



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

BEVERLY EAVES PERDUE
GOVERNOR

EUGENE A. CONTI, JR.
SECRETARY

September 13, 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: **Supplemental Information for the 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.

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) is providing the following supplemental information associated with the application for a modification to the existing Individual Section 404 Permit and 401 Certification for Permit Impact Site 2 of the above referenced project. The information provided herein was requested at the agency/contractor meeting on September 2, 2010. This letter includes both clarification and documentation on hand clearing mitigation requirements, proposed mitigation site, and stormwater measures associated with Site 2 (proposed work bridge and I-85 bridge over the Yadkin River). Enclosed with this letter is a copy of the onsite restoration plan, stormwater treatment information, a revised wetland permit impact summary table, and permit drawings 5A, 7A, 9A, and 9B of 11.

Hand Clearing

Site 2 requires 6.59 acres of hand clearing to construct the work bridge and bridge over the Yadkin River. Hand clearing impacts were not included in the original permit application (2004). After discussions with the agencies and NCDOT, no mitigation will be required for hand clearing.

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

The limits of construction for the I-85 bridge corridor across the Yadkin River will be cleared of standing timber. Hand clearing will be performed using a track mounted feller-buncher timber harvester working on timber mats. The mats will distribute the loading of the machine to the ground to minimize compaction and rutting of the soil in the permit areas. Trees will be cut off of the stump and removed. The stumps will be left in place in the cleared areas. Grubbing will only occur in the area where the drilled shafts will be constructed for the permanent structure and steel pile will be driven for the temporary work bridge (trestle) foundations. The trees and stumps will be removed from the corridor by using a track mounted timber loader which will operate on timber mats to forward the debris to areas outside of the permit area that can accommodate rubber tired equipment. The rubber tired equipment will move the debris to an area for loading and removal from the site.

Bridge Construction

The trestle pile will be driven using a pile hammer with the steel pipe pile inside of a ring of turbidity curtain. Each pile will be driven separately with the curtain containing only the pile. The curtain ring will be moved and setup at each new location before the pile is driven. The drilled shaft construction will be performed from the trestle. The turbidity curtain will be placed around the perimeter of the entire bent of drilled shafts and driven piles for the drilled shaft template. The permanent steel shaft casing will be driven. The soil will be excavated from the inside of the casing and placed into steel boxes for removal from the trestle to a disposal area.

Mitigation

On-site mitigation is associated with the project and involves removal of the existing I-85 bridge over the Yadkin River as well as removal of existing roadway fill (causeway) in the floodplain of the river. This mitigation was detailed in the "Restoration Plan for Swamp Hardwood Restoration" which is included in this submittal. The total amount of riparian wetland mitigation described in the restoration plan is 2.74 acres. The current design of Section AC shows 0.07 acre of permanent fill and 0.14 acres of mechanized clearing in the wetland for a total of 0.21 acres of permanent riparian wetland impacts at the bridge location. Mitigation for Site 2 will be debited at a 1:1 ratio from the 2.74 acres of on sit riparian wetland restoration described above leaving a balance of 2.53 acres. The mitigation request from EEP for 0.42 acres will be rescinded.

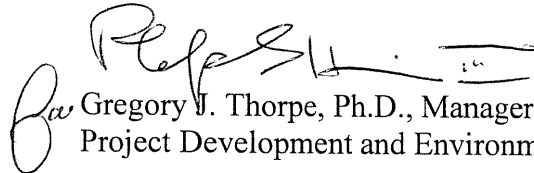
Stormwater

Stormwater management has been incorporated across the project to the greatest extent practical. The project area does not lie within a water supply watershed, buffered basin, or an area with local buffer requirements. The area does contain a 303(d) listed stream (Yadkin River) and the sediment and erosion control on the project was designed for the 25 year storm. The Yadkin River will not have any direct discharges from the highway and the bridge will have an enclosed deck drainage system that will be discharged to dry detention basins on the south end of the bridge (see attached drawing). These dry detention basins collect both waters from the bridge as well as portions of the L line for treatment. A dry detention basin is also provided on the north end of the bridge to provide treatment for the L line in that area. Grass swale treatment is also provided in series with the dry detention basins (grass swale comps associated with Site 2 are included). Additional measures have been incorporated across the project such as ditches which receive grass swale credit and preformed scour holes. Areas in which stormwater devices have not been provided were due to the topography not lending itself to incorporation of the devices or NCDOT right of way was not sufficient for

inclusion. A more detailed description of the stormwater devices proposed for the remainder of the project will be included in the forthcoming permit modification for the remaining permit impact sites.

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.

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

Restoration Plan for Swamp Hardwoods Wetlands
At Existing Bridge Causeway of the I-85 Yadkin River
In Rowan County
I-2304AA
July 12, 2004

The North Carolina Department of Transportation (NCDOT) will perform on-site mitigation for riverine bottomland hardwood swamp at the Interstate 85 (I-85) overpass of the Yadkin River in Rowan County. This mitigation site occurs within Transportation Improvement Program (TIP) project I-2304AA. NCDOT will remove approximately 2.74 acres of existing bridge causeway fill in order to restore the underlying disturbed wetlands.

WETLAND MITIGATION GRADING

The design of the wetland mitigation area shall consist of undercut excavation of existing roadway fill down to the alluvium soil layer. If the alluvium soil layer is encountered at an elevation above the adjacent existing wetland, excavation shall continue until the elevation matches the existing, adjacent wetland elevation. If the alluvium soil layer is encountered below the adjacent existing wetland elevation, a silty loam, sandy loam or muck shall be used to backfill these areas to match the existing wetland elevation. All excavated areas shall be ripped prior to placement of any backfill material and before planting of the site.

The NCDOT Project Development and Environmental Analysis, Office of Natural Environment shall approve the design of the restoration site prior to construction. The Office of Natural Environment shall be contacted to provide construction oversight to ensure that the wetland mitigation area is constructed appropriately.

VEGETATION PLANTING

The restoration site will be planted with the following wetland tree species: sycamore (*Platanus occidentalis*), river birch (*Betula nigra*), green ash (*Fraxinus pennsylvanica*), American elm (*Ulmus americana*), black gum (*Nyssa sylvatica*), and swamp chestnut oak (*Quercus michauxii*).

The hardwood tree species utilized shall be 18"-30" in size and shall be bare root seedlings that are at least one growing season in age. Planting density shall be 680 seedlings per acre, which equates to a plant spacing of 8 feet on-center.

MONITORING:

Upon successful completion of construction, NCDOT will document the following monitoring activities utilizing an annual report for the site, which will be distributed to the regulatory agencies.

HYDROLOGIC MONITORING

While no specific hydrological monitoring is proposed for this restoration site, elevations of restored areas will be verified during construction to match adjacent wetland elevations.

VEGETATION SUCCESS CRITERIA

NCDOT shall monitor the restoration site utilizing two (2) fifty feet by fifty feet (50' x 50') monitoring plots that will be established upon completion of the site grading and planting.

NCDOT shall monitor the site for a minimum of five years or until the site is deemed successful. A 320 stems per acre survival criterion for planted seedlings will be used to determine success for the first three years. The required survival criterion will decrease by 10% each year after the third year of vegetation monitoring (i.e., for an expected 290 stems per acre for year 4, and 260 stems per acre for year 5).

Grass Swale Comps

Discharge is considered to be treated if it meets the following criteria:

100 ft. of grass swale for every 1 acre of drainage area. AND

2 yr. velocity is less than or equal to 2 ft./sec.

Date: 9/3/2010

Dsn. By: JJM






Check: JRR

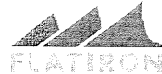

SHT.	Station Range	Site	Type	D.A. (ac)	Required length for treatment	Actual Length	Slope	Base Width	Side Slope	GS Treated Discharge	Q2 (cfs)	Q2 vel. (fps)	Q10 (cfs)	Q10 vel. (fps)	Treatment Provided
12	90500 - 91000	3	2GI	0.91	90.90	500	0.02	0.00	10.00	YES	2.97	1.85	3.82	1.97	GS
12	91000 - 91625	4	2GI	1.10	110.20	625	0.02	0.00	10.00	YES	3.60	1.91	4.63	2.03	GS
12	90500 - 90700	3	2GI	1.33	133.40	200	0.02	0.00	6.00	NO	4.36	2.31	5.60	2.46	DDB
12	90700 - 90850	3	2GI	1.33	133.40	150	0.02	0.00	4.00	NO	4.36	2.76	5.60	2.94	DDB
12	90850 - 90900	3	2GI	0.37	37.00	50	0.05	0.00	4.00	NO	1.21	2.89	1.55	3.08	DDB
12	90950 - 91700	4	DITCH	9.02	902.00	750	0.08	2.00	2.00	NO	14.94	7.15	19.19	7.66	NONE
12	5722 - 5969	4	2GI	0.20	20.00	247	0.04	0.00	3.00	NO	0.48	2.19	0.62	2.33	NONE
12	5722 - 6400	4	2GI	1.27	126.50	678	0.03	0.00	5.00	NO	3.86	2.80	4.96	2.98	NONE
12	6400 - 6622	4	2GI	0.28	27.80	222	0.01	0.00	5.00	YES	0.85	1.05	1.09	1.11	GS
12	5600 - 5659	3	DITCH	2.80	280.00	59	0.06	2.00	2.00	NO	4.88	4.85	6.27	5.22	NONE
12	5246 - 5392	3	DITCH	4.83	483.00	180	0.03	2.00	2.00	NO	9.48	4.68	12.17	5.02	NONE

2GI = 2 GRATED INLET
 SBG = SHOULDER BERM GUTTER
 CB = CATCH BASIN
 DDB = DRY DETENTION BASIN
 B = BASIN
 GS = GRASS SWALE

BDOS = BERM DRAINAGE OUTLET STRUCTURE
 OTCB = OPEN THROAT CATCH BASIN
 OPEN = OPEN END PIPE
 PSH = PRE FORMED SCOUR HOLE
 LS = LEVEL SPREADER

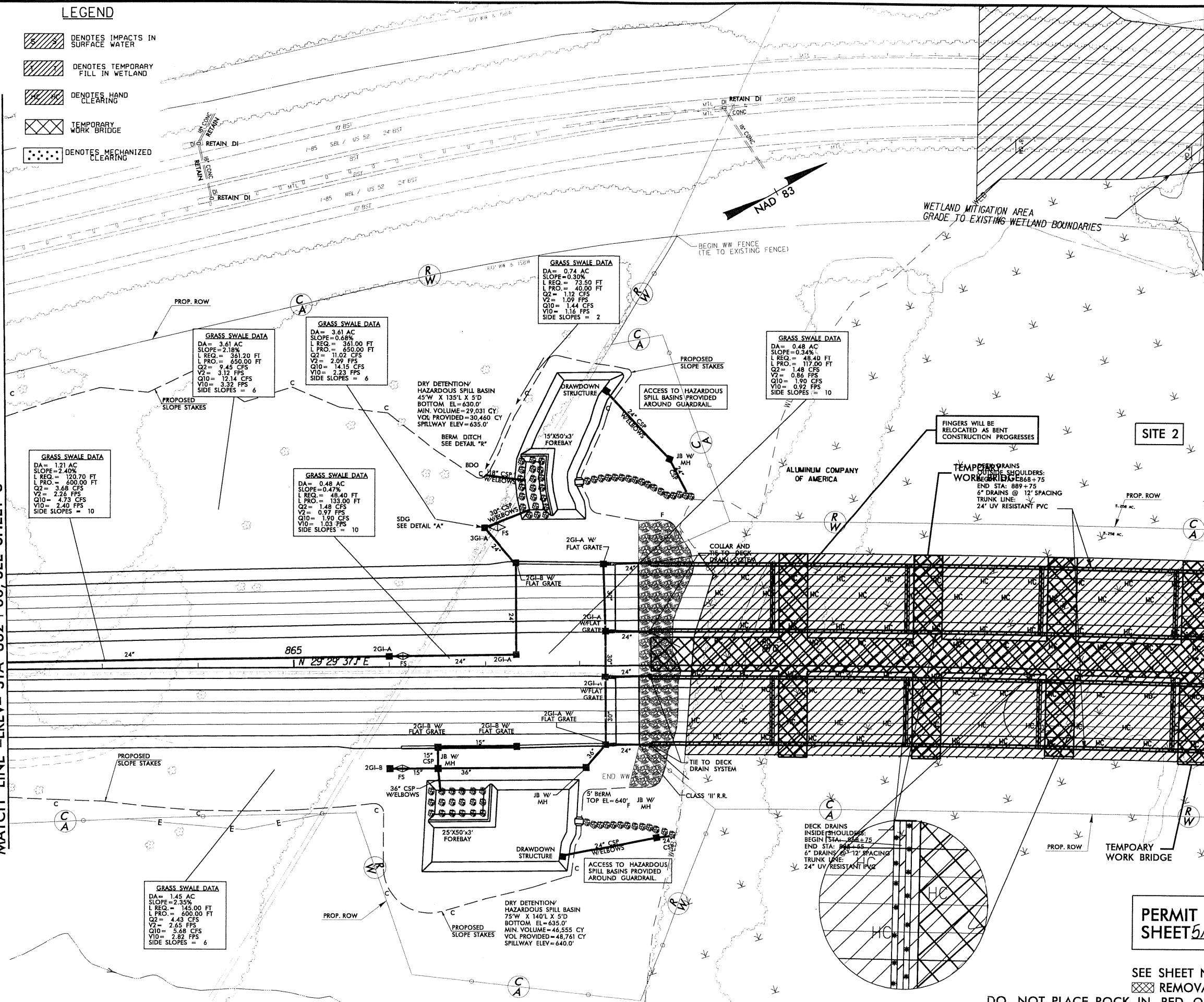
LEGEND

-  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. 9
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	
	
THE LANE CONSTRUCTION CORPORATION	
STV/Ralph Whitehead Associates, Inc. 1000 West Morehead St., Ste. 200 Charlotte, NC 28208 NC LICENSE NO. P-0991	
 HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.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



GRASS SWALE DATA
 DA = 0.74 AC
 SLOPE = 0.30%
 L REQ. = 73.50 FT
 L PRO. = 40.00 FT
 Q2 = 1.12 CFS
 V2 = 1.09 FPS
 Q10 = 1.44 CFS
 V10 = 1.16 FPS
 SIDE SLOPES = 2

GRASS SWALE DATA
 DA = 3.61 AC
 SLOPE = 2.18%
 L REQ. = 361.20 FT
 L PRO. = 650.00 FT
 Q2 = 9.45 CFS
 V2 = 3.12 FPS
 Q10 = 12.14 CFS
 V10 = 3.32 FPS
 SIDE SLOPES = 6

GRASS SWALE DATA
 DA = 3.61 AC
 SLOPE = 0.68%
 L REQ. = 361.00 FT
 L PRO. = 650.00 FT
 Q2 = 11.02 CFS
 V2 = 2.09 FPS
 Q10 = 14.16 CFS
 V10 = 2.23 FPS
 SIDE SLOPES = 6

GRASS SWALE DATA
 DA = 0.48 AC
 SLOPE = 0.34%
 L REQ. = 48.40 FT
 L PRO. = 117.00 FT
 Q2 = 1.48 CFS
 V2 = 0.86 FPS
 Q10 = 1.90 CFS
 V10 = 0.92 FPS
 SIDE SLOPES = 10

GRASS SWALE DATA
 DA = 1.21 AC
 SLOPE = 2.40%
 L REQ. = 120.70 FT
 L PRO. = 600.00 FT
 Q2 = 3.68 CFS
 V2 = 2.26 FPS
 Q10 = 4.73 CFS
 V10 = 2.40 FPS
 SIDE SLOPES = 10

GRASS SWALE DATA
 DA = 0.48 AC
 SLOPE = 0.47%
 L REQ. = 48.40 FT
 L PRO. = 133.00 FT
 Q2 = 1.40 CFS
 V2 = 0.97 FPS
 Q10 = 1.90 CFS
 V10 = 1.03 FPS
 SIDE SLOPES = 10

GRASS SWALE DATA
 DA = 1.45 AC
 SLOPE = 2.35%
 L REQ. = 145.00 FT
 L PRO. = 600.00 FT
 Q2 = 4.43 CFS
 V2 = 2.65 FPS
 Q10 = 5.68 CFS
 V10 = 2.82 FPS
 SIDE SLOPES = 6

PERMIT DRAWINGS
 SHEET 5A OF 11

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

PLOT DRIVER: NCDOT_dwg_color_eng_100.plt
 PENTABLE: NCDOT_permits_noccon.tbl
 USER: jmasrloc DATE: 9/3/2010
 FILE: Ralph.Whitehead.assoc\Associates\RW\Flatiron\I-2304AC\Hydraulics\PERMITS_Env\Environment\I-2304AC_HYD_PRM_PLANS\SHEETS.dgn

REVISIONS

PLOT DRIVER: NCD01.dcf_color_eng.100.plt
 USER: jmasroc DATE: 9/3/2010
 PENTABLE: NCD01_permit.dwg
 TIME: 9:57:54 AM SCALE: 1:100
 FILE: Ralph.Whitehead.and.Associates\RW\Iron.Lane.Yadkin.I.85\12304AC\Hydraulics\PERMITS\Environmental\Drawings\12304AC_HYD_PRM_PLANS\HEETS.dgn

REVISIONS

THE LANE
 CONSTRUCTION CORPORATION

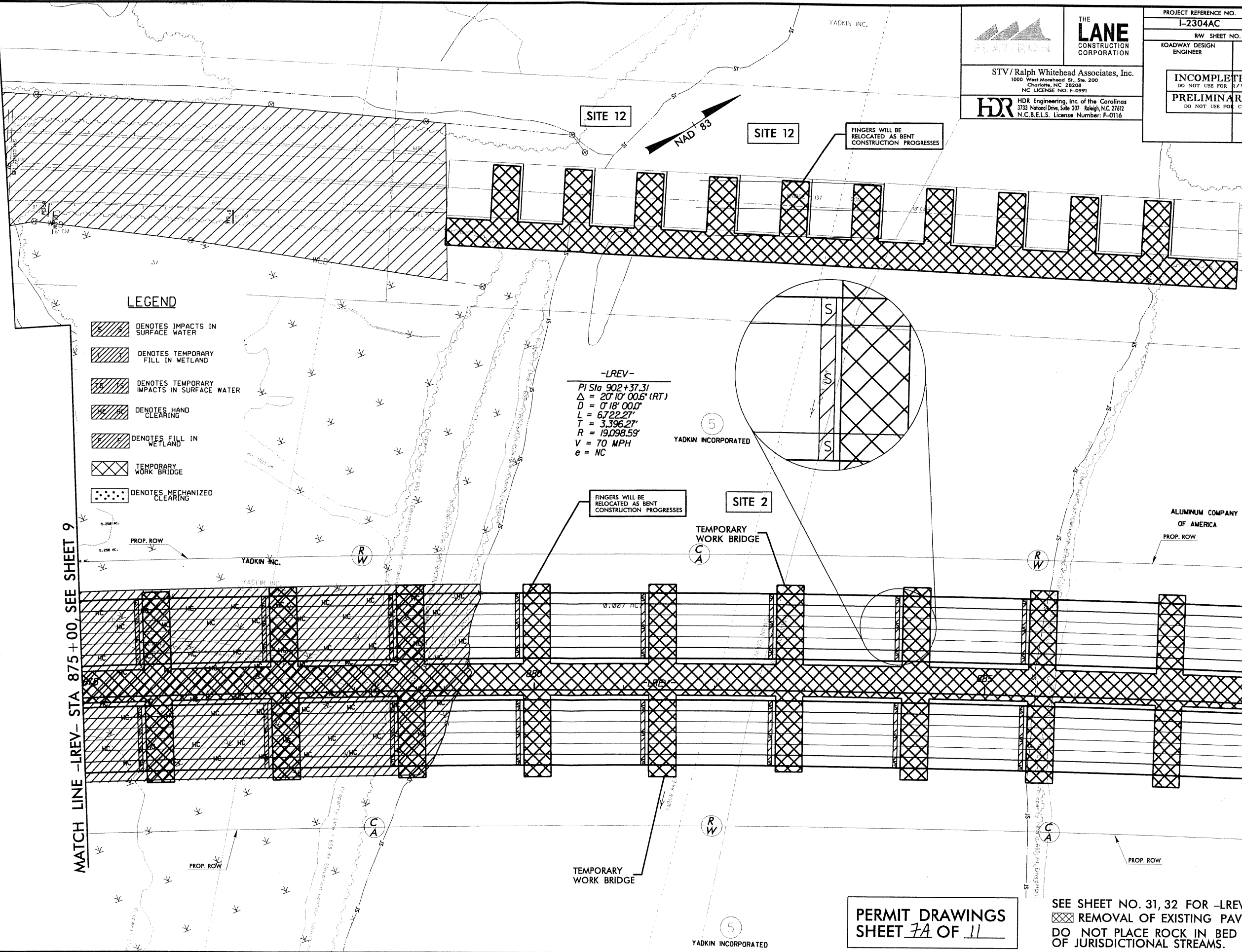
STV/Ralph Whitehead Associates, Inc.
 1000 West Morehead St., Ste. 200
 Charlotte, NC 28208
 NC LICENSE NO. F-0991

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 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	

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

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



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)
 $D = 0' 18'' 00.0''$
 $L = 6722.27'$
 $T = 3396.27'$
 $R = 19,098.59'$
 $V = 70$ MPH
 $e = NC$

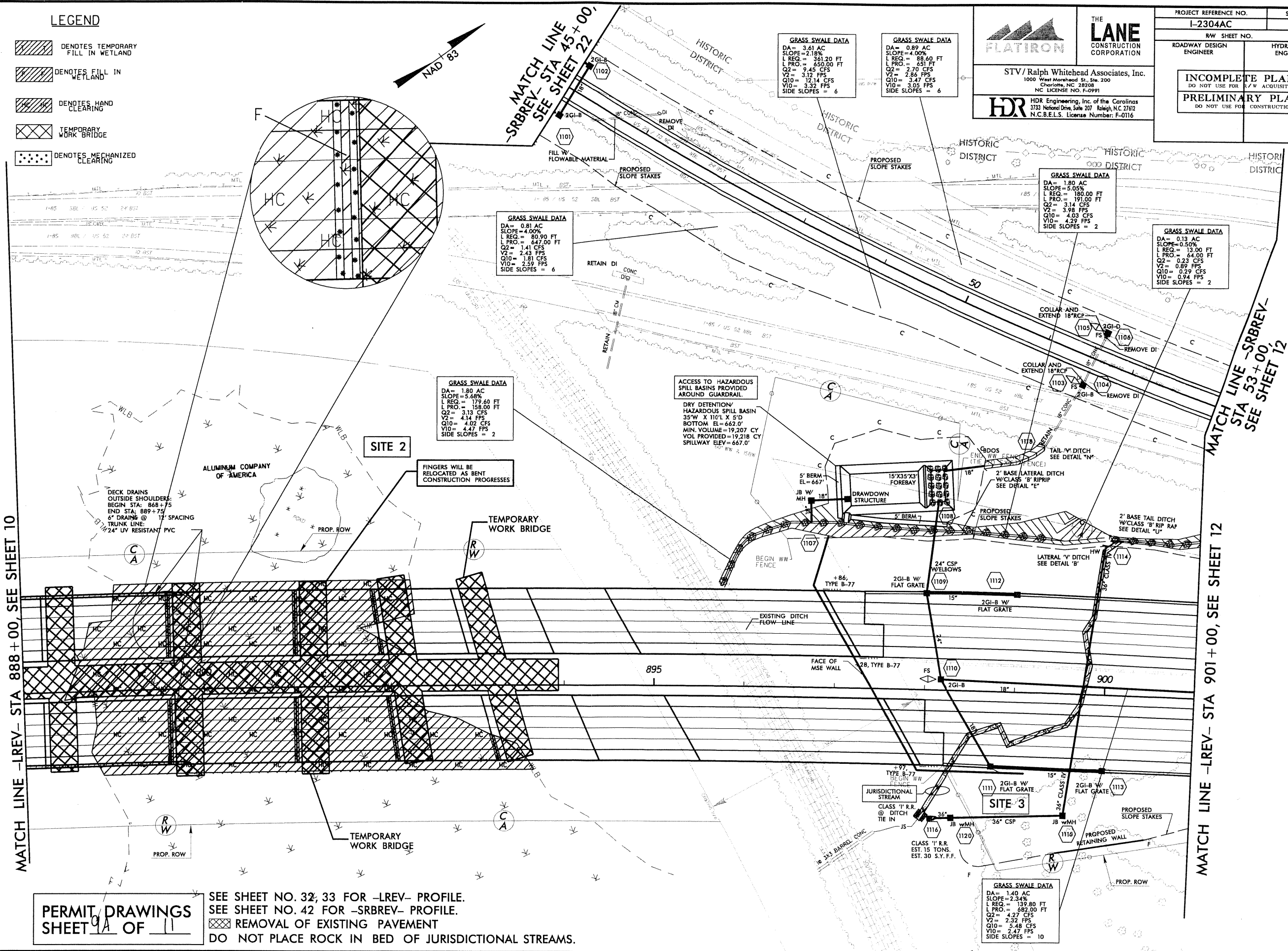
PERMIT DRAWINGS
 SHEET 7A OF 11

SEE SHEET NO. 31, 32 FOR -LREV- 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

PROJECT REFERENCE NO. I-2304AC		SHEET NO. 11	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
 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 3733 National Drive, Suite 207 Raleigh, NC 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	



PLOT DRIVER: NCDOT_dpf_color_eng_100.ppt
 USER: jmasr oc
 DATE: 9/3/2010
 PENTABLE: NCDOT_per_mits_NCCON.tdi
 TIME: 10:11:11 AM
 SCALE: 1:100
 FILE: Rapp_Whitehead_Associates\RW\Fatiron\Lane_Yadkin_I_85\I2304AC\Hydr\auties\PERMITS_Envr\ament\Drawings\I2304AC_HYD_PRM_PLANS\SHETS.dgn

REVISIONS

