



ADDITIONAL INFORMATION AND COMPUTATIONS

DA=7.64 SQ. MI., QL2 LIDAR
 USGS REGRESSION, SIR 2014-5030, REGION 4
 IMPERVIOUS AREA = 34.8%
 (FROM CITY OF DUNN, AND, HARNETT COUNTY, FUTURE LAND, USE MAPS)

24 HR., 50-YR. MAXIMUM PRECIPITATION = 7.8"

REGION 4: 0.10 SQ. MI. ≤ DA ≤ 53.5 SQ. MI.

FREQUENCY	NATURAL	50yr	100yr	500yr
Q ₁₀	170.0	170.5	171.1	171.8
Q ₂₅	171.2	172.8	173.8	175.2
Q ₅₀	172.0	175.0	176.5	178.2
Q ₁₀₀	173.0	178.0	180.0	182.0
Q ₅₀₀	177.0	200.0	220.0	240.0

FEMA FLOWS > USGS FLOWS
 THEREFORE, FEMA FLOWS WERE USED FOR DESIGN AND COMPLIANCE.

SITE DATA

Drainage Area: 7.64 SQ. MI. Source: QL2 LIDAR; STREAM STATS
 River Basin: CAPE FEAR Character: RESIDENTIAL; INDUSTRIAL
 Stream Classification: (Such as Trout, High Quality Water, etc.) C; Sw
 Data on Existing Structure: 3 @ 8' x 9' RCBC w/WING WALLS & SQUARE EDGE HW
 Total Waterway Opening: 216 s.f. Waterway Opening Below 100yr. WS EL.: 216 s.f.
 Debris Potential: Low Moderate High
 Data on Structures Up and Down Stream: US: 3 @ 8' x 8' RCBC ON US 301
 DS: 3 @ 8' x 9' RCBC ON NC-55
 Gage Station No.: NA Period of Records: NA yrs.
 Max. Discharge: N/A c.f.s Date: N/A Frequency: N/A
Historical Flood Information:
 Date: 09/2018 Elev. 176 +/- ft. Est. Freq. 100+ yr. Source: KEITH ANDERSON, HARNETT COUNTY MAINTENANCE ENGINEER Knowledge: 20 yrs.
 "HURRICANE MATTHEW & FLORENCE"
 Date: 02/2019 Elev. 167.8 ft. Est. Freq. 10+ yr. Source: FIELD SURVEY Period of Knowledge: yrs.
 MATCH OR REDUCE CORRECTED EFFECTIVE 100-YR EL. = 175.5 ft. Normal Water Surface Elev. 167.8 ft.
 Allowable HW Elev. 167.8 ft. Manning's n: Left O.B. 0.12 Channel 0.045 Right O.B. 0.12 Obtained From: FEMA MODEL
 Flood Study/Status: DETAILED STUDY; FIRM PANEL #1526 (01/05/07) Floodway Established?: YES
 Flood Study 100 yr. Discharge: 2580 c.f.s.; WS Elev.: Floodway 174.6 ft. Without Floodway 174.6 ft. @River Station 4817.404

DESIGN DATA

Hydrological Method: FEMA
 Hydraulic Design Method: HEC-RAS 4.1.0 (I-5986B Stony Run I-95)
 Design Tailwater: Q₁₀ 7.4 ft.; Q₂₅ 7.9 ft.; Q₅₀ 8.2 ft.; Q₁₀₀ 8.4 ft.; Q₅₀₀ 9.1 ft.

FREQUENCY	Q (cfs)	Inlet Control		Outlet Control		Remarks
		HWd	WSEL	H.W.	WSEL	
10 YR	1320	0.73	6.6	169.6	7.8	OUTLET CONTROL
50 YR	2230	1.07	9.6	172.6	10.1	OUTLET CONTROL
100 YR	2580	1.18	10.6	173.6	11.1	OUTLET CONTROL
500 YR	3640	1.57	14.1	177.1	14.3	OUTLET CONTROL
OT	3295	1.43	12.8	175.8	13.8	OUTLET CONTROL

Is a Floodway Revision Required? NO, MOA TYPE 2B Total Proposed Waterway Opening: 216 s.f. (1.5' DECREASE AT RIVER STATION 4825)
 Outlet Velocity (V_o): 3.0 f.p.s. Natural Channel Velocity (V_n): 2.8 f.p.s.
 Required Outlet Protection: CLASS I RIP-RAP (BANKS ONLY)

INFORMATION TO BE SHOWN ON PLANS
 Design: Discharge 2580 c.f.s. @ River Station 4825 WS EL. Taken 100 yr. Elev. 174.1 ft.
 Base Flood: Discharge 2580 c.f.s. Frequency 100 yr. Elev. 174.1 ft.
 Overtopping: Discharge 3295 c.f.s. Frequency 100+ yr. Elev. 176.8' @ 1036+44 -L- LT (SAG)

CULVERT SURVEY & HYDRAULIC DESIGN REPORT
 N. C. DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 HYDRAULICS UNIT
 RALEIGH, N. C.

I.D. No. I-5986B Project No. 47532.1.3 Proj. Station 1042+09 -L-
 County HARNETT Stream STONY RUN Stru. No. 0079
 On Highway I-95 Between US 421 and SR 1808 (JONESBORO RD.)
 Recommended Structure 3 @ 8' x 9' RCBC w/6" BEVELED HW
 (3' TOE WALLS UPSTREAM & DOWNSTREAM)
 Recommended Width of Roadway 156' S.P.-S.P. (NORMAL) Skew 119 DEG
 Recommended Location is (Up, A) Down Stream from Existing Crossing AT
 Latitude 35.30616 Longitude -78.58886
 Statewide Tier Regional Tier Sub-Regional Tier
 Bench Mark is BM #51: RRS 18" PINE, STA 1057+37 -L-, 83 FT LT
 N 567694 E 2123739 Elev. 199.53 ft. Datum: NAVD 88
 Temporary Crossing N/A (STAGED INSTALLATION)



Designed by: DAVID J. STANOVICH Date: 12/27/2019
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