittent stream impacts (including temporary impacts) proposed on the site, then complete this question for all stream sites impacted.						
3a. Stream impact number - Permanent (P) or Temporary (T)	3b. Type of impact	3c. Stream name	3d. Perennial (PER) or intermittent (INT)?	3e. Type of jurisdiction (Corps - 404, 10 DWQ – non-404, other)	3f. Average stream width (feet)	3g. Impact length (linear feet)
Site 1 ☐ P ☒ T	Temporary Work Pads	Dutch Buffalo Creek	☒ PER ☐ INT	☒ Corps ☐ DWQ	30	0.06 acre (76')
3h. Total stream and tributary impacts						0.06 acre (76')
3i. Comments:						
Permanent surface water impacts due to new piers in the water = <0.01 acre (42.42 sq ft)						
4. Open Water Impacts						
If there are proposed impacts to lakes, ponds, estuaries, tributaries, sounds, the Atlantic Ocean, or any other open water of the U.S. then individually list all open water impacts below.						
4a. Open water impact number – Permanent (P) or Temporary (T)	4b. Name of waterbody (if applicable)	4c. Type of impact		4d. Waterbody type	4e. Area of impact (acres)	
O1 ☐ P ☐ T						
O2 ☐ P ☐ T						
O3 ☐ P ☐ T						
O4 ☐ P ☐ T						
4f. Total open water impacts					0 Permanent 0 Temporary	
4g. Comments: No open water within construction limits.						
5. Pond or Lake Construction						
If pond or lake construction proposed, then complete the chart below.						

5a. Pond ID number	5b. Proposed use or purpose of pond	5c. Wetland Impacts (acres)			5d. Stream Impacts (feet)			5e. Upland (acres)
		Flooded	Filled	Excavated	Flooded	Filled	Exca vated	Flooded
P1								
P2								
5f. Total								
5g. Comments:								
5h. Is a dam high hazard permit required?			☐ Yes ☐ No If yes, permit ID no:					
5i. Expected pond surface area (acres):								
5j. Size of pond watershed (acres):								
5k. Method of construction:								

6. Buffer Impacts (for DWQ)

If project will impact a protected riparian buffer, then complete the chart below. If yes, then individually list all buffer impacts below. If any impacts require mitigation, then you **MUST** fill out Section D of this form.

6a. Project is in which protected basin?			☐ Neuse ☐ Catawba			☐ Tar-Pamlico ☐ Randleman	☐ Other:
6b. Buffer impact number – Permanent (P) or Temporary (T)	6c. Reason for impact	6d. Stream name	6e. Buffer mitigation required?	6f. Zone 1 impact (square feet)	6g. Zone 2 impact (square feet)		
B1 ☐ P ☐ T			☐ Yes ☐ No				
B2 ☐ P ☐ T			☐ Yes ☐ No				
B3 ☐ P ☐ T			☐ Yes ☐ No				
6h. Total buffer impacts							
6i. Comments: This project is not located within a protected buffer area.							

D. Impact Justification and Mitigation		
1. Avoidance and Minimization		
1a. Specifically describe measures taken to avoid or minimize the proposed impacts in designing project. Due to high traffic volumes, traffic will use the existing structure until the new structure is completed. Grassed shoulders will be utilized on each side of the road to maximize vegetative conveyance and allow runoff to remain in a diffuse flow pattern to encourage passive stormwater treatment. Deck drains will be installed only over land and none installed over the stream on the new bridge to minimize direct discharge. The "causeway" approaches on the old structure will be removed to maximize floodplain hydraulic connectivity with the new, longer structure.		
1b. Specifically describe measures taken to avoid or minimize the proposed impacts through construction techniques. Best Management Practices (BMPs) will be utilized during construction to attempt to reduce the stormwater impacts to the receiving streams due to erosion and runoff.		
2. Compensatory Mitigation for Impacts to Waters of the U.S. or Waters of the State		
2a. Does the project require Compensatory Mitigation for impacts to Waters of the U.S. or Waters of the State?	☐ Yes ☒ No If no, explain:	
2b. If yes, mitigation is required by (check all that apply):	☐ DWQ ☐ Corps	
2c. If yes, which mitigation option will be used for this project?	☐ Mitigation bank ☐ Payment to in-lieu fee program ☐ Permittee Responsible Mitigation	
3. Complete if Using a Mitigation Bank		
3a. Name of Mitigation Bank: not applicable		
3b. Credits Purchased (attach receipt and letter)	Type	Quantity
3c. Comments:		
4. Complete if Making a Payment to In-lieu Fee Program		
4a. Approval letter from in-lieu fee program is attached.	☐ Yes	
4b. Stream mitigation requested:	0 linear feet	
4c. If using stream mitigation, stream temperature:	☐ warm ☐ cool ☐ cold	
4d. Buffer mitigation requested (DWQ only):	0 square feet	
4e. Riparian wetland mitigation requested:	0 acre	
4f. Non-riparian wetland mitigation requested:	0 acres	
4g. Coastal (tidal) wetland mitigation requested:	0 acres	
4h. Comments: The NCDOT does not propose mitigation for the temporary stream impacts. These impacts do not require permanent fill in the stream bed and, therefore, under Section 404 of the Clean Water Act, do not constitute Loss of Waters of the U.S. and are not subject to compensatory mitigation.		
Complete if Using a Permittee Responsible Mitigation Plan		
5a. If using a permittee responsible mitigation plan, provide a description of the proposed mitigation plan.		

6. Buffer Mitigation (State Regulated Riparian Buffer Rules) – required by DWQ				
6a. Will the project result in an impact within a protected riparian buffer that requires buffer mitigation?				☐ Yes ☒ No
6b. If yes, then identify the square feet of impact to each zone of the riparian buffer that requires mitigation. Calculate the amount of mitigation required.				
Zone	6c. Reason for impact	6d. Total impact (square feet)	Multiplier	6e. Required mitigation (square feet)
Zone 1			3 (2 for Catawba)	
Zone 2			1.5	
	6f. Total buffer mitigation required:			
6g. If buffer mitigation is required, discuss what type of mitigation is proposed (e.g., payment to private mitigation bank, permittee responsible riparian buffer restoration, payment into an approved in-lieu fee fund).				
6h. Comments:				

E. Stormwater Management and Diffuse Flow Plan (required by DWQ)	
1. Diffuse Flow Plan	
1a. Does the project include or is it adjacent to protected riparian buffers identified within one of the NC Riparian Buffer Protection Rules?	☐ Yes ☒ No
1b. If yes, then is a diffuse flow plan included? If not, explain why. Comments: If required from 1a, see attached buffer permit drawings.	☐ Yes ☐ No
2. Stormwater Management Plan	
2a. What is the overall percent imperviousness of this project?	N/A
2b. Does this project require a Stormwater Management Plan?	☒ Yes ☐ No
2c. If this project DOES NOT require a Stormwater Management Plan, explain why:	
2d. If this project DOES require a Stormwater Management Plan, then provide a brief, narrative description of the plan: See attached permit drawings.	
2e. Who will be responsible for the review of the Stormwater Management Plan?	☐ Certified Local Government ☐ DWQ Stormwater Program ☒ DWQ 401 Unit
3. Certified Local Government Stormwater Review	
3a. In which local government's jurisdiction is this project?	not applicable
3b. Which of the following locally-implemented stormwater management programs apply (check all that apply):	☐ Phase II ☐ NSW ☐ USMP ☐ Water Supply Watershed ☐ Other:
3c. Has the approved Stormwater Management Plan with proof of approval been attached?	☐ Yes ☐ No
4. DWQ Stormwater Program Review	
4a. Which of the following state-implemented stormwater management programs apply (check all that apply):	☐ Coastal counties ☐ HQW ☐ ORW ☐ Session Law 2006-246 ☐ Other:
4b. Has the approved Stormwater Management Plan with proof of approval been attached?	☐ Yes ☐ No N/A
5. DWQ 401 Unit Stormwater Review	
5a. Does the Stormwater Management Plan meet the appropriate requirements?	☐ Yes ☐ No N/A
5b. Have all of the 401 Unit submittal requirements been met?	☐ Yes ☐ No N/A

F. Supplementary Information	
1. Environmental Documentation (DWQ Requirement)	
1a. Does the project involve an expenditure of public (federal/state/local) funds or the use of public (federal/state) land?	☒ Yes ☐ No
1b. If you answered "yes" to the above, does the project require preparation of an environmental document pursuant to the requirements of the National or State (North Carolina) Environmental Policy Act (NEPA/SEPA)?	☒ Yes ☐ No
1c. If you answered "yes" to the above, has the document review been finalized by the State Clearing House? (If so, attach a copy of the NEPA or SEPA final approval letter.) Comments: Categorical Exclusion (CE) approved 7/14/15	☒ Yes ☐ No
2. Violations (DWQ Requirement)	
2a. Is the site in violation of DWQ Wetland Rules (15A NCAC 2H .0500), Isolated Wetland Rules (15A NCAC 2H .1300), DWQ Surface Water or Wetland Standards, or Riparian Buffer Rules (15A NCAC 2B .0200)?	☐ Yes ☒ No
2b. Is this an after-the-fact permit application?	☐ Yes ☒ No
2c. If you answered "yes" to one or both of the above questions, provide an explanation of the violation(s):	
3. Cumulative Impacts (DWQ Requirement)	
3a. Will this project (based on past and reasonably anticipated future impacts) result in additional development, which could impact nearby downstream water quality?	☐ Yes ☒ No
3b. If you answered "yes" to the above, submit a qualitative or quantitative cumulative impact analysis in accordance with the most recent DWQ policy. If you answered "no," provide a short narrative description. Due to the minimal transportation impact resulting from this bridge replacement, this project will neither influence nearby land uses nor stimulate growth. Therefore, a detailed indirect or cumulative effects study will not be necessary.	
4. Sewage Disposal (DWQ Requirement)	
4a. Clearly detail the ultimate treatment methods and disposition (non-discharge or discharge) of wastewater generated from the proposed project, or available capacity of the subject facility. not applicable	

5. Endangered Species and Designated Critical Habitat (Corps Requirement)		
5a. Will this project occur in or near an area with federally protected species or habitat?	☒ Yes	☐ No
5b. Have you checked with the USFWS concerning Endangered Species Act impacts?	☒ Yes	☐ No
5c. If yes, indicate the USFWS Field Office you have contacted.	☐ Raleigh ☒ Asheville	
5d. What data sources did you use to determine whether your site would impact Endangered Species or Designated Critical Habitat? As of April 2, 2015 the USFWS lists three federally listed species for Cabarrus County. There is no habitat present for the Carolina heelsplitter as found during multiple surveys and low quality mussel habitat. Surveys were conducted for Schweinitz's sunflower by NCDOT biologists in October 17, 2014 and no individuals were found. The project was reviewed for effects on the northern long-eared bat, and NCDOT has determined that the proposed action does not require separate consultation under grounds that the proposed action is consistent with the final Section 4(d) rule. This determination was distributed to the USFWS on April 13, 2016. No response was received.		
6. Essential Fish Habitat (Corps Requirement)		
6a. Will this project occur in or near an area designated as essential fish habitat?	☐ Yes	☒ No
6b. What data sources did you use to determine whether your site would impact Essential Fish Habitat? NMFS County Index		
7. Historic or Prehistoric Cultural Resources (Corps Requirement)		
7a. Will this project occur in or near an area that the state, federal or tribal governments have designated as having historic or cultural preservation status (e.g., National Historic Trust designation or properties significant in North Carolina history and archaeology)?	☒ Yes	☐ No
7b. What data sources did you use to determine whether your site would impact historic or archeological resources? NEPA Documentation		
8. Flood Zone Designation (Corps Requirement)		
8a. Will this project occur in a FEMA-designated 100-year floodplain?	☒ Yes	☐ No
8b. If yes, explain how project meets FEMA requirements: NCDOT Hydraulics Unit coordination with FEMA		
8c. What source(s) did you use to make the floodplain determination? FEMA Maps		
For Philip S. Harris, III, P.E. Applicant/Agent's Printed Name	 Applicant/Agent's Signature (Agent's signature is valid only if an authorization letter from the applicant is provided.)	08/09/2016 Date



North Carolina Department of Transportation
Highway Stormwater Program
STORMWATER MANAGEMENT PLAN



(Version 2.02; Released April 2015)

FOR NCDOT PROJECTS

WBS Element: 55048.1.1 TIP No.: B-5548 County(ies): Cabarrus Page 1 of 1

General Project Information

WBS Element:	55048.1.1	TIP Number:	B-5548	Project Type:	Bridge Replacement	Date:	6/7/2016
NCDOT Contact:	William S. Zerman, PE			Contractor / Designer:			
	Address:	NC DOT Hydraulics Unit 1590 Mail Service Center Raleigh, NC 27699			Address:		
	Phone:	919-707-6755			Phone:		
	Email:	bzerman@ncdot.gov			Email:		
City/Town:				County(ies):	Cabarrus		
River Basin(s):	Yadkin-Pee Dee			CAMA County?	No		
Wetlands within Project Limits?							

Project Description

Project Length (lin. miles or feet):	0.691 Miles	Surrounding Land Use:	Rural and wooded with rolling hills and agricultural lands; residential					
	Proposed Project		Existing Site					
Project Built-Upon Area (ac.)	2.7	ac.	1.8	ac.				
Typical Cross Section Description:	Two -12 ft. travel lane, 4 ft. to 7ft. Shoulders (4 ft. paved)		Two- 11 ft. travel lanes					
Annual Avg Daily Traffic (veh/hr/day):	Design/Future:	9500	Year:	2040	Existing:	7000	Year:	2015
General Project Narrative: (Description of Minimization of Water Quality Impacts)	The project consists of replacing Bridge #103 on NC 49 over Dutch Buffalo Creek. 4 ft. paved shoulders are provided on each side. Limiting paved shoulders maximized vegetative conveyance. The Existing three span 119 ft long bridge will be replaced with a new three span 180 ft. long bridge located 70 ft. downstream of the existing bridge. The proposed bridge will not have any deck drains. Existing drainage patterns have been maintained. Runoff from the bridge will be collected by an inlet and piped down the fill slope to Class 'B' rip rap to provide energy dissipation and encourage diffuse flow before reaching the jurisdictional stream.							

Waterbody Information

Surface Water Body (1):	Dutch Buffalo Creek		NCDWR Stream Index No.:	13-17-11-5		
NCDWR Surface Water Classification for Water Body	Primary Classification:	Class C				
	Supplemental Classification:	None				
Other Stream Classification:						
Impairments:	None					
Aquatic T&E Species?	Comments:					
NRTR Stream ID:				Buffer Rules in Effect:	N/A	
Project Includes Bridge Spanning Water Body?		Deck Drains Discharge Over Buffer?	N/A	Dissipator Pads Provided in Buffer?	N/A	
Deck Drains Discharge Over Water Body?		(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

09/08/99

See Sheet 1-A For Index of Sheets
See Sheet 1-B For Conventional Symbols

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CABARRUS COUNTY

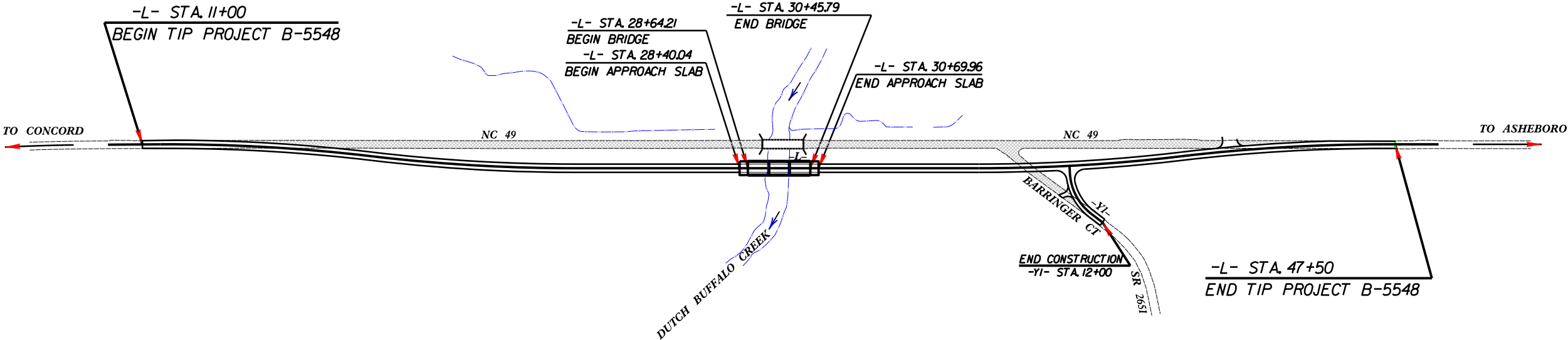
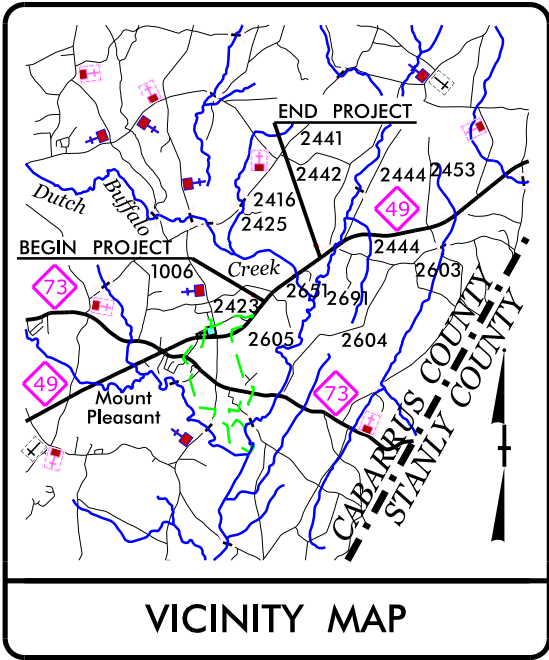
LOCATION: BRIDGE NO.103 OVER DUTCH BUFFALO CREEK ON NC 49.

TYPE OF WORK: GRADING, PAVING, DRAINAGE AND STRUCTURE.

SURFACE WATER IMPACTS PERMIT

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5548	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
55048.1.1	NHPP-0049(32)	PE	

PERMIT DRAWING
SHEET 1 OF 6



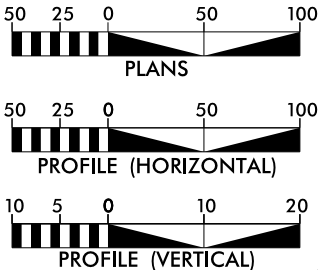
THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD .

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONTRACT:

TIP PROJECT: B-5548

GRAPHIC SCALES



DESIGN DATA

ADT 2017 = 8,400
ADT 2037 = 11,500
DHV = 11 %
D = 60 %
K = 15 % *
V = 60 MPH
* TTST = 7% DUAL = 8%
FUNC CLASS: ARTERIAL
REGIONAL TIER

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT B-5548 = 0.657 MI
LENGTH OF STRUCTURE TIP PROJECT B-5548 = 0.034 MI
TOTAL LENGTH OF TIP PROJECT B-5548 = 0.691 MI

Prepared in the Office of:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., Raleigh NC, 27610

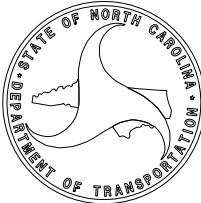
2012 STANDARD SPECIFICATIONS
RIGHT OF WAY DATE:
JANUARY 15, 2016
LETTING DATE:
JANUARY 17, 2017

G. E. BREW, PE
PROJECT ENGINEER

THAD F. DUNCAN, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.
ROADWAY DESIGN
ENGINEER
SIGNATURE: _____ P.E.



202014
R:\Hydraulics\CADD\PERMIT DRAWINGS\B-5548_Hyd_1.mxd
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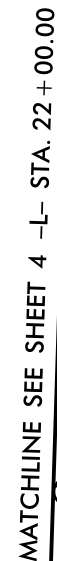


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⑤



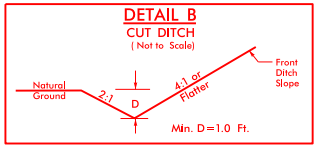
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MATCHLINE SEE SHEET 6 -L- STA. 36 + 00.00



8/17/99



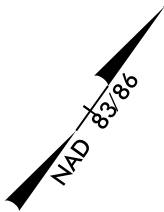
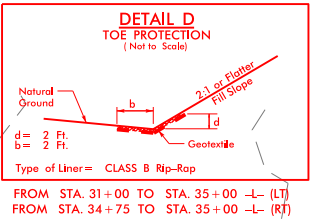
FROM STA. 22+75 TO STA. 23+25 -L- (LT)
FROM STA. 26+00 TO STA. 28+50 -L- (LT)
FROM STA. 35+50 TO STA. 37+50 -L- (RT)

FRANCIS MEDLIN FAMILY FARMS I, LLC

1

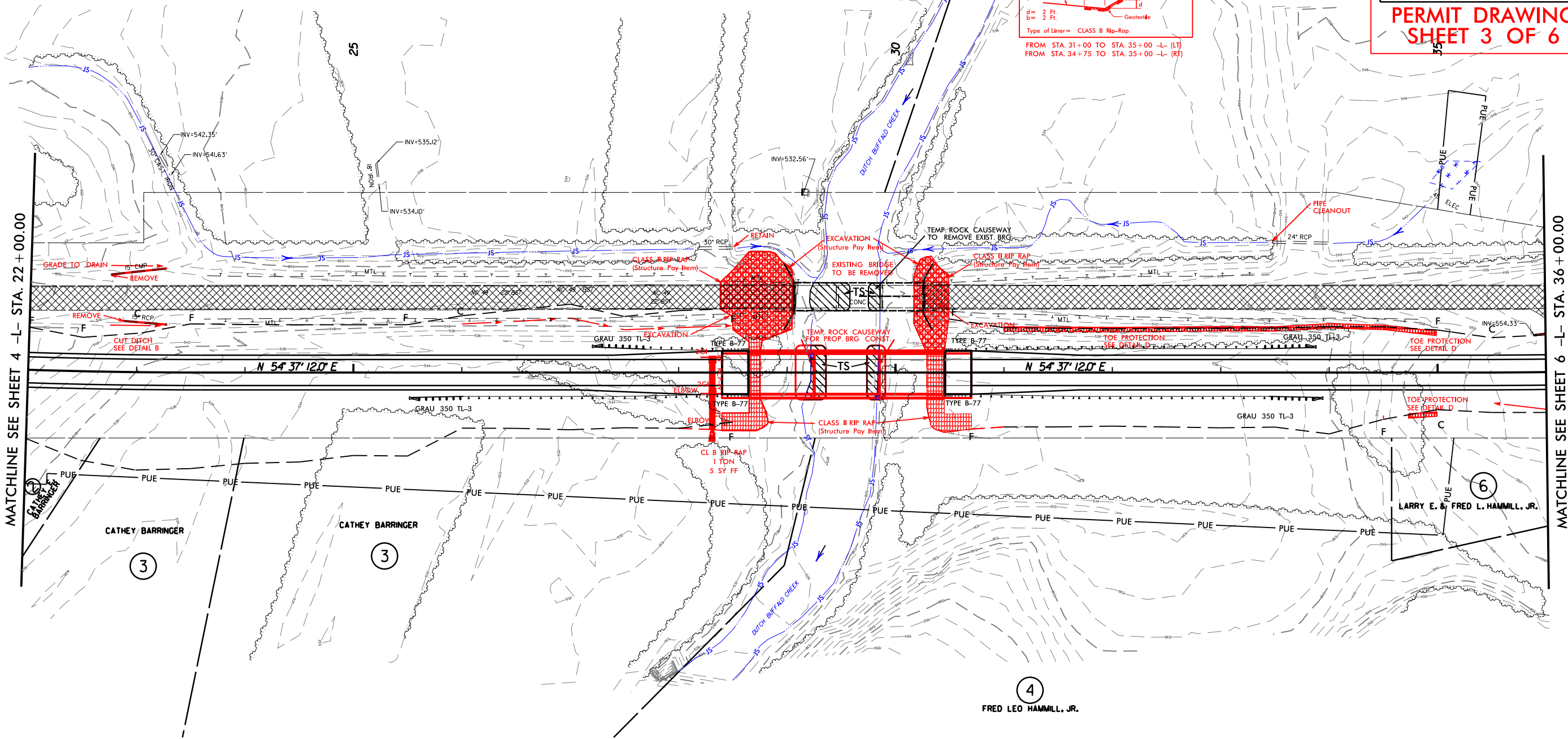
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5



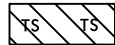
PROJECT REFERENCE NO.	SHEET NO.
B-5548	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

PERMIT DRAWING
SHEET 3 OF 6



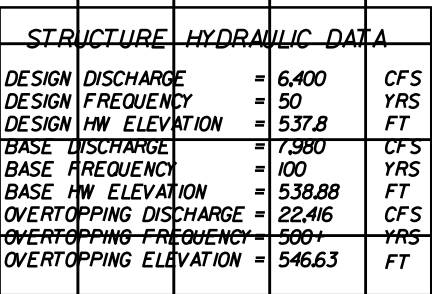
50' 0' 50' 100' 150'

GRAPHIC SCALE



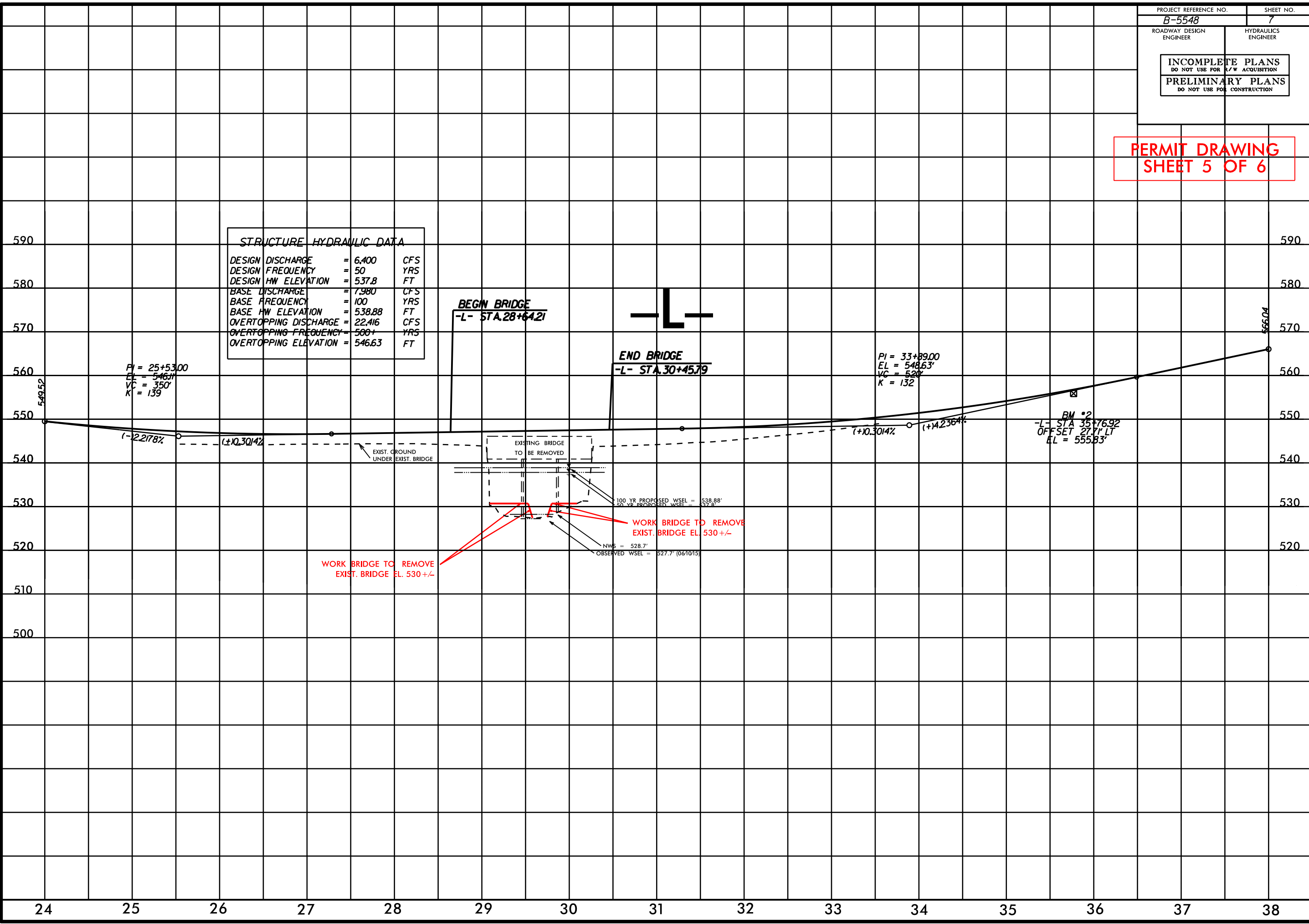
TEMPORARY WORK BRIDGE

PERMIT DRAWING
SHEET 4 OF 6



PERMIT DRAWING
SHEET 5 OF 6

STRUCTURE HYDRAULIC DATA			
DESIGN DISCHARGE	=	6,400	CFS
DESIGN FREQUENCY	=	50	YRS
DESIGN HW ELEVATION	=	537.8	FT
BASE DISCHARGE	=	7,980	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	538.88	FT
OVERTOPPING DISCHARGE	=	22,416	CFS
OVERTOPPING FREQUENCY	=	500+	YRS
OVERTOPPING ELEVATION	=	546.63	FT



WETLAND PERMIT IMPACT SUMMARY												
			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	29+17 / 29+34 -L-	Rock Causeway "Prop. BRG"							0.02		50	
1	29+75 / 29+85 -L-	Rock Causeway "Prop. BRG"							0.01		50	
1	29+20 / 29+58 -L-LT	Rock Causeway										
		Exist. BRG							0.02		26	
1	29+75 / 29+86 -L-LT	Rock Causeway										
		Exist. BRG							< 0.01		26	
TOTALS*:									0.06	0	152	0

*Rounded totals are sum of actual impacts

NOTES:

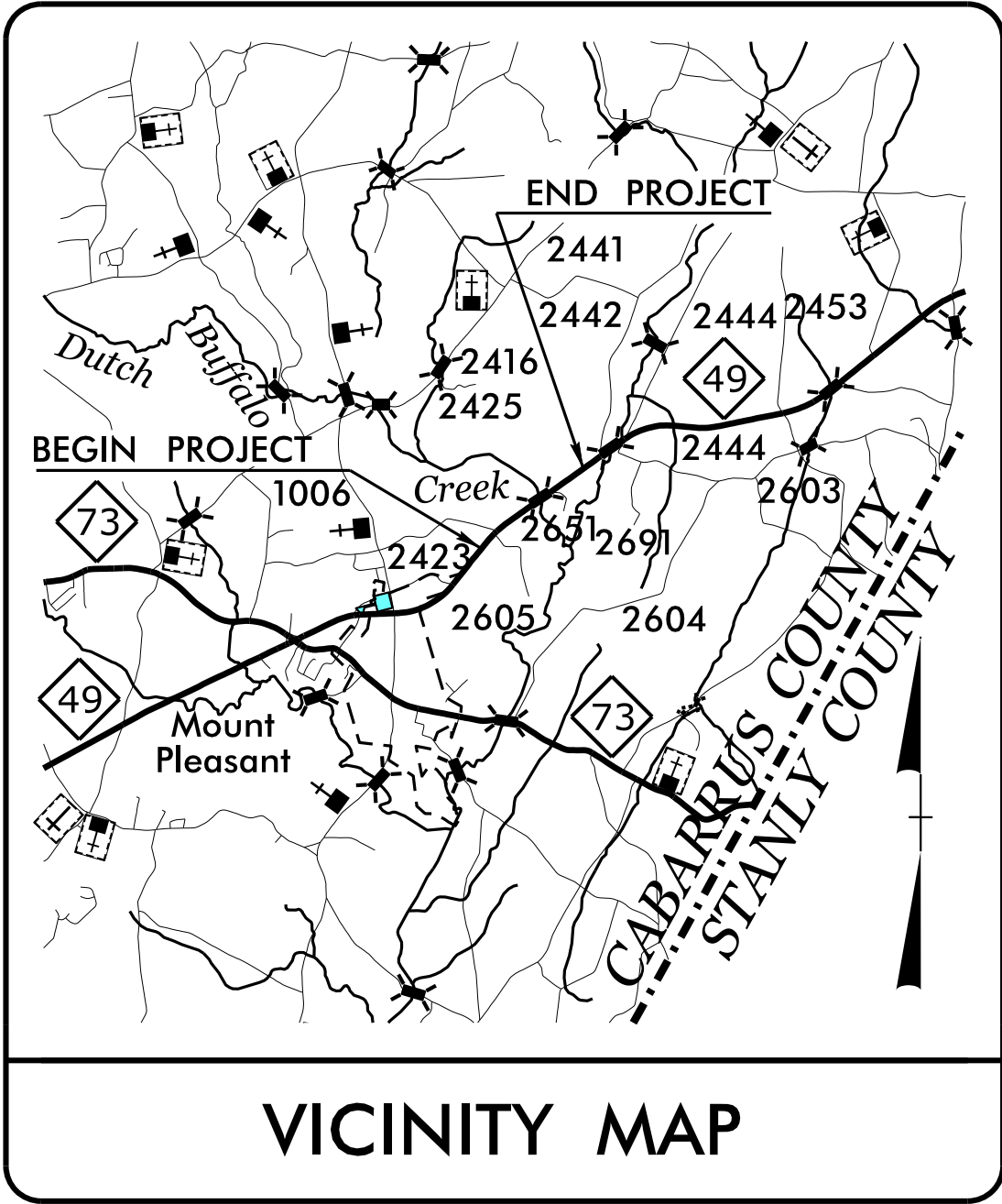
PERMANENT SURFACE WATER IMPACT DUE TO PIERS= 42.42 SQ. FT. (<0.01 AC)	NC DEPARTMENT OF TRANSPORTATION
---	---------------------------------

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
3/15/2016
CABARRUS COUNTY
B-5548
55048.1.1
SHEET 6 OF 6

SHEET 6 OF 6

09/08/99

See Sheet 1-A For Index of Sheets
See Sheet 1-B For Conventional Symbols



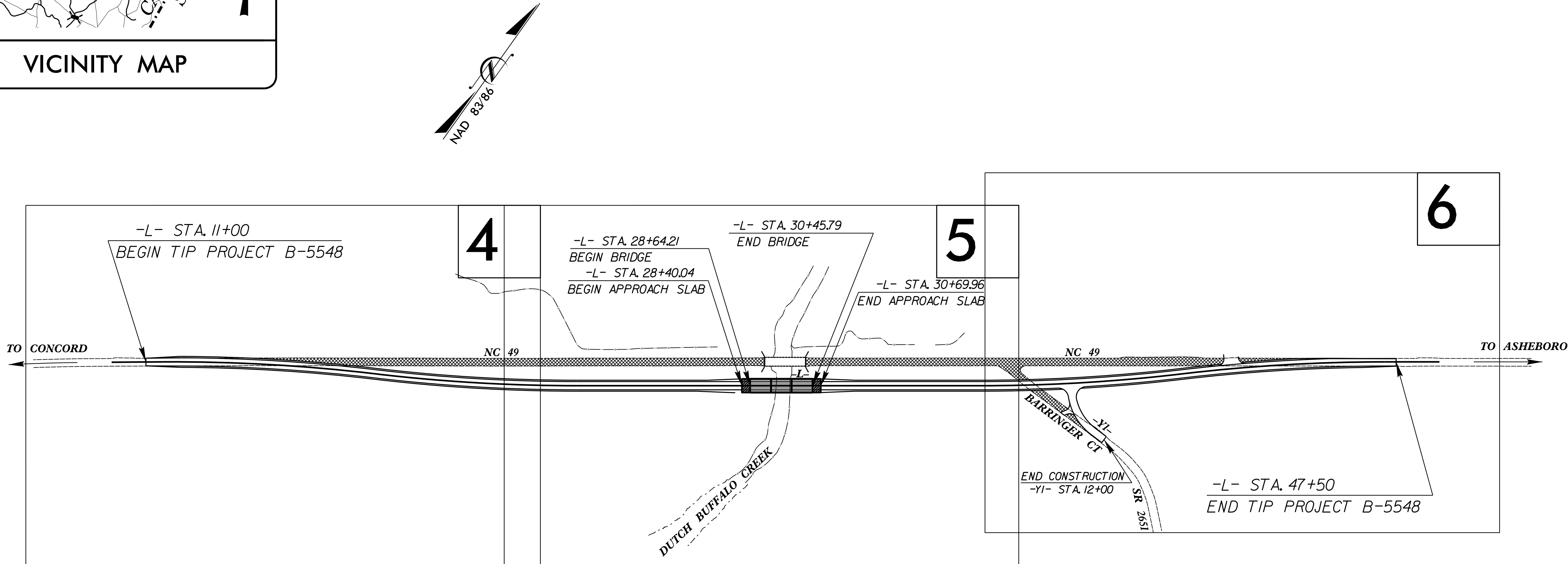
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CABARRUS COUNTY

LOCATION: BRIDGE NO.103 OVER DUTCH BUFFALO CREEK ON NC 49.

TYPE OF WORK: GRADING, PAVING, DRAINAGE AND STRUCTURE.

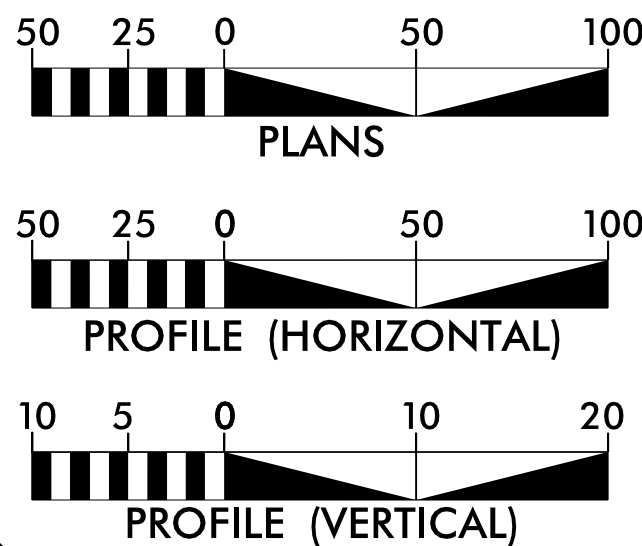
STATE	STATE PROJECT REFERENCE NO.		SHEET NO.	TOTAL SHEETS
N.C.	B-5548		1	
STATE PROJ.NO.		F. A. PROJ.NO.	DESCRIPTION	
55048.1.1		NHPP-0049(032)	PE	
55048.2.1		NHPP-0049(032)	R/W,UTIL	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED				



THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES



DESIGN DATA

ADT 2017 = 8,400
ADT 2037 = 11,500
DHV = 11 %
D = 60 %
K = 15 % *
V = 60 MPH
* TTST = 7% DUAL = 8%
FUNC CLASS: ARTERIAL
REGIONAL TIER

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT B-5548 = 0.657 MI
LENGTH OF STRUCTURE TIP PROJECT B-5548 = 0.034 MI
TOTAL LENGTH OF TIP PROJECT B-5548 = 0.691 MI

Prepared in the Office of:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., Raleigh NC, 27610

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JANUARY 21, 2016

LETTING DATE:
JANUARY 17, 2017

G. E. BREW, PE
PROJECT ENGINEER

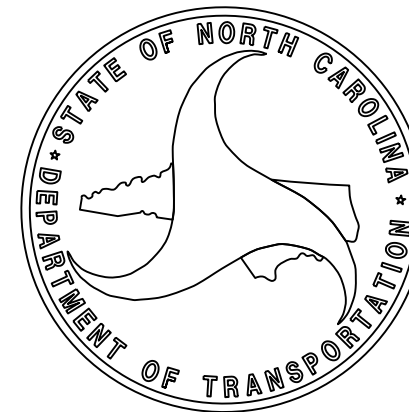
THAD F. DUNCAN, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN
ENGINEER

SIGNATURE: P.E.



TIP PROJECT: B-5548

CONTRACT:

28-JAN-2016 10:25
R:\Roadway\Proj\B-5548_Rdy_Tsh.dgn
\$\$\$\$\$USERNAME\$\$\$

Note: Not to Scale

**S.U.E. = Subsurface Utility Engineering*

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
B-5548	I-B

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin	○ EIP
Property Corner	----->
Property Monument	□ ECM
Parcel/Sequence Number	(23)
Existing Fence Line	-x-x-x-
Proposed Woven Wire Fence	○
Proposed Chain Link Fence	□
Proposed Barbed Wire Fence	◇
Existing Wetland Boundary	--- WLB ---
Proposed Wetland Boundary	WLB
Existing Endangered Animal Boundary	--- EAB ---
Existing Endangered Plant Boundary	--- EPB ---
Known Soil Contamination: Area or Site	☠ ☠
Potential Soil Contamination: Area or Site	☹ ☹

BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or U/G Tank Cap	○
Sign	○ S
Well	○ W
Small Mine	✕
Foundation	▭
Area Outline	▭
Cemetery	▭ †
Building	▭
School	▭
Church	▭
Dam	▭

HYDROLOGY:

Stream or Body of Water	-----
Hydro, Pool or Reservoir	▭
Jurisdictional Stream	--- JS ---
Buffer Zone 1	--- BZ 1 ---
Buffer Zone 2	--- BZ 2 ---
Flow Arrow	←
Disappearing Stream	→
Spring	○
Wetland	⚡
Proposed Lateral, Tail, Head Ditch	▭
False Sump	▭

RAILROADS:

Standard Gauge	-----
RR Signal Milepost	○ MILEPOST 35
Switch	SWITCH
RR Abandoned	-----
RR Dismantled	-----

RIGHT OF WAY:

Baseline Control Point	◆
Existing Right of Way Marker	△
Existing Right of Way Line	-----
Proposed Right of Way Line	-----
Proposed Right of Way Line with Iron Pin and Cap Marker	-----
Proposed Right of Way Line with Concrete or Granite RW Marker	-----
Proposed Control of Access Line with Concrete C/A Marker	-----
Existing Control of Access	-----
Proposed Control of Access	-----
Existing Easement Line	--- E ---
Proposed Temporary Construction Easement	--- E ---
Proposed Temporary Drainage Easement	--- TDE ---
Proposed Permanent Drainage Easement	--- PDE ---
Proposed Permanent Drainage /Utility Easement	--- DUE ---
Proposed Permanent Utility Easement	--- PUE ---
Proposed Temporary Utility Easement	--- TUE ---
Proposed Aerial Utility Easement	--- AUE ---

Proposed Permanent Easement with Iron Pin and Cap Marker

ROADS AND RELATED FEATURES:

Existing Edge of Pavement	-----
Existing Curb	-----
Proposed Slope Stakes Cut	--- C ---
Proposed Slope Stakes Fill	--- F ---
Proposed Curb Ramp	CR
Existing Metal Guardrail	-----
Proposed Guardrail	-----
Existing Cable Guiderail	-----
Proposed Cable Guiderail	-----

Equality Symbol	⊙
Pavement Removal	▭

VEGETATION:

Single Tree	☼
Single Shrub	☼
Hedge	-----
Woods Line	-----

Orchard	☼ ☼ ☼ ☼
Vineyard	▭ Vineyard

EXISTING STRUCTURES:

MAJOR:	
Bridge, Tunnel or Box Culvert	CONC
Bridge Wing Wall, Head Wall and End Wall	CONC WW
MINOR:	
Head and End Wall	CONC HW
Pipe Culvert	-----
Footbridge	-----
Drainage Box: Catch Basin, DI or JB	CB
Paved Ditch Gutter	-----
Storm Sewer Manhole	⊙
Storm Sewer	--- S ---

UTILITIES:

POWER:	
Existing Power Pole	●
Proposed Power Pole	○
Existing Joint Use Pole	●
Proposed Joint Use Pole	○
Power Manhole	⊙
Power Line Tower	⊠
Power Transformer	⊠
U/G Power Cable Hand Hole	▭
H-Frame Pole	● ●
Recorded U/G Power Line	--- P ---
Designated U/G Power Line (S.U.E.*)	--- P ---

TELEPHONE:

Existing Telephone Pole	●
Proposed Telephone Pole	○
Telephone Manhole	⊙
Telephone Booth	▭
Telephone Pedestal	▭
Telephone Cell Tower	⊙
U/G Telephone Cable Hand Hole	▭
Recorded U/G Telephone Cable	--- T ---
Designated U/G Telephone Cable (S.U.E.*)	--- T ---
Recorded U/G Telephone Conduit	--- TC ---
Designated U/G Telephone Conduit (S.U.E.*)	--- TC ---
Recorded U/G Fiber Optics Cable	--- T FO ---
Designated U/G Fiber Optics Cable (S.U.E.*)	--- T FO ---

WATER:

Water Manhole	⊙
Water Meter	○
Water Valve	⊗
Water Hydrant	⊙
Recorded U/G Water Line	--- W ---
Designated U/G Water Line (S.U.E.*)	--- W ---
Above Ground Water Line	--- A/G Water ---

TV:

TV Satellite Dish	☼
TV Pedestal	▭
TV Tower	⊗
U/G TV Cable Hand Hole	▭
Recorded U/G TV Cable	--- TV ---
Designated U/G TV Cable (S.U.E.*)	--- TV ---
Recorded U/G Fiber Optic Cable	--- TV FO ---
Designated U/G Fiber Optic Cable (S.U.E.*)	--- TV FO ---

GAS:

Gas Valve	◇
Gas Meter	⊙
Recorded U/G Gas Line	--- G ---
Designated U/G Gas Line (S.U.E.*)	--- G ---
Above Ground Gas Line	--- A/G Gas ---

SANITARY SEWER:

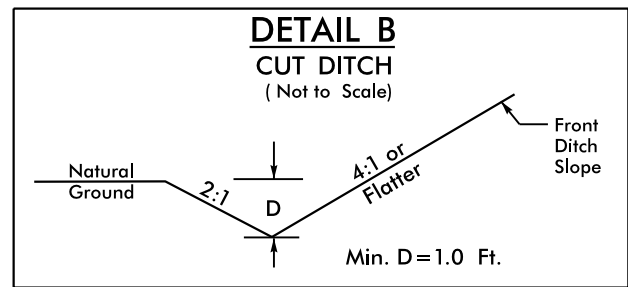
Sanitary Sewer Manhole	⊙
Sanitary Sewer Cleanout	⊙
U/G Sanitary Sewer Line	--- SS ---
Above Ground Sanitary Sewer	--- A/G Sanitary Sewer ---
Recorded SS Forced Main Line	--- FSS ---
Designated SS Forced Main Line (S.U.E.*)	--- FSS ---

MISCELLANEOUS:

Utility Pole	●
Utility Pole with Base	▭
Utility Located Object	○
Utility Traffic Signal Box	▭
Utility Unknown U/G Line	--- ?UTL ---
U/G Tank; Water, Gas, Oil	▭
Underground Storage Tank, Approx. Loc.	UST
A/G Tank; Water, Gas, Oil	▭
Geoenvironmental Boring	⊙
U/G Test Hole (S.U.E.*)	⊙
Abandoned According to Utility Records	AATUR
End of Information	E.O.I.



FOR -L- PROFILE SEE SHEET 7
FOR -DRI- PROFILE SEE SHEET 8
FOR -DR2- PROFILE SEE SHEET 8



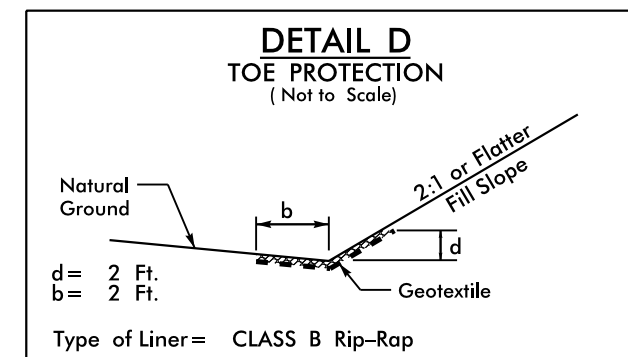
FROM STA. 22+75 TO STA. 23+25 -L- (LT)
FROM STA. 26+00 TO STA. 28+50 -L- (LT)
FROM STA. 35+50 TO STA. 37+50 -L- (RT)

FRANCIS MEDLIN FAMILY FARMS I, LLC
DB 8468 PG 219

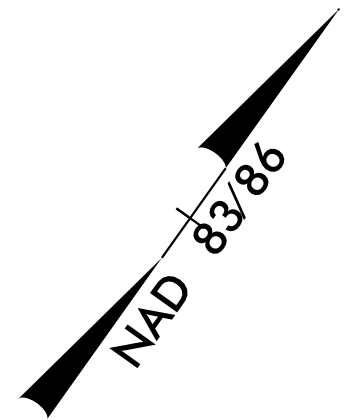
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ERNEST Y CHOW
DB 1146 PG 096

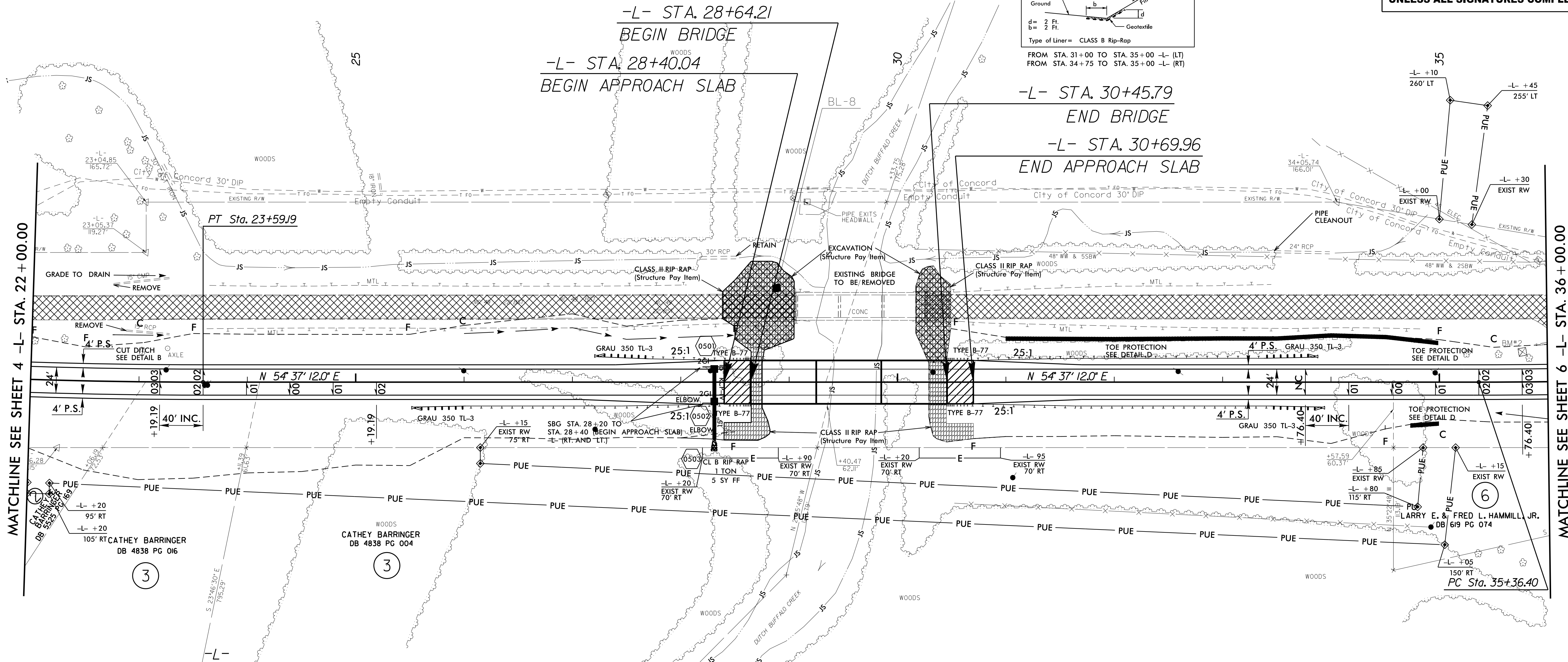
5



FROM STA. 31+00 TO STA. 35+00 -L- (LT)
FROM STA. 34+75 TO STA. 35+00 -L- (RT)



PROJECT REFERENCE NO. <i>B-5548</i>		SHEET NO. <i>5</i>	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			



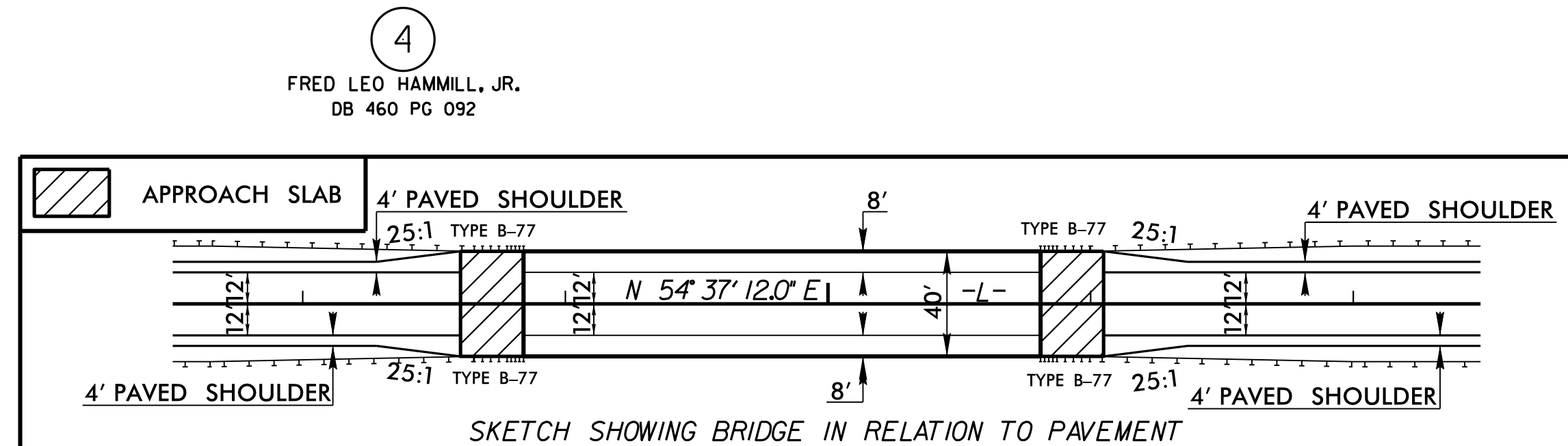
PI Sta 20+64.37	PI Sta 38+31.75
$\Delta = 6^\circ 45' 52.8''$ (LT)	$\Delta = 6^\circ 45' 40.0''$ (LT)
$D = 1^\circ 08' 45.3''$	$D = 1^\circ 08' 45.3''$
$L = 590.33'$	$L = 590.02'$
$T = 295.51'$	$T = 295.35'$
$R = 5,000.00'$	$R = 5,000.00'$
$SE = 03$	$SE = 03$
$INC = 40'$	$INC = 40'$

-DR3-

PI Sta 10+69.29	PI Sta 12+12.51
$\Delta = 86^\circ 12' 49.5''$ (RT)	$\Delta = 89^\circ 52' 09.5''$ (LT)
$D = 190^\circ 59' 09.4''$	$D = 136^\circ 25' 06.7''$
$L = 45.14'$	$L = 65.88'$
$T = 28.08'$	$T = 41.90'$
$R = 30.00'$	$R = 42.00'$

-DR4-

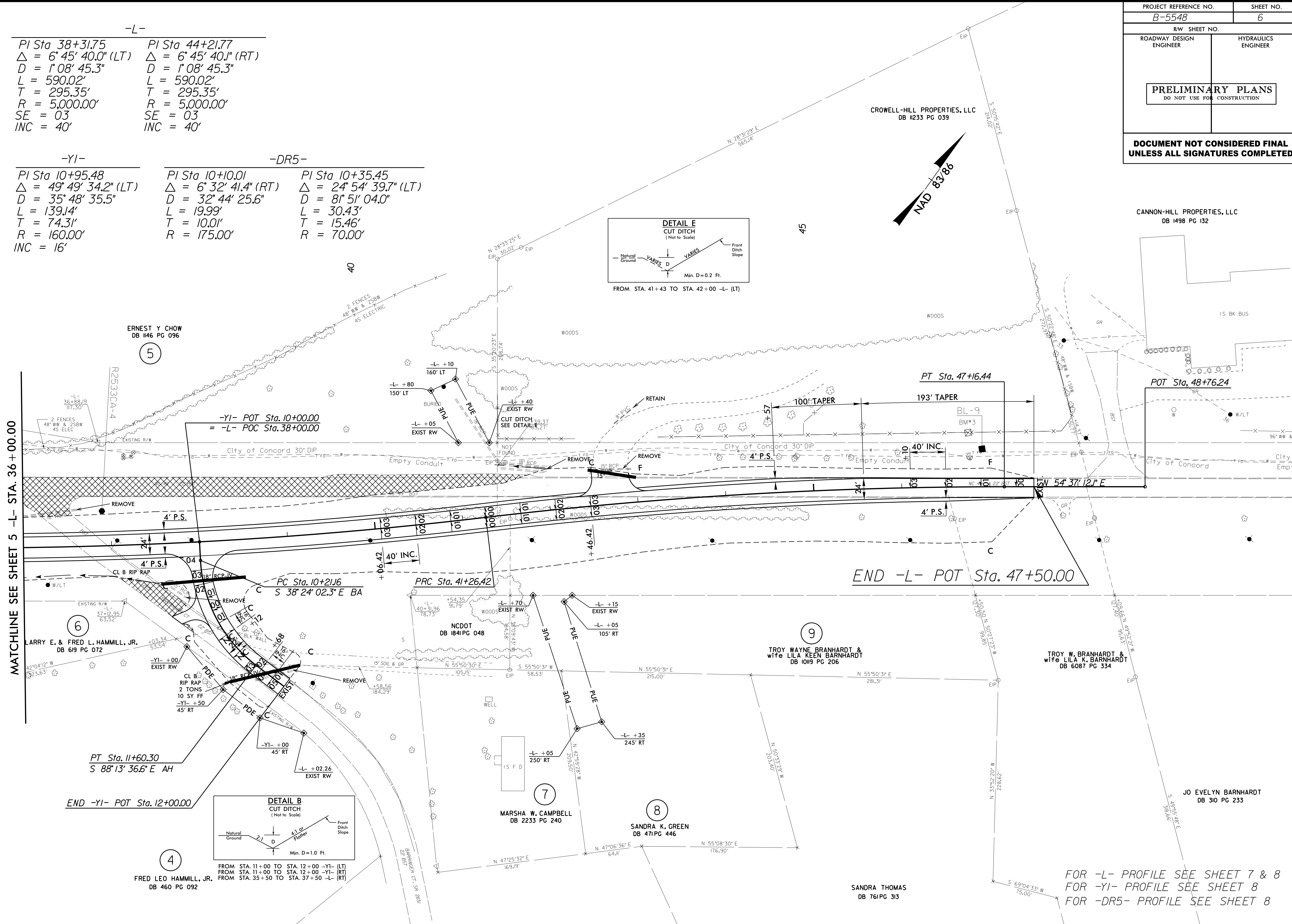
PI Sta 10+31.45	PI Sta 10+96.03
$\Delta = 71^\circ 31' 50.9''$ (LT)	$\Delta = 69^\circ 23' 22.2''$ (RT)
$D = 190^\circ 59' 09.4''$	$D = 179^\circ 02' 57.5''$
$L = 37.45'$	$L = 38.75'$
$T = 21.61'$	$T = 22.15'$
$R = 30.00'$	$R = 32.00'$



FOR -L- PROFILE SEE SHEET 7
FOR -DR3- PROFILE SEE SHEET 8
FOR -DR4- PROFILE SEE SHEET 8

8/17/99

28-JAN-2016 10:25
R:\Roadway\Projects\B-5548-Rdy-ps-h_6.dgn
B-5548-Rdy-ps-h_6.dgn



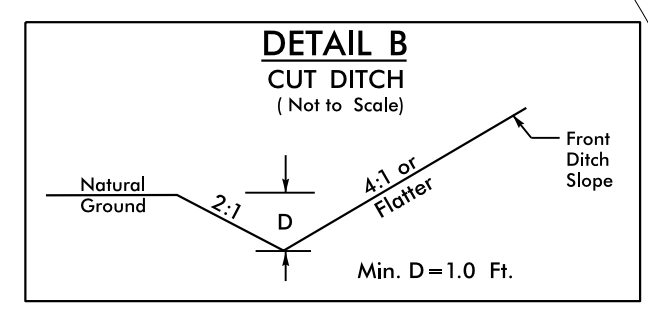
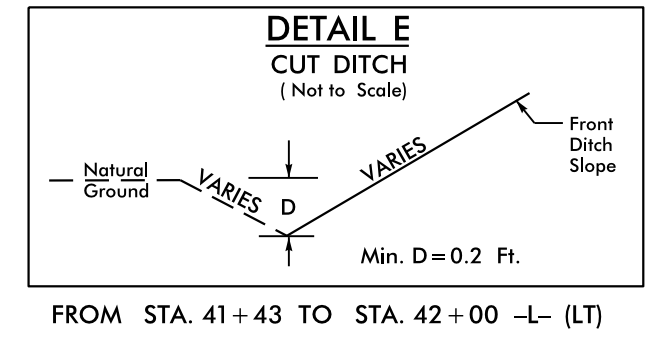
-L-
PI Sta 38+31.75
 $\Delta = 6^\circ 45' 40.0''$ (LT)
 $D = 1^\circ 08' 45.3''$
 $L = 590.02'$
 $T = 295.35'$
 $R = 5,000.00'$
 $SE = 03$
 $INC = 40'$

PI Sta 44+21.77
 $\Delta = 6^\circ 45' 40.1''$ (RT)
 $D = 1^\circ 08' 45.3''$
 $L = 590.02'$
 $T = 295.35'$
 $R = 5,000.00'$
 $SE = 03$
 $INC = 40'$

-YI-
PI Sta 10+95.48
 $\Delta = 49^\circ 49' 34.2''$ (LT)
 $D = 35^\circ 48' 35.5''$
 $L = 139.14'$
 $T = 74.31'$
 $R = 160.00'$
 $INC = 16'$

-DR5-
PI Sta 10+10.01
 $\Delta = 6^\circ 32' 41.4''$ (RT)
 $D = 32^\circ 44' 25.6''$
 $L = 19.99'$
 $T = 10.01'$
 $R = 175.00'$

PI Sta 10+35.45
 $\Delta = 24^\circ 54' 39.7''$ (LT)
 $D = 81^\circ 51' 04.0''$
 $L = 30.43'$
 $T = 15.46'$
 $R = 70.00'$



PROJECT REFERENCE NO.		SHEET NO.
B-5548		6
R/W SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		

FOR -L- PROFILE SEE SHEET 7 & 8
FOR -YI- PROFILE SEE SHEET 8
FOR -DR5- PROFILE SEE SHEET 8

