Environmental Assessment

Widen CR-29/1277 (Caldwell Mill Road/Camp Horner Road) from CR-370 (Heatherwood Drive) to CR-2311 (Acton Road) and Bridge Replacement over Cahaba River (BIN #019329)

PROJECT NUMBER: STPBH-5939(200)

Jefferson and Shelby Counties, Alabama

Preparer: Beth Koenig **Date:** 5/19/2020

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ENVIRONMENTAL ASSESSMENT

1. **PROJECT NAME:** Widen CR-29/1277 (Caldwell Mill Road/Camp Horner Road) from CR-370 (Heatherwood Drive) to CR-2311 (Acton Road) and Bridge Replacement over Cahaba River (BIN #007390)

2. **PROJECT NUMBER:** STPBH-5939(200)

3. **LOCATION (County or Counties)**: Jefferson and Shelby Counties

4. TYPE OF PROJECT

A] Additional Capacity for Existing Facility	**[ ]**
B] Relocation of Existing Roadway	**[ ]**
C] Bridge Replacement with New Alignment	**[X]**
D] New Facility	**[ ]**
E] Other (Specify) : _____	**[ ]**

5. PROJECT AREA DESCRIPTION

The project is located in central Alabama, beginning in Shelby County and extending 1.46 miles northwest along CR-29/1277 (Caldwell Mill Road/Camp Horner Road) into Jefferson County. The project begins approximately 50' south of the intersection at Heatherwood Drive/Crossings Crest, Shelby County and ends approximately 150' south of Ossa Wintha Drive or approximately 500' south of the intersection at Acton Road, Jefferson County. The existing bridge within the project limits spans the Cahaba River. The project area is predominately residential development. The project corridor has rolling terrain. In the area of the bridge, the river has steep banks and rock outcroppings. The Functional Classification of CR-29 is Major Collector. (Refer to Appendix A, Pages A-1 & A-2).

6. PROJECT PURPOSE & NEED

The bridge over the Cahaba River is functionally obsolete, meaning that it was built to standards that are not used today. The existing bridge has narrow lanes and no shoulders. It also has a National Bridge Inspection Standards (NBIS) Sufficiency rating of 49.6 on a scale from 0 to 100, with 100 considered as an entirely sufficient bridge. The horizontal curve on the Jefferson County/north approach to the bridge and the vertical curve located on the existing bridge do not meet current AASHTO roadway design standards. Properly designed horizontal and vertical curves provide a natural, easy to follow path for drivers to negotiate a turn or a grade change. In addition, along CR-29/1277 (Caldwell Mill Road/Camp Horner Road) experiences congestion and travel delays due to the frequency of turning movements caused by numerous driveways and access points along the existing roadway. Queue lengths extend through access points for multiple cycles causing excessive queue delays.

7. PROPOSED PROJECT DESCRIPTION

The Cahaba River bridge crossing will be realigned to provide improved driving conditions for motorists by correcting the horizontal and vertical geometry so that it meets the design criteria as set forth in the AASHTO Guide *"A Policy on Geometric Design of Highways and Streets"* for 35 m.p.h. in Jefferson County and 45 m.p.h. in Shelby County. The revised alignment will move the low point of the curve off the bridge to the south, helping with drainage on the bridge. The new bridge over the Cahaba River will have a 50' clear roadway width (2-11' through lanes, 12' center turn lane and 8' shoulders each side), resulting in adequate lane width and shoulders.

The widened shoulders will accommodate bicyclists and provide a refuge for distressed motorists in the event of an emergency. The additional width also provides space for maintenance activities without necessitating a temporary closure of the bridge. A 5' sidewalk will be carried across the new bridge on the east side and separated from traffic with a concrete barrier. The new bridge will be a 350' long, three span, reinforced concrete bridge. The new bridge will span the Cahaba River active channel and be less constricting of water flow in the channel than the current bridge.

A retaining wall is proposed to limit the bent abutment[1] footprint. The footprint is limited because a retaining wall maintains an abrupt difference in ground surface elevations and supports near vertical slopes[2] of soil by preventing the soil from sliding. Without a retaining wall, slopes must be flatter to remain stable. Vertical slopes with retaining walls occupy less land than flatter, more horizontal slopes. Retaining walls/rock cut slopes[3] will be used adjacent to the bridge on both sides of Caldwell Mill Road. Cut Slopes/Walls in these locations will range in height from 4' to 20' and will extend approximately 600' as necessary to accommodate the rolling terrain. This will minimize right of way impacts to the adjacent properties.

The proposed project will widen the existing 2-lane facility from a 26' wide roadway to a 34' wide roadway to provide two 11' foot thru lanes and a 12' center two-way turn lane. Additionally, 12' auxiliary lanes, also known as turn lanes, will be added along Caldwell Mill Road at Altadena Wood Drive and Crossings Drive. Two intersection realignments will also be a part of this project. Buttewoods Drive and Old Caldwell Mill Road will be realigned so that the two streets approach to meet at a single point along Caldwell Mill Road, thus creating a four-legged intersection[4]. This will also occur at Pahokee Trace and Lakeland Drive. Upon completion of the project, there will be a continuous three-lane facility from SR119 in Shelby County to Acton Rd in Jefferson County. This three-lane roadway will shift any queues associated with the left turns out of the travel lanes into the center two-way turn lane allowing the thru traffic to move more efficiently.

The widened roadway section will include curb and gutter, Additionally, a 5' wide concrete sidewalk will be provided along the east side of the project and separated from the curb and gutter by a 2' grassed strip. No temporary or permanent access control will be installed in the project limits.

Termini:
The existing CR-29/1277 (Caldwell Mill Road/Camp Horner Road) roadway reduces from a three-lane roadway section to a narrow two-lane facility with no shoulders at the intersection with Heatherwood Drive, and continues north to the two-lane intersection with dedicated turn lane at Acton Road; Camp Horner Road and Acton Road is essentially a "T" intersection as the roadway directly across from Camp Horner Road is Acton Parkway and serves as an entrance to an apartment complex.

8. PROJECT HISTORY

This bridge replacement and roadway approach project was first initiated in 2002. The alignments for the Build Alternates considered at this time were the same throughout the project corridor except at the Cahaba River bridge crossing. All five (5) Build Alternates had the same centerline alignment from the beginning of the project at Heatherwood Drive to just south of the Cahaba River Bridge near the Butte Woods intersection (Refer to Appendix B – Project History for more detailed information on alignments). The centerline alignment also remained the same for all build alternates from just north of the Cahaba River Bridge near the Pahokee Trace intersection to the end of the project at Acton Road. The proposed improvements in these sections of the project consisted of symmetrical widening about the centerline of the existing roadway. The widening allowed for the addition of a center two-way turn lane and shoulders and improved access to side roads. All of the build alternates would include a bridge that spanned the Cahaba River and had a 50' clear roadway width (2-11' through lanes, 12' center turn lane and 8' shoulders each side).

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[1] A bent abutment is a supporting structure (substructure) at the ends of a bridge whereon the structure's superstructure (the upper portion of the bridge that is driven on) rests.
[2] Slope is the relationship of vertical rise to horizontal run. A steep slope has more vertical rise and less horizontal run. A flat slope has less vertical rise and more horizontal run.
[3] The slope or grade of land refers to the tangent of the angle of that surface to the horizontal. A cut slope is when soil or rock is removed to create a new surface.
[4] An intersection is a crossroads where two roads meet. The number of intersecting legs, or the number of roads that will join to form an intersection, determines the type of intersection.

At that time, a pump station that serviced the nearby apartment complex was located on the southeast side of CR-29 and the Cahaba River. An existing driveway accessed the pump station off CR-29 and access would need to be maintained to this driveway during and after construction of the new bridge. All of the proposed build alternates took this into consideration either by spanning the driveway or avoiding the driveway (Refer to Appendix A, Page A-3). Since there is no reasonable detour for CR-29, it must remain open to traffic during construction. Therefore, the different alternates studied were based upon shifting the proposed bridge to either side of the existing bridge.

The alternatives for the Cahaba River bridge crossing are described below.

Alternate A
This alignment consisted of shifting the bridge 100' west (downstream) for bridge realignment in a horizontal curve, tying back tangent[5] to an existing curve across the Jefferson County line.

Alternate B
For Alternate B, the bridge alignment shifted the replacement bridge approximately 125' to the east (upstream) on a tangent section, which produces a flattened horizontal curve to the south and ties in to the tangent section on the north end of the bridge. This then ties back tangent to an existing curve across the Jefferson County line. The vertical curve of this bridge would not meet AASHTO design criteria.

Alternate C
Alternate C is a variation of Alternate B in an attempt to meet the vertical design criteria. This alternate involved widening 7 feet to the west of existing centerline to existing bridge, then shifting 125' to the east (upstream) for bridge realignment, tying back tangent to existing curve across the Jefferson County line. The vertical curve for this alignment did not meet AASHTO design criteria either.

Alternate D
This alignment consisted of shifting 60' west (downstream) of the existing bridge and tying back to an existing tangent beyond the bridge. The vertical curve of this bridge would not meet AASHTO design criteria.

Alternate E
This alternative consisted of the new bridge centerline ranging from approximately 60' on the southern end to 140' on the northern end to the east (upstream) of the existing bridge. The revised alignment ties in near the intersection of River Estates Rd and Pahokee Trace on a tangent. The proposed alignment crosses the Cahaba River on the skew and includes a bridge approximately 460' in length to span the floodplain.

	Required Design Variances	Required ROW Relocations	Required Bridge Length	Estimate Bridge Construction Cost
Alternate A	**2**	**1**	**230'**	**$8 Million**
Alternate B	**1**	**2**	**480'**	**$10 Million**
Alternate C	**1**	**2**	**480'**	**$10 Million**
Alternate D	**1**	**0**	**225'**	**$6 Million**
Alternate E	**0**	**4**	**460'**	**$12.5 Million**

Alternate E was the preferred alternate because it met all project design criteria and corrected all existing substandard geometrics (Refer to Appendix B – Project History for more details). However, in 2018, the pump station was relocated so the need for the access driveway no longer existed. It was determined that the previous build alternates that had taken the driveway into consideration could be eliminated. A new alternate that was no longer limited by the driveway access is presented as Alternate F (Build Alternate) in the Alternate Analysis.

[5] Tangents are straight roadway sections that are connected by curves. The roadway alignment is a series of horizontal tangents and horizontal curves.

9. ALTERNATES ANALYSIS

No-Build Alternate

In order to provide a thorough study for this corridor, a "No Build" alternate was considered. The No-Build Alternate would retain the existing two-lane roadway in its present condition. This alternate would not require the displacement of any homes or businesses.

The No-Build alternate does nothing to improve the geometry of the existing roadway, so the roadway will continue to have deficiencies and not meet current design criteria. Also, the No-Build Alternate would not replace the functionally obsolete bridge or accommodate bicyclist and pedestrians. This alternate would have no impacts to the floodplain or the channel.

The No-Build Alternate is carried forward as a reasonable alternate throughout the environmental review process to provide a benchmark in which to compare impacts from the proposed alternates.

Build Alternate (Alternate F)

This alignment is consistent with the Alternates presented in the Project History. The alternative consists of symmetrical widening of the existing roadway, except at the Cahaba River bridge, from the beginning of the project at Heatherwood Drive to the end of the project at Acton Road. The widening allowed for the addition of a center two-way turn lane and shoulders and improved access to side roads. This alternate will have 50' clear roadway width (2-11' through lanes, 12' center turn lane and 8' shoulders each side). At the Cahaba River, the new bridge will be located approximately 60' to the east (upstream) of the existing bridge with a reversing curve to tie back into the roadway near the intersection of River Estates Rd and Pahokee Trace.

This alternate would require the displacement and relocation of one home, noted as Structure Number 3 on Map A-3. This reduces acquisition costs as the previous preferred alternate would require the relocation of 3 homes and 1 business.

This alignment minimizes the bridge length required to cross the Cahaba River while still meeting all horizontal and vertical design requirements, thereby meeting AASHTO standards and not requiring a design variance. The bridge can be constructed without having equipment or fill in the floodplain, which reduces environmental impacts. This alternate reduces costs due to the shorter bridge length. Therefore, this alternate is the Preferred Alternate and will be carried forward throughout the environmental review process. (Refer to Appendix A, Pages A-4 to A-7).

	Required Design Variances	**Required ROW Relocations**	**Required Bridge Length**	**Required Bridge Cost**
No Build	**0**	**0**	**0'**	**$0**
Alternate F	**0**	**1**	**350'**	**$7.5 Million**

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IMPACT CATEGORY CODES:

0. **NOT APPLICABLE TO THIS PROJECT**
1. **NO IMPACT ANTICIPATED**
2. **POTENTIALLY BENEFICIAL IMPACT**
3. **POTENTIALLY MINOR ADVERSE IMPACT**
4. **MITIGATION REQUIRED; SEE DOCUMENTATION**
5. **YES**
6. **NO**

IMPACT ASSESSMENT

IMPACT CATEGORIES	0	1	2	3	4	5	6	DOCUMENTATION REFERENCES OR ADDITIONAL COMMENTS
I. LAND USE								
A. Compatibility w/ Comp. Plans & Zoning Regs.						✓		Included in ALDOT FY2020-2023 State Transportation Improvement Program (STIP) adopted September 2019
B. ROW Required						✓		Approximately 12.5 Acres are required. (Refer to Appendix A, Page A-4 to A-7)
C. Visual or Aesthetic Impact				✓				Aesthetic treatment of retaining walls to match existing retaining walls in residential area. Architectural treatment of retaining walls will be coordinated per our Environmental Commitment.
D. Prime & Unique Farmlands		✓						(See Appendix D, Page D-1)
II. SOCIOECONOMIC IMPACTS								
A. Community Cohesion Impacts		✓						Roadway/Bridge replacement is occurring to existing infrastructure. It will not separate the community and does not cause a negative impact to cohesion.
B. Community Facilities		✓						No impacts on community facilities are evident.
C. Displacements						✓		
1). Residential						✓		1 Owner Resident will be displaced (See Appendix E, Page E-2 to E-3)
2). Business							✓	
D. Environmental Justice/Title VI		✓						No environmental justice population present in the project area.
E. Pedestrian/Bicycle Facilities						✓		An ADA compliant 5' wide sidewalk will be provided the full length of the project on the east side of the roadway. Bicycles will be accommodated on the widened shoulders.

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IMPACT CATEGORIES	0	1	2	3	4	5	6	DOCUMENTATION REFERENCES OR ADDITIONAL COMMENTS
III. ECOLOGICAL IMPACTS								
A. Endangered Species		✓						Refer to ALDOT letter dated 11/15/2019, ALDOT email dated 9/12/16, and USFWS letters dated 6/8/2007 and 9/16/2002 (See Appendix F, Pages F-6, F-13, F-27 & F-44)
B. Vegetation/Wildlife Habitat		✓						Refer to ALDOT letter dated 11/15/2019, ALDOT email dated 9/12/16, and USFWS letters dated 6/8/2007 and 9/16/2002 (See Appendix F, Pages F-6, F-13, F-27 & F-44)
IV. NATURAL FEATURES/ RESOURCES IMPACTS								
A. Water Quality				✓				ALDOT standard BMP's will be implemented for erosion control and siltation during construction (Refer to Appendix G)
B. Wetland Impacts							✓	None identified. (Refer to Wetlands Delineation Report in Appendix H)
C. Stream Impacts						✓		Two perennial streams with 120' total streambed impacts (See Appendix H, Figures 4 & 5)
D. Floodplains (ref. 23 CFR 650)				✓				Refer to Hydraulic Report dated 5/15/20, Preliminary Drainage Report dated 10/31/17, and Floodplain Study dated 12/15/03 (Refer to Appendix I)
E. Wild & Scenic Rivers	✓							
F. Coastal Zone	✓							
G. Air Quality								Refer to Air Impact Analysis Report (See Appendix J)
1). Ozone non-attainment area?						✓		
2). Carbon Monoxide		✓						
3). PM 2.5		✓						Refer to PM2.5 Hot Spot Analysis (See Appendix J)
4). Mobile Source Air Toxics (MSAT)		✓						
H. Noise				✓				Project showed noise impacts to 2 receptors, but abatement was determined not to be feasible and reasonable. Refer to Noise Impact Analysis Report (See Appendix K)

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3. **POTENTIALLY MINOR ADVERSE IMPACT**
4. **MITIGATION REQUIRED; SEE DOCUMENTATION**
5. **YES**
6. **NO**

IMPACT ASSESSMENT

IMPACT CATEGORIES	0	1	2	3	4	5	6	DOCUMENTATION REFERENCES OR ADDITIONAL COMMENTS
V. CULTURAL RESOURCES IMPACTS/SECTION 4(F) FINDINGS								
A. Historic Properties							✓	
1). SHPO concurrence						✓		Refer to letter to SHPO dated January 4, 2017 (See Appendix L, Page L-1)
B. Archaeology Sites							✓	
1). SHPO concurrence						✓		Refer to letter to SHPO letter January 4, 2017 (See Appendix L, Page L-1)
C. Tribal Coordination						✓		Refer to Tribal coordination letters (See Appendix F, Pages F-1 to F-5, F-32, F-41 & F-43)
D. Recreation Areas/ Public Parks	✓							
E. Wildlife/Waterfowl Refuges	✓							
VI. HAZMAT								
A. HazMat							✓	Refer to Hazardous Materials clearance letter dated March 3, 2020 (See Appendix M, Page M-1,)

PERMITS

VII. PERMITS REQUIRED	Yes	No	DOCUMENTATION REFERENCES &/OR ADDITIONAL COMMENTS
A. Corps of Engineers	✓		Nationwide 14
B. Coast Guard		✓	Refer to FHWA letter dated March 13, 2017 (See Appendix N, Page N-1)
C. TVA		✓	
D. Mitigation Required		✓	

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PUBLIC INVOLVEMENT

VIII. PUBLIC INVOLVEMENT PHASE	YES	NO	ADDITIONAL COMMENTS
A. Exemption Requested from Early Coordination		✓	Refer to Early Coordination responses (See Appendix F)
B. Exemption Requested from Public Involvement		✓	Refer to PIM dated December 9, 2010 and PIM dated April 13, 2004 (See Appendix O)
C. Exemption Requested from Further Public Hearings	✓		Three public involvement meetings have been conducted. The third meeting was conducted as a Formal Public Involvement Meeting held on April 26, 2016. Refer to PIM Report dated June 22, 2016. Public outreach letters/comment forms were mailed to citizens affected by the preferred alternate on July 9, 2019. There is overall support for the project (See Appendix O).

ENVIRONMENTAL COMMITMENTS

IX. ENVIRONMENTAL COMMITMENTS (YES/NO)	COMMENTS
YES – Jefferson/Shelby Counties are responsible for commitments, signed by Jefferson County on December 18, 2019 and by Shelby County on December 24, 2019.	1. No work is to be performed in the Cahaba River and ALDOT Erosion Control BMP's are to be implemented. 2. The new bridge structure is to span the Cahaba River; storm water will not be discharged directly into the river. 3. Construction method is to be top down; existing columns are to be removed to the mud line and temporary work pad is not to be placed in the river. 4. The existing bridge and other construction debris shall not be dropped into the water. 5. Architectural treatment of Retaining Walls to be constructed between Stations 128+90 and 131+20 will be coordinated with affected community residents.

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F H W A C O N C U R R E N C E

X. ENVIRONMENTAL ASSESSMENT FINDING (Check Appropriate Response)	RESPONSE	SIGNATURE	DATE
A. FHWA Concurs with this Environmental Assessment		Lynne A. Urquhart For: Mark D. Bartlett, PE Division Administrator FHW A, Alabama Division	**06/01/2020**
B. FHWA Concurs with this Environmental Assessment on the conditions stated below			

FHWA COMMENTS (if applicable):