APPENDIX H

SCDOT Bridge Scope and Risk Assessment Form
and
SCDOT Floodplains Checklist

BRIDGE SCOPE AND RISK ASSESSMENT FORM

COUNTY: Jasper DATE: 08/16/2016

ROAD #: US 17 STREAM CROSSING: Back River

Purpose & Need for the Project:

The purpose of the proposed project is to increase roadway capacity and improve safety on U.S. 17 between the GA 404 SPUR and S.C. 315. The project is needed to accommodate existing and future traffic volumes using U.S. 17.

I. FEMA Acknowledgement

Is this project located in a regulated FEMA Floodway? ☐ Yes ☒ No

Panel Number: 4501120220B Effective Date: 09/29/1986 (See Attached)

II. FEMA Floodmap Investigation

FEMA Flood Profile Sheet Number _____ illustrates the existing 100 year flood:

☐ Passes under the existing low chord elevation.
☐ Is in contact with the existing low chord elevation.
☐ Overtops the existing bridge finished grade elevation.

III. No Rise/CLOMR Preliminary Determination

☑ Preliminary assessment indicates this project may be constructed to meet the "No-Rise" requirements. A detailed hydraulic analysis will be performed to verify this assessment.

Justification: The 100-year flood elevation within the project limits is based on hurricane storm surge from the Atlantic Ocean. The fill associated with the project is negligible compared to the volume of storm surge.

☐ Preliminary assessmnet indicates this project may require a CLOMR/LOMR. Impacts will be determined by a detailed hydraulic analysis.

Justification:

BRIDGE SCOPE AND RISK ASSESSMENT FORM

IV. Preliminary Bridge Assessment

A. Locate Existing Plans

a. Bridge Plans ☑ Yes ☐ No File No. _____ Sheet No. 40-44 (See Attached)

b. Road Plans ☐ Yes ☑ No File No. _____ Sheet No. _____ (See Attached)

B. Historical Highwater Data

a. USGS Gage ☐ Yes ☑ No Gage No. Fort Pulaski Results: 6.85 NAVD 10/15/1947

b. SCDOT/USGS Documented Highwater Elevations

☐ Yes ☑ No Results: FEMA FIS notes 10/15/47 tide of 7.0 NAVD

c. Existing Plans ☐ Yes ☑ No See Above

V. Field Review

A. Existing Bridge

Length: 3202.67 ft. Width: _____ ft. Max. span Length: 36 ft.

Alignment: ☑ Tangent ☐ Curved

Bridge Skewed: ☐ Yes ☑ No Angle: _____

End Abutment Type: Sloping 1:2

Riprap on End Fills: ☑ Yes ☐ No Condition: Not clearly visible

Superstructure Type: Concrete trestle

Substructure Type: Pile bents

Utilities Present: ☑ Yes ☐ No

Describe: Overhead power visible on either end of the bridge

Debris Accumulation on Bridge: Percent Blocked Horizontally: _____ %

Percent Blocked Vertically: _____ %

Hydraulic Problems: ☐ Yes ☑ No

Describe: None visible from site inspection

BRIDGE SCOPE AND RISK ASSESSMENT FORM

V. Field Review (cont.)

B. Hydraulic Features

a. Scour Present: ☐ Yes ☑ No Location: _____

b. Distance from F.G. to Normal Water Elevation: ~ 13.0 ft.
c. Distance from Low Steel to Normal Water Elev.: ~ 8.5 ft.
d. Distance from F.G. to High Water Elevation: ~9.5 ft.
e. Distance from Low Steel to High Water Elev.: ~ 5.0 ft.

f. Channel Banks Stable: ☑ Yes ☐ No
Describe:

g. Soil Type: River is coarse sand. Floodplain is clay/silty clay.

h. Exposed Rock: ☐ Yes ☑ No Location: _____

i. Give Description and Location of any structures or other property that could be damaged due to additional backwater.

Reserve at Savannah Harbor on Hutchinson Island includes a golf course and some houses. It is primarily cleared and graded, but not built out.

C. Existing Roadway Geometry

a. Can the existing roadway be closed for an On-Alignment Bridge Replacement
☐ Yes ☑ No
Describe:

If "yes", does the existing vertical and horizontal curves meet the proposed design speed criteria?

If "No", will the proposed bridge be:
☐ Staged Constructed
☑ Replaced on New Alignment

BRIDGE SCOPE AND RISK ASSESSMENT FORM

VI. Field Review (cont.)

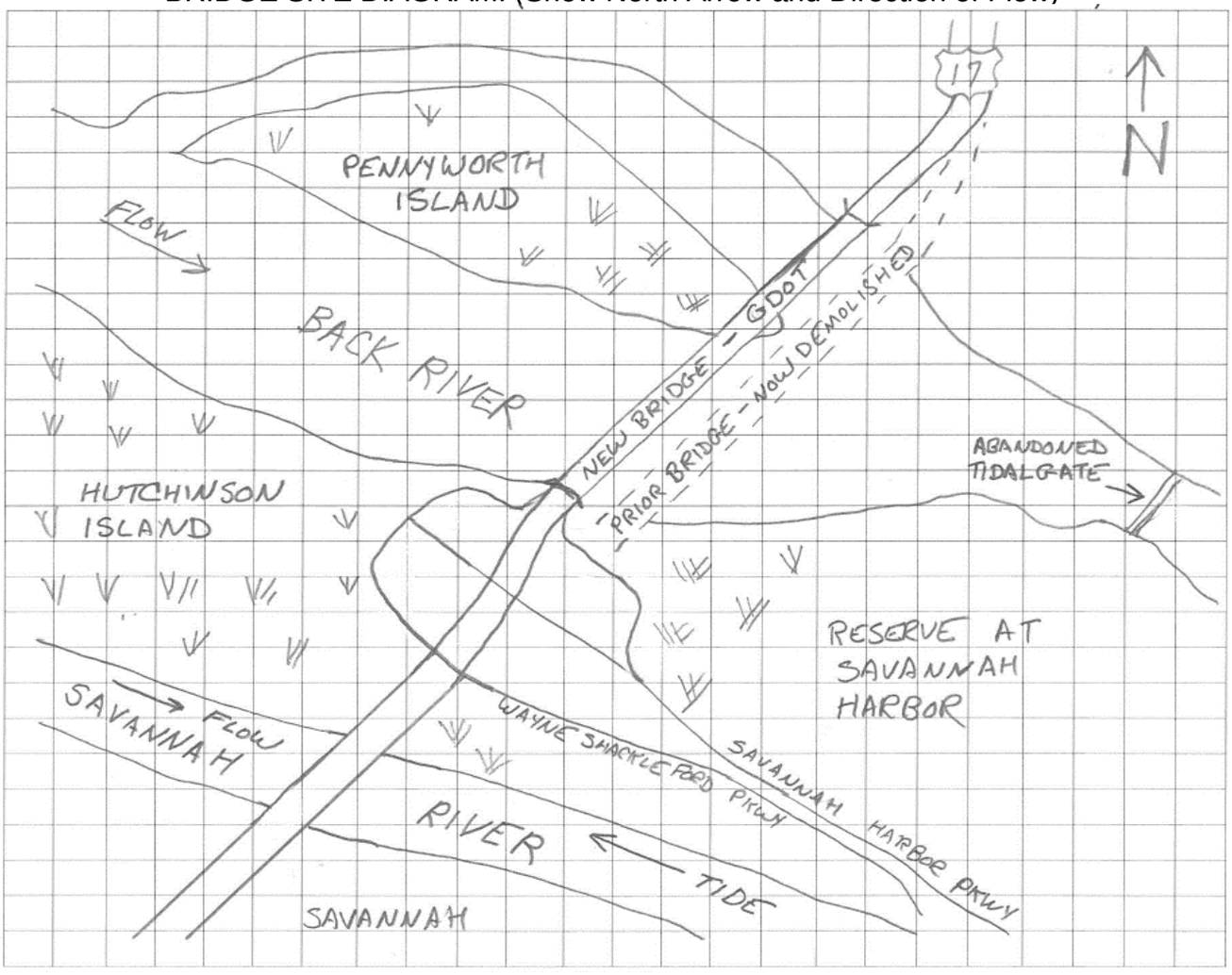
A. Proposed Bridge Recommendation:

Length: _____ ft. Width: _____ ft. Elevation: _____ ft.

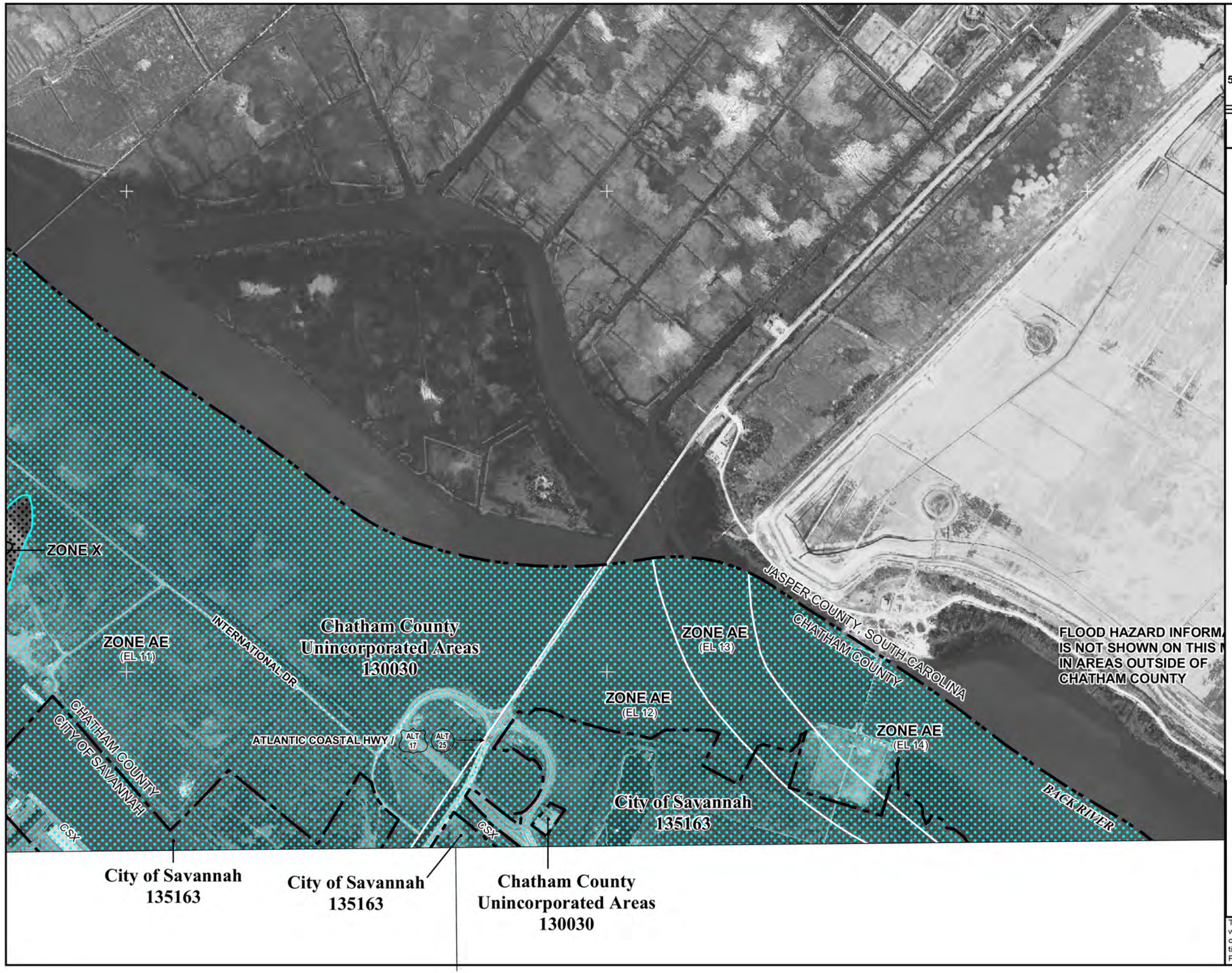
Span Arangement: _____

Notes: The recent project by GDOT consisted of constructing a new bridge on a shifted alignment with two lanes. The proposed SCDOT project will consist of providing an additional two lane parallel bridge structure to accommodate an ultimate section of four travel lanes.

BRIDGE SITE DIAGRAM: (Show North Arrow and Direction of Flow)



Performed By: Steve Swygert, P.E.



MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

METE

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0155F

FIRM

FLOOD INSURANCE RATE MAP

CHATHAM COUNTY, GEORGIA

AND INCORPORATED AREAS

PANEL 155 OF 455

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

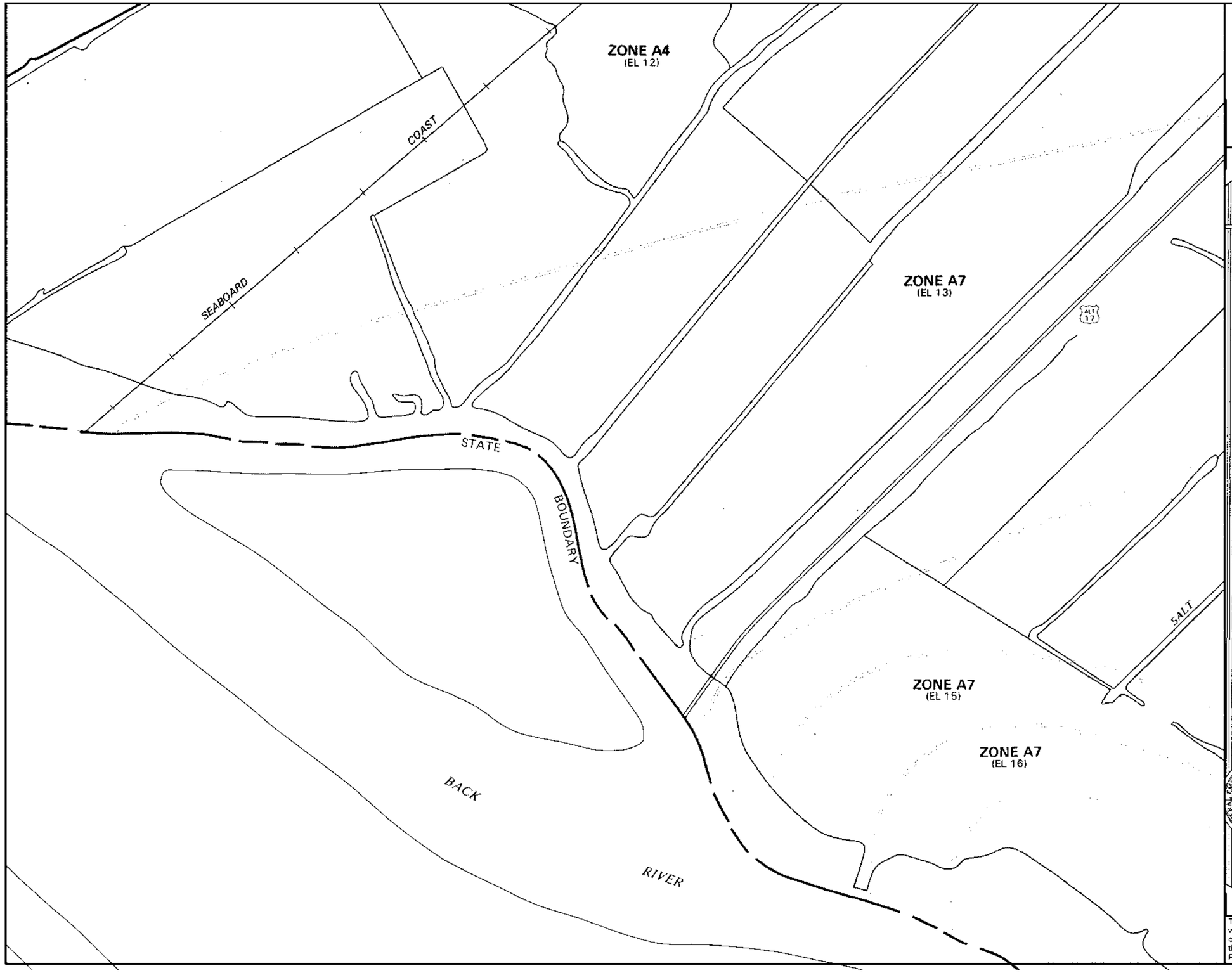
COMMUNITY	NUMBER	PANEL	SUFFIX
CHATHAM COUNTY	130030	0155	F
SAVANNAH, CITY OF	135163	0155	F

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
13051C0155F

EFFECTIVE DATE
SEPTEMBER 26, 2008

Federal Emergency Management Agency



N

APPROXIMATE SCALE

1000 0 1000 FEET

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

JASPER COUNTY,
SOUTH CAROLINA
(UNINCORPORATED AREAS)

PANEL 220 OF 260

(SEE MAP INDEX FOR PANELS NOT PRINTED)

COMMUNITY-PANEL NUMBER
450112 0220 B

EFFECTIVE DATE:
SEPTEMBER 29, 1986

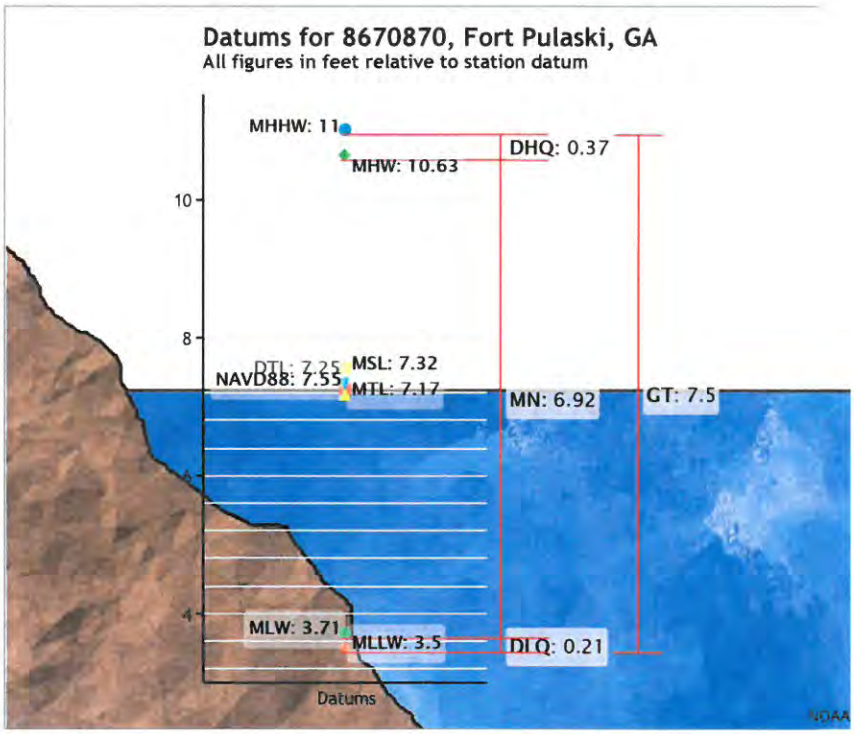
Federal Emergency Management Agency

Datums for 8670870, Fort Pulaski GA

Elevations on Station Datum

Station: 8670870, Fort Pulaski, GA
Status: Accepted (Apr 17 2003)
Units: Feet
T.M.: 75 W
Epoch: (/datum_options.html#NTDE) 1983-2001
Datum: STND

Datum	Value	Description
MHHW (/datum_options.html#MHHW)	11.00	Mean Higher-High Water
MHW (/datum_options.html#MHW)	10.63	Mean High Water
MTL (/datum_options.html#MTL)	7.17	Mean Tide Level
MSL (/datum_options.html#MSL)	7.32	Mean Sea Level
DTL (/datum_options.html#DTL)	7.25	Mean Diurnal Tide Level
MLW (/datum_options.html#MLW)	3.71	Mean Low Water
MLLW (/datum_options.html#MLLW)	3.50	Mean Lower-Low Water
NAVD88 (/datum_options.html)	7.55	North American Vertical Datum of 1988
STND (/datum_options.html#STND)	0.00	Station Datum
GT (/datum_options.html#GT)	7.50	Great Diurnal Range
MN (/datum_options.html#MN)	6.92	Mean Range of Tide
DHQ (/datum_options.html#DHQ)	0.37	Mean Diurnal High Water Inequality



Showing datums for
8670870 Fort Pulaski, GA

Data Units • Feet
Meters

Epoch • Present (1983-2001)
Superseded (1960-1978)

Submit

Datum	Value	Description
DLQ (/datum_options.html#DLQ)	0.21	Mean Diurnal Low Water Inequality
HWI (/datum_options.html#HWI)	0.52	Greenwich High Water Interval (in hours)
LWI (/datum_options.html#LWI)	6.90	Greenwich Low Water Interval (in hours)
Maximum	14.40	Highest Observed Water Level
Max Date & Time	10/15/1947 08:18	Highest Observed Water Level Date and Time
Minimum	-1.10	Lowest Observed Water Level
Min Date & Time	03/20/1936 23:48	Lowest Observed Water Level Date and Time
HAT (/datum_options.html#HAT)	12.83	Highest Astronomical Tide
HAT Date & Time	11/05/1998 13:24	HAT Date and Time
LAT (/datum_options.html#LAT)	1.69	Lowest Astronomical Tide
LAT Date & Time	02/09/2001 07:48	LAT Date and Time

Tidal Datum Analysis Periods

01/01/1983 - 12/31/2001

To refer water level heights to NAVD88 (North American Vertical Datum of 1988), apply the values located at National Geodetic Survey (http://www.ngs.noaa.gov/Tidal_Elevation/diagram.jsp?PID=CK0697&EPOCH=1983-2001).

Show nearby stations

Products available at 8670870 Fort Pulaski, GA

The Savannah River (northern boundary) and the Ogeechee River (southern boundary) have drainage areas extending far beyond the limits of Chatham County. Other streams have chiefly tidal estuaries within the county and include the Little Ogeechee River, Vernon River, Bear River, Wilmington River, Bull River, and numerous tributaries to these. Main openings to the Atlantic Ocean are Ossabaw Sound and Wassaw Sound, both of which are wide and deep.

Much of the land situated in the floodplain is undeveloped marshland, with some residential, commercial, and industrial development.

2.3 Principal Flood Problems

Chatham County is subject to flooding caused by hurricanes and tropical storms. Major storms and hurricanes caused flooding in 1871, 1881, 1885, 1893, 1896, 1898, 1911, 1940, 1944, 1947, 1952, 1959, and 1979 (Dunn and Miller, 1964; National Climatic Center, 1979; Tannehill, 1956). The highest surges occurred during the hurricanes of 1881 and 1893, which caused flood heights up to 15 and 18 feet NAVD, respectively, in Savannah Beach (Dunn and Miller, 1964; Tannehill, 1956).

Georgia hasn't been hit by a major hurricane in 108 years, but hurricanes do not have to be fully developed or even make landfall in Georgia to wreak havoc. More recently, according to the Georgia Emergency Management Agency (GEMA), major storms and hurricanes caused flooding in 1989, 1994, 1996, 1999, and 2005 (GEMA, 2006).

The primary factors contributing to flooding in Chatham County are its openness to Atlantic Ocean surges and unfavorable bathymetry extending offshore. Many of the large streams near the coast have wide mouths and are bordered by extensive areas of low marsh. In addition, the terrain at the coast is generally too low to provide an effective barrier. The offshore ocean depths are shallow for great distances, generating a high Atlantic Ocean surge.

A storm history of Chatham County and its vicinity during the past 140 years is summarized below. Damage figures are determined in dollar values at the time of the storm. No attempt has been made to adjust these figures to current dollar values.

August 16 - 19, 1871
A tropical cyclone moved overland from Florida and caused damage along the Florida, Georgia, and South Carolina coasts. At Savannah, Georgia, the wind speed was 72 miles per hour (mph) from the north.

August 21 - 29, 1881
This storm reached hurricane intensity northeast of Puerto Rico on August 22. The lowest barometric pressure reading was 29.08 inches. The storm center

entered the coast south of Savannah on August 27. Damage in Savannah was estimated at $1.5 million. Approximately 335 people were killed in and near the city. Nearly 100 vessels were wrecked along the Atlantic coast. Damage was very heavy on Tybee Island and other coastal islands near Savannah. The highest tide observed was estimated to reach an elevation of 15.6 feet NAVD at Savannah Beach, approximating a flood of at least 1-percent-annual-chance magnitude.

August 21 - 26, 1885
This storm moved inland north of Savannah on August 25. It caused heavy damage in the Carolinas. Total damage was estimated at about $1.7 million. Damage inflicted by this storm in Georgia was relatively light.

August 15 - September 2, 1893
This major hurricane, which originated near the Cape Verde Islands, reached the Georgia coast on August 27. It was accompanied by a tremendous storm wave that submerged the islands along the Georgia and South Carolina coasts. Between 2,000 and 2,500 people lost their lives on the coastal islands and in the lowland between Tybee Island and Charleston. Property damage along the Atlantic coast was estimated at $10 million. Nearly every building on Tybee Island was damaged and the railroad to the island was wrecked. The highest tide known to have occurred in the county was estimated to have a range of 16.1 to 18.6 feet NAVD at Savannah Beach.

September 22 - 29, 1896
This hurricane entered the northwestern Florida coast near St. Mark. Its center passed through southeastern Georgia and South Carolina on September 28 and 29. Hurricane winds persisted when the hurricane moved inland. Savannah recorded maximum winds of 75 mph. Damage in Savannah was estimated at $1 million. Damage was also heavy on Tybee Island and over much of southeastern Georgia. Because the damaging hurricane wind was of a short duration near Chatham County and occurred during a low tide period, destruction caused by storm surge was relatively light compared with the hurricanes of 1881 and 1893.

August 30 - September 1, 1898
This hurricane entered the Georgia-South Carolina coast on August 30. Its center passed over Tybee Island. Winds on Tybee Island were estimated at 100 mph. The storm surges were not high enough to cause extensive damage; however, the hurricane was accompanied by very heavy rain, and the countryside was flooded for 100 miles around Savannah. Most roads and railroads were impassable because of high water.

August 23 - 30, 1911
The center of this hurricane entered the coast between Savannah and Charleston on August 28. A maximum wind of 88 mph from the northwest was recorded at Savannah. Damage in the Savannah area was remarkably low; however, property on Tybee Island was heavily damaged. Excessive rains accompanied the storm

and caused considerable damage to roads, crops, and other property throughout southern Georgia.

August 5 - 15, 1940
This was the first hurricane to affect Georgia since August 1911. Its center entered the South Carolina coast to the north of Savannah on August 11. The wind at Savannah reached 73 mph, and damage in the Savannah area was estimated at $850,000. The highest tide observed at Beaufort, South Carolina, was estimated to be 11.5 feet NAVD. High tides of 6.5 and 5.5 feet NAVD were recorded at Fort Pulaski, Georgia, and at Fort Jackson, Savannah Harbor, Georgia, respectively.

October 12 - 23, 1944
This hurricane entered the gulf coast of Florida and moved northeastward across the peninsula. Its center crossed the east coast near Jacksonville, Florida, in a north-northeast direction and moved inland again near Savannah. The hurricane was downgraded to a tropical storm by the time it reached Georgia. The highest tide, 5.0 feet NAVD along the Georgia coast, was observed at Fort Pulaski, near the mouth of the Savannah River. The estimated damage in Georgia was $500,000.

October 9 - 16, 1947
The center of this hurricane entered the Georgia coast just south of Savannah on October 15. At Savannah, the maximum wind speed was 77 mph, and the lowest barometric pressure was 28.77 inches. Heavy losses were sustained at Savannah and Savannah Beach, where more than 1,500 buildings were substantially damaged. Total damage in the coastal area was estimated at more than $2 million. The highest tide, 7.0 feet NAVD, was recorded at Fort Jackson.

August 18 - September 2, 1952 (Hurricane Able)
Hurricane Able moved inland on August 30. Its center passed near Beaufort with maximum winds of approximately 100 mph. Damage from this storm was estimated at about $2.8 million.

September 20 - October 2, 1959 (Hurricane Gracie)
Hurricane Gracie moved inland on September 29. Its center passed over the South Carolina coast near Beaufort. Wind gusts of hurricane force were felt in the Savannah area, and damage was inflicted over the upper Georgia coastal area. The total damage inflicted by the storm was estimated at $14 million with damage in Georgia estimated at more than $500,000. Highwater marks, which were reported near Edisto Beach, South Carolina, ranged from 6.4 to 11.0 feet NAVD.

August 25 - September 7, 1979 (Hurricane David)
Hurricane David was the most intense storm of the century to affect the islands of the eastern Caribbean. However, the storm was not a major hurricane when it struck the United States. David struck just north of Palm Beach, Florida, on

September 3 and made a second landfall about 24 hours later near Savannah Beach, Georgia. In the United States, David was responsible for five deaths and about $300 million in damages. The death toll and damage were much greater in Dominica, Cuba, and the Dominican Republic (NCC, 1979).

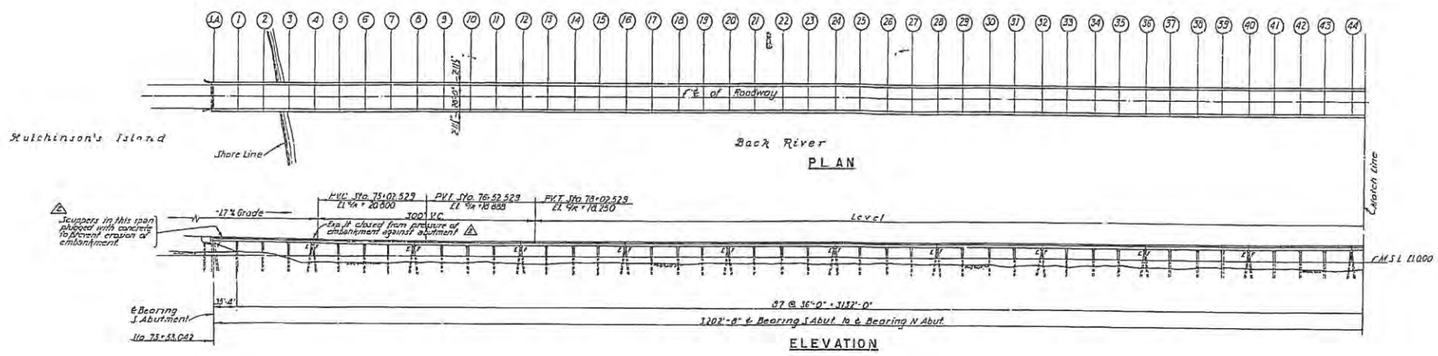
September 9 - September 25, 1989 (Hurricane Hugo)
Hurricane Hugo was a destructive Category 5 hurricane that killed 82 people, left 56,000 homeless and caused $16.3 billion in damages, making it the most destructive hurricane ever recorded up to that time. Hugo was originally forecast to move toward Savannah, but instead turned north toward Charleston, South Carolina. Savannah was evacuated in anticipation of Hugo but saw no effects other than isolated showers (GEMA, 2006).

June 30 - July 10, 1994 (Tropical Storm Alberto)
Tropical Storm Alberto made landfall in the Florida Panhandle on July 4, 1994, then moved into western Georgia, where it made a loop July 5-6, dumping 27.61 inches of rain in Americus (21 inches within 24 hours). Alberto's winds and tides did only minor damage to the Florida coast, but the excessive rains that fell in Georgia caused catastrophic flooding from Clayton County through central and southwest Georgia to the Florida border, resulting in 33 deaths, $500 billion in damage and a major disaster declaration for 55 counties (GEMA, 2006).

September 27 - October 6, 1995 (Hurricane Opal)
After coming ashore in the Florida Panhandle on October 4, 1995, Opal swept through Georgia with high winds, heavy rain and tornadoes, killing 14 people and resulting in a major disaster declaration for 50 counties (GEMA, 2006).

September 7 - September 19, 1999 (Hurricane Floyd)
Hurricane Floyd triggered the second largest evacuation in U.S. history when 2.6 million coastal residents of five states including around 350,000 people in Georgia, were ordered from their homes as Hurricane Floyd approached. Floyd struck the Bahamas at peak strength, causing heavy damage. It then paralleled the east coast of the U.S., causing massive evacuations and costly preparations. In total, Floyd was responsible for 57 fatalities and $5.7 billion in damage, mostly in North Carolina (GEMA, 2006).

August 23 - August 31, 2005 (Hurricane Katrina)
Hurricane Katrina was the costliest and one of the deadliest hurricanes in the history of the U.S. Katrina formed on August 23, 2005, and caused devastation along much of the north-central Gulf Coast. At least 1,836 people lost their lives in Hurricane Katrina and in the subsequent floods. It is estimated to have been responsible for $81.2 billion in damages (GEMA, 2006).



BENT No.	ELEV CROWN OF ROADWAY	ELEV TOP OF PILE CAP	ELEV OF PILE CUT-OFF	BENT No.	ELEV CROWN OF ROADWAY	ELEV TOP OF PILE CAP	ELEV OF PILE CUT-OFF
LA	23.341	18.841	16.841	83	17.674	13.174	11.674
1	23.741	18.241	16.741	84	17.350	12.850	10.850
2	23.129	17.629	16.129	85	16.954	12.454	10.954
3	21.517	17.017	15.517	86	16.486	11.306	10.486
4	20.905	16.405	14.405	87	15.946	11.446	9.346
5	20.317	15.817	14.317	88	15.334	10.834	8.834
6	19.603	15.303	13.603	AA	14.863	10.163	8.16 ⚠
7	19.363	14.863	13.363				
8	18.935	14.435	12.435				
9	18.701	14.201	12.701				
10	18.480	13.980	12.980				
11	18.333	13.833	12.333				
12	18.255	13.755	11.755				
13 to 79	18.250	13.750	13 pile for ℄ Bent 11 pile Tower Bent				
80	18.214	13.714	11.714				
81	18.106	13.606	12.106				
82	17.926	13.426	11.926				

⚠ At ℄ Bearing

GENERAL NOTES FOR CONCRETE TRESTLE

1. GENERAL: All work done under this contract shall be in accordance with the Standard Specifications for Construction of Roads and Bridges of the Georgia State Highway Department, Dated May 1, 1947 and the Special Provisions of this project
2. DATUM SPECIFICATION: 1949 Standard Specifications for Highway Bridges of the American Association of State Highway Officials - Division II
3. LIVE LOAD: H20-S16-44
4. CONCRETE: For precast concrete piles shall be Class V with a minimum 28 day compressive strength 3500 psi, in accordance with Georgia Standard Specifications All other concrete shall be Class A with a minimum 28 day compressive strength of 3000 psi.
5. CHAMFER: All exposed edges to be chamfered ¾" unless otherwise shown or noted
6. PERMANENT CAMBER FOR BEAMS: Forms shall be set to provide for ½ permanent camber in beams.
7. REINFORCING STEEL: All bars shall be deformed bars based 40 diameters except for stirrups, which shall be based 30 diameters, and except as otherwise noted on the drawings. All bars shall be 2" clear from face of concrete unless otherwise shown.

⚠ Forms were fabricated with 1½" camber, and were set ½" low to preserve thickness of slab at center of span.

APPROVED _____ ENGINEER
COASTAL HIGHWAY DISTRICT OF GEORGIA

Rev.	Description	Date
⚠	Revised Camber as constructed	9-1-54
⚠	Revisions as constructed	8-26-54
⚠	Revised Elevations	6-9-53

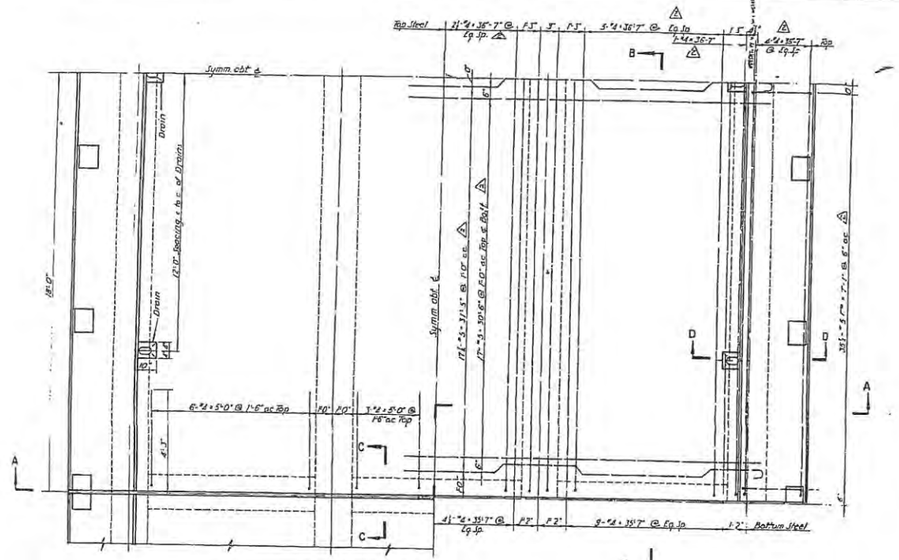
COASTAL HIGHWAY DISTRICT OF GEORGIA

SAVANNAH RIVER CROSSING
GEORGIA-SOUTH CAROLINA SHORT ROUTE

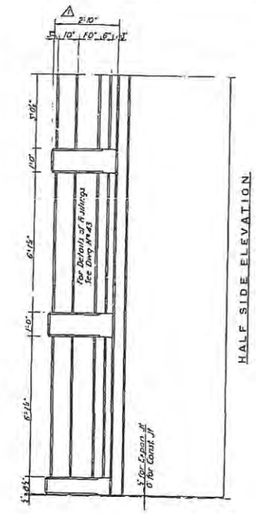
PLAN AND ELEVATION OF CONCRETE TRESTLE

PARSONS, BRINCKERHOFF, HALL & MACDONALD
ENGINEERS NEW YORK N.Y.

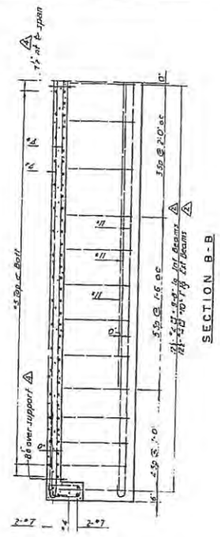
DR. BY: W.J.H	TR. BY: J.L.	CH. BY: L. G.S.	DRAWING NO. 40
DATE: 5-1-54	SCALE: 1"=60'	SHEET 40 OF 72	



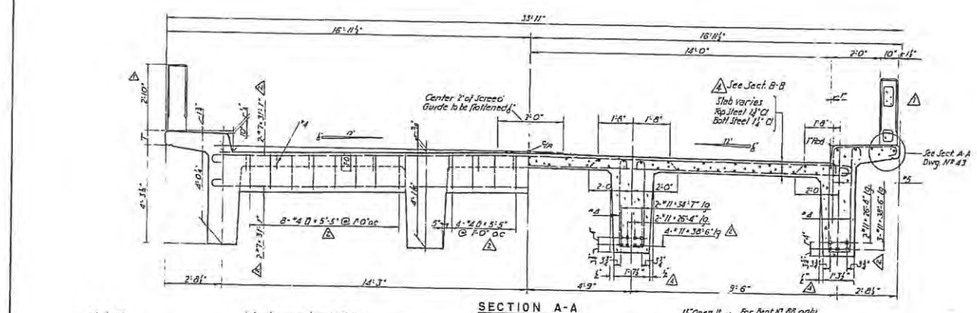
HALF PLAN



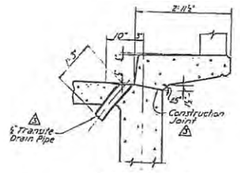
HALF SIDE ELEVATION



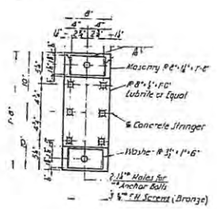
SECTION B-B

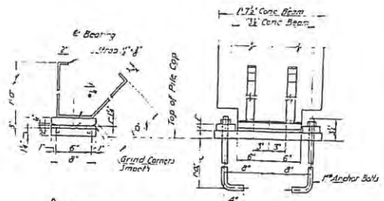


SECTION A-A



SECTION D-D

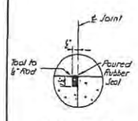




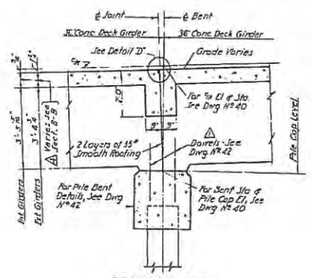
Ⓐ Red Lead & Canvas under all Expansion Shoes

DETAIL OF EXPANSION SHOE

Scale ½" = 1'-0"

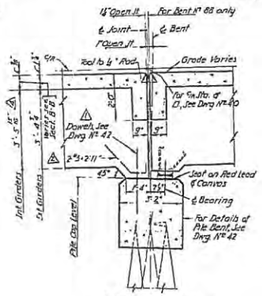


DETAIL "D"



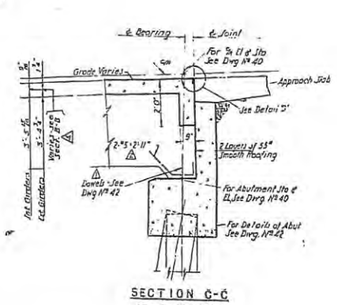
SECTION C-C

CONSTRUCTION JOINT



SECTION C-C

EXPANSION JOINT



SECTION C-C

AT ABUTMENT

Ⓐ Notes: 1. Inside faces of beams canted to facilitate removal of forms.
2. Web thickness varied to counteract ½" error in camber of forms.

APPROVED: _____ ENGINEER

COASTAL HIGHWAY DISTRICT OF GEORGIA

Rev.	Description	Date
Ⓐ	Revised Slab Bridges and Beam Bridge as constructed.	9-1-54
Ⓐ	Revisions as constructed.	8-24-54
Ⓐ	Revised Reinf. Bar lengths.	6-26-53
Ⓐ	Added Dowels and revised railings.	6-8-53

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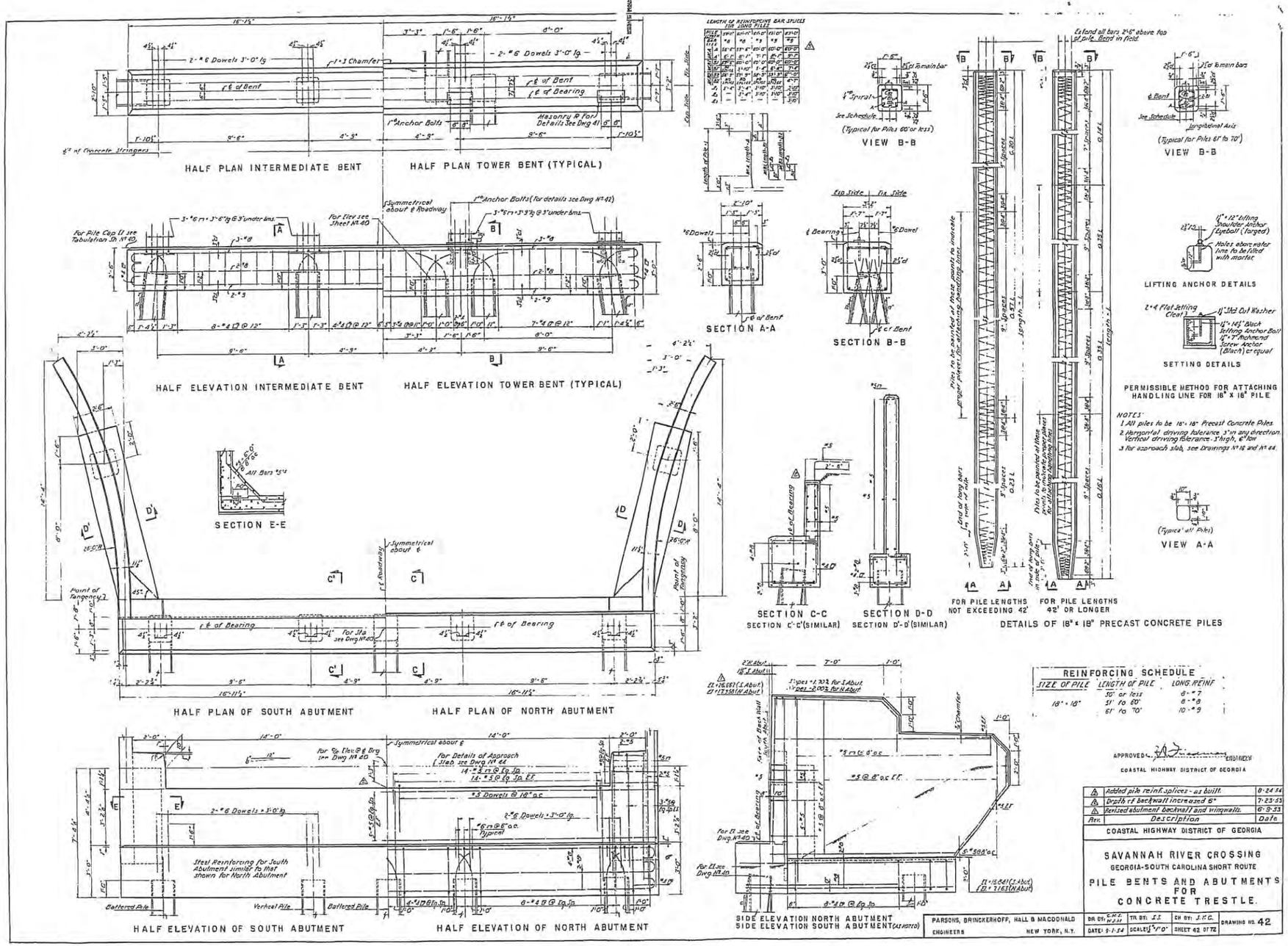
ENGINEERS NEW YORK, N.Y.

COASTAL HIGHWAY DISTRICT OF GEORGIA

SAVANNAH RIVER CROSSING
GEORGIA - SOUTH CAROLINA SHORT ROUTE

DETAILS OF TYPICAL CONCRETE SPAN

DR. BY H.J.H. | TR. BY J.J. | CH. BY R.M. | DRAWING NO. 41
DATE: 9-1-54 | SCALE: 1"=1'-0" (FULL SIZE) | SHEET 41 OF 72



NOTES:
1. All piles to be 18"x 18" Precast Concrete Piles
2. Horizontal driving tolerance 3" in any direction. Vertical driving tolerance - 3" high, 6" low
3. For approach slab, see drawings Nº 16 and Nº 44.

REINFORCING SCHEDULE

SIZE OF PILE	LENGTH OF PILE	LONG. REINF
18" x 18"	50' or less	8 - #7
	51' to 60'	8 - #9
	61' to 70'	10 - #9

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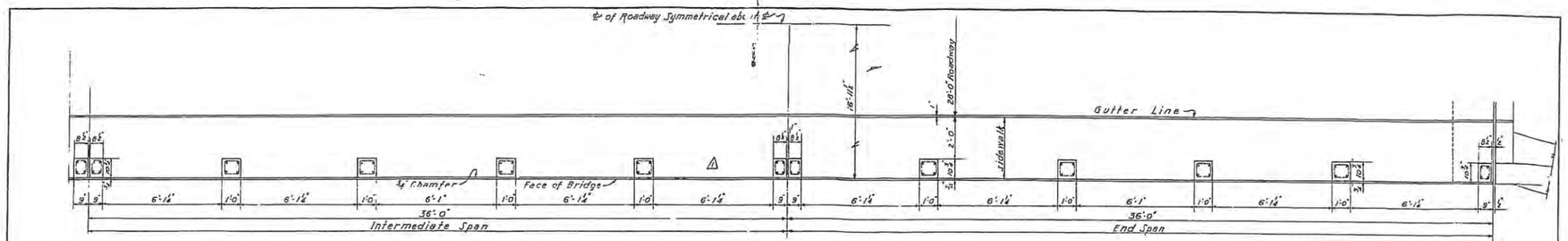
Rev.	Description	Date
4	Added pile reinf. splices - as built	8-24-54
3	Depth of backwall increased 6"	7-23-53
2	Revised abutment backwall and wingwalls	6-8-53

COASTAL HIGHWAY DISTRICT OF GEORGIA

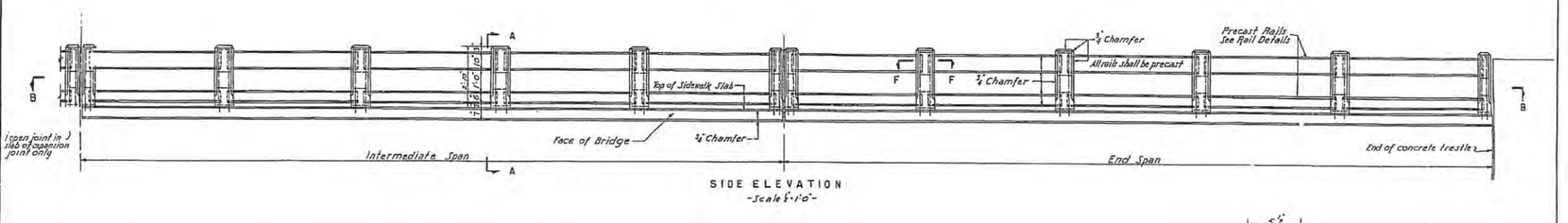
SAVANNAH RIVER CROSSING
GEORGIA-SOUTH CAROLINA SHORT ROUTE
PILE BENTS AND ABUTMENTS FOR CONCRETE TRESTLE.

PARSONS, BRINCKERHOFF, HALL & MACDONALD
ENGINEERS NEW YORK, N.Y.

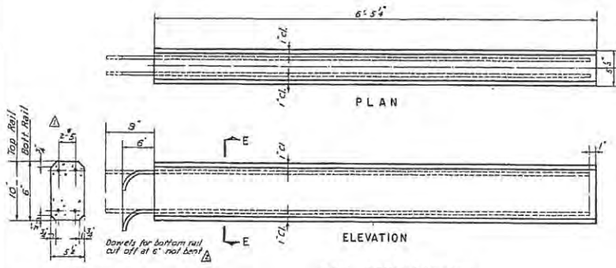
DR BY: C.W.C. M.J.H. | TR BY: S.S. | CH BY: J.H.C.
DATE: 9-1-54 | SCALE: 1/2"=1'-0" | SHEET 42 OF 72 | DRAWING NO. 42



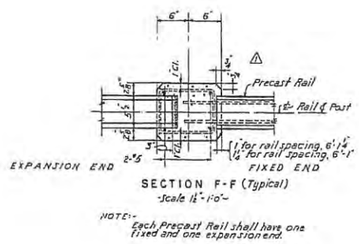
SECTION B-B
(Rails not shown)



SIDE ELEVATION
-Scale ¼"-1'0"-

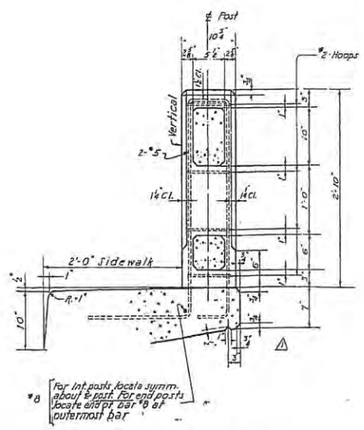


RAIL DETAILS (Typical)
-Scale 1½"-1'0"-



SECTION F-F (Typical)
-Scale 1½"-1'0"-

NOTE:- Each Precast Rail shall have one fixed and one expansion end.

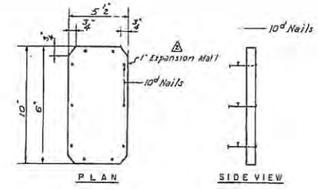


for int posts locate symm. about ℄ post. For end posts locate add'l bar #8 at outermost bar

SECTION A-A (Typical)
-Scale 1½"-1'0"-

-SPECIAL NOTE-

Before pouring rail bar drive ten 10d nails ½" into end of form at expansion end approximately as shown on plan. After rail is removed from joint, paint surfaces between end of rail, ¾" end ½" expansion materials, with roofing pitch. Drive expansion material up tight to end of rail and clinch nails. Wrap end of rail with one layer of three ply roofing felt fitted snugly to all surfaces and cleanliers. Place rail in post forms so that expansion assembly is held in place and exercise care in placing and tamping post concrete so that expansion material will not become dislodged.



⚠ DETAILS OF EXPANSION MATERIALS
-Scale 3"-1'0"-

NOTES:
⚠ 1. For General Notes see Dwg. N° 40.
2. All rail posts to be vertical.

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COASTAL HIGHWAY DISTRICT OF GEORGIA

Rev.	Description	Date
⚠	Revised expansion material and bars in ballast rail - as built	8-24-54
⚠	Added expansion detail for rails.	7-22-53

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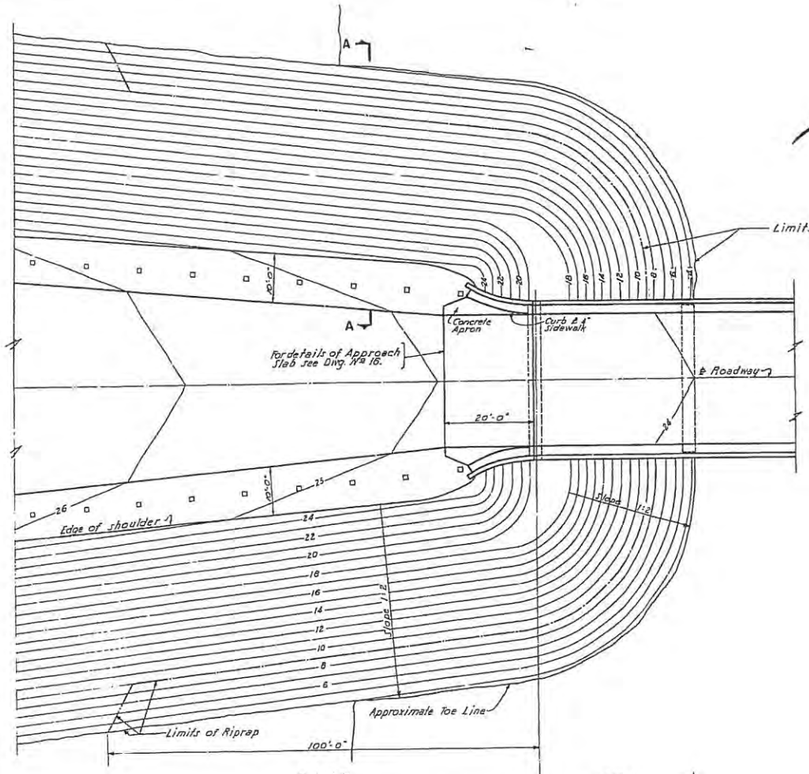
ENGINEERS NEW YORK, N.Y.

COASTAL HIGHWAY DISTRICT OF GEORGIA

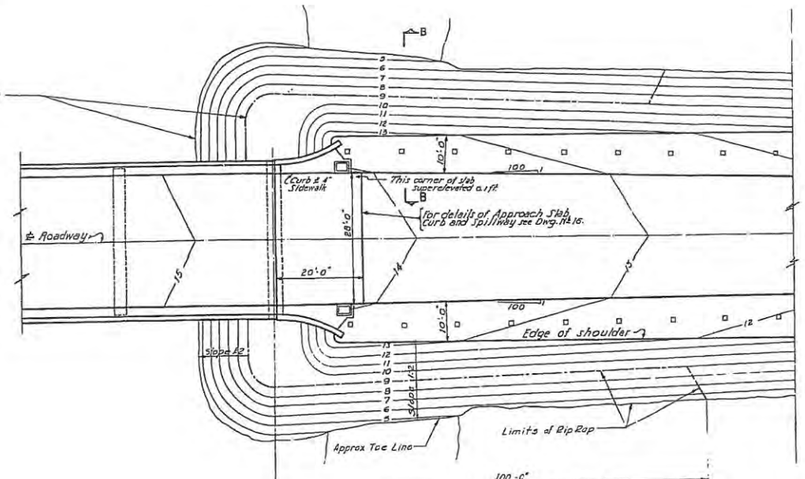
SAVANNAH RIVER CROSSING
GEORGIA-SOUTH CAROLINA SHORT ROUTE

CONCRETE RAILING DETAILS

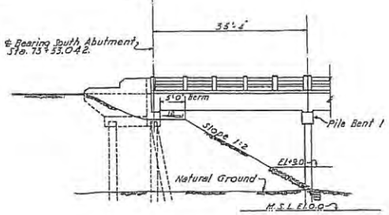
DR. BY J.N.R. | TR. BY A.N.R. | CH. BY L.G.J. | DRAWING NO. 43
DATE: 3-1-54 | SCALE: AS NOTED | SHEET 43 OF 72



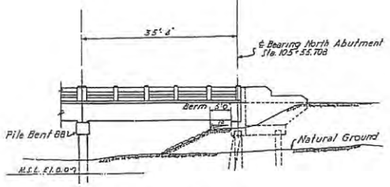
PLAN



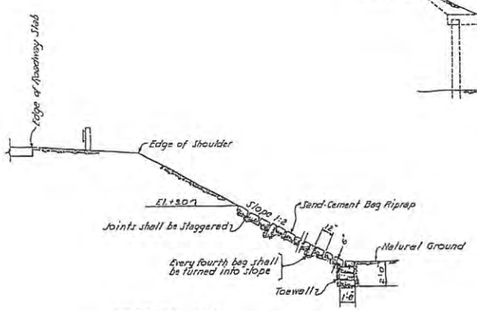
PLAN



SOUTH ABUTMENT



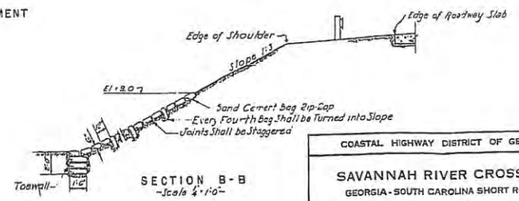
NORTH ABUTMENT



SECTION A-A
-Scale 1"=10'-

NORTH AND SOUTH ABUTMENTS
FOR CONCRETE TRESTLE
-Scale 1"=10'-

Note: Sand Cement Riprap shall be approximately 6'-12"+1'-0".



SECTION B-B
-Scale 4"=10'-

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COASTAL HIGHWAY DISTRICT OF GEORGIA

COASTAL HIGHWAY DISTRICT OF GEORGIA

SAVANNAH RIVER CROSSING
GEORGIA - SOUTH CAROLINA SHORT ROUTE

RIP-RAP PROTECTION FOR CONCRETE TRESTLE ABUTMENTS

PARSONS, BRINCKERHOFF, HALL & MACDONALD ENGINEERS NEW YORK, N.Y.	DR. BY: J.B.T.	TR. BY: A.H.R.	CH. BY: W.J.M.	DRAWING NO. 44
	DATE: 8-1-56	SCALE: NOTED	SHEET 14 OF 72	

South Carolina Department of Transportation
Location and Hydraulic Design of Encroachments on Floodplains Checklist

23 CFR 650, this regulation shall apply to all encroachments and to all actions which affect base floodplains, except for repairs made with emergency funds. Note: These studies shall be summarized in the environmental review documents prepared pursuant to 23 CFR 771.

I. PROJECT DESCRIPTION

The proposed project will consist of providing an additional two lane parallel bridge structure to U.S. 17 over Back River to accommodate an ultimate section of four travel lanes. The project limits extend between the GA 404 SPUR and S.C. 315.

A. Narrative Describing Purpose and Need for Project
   a. Relevant Project History:
   b. General Project Description and Nature of Work (attach Location and Project Map):
   c. Major Issues and Concerns:

The purpose of the proposed project is to increase roadway capacity and improve safety on U.S. 17 between the GA 404 SPUR and S.C. 315. The project is needed to accommodate existing and future traffic volumes using U.S. 17. GDOT recently completed construction of a new bridge on a shifted alignment with two lanes. The SCDOT project will construct a parallel bridge to the new GDOT structure.

B. Are there any floodplain(s) regulated by FEMA located in the project area?
   Yes☒ No☐

C. Will the placing of fill occur within a 100-year floodplain?
   Yes☒ No☐

D. Will the existing profile grade be raised within the floodplain?

The roadway elevation at the end of the proposed bridge is 17.89ft, and the roadway elevation at the northern terminus of the project is 8.90ft. Therefore a portion of the proposed roadway is above the BFEs shown on the 1986 FIRMs.

E. If applicable, please discuss the practicability of alternatives to any longitudinal encroachments.

The BFEs in the project limits are based on storm surge from the Atlantic Ocean, so there is no practical alternative to avoid longitudinal encroachments.

F. Please include a discussion of the following: commensurate with the significance of the risk or environmental impact for all alternatives containing encroachments and those actions which would support base floodplain development:

a. What are the risks associated with implementation of the action?

Since the BFEs are determined by a complex coastal model of the storm surge, isolated roadway fill would cause a minimal impact to the BFEs.

b. What are the impacts on the natural and beneficial floodplain values?

Since this is a floodplain determined by storm surge and not a riverine floodplain, impacts on beneficial floodplains are minimal.

c. What measures were used to minimize floodplain impacts associated with the action?

Floodplain impacts were minimized as much as possible, but the road profile was set to meet clearance requirements for the bridge and vertical curve requirements for the road grade.

d. Were any measures used to restore and preserve the natural and beneficial floodplain values impacted by the action?

No.

G. Please discuss the practicability of alternatives to any significant encroachments or any support of incompatible floodplain development.

The BFEs in the project limits are based on storm surge from the Atlantic Ocean, so there is no practical alternative to avoid encroachments.

H. \Were local, state, and federal water resources and floodplain management agencies consulted to determine if the proposed highway action is consistent with existing watershed and floodplain management programs and to obtain current information on development and proposed actions in the affected? Please include agency documentation.

FEMA is currently updating the storm surge studies for the coastal counties. The Jasper County Floodplain Manager should be consulted at the time of final design to ensure all local floodplain regulations are met.

Steve Swygert, PE — 12/12/16

Hydraulic Engineer — Date