Chapter 6—Comparison of Alternatives

For purposes of this chapter, Preferred Alternative 8 that was identified in the Draft Environmental Impact Statement (DEIS) will be referred to as "Alternative 8." The Preferred Alternative for the Final Environmental Impact Statement (FEIS) will be referred to as the "Refined Preferred Alternative 8."

6.1 Introduction

This chapter uses the purpose and need performance goals, costs, impact information, and engineering/safety design considerations presented in **Chapter 2**, *Purpose and Need*, **Chapter 3**, *Alternatives*, and **Chapter 5**, *Environmental Consequences*, to select the Tier 2 Preferred Alternative for I-69 Section 5. **Section 6.2**, *Comparison of Alignment Alternatives*, compares the Section 5 alignment alternatives, while **Section 6.3**, *Development of the Preferred Alternative*, details the factors that were used to identify the Refined Preferred Alternative for the FEIS. The alternatives evaluated provide different combinations of alignments and access features to upgrade existing SR 37 to an Interstate highway. The discussion highlights the similarities and differences in the design features of the alternatives, and the ability to integrate these features into the existing SR 37 infrastructure. **Section 6.4**, *Selection of the Preferred Alternative*, documents the selection of the Preferred Alternative.

Alternative 8 was identified as the DEIS Preferred Alternative. Comments on the DEIS generally supported this selection and offered recommendations to be considered in further refining this alternative to avoid or further reduce impacts and/or cost. This FEIS presents refinements to the DEIS Preferred Alternative that have occurred since the issuance of the DEIS. These modifications are based on comments received on the DEIS; information received from CAC members, participating agencies and other local public officials; and additional engineering and environmental studies to address comments received on the DEIS as well as results from the updated traffic modeling for the project. The product of these efforts is Refined Preferred Alternative 8. The impacts associated with Refined Preferred Alternative 8 are presented in **Chapter 5**, *Environmental Consequences*, and compared herein to the impacts for Alternatives 4, 5, 6, 7, and 8 (the alternatives presented in the DEIS).

Since the publishing of the DEIS, the following substantive changes have been made to this chapter:

- Impact tables throughout this chapter were updated to include the impacts of Refined Preferred Alternative 8. Impact tables were also updated to include the potential impacts to hazardous waste sites, wellhead protection areas, and cave recharge areas for all alternatives.

- Pavement recommendations and the resulting cost savings from the reuse of the existing SR 37 pavement for Alternative 8 and Refined Preferred Alternative 8 were added throughout the chapter.

- Ephemeral streams, total stream impacts, and stream relocation impacts were updated for all alternatives in the impact tables in this chapter.

- **Section 6.2.1.4**, *Refined Preferred Alternative 8,* was added to provide a general description of the Refined Preferred Alternative 8.

- **Section 6.3.3**, *Purpose and Need Performance Goals,* traffic and crash analysis information was updated, due to the availability of updated traffic forecasts since the DEIS.

- **Sections 6.3.4.1** to **6.3.4.6**, the text was modified to describe each alternative separately and the alternative comparison is separated by impact, costs, and design considerations.

- **Table 6-4**, Managed Lands impacts were updated for all alternatives for Subsection 5B.

- **Section 6.4.1**, *Rationale for Selection of Preferred Alternative,* information was added for Refined Preferred Alternative 8.

- **Table 6-10**, Open water impacts were updated for Alternative 7.

- **Section 6.4.2**, *Preferred Alternative Costs and Impacts Comparison with Tier 1 Estimates,* section was updated to reflect the impacts and costs for Refined Preferred Alternative 8.

Refined Preferred Alternative 8 uses the existing SR 37 right-of-way, with additional adjacent acreage required based on design requirements and topography. Interchanges are located at Fullerton Pike, Tapp Road/SR 45/2nd Street, SR 48/3rd Street, SR 46, Walnut Street, Sample Road, and Liberty Church Road. In addition, overpasses are located at Rockport Road, Vernal Pike, Arlington Road, Kinser Pike, and Chambers Pike. Local access roads and new connections to existing local roads are provided in portions of the Section 5 corridor where drives and other roads currently connect to existing SR 37. These are located primarily north of Walnut Street to the northern project terminus. This chapter compares the build alternatives end-to-end and explains the rationale for identifying Refined Preferred Alternative 8.

6.2 Comparison of Alignment Alternatives

For a typical new highway on new location as exemplified in Sections 1-4 of I-69, equal attention is given to two “types” of build alternatives. These are 1) the location of the mainline roadway; and, 2) the location and type of connection (e.g., interchange, intersection, driveways, etc.) from the existing project roadway system to the new mainline. As noted in **Chapter 3**, *Alternatives*, the mainline of the Section 5 project uses the current right-of-way of SR 37. Therefore, while there was consideration given to the location and configuration (i.e., number of lanes, width of median, etc.) of the new mainline, emphasis for alternative development for Section 5 was on access treatments. These include location and type of connection to the mainline, as well as nearby local roads which will not have access to I-69.

6.2.1 End-to-End Mainline Alternatives

For Section 5, alignment alternatives extended approximately 21 miles from Section 5's southern terminus just north of the intersection of SR 37 and Victor Pike, northward to just south of the existing interchange of SR 37 and SR 39 in Martinsville. As noted above, these alignment alternatives were developed along the current SR 37 right-of-way. As discussed in **Chapter 3**, alternatives use different typical cross sections (e.g., width of median, width of shoulders, etc.). Because of this difference, alternatives may have different construction limits, right-of-way, and construction costs, even where the alternative elements are similar. Alternatives 4 and 5 are shown in **Figure 3-11**, and Alternatives 6 and 7 are shown in **Figure 3-12**. **Figure 3-13** and **Figure 3-14** show the alignments of Alternative 8 and Refined Preferred Alternative 8 within the Section 5 corridor (note: the Chapter 3 figures can be found at the end of Chapter 3).

6.2.1.1 Alternatives 4 and 5

Two initial design criteria typical cross sections were developed for mainline of Section 5, a rural typical section and an urban typical section. These were used in the development of Alternatives 4 and 5:

- The rural typical section for Alternatives 4 and 5 has two 12-foot wide lanes in each direction separated by an 84-foot wide depressed median (see **Figure 3-9**). A 12-foot wide truck climbing lane was also included, where needed, due to grade. The rural typical section has 6-foot wide paved shoulders to the inside of the travel lanes along the median and 12-foot wide paved shoulders to the outside of the travel lanes within the minimum 35-foot wide outside clear zone.[1]

- The urban typical section for Alternatives 4 and 5 has three 12-foot wide travel lanes in each direction, with an additional 12-foot wide auxiliary lane where needed (see **Figure 3-9**). In addition, there is a 60-foot wide depressed median with two 12-foot wide paved shoulders to the inside of the travel lanes along the median. To the outside of the travel lanes, there are two 12-foot wide paved shoulders within the minimum 35-foot wide clear zone.

These design elements satisfy minimum *Indiana Design Manual* (IDM) requirements. In addition to this roadway footprint, sufficient land is needed to provide for cut and fill slopes, right-of-way maintenance (maneuverability of equipment for mowing, shrub clearing, etc.), drainage, and right-of-way fencing. Plantings, gateways, and other enhancements could be considered, based upon input from the public and agencies. Such added elements will be considered within constraints of available right-of-way, impacts, and cost. In order to provide connectivity to residential development and businesses, portions of Section 5 will also require new and/or newly connected local access roads along I-69.

[1] A clear zone is the unobstructed, relatively flat area provided beyond the edge of the traveled way. The clear zone is intended to allow errant vehicles to stop or maneuver without striking any fixed objects. The clear zone includes any shoulders and auxiliary lanes.

6.2.1.2 Alternatives 6 and 7 (Minimal Impact Alternatives)

As detailed in **Chapter 3**, *Alternatives*, following the development of Alternatives 4 and 5, additional design features were evaluated to further avoid developed areas in Bloomington and natural resources throughout the corridor, as well as to minimize project costs. These design features optimize the use of existing pavement, current SR 37 grade, structures (i.e., current interchanges and bridges), and right-of-way. The Indiana Department of Transportation (INDOT) and the Federal Highway Administration (FHWA) agreed that the development of the minimal impact alternatives may also include Level 1 and Level 2 design feature exceptions, such as:

- minor variations in shoulder width;
- use of existing vertical grades on SR 37;
- inclusion of various interchange designs (e.g., single point urban interchange, folded diamond, etc.);
- locations of and types of median barriers;
- retaining walls; and,
- guardrails to reduce the width of the right-of-way needed for the corridor.

The use of these various design feature exceptions was evaluated based on costs, impacts, and safety/engineering design considerations, and two minimal impact alternatives, Alternatives 6 and 7 were developed. Formal approval of these Level 1 and Level 2 design exceptions would not occur until after the Tier 2 studies are completed and final design is underway. More information about design exceptions can be found in ***Appendix EE***, *Level 1 and Level 2 Design Exceptions*. The rural and urban typical sections for the minimal impact Alternatives 6 and 7 are described below.

- The **rural typical section** (i.e., configuration) for Alternatives 6 and 7 has two 12-foot wide travel lanes in each direction, with a 60-foot wide depressed median and 4-foot wide paved shoulders to both sides of the median (see **Figure 3-10**). To the outside of the travel lanes are 30-foot wide clear zones that include 12-foot wide paved shoulders. The travel lanes use the existing SR 37 travel lanes as much as possible, including existing lane lines and pavement. Where necessary, access roads would be constructed along the interstate, with either a 19- to 43-foot grass median or a barrier separating the 12-foot wide shoulder of the interstate from a 5-foot wide shoulder of the access road. The access road would have two 11-foot wide travel lanes, and a 20-foot wide clear zone with the 5-foot wide outside shoulder contained within it. This would reduce the footprint of the access road from 64 feet wide in Alternatives 4 and 5 to approximately 48 feet in width with these two alternatives.

- The **urban typical section** (i.e., configuration) for Alternatives 6 and 7 is composed of three, 12-foot wide travel lanes in each direction (see **Figure 3-10**), with the third lane constructed to the inside of the existing SR 37 lanes. Where possible, alternatives will use existing lane lines and pavement of SR 37. The median would be 26.5 feet in width, and consist of two 12-foot wide paved shoulders, separated by a concrete barrier. To the outside of the travel lanes would be a 30-foot clear zone containing a 12-foot wide paved shoulder to the edge of each outside travel lane.

Due to the narrow right-of-way footprint, and the goal of minimizing costs, vegetative plantings and other context sensitive enhancements are less likely to be included in Alternatives 6 and 7. Plantings, gateways, and other enhancements could be added with input from the public and agencies. Such added elements would be considered within the constraints of right-of-way, impacts, and cost.

Alternative 7 would have a minor encroachment of the mainline into the Wapehani Mountain Bike Park, a Section 4(f) resource. For further information on this Section 4(f) resource, please refer to **Chapter 8**, *Section 4(f)*. Another design feature of Alternative 7 is the use of the existing partial interchange at North Walnut Street. While the existing partial interchange differs from the current FHWA guidelines,[2] the FHWA has approved its use (refer to **Appendix RR**, *Walnut Street Interchange Selection Report*).

6.2.1.3 Alternative 8 (DEIS Preferred Alternative)

The "hybrid" Alternative 8 is comprised of desirable features of Alternatives 5, 6, and 7, taking into consideration the previously-considered Level 1 and Level 2 design exceptions. The alignment was further refined to minimize impacts and costs, and to incorporate engineering and safety design considerations. Due to the narrow right-of-way footprint, and the goal of minimizing costs, vegetative plantings and other context sensitive enhancements are less likely to be included in Alternative 8. Plantings, gateways, and other enhancements could be added with input from the public and agencies. Such added elements would be considered within the constraints of right-of-way, impacts, and cost.

Alternative 8 has the same mainline typical rural and urban configurations as Alternatives 6 and 7. Alternative 8 is virtually identical to either Alternative 6 or Alternative 7 in most areas. In some areas, it uses design features from Alternative 5 or introduces new features not present in the other Alternatives. For instance, between Tapp Road and SR 45/2nd Street, Alternative 8 shifts to the west in the same manner as Alternative 5, but uses the mainline typical section of Alternative 6. This is in contrast to Alternative 7, which, while having the same split interchange, does not shift to the west, and encroaches into Wapehani Mountain Bike Park, a Section 4(f) resource. In some areas, such as the Vernal Pike overpass, the right-of-way limits were the same as Alternative 7's, but Alternative 8's construction limits are slightly larger than Alternative 7 to allow for additional space for drainage treatments.

[2] *Access to the Interstate System*, U.S. Department of Transportation (USDOT), FHWA, 74 FR 165, August 27, 2009. The existing North Walnut Street interchange on SR 37 serves only southbound exiting and northbound entering traffic. FHWA's guidelines require that interchanges on newly-constructed Interstate highways serve all directions of travel.

Alternative 8 included two options for the interchange at North Walnut Street. Alternative 8 included a full interchange at the location of the existing North Walnut Street interchange as part of Option A. The existing partial interchange is retained as part of Option B. These options are discussed in further detail in **Section 6.3.4.4**, *Subsection 5D - Beanblossom Valley/ Floodplain.*

6.2.1.4 Refined Preferred Alternative 8

Refined Preferred Alternative 8 was developed by modifying Alternative 8 (the DEIS Preferred Alternative). These modifications reflect decisions made by INDOT based upon consideration of DEIS comments, as well as additional coordination with resource agencies, participating agencies and other local public officials, public organizations, and individuals. These modifications reduce environmental impact, improve local access, make minor corrections to the project design, reflect additional engineering and environmental analysis, and/or reduce project costs. Refined Preferred Alternative 8 is essentially the same as Alternative 8, with the following alignment modifications:

- **West Fullerton Pike**: Alternative 8 was tapered in this area on the west end of Fullerton Pike to tie into the existing Fullerton Pike alignment. This modification would also straighten the curve on West Fullerton Pike and shift it slightly to the north, avoiding two office buildings on the south side of West Fullerton Pike.

- **Access to the Hickory Heights Mobile Home Park via Barger Lane**: This mobile home park currently has access from Tapp Road via Barger Lane. With Alternative 8, access to the mobile home park was provided via West Maple Leaf Drive, through neighborhoods north of the mobile home park. In Refined Preferred Alternative 8, access has been revised to connect with South Danlyn Road to the west of the mobile home park, to provide for shorter access between Tapp Road and the mobile home park and reduce the change to existing access. This revision reduces the distance of travel through neighborhoods in order to access I-69.

- **Wapehani Mountain Bike Park:** With Alternative 8, the park was avoided. Modifications in Refined Preferred Alternative 8 encroach into the edge of the park and use the same right-of-way limits along the east side of SR 37 as Alternative 7, and further reduce displacement impacts along the west side of SR 37 south of the park.

- **Sam's Club:** New access was added from eastbound 2nd Street to Sam's Club to provide right in/right out movement between the ramp intersections and Liberty Drive.

- **SR 45/2nd Street Interchange:** The existing bridge at SR 45/2nd Street will remain in place with some modifications to accommodate bicycle/pedestrian traffic across the bridge. The interchange ramps will be reconfigured for the split diamond interchange between SR 45/2nd Street and Tapp Road.

- **SR 48/3rd Street Interchange:** The existing interchange layout will remain in place with additional capacity added to the exit ramps. The left turn lanes on SR 48/3rd Street to the

entrance ramps will be extended and the existing bridge will be widened to provide bicycle/pedestrian facilities.

- **N. Walnut Street Interchange Selection:** The use of the existing partial interchange was approved by FHWA and will be used at this location, consistent with Alternative 8 (Option B).

- **Eastern Local Access Road Removal:** The eastern local access road connecting Walnut Street to Connaught Road was removed due to the low volumes of traffic on the roadway, as well as the environmental impacts and costs associated with constructing the roadway.

- **Liberty Church Road Interchange Revision:** The interchange at Liberty Church Road was shifted north to minimize impacts to floodplains located in the southwest corner of the interchange.

In addition to these modifications, further refinements were made to the right-of-way along the alignment to minimize impacts to resources, reduce the number of displacements, as well as address access changes and roadway design revisions or corrections. Some bridges were also modified to allow for bicycle/pedestrian use. These changes are further detailed in the following sections.

6.2.2 Access Alternatives – Interchanges, Overpasses, Access Roads

As discussed above, the alternatives all have the same beginning and ending points, are approximately the same length, and follow the existing SR 37 (a four-lane state highway with a divided median). However, the locations of interchanges, interchange types (e.g., urban diamond, folded diamond, etc.), overpasses/underpasses, and access roads vary among the alternatives. **Table 6-1** identifies the combination of interchanges, interchange types and overpasses/underpasses proposed for each alternative.

Existing SR 37 interchanges were afforded preference due to the substantial disruption to local travel patterns, increased impacts and costs if excluded from the Section 5 alternatives. These include the SR 45/2nd Street, SR 48/3rd Street, SR 46, and Walnut Street (partial); however, alternatives were considered that modified the interchange types. Potential alternative interchanges were based upon traffic volumes from the I-69 corridor model and input from participating agencies and other local government representatives, Expert Land Use Panel, Community Advisory Committee(s) (CAC), and public comments. Tapp Road, Vernal Pike, Chambers Pike, and Liberty Church Road are examples of such alternative locations.

Table 6-1: Section 5 Alternative Interchange and Roadway Overpass/Underpass Locations (South to North)

Alternative	Interchange Locations (interchange types)	Roadway Overpass/ Underpass Locations
Existing SR 37	• SR 45/2nd St. (double-loop diamond) • SR 48/3rd St. (urban diamond) • SR 46 (double folded diamond) • N. Walnut St.(partial)	• Arlington Rd.
Alternative 4	• Fullerton Pike (folded diamond) • SR 45/2nd St. (tight diamond) • SR 48/3rd St. (tight diamond) • SR 46 (double folded diamond) • Kinser Pike (rural diamond) • Sample Rd. (rural diamond) • Paragon Rd./Pine Blvd.(rural diamond)	• Rockport Rd. • Tapp Rd. • Vernal Pike • Arlington Rd. • N. Walnut St. • Chambers Pike • Liberty Church Rd.
Alternative 5	• Fullerton Pike (folded diamond) • Tapp Rd./SR 45/2nd St.(split diamond) • SR 48/3rd St. (single-point) • SR 46 (double folded diamond) • N. Walnut St. (single-point diamond) • Sample Rd. (rural diamond) • Liberty Church Rd. (rural diamond)	• Rockport Rd. • Vernal Pike • Arlington Rd. • Kinser Pike • Chambers Pike • Paragon Rd./ Pine Blvd.
Alternative 6	• Fullerton Pike (double folded diamond) • SR 45/2nd St. (double-loop diamond) • SR 48/3rd St. (urban diamond) • SR 46 (double folded diamond) • Sample Rd. (folded diamond) • Liberty Church Rd. (urban diamond)	• Rockport Rd. • Tapp Rd. • Vernal Pike • Arlington Rd. • N. Walnut St. • Chambers Pike
Alternative 7	• Fullerton Pike (double folded diamond) • Tapp Rd./SR 45/2nd St.(split diamond) • SR 48/3rd St. (urban diamond) • SR 46 (double folded diamond) • N. Walnut St. (partial interchange) • Sample Rd.(urban diamond) • Liberty Church Rd. (folded diamond)	• Rockport Rd. • Vernal Pike • Arlington Rd. • Kinser Pike • Bryant's Creek Rd.

Table 6-1: Section 5 Alternative Interchange and Roadway Overpass/Underpass Locations (South to North)

Alternative	Interchange Locations (interchange types)	Roadway Overpass/ Underpass Locations
Alternative 8	• Fullerton Pike (double folded diamond) • Tapp Rd./SR 45/2nd St.(split diamond) • SR 48/3rd St. (urban diamond) • SR 46 (double folded diamond) • N. Walnut St.(partial interchange or single-point diamond) • Sample Rd. (folded diamond) • Liberty Church Rd.(urban diamond)	• Rockport Rd. • Vernal Pike • Arlington Rd. • Kinser Pike • Chambers Pike
Refined Preferred Alternative 8	• Fullerton Pike (double folded diamond) • Tapp Rd./SR 45/2nd St.(split diamond) • SR 48/3rd St. (urban diamond) • SR 46 (double folded diamond) • N. Walnut St.(partial interchange) • Sample Rd. (folded diamond) • Liberty Church Rd.(urban diamond)	• Rockport Rd. • Vernal Pike • Arlington Rd. • Kinser Pike • Chambers Pike

6.3 Development of the Preferred Alternative

6.3.1 Process of Selection

The Section 5 project area has a diverse environment with many different land uses, ranging from the typical urban/suburban environment in Bloomington to the rural environment south of Martinsville. Due to this diverse environment, it was appropriate to evaluate the alternatives within similar settings, as opposed to an end-to-end comparison for the entire 21-mile project. The Section 5 alternatives were evaluated by subsection to compare them under similar settings, based on public and agency input, impacts to resources, ability of the alignment design to integrate into the existing infrastructure, costs, and engineering/safety design considerations.

Six subsections, 5A through 5F, were delineated by identifying areas along the current SR 37 with similar planning, transportation, development, and environmental features. This was done to provide a more detailed comparison of the features of each alternative, as well as to provide participating agencies and the public a way to evaluate how the alternatives would impact areas of greatest interest to them. For instance, those associated with the City of Bloomington would be more interested in the alternative features in subsections in their area (Subsections 5A to 5D), while the City of Martinsville may only be interested in one subsection (Subsection 5F). It should be noted that these subsection comparisons were not used to “piece together” alternative alignments by subsection. Rather, these subsection comparisons were used as part of determining the overall Refined Preferred Alternative for Section 5. Each of the subsections is described in **Section 6.3.2**, and depicted in **Figure 6-1**.

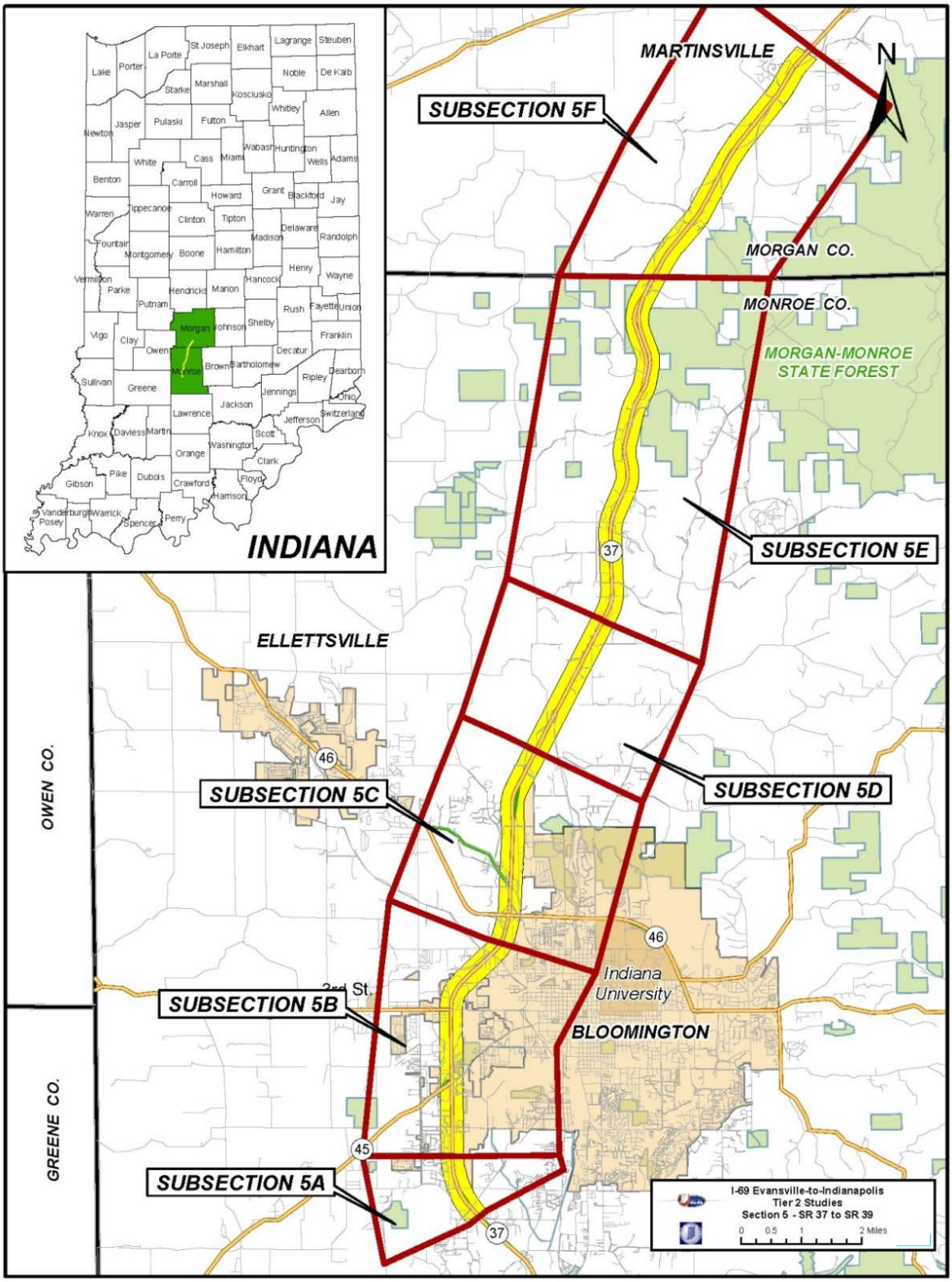

Figure 6-1: Subsections for Section 5

6.3.2 Determination of Subsection Limits

6.3.2.1 Subsection 5A – South Growth Area (1.1 miles)

Subsection 5A begins at the southern terminus of Section 5, near the intersection of SR 37/I-69 and That Road. It follows the existing SR 37 alignment, extending north/northwest approximately 1.1 miles to a point approximately 0.55-mile north of Fullerton Pike and 0.47-mile south of Tapp Road. Subsection 5A is characterized by existing and planned development, location of other large transportation projects (i.e., Section 4 of I-69 and the Monroe County/Fullerton Pike projects), and similar environmental resource issues (e.g., karst and the North Clear Creek Historic Landscape District).

6.3.2.2 Subsection 5B – Core Urban Area (3.8 miles)

Subsection 5B continues north from the northern terminus of Subsection 5A along existing SR 37/I-69 about 3.8 miles, to a point approximately 0.47-mile north of the existing intersection of SR 37 and Vernal Pike. Subsection 5B is characterized by substantial existing development (e.g., shopping centers, restaurants, hotels, etc.) adjacent to and along SR 37. The Wapehani Mountain Bike Park (a Section 4(f) resource), and the Lemon Lane Landfill Superfund Site are located in this subsection.

6.3.2.3 Subsection 5C – Transition Area (3.3 miles)

Subsection 5C continues north/northeast from the northern terminus of Subsection 5B approximately 3.3 miles along existing SR 37 to a point approximately 0.38-mile north of Kinser Pike. Subsection 5C is characterized by residential planned development, consideration of access to Bloomington High School North, the Maple Grove Road Rural Historic District, and environmental resources such as karst.

6.3.2.4 Subsection 5D – Beanblossom Valley/Floodplain (2.4 miles)

Subsection 5D continues north/northeast from the northern terminus of Subsection 5C along existing SR 37 approximately 2.4 miles ending 0.63-mile south of the existing intersection of SR 37 and Sample Road. Subsection 5D is characterized by limited development potential in the area due to extensive floodplains and other extensive aquatic resources, and engineering issues related to significant topographic changes in the Beanblossom Valley.

6.3.2.5 Subsection 5E – Simpson Chapel Development Area (5.9 miles)

Subsection 5E proceeds north/northeast along existing SR 37 approximately 5.9 miles. The subsection ends at the Monroe/Morgan county line. Subsection 5E is characterized by commercial development on the eastern side of the roadway, the need for local access roads to access I-69 via the Sample Road interchange, issues related to emergency services response time and environmental resource issues including streams and forests.

6.3.2.6 Subsection 5F – Morgan County (4.6 miles)

Subsection 5F is approximately 4.6 miles length. This section continues north/northeast along the existing SR 37 from the Monroe/Morgan county line and ends south of the bridge carrying SR 37 over Indian Creek (the northern terminus of Section 5). This subsection will connect with Section 6. Subsection 5F is characterized by a different county government (Morgan County), the need for local access roads to access I-69 via Liberty Church Road or Paragon Road interchange, emergency service coverage, and similar environmental resources including streams and floodplains.

6.3.3 Purpose and Need Performance Goals

The following purpose and need performance goals, as discussed in **Section 2.5**, *Project Goals and Performance Measures*, were used in the comparison of alternatives for the project.

GOAL 1: Complete Section 5 of I-69 between SR 37 Southwest of Bloomington and SR 39 in Martinsville

- Performance Measure: Development of a freeway that meets current standards.
- Ability of Alternatives to meet Purpose and Need Goal 1: All alternatives satisfy this goal completing a freeway to current interstate standards in Section 5. The SR 37/I-69 mainline would be upgraded to meet the safety/design criteria for an interstate. Access to/from SR 37/I-69 would be fully controlled, with access available only at interchanges. Current local roads would be closed at their intersections of SR 37, but reconnected through new local access roads. Grade-separated overpasses would be constructed over SR 37/I-69 to maintain connectivity.

GOAL 2: Reduce existing and forecasted traffic congestion in the Section 5 Study Area

- Performance Measure: Reduction of traffic congestion in Section 5 Study Area. The level of service, as well as other measures of congestion relief, will be calculated and compared for each alternative.
- Ability of Alternatives to meet Purpose and Need Goal 2: All alternatives meet the purpose and need goals of relieving traffic congestion in Morgan and Monroe counties by reducing the congested vehicle miles traveled (VMT) and congested vehicle hours traveled (VHT) when compared to the No Build Alternative.

I-69 results in a significant increase in vehicle travel in Morgan and Monroe counties, by diverting traffic from roads outside of this two-county area. The Build Alternatives result in additional daily VMT ranging from 243,000 to 249,000 in the two counties, an increase of between 9.19% and 9.39% from the No Build Alternative (refer to **Table 3.7**). Increases in daily VHT range from 1,003 to 2,398, an increase of between 1.95% and 2.11%. It should be noted that VMT increases to a much greater degree than VHT. This is due primarily to additional traffic on I-69 (once it is upgraded from SR 37) traveling in uncongested conditions.

In spite of these significant increases in overall traffic, each alternative provides a significant decrease in congestion from the No Build scenario (see **Table 3.8**). When compared to the No Build Alternative, Alternative 4 would show the greatest reduction in total congested VMT, by 43,571 VMT in Monroe County, and 42,443 VMT in Morgan County. The Refined Preferred Alternative 8 would see a reduction of 34,136 VMT in Monroe County, and 35,683 VMT when compared to the No Build Alternative.

The total daily congested VHT when compared to the No Build Alternative also is reduced for all build alternatives. The greatest reduction (4,671 hours) would occur under Alternative 4. The Refined Preferred Alternative 8 would result in a reduction in daily congested VHT of 1,129 hours in Monroe County, and 902 hours in Morgan County when compared to the No Build Alternative.

GOAL 3: Reduce crashes on local and state roads in the Section 5 Study Area

- Performance Measure: Reduction of crashes in the Section 5 Study Area. The reduction in the number of fatal, injury and property-damage accidents will be calculated for each alternative.
- Ability of Alternatives to meet Purpose and Need Goal 3: Alternatives were evaluated by their estimated annual reduction of the number of accidents in Morgan and Monroe counties. As shown in **Table 3.9**, forecasted annual accident reductions (compared to the No Build Alternative) range between 228 for Alternative 4 and 261 for Alternative 8 and Refined Preferred Alternative 8.

GOAL 4: Support Local Economic Development Initiatives

- Performance Measure: Improve or maintain access of area businesses. Alternatives will be evaluated and compared for the overall level of accessibility which they provide to businesses. This will include consideration of the location of interchanges, grade separations and access roads that provide appropriate access to I-69 for local commercial and industrial interests. Travel times and distances from three representative local origin points to specific local commercial, retail and employment areas will be compared for each alternative.
- Ability of Alternatives to meet Purpose and Need Goal 4: All Section 5 build alternatives support economic development in the study area. Improving regional access allows workers to choose from a wider selection of employers and provides businesses with a wider pool of qualified employees from which to choose.

  The upgrade of SR 37 to I-69 provides for efficient movement of goods within and through the study area. To evaluate the ability of each build alternative to serve business access needs, congested travel and travel times between key origins and destinations in the Study Area was analyzed for each alternative. This analysis is summarized in **Section 5.5.3.1**, *Direct Economic Impacts*, and is described in detail in **Appendix JJ**, *Local Travel Accessibility Analysis*. The results of this evaluation found that the alternatives would all have similar travel times throughout the Section 5 Study Area. With any of the

build alternatives, there would be a six to seven minute reduction in travel time through the 21-mile Section 5 corridor when compared to the No Build Alternative.

In addition, the alternatives provide access to certain areas of existing or proposed development. All alternatives would have an interchange at Fullerton Pike, which would provide an access to the interstate from the local Tax Increment Financing (TIF) District. Alternatives 5, 7, 8, and Refined Preferred Alternative 8 would have the split-diamond interchange at Tapp Road and SR 45/2nd Street, which is supported by the City of Bloomington and Monroe County, and would provide access to commercial development along the roadway. Alternatives 5, 6, 7, 8, and Refined Preferred Alternative 8 would have an interchange at Liberty Church Road/Godsey Road, which would support the City of Martinsville and Morgan County long range development plan, utility infrastructure development and annexation initiatives.

6.3.4 Detailed Alternative Evaluation

The following sections compare each alignment alternative with other alignment alternatives within the same corridor subsection. This comparison includes the range of impacts associated with the implementation of both the initial and minimal impact design criteria. **Table 6-2** gives a summary of impacts and costs for all alternatives by subsections. **Table 6-3** through **Table 6-8** summarize costs and key environmental impacts for each alignment alternative for subsections 5A through 5F. Project cost estimates for each subsection included costs for engineering and design, right-of-way acquisition (land acquisition and relocations), and construction. Plantings, gateways, and other enhancements could be added with input from the public and agencies as allowed by limited right-of-way, impacts, and financial constraints.

Mitigation costs are similar between Alternatives 4 and 5 ($29.2M and $28.0, respectively) but are higher than those calculated for Alternatives 6, 7, 8 and Refined Preferred Alternative 8 ($16.1M to $17.9M). Mitigation costs were not used as a factor in the evaluation of alternatives within subsections because some mitigation measures cannot be segmented and provide meaningful data. For further information on mitigation, please refer to **Chapter 7**, *Mitigation and Commitments*.

One advantage of upgrading the existing SR 37 alignment is the potential for reuse of the existing grade and pavement, with minimal rehabilitation. As part of the FEIS development, a detailed evaluation of the existing pavement conditions was performed for I-69 Section 5. A Life Cycle Cost Analysis[3] was prepared for several pavement alternatives and is available by request through INDOT. The recommended pavement treatment details finalized for Refined Preferred Alternative 8 are summarized in **Appendix KK**, *Pavement Recommendations*, based on the data collected. Construction costs presented in this chapter reflect the savings that are realized by being able to reuse the existing SR 37 pavement, where warranted. For comparison

[3] Indiana Department of Transportation, I-69, Section 5 FEIS Life Cycle Cost Analysis (Milepost 97.1 to Milepost 118.2), Morgan and Monroe Counties, IN. March 2013.

purposes, these savings are also reflected in Alternative 8 (the DEIS Preferred Alternative) where it follows the same alignment.

Costs for Alternatives 4 through 8 decreased from those shown in the DEIS. These reductions occurred for the following reasons:

- Design and construction administration costs were reduced for all alternatives. These reduced costs are consistent with expected economies for the innovative financing and delivery of this project.

- As described below for each subsection, pavement reuse (using overlays on existing SR 37 pavement) provided additional savings for Alternative 8 and Refined Preferred Alternative 8. If such an approach were applied to Alternative 6, comparable savings in pavement costs could be realized. Pavement reuse would provide pavement cost reductions for Alternative 7, but these would be less than for Alternatives 6, 8 and Refined Preferred Alternative 8. Alternative 7 reconstructs some existing earthwork such that pavement reuse would be less extensive than for these other alternatives. Pavement reuse is not possible for Alternatives 4 and 5, since these alternatives do not use existing SR 37 lane lines.

Decisions among alternatives within subsections emphasized avoidance/minimization of impacts, costs, and safety/engineering design considerations. Unlike previous evaluations performed in I-69 Sections 1 through 4, integration into existing SR 37 infrastructure was also a major factor, especially in Section 5's more southern, urbanized area where SR 37 already has a large amount of access control. Public and resource agency input were also major factors that were considered in evaluating alternative impacts during all phases of the project. See **Section 11.4.2**, *Agency Coordination*, for details.

Table 6-2: Impacts by Subsection for All Alternatives

Impact Criteria	Impacts for Subsection 5A						Impacts for Subsection 5B						Impacts for Subsection 5C					
	Alt. 4	Alt. 5	Alt. 6	Alt. 7	Alt. 8	RPA 8	Alt. 4	Alt. 5	Alt. 6	Alt. 7	Alt. 8	RPA 8	Alt. 4	Alt. 5	Alt. 6	Alt. 7	Alt. 8	RPA 8
Costs*																		
Right-of-Way Costs ($M)**	13.91M	13.47M	11.08M	11.80M	11.28M	8.08M	94.34M	76.77M	12.24M	15.79M	17.85M	14.33M	7.31M	4.62M	1.13M	1.46M	1.49M	0.98M
Construction/Design/Utility/ Admin Cost ($M)	47.30M	47.22M	36.01M	36.00M	31.61M	31.54M	114.59M	121.44M	74.93M	82.25M	71.79M	73.52	82.80M	63.97M	34.54M	38.69M	29.69M	32.46M
Total Cost ($M)	61.21M	60.69M	47.09M	47.80M	42.89M	39.62M	208.93M	198.21M	87.17M	98.04M	89.64M	87.85M	90.11M	68.59M	35.67M	40.151M	31.18M	33.44M
Right-of-Way (ac)	144.55	143.03	94.72	94.92	93.10	94.20	295.72	299.01	232.25	253.57	257.44	260.15	282.58	221.37	191.57	195.64	195.14	194.62
Displacements (#)																		
Residential	22	21	20	25	20	16	87	85	36	40	49	38	20	13	2	3	3	2
Institutional	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
Business	14	14	12	11	12	4	38	35	5	5	4	3	5	4	0	0	0	0
Total Displacements	37	36	33	37	33	21	125	120	41	45	53	41	25	17	2	3	3	2
Noise Impacts (#)	13	12	25	25	29	23	230	221	369	332	318	292	17	20	25	26	26	17
Section 4(f)																		
Park	No	No	No	No	No	No	No	*de minimis*	No	*de minimis*	No	*de minimis*	No	No	No	No	No	No
Historic	Yes (Adverse)	Yes (Adverse)	*de minimis*	No	*de minimis*	*de minimis*	No	No	No	No	No	No	No	No	No	No	No	No
Total Wetland (ac)																		
Aquatic Bed Wetland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emergent Wetland	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.06	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Forested Wetland	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.23	0.00	0.11	0.07	0.07	0.00	0.00	0.00	0.00	0.00	0.00
Scrub/Shrub Wetland	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Wetland Impacts	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.30	0.01	0.12	0.08	0.08	0.00	0.00	0.00	0.00	0.00	0.00
Total Streams (lf)																		
Ephemeral	5,255	5,270	2,696	2,508	2,701	2,678	9,182	9,654	8,156	8,964	9,121	9,086	8,091	6,392	5,680	5,696	5,692	5,610
Intermittent	550	547	552	559	552	551	382	439	184	321	326	359	0	0	0	0	0	0
Perennial	0	0	0	0	0	0	0	0	0	0	0	0	411	0	0	0	0	0
Total Stream Impacts	5,805	5,817	3,248	3,067	3,253	3,229	9,564	10,093	8,340	9,285	9,447	9,445	8,502	6,392	5,680	5,696	5,692	5,610
Total Natural Stream Impacts***	3,420	3,435	861	712	866	843	1,822	2,267	732	1,407	1,527	1,476	3,623	1,576	930	946	942	860
Stream Relocations (lf)	5,131	5,146	2,278	2,154	2,286	2,264	6,358	6,643	5,365	5,828	5,941	5,847	3,744	2,676	2,063	2,079	2,083	2,066
Floodplain (ac)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.04	0.00	0.00	0.00	0.00	0.00
Karst Features (#)	29	28	23	26	23	23	32	35	31	33	32	33	41	33	24	24	24	23
Karst Features (ac)	119.20	118.20	81.40	81.40	79.90	79.50	161.70	160.00	124.00	130.90	131.00	134.50	121.80	115.70	107.30	107.40	107.30	107.30
No. of Cave Recharge Areas (#)	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
Hazardous Material Sites (#)	1	1	1	0	1	1	7	7	5	6	6	6	0	0	0	0	0	0
Wellhead Protection Areas (#)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Farmland (ac)	28.2	27.6	7.3	6.3	7.0	6.6	0.0	0.0	0.0	0.0	0.0	0.0	42.1	10.5	1.0	1.4	1.3	1.3
Managed Land (ac)	0.85	0.65	0.35	0.37	0.33	1.03	1.51	3.54	0.61	3.28	1.11	3.23	0.60	0.00	0.00	0.00	0.00	0.00
Upland Forest (ac)	37.35	36.98	18.14	17.33	17.17	16.73	21.24	29.11	14.65	23.63	21.82	24.06	30.74	16.50	11.15	12.65	12.22	12.17
Core Forest (ac)	0	0	0	0	0	0	2.09	2.21	0.47	0.47	0.47	0.47	2.64	2.59	2.44	2.44	2.44	2.44

** 2015 Dollars, excluding mitigation costs, $M = million dollars, ac = acres, lf = linear feet, RPA = Refined Preferred Alternative*

*** Right-of-way costs developed using criteria found in **Appendix D**, Cost Estimation Methodology, and include costs for acreage and improvements required for actual construction, relocation costs, costs for acquiring structures and improvements due to lost access, and administrative fees.*

**** Total Natural Stream Impacts are total streams minus concrete gutters, culverts, dump rock gutters, and roadside ditches.*

Note: All impacts are by preliminary right-of-way, and not necessarily the amount to be acquired, except wetland impacts which are by construction limits.

Table 6-2: Impacts by Subsection for All Alternatives, continued

Impact Criteria	Impacts for Subsection 5D							Impacts for Subsection 5E						Impacts for Subsection 5F					
	Alt. 4	Alt. 5	Alt. 6	Alt. 7	Alt. 8 Option A	Alt. 8 Option B	RPA 8	Alt. 4	Alt. 5	Alt. 6	Alt. 7	Alt. 8	RPA 8	Alt. 4	Alt. 5	Alt. 6	Alt. 7	Alt. 8	RPA 8
Costs*																			
Right-of-Way Costs ($M)**	7.99M	9.10M	6.82M	4.27M	6.14M	5.51M	4.75M	28.19M	27.00M	18.45M	12.92M	17.74M	14.01M	15.23M	14.60M	10.77M	9.62M	10.57M	8.06M
Construction/Design/Utility/ Admin Cost ($M)	84.68M	115.87M	80.04M	68.87M	93.72M	55.90M	45.35M	110.64M	110.24M	92.21M	88.44M	78.57M	81.60M	105.61M	116.70M	78.11M	77.96M	65.94M	62.97M
Total Cost ($M)	92.67M	124.97M	86.86M	73.14M	99.86M	61.41M	50.10M	138.837M	137.24M	110.66M	101.36M	96.31M	95.61M	120.84M	131.30M	88.88M	87.58M	76.51M	71.03M
Right-of-Way (ac)	190.19	218.40	176.73	147.12	176.12	148.44	129.13	490.66	486.94	370.52	338.33	366.94	364.55	364.40	360.63	254.36	262.12	257.31	257.00
Displacements (#)																			
Residential	29	31	17	10	17	16	13	48	49	36	23	36	28	43	36	27	22	26	22
Institutional	0	0	0	0	0	0	0	1	1	0	0	0	0	1	1	0	0	0	0
Business	1	1	0	0	0	0	0	13	13	10	5	10	8	6	4	6	6	6	2
Total Displacements	30	32	17	10	17	16	13	62	63	46	28	46	36	50	41	33	28	32	24
Noise Impacts (#)	1	1	2	7	3	3	8	19	15	27	34	24	33	16	34	28	28	30	45
Section 4(f)																			
Park	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
Historic	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
Total Wetland (ac)***																			
Aquatic Bed Wetland	0.20	0.40	0.17	0.00	0.14	0.13	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emergent Wetland	2.73	4.36	3.63	2.17	3.19	2.31	1.47	0.14	0.14	0.14	0.09	0.14	0.14	0.71	0.64	0.16	0.16	0.14	0.16
Forested Wetland	6.18	8.57	5.76	1.31	4.99	1.55	0.31	0.32	0.32	0.00	0.22	0.21	0.21	0.00	0.00	0.00	0.00	0.00	0.00
Scrub/Shrub Wetland	0.07	0.07	0.09	0.08	0.07	0.07	0.04	0.88	0.88	0.88	0.88	0.88	0.88	0.37	0.38	0.12	0.15	0.12	0.12
Total Wetland Impacts	9.18	13.40	9.65	3.56	8.39	4.06	1.84	1.34	1.34	1.02	1.19	1.23	1.23	1.08	1.02	0.28	0.31	0.26	0.28
Total Streams (lf)***																			
Ephemeral	13,249	14,553	11,802	10,813	11,979	11,146	9,279	29,326	29,171	24,376	23,020	24,255	23,573	22,329	18,755	15,704	15,803	15,758	15,466
Intermittent	0	0	0	0	0	0	0	9,678	9,632	7,515	8,188	7,518	7,443	4,374	4,198	4,664	3,568	4,671	3,509
Perennial	1,861	2,308	2,198	2,086	2,204	1,932	1,656	480	534	455	639	447	447	1,277	1,712	1,210	1,126	1,180	925
Total Stream Impacts	15,110	16,861	14,000	12,899	14,183	13,078	10,935	39,484	39,337	32,346	31,847	32,220	31,463	27,980	24,665	21,578	20,497	21,609	19,900
Total Natural Stream Impacts****	8,351	8,910	6,223	5,701	6,541	6,143	4,197	22,475	22,329	15,425	14,961	15,244	14,487	12,149	9,119	6,225	5,131	6,256	4,526
Stream Relocations (lf)***	10,310	11,466	9,635	8,665	9,847	9,155	7,464	28,243	28,095	21,033	20,963	21,092	20,570	19,677	14,649	15,183	13,671	15,231	13,418
Floodplain (ac)	77.04	102.68	87.05	65.96	88.09	61.86	47.77	6.61	6.64	5.90	6.94	5.88	5.88	31.86	36.18	34.03	26.79	34.55	21.50
Karst Features (#)	4	4	3	3	3	3	2	38	38	28	27	28	29	0	0	0	0	0	0
Karst Features (ac)	0.80	0.80	0.20	0.20	0.20	0.20	0.10	36.20	35.50	25.60	20.40	25.30	25.90	0.00	0.00	0.00	0.00	0.00	0.00
Cave Recharge Areas (#)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hazardous Material Sites (#)	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0
Wellhead Protection Areas (#)	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1
Farmland (ac)	10.1	17.3	11.3	6.7	13.2	2.3	0.6	16.6	16.3	7.1	8.6	7.1	7.1	52.4	88.5	38.7	47.4	38.8	44.3
Managed Land (ac)	0.06	0.18	0.00	0.06	0.01	0.01	0.00	15.90	13.95	2.68	0.36	1.55	1.55	7.40	7.77	2.49	2.42	2.48	2.48
Upland Forest (ac)***	56.42	63.11	40.03	32.62	42.53	38.78	26.76	187.48	185.13	111.85	102.16	110.49	107.49	99.93	64.84	42.79	44.55	45.09	40.45
Core Forest (ac)	1.82	2.33	1.53	0.82	1.21	1.32	0.04	59.14	57.85	32.20	31.47	31.44	29.64	21.54	11.84	9.24	9.32	9.30	9.25

** 2015 Dollars, excluding mitigation costs, $M = million dollars, ac = acres, lf = linear feet, RPA = Refined Preferred Alternative*

*** Right-of-way costs developed using criteria found in **Appendix D**, Cost Estimation Methodology, and include costs for acreage and improvements required for actual construction, relocation costs, costs for acquiring structures and improvements due to lost access, and administrative fees.*

**** Calculations for wetlands, streams, stream relocations, and upland forests include bifurcation area in Subsection 5E.*

***** Total Natural Stream Impacts are total streams minus concrete gutters, culverts, dump rock gutters, and roadside ditches.*

Note: All impacts are by preliminary right-of-way, and not necessarily the amount to be acquired, except wetland impacts which are by construction limits.

6.3.4.1 Subsection 5A – South Growth Area

Subsection 5A begins at the intersection of SR 37/I-69 and That Road, and extends north/northwest along existing SR 37 approximately 1.1 miles, ending at a point approximately 0.55-mile north of Fullerton Pike and 0.45-mile south of Tapp Road (refer to **Figure 6-1**). A major resource in this area is the North Clear Creek Historic Landscape District, to the east of SR 37 along Fullerton Pike. In addition, the Monroe Hospital is located to the west of SR 37, situated on the south side of Fullerton Pike. Numerous businesses are located to the west of SR 37 along Fullerton Pike. A residential subdivision is located to the north of Fullerton Pike adjacent to the west side of SR 37. In addition, other numerous residences are located throughout this south growth area along the primary and secondary roadways, such as Rockport Road, Fullerton Pike, That Road, and Judd Avenue. Various karst features are also located throughout Subsection 5A.

Each alternative is discussed in the following paragraphs as it pertains to Subsection 5A. It should be noted that subsequent to development of Alternatives 4 and 5, the Section 4 I-69/SR 37 interchange design was completed; in the event that either Alternatives 4 or 5 are selected, the designs would require updating to match with the final design of the SR 37 interchange. Alternatives 4 and 5, however, were designed to provide design flexibility for the Section 4 interchange at SR 37/I-69. Alternatives 6, 7, 8, and Refined Preferred Alternative 8 were designed to match the Section 4 SR 37/I-69 interchange design layout.

Alternative 4

Alternative 4 would use the urban typical section with three 12-foot wide travel lanes in each direction, with an additional 12-foot wide auxiliary lane where needed (see **Figure 3-7**). In addition, there is a 60-foot wide depressed median with two 12-foot wide paved shoulders to the inside of the travel lanes along the median. To the outside of the travel lanes, there are two 12-foot wide paved shoulders within the minimum 35-foot wide clear zone. With Alternative 4, the mainline would be shifted to the east of existing SR 37 from just south of That Road to north of Fullerton Pike. There would be a folded diamond interchange at Fullerton Pike with Alternative 4.

The existing at-grade intersections at That Road and Rockport Road would be closed, and an overpass of Rockport Road would be constructed. A local access road would be constructed on the east side of the mainline to connect That Road to Rockport Road. On the west side of the mainline, access to the Fullerton Pike interchange would be provided via That Road.

On the east side of the mainline, Alternative 4 would shift Fullerton Pike north of the existing roadway alignment and acquire part of the North Clear Creek Historic Landscape District, a National Register of Historic Places (NRHP)-eligible Section 4(f) resource. The shift of Fullerton Pike to the north would also require improvements along Rockport Road to realign and change the grade of approaches to the Fullerton Pike/ Rockport Road intersection to reduce its skew and improve sight distance. In addition, a new local access road would be constructed on the southwest corner of the historic landscape district to provide access to an approximately 92-acre parcel and align with the City of Bloomington's long-term plans for a new road between

Fullerton Pike and Tapp Road that would roughly parallel existing SR 37. The improvements in the vicinity of the North Clear Creek Historic Landscape District would require approximately 12.7 acres of new right-of-way from the district, and constitute an Adverse Effect on the resource as well as a Section 4(f) use.

On the west side of the mainline, Fullerton Pike would follow the existing roadway, coming back down to grade and tying into existing Fullerton Pike prior to the Fullerton Cemetery. Judd Avenue would be closed at Fullerton Pike due to the interchange, but access to I-69 would be provided along Jeffrey Drive to Sharon Drive to the Fullerton Pike interchange.

Alternative 5

With the exception of minor right-of-way differences due to construction cut/fill limits, Alternative 5 would be the same as Alternative 4 in the Subsection 5A area. Alternative 5 would also require approximately 12.7 acres of land from North Clear Creek Historic Landscape District for right-of-way, resulting in an Adverse Effect on the NRHP-eligible resource and a Section 4(f) use.

Alternative 6

Alternative 6 would have three 12-foot travel lanes in each direction of the mainline, separated by a 26.5-foot wide median with a concrete barrier. There would be 12-foot wide shoulders to the inside of the travel lanes along the median. To the outside of the travel lanes, there are 12-foot wide paved shoulders within a 30-foot wide clear zone (see **Figure 3-8**). The Alternative 6 mainline would remain within the existing right-of-way of SR 37 through Subsection 5A.

That Road and Rockport Road would both be closed, and an overpass of Rockport Road would be constructed. A local access road would be constructed on the east side of the mainline to connect That Road to Rockport Road. Alternative 6 is proposed to have a double folded diamond interchange with I-69 entrance ramp loops on the northwest and southeast quadrants at Fullerton Pike. Access to the Fullerton Pike interchange on the west side of I-69 would be provided by That Road.

At the intersection of Rockport Road and Fullerton Pike, Rockport Road would be re-aligned to reduce its skew and improve sight distance. On the east side of the mainline, Alternative 6 would retain the existing Fullerton Pike alignment and would acquire a minor strip of right-of-way from the North Clear Creek Historic Landscape District (2.42 acres), resulting in a No Adverse Effect and Section 4(f) *de minimis* impact.

On the west side of the mainline, Fullerton Pike would be similar to Alternatives 4 and 5, following the existing roadway alignment and resulting in the closure of Judd Avenue.

Alternative 7

Alternative 7 is the same as Alternative 6 in Subsection 5A, with the exception of the Fullerton Pike alignment on the east side of the mainline. Alternative 7 would shift Fullerton Pike south of

the existing roadway to avoid direct impacts to and a Section 4(f) use of the North Clear Creek Historic Landscape District. There would be No Adverse Effect to this site with Alternative 7.

Alternative 8

Alternative 8 is the same as Alternative 6 in Subsection 5A, with minor differences in right-of-way due to construction cut/fill limits. Like Alternative 6, Alternative 8 would also acquire a minor amount of right-of-way (2.41 acres) from North Clear Creek Historic Landscape District, resulting in a No Adverse Effect and Section 4(f) *de minimis* impact.

Refined Preferred Alternative 8

Refined Preferred Alternative 8 is a slight modification of Alternative 8 in Subsection 5A with minor differences in right-of-way due to construction cut/fill limits. A modification was made on the west side of the mainline where Fullerton Pike was tapered to tie into the existing Fullerton Pike alignment. This modification would straighten the curve on Fullerton Pike and shift the roadway slightly to the north. Bicycle/pedestrian accommodations would be made on Rockport Road and Fullerton Pike, but would not change the footprint of Fullerton Pike (see **Table 7-2** for further details on bicycle/pedestrian accommodations). Refined Preferred Alternative 8 also further minimized right-of-way needs from North Clear Creek Historic Landscape District and would acquire (1.96 acres) of property, resulting in a No Adverse Effect and Section 4(f) *de minimis* impact.

Table 6-3 provides a summary of cost and impacts for Subsection 5A by alternative.

Table 6-3: Impacts for Subsection 5A

Alignment Alternatives	Alternative 4	Alternative 5	Alternative 6	Alternative 7	Alternative 8	Refined Preferred Alternative 8
Impacts/Design Criteria						
Costs (2015 dollars)*						
Right-of-Way Costs ($M)**	13.91M	13.47M	11.08M	11.80M	11.28M	8.08M
Construction/Design/Utility/ Admin Cost ($M)	47.30M	47.22M	36.01M	36.00M	31.61M	31.54M
Total Cost ($M, not including mitigation costs)	61.21M	60.69M	47.09M	47.80M	42.89M	39.62M
Right-of-Way (ac)	144.55	143.03	94.72	94.92	93.10	94.20
Displacements (#)						
Residential	22	21	20	25	20	16
Institutional	1	1	1	1	1	1
Business	14	14	12	11	12	4
Total Displacements	37	36	33	37	33	21
Noise Impacts (#)	13	12	25	25	29	23
Section 4(f)						
Park	No	No	No	No	No	No
Historic	Yes (Adverse)	Yes (Adverse)	*de minimis*	No (No Adverse)	*de minimis*	*de minimis*
Total Wetland (ac)						
Aquatic Bed Wetland	0.00	0.00	0.00	0.00	0.00	0.00
Emergent Wetland	0.00	0.00	0.00	0.00	0.00	0.00
Forested Wetland	0.00	0.00	0.00	0.00	0.00	0.00
Scrub/Shrub Wetland	0.00	0.00	0.00	0.00	0.00	0.00
Total Wetland Impacts	0.00	0.00	0.00	0.00	0.00	0.00
Total Streams (lf)						
Ephemeral	5,255	5,270	2,696	2,508	2,701	2,678
Intermittent	550	547	552	559	552	551
Perennial	0	0	0	0	0	0
Total Stream Impacts	5,805	5,817	3,248	3,067	3,253	3,229
Total Natural Stream Impacts***	3,420	3,435	861	712	866	843
Stream Relocations (lf)	5,131	5,146	2,278	2,154	2,286	2,264
Floodplain (ac)	0	0	0	0	0	0
Karst Features (#)	29	28	23	26	23	23
Karst Features (ac)	119.2	118.2	81.4	81.4	79.9	79.5
Cave Recharge Areas (#)	1	1	1	1	1	1
Wellhead Protection Areas (#)	0	0	0	0	0	0
Hazardous Material Sites (#)	1	1	1	0	1	1
Farmland (ac)	28.2	27.6	7.3	6.3	7.0	6.6
Managed Land (ac)	0.85	0.65	0.35	0.37	0.33	1.03
Upland Forest (ac)	37.35	36.98	18.14	17.33	17.17	16.73
Core Forest (ac)	0.00	0.00	0.00	0.00	0.00	0.00

** 2015 Dollars, excluding mitigation costs, $M = million dollars, ac = acres, lf = linear feet*

*** Right-of-way costs developed using criteria found in **Appendix D**, Cost Estimation Methodology, and include costs for acreage and improvements required for actual construction, relocation costs, costs for acquiring structures and improvements due to lost access, and administrative fees.*

**** Total Natural Stream Impacts are total streams minus concrete gutters, culverts, dump rock gutters, and roadside ditches.*

Note: All impacts are by preliminary right-of-way, and not necessarily the amount to be acquired, except wetland impacts which are by construction limits.

Impact and Cost Comparison

Because the mainline footprints of Alternatives 4 and 5 are larger than those of Alternatives 6, 7, 8, and Refined Preferred Alternative 8, Alternatives 4 and 5 have the highest overall costs and have the greatest impacts to most resources (see **Table 6-3**). Higher construction costs, coupled with the additional right-of-way costs, results in overall total costs in this subsection for Alternatives 4 and 5 that are over $13M greater than the other alternatives. With Alternatives 6, 7, 8, and Refined Preferred Alternative 8, the impacts are reduced and costs are lowered through the use of the minimal impact criteria and greater use of existing SR 37 right-of-way. Construction costs are further reduced for Alternative 8 and Refined Preferred Alternative 8 due to applying an overlay to reuse 1.1 miles of existing SR 37 pavement in each direction; these cost savings are reflected in **Table 6-3**. For further information please refer to **Appendix KK**, *Pavement Recommendations*.

Alternatives 4 and 5 were shifted to the east to avoid the relocation of the Monroe Hospital. However, Alternatives 4 and 5 would acquire approximately 50 acres more right-of-way, resulting in approximately $1.5M to $5M in additional right-of-way costs, when compared to the other alternatives. In addition, Alternatives 4 and 5 would have more business displacements than the other alternatives, and more residential displacements as compared to Alternatives 6, 8, and Refined Preferred Alternative 8. While there would be less impacts to noise receptors with Alternatives 4 and 5, that is due to the fact that some of the potentially impacted receptors would be displaced by these alternatives.

Alternatives 4 and 5 would have the greatest impact to the North Clear Creek Historic Landscape District, an NRHP-eligible Section 4(f) resource.

Alternatives 4 and 5 both result in over 5,800 linear feet of total stream impacts, which is approximately 2,500 more linear feet of impact than Alternatives 6, 7, 8, and Refined Preferred Alternative 8. With regards to karst, Alternatives 4 and 5 would have greater acreage impacts to karst and would impact a larger number of karst features. Farmland impacts would also be almost four times greater with Alternatives 4 and 5 than the other alternatives, and the amount of impacts to upland forests would be almost double the amount when compared to Alternatives 6, 7, 8, and Refined Preferred Alternative 8.

The major design differences among the minimal impact alternatives (Alternatives 6, 7, 8, and Refined Preferred Alternative 8) are their treatments of Fullerton Pike, as discussed in the following paragraphs. However, these differences are minor when compared to their collective differences from Alternatives 4 and 5 (see **Table 6-3**).

Design Comparison

Fullerton Pike

Staying within the existing Fullerton Pike alignment was important, both to conform with local transportation plans and to be consistent with proposed roadway improvements in the vicinity of

Fullerton Pike. In addition, using the existing alignment reduced residential displacements on the east side of the mainline.

Alternatives 6, 7, 8, and Refined Preferred Alternative 8 are proposed to have a double-folded diamond interchange with I-69 entrance ramp loops on the northwest and southeast quadrants at Fullerton Pike. Alternatives 4 and 5 use a single-folded diamond interchange. The interchange design of Alternatives 6, 7, 8, and Refined Preferred Alternative 8 was favored because mainline traffic would be less likely to experience delays from merging with reduced speed on-ramp traffic than by deceleration for a reduced speed off-ramp. The use of existing SR 37 alignment, pavement, right-of-way, and folded approach ramps reduced the aerial extent of the interchange with Alternatives 6, 7, 8, and Refined Preferred Alternative 8. This smaller footprint results in fewer impacts to farmlands and forests on the east side of SR 37/I-69.

Differences exist on the alignment of Fullerton Pike to the east of the mainline between the east side of the proposed Fullerton Pike interchange ramps and Fullerton Pike's intersection with Rockport Road. Specifically, Alternatives 6, 8 and Refined Preferred Alternative 8 retain the existing alignment of Fullerton Pike, while Alternative 7 relocates Fullerton Pike to the south of its existing location.

Alternatives 6, 8 and Refined Preferred Alternative 8 are consistent with local transportation plans (Monroe County Fullerton Pike/Gordon Pike/Rhorer Road project) in that they allow straight flow of through traffic without speed reduction or curve modifications. This is especially important given the existing rolling terrain and proximity to the ramp termini from the Fullerton Pike interchange. By staying on the existing Fullerton Pike and widening the existing roadway, the alignment uses properties that are already zoned for transportation uses, and allows for minimization of impacts to properties that are located beyond the project to the east (the Monroe County Fullerton Pike/Gordon Pike/Rhorer Road project). However, these alternatives would require between 1.96 acres (Refined Preferred Alternative 8) and 2.42 acres (Alternative 6) of right-of-way acquisition from the North Clear Creek Historic Landscape District, an NRHP-eligible Section 4(f) resource.

While Alternative 7 would avoid direct impacts to the North Clear Creek Historic Landscape District by relocating Fullerton Pike to the south, it would have impacts to non-Section 4(f) resources. It would require four additional residential relocations and would impact three additional karst features due to this shift. In addition, Alternative 7 would require double-s curves on Fullerton Pike, thereby reducing the overall speed of the proposed facility. SHPO recognized these impacts in its May 23, 2012 letter (refer to **Appendix N**, *Section 106 Documentation*). FHWA determined, and the SHPO and ACHP concurred, that acquisition of property located within the historic district but needed for Alternatives 6, 8 and Refined Preferred Alternative 8 would have No Adverse Effect on the historic district (see **Appendix N**, *Section 106 Documentation*) and would constitute a *de minimis* impact to the resource (see **Chapter 8**, *Section 4(f)*). Therefore, no advantage results from the use of Alternative 7 in this area.

To the west of SR 37/I-69, the Refined Preferred Alternative 8 differs when compared to Alternatives 6, 7, and 8 with respect to the alignment of Fullerton Pike. Alternatives 6, 7, and 8

follow the existing Fullerton Pike alignment, which has a curve. Refined Preferred Alternative 8 would shift the existing roadway slightly to the north, and thus, would straighten this curve. This shift avoids two office buildings on the south side of Fullerton Pike to the west of Monroe Medical Park Boulevard when compared to Alternatives 6 and 8, resulting in eight less business displacements. In addition, reducing the curvature in the roadway would improve safety in this location and allow for a higher design speed.

Finally, the right-of-way for Refined Preferred Alternative 8 was narrowed to eliminate four residential displacements along Rockport Road when compared to Alternatives 6 and 8. Other than what is noted above, there are only minor differences in impacts to other resources among Alternatives 6, 7, 8, and Refined Preferred Alternative 8 for Subsection 5A, as shown in **Table 6-3**.

6.3.4.2 Subsection 5B - Core Urban Area

Subsection 5B begins approximately 0.47-mile south of Tapp Road at the northern terminus of Subsection 5A and extends north along SR 37 approximately 3.8 miles to a point approximately 0.38-mile north of the existing intersection of SR 37 and Vernal Pike (see to **Figure 6-1**). This subsection includes the intersections/interchanges at Tapp Road, SR 45/2nd Street, SR 48/3rd Street, and Vernal Pike. SR 37 has two grade-separated crossings with railroad lines within this subsection. This subsection has relatively dense commercial and residential development. Also Wapehani Mountain Bike Park (a protected Section 4(f) resource) is located adjacent to existing SR 37 on the east side of the roadway.

Alternative 4

Alternative 4 would use the urban typical section with three 12-foot wide travel lanes in each direction, with an additional 12-foot wide auxiliary lane where needed (see **Figure 3-7**). In addition, there is a 60-foot wide depressed median with 12-foot wide paved shoulders to the inside of the travel lanes along the median. To the outside of the travel lanes, there are 12-foot wide paved shoulders within the minimum 35-foot wide clear zones. Alternative 4 is re-aligned slightly to the west of the current SR 37 alignment to avoid the Wapehani Mountain Bike Park.

Tapp Road would be closed at the mainline, and there would be an overpass of Tapp Road at this location. Tapp Road would be widened on the west side from the overpass west to Leonard Springs Road to provide an additional turning lane. Due to the overpass, Barger Lane would be closed at Tapp Road, but a new access connection would be provided to Barger Lane from the north through West Maple Leaf Drive. South Yonkers Street would also be closed at Tapp Road due to the overpass, and traffic would be re-routed through Indian Creek Drive to Fairington Drive and then to Rayle Place to connect to Tapp Road.

On the east side of the mainline, Rex Grossman Boulevard would be closed at Tapp Road. Businesses and parcels would still have access to Tapp Road through Cota Drive from the south and West Schmaltz Boulevard/South Deborah Drive from the north.

A new tight diamond interchange would be constructed to replace the current SR 45/2nd Street interchange. An overpass would continue to carry Indiana Railroad over SR37/I-69, and a new tight diamond interchange would be constructed at the SR 48/3rd Street interchange. Whitehall Crossing Boulevard would be closed to SR 37/I-69, and traffic would be re-routed to Gates Drive. An underpass would continue to allow the CSX Railroad to pass under SR37/I-69. Vernal Pike would be closed at SR 37, and an underpass would be constructed north on West 17th Street. Due to the underpass, North Crescent Road would be closed. Packing House Road and Industrial Park Road would be relocated to form a four-way intersection with Vernal Pike.

Alternative 5

Similar to Alternative 4, Alternative 5 consists of three mainline travel lanes in each direction realigned slightly to the west of the current SR 37 footprint. However, a split-diamond interchange at Tapp Road and SR 45/2nd Street is proposed with this alternative. The split-diamond interchange would be designed to maintain access to I-69 while avoiding weave issues associated with closely spaced interchange access points. On either side of I-69, there would be a two lane limited-access road providing unidirectional (one way) travel to carry traffic between Tapp Road and SR 45/2nd Street; these roads are also referred to as Collector Distributer (CD) lanes. The interchange construction would include additional lanes and shoulders along I-69, a bridge structure at Tapp Road, replacement of an existing bridge structure at SR 45/2nd Street, approach and access ramps, and additional right-of-way. The alignment of Alternative 5 would have a minor right-of-way impact to the southwest edge of Wapehani Mountain Bike Park (a Section 4(f) *de minimis* impact) to accommodate the CD lanes.

Unlike Alternative 4, Tapp Road would be widened only through the limits of the interchange construction. Due to the interchange, Barger Lane would be closed at Tapp Road, but a new access connection would be provided to Barger Lane from the north through West Maple Leaf Drive. South Yonkers Street would also be closed at Tapp Road due to the interchange, and traffic would be re-routed through Indian Creek Drive to Fairington Drive to Rayle Place to connect to Tapp Road.

On the east side of the mainline, Rex Grossman Boulevard would be closed at Tapp Road. Businesses and parcels would still have access to Tapp Road through Cota Drive from the south and West Schmaltz Boulevard/South Deborah Drive from the north.

At SR 48/3rd Street, Alternative 5 would have a single-point interchange. Like Alternative 4, an overpass for the Indiana Railroad and underpass for the CSX Railroad would be provided. Whitehall Crossing Boulevard would be closed at SR 37, and traffic would be re-routed to Gates Drive. Vernal Pike would be closed at SR 37 and an underpass would be constructed just north at West 17th Street. Due to the underpass, North Crescent Road would be closed. Packing House Road and Industrial Park Road would be relocated to form a four-way intersection with Vernal Pike.

Alternative 6

Alternative 6 would have three travel lanes in each direction of the mainline, separated by a 26.5-foot wide median with a concrete barrier. There would be 12-foot wide shoulders to the inside of the travel lanes along the median. To the outside of the travel lanes, there are 12-foot wide paved shoulders within a 30-foot wide clear zone (see **Figure 3-8**). The Alternative 6 mainline is shifted slightly to the west of SR 37's current footprint and Wapehani Mountain Bike Park (a Section 4(f) resource) is avoided. Like Alternative 4, there would be an overpass constructed at Tapp Road. Because the mainline footprint of Alternative 6 is narrower than Alternatives 4 and 5, access would be maintained from Tapp Road to Yonkers Street. Barger Lane would still need to be closed at Tapp Road, and would be re-routed through a new connection to Maple Leaf Drive to the north. On the east side of the mainline, Rex Grossman Boulevard would be closed at Tapp Road. Businesses and parcels would still have access to Tapp Road through Cota Drive from the south and West Schmaltz Boulevard/South Deborah Drive from the north.

Alternative 6 would use the existing SR 45/2nd Street double-folded interchange with loop ramps on the north side of SR 45/2nd Street. As with the other alternatives, Whitehall Crossing Boulevard would be closed at SR 37, and traffic would be re-routed through Gates Drive. In addition, the overpass and underpass for the Indiana Railroad and CSX Railroad, respectively, would remain in place. Like Alternatives 4 and 5, Vernal Pike would be closed at SR 37, and an underpass would be constructed just north at West 17th Street, resulting in the closure of North Crescent Road. Unlike Alternatives 4 and 5, Packing House Road and Industrial Park Road would be relocated and form offset T-intersections with Vernal Pike. The existing SR 48/3rd Street interchange would be used with Alternative 6.

Alternative 7

Alternative 7 consists of three mainline travel lanes in each direction within the current SR 37 right-of-way, using the minimal impact criteria footprint (refer to **Figure 3-8**). Similar to Alternative 5, a split-diamond interchange would be constructed between Tapp Road and SR 45/2nd Street with CD lanes on either side of I-69, requiring right-of-way from Wapehani Mountain Bike Park (a Section 4(f) resource).

Due to the interchange, Barger Lane would be closed at Tapp Road, but a new access connection would be provided to Barger Lane from the North through West Maple Leaf Drive. Due to the split-interchange, South Yonkers Street would be closed at Tapp Road and traffic re-routed through Indian Creek Drive to Fairington Drive to Rayle Place to connect to Tapp Road.

On the east side of the mainline, Rex Grossman Boulevard would be closed at Tapp Road. Businesses and parcels would still have access to Tapp Road through Cota Drive from the south and West Schmaltz Boulevard/South Deborah Drive from the north.

As with the other alternatives, Whitehall Crossing Boulevard would be closed at SR 37, and traffic would be re-routed through Gates Drive. In addition, the existing overpass and underpass for the Indiana Railroad and CSX Railroad, respectively, would remain in place. At Vernal Pike, the roadway would be closed on both sides at SR 37 and traffic would be re-routed north to a

new overpass on West 17th Street. North Crescent Road would remain open and have an intersection with West 17th Street. Like Alternative 6, Packing House Road and Industrial Park Road would be relocated and form offset T-intersections with Vernal Pike. At SR 48/3rd Street, the existing interchange would be used, like Alternative 6.

Alternative 8

Alternative 8 consists of three mainline travel lanes in each direction using the minimal impact criteria footprint (refer to **Figure 3-8**). Similar to Alternative 5 and 7, a split-diamond interchange would be constructed between Tapp Road and SR 45/2nd Street with CD lanes on either side of I-69; however, the mainline would be shifted slightly west of the existing SR 37 alignment to avoid the Wapehani Mountain Bike Park (a Section 4(f) resource).

Like Alternatives 4, 5, and 7, Yonkers Street and Barger Lane would be closed at Tapp Road, and traffic would be re-routed as previously described. In addition, on the east side of the mainline, Rex Grossman Boulevard would be closed at Tapp Road, but traffic would still have access to Tapp Road through Cota Drive from the south and West Schmaltz Boulevard/South Deborah Drive from the north. In addition, the existing overpass and underpass for the Indiana Railroad and CSX Railroad, respectively, would remain in place. Whitehall Crossing Boulevard would be closed at SR 37,with traffic re-routed to Gates Drive, similar to Alternatives 4, 5, 6, and 7. At Vernal Pike, Alternative 8 would be the same as Alternative 7 in that it would close Vernal Pike, re-route traffic north to a new overpass on West 17th Street and allow for North Crescent Road to remain open. Like Alternatives 6 and 7, Packing House Road and Industrial Park Road would be relocated and form offset T-intersections with Vernal Pike. The existing SR 48/3rd Street interchange would be used with Alternative 8.

Refined Preferred Alternative 8

In Subsection 5B, the Refined Preferred Alternative 8 is similar to Alternative 7, with modifications and refinements to further reduce impacts. Right-of-way was narrowed, where possible, to minimize impacts to residences, businesses, and the Wapehani Mountain Bike Park.

The bridge for the Tapp Road interchange over I-69 would be modified to accommodate bicycle/pedestrian uses; however, this modification would not change the footprint of the interchange. (For further details on bicycle/pedestrian facilities, please refer to **Table 7-2**.)

At Barger Lane, instead of providing a new access connection to Maple Leaf Drive, Refined Preferred Alternative 8 provides a new access connection to South Danlyn Road west of the roadway, to provide closer access to/from Tapp Road for the Hickory Heights Mobile Home Park.

At the SR 45/2nd Street interchange, the existing bridge would remain in place with some modifications to accommodate bicycle/pedestrian traffic across the bridge. SR 45/2nd Street improvements would extend from North Liberty Drive to South Basswood Drive/Oakdale Drive to provide bicycle/pedestrian facilities. The interchange ramps would also be reconfigured to combine with the proposed CD lanes between Tapp Road and SR 45/2nd Street and the split-

diamond interchange connecting the two. A new local service road was also added from eastbound SR 45/2nd Street to Sam's Club to provide a right-in/right-out movement between the ramp intersections and Liberty Drive.

For the SR 48/3rd Street interchange, additional capacity would be added to the exit ramps. The left turn lanes on SR 48/3rd Street will be extended, the existing bridge will be widened on each side, and SR 48/3rd Street improvements would extend from North Gates Drive to South Franklin Road to provide bicycle/pedestrian facilities.

At the Vernal Pike/West 17th Street overpass, the bridge would be modified to accommodate bicycle/pedestrian facilities. **Table 6-4** provides a summary of cost and impacts for Subsection 5B.

Table 6-4: Impacts for Subsection 5B

Alignment Alternatives	Alternative 4	Alternative 5	Alternative 6	Alternative 7	Alternative 8	Refined Preferred Alternative 8
Impacts/Design Criteria						
Costs (2015 dollars)*						
Right-of-Way Costs ($M)**	94.34M	76.77M	12.24M	15.79M	17.85M	14.33M
Construction/Design/Utility/ Admin Cost ($M)	114.59M	121.44M	74.93M	82.25M	71.79M	73.52M
Total Cost ($M, not including mitigation costs)	208.93M	198.21M	87.17M	98.04M	89.64M	87.85M
Right-of-Way (ac)	295.72	299.01	232.25	253.57	257.44	260.15
Displacements (#)						
Residential	87	85	36	40	49	38
Institutional	0	0	0	0	0	0
Business	38	35	5	5	4	3
Total Displacements	125	120	41	45	53	41
Noise Impacts (#)	230	221	369	332	318	292
Section 4(f)						
Park	No	*de minimis*	No	*de minimis*	No	*de minimis*
Historic	No	No	No	No	No	No
Total Wetland (ac)						
Aquatic Bed Wetland	0.00	0.00	0.00	0.00	0.00	0.00
Emergent Wetland	0.03	0.06	0.01	0.01	0.01	0.01
Forested Wetland	0.06	0.23	0.00	0.11	0.07	0.07
Scrub/Shrub Wetland	0.01	0.01	0.00	0.00	0.00	0.00
Total Wetland Impacts	0.10	0.30	0.01	0.12	0.08	0.08
Total Streams (lf)						
Ephemeral	9,182	9,654	8,156	8,964	9,121	9,086
Intermittent	382	439	184	321	326	359
Perennial	0	0	0	0	0	0
Total Stream Impacts	9,564	10,093	8,340	9,285	9,447	9,445
Total Natural Stream Impacts***	1,822	2,267	732	1,407	1,527	1,476
Stream Relocations (lf)	6,358	6,643	5,365	5,828	5,941	5,847
Floodplain (ac)	0.00	0.00	0.00	0.00	0.00	0.00
Karst Features (#)	32	35	31	33	32	33
Karst Features (ac)	161.70	160.00	124.00	130.90	131.00	134.50
Cave Recharge Areas (#)	0	0	0	0	0	0
Wellhead Protection Areas (#)	0	0	0	0	0	0
Hazardous Material Sites (#)	7	7	5	6	6	6
Farmland (ac)	0.0	0.0	0.0	0.0	0.0	0.0
Managed Land (ac)	1.51	3.54	0.61	3.28	1.11	3.23
Upland Forest (ac)	21.24	29.11	14.65	23.63	21.82	24.06
Core Forest (ac)	2.09	2.21	0.47	0.47	0.47	0.47

** 2015 Dollars, excluding mitigation costs, $M = million dollars, ac = acres, lf = linear feet*

*** Right-of-way costs developed using criteria found in **Appendix D**, Cost Estimation Methodology, and include costs for acreage and improvements required for actual construction, relocation costs, costs for acquiring structures and improvements due to lost access, and administrative fees.*

**** Total Natural Stream Impacts are total streams minus concrete gutters, culverts, dump rock gutters, and roadside ditches.*

Note: All impacts are by preliminary right-of-way, and not necessarily the amount to be acquired, except wetland impacts which are by construction limits.

Impact and Cost Comparison

Because of the larger mainline footprint, Alternatives 4 and 5 would have greater impacts and costs to resource categories in Subsection 5B when compared to the minimal impact Alternatives 6, 7, 8 and Refined Preferred Alternative 8. Additional right-of-way for the mainline footprint would be required with Alternatives 4 and 5 outside of the current SR 37 right-of-way. The right-of-way costs for Alternatives 4 and 5 range from approximately $77M to $94M for Subsection 5B, which is at least four to five times greater than the minimal impact alternatives that range from approximately $12M to $18M.

The number of total displacements for Alternatives 4 and 5 are two to three times greater than the displacements of Alternatives 6, 7, 8 and Refined Preferred Alternative 8. While the minimal impact alternatives would have greater noise impacts, Alternatives 4 and 5 would displace many of the noise receptors impacted by Alternatives 6, 7, 8, and Refined Preferred Alternative 8.

When comparing Alternatives 4 and 5, Alternative 5 would have greater wetland, stream, karst features, farmland, core forest, and upland forest impacts, due to the footprint of the split-diamond interchange. Alternative 5 would also have a minor right-of-way impact to the southernmost portion of the Wapehani Mountain Bike Park (1.10 acres), due to the CD lanes on the east side, even though this alternative is shifted to the west. This would be considered a *de minimis* impact to the park (see **Chapter 8**, *Section 4(f)*).

As shown in **Table 6-4**, the impacts are reduced and costs are lowered through the use of the minimal impact criteria in Alternatives 6, 7, 8, and Refined Preferred Alternative 8. While there are some major design differences between the minimal impact alternatives, the impact differences are minor when compared to their collective differences from Alternatives 4 and 5.

When comparing the minimal impact alternatives, Alternative 6 would have the least impacts and lowest costs because it only includes an overpass of Tapp Road and uses the existing SR 45/2nd Street interchange instead of providing the Tapp Road/SR 45/2nd Street split-diamond interchange and CD lanes included in Alternatives 7, 8, and Refined Preferred Alternative 8. Alternative 6 and Refined Preferred Alternative 8 would have the lowest total number of displacements. Construction costs are lowered further for Alternative 8 and Refined Preferred Alternative 8 due to applying an overlay to reuse 3.8 miles of SR 37 existing pavement in each direction; these cost savings are reflected in **Table 6-4.** For further information please refer to **Appendix KK**, *Pavement Recommendations*.

Design Comparison

Tapp Road and SR 45/2nd Street

Currently, Tapp Road has a signalized intersection with SR 37. During the initial development of alternatives, the City of Bloomington, Monroe County, and the Expert Land Use Panel (ELUP) indicated they would prefer an interchange at Tapp Road. However, due to traffic merging and FHWA interchange spacing guidelines, a single-point interchange at Tapp Road was determined not to be feasible. Because of this, the split-diamond interchange between Tapp Road and SR

45/2nd Street was proposed to meet FHWA requirements while still providing interstate access at Tapp Road.

Alternatives 4 and 6 would not provide direct access from the interstate to the Tapp Road area. In addition, the overpass at Tapp Road would not support the City of Bloomington and Monroe County's long-range plans. Alternatives 5, 7, 8, and Refined Preferred Alternative 8 would maintain the development potential on eastern Tapp Road with access to I-69, spread traffic loads with additional access to southwest Bloomington, and reduce traffic volumes on Leonard Springs Road and Tapp Road west of I-69. This split-diamond interchange at Tapp Road and SR 45/2nd Street would also reduce travel through western neighborhoods and provide an additional access point. While this interchange configuration would increase traffic volumes on Tapp Road east of I-69, it would reduce historically congested traffic volumes on SR 45/2nd Street.[4] The split-diamond interchange would support the City of Bloomington's recent infrastructure improvements including upgrades on Tapp Road east of SR 37 and long-range plans for planned improvements in southern Bloomington (West Airport Road, West Tapp Road, West Country Club Drive/East Winslow Road/East Rogers Road). As such, the split-diamond interchange is supported by the City and Monroe County.

SR 45/2nd Street is a state highway with significant traffic volumes; therefore, an interchange was maintained at this location in all six alternatives. The alternative screening process recommended three different interchange designs for this location. Alternative 4 uses a tight diamond interchange, Alternative 6 uses the existing folded diamond interchange (with loop ramps on the north side of SR 45/2nd Street), and Alternatives 5, 7, 8, and Refined Preferred Alternative 8 use a split-diamond interchange at Tapp Road and SR 45/2nd Street (as discussed above). These recommendations were based on knowledge that exit ramps used with folded diamond interchanges (such as the existing interchange) have the potential to cause backups from ramp traffic onto the mainline; significant right-of-way impacts and cost could be reduced with reuse of the existing interchange; a significant amount of INDOT-owned right-of-way is available to accommodate various urban interchange configurations; and, right-of-way costs and business impacts could be further reduced. A single-point interchange was not recommended because it would require realigning SR 45/2nd Street to reduce the skew across I-69, resulting in the closure of the SR 45 bridge.

SR 48/3rd Street

Because SR 48/3rd Street is a state highway with significant traffic volumes, an interchange was maintained at this location in all six alternatives. The alternative screening process included various interchange designs to improve the existing interchange. Alternative 4 uses a new tight diamond interchange, Alternative 5 uses a single-point interchange, and Alternatives 6, 7, and 8, use the existing tight diamond interchange. Refined Preferred Alternative 8 also uses the existing interchange and provides added storage capacity on the ramps. The use of the existing tight diamond interchange lowers bridge costs compared to a single-point interchange. The City of Bloomington initially stated a preference for a single-point interchange design for SR 48/3rd Street, with the assumption that it would minimize impacts. However, the City stated it would

[4] Noted in input received at Participating Agency Coordination Meeting held on March 27, 2012.

also consider alternate interchange types that would meet the operational needs at this interchange. Monroe County did not specify a preferred layout for this interchange. During development of the FEIS, the City and the County concurred that the modifications added into Refined Preferred Alternative 8 would achieve this goal.

Vernal Pike

Currently, Vernal Pike has a signalized intersection with SR 37. Monroe County stated a preference for interchange access at Vernal Pike. However, a Vernal Pike interchange would exceed the FHWA minimum interstate interchange spacing guidelines relative to the SR 46 interchange. In order to address this spacing, a CD system and reconstruction of the SR 46 interchange (to accommodate the CD roads) would be required to meet the Monroe County recommendation for an interchange at Vernal Pike; therefore, an interchange at Vernal Pike is not included in the six alternatives addressed in the FEIS. Both the City of Bloomington and Monroe County recommended that a grade separation with I-69 be considered at this location if an interchange were not included to maintain community connectivity and maintain access to the industrial areas west of I-69. The grade separation would be consistent with the 17th Street project included in the Bloomington/Monroe County Metropolitan Planning Organization's (BMCMPO) 2030 Long Range Transportation Plan.

Alternatives 4, 5, and 6 have an underpass of Vernal Pike/West 17th Street, while Alternatives 7, 8, and Refined Preferred Alternative 8 include an overpass. Traffic analyses determined that an overpass was optimal in this area because it would provide better maintenance of traffic in this area during construction of the grade separation, and would not require the closure of North Crescent Road. Travelers could still access West 17th Street. In addition, the U.S. Environmental Protection Agency (USEPA) was concerned that an underpass would affect groundwater conditions and monitoring at the Illinois Central Spring Recharge Area (ILCS) and Lemon Lane Landfill Superfund Site.[5] Therefore, the overpass is preferred at Vernal Pike.

Mainline at Wapehani Mountain Bike Park

Wapehani Mountain Bike Park is located adjacent to and east of existing SR 37. This public park is protected under Section 4(f) of the Department of Transportation Act of 1966, (as codified under 49 U.S.C. §303). Since the approval of the Tier 1 Record of Decision (ROD), the FHWA amended the regulations implementing Section 4(f). The Section 4(f) findings made in the Tier 1 ROD relied on the previous regulations found at 23 CFR §771.135. The findings in this Tier 2 document for Section 5 are based on the new regulations in 23 CFR Part 774. Section 6009 of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), permits FHWA to determine that a direct use of a Section 4(f) resource which, after taking into account any measures to minimize harm, does not adversely affect the features, attributes and activities of the resource constitutes a *de minimis* impact. In such cases, the protections of Section 4(f) do not apply and such uses do not require a determination that there is no feasible and prudent alternative to that use.

[5] Refer to USEPA comment letter regarding Draft Karst Reports for Sections 4 and 5, dated June, 27, 2008.

Alternatives 4, 6, and 8 avoid the park by shifting the mainline to the west. Alternatives 4, 6, and 8 have increased impacts on existing homes and commercial properties and would need to relocate major utilities such as natural gas and electric transmission lines. These avoidance alternatives would also require a new bridge structure at SR 45/2nd Street, increasing both project cost and travel detours/congestion during construction in this area. While Alternative 5 has less impact (1.10 acres) on the park than Alternative 7 (1.73 acres); impacts west of I-69 are not avoided because of its wider footprint.

Alternative 7 would stay on the existing SR 37 alignment and impact the western edge of the park, resulting in 1.73 acres of right-of-way being needed from the park. A comparison of cost and potential displacement impacts and between Alternative 7 and Alternative 8 (the DEIS Preferred Alternative that avoids the park) showed that Alternative 8 would result in a $5.4 million increase in project costs and result in total take of seven additional residential properties. DEIS comments pertaining to this resource and potential for mitigation and other measures that may minimize harm to the park have since been considered. Like Alternative 7, the Refined Preferred Alternative 8 incorporates the use of 1.73 acres from the park to avoid the residential and construction impacts, as well as additional costs. A reduction of 11 potential residential displacements are attributed to not shifting the alignment under Refined Preferred Alternative 8, as compared to a reduction of seven with Alternative 7. The park owner/manager (City of Bloomington), INDOT, and FHWA agree that this is a *de minimis* impact and mitigation measures are being implemented as part of this agreement. For further information, refer to **Chapter 8**, *Section 4(f)*, and **Appendix QQ**, *Wapehani MOA*.

To maintain the existing alignment on SR 37 north of Wapehani Mountain Bike Park, Alternative 7 and Refined Preferred Alternative 8 would use a retaining wall along the western boundary of the Wapehani Hills and Oakdale Square Apartment Complexes to avoid additional multi-family displacements.

6.3.4.3 Subsection 5C - Transition Area

Subsection 5C encompasses the transition area of the project north of the intersection of SR 37 and Vernal Pike, traversing north approximately 3.3 miles north along SR 37 to a point approximately 0.38-mile north of Kinser Pike. This subsection includes the current interchanges/intersections at SR 46, Arlington Road, Acuff Road, and Kinser Pike. There are various land uses along the study corridor in Subsection 5C including residential and institutional uses. Natural resource features such as karst, upland forests, and streams are located throughout the Subsection 5C area, and the Maple Grove Road Rural Historic District is located west of SR 37 in this area.

Alternative 4

Alternative 4 would use the suburban typical section shown in **Figure 3-7** with three 12-foot wide travel lanes in each direction. There would be a 60-foot wide depressed median with 12-foot wide paved shoulders to the inside of the travel lanes along the median. To the outside of the travel lanes, there are 12-foot wide paved shoulders within the minimum 35-foot wide clear zones. The mainline would be centered on the existing SR 37 alignment.

As with all other build alternatives, Alternative 4 would use the existing interchange at SR 46. The existing overpass at Arlington Road would be raised and remain in its current location, so that existing travel patterns are unaffected. Acuff Road would be closed on both sides of I-69, and traffic would be re-routed to Kinser Pike or Maple Grove Road.

There would be a rural diamond interchange at Kinser Pike with Alternative 4, which would include a T-intersection and a closer tie-in with the existing Kinser Pike. This interchange at Kinser Pike was considered as an alternative to an interchange at Walnut Street (Walnut Street is discussed in **Section 6.3.4.4**, *Subsection 5D*). The Kinser Pike interchange with Alternative 4 would include construction of a local access road from the Kinser Pike interchange east to the intersection of Walnut Street and Bayles Road.

Alternative 5

Alternative 5 would use the same suburban typical section as described for Alternative 4. The mainline of Alternative 5 would also be centered on the existing SR 37 similar to Alternative 4.

The existing SR 46 interchange would remain, and the existing overpass at Arlington Road would be raised and remain in its current location. Acuff Road would be closed, and re-routed to either Kinser Pike or Maple Grove Road.

At Kinser Pike, Alternative 5 would have an overpass, and Kinser Pike on the west side of I-69 would be used to access the interchange to the north at Walnut Street (see **Section 6.3.4.4**, *Subsection 5D*).

Alternative 6

Alternative 6 would use the suburban typical section shown in **Figure 3-8** consisting of three travel lanes in each direction for the mainline. There would be a 36-foot wide median containing 12-foot wide paved shoulders to the inside of the travel lanes along the median, a center concrete barrier to Arlington Road, and a center guardrail barrier from Arlington Road north to Sample Road. To the outside of the travel lanes, there are 12-foot wide paved shoulders within the minimum 30-foot wide clear zones. The mainline would be centered on the existing SR 37 alignment in Subsection 5C.

The existing SR 46 interchange would remain. The existing overpass at Arlington Road would remain in its current location and be reused by lowering mainline I-69 elevations to reduce traffic disruptions and maintain east/west connectivity. Acuff Road would be closed, and re-routed to either Kinser Pike or Maple Grove Road.

Alternative 6 would not include an interchange or overpass at Kinser Pike, but would provide a local access road connection from the Walnut Street interchange to properties on the west side of SR 37 with upgrades to West Kinser Pike / Bottom Road and to the Sample Road interchange (discussed further in **Section 6.3.4.5**, *Subsection 5E*).

Alternative 7

Alternative 7 would use the same suburban typical section described above for Alternative 6 for the mainline through Subsection 5C.

The existing SR 46 interchange would remain. The existing overpass at Arlington Road would remain in its current location and be reused by lowering mainline I-69 elevations to reduce traffic disruptions and maintain east/west connectivity. Acuff Road would be closed, and re-routed to either Kinser Pike or Maple Grove Road.

Alternative 7 would have an overpass on Kinser Pike, and West Kinser Pike would be used to access Bottom Road and Sample Road interchange to the north. (The Sample Road interchange is discussed in **Section 6.3.4.5**, *Subsection 5E.*)

Alternative 8

Alternative 8 would use the same suburban typical section described above for Alternative 6 for the mainline through Subsection 5C.

The existing SR 46 interchange would remain. The existing overpass at Arlington Road would remain in its current location and be reused by lowering mainline I-69 elevations to reduce traffic disruptions and maintain east/west connectivity. Acuff Road would be closed, and re-routed to either Kinser Pike or Maple Grove Road.

Similar to Alternative 7, Alternative 8 would have an overpass on Kinser Pike. With Alternative 8, West Kinser Pike would be used to access Bottom Road and the Walnut Street interchange (see **Section 6.3.4.4**, *Subsection 5D*) or Sample Road interchange (see **Section 6.3.4.5**, *Subsection 5E*).

Refined Preferred Alternative 8

Refined Preferred Alternative 8 would be the same as Alternative 8 in Subsection 5C, except that the right-of-way was narrowed in areas, where possible, to minimize right-of-way acquisition and land use impacts.

The existing SR 46 interchange would remain. The existing overpass at Arlington Road would remain in its current location and be reused by lowering mainline I-69 elevations to reduce traffic disruptions and maintain east/west connectivity. Acuff Road would be closed, and re-routed to either Kinser Pike or Maple Grove Road.

Similar to Alternative 7 and 8, the Refined Preferred Alternative 8 would have an overpass for Kinser Pike. Like Alternative 8, West Kinser Pike would be used to access Bottom Road and the Sample Road interchange (see **Section 6.3.4.5**, *Subsection 5E*), but the Walnut Street partial interchange will not be accessible directly from West Kinser Pike or Bottom Road in Refined Preferred Alternative 8 (see **Section 6.3.4.4**, *Subsection 5D*).

Table 6-5 shows the impacts from the build alternatives in Subsection 5C.

Table 6-5: Impacts for Subsection 5C

Alignment Alternatives	Alternative 4	Alternative 5	Alternative 6	Alternative 7	Alternative 8	Refined Preferred Alternative 8
Impacts/Design Criteria						
Costs (2015 dollars)*						
Right-of-Way Costs ($M)**	7.31M	4.62M	1.13M	1.46M	1.49M	0.98M
Construction/Design/Utility/ Admin Cost ($M)	82.80M	63.97M	34.54M	38.69M	29.69M	32.46M
Total Cost ($M, not including mitigation costs)	90.11M	68.59M	35.67M	40.15M	31.18M	33.44M
Right-of-Way (ac)	282.58	221.37	191.57	195.64	195.14	194.62
Displacements (#)						
Residential	20	13	2	3	3	2
Institutional	0	0	0	0	0	0
Business	5	4	0	0	0	0
Total Displacements	25	17	2	3	3	2
Noise Impacts (#)	17	20	25	26	26	17
Section 4(f)						
Park	No	No	No	No	No	No
Historic	No	No	No	No	No	No
Total Wetland (ac)						
Aquatic Bed Wetland	0.00	0.00	0.00	0.00	0.00	0.00
Emergent Wetland	0.00	0.00	0.00	0.00	0.00	0.00
Forested Wetland	0.00	0.00	0.00	0.00	0.00	0.00
Scrub/Shrub Wetland	0.00	0.00	0.00	0.00	0.00	0.00
Total Wetland Impacts	0.00	0.00	0.00	0.00	0.00	0.00
Total Streams (lf)						
Ephemeral	8,091	6,392	5,680	5,696	5,692	5,610
Intermittent	0	0	0	0	0	0
Perennial	411	0	0	0	0	0
Total Stream Impacts	8,502	6,392	5,680	5,696	5,692	5,610
Total Natural Stream Impacts***	3,623	1,576	930	946	942	860
Stream Relocations (lf)	3,744	2,676	2,063	2,079	2,083	2,066
Floodplain (ac)	10.04	0.00	0.00	0.00	0.00	0.00
Karst Features (#)	41	33	24	24	24	23
Karst Features (ac)	121.80	115.70	107.30	107.40	107.30	107.30
Cave Recharge Areas (#)	0	0	0	0	0	0
Wellhead Protection Areas (#)	0	0	0	0	0	0
Hazardous Material Sites (#)	0	0	0	0	0	0
Farmland (ac)	42.1	10.5	1.0	1.4	1.3	1.3
Managed Land (ac)	0.60	0.00	0.00	0.00	0.00	0.00
Upland Forest (ac)	30.74	16.50	11.15	12.65	12.22	12.17
Core Forest (ac)	2.64	2.59	2.44	2.44	2.44	2.44

** 2015 Dollars, excluding mitigation costs, $M = million dollars, ac = acres, lf = linear feet*

*** Right-of-way costs developed using criteria found in **Appendix D**, Cost Estimation Methodology, and include costs for acreage and improvements required for actual construction, relocation costs, costs for acquiring structures and improvements due to lost access, and administrative fees.*

**** Total Natural Stream Impacts are total streams minus concrete gutters, culverts, dump rock gutters, and roadside ditches.*

Note: All impacts are by preliminary right-of-way, and not necessarily the amount to be acquired, except wetland impacts which are by construction limits.

Impact and Cost Comparison

Alternative 4 would have the highest total cost (approximately $90M) and greatest impacts to resources among all the alternatives for Subsection 5C due to the rural diamond interchange at Kinser Pike and the extension of Kinser Pike east to tie into Walnut Street. This alternative would require the most right-of-way acquisition among all the alternatives (approximately 283 acres) and has the most displacements (at 25), resulting in the highest right-of-way costs (over $7M). Alternative 4 also has the greatest impacts to forested land and farmlands due to its extension of Kinser Pike east to connect to Walnut Street. This extension would cross several streams and karst valleys, which would result in greater impacts to streams and karst, as well as relocate the most streams among all alternatives.

Alternative 5 has fewer impacts, right-of-way, and total cost than Alternative 4 due to the Kinser Pike overpass and lack of a connection to the intersection of Walnut Street and Bayles Road. Alternatives 6, 7, 8, and Refined Preferred Alternative 8 have fewer impacts, cost and displacements than either Alternatives 4 and 5 from the use of minimal design criteria (refer to **Table 6-5**). Construction costs are lowered further for Alternative 8 and Refined Preferred Alternative 8 due to applying an overlay to reuse 3.2 miles of existing SR 37 pavement in each direction; these cost savings are reflected in **Table 6-5.** For further information please refer to **Appendix KK**, *Pavement Recommendations*.

Although Alternative 5 has fewer noise impacts than Alternatives 6, 7, 8, and Refined Preferred Alternative 8, the impacts are offset by the fact that there are more displacements with Alternative 5 (14 to 15 additional displacements).

As shown in **Table 6-5**, Alternative 6 would have the least amount of right-of-way acquisition, because it would primarily upgrade Kinser Pike using the current West Bottom Road as an access road, and does not provide an overpass or interchange at Kinser Pike, thereby limiting the right-of-way footprint in the area. Alternatives 7, 8, and Refined Preferred Alternative 8 would have an overpass at Kinser Pike that results in slightly more impacts than Alternative 6. Impacts in Subsection 5C among Alternatives 7, 8, and Refined Preferred Alternative 8 are similar, except that by narrowing the right-of-way, a displacement is avoided in Refined Preferred Alternative 8.

Design Comparison

SR 46 Interchange

Because SR 46 is a state highway with significant traffic volumes, an interchange was maintained at this location in all six build alternatives. The use of the existing folded-diamond interchange reduces impacts to adjoining historic districts, forest, streams, infrastructure and a local Superfund site. Under all six alternatives, the existing interchange can be used with only minor improvements to ramp termini.

Kinser Pike

Alternative 4 would contain a rural diamond interchange at Kinser Pike, which would include a T-intersection and closer tie-in with the existing West Kinser Pike to minimize potential visual and noise impacts to the Maple Grove Road Rural Historic District, an NRHP-listed resource. Kinser Pike and the existing Walnut Street partial interchange are close in proximity, and an interchange would not be provided at both locations due to FHWA's interchange spacing guidelines. The City of Bloomington had expressed a preference for a Kinser Pike interchange to provide direct access from I-69 to the Kinser Pike/Prow Road TIF district in 2007. Since then, both the City of Bloomington and Monroe County have expressed support of a grade separation at Kinser Pike with a corresponding Walnut Street interchange. While a Kinser Pike interchange would reduce impacts in the Beanblossom Valley, the Kinser Pike location is along a karst terrain ridge that would overlook the Maple Grove Road Rural Historic District to the west of SR 37. Both the neighborhood association and the SHPO commented on potentially increased noise and visual impacts to the historic district, related to both the interchange itself and the increased potential for induced growth to the west of existing SR 37. Monroe County and the City of Bloomington both support an interchange at Walnut Street rather than Kinser Pike, because the existing partial interchange at Walnut Street is viewed as a gateway to Bloomington, and it also diverts traffic to downtown Bloomington rather than using other interchanges farther south on I-69 such as SR 46.

Alternatives 5, 7, 8, and Refined Preferred Alternative 8 include an overpass of Kinser Pike over the mainline, and Kinser Pike West would be used to access the Bottom Road portion of Beanblossom Valley. An overpass at Kinser Pike would allow for an interchange at Walnut Street, which is supported by the City of Bloomington and Monroe County.

Even though Alternative 6 would have the fewest impacts, it would not provide the connectivity needed to access facilities on the eastern and western side of the mainline and maintain community cohesion. Alternative 6 would not have access to I-69 at Walnut Street or an overpass at Kinser Pike. Without an overpass or interchange, access to either side of I-69 would be limited because access at Acuff Road would also be closed across I-69. Access to I-69 would be provided from Kinser Pike north to the Sample Road interchange via a new local access road connection (upgrades to West Kinser Pike / Bottom Road). However, an overpass or interchange is needed to maintain connectivity and access in the area to places such as Bloomington High School North, three places of worship, a business center, and a medical facility off of Prow Road. In addition, the Bloomington Wastewater Treatment Plant is located on the west side of SR 37, and without an overpass or interchange it would be difficult to access this facility.

Mainline

Construction costs are lowest with Alternatives 6, 8, and Refined Preferred Alternative 8 as shown in **Table 6-5**. Alternative 7 would change the existing SR 37 5% profile grade south of Kinser Pike to 4%, while it would remain at the same 5% grade with Alternatives 6, 8, and Refined Preferred Alternative 8. The amount of earthwork and reconstruction of the mainline results in a greater construction cost for this subsection with Alternative 7. In addition, Alternative 7 would have a concrete median barrier to divide travel lanes. Alternatives 6, 8, and

Refined Preferred Alternative 8 would have a wider median and use guardrail, further lowering the construction costs.

6.3.4.4 Subsection 5D - Beanblossom Valley/ Floodplain

Subsection 5D begins at the northern terminus of Subsection 5C at a point approximately 0.38-mile north of Kinser Pike and traverses north along SR 37/I-69 about 2.4 miles before ending approximately 0.63-mile south of the existing intersection of SR 37/I-69 and Sample Road. This subsection includes the existing Walnut Street partial interchange, which has a southbound exit ramp and bridge and a northbound entrance ramp. An interchange at this location is based upon its listing in the Tier 1 ROD; the interchange is historically the gateway to Bloomington; and there is the potential to reuse the Historic Monroe County Bridge No. 913 as part of a local access road across Beanblossom Valley.

Prior to the release of the DEIS, Monroe County had indicated a preference for a full Walnut Street interchange but has expressed the need for a partial interchange at a minimum. The County also expressed a desire for treatments which highlight this location as a gateway to Bloomington. In letters, memos, participating agency meetings, and in-person discussions, Monroe County noted that this could serve as a second access to Ellettsville and provide for better use of existing infrastructure. The City of Bloomington also indicated a preference for a full Walnut Street interchange which provides for all access movements. The City also joined Monroe County in its support of a unique gateway feature at this location.

In DEIS comments, the Bloomington Township Fire Department expressed preference for a full interchange to allow access to emergency incidents on I-69 and points west in the county accessed by Bottom Road. Greater Bloomington Chamber of Commerce supported the partial interchange to limit environmental and cost impacts. Monroe County and the City of Bloomington support the partial interchange subject to additional local road improvements (extension of Lawson Road) to satisfy concerns regarding alternative access to I-69 for residents of Ellettsville and northwest Monroe County. USDOI, USEPA, and IDEM support the reuse of a partial interchange because it would minimize impacts to wetlands, streams and associated floodplain areas in the Beanblossom Creek area.

Alternative 4

Alternative 4 would use the suburban typical section shown in **Figure 3-7** with three 12-foot wide travel lanes in each direction. There would be a 60-foot wide depressed median with 12-foot wide paved shoulders to the inside of the travel lanes along the median. To the outside of the travel lanes, there are 12-foot wide paved shoulders within the minimum 35-foot wide clear zones. The mainline would be centered on the existing SR 37 alignment.

There would be an overpass for Walnut Street starting at the north end of Historic Monroe County Bridge No. 913 and extending westerly across the existing location of the partial Walnut Street interchange and intersecting with Bottom Road.

Alternative 4 would have an eastern local access road that would extend from north of Bridge No. 913 and parallel SR 37/I-69 north toward the Sample Road interchange, except where it would swing east around the Hoosier Energy facility. Where the east side access road swing starts to turn east around the Hoosier Energy facility, a west side local access starts north and parallels SR 37/I-69 north toward the Sample Road interchange, with the exception of short shift to the west to avoid the Griffith Cemetery.

With Alternative 4, various local roads and driveways would be closed at the I-69 mainline, but connected to the local access roads. Some of these named roads include Bottom Road, North Connaught Road, North Charlie Taylor Lane, Ellis Road, Griffith Cemetery Road, Wylie Road/Showers Road, Stonebelt Drive, Purcell Drive, and Wayport Road.

Alternative 5

Alternative 5 would use the same suburban typical section as described for Alternative 4. In addition, Alternative 5 would have a single point or rural diamond interchange starting from Walnut Street at East Whisnand Road and circling north around the Historic Monroe County Bridge No. 913, then extending westerly across the existing location of the partial Walnut Street interchange and ending at an intersection with Bottom Road on to the west, which would require additional right-of-way. Historic Monroe County Bridge No. 913 would connect to the eastern local access road.

With regards to local access roads, Alternative 5 would have the same general design and location for local access roads across Beanblossom Valley as described in Alternative 4. In addition, the same local roads and driveways would be closed at the I-69 mainline and re-routed to the local access roads like Alternative 4.

Alternative 6

Alternative 6 would use the suburban typical section shown in **Figure 3-8** consisting of three travel lanes in each direction for the mainline. Using the minimal impact criteria, there would be a 36-foot wide median containing 12-foot wide shoulders to the inside of the travel lanes and a center guardrail barrier. To the outside of the travel lanes, there would be 12-foot wide shoulders within the minimum 30-foot wide clear zones. The mainline would be centered on the existing SR 37 alignment in Subsection 5D.

Alternative 6 would have an overpass starting from Walnut Street at East Whisnand Road, circling north around Historic Monroe County Bridge No. 913 and extending west across the existing location of the partial Walnut Street interchange to Bottom Road. Historic Monroe County Bridge No. 913 would be accessed from the eastern local access road. Local access roads would be located on either side of SR 37/I-69 adjacent to the mainline with a grass median separating them from the mainline across Beanblossom Valley. The eastern local access road would extend from Historic Monroe County Bridge No. 913 and then run parallel to the I-69 mainline north toward the Sample Road interchange. The western local access road would extend from West Kinser Pike to Bottom Road and then parallel SR 37/I-69 north toward the Sample Road interchange, with the exception of short shift to the west to avoid the Griffith Cemetery.

Like Alternatives 4 and 5, various local roads and driveways would be closed and re-routed to local access roads.

Alternative 7

Alternative 7 would use the same suburban typical section as described in Alternative 6 through Subsection 5D, centered on the existing SR 37 alignment.

Alternative 7 would make use of the existing partial interchange at Walnut Street with parallel local access roads. Although similar to Alternative 6, these local access roads would be separated from mainline SR 37/I-69 by a barrier. An eastern local access road would extend from Monroe County Bridge No. 913 adjacent to the I-69 mainline north toward the Sample Road interchange. A western local access road would extend from West Kinser Pike to Bottom Road then east to run along SR 37/I-69 to the north toward the Sample Road interchange, with the exception of short shift to the west to avoid the Griffith Cemetery. Like the other previously discussed alternatives, various local roads and driveways would be closed through Subsection 5D and re-routed to local access roads.

Alternative 8

Alternative 8 would use the same suburban typical section as described in Alternative 6 through Subsection 5D, centered on the existing SR 37 alignment.

Alternative 8 would have two options starting from Walnut Street at East Whisnand Road. Alternative 8 (Option A) would have a rural diamond or single point interchange (similar to Alternative 5) to replace the current partial interchange to comply with FHWA guidelines[6] for construction of a fully-directional interchange on new facilities. Alternative 8 (Option B) would retain the existing partial interchange at Walnut Street to minimize impacts to wetlands, streams, floodplains, and construction costs. Both Alternative 8 options have the same design and location of eastern local access roads as Alternative 6, while the western local access road starts across from Connaught Road and does not cross the Beanblossom Creek valley. These roads have a grass median between them and the mainline and generally parallel the existing SR 37 alignment. Alternative 8 would also close local roads and driveways that currently have access to SR 37 and re-route traffic to local access roads, similar to the other alternatives.

Refined Preferred Alternative 8

Refined Preferred Alternative 8 would be the same as Alternative 8 (Option B) with two exceptions: the portion of the eastern local access road from Whisnand Road/Walnut Road north to Connaught Road would be removed; and, the right-of-way was narrowed, where possible, to minimize impacts to resources through Subsection 5D.

Table 6-6 lists the impacts to resources for the alternatives in Subsection 5D.

[6] Access to the Interstate System, Federal Highway Administration, 74 FR 165, August 27, 2009.

Table 6-6: Impacts for Subsection 5D

Alignment Alternatives	Alt. 4	Alt. 5	Alt. 6	Alt. 7	Alt. 8 Option A	Alt. 8 Option B	Refined Preferred Alt. 8
Impacts/Design Criteria							
Costs (2015 dollars)*							
Right-of-Way Costs ($M)**	7.99M	9.10M	6.82M	4.27M	6.14M	5.51M	4.75M
Construction/Design/Utility/ Admin Cost ($M)	84.68M	115.87M	80.04M	68.87M	93.72M	55.90M	45.35M
Total Cost ($M, not including mitigation costs)	92.67M	124.97M	86.86M	73.14M	99.86M	61.41M	50.10M
Right-of-Way (ac)	190.19	218.40	176.73	147.12	176.12	148.44	129.13
Displacements (#)							
Residential	29	31	17	10	17	16	13
Institutional	0	0	0	0	0	0	0
Business	1	1	0	0	0	0	0
Total Displacements	30	32	17	10	17	16	13
Noise Impacts (#)	1	1	2	7	3	3	8
Section 4(f)							
Park	No	No	No	No	No	No	No
Historic	No	No	No	No	No	No	No
Total Wetland (ac)							
Aquatic Bed Wetland	0.20	0.40	0.17	0.00	0.14	0.13	0.02
Emergent Wetland	2.73	4.36	3.63	2.17	3.19	2.31	1.47
Forested Wetland	6.18	8.57	5.76	1.31	4.99	1.55	0.31
Scrub/Shrub Wetland	0.07	0.07	0.09	0.08	0.07	0.07	0.04
Total Wetland Impacts	9.18	13.40	9.65	3.56	8.39	4.06	1.84
Total Streams (lf)							
Ephemeral	13,249	14,553	11,802	10,813	11,979	11,146	9,279
Intermittent	0	0	0	0	0	0	0
Perennial	1,861	2,308	2,198	2,086	2,204	1,932	1,656
Total Stream Impacts	15,110	16,861	14,000	12,899	14,183	13,078	10,935
Total Natural Stream Impacts***	8,351	8,910	6,223	5,701	6,541	6,143	4,197
Stream Relocations (lf)	10,310	11,466	9,635	8,665	9,847	9,155	7,464
Floodplain (ac)	77.04	102.68	87.05	65.96	88.09	61.86	47.77
Karst Features (#)	4	4	3	3	3	3	2
Karst Features (ac)	0.80	0.80	0.20	0.20	0.20	0.20	0.10
Cave Recharge Areas (#)	0	0	0	0	0	0	0
Wellhead Protection Areas (#)	0	0	0	0	0	0	0
Hazardous Material Sites (#)	1	1	1	1	1	1	1
Farmland (ac)	10.1	17.3	11.3	6.7	13.2	2.3	0.6
Managed Land (ac)	0.06	0.18	0.00	0.06	0.01	0.01	0.00
Upland Forest (ac)	56.42	63.11	40.03	32.62	42.53	38.78	26.76
Core Forest (ac)	1.82	2.33	1.53	0.82	1.21	1.32	0.04

** 2015 Dollars, excluding mitigation costs, $M = million dollars, ac = acres, lf = linear feet*

*** Right-of-way costs developed using criteria found in **Appendix D**, Cost Estimation Methodology, and include costs for acreage and improvements required for actual construction, relocation costs, costs for acquiring structures and improvements due to lost access, and administrative fees.*

**** Total Natural Stream Impacts are total streams minus concrete gutters, culverts, dump rock gutters, and roadside ditches.*

Note: All impacts are by preliminary right-of-way, and not necessarily the amount to be acquired, except wetland impacts which are by construction limits.

Impact and Cost Comparison

Alternatives 4 and 5 in Subsection 5D have wider mainlines and local access road setback distances, require the most right-of-way acquisition and displacements, and have the highest impacts to resources shown in **Table 6-6**, with the exception of noise impacts. The noise impacts are reduced in Alternatives 4 and 5 as the increased relocations have removed noise receptors that are impacted under Alternatives 6, 7, 8, and Refined Preferred Alternative 8.

Alternative 5 has the highest right-of-way acquisition, displacements, and the highest impacts to wetlands, streams, floodplains, farmlands, and forests due to the full interchange at Walnut Street. Alternative 4 has the second highest overall impacts to resources and displacements, as it would require additional right-of-way to convert the existing Walnut Street partial interchange into an overpass. In addition, Alternatives 4 and 5 have a larger mainline footprint with parallel local access roads wider grass medians than the minimal impact Alternatives 6, 7, 8, and Refined Preferred Alternative 8. And, while the number of hazardous sites impacted are the same for all alternatives, Alternatives 4 and 5 have the eastern local access road swinging around the Hoosier Energy facility that requires additional right-of-way from this site. Therefore, these alternatives have more potential for hazardous waste impacts within the site when compared to the other minimal impact alternatives. Correspondingly, Alternatives 4 and 5 have higher right-of-way costs at approximately $8.0M and $9.1M, respectively, than the minimal impact alternatives, which range between approximately $4.3M and $6.2M. Construction costs are lowered further for Alternative 8 and Refined Preferred Alternative 8 due to applying an overlay to reuse 2.3 miles of existing SR 37 pavement in each direction; these cost savings are reflected in **Table 6-6**. For further information please refer to **Appendix KK**, *Pavement Recommendations*.

Among the minimal impact alternatives, Refined Preferred Alternative 8 would have the lowest overall resource impacts when compared to Alternatives 6, 7, and 8 (Option A). With the partial interchange like Alternative 8 (Option B), as well as the removal of a portion of the eastern local access road, Refined Preferred Alternative 8 would save over six acres of wetland impacts, 40 acres of floodplain impacts, 15 acres of upland forest impacts, and 3,000 linear feet of stream impacts when compared to Alternative 8 (Option A). In addition, there would be four less residential displacements and approximately 47 acres less of right-of-way acquisition with Refined Preferred Alternative 8.

Design Comparison for Walnut Street and Local Access Roads

Alternative 4

Alternative 4 would only have an overpass at Walnut Street, which is not supported by the City of Bloomington or Monroe County. An overpass would not provide an access point from the interstate to divert traffic going downtown from traveling farther south on I-69. This traffic would need to use the SR 46 and SR 48/3rd Street interchanges instead. Conversion of the existing Walnut Street interchange to an overpass would require additional right-of-way and increase impacts to resources above those required in alternatives that reuse the existing partial interchange (Alternative 7, Alternative 8 Option B, and Refined Preferred Alternative 8).

Alternative 4 and 5 provide separation between the local access roads and the mainline with grass medians.

Alternative 5

Alternative 5 would provide a full interchange, which is desired by the City of Bloomington and Monroe County because of the access provided to Bottom Road west of the mainline at this interchange. Alternative 5 would also comply with FHWA guidelines for construction of a fully-directional interchange on new facilities. However, as mentioned above, Alternative 5 would have the highest overall costs and greatest impacts to resources in the area due to the full interchange.

Alternative 4 and 5 provide separation between the local access roads and the mainline with grass medians.

Alternative 6

Alternative 6 would replace the existing partial interchange at Walnut Street with an overpass and would also not have access or an overpass at Kinser Pike (discussed in **Section 6.3.4.3**, *Subsection 5C*). Access would be provided via a new local access road connection (upgrades to West Kinser Pike/Bottom Road) from Kinser Pike north to the Sample Road interchange.

Alternative 6 provides separation between the local access roads and the mainline with grass medians, with the exception of a concrete barrier located at Hoosier Energy.

Alternative 6 is not supported by the City of Bloomington or Monroe County, as it does not provide direct access to I-69 at Walnut Street. In addition, an overpass would not provide an access point to the interstate to divert traffic going downtown from traveling farther south on I-69. That traffic would need to use the SR 46 and SR 48/3rd Street interchanges to access downtown Bloomington instead. Conversion of the existing Walnut Street interchange to an overpass would require additional right-of-way and increased impacts to wetlands, streams, farmland, and upland forest beyond those required for reuse of the existing partial interchange. These impacts are similar or only slightly less than those required to provide a full interchange in Alternative 8 (Option A).

Alternative 7

Alternative 7 would provide an overpass at Kinser Pike (discussed in **Section 6.3.4.3**, *Subsection 5C*) and retain the use of existing Walnut Street partial interchange. Alternative 7 would use existing INDOT right-of-way already located at this partial interchange, and have a narrower profile across Beanblossom Valley due to a closer alignment of local access roads adjacent to SR 37/I-69 through the use of a concrete barrier to separate local access roads from the I-69 mainline. Alternative 7 has lowest right-of-way costs and displacements. In addition, it has the second lowest stream and wetland impacts, and floodplain impacts. It partially meets the Monroe County and the City of Bloomington desire for an interchange at this location because it would divert traffic to the downtown area and away from other interchanges such as SR 46, resulting in better traffic distribution. Approval was received from FHWA in February, 2013, to allow the

use of the existing partial interchange at Walnut Street based on the information presented in **Appendix RR**, *Walnut Street Interchange Selection Report.* The traffic volumes at this location did not support the need for a fully directional interchange, and it reduced impacts to wetlands, streams, and floodplains located in the vicinity that would be impacted with construction of a full interchange.

Alternative 7 has local access roads that are immediately adjacent to the mainline, separated by a continuous concrete barrier wall, from Walnut Street to Chambers Pike on the east side and from Walnut Street to Sample Road on the west side. While this reduces resource impacts, it introduces engineering and access issues not present in the other alternatives. These issues include headlight glare from opposing traffic; restricted turning radii at residential and commercial driveways throughout the access road length; reduced width for snow storage; and, reduced maneuverability around accident locations on the local access road during emergency situations. Since the wall must be a concrete barrier, it introduces an urban feel into a rural area.

Alternative 8

Alternative 8 would provide an overpass at Kinser Pike and include either a full single-point interchange (Option A) or retain the use of existing Walnut Street partial interchange (Option B). Either interchange option would result in reducing traffic volumes on the SR 46 interchange. Walnut Street has historically been the northern entrance to Bloomington and Indiana University, and the one location for requested treatments as a gateway to Bloomington from the community. Alternatives 8 has the same local access roads and separation as Alternative 6.

The full interchange in Alternative 8 (Option A) has greater cost, right-of-way acquisition, displacements and impacts to natural resources than Alternative 7, Alternative 8 (Option B), and Refined Preferred Alternative 8. However, it would comply with FHWA policies for construction of a fully directional interchange at new facilities. In addition, it supports local transportation plans, and would divert traffic to the downtown area away from other interchanges such as SR 46 and SR 48/3rd Street.

The partial interchange in Alternative 8 (Option B) would use existing INDOT right-of-way; however, it would have a wider profile across Beanblossom Valley than Alternative 7. It has a grass median instead of a barrier between the local access roads and SR 37/I-69 mainline traffic. Alternative 8 (Option B) has the second lowest construction costs and displacements of all alternatives. In addition, it reduces impacts to wetlands, streams, and floodplains when compared to the full interchange option. It also saves over $37 million in construction costs, compared to the full interchange in Option A.

Refined Preferred Alternative 8

Refined Preferred Alternative 8 would be the same as Alternative 8 (Option B) with two exceptions: the portion of the eastern local access road from Whisnand Road/Walnut Road north to Connaught Road would be removed; and, the right-of-way was narrowed, where possible, to minimize impacts to resources through Subsection 5D. The removal of a portion of the eastern local access road and use of the existing partial interchange has reduced overall resource impacts

and costs as described previously. **Appendix RR**, *Walnut Street Interchange Selection Report* summarizes DEIS comments received in regards to this interchange. The use of the partial interchange is supported by the Greater Bloomington Chamber of Commerce to limit environmental and cost impacts. Monroe County and the City of Bloomington support the partial interchange subject to additional local road improvements (extension of Lawson Road) to satisfy concerns regarding alternative access to I-69 for residents of Ellettsville and northwest Monroe County. USDOI, USEPA, and IDEM support the reuse of a partial interchange because it would minimize impacts to wetlands, streams and associated floodplain areas in the Beanblossom Creek area.

6.3.4.5 Subsection 5E - Simpson Chapel Development Area

Subsection 5E begins at the northern terminus of Subsection 5D at a point approximately 0.63-mile south of the existing intersection of SR 37 and Sample Road (near the North Wayport Road intersection) and proceeds north along SR 37 for approximately 5.9 miles, ending at the Monroe/Morgan County line. This subsection includes the intersections of Sample Road, Chambers Pike, Bryant's Creek Road, and Old SR 37. The Morgan-Monroe State Forest is partially located in Subsection 5E, along with scattered residential and business development along the existing roadway.

Alternative 4

Through most of Subsection 5E, Alternative 4 would use the rural typical section depicted in **Figure 3-7**, which would have two 12-foot wide travel lanes, separated by an 84-foot wide grass median with 6-foot wide shoulders to the inside of the travel lanes. To the outside of the travel lanes would be a 12-foot wide shoulder within a 35-foot wide clear zone to each side. The mainline for Alternative 4 would shift to the west from Sample Road north to the vicinity of Chambers Pike to avoid businesses and a hazardous material site located on the east side of the mainline, and then would shift back to be centered on the existing SR 37 alignment to the Morgan/Monroe county line. From Chambers Pike to Bryant's Creek Road, there would be an additional truck climbing lane in each direction due to the terrain.

Alternative 4 would have a rural diamond interchange at Sample Road, and an overpass at Chambers Pike. New right-of-way would be acquired on the west side to construct the I-69 mainline southbound travel lanes. On the east side, the existing SR 37 northbound lanes would be converted to the eastern local access road, separated from the I-69 mainline by a grass median north to Chambers Pike. Local access roads would be constructed to re-connect and provide access to local business and residential development along the mainline. Local roads such as Duxberry Drive and Fox Hollow Road would be closed and re-routed to the eastern local access road. Sparks Lane on the east side of the mainline would be closed with Alternative 4, with no connections to a local access road. The access at Bryant's Creek Road would also be closed on the east side of the roadway, and properties that are landlocked on the east side of the roadway would be acquired.

Local roads would be closed on the west side of the mainline and connected to a local access road to provide access generally parallel to SR 37/I-69. Some of the local roads that would be

closed at their intersections with SR 37/I-69 are Simpson Chapel Road, Lee Paul Road, Norm Anderson Road/North Crossover Road, Sylvan Lane, and Burma Road.

Alternative 5

In Subsection 5E, Alternative 5 is the similar to Alternative 4, with a few minor differences in right-of-way due to the construction cut/fill limits.

Alternative 6

Alternative 6 would use the rural typical section shown in **Figure 3-8** through most of Subsection 5E. There would be two 12-foot wide travel lanes in each direction from Sample Road to the Morgan/Monroe county line, separated by a 60-foot wide grass median with 4-foot wide shoulders to the inside of the travel lanes. To the outside of the mainline, there would be a 12-foot wide shoulder within a 30-foot wide clear zone to each side. Where needed, there would be an additional 12-foot wide truck climbing lane to due to the grade.

At Sample Road, Alternative 6 would have a folded urban interchange, with no ramp in the southwest quadrant. In addition, there would be an overpass at Chambers Pike, and access would be closed at Bryant's Creek Road.

Local access roads would be constructed to re-connect and provide access to local business and residential development along the mainline. Alternative 6 would reuse both northbound and southbound lanes of the SR 37 roadway by using the northbound SR 37 lanes as the east side access road. Alternative 6 would convert the existing SR 37 southbound lanes to become the northbound travel lanes; new southbound travel lanes would be constructed to the west. The east side local access road would be separated from the mainline by a grass median between Sample Road and Chambers Pike. At Sparks Lane, the access would be closed to SR 37/I-69, but a local access road would be constructed to provide a connection from Sparks Lane to Chambers Pike. At Bryant's Creek, access would be closed on the east side of the mainline, and landlocked properties would be acquired.

On the west side of the mainline, access would be closed at various intersections of local roads with SR 37/I-69. However, most of these roads would be reconnected via local access roads similar to Alternatives 4 and 5.

Alternative 7

Alternative 7 would use the same rural typical section as described for Alternative 6 (see **Figure 3-8**), and would use the existing SR 37 travel lanes for the I-69 mainline. Alternative 7 requires reconstructing the mainline to change the current SR 37 grade of 5% to 4%, and would not reuse the existing SR 37 pavement.

Alternative 7 would have an medium diamond (urban) interchange at Sample Road. At Chambers Pike, access would be closed and there would be no overpass. Local access roads would be similar to Alternatives 4, 5, and 6 but with Alternative 7, an overpass would connect Bryant's Creek Road to Turkey Track Road on the west side of I-69. Portions of the west side

local access road, and all of the east side local access road, would be separated from the mainline with a concrete barrier.

Alternative 8

Alternative 8 is the same as Alternative 6 through Subsection 5E, with a few minor differences in right-of-way due to the construction cut/fill limits. The only other difference is that the west side access road at Simpson Chapel Road would have a free flow connection with Alternative 6, and would have a stop condition with Alternative 8.

Refined Preferred Alternative 8

Refined Preferred Alternative 8 is the same as Alternative 8 through Subsection 5E, except it includes 12-foot wide shoulders on the Chambers Pike overpass to meet INDOT sight-distance criteria and, the right-of-way was narrowed, where possible, to minimize impacts.

Table 6-7 summarizes the impacts for Subsection 5E.

Table 6-7: Impacts for Subsection 5E

Alignment Alternatives	Alternative 4	Alternative 5	Alternative 6	Alternative 7	Alternative 8	Refined Preferred Alternative 8
Impacts/Design Criteria						
Costs (2015 dollars)*						
Right-of-Way Costs ($M)**	28.19M	27.00M	18.45M	12.92M	17.74M	14.01M
Construction/Design/Utility/ Admin Cost ($M)	110.64M	110.24M	92.21M	88.44M	78.57M	81.60M
Total Cost ($M, not including mitigation costs)	138.83M	137.24M	110.66M	101.36M	96.31M	95.61M
Right-of-Way (ac)	490.66	486.94	370.52	338.33	366.94	364.55
Displacements (#)						
Residential	48	49	36	23	36	28
Institutional	1	1	0	0	0	0
Business	13	13	10	5	10	8
Total Displacements	62	63	46	28	46	36
Noise Impacts (#)	19	15	27	34	24	33
Section 4(f)						
Park	No	No	No	No	No	No
Historic	No	No	No	No	No	No
Total Wetland (ac)***						
Aquatic Bed Wetland	0.00	0.00	0.00	0.00	0.00	0.00
Emergent Wetland	0.14	0.14	0.14	0.09	0.14	0.14
Forested Wetland	0.32	0.32	0.00	0.22	0.21	0.21
Scrub/Shrub Wetland	0.88	0.88	0.88	0.88	0.88	0.88
Total Wetland Impacts	1.34	1.34	1.02	1.19	1.23	1.23
Total Streams (lf)***						
Ephemeral	29,326	29,171	24,376	23,020	24,255	23,573
Intermittent	9,678	9,632	7,515	8,188	7,518	7,443
Perennial	480	534	455	639	447	447
Total Stream Impacts	39,484	39,337	32,346	31,847	32,220	31,463
Total Natural Stream Impacts****	22,475	22,329	15,425	14,961	15,244	14,487
Stream Relocations (lf)***	28,243	28,095	21,033	20,963	21,092	20,570
Floodplain (ac)	6.61	6.64	5.90	6.94	5.88	5.88
Karst Features (#)	38	38	28	27	28	29
Karst Features (ac)	36.20	35.50	25.60	20.40	25.30	25.90
Cave Recharge Areas (#)	0	0	0	0	0	0
Wellhead Protection Areas (#)	0	0	0	0	0	0
Hazardous Material Sites (#)	1	1	1	1	1	1
Farmland (ac)	16.6	16.3	7.1	8.6	7.1	7.1
Managed Land (ac)	15.90	13.95	2.68	0.36	1.55	1.55
Upland Forest (ac)***	187.48	185.13	111.85	102.16	110.49	107.49
Core Forest (ac)	59.14	57.85	32.20	31.47	31.44	29.64

** 2015 Dollars, excluding mitigation costs, $M = million dollars, ac = acres, lf = linear feet*

*** Right-of-way costs developed using criteria found in **Appendix D**, Cost Estimation Methodology, and include costs for acreage and improvements required for actual construction, relocation costs, costs for acquiring structures and improvements due to lost access, and administrative fees.*

**** Calculations include bifurcation area in Subsection 5E.*

***** Total Natural Stream Impacts are total streams minus concrete gutters, culverts, dump rock gutters, and roadside ditches.*

Note: All impacts are by preliminary right-of-way, and not necessarily the amount to be acquired, except wetland impacts which are by construction limits.

Impact and Cost Comparison

Because of the shift off of the current SR 37 alignment, the rural diamond interchange, and the larger typical section footprint, Alternatives 4 and 5 have the highest costs for right-of-way and construction. In addition, Alternatives 4 and 5 would have the highest impacts to most resources, including wetlands, streams, farmlands, managed lands, upland forest, and core forests. Except for minor differences in right-of-way from the construction cut/fill limits, the impacts to resources are almost the same when comparing Alternative 4 and 5 to each other. Alternatives 4 and 5 would have substantially greater impacts and higher costs than Alternative 6, 7, 8, and Refined Preferred Alternative 8, which incorporate the minimal impact design criteria. Construction costs are reduced further for Alternative 8 and Refined Preferred Alternative 8 due to applying an overlay to reuse 3.3 miles of existing SR 37 southbound pavement and 5.9 miles of existing SR 37 northbound pavement; these cost savings are reflected in **Table 6-7.** For further information please refer to **Appendix KK**, *Pavement Recommendations*.

Due to the use of the concrete barrier median between the local access road and mainline and no grade separation at Chambers Pike, Alternative 7 would require less right-of-way acquisition than the other minimal impact alternatives and would have a lower number of displacements. Correspondingly, it would have a lower right-of-way acquisition cost when compared to Alternatives 6, 8, and Refined Preferred Alternative 8. Alternative 7 would also have slightly more impacts to floodplains (about one acre) and farmlands (approximately 1.5 acres) than the other minimal impact alternatives due to the overpass at Bryant's Creek Road, but would have lower impacts to karst features and upland forests.

Alternatives 6, 8, and Refined Preferred Alternative 8 are similar for most impacts due to only minor differences in right-of-way acquisition and slightly different local access road configurations. Alternative 7 and Refined Preferred Alternative 8 have the lowest right-of-way cost ($13M and $14M respectively), and Alternative 6 has the highest of the minimal impact alternatives at over $18M. Alternatives 6 and 8 would have the highest displacements (at 46), while Refined Preferred Alternative 8 would have ten less (at 36). Alternative 7 would have the highest number of receptors that would be impacted by noise because it would not displace these receptors (homes).

Design Comparison

Sample Road/Chambers Pike Interchange Comparison

An interchange at this location is based upon the listing in the Tier 1 ROD, topographic and cemetery avoidance constraints, and the ability to provide access to a cluster of churches, residences, and commercial parcels between Beanblossom Valley and the Morgan-Monroe State Forest. An interchange at the I-69 and Sample Road intersection was included in all except one of the preliminary alternatives. Year 2035 traffic forecasts showed that interchanges at both Sample Road and Chambers Pike are not warranted (the combined total is less than 10,000 vehicles per day [VPD]) and an interchange at Sample Road would serve twice the traffic of an interchange at Chambers Pike (see **Section 5.6**, *Traffic Impacts*).

Therefore, an interchange at Sample Road is proposed for all six build alternatives, and an overpass at Chambers Pike is being advanced for Alternatives 4, 5, 6, 8, and the Refined Preferred Alternative 8. The interchange construction would include additional lanes and shoulders along I-69, a bridge structure, approach ramps, and additional right-of-way. Alternatives 4, 5, and 7 would have a diamond interchange instead of the single-fold interchange while Alternatives 6, 8, and the Refined Preferred Alternative 8 consist of a single-fold interchange with a loop in the northwest quadrant. This design was allowed because mainline traffic would be less likely to experience delays from merging with traffic entering at a reduced speed than by traffic decelerating to exit or traffic from off-ramps backing up onto the mainline. The inclusion of folded approach ramps reduces the footprint of the interchange and would result in fewer impacts to a deep valley in the southwest quadrant.

If both the Chambers Pike and Sample Road interchange locations were proposed, it would not comply with the FHWA three-mile minimum interstate interchange spacing for rural areas. Monroe County originally stated support for interchanges at both Sample Road and Chambers Pike; however, the County stated a preference for the Sample Road interchange if only one interchange was to be built. It remains supportive of the Sample Road interchange with an overpass at Chambers Pike Overpass.

Chambers Pike/Bryant's Creek Road Overpass Comparison

As previously mentioned, all the build alternatives except Alternative 7 would provide an overpass at Chambers Pike, and close access at Bryant's Creek Road. Alternative 7 would do the opposite, by closing Chambers Pike, and providing an overpass at Bryant's Creek Road. Based on requests from utilities (Hoosier Energy), emergency service providers (EMS, fire, police), and local residents, the Chambers Pike overpass was determined to be necessary to maintain connectivity and traffic patterns in the area and to provide essential access from one side to the other of the mainline. In addition, Chambers Pike carries more traffic than Bryant's Creek Road, making it easier for traffic to flow through the area, rather than be re-routed via access roads to another overpass at Bryant's Creek Road.

Mainline and Local Access Roads

Alternatives 4 and 5 would shift the mainline to the west, and reuse the existing northbound SR 37 travel lanes as the east side access road between Sample Road and Chambers Pike. However, Alternatives 4 and 5 would reconstruct the mainline to change the current grade from 5% to 4% in the bifurcated area, which would not allow for the reuse of existing pavement for the mainline. In addition, Alternatives 4 and 5 would have a wider footprint with the mainline and access roads because they do not incorporate the minimal impact design criteria used in Alternatives 6, 7, 8, and Refined Preferred Alternative 8. All six of the alternatives provide local access roads from Sample Road to either Chambers Pike on the east side or Burma Road on the west side.

Alternative 7 requires reconstructing the mainline to change the current SR 37 grade of 5% to 4%, and would not reuse the existing pavement. Alternative 7 in Subsection 5E would include several design features (described below) that, while allowing for narrower typical section, could

affect the setting and feel of the area, have safety ramifications, and access restriction. The use of a concrete median barrier between the SR 37/I-69 mainline and the local access roads would introduce a visual component that may be viewed more in keeping with an urban setting than the rural/transition present today. The placement of the mainline and local access road travel lanes in close proximity to each other may affect driving speed, lack of snow storage space, and emergency access (due the length of the barrier walls). Temporary lanes would extend beyond this narrow typical section during construction to meet maintenance of traffic requirements that have dictated the need for two lanes of traffic in each direction through Subsection 5E.

Alternatives 6, 8, and the Refined Preferred Alternative 8 would not change the grade of the road and reuse both northbound and southbound lanes of the SR 37 roadway by using the northbound SR 37 lanes as the east side access road. These alternatives convert the existing SR 37 southbound lanes to become the northbound travel lanes; new southbound travel lanes would be constructed to the west. Alternatives 6, 8, and the Refined Preferred Alternative 8 provide separation between the local access roads and the mainline with grass medians with the exception of a concrete barrier located at Poynter Sheet Metal.

The shift included in Alternatives 6, 8, and Refined Preferred Alternative 8 allows for the construction of the new southbound I-69 lanes without having to encroach on existing travel patterns. Rehabilitation of the existing southbound SR 37 pavement (new I-69 northbound lanes) may allow for the pavement treatment to be constructed in stages, such that constructing temporary pavement (travel lanes) is unnecessary. In addition, Alternatives 6, 8 and Refined Preferred Alternative 8 use the existing SR 37 grade of 5%, instead of reconstructing the mainline to a 4% grade, as Alternative 7 does.

6.3.4.6 Subsection 5F- Morgan County

Subsection 5F begins at the northern terminus of Subsection 5E at the Monroe/Morgan County line and follows SR 37 approximately for 4.6 miles north, ending at the southern end of the bridge carrying SR 37 over Indian Creek. This subsection includes the major intersections of Paragon Road/Pine Boulevard and Liberty Church Road. All of the alternatives would have two mainline travel lanes in each direction, centered on the existing SR 37 alignment.

Alternative 4

Alternative 4 would use the rural typical section depicted in **Figure 3-7**, which would have two 12-foot wide travel lanes, separated by an 84-foot wide grass median with 6-foot wide shoulders to the inside of the travel lanes. To the outside of the travel lanes would be a 12-foot wide shoulder within a 35-foot wide clear zone on each side.

Alternative 4 has a rural diamond interchange at Paragon Road/Pine Boulevard, and an overpass at Liberty Church Road.

Access at Cooksey Lane/Petro Road on the east side of the mainline would be closed at the Morgan/Monroe county line. No new access would be provided at this location, and the landlocked properties would be acquired. On the west side of the mainline, Turkey Track Road

would be closed at the mainline, but access would be provided via a local access road that extends Turkey Track Road north to the Paragon Road/Pine Boulevard interchange. From Paragon Road north, local access roads would be constructed parallel to both sides of the mainline, with the west side local access road terminating at Legendary Hills Drive, and the east side local access road terminating at Old SR 37 by the Hillview Motel. The east side local access road would swing east to avoid the Stitt-Maxwell cemetery. Local access roads would provide access for two parcels north and west of Brehob Lane to Old SR 37 and for four parcels north of the Hillview Motel to Old SR 37.

Alternative 5

With Alternative 5, the mainline would use the same rural typical section described in Alternative 4, and would have the same local access road configuration. However, Alternative 5 would have an overpass at Paragon Road/Pine Boulevard, and a rural diamond interchange at Liberty Church Road.

Alternative 6

Alternative 6 would use the rural typical section shown in **Figure 3-8** through Subsection 5F, which incorporates the minimal impact design criteria. There would be two 12-foot wide travel lanes in each direction, separated by a 60-foot wide grass median with 4-foot wide shoulders to the inside of the travel lanes. To the outside of the mainline, there would be a 12-foot wide shoulder within a 30-foot wide clear zone on each side.

Alternative 6 would not have an overpass at Paragon Road/Pine Boulevard. Access would be maintained in this area through the use of local access roads on either side of the mainline. At Liberty Church Road, there would be an urban diamond interchange centered on the existing intersection with SR 37.

Similar to Alternatives 4 and 5, access for Cooksey Lane/Petro Road would be closed at SR 37, and landlocked properties would be acquired rather than having an local access road constructed. Also, Alternative 6 would provide access via a new local access road connecting to Turkey Track Road north to the Liberty Church Road interchange. New local access roads would be constructed on both sides of the mainline from Paragon Road/Pine Boulevard and extend north to connect to the Liberty Church Road interchange. The local access road on the west side would continue past the Liberty Church Road interchange to Legendary Hills Drive, while the east side local access would continue beyond the Liberty Church Road interchange to provide access to Old SR 37 by the Hillview Motel. The east side local access road would swing east to avoid the Stitt-Maxwell cemetery. Local service roads would provide access for two parcels north and west of Brehob Lane to Old SR 37 and for four parcels north of the Hillview Motel to Old SR 37.

Alternative 7

Alternative 7 would have the same rural typical section as described for Alternative 6, and the same local access road and local service road configuration. At Liberty Church Road, Alternative

7 would have a folded diamond interchange shifted approximately 650 feet north of the existing Liberty Church Road intersection with SR 37.

Alternative 8

Alternative 8 would be the same as Alternative 6 with an urban diamond interchange centered on the existing Liberty Church Road intersection with SR 37). However, a cost savings is recognized by reuse of pavement.

Refined Preferred Alternative 8

With one exception, Refined Preferred Alternative 8 is the same as Alternative 8 in Subsection 5F. This exception is that the interchange at Liberty Church Road was shifted approximately 700 feet north of the existing Liberty Church Road intersection with SR 37 to minimize impacts to floodplains associated with Little Indian Creek in the southwest quadrant of this intersection.

Table 6-8 presents the impacts for Subsection 5F by alternative.

Table 6-8: Impacts for Subsection 5F

Alignment Alternatives	Alternative 4	Alternative 5	Alternative 6	Alternative 7	Alternative 8	Refined Preferred Alternative 8
Impacts/Design Criteria						
Costs (2015 dollars)*						
Right-of-Way Costs ($M)**	15.23M	14.59M	10.77M	9.62M	10.57M	8.06M
Construction/Design/Utility/ Admin Cost ($M)	105.61M	116.70M	78.11M	77.96M	65.94M	62.97M
Total Cost ($M, not including mitigation costs)	120.84M	131.30M	88.88M	87.58M	76.51M	71.03M
Right-of-Way (ac)	364.40	360.63	254.36	262.12	257.31	257.00
Displacements (#)						
Residential	43	36	27	22	26	22
Institutional	1	1	0	0	0	0
Business	6	4	6	6	6	2
Total Displacements	50	41	33	28	32	24
Noise Impacts (#)	16	34	28	28	30	45
Section 4(f)						
Park	No	No	No	No	No	No
Historic	No	No	No	No	No	No
Total Wetland (ac)						
Aquatic Bed Wetland	0.00	0.00	0.00	0.00	0.00	0.00
Emergent Wetland	0.71	0.64	0.16	0.16	0.14	0.16
Forested Wetland	0.00	0.00	0.00	0.00	0.00	0.00
Scrub/Shrub Wetland	0.37	0.38	0.12	0.15	0.12	0.12
Total Wetland Impacts	1.08	1.02	0.28	0.31	0.26	0.28
Total Streams (lf)						
Ephemeral	22,329	18,755	15,704	15,803	15,758	15,466
Intermittent	4,374	4,198	4,664	3,568	4,671	3,509
Perennial	1,277	1,712	1,210	1,126	1,180	925
Total Stream Impacts	27,980	24,665	21,578	20,497	21,609	19,900
Total Natural Stream Impacts***	12,149	9,119	6,225	5,131	6,256	4,526
Stream Relocations (lf)	19,677	14,649	15,183	13,671	15,231	13,418
Floodplain (ac)	31.86	36.18	34.03	26.79	34.55	21.50
Karst Features (#)	0	0	0	0	0	0
Karst Features (ac)	0.00	0.00	0.00	0.00	0.00	0.00
Cave Recharge Areas (#)	0	0	0	0	0	0
Wellhead Protection Areas (#)	0	0	0	0	0	0
Hazardous Material Sites (#)	1	1	1	1	1	1
Farmland (ac)	52.4	88.5	38.7	47.4	38.8	44.3
Managed Land (ac)	7.40	7.77	2.49	2.42	2.48	2.48
Upland Forest (ac)**	99.93	64.84	42.79	44.55	45.09	40.45
Core Forest (ac)	21.54	11.84	9.24	9.32	9.30	9.25

** 2015 Dollars, excluding mitigation costs, $M = million dollars, ac = acres, lf = linear feet.*

*** Right-of-way costs developed using criteria found in **Appendix D**, Cost Estimation Methodology, and include costs for acreage and improvements required for actual construction, relocation costs, costs for acquiring structures and improvements due to lost access, and administrative fees.*

**** Total Natural Stream Impacts are total streams minus concrete gutters, culverts, dump rock gutters, and roadside ditches.*

Note: All impacts are by preliminary right-of-way, and not necessarily the amount to be acquired, except wetland impacts which are by construction limits.

Impact and Cost Comparison

Due to the larger mainline footprint and the interchange/overpass combination at either Paragon Boulevard or Liberty Church Road (as described earlier), Alternatives 4 and 5 would result in greater impacts to resources due to the additional right-of-way needed when compared to minimal impact Alternatives 6, 7, 8, and Refined Preferred Alternative 8. Consequently, the right-of-way costs for Alternatives 4 and 5 would also be approximately $4M to $7M higher. Alternative 4 would have the highest number of total displacements at 50, while Alternative 5 would have 41. The other minimal impact alternatives would have less displacements, ranging from 24 with Refined Preferred Alternative 8 to 33 with Alternative 6. Consequently, Refined Preferred Alternative 8 would have the highest number of impacted noise receptors, as receptors are not being displaced as they would be with Alternatives 4 and 5.

Construction costs are lowered further for Alternative 8 and Refined Preferred Alternative 8 due to applying an overlay to reuse 4.6 miles of existing SR 37 pavement in each direction; these cost savings are reflected in **Table 6-8.** For further information please refer to **Appendix KK**, *Pavement Recommendations*.

Wetland impacts are also three times greater when comparing Alternatives 4 and 5 to the minimal impact alternatives. Impacts to streams, floodplains, farmland, managed land, upland forests and core forests are generally higher with Alternatives 4 and 5.

Although they use different interchange types, Alternative 7 and Refined Preferred Alternative 8 would shift the Liberty Church Road interchange slightly north, avoiding streams and floodplains located in the southwest quadrant of the existing intersection between Liberty Church Road and SR 37. Due to this, the impacts to these resources are considerably less when compared to Alternatives 6 and 8. However, farmland impacts are increased with Alternative 7 and Refined Preferred Alternative 8, by approximately 6 to 9 acres. In addition, displacements are lower with Alternative 7 and Refined Preferred Alternative 8, resulting in lower right-of-way acquisition costs, even though Alternatives 6 and 8 would require the same or less right-of-way for construction. Wetland impacts are similar among all the minimal impact alternatives, ranging from 0.26-acre with Alternative 8 to 0.31-acre with Alternative 7. Overall, Refined Preferred Alternative 8 has the least amount of impacts with regards to displacements, stream impacts, floodplains, and upland forests when compared to the other minimal impact alternatives.

Design Comparison

Paragon Road/Liberty Church Road Interchange Comparison

A potential interchange at Paragon Road/Pine Boulevard was included in Tier 1 and was retained as an access to the nearby Morgan-Monroe State Forest. An alternative interchange location at Liberty Church Road was included based upon support of Morgan County and the City of Martinsville, as well as local economic development, utilities, and city expansion plans.

The City of Martinsville has extended utilities and is in the process of annexing areas east of existing SR 37 including Jordan Road to the east and Liberty Loop Road to the south. The area

west of SR 37 at Liberty Church Road/Godsey Road has limited development potential with the presence of floodplains and is a potential location for a City of Martinsville municipal well field.

The Indiana Department of Natural Resources (IDNR) has indicated that interchange access at the Liberty Church Road location was preferable to Paragon Road due to the reduced impacts to the Morgan-Monroe State Forest. Through this portion of I-69, all Section 5 Alternatives would affect Morgan-Monroe State Forest. Alternatives 4, 5, 6, 7, 8, and Refined Preferred Alternative 8 would require acquisition of managed lands for right-of-way. Additional information about Morgan-Monroe State Forest is provided in **Section 5.22**, *Managed Lands and Natural Areas*.

Year 2035 traffic forecasts showed that the Paragon Road/Pine Boulevard interchange would serve about 1,000 vehicles per day (vpd) less than the Liberty Church Road/Godsey Road interchange (see **Section 5.6**, *Traffic Impacts*). When combined with the input from the ELUP, IDNR, City of Martinsville, and Morgan County, the Paragon Road/Pine Boulevard interchange was only included in Alternative 4 while the Liberty Church Road/Godsey Road interchange was included in Alternatives 5, 6, 7, 8, and Refined Preferred Alternative 8. The interchange construction for either location would include additional lanes and shoulders along existing SR 37; a bridge structure, approach ramps, and additional right-of-way.

Based on the future proposed development in the Liberty Church Road area and the support of Martinsville and Morgan County, Alternative 4 would be inconsistent with the community/economic development goals of Martinsville and Morgan County because it does not provide an interchange at the Liberty Church Road area.

Alternatives 5, 6, 7, 8, and Refined Preferred Alternative 8 provide an interchange at Liberty Church Road, making them consistent with future growth and development plans in the area. Alternative 5 would have a rural diamond interchange shifted north of the existing Liberty Church Road/Godsey Road intersection with SR 37. Alternatives 6 and 8 would have a medium (urban) diamond interchange centered on the existing Liberty Church Road/Godsey Road intersection. Alternative 7 would have a folded diamond interchange, and Refined Preferred Alternative 8 would have an urban diamond interchange, both shifted slightly north of the existing Liberty Church Road/Godsey Road intersection. This shift of the interchange location slightly north (approximately 700 feet) of the existing intersection would minimize floodplain and stream impacts.

6.3.4.7 Summary of Alternatives

A summary of the overall impacts by Alternative is shown in **Table 6-9**.

Table 6-9: Alternatives Impact Summary of all Subsections

Alignment Alternatives	Alt. 4	Alt. 5	Alt. 6	Alt. 7	Alt. 8 Option A	Alt. 8 Option B	Refined Preferred Alt. 8
Impacts/Design Criteria							
Costs (2015 dollars)*							
Right-of-Way Costs ($M)**	166.97M	145.56M	60.49M	55.86M	65.07M	64.44M	50.21M
Construction/Design/Utility/ Admin Cost ($M)	545.62M	575.44M	395.84M	392.21M	371.32M	333.50M	327.44M
Total Cost ($M, not including mitigation costs)	712.59M	720.99M	456.33M	448.07M	436.41M	397.94M	377.65M
Right-of-Way (ac)	1768.10	1729.38	1320.15	1291.70	1346.05	1318.37	1299.65
Displacements (#)							
Residential	249	235	138	123	151	150	119
Institutional	3	3	1	1	1	1	1
Business	77	71	33	27	32	32	17
Total Displacements	329	309	172	151	184	183	137
Noise Impacts (#)	296	303	476	452	430	430	418
Section 4(f)							
Park	No	*de minimis*	No	*de minimis*	No	No	*de minimis*
Historic	Yes (Adverse)	Yes (Adverse)	*de minimis*	No (No Adverse)	*de minimis*	*de minimis*	*de minimis*
Total Wetland (ac)***							
Aquatic Bed Wetland	0.20	0.40	0.17	0.00	0.14	0.13	0.02
Emergent Wetland	3.61	5.20	3.94	2.43	3.48	2.60	1.78
Forested Wetland	6.56	9.12	5.76	1.64	5.27	1.83	0.59
Scrub/Shrub Wetland	1.33	1.34	1.09	1.11	1.07	1.07	1.04
Total Wetland Impacts	11.70	16.06	10.96	5.18	9.96	5.63	3.43
Total Streams (lf)***							
Ephemeral	87,432	83,795	68,414	66,804	69,506	68,673	65,692
Intermittent	14,984	14,816	12,915	12,636	13,067	13,067	11,862
Perennial	4,029	4,554	3,863	3,851	3,831	3,559	3,028
Total Stream Impacts	106,445	103,165	85,192	83,291	86,404	85,299	80,582
Total Natural Stream Impacts****	51,840	47,636	30,396	28,858	31,376	30,978	26,389
Stream Relocations (lf)***	73,463	68,675	55,557	53,360	56,480	55,788	51,629
Floodplain (ac)	125.55	145.50	126.98	99.69	128.52	102.29	75.15
Karst Features (#)	144	138	109	113	110	110	110
Karst Features (ac)	439.70	430.20	338.50	340.30	343.70	343.70	347.30
Cave Recharge Areas (#)	1	1	1	1	1	1	1
Wellhead Protection Areas (#)	1	1	1	1	1	1	1
Hazardous Material Sites (#)							
Farmland (ac)	149.4	160.2	65.4	70.4	67.4	56.5	59.9
Managed Land (ac)	26.32	26.09	6.13	6.49	5.48	5.48	8.29
Upland Forest (ac)**	433.16	395.67	238.61	232.94	249.32	245.57	227.66
Core Forest (ac)	87.23	76.82	45.88	44.52	44.86	44.97	41.84

** 2015 Dollars, excluding mitigation costs, $M = million dollars, ac = acres, lf = linear feet*

*** Right-of-way costs developed using criteria found in **Appendix D**, Cost Estimation Methodology, and include costs for acreage and improvements required for actual construction, relocation costs, costs for acquiring structures and improvements due to lost access, and administrative fees.*

**** Calculations include bifurcation area in Subsection 5E.*

***** Total Natural Stream Impacts are total streams minus concrete gutters, culverts, dump rock gutters, and roadside ditches.*

Note: All impacts are by preliminary right-of-way, and not necessarily the amount to be acquired, except wetland impacts which are by construction limits.

6.4 Selection of the Preferred Alternative

6.4.1 Rationale for Selection of Preferred Alternative

Alternative 8 was the DEIS Preferred Alternative for Section 5 as a complete terminus-to-terminus system based on the information considered in **Section 6.3.4**. Comments on the DEIS generally supported this selection and offered recommendations to be considered in further refining this alternative to avoid or further reduce impacts and/or cost. **Table 6-9a** summarizes the differences between the DEIS Preferred Alternative 8 and Refined Preferred Alternative 8. This FEIS presents refinements to Alternative 8 that have occurred since the issuance of the DEIS. These modifications are based on comments received on the DEIS; information received from CAC members, participating agencies and other local public officials; and additional engineering and environmental studies. The product of these efforts is Refined Preferred Alternative 8.

Table 6-9a: Differences Between DEIS Preferred Alternative 8 and Refined Preferred Alternative 8

Feature Area	DEIS Preferred Alternative 8	Refined Preferred Alternative 8	Advantages/Benefits of Refined Preferred Alternative 8
Entire Alternative	Consistent application of side gradient slopes.	Incorporation of alternate side slopes and/or retaining walls at select locations.	Overall reduction in the right-of-way which reduces environmental impacts and the number of relocations.
West Fullerton Pike	Aligned along existing Fullerton Pike.	Shifted slightly to the north and use of a straighter curve for the Fullerton Pike reconstruction.	Improve safety; allow for higher design speed; avoid impacts to two office buildings which avoids 8 business relocations.
Access to Hickory Heights via Barger Lane	Access to Hickory Heights Mobile Home Park to connect to West Maple Leaf Drive to the north.	Access revised to tie into South Danlyn Road to the west.	Shorter access between mobile home park and Tapp Road, less through traffic on residential roads.
Wapehani Mountain Bike Park	Avoided park's boundary.	Shifts into edge of park, acquiring right-of-way along edge of park.	Reduce residential displacements and commercial property impacts, eliminate 2nd St. bridge replacement; reduce costs; reduce traffic delays and/or detours during construction.
Sam's Club	Access to Sam's Club at South Hickory Leaf Drive only.	Adds right-in/right-out access to Sam's Club from eastbound SR 45/2nd Street.	Better traffic flow; closer to existing commercial access; reduce traffic on partially residential South Hickory Leaf Drive.
SR 45/2nd Street Interchange	Existing bridge and ramp configuration.	Bridge will be modified for bicycle/pedestrian uses.	Improve bicycle/pedestrian accommodations.

Table 6-9a: Differences Between DEIS Preferred Alternative 8 and Refined Preferred Alternative 8

Feature Area	DEIS Preferred Alternative 8	Refined Preferred Alternative 8	Advantages/Benefits of Refined Preferred Alternative 8
SR 48/3rd Street Interchange	Existing bridge and ramp configuration.	Bridge will be widened for bicycle/pedestrian uses. Additional lanes on exit ramps.	Improve bicycle/pedestrian accommodations. Better traffic management for exiting highway.
North Walnut Street Interchange	Construct a new full interchange (Option A) or use the existing partial interchange (Option B).	FHWA approval to reuse the existing partial interchange.	Reduction of natural resource impacts (floodplains, wetlands, streams); reduce costs; maintains use of Historic Monroe County Bridge No. 913.
Eastern Local Access Road Removal in Beanblossom Valley	Eastern local access road from North Walnut Street north to Connaught Road.	Removal of eastern local access road from North Walnut Street north to Connaught Road.	Reduce natural resource impacts (floodplains, wetlands, streams); reduce costs; maintains existing traffic patterns.
Liberty Church Road Interchange	Interchange centered on existing Liberty Church Road/Godsey Road intersection.	Interchange shifted approximately 700 feet north of existing Liberty Church Road/Godsey Road intersection.	Reduction in natural resource impacts (floodplains and streams).

Refined Preferred Alternative 8 would provide interchanges at Fullerton Pike, Tapp Road/SR 45/2nd Street, SR 48/3rd Street, SR 46, Walnut Street, Sample Road, and Liberty Church Road. While the interchange types for Refined Preferred Alternative 8 are identified below, the specific interchange type for each location will be determined during final design for the final alignment, but will stay within the right-of-way footprint for the Refined Preferred Alternative 8. Should design changes cause impacts outside of the footprint in this FEIS, those will be analyzed and documented. In addition, overpasses would be located at Rockport Road, Vernal Pike, Arlington Road, Kinser Pike, and Chambers Pike.

Below is a description of the design features of Refined Preferred Alternative 8 by Subsection.

In Subsection 5A, the mainline of Refined Preferred Alternative 8 retains the existing SR 37 alignment, using an urban typical section (see **Figure 3-8**) with three 12-foot travel lanes in each direction of the mainline, separated by a 26.5-foot wide median with a concrete barrier. There would be a 12-foot wide shoulder and a 30-foot wide clear zone on each side of the mainline (see **Figure 3-8**). Due to the close proximity to the SR 37/I-69 interchange in Section 4, the Refined Preferred Alternative 8 also closes That Road and includes a new local access road to connect That Road to Rockport Road on the east side of SR 37/I-69 to maintain connectivity. While Refined Preferred Alternative 8 includes a double-folded diamond interchange at Fullerton Pike for access to the local TIF, various interchange design types could be designed to meet the traffic demand needs within the proposed right-of-way.

Refined Preferred Alternative 8 widens the existing Fullerton Pike alignment on the east side of SR 37/I-69 to allow straight flow of through traffic without speed reduction or curve modifications. This is especially important given the existing rolling terrain and proximity to the ramp termini from the Fullerton Pike interchange. A narrower right-of-way is used to reduce displacements along Fullerton Pike; minimize impacts to the NRHP-eligible North Clear Creek Historic Landscape District; and, to integrate with local planned projects in the Fullerton Pike area. In addition, the Fullerton Pike alignment west of the I-69 mainline was shifted north in Refined Preferred Alternative 8 by straightening the roadway curvature to avoid impacts to two multi-unit office buildings, eliminating eight business displacements. However, final design elements may be necessary to avoid impacting the Monroe Hospital Administration and Billing building. Additionally, by reducing the amount of right-of-way along Rockport Road, the Refined Preferred Alternative 8 avoids four residential relocations. In consultation with Monroe County, the Refined Preferred Alternative 8 includes bicycle/pedestrian accommodations on Rockport Road and Fullerton Pike within the proposed right-of-way.

In Subsection 5B, the mainline of Refined Preferred Alternative 8 is centered on the existing SR 37 alignment (similar to Alternative 7) to reduce impacts along the western side of SR37/I-69. The minimal impact criteria footprint would have three travel lanes in each direction of the mainline, separated by a 26.5-foot wide median with a concrete barrier. There would be a 12-foot wide shoulder and a 30-foot wide clear zone on each side of the mainline (see **Figure 3-8**).

Like Alternative 7, the Refined Preferred Alternative 8 incorporates the use of 1.73 acres from the Wapehani Mountain Bike Park to avoid residential and construction impacts, as well as additional costs. DEIS comments pertaining to this resource and potential for mitigation and other measures that may minimize harm to the park have been considered. A reduction of 11 potential residential displacements in Hickory Heights and Van Buren neighborhoods are attributed to not shifting the mainline alignment under Refined Preferred Alternative 8. The City of Bloomington, INDOT, and FHWA, agree that this is a *de minimis* impact and mitigation measures are being implemented as part of this agreement (see **Appendix QQ**, *Wapehani MOA*). To maintain the existing alignment on SR 37 north of Wapehani Mountain Bike Park, Refined Preferred Alternative 8 would use a retaining wall along the western boundary of the Wapehani Hills and Oakdale Square Apartment Complexes to avoid additional multi-family displacements.

Tapp Road and SR 45/2nd Street will have a split-diamond interchange, with CD lanes on the outside of the mainline for ingress/egress of traffic. The split-diamond interchange will support the recent infrastructure improvements on Tapp Road and several long-range transportation improvements (from West Airport Road/West Tapp Road/West Country Club Drive/East Winslow Road/East Rogers Road). The split-diamond interchange will provide more access points to I-69 (at both SR 45/2nd Street and Tapp Road). The Refined Preferred Alternative 8 added a local access road for right-in/right-out access from 2nd Street to the Sam's Club. In addition, the Refined Preferred Alternative 8 reduced the distance for Tapp Road access to Barger Lane by replacing the West Maple Leaf Drive north connection (Alterative 8) with a new connection that ties into South Danlyn Road to the west.

While the Refined Preferred Alternative 8 would continue to make use of the existing SR 48/3rd Street interchange, additional storage capacity is added to the exit ramps. Refined Preferred Alternative 8 would have an overpass at Vernal Pike/17th Street and intersection improvements or North Crescent Road and 17th Street. The overpass would maintain traffic on the east side of the roadway by avoiding closure of North Crescent Road and reduce maintenance of traffic disruptions during construction. In addition, the overpass would avoid the potential for groundwater resource issues associated with the Lemon Lane Landfill Superfund Site and ILCS, a concern raised by the USEPA and IDEM. In consultation with the City of Bloomington and Monroe County, the Refined Preferred Alternative 8 includes bicycle and pedestrian accommodations at Tapp Road, SR 45/2nd Street, SR 48/3rd Street, and the Vernal Pike/West 17th Street overpass. This would increase the proposed right-of-way to Liberty Drive on SR 45/2nd Street and from South Franklin Road to North Gates Drive on SR 48/3rd Street.

In Subsection 5C, the mainline of Refined Preferred Alternative 8 would use the suburban typical section shown in **Figure 3-8** consisting of three travel lanes in each direction for the mainline. There would be a 36-foot wide median containing 12-foot wide paved shoulders to the inside of the travel lanes along the median, a center concrete barrier to Arlington Road, and a center guardrail barrier from Arlington Road north to Sample Road. To the outside of the travel lanes, there are 12-foot wide paved shoulders within the minimum 30-foot wide clear zones. The mainline follows existing SR 37 alignment, and maintains the grade of existing SR 37, thereby reducing the amount of earthwork needed during construction, and minimizing impacts. Refined Preferred Alternative 8 uses a guardrail and a grass median to reduce visual impacts by avoiding the use of a concrete barrier wall consistent with the context sensitive solutions proposed by the CACs and participating agencies.

The existing SR 46 interchange would remain. The existing overpass at Arlington Road would remain in its current location and be reused by lowering mainline I-69 elevations to reduce traffic disruptions and maintain east/west connectivity. . Acuff Road would be closed, and re-routed to either Kinser Pike or Maple Grove Road. An overpass is provided at Kinser Pike to maintain connectivity and access to either the Walnut Street interchange (Subsection 5D) or Sample Road interchange (Subsection 5E).

In Subsection 5D, the Refined Preferred Alternative 8 would use the suburban typical section shown in **Figure 3-8** consisting of three travel lanes in each direction for the mainline with truck climbing lanes in each direction due to the terrain. Using the minimal impact criteria, there would be a 36-foot wide median containing 12-foot wide shoulders to the inside of the travel lanes and a center guardrail barrier. To the outside of the travel lanes, there would be 12-foot wide shoulders within the minimum 30-foot wide clear zones. The mainline would be centered on the existing SR 37 alignment and grade which reduced construction costs, earthwork, and associated impacts. Two modifications with the Refined Preferred Alternative 8, as described in the following paragraphs, greatly reduced impacts to natural resources (wetlands, streams, and floodplains).

The eastern local access road from Whisnand Road/Walnut Road north to Connaught Road was removed in the Refined Preferred Alternative 8 because of the forecasted low traffic needs and to reduce floodplain and wetland impacts. The western local access road also starts across from

Connaught Road and does not cross the Beanblossom Valley. These roads have a grass median between them and the mainline, other than one barrier wall along the outside shoulder located at Hoosier Energy. This median avoids undesirable features which have design and safety implications such as the glare of oncoming headlights from opposing traffic, reduced turning radii on the access road, reduced snow storage area, and reduced maneuverability on the access road during emergency situations. Visual impacts will be reduced by avoiding use of the concrete barrier wall to maintain the rural feeling of the Subsection 5D area.

At Walnut Street, the Refined Preferred Alternative 8 reuses the existing partial interchange to minimize impacts to wetlands, streams, floodplains, and construction costs. While the existing partial interchange differs from the current FHWA guidelines,[7] the FHWA has approved its use (refer to **Appendix RR**, *Walnut Street Interchange Selection Report*). The existing Walnut Street interchange serves two of four traffic movements to and from Bloomington via existing Walnut Street for the Refined Preferred Alternative 8. Development to the north and west (which would be served by a new interchange serving all movements) is unlikely to occur. This area is within the Beanblossom Valley floodplain, and there is limited potential for development. Support for this interchange cited the diversion of traffic to the downtown area and away from other interchanges such as SR 46, resulting in better traffic distribution, and retaining the northern entrance to Bloomington and Indiana University. Treatments also have been requested at this interchange to designate it as a gateway to Bloomington.

In Subsection 5E, Refined Preferred Alternative 8 has three mainline travel lanes in each direction from the Kinser Pike/Walnut Street area to Sample Road. From Sample Road north to Bryant's Creek Road, it has two lanes, with an additional truck climbing lane in the southbound direction between Sample Road and Bryant's Creek Road. Refined Preferred Alternative 8 uses the existing pavement of SR 37 by using the northbound SR 37 lanes as the east side access roads and converting the existing SR 37 southbound lanes into the future northbound travel lanes. New southbound travel lanes will be constructed to the west. This affords the opportunity to rehabilitate the existing pavement in place; this reuse of the existing pavement reduces costs and impacts.

At Sample Road, Refined Preferred Alternative 8 has a folded urban interchange to minimize impacts to resources in the southwest quadrant of the interchange location. Refined Preferred Alternative 8 has an overpass on Chambers Pike, which has been supported in requests from utilities, emergency service providers, and local residents. In addition, Chambers Pike carries relatively high traffic volumes compared to other area roads, and provides for better maintenance of traffic patterns in the area. Refined Preferred Alternative 8 uses an outside shoulder and guardrail between the mainline and access road. This avoids the need for a barrier wall between the mainline and access road.

In Subsection 5F, Refined Preferred Alternative 8 uses the rural typical section shown in **Figure 3-8**, which incorporates the minimal impact design criteria. There would be two 12-foot wide

[7] *Access to the Interstate System*, U.S. Department of Transportation (USDOT), FHWA, 74 FR 165, August 27, 2009. The existing North Walnut Street interchange on SR 37 serves only southbound exiting and northbound entering traffic. FHWA's guidelines require that interchanges on newly-constructed Interstate highways serve all directions of travel.

travel lanes in each direction, separated by a 60-foot wide grass median with 4-foot wide shoulders to the inside of the travel lanes. To the outside of the mainline, there would be a 12-foot wide shoulder and 30-foot wide clear zone to each side.

Existing and new local access roads connect the Paragon Road/Pine Boulevard area north to Liberty Church Road. Refined Preferred Alternative 8 has a medium (urban) diamond interchange at Liberty Church Road that is shifted north of the existing Liberty Church Road intersection with SR 37 by about 700 hundred feet, to minimize impacts to floodplains and streams. An interchange at Liberty Church Road supports the future development goals of Martinsville and Morgan County. North of Liberty Church Road, a western local access road would be constructed to connect to Legendary Hills Drive, while an eastern local access road would be constructed to connect to Old SR 37 by the Hillview Motel.

As described in the previous subsection comparisons, Refined Preferred Alternative 8 provides the best balance of meeting the purpose and need goals, accessibility and connectivity, and integration into existing SR 37 infrastructure while minimizing impacts and costs.

Table 6-10 tabulates in detail the potential impacts and estimated cost ranges associated with Refined Preferred Alternative 8 in comparison with the other five build alternatives. **Figure 3-13** and **Figure 3-14** show the alignment of Alternative 8 and Refined Preferred Alternative 8 within the Section 5 corridor. Alternatives 4 and 5 are shown in **Figure 3-12** and Alternatives 6 and 7 are shown in **Figure 3-11**. These figures are the tabbed maps that follow Chapter 3.

The selection of Refined Preferred Alternative 8 followed a period of review and consideration of public and regulatory agency comments on the DEIS (see **Chapter 3**, *Alternatives*, and **Chapter 11**, *Comments, Coordination, and Public Involvement*).

Six alternatives representing end-to-end Build Conditions for the mainline alignment with various interchange and overpass/underpass options were studied in detail. The six alternatives were evaluated for potential impacts on the natural and human environment (see **Chapter 5**, *Environmental Consequences*), and costs (**Section 6.2**). As shown in **Chapter 3**, *Alternatives*, each of these alternatives provide significant benefits in satisfying the local Purpose and Need goals of traffic congestion reduction and accident reduction. Therefore, Refined Preferred Alternative 8 was selected primarily based upon the ability to reuse existing infrastructure, local economic development, provision of access/connectivity, consideration of impacts, and cost. As discussed in **Section 6.3**, interchange recommendations were based primarily on the ability of the interchanges to meet Purpose and Need including increased accessibility, reduced travel time for regional destinations, congestion relief, and safety benefits.

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Table 6-10: Comparative Impacts Summary - Section 5 Alternatives

FEIS Section	Potential Impacts	Alternative 4	Alternative 5	Alternative 6	Alternative 7	Preferred Alternative 8		Refined Preferred Alternative 8
						Option A Full Interchange	Option B Partial Interchange	
	Length (miles)	21.06	21.06	21.08	21.08	21.08	21.08	21.08
	Estimated Costs ($M) in 2015 dollars including design, construction, ROW relocation, utilities and mitigation	$741.75M	$748.95M	$473.69M	$464.75M	$454.27M	$414.96M	$393.74M
	Construction/Design/Engineering/Administration/Utility Relocation	$545.62M	$575.44M	$395.84M	$392.21M	$371.32M	$333.50M	$327.44M
	*Right-of-Way Costs**	$166.97M	$145.56M	$60.49M	$55.86M	$65.07M	$64.44M	$50.21M
	Mitigation Costs	$29.16M	$27.95M	$17.36M	$16.68M	$17.88M	$17.02M	$16.09M
5.2	Relocations/Displacements							
Social Impacts	*Residential:*	*249*	*235*	*138*	*123*	*151*	*150*	*119*
	Institutional:	*3*	*3*	*1*	*1*	*1*	*1*	*1*
	Business:	*77*	*71*	*33*	*27*	*32*	*32*	*17*
	Total Displacements:	*329*	*309*	*172*	*151*	*184*	*183*	*137*
5.3	Total ROW for I-69 Section 5:**	1,768.10	1,729.38	1,320.15	1,291.70	1,346.05	1,318.37	1,299.65
Land Use and Community Impacts	*Existing SR 37 ROW*	*966.57*	*967.68*	*972.69*	*972.65*	*972.68*	*972.68*	*972.59*
	New ROW to be Acquired	*801.53*	*761.70*	*347.46*	*319.05*	*373.37*	*345.69*	*327.06*
	*Agricultural Land***	*151.20*	*162.08*	*67.22*	*72.23*	*69.24*	*58.31*	*61.79*
	*Developed Land***	*1,046.83*	*1,040.54*	*929.05*	*913.94*	*940.14*	*932.86*	*933.46*
	*Mines/Quarries***	*2.45*	*2.41*	*0.25*	*0.00*	*0.25*	*0.25*	*0.22*
	*Upland Habitat (includes non-wetland forest, herbaceous cover, and scrub/shrub areas)***	*549.87*	*502.70*	*307.56*	*294.90*	*320.34*	*245.57*	*296.48*
	*Open Water (lakes and ponds within ROW only)***	*0.61*	*0.27*	*0.33*	*0.11*	*0.32*	*0.28*	*0.02*
	*Streams (ac)***	*13.57*	*13.59*	*11.49*	*11.23*	*11.70*	11.24	10.24
	*Wetlands (ac) (includes emergent, forested, and scrub/shrub areas within ROW only)***	*14.19*	*18.24*	*13.15*	*8.20*	*13.13*	*8.57*	*5.75*
	Agricultural Land, Indirect Impacts (in acres for 2035, based on 29 to 31 TAZs):	32	37	33	37	37	37	37
	Forested Land, Indirect Impacts (in acres):	40	47	41	47	47	47	47
5.4	Farmlands Impacts:							
Farmlands	*Total farmland acres to be acquired for ROW*	*149.4*	*160.2*	*65.4*	*70.4*	*67.4*	*56.5*	*59.9*
	Cropland acres to be acquired for ROW	*144.2*	*157.5*	*65.0*	*69.9*	*66.9*	*55.9*	*59.3*
	Number of uneconomic remnants	*6*	*6*	*6*	*8*	*9*	*7*	*7*
	Number of landlocked parcels	*3*	*2*	*1*	*3*	*1*	*1*	*2*
	NRCS-CPA-106 Form Results:							
	Prime/unique farmland acres in ROW							
	Monroe County	74.97	67.63	32.88	21.73	32.52	Not Available***	Not Available***
	Morgan County	65.19	114.96	52.55	62.33	71.35	Not Available***	Not Available***
	Statewide and locally important farmland to be converted + Corridor Assessment							

Table 6-10: Comparative Impacts Summary - Section 5 Alternatives

FEIS Section	Potential Impacts	Alternative 4	Alternative 5	Alternative 6	Alternative 7	Preferred Alternative 8		Refined Preferred Alternative 8
						Option A Full Interchange	Option B Partial Interchange	
	Monroe County	0	0	0	0	0	Not Available***	Not Available***
	Morgan County	0	0	0	0	0	Not Available***	Not Available***
	Total Points: Relative Value of Farmland to be Converted + Corridor Assessment:							
	Monroe County	110	122	114	112	116	Not Available***	Not Available***
	Morgan County	120	126	145	143	136	Not Available***	Not Available***
	Estimated crop production loss - total Morgan and Monroe Counties:	$67,721	$78,655	$32,824	$36,202	$33,656	$29,103	$31,338
5.5 Economic Impacts	Economic Impacts:							
	Estimated loss in tax base	$1,770,988	$1,833,122	$773,240	$781,293	$952,236	$944,389	$616,327
	Estimated annual crop production loss (i.e., farm income)	$67,721	$78,655	$32,824	$36,202	$33,656	$29,103	$31,338
	Induced growth projected year 2035, Total for Monroe and Morgan Counties:							
	Housing units	337	337	337	337	337	337	337
	Jobs	350	350	350	350	350	350	350
5.6 Traffic Impacts	Access:							
	Proposed Interchanges	*• Fullerton Pike • SR 45/2nd St. • SR 48/3rd St. • SR 46 • Kinser Pike • Sample Rd. • Paragon Rd./Pine Blvd.*	*• Fullerton Pike • Tapp Rd./SR 45/2nd St. • SR 48/3rd St. • SR 46 • N. Walnut St. • Sample Rd. • Liberty Church Rd.*	*• Fullerton Pike • SR 45/2nd St. • SR 48/3rd St. • SR 46 • Sample Rd. • Liberty Church Rd.*	*• Fullerton Pike • Tapp Rd./SR 45/2nd St. • SR 48/3rd St. • SR 46 • N. Walnut St. • Sample Rd. • Liberty Church Rd.*	*• Fullerton Pike • Tapp Rd./SR 45/2nd St. • SR 48/3rd St. • SR 46 • N. Walnut St. • Sample Rd. • Liberty Church Rd.*	*• Fullerton Pike • Tapp Rd./SR 45/2nd St. • SR 48/3rd St. • SR 46 • N. Walnut St. • Sample Rd. • Liberty Church Rd.*	*• Fullerton Pike • Tapp Rd./SR 45/2nd St. • SR 48/3rd St. • SR 46 • N. Walnut St. • Sample Rd. • Liberty Church Rd.*
	Proposed Grade Separations (overpasses and underpasses)	*• Rockport Rd. • Tapp Rd. • Vernal Pike • Arlington Rd. • N. Walnut St. • Chambers Pike • Liberty Church Rd.*	*• Rockport Rd. • Vernal Pike • Arlington Rd. • Kinser Pike • Chambers Pike • Paragon Rd./ Pine Blvd.*	*• Rockport Rd. • Tapp Rd. • Vernal Pike • Arlington Rd. • N. Walnut St. • Chambers Pike*	*• Rockport Rd. • Vernal Pike • Arlington Rd. • Kinser Pike • Bryant's Creek Rd./Turkey Track Road*	*• Rockport Rd. • Vernal Pike • Arlington Rd. • Kinser Pike • Chambers Pike*	*• Rockport Rd. • Vernal Pike • Arlington Rd. • Kinser Pike • Chambers Pike*	*• Rockport Rd. • Vernal Pike • Arlington Rd. • Kinser Pike • Chambers Pike*
	Proposed Road Closures	*62*	*63*	*66*	*64*	*62*	*62*	*63*
	Proposed Access Roads (number and total length, in miles)	*21 (16.6 mi)*	*20 (15.8 mi)*	*18 (15.8 mi)*	*18 (15.9 mi)*	*17 (15.0 mi)*	*18 (15.8 mi)*	*16 (13.7 mi)*
	Percent Change in Traffic Volumes on State and Local Roads from No Build Alternative:							
	That Road (from SR 37 to Rodgers Street)	*-31%*	*-38%*	*-14%*	*-19%*	*-19%*		*-19%*
	That Road (from Rockport Road to Fullerton Pike)	*-77%*	*-85%*	*200%*	*185%*	*186%*		*187%*
	Rockport Road (from SR 37/I-69 to Fullerton Pike)	*-15%*	*-16%*	*-32%*	*-31%*	*-31%*		*-30%*

Table 6-10: Comparative Impacts Summary - Section 5 Alternatives

FEIS Section	Potential Impacts	Alternative 4	Alternative 5	Alternative 6	Alternative 7	Preferred Alternative 8		Refined Preferred Alternative 8
						Option A Full Interchange	Option B Partial Interchange	
	Leonard Springs Road (from Fullerton Pike to Tapp Road)	*32%*	*33%*	*8%*	*15%*	*13%*		*13%*
	Leonard Springs Road (from Tapp Rd to SR 45)	*-2%*	*-14%*	*-11%*	*-13%*	*-18%*		*-18%*
	Fullerton Pike (West of SR 37/I-69 to Leonard Springs Road)	*37%*	*33%*	*36%*	*27%*	*38%*		*37%*
	Fullerton Pike (East of SR 37/I-69 to Rockport Road)	*153%*	*160%*	*92%*	*96%*	*98%*		*97%*
	Tapp Road (West of SR 37/I-69 to Leonard Springs Road)	*-23%*	*-40%*	*-31%*	*-37%*	*-37%*		*-37%*
	Tapp Road (East of SR 37/I-69 to Weimer Road)	*-26%*	*-32%*	*-30%*	*-33%*	*-30%*		*-30%*
	SR 45 (from Liberty Drive to Curry Pike)	*-2%*	*-7%*	*-2%*	*-1%*	*-17%*		*-17%*
	SR 45 (from Basswood Road to Weimer Road)	*42%*	*22%*	*47%*	*35%*	*23%*		*24%*
	Weimer Road (from Tapp Road to SR 45)	*241%*	*71%*	*76%*	*3%*	*7%*		*8%*
	Walnut Street (from Winslow Road to Hillside Drive)	*-5%*	*-6%*	*-6%*	*-3%*	*-3%*		*-3%*
	Curry Pike (from SR 45 to SR 48)	*1%*	*-9%*	*-3%*	*-7%*	*-10%*		*-10%*
	Curry Pike (from SR 48 to Vernal Pike)	*20%*	*13%*	*33%*	*30%*	*28%*		*32%*
	Curry Pike (from Vernal Pike to SR 46)	*24%*	*3%*	*26%*	*17%*	*22%*		*19%*
	Liberty Drive (from SR 45 to SR 48)	*80%*	*80%*	*15%*	*60%*	*64%*		*63%*
	SR 48 (West of SR 37/I-69 to Liberty Drive)	*10%*	*29%*	*11%*	*11%*	*11%*		*10%*
	SR 48 (East of SR 37/I-69 to Franklin Road)	*17%*	*40%*	*18%*	*21%*	*11%*		*12%*
	Vernal Pike (from Industrial Drive to Curry Pike)	*30%*	*39%*	*36%*	*36%*	*32%*		*40%*
	17th Street (from Monroe Street to Madison Street)	*12%*	*-1%*	*16%*	*16%*	*13%*		*17%*
	Adams Street (from 5th Street to Vernal Pike)	*-26%*	*-27%*	*-25%*	*-24%*	*-26%*		*-25%*
	Walnut Street (from College Avenue to SR 46)	*-12%*	*1%*	*-13%*	*-11%*	*-2%*		*-11%*
	Walnut Street (East of SR 37/I-69 to Bayles Road)	*-72%*	*10%*	*-42%*	*-33%*	*17%*		*-29%*
	SR 46 (West of SR 37/I-69 to Curry Pike)	*16%*	*35%*	*15%*	*17%*	*19%*		*17%*
	SR 46(East of SR 37/I-69 to Madison Street)	*15%*	*9%*	*20%*	*16%*	*7%*		*17%*
	Arlington Road (West of SR 37/I-69 to SR 46)	*-8%*	*-15%*	*-11%*	*-8%*	*-10%*		*-7%*
	Maple Grove Road (from Acuff Road to Lost Mans Lane)	*-57%*	*-64%*	*-61%*	*-53%*	*-61%*		*-54%*
	Prow Road (from Arlington Road to Acuff Road)	*199%*	*170%*	*214%*	*214%*	*174%*		*214%*
	Acuff Road (from Prow Road to Kinser Pike)	*-54%*	*-33%*	*-22%*	*-22%*	*-32%*		*-22%*
	Kinser Pike (East of SR 37/I-69 to Acuff Road)	*366%*	*186%*	*51%*	*240%*	*185%*		*232%*
	Kinser Pike (West of SR 37/I-69 to Bottom Road)	*512%*	*2024%*	*328%*	*1718%*	*864%*		*1924%*
	Sample Road (West of SR 37/I-69 to Simpson Chapel Road)	*428%*	*122%*	*350%*	*573%*	*137%*		*527%*
	Sample Road (East of SR 37/I-69 to Old SR 37)	*140%*	*97%*	*174%*	*164%*	*112%*		*169%*
	Simpson Chapel Road (from Sample Road to Williams Road)	*39%*	*-28%*	*52%*	*265%*	*-16%*		*248%*
	Old SR 37 (from Fox Hollow Road to Chambers Pike)	*-31%*	*4%*	*7%*	*27%*	*1%*		*2%*
	Old SR 37 (from Chambers Pike to Paragon Road)	*-7%*	*-15%*	*-39%*	*-43%*	*-40%*		*-40%*
	Chambers Pike (East of SR 37/I-69 to Old SR 37)	*19%*	*1%*	*-12%*	*-50%*	*-17%*		*-17%*
	Dittemore Road (from Crossover Road to Tilford Road)	*-80%*	*-85%*	*-86%*	*-98%*	*-89%*		*-88%*
	Turkey Track Road (from Bryant's Creek Road to Pine Boulevard)	*63%*	*48%*	*42%*	*55%*	*41%*		*41%*

Table 6-10: Comparative Impacts Summary - Section 5 Alternatives

FEIS Section	Potential Impacts	Alternative 4	Alternative 5	Alternative 6	Alternative 7	Preferred Alternative 8		Refined Preferred Alternative 8
						Option A Full Interchange	Option B Partial Interchange	
	Pine Boulevard (East of SR 37/I-69 to Old SR 37)	*168%*	*26%*	*-49%*	*-47%*	*-27%*		*-46%*
	Paragon Road (West of SR 37/I-69 to Ivan Trail)	*14%*	*-89%*	*-96%*	*-95%*	*-96%*		*-95%*
	Cramer Road (from Paragon Road to Godsey Road)	*93%*	*-68%*	*-80%*	*-73%*	*-77%*		*-77%*
	Liberty Church Road (West of SR 37/I-69 to Cramer Road)	*24%*	*3348%*	*-89%*	*655%*	*654%*		*670%*
	Liberty Church Road (East of SR 37/I-69 to Old SR 37)	*-32%*	*175%*	*107%*	*158%*	*158%*		*170%*
	SR 37/I-69 SB (from SR 39 to Liberty Church Road/Paragon Road)	*49%*	*56%*	*53%*	*55%*	*56%*		*55%*
	SR 37/I-69 SB (from Liberty Church Road/Paragon Road to Sample Road)	*50%*	*48%*	*47%*	*47%*	*48%*		*47%*
	SR 37/I-69 SB (from Sample Road to Kinser Pike/Walnut Street)	*41%*	*40%*	*38%*	*45%*	*41%*		*45%*
	SR 37/I-69 SB (from Kinser Pike/Walnut Street to SR 46)	*89%*	*62%*	*75%*	*65%*	*60%*		*64%*
	SR 37/I-69 SB (from SR 46 to SR 48/3rd Street)	*32%*	*47%*	*35%*	*38%*	*41%*		*37%*
	SR 37/I-69 SB (from SR 48/3rd Street to SR 45/Bloomfield Road/2nd Street)	*14%*	*21%*	*16%*	*21%*	*24%*		*22%*
	SR 37/I-69 SB (from SR 45/Bloomfield Road/2nd Street to Tapp Road (mainline))	*22%*	*5%*	*23%*	*3%*	*5%*		*4%*
	SR 37/I-69 SB (from SR 45/Bloomfield Road/2nd Street to Tapp Road (CD lanes)	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*		*N/A*
	SR 37/I-69 SB (from Tapp Road to Fullerton Pike)	*22%*	*23%*	*23%*	*21%*	*23%*		*22%*
	SR 37/I-69 SB (from Fullerton Pike to SR 37)	*23%*	*23%*	*21%*	*20%*	*19%*		*57%*
	SR 37/I-69 NB (from SR 39 to Liberty Church Road/Paragon Road)	*51%*	*58%*	*55%*	*56%*	*61%*		*56%*
	SR 37/I-69 NB (from Liberty Church Road/Paragon Road to Sample Road)	*42%*	*48%*	*40%*	*40%*	*42%*		*40%*
	SR 37/I-69 NB (from Sample Road to Kinser Pike/Walnut Street)	*41%*	*41%*	*33%*	*42%*	*41%*		*42%*
	SR 37/I-69 NB (from Kinser Pike/Walnut Street to SR 46)	*75%*	*56%*	*76%*	*68%*	*55%*		*66%*
	SR 37/I-69 NB (from SR 46 to SR 48/3rd Street)	*32%*	*36%*	*31%*	*34%*	*36%*		*34%*
	SR 37/I-69 NB (from SR 48/3rd Street to SR 45/Bloomfield Road/2nd Street)	*23%*	*35%*	*25%*	*30%*	*30%*		*30%*
	SR 37/I-69 NB (from SR 45/Bloomfield Road/2nd Street to Tapp Road (mainline))	*32%*	*19%*	*33%*	*13%*	*13%*		*12%*
	SR 37/I-69 NB (from SR 45/Bloomfield Road/2nd Street to Tapp Road (CD lanes)	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*		*N/A*
	SR 37/I-69 NB (from Tapp Road to Fullerton Pike)	*32%*	*38%*	*34%*	*35%*	*35%*		*34%*
	SR 37/I-69 NB (from Fullerton Pike to SR 37)	*23%*	*24%*	*23%*	*22%*	*22%*		*22%*
5.7 Visual	View From/Of I-69:							
	View from I-69	*Views from the road may be obstructed due to roadway's position within terrain or dense vegetation. Some panoramic views will be created or maintained along roadway, such as through Beanblossom Creek valley and near Liberty Church Road. Many residential areas, public facilities, and commercial businesses will be visible from roadway.*						
	View of I-69	*Direct views of the road will be present, either in areas that already have a view of the road or from residences that currently have obstructed views due to dense vegetation. Direct views of roadway will occur in areas of interchanges and potentially in vicinity of overpasses/underpasses due to clearing needed for structures.*						
5.8 Environmental Justice	Impact to minority/low-income populations:	No disproportionately high or adverse impact to low-income or minority populations.						

Table 6-10: Comparative Impacts Summary - Section 5 Alternatives

FEIS Section	Potential Impacts	Alternative 4	Alternative 5	Alternative 6	Alternative 7	Preferred Alternative 8		Refined Preferred Alternative 8
						Option A Full Interchange	Option B Partial Interchange	
5.9 Air Quality	Air Quality Standard Exceedances Predicted:	No exceedance of the NAAQS or current SIP budgets. Regional and project-level conformity requirements met.						
5.10 Noise	Total Number of Impacted Noise Receivers:	296	303	476	452	430	430	419
	Impacted Receivers that Approach or Exceed NAC	*293*	*300*	*475*	*451*	*426*	*426*	*408*
	Impacted Receivers that Approach or Exceed NAC and have a Substantial Increase	*0*	*0*	*0*	*0*	*0*	*0*	*1*
	Impacted Receivers with a Substantial Increase:	*3*	*3*	*1*	*1*	*4*	*4*	*10*
	Impacted Receivers with Substantial Increases from 15 dBA to 20 dBA	*3*	*3*	*1*	*1*	*4*	*4*	*10*
	Impacted Receivers with Substantial Increases from 20 dBA to 25 dBA	*0*	*0*	*0*	*0*	*0*	*0*	*0*
	Impacted Receivers with Substantial Increases from 25 dBA and Greater	*0*	*0*	*0*	*0*	*0*	*0*	*0*
5.11 Wild and Scenic Rivers	No Wild or Scenic Rivers located in project area.	Not Applicable						
5.12 Construction Impacts		Temporary impacts to air quality, water quality, karst, nearby noise receptors, traffic flow/patterns due to construction.						
5.13 Historic Resources	National Register of Historic Places eligible or listed resources	Adverse Effect to North Clear Creek Historic Landscape District	Adverse Effect to North Clear Creek Historic Landscape District	No Adverse Effect	No Adverse Effect	No Adverse Effect	No Adverse Effect	No Adverse Effect
5.14 Archaeological Resources	National Register of Historic Places eligible or listed resources	3 sites potentially eligible for listing in NRHP, 11 sites recommended for avoidance or additional study; one site recommended for Phase Ic testing; 19 alluvial floodplain test areas identified for Phase Ic archaeological investigations.						
5.15 Mineral Resources	Mineral Resources Potentially in ROW:							
	Potentially Marketable Limestone (acres)	996	959	742	731	766	766	772
	Potentially Marketable Limestone minus overlying developed land cover (in acres, and percent of total potentially marketable limestone)	301 (30%)	273 (29%)	141 (19%)	129 (18%)	149 (19%)	149 (19%)	148 (19%)
	Abandoned Limestone Quarries (number of quarries)	3	3	3	3	3	3	3
	Active Limestone Quarries (number of quarries, and acres)	1 (9 ac)	1 9 ac)	1 (2 ac)	0	1 (2 ac)	1 (2 ac)	1 (2 ac)
	Active Oil/Gas Wells (number of wells)	0	0	0	0	0	0	0
	Abandoned/Dry Oil/Gas Wells (number of wells)	0	0	0	0	0	0	0
	High Potential Sand and Gravel Resources (in acres)	41	43	30	30	30	30	30

Table 6-10: Comparative Impacts Summary - Section 5 Alternatives

FEIS Section	Potential Impacts	Alternative 4	Alternative 5	Alternative 6	Alternative 7	Preferred Alternative 8		Refined Preferred Alternative 8
						Option A Full Interchange	Option B Partial Interchange	
5.16	HAZMAT Sites potentially in ROW:	9	9	7	7	8	8	8
Hazardous Materials	*HM-1 (C&H Stone 4000 Rockport Road)*	Potential Impact	Potential Impact	Potential Impact	No Impact	Potential Impact	Potential Impact	Potential Impact
and Waste Sites	*HM-2 (Sam's Club 3205 West SR 45)*	Potential Impact	Potential Impact	No Impact	Potential Impact	Potential Impact	Potential Impact	Potential Impact
	HM-3 (Coca Cola 1701 Liberty Drive)	Potential Impact	Potential Impact	No Impact	No Impact	No Impact	No Impact	No Impact
	HM-4 (Kmart #7402 3175 West 3rd Street)	Potential Impact	Potential Impact	No Impact	No Impact	No Impact	No Impact	No Impact
	HM-5 (Former Amoco Unit 10116 3100 West 3rd Street)	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact
	HM-6 (Former Marathon Unit 2572 2850 West 3rd Street)	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact
	HM-7 (Lemon Lane Landfill Bloomington)	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact
	HM-7 (Illinois Central Spring Bloomington)	Potential Impact	Potential Impact	Potential Impact	Potential Impact	Potential Impact	Potential Impact	Potential Impact
	HM-8 (Former Hanna Trucking/United Rental/O'Mara Contractor 2520 Industrial Drive)	No Impact	No Impact	Potential Impact	Potential Impact	Potential Impact	Potential Impact	Potential Impact
	HM-9 (Sturgis Auto Salvage 2810 West Hensonburg Road)	Potential Impact	Potential Impact	Potential Impact	Potential Impact	Potential Impact	Potential Impact	Potential Impact
	HM-10 (Dotlich Crane Service Crescent Road & West 17th Street)	Potential Impact	Potential Impact	Potential Impact	Potential Impact	Potential Impact	Potential Impact	Potential Impact
	HM-11 (Bennett Stone Quarry SR 37 and SR 46, aka Bennett's Dump)	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact
	HM-12 (INDOT Sub-District 2965 North Prow Road)	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact
	HM-13 (Hoosier Energy 7398 North SR 37)	Potential Impact	Potential Impact	Potential Impact	Potential Impact	Potential Impact	Potential Impact	Potential Impact
	HM-14 (Johnson Oil Bigfoot #071 (BP/Circle K) 7340 North Wayport Road)	Potential Impact	Potential Impact	Potential Impact	Potential Impact	Potential Impact	Potential Impact	Potential Impact
	HM-15 (Bloomington Auto Parts 7650 North SR 37)	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact
5.17	Impacts to Protected Species:							
Threatened and Endangered Species	*Federally-listed threatened/endangered - (corridor studied for Indiana bat and Eastern fanshell mussel)*	Indiana bats captured in summer of 2012. Three maternity roosting colonies within in Section 5 study area. USFWS has concluded that proposed project is not likely to jeopardize the continued existence of Indiana bat or destroy or adversely modify its designated critical habitat. No Eastern fanshell mussels found in Section 5 study area; therefore, no effect anticipated.						
	Bald Eagle (protected under the Bald and Golden Eagle Protection Act)	Bald eagle nest found in Section 5 study area, but no impacts anticipated to nest site and no "take" of bald eagle is anticipated from proposed project.						
	State-listed threatened/endangered/rare/special concern	Habitat present for troglobitic crayfish, Barr's commensal cave ostracod, Indiana cave springtail, Mayfield cave beetle, hidden springtail, Packard's groundwater amphipod, Bollman's cave millipede, Barr's cave amphipod, crawfish frog, common mudpuppy, barn owl, Henslow's sparrow, northern harrier, red-shouldered hawk, evening bat, little brown bat, Eastern tricolored or pipistrelle, Eastern red bat, Northern myotis, silver-haired bat, hoary bat, bobcat, Eastern box turtle. Potential impacts could occur to habitat of barn owl, Henslow's sparrow, red-shouldered hawk, evening bat, little brown bat, Eastern tricolored or pipistrelle, Eastern red bat, Northern myotis, silver-haired bat, hoary bat, bobcat, and Eastern box turtle in various locations throughout study area.						
5.18	Wildlife Habitat Impacts (acres):							
Wildlife	*Dry-Mesic Upland Forest*	367.77	332.35	203.78	199.57	209.8	208.33	203.45
	Forest Fragment	32.64	32.43	25.91	25.87	25.99	25.60	25.37
	Mesic Floodplain Forest	36.31	27.86	17.54	21.06	20.29	20.29	15.75
	Mesic Upland Forest	29.08	35.46	17.29	12.31	19.23	16.95	8.46
	Early to Mid Successional Forest	24.39	20.03	12.27	13.37	13.78	13.81	13.21
	Old Field	59.68	54.57	30.77	22.72	31.25	30.88	30.24
	Upland Habitat Subtotal:	*549.87*	*502.70*	*307.56*	*294.90*	*320.34*	*315.86*	*296.48*
	Open Water (PUBs)	1.40	4.18	5.38	2.20	2.50	0.07	0.02
	Wetlands (aquatic bed, forested, emergent and scrub/shrub, see 5.19 for details)	11.70	16.06	10.96	5.18	9.96	5.63	3.43
	Total Acres of Natural Habitat in ROW and Percent of Corridor Total	562.97 (23.13%)	522.94 (21.48%)	323.90 (13.31%)	302.28 (12.42%)	332.80 (13.67%)	321.56 (13.21%)	299.93 (12.32%)

Table 6-10: Comparative Impacts Summary - Section 5 Alternatives

FEIS Section	Potential Impacts	Alternative 4	Alternative 5	Alternative 6	Alternative 7	Preferred Alternative 8		Refined Preferred Alternative 8
						Option A Full Interchange	Option B Partial Interchange	
5.19	Wetland Impacts Total (within construction limits in acres):****	11.70	16.06	10.96	5.18	9.96	5.63	3.43
Water Resources	*Aquatic Bed Wetland*	0.20	0.40	0.17	0.00	0.14	0.13	0.02
	Emergent Wetland	3.61	5.20	3.94	2.43	3.48	2.60	1.78
	Scrub/Shrub Wetland	1.33	1.34	1.09	1.11	1.07	1.07	1.04
	Forested Wetland	6.56	9.12	5.76	1.64	5.27	1.83	0.59
	Stream Impacts Total (linear feet):****	106,445	103,165	85,192	83,291	86,404	85,299	80,582
	Ephemeral	87,432	83,795	68,414	66,804	69,506	68,673	65,692
	Intermittent	14,984	14,816	12,915	12,636	13,067	13,067	11,862
	Perennial	4,029	4,554	3,863	3,851	3,831	3,559	3,028
	*Total Natural Stream Impacts (Total Stream Impacts minus concrete gutters, culverts, dump rock gutters, and roadside ditches)*****	51,840	47,636	30,396	28,858	31,376	30,978	26,389
	Stream Relocation Impacts (linear feet):****	73,463	68,675	55,557	53,360	56,480	55,788	51,629
	Floodplain Impacts (in acres):	125.55	145.50	126.98	99.69	128.52	102.29	75.15
	Groundwater Impacts:							
	Private Wells (IDNR listed wells within 1,000')	86	85	71	69	72	72	73
	Public Wells (IDNR listed significant water withdrawal facilities within 1,000')	2	2	1	1	1	1	1
	Wellhead Protection Areas (IDNR listed areas within 1,000')	1	1	1	1	1	1	1
	Sole Source Aquifers - None in Study Area	0	0	0	0	0	0	0
	Riparian Impacts (in acres):	198.47	181.08	116.16	113.34	121.59	119.08	107.27
5.20	Forest Impacts: (total acres of impact and percent of total acres, 1,904.22 total acres in corridor)	440.96 (23.16%)	406.03 (21.32%)	245.50 (12.89%)	235.99 (12.39%)	256.26 (13.46%)	248.66 (13.06%)	229.06 (12.03%)
Forest	Total Wetland Forest Impacts (within alternative right-of-way in acres)	7.80	10.36	6.89	3.05	6.94	3.09	1.40
	Forest 025 wetland impact acres	0.10	0.23	0.00	0.16	0.15	0.15	0.16
	Forest 122 wetland impact acres	0.27	0.38	0.28	0.28	0.28	0.28	0.28
	Forest 126 wetland impact acres	0.00	0.60	0.60	0.36	0.60	0.51	0.00
	Forest 130 wetland impact acres	0.00	0.01	0.00	0.00	0.00	0.00	0.00
	Forest 131 wetland impact acres	0.40	0.71	0.71	0.33	0.71	0.50	0.03
	Forest 134 wetland impact acres	2.96	4.34	4.26	1.13	4.14	0.59	0.23
	Forest 136 wetland impact acres	0.14	0.14	0.14	0.14	0.14	0.14	0.14
	Forest 139 wetland impact acres	0.00	0.00	0.10	0.00	0.00	0.00	0.00
	Forest 144 wetland impact acres	0.00	0.00	0.07	0.00	0.00	0.00	0.00
	Forest 145 wetland impact acres	0.33	0.33	0.00	0.00	0.00	0.00	0.00
	Forest 147 wetland impact acres	1.04	1.04	0.25	0.13	0.25	0.25	0.11
	Forest 150 wetland impact acres	1.57	1.58	0.00	0.00	0.00	0.00	0.00
	Forest 151 wetland impact acres	0.06	0.06	0.04	0.01	0.00	0.00	0.00
	Forest 152 wetland impact acres	0.55	0.55	0.42	0.21	0.39	0.39	0.17
	Forest 154 wetland impact acres	0.01	0.01	0.01	0.00	0.00	0.00	0.00

Table 6-10: Comparative Impacts Summary - Section 5 Alternatives

FEIS Section	Potential Impacts	Alternative 4	Alternative 5	Alternative 6	Alternative 7	Preferred Alternative 8		Refined Preferred Alternative 8
						Option A Full Interchange	Option B Partial Interchange	
	Forest 221 wetland impact acres	0.37	0.38	0.01	0.28	0.28	0.28	0.28
	Forest 229 wetland impact acres	0.00	0.00	0.00	0.02	0.00	0.00	0.00
	Total Upland Forest Impacts (in acres)****	433.16	395.67	238.61	232.94	249.32	245.57	227.66
	Core Forest Impacts (in acres):	87.23	76.82	45.88	44.52	44.86	44.97	41.84
5.21	Total Karst Features Impacts (number of features, and acres):	144 (439.7 ac)	138 (430.2 ac)	109 (338.5 ac)	113 (340.3 ac)	110 (343.7 ac)	110 (343.7 ac)	110 (347.3 ac)
Karst	*Caves Recharge Area (number of features and acres)*	*1 (51.5 ac)*	*1 (51.0 ac)*	*1 (38.8 ac)*	*1 (39.4 ac)*	*1 (38.0 ac)*	*1 (38.0 ac)*	*1 (37.4 ac)*
	Sinking Streams Watershed (number of features and acres)	*5 (307.3 ac)*	*5 (304.4 ac)*	*5 (253.3 ac)*	*5 (257.5 ac)*	*5 (257.4 ac)*	*5 (257.4 ac)*	*5 (259.7 ac)*
	Sinkhole Drainage (number of features and acres)	*105 (147.0 ac)*	*95 (141.1 ac)*	*76 (101.3 ac)*	*78 (97.7 ac)*	*76 (100.4 ac)*	*76 (100.4 ac)*	*77 (101.1 ac)*
	Buried Sinks (number of features and acres)	*14 (30.5 ac)*	*15 (29.5 ac)*	*14 (23.4 ac)*	*14 (24.4 ac)*	*14 (25.3 ac)*	*14 (25.3 ac)*	*14 (25.9 ac)*
	Total Springs	*19*	*22*	*13*	*15*	*14*	*14*	*13*
	No. that are <2 gpm (gpm - gallons per minute)	4	3	2	2	2	2	2
	No. that are 2-10 gpm (gpm - gallons per minute)	10	14	7	9	8	8	8
	No. that are 11-100 gpm (gpm - gallons per minute)	4	4	3	2	3	3	2
	No. that are >101 gpm (gpm - gallons per minute)	1	1	1	2	1	1	1
	Relevant Karst Area (in acres)	*909.4*	*874.5*	*686*	*683.3*	*710.5*	*710.5*	*713.7*
5.22	Total Managed Lands/Acres in ROW	26.32	26.09	6.13	6.49	5.48	5.48	8.29
Managed Lands	*Acres within Morgan-Monroe State Forest Boundary*	7.64	5.71	1.22	0.07	0.10	0.10	0.10
5.23 Permits	Permits Potentially Needed Prior to Construction	USACE Section 404 Permit, IDEM Section 401 Certification, IDEM Isolated Wetland Permit, IDNR Construction within Floodway Permit, NPDES Permit, IDEM Rule 5, USEPA Class V Injection Well Permit						
5.24	Cumulative Land Use Changes (in acres) Monroe and Morgan Counties:							
Cumulative Impacts	*Direct conversion of agricultural land to ROW*	*-151*	*-162*	*-67*	*-72*	*-69*	*-58*	*-62*
	Direct conversion of upland forests to ROW	*-433*	*-396*	*-239*	*-233*	*-249*	*-246*	*-228*
	Indirect conversion of agricultural land	*-32*	*-37*	*-33*	*-37*	*-37*	*-37*	*-37*
	Indirect conversion of upland forest land	*-40*	*-47*	*-41*	*-47*	*-47*	*-47*	*-47*
	Total Direct and Indirect/Induced Agricultural Changes	*-183*	*-199*	*-100*	*-109*	*-106*	*-95*	*-99*
	Total Direct and Indirect/Induced Upland Forest Changes	*-473*	*-443*	*-280*	*-280*	*-296*	*-293*	*-275*
	Total Agricultural Land to be Converted for Forest and Wetland Mitigation	*-472*	*-449*	*-275*	*-249*	*-282*	*-267*	*-239*
	Total Upland Forest Mitigation	*433*	*396*	*239*	*233*	*249*	*246*	*228*
	Total Agricultural Changes from Others (including No Build Alternative)	*-2953*	*-2953*	*-2953*	*-2953*	*-2953*	*-2953*	*-2953*
	Total Upland Forest Changes from Others (including No Build Alternative)	*-3788*	*-3788*	*-3788*	*-3788*	*-3788*	*-3788*	*-3788*
	Total Agricultural Cumulative Land Use Change	*-3608*	*-3601*	*-3328*	*-3311*	*-3341*	*-3314*	*-3291*
	Total Upland Forest Cumulative Land Use Change	-3828	-3835	-3829	-3835	-3835	-3835	*-3835*

Table 6-10: Comparative Impacts Summary - Section 5 Alternatives

FEIS Section	Potential Impacts	Alternative 4	Alternative 5	Alternative 6	Alternative 7	Preferred Alternative 8		Refined Preferred Alternative 8
						Option A Full Interchange	Option B Partial Interchange	
5.25 Energy	Energy Impacts	Major one-time energy resources demand during construction. Once in operation, Build Alternatives will greater fuel consumption than No Build Alternative due to higher amount of vehicle miles traveled and increased speed. All Build Alternatives will have nearly identical results for annual VMT, daily fuel consumption, annual BTUs, and BTUs per VMT, making them virtually equal in the amount of energy consumption.						
5.26 Short-term v. Long-term	Short-term uses versus Long-term productivity	Temporary construction impacts. Permanent loss of croplands, forests, developed lands, and displacements. Long-term benefits of improved transportation linkage, accessibility, safety, and travel time savings.						
5.27 Irreversible and Irretrievable Commitment of Resources	Irreversible and Irretrievable Commitment of Resources	Potential impacts include permanent commitment of state and federal funds; resources for construction including fossil fuels, labor, and construction materials; environmental impacts; and, induced development. Anticipated benefits include improved transportation linkage and accessibility; improved safety, travel time savings; and, greater availability of services.						
8 Section 4(f) and 6(f) Resources	Section 4(f) Evaluation							
	Wapehani Mountain Bike Park	No	*de minimis*	No	*de minimis*	No	No	*de minimis*
	North Clear Creek Historic Landscape District	Yes	Yes	*de minimis*	No	*de minimis*	*de minimis*	*de minimis*
	Section 6(f) Evaluation - None in Study Area	Not Applicable						

** Right-of-way costs developed using criteria found in **Appendix D**, Cost Estimation Methodology, and include costs for acreage and improvements required for actual construction, relocation costs, costs for acquiring structures and improvements due to lost access, and administrative fees.*

*** Total right-of-way is the sum of all lands that would be within an alternative's right-of-way, including the direct conversion of existing SR 37 and local right-of-way and new right-of-way required. This includes both privately owned lands that would be acquired and those lands already within existing SR 37 right-of-way. The total right-of-way is less than the sum of impacts to land use types (by 8.3 to 10.6 acres depending on the alternative), due to overlaps between land use types. The area for some small streams in forested areas is not subtracted from the forest land cover.*

**** NRCS consultation was conducted based on Alternative 8 (Option A). Total prime/unique farmland for Alternative 8 (Option B) and the Refined Preferred Alternative 8 would be less than 32.52 acres and 71.35 acres respectively for Monroe and Morgan counties. Total prime/unique farmland for Refined Preferred Alternative 8 would be less than 32.52 acres and 71.35 acres respectively for Monroe and Morgan counties. No statewide or locally important farmlands impacted.*

***** Calculations include bifurcation area in Subsection 5E.*

****** Total Natural Stream Impacts are total streams minus concrete gutters, culverts, dump rock gutters, and roadside ditches.*

Note: All impacts are by preliminary right-of-way, and not necessarily the amount to be acquired, except wetland impacts which are by construction limits.

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6.4.2 Preferred Alternative Costs and Impacts Compared with Tier 1 Estimates

The Tier 1 FEIS presented tables that included estimates of cost and major impacts for each Tier 2 section of the proposed I-69 Preferred Alternative. Table 6-30 of that document (page 6-62) presented the estimates for Section 5. Tier 1 costs and impacts in Section 5 were determined based upon preliminary right-of-way. As shown in **Table 6-11**, project costs, right-of-way acquisition, displacements, wetlands, floodplains, and farmland impacts for the Tier 2 Refined Preferred Alternative 8 are lower than the Tier 1 FEIS estimates. Forests are higher with the Tier 2 Refined Preferred Alternative 8 than what was estimated in Tier 1 FEIS for Section 5. An explanation for these changes from Tier 1 is provided below, to evaluate the differences between the Tier 1 and Tier 2 impact estimates.

Table 6-11: Comparison of Tier 1 FEIS Costs and Impacts to Tier 2 Refined Preferred Alternative 8

Data and Resources	Tier 1	Tier 2 Refined Preferred Alternative 8
Length (miles)	22.3	21.1
Project Cost ($ million)*	438M to 474M	394M
Area of New Right-of-Way (acres)	585	327
Farmland (acres)	385	60
Upland Forest (acres)	90	228
Wetlands (acres)	5	3.4
Floodplain (acres)	100	75
Residential Displacements	146	119
Business Relocations	22	17

** Cost estimates are for the year 2015. Tier 1 estimates have been adjusted to account for inflation so that an accurate comparison can be made between estimated Tier 1 and Tier 2 costs. Tier 1 estimate does not include the cost for construction administration, utility relocation or mitigation. Tier 2 cost estimates include construction administration, utility relocation and mitigation.*

Note: All impacts are by preliminary right-of-way and not necessarily the amount to be acquired, except wetland impacts which are by construction limits.

Project Cost

The cost estimates for the Section 5 alternatives were calculated in Year 2012 dollars, and escalated to Year 2015 at an annual inflation rate of 3.5%. The Tier 1 estimates were in Year 2000 dollars and also escalated at the same inflation rate of 3.5%. As noted in the footer to **Table 6-11**, the Tier 2 cost estimates include three additional items (utility relocation, mitigation and construction administration) which were ***excluded*** from the Tier 1 cost estimates. Tier 1 construction and right-of-way cost estimates ranged between $438 and $474 million. Refined Preferred Alternative 8 would be $394 million, which includes construction and right-of-way cost estimates, as well as the construction administration, utility relocation, and mitigation.

Right-of-Way

The area of land required for right-of-way with the Tier 2 Refined Preferred Alternative 8 is about 258 acres less when compared to the Tier 1 FEIS. The Tier 2 estimate for the Refined Preferred Alternative 8 was based on the right-of-way limits proposed including areas for the interchanges and local access roads. The Tier 1 right-of-way calculations included provision for access roads only if they were within the typical section of the mainline alternatives. The Tier 1 FEIS stated with regard to the cross sections used in the Tier 1 study, "The typical cross sections will be refined during subsequent phases of project development (Tier 2 environmental studies and design)" (Appendix E, *Development of Typical Cross Sections*, p. 1). The typical section right-of-way considered in Tier 1 for the preferred alternative between SR 37 and SR 39 was 420 feet wide for most of the corridor, except between SR 45 and SR 46, where it was 290 feet wide. (See Tier 1 FEIS, Appendix E, *Discussion of Alternative 3*.) The Refined Preferred Alternative 8 is typically 350 feet wide in the same interval.

Farmland

The Tier 1 FEIS estimated 385 acres of farmland impact. Refined Preferred Alternative 8 would have considerably less direct farmland impact, at 60 acres, which is approximately 84% less than the Tier 1 estimate. Much of the decrease in farmland impacts was due to the reduction in right-of-way. In addition, some of the increased forest impacts between Tier 1 and Tier 2 may be due to the reclassification of farmland (in the Tier 1 data sets) to forest (in the Tier 2 datasets). See discussion of forest impacts immediately following for details.

Forest

The Tier 1 forest data used for comparing corridors were the best available data showing forest cover within the 26-county Tier 1 study area and were suitable for comparing forest impacts for alternative corridors. It was provided by the United States Geological Survey (a subset of its National Land Cover Data set) and was derived by remote sensing photo interpretation techniques using satellite photography with a nominal 30-meter (approximately 100 foot) resolution. The nominal date for this data was 1992. The estimates for forest impacts in this Tier 2 study are based upon field surveys, which identified many smaller forested areas (such as fencerow and streamside forests) that may not have been identified in the dataset used in Tier 1.

The forest impacts estimated for Refined Preferred Alternative 8 would be approximately 228 acres, which is higher than the 90 acres estimated in the Tier 1 FEIS. The Tier 1 FEIS estimates included parallel frontage roads while Tier 2 includes local access roads outside of the mainline typical sections. These are primarily located within the rural (i.e. forested) areas of the Section 5 corridor and connect existing local roads. The Tier 1 FEIS typical section assumed that any local access roads were immediately adjacent to, and part of the typical section of, the mainline. These differences in the footprints are consistent with the acreage changes between the Tier 1 FEIS Preferred Alternative and the Tier 2 Refined Preferred Alternative 8.

Wetlands

The differences between Tier 1 and Tier 2 impacts are partially the result of the procedures used to identify the impacts; i.e., Tier 1 estimates were based primarily on available published data while Tier 2 evaluations were based primarily on preliminary design and field reconnaissance combined with resource materials and updating aerial photography. Therefore, whereas Tier 1 identified wetlands using National Wetland Inventory (NWI) mapping that contains data which are not always field-verified, Tier 2 wetlands were identified by field wetland delineations and resulted in the substantial increase in the number and total acres of wetlands within the Section 5 corridor.

Refined Preferred Alternative 8 would have 1.6 acres less of wetland impacts than the Tier 1 FEIS estimated at 5 acres of impact. Refined Preferred Alternative 8 would have about 3.4 acres of wetland impact. The Tier 1 FEIS assumed that the existing Walnut Street partial interchange would be retained,[8] and it was for the Refined Preferred Alternative 8. Additionally, the removal of a local access road connecting Walnut Street to Connaught Road on the east side of the mainline through the Beanblossom Valley area under Refined Preferred Alternative 8 contributes to the reduction in wetland acreage from the estimated impacts.

Floodplains

Floodplain impacts for Refined Preferred Alternative 8 are 25 acres less than the estimated 100 acres with the Tier 1 preferred alternative. The Tier 2 studies (using updated IDNR and FEMA floodplain mapping) provided a more precise determination of right-of-way requirements than was available during Tier 1. The acres of mapped floodplain increased substantially between the Tier 1 and Tier 2 studies. This information was used to modify the alignment, particularly at the Liberty Church Road interchange, to minimize impacts to floodplains.

Residential Displacements

The 119 potential residential displacements for Refined Preferred Alternative 8 are less than the Tier 1 FEIS estimate of 146 displacements. Modifications were made to narrow the right-of-way width and further refinements minimized potential displacements. In addition, the *de minimis* use of the Section 4(f) Wapehani Mountain Bike Park avoided 11 residential displacements from Hickory Heights and Van Buren neighborhood. This resulted in a reduction in the overall number of residential displacements from the Tier 1 FEIS estimate.

Business Relocations

The Tier 1 FEIS estimated 22 business relocations. Refined Preferred Alternative 8 would result in 17 potential business relocations, five less than the Tier 1 FEIS estimate. The Refined Preferred Alternative 8 commits to the use of engineering solutions to avoid displacing businesses within the Monroe Hospital Administration and Billing building.

[8] See Tier 1 FEIS, Volume III (Environmental Atlas), Preferred Alternative 3C, p. 15 of 20.

6.4.3 Summary

Based on the alternatives analysis for this project, Refined Preferred Alternative 8 was identified as the Preferred Alternative for the proposed project, as described in the previous sections. **Chapter 7**, *Mitigation and Commitments*, discusses the mitigation proposed for Refined Preferred Alternative 8. The **Summary** chapter contains an executive summary of the purpose and need, alternatives considered, impacts, mitigation and permitting, as well as the next steps for the proposed project.

Chapter 6 Figure Index

Figure Reference	Number of Sheets
Figure 6-1: Subsections for Section 5	(p. 6-11)

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