

Project Number 45627.1.1
TIP Number B-5672
Let Date _____

PREDESIGN-PRESURVEY REPORT

County Halifax

Bridge Number 410134
Road Number SR 1310 (Airlies Rd)
Stream Bear Swamp

Type Of Request: POC Force Account TIP
Date 1/2/16 Name EAKpuogu Assigned To _____
Checked By _____

Prior Survey Date 6-77 (attach copy of prior survey)

Panel : 3944

Study By Scour Section _____

Flood Zone X Detail Study Limited Date 7/3/2007 (attach copy of flood map)

B.M. Info _____

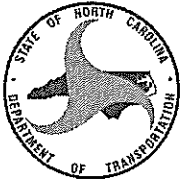
Quad Map Aurelian Springs Drainage Area 20.35 mi From Stream Stats
Q25 1520 Q50 1880 Q100 2280 Method USGS-Rural Regression eqn
(USGS-SI Report 2009-5158)

EXISTING BRIDGE INFORMATION

Location 1.8 mi W Jct NC 48
Average Daily Traffic 540 (2013)
Length 91 Bed-To Crown 14 Water Depth 7
Type Structure Tim Deck on Approach: Tim Joists. MAIN: 1-Beams
Type Spans 1 @ 17'6", 1 @ 17'2", 1 @ 39'0", 1 @ 17'5"
Upstream Structure (SR 1306) Brg 198
Location 0.9 mi N Jct SR 1300
Bed-To Crown 10 Prior Survey No
Downstream Structure (SR 1300) Brg #135
Location 1.3 mi N of NC 48
Bed-To Crown 19 Prior Survey 8.21465 survey not found
SCS Watershed _____

ENVIRONMENTAL

Trout Stream No Anadromous Fish No Primary Nursery Area No
High Quality Waters No Nutrient Sensitive Waters Yes
Near Water Supply Intake No CAMA County No
Stream Classification WS-TV, NSW
DENR River Basin Info. Tar Pam



NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
STRUCTURE MANAGEMENT UNIT

ATTENTION: PRIORITY MAINTENANCE: TIMBER PILES.
TEMPORARY REPAIRS. NEW AWS. NEW CRUTCH
BENTS AT BENT 3.

Structure Safety Report

Routine Element Inspection - Contract

COUNTY: HALIFAX STRUCTURE NUMBER: 410134 FREQUENCY: 24 MONTHS

FACILITY CARRIED: SR1310 MILE POST:

LOCATION: 1.8MI.W.JCT.NC48

FEATURE INTERSECTED: BEAR SWAMP

LATITUDE: 36° 20' 4.92" LONGITUDE: 77° 50' 37.3"

SUPERSTRUCTURE: TIMBER FLOOR ON TIMBER JOIST&I-BEAMS

E.BTS&INT.BTS.TIMBER CAP/TIMBER PILES @ VAR.CTS. AND STEEL CRUTCH BENTS
SUBSTRUCTURE: E.BTS&INT.BTS.TIMBER CAP/TIMBER PILES @ VAR.CTS.

SPANS: 1@17.5';1@17.17';1@39';1@17.42'

☐ FRACTURE CRITICAL ☒ TEMPORARY SHORING ☒ SCOUR CRITICAL ☒ SCOUR PLAN OF ACTION

PRESENT CONDITION: Fair INSPECTION DATE: 09/02/2015

POSTED SV: 20 POSTED TTST: 29

OTHER SIGNS PRESENT: (4) DELINEATORS



LOOKING EAST

Sign noticed issued for		Number Required
<u>NO</u>	WEIGHT LIMIT	<u>0</u>
<u>NO</u>	DELINEATORS	<u>0</u>
<u>NO</u>	NARROW BRIDGE	<u>0</u>
<u>NO</u>	ONE LANE BRIDGE	<u>0</u>
<u>NO</u>	LOW CLEARANCE	<u>0</u>

INSPECTED BY BYRON ATKINSON	SIGNATURE <i>Byron Atkinson</i>	ASSISTED BY JILLA ISRAELNAIM
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BRIDGE MANAGEMENT UNIT

DATA ON EXISTING STRUCTURE

Run Date: 01/28/2016

COUNTY : DIVISION : DISTRICT : STRUCTURE NUMBER : LENGTH :
HALIFAX 4 1 410134 91 FEET

ROUTE CARRIED : SR1310
FEATURE INTERSECTED : BEAR SWAMP

LOCATED : 1.8 MI. W. JCT. NC48
BRIDGE NAME : CITY :

FUNC. CLASS : SYST.ON : SYST.UNDER : ADT & YR : RAIL TYPE :
09 NFA NFA 540 2013 LT 233 RT 233

BUILT : BY : PROJ : FED.AID PROJ : DESIGN LOAD :
1952 BMU 5.3051 Unknown

REHAB : BY : PROJ : ALIGNMENT : SKEW : LANES :
1982 BMU 5.3051 TAN 90 ON 2 UNDER 0

NAVIGATION : VC 0 FT HC 0 FT HT. CRN. TO BED : 14 FT WATER DEPTH : 7 FT

SUPERSTRUCTURE : TIMBER DECK ON APPROACH:TIMBER JOISTS. MAIN:I-BEAMS

SUBSTRUCTURE : E.BTS & INT.BTS:TIMBER CAP ON TIMBER PILES @ VAR.CTS., INT.BT#3 W/STEEL CAP & PILE CRUTCHES

SPANS : 1@17'6", 1@17'2", 1@39'0", 1@17'5"

BEAMS OR GIRDERS : SP#1,2,4:18 LNS.6"X12" TIMBER JOISTS @ VAR. CTS., SP#3:10 LNS.21" I-BEAMS @ VAR. CTS.

FLOOR : 4"X8" TIM, 4" AWS ENCROACHMENT : DECK (OUT TO OUT) : 22.167 FT

CLEAR ROADWAY : 21.083 FT BETWEEN RAILS : 21.5 FT SIDEWALK OR CURB : LT .2085 FT RT .2085 FT

VERT.CL.OVER :
999.9 FT

INV.RTG. : OPE.RTG. : CONTR.MEMBER : POSTED :
HS-1 HS-1 Joist SV 20 TTST 29 DATE 09/24/2013

SYSTEM : Secondary S.R. Route GREEN LINE ROUTE : N

UNDER ROUTES AND CLEARANCES

REMARKS :

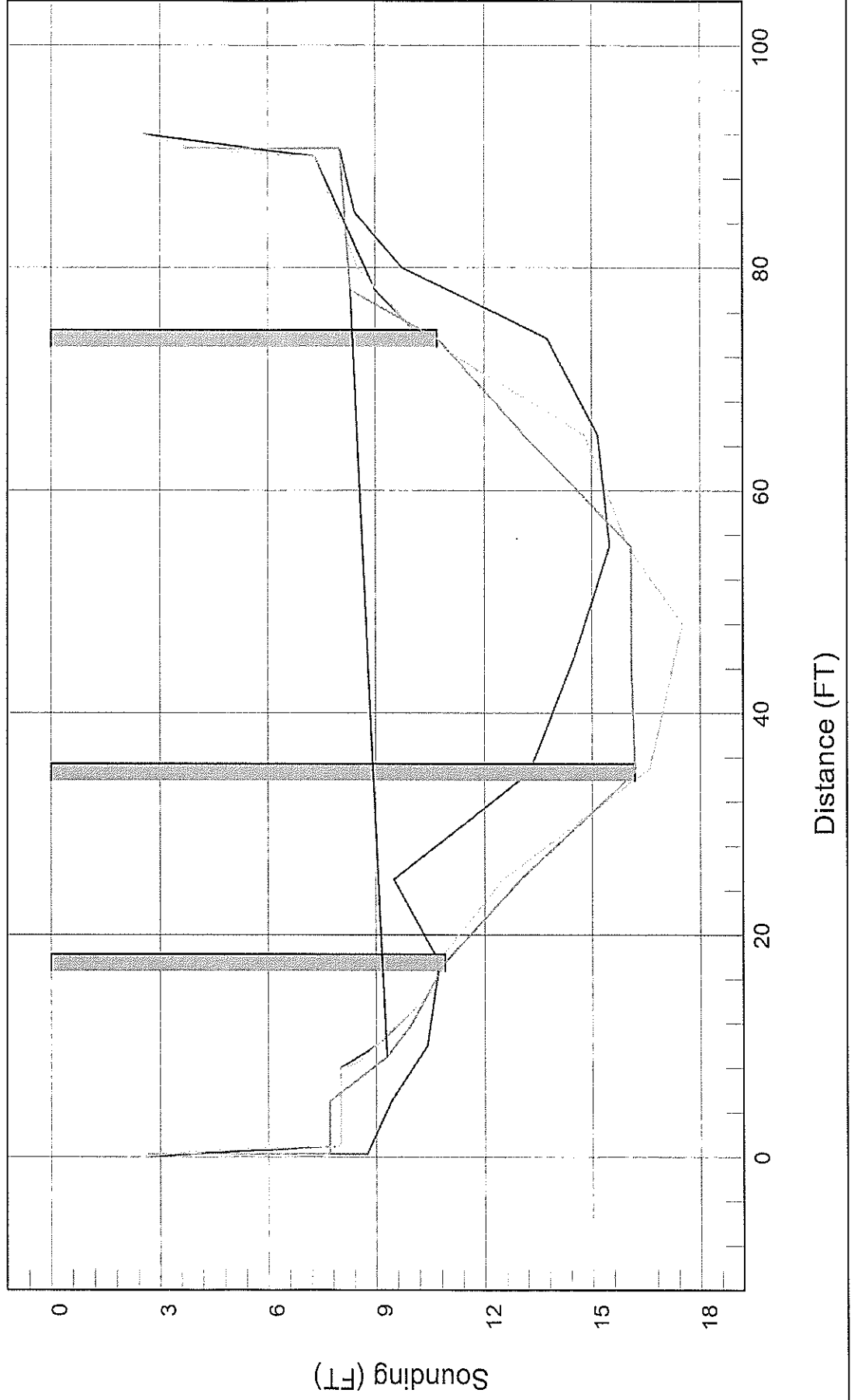
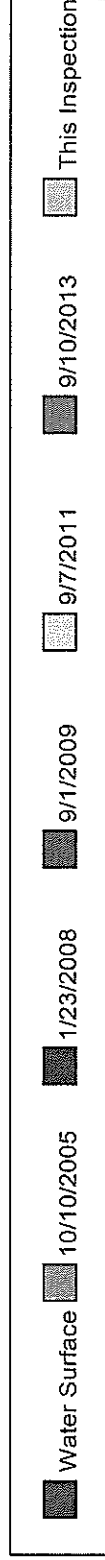
Bridge: 410134

County HALIFAX

Date:

STREAMBED PROFILE (Downstream)

Top of Rail = 0 FT (Sounding)



BRIDGE MANAGEMENT UNIT

DATA ON EXISTING STRUCTURE

Run Date: 10/01/2013

COUNTY :	DIVISION :	DISTRICT :	STRUCTURE NUMBER :	LENGTH :
HALIFAX	4	1	410198	51 FEET

ROUTE CARRIED :	FEATURE INTERSECTED :
SR1306	BEAR SWAMP

LOCATED :	BRIDGE NAME :	CITY :
0.9 MI N JCT SR 1300		

FUNC. CLASS :	SYST.ON :	SYST.UNDER :	ADT & YR :	RAIL TYPE :
09	NFA	NFA	50 2000	LT 227 RT 227

BUILT :	BY :	PROJ :	FED.AID PROJ :	DESIGN LOAD :
1958	BMU			Unknown

REHAB :	BY :	PROJ :	ALIGNMENT :	SKEW :	LANES :
			TAN.	90	ON 2 UNDER 0

NAVIGATION :	HT. CRN. TO BED :	WATER DEPTH :
VC 0 FT HC 0 FT 10 FT		1 FT

SUPERSTRUCTURE : TIMBER DECK/TIMBER JOISTS

SUBSTRUCTURE : E.BTS&INT.BTS:TIMBER CAP/TIMBER PILES@6' CTS.

SPANS : 1@17'-2";1@16'-8";1@17'-2"

BEAMS OR GIRDERS : SPN1 13,SPN2 14,SPN3 11 LNS. TIM JSTS @ VAR. CTS

FLOOR :	ENCROACHMENT :	DECK (OUT TO OUT) :
4X8TIM/1.5 AWS		20.083 FT

CLEAR ROADWAY :	BETWEEN RAILS :	SIDEWALK OR CURB :
19.157 FT	19.917 FT	LT .38 FT RT .38 FT

VERT.CL.OVER :
999.9 FT

INV.RTG. :	OPE.RTG. :	CONTR.MEMBER :	POSTED :	TTST	DATE
HS-1	HS-1	Joist	SV 10	16	09/16/2008

SYSTEM :	GREEN LINE ROUTE :
Secondary S.R. Route	N

UNDER ROUTES AND CLEARANCES

Upstream structure

REMARKS :

BRIDGE MANAGEMENT UNIT

DATA ON EXISTING STRUCTURE

Run Date: 08/19/2013

COUNTY :	DIVISION :	DISTRICT :	STRUCTURE NUMBER :	LENGTH :
HALIFAX	4	1	410135	90 FEET

ROUTE CARRIED :	FEATURE INTERSECTED :
SR1300	BEAR SWAMP

LOCATED :	BRIDGE NAME :	CITY :
1.3 MI.N.OF NC48		

FUNC. CLASS :	SYST.ON :	SYST.UNDER :	ADT & YR :	RAIL TYPE :
09	NFA	NFA	410 2012	LT 141 RT 141

BUILT :	BY :	PROJ :	FED.AID PROJ :	DESIGN LOAD :
1961	SHC	8.21465	S-767(2)	H 15

REHAB :	BY :	PROJ :	ALIGNMENT :	SKEW :	LANES :
			TAN.	63	ON 2 UNDER 0

NAVIGATION :	HT. CRN. TO BED :	WATER DEPTH :
VC 0 FT HC 0 FT 19 FT		11 FT

SUPERSTRUCTURE : RC FLOOR ON I-BEAMS

SUBSTRUCTURE : E.BTS&BTS:RC CAP/PRESTR.CONC.PILES

SPANS : 3@30'

BEAMS OR GIRDERS : 4 LINES W24X76 I-BEAMS @7'CENTERS

FLOOR :	ENCROACHMENT :	DECK (OUT TO OUT) :
7.5 RC/1.5 AWS		26.417 FT

CLEAR ROADWAY :	BETWEEN RAILS :	SIDEWALK OR CURB :
24 FT	26.25 FT	LT 1.125 FT RT 1.125 FT

VERT.CL.OVER :
999.9 FT

INV.RTG. :	OPE.RTG. :	CONTR.MEMBER :	POSTED :	TTST	DATE
HS-15	HS-25	Int Bm	SV 33	41	08/23/2006

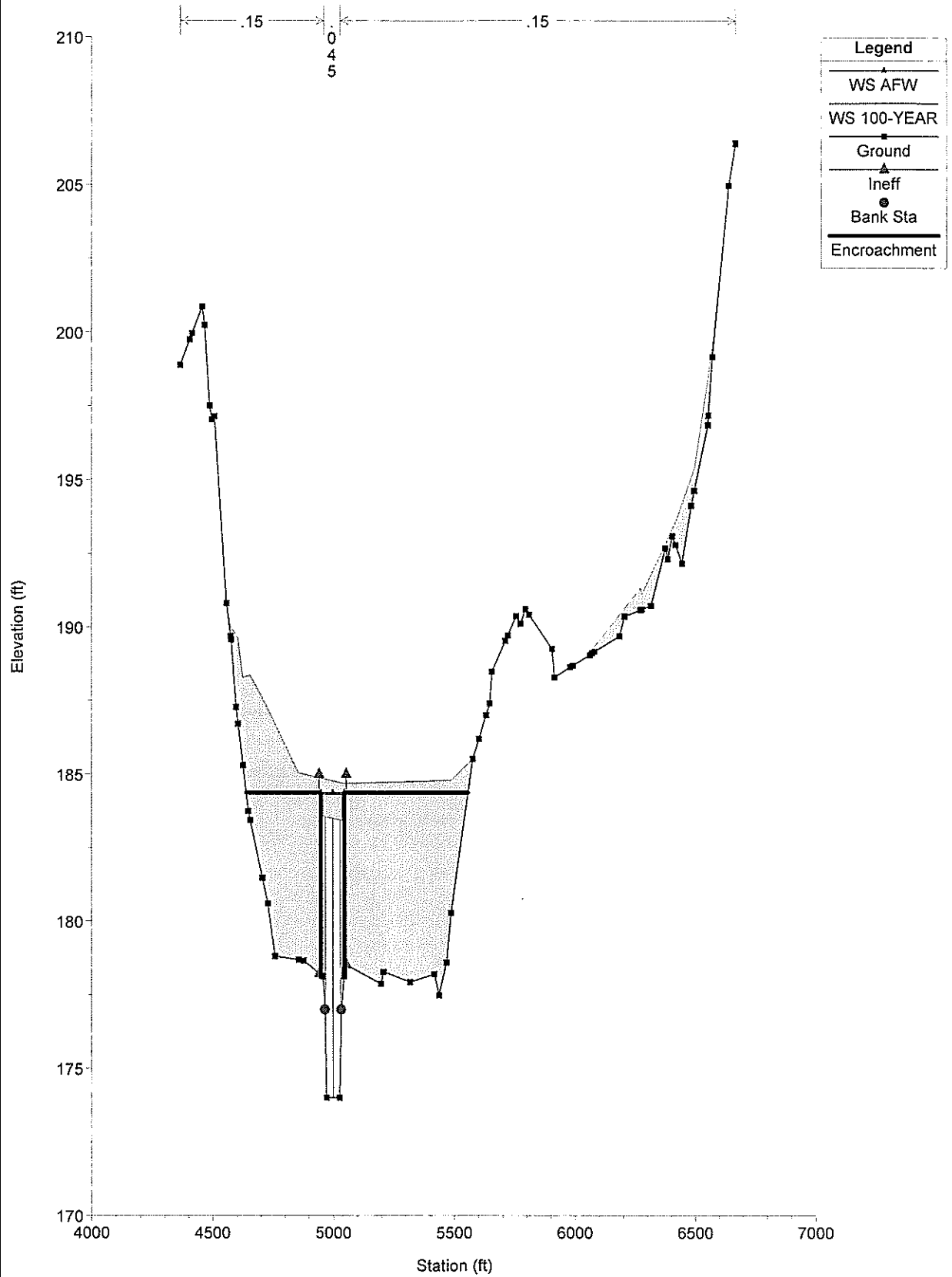
SYSTEM :	GREEN LINE ROUTE :
Secondary S.R. Route	N

UNDER ROUTES AND CLEARANCES

downstream structure

REMARKS :

Bear Swamp Plan: BEAR_SWAMP 2/3/2016
Airlies Road - BS - TOR



HEC-RAS Plan: Base Plan River: Main Stem Reach: Reach - 1

Reach	River Sta	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Reach - 1	39501.2	4900.00	176.24	185.94		185.97	0.000521	3.16	6051.84	1140.64	0.18
Reach - 1	39501.2	4900.00	176.24	186.24		186.29	0.000627	3.54	4773.72	729.80	0.20
Reach - 1	39000.0	4900.00	175.56	185.75		185.77	0.000308	2.51	9285.53	1605.89	0.14
Reach - 1	39000.0	4900.00	175.56	186.02		186.05	0.000372	2.81	6102.98	869.47	0.15
Reach - 1	38500.0	4900.00	175.09	185.61		185.63	0.000256	2.34	8951.83	1377.23	0.13
Reach - 1	38500.0	4900.00	175.09	185.85		185.87	0.000311	2.62	6486.35	874.68	0.14
Reach - 1	38000.0	4900.00	174.49	185.41		185.46	0.000476	3.28	6004.40	932.62	0.18
Reach - 1	38000.0	4900.00	174.49	185.60		185.66	0.000591	3.69	4521.95	638.89	0.20
Reach - 1	37607.2	4900.00	174.01	184.31	179.88	184.95	0.001941	6.67	955.83	917.60	0.37
Reach - 1	37607.2	4900.00	174.01	184.37	179.83	185.08	0.002066	6.91	866.08	96.00	0.38
Reach - 1	37572.2	Bridge									
Reach - 1	37537.2	4900.00	173.75	183.31	179.62	184.06	0.002549	7.26	871.93	891.92	0.42
Reach - 1	37537.2	4900.00	173.75	184.02	179.55	184.74	0.002129	6.97	857.58	96.00	0.39
Reach - 1	37000.0	4900.00	173.49	182.95		183.01	0.000796	3.84	4909.26	969.67	0.22
Reach - 1	37000.0	4900.00	173.49	183.63		183.72	0.000885	4.25	4072.37	684.26	0.24
Reach - 1	36500.0	5480.00	173.29	182.44		182.54	0.001144	4.55	4664.80	1037.60	0.27
Reach - 1	36500.0	5480.00	173.29	183.09		183.22	0.001172	4.82	3891.68	669.90	0.27
Reach - 1	35999.0	5480.00	173.16	181.92		182.00	0.000985	4.10	5154.38	1114.99	0.25
Reach - 1	35999.0	5480.00	173.16	182.57		182.66	0.001013	4.36	4209.92	688.11	0.25
Reach - 1	35500.0	5480.00	172.31	181.22		181.37	0.001610	5.30	4338.54	982.81	0.32

Section 5.0 – Engineering Methods

A summary of the drainage area-peak discharge relationships for the flooding sources studied by detailed methods is shown in Table 10, “Summary of Discharges.”

Table 10—Summary of Discharges

Flooding Source	Location	Drainage Area (square miles)	Discharges (cfs)			
			10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Bear Swamp	Approximately 1.5 miles downstream of Highway 561	44.09	*	*	7,940	*
	Approximately 0.9 mile downstream of Old NC 48	40.99	*	*	7,590	*
	Approximately 2.2 miles downstream of Bowser Crossroads Road crossing	38.10	*	*	7,250	*
	Approximately 0.2 mile downstream of Bowser Crossroads Road crossing	24.32	*	*	5,480	*
	Approximately 0.1 mile downstream of Lilies Road crossing	20.39	*	*	4,900	*
	Approximately 0.7 mile upstream of Lilies Road crossing	18.05	*	*	4,540	*
	Approximately 1.8 miles upstream of Lilies Road crossing	9.53	*	*	3,050	*
	Approximately 2.2 miles upstream of Lilies Road crossing	3.79	*	*	1,710	*
	Approximately 3.1 miles upstream of Lilies Road crossing	3.35	*	*	1,590	*
Beaverdam Swamp	Approximately 1.4 miles downstream of Church Street	31.13	*	*	3,280	*
	Approximately 4.7 miles downstream of Eden Church Road	27.78	*	*	3,070	*
	Approximately 4.1 miles downstream of Eden Church Road	26.94	*	*	3,020	*

StreamStats



Delineation Results

Be sure to thoroughly check the delineated basin for accuracy before using the tools below.

WARREN CO
HALLAM CO

36.33470, -77.84369

South
Rosemary

Halls
County
Airport

StreamStats Basin Characteristics Report - Google Chrome

streamstatsags.cr.usgs.gov/v3_beta/BCreport.htm?rcode=NC&w

USGS StreamStats Version 3.0

Basin Characteristics Ungaged Site Report

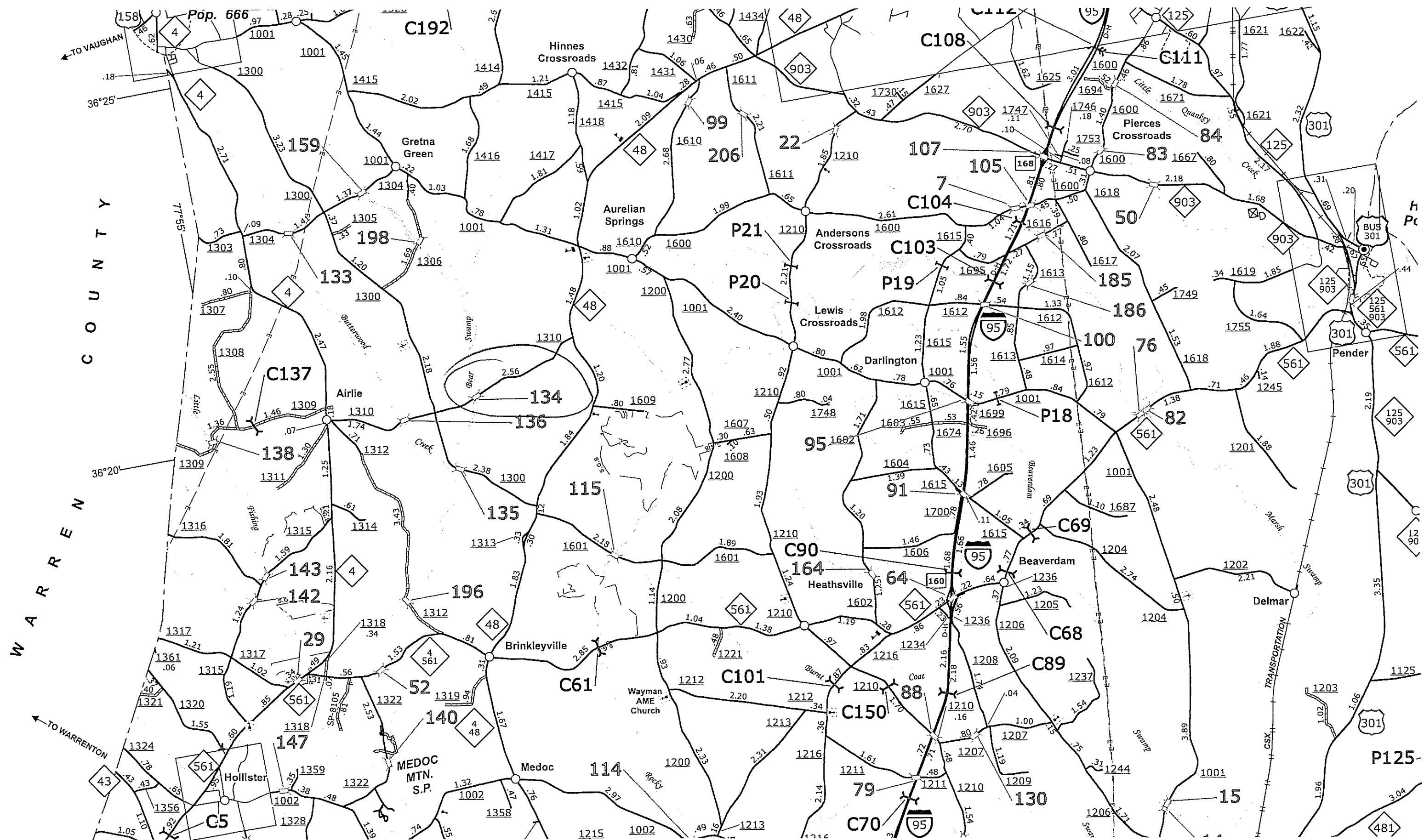
Date: Tues Feb 2, 2016 2:07:54 PM GMT-5

Study Area: North Carolina

NAD 1983 Latitude: 36.3346 (36 20 05)

NAD 1983 Longitude: -77.8437 (-77 50 38)

Label	Value	Units	Definition
DRNAREA	20.3	square miles	Area that drains to a point on a stream
LC11IMP	0.41	percent	Percentage of impervious area determined from NLCD 2011 impervious dataset





Flood Information

 Click the map to view information. 

Map Location

Flood Zone: (Zone X) Minimal Flood Risk

Flood Source:

Base Flood Elevation: Not available for this area.

County: Halifax

Political Area: Halifax County

CID: 370327

Panel: 3944  Download

Map Number: 3720394400J

Panel Effective Date: 7/3/2007

Latitude: 36.33411

Longitude: -77.84119

 Address locations are approximate.
 1717 Airtie Rd, Littleton, NC

-  Risk Information
-  Financial Vulnerability
-  FIS Reports
-  Map Export
-  Data Export

BM Elev. 100.00 Assumed
1 Nail in base of 36" Oak
31' Rt. of Sta. 16+33

P.I. 13+25
El. 104.0
100' VC

Sta. 14+50 3@40' Pres. Cored Slab
120° SKEW

Cr. Gr. Elev. 104.0

DA = 20.4 Sq.
Contour 4.6
Q_{50R} = 2500 cfs
Waterway R
Waterway

2.5%

0.0%

H.W. 101.14

REMOVE

N.G. RT.

15' RT.

PUSH @ 5'

N.G. RT.

10 BPF @ 10'

10 BPF @ 15'

40 BPF @ 20'

225 BPF @ 23'

Pile EB

W.S. 95.12

15' RT.

PUSH @ 5'

10 BPF @ 10'

60 BPF @ 15'

200 BPF @ 17.9'

15' RT.

PUSH @ 5'

10 BPF @ 10'

40 BPF @ 15'

300 BPF @ 18'

N.G. RT.

PUSH @ 5'

10 BPF @ 10'

35 BPF @ 15'

30 BPF @ 20'

120 BPF @ 25'

250 BPF @ 25.5'

Rip Rap C.I.

Reed to Elev. 101.5

Pile EB

Brq 134

11

12

13

14

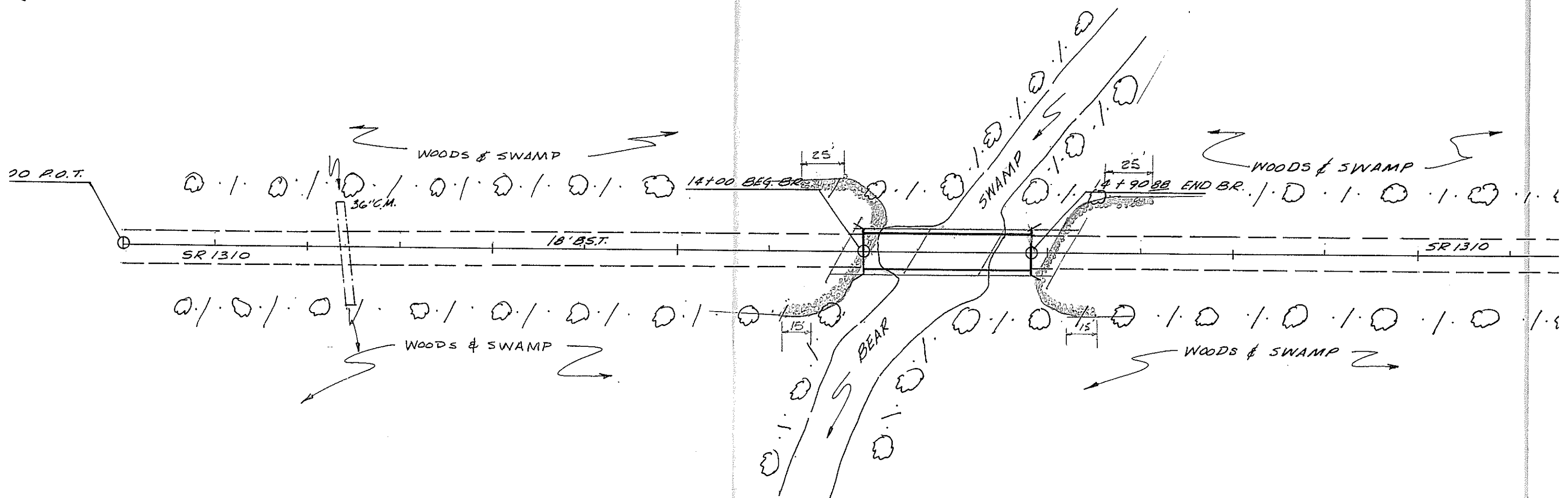
15

16

17

18

Brq 134



Drainage Area 22^{sq} MILES Obtained from SOIL MAP

Character of Drainage Area LONG & OVAL SHAPED

Waterway Required by Formula 520^{sq} ft Sq. Ft. Formula Used TALBOT'S C=0.4

Maximum Stream Discharge _____ Sec. ft. Date _____

Discharge Data Obtained From _____

Period Covered by Discharge Records _____

Discharge Used for Design of Waterway _____ Sec. Ft.

Waterway Area Considered Necessary 550^{sq} ft Sq. Ft.

Waterway Area Provided by Recommended Structure _____ Sq. Ft.

Data on Existing Structure _____

Data on other Structures 300' Up or Down Stream BRIDGE # 135 52.6" OVERALL LENGTH;
17'8" CLEAR ROADWAY; 3@17'0" POST & SEALS

Method Used in Determining Foundation Material DRIVING 1/2" IRON RODS

Is Additional Foundation Investigation Considered Advisable NO

Other Information _____

Downstream
Structure

28 41 0000 1960 NO TIP STA_5575 BEAR SWAMP SR 1300
WO_821465.PDF

BEAR SWAMP

BRIDGE DEPARTMENT
N. C. STATE HIGHWAY & PUBLIC WORKS COMMISSION
RALEIGH, N. C.

BRIDGE SURVEY REPORT

Br 135

PART 2
JECT NO. 8.21465 HALIFAX COUNTY, STA. 55+75

DGE OVER BEAR SWAMP Known as _____

Co. Rd. 1300 between LITTLETON and N.C. 48

mmended Width of Roadway 24' Skew 27° RH

mmended Structure 3@30' C-C I-BEAMS; ON PILES

Rip Rap IS REQD.

Temporary Crossing NOT REQD.

Present Structure TO BE REMOVED

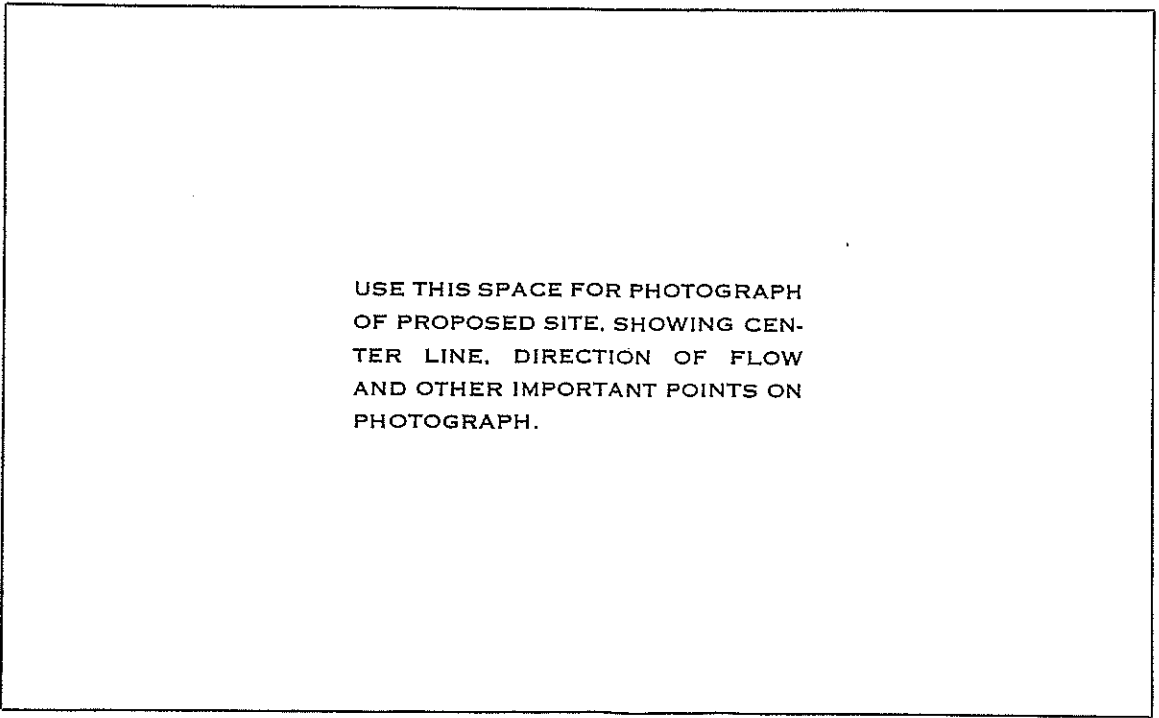
New Location is ±300 Up, ~~Down~~ Stream from Crossing on Present Road

Nearest Shipping Point LITTLETON, N.C. On SEABOARD R. R.

Distance from Shipping Point to Bridge Site is 8.7 miles.

Elevations From B. M. #5 2 NAILS IN BASE 18" PINE 60' RT Elev. 310.05

STATION 51+90.1-



Surveyed by J.W. COLLIER Assisted by M.A. HEAD, R.L. SPENCE Date DEC. 1960

brg 135

