STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

BEVERLY EAVES PERDUE
GOVERNOR

EUGENE A. CONTI, JR.
SECRETARY

August 22, 2011

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 the widening of I-85 from just north of NC 150 to just north of I-85 Business in Davidson County. Federal Aid Project No. NHF-85-3(164)80, WBS 34156.3.6, Division 9, TIP No. I-2304AD.

Reference: Individual 401 Certification No. 3455 issued March 19, 2004
Individual 401 Certification No. 3455 Modification issued November 22, 2004
Individual 404 Permit USACE Action ID 1998-21203 issued December 16, 2004
Individual 404 Permit Extension issued April 1, 2009
Individual 404 Permit Modification - Site 9 issued May 11, 2011
Individual 401 Certification No. 3455 Modification – Site 9 issued May 11, 2011

Dear Sir:

The North Carolina Department of Transportation (NCDOT) proposes a modification to the existing Individual Section 404 Permit and Section 401 Water Quality Certification for the above referenced project. Originally, the project was permitted with Sections AA and AB; however, the project is now being referred to as Sections AC and AD in order to accommodate contracts and financing. Section AC encompasses what was previously referred to as AA. Section AD includes the area previously referred to as AB. The Design Build contract for Section AD was awarded on January 26, 2011. Impact summary tables and revised permit drawings are enclosed with this application.

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:

- Protected Species
- Aquatic life passage
- FEMA compliance

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

- Cultural resources

The project is located in HUC 03040103 of the Yadkin River Basin. This modification application is specific to Sites 1, 2, 3, 4, 5, 6, 7, 8, and 10 for which a 404 Permit was issued on December 16, 2004 and a 401 Permit Modification was issued on November 22, 2004. A 404 Permit Extension was issued on April 1, 2009. The 404 and 401 Permit Modifications for Site 9 were issued on May 11, 2011.

Permit Site 1

Based on the 2004 permit drawings, Site 1 wetland impacts total 0.052 acre. Site 1 wetland impacts were addressed in a permit modification issued for the AC portion of this project. The Design-Build team noticed that the 2004 permit drawings showed permanent fill in a jurisdictional stream at Site 1 but no stream impacts were listed in the impact summary table. To correct this omission 14 feet of permanent stream impacts were added at Site 1. Class 1 Rip Rap will be placed along the stream banks to stabilize the stream. Rip rap will not be placed in the stream bed.

Permit Site 2

Based on the 2004 permit drawings, Site 2 stream impacts total 219 linear feet. Through the Design-Build process, the fill line on the north side of I-85 was adjusted, which resulted in a reduction of permanent stream impacts at Site 2 by 49 feet. The current design will have 170 linear feet of permanent stream impacts and 25 linear feet of temporary stream impacts at Site 2.

Permit Site 3

Based on the 2004 permit drawings, Site 3 stream impacts total 216 linear feet and wetland impacts total 0.65 acre. Design adjustments made during the Design-Build process reduced wetland impacts at Site 3 by 0.08 acre and increased permanent stream impacts by 12 feet. Wetland impacts were reduced by moving a scour hole out of the wetland. Stream impacts increased at Site 3 due to increasing the outlet channel length to promote positive drainage into the existing stream. The current design will have 0.57 acre of permanent wetland impacts, 0.56 acre of hand clearing in wetlands, 228 linear feet of permanent stream impacts and 24 linear feet of temporary stream impacts at Site 3.

Permit Site 4

Based on the 2004 permit drawings, Site 4 wetland impacts total 0.107 acre. No changes occurred at this Site during the Design-Build process. The current design will have 0.10 acre of permanent wetland impacts at Site 4.

Permit Site 5

Based on the 2004 permit drawings, Site 5 stream impacts total 270 linear feet. Through the Design-Build process, the roadway grade has been lowered through Site 5, which lowers the fill heights and shortens the required culvert length at Site 5. Due to this design change the permanent stream impacts at Site 5 will be reduced by 10 feet. In addition, the culvert size at this location was increased from 66 inches to 72 inches to facilitate burying the invert of the culvert. The current

design will have 260 linear feet of permanent stream impacts and 16 linear feet of temporary stream impacts at Site 5.

Permit Site 6

Based on the 2004 permit drawings, Site 6 wetland impacts total 0.063 acre and surface water (pond) impacts total 0.003 acre. The fill line on the south side of Clyde Fitzgerald Road was altered during the Design-Build process, which resulted in eliminating impacts to the pond. The current design will still have 0.06 acre of permanent wetland impacts and 0.09 acre of hand clearing in wetlands at Site 6.

Permit Site 7

Based on the 2004 permit drawings, Site 7 stream impacts total 272 linear feet. During the Design-Build process the culvert extension and rip rap protection on the south side of Clyde Fitzgerald Road was eliminated, reducing stream impacts in that location slightly. However, when the stream impacts were measured by the Design-Build team the impacts were identical to the 2004 permit. This could be due to a measurement error in the 2004 permit. The current design will have 272 linear feet of permanent stream impacts and 10 linear feet of temporary stream impacts at Site 7.

Permit Site 8

Based on the 2004 permit drawings, Site 8 stream impacts total 380 linear feet and wetland impacts total 0.277 acre. At the request of NCDOT, the Y-3 alignment was revised which resulted in reduced stream and wetland impacts at Site 8. Culvert sizes were also increased at this site from 54 inches to 60 inches and from 42 inches to 48 inches to facilitate burying the invert of the culverts. Permanent stream impacts were reduced by 198 linear feet. Permanent wetland impacts were reduced by 0.10 acre. The current design will have 182 linear feet of permanent stream impacts, 30 linear feet of temporary stream impacts, and 0.18 acre of permanent wetland impacts at Site 8.

Permit Site 10

Based on the 2004 permit drawings, Site 10 stream impacts total 59 linear feet. Minor adjustments were made to the inlet and outlet structures during the Design-Build process, which resulted in a reduction of stream impacts by 2 linear feet at Site 10. The current design will have 57 linear feet of permanent stream impacts and 28 linear feet of temporary stream impacts.

The following table presents the total impacts associated with the previous permit (2004), the current design impacts, and illustrates the differences. For specific site details, please see the attached permit impact summary tables and permit drawings.

ORIGINAL PERMIT IMPACTS							REVISED IMPACTS					
Site No.	Perm. Fill In Wetland (ac)	Excavation In Wetlands (ac)	Mech. Clearing In Wetland (ac)	Perm. SW Impacts (ac)	Fill In SW (Pond) (ac)	Existing Channel Impacts Perm. (ft)	Perm. Fill in Wetland (ac)	Mech. Clearing/ Excavat in Wetland (ac)	Perm. SW impact (ac)	*Temp SW impact (ac)	Existing Channel Impacts Perm. (ft)	Existing Channel Impacts Temp. (ft)
1	0.033		0.019						0.001		14	
2				0.021		219			0.017	0.003	170	25

3	0.463	0.016	0.171	0.062		216	0.420	0.150	0.130	0.014	228	24
4	0.071		0.036				0.070	0.030				
5				0.034		270			0.030	0.003	260	16
6	0.037		0.026		0.003		0.030	0.032				
7				0.030		272			0.050	0.003	272	10
8 (54" RCP)	0.263		0.005	0.009		179			0.001	0.002	40	20
8 (42" RCP)			0.009	0.014		201	0.170	0.010	0.010	0.001	142	10
9	0.039			0.042		395						
10				0.006		59			0.001	0.002	57	28
TOTALS*:**	0.906	0.016	0.266	0.218	0.003	1,811	0.690	0.222	0.240	0.028	1183	133
NET CHANGE IN IMPACTS:							-0.216	-0.060	+0.022	+0.028	-628	+133

*There were no Temporary Impacts noted in the 2004 Permit.

Mitigation

Mitigation through the Ecosystem Enhancement Program (EEP) has been set aside for this project at the time of the 2004 permit. However, additional mitigation will not be required as a result of this modification because the proposed design revisions reduce the amount of permanent stream and wetland impacts.

REGULATORY APPROVAL

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 Section 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. We are providing five (5) copies of this modification request to the NCDWQ for their review and approval.

If you have any questions or need additional information, please contact Kent Boyer at kboyer@ncdot.gov or (336) 703-6500.

Sincerely,

K.D. Boyer

Kent Boyer
NCDOT Division 9 Environmental Officer

cc:
NCDOT Permit Application Standard
Distribution List.

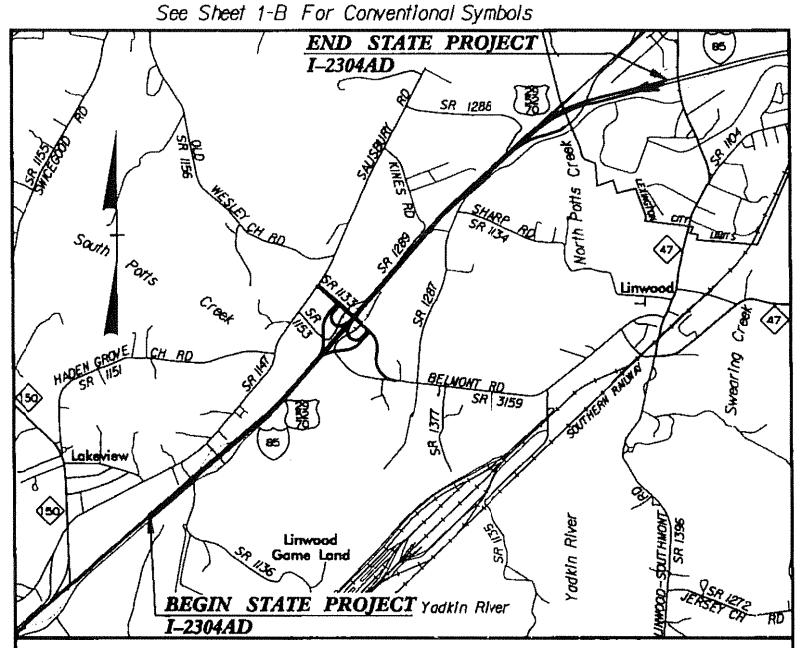
09/08/99

PROJECT: I-2304AD

CONTRACT: C202382

TIP P

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



SKETCH MAP SHOWING THE VICINITY OF STATE PROJECT I-2304AD

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

DAVIDSON COUNTY

LOCATION: I-85 WIDENING FROM JUST NORTH OF NC 150 TO JUST NORTH OF I-85 BUSINESS

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

WETLAND & STREAM IMPACTS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-2304AD	1	

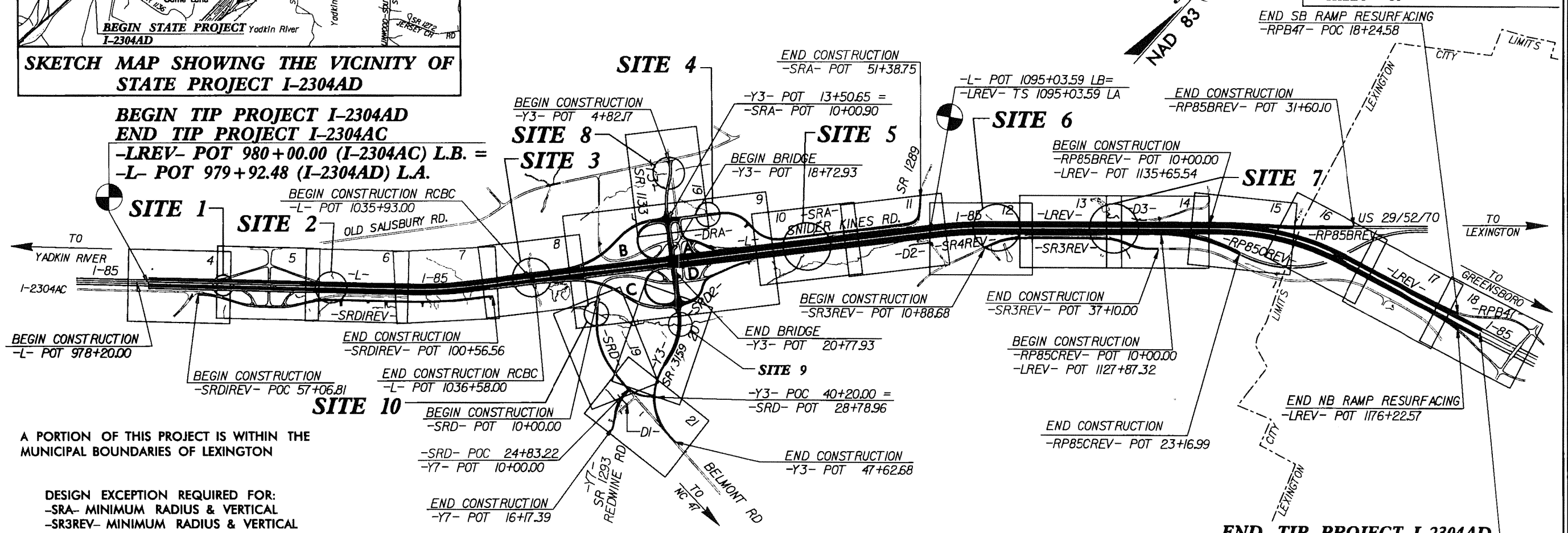
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
34156.1.1	NHF-85-3(164)80	P.E.
34156.2.3		R/W, UTIL
34156.3.6		CONST.

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
DAVIDSON COUNTY

PROJECT: 34156.1.1 (I-2304AD)

I-85 WIDENING JUST NORTH OF NC 150 TO JUST NORTH OF I-85 BUSINESS

SHEET OF



A PORTION OF THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF LEXINGTON

DESIGN EXCEPTION REQUIRED FOR:
-SRA- MINIMUM RADIUS & VERTICAL
-SR3REV- MINIMUM RADIUS & VERTICAL

THIS IS A CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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 2009 = 59,600
ADT 2035 = 110,200
DHV = 10 %
D = 55 %
T = 25 % *
V = 70 MPH
* 19% TTST + 6% DUALS
FUNC CLASS = INTERSTATE

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT I-2304AD = 3.768 MILES
LENGTH STRUCTURES TIP PROJECT I-2304AD = 0.012 MILES
TOTAL LENGTH TIP PROJECT I-2304AD = 3.780 MILES

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: OCTOBER 21, 2010

LETTING DATE: JANUARY 18, 2011

Prepared In the Office of:

Balfour Beatty Infrastructure Inc.
AND
Austin Bridge & Road
An Austin Industries Company
A JOINT VENTURE

FLORENCE & HUTCHESON, 8121 WINGDOM WAY, SUITE 100, RALEIGH, NC 27607, 919-851-8099, NC LIC. NO. F-0256

PB, 121 WEST TRADE STREET, SUITE 1600, CHARLOTTE, NC 28202, 704-343-9401, NC LIC. NO. F-0165

STEPHEN R. WHITLEY, PE
PROJECT ENGINEER

DAVID C. WALLER, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER
SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER
SIGNATURE: P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

P.E.
STATE HIGHWAY DESIGN ENGINEER

8/8/2011
R:\Hydraulics\PERMITS_Environmental\Drawings\I2304ad_hyd_prm_wet_tsh_a.dgn
Florence & Hutcheson, Inc.

8/8/2011
R:\Drainage\i2304ad_hyd_details.dgn
Florence & Hutcheson, Inc.

REVISIONS

8/17/99

Balfour Beatty Infrastructure Inc.
AND
Austin Bridge & Road
An Austin Industries Company
A JOINT VENTURE

FLORENCE & HUTCHESON
8121 KINGDOM WAY
SUITE 100
RALEIGH, NC 27607
919-851-6066
NC LIC NO F-0256

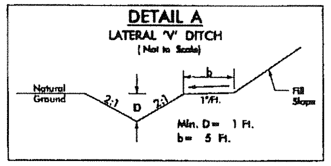
PB
121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202
704-342-5401
NC LIC. NO. F-0165

PROJECT REFERENCE NO.	SHEET NO.
I-2304AD	2-H
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

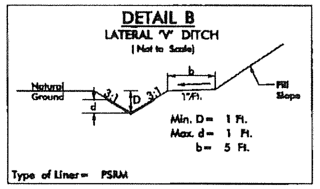
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DETAIL A
LATERAL 'V' DITCH
(Not to Scale)



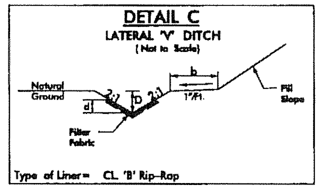
-Y3- 20+90 (RT.) - 21+11 (RT.) SHT. 9
-Y3- 42+00 (LT.) - 42+42 (LT.) SHT. 21

DETAIL B
LATERAL 'V' DITCH
(Not to Scale)



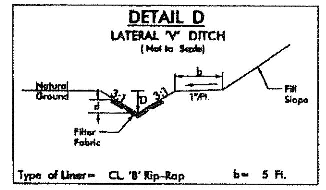
-LREV- 1126+13 (RT.) - 1127+00 (RT.) SHT. 14

DETAIL C
LATERAL 'V' DITCH
(Not to Scale)



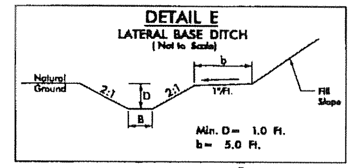
	Min. D	Max. d	b	
-L- 1069+50 (RT.) - 1070+00 (RT.)	1 Ft.	1 Ft.	5 Ft.	SHT. 9
-L- 1070+00 (RT.) - 1071+50 (RT.)	1 Ft.	1 Ft.	5 Ft.	SHT. 10
-LREV- 1123+50 (LT.) - 1124+50 (LT.)	2 Ft.	2 Ft.	3 Ft.	SHT. 14
-SRD2- 15+00 (RT.) - 16+64 (RT.)	1 Ft.	1 Ft.	5 Ft.	SHT. 9
-Y3- 31+80 (RT.) - 34+35 (RT.)	1 Ft.	1 Ft.	5 Ft.	SHT. 20

DETAIL D
LATERAL 'V' DITCH
(Not to Scale)



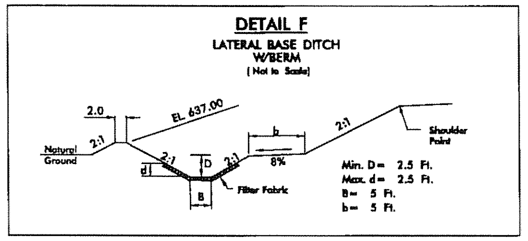
	Min. D	Max. d	
-LREV- 1105+50 (LT.) - 1108+00 (LT.)	1 Ft.	1 Ft.	SHT. 12
-L- 1124+65 (RT.) - 1126+13 (RT.)	1.5 Ft.	1.5 Ft.	SHT. 14
-SR3REV- 32+66 (LT.) - 34+34 (LT.)	1.5 Ft.	1.5 Ft.	SHT. 14

DETAIL E
LATERAL BASE DITCH
(Not to Scale)



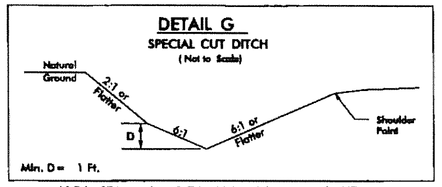
	B	
-L- 1036+73 (RT.) - 1037+72 (RT.)	4 Ft.	SHT. 8
-SRA- 15+72 (LT.) - 16+75 (LT.)	2 Ft.	SHT. 9
-SRD- 26+00 (RT.) - 28+37 (RT.)	2 Ft.	SHT. 9
-LREV- 1120+75 (LT.) - 1121+50 (LT.)	2 Ft.	SHT. 13

DETAIL F
LATERAL BASE DITCH
W/BERM
(Not to Scale)



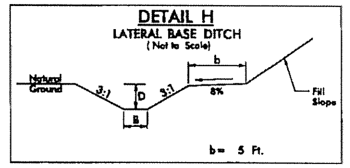
-L- 1040+23 (LT.) - 1041+50 (LT.) SHT. 8

DETAIL G
SPECIAL CUT DITCH
(Not to Scale)



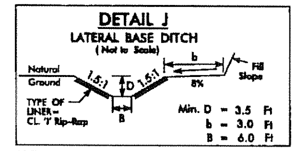
-LREV- STA. 1156+15 TO STA. 1156+75 (RT.) SHT. 16

DETAIL H
LATERAL BASE DITCH
(Not to Scale)



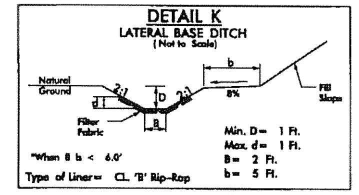
	Min. D	B	
-L- 1075+80 (RT.) - 1080+50 (RT.)	1 Ft.	4 Ft.	SHT. 10
-L- 1078+65 (LT.) - 1079+50 (LT.)	1 Ft.	3 Ft.	SHT. 10
-LREV- 1104+00 (LT.) - 1105+50 (LT.)	1.5 Ft.	2 Ft.	SHT. 12
-Y3LPC- 12+35 (LT.) - 12+76 (LT.)	1 Ft.	2 Ft.	SHT. 9
-Y3LPC- 10+25 (LT.) - 11+12 (LT.)	1 Ft.	2 Ft.	SHT. 9

DETAIL J
LATERAL BASE DITCH
(Not to Scale)



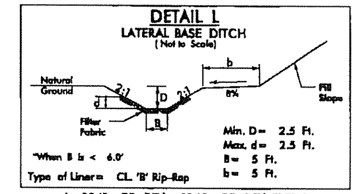
-LREV- 1121+50 (LT.) TO 1122+69 (LT.) SHT. 13

DETAIL K
LATERAL BASE DITCH
(Not to Scale)



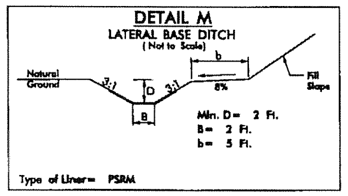
	Min. D	Max. d	
-L- 1023+00 (LT.) - 1025+20 (LT.)	1 Ft.	1 Ft.	SHT. 7
-L- 1025+20 (LT.) - 1025+67 (LT.)	1.5 Ft.	1.5 Ft.	SHT. 7
-L- 1025+67 (LT.) - 1026+75 (LT.)	1 Ft.	1 Ft.	SHT. 7
-SRD1REV- 76+17 (RT.) - 78+07 (RT.)	1 Ft.	1 Ft.	SHT. 6
-SRD2- 12+00 (RT.) - 14+00 (RT.)	1 Ft.	1 Ft.	SHT. 9
-Y3- 42+50 (LT.) - 43+00 (LT.)	1 Ft.	1 Ft.	SHT. 20
-SRD2- 12+00 (RT.) - 14+00 (RT.)	1 Ft.	1 Ft.	SHT. 9
-SRD2- 11+29 (RT.) - 12+00 (RT.)	1 Ft.	1 Ft.	SHT. 20

DETAIL L
LATERAL BASE DITCH
(Not to Scale)



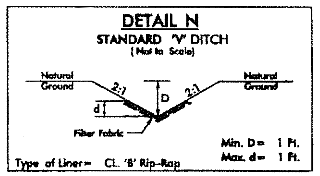
-L- 1041+50 (LT.) - 1043+00 (LT.) SHT. 8
-L- 1043+00 (LT.) - 1046+73 (LT.) SHT. 9

DETAIL M
LATERAL BASE DITCH
(Not to Scale)



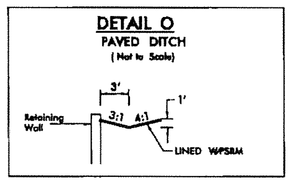
-L- 1074+25 (RT.) - 1075+48 (RT.) SHT. 10

DETAIL N
STANDARD 'V' DITCH
(Not to Scale)



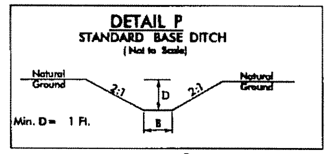
-Y3- 34+64 (LT.) - 34+98 (LT.) SHT. 21
-RPB5BREV- 13+00 (LT.) - 13+93 (LT.) SHT. 15

DETAIL O
PAVED DITCH
(Not to Scale)



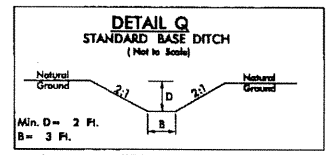
-L- 1015+72 (LT.) - 1016+21 (LT.) SHT. 6

DETAIL P
STANDARD BASE DITCH
(Not to Scale)



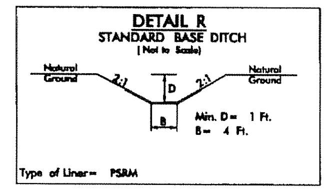
	B	
-SRA- 16+50 (RT.)	2 Ft.	SHT.9
-Y3- 10+50 (LT.)	4 Ft.	SHT. 19

DETAIL Q
STANDARD BASE DITCH
(Not to Scale)



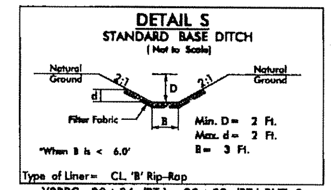
-Y3- 42+04 (RT.) - 42+55 (RT.) SHT. 21
-Y3- 42+50 (RT.) - OUT. SHT. 21

DETAIL R
STANDARD BASE DITCH
(Not to Scale)



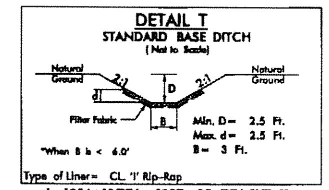
-L- 1078+48 (LT.) SHT. 10

DETAIL S
STANDARD BASE DITCH
(Not to Scale)



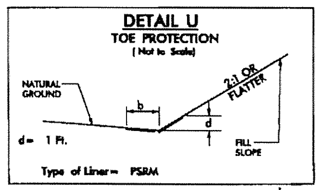
-Y3RPC- 23+86 (RT.) - 23+82 (RT.) SHT. 9

DETAIL T
STANDARD BASE DITCH
(Not to Scale)



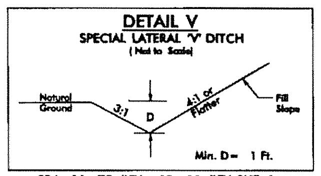
-L- 1086+19(RT.) - 1087+25 (RT.) SHT. 11

DETAIL U
TOE PROTECTION
(Not to Scale)



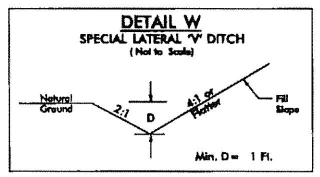
	b	
-LREV- 1103+00 (RT.) - 1105+50 (RT.)	5 Ft.	SHT.12
-SR3REV- 26+66 (RT.) - 27+63 (RT.)	5 Ft.	SHT. 13
-SR3REV- 30+20 (RT.) - 32+00 (RT.)	5 Ft.	SHT. 14
-SR3REV- 34+76 (RT.) - 36+00 (RT.)	5 Ft.	SHT. 14
-D3- (LT. & RT.)	5 Ft.	SHT. 14
-SRD- 12+18 (LT.) - 12+40 (LT.)	3 Ft.	SHT. 9
-SRD- 12+70 (LT.) - 13+50 (LT.)	3 Ft.	SHT. 9&19

DETAIL V
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



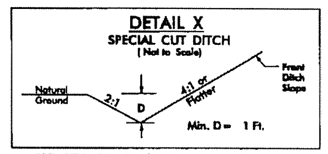
-SRA- 16+75 (LT.) - 19+00 (LT.) SHT. 9
-Y3- 8+35 (LT.) - 8+85 (LT.) SHT. 19
-SRA- 14+00 (RT.) - 19+00 (RT.) SHT. 9

DETAIL W
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



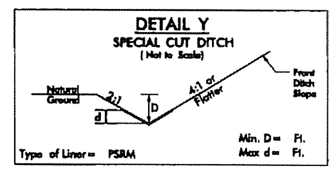
-SRD- 26+00 (LT.) - 28+50 (LT.) SHT. 9

DETAIL X
SPECIAL CUT DITCH
(Not to Scale)



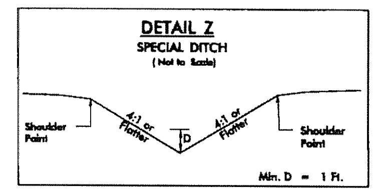
-SRD1REV- 79+10 (RT.) - 79+60 (RT.) SHT. 6
-SRD1REV- 88+10 (RT.) - 89+78 (RT.) SHT. 7
-Y3RPB- 16+83 (LT.) - 18+50 (LT.) SHT. 9
-SRA- 10+72 (RT.) - 11+35 (RT.) SHT. 9
-SRD2- 16+67 (RT.) - 17+80 (RT.) SHT. 9
-D2- 10+57 (RT.) - 12+82 (RT.) SHT. 11
-LREV- 1151+00 (LT.) - 1152+00 (LT.) SHT. 16
-Y3- 34+50 (LT.) - 34+64 (LT.) SHT. 20
-Y3- 34+64 (LT.) - 35+00 (LT.) SHT. 20
-Y3- 39+50 (RT.) - 39+87 (RT.) SHT. 21
-Y3- 41+50 (LT.) - 42+00 (LT.) SHT. 21

DETAIL Y
SPECIAL CUT DITCH
(Not to Scale)



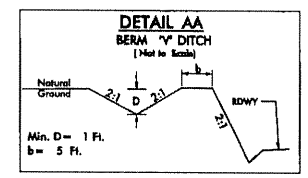
-SRA- 13+00 (RT.) - 14+00 (RT.) SHT 9

DETAIL Z
SPECIAL DITCH
(Not to Scale)



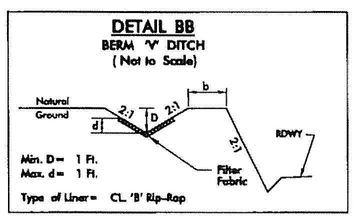
-L- 993+50 (RT.) - 997+00 (RT.) SHT. 5
-L- 1007+50 (RT.) - 1015+00 (RT.) SHT. 6
-L- 1026+50 (RT.) - 1030+50 (RT.) SHT. 7
-L- 1030+00 (RT.) - 1030+50 (RT.) SHT. 8
-L- 1044+50 (RT.) - 1049+00 (RT.) SHT. 9
-Y3LPB- 13+50 (LT.) - 16+00 (LT.) SHT. 9

DETAIL AA
BERM 'V' DITCH
(Not to Scale)



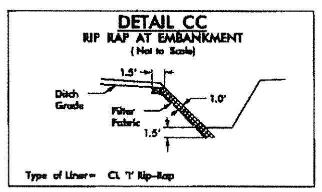
	D	b	
-L- 1028+00 (LT.) - 1029+60 (LT.)	1 Ft.	5 Ft.	SHT. 7
-SRA- 23+50 (LT.) - 25+00 (LT.)	1 Ft.	5 Ft.	SHT. 9
-SRA- 25+00 (LT.) - 28+25 (LT.)	1 Ft.	5 Ft.	SHT. 10
-SRA- 42+23 (LT.) - 44+73 (LT.)	1 Ft.	3 Ft.	SHT. 11
-LREV- 1095+50 (LT.) - 1096+50 (LT.)	1.5 Ft.	3 Ft.	SHT. 12
-LREV- 1108+00 (LT.) - 1111+00 (LT.)	1.5 Ft.	5 Ft.	SHT. 13
-LREV- 1112+00 (LT.) - 1114+00 (LT.)	1 Ft.	5 Ft.	SHT. 13
-LREV- 1114+00 (LT.) - 1115+50 (LT.)	1 Ft.	5 Ft.	SHT. 13
-LREV- 1133+90 (LT.) - 1139+00 (LT.)	1 Ft.	5 Ft.	SHT. 15
-Y3- 36+00 (LT.) - 39+00 (LT.)	1 Ft.	5 Ft.	SHT. 20
-Y3- 39+00 (LT.) - 40+00 (LT.)	1 Ft.	5 Ft.	SHT. 21

DETAIL BB
BERM 'V' DITCH
(Not to Scale)



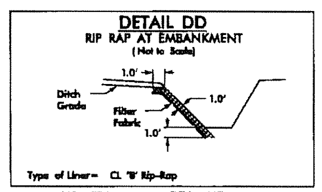
	b	
-L- 1026+75 (LT.) - 1028+00 (LT.)	5 Ft.	SHT. 7
-SRA- 44+73 (LT.) - 46+22 (LT.)	3 Ft.	SHT. 11
-L- 1093+75 (LT.) - 1094+60 (LT.)	3 Ft.	SHT. 11
-L-/-LREV- 1094+60 (LT.) - 1095+50 (LT.)	3 Ft.	SHT. 11
-Y3- 40+00 (LT.) - 40+56 (LT.)	5 Ft.	SHT. 21

DETAIL CC
RIP RAP AT EMBANKMENT
(Not to Scale)



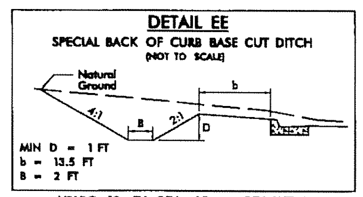
-L- 1075+75 (RT.) SHT. 10
-L- 1078+65 (LT.) SHT. 10

DETAIL DD
RIP RAP AT EMBANKMENT
(Not to Scale)



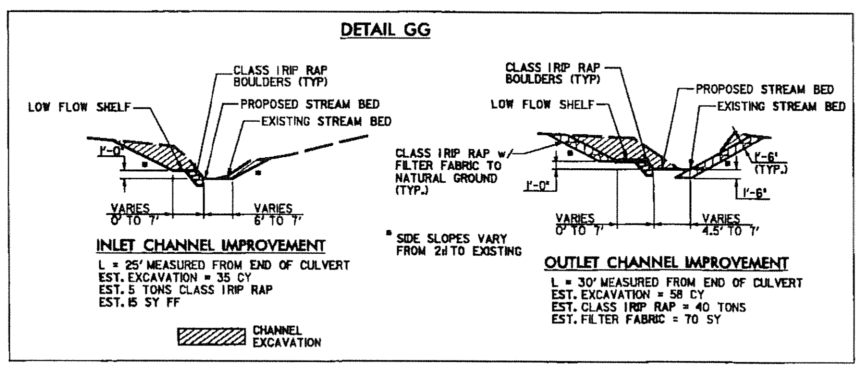
-Y3- STA. 28+70 (LT.) SHT. 20
-Y3- STA. 28+94 (LT.) SHT. 20
-Y3- STA. 31+68 (RT.) SHT. 20

DETAIL EE
SPECIAL BACK OF CURB BASE CUT DITCH
(NOT TO SCALE)



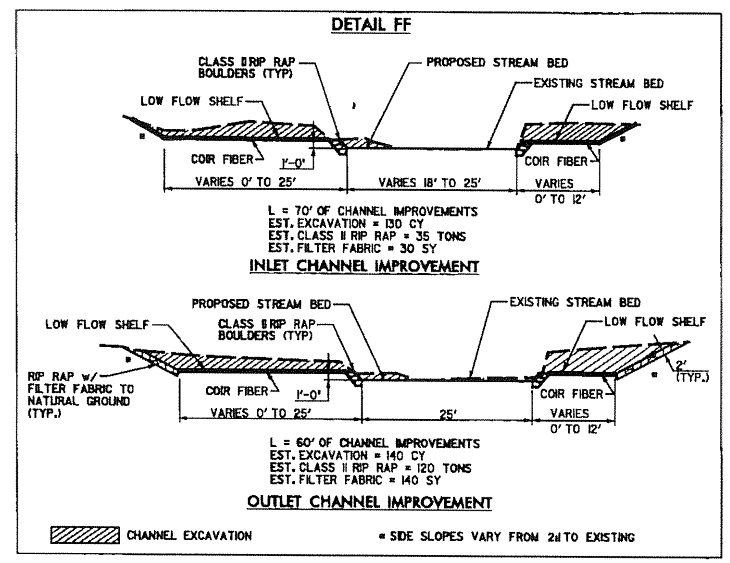
-Y3LPC- 12+76 (LT.) - 15+00 (LT.) SHT. 9

DETAIL GG



-SRD- 12+50 (SHT. 9)

DETAIL FF



-L- 1036+26 (SHT. 8)

PROJECT REFERENCE NO.	SHEET NO.
I-2304AD	2-1
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Balfour Beatty Infrastructure Inc.
AND
Austin Bridge & Road
An Austin Industries Company
A JOINT VENTURE

FLORENCE & HUTCHESON
8121 KINGDOM WAY
SUITE 100
RALEIGH, NC 27607
919-851-9065
NC LIC. NO. F-0258

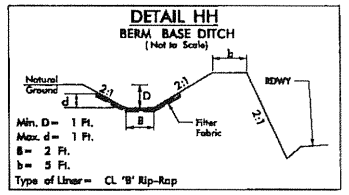
121 WEST TRADE STREET
SUITE 1980
CHARLOTTE, NC 28202
704-342-0401
NC LIC. NO. F-0155

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

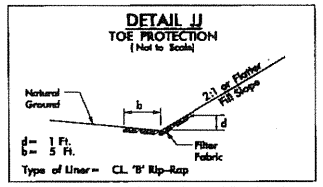
REVISIONS

DETAIL HH
BERM BASE DITCH
(Not to Scale)



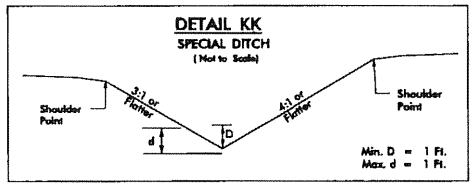
-SRA- 28+25 (LT.) - 30+65 (LT.) (SHT. 10)

DETAIL JJ
TOE PROTECTION
(Not to Scale)



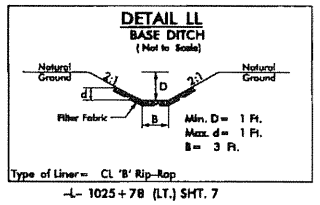
-L- 1005+00 (LT.) - 1006+97 (LT.) SHT. 6
-L- 1007+05 (LT.) - 1010+50 (LT.) SHT. 6
-L- 1036+70 (LT.) - 1037+30 (LT.) SHT. 8
-L- 1087+25 (RT.) - 1090+50 (RT.) SHT. 11
-SRA- 31+22 (LT.) - 33+20 (LT.) SHT. 10
-SR3- 15+90 (RT.) - 16+40 (RT.) SHT 11
-RP85BREV- 15+42 (LT.) - 17+66 (LT.) SHT. 15
-Y3- 29+00 (LT.) - 32+50 (LT.) SHT. 20

DETAIL KK
SPECIAL DITCH
(Not to Scale)



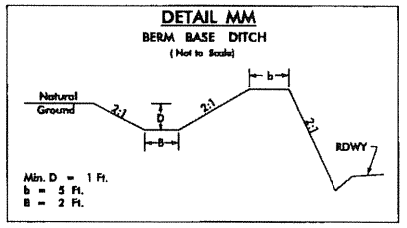
-L- 991+00 (RT.) - 993+500 (RT.) SHT. 5
-L- 1005+50 (RT.) - 1007+50 (RT.) SHT 6

DETAIL LL
BASE DITCH
(Not to Scale)



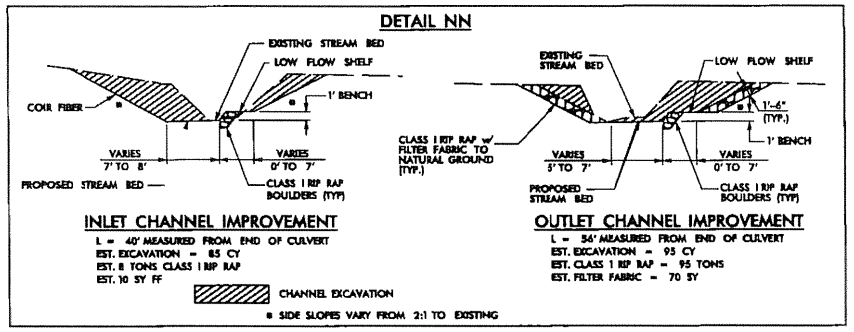
-L- 1025+78 (LT.) SHT. 7

DETAIL MM
BERM BASE DITCH
(Not to Scale)



Min. D
-Y3LPC- 11+12 (LT.) - 12+35 (LT.) 1 Ft. SHT. 9
-LREV- 1157+75 (LT.) - 1161+00 (LT.) 1.9 Ft. SHT. 16

DETAIL NN



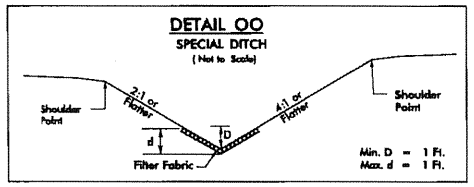
INLET CHANNEL IMPROVEMENT
L = 40' MEASURED FROM END OF CULVERT
EST. EXCAVATION = 85 CY
EST. 8 TONS CLASS I RIP RAP
EST. 10 SY FF

OUTLET CHANNEL IMPROVEMENT
L = 56' MEASURED FROM END OF CULVERT
EST. EXCAVATION = 95 CY
EST. CLASS I RIP RAP = 95 TONS
EST. FILTER FABRIC = 70 SY

CHANNEL EXCAVATION
* SIDE SLOPES VARY FROM 2:1 TO EXISTING

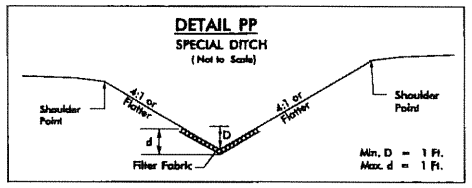
-Y3- 28+96 SHT. 20

DETAIL OO
SPECIAL DITCH
(Not to Scale)



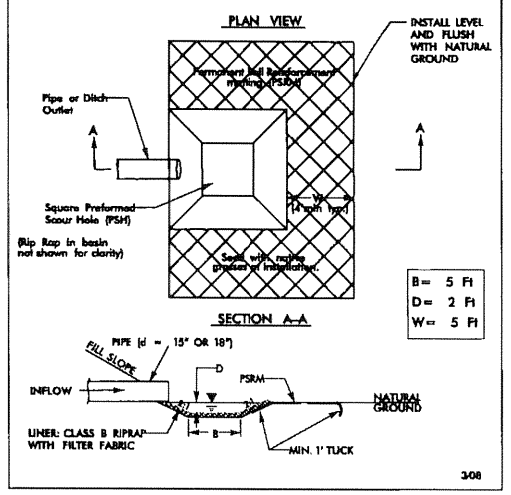
-L- 1002+45 (RT.) - 1003+12 (RT.) SHT. 5
-Y3- 21+50 (LT.) - 25+00 (LT.) SHT. 9

DETAIL PP
SPECIAL DITCH
(Not to Scale)



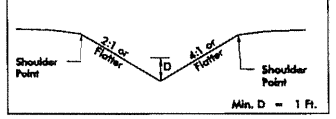
-L- 1001+00 (RT.) - 1002+45 (RT.) SHT. 5
-L- 1044+00 (LT.) - 1047+00 (LT.) SHT. 9
-L- 1050+00 (LT.) - 1050+93 (LT.) SHT. 9
-Y3RPB- 20+77.24 (RT.) - 21+50 (RT.) SHT. 9
-Y3LPB- 10+35.74 (RT.) - 13+50 (RT.) SHT. 9
-Y3LPB- 14+00 (LT.) - 14+69 (LT.) SHT. 9
-Y3LPB- 16+00 (RT.) - 20+26.85 (RT.) SHT. 9

DETAIL QQ
PREFORMED SCOUR HOLE
*NOT TO SCALE



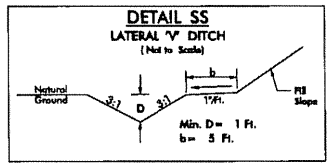
-L- 1035+00 (LT.) SHT. 8
-L- 1035+50 (RT.) SHT. 8
-L- 1039+85 (LT.) SHT 8
-Y3RPC- 13+05 (RT.) SHT. 8
-Y3RPC- 14+50 (RT.) SHT. 9
-Y3RPC- 27+43 (RT.) SHT. 20

DETAIL RR
SPECIAL DITCH
(Not to Scale)



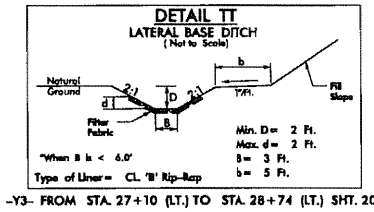
-L- 990+00 (RT.) TO 991+00 (RT) SHT 4
-L- 1003+12 (RT.) TO 1004+00 (RT.) SHT. 5
-L- 1004+00 (RT.) TO 1005+50 (RT.) SHT. 6
-L- 1024+50 (RT.) TO 1026+50 (RT.) SHT. 7

DETAIL SS
LATERAL 'V' DITCH
(Not to Scale)



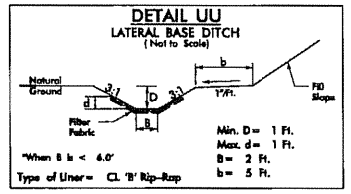
-SRD1REV- 76+17 (RT.) - 77+65 (RT.) SHT. 6
-SR3REV- 14+06 (RT.) - 15+14 (RT.) SHT. 12
-Y3- 6+36 (RT.) - 6+90 (RT.) SHT. 19
-Y3- 30+75 (RT.) - 31+68 (RT.) SHT. 20

DETAIL TT
LATERAL BASE DITCH
(Not to Scale)



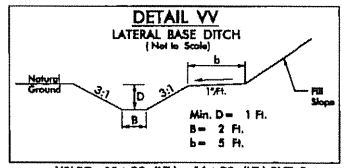
-Y3- FROM STA. 27+10 (LT.) TO STA. 28+74 (LT.) SHT. 20

DETAIL UU
LATERAL BASE DITCH
(Not to Scale)



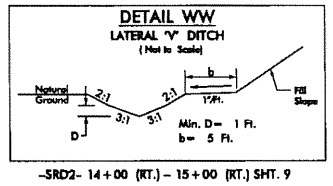
-Y3LPC- 16+00 (LT.) - 16+90 (LT.) SHT. 9
-Y3LPC- 16+20 (LT.) - 16+90 (LT.) SHT. 9
-L- 1073+60 (RT.) - 1074+25 (RT.) SHT. 10

DETAIL VV
LATERAL BASE DITCH
(Not to Scale)



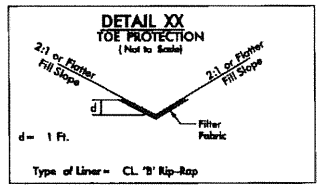
-Y3LPC- 15+00 (LT.) - 16+00 (LT.) SHT. 9
-Y3LPC- 16+90 (LT.) - 18+82 (LT.) SHT. 9

DETAIL WW
LATERAL 'V' DITCH
(Not to Scale)



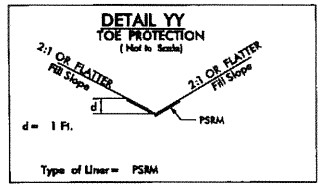
-SRD2- 14+00 (RT.) - 15+00 (RT.) SHT. 9

DETAIL XX
TOE PROTECTION
(Not to Scale)



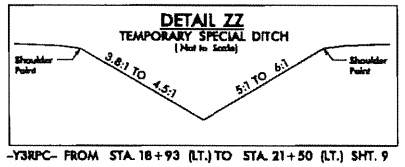
-L- 1058+85 (RT.) - 1063+50 (RT.) SHT. 9
-Y3RPB- 21+50 (RT.) - 24+00 (RT.) SHT. 9
-Y3LPB- 13+15 (LT.) - 14+00 (LT.) SHT. 9
-Y3LPC- 15+27 (RT.) - 17+30 (RT.) SHT. 9
-Y3LPC- 13+00 (RT.) - 14+85 (RT.) SHT. 9
-LREV- 1122+50 (RT.) - 1124+10 (RT.) SHT 14

DETAIL YY
TOE PROTECTION
(Not to Scale)



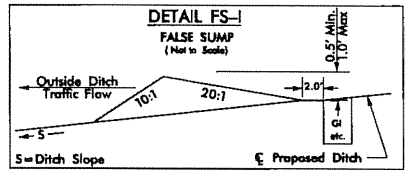
-Y3RPB- 24+00 (RT.) - 26+10 (RT.) SHT. 9
-Y3LPC- 17+30 (RT.) - 18+85 (RT.) SHT. 9

DETAIL ZZ
TEMPORARY SPECIAL DITCH
(Not to Scale)



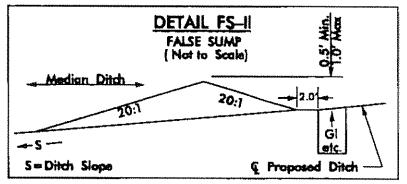
-Y3RPC- FROM STA. 18+93 (LT.) TO STA. 21+50 (LT.) SHT. 9

DETAIL FS-I
FALSE SUMP
(Not to Scale)



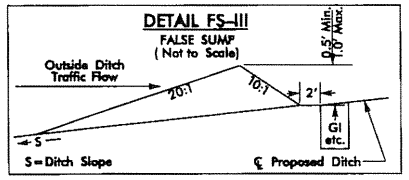
-SRD1REV- 80+05 (LT.) SHT. 6
-SRD1REV- 89+80 (RT.) SHT. 7
-L- 1033+00 (RT.) SHT. 8
-Y3RPB- 25+50 (LT.) SHT. 9
-SRA- 30+40 (RT.) SHT. 10
-SRA- 36+20 (LT.) SHT. 10
-Y3- 40+55 (LT.) SHT. 21
-SRA- 42+72 (LT.) SHT. 11
-SRA- 44+73 (LT.) SHT. 11
-LREV- 1095+50 (LT.) SHT. 11
-LREV- 1114+00 (LT.) SHT. 13
-LREV- 1119+00 (LT.) SHT. 13
-LREV-1129+00 (LT.) SHT. 14
-LREV-1130+00 (LT.) SHT. 14
-LREV-1131+81 (LT.) SHT. 14
-LREV- 1134+70 (LT.) SHT. 14
-LREV- 1131+81 (LT.) SHT. 14
-LREV- 1139+00 (LT.) SHT. 15
-RP85BREV- 18+80 (LT.) SHT. 15
-RP85BREV- 27+00 (LT.) SHT. 16
-RP85BREV- 29+95 (LT.) SHT. 16
-LREV- 1158+00 (LT.) SHT. 16
-LREV- 1165+00 (LT.) SHT. 17

DETAIL FS-II
FALSE SUMP
(Not to Scale)



-L- 981+50 (MED.) SHT. 4
-L- 992+00 (MED.) SHT. 5
-L- 993+60 (MED.) SHT. 5
-L- 997+35 (MED.) SHT. 5
-L- 999+70 (MED.) SHT. 5
-L- 1003+15 (MED.) SHT. 5
-L- 1003+12 (RT.) SHT. 5
-L- 1007+50 (MED.) SHT. 6
-L- 1009+60 (MED.) SHT. 6
-L- 1013+00 (MED.) SHT. 6
-L- 1016+60 (MED.) SHT. 6
-L- 1019+30 (MED.) SHT. 7
-L- 1021+65 (MED.) SHT. 7
-L- 1026+50 (MED.) SHT. 7
-L- 1027+65 (MED.) SHT. 7
-L- 1032+65 (MED.) SHT. 8
-L- 1037+00 (MED.) SHT. 8
-L- 1039+00 (MED.) SHT. 8
-L- 1042+65 (MED.) SHT. 8
-L- 1046+40 (RT.) SHT. 9
-L- 1046+60 (MED.) SHT. 9
-L- 1051+45 (MED.) SHT. 9
-L- 1053+60 (MED.) SHT. 9
-L- 1058+20 (MED.) SHT. 9
-L- 1060+35 (MED.) SHT. 9
-L- 10+68+65 (MED.) SHT. 9
-L- 1073+65 (MED.) SHT. 10
-L- 1079+05 (MED.) SHT. 10
-L- 1080+65 (MED.) SHT. 10
-Y3RPB- 24+60 (RT.) SHT 9
-L- 1087+63 (MED.) SHT. 11
-L- 1091+50 (MED.) SHT. 11
-L- 1095+00 (MED.) SHT. 11
-LREV- 1097+00 (MED.) SHT. 12
-LREV- 1099+00 (MED.) SHT. 12
-LREV- 1101+50 (MED.) SHT. 12
-LREV- 1103+92 (MED.) SHT. 12
-LREV- 1114+00 (MED.) SHT. 13
-LREV- 1119+20 (MED.) SHT. 13
-LREV- 1123+11 (MED.) SHT. 14
-LREV- 1133+10 (MED.) SHT. 14
-LREV- 1135+10 (MED.) SHT. 15
-LREV- 1136+34 (MED.) SHT. 15
-LREV- 1137+60 (MED.) SHT. 15
-LREV- 1141+83 (MED.) SHT. 15
-LREV- 1146+00 (MED.) SHT. 15
-LREV- 1149+53 (RT.) SHT. 16
-LREV- 1150+90 (MED.) SHT. 16
-LREV- 1153+00 (MED.) SHT. 16
-LREV- 1157+03 (MED.) SHT. 16
-LREV- 1160+96 (MED.) SHT. 17
-LREV- 1165+00 (MED.) SHT. 17

DETAIL FS-III
FALSE SUMP
(Not to Scale)



-L- 992+35 (RT.) SHT. 5
-SRD1REV- 78+90 (RT.) (SHT. 6
-SRD1REV- 89+85 (LT.) SHT. 7
-SRD1REV- 92+35 (LT.) SHT. 7
-L- 1020+00 (LT.) SHT. 7
-L- 1022+50 (LT.) SHT. 7
-L- 1034+00 (LT.) SHT. 8
-SRD2- 16+60 (RT.) SHT. 9
-Y3RPC- 16+75 (RT.) SHT. 9
-L- 1081+50 (RT.) SHT. 10
-SRA- 30+75 (RT.) SHT. 10
-SRA- 34+20 (RT.) SHT. 10
-L- 1088+00 (RT.) SHT 11
-L- 1089+50 (RT.) SHT 11
-L- 1091+25 (RT.) SHT. 11
-L- 1093+37 (RT.) SHT 11
-L- 1094+50 (RT.) SHT. 11
-SRA- 42+72 (RT.) SHT. 11
-D2- 10+53 (RT.) SHT. 11
-D2- 11+57 (RT.) SHT. 11
-LREV- 1118+00 (RT.) SHT. 13
-LREV- 1119+06 (RT.) SHT. 13
-LREV-1122+52 (RT.) SHT. 14
-SR3REV-30+20 (RT.) SHT. 14
-LREV- 1141+76 (RT.) SHT. 15
-RP85CREV- 21+52 (RT.) SHT. 15
-LREV- 1160+68 (RT.) SHT. 17
-LREV- 1164+36 (RT.) SHT. 17
-RP85CREV- 10+50 (RT.) SHT. 15
-Y3- 8+90 (LT.) SHT. 19
-Y3- 40+55 (LT.) SHT. 21

8/8/2011
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Florence & Hutcheson, Inc.

8/17/99

Balfour Beatty Infrastructure Inc.
AND
Austin Bridge & Road
An Austin Industries Company
A JOINT VENTURE

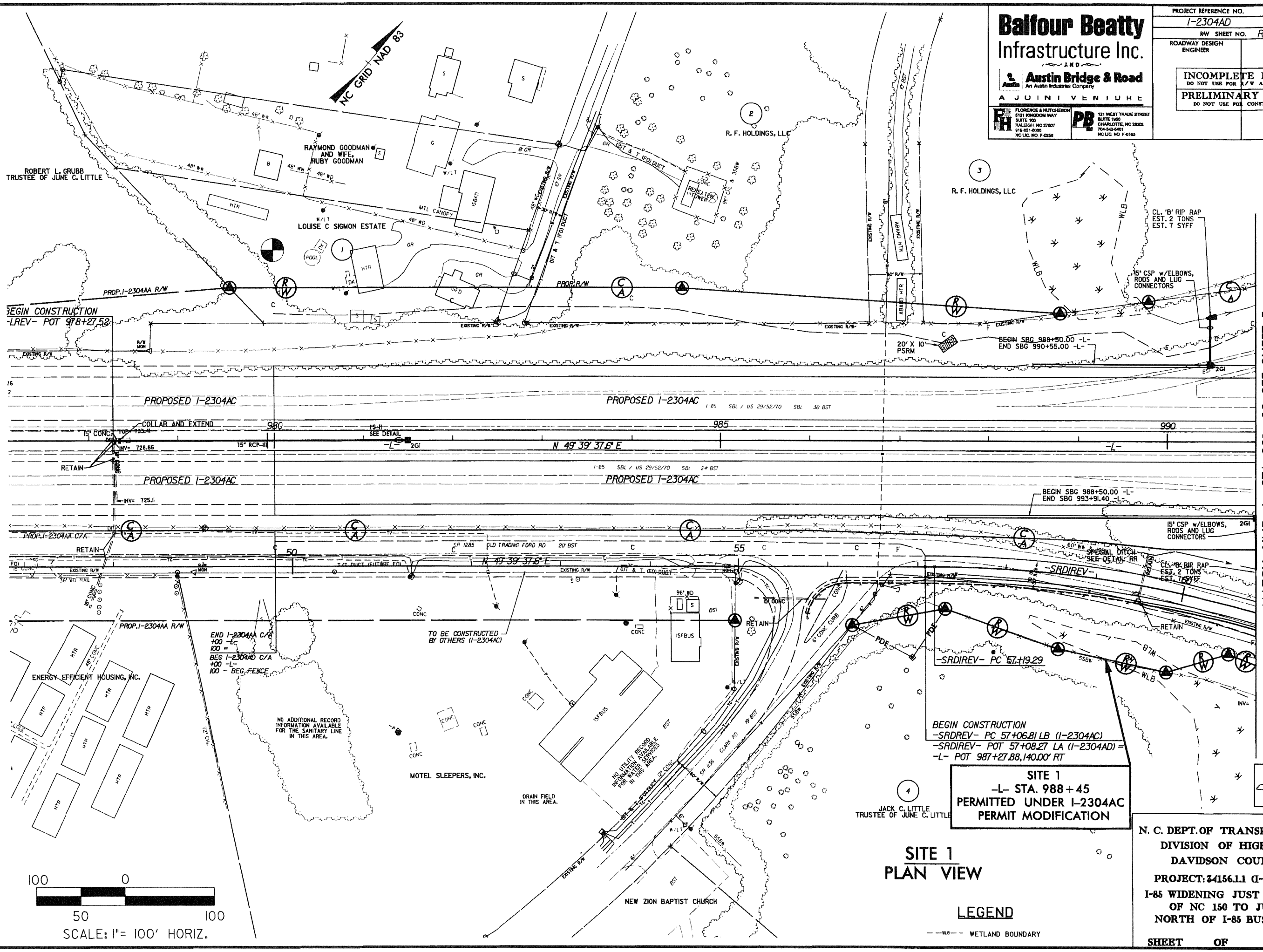
FLORENCE & HUTCHESON
6121 KINGDOM WAY
SUITE 100
RALEIGH, NC 27607
919-851-6095
NC LIC. NO F-0256

PB
121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202
704-342-5401
NC LIC. NO F-0165

PROJECT REFERENCE NO.	SHEET NO.
I-2304AD	4
R/W SHEET NO. RW-4	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



SITE 1
PLAN VIEW

LEGEND

— — WLB — — WETLAND BOUNDARY

ENGLISH

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
DAVIDSON COUNTY
PROJECT: 34156.1.1 (I-2304AD)
I-85 WIDENING JUST NORTH OF NC 150 TO JUST NORTH OF I-85 BUSINESS

SHEET OF

8/19/2011
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Florence & Hutcheson Inc.

8/17/99

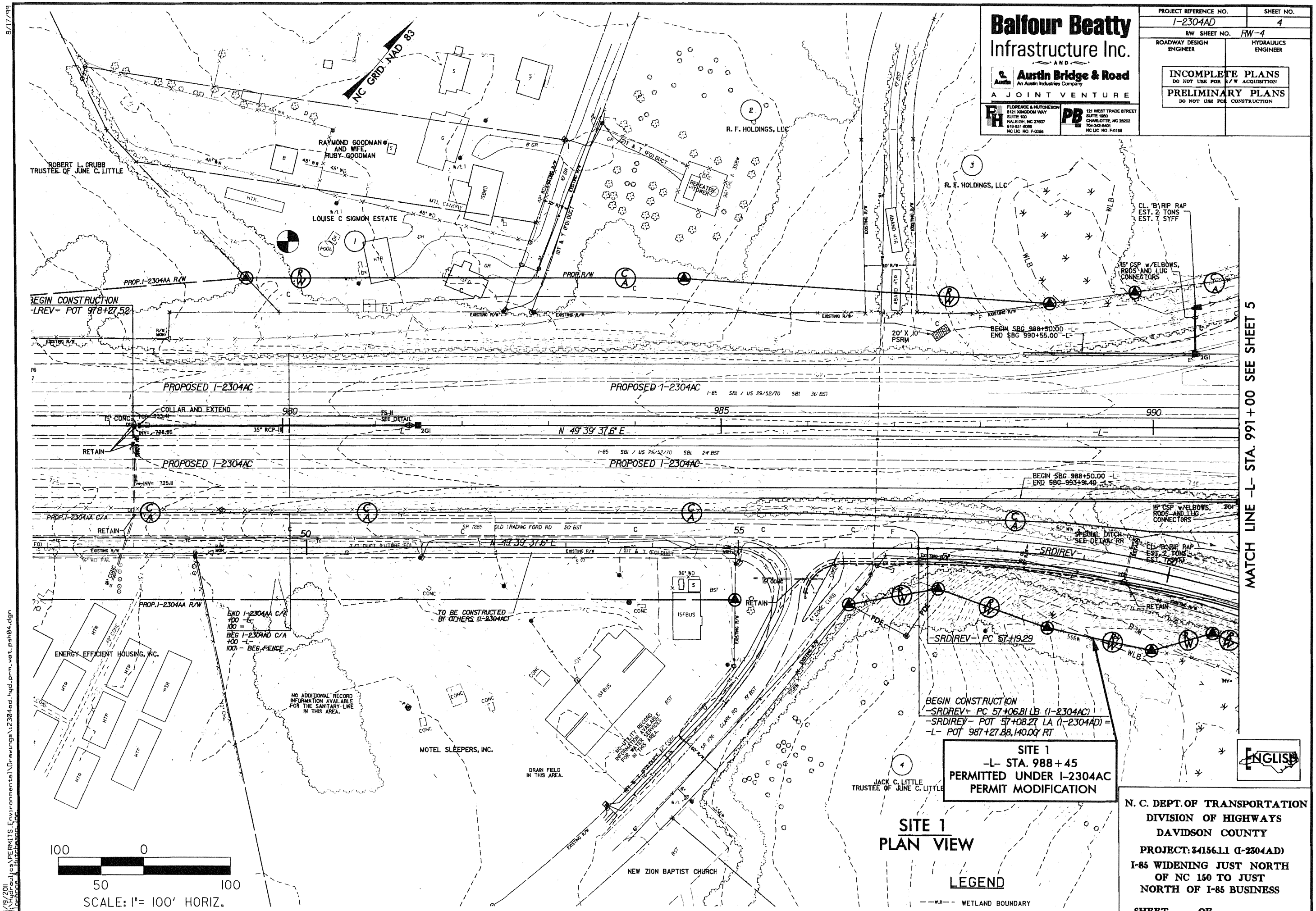
Balfour Beatty Infrastructure Inc.
AND
Austin Bridge & Road
An Austin Industries Company
A JOINT VENTURE

FLORENCE & HUTCHESON
8121 BONDOON WAY
SUITE 100
RALEIGH, NC 27607
919-851-8095
NC LIC NO. F-0256

121 WEST TRADE STREET
SUITE 1800
CHARLOTTE, NC 28202
704-342-8401
NC LIC NO. F-0168

PROJECT REFERENCE NO.	SHEET NO.
I-2304AD	4
R/W SHEET NO. RW-4	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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



ENGLISH

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
DAVIDSON COUNTY
PROJECT: 34156.1.1 (I-2304AD)
I-85 WIDENING JUST NORTH OF NC 150 TO JUST NORTH OF I-85 BUSINESS

SHEET OF

8/19/2011
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Florence & Hutcheson Inc.

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
I-2304AD	5
R/W SHEET NO. RW-5	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

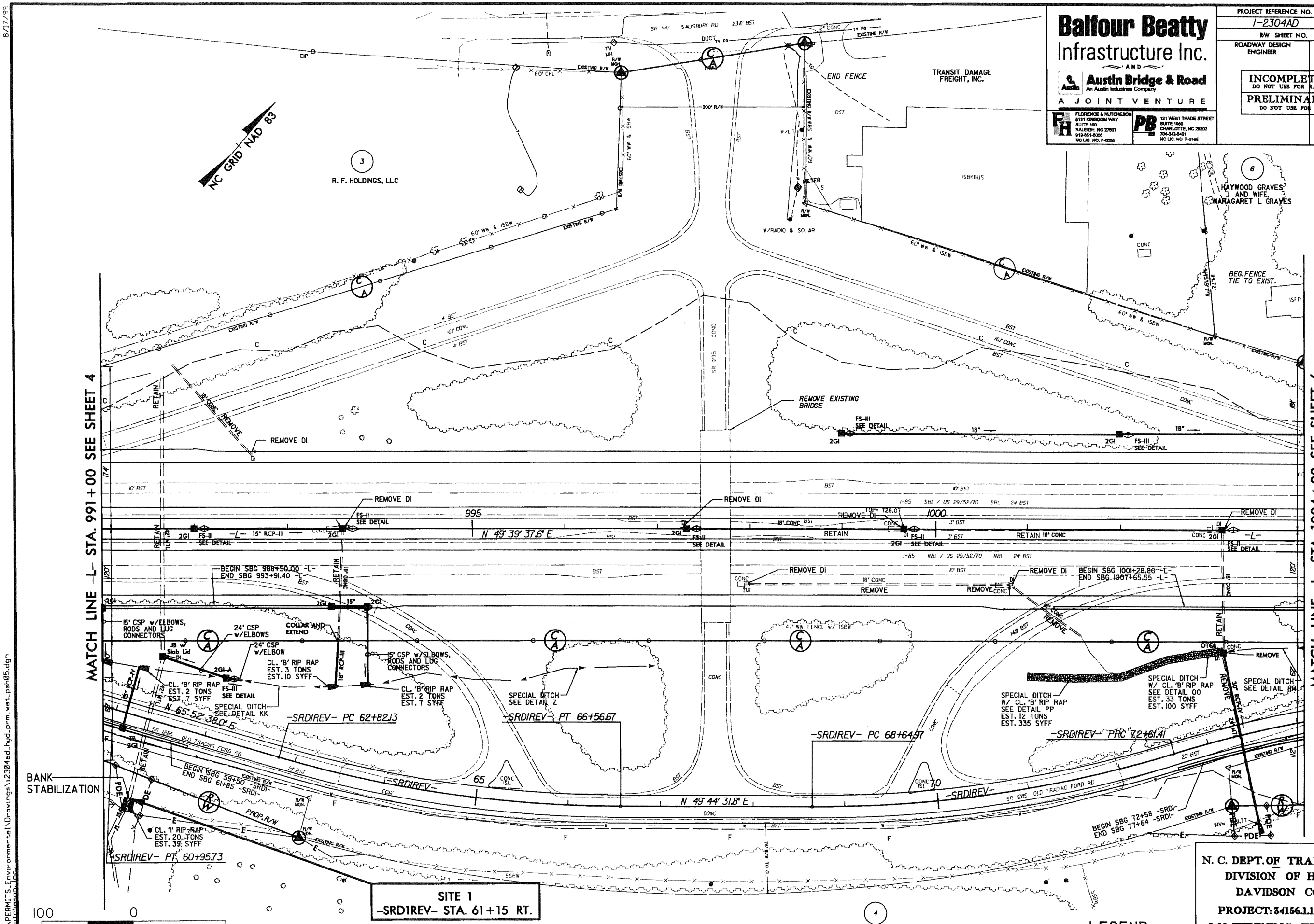
Balfour Beatty Infrastructure Inc.
AND
Austin Bridge & Road
An Austin Industries Company
A JOINT VENTURE

FLORENCE & HUTCHESON
5121 KINGSDOWN WAY
SUITE 100
RALEIGH, NC 27607
919-851-6205
NC LIC. NO. F-0258

PB
121 WEST TRADE STREET
SUITE 1960
CHARLOTTE, NC 28202
704-343-9401
NC LIC. NO F-0165

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



DO NOT PLACE RIP RAP IN BED OF JURISDICTIONAL STREAM

SITE 1
PLAN VIEW

LEGEND

- - - - WETLAND BOUNDARY

DENOTES IMPACTS IN SURFACE WATER

ENGLISH

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
DAVIDSON COUNTY

PROJECT: 34156.1.1 (I-2304AD)

I-85 WIDENING JUST NORTH OF NC 150 TO JUST NORTH OF I-85 BUSINESS

SHEET OF

8/19/2011
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Florence & Hutcheson, Inc.

8/17/99

Balfour Beatty Infrastructure Inc.
AND
Austin Bridge & Road
An Austin Industries Company
A JOINT VENTURE

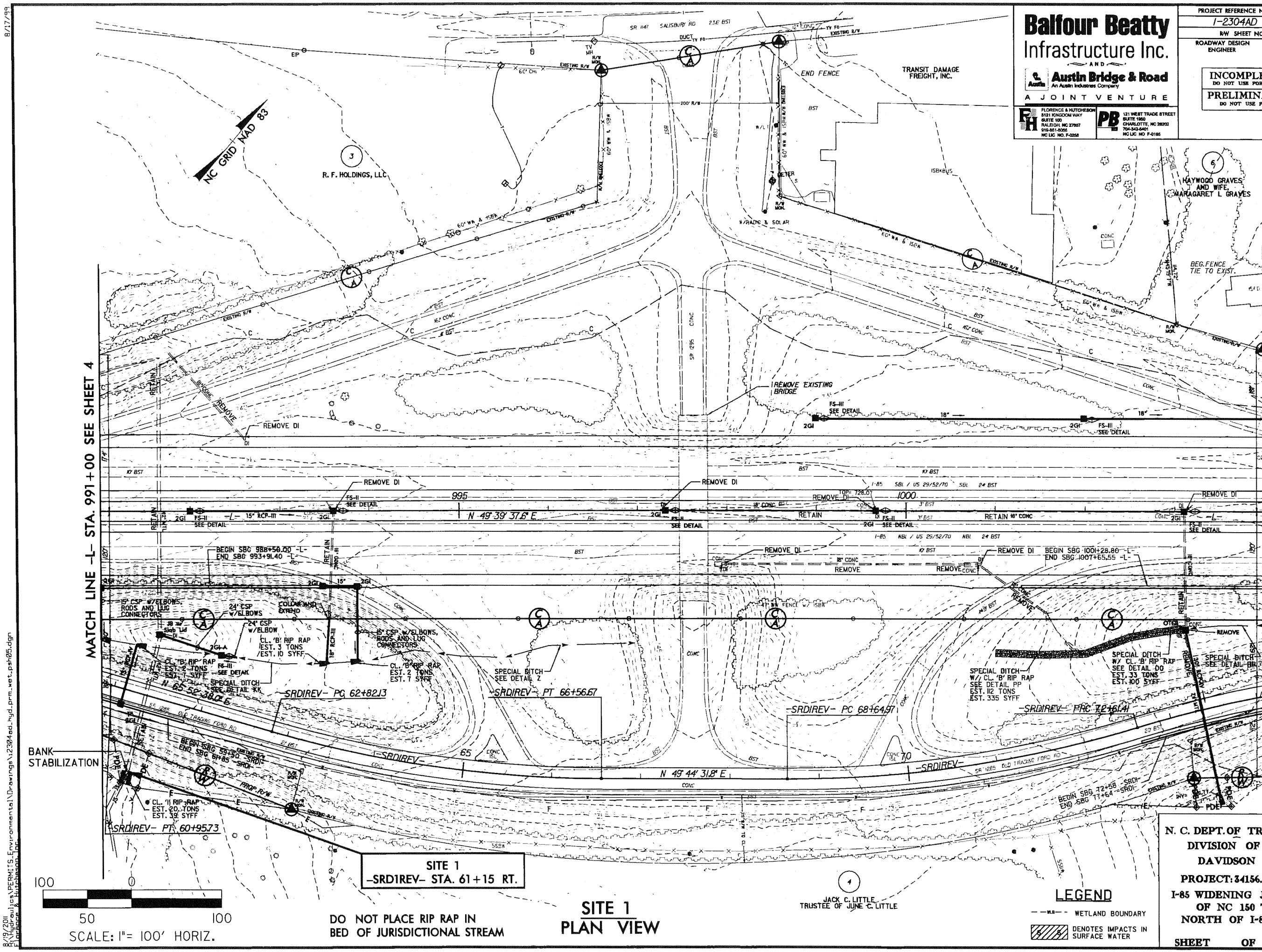
FLORENCE & HUTCHESON
8121 KINGDOM WAY
SUITE 100
RALEIGH, NC 27607
919-851-8066
NC LIC NO. F-0258

PB
121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202
704-343-5401
NC LIC NO F-0195

PROJECT REFERENCE NO.	SHEET NO.
I-2304AD	5
R/W SHEET NO. RW-5	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



100 0 50 100
SCALE: 1"= 100' HORIZ.

DO NOT PLACE RIP RAP IN BED OF JURISDICTIONAL STREAM

SITE 1
PLAN VIEW

LEGEND
WETLAND BOUNDARY
DENOTES IMPACTS IN SURFACE WATER

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
DAVIDSON COUNTY
PROJECT: 34156.1.1 (I-2304AD)
I-85 WIDENING JUST NORTH OF NC 150 TO JUST NORTH OF I-85 BUSINESS

SHEET OF

8/19/2011
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Florence & Hutcheson Inc.

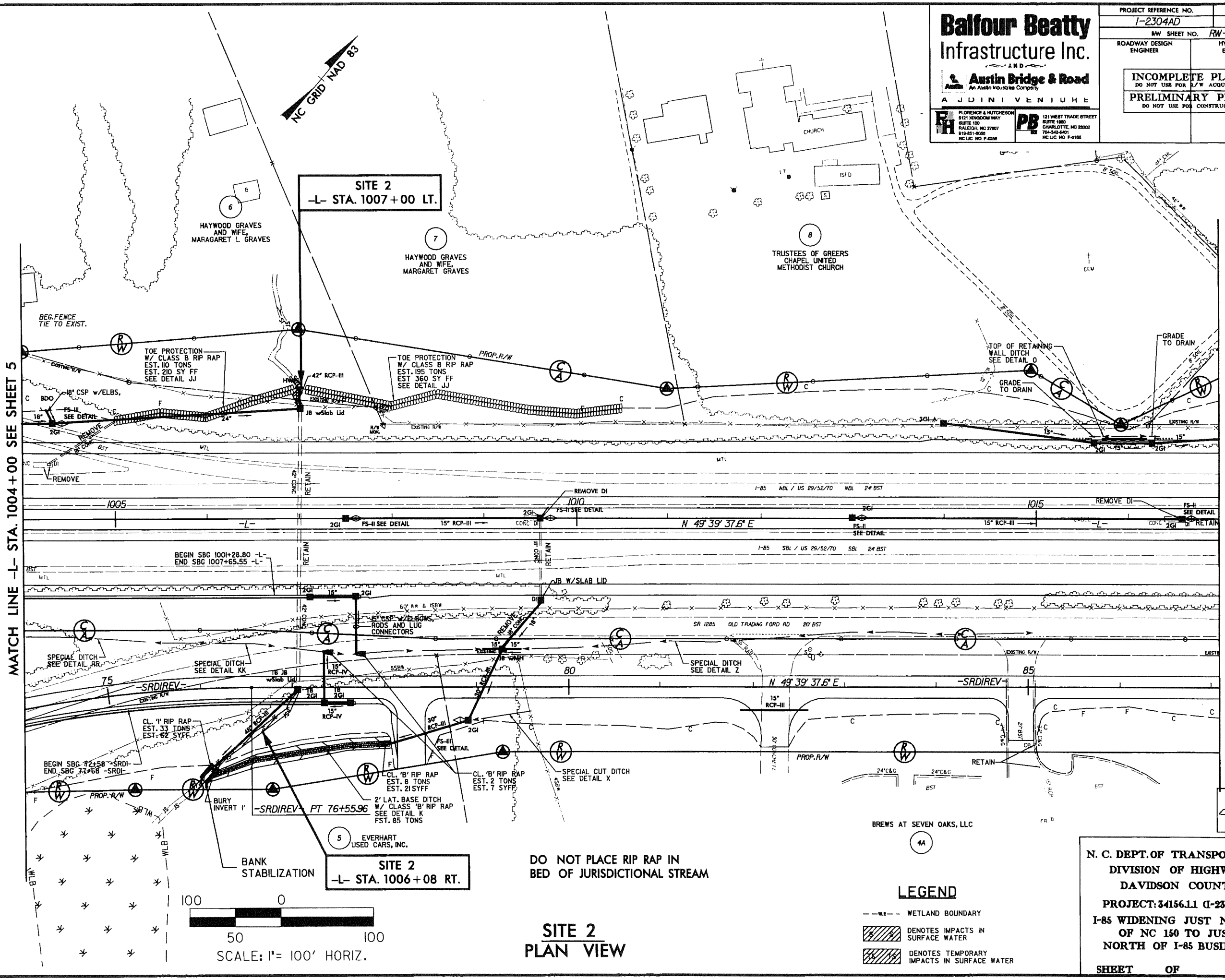
PROJECT REFERENCE NO.	SHEET NO.
I-2304AD	6
R/W SHEET NO. RW-6	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Balfour Beatty Infrastructure Inc.
AND
Austin Bridge & Road An Austin Industries Company
A JOINT VENTURE

FLORENCE & HUTCHESON, 8121 KINGDOM WAY, SUITE 100, RALEIGH, NC 27607, 919-851-0005, NC LIC NO F-0258
PB, 121 WEST TRADE STREET, SUITE 1950, CHARLOTTE, NC 28202, 704-342-8401, NC LIC NO F-0166

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



DO NOT PLACE RIP RAP IN BED OF JURISDICTIONAL STREAM

SITE 2
PLAN VIEW

LEGEND

- WETLAND BOUNDARY
- DENOTES IMPACTS IN SURFACE WATER
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
DAVIDSON COUNTY
PROJECT: 34156.1.1 (I-2304AD)
I-85 WIDENING JUST NORTH OF NC 150 TO JUST NORTH OF I-85 BUSINESS

SHEET OF

REVISIONS

8/17/99

8/19/2011
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Florence & Hutcheson, Inc.

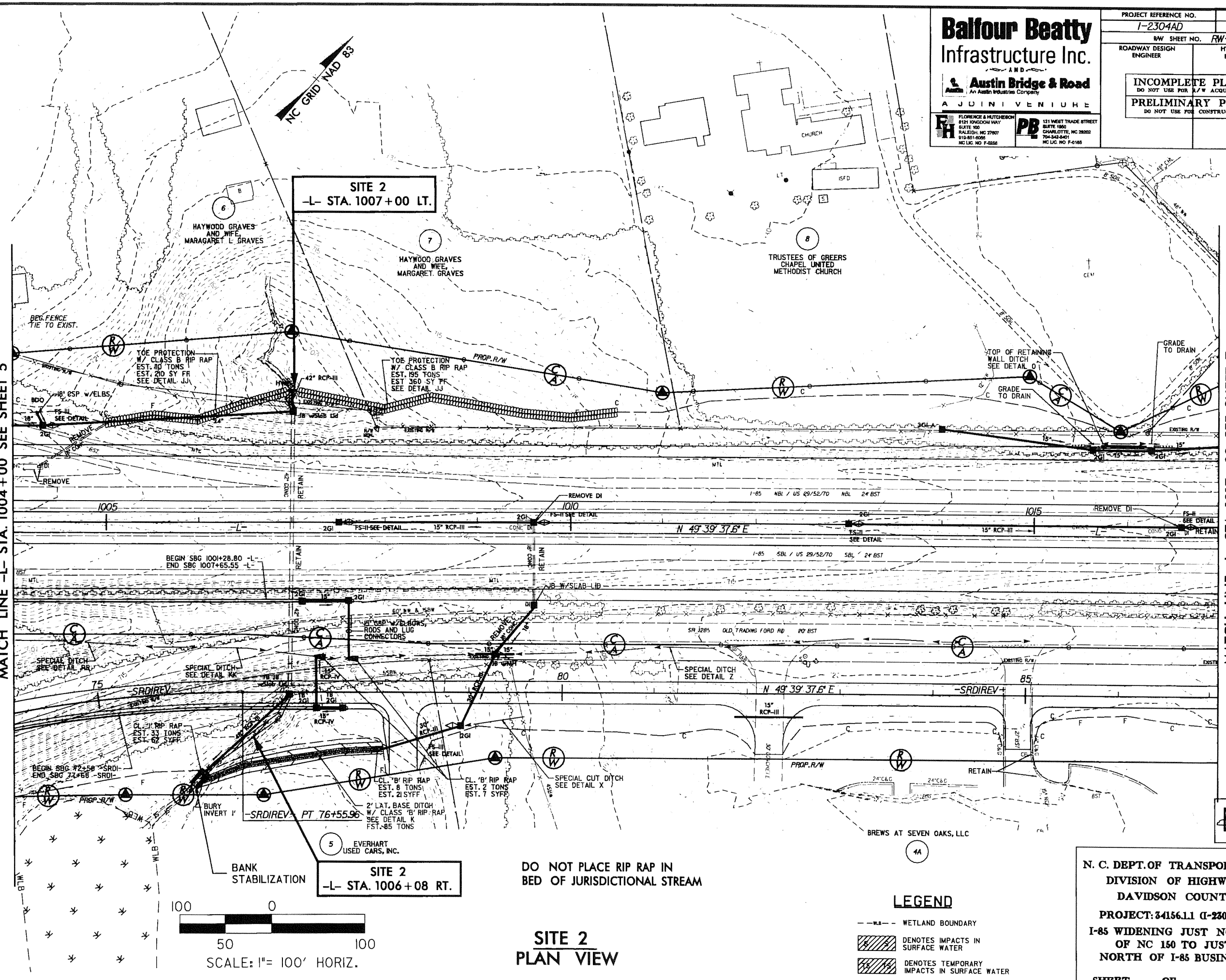
PROJECT REFERENCE NO.	SHEET NO.
I-2304AD	6
R/W SHEET NO. RW-6	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Balfour Beatty Infrastructure Inc.
AND
Austin Bridge & Road An Austin Industries Company
A JOINT VENTURE

FLORENCE & HUTCHESON, 8121 KINGDOM WAY, SUITE 100, RALEIGH, NC 27607, 919-851-6066, NC LIC. NO F-0356
PB 121 WEST TRADE STREET, SUITE 1950, CHARLOTTE, NC 28202, 704-342-5401, NC LIC. NO F-0165

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



SITE 2
PLAN VIEW

LEGEND

- WLB — WETLAND BOUNDARY
- DENOTES IMPACTS IN SURFACE WATER
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
DAVIDSON COUNTY
PROJECT: 34156.1.1 (I-2304AD)
I-85 WIDENING JUST NORTH OF NC 150 TO JUST NORTH OF I-85 BUSINESS

SHEET OF

REVISIONS

8/17/09

8/19/2011
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Florence & Hutcheson Inc.

8/17/99

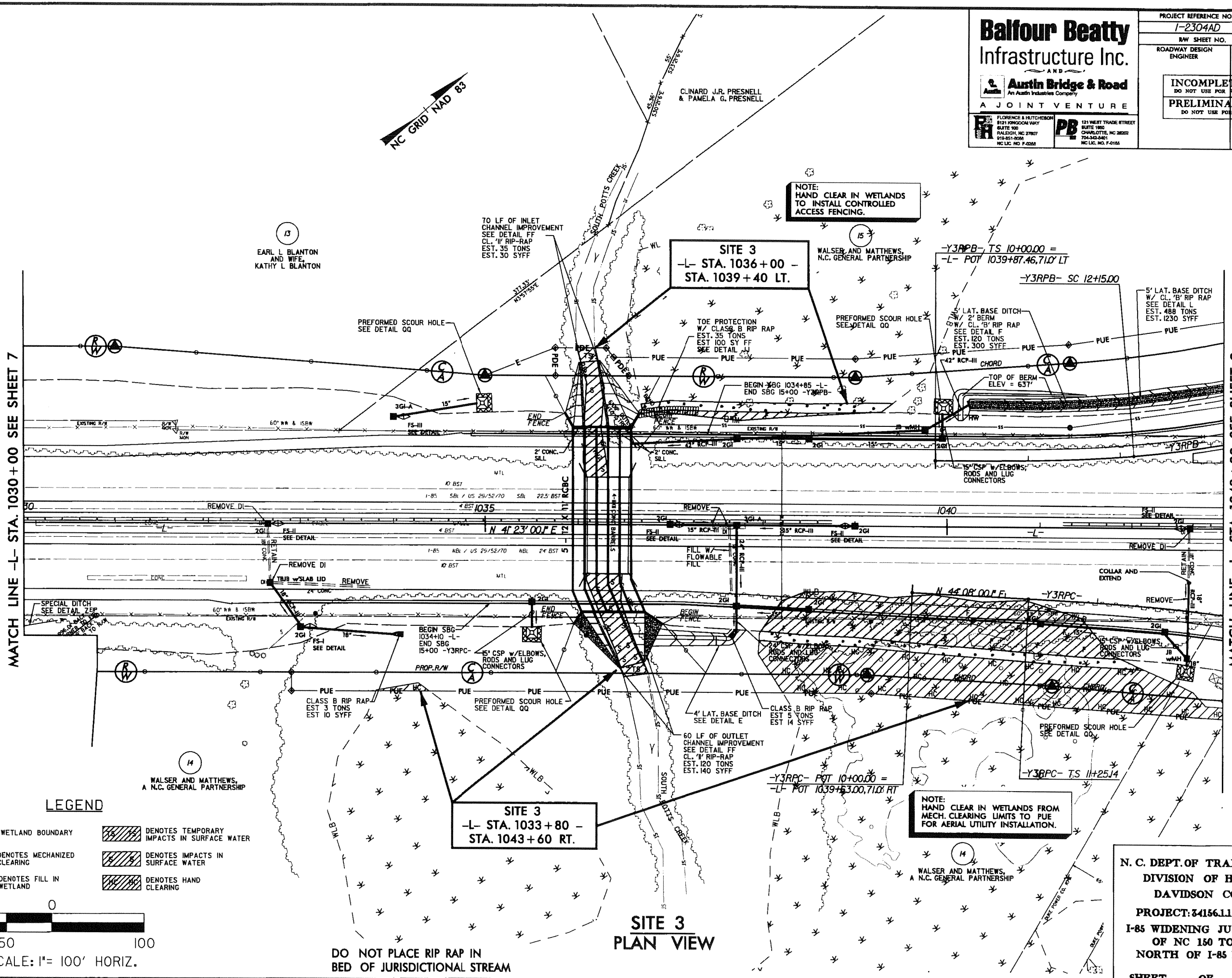
Balfour Beatty Infrastructure Inc.
AND
Austin Bridge & Road An Austin Industries Company
A JOINT VENTURE

FLORENCE & HUTCHESON, 8121 KINGDOM WAY, SUITE 100, RALEIGH, NC 27607, 919-851-8056, NC LIC. NO. F-0258
PB, 121 WEST TRADE STREET, SUITE 1950, CHARLOTTE, NC 28202, 704-343-0401, NC LIC. NO. F-0155

PROJECT REFERENCE NO.	SHEET NO.
I-2304AD	8
R/W SHEET NO. RW-8	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



LEGEND

- WETLAND BOUNDARY
- DENOTES MECHANIZED CLEARING
- DENOTES FILL IN WETLAND
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER
- DENOTES IMPACTS IN SURFACE WATER
- DENOTES HAND CLEARING

100 0 50 100
SCALE: 1" = 100' HORIZ.

DO NOT PLACE RIP RAP IN BED OF JURISDICTIONAL STREAM

SITE 3
PLAN VIEW

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
DAVIDSON COUNTY
PROJECT: 34156.1.1 (I-2304AD)
I-85 WIDENING JUST NORTH OF NC 150 TO JUST NORTH OF I-85 BUSINESS

SHEET OF

8/8/2011
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Florence & Hutcheson, Inc.

Balfour Beatty Infrastructure Inc.
AND
Austin Bridge & Road
An Austin Industries Company
A JOINT VENTURE

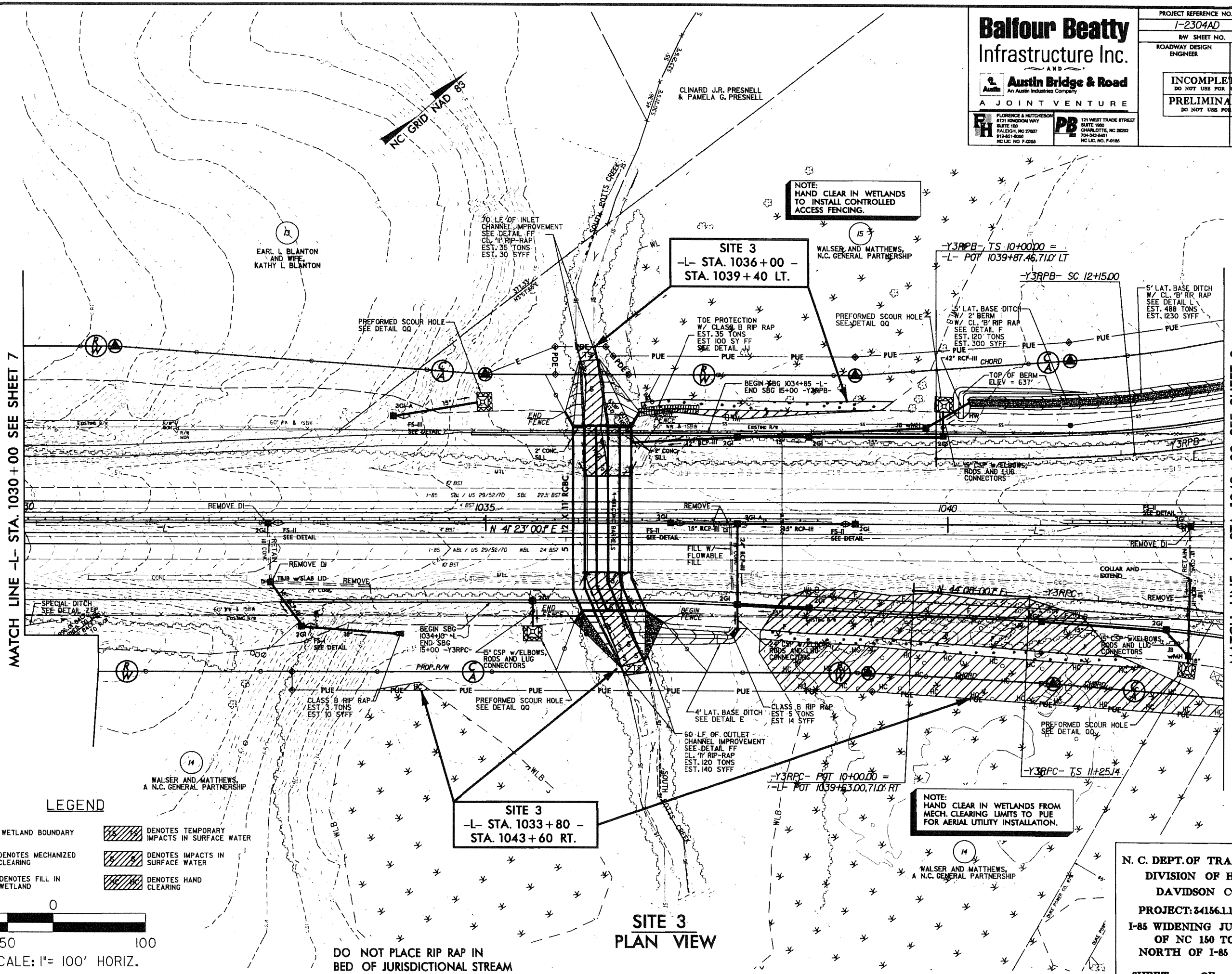
FLORENCE & HUTCHESON
8121 KINGDOM WAY
SUITE 100
RALEIGH, NC 27607
919-851-8055
NC LIC NO F-0258

PB
121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202
704-342-8481
NC LIC. NO. F-0185

PROJECT REFERENCE NO.	SHEET NO.
I-2304AD	8
R/W SHEET NO. RW-8	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



LEGEND

- WETLAND BOUNDARY
- DENOTES MECHANIZED CLEARING
- DENOTES FILL IN WETLAND
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER
- DENOTES IMPACTS IN SURFACE WATER
- DENOTES HAND CLEARING

100 0 50 100
SCALE: 1" = 100' HORIZ.

DO NOT PLACE RIP RAP IN BED OF JURISDICTIONAL STREAM

SITE 3
PLAN VIEW

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
DAVIDSON COUNTY
PROJECT: 34156.1.1 (I-2304AD)
I-85 WIDENING JUST NORTH OF NC 150 TO JUST NORTH OF I-85 BUSINESS

SHEET OF

8/17/99

8/8/2011
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Florence & Hutcheson Inc.

8/17/99

Balfour Beatty Infrastructure Inc.
AND
Austin Bridge & Road
An Austin Industries Company
A JOINT VENTURE

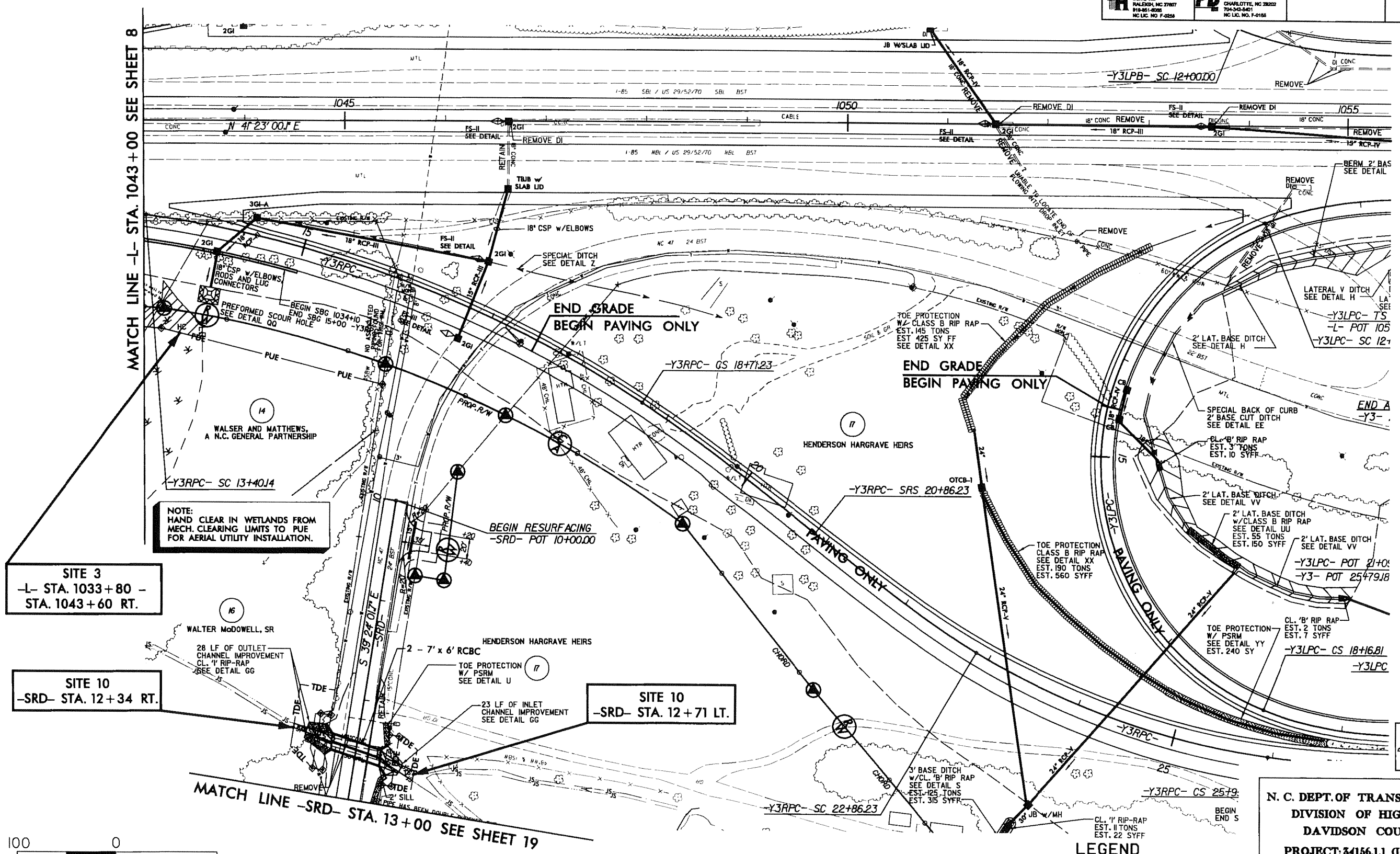
FLORENCE & HUTCHESON
5121 KINGDOM WAY
SUITE 100
RALEIGH, NC 27607
919-851-6095
NC LIC. NO. F-0256

121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202
704-343-5401
NC LIC. NO. F-0155

PROJECT REFERENCE NO.	SHEET NO.
I-2304AD	9a
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



100 0 50 100
SCALE: 1" = 100' HORIZ.

DO NOT PLACE RIP RAP IN BED OF JURISDICTIONAL STREAM

SITE 3 & 10
PLAN VIEW

LEGEND

- DENOTES TEMPORARY IMPACTS IN SURFACE WATER
- DENOTES HAND CLEARING
- DENOTES IMPACTS IN SURFACE WATER

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
DAVIDSON COUNTY
PROJECT: 34156.1.1 (I-2304AD)
I-85 WIDENING JUST NORTH OF NC 150 TO JUST NORTH OF I-85 BUSINESS

SHEET OF

8/8/2011
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Florence & Hutcheson, Inc.

8/17/99

Balfour Beatty Infrastructure Inc.
AND
Austin Bridge & Road
An Austin Industries Company
A JOINT VENTURE

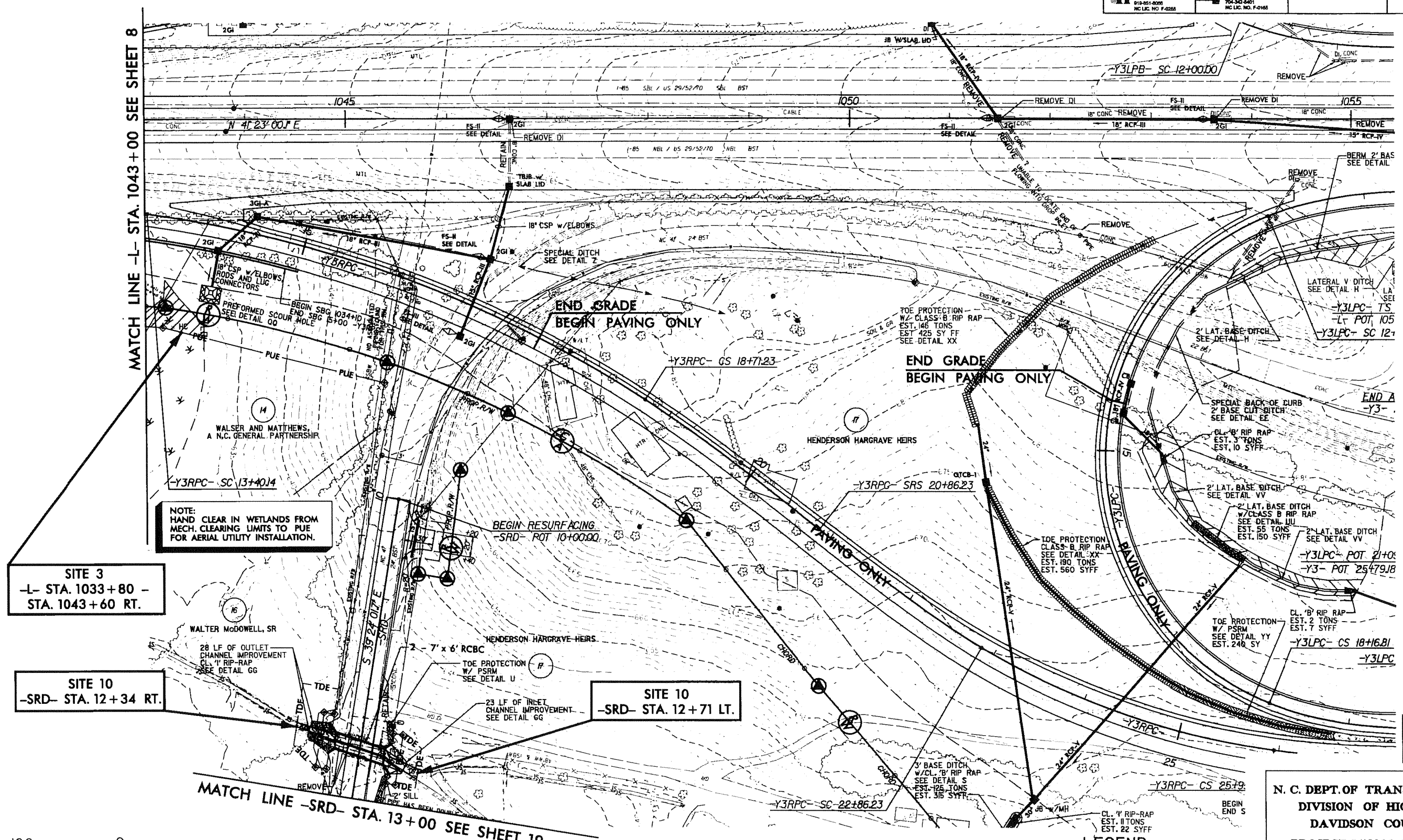
FLORENCE & HUTCHESON
8121 KINGDOM WAY
SUITE 100
RALEIGH, NC 27607
919-851-6055
NC LIC. NO. F-0258

PB
121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202
704-342-6401
NC LIC. NO. F-0165

PROJECT REFERENCE NO.	SHEET NO.
I-2304AD	9a
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



100 0 50 100
SCALE: 1"= 100' HORIZ.

DO NOT PLACE RIP RAP IN BED OF JURISDICTIONAL STREAM

SITE 3 & 10
PLAN VIEW

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
DAVIDSON COUNTY
PROJECT: 34156.1.1 (I-2304AD)
I-85 WIDENING JUST NORTH OF NC 150 TO JUST NORTH OF I-85 BUSINESS

SHEET OF

8/8/2011
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Florence & Hutcheson Inc.

8/17/99

Balfour Beatty Infrastructure Inc.
AND
Austin Bridge & Road
An Austin Industries Company
A JOINT VENTURE

FLORENCE & HUTCHESON
5121 KINGDOM WAY
SUITE 100
RALEIGH, NC 27607
919-851-9055
NC LIC. NO. F-0258

PB
121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202
704-342-5401
NC LIC. NO. F-0165

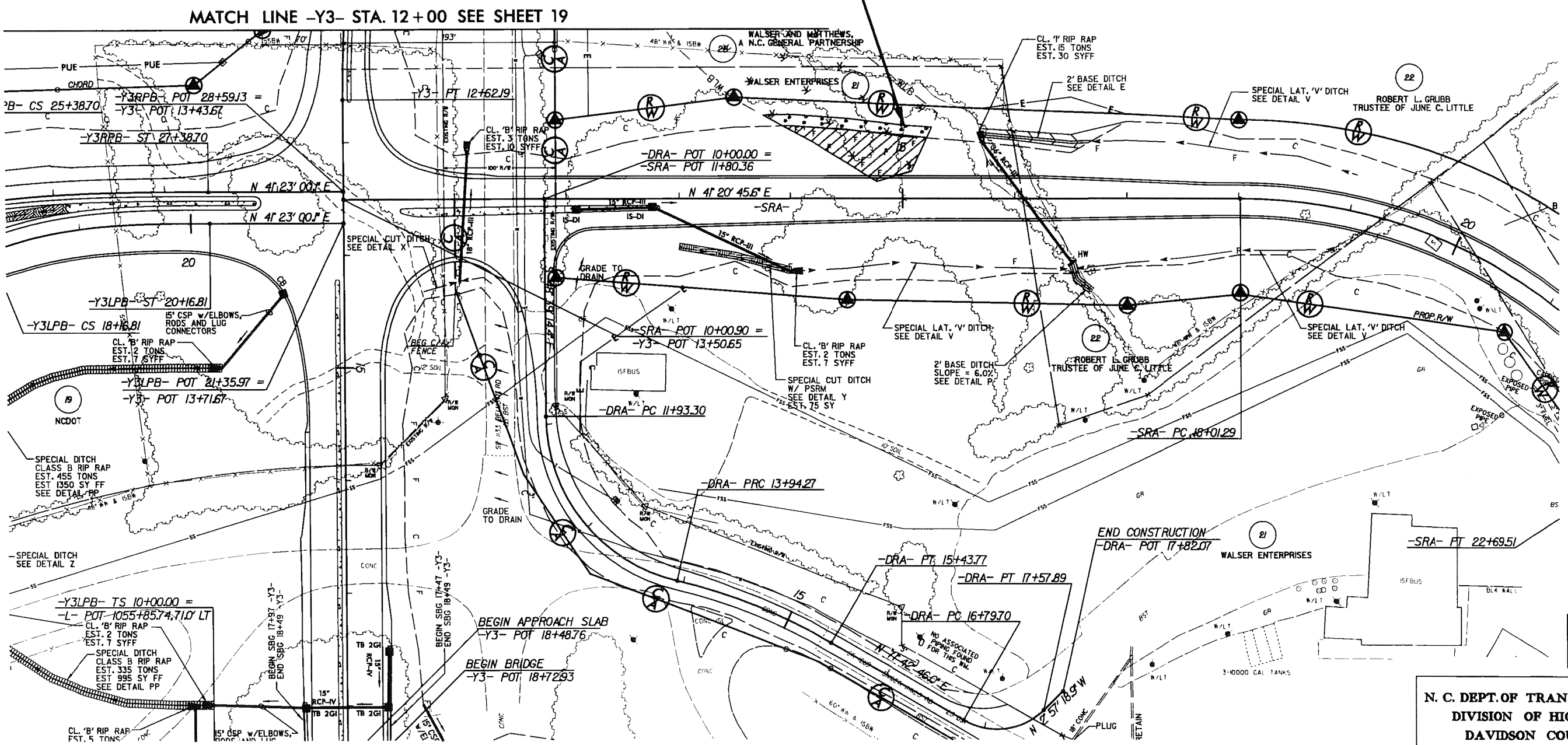
PROJECT REFERENCE NO.	SHEET NO.
I-2304AD	9b
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NC GRID NAD 83

SITE 4
-SRA- STA. 13+70 -
STA. 15+30 LT.



100 0 50 100
SCALE: 1"= 100' HORIZ.

SITE 4
PLAN VIEW

LEGEND

- WETLAND BOUNDARY
- DENOTES FILL IN WETLAND
- DENOTES MECHANIZED CLEARING

ENGLISH

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
DAVIDSON COUNTY
PROJECT: 34156.1.1 (I-2304AD)
I-85 WIDENING JUST NORTH OF NC 150 TO JUST NORTH OF I-85 BUSINESS

SHEET OF

8/8/2011
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Florence & Hutcheson Inc.

8/17/99

Balfour Beatty Infrastructure Inc.
AND
Austin Bridge & Road
An Austin Industries Company
A JOINT VENTURE

FLORENCE & HUTCHESON
5121 KINGDOM WAY
SUITE 100
RALEIGH, NC 27607
919-851-6095
NC LIC NO F-0258

PB
121 WEST TRADE STREET
SUITE 1800
CHARLOTTE, NC 28202
704-342-5401
NC LIC. NO. F-0156

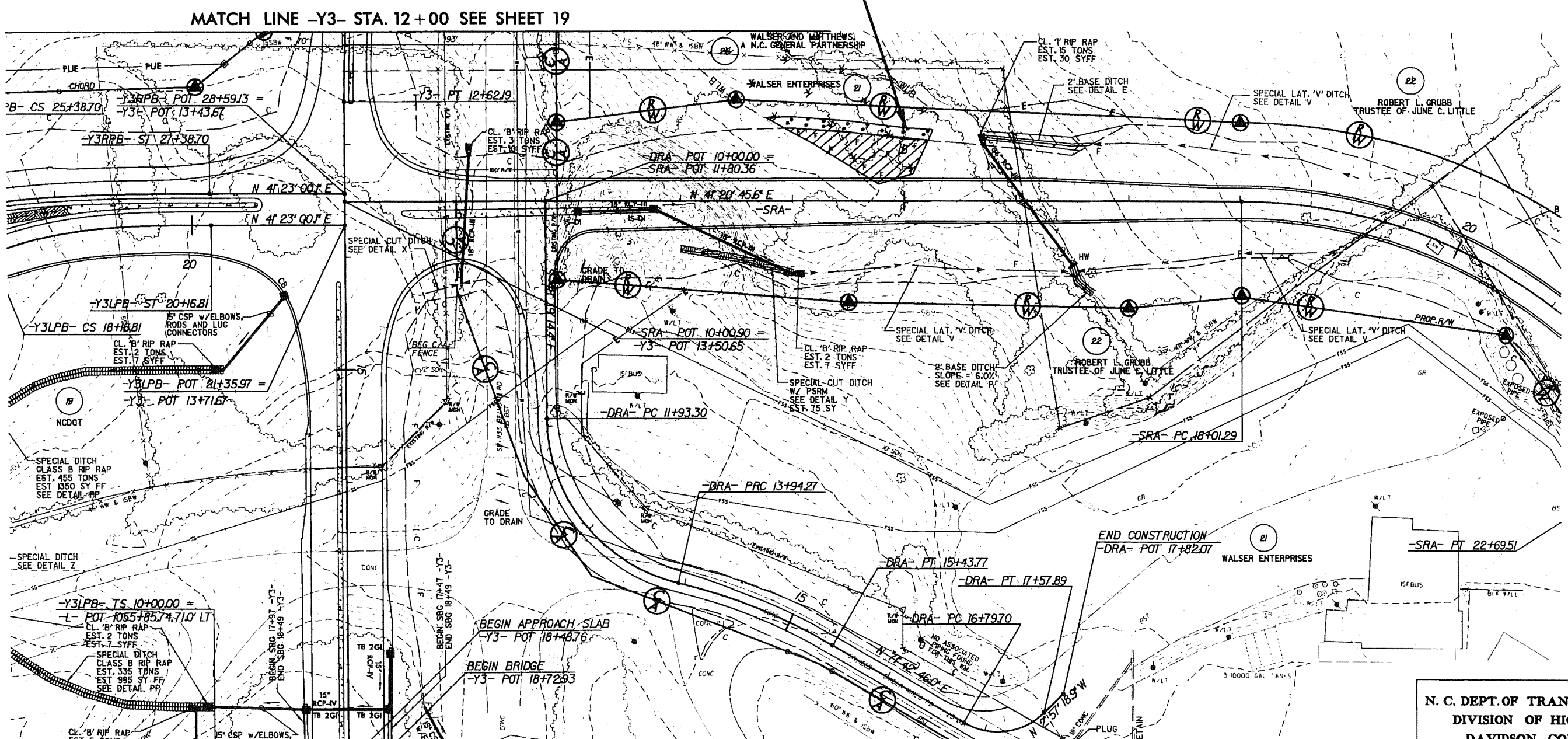
PROJECT REFERENCE NO.	SHEET NO.
I-2304AD	9b
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NC GRID NAD 83

SITE 4
-SRA- STA. 13+70 -
STA. 15+30 LT.



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SCALE: 1"= 100' HORIZ.

SITE 4
PLAN VIEW

LEGEND

- WETLAND BOUNDARY
- DENOTES FILL IN WETLAND
- DENOTES MECHANIZED CLEARING

ENGLISH

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
DAVIDSON COUNTY

PROJECT: 34156.1.1 (I-2304AD)

I-85 WIDENING JUST NORTH OF NC 150 TO JUST NORTH OF I-85 BUSINESS

SHEET OF

8/8/2011
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Florence & Hutcheson Inc.

8/17/99

Balfour Beatty Infrastructure Inc.
AND
Austin Bridge & Road
An Austin Industries Company
A JOINT VENTURE

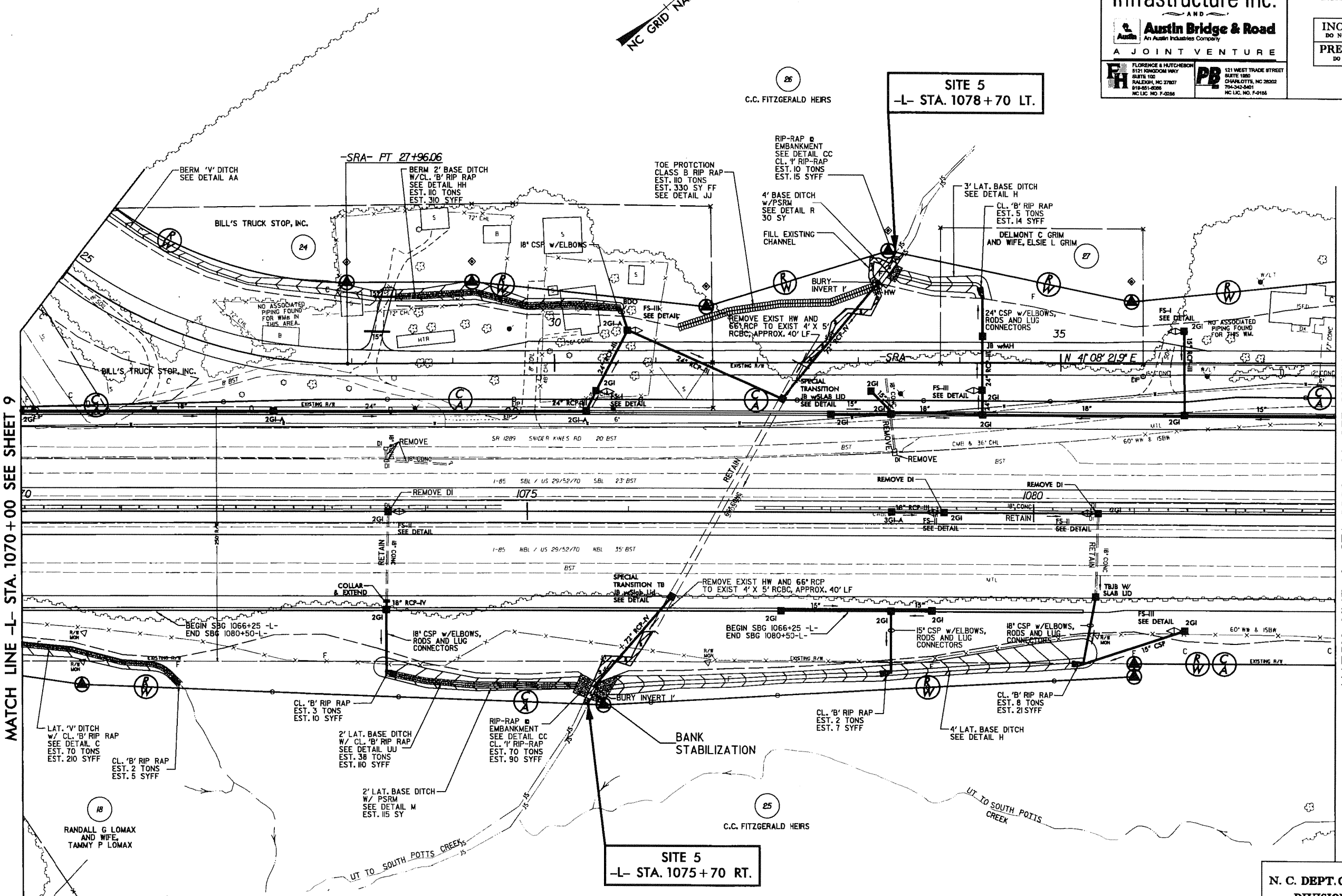
FLORENCE & HUTCHESON
5121 KINGDOM WAY
SUITE 100
RALEIGH, NC 27607
919-851-6266
NC LIC NO F-0266

PB
121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202
704-342-3401
NC LIC. NO. F-0166

PROJECT REFERENCE NO.	SHEET NO.
I-2304AD	10
R/W SHEET NO.	RW-10
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



DO NOT PLACE RIP RAP IN BED OF JURISDICTIONAL STREAM

SITE 5
PLAN VIEW

LEGEND

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

ENGLISH

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
DAVIDSON COUNTY
PROJECT: 34156.1.1 (I-2304AD)
I-85 WIDENING JUST NORTH OF NC 150 TO JUST NORTH OF I-85 BUSINESS

SHEET OF

8/11/20
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Florence & Hutcheson Inc.

8/17/99

Balfour Beatty Infrastructure Inc.
AND
Austin Bridge & Road
An Austin Industries Company
A JOINT VENTURE

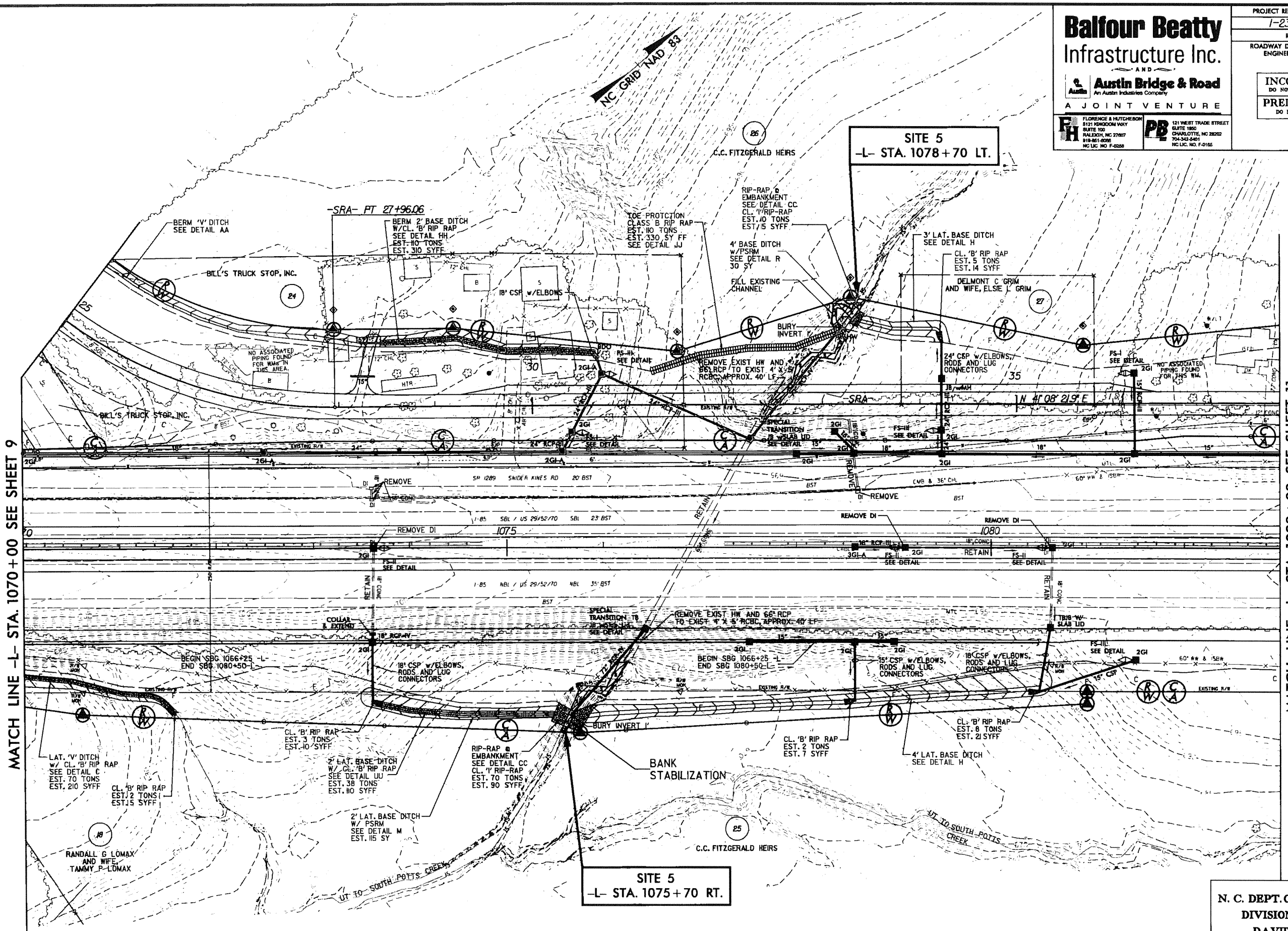
FLORENCE & HUTCHESON
5121 KINGDOM WAY
SUITE 100
RALEIGH, NC 27607
919-861-8095
NC LIC. NO F-0258

121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202
704-343-5401
NC LIC. NO. F-0165

PROJECT REFERENCE NO.	SHEET NO.
I-2304AD	10
R/W SHEET NO.	RW-10
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



100 0 50 100
SCALE: 1"= 100' HORIZ.

DO NOT PLACE RIP RAP IN BED OF JURISDICTIONAL STREAM

SITE 5
PLAN VIEW

LEGEND

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

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
DAVIDSON COUNTY
PROJECT: 34156.1.1 (I-2304AD)
I-85 WIDENING JUST NORTH OF NC 150 TO JUST NORTH OF I-85 BUSINESS

SHEET OF

8/11/2011
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Florence & Hutcheson Inc.

8/17/99

NOTE:
HAND CLEAR IN WETLANDS FROM MECH. CLEARING LIMITS TO PUE FOR AERIAL UTILITY INSTALLATION.

Balfour Beatty Infrastructure Inc.
AND
Austin Bridge & Road
An Austin Industries Company
A JOINT VENTURE

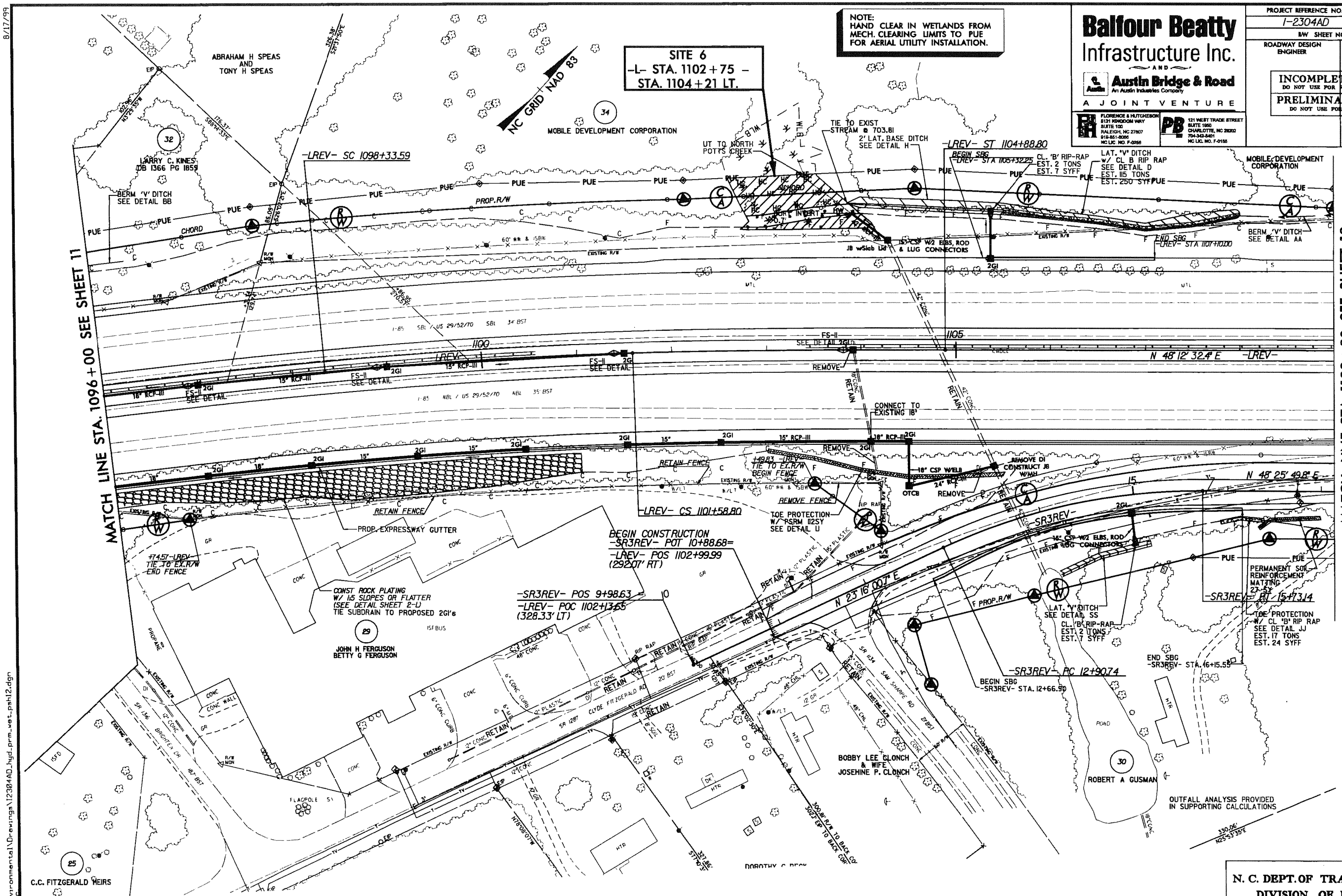
FLORENCE & HUTCHESON
5121 KINGDOM WAY
SUITE 100
RALEIGH, NC 27607
919-851-8055
NC LIC. NO. F-0356

PB
121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202
704-343-5401
NC LIC. NO. F-0155

PROJECT REFERENCE NO.	SHEET NO.
I-2304AD	12
R/W SHEET NO.	RW-12
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



100 0 50 100
SCALE: 1"= 100' HORIZ.

SITE 6
PLAN VIEW

LEGEND

- WETLAND BOUNDARY
- DENOTES FILL IN WETLAND
- DENOTES MECHANIZED CLEARING
- DENOTES HAND CLEARING

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
DAVIDSON COUNTY

PROJECT: 34156.1.1 (I-2304AD)

I-85 WIDENING JUST NORTH OF NC 150 TO JUST NORTH OF I-85 BUSINESS

SHEET OF

8/8/2001
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Florence & Hutcheson Inc.

8/17/99

NOTE:
HAND CLEAR IN WETLANDS FROM MECH. CLEARING LIMITS TO PUE FOR AERIAL UTILITY INSTALLATION.

Balfour Beatty Infrastructure Inc.
AND
Austin Bridge & Road
An Austin Industries Company
A JOINT VENTURE

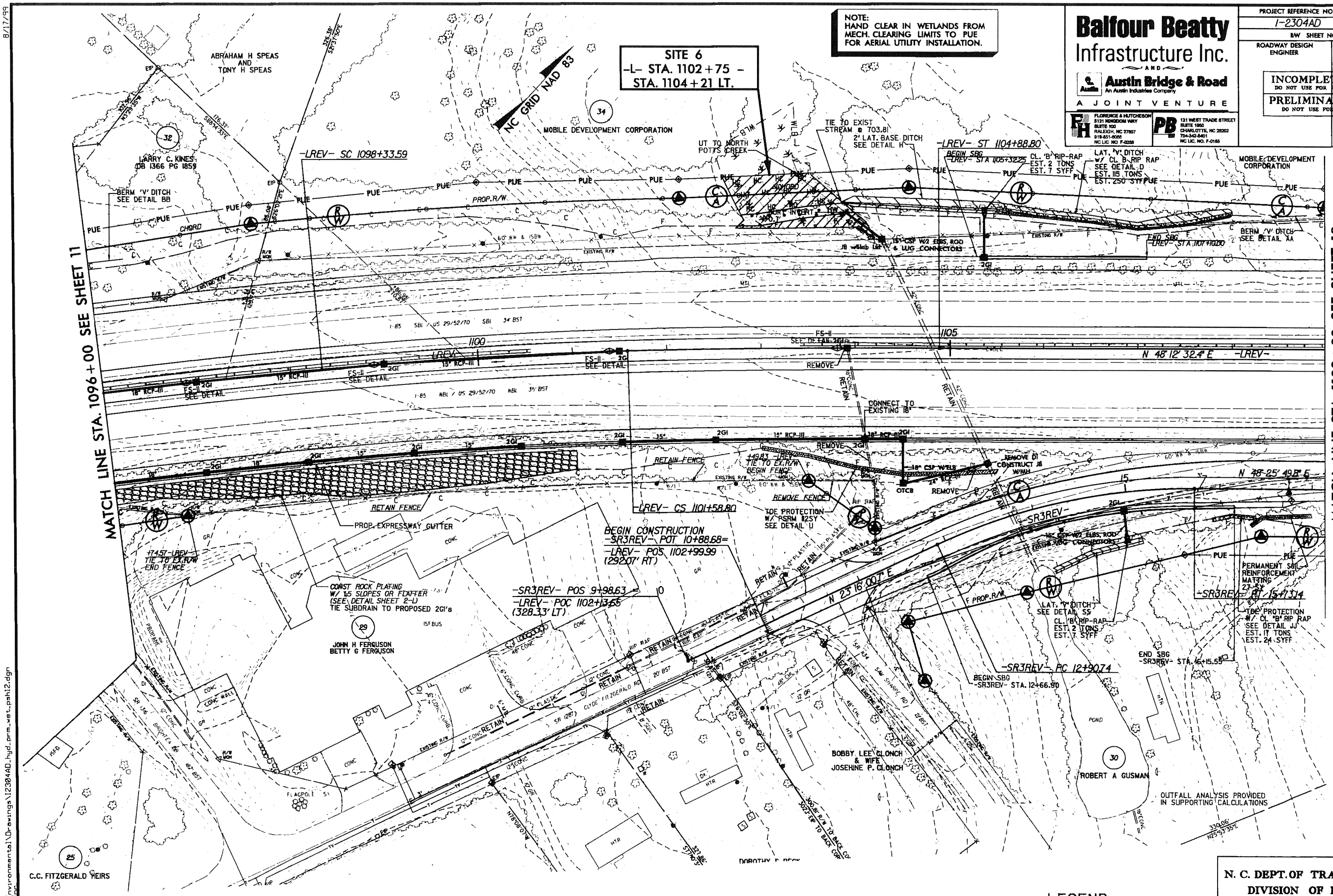
FLORENCE & HUTCHESON
5121 KINGDOM WAY
SUITE 100
RALEIGH, NC 27607
919-851-9066
NC LIC. NO. F-0258

PB
131 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202
704-342-8401
NC LIC. NO. F-0165

PROJECT REFERENCE NO.	SHEET NO.
I-2304AD	12
R/W SHEET NO.	RW-12
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



100 0 50 100
SCALE: 1"= 100' HORIZ.

SITE 6
PLAN VIEW

LEGEND

- WETLAND BOUNDARY
- DENOTES FILL IN WETLAND
- DENOTES MECHANIZED CLEARING
- DENOTES HAND CLEARING

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
DAVIDSON COUNTY

PROJECT: 34156.1.1 (I-2304AD)
I-85 WIDENING JUST NORTH OF NC 150 TO JUST NORTH OF I-85 BUSINESS

SHEET OF

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8/8/2011
Florence & Hutcheson, Inc.

8/17/99

Balfour Beatty Infrastructure Inc.
AND
Austin Bridge & Road
An Austin Industries Company
A JOINT VENTURE

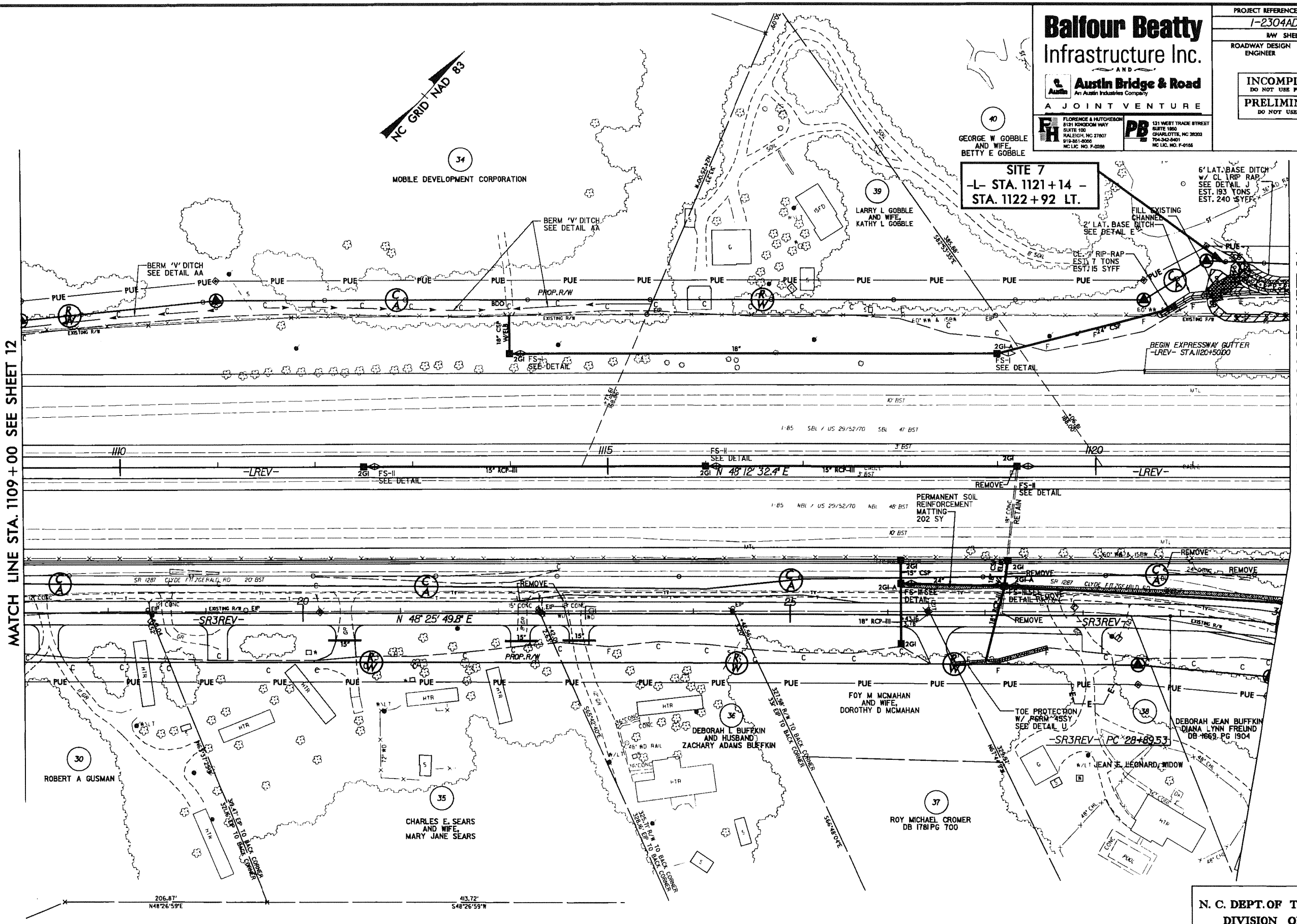
FLORENCE & HUTCHESON
8121 KINGDOM WAY
SUITE 100
RALEIGH, NC 27607
919-851-8066
NC LIC NO. F-0258

PB
121 WEST TRADE STREET
SUITE 1850
CHARLOTTE, NC 28202
704-342-8401
NC LIC. NO. F-0166

PROJECT REFERENCE NO.	SHEET NO.
I-2304AD	13
R/W SHEET NO.	RW-13
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



SITE 7
PLAN VIEW

LEGEND

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

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
DAVIDSON COUNTY
PROJECT: 34156.1.1 (I-2304AD)
I-85 WIDENING JUST NORTH OF NC 150 TO JUST NORTH OF I-85 BUSINESS

SHEET OF

8/8/2011
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Florence & Hutcheson, Inc.

8/17/99

Balfour Beatty Infrastructure Inc.
AND
Austin Bridge & Road
An Austin Industries Company
A JOINT VENTURE

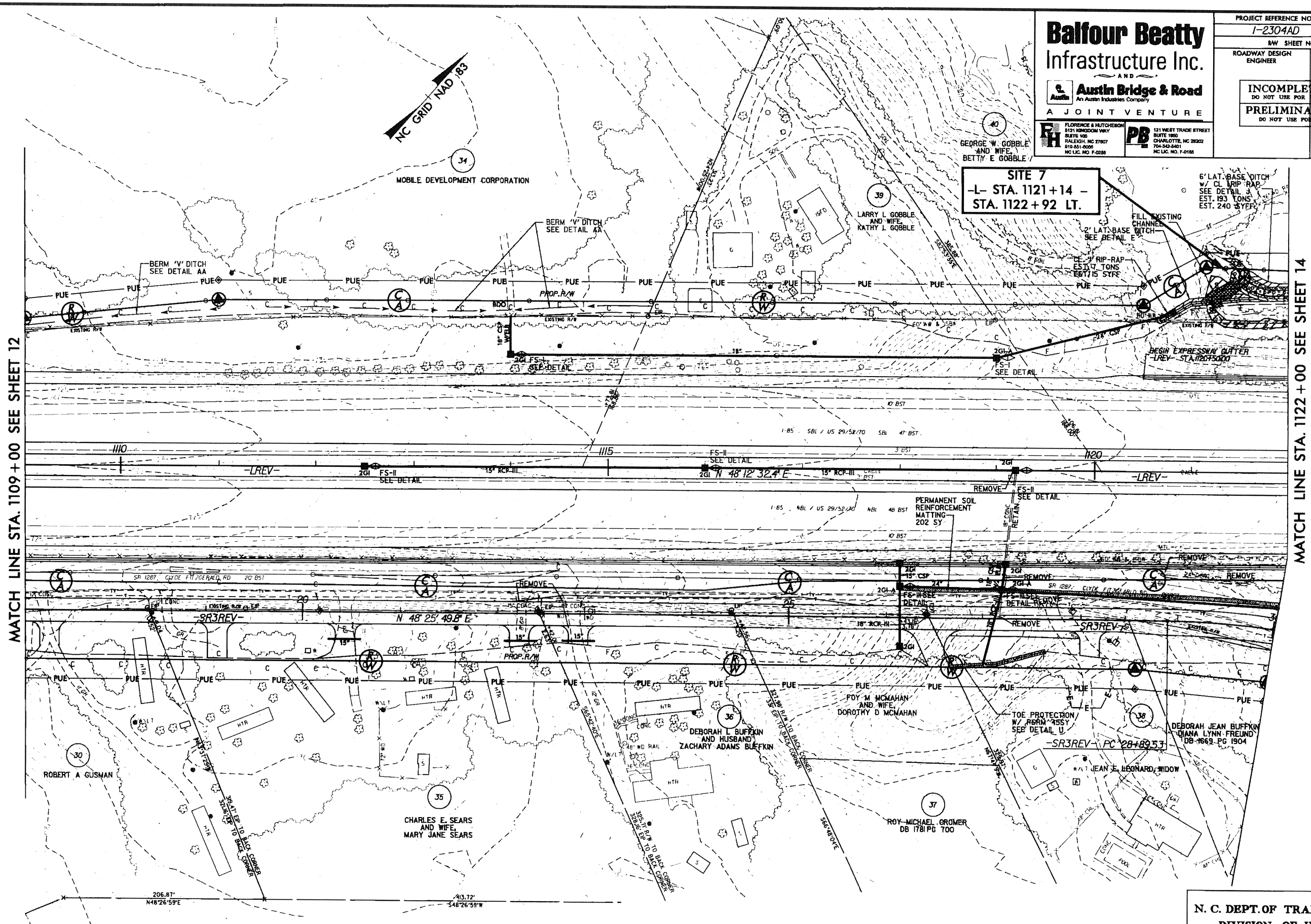
FLORENCE & HUTCHESON
5121 KINGDOM WAY
SUITE 100
RALEIGH, NC 27607
919-851-6006
NC LIC. NO. F-0288

PB
121 WEST TRADE STREET
SUITE 1950
CHARLOTTE, NC 28202
704-342-5401
NC LIC. NO. F-0155

PROJECT REFERENCE NO.	SHEET NO.
I-2304AD	13
R/W SHEET NO.	RW-13
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



SITE 7
PLAN VIEW

LEGEND

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

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
DAVIDSON COUNTY
PROJECT: 34156.1.1 (I-2304AD)
I-85 WIDENING JUST NORTH OF NC 150 TO JUST NORTH OF I-85 BUSINESS

SHEET OF

8/8/20
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Florence & Hutcheson Inc.

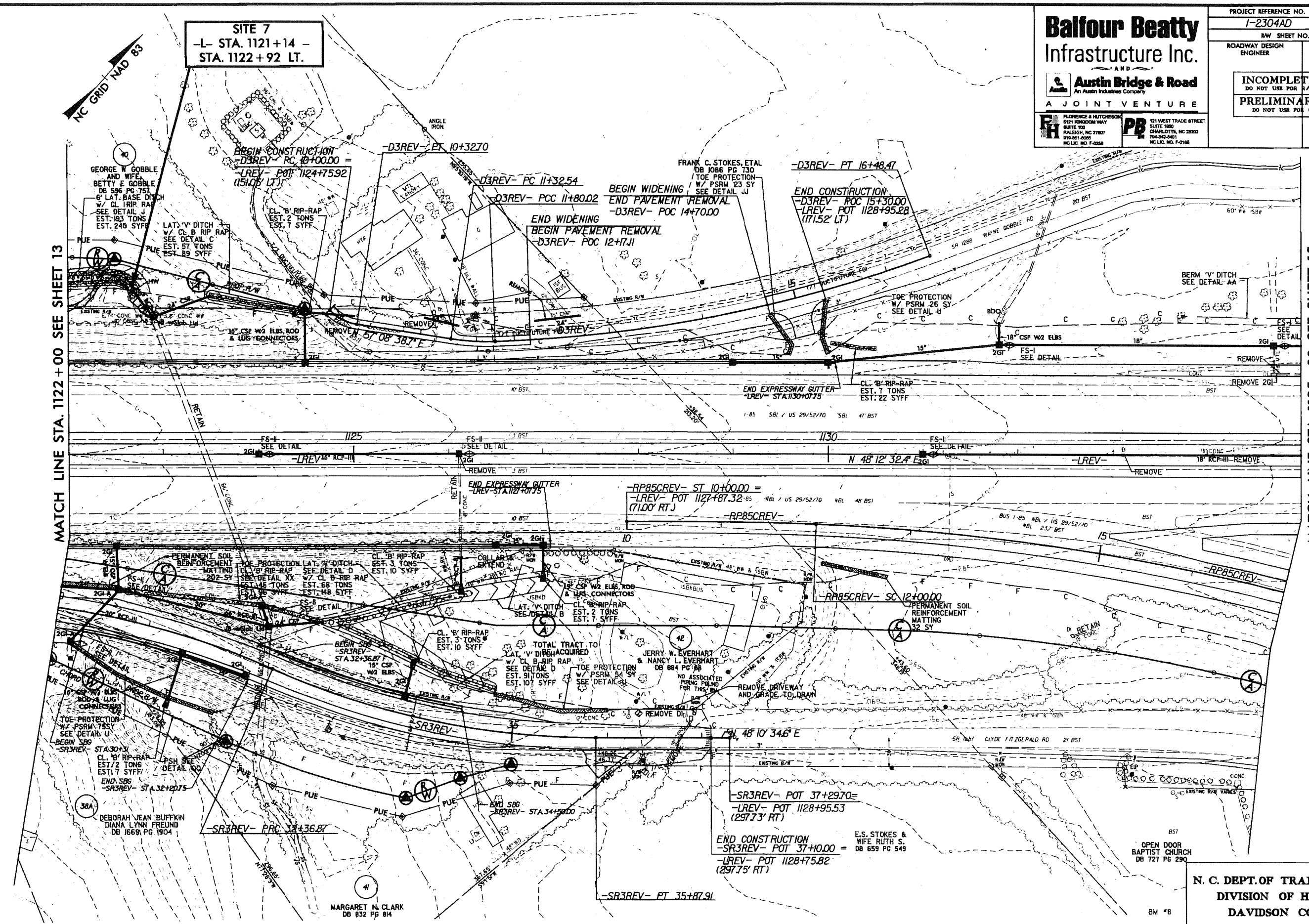
8/17/99

PROJECT REFERENCE NO.	SHEET NO.
I-2304AD	14
R/W SHEET NO.	RW-14
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Balfour Beatty Infrastructure Inc.
AND
Austin Bridge & Road
An Austin Industries Company
A JOINT VENTURE

FLORENCE & HUTCHESON, 5121 KINGDOM WAY, SUITE 100, RALEIGH, NC 27607, 919-851-6066, NC LIC. NO. F-0258
PB, 121 WEST TRADE STREET, SUITE 1950, CHARLOTTE, NC 28202, 704-343-0401, NC LIC. NO. F-0165

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



SITE 7
PLAN VIEW

LEGEND

DENOTES IMPACTS IN SURFACE WATER

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
DAVIDSON COUNTY
PROJECT: 34156.1.1 (I-2304AD)
I-85 WIDENING JUST NORTH OF NC 150 TO JUST NORTH OF I-85 BUSINESS

SHEET OF

8/8/2011
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Florence & Hutcheson, Inc.

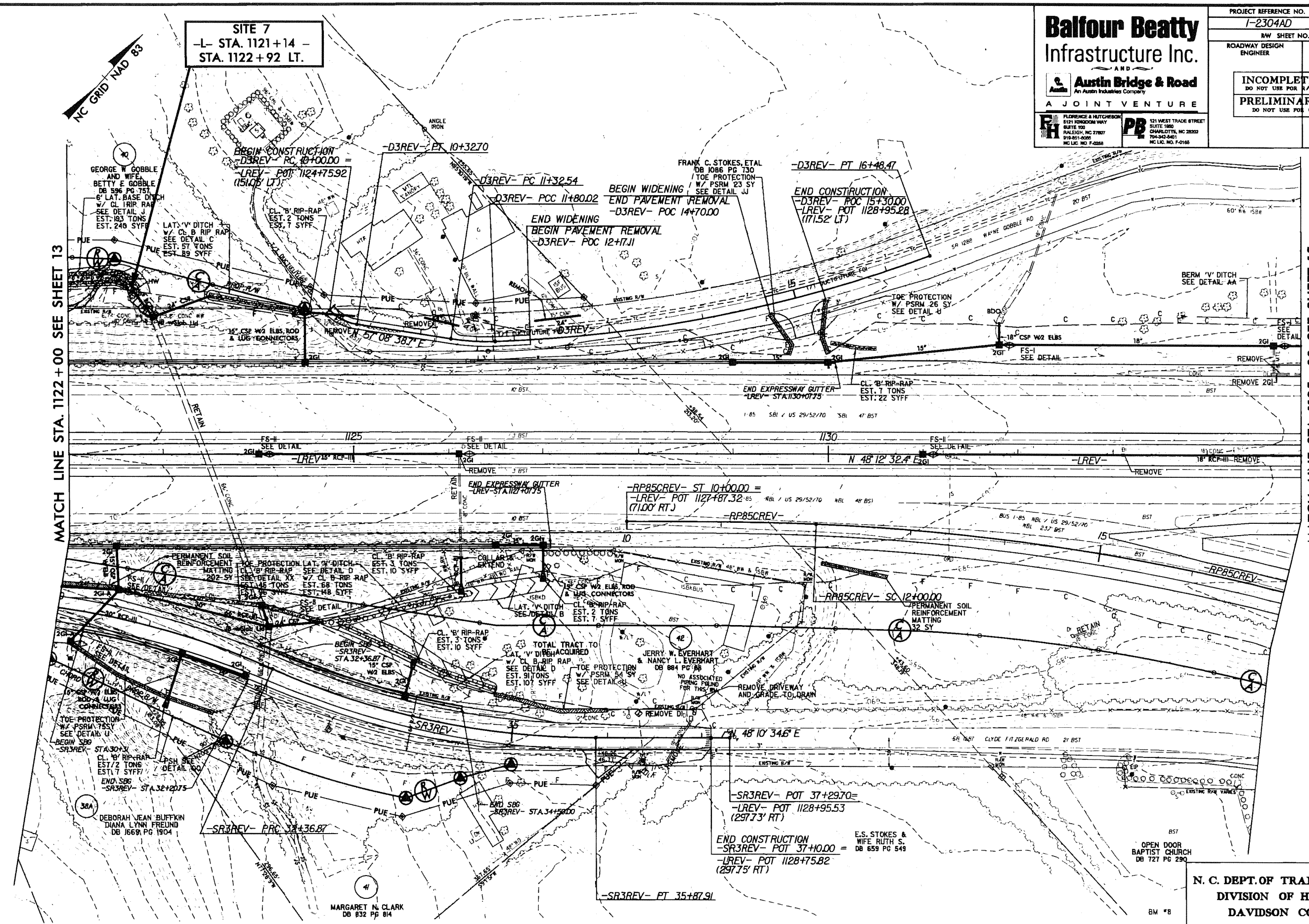
8/17/99

PROJECT REFERENCE NO.	SHEET NO.
I-2304AD	14
R/W SHEET NO.	RW-14
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Balfour Beatty Infrastructure Inc.
AND
Austin Bridge & Road
An Austin Industries Company
A JOINT VENTURE

FLORENCE & HUTCHESON, 5121 KINGDOM WAY, SUITE 100, RALEIGH, NC 27607, 919-851-6066, NC LIC. NO. F-0258
PB, 121 WEST TRADE STREET, SUITE 1950, CHARLOTTE, NC 28202, 704-343-0401, NC LIC. NO. F-0165

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



SITE 7
PLAN VIEW

LEGEND

DENOTES IMPACTS IN SURFACE WATER

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
DAVIDSON COUNTY
PROJECT: 34156.1.1 (I-2304AD)
I-85 WIDENING JUST NORTH OF NC 150 TO JUST NORTH OF I-85 BUSINESS

SHEET OF

8/8/2011
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Florence & Hutcheson, Inc.

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
I-2304AD	19
R/W SHEET NO.	RW-18
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

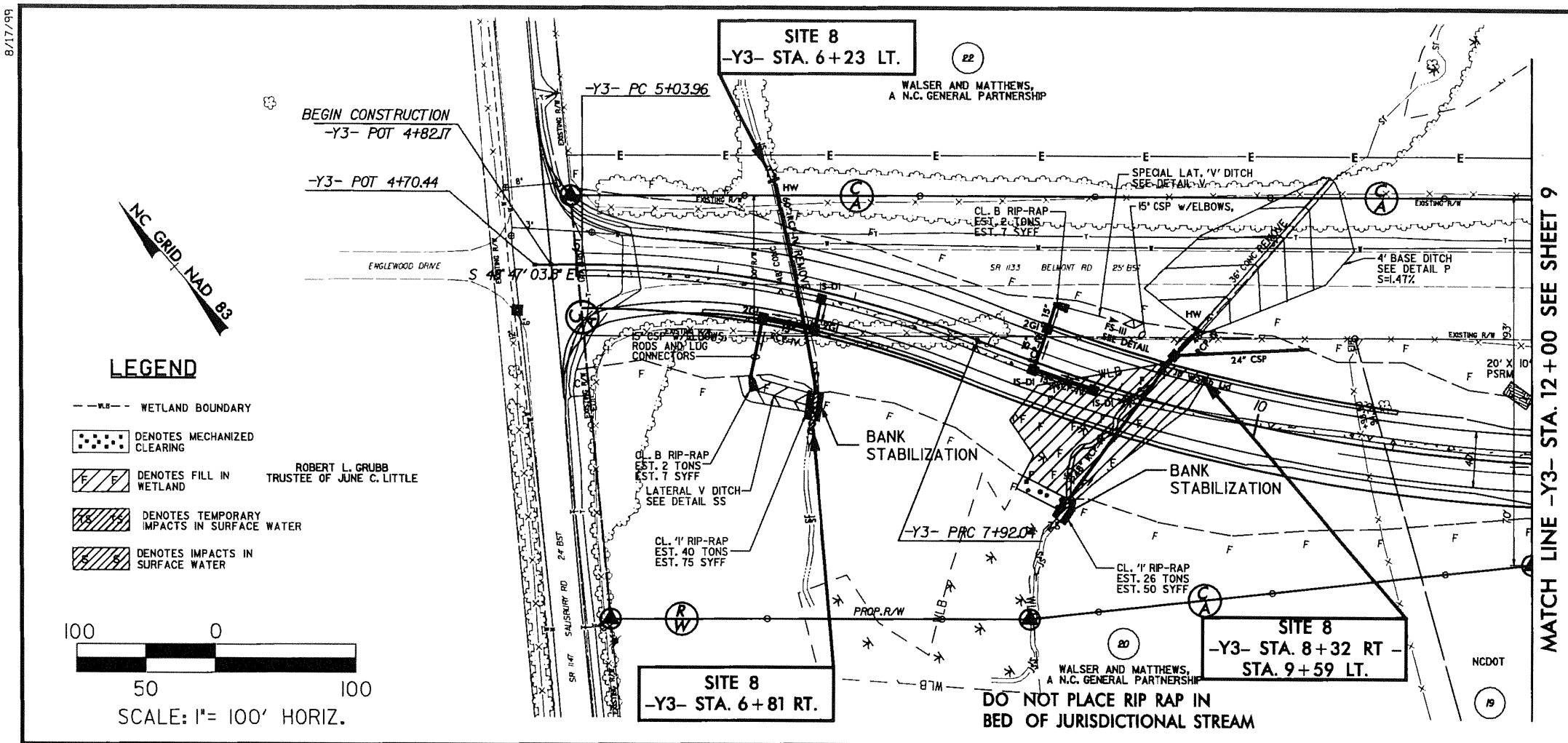
Balfour Beatty Infrastructure Inc.
AND
Austin Bridge & Road An Austin Industries Company
A JOINT VENTURE

FLORENCE & HUTCHESON, 5121 KINGDOM WAY, SUITE 100, RALEIGH, NC 27607, 919-851-9285, NC LIC NO F-0258

PB, 121 WEST TRADE STREET, SUITE 1950, CHARLOTTE, NC 28202, 704-342-5401, NC LIC NO F-0186

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

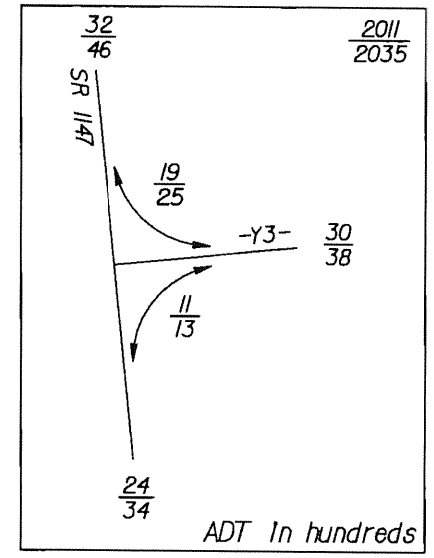


LEGEND

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

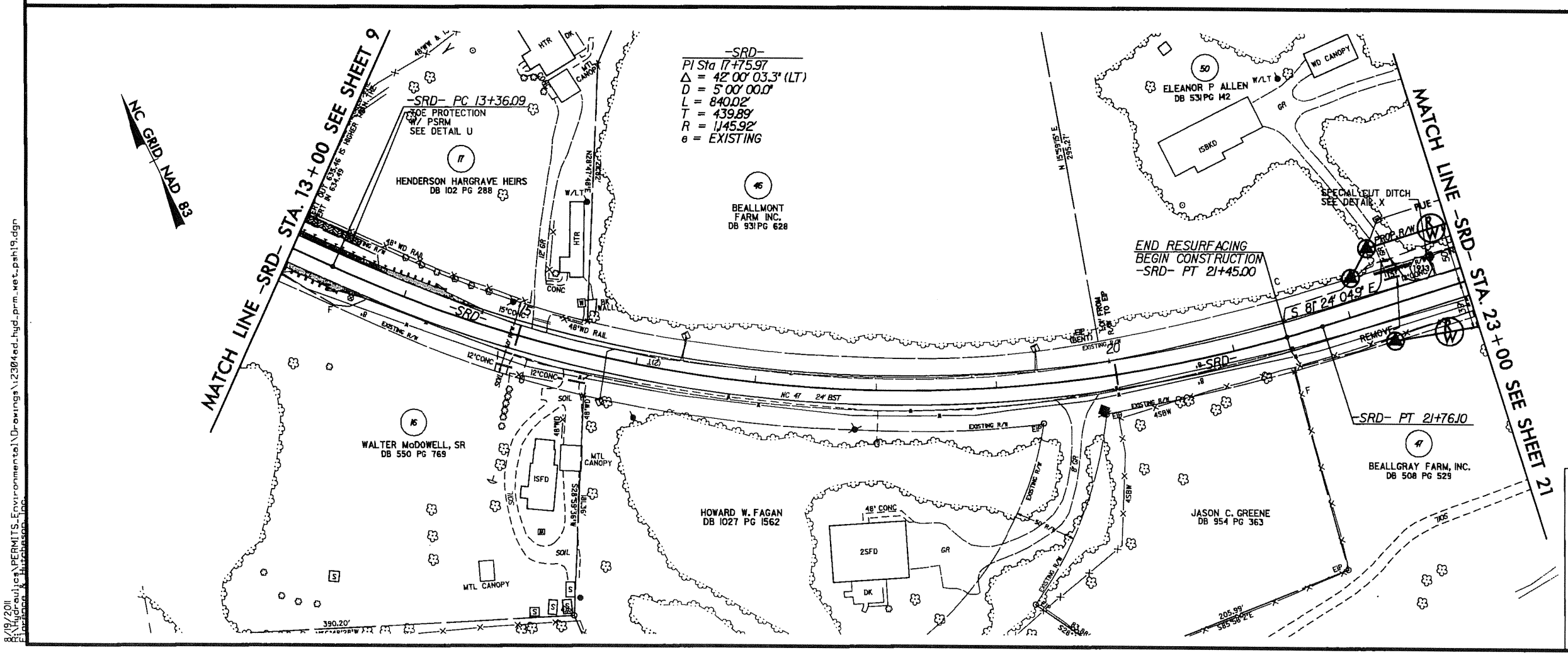
ROBERT L. GRUBB
TRUSTEE OF JUNE C. LITTLE

100 0 50 100
SCALE: 1" = 100' HORIZ.



SITE 8
PLAN VIEW

SEE SHEETS 2-H & 2-I FOR DRAINAGE DETAILS
SEE SHEET 31 FOR -Y3- PROFILE
SEE SHEET RW-18 FOR RIGHT OF WAY DATA



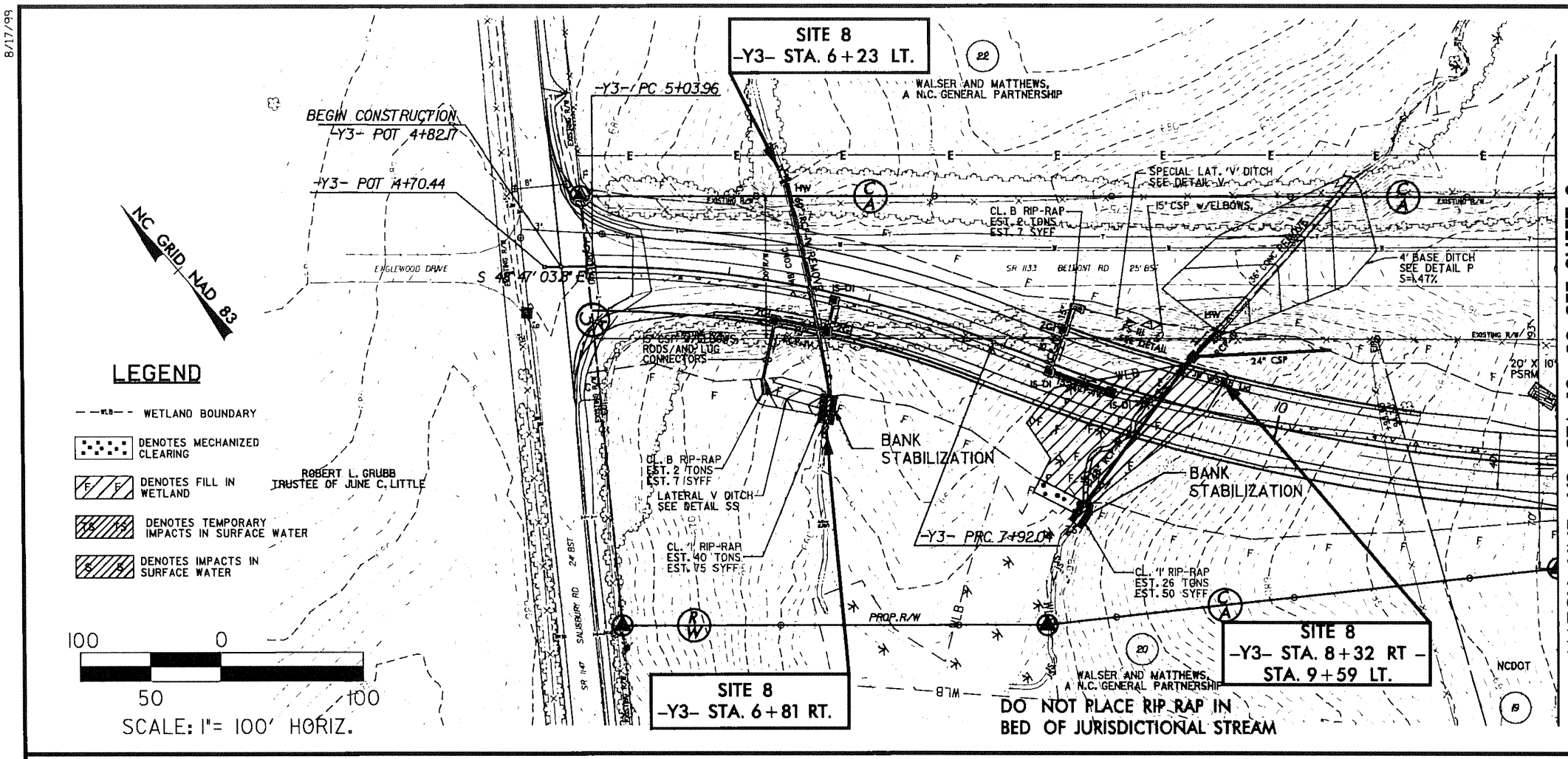
ENGLISH

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
DAVIDSON COUNTY
PROJECT: 34156.1.1 (I-2304AD)
I-85 WIDENING JUST NORTH OF NC 150 TO JUST NORTH OF I-85 BUSINESS

SHEET OF

8/19/2011
H:\Highways\Projects\PERMITS_Environmental\Drawings\I2304ad_hyd_prm_wet_psh19.dgn
FLORENCE & HUTCHESON, INC.

8/17/99



Balfour Beatty Infrastructure Inc.
AND
Austin Bridge & Road
An Austin Industries Company
A JOINT VENTURE

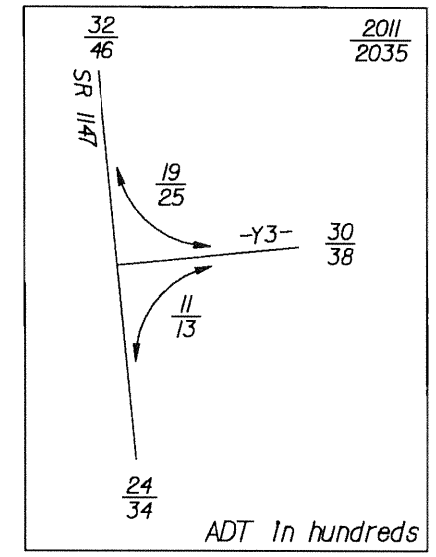
FLORENCE & HUTCHESON, 5121 KINGDOM WAY, SUITE 100, RALEIGH, NC 27607, 919-851-6066, NC LIC NO. F-0256

PB, 121 WEST TRADE STREET, SUITE 1950, CHARLOTTE, NC 28202, 704-343-6401, NC LIC. NO F-0165

PROJECT REFERENCE NO.	SHEET NO.
I-2304AD	19
R/W SHEET NO.	RW-18
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

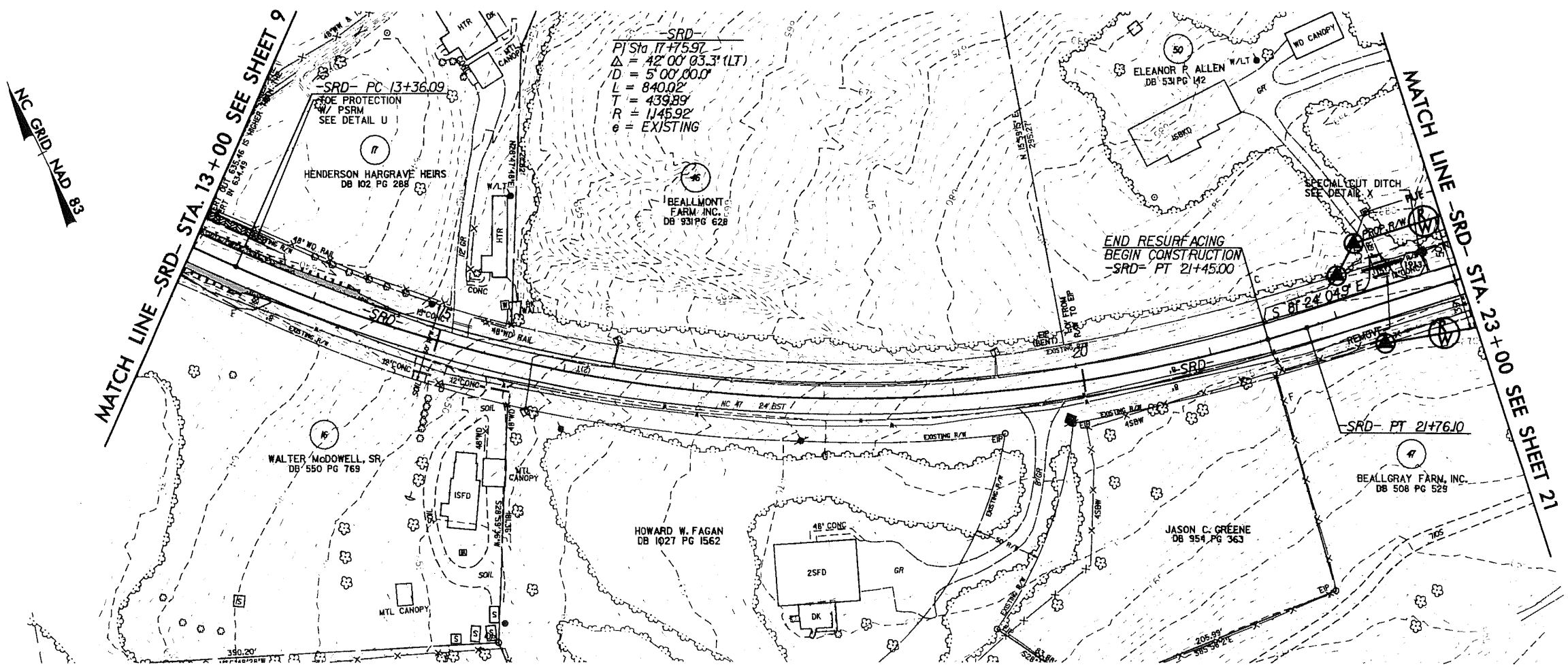
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



SITE 8
PLAN VIEW

SEE SHEETS 2-H & 2-I FOR DRAINAGE DETAILS
SEE SHEET 31 FOR -Y3- PROFILE
SEE SHEET RW-18 FOR RIGHT OF WAY DATA



ENGLISH

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
DAVIDSON COUNTY

PROJECT: 34156.1.1 (I-2304AD)

I-85 WIDENING JUST NORTH OF NC 150 TO JUST NORTH OF I-85 BUSINESS

SHEET OF

8/19/2011
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Florence & Hutcheson, Inc.

5/28/99

Balfour Beatty Infrastructure Inc.
AND
Austin Bridge & Road
An Austin Industries Company
A JOINT VENTURE

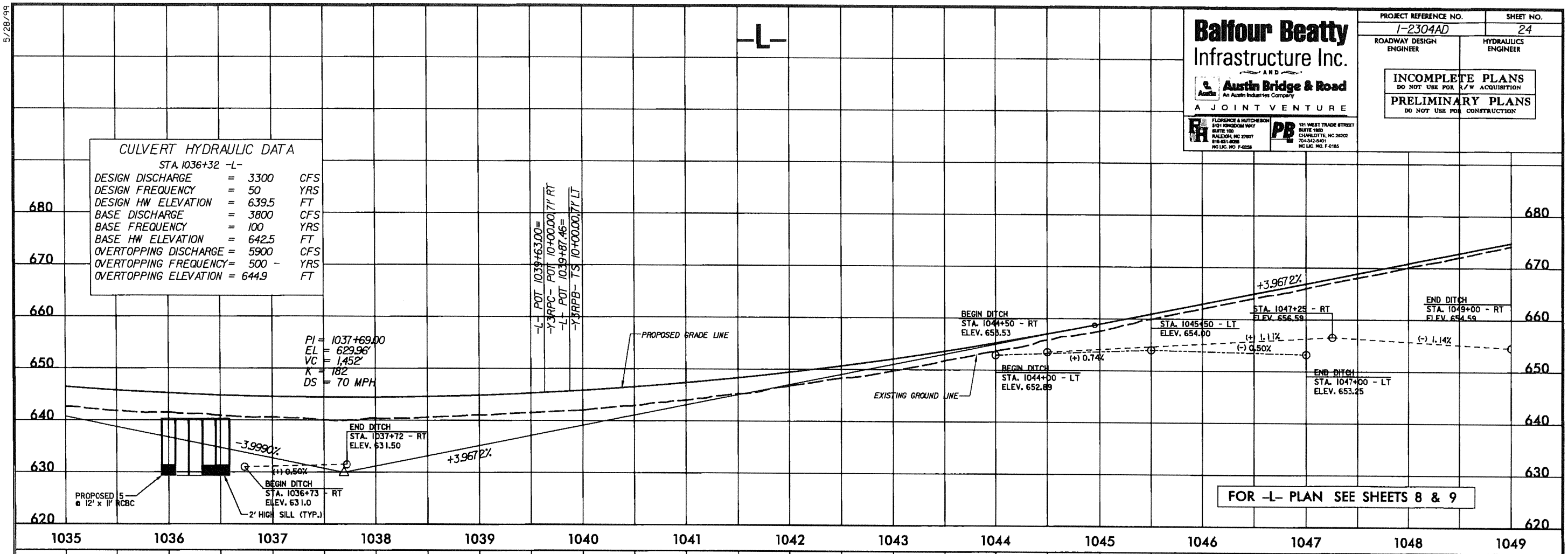
FLORENCE & HUTCHESON
5121 KINGDOM WAY
SUITE 100
RALEIGH, NC 27607
919-851-6055
NC LIC. NO F-0258

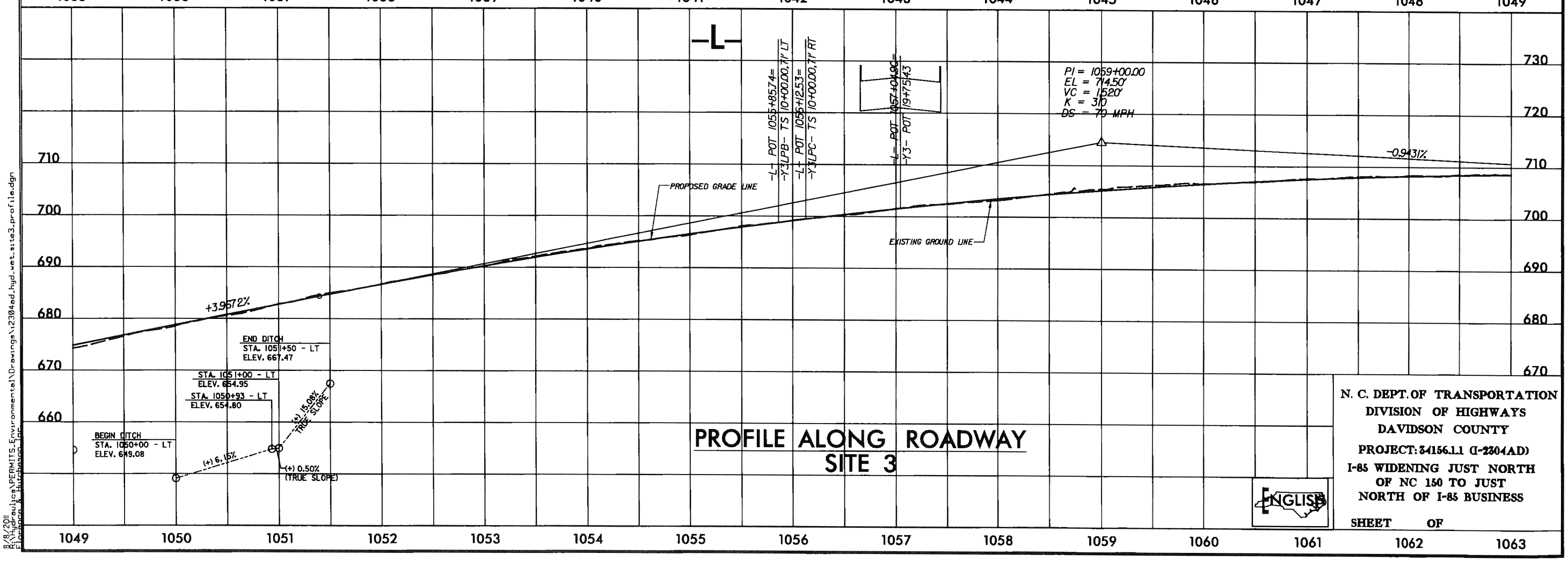
PB
131 WEST TRADE STREET
SUITE 1900
CHARLOTTE, NC 28202
704-342-5401
NC LIC. NO. F-0185

PROJECT REFERENCE NO.	SHEET NO.
I-2304AD	24
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION





PROFILE ALONG ROADWAY
SITE 3

ENGLISH

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
DAVIDSON COUNTY
PROJECT: 34156.1.1 (I-2304AD)
I-85 WIDENING JUST NORTH OF NC 150 TO JUST NORTH OF I-85 BUSINESS

SHEET OF

8/8/2011
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Florence & Hutcheson, Inc.

5/28/99

-Y3-

Balfour Beatty Infrastructure Inc. AND **Austin Bridge & Road** An Austin Industries Company

A JOINT VENTURE

FLORENCE & HUTCHESON 8121 RENDEZVOUS WAY SUITE 100 RALEIGH, NC 27617 919-851-8200 NC LIC. NO. F-0258

PB 121 WEST TRADE STREET SUITE 1600 CHARLOTTE, NC 28202 704-342-8401 NC LIC. NO. F-0165

PROJECT REFERENCE NO.	SHEET NO.
I-2304AD	31
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

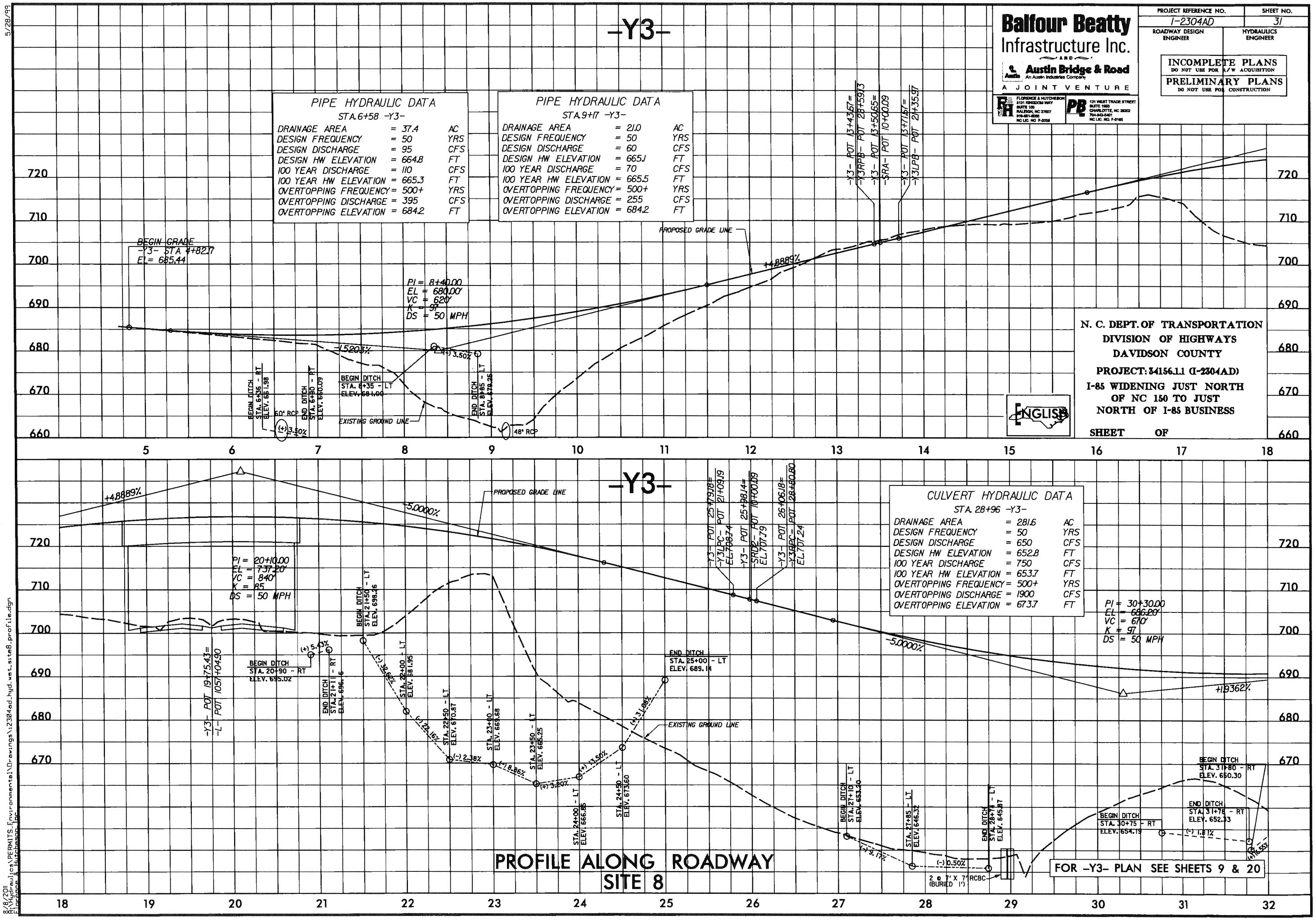
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PIPE HYDRAULIC DATA
STA. 6+58 -Y3-

DRAINAGE AREA	= 37.4	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 95	CFS
DESIGN HW ELEVATION	= 664.8	FT
100 YEAR DISCHARGE	= 110	CFS
100 YEAR HW ELEVATION	= 665.3	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 395	CFS
OVERTOPPING ELEVATION	= 684.2	FT

PIPE HYDRAULIC DATA
STA. 9+17 -Y3-

DRAINAGE AREA	= 21.0	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 60	CFS
DESIGN HW ELEVATION	= 665.1	FT
100 YEAR DISCHARGE	= 70	CFS
100 YEAR HW ELEVATION	= 665.5	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 255	CFS
OVERTOPPING ELEVATION	= 684.2	FT



CULVERT HYDRAULIC DATA
STA. 28+96 -Y3-

DRAINAGE AREA	= 281.6	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 650	CFS
DESIGN HW ELEVATION	= 652.8	FT
100 YEAR DISCHARGE	= 750	CFS
100 YEAR HW ELEVATION	= 653.7	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 1900	CFS
OVERTOPPING ELEVATION	= 673.7	FT

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
DAVIDSON COUNTY

PROJECT: 34156.1.1 (I-2304AD)

I-85 WIDENING JUST NORTH OF NC 150 TO JUST NORTH OF I-85 BUSINESS

SHEET OF

ENGLISH

PROFILE ALONG ROADWAY
SITE 8

FOR -Y3- PLAN SEE SHEETS 9 & 20

8/8/2011
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Florence & Hutcheson, Inc.

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
I-2304AD	44
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Balfour Beatty Infrastructure Inc. AND **Austin Bridge & Road** An Austin Industries Company

A JOINT VENTURE

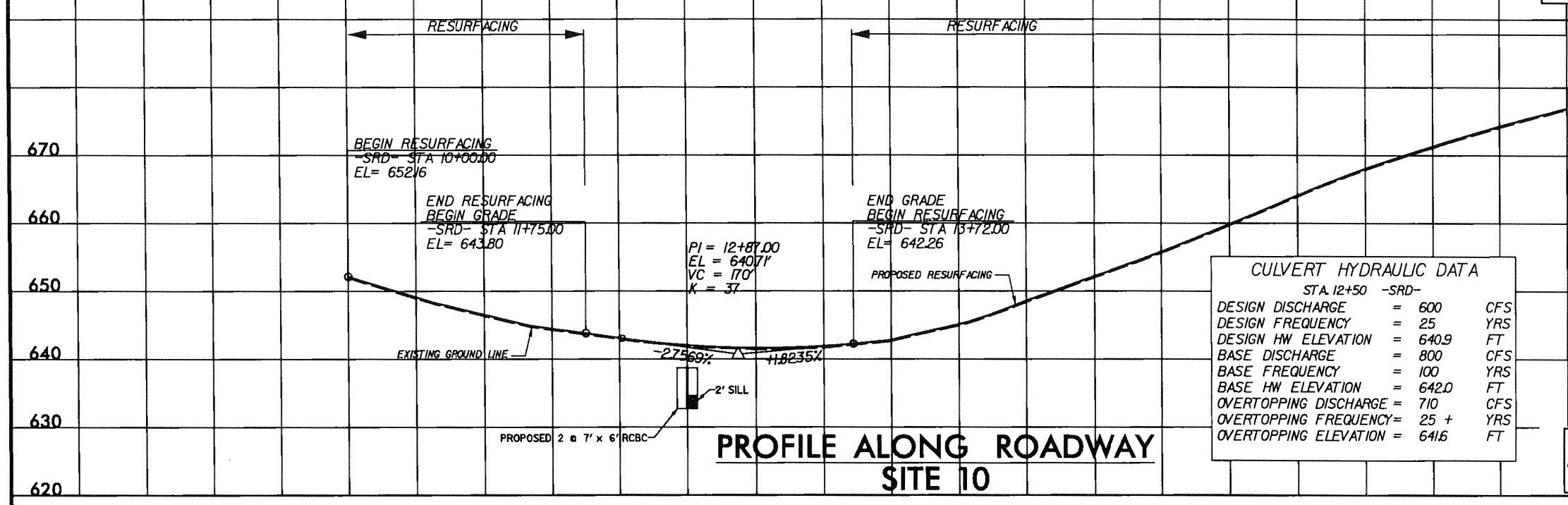
FLORENCE & HUTCHESON 8131 KINGDOM WAY SUITE 100 RALEIGH, NC 27607 919-851-0066 NC LIC. NO. F-0268

PB 121 WEST TRADE STREET SUITE 1950 CHARLOTTE, NC 28202 704-343-0401 NC LIC. NO. F-0195

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-SRD-



CULVERT HYDRAULIC DATA

STA. 12+50 -SRD-

DESIGN DISCHARGE	=	600	CFS
DESIGN FREQUENCY	=	25	YRS
DESIGN HW ELEVATION	=	640.9	FT
BASE DISCHARGE	=	800	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	642.0	FT
OVERTOPPING DISCHARGE	=	710	CFS
OVERTOPPING FREQUENCY	=	25 +	YRS
OVERTOPPING ELEVATION	=	641.6	FT

PROFILE ALONG ROADWAY
SITE 10

ENGLISH

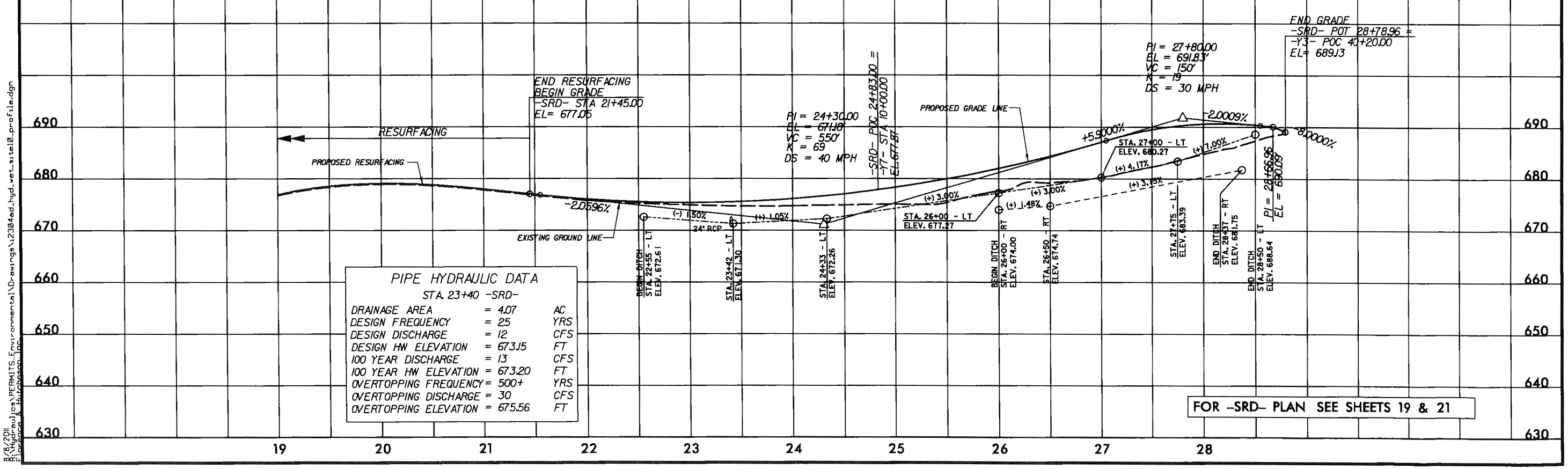
N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
DAVIDSON COUNTY

PROJECT: 34156.1.1 (I-2304AD)

I-85 WIDENING JUST NORTH OF NC 150 TO JUST NORTH OF I-85 BUSINESS

SHEET OF

-SRD-



PIPE HYDRAULIC DATA

STA. 23+40 -SRD-

DRAINAGE AREA	=	4.07	AC
DESIGN FREQUENCY	=	25	YRS
DESIGN DISCHARGE	=	12	CFS
DESIGN HW ELEVATION	=	673.15	FT
100 YEAR DISCHARGE	=	13	CFS
100 YEAR HW ELEVATION	=	673.20	FT
OVERTOPPING FREQUENCY	=	500+	YRS
OVERTOPPING DISCHARGE	=	30	CFS
OVERTOPPING ELEVATION	=	675.56	FT

FOR -SRD- PLAN SEE SHEETS 19 & 21

8/8/2011
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Florence & Hutcheson Inc.

8/17/99

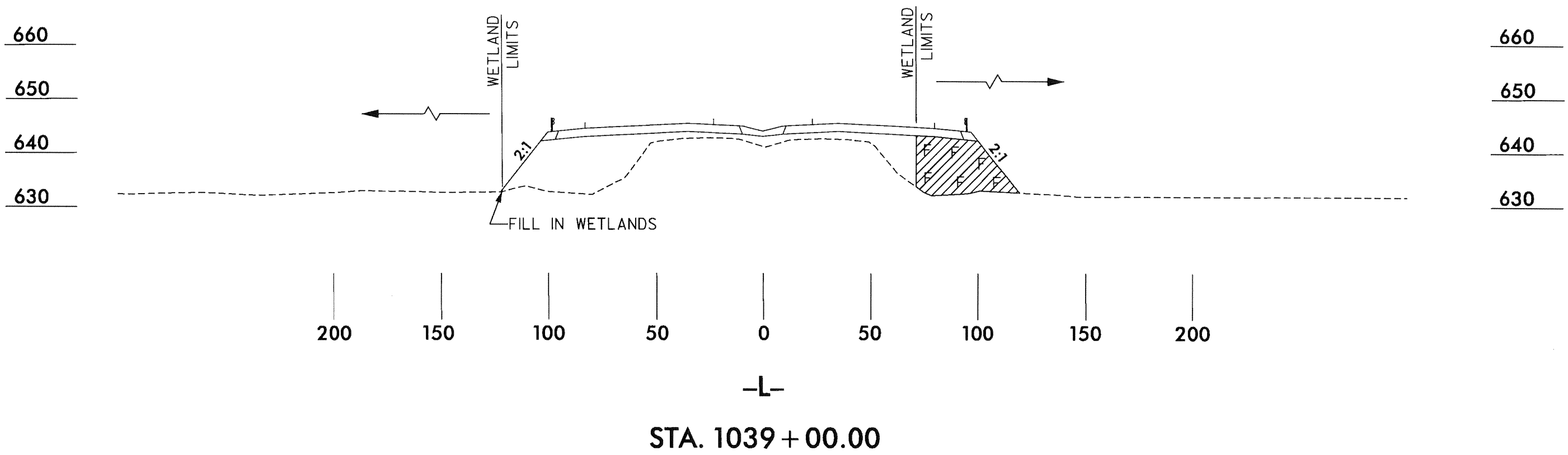
Balfour Beatty Infrastructure Inc.
AND
Austin Bridge & Road
An Austin Industries Company
A JOINT VENTURE

FLORENCE & HUTCHESON
8121 KINGDOM WAY
SUITE 100
RALEIGH, NC 27607
919-851-6055
NC LIC. NO. F-0258

121 WEST TRADE STREET
SUITE 1980
CHARLOTTE, NC 28202
704-342-5401
NC LIC. NO. F-0155

PROJECT REFERENCE NO.	SHEET NO.
I-2304AD	XSC-SITE3
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



SCALE:
1"= 50' HORIZONTAL
1"= 10' VERTICAL

SITE 3 SECTION

LEGEND

F/F DENOTES FILL IN WETLAND

ENGLISH

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
DAVIDSON COUNTY
PROJECT: 34156.1.1 (I-2304AD)
I-85 WIDENING JUST NORTH OF NC 150 TO JUST NORTH OF I-85 BUSINESS

SHEET OF

8/8/2011
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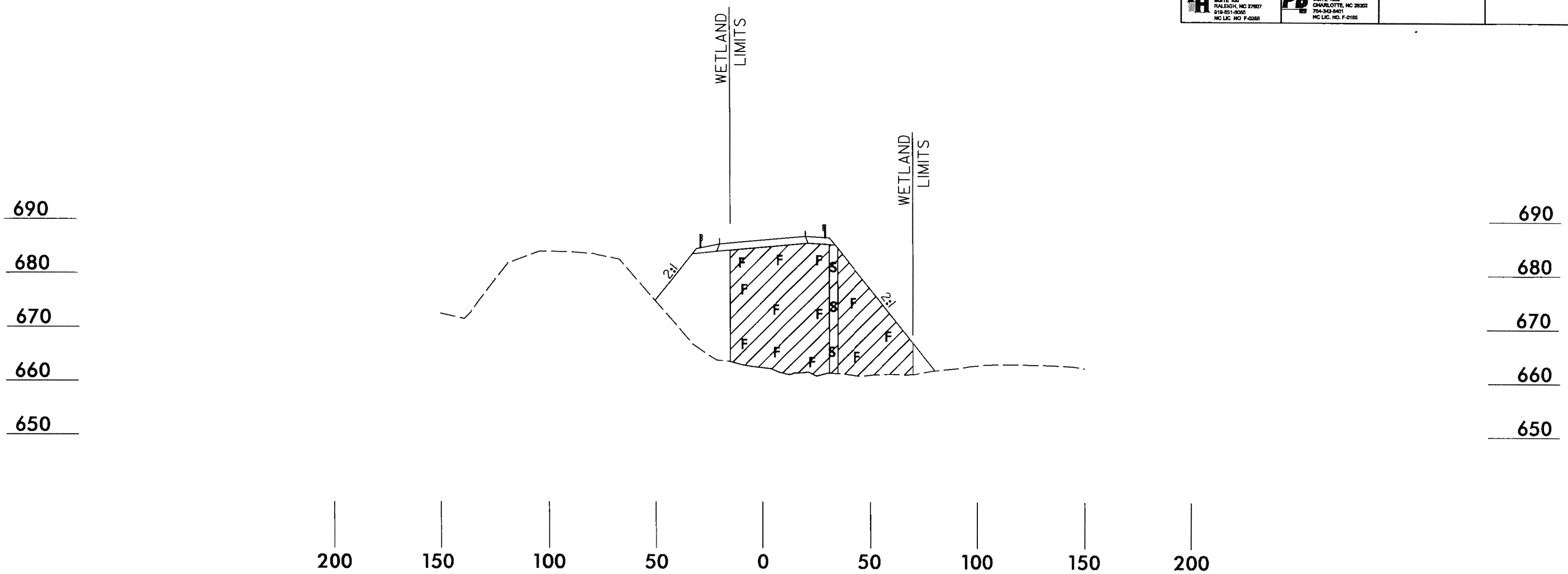
Florence & Hutcheson Inc.

8/17/99

Balfour Beatty Infrastructure Inc. AND Austin Bridge & Road (An Austin Industries Company) — A JOINT VENTURE	PROJECT REFERENCE NO.	SHEET NO.
	I-2304AD	XSC-SITE8
	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	

FLORENCE & HUTCHESON, 5121 KINGDOM WAY, SUITE 100, RALEIGH, NC 27607, 919-851-6065, NC LIC. NO. F-0258

PB, 121 WEST TRADE STREET, SUITE 1950, CHARLOTTE, NC 28202, 704-343-5401, NC LIC. NO. F-0155



-Y3-

STA. 9+00

SCALE:

1"= 50' HORIZONTAL

1"= 10' VERTICAL

SITE 8 SECTION

LEGEND

S S — DENOTES IMPACTS IN SURFACE WATER

F F — DENOTES FILL IN WETLAND

ENGLISH

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
DAVIDSON COUNTY

PROJECT: 34156.1.1 (I-2304AD)

I-85 WIDENING JUST NORTH OF NC 150 TO JUST NORTH OF I-85 BUSINESS

SHEET OF

8/8/2011
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Florence & Hutcheson, Inc.

WETLAND & STREAM IMPACTS
SUMMARY OF AFFECTED PROPERTY OWNERS

TRACT NO.	PROPERTY OWNER	ADDRESS	SITE NO.
4	JACK C. LITTLE TRUSTEE OF JUNE C. LITTLE DB 698 PG 336		SITE 1
5	EVERHART USED CARS, INC. DB 635 PG 161	1517 GREENSBORO ROAD LEXINGTON, NC 27292-1919	SITE 2
6	HAYWOOD GRAVES AND WIFE, MARGARET L. GRAVES DB 635 PG 17 DB 915 PG 965 DB 401 PG 338	8291 OLD SALISBURY ROAD LINWOOD, NC 27299-9708	SITE 2
14 15	WALSER & MATTHEWS A N.C. GENERAL PARTNERSHIP DB 1320 PG 741	4522 ABBOTT LOOP ROAD JAMESTOWN, NC 27282	SITE 3
21	WALSER ENTERPRISES DB 112 PG 110	SNIDER-KINES ROAD LINWOOD, NC 27299	SITE 4
25 26	C. C. FRITZGERALD HEIRS DB 57 PG 205	194 REDWINE ROAD LINWOOD, NC 27299	SITE 5
30	ROBERT A. GUSMAN DB 634 PG 656 DB 596 PG 759	P.O. BOX 992 LEXINGTON, NC 27293-0992	SITE 6
34	MOBILE DEVELOPMENT CORP. DB 1051 PG 1588	23 WEST SECOND STREET LEXINGTON, NC 27292	SITE 6
40	GEORGE W. GOBBLE AND WIFE, BETTY E. GOBBLE DB 596 PG 757	984 WAYANE GOBBLE ROAD LINWOOD, NC 27299-9706	SITE 7
20	WALSER & MATTHEWS A N.C. GENERAL PARTNERSHIP DB 1320 PG 741	4522 ABBOTT LOOP ROAD JAMESTOWN, NC 27282	SITE 8
22	WALSER & MATTHEWS A N.C. GENERAL PARTNERSHIP DB 1337 PG 1689	4522 ABBOTT LOOP ROAD JAMESTOWN, NC 27282	SITE 8
16	WALTER McDOWELL, SR DB 550 PG 769	796 BELMONT ROAD LINWOOD, NC 27299-9201	SITE 10
17	HENDERSON HARGRAVE HEIRS DB 102 PG 288	561 BELMONT ROAD LINWOOD, NC 27299-9201	SITE 10

ENGLISH

NCDOT

DIVISION OF HIGHWAYS

DAVIDSON COUNTY

PROJECT: 34156.1.1 (I-2304AD)

I-85 WIDENING FROM JUST NORTH OF NC 150 TO JUST NORTH OF I-85 BUSINESS

SHEET OF

8/8/2011
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REVISED - 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)	Fill in SW Pond (ac)	Temp. SW Impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	-L- 988+45R / -L- 989+70 R	Roadway Embankment	--	--	--	--	--	--	--	--	--	--	--
	-SRD1REV- 61+15 R	BANK STABILIZATION						0.001	--	-	14	--	--
2	-L- 1006+08R / -L- 1007+00L	42" RCP - LT / 48" RCP - RT	--	--	--	--	--	0.017	--	0.003	148	25	--
		BANK STABILIZATION						--	--	--	22	--	--
3	-L- 1033+80 – 1043+60R -L- 1036+00 – 1039+40L	(5) 12' x 11' RCBC w/2' SILL in 3 CELLS	0.420	--	--	0.150	0.560	0.130	--	0.014	228	24	--
4	-SRA- 13+70L / -L- 15+30L	Roadway Embankment	0.070	--	--	0.030	--	--	--	--	--	--	--
5	-L- 1075+70R / -L- 1078+70L	Ex 4' x 5' RCBC w/ 72" RCP Extensions	--	--	--	--	--	0.030	--	0.003	260	16	--
6	-L- 1102+62 - 1104+21L	1 @ 42" RCP	0.030	--	--	0.032	0.089	--	--	--	--	--	--
7	-L- 1121+14 - 1122+92L	1 @ 66" RCP						0.050	--	0.003	272	10	--
8	-Y3- 6+23L / -Y3- 6+81R	60" RCP	--	--	--	--	--	0.001	--	0.002	21	20	--
		BANK STABILIZATION						--	--	--	19	--	--
	-Y3- 8+32R /-Y3- 9+59L	48" RCP	0.170	--	--	0.010	--	0.010	--	0.001	124	10	--
		BANK STABILIZATION						--	--	--	18	--	--
10	-SRD- 12+34R / -SRD- 12+71L	(2) 7' x 6' RCBC w/2' CONC. SILL	--	--	--	--	--	0.001	--	0.002	57	28	--
TOTALS:			0.690	0.000	0.000	0.222	0.649	0.240	0.000	0.028	1183	133	0
											1316		

NOTE:

1. TEMPORARY SW IMPACTS HAVE BEEN QUANTIFIED ON THE REVISED IMPACT SUMMARY.
2. BANK STABILIZATION, AN ALLOWABLE PERMANENT IMPACT, HAS BEEN QUANTIFIED, SEPARATELY ON THE REVISED IMPACT SUMMARY.
3. PERMIT MODIFICATION FOR SITE 9 IMPACTS WERE POSTED BY NCDOT ON MAY 31, 2011.

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
PROJECT WIDE: SITES 1-8 & 10
DAVIDSON COUNTY
WBS - 34156.1.1 (**I-2304AD**)

ATN Revised 3/31/05

SHEET 8/22/2011