DESIGN EXECUTIVE SUMMARY

County:	Jefferson	**Item #:**	05-193	
Route Number(s):	KY 864 (Logan) and KY 864-1 (Shelby)	**State Program #:**		
BMP/EMP:	14.4 to 15.6 (Logan)	**Federal Project #:**		
Type of Work:	Road Reconfiguration	**State Project #:**		

Highway Plan Project Description: One-way to Two-way conversion of Shelby Street and Logan Street. Following conversion, only Logan Street will remain KY 864. Curb extensions construction and signal removals will also occur on both corridors.

EXISTING CONDITIONS

ADT (current): 4500 (Logan) 5550 (Shelby)	**Truck Class:** A		**Trucks: 4%**
Existing Functional Classification: ☑ Urban ☐ Rural; Arterial	**Terrain:** Level	**Route is on (check all that apply):** ☐ NHS ☐ NN ☐ Ext Wt ☑ None	
Posted Speed Limit: 35 mph **"or"**	**Statutory Speed Limit:** ☐ 35 mph (urban) ☐ 55 mph (rural)		
Existing Bike Accommodations: None	**Ped:** ☑ Sidewalk ☐ Other:____N/A_____		

PROPOSED CONDITIONS

Design Functional Classification: ☑ Urban ☐ Rural; Arterial	**Design ADT ( ):** **DHV:**	**Access Control:** By Permit **Min. Spacing:**_____	

CONTROLLING CRITERIA:	**EXISTING CONDITIONS (Estimated based upon existing geometrics.)**	**AASHTO Guidance (for design speed)**	**Recommendation**	**Design Exception (check if needed for Design Speed)**	
Design Speed	**35 MPH**	Minimum: 35 MPH Selected: 35 MPH	**35 MPH**	☐	
Note: For any remaining controlling criteria that are less than AASHTO recommended guidance: If recommended design speed is ≥ 50 mph, exceptions are needed; If recommended design speed is < 50 mph, variances are needed.				**Exception (≥ 50 mph)**	**Variance (< 50 mph)**
Lane Width, No. of Lanes	2 - 11' travel lanes	9' - travel lane	2-11' travel lanes	☐	☐
Shoulder Width (Minimum Usable)	N/A	N/A	N/A	☐	☐
Horiz. Curve Radius (Minimum)	Existing	340.00	Existing	☐	☐
Max. Superelev. Rate (emax= 6 %)	Existing	6%	Existing	☐	☐
Stopping Sight Distance (Minimum)	Existing	250	Existing	☐	☐
Max. Grade (%)	Existing	7.00%	Existing	☐	☐
Normal Cross Slope (%)	Existing	2.00%	Existing	☐	☐
Vert. Clearance (ft.)	N/A	N/A	N/A	☐	☐

OTHER CRITERIA:

				Design Variance
Border Area (urban)	12'	8'-12'	12'	☐
Sidewalk Width, slope	Existing	5', <2%	Ex. Width, 1.5%	☐
Bike Lane Width, slope	N/A	N/A	N/A	☐
Shared Use Path Width	N/A	N/A	N/A	☐
Other:	N/A	N/A	N/A	☐

DESIGN EXECUTIVE SUMMARY

Design Criteria Notes: None

Environmental Action: CE Level 1

Completion Date:

☑ scheduled ☐ actual

Existing Pavement Depths: Based on 1969 KY US 31W highway plans: 3" DGA, 8" Cement Concrete Pavement, Type "D"
Based on field observations: Additional asphalt pavement surface placed atop 1969 pavement

Include:

1. Typical Sections, including bridges (on 8.5X11 inch paper)
2. Map showing project location
3. Preliminary line & grade meeting minutes
   - Purpose and Need Statement
   - Project overview and existing conditions
   - Discussion of Alternatives (including preferred and no build) with respective traffic control schemes, utility and right of way impacts, environmental impact, and performance (traffic analysis, safety analysis, etc.)
   - Consideration of Bicycle and pedestrian facilities discussion **(HD-1501)**
   - Cost comparison table of alternatives vs. Highway plan (include D, R, U, & C)
   - Discussion if preferred alternative cost is >115% than the highway plan
   - Discussion of clearzone
   - Discussion of design exceptions and mitigation strategies
   - Discussion of low cost maintenance improvements
   - Additional Comments and action items
4. Water related impact summary

Submitted by Project Engineer: ☐ KYTC ☐ Consultant **Date:**

Recommended by Project Manager: **Date:**

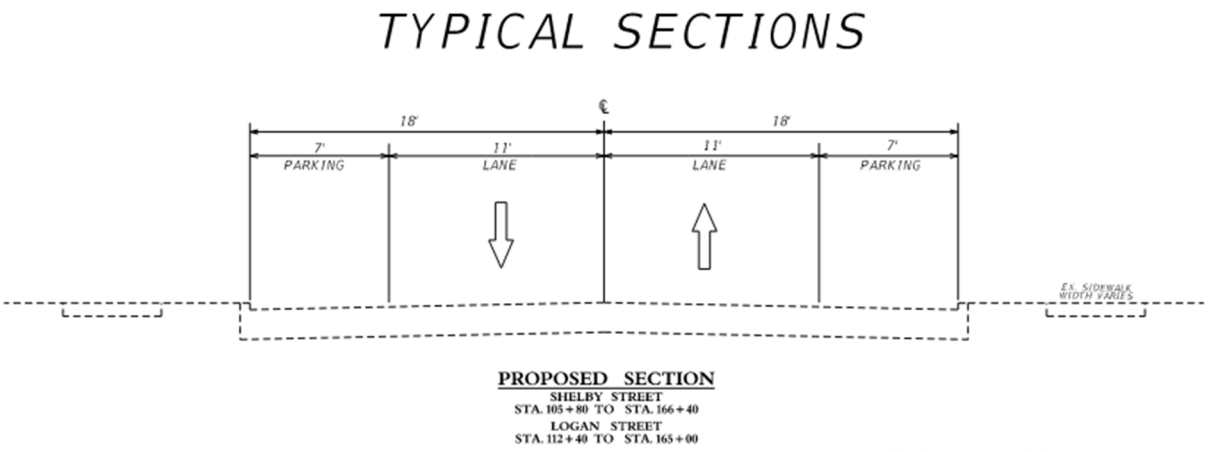
Tier Level Approval ☐ Tier 1 ☐ Tier 2 ☐ Tier 3

Location Engineer: **Date:**

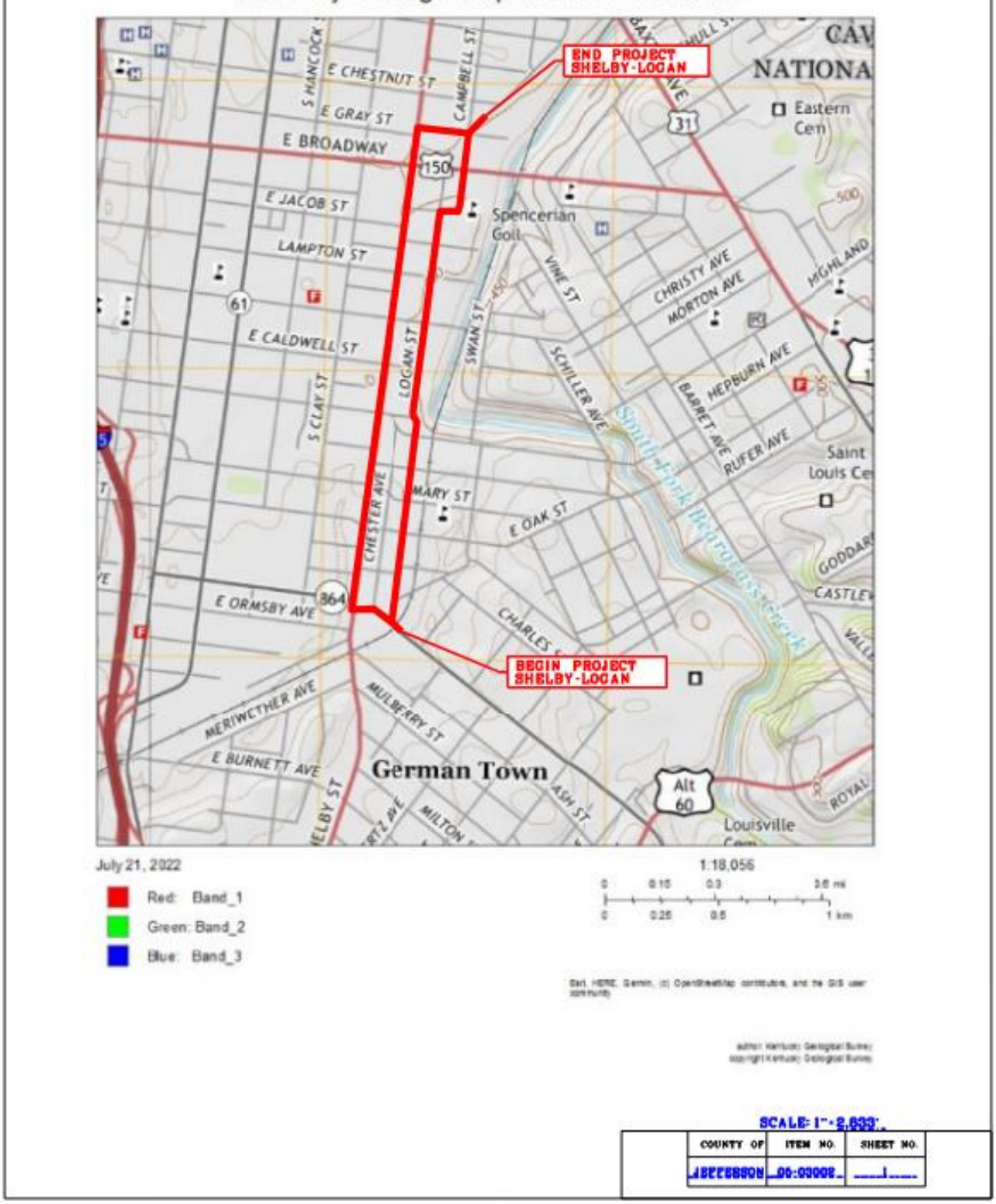
Roadway Design Branch Manager: **Date:**

Geometric Approval Granted by: Director, Div. of Hwy. Design **Date:**

1. Typical Sections



2. Project Location Map



3. Project Overview and Existing Conditions

This project involves the one-way to two-way conversion of Shelby Street (KY 864) and Logan Street (KY 864) from Goss Avenue through Chestnut Connector, the full one-way road pair section length of KY 864. The project corridor streets provide access to both residential, recreational, and commercial areas. Within the project corridor there are ten existing signalized intersection that provide safe crossing for pedestrians. Four of these signalized intersections are proposed to be removed and replaced with four-way stops.

The project also involves addition of traffic calming along the corridor through the construction of curb extensions. The curb extensions will be installed at areas with higher pedestrian volumes. The curb extensions will reduce the length of pedestrian crossings across the roadway while making pedestrians more visible to drivers and vice-versa. The curb extension will be designed to maintain existing drainage patterns and drainage while minimizing impacts to existing utilities.

Existing utilities along the corridor and project area include overhead power lines, water, and combined sewer lines within project limits.

4. Purpose and Need Statement

Project Purpose:

The purpose of the Shelby & Logan Street project is to improve vehicular mobility and improve pedestrian safety through the corridor.

Project Need:

Shelby and Logan Streets are an important transportation corridor (one-way street pair) that connects Chestnut Connector, Broadway, and Goss Avenue. It has 4 lanes (2 lanes in each direction) with full pedestrian facilities. It currently has numerous signalized intersections throughout the corridor. It provides access to the Smoketown residential neighborhoods and to the popular Logan Street Market commercial area.

While it is not one of the busiest and most important corridors in the region, it does have safety issues for neighborhood residents and visitors for both vehicular traffic and pedestrians. During the morning and afternoon peak periods, the corridor is used as a commuting route between downtown Louisville and residential neighborhoods. This results in vehicular traffic traveling along the corridor at higher speed than typical residential and commercial mixed corridors. This transportation demand has resulted in pedestrian incidents along the project corridor.

Commercial development along the Logan Street corridor has continued to progress over the past several years. Access to these facilities is important for the residents within the area. Presently, no traffic calming along Shelby Street or Logan Street exists to safely facilitate pedestrians from the residential neighborhoods, parking areas, or transit stops to commercial facilities along Logan Street.

5. Discussion of Alternatives (Including No-Build)

Alternatives Considered

This project evaluated two primary alternatives in addition to a no-build alternative. Alternatives evaluated include:

- No-build
- Alternative 1 – Conversion with Signal Removal
- Alternative 2 – Conversion without Signal Removal

The Shelby Street and Logan Street project requires two major parts, one-way to two-way conversion and additional traffic calming. The majority of the one-way to two-way traffic conversion is completed with updates to signs and pavement markings as well as modification to traffic signals. All conversion work will occur within the limits of the existing roadway. Limited hardscape work will occur to allow for the required geometrics for two-way operations. The traffic calming will be completed through the addition of curb extensions. The curb extensions were selected for traffic calming as they can be installed with limited impacts to drainage and utilities. During initial conceptual design, the two major alternatives were if the conversion would be completed with or without signal removal. Within the existing project corridor there are ten signalized intersections. The intersections have been evaluated for signal removal warrants and traffic operational performance as signalized and as a four-way stop.

Each of these PL&G alternatives is discussed in more detail below.

Alternative 1 – Conversion With Signal Removal

Alternative 1 features a one-way to two-way conversion of Shelby & Logan Streets as well as the installation of curb extensions for traffic calming. The curb extensions will be constructed at six locations along the project corridor. The existing roadway geometry will be maintained, but will have changes to the pavement markings to convert to a two-way section, resulting in the following possible typical section:

- 1 – 11-foot northbound lane
- 1 – 11-foot southbound lanes
- 7-foot parking (existing, both sides)
- Sidewalk (existing, both sides, with and without verge)

After warrant and traffic operations evaluations were completed, it was recommended to remove four of the ten traffic signals within the area, at the following locations:

- Shelby & Breckenridge
- Logan & Breckenridge
- Logan & Mary
- Logan & Oak

Utility impacts are anticipated to be minimal. There is no anticipated right of way impact. The environmental impacts are expected to be minimal with a CE Level 1 approval required. No changes to roadway performance are anticipated with the reconfiguration providing the same number of travel lanes as existing. Major improvements to pedestrian safety are expected by providing shorter crosswalks at the curb extensions.

Alternative 2 – Conversion Without Signal Removal

Alternative 2 features a one-way to two-way conversion of Shelby & Logan Streets as well as the installation of curb extensions for traffic calming. The curb extensions will be constructed at six locations along the project corridor. The existing roadway geometry will be maintained, but will have changes to the pavement markings to convert to a two-way section, resulting in the following possible typical section:

- 1 – 11-foot northbound lane
- 1 – 11-foot southbound lanes
- 7-foot parking (existing, both sides)
- Sidewalk (existing, both sides, with and without verge)

This option was not selected as the build option, because the signal removal (where feasible) better meets the project purpose of traffic calming and providing streets that better match the context of neighborhood streets.

Utility impact risks are anticipated to be greater than Alternative 1, as increase in the number of signal poles to be installed will have a greater change of utility impacts. There is no anticipated right of way impact. The environmental impacts are expected to be minimal with a CE Level 1 approval required. Alternative 2 is expected to provide improvements to roadway performance compared to Alternative 1, as the signals provide less delay than the Alternative 1 four-way stops. Major improvements to pedestrian safety are expected by providing shorter crosswalks at the curb extensions.

No-Build Alternative

The no-build alternative was dismissed because it did not meet the purpose and need.

Preferred Alternative

Alternative 1 is identified and the preferred option and is within the available funding for the project. The no-build option does not satisfy the purpose and need for the project.

6. Discussion of Design Exceptions/Variances

No design variances are requested.

7. Cost Comparison Table of Alternatives vs. Highway Plan

Phase	2022-2028 Six-Year Plan	Alt. 1 (Preferred)	Alt. 2	Alt. 3 (No Build)
Design	N/A	$150,000	$150,000	$83,000*
Construction	$3,000,000	$1,070,000	$1,250,000	-
Utilities	N/A	$0**	$0**	-
R/W	N/A	$0	$0	-
Total		$1,200,000	$1,400,000	$83,000

*Design Fees for Phase 1 Engineering

**Anticipated Utility Impacts from Phase 1 Design, May Increase During Phase 2 Design

8. Discussion of Preferred Alternative Cost Greater than 115% of Available Funding.

The preferred Alternative is within the available funding for the project.

9. Discussion of Clear Zone

This project is in an urban area, and therefore Chapter 10 of the AASHTO Roadside Design Guide is used for guidance. A minimum of a 1.5 foot lateral offset from the face of the curb is recommended (it is desirable to have as much as eight foot). There will be no items added within the clear zone as a part of this project.

10. Consideration for Bicyle and Pedestrian Facilities

The project will include addition of curb extensions for pedestrian safety at either intersections along the project corridor. No bicycle accommodations will be constructed with this project

11. Water-Related Impacts Summary

See water-related impacts summary form on next page.

WATER RELATED IMPACTS SUMMARY

County	Jefferson	**Route No.**	KY 864 & KY 864-1	**Item No.**	5-03002.00
Date	08/19/2022	**Program #**			
Federal Project No.					
State Project No.					
Location Engineer					

Section 1: Impact Checklist

Complete this section for each alternative considered at the conclusion of Phase 1 design.

Alternate 1

FLOODPLAIN IMPACTS		
FEMA Study Type	**Yes**	**Community No.**
Detailed FEMA Study with delineated floodway*	☒	210120B
Detailed FEMA Study without delineated floodway**	☐	
Approximate FEMA Study	☐	
No FEMA Study	☐	

***** If proposed design impacts the floodway, then it may require initiation of map revision process (CLOMR/LOMR).

** If proposed design impacts water surface elevations, then it may require initiation of map revision process (CLOMR/LOMR).

Potential impacts to floodplains and/or floodways shall be assessed early in the project. Refer to the Drainage Manual.

The project is located on the FEMA Flood Map Panel 21111C0042E (Jefferson County) and is in a “Zone AE” flood area

SIGNIFICANT RESOURCE IMPACTS	YES		NO	
Are open sinkholes impacted? If so, how many sinkholes are impacted?	☐		☒	
Are wetlands impacted? If so, how many total acres are estimated? _____ acres	☐		☒	
Are any of the streams in the project area designated “Special Use Waters” (e.g. Wild Rivers, Exceptional Waters, Outstanding State Resource Water, etc.)?	☐		☒	

Where possible, alignments should be developed that avoid significant resources. When it becomes impossible to avoid a significant resource, the project should be designed to minimize these impacts. Significant resource impacts are discussed in DR 202 of the drainage manual. Wetland impacts and their costs are discussed in DR 500 of the Drainage Manual.

Projects that impact special use waters may require an individual KPDES Erosion Control Permit. Contact the Division of Environmental analysis for more information.

STREAM CHANNEL IMPACTS	YES		NO	
Will stream relocations (channel changes) be needed? If so, check all that apply: 1. Will at least "1" relocation be over 100' in length? ☐ 2. Will at least "1" relocation be over 300' in length? ☐ 3. Will at least "1" relocation be over 500' in length? ☐ How many total linear feet are estimated? _____ LF	☐		☒	
Will new culverts or culvert extensions be constructed? If so, check all that apply: 1. Will at least "1" be over 300' in length? ☐ 2. Will at least "1" be over 500' in length? ☐ How many total linear feet are estimated? _____ LF	☐		☒	
Will temporary stream crossings be needed?	☐		☒	
Will excess material sites that require permitting be needed?	☐		☒	
Will bridges be constructed?	☐		☒	

On highway projects that involve stream crossings such as bridge and culverts, it is often not feasible to totally avoid stream channel impacts. In these cases, design the project to minimize the impacts. Stream relocations should be avoided if possible. If stream relocations are unavoidable design to project to minimize their impacts. Stream channel impacts are discussed in DR 506, 601-3, 608-2, and 802-3 of the drainage manual.

Alternate 2

FLOODPLAIN IMPACTS		
FEMA Study Type	**Yes**	**Community No.**
Detailed FEMA Study with delineated floodway*	☒	210120B
Detailed FEMA Study without delineated floodway**	☐	
Approximate FEMA Study	☐	
No FEMA Study	☐	

***** If proposed design impacts the floodway, then it may require initiation of map revision process (CLOMR/LOMR).

** If proposed design impacts water surface elevations, then it may require initiation of map revision process (CLOMR/LOMR).

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The project is located on the FEMA Flood Map Panel 21111C0042E (Jefferson County) and is in a “Zone AE” flood area

SIGNIFICANT RESOURCE IMPACTS	YES		NO	
Are open sinkholes impacted? If so, how many sinkholes are impacted?	☐		☒	
Are wetlands impacted? If so, how many total acres are estimated? _____ acres	☐		☒	
Are any of the streams in the project area designated “Special Use Waters” (e.g. Wild Rivers, Exceptional Waters, Outstanding State Resource Water, etc.)?	☐		☒	

Where possible, alignments should be developed that avoid significant resources. When it becomes impossible to avoid a significant resource, the project should be designed to minimize these impacts. Significant resource impacts are discussed in DR 202 of the drainage manual. Wetland impacts and their costs are discussed in DR 500 of the Drainage Manual.

Projects that impact special use waters may require an individual KPDES Erosion Control Permit. Contact the Division of Environmental analysis for more information.

STREAM CHANNEL IMPACTS	YES	NO

Will stream relocations (channel changes) be needed? If so, check all that apply: 4. Will at least "1" relocation be over 100' in length? ☐ 5. Will at least "1" relocation be over 300' in length? ☐ 6. Will at least "1" relocation be over 500' in length? ☐ How many total linear feet are estimated? _____ LF	☐		☒	
Will new culverts or culvert extensions be constructed? If so, check all that apply: 3. Will at least "1" be over 300' in length? ☐ 4. Will at least "1" be over 500' in length? ☐ How many total linear feet are estimated? _____ LF	☐		☒	
Will temporary stream crossings be needed?	☐		☒	
Will excess material sites that require permitting be needed?	☐		☒	
Will bridges be constructed?	☐		☒	

On highway projects that involve stream crossings such as bridge and culverts, it is often not feasible to totally avoid stream channel impacts. In these cases, design the project to minimize the impacts. Stream relocations should be avoided if possible. If stream relocations are unavoidable design to project to minimize their impacts. Stream channel impacts are discussed in DR 506, 601-3, 608-2, and 802-3 of the drainage manual.

Section 2: Impact Discussion

Alternatives that were considered for this project both occur within the FEMA floodplain along Logan Street near Breckenridge Street and Grey Street. Both alternatives propose to provide minor changes to pavement surface within the 100-year floodplain, that include both the addition and removal of median islands. The proposed addition and removal of median islands is the same between both alternatives. The balance of addition and removal will minimize floodplain impacts.