



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

BEVERLY EAVES PERDUE
GOVERNOR

EUGENE A. CONTI, JR.
SECRETARY

September 1, 2010

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

Attention: Mr. John Thomas
NCDOT Coordinator, Division 9

Subject: **Application for a Modification to Section 404 Individual Permit and Individual Section 401 Water Quality Certification** for reconstruction and widening of I-85 from north of SR 2120 (Long Ferry Road) in Rowan County to south of NC 150 in Davidson County. Federal Aid Project No. NHFIMF-85-3(197)81, WBS 34156.3.GV3, Division 9, TIP No. I-2304AC.

Debit \$570 from WBS 34156.3.GV3

Reference: Individual 404 Permit issued December 16, 2004, USACE Action ID 1998-21203
Individual 401 Certification No. 3455 issued March 19, 2004
Individual 401 Certification No. 3455 Modification issued November 22, 2004
Individual 404 Permit Extension issued April 1, 2009

Dear Sir:

The North Carolina Department of Transportation (NCDOT) proposes a modification to the existing Individual Section 404 Permit and 401 Certification for the Permit Impact Site 2 of the above referenced project. Originally, the project was permitted with Sections AA and AB; however, the project is now being referred to as Section AC and AD due to contracts and financing. The AC Section encompasses what was previously referred to as AA and includes Site 2. The AD Section includes the area previously referred to as AB. Revised permit drawings are included with this permit modification request. The project construction contract was awarded on April 22, 2010 with anticipated start date in early fall 2010. Enclosed with this application is the Preliminary Jurisdictional Determination Form, Ecosystem Enhancement Program letter, and permit drawings.

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

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

TELEPHONE: 919-431-2000
FAX: 919-431-2001 or
919-431-2002
WEBSITE: WWW.NCDOT.ORG

LOCATION:
4701 ATLANTIC AVE.
SUITE 116
RALEIGH NC 27604

- Protected Species
- Aquatic life passage
- FEMA compliance
- Cultural resources

Site 2

The project is located in HUC 03040103 of the Yadkin River Basin. This modification is specific to Site 2 of the permit and will result in the following impacts due to construction of the proposed I-85 bridge over the Yadkin River:

- 0.07 acre Permanent Fill in Riparian Wetlands
- 0.02 acre Temporary Fill in Riparian Wetlands
- 6.59 acre Hand Clearing in Riparian Wetlands
- 0.14 acre Mechanized Clearing in Riparian Wetlands
- <0.01 acre Permanent Surface Water Impacts
- 0.02 acre Temporary Surface Water Impacts

There are two wetlands located at Site 2. The boundary of the wetland located on the south side of the river has not changed from the original permit. The wetland located on the north side of the river was included in the original permit, however, after a site visit in January 2010 it was determined that the wetland was now larger than originally delineated. Per a phone conversation with John Thomas of the US Army Corp of Engineers a Preliminary Jurisdictional Determination Form will be required and has been included in this permit modification application.

Site 2 includes the proposed I-85 bridge over the Yadkin River and temporary work bridge required to build the bridge. This site was included in the original permit plans (2004 Impact Sheets 6-10); however, impacts associated with the bridge and temporary work bridge were not supplied at that time. This permit modification provides the impacts associated with construction of both the temporary work bridge and the I-85 bridge over the Yadkin River.

Prior to beginning construction on the work bridge, the footprint of the work bridge must be cleared of vegetation. Vegetation (trees/shrubs) will be cut 2-6 feet above the soil and removed to minimize the potential for drift. Hand clearing will be the method utilized for clearing with the exception of mechanized clearing at locations where stumps are in conflict with the bridge piles. Construction of the work bridge will result in 0.02 acre of temporary fill in wetlands and 0.02 acre of temporary surface water impacts. The work bridge will consist of a mainline bridge with fingers that extend 10 feet beyond the footprint of the proposed I-85 bridge. The mainline bridge will be 63 spans and include 64 bents with 2 piles per bent. There will be 36 bridge fingers with 3 bents per span.

The I-85 bridge will be 2,900 feet long with runoff conveyed through deck drains in a closed drainage system and discharging outside of jurisdictional areas. Permanent impacts from the bridge construction will result in 0.07 acre of fill in wetlands and 0.03 acre of fill in surface water.

A permit modification for the remainder of the project is forthcoming and will include information detailing the demolition of the existing I-85 bridge over the Yadkin River as well as additional sites which deviate from the original permit. The remaining project areas are awaiting final approval on design and could potentially delay the project completion date without the ability to begin construction of the I-85 bridge over the Yadkin River (Site 2). Site 2 construction is necessary to get

traffic off of the existing I-85 and provide a safe route for those traveling on I-85. The existing I-85 bridge does not meet NCDOT's current standards, is structurally deficient, and has a higher crash rate than the statewide average for comparable facilities.

Compensatory Mitigation will be required for the permanent riparian wetland impacts. Mitigation for the 0.07 acres of permanent riparian wetland fill will be provided at 2:1 ratio and at the 1:1 ratio for the 0.14 acres of mechanized clearing in riparian wetlands. Total acres of mitigation will be 0.28. Compensatory mitigation will be provided by the Ecosystem Enhancement Program and enclosed is their letter of acceptance.

REGULATORY APPROVALS

Section 404

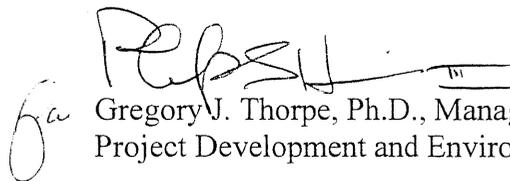
Request is hereby made for a modification to the USACE Individual 404 Permit as required for the above-described activities.

Section 401

We are hereby requesting a modification to the 401 Water Quality Certification from the N.C. Division of Water Quality. In compliance with the NCAC Section 143 215.3D(e), we will provide \$570.00 to act as payment for processing the Section 401 permit modification previously noted in this application (See Subject line). We are providing five (5) copies of this modification request to the NCDWQ for their review and approval.

Thank you for your assistance with this project. If you have any questions or need additional information, please contact Sara Easterly at seeasterly@ncdot.gov or (919) 431-1605. A copy of this permit modification application will be posted on the DOT website at: <http://www.ncdot.org/doh/preconstruct/pe/neu/permit.html>.

Sincerely,



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

w/attachment

Mr. Brian Wrenn, NCDWQ (5 Copies)
Ms. Marla Chambers, NCWRC
Ms. Jennifer Derby, USEPA
Ms. Marella Buncick, USFWS

W/o attachment (see website for attachments)

Dr. David Chang, P.E., Hydraulics
Mr. Mark Staley, Roadside Environmental
Mr. Dewayne Sykes, P.E., Utilities Unit
Mr. Greg Perfetti, P.E., Structure Design
Mr. S.P. Ivey, P.E., Division Engineer

Mr. Kent Boyer, DEO
Mr. Jay Bennett, P.E., Roadway Design
Mr. Majed Alghandour, P. E., Programming and TIP
Mr. Art McMillan, P.E., Highway Design
Mr. Scott McLendon, USACE, Wilmington
Ms. Beth Harmon, EEP
Mr. Phillip Ayscue, NCDOT External Audit Branch
Mr. Drew Jorner, P.E., Human Environment Unit Head
Mr. Clarence W. Coleman, P.E., FHWA
Mr. Eric Midkiff, P.E., PDEA

ATTACHMENT

PRELIMINARY JURISDICTIONAL DETERMINATION FORM

BACKGROUND INFORMATION

- A. REPORT COMPLETION DATE FOR PRELIMINARY JURISDICTIONAL DETERMINATION (JD): **September 1, 2010**

- B. NAME AND ADDRESS OF PERSON REQUESTING PRELIMINARY JD:
Sara Easterly
NCDOT
1598 Mail Service Center
Raleigh, NC 27699-1598

- C. DISTRICT OFFICE, FILE NAME, AND NUMBER:

- D. PROJECT LOCATION(S) AND BACKGROUND INFORMATION:
The reconstruction and widening of I-85 from north of SR 2120 (Long Ferry Road) in Rowan County to south of NC 150 in Davidson County. Federal Aid Project No. NHFIMF-85-3(197)81, WBS 34156.3.GV3, Division 9, TIP No. I-2304AC.

(USE THE ATTACHED TABLE TO DOCUMENT MULTIPLE WATERBODIES AT DIFFERENT SITES)

State: North Carolina County/parish/borough: Davidson City: Salisbury
Center coordinates of site (lat/long in degree decimal format):
Lat. 35.7206638° N, Long. -80.3903961° W.
Universal Transverse Mercator:
Name of nearest waterbody: Yadkin River

Identify (estimate) amount of waters in the review area:
Non-wetland waters: line ar feet: width (ft) a nd/or acres.
Cowardin Class:
Stream Flow:
Wetlands: ac res.
Cowardin Class:

Name of any water bodies on the site that have been identified as Section 10 waters:
Tidal:
Non-Tidal:

E. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

Office (Desk) Determination. Date:

Field Determination. Date(s):

1. The Corps of Engineers believes that there may be jurisdictional waters of the United States on the subject site, and the permit applicant or other affected party who requested this preliminary JD is hereby advised of his or her option to request and obtain an approved jurisdictional determination (JD) for that site. Nevertheless, the permit applicant or other person who requested this preliminary JD has declined to exercise the option to obtain an approved JD in this instance and at this time.

2. In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring "pre-construction notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an approved JD for the activity, the permit applicant is hereby made aware of the following: (1) the permit applicant has elected to seek a permit authorization based on a preliminary JD, which does not make an official determination of jurisdictional waters; (2) that the applicant has the option to request an approved JD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an approved JD could possibly result in less compensatory mitigation being required or different special conditions; (3) that the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) that the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary; (5) that undertaking any activity in reliance upon the subject permit authorization without requesting an approved JD constitutes the applicant's acceptance of the use of the preliminary JD, but that either form of JD will be processed as soon as is practicable; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a preliminary JD constitutes agreement that all wetlands and other water bodies on the site affected in any way by that activity are jurisdictional waters of the United States, and precludes any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an approved JD or a preliminary JD, that JD will be processed as soon as is practicable. Further, an approved JD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331, and that in any administrative appeal, jurisdictional issues can be raised (see 33 C.F.R. 331.5(a)(2)). If, during that administrative appeal, it becomes necessary to make an official determination whether CWA jurisdiction exists over a site, or to provide an official delineation of jurisdictional waters on the site, the Corps will provide an approved JD to accomplish that result, as soon as is practicable.

This preliminary JD finds that there "may be" waters of the United States on the subject project site, and identifies all aquatic features on the site that could be affected by the proposed activity, based on the following information:

SUPPORTING DATA. Data reviewed for preliminary JD (check all that apply

- checked items should be included in case file and, where checked and requested, appropriately reference sources below):

Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant:

Data sheets prepared/submitted by or on behalf of the applicant/consultant.

Office concurs with data sheets/delineation report.

Office does not concur with data sheets/delineation report.

Data sheets prepared by the Corps:

Corps navigable waters' study:

U.S. Geological Survey Hydrologic Atlas:

USGS NHD data.

USGS 8 and 12 digit HUC maps.

U.S. Geological Survey map(s). Cite scale & quad name:1:24000; .

USDA Natural Resources Conservation Service Soil Survey.

Citation:

National wetlands inventory map(s). Cite name:SAW shapefile.

State/Local wetland inventory map(s):

FEMA/FIRM maps:

100-year Floodplain Elevation is: (National Geodetic Vertical Datum of 1929)

Photographs: Aerial (Name & Date):

or Other (Name & Date):

Previous determination(s). File no. and date of response letter:

Other information (please specify):

IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.

Signature and date of
Regulatory Project Manager
(REQUIRED)

Sara Easterly 9/1/2010
Signature and date of
person requesting preliminary JD
(REQUIRED, unless obtaining
the signature is impracticable)

Site number	Latitude	Longitude	Cowardin Class	Estimated amount of aquatic resource in review area	Class of aquatic resource
2	35.7206638	-80.3903961			



August 16, 2010

Mr. Gregory J. Thorpe, Ph.D.
Manager, Project Development and Environmental Analysis Branch
North Carolina Department of Transportation
1548 Mail Service Center
Raleigh, North Carolina 27699-1548

Dear Dr. Thorpe:

Subject: EEP Mitigation Acceptance Letter:

I-2304AC, I-85 from North of SR 2120 (Long Ferry Road) to US 29/70, Rowan County

The purpose of this letter is to notify you that the Ecosystem Enhancement Program (EEP) will provide the compensatory riparian wetland mitigation for the subject project. Based on the information supplied by you on August 16, 2010, the impacts are located in CU 03040103 of the Yadkin River Basin in the Central Piedmont (CP) Eco-Region, and are as follows:

Yadkin 03040103 CP	Stream			Wetlands			Buffer (Sq. Ft.)	
	Cold	Cool	Warm	Riparian	Non-Riparian	Coastal Marsh	Zone 1	Zone 2
Impacts (feet/acres)	0	0	0	0.21	0	0	0	0
Mitigation Units (Credits-up to 2:1)	0	0	0	0.42	0	0	0	0

EEP commits to implementing sufficient compensatory riparian wetland mitigation credits to offset the impacts associated with this project in accordance with the N.C. Department of Environment and Natural Resources' Ecosystem Enhancement Program In-Lieu Fee Instrument dated July 28, 2010. If the above referenced impact amounts are revised, then this mitigation acceptance letter will no longer be valid and a new mitigation acceptance letter will be required from EEP.

If you have any questions or need additional information, please contact Ms. Beth Harmon at 919-715-1929.

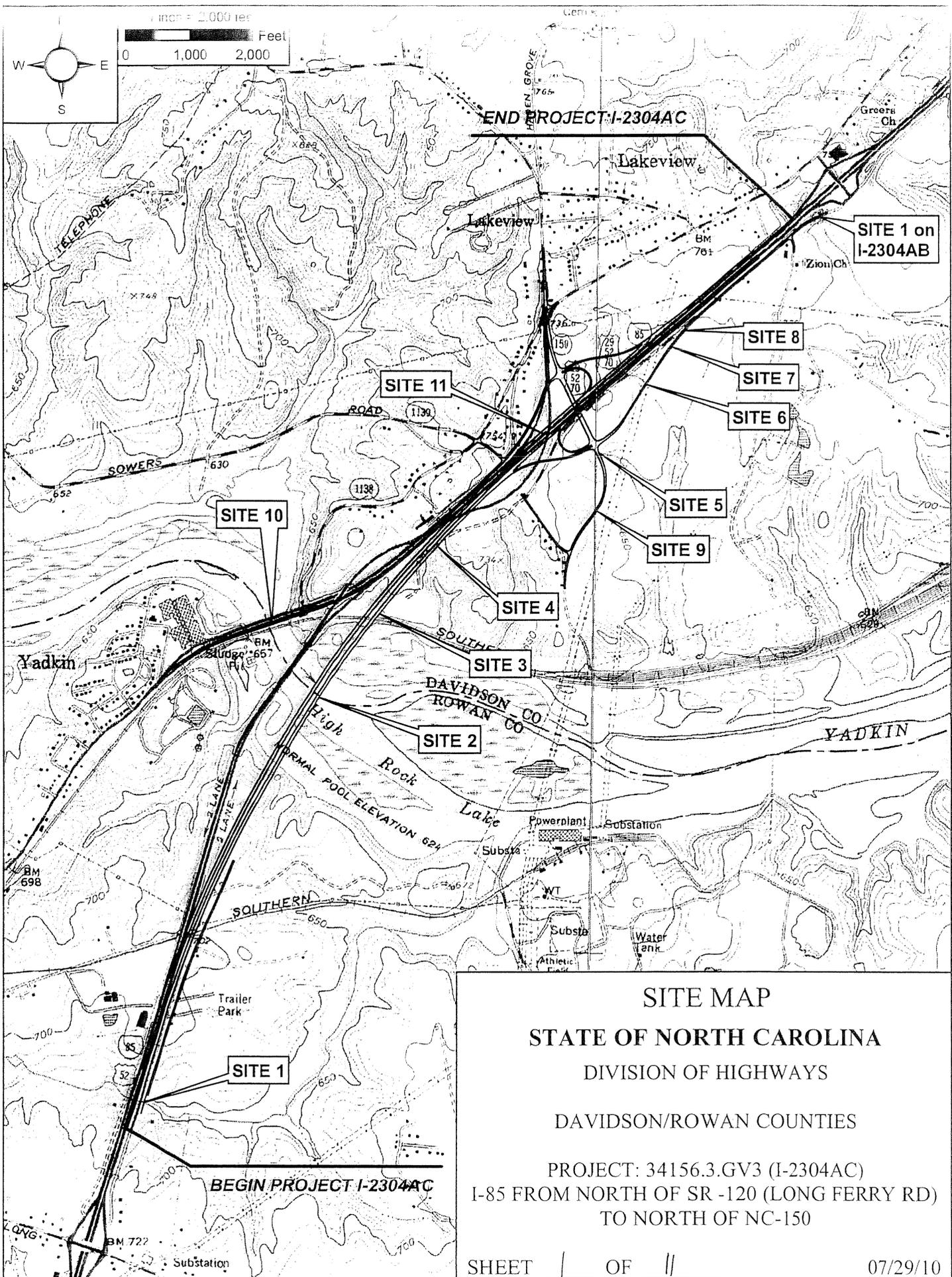
Sincerely,

William D. Gilmore, P.E.
EEP Director

cc: Mr. John Thomas, USACE – Raleigh Regulatory Field Office
Mr. Brian Wrenn, Division of Water Quality, Wetlands/401 Unit
File: I-2304AC

Restoring... Enhancing... Protecting Our State





SITE MAP
STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS
 DAVIDSON/ROWAN COUNTIES
 PROJECT: 34156.3.GV3 (I-2304AC)
 I-85 FROM NORTH OF SR -120 (LONG FERRY RD)
 TO NORTH OF NC-150
 SHEET 1 OF 11 07/29/10

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS					SURFACE WATER IMPACTS				
			Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW Impacts (ac)	Temp. SW Impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
2	868+60 TO 897+27 -LREV-	BRIDGE	0.07	0.02		0.14 *	6.59	<0.01	0.02			
TOTALS:			0.07	0.02	0.00	0.00	6.59	<0.01	0.02	0	0	0

* Mechanized clearing was based on a 4.5ft wide area along the bridge piers in case stumps or roots need to be removed for drilling the piers. This is a conservative estimate and the entire area will not be mechanically cleared.

Permanent stream fill from bridge piles:
 =10 bents * 2 piles/bent * 15.9043 sf/pile = 318.09 sf

NC DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS

 ROWAN/DAVIDSON COUNTY
 WBS - 34156.1.1 (I-2304AC)

SHEET **2 of 11** 8/30/2010

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

ROWAN & DAVIDSON COUNTY

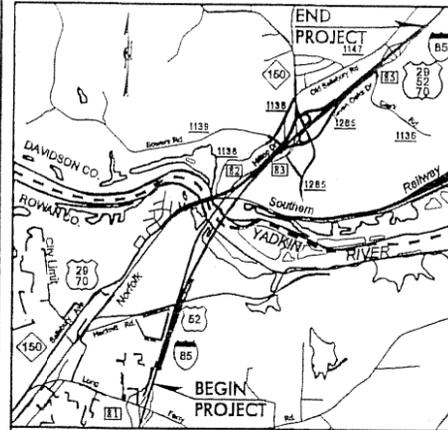
LOCATION: SOUTH SECTION FROM -C- STA. 807+00 TO 901+00
RECONSTRUCTION OF I-85 FROM NORTH OF SR 2120
IN ROWAN COUNTY TO NORTH OF NC 150 IN DAVIDSON
COUNTY

TYPE OF WORK: GRADING, DRAINAGE, PAVING, WIDENING, RESURFACING,
GUARDRAIL, STRUCTURES, & CULVERTS

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
34156.1.1	NHF-85-3(164)80	PE
34156.2.4		RW UTIL.
34156.3.GV3	NHFIMF-085-3(197)81	CONST.

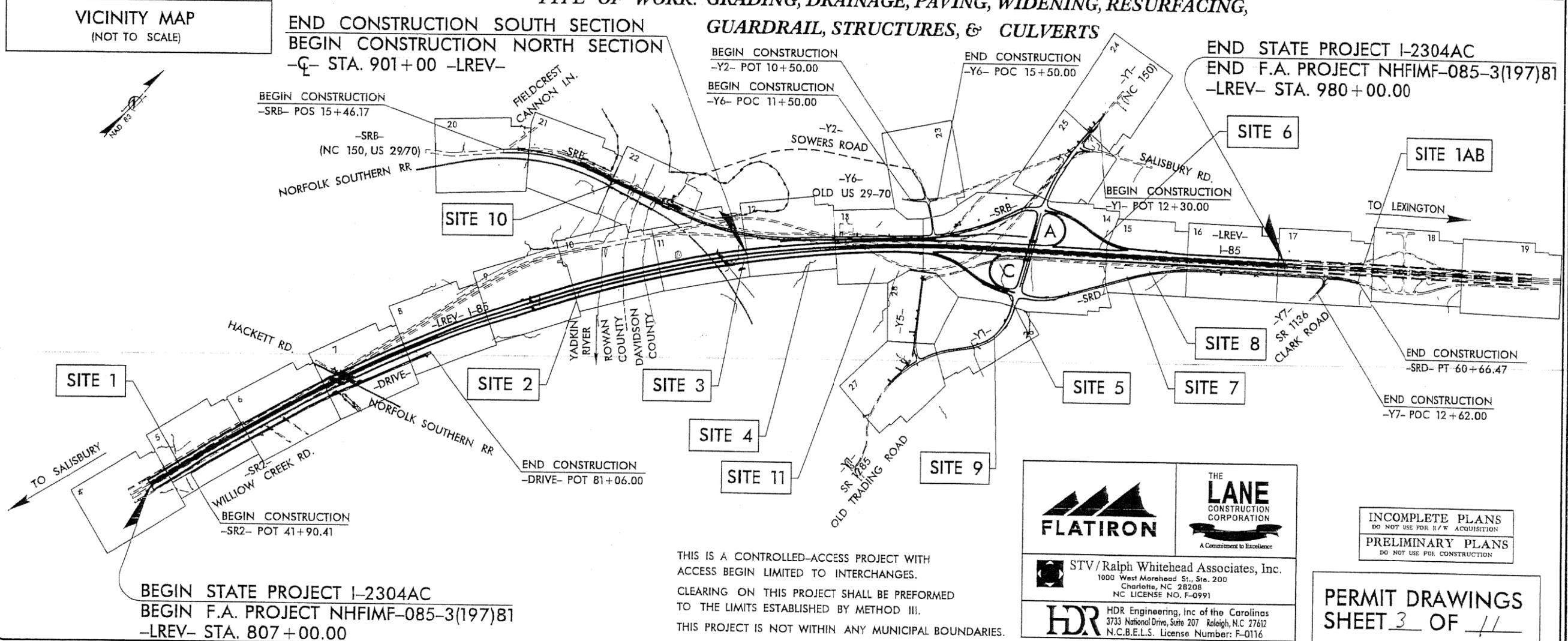
**WETLAND AND
STREAM IMPACTS**
SUBMITTED: 08-31-2010

SUBMITTAL #S-014R



VICINITY MAP
(NOT TO SCALE)

END CONSTRUCTION SOUTH SECTION
BEGIN CONSTRUCTION NORTH SECTION
-C- STA. 901+00 -LREV-

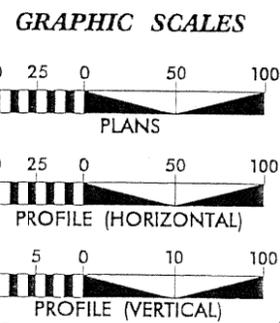


END STATE PROJECT I-2304AC
END F.A. PROJECT NHFIMF-085-3(197)81
-LREV- STA. 980+00.00

TIP PROJECT: I-2304AC

CONTRACT: C 202383

PLOT DRIVER: \$PLTDRV\$ DATE: \$DATE\$ FILE: \$PWVARVAULTPATHDESC\$
PENTABLE: \$PENTBL\$ SCALE: \$SCALE\$ SHORT \$
TIME: \$TIME\$



DESIGN DATA

ADT 2009 =	58,800
ADT 2035 =	109,200
DHV =	10 %
D =	55 %
T =	25 % *
V =	70 MPH
RURAL INTERSTATE	
* TTST =	19% DUAL = 6%

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT I-2304AC =	2.70 MI.
LENGTH STRUCTURE TIP PROJECT I-2304AC =	0.58 MI.
TOTAL LENGTH TIP PROJECT I-2304AC =	3.28 MI.

DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., Raleigh, NC, 27610

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: _____

LETTING DATE:
APRIL 22, 2010

PROJECT ENGINEER: _____

PROJECT DESIGN ENGINEER: _____

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: _____ P.E.

**DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA**

STATE HIGHWAY DESIGN ENGINEER: _____ P.E.

FLATIRON

THE LANE CONSTRUCTION CORPORATION
A Commitment to Excellence

STV/Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC LICENSE NO. F-0991

HDR HDR Engineering, Inc. of the Carolinas
3733 National Drive, Suite 207 Raleigh, N.C. 27612
N.C.B.E.L.S. License Number: F-0116

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

**PERMIT DRAWINGS
SHEET 3 OF 11**

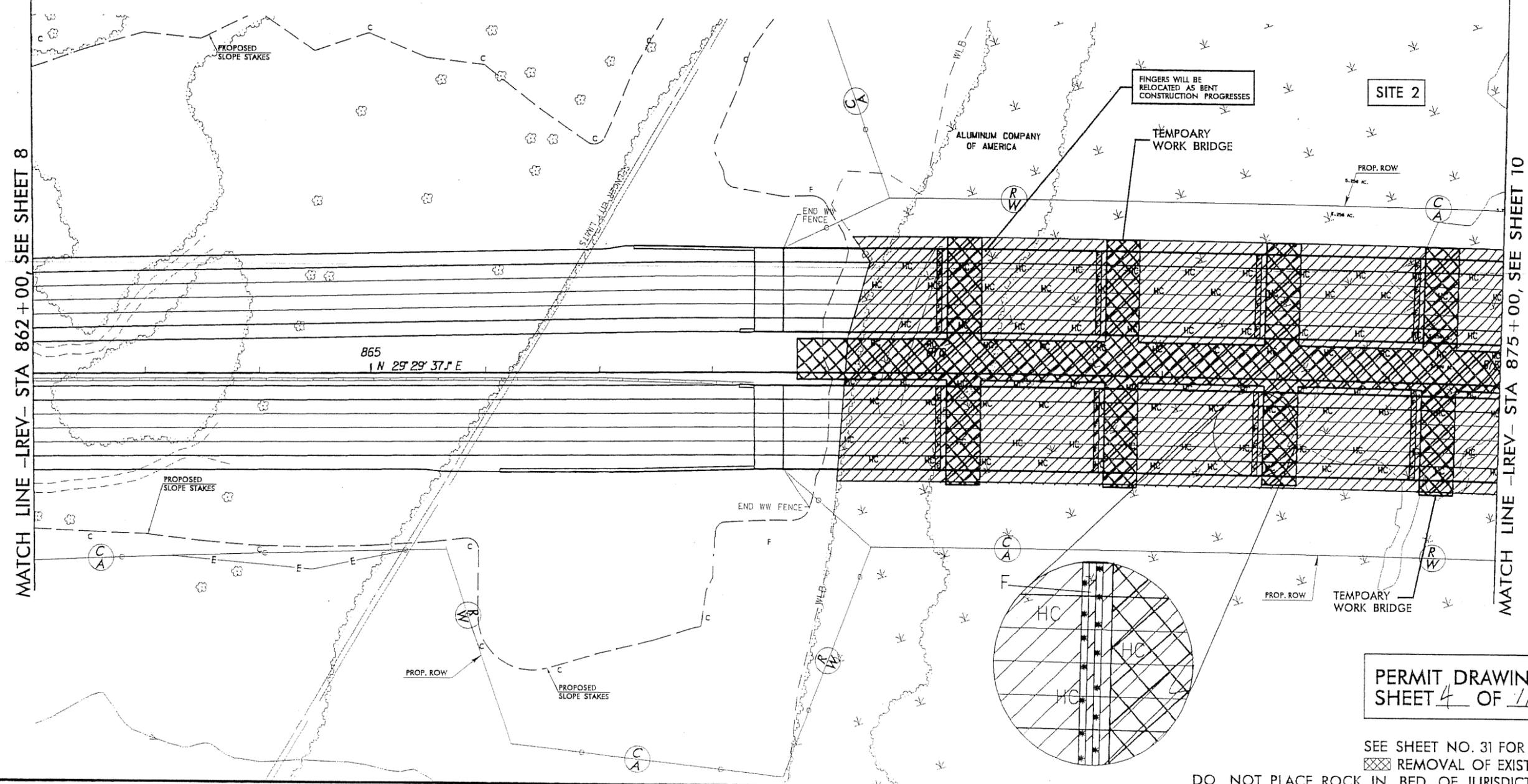
THIS IS A CONTROLLED-ACCESS PROJECT WITH
ACCESS BEGIN LIMITED TO INTERCHANGES.
CLEARING ON THIS PROJECT SHALL BE PERFORMED
TO THE LIMITS ESTABLISHED BY METHOD III.
THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.

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 USER: jmassroc DATE: 8/30/2010
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 REVISIONS

- LEGEND**
-  DENOTES IMPACTS IN SURFACE WATER
 -  DENOTES TEMPORARY FILL IN WETLAND
 -  DENOTES HAND CLEARING
 -  TEMPORARY WORK BRIDGE
 -  DENOTES MECHANIZED CLEARING



PROJECT REFERENCE NO. I-2304AC		SHEET NO. 5	
RAW SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION			
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
		THE LANE CONSTRUCTION CORPORATION	
STV/Ralph Whitehead Associates, Inc. 1000 West Morehead St., Ste. 200 Charlotte, NC 28208 NC LICENSE NO. F-0991			
 HDR Engineering, Inc. of the Carolinas 3713 Howard Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116			



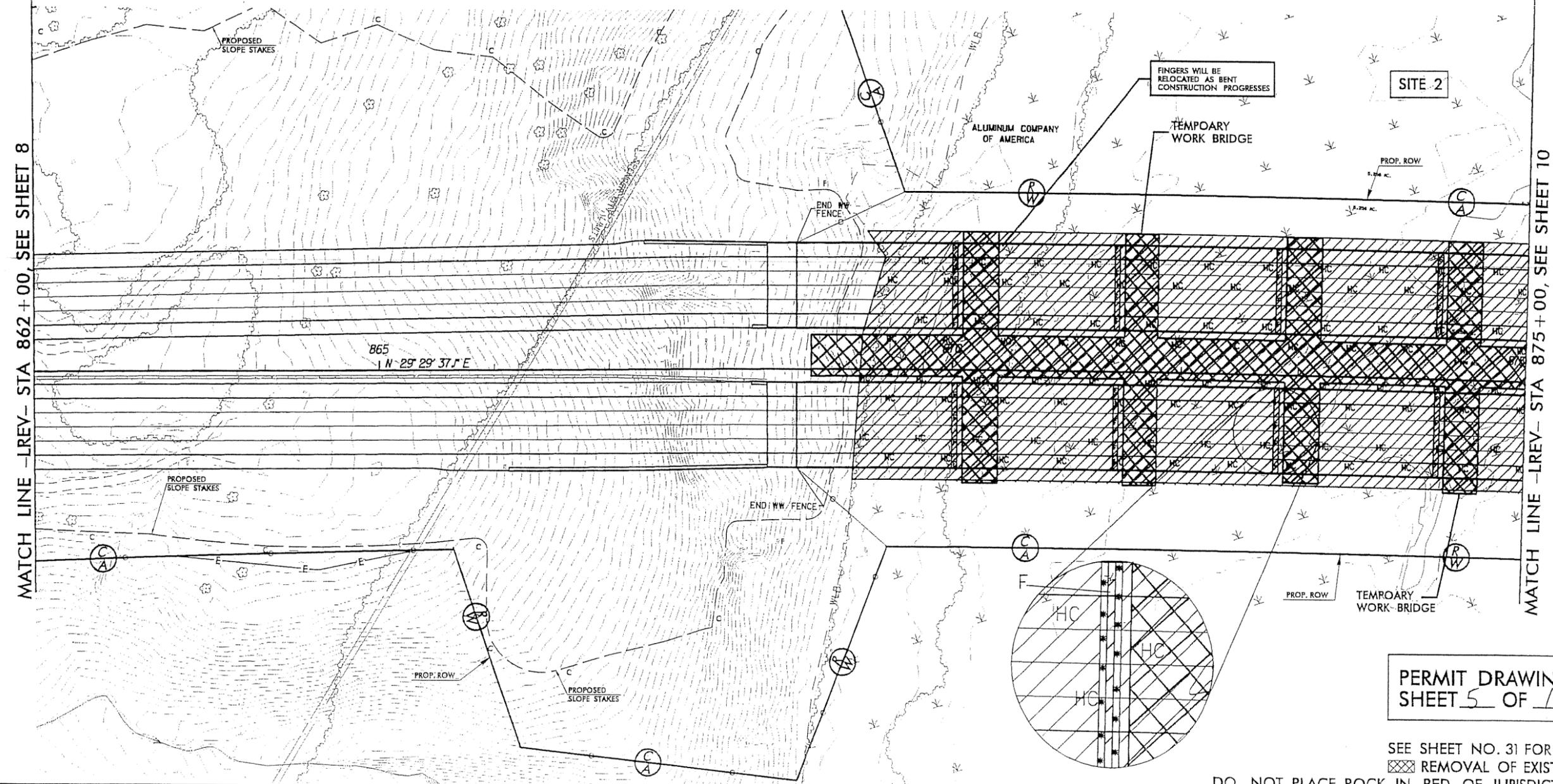
MATCH LINE -LREV- STA 862+00 SEE SHEET 8

MATCH LINE -LREV- STA 875+00, SEE SHEET 10

PERMIT DRAWINGS
 SHEET 4 OF 11

SEE SHEET NO. 31 FOR -LREV- PROFILE.
 REMOVAL OF EXISTING PAVEMENT
 DO NOT PLACE ROCK IN BED OF JURISDICTIONAL STREAMS.

- LEGEND**
-  DENOTES IMPACTS IN SURFACE WATER
 -  DENOTES TEMPORARY FILL IN WETLAND
 -  DENOTES HAND CLEARING
 -  TEMPORARY WORK BRIDGE
 -  DENOTES MECHANIZED CLEARING



MATCH LINE -REV- STA 862+00, SEE SHEET 8

MATCH LINE -REV- STA 875+00, SEE SHEET 10

PERMIT DRAWINGS
 SHEET 5 OF 11

SEE SHEET NO. 31 FOR -REV- PROFILE.
 REMOVAL OF EXISTING PAVEMENT
 DO NOT PLACE ROCK IN BED OF JURISDICTIONAL STREAMS.

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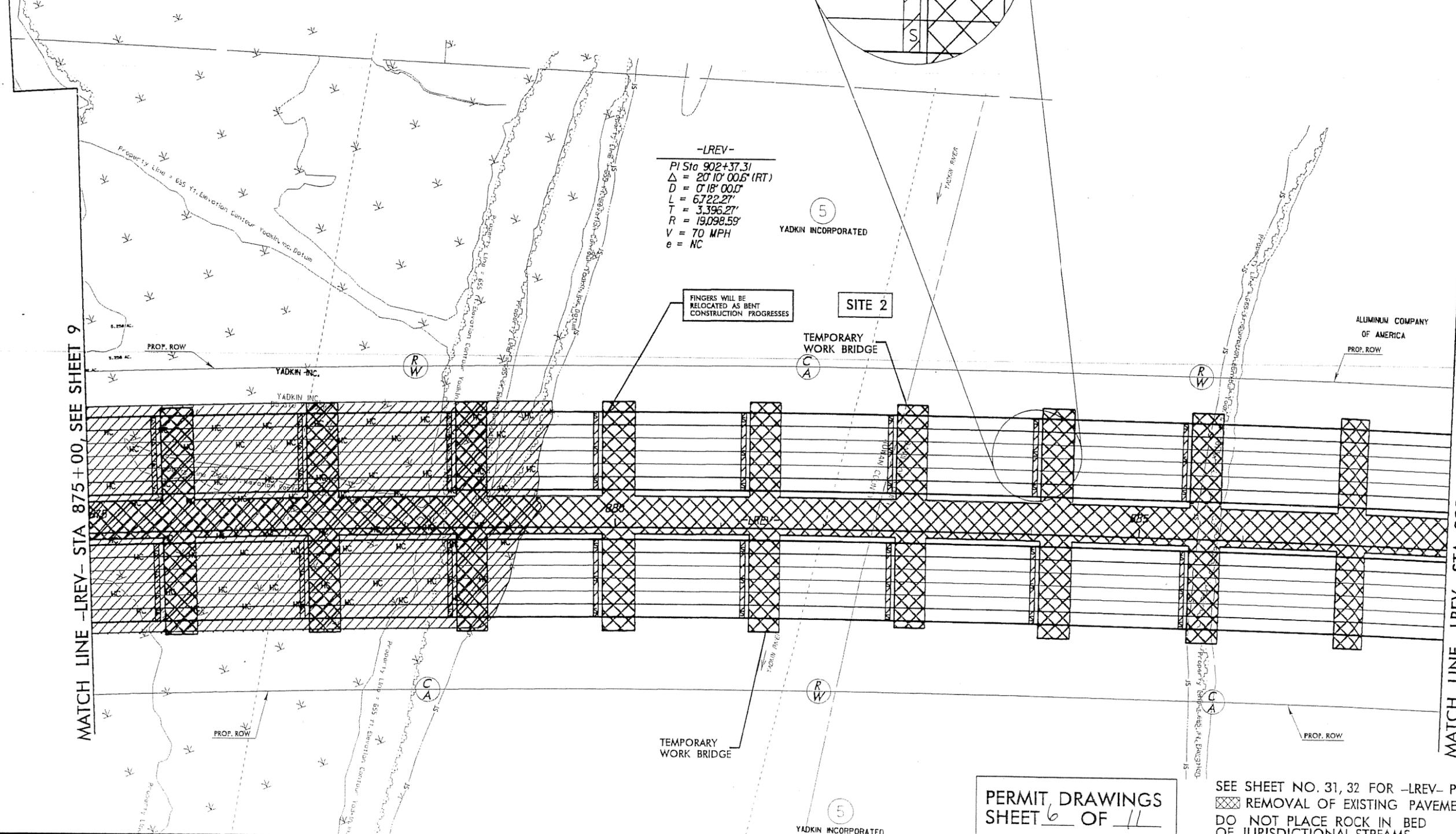
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PROJECT REFERENCE NO. I-2304AC SHEET NO. 10	
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

STV/Ralph Whitehead Associates, Inc.
 1000 West Alameda St., Ste. 200
 Charlotte, NC 28203
 NC LICENSE NO. F-0991

HDR Engineering, Inc. of the Carolinas
 3713 National Drive, Suite 207 Raleigh, NC 27612
 N.C.B.E.L.S. License Number: F-0116

- ### LEGEND
- DENOTES IMPACTS IN SURFACE WATER
 - DENOTES TEMPORARY FILL IN WETLAND
 - DENOTES TEMPORARY IMPACTS IN SURFACE WATER
 - DENOTES HAND CLEARING
 - DENOTES FILL IN WETLAND
 - TEMPORARY WORK BRIDGE
 - DENOTES MECHANIZED CLEARING



-LREV-

PI Sta 902+37.31
 $\Delta = 20' 10'' 00.6''$ (RT)
 $D = 0' 18'' 00.0''$
 $L = 6,722.27'$
 $T = 3,396.27'$
 $R = 19,098.59'$
 $V = 70$ MPH
 $e = NC$

PERMIT DRAWINGS
 SHEET 6 OF 11

SEE SHEET NO. 31, 32 FOR -LREV- PROFILE.
 REMOVAL OF EXISTING PAVEMENT
 DO NOT PLACE ROCK IN BED OF JURISDICTIONAL STREAMS.

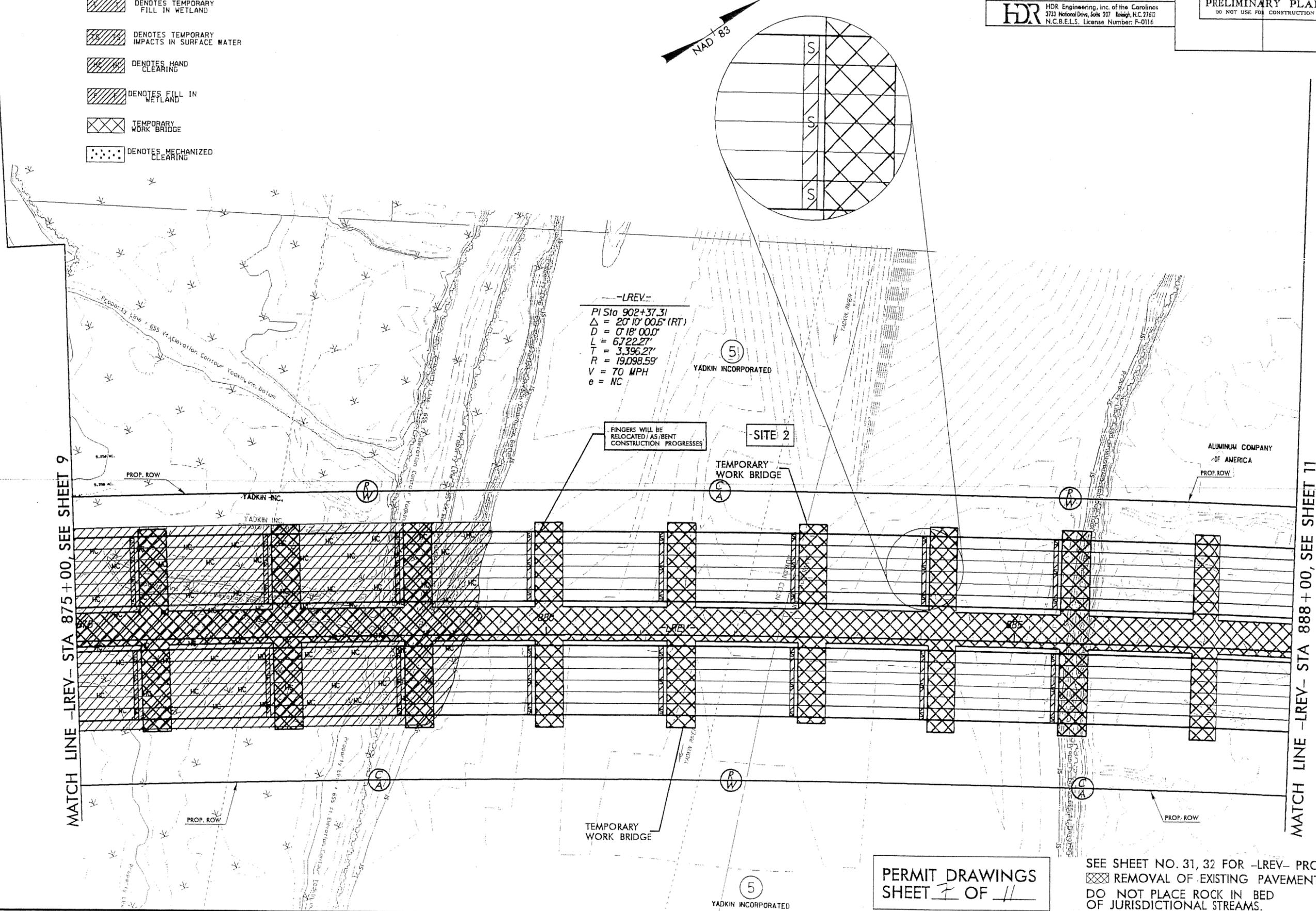
PLOT DRIVER: NCDOT.pdf_color_eng_100.plt
 USER: jmasrcc DATE: 8/30/2010
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 PENTABLE: NCDOT_permits.tbl
 TIME: 2:00:47 PM SCALE: 1:100
 REVISIONS

PROJECT REFERENCE: I-2304AC SHEET NO. 10	
RAW SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

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1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC LICENSE NO. F-0991

HDR Engineering, Inc. of the Carolinas
3733 National Drive, Suite 207 Raleigh, NC 27612
N.C.E.E.L.S. License Number: F-0116

- LEGEND**
- DENOTES IMPACTS IN SURFACE WATER
 - DENOTES TEMPORARY FILL IN WETLAND
 - DENOTES TEMPORARY IMPACTS IN SURFACE WATER
 - DENOTES HAND CLEARING
 - DENOTES FILL IN WETLAND
 - TEMPORARY WORK BRIDGE
 - DENOTES MECHANIZED CLEARING



MATCH LINE -LREV- STA 875+00, SEE SHEET 9

MATCH LINE -LREV- STA 888+00, SEE SHEET 11

SEE SHEET NO. 31, 32 FOR -LREV- PROFILE.
 REMOVAL OF EXISTING PAVEMENT
 DO NOT PLACE ROCK IN BED OF JURISDICTIONAL STREAMS.

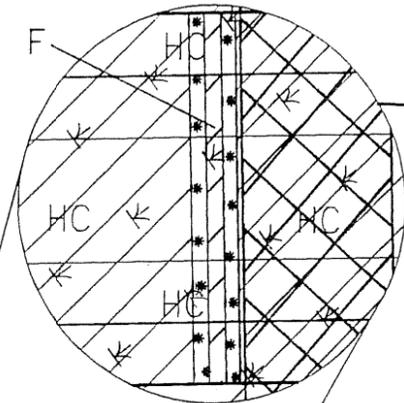
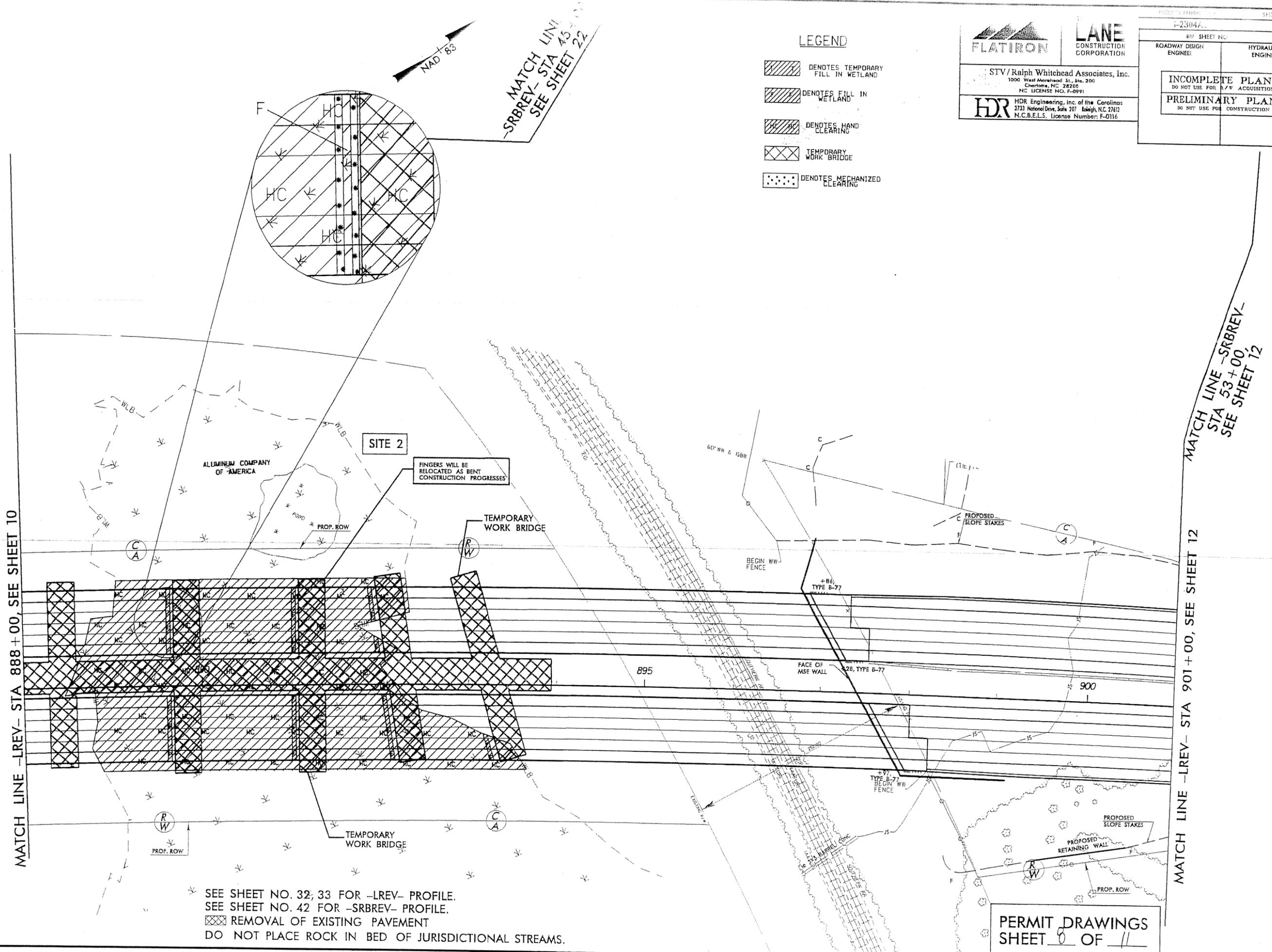
PLOT DRIVER: NCD01.pdf_color_eng_100.plt
 USER: jmcassioc
 FILE: Ralph_Whitehead_and_Associates\RWHA_Flatiron_Lone_Yadkin_I_85\I2304AC\Hydro\lics\PERMITS\EnvironmentalDrawings\I2304AC_HYD_PDM_PLANSHEETS.dgn
 PENTABLE: NCD01_permit_lics_MOCN.fbi
 TIME: 12:35:36 PM
 SCALE: 1:100

REVISIONS

MATCH LINE -LREV- STA 888 + 00, SEE SHEET 10

MATCH LINE -LREV- STA 901 + 00, SEE SHEET 12

SEE SHEET NO. 32, 33 FOR -LREV- PROFILE.
 SEE SHEET NO. 42 FOR -SRBREV- PROFILE.
 REMOVAL OF EXISTING PAVEMENT
 DO NOT PLACE ROCK IN BED OF JURISDICTIONAL STREAMS.



LEGEND

-  DENOTES TEMPORARY FILL IN WETLAND
-  DENOTES FILL IN WETLAND
-  DENOTES HAND CLEARING
-  TEMPORARY WORK BRIDGE
-  DENOTES MECHANIZED CLEARING

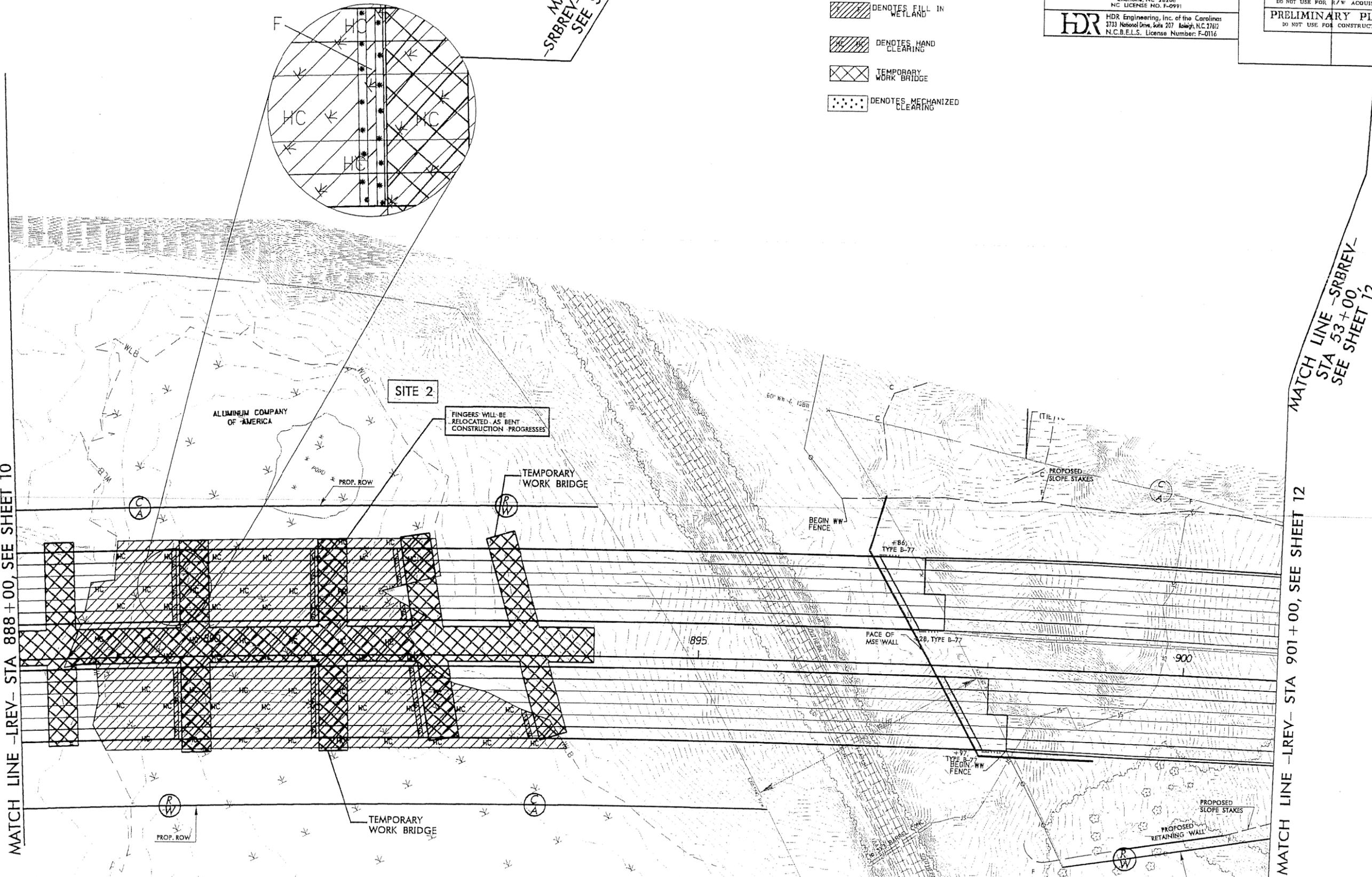
FLATIRON
LANE
 CONSTRUCTION CORPORATION
 STV/Ralph Whitehead Associates, Inc.
 1000 West Morehead St., Ste. 200
 Charlotte, NC 28205
 NC LICENSE NO. F-0991
HDR HDR Engineering, Inc. of the Carolinas
 3733 National Drive, Suite 207 Raleigh, NC 27612
 N.C.B.E.L.S. License Number: F-0116

PROJECT: F-2304A	
BY SHEET NO. 1	
ROADWAY DESIGN ENGINEER:	HYDRAULICS ENGINEER:
INCOMPLETE PLANS DO NOT USE FOR R/F ACQUISITION PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

PERMIT DRAWINGS
 SHEET 0 OF 11

PLOT DRIVER: NCDOT_pdf_color_eng_100.plt
 USER: jmassrec DATE: 8/30/2010
 FILE: Ralph_Whitehead_and_Associates\RW\Flatiron_Lane_Yadkin_I_85\12304AC\Hydro\Drawings\12304AC_HYD_PDM_PLANSHEETS.dgn
 PENITABLE: NCDOT_permits.tbl
 TIME: 1:59:55 PM SCALE: 1:100
 REVISIONS

MATCH LINE -LREV- STA 888+00, SEE SHEET 10



LEGEND

- DENOTES TEMPORARY FILL IN WETLAND
- DENOTES FILL IN WETLAND
- DENOTES HAND CLEARING
- TEMPORARY WORK BRIDGE
- DENOTES MECHANIZED CLEARING

FLATIRON
LANE
 CONSTRUCTION CORPORATION

STV/Ralph Whitehead Associates, Inc.
 1000 West Morehead St., Ste. 200
 Charlotte, NC 28208
 NC LICENSE NO. F-0991

HDR HDR Engineering, Inc. of the Carolinas
 3733 National Drive, Suite 207 Raleigh, N.C. 27612
 N.C.B.E.L.S. License Number: F-0116

PROJECT REFERENCE: I-2304AC	
SHEET NO. 11	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

MATCH LINE -SRBREV- STA 53+00, SEE SHEET 12

MATCH LINE -LREV- STA 901+00, SEE SHEET 12

SEE SHEET NO. 32, 33 FOR -LREV- PROFILE.
 SEE SHEET NO. 42 FOR -SRBREV- PROFILE.
 REMOVAL OF EXISTING PAVEMENT
 DO NOT PLACE ROCK IN BED OF JURISDICTIONAL STREAMS.

PERMIT DRAWINGS
 SHEET 9 OF 11

5/28/01

-LREV-

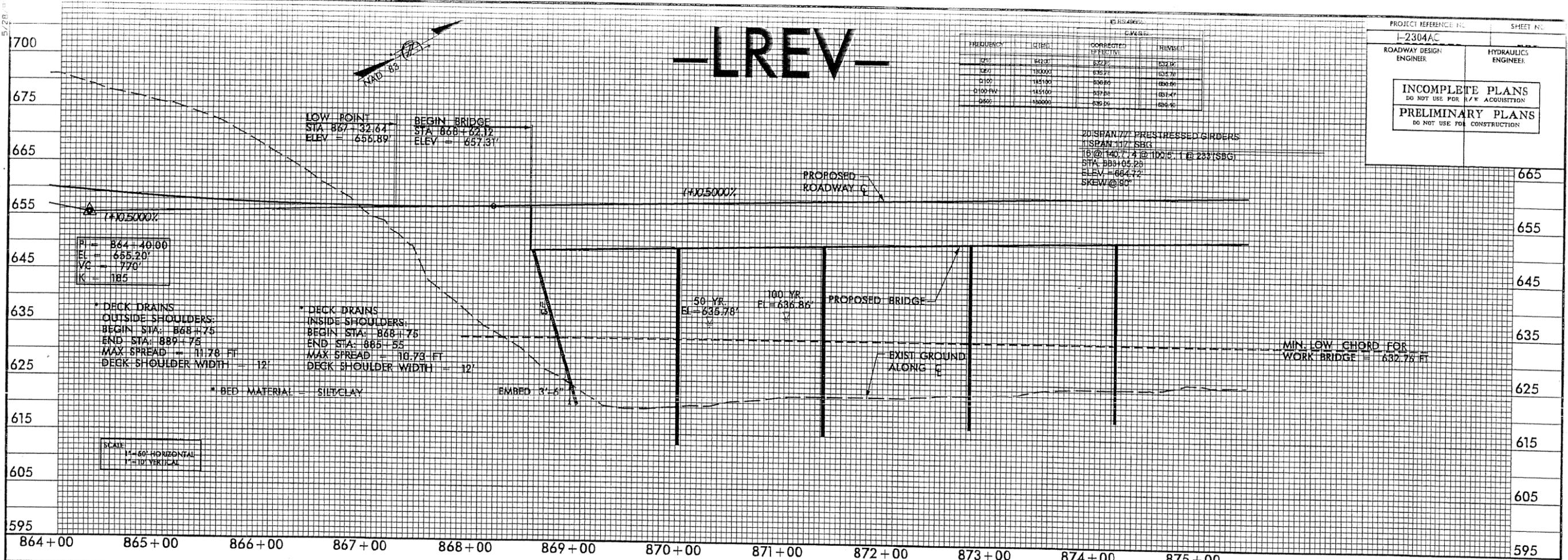
FREQUENCY	Q (ft)	CORRECTED EFFECTIVE	REVISION
10	8420	832.84	832.84
15	13000	835.78	835.78
20	148100	836.86	836.86
100	180000	837.88	837.88
500	180000	839.10	839.10

PROJECT REFERENCE NO. I-2304AC SHEET NO.

ROADWAY DESIGN ENGINEER HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/F ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



PI =	864+40.00
EL =	655.20'
VC =	770'
K =	185

* DECK DRAINS
OUTSIDE SHOULDERS:
BEGIN STA: 868+75
END STA: 889+75
MAX SPREAD = 11.78 FT
DECK SHOULDER WIDTH = 12'

* DECK DRAINS
INSIDE SHOULDERS:
BEGIN STA: 868+75
END STA: 865+55
MAX SPREAD = 10.73 FT
DECK SHOULDER WIDTH = 12'

* BED MATERIAL = SILT/CLAY

SCALE
1"=60' HORIZONTAL
1"=10' VERTICAL

-LREV-

PERFORMANCE CURVE DATA FOR 4000'S

FREQUENCY	Q (ft)	CORRECTED EFFECTIVE	REVISION
10	8420	832.84	832.84
15	13000	835.78	835.78
20	148100	836.86	836.86
100	180000	837.88	837.88
500	180000	839.10	839.10

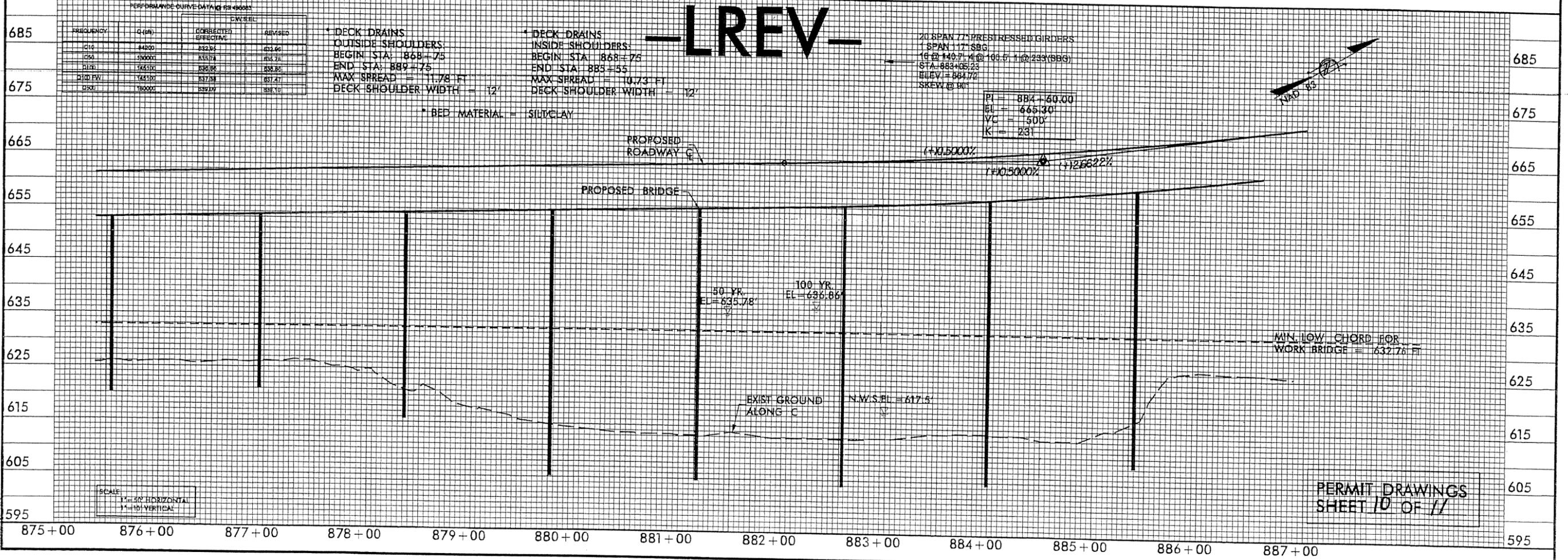
* DECK DRAINS
OUTSIDE SHOULDERS:
BEGIN STA: 868+75
END STA: 889+75
MAX SPREAD = 11.78 FT
DECK SHOULDER WIDTH = 12'

* DECK DRAINS
INSIDE SHOULDERS:
BEGIN STA: 868+75
END STA: 883+55
MAX SPREAD = 10.73 FT
DECK SHOULDER WIDTH = 12'

* BED MATERIAL = SILT/CLAY

20 SPAN 77' PRESTRESSED GIRDERS
1 SPAN 117' SBG
16 @ 140.7' @ 100.5' + @ 233' (BBG)
STA: 883+05.23
ELEV: 864.72
SKEW @ 90°

PI =	884+60.00
EL =	665.30'
VC =	500'
K =	231



SCALE
1"=60' HORIZONTAL
1"=10' VERTICAL

PERMIT DRAWINGS
SHEET 10 OF 11

B:\5\2010\12259\AC_RDY_PFL031.dgn

FREQUENCY	C (in)	COMPECTED EFFECTIVE	REUSED
0.10	8420	832.98	832.98
0.50	13000	825.76	825.76
1.00	14510	821.40	821.40
1.50	14510	821.40	821.40
1.000	18000	819.00	819.00

DECK DRAIN
 OUTSIDE SHOULDERS:
 BEGIN STA: 886+75
 END STA: 889+75
 MAX SPREAD = 11.78 FT
 DECK SHOULDER WIDTH = 12'

DECK DRAIN
 INSIDE SHOULDERS:
 BEGIN STA: 888+75
 END STA: 885+55
 MAX SPREAD = 10.73 FT
 DECK SHOULDER WIDTH = 12'

-LREV-

END BRIDGE
 STA: 897+48.33
 ELEV = 699.60'

PROJECT REFERENCE NO. I-2304AC SHEET NO. 11

ROADWAY DESIGN ENGINEER: HYDRAULICS ENGINEER

INCOMPLETE PLANS
 DO NOT USE FOR R/F ACQUISITION

PRELIMINARY PLANS
 DO NOT USE FOR CONSTRUCTION

20' SPAN 7/7' PRESTRESSED GIRDERS
 11 SPAN 11/7' SBG
 1B @ 140.7' @ 1100.5' @ 288Y980
 STA: 888+05.23
 ELEV: 664.72'
 SREW @ 90°

* BED MATERIAL = SILTCLAY

PROPOSED ROADWAY

705
695
685
675
665
655
645
635
625

887+00 888+00 889+00 890+00 891+00 892+00 893+00 894+00 895+00 896+00 897+00 898+00

50 YR. EL = 635.78'
 100 YR. EL = 636.86'

EXIST GROUND ALONG C

MIN. LOW CHORD FOR WORK BRIDGE = 632.76 FT

PROFILE ALONG STRUCTURE

PROPOSED 11/7' SBG

MSE WALL

SCALE:
 1" = 80' HORIZONTAL
 1" = 10' VERTICAL

