PREDESIGN/PRESURVEY REPORT

Project No.:
TIP No.:
Let Date:
WBS No.:

Bridge No.: 280095
Road No.: SR1838 Lake leonard rd.
Stream: CREEK

County: DAVIDSON

Type of Request: TIP

Date: 10/21/2014 **Name**: SMQ **Assigned to:**

Checked by:

Prior Survey Date (attach copy of prior survey): N/A

Study by Scour Section: Attached

Flood Zone: YES **Detail Study:** DS **Date:** 03/16/09 **Panel No.:** 6747

BM Info:

Quad Map: MIDWAY SW **Drainage Area:** 5.61 SQ MI **From:** Strm Stat Region 1 RURAL

Q25: 1527 CFS **Q50:** 1860 CFS **Q100:** 2161 CFS **Method:** USGS SI Report 2009-5158

EXISTING BRIDGE INFORMATION

Location: 0.4 MI. W. JCT. SR1813

Average Daily Traffic: 300 2011 YEAR

Length: 26 FEET **Bed-to-Crown:** 11 FEET **Water Depth:** 1 FEET

Type of Structure: Timber deck on I-beams

Type of Span(s): 1@26'0

Upstream Structure: 280361

Location: 0.2 MI. N. JCT. SR1813

Bed-to-Crown: 10 FEET **Prior Survey:** N/A

Downstream Structure: CITY LAKE

Location:

Bed-to-Crown: **Prior Survey:**

SCS Watershed:

ENVIRONMENTAL

Trout Stream: No **Anadromous Fish:** **Primary Nursery Area:** No

High Quality Waters: No **Nutrient Sensitive Waters:** No

Near Water Supply Intake: No **CAMA County:** No

Stream Classification: WS-III: Water Supply III - Moderately Developed Notes: None

DENR River Basin Info: Yadkin/Pee-Dee

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

BEVERLY EAVES PERDUE
GOVERNOR

EUGENE A. CONTI, JR.
SECRETARY

May 20, 2010

MEMORANDUM TO: Mr. Don Idol
Assistant Bridge Inspection Engineer

FROM: Jerry Beard, P.E.
Scour Engineer
Hydraulic Design Unit

SUBJECT: **Transmittal of Bridge Scour Assessments**

The scour committee recommends, based on the Geotechnical Units low risk screening using NCHRP 24-25 "Guidelines for Risk-Based Management of Bridges with Unknown Foundations", that the code for Item 113 be changed to Z for the following bridges:

County Name	Bridge #	Item 113 Code
DAVIDSON	280007	Z
DAVIDSON	280045	Z
DAVIDSON	280052	Z
DAVIDSON	280069	Z
DAVIDSON	280077	Z
DAVIDSON	280079	Z
DAVIDSON	280086	Z
DAVIDSON	280090	Z
DAVIDSON	280095	Z
DAVIDSON	280117	Z
DAVIDSON	280134	Z
DAVIDSON	280148	Z
DAVIDSON	280195	Z
DAVIDSON	280220	Z
DAVIDSON	280235	Z
DAVIDSON	280237	Z
DAVIDSON	280240	Z
DAVIDSON	280242	Z
DAVIDSON	280271	Z
DAVIDSON	280277	Z
DAVIDSON	280282	Z
DAVIDSON	280286	Z
DAVIDSON	280295	Z

MAILING ADDRESS:
NC DEPARTMENT OF TRANSPORTATION
HYDRAULICS UNIT
1590 MAIL SERVICE CENTER
RALEIGH NC 27699-1590

TELEPHONE 919-250-4100
FAX. 919-250-4108

WEBSITE.
HTTP://WWW.NCDOT ORG/DOH/PRECONSTRUCT/HIGHWAY/HYDRO/

LOCATION:
CENTURY CENTER COMPLEX
BUILDING B
1020 BIRCH RIDGE DRIVE
RALEIGH NC

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

BEVERLY EAVES PERDUE
GOVERNOR

EUGENE A. CONTI, JR.
SECRETARY

County Name	Bridge #	Item 113 Code
DAVIDSON	280297	Z
DAVIDSON	280303	Z
DAVIDSON	280305	Z
DAVIDSON	280310	Z
DAVIDSON	280349	Z
DAVIDSON	280361	Z
DAVIDSON	280407	Z
DAVIDSON	280408	Z
DAVIDSON	280447	Z

Code Z:

Bridge with "Unknown Foundation" that has not been evaluated for scour. Average Daily Traffic (ADT) is less than 1500. Bridge is considered low risk using NCHRP 24-25 "Guidelines for Risk-Based Management of Bridges with Unknown Foundations". A Plan of Action (POA) has been implemented.

POA

Monitor bridge foundation during biennial inspection cycle for case 1 or 2.

1) If mud line at any end bent or interior bent scours more than 4 feet from the established baseline contact the Hydraulics Unit. Establish a baseline using the 2008-2009 inspection soundings.
2) If footings have greater than 10% of the bearing undermined, contact the Hydraulics Unit.

If you have any questions or comments concerning the above please feel free to contact me at 250-4100.

MAILING ADDRESS:
NC DEPARTMENT OF TRANSPORTATION
HYDRAULICS UNIT
1590 MAIL SERVICE CENTER
RALEIGH NC 27699-1590

TELEPHONE 919-250-4100
FAX 919-250-4108

WEBSITE.
HTTP://WWW.NCDOT ORG/DOH/PRECONSTRUCT/HIGHWAY/HYDRO/

LOCATION:
CENTURY CENTER COMPLEX
BUILDING B
1020 BIRCH RIDGE DRIVE
RALEIGH NC

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
BRIDGE MANAGEMENT UNIT

ATTENTION TEMPORARY REPAIRS

BRIDGE INSPECTION REPORT

INSPECTION TYPE: Routine Inspection

COUNTY DAVIDSON BRIDGE NUMBER 280095 INSPECTION CYCLE 2 YRS

ROUTE SR1838 ACROSS CREEK M.P. 0

LOCATION 0.4 MI. W. JCT. SR1813

SUPERSTRUCTURE TIMBER DECK ON I-BEAMS

SUBSTRUCTURE END BENTS:TIMBER CAPS & PILES,CONCRETE ENCASED

SPANS 1@26'0

LONGITUDE 80° 12' 39.93" LATITUDE 35° 52' 58.80"

INSPECTION DATE 04/08/2013 PRESENT CONDITION GOOD

PRESENT POSTING SV 16 TTST 21 SV 16 TTST 21 PROPOSED POSTING

OTHER SIGNS PRESENT (4) DELINEATORS

LOOKING EAST

Fracture Critical	No
Temporary Shoring	No
Scour Critical	No
Scour POA	Yes

SIGN NOTICE ISSUED FOR		NUMBERED REQUIRED
No	WEIGHT LIMIT	
No	DELINEATORS	
No	NARROW BRIDGE	
No	ONE LANE BRIDGE	
No	LOW CLEARANCE	

NATIONAL BRIDGE INVENTORY-------- STRUCTURE INVENTORY AND APPRAISAL Run Date: 05/13/2013

IDENTIFICATION

(1) STATE NAME -NORTH CAROLINA BRIDGE 280095
(8) STRUCTURE NUMBER(FEDERAL) 000000000570095
(5) INVENTORY ROUTE (ON/UNDER) - ON 31018380
(2) STATE HIGHWAY DEPARTMENT DISTRICT 1
(3) COUNTY CODE 57 (4) PLACE CODE 0
(6) FEATURE INTERSECTED - CREEK
(7) FACILITY CARRIED SR1838
(9) LOCATION 0.4 MI. W. JCT. SR1813
(11)MILEPOINT 0
(16)LAT 35° 52' 58.80" (17)LONG 80° 12' 39.93"
(98)BORDER BRIDGE STATE CODE PCT SHARE
(99)BORDER BRIDGE STRUCTURE NO

STRUCTURE TYPE AND MATERIAL

(43) STRUCTURE TYPE MAIN: Steel
TYPE - Stringer Mutlibeam or Girder CODE 302
(44) STRUCTURE TYPE APPR :
TYPE - CODE 000
(45) NUMBER OF SPANS IN MAIN UNIT 1
(46) NUMBER OF APPROACH SPANS
(107)DECK STRUCTURE TYPE - 8 CODE
(108)WEARING SURFACE / PROTECTIVE SYSTEM :
(A) TYPE OF WEARING SURFACE - CODE
(B) TYPE OF MEMBRANE - CODE
(C) TYPE OF DECK PROTECTION - CODE

AGE AND SERVICE

(27) YEAR BUILT 1953
(106)YEAR RECONSTRUCTED
(42) TYPE OF SERVICE : ON - Highway
UNDER - Waterway CODE 15
(28) LANES: ON STRUCTURE 2 UNDER STRUCTURE 0
(29) AVERAGE DAILY TRAFFIC 300
(30) YEAR OF ADT 2011 (109) TRUCK ADT PCT 6%
(19) BYPASS OR DETOUR LENGTH 1 MI

GEOMETRIC DATA

(48) LENGTH OF MAXIMUM SPAN 25 FT
(49) STRUCTURE LENGTH 26 FT
(50)CURB OR SIDEWALK: LEFT .333 FT RIGHT .333 FT
(51) BRIDGE ROADWAY WIDTH CURB TO CURB 19.167 FT
(52) DECK WIDTH OUT TO OUT 20.167 FT
(32) APPROACH ROADWAY WIDTH (W/SHOULDERS) 16 FT
(33) BRIDGE MEDIAN - No Median CODE 0
(34) SKEW 30° (35) STRUCTURE FLARED 0
(10) INVENTORY ROUTE MIN VERT CLEAR 999.9 FT
(47) INVENTORY ROUTE TOTAL HORIZ CLEAR 19.167 FT
(53) MIN VERT CLEAR OVER BRIDGE RDWY 999.9 FT
(54) MIN VERT UNDERCLEAR REF Not a Highway or Railroad 0 FT
(55) MIN LAT UNDERCLEAR RT REF Not a Highway or Railroad 000 FT
(56) MIN LAT UNDERCLEAR LT REF - 000 FT

NAVIGATION DATA

(38) NAVIGATION CONTROL - No Navigational Control CODE 0
(111)PIER PROTECTION - CODE
(39) NAVIGATION VERTICAL CLEARANCE 0
(116)VERT - LIFT BRIDGE NAV MIN VERT CLEAR FT
(40) NAVIGATION HORIZONTAL CLEARANCE 0 FT

SUFFICIENCY RATING = 18.95
STATUS = Structurally Deficient

CLASSIFICATION — CODE

(112)NBIS BRIDGE SYSTEM - YES
(104)HIGHWAY SYSTEM Is not on NHS 0
(26) FUNCTIONAL CLASS - Local 09
(100)STRAHNET HIGHWAY - Not a STRAHNET Route 0
(101)PARALLEL STRUCTURE - No Parallel Structure N
(102)DIRECTION OF TRAFFIC - 2-way Traffic 2
(103)TEMPORARY STRUCTURE - Temporary Structure/Conditions T
(110)DESIGNATED NATIONAL NETWORK - Not on the National Network 0
(20) TOLL On Free Road 3
(31) MAINTAIN - State Highway Agency 01
(22) OWNER - State Highway Agency 01
(37) HISTORICAL SIGNIFICANCE - Not Eligible 5

CONDITION — CODE

(58) DECK 7
(59) SUPERSTRUCTURE 7
(60) SUBSTRUCTURE 3
(61) CHANNEL & CHANNEL PROTECTION 7
(62) CULVERTS N

LOAD RATING AND POSTING — CODE

(31) DESIGN LOAD Unknown 0
(63) OPERATING RATING METHOD - Load Factor 1
(64) OPERATING RATING - HS-1 1
(65) INVENTORY RATING METHOD - Load Factor 1
(66) INVENTORY RATING - HS-1 1
(70) BRIDGE POSTING - Posting Required 0
(41) STRUCTURE OPEN, POSTED ,OR CLOSED P
DESCRIPTION - Posted for Load

APPRAISAL — CODE

(67) STRUCTURAL EVALUATION 3
(68) DECK GEOMETRY 3
(69) UNDERCLEARANCES,VERTI & HORIZ N
(71) WATERWAY ADEQUACY 7
(72) APPROACH ROADWAY ALIGNMENT 8
(36) TRAFFIC SAFETY FEATURES 0000
(113)SCOUR CRITICAL BRIDGES U

PROPOSED IMPROVEMENTS

(75) TYPE OF WORK - CODE
(76) LENGTH OF STRUCTURE IMPROVEMENT
(94) BRIDGE IMPROVEMENT COST
(95) ROADWAY IMPROVEMENT COST
(96) TOTAL PROJECT COST
(97) YEAR OF IMPROVEMENT COST ESTIMATE
(114)FUTURE ADT 600 (115) YEAR FUTURE ADT 2025

INSPECTIONS

(90) INSPECTION DATE 04/08/2013
(92) CRITICAL FEATURE INSPECTION : (93) CFI DATE
A) FRACTURE CRIT DETAIL - NO A)
B) UNDERWATER INSP - NO B)
C) OTHER SPECIAL INSP NO C)
SCOUR

BRIDGE MANAGEMENT UNIT

DATA ON EXISTING STRUCTURE Run Date: 05/13/2013

COUNTY :	DIVISION :	DISTRICT:	STRUCTURE NUMBER :	LENGTH :
DAVIDSON	9	1	280095	26 FEET

ROUTE CARRIED :	FEATURE INTERSECTED :
SR1838	CREEK

LOCATED :	BRIDGE NAME :	CITY :
0.4 MI. W. JCT. SR1813		

FUNC. CLASS :	SYST.ON :	SYST.UNDER :	ADT & YR :	RAIL TYPE :
09	NFA	NFA	300 2011	LT 227 RT 227

BUILT :	BY :	PROJ :	FED.AID PROJ :	DESIGN LOAD :
1953	BMU			Unknown

REHAB :	BY :	PROJ :	ALIGNMENT :	SKEW :	LANES :
			TAN	60	ON 2 UNDER 0

NAVIGATION :	HT. CRN. TO BED :	WATER DEPTH :
VC 0 FT HC 0 FT	11 FT	1 FT

SUPERSTRUCTURE : TIMBER DECK ON I-BEAMS

SUBSTRUCTURE : END BENTS:TIMBER CAPS & PILES,CONCRETE ENCASED

SPANS : 1@26'0

BEAMS OR GIRDERS : 9 LINES OF W12X27 I-BEAMS @ 2'6 1/2 CENTERS

FLOOR :	ENCROACHMENT :	DECK (OUT TO OUT) :
4X8 TIM,2.0 AWS		20.167 FT

CLEAR ROADWAY :	BETWEEN RAILS :	SIDEWALK OR CURB :
19.167 FT	19.833 FT	LT .333 FT RT .333 FT

VERT.CL.OVER :
999.9 FT

INV.RTG. :	OPE.RTG. :	CONTR.MEMBER :	POSTED :
HS-1	HS-1	Int W 12 x 27	SV 16 TTST 21 DATE 06/06/2007

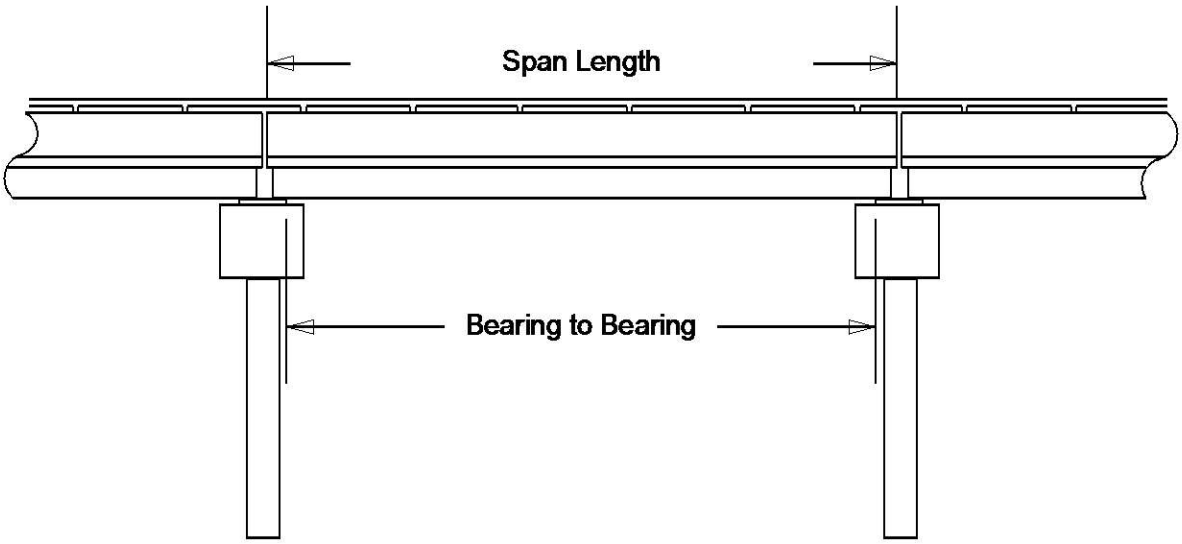
SYSTEM :	GREEN LINE ROUTE :
Secondary S.R. Route	N

UNDER ROUTES AND CLEARANCES

REMARKS :

Structure Data Worksheet

County: DAVIDSON Structure No: 280095 Date: 04/08/2013 Inspected By: BTH



Span No	Span Length	Bearing to Bearing	Comments
1	26	25.167	NBIS BL : 22.833 FT

Stream Bed Soundings

(See next sheet for profile sketch)

Bridge No: 280095 County: DAVIDSON Date: 04/08/2013 By: BTH

Record sounding from top of rail. Other location if needed:

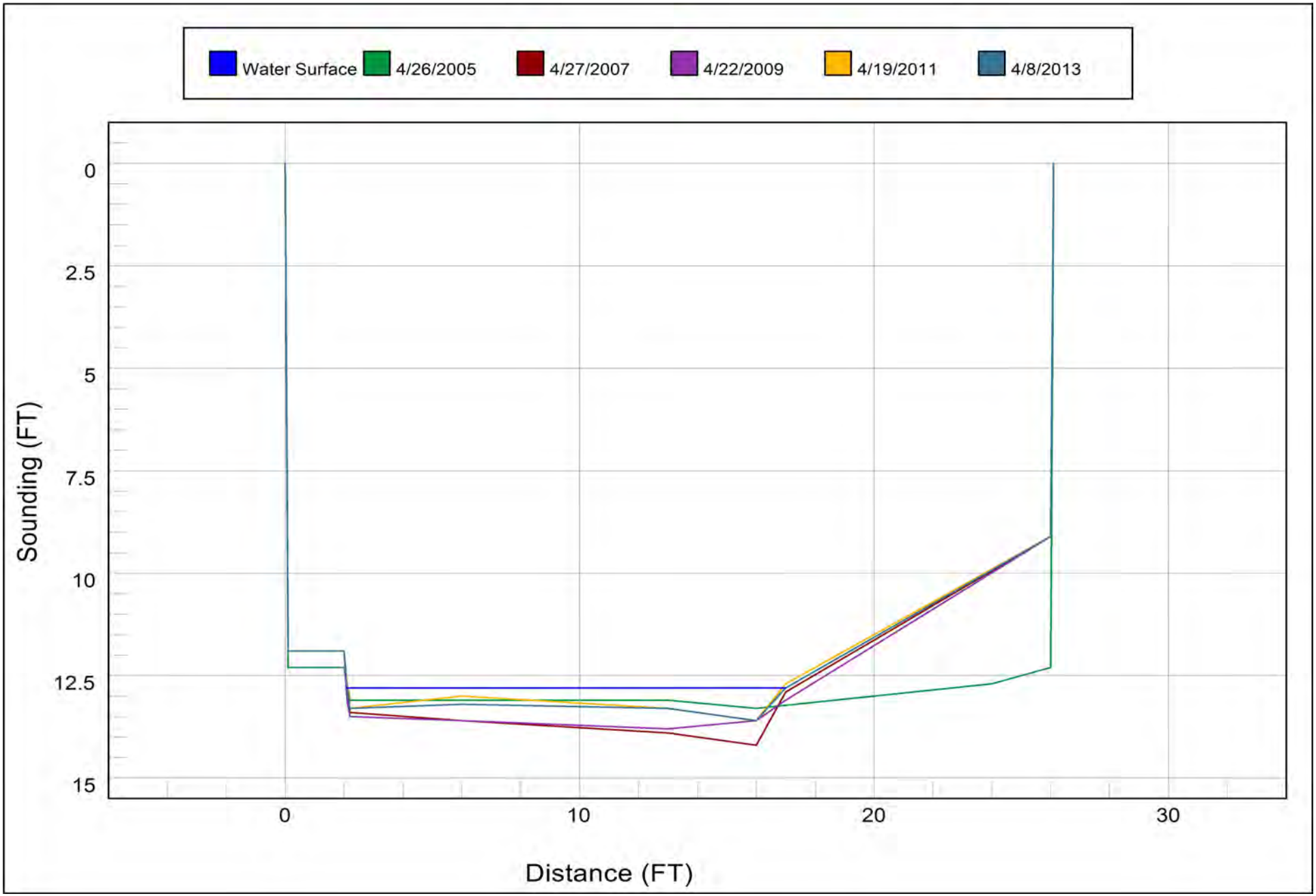
Distance from Highwater Mark to top of rail: Location of Highwater Mark:

DOWNSTREAM			UPSTREAM		
Distance (Station) (ft)	Sounding (ft)	Description	Distance (Station) (ft)	Sounding (ft)	Description
0	0	ABUT 1	0	0.0	ABUT 1
0.1	11.9				
2	11.9				
2.1	12.8	WS WE	2.1	13.6	
2.2	13.3				
6	13.2				
13	13.3				
16	13.6				
17	12.8	WS WE			
26	9.1		26	10.2	
26.1	0	ABUT 2	26.1	0.0	ABUT 2

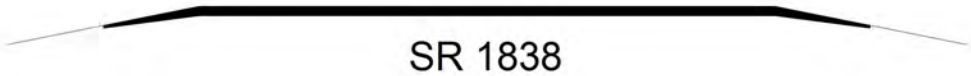
Bridge: 280095 County DAVIDSON Date: 04/08/2013

STREAMBED PROFILE (Downstream)

Top of Rail = 0 FT (Sounding)



Bridge Inspection Field Sketch



Roadway	16ft Wide	2 Paved Lanes	Looking East
Left Shoulder	6ft Wide		6ft Unpaved
Right Shoulder	6ft Wide		6ft Unpaved
Left Guardrail			
Right Guardrail			

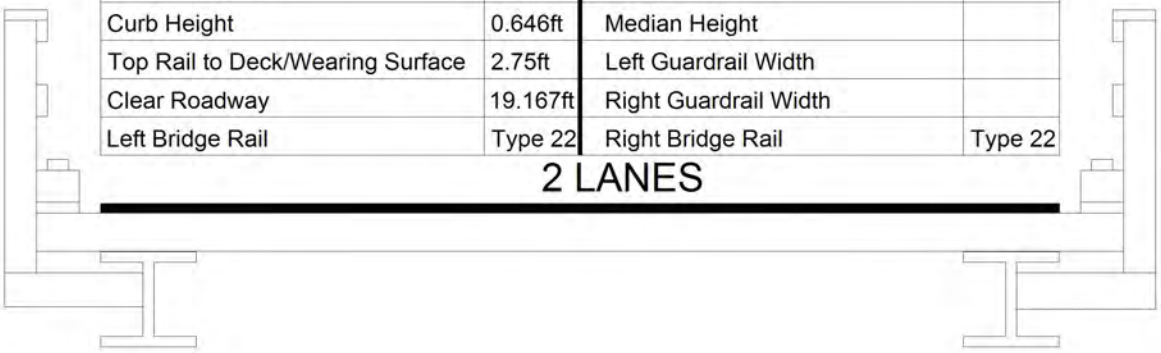
MEASUREMENTS VERIFIED 4-08-13 BTH
MEASUREMENTS VERIFIED 4-19-11 BTH
MEASUREMENTS VERIFIED 4-22-09 BTH

Title	Description
APPROACH ROADWAY	SHEET 1

Bridge No: 280095	Drawn By: BTH	Date: 04/26/07	File Name: S0090000119

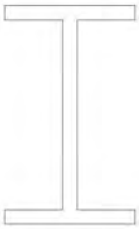
Bridge Inspection Field Sketch

Deck Width/Out to Out	20.167ft	Wearing Surface	0.167ft
Between Rails	19.833ft	Median Width	
Curb Height	0.646ft	Median Height	
Top Rail to Deck/Wearing Surface	2.75ft	Left Guardrail Width	
Clear Roadway	19.167ft	Right Guardrail Width	
Left Bridge Rail	Type 22	Right Bridge Rail	Type 22



Measurements for Span #	1		
Deck Thickness	0.313	Left Overhang	1.083
Top of Rail to Bottom of Beam	4.583	Right Overhang	1.083

Beam No	Beam Type	Spacing	Comments
1	Steel I Beam	2.25	
2	Steel I Beam	2.25	
3	Steel I Beam	2.25	
4	Steel I Beam	2.25	
5	Steel I Beam	2.25	
6	Steel I Beam	2.25	
7	Steel I Beam	2.25	
8	Steel I Beam	2.25	
9	Steel I Beam		



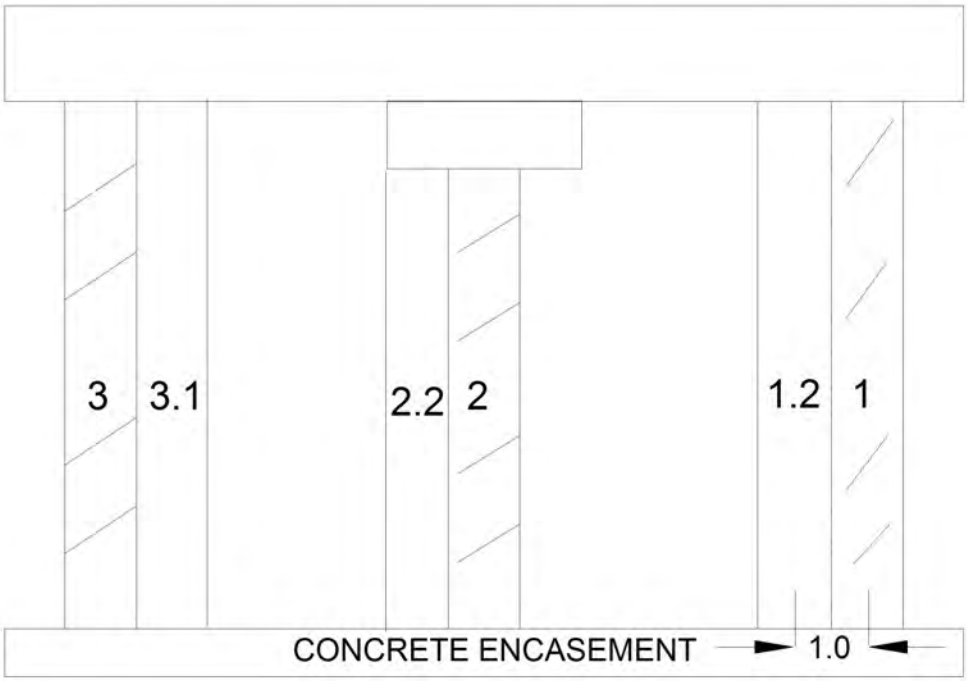
BEAMS	WIDTH	HEIGTH	FLANGE	WEB
ALL	.542	1.0	.026	.020

MEASUREMENTS VERIFIED 4-08-13 BTH
MEASUREMENTS VERIFIED 4-19-11 BTH
MEASUREMENTS VERIFIED 4-22-09 BTH

Title	Description
SUPERSTRUCTURE	SHEET 2

Bridge No: 280095	Drawn By: BTH	Date: 04/26/07	File Name: S0090000120

Bridge Inspection Field Sketch



Abutment #	1		
Cap - Beam Type (Wood or Steel)			
Cap Size	25ft Long	.959ft Wide	0.833ft High
Left Overhang	3.583ft	Lt Cap/Beam Overhang	2.667ft
Right Overhang	4ft	Rt Cap/Beam Overhang	1.833ft
Timber Sub Cap			
Size	3ft Long	.980ft Wide	0.833ft High
Left pile to splice			
Left Overhang	2.5ft		
Right Overhang	.5ft		
Sill - Sill			
Sill Size	28ft Long	2ft Wide	2ft High

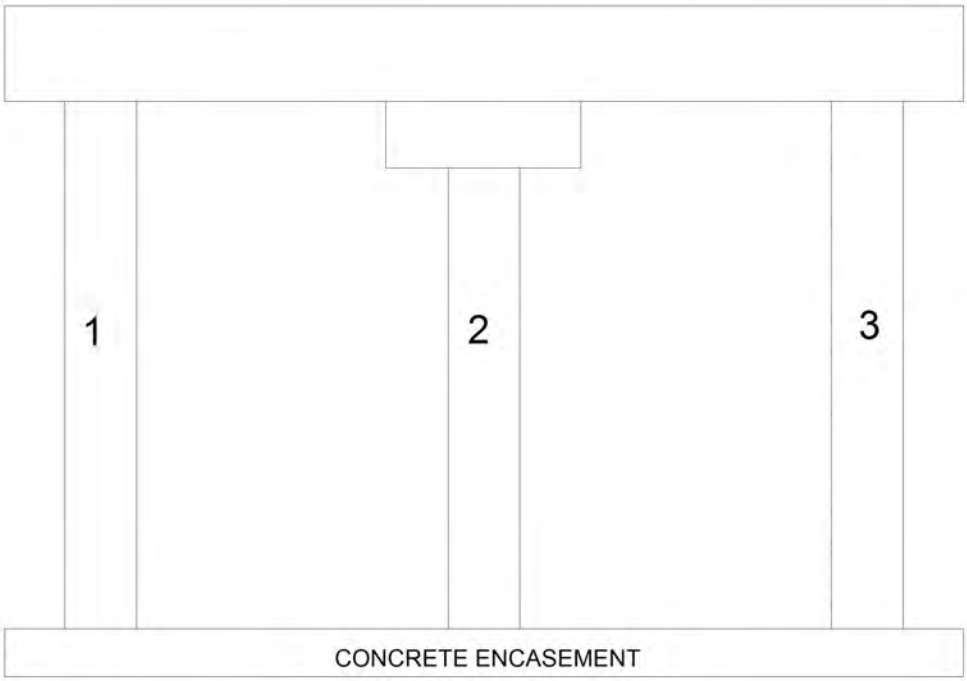
Pile #	Material	Pile Type	Spacing	Length	Width/Diam.	Height	Orientation
1	Wood or Timber	Pile Bent	9.583		1.0 ft. Dia.		Vertical
2	Wood or Timber	Pile Bent	7.417		1.0 ft. Dia.		Vertical
3	Wood or Timber	Pile Bent			1.0 ft. Dia.		Vertical

MEASUREMENTS VERIFIED 4-08-13 BTH
MEASUREMENTS VERIFIED 4-19-11 BTH
MEASUREMENTS VERIFIED 4-22-09 BTH

Title	Description
ABUT 1	SHEET 3

Bridge No:	Drawn By:	Date:	File Name:
280095	BTH	04/26/07	S0090000121

Bridge Inspection Field Sketch



Abutment #	2		
Cap - Beam Type (Wood or Steel)			
Cap Size	24ft Long	1ft Wide	0.833ft High
Left Overhang	3.417ft	Lt Cap/Beam Overhang	1ft
Right Overhang	3.333ft	Rt Cap/Beam Overhang	2.75ft
Timber Sub Cap			
Size	3ft Long	1ft Wide	0.792ft High
Left pile to splice			
Left Overhang	1.5ft		
Right Overhang	1.5ft		
Sill - Sill			
Sill Size	28ft Long	2ft Wide	2ft High

Pile #	Material	Pile Type	Spacing	Length	Width/Diam.	Height	Orientation
1	Wood or Timber	Pile Bent	8.417 ft.		1.0 ft.Dia.		Vertical
2	Wood or Timber	Pile Bent	8.75 ft.		1.0 ft.Dia.		Vertical
3	Wood or Timber	Pile Bent			1.0 ft.Dia.		Vertical

MEASUREMENTS VERIFIED 4-08-13 BTH

MEASUREMENTS VERIFIED 4-19-11 BTH
MEASUREMENTS VERIFIED 4-22-09 BTH

Title	Description
ABUT 2	SHEET 4

Bridge No:	Drawn By:	Date:	File Name:
280095	BTH	04/26/2007	S0090000157

LOOKING WEST

EAST POSTING

Structure 280095 County DAVIDSON Date: 04/08/2013 Structure Photos

LOOKING NORTH

DOWNSTREAM

ABUT 2

UPSTREAM

ABUT 1 WITH TEMPORARY REPAIRS

SUPERSTRUCTURE SPAN

DOWNSTREAM

USGS
North Carolina StreamStats

Streamstats Ungaged Site Report

Date: Tue Nov 4 2014 06:04:22 Mountain Standard Time
Site Location: North_Carolina
NAD27 Latitude: 35.8830 (35 52 59)
NAD27 Longitude: -80.2114 (-80 12 41)
NAD83 Latitude: 35.8831 (35 52 59)
NAD83 Longitude: -80.2111 (-80 12 40)
Drainage Area: 5.61 mi2
Percent Urban: 11.0 %
Percent Impervious: 3.3 %

Peak Flows Region Grid Basin Characteristics

100% Peak Southeast US 2009 5158 (5.61 mi2)

Parameter	Value	Regression Equation Valid Range	
		Min	Max
Drainage Area (square miles)	5.61	1	9000
Percent Area in Region 1 (percent)	100.000	0	100
Percent Area in Region 2 (percent)	0.000	0	100
Percent Area in Region 3 (percent)	0.000	0	100
Percent Area in Region 4 (percent)	0.000	0	100
Percent Area in Region 5 (percent)	0.000	0	100

Urban Flows Region Grid Basin Characteristics

100% Peak urban Blue Ridge-Piedmont FS007-00 (5.61 mi2)

Parameter	Value	Regression Equation Valid Range	
		Min	Max
Drainage Area (square miles)	5.61	0.04	41
Area of Impervious Surfaces (percent)	3.27	2	54.6

Peak Flows Region Grid Streamflow Statistics

Statistic	Flow (ft^3/s)	Prediction Error (percent)	Equivalent years of record	90-Percent Prediction Interval	
				Minimum	Maximum
PK2	485	35		279	843
PK5	870	34		505	1500
PK10	1150	35		658	2020
PK25	1530	38		841	2770
PK50	1860	40		992	3490
PK100	2160	42		1120	4190
PK200	2460	44		1230	4940
PK500	2930	48		1390	6170

Urban Flows Region Grid Streamflow Statistics

Statistic	Flow (ft^3/s)	Standard Error (percent)	Equivalent years of record	90-Percent Prediction Interval	
				Minimum	Maximum
PK2U	268	40			
PK5U	503	39			
PK10U	695	38			
PK25U	1100	39			
PK50U	1340	38			
PK100U	1590	38			

This digital Flood Insurance Rate Map (FIRM) was produced through a unique cooperative partnership between the State of North Carolina and the Federal Emergency Management Agency (FEMA). The State of North Carolina has implemented a long term approach to floodplain management to decrease the costs associated with flooding. This is demonstrated by the State's commitment to map flood hazard areas at the local level. As a part of this effort, the State of North Carolina has joined in a Cooperating Technical State agreement with FEMA to produce and maintain this digital FIRM.

FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR ZONE DESCRIPTIONS AND INDEX MAP

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT

HTTP://FRIS.NC.GOV/FRIS

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) *Zone A, V, A99*
	With BFE or Depth *Zone AE, AO, AH, VE, AR*
	Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	0.2% Annual Chance Flood Hazard, Areas of 1% Annual Chance Flood with Average Depth Less Than One Foot or With Drainage Areas of Less Than One Square Mile *Zone X*
	Future Conditions 1% Annual Chance Flood Hazard *Zone X*
	Area with Reduced Flood Risk due to Levee See Notes *Zone X*
OTHER AREAS	Areas Determined to be Outside the 0.2% Annual Chance Floodplain *Zone X*
GENERAL STRUCTURES	Channel, Culvert, or Storm Sewer
	Accredited or Provisionally Accredited Levee, Dike, or Floodwall
	Non-accredited Levee, Dike, or Floodwall
	BM5510 North Carolina Geodetic Survey bench mark
	BM5510 National Geodetic Survey bench mark
	BM5510 Contractor Est. NCFMP Survey bench mark
	012 18.2 Cross Sections with 1% Annual Chance Water Surface Elevation (BFE)
	8 Coastal Transect
	Coastal Transect Baseline
	Profile Baseline
OTHER FEATURES	Hydrographic Feature
	Limit of Study
	Jurisdiction Boundary

NOTES TO USERS

For information and questions about this map, available products associated with this FIRM including historic versions of this FIRM, how to order products or the National Flood Insurance Program in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Map Service Center website at http://msc.fema.gov. An accompanying Flood Insurance Study report, Letter of Map Revision (LOMR) or Letter of Map Amendment (LOMA) revising portions of this panel, and digital versions of this FIRM may be available. Visit the North Carolina Floodplain Mapping Program website at http://www.ncfloodmaps.com, or contact the FEMA Map Service Center.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Map Service Center at the number listed above.

For community and countywide map dates refer to the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in the community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

Base map information shown on this FIRM was provided in digital format by the North Carolina Floodplain Mapping Program (NCFMP). The source of this information can be determined from the metadata available in the digital FLOOD database and in the Technical Support Data Notebook (TSDN).

ACCREDITED LEVEE NOTES TO USERS: If an accredited levee note appears on this panel check with your local community to obtain more information, such as the estimated level of protection provided (which may exceed the 1-percent-annual-chance level) and Emergency Action Plan, on the levee system(s) shown as providing protection. To mitigate flood risk in residual risk areas, property owners and residents are encouraged to consider flood insurance and floodproofing or other protective measures. For more information on flood insurance, interested parties should visit the FEMA Website at http://www.fema.gov/business/nfip/index.shtm.

PROVISIONALLY ACCREDITED LEVEE NOTES TO USERS: If a Provisionally Accredited Levee (PAL) note appears on this panel, check with your local community to obtain more information, such as the estimated level of protection provided (which may exceed the 1-percent-annual-chance level) and Emergency Action Plan, on the levee system(s) shown as providing protection. To maintain accreditation, the levee owner or community is required to submit the data and documentation necessary to comply with Section 65.10 of the NFIP regulations. If the community or owner does not provide the necessary data and documentation or if the data and documentation provided indicates the levee system does not comply with Section 65.10 requirements, FEMA will revise the flood hazard and risk information for this area to reflect de-accreditation of the levee system. To mitigate flood risk in residual risk areas, property owners and residents are encouraged to consider flood insurance and floodproofing or other protective measures. For more information on flood insurance, interested parties should visit the FEMA Website at http://www.fema.gov/business/nfip/index.shtm.

LIMIT OF MODERATE WAVE ACTION NOTES TO USERS: For some coastal flooding zones the AE Zone category has been divided by a Limit of Moderate Wave Action (LiMWA). The LiMWA represents the approximate landward limit of the 1.5-foot breaking wave. The effects of wave hazards between the VE Zone and the LiMWA (or between the shoreline and the LiMWA for areas where VE Zones are not identified) will be similar to, but less severe than those in the VE Zone.

Limit of Moderate Wave Action (LiMWA)

COASTAL BARRIER RESOURCES SYSTEM (CBRS) NOTE

This map may include approximate boundaries of the CBRS for informational purposes only. Flood insurance is not available within CBRS areas for structures that are newly built or substantially improved on or after the date(s) indicated on the map. For more information see http://www.fws.gov/habitatconservation/coastal_barrier.html, the FIS Report, or call the U.S. Fish and Wildlife Service Customer Service Center at 1-800-344-WILD.

CBRS Area

Otherwise Protected Area

SCALE

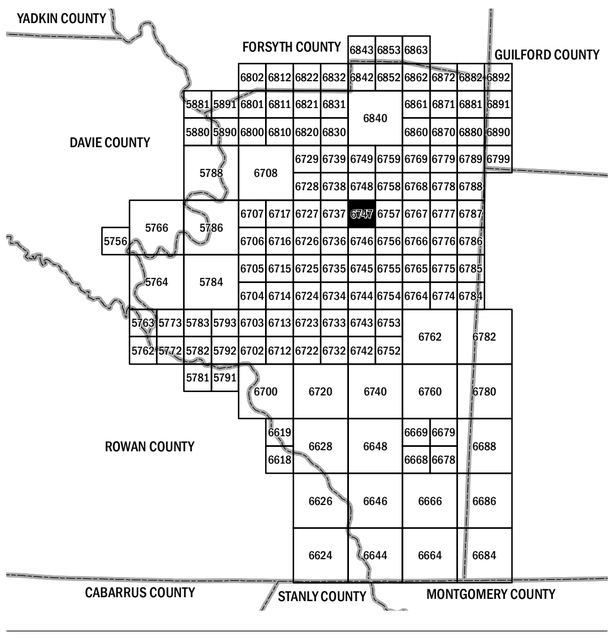
Map Projection:
North Carolina State Plane Projection Feet (Zone 3200)
Datum: NAD 1983 (Horizontal), NAVD 1988 (Vertical)

1 inch = 500 feet 1:6,000

0 250 500 1,000 Feet

0 75 150 300 Meters

PANEL LOCATOR



FEMA

National Flood Insurance Program

NORTH CAROLINA FLOODPLAIN MAPPING PROGRAM
NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP

NORTH CAROLINA

PANEL 6747

Panel Contains:

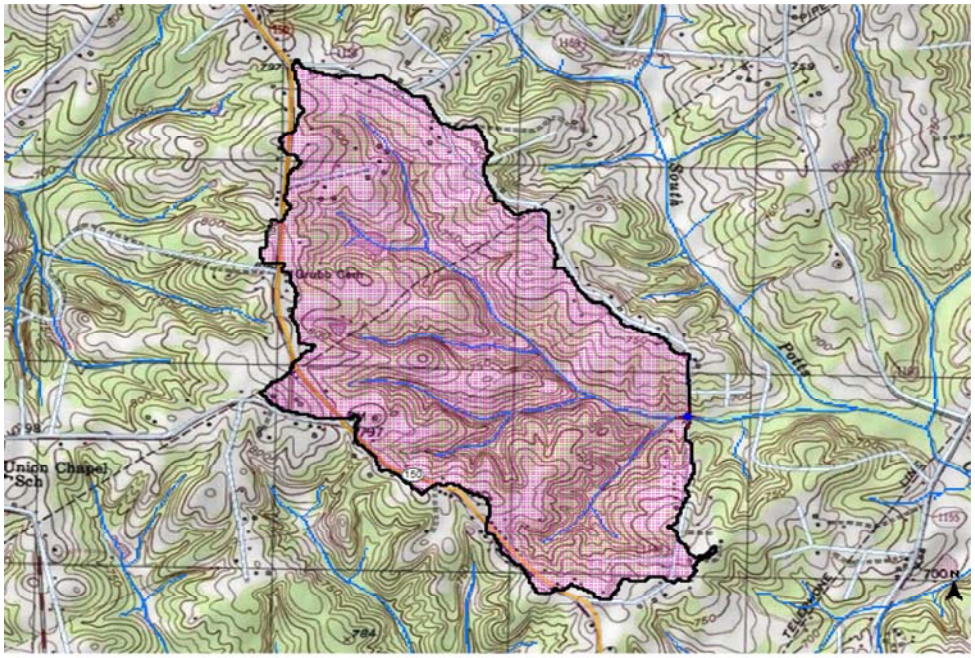
COMMUNITY	CID	PANEL	SUFFIX
DAVIDSON COUNTY	370307	6747	J

MAP NUMBER
3710674700J

MAP REVISED
3/16/2009

USGS
North Carolina StreamStats

DAVIDSON 280095



11/4/2014 6:05:17 AM

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD 88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Leonard Creek								
001	110	95	447	10.6	650.5	637.4[2]	637.4	0.0
004	355	95	444	10.6	650.5	640.9[2]	640.9	0.0
023	2,300	300	1,988	2.4	650.5	645.2[2]	646.0	0.8
042	4,233	690	939	5.0	650.5	646.9[2]	646.9	0.0
045	4,531	390	1,388	3.4	650.5	649.3[2]	649.9	0.6
049	4,939	315	804	5.8	650.5	649.7[2]	649.7	0.0
052	5,161	315	812	5.8	651.4	651.4	651.4	0.0
068	6,800	240	1,796	2.2	655.0	655.0	656.0	1.0
092	9,150	375	1,737	2.3	656.7	656.7	657.4	0.7
108	10,787	570	2,450	1.1	657.7	657.7	658.3	0.6
123	12,289	240	1,880	1.5	666.7	666.7	667.2	0.5
130	13,000	210	1,220	2.3	666.9	666.9	667.5	0.6
134	13,400	90	799	3.5	667.0	667.0	667.6	0.6
138	13,800	580	12,064	0.2	688.7	688.7	689.4	0.7
188	18,800	325[3]	1,288	2.0	688.7	688.7	689.4	0.7
211	21,100	280[3]	476	5.1	693.5	693.5	693.5	0.0
237	23,700	225	559	4.2	708.2	708.2	708.2	0.0
251	25,139	145	534	4.4	713.8	713.8	714.7	0.9
262	26,200	190	874	2.6	718.0	718.0	718.8	0.8
273	27,337	135	270	8.2	724.8	724.8	724.8	0.0

[1]Feet above confluence with Abbotts Creek

[2]Elevation computed without consideration of backwater effects from Abbotts Creek

[3] Value is inaccurate, as the floodway has been adjusted in this area to match topographic-based floodplain redelineation

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIDSON COUNTY, NC AND INCORPORATED AREAS

FLOODWAY DATA

LEONARD CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD 88)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Leonard Creek								
298	29,800[1]	320	491	4.4	733.7	733.7	733.7	0.0
326	32,600[1]	280[3]	455	4.6	743.2	743.2	743.2	0.0
356	35,600[1]	100	222	8.7	752.6	752.6	752.6	0.0
382	38,190[1]	100	486	3.8	762.0	762.0	762.8	0.8
398	39,810[1]	285	359	4.0	765.0	765.0	765.0	0.0
407	40,738[1]	275	321	4.2	769.5	769.5	769.5	0.0
418	41,825[1]	250	270	5.0	779.1	779.1	779.1	0.0
428	42,775[1]	155	622	2.1	781.0	781.0	781.6	0.6
438	43,810[1]	115[3]	335	4.0	782.5	782.5	783.4	0.9
448	44,810[1]	70	216	5.6	787.5	787.5	788.5	1.0
464	46,400[1]	90	300	4.0	794.7	794.7	795.7	1.0
477	47,700[1]	100	281	3.5	799.6	799.6	800.6	1.0
Little Uwharrie River								
300	29,961[2]	82	433	7.1	555.2	555.2	556.2	1.0
310	30,952[2]	88	587	5.3	561.2	561.2	562.2	1.0
319	31,937[2]	146	640	4.8	567.4	567.4	568.4	1.0
328	32,800[2]	208	1,137	2.7	573.5	573.5	574.5	1.0
337	33,655[2]	91	464	6.0	577.8	577.8	578.8	1.0

[1]Feet above confluence with Abbotts Creek

[2]Feet above mouth

[3]Value is inaccurate, as the floodway has been adjusted in this area to match topographic-based floodplain redelineation

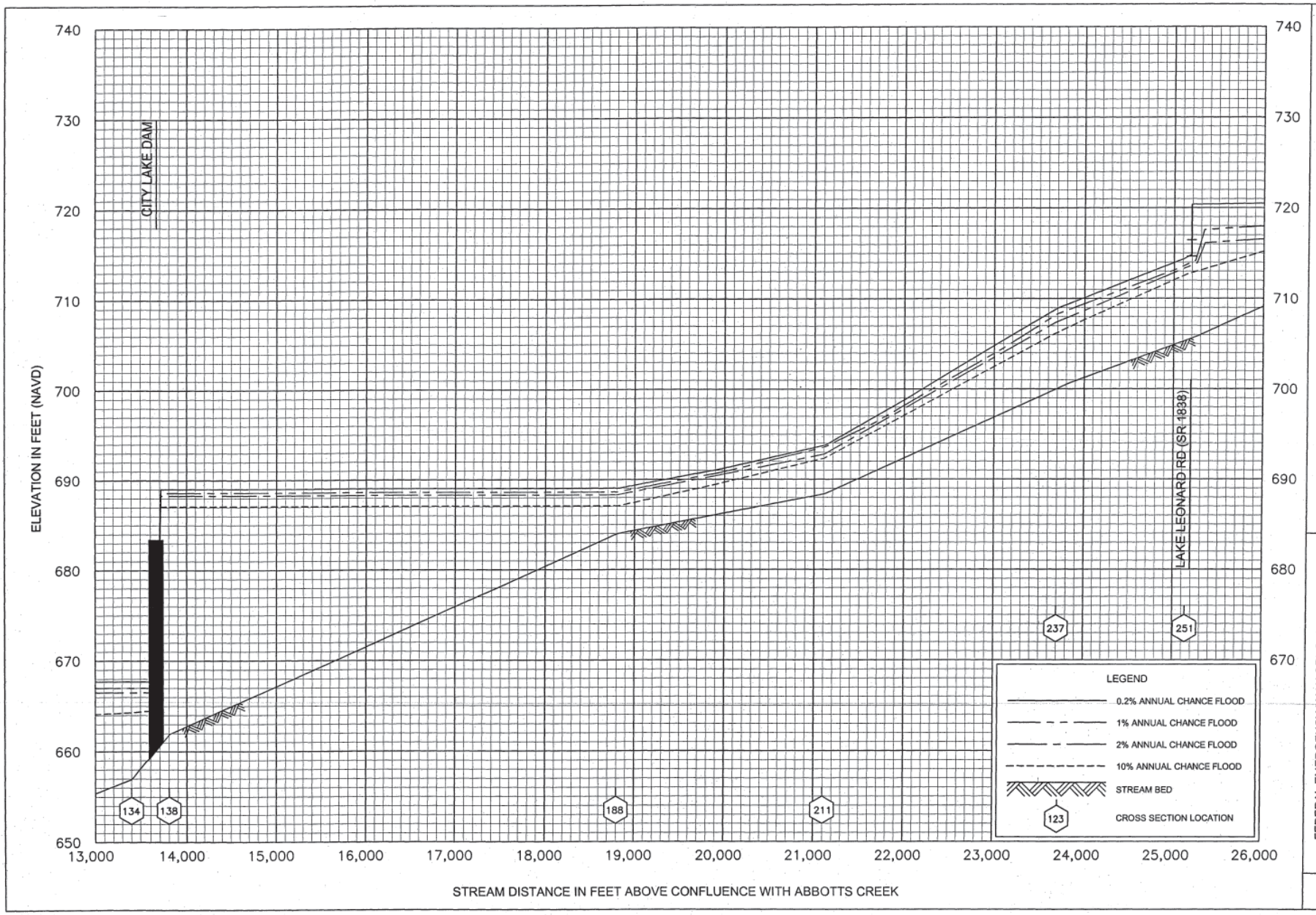
TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIDSON COUNTY, NC AND INCORPORATED AREAS

FLOODWAY DATA

LEONARD CREEK – LITTLE UWHARRIE RIVER



FLOOD PROFILES

LEONARD CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIDSON COUNTY, NC

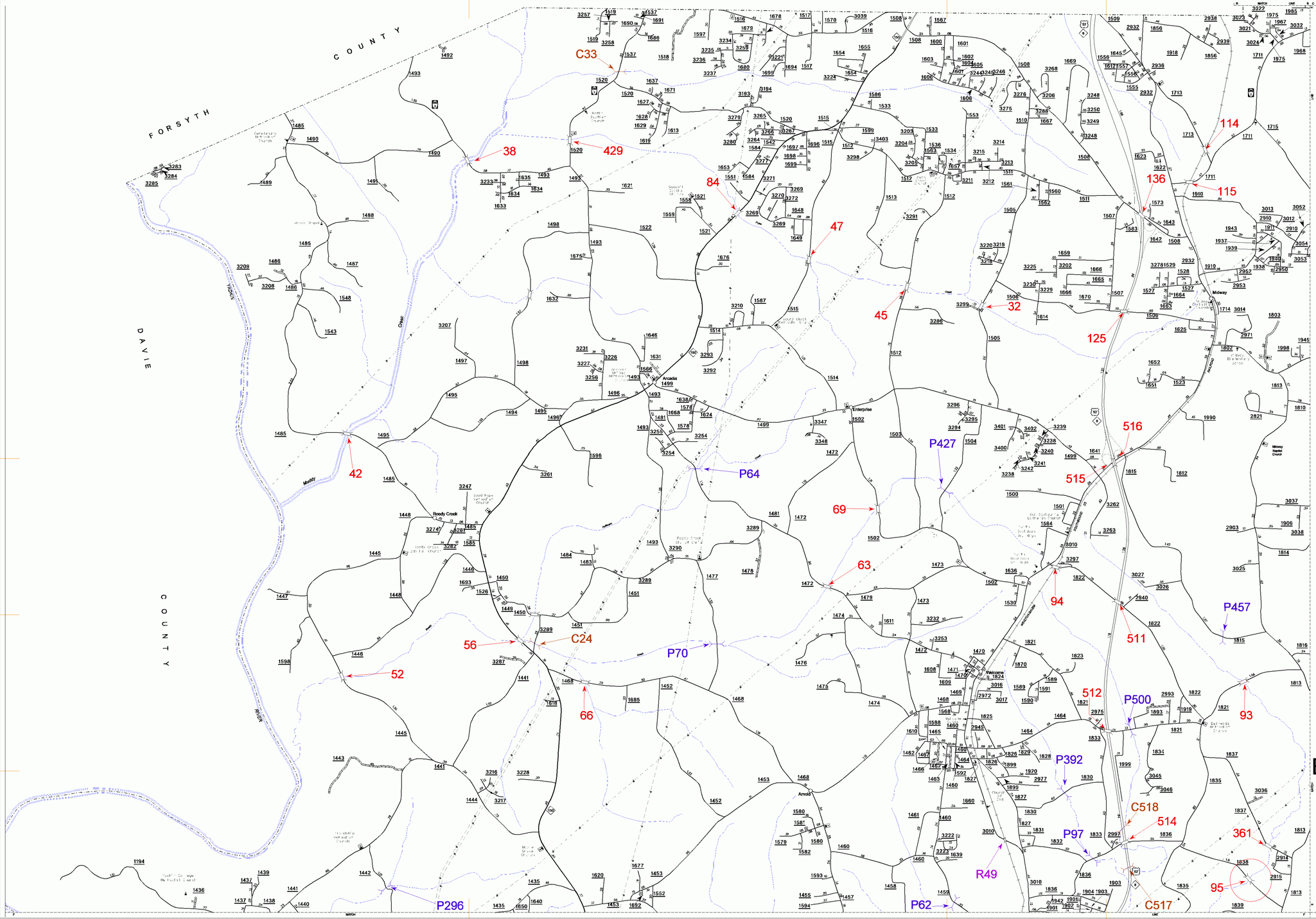
AND INCORPORATED AREAS

Table 8—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
Kennedy Mill Creek	Approximately 600 feet downstream of Joe Moore Road (SR 1776)	4.0	*	*	2,384	*
	Approximately 80 feet upstream of confluence of Kennedy Mill Creek Tributary 1	1.3	*	*	1,275	*
	Approximately 0.7 mile upstream of the confluence of Kennedy Mill Creek Tributary 1	1.0	*	*	1,199	*
	Approximately 1.2 miles upstream of the confluence of Kennedy Mill Creek Tributary 1	0.8	*	*	978	*
	Approximately 50 feet downstream of the Davidson/Guilford County boundary	0.7	*	*	925	*
Kennedy Mill Creek Tributary 1	At the confluence with Kennedy Mill Creek	2.2	*	*	1,757	*
	Approximately 170 feet downstream of National Highway	1.3	*	*	1,430	*
	Approximately 1,050 feet upstream of National Highway	1.2	*	*	1,178	*
	Approximately 420 feet downstream of the Davidson/Guilford County boundary	1.1	*	*	1,125	*
Leonard Creek	At confluence with Abbotts Creek	19.0	2,250	3,670	4,750	6,900
	Below confluence of Everhart Creek	18.2	2,200	3,620	4,700	6,840
	Above confluence of Everhart Creek	15.2	2,000	3,280	4,020	6,020
	Below confluence of Tinkers Creek	14.9	1,990	3,250	4,000	6,000
	Above confluence of Tinkers Creek	7.6	1,290	2,220	2,790	4,090
	At City Lake Dam	7.3	1,200	2,100	2,600	3,800

Table 8—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
Leonard Creek	Below confluence of Cain Creek	3.6	970	1,720	2,150	3,200
	Above confluence of Cain Creek	2.3	950	1,680	2,100	3,075
	Approximately 1.3 miles upstream of Thomas Road (SR 1815)	1.1	410	785	980	1,460
Lick Creek	At the confluence with Yadkin River	34.2	*	*	6,780	*
	Approximately 20 feet upstream of Lick Creek Church Road (SR 2501)	31.2	*	*	6,391	*
	Approximately 0.8 mile upstream of Lick Creek Church Road (SR 2501)	29.6	*	*	6,192	*
	Approximately 60 feet upstream of Denton Road (SR 1002)	27.1	*	*	5,861	*
	Approximately 2.0 miles upstream of Denton Road (SR 1002)	21.4	*	*	5,059	*
	Approximately 1.0 mile downstream of Flat Swamp Road (SR 2351)	20.8	*	*	4,963	*
	Approximately 1,220 feet downstream of Flat Swamp Road (SR 2351)	20.1	*	*	4,857	*
	Approximately 770 feet downstream of Yates Road (SR 2347)	18.6	*	*	4,638	*
	Approximately 0.9 mile upstream of Yates Road (SR 2347)	14.7	*	*	4,002	*
	Approximately 0.6 mile downstream of NC Highway 47	13.0	*	*	3,695	*
	Approximately 1,910 feet upstream of NC Highway 47	12.2	*	*	3,550	*



Customized GIS Product Created for Bridge Maintenance
Produced by Geographic Information Systems Unit - Jul 2006

- NORMAL BRIDGE
- "C" CULVERT
- "D" PEDESTRIAN BRIDGE
- "F" FERRY RAMP
- "G" FEDERAL AGENCY STRUCTURE
- "H" NON-SYSTEM STRUCTURE MAINTAINED BY NCDOT
- "L" CANTILEVER SIGN STRUCTURE
- "M" PRIVATELY OWNED STRUCTURE
- "N" NCDOT OVERPASS STRUCTURES
- "P" PIPE CULVERT
- "R" RAILROAD COMPANY STRUCTURE
- "S" OVERHEAD SIGN
- "T" TUNNEL
- "U" PEDESTRIAN, CATTLE UNDERPASS
- "V" VEHICLE UNDERPASS LESS THAN 20'
- "W" NCDOT AND PRIVATE PEDESTRIAN BRIDGES
- "Y" SINGLE POLE SIGN STRUCTURE

N
W E
S

ENLARGED MUNICIPAL AND SUBURBAN AREAS

DAVIDSON COUNTY

NORTH CAROLINA

BRIDGE LOCATION MAP

PREPARED BY THE

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
INFORMATION TECHNOLOGY - GIS UNIT

IN COOPERATION WITH THE

U.S.DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

SCALE
1 0 1 MILE

POLYCONIC PROJECTION

SHEET 3 OF 8

Disclaimer: The GIS Unit's goal is to provide the most accurate information as possible, the magnitude of the data prevents any guarantee of accuracy or completeness. If you find any information that is incorrect, please send your request to the GIS Unit.

Customized GIS map checked by Technology

PD&D

Data Comp.

COPIES OF THIS MAP ARE AVAILABLE TO THE PUBLIC AT A NOMINAL COST.
ADDRESS:
N.C. DEPARTMENT OF TRANSPORTATION
GIS UNIT - INFORMATION SERVICES
3401 CARL BLACKWELD ST.
RALEIGH, N.C. 27610

REVISED
1/1/00 LM
12/02 YRT
6/13/02 YRT
1/2/03 YRT
8/26/03 YRT
7/15/04 YRT
2/10/05 YRT
5/31/05 YRT
6/15/06 JBB

SUP 2

DAVIDSON

DIVISION 9 DISTRICT 1 DAVIDSON COUNTY NORTH CAROLINA 057

MAINTENANCE COORDINATION

Bridge Maintenance – Contact Superintendent and Supervisor.

High Water:

Relocation: **New Alignment Staked:** **BM Information:**

Road Maintenance – Contact District Engineer and County Maintenance Engineer.

High Water:

Road to be Paved: **Relocation of Vicinity of Bridge:**

New Alignment Staked: **BM Information:**

Initiated as: **Date Initiated:**

Man-days Estimated:

Date Surveyed: **Date Completed:**

Personnel	Hours	Pay Period

Comments: