

FHWA-IN-EIS-02-02-F

SR 25 Hoosier Heartland Highway
From I-65 in Lafayette to US 24/US 35 in Logansport
Tippecanoe, Carroll, and Cass Counties, Indiana

Final Environmental Impact Statement

Submitted Pursuant to 42 U.S.C. 4332 (2) (c)

by the

U.S. Department of Transportation
Federal Highway Administration

and

Indiana Department of Transportation

November 2004

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11/16/2004

Date of Approval

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The Indiana Department of Transportation conducted an in-depth study of the need to improve the transportation corridor between Lafayette and Logansport, Indiana. The proposed project begins east of the SR 25 / Interstate 65 (I-65) interchange in Lafayette and heads northeast to terminate at US 24/US 35 in Logansport, a distance of approximately 35.3 miles. The project corridor, which extends through Tippecanoe, Carroll, and Cass counties, Indiana, would complete the 99-mile stretch of the Hoosier Heartland Highway between Lafayette and Fort Wayne, Indiana. This document analyzes the potential impacts of the project from Lafayette to Logansport, and considers the following alternatives: (1) provision of alternative modes to transport people and goods, (2) Transportation System Management strategies, (3) No-Build Alternative, and (4) several Build Alternatives involving construction of an improved highway either along the existing roadway or on new alignment. The study reveals the major benefits of the project are associated with decreased travel time, improved safety, and better system linkage, while the major impacts are associated with land use (farmland) and property displacements. A Preferred Alternative has been recommended that provides a four-lane divided, partial access-control roadway with an average 300-foot-wide right-of-way. A Record of Decision (ROD) will be made following the comment deadline.

Comments on the FEIS are due by December 27, 2004, as published in the Federal Register. Comments should be sent to Mr. Roger Manning, INDOT, 100 North Senate Avenue, IGCN ROOM N855, Indianapolis, Indiana 46204-2218; or to Mr. David Smith, Qk4, Pinnacle Center, 3317 Grant Line Road, Suite 102, New Albany, Indiana 47150; or submitted via the website: www.sr25study.com.

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SUMMARY

S.1 INTRODUCTION

The Indiana Department of Transportation (INDOT), in cooperation with the Federal Highway Administration (FHWA), proposes to provide transportation improvements in the State Route 25 (SR 25) corridor beginning east of the State Route (SR) 25 / Interstate 65 (I-65) interchange in Lafayette and heading northeast to terminate at US Highway 24/US 35 (referred to hereafter as US 24) in Logansport, a distance of approximately 35.3 miles. The project extends through Tippecanoe, Carroll, and Cass Counties, Indiana (see Figure S-1, page S-2).

On November 24, 1999, FHWA published a Notice of Intent (NOI) in the *Federal Register* advising the public that an Environmental Impact Statement (EIS) would be prepared for the proposed highway project. FHWA and INDOT concurred in approving the *Draft EIS* in August 2002 with the No-Build Alternative and Build Alternatives 1, 2, 3 and 4 still under consideration. Public hearings were held in the project area October 1, 2, and 3, 2002. In January 2003, INDOT announced its recommendation for a Preferred Alternative—**Alternative 2**—to be advanced to the *Final Environmental Impact Statement* (FEIS). This FEIS is the result of a multi-year planning effort involving extensive public input; on-going coordination with local, state, and federal agencies; detailed environmental assessments; and thorough analyses of historical and socioeconomic issues. It is a comprehensive updating of the draft document, changes to which are an outgrowth of the public involvement and agency coordination process.

S.2 PROJECT PURPOSE AND NEED

This project is part of a planned Heartland Corridor Highway improvement from Lafayette, Indiana, to Toledo, Ohio—a distance of approximately 200 miles. This project will complete the 99-mile Hoosier Heartland Highway (Lafayette to Fort Wayne) portion of the corridor. The *Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA)* and *The Transportation Equity Act for the 21st Century (TEA-21)* listed the Heartland Industrial Corridor among the 21 “High Priority Corridors on the National Highway System.” The purpose of the project is to complete a critical link in the corridor, providing an important regional facility that will serve traffic, improve safety, and meet current design standards. The need for the project is as follows:

- To reduce congestion, and improve the efficiency and capacity of transportation between Lafayette and Logansport by providing an alternative that will facilitate the movement of traffic.
- To improve safety and meet current design standards.
- To enhance the regional and local transportation network by improving and completing the transportation system between Fort Wayne and Lafayette.
- To implement federal legislation promulgated in the *Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA)* and the *Transportation Equity Act for the 21st Century (TEA-21)*; and to respond to the designation of SR 25 as a Statewide Mobility Corridor in INDOT’s Long Range Plan.

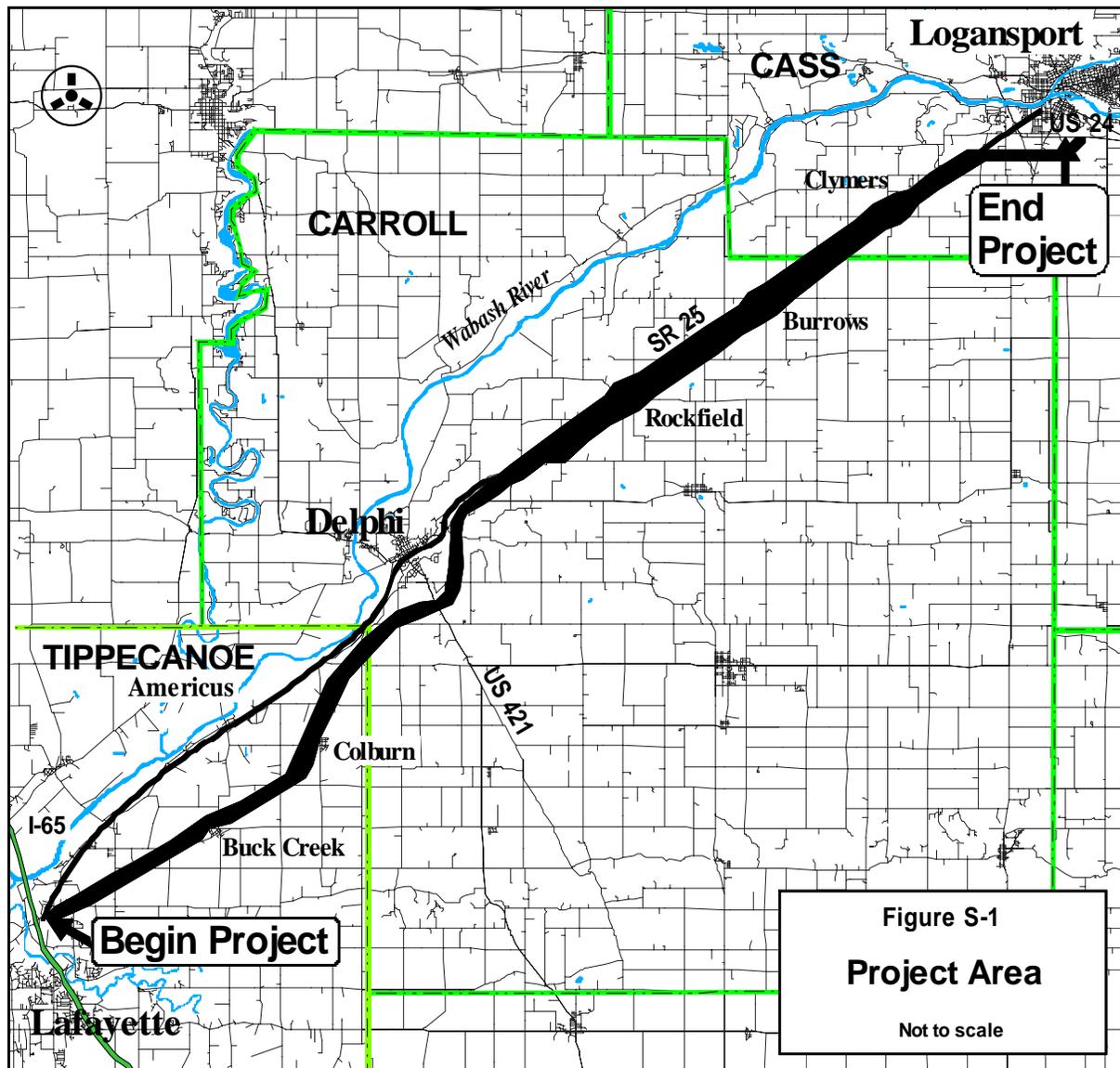
S.3 EXISTING ROADWAY CONDITIONS

SR 25 is functionally classified on the Indiana highway system as a Rural Other Principal Arterial, and as an Urban Other Principal Arterial within the Urban Area Boundary (UAB) of Logansport. Existing SR 25 is a two-lane facility, constructed circa 1931, with minimal earth shoulders throughout most of the 33-mile-long Lafayette-to-Logansport corridor. The driving lanes are approximately 12 feet wide and the present

driving surface is asphalt throughout. The predominant posted speed is 55 miles per hour (mph), with reduced speeds in the I-65 interchange area and through Delphi and several small communities.

Vertical curve deficiencies in the alignment create substandard stopping and intersection sight distances for a sum of approximately four miles in the overall project length. Obstructions on the existing roadside slopes—including trees, culvert headwalls, utility poles, and substandard guardrail end treatments or steep embankment slopes without guardrails—reduce the desired recovery zone.

Access control is by driveway permit, only, and there are approximately 145 private entrances along this corridor. In addition, in the project area, existing SR 25 has three at-grade railroad crossings: the Norfolk Southern railroad in Delphi, a Norfolk Southern spur serving industries near Clymers, and the Winamac Southern railroad near Clymers. There are 81 public crossroads that intersect existing SR 25. At-grade railroad crossings occur on approximately 40 of these crossroads. Currently 41 trains per day, on average, use the Norfolk Southern railroad through the project area. The average is expected to increase to 65 trains per day within the next few years.



S.4 PROJECT DESCRIPTION

The approximately 35.3-mile-long, four-lane divided highway would be designated SR 25. The construction cost (excludes utilities) is estimated to be \$240.7 million with **Preferred Alternative 2**. The western terminus of the highway would be immediately east of the SR 25 / I-65 interchange in Lafayette. The eastern terminus in Logansport—at US 24—is at the western terminus of the completed portion of the Hoosier Heartland Highway between Logansport and Fort Wayne.

The connections to public crossroads would be at-grade intersections, interchanges at US 421 in Delphi and SR 29-Burlington Avenue in Logansport, and connecting roads at selected locations where grade separations occur. The proposed SR 25 would bridge over all railroad crossings to eliminate conflicts. Several public crossroads will be reconstructed to bridge railroad tracks, or will be closed to through traffic, thereby eliminating up to 16 railroad crossings in the project corridor (the number depending on the build alternative considered). The design speed from I-65 to the former Aretz Airport would be 55 miles per hour (mph) and from the former airport to Logansport 70 mph.

The design year for the project is 2030. Traffic volumes on SR 25 for the current (base year 2000) and those projected for the design year are as follows: From the I-65 interchange to Tippecanoe County Road (CR) 450N, the current traffic volume on SR 25 is approximately 21,600 vehicles per day (vpd), and the projected volume is 29,000 vpd. Between CR 450N to Main Street in Delphi, current traffic volumes range from 7,700–15,500 vpd, and between Delphi to Logansport they range from 4,400–6,800 vpd. By the design year 2030, traffic volumes in those locations are projected to increase to 11,700–23,400 vpd, and 6,500–8,600 vpd, respectively, given the No-Build scenario.

S.5 TYPICAL SECTIONS

The new SR 25 mainline typical section would have an approximately 300-foot-wide right-of-way (the precise dimension will vary, depending on alignment and terrain features) within which would be two 3.6-meter-wide (12-foot) lanes in each direction separated by a 24-meter-wide (80-foot) depressed median that would include 1.2-meter-wide (4-foot) inside shoulders (paved and usable); a minimum 9-meter-wide (30-foot) outside clear zone containing 3.3-meter-wide (11-foot) usable shoulders, 3.0 meters (10 feet) of which would be paved. The typical section for state routes and high-volume county maintained connecting roads would include two 3.6-meter-wide (12-foot) lanes with 2.4-meter-wide (8-foot) usable outside shoulders, 1.8 meters (6 feet) of which would be paved. Low volume county roads would have two 3.3-meter-wide (11-foot) lanes with 1.8-meter-wide (6-foot) outside usable shoulders of which 1.2 meters (4 feet) would be paved.

S.6 ALTERNATIVES CONSIDERED

Alternatives that were considered to determine if they met the Purpose and Need included the following. Chapter 2 addresses all of these alternatives in detail.

Alternative Modes of Transportation—The ability of bus and rail transit to provide an alternative means of meeting transportation demands in the project area was considered and rejected. The SR 25 study corridor is primarily rural, and housing and employment are widely dispersed. Buses would require long routes and numerous stops to serve trip origins and destinations, thereby driving up running miles, time in transit, and both operating and user costs. Such a system would not be convenient, attractive to potential riders, or financially feasible. At present, the CSX, Norfolk Southern, and Winamac Southern railroad systems provide rail freight service in the project area. Approximately 41 freight trains per day pass

through the project area using Norfolk Southern tracks. Amtrak provides once daily passenger service from Lafayette to Indianapolis and Chicago, but the train does not traverse the project area. There is insufficient demand for passenger service, nor could the existing rail system in the foreseeable future handle passenger service through this corridor because of the high volume of freight traffic.

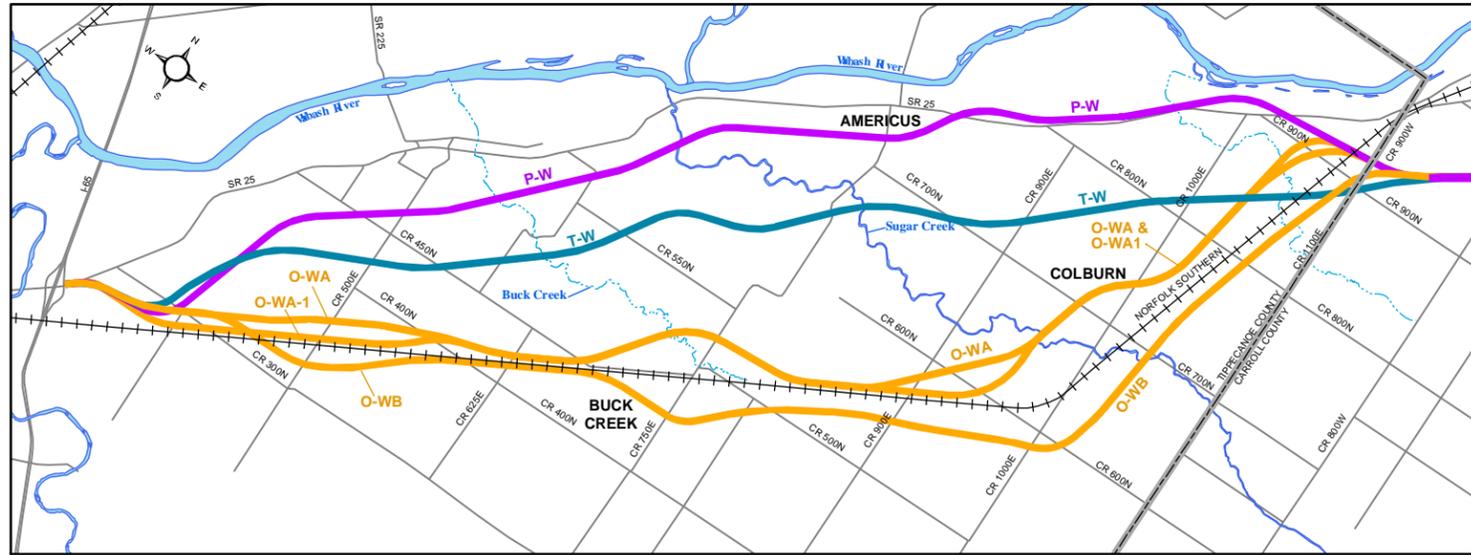
Transportation System Management—Improvements to intersections, minor alignment shifts, and other TSM measures would not correct deficiencies, increase capacity, or improve safety along the roadway sufficient to meet the Purpose and Need. TSM measures could not remove at-grade railroad crossings, increase roadside recovery zones and provide adequate shoulders throughout the corridor. The extensive improvements needed to meet the project’s Purpose and Need would be beyond the scope of TSM.

No-Build Alternative—Under the No-Build Alternative, INDOT would not reconstruct or relocate SR 25 between Lafayette and Logansport. The No-Build Alternative would not require the acquisition of additional right-of-way, nor would it directly affect land uses along existing SR 25. No displacements of homes or businesses would be required. No expenditures of funds for construction would occur, though there would be expenses associated with the maintenance of the existing roadway. The No-Build Alternative may be expected to result in worsened conditions for fast, safe, efficient, and economical (time and money) vehicular traffic movement. The No-Build Alternative would not meet the project Purpose and Need, i.e., to improve the transportation network, reduce congestion (improve traffic flow and travel time), and improve safety between Lafayette and Logansport.

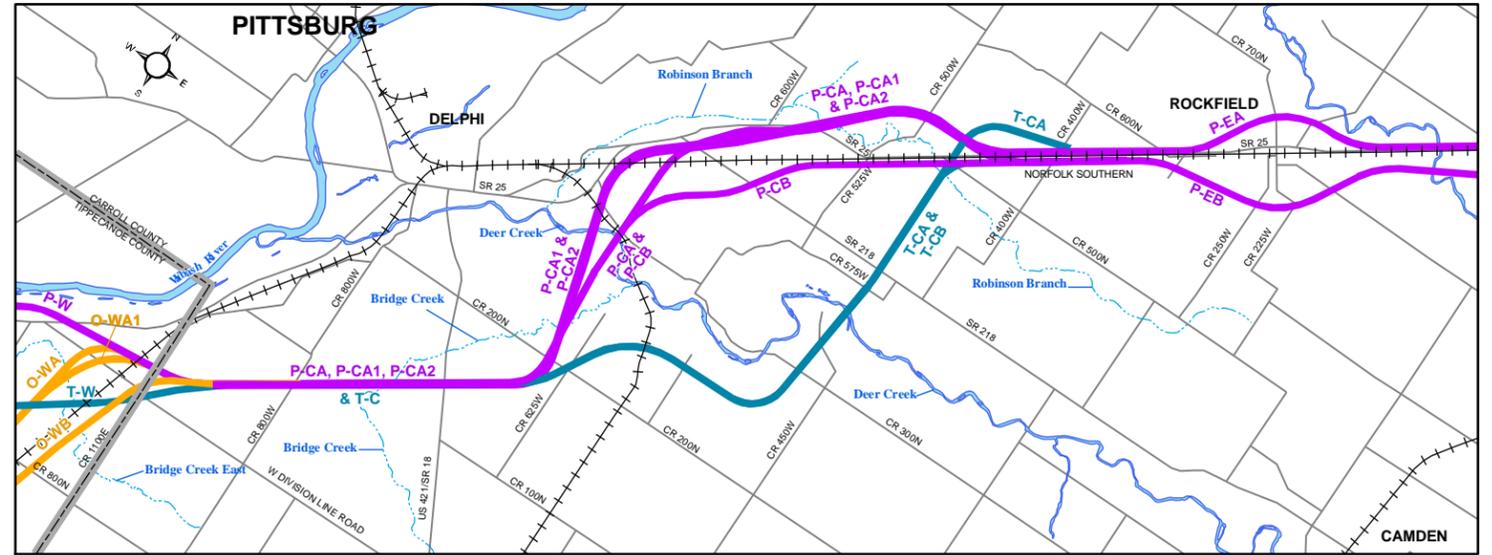
Build Alternatives—The identification and evaluation of build alternatives were the most important and critical steps of the study. Any alternative that could meet the Purpose and Need for the project was identified and given consideration. Starting from a wide range of corridors and potential alignments, the number was narrowed down to several preliminary alternatives as more detailed information was collected and analyzed. For ease of reference and analysis, the project area was divided into four major segments—Western, Central, Eastern, and Logansport—each of which contained two or more of the preliminary alternatives. Continuing analysis resulted in the elimination of several of these alternatives, and those remaining were combined to produce four build alternatives that extend the entire project length, from Lafayette to Logansport. The No-Build Alternative and the following four build alternatives were the subjects of the detailed socioeconomic and environmental analyses presented in the DEIS. In January 2003, following the period of public comment on the DEIS, INDOT recommended **Alternative 2** as the Preferred Alternative.

<u>Name</u>	<u>Combination</u>	<u>Length (in Miles)</u>
Alternative 1	O-WA + P-CA1 + P-EA + Y-LA	35.3
Alternative 2	O-WA1 + P-CA1 + P-EA + Y-LA	35.3
Alternative 3	O-WA + P-CA2 + P-EB + Y-LB	35.2
Alternative 4	O-WA1 + P-CA2 + P-EB + Y-LB	35.3

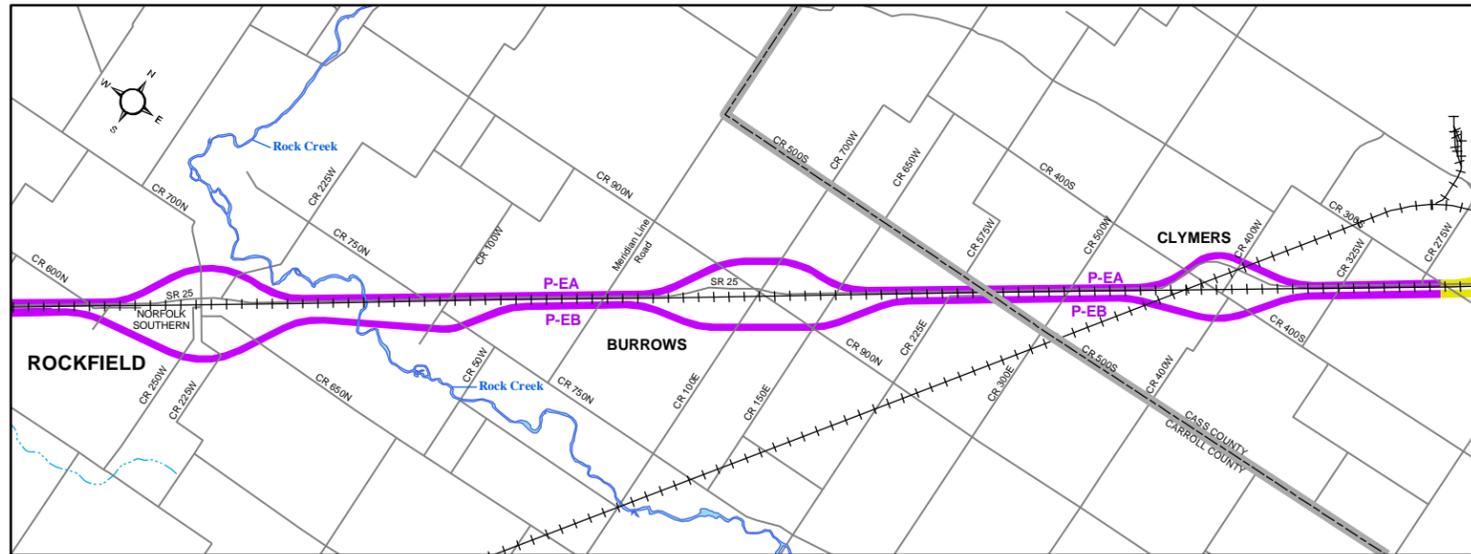
The following text identifies the build alternatives considered in each corridor segment during the evaluation process, summarizes the reasons for their elimination or advancement for further study in the DEIS, and describes **Preferred Alternative 2** and reasons for its recommendation over the other alternatives. Exhibit S-1, page S-5, shows all preliminary build alternatives. Build Alternatives 1–4, which were derived from combining select preliminary alignments, are depicted on Exhibit S-2, page S-7. **Preferred Alternative 2** is depicted on Exhibit S-3, page S-7. Detailed discussions of the identification and evaluation of all alternatives and recommendation of a Preferred Alternative comprise Chapter 2.



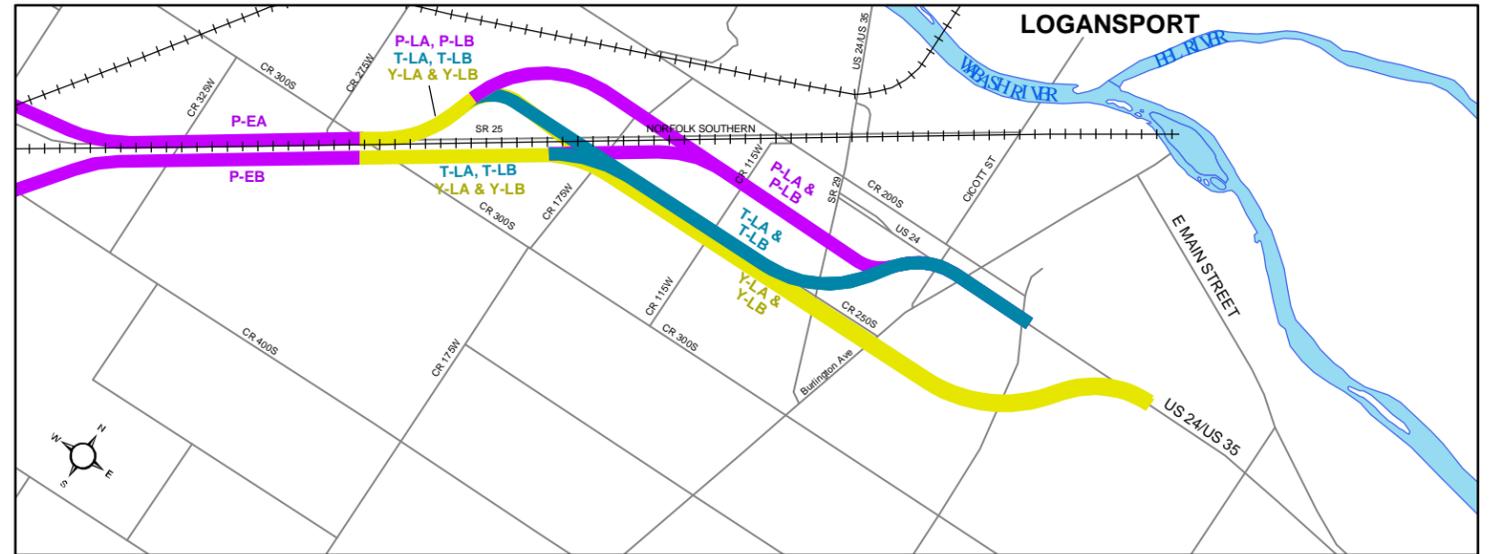
WESTERN SEGMENT



CENTRAL SEGMENT



EASTERN SEGMENT



LOGANSPORT SEGMENT



Architecture Engineering Construction

Exhibit S-1

Sheet 1 of 1

SR 25: Hoosier Heartland Highway
Lafayette to Logansport, Indiana

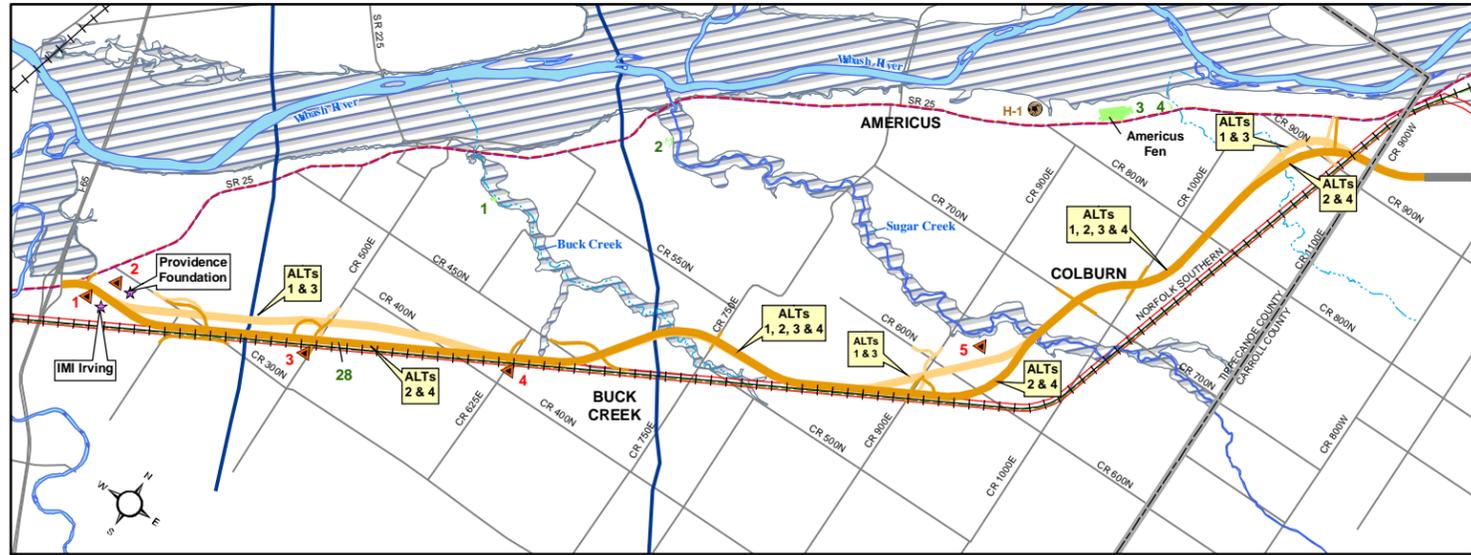
PRELIMINARY ALTERNATIVES CONSIDERED

Not To Scale

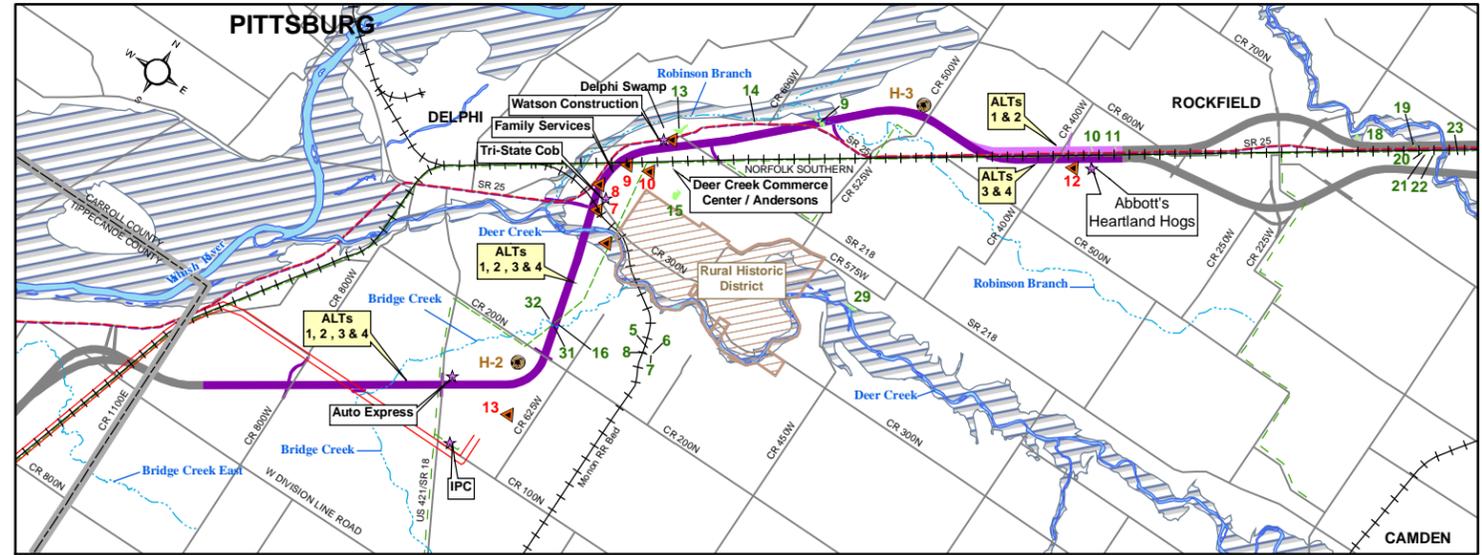
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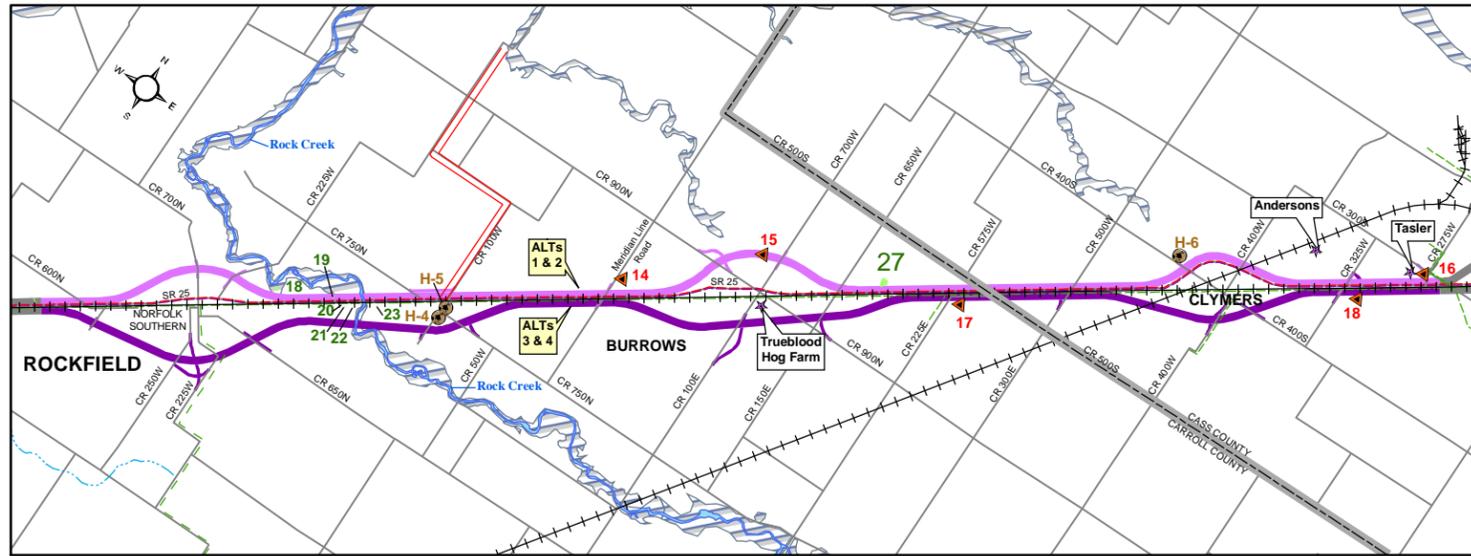
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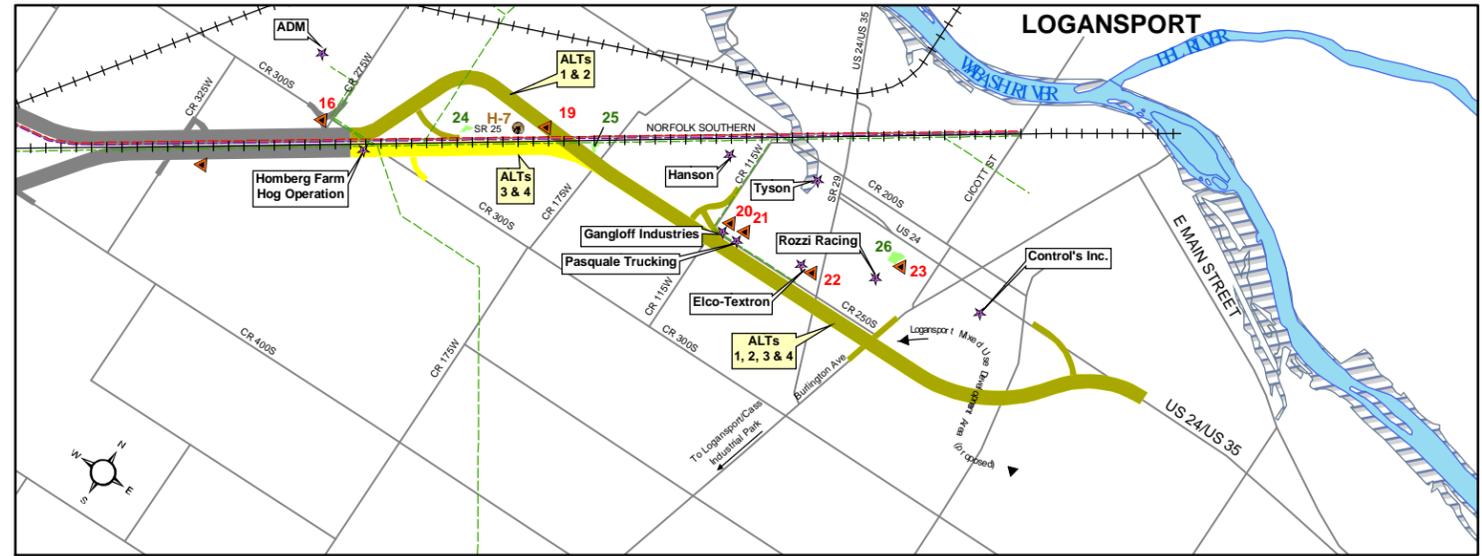
WESTERN SEGMENT
Alternatives 1 & 3 (O-WA)
Alternatives 2 & 4 (O-WA1)



CENTRAL SEGMENT
Alternatives 1 & 2 (P-CA1)
Alternatives 3 & 4 (P-CA2)



EASTERN SEGMENT
Alternatives 1 & 2 (P-EA)
Alternatives 3 & 4 (P-EB)



LOGANSPORT SEGMENT
Alternatives 1 & 2 (Y-LA)
Alternatives 3 & 4 (Y-LB)

- Rural Historic District
- Wetland Location and Site ID
- 100-Year Flood Boundary
- Potential HAZMAT Site and ID
- Historic Resource and Site ID
- Business Location
- Railroad Lines
- Low Pressure Gas
- High Pressure Gas
- Electric Transmission
- Underground Electric
- Fiber Optic Cable
- Underground Pipeline

Note: Site ID numbers reference data on tables in Chapter 4.0 of the FEIS.



Architecture Engineering Construction

Exhibit S-2

SR 25: Hoosier Heartland Highway
 Lafayette to Logansport, Indiana

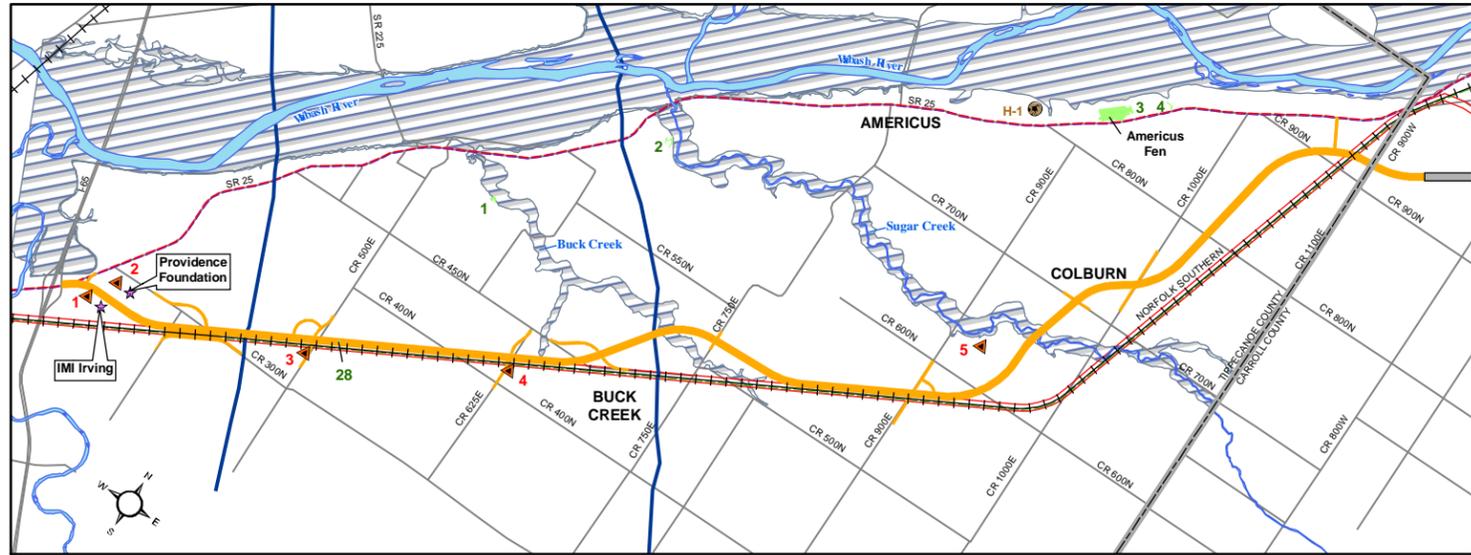
BUILD ALTERNATIVES

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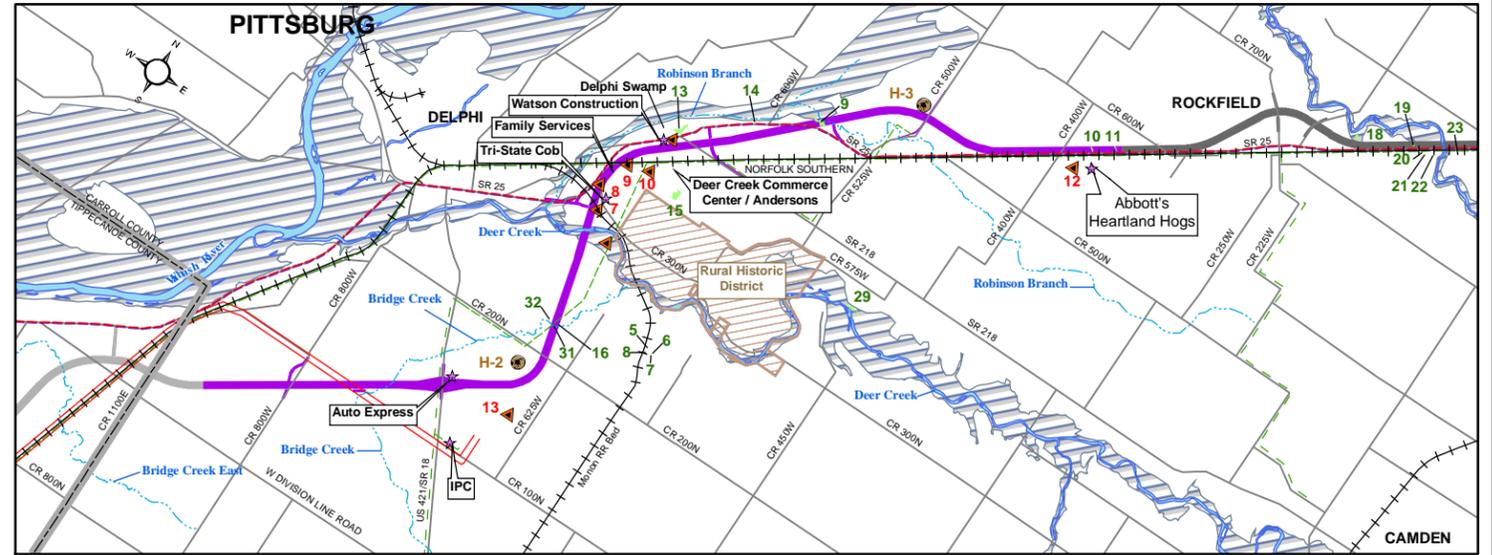
Sheet 1 of 1

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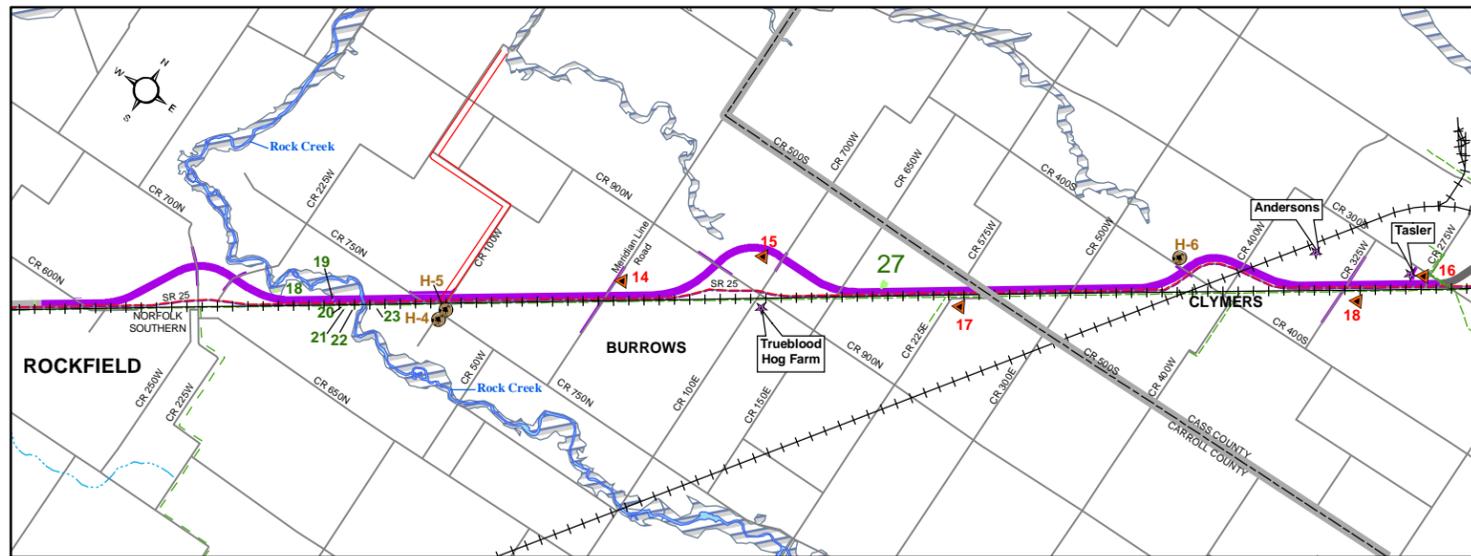
[Page 8]



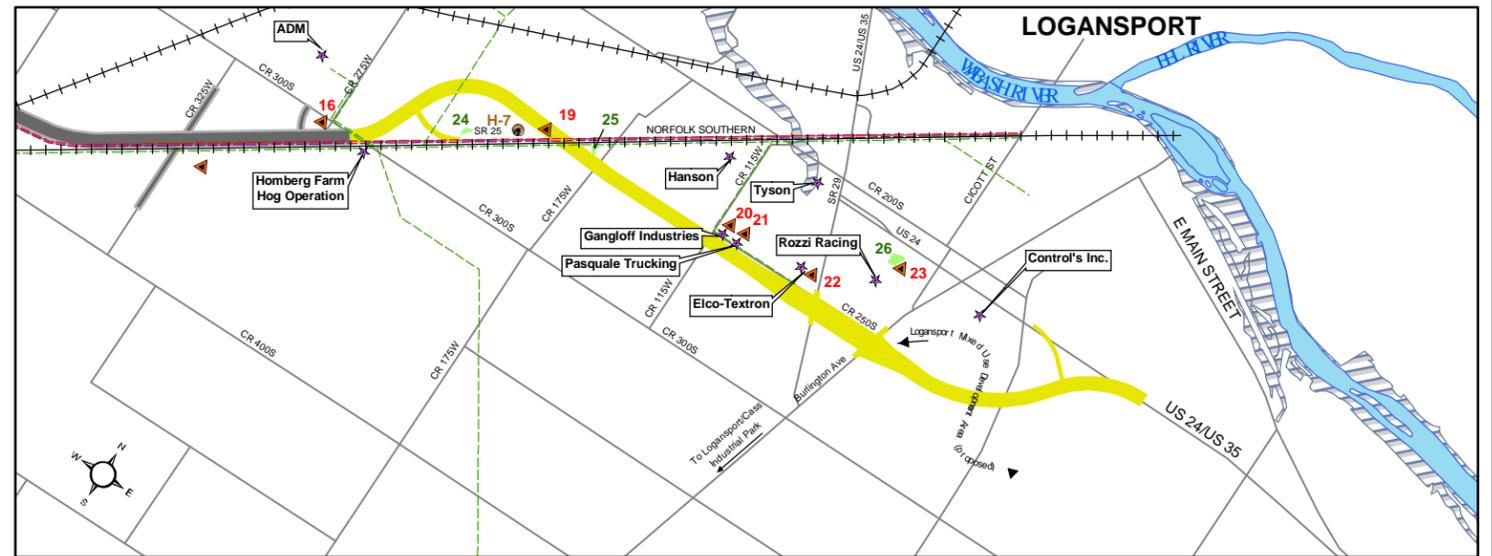
WESTERN SEGMENT
(O-WA1)



CENTRAL SEGMENT
(P-CA1)



EASTERN SEGMENT
(P-EA)



LOGANSPORT SEGMENT
(Y-LA)

- | | |
|-------------------------------|-----------------------|
| Rural Historic District | Railroad Lines |
| Wetland Location and Site ID | Low Pressure Gas |
| 100-Year Flood Boundary | High Pressure Gas |
| Potential HAZMAT Site and ID | Electric Transmission |
| Historic Resource and Site ID | Underground Electric |
| Business Location | Fiber Optic Cable |
| | Underground Pipeline |

Note: Site ID numbers reference data on tables in Chapter 4.0 of the FEIS.



Architecture Engineering Construction

Exhibit S-3

Sheet 1 of 1

SR 25: Hoosier Heartland Highway
Lafayette to Logansport, Indiana

PREFERRED ALTERNATIVE 2

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[Page 10]

- **Western Segment**—From east of the existing SR 25/I- 65 interchange in Tippecanoe County to just east of CR 1100E, in Carroll County, five build alternatives were identified for comparison :

Purple-West (P-W)	Orange-West A (O-WA)	Orange-West B (O-WB)
Orange-West A1 (O-WA1)	Teal-West (T-W)	

O-WA and O-WA1 were retained for further study in the DEIS. The other alternatives were eliminated for reasons that included failing to effectively meet the project Purpose and Need (particularly providing traffic relief on existing SR 25); and/or having notable farmland and environmental impacts, including impacts to wetlands, and sensitive natural areas at creek crossings.

Essentially, OWA separated the mainline from the Norfolk Southern railroad track by 1,000 feet while OWA-1 reduced this separation to 150 feet. O-WA1 was identified by INDOT as the preferred alignment. O-WA1 was preferred over O-WA primarily because, whenever possible, the O-WA1 alignment is adjacent to the railroad right-of-way and uses grade separations for rail crossings of the intersecting public roads. The benefits of this alignment outweighed those provided by O-WA in that the alignment better satisfies the performance measures related to Purpose and Need, is more responsive to local and regional planning initiatives, and has fewer residential relocations.

O-WA1’s western terminus begins immediately east of the intersection of existing SR 25 and the I-65 northbound exit/entrance ramps, and heads east to traverse the north and northwest edges of a limestone quarry’s gravel stockpile area. The alternative next traverses a portion of the former Aretz airstrip property now owned by the Providence Foundation, and then continues east adjacent to and paralleling the Norfolk Southern railroad track. The alignment crosses Tippecanoe CR 400E and CR 300N. The alignment crosses Tippecanoe CR 400E, which would be closed to through traffic at the Norfolk Southern track but connected to CR 300N via construction of a local service road (LSR) on the south side of the track. The alignment continues eastward adjacent to the track, providing a grade separation with CR 300N (with no connection to the new mainline), a one-quadrant interchange (grade separation with a single connector roadway ramp) with CR 500E, a grade separation with CR 625E (with indirect access to the mainline via CR 450N), and an at-grade intersection with CR 450N. and an at-grade intersection with CR 450N. Passing north of the community of Buck Creek, the alignment crosses Buck Creek and provides an at-grade intersection with CR 750E. The alignment rejoins the railroad right-of-way and provides a one-quadrant interchange (grade separation with a single connector roadway ramp) with CR 900E. It then turns northward, away from but still more-or-less parallel to the railroad right-of-way, and crosses CR 600N, which would be closed to through traffic and not have direct access to the mainline. The alignment next crosses Sugar Creek, and passes to the west of Colburn, providing an at-grade intersection with CR 700N and a grade separation with CR 1000E. The alignment next crosses CR 800N, which would be closed to through traffic and not have direct access to the mainline; and CR 900N, which would overpass the new road. A new connecting road (local service road) links existing SR 25 to the new alignment. The mainline then overpasses the railroad and CR 1100E whereupon it enters Carroll County. CR 1100E will remain open but will not have direct access to the new SR 25.

- **Central Segment**—From the terminus of the Western Segment east of CR 900W to just east of CR 400W in Carroll County, six alignments were considered:

Purple-Central A (P-CA)	Purple-Central A1 (P-CA1)	Purple-Central B (P-CB)
Teal-Central A (T-CA)	Purple-Central A2 (P-CA2)	Teal-Central B (T-CB)

P-CA1 and P-CA2 were carried forward for detailed analysis in the DEIS. The other alignments were eliminated for reasons that included failing to effectively meet Purpose and Need, encountering notable environmental impacts including the Delphi Swamp, and affecting archaeological and historical resources eligible for listing on the National Register of Historic Places (NRHP).

Both of the Central Segment build alternatives are on shared alignment until approximately one half mile east of CR 500W, where P-CA1 remains north of the Norfolk Southern railroad to provide a connection with P-EA, while P-CA2 crosses to the south side of the railroad to provide a connection with P-EB. P-CA1 was identified by INDOT as the preferred alignment primarily because it provides connection to P-EA, the Eastern Segment component of **Preferred Alternative 2**.

P-CA1 connects with O-WA1 and continues in a northeasterly direction, providing an at-grade intersection with Carroll CR 800W, then crossing CR 100N, which will not have direct access to the new road and will be closed to through traffic. After crossing a tributary to Bridge Creek, the alignment provides an interchange with US 421. The alignment then turns to the north, crosses Bridge Creek and intersects CR 200N, which overpasses and will not have direct connection to new SR 25. It again crosses Bridge Creek, and then crosses Deer Creek west of the High Bridge area and the Deer Creek Valley Rural Historic District. After the creek crossing the alignment crosses the abandoned Monon Railroad track and overpasses CR 300N, which will not have direct connection to the new SR 25. However, connection will be made in that vicinity between the new SR 25 and the existing SR 25/Main Street via construction of a local service road (LSR) intersecting the new mainline 800 feet east of Deer Creek. The alignment continues north, traversing the western edge of the Deer Creek Commerce Center property, west of The Andersons Grain Mill. It crosses over the Norfolk Southern railroad before turning to the northeast to align parallel to and south of existing SR 25 to just east of CR 600W, where it crosses existing SR 25. A new connector creates an at-grade intersection with SR 218, extending to existing SR 25. Another new connector creates an at-grade intersection with the new mainline linked to existing SR 25 0.7 mile east of CR 600W. The alignment continues in the northeasterly direction, crossing CR 500W, which will overpass and not have direct connection with the new mainline road. The alignment then curves to the east to adjoin the railroad right-of-way and cross CR 400W, which will not have direct access to the new road and will be closed at the new SR 25. This segment of the Preferred Alternative terminates just east of CR 400W.

Several changes were made to the preliminary plans for this segment of new SR 25 as a result of design considerations and the public involvement process.

- An interchange, rather than the at-grade intersection initially proposed, is planned at US 421. The modification was made in response to concerns expressed by local officials about access to Delphi via this heavily traveled US highway, which currently carries the highest traffic volumes of all Delphi area roads except existing SR 25. The primary impacts anticipated with this modification are the higher cost associated with interchange construction, and the addition of approximately 8.7 acres of land to the total amount to be acquired for right-of-way. (It is likely that the interchange would have been included as a feature of any build alternative selected as the Preferred Alternative.)
- CR 200N will not have an at-grade intersection with the new road. Instead, it will overpass the new road and not have direct connection to it, thereby reducing the number of access points along the new roadway, in keeping with the partial access control proposed for new SR 25.

- A new connector links the new mainline with existing SR 25. The connector is an extension of the new connector linking SR 218 with new SR 25. The extension facilitates access to/from several businesses and residences along existing SR 25, which will terminate just east of CR 600W, at the new mainline.
 - CR 500W will be grade-separated from new SR 25 rather than be closed at the new roadway. This change was made in response to a request from local officials and emergency responders.
 - CR 400W will be closed at the new road rather than have a direct connection. This change was requested by county officials and emergency service providers who preferred that CR 500W remain open instead of CR 400W. They noted that CR 400W is a narrow gravel road only one-quarter mile in length, whereas CR 500W is a wide, paved road two miles in length. The primary impact associated with this modification is a change in local access. Motorists who currently access existing SR 25 and locations south of that mainline via CR 400W will have to travel to CR 600N to access new SR 25 from the north, or to CR 500W to access new SR 25 and destinations south of the new mainline. Impacts related to changes in access are discussed in Chapter 4, Section 4.3.
- **Eastern Segment**— From the terminus of the Central Segment east of Carroll CR 400W to Cass CR 300S, two alignments were studied: Purple-East A (P-EA) and Purple-East B (P-EB).

The alignment of P-EA is north of the railroad, taking advantage of the existing SR 25 right-of-way throughout all of its length except where it bypasses the towns of Rockfield, Burrows, and Clymers to the north. P-EB is south of and parallel to the railroad except where it bypasses those three communities to the south.

P-EA was identified by INDOT as the preferred alignment. The primary determining factors in recommending P-EA are its ability to meet the project's Purpose and Need, and its location north of the railroad on an alignment that better enhances the local transportation network and improves safety by eliminating more at-grade railroad crossings than P-EB. The north-of-rail alignment better enhances the local transportation network and improves safety by eliminating more at-grade railroad crossings than the south-of-rail alignment. In concert with local planning initiatives, it also uses portions of the existing roadway, thereby reducing impacts to prime farmland and the cost of maintaining those sections of existing SR 25 that will revert to local jurisdictions.

From the terminus of the P-CA1 alignment in Carroll County to CR 300S in Cass County, the P-EA uses the existing SR 25 right-of-way, except where the alignment curves to pass north of Rockfield, Burrows, and Clymers. From west to east, the new road crosses Carroll CR 600N, which will have, by way of a connector, an at-grade intersection with the new SR 25; Walnut Street, which would be grade-separated with the new road; and CR 250W, which would have an at-grade intersection. Just east of Rockfield, the new road crosses Rock Creek. It then encounters CR 750N and CR 100W, which would be denied direct access at the new road but be connected to each other via construction of a section of local service road. Continuing eastward, P-EA provides a grade separation to carry Meridian Line Road over the new road and the Norfolk Southern railroad. Passing north of Burrows, at-grade intersections are proposed on the mainline with CR 900N and CR 100E. East of Burrows the Preferred Alternative crosses CR 150E, which would not have direct access to the mainline; and CR 500S, on the Carroll-Cass County line, where a grade separation is proposed to carry the crossroad over the new mainline road and the railroad. Next, P-EA crosses CR 500W, which would not have direct access to SR 25. Passing north of Clymers, the alignment provides an at-grade intersection

with CR 400S, and then overpasses CR 400W (Main Street) and the Winamac Southern railroad. The local road, CR 400W, would not have direct access to the mainline. The new alignment then bridges over a railroad spur linked to the Norfolk Southern railroad. East of Clymers the alignment provides a grade-separation with CR 325W, thereby carrying the crossroad over the new mainline road and the Norfolk Southern railroad. It also provides an at-grade “T” intersection with a connector to CR 300S. P-EA terminates just east of this intersection.

Two changes were made to the preliminary plans in this segment owing to design considerations and the public involvement process.

- CR 600N will have an at-grade connection with new SR 25, rather than no direct access. Access to the new road from the areas north of SR 25 just west of Rockfield will be needed in light of the elimination of a direct connection at North Walnut Street (see paragraph below).
- North Walnut Street will be grade-separated with new SR 25. Preliminary plans called for an at-grade intersection; however, another at-grade intersection is proposed at CR 250W, less than a mile north of North Walnut Street. The change to a grade separation at North Walnut Street is in keeping with the partial access control proposed for the new roadway. No notable environmental impacts are associated with this change. The grade separation on North Walnut Street will maintain local access to Rockfield, while there will be convenient access between Rockfield and new SR 25 via the at-grade intersection at CR 250W.

■ **Logansport Segment**—From the terminus of the Eastern Segment at CR 300S to the connection to US 24 in Logansport, six alignments were initially considered:

Yellow-Logansport A (Y-LA)	Yellow-Logansport B (Y-LB)	Purple-Logansport A (P-LA)
Purple-Logansport B (P-LB)	Teal-Logansport A (T-LA)	Teal-Logansport B (T-LB)

Y-LA and Y-LB were advanced for detailed analysis in the DEIS. The other alignments were eliminated from further consideration primarily because they had little local support, had more potential environmental impacts, and had more adverse impacts to businesses.

Y-LA and Y-LB share a common alignment for all but their western termini, where Y-LA continues from P-EA north of the railroad, and Y-LB continues from P-EB south of the railroad. INDOT identified Y-LA as the preferred alignment. The primary determining factor in recommending Y-LA is its location north of the railroad, providing a connection with the P-EA alternative in the previous (Eastern) segment.

Just east of its connection with P-EA, Y-LA heads north and forms an at-grade “T” intersection with a new connector to existing SR 25. Y-LA then turns southward to overpass the Norfolk Southern railroad and existing SR 25. It then crosses CR 175W, which will be closed at and have no direct access to the new SR 25. The alignment then heads eastward and crosses CR 115W, which will be closed at and have no direct access to the new SR 25. The alignment continues eastward parallel to CR 250S, and provides an interchange that will serve both SR 29 and Burlington Avenue. The alignment then heads northeast overpassing Old Kokomo Pike, with no direct connection to that crossroad. The mainline forms an at-grade “T” intersection with a new connector to existing US 24/US 35. The Preferred Alternative terminates at its connection with US 24/US 35 east of Old Kokomo Pike.

The following changes were made to the preliminary plans in this segment as a result of the public involvement process:

- During the DEIS public comment period, local government officials, community leaders, emergency service providers, and the public requested an interchange, rather than an at-grade intersection, at Burlington Avenue. Reasons cited by those requesting the interchange were safety, traffic handling, and the desire for a “gateway” access to Logansport. INDOT and FHWA agreed to provide an interchange that will provide access to both SR 29 and Burlington Avenue. The selected interchange configuration will improve connectivity with the area’s roadway network by providing access to SR 29, a state highway that ties into US 24/US 35 northwest of the project area, and Burlington Avenue, which is to become the “gateway” entrance into Logansport. The primary impacts of this change will be as follows: an estimated 5 additional residential relocations, the higher cost of constructing an interchange rather than an at-grade intersection, and the acquisition of 14.3 additional acres of land for right-of-way
- Direct access to new SR 25 from CR 115W was a feature of the four build alternatives presented in the DEIS. Owing to the proximity of CR 115W to SR 29 and the proposed interchange, direct access from CR 115W to new SR 25 is not a feature of **Preferred Alternative 2**.

It is likely that the interchange would have been included as a feature of any build alternative recommended as the Preferred Alternative.

S.7 SUMMARY OF ENVIRONMENTAL IMPACTS

The four build alternatives were evaluated based on their ability to meet the project Purpose and Need; their potential environmental impacts; and ongoing input from regulatory agencies, local government officials, interested groups and organizations, and the general public. **Preferred Alternative 2** is based on the results of these evaluations addressed in the DEIS evaluations, as well as on public and agency input following circulation of the DEIS and its associated public hearings. The Preferred Alternative combines the transportation advantages and other beneficial features detailed in the DEIS with design modifications that avoid or minimize impacts to sensitive resources within the corridor or address issues raised during the public comment period. Where two or more alternatives share an alignment, design modifications made subsequent to the issuance of the DEIS apply only to **Preferred Alternative 2**.

The following paragraphs summarize the potential environmental impacts of the project according to the subject of the impact (i.e., whether the impact is to land use, wetlands, historic resources, social conditions, air quality, etc.). Where impacts are specific to a particular proposed alternative, the alternative is identified. Where impacts would be similar with any build alternative, the discussion of impacts is presented in general terms. A summary of the impacts (pages S-34–S-36) concludes this Summary. Chapter 4 of this study presents a detailed discussion of each subject. For reference, the Chapter 4 subsection in which each discussion appears is identified in brackets [#.#] following each section title, below.

Land Use [4.1]—Construction of **Preferred Alternative 2** would require the acquisition of approximately 1,552 acres of additional right-of-way, including approximately 23 acres required for the construction of interchanges with US 421 and SR 29-Burlington Avenue. The majority of the land that would be acquired is in agricultural use, followed by rural-residential uses interspersed with residential neighborhoods near Lafayette, Delphi, and Logansport. In the predominantly rural areas, substantial land use changes are neither proposed in existing land use plans nor supported by most local residents. Strong local planning

exists within the project area. The project is anticipated and included in local land use plans and initiatives, and planning agencies have already begun to address the potential impacts of the project. Development that may take place as a result of the project most likely would occur in areas designated for development in local land use plans, and near the new roadway's at-grade intersections and interchanges with public crossroads, particularly those near communities. Future land use changes encouraged by the presence of a new roadway would be subject to controls through the comprehensive plans and zoning regulations in place, and/or approval of city and county officials.

Farmland Protection Policy Act and Impacts on Agricultural Lands [4.2]—Farmland would be acquired for right-of-way no matter which build alternative is considered. **Preferred Alternative 2** would acquire slightly more prime farmland than Alternative 1 (approximately 827 and 835 acres, respectively), and less than Alternatives 3 and 4 (approximately 937 and 945 acres, respectively). An additional 11 acres (approximate) of prime farmland would be acquired for construction of the interchanges at US 421 and SR 29-Burlington Avenue. Because these interchanges would likely have been proposed regardless which build alternative was selected as the Preferred Alternative, the 11 acres should be included in the prime farmland total for each alternative to provide a valid comparison. Farm severances would also occur, and some severed parcels would be too small to support productive farming. Efforts were made to develop alternatives more-or-less near and parallel to the railroad and/or existing SR 25 to reduce severance impacts to farms. Other indirect impacts to farmland could include loss of some farmland to development, particularly around local crossroads/proposed SR 25 intersections near communities. Local planning officials are very supportive of maintaining agricultural land use in the area, and the control of development is within each local government's jurisdiction through land use planning, and subdivision and zoning regulations. Coordination with the U.S. Department of Agriculture, Natural Resource Conservation Service (NRCS) has been ongoing, and the service's form AD-1006 was used to score impacts to farmland. Each alternative scored a relative value less than 160; therefore, assessing measures to mitigate impacts to prime farmlands was not required.

Social Impacts [4.3]—The proposed project would not cause major disruptions to subdivisions or platted neighborhoods, nor would it impact community cohesion by displacing a large number of residents or businesses or by cutting off residents from community facilities and service providers. The most notable impact to an urban residential area would occur on or near Burlington Avenue, where the interchange associated with **Preferred Alternative 2** will require acquisition of an estimated seven single-family residences. The interchange is intended to provide Logansport with the "gateway" access that it currently lacks. Access to community services would be improved for those residents remaining along Burlington Avenue. Some impact to community cohesion could be experienced in rural areas where housing is located adjacent to county/state road rights-of-way. Though these residences are generally few in number, a neighborhood-type sense of interdependence and cohesion can develop. Rural residents on scattered sites throughout the project area, as well as in towns such as Buck Creek and Colburn, may view a new four-lane roadway as both a physical and a psychological barrier between them and their neighbors and service providers.

Other social impacts are generally related to travel time and access. With any build alternative, some public crossroads would overpass the new SR 25 or be closed, and up to 16 railroad crossings would be eliminated (**Preferred Alternative 2**). Table S-1, page S-17 identifies proposed conditions for the area's major roads. For some commuters and local residents, the closing of crossroads would lengthen travel time to/from some destinations. In many cases, such inconvenience would be offset by the fact that the new road would improve travel time between communities, and the reduced traffic on those portions of existing SR 25 that will remain open would have a similar benefit.

TABLE S-1—Crossroad Intersections, Connections and Closings Under Consideration

	Alternatives			
	Alternative 1 OWA+PCA1+PEA+YLA	Preferred Alternative 2 OWA1+PCA1+PEA+YLA	Alternative 3 OWA+PCA2+PEB+YLB	Alternative 4 OWA1+PCA2+PEB+YLB
Western Segment (O-WA / A1)				
Exist. SR 25	1	1	1	1
CR 400E	N: 3 B / S: 4 B (connects to CR 300N)	N: 3 B / S: 4 B (connects to CR 300N)	N: 3 B / S: 4 B (connects to CR 300N)	N: 3 B / S: 4 B (connects to CR 300N)
CR 300N	1	2B	1	2B
CR 500E	1	2 A	1	2 A
CR 400N	3 B	3 B	3 B	3 B
CR 625E	2 B	2 B	2 B	2 B
CR 450N	1	1	1	1
CR 750E	1	1	1	1
CR 900E	1	2 A	1	2 A
CR 600N	3 B	3 B	3 B	3 B
CR 700N	1	1	1	1
CR 1000E	2 B	2 B	2 B	2 B
CR 800N	3 B	3 B	3 B	3 B
CR 900N	N: 3 B / S: 1	2 B	N: 3 B / S: 1	2 B
Exist. SR 25	5	5	5	5
CR 1100E	2 B	2 B	2 B	2 B
Central Segment (P-CA1 / 2)				
CR 800W	1	1	1	1
CR 100N	3 B	3 B	3 B	3 B
US 421	1	2 A	1	1
CR 200N	1	2 B	1	1
CR 300N	2 B	2 B	2 B	2 B
RR	2	2	2	2
SR 218	1	1	1	1
Exist. SR 25	1	N: 3 B / S: 1	1	1
CR 500W	3 B	2 B	3 B	3 B
CR 400W	1	3 B	S: 3 B	S: 3 B
Eastern Segment (P-EA / B)				
CR 600N	3 B	N: 4 A / S: 3 B	NA	NA
N. Walnut St.	1	2B	NA	NA
CR 250W	1	1	5	5
CR 225W	NA	NA	4 A	4 A
CR 650N	NA	NA	2 B	2 B
CR 750N	N: 4 B (connects to CR 100W) / S: 3 B	N: 4 B (connects to CR 100W) / S: 3 B	N: 3 B / S: 1	N: 3 B / S: 1
CR 100W	N: 4 B (connects to CR 750N) / S: 3 B	N: 4 B (connects to CR 750N) / S: 3 B	N: 3 B / S: 1	N: 3 B / S: 1
Meridian Line Rd.	2 B	2 B	3 B	3 B
CR 900N	1	1	N: 3 B / S: 1	N: 3 B / S: 1
CR 100E	1	1	1	1
CR 150E	3 B	3 B	3 B	3 B
CR 500S	2 B	2 B	3 B	3 B
CR 500W	3 B	3 B	N: 3 B / S: 1	N: 3 B / S: 1
CR 400S	1	1	2 B	2 B
CR 400W	2 B	2 B	1	1
CR 325W	2 B	2 B	2 B	2 B
CR 275W	4 A	(Access via CR 300S)	NA	NA
CR 300S	N: 1 / S: 3 B	N: 1 / S: 3 B	N: 3 B / S: 1	N: 3 B / S: 1
Logansport Segment (Y-LA / B)				
Exist. SR 25	5	5	NA	NA
SR 25	2 B	2 B	NA	NA
CR 175W	3 B	3 B	3 B	3 B
CR 115W	N: 1 / S: 3 B	3 B	N: 1 / S: 3 B	N: 1 / S: 3 B
SR 29	2 B	2 A	2 B	2 B
Burlington Ave.	1	2 A	1	1
Kokomo Pk.	2 B	2 B	2 B	2 B
Legend	1 = At-grade intersection 2 = Grade-separation 3 = Road closed to thru traffic 4 = Crossroad relocated 5 = New connection	A = Access to new SR 25 B = No access to new SR 25 NA = Not applicable	S = South of new SR 25 N = North of new SR 25	

Emergency responders and local public officials identified critical routes recommended to remain open: Tippecanoe County CR 500E and CR 900E; Carroll County CR 700N, US 421, CR 300N (Camden-Delphi Road), and CR 500W; and Cass County CR 600N, CR 300S, CR 400S, CR 500S, CR 175W, SR 29, Burlington Avenue, and Old Kokomo Pike. The proposed build alternatives were designed to address these recommendations. New SR 25 and associated closing of several public crossroads would change some travel patterns and redistribute traffic on the area's road network, particularly existing SR 25, which would lose traffic to the new SR 25. While this could result in longer trips and slower response times in some instances, the consensus among the emergency response agencies was that shorter trips with quicker response times would be the predominant effect.

The majority of the public crossroads along the project corridor are school bus routes. The Tippecanoe School Corporation expressed concerns about road closings and potential impacts during construction, particularly at the existing SR 25/CR 300N intersection and SR 25/I-65 interchange. CR 300N at existing SR 25 would not be directly affected by construction of the proposed new roadway; however, CR 300N in the vicinity of CR 400E would be impacted by construction of any of the build alternatives, since the new roadway would cross CR 300N in this area. As currently proposed, **Preferred Alternative 2** and Alternative 4 provide a grade-separation to carry CR 300N over the railroad and new roadway but do not provide direct access to new SR 25. Alternatives 1 and 3 would provide an at-grade intersection for the new road and CR 300N. Concerns about access are typical of all school systems in the vicinity of the project. Changes in access for school bus routes will be discussed with the school systems well in advance so the schools systems can adjust routes in a timely manner. Where roads are severed, provisions for school bus turnarounds will be included during the final design phase of the project.

No pockets or groups of minorities, elderly, low-income, non-driver, or transit-dependent individuals were observed to be occupying residences within the proposed rights-of-way. There is no evidence that handicapped individuals would be relocated. None of the alternatives would have a disproportionate impact to such individuals, in accordance with *Executive Order 12898, Environmental Justice*.

Relocation/Displacement Impacts [4.4]—Estimated relocation/ displacement impacts to residents, businesses, and institutions are summarized on Table S-2, page S-19. A total of 43 residences were identified as being within the right-of-way of one or more build alternatives and, therefore, as being potential relocations. Of these, two are tenant-occupied duplexes and the rest appear to be owner-occupied houses. None of the residences are in a platted neighborhood or subdivision. Research indicates that sufficient comparable, decent, safe, and sanitary housing will exist when the right-of-way is acquired for this proposed project, if a build alternative is selected. Therefore, it is likely the relocations for this project could be accomplished using normal relocation procedures.

A total of nine businesses were identified as being potential displacements as a result of right-of-way requirements for the project. Alternative 1 and **Preferred Alternative 2** would potentially displace five businesses, and Alternatives 3 and 4 would potentially displace eight. All but one of the businesses' spokespersons indicated the businesses would be able to remain at the same site or relocate within the same area, and business closings or reductions in the number of employees would be unlikely as a result of the project. In some cases, business expansion was considered possible. Based on the information, there would be no substantial impacts on the economy of the communities by the acquisition of these enterprises. The fact that the local communities' economic development/land use plans include the completion of the Hoosier Heartland Highway indicates local jurisdictions believe the project long-term economic benefits would outweigh any short-term impacts as the result of business displacement.

The Carroll County office of the Family and Social Services Administration’s Division of Family and Children, operates from a leased building in the Deer Creek Commerce Center. This structure is within the right-of-way of all build alternatives (which share an alignment in this area) and would be acquired as a result of the project. A spokesperson for the agency said discussions have been held with Delphi government officials regarding potential sites for relocating the office.

TABLE S-2—Summary of Potential Relocations and Displacements

Alternative	Residential					Institutional	Commercial/Industrial	
	Dwellings			No. of Families*	Residences on Farms		Total Businesses	Businesses by Name
	Single Family	Duplex*	Total					
Alt. 1 OWA+PCA1+PEA+YLA	32	2	34	36	7	Division of Family/ Children	5	Auto Express, Tri-State, Watson/J.R. Rentals, Tasler
Preferred Alt. 2 OWA1+PCA1+PEA+YLA	31	2	33	35	7	Division of Family/ Children	5	Auto Express, Tri-State, Watson/J.R. Rentals, Tasler
Alt. 3 OWA+PCA2+PEB+YLB	25	2	27	29	3	Division of Family/ Children	8	Auto Express, Tri-State, Heartland Hogs, Watson/J.R. Rentals, Trueblood Hog Farm, Homberg Farm/PHT
Alt. 4 OWA1+PCA2+PEB+YLB	19	2	21	23	3	Division of Family/ Children	8	Auto Express, Tri-State, Heartland Hogs, Watson/J.R. Rentals, Trueblood Hog Farm, Homberg Farm/PHT

* All alternatives would impact the same 2 duplex structures, each of which is assumed to house two families.

Economic Impacts [4.5]—Local officials and planning agencies have long supported the project for its development potential. As noted above, several businesses could be displaced as a result of the project. Most, if not all, could relocate in the immediate area. Where the proposed new road would depart substantially from the existing SR 25 alignment, the project would result in some development at public crossroads along the new route and, at the same time, in some loss of revenue by businesses along the existing route. With the proposed interchanges associated with **Preferred Alternative 2**, some existing business in the vicinity will have convenient access to new SR 25, and additional development could occur. Local officials and development groups do expect the project to attract new business and industry, and have identified areas for such development in their land use plans and studies. This should offset losses to the local economy resulting from the reduction of through traffic—thus, business revenues—along existing SR 25.

Joint Development [4.6]—There is the potential for enhancement of the Delphi hiking trails system as an outgrowth of the SR 25 project. The trails initiative is discussed in “Considerations Relating to Pedestrians and Bicyclists,” below.

Considerations Relating to Pedestrians and Bicyclists [4.7]— The proposed project would be a high-speed, partial-access-controlled facility; therefore, no on-road bike routes or pedestrian sidewalks/trails would be provided. Three established, on-road bike routes through the project corridor—the Colburn Loop, the Wabash-Wildcat Region Bikeway, and the Wabash Valley Route 2—would be crossed at various locations by build alternatives. The shared alignment of **Preferred Alternative 2** and Alternative 4 would maintain existing CR 900N as a through road by carrying new SR 25 over the county road, thereby providing uninterrupted access to public crossroads designated as bike routes. The shared alignment of Alternatives 1 and 3 would relocate a section of Tippecanoe CR 900N, part of the Wabash-Wildcat route, thereby causing bicyclists to travel approximately one-half mile along existing SR 25 to connect with the route. Based on the Federal Highway Administration’s (FHWA) Section 4(f) Policy, June 7, 1989, the proposed change in the bike route would not require Section 4(f) involvement because of the proximity of connecting access that would permit continuity of the bikeway, and because the bikeway is not limited to any specific location within the CR 900N right-of-way.

Three potential hiking trails in the Delphi area would be equally affected by the build alternatives. These potential trails traverse private properties and are not open to the public on a regular basis. The build alternatives are on common alignment in the area and the preliminary design for new roadway does not specifically provide for uninterrupted access to the proposed trails. INDOT's ability to participate in trail development—such as including trail access as a specific feature of SR 25 design—depends upon development of a long-range trails master plan that 1) guarantees public use of the trails into the future, and 2) is approved by officials having jurisdiction over ownership and management of the trails. Trails supporters are working to obtain from private landowners donations of land for the trails. Carroll County and City of Delphi officials have passed resolutions expressing their support for this effort. According to trail proponents, the development of a long-range master plan is expected to begin in spring 2005. Upon completion, the plan will be presented for adoption by the local government jurisdictions. Because the efforts to establish municipally owned and operated trails for the Delphi area is a concurrent development with this project, INDOT will work through final design with the municipal entity that will be responsible for the new public trails to make every reasonable effort to maintain continuity of these trails crossing the new alignment. Until a municipal entity approves a public trails master plan and assumes ownership and management of the trails, INDOT cannot commit to any specific design accommodations.

Air Quality Impacts [4.8]— Pursuant to the 1990 *Clean Air Act Amendments*, the counties of Tippecanoe, Carroll and Cass have never been designated as non-attainment areas for transportation-related pollutants. According to the calculated existing and future emissions of CO, the project is not expected to adversely affect the air quality within the Wabash Valley Intrastate Air Quality Control Region. All existing and predicted carbon monoxide concentrations are below the one-hour NAAQS. In accordance with the Amended Final Conformity Guidelines issued by both the U.S. Department of Transportation and USEPA, which are in effect as of September 15, 1997, the project is located in an air quality area that does not require transportation control measures. Based on this analysis, the project is in compliance with the Indiana State Implementation Plan for the Attainment and Maintenance of National and State Ambient Air Quality Standards.

Noise Impacts [4.9]— The proposed new roadway will result in higher noise levels where it traverses relatively quiet rural agricultural areas. However, the proposed new road would result in a decrease in traffic noise levels at the majority of locations analyzed for noise impact on existing SR 25 because much of the traffic on the existing road would shift to the new road. The majority of the project corridor experiences heavy train traffic and traffic from existing SR 25, both of which contribute to existing noise levels. INDOT developed a policy consistent with FHWA guidelines to determine the need, feasibility, and reasonableness of noise abatement measures for all major roadway projects. Under FHWA guidelines (23 CFR 1 Part 772), noise abatement will be considered for those locations where noise levels are predicted to approach or exceed their respective Noise Abatement Criterion (NAC), or when the predicted traffic noise levels substantially exceed existing noise levels. INDOT's Highway Traffic Noise Policy defines "approach or exceed" as noise levels that are higher than 1 dBA below the appropriate NAC, and "substantially exceed" as future noise levels 15 dBA or more above existing noise levels. With the build alternatives, noise levels are predicted to approach or exceed the NAC at three to seven sites, as follows: Alternative 1, four sites; **Preferred Alternative 2**, three sites; Alternatives 3 and 4, seven sites. Noise levels are not predicted to show a substantial (i.e., 15 dBA or greater) increase over existing levels at any of the sites with any alternative. Constructing noise barrier walls for the potentially affected sites was investigated, but none of the build alternatives would meet the criteria for a noise barrier wall. Where the project would be located on new alignment, the potential exists for local officials and developers to help minimize noise impacts through the use of careful land use planning.

Energy Impacts [4.10]—The construction of a transportation facility represents a considerable one-time energy resources demand, both in materials fabrication and actual construction activities. The combined cost reduction factors (e.g., improved access, travel time, and safety) would make the operational cost of any of the build alternatives less than, or equivalent to, the operational cost of the No-Build Alternative. Therefore, in the long run, the operational savings of any one of the build alternatives would offset the construction energy requirements, and result in future net energy savings. No naturally occurring fossil fuel reserves or other vital resources have been noted in the area; therefore, none of the build alternatives would have an adverse impact in this regard.

Water Quality Impacts [4.11]—The project will cross several streams, including major, minor, and intermittent streams. The total length of stream crossings varies little among alternatives—ranging from approximately 17,565 feet with **Preferred Alternative 2** to 18,274 feet with Alternative 3. Coordination occurred early-on and is ongoing with the U.S. Army Corps of Engineers (USACE), the Indiana Department of Environmental Management (IDEM), and IDNR. The final design will be submitted to the USACE to obtain an Individual Section 404 Permit and to the IDEM for Section 401 Water Quality Certification. The crossing of minor tributaries will require site-specific measures, including pipes/culverts. The actual structure, design, and location, and mitigation for stream impacts will be determined in the final design. A Conceptual Wetland Mitigation Plan, prepared to address mitigation measures for wetland impacts, also addresses potential mitigation for impacts to streams and wildlife/wildlife habitat.

Lafayette and Logansport have state-certified Wellhead Protection Programs (WHPP) for public water sources. The Lafayette WHPP boundary limits do not extend into the project area. The project would not impact the city's potable water service resources. The SR 25 alternatives traverse a portion of the Logansport WHPP area; however, the alternatives are not located near the reservoirs or well fields that are the sources of the utility's water supply. The Delphi Water Works Department has submitted a WHPP to IDEM, but the plan has not yet been approved. The proposed boundaries extend into the Deer Creek Commerce Center; therefore, the build alternatives, which share an alignment through that area, traverse a portion of the proposed WHPP area. The alignment is not near the source reservoirs or well fields that are the sources of the utility's water supply.

Wetland Impacts [4.12]—The *Wetland Delineation Report* identified seven wetland areas portions or all of which would be within the right-of-way of one or more build alternatives. A subsequent (April 2003) field investigation of Wetland "S", to which access had been denied, resulted in the following modifications to the wetland report. Wetlands are located on Exhibits S-2 and S-3 by Site ID numbers.

- The size of Wetland "S" (Site 16) originally estimated to be 0.2 acre, was found to be 0.04 acre. The wetland is partially within the project right-of-way, but no direct impacts are anticipated because the new roadway bridges the area and bridge piers would not be located in the wetland area.
- Two small wetlands not identified in the report were located near Wetland "S": Wetlands "AE" (0.03 acre) and "AF" (0.01 acre). Wetland "AE" (Site 31) will be directly impacted by the project, as it is entirely within the right-of-way of the new roadway. Wetland "AF" (Site 32) will not be directly impacted, as it is adjacent to the right-of-way in an area to be bridged by the new roadway.

Alternative 1 impacts six sites (totaling 2.4 acres). **Preferred Alternative 2** impacts all seven sites and affects the largest total area (2.68 acres). Alternatives 3 and 4 impact four sites (totaling 1.55 acres and 1.83 acres, respectively). During the evaluation of alternatives, alignments were shifted or eliminated in an effort to avoid or minimize impact to wetlands. However, a variety of constraints (including historic properties and district, Delphi Swamp, Americus Fen, as well as requirements related to roadway

configurations and design standards), limited the alignment options available. Indirect impacts could occur where wetland areas remain outside but adjacent to the right-of-way. In such cases, the remainder of the wetland may be too small to be viable, or the new road could disrupt the wetland's water source. It is not likely that all direct or indirect impacts can be avoided. Based on considerations detailed in Chapter 4, Section 4.12, and in accordance with Executive Order 11990, it has been determined that there is no practicable alternative to the proposed construction in wetlands and that the proposed action includes all practicable measures to minimize harm to wetlands which may result from such use.

Early coordination has occurred and consultation is ongoing with permitting agencies. Mitigation will occur in accordance with the 1991 Memorandum of Understanding (MOU) signed by USFWS, INDOT and IDNR. The MOU established standard mitigation ratios for impacts to wetland resources. Proposed wetland mitigation measures—which include INDOT's commitment (based on a willing seller) to try to purchase a portion of Delphi Swamp for protection, restoration, enhancement, and permanent protections as an IDNR Nature Preserve—are identified in the "Mitigation Measures" section, page S-28. USACE, IDEM and IDNR permits will be required (see "Permits," below).

Permits [4.13]—Roadway construction activities would result in a variety of impacts to wetlands, streams, and waterways. A USACE Individual 404 Permit, an Individual 401 Water Quality Certification from IDEM, and an IDNR Construction in a Floodway Permit would likely be necessary to construct any of the build alternatives. Detailed permit coordination would occur during the design phase. The Individual Permit would include a detailed mitigation and monitoring plan for wetland and stream impacts.

Water Body Modification and Wildlife Impacts [4.14]—The placement of culverts/pipes in existing channels or construction of bridges is proposed at several creek and ditch crossings. In some cases, these activities will require an alteration to the natural shape of the creek/ditch. **Preferred Alternative 2** and Alternative 1 have approximately the same impacts to major and minor streams, i.e., 8,871 linear feet and 8,867 linear feet, respectively. Impacts from Alternatives 3 and 4 are greater—9,921 linear feet and 9,924 linear feet, respectively. Riparian/upland forested impacts calculated for the preferred alignment show the impact to be approximately 81 acres. The build alternatives shared an alignment at the majority of the stream crossings. Where they did not share an alignment, the crossings were still required of all alignments—albeit on different locations—and the impacts were similar. Likewise, their impacts to riparian/upland forest areas would be similar. Potential impacts to streams and riparian/forest areas with the Preferred Alternative are shown in Table S-3, page S-23.

While USFWS has concurred, "the preferred alternative avoids most sensitive areas and will not result in excessive impacts to wetlands or forest" (Appendix A3, letter of January 23, 2004), several stream crossing locations have been identified as areas of concern owing to potential impacts on aquatic and riparian life and their habitat. Designing crossings to keep channel and bank modifications to a minimum and to avoid channel alterations below the low-water elevation was recommended.

During the development and evaluation of alternatives for this project, careful consideration was given to stream crossings to avoid or minimize their associated impacts. Bridging all major and several minor streams was proposed for all build alternative—including **Preferred Alternative 2**. Locations chosen for all stream crossings were evaluated for design feasibility as well as environmental impact.

Alignments were shifted or eliminated in an effort to avoid or minimize impacts to streams, wetlands, and wildlife habitat. However, a variety of constraints along the project corridor limited the alignment options available. Alternatives that avoided the crossings associated with **Preferred Alternative 2** either

impacted one or more sensitive resources, or were located too far south of the existing SR 25 and Delphi to satisfy performance measures associated with the project's Purpose and Need.

TABLE S-3—Stream and Riparian Impacts: Preferred Alternative 2

Streams	Crossings	Length (Ft)	Proposed Structure	Riparian/ Forest (Acres)
Major				
Sugar Creek	1	469	Bridge	11.0
Deer Creek	1	256	Bridge	7.3
Rock Creek	1	302	Bridge	4.4
<i>Sub-T. Major</i>	3	1,027		22.7
Minor				
Dry Run Tributaries	3	466 187 331	Pipes/box culverts	2.6 0.0 0.6
Buck Creek Tributary	1	400	Pipe/box culvert	2.3
Buck Creek	1	643	Bridge	7.2
Sugar Creek Tributary	1	325	Pipe/box culvert	0.0
Bridge Creek Tributary	3	463 361 417	Bridge Pipe/box culvert Pipe/box culvert	6.5 0.0 5.3
Bridge Creek	3	348 774 364	Bridge Pipe/box culvert Bridge	6.3 0.1 12.8
Robinson Branch	1	750	Pipe/box culvert	12.5
Little Rock Creek	1	361	Pipe/box culvert	1.4
Cronin Ditch	1	302	Pipe/box culvert	0.0
Keeps Creek	1	348	Pipe/box culvert	0.0
Unnamed Ditch	1	420	Pipe/box culvert	0.5
Goose Creek Tributary	1	351	Pipe/box culvert	0.0
Goose Creek	1	233	Pipe/box culvert	0.0
<i>Sub-T. Minor</i>	19	7,844		58.1
Total Major / Minor	22	8,871		80.8

NOTE: Shading indicates stream crossings where all build alternatives shared a common alignment.

This project will result in the clearing of approximately 81 acres of forest habitat. The loss of woodland habitat and the resulting habitat fragmentation will have some impact on migratory birds but it is not likely to be significant. Measures to mitigate impacts to wetlands through the purchase of a portion of Delphi Swamp might also serve to mitigate impacts to riparian/forested wildlife habitat. Through coordination with USFWS, surveys were conducted of streams at or near proposed crossing sites. Based on the survey results, no federal or state protected species of fish or fresh water mussel were identified at the sampled locations.

Impacts to Federally Threatened and/or Endangered Species [4.15]— The ecological assessments conducted for this study note that federally endangered Indiana bats (*Myotis sodalis*) were captured along Sugar Creek (crossed by all build alternatives) during field surveys of the proposed project area, and habitat suitable for maternity colonies of Indiana bats exists along creeks within the project corridor. Such habitat, often located in riparian areas, consists of trees that are greater than six inches in diameter at breast height and have loose bark. All build alternatives cross Sugar Creek on a shared alignment approximately 2 miles south of the capture site. Through consultation with USFWS, it was determined that a Biological Assessment and formal Section 7 coordination is not required. However, if new information on endangered species in the project area becomes available, or if project plans are changed substantially, further consultation will be necessary. In addition, where removal or modification of habitat cannot be avoided, the following steps will be taken: limiting the removal of trees—particularly trees that may serve as roost trees—and other vegetation to areas needed for the construction, and confining tree removal to a time of year that would not conflict with the summer bat-occupancy period (April 15 –

September 15). Significant indirect or cumulative impacts to the Indiana bat are not anticipated as a result of this project.

Floodplain Impacts [4.16]—Review of the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Maps indicates the proposed project crosses the 100-year flood plain of Buck Creek, Sugar Creek, Deer Creek, and Rock Creek. Proposed bridges over these creeks would perform hydraulically in a manner equal to or greater than the backwater surface elevations, and would not be expected to increase as the proposed new bridges would be designed to “pass” the 100-year floodway volume, with adequate clearance, under the structures. As a result, there would be no significant impacts on natural and beneficial floodplain values; there would be no significant change in flood risks; and there will be no significant increase in potential for interruption or termination of emergency service or emergency evacuation routes; therefore, it has been determined that this encroachment is not significant.

Impacts Upon Wild and Scenic Rivers [4.17]— There are no wild and/or scenic rivers designated by state or federal agencies in the project area.

Hazardous Materials [4.18]—A Phase I environmental assessment identified 23 potential hazardous materials sites within or near the right-of-way of one or more build alternatives. **Preferred Alternative 2** potentially impacts 11 sites. The DEIS identified four sites potentially requiring Phase II investigation. Additional site reconnaissance indicated minimal visible contamination present, and the potential for contamination no greater than for any other HAZMAT site identified in the project corridor. Therefore, Phase II is not recommended at the sites. During construction consideration will be given to further investigation should conditions be found to exist that warrant such investigation

Visual Impacts [4.19]—The project traverses rural and urban environments and presents viewsheds typical of both and neither unique nor remarkable, with one exception—in the vicinity of Delphi, along Deer Creek, where bluffs, the creek, and forested areas present a scenic natural landscape that is distinctive, attractive and unique to the project corridor. This scenic area contains several historic structures and farms that have been included in the NRHP-eligible Rural Historic District. None of the alternatives would traverse historic properties, but all build alternatives share a common alignment through this area and, thus, would cross Deer Creek and have a visual impact on the district. Where build alternatives would traverse rural areas on new alignment, the view from the road would be pleasant, but the view of the road could be negatively affected by the presence of the road. Mitigation proposed for visual impact to the Rural Historic District is identified in the “Historical and Archaeological Preservation” section, below.

Construction Impacts [4.20]—Construction activities for the proposed project would have air, noise, water quality, and traffic flow impacts for businesses and travelers in the vicinity of the proposed project. During construction, measures to minimize such impacts would be controlled in accordance with INDOT *Standard Specifications*.

Historical and Archaeological Preservation [4.21]—

Historical: Cultural resource surveys of aboveground historic or potentially historic resources identified several sites within the Area of Potential Effect (APE) of the four build alternatives: two of the sites are listed on the National Register of Historic Places (NRHP), and four were identified as eligible for listing. In addition, an area east of Delphi was identified as an NRHP-eligible Rural Historic District. The district was listed on the National Register in December 2002 as the Deer Creek Valley Rural Historic District. None of the build alternatives would acquire right-of-way from within the boundaries of NRHP-listed or -eligible historic resources, or substantially impair the activities, features, or attributes of the resources. Therefore,

there is no Section 4(f) use with these properties. Exhibits S-2 and S-3 show the approximate locations of the historic resources.

FHWA, in consultation with the State Historic Preservation Officer (SHPO) and other Consulting Parties, determined several of the resources would experience adverse visual effects as a result of the proximity of the resource to a build alternative (see Table S-4). All four build alternatives would have an equal adverse visual impact on the Rural Historic District and one individual, eligible resource because the alternatives share an alignment in the vicinity of these resources. Between Delphi and Logansport Alternative 1 and **Preferred Alternative 2** are north of the Norfolk Southern tracks and would have an adverse visual impact on two eligible resources, while Alternative 3 and 4 cross to the south side of the tracks and would have an adverse visual impact on one listed and one eligible resource.

TABLE S-4—Historic Resources: Determinations of Eligibility and Effect

Resource	Property No.* [Exhibit ID No.]	NRHP Status	NRHP Criteria	Alternatives Impacting a Resource**	ROW Required Within Resource Boundary	Adverse Effect
John Cunningham Farm: dairy barn (c. 1910s)	157-070-0003A [H-1]	Eligible	Dairy Barn— Criterion C	None	None	None
Rural Historic District, Deer Creek Township, Carroll County	335,336,337,338, 339,340,342	Listed	District— Criteria A, C	Alts. 1, 2, 3 and 4	None	Visual
Baum-Shaeffer Farm: Italianate style house (c. 1855), bank barn, English barn, log building	015-162-347 [H-2]	Listed	Criteria A, C	None	None	None
Isaac Robbins Farm: Federal style house and brick milk house (all c. 1850)	015-207-323 [H-3]	Eligible	Farm buildings and environs— Criteria A, C	Alts. 1, 2, 3 and 4	None	Visual
District School # 3: Italianate style brick building (c. 1874)	015-084-067 [H-4]	Listed	Criterion A	Alts. 3, 4	None	Visual
Italianate House	015-084-066 [H-5]	Eligible	House— Criterion C	Alts. 3, 4	None	Visual
Joseph Atkinson Farm: Italianate style house (c. 1865), livestock barn, English barn, lean-tos, utility shed, drive-through corncrib (all c. 1900)	017-124-45011 [H-6]	Eligible	Farm buildings and environs— Criterion C	Alts. 1, 2	None	Visual
Farm: Side-gabled house (c. 1884), drive-through corncrib, 2 utility sheds, Sweitzer barn (all c. 1900)	QS029 [H-7]	Eligible	Farm buildings and environs— Criterion A	Alts. 1, 2	None	Visual

* NOTE: The "Property No." is the number assigned to each site in the *Review of Historic Properties* report. The "Exhibit ID No." is the number that identifies the location of each resource on Exhibits S-2, and S-3. The Rural Historic District is identified by boundary lines and shading.

** The alternatives referenced share the same alignment in the vicinity of the resource; therefore, their impact on the resource would be the same.

A Memorandum of Agreement (MOA) documenting mitigation measures to which FHWA and INDOT are committed was signed September 3, 2004, by FHWA, INDOT, and the SHPO. Consulting Parties were invited to sign as "concurring parties" to the agreement. The signed MOA (Appendix B1) concludes the Section 106 process.

During the Section 106 process, the following two issues arose that required resolution prior to the execution of the MOA:

Josephus Atkinson Farm: Two of the property owners, one a Consulting Party, stated their belief that the Section 106 process as it was being conducted for the project was not responsive to the issues and

concerns they had raised via documentation presented during the period of public comment on the DEIS and at Consulting Parties meetings. They said the boundary of the resource should be expanded to incorporate additional farm property, including pastureland just south of Cass CR 400S that is within the right-of-way of **Preferred Alternative 2**. They supplied materials documenting the history of the farm and its previous owners. INDOT's cultural resource consultants undertook a detailed investigation based on which a report was prepared stating the extension of the historic boundary was not warranted and concluding the resource should be eligible for listing on the National Register of Historic Places under Criterion C, only, rather than Criteria A and C, as previously considered. FHWA, in consultation with the SHPO, concurred in the report's recommendations. FHWA submitted the report and all documentation provided by the property owners to the Keeper of the National Register of Historic Places—the final authority in matter of eligibility. On July 15, 2004, the Keeper ruled that the property outside the previously determined historic boundary is not NRHP-eligible, and that the boundary should be redrawn to exclude a woodlot that had initially been included within the boundary. The Keeper also concurred with the determination that the property is eligible under Criterion C, only. Chapter 4, Section 4.21 and Chapter 8, Section 8.4 (Comment D.3) discuss the issues raised in greater detail. Pertinent documentation comprises Appendices A2 (public comment ID# 062) and B3.

Expanding the APE: As a result of public input, two changes to the project's preliminary plans were made after the recommendation of **Alternative 2** as the Preferred Alternative: interchanges are now proposed with US 421 south of Delphi, and with SR 29-Burlington Avenue in Logansport. As a result, an addendum to the original cultural resource survey was prepared (see *Review of Additional Historic Property and Expansion of A.P.E.*, Appendix B2) to expand the APE to incorporate the larger right-of-way area needed for the interchanges, to determine whether there were any NRHP-listed or potentially eligible resources in the area, and, if so, to assess the potential effects the interchanges could have on such resources. FHWA, in consultation with the SHPO, concurred with the report's recommendation that the APE be expanded to include the areas immediately surrounding the interchanges, and that there were no listed or potentially eligible resources that could be affected by the interchanges.

Archaeological: Three archaeological studies were conducted for this project: an assessment of probabilities along the entire corridor (published August 2001), a Phase 1a reconnaissance of a portion of the project area in Carroll County (published March 2001), and a Phase 1a reconnaissance of the entire **Preferred Alternative 2** alignment (published June 2003). The assessment noted the probability of archaeological resources in the project area, and recommended Phase 1a reconnaissance once a preferred alignment was recommended. The SHPO concurred with the recommendation, which was fulfilled with the **Preferred Alternative 2** survey. The Phase 1a report of March 2001 recommends avoidance or Phase 1c investigation of three alluvial soils sites should they be impacted by the project. Only one site is potentially impacted; it is partially within the right-of-way of the Preferred Alternative. The June 2003 report was revised in November 2004 based on the SHPO's comments. Eight archaeological sites and a small floodplain were recommended for avoidance or further investigation: Phase 2 for the archaeological sites and Phase 1c for the floodplain. All are wholly or partially within the right-of-way of **Preferred Alternative 2**.

All additional investigations, and any actions required based on the results of the investigations will be completed prior to construction, according to stipulations identified in the MOA. Stipulations also include consulting with Native American tribes when appropriate; taking reasonable measures to avoid disinterment and disturbance to human remains and grave goods of religious and cultural significance to Native American tribes and ensuring that any human remains and grave goods are treated in accord with all appropriate regulations and guidelines.

S.8 MITIGATION MEASURES

Throughout this project, major efforts have been made to avoid or minimize impacts to the natural and human environment. Where impacts were potentially unavoidable, measures to mitigate the impacts were identified. Chapter 5, "Mitigation and Commitments," describes the commitments FHWA and INDOT have agreed to in mitigating environmental impacts that could occur with **Preferred Alternative 2**. These mitigation measures will be implemented during the design and construction phases of the project development. The proposed mitigation plan relates only to **Preferred Alternative 2**. If another alternative is selected in the Record of Decision, this finding will need to be revised.

Key features of the mitigation measures identified in Chapter 5 are outlined below:

Farmland Impact—No alternatives other than those discussed in the FEIS will be considered without a re-evaluation of the project's potential impacts upon farmland.

Social Impact: School Bus Routes—Significant changes in access for known school bus routes will be discussed with the school systems well in advance so the schools systems can adjust routes in a timely manner. Where roads are closed, provision for school bus turnarounds will be included during the final design of the project.

Right-of-way—During final design, land-locked parcels will be identified. During right-of-way acquisition, agents will work with the affected property owners on a case-by-case basis to determine the best solution for each occurrence.

Relocation—The project will be accomplished in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Public Law 91-646), as amended in 1987. Relocation resources will be available to all residential relocatees without discrimination. If circumstances require it, the Housing of Last Resort program will be available.

Erosion Control—

- Construction limits will be minimized.
- Best Management Practices will be used to prevent non-source point pollution, to control storm water runoff, and to minimize sediment damage to water quality and aquatic habitats.
- A soil erosion and sedimentation control plan will be developed in conjunction with final construction plans, and implemented to control erosion within the construction limits. All construction activities must comply with federal and state soil erosion and sedimentation regulations. INDOT's *Standard Specifications and Special Provisions* will govern construction activities to control erosion and subsequent water pollution.

Water Quality and Stream Crossing Impacts—

The exact extent and locations of any stream modifications that may be required by the project would be site dependent and defined in the final design. USFWS has noted channel alterations could result in indirect effects such as "increased bank erosion, increased sediment load and channel instability." It is not likely that all indirect impacts can be avoided.

Where stream crossings occur, mitigation for impacts to fish and wildlife habitats have been developed in accordance with IDNR and USACE guidelines. Mitigation measures—such as installing three-sided culverts that would retain the natural channel bottom, and seasonal tree clearing to minimize impact to the Indiana bat’s summer habitat—are proposed. Continued efforts will be made during final design to identify design features that would minimize impacts at the crossings, including identifying measures to keep channel and bank modifications to a minimum and, where feasible, avoid channel alterations below the low-water elevation. Where required, applicable permits will be obtained.

Management requirements of IDEM-approved Wellhead Protection Plans (WHPPs) will be complied with. Where groundwater from private, individual wells is the principal source of potable water, grassy swales to divert stormwater from the road to ditches and streams, and construction methods to reduce turbidity that construction temporarily causes will be among the measures employed to protect sources of potable water.

Wetlands—INDOT has committed to try to purchase some portion(s) of Delphi Swamp at/near fair market value, assuming a willing seller(s). The Conceptual Mitigation Plan (Plan) proposes that a portion of Delphi Swamp be purchased, restored, placed into a 5-year monitoring and management plan, and permanent protection of the property as an IDNR Nature Preserve. Three properties have been identified as of interest by IDNR (total approximately 86 acres). An added benefit of this site for mitigation is the presence of Robinson Branch that borders Delphi Swamp. This presents an additional opportunity to compensate for impacts to riparian habitat. The restoration and enhancement activities to be used cannot be known until the specific parcels to be used are known. The Plan is contained in its entirety in the *Preferred Alternative and Mitigation Package* in Appendix A3.

The likelihood that at least some portions of Delphi Swamp could be made available for purchase by INDOT appears good, based on conversations with owners of two of the three parcels identified as composing the swamp. Alternative mitigation scenarios will be pursued if the commitment to purchase a portion Delphi Swamp cannot be carried through, or should the acquired tracts not prove sufficient to achieving USACE replacement ratios, or should other, as yet unforeseen, circumstances arise.

Given that wetlands may naturally increase, decrease, be eliminated, or be created, detailed mitigation plans will be developed during final design to meet the requirements of the USACE, when details exist to support such development. At that time, additional measures to minimize impacts to specific wetland sites can be considered, including narrowing medians and shoulder widths; and installing drainage features such as swales to ensure that roadway runoff does not enter wetland areas, and culverts to maintain the flow of water to a wetland area otherwise cut off from its water source. In addition, INDOT will explore bridging streams and wetlands and, where determined appropriate, bridging will be done.

INDOT will be responsible for retaining the services of individuals qualified to delineate and design wetland mitigation sites during final design. Given that wetlands may naturally increase, decrease, be eliminated, or be created, detailed mitigation plans will be developed during final design to meet the requirements of the USACE, when details exist to support such development.

Federally Threatened and/or Endangered Species—USFWS determined that formal Section 7 consultation is not required. However, further consultation will be undertaken should new information on endangered species at the site become available or if there is a “significant change” in project plans. Where removal or modification of habitat cannot be avoided: limit tree removal within the riparian corridors—particularly trees that may serve as roost trees—and other vegetation to areas needed for the construction, and confine tree removal to April 15 – September 15.

Construction Impacts—

- Air pollution associated with airborne particles will be effectively controlled in accordance with INDOT's *Standard Specifications*.
- Noise and vibrations control measures will include those contained in INDOT's *Standard Specifications*.
- In accordance with IDEM requirements, erosion control planning (ECP) will be undertaken.
- Traffic flow maintenance and construction sequences will be planned and scheduled to minimize traffic delays on existing public crossroads and SR 25, where necessary. Signs will be used to notify the traveling public of road closures and other pertinent information. The local news media will be notified in advance of significant road closings and other major construction-related activities that could excessively inconvenience the community.
- Access to all properties would be maintained to the extent practical through controlled construction scheduling.
- Structure and debris removal will be in accordance with local and state regulatory agencies permitting the operation.

Historical and Archaeological Resources—FHWA, in consultation with the SHPO, determined that the Preferred Alternative would have an adverse visual effect on the NRHP-listed Deer Creek Valley Rural Historic District and three NRHP-eligible individual resources. In addition, along the **Preferred Alternative 2** alignment, eight archaeological sites, an alluvial soils area, and a small section of floodplain are either wholly or partially within the right-of-way and, therefore, are recommended for avoidance or additional investigation (Phase 2, Phase 1c, and Phase 1c, respectively).

On September 3, 2004, FHWA, the SHPO and INDOT signed a Memorandum of Agreement (MOA) identifying measures and commitments to mitigate potential impacts to historical and archaeological resources. FHWA and the Indiana SHPO agree that the project will be implemented in accordance with the stipulations in the MOA to take into account the effects of the project on cultural resources. FHWA will ensure the measures in the MOA are implemented and, with INDOT, will consult with the SHPO at key points in the design stage regarding implementation of the principal elements of the MOA. The MOA also addresses how to handle unanticipated discoveries that might occur during the implementation of the project, conflict resolution, and preparation of reports, and the duration of the MOA. The executed MOA (Appendix B1) concludes the Section 106 process. Mitigation measures identified in the MOA include those summarized below:

Overall, the project will feature context sensitive design solutions, roadway lighting (where necessary) that minimizes the dispersion of light beyond the highway right-of-way, and "no-work zones" to ensure avoidance of any significant or potentially significant cultural (historic and archaeological) resources adjacent to or within the project right-of-way. The no-work zone would apply to all of the identified historic properties, including an NRHP-listed resource determined to have no adverse impact as a result of **Preferred Alternative 2**. Mitigation measures stipulated in the MOA to minimize visual impacts include:

- Deer Creek Valley Rural Historic District: Retaining access to existing SR 25 from Carroll CR 300N (the primary access to the district), but not providing direct access to/from CR 300N and the new roadway; and convening an Advisory Team, co-chaired by a representative of INDOT and the SHPO, to ensure the project design respects the historic qualities, landscapes, historic buildings and features within the Deer Creek Valley Rural Historic District.

- Isaac Robbins Farm: Landscaping in the form of tree plantings within INDOT rights-of-way along the resource boundary; considering minimizing the vertical grade of the new roadway along the resource boundary; and constructing a control-of-access fence along the right-of-way line, and, possibly, relocating the resource's entrance drive.
- Josephus Atkinson Farm: Landscaping in the form of tree plantings within INDOT rights-of-way along the resource's boundary; considering installing screening atop and, where appropriate, in the vicinity of the barrier wall on the CR 400W bridge; considering minimizing the vertical grade of the new roadway along the resource boundary; and within three years following the Record of Decision, developing documentation and seeking NRHP nomination for the Josephus Atkinson resource, if the property owners consent to NRHP listing.
- Farmstead (ID QS029): Landscaping in the form of tree plantings within INDOT rights-of-way along the resource's boundary.

FHWA has phased the final identification, evaluation, and determination of effects on the archaeological resources identified in the **Preferred Alternative 2** corridor. The MOA stipulates that the identification and evaluation of archeological resources for inclusion in the NRHP must be completed before letting any type of project construction in the APE or selecting sites for ancillary activities associated with the project.

Stipulations also include consulting with Native American tribes when appropriate; taking reasonable measures to avoid disinterment and disturbance to human remains and grave goods of religious and cultural significance to tribes; and ensuring that any human remains and grave goods are treated in accord with all appropriate regulations and guidelines.

S.9 ISSUES RAISED IN AGENCY AND PUBLIC COMMENTS

During the public comment period a wide range of issues emerged, some raised by the public and others noted by regulatory agencies. The issues were considered and addressed in the process of recommending the Preferred Alternative. Responses to all substantive comments are included in Chapter 8 of the FEIS. The complete set of comments on the DEIS is contained in Appendix A2. This section provides general responses to the major issues raised in the comments from resource agencies and the public. The key issues raised are grouped and addressed under the following broad categories:

- Impacts to Natural Resources
- Impacts to Cultural Resources
- Request for a Supplemental SEIS to Consider "Mears/300W Route"
- Requested Access Modifications: Requests for Interchanges
- Hiking Trails in the Delphi Area
- Farm Impacts

Of note is the U.S. Environmental Protection Agency letter of November 1, 2002, stating:

...our Agency has a lack of objection "LO" to each of the build alternatives and to the proposed project overall. This "LO" rating indicates that we believe that the proposed project will result in minimum adverse impacts to the environment with appropriate mitigation and that we did not identify any outstanding environmental issues that need additional analysis."

Impacts to Natural Resources—Impacts to sensitive natural resources such as wetlands (including Americus Fen and Delphi Swamp) and creeks (especially Bridge Creek, Deer Creek, and Robinson Branch) in the project area have been an on-going concern of state and federal agencies and local residents. Alternatives that would have impacted the fen and swamp have been eliminated. Alignment shifts made prior to the issuance of the DEIS somewhat reduced impacts at the Deer Creek and Bridge Creek crossings, and mitigation measures are proposed where impacts to these and other streams cannot be avoided (see FEIS Chapter 5). Extensive shifting in the vicinity of Deer Creek and Bridge Creek was not possible owing to the proximity of other sensitive resources in the immediate vicinity, including the Deer Creek Valley Rural Historic District, Bassard Falls, a section of riffles in Deer Creek, and wetlands.

Since the issuance of the DEIS, additional data regarding impacts to streams, upland forests, and riparian habitat has been incorporated into the environmental documentation (FEIS Chapter 4). Proposed mitigation for wetland impacts involves INDOT's commitment to try to purchase a portion of Delphi Swamp for protection, restoration, enhancement, and permanent protections as an IDNR Nature Preserve. The ability to meet the commitment depends upon purchase from a willing seller(s) at or near fair market value. The proposal is explained in the Conceptual Wetland Mitigation Plan (Plan) for addressing wetland and related impacts resulting from the project. The plan is contained in the *Preferred Alternative and Mitigation Package*, Appendix A3. Because Robinson Branch flows through portions of the Delphi Swamp, the Plan addresses some of the concerns regarding potential riparian habitat and stream impacts due to the project.

The proposed mitigation plan relates only to **Preferred Alternative 2**. If another alternative is selected in the Record of Decision, this finding will need to be revised. Further efforts to minimize impacts to the sensitive natural areas may be possible in the final design phase.

A Section 4(f) evaluation is not warranted, as there is no use of any Section 4(f) land within the project limits. All Section 4(f) lands adjacent to the project will be avoided and no property will be acquired from these properties or incorporated into the transportation facility.

Impacts to Cultural Resources— Possible impacts to historic resources in the Delphi community have been an ongoing concern, and local efforts to preserve area resources led to the identification of an NRHP-eligible Rural Historic District. The district was listed on the National Register in December 2002. Build alternatives that would have encroached upon or been adjacent to the district's boundaries have been eliminated or shifted. All build alternatives evaluated in the DEIS were on a shared alignment about 1,400 feet west of the district. The alignment would have a visual impact.

Some commenters on the DEIS who own NRHP-listed/eligible properties that would experience visual impacts as a result of the project have noted their opposition to the Preferred Alternative's proximity to their properties. These commenters are Consulting Parties to the Section 106 process. In correspondence and/or at the public hearing, and at Consulting Parties meetings, commenters expressed concerns about aesthetics, noise, and loss of farmland and associated income as a result of the project. Measures to mitigate adverse visual impacts were identified by Consulting Parties, who then were given the opportunity to review and comment on a draft Memorandum of Agreement documenting proposed mitigation that would be committed to by FHWA and INDOT. On September 3, 2004, FHWA, the SHPO, and INDOT signed the MOA. Consulting Parties were invited to sign as "concurring parties" to the agreement.

During the Section 106 process, two owners (one a Consulting Party) of an NRHP-eligible resource (Josephus Atkinson Farm, discussed in Section S.7, page S-25) stated their belief that the Section 106 process as it was being conducted for the project was not responsive to the issues and concerns they had raised. The key issue among several raised was their belief that the boundary of the historic resource should be expanded to include additional farmland, including a section within the right-of-way of the Preferred Alternative. Ultimately, FHWA submitted the matter to the Keeper of the National Register of Historic Places for a final determination of eligibility. On July 15, 2004, the Keeper ruled that the property outside the previously determined historic boundary is not NRHP-eligible, that the boundary should be redrawn to exclude a woodlot that had initially been included within the boundary, and that the property is eligible under Criterion C, only. Chapter 4, Section 4.21.1 and Chapter 8, Section 8.4 (Comment D.3) address the issues raised in greater detail. Pertinent documentation appears in Appendices A2 (public comment ID# 062) and B3.

Request for a Supplemental Environmental Impact Statement (SEIS) to Consider the “Mears/300W Route”— During and following the period of public comment on the DEIS, approximately 197 persons (including 134 who signed a petition) called for consideration of an alternative south of the build alternatives in the Delphi area. Some requested preparation of a Supplemental Environmental Impact Statement (SEIS). The commenters stated that the route had been proposed early in the alternatives development process but never evaluated and that, as a feasible alternative, it must be evaluated according to National Environmental Policy Act (NEPA) requirements. They further stated that the alternative would reduce project costs by eliminating the need for several bridges, and avoid the environmentally sensitive, natural areas encountered by the build alternative at the Bridge Creek and Deer Creek crossings.

During the development of alternatives to be carried forward for detailed evaluation in the DEIS, three corridors—Teal, Yellow and Orange—in close proximity to the “Mears/300W Route” were evaluated. The corridors were representative of conditions in the general area of the “Mears/300W Route.” Orange and Yellow were eliminated early-on because alternatives that could be located within those corridors were too far from the existing transportation corridor to satisfy the performance measures associated with the project’s Purpose and Need, particularly regarding relieving traffic on existing SR 25 and providing system linkage via a direct connection to Delphi. Teal, the nearest of the three to the existing SR 25 corridor, was retained for consideration as an alignment that would avoid a rural historic district south of Delphi. However, other alternatives were identified that would better meet Purpose and Need and avoid the district. Therefore, Teal was eliminated. Because the Teal was not carried forward in the DEIS for detailed analysis, it is not considered a reasonable alternative by FHWA. Therefore, the Mears route is also not considered a reasonable alternative and will not be studied in the context of a Supplemental EIS. This issue is addressed in Chapter 8, page VIII-22, and related documentation comprises Appendix D.

Requested Access Modifications—In Logansport, government officials, planning groups, and citizens expressed their desire for an interchange to connect proposed SR 25 and Burlington Avenue. Preliminary plans had an at-grade intersection at that location. Officials in Delphi made a similar request for the US 421/SR 25 juncture, also initially planned as an at-grade intersection. Interchanges are now proposed at these locations.

Hiking Trails in the Delphi Area—A number of local elected officials and members of organizations supporting hiking trails in the Delphi area have asked that assistance with trail development and access be considered during design of the new roadway. **Preferred Alternative 2** (on shared alignment with all alternative in the area) crosses three of the trails. Currently, these trails are on private property and are

not generally open to the public (thus there is no Section 4(f) use). INDOT has indicated its ability to participate in the effort is dependent upon approval of a long-range trails master plan by officials having jurisdiction over ownership and management of the trails. Carroll County and City of Delphi officials have passed resolutions expressing their support for this effort. Because the efforts of trails supporters to establish municipally owned and operated trails for the Delphi area is a concurrent development with this project, INDOT will work through final design with the municipal entity responsible for the new public trails to make every reasonable effort to maintain continuity of these trails crossing the new alignment. Until a municipal entity approves a public trails master plan and assumes ownership and management of the trails, INDOT cannot commit to any specific design accommodations.

Farming—Disruption of farm operations, particularly through farm severances, has been a major issue raised during the project, resulting in local residents' disagreement regarding which alignment would have the fewest impact—one north of the railroad or one to the south. The analysis of impacts indicated the north-of-rail alignment shared by Alternative 1 and **Preferred Alternative 2** has slightly fewer farm severances and impacts less prime farmland.

S.10 OTHER FEDERAL ACTIONS REQUIRED FOR THE PROPOSED ACTION

Approval of a USACE Individual 404 Permit for use of wetlands will be required.

In addition to federal requisites, Individual 401 Water Quality Certification from IDEM and a Construction in a Floodway Permit from IDNR will be required.

The Individual Permit applications will include detailed mitigation plans for wetland and stream impacts.

TABLE S-5—Comparative Impacts Summary: No-Build and Build Alternatives

FEIS Section	Impacts	No-Build	Alternative 1 O-WA+P-CA1+P-EA+Y-LA	Preferred Alternative 2 O-WA1+P-CA1+P-EA+Y-LA	Alternative 3 O-WA+P-CA2+P-EB+Y-LB	Alternative 4 O-WA1+P-CA2+P-EB+Y-LB
	Length (miles)	0	35.3	35.3	35.2	35.3
	Estimated cost (millions) for construction, contingencies, ROW, design	0	\$218.9	\$224.7 + \$16.0 est.*	\$212.7	\$218.5
4.1	Land use—Additional acres of ROW to be acquired (by use):					
	-Agricultural (cultivable + uncultivated, in 4.2, below)	0	1,168	1,171 + 15 * = 1,186	1,215	1,218
	-Residential/Rural Residential	0	244	267 + 5 * = 272	207	230
	-Commercial/Industrial	0	95	90 + 3 * = 93	90	85
	-Institutional	0	1	1	1	1
	Total	0	1,508	1,529 + 23 * = 1,552	1,513	1,534
4.2	Farmland impacts:	No effect				
	-Number. of parcels of 20+ cultivable acres from which ROW would be acquired (i.e., farm parcels severed)	0	127	142	130	145
	-Cultivable (20+ acres) farmland acres in ROW	0	1,004	1,001 + 12 * = 1,013	1,039	1,046
	-Uncultivated (forest, wetlands, riparian) farmland acres in ROW	0	174	170 + 3 * = 173	176	172
	-Prime/Unique Farmland acres in ROW	0	827	835 + 11 est.* = 846	937	945
	-Statewide + Local Important Farmland acres in ROW	0	11	11	2	2
	-Mitigation discussion required?	No	No	No	No	No
4.3	Social:					
	-Travel time, community access, etc.	Road deficiencies, traffic, slow travel time, increase costs and reduce ease, safety of local/regional access.	Improves travel time and costs, improves area/regional access.	Same as Alt. 1	Same as Alt. 1	Same as Alt. 1
	-Crossroads closed to through traffic at new SR 25 (requiring some changes in local travel patterns)	0	15	16	18	18
	-At-grade railroad crossings on public roads eliminated	0	11 (+ 4 open to local access, only)	16 (+ 3 open to local access, only)	7 (+ 6 open to local access, only)	12 (+ 5 open to local access, only)
	-Special groups/unique communities	No effect	No impact. (Is not near local German Baptist Community.)	Same as Alt. 1	Same as Alt. 1	Same as Alt. 1
4.4	Relocations / displacements:					
	-Residential	0	32 s-f units; 2 duplexes: 36 households	26 + 5* s-f units + 2 duplexes: 35 households	25 s-f units; 2 duplexes: 29 households	19 s-f units; 2 duplexes: 23 households
	-Commercial	0	5	5	8	8
	-Institutional	0	1	1	1	1

TABLE S-5—Comparative Impacts Summary: No-Build and Build Alternatives (Continued)

FEIS Section	Impacts	No-Build	Alternative 1 O-WA+P-CA1+P-EA+Y-LA	Preferred Alternative 2 O-WA1+P-CA1+P-EA+Y-LA	Alternative 3 O-WA+P-CA2+P-EB+Y-LB	Alternative 4 O-WA1+P-CA2+P-EB+Y-LB	
4.5	Economic		Increased traffic and reduced road capacity impair development potential, increase travel costs.	Improved travel time, safety, and local/regional access increase development potential and employment opportunities. Provides added access to Delphi, improved access to Logansport.	Same as Alt. 1	Same as Alt. 1	Same as Alt. 1
4.6	Joint development	No change.		None	None	None	None
4.7	Pedestrians and bicyclists (trails crossed)	0	Crosses 3 bike routes sharing road ROW: access maintained except on CR 900N, which would be relocated. Crosses 3 proposed hiking trails not open to public: likely that access could be maintained. No Section 4(f) use.	Crosses 3 bike routes sharing road ROW: access maintained except on all. Crosses 3 proposed hiking trails not open to public: likely that access could be maintained. No Section 4(f) use.	Same as Alt. 1		Same as Alt. 2
4.8	Air quality	Some reduction in quality over time.	Steadying traffic flow by reducing number of access points and railroad crossings would reduce vehicle-related pollutants. No exceedance of standards projected.	Same as Alt. 1	Same as Alt. 1		Same as Alt. 1
4.9	Noise	Projected noise levels at 27 of 37 receptor sites are above those projected with build alternatives; at 9 of these sites levels are predicted to approach or exceed NAC standard (67 dBA). Substantial increase (6 dBA above existing level) at one NRHP-eligible resource.	Noise levels predicted to approach or exceed the NAC standard at 4 receptor sites. No substantial noise increases projected. Projected levels at 27 sites are below those projected with No-Build Alternative.	Noise levels predicted to approach or exceed the NAC standard at 3 receptor sites. No substantial noise increases projected. Projected levels at 27 sites are below those projected with No-Build Alternative.	Noise levels predicted to approach or exceed the NAC standard at 7 receptor sites. No substantial noise increases projected. Projected levels at 27 sites are below those projected with No-Build Alternative.		Same as Alt. 3
4.10	Energy	No effect.	Major one-time energy resources demand. Improved access, travel time, safety make operational costs less than or equivalent to No-Build.	Same as Alt. 1	Same as Alt. 1		Same as Alt. 1
4.11	Water quality, related impacts: -Stream crossings (including intermittent) -Bridges (Stream / RR / Highway) -Length of stream impact (feet) - General impacts	0 0 0	41 6 / 7 / 6 17,685	43 7 / 11 / 9 + 2* 17,565	42 6 / 4 / 8 18,274	44 6 / 9 / 8 18,143	Same as Alt. 1
4.12	Wetlands (acres directly impacted)	0	2.40	2.68	1.55	1.83	
4.13	Permits	None	USACE 404, IDEM 401, IDNR Construction in a Floodway	Same as Alt. 1	Same as Alt. 1		Same as Alt. 1
4.14	Water body modifications / wildlife habitat impacts	No effect	Habitat: 174 acres uncultivated agri. land/ riparian/wetland/forest	Habitat: 170 + 3* acres uncultivated agri. land/ riparian/ wetland/forest	Habitat: 176 acres agri. land/ riparian/ wetland/forest	Habitat: 172 acres uncultivated agri. land/ riparian/wetland/forest	
4.15	Endangered species	No effect	Indiana bats captured on Sugar Creek and habitat exists through project corridor.	Same as Alt. 1	Same as Alt. 1		Same as Alt. 1

TABLE S-5—Comparative Impacts Summary: No-Build and Build Alternatives (Continued)

FEIS Section	Impacts	No-Build	Alternative 1 O-WA+P-CA1+P-EA+Y-LA	Preferred Alternative 2 O-WA1+P-CA1+P-EA+Y-LA	Alternative 3 O-WA+P-CA2+P-EB+Y-LB	Alternative 4 O-WA1+P-CA2+P-EB+Y-LB
4.16	Floodplains (acres)	0	25	25	21	21
4.17	Wild and scenic rivers	None in area	None in area	None in area	None in area	None in area
4.18	Potential HAZMAT sites	No effect	12	11	11	10
4.19	Visual	No effect	Pleasant view from the road through rural areas. Visual impacts to cultural resources (see 4.21 below).	Same as Alt. 1	Same as Alt. 1	Same as Alt. 1
4.20	Construction	No effect	Temporary dust, noise, traffic delays, water quality impacts.	Same as Alt. 1	Same as Alt. 1	Same as Alt. 1
4.21	Cultural resources -Archaeological resources (eligible for / listed on NRHP) -Historic properties (eligible for / listed on NRHP) Note: No 4(f) use expected.	No effect Increase over existing noise level at an NRHP-eligible resource.	1 alluvial soils area recommended for avoidance/ further testing. Visual impact to NRHP-listed Rural Historic District and 3 eligible sites.	1 floodplain area, 1 alluvial soils area, 8 arch. sites recommended for avoidance/ further testing. Same as Alt. 1	1 alluvial soils area recommended for avoidance/ further testing. Visual impact to NRHP-listed Rural Historic District, 1 listed site and 2 eligible sites.	1 alluvial soils area recommended for avoidance/ further testing. Same as Alt. 3
4.22	Long-term impacts	Would not improve accessibility and safety, travel time, economic development potential.	Completes a link in the Hoosier Heartland Industrial corridor and enhances long-term productivity for the area and region.	Same as Alt. 1	Same as Alt. 1	Same as Alt. 1

* Indicates additional impacts associated with the modification of **Preferred Alternative 2** to include interchanges (rather than at-grade intersections) at Burlington Avenue/SR 29 and US 421. It is likely that these modifications would have been made with any of the build alternatives.

Abbreviations Key:

4.2: ROW = Right-of-Way USDA = U.S. Department of Agriculture

4.4 s-f = single-family residential dwelling

4.7 Section 4(f) = A section of the Department of Transportation Act (1966) requiring avoidance of certain resources (such as public parks and recreational areas, historic and archaeological sites, wild and scenic rivers, or wildlife management areas) when a feasible alternative is possible.

4.9 NRHP = National Register of Historic Places

4.11 RR = Railroad

4.13 USACE = U.S. Department of the Army, Corps of Engineers IDEM = Indiana Department of Environmental Management IDNR = Indiana Department of Natural Resources

4.14 USFWS = U.S. Department of the Interior, Fish and Wildlife Service

4.18 HAZMAT = Hazardous materials

4.21 Regarding Section 106: Section 106 of the *National Historic Preservation Act* (1966), as amended, requires the federal government to “take into account” the effect of its proposed actions on archaeological and historic resources before making project decisions. Regarding archaeological resources: A detailed field reconnaissance of the entire length of the project corridor was undertaken for the **Preferred Alternative 2**, only. Therefore, comparison of **Preferred Alternative 2**'s potential impacts with those of Alternatives 1, 3 and 4 is not possible. (The “alluvial soils area” was identified in a Phase 1a survey performed early in the project for the Deer Creek Valley area [Central Segment], only). FEIS Chapter 4, Section 4.21.2 discusses potential impacts to archaeological resources.

CHAPTER 1—PURPOSE OF AND NEED FOR ACTION

1.1 PROJECT STATUS

The Indiana Department of Transportation (INDOT), in cooperation with the Federal Highway Administration (FHWA), proposes to provide transportation improvements in the State Route 25 (SR 25) corridor between the cities of Lafayette and Logansport, Indiana. This Final Environmental Impact Statement (FEIS) is the result of a multi-year planning effort involving extensive public input; on-going coordination with local, state, and federal agencies; detailed environmental assessments; and thorough analyses of historical and socioeconomic issues.

On November 24, 1999, FHWA published a Notice of Intent (NOI) in the *Federal Register* advising the public that an Environmental Impact Statement would be prepared for the proposed highway project. The process began with the study of the No-Build Alternative and more than 80 build alternatives, which were refined and reduced in number for further analysis. The Draft EIS was approved by FHWA and INDOT in August 2002 with the No-Build Alternative and Build Alternatives 1, 2, 3 and 4 still under consideration. Preliminary engineering plans and cost estimates were developed for use in comparing the alternatives. Public hearings were held in the project area October 1, 2, and 3, 2002. In January 2003, INDOT announced its recommendation for a Preferred Alternative—**Alternative 2**—to be advanced to the FEIS. The FEIS is a comprehensive updating of the draft document, changes to which are an outgrowth of the public involvement process. The FEIS includes a description of the Preferred Alternative, incorporating new data and preliminary design changes made since the issuance of the DEIS; recommended measures for mitigating environmental impacts associated with the Preferred Alternative; and responses to regulatory agency and public comments on the DEIS.

1.2 PROJECT DESCRIPTION AND SETTING

This project is part of a planned Heartland Industrial Corridor improvement extending from Lafayette, Indiana, to Toledo, Ohio—a distance of approximately 200 miles. The *Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA)* and *The Transportation Equity Act for the 21st Century (TEA-21)* listed the Heartland Industrial Corridor among the 21 “High Priority Corridors on the National Highway System.” The Indiana portion of this corridor is referred to as the Hoosier Heartland Highway. This project, from Lafayette to Logansport, will complete the Hoosier Heartland Highway from Lafayette to Fort Wayne, a distance of approximately 99 miles (see Figure 1, page I-2). The four-lane divided Hoosier Heartland Highway is open to traffic from Logansport to Fort Wayne, Indiana. The last segment of the highway remaining to be reconstructed is the proposed project, which begins 0.1-mile east of Interstate 65 (I-65) in Lafayette and extends approximately 35.3 miles northeast to the multi-lane section of US 24/US 35¹, 1.6 miles east of SR 29 in Logansport. This link will provide a continuous multi-lane highway from Lafayette to Fort Wayne, thereby connecting I-65 and I-69. Figure 2, page I-3, shows the status of all segments of the corridor.

A key element of the system linkage is the rationale for the beginning and ending points of the project (i.e., the logical termini). The project’s western terminus location was selected because it provides a direct connection with I-65, the major north-south Interstate highway in Indiana. The

¹ For ease of reference, the US 24/US 35 common route is hereafter referred to simply as US 24.

project's eastern terminus was selected because it connects with US 24, the recently constructed multi-lane section of the Hoosier Heartland Highway. The project would, thus, provide improved connection between the area's two largest urban areas, Lafayette and Logansport, and also complete the 99-mile stretch of the Hoosier Heartland Highway between Lafayette and Fort Wayne.

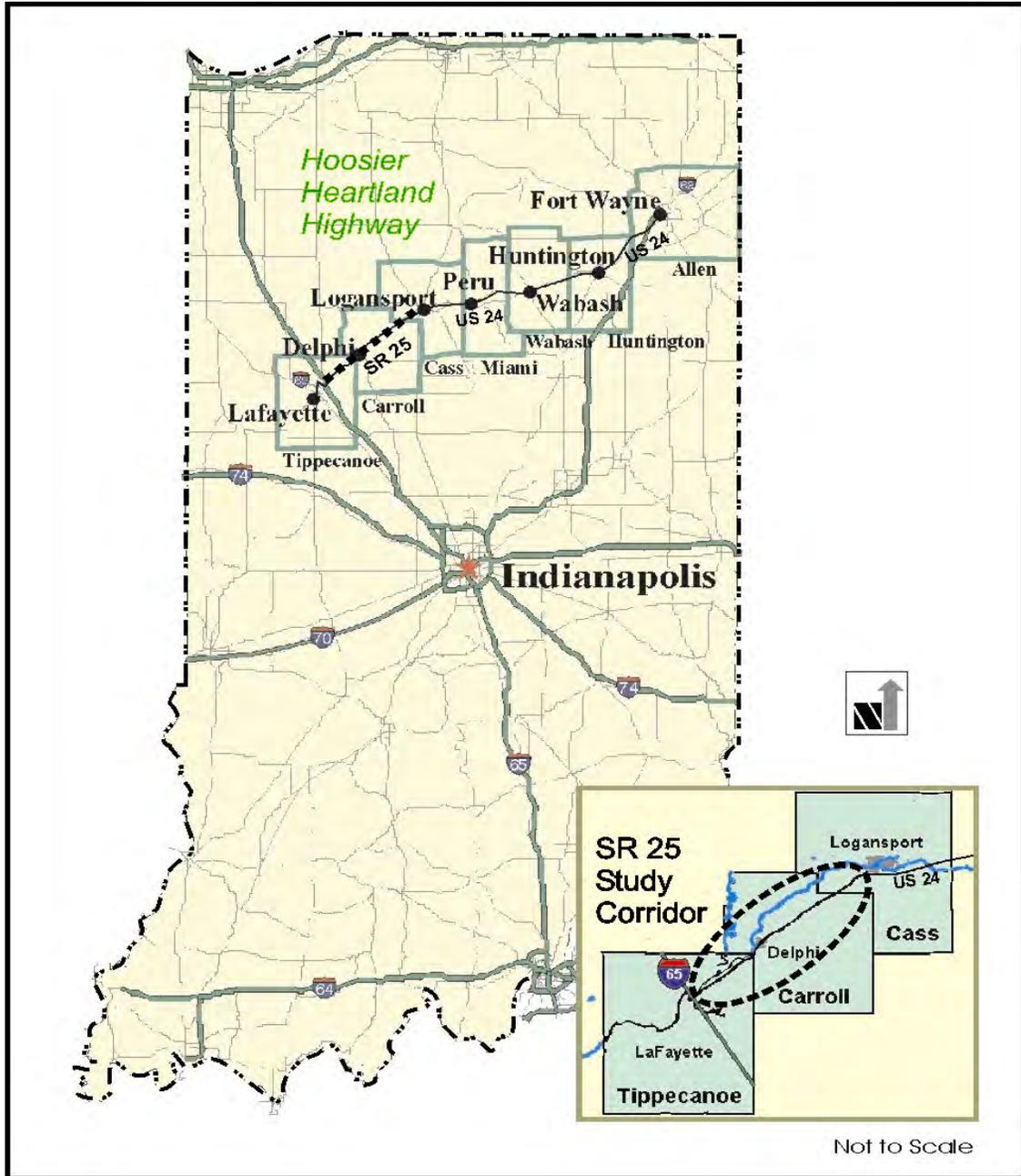


Figure 1
PROJECT LOCATION

SR 25: Hoosier Heartland Highway
Lafayette to Logansport, Indiana



This section of SR 25 is being advanced as an independent project because it is the major commercial corridor serving the cities of Lafayette, Delphi, and Logansport, as well as several smaller communities along the route. The existing SR 25 (Figure 3, page I-7) intersects I-65 on the eastern edge of Lafayette, goes through downtown Delphi, and parallels the Norfolk Southern railroad between Delphi and Logansport. Train traffic impedes vehicular traffic flow, producing frequent delays and lengthening travel time (including emergency response) along SR 25 and on local public roads that intersect existing SR 25.

1.3 EXISTING ROADWAY CONDITIONS

SR 25, which is part of the National Highway System (NHS), is also on the Indiana 4R Network and National Truck Network. SR 25 is a Statewide Mobility Corridor in INDOT's 2000-2025 Long Range Plan update, published in 2002. As described in the plan update: "Statewide Mobility Corridors serve as the connection between urban areas of 25,000 persons or greater in Indiana and neighboring states, provide macro-level accessibility to cities and regions around the state, and play a vital role in economic development." SR 25 is functionally classified on the Indiana highway system as a Rural Other Principal Arterial, and as an Urban Other Principal Arterial within the Urban Area Boundary (UAB) of Logansport. Arterials provide the highest level of mobility, at the highest speed, for long, uninterrupted travel. Arterials generally have higher design standards than other roads, often with multiple lanes and relatively strong access control.

The two main categories of roads composing the arterial system are “urban” and “rural.” The rural arterial system provides interstate and intercounty service so that all developed areas are within a reasonable distance of an arterial highway. The rural arterial system comprises principal and minor routes, and the principal routes are further stratified as 1) freeways, and 2) other principal arterials. The rural principal arterial system provides for movement between virtually all urban areas with populations greater than 50,000, and a large majority of urban areas with populations over 25,000. The urban arterial system is also broken down into principal and minor routes, and further stratified as 1) interstate, 2) other freeways, and 3) other principal arterials (i.e., arterials having partial or no control of access). The urban principal arterial system carries most of the trips entering/leaving an urban area, most through movements bypassing the central city, and significant intra-area traffic. The system includes roadways with fully or partially controlled access, as well as those with no control of access.

Existing SR 25 is a two-lane facility, constructed circa 1931, with minimal earth shoulders throughout most of the 33-mile-long Lafayette-to-Logansport corridor. The travel (driving) lanes are 12 feet wide and the driving surface is asphalt throughout. The posted speed is, predominantly, 55 miles per hour (mph), with reduced speeds in the I-65 interchange area, and through the communities of Americus, Delphi, Rockfield, and Burrows. Signalized intersections occur at the following locations along existing SR 25: northbound and southbound I-65 ramps, Tippecanoe CR 300N/Deems Drive, US 421/SR 39/SR 18 just west of Delphi, and US 421/SR 39/SR 18² in downtown Delphi.

The existing horizontal alignment is good throughout the Lafayette to Logansport segment of SR 25, with five curves from 0°30' to 6°00'. Assuming proper superelevation, each of these meets the requirements for a 55-mph roadway. While much of the vertical alignment meets the minimum requirements for a stopping sight distance (SSD) for 55-mph roadway, there are sections between Lafayette and Americus where reduced speed is needed. Vertical curve deficiencies in the alignment create substandard stopping and intersection sight distances (ISD) for a sum of approximately four miles in the overall project length.

Access control is by driveway permit, only. Obstructions on the existing roadside slopes—including trees, culvert headwalls, utility poles, and substandard guardrail end treatments or steep embankment slopes without guardrails—reduce the desired recovery zone. The deficiencies are summarized, by reference post (RP)³, on Table 1.1, page I-5, from Lafayette to Logansport, beginning approximately at the I-65/SR 25 interchange and heading northeast. The deficiencies/substandard attributes along the route are identified on the table by number, as follows:

- 1 - Substandard shoulder 3.3–7.9 feet, broken asphalt (4R reconstruction standard is 11-foot usable shoulder, 10-foot paved)
- 2 - Obstructions inside clear zone and obstruction-free zone
- 3 - Non-traversable fill slope steeper than 3:1 without guardrail
- 4 - Substandard guardrail and guardrail end treatment

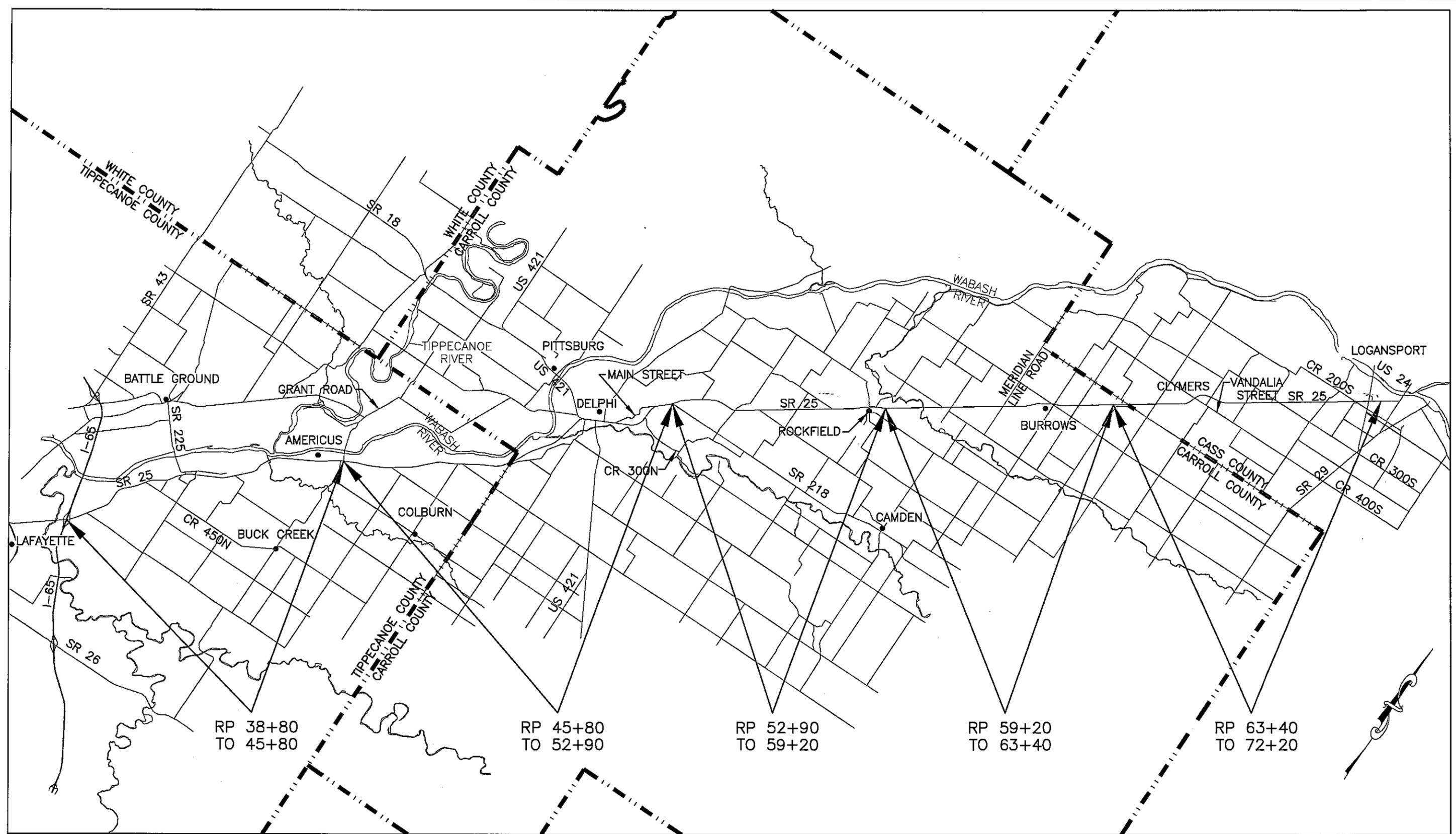
² For ease of reference, the US 421/SR 39/SR 18 common route is hereafter referred to simply as US 421.

³ On Table 1.1, the assumed beginning is RP 38+80 just east of the I-65/SR 25 intersection traveling northeast. The approximate locations of the reference post ranges, in bold type following the segment heading, are shown on Figure 3, page I-7.

TABLE 1.1—SR 25 Deficiencies

Station	NORTH BOUND		SOUTH BOUND	
	Deficiency	Note	Deficiency	Note
Lafayette to Americus (RP 38+80 to 45+80)				
38+50 - 39+45 39+45 - 39+92	1, 2 1		1, 2 1	
40+39 - 40+68 41+40 - 41+42 41+72 42+95 43+01	2, 4 2 2	<i>trees in clear zone</i>	2, 3 2, 3 2, 3 2, 3	
43+06 43+06 - 43+77 43+71 - 43+82 43+88 - 44+37 44+43	2 2 2 3, 2 2, 3	<i>headwall with no guardrail</i> <i>poles in clear zone</i>	2, 3	<i>trees in clear zone</i>
44+43 - 44+84 45+13 45+32 - 45+38	 2, 5		2, 3 4, 3	<i>trees in clear zone</i>
Americus to North of Delphi (RP 45+80 to 52+90)				
46+02 46+64 46+83 - 47+02	2 2 2, 3	<i>headwall with no guardrail</i> <i>steep embankment</i> <i>headwall with no guardrail</i>	2, 3	<i>headwall with no guardrail</i>
47+02 - 47+59 47+97 49+30 - 49+35	2 2 2		2	<i>headwall with no guardrail</i>
49+56 49+73 - 49+90 49+96 49+96 - 50+02	2 2 2	<i>embankment with trees</i> <i>embankment with trees</i>	2, 4 2, 4	<i>trees in clear zone</i>
50+58 - 50+81 51+09 - 51+38	 2, 3	<i>telephone poles in clear zone</i>	2	
North of Delphi to Rockfield (RP 52+90 to 59+20)				
53+27 - 53+39 54+22 - 54+79 54+79 54+84	4 2, 3	<i>trees in clear zone</i>	4 2, 3 2, 3	
55+32 55+79 - 55+87 56+11 - 56+61	2 2		2, 3 2, 3	
56+49 - 56+74 57+44	2, 3		2, 3 2, 3	
58+05 58+48 - 58+59	2, 3		2, 3 2	
Rockfield to Burrows (RP 59+20 to 63+40)				
59+14 - 60+02 60+02 59+64	2	<i>trees in clear zone</i>	2, 3 2, 3	<i>trees in clear zone</i>
59+90 - 60+03 59+96 63+01 63+06	2, 3 2, 3 2		2, 3	<i>trees in clear zone</i>
Burrows to Logansport (RP 63+40 to 72+20)				
65+26 65+85 66+04	2 2	<i>steep embankment</i>	2, 3 2	
67+80 69+22 69+90	2	<i>steep embankment</i>	2 2	
69+92 70+51 70+77	2		2 2, 3	<i>trees in clear zone</i>
70+81 71+32	2	<i>steep embankment</i>	2	

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KEY
 Intersection capacity analysis locations, identified
 in Section 1.4.1, Capacity and Transportation Demand.

Note:
 Reference posts (RP) are approximate and reflect general locations of
 data presented on Table 1.1, SR 25 Deficiencies.

Figure 3 Sheet 1 of 1
 SR 25: Hoosier Heartland Highway
 Lafayette to Logansport, Indiana
 EXISTING SR 25
 (Not to Scale)

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[Page I-8]

There are approximately 81 public crossroads and 145 private entrances along this corridor. At-grade railroad crossings occur on approximately 40 of these crossroads. The Norfolk Southern and Winamac Southern railroads are in the project corridor. Existing SR 25 has either at-grade or grade-separated (bridge) railroad crossings at the following locations:

<u>Location</u>	<u>Railroad</u>	<u>Crossing</u>	<u>Warning Device</u>
▪ Delphi, on US 421 (common route with SR 25)	Norfolk Southern	At-grade	Gates, flashing lights, and warning signs
▪ Delphi, east of Deer Creek Commerce Park	Norfolk Southern	SR 25 overpass	--
▪ Clymers, at CR 400W	Winamac Southern	At-grade	Gates and warning signs
▪ Industrial properties, east of Clymers	Norfolk Southern spur	At-grade	Warning signs

Currently 41 trains per day, on average, use the Norfolk Southern track through the area, according to the trainmaster for the Norfolk Southern Railway Company. The average is expected to increase to 65 trains per day within the next few years. Fire districts and other emergency response agencies have service areas that are separated by that railroad. Representatives of these groups, along with local government officials and members of the general public, have noted their concerns about reduced emergency response times owing to delays at railroad crossings. (See Chapter 4, Section 4.3, “Emergency Services,” for discussion of emergency routes.)

1.4 PURPOSE AND NEED

The project effects reconstruction and relocation of SR 25 starting 0.1 mile east of the SR 25 and Interstate 65 (I-65) interchange in Lafayette and extending 35.3 miles northeast to terminate at US 24, 1.6 miles east of SR 29 in Logansport. The project corridor extends through Tippecanoe, Carroll, and Cass counties, Indiana. The *Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA)* and *The Transportation Equity Act for the 21st Century (TEA-21)* listed the Heartland Industrial Corridor (Lafayette to Toledo) as #4 among the 21 “High Priority Corridors on the National Highway System.” Road segments defined within those corridors included the construction of a four-lane highway from Lafayette to Fort Wayne, following existing SR 25 and US 24. The Lafayette-to-Logansport project is the last remaining section of the Lafayette-to-Fort Wayne segment of the high priority corridor.

The purpose of the project is to complete a critical link in the Hoosier Heartland Industrial Corridor, providing an important regional facility that will serve traffic, improve safety, and meet current design standards. The need for improvement in the corridor is demonstrated by the existing roadway cross section (traveled way, shoulders, and roadsides/ditches), which is substandard to contemporary design, and by crash analysis results that show SR 25 has a higher than average rate of injury crashes between Lafayette and Delphi and a slightly higher rate of fatal crashes between Delphi and Logansport. The numerous access points (low level of access control) and substandard geometries contribute to the crash rates. In addition, year 2030 traffic projections that indicate traffic volumes will increase substantially along SR 25, compared with year 2000 volumes, and most sections will operate at unacceptable levels of service (LOS) D or E. The need for the project is summarized in the following statements:

- To reduce congestion, and improve the efficiency and capacity of transportation between Lafayette and Logansport by providing an alternative that will facilitate the movement of traffic.
- To improve safety and meet current design standards.
- To enhance the regional and local transportation network by improving and completing the transportation system between Fort Wayne and Lafayette.
- To implement federal legislation promulgated in *ISTEA* and *TEA-21*; and to respond to the designation of SR 25 as a Statewide Mobility Corridor in INDOT's Long Range Plan.

1.4.1 Traffic Capacity and Transportation Demand

Existing SR 25, which is part of the National Highway System (NHS), is also on the Indiana 4R Network and National Truck Network. It occupies the highest category in INDOT's planning hierarchy, a Statewide Mobility Corridor. SR 25 serves as the main highway between Lafayette, Delphi, and Logansport. Approximately 3,000 people who work in Tippecanoe County live in Carroll and Cass counties. Most of them use SR 25 for their commute, according to 1997 data from the Tippecanoe County Area Plan Commission (APC), which is the Greater Lafayette area's Metropolitan Planning Organization (MPO). In addition, Lafayette serves as a regional shopping/entertainment district and health-care center, and Purdue University's main campus is in West Lafayette.

Traffic volume data along existing SR 25 was obtained from INDOT, mechanical traffic counters, intersection turning movement counts, and the APC travel model. From the I-65 interchange to Tippecanoe County Road (CR) 450N, the current (base year 2000) traffic volume on SR 25 is approximately 21,600 vehicles per day (vpd), and the projected volume for design year 2030 is 29,000 vpd. Between CR 450N and Main Street in Delphi, current traffic volumes range from 7,700–15,500 vpd, and between Delphi and Logansport they range from 4,400–6,800 vpd. By the design year 2030, the traffic in those locations is projected to increase to 11,700–23,400 vpd and 6,500–8,600 vpd, respectively, given the No-Build scenario. Tables 1.2–1.9 in this section show existing and projected traffic volumes and levels of service for existing SR 25.

The need for an improvement in the corridor is demonstrated by an analysis of the traffic capacity of the existing facility. The traffic-carrying capacity of existing SR 25 was analyzed for existing volumes, 2010 volume projections, and 2030 volume projections between I-65 and Logansport, assuming no roadway capacity improvements. The capacity analyses included a comparison (expressed as a volume to capacity— v/c —ratio) of the traffic volume to the operating capacity (i.e., service flow rate of LOS E) of the road lane based on its characteristics (number of lanes, shoulder width, grades, passing opportunity, etc.). The v/c ratio ranges from zero (0) to 1.0, defined as follows:

$v/c = 0$: the flow rate is zero—this is the starting point for the comparison.

$v/c = 0 - 0.999$: the volume of traffic is less than the road's capacity to handle it.

$v/c = 1.0$: the flow rate equals the roadway's capacity; i.e., the road is approaching the limits of its ability (capacity) to handle the traffic volume.

$v/c > 1.0$: the traffic volume exceeds the road's capacity, producing unacceptable delays and a level of service "F."

Level of service (LOS) is the method commonly used to evaluate roadway functions. Level of service is defined as a qualitative measure of operational conditions, and the perception of these conditions by motorists. These conditions are usually defined in terms of factors such as speed and travel time, maneuverability and delay. There are six levels of service, which are designated by the letters “A” through “F.” Level of service “A” represents the most desirable operating conditions, while level of service “F” defines the least acceptable. Both the *Indiana Department of Transportation Design Manual* and the American Association of Highway and Transportation Officials’ (AASHTO) *A Policy on Geometric Design of Highways and Streets* state that for the design of an arterial highway in rural areas, LOS C is the minimum acceptable, LOS B is desirable, and LOS D, E and F are unacceptable.

The methodology used to analyze the capacity and level of service was based on standard traffic engineering procedures outlined in the year 2000 *Highway Capacity Manual* (HCM) “Special Report 209,” published by the Transportation Research Board. The analysis was performed using Highway Capacity Software (HCS). The procedure considers traffic and geometric conditions of the facility such as traffic volumes, percent of large vehicles, operating speed, lane and shoulder widths, grades, passing opportunity, and directional distributions to determine the LOS.

One criterion for measuring the effectiveness of relocating SR 25 is the ability to attract enough traffic away from existing SR 25 so that it can maintain at least LOS C, or above.

Corridor Sections Analyzed

To perform the analyses, existing levels of service were identified for thirteen sections of SR 25, and projections were made for the years 2010, 2020 and 2030 for these same sections. Existing and projected levels of service were also determined for six intersections along the SR 25 corridor. The thirteen roadway sections and six intersections are identified below and shown on Figure 3, page I-7.

13 ROADWAY SECTIONS	6 INTERSECTIONS
<p>Tippecanoe County: I-65 to CR 450N CR 450N to SR 225 SR 225 to Grant Road Grant Road to County Line</p> <p>Carroll County: County Line to US 421 US 421 to Main Street (Delphi) Main Street to CR 300N CR 300N to SR 218 SR 218 to County Line</p> <p>Cass County: County Line to CR 400S (Vandalia Street) CR 400S (Vandalia Street) to CR 300S CR 300S to CR 200S CR 200S to US 24</p>	<p>Tippecanoe County: SR 25 and I-65 Southbound Ramps (S) SR 25 and I-65 Northbound Ramps (S) SR 25 and CR 300N / Deems Drive (S)</p> <p>Carroll County: SR 25 and US 421N (S) SR 25 and US 421S/Washington Street (S)</p> <p>Cass County: US 24/US 35/SR 29 (U)</p> <p>(U) = Unsignalized (S) = Signalized</p>

Base Year 2000 Volumes

Table 1.2 shows the existing levels of service for the thirteen identified sections of SR 25. The analysis reveals that over 50 percent of the corridor is operating at unacceptable levels of service D or E (see shaded rows on Table 1.2). Near Lafayette at the west end of the corridor, where existing SR 25 has a four-lane section divided by a continuous median/left-turn lane, the level of service is B. The eastern half of SR 25 is operating at LOS C. A separate analysis was performed for the AM and PM peak-hour volumes at each of the six intersections. Table 1.3 summarizes the intersection capacity analyses. As indicated in the table, none of the intersections analyzed operate at unacceptable levels of service. It should be noted that the SR 25/I-65 southbound ramp, which is now signalized, was not signalized at the time the analysis was performed. It has not been analyzed as a signalized intersection.

TABLE 1.2—Level of Service Summary – Base Year 2000 Volumes, Existing SR 25

Roadway Section—Existing SR 25	Existing Traffic Volume: AADT	Level of Service
I-65 to CR 450N	21,600	B
CR 450N to SR 225	15,500	E
SR 225 to Grant Road	13,800	E
Grant Road to Tippecanoe/Carroll Co. Line	10,500	D
County Line to US 421	7,700	D
US 421 to Main Street (Delphi)	10,900	D
Main Street to CR 300N	8,000	D
CR 300N to SR 218	6,700	C
SR 218 to Carroll/Cass Co. Line	4,400	C
County Line to CR 400S (Vandalia Street)	4,600	C
CR 400S (Vandalia Street) to CR 300S	5,200	C
CR 300S to CR 200S	5,800	C
CR 200S to US 24	6,800	C

AADT = Annual Average Daily Traffic. Source of data: INDOT traffic counts factored to the current year.

NOTE: Shaded rows indicate roads operating at unacceptable levels of service.

TABLE 1.3—Intersection Level of Service Summary – Base Year 2000 Volumes, Existing SR 25

Intersection With Existing SR 25	AM Peak Hour			PM Peak Hour		
	LOS	Avg. Delay (sec.)	v/c	LOS	Avg. Delay (sec.)	v/c
SR 25/I-65 SB	*	*		*	*	
SR 25/I-65 NB	C	17	0.83	B	10	0.50
SR 25/CR 300N	B	10	0.53	B	10	0.57
SR 25/US 421N	B	11	0.49	B	11	0.53
SR 25/US 421S	C	21	0.67	C	23	0.68
US 24/US 35/SR 29	A	**		A	**	

* This intersection had not been signalized when the capacity analysis was performed; therefore, LOS and average delay have not been evaluated.

** Average delay was not evaluated for unsignalized intersections.

v/c = volume/capacity, i.e., a comparison of the traffic volume to the service capacity of the roadway based on the roadway's characteristics.

2010 Volumes

Traffic volumes were projected to the year 2010 based on historical growth trends along the entire length of SR 25. The LOS analysis was again made assuming the increased traffic volumes on the existing roadway conditions. Using the projected 2010 traffic, the analysis indicates that over half of the corridor would operate at unacceptable level of service D or E. Compared with year 2000 volumes, the level of service remains the same for the westerly sections between I-65 and CR 300N east of Delphi. The section from CR 300N to SR 218 drops from LOS C to LOS D. Also, the segment of SR 25 from CR 200S to US 24 worsens from LOS C to LOS D. Table 1.4 summarizes the results of the SR 25 mainline capacity analyses.

TABLE 1.4—Level of Service Summary – Year 2010 Volumes, “No-Build” Condition

Roadway Section—Existing SR 25	Projected Traffic Volume: AADT	Level of Service
I-65 to CR 450N	24,100	B
CR 450N to SR 225	18,100	E
SR 225 to Grant Road	15,100	E
Grant Road to Tippecanoe/Carroll Co. Line	12,000	D
County Line to US 421	10,500	D
US 421 to Main Street (Delphi)	11,200	D
Main Street to CR 300N	9,200	D
CR 300N to SR 218	7,300	D
SR 218 to Carroll/Cass Co. Line	5,100	C
County Line to CR 400S (Vandalia Street)	5,800	C
CR 400S (Vandalia Street) to CR 300S	6,200	C
CR 300S to CR 200S	6,600	C
CR 200S to US 24	7,300	D

AADT = Annual Average Daily Traffic.

NOTE: Shaded rows indicate roads operating at unacceptable levels of service.

Intersection capacity analyses were performed for 2010 traffic on the previously referenced intersections. Table 1.5 summarizes the capacity analyses. As shown in the table, only the SR 25/US 421S intersection will operate at an unacceptable level of service (LOS D) with PM peak-hour traffic. The existing signalized intersection at US 421 can reach an acceptable level of service through the addition of left-turn lanes.

TABLE 1.5—Intersection Level of Service Summary – Year 2010 Volumes, “No-Build” Condition

Intersection With Existing SR 25	AM Peak Hour			PM Peak Hour		
	LOS	Avg. Delay (sec.)	v/c	LOS	Avg. Delay (sec.)	v/c
SR 25/I-65 SB	*	*		*	*	
SR 25/I-65 NB	C	18	0.85	B	12	0.61
SR 25/CR 300N	B	11	0.64	B	12	0.63
SR 25/US 421N	B	13	0.54	B	14	0.65
SR 25/US 421S	C	23	0.72	D	27	0.83
US 24/US 35/SR 29	A	**		A	**	

* This intersection had not been signalized when the capacity analysis was performed; therefore, LOS and average delay have not been evaluated.

** Average delay was not evaluated for unsignalized intersections.

v/c = volume/capacity, i.e., a comparison of the traffic volume to the service capacity of the roadway based on the roadway's characteristics.

2030 Volumes

The projections for 2030 indicate that the traffic volumes will increase significantly along the entire length of SR 25 and, compared with year 2000 volumes, the level of service will deteriorate at eight of the thirteen locations analyzed (see Table 1.6). For example, SR 25 from Grant Road to the Tippecanoe/Carroll County line will decrease from LOS D to LOS E. By year 2030, the only sections of SR 25 operating at LOS C are those from I-65 to CR 450N (four-lane section divided by a continuous median/left-turn lane) and SR 218 to the Carroll/Cass County line. All remaining sections of existing SR 25 will be operating at LOS D or E, which is unacceptable for efficient operation. Accommodating this additional traffic with an acceptable level of service would require adding through-travel lanes to the existing roadway or removing traffic demand from existing SR 25 by building a new parallel facility.

TABLE 1.6—Level of Service Summary – Year 2030 Volumes, “No-Build” Condition

Roadway Section—Existing SR 25	Projected Traffic Volume: AADT	Level of Service
I-65 to CR 450N	29,000	C
CR 450N to SR 225	23,400	E
SR 225 to Grant Road	17,600	E
Grant Road to Tippecanoe/Carroll Co. Line	15,100	E
County Line to US 421	16,000	E
US 421 to Main Street (Delphi)	11,700	D
Main Street to CR 300N	11,700	D
CR 300N to SR 218	8,600	D
SR 218 to Carroll/Cass Co. Line	6,500	C
County Line to CR 400S (Vandalia Street)	8,100	D
CR 400S (Vandalia Street) to CR 300S	8,100	D
CR 300S to CR 200S	8,100	D
CR 200S to US 24	8,100	D

AA DT = Annual Average Daily Traffic.

NOTE: Shaded rows indicate roads operating at unacceptable levels of service.

An intersection capacity analysis of the six intersections was performed using year 2030 AM and PM peak-hour traffic. Four intersections were found to have service level problems for this traffic scenario: SR 25 / I-65 northbound (LOS D, AM peak hour), SR 25/ R 300N (LOS D, AM peak hour), SR 25 / US 421 North (LOS D, PM peak hour) and South (LOS F, AM and PM peak hour), and US 24/US 35/SR 29 (LOS F, AM and PM peak hour). The unsignalized intersection (US 24/US 35/SR 29) can reach an acceptable level of service through the installation of a traffic signal. Left-turn-lane additions are necessary for the intersections of SR 25 / CR 300N, and SR 25 / US 421 North and South, to attain an acceptable level of service. Table 1.7 summarizes the intersection capacity analyses.

TABLE 1.7—Intersection Level of Service Summary – Year 2030 Volumes, “No-Build” Condition

Intersection With Existing SR 25	AM Peak Hour			PM Peak Hour		
	LOS	Avg. Delay (sec.)	v/c	LOS	Avg. Delay (sec.)	v/c
SR 25/I-65 SB	B	15	0.82	C	21	0.94
SR 25/I-65 NB	D	38	1.02	C	20	0.92
SR 25/CR 300N	D	31	0.93	B	14	0.81
SR 25/US 421N	C	19	0.78	D	32	0.92
SR 25/US 421S	F	*	*	F	*	*
US 24/US 35/ SR 29:						
Unsignalized	B (WB left-turn, F)	**		B (WB left-turn, F)	**	
Signalized	B	10	0.36	B	10	0.48

v/c = volume/capacity, i.e., a comparison of the traffic volume to the service capacity of the roadway based on the roadway's characteristics.

* = v/c ratio greater than 1.0; delay could not be calculated.

** Average delay was not evaluated for unsignalized intersections.

Burlington Avenue Interchange Study

During the public hearing/public comment portion of the process, Logansport area government officials, emergency service providers, and the public urged the construction of an interchange, rather than an at-grade intersection, at Burlington Avenue in Logansport. Future traffic volumes at the location, safety factors, and local access were the primary reasons given by local officials and the public for supporting an interchange. A traffic study—*Transportation Needs Study for Hoosier Heartland Highway (SR 25) and Burlington Avenue*⁴—was prepared in 2002, sponsored by the City of Logansport, Cass County, and Logansport-Cass County Economic Development Foundation. The report evaluated the operation of the proposed new SR 25/Burlington Avenue junction as both an at-grade intersection and a grade-separated interchange. Based on the traffic analyses, the study recommended a grade-separated interchange at the intersection of the new road and Burlington Avenue. INDOT and FHWA have agreed to provide an interchange that will serve both SR 29 and Burlington Avenue. The interchange takes the place of the overpass with no connection to new SR 25 initially proposed at SR 29 and the at-grade intersection proposed at Burlington Avenue. Chapter 2, Section 2.4, “Preferred Alternative,” contains a discussion of the proposed interchange.

1.4.2 Design Standards and Safety

The existing two-lane road fails to meet current design standards along most of the length, with substandard shoulder width, roadside clearances, and vertical alignment; and lack of intersection sight distance among the main deficiencies, as noted in Table 1.1, page I-5. INDOT’s geometric design criteria for rural, multi-lane arterials (4R, new construction/reconstruction) specifies that usable shoulder width should be 11 feet, of which 10 feet should be paved, and that roadside ditches should be traversable (3:1 or flatter) if not recoverable (4:1 or flatter). In addition, substandard (with respect to stopping sight distance) vertical curves occur throughout the project length, but are most frequent in the Western Segment, from Lafayette to Delphi, where over one third of the vertical alignment is substandard with respect to INDOT standards for stopping sight distance.

Vehicle mix is another concern. SR 25 is the major commercial corridor for the study area. Heavy vehicles (i.e., large trucks, farm vehicles, buses) make up 15 to 20 percent of the existing daily traffic along SR 25 between Lafayette and Logansport (see Table 1.8, page I-16). These vehicles are less able to negotiate substandard conditions than automobiles and consume a higher percentage of a roadway’s available capacity. Large trucks and farm vehicles entering and exiting industrial sites, commercial establishments, and farm businesses create conflict points with the high-speed mainline traffic. The poorer acceleration characteristics of trucks, farm equipment, and buses, in combination with the limited number of passing zones in some locations, contribute to high-risk passing maneuvers.

⁴ The Mannik & Smith Group, September 30, 2002. The report was entered into the record at the public hearing in Logansport, and appears in its entirety in Appendix C, together with a commentary on the report titled “Intersections, Interchanges and Road Safety: A Commentary.” Delphi-MRI, October 2002.

TABLE 1.8—Year 2000 Heavy Vehicle Traffic (Percent of Total Traffic)

Location	Percent Heavy Vehicles		
I-65 to SR 225	EB 22.7	WB 12.3	Average 17.8
SR 225 to Americus	EB 11.9	WB 19.1	Average 15.6
Americus to Delphi	EB 21.4	WB 14.7	Average 18.1
Rockfield to Burrows	EB 27.1	WB 15.8	Average 21.5
Corridor Average	17.7 %		

Access to existing SR 25 is controlled by driveway permit, the lowest level of access control. This 33-mile-long section of SR 25 has 81 at-grade public street intersections, approximately 145 private entrances, and three at-grade railroad crossings. The parallel Norfolk Southern railroad track averages 41 trains per day. The at-grade railroad crossings on existing SR 25 and on numerous public crossroads in the project corridor present conflicts between vehicles and trains, and can cause delays and contribute to crashes. AASHTO's *Highway Safety Design and Operations Guide 1997* states that "access control is one of the most significant factors in the safe, efficient operation of a highway." According to the *Report on Highway-Railroad Crossings and Mitigation Efforts by State*⁵, at-grade railroad crossing collisions "remain the second leading cause of all railroad-related fatalities in the railroad industry." Reducing the number of at-grade railroad crossings and access points would reduce delays in travel time and improve safety within this corridor.

Traffic crash data indicate that numerous crashes occur at public road at-grade intersections and private and commercial entrance drives, all but a few of which are unsignalized and have stop control for crossroad approaches. The only signalization along the existing roadway occurs at the northbound and southbound I-65 ramps, Tippecanoe CR 300N, US 421 just west of Delphi, and US 421 in downtown Delphi. To determine if there are segments along existing SR 25 with high rates of crashes, crash data were obtained using the INDOT and Indiana State Police database for the four-year period 1995-1998. This data were analyzed using INDOT's methodology for determining statewide injury and fatal crash rates by type of roadway. Results of the analysis are summarized in Tables 1.9 and 1.10.

TABLE 1.9—Traffic Crash Summary (1995 to 1998)

Location	No. Fatal Crashes	No. Injury Crashes
Lafayette to Delphi	3	121
Delphi To Logansport	3	47
Corridor Total	6	168

TABLE 1.10—Crash Rate Comparison

Location	Fatal Crash Rate	Injury Crash Rate
Other Principal Arterials ⁽¹⁾	1.99	51.88
SR 25: Lafayette to Delphi ⁽²⁾	1.52	61.16
SR 25: Delphi to Logansport ⁽²⁾	2.25	35.24
Indiana Statewide Average: Rural Roads ⁽¹⁾	1.72	60.78

Fatal Crash and Injury Crash rates are the number of fatal/injury crashes per 100 million vehicle miles of travel.

(1) Source: INDOT, 1997 *Motor Vehicle Fatalities and Rates*

(2) Source: INDOT, 1995-1998 Crash Statistics

⁵ U.S. Department of Transportation, Federal Railroad Administration, February 2002.

The tables show that SR 25, compared to similar facilities (*Rural Arterials*) in Indiana, has a higher than average rate of injury crashes occurring between Lafayette and Delphi and a slightly higher rate of fatal crashes occurring between Delphi and Logansport. The injury crash rate for Lafayette to Delphi (61.16) is higher than that for the state (51.88), while the same rate for the segment from Delphi to Logansport (35.24) is lower than the statewide rate (51.88). However, the fatal crash rate for the segment from Delphi to Logansport (2.25) is higher than the statewide rate (1.99), while that rate for Lafayette to Delphi is lower, at 1.52.

To improve safety and meet current design standards, existing SR 25 would need to be reconstructed to the AASHTO and INDOT design standards, as detailed in the INDOT *Design Manual for Rural Arterials—New Construction/Reconstruction for a New Roadway*, and AASHTO's publication, *A Policy on Geometric Design of Highway and Streets*. The standards relate to such factors as roadway widths, horizontal and vertical geometry, stopping and intersection sight distances (SSD and ISD), roadside clearance, intersection access control, etc. Alternatives were evaluated to determine their ability to comply with all current roadway design standards and improve safety by reducing conflicts including railroad crossings, intersections with public crossroads, and access to/from private drives.

1.4.3 System Linkage

One of the project needs is to enhance both the regional and local transportation network. The project's western terminus was selected because it provides a direct connection to I-65, the major north-south Interstate in Indiana. The project's eastern terminus was selected because it connects with the recently constructed multi-lane section of US 24 in Logansport. The entire corridor of SR 25 and US 24 from Lafayette to Fort Wayne—a distance of approximately 99 miles—is commonly referred to as the Hoosier Heartland Highway. The Lafayette-to-Logansport section of SR 25 is being advanced as an independent project because it is the major commercial corridor linking Lafayette, Delphi, and Logansport. This project would provide a continuous highway improvement and complete the Hoosier Heartland Highway from Lafayette to Fort Wayne, connecting I-65 and I-69. Ultimately, plans call for extending the Heartland Industrial Corridor eastward from Fort Wayne to Toledo, Ohio, thereby making the Heartland Industrial Corridor a 200-mile-long highway linking Lafayette to Toledo.

The project corridor parallels existing SR 25 for much of its distance, thereby allowing for the continuance of the existing local connections among communities and trip destinations while providing a community bypass alternative for through travelers. The project also provides connections with several state and US roadways (all under INDOT's jurisdiction)—namely I-65 in Lafayette, US 421 and SR 218 in Delphi, and US 24/US 35 and SR 29 in Logansport.

The measure of the project's ability to meet Purpose and Need with respect to system linkage will be its effectiveness in enhancing the regional and local transportation network by 1) improving and completing the transportation system between Fort Wayne and Lafayette, and 2) serving the local communities in the existing corridor.

1.4.4 Government Authority

In 1987, the Indiana General Assembly directed INDOT to undertake a feasibility study for a multi-lane highway between Lafayette and Fort Wayne. The highway was to follow SR 25 from Lafayette to Logansport and US 24 from Logansport to Fort Wayne. This has become known as the Hoosier Heartland Highway.

In 1988, the *Feasibility Study: Lafayette to Fort Wayne Corridor* was completed by American Consulting Engineers, Inc., for INDOT. The study recommended upgrading the corridor and prioritized sections for improvement. As shown on Figure 2, page I-3, all sections of the Hoosier Heartland Highway are open to traffic except the section from Logansport to Lafayette. INDOT and the Ohio DOT, and FHWA, with consultant Mannik & Smith, Inc., completed the *United States Route 24 Improvement Feasibility Study* in 1994. This study looked at improving the US 24 corridor between Fort Wayne, Indiana, and Toledo, Ohio. Currently, the Ohio DOT, in cooperation with INDOT, is sponsoring three preliminary development studies for US 24 corridor east of Fort Wayne. One study is focusing on the section between New Haven, Indiana, and Defiance, Ohio, the second study is considering the section between Defiance and Napoleon, Ohio, and the third study is focusing on the section from Napoleon to Toledo.

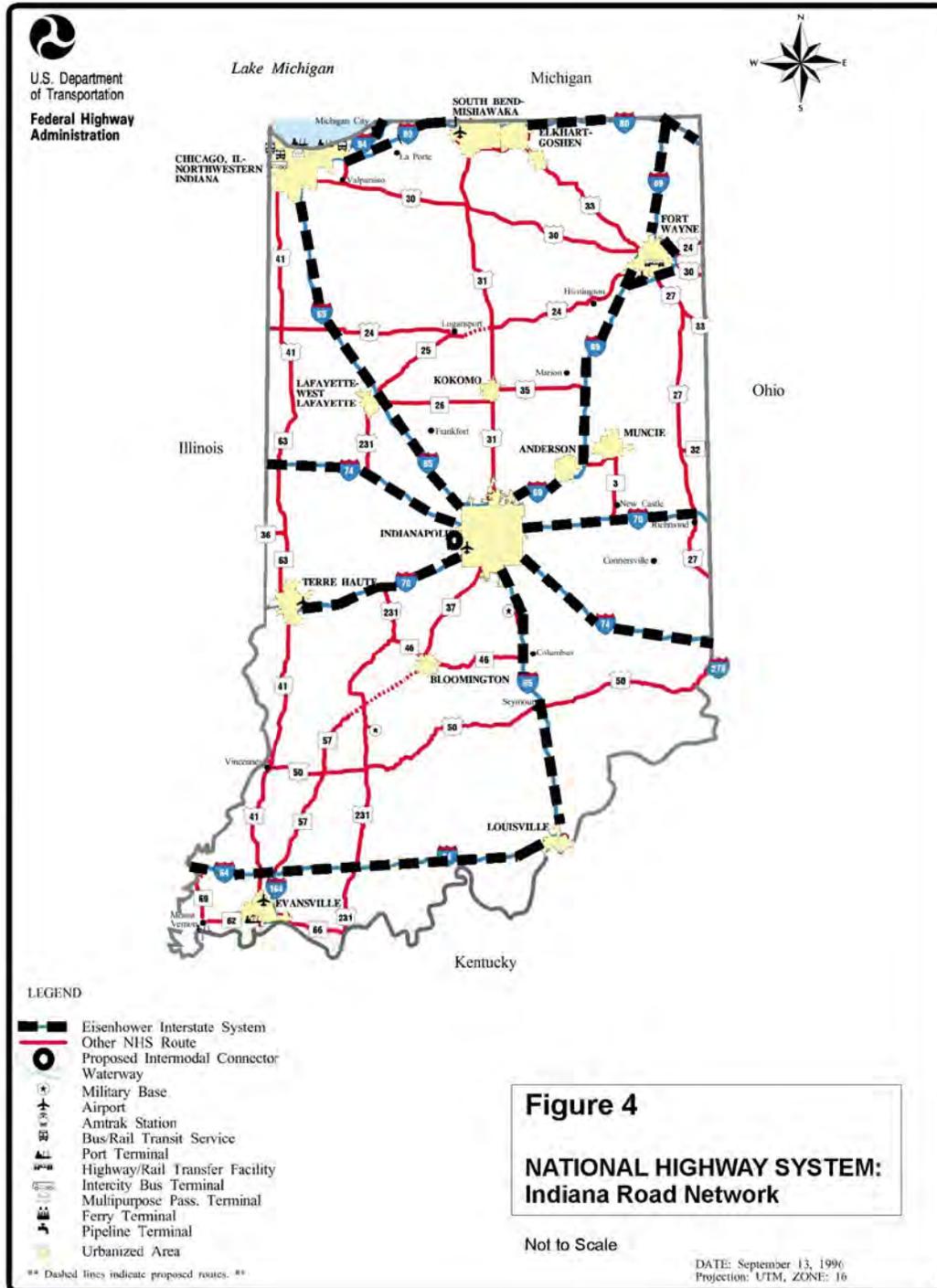
The *Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA)* listed the Heartland Industrial Corridor from Lafayette, Indiana, to Toledo, Ohio, as “High Priority Corridor #4” of the 21 national priority corridors identified. Section 1105, “High Priority Corridors on the National Highway System,” stated: “the development of transportation corridors is the most efficient and effective way of integrating regions and improving efficiency and safety of commerce and travel and further promoting economic development.” The *Transportation Equity Act for the 21st Century (TEA-21)*, enacted in 1998, again identified the portion of the corridor between Lafayette and Fort Wayne as a high priority corridor and provided \$18.75 million toward implementation of the project.

At the state level, the improvement to the SR 25 corridor from Lafayette to Logansport is identified in the statewide transportation plan (*Transportation In Indiana: Multi-modal Plan Development For The 1990’s And Beyond*) as a part of one of 27 “Major Commercial Routes.” SR 25 is a Statewide Mobility Corridor in INDOT’s *2000-2025 Long Range Plan Update*, published in 2002. This corridor is also part of the National Highway System (NHS), as depicted on Figure 4, page I-19. As described in the plan update: “Statewide Mobility Corridors serve as the connection between urban areas of 25,000 persons or greater in Indiana and neighboring states, provide macro-level accessibility to cities and regions around the state, and play a vital role in economic development.” Corridor characteristics identified in the plan include:

Upper level design standards	High speed	Generally multi-lane divided
Free flowing traffic conditions	Desirable to bypass congested areas	Serves long distance trips
Full access control desirable, no less than partial access control	Railroad and highway grade separations desirable	Carry longer distance commuter traffic
Heavy commercial vehicle flows	Large through traffic volumes	

Locally, improving the SR 25 corridor, as part of the Hoosier Heartland Highway project, is supported by the affected jurisdictions. The Tippecanoe County APC included the project in its *Adopted Thoroughfare Plan*; the Carroll County and Delphi elected officials have written and spoken in support of the project, and included it in their land use planning initiatives; and the Logansport/Cass County Plan Commission, and the Logansport County Council and Cass County Commissioners adopted a *Thoroughfare Plan* in February 2002 that advocates the project. This local recognition followed completion, in 1995, of the *State Road 25 Hoosier Heartland Corridor Study* prepared for INDOT by Schimpler-Corradino Associates. The study

included an extensive public involvement component, and recommended a route for a partial access control (with limited access right-of-way), four-lane highway. The project's responsiveness to local, state, and federal transportation initiatives is a measure of the project's effectiveness in meeting the need to implement federal legislation and respond to state plans. Support from elected officials and local/regional planning agencies is documented in correspondence comprising Appendix A1.



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CHAPTER 2—ALTERNATIVE DEVELOPMENT AND EVALUATION

This chapter explains the methods used to develop and evaluate alternatives that would meet the Purpose and Need of the project—from the initial corridor evaluation efforts through the recommendation of the Preferred Alternative—**Alternative 2**, the focus of this FEIS. The chapter begins with an introduction to the public involvement program that was a major element in the alternatives identification and evaluation process. A chronological listing of key informational meetings and public hearings is presented. The chapter then identifies all of the alternatives considered, summarizes the evaluation methodology, and explains why certain alternatives were eliminated while others were advanced for detailed study. The chapter concludes with the description of the Preferred Alternative—**Alternative 2**, and the rationale behind its recommendation. Later references to this Preferred Alternative in the FEIS will be written as **Preferred Alternative 2**.

2.1 PUBLIC INVOLVEMENT

Since public involvement plays such an important role in the development of the project, a public participation program was developed that included a project Web site, a series of newsletters, and numerous informational meetings with the public as well as with representatives of local and state government organizations and regulatory agencies; businesses, utilities, interest groups, etc. During this period, the Web site received over 800 “hits,” and several hundred letters/written comments were submitted. All of those requesting information received responses. The newsletter mailing list contained more than 2,100 names, many of which were identified from meeting attendance records and Web site requests.

In addition to identifying issues of concern to the general public, the informal meetings were instrumental in initiating coordination with state and federal regulatory agencies, local government officials, and local planning and economic development groups (see Appendix A1 for correspondence); and in identifying and evaluating the numerous study corridors and alternative alignments that have been under consideration during the course of this project.

On November 24, 1999, FHWA published a Notice of Intent (NOI) in the *Federal Register* advising the public that an EIS “will be prepared for the proposed highway project in Tippecanoe, Carroll and Cass Counties, Indiana.” The DEIS was published in August 2002. The formal comment period began September 13, 2002, with the *Federal Register* notice of the document’s availability. The comment period included three formal public hearings, one each in Lafayette (October 1), Delphi (October 2), and Logansport (October 3); and concluded on November 1, 2002. Over 700 people attended the public hearings, and comments were received (including emails, letters, and petitions) from over 600 individuals and agencies. Chapter 8 summarizes the public involvement process and early agency coordination efforts, and addresses substantive public and agency comments made during the period of public comment on the DEIS. A chronological listing of meetings/activities important to the public involvement process is provided in that chapter, page VIII-1 and following.

The study corridors and alternative alignments considered during this study, the process employed in identifying and evaluating them, and the rationale for recommending **Preferred Alternative 2** over other alternatives, are described in the following sections of this chapter.

2.2 OVERVIEW OF ALTERNATIVES CONSIDERED

The identification and evaluation of alternatives were the most important and critical steps of the study. Any alternative that could meet the Purpose and Need for the project was identified and given consideration. Starting from a wide range of alternatives, the number of alternatives was narrowed down as more detailed information was collected and analyzed. Purpose and Need, environmental factors, engineering feasibility, public comment, and cost were evaluated before a Preferred Alternative was recommended. Alternatives considered to determine whether they met the Purpose and Need for the project included:

- Provision of alternative modes (e.g., transit) to transport people and goods.
- Transportation System Management (TSM) strategies.
- No-Build Alternative.
- Construction of an improved highway either along the existing roadway or on new alignment.

2.2.1 Bus and Rail Transit

This study, as well as all previous Hoosier Heartland Corridor studies, focuses on the problems related to safety and operating traffic service level on SR 25. To fully address the problems on SR 25, this study considered the other available modes of transportation within the corridor—namely, bus and rail transit—to determine their potential for reducing or eliminating the problems facing SR 25. In certain circumstances, these two modes can relieve congestion problems caused by heavy vehicles and commuters, and safety problems related to large numbers of access points.

The INDOT 1995 *Statewide Long Range Multimodal Transportation Plan* discussed transit and rail policies, programs, and projects for Indiana. The plan takes a comprehensive look at the transportation needs of Indiana. The public transit strategies focused on improving the efficiency and effectiveness of the existing transit systems in the state. The *Indiana Statewide Public Transportation Needs Assessment Study*, completed in February 1999, documented the financial and equipment needs of the existing systems and presented estimates on what it would take to attract additional public transit riders. Priorities centered on improving the existing transit services. The 1995 long-range plan also discussed rail strategies for Indiana. These strategies concentrated on maintaining, enhancing, and improving the operation of the rail freight system serving customers in Indiana. Making safety improvements along the existing rail freight network and at rail/highway intersections was an important strategy. The major carriers concentrate on long-haul freight movements.

Bus Transit—The Greater Lafayette Public Transportation Corporation (CityBus), in Lafayette, provides fixed-route bus service. The service area for CityBus is restricted to the cities of Lafayette and West Lafayette, and the hours of service are from 6:00 a.m. to 10:35 p.m. (weekdays), 6:00 a.m. to 9:40 p.m. (Saturdays), and 8:45 a.m. to 6:40 p.m. (Sundays). CityBus has 57 revenue vehicles. CityBus carried more than 2.8 million riders in 2000, a 66 percent increase over the number carried in 1998. The service is supported financially by fares, and by local, state and federal assistance. Public operating assistance supports about 70 percent of the yearly budget.

Logansport/Cass County also has a small transit provider known as Cass Area Transit. Cass Area Transit has a 10-vehicle fleet that provides weekday service in Logansport and Cass County. Hours of service are between 6:00 a.m. and 6:00 p.m. The service is supported by fares, and by local, state and federal assistance. Public operating assistance covers about 84 percent of

the yearly budget. Between 1997 and 1998 ridership more than doubled (from approximately 29,900 to 70,000), and an 11 percent increase was recorded in 1999.

Greyhound provides bus service along I-65 through Lafayette to Chicago, Gary, Hammond, and Indianapolis. There is no east-west transit service along the SR 25 corridor connecting Lafayette and Logansport.

The ability of a transit service to successfully improve levels of service (traffic flow) depends on a number of factors. Population, housing, and employment densities are usually the main determinants in deciding whether or not transit service can help alleviate traffic problems in an area or corridor. The SR 25 study corridor is rural in character, and housing and employment are widely dispersed. Buses would require long routes and numerous stops to serve trip origins and destinations, thereby driving up running miles, time in transit, and both operating and user costs. Such a system would not be convenient, attractive to potential ridership, or financially feasible. Given these constraints, transit service would not reduce the traffic problems along SR 25. Neither the *Statewide Long Range Multimodal Transportation Plan* nor the *Indiana Statewide Public Transportation Needs Assessment Study* recommended expanded transit service in the SR 25 corridor.

Rail Service—Rail freight service in the region is provided by the CSX, Norfolk Southern, and Winamac Southern systems. CSX and Norfolk Southern are line-haul systems (i.e., primarily engaged in the transport of cargo over a long distance within a rail network). CSX provides north-south freight service through Lafayette, and does not enter the project corridor. Norfolk Southern provides east-west freight service through Lafayette, Delphi, and Logansport. The Norfolk Southern Trainmaster reports that this line has an average of 41 trains per day. Rail freight traffic has been steadily increasing over the past few years. Winamac Southern is a short line system (i.e., primarily engaged in the transport of cargo over a short distance on local rail lines not part of a rail network) serving the industrial areas between Logansport and Camden. Existing SR 25 parallels the Norfolk Southern track from Delphi to Logansport, and crosses a Norfolk Southern spur and Winamac Southern track, at grade, in the vicinity of Clymers.

At present, neither CSX nor the Norfolk Southern provides passenger service in the project area. The only passenger rail service in the region is provided by Amtrak, which has trips to Indianapolis and Chicago, Illinois, once daily. The train departs and arrives at the Big Four Depot in Lafayette, but does not travel through the project corridor.

There are three at-grade railroad crossings on existing SR 25, one at-grade crossing on SR 218 south of SR 25, and some 40 additional at-grade crossings on county crossroads and community streets that provide access to SR 25. Delays caused by trains at these crossings make rail service disruptive to the traveling public, farm operations, and emergency response traffic along the entire corridor, especially in Lafayette and Delphi, where at-grade crossings are located in the downtown area. Major railroad relocation was recently completed in Lafayette to reroute the CSX and Norfolk Southern lines around that city to improve both internal vehicle circulation and railroad operations. Norfolk Southern has determined that its line between Lafayette and Logansport needs capacity improvements that could include new signals, double-track, or additional sidings. Improvements to the rail line would be privately funded, for the most part.

Consolidation has been improving commercial and industrial rail service over the last decade. Railroads best serve larger movements over longer distances. TOFC (trailer on flat car), COFC (containers on flat car), and bulk shipments are prime railroad shipments. In the SR 25 corridor,

those companies with rail access are already using the rail service for their bulk commodities. Although improvements to the existing rail lines have been identified as a need, they will not eliminate the need for improvements to the surface transportation system in the SR 25 corridor. Regional goods movements and shipments needing a quick turn-around tend to rely on truck freight. Economies of scale force smaller shipments to multiple destinations to use trucks.

Indiana has been involved in high-speed rail planning since at least 1982, when it became a member of the Midwest Intercity High Speed Passenger Rail Compact. The Compact is discussing the possibility of supporting high-speed passenger rail service from Chicago, Illinois, through Lafayette, Indiana, to Cincinnati, Ohio. SR 25 could become a feeder road to this potential high-speed rail route.

The Tippecanoe County APC's May 2001 *Transportation Plan for 2025* states: "If high-speed rail becomes reality, Lafayette may become a commuter hub" in the corridor between Lafayette and Chicago. The transportation plan then focuses almost entirely on improvements to the area's roadway network—including the SR 25 project as a key element in the completion of the Hoosier Heartland Highway—and does not reference or recommend passenger rail service as a means of helping reduce traffic on the area's road system or meet economic development goals. In Logansport's 1999 *Comprehensive Plan*, railroads were referenced only with regard to the recent trend toward rail line abandonment and the need to "consider what, if anything, should be done in order to preserve the existing rail corridors for future public benefit. Possible uses include future location of utilities or development of a regional trail system." The plan does note that passenger service is located in Lafayette.

Owing to the inefficiency of current railroad operations caused by a combination of factors including the high number of freight trains through the area, Norfolk Southern is currently studying ways to improve its line's capacity and operations for freight. There is insufficient demand for passenger service, nor, in the foreseeable future, could the existing railroad system handle passenger service through this corridor because of the high volumes of freight traffic.

2.2.2. Transportation System Management (TSM)

TSM refers to the use of the operational planning process to define ways to operate the existing roadway system at the most productive and efficient level. The basic objective of TSM is to create more efficient use of existing facilities through improved management and operation of the vehicles on the roadway. Although TSM improvements can improve operating capacities and levels of service in urban areas where signalized systems generally control traffic flow, they do not include constructing additional traffic carrying lanes or altering the existing alignment. Rather, TSM measures generally consist of improvements to intersections (such as adding or improving the timing phasing of traffic signals and adding auxiliary turn lanes), minor alignment shifts, and traffic diversions or other traffic management measures.

Existing SR 25 is a two-lane road with deficiencies and substandard attributes—including substandard shoulders and roadside ditch sections (Table 1.1, page I-5)—at numerous locations throughout most of its length in the project area. There are also 145 private entrances, 81 intersecting public crossroads, and three railroad crossings along SR 25 in the project area, and the road travels directly through several towns having speed limits that reduce travel time through the corridor. Existing (base year 2000) traffic volumes are approximately 21,600 vpd from the I-65 interchange to CR 450N. Traffic volumes range between 7,700–15,500 vpd from CR 450N to Main Street in Delphi, and between 4,400–6,800 vpd from Delphi to Logansport. By the design

year 2030, the traffic in those locations is projected to increase to 29,000 vpd, 11,700–23,400 vpd, and 6,500–8,600 vpd, respectively, given the no-build scenario.

Improvements to intersections, minor alignment shifts, and other TSM measures would not sufficiently correct deficiencies, reduce travel time (i.e., improve levels of service), or improve safety along the roadway. TSM measures could not eliminate the conflict points caused by the high number of at-grade intersections, remove at-grade railroad crossings on the mainline, upgrade roadside recovery zones, and provide adequate shoulders throughout the corridor. The extensive improvements needed to meet the project's Purpose and Need—including reducing congestion (improving traffic flow and reduce travel time), improving the overall efficiency of transportation, improving safety, and meeting current design standards—would be beyond the scope of TSM.

2.2.3 No-Build Alternative

Under the No-Build Alternative INDOT would not reconstruct or relocate SR 25 between Lafayette and Logansport. Although routine maintenance and repairs would continue to be made on existing SR 25, the No-Build Alternative should not be interpreted as a continuation of the status quo. Traffic volumes and characteristics, and development inside and outside the project area will change. Normal growth in the area would contribute to increases in traffic volumes and a worsening of existing problems. Under the No-Build Alternative, interruptions to traffic flow would increase, passing opportunities would decrease, levels of service (LOS) would deteriorate, congestion and accident risk would increase, and overall roadway conditions would worsen. In addition, the No-Build Alternative would leave the final link in the Lafayette to Fort Wayne section of the Hoosier Heartland Highway as a substandard, two-lane roadway tying into an interstate (I-65) at its western terminus and the improved, four-lane US 24 at its eastern terminus. The No-Build Alternative would not meet the project Purpose and Need, i.e., to improve the transportation network, reduce congestion (improve traffic flow and travel time), and improve safety between Lafayette and Logansport.

2.2.4 Preliminary Build Alternatives

The process of developing and evaluating build alternatives began with the identification and analysis of broad corridors to determine which would best meet the project's Purpose and Need while minimizing adverse effects. Corridors that did not meet these criteria were eliminated, and corridors that met the criteria were advanced to the next level—the development of two or more preliminary alignments within each viable corridor. The methodologies used to identify and evaluate the corridors and preliminary alignments are summarized in the following sections.

2.2.4.1 Corridor Identification and Evaluation

As a first step in developing build alternatives, the project team identified several broad corridors, all of which could contain one or more build alternatives that, from an engineering standpoint, would be feasible to construct. The corridors were approximately 1,000 to 2,000 feet wide and spanned the length of the study area (see Exhibit 1, page II-7). For ease of reference, each corridor was assigned a color—Orange, Purple, Teal, Red, and Yellow. Connectors, colored Black, were also developed to create logical links between the corridors, described below:

- **Orange**—This southernmost practical corridor was north of the state-protected Wildcat Creek watershed and generally followed the Norfolk Southern railroad track and an abandoned rail line for most of its length. It joined with the Purple Corridor west of Logansport.

- **Purple**—This corridor was closest to the existing SR 25 right-of-way, and paralleled the right-of-way almost the entire distance from Lafayette to Logansport. Whenever possible, the corridor included portions of the existing right-of-way.
- **Teal**—This corridor, south of existing SR 25 and the Purple Corridor and north of the Orange Corridor, was the shortest practical corridor between the east and west termini of the project.
- **Red**—This northernmost practical corridor connected to the I-65 / SR 43 interchange (almost three miles north of the existing I-65/SR 25 interchange) north of the Wabash River, then followed SR 43 to SR 225, where it headed northeastward on new alignment, crossed the Tippecanoe and Wabash Rivers, and joined the Purple Corridor just west of Logansport.
- **Yellow**—Based on input from a scoping meeting held February 15, 2000, this corridor was developed to offer an additional southern connection around Delphi. The additional southern connection was needed in the event that the initial boundaries of a rural area being studied as potentially eligible for listing on the National Register of Historic Places (NRHP) were extended southward through or beyond the Teal Corridor. (The rural area was subsequently listed on the National Register as Deer Creek Valley Rural Historic District.)
- **Black Connectors**—Five connectors were developed to provide logical links between corridors. The connectors appear on Exhibit 1 and are described, below.

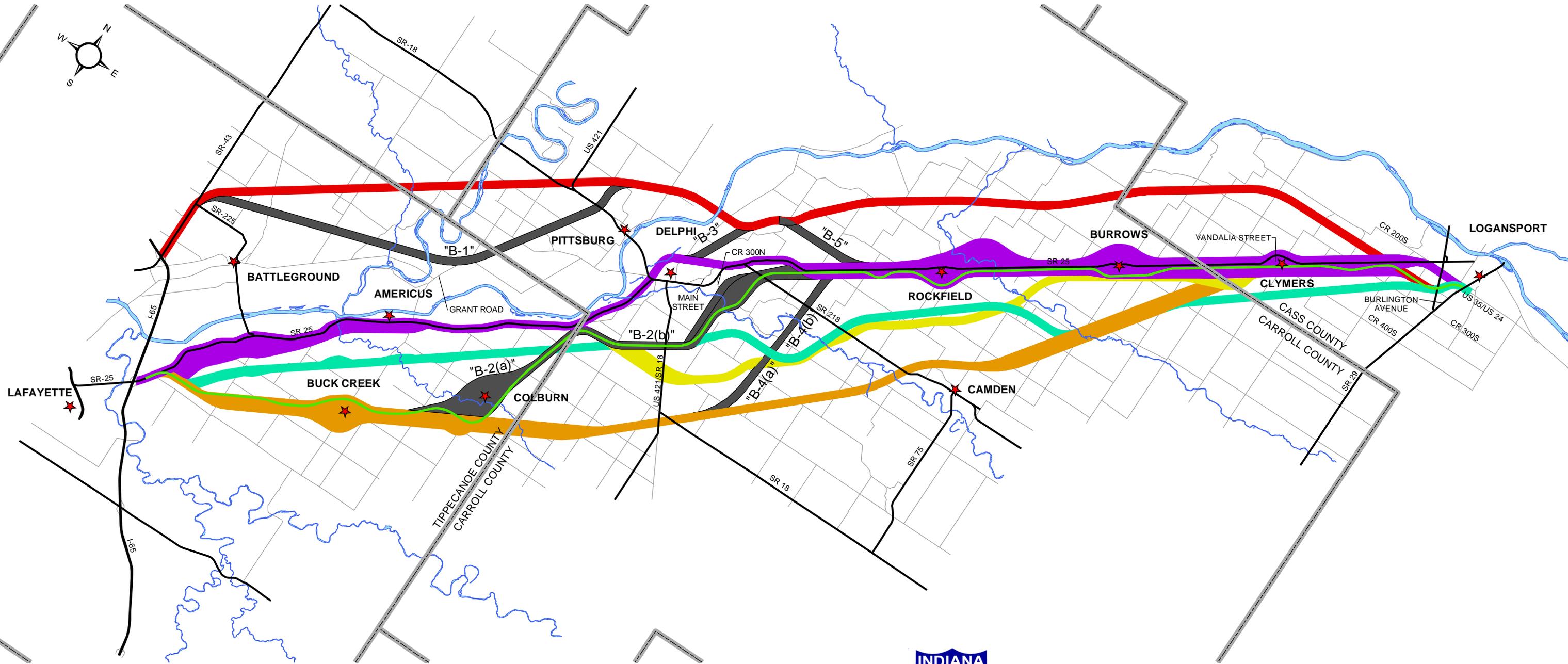
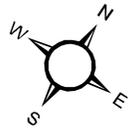
Connectors “B-1,” “B-3,” and “B-5”: Three Black connectors were associated with the Red Corridor—“B-1” departed from the Red Corridor at SR 43 and headed southeastward to rejoin the Red Corridor northwest of Pittsburg. “B-3” and “B-5” linked the Red Corridor with the Purple Corridor along existing SR 25 northeast of Delphi.

Connector “B-2”: This connector extended from the Orange Corridor near Colburn northward, across the Teal corridor to the Purple Corridor at existing SR 25, east of the Tippecanoe/Carroll County line. It then headed eastward sharing the Teal Corridor alignment, then turned northward, crossed SR 218, and rejoined the Purple Corridor along SR 25, just east of SR 218. From Colburn to the county line the connector is labeled “B-2(a)” on Exhibit 1, and from the county line to the Purple Corridor east of SR 218 it is “B-2(b).”

Connector “B-4”: This connector extended from the Orange Corridor east of US 421 northward, intersected the Teal Corridor, and terminated at the Purple Corridor along existing SR 25, east of SR 218. The connector section linking the Orange and Teal corridors is “B-4(a)” on Exhibit 1 and the section linking the Teal and the Purple corridors is “B-4(b).”

1995 Corridor Study—Sections of the Orange and Purple corridors and Black connectors match the alignment recommended in the *1995 Corridor Study*. The alignment follows the Orange Corridor east from Lafayette to Colburn, then heads northeast paralleling the Norfolk Southern railroad to just south of existing SR 25, where it turns east to skirt Delphi on the south. East of Delphi, the alignment again parallels the railroad into Logansport. Exhibit 1 shows the segments of the corridors described above that, when combined, best match the 1995 alignment.

Preliminary build alternatives were developed within and connecting the Orange, Purple, Teal, Red, and Yellow corridors to 1) evaluate how effectively alignments within each given corridor could meet the project’s Purpose and Need, and 2) identify whether the alignments would encounter any “fatal flaws,” i.e., protections to property under the U.S. Department of Transportation’s Section 4(f) requirements. Section 4(f) refers to the *Department of Transportation Act of 1966* requirement that certain resources (such as public parks and recreational areas, publicly owned wildlife and waterfowl refuges, as well as historic and



KEY

-  1995 Study Alignment
-  County Line



Architecture Engineering Construction

Exhibit 1 Sheet 1 of 1

SR 25: Hoosier Heartland Highway
Lafayette to Logansport, Indiana

**ALL CORRIDORS
CONSIDERED**

Not To Scale

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[Page II-8]

archaeological sites eligible for or included on the National Register of Historic Places) be avoided when a feasible and prudent alternative is possible. The initial corridor evaluation process employed the performance measures described below to identify the project's ability to meet the Purpose and Need and avoid Section 4(f) resources:

PERFORMANCE MEASURES

- **Regarding reducing traffic volumes on existing SR 25, and improving the efficiency and traffic service level of transportation between Lafayette and Logansport by providing an alternative that will facilitate the movement of traffic—**

Performance measure: The corridors were evaluated to determine the ability of alternative alignments that could be developed therein to attract enough traffic from existing SR 25 so 1) the volume of traffic on existing SR 25 is substantially reduced, i.e., lower than that projected for the new corridor, and 2) LOS C or above could be maintained on existing SR 25.

- **Regarding providing system linkage, i.e., effectively enhancing the regional and local transportation network by improving and completing the transportation system between Fort Wayne and Lafayette, and serving the local communities in the existing corridor—**

Performance measure: All corridors considered would complete the link between Lafayette and Fort Wayne sufficiently well to warrant their advancement to the next level of evaluation. Therefore, the focus of the evaluation turned to a corridor's ability to serve local communities within the existing SR 25 corridor. Proximity to and connections with existing SR 25, and the ability to relieve traffic on the existing road sufficiently to facilitate travel between local communities were key determinants in a corridor's advancement or elimination.

- **Regarding improving safety and meeting current design standards—**

Performance measure: A road constructed on new alignment would meet current design standards, including those related to safety. All study corridors rate equally high marks for their ability to meet this need. It was, therefore, a corridor's ability to address safety issues along existing SR 25 that became a key determining factor in a corridor's advancement or elimination. On existing SR 25, deficiencies, high traffic volumes, heavy-truck traffic, numerous access points, etc., contribute to higher-than-average accident rates at various locations. These problems occur along the full length of the existing road in the project area, but are most acute between Lafayette and Delphi, the stretch with the highest traffic volumes (both existing and projected), the greatest number of deficiencies, and the highest number of accidents—121 injury crashes and three fatality crashes from 1995-1998.

Corridors that would provide relief from high volumes of traffic would contribute to a solution to safety problems by reducing the potential for accidents on existing SR 25. Therefore the performance measure for improving safety was the same as that for meeting the need to reduce congestion and improve efficiency and capacity on existing SR 25.

- **Regarding responding to federal and state transportation initiatives—**

Performance measure: Build alternatives that could be developed within all corridors could address this need sufficiently to warrant advancing the corridors to the next level of scrutiny. Therefore, this performance measure was assumed to be met by all, and is not referenced in the discussion of corridors, below.

- **Regarding Section 4(f) resources—**

It was determined that, for this initial screening, the resource would have to be large enough (i.e., a park or historic district) to create an obstacle that could not be avoided by any build alternatives within the corridor in which the resource occurs.

The following discussion indicates whether a corridor was advanced for further analysis or eliminated from consideration, and identifies the performance measures upon which the decisions were based. Table 2.1, pages II-17– II-18, contains summary checklist of the evaluation results, including a comparisons of two of the principal evaluation determinants—the projected (year 2030) traffic volumes and levels of service within the corridors.

Red Corridor—Eliminated

Initial analysis indicated that there would be no unavoidable Section 4(f) resources within this corridor. However, the Red Corridor was eliminated because the alternatives that could be developed within the corridor did not fully meet the Purpose and Need of this project, and required crossing two major rivers—Tippecanoe and Wabash. A letter from IDNR (November 14, 2000, in Appendix A1) stated the Division of Fish and Wildlife “recommends elimination of the entire red corridor and the B-1 segment“ for reasons that include the river crossings “in areas that support rare species of fish and mussels.” Regarding Purpose and Need, while alternatives that could be developed within the corridor would respond to federal and state transportation initiatives and meet current design standards, including safety standards, the corridor failed to satisfy the other performance measures because it would not:

- Relieve traffic on a major portion of existing SR 25, or provide LOS C or above on a stretch of existing SR 25 that has numerous deficiencies (see Table 1.1, page I-5)—i.e., from Tippecanoe CR 450N to SR 225, where the projected level of service on the existing road is LOS E and traffic is 16,500 vpd; and from SR 225 to Grant Road, where LOS D occurs and the projected residual volume is 9,800 vpd. From I-65 to SR 218 north of Delphi, existing SR 25’s residual volumes would be higher than traffic attracted to a new road in the corridor, and LOS D (with 11,700 vpd) would occur from the Tippecanoe/Carroll County line to US 421.
- Satisfy the performance measures with respect to system linkage. The Red Corridor does not effectively enhance the local transportation network by serving communities in the existing SR 25 corridor. The Red Corridor is too far north of almost every community within the existing SR 25 corridor to provide connections with existing SR 25 that would serve the local communities. In fact, from I-65 to just north of Delphi, the Wabash River separates the Red Corridor from existing SR 25 and communities in its corridor.

As noted above, the traffic volumes along existing SR 25 from I-65 to Delphi are projected to be higher than those in the Red Corridor, and the level of service is unacceptable at two locations through this area. These conditions occur along the stretch of existing SR 25 where the most deficiencies and the highest number of accidents are recorded. And, although LOS C occurs between US 421 and SR 218 and LOS A is projected from SR 218 and the corridor’s terminus in Logansport, the distance between existing SR 25 and the Red Corridor prohibits connections to Delphi, Rockfield, Burrows, and Clymers

Alternatives that could be developed within other corridors would provide desirable levels of service and/or substantially reduced traffic volumes while better serving the local communities in the existing corridor owing to proximity to and connections with these communities.

Orange Corridor

I-65 to Tippecanoe/Carroll County Line—Advanced

The segment that was advanced was a modified version of the original corridor. The modified corridor incorporated connector “B-2(a)” to the county line in response to the elimination of the

remainder of the Orange Corridor. Alternatives could be developed within the corridor that fully meet the Purpose and Need of this project, i.e., they would:

- Provide LOS C or above and reduce the volume of traffic on the section of existing SR 25 where numerous deficiencies have been noted. Existing SR 25 would experience a reduction in traffic ranging from 71–83 percent compared with the projected no-build volumes.
- Meet the performance criterion with respect to system linkage. The corridor effectively enhances the local transportation network by serving communities in the existing corridor. Alternatives that could be developed within the corridor could provide connections with the local communities—including Lafayette, Buck Creek and Colburn—in the existing SR 25 corridor. Although the Orange Corridor will not serve Americus directly, existing SR 25 will remain open from I-65 to Delphi, and alternatives developed in the Orange Corridor provide traffic relief and acceptable levels of service (ranging from LOS A to C) on the existing road.
- Respond to federal and state transportation initiatives.
- Meet current design standards, including safety standards.
- Have no use of Section 4(f) resources within the corridor.

Tippecanoe/Carroll County Line to Carroll CR 300N (the Delphi area)—Eliminated

As the southernmost corridor in the area, it did not:

- Provide traffic relief to existing SR 25 through Delphi. From the Tippecanoe/Carroll County Line to US 421, the projected level of service on the existing road is LOS D and the projected traffic volume is 9,600 vpd, which is a higher volume than that projected within the Orange Corridor (6,400 vpd). From US 421 to CR 300N, the level of service is LOS C but the projected traffic volumes along existing SR 25 are substantially higher than those within the new corridor (9,600 vpd vs. 2,400 vpd, respectively).
- Meet the performance criterion with respect to system linkage by serving communities within the existing SR 25 corridor. More than two miles south of Delphi, the corridor is too far from the community to provide a direct connection to the existing corridor or to relieve traffic on the existing road. Therefore, it does not facilitate travel between Delphi and neighboring communities within the existing SR 25 corridor.

CR 300N to approximately CR 400W (Vandalia Street, Clymers)—Eliminated

Regarding Purpose and Need, as the southernmost alignment in the area, the corridor did not:

- Provide relief from traffic on existing SR 25 by sufficiently reducing traffic volumes from CR 300N to the corridor's terminus in Clymers (beyond which the corridor did not extend). Although the projected levels of service on existing SR 25 are in the acceptable (LOS C) to desirable (LOS B) range through this area, the residual traffic volumes on existing SR 25 are projected to be notably higher than traffic volumes within the Orange Corridor. For example, from CR 300N to SR 218, LOS C would occur on existing SR 25 but the residual traffic is projected to be 6,600 vpd, while traffic within the Orange Corridor in that area is projected to be 2,000 vpd. Other corridors studied would produce an acceptable level of service and reduce traffic on existing SR 25 to a level below that on a new road within the corridor.
- Meet the performance criterion with respect to system linkage. By not providing direct connections between the new corridor and existing SR 25, or sufficient traffic relief along existing SR 25, the corridor would not facilitate travel between local communities within the existing corridor—particularly Delphi, Rockfield, and Burrows. Other corridors studied would better satisfy the system linkage performance measure.

Environmental issues were also a consideration. IDNR said the corridor's Deer Creek crossing "would have significant negative impact to fish, wildlife, and botanical resources." (See reference to the "O-3 corridor" in the November 14, 2000, letter in Appendix A1).

Purple Corridor

I-65 to Tippecanoe/Carroll County Line—Advanced

Alternatives could be developed within the corridors that:

- Provide acceptable levels of service (LOS A from I-65 to CR 450N and LOS C to the county line) and substantial relief from traffic on existing SR 25. Projected traffic volumes on the existing road range from 6,500 vpd to 2,900 vpd, while those within the Purple Corridor range from 22,500 vpd to 12,200 vpd.
- Satisfy the performance measure with respect to system linkage. The corridor effectively enhances the local transportation network by facilitating access between local communities in the existing SR 25 corridor. In fact, the Purple Corridor encompasses the existing SR 25 corridor. As noted above, alternatives could be developed within the new corridor that would provide direct connection to and relieve traffic on the existing road, thereby facilitating travel between communities along existing SR 25.
- Respond to federal and state transportation initiatives.
- Meet current design standards, including safety standards.
- Have no use of Section 4(f) resources within the corridor.

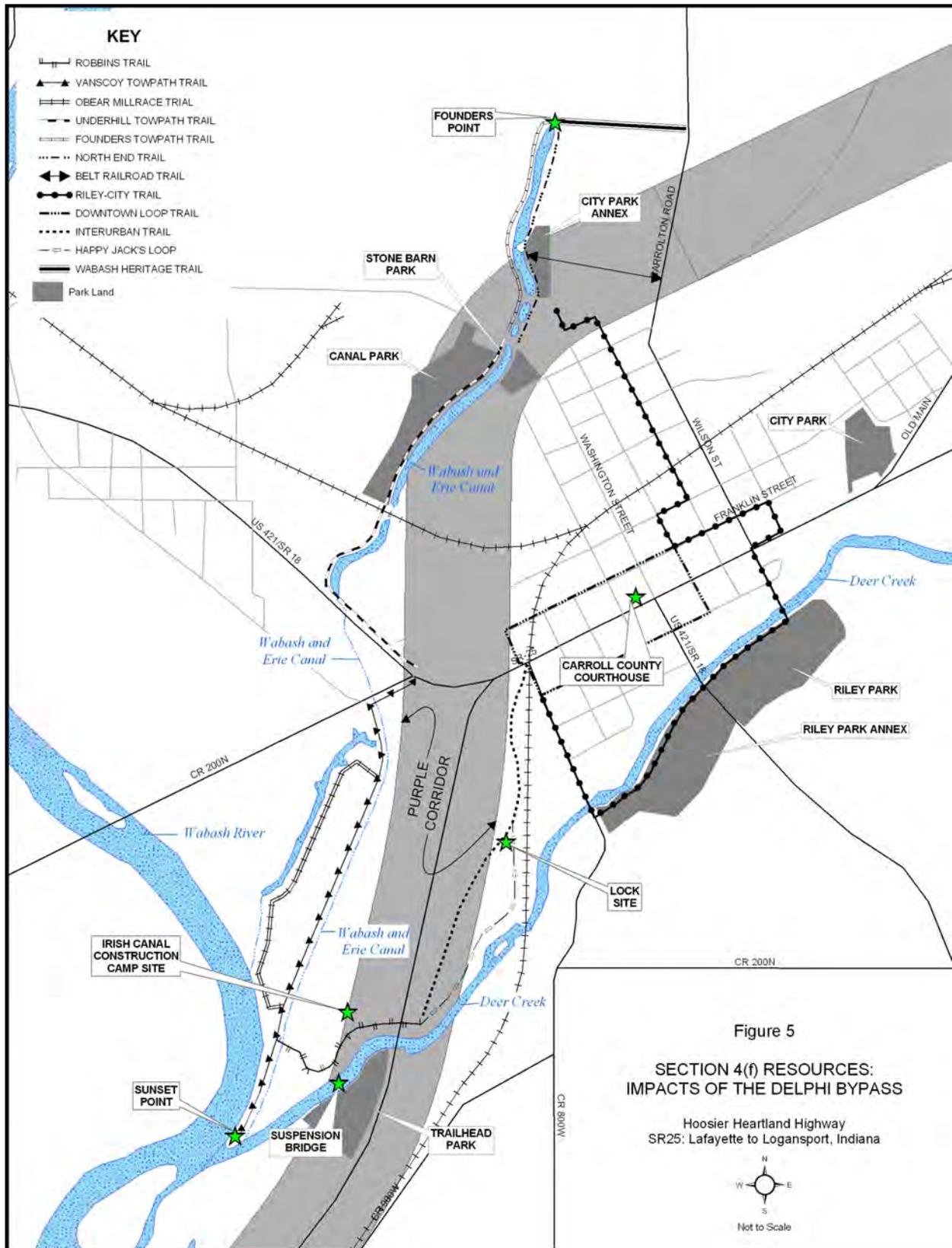
Delphi North By-Pass—Eliminated.

Alternatives developed in this section of the Purple Corridor through Delphi would result in a use of several Section 4(f) resources. The corridor encompasses all of Trailhead Park southwest of Delphi, most of Canal Park along the section of Wabash and Erie Canal in Delphi, and several trails that are part of the community's established system of public hiking trails. Three of the trails that would be traversed—the VanScoy Towpath Trail, the Underhill Towpath Trail, and the Founders Towpath Trail—follow the canal and are part of the Wabash Heritage Trail system. The locations of the parks and trails in relation to the by-pass are shown on Figure 5, page II-13.

Tippecanoe/Carroll County Line to US 24—Advanced

An alternative to the eliminated Delphi North By-Pass (see above) was developed south of Delphi. The by-pass segment was replaced with the section of the Black connector "B-2(b)." This modified Purple Corridor was retained because alternatives could be developed therein that:

- Provide LOS C from the county line to Main Street in Delphi, LOS A or B from there to CR 300S, then LOS C to the corridor terminus. In addition, residual traffic on existing SR 25 is projected to be well below that within the Purple Corridor, indicating that the new corridor would also meet the performance criterion of providing traffic relief on the existing road
- Satisfy the performance measure with respect to system linkage. East of Delphi the corridor joins the existing SR 25 corridor, enabling the development of alternatives that would have direct connections to and provide traffic relief on existing SR 25. This, in turn, would facilitate travel between local communities.
- Respond to federal and state transportation initiatives.
- Meet current design standards, including safety standards.
- Have no use of Section 4(f) resources within the corridor.



Teal Corridor

I-65 to Tippecanoe/Carroll County Line—Advanced

Alternatives could be developed within the corridor that would:

- Provide LOS C or above for much of its length and reduce traffic on existing SR 25 through this area. Residual traffic on existing SR 25 would range from 1,600 vpd to 6,500 vpd. The traffic volume within the Teal Corridor is projected to range from 11,700 vpd to 22,500 vpd, and with the No-Build scenario 15,100 vpd to 29,000 vpd.
- Satisfy the performance measure with respect to system linkage. The Teal Corridor lies between the Purple and Orange Corridors and offers less direct connections to either existing SR 25 (and, thereby, to Americus) or the communities of Buck Creek and Colburn. On the other hand, because of the Teal Corridor's central location, the distances from a new road within that corridor to both existing SR 25 and the communities to the south (approximately one mile in either direction) are not sufficiently great to warrant eliminating the corridor from consideration—particularly since the Teal Corridor facilitates travel between communities along existing SR 25 by providing an acceptable level of service and traffic relief on the existing road.
- Respond to federal and state transportation initiatives.
- Meet current design standards, including safety standards.
- Have no use of Section 4(f) resources within the corridor.

Tippecanoe/Carroll County Line to approximately Carroll CR 400W at Existing SR 25—Advanced

Early in the corridor identification process there arose the possibility that a rural farming/residential area in the Deer Creek Valley near Delphi might be eligible for listing on the National Register of Historic Places. At this early stage, there were no boundaries defining the precise extent of the potentially eligible district. Therefore several alternative corridors were developed to provide avoidance of a variety of possible boundaries. The Teal Corridor through this area was one such avoidance corridor. Its location was based on the possibility that the district's boundary would extend no farther south than Deer Creek. The Teal Corridor through this area was advanced as an avoidance alternative, i.e., it offered an alternative sufficiently far south of the potential Rural Historic District to avoid a direct impact to the district. (The Deer Creek Valley Rural Historic District was listed on the National Register in December 2002.)

The Teal Corridor that was advanced is a modification of the corridor that was originally defined. The modified corridor incorporates the section of the Black connector identified as "B-4(b)" (see Exhibit 1). "B-4(b)" intersects the Teal Corridor at CR 200N and heads northeast to existing SR 25 near CR 400W. The modification became necessary after it was determined that the Teal Corridor from CR 400W to Cass CR 300S would be eliminated (see discussion, below). The use of "B-4(b)" permitted the Teal Corridor to tie into a corridor (Purple) that would be continued eastward toward Logansport. Alternatives could be developed within the modified corridor that:

- Provide an alternative that would avoid the potential (now listed) Rural Historic District.
- Meet the performance criterion for improving efficiency and capacity of transportation within the existing corridor, and partially meet the criterion for providing relief from traffic. Alternatives could be developed within the Teal Corridor that provide LOS C on existing SR 25 from the county line to US 421 and a substantial reduction in traffic. However, from US

421 eastward residual traffic volumes on existing SR 25 are projected to be higher than volumes within the Teal Corridor, though the level of service remains LOS C to SR 218 and LOS B from that point eastward.

- Partially meet the performance measures with regard to system linkage by providing relief from traffic on existing SR 25 and LOS C from the county line to US 421. For much of its distance, the Teal Corridor is approximately two miles south of existing SR 25, which would remain open through the area to serve local communities, including Delphi. The Teal Corridor intersects US 421, by means of which motorists could reach Delphi two miles to the north. The modified Teal Corridor (using Black Connector “B-2”) connects to existing SR 25 approximately three miles east of Delphi, thereby providing access to Delphi from the east. Neither means of accessing Delphi is as convenient or direct as that provided by the Purple Corridor. Furthermore, the Teal Corridor is projected to carry less traffic than existing SR 25 from US 421 eastward, through Delphi. Therefore, the corridor through this area does not meet the performance criterion for relief of traffic volumes on existing SR 25. The corridor would meet the level of service performance criterion by providing LOS C through Delphi.
- Respond to federal and state transportation initiatives.
- Meet current design standards, including safety standards.
- Have no use of Section 4(f) resources within the corridor.

As noted above, this corridor was advanced, despite its shortcomings, because an avoidance alternative for the Rural Historic District was needed.

Approximately Carroll CR 400W to Cass CR 300S—Eliminated.

The Teal Corridor’s southern alignment in the Delphi area (described above) was an avoidance alternative. The continuation of that alternative’s southern alignment from approximately CR 400W west of Rockfield to CR 300S in Logansport was eliminated because:

- No avoidance alternative was needed in this area.
- The alternative was too far from the existing corridor and the communities served thereby to satisfy the performance measure with respect to local system linkage and relief of traffic on the existing roadway. Residual traffic on existing SR 25 is projected to be higher than traffic within the Teal Corridor.

Cass CR 300S to US 24—Advanced

Alternatives could be developed in this section of the Teal Corridor that:

- Provide LOS A and relief from traffic on existing SR 25. Projected traffic within the Teal Corridor is 5,100 vpd and projected residual traffic on existing SR 25 is 3,000 vpd. The no-build scenario produces LOS D and a projected traffic volume of 8,100 vpd.
- Satisfy the performance measure with respect to system linkage by serving the local communities in the existing SR 25 corridor. Alternatives could be developed within the Teal Corridor that would provide direct connection to and relieve traffic on the existing road, thereby facilitating travel between communities along existing SR 25.
- Respond to federal and state transportation initiatives.
- Meet current design standards, including safety standards.
- Have no use of Section 4(f) resources within the corridor.

Yellow Corridor

Tippecanoe/Carroll County Line to Cass CR 300S—Eliminated

The Yellow Corridor, the western terminus of which was approximately the Tippecanoe/Carroll County line, was developed to provide an second avoidance alternative south of the Rural Historic District—one that was not as far south of existing SR 25 as the Orange Corridor but farther south than the Teal. This avoidance alternative was considered necessary because the southern boundary of the district had not yet been determined, and it was possible that the boundary could extend south of the Teal Corridor. Once the boundary of the proposed district was determined to be north of the Teal Corridor, the Yellow Corridor was eliminated because:

- An avoidance alternative farther south of the potentially historic resource was not necessary.
- While it provided LOS B and C on existing SR 25, it did not meet the performance criterion with respect to residual traffic volumes along existing SR 25, where projected volumes were higher than traffic volumes within the Yellow Corridor.
- The alternative was too far from the existing corridor (1 – 3 miles, in places) and communities served thereby to satisfy the performance measure with respect to local system linkage.

Cass CR 300S to US 24—Advanced

Alternatives could be developed within the Yellow Corridor that:

- Provide LOS A and relief from traffic on existing SR 25. Projected traffic within the Yellow Corridor is 5,100 vpd while projected residual traffic on existing SR 25 is 3,000 vpd. The no-build scenario produces LOS D and a projected traffic volume of 8,100 vpd.
- Satisfy the performance measure with respect to system linkage by providing direct connection to and relieving traffic on the existing road, thereby facilitating travel between communities along existing SR 25. In Logansport, a connection with Burlington Avenue could be made that would provide the city a primary access route such as the city currently lacks.
- Respond to federal and state transportation initiatives.
- Meet current design standards, including safety standards.
- Have no use of Section 4(f) resources within the corridor.

“Mears/300W Route”

Comments and a petition were received during the period of public comment on the DEIS suggesting another reasonable alternative—commonly referred to as the “Mears” and/or the “300W Route” (“Mears/300W Route,” herein)—should have been analyzed in the DEIS; therefore, a Supplemental EIS must be prepared. Three corridors—Orange, Yellow, and Teal—in close proximity to the “Mears/300W Route” (see Figure 9 in Chapter 8, page VIII-23) were evaluated, as described above. The corridors were representative of conditions in the general area of the “Mears/300W Route.” Ultimately, all three were eliminated primarily because alternatives that could be located within those corridors were too far from the existing transportation corridor to meet Purpose and Need, particularly regarding relieving traffic on existing SR 25 and providing system linkage via a direct connection to Delphi. FHWA has concluded that the proposed Mears route, which would be the farthest from the existing corridor, is not a reasonable alternative and will not be studied in the context of a Supplemental EIS. Chapter 8, Section 8.4.2, page VIII-22, contains a detailed response to comments regarding the “Mears/300W Route.”

TABLE 2.1—Corridor Evaluations

Corridors	2030 Traffic Volumes and Capacity Analysis						Performance Criteria—Purpose and Need, and Section 4(f) Involvement						Corridor Status
	No-Build Traffic Existing SR 25	LOS	Traffic on Alternative	LOS	Residual Traffic Existing SR 25	LOS	Acceptable LOS & Residual Traffic on Existing SR 25	System Linkage	Safety (In existing SR 25 corridor)	Meet Current Design Standards	Responds to Federal/State Transportation Initiatives	Section 4(f) Involvement	
RED													
TIPPECANOE COUNTY													
I-65 to CR 450N (W)	29,000	C	6,900	A	22,100	B	-	-	-	+	+	No	E
CR 450N to SR 225 (W)	23,400	E	6,900	A	16,500	E	-	-	-	+	+	No	E
SR 225 to Grant Road (W)	17,600	E	7,800	A	9,800	D	-	-	-	+	+	No	E
Grant Road to Co. Line (W)	15,100	E	7,500	A	7,600	C	-	-	-	+	+	No	E
CARROLL COUNTY													
Co. Line to US 421 (C)	16,000	E	4,300	A	11,700	D	-	-	-	+	+	No	E
US 421 to Main St. (Delphi) (C)	11,700	D	4,200	A	7,500	C	-	-	-	+	+	No	E
Main St. to CR 300N (C)	11,700	D	4,200	A	7,500	C	-	-	-	+	+	No	E
CR 300N to SR 218 (C)	8,600	D	3,600	A	5,000	C	-	-	-	+	+	No	E
SR 218 to Co. Line (C / E)	6,500	C	3,400	A	3,100	A	+	-	+	+	+	No	E
CASS COUNTY													
Co. Line to CR 400S (Vandalia St.) (E)	8,100	D	7,200	A	900	A	+	-	+	+	+	No	E
Vandalia St. to CR 300S (E)	8,100	D	6,800	A	1,300	A	+	-	+	+	+	No	E
CR 300S to CR 200S (L)	8,100	D	5,000	A	3,100	A	+	-	+	+	+	No	E
CR 200S to US 24 (L)	8,100	D	5,000	A	3,100	A	+	-	+	+	+	No	E
ORANGE													
TIPPECANOE COUNTY													
I-65 to CR 450N (W)	29,000	C	22,500	B	6,500	A	+	+	+	+	+	No	A
CR 450N to SR 225 (W)	23,400	E	18,100	B	5,300	C	+	+	+	+	+	No	A
SR 225 to Grant Road (W)	17,600	E	15,100	A	2,500	B	+	+	+	+	+	No	A
Grant Road to Co. Line (W)	15,100	E	12,200	A	2,900	C	+	+	+	+	+	No	A
CARROLL COUNTY													
Co. Line to US 421 (C)	16,000	E	6,400	A	9,600	D	-	-	-	+	+	No	E
US 421 to Main St. (Delphi) (C)	11,700	D	2,400	A	9,300	C	-	-	-	+	+	No	E
Main St. to CR 300N (C)	11,700	D	2,400	A	9,300	C	-	-	-	+	+	No	E
CR 300N to SR 218 (C)	8,600	D	2,000	A	6,600	C	-	-	-	+	+	No	E
SR 218 to Co. Line (C / E)	6,500	C	1,900	A	4,600	B	-	-	-	+	+	No	E
CASS COUNTY													
Co. Line to CR 400S (Vandalia St.) (E)	8,100	D	3,900	A	4,200	B	-	-	-	+	+	No	E
Vandalia St. to CR 300S (E)	8,100	D	2,700	A	5,400	C	-	-	-	+	+	No	E
CR 300S to CR 200S (L)	8,100	D	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CR 200S to US 24 (L)	8,100	D	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PURPLE													
TIPPECANOE COUNTY													
I-65 to CR 450N (W)	29,000	C	22,500	B	6,500	A	+	+	+	+	+	No	A
CR 450N to SR 225 (W)	23,400	E	18,100	B	5,300	C	+	+	+	+	+	No	A
SR 225 to Grant Road (W)	17,600	E	14,200	A	3,400	C	+	+	+	+	+	No	A
Grant Road to Co. Line (W)	15,100	E	12,200	A	2,900	C	+	+	+	+	+	No	A
CARROLL COUNTY													
Co. Line to US 421 (C)	16,000	E	9,600	A	6,400	C	+	+	+	+	+	(1)	A (Modified)
US 421 to Main St. (Delphi) (C)	11,700	D	9,300	A	2,400	B	+	+	+	+	+	(1)	A (Modified)
Main St. to CR 300N (C)	11,700	D	9,300	A	2,400	A	+	+	+	+	+	(1)	A (Modified)
CR 300N to SR 218 (C)	8,600	D	6,600 (S) 8,600 (N)	A	2,000 * 0	A	+	+	+	+	+	No	A
SR 218 to Co. Line (C / E)	6,500	C	4,600 (S) 6,500 (N)	A	1,900 * 0	A	+	+	+	+	+	No	A
CASS COUNTY													
Co. Line to CR 400S (Vandalia St.) (E)	8,100	D	7,100 (S) 8,100 (N)	A A	1,000 * 0	B	+	+	+	+	+	No	A
Vandalia St. to CR 300S (E)	8,100	D	6,800 (S) 8,100 (N)	A A	1,300 * 0	B	+	+	+	+	+	No	A
CR 300S to CR 200S (L)	8,100	D	5,100	A	3,000	C	+	+	+	+	+	No	A
CR 200S to US 24 (L)	8,100	D	5,100	A	3,000	C	+	+	+	+	+	No	A

TABLE 2.1—Corridor Evaluations (Continued)

Corridors	Traffic Volumes and Capacity Analysis						Performance Criteria—Purpose and Need, and Section 4(f) Involvement						Corridor Status
	No-Build Traffic Existing SR 25	LOS	Traffic on Alternative	LOS	Residual Traffic Existing SR 25	LOS	Acceptable LOS & Residual Traffic on Existing SR 25	System linkage	Safety (In existing SR 25 corridor)	Meet Design Standards	Responds to Federal/State Transportation Initiatives	Section 4(f) Involvement	Advanced (A) Eliminated (E)
TEAL													
TIPPECANOE COUNTY													
I-65 to CR 450N (W)	29,000	C	22,500	B	6,500	A	+	+	+	+	+	No	A
CR 450N to SR 225 (W)	23,400	E	18,100	B	5,300	C	+	+	+	+	+	No	A
SR 225 to Grant Road (W)	17,600	E	16,000	A	1,600	B	+	+	+	+	+	No	A
Grant Road to Co. Line (W)	15,100	E	11,700	A	3,400	C	+	+	+	+	+	No	A
CARROLL COUNTY													
Co. Line to US 421 (C)	16,000	E	10,600	A	5,400	C	+	+	+	+	+	No	A (Avoidance alt.)
US 421 to Main St. (Delphi) (C)	11,700	D	4,400	A	7,300	C	-	-	-	+	+	No	A (Modified—Avoidance alt.)
Main St. to CR 300N (C)	11,700	D	4,400	A	7,300	C	-	-	-	+	+	No	A (Modified—Avoidance alt.)
CR 300N to SR 218 (C)	8,600	D	3,700	A	5,000	C	-	-	-	+	+	No	A (Modified—Avoidance alt.)
SR 218 to Co. Line (C / E)	6,500	C	1,800	A	4,700	B	-	-	-	+	+	No	A to SR 218 (Modified—Avoidance alt.) E beginning at CR 400W
CASS COUNTY													
Co. Line to CR 400S (Vandalia St.) (E)	8,100	D	3,500	A	4,600	B	-	-	-	+	+	No	E
Vandalia St. to CR 300S (E)	8,100	D	2,600	A	5,500	C	-	-	-	+	+	No	E
CR 300S to CR 200S (L)	8,100	D	5,100	A	3,000	A	+	+	+	+	+	No	A
CR 200S to US 24 (L)	8,100	D	5,100	A	3,000	A	+	+	+	+	+	No	A
YELLOW													
TIPPECANOE COUNTY (Yellow Corridor begins in Carroll County)													
CARROLL COUNTY													
Co. Line to US 421 (C)	16,000	E	10,400	A	5,600	C	+	-	+	+	+	No	E
US 421 to Main St. (Delphi) (C)	11,700	D	4,600	A	7,100	C	-	-	-	+	+	No	E
Main St. to CR 300N (C)	11,700	D	4,600	A	7,100	C	-	-	-	+	+	No	E
CR 300N to SR 218 (C)	8,600	D	3,800	A	4,800	B	-	-	-	+	+	No	E
SR 218 to Co. Line (C / E)	6,500	C	2,000	A	4,600	B	-	-	-	+	+	No	E
CASS COUNTY													
Co. Line to CR 400S (Vandalia St.) (E)	8,100	D	3,900	A	4,200	B	-	-	-	+	+	No	E
Vandalia St. to CR 300S (E)	8,100	D	2,700	A	5,300	C	-	-	-	+	+	No	E
CR 300S to CR 200S (L)	8,100	D	5,100	A	3,000	A	+	+	+	+	+	No	A
CR 200S to US 24 (L)	8,100	D	5,100	A	3,000	A	+	+	+	+	+	No	A

KEY: (W), (C), (E), (L) = The Western, Central, Eastern, or Logansport project segment in which the listed section of existing SR 25 is located. This is included to facilitate comparison of corridor data with information presented in Section 2.4.2 about specific build alternatives.

Plus (+) = Generally meets performance criteria.

Minus (-) = Generally fails to meet performance criteria because of LOS D or below, or high residual traffic volumes, or both, for existing SR 25.

(1) = One segment of corridor had 4(f) involvement. Segment eliminated and new segment added so corridor could be advanced.

(S) = Represents an alternative located south of the railroad. Existing SR 25 remains open to traffic and carries the traffic volumes indicated by an asterisk (*) in the column titled "Residual Traffic Existing SR 25."

(N) = Represents an alternative located north of the railroad. Existing SR 25 is incorporated into the new roadway; there would be no "residual traffic."

BOLD = Residual traffic volume higher than projected volume on a new road within the corridor.

2.2.4.2 Preliminary Build Alternatives: Development and Evaluation

Once the corridors had been screened for their ability to meet the project's Purpose and Need and avoid Section 4(f) resources, the preliminary alternative alignments within the corridors advanced for further analysis were modified and refined for detailed evaluation and comparison of alternative routes.

Development of Build Alternatives

It was recognized that, within any of the corridors surviving the initial screening, there were many environmentally sensitive areas, home sites, businesses, cultural resources, etc., that could be avoided with a judiciously placed 300-foot-wide right-of-way—which would approximate the actual right-of-way for the proposed roadway. Therefore, 300-foot-wide build alternative alignments were developed within the broad corridors for detailed evaluation. Information from preliminary engineering work, technical studies, coordination with regulatory agencies, and public input was used to identify alignments that would be both constructible and responsive to social, economic, and environmental constraints/concerns.

For ease of reference and analysis, the overall project corridor was divided into four major segments—Western, Central, Eastern, and Logansport. In each segment, two or more 300-foot-wide build alternatives were identified. Alignments within one segment could connect to those in preceding and following segments to form a variety of build alternatives extending the full length of the project—from Lafayette to Logansport.

Evaluation and Comparison

The preliminary build alternatives were evaluated and compared based on their effectiveness in meeting the Purpose and Need, their potential economic, social, and environmental impacts; and engineering design issues; the regulatory environmental requirements associated with each alternative; and construction costs. Key considerations during the evaluation process included:

Threatened / Endangered Species	Impacts to Prime Farmland	Wetlands
Potential Hazardous Material Sites	Floodplains / Stream Impacts	Economic Impacts
Impacts to Cultural Resources	Displacement of Residences/Businesses	Public Response

The analysis focused on determining 1) whether any of the alternatives would encounter critical constraints that would indicate they should be eliminated, or 2) whether any alternatives encountering constraints could, with some modification, be carried forward in the analysis. The build alternatives analyzed during this stage are described in the following section and shown on Exhibit 2, page II-21. Preliminary build alternatives carried forward for scrutiny in the DEIS are described and those that were eliminated are identified, along with the reasons for their elimination. Tables 2.2– 2.5, pages II-29 – II-31, compare potential impacts of each alternative.

2.2.4.3 Preliminary Build Alternatives: Evaluation Results

Western Segment—From east of the existing SR 25/I-65 interchange in Tippecanoe County to just east of CR 1100E in Carroll County, five build alternatives were identified. Following the corridor analysis, which eliminated the Orange Corridor in all but the Western Segment, a section of Black connector was incorporated into the Orange Corridor so that alignments developed within this segment could connect with those developed for the Central Segment. The connector, B-2(a) on Exhibit 1, begins in Colburn and heads northeastward to join the Purple Corridor at the Tippecanoe/Carroll County line. The alternatives are as follows:

Orange-West A (O-WA)—11.8 miles	Advanced
Orange-West A1 (O-WA1)—11.9 miles	Advanced
Orange-West B (O-WB)—12.1 miles	Eliminated
Teal-West (T-W)—11.2 miles	Eliminated
Purple-West (P-W)—11.5 miles	Eliminated

Advanced

O-WA: This is the northernmost of the two southern alignments that generally parallel the Norfolk Southern railroad from I-65 to southwest of Delphi. O-WA begins just east of the intersection of existing SR 25 and the I-65 northbound exit/entrance ramps, and heads east to traverse the north and northwest edges of a limestone quarry’s gravel stockpile area. The alternative next traverses a portion of the former Aretz airstrip property now owned by the Providence Foundation, which has preliminary development plans that include a private school campus and seniors’ community. From the eastern part of this property, the alternative continues east paralleling the railroad approximately 1,000 feet north to provide for intersections with CR 300N and CR 500E. (The 1,000-foot separation complies with INDOT’s desired criterion for mainline highway separation from at-grade railroad crossings.) The alignment adjoins the railroad right-of-way for approximately 3,000 feet before it turns northward to bypass Buck Creek to the north. It then turns eastward to adjoin the railroad right-of-way for approximately 3,500 feet before turning northeast (within the corridor formerly identified as a Black connector) to intersect CR 900E and pass west of Colburn. It then parallels the railroad, overpasses the track north of CR 900N, and then heads to the east to terminate just east of Carroll CR 1100E. The alternative does not use the five-lane section of existing SR 25 that has numerous access points to adjacent properties.

The Tippecanoe County APC (the area’s MPO) opposed the alignment because of its potential agricultural impacts. In a written attachment accompanying Resolution T-00-6 (included in Appendix A1), adopted in October 2000, in support of “a modified O-WA alignment” (i.e., O-WA1), the Tippecanoe APC noted: the “thousand foot separation between rail and road requested by InDOT [sic] and shown in O-WA and O-WB, for design purposes, is...disruptive of existing row crop production cutting the (Washington) Township diagonally again, a quarter mile from the existing rail corridor.” The amendment also stated:

The most significant difference between the O-WA route and the Plan Commission Staff proposed routing [O-WA1] is to meld the road and railroad corridors into a single intermodal transportation corridor wherever possible. This would enable the bridging of both rail and the new road, eliminating eight or more at-grade rail crossings and intersections with the National Highway System route. It would also enable the Norfolk Southern railroad to increase rail capacity by double tracking toward Lafayette.... The adopted Thoroughfare Plan, part of the Comprehensive Plan for Tippecanoe County has been amended to show a Rural Divided primary arterial on this [O-WA1] alignment along the north side of the rail corridor.... It is our position that the most reasonable corridor for the Hoosier Heartland is adjacent to the north side of the railroad wherever possible, gaining complete rail-crossing safety by bridging both.

O-WA was advanced for further study because the alternative:

- Satisfies all performance measures including providing an acceptable level of service and traffic relief on existing SR 25, and serving communities within the corridor. Although O-WA would not directly serve Americus, existing SR 25 would remain in operation and serve that community. Buck Creek and Colburn, now approximately two miles south of existing SR 25, would be served directly by the new road.

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[Page II-22]

- Maintains the thousand-foot separation north of the tracks, closer to the existing SR 25 corridor than the O-WB Alternative, which also has a thousand-foot separation.
- Has less potential than the P-W and T-W alternatives for impacting archaeological resources, quality forest areas, wetland communities, and the habitat of an endangered species—the Indiana bat. The USFWS strongly supported both O-WA/A1 alignments over alignments farther north (see letter dated June 22, 2001, in Appendix A1).

O-WA1: As a result of input from the APC and the public, this variation of the O-WA alignment was developed. This alternative is similar to O-WA, but whenever possible it is adjacent to the railroad right-of-way and uses grade separations for rail crossings of the intersecting local public roads, as recommended in the county’s amended *Thoroughfare Plan*. O-WA1 was carried forward because the alternative:

- Satisfies Purpose and Need performance measures including providing an acceptable level of service and traffic relief on existing SR 25, and serving existing communities within the existing corridor. Although the new road would not directly serve Americus, existing SR 25 would continue to serve the community. Buck Creek and Colburn, about two miles south of existing SR 25, would be served directly by the new road.
- Provides an alignment for analysis that is compatible with the county’s amended *Thoroughfare Plan*, which is part of the *Comprehensive Plan*.
- Has less potential than the P-W and T-W alternatives for impacting archaeological resources, quality forest areas, wetland communities, and the habitat of the Indiana bat. The USFWS strongly supported both O-WA/A1 alignments over alignments farther north (see June 22, 2001, letter).

Eliminated

O-WB: This build alternative was located south of the Norfolk Southern railroad from its western terminus to Colburn, then east of the track from Colburn to its terminus just east of CR 1100E. O-WB paralleled the railroad for almost the entire length of the alternative, generally mirroring on the south or east side of the track the alignment of O-WA to the north and west.

In its attachment accompanying Resolution T-00-6 supporting O-WA1, the APC noted that both O-WA and O-WB were located 1,000 feet from the existing rail corridor. O-WB’s 1,000-foot separation from the rail corridor and the alignment’s location south of the track were noted to be incompatible with the APC’s preference for a “next to the rail” location north of the track. In addition, the APC objected to O-WA and O-WB because of their potential disruption of row crop production.

Furthermore, while regional linkage would not suffer, the south-of-the-track location would not be consistent with the need to improve local system linkage for two reasons: First, the alignment’s location south and east of the track would have resulted in an increase in the volume of traffic crossing the track at grade in the area. This would be especially evident in the communities of Buck Creek and Colburn. Buck Creek is divided by the railroad track, and the majority of the development is north of the track. Motorists north of the track could access the new road located to the north without having to cross the track. Those to the south would have to cross the track to access the new road, but they would be fewer in number. In Colburn, the majority of the developed area lies to the west of the track (which heads northward just south of the community). The O-WB alignment is east of the track through this area, and this location would require more

traffic to cross the track to reach the new road. The high volume of train traffic would adversely impact emergency vehicle response time, as well as cause delays to the motoring public. Second, at its eastern terminus near CR 1100E, the alignment would be farther from existing SR 25 than any of the other build alternatives, requiring an at-grade railroad crossing and longer distance to travel to make the connection to the existing road.

O-WB would not measurably differ from the other Orange Corridor build alternatives' ability to avoid notable environmental impacts while meeting the project's Purpose and Need by providing traffic relief to existing SR 25, regional system linkage, and a roadway that meets AASHTO and INDOT standards. However, the alternative was eliminated in favor of the build alternatives that meet the Purpose and Need without encountering the following constraints:

- Lack of compatibility with the transportation element of the county's amended *Thoroughfare Plan*, which is part of the *Comprehensive Plan*.
- Potential to disrupt agricultural production.
- Poor local system linkage owing to at-grade rail crossings in Buck Creek and Colburn, and distance from existing SR 25 at eastern terminus (i.e., other alternatives provide a closer, more direct connection between the existing and the new roads).

P-W: This alternative was south of and more-or-less parallel to existing SR 25 for its entire length. P-W would have provided traffic relief to existing SR 25 and, overall, would have met the project's Purpose and Need criteria by also providing local and regional system linkage and a roadway that meets AASHTO and INDOT standards. However, it was eliminated primarily because of:

- The difficulty of limiting access to the road while maintaining access to residences, particularly where the build alternative crossed and then closely paralleled existing SR 25.
- Its potential impact on sensitive natural areas: P-W had the greatest potential of all build alternatives in the corridor for impacting sensitive archaeological resources, the habitat of the Indiana bat, quality forested areas, floodplains and streams, and unique wetland communities including the Americus Fen. USFWS identified P-W as having the most potential for adverse environmental impacts. In a letter dated June 22, 2001 (see Appendix A1), the agency stated, "The purple route will involve extensive loss and fragmentation of floodplain/riparian forest which provides high-quality habitat for a variety of wildlife, including the Indiana bat." IDNR also noted the impact of the alternative on the Americus Fen, which it referred to as a "significant natural area" (see the reference to "Segment P-1" in the November 14, 2000, letter in Appendix A1). The Tippecanoe County APC expressed concern because the alternative would "traverse three significant watersheds (Buck Creek, Sugar Creek and Bridge Creek) close to their confluences with the Wabash River. This would require considerable cut and fill sections destroying much natural vegetation and fragile slopes along the streams and valleys."

T-W: Approximately midway between the Purple and Orange alignments, this build alternative was eliminated because of:

- Notable wetland and floodplain impacts, and greater potential for impacting Indiana bat habitat and archaeological resources than the Orange Corridor's build alternatives. IDNR indicated this to be the least desirable build alternative through the area (see the reference to the "T-1 segment" in the November 14, 2000, letter in Appendix A1).

- Lack of compatibility with the planning objective for this area. The Tippecanoe County APC stated it has been “discussing the potential for large-lot rural-residential development in areas not in active row crop production, as the wooded areas above the natural valleys in Washington Township. Some scattered single-family homes already exist in this environment and others are planned.... Because of the natural beauty of the sites, precipitous terrain and tree cover, value of the land is 10 plus times that of cultivated farmland.”

Central Segment—From the terminus of the Western Segment east of CR 1100E to just east of CR 400W in Carroll County, southwest and east of Delphi, six alignments were considered:

Purple-Central A1 (P-CA1)—8.4 miles	Advanced
Purple-Central A2 (P-CA2)—8.5 miles	Advanced
Purple-Central A (P-CA)—8.2 miles	Eliminated
Purple-Central B (P-CB)—7.9 miles	Eliminated
Teal-Central A (T-CA)—7.8 miles	Eliminated
Teal-Central B (T-CB)—8.2 miles	Eliminated

Advanced

P-CA1: This alignment begins just east of CR 1100E and continues in a northeasterly direction to intersect with US 421. After crossing US 421, the alignment turns to the north and crosses Deer Creek west of the High Bridge area and the Deer Creek Valley Rural Historic District. The alignment continues north, traversing the western edge of the Deer Creek Commerce Center property, west of The Andersons Grain Mill, and overpasses the railroad before turning to the northeast to parallel existing SR 25 on the south side. The alignment continues in the northeasterly direction, and then curves to the east to be adjacent to the railroad right-of-way and terminate east of CR 400W. P-CA1, which was developed as an alternative to P-CA, was carried forward because the alternative:

- Satisfies the performance measures with respect to relieving traffic and improving the level of service (to C and B) on existing SR 25 through most of the area.
- Provides an alignment farther to the west than P-CA and P-CB, distancing the project from the Rural Historic District, and thereby avoiding direct impacts and minimizing tangential impacts. The alternative would have a visual impact on the district, but its distance from the district (approximately 1,300 feet), the topography in the area, and mitigation measures identified during the Section 106 Consulting Parties process will minimize the impact.
- Responds to IDNR and USFWS objections stated in letters of November 14, 2000, and June 22, 2001 (Appendix A1), respectively. IDNR noted “Segment P-2” (the Purple Corridor section containing P-CA/B) “would have direct impact on Delphi Swamp.” The same letter also noted that the crossing of Deer Creek as shown in the “B-2 corridor” (the section of the Black connector containing P-CA/B) “would probably have the most negative impacts to fish, wildlife, and botanical resources” of all corridors under consideration at the time. The USFWS objected to “the current Purple route (i.e., P-CA/B) crossing of Deer Creek because of loss and fragmentation of high-quality bottomland forest,” and recommendation that the crossing be shifted either east or west. The letter also noted “the proposed Purple route and/or the new SR 218 interchange would impinge on the floodplain of Robinson Branch in an area known as Delphi Swamp.”

The presence of the Deer Creek Valley Rural Historic District precluded a shift eastward to avoid the referenced Deer Creek crossing; therefore, the move was made to the west as a

feature of the P-CA1 alignment. The relocation of the SR 218 intersection provided avoidance of impacts to Delphi Swamp. (USFWS also objected to the location of the Bridge Creek crossing and recommended shifting to another crossing location. Design constraints required all P-C alignments to retain the Bridge Creek crossing location.)

- Has less impact than P-CA to the Deer Creek Commerce Center, and particularly The Andersons' current operations and expansion potential.
- Creates direct access to Delphi via construction of a connecting road from new SR 25 to Main Street. This alignment meets the performance criterion with respect to system linkage by serving the local communities in the existing SR 25 corridor better than all other build alternatives except P-CA2. This alignment is consistent with local land use planning initiatives, particularly for its ability to create a new, major entranceway into Delphi.

P-CA2: This build alternative mirrors the P-CA1 alignment until just west of CR 400W, where it heads south overpassing the railroad, then eastward paralleling the railroad and existing SR 25 on the south side to cross and terminate just east of CR 400W. This alignment was advanced to provide a connection to P-EB in the Eastern Segment, south of the railroad. P-CA2 accomplishes the same goals as P-CA1 regarding meeting Purpose and Need performance measures, reducing/avoiding impacts to sensitive resources and the commerce center, and providing a new entrance to Delphi. Local officials also support this build alternative.

Eliminated

P-CA: This build alternative more or less mirrors the alignment of P-CA1/A2 except for a section beginning south of the crossing of Deer Creek and ending north of the Deer Creek Commerce Center. Through this stretch, the P-CA crosses the creek to the east of the P-CA1/A2 crossing, then abuts the west boundary of the Rural Historic District, and then bisects the Deer Creek Commerce Center property. The ability of this alternative to provide traffic relief and an acceptable level of service on existing SR 25 was similar to that of all P-C alternatives. However, as noted in the discussion of the P-CA1/A2 alternatives, P-CA was eliminated because it presented several notable constraints, including the following:

- It abutted the western boundary of the Rural Historic District and, thus, would have had a more severe impact on the resource.
- The road connecting existing SR 25 and the build alternative impacted Delphi Swamp.
- It bisected the Deer Creek Commerce Center operations of a major business.
- It was opposed by USFWS and IDNR because of its potential impacts to Deer Creek.
- It did not provide as direct a connection to Delphi as P-CA1/A2, and therefore was not as successful as these alternatives in meeting the need to provide local system linkage. Local officials did not support this alternative.

P-CB: P-CB was similar to P-CA through the crossing of Deer Creek. Just north of the crossing the alignment curved northeast across the Rural Historic District property, and then passed southeast of the Andersons Grain Mill in the commerce center. The alignment continued northeasterly direction south of and adjacent to the railroad right-of-way, crossed and terminated just east of CR 400W. Because P-CB had Section 4(f) use by taking land from a 4(f) resource—the National Register-listed Rural Historic District—it was eliminated.

T-C: This alternative shared an alignment with the P-C alternatives to a point just south of CR 200N, where the T-C alignment continued in a northeasterly direction rather than turn north. The alignment curved to the east to remain south of Deer Creek, then crossed the creek. From the creek crossing the alignment continued north, then headed northeast to follow the railroad right-of-way. The build alternative had two possible eastern connections just east of CR 400W: “A” north of the railroad and existing SR 25, and “B” to the south of both. USFWS (June 22, 2001, letter in Appendix A1) expressed its preference for this alternative “as having the least impacts of wetlands and floodplain forest.” However, T-C was eliminated because:

- The volume of traffic on existing SR 25 from Main Street in Delphi to the Carroll/Cass County line was projected to be higher than the traffic volume within the new corridor; therefore, the alternative did not meet Purpose and Need. The alternatives carried forward show a substantial reduction in traffic on existing SR 25.
- Several archaeological resources and an alluvial soils area along Deer Creek were impacted.
- The alignment divided farmland and potentially displaced residents of the Old Order German Baptist community in the area.
- Delphi government and development officials did not support the alternative because it was too far south of the traffic corridor to facilitate access between Delphi and Logansport (thus providing poor local system linkage), and because it failed to provide the desired additional entranceway into Delphi.

Eastern Segment—From the terminus of the Central Segment east of CR 400W in Carroll County to CR 300S in Cass County, two alignments were studied. They generally parallel existing SR 25 and the Norfolk Southern railroad either to the north or south.

Purple-East A (P-EA)—11.2 miles	Advanced
Purple-East B (P-EB)—11.2 miles	Advanced

P-EA: This alignment follows the north side of the railroad and uses a portion of the existing SR 25 right-of-way, except where the alignment curves to bypass Rockfield, Burrows, and Clymers to the north. Public officials and economic development groups support the P-EA alignment because it 1) eliminates some of existing SR 25, thus reducing maintenance costs for jurisdictions that will assume the responsibility for the remainder of the existing roadway; 2) reduces land acquisition costs and impacts to property owners and prime farmland along the route by utilizing some of the existing right-of-way of SR 25; and 3) is more compatible with long-term land use plans.

P-EB: This alignment follows the south side of the railroad except where the alignment curves to bypass Rockfield, Burrows, and Clymers to the south. This alignment does not use any section of the existing SR 25 right-of-way.

Both alternatives were advanced because they are similar in their benefits and impacts; i.e., they:

- Satisfy the performance measures for Purpose and Need, including traffic relief and improved level of service on existing SR 25, and improved system linkage both locally and regionally.
- Avoid environmental or other constraints that would require their elimination.

Logansport Segment—From the terminus of the Eastern Segment at CR 300S to the connection to US 24 in Logansport, six alignments were initially considered:

Yellow-Logansport A (Y-LA)—3.9 miles	Advanced
Yellow-Logansport B (Y-LB)—3.7 miles	Advanced
Purple-Logansport A (P-LA)—3.3 miles	Eliminated
Purple-Logansport B (P-LB)—3.1 miles	Eliminated
Teal-Logansport A (T-LA)—3.3 miles	Eliminated
Teal-Logansport B (T-LB)—3.1 miles	Eliminated

Advanced

Y-L: This alternative has two western termini: “A” connects with P-EA, north of existing SR 25 and the railroad, and “B” connects with P-EB, to the south. West of CR 175W, Y-LA overpasses the railroad and joins the Y-LB alignment for the remainder of its length. Heading east, Y-L passes south of CR 250S, crosses SR 29, intersects Burlington Avenue, and then heads northeast to connect with US 24 east of Old Kokomo Pike. Y-L was advanced because it:

- Satisfies the performance measures by providing level of service LOS C, relief from traffic on existing SR 25, and local system linkage. The alternative is included in the local planning initiatives—including the amendment to the *Comprehensive Plan*, the *City of Logansport, Thoroughfare Plan*—in part because its connection to Burlington Avenue will give Logansport a primary entranceway and connection to a major highway.

Eliminated

P-L: This alignment, like that of Y-L, had two western termini: “A,” which connected with P-EA, and “B,” which connected with P-EB. P-LA headed north then east, overpassing both SR 25 and the railroad, while P-LB headed eastward parallel to both. The two alignments converged just west of CR 175W, passed between two industrial sites—Tyson Fresh Meats, Inc. (formerly IBP) and the Elco-Textron plants—before intersecting SR 29. Across SR 29, the alignment curved northwest to connect to US 24 west of Burlington Avenue. P-L was eliminated because the alternative:

- Did not provide suitable local system linkage by facilitating access to/from Logansport. It did not have the support of local officials or the general public because it was not be compatible with city’s thoroughfare or comprehensive plans (see Chapter 4, Section 4.1).
- Separated a major industry (the Tyson plant) from its supporting, affiliated companies, thereby disrupting their traffic circulation and operations.
- Had greater wetland impacts than Y-L.

T-L: This alternative also had two western termini, “A” and “B,” connecting with P-EA and P-EB, respectively. T-LA headed north then east, overpassing SR 25 and the railroad, and T-LB headed northeast, converging with T-LA just west of CR 175W. The alignment headed east, passing south of CR 250S, then curved northeast across a corner of the Elco-Textron plant property, intersected SR 29 and continued northeast to connect to existing US 24 west of Burlington Avenue. Like Alternative P-L, Alternative T-L was eliminated for the following reasons:

- By not improving access into Logansport via the long-sought “gateway” entrance into the community, the alternative offered poor local system linkage and was not compatible with the city’s comprehensive and transportation plans.

- Compared to Y-L, the alternative had greater impacts to wetlands, encountered more potential hazardous materials sites, and had more adverse impacts to businesses.

TABLE 2.2—Comparative Impacts: Western Segment

	P-W	O-WB	T-W	O-WA	O-WA1
Length (miles)	11.5	12.1	11.2	11.8	11.9
Stream crossings	14	5	13	13	15
Biotic communities (potential for impacts)	Higher quality forest areas, wetland communities including Americus Fen, more diverse fish populations, and greater potential habitat for federally protected Indiana bat than O-Ws.	Less potential than P-W or T-W for impacting quality forest areas, wetland communities, and Indiana bat habitat than P-W.	Similar to P-W in potential impacts to forest areas, wetlands and bat habitat.	Less potential than P-W or T-W for impacting quality forest areas, wetland communities, and Indiana bat habitat.	Less potential than P-W or T-W for impacting quality forest areas, wetland communities, and Indiana bat habitat.
Wetland impact (acres)	4.2	4.0	7.5	0	0.28
Floodplains (acres)	10.4	5.5	13.4	11.3	11.3
Length of stream impact (feet)	8,261	1,946	4,759	4,695	4,593
Air quality— exceedance of standards	None	None	None	None	None
Noise level exceedance sites	None	<i>Eliminated before potential for impact assessed.</i>	<i>Eliminated before potential for impact assessed.</i>	1 site	1 site
Potential HAZMAT sites	6	5	2	3	2
Prime/unique farmland (acres)	195	335	207	327	335
Archaeological resources (probability in area)	Highest	Least potential	Relatively high; less than P-W.	Relatively high; less than P-W.	Relatively high; less than O-WA
Historic resources (NRHP listed or eligible)	1 potentially eligible site.	<i>Eliminated before potential for impact assessed.</i>	<i>Eliminated before potential for impact assessed.</i>	None	None
Trails crossed	Wabash-Wildcat Region Bikeway. On public roads: no 4(f) involvement.	Wabash-Wildcat, Colburn Loop bikeways. On public roads: no 4(f) involvement.	Wabash-Wildcat, Colburn Loop bikeways. On public roads: no 4(f) involvement.	Wabash-Wildcat, Colburn Loop bikeways. On public roads: no 4(f) involvement.	Wabash-Wildcat, Colburn Loop bikeways. On public roads: no 4(f) involvement.
Relocation / displacement					
Residential	14 s-f	6 s-f	8 s-f	14 s-f	8 s-f
Commercial	2	1	1	0	0
Support / opposition	Area Plan Commission (APC) opposed due to potential watershed impacts and lack of compatibility with land use objectives. USFWS said P-W has greater impacts than O-W alternatives.	APC opposed as incompatible with Thoroughfare Plan. USFWS strongly supports O-W routes.	APC opposed as least compatible with land use objectives.	APC opposed as incompatible with Thoroughfare Plan. USFWS strongly supports O-W routes.	APC supported because "next to the rail" location north of tracks is compatible with Thoroughfare Plan. USFWS strongly supports O-W routes.
Other considerations	Bisects north half of Providence Foundation property. Least impact to farmland.	Less impact to Providence Foundation property than P-W / T-W / O-WA.	Same impact as P-W to Providence Foundation property as P-W.	Less impact to Providence Foundation property than P-W / T-W.	Less impact to Providence Foundation property than P-W / T-W and O-WA/B.

NOTES: Gray shading indicates that the alternative was eliminated from further study.
Stream: References to "stream" in this table include intermittent streams.
Relocations: s-f = single-family residential dwelling.

TABLE 2.3— Comparative Impacts: Central Segment

	P-CA	P-CA1	P-CB	P-CA2	T-CA	T-CB
Length (miles)	8.2	8.4	7.9	8.5	7.8	8.2
Stream crossings	10	11	9	11	11	11
Biotic communities (potential for impacts)	High quality wetland communities; potential habitat for Indiana bat.	High quality wetland communities; potential habitat for Indiana bat.	High quality wetland communities; potential habitat for Indiana bat.	High quality wetland communities; potential habitat for Indiana bat.	Unique wetland communities; potential habitat for Indiana bat.	Unique wetland communities; potential habitat for Indiana bat.
Wetland impact (acres)	1.4	1.9	1.9	1.4	1.0	0.4
Floodplains (acres)	6.8	7.6	6.8	7.6	11.5	11.5
Length of stream impact (feet)	4,679	4,786	4,235	4,786	3,976	3,976
Air quality—exceedance of standards	None	None	None	None	None	None
Noise level exceedance sites	None	None	None	None	None	None
Potential HAZMAT sites	3	5	1	6	1	2
Prime and unique farmland (acres)	211	203	240	225	294	299
Archaeological resources (Phase 1a reconnaissance)	Most potential for impact to alluvial soils (possibly with buried, intact deposits) and Delphi Swamp.	Less potential for impact to alluvial soils than P-CA / T-Cs.	Slightly greater potential for impact to alluvial soils than A1/A2 and T-Cs.	Less potential for impact to alluvial soils than P-CA / T-Cs.	Several sites in/adjacent to right-of-way. Traverses alluvial soils (potential for intact, buried deposits).	Several sites in/adjacent to right-of-way. Traverses alluvial soils (potential for intact, buried deposits).
Historic resources (NRHP listed or eligible)	1 listed site, 1 eligible site, and Rural Historic District.	1 listed site, 1 eligible site, and District.	1 listed site. Traverses west boundary of District.	1 listed site, 1 eligible site, and District.	1 eligible site and District.	1 eligible site and District.
Trails crossed	2 proposed hiking trails—Pioneer Road, Monon RR bed. Not open to public: no 4(f) involvement.	3 proposed hiking trails—Pioneer Road, Slate Bluffs, Monon RR bed. Not open to public: no 4(f) involvement.	2 proposed hiking trails—Pioneer Road, Monon RR bed. Not open to public: no 4(f) involvement.	3 proposed hiking trails—Pioneer Road, Monon RR bed. Not open to public: no 4(f) involvement.	1 proposed hiking trail—Mill Race route. Not open to public: no 4(f) involvement.	1 proposed hiking trail—Mill Race route. Not open to public: no 4(f) involvement.
Relocations / displacements						
Residential	4 s-f	6 s-f, 2 m-f	4 s-f	4 s-f, 2 m-f	6 s-f	4 s-f
Commercial	2	4	1	5	1	2
Institutional		1		1		
Unique communities					ROW required from Old Order German Baptist community.	ROW required from Old Order German Baptist community.
Support / opposition	IDNR could support, with conditions, including avoiding Delphi Swamp. USFWS says shifting east/west could reduce Deer Creek impacts.	Local officials support: it has best connection to Delphi.		In Deer Creek area, shares alignment supported by local officials.	USFWS suggest they favor T-C due to potential wetland, forest, stream impacts of P-Cs.	USFWS suggest they favor T-C owing to potential wetland, forest and stream impacts of P-Cs.
Other considerations	Bisects Deer Creek Commerce Center. Connector alignment impacts Delphi Swamp.	Avoids Delphi Swamp and lessens impact to Commerce Center and Deer Creek.		Avoids Delphi Swamp and lessens impact to Commerce Center and Deer Creek.		

NOTES: Gray shading indicates that the alternative was eliminated from further study.
 Stream: References to "stream" in this table include intermittent streams.
 Relocations: s-f = single-family residential dwelling; m-f = multi-family dwelling.

TABLE 2.4—Comparative Impacts: Eastern Segment

	P-EA	P-EB
Length (miles)	11.2	11.2
Stream crossings	6	6
Biotic communities (potential for impacts)	5 wetlands, 3 high quality forest areas; potential habitat for federally protected Indiana bat.	3 wetlands, 1 high quality forest area; potential habitat for federally protected Indiana bat.
Wetland impact (acres)	0.3	0
Floodplains (acres)	6.1	2.5
Length of stream impact (feet)	2,172	2,257
Air quality—exceedance of standards	None	None
Noise level exceedance sites	1 site (in right-of-way and would be acquired)	None
Potential HAZMAT sites	3	2
Prime and unique farmland (acres)	243	301
Archaeological resources (probability)	Higher probability than P-EB.	Lower probability than P-EA.
Historic resources (NRHP listed or eligible)	1 eligible site	1 listed, 1 eligible site
Trails crossed	Wabash Valley Route 2 bike trail, north of Clymers. On road: no 4(f) involvement.	Wabash Valley Route 2 bike trail, south of Clymers. On road: no 4(f) involvement.
Relocations / displacements Residential Commercial	5 s-f 1	1 s-f 0
Support / opposition	Public officials support: eliminates some of existing SR 25, reducing local maintenance costs; compatible with land use plans.	
Other considerations	ROW requires relocation of Andersons' current rail access.	

NOTES: Stream: References to "stream" in this table include intermittent streams.

Relocations: s-f = single-family residential dwelling.

TABLE 2.5—Comparative Impacts: Logansport Segment

	P-LA	P-LB	T-LA	T-LB	Y-LA	Y-LB
Length (miles)	3.3	3.1	3.3	3.1	3.9	3.7
Stream crossings	6	5	6	6	10	10
Biotic communities (potential for impacts)	3 wetlands in area: less potential for impact than P-LB / T-LB. Potential habitat for Indiana bat.	3 wetlands in area: more potential for impact than all but T-LB. Potential Indiana bat habitat.	3 wetlands in area: less potential for impact than P-LB / T-LB. Potential habitat for Indiana bat.	3 wetlands in area: more potential for impact than all but P-LB. Potential habitat for Indiana bat.	Less potential for impact than P-LB / T-LB. Potential habitat for Indiana bat.	Less potential for impact than P-LB / T-LB. Potential habitat for Indiana bat.
Wetland impact (acres)	1.2	1.8	1.2	1.2	0	0
Floodplains (acres)	0	0	0	0	0	0
Length of stream impact (feet)	2,422	2,632	2,967	3,012	3,946	4,098
Air quality—exceedance of standards	None	None	None	None	None	None
Noise level exceedance sites	None	None	None	None	None	None
Potential HAZMAT sites	2	2	5	4	3	2
Prime and unique farmland (acres)	45	45	65	51	54	85
Archaeological resources (probability in area)	Quality of resources could be higher than for Y-L.	Quality of resources could be higher than for Y-L.	Quality of resources could be higher than for Y-L.	Quality of resources could be higher than for Y-L.	Quality of resources could be lower than for P-L, T-L.	Quality of resources could be lower than for P-L, T-L.
Historic resources (NRHP listed or eligible)	None	None	1 eligible site	None	1 eligible site	None
Relocations/displacements Residential Commercial	6 s-f 2	9 s-f 3	8 s-f 2	7 s-f 1	7 s-f 0	6 s-f 2
Support / opposition					Majority of local officials support; compatible with land use plans.	
Other considerations	Impacts some parking from 3 - 4 businesses; potential impacts to businesses' plans / operations.	Impacts some parking from 3 - 4 businesses; potential impacts to businesses' plans / operations.	Impacts some parking /other property from 3 businesses.	Impacts some parking /other property from 3 businesses.	Impacts some parking from 1 business. Provides for entranceway into Logansport.	Impacts some parking from 1 business. Provides for entranceway into Logansport.

NOTES: Gray shading indicates the alternatives have been eliminated from further study.
Relocations: s-f = single-family residential dwelling.

Stream: References to "stream" in this table include intermittent streams.

2.3 FEASIBLE ALTERNATIVES

Following the analysis of design considerations and environmental constraints, several preliminary alignments were eliminated. The remaining alignments within each of the four major segments were combined, in all ways feasible, to form four build alternatives that extend from the western terminus near the I-65 interchange to the eastern terminus at US 24. The No-Build Alternative and the following four build alternatives were the subjects of the detailed socioeconomic and environmental analyses presented in the DEIS. In January 2003, following the period of public comment on the DEIS, INDOT recommended **Alternative 2** as the Preferred Alternative.

<u>Name</u>	<u>Combination</u>	<u>Length (in Miles)</u>
Alternative 1	O-WA + P-CA1 + P-EA + Y-LA	35.3
Alternative 2	O-WA1 + P-CA1 + P-EA + Y-LA	35.3
Alternative 3	O-WA + P-CA2 + P-EB + Y-LB	35.2
Alternative 4	O-WA1 + P-CA2 + P-EB + Y-LB	35.3

The four build alternatives are shown on Exhibit 3, pages II-39– II-45. The exhibit locates 100-year floodplain boundaries, wetland areas, historic resources (excluding archaeological sites), potential hazardous materials sites, and major businesses/industries along the alignments.

2.3.1 Cost Estimates

To estimate construction costs for each build alternative, a number of individual project components were identified and cost estimates were developed for each, as identified in Table 2.6. All cost estimates shown in Table 2.6 have been rounded to the nearest \$100,000.

TABLE 2.6—Estimated Costs by Type of Work: Build Alternatives

Type of Work	Alt. 1	Preferred Alt. 2	Alt. 3	Alt. 4
Earthwork	\$ 40,000,000	\$ 37,900,000	\$ 44,000,000	\$ 41,900,000
Mainline Pavement	\$ 53,900,000	\$ 54,000,000	\$ 53,500,000	\$ 53,600,000
Bridges *	\$ 50,700,000	\$ 58,000,000	\$ 44,100,000	\$ 51,400,000
Small Drainage Structures	\$ 2,800,000	\$ 2,800,000	\$ 2,700,000	\$ 2,700,000
Approaches	\$ 13,900,000	\$ 13,600,000	\$ 13,400,000	\$ 13,100,000
Signing	\$ 2,800,000	\$ 2,800,000	\$ 2,800,000	\$ 2,800,000
Mobilization/Demobilization	\$ 8,300,000	\$ 8,500,000	\$ 8,100,000	\$ 8,300,000
Construction Sub-total	\$ 172,400,000	\$ 177,600,000	\$ 168,600,000	\$ 173,800,000
Contingencies/Miscellaneous (15%)	\$ 25,900,000	\$ 26,600,000	\$ 25,300,000	\$ 26,100,000
Construction Total	\$ 198,300,000	\$ 204,200,000	\$ 193,900,000	\$ 199,900,000
Land Acquisition (ROW/Damage/Relocation)	\$ 10,700,000	\$ 10,200,000	\$ 9,100,000	\$ 8,600,000
Design Engineering	\$ 10,000,000	\$ 10,300,000	\$ 9,800,000	\$ 10,100,000
Total	\$ 219,000,000	\$ 224,700,000	\$ 212,800,000	\$ 218,600,000

* Cost does not include interchanges at US 421 and SR 29-Burlington Avenue. The interchanges were not design features of Alternative 2 at this stage of alternatives' development. Table 2.9, page II-68, includes the estimated cost for the interchanges.

The size and length of bridges and small drainage structures (culverts, span dimension less than 20 feet) were estimated by examining aerial photos, U.S. Geological Survey quadrangle maps (USGS quad maps), and the road profile. Pavement costs were based on the calculated segment lengths using an assumed pavement section and costs associated with each layer and thickness. Earthwork quantities for the crossroads and mainline were determined by the road profile, typical section, and average end area method.

Costs assigned crossroads, culverts and bridges, pavement, and earthwork were then tallied, per alternative, and an additional cost was added based on a percentage of the subtotal (25 percent of pavement, crossroads, culverts, and other bridges subtotal) to account for items such as guardrails, mobilization, clearing and grubbing, traffic control, etc., that would be required to construct this project. Finally, an additional 15 percent was added to the subtotal to account for contingencies.

Land acquisition costs were estimated using per acre prices for farmland. Costs for improvements were estimated based on lump sum amounts for the type and condition of the property, with an estimate for severance damages, where applicable.

2.3.2 Comparison of Environmental Impacts

Table 2.7, pages II-34–II-36, compares project related data—such as project length, cost, and potential environmental impacts—associated with each feasible alternative. The impacts are discussed in detail in Chapter 4. This data, coupled with input from the public officials, agencies, and the general public following the issuance of the DEIS, formed the basis for INDOT’s recommendation of **Alternative 2** as the Preferred Alternative.

2.3.3 Comparison of Traffic Volumes and Levels of Service

Existing and projected traffic volumes and levels of service for the feasible alternatives are provided on Table 2.8, pages II-37–II-38. Traffic that would remain on the existing road (“residual traffic”), assuming completion of the project, is included for comparison. The analysis of existing traffic and future traffic volume projections indicates that, for most of its length, existing SR 25 will not provide levels of service that would reduce congestion and improve the efficiency and capacity of transportation between Lafayette and Logansport. The build scenario indicates that the movement of traffic through the corridor would be facilitated by construction of a new roadway that would 1) provide an alternative route designed to carry the projected volumes of traffic at desirable/preferable levels of service, and 2) attract traffic from the existing SR 25, resulting in desirable/preferable levels of service on that road.

TABLE 2.7—Comparative Impacts Summary: No-Build and Build Alternatives

FEIS Section	Impacts	No-Build	Alternative 1 O-WA+P-CA1+P-EA+Y-LA	Preferred Alternative 2 O-WA1+P-CA1+P-EA+Y-LA	Alternative 3 O-WA+P-CA2+P-EB+Y-LB	Alternative 4 O-WA1+P-CA2+P-EB+Y-LB
	Length (miles)	0	35.3	35.3	35.2	35.3
	Estimated cost (millions) for construction, contingencies, ROW, design	0	\$218.9	\$224.7 + \$16.0 est.*	\$212.7	\$218.5
4.1	Land use—Additional acres of ROW to be acquired (by use):					
	-Agricultural (cultivable + uncultivated, in 4.2, below)	0	1,168	1,171 + 15 * = 1,186	1,215	1,218
	-Residential/Rural Residential	0	244	267 + 5 * = 272	207	230
	-Commercial/Industrial	0	95	90 + 3 * = 93	90	85
	-Institutional	0	1	1	1	1
	Total	0	1,508	1,529 + 23 * = 1,552	1,513	1,534
4.2	Farmland impacts:	No effect				
	-Number. of parcels of 20+ cultivable acres from which ROW would be acquired (i.e., farm parcels severed)	0	127	142	130	145
	-Cultivable (20+ acres) farmland acres in ROW	0	1,004	1,001 + 12 * = 1,013	1,039	1,046
	-Uncultivated (forest, wetlands, riparian) farmland acres in ROW	0	174	170 + 3 * = 173	176	172
	-Prime/Unique Farmland acres in ROW	0	827	835 + 11 est.* = 846	937	945
	-Statewide + Local Important Farmland acres in ROW	0	11	11	2	2
	-Mitigation discussion required?	No	No	No	No	No
4.3	Social:					
	-Travel time, community access, etc.	Road deficiencies, traffic, slow travel time, increase costs and reduce ease, safety of local/regional access.	Improves travel time and costs, improves area/regional access.	Same as Alt. 1	Same as Alt. 1	Same as Alt. 1
	-Crossroads closed to through traffic at new SR 25 (requiring some changes in local travel patterns)	0	15	16	18	18
	-At-grade railroad crossings on public roads eliminated	0	11 (+ 4 open to local access, only)	16 (+ 3 open to local access, only)	7 (+ 6 open to local access, only)	12 (+ 5 open to local access, only)
	-Special groups/unique communities	No effect	No impact. (Is not near local German Baptist Community.)	Same as Alt. 1	Same as Alt. 1	Same as Alt. 1
4.4	Relocations / displacements:					
	-Residential	0	32 s-f units; 2 duplexes: 36 households	26 + 5* s-f units + 2 duplexes: 35 households	25 s-f units; 2 duplexes: 29 households	19 s-f units; 2 duplexes: 23 households
	-Commercial	0	5	5	8	8
	-Institutional	0	1	1	1	1

TABLE 2.7—Comparative Impacts Summary: No-Build and Build Alternatives (Continued)

FEIS Section	Impacts	No-Build	Alternative 1 O-WA+P-CA1+P-EA+Y-LA	Preferred Alternative 2 O-WA1+P-CA1+P-EA+Y-LA	Alternative 3 O-WA+P-CA2+P-EB+Y-LB	Alternative 4 O-WA1+P-CA2+P-EB+Y-LB
4.5	Economic	Increased traffic and reduced road capacity impair development potential, increase travel costs.	Improved travel time, safety, and local/regional access increase development potential and employment opportunities. Provides added access to Delphi, improved access to Logansport.	Same as Alt. 1	Same as Alt. 1	Same as Alt. 1
4.6	Joint development	No change.	None	None	None	None
4.7	Pedestrians and bicyclists (trails crossed)	0	Crosses 3 bike routes sharing road ROW: access maintained except on CR 900N, which would be relocated. Crosses 3 proposed hiking trails not open to public: likely that access could be maintained. No Section 4(f) use.	Crosses 3 bike routes sharing road ROW: access maintained on all. Crosses 3 proposed hiking trails not open to public: likely that access could be maintained. No Section 4(f) use.	Same as Alt. 1	Same as Alt. 2
4.8	Air quality	Some reduction in quality over time.	Steadying traffic flow by reducing number of access points and railroad crossings would reduce vehicle-related pollutants. No exceedance of standards projected.	Same as Alt. 1	Same as Alt. 1	Same as Alt. 1
4.9	Noise	Projected noise levels at 27 of 37 receptor sites are above those projected with build alternatives; at 9 of these sites levels are predicted to approach or exceed NAC standard (67 dBA). Substantial increase (6 dBA above existing level) at one NRHP-eligible resource.	Noise levels predicted to approach or exceed the NAC standard at 4 receptor sites. No substantial noise increases projected. Projected levels at 27 sites are below those projected with No-Build Alternative.	Noise levels predicted to approach or exceed the NAC standard at 3 receptor sites. No substantial noise increases projected. Projected levels at 27 sites are below those projected with No-Build Alternative.	Noise levels predicted to approach or exceed the NAC standard at 7 receptor sites. No substantial noise increases projected. Projected levels at 27 sites are below those projected with No-Build Alternative.	Same as Alt. 3
4.10	Energy	No effect.	Major one-time energy resources demand. Improved access, travel time, safety make operational costs less than or equivalent to No-Build.	Same as Alt. 1	Same as Alt. 1	Same as Alt. 1
4.11	Water quality, related impacts: -Stream crossings (including intermittent) -Bridges (Stream / RR / Highway) -Length of stream impact (feet) - General impacts	0 0 0 No change in existing conditions.	41 6 / 7 / 6 17,685 Possible short-term increase in stream sedimentation, groundwater turbidity during construction. Roadway pollutants introduced along new alignment. Grass swales, pipes proposed.	43 7 / 11 / 9 + 2* 17,565 Same as Alt. 1	42 6 / 4 / 8 18,274 Same as Alt. 1	44 6 / 9 / 8 18,143 Same as Alt. 1
4.12	Wetlands (acres directly impacted)	0	2.40	2.68	1.55	1.83
4.13	Permits	None	USACE 404, IDEM 401, IDNR Construction in a Floodway	Same as Alt. 1	Same as Alt. 1	Same as Alt. 1
4.14	Water body modifications / wildlife habitat impacts	No effect	Habitat: 174 acres uncultivated agri. land/ riparian/wetland/forest	Habitat: 170 + 3* acres uncultivated agri. land/ riparian/ wetland/forest	Habitat: 176 acres agri. land/ riparian/ wetland/forest	Habitat: 172 acres uncultivated agri. land/ riparian/wetland/forest
4.15	Endangered species	No effect	Indiana bats captured on Sugar Creek and habitat exists through project corridor.	Same as Alt. 1	Same as Alt. 1	Same as Alt. 1

TABLE 2.7—Comparative Impacts Summary: No-Build and Build Alternatives (Continued)

FEIS Section	Impacts	No-Build	Alternative 1 O-WA+P-CA1+P-EA+Y-LA	Preferred Alternative 2 O-WA1+P-CA1+P-EA+Y-LA	Alternative 3 O-WA+P-CA2+P-EB+Y-LB	Alternative 4 O-WA1+P-CA2+P-EB+Y-LB
4.16	Floodplains (acres)	0	25	25	21	21
4.17	Wild and scenic rivers	None in area	None in area	None in area	None in area	None in area
4.18	Potential HAZMAT sites	No effect	12	11	11	10
4.19	Visual	No effect	Pleasant view from the road through rural areas. Visual impacts to cultural resources (see 4.21 below).	Same as Alt. 1	Same as Alt. 1	Same as Alt. 1
4.20	Construction	No effect	Temporary dust, noise, traffic delays, water quality impacts.	Same as Alt. 1	Same as Alt. 1	Same as Alt. 1
4.21	Cultural resources -Archaeological resources (eligible for / listed on NRHP) -Historic properties (eligible for / listed on NRHP) Note: No 4(f) use expected.	No effect Increase over existing noise level at an NRHP-eligible resource.	1 alluvial soils area recommended for avoidance/ further testing. Visual impact to NRHP-listed Rural Historic District and 3 eligible sites.	1 floodplain area, 1 alluvial soils area, 8 arch. sites recommended for avoidance/ further testing. Same as Alt. 1	1 alluvial soils area recommended for avoidance/ further testing. Visual impact to NRHP-listed Rural Historic District, 1 listed site and 2 eligible sites.	1 alluvial soils area recommended for avoidance/ further testing. Same as Alt. 3
4.22	Long-term impacts	Would not improve accessibility and safety, travel time, economic development potential.	Completes a link in the Hoosier Heartland Industrial corridor and enhances long-term productivity for the area and region.	Same as Alt. 1	Same as Alt. 1	Same as Alt. 1

* Indicates additional impacts associated with the modification of **Preferred Alternative 2** to include interchanges (rather than at-grade intersections) at Burlington Avenue/SR 29 and US 421. It is likely that these modifications would have been made with any of the build alternatives.

Abbreviations Key:

- 4.2: ROW = Right-of-way USDA = U.S. Department of Agriculture
- 4.4 s-f = single-family residential dwelling
- 4.8 Section 4(f) = A section of the Department of Transportation Act (1966) requiring avoidance of certain resources (such as public parks and recreational areas, historic and archaeological sites, wild and scenic rivers, or wildlife management areas) when a feasible alternative is possible.
- 4.9 NRHP = National Register of Historic Places
- 4.12 RR = Railroad
- 4.15 USACE = U.S. Department of the Army, Corps of Engineers IDEM = Indiana Department of Environmental Management IDNR = Indiana Department of Natural Resources
- 4.16 USFWS = U.S. Department of the Interior, Fish and Wildlife Service
- 4.19 HAZMAT = Hazardous materials
- 4.22 Regarding Section 106: Section 106 of the *National Historic Preservation Act* (1966), as amended, requires the federal government to “take into account” the effect of its proposed actions on archaeological and historic resources before making project decisions. Regarding archaeological resources: A detailed field reconnaissance of the entire length of the project corridor was undertaken for the **Preferred Alternative 2**, only. Therefore, comparison of **Preferred Alternative 2**'s potential impacts with those of Alternatives 1, 3 and 4 is not possible. (The “alluvial soils area” was identified in a Phase 1a survey performed early in the project for the Deer Creek Valley area [Central Segment], only). FEIS Chapter 4, Section 4.21.2 discusses potential impacts to archaeological resources.

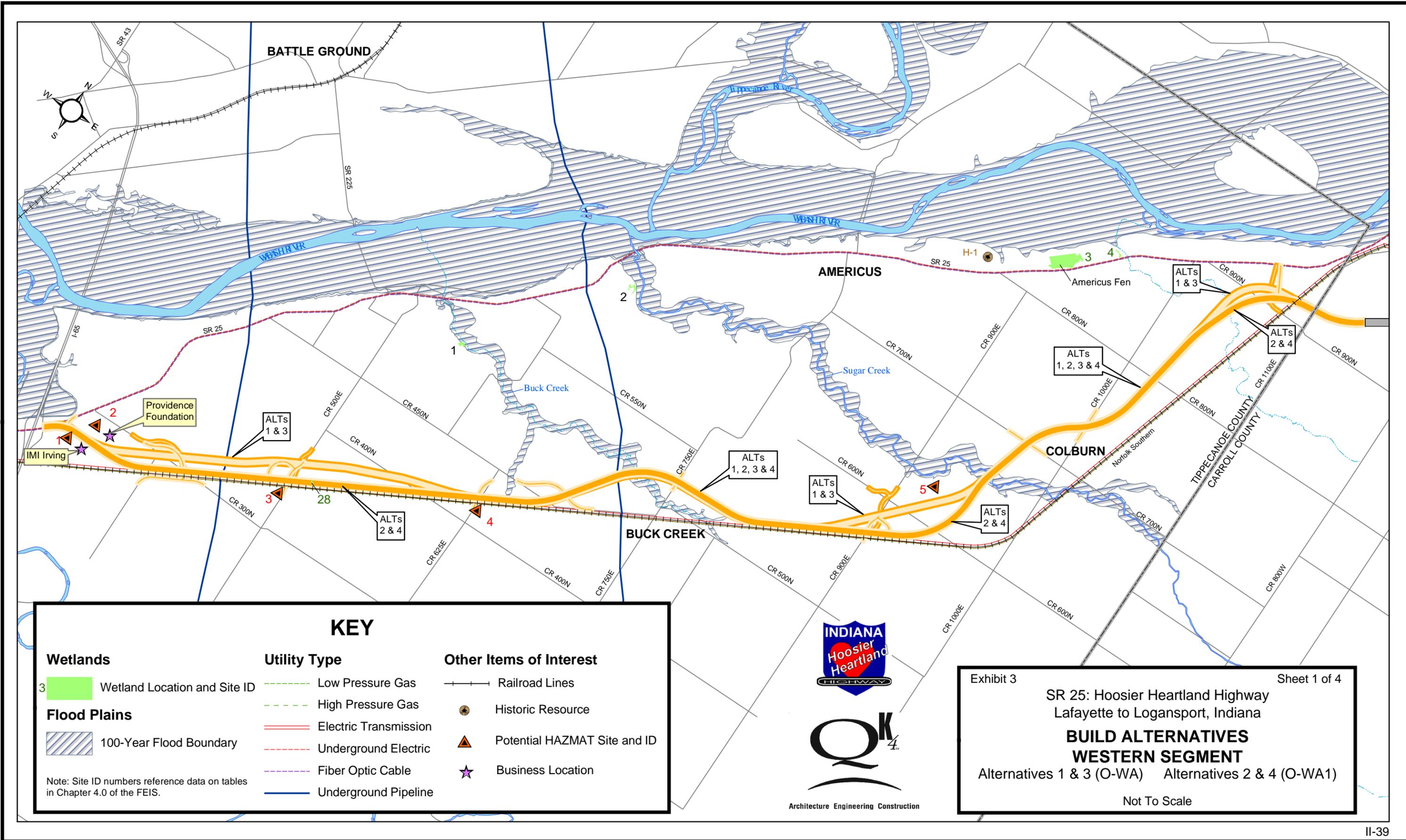
TABLE 2.8—Traffic Volumes and Levels of Service: Comparison of Alternatives

	2005						2010						2030					
	No-Build Traffic Existing SR 25	LOS	Traffic on Alternative	LOS	Residual Traffic Exist. SR 25	LOS	No-Build Traffic Existing SR 25	LOS	Traffic on Alternative	LOS	Residual Traffic Exist. SR 25	LOS	No-Build Traffic Existing SR 25	LOS	Traffic on Alternative	LOS	Residual Traffic Existing SR 25	LOS
ALTERNATIVE 1 (OWA-PCA1-PEA-YLA)																		
TIPPECANOE COUNTY																		
I-65 to CR 450N	22,800	B	17,800	B	5,000	A	24,100	B	18,700	B	5,400	A	29,000	C	22,500	B	6,500	A
CR 450N to SR 225	16,800	E	13,000	A	3,800	C	18,100	E	14,000	A	4,100	C	23,400	E	18,100	B	5,300	C
SR 225 to Grant Road	14,400	E	12,400	A	2,000	B	15,100	E	13,000	A	2,100	B	17,600	E	15,100	A	2,500	B
Grant Road to Co. Line	11,300	D	9,100	A	2,200	B	12,000	D	9,700	A	2,300	B	15,100	E	12,200	A	2,900	C
CARROLL COUNTY																		
Co. Line to US 421	9,100	D	5,500	A	3,600	C	10,500	D	6,300	A	4,200	C	16,000	E	9,600	A	6,400	C
US 421 to Main St. (Delphi)	11,000	D	8,700	A	2,300	B	11,200	D	8,900	A	2,300	B	11,700	D	9,300	A	2,400	B
Main St. to CR 300N	8,600	D	6,600	A	2,000	A	9,200	D	7,100	A	2,100	A	11,700	D	9,300	A	2,400	A
CR 300N to SR 218	7,000	C	6,800	A	200	A	7,300	D	7,000	A	300	A	8,600	D	8,100	A	500	A
SR 218 to Co. Line	4,800	C	4,800	A	0	N/A	5,100	C	5,100	A	0	N/A	6,500	C	6,500	A	0	N/A
CASS COUNTY																		
Co. Line to CR 400S (Vandalia St.)	5,200	C	5,200	A	0	N/A	5,800	C	5,800	A	0	N/A	8,100	D	8,100	A	0	N/A
Vandalia St. to CR 300S	5,700	C	5,700	A	0	N/A	6,200	C	6,200	A	0	N/A	8,100	D	8,100	A	0	N/A
CR 300S to CR 200S	6,200	C	4,000	A	2,200	A	6,600	C	4,200	A	2,400	A	8,100	D	5,100	A	3,000	A
CR 200S to US 24	7,000	C	4,500	A	2,500	A	7,300	D	4,600	A	2,700	A	8,100	D	5,100	A	3,000	A
PREFERRED ALTERNATIVE 2 (OWA1-PCA1-PEA-YLA)																		
TIPPECANOE COUNTY																		
I-65 to CR 450N	22,800	B	17,800	B	5,000	A	24,100	B	18,700	B	5,400	A	29,000	C	22,500	B	6,500	A
CR 450N to SR 225	16,800	E	13,000	A	3,800	C	18,100	E	14,000	A	4,100	C	23,400	E	18,100	B	5,300	C
SR 225 to Grant Road	14,400	E	12,400	A	2,000	B	15,100	E	13,000	A	2,100	B	17,600	E	15,100	A	2,500	B
Grant Road to Co. Line	11,300	D	9,100	A	2,200	B	12,000	D	9,700	A	2,300	B	15,100	E	12,200	A	2,900	C
CARROLL COUNTY																		
Co. Line to US 421	9,100	D	5,500	A	3,600	C	10,500	D	6,300	A	4,200	C	16,000	E	9,600	A	6,400	C
US 421 to Main St. (Delphi)	11,000	D	8,700	A	3,700	B	11,200	D	8,900	A	2,300	B	11,700	D	9,300	A	2,400	B
Main St. to CR 300N	8,600	D	6,600	A	2,000	A	9,200	D	7,100	A	2,100	A	11,700	D	9,300	A	2,400	A
CR 300N to SR 218	7,000	C	6,800	A	200	A	7,300	D	7,000	A	300	A	8,600	D	8,100	A	500	A
SR 218 to Co. Line	4,800	C	4,800	A	0	N/A	5,100	C	5,100	A	0	N/A	6,500	C	6,500	A	0	N/A
CASS COUNTY																		
Co. Line to CR 400S (Vandalia St.)	5,200	C	5,200	A	0	N/A	5,800	C	5,800	A	0	N/A	8,100	D	8,100	A	0	N/A
Vandalia St. to CR 300S	5,700	C	5,700	A	0	N/A	6,200	C	6,200	A	0	N/A	8,100	D	8,100	A	0	N/A
CR 300S to CR 200S	6,200	C	4,000	A	2,200	A	6,600	C	4,200	A	2,400	A	8,100	D	5,100	A	3,000	A
CR 200S to US 24	7,000	C	4,500	A	2,500	A	7,300	D	4,600	A	2,700	A	8,100	D	5,100	A	3,000	A
ALTERNATIVE 3 (OWA-PCA2-PEB-YLB)																		
TIPPECANOE COUNTY																		
I-65 to CR 450N	22,800	B	17,800	B	5,000	A	24,100	B	18,700	B	5,400	A	29,000	C	22,500	B	6,500	A
CR 450N to SR 225	16,800	E	13,000	A	3,800	C	18,100	E	14,000	A	4,100	C	23,400	E	18,100	B	5,300	C
SR 225 to Grant Road	14,400	E	12,400	A	2,000	B	15,100	E	13,000	A	2,100	B	17,600	E	15,100	A	2,500	B
Grant Road to Co. Line	11,300	D	9,100	A	2,200	B	12,000	D	9,700	A	2,300	B	15,100	E	12,200	A	2,900	C
CARROLL COUNTY																		
Co. Line to US 421	9,100	D	5,500	A	3,600	C	10,500	D	6,300	A	4,200	C	16,000	E	9,600	A	6,400	C
US 421 to Main St. (Delphi)	11,000	D	8,700	A	3,700	B	11,200	D	8,900	A	2,300	B	11,700	D	9,300	A	2,400	B
Main St. to CR 300N	8,600	D	6,600	A	2,000	A	9,200	D	7,100	A	2,100	A	11,700	D	9,300	A	2,400	A
CR 300N to SR 218	7,000	C	5,400	A	1,600	A	7,300	D	5,600	A	1,700	A	8,600	D	6,600	A	2,000	A
SR 218 to Co. Line	4,800	C	3,400	A	1,400	A	5,100	C	3,600	A	1,500	A	6,500	C	4,600	A	1,900	A
CASS COUNTY																		
Co. Line to CR 400S (Vandalia St.)	5,200	C	4,600	A	600	A	5,800	C	5,100	A	700	A	8,100	D	7,100	A	1,000	A
Vandalia St. to CR 300S	5,700	C	4,800	A	900	A	6,200	C	5,200	A	1,000	A	8,100	D	6,800	A	1,300	A
CR 300S to CR 200S	6,200	C	4,000	A	2,200	A	6,600	C	4,200	A	2,400	A	8,100	D	5,100	A	3,000	A
CR 200S to US 24	7,000	C	4,500	A	2,500	A	7,300	D	4,600	A	2,700	A	8,100	D	5,100	A	3,000	A

NOTE: Where "Residual Traffic" is "0," and "N/A" designates the Level of Service, the build alternative incorporates this section of existing SR 25 and there would be no residual traffic.

TABLE 2.8—Traffic Volumes and Level of Service: Comparison of Alternatives (Continued)

	2005						2010						2030					
	No-Build Traffic Existing SR 25	LOS	Traffic on Alternative	LOS	Residual Traffic Exist. SR 25	LOS	No-Build Traffic Existing SR 25	LOS	Traffic on Alternative	LOS	Residual Traffic Exist. SR 25	LOS	No-Build Traffic Existing SR 25	LOS	Traffic on Alternative	LOS	Residual Traffic Exist. SR 25	LOS
ALTERNATIVE 4 (OWA1-PCA2-PEB-YLB)																		
TIPPECANOE COUNTY																		
I-65 to CR 450N	22,800	B	17,800	B	5,000	A	24,100	B	18,700	B	5,400	A	29,000	C	22,500	B	6,500	A
CR 450N to SR 225	16,800	E	13,000	A	3,800	C	18,100	E	14,000	A	4,100	C	23,400	E	18,100	B	5,300	C
SR 225 to Grant Road	14,400	E	12,400	A	2,000	B	15,100	E	13,000	A	2,100	B	17,600	E	15,100	A	2,500	B
Grant Road to Co. Line	11,300	D	9,100	A	2,200	B	12,000	D	9,700	A	2,300	B	15,100	E	12,200	A	2,900	C
CARROLL COUNTY																		
Co. Line to US 421	9,100	D	5,500	A	3,600	C	10,500	D	6,300	A	4,200	C	16,000	E	9,600	A	6,400	C
US 421 to Main St. (Delphi)	11,000	D	8,700	A	3,700	B	11,200	D	8,900	A	2,300	B	11,700	D	9,300	A	2,400	B
Main St. to CR 300N	8,600	D	6,600	A	2,000	A	9,200	D	7,100	A	2,100	A	11,700	D	9,300	A	2,400	A
CR 300N to SR 218	7,000	C	5,400	A	1,600	A	7,300	D	5,600	A	1,700	A	8,600	D	6,600	A	2,000	A
SR 218 to Co. Line	4,800	C	3,400	A	1,400	A	5,100	C	3,600	A	1,500	A	6,500	C	4,600	A	1,900	A
CASS COUNTY																		
Co. Line to CR 400S (Vandalia St.)	5,200	C	4,600	A	600	A	5,800	C	5,100	A	700	A	8,100	D	7,100	A	1,000	A
Vandalia St. to CR 300S	5,700	C	4,800	A	900	A	6,200	C	5,200	A	1,000	A	8,100	D	6,800	A	1,300	A
CR 300S to CR 200S	6,200	C	4,000	A	2,200	A	6,600	C	4,200	A	2,400	A	8,100	D	5,100	A	3,000	A
CR 200S to US 24	7,000	C	4,500	A	2,500	A	7,300	D	4,600	A	2,700	A	8,100	D	5,100	A	3,000	A



Architecture Engineering Construction

Exhibit 3 Sheet 1 of 4

SR 25: Hoosier Heartland Highway
Lafayette to Logansport, Indiana

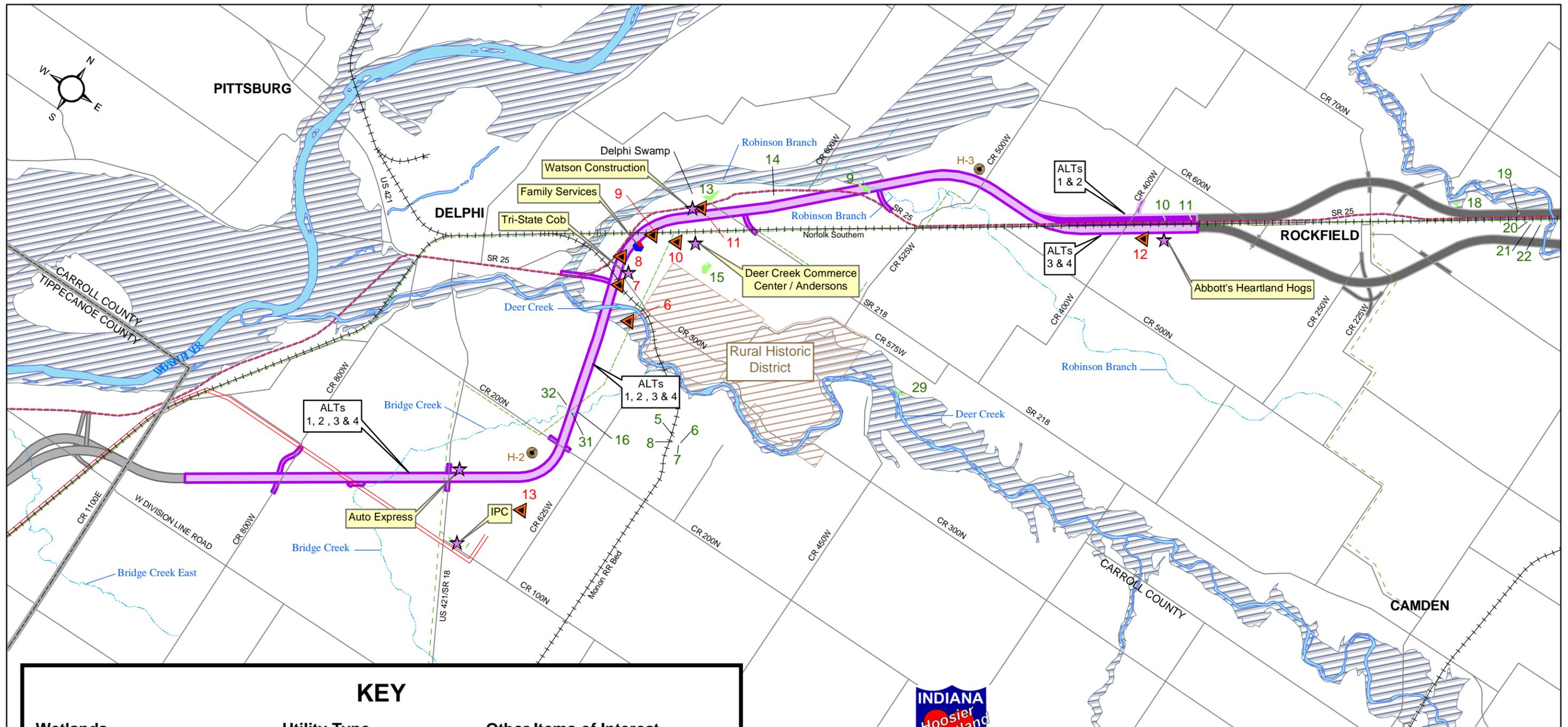
**BUILD ALTERNATIVES
WESTERN SEGMENT**

Alternatives 1 & 3 (O-WA) Alternatives 2 & 4 (O-WA1)

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[Page 40]



KEY

<p>Wetlands</p> <p>3 Wetland Location and Site ID</p> <p>Flood Plains</p> <p> 100-Year Flood Boundary</p> <p><small>Note: Site ID numbers reference data on tables in Chapter 4.0 of the FEIS.</small></p>	<p>Utility Type</p> <p> Low Pressure Gas</p> <p> High Pressure Gas</p> <p> Electric Transmission</p> <p> Underground Electric</p> <p> Fiber Optic Cable</p> <p> Underground Pipeline</p>	<p>Other Items of Interest</p> <p> Railroad Lines</p> <p> Historic Resource</p> <p> Potential HAZMAT Site and ID</p> <p> Business Location</p>
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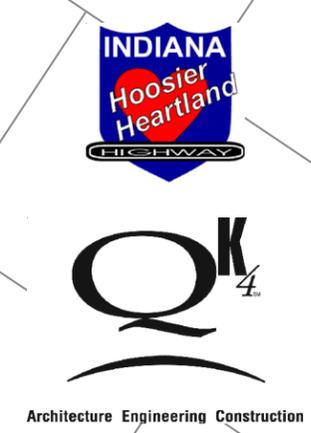


Exhibit 3 Sheet 2 of 4

SR 25: Hoosier Heartland Highway
Lafayette to Logansport, Indiana

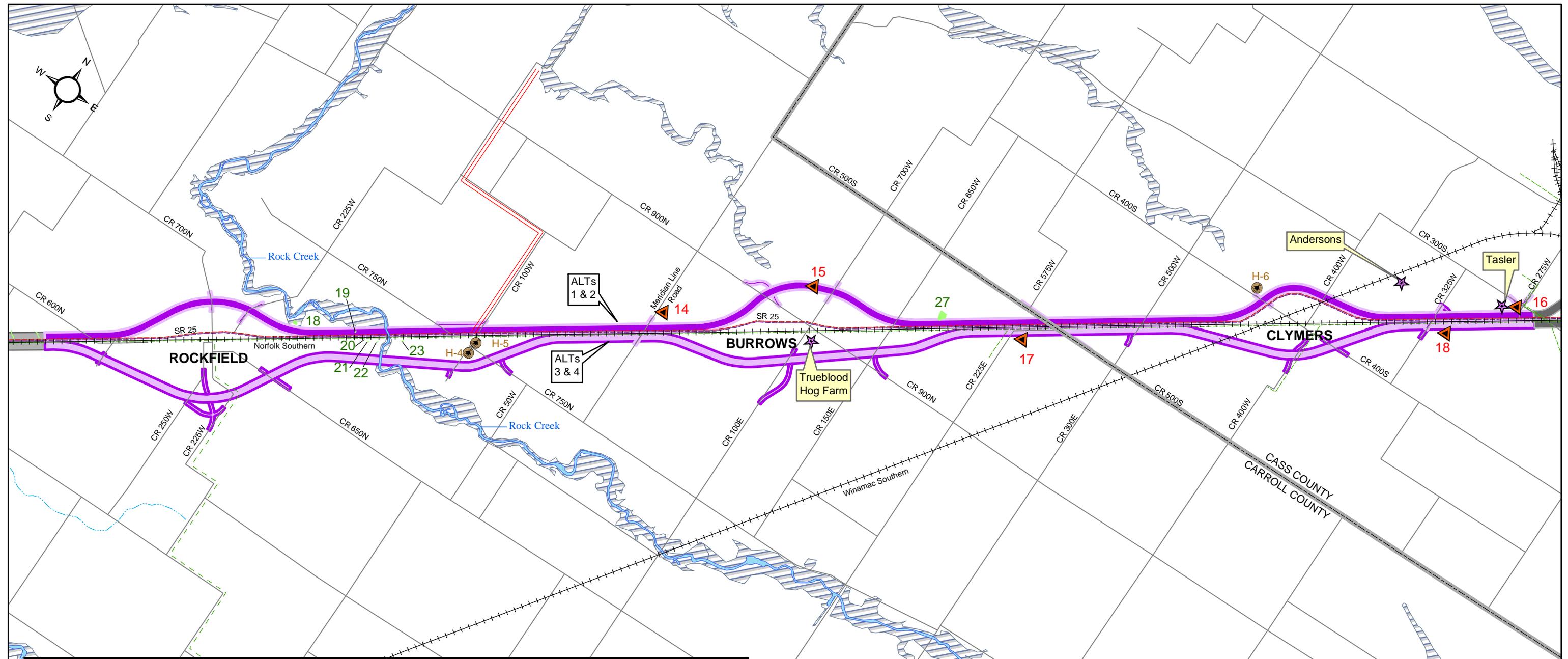
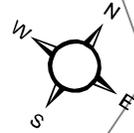
**BUILD ALTERNATIVES
CENTRAL SEGMENT**

Alternatives 1 & 2 (P-CA1) Alternatives 3 & 4 (P-CA2)

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[Page 42]



KEY

Wetlands

3 Wetland Location and Site ID

Flood Plains

100-Year Flood Boundary

Note: Site ID numbers reference data on tables in Chapter 4.0 of the FEIS.

Utility Type

- Low Pressure Gas
- High Pressure Gas
- Electric Transmission
- Underground Electric
- Fiber Optic Cable
- Underground Pipeline

Other Items of Interest

- Railroad Lines
- Historic Resource
- Potential HAZMAT Site and ID
- Business Location



Architecture Engineering Construction

Exhibit 3

Sheet 3 of 4

SR 25: Hoosier Heartland Highway
Lafayette to Logansport, Indiana

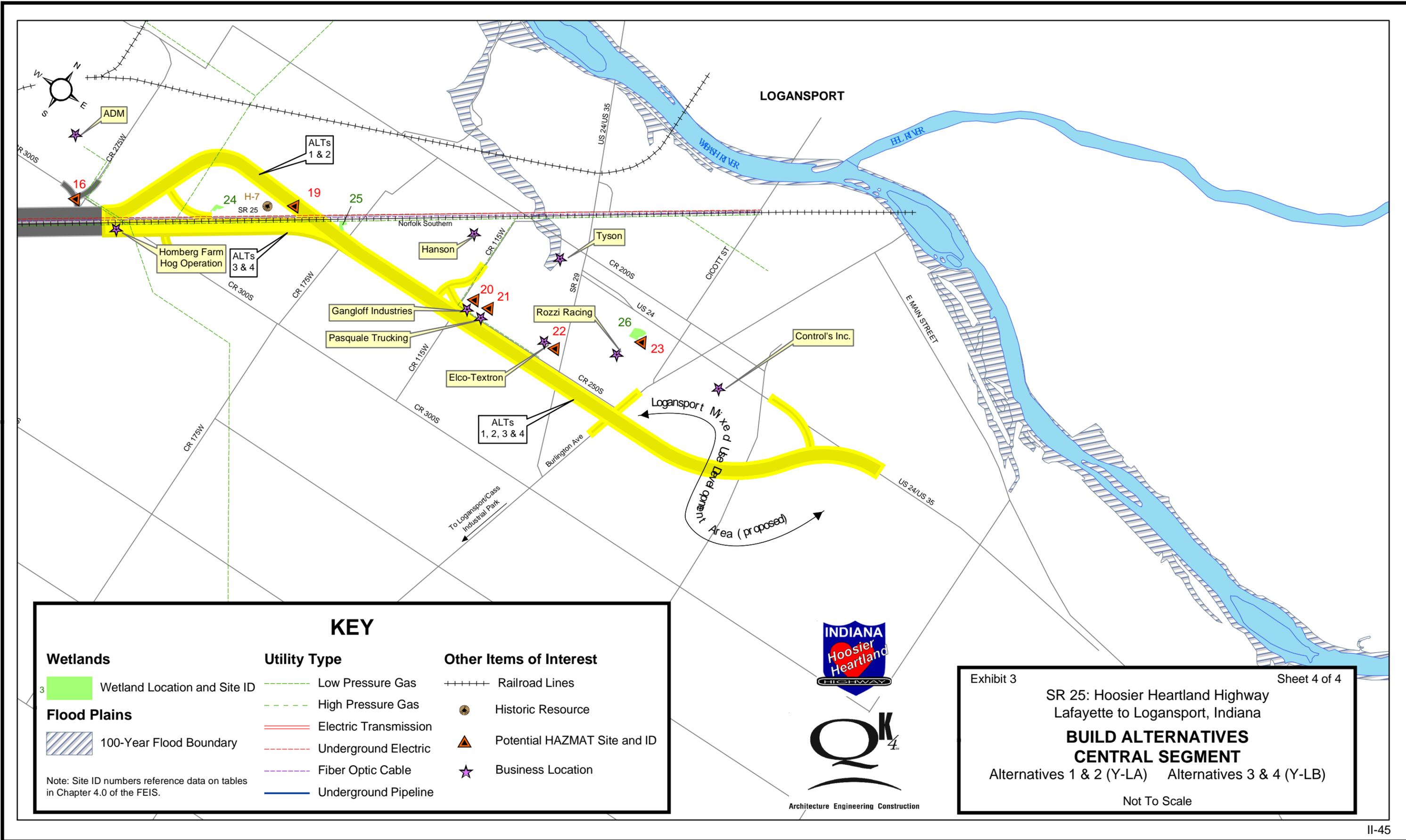
BUILD ALTERNATIVES EASTERN SEGMENT

Alternatives 1 & 2 (P-EA) Alternatives 3 & 4 (P-EB)

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[Page 44]



KEY

- | | | |
|--|--|--|
| <p>Wetlands</p> <ul style="list-style-type: none"> Wetland Location and Site ID <p>Flood Plains</p> <ul style="list-style-type: none"> 100-Year Flood Boundary <p><small>Note: Site ID numbers reference data on tables in Chapter 4.0 of the FEIS.</small></p> | <p>Utility Type</p> <ul style="list-style-type: none"> Low Pressure Gas High Pressure Gas Electric Transmission Underground Electric Fiber Optic Cable Underground Pipeline | <p>Other Items of Interest</p> <ul style="list-style-type: none"> Railroad Lines Historic Resource Potential HAZMAT Site and ID Business Location |
|--|--|--|



Exhibit 3 Sheet 4 of 4

SR 25: Hoosier Heartland Highway
Lafayette to Logansport, Indiana

**BUILD ALTERNATIVES
CENTRAL SEGMENT**

Alternatives 1 & 2 (Y-LA) Alternatives 3 & 4 (Y-LB)

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2.4 PREFERRED ALTERNATIVE

From among the alternatives identified in Section 2.3, Alternative 2 was recommended as the Preferred Alternative to be advanced to the FEIS. The recommendation followed the period of public and regulatory agency comment on the DEIS, and was based on the alternative's ability to meet Purpose and Need, environmental and design considerations, and input received during the public comment period. For continuity and comparison, the analyses of the build alternatives presented in the DEIS are included in this FEIS. Where necessary, text has been modified and/or expanded to incorporate new or refined data relevant to the analyses and recommendation process, and to identify reasons for the recommendation of Alternative 2 as the Preferred Alternative.

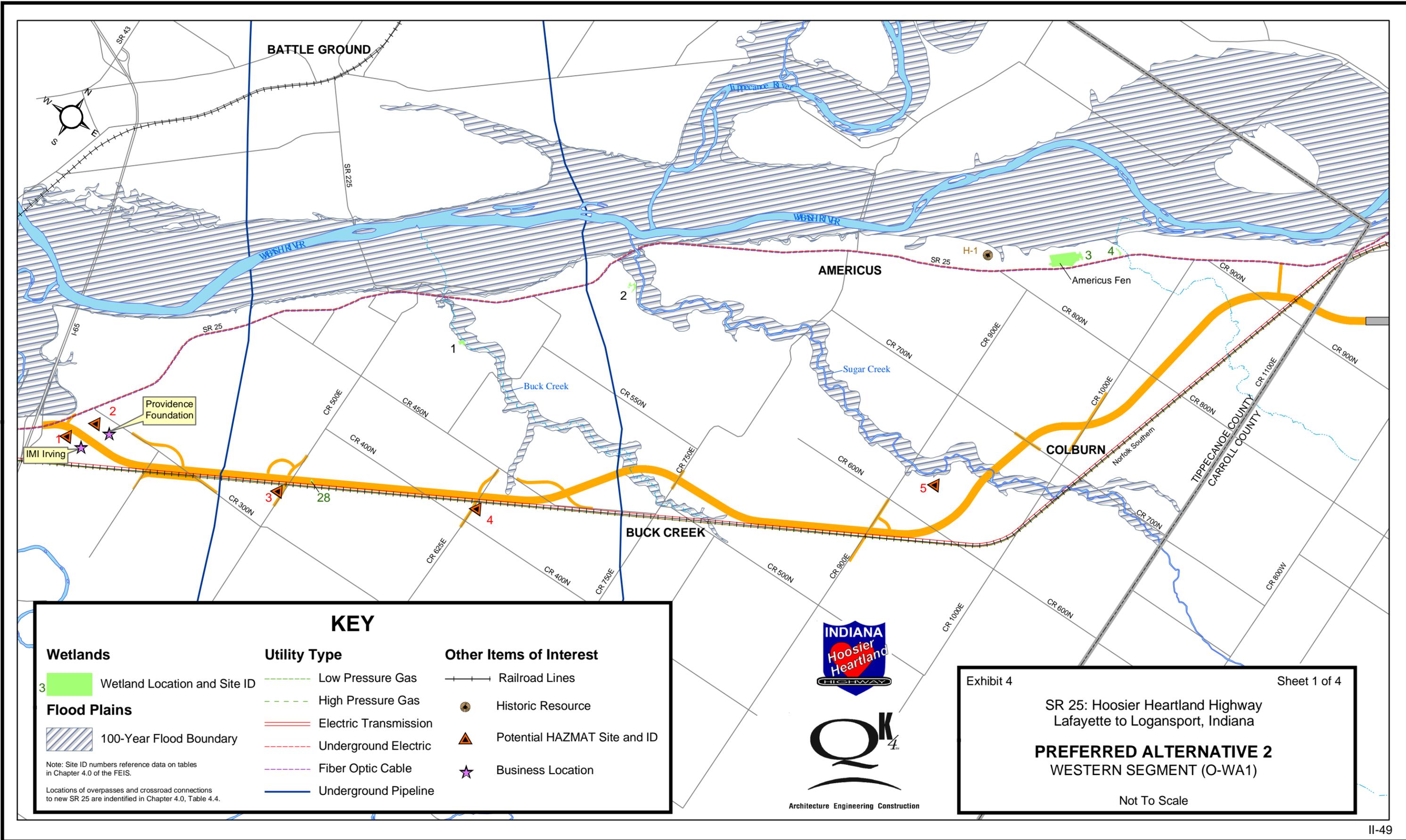
Preferred Alternative 2 combines segments O-WA1+ P-CA1 + P-EA + Y-LA. For reasons presented below and in subsequent chapters of the FEIS, the O-WA, P-CA2, P-EB, and Y-LB components were eliminated, thereby eliminating Alternative 1 (comprising O-WA + P-CA1 + P-EA + Y-LA), Alternative 3 (comprising O-WA, P-CA2, P-EB, and Y-LB), and Alternative 4 (comprising P-CA2, P-EB, and Y-LB).

Preferred Alternative 2 is described in Section 2.4.1, below, including modifications made based on public input and environmental/engineering considerations. Impacts resulting from the modifications apply only to the Preferred Alternative (i.e., alternatives that were eliminated were not reevaluated to assess each modification's potential impacts). Section 2.4.1 also identifies the impacts (both benefits and constraints) considered in the recommendation of this alternative over those eliminated. Traffic, typical section, and cost estimate data for the Preferred Alternative are presented in subsections that follow Section 2.4.1. For ease of reference and continuity of format, the description of the alternative and discussion of benefits and constraints are separated into the four project corridor segments identified throughout the DEIS.

Each of the four build alternatives satisfies the performance measures (defined on page II-9) used in this study to identify an alternative's ability to meet Purpose and Need. Had they not met Purpose and Need, they would not have been advanced for analysis in the DEIS. Overall, however, the Preferred Alternative satisfies the performance criteria to a greater extent than Alternatives 1, 3 and 4. In addition, determining factors—such as local planning initiatives and environmental impacts—assisted in the evaluation of alternatives and recommendation of Alternative 2 as the Preferred Alternative. Table 2.7, pages II-34–II-36, summarizes key design features and environmental impacts of the feasible alternatives. Exhibit 3, pages II-39–II-45, shows the four build alternatives, and Exhibit 4, pages II-49–II-55 shows the alignment of **Preferred Alternative 2**. With regard to performance measures, all alternatives were equal in their ability 1) to respond to federal and state transportation initiatives, and 2) to provide a roadway that would meet current design standards. Therefore, these performance measures are not specifically referenced in the discussion below.

Chapter 4, “Environmental Consequences,” contains analyses of environmental impacts associated with **Preferred Alternative 2**—including those related to new data and modifications to preliminary design incorporated after the recommendation of the Preferred Alternative. Measures for mitigating unavoidable impacts are detailed in Chapter 5, “Mitigation and Commitments.”

Refinements will continue to be made in later project development phases to horizontal alignment, vertical grade lines, access, and cross-sections, among other design elements. The refinements could result in either the minimization or avoidance of some impacts for which mitigation is proposed herein, or in additional impacts not yet identified. Coordination will continue with regulatory agencies having jurisdiction over resources that could be impacted by the project. Should substantive changes occur, appropriate environmental analysis will be undertaken.



KEY		
Wetlands	Utility Type	Other Items of Interest
<ul style="list-style-type: none"> 3 Wetland Location and Site ID 	<ul style="list-style-type: none"> Low Pressure Gas High Pressure Gas Electric Transmission Underground Electric Fiber Optic Cable Underground Pipeline 	<ul style="list-style-type: none"> Railroad Lines Historic Resource Potential HAZMAT Site and ID Business Location
<ul style="list-style-type: none"> 100-Year Flood Boundary <p>Note: Site ID numbers reference data on tables in Chapter 4.0 of the FEIS.</p> <p>Locations of overpasses and crossroad connections to new SR 25 are identified in Chapter 4.0, Table 4.4.</p>		



Exhibit 4 Sheet 1 of 4

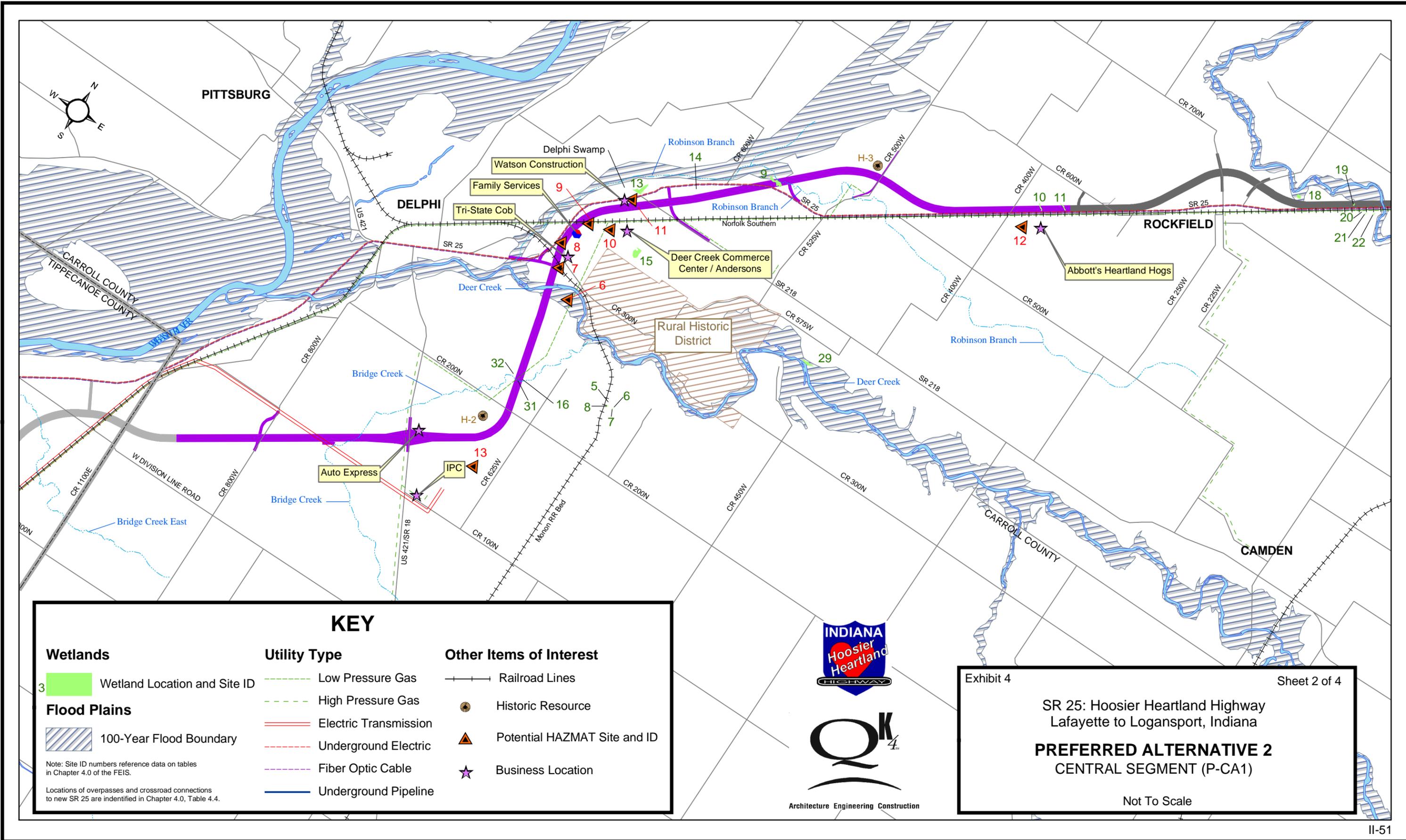
SR 25: Hoosier Heartland Highway
Lafayette to Logansport, Indiana

PREFERRED ALTERNATIVE 2
WESTERN SEGMENT (O-WA1)

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[Page 50]



KEY

<p>Wetlands</p> <p>3 Wetland Location and Site ID</p> <p>Flood Plains</p> <p> 100-Year Flood Boundary</p> <p><small>Note: Site ID numbers reference data on tables in Chapter 4.0 of the FEIS.</small></p> <p><small>Locations of overpasses and crossroad connections to new SR 25 are identified in Chapter 4.0, Table 4.4.</small></p>	<p>Utility Type</p> <p> Low Pressure Gas</p> <p> High Pressure Gas</p> <p> Electric Transmission</p> <p> Underground Electric</p> <p> Fiber Optic Cable</p> <p> Underground Pipeline</p>	<p>Other Items of Interest</p> <p> Railroad Lines</p> <p> Historic Resource</p> <p> Potential HAZMAT Site and ID</p> <p> Business Location</p>
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Exhibit 4 Sheet 2 of 4

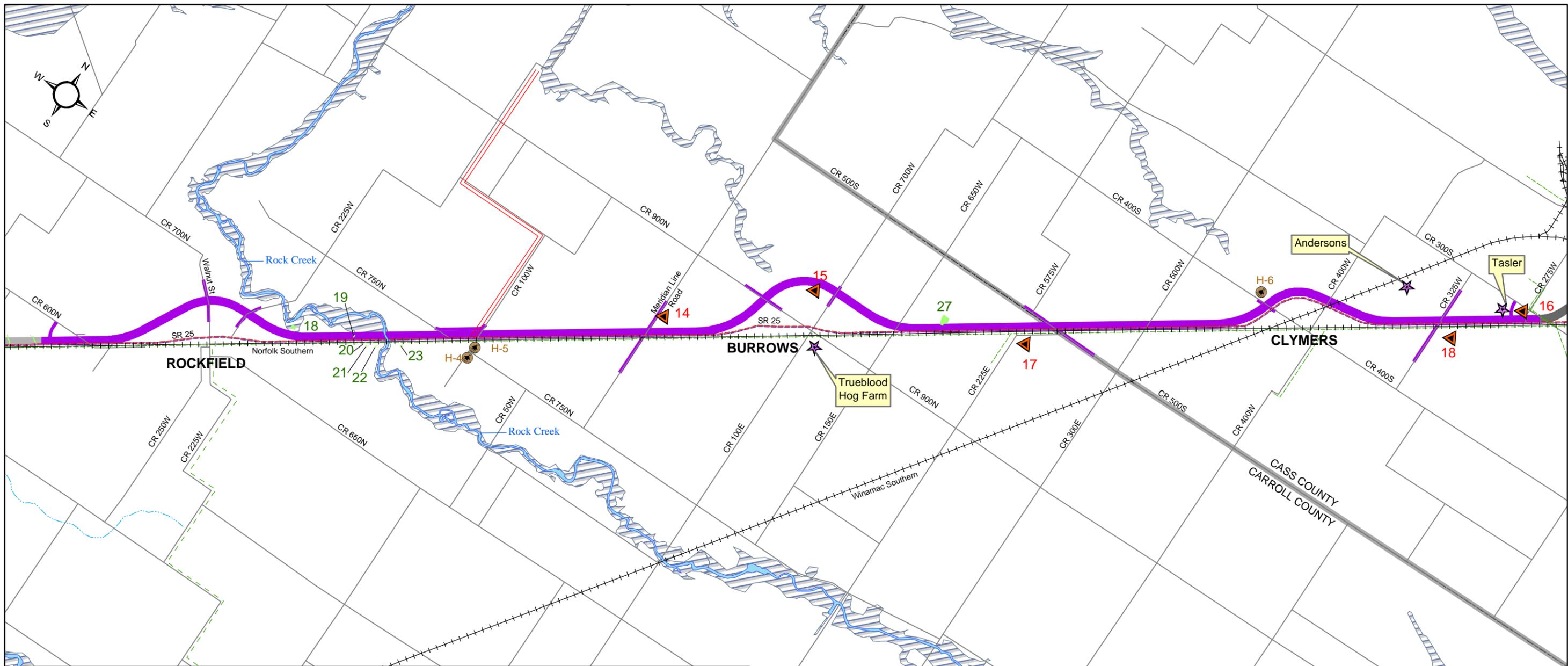
SR 25: Hoosier Heartland Highway
Lafayette to Logansport, Indiana

PREFERRED ALTERNATIVE 2
CENTRAL SEGMENT (P-CA1)

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[Page 52]



KEY		
Wetlands	Utility Type	Other Items of Interest
Wetland Location and Site ID	Low Pressure Gas	Railroad Lines
Flood Plains	High Pressure Gas	Historic Resource
100-Year Flood Boundary	Electric Transmission	Potential HAZMAT Site and ID
<small>Note: Site ID numbers reference data on tables in Chapter 4.0 of the FEIS.</small>	Underground Electric	Business Location
<small>Locations of overpasses and crossroad connections to new SR 25 are identified in Chapter 4.0, Table 4.4.</small>	Fiber Optic Cable	
	Underground Pipeline	



Exhibit 4 Sheet 3 of 4

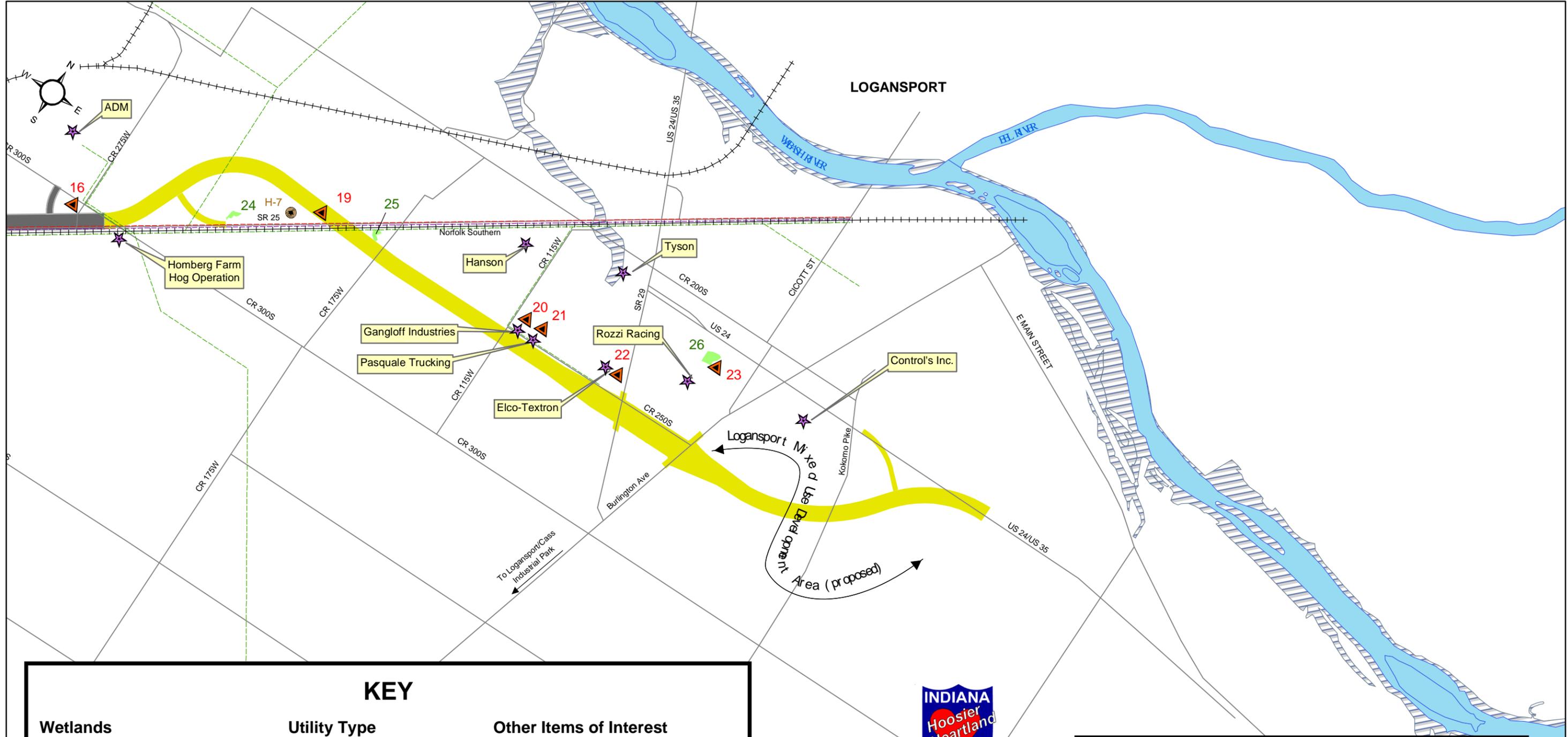
SR 25: Hoosier Heartland Highway
Lafayette to Logansport, Indiana

PREFERRED ALTERNATIVE 2
EASTERN SEGMENT (P-EA)

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[Page 54]



KEY

<p>Wetlands</p> <p>3 Wetland Location and Site ID</p> <p>Flood Plains</p> <p> 100-Year Flood Boundary</p> <p><small>Note: Site ID numbers reference data on tables in Chapter 4.0 of the FEIS.</small></p> <p><small>Locations of overpasses and crossroad connections to new SR 25 are identified in Chapter 4.0, Table 4.4.</small></p>	<p>Utility Type</p> <p> Low Pressure Gas</p> <p> High Pressure Gas</p> <p> Electric Transmission</p> <p> Underground Electric</p> <p> Fiber Optic Cable</p> <p> Underground Pipeline</p>	<p>Other Items of Interest</p> <p> Railroad Lines</p> <p> Historic Resource</p> <p> Potential HAZMAT Site and ID</p> <p> Business Location</p>
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Architecture Engineering Construction

Exhibit 4 Sheet 4 of 4

SR 25: Hoosier Heartland Highway
Lafayette to Logansport, Indiana

PREFERRED ALTERNATIVE 2
LOGANSPORT SEGMENT (Y-LA)

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2.4.1 Preferred Alternative 2: Description, Benefits, and Constraints

WESTERN SEGMENT

Preferred: O-WA1

Eliminated: O-WA

O-WA1 is a modified version of O-WA, the primary difference being that, through a portion of the corridor, O-WA maintained about a 1,000-foot separation between the road and Norfolk Southern railroad while O-WA1 is adjacent to the railroad right-of-way, reducing the separation to 150 feet.

Description of Alignment

The alignment's western terminus begins immediately east of the intersection of existing SR 25 and the I-65 northbound exit/entrance ramps, and heads east to traverse the north and northwest edges of a limestone quarry's gravel stockpile area. The alternative next traverses a portion of the former Aretz airstrip property now owned by the Providence Foundation, and then continues east adjacent to and paralleling the Norfolk Southern railroad track. The alignment crosses Tippecanoe CR 400E, which would be closed to through traffic at the Norfolk Southern track but connected to CR 300N via construction of a local service road (LSR) on the south side of the track. The alignment continues eastward adjacent to the track, providing a grade separation with CR 300N (with no connection to the new mainline), a one-quadrant interchange (grade separation with a single connector roadway ramp) with CR 500E, a grade separation with CR 625E (with indirect access to the mainline via CR 450N), and an at-grade intersection with CR 450N. Passing north of the community of Buck Creek, the alignment crosses Buck Creek and provides an at-grade intersection with CR 750E. The alignment rejoins the railroad right-of-way and provides a one-quadrant interchange (grade separation with single connector roadway ramp) with CR 900E. It then turns northward, away from but still more-or-less parallel to the railroad right-of-way, and crosses CR 600N, which would be closed to through traffic and not have direct access to the mainline. The alignment next crosses Sugar Creek, and passes to the west of Colburn, providing an at-grade intersection with CR 700N and a grade separation with CR 1000E. The alignment next crosses CR 800N, which would be closed to through traffic and not have direct access to the mainline; and CR 900N, which would overpass the new road. A new connecting road links existing SR 25 to the new alignment. The mainline then overpasses the railroad and CR 1100E whereupon it enters Carroll County. CR 1100E will remain open but not have direct access to the new SR 25.

Benefits Considered

O-WA1 was preferred over O-WA primarily because, whenever possible, the O-WA1 alignment is adjacent to the railroad right-of-way and uses grade separations for rail crossings of the intersecting public roads. The benefits of this alignment outweighed those provided by O-WA in that the alignment better satisfies the performance measures related to Purpose and Need, is more responsive to local and regional planning initiatives, and has fewer residential relocations. The following paragraphs briefly identify the factors favoring O-WA1 over O-WA.

Purpose and Need—

- O-WA1's ability to enhance the local transportation network better than O-WA was a factor in the recommendation of this alternative. While both alternatives equally benefit existing SR 25 by reducing traffic and improving capacity, O-WA1 produces greater benefits—by way of improved access and travel time—to local communities and areas south of the existing roadway and the Norfolk Southern railroad. Its next-to-rail alignment permits grade-separated

crossings of the railroad and new SR 25 on three public crossroads. For much of its length, O-WA maintains about a 1,000-foot separation between the new road and railroad track, a distance that makes bridging the track impractical.

- With regard to improving safety, both O-WA1 and O-WA would equally benefit existing SR 25, reducing the potential for crashes by reducing traffic volumes and improving capacity on the section of SR 25 with numerous deficiencies (see Table 1.1, page I-5). However, O-WA1 would also improve safety on other public roads composing the local transportation network by eliminating six at-grade railroad crossings on local public crossroads—carrying four crossroads over the railroad via bridges and closing two crossroads north and south of the new road and railroad. In addition, two other railroad crossings are retained only to provide access to a few properties located between the railroad and the new SR 25. O-WA eliminated one at-grade railroad crossing by closing the crossroad north and south of the new road and railroad, and retained three other crossings to provide local access, only. At-grade railroad crossing collisions “remain the second leading cause of all railroad-related fatalities” in the railroad industry, according to the *Report on Highway-Railroad Crossings and Mitigation Efforts by State*, U. S. Department of Transportation, Federal Railroad Administration, February 2002.
- O-WA1 satisfies the project’s need to provide an acceptable level of service and traffic relief on existing SR 25. With either alternative, existing SR 25 would experience LOS C and reduction in traffic ranging from 71–83 percent. Because O-WA equally satisfies this need, it was not a factor in the recommendation of the preferred alignment.

Planning initiatives—

- O-WA1’s next-to-rail alignment is recommended in Tippecanoe County’s *Long-Range Transportation Plan* and its amended *Thoroughfare Plan*, components of the *Comprehensive Plan*. The next-to-rail alignment also drew strong support from local officials and the public both early on in the project and during the period of comment on the *DEIS* (see Appendix A). As noted above, the alternative eliminates six railroad crossings entirely, and retains two others for local access, only. O-WA eliminated one railroad crossing entirely and closed three others to through traffic.
- The next-to-the rail alignment of O-WA1 would cause fewer impacts to agricultural operations on the land between the two transportation corridors than the O-WA alignment’s approximately 1,000-foot separation from the track. The Tippecanoe County APC’s Resolution T-00-6 (see Appendix A1), adopted in October 2000, noted the 1,000-foot separation of road and rail requested by INDOT “is...disruptive of existing row crop production cutting the (Washington) Township diagonally again, a quarter mile from the existing rail corridor.” Farmland impacts were a major concern of local government officials, planning agencies, and the public throughout the project.
- The O-WA1 alignment’s impact on the Providence Foundation’s proposed school campus and seniors’ community is less than that of O-WA, which would require the acquisition of more right-of-way from the site.

Constraints Addressed

Impacts to natural resources—

- O-WA1 encounters a 0.28-acre wetland area adjacent to the railroad track (Wetland AD, Site 28 on Exhibits 3 and 4). O-WA would not impact any wetlands. The site affected by O-WA1 has been identified by the USACE as a jurisdictional wetland regulated under Section 404 of the *Clean Water Act*. It is entirely within the right-of-way of the new road and its loss would require mitigation. Wetland impacts and permits are addressed in Chapter 4, Sections 4.12 and 4.13, and mitigation is discussed in Chapter 5.

Relocation/displacement impacts—

- The acquisition of additional right-of-way would result in residential relocations with either alternative. However, O-WA1 will result in fewer relocations (8 estimated) than O-WA (14 estimated). Neither alignment would involve business displacements. Relocation impacts are discussed in Chapter 4, Section 4.4, and mitigation is addressed in Chapter 5.

CENTRAL SEGMENT

Preferred: P-CA1

Eliminated: P-CA2

Both of the Central Segment build alternatives are on shared alignment until approximately one half mile east of CR 500W, where P-CA1 remains north of the Norfolk Southern railroad to provide a connection with P-EA, while P-CA2 crosses to the south side of the railroad to provide a connection with P-EB.

Description of Alignment

This section of the Preferred Alternative continues from O-WA1 in a northeasterly direction, providing an at-grade intersection with Carroll CR 800W, then crossing CR 100N, which will not have direct access to the new road and will be closed to through traffic. After crossing a tributary to Bridge Creek, the alignment provides an interchange with US 421. The alignment then turns to the north, crosses Bridge Creek and intersects CR 200N, which overpasses and will not have direct connection to new SR 25. It again crosses Bridge Creek, and then crosses Deer Creek west of the High Bridge area and the Deer Creek Valley Rural Historic District. After the creek crossing the alignment crosses the abandoned Monon Railroad track and overpasses CR 300N, which will not have direct connection to the new SR 25. However, connection will be made in that vicinity between the new SR 25 and the existing SR 25/Main Street via construction of a local service road (LSR) intersecting the new mainline 800 feet east of Deer Creek. The alignment continues north, traversing the western edge of the Deer Creek Commerce Center property, west of The Andersons Grain Mill. It crosses over the Norfolk Southern railroad before turning to the northeast to align parallel to and south of existing SR 25 to just east of CR 600W, where it crosses existing SR 25. A new connector creates an at-grade intersection with SR 218, extending to existing SR 25. Another new connector creates an at-grade intersection with the new mainline linked to existing SR 25 0.7 mile east of CR 600W. The alignment continues in the northeasterly direction, crossing CR 500W, which will overpass and not have direct connection with the new mainline road. The alignment then curves to the east to adjoin the railroad right-of-way and cross CR 400W, which will not have direct access to the new road and will be closed at the new SR 25. This segment of the Preferred Alternative terminates just east of CR 400W.

Several changes were made to the preliminary plans for this segment of new SR 25 as a result of design considerations and the public involvement process.

- An interchange, rather than the at-grade intersection initially proposed, is planned at US 421. The modification was made in response to concerns expressed by local officials about access to Delphi via this heavily traveled US highway, which currently carries the highest traffic volumes of all Delphi area roads except existing SR 25. INDOT 2001 average daily traffic data for US 421 immediately south of existing SR 25 shows the traffic volume to be 8,880 vpd, and 4,470 vpd in the vicinity of the proposed intersection. The primary impacts anticipated with this modification are the higher cost associated with interchange construction, and the addition of approximately 8.7 acres of land to the total amount to be acquired for right-of-way.
- CR 200N will not have an at-grade intersection with the new road. Instead, it will overpass the new road and not have direct connection to it, thereby reducing the number of access points along the new roadway, in keeping with the partial access control proposed for new SR 25.
- A new connector links the new mainline with existing SR 25. The connector is an extension of the new connector linking SR 218 with new SR 25. The extension facilitates access to/from several businesses and residences along existing SR 25, which will terminate just east of CR 600W, at the new mainline.
- CR 500W will be grade-separated from new SR 25 rather than be closed at the new roadway. This change was made in response to a request from local officials (see paragraph below), including an analysis performed by the Delphi Fire Chief that identified a response time delay if CR 500W were to be closed.
- CR 400W will be closed at the new road rather than have a direct connection. This change was requested by county officials and emergency service providers who preferred that CR 500W remain open instead of CR 400W. They noted that CR 400W is a narrow gravel road only one-quarter mile in length, whereas CR 500W is a wide, paved road two miles in length. The only notable impact associated with this modification is a change in local access. Motorists who currently access existing SR 25 and locations south of that mainline via CR 400W will have to travel to CR 600N to access new SR 25 from the north, or to CR 500W to access new SR 25 and destinations south of the new mainline. Impacts related to changes in access are discussed in Chapter 4, Section 4.3.

Benefits Considered

The primary determining factor in recommending P-CA1 is its location north of the railroad at the alignment's northern terminus. This alignment provides a connection with the P-EA alternative in the next (Eastern) segment. The discussion of the Eastern Segment (page II-62) describes the benefits and constraints of a north-of-the-railroad alignment.

Purpose and Need—

- P-CA1 and P-CA2 share an alignment for all but the northernmost mile; therefore, for the majority of their distance they share the ability to satisfy the performance standards determining how well Purpose and Need are met. The primary benefit of P-CA1 over P-CA2 is that it permits connection with P-EA in the Eastern Segment, thereby enabling the continuation of an alternative alignment north of the railroad. The north-of-rail alignment better enhances the local transportation network and improves safety by eliminating more at-grade railroad crossings than the south-of-rail alignment.

Planning initiatives—

- Because they also equally accomplish the dual goals of minimizing impacts to the Deer Creek Commerce Center and providing a new entranceway to Delphi via a direct connection to Main Street, the alternatives are equally responsive to local planning initiatives where these two issues are concerned.

Constraints Addressed

Impacts to natural and cultural resources—

- Where on shared alignment, P-CA1 and P-CA2 were equal in their ability to minimize impacts to sensitive natural and cultural resources in the Central Segment, including avoiding Delphi Swamp and direct impacts (i.e., right-of-way acquisition) to the Deer Creek Valley Rural Historic District. Nonetheless, some impacts were unavoidable, including impacts associated with the crossing of Bridge Creek, Deer Creek, and Robinson Branch; impacts to one alluvial soils area and two wetland sites (Wetlands “U” and “AE,” Sites 9 and 31 on Exhibits 3 and 4); and adverse visual effects on historic resources (site H-3 and the Rural Historic District, both shown on the exhibits). Because both alternatives impact these resources equally, the impacts were not determining factors in the selection of P-CA1 over P-CA2. Impacts related to these constraints are discussed in Chapter 4, Sections 4.12 and 4.13 (wetlands and permits), and in Section 4.21 (cultural resources). Mitigation is addressed in Chapter 5.
- Where P-CA1 and P-CA2 diverge, P-CA1 impacts two wetland areas that P-CA2 avoids. The two areas (Wetlands “A” and “B,” Sites 10 and 11 on Exhibits 3 and 4) are adjacent to existing SR 25 and, thus, partially within the right-of-way of the new road. Site 10 is approximately 0.4 acre and Site 11 is approximately 0.3 acre in size. The direct impact would be approximately 0.1 acre each, and indirect impacts, such as roadside runoff, could adversely affect the remainder of both sites. The USACE has determined that neither wetland area would be regulated under Section 404 of the *Clean Water Act*; however, they would be regulated by IDEM as waters of the state. Coordination with USACE, USFWS, IDEM, and IDNR is ongoing and mitigation measures are being identified. Requisite permits would be obtained prior to construction. Wetland impacts and permits are addressed in Chapter 4, Sections 4.12 and 4.13, and mitigation is addressed in Chapter 5. The south-of-rail alignment, just opposite (south of) the wetlands, would displace one business—a family owned and operated hog farm.

Relocation/displacement impacts—

- Residential relocation/ business and institutional displacement impacts of each alternative would be similar. The acquisition of additional right-of-way will result in an estimated 9 residential relocations and 4 business displacements with P-CA1, and an estimated 8 residential relocations and 5 business displacements with P-CA2. Both would displace a social services agency. Relocation and displacement impacts are discussed in Chapter 4, Section 4.4, and mitigation is addressed in Chapter 5.

EASTERN SEGMENT**Preferred: P-EA**

Eliminated: P-EB

The alignment of P-EA is north of the railroad, taking advantage of the existing SR 25 right-of-way throughout all of its length except where it bypasses the towns of Rockfield, Burrows, and Clymers to the north. P-EB is south of and parallel to the railroad except where it bypasses those three communities to the south.

Description of Alignment

From the terminus of the P-CA1 alignment in Carroll County to CR 300S in Cass County, the preferred alignment uses the existing SR 25 right-of-way, except where the alignment curves to pass north of Rockfield, Burrows, and Clymers. From west to east, the new road crosses Carroll CR 600N, which will have, by way of a local service road connector, an at-grade intersection with the new mainline road; and North Walnut Street, which will be grade separated with the mainline; and CR 250W, which will be provided an at-grade intersection. Just east of Rockfield, the new road crosses Rock Creek. It then encounters CR 750N and CR 100W, which will not have direct access to the new road but be linked to each other via construction of a section of local service road. Continuing eastward, the alignment provides a grade-separation to carry Meridian Line Road over the new road and the railroad. Passing north of Burrows, at-grade intersections are proposed on the mainline with CR 900N and CR 100E to ensure access to the community. East of Burrows the Preferred Alternative crosses CR 150E, which will be closed to through traffic and not have access to the mainline; and CR 500S, on the Carroll-Cass County line, where a grade-separation will carry the crossroad over the new mainline road and the railroad. Next, the Preferred Alternative crosses CR 500W, which will be closed to through traffic and not have direct access to the new road. Passing north of Clymers, the alignment provides an at-grade intersection with CR 400S, and then overpasses CR 400W (Main Street) and the Winamac Southern railroad. The local road (CR 400W) will not have direct access to the mainline. The alignment then bridges a railroad spur linked to the Norfolk Southern railroad. East of Clymers the alignment provides a grade separation with CR 325W, thereby carrying the crossroad over the new mainline road and the railroad. It also provides an at-grade "T" intersection with a connector (LSR) to CR 300S. The Preferred Alternative's Eastern Segment terminates just east of that intersection.

Two changes were made to the preliminary plans in this segment as a result of the public involvement process.

- CR 600N will have an at-grade connection with new SR 25, rather than no direct access. Access to the new road from the areas north of SR 25 just west of Rockfield will be needed in light of the elimination of a direct connection at North Walnut Street (see paragraph below).
- North Walnut Street will be grade-separated with new SR 25. Preliminary plans called for an at-grade intersection; however, another at-grade intersection is proposed at CR 250W, less than a mile north of North Walnut Street. The change to a grade separation at North Walnut Street is in keeping with the partial access control proposed for the new roadway. No notable environmental impacts are associated with this change. The grade separation on North Walnut Street will maintain local access to Rockfield, while there will be convenient access between Rockfield and new SR 25 via the at-grade intersection at CR 250W.

Benefits Considered

The primary determining factors in recommending P-EA are its ability to meet the project's Purpose and Need, and its location north of the railroad on an alignment that better enhances the local transportation network and improves safety by eliminating more at-grade railroad crossings than the south-of-rail alternatives. In concert with local planning initiatives, it also uses portions of the existing roadway, thereby reducing impacts to prime farmland and the cost of maintaining those sections of existing SR 25 that will revert to local jurisdictions.

Purpose and Need—

- P-EA's ability to enhance the local transportation network better than P-EB was a factor in the recommendation of this alternative. Both P-EA and P-EB would benefit existing SR 25 by reducing traffic and improving capacity; however, P-EA incorporates most of existing SR 25, thereby carrying all traffic on a new four-lane divided roadway constructed to current standards, rather than leave the existing road, with deficiencies, in place as would P-EB.
- With regard to improving safety, while the P-EB alignment eliminated five at-grade railroad crossings on local public crossroads, and retained two others for local access, only, P-EA eliminates nine railroad crossings on local public roads. The three crossroads and new SR 25 will overpass the Norfolk Southern railroad, and the remaining five crossroads will be closed to through traffic at the new road.

Planning initiatives—

- Logansport and Cass County officials and planning/economic development groups supported the P-EA alignment for reasons of improved safety, fewer farmland impacts, and economic viability. Support expressed throughout the project includes correspondence provided in Appendix A. In a letter submitted during the public comment period (see Appendix A2), the Cass County Commissioners cited as important features of the north-of-rail alignment the elimination of several at-grade railroad crossings and use of the existing SR 25 roadway, thus eliminating county maintenance costs.
- Logansport area land use plans call for commercial/industrial development south of the railroad in the project area. The construction of a new roadway parallel to and south of the existing Norfolk Southern track would result in either 1) an at-grade railroad crossing on new SR 25 at such time as a rail spur would be constructed to serve the proposed commercial/industrial development, or 2) eventual reconstruction of the new SR 25 to bridge the rail spur.
- The P-EA eliminates nine at-grade railroad crossings on public roads as opposed to five with P-EB. Four of the at-grade railroad crossings would be replaced with overpass structures.
- The P-EA alignment eliminates much of existing SR 25, thus reducing maintenance costs for jurisdictions that will assume the responsibility for the remainder of the existing roadway. Use of existing right-of-way also potentially reduces land acquisition costs and reduces impacts to property owners along the route. With the P-EA alignment, 9 miles of existing SR 25 in Carroll County and 3 miles in Cass County would be relinquished to the counties for maintenance; whereas, with the P-EB alignment, 16 miles and 6 miles, respectively, would become the responsibility of the counties.

- Minimizing farmland impacts has been an important issue to local government officials, planning agencies and the general public throughout the course of the project. The P-EA alignment has fewer impacts to farmland than P-EB because it requires the acquisition of less agricultural acreage—approximately 283 acres versus 345 acre, respectively. With P-EB, more of the acreage acquired has been identified by the USDA as prime farmland—approximately 300 acres with P-EB versus 243 acres with P-EA (see Appendix A1, USDA Form 1006).

Constraints Addressed

Impacts to natural and cultural resources—

- P-EA impacts two wetland areas, while P-EB impacts none. The two impacted areas (Wetlands “D” and “E,” Sites 19 and 27 on Exhibits 3 and 4) are adjacent to existing SR 25. Site 19, approximately 0.1 acre in size, is entirely within the right-of-way of the new road and would be eliminated by construction. Site 27, approximately 2.1 acres, is partially (approximately 0.8 acre) within the right-of-way. The direct impact to this site would be approximately 0.8 acre lost to construction, and indirect impacts, such as roadside runoff, could adversely affect the remainder of the site. The USACE has determined that neither wetland area would be regulated under Section 404 of the *Clean Water Act*, however, they would be regulated by IDEM as waters of the state. Coordination with the USACE, USFWS, IDEM, and IDNR is ongoing and mitigation measures are being identified. Requisite permits will be obtained prior to construction. Wetland impacts and permits are addressed in Chapter 4, Sections 4.12 and 4.13, and mitigation is addressed in Chapter 5.
- The preferred alignment would have an adverse visual effect on one historic resource determined to be eligible for NRHP listing (H-6 on Exhibits 3 and 4). The contributing elements that collectively form the historic site include a house and seven outbuildings. Impacts and related mitigation measures are discussed in Chapter 4, Section 4.21, and in Chapter 5. The P-EB alignment was determined to have an adverse visual impact on two sites: an NRHP-listed schoolhouse, and a house deemed eligible for listing (H-4 and H-5 on the exhibits). Avoidance of these sites prohibited locating the P-EB alignment adjacent to the railroad in this area, resulting in somewhat greater impact to farmland as a result of severances.

Relocation/displacement impacts—

- The acquisition of additional right-of-way for the P-EA alignment will result in an estimated 5 residential relocations and 1 business displacement. With P-EB, it is estimated there would be 1 residential relocation and 1 business displacement. Relocation and displacement impacts and are discussed in Chapter 4, Section 4.4, and mitigation is addressed in Chapter 5. Despite the greater number of estimated residential relocations, the P-EA alignment’s benefits outweigh this constraint.

**LOGANSPORT
SEGMENT****Preferred: Y-LA**

Eliminated: Y-LB

As with the alternatives discussed in the Central Segment, the Logansport Segment alternatives share a common alignment for all but their western termini, where Y-LA continues from P-EA north of the railroad, and Y-LB continues from P-EB south of the railroad.

Description of Alignment

Just east of its connection with P-EA, Y-LA heads north and forms an at-grade “T” intersection with a new connector to existing SR 25. Y-LA then turns southward to overpass the Norfolk Southern railroad and existing SR 25. It then crosses CR 175W, which will be closed at and have no direct access to the new SR 25. The alignment then heads eastward and crosses CR 115W, which will be closed at and have no direct access to the new SR 25. The alignment continues eastward parallel to CR 250S, and provides an interchange that will serve both SR 29 and Burlington Avenue. The alignment then heads northeast overpassing Old Kokomo Pike, with no direct connection to that crossroad. The mainline forms an at-grade “T” intersection with a new connector to existing US 24/US 35. The Preferred Alternative terminates at its connection with US 24/US 35 east of Old Kokomo Pike.

The following changes were made to the preliminary plans in this segment as a result of the public involvement process:

- During the DEIS public comment period, local government officials, community leaders, emergency service providers, and the public requested an interchange, rather than an at-grade intersection, at Burlington Avenue. Reasons cited by those requesting the interchange were safety, traffic handling, and the desire for a “gateway” access to Logansport. INDOT and FHWA agreed to provide an interchange that will provide access to both SR 29 and Burlington Avenue. The selected interchange configuration will improve connectivity with the area’s roadway network by providing access to SR 29, a state highway that ties into US 24/US 35 northwest of the project area, and Burlington Avenue, which is to become the “gateway” entrance into Logansport. The primary impacts of this change will be as follows:
 - An estimated 5 additional residential relocations
 - The higher cost of constructing an interchange rather than an at-grade intersection
 - The acquisition of 14.3 additional acres of land for right-of-way
- Direct access to new SR 25 from CR 115W was a feature of the four build alternatives presented in the DEIS. However, owing to the proximity of CR 115W to SR 29 and the proposed interchange, direct access from CR 115W to new SR 25 is not a feature of **Preferred Alternative 2**.

It is likely that the interchange would have been included as a feature of any build alternative selected as the Preferred Alternative. Environmental impacts associated with the interchange are discussed in Chapter 4, Sections 4.1–4.4, and measures to mitigate impacts are addressed in Chapter 5.

Benefits Considered

The primary determining factor in recommending Y-LA is its location north of the railroad, providing a connection with the P-EA alternative in the previous (Eastern) segment. The discussion of the Eastern Segment, above, describes the benefits and constraints of a north-of-the-railroad alignment.

Purpose and Need, and planning initiatives—

- Y-LA and Y-LB share an alignment for all but the southernmost mile. By connecting with P-EA in the Eastern Segment, thereby continuing the north-of-rail alignment, Y-LA. The overall benefits of the north-of-rail alignment—from Delphi to Logansport—include an enhanced local transportation network and improved safety by eliminating more at-grade railroad crossings than the south-of-rail alignment, and maximizing the use of the existing SR 25 right-of-way.
- The Y-LA alignment is included in the February 11, 2002, adopted amendment to the *Comprehensive Plan*, the *City of Logansport Thoroughfare Plan*, and local officials and planning/development agencies have long advocated the north-of-rail alignment between Delphi and Logansport, as noted in the discussion of the Eastern Segment, Y-LA is more responsive to local planning initiatives than Y-LB because, in tandem with P-EA, it will not adversely impact the city's south-of-the-railroad development areas, and will result in fewer impacts to prime farmland: approximately 54 acres of prime farmland required for right-of-way with Y-LA versus approximately 85 acres with Y-LB. After the recommendation of the Preferred Alternative, a split-diamond interchange with SR 29-Burlington Avenue was included as a design feature of Preferred Alternative 2. It is estimated that an additional 4.6 acres of prime farmland will be required for right-of-way with construction of the interchange, bringing the total impact in this segment to 58.6 acres—still fewer than with Y-LB.

Constraints Addressed

Impacts to cultural resources—

- The Preferred Alternative would have an adverse visual effect on one farm property determined to be eligible for NRHP listing (H-7 on Exhibits 3 and 4). The contributing elements that collectively form the historic site include a house and several outbuildings. Impacts and mitigation measures related to these constraints are discussed in Chapter 4, Section 4.21, and in Chapter 5. Y-LB would not adversely impact any historic resources; however, the Y-LA alignment's benefits outweigh this constraint.

Relocation/displacement impacts—

- With the at-grade intersection initially proposed at Burlington Avenue, the Y-LA would have resulted in an estimated 7 residential relocations. The interchange with SR 29-Burlington Avenue will result in an estimated 5 additional residential relocations, for a total of 12 relocations with the Preferred Alternative in the Logansport Segment. An estimated 6 residential relocations and 2 business displacements (a hog farm and trucking business operating at the same location) were associated with the Y-LB component of Alternatives 3 and 4, which did not feature an interchange. Relocation and displacement impacts are discussed in Chapter 4, Section 4.4, and mitigation is addressed in Chapter 5.

SUMMARY OF REASONS FOR ELIMINATING ALTERNATIVES 1, 3, AND 4

Alternative 1, comprising O-WA + P-CA1 + P-EA + Y-LA, was not recommended as the Preferred Alternative because its western section, O-WA, was eliminated. The alternative, O-WA1, better satisfies the performance measures related to Purpose and Need, is more responsive to local and regional planning initiatives, and has fewer residential relocations. The next-to-rail alignment and ability to eliminate several at-grade railroad crossings on local public crossroads were desirable features possessed by O-WA1.

Alternative 3, comprising O-WA + P-CA2 + P-EB + Y-LB, was not recommended as the Preferred Alternative because all segments were eliminated for reasons that included being less able to satisfy performance measures relating to Purpose and Need, particularly the safety aspects involved in elimination of at-grade railroad crossings on local public crossroads; and being less responsive to the local planning initiatives of Lafayette, Delphi, and Logansport.

Alternative 4, comprising O-WA1 + P-CA2 + P-EB + Y-LB, was not recommended as the Preferred Alternative because P-CA2, P-EB, and Y-LB were eliminated for reasons that included being less able to satisfy Purpose and Need performance measures, particularly the safety aspects involved in elimination of at-grade railroad crossings on local public crossroads; and being less responsive to local planning initiatives.

2.4.3 Preferred Alternative 2: Traffic Volumes and Levels of Service

By the design year 2030, traffic volumes on the new road are projected to range from 4,600–22,500 vpd with **Preferred Alternative 2**. Level of service (LOS) A is projected in all areas except between I-65 and SR 225 in Tippecanoe County, where the highest traffic volumes (22,500–18,100 vpd) and LOS B are projected (see Table 2.8, pages II-37–II-38). Where residual traffic will occur on the existing roadway, traffic volumes would range from 2,400–6,500 vpd and the LOS would range from A to C, depending on the location. As shown on Table 2.8, the only difference in traffic volumes and level of service among the build alternatives involves existing SR 25 approximately between Delphi and Logansport. Through that area, much of the existing roadway (and its residual traffic) would be eliminated with the north-of-the-railroad alignment of Alternative 1 and **Preferred Alternative 2**, while all of the existing roadway would be open to traffic with the south-of-the-railroad alignment of Alternatives 3 and 4.

2.4.4 Preferred Alternative 2: Typical Cross Sections

The new SR 25 mainline typical section would have an approximately 300-foot-wide right-of-way (the precise dimension will vary, depending on alignment and terrain features) within which would be two 3.6-meter-wide (12-foot) lanes in each direction separated by a 24-meter-wide (80-foot) depressed median that would include 1.2-meter-wide (4-foot) inside shoulders (paved and usable); a minimum 9-meter-wide (30-foot) outside clear zone containing 3.3-meter-wide (11-foot) usable shoulders, 3.0 meters (10 feet) of which would be paved. The typical section for state routes and high-volume county maintained connecting roads would include two 3.6-meter-wide (12-foot) lanes with 2.4 -meter-wide (8-foot) usable outside shoulders, 1.8 meters (6 feet) of which would be paved. Low volume county roads would have two 3.3-meter-wide (11-foot) lanes with 1.8-meter-wide (6-foot) outside usable shoulders of which 1.2 meters (4 feet) would be paved. Typical sections are depicted on Figure 6, pages II-69–II-70.

2.4.5 Preferred Alternative 2: Cost Estimates

The estimated construction costs for were developed in concert with the evaluation of Alternatives 1 through 4. An explanation of the estimating process is provided in Section 2.3.1 and a comparison of the costs of the four build alternatives is provided on Table 2.6, page II-32, in that section. Table 2.9, which shows only the estimates for the Preferred Alternative, is included here for ease of reference.

The most notable difference in cost between the Preferred Alternative and the three other build alternatives is the cost of bridge construction, which ranges from \$22.6 million to \$29.9 million higher with **Preferred Alternative 2** than the cost of bridges with the other alternatives. The cost of bridges for **Preferred Alternative 2** includes an estimated \$16 million for the construction of the interchanges at US 421 and SR 29-Burlington Avenue. Because it is considered probable that the interchanges would be included regardless which alternative was recommended as the Preferred Alternative, a more accurate reflection of the cost differences requires the \$16 million either be included in or excluded from the costs of all four alternatives. In either case, the cost differences range from approximately \$5.7 million (Alternative 1) to \$11.9 million (Alternative 3). The reason for the higher cost of the Preferred Alternative is that it will require the construction of 29 bridges, 11 of which will carry the mainline or crossroads over railroad track. The remaining structures will bridge crossroads or streams. The number of bridges proposed with the other alternatives ranges from 19 (Alternative 1) to 22 (Alternative 3). Although **Preferred Alternative 2** bears the greatest cost of the four build alternatives, its ability to eliminate railroad crossings was considered a substantial benefit that was an important factor in its recommendation as the Preferred Alternative.

TABLE 2.9—Estimated Costs by Type of Work: Preferred Alternative 2

Type of Work	Cost (in millions)
Earthwork	\$37.9
Mainline Pavement	\$54.0
Bridges + US 421 and SR-29 Burlington Avenue interchange structures	\$58.0 + \$16.0*
Box Culverts	\$ 2.8
Approaches	\$13.6
Signing	\$ 2.8
Mobilization and Demobilization	\$ 8.5
Construction Sub- Total	\$177.6
Contingencies/Miscellaneous (15%)	\$26.6
Construction Total	\$204.2
Land Acquisition (ROW / Damage / Relocation)	\$10.2
Design Engineering	\$10.3
Total	\$224.7 + \$16.0* = \$240.7

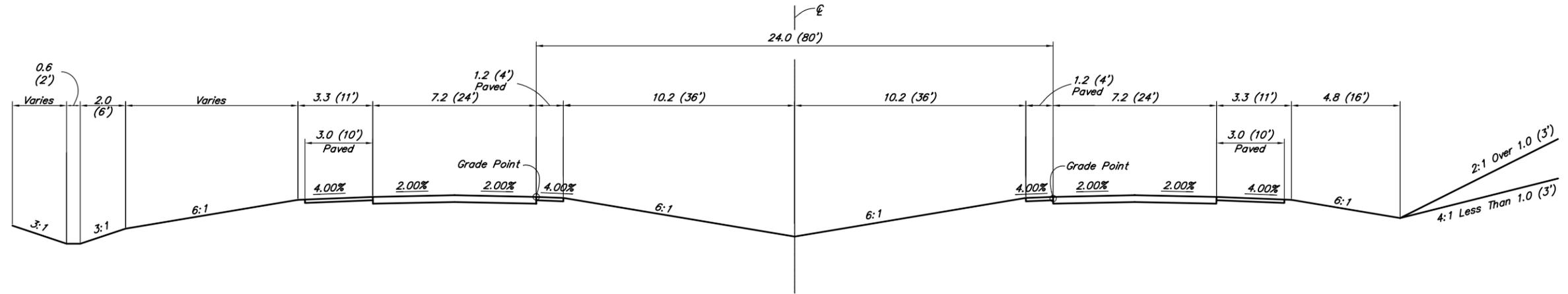
* The estimated additional cost associate with construction of interchanges rather than at-grade intersections at US 421 and SR 29-Burlington Avenue. It is probable that the interchanges would be included with any alternative selected as the Preferred Alternative.

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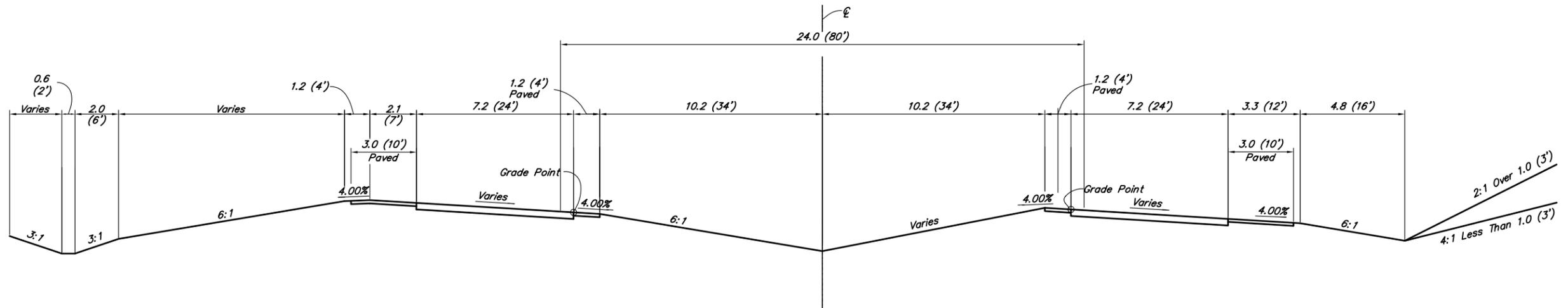
PREPARED BY :
 QK4
 CONSULTING ENGINEERS

DATE _____

TYPICAL CROSS SECTIONS



NORMAL CROSS SECTION



SUPERELEVATED CROSS SECTION

STATE ROAD 25

Figure 6
TYPICAL CROSS SECTION
 Sheet 1 of 2

UPDATE DATE

LETTING DATE

PREPARED BY :
QK4
CONSULTING ENGINEERS

DATE

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REVISION

10-04-96

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TYPICAL CROSS SECTIONS

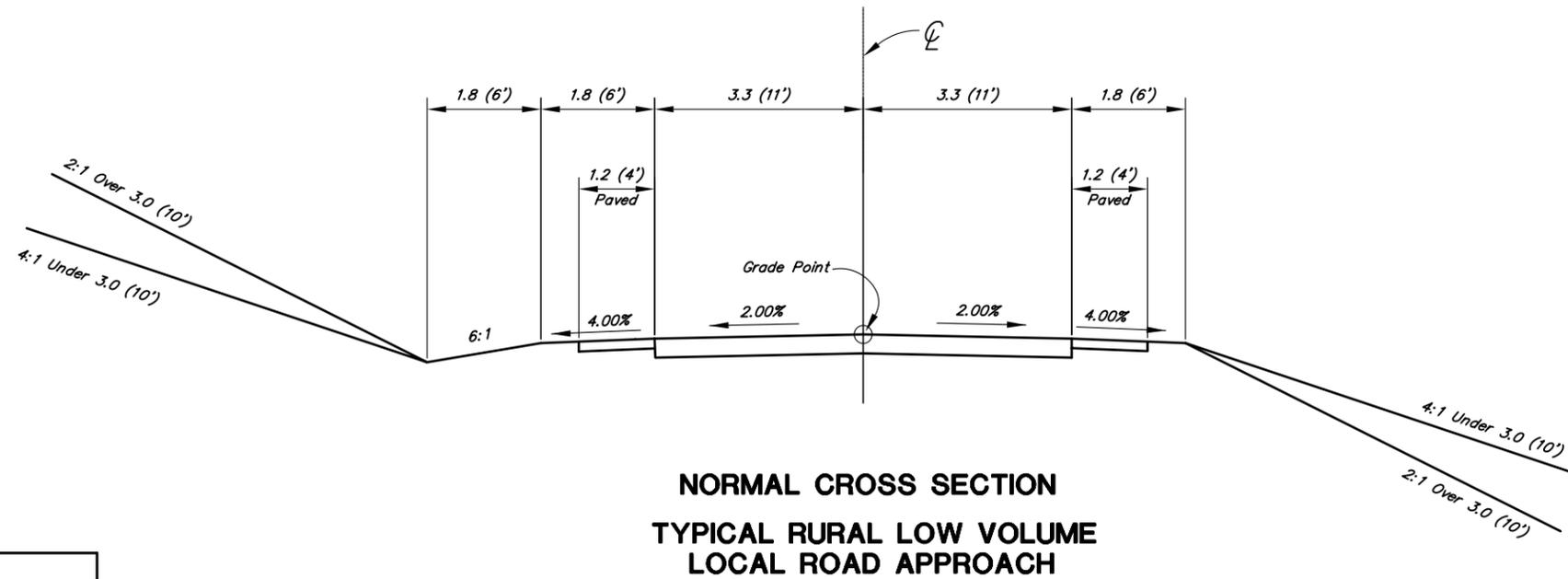
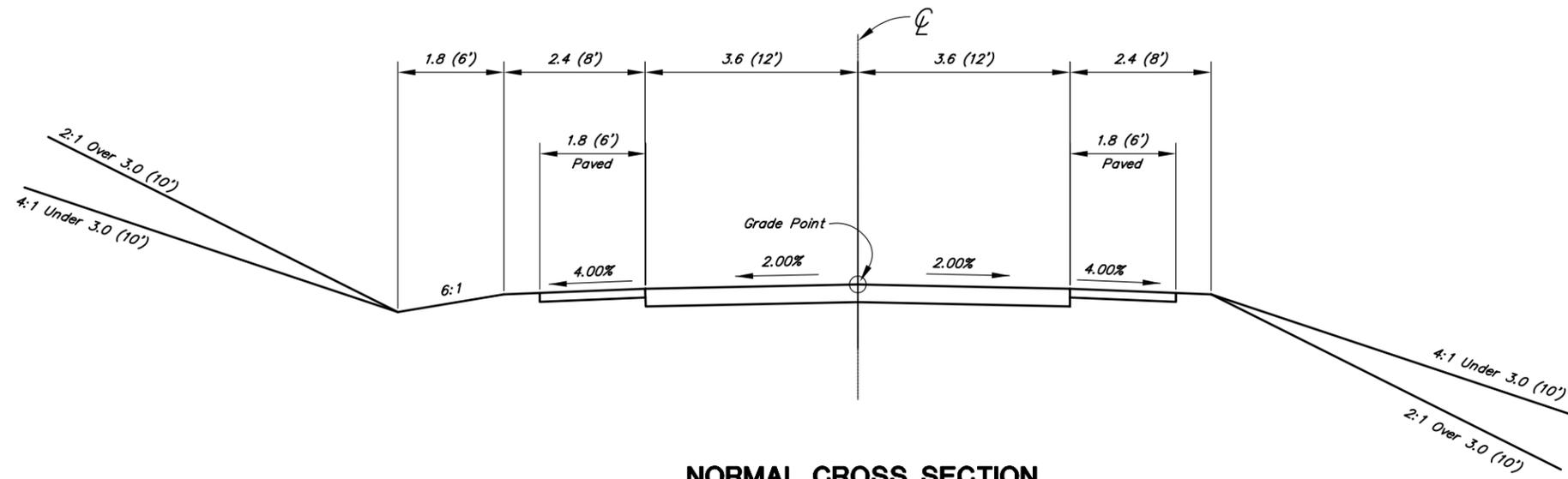


Figure 6
TYPICAL CROSS SECTION
Sheet 2 of 2

CHAPTER 3—AFFECTED ENVIRONMENT

3.1 NATURAL ENVIRONMENT

The environmental consequences of the project were as fundamental a concern in the planning process as function, safety, economy, etc. Identification of these consequences requires knowledge of the existing environment—natural, human social, and economic—and an awareness of local jurisdictions’ short- and long-term plans for land use within the study area. The following sections describe the natural, human social and economic environments—both current and, where applicable, projected—that would be affected by the build alternative alignments associated with this project.

Since the issuance of the DEIS in August 2002, a preferred alignment—**Alternative 2**—has been recommended from among the alternatives advanced in the DEIS. To maintain a frame of reference and provide a basis for evaluating the impacts of the Preferred Alternative, the discussions relevant to the No-Build Alternative and all four build alternatives advanced in the DEIS are retained in this section of the FEIS. Where necessary, this section has been updated or expanded since the issuance of the DEIS to include new or revised data, including that derived from public and agency input, that played a role in affecting the decision to recommend **Alternative 2** as the Preferred Alternative.

3.1.1 Topography/Geology/Soils

The project area is within the Upper Wabash River Basin in the Tipton Till Plain physiographic unit. The surface topography of this geologic unit is generally characterized as nearly level to gently rolling with subsurface, unconsolidated deposits of glacial drift ranging from 50–250 feet thick. The area is broadly characterized as poorly drained and “featureless,” with relatively isolated, deeply entrenched drainage patterns. Surface relief across the plain is generally less than 10 feet per 1,000 feet. The surface elevation between Lafayette and Delphi roughly averages 650 feet above mean sea level (msl). Runoff from glacial meltwaters carved deep valleys in the drainage features that serve as tributaries to the Wabash River in this section. The erosion of the till plain through these drainageways gives the area its characteristic undulation. The land surface elevation rises between Delphi and Logansport to an approximate elevation of 750 feet msl. The topography across this area is nearly level and is generally featureless.

The principal soil associations within the project area vary from county to county, as follows:

Tippecanoe County—Genessee Loam, Ockley Loam/Silt Loam, Fox Loam, Russell Silt Loam, Miami Silt Loam, and Crosby Silt Loam. All but Crosby (imperfectly drained) are well drained on slopes having grades ranging from 0–25 percent.

Carroll County—Cyclone–Fincastle–Starks, Camden–Kendall–Patton, Rockfield–Fincastle–Starks, Cyclone–Kendall–Fincastle, Ockley–Fox–Mudlavia, Moundhaven–Landes–Ockley, and Hennepin–Casco. All are deep, and most are nearly level and gently sloping. They range from poorly drained to well drained.

Cass County—Cyclone–Fincastle, and Russell–Miami. Both are deep and formed in loess and glacial till. The former are nearly level to gently sloping, and poorly to somewhat poorly drained; while the latter are gently to strongly sloping and well drained.

3.1.2 Hydrology

The major drainage feature in the project area is the Wabash River. Associated tributaries to the Wabash River within the study area are Sugar, Buck, Bridge, Deer, and Rock Creeks. Other low-order streams and intermittent drainageways break the landscape around these features. This section of the Wabash River and associated tributaries drains an estimated total 6,981 square miles of Indiana. Other important drainage features in the general vicinity of the project area are Wildcat Creek and the Tippecanoe River, neither of which is crossed by any build alternative.

3.1.3 Wetlands

The area within the potential right-of-way for the build alternatives was surveyed to determine the locations and quality of jurisdictional wetlands. Thirty wetland areas were delineated within the project corridor. Wetlands were identified using USACE's *Wetland Delineation Manual (1987)* and guidance documents and regulations. Jurisdictional determinations for other "water of the United States" were made based on definitions and guidance found in 33 Code of Federal Regulations 328.3, Corps Regulatory Guidance Letters, and the *Wetland Delineation Manual*. USACE administers Section 404 of the *Clean Water Act*, which regulates the discharge of fill or dredged material into all "waters of the United States," and is the regulatory authority that must make the final determination as to the jurisdictional status of the project area. In addition, IDEM maintains jurisdiction over "waters of the state."

Wetlands are a category of "waters of the United States" for which a specific identification methodology was developed. As described in detail in the *Wetland Delineation Manual (1987)*, wetland boundaries are delineated using three criteria: hydrophytic vegetation, hydric soils, and wetland hydrology. The wetland system in the project area is identified as Palustrine, and the classes are Emergent, Scrub-Shrub, and/or Forested Wetlands.

Palustrine System—As it pertains to the project area, it includes all nontidal wetlands dominated by trees, shrubs, and persistent emergents. The system groups the vegetated wetlands traditionally called by such names as marsh, swamp, bog, fen, and prairie, and includes ponds.

Emergent Wetland—This class is characterized by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. Perennial plants usually dominate these wetlands.

Scrub-Shrub Wetland—This class includes areas dominated by woody vegetation less than 6 meters (20 feet) in height. They are one of the most widespread classes in the U.S. Forests composed of young trees less than 6 meters tall are included in this class.

Forested Wetland—This class is characterized by woody vegetation that is 6 meters or more in height. They are most common in the eastern United States. They normally possess an overstory of trees, an understory of young trees/shrubs, and a herbaceous layer.

Two notable sites in the project area are the Americus Fen, northeast and southwest of Americus; and the Delphi Swamp, northeast of Delphi. Both are Emergent Wetlands that receive their water supply from "seeps" issuing from forested hill slopes. The sites are depicted on Exhibit 4, pages II-49–II-55. Following the identification of these sensitive areas, all relevant alternative alignments were either eliminated or shifted to avoid impacts to these areas.

3.1.4 Biotic Communities

Some work has been done to classify general areas of Indiana into natural regions (Homoya, et al., 1985). A natural region is a “generalized unit of the landscape where a distinctive assemblage of natural features is present.” The project area lies within the Central Till Plain Natural Region and is further classified into two sections—the Tipton Till Plain Section and the Entrenched Valley Section.

The upland within the study area exists in the Tipton Till Plain Section, characterized as an undissected plain formerly covered by extensive beech-maple-oak forests. Forested areas were extensive but are now typically confined to isolated woodlots. Other types of communities, which may be found, include bog, prairie, marsh, seep, spring, and pond. Fens may also be present. Besides more common tree species, relict stands of Canada yew, eastern hemlock, and white pine might be found on hill slopes. These residual northern species most likely flourished in cooler post-glacial climates and retreated to isolated, cooler hillslopes. Species of ferns and mosses are typically found beneath more showy herbaceous plants. The Wabash River and portions of the lowest ancillary tributaries to the river are within the Entrenched Valley Section, identified by deeply entrenched drainage features with bedrock exposed in many places. A variety of natural communities are typically found in this section including prairie, gravel-hill prairie, fen marsh savanna, cliff, seep spring and pond. The circumneutral seep spring is described as possibly more common in this section than other areas of the state. These types of communities support a wide variety of plant and animal species.

Forests within the study area are mostly isolated woodlots that consist of relatively recent growth (post-European settlement) with few remnant forest types. Beech-maple-oak forest complexes historically covered much of the area. Many of the pre-existing mammals—such as the elk, red wolf, timber wolf, black bear, mountain lion, and bison—were extirpated from the area during settlement and clearing of the forests for agricultural purposes. The current complex of forest-meadow-stream-farmland provides habitat for the remaining mammals, reptiles and amphibians, and birds. Mammals include white-tailed deer, coyotes, red and gray foxes, long-tailed weasels, opossum, bat species, badgers, beavers, muskrats, woodchucks, eastern cottontails, squirrels, ground squirrels, eastern chipmunks, stripe skunks, moles, shrews, Norway rats, white-footed mice, house mice, meadow and woodland voles, etc. Reptiles and amphibians that can be found in the habitat may include frogs, salamanders, skinks, turtles, snakes, etc. Avian species typically represented in the area may include herons, geese, turkeys, ducks, vultures, hawks (and other raptors), cardinals, orioles, finches, buntings, towhees, tanagers, bluebirds, chickadees, kingfishers, flickers, sandpipers, woodcocks, coves, owls, swifts, hummingbirds, woodpeckers, flycatchers, martins, swallows, nuthatches, wrens, thrushes, kinglets, waxwings, vireos, warblers, water thrushes, grosbeaks, sparrows, blackbirds, meadowlarks, finches, etc.

In all, eleven forested areas were inspected in the study area, and assessed in terms of a relative value from an ecological perspective of plant diversity and habitat potential. Some key elements of this assessment included native, mixed hardwood stands (mature and immature); the presence of native herbaceous plants; diversity of herbaceous and shrub communities; evidence of wildlife use; and the presence of endangered, threatened or rare species. The results of the assessment are as follows:

Lafayette to Delphi (4 forested areas inspected)—All of the forested areas appeared to have been disturbed through previous farming practices. The presence of certain tree species, lack of diverse herbaceous understory, frequent usage by motorized recreational vehicles, etc., resulted in a low to medium quality rating.

Delphi area (2 forested areas inspected)—One forested area was of medium to high value based on species diversity and tree species/size. The other was identified as a high quality, bottomland, mixed hardwood forest along Deer Creek. Natural springs in this area coupled with the topographic relief resulted in the formation of Bassard Falls (waterfall) in the area.

Delphi to Logansport (5 forested areas inspected)—Four of these areas were assigned a medium quality rating, as they appeared to have been impacted in the recent past. Species diversity was moderate and the forest was either fragmented with few mature trees or lacking a diversity of mature trees entirely. One area contained numerous mature beech and oak trees, and a rich and diverse herbaceous understory. This area was identified as a high quality area.

A field inventory of the plant materials in the potential right-of-way of the various alternative alignments was conducted. Typical tree species found throughout the study area include ash, basswood, blue beech, American beech, Ohio buckeye, wild black cherry, eastern cottonwood, American elm, box elder, hackberry, hawthorn, hickories, ironwood, sycamore, black walnut, willows, tulip-poplar, Kentucky coffee, locusts, mulberry, maples, oaks, osage, dogwood, sweet gum, pawpaw, redbud, etc. Shrubs may include, bladdernut, blackhaw, buttonbush, dogwoods, currants, honeysuckle, hoptree, hydrangea, spicebush, sumac, viburnum, etc. Common herbaceous plants found in both uplands and wetland areas may include asters, bedstraw, barnyard grass, black snakeroot, bittersweet nightshade, bloodroot, blue flag, bladderworts, cattail, clear weed, cinnamon fern, daisy fleabane, common goat's beard, Dame's rocket, dogbane, hard stemmed bulrush, honewort, horse nettle, horsetail, maidenhair fern, marsh marigold, multiflora rose, orchard grass fire pink, poison hemlock, poison ivy, pokeweed, Queen Anne's lace, reed canary grass, rough avens, sawtooth sunflower, swamp milkweed, skunk cabbage, Virginia wild-rye, wild ginger, etc.

The Indiana Natural Heritage Data Center was queried to learn whether there was documented evidence of endangered, threatened, or rare (ETR) plant or animal species or high quality communities (HQC) within the broad corridor that contains all of the build alternative alignments. This data center, part of a worldwide system of Heritage Programs, provides information about Indiana's diverse biotic communities, landscape features, and outdoor amenities to assure adequate methods for evaluating this information and setting sound land protection priorities. The database contains 1,827 documented occurrences of 121 federal listed species, 7,621 documented occurrences of 568 state listed species, and 1,189 documented occurrences of 59 high quality natural communities. The database also has records for over 700 significant natural areas in the state.⁶

The query revealed the presence of several ETR species of mammal, bird, fish, mollusk, reptile, plant, and HQC within the broad corridor that contains all of the build alternative alignments. Field reconnaissance was conducted during the summers of 2000 and 2001, and early coordination was initiated with USFWS. Federally protected and state listed species found in or potentially located in the study area are as follows:

⁶ Source: www.state.in.us/dnr/naturepr/center.htm

Federally Protected Species

Through early coordination with USFWS, the federally endangered Indiana bat was identified as potentially present in the study area. Mist netting was conducted for the Indiana bat on four primary creeks (or suitable tributaries) during two separate netting campaigns. Six different species of bats were captured, including the Indiana bat, which was captured only on Sugar Creek. The results of the bat survey are presented in the report, "Survey of Bats and Search for Endangered Bat Species, Particularly the Indiana Bat (*Myotis sodalis*) Along Selected Proposed State Route 25 Routes." The results of coordination with USFWS are presented in Chapter 4, Section 4.15.

Coordination with USFWS and IDNR also identified several other federally protected species potentially in the study area, including the federally threatened bald eagle and federally endangered clubshell mussel and fanshell mussel. No sightings were recorded for the bald eagle and no nesting sites were observed during field investigations. The mussel species are primarily associated with the Tippecanoe and Wabash Rivers. Field investigations included electrofishing and mussel surveys conducted during July and August 2001, and a "2001 Fish/Mussel Evaluation Report" was prepared documenting the results of the investigations. Eleven fish and freshwater mussel sampling locations were selected on six streams; Buck Creek, Sugar Creek, Bridge Creek, Bridge Creek (tributary of Deer Creek), Deer Creek, and Rock Creek. The surveys were conducted at locations where the build alternative alignments crossed these waterways. A total of 36 species of fish (representing eight families) were identified, but none were state or federally protected species. A total of 11 species of mussels were identified, with live specimens collected from Rock Creek and historic evidence used to identify the remaining species. No live federally endangered mussel species were observed during the field investigation.

USFWS has proposed the eastern Massasauga rattlesnake as a candidate for listing as a federally protected species (see USFWS letter of October 2, 2001, Appendix A1). This species has been documented in the Delphi Swamp.

Other than the Indiana bat, no federally protected species of animal or plant was observed in the study area during field reviews. While USFWS recognizes the potential for the other state and/or federally protected species to be present in the project area, specific field investigations through the project corridor did not yield evidence that these species are present.

Natural Areas and State-Protected Species

IDNR has advised that the following state-protected species have been documented in the Americus Fen area: the spotted turtle (endangered), yellow sedge (threatened), and hairy-fruited sedge (watch-list). The eastern Massasauga rattlesnake (federal candidate, state-endangered), Kirtland's snake (endangered), spotted turtle (endangered), and small yellow lady's-slipper (rare) have been documented in the Delphi Swamp. IDNR notes that both Americus Fen and Delphi Swamp are "significant" natural areas, and USFWS has referenced the Delphi Swamp/Robinson Branch plant community as being "specialized" and noted "species richness is high in some areas." There was fossil evidence in Deer Creek of the wavy-rayed lampmussel, a State Special Concern listed species. No other state-protected species of fish/mollusk was identified, and no recent evidence or live samples of the wavy-rayed lampmussel were noted.

3.1.5 Visual

The visual character of the project corridor is, for the most part, pastoral, in keeping with the predominantly agricultural land use. Level to rolling fields of crops, pasture and intermittent woodlands, interspersed with rural residences and farm structures, predominate the viewshed throughout most of the corridor. Notable exceptions occur where the corridor encounters land uses associated with urban areas such as Lafayette, Delphi, and Logansport; and in the natural areas along creeks, particularly Deer Creek, where bluffs and woodlands contribute topographic and scenic elements that are unique in the corridor. The Norfolk Southern railroad and, occasionally, those of other rail lines are encountered—in both the rural and urban settings—within the project corridor throughout its length.

3.2 SOCIAL ENVIRONMENT

This section summarizes the social characteristics and conditions of the project corridor, which extends for approximately 33 miles through three Indiana counties—Tippecanoe, Carroll, and Cass. Communities within the corridor (see Figure 3, page I-7) include, from south to north: Lafayette, Americus and Buck Creek in Tippecanoe County; Colburn, Delphi, Rockfield, and Burrows in Carroll County; and Clymers and Logansport in Cass County. The following U.S. Census Tracts have a substantial portion of their areas within the immediate study corridor: Tippecanoe County tracts 101, 108 and 109, Carroll County tracts 593 and 597, and Cass County tracts 514 and 518. Available Census 2000 data is referenced herein. Otherwise, the 1990 Census and subsequent estimates are the primary sources of this information.

3.2.1 Population Trends

A comparative analysis of U.S. Census Bureau's census data from the years 1980, 1990, and 2000 shows that, while declines in population were recorded between 1980 and 1990—namely in Carroll and Cass counties and the communities of Delphi and Logansport—gains were recorded for all jurisdictions by 2000 (see Table 3.1, page III-7). Tippecanoe County and the city of Lafayette recorded gains in 1990 and again in 2000, Lafayette having gone from a 1.7 percent increase between 1980 and 1990 to a 28.9 percent increase from 1990 to 2000—almost triple that of the state as a whole during that period. In population, Tippecanoe County ranks 8th among Indiana's 92 counties, Cass County ranks 35th (down from 33rd in 1990), and Carroll County ranks 73rd.

Population growth is influenced by natural increase (births minus deaths) and migration (persons moving into and out of an area). According to the U.S. Census Bureau, between 1990 and 1999 the natural population increase rate was highest in Tippecanoe County with 6.3 percent, followed by Carroll County's 3.7 percent and Cass County's 2.8 percent. During that same period, Carroll County experienced the highest net domestic migration rate, which accounted for a population gain of 3.1 percent due to in-migration, while Cass County recorded a -1.4 percent, which represented a loss due to out-migration. The highest net international migration rate for the period was Tippecanoe County's 1.1 percent, followed by Cass County's 0.4 percent and Carroll County's 0.1 percent.

The 1990s saw the arrival of large and small manufacturing companies as well as numerous support businesses in the area. The gains in population that followed decades of decline are in part attributable to the growth of job opportunities that attracted workers from outside the area

and retained area residents who might otherwise have moved away. Section 3.2, “Economic Environment,” presents information regarding economic conditions in the project area.

Table 3.1 summarizes historical population counts and population projections for 2010, 2020, and 2030 for the cities and counties in the area and for the state as a whole. In all cases, the highest percent increase in population was experienced between 1990 and 2000. Although the percentages of gain would not be as great over the next three decades, continued growth is projected for all jurisdictions, with Lafayette, Delphi, and Logansport showing notable growth that is well above that projected for their respective counties and the state. Between 2020 and 2030, population growth in all but Cass County is projected to outpace that of the state.

TABLE 3.1—Study Area Population Trends

Place	1980	1990	% Change '80-'90	2000	% Change '90-'00	Projected					
						2010	% Change '00-'10	2020	% Change '10-'20	2030	% Change '20-'30
Indiana	5,490,224	5,544,159	9.8	6,080,485	9.7	6,504,594	7.0	6,982,047	7.3	7,459,500	6.8
Tippecanoe Co.	121,702	130,598	7.3	148,955	14.1	160,531	7.8	175,796	9.5	191,060	8.7
Lafayette	43,011	43,764	1.7	56,397	28.9	69,030	22.4	81,663	18.3	94,296	15.5
Carroll Co.	19,722	18,809	- 4.6	20,165	7.2	21,462	6.4	22,731	5.9	24,000	6.9
Delphi	3,042	2,531	- 16.8	3,015	19.1	3,499	16.1	3,983	13.8	4,467	12.2
Cass Co.	40,936	38,413	- 6.2	40,930	6.6	41,045	0.3	42,531	3.6	44,017	3.5
Logansport	17,731	16,812	- 5.2	19,684	17.1	22,556	14.6	25,428	12.7	28,300	11.3

Sources: U.S. Census Bureau, 1980, 1990 and 2000 Censuses. Years 2010 through 2030 projections by Presnell Associates of Indiana, Inc., based on a straight-line projection using historical census data, including Census Bureau estimates for the years 1991 through 1999 for the three counties.

NOTE: The minus symbol (-) indicates a loss in population.

3.2.2 Socioeconomic/Community Characteristics

The following text and tables present, for comparison, information on age, race, households and housing, education, income and poverty, and commuting patterns in the study area.

Age

Following the nationwide trend, the state of Indiana and all jurisdictions within the project area have an aging population. The median age in Indiana is now 35.2, up from 32.8 in 1990. The median ages in both Carroll and Cass counties are above that of the state; furthermore, both counties and the communities of Delphi and Logansport have a notably higher percentage of persons aged 65 and over than does the state (12.4 percent). Therefore, the potential exists for the project to have the greatest impact on the elderly in these areas—particularly in Delphi, where 17.4 percent of the population is aged 65+. Tippecanoe County recorded the lowest median age in both the 1990 and 2000 censuses (26.8 and 27.2, respectively) and the lowest percentage of persons aged 65 and over. Tippecanoe County is home to a much larger percentage of persons aged 15 to 24 (28.8 percent) than either Carroll and Cass counties or the state. This is most likely due to the presence of Purdue University in West Lafayette. The Census 2000 age distribution data for the three counties and cities, and the state appear in Table 3.2, page III-8.

TABLE 3.2—Census 2000 Percent of Population By Age

Place	Total Population	Median Age		% of Population				
		2000	1990	Under 5	5 to 14	15 to24	25 to 64	65+
Indiana	6,080,485	35.2	32.8	7.0%	14.6%	14.5%	51.6%	12.4%
Tippecanoe Co.	148,955	27.2	26.8	5.9%	11.7%	28.8%	44.5%	9.2%
Lafayette	56,397	--	--	7.0%	12.5%	18.0%	50.5%	12.1%
Carroll Co.	20,165	37.2	35.0	6.8%	15.1%	11.9%	52.3%	13.9%
Delphi	3,015	--	--	7.3%	14.4%	12.5%	48.6%	17.4%
Cass Co.	40,930	36.7	35.0	7.0%	14.0%	13.6%	51.0%	14.4%
Logansport	19,684	--	--	7.6%	13.1%	15.3%	48.9%	15.2%

Sources: US Census Bureau; Indiana Business Research Center (www.stats.indiana.edu).

Race

Census 2000 was notable as the first census to allow checking more than one race.⁷ The 2000 data (see Table 3.3, page III-9) shows that the study area had a lower concentration of minorities than did the state. While, among those reporting one race only, the percentage of whites in the state of Indiana was 87.5 percent, whites comprised anywhere from 88.9 to 97.6 percent of the population in the three counties and the communities of Lafayette, Delphi and Logansport. Blacks or African Americans, on the other hand, comprised 8.4 percent of the state's population and only from 0.1 to 3.2 percent of the population of the project area jurisdictions. Asians were the only minority found in greater numbers in portions of the project area than in the state, with the highest concentration being within Tippecanoe County (4.5 percent). Tippecanoe County and Lafayette recorded higher percentages of persons in the "two or more races" category than the state.

Hispanic populations of Lafayette, Delphi and Logansport and the counties of Cass and Tippecanoe are notably higher than for the state as a whole. Only Carroll County recorded a lower percentage than that of the state. The growth in the Hispanic population in the study area could be attributable to the opening of several industries in the 1990s, including two major hog processing plants near Delphi and Logansport, which have attracted a large number of Hispanic employees. One indication of the Hispanic presence in Logansport is the local school system's Hispanic population, which, according to the Indiana Department of Education, ranges from 9.9 percent at Fairview Elementary School—the only school in the immediate vicinity of the project—to 23.8 percent at Columbia Elementary School. In Delphi, only Hillcrest Elementary School has a notable percentage of Hispanic students (10.2 percent), while in Lafayette, the range is from 5.6 percent to 26.3 percent, with only three of the 14 city public schools under 10 percent.

⁷ The Census 2000 census form gave persons the opportunity to select more than one racial category to indicate multi-racial heritage. Previous censuses permitted persons to select only one racial category. Therefore, the current census's population-by-race data cannot be compared with that of the previous censuses.

TABLE 3.3—Census 2000 Population by Race

Place	One Race Only							Reporting Two or More Races		Hispanic (can be of any race)	
	Total Reporting One Race Only		White	Black or African-American	Am. Indian & Alaska Native	Asian	Other	#	%	#	%
	#	%									
Indiana	6,004,813	98.8%	87.5%	8.4%	0.3%	1.0%	1.6%	75,672	1.2%	214,536	3.5%
Tippecanoe Co.	146,907	98.6%	88.9%	2.5%	0.3%	4.5%	2.5%	2,048	1.4%	7,834	5.3%
Lafayette	55,483	98.4%	88.9%	3.2%	0.4%	1.2%	4.7%	914	1.6%	5,136	9.1%
Carroll Co.	20,057	99.5%	97.6%	0.2%	0.2%	0.1%	1.4%	108	0.5%	591	2.9%
Delphi	2,986	99.0%	92.6%	0.1%	0.2%	0.3%	5.9%	29	1.0%	367	12.2%
Cass Co.	40,564	99.1%	93.7%	1.3%	0.3%	0.5%	3.3%	366	0.9%	2,905	7.1%
Logansport	19,452	98.8%	89.8%	2.1%	0.4%	0.9%	5.7%	232	1.2%	2,476	12.6%

Data source: U.S. Census Bureau, Census 2000. Calculations: Indiana Business Research Center, Indiana University Kelley School of Business. The table was produced by STATS Indiana (www.stats.indiana.edu/) on March 9, 2001.

Households, Housing, and Tenure

A comparison between 1990 and 2000 Census data (see Table 3.4) shows that the state and all local jurisdictions analyzed for this study recorded gains in both the number of households and the number of housing units. Tippecanoe County and the city of Lafayette recorded the highest percentage increase in both categories while, at the same time, they had the smallest percent of owner-occupied housing units and the smallest average household size.

TABLE 3.4—Census 2000 Households and Housing

Place	Households			Housing units				
	Total	% Change from 1990	Average Size	Total	% Change from 1990	% of Total Occupied	% Occupied by...	
							Owner	Renter
Indiana	2,336,306	13.1%	2.53	2,532,319	12.7%	92.3%	71.4%	28.6%
Tippecanoe Co.	55,226	21.1 %	2.42	58,343	21.2%	94.7%	55.9%	44.1%
Lafayette	24,060	33.1%	2.31	25,602	32.9%	94.0%	52.9%	47.1%
Carroll Co.	7,718	9.2%	2.59	8,675	2.9%	89.0%	79.7%	20.3%
Delphi	1,161	16.7%	2.50	1,241	15.0%	93.6%	62.4%	37.6%
Cass Co.	15,715	7.2%	2.53	16,620	6.3 %	94.6%	73.7%	26.3%
Logansport	7,604	10.8%	2.47	8,026	9.1%	94.7%	61.3%	38.7%

Source: U.S. Census Bureau. Profiles of General Demographic Characteristics: 2000 Census of Population and Housing, May 2001. Note: All % changes from 1990 reflect gains.

School Enrollment and Educational Attainment

Educational attainment has been found to correlate with lifelong income levels. The trend toward well-paying jobs in high-tech industries that require an educated workforce is likely to tie income to education even more closely in the future. At the same time, such industries are attracted to communities that can provide a well-educated workforce. These industries expand the community's tax base while their higher wages fuel spending, spur the local economy, and improve quality of life, overall—all of which generally makes a community attractive to similar industries. Thus, educational attainment could be expected to play an increasingly important role in the success/failure of a community's economic development efforts and growth. Table 3.5, page III-10, capsulizes education enrollment and attainment data for the project area.

Of the state's 1,109,293 students enrolled in Kindergarten through 12th Grade during 1999-2000 school year, about 2.8 percent (30,116) attended Tippecanoe, Carroll and Cass County schools,

both public and private, according to Indiana Department of Education data. Available statistics for the public school systems show that, of the three counties, Cass County recorded that highest graduation rate for that period (89.6 percent), and the lowest college attendance rate (59 percent). Carroll and Tippecanoe Counties both had graduation rates of 85.5 percent. Tippecanoe County recorded the highest college attendance rate (67.5 percent), followed by Carroll County with 61.5 percent. The state's graduation and college attendance rates for that period were 89 percent and 64 percent, respectively.

TABLE 3.5—Educational Enrollment and Attainment

Place	1999 / 2000			1990 Census—Educational Attainment					
	K–12* Enrollment (% of State)	Graduation Rate**	College Attendance Rate**	Total Population	Less than 9 th Grade	9 th to 12 th Grade	High School Graduate	Associate/Bachelor's Degree	Graduate or Professional Degree
Indiana	1,108,293 (100%)	89.0 %	64.0%	5,544,159	8.5%	15.8%	38.2%	14.5%	6.4%
Tippecanoe Co.	20,822 (1.9%)	85.5%	67.5%	130,598	5.1%	9.7%	31.7%	21.0%	15.3%
Lafayette	13,010 (1.2%)	--	--	43,764	6.7%	12.8%	35.7%	18.2%	8.9%
Carroll Co.	2,893 (0.3%)	85.5%	61.5%	18,809	7.1%	16.7%	46.9%	11.7%	3.8%
Delphi	1,727 (0.2%)	--	--	2,531	10.7%	18.7%	39.4%	8.8%	5.2%
Cass Co.	7,001 (0.6%)	89.6%	59.0%	38,413	7.0%	17.1%	46.5%	9.2%	4.0%
Logansport	4,320 (0.4%)	--	--	16,812	9.3%	20.6%	45.1%	7.8%	3.1%

Sources: 1999-2000 data from the Indiana Department of Education; 1990 data from the U.S. Census Bureau (C90STF3A). NOTE: the 1999/2000 data references total *student* populations, while the 1990 Census data is based on total *general* populations.

* Public and private schools.

** Public schools, only.

The 1990 Census showed that, in general, educational attainment tended to be somewhat lower in the study area than in the state. In the city of Delphi, 10.7 percent of the population had less than a ninth grade education, as compared to 8.5 percent for the state of Indiana and 10.4 percent for the United States. Tippecanoe County and the city of Lafayette had fewer of its citizens fall into this category (5.1 percent and 6.7 percent respectively) than did the rest of the study area. Tippecanoe and Lafayette also had lower percentages of its citizens with only ninth to twelfth grade educations—9.7 percent and 12.8 percent as compared with 15.8 percent for the state as a whole. In addition, 21.0 percent of Tippecanoe County residents and 18.2 percent of city of Lafayette residents obtained an associates or bachelor's degree, while only 14.5 percent of the state's residents attained this level of education. The percentage of the remainder of the study area that reached this level of education was very low, however, ranging from 7.8 percent to 11.7 percent. Tippecanoe County also stands out within the study area in percentage of graduate or professional degrees—15.3 percent of that county's residents obtained such a degree as compared with 6.4 percent of the state's residents and a range of 3.1 percent to 8.9 percent in the rest of the study area. It is likely that the location of institutions of higher learning within the county accounts for the county's high percentage of residents in this category.

Income and Persons Below Poverty Level

The per capita income and the median household income of the state and the three counties rose substantially from 1990 to 1997/1999 (see Table 3.6, page III-11). Conversely, the percentage of persons below the poverty level fell slightly, the most notable decline coming in Tippecanoe County. However, the poverty rate in Tippecanoe County (10.1 percent) was higher than that for the state and the other counties, and the rate for Cass County was equal to that of the state (9.9 percent).

TABLE 3.6—Income Characteristics

Place	Per Capita Income		Median Household Income		% Persons Below Poverty Level	
	1990	1999	1990	1997	1990	1997
Indiana	\$13,149	\$26,157	\$28,797	\$37,909	10.7	9.9
Tippecanoe Co.	\$12,570	\$24,175	\$27,630	\$40,042	14.4	10.1
Lafayette	\$13,468	--	\$27,023	--	8.9	--
Carroll Co.	\$12,165	\$23,483	\$28,506	\$40,352	7.5	6.9
Delphi	\$11,259	--	\$23,125	--	7.2	--
Cass Co.	\$11,860	\$23,362	\$25,963	\$35,029	10.3	9.9
Logansport	\$10,268	--	\$20,533	--	15.9	--

Source: Census 1990 data from the U.S. Census Bureau 1990 STF 3A files. Estimates for years 1999 and 1997 are from STATS Indiana Profiles (www.stats.indiana.edu/profiles), April 2001.

Transportation / Commuting Patterns

Commutes between counties in the study area are frequent. Indiana Department of Revenue data (IT-40 tax returns) for 1999 indicates the following work day commuting patterns (see Table 3.7): 2,909 workers from Carroll County and 416 from Cass County commute into Tippecanoe County; 190 workers from Cass County and 298 workers from Tippecanoe County commute into Carroll County; and 441 workers from Carroll County and 76 workers from Tippecanoe County commute into Cass County. Carroll County has the highest percent of its labor force commuting out of the county to work (38.8 percent, with 20.7 percent going to Tippecanoe County). Tippecanoe County has the smallest percent of its labor force leaving the county to work (4.6 percent). Cass County's rate is 16.5 percent (the majority of which head to counties other than Tippecanoe and Carroll). As could be expected as a result of the urban nature of Tippecanoe County and the presence of Lafayette/West Lafayette as an employment center, the county retains the highest percentage of its labor force and has the highest percent of its commuters in from outside the county (19.6 percent).

TABLE 3.7—Commuting Patterns, 1999

Into Tippecanoe Co. FROM. . .	Number	% of Work Force**	Out of Tippecanoe Co. TO. . .	Number	% of Labor Force**
County Work Force	101,924	100%	County Labor Force	85,870	100%
All Areas*	19,963	19.6%	All Areas	3,909	4.6%
Carroll County	2,909	3.1%	Carroll County	298	0.3%
Cass County	416	4.1%	Cass County	76	0.09%
Into Carroll Co. FROM. . .	Number	% of Work Force	Out of Carroll Co. TO. . .	Number	% of Labor Force
County Work Force	9,879	100%	County Labor Force	14,072	100%
All Areas	1,269	12.8%	All Areas	5,462	38.8%
Tippecanoe County	298	3.0%	Tippecanoe County	2,909	20.7%
Cass County	190	1.9%	Cass County	441	3.1%
Into Cass Co. FROM. . .	Number	% of Work Force	Out of Cass Co. TO. . .	Number	% of Labor Force
County Work Force	25,236	100%	County Labor Force	27,231	100%
All Areas	2,493	9.9%	All Areas	4,488	16.5%
Carroll County	441	1.7%	Carroll County	190	0.7%
Tippecanoe County	76	0.09%	Tippecanoe County	416	1.5%

Source: Indiana Department of Revenue (www.stats.indiana.edu/web/county/commuting/1999), based on IT-40 tax returns.

* "All Areas" data identifies the total number of workers who commute into/out of the county.

** "% of Work Force" identifies the total number of persons who work in the county, and "% of Labor Force" identifies the total number of persons who live in the county and are employed.

The Indiana Bureau of Motor Vehicles recorded a marked increase in the number of vehicle registrations in each county between 1994 and 2000 (see Table 3.8). Passenger car registrations in Carroll County increased 29.0 percent during that period, while truck registrations increased 33.2 percent. In Cass County, passenger car registrations increased 23.1 percent and truck registrations increased 40.0 percent. In Tippecanoe County, passenger car registrations increased 32.2 percent while truck registrations increased 43.4 percent.

TABLE 3.8—Automobile and Truck Registrations, 1994 and 2000

	Tippecanoe Co.		Carroll Co.		Cass Co.	
	Passenger Cars	Trucks	Passenger Cars	Trucks	Passenger Cars	Trucks
2000	77,669	24,592	11,836	7,477	22,989	11,238
1994	58,742	17,150	9,172	5,613	18,675	8,026
% Change	32.2%	43.4%	29.0%	33.2%	23.1%	40.0%

Source: Indiana Bureau of Motor Vehicles, June 2001. The year 1994 was chosen for comparison because it is the earliest year for which the bureau's data was readily available.

Note: "Trucks" includes farm trucks and weight categories "7-9-11" and "16 and up" (thousand pounds).

3.2.3 Institutions

Educational Institutions

The following school districts operate the majority of the educational facilities serving students in grades K–12 in the three counties. Schools near the project corridor are noted, along with their 1999-2000 enrollments (in parentheses).

Tippecanoe County—Tippecanoe School Corporation, Lafayette School Corporation, West Lafayette School Corporation, and Diocese of Lafayette Catholic Schools. No schools in these districts are in or near the project corridor; however, the Tippecanoe district buses students from throughout the area. Schools with bus routes in the project corridor are: William Henry Harrison High School (1,450), East Tipp Middle School (376), and Hershey Elementary School (744).

Carroll County—Delphi Community School Corporation and Carroll Consolidated School Corporation. The following schools operated by the Delphi Corporation are within approximately one mile of the project corridor and have bus routes throughout: Delphi Community High School (510), Delphi Community Middle School (378), and Hillcrest Elementary School (590).

Cass County—Pioneer Regional School Corporation, Southeastern School Corporation, Logansport Community School Corporation, and Diocese of Lafayette Catholic Schools. Fairview Elementary School (365), operated by the Logansport Corporation, is approximately one-half mile west of the project's eastern terminus. Schools identified as having school bus routes in the project corridor are as follows: Fairview, Logansport Community High School (1,049), and Lincoln Middle School (465).

The Providence Foundation, Inc., a non-profit corporation formed to develop resources for Christian education in Tippecanoe County, owns a 60-acre tract formerly occupied by the Aretz Airport. The Foundation is planning a development comprised of elementary through high school facilities, including sports fields and an auditorium, as well as both assisted- and independent-living facilities for senior citizens. Final plans will depend on the location of the SR 25 alignment. Alternatives 1 and 3 (on shared alignment in the area) would require the acquisition of a larger

portion of the site than would **Preferred Alternative 2** and Alternative 4 (on a shared alignment preferred by Foundation officials).

There are two post-secondary educational institutions in the general vicinity of the project: Purdue University and Ivy Tech State College–Lafayette. Purdue, with its main campus located on 1,579 acres in West Lafayette, is one of the state’s major universities and the larger of the two post-secondary educational institutions in the vicinity of the project. The fall 2000 enrollment on the main campus was almost 38,000 undergraduate and graduate students, and over 10,500 students were enrolled at the combined Indiana University/Purdue University campus in Fort Wayne (the northern terminus of the Hoosier Heartland Highway). Ivy Tech, in Lafayette, offers one- and two-year degree programs to prepare students for careers in technical fields. Courses are currently offered at three locations in the city, but consolidation of the campus is underway. The school serves approximately 5,000 students annually, and is a member of the Community College of Indiana system. Neither of these institutions is within the project corridor. However, because they serve student populations on a regional basis (and beyond), the project would be expected to improve access to services and facilities offered on and among the campuses.

Hospitals/Healthcare Facilities

Two large medical “campuses” anchored by hospitals are located in Lafayette. The Lafayette Home Hospital campus includes a 365-bed hospital; a medical arts building offering a variety of medical screening, diagnostic, rehabilitation and other services; an ambulatory surgery center; the Oncology Institute of Greater Lafayette and the Arnett Clinic, which provides multispecialty care at eleven locations in the Greater Lafayette area. The St. Elizabeth Hospital Medical Center is a regional center for cardiac and cancer care and renal dialysis, and a research and teaching facility that offers a wide range of health care services. The medical campus includes an Arnett Clinic, a school of nursing and a variety of other medical and health related services and facilities. The Home Hospital and St. Elizabeth merged to form Greater Lafayette Health Services, Inc., in 1997. Other healthcare services in the area include several intermediate/long-term care facilities.

St. Elizabeth Hospital Healthcare Center, in Delphi, is a member of the St. Elizabeth Medical Center network. The Delphi center provides skilled and intermediate extended health care. An Arnett Clinic and the Carroll County Nursing Center for Family Health are also located in Delphi.

In Logansport, the primary health care facility is Logansport Memorial Hospital, which, as a member of a joint venture, also operates the Logansport Regional Cancer Care Center. The hospital is a 135-bed regional medical center that serves residents in Cass and surrounding counties. The cancer center, which can treat up to 25 patients per day, also serves Cass and surrounding counties. Other facilities in the area include Logansport State Hospital, the largest public psychiatric facility in the state’s mental health system; and several intermediate and/or long-term care facilities.

None of these health care facilities are within the project corridor. However, because they provide services on a regional basis, the project would be expected to improve residents’ ability to have access to these medical/healthcare services and facilities. The project would also reduce the response and travel time for EMS / ambulances making emergency trips to these facilities.

Churches

One church has been identified having the potential for impacts as a result of the project—Delphi Pentecostal Church, located on the south side of existing SR 25 east of Delphi. A recently constructed gymnasium/multi-purpose building is potentially within the right-of-way of **Preferred Alternative 2** (on shared alignment with Alternatives 1, 3, and 4 through this area). The church pastor, Timothy Stewart, said the church serves more than 100 families, most of whom live in the Delphi area. Church services are held four or more times each week, and related activities draw people to the facilities daily. The church has a 20-year plan to provide for growth and expansion of its services and outreach. Presently, the facilities on the approximately 14-acre site include a church building, the new gym, and a storage building. There is also a playground and areas used by church members for picnics and other outdoor recreational activities. Pastor Stewart noted that being along existing SR 25 has given the church a locational advantage in attracting membership, and that a marquee in view of the road is used to encourage passers-by to visit.

Social Services

The Carroll County office of the state Family and Social Services Administration's Division of Family and Children operates from a leased building approximately one mile east of Delphi. This structure is within the right-of-way of **Preferred Alternative 2** (on shared alignment with Alternatives 1, 3, and 4 through this area), and would be acquired as a result of the project, thereby displacing this family services agency. The office, which has a staff of ten, administers the Food Stamps, Medicaid and other assistance programs for Carroll County residents. According to the director of the office, Mr. Gilbert Smith, the 3,500-square-foot facility is visited by an average of 20 persons per weekday. Services are also provided primarily via mail and telephone. Mr. Smith noted that conversations with local government officials regarding possible relocation of the facility have occurred.

3.2.4 Cultural Aspects

Cultural Resources

Section 106 of the *National Historic Preservation Act* (1966), as amended, and 36 Code of Federal Regulations (CFR) Part 800 (Protection of Historic Properties, Revised 11 January 2001) requires the federal government to "take into account" the effect of its proposed actions on archaeological and historic resources before making project decisions. Archaeological and historic sites on or eligible for the National Register of Historic Places (NRHP) are afforded protection under federal regulations. Inventory surveys of historic resources along the entire project length, and of archaeological resources in the Central Segment were prepared as a task of this study. In addition, an archaeological survey was conducted in the remaining three corridor segments to determine the potential for encountering notable resources along the alternative alignments therein. The surveys were conducted to determine whether the project area contains historic and archaeological resources that are on, or eligible to be listed on, the Indiana Register of Historic Places (IRHSS) or the National Register.

Historical Cultural Resources Inventory—A field survey of the SR 25 project corridor was conducted to locate aboveground historic resource properties, sites, and structures that may be affected by the project. The survey identified historic resources located along the various build alternatives; evaluated their historical and architectural significance; and provided a preliminary assessment of the build alternatives' potential effect on the identified historic resource. The

historic resource assessment included: a review of the NRHP for any listed historic sites; documentary research in local and state libraries and county assessor offices; photographic documentation of historic resources; and a field survey of buildings, above ground resources, structures, and any other potentially eligible historic resource within the area of potential effect (APE). The APE is the area in which the project has the potential to affect historic resources either through direct physical encroachments, or through indirect effects such as noise, light, vibrations, aesthetics impacts, etc.

Numerous historic resource sites were identified throughout the study area between Lafayette and Logansport; however, only those resources located within the APE of a build alternative alignment were carried forward for evaluation. The results and recommendations of the resources survey are discussed in the Chapter 4, Section 4.21.1.

Archaeological Resources—At the time the archaeological resources were initially studied, multiple alternative alignments were still under consideration and collectively composed over 90-miles of alignment for assessment. Therefore, two analyses—a Phase 1a reconnaissance and an assessment of site probabilities—were performed. The Phase 1a field survey was performed in an area where the probability of finding sensitive archaeological sites was already known to be high owing to the presence of notable, previously identified cultural and natural resources (i.e., the Deer Creek Valley Rural Historic District and the Bridge Creek–Deer Creek area). Roadway alignment options are limited through this sensitive area; therefore, it was important to verify the existence of, and locate with a high degree of precision, the archaeological sites in that area. The assessment was performed on the remainder of the project corridor to identify those areas along build alternative alignments with the greatest *potential* for the presence of archaeological sites. These build alternatives traversed less historically and environmentally sensitive—thus, less restrictive—areas, thereby reducing the potential for encountering archaeological sites.

As the project progressed, the alignments were refined and several of the build alternatives were eliminated from further study. Four build alternatives remained under consideration in the DEIS. Following INDOT's recommendation of **Alternative 2** as the Preferred Alternative, a Phase 1a reconnaissance was conducted along the entire length of its corridor. The results and recommendations of the archaeological studies concluded to date are discussed in Chapter 4, Section 4.21.2.

The archaeological studies were conducted in accordance with the guidelines established by the State of Indiana, and in compliance with recent amendments to *the Indiana Historic Preservation Act* (IC 14-21-1). The archaeological records check, Phase 1a field reconnaissance, assessment of probabilities, and the reports and recommendations were accomplished or supervised by a Professional Archaeologist meeting the federal standards established in 36 CFR Part 61 and 66 and the “Standards and Guidelines for Historic Preservation and Archaeology” (48 FR 44716); and Indiana qualification standards in 312 IAC 21-3-4.

Cultural Attractions

In addition to resources identified by the historic and archaeological studies noted above, there are a number of cultural attractions in the three counties traversed by the project—including theaters, parks, art centers, libraries, and museums in Greater Lafayette, Delphi and Logansport. The only cultural attractions that would be directly affected by the project would be sections of one locally identified and two state-designated biking trails; and three proposed hiking trails (see

page III-19 for a discussion of trails). All of these trails would encounter the new SR 25 at several locations (see Figure 7, page III-21). Neither the biking nor potential hiking trails would require Section 4(f) involvement. There would be no need to acquire right-of-way from other cultural attractions, nor would the roadway be close enough to any of the attractions to impact their aesthetic appeal or ability to function. Indirectly, the project would provide improved access to the corridor, in general; therefore, improved access to some of the attractions—particularly those in the Lafayette and Logansport areas—could be expected. In Delphi, much of the cultural attraction is related to the rural ambiance and historical heritage that the community is striving to preserve and enhance. Existing SR 25 bisects the town. The new roadway would bypass the community to the east, thereby reducing through-traffic (and its associated noise and air quality impacts) while providing ready access to Delphi via connections to several local roads, including existing SR 25 and US 421.

3.2.5 Aesthetics

The project corridor encompasses both rural and urban environments and presents viewsheds typical of both—i.e., there are land uses typically associated with urban areas and rural communities, as well as level to rolling fields of crops, pastures and occasional forested areas interspersed with rural residences, farm structures, and agri-business facilities. The viewsheds through most of the corridor are typical of rural farming areas and pleasantly pastoral, though not unique or remarkable. A major exception to this occurs in the vicinity of Delphi, along Deer Creek, where bluffs, the creek, and forested areas present a scenic natural landscape that is distinctive, attractive and unique to the project corridor. This scenic area, which also contains several historic structures and farms that have been included in the Deer Creek Valley Rural Historic District (see Exhibit 3, page II-41), listed on the National Register December 19, 2002, was a favorite subject of the noted Hoosier poet, James Whitcomb Riley.

3.2.6 Community Services

The counties and their communities in the study area offer a range of services, the scope of which depends upon the area or community being served. Lafayette, Delphi, and Logansport are county seats; therefore, most of the government offices; emergency medical / 911, police, county sheriff, and fire department facilities; and other service providers for the counties are based in these communities. In addition, the Indiana State Police has a post in West Lafayette and there are fire departments in Burrows and Camden. The following utility companies are the primary providers of utilities within the project corridor:

- Electric—Logansport Municipal Utilities, Carroll County REMC, CINergy/PSI, Tipp-Mont REMC, and Cass County REMC
- Gas—Northern Indiana Public Service (NIPSCO), and Vectren/Indiana Gas
- Water/Wastewater—Delphi Water Works, Delphi Sanitation Department, Logansport Municipal Utilities, and Lafayette Utilities
- Telephone—Verizon, TDS Communications, Ameritech, and Williams Communications

Two companies have petroleum pipelines within the project corridor: BP—AMOCO and TEPPCO, both of which cross the project corridor, from east to west, in Tippecanoe County. In addition, Williams Communications' fiber optics cable shares the right-of-way with the AMOCO pipeline.

3.2.7 Community Patterns

The majority of the project corridor traverses sparsely developed, rural areas having agriculture (principally crops and livestock) as the predominant land use. As is typical in rural areas, there are residences on scattered sites and subdivisions near communities within the corridor. There are no enclaves of low-income or minority populations within the project corridor. Also typical of rural areas, commercial/industrial developments are primarily located in/near the communities along the major roadway (SR 25) through the corridor. The only notable exceptions to these typical community patterns occur southeast of Delphi, where the Deer Creek Valley Rural Historic District (listed on the National Register of Historic Places) is located and where several Old Order German Baptist families own and operate farms.

The Deer Creek Valley Rural Historic District is east of Delphi and includes several large farms, cemeteries on private properties, and High and Wilson Bridges. While none of the build alternatives would cross the boundaries of the district, there would be visual impacts as a result of the project. The district and impacts are further discussed in Chapter 4, Section 4.21.1. Appendix B contains documentation regarding cultural resources, including the district.

Several residences and farms belonging to members of the Old Order German Baptist faith are located off CR 450W, along a local road that provides access among their farms. The members of this religious group adhere to a traditional lifestyle that eschews use of electricity, telephones, and automobiles. Horse and buggy is their mode of transportation, and horses are used for farm work. Their children are home-schooled, and the community is relatively self-sustaining and interdependent (i.e., they grow much of their own food, and share in the farm work). Their strict adherence to a traditional lifestyle and dress identifies them as members of a unique cultural group. The alternatives that would have directly impacted this community have been eliminated.

3.2.8 Non-Highway Transportation Facilities

The Hoosier Heartland Highway will link communities and improve access to multi-modal transportation centers in the region—including Fort Wayne, Toledo and Detroit. Rail, airport, port and other transportation-related facilities in and/or serving the project area include the following:

Rail Service—The only passenger rail service in the region is provided by Amtrak, which has once daily trips to Indianapolis and Chicago, Illinois. The train departs and arrives at the Big Four Depot in Lafayette, but does not travel through the project corridor.

Rail freight service in the region is provided by the CSX, Norfolk Southern, and Winamac Southern systems. CSX provides north-south freight service through Lafayette, and does not enter the project corridor. Norfolk Southern provides east-west freight service through Lafayette, Delphi, and Logansport. Winamac Southern serves the industrial areas between Logansport and Camden. The Norfolk Southern railroad parallels existing SR 25 from Delphi to Logansport. The Norfolk Southern Trainmaster reports that this line has an average of 41 trains per day through the project area. Rail freight traffic has been steadily increasing over the past few years, and is projected to average 65 trains per day within a few years. A major railroad relocation recently completed in Lafayette rerouted the CSX and Norfolk Southern lines around that city to improve both internal vehicle circulation and railroad operations. The project eliminated more than 40 at-grade railroad crossings. Norfolk Southern has determined that its line between Lafayette and Logansport needs improvements to prepare for an anticipated increase in capacity. A study is

underway to identify locations and types of improvements that could include new signals, double-track, additional sidings, or relocating switching operations in the Clymers area to Logansport. Improvements would be privately funded, for the most part.

In the project area, there are three at-grade railroad crossings on existing SR 25, and additional at-grade crossings are located on numerous public crossroads that provide access to existing SR 25. At at-grade crossings, trains cause traffic delays that are inconvenient and/or costly to motorists and increase emergency response times. This is especially the case at crossings where both the volume of railroad traffic and the volume of roadway traffic are high. Reducing the number of at-grade crossings is an important objective in meeting the need to “provide roadway safety and meet current design standards.” The new SR 25 would have no at-grade railroad crossings along its route; instead, the new roadway would overpass the Norfolk Southern railroad at several locations along the corridor. The proposed closing of several public crossroads and/or the construction of overpasses in connection with the project will eliminate several at-grade railroad crossings. (See Chapter 4, Section 4.3, for further discussion of proposed at-grade railroad crossing closures).

Airports—Indianapolis International Airport, located 60 miles south of Lafayette via I-65, provides the primary air service in the region. The airport is served by 12 major and 10 national passenger airlines. In the year 2000, the airport handled 7.7 million passengers, almost 1.3 million tons of mail and freight, and 357.2 daily aircraft departures (average).

Purdue University Airport, in West Lafayette, is the largest airport in the vicinity of the project area. United Express Airlines and Northwest Airlines provide flights to Chicago O’Hare and to Detroit; and Lafayette Aviation offers scheduled carrier, repair, instructional, charter, ambulance and other services. The airport has over 60 single- and multi-engine plans, including two jets, and has an extensive educational and student-training program connected with Purdue University.

Other airports serving the project area are the Delphi and Logansport municipal airports. The Delphi facility, which is approximately 2.5 miles southeast of town and within 0.6 mile of the easternmost build alternative, offers fuel service and houses several single-engine planes. The Logansport Airport, which is about 1.0 mile south of the city and the project terminus, provides freight/cargo, ambulance, charter, instructional, and agricultural-related services and housing several single- and multi-engine planes. The proposed improved connections to local roads would be expected to improve access to both the Delphi and Logansport facilities.

Port Facilities—There are no navigable waters or port facilities for major water carriers in the project area. However, the project will complete a key link in a road network providing improved accessibility and connectivity to regional centers of transportation, including the Port of Toledo, on the easternmost end of the Hoosier Heartland Highway corridor. Nearer the project area, the only major port facility is Indiana’s International Port/Burns Harbor at Portage, 75 miles north of the project area via I-65. While other roads connecting with I-65 provide a shorter travel distance between local communities and this port, the SR 25 project would provide a high-speed, partial-access-controlled facility that could reduce the overall travel time and offer a safer road.

Bicycle/Pedestrian Facilities—There are three established on-road bicycle routes through the project corridor: the Colburn Loop, the Wabash-Wildcat Region Bikeway, and the Wabash Valley Route 2.⁸ At various locations, these routes share alignments. The bike routes are shown on Figure 7, page III-21, in relation to **Preferred Alternative 2**, as well as Alternatives 1, 3, and 4. All build alternatives cross two bicycle routes—the Colburn Loop and/or the Wabash-Wildcat Region Bikeway—at the following locations in Tippecanoe County:

- Colburn Loop/Wabash-Wildcat (shared)—CR 500E, CR 450N, CR 750E, and CR 700N
- Wabash-Wildcat, only—Booth Road and CR 900N

Alternative 1 and **Preferred Alternative 2** cross the Wabash Valley Route 2 route northwest of Clymers, at Cass CR 400S, and Alternatives 3 and 4 cross that route southeast of Clymers, also at CR 400S.

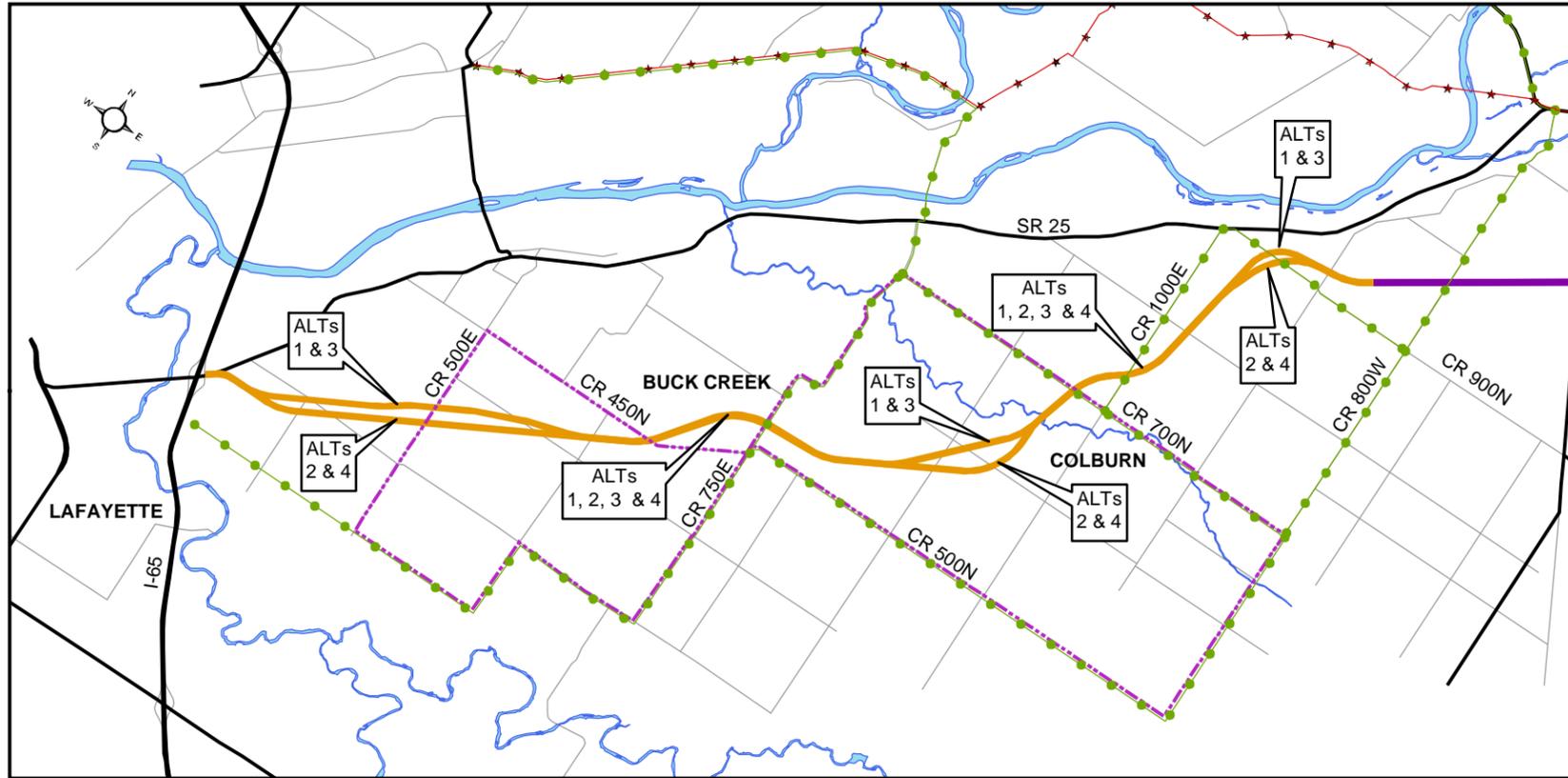
Alternatives 1 and 3 would relocate Tippecanoe CR 900N, thus requiring the connection between CR 1000E and CR 800E to be made via the relocated roadway and approximately one-half mile of existing SR 25. All of the other public crossroads shared by the bike routes would remain open with the above-cited alternatives; therefore, bike travel along these roadways would not be interrupted. The potential exists for expanding biking options through the project corridor by including the sections of existing SR 25 that would remain open following completion of the new roadway. The new roadway will divert a substantial amount of traffic from the existing road, thereby providing an opportunity for a more pleasant and safe biking experience along that route.

There are three potential hiking trails east of Delphi that would be encountered by all build alternatives. Two local groups—Delphi Heritage Trails and Carroll County Wabash & Erie Canal, Inc.—propose these trails. The approximate locations of the trails are shown on Figure 7 and identified as follows for ease of reference: Monon Railroad Bed, Pioneer Road, and Slate Bluffs. The trails are not marked or developed, and, for most of their length, they traverse private property, access to which is not available to the general public except during organized hikes held several times during the year. The Canal group is currently working to obtain from private landowners donations of land for the proposed trails, with the goal of eventually deeding the land to the City of Delphi and/or Carroll County to ensure public ownership of and long-term access to the trails, once developed. To date, the Canal group has obtained a portion of the Monon Railroad Bed. There is strong support by local officials and trails advocates for developing the trails for public recreational purposes. Preparation of a long-range master plan for trails development is expected to begin in spring 2005. Chapter 4, Section 4.7 contains further discussion of the Delphi trails initiative.

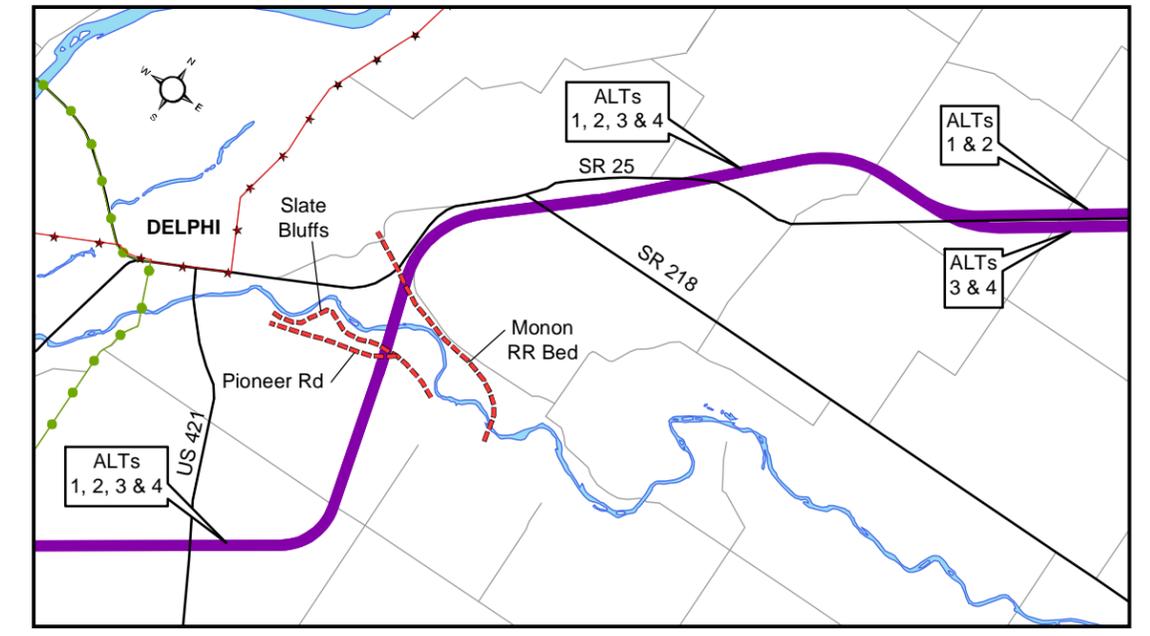
Except within Delphi, there are no sidewalks along existing SR 25 or along any of the public crossroads along the project corridor. There are several state/locally dedicated public hiking trails in the general vicinity of the project corridor—including trails in Delphi and those associated with the Wabash River Heritage Corridor, a conservation corridor extending 510 miles along the Wabash River and having access points in West Lafayette, Delphi and Logansport. These would not be impacted by any of the build alternatives.

⁸ The Colburn Loop appears in *Back Roads of Indiana*, by Charlie Myer, and on the Lafayette Convention and Visitors Bureau web site. The Wabash-Wildcat and Wabash Valley routes have been developed and mapped by IDNR.

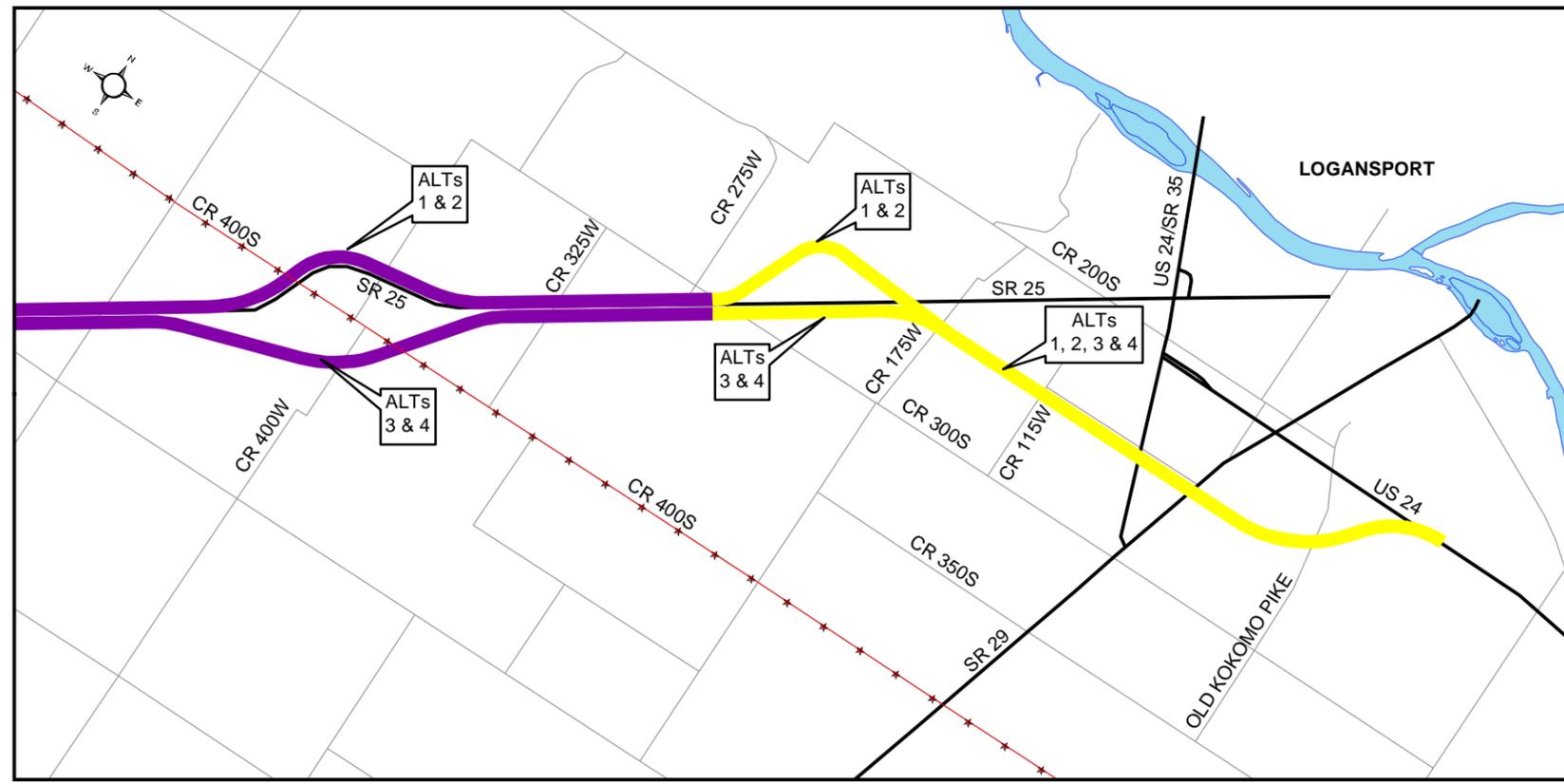
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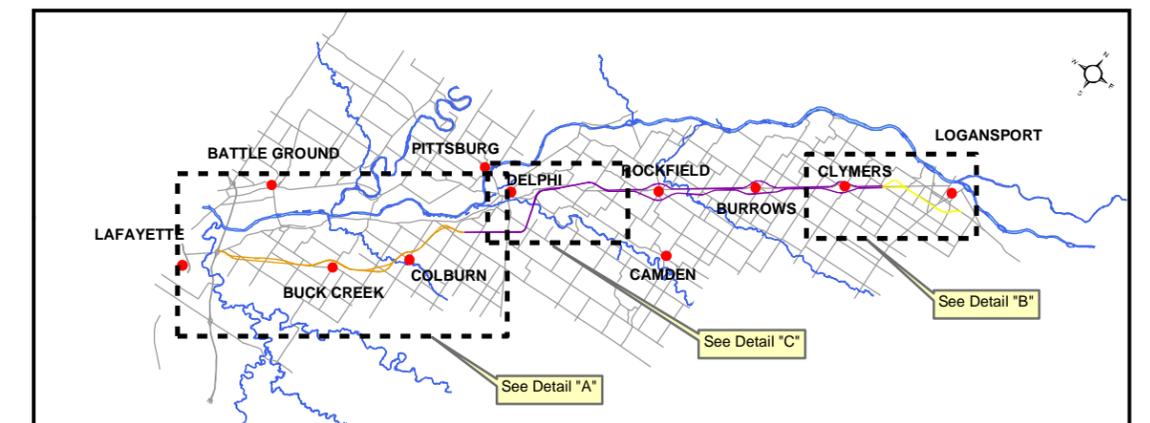
DETAIL "A"



DETAIL "C"



DETAIL "B"



VICINITY MAP

- KEY**
- Name and Agency**
- Colburn Loop
 - ★ Wabash Valley - Route 2, DNR
 - Wabash-Wildcat, DNR
 - Proposed Hiking Trail



Figure 7

SR 25: Hoosier Heartland Highway
Lafayette to Logansport, Indiana

**EXISTING BIKEWAYS AND
PROPOSED HIKING TRAILS**

Not To Scale

Sheet 1 of 1

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[PAGE III-22]

3.3 ECONOMIC ENVIRONMENT

The 1990s saw the arrival of both large and small manufacturing companies in the area, spurring an economic resurgence contributing to population growth. According to Wabash County Economic Development Corporation data, major companies that located in the region during that time include the General Motors Truck Plant in Fort Wayne (approximately 3,500 employees); Tyson Fresh Meats, Inc., pork processing plant (formerly Iowa Beef Producers, Inc. [IBP]), in Logansport (some 1,900 employees); Subaru of Indiana Automotive, Inc., (formerly Subaru/Isuzu in Lafayette (approximately 3,000 employees); and Indiana Packing Company (IPC), a pork processing plant near Delphi (1,200-1,500 employees). Other large companies in the project area include The Andersons Wholesale Fertilizer Division, which has plants in Delphi (in the Deer Creek Commerce Center, which is owned by Andersons), Clymers, and Logansport; Elco-Extron's Precision Stamping Division in Logansport; and ESSROC Cement Corporation, west of Logansport. Smaller businesses and industries—such as Federal Mogul in Logansport, Timberland Inc. in Peru, Indiana, and Anderson Fittings and Martin-Yale Inc., both in Wabash—were, likewise, attracted to the area. Federal Mogul and Anderson Fittings located in the area as recently as 1999. The Lafayette/West Lafayette area, in particular, is growing both in population and economically. Located in West Lafayette, Purdue University is the region's largest employer.

Farming also plays a key role in the economy of Tippecanoe, Carroll and Cass counties. Farmers need a road that can handle the future vehicular traffic as well as allow for the safe and efficient movement of farm equipment, supplies and products to and from the marketplace.

3.3.1 Employment and Income

Data provided by the Indiana Department of Workforce Development shows that the state's unemployment rate for the year 2000 was 3.2 percent, compared with 5.7 percent in 1990. Year 2000 data for the three counties shows that only Cass had a higher rate than the state's, but that the rate (3.3 percent) was down substantially from the its 1990 high of 7.3 percent (see Table 3.9, below). In fact, every jurisdiction having year 2000 data available recorded a notable decline in unemployment since 1990. Both Tippecanoe and Carroll Counties are in Indiana's Region 4—an eight-county area the central base of which is the Lafayette Metropolitan Statistical Area (MSA). The year 2000 estimates showed the region had an average unemployment rate of 2.6 percent, slightly higher than that for Tippecanoe and Carroll Counties. Cass County is in Region 5, a six-county area with its base in the Kokomo MSA. The average regional unemployment rate of 4.2 percent was slightly higher than that for Cass County.

TABLE 3.9—Unemployment Rate, 1990 and 2000

Years	U.S.	Indiana	Tippecanoe Co.	Lafayette	Carroll Co.	Delphi	Cass Co.	Logansport
2000	4.0%	3.2%	2.3%	2.2%	2.5%	3.8	3.3%	4.5%
1990	6.3%	5.7%	4.4%	4.3%	4.1%	6.1%	7.3%	9.7%

Source: 1990 - U.S. Census Bureau 1990 STF 3A files. Year 2000 - Indiana Department of Workforce Development.

In the project area, the greatest concentration of service-occupation employed workers is found in Tippecanoe County, which has 25.0 percent of its work force employed by this sector compared to 17.3 percent for Carroll and Cass counties. Both Carroll and Cass Counties had a higher percentage of workers employed by the manufacturing sector (27.2 percent and 29.2 percent, respectively) than do Tippecanoe County (18.7 percent) and the state as a whole (19.3 percent).

Among the three counties, Carroll County has the highest percentage of farm employment (9.5 percent). The U.S. Bureau of Economic Analysis (BEA) data on employment by sector is shown in Table 3.10.

TABLE 3.10—Employment by Industry, 1999

Industry	Indiana		Tippecanoe Co.		Carroll Co.		Cass Co.	
	Employed	%	Employed	%	Employed	%	Employed	%
Total full- / part-time	3,645,725	100.0	98,560	100.0	8,877	100.0	22,539	100.0
Farm	80,157	2.2	1,130	2.1	847	9.5	953	4.2
Non-farm (Private + Gov't)	3,565,550	97.8	97,430,	98.9	8,030	90.5	21,586	95.8
Private	3,143,695	86.2	76,661	77.8	7,127	80.3	17,926	99.5
Agriculture, forestry, fishing,	30,447	8.4	(D)	(NA)	228	2.6	(D)	(NA)
Mining	9,431	2.6	(D)	(NA)	(D)	(NA)	(D)	(NA)
Construction	212,699	5.8	4,652	4.7	560	6.3	928	4.1
Manufacturing	702,595	19.3	18,400	18.7	2,412	27.2	6,575	29.2
Transportation, public utilities	173,818	4.5	2,576	2.6	(D)	(NA)	670	3.0
Wholesale trade	154,079	4.2	2,101	2.1	392	4.4	954	4.2
Retail trade	653,326	17.9	17,710	18.0	1,244	14.0	3,652	16.2
Finance, insurance, real estate	231,733	6.4	5,723	5.8	474	5.3	861	3.8
Services	975,567	26.8	24,591	25.0	1,538	17.3	3,896	17.3
Government	421,855	11.6	20,769	21.1	903	10.2	3,660	16.2

Source: U.S. Bureau of Economic Analysis (www.stats.indiana.edu/profiles).

(D) = Not shown to avoid disclosure of confidential information, but the estimates for this item are included in the total. (N/A) = Data not available due to BEA non-disclosure requirements.

According to BEA data (see Table 3.11, page III-25), the mining industry recorded the greatest average earnings for employees statewide, while within the three project-area counties the highest average earnings came from manufacturing in Tippecanoe County, wholesale trade in Carroll County, and construction in Cass County. Tippecanoe County, with overall average earnings per job of \$29,537, was only slightly below the state, followed by Cass County (\$24,865) and Carroll County (\$21,058). There is a notable gap between average earnings per job in farming for the state (\$2,662) and Carroll County (\$10,662). Farm industry earnings for both the state and Carroll and Cass counties were substantially below those for 1998—down 62.65 percent for the state, 41.2 percent for Carroll County and 63.79 percent for Cass County. However, both the state and Carroll County reported notable gains in the agriculture/forestry/fishing industries (9.17 percent and 7.25 percent, respectively).

Overall, Carroll County recorded almost a one percent loss in industry earnings between 1998 and 1999, while the state, Tippecanoe County and Cass County recorded gains. Both Tippecanoe and Cass counties reported higher increases in service industry earnings than did the state, and Cass County posted notably higher-than-the-state gains in both the construction and wholesale trade industries. The most substantial gain among any of the jurisdictions was the 13.2 percent increase in the finance/insurance/real estate industry earnings in Carroll County, which also reported a modest increase in construction industry earnings.

TABLE 3.11—Earnings by Industry and Per Job, 1999

Industry	Indiana			Tippecanoe Co.			Carroll Co.			Cass Co.		
	Earnings by Industry (\$000)	Change from 1998	Avg.* Earnings Per Job	Earnings by Industry (\$000)	Change from 1998	Avg.* Earnings Per Job	Earnings by Industry (\$000)	Change from 1998	Avg.* Earnings Per Job	Earnings by Industry (\$000)	Change from 1998	Avg.* Earnings Per Job
Total by place of work	\$110,528,659	4.64%	\$30,317	\$2,911,118	3.88%	\$29,537	\$186,935	-0.97%	\$21,058	\$560,442	2.58%	\$24,865
Farm	\$213,378	-62.65%	\$2,662	(L)	(NA)	(NA)	\$9,031	-41.20%	\$10,662	\$4,072	-63.79%	\$4,273
Non-farm (Private+Gov't)	\$110,315,281	5.01%	\$30,939	\$2,911,137	4.01%	\$29,879	\$177,904	2.60%	\$22,155	\$556,370	3.98%	\$25,775
Private	\$95,610,185	5.00%	\$30,413	\$2,205,914	3.72%	\$28,775	\$151,860	2.30%	\$21,308	\$442,213	3.84%	\$24,669
Agriculture, forestry, fishing,	\$497,223	9.17%	\$16,331	(D)	(NA)	(NA)	\$2,366	7.25%	\$10,377	(D)	(NA)	(NA)
Mining	\$444,233	1.10%	\$47,103	(D)	(NA)	(NA)	(D)	(NA)	(NA)	(D)	(NA)	(NA)
Construction	\$7,255,749	4.83%	\$34,113	\$154,451	4.01%	\$33,201	\$11,909	5.34%	\$21,266	\$31,037	6.15%	\$33,445
Manufacturing	\$32,650,974	4.21%	\$46,472	\$880,405	2.17%	\$47,848	\$73,669	0.60%	\$30,543	\$211,284	3.32%	\$32,134
Transportation, public utilities	\$6,664,742	4.22%	\$38,343	\$88,331	4.90%	\$34,290	(D)	N/A	(NA)	\$19,944	-7.49%	\$29,767
Wholesale trade	\$6,269,942	5.11%	\$40,693	\$74,571	5.79%	\$35,493	\$12,127	1.91%	\$30,936	\$30,354	7.70%	\$31,818
Retail trade	\$10,322,862	5.58%	\$15,800	\$252,790	5.76%	\$14,274	\$13,431	2.84%	\$10,797	\$50,500	1.68%	\$13,828
Finance, insurance, real estate	\$6,858,133	5.54%	\$29,595	\$149,202	-3.09%	\$26,071	\$7,446	13.20%	\$15,709	\$18,279	2.79%	\$21,230
Services	\$24,646,327	5.88%	\$25,264	\$591,791	6.57%	\$24,065	\$21,659	1.21%	\$14,083	\$71,440	8.63%	\$18,337
Government	\$14,705,096	5.10%	\$34,858	\$705,223	4.95%	\$33,956	\$26,044	4.37%	\$28,842	\$114,157	4.51%	\$31,190

Source: U.S. Bureau of Economic Analysis (www.stats.indiana.edu/profiles)

(D) = Not shown to avoid disclosure of confidential information, but the estimates for this item are included in the totals. (L) = Less than \$50,000, but the estimates for this item are included in the totals. (NA) = Data not available for this year due to BEA non-disclosure requirements.

* Based on the earnings by industry (second column in the table, above) and the number of persons employed in that industry (shown on Table 3.12).

3.3.2 Tax Base

The total taxable real estate in the three counties in the project area in 1998 was \$234.6 million, or approximately 3.8 percent of that of the entire state. Agricultural real estate represented 36.1 percent of the total valuation for Carroll County and 23.1 percent for Cass County, and only 6.0 percent for Tippecanoe County and 10 percent for the state. Commercial/industrial real estate makes up a much greater share of the tax base in Tippecanoe County (50.0 percent) than in the state (43.7 percent) and both Carroll and Cass counties (20.6 percent and 38.1, respectively). In Carroll and Cass Counties, agriculture constitutes a notably higher percentage of the tax base than it does in the state, while in Tippecanoe County both the commercial/industrial and the residential sectors' shares are higher than those of the state and the two other counties. Table 3.12 capsulizes the property value data.

TABLE 3.12—Assessed Property Value By Sector, 1998

Sector	Indiana		Tippecanoe Co.		Carroll Co.		Cass Co.	
	Value	% of Total	Value	% of Total	Value	% of Total	Value	% of Total
Total (all sectors)	\$53,804,456,880	100.0	\$1,531,489,860	100.0	\$195,205,200	100.0	\$301,916,960	100.0
Agriculture	\$5,360,039,980	10.0	\$91,901,910	6.0	\$70,548,760	36.1	\$69,753,040	23.1
Commercial / Industrial	\$23,503,068,800	43.7	\$765,283,710	50.0	\$40,200,200	20.6	\$115,063,400	38.1
Residential	\$21,877,992,790	40.7	\$628,950,800	41.1	\$75,050,310	38.4	\$102,798,590	34.0
Utility	\$3,063,355,320	5.7	\$45,353,440	3.0	\$9,405,930	4.8	\$14,301,930	4.7
Total Assessed Value per Capita	\$9,175		\$11,073		\$9,766		\$7,827	

Source: The State Board of Tax Commissioners (www.stats.indiana.edu/profiles)

3.3.3 Labor Force Characteristics

Due to the number of manufacturing/industrial plants in the area, employment data from the 1990 Census indicates that, with two exceptions, a smaller percentage of managerial and professional workers were in the study area than in the state (22.3 percent) and nation (26.4 percent). Tippecanoe County (29.7 percent) and the city of Lafayette (24.0 percent) were the exceptions—the remainder of the study area’s workforce ranged from 15.1 percent to 17.0 percent managerial and professional. Technical, sales and administrative support occupations were represented within the study area at about the same rate as within the state—ranging from 22.9 percent to 32.2 percent in the study area and 29.6 percent in the state. The greatest concentration of service-occupation employed workers was found in the city of Logansport, which had 20.2 percent of its workforce employed by this sector compared to 13.3 percent for the state. As expected, both Carroll and Cass counties had a higher percentage of citizens employed by the farm, forestry and fishing sector (7.2 percent and 4.4 percent, respectively) than did the state (2.2 percent). 1990 Census data on unemployment and occupation by sector is shown in Table 3.13.

TABLE 3.13—Employment Characteristics by Occupations, 1990

Location	Occupation				
	Managerial and Professional Specialty	Tech, Sales, Administrative Support	Service	Farm, Forestry, Fishing	All Others
United States	26.4%	31.7%	13.2%	2.5%	26.2%
Indiana	22.3%	29.6%	13.3%	2.2%	32.6%
Tippecanoe Co.	29.7%	30.2%	15.9%	1.9%	22.1%
Lafayette	24.0%	30.6%	16.9%	0.5%	28.0%
Carroll Co.	17.0%	22.9%	12.6%	7.2%	40.3%
Delphi	15.3%	32.2%	11.5%	1.4%	39.6%
Cass Co.	17.2%	23.4%	16.1%	4.4%	38.9%
Logansport	15.1%	24.1%	20.2%	1.1%	39.5%

Source: U.S. Census Bureau 1990 STF 3A files.

3.3.4 Economic Development and Growth

Local jurisdictions in the study area are encouraging the type of economic growth that brought both large and small manufacturing companies to the area during the 1990s. Secondary economic development related to agriculture (as evinced by the presence of IPC, Tyson, and Andersons) and spurred by the proximity of major auto/truck manufacturers (including General Motors and Subaru) will continue to occur so long as the proper infrastructure is in place.

The following industrial/commerce park sites are near or within the project corridor:

Logansport/Cass Industrial Park—This 130-acre site on SR 29, approximately one mile south of the project’s corridor, has full utilities, a major tenant (Federal Mogul Fuel Systems), and land available for additional development. In its 170,000-square-foot facility, Federal Mogul employs approximately 550 workers in the manufacture of marine fuel system components.

Logansport Mixed-Use Development Area—The city has for sale a large (approximately 480-acre), vacant parcel that is available for mixed use residential and commercial/industrial development. The tract is within the project corridor southeast of US 24.

Deer Creek Commerce Center—Located in Delphi and owned by The Andersons, Inc., this 160-acre tract currently includes Andersons’ four Delphi-based fertilizer business units, and there is

ample space for business expansion on the site. Also located in the commerce park is the Carroll County office of the Family and Social Services Administration's Division of Family and Children.

Other major businesses located along or near build alternative alignments but not associated with an industrial/commerce park, include the following:

- The Andersons Wholesale Fertilizer Division, which has facilities in Delphi, also operates a terminal in Clymers that handles grain, distributes liquid fertilizers to dealers, and stores soybean oil. The Clymers facility, which is served by SR 25 and the Norfolk Southern railroad, handles some 300,000 tons of product annually. (Note: The Andersons' also operates a plant 3.0 miles south of Logansport, well outside the project corridor.)
- ADM/Countrymark, Logansport: The Logansport Elevator operations, located northwest of existing SR 25, are part of this company's international co-op system that is one of the largest suppliers of feed grains and soybeans to the southeast market. Like Andersons, the facility has direct access to rail.
- Tyson Fresh Meats, Inc., Logansport: Noted as one of the world's largest suppliers of premium meat products, and one of the largest industries in Logansport, Tyson's facilities include a pork carcass processing plant south of existing SR 25, between CR 115W and SR 29.
- Hanson Cold Storage Co., Logansport: Hanson, south of existing SR 25 and west of CR 115W, specializes in storage and custom packaging of fresh/frozen meats. Its storage facility includes enclosed refrigerated truck docks and a private siding with a covered rail dock. Hanson also has a warehousing facility in Lafayette, giving it a total of 280,000 square feet of space at its two locations.
- Elco-Textron's Precision Stamping Division, Logansport: The 185,592-square-foot plant just west of SR 29 produces engineered assemblies and components for automotive/transportation and commercial applications. The company plans to increase production by adding a shift.
- Pasquale Trucking, Logansport: This trucking company, located just west of Elco-Textron, provides over-the-road freight hauling of refrigerated and dry goods for industries, including Tyson.
- Gangloff Industries, Logansport: Located adjacent to Pasquale Trucking, this freight trucking company provides refrigerator-truck, over-the-road hauling services for industries, including Tyson.
- Rozzi's Racing Bill, Logansport: This harness horse training facility, with training track and stables, is located on a 10-acre site between SR 29 and Burlington Avenue. Also on the property are greenhouses, totaling approximately 23,000 square feet, which provide stock for a local florist company.
- Controls, Inc., Logansport: This electronic manufacturing services company headquartered in Logansport operates from a 72,000-square-foot facility adjacent to the city's proposed mixed-use development area south of US 24.

- Tasler, Inc., Logansport: This manufacturer of wooden pallets and skids is headquartered in Iowa. It is located on a four-acre site north of existing SR 25 and west of Cass CR 300S.
- Homberg Farm, and PHT, Inc., Logansport: These companies are family-owned and operated from the same location west of Logansport, south of the railroad. A family residence is also on the property's over 800 acres. Structures related to the agri-business include hog barns and grain processing buildings. PHT, Inc., is a small, commercial trucking business that hauls fertilizer and ammonia to local companies.
- Trueblood Hog Farm, east of Burrows: This family-owned and operated farm contains a house and two confinement hog buildings located east of CR 150E just south of the railroad track. The farm's IDEM operating permit requires 73 contiguous acres to maintain the permit.
- Abbott's Heartland Hogs, north of Delphi: This family-owned agri-business is on the south side of existing SR 25 northeast of Delphi. The facility contains several barns and other farm buildings. The family residence is on the north side of SR 25, directly across from the barns. The operation takes hogs (12,000 head) from the early weaning through finishing stages and ships them to local processors including IPC.
- Indiana Packing Company, Delphi: The Indiana pork processing plant, owned by Mitsubishi of Japan, operates two shifts at its plant south of Delphi, on US 421.
- Tri-State Cob Limited, Delphi: Located across from the Deer Creek Commerce Center, this trucking company hauls dry goods (corn, mulch, paper, etc.). The majority of its business is corn hauling, and almost all of the corn is hauled to The Andersons.
- Hoosier Harvest Services, Inc., Delphi: Located on CR 300N, the company sells and services silos for feed storage. The company also operates Delphi-U-Store, a mini-warehouse on site.
- Auto Express Car Wash, Delphi: This is a coin-operated, do-it-yourself car wash located on 12 acres on the east side of US 421.
- Watson Construction Co., and J.W. Rentals, Delphi: These companies are owned and operated from the same location east of Delphi, just south of existing SR 25. The construction company specializes in the construction of apartments and houses, and has roofing and remodeling services. The rental company has two duplexes, a trailer park, and storage units for tenants on the site (north of the construction company facility, along the south side of existing SR 25), and rental apartments and houses off-site.
- IMI Irving, Inc., Lafayette: This ready-mix concrete company is located on approximately 50 acres immediately east of I-65 and south of existing SR 25, near the western terminus of the new SR 25. The company also leases some of its land to Milestone Construction Company, an asphalt producer.

Potential impacts to these and other commercial/industrial enterprises as a result of the project are discussed in Chapter 4, Section 4.5.

3.3.5 Agriculture and Land Use

Tippecanoe, Carroll and Cass counties have a total land area of just over 867,000 acres of which approximately 76.7 percent (665,100 acres) is farmland, compared to the state's 65.8 percent, according to the U.S. Department of Agriculture's 1997 Census of Agriculture (see Table 3.14, page III-30). Developed areas, including towns and cities, make up the remaining predominant land uses. Of the farmland, a total of 419,859 acres is cultivated cropland—primarily corn, soybeans, wheat and hay (see Table 3.15, page III-30). The remainder of the agricultural land is woodland and pastureland. The project's potential impacts on agricultural land are summarized in Chapter 4, Section 4.2.

TABLE 3.14—Agricultural Land Use, 1997

Description	Carroll Co.	Cass Co.	Tippecanoe Co.	Indiana
Total Land Area (acres)	283,251	264,249	319,896	22,956,877
Land in Farms (and % of Total Area)	218,200 (77.0%)	205,400 (77.7%)	241,500 (75.5%)	15,111,000 (65.8%)
Number of Farms	563	700	665	57,916
Average Size of Farms	388	293	363	261
Average Value per Acre	\$2,282	\$2,088	\$2,595	\$2,064
Cultivated Cropland (acres)	198,014	179,249	220,806	12,848,950
Harvested Cropland (acres)	186,176	170,009	213,122	11,716,704
Pastureland (acres)	7,886	14,753	10,749	1,254,525
Woodland (acres)	9,161	12,649	9,681	1,283,246

Source: U.S. Department of Agriculture, 1997 Census of Agriculture. This census is taken every five years covering the years ending in "2" and "7." Therefore, the 1997 census is the most current. Census data for cultivated and harvested crops were estimated. These figures were revised in 1999, and the revisions are reflected in Table 3.15.

TABLE 3.15—Inventory of Principal Crops—1997 Through 2000: Carroll, Cass, and Tippecanoe Counties, Indiana

Year	Corn			Soybeans			Wheat			Hay			Total		
	Carroll	Cass	Tippecanoe	Carroll	Cass	Tippecanoe	Carroll	Cass	Tippecanoe	Carroll	Cass	Tippecanoe	Carroll	Cass	Tippecanoe
Planted Acres															
1997	108,800	91,600	110,000	78,700	76,100	103,100	6,800	7,000	8,600				194,300	174,700	221,700
1998	111,000	95,400	101,500	84,400	81,600	104,400	6,600	5,800	8,300				202,000	182,800	214,200
1999	108,000	91,900	103,000	85,900	84,300	97,400	5,200	3,800	6,200				199,100	180,000	206,600
2000	103,000	95,400	101,000	85,600	81,700	96,600	4,900	4,400	6,400				193,500	181,500	204,000
Average	107,700	93,575	103,875	83,650	80,925	100,375	5,875	5,250	7,375				197,225	179,750.0	211,625
Harvested Acres															
1997	107,000	89,400	108,900	78,100	75,500	102,000	5,600	6,200	7,600	3,000	6,300	6,000	193,700	177,400	224,500
1998	106,500	90,500	99,900	82,600	80,500	103,100	6,000	5,800	7,700	3,600	6,500	5,900	198,700	183,300	216,600
1999	106,700	90,800	101,900	85,400	83,800	96,500	4,900	3,800	6,000	3,300	6,400	5,100	200,300	184,800	209,500
2000	101,900	94,100	100,100	85,400	81,400	96,300	4,700	4,200	6,100	3,200	6,400	5,500	195,200	186,100	208,000
Average	105,525	91,200	102,700	82,875	80,300	99,475	5,300	5,000	6,850	3,275	6,400	5,625	196,975	182,900	214,650
Production (thousands, 000)															
	Bushels			Bushels			Bushels			Tons					
1997	15,479.8	12,363.9	12,537.3	4,086.8	3,769.8	4,320.3	386.5	387.2	492.3	12.7	29.3	19.7			
1998	15,580.8	13,676.7	13,803.6	4,023.6	3,847.4	4,548.3	399.9	365.0	502.6	15.3	28.4	19.5			
1999	16,280.2	12,890.4	15,001.8	4,072.9	3,572.7	4,003.2	397.2	265.5	435.3	12.9	26.5	19.8			
2000	14,688.0	14,058.6	14,082.7	4,083.1	3,852.8	4,472.6	366.1	287.8	458.6	13.5	29.2	21.0			
Average	15,507.4	13,247.4	13,856.4	4,066.6	3,760.7	4,336.1	387.4	326.4	472.2	13.6	28.4	20.0			
State Marketing Year Average Price															
	Per Bushel			Per Bushel			Per Bushel			Per Ton					
1997		\$2.78			\$7.34			\$4.06			\$113.00				
1998		\$2.53			\$6.59			\$3.18			\$88.00				
1999		\$2.11			\$5.05			\$2.36			\$86.00				
2000		\$1.95			\$4.75			\$2.15			Not available *				
4-Yr Avg		\$2.34			\$5.93			\$2.94			\$96.00 (3-year avg.)				

Source: U.S. Department of Agriculture, National Agricultural Statistics Service: <http://www.nass.usda.gov/in/index.htm>, and Indiana Agricultural Statistics: <http://www.nass.usda.gov/in/cntest/cntvest.htm>

* Averages for hay production provided for years 1997–1999, only. Year 2000 data measured in bushels rather than tons, thereby preventing comparison.

CHAPTER 4—ENVIRONMENTAL CONSEQUENCES

This chapter presents the analysis of potential environmental and socioeconomic consequences of **Preferred Alternative 2**. Although the No-Build Alternative does not meet the project Purpose and Need, it has been included as a baseline condition—in accordance with CEQ regulations and FHWA guidelines—against which to measure the Preferred Alternative. Furthermore, to provide a frame of reference for evaluating the impacts of the Preferred Alternative, the potential impacts of Alternatives 1, 3, and 4, as addressed in the DEIS, are included in the following discussion. Exhibit 3, pages II-39–II-45, depicts the four build alternatives and key environmental and other features in the project area. Exhibit 4, pages II-49–II-55, depicts **Preferred Alternative 2** together with all features identified on Exhibit 3.

The four build alternatives were evaluated based on their ability to meet the project Purpose and Need; their potential environmental impacts; and ongoing input from regulatory agencies, local government officials, interested groups and organizations, and the general public. **Preferred Alternative 2** is based on the results of these evaluations addressed in the DEIS, as well as on public and agency input following circulation of the DEIS and its associated public hearings. The Preferred Alternative combines the transportation advantages and other beneficial features detailed in the DEIS with design modifications that avoid or minimize impacts to sensitive resources within the corridor, or address issues raised during the public comment period. Where two or more alternatives share an alignment, design modifications made subsequent to the issuance of the DEIS apply only to **Preferred Alternative 2**. In some cases—such as the analyses of biotic communities and cultural resources—additional data is provided in technical reports of this study and referenced in their relevant subsections, below. Some information in the technical reports may differ from that presented herein, where project data has been updated or new information has surfaced.

4.1 LAND USE IMPACTS

The No-Build Alternative would not require the acquisition of additional right-of-way, nor would it directly affect existing land use and growth patterns along existing SR 25, i.e., residential, commercial, and industrial development along the existing corridor would continue to occur. No displacements of homes or businesses would be required. Construction of **Preferred Alternative 2** will require acquisition of approximately 1,552 acres of right-of-way, including approximately 23 acres required for the construction of interchanges with US 421 and SR 29-Burlington Avenue. Table 4.1, page IV-2, shows the amount of right-of-way that would be acquired with each build alternative. The totals reflect the acreage identified in the DEIS, which was published prior to the addition of the interchanges at US 421 in Delphi and at SR 29-Burlington Avenue in Logansport as features of the Preferred Alternative. Because it is probable the interchanges would have been added as features of any alternative selected as the preferred, the right-of-way acreage associated with the interchanges is listed separately, for use in comparing the alternatives.

The majority of the land that would be acquired by any of the build alternatives is currently used for agriculture (see Table 4.2, page IV-7), followed by rural-residential uses interspersed with pockets of suburban neighborhoods in outlying areas surrounding Lafayette, Delphi, and Logansport. Other land uses encountered along the project alternative alignments include commercial and industrial facilities (in isolated locations along rural stretches, and more heavily concentrated in communities such as Logansport, Delphi, and Clymers), a family services

agency, riparian areas, and other undeveloped land not in agricultural use. Most of the recent development in the project corridor has occurred in the Lafayette, Delphi, and Logansport urban areas. Recent development trends in these areas have included a mix of infill of both commercial and residential uses, and development of residential subdivisions along state and county roads, including portions of the existing SR 25 corridor.

TABLE 4.1—Right-of-Way Acquisition Acreage Requirements for Each Build Alternative

	Alternative 1 OWA+PCA1+PEA+YLA	Preferred Alternative 2 OWA1+PCA1+PEA+YLA		Alternative 3 OWA+PCA2+PEB+YLB	Alternative 4 OWA1+PCA2+PEB+YLB
			(Additional acres with interchanges)		
Agricultural (cultivable acres)	1004	1001	+12	1,039	1,046
Residential/Rural Residential	244	267	+5	207	230
Commercial/Industrial	95	90	+3	90	85
Institutional	1	1	0	1	1
Wildlife Habitat (uncultivated agri./ riparian/ wetland/ forested)	174	170	+3	176	172
Total Acres to Be Acquired	1,508	1,529	+23	1,513	1,534

Without improvements to the road network in the project area, land use changes in the rural areas—particularly parcels/farms not fronting existing SR 25—would be expected to occur within the next 20 to 30 years. Continued conversion of rural agricultural land to residential, commercial/industrial, or other uses would be expected to occur directly along existing SR 25 with and without the project. However, without an alternate route in the area, traffic volumes are projected to increase and the level of service to deteriorate along existing SR 25. This would adversely affect mobility, increase the potential for safety problems, and adversely impact the overall growth planned for in communities.

Lafayette/Tippecanoe County—In *The Comprehensive Plan for Tippecanoe County*, 1981, all development—other than some scattered residential in rural areas—is designated to be located in or adjacent to existing urbanized or designated “urbanizing” areas. The project corridor from I-65 to SR 225 to the northwest and Buck Creek to the northeast of existing SR 25 is within the “urbanizing” area. The project traverses the “rural” planning area for the remainder of its distance in the county. The plan shows agricultural and open space continuing as the predominant land use in both the urbanizing and rural areas traversed by the project, with residential development confined primarily to the existing SR 25 and CR 500E corridors; in all four quadrants of the CR 200N/CR 400E intersection, and south of CR 200N to Wildcat Creek; and around Buck Creek, Americus and Colburn. “Residential Expansion Sectors” identified in the plan include one area immediately south of the project corridor and Norfolk Southern railroad. This area encompasses the four quadrants of the CR 200N/CR 400E intersection, continuing south of CR 200N to Wildcat Creek. Residential use now exists in the area and additional residential development is located north of this area, along CR 400E south of CR 300N. While the land use plans do not show development (either additional residential or strip commercial) extending north/south along CR 400E to connect the existing and proposed residential developments, it is likely that such development would occur over time, with or without the SR 25 improvement. Because Alternatives 1 and 3 would provide direct access to the new mainline via CR 300N, it is also likely the pace of development in the area would be more rapid than with **Preferred Alternative 2** and Alternative 4, which do not provide direct access to new SR 25 via CR 400E or CR 300N.

The *Greater Lafayette Area Transportation and Development Study: Transportation Plan for 2025*, prepared by the Tippecanoe County APC in May 2001, shows the proposed Hoosier Heartland Highway on the map of “Planned Improvements Between 1999 to 2010.” The plan states that the highway “would create a safer and faster route from Lafayette to Fort Wayne, while providing greater access to Lafayette’s industrial base. Locally, it would take traffic from SR 25N, which is over capacity and hazardous.” The study notes that the APC supports the alignment immediately adjacent to the railroad right-of-way (referred to as “modified O-WA,” later named O-WA1, a component of **Preferred Alternative 2** and Alternative 4) because it would “... combine two substantial, major transportation corridors (railroad right-of-way) into one multimodal corridor producing substantial benefits. The one multimodal corridor would allow at-grade rail crossings to be closed or bridged from the I-65 interchange to CR 900E and beyond. It would also minimize agriculture land severance, minimize disruption of the steep and wooded slopes and areas more suited to rural residential development, and minimize impacts to flood plains.” In October 2000, the APC adopted Resolution T-00-6 recommending the “modified O-WA” alternative. In supporting documentation submitted with the resolution, the APC noted that proposed alignments P-W and T-W would be less suitable for accommodating development being considered that included “large-lot rural-residential development” in areas not in active row crop production...,” while the O-WA and O-WB alternatives would be “disruptive of existing row crop production.”

The APC’s inclusion of the project in its transportation element update and its recommendation of the next-to-rail (O-WA1) in Resolution T-00-6 (see letter of October 19, 2000, Appendix A1) establish the project as a component in its long-range land use plans. The APC’s stated preference for an alignment that would minimize impacts to agricultural land, natural areas, and land suited to rural residential development indicates the 1981 plan’s intentions for the area have remained constant. The implication is that, by improving the area’s roadway network, the project would accommodate growth in those areas of the county designated for development.

Delphi/Carroll County—While there is no comprehensive plan for Delphi or Carroll County, a 1994 planning report identified goals, objectives and guidelines for development in and around Delphi, and support for a new Hoosier Heartland Highway corridor with a convenient connection to the town. Much of the new development that has occurred since is toward the south, as recommended in the report, along US 421 and SR 218. An interchange is planned at US 421, in Delphi, one of the most heavily traveled roads in the project area. Initial plans called for an at-grade intersection with US 421. The interchange was added at the request of local officials, emergency responders, and the public concerned about traffic volumes and safety along the heavily traveled roadway. SR 218 will have access to the new mainline via a new connector that will tie into SR 218, intersect the new mainline at grade, and extend northward to intersect existing SR 25 at grade. Access to/from the new roadway at both locations could be expected to accelerate the pace of development in the area. Area government officials view the project as needed to enhance access to these planned growth areas, to reduce heavy-vehicle (i.e., trucks and buses) traffic through downtown Delphi, and to provide convenient access to the heart of the Delphi business area via a connection to Main Street. The P-CA1 component of **Preferred Alternative 2** shares an alignment in this area with the other build alternatives. Local government officials are on record in support of the alignment’s proximity to the community and existing SR 25, and its provision for direct connection between new SR 25 and Delphi (see Appendices A1 and A2).

Logansport—Most new development has occurred in the recent past along the west side of the Logansport urban area, near the recently completed segment of US 24, the Hoosier Heartland Highway. The *Comprehensive Plan: City of Logansport* identifies the Hoosier Heartland corridor from CR 325E to CR 175W as its “future economic corridor,” and calls for a detailed planning effort to “protect local interests in access control, overall development cohesiveness and appearance along the corridor, and coordination in providing new utility and other public services.” A draft of the city’s “Potential 20 Year Development Areas” shows areas for commercial, industrial and residential development along this corridor on land that is now agricultural or undeveloped, or as infill where development currently exists. Local government officials and community leaders have included the build alternative alignment in Logansport in the local land use planning initiatives—including the February 11, 2002, amendment to the *Comprehensive Plan*, the *City of Logansport, Thoroughfare Plan*—in part because it allows for a connection to Burlington Avenue that will make that road the main entranceway into Logansport, which currently lacks a primary connection to a major highway. The “Continuation of Hoosier Heartland Industrial Corridor, SR 25 Portion” tops the list of the *Thoroughfare Plan*’s “Ten-year Plan” projects. The plan references the alignment formerly designated Y-LA—a component of Alternative 1 and **Preferred Alternative 2**—and notes that this alignment “was generally preferred by the public and also had the support of elected officials.” The P-EA segment of **Preferred Alternative 2**, of which the Y-LA alignment is an extension, is also supported in Logansport planning initiatives. The proposed land use is designed with the build alternative alignment as a key feature.

During the DEIS public comment period, local government officials, community leaders, emergency service providers, and the public requested an interchange, rather than an at-grade intersection, at Burlington Avenue. A grade-separated interchange is part of the Logansport 2002 *Thoroughfare Plan*, which is an element of the city’s *Comprehensive Plan*. Reasons cited by those requesting the interchange were improved safety, traffic handling, responsiveness to local planning initiatives, and the need for a “gateway” access to Logansport. The *Transportation Needs Study for Hoosier Heartland Highway (SR 25) and Burlington Avenue* (Appendix C) was prepared in 2002 for the City of Logansport, Cass County, and Logansport-Cass County Economic Development Foundation. The study recommended a grade-separated interchange at the intersection of new SR 25 and Burlington Avenue. As noted in Chapter 2, Section 2.4, INDOT and FHWA agreed to provide an interchange that will provide access to both SR 29 and Burlington Avenue. The selected interchange will improve connectivity with the area’s road network by providing access to SR 29, a state highway that ties into US 24/US 35 northwest of the project area, and Burlington Avenue, which is to be Logansport’s “gateway” entrance.

SUMMARY OF LAND USE IMPACTS

▪ **Direct Effects**

No-Build Alternative: None.

Build Alternatives: The acquisition of approximately 1,500 acres of additional right-of-way with all build alternatives, including **Preferred Alternative 2** (approximately 1,552 acres), would constitute an irreversible commitment of that land to transportation use for as long as the facility is required. However, if a greater need arises for use of the land or if the highway facility is no longer needed, the land can be converted to another use. At present, there is no reason to believe such a conversion will ever be necessary or desirable.

Providing interchanges rather than at-grade intersections at US 421 in Delphi and SR 29-Burlington Avenue in Logansport will increase the amount of land required for right-of-way. The land use in the vicinity of the interchanges is currently a mix of agricultural, residential, commercial/ industrial, and undeveloped. In Delphi, one of the area's largest industries, IPC, is located almost immediately south of the proposed interchange, and office/commercial development is occurring along US 421, the most heavily traveled road (other than existing SR 25) in the area. In Logansport, the current land use plan shows mixed-use development—residential, commercial and industrial—intended for the area. Industrial and commercial uses already exist immediately north of the proposed new roadway from CR 115W to Burlington Avenue. The decision to provide the interchanges was responsive to the local support identified during the public involvement process.

- **Indirect / Cumulative Effects**

No-Build Alternative: This alternative is inconsistent with local comprehensive plans and regional transportation plans, all of which anticipate the completion of the Hoosier Heartland Highway. Although development would be expected to continue, to some extent, within the corridor without the project, local communities' plans to stimulate growth based on the presence of the improved transportation network would be adversely impacted by lack of road improvements in the corridor, as would the regionally identified need for system linkage.

Build Alternatives: The project has the potential for indirect and cumulative impacts. For example, new businesses/industries create job opportunities that attract employees into an area. This spurs residential development, which in turn impacts schools and community support services, creates a demand for additional businesses, thereby increasing the potential for more development. Indirectly, the project could influence the location of new developments and affect the expected rate of growth. A typical scenario is the conversion of farmland or undeveloped land to residential, commercial or a mix of uses, particularly around intersections with public crossroads and the new roadway. Cumulatively, to the land taken from agricultural use for right-of-way would be added the land taken from agricultural use for development that would, potentially, spur more road improvements/new roads, which would, in turn, induce additional removal of agricultural land for development.

Strong local planning exists within the project area. The project is anticipated and included in local land use plans and initiatives, and planning agencies have already begun to address the potential impacts of the project. Local communities have identified areas for development with an improved transportation corridor in mind, and have made recommendations regarding a preferred alignment within their jurisdictions to best accommodate their development plans while addressing land use and other environmental issues. As noted, the individual components of **Preferred Alternative 2** (i.e., O-WA1, P-CA1, P-EA, and Y-LA) are supported by the majority of local officials and planning initiatives in communities within the project corridor. An improved transportation network, including a completed Hoosier Heartland Highway, has long been a key element in land use and transportation planning efforts of communities in the study area, including Logansport, which continues to expand industrial sites around the US 24 terminus of the project in anticipation of the project's completion. One means of keeping roadway-induced development within established development areas is by constructing a partial access control road—a road having a limited number of direct-access points—as is planned for SR 25. Restricting access generally discourages strip development along new roads.

Local land use plans support the continuance of agricultural land uses throughout much of the project area, and public sentiments expressed at numerous public meetings on the project were strongly protective and supportive of farming operations and maintenance of the area's historically rural setting and lifestyle. Although agricultural land would be dedicated to transportation use, and, cumulatively, more agricultural land could be converted as a result of development, land use plans, zoning and other controls coupled with strong local interest in preserving the agricultural base and heritage of the area will result in a minimal adverse, long-range effect on land use.

4.2 FARMLAND PROTECTION POLICY ACT AND IMPACTS ON AGRICULTURAL LAND

The project is being developed in compliance with the *Farmland Protection Policy Act of 1981* and in accordance with the state and federal regulations concerning farmland protection. Formal consultation with the U.S. Department of Agriculture, Natural Resources Conservation Service for compliance with the *Farmland Protection Policy Act* has been initiated. The Farmland Conversion Impact Rating Form AD-1006 (Appendix A1) has been used to evaluate this project's effect on farmland. Since this project received a total point value of less than 160 points, it will receive no further consideration for farmland protection, as the project will have no significant impact to farmland. No alternatives other than those discussed in this document will be considered without a re-evaluation of the project's potential impacts upon farmland.

Historically, farming has been an important resource throughout the project area and the state of Indiana, as a whole. The importance of farming was emphasized throughout the public participation process, and its import is evidenced by the fact that, though Tippecanoe County is the fastest growing county of the three in the project area, it has lost the lowest percentage of farmland. The top priority of citizens during the analysis of alternatives was to minimize the unavoidable creation of farmland severances and uneconomic remnants. Table 4.2, page IV-7, summarizes the primary farmland impacts by alternative. Included in the table are the estimated number of farm severances (Row 2) and potential uneconomic remnants by approximate remnant sizes (Rows 3a–d) and key data from Form AD-1006 (Rows 5a–b).

SUMMARY OF FARMLAND IMPACTS

- **Direct Effects**

No-Build Alternative: None.

Build Alternatives: Direct impacts on farmland will result from the acquisition of farmland for additional right-of-way needed for road construction. The project will require the acquisition of about 1,000 acres of cultivable farmland for additional right-of-way, which amounts to less than 0.2 percent of agricultural land in the three counties within the project area. Most of this acreage would be prime/unique farmland. **Preferred Alternative 2** would require the acquisition of slightly more prime farmland (approximately 835 acres) than Alternative 1 (approximately 827 acres), and less than Alternatives 3 and 4 (approximately 937 and 945 acres, respectively). An additional 11 acres (approximate) of prime farmland would be acquired for construction of the interchanges at US 421 in Delphi and SR 29-Burlington Avenue in Logansport. Because these interchanges would likely have been proposed regardless which build alternative was selected as the Preferred Alternative, the 11 acres

should be included in the prime farmland total for each alternative to provide a valid comparison.

Impacts include removal of the acquired land from agricultural production, and the creation of “uneconomic remnants” and/or landlocked parcels. For this analysis, it was assumed that a farm parcel with fewer than 20 acres would be an “uneconomic remnant”; that is, the parcel, *if considered by itself*, would be too small to be economically productive as a farm. However, it is unlikely that all or most of these parcels would have no viable use. Most of the parcels would be adjacent to other farm parcels owned either by the same individual or by a neighbor who might wish to acquire and farm the land. The state could buy the uneconomic remnant to offer for resale. Also, where compatible with local land use plans, some parcels might be suitable for residential or other development, while other parcels might be suitable for wetland mitigation or other uses.

TABLE 4.2—Potential Agricultural Impacts by Alternatives

Impacts	Alt. 1 OWA+PCA1+ PEA+YLA	Alt. 2-Preferred OWA1+PCA1+PEA+YLA		Alt. 3 OWA+PCA2+ PEB+YLB	Alt. 4 OWA1+PCA2+ PEB+YLB
		Without interchanges	Additional parcels/acres with interchanges		
⁽¹⁾ Total Number of Parcels From Which ROW Would Be Acquired (includes all land uses)	316	309	+4	280	273
⁽²⁾ Number of Parcels of 20+ Cultivable Acres From Which ROW Would Be Acquired (i.e., number of farmland severances)	127	142	0	130	145
⁽³⁾ Number of Cultivable Parcels Remaining After ROW Acquisition, by Size Range of Remainder					
^(a) 0 – 5 acres	93	91	0	89	87
^(b) 6 – 10 acres	19	19	0	21	21
^(c) 11 – 15 acres	22	23	0	17	18
^(d) 16 – 20 acres	15	13	0	19	17
⁽⁴⁾ Acres of Land Potentially Impacted					
^(a) Total Acres To Be Acquired For ROW (includes all land uses)	1,508	1,529	+23	1,513	1,534
^(b) Cultivable Farmland Acres* To Be Acquired For ROW	1004	1001	+12	1039	1046
^(c) Uncultivated (incl. forested/riparian/wetland) Farmland Acres To Be Acquired For ROW	174	170	+3	176	172
⁽⁵⁾ USDA Form AD-1006 Data					
^(a) Total Acres Prime + Unique Farmland	826.6	834.6	+ 10.8 estim.	936.7	944.7
^(b) Total Acres Statewide + Local Important Farmland	11	11	0 estim.	2	2

* In this table, “farm” is defined as a parcel that has 20 acres or more of cultivable land. Agricultural parcels were identified from aerial photography and property tax records, which identify individual property boundary lines but do not specify whether the boundaries encompass just one farm field or an entire farmstead. Therefore, the number of parcels cited above does not reflect the number of farms potentially impacted; i.e., several potentially impacted parcels could belong to one farm operation.

The ability to access parcels severed by the new road is also a consideration when determining direct impacts to farmland. New SR 25 would have partial access control, and at-grade intersections would be kept to a minimum. While access to most severed parcels will be available via adjacent roads/driveways, some parcels would be landlocked. The state would also analyze the feasibility of providing a frontage road for access. The disposition of uneconomic remnants and severed parcels would be addressed during final design.

▪ **Indirect / Cumulative Effects**

No-Build Alternative: None.

Build Alternatives: As noted in the “Land Use” section, above, potential indirect and cumulative impacts to farmland as the result of road construction include the conversion of

farmland to non-agricultural uses. Indirect impacts would most likely occur where access is proposed. Information from the National Agricultural Statistics Service of the U.S. Department of Agriculture indicates that from 1987 to 1997, Indiana experienced a seven percent reduction in farmland. During that same period, Tippecanoe, Carroll, and Cass counties experienced reductions that were at or below the statewide average (i.e., two percent, five percent, and seven percent, respectively). Local planning officials are very supportive of maintaining agricultural land use in the area, and the control of development is within each local government's jurisdiction through land use planning, and subdivision and zoning regulations. Such tools provide support for the project and, related to the indirect conversion of farmland, 1) provide guidance for land use changes in and around the proposed highway corridor, and 2) provide support for the continuance of agricultural land uses throughout most of the project area. Therefore, since such tools are in place to govern land use changes and protect agricultural resources in accordance to the broader goals and objectives of the communities, the indirect effects of the project on farmland are expected to be minimal.

4.3 SOCIAL IMPACTS

Community Cohesion

The project would not cause major disruptions to subdivisions or platted neighborhoods, nor would it cause major divisions to communities, or impact community cohesion by displacing a large number of residents or cutting off residents from community facilities and service providers. The most notable impact to an urban residential area would occur on or near Burlington Avenue, where the interchange associated with **Preferred Alternative 2** will require acquisition of an estimated seven single-family residences. The interchange is intended to provide Logansport with the "gateway" access that it currently lacks. Access to community services would be improved for those residents remaining along Burlington Avenue.

Some impact to community cohesion could be experienced in rural areas where housing is located adjacent to county/state road rights-of-way. Though these residences are generally few in number and not considered part of a neighborhood, a neighborhood-type sense of interdependence and cohesion can develop, especially where the next-closest neighbors are not in easy walking distance. In these instances, the displacement of two or more residents could produce a negative impact to the remaining residents. This situation occurs as a result of one or more of the build alternatives, as follows:

Tippecanoe CR 500E—In a cluster of dwellings along CR 500E north of CR 300N, it is estimated **Preferred Alternative 2** will require the acquisition of two residences, and Alternative 4 would acquire three residences. Alternatives 1 and 3 would acquire one residence north of the cluster.

Tippecanoe CR 625E—All build alternatives would require the acquisition of an estimated two residences along the railroad, off CR 625E. These residences are the southernmost dwellings in a small cluster of residences along that roadway, just north of the track.

There is also the possibility that rural residents on scattered sites throughout the project area, as well as in towns such as Buck Creek and Colburn, could view a new four-lane roadway as both a physical and a psychological barrier between them and their neighbors and service providers. This is to be expected particularly where public crossroads leading to/from communities or individual properties are severed as a result of the project, requiring motorists to forsake established routes and adjust to new travel patterns to access familiar destinations. To continue

the existing sense of cohesion for widely separated residents and communities, the build alternatives maintain local access wherever possible. With any of the build alternatives, some public crossroads leading to and from communities would be provided access to the new route via an at-grade intersection, some will overpass the new road and have no direct connection to it, others would be reconstructed to provide connections with nearby roads but not necessarily with new SR 25, and still others would be closed. With **Preferred Alternative 2**, interchanges are proposed at US 421 in Delphi, and SR 29-Burlington Avenue in Logansport to facilitate access to these communities.

Alternative 1 eliminated eleven at-grade railroad crossings on public roads (crossroads and existing SR 25), and retained four other crossings to provide local access, only. **Preferred Alternative 2** eliminates sixteen at-grade railroad crossings on public roads, while retaining three others for local access, only. Alternative 3 eliminated seven at-grade railroad crossings, and retained six others for local access, and Alternative 4 eliminated twelve at-grade crossings, and retained five others for local access, only. Table 4.3 identifies public roads where at-grade railroad crossings would be eliminated (✓) or have local access only (L). Table 4.4, page IV-10, identifies the proposed conditions for all of the area’s major roads. Where local access is provided, the crossroads would terminate just beyond the track and be closed to through traffic.

TABLE 4.3—Railroad Crossings Eliminated

Crossroad	Alternative 1	Preferred Alternative 2	Alternative 3	Alternative 4
Western Segment				
CR 400E		✓		✓
CR 300N		✓		✓
CR 500E		✓		✓
CR 400N	L	✓	L	✓
CR 625E	✓	✓	✓	✓
CR 900E		✓		✓
CR 600N	L	L	L	L
CR 800N	L	L	L	L
Central Segment				
CR 400W	✓	✓	✓	✓
Eastern Segment				
CR 600N	✓	✓		
CR 100W	✓	✓	L	L
Meridian Line Rd.	✓	✓	✓	✓
CR 150E	✓	✓	L	L
CR 500S	✓	✓	✓	✓
CR 500W	✓	✓	✓	✓
CR 325W	✓	✓	✓	✓
Existing SR 25	✓	✓		
CR 300S	✓	✓	✓	✓
Logansport Segment				
CR 175W	L	L	L	L
Total	✓= 11 L = 4	✓= 16 L = 3	✓= 7 L = 6	✓= 12 L = 5

✓= Railroad crossing eliminated.

L = Local access only. Road closed to through traffic, but open at railroad crossing for a short distance to permit local access.

TABLE 4.4—Crossroad Intersections, Connections and Closings Under Consideration

	Alternatives			
	Alternative 1 OWA+PCA1+PEA+YLA	Preferred Alternative 2 OWA1+PCA1+PEA+YLA	Alternative 3 OWA+PCA2+PEB+YLB	Alternative 4 OWA1+PCA2+PEB+YLB
Western Segment (O-WA / A1)				
Exist. SR 25	1	1	1	1
CR 400E	N: 3 B / S: 4 B (connects to CR 300N)	N: 3 B / S: 4 B (connects to CR 300N)	N: 3 B / S: 4 B (connects to CR 300N)	N: 3 B / S: 4 B (connects to CR 300N)
CR 300N	1	2B	1	2B
CR 500E	1	2 A	1	2 A
CR 400N	3 B	3 B	3 B	3 B
CR 625E	2 B	2 B	2 B	2 B
CR 450N	1	1	1	1
CR 750E	1	1	1	1
CR 900E	1	2 A	1	2 A
CR 600N	3 B	3 B	3 B	3 B
CR 700N	1	1	1	1
CR 1000E	2 B	2 B	2 B	2 B
CR 800N	3 B	3 B	3 B	3 B
CR 900N	N: 3 B / S: 1	2 B	N: 3 B / S: 1	2 B
Exist. SR 25	5	5	5	5
CR 1100E	2 B	2 B	2 B	2 B
Central Segment (P-CA1 / 2)				
CR 800W	1	1	1	1
CR 100N	3 B	3 B	3 B	3 B
US 421	1	2 A	1	1
CR 200N	1	2 B	1	1
CR 300N	2 B	2 B	2 B	2 B
RR	2	2	2	2
SR 218	1	1	1	1
Exist. SR 25	1	N: 3 B / S: 1	1	1
CR 500W	3 B	2 B	3 B	3 B
CR 400W	1	3 B	S: 3 B	S: 3 B
Eastern Segment (P-EA / B)				
CR 600N	3 B	N: 4 A / S: 3 B	NA	NA
N. Walnut St.	1	2B	NA	NA
CR 250W	1	1	5	5
CR 225W	NA	NA	4 A	4 A
CR 650N	NA	NA	2 B	2 B
CR 750N	N: 4 B (connects to CR 100W) / S: 3 B	N: 4 B (connects to CR 100W) / S: 3 B	N: 3 B / S: 1	N: 3 B / S: 1
CR 100W	N: 4 B (connects to CR 750N) / S: 3 B	N: 4 B (connects to CR 750N) / S: 3 B	N: 3 B / S: 1	N: 3 B / S: 1
Meridian Line Rd.	2 B	2 B	3 B	3 B
CR 900N	1	1	N: 3 B / S: 1	N: 3 B / S: 1
CR 100E	1	1	1	1
CR 150E	3 B	3 B	3 B	3 B
CR 500S	2 B	2 B	3 B	3 B
CR 500W	3 B	3 B	N: 3 B / S: 1	N: 3 B / S: 1
CR 400S	1	1	2 B	2 B
CR 400W	2 B	2 B	1	1
CR 325W	2 B	2 B	2 B	2 B
CR 275W	4 A	(Access via CR 300S)	NA	NA
CR 300S	N: 1 / S: 3 B	N: 1 / S: 3 B	N: 3 B / S: 1	N: 3 B / S: 1
Logansport Segment (Y-LA / B)				
Exist. SR 25	5	5	NA	NA
SR 25	2 B	2 B	NA	NA
CR 175W	3 B	3 B	3 B	3 B
CR 115W	N: 1 / S: 3 B	3 B	N: 1 / S: 3 B	N: 1 / S: 3 B
SR 29	2 B	2 A	2 B	2 B
Burlington Ave.	1	2 A	1	1
Kokomo Pk.	2 B	2 B	2 B	2 B

Legend

1 = At-grade intersection
 2 = Grade-separation
 3 = Road closed to thru traffic
 4 = Crossroad relocated
 5 = New connection

A = Access to new SR 25
 B = No access to new SR 25
 NA = Not applicable

S = South of new SR 25
 N = North of new SR 25

Where public crossroads would be closed, travel time to work, to local service providers or other destinations could be lengthened for residents/commuters in some areas; however, in many cases, such inconvenience would be offset by the fact that the new roadway would reduce delays and improve travel time between communities, and reduce traffic on those portions of existing SR 25 that will remain open. Overall, none of the build alternatives would inhibit access to jobs, educational facilities, religious institutions, health and welfare services, recreational facilities, social and cultural facilities, pedestrian facilities, shopping facilities and public transit services.

Emergency Services

Police, fire, emergency medical and 911 service providers and public officials throughout the project area were included in the early coordination and ongoing public participation program associated with this project. (Related documentation appears in Appendix A1). Meetings with representatives of the emergency services agencies from Tippecanoe, Carroll and Cass County were held in May and September 2000. Attendees represented various local police, fire, EMS, and 911 departments. Local officials and emergency responders also participated in the public hearing and comment phase of the project, offering additional information and recommendations regarding critical routes. At these meetings/public hearings, and through correspondence with public officials and representatives of these agencies, critical routes recommended to remain open were identified, as follows: Tippecanoe County CR 500E and CR 900E; Carroll County CR 700N, US 421, CR 300N (Camden-Delphi Road), and CR 500W; and Cass County CR 600N, CR 300S, CR 400S, CR 500S, CR 175W, SR 29, Burlington Avenue, and Old Kokomo Pike. Existing SR 25 would remain open along much of its length, particularly through the rural communities it currently bisects; thus, it would continue to provide access to much of its current service area, as well as to the new SR 25 at selected locations, for emergency and general travel purposes. In addition, other state routes that serve as snow/evacuation routes are also considered emergency routes. None of the build alternatives would require the closing of any of these routes. Direct connection to the new roadway is not provided in all cases. Proposed access for critical routes is shown on Table 4.5, page IV-12.

The new SR 25 and associated closing of several crossroads would change some travel patterns and redistribute traffic volumes on the road network, particularly existing SR 25, which would lose traffic to the new SR 25. While the change in travel patterns, especially those related to road closings, could produce longer trips and slower response times in some instances, the predominant impact would be shorter trips with quicker response times, for the following reasons: 1) much of existing SR 25 would remain open and carry less traffic, 2) some roads (including new SR 25) would be constructed to overpass railroads rather than have at-grade railroad crossings, and 3) in many instances the new SR 25 alignment would have connections with existing public crossroads. **Preferred Alternative 2** includes interchanges with US 421 in Delphi and SR 29-Burlington Avenue in Logansport to facilitate access to those communities. As noted, emergency response agencies and public officials along the project route have been consulted about proposed closings and other access-related matters. The consensus among the representatives of the emergency response agencies at the meetings was that shorter trips with quicker response would be the predominant impact, assuming that critical routes they identified remain accessible. The build alternatives have been designed to address the recommendations of these officials and agencies. Where public crossroads would be closed, alternative routes would be available in the vicinity.

TABLE 4.5—Proposed Access for Critical Routes

Critical Route	Proposed Open/Closed	Proposed SR 25 Intersection /Connection		
		At-Grade	Grade Separation	
		Direct access to new SR 25	Access new SR 25 via connecting road / interchange*	No direct connection to new SR 25
Existing SR 25	Open along most of its length	All alternatives		
Western				
CR 500E	Open	Alts. 1 and 3	Preferred Alt. 2 and Alt. 4	
CR 900E	Open	Alts. 1 and 3	Preferred Alt. 2 and Alt. 4	
CR 700N	Open	All alternatives		
Central				
US 421	Open	Alts. 1, 3 and 4	Preferred Alt. 2	
CR 300N (Carroll Co.)	Open			All alternatives
CR 500W	Open, Preferred Alt. 2 Closed, Alts. 1, 3 and 4			Preferred Alt. 2
Eastern				
CR 600N	Closed to thru traffic (access to new SR 25, as noted at right)		Alt. 1 and Preferred Alt. 2	
CR 500S	Open, Alt.1 and Preferred Alt. 2 Closed, Alts. 3 and 4			Alt. 1 and Preferred Alt. 2
CR 400S	Open	Alt. 1 and Preferred Alt. 2		Alts. 3 and 4
CR 300S	Closed to thru traffic (access to new SR 25, as noted at right)	Alt. 1 and Preferred Alt. 2 (eastbound)		
Logansport				
CR 175W	Closed (alternative routes in area)			
SR 29	Open		Preferred Alt. 2	Alts. 1, 3 and 4
Burlington Avenue	Open	Alts. 1, 3 and 4	Preferred Alt. 2	
Old Kokomo Pike				All alternatives

School Bus Routes

The majority of the public crossroads along the project corridor serve as school bus routes. The Tippecanoe School Corporation expressed concerns about road closings and impacts during construction at the existing SR 25/CR 300N intersection and SR 25/I-65 interchange. Director of Transportation Philip E. Mugg, in a letter dated September 11, 2001 (see Appendix A1), recommended that turnarounds with a minimum radius of 100 feet be provided for school buses where roadways are severed and dead-end segments created; and that construction impacts be minimized at the referenced intersection and interchange, which are main school bus arteries. He also noted that the school district is large (430 square miles), and that any action that lengthens the bus runs (by requiring drivers to double back over roads in order to exit dead-end segments) is a major concern. CR 300N at existing SR 25 in Tippecanoe County would not be directly affected by construction of the new roadway; however, CR 300N in the vicinity of CR 400E would be impacted by construction of all build alternatives, since the new roadway would cross CR 300N in this area. Alternatives 1 and 3 provide an at-grade intersection at the new road and CR 300N, while **Preferred Alternative 2** and Alternative 4 provide a grade-separation to carry CR 300N over the railroad and new roadway but do not provide direct access to new SR 25. The majority of the public crossroads would have either at-grade intersections with the new road or would be reconstructed to overpass the new road and adjacent railroad. Where roads would be closed, alternate routes are available nearby or access roads would be constructed. School bus routes are evaluated yearly to adjust to changing student populations. Changes in access for school bus routes will be discussed with the school systems well in advance of when they actually take place so the schools systems can adjust routes in a timely manner. Where roads are severed, provisions for school bus turnarounds will be included during the final design phase of the project.

Environmental Justice

No pockets or groups of minorities, elderly, low-income, non-driver, handicapped, or transit-dependent individuals were observed to be occupying residences within the rights-of-way. There is also no evidence that any handicapped individuals would be relocated. Therefore, none of the build alternatives would have a disproportionate impact to such individuals, in accordance with Executive Order 12898, *Environmental Justice*. The purpose of *Executive Order 12898* is to identify, address and avoid disproportionately high and adverse human health or environmental effects on minority or low-income populations. Disproportionately high and adverse human health or environmental effects on minority and low-income populations are not anticipated because field reconnaissance and contact with local officials, as well as the results from the socioeconomic analysis, indicated that no enclaves are located in the project corridor.

SUMMARY OF SOCIAL IMPACTS

▪ **Direct Effects**

No-Build Alternative: No public roads would be closed and existing at-grade railroad crossings would remain operational.

Build Alternatives: Several public roads would be closed at the new roadway, and other public roads would overpass both the new road and the railroad—in some cases providing access to the new road, in other cases not. Changes to existing roads will require changes in motorists' travel patterns, lengthening travel time for some and reducing it for others.

▪ **Indirect / Cumulative Effects**

No-Build Alternative: Along existing SR 25, increased traffic volumes and related congestion could adversely impact the safety of pedestrians and motorists, emergency responders, school buses, etc., increasing travel time and impairing ready access to community services and other local destinations.

Build Alternatives: Changes to existing roads will require changes in motorists' travel patterns, lengthening travel time for some and reducing it for others. Overall, travel time and motoring safety are expected to improve throughout the corridor as a result of any build alternative selected. For example, residual traffic on SR 25 would be reduced and acceptable/desirable levels of service achieved (see Table 2.8, pages II-37–II-38), thereby reducing the number of congestion-related delays and the potential for accidents, particularly on sections of existing SR 25 having a high number of deficiencies (such as between Lafayette and Delphi). Access to Delphi and Logansport would be improved by the construction of interchanges with US 421 and SR 29-Burlington Avenue.

The elimination of several at-grade railroad crossings on public roadways by overpassing or road closing will, likewise, eliminate travel delays occasioned by the heavy volume of rail traffic in the area and reduce accident potential. In addition, some public crossroads would retain an at-grade railroad crossing to provide access to properties immediately north/south of the track; the crossroads would terminate a short distance beyond the track, thus be closed to through traffic. The number of at-grade railroad crossings eliminated with each build alternative, is as follows:

- Alternative 1 = 11 closed + 4 retained for local access, only
- **Preferred Alternative 2** = 16 closed + 3 retained for local access, only
- Alternative 3 = 7 closed + 6 retained for local access, only.
- Alternative 4 = 12 closed + 5 retained for local access, only

Emergency responders have voiced support for the project, particularly the elimination of delay-causing at-grade railroad crossings.

The project will also provide improved access to communities, especially Delphi and Logansport, where proposed connections to local public roads are strongly supported by government officials and planning agencies. At the same time, the high volumes of through-traffic (including heavy vehicles) currently experienced in downtown Delphi will be reduced as a result of the proximity of and convenient access to the new road.

4.4 RELOCATION IMPACTS

The potential impacts to residences, businesses and institutions as a result of the project were identified in a *Conceptual Stage Relocation Plan*. The information in the plan is summarized below, and the data is capsulized on Table 4.6, page IV-16.

4.4.1 Residential Relocations

A total of 43 residences were identified as being within the right-of-way of one or more build alternatives and, therefore, as being potential relocations. Of these, two are tenant-occupied duplexes and the rest appear to be owner-occupied houses. Seven of the owner-occupied residences are farmhouses, two are on sites with businesses, and the rest are on residential-only lots along county or state roads. None of the residences are in a platted neighborhood or subdivision. Estimated residential relocations, by alternative, are as follows:

- Alternative 1 32 single-family residences + 2 duplexes = 36 families
- **Preferred Alternative 2** **31 single-family residences + 2 duplexes** = **35 families**
- Alternative 3 25 single-family residences + 2 duplexes = 29 families
- Alternative 4 19 single-family residences + 2 duplexes = 23 families

Special Advisory Services

No unique relocation situations are known or are anticipated with selection of any of the alternatives. However, should such situations arise, special advisory services would be available.

Available Housing

Contact was made with local real estate agents, newspaper and real estate advertisements were reviewed, and searches were made on the Internet to identify available housing in and around the study area. The research indicates that sufficient comparable, decent, safe and sanitary housing will exist when the right-of-way is acquired for this project. Therefore, it is likely the relocations for this project could be accomplished using normal relocation procedures and the need for Housing

of Last Resort⁹ is not anticipated. One reason Housing of Last Resort may not be needed is because the right-of-way acquisition phase of this project will likely occur in stages, over non-concurrent time periods. This approach would allow more time for adequate houses to come onto the market during the relocation phases. Another reason Housing of Last Resort may not be needed is because it is possible that some of the potentially displaced houses could be relocated on the same property, yet out of the proposed right-of-way of the future road. This would most likely happen with the trailers and the farmhouses. No other projects, public or private, that would compete for available housing during the time right-of-way is to be acquired, are known to exist in any of the counties. Should the need for Housing of Last Resort arise, however, that program will be available. Because the project would extend into three counties, the number of comparable, available housing was analyzed for each county. It was assumed that the potentially displaced individuals could remain in the same county, if they should choose to do so. Those displaced by any of the build alternatives would be relocated into decent, safe, and sanitary replacement housing, within their financial means, without discrimination, and within a reasonable time.

Availability of Resources

Relocation resources would be available to all residential relocatees without regard to race, creed, color, sex, national origin, or economic status, as required by Title VI of the *Civil Rights Act of 1964*. And, in accordance with *Environmental Justice Executive Order 12898*, it is anticipated that the project would not have a disproportionately high and adverse effect on minority or low-income populations.

Financial assistance would be available to eligible persons displaced by this project. Payments received are not considered as income under the provisions of the *Internal Revenue Code of 1954*; or for the purposes of determining any person's eligibility, or the extent of eligibility, for assistance under the *Social Security Act* or any other federal law.

Relocation Procedures

To minimize the unavoidable effects of right-of-way acquisition and displacement of people, INDOT offers a Relocation Assistance Program in accordance with the *Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970* (Public Law 91-646), as amended in 1987. At the time right-of-way is acquired a relocation agent would be assigned to this project to ascertain the needs and desires of the potentially displaced persons, to provide information, answer questions, give help in finding replacement property, and issue last resort housing payments, if needed.

4.4.2 Business and Institutional Displacements

A total of nine businesses were identified as being potential displacements as a result of right-of-way requirements for the project. The businesses, shown on Exhibits 3 and 4, are as follows: Auto Express Car Wash, Mark L. Abbott Heartland Hogs, Watson Construction / J.W. Rentals (same ownership and location), Tri-State Cob, Trueblood Hog Farm, Tasler Inc., and Homberg Farm / PHT, Inc. (same ownership and location). A vacant commercial building (formerly Big "R"

⁹ "Last resort housing" is a program used when comparable replacement housing is not available or is unavailable within the displacee's financial means, and the replacement payment exceeds the state legal limits. The program's purpose is to allow broad latitudes in methods of implementation by the state so that decent, safe, and sanitary replacement housing can be provided. This program is used, as the name implies, only as a "last resort," when there is no adequate opportunity for relocation within the area.

True Value) near Tri-State Cob would be acquired for right-of-way by all build alternatives. Alternative 1 and **Preferred Alternative 2** would potentially displace five businesses, and Alternatives 3 and 4 would potentially displace eight (see Table 4.6). All but one of the businesses' spokespersons indicated the businesses would be able to remain at the same site or relocate within the same area, and business closings or reductions in the number of employees would be unlikely as a result of the project. In some cases, business expansion was considered possible. The fact that local communities' land use plans include the completion of the Hoosier Heartland Highway indicates local jurisdictions believe the project's long-term economic benefits outweigh short-term impacts of business displacement.

The Carroll County office of the state Family and Social Services Administration's Division of Family and Children operates from a leased building approximately one mile east of Delphi. This structure is within the right-of-way of all build alternatives (which share an alignment in this area) and would be acquired as a result of the project, thereby displacing this family services agency. The office, which has a staff of ten, administers the Food Stamps, Medicaid and other assistance programs for Carroll County residents. According to the director of the office, Mr. Gilbert Smith, the 3,500-square-foot facility is visited by an average of 20 persons per weekday. Services are also provided primarily via mail and telephone. Although the Delphi area is not the geographic center of the county, it is the most populous area of the county; therefore, the Delphi area is considered to be best suited to providing services to county residents. Mr. Smith noted that conversations with local government officials regarding possible displacement have occurred. It is not considered likely that an existing building with sufficient space to accommodate the office would be available in downtown Delphi or in the immediate area. However, one mile south of Delphi, on US 421, there is land available on which a new facility could be constructed. The distance from the town center would be the same as now (approximately one mile). It is not anticipated that the agency's ability to provide services would be adversely affected by relocation.

TABLE 4.6—Summary of Potential Relocations and Displacements

Alternative	Residential					Institutional	Commercial/Industrial	
	Dwellings			No. of Families*	Residences on Farms		Total Businesses	Businesses by Name
	Single Family	Duplex*	Total					
Alt. 1 OWA+PCA1+PEA+YLA	32	2	34	36	7	Division of Family/ Children	5	Auto Express, Tri-State, Watson/J.R. Rentals, Tasler
Preferred Alt. 2 OWA1+PCA1+PEA+YLA	31	2	33	35	7	Division of Family/ Children	5	Auto Express, Tri-State, Watson/J.R. Rentals, Tasler
Alt. 3 OWA+PCA2+PEB+YLB	25	2	27	29	3	Division of Family/ Children	8	Auto Express, Tri-State, Heartland Hogs, Watson/J.R. Rentals, Trueblood Hog Farm, Homberg Farm/PHT
Alt. 4 OWA1+PCA2+PEB+YLB	19	2	21	23	3	Division of Family/ Children	8	Auto Express, Tri-State, Heartland Hogs, Watson/J.R. Rentals, Trueblood Hog Farm, Homberg Farm/PHT

* All alternatives would impact the same 2 duplex structures, each of which is assumed to house two families.

Early Coordination with Local Governments and Businesses

Public involvement has been an ongoing part of this project. As a result, local government officials and owners/representatives of business that could, potentially, be displaced have had opportunities to provide comments/input into the project's development.

Based on the existing land uses and the widely dispersed locations of most developments, there is available land on which displaced businesses could relocate and remain in their market area.

SUMMARY OF RELOCATION IMPACTS

▪ Direct Effects

No Build Alternative: None.

Build Alternatives: Residential relocations would involve occupants of an estimated 21 to 34 residential structures, all but two of which are single-family dwellings. The two exceptions are duplexes assumed to house two families each. Alternative 1 would potentially require the 36 relocations; **Preferred Alternative 2**, 35 relocations; Alternative 3, 29 relocations; and Alternative 4, 23 relocations. Alternative 1 and **Preferred Alternative 2** would potentially displace five businesses and Alternatives 3 and 4 would potentially displace eight. All alternatives share an alignment that would potentially displace the Carroll County office of the state Family and Social Services Administration's Division of Family and Children. It is likely that residents and businesses wishing to relocate near their current locations could do so, and that the state agency office could also be relocated in the immediate vicinity, assuming the state would choose to construct a new facility. Should the state opt to relocate into an existing building, a facility similar to the one now occupied by the agency may be difficult to find in Delphi.

It is anticipated that the project would not have a disproportionately high and adverse effect on minority or low-income populations.

▪ Indirect / Cumulative Effects

No Build Alternative: None.

Build Alternatives: Local government officials and planners anticipate economic growth to be a benefit of improvements to the area's transportation network. Such growth would lead to increased employment and housing opportunities within the project corridor, offsetting temporary losses occurring as a result of residential relocations or business displacements.

4.5 ECONOMIC IMPACTS

Commerce/industrial parks, individual businesses, and other facilities that could be directly or indirectly affected—positively or negatively—by the project are shown on Exhibits 3 and 4 and described, as follows:

Commerce/Industrial Parks

- Deer Creek Commerce Center: Owned by The Andersons, Inc., the 160-acre tract currently houses Andersons' four Delphi-based business, and there is ample space for business expansion on the site. The Andersons/commerce center property would have direct access to the new SR 25 from a realigned SR 218. Delphi officials have stated their preference for the common alignment that is shared by all alternatives through this area because it lessens the impact to The Andersons' property and operations, and it would provide an access to the community via a proposed connection to Main Street.
- Logansport/Cass Industrial Park: The 130-acre park on SR 29 is approximately one mile south of the project corridor. The major tenant is Federal Mogul Fuel Systems. The project would put an improved roadway within a short distance of the industrial park, thereby providing existing tenants with better access to/from supplies and markets, and attracting new tenants to the industrial park.

- Logansport Mixed-Use Development Area: The approximately 480-acre vacant tract of land available for mixed-use residential/commercial/industrial development is within the project corridor, southeast of US 24. The southwestern portion of this property would be bisected by all of the alternatives, which share a common alignment through this area. Logansport officials have gone on record as supporting this alignment, which would provide the site with high visibility and proximity to the new roadway—thereby making it attractive to developers.
- Logansport Industrial Area: A triangular-shaped area that is bisected by CR 115W and bounded by existing SR 25 on the north, SR 29 on the east, CR 250S on the south, and CR 175W on the west is included in the city’s plans for industrial and commercial development. The area currently contains five industries, three of which have an interdependent relationship. Businesses located in this area are Tyson Fresh Meats, Inc. (formerly IBP), Pasquale Trucking, Gangloff Industries, Elco-Textron, and Hanson Cold Storage. Pasquale and Gangloff are trucking companies the majority of whose business comes from hauling for Tyson. The main access to all of the businesses is CR 250S via SR 29. With the addition of the interchange associated with **Preferred Alternative 2**, CR 250S maintains access to SR 29, thereby providing these businesses convenient access to the new SR 25 via the interchange. Without the interchange (i.e., Alternatives 1, 3, and 4), CR 250S would retain access to SR 29, but the new SR 25 would overpass SR 29 without connection. In this case, access to new SR 25 would be provided by extending CR 250S westward to intersect realigned CR 115W’s new connector that would provide an at-grade intersection with new SR 25. (With the interchange, this connector would not be provided.)

Businesses

- The Andersons, Clymers—Alternative 1 and **Preferred Alternative 2**, located north of existing SR 25 and the railroad, would require the relocation of the company’s current rail access. Regarding the importance of rail access, the company noted, “...we would have to risk loss of value to our property and our farmer customers as a result of being served over a shortline railroad owned by a competitor.” The Andersons officials prefer an alignment south of existing SR 25 and the railroad (Alternatives 3 and 4). Logansport officials support the northerly alignment through Clymers, stating in a letter that, “The proposed elimination of rail spur servicing the Anderson’s (sic) is acceptable provided that a direct connection of a Class 1 rail line is retained for area businesses.”

The Norfolk Southern (NS) provides rail freight service to both The Andersons and ADM/Countrymark in Clymers. In a letter addressing company’s ability to provide service should the SR 25 project impact the current arrangements, a Norfolk Southern official noted that the railroad “serves both facilities directly by its owned line and/or via trackage-rights over Winamac Southern Railway Company (WSRY). NS must either (a) have its own unimpeded access to both facilities with direct connection to its mainline trackage (as it presently does) or (b) ...obtain a long term lease of the present WSRY mainline between Logansport and Clymers—at no cost to NS for any land, rehabilitation and/or construction of any new trackage...related to this reroute proposal.”

Alternative 1 and **Preferred Alternative 2** can provide for the same level of rail service currently available by using the WSRY line or the existing Norfolk Southern spur. Alternatives 3 and 4 are south of existing SR 25 and the railroad, and would not impact these businesses.

- ADM/Countrymark, Logansport: Like nearby Andersons, the ADM facility has direct access to rail, and Alternative 1 and **Preferred Alternative 2** would impact the facility in the same way they would Andersons. Options addressed by officials of Norfolk Southern and INDOT (see The Andersons, above) would be available to ADM.
- Rozzi's Racing Bill, and a nursery business, Logansport: Located just west of Burlington Avenue, north of the common alignment of the build alternatives, these businesses would have the advantage of proximity to the new SR 25 and Burlington Avenue, which is intended to be the main gateway into Logansport. Some right-of-way might be acquired from this property by the **Preferred Alternative 2** for construction of the interchange.
- Tyson Fresh Meats, Inc. (formerly IBP), Logansport: One of the largest industries in Logansport, Tyson's facilities include a pork carcass processing plant south of existing SR 25, between CR 115W and SR 29. With the proposed interchange associated with **Preferred Alternative 2**, this business will have access to the new SR 25 via CR 115W to CR 250S to SR 29. Without the interchange, SR 29 would not have a direct connection to new SR 25. Instead, access to new SR 25 would be via a proposed at-grade intersection with realigned CR 115W. (With the interchange, this connector would not be provided.)
- Hanson Cold Storage Co., Logansport: Hanson, south of existing SR 25 and west of CR 115W, specializes in storage and custom packaging of fresh/frozen meats. With the build alternatives, access from this business to SR 29 and new SR 25 will be the same as described for Tyson.
- Elco-Textron's Precision Stamping Division, Logansport: The 185,592-square-foot plant at the junction of SR 29 and CR 250S produces engineered assemblies and components for automotive/ transportation and commercial applications. The company plans to increase production by adding a shift. With the proposed interchange associated with **Preferred Alternative 2**, this business will have convenient access to new SR 25 via the interchange at SR 29. Without the interchange, SR 29 would not have a direct connection to new SR 25. Instead, access to new SR 25 would be via a proposed at-grade intersection with realigned CR 115W. (With the interchange, this connector would not be provided.)
- Pasquale Trucking, Logansport: This trucking company, located just west of Elco-Textron, on CR 250S, provides over-the-road freight hauling of refrigerated and dry goods for industries, including Tyson. With the proposed interchange associated with **Preferred Alternative 2**, this business will have convenient access to new SR 25 via the interchange at SR 29. Without the interchange, SR 29 would not have a direct connection to new SR 25. Instead, access to new SR 25 would be via a proposed at-grade intersection with realigned CR 115W. (With the interchange, this connector would not be provided.)
- Gangloff Industries, Logansport: Located adjacent to Pasquale Trucking on CR 250S, this freight trucking company provides refrigerator-truck, over-the-road hauling services for industries, including Tyson. With the proposed interchange associated with **Preferred Alternative 2**, this business will have convenient access to new SR 25 via the interchange at SR 29. Without the interchange, SR 29 would not have a direct connection to new SR 25. In this case, access to new SR 25 would be via an at-grade intersection with CR 115W. Providing this connection would require realigning the CR 250S/CR 115W intersection. Some right-of-way would be required from the company's parking area to accommodate the realignment of the CR 250S/CR 115W intersection.

- Controls, Inc. Logansport: This electronic manufacturing services company is adjacent to the city's proposed mixed-use development area south of US 24, near the project terminus. It would be expected to benefit from a high-profile location along the Hoosier Heartland Highway, and from the economic development that is anticipated in the immediate area as a result of the completion of the SR 25 leg of this highway.
- Tasler, Inc., Logansport: This business, which manufactures wooden pallets and skids and is headquartered in Iowa, is located on existing SR 25 and would be displaced by Alternatives 1 and 2. The company has nine employees. It has been on the four-acre site almost two years and in the general area a total of seven years. If displaced, it is probable the business would relocate in the same area, according to a company spokesman, who noted that expansion of the operation is a possibility in the future.
- Homberg Farm, and PHT, Inc., Logansport: These companies are family-owned and operated from the same location west of Logansport, south of the railroad. A family residence is also on the property's over 800 acres. The land has been owned by the family since 1820, and the farm's hog and grain business has been operating since 1942. PHT, Inc., is a commercial trucking business that hauls fertilizer and ammonia to local companies. The two owners are the only employees of both businesses. Structures related to the agri-business—i.e., hog barns and grain processing buildings—are within the right-of-way of Alternatives 3 and 4. Loss of the buildings would probably not cause the closure of the businesses, according to a spokesperson. However, changes in access to clients and local service providers as a result of a south-of-the-track alternative were noted to be a major concern.
- Trueblood Hog Farm, east of Burrows: This farm, north of the intersection of Carroll CR 900N and CR 150E, contains a house and two confinement hog buildings located on CR 150E just south of the railroad track. The farm's IDEM operating permit requires 73 contiguous acres to maintain the permit. Alternatives 3 and 4 would divide the property, leaving the house and hog buildings between the new road and the railroad, without access to the remaining acreage where farm waste is disposed of, and potentially, without the requisite 73 contiguous acres. The farm owner stated that the "hog operation will be out of business if the southern route is selected."
- Indiana Packing Company (IPC), Delphi: The Indiana pork processing plant south of Delphi, on US 421, would not be directly impacted by the project. However, **Preferred Alternative 2** will provide an interchange with US 421 immediately north of IPC's plant. The industry does not have rail access on-site, and the closest major roadway for regional shipping of its product is existing SR 25 to the north. Convenient access to the new SR 25 would be expected to benefit the company and would reduce the number of livestock-hauling trucks in Downtown Delphi and on a section of the heavily traveled US 421.
- Abbott's Heartland Hogs: This family-owned agri-business is located along the south side of existing SR 25 northeast of Delphi. The facility contains several barns and other farm buildings that are within the right-of-way of Alternatives 3 and 4. There are two full-time employees, both of whom are family members, and one part-time employee. The family has extensive land holdings in the immediate area, and operates in conjunction with another family member's agri-business in the area. A family spokeswoman said the hog operations could be relocated on their property within the immediate area should the existing facilities be acquired for right-of-way.

- Tri-State Cob Limited, Delphi: Located across from the Deer Creek Commerce Center, this trucking company would be displaced by all build alternatives, which occupy a common alignment through this area. The company hauls dry good (corn, mulch, paper, etc.). The majority of its business is corn hauling, and almost all of the corn is hauled to The Andersons. The company, which has been at its present location about 20 years, employs 17 persons, 11 of whom are truck drivers. A spokesperson noted that, should the project result in displacement, the business would likely relocate in the same general area.
- Watson Construction Co., and J.W. Rentals, Delphi: These companies are operated from the same location east of Delphi, just south of existing SR 25. There are a total of 8 employees. The construction company specializes in the construction of apartments and houses, and offers roofing and remodeling services. The rental company has two duplexes, a trailer park, and storage units for tenants on the site (north of the construction company facility, along the south side of existing SR 25), and rental apartments and houses off-site. The businesses (including some of the dwelling units) would be displaced by all build alternatives, which occupy a common alignment through this area. A spokesperson for the companies said they have been on the site approximately 28 years and, if relocation becomes necessary, the businesses would relocate in the same area, with expansion a possibility.
- Auto Express Car Wash: This coin-operated, do-it-yourself car wash along US 421 would be displaced by all of the build alternatives, which share an alignment at this location. The company has one employee, who is also the owner. He explained that the business sits on 12 acres and, depending on the right-of-way requirements, relocation of the business on the same site would be the preferred option. He also noted that a modest expansion of the business would be probable should relocation on the site be possible.
- IMI Irving, Inc., Lafayette: This quarry and ready-mix concrete company would have right-of-way acquired by all build alternatives, which share an alignment and, therefore, impacts through this area. The entrance to the property would be relocated to be just north of the existing entrance as a result of all build alternatives.

Institutions / Organizations

- Carroll County office of the Family and Social Services Administration's Division of Family and Children, Delphi: Located in a leased building in the Deer Creek Commerce Center, this facility would be impacted by all build alternatives, which would require the acquisition of the property for right-of-way. The office, which has a staff of ten, administers the Food Stamps, Medicaid and other assistance programs for Carroll County residents. The 3,500-square-foot facility is visited by an average of 20 persons per weekday, and additional services are provided primarily via mail and telephone. Although it is not likely that an existing building with sufficient space to accommodate the office would be available in Delphi or in the immediate area, one mile south of Delphi, on US 421, there is land available on which a new facility could be constructed. The distance from the town center would be the same as now (approximately one mile), and there would be direct access to Delphi and the new SR 25 via US 421. It is not anticipated that the agency's ability to provide services would be adversely affected by relocation.

- Providence Foundation, Inc., Lafayette: This non-profit organization's property (formerly the site of the Aretz Airport), which is planned for development as a mixed-use school campus and senior citizens' community, would be impacted by all proposed build alternatives. **Preferred Alternative 2** and Alternative 4, which share an alignment at this location, would have the least impact; therefore, Foundation officials have gone on record as preferring this alignment.

The following capsulizes comments received during the development of the alternatives from local government and planning officials and from businesses regarding the project.

- Tippecanoe County APC's Board of Commissioners has gone on record in support of the common alignment of **Preferred Alternative 2** and Alternative 4 for reasons that include the "near the rail" location (which reduces agricultural impacts and improves travel safety by reducing the number of railroad crossings), and because of its compatibility with area economic development plans. The local Chamber of Commerce of Commerce also has supported the alignment shared by **Preferred Alternative 2** and Alternative 4.
- Delphi city officials and economic development groups have gone on record in support of the common route proposed for all alternatives in the Delphi area because it would provide an additional entrance to the city with its proposed connection to Main Street. In addition, input by local elected officials was instrumental in the decision to consider an interchange with US 421 rather than the at-grade intersection initially planned. The interchange will improve access to Delphi from the south, accommodate planned development, and better handle traffic on one of the project area's most heavily traveled roads. **Preferred Alternative 2** would have minimal impact to the Deer Creek Commerce Center. Andersons' officials have registered their objections to any alternative that would impact their current operations or their ability to expand operations on their Commerce Center site.
- Camden town officials and members of the Camden Community Preservation Society have written in support of an alignment south of the railroad (Alternative 3 or 4), stating that it has greater potential to bolster the community's economy than would the northern alternative.
- Government and development officials in Logansport have gone on record in favor of the north-of-the-tracks route (i.e., the shared alignment of Alternative 1 and **Preferred Alternative 2**) from Delphi to the project's eastern terminus in Logansport because it would be the most beneficial to the community's development plans. Regarding the potential impact of the alternative on the Clymers area rail spur serving The Andersons and ADM/Countrymark, Logansport officials have noted that the impact would be acceptable to them provided a direct connection to a Class 1 rail line is retained for area businesses. The Andersons' officials have continued to register their objections to a northern alignment. Norfolk Southern railroad officials have stated that to continue to provide rail service to these businesses, it must have either its own unimpeded access or a long-term lease of the WSRV mainline in the area at no cost to Norfolk Southern. Alternative 1 and **Preferred Alternative 2** can provide for the same level of rail service currently available by using the WSRV line or the existing NS spur.

Maintenance of Existing SR 25

One issue that has surfaced is that of responsibility for maintenance of existing SR 25 once the new roadway is constructed. Existing SR 25 is a state-owned and state-maintained road. Indiana law dictates the number of miles of roadway INDOT may maintain. Once the new road is open and INDOT becomes responsible for its maintenance, INDOT proposes to shift the responsibility for maintaining the remaining sections of existing SR 25 to the local jurisdictions wherein those sections lie. Prior to this action, a Memorandum of Agreement (MOA) between each affected local jurisdiction and INDOT would be required stipulating the terms of the jurisdiction's responsibilities regarding maintenance and right-of-way. The approximate number of miles of existing SR 25 that would remain in operation and would be turned over as a result of each alternative are shown on Table 4.7.

TABLE 4.7—Existing SR 25: Proposed Maintenance Responsibility

Counties	Estimated Mileage	
	Alternative 1 or Preferred Alternative 2	Alternative 3 or 4
Tippecanoe County	11 miles	11 miles
Carroll County	9 miles	16 miles
Cass County	3 miles	6 miles
Total	23 miles	33 miles

SUMMARY OF ECONOMIC IMPACTS

- **Direct Effects**

No-Build Alternative: No expenditures of funds for construction would occur with the No-Build Alternative. There would be increasing expenses associated with the maintenance of the existing roadway.

Build Alternatives: Where the new road would depart substantially from the existing SR 25 alignment, the project could result in some development at public crossroads intersecting the new route and, at the same time, in some loss of revenue by commercial enterprises along the existing route—especially restaurants, gas stations, and others that rely on truckers and the motoring public for much of their business. It is estimated that **Preferred Alternative 2** would displace five businesses. Representatives of all noted they would continue operation, and would likely be able to do so in the same area. Spokespersons for three of the businesses noted the possibility for expansion (with or without the relocation).

- **Indirect / Cumulative Effects**

No-Build Alternative: The No-Build Alternative would result in a failure to provide adequate transportation support for the existing and future growth of this area. The No-Build Alternative may be expected to result in worsened conditions for fast, safe, efficient and economical (time and money) vehicular traffic movement.

Build Alternatives: Loss of revenue by businesses along the existing route would be expected not only at the businesses scattered throughout the rural stretches of existing SR 25, but also in the communities of Delphi, Rockfield, Burrows, and Clymers. Existing SR 25 passes through these communities, and the new roadway would bypass them, resulting in potential impacts to their existing businesses. Many of these businesses serve local needs and would

not be dependent upon through-traffic for their revenue. Existing SR 25 will remain open through these communities and access between the new roadway and the communities would be provided. Thus, impacts should be limited.

Potential development associated with the new road would locate primarily at sites identified for development in local land use plans. Some development would also be expected at intersections of new SR 25 with public crossroads, particularly near communities along the route, and it may occur at a faster rate than it would should the project not be constructed. Emphasis on the project in local land use and development plans indicates the communities believe the long-term benefits will offset initial losses to the local economy resulting from the reduction of through traffic—thus, business revenues—along existing SR 25.

Delphi has identified the need to remove the heavy volume of through-traffic, especially truck traffic, which currently exists on SR 25, though some businesses could expect to lose revenues as a result of reduced traffic volumes. The community also expressed the desire to have a second access into the community and improved access via an interchange on US 421. All of the proposed build alternatives would reduce traffic on the existing road and provide the desired second access, and **Preferred Alternative 2** would also provide an interchange on US 421. The community's development initiatives strongly support the project for these reasons. Americus, which is on existing SR 25 near Lafayette, would be far removed from the new roadway. Existing SR 25 would remain open from Lafayette to Delphi, but reduced traffic in Americus could result in some loss of business. Regarding potential impacts to Buck Creek and Colburn, none of the build alternatives would bypass these communities at a great distance, and the communities would be closer to the new road than they are to existing SR 25. Thus, the communities could benefit from the proximity to an improved transportation network. Likewise, Rockfield, Burrows and Clymers would be provided access to the new SR 25 with all build alternatives, as all would have at-grade intersections with existing public crossroads leading into these communities. In addition to improved travel time and economy, benefits of the new roadway would likely include some new development at planned locations along public crossroads having at-grade intersections with the new SR 25.

At the west and east termini of the project, Lafayette and Logansport officials and development groups support the project because of its potential to boost development. Logansport, in particular, is eager for the project as a means of providing an identifiable "gateway" into the city. At present, the city is bypassed by all major roadways and has no readily identifiable entrance into the heart of the city. **Preferred Alternative 2** will provide an interchange that serves both SR 29 and Burlington Avenue, the latter of which would become the city's main entranceway from the south.

Short-term losses of property tax revenues would occur when right-of-way for the project is purchased. However, tax revenue from new development would most likely offset these losses. Such new development would be dependent upon local government and Plan Commission decisions/recommendations regarding land use. The property tax issue has not surfaced as a concern; rather, officials and planning agencies have long supported the project for its development potential.

4.6 JOINT DEVELOPMENT

There is the potential for enhancement of the Delphi hiking trails system as an outgrowth of the SR 25 project. The trails initiative is discussed in Section 4.7, below.

4.7 CONSIDERATIONS RELATING TO PEDESTRIANS AND BICYCLISTS

Sidewalks

Except within the community of Delphi, there are no sidewalks along existing SR 25 or along any of the public crossroads in the project corridor, and none are proposed along the new roadway, which would be a high-speed facility through primarily rural areas, and not conducive to pedestrian traffic.

Bicycle Routes

There are three established on-road bike routes through the project corridor—the Colburn Loop, the Wabash-Wildcat Region Bikeway, and the Wabash Valley Route 2—that would be crossed at various locations by all build alternatives (see Figure 7, page III-21). **Preferred Alternative 2** and Alternative 4 would maintain uninterrupted access to all public crossroads designated as bike routes. Alternatives 1 and 3 would relocate a section of CR 900N in Tippecanoe County just north of the railroad crossing. The relocated road would have an at-grade intersection with new SR 25 and would continue north to intersect existing SR 25. The remaining section of existing CR 900N north of the railroad would have cul-de-sacs immediately north and south of the new SR 25, thereby closing that section of CR 900N to through traffic, including bikes. As stipulated in the Federal Highway Administration's (FHWA) Section 4(f) Policy, June 7, 1989, "...if a recreational bikeway is simply described as occupying the highway rights-of-way and is not limited to any specific location within that right-of-way, a 'use' of land would not occur (Section 4(f) would not apply) provided adjustments or changes in the alignment of the highway or bikeway would not substantially impair the continuity of the bikeway." Currently, the Wabash-Wildcat Region Bikeway designates CR 900N and an approximately one-tenth-mile section of existing SR 25 as the means of access between CR 1000E and CR 800W. As a result of the road relocation, bicyclists would have to travel approximately one-half mile along existing SR 25 to make this connection. Because of the proximity of connecting access that would permit continuity of the bikeway, and because the bikeway is not limited to any specific location within the CR 900N right-of-way, Section 4(f) would not apply.

Hiking Trails

There are several state/locally dedicated public hiking trails in the general vicinity of the project corridor—including trails in Delphi and those associated with the Wabash River Heritage Corridor, a conservation corridor extending 510 miles along the Wabash River and having access points in West Lafayette, Delphi and Logansport. These would not be impacted by any of the proposed alignments.

There are also three potential hiking trails in the Delphi area that would be crossed by all build alternatives, which share a common alignment in this area. The approximate locations of the trails are shown on Figure 7 and identified as follows: Monon Railroad Bed, Pioneer Road, and Slate Bluffs. Two local groups—Delphi Heritage Trails and Carroll County Wabash & Erie Canal, Inc.—are proposing these trails. The trails are not officially dedicated, are on private property, and are

not generally open to the public. Since the trails are not on public land and open to the public, potential impacts to them would not have Section 4(f) involvement. The Canal group is working to obtain from private landowners donations of land for the trails, and has recently acquired a section of the Monon Railroad Bed (see Appendix A3 letter and map from the Canal group). Their goal is to eventually deed the land to the City of Delphi and/or Carroll County to ensure public ownership of and long-term access to the trails, once developed.

There is strong support by local officials and trails advocates for developing the trails for public recreational purposes. On April 16, 2003, several Delphi and Carroll County elected officials and agency representatives—including Delphi Mayor Lee Hoard and a representative of both trail advocate groups—met with FHWA and INDOT representatives to discuss 1) local officials' interest in and commitment to securing and developing the trails for public use, and 2) the impacts of new SR 25 on trail access and the potential for accommodating access via roadway design, pedestrian bridges, or other means. The preliminary layout for the build alternatives in the area does not specifically provide for uninterrupted access to the potential trails; however, it is probable that the Deer Creek and CR 300N bridges' clearances would be sufficient to permit pedestrian access to the trails, although some portions of the trails could require relocating to access the bridge underpasses.

INDOT's ability to participate in trail development—whether it be including trail access as a specific feature of SR 25 design, funds for a pedestrian bridge, or other involvement—depends upon development of a long-range trails master plan that 1) guarantees public use of the trails into the future, and 2) is approved by officials having jurisdiction over ownership and management of the trails. Carroll County and City of Delphi officials have passed resolutions (see Appendix A3 for the county's resolution) expressing their support for this effort. According to trail proponents, the development of a long-range master plan is expected to begin in spring 2005. Upon completion, the plan will be presented for adoption by the local government jurisdictions.

Because the efforts of Delphi Historic Trails to establish municipally owned and operated trails for the Delphi area is a concurrent development with this project, INDOT will work through final design with the municipal entity responsible for the new public trails to make every reasonable effort to maintain continuity of these trails crossing the new alignment. Until a municipal entity approves a public trails master plan and assumes ownership and management of the trails, INDOT cannot commit to any specific design accommodations.

SUMMARY OF IMPACTS TO PEDESTRIANS / BICYCLISTS

▪ Direct Effects

No-Build Alternative: None.

Build Alternatives: Alternatives 1 and 3 would relocate a section of CR 900N in Tippecanoe County just north of the railroad crossing, thereby closing a section of CR 900N to through traffic, including bicyclists following the route of the Wabash-Wildcat Region Bikeway. Bicyclists would have to travel approximately one-half mile along existing SR 25 to make this connection. **Preferred Alternative 2** and Alternative 4 maintain existing CR 900N as a through road by carrying new SR 25 over the roadway.

- **Indirect / Cumulative Effects**

No-Build Alternative: None.

Build Alternatives: The potential exists for expanding biking options through the project corridor by including the sections of existing SR 25 that would remain open following completion of the new roadway. The new roadway will divert a substantial amount of traffic from the existing road, thereby providing an opportunity for a more pleasant and safe biking experience along that route. The cause of Delphi/Carroll County trails advocates, including local government officials, could be furthered by the road project. The possibility that the new road would interrupt trail continuity has spurred a cooperative effort among Delphi/Carroll County governments and two local interest groups. Development of a long-range trails master plan is expected to begin in spring 2005. The existence of an officially adopted plan that guarantees public ownership and access into the future would enable INDOT to take trail access into account in roadway design and, possibly, assist in other areas of trail development. Trails advocates cite quality of life and economic development through tourism as reasons for adding these new trails to the Delphi trails system.

4.8 AIR QUALITY IMPACTS

4.8.1 Assessment Methodology

For this project, a microscale carbon monoxide (CO) analysis comparing existing (2000) and 2020 conditions for the project corridor was performed. The analysis was conducted to determine if CO emissions generated by the project would cause or contribute to an exceedance of National Ambient Air Quality Standards (NAAQS) as promulgated by the U.S. Environmental Protection Agency (USEPA). State and federal ambient air quality standards for CO are: 1-hour concentrations = 35 ppm or 40 mg/m³, and 8-hour concentrations = 9 ppm or 10 mg/m³. These values may not be exceeded more than once per year. Any computer modeled concentration above either the one-hour or eight-hour standard is considered a violation. Since CO is a product of combustion and is relatively inert, in addition to being emitted near the ground, the highest concentrations are typically found near the source. CO concentrations were evaluated at locations where humans may be near or on the roadway.

The dispersion of CO in the study area was simulated using CAL3QHC. CAL3QHC is a microcomputer dispersion model developed to predict the level of CO or other inert pollutant concentrations from motor vehicles traveling near roadway intersections. For the purposes of this project, the CAL3QHC model was adapted to perform as a line source model in order to predict and compare CO concentrations along free-flow sections of the project.

Data inputs to the CAL3QHC model include motor vehicle emission factors, worst-case meteorological conditions, and receptor and roadway site geometry. Emission factors for SR 25 were generated by MOBILE5.0b based on input data provided by INDOT. CO emission factors were based on various assumptions that include ambient temperature, vehicle mix, vehicle speed, vehicle registration distribution, and percent cold and hot starts. The analysis was conducted under simulated meteorological conditions designed to yield "worst-case" CO concentrations. These conditions include:

Wind Speed—The wind speed was assumed as one meter per second, which represents very little or no dispersion of the pollutants.

Stability Class—Pasquill's stability class, a measure of the atmospheric turbulence, ranges from A (very turbulent) to F (very stable). Stability class E (slightly stable) was used to model those receptors along SR 25.

Temperature—An ambient temperature of 25.5° F was assumed. This temperature represents the average temperature for the typically coldest month (January) for the nearest official National Weather Service Station.

Wind Angle—The wind angle may vary from 0° to 360° depending on the receptors' locations. The model's flexibility simplifies this process by requiring the program to conduct a worst-case wind angle search. This analysis used a wind angle search in increments of 10°.

Vehicle Mix—The vehicle mix was adjusted to reflect a higher local composition of heavy-duty gasoline and diesel trucks and was based on input provided by INDOT.

Surface Roughness—Surface roughness can affect the dispersion of pollutants and can range from 1 cm for flat, level terrain to 500 cm for urban areas (CBD). A roughness height of 108 cm was assumed for all areas along SR 25.

Mixing Height—The mixing height algorithm is intended for the study of nocturnal inversions. It was assigned a value of 1,000 meters.

Background Concentrations—All concentrations of CO that are not emitted by the sources being modeled are considered as background concentrations. They originate from either nearby parking lots or adjacent intersections. For the purposes of this study, a one-hour background concentration of 1.2 ppm was used for areas along SR 25.

4.8.2 Microscale Analysis

The CAL3QHC model was used to conduct a microscale analysis of CO concentrations generated along the free flow sections of the existing roadway and the project. In addition to meteorological input data, the CAL3QHC model requires that roadway and receptor site geometries be defined within a Cartesian coordinate system. For this analysis, a 1,000-foot (300 meter) roadway segment with the highest projected traffic volumes was modeled. This segment is located between I-65 and CR 450N and is common to all of the alternatives. Receptors were placed at various distances from the roadway including 10 feet, 25 feet, 50 feet, 75 feet and 100 feet. The results of the analyses conducted for the existing conditions, the No-Build Alternative and the build alternatives are summarized in Table 4.8.

For existing conditions, one-hour concentrations ranged from 2.0 ppm to 4.1 ppm. Since one-hour concentrations fall well below the standard, eight-hour concentrations were not calculated for this study. For the 2020 No-Build Alternative, one-hour concentrations will decrease slightly ranging from 1.9 ppm to 4.0 ppm. As shown in Table 4.8, predicted one-hour CO concentrations for the 2020 build alternatives will decrease as compared to existing and No-Build Alternative levels, ranging from 1.8 ppm to 3.1 ppm.

TABLE 4.8—Maximum One-Hour CO ppm Concentrations on Existing SR 25

Receptor Number	Existing	2020 No-Build Alt.	2020 Build Alts.
1	4.1	4.0	3.1
2	3.0	2.9	2.5
3	2.4	2.3	2.1
4	2.1	2.1	1.9
5	2.0	1.9	1.8

None of the alternatives are predicted to experience CO levels that would approach or exceed the one-hour CO standard.

4.8.3 Conclusions

Pursuant to the 1990 *Clean Air Act Amendments*, the counties of Tippecanoe, Carroll and Cass have never been designated as non-attainment areas for transportation-related pollutants. According to the calculated existing and future emissions of CO, the project is not expected to adversely affect the air quality within the Wabash Valley Intrastate Air Quality Control Region. All existing and predicted carbon monoxide concentrations are below the one-hour NAAQS. In accordance with the Amended Final Conformity Guidelines issued by both the U.S. Department of Transportation and USEPA, which are in effect as of September 15, 1997, the project is located in an air quality area that does not require transportation control measures. Based on this analysis, the project is in compliance with the Indiana State Implementation Plan for the Attainment and Maintenance of National and State Ambient Air Quality Standards.

SUMMARY OF AIR QUALITY IMPACTS

- **Direct Effects**

No-Build Alternative: For the 2020 No-Build Alternative, one-hour concentrations will decrease slightly ranging from 1.9 ppm to 4.0 ppm. The slight decrease is accounted for by the dwindling number of older vehicles operating on the roadways without emission controls. By the year 2020, the majority, if not all, such vehicles will no longer be in use.

Build Alternatives: Pursuant to the 1990 *Clean Air Act Amendments*, the counties of Tippecanoe, Carroll and Cass have never been designated as non-attainment areas for transportation-related pollutants. According to the calculated existing and future emissions of CO, the project is not expected to adversely affect the air quality within the Wabash Valley Intrastate Air Quality Control Region. Predicted one-hour CO concentrations for the 2020 build alternatives will decrease as compared to existing and No-Build Alternative levels, ranging from 1.8 ppm to 3.1 ppm.

- **Indirect / Cumulative Effects**

No-Build Alternative: None.

Build Alternatives: Indirect impacts to the air quality of the communities from development that could occur as a result of this new roadway project cannot be determined. Information on the types of development that could occur in regard to air quality issues is not known, or foreseeable. The possibility that so-called “clean” industries (those producing no air pollution) could occur as a result of the selection of a build alternative is the same that pollution-generating industries could be developed as a result of the selection of a build alternative. If pollution-generating developments are proposed in the region, they will be coordinated with IDEM in order to monitor and regulate the air quality.

4.9 NOISE IMPACTS

The new roadway would result in higher noise levels along its route, particularly where it traverses relatively quiet rural agricultural areas. Along existing SR 25, however, the new roadway would result in notable decreases in noise levels at the majority of locations analyzed for noise impacts. The majority of the project corridor experiences heavy train traffic, which

contributes to existing noise levels. The following sections describe the methodology employed and the results of the noise impact analysis, which has been conducted in accordance with 23 Code of Federal Regulation 772 and subsequent FHWA noise guidance.

4.9.1 Methodology

Noise can be generally defined as unwanted sound. It is a vibrational energy form that causes pressure variations in elastic media such as air or water. The human ear perceives these pressure variations as sound, and can discern different levels of loudness as the intensity of the pressure variations fluctuate. These pressure differences are commonly measured in decibels (dB). The decibel scale range audible to humans is 0 to 140, where a level of zero decibels corresponds to the lowest limit of audibility, while a level of 140 decibels represents the threshold of pain. The noise levels of many common appliances and events are listed below for reference:

Refrigerator	40-43 dBA	Clothes Washer	65-70 dBA
Typical Living Room	40 dBA	Phone	66-75 dBA
Forced Hot Air Heating System	40-52 dBA	Lawn Mower	88-94 dBA
Normal Conversation	55-65 dBA	Inside Car	68-73 dBA
Dishwasher	63-66 dBA	(Windows Closed, 30 mph)	

Since the hearing sensitivity of the human ear is non-linear, an electronic weighting scale (“A-weighted” scale) is used to define the relative loudness of different frequencies. Sound levels measured using the A-weighted scale are often expressed as dBA. For the purposes of this study, all references to sound levels will reflect dBA measurements. Additionally, all referenced noise levels represent exterior levels only. No noise measurements were conducted on the interior of buildings or other structures.

Noise monitoring procedures established by FHWA permit performing noise analyses in terms of either L_{10} or L_{eq} sound levels. L_{10} is the sound level exceeded 10 percent of the time. L_{eq} is defined as the equivalent, steady state sound level, which, in a given period of time, contains the same acoustical energy as the time-varying sound level during the same time period. Generally, a 3-dBA L_{eq} change is the average minimum change necessary to be perceived by most people. The L_{eq} noise descriptor was used in this study because of its relative ease to monitor and compare with FHWA's noise abatement criteria (NAC) standards.

INDOT developed a policy consistent with FHWA guidelines to determine the need, feasibility, and reasonableness of noise abatement measures for all major roadway projects. Under FHWA guidelines (23 CFR 1 Part 772), noise abatement will be considered for those locations where noise levels are predicted to approach or exceed their respective Noise Abatement Criterion (NAC), or when the predicted traffic noise levels substantially exceed existing noise levels. INDOT's Highway Traffic Noise Policy defines “approach or exceed” as noise levels that are higher than 1 dBA below the appropriate NAC, and “substantially exceed” as future noise levels 15 dBA or more above existing noise levels.

Noise Sites

Noise readings were recorded at thirty-seven locations within the project area to gain an accurate representation of the existing noise levels to use for calibration of the noise model. These receptor sites represent locations subject to future increases or decreases in noise generated by implementing the project. The receptor sites typically represent noise sensitive land uses near the project, and are usually representative of other development anticipated to have similar projected

noise levels. The receptors were selected based on FHWA noise abatement criteria established for noise sensitive land uses (see Table 4.9). The sites modeled and analyzed for potential noise impacts are described in Table 4.10, page IV-32, and shown on Figure 8, page IV-33

TABLE 4.9—Noise Abatement Criteria

Hourly A-Weighted Sound Level - Decibels (dBA)			
Category	L _{eq} (h)	L ₁₀ (h)	Description of Activity
A	57 (Exterior)	60 (Exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	67 (Exterior)	70 (Exterior)	Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries and hospitals.
C	72 (Exterior)	75 (Exterior)	Developed lands, properties, or activities not included in categories A or B.
D	--	--	Undeveloped lands.
E	52 (Interior)	55 (Interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals and auditoriums.

Source: Federal Highway Administration

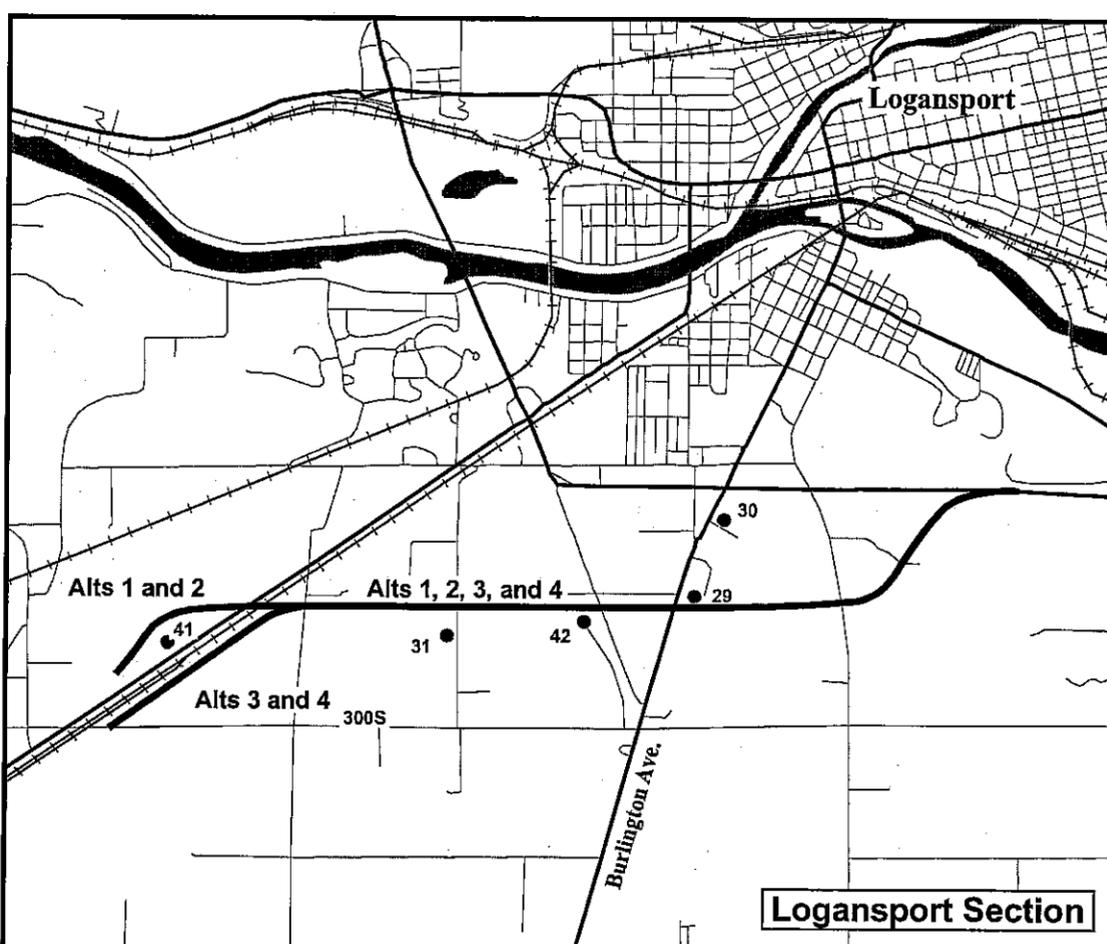
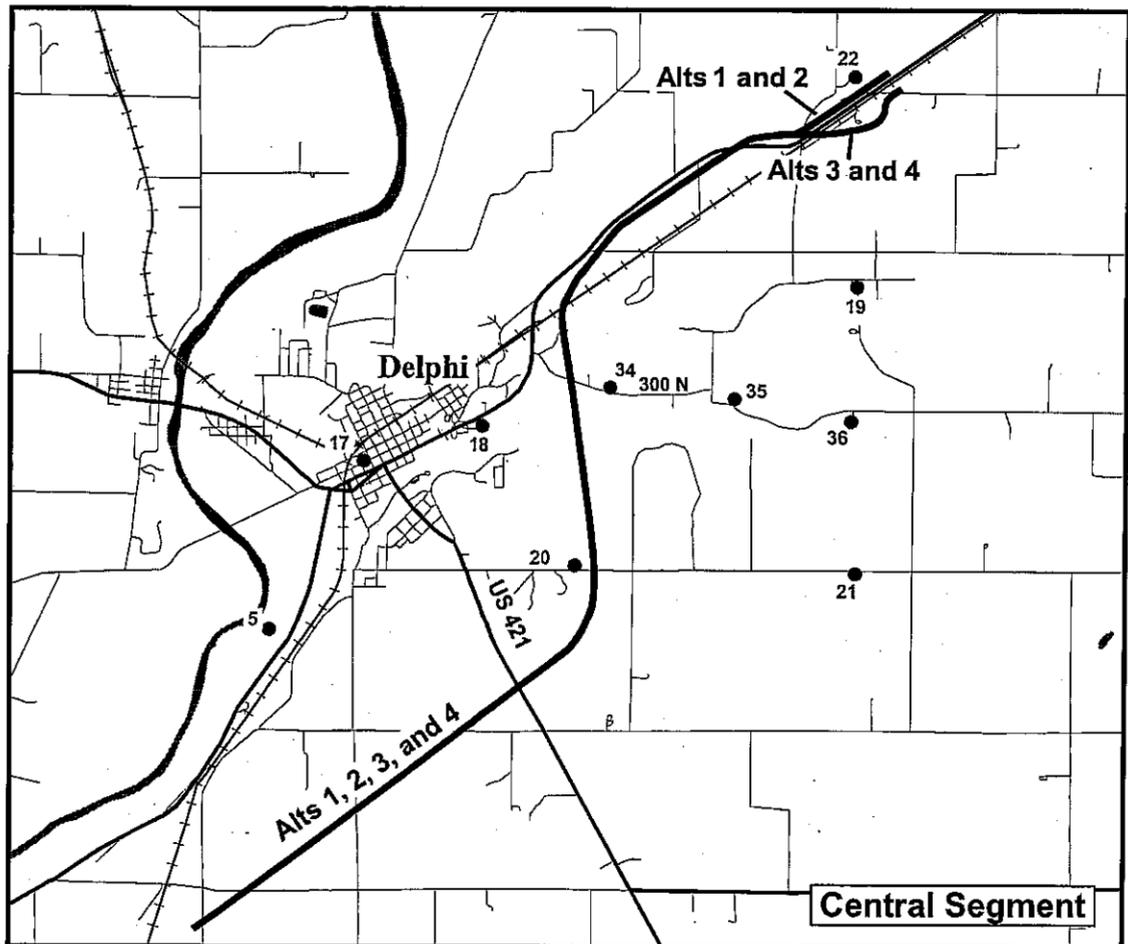
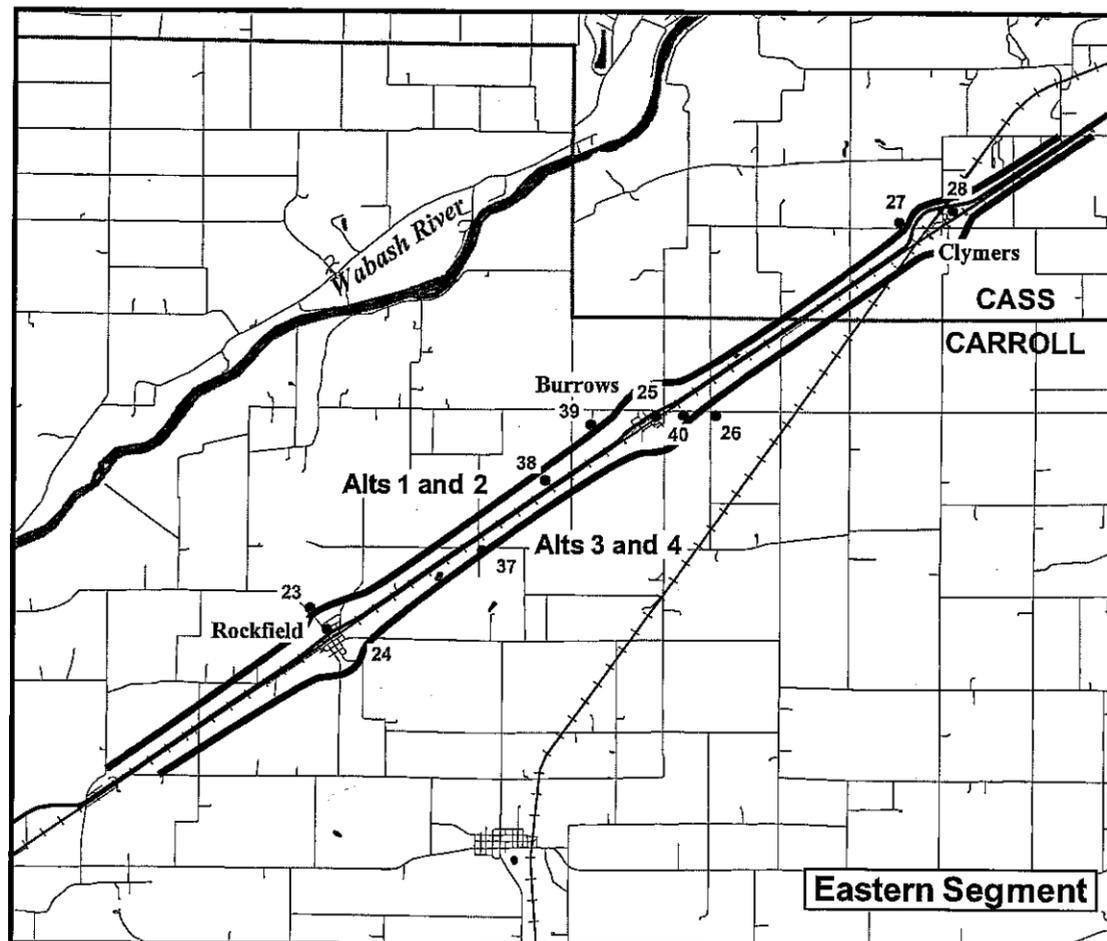
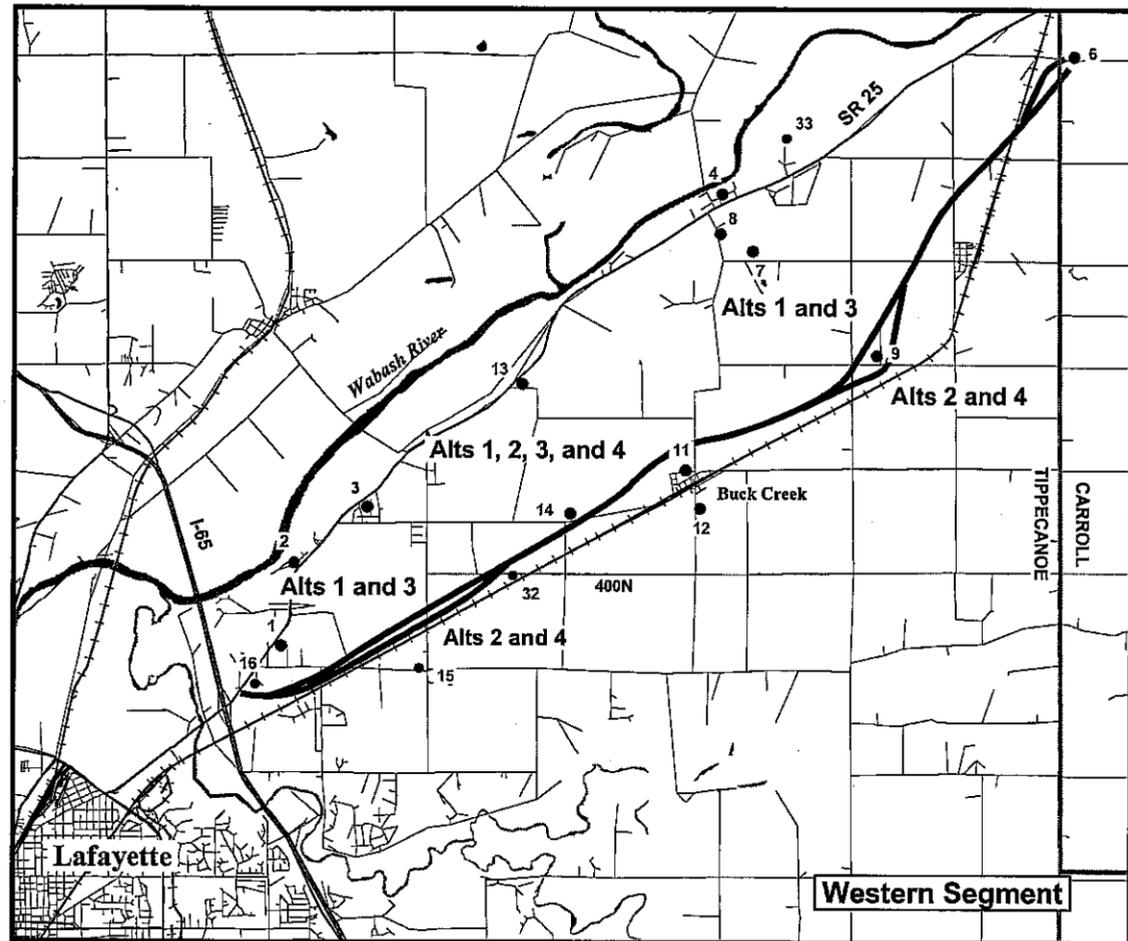
Data Collection and Model Calibration

Noise levels were measured and recorded at the thirty-seven receptor site locations in August 2000 and July-August 2001 using FHWA-approved QUEST M-27 Noise Dosimeter/Datalogger. The datalogger has multiple functions, and integrates noise levels on a continuous basis to produce an equivalent (i.e., average or L_{eq}) sound level for any desired test duration. Noise levels were measured directly by a sound level meter for two reasons: establish existing noise levels and calibrate the FHWA noise prediction computer model. FHWA recommends validating the computer model predicted noise levels with actual measured levels to account for any deficiencies. Existing noise levels are used to calibrate the computer model to existing conditions before using it to predict future noise levels. The noise measurements were made during heavy traffic periods and under meteorologically acceptable conditions. Traffic data was simultaneously recorded with the noise measurements and classified as one of five vehicle types (i.e., motorcycle, bus, automobile/light truck, medium truck, and heavy truck) for subsequent entry into the noise prediction computer model. Field observations indicate whether the dominant noise source appears to originate from local traffic, periodic freight trains, residential noise or other sources.

FHWA's Traffic Noise Model (TNM) is a computer-modeling program used to predict noise levels in environments where the dominant noise source originates from motor vehicles. The TNM computer model is considered calibrated and validated when the measured and modeled existing noise levels agree to within ±3 dBA for the L_{eq} descriptor at the monitored noise-sensitive site. The computer model is calibrated on a site-specific basis by comparing a particular site's measured existing noise levels with those predicted by the model based upon the traffic counts obtained during noise measurement periods. During the calibration process, additional adjustments are applied to the model to account for speed, receptor site's distance from the roadway, grade, roadway segment length, and shielding. The differences obtained are used to determine the receptor site's peculiarities for existing and predicted noise levels for which the model might not account. The TNM computer model then estimates vehicle noise emissions based on reference energy mean emission levels for the five classes of vehicles: motorcycle, automobile and light truck, bus, medium truck (two axles and six wheels), and heavy truck (three or more axles).

TABLE 4.10—Noise Receptor Site Descriptions

Site No.	Site Description	Site No.	Site Description
1	The front façade of two single-family residences east of SR 25. This site is approximately 50 feet from existing SR 25, 2,640 feet from Alts. 1, 3 and 2,932 feet from Alts. 2, 4. Land use category B.	25	The front façade of Presbyterian church in Burrows, west of SR 25. The site is approximately 10 feet from existing SR 25, 1,296 feet from Alts. 1, 2 and 1,471 feet from Alts. 3, 4. Land use category B.
2	The rear façade of eleven single-family residences west of SR 25. The site is approximately 50 feet from existing SR 25, 5,460 feet from Alts. 1, 3 and, 6,032 feet from Alts. 2, 4. Land use category B.	26	The front façade of a single-family residence east of SR 25 on CR 900N. The site is approximately 1,525 feet from existing SR 25, 2,050 feet from Alts. 1, 2 and 502 feet from Alts. 3, 4. Land use category B.
3	The front façade of two single-family residences east of SR 25. The site is approximately 75 feet from existing SR 25, 6375 feet from Alts. 1, 3 and 7,176 feet from Alts. 2, 4. Land use category B.	27*	The front façade of a single-family historic residence west of SR 25 on CR 400S. The site is approximately 828 feet from existing SR 25, 577 feet from Alts. 1, 2 and 2,059 feet from Alts. 3, 4. Land use category B.
4	The front façade of two single-family residences west of SR 25. The site is approximately 100 feet from existing SR 25, 10,533 feet from Alts. 1, 3 and 10,539 feet from Alts. 2, 4. Land use category B.	28	The front façade of three single-family residences south of SR 25. The site is approximately 60 feet from existing SR 25, 249 feet from Alts. 1, 2 and 1,457 feet from Alts. 3, 4. Land use category B.
5	The parking lot of the Trail Head Park west of SR 25. The site is approximately 500 feet from existing SR 25, and 5,852 feet from all alternatives. Land use category B.	29	The front façade of four single-family residences east of SR 25 on Burlington Ave. The site is approximately 5,000 feet from existing SR 25, and 62 feet from all alternatives. Land use category B.
6	The front façade of four single-family residences east of SR 25 on CR 900N. The site is approximately 2,736 feet from existing SR 25, and 932 feet from all alternatives. Land use category B.	30	The front façade of two single-family residences east of SR 25 on Burlington Ave. The site is approximately 3,800 feet from existing SR 25, and 1,460 feet from all alternatives. Land use category B.
8	The front façade of three single-family residences located east of SR 25 on CR 775 E. The site is approximately 2,275 feet from the existing SR 25, 9,107 feet from Alts. 1, 3 and 9,483 feet from Alts. 2, 4. Land use category B.	31	The front façade of a single-family residence east of SR 25 on CR 115W. The site is approximately 2,800 feet from existing SR 25, and 567 feet from all alternatives. Land use category B.
9	The front façade of a single-family residence east of SR 25 on CR 600N. The site is approximately 10,549 feet from existing SR 25, 426 feet from Alts. 1, 3 and 623 feet from Alts. 2, 4. Land use category B.	32	The front yard of a single-family farmhouse east of SR 25 on CR 400N. The site is approximately 8,235 feet from existing SR 25, 274 feet from Alts. 1, 3 and 305 feet from Alts. 2, 4. Land use category B.
11	The parking lot of the Buck Creek Community Center, east of SR 25 on CR 750 E. The site is approximately 9,422 feet from existing SR 25, 705 feet from Alts. 1, 3, and 764 feet from Alts. 2, 4. Land use category B.	33*	The barnyard of a single-family historic farmhouse west of SR 25. The site is approximately 1,000 feet from existing SR 25, and 8,655 feet from all alternatives. Land use category B.
13	The front façade of eight single-family residences east of SR 25 on CR 600E. The site is approximately 736 feet from existing SR 25, and 7,612 feet from all alternatives. Land use category B.	34*	The front façade of a single-family historic farmhouse east of SR 25 on CR 300N. The site is approximately 2,995 feet from existing SR 25, and 2,041 feet from all alternatives. Land use category B.
14	The front façade of four single-family residences east of SR 25 on CR 625 E. The site is approximately 7,890 feet from existing SR 25, and 361 feet from the all alternatives. Land use category B.	35*	The front façade of a single-family historic farmhouse east of SR 25 on CR 300N. The site is approximately 6,802 feet from existing SR 25, and 5,695 feet from all alternatives. Land use category B.
16	The front façade of nine single-family residences east of SR 25 on Aretz Ln. The site is approximately 586 feet from existing SR 25, and 285 feet from all alternatives. Land use category B.	36*	The front yard of a single-family historic farmhouse west of SR 25 on CR 300N. The site is approximately 10,258 feet from existing SR 25, and 9,266 feet from all alternatives. Land use category B.
17	The front façade of the Delphi Community Church of God, west of SR 25. The site is approximately 35 feet from existing SR 25, and 6,771 feet from Alts. 3, 4. Land use category B.	37*	The rear façade of two single-family farmhouses, one of which is historic, east of SR 25 on CR 750N. The site is approximately 400 feet from existing SR 25, 462 feet from Alts. 1, 2 and 797 feet from Alts. 3, 4. Land use category B.
18	The front façade of the Cottage Street Church of Christ west of SR 25. The site is approximately 100 feet from existing SR 25, and 2,799 feet from all alternatives. Land use category B.	38	The front façade of a single-family residence west of SR 25. The site is approximately 55 feet from existing SR 25, 269 feet from Alts. 3, 4 and within the right-of-way of Alts. 1, 2. Land use category B.
19	The front façade of two single-family farmhouses east of SR 25 on CR 375N. The site is approximately 5,115 feet from existing SR 25, 6,738 feet from Alts. 1, 2 and 6,143 feet from Alts. 3, 4. Land use category B.	39	The rear façade of a single-family farmhouse west of SR 25 on CR 900N. The site is approximately 1,320 feet from existing SR 25, 590 feet from Alts. 1, 2 and 2,867 feet from Alts. 3, 4. Land use category B.
20	The front façade of three single-family residences east of SR 25 on CR 200N. The site is approximately, 5,975 feet from existing SR 25, and 476 feet from all alternatives. Land use category B.	40	The front yard of a single-family farmhouse east of SR 25 on CR 900N. The site is approximately 700 feet from existing SR 25, 1,784 feet from Alts. 1, 2 and 361 feet from Alts. 3, 4. Land use category B.
22	The front façade of a single-family residence west of SR 25. The site is approximately 300 feet from existing SR 25, 269 feet from Alts. 1, 2 and 626 feet from Alts. 3, 4. Land use category B.	41*	The front gate of a single-family historic farmhouse west of SR 25. The site is approximately 40 feet from existing SR 25, 613 feet from Alts. 1, 2 and 262 feet from Alts. 3, 4. Land use category B.
23	The front façade of two single-family farmhouses west of SR 25 on N. Walnut west of Rockfield. The site is approximately 1,669 feet from existing SR 25, 482 feet from Alts. 1, 2 and 2,260 feet from Alts. 3, 4. Land use category B.	42	The front yard of a single-family farmhouse east of SR 25 near the junction of CR 250S/SR 29. The site is approximately 3,965 feet from existing SR 25, and 279 feet from all alternatives. Land use category B.
24	The front façade of eight single-family residences west of SR 25. The site is about 20 feet from existing SR 25, 961 feet from Alts. 1, 2 and 2,277 feet from Alts. 3, 4. Land use category B.	NOTE	An asterisk (*) indicates a resource listed or eligible for listing on the National Register of Historic Places.



● Noise Reading Sites

Figure 8
HOOSIER HEARTLAND HIGHWAY
State Route 25 Noise Reading Locations
 Not to Scale

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[Page IV-34]

Eighteen of the thirty-seven noise-sensitive receptor sites were identified as traffic-related noise locations (Sites 1, 2, 3, 4, 5, 11, 13, 17, 18, 22, 24, 25, 28, 29, 30, 37, 38, and 41). The noise measurements and traffic data for these 18 sites were entered into the TNM computer model and used to calibrate it. The resulting measured and modeled existing noise levels agreed to within ± 3 dBA for the L_{eq} descriptor at these 18 traffic-related noise-sensitive sites. Since the measured and modeled noise levels were within the generally accepted standard for calibration, the TNM computer model was considered validated and capable of predicting future noise levels.

The remaining nineteen noise-sensitive receptors (Sites 6, 8, 9, 14, 16, 19, 20, 23, 26, 27, 31, 32, 33, 34, 35, 36, 39, 40, and 42) were considered ambient noise receptors. Several of these receptors represent properties listed or eligible for listing on the National Register of Historic Places and, thus, individually chosen for study. These nineteen ambient noise receptors were not included in determining the overall calibration of the computer model because traffic on the SR 25 roadway was either not visible or countable from that receptor site location. Instead, traffic observed from nearby traffic-related receptor sites was used to model these sites.

4.9.2 Noise Level Data

Table 4.11, page IV-36, presents measured existing, modeled, and predicted (year 2020) exterior noise levels for each noise receptor site. Each receptor site was classified as land use activity category "B," with a noise abatement criterion of 67 dBA (external).

Existing Noise Levels

Existing measured noise levels in the project corridor range from 50 dBA L_{eq} at Site 36 to 72 dBA L_{eq} at Site 25. In accordance with INDOT guidelines for considering noise abatement, noise levels were assumed to approach the noise abatement criteria (NAC) if the resultant noise level was within 1 dBA of the appropriate activity category value identified in Table 4.9, page IV-31 (*i.e.*, 66 dBA for land use category B). There are ten sites at which the existing noise levels approach or exceed the noise abatement criterion: Site 1, two single-family residences; Site 2, a row of eleven single-family residences; Site 3, two single-family residences; Site 4, two single-family residences; Site 24, a row of five single-family residences; Site 25, the Presbyterian church in Burrows; Site 29, a row of four single-family residences; Site 30, two single-family residences; Site 38, a single-family farm; and Site 41, a single-family farm.

TABLE 4.11—SR 25: Existing and Predicted Year 2020 Noise Levels (dBA L_{eq})

Receptor Site No.	Existing Measured	2020 No-Build	Build Alternatives				Dwelling Units
			Alternative 1	Preferred Alternative 2	Alternative 3	Alternative 4	
1	69	79	66	66	66	66	2
2	67	74	67	67	67	67	11
3	66	75	59	59	59	59	2
4	67	70	61	61	61	61	2
5	56	60	55	55	55	55	1
-6-	60	60	53	53	53	53	4
-8-	60	57	44	44	44	44	3
-9-	53	47	59	57	59	57	1
11	55	56	56	57	56	57	1
13	60	65	50	50	50	50	8
-14-	57	52	63	63	63	63	4
-16-	54	60	65	65	65	65	9
17	65	71	60	60	60	60	1
18	62	67	61	61	61	61	1
-19-	53	45	41	41	41	41	2
-20-	58	61	57	57	57	57	3
22	58	62	60	60	55	55	1
-23-	63	47	53	53	47	47	2
24	68	74	48	48	66	66	8
25	72	75	51	51	68	68	1
-26-	57	47	44	44	55	55	1
-27-*	61	53	53	53	50	50	1
28	65	69	58	58	60	60	3
29	67	65	68	NA **	69	69	4
30	67	70	64	64	65	65	2
-31-	56	51	54	54	54	54	1
-32-	56	47	64	NA	64	NA	1
-33-*	56	60	46	46	46	46	1
-34-*	55	49	47	47	47	47	1
-35-*	58	45	42	42	42	42	1
-36-*	50	43	40	40	40	40	1
37*	57	58	53	53	54	54	2
38	66	71	NA	NA	66	66	1
-39-	55	48	52	52	48	48	1
-40-	56	53	47	47	57	57	1
41*	68	74	67	67	67	67	1
-42-	57	49	60	NA **	60	60	1

* NRHP-listed or -eligible sites.

** The proposed SR 29-Burlington Avenue Interchange would likely require acquisition of this property.

Noise Abatement Criterion: Sound Level = 67 dBA L_{eq}

- 14 -
Ambient Noise Receivers
(Col. 1, only)

Approach
or Exceed NAC

NA
Not applicable. Site within right-of-way
of build alternative.

Future Noise Levels

Future noise levels for the No-Build Alternative and the build alternatives were modeled using the previously calibrated and validated TNM computer program. The noise impact analysis associated with the No-Build and build alternatives was based on average daily traffic (ADT) and design hourly volume (DHV) projections for the year 2020 (see Table 4.12, below), derived from a straight-line interpolation from the year 2000 and 2030 traffic data.

TABLE 4.12—Existing and 2020 Traffic Design Hourly Volumes

Roadway Segment	2000 Existing	2020 No-Build	2020 Build
A - I-65 to CR 450N	2,602	3,197	(3,197)
B - CR 450N to SR 225	1,867	2,502	1,940 (562)
C - SR 225 to Grant Rd.	1,663	1,968	1,751 (217)
D - Grant Rd. to County Line	1,265	1,635	1,104 (530)
E - County Line to US 421	928	1,594	1,594
F - US 421 to Main St. - Delphi	1,313	1,378	1,378
G - Main St. to CR 325N	964	1,261	1,261
H - CR 325N to SR 218	807	960	960
I - SR 218 to County Line	530	699	699
J - County Line to Vandalia St.	554	835	835
K - Vandalia St. to CR 300S	627	859	434 (426)
L - CR 300S to CR 200S	699	884	643 (241)
M - CR 200S to US 24	819	924	683 (241)

NOTE: Numbers in parentheses indicate residual traffic on the existing SR 25

For most of the receptor sites, the noise levels predicted for the future No-Build and/or build alternatives are lower than those noise levels measured in the field. This may appear to be counter-intuitive, since traffic volumes generally increase in the future. However, there are two situations in which measured existing noise levels can be higher than projected noise levels: 1) when traffic noise is measured at a site far from the roadway being monitored, and 2) when the measurement site is closer to the existing road than it is to the build alternative.

1) When traffic noise is measured close to the roadway, the traffic is the dominant noise source and background noises account for very little of the total noise measured. Conversely, when traffic noise is measured at a site far from the roadway, traffic is no longer the dominant noise source, and background noises account for more of the total noise measured. This results in a noise level higher than would have been measured had extraneous noise not been present at the time the noise measurement was taken.

The traffic noise model considers vehicular traffic as the only noise source in its calculations. Comparing modeled noise levels (which take only traffic noise into account) with measured noise levels (which can reflect other noise sources in addition to vehicular traffic) can lead to confusion in situations like that described above.

2) When a proposed road will either result in closure of an existing road or attract traffic away from an existing road, and when a noise measurement site is closer to that existing road than it is to the proposed road, the measured noise level would be higher than the predicted noise level.

No-Build Alternative

The No-Build Alternative noise analysis results indicate that year 2020 noise levels without implementing the project would range from 43 dBA L_{eq} at Site 36 to 79 dBA L_{eq} at Site 1. The No-Build noise levels represent a difference from existing noise levels ranging from a low of -16 dBA L_{eq} to a high of +10 dBA L_{eq} .

The noise receptor sites predicted to experience a decrease in noise levels are Site 8, which will decrease by 3 dBA, Site 9, which will decrease by 6 dBA, Site 14, which will decrease by 5 dBA, Site 19, which will decrease by 8 dBA, Site 23, which will decrease by 16 dBA, Site 26, which will decrease by 10 dBA, Site 27, which will decrease by 8 dBA, Site 29, which will decrease by 2 dBA, Site 31, which will decrease by 5 dBA, Site 32, which will decrease by 9 dBA, Site 34, which will decrease by 6 dBA, Site 35, which will decrease by 13 dBA, Site 36, which will decrease by 7 dBA, Site 39, which will decrease by 7 dBA, Site 40, which will decrease by 3 dBA, and Site 42, which will decrease by 8 dBA.

The sites at which No-Build noise levels approach or exceed the noise abatement criterion are: Sites 1 through 4, 24, 25, 30, 38, and 41 (all previously described above); Site 17, the Delphi Community Church of God; Site 18, the Cottage Street Church of Christ; and Site 28, three single-family residences.

Build Alternatives

Noise level impacts related to the build alternative alignments are briefly described below. Where the noise analysis is concerned, the primary difference between Alternative 1 and **Preferred Alternative 2** and Alternatives 3 and 4 occurs in the Eastern Segment of the project area, where Alternatives 1 and 2 share a common alignment north of SR 25 and the railroad, and Alternatives 3 and 4 share a common alignment to the south. Alternatives 3 and 4 are so similar in their noise-related impacts that they are combined in the description. Table 4.11, page IV-36, presents the detailed data, by site and alternative.

Alternatives 1—Noise levels are predicted to approach or exceed the NAC standard of 67 dBA at four of the thirty-seven receptor sites: Site 1 (66 dBA), Sites 2 and 41 (67 dBA), and Site 29 (68 dBA). At eight receptor sites (Sites 9, 11, 14, 16, 22, 29, 32, and 42), the predicted noise levels range from 1 or 2 dBA (Sites 11, 22, and 29) to 11 dBA (Site 16) above the existing levels; at one site (Site 2) the predicted and existing levels are the same; and at the remaining twenty-eight sites, the predicted levels are below those of the existing levels. With the project, projected noise levels at twenty-seven of the thirty-seven sites are below those projected to occur with the No-Build Alternative. With the alternative, Site 38 would be acquired for right-of-way.

Preferred Alternative 2—Noise levels are predicted to approach or exceed the NAC standard of 67 dBA at three of the thirty-seven receptor sites: Site 1 (66 dBA), and Sites 2 and 41 (67 dBA). At six receptor sites (Sites 9, 11, 14, 16, and 22), the predicted noise levels range from 1 or 2 dBA (Sites 11 and 22) to 11 dBA (Site 16) above the existing levels; at one site (Site 2) the predicted and existing levels are the same. At twenty-five sites, the predicted levels are below the existing levels and projected No-Build Alternative levels. Sites 29, 32, 38, and 42 would be acquired for right-of-way.

Alternatives 3 and 4—Noise levels are predicted to approach or exceed the NAC standard of 67 dBA at seven of the thirty-seven receptor sites: Sites 1, 24, and 38 (66 dBA), Sites 2 and 41 (67 dBA), and Sites 25 and 29 (68 dBA). At eight receptor sites (Sites 9, 11, 14, 16, 29, 32 [Alternative 3, only], 40 and 42), the predicted noise levels range from 1 to 2 dBA (Sites 11, 29 and 40) to 11 dBA (Site 16) above the existing levels; at two sites (Sites 2 and 38) the predicted and existing levels are the same; and at the remaining twenty-seven sites, the predicted levels are below those of the existing levels. With the project, projected noise levels at twenty-seven of the thirty-seven sites are below those projected to occur with the No-Build Alternative. With Alternative 4, Site 32 would be acquired for right-of-way.

4.9.3 Noise Abatement

INDOT has developed a policy consistent with FHWA guidelines to determine the need, feasibility, and reasonableness of noise abatement measures for all major highway projects. In 23 CFR Part 772, FHWA offers a number of measures for abating or eliminating noise impacts. The primary means of mitigating noise impacts, as offered by FHWA, are as follows:

- Traffic control measures (e.g. modified speed limits, and exclusive lane designations).
- Alteration of horizontal and vertical alignments.
- Construction of noise barriers (including landscaping for aesthetics) whether within or outside the highway right-of-way.
- Acquisition of property rights (either in fee or lesser interest) for construction of noise barriers.
- Acquisition of real property or interests therein (predominantly unimproved property) to serve as a buffer zone to preempt development that would be adversely impacted by traffic noise.
- Noise insulation of public use or non-profit institutional structures.

Under INDOT guidelines, noise abatement will be considered for those locations where the traffic noise levels are predicted to approach (i.e., within 1 dBA), equal, or exceed their respective Noise Abatement Criterion (NAC), or when predicted noise levels substantially exceed existing noise levels (i.e., greater than or equal to 15 dBA). Locations meeting these noise level criteria are subsequently assessed for feasibility and reasonableness of noise abatement measures. Feasibility refers the structural and acoustical possibility of reducing traffic noise at a location by at least 5 dBA. Reasonableness refers to INDOT's determination that noise abatement is prudent based on consideration of the following factors:

- The number of benefited receivers, or those for whom the abatement will benefit by at least 5 dBA L_{eq} at the noisiest hour conditions.
- The abatement cost on a benefited receiver basis and on a project level basis.
- The severity of existing and future traffic noise levels based on the absolute level and the increase of the future noise levels.
- The timing of development near the project.
- The concerns of impacted residents.

A consideration of the primary means of mitigating noise impacts follows.

Traffic Management Measures—Traffic management measures were not considered feasible for abating noise impacts for any receptor. Measures such as installation of additional traffic control devices, prohibition of vehicle types, time-use restrictions, speed limit reductions, and exclusive lane designations would be detrimental to the project’s ability to function as a principal arterial and a major route.

Alteration of Horizontal and Vertical Alignments—The preferred alignment selection usually includes shifting the alignment both vertically and horizontally, wherever feasible, to minimize impacts to adjacent land uses. Vertical and horizontal alignments are altered to minimize noise impacts where other factors are not prohibitive. Due to the varying terrain types the different alignments traverse, some sites may experience slightly different noise levels than those predicted in this study with implementation of the preferred alignment.

Construction of Noise Barriers—Constructing a noise barrier between the shoulder and the right-of-way limits is generally given the most serious consideration by INDOT and FHWA for abating noise impacts.

Noise Insulation of Public Use or Nonprofit Institutional Structures—INDOT’s policy is consistent with FHWA’s interior noise level criteria policy on noise insulation and air conditioning compliance. This noise abatement measure option applies only to public and non-profit institutional use buildings. Sites 11, 17, 18, and 25 are considered within this classification; however, none of these sites will experience NAC noise impacts. In fact, these sites would benefit from the predicted noise level reductions with implementation of a build alternative.

Constructing noise barriers for potentially affected receptor sites is the typical method of traffic noise abatement, and was investigated for the noise sensitive receivers impacted by the preferred alignment. The cost per benefited receiver was calculated based on the distance of the receiver from the roadway, the length of noise barrier required providing significant noise reduction, and a reasonable cost per square foot for noise barrier construction. A barrier height of 12 feet was assumed. Table 4.13 summarizes the findings.

TABLE 4.13— Summary of Reasonableness of Noise Abatement

Reasonableness Factor	Site 1	Site 2	Site 41
Number of Benefited Receivers	2	11	1
Abatement Cost Per Benefited Receiver	\$68,544	\$11,270	\$110,976
Severity of Existing and Future Traffic Noise Levels ¹	No Impact (Approaches NAC)	No Impact (Equals NAC)	No Impact (Equals NAC)
Timing of Development	Before Highway	Before Highway	Before Highway
Views of Impacted Residents ²	For	For	For

¹ Impact classification per INDOT Noise Policy

² Assumes impacted residents are "For" noise abatement

Applying INDOT’s policy for considering noise abatement reasonableness, it was determined that constructing noise barriers at the impacted receptor Sites 1 and 41 would be unreasonable due to a high cost per benefited receiver and the low severity of noise impacts. It was determined that

constructing a noise barrier at the impacted receptor Site 2 would be unreasonable due to the low severity of noise impacts. In addition, constructing a barrier at Site 2 that would abate noise would be infeasible because the affected residences are separated by a road providing access to the existing SR 25. The need to maintain this access would interfere with the function of a noise barrier—i.e., the break in the barrier would impair its noise-damping effectiveness. Furthermore, constructing a barrier broken by the access road could reduce safety by impairing sight distance for vehicles turning onto SR 25. Other methods of noise abatement (as described above) would either not apply to the impacted noise receivers or were considered unreasonable and/or infeasible.

Where the project would be located on new alignment, the potential exists for local officials and developers to help minimize noise impacts through the use of careful land use planning. The application of a 66 dBA L_{eq} (Category B) noise contour would limit future noise sensitive land uses from being located too close to the roadway. Creation of a "buffer zone" or locating noise sensitive developments a reasonable distance away from the project would help minimize future noise impacts. Copies of the Final Environmental Impact Statement will be provided to local authorities for use in noise-sensitive land use planning.

4.9.4 Construction Noise Impacts

Implementation of the project would result in unavoidable short-term noise impacts. The primary noise source would originate from construction activities such as earth removal, hauling, grading, and paving. Noise abatement measures may be necessary during construction to restrict noise levels in the vicinity of noise sensitive sites. These measures may include, but are not limited to:

- Providing soundproof housing or enclosures for stationary noise producing machinery such as drills, augers, cranes, derricks, compactors, pile drivers, generators, etc.
- Providing efficient silencers on equipment air intakes.
- Providing efficient intake and exhaust mufflers on internal combustion engines.
- Performing proper maintenance on all noise producing equipment to prevent excessive metal surfaces rattling and vibration.
- Restricting construction operations in the vicinity of noise sensitive locations to periods of the day when excessive noise would be least harmful.
- Selecting haul routes to minimize noise impact from heavy trucks.
- Taking other measures as necessary to prevent construction noise from becoming a public nuisance or detrimental to human health.

These and other methods of construction noise abatement are typically accomplished by provisions in the construction contract that require the contractor to implement them.

SUMMARY OF NOISE IMPACTS

- **Direct Effects**

No-Build Alternative: The projected noise levels at twenty-seven of the thirty-seven sites are above those projected to occur with the build alternatives.

Build Alternatives: Traffic noise impacts occur 1) when noise levels generated by implementing the project approach or exceed the established noise abatement criteria (NAC), or 2) when predicted noise levels substantially exceed existing noise levels.

Traffic noise impacts will occur with implementation of the project. The traffic volume increases predicted for the year 2020 will be the major source of the noise impacts. However, the noise levels associated with the build alternatives will generally be lower than those of the No-Build Alternative where the new roadway would be on new alignment, **Preferred Alternative 2** would attract traffic—the primary noise generator—from existing SR 25 and, thus, from the noise-sensitive land uses along the existing road.

Alternative 1 noise levels are predicted to approach or exceed the NAC of 67 dBA at four of the thirty-seven receptor sites. **Preferred Alternative 2** noise levels are predicted to approach or exceed the NAC of 67 dBA at three of the thirty-seven receptor sites. Alternatives 3 and 4 noise levels are predicted to approach or exceed the NAC of 67 dBA at seven of the thirty-seven receptor sites. With **Preferred Alternative 2**, the projected noise levels at twenty-five of the thirty-seven sites are below those projected to occur with the No-Build Alternative. (Four additional sites are within the right-of-way of the Preferred Alternative and would be acquired.)

Implementation of the project would result in unavoidable short-term noise impacts primarily originating from construction activities such as earth removal, hauling, grading, and paving.

The construction of noise barriers has been determined to not be reasonable due to the severity of noise impacts. The reasonableness and feasibility of constructing noise barriers will be re-evaluated during the final design process.

- **Indirect / Cumulative Effects**

No-Build Alternative: None.

Build Alternatives: None.

4.10 ENERGY IMPACTS

The construction of a transportation facility represents a considerable one-time energy resources demand, both in materials fabrication and actual construction activities. These processes use a wide variety of resources, but the primary resource of concern is crude oil. Although large amounts of this product would be used, the ultimate result will be the long-term savings of this resource through improved traffic handling capacity in the study area. The combined cost reduction factors (e.g., improved access, travel time, and safety) would make the operational cost of any of the proposed build alternatives less than, or equivalent to, the operational cost of the No-Build Alternative. Therefore, in the long run, the operational savings of any of the build alternatives will offset the construction energy requirements, and result in future net energy savings. Another aspect that must be addressed is the potential for rendering energy sources unusable due to project implementation. No naturally occurring fossil fuel reserves or other vital resources have been noted in the area. In sum, none of the build alternatives will have an adverse impact in this regard.

4.11 WATER QUALITY IMPACTS

Streams and Drainages

All of the build alternatives cross streams located throughout the project corridor. Selected characteristics of stream crossings, by project segment, are provided on Table 4.14, page IV-44.

The major crossings would require the construction of bridge abutments and piers to support the bridges. In such a case, the creek would be stabilized both upstream and downstream of the bridge abutments to prevent any erosion or damage to the structure. The exact extent and locations of any stream modifications that may be required would be site dependent and defined in the final design. Early coordination with USACE and IDEM has occurred and coordination will continue throughout the development of the project. The final design will be submitted to USACE to obtain an Individual 404 Permit, to IDEM for 401 Water Quality Certification, and to IDNR for a Construction in a Floodway Permit.

The crossing of minor tributaries will require site-specific measures, including pipes/culverts. The peak flow of each watershed or stream will be calculated and a culvert or pipe will be selected based on engineering design criteria. The actual structure, design and location will be determined in the final design.

One of the design objectives of this project is to disrupt the flow of water as little as possible. On the preliminary engineering drawings, small drainages will be identified so that, during final design, appropriate measures can be taken to maintain the drainage pattern. During the final design, the roadway drainage system would be designed to carry runoff in open ditches to streams in the study corridor. Drainage design would generally follow existing landforms and topography so that construction and operation of the road will minimize disturbance of the existing drainage patterns.

The operation of the new roadway will result in a faster rate of runoff during precipitation events. During a rainstorm, water will run off the road rapidly and will be conveyed away from the road using primarily a system of open grassed swales that are designed to handle a large storm event. In some instances, paved ditches and/or pipe may also be used to carry stormwater runoff.

Potable Water Resources

Lafayette—Lafayette has a state-certified Wellhead Protection Program (WHPP) for public water sources. The Lafayette Water Company has implemented a certified WHPP, and the service precincts of the water company and boundary limits of the WHPP do not extend into the project area. According to conversations with the city's water utility representatives, the project would not impact the city's potable water service resources. In the project area, groundwater from private, individual wells is the source of potable water. Wells in this area range from 60 to 110 feet in depth.

TABLE 4.14—Stream Crossing Impacts: Number and Length of Crossings

Streams	Alternative 1 OWA+PCA1+PEA+YLA			Preferred Alternative 2 OWA1+PCA1+PEA+YLA			Alternative 3 OWA+PCA2+PEB+YLB			Alternative 4 OWA1+PCA2+PEB+YLB		
	Crossings	Meters	Feet	Crossings	Meters	Feet	Crossings	Meters	Feet	Crossings	Meters	Feet
Major												
Sugar Creek	1	143	469	1	143	469	1	143	469	1	143	469
Deer Creek	1	78	256	1	78	256	1	78	256	1	78	256
Rock Creek	0	0	0	0	0	0	1	80	261	1	80	261
Rock Creek	1	92	302	1	92	302	1	78	257	1	78	257
<i>Sub-T. Major</i>	3	313	1,027	3	313	1,027	4	379	1,243	4	379	1,243
Minor												
Dry Run Tributary	1	142	466	1	142	466	1	142	466	1	142	466
Dry Run Tributary	1	58	189	1	57	187	1	57	187	1	58	189
Dry Run Tributary	0	0	0	1	101	331	0	0	0	1	101	331
Buck Creek Tributary	1	122	400	1	122	400	1	122	400	1	122	400
Buck Creek	1	196	643	1	196	643	1	196	643	1	196	643
Sugar Creek Tributary	1	198	650	1	99	325	1	198	650	1	99	325
Bridge Creek Tributary	1	141	463	1	141	463	1	141	463	1	141	463
Bridge Creek	1	106	348	1	106	348	1	106	348	1	106	348
Bridge Creek Tributary	1	110	361	1	110	361	1	110	361	1	110	361
Bridge Creek	1	236	774	1	236	774	1	236	774	1	236	774
Bridge Creek Tributary	1	127	417	1	127	417	1	127	417	1	127	417
Bridge Creek	1	111	364	1	111	364	1	111	364	1	111	364
Robinson Branch	1	229	750	1	229	750	1	262	860	1	262	860
Little Rock Creek	1	110	361	1	110	361	1	115	377	1	115	377
Cronin Ditch	1	92	302	1	92	302	1	101	331	1	101	331
Keeps Creek	1	106	348	1	106	348	1	78	257	1	78	257
Keeps Creek (Martin Ditch)	0	0	0	0	0	0	1	235	773	1	235	773
Unnamed Ditch	1	128	420	1	128	420	1	128	420	1	128	420
Goose Creek Tributary.	1	107	351	1	107	351	1	107	351	1	107	351
Goose Creek	1	71	233	1	71	233	1	71	233	1	71	233
<i>Sub-T. Minor</i>	19	2,390	7,840	19	2,291	7,844	20	2,645	8,678	20	2,646	8,681
Intermittent	19	2,691	8,828	21	2,650	8,694	18	2,546	8,353	20	2,505	8,219
Total Major / Minor	22	2,703	8,867	22	2,604	8,871	24	3,024	9,921	24	3,025	9,924
Total Intermit.	19	2,691	8,828	21	2,650	8,694	18	2,546	8,353	20	2,505	8,219
TOTAL	41	5,394	17,685	43	5,254	17,565	42	5,570	18,274	44	5,530	18,143

NOTE: Shading indicates alternatives are on common alignment at this location.

Delphi—Delphi Water Works Department has submitted a WHPP plan to IDEM, which is currently reviewing the plan. The area’s boundaries extend into the Deer Creek Commerce Center, and the shared alternative alignments would traverse a portion of the proposed WHPP area, though not near the source reservoirs or well fields that are the sources of the utility’s water supply. The only portion of the Delphi Water Works Department’s service area that would be traversed by any of the alternatives is in the Deer Creek Commerce Center. Outside the service boundaries groundwater from private, individual wells is the source of potable water. Wells in this area range from 150 to 230 feet in depth.

Logansport—Logansport Municipal Utility has implemented a certified WHPP. The SR 25 alternatives are not located near the reservoirs or well fields that are the sources of the utility’s water supply. However, a review of the city’s proposed WHPP map shows that all build alternatives traverse a portion of the WHPP area. Outside the service boundaries groundwater from private, individual wells is the source of potable water. The average well depth in this area is approximately 80 to 85 feet.

Continued coordination with IDEM and the local jurisdictions will assure that the Preferred Alternative would comply with management requirements of the local programs developed by the Logansport Municipal Utility and the Delphi Water Works Department.

Where groundwater from private, individual wells is the principal source of potable water, there is the potential that road surface stormwater runoff from a new roadway could affect drinking water in the area. However, as noted, studies have shown that constituent pollutant loads in runoff water are generally not large enough to require treatment. Grassy swales to divert stormwater to ditches and streams, and construction methods to reduce turbidity that road construction could temporarily cause would be among the measures employed to protect sources of potable water.

There are no sole source aquifers in the project area. Coordination with IDEM confirmed that sole source aquifers are now being identified in the state; however, it is unlikely that any will be identified in the project area in the near future.

SUMMARY OF WATER QUALITY IMPACTS

- **Direct Effects**

No-Build Alternative: None

Build Alternatives: All of the build alternatives cross streams located throughout the project corridor. The length of stream crossings is similar for all build alternatives, with the total length for **Preferred Alternative 2** (17,565 linear feet) being slightly less than that for the other three alternatives. The major crossings would require the construction of bridge abutments and piers to support the bridges.

IDNR has jurisdiction over the floodway of ditches and streams with a watershed greater than one square mile. Because impacts are proposed to jurisdictional floodways, construction-in-a-floodway permits will be required from IDNR. Detailed permit coordination (see Section 4.13, “Permits”) will occur during the final design phase of the project. IDNR could also require mitigation for tree clearing within the floodway boundaries.

In correspondence dated January 23, 2004 (Appendix A3), USFWS noted its issues of concern include “direct loss of aquatic and riparian habitats, alternations in channel dimensions and hydraulics which may result in indirect effects such as increased bank erosion, increased sediment load and channel instability.” The exact extent and locations of stream modifications that may be required would be site dependent and defined in the final design. Therefore, as noted in the January 2004 correspondence, “the potential need for and extent of mitigation of stream impacts cannot be addressed until final design has been completed.” In keeping with USFWS recommendations, where stream crossings are required, they would be “designed to minimize the linear extent of channel and bank modifications and, where feasible, to avoid channel alterations below the low-water elevation.”

A Conceptual Wetland Mitigation Plan, prepared to address mitigation measures for wetland impacts, also addresses potential mitigation for impacts to streams and wildlife/wildlife habitat. Proposed mitigation includes the commitment by INDOT, contingent upon willing sellers, to try to purchase a portion of Delphi Swamp at or near fair market value. That portion of Delphi Swamp would be restored, placed into a 5-year monitoring and management plan, and permanently protected as an IDNR Nature Preserve. An added benefit of this site for mitigation is the presence of Robinson Branch that borders the swamp. In its January 2004 letter, USFWS noted that areas along Robinson Branch in Delphi Swamp are “degraded and could be restored for stream mitigation.” Because Robinson Branch is a legal drain, coordination with the responsible county agency would be necessary to determine whether improvements to the stream could be made as a means of mitigating stream impacts.

Surface streams could experience a short-term increase in sedimentation as a result of the project. Construction of the new roadway would result in a temporary increase in levels of turbidity, specific conductance, suspended solids, and nutrients in the groundwater. Appropriate Best Management Practices for control of erosion and sedimentation during construction will be implemented.

Where groundwater from private, individual wells is the principal source of potable water, there is the potential that road surface stormwater runoff from a new roadway could affect drinking water in the area. However, as noted, studies have shown that constituent pollutant loads in runoff water are generally not large enough to require treatment.

Sections 4.13, “Permits,” and 4.14, “Water Body Modification and Wildlife Habitat,” contain further discussion of stream impacts. Mitigation measures are discussed in Chapter 5.

- **Indirect / Cumulative Effects**

No-Build Alternative: None.

Build Alternatives: After construction, a key water quality concern would be the potentially adverse effects of stormwater runoff due to vehicular related pollutants. The constituents of concern are: metals, oils, greases and other organics, nutrients from runoff, and atmospheric sources and solids. The impacts of this discharge on the creeks and tributaries are determined as per the guidelines contained in FHWA publications: *Constituents of Highway Runoff* (1981), *Effects of Highway Runoff on Receiving Waters* (1987), and *Pollutant*

Loadings and Impacts from Highway Stormwater Runoff (1990). Appropriate stormwater management practices would be used to mitigate stormwater runoff impacts.

As noted in “Direct Effects,” above, USFWS stated its concern about “direct loss of aquatic and riparian habitats, alternations in channel dimensions and hydraulics which may result in indirect effects such as increased bank erosion, increased sediment load and channel instability.” The exact extent and locations of stream modifications that might be required, as well as potential measures to mitigate the impacts, would be site dependent and defined in the final design.

Development that could occur as a result of the project would indirectly add to the impacts to streams, as would the cumulative effect of existing and new development in the corridor. Proposed developments must comply with local land use planning and zoning stipulations and regulations with regard to protecting water quality, particularly that of potable water resources. The permitting regulations of IDNR and USACE must be complied with on all projects involving federal funding.

4.12 WETLANDS

This project was developed in conformity with Executive Order 11990 and USDOT Order 5660.1A. Terrestrial and aquatic ecological assessments, including the April 26, 2002, *Wetland Delineation Report*, were prepared for this project. Field investigations identified 32 wetland areas that could have been partially or totally within the proposed right-of-way of one or more build alternatives and, thus, would have required mitigation. Modifications to or elimination of build alternatives reduced to seven the number of wetland sites potentially directly impacted by the project. A subsequent (April 2003) field investigation of Wetland “S” (Site 16, Exhibits 3 and 4, pages II-39–45, and II-49–55, respectively), to which access had been denied, resulted in the following modifications to the wetland report.

- The size of Wetland “S,” originally estimated to be 0.2 acre, was found to be 0.04 acre. The wetland is partially within the project right-of-way, but no direct impacts are anticipated because the new roadway bridges the area and bridge piers would not be located in the wetland area. In a letter dated February 3, 2004 (Appendix A3), the USEPA noted this “forested hillside seep” as an “especially important resource to avoid.”
- Two small wetlands not identified in the report were located near Wetland “S”: Wetlands “AE” (0.03 acre) and “AF” (0.01 acre). Wetland “AE” (Site 31 on Exhibits 3 and 4) will be directly impacted by the project, as it is entirely within the right-of-way of the new roadway. Wetland “AF” (Site 32 on Exhibits 3 and 4) will not be directly impacted, as it is adjacent to the right-of-way in an area to be bridged by the new roadway.

Alternative 1 impacts six sites, **Preferred Alternative 2** impacts all seven sites and affects the largest total area (approximately 2.68 acres), and Alternatives 3 and 4 impact four sites. The total area of direct impact attributable to each build alternative is shown on Table 4.15, page IV-48. Potential impacts by site are summarized on Table 4.16, page IV-49. The sites are identified on Exhibits 3 and 4 by the Site ID numbers on Table 4.16.

TABLE 4.15—Summary of Right-of-Way Impacts to Wetlands, by Alternative

Alternative (By segment)	Existing		Taken		Remaining		
	Hectares	Acres	Hectares	Acres	Hectares	Acres	%
Alternative 1							
Western (OWA)	0	0	NA	NA	NA	NA	NA
Central (PCA1)	1.06	2.61	0.85	2.10	0.21	0.51	20%
Eastern (PEA)	0.88	2.18	0.12	0.30	0.76	1.88	86%
Logansport (Y-LA)	0	0	NA	NA	NA	NA	-
Total	1.94	4.79	0.97	2.40	0.97	2.39	50%
Preferred Alternative 2							
Western (OWA1)	0.11	0.28	0.11	0.28	0	0	0%
Central (PCA1)	1.06	2.61	0.85	2.10	0.21	0.51	20%
Eastern (PEA)	0.88	2.18	0.12	0.30	0.76	1.88	86%
Logansport (YLA)	0	0	NA	NA	NA	NA	NA
Total	2.05	5.07	1.08	2.68	0.97	2.39	47%
Alternative 3							
Western (OWA)	0	0	NA	NA	NA	NA	NA
Central (PCA2)	0.78	1.93	0.63	1.55	0.15	0.38	20%
Eastern (PEB)	0	0	NA	NA	NA	NA	NA
Logansport (YLB)	0	0	NA	NA	NA	NA	NA
Total	0.78	1.93	0.63	1.55	0.15	0.38	20%
Alternative 4							
Western (OWA1)	0.11	0.28	0.11	0.28	0	0	0%
Central (PCA2)	0.78	1.93	0.63	1.55	0.15	0.38	20%
Eastern (PEB)	0	0	NA	NA	NA	NA	NA
Logansport (YLB)	0	0	NA	NA	NA	NA	NA
Total	0.89	2.21	0.74	1.83	0.15	0.38	17%

NOTE: *Existing* = Total size of wetland sites having all or part of their area within the project right-of-way.
Taken = That portion of the “Existing” area estimated to be within the right-of-way of one or more alternatives.
Remaining = That portion of the “Existing” area not within the right-of-way.
NA = Not applicable.

In 1991, IDNR, USFWS, and INDOT signed a Memorandum of Understanding (MOU) that established standard mitigation ratios for impacts to wetland resources. While not signatory to the agreement, USACE and IDEM typically follow the MOU. Though mitigation (replacement) ratios for impacts to certain wetland types are negotiated on a case-by-case basis with the regulatory agency, they are generally based on the following standards for habitat in the project area:

<u>Habitat Category</u>	<u>Standard Minimum</u>
Palustrine Emergent (E) Wetland	2:1
Palustrine Scrub-Shrub (SS) Wetland	3:1
Palustrine Forested (F) Wetland	4:1

Table 4.16 shows suggested mitigation ratios for wetlands potentially impacted by the project.

USACE and IDEM make the final determination of the jurisdictional status of wetland areas and waterway crossing sites. USACE has reviewed the *Wetland Delineation Report* and, as stated in a letter of September 24, 2002 (see Appendix A1), has determined that Wetlands “A,” “B,” “D,” and “E” are isolated wetlands that “...would not be regulated under Section 404 of the CWA, but would be regulated by the Indiana Department of Environmental Management as waters of the State.” USACE also stated that Wetlands “AD,” “S,” and “U”...“and the 33 waterways and surface tributary drainages would be regulated under Section 404 of the CWA.” As previously noted (page IV-47), a recent field investigation found that Wetland “S” would not be directly impacted by the project; however, previously unidentified Wetland “AE” is entirely within the project right-of-way,

TABLE 4.16—Summary of Potential Impacts to Wetlands, by Site

Site ID	Total Area (rounded to nearest 100th)		Type	Standard Mitigation Ratio	Alternative(s) Impacting Site	Area Taken		Comments
	Hectares	Acres				Hectares	Acres	
1	0.36	0.90	F					No impact. Alignment near site eliminated.
2	0.46	1.13	F					No impact. Alignment near site eliminated.
3	6.12	15.11	E/SS					No impact. Alignment near site eliminated.
4	0.22	0.55	SS					No impact. Alignment near site eliminated.
5	0.01	0.01	F					No impact. Alignment near site eliminated.
6	0.01	0.02	F					No impact. Alignment near site eliminated.
7	0.01	0.02	F					No impact. Alignment near site eliminated.
8	0.04	0.11	F					No impact. Alignment near site eliminated.
9 (U)	0.73	1.80	E/SS	2:1-3:1	All	0.62	1.52	Site partially within proposed ROW. Potential roadside runoff, other impacts to remainder.
10 (A)	0.15	0.36	E	2:1	Alt. 1 & Preferred Alt. 2	0.11	0.28	Site partially within proposed ROW. Potential roadside runoff, other impacts to remainder.
11 (B)	0.13	0.32	E	2:1	Alt. 1 & Preferred Alt. 2	0.11	0.27	Site partially within proposed ROW. Potential roadside runoff, other impacts to remainder.
12	*	*	E/SS					No impact. Alignment shifted south of existing SR 25 to avoid site. Access to site denied.
13	0.84	2.08	E					No impact. Alignment shifted south of existing SR 25 to avoid site.
14	0.02	0.05	E/SS		All			Possible indirect impact. The alignment was shifted to avoid the site, which is adjacent to existing SR 25. The new road would create a barrier south of the site. Farther south, the railroad forms an existing barrier.
15	0.84	2.07	E/SS					No impact. Alignment near site eliminated.
16 (S)	0.04	0.09	F	4:1	All			Site partially in ROW; direct impact avoided by bridging wetland area.
17	*	*	F					No impact. No alignment near site.
18	0.21	0.52	SS/F		Alt. 1 & Preferred Alt. 2			Possible indirect impact. The site is in a floodplain, north of existing SR 25/railroad corridor. The build alternatives would place the new road adjacent to the site and remove nearby vegetation the loss of which could affect the site.
19 (D)	0.05	0.11	SS/F	3:1 – 4:1	Alt. 1 & Preferred Alt. 2	0.04	0.11	Site wholly within proposed ROW.
20	0.01	0.02	E/SS		Alts. 3, 4			Possible indirect impact. The railroad/existing SR 25 corridor bound this very small site to the north. The build alternatives would create a barrier to the south, where currently there is farmland.
21	0.03	0.08	F		Alts. 3, 4			Possible indirect impact. The railroad/existing SR 25 corridor bound this very small site to the north. The build alternatives would create a barrier to the south, where currently there is farmland.
22	0.03	0.08	SS/F		Alts. 3, 4			Possible indirect impact. The railroad/existing SR 25 corridor bound this very small site to the north. The build alternatives would create a barrier to the south, where currently there is farmland.
23	0.05	0.12	E/SS		Alts. 3, 4			Possible indirect impact. The railroad/existing SR 25 corridor bound this very small site to the north. The build alternatives would create a barrier to the south, where currently there is farmland.
24	0.22	0.54	SS		Alt. 1 & Preferred Alt. 2			Possible indirect impact. Alignment avoids direct impact but new access ramp would create a barrier immediately to the west, existing SR 25 and railroad are already a barrier to the south, and new SR 25 would be a barrier farther north and east. Road and railroad barriers would surround the entire site, whereas now the site is surrounded in three directions by farmland.
25	0.22	0.55	E/SS		All Alts.			Possible indirect impact. Alignments avoid direct impact and the site is closely bounded by CR 175W and the railroad/existing SR 25 corridor. The build alternatives would be immediately adjacent to the site, causing it to be enclosed by barriers. There is also the potential for stormwater runoff to affect the site.
26	0.61	1.52	E/SS					No impact. Alignment near site eliminated.
27 (E)	0.83	2.06	E	2:1	Alt. 1 & Preferred Alt. 2	0.08	0.19	Site partially within proposed ROW. Potential roadside runoff, other impacts to remainder.
28 (AD)	0.11	0.28	SS/F	3:1 – 4:1	Preferred Alt. 2 & Alt. 4	0.11	0.28	Site entirely within proposed ROW.
29	0.40	1.00	F					No impact. Alignment near site eliminated.
30	**	**	F					No impact. Alignment near site eliminated.
31 (AE)	0.01	0.03	SS	3:1	All Alts.	0.01	0.03	Site wholly within proposed ROW.
32 (AF)	0.004	0.01	F					Wetland outside but adjacent to ROW. Alignment avoids direct impact by bridging wetland area.

Abbreviations Key: ROW = Right-of-Way E = Emergent SS = Scrub Shrub F = Forested

Notes: Shaded rows indicate sites not directly impacted by project. Site ID numbers locate sites on Exhibits 3 & 4.

Letters in () following Site ID number are site identifiers in the *Wetland Delineation Report*.

and another unidentified wetland, "AF," is adjacent to the right-of-way. USACE has reviewed the results of the field survey and has determined that the wetlands are jurisdictional and subject to regulation under Section 404 of the CWA (see Appendix A3, letter of August 29, 2003).

Early coordination has occurred and consultation is ongoing with permitting agencies. A USACE Individual 404 Permit, an Individual 401 Water Quality Certification from IDEM, and an IDNR Construction in a Floodway Permit will be necessary to construct any of the proposed build alternatives. Detailed permit coordination will occur during the final design phase of the project. The Individual Permits will include a detailed mitigation and monitoring plan for wetland and stream impacts. Proposed mitigation includes the commitment by INDOT, contingent upon a willing seller, to try to purchase a portion of Delphi Swamp at or near fair market value. That portion of Delphi Swamp would be, restored, placed into a 5-year monitoring and management plan, and permanently protected as an IDNR Nature Preserve. Details of the proposed mitigation measures are described in Chapter 5.

ONLY PRACTICABLE ALTERNATIVE FINDING

Wetland areas were important considerations in the decision to either modify or eliminate several alternative alignments. **Based on the considerations described below, and in accordance with Executive Order 11990, it has been determined that there is no practicable alternative to the proposed construction in wetlands and that the proposed action includes all practicable measures to minimize harm to wetlands which may result from such use.**

The No-Build Alternative is not considered practicable because it does not address the needs for the proposed project as detailed in the statement of project Purpose and Need (Chapter 1, Section 1.4). Alternatives 1, 3, and 4 impact fewer wetlands than **Preferred Alternative 2**; however, Alternatives 1, 3, and 4 have been eliminated for reasons defined in Chapter 2, Section 2.4 and summarized below. Data regarding each site the project would impact is capsulized on Table 4.16, page IV-49.

WESTERN SEGMENT—

Wetland "AD" (Site 28)—This approximately 0.28-acre shrub-scrub/forested wetland is in an agricultural/residential area adjacent to the railroad right-of-way and east of CR 800E. Sandbar willow, American elm, and poison hemlock dominate the wetland. The upland area was dominated by sugar maple, may-apple, and hackberry. The wetland appears to have formed from a concentrated discharge of runoff conveyed along the nearby railroad. The discharged runoff follows a rough drainage pattern and spreads over the surrounding level land surface. The potential for wildlife usage appears to be low based on its proximity to a residential area. Overall, the wetland is assigned a moderate value. Wetland "AD" is entirely within the right-of-way of **Preferred Alternative 2** and Alternative 4, which are on shared alignment (as Western Segment O-WA1) adjacent to the railroad.

Avoidance: Alternatives 1 and 3, on shared alignment (as O-WA), are sufficiently north of the wetland to avoid the area. However, the alignment was eliminated because local officials, the APC, and members of the public stated their preference for an alignment that avoids or minimizes impacts to farmland and remains close to the railroad track—i.e., the O-WA1 section of **Preferred Alternative 2** and Alternative 4. Early on, other alignments were also studied that could have avoided this wetland; however, they were eliminated for the following reasons: During early

coordination, the USFWS and IDNR expressed preference for the alternatives in the southern portion of the project corridor that avoid impacts to sensitive biotic areas along the Wabash River and existing SR 25, particularly the wetland fen sites in the vicinity of Americus. Likewise, the archaeological resource survey performed for this project recommended an alignment that would avoid/minimize impacts to potential resources near the Wabash River and along local creeks. Northern alignments known as P-W and T-W would have avoided impacting the wetland; however, they would have had greater potential for impacting potentially more notable wetland areas or resources. Thus, they were eliminated. Shifting the alignment south of the railroad (O-WB) was considered and eliminated early on because it did not meet Purpose and Need.

CENTRAL SEGMENT—Alternatives in this would encounter the following four wetland areas:

Wetland “AE” (Site 31)—This is a scrub-shrub wetland community, 0.03 acre in size, is located at the bottom of a steep slope, adjacent to a tributary of Deer Creek. Dominant vegetation within the wetland includes elderberry and true water-cress. Wetland hydrology is provided by over-bank flooding and perhaps some groundwater discharge. It is considered a moderate quality wetland due to its relatively undisturbed nature. It is probably that it has moderate value to wildlife. Its wildlife value is, to some degree, limited by its small size. The upland forest surrounding this wetland is characterized by trees such as sycamore, American elm, and sugar maple. Wetland “AE” is entirely within the right-of-way of all build alternatives, which share an alignment (P-CA1 and P-CA2) in the area.

Wetland “U” (Site 9)—This approximately 1.8-acre emergent/scrub-shrub wetland is characterized as a wet sedge meadow that may have been disturbed in the past through agricultural practices but allowed to return to wetland. The wetland area is dominated by swamp skunk cabbage, sweet flag, American elm, box elder, spotted touch-me-not, and northern spicebush. The upland area was dominated by chokeberry, sugar maple, spring beauty, and sweet cicely. Wildlife usage may be moderate to high and can include avian nesting, mammalian forage and cover, amphibian lifecycle, and more. The wet sedge meadow provides seasonal changes in landscape and dynamic habitat for a variety of wildlife. While there is little economic value associated with this wetland, the human aesthetic value is moderate to high considering the expected wildlife usage throughout the seasons. Overall, a moderate value is assigned to the wetland. The wetland may contribute to water quality improvement and to groundwater recharge. Wetland “U” is partially (1.5 acres) within the right-of-way of all build alternatives (Central Segment alignments P-CA1 and P-CA2), which share a common alignment in this area.

Wetlands “A” and “B” (Sites 10 and 11)—These emergent wetlands located adjacent to each other immediately north of existing SR 25. Wetland “A,” approximately 0.36 acre, is dominated by reed canary grass, and clasp leaf dogbane. The upland area is dominated by Queen Anne’s lace, reed canary grass, and clasp leaf dogbane. Wetland “B,” approximately 0.31 acre, is dominated by rush, barnyard grass, and rice cut grass. The upland area is dominated by red clover, fescue, and giant foxtail. Both sites are within shallowly sloped drainage features within an active agricultural field. Drainage swales along existing SR 25 convey runoff to these drainage features along with runoff from the agricultural fields. Surface runoff from the surrounding farm fields and roadside ditches along existing SR 25 may transport agricultural chemicals, eroded sediments, and inorganic pollutants into this wetland. This wetland would function to remove such pollutants from the runoff water. These wetlands have most likely been disturbed in the past through farming. These wetlands are isolated from nearby brush or forest cover that would limit

their use by many species of mammals associated with wetlands. The current potential for these wetlands to provide human economic benefits is also low, with the exception of improving water quality. There are undoubtedly some species that use these areas; however, based on the location of the wetlands, low plant species diversity, and invasion by exotic species, the wetlands are assigned a low to moderate value. Approximately 0.28 acre of Wetland “A” and 0.27 acre of Wetland “B” are within the right-of-way of the shared Alternative 1 and **Preferred Alternative 2** alignment (P-CA1).

Avoidance: The alignment through most of the Central Segment is common to all build alternatives. It was developed to address a variety of issues, including wetland impacts. This alignment shifts the crossing of Deer Creek westward, in response to USFWS comments regarding the sensitive nature of the area; and keeps the alignment away from the Delphi Swamp, as recommended by both USFWS and IDNR. The creek-crossing options are also limited owing to constraints related to the proximity of the Deer Creek Valley Rural Historic District to the east, locally important natural features such as Bassard Falls and slate bluffs near/along Deer Creek, a major industry to the east and north, residential areas associated with Delphi to the west, and existing roads and railroad facilities in the area. To minimize indirect impacts to Deer Creek (i.e., impacts caused by development that could occur as a result of the build alternative), access has been strategically placed. In the vicinity of Deer Creek, the only access from the new mainline to Delphi is via a new connecting road (approximately 885 feet north of Deer Creek). Any development proposed for the southwest quadrant of the connector/new mainline intersection should be closely coordinated with the local officials to address the potential for adverse impacts to Deer Creek.

Wetlands “U” is partially impacted and “AE” wholly impacted by the shared alignment of all of the four build alternatives. These sites could only be avoided by shifting the alignment to an area where more notable impacts to existing resources would occur. In the case of Wetland “U,” shifting the alignment south to avoid the wetland would result in an additional crossing of Robinson Branch and place the new road so close to existing SR 25 that a connector road between the two routes may not be feasible. Shifting it north would place the alignment in the floodplain of Robinson Branch, impact more businesses and residences along existing SR 25, and could impact Delphi Swamp to the west and an NRHP-eligible residence to the east. Wetland “AE,” which is entirely within the project right-of-way, is in the area constrained primarily by an NRHP-listed property to the east, the Deer Creek crossing to the north, and other wetlands immediately adjacent to the project right-of-way.

Wetlands “A” and “B” are adjacent to each other and would be impacted by Alternative 1 and **Preferred Alternative 2** (Central Segment’s P-CA1), north of existing SR 25 and the CSX railroad. Design constraints related to tying into existing SR 25 preclude shifting the alternatives to the north to avoid the sites. Alternatives 3 and 4, on shared alignment, provided an avoidance alternative to the south of the railroad (P-CA2). However, as explained in Chapter 2, Section 2.4.1, the southern alignment was eliminated because it did not permit connection with the north-of-rail alignment in the Eastern Segment (P-EA, a component of **Preferred Alternative 2**). Between Delphi and Logansport, it was determined that the north-of-rail alignment (i.e., the P-CA1 + P-EA components of **Preferred Alternative 2**) better meets Purpose and Need, enhancing the local transportation network and improving safety by eliminating more at-grade railroad crossings than the south-of-rail alignment. Furthermore, the north-of-rail alignment incorporates approximately 9.5 miles of existing SR 25, thereby carrying all traffic on a new four-

lane divided roadway constructed to current standards, rather than leaving the existing road, with deficiencies, in place, as would the south-of-rail alignment.

Where only a portion of a wetland (Wetland “U”) is in the right-of-way, methods to minimize impacts to the remaining portion of the site, including swales to prevent roadside runoff from reaching the site, will be studied during the design phase.

EASTERN SEGMENT—

Wetland “D” (Site 19)—Located along the north side of existing SR 25, this approximately 0.1-acre scrub-shrub/forested wetland exists as a small drainage feature that discharges to Rock Creek approximately one quarter mile to the northwest. The wetland is dominated by spotted touch-me-not, box elder, and Canadian black snakeroot. The upland area was dominated by black cherry. It is likely the wetland area was disturbed in the past through farming and was allowed to revert to wetland. It would serve to improve water quality and to reduce water temperatures before discharge to the creek. In addition, the wetland may serve as a source of groundwater recharge. Wildlife use may be considered moderate to high based on the dense undergrowth and medium-mature trees. Economic and aesthetic values are low since the trees are not of high market value and much of the area is not amenable to open pedestrian travel. The wetland is assigned a moderate to high value as a source of forage, cover, and water.

Wetland “D” is entirely within the right-of-way of Alternative 1 and **Preferred Alternative 2**, which are on shared alignment (as P-EA in the Central Segment) north of existing SR 25. Alternatives 3 and 4, also on shared alignment (P-EB), are south of the railroad and would not impact the site.

Wetland “E” (Site 27)—This approximately 2.1-acre wetland is emergent and is located within an active agricultural field. The wetland is dominated by reed canary grass, giant foxtail, and cattail, and the upland area is dominated by corn stubble. The wetland serves to improve water quality from surrounding farm field runoff. There is no apparent overland drainage feature associated with the wetland. The potential for this wetland to serve as a good source of groundwater recharge is moderate to high; however, it is possible that this wetland exists due to faulty farm drainage tiles that were not repaired. Based on the dominant presence of exotic, invasive plant species, the forage and habitat value to wildlife is low to moderate. There are minimal perceived aesthetic values associated with this wetland due to its location within an agricultural field. Its presence and break in the landscape, and apparent use by avian species suggest a source of aesthetic value, but it is assigned little or no economic value. Overall, the area is considered of low to moderate value.

Wetland “E” is partially (0.19 acre) within the right-of-way of Alternative 1 and **Preferred Alternative 2**, on shared alignment (P-EA). Alternatives 3 and 4, also on shared alignment (P-EB), provided an avoidance alternative to the south.

Avoidance: Two alignments have been developed through this area—one north of the railroad (P-EA, a component of Alternative 1 and **Preferred Alternative 2**) that uses the right-of-way of existing SR 25, and one south of the railroad (P-EB, a component of Alternatives 3 and 4). Wetland “D” is adjacent to the north side of existing SR 25 and entirely within the right-of-way of the northern alignment. Wetland “E” is slightly farther from the existing road, so that only a portion of the site would be within the project right-of-way. These sites could be avoided by shifting the alignment farther north, well into the floodplain of Rock Creek; however, other wetlands would be

impacted and, potentially, more than one creek crossing required. In addition, the Rock Creek area north of existing SR 25 has been identified by the archaeological resource survey as “considered likely to contain archaeological properties.”

Alternatives 3 and 4, on shared alignment, provided an avoidance alternative to the south of the railroad (P-CA2). However, as explained in Chapter 2, Section 2.4.1, it was determined that the north-of-rail alignment (i.e., the P-CA1 + P-EA, components of **Preferred Alternative 2** and Alternative 1) better meets Purpose and Need, enhancing the local transportation network and improving safety by eliminating more at-grade railroad crossings than the south-of-rail alignment (10 with P-CA1 + P-EA versus 6 with P-CA2 + P-EB). Furthermore, the north-of-rail alignment incorporates approximately 9.5 miles of existing SR 25, thereby carrying all traffic on a new four-lane divided roadway constructed to current standards, rather than leaving the existing road, with deficiencies, in place, as would the south-of-rail alignment. In addition, by eliminating much of existing SR 25, the preferred alignment (1) reduces maintenance costs for jurisdictions that will assume the responsibility for the remainder of the existing roadway, (2) potentially reduces land acquisition costs, and (3) reduces impacts to property owners along the route. The Logansport and Cass County officials and planning/economic development groups have supported the north-of-rail alignment primarily for these reasons. Therefore, the south-of-rail alignment (shared Alternatives 3 and 4) was eliminated.

Shifting the alignment out of the right-of-way of existing SR 25 (either farther north, or to the south) would be contrary to one of the main reasons the alignment was recommended—i.e., to utilize the existing roadway. Where only a portion of a site (Wetland “E”) is in the alignment’s right-of-way, methods to minimize impacts to the remaining portion of the site, including swales to prevent roadside runoff from reaching the site, will be considered during the design phase.

LOGANSPOUR SEGMENT—No wetland sites are impacted by the project in this area.

SUMMARY OF WETLAND IMPACTS

- **Direct Effects**

No-Build Alternative: None

Build Alternatives: **Preferred Alternative 2** would affect seven wetland sites and impact a total of approximately 2.68 acres. Impacts to these wetlands were determined for each habitat community type, i.e., Emergent (E), Scrub Shrub (SS), Forest (F) and the combinations E/SS and SS/F.

The proposed roadway design for **Preferred Alternative 2** has been reviewed for each wetland impact site for the purpose of avoiding impacts to the maximum extent practicable. Where impacts could not be avoided, impacts were minimized to the maximum extent practicable. Early and ongoing coordination, including field reviews, with regulatory agencies—USACE, IDEM, IDNR, and USFWS—resulted in alignment shifts that avoided or minimized many direct impacts. However, the location of and potential impacts to sensitive resources (such as National Register-eligible properties, Deer Creek and other creeks, Delphi Swamp, Americus Fen, etc.) precluded totally avoiding wetlands.

None of the direct impacts would affect the Americus Fen or Delphi Swamp sites, nor would the project make these sites more accessible than they now are. All build alternatives are far south of the Americus Fen area. Existing SR 25 and a small, mixed residential/commercial area separates the Delphi Swamp and the build alternatives. Existing SR 25 will remain open to provide access to residential and business property in this area, thereby continuing to serve as the southern boundary of the swamp.

Based on the above considerations and in accordance with Executive Order 11990, it has been determined that there is no practicable alternative to the proposed construction in wetlands and that the proposed action includes all practicable measures to minimize harm to wetlands which may result from such use. The No-Build Alternative is not considered practicable because it does not address the needs for the proposed project as detailed in the statement of project Purpose and Need (Chapter 1, Section 1.4). Alternatives 1, 3, and 4 impact fewer wetlands than **Preferred Alternative 2**; however, **Preferred Alternative 2** was recommended because it satisfies the performance criteria associated with Purpose and Need to a greater extent than Alternatives 1, 3, and 4. In addition, determining factors—such as local planning initiatives, eliminating approximately 9.5 miles of existing SR 25, and eliminating more railroad crossings (16 total) than other alternatives—contributed to its recommendation. Alternatives 1, 3, and 4 have been eliminated for reasons defined in Chapter 2, Section 2.4.1, and summarized below:

- **Alternative 1** (O-WA + P-CA1 + P-EA + Y-LA): Its western section, O-WA, was eliminated for being less able to satisfy the performance measures related to Purpose and Need and less responsive to local and regional planning initiatives, and for having more residential relocations. The next-to-rail alignment and ability to eliminate several at-grade railroad crossings on local public crossroads were desirable features possessed by O-WA1, the Western Segment component of **Preferred Alternative 2**.
- **Alternative 3** (O-WA + P-CA2 + P-EB + Y-LB): All segments were eliminated for reasons that included being less able to satisfy performance measures relating to Purpose and Need, particularly the safety aspects involved in elimination of at-grade railroad crossings on local public crossroads; and being less responsive to local planning initiatives.
- **Alternative 4** (O-WA1 + P-CA2 + P-EB + Y-LB): P-CA2, P-EB, and Y-LB were eliminated for reasons that included being less able to satisfy Purpose and Need performance measures, particularly the safety aspects involved in elimination of at-grade railroad crossings on local public crossroads; and being less responsive to local planning initiatives.

Mitigation for impacts is being coordinated with the requisite regulatory agencies (see Chapters 5 and 8, and Appendix A). Proposed mitigation for wetland impacts involves INDOT's commitment to try to purchase a portion of Delphi Swamp for protection, restoration, enhancement, and permanent protections as an IDNR Nature Preserve. The ability to meet the commitment depends upon purchase from a willing seller(s) at or near fair market value. The proposal is explained in the Conceptual Wetland Mitigation Plan for addressing wetland and related impacts resulting from the project. The plan is contained in the *Preferred Alternative and Mitigation Package*, Appendix A3. Because Robinson Branch flows through portions of the Delphi Swamp, the conceptual plan addresses some of the concerns

regarding potential riparian habitat and stream impacts due to the project. The proposed mitigation plan relates only to **Preferred Alternative 2**. If another alternative is selected in the Record of Decision, this finding will need to be revised.

At present, the likelihood that at least some portions of Delphi Swamp could be made available for purchase by INDOT appears good, based on conversations with owners of two of the three parcels identified as composing the swamp. Alternative mitigation scenarios will be pursued if the commitment to purchase a portion Delphi Swamp cannot be carried through purchase agreements cannot be reached with owners or other, as yet unforeseen, circumstances arise. INDOT will be responsible for retaining the services of individuals qualified to delineate and design wetland mitigation sites during final design. Given that wetlands may naturally increase, decrease, be eliminated, or be created, detailed mitigation plans will be developed during final design to meet the requirements of the USACE, when details exist to support such development. Should the acquisition of Delphi Swamp tracts not be accomplished, or should the acquired tracts not prove sufficient to achieving USACE replacement ratios, the plan will identify mitigation sites for creating the requisite wetlands.

Additional measures to minimize impacts to specific wetland sites can be considered during final design. Such measures could include the installation of drainage features such as swales to ensure that roadway runoff does not enter wetland areas, and culverts to maintain the flow of water to a wetland area otherwise cut off from its water source.

- **Indirect / Cumulative Effects**

No-Build Alternative: None.

Build Alternatives: Alignments were shifted or eliminated in an effort to avoid or minimize impact to wetlands. However, a variety of constraints (including historic properties and district, Delphi Swamp, Americus Fen, as well as requirements related to roadway configurations and design standards) limited the alignment options available. In several cases a portion, rather than all, of a wetland area would be directly affected (i.e., be within the project right-of-way), while in other instances a wetland area would be adjacent to or relatively near the right-of-way. In either case, the viability of the these wetland areas may be impaired because hydrology and drainage patterns in the area are altered, the remaining wetland area is too small, vegetation is lost, barriers to species/processes are created, or other factors. Loss of wetlands could impact groundwater recharge/discharge, nutrient removal/transformation, and other wetland functions. Table 4.16, page IV-49, capsulizes wetland data and potential impacts.

It is not likely that all indirect impacts can be avoided. As is the case with direct impacts, measures (such as those described above) to minimize indirect impacts to specific wetland sites can be identified during final design.

4.13 PERMITS

Roadway construction activities would result in a variety of impacts to wetlands, streams, and waterways. Early and ongoing coordination has occurred with permitting agencies—IDEM, IDNR and USACE—and coordination will continue as the project proceeds.

Wetlands—Three wetlands directly affected by the project—“AD,” “U,” and “AE” (Sites 28, 9, and 31 on Exhibits 3 and 4)—are considered jurisdictional and are regulated by the USACE under Section 404 of the Clean Water Act (CWA). USACE is the federal agency responsible for regulating impacts to jurisdictional wetlands, streams, and other “waters of the United States.” The permit application must show all practicable measures have been taken to avoid impacts to wetlands. All seven wetlands affected are regulated by IDEM, which maintains jurisdiction over the state’s water quality issues, and has established permitting programs to regulate discharges of pollutants to “waters of the State.” Construction activities that will result in such a discharge (including impacts to wetlands) require permitting through this program (per Section 401 of CWA). In addition, IDEM requires erosion control planning (ECP) for projects that disturb five acres or more of land surface (327 IAC 15-5). IDEM will require measures be implemented to minimize potential physical disturbance and control soil erosion.

Streams—A USACE Individual Permit (IP) is required for all projects involving stream impacts greater than 91 linear meters (300 linear feet). Stream crossings for all build alternatives would exceed this criterion. Therefore, a USACE Individual 404 Permit and an Individual 401 Water Quality Certification from IDEM would be necessary to construct the project. Detailed permit coordination would occur during the design phase of the project. The required Individual Permits would include a detailed mitigation plan for the stream impacts.

Waterways—Construction activities on waterways with a watershed of one square mile or greater in an urban area and, in a rural area, 50 square miles or greater at the point where the bridge crosses the stream require a construction in a floodway permit from IDNR (Flood Control Act IC 14-28-1). Because this project meets the criteria, a construction in a floodway permit will be necessary. IDNR, Division of Fish and Wildlife, will provide specific input during review of IDNR permits.

4.14 WATER BODY MODIFICATION AND WILDLIFE IMPACTS

Water body modification impacts apply to wetlands, and to streams and their associated riparian communities. Impacts to wetlands are described in Section 4.12. Riparian communities are plant communities adjacent to water that are at least moderately affected by their proximity to water. These areas, including bank-side vegetation and upland forests, provide habitat for many species and functions similar to wetlands such as sediment stabilization and toxicant retention.

The placement of culverts/pipes in existing channels or construction of bridges is proposed at several creek and ditch crossings. In some cases, these activities will require an alteration to the natural shape of the creek/ditch. Such alterations—which include channel widening, enclosure, straightening and realignment; bank shaping and stabilization; and/or the placement of piers within the water body—can produce the following impacts:

- Channel widening—Reduction in stream velocity allowing accumulation of sediments, or alter riffle-pool complexes.
- Channel enclosure (pipes/culverts)—Restriction of flow during peak flood events; accumulation of backwater; and/or disruption of the natural ecology of a water body by blocking sunlight, removing natural aquatic and wildlife habitat, and destroying bottom substrate important to macroinvertebrate communities.

- Channel realignment—By removing meanders, an increase in stream velocity and energy resulting in stream bank erosion, loss of stream bank vegetation, and destruction of riffle/pool complexes.
- Bank shaping and stabilization—Loss of habitat or bank-side vegetation.
- Placing bridge piers in a water body—Loss of habitat in the area of the piers.

Stream and riparian/upland forest impacts of **Preferred Alternative 2** are summarized on Table 4.17.

TABLE 4.17—Stream and Riparian Impacts: Preferred Alternative 2

Streams	Crossings	Length (Ft)	Proposed Structure	Riparian/ Forest (Acres)
Major				
Sugar Creek	1	469	Bridge	11.0
Deer Creek	1	256	Bridge	7.3
Rock Creek	1	302	Bridge	4.4
<i>Sub-T. Major</i>	3	1,027		22.7
Minor				
Dry Run Tributaries	3	466 187 331	Pipes/box culverts	2.6 0.0 0.6
Buck Creek Tributary	1	400	Pipe/box culvert	2.3
Buck Creek	1	643	Bridge	7.2
Sugar Creek Tributary	1	325	Pipe/box culvert	0.0
Bridge Creek Tributary	3	463 361 417	Bridge Pipe/box culvert Pipe/box culvert	6.5 0.0 5.3
Bridge Creek	3	348 774 364	Bridge Pipe/box culvert Bridge	6.3 0.1 12.8
Robinson Branch	1	750	Pipe/box culvert	12.5
Little Rock Creek	1	361	Pipe/box culvert	1.4
Cronin Ditch	1	302	Pipe/box culvert	0.0
Keeps Creek	1	348	Pipe/box culvert	0.0
Unnamed Ditch	1	420	Pipe/box culvert	0.5
Goose Creek Tributary	1	351	Pipe/box culvert	0.0
Goose Creek	1	233	Pipe/box culvert	0.0
<i>Sub-T. Minor</i>	19	7,844		58.1
Total Major / Minor	22	8,871		80.8

NOTE: Shading indicates stream crossings where all build alternatives shared a common alignment.

While USFWS has concurred, “the preferred alternative avoids most sensitive areas and will not result in excessive impacts to wetlands or forest” (Appendix A3, letter of January 23, 2004), several stream crossing locations have been identified as areas of concern owing to potential impacts on aquatic and riparian life and their habitat. USFWS noted its greatest concern to be the crossing of Deer Creek, “where many sensitive natural features are present, including high quality floodplain forest, steep slopes and unique wetlands.” Also of concern were the crossings of Bridge Creek, Robinson Branch, and other streams owing to “issues of concern” such as “direct loss of aquatic and riparian habitats, and alternations in channel dimensions and hydraulics which may result in indirect effects such as increased bank erosion, increased sediment load and channel instability.” Designing crossings to keep channel and bank modifications to a minimum and to avoid channel alterations below the low-water elevation was recommended.

In a letter dated May 28, 2003 (Appendix A3), USFWS considered impacts to the Robinson Branch stream corridor “significant” owing to potential loss/fragmentation of riparian forest and proposed lengthy stream alteration. Recommended measures to minimize impacts included

constructing a bridge rather than placement of a culvert at the crossing, or “shifting a short section of existing SR 25 westward to allow for an intersection outside the Robinson Branch forest corridor.”

USFWS again commented on potential wetland, stream and forest impacts in a letter dated March 29, 2004 (Appendix A3). Areas of particular concern included the following:

- Buck Creek, Sugar Creek, and Bridge Creek crossings:” Major forest fragmentation would occur,” but proposed plans to bridge the creeks would reduce channel impacts.
- Bridge Creek tributary north of CR 100N, Bridge Creek near a tributary confluence, and Robinson Branch (two crossings): “Significant stream impacts may occur....”
- Rock Creek: Substantial forest fragmentation would occur at the Rock Creek crossing and the drainageway to its west which contains a forested wetland.”

Recommended measures to minimize impacts were summarized, as follows:

1. *Avoid major channel alternations and minimize tree-clearing at all crossings, especially those with good aquatic habitat and/significant expanses of riparian/floodplain forest.*
2. *Use bridges or 3-sided culverts rather than pipes or box culverts for crossings of all streams of sufficient size which contain natural channel configuration and functional aquatic habitat.*
3. *Investigate revisions to the road crossing alignment at Sugar Creek, Bridge Creek (Deer Creek)/tributary confluence and Robinson Ditch crossings.*
4. *Construct a bridge rather than a culvert at the Robinson Ditch crossing, spanning as much of the wetland/riparian area as possible.*

Regarding impacts to wetlands, streams, and wildlife/wildlife habitat, USEPA, in a letter dated February 3, 2004 (Appendix A3), recommended “firm statements of commitment to bridge over all streams and their associated wetlands and floodplains.”

SUMMARY OF STREAM AND WILDLIFE IMPACTS

- **Direct Effects**

No-Build Alternative: None

Build Alternatives:

Preferred Alternative 2 and Alternative 1 have approximately the same impacts to major and minor streams, i.e., 8,871 linear feet and 8,867 linear feet, respectively. Impacts from Alternatives 3 and 4 are greater—9,921 linear feet and 9,924 linear feet, respectively. Riparian/upland forested impacts calculated for the preferred alignment show the impact to be approximately 81 acres. The build alternatives shared an alignment at the majority of the stream crossings. Where they did not share an alignment, the crossings were still required of all alignments—albeit on different locations—and the impacts were similar. Likewise, their impacts to riparian/upland forest areas would be similar.

As shown on Table 4.17 (page IV-58), the current stage in the project, bridging is proposed at three major streams—Sugar, Deer, and Rock Creeks—and at several locations along minor streams. Culverts/pipes are proposed at the remaining stream crossings, and stream realignment could be required in some instances. During the development and evaluation of alternatives for this project, careful consideration was given to stream crossings to avoid or minimize their associated impacts. Bridging all major and several minor streams was proposed for all build alternative—including **Preferred Alternative 2**. Locations chosen for all stream crossings were evaluated for design feasibility as well as environmental impact.

During the development of alternative routes in the Delphi area, the locations of the Bridge Creek and Deer Creek crossings were shifted to avoid sensitive resources in the immediate vicinity—including the Rural Historic District, an NRHP-listed property, Bassard Falls, alluvial soils and wetland areas, and the slate bluffs area of Deer Creek. Alternatives that avoided the crossings associated with **Preferred Alternative 2** either impacted one or more of these sensitive resources, or were located too far south of the existing SR 25 and Delphi to satisfy performance measures associated with the project's Purpose and Need—i.e., to substantially reduce traffic on existing SR 25, to serve local communities in the existing SR 25 corridor.

Regarding the Robinson Branch crossings, a review of preliminary design indicates shifting existing SR 25 westward, as recommended by USFWS (May 28, 2003 letter, Appendix A3) would not substantially reduce the length of the currently proposed 750-foot drainage structure, and the forest impacts would still occur as a result of the placement of fill material. Regarding construction of a bridge, it does not appear that a bridge is needed to sustain existing stream hydraulics, and the cost of a bridge is not deemed warranted at this time. During final design, hydraulic analysis may determine that a bridge is warranted.

The exact extent and locations of any stream modifications that may be required by the project would be site dependent and defined in the final design. Continued efforts will be made during final design to identify design features that would minimize impacts at the crossings, including identifying measures to keep channel and bank modifications to a minimum and, where feasible, avoid channel alterations below the low-water elevation. Mitigation of stream impacts could include installing three-sided culverts that would retain the natural channel bottom, thereby facilitating the migration of stream fauna through the culverts, and reducing impacts to the flow rate. The culverts should be of sufficient size to prevent upstream bed instability and erosion of downstream banks.

The purchase of a portion of Delphi Swamp (based on a willing seller) to mitigate impacts to wetlands could also provide opportunities to mitigate impacts to riparian/forest areas along the project alignment, and impacts to Robinson Branch resulting from channel realignment and forest loss. Because Robinson Branch is a legal drain, coordination with the responsible county agency would be necessary to determine whether improvements to the stream could be made as a means of mitigating stream impacts.

This project will result in the clearing of approximately 81 acres of forest habitat. It is expected that clearing will occur at the final chosen crossing sites that will result in impacts to habitat at certain locations. Some of the crossing sites currently exist as wooded riparian habitat (upland forest) and the loss of such areas can potentially impact wildlife usage of these areas. Clearing of riparian areas also poses a potential impact to aquatic life. Thermal

loading to these waterways caused by exposing the stream surface to incident solar radiation can potentially limit usage of exposed stream reaches to full light-tolerant aquatic species of plant and animal life. Through coordination with USFWS, surveys were conducted of streams at or near proposed crossing sites. Based on the survey results, no federal or state protected species of fish or fresh water mussel were identified at the sampled locations.

Fragmentation of forest habitat may affect migratory birds in a number of ways. Some birds require large blocks of forest to successfully nest and fledge their young. Nests deep in a forest tract are also often less susceptible to cow bird parasitism and predation by edge species such as raccoons. Both of these factors can have significant impacts on bird populations. This impact on migratory birds, however, is lessened somewhat by the linear (riparian) or small nature of many of the woodlands being impacted. Because of this, their interiors may already be largely accessible to cowbirds and edge predators. Fragmentation may also affect bird use by separating habitat blocks such that they no longer function as one habitat unit. Because of the linear nature of this project, habitat blocks that are divided will still be in close proximity and will continue to be accessible to most bird species. The Preferred Alternative also avoids the largest blocks of wooded habitat in the study area that are associated with the Wabash River. The loss of woodland habitat and the resulting habitat fragmentation will have some impact on migratory birds but it is not likely to be significant.

Where stream crossings occur, mitigation for impacts to fish and wildlife habitats have been developed in accordance with IDNR and USACE guidelines. Mitigation measures—such as seasonal tree clearing to minimize impact to the Indiana bat's summer habitat; and potential purchase of a portion of Delphi Swamp for enhancement, restoration and protection, and possibly riparian reforestation restoration of degraded stream reaches, particularly along Robinson Branch—are proposed (see Chapter 5). During final design, bridging streams and wetlands will be explored and, where determined appropriate, bridges will be constructed.

- **Indirect and Cumulative Effects**

No-Build Alternative: None.

Build Alternatives: Alignments were shifted or eliminated in an effort to avoid or minimize impacts to streams, wetlands, and wildlife habitat. However, a variety of constraints along the project corridor (including historic properties and district, Delphi Swamp, Americus Fen, as well as requirements related to roadway configurations and design standards) limited the alignment options available.

USFWS has noted channel alterations could result in indirect effects such as “increased bank erosion, increased sediment load and channel instability.” It is not likely that all indirect impacts can be avoided. During final design, measures will be identified “to minimize the linear extent of channel and bank modifications and, where feasible, avoid channel alterations below the low-water elevation.”

4.15 IMPACTS TO THREATENED AND/OR ENDANGERED SPECIES

Section 7 of the *Endangered Species Act* directs all Federal agencies to use their existing authorities to conserve threatened and endangered species and, in consultation with USFWS/National Marine Fisheries Service, to ensure that their actions do not jeopardize listed

species or destroy or adversely modify critical habitat. Informal coordination with USFWS has been ongoing since early in the project.

In addition to federal protection, vertebrates and mollusks classified as endangered or threatened in Indiana are protected from “taking” pursuant to the Nongame and Endangered Species Act of 1973 and Fish and Wildlife Administrative Rules. Plants are protected by the Nature Preserves Act, which prohibits the collecting of plants occurring on dedicated nature preserves. Plants are also afforded protection by IDNR General Property Rules, which prohibit the picking or molesting of trees, shrubs, vines or flowers occurring on nature preserves, museum and historic sites, wetland conservation areas, wildlife habitat trust areas, and lands owned, licensed and leased to IDNR. State parks, state forests and state reservoir properties also provide protection.

Federally Protected Species

The following federally protected species have been identified as potentially being the study area: the federally endangered clubshell mussel and fanshell mussel, and federally threatened bald eagle, and the federally endangered Indiana bat.

In a letter dated June 22, 2001 (see Appendix A1), USFWS noted the following regarding the mussel species and bald eagle: “Since the current routes will not directly affect the Wabash or Tippecanoe Rivers, based on current information we conclude that the project is not likely to affect the two endangered mussels. There are no recent records of bald eagles in the project, however this species is expanding its nesting distribution in Indiana, especially along the Wabash River and its major tributaries...” Regarding the Indiana bat, “...we conclude that all 5 streams crossing/floodplain areas...provide high-quality foraging and maternity roost habitat...”

During subsequent field investigations, no live federally endangered mussel species were observed. No sightings were recorded for the bald eagle, and no nesting sights were observed during field investigations. Mist netting was conducted for the Indiana bat on four primary creeks (or suitable tributaries) during two separate netting campaigns. Six different species of bats were captured, including the Indiana bat, which was captured only on Sugar Creek, which is crossed by all build alternatives. There is much summer habitat in the area that can be used by the Indiana bat for roosting, maternity colonies, foraging, etc., and it is possible that the entire Wabash River watershed is used by the Indiana bat for these purposes. (Summer habitat consists of trees that are located in riparian areas, that are greater than six inches in diameter at breast height, and that have loose bark.)

The draft 1997 *Indiana Bat (Myotis sodalis) Revised Recovery Plan*, prepared for Region 3 USFWS¹⁰, indicated that, though the Indiana bat populations declined “between the earliest censuses and 1980,” the populations “have rebounded to former levels in recent years.” The *Recovery Plan* also notes the following: “A clearer picture of the relationship between the Indiana bat and its summer habitat is urgently needed. Until we better understand the factor or factors that have contributed to the decline of the species, we cannot accurately assess whether the loss of summer habitat...is limiting to regional or range wide populations of the species.” According to

¹⁰ The *Revised Recovery Plan* has not been adopted by USFWS, and is likely to undergo substantial redrafting prior to being adopted. At the time of the drafting of the revised plan in the mid-1990s, the population of the Indiana bat in Indiana was increasing to pre-1980 levels, but the rangewide population was still declining substantially. The most recent cave census in Indiana for the bat (winter 2000/2001) found a population decline of seven percent from the previous census.

a letter dated May 28, 2003 (see Appendix A3), USFWS has determined there is no need for a Biological Assessment or “for further consultation ...as required under Section 7 of the Endangered Species Act of 1973, as amended.” Further consultation would be required should “new information on endangered species at the site” become available or if there is a “significant change” in project plans. Because suitable habitat for the species could exist throughout the project corridor, where removal or modification of habitat cannot be avoided, steps to minimize impacts to Indiana bats will be required (see Chapter 5). These steps will involve limiting the removal of trees—particularly trees that may serve as roost trees—and other vegetation to areas needed for the construction, and confining tree removal to a time of year that would not conflict with the summer bat-occupancy period (April 15 – September 15).

In addition to the above-referenced species, USFWS recently proposed the eastern Massasauga rattlesnake as a candidate for listing as a federally protected species. This species has been documented in the Delphi Swamp. All build alternatives that would have impacted the Delphi Swamp have either been modified to avoid this resource, or have been eliminated.

Natural Areas and State-Protected Species

IDNR has advised that the following state-protected species have been documented in the Americus Fen area: the spotted turtle (endangered), yellow sedge (threatened), and hairy-fruited sedge (watch-list) have been documented in the Americus Fen. The eastern Massasauga rattlesnake (federal candidate, state-endangered), Kirtland’s snake (endangered), spotted turtle (endangered), and small yellow lady’s-slipper (rare) have been documented in the Delphi Swamp—the spotted turtle on June 19, 2003 (see IDNR correspondence dated July 15, 2003, Appendix A3). IDNR noted that both Americus Fen and Delphi Swamp are “significant” natural areas (November 14, 2000, letter in Appendix A1) and USFWS has referenced the Delphi Swamp/Robinson Branch plant community as being “specialized” and noted “species richness is high in some areas” (June 22, 2001, letter in Appendix A1). There was fossil evidence in Deer Creek of the wavy-rayed lampmussel, a State Special Concern listed species. No other state-protected species of fish/mollusk were identified, and no recent evidence or live samples of the wavy-rayed lampmussel were noted. As noted, all build alternatives that would have impacted the Delphi Swamp and Americus Fen resource areas have been eliminated or their alignments modified to avoid impacts. The acquisition of a portion of Delphi Swamp is proposed as mitigation for wetland and stream/riparian area impacts (see Chapter 5).

SUMMARY OF IMPACTS TO FEDERALLY THREATENED AND/OR ENDANGERED SPECIES

▪ **Direct Effects**

No-Build Alternative: None.

Build Alternatives: Mist netting conducted for the Indiana bat resulted in their capture on Sugar Creek. Although all build alternatives cross that creek on a shared alignment, the crossing is approximately 2 miles south of the capture site. Through consultation with USFWS, it was determined that a Biological Assessment and formal Section 7 coordination are not required. However, if new information on endangered species in the project area becomes available, or if project plans are changed substantially, further consultation will be necessary. In addition, where removal or modification of habitat cannot be avoided, the following steps will be taken: limiting the removal of trees—particularly trees that may serve

as roost trees—and other vegetation to areas needed for the construction, and confining tree removal to a time of year that would not conflict with the summer bat-occupancy period (April 15 – September 15).

- **Indirect / Cumulative Effects**

No-Build Alternative: None.

Build Alternatives: Clearing of vegetation for construction will likely impact some wooded riparian habitat suitable for roosting and foraging. Impacts due to future development that might occur in the area could also result in similar loss of habitat and additional impact to wildlife usage. Protection of sensitive areas along local creeks and waterways has been encouraged and promoted by local officials, environmental groups, and the public during the planning process for this project. Significant indirect or cumulative impacts to the Indiana bat are not anticipated as a result of this project.

4.16 FLOODPLAIN IMPACTS

According to the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map No. 180019 0075 B for Carroll County, effective date November 15, 1989; and Nos. 180228 0020 B, 0040 B, and 0035 B for Tippecanoe County, effective date March 16, 1981, the project crosses the 100-year flood plain of Buck Creek, Sugar Creek, Deer Creek, and Rock Creek. Proposed bridges over these creeks would perform hydraulically in a manner equal to or greater than the backwater surface elevations, and would not be expected to increase as the proposed new bridges would be designed to “pass” the 100-year floodway volume, with adequate clearance, under the structures. As a result, there would be no significant impacts on natural and beneficial floodplain values; there would be no significant change in flood risks; and there will be no significant increase in potential for interruption or termination of emergency service or emergency evacuation routes; therefore, it has been determined that this encroachment is not significant. A hydraulic design study that addresses various structure size alternatives would be completed during the final design phase, and summary of this would be included with the Field Check Plans and Design Summary.

4.17 IMPACTS UPON WILD AND SCENIC RIVERS

There are no wild and/or scenic rivers designated by state or federal agencies in the project area.

4.18 HAZARDOUS MATERIALS

A hazardous waste investigation was conducted to identify potential constraints from environmental contamination and hazardous materials that would inhibit the project. The study was conducted in accordance with recommended USEPA methodologies. Site inspections included properties affected by the project and adjoining properties in the proximity of the new roadway's build alternative alignments (both the mainlines and access roads). Areas where the build alternatives would traverse undeveloped farmland/pasture were included in the site reconnaissance, but heavily forested areas where access was inhibited by agricultural crops were not fully inspected. The government database report was generated by Vista Information Solutions, Inc., in December 1999. The agencies and types of records in the government database review and associated acronyms include:

USEPA

National Priority List (NPL)
Resource Conservation and Recovery Act (RCRA) Corrective Actions (CORRACTS)
RCRA Permitted Treatment, Storage and Disposal Facilities (RCRA-TSD)
Sites under review by the EPA (CERCLIS/ NFRAP)
Toxic Release Inventory Database; TRIS
RCRA Registered Small and Large Quantity Generators of Hazardous Waste (GNRTR)
Emergency Response Notification System (ERNS) and State Spills Lists (SPILLS)

State

State Equivalent Priority List (SPL)
State Equivalent Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) List (SCL)
Leaking Underground Storage Tanks (LUST)
Solid Waste Landfills, Incinerators or Transfer Stations; SWLF
Registered Underground Storage Tanks; UST

The following summarizes the federal and state environmental records review of project area hazardous materials sites. A total of 23 sites were identified in or near the project right-of-way. Data about all sites appears on Table 4.18, page IV-66. The sites are located on Exhibits 3 and 4 in Chapter 2.

Owner/Facility

Aretz Airport (now Providence Foundation property)
Burrows Radio Tower
ABC Metals Inc.
HTI
Logan Stampings Inc.
ESSROC Co.
Elco-Textron, Inc.
Former IBP, Inc (now Tyson)
Gangloff Industries

Database Listing

State: Former UST Site
State: LUST & Former UST Site
State: UST & LUST
USEPA: Hazardous Waste Generator
State: SWLF & ERNS SPILLS
USEPA & IDEM: CORRACTS, GENTR, ERNS Spills
State: SWLF & Generator
State: SCL
State: Former UST Site

Preferred Alternative 2 potentially impacts 11 sites. The DEIS identified four sites potentially requiring Phase II investigation—Tri-State Cob (Site 8), Brown Pony Farm (Site 15), Tasler, Inc. (Site 16), and a junk auto stockpile/possible auto salvage (Site 19). Additional site reconnaissance indicated minimal visible contamination present, and the potential for contamination no greater than for any other HAZMAT site identified in the project corridor. Therefore, Phase II is not recommended at these sites. During construction consideration will be given to further investigation should conditions be found to exist that warrant such investigation.. General concerns are as follows:

Underground Storage Tanks (USTs) and Aboveground Storage Tanks (ASTs)—No registered USTs or retail gasoline outlets are located within the proposed rights-of-way of the project. The former Aretz Airport, American Tower (Burrows Radio Tower) and Gangloff Industries (Sites 2, 14 and 20) each have registered USTs listings in the state government database reports and a portion of these commercial properties may be included in the right-of-way acquisition; however, the former location of these tank systems are not near the build alternatives. Each of these tank systems is permanently out of service and verified removed, and therefore, no further investigation for these sites is warranted. No evidence of unregistered UST systems was found on private residential property during the site inspections.

TABLE 4.18—Summary of Suspect Sites

Site	Name	Concerns	Alternatives
WESTERN SEGMENT			
1	Irving Materials, Inc. (IMI) and Milestone Hot Mix	<ul style="list-style-type: none"> • ASTs – Two (2) fuel • Possible petroleum contamination in sand and gravel pit from operations 	All build alternatives would require some right-of-way (ROW).
2	Former Aretz Airport (Providence Foundation Property) Miller Trucking Company (on former airport property)	<ul style="list-style-type: none"> • Former UST site • Possible petroleum contamination from operations • Truck repair activity • Hazardous material storage 	All build alternatives would require some ROW.
3	Electric Substation	<ul style="list-style-type: none"> • Suspect PCBs, oils and greases 	Site is south of ROW and railroad.
4	Royster Clark	<ul style="list-style-type: none"> • Three (3) fuel ASTs • Two (2) anhydrous ammonia ASTs • Pesticide applicators • Adjacent to subject area; no impact 	Site is south of ROW and railroad.
5	Residential Property	<ul style="list-style-type: none"> • One (1) AST propane • Junk and waste stockpiling 	Alternatives 1 & 3 would acquire property.
CENTRAL SEGMENT			
6	Hoosier Harvest Services	<ul style="list-style-type: none"> • Junk and waste stockpiling • Special waste 	Site is east of ROW.
7	Abandoned Railroad Spur	<ul style="list-style-type: none"> • Possible contamination from use of spur 	All build alternatives would require some ROW.
8	Tri-State Cob	<ul style="list-style-type: none"> • Multiple ASTs • Oils, petroleum and kerosene • Abandoned autos • 55-gallon drums 	All build alternatives would acquire property.
9	Vacant Commercial Property	<ul style="list-style-type: none"> • Former Big "R" True Value 	All build alternatives would acquire property.
10	Andersons Wholesale Distributor	<ul style="list-style-type: none"> • Multiple ASTs • Petroleum products (oils and greases) 	Site is east of ROW.
11	Watson's Construction Company	<ul style="list-style-type: none"> • Small-scale general construction company 	All build alternatives would acquire property.
12	Abbott's Heartland Hogs	<ul style="list-style-type: none"> • Multiple ASTs (diesel and gas) • Petroleum products 	Alternatives 3 & 4 would acquire property.
13	Old Carroll County Landfill	<ul style="list-style-type: none"> • Lechate migration 	Site is south of ROW.
EASTERN SEGMENT			
14	American Tower (Burrows Radio Tower)	<ul style="list-style-type: none"> • Radio tower and radio tower AST • Former UST site • LUST site 	Tower in ROW of Alternative 1 & Preferred Alt. 2 . AST site is outside (adjacent to) ROW.
15	Brown Pony Farm	<ul style="list-style-type: none"> • Seven (7) ASTs; diesel fuel and gas • Junk and waste stockpiling 	Alternative 1 & Preferred Alt. 2 would acquire property.
16	Tasler, Inc.	<ul style="list-style-type: none"> • Wood skid and pallet company • Oils, greases and petroleum products for wood cutting/stockpiling operations • Former waste transfer station 	Alternative 1 & Preferred Alt. 2 would acquire property.
17	Residence and Private Farm	<ul style="list-style-type: none"> • Three (3) ASTs (diesel and gas) 	Alternatives 3 & 4 would acquire property.
18	Radio Tower	<ul style="list-style-type: none"> • Hazardous batteries • Capacitors and transformers with suspect PCBs 	Alternatives 3 & 4 would acquire property.
LOGANSPOUT SEGMENT			
19	Junk auto stockpile and residence	<ul style="list-style-type: none"> • Junk auto stockpile • Possible auto salvage operation • Petroleum contamination from leaking salvage autos • Waste stockpiling 	Alternative 1 & Preferred Alt. 2 would acquire property.
20	Gangloff Industries	<ul style="list-style-type: none"> • USTs (diesel and gas) • Truck repair operations • Waste oils, greases, batteries and solvents 	All alternatives would require some ROW.
21	Pasquale Trucking Company	<ul style="list-style-type: none"> • Truck repair and wash operations • Two large AST tanks; gas • Waste oils, solvents and greases • Petroleum, coal, mineral waste stream from wash operations 	Site is north of ROW.
22	Elco-Textron	<ul style="list-style-type: none"> • Two (2) large propane ASTs • Hazardous waste generator 	Site is north of ROW.
23	Private Residential Property	<ul style="list-style-type: none"> • Waste stockpiling and open dumping • Possible special waste among waste stream 	Site is north of ROW.

Site ID numbers locate the sites on Exhibits 3 and 4 in Chapter 2.

Aboveground propane and gasoline tanks were observed on area farms and residences. If these tanks are relocated as a result of the project, they must be handled consistent with existing standards. Commercial properties within the right-of-way of the alternatives with ASTs (diesel fuel and kerosene) include Tri-State Cob and Abbott's Heartland Hogs (Sites 8 and 12, respectively). No evidence of surface staining, stressed vegetation or noxious odors was observed at any of these AST locations. No other evidence of leaking tanks or of contamination from use of tank systems was identified.

Asbestos-Containing Building Material (ACBM)—Some of the alternatives may require the removal of structures that have been constructed with ACBM. These structures include several single-family residences, barns, and commercial buildings.

A certified asbestos inspector will inspect any structure that would be demolished as a result of the project and the friable asbestos containing materials will be properly abated prior to demolition activities. Any building/dwelling containing asbestos that would be demolished or removed as a part of clearing operations for the construction of the new highway will be demolished or removed in accordance with current applicable state, federal and local regulations and as prescribed under Section 202.06.1 of INDOT's 1999 *Standard Specifications*.

Lead Based Paints (LBP)—Due to the age of the structures located in the project area, LBP are suspected. These structures are generally limited to single-family dwellings.

Polychlorinated Biphenyls—Several pole-mounted electrical transformers are located within the proposed rights-of-way of the build alternatives. These transformers are maintained by the local utility company and could contain polychlorinated biphenyls (PCBs). There was no evidence to indicate that any of the transformers that were inspected had leaked. In their current condition, the transformers pose minimal environmental hazard to human health or the environment. Coordination with the local utility prior to construction to properly handle and relocate each unit will be conducted.

Waste Stockpiling/Dumping—Evidence of waste stockpiling was identified on multiple residential properties. These sites were viewed only from a distance and most of the waste appeared to be household refuse, construction debris, and household furnishings. No obvious hazardous waste was identified at these sites. One private residence (Site 19) has multiple salvage autos stored on site. Junk and waste stockpiling that includes multiple 55-gallon drums are located on a commercial property identified as the Brown Pony Farm (Site 15). No visual impacts were identified. During construction, consideration will be given to the potential for contaminants associated with waste stockpiling/dumping.

Pesticides /Herbicides and Other Chemicals—Area farms are likely to use pesticides and herbicides. Given the extensive agricultural usage in the project area, the possibility exists that these chemicals may be present within area barns or outbuildings. No visual impacts or evidence of chemical misapplication or storage was detected during site investigations.

Railroads—Railroad tracks traverse the project area. The new SR 25 would have no at-grade railroad crossings; however, alternative alignments closely parallel the railroad right-of-way. The roadway would bridge the railroad at several locations and each build alternative will require some right-of-way of an abandoned railroad spur (Site 7). During construction, consideration will

be given to the potential for contamination from leaking petroleum products from trains, treated lumber used for track construction, or spills from cargo transported on the rail line. There was no visual evidence of contamination from the railroads identified during the field reconnaissance.

Other Potential Areas of Concern—The Tri-State Cob property (Site 8) has the potential for contamination from sources other than the ASTs described above. The primary concerns with this commercial property are the petroleum products used in facility operations, abandoned vehicles, and 55-gallon drums of unknown content. During construction, consideration will be given to the potential for contamination from leaking petroleum products. Tasler, Inc. (Site 16) is another unique area of potential concern. The building is currently occupied by a pallet company that could be using chemicals for the processing. In addition, the facility formally housed a solid waste transfer station. The state data search identified this site and indicated that it has never been cited for violations. During construction, consideration will be given to the potential for contamination.

4.19 VISUAL IMPACTS

In an analysis of visual impacts of alternative roadway alignments, consideration is given “aesthetic” appeal as it pertains to “view from the road” and “view of the road.” “Aesthetics” refers to the visual qualities and scenic nature of an area. Studies show that there can be individual and regional preferences over what qualifies as “scenic.”

The project corridor encompasses both rural and urban environments and presents viewsheds typical of both—i.e., there are land uses typically associated with urban areas, as well as level to rolling fields of crops, pastures and occasional forested areas interspersed with rural residences, farm structures, and agri-business facilities. The viewsheds through most of the corridor are typical of rural farming areas and pleasantly pastoral, though, with one exception, not unique or remarkable. The exception occurs in the vicinity of Delphi, along Deer Creek, where bluffs, the creek, and forested areas present a scenic natural landscape that is distinctive, attractive and unique to the project corridor. This scenic area contains several historic structures and farms that have been included in the NRHP-listed Deer Creek Valley Rural Historic District. In addition, none of the alternatives would traverse historic properties, but all build alternatives share a common alignment through this area and, thus, would cross Deer Creek and have a visual impact on the district. It has also been determined that Alternative 1 and **Preferred Alternative 2** would have an adverse visual impact on three historic properties located along the north side of existing SR 25 between Delphi and Logansport. Visual impacts to historic resources and proposed measures to mitigate the impacts are addressed in Section 4.21.1 and in Chapter 5. Appendix B contains documentation related to the impacts to historic resources, including the signed Memorandum of Agreement detailing measures to mitigate potential adverse visual impacts.

From the standpoint of visual appeal from the road, all of the alternative alignments traverse primarily the same type landscape—level to rolling, cultivated cropland occasionally interspersed with forested areas and creeks; railroad tracks throughout most of the corridor; and residential and commercial/industrial land uses along existing SR 25, particularly in/near the communities along the corridor. The build alternatives are in proximity for most of their distance; therefore, the view from the road would be approximately the same for each.

Regarding view of the road, residents along existing SR 25 in the bypassed areas may experience an improvement in aesthetics due to the reduction in traffic and its side effects (such as noise, litter, etc.). At the same time, where the alternative alignments approach either residences along the existing road, or residences now shielded from the main road by trees, shrubs, and/or distance, there will be a reduction in aesthetics owing to the nearness of the new road, the effects of traffic, and the loss of trees and shrubs to construction. As noted, in the project corridor there are water features and associated forested areas, and pastures/farmland. Consequently, negative impacts to the visual character of the corridor could occur with the construction of any of the build alternatives, especially in the Delphi area at the creek crossings.

4.20 CONSTRUCTION IMPACTS

Construction activities for the project would have air, noise, water quality, and traffic flow impacts for those businesses and travelers within the immediate vicinity of the project. The air quality impact would be temporary, primarily in the form of emissions from diesel powered construction equipment and dust from exposed earth. Air pollution associated with the creation of airborne particles would be effectively controlled through the use of watering or the application of calcium chloride in accordance with INDOT's *Standard Specifications*.

Noise and vibrations impacts would originate from heavy equipment movement and construction activities such as pile driving and vibratory compaction of embankments. Noise and vibrations control measures would include those contained in INDOT's *Standard Specifications*.

Water quality impacts resulting from erosion and sedimentation would be controlled in accordance with INDOT's *Standard Specifications* and the Indiana Handbook for Erosion Control in Developing Areas.

Traffic flow maintenance and construction sequences would be planned and scheduled to minimize traffic delays on existing public crossroads and SR 25, where necessary. Signs would be used to notify the traveling public of road closures and other pertinent information. Local law enforcement officials, fire departments and other emergency responders would be notified in advance of road closings and other construction-related activities that could affect their response times and routes so they can plan alternative routes in advance. Likewise, the local news media would be notified in advance of road closings and other construction-related activities that could excessively inconvenience the community so motorists can be advised and plan travel routes in advance. Access to all properties would be maintained to the extent practical through controlled construction scheduling. Traffic delays would be controlled to the extent possible where many construction operations are in progress at the same time. The contractor would be required to maintain one lane of traffic in each direction at all times.

Structure and debris removal would be in accordance with local and state regulatory agencies permitting the operation. The contractor would be responsible for pollution control methods in borrow pits, other materials pits, and areas used to dispose of waste materials from the project.

Temporary erosion control features, as specified in INDOT's *Standard Specifications*, would consist of the temporary placement of sod, mulching, sandbagging, slope drains, sediment basins, sediment checks, artificial coverings, and berms.

4.21 HISTORICAL AND ARCHAEOLOGICAL PRESERVATION

Section 106 of the *National Historic Preservation Act* (1966), as amended, 36 CFR Part 800 (Protection of Historic Properties, Revised 11 January 2001), requires the federal government to "take into account" the effect of its proposed actions on archaeological and historic resources before making project decisions. Archaeological or historic resources on or eligible for the National Register of Historic Places (NRHP) are afforded protection under federal regulations. In addition, the state of Indiana maintains the Indiana Register of Historic Sites and Structures (IRHSS), and requires an assessment of a proposed project's effects on resources that are eligible or potentially eligible for listing on the IRHSS. In keeping with Section 106 requirements [specifically, stipulations in sections 800.11(e) and (f)], all documentation relating to Section 106 resources has been provided to the Advisory Council on Historic Preservation (ACHP).

4.21.1 Historical Cultural Resources

4.21.1.1 Introduction

In accordance with the requirements of Section 106, 36 CFR Part 800, field surveys of the project corridor were conducted to locate aboveground historic resource properties, sites, and structures that may be affected by the project. The surveys identified historic resources located along the proposed alternative alignments, evaluated their historical and architectural significance, and provided a preliminary assessment of the proposed alignments' potential effects on the identified historic resources.

The historic resource assessments involved: a review of the NRHP for any listed historic sites; documentary research in local and state libraries, the Division of Historic Preservation and Archaeology archives, and county assessor offices; photographic documentation of historic resources; and a field survey of buildings, aboveground resources, structures, and any other potentially eligible historic resource within the area of potential effects (APE). The APE is the area in which the project is likely to affect historic resources either through direct physical encroachments, or through indirect effects such as noise, light, vibrations, aesthetic impacts, etc.

Initially, a broad corridor—approximately 8 miles wide and 33 miles long—encompassing the entire project area was selected as the study area. In this initial study area, a literature and historic records search identified over 240 potential historic sites. Each of these potential sites was identified and plotted on project mapping, and subsequently considered in developing the initial alternatives corridors by positioning road alignments to avoid as many sites as possible.

After the initial alternatives were refined and reduced to those considered feasible, a detailed field reconnaissance was conducted to identify standing structures within an APE of approximately 1,500 feet of each alignment's centerline. The identified sites within the APE were further evaluated for historical significance and to determine their NRHP eligibility. Two historic resources survey reports were prepared:

- *Review of a Rural Historic District, Deer Creek Township, Carroll County, Indiana*, February 2001
- *Review of Historic Properties Along Proposed Alignments for an Improved S.R. 25: The Hoosier Heartland Corridor*, March 2001 (revised with an *Addendum of Effects*, March 2002)

FHWA reviewed these documents, and consulted with the State Historic Preservation Officer (SHPO) and other Consulting Parties as part of the Section 106 process. On July 8, 2002, FHWA issued a revised, approved Determinations and Findings of APE, Eligibility and Effect. Maps showing the APE are included in Appendix B1. Appendix B2 contains the FHWA determinations and findings.

4.21.1.2 Description of the Historic Resources Within the APE

The historic resource surveys identified numerous historic resource sites in the SR 25 study area between Lafayette and Logansport; however, only those resources within the APE of the four proposed alignments advanced to the DEIS for more detailed study were carried forward for evaluation in the DEIS. Of the 26 sites identified within the APE, two sites are listed on the National Register, four are eligible to be listed, and an area east of Delphi was determined eligible for listing as a Rural Historic District and has, since, been listed as the Deer Creek Valley Rural Historic District. None of the build alternatives would acquire right-of-way from within the boundaries of historic resources listed on the NRHP or from boundaries of resources that are eligible for NRHP listing. Also, none of the build alternatives would substantially impair the resource's activities, features, or attributes. Therefore, there is no Section 4(f) involvement with these properties. Several of the resources would experience visual impacts as a result of the proximity of the resource to build alternatives.

The approximate locations of the NRHP-listed or -eligible historic resources appear on Exhibits 3 and 4. The following paragraphs describe the historic properties by project segment and identify the impact by alternative. The information is summarized on Table 4.19, page IV-73.

Western Segment—There were no listed or eligible sites located near the build alternatives. The John Cunningham farm dairy barn (Site 157-070-0003A; H-1 on the exhibits) is NRHP-eligible based on Criterion C. The preliminary build alternative (P-W) that would have impacted that site has been eliminated.

Central Segment—An NRHP-listed Rural Historic District, and two individual properties (one listed and one eligible) were identified:

- Baum-Shaeffer Farm (Site 015-347; H-2 on the exhibits): West of the common alignment shared by all build alternatives is a farmstead that is NRHP-listed based on Criteria A and C. This site would not experience adverse effects as a result of the project.
- Isaac Robbins Farm (Site 015-323; H-3 on the exhibits): The second site, a farmhouse north of all build alignments, is eligible under Criteria A and C. This site would experience an adverse visual effect as a result of all build alternatives. All build alternatives would have the same impact because they are on shared alignment in the area.
- Deer Creek Valley Rural Historic District: A Rural Historic District eligible for NRHP listing under Criteria A and C, and listed on December 19, 2002, is located in the Central Segment (highlighted on the exhibits). This area is extensively described and evaluated in a separate report, *Review of a Rural Historic District, Deer Creek Township, Carroll County, Indiana*, February 2001, on file. The district is east of Delphi, adjacent to and north of Deer Creek. The irregularly shaped area is almost two miles long and varies in width from about 1,000 feet to slightly over one mile. The district would experience an adverse visual impact as a result of

the project. All build alternatives would impact the district equally because they are on shared alignment in the area.

The area is predominantly rural farmland, with some residential properties. It is remarkable for the number of notable and outstanding rural historic resources that are contained within a relatively small geographic area. Extensive efforts have been made to avoid impacts from the project to this area, and alignments that would have had a direct impact were eliminated. Through this area all build alternatives share a common alignment, which is in proximity to the Rural Historic District. Therefore, all would have the same adverse visual effect on the district. Currently, the view from the district looking west, east, and south is primarily of farms, undeveloped land, and/or wooded areas along Deer Creek. North of the district there is a business park (Deer Creek Commerce Center) with railroad sidings and industrial structures that include tall grain silos, all of which are visible from within the district. In addition, a cell tower located on CR 575W, approximately in the center of the district, is highly visible from almost everywhere within the district. The new SR 25 would be elevated to overpass Deer Creek west of the district, and the elevated section would be visible from properties within the district, especially in winter when the leaves are off the trees. Introducing a new road into an area that has a mostly scenic rural quality will have the cumulative effect of further reducing the options for pleasant views available to those in the district.

To avoid other impacts to the district, there would be no direct access to the area from the new SR 25. The alignment overpasses and provides no connection to CR 300N, the primary access road into the area.

Eastern Segment—Three historic sites were identified:

Two sites are located about 1.5 miles northeast of Rockfield. The sites are close to each other, south of the railroad and north of the Alternatives 3 and 4 common alignment, as follows:

- District School #3 (Site 015-084-067; H-4 on the exhibits): This NRHP-listed schoolhouse is eligible under Criterion A. The site would experience adverse visual impacts as a result Alternatives 3 and 4. The impacts would be the same with either alternative because they share an alignment.
- Italianate House (Site 015-084-066; H-5 on the exhibits): The house is eligible under Criterion C. The site would experience an adverse visual effect as a result Alternatives 3 and 4. The impact would be the same with either alternative because they share an alignment.

The third site is west of Clymers and the Alternatives 1 and 2 common alignment, as follows:

- Joseph Atkinson Farm (Site 017-124-45011; H-6 on the exhibits): This farm, with a house and seven outbuildings collectively forming a historic site, was initially determined to be eligible under Criteria A and C. The property owner disagreed with the boundary determination made by FHWA regarding this resource. FHWA submitted a request for a determination of eligibility to the Keeper of the National Register of Historic Places to resolve the boundary issue. The Keeper determined that the resource is eligible under Criterion C only, and established a boundary for the resource. A detailed discussion of the eligibility review appears in Sections 4.21.1.3 and 4.21.1.5. Related correspondence is in Appendix B3.

Alternatives 1 and **Preferred Alternative 2** would have an adverse visual impact on the resource. The impact would be the same with either alternative because they share an alignment.

Logansport Segment—A farm site (Site QS029; H-7 the exhibits) was identified as NRHP eligible. The site, west of Logansport, consists of a house, and several outbuildings eligible under Criterion A. It is located south of the Alternative 1 and **Preferred Alternative 2** common alignment, and north of the railroad. There would be an adverse visual effect as a result of Alternatives 1 and **Preferred Alternative 2**. The impact would be the same with either alternative because they share an alignment.

TABLE 4.19—Historic Resources: Summary of Determinations of Eligibility and Effect

Resource	Property No.* [Exhibit ID No.]	NRHP Status	NRHP Criteria	Alternative Impacting a Resource**	ROW Required Within Resource Boundary	Adverse Effect
John Cunningham Farm: dairy barn (c. 1910s)	157-070-0003A [H-1]	Eligible	Dairy barn— Criterion C	None	None	None
Rural Historic District, Deer Creek Township, Carroll County	335,336,337,338, 339,340,342	Listed	District— Criteria A, C	All	None	Visual
Baum-Shaeffer Farm: Italianate style house (c. 1855), bank barn, English barn, log building	015-162-347 [H-2]	Listed	Criteria A, C	None	None	None
Isaac Robbins Farm: Federal style house and brick milk house (all c. 1850)	015-207-323 [H-3]	Eligible	Farm buildings and environs— Criteria A, C	All	None	Visual
District School # 3: Italianate style brick building (c. 1874)	015-084-067 [H-4]	Listed	Criterion A	Alts. 3, 4	None	Visual
Italianate House	015-084-066 [H-5]	Eligible	House— Criterion C	Alts. 3, 4	None	Visual
Joseph Atkinson Farm: Italianate style house (c. 1865), livestock barn, English barn, lean-to, utility shed, drive-through corncrib (all c. 1900)	017-124-45011 [H-6]	Eligible	Farm buildings Criterion C	Alts. 1, Preferred Alt. 2	None	Visual
Farm: Side-gabled house (c. 1884), drive-through corncrib, 2 utility sheds, Sweitzer barn (all c. 1900)	QS029 [H-7]	Eligible	Farm buildings and environs— Criterion A	Alts. 1, Preferred Alt. 2	None	Visual

* NOTE: The "Property No." is the number assigned to each site in the *Review of Historic Properties* report. The "Exhibit ID No." is the number that identifies the location of each resource on Exhibits 3 and 4. The Rural Historic District is identified by boundary lines and shading on Sheet 2 of both exhibits.

** The alternatives referenced share the same alignment in the vicinity of the resource; therefore, their impact on the resource would be the same.

4.21.1.3 Additional Surveys

Following the recommendation of the Preferred Alternative in January 2003, two additional surveys were conducted:

- *Review of Additional Historic Property and Expansion of A.P.E. in Connection With Two Interchanges Planned for State Route 25.* December 2003
- *Reconnaissance Review: The Josephus Atkinson Farm, Clinton Township, Cass County.* April 2004

The survey regarding the expansion of the APE (see Appendix B2) was conducted in response to modifications of the preliminary design plans to include two interchanges with **Preferred Alternative 2** that were not presented in the DEIS—those at US 421 in Delphi and SR 29-Burlington Avenue in Logansport. Maps showing the original and expanded APE are included as exhibits in the Memorandum of Agreement, Appendix B1. The *Reconnaissance Review* (see Appendix B3) was undertaken in response to a request by owners' of the Josephus Atkinson Farm that the boundary of the NRHP-eligible portion of their farmstead be expanded to include land previously determined to be ineligible. The following describes survey findings and the issues that the surveys addressed:

Review of Additional Historic Property and Expansion of A.P.E. in Connection With Two Interchanges Planned for State Route 25: As a result of public input, two changes to the project's preliminary plans were made after the recommendation of Alternative 2 as the Preferred Alternative: interchanges are now proposed with US 421 south of Delphi, and with SR 29-Burlington Avenue in Logansport. As a result, the *Review of Additional Historic Property and Expansion of A.P.E. in Connection With Two Interchanges Planned for State Route 25* was prepared as an addendum to the original cultural resource survey. The report was prepared to expand the APE to incorporate the larger right-of-way area needed for the interchanges, to determine whether there were any NRHP-listed or potentially eligible resources in the area, and, if so, to assess the potential effects the interchanges could have on such resources. FHWA, in consultation with the SHPO, concurred with the report's recommendation that the APE be expanded to include the areas immediately surrounding the interchanges, and that there were no listed or potentially eligible resources that could be affected by the interchanges.

Reconnaissance Review: The Josephus Atkinson Farm, Clinton Township, Cass County: During the period of public comment on the DEIS and following the selection of Alternative 2 as the Preferred Alternative, owners of one of the eligible resources—the Josephus Atkinson Farm—disagreed with the boundary determination, stating that it excluded portions of the farm that had historical significance. They provided documentation regarding the history of the farm to support their estimation of its historical importance and that of the property's previous owners, and requested an extension of the boundary to include previously excluded areas. They also urged the selection of a preferred alternative south of the railroad (Alternative 3 or 4) to avoid impacts to the resource. A detailed review of the original cultural survey data together with additional research and site reconnaissance was performed. The resulting report (contained in Appendix B3) recommended against expanding the boundary because the areas proposed for inclusion did not meet National Register criteria. The report further concluded that the property previously determined to be eligible under Criteria A and C should, in fact, be considered eligible under Criterion C, only. FHWA, in consultation with the SHPO, concurred in the recommendations. Ultimately, the issue of eligibility was resolved by the Keeper of the National Register, as summarized in Section 4.21.1.5.

4.21.1.4 Coordination

Both the determination of a site's NRHP eligibility and the assessment of effects must be coordinated with the SHPO for concurrence and a decision of eligibility and effects. In accordance with Section 106 requirements, the general public, local governments, the six recognized Native American Tribes with an interest in the area, and members of the historic community were invited to provide input into the historic resources survey and report. A "Consulting Party" team was

established, composed of local, state and federal government officials, and individuals who requested to be a Consulting Party and had an identified interest in the historic resources. The following meetings with Consulting Parties were held.

July 10, 2001—The initial Consulting Parties meeting was held on July 10, 2001, in Delphi, to discuss the historic resource survey process and results, review historic resources, and provide comment on the APE and the historic resources identified. Eighteen people attended: two landowners; two Carroll County Commissioners; the Mayor of Delphi; two Committee for Fair Alignment representatives; one representative each from the Rural Historic District, Historic Trails, Historic Landmarks, and Carroll County Historic Bridge Coalition; one representative from IDNR Historic Preservation and Archaeology; one FHWA representative; the consultant performing the aboveground cultural resources survey; and representatives of INDOT and the project consultants. The *National Historic Preservation Act* requirements and the Section 106 consultation guidelines were explained, and the project status was reviewed. The cultural resources consultant presented the survey results to date, indicating site locations on the maps, and discussed findings concerning the Deer Creek Valley Rural Historic District. General discussions followed. Of note was a discussion concerning the Rural Historic District boundaries and potential impacts from alternatives—including noise and visual impacts, and mitigation.

March 21, 2002—Another Consulting Parties meeting was held March 21, 2002, in Delphi, to review the historic resources identified within the APE as NRHP eligible, and to discuss the anticipated effects to NRHP-listed and -eligible properties. The meeting was attended by fourteen persons including one representative each from the Rural Historic District, the Delphi Preservation Society, Inc., and the Committee for Fair Highways; one citizen; one representative each from FHWA, IDNR, and NRCS, two representatives of INDOT; and five representatives of the project consultants. Regarding the timeframe for decision-making, FHWA and INDOT representatives said the public hearing process includes a 45-day public comment period prior to selection of a Preferred Alternative, and once a decision is reached regarding a Preferred Alternative the environmental process would not be revisited. A discussion followed concerning the completed review of cultural resources within the project corridor, the potential for visual impact to the Rural Historic District, traffic noise impacts, and potential impacts to specific historic properties. (FHWA, in consultation with the SHPO, issued its determinations of eligibility and effect July 8, 2002.)

April 16, 2003—Following the January 2003 announcement that INDOT had recommended Alternative 2 as its Preferred Alternative, Consulting Parties were invited to attend a meeting April 16, 2003, in Delphi to identify and evaluate potential means of mitigating adverse visual effects of **Preferred Alternative 2** on the Deer Creek Valley Rural Historic District, and the NRHP-eligible Isaac Robins Farm, Josephus Atkinson Farm, and a farmstead (#QS029). The meeting was attended by a representative of the SHPO, ten additional Consulting Parties, and representatives of INDOT, FHWA, and the project consultants. An explanation of the need for and components of a Memorandum of Agreement (MOA) was given. The goal of the meeting was to identify potential mitigation measures to include in the MOA. Discussion followed regarding historic resources that would potentially experience adverse visual impacts as a result of **Preferred Alternative 2**. The discussions are capsulized, below:

- Deer Creek Valley Rural Historic District: To reduce impacts to the district, CR 300N, the primary access to the district, will remain open but will not have access to/from new SR 25. It

was determined that some mitigation measures would be necessary, and should include applying a “context sensitive solutions” approach to the design of new SR 25 bridges in the area, and establishing a design review group to provide input during design and participate in the design selection. Locating a trailhead in the vicinity of the district’s west boundary was suggested as a mitigation measure. It was noted that a trail plan would be needed to insure local government commitment to trail development and to securing public access to the trails. (See Section 4.7 for further discussion about trails in the Delphi area.)

- Isaac Robbins Farm: The resident, also a Consulting Party, noted concerns about safety owing to the proximity of the new bridge to the residence’s entry drive, drainage and stormwater runoff, visual impact, and noise. While the only one of these issues requiring mitigation is visual impact, the other issues were also discussed. As a mitigation measure to reduce visual impact, tree planting along the north and east property boundaries was proposed. There would be no mitigation for noise because the projected noise level was not high enough to warrant a determination of adverse noise effect.
- Josephus Atkinson Farm: Two owners of the property, one a Consulting Party, said they believe the historic resource boundary should be extended to include the entire farm. The owners also proposed several measures for mitigating the visual impacts to the resource that included lowering the grade of new SR 25 and CR 400S, landscaping, screening, and constructing a berm that would follow the profile of the bridge embankment. They asked why noise was not included in the determination of adverse impacts to the property. The representative from FHWA said the analysis showed the new road would not cause a sufficient increase in noise levels to warrant an adverse effect determination and noise abatement measures.
- Farmstead (#QS029): The property owners, also Consulting Parties, said the entire farm has been in the family 160 years and therefore all of it should be NRHP-eligible. National Register criteria for listing was explained, and it was noted that in Indiana it is standard practice for the SHPO to include only the farmstead, and not surrounding farmland, unless there is evidence of historic cropland practices or other unusual situations. The owners stated the alignment so fragmented the farm and impeded access to the severed parcels, thereby crippling the farming operation and their ability to retain the property. They stated potential loss of the property outweighed identifying measures to mitigate visual impacts. No mitigation measures were identified at the meeting.

Based on the discussions at the Consulting Parties meeting, a draft MOA was prepared and mailed to the Consulting Parties documenting the mitigation measures considered reasonable and appropriate for each identified resource. A meeting to review the draft MOA was scheduled for March 4, 2004, in Delphi.

March 4, 2004—The purpose of the meeting was a review of the draft MOA. The representative from FHWA explained that Consulting Parties can agree with the MOA by signing the document as “concurring parties,” but the lack of a Consulting Party’s signature would not terminate the MOA. The meeting proceeded with an item-by-item review of the draft MOA’s mitigation stipulations related to the project’s adverse visual impact to the Deer Creek Valley Rural Historic District, Isaac Robbins Farm, Josephus Atkinson Farm, and a farmstead (#QS029). In addition, a letter from the Consulting Party/owner of the NRHP-listed Baum-Shaeffer Farm was read that requested information about the project’s impact on the property’s drainage. (FHWA, in

consultation with the SHPO, determined there would be no adverse effects to this resource as a result of the project.) Key items of discussion were as follows.

- Deer Creek Valley Rural Historic District: Two Consulting Parties who are also members of the Committee for Fair Alignment asked that the organization be represented on the Advisory Team. Representatives of FHWA, INDOT, and the SHPO agreed consideration be would be given to adding members to the Advisory Team.
- Isaac Robbins Farm: A Consulting Party representing the owners of the resource expressed concern for safety owing to the proximity of the property's existing access drive to the proposed bridge approach on Carroll CR 500W. A representative from INDOT said the matter could be reviewed during final design, in consultation with FHWA and the SHPO. Regarding tree planting and lowering the grade of the new roadway as mitigation for visual impacts, stipulations will be included in the MOA, but specific details would be determined during final design.
- Josephus Atkinson Farm: Two of the property owners, one a Consulting Party, stated their belief that the Section 106 process as it was being conducted for the project was not responsive to the issues and concerns they had raised via documentation presented during the period of public comment on the DEIS and at the previous Consulting Parties meeting. They said the boundary of the resource should be expanded to incorporate additional farm property, including pastureland just south of Cass CR 400S including pastureland just south of Cass CR 400S that is within the right-of-way of **Preferred Alternative 2**. Regarding visual impacts to the resource, the owners restated the mitigation measures they had previously identified, and also asked for a 3-D depiction of the plantings other measures to ensure their efficacy. The representative from INDOT said stipulations regarding mitigation would be included in the MOA, but specific details would be determined during final design. The owners also questioned the noise analysis data presented in the DEIS, contending there would be an adverse noise effect to the resource.
- Farmstead (#QS029): The property owner/Consulting Party was not in attendance. Referencing the concern over access to farm fields raised by the property owner at the previous Consulting Parties meeting, it was noted access could be provided using a section of existing SR 25 that will be overpassed by the new roadway.

The meeting concluded with the following summary of actions to be taken:

The boundary issue related to the Josephus Atkinson resource would be addressed and a determination made by FHWA as soon as possible. In addition, a written submittal would be made to the owners of the Josephus Atkinson Farm further explaining the noise modeling procedures and results as they apply to the resource (see letter of April 6, 2004, Appendix B3).

The draft MOA would be revised based on issues raised during the Consulting Parties meeting, and then submitted for approval and signatures by FHWA, the SHPO, and INDOT. A signed copy of the document would be sent to each Consulting Party, along with a signature page for signing if the Consulting Party wishes to indicate concurrence with the MOA. The executed MOA would be submitted to the ACHP together with all Section 106-related information and documentation collected from the time the ACHP was first notified of FHWA's determination of adverse effect.

4.21.1.5 Eligibility Issues Related to the Josephus Atkinson Farm

During the period of public comment on the DEIS, the owners of the Josephus Atkinson Farm submitted materials documenting the history of the farm and noting their concerns about the potential impacts to the property as a result of the project (see Appendix A2, ID #062). Following the March 4, 2004, Consulting Parties meeting, the owners submitted more documentation related to the farm's history (see Appendix B3), seeking the inclusion of additional farm property within the historic boundary. INDOT's cultural resource consultants undertook a detailed investigation, including records search, resource site reconnaissance, and comparison with other farms in the area, and prepared a report (described in Section 4.21.1.3, *Reconnaissance Review*) in which it is stated that the extension of the historic boundary is not warranted, based on the evaluation made using standard National Register guidelines for properties and for the cultural landscape. In addition, the report concluded the resource would be eligible under Criterion C, only, rather than Criteria A and C, as previously considered.

FHWA, in consultation with the SHPO, concurred in the recommendations. To resolve the matter, on June 3, 2004, FHWA submitted the *Reconnaissance Review* and all documentation provided by the property owners to the Keeper of the National Register—the National Park Service official having final authority over determinations of eligibility in cases where the matter is in dispute.

The property owners, in turn, submitted their request, together with their supporting documentation, to the Advisory Council on Historic Preservation (ACHP). The ACHP responded June 18, 2004, noting it had previously declined to participate in consultation for this project, that FHWA appeared to have given the property owners' request "serious consideration" and to be in compliance with the National Historic Preservation Act, and that additional information the property owners considered relevant should be submitted to the Keeper—the "ultimate authority on National Register eligibility."

On July 15, 2004, the Keeper ruled that the property outside the previously determined historic boundary is not NRHP-eligible, and that the boundary should be redrawn to exclude a woodlot that had initially been included within the boundary. The Keeper also concurred with the determination that the property is eligible under Criterion C, only, rather than under Criteria A and C, as initially determined. Documentation related to the Josephus Atkinson Farm, including the above referenced correspondence, appears in Appendix B3.

4.21.1.6 Conclusion of the Section 106 Process

The Memorandum of Agreement documenting mitigation measures was signed on September 3, 2004, by FHWA, the SHPO, and INDOT. Copies of the signed document have been provided the Consulting Parties together with an invitation to sign as "concurring parties" to the agreement. The mitigation measures stipulated in the signed MOA are discussed in Chapter 5. The signed MOA, including signature pages and attachments, is provided in Appendix B1.

4.21.2 Archaeological Resources

4.21.2.1 Introduction

In accordance with the requirements of Section 106, 36 CFR Part 800, studies were conducted to locate archaeological resources within the SR 25 project area, and determine their eligibility for listing in the IRHSS or the NRHP. At the time of the initial archaeological investigations, multiple

alternative alignments were still under consideration and collectively composed over 90 miles of alignment for assessment. Therefore, phasing of analyses was performed for the SR 25 project from Lafayette to Logansport. The results of these early investigations are contained in the following two documents on file:

- *An Assessment of Archaeological Site Probabilities along Multiple Alternate Highway Corridors between Lafayette and Logansport in Tippecanoe, Carroll, and Cass Counties, Indiana*, August 17, 2001.
- *Phase 1a Archaeological Field Reconnaissance: For a Portion of the SR 25 Hoosier Heartland Corridor, Carroll County, Indiana*, March 16, 2001.

The initial Phase 1a survey was performed in an area where the probability of finding sensitive archaeological sites was already known to be high owing to the presence of notable, previously identified cultural and natural resources (i.e., the Deer Creek Valley Rural Historic District and the Deer Creek area). Roadway alignment options are limited through this sensitive area; therefore, it was important to verify the existence of, and locate with a high degree of precision, the archaeological sites in that area.

The assessment-level study was performed on the remainder of the broad project corridor to identify those areas along proposed alignments with the greatest potential for the presence of archaeological sites. These proposed alignments traversed less historically and environmentally sensitive—and thus less restrictive—areas, thereby reducing the probability that archaeological sites would be adversely impacted by the build alternatives.

Once the number of build alternatives had been reduced to four within a well-defined corridor, a Phase 1a reconnaissance was begun along the portions of the project corridor not covered by the previous Phase 1a reconnaissance. INDOT announced its recommendation of Alternative 2 as the Preferred Alternative in January 2003, after which the archaeological fieldwork focused on the Preferred Alternative's alignment. Fieldwork was completed in spring 2003. The report—*Phase 1a Archaeological Field Reconnaissance: SR 25 Hoosier Heartland Corridor in Tippecanoe, Carroll, and Cass Counties, Indiana*, July 30, 2003—documents sites potentially impacted by **Preferred Alternative 2**.

All of these studies were conducted in accordance with the guidelines established by the state of Indiana, and in compliance with recent amendments to the *Indiana Historic Preservation Act* (IC 14-21-1). The archaeological records check, Phase 1a field reconnaissance, assessment of probabilities, and the reports and recommendations were accomplished or supervised by a professional archaeologist meeting the federal standards established in 36 CFR Part 61 and 66, and the “Standards and Guidelines for Historic Preservation and Archaeology” (48 FR 44716). The results and recommendations of the studies are discussed in the following paragraphs. The recommendations are made with the understanding that if human remains, features, or midden deposits are revealed during construction, any disturbance will cease until a professional archaeologist is contacted and mitigation is completed.

4.21.2.2 Assessment of Probabilities

The *Assessment of Archaeological Site Probabilities along Multiple Alternate Highway Corridors between Lafayette and Logansport in Tippecanoe, Carroll, and Cass Counties, Indiana*, prepared during summer 2001, identified areas in the remainder of the project corridor that hold the

greatest potential for the presence of archaeological resources. The report was based upon prior research within the area and previous studies specifically pertaining to predictive modeling for prehistoric site locations. The report provided an analysis detailing the relative probability of archaeological resources likely to be within the proposed alignments. The results of the Phase 1a reconnaissance of the Central Segment was used in combination with the predictive modeling to produce a report of relative probabilities by project segment. The following paragraphs discuss the findings and conclusions reported in the assessment, by project segment:

Western Segment: The assessment report noted the probability that numerous archaeological resource sites are likely to be located within the project area. The areas with the highest probability for containing unrecorded archaeological resource sites are the Wabash River Valley, the numerous tributary streams and rivers, and the areas surrounding the upland wetlands. There are several previously recorded prehistoric burial sites along the northern edge of the Wabash River Valley. Therefore, the report recommended avoiding as much as possible the valley and surrounding bluffs of the Wabash River, and its tributary streams and rivers. Alternatives 1 and 3 (O-WA in this segment) share an alignment in the segment, as do **Preferred Alternative 2** and Alternative 4 (O-WA1). In addition, through much of this segment, all build alternatives share a single alignment. Therefore, their potential for impacting archaeological resources is similar. The alignments rated a higher preference than those (P-W and T-W, eliminated) that were positioned on the southern edge of the river valley and had greater potential for impacting sensitive sites.

Eastern Segment: The assessment noted that the alignment located south of the existing SR 25 roadway and the railroad (Alternatives 3 and 4, P-EB in this segment, on common alignment) exhibits the lowest probability for impacting archaeological resources. The alignment north of the roadway and railroad (Alternative 1 and **Preferred Alternative 2**) passes Rockfield to the north and, for over a mile, generally parallels Rock Creek, which is considered highly likely to contain archaeological resources. The north alignment then bypasses Burrows and Clymers to the north, where the probability for the presence of archaeological resources was said to be higher, compared to the southern alignment.

Logansport Segment: The assessment stated, “the alternative that more directly addresses the descent to the terrace and then turns east, appears to offer the lowest potential for affecting significant archaeological resources.” Alternatives 1 – 4 meet this description.

The report concluded that archaeological resources would be minimally impacted by the project alignments, and that minor adjustments to a preferred alignment might be necessary to accommodate unforeseen eventualities.

4.21.2.3 Phase 1a Surveys

The Phase 1a Archaeological Field Reconnaissance: For a Portion of the SR 25 Hoosier Heartland Corridor, Carroll County, Indiana, March 2001: This report contains the results of detailed fieldwork conducted from May to August 2000 for approximately a 946-acre portion of the project corridor in Carroll County. The study area was in the Central Segment east of Delphi and includes the NRHP-listed Deer Creek Valley Rural Historic District. Archaeological records and literature research indicated a professional archaeologist had not previously surveyed the area under investigation; however, 26 previously registered sites are within one mile of this area.

The reconnaissance found and documented 92 previously unregistered archaeological sites, of which 77 sites appeared ineligible for the NRHP or IRHSS. No further work was recommended for these ineligible sites. The remaining 15 archaeological sites were recommended for either avoidance or further investigative work if an alignment were to be selected that would have a potential adverse effect on a site. In addition, the report identified 3 alluvial soils areas recommended for avoidance or further investigation (Phase 1c). Alternatives 1 and **Preferred Alternative 2** (P-CA1), and Alternatives 3 and 4 (P-CA2) share an alignment through most of the segment and would not impact any of the archaeological sites, but would traverse a portion of an alluvial soils area along Bridge Creek. The SHPO concurred with the general findings of the Phase 1a report; and additionally stipulated that areas not surveyed must be investigated prior to project-related disturbance. That investigation is the June 2003 survey described below.

Phase 1a Archaeological Field Reconnaissance: SR 25 Hoosier Heartland Corridor in Tippecanoe, Carroll, and Cass Counties, Indiana, June 2003: This report contains the results of detailed fieldwork conducted during fall 2001, spring 2002, spring 2003 covering 1,896 acres along the **Preferred Alternative 2** alignment. The investigation resulted in the identification of 174 previously undocumented sites. Thirty-four sites and a small (7–9 acres) floodplain north of Deer Creek were considered potentially NRHP or IRHSS eligible and recommended for avoidance or, if that is not feasible, further investigation. Review by the SHPO resulted in revisions to the recommendations: The recommendation to avoid or conduct Phase 1c survey for the floodplain area was retained, but the number of potentially eligible archaeological sites recommended for avoidance or further investigation (Phase 2) was reduced from 34 to 8.

4.21.2.4 Coordination

Federal and state environmental provisions concerning the identification of archaeological resources have been accomplished for both Phase 1a field investigations. The SHPO has concurred with the findings and recommendations presented in the Phase 1a reports (see letters dated June 29, 2001, and November 9, 2004, Appendix B2). All sites recommended for avoidance or further investigations are either wholly or partially within the right-of-way of **Preferred Alternative 2**. The exact impacts to each site, as well as possible avoidance, would be site dependent and defined in the final design. If avoidance is not feasible, the recommended investigations will be conducted. Prior to the fieldwork, a plan outlining the methods and techniques of the proposed investigations will be submitted to the SHPO for review and comment. All additional investigations and any actions required based on the results of that work would be completed prior to construction, according to stipulations identified in the MOA.

The historic resource identification efforts and assessment of effects must be coordinated with federally recognized Native American tribes that might attach religious and cultural importance to any property that could be potentially impacted. Early on six federally recognized Native American tribes were identified as having an interest in the project area and were invited to participate in the Section 106 Consulting Parties process: Citizen Potawatomi Nation, Prairie Band Potawatomi Nation, Peoria Tribe of Indians of Oklahoma, Miami Tribe of Oklahoma, Hannahville Indian Community and Forest County Potawatomi. All but the Prairie Band Potawatomi Nation responded. The Citizen Potawatomi Nation noted their records indicate “there is a potential for encountering historic Potawatomi village and or sites,” particularly in the Logansport area. The Peoria, Hannahville, and Forest County Potawatomi tribes said they were unaware of any sensitive tribal resources in the project area; however, they asked to be notified

immediately should potentially sensitive sites be discovered during construction. (The Miami Tribe asked only for minutes of a meeting to which they had been unable to send a representative.)

On October 7, 2003, FHWA notified the tribes of the findings and recommendations of the Phase 1a survey of the **Preferred Alternative 2**, and invited them to submit comments or concerns. Comments were received from two tribes: The Peoria Tribe of Indians of Oklahoma and the Prairie Band Potawatomi Nation. The Peoria Tribe noted no objection to construction of the project, but stated if human remains or “any objects falling under the Native American Grave Protection and Repatriation Act (NAGPRA) are uncovered during construction, the construction should stop immediately, and the appropriate persons, including state and tribal NAGPRA representatives contacted.” The Prairie Band Potawatomi provided the name and address of the new tribal chairman/NAGPRA tribal representative, to whom future correspondence should be sent. In concert with requirements of the Section 106 process, they were included in the invitation to Consulting Parties to meet for a discussion of the MOA identifying mitigation for potential impacts to historic and archaeological resources. They have been provided a copy of the signed MOA, and invited to become “concurring parties.”

Given the length of the project corridor and the number of sites recommended for additional investigation if avoidance is not possible, it is not likely the additional work could be completed within the anticipated timeframe of the Record of Decision for this project (fourth quarter 2004). The MOA permits the approval of the FEIS prior to the conclusion of further archaeological investigations/evaluations that might be required. However, this approach—referred to as “phasing”—also places stipulations in the MOA regarding treatment of any archaeological resources that might be found during further investigation. Mitigation of potential impacts is discussed in Chapter 5. The signed MOA is in Appendix B1.

4.22 THE RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

The short-term uses associated with construction of the new SR 25 are those that typify highway construction. There would be a number of temporary adverse impacts on air, water and the natural landscape. Highway construction inevitably involves noise, air pollution (especially dust), erosion, sediment and local degradations in water quality. The appearance of construction machinery and the disturbed landscape created during construction would be aesthetically displeasing to persons in the area. Businesses and individuals would be displaced from the right-of-way, potentially resulting in stress and monetary losses. As noted in previous sections, Best Management Practices would be employed during construction to minimize impacts to the environment, and relocation assistance would be available to those being displaced.

Regarding long-term productivity, loss of agricultural land to right-of-way would be a permanent loss of agricultural production on that land. Right-of-way acquisition would require approximately 1,500 acres of which approximately 1,000 acres would be agricultural land removed from production. This represents less than 0.2 percent of the total amount of agricultural cropland in the three counties in the study area. Most, if not all, displaced businesses and residents would be able to locate in the general area from which they are being displaced; and, in the long run, new businesses and residents would be expected to locate in the communities served by the new

roadway as a result of an improved transportation network and jobs created from anticipated economic development.

Transportation improvements are based on state and local comprehensive plans that consider the need for present and future traffic requirements within the context of present and future land use development. The local short-term impacts and use of resources by the project are consistent with the maintenance and enhancement of long-term productivity for the local area, the state, and—in the project's capacity as a link in the Hoosier Heartland Industrial Corridor—the region. The chief long-term benefits of the project would be those it is designed to provide, as defined by the project's Purpose and Need.

4.23 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES WHICH WILL BE INVOLVED IN THE PROPOSED ACTION

Implementing the project would involve a commitment of a range of natural, physical, human, and fiscal resources. Land used in the construction of a new highway facility is considered an irreversible commitment during the time period that the land is used for that facility. However, if a greater need arises for use of the land or if the highway facility is no longer needed, the land can be converted to another use. At present, there is no reason to believe such a conversion will ever be necessary or desirable.

Considerable amounts of fossil fuels, labor, and highway construction materials such as cement, aggregate, and bituminous material are expended. Additionally, large amounts of labor and natural resources are used in the fabrication and preparation of construction materials. These materials are generally not retrievable. However, they are not in short supply and their use will not have an adverse effect upon continued availability of these resources. Any construction will also require a substantial one-time expenditure of both state and federal funds, which are not retrievable.

The commitment of these resources is based on the concept that residents in the immediate area, state, and region will benefit by the improved quality of the transportation system. These benefits will consist of improved accessibility and safety, savings in time, and greater availability of quality services, which are anticipated to outweigh the commitment of these resources.

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CHAPTER 5—MITIGATION AND COMMITMENTS

The mitigation of adverse project impacts has been organized into the following categories:

- Mitigation Commitments
- Avoidance Commitments

5.1 MITIGATION COMMITMENTS

These mitigation measures will be implemented during the design and construction phases of the project development.

Farmland Impact

Local land use plans support the continuance of agricultural land uses throughout much of the project area, and alignment decisions were based in part on their ability to minimize impacts to agricultural land, particularly prime/unique farmland. The project is being developed in compliance with the *Farmland Protection Policy Act of 1981*. Formal consultation with USDA Natural Resources Conservation Service resulted in a determination that the project will have no significant impact to farmland. No alternatives other than those discussed in the FEIS will be considered without a re-evaluation of the project's potential impacts upon farmland.

Social Impact: School Bus Routes

With the project, some public crossroads will be closed at the new road, others will overpass the new road, and others will be provided direct access to the new road. Substantial changes in access for known school bus routes will be discussed with the school systems well in advance of when they actually take place so the schools systems can adjust routes in a timely manner. Where roads are closed, provision for school bus turnarounds will be included during the final design of the project.

Right-of-way

During the design phase, land-locked parcels will be identified. During right-of-way acquisition, agents will work with the affected property owners on a case-by-case basis to determine the best solution for each occurrence.

Relocation

The project will be accomplished in accordance with the *Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Public Law 91-646)*, as amended in 1987. Relocation resources will be available to all residential relocatees without discrimination. It is anticipated the relocation on this project will be accomplished using normal relocation procedures. Sufficient replacement housing would be available in the area within the financial means of the potentially displaced residents. The Housing of Last Resort program may not be needed. However, if circumstances require it, the program will be available. Sufficient vacant property exists in the project area to permit the re-establishment of displaced businesses.

Pedestrian Trails/Joint Development

The cause of Delphi/Carroll County trails advocates, including local government officials, could be furthered by the road project. The possibility that the new road would interrupt trail continuity has spurred a cooperative effort among Delphi/Carroll County governments and two local interest groups to develop a long-range trails master plan. Work on the plan is expected to begin in spring 2005. Trails advocates cite quality of life and economic development through tourism as reasons for adding these new trails to the Delphi trails system. State participation in trail development—whether it be including trail access as a specific feature of SR 25 design, funds for a pedestrian bridge, or other involvement—requires guaranteed public use of the trails into the future, rather than the occasional public use of private property that is currently the case. INDOT has indicated its ability to participate in the effort is dependent upon approval of a long-range trails master plan by officials having jurisdiction over ownership and management of the trails. Because the efforts of Delphi Historic Trails to establish municipally owned and operated trails for the Delphi area is a concurrent development with this project, INDOT will work through final design with the municipal entity responsible for the new public trails to make every reasonable effort to maintain continuity of these trails crossing the new alignment. Until a municipal entity approves a public trails master plan and assumes ownership and management of the trails, INDOT cannot commit to any specific design accommodations.

Erosion Control

- Construction limits will be minimized.
- Best Management Practices will be used to prevent non-source point pollution, to control storm water runoff, and to minimize sediment damage to water quality and aquatic habitats.
- Erosion control measures such as berms, mulched seeding, sodding, and riprap will be installed where appropriate.
- Temporary and permanent erosion control features will be incorporated into the project at the earliest practicable time as construction progresses.
- When seeding or sodding must be delayed, temporary erosion protection with mulches, matting dust palliatives, etc., will be provided.
- When borrow material is obtained from other than commercially operated sources, erosion of the borrow site shall be controlled during and after completion of the work by minimizing the erosion in such a way that it will prevent sediment from entering streams.
- Waste or disposal areas and construction roads will be located and constructed in a manner that will keep sediment from entering streams.
- All excavated materials not used for roadway embankment or disposed of off-site will be hauled for storage to an upland site and secured in such a manner as to prevent runoff from entering streams.
- Implementing an approved soil erosion and sedimentation control plan will control erosion within the construction limits. All construction activities must comply with federal and state soil erosion and sedimentation regulations. This plan will be developed in conjunction with final construction plans. INDOT *Standard Specifications and Special Provisions* will govern construction activities to control erosion and subsequent water pollution.

Water Quality and Stream Crossing Impacts

The crossings of major, minor and intermittent streams will occur with the project. The types of structures, design and location will be determined during the final design, and permits will be required (see Permits, below). During final design, INDOT will explore bridging streams and wetlands and, where determined appropriate, bridging will be done.

- Work in low-water channel of existing streams will be minimized to the maximum practicable extent by limiting construction to the placement of required drainage structures or structure components such as piers, pilings, footings, shaping of spill slopes around bridge abutments and placement of riprap.
- Frequent fording of live streams will not be permitted. Temporary bridges or other structures will be used whenever necessary. Mechanical equipment will not be allowed in wetlands beyond the construction limits. Only coarse granular material will be placed in live streams during construction.
- Pollutants such as fuels, lubricants, bitumens, raw sewage and other harmful materials will not be discharged into or near streams.
- A Conceptual Wetland Mitigation Plan (see *Preferred Alternative and Mitigation Package*, Appendix A3), which involves INDOT's commitment to try to purchase a portion of Delphi Swamp, contains mitigation features that include the possibility of riparian reforestation and restoration of degraded stream reaches along Robinson Branch, where there is the potential for the most notable impact.
- To further minimize impacts to Robinson Branch, mitigation will include installing a three-sided culvert to retain the natural channel bottom, thereby facilitating the migration of stream fauna through the culvert and reducing impacts to the flow rate. The culvert will be of sufficient size to prevent upstream bed instability and erosion of downstream banks.
- INDOT *Standard Specifications* provide standard temporary and permanent erosion measures required in the construction of highway facilities. Appropriate Best Management Practices for control of erosion and sedimentation of streams during construction will be implemented.
- Management requirements of IDEM-approved Wellhead Protection Programs (WHPP) for public water sources will be complied with. Where groundwater from private, individual wells is the principal source of potable water, grassy swales to divert stormwater from the road to ditches and streams, and construction methods to reduce turbidity that construction temporarily causes will be among the measures employed to protect sources of potable water.

Wetlands

The wetland impact estimate for the Preferred Alternative totals 2.68 acres comprising seven separate sites that range in size from 0.03 acre to 1.52 acres. The majority of the wetlands impacted are emergent, though some scrub/shrub and forested wetlands are present, also. Changes to the alignment during final design could increase or decrease the estimated number of acres impacted.

A Conceptual Wetland Mitigation Plan (Plan)—involving the proposed purchase of a portion of Delphi Swamp—has been prepared to mitigate impacts to wetlands within the project right-of-way. The Plan proposes that a portion of Delphi Swamp be purchased (assuming a willing seller), restored, placed into a 5- year monitoring and management plan, and permanent protection of the property as an IDNR Nature Preserve. An added benefit of this site for mitigation is the presence of Robinson Branch that borders Delphi Swamp. This presents an additional opportunity to compensate for impacts to riparian habitat.

The restoration and enhancement activities to be used cannot be known until the specific parcel(s) to be purchased and used are known. Due to the sensitivity of the site and the proposed ultimate ownership by IDNR, Division of Nature Preserves, Plan development will be closely coordinated with IDNR. The Plan identifies several types of activities that might be expected to be carried out over a 5-year restoration period, and addresses restoration, maintenance, and monitoring. The full text of the Conceptual Wetlands Mitigation Plan appears in the *Preferred Alternative and Mitigation Package*, located in Appendix A3. The Plan includes correspondence from the Division of Nature Preserves regarding the attributes of Delphi Swamp and recommendations for its restoration and protection.

Wetland impacts are estimated at approximately 2.68 acres depending on the alternative chosen and final design changes. Using standard mitigation ratios per the 1991 IDNR, USFWS, and INDOT mitigation ratio Memorandum of Understanding (MOU) and the maximum projected impact (**Preferred Alternative 2**), this could result in approximately 7.6 acres of wetland mitigation required. However, that MOU assumes that new wetlands will be created. The proposal here is primarily for the enhancement and preservation of a significant existing wetland. While some wetland acreage may be restored/created it will likely be small. Where enhancement of existing wetlands is a significant portion of a compensatory wetland mitigation plan, mitigation ratios are typically higher.

At present, the likelihood that at least some portions of Delphi Swamp could be made available for purchase by INDOT appears good, based on conversations with owners of two of the three parcels identified as composing the swamp. Alternative mitigation scenarios will be pursued if the commitment to purchase a portion Delphi Swamp cannot be carried through, or should the acquired tracts not prove sufficient to achieving USACE replacement ratios, or should other, as yet unforeseen, circumstances arise. INDOT will be responsible for retaining the services of individuals qualified to delineate and design wetland mitigation sites during final design.

Given that wetlands may naturally increase, decrease, be eliminated, or be created, detailed mitigation plans will be developed during final design to meet the requirements of the USACE, when details exist to support such development. At that time, additional measures to minimize impacts to specific wetland sites can be considered, including narrowing medians and shoulder widths; and installing drainage features such as swales to ensure that roadway runoff does not enter wetland areas, and culverts to maintain the flow of water to a wetland area otherwise cut off from its water source. In addition, INDOT will explore bridging streams and wetlands and, where determined appropriate, bridging will be done.

Permits

Detailed permit coordination will occur during the design phase. The final design will be submitted to the following agencies to obtain requisite permits:

- USACE Section 404 Permit for Discharge of Dredged or Fill Material into Waters of the United States
- IDEM Section 401 Water Quality Certification
- IDNR Construction in a Floodway Permit.

The Individual Permit applications will include detailed mitigation plans for wetland and stream impacts.

Federally Threatened and/or Endangered Species

Early coordination with USFWS resulted in mist netting along the principal creeks in the project area to determine whether the Indiana bat was present. The mist netting resulted in the capture of Indiana bats on Sugar Creek. According to a letter dated May 28, 2003 (see Appendix A3), USFWS has determined there is no need for a Biological Assessment or “for further consultation ...as required under Section 7 of the Endangered Species Act of 1973, as amended.” Further consultation would be required should “new information on endangered species at the site” become available or if there is a “significant change” in project plans. Because suitable habitat for the species could exist throughout the project corridor, where removal or modification of habitat cannot be avoided, steps to minimize impacts to Indiana bats will be required. These steps will involve limiting the removal of trees within the riparian corridors—particularly trees that may serve as roost trees (i.e., trees with exfoliating bark, greater than six inches in diameter at breast height)—and other vegetation to areas needed for the construction, and confining tree removal to a time of year that would not conflict with the summer bat-occupancy period (April 15 – September 15).

Construction Impacts

- Air pollution associated with airborne particles will be effectively controlled through the use of watering, or the application of calcium chloride, in accordance with INDOT’s *Standard Specifications*.
- Noise and vibrations impacts would originate from heavy equipment movement and construction activities such as pile driving and vibratory compaction of embankments. Noise and vibrations control measures would include those contained in INDOT *Standard Specifications*.
- IDEM requires erosion control planning (ECP) for projects that disturb one acre or more of land surface. IDEM would require measures be implemented to minimize potential physical disturbance and control soil erosion. Water quality impacts resulting from erosion and sedimentation would be controlled in accordance with INDOT *Standard Specifications* and the Indiana *Handbook for Erosion Control in Developing Areas*.

- Traffic flow maintenance and construction sequences would be planned and scheduled to minimize traffic delays on existing public crossroads and SR 25, where necessary. Signs would be used to notify the traveling public of road closures and other pertinent information. The local news media would be notified in advance of significant road closings and other major construction-related activities that could excessively inconvenience the community so motorists can plan travel routes in advance.
- Access to all properties would be maintained to the extent practical through controlled construction scheduling. Traffic delays would be controlled to the extent possible where many construction operations are in progress at the same time.
- Structure and debris removal would be in accordance with local and state regulatory agencies permitting the operation. The contractor would be responsible for pollution control methods in borrow pits, other materials pits, and areas used to dispose of waste materials from the project. Temporary erosion control features, as specified in INDOT *Standard Specifications*, would consist of the temporary placement of sod, mulching, sandbagging, slope drains, sediment basins, sediment checks, artificial coverings, and berms.

Historical and Archaeological Resources

FHWA, in consultation with the SHPO, determined that **Preferred Alternative 2** would have an adverse visual effect on the NRHP-listed Deer Creek Valley Rural Historic District and three NRHP-eligible individual resources. In addition, along the **Preferred Alternative 2** corridor, several archaeological sites, an alluvial soils area, and a small section of floodplain are either wholly or partially within the right-of-way and, therefore, are recommended for avoidance or additional investigation.

On September 3, 2004, FHWA, the SHPO and INDOT signed a Memorandum of Agreement (MOA) identifying measures and commitments to mitigate potential impacts to these resources. FHWA and the Indiana SHPO agree that the project will be implemented in accordance with the stipulations in the MOA to take into account the effects of the project on cultural resources. FHWA will ensure the measures in the MOA are implemented and, with INDOT, will consult with the SHPO at key points in the design stage regarding implementation of the principal elements of the MOA. The MOA also addresses how to handle unanticipated discoveries that might occur during the implementation of the project, conflict resolution, and preparation of reports, and the duration of the MOA.

The signed agreement concludes the Section 106 process. The executed MOA is contained in full in Appendix B1. Mitigation measures identified in the MOA include those summarized below:

Historical Resources

Overall, the project will feature context sensitive design solutions, roadway lighting (where necessary) that minimizes the dispersion of light beyond the highway right-of-way, and “no-work zones” to ensure avoidance of any significant or potentially significant cultural (historic and archaeological) resources adjacent to or within the project right-of-way. The no-work zone would apply to all of the identified historic properties, including the Baum-Shaeffer Farm, an NRHP-listed resource determined to have no adverse impact as a result of **Preferred Alternative 2**. Mitigation measures stipulated in the MOA to minimize visual impacts include:

- Deer Creek Valley Rural Historic District: Retaining access to existing SR 25 from Carroll CR 300N (the primary access to the district), but not providing direct access to/from CR 300N and the new roadway; and convening an Advisory Team, co-chaired by a representative of INDOT and the SHPO, to ensure the project design respects the historic qualities, landscapes, historic buildings and features within the Deer Creek Valley Rural Historic District.
- Isaac Robbins Farm: Landscaping in the form of tree plantings within INDOT rights-of-way along the resource boundary; considering minimizing the vertical grade of the new roadway along the resource boundary; and constructing a control-of-access fence along the right-of-way line, and, possibly, relocating the resource's entrance drive.
- Josephus Atkinson Farm: Landscaping in the form of tree plantings within INDOT rights-of-way along the resource's boundary; considering installing screening atop and, where appropriate, in the vicinity of the barrier wall on the CR 400W bridge; considering minimizing the vertical grade of the new roadway along the resource boundary; and within three years following the Record of Decision, developing documentation and seeking NRHP nomination for the Josephus Atkinson resource, if the property owners consent to NRHP listing.
- Farmstead (ID QS029): Landscaping in the form of tree plantings within INDOT rights-of-way along the resource's boundary.

Archaeological Resources

FHWA has phased the final identification, evaluation, and determination of effects on the archaeological resources identified in the **Preferred Alternative 2** corridor. **ADD WHAT PHASES** The MOA stipulates that the identification and evaluation of archeological resources for inclusion in the NRHP must be completed before letting any type of project construction in the APE or selecting sites for ancillary activities associated with the project.

Stipulations also include consulting with Indian Tribes when appropriate; taking reasonable measures to avoid disinterment and disturbance to human remains and grave goods of religious and cultural significance to Indian Tribes; and ensuring that any human remains and grave goods are treated in accord with all appropriate regulations and guidelines.

5.2 AVOIDANCE COMMITMENTS

These mitigation measures will be advanced through the design and construction phases of project development:

- The Preferred Alternative will be located so it will avoid Delphi Swamp and the Deer Creek Valley Rural Historic District.
- During final design, measures will be identified to minimize the linear extent of channel and bank modifications and, where feasible, avoid channel alterations below the low-water elevation.
- INDOT will continue to investigate design features that would minimize impacts at stream crossings. Structures will be located so they minimize impacts to streams.

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CHAPTER 6—LIST OF PREPARERS

This environmental document was prepared to assess the impacts associated with the SR 25 four lane divided highway in Tippecanoe, Cass, and Carroll counties, Indiana. Persons responsible for preparation of this document or background analysis are listed below.

NAME	PRIMARY RESPONSIBILITY	PROFESSIONAL DISCIPLINE/ EXPERTISE
FHWA		
Robert Dirks, P.E.	Project Management	B.S., Civil Engineering. Ten years' environmental experience.
Matt Fuller	Document Review	B.S. and M.S., Civil Engineering. Four years' experience in environmental studies with FHWA.
Larry Heil, P.E.	Document Review	B.S. and M.S., Civil Engineering. Sixteen years' experience in planning/ environmental studies with FHWA.
INDOT		
Roger Manning	Project Manager	30 years' experience in journalism, corporate communications and public relations; prior to assignment as a project manager in August 2003, served five years managing the INDOT Office of Communications.
Chris Andrews	Environmental, Document Review	B.A. Geology, 1973, LPG #13, 30 years with INDOT, 23 years in the preparation and review of environmental documentation.
Ricky Clark	Public Involvement	B.A., Telecommunications, 1997. Eight years' experience in transportation public involvement and public affairs.
Mary Ellen Kennedy	Environmental, Document Review	B.A., History, 1998; M.S., Historic Preservation, 2000. Five years' architectural history experience.
James Juricic	Environmental, Document Review	B.S., Forestry, 1969. Thirty-five years' experience with INDOT with 24 years reviewing environmental documents.
Anees (John) Kassis, P.E.	Engineering, Document Review	P.E. licensed in NJ, VA, MD, and IN. Thirty years' experience as engineer with FHWA in Design Div., Fed-Aid Div., and Area/Field Engineer in Washington HQ and Indiana, respectively. Five years as Design Engineer with NJ DOT. Five years in engineering assessment with INDOT.
Janice Osadcuk	Project Management	B.A., Biology; M.A., Ecology; NEPA. Thirty years' environmental related experience.
Brad Steckler, P.E.	Transportation Engineering	B.S., Civil Engineering, 1983; M.S., Engineering, 1995. Eighteen years' experience in civil / highway / transportation engineering, economics.

Qk4 (formerly Presnell Associates of Indiana, Inc.)

William Crawford	Public Involvement	B.S. chemistry, 1979; M.S., Systems Management, 1992. Five years' experience in transportation planning and environmental studies.
Jeffrey Dyer, P.E.	Highway Design and Traffic	B.S.C.E., Civil Engineering, 1979. M.S.C.E., Transportation, 1983. Twenty-five years' experience.
Matt Houser	Environmental Analysis	B.S., Landscape Architecture, 1980. Twenty-five years' experience in transportation planning, city planning and environmental documentation for highway projects.
Robert Helmandollar *	Right-of-Way	B.S., Business Administration/Real Estate/Finance, 1981. Thirty-two years' experience.
Frank Koch	Micro Station Mapping	Thirty-two years' experience in transportation/highway field.
Jeremy Lukat	Traffic Analysis	B.S., Civil Engineering, 2000. Two years' experience in traffic studies.
Jim McDonald *	Local Coordination	B.S., M.U.R.P., M.L.A. Twenty years' experience in land use and transportation planning.
Tim Presnell *	Hazardous Materials	Sixteen years' experience.
Kirk Reinke	Noise / Air Analysis	B.A., Geography/Agronomy, 1991. Four years' experience.
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Scott Stepro	GIS, AutoCAD, Microstation Mapping	Associate in Civil Design, 1987. ESRI certified in Arc/INFO, ArcGIS, ArcVIEW GIS. AutoDesk Certified in AutoCAD. Sixteen years of civil engineering mapping and three years of GIS experience.
Roger Wade, P.E., P.L.S.	Project Management.	B.S., Civil Engineering, 1972. Thirty years' experience.
Jane Wehner	Environmental Analysis, Principal Author	B.A., English, 1967. Twenty-one years' experience in transportation planning/ environmental analysis; emphasis on writing and producing environmental documents.
David Wright, PE, A.I.C.P.	Project Manager	B.C.E., Civil Engineering, 1962; M.S.C.E., Civil Engineering, 1965; M.C.P., City Planning, 1965; M. Eng., Civil Engineering, 1976. Thirty-seven years' experience.

* No longer with the company.

Sub-Consultants

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Joel Johnston *	Wetlands/Biology J.F. New & Associates, Inc.	B.S., Natural Resources and Environmental Sciences, 1987. Ten years' experience in environmental/ecological consulting.
John Richardson	Mussel Surveyor J.F. New & Associates, Inc.	M.S., Tennessee Tech. U.; received Best Student Paper award at the Southeastern Assoc. of Biologists Annual Conference, 1991, for presentation of novel mussel substrate sampling technique he developed. Wetland biologist with USACE prior to joining J.F. New. Fifteen years' experience. Certified as Professional Wetland Scientist (P.W.S).
Robert Wolfe	Wetlands/Ecology J.F. New & Associates, Inc.	B.S. Wildlife Ecology, 1982; M.S. Wetlands Ecology, 1987. Sixteen years' experience as a professional ecologist. Certified as Professional Wetland Scientist (P.W.S).
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Anthony W. Adderley*	Landmark Archaeological and Environmental Services, Inc.	B.S., Anthropology, 1993; M.S., Archaeological Resource Management, 2001. Twelve years' archaeological experience.
<u>The Westerly Group</u> (Cultural Historical)		
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SECTION 106 CONSULTING PARTIES

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CHAPTER 8—COMMENTS AND COORDINATION

This chapter discusses the public involvement activities and agency coordination undertaken as part of the development of both the DEIS and FEIS.

8.1 INTRODUCTION

On January 22, 2003, INDOT recommended Alternative 2 as the Preferred Alternative. That alternative, shown on Exhibit 4, pages II-49–II-55, features a next-to-railroad alignment from Lafayette to Delphi, and a north-of-railroad alignment between Delphi and Logansport. Alternative 2 was recommended because, overall, it satisfied the performance criteria to a greater extent than Alternatives 1, 3, and 4. In addition, environmental and engineering considerations, and input from the public and regulatory agencies contributed to the recommendation of Alternative 2 as the Preferred Alternative. Chapter 2 details the alternatives evaluation process that led to the recommendation of Alternative 2.

Below is a chronological list of informational meetings and activities that contributed to the development of the feasible build alternatives, the recommendation of the Preferred Alternative, and preparation of the FEIS. Key meetings/activities are described in greater detail in the sections following the listing.

INFORMATIONAL MEETINGS AND ACTIVITIES

- November 24, 1999—FHWA published the Notice of Intent (NOI) in the Federal Register.
- January 18, 19, and 20, 2000—First series of public meetings, in Lafayette, Delphi, and Logansport. A total of 498 people attended.
- February 14, 2000—Informational meeting and discussion of public involvement approach with Carroll County Commissioners and the Mayor of Delphi.
- February 15, 2000—Scoping meeting with federal, state and local agency representatives to discuss Purpose and Need, environmental constraints, Section 106 cultural resources, ecological resources, socioeconomic issues, and traffic and engineering issues.
- March 8 and 9, 2000—Task Force meetings, with representatives of interest groups and residents in Lafayette, Delphi, and Logansport. A total of 151 people attended.
- April 5, 10, and 11, 2000—Second series of public meetings, in Buck Creek, Logansport, and Delphi. A total of 471 people attended.
- June 8, 2000—Purpose and Need/Preliminary Corridor Review meeting with representatives of Federal Highway Administration (FHWA), Indiana Department of Natural Resources (IDNR), Tippecanoe Area Plan Commission (APC), U.S. Environmental Protection Agency, U.S. Army Corps of Engineers (USACE), and U.S. Fish and Wildlife Service (USFWS) discussing the Purpose and Need and the review of the preliminary corridors recommended to be dropped from further consideration.
- August 11 and September 6, 2000—Meetings with Cass County and the Logansport Economic Development Foundation (LEDF) officials to present the alignment studies completed to date and to discuss the termini alternatives near Logansport.
- September 6 and 7, 2000—Meetings with Cass and Carroll Counties' emergency services agencies to discuss the potential effects of the proposed partial access control alternatives on the provision of emergency services.

- September 12, 13, and 14, 2000—Third series of public meetings, in Lafayette, Delphi, and Logansport. A total of 483 people attended.
- September 12 and 13, 2000—Meetings with Tippecanoe County Commissioners, and Delphi officials and Carroll County Commissioners to discuss alternative alignments and potential right-of-way impacts.
- November 17, 2000—Meeting with the Hoosier Heartland Industrial Corridor (HHIC) coalition regarding alternative alignments.
- January 10, 2001—Meeting with the HHIC coalition to discuss alternative alignments.
- January 26, 2001—Meeting with Norfolk Southern Railway Company (NS) officials to discuss issues relating to railroad access to The Andersons' plant in Clymers.
- March 7, 2001—Meeting with HHIC coalition to discuss project status and schedule.
- April 25, 2001—Meeting with The Andersons, Inc., officials, NS representatives, and Carroll County Commissioners to discuss impacts of alternatives, railroad access, and right-of-way issues.
- May 18, 2001—Meeting with FHWA, USFWS, USEPA, IDNR, IDEM and local officials to review the Preliminary Alternatives Report and present preliminary field investigation findings.
- June 6, 2001—Meeting with the IDNR to discuss issues related to natural areas and historic resources in the project corridor.
- July 11, 2001—Section 106 Consulting Parties meeting at Delphi to discuss the area of potential effect (APE) and the eligibility of properties for listing on the National Register of Historic Places.
- July 18, 2001—Meeting with the HHIC coalition regarding progress on the project.
- September 26, 2001—Meeting with the HHIC coalition regarding progress to date.
- November 26, 2001—Meeting with the HHIC coalition to discuss the status of the DEIS and Section 106 activities, and steps needed to take the project to final design.
- March 21, 2002—Section 106 Consulting Parties meeting at Delphi to review the project status, APE, and eligible historic properties, and to discuss the possible effects of the project on the properties.
- May 3, 2002—Meeting with the HHIC coalition to discuss the status of the DEIS and Section 106 activities.
- July 16, 2002—Meeting with HHIC coalition to discuss timeframe for DEIS completion and public hearings.
- August 19, 2002—FHWA approval of the DEIS.
- September 13, 2002—Notice of DEIS approval and issuance appears in Federal Register, officially beginning the DEIS public comment period.
- September 27, 2002—Meeting with HHIC coalition to discuss the approved DEIS.
- October 1, 2, and 3, 2002—Public hearings regarding the DEIS, in Lafayette, Delphi, and Logansport. A total of 737 people were recorded in attendance.
- November 1, 2002—Conclusion of DEIS public comment period.
- January 22, 2003—INDOT announces its recommendation of Alternative 2 as the Preferred Alternative.
- April 3, 2003—Meeting with representatives of FHWA, USFWS, USACE, and IDNR to review environmental impacts identified in the DEIS, and discuss potential mitigation measures.

- April 16, 2003—Meeting with Delphi government officials, and representatives of FHWA and Carroll County Wabash & Erie Canal, Inc., to discuss the proposed pedestrian trails and access issues related to the Preferred Alternative alignment.
- April 16, 2003—Section 106 Consulting Parties meeting in Delphi to discuss potential mitigation for the project's adverse visual effects to NRHP-listed/eligible properties.
- June 19, 2003—Field reconnaissance of Delphi Swamp and environs with FHWA, USACE, USFWS, IDNR, IDEM to review the area's potential as a wetland mitigation site.
- July 15, 2003—Meeting with HHIC coalition to discuss the timetable for completion of the environmental documentation phase of the project.
- September 4, 2003—Meeting with HHIC coalition to discuss the status of the FEIS.
- January 8, 2004—Meeting with Participating Agencies to discuss the Preferred Alternative and Mitigation Package.
- January 9, 2004—Meeting with state and local officials to discuss the Preferred Alternative and Mitigation Package.
- February 24, 2004—Meeting with HHIC coalition to discuss the status of the FEIS.
- March 4, 2004—Fourth Consulting Parties meeting to review the Draft Memorandum of Agreement's stipulations for mitigating impacts to cultural resources.
- August 5, 2004—Meeting with HHIC coalition to discuss the status of the FEIS.
- September 2, 2004—Meeting with HHIC coalition to discuss the status of the FEIS.
- September 3, 2004—Section 106 Memorandum of Agreement, which identifies measures to mitigate potential adverse visual effects to cultural resources, was signed by FHWA, the SHPO, and INDOT.

8.2 PUBLIC INVOLVEMENT

This project has a history of extensive public involvement dating back to the preliminary study prepared for INDOT in 1995. That work was guided by a Study Task Force composed of 50 members from various levels of state and local governments, private sector interests, farmers, and other key community representatives. The task force played a major role in the planning process. Additionally, eight rounds of public meetings were held with average attendance close to 300 per round. The input received significantly influenced the direction of the project.

As in the earlier study, public involvement has played a significant role in the development and evaluation of alternatives during the current environmental analysis and preliminary design phase of the SR 25 project. The public involvement effort has included a project web site with an email "Comment" section, periodic newsletters, numerous meetings with the public, and a series of public hearings. The meetings and other features of the public involvement effort were designed to inform/update the public and solicit input. The meetings were held in different locations to make it convenient for the greatest number of citizens to attend without having to travel great distances. The following summarizes the major features of the public involvement process:

Project Web Site: The project web site, www.sr25study.com, provided a project overview as well as information about the project's history, recent developments, key meeting minutes, alternatives under consideration, the recommendation of the Preferred Alternative (including mapping), and upcoming meetings/activities. The Web site also included an on-line comment page that resulted in more than 200 comments ranging from requests to be added to the project mailing list or for

information about specific properties to the identification of alignment preferences. The web site address appeared on all printed project-related materials and in media presentations at public meetings/hearings. In all, the web site received over 1,400 hits during the course of four years.

Project Newsletters: The project newsletter, “Heartland Connections,” was distributed to a mailing list that consisted of almost 2,500 persons, including project team members, government officials, organizations, representatives of regulatory agencies, and the public. The first issue of “Heartland Connections” was published in fall 1999, with two subsequent issues through spring 2001. The newsletters provided information about the tasks associated with the project, the public involvement program, project history, and status of the ongoing work; and presented potential alignments being evaluated. Readers were advised how to make comments or ask questions about the project.

Public Meetings:

- INDOT held the first series of project-related public information meetings on January 18, 19, and 20, 2000. A total of 498 people attended—177 in Lafayette, 236 in Delphi, and 85 in Logansport. A total of 79 written and oral comments were received: most generally supported the project, some expressed opposition, and other responses were comments on the web site, requests for information, etc. Some people wrote that they would like to see the project commence as soon as possible; others identified favored corridors including the northern Red, Orange, Teal, or Purple corridor. Still others wanted the new road to follow the existing SR 25 corridor. Some respondents expressed concerns about environmental issues (Wabash River, historic districts, trails, etc.). Others offered miscellaneous comments, such as suggestions on ways to improve the project web site, requests for specific information on how the corridors would affect individual properties, and opinions on the public meeting format. Of the individuals who did not support the project, concerns expressed included the possible disruption of gas lines and power lines, environmental impacts, and the disruption to farmland and homes that would be caused by new construction. General comments or questions included whether or not the project team had met with local government officials about the project, the number of businesses and homes that might be affected by specific routes, or critiques of the meeting format.
- The second round of public meetings was held April 5, 10, and 11, 2000. The meeting in Buck Creek drew 147 persons, 107 attended in Logansport, and in Delphi there were 217 persons. Each meeting included a summary of the project activities to date, descriptions of the alternative corridors under consideration, and the results of the Task Force meetings. The evaluation of project corridors was explained and the presentation concluded with the results of the evaluation. In Buck Creek, speakers during the public comments session raised concerns about local road access, property acquisition, safety, time schedule, traffic, and results of the alternative evaluation. Generally, it was stated that the corridor along the railroad should be seriously considered to minimize farm impacts. In Logansport, issues mentioned included changes in fire protection insurance rates and the evaluation of farmland impacts. The farming community preferred an alternative along the north side of the Norfolk Southern railroad, and economic development interests preferred the alternative along the south side of the railroad. In Delphi, most speakers favored the alternative recommended in the *1995 Corridor Study*. Speakers noted the need to minimize farm impacts and residential relocations. Public officials endorsed the *1995 Study Corridor* recommendation.

- A third series of public meetings was held on September 12, 13, and 14, 2000. A total of 483 people attended these meetings—117 at Lafayette, 255 at Delphi, and 111 at Logansport. Information concerning the Relocation Assistance Program, and purchase of right-of-way was made available at all meetings. During the public comment sessions, general support for the project was expressed, with speakers citing economic development, safety, quality of life, and the future of the state as major benefits. Commenters suggested keeping the new road near the railroad, if at all possible. Support was also given for grade separations at railroad crossings to reduce delays. Some citizens voiced their concerns that certain routes would adversely impact their own properties, and others spoke about avoiding their farmland. Concerns about farmland severance and access roads were also raised—including requests for access roads from the new road to specific homes and/or neighborhoods. Written comments ranged from general project support or opposition to specific support of and/or opposition to potential alignments—particularly those either north or south of the railroad between Delphi and Logansport. While the comments received following previous public meetings generally favored alternatives north of the railroad, many of those received following the recent meetings favor selecting an alternative to the south. Other written comments included opposition to splitting farmland, concerns about acquisition of specific properties, and questions about plans to provide access to the new road from existing roads.

Task Force Meetings: March 8 and 9, 2000, Task Force meetings were held in Lafayette, Delphi and Logansport with invited representatives of local organizations/interest groups and residents to gather input on important factors to consider in the selection of the alignment of SR 25. The three meetings were attended by a total of 151 persons: 14 in Lafayette, 32 in Logansport, and 105 in Delphi. Attendees were provided a handout packet, which included an explanation of the revised Section 106 process and consultation procedures (identification of historic properties), possible project impact categories, main factors in the decision-making process, and an overview of the National Environmental Policy Act (NEPA) process.

The attendees discussed factors that should be considered in the selection of the route for the SR 25 improvement. In Lafayette and Delphi, the group discussed the issues as one group, while Logansport attendees separated into two groups. In Lafayette, there were 13 persons in the single-group discussion; in Delphi, 89; and in Logansport, a total of 29. A sheet listing several factors for consideration was provided. The listed items were derived from the 1995 Corradino feasibility study, and attendees were encouraged to add to the list. Once the list was finalized, meeting attendees rated each factor with a score of 0 (least important) to 10 (very important). An average rating was figured for each factor. Overall, severing farmland, other farmland impacts, land use, use of the existing railroad corridor, displacement of people, and railroad crossing safety were identified as being the most important factors, with ratings ranging from 9.9 (farm severance) to 8.1 (displacement of people and railroad crossing safety).

Public Hearings and DEIS Comment Period: The DEIS was published in August 2002. The formal comment period began September 13, 2002, with the *Federal Register* notice of the document's availability. The comment period included three formal public hearings, one each in Lafayette (October 1), Delphi (October 2), and Logansport (October 3). Notices of the public hearing were mailed to over 2,100 persons on the project mailing list, a legal notice of the public hearings was placed in newspapers in the project area, and the meeting notice and a summary of the DEIS were posted on the project web site. All notices provided the addresses and telephone numbers of six locations for public viewing of the DEIS: the public libraries in Lafayette, Delphi,

and Logansport, and the INDOT offices in Crawfordsville, LaPorte, and Indianapolis. In addition, a copy of the DEIS was sent to individuals, agencies and organizations listed in DEIS Chapter 7.

The public comment period concluded on November 1, 2002, providing 50 days for public review and comment on the DEIS (regulations require 45 days). More than 700 persons attended the public hearings, and comments were received (including emails, letters, and petitions) from over 600 persons during the comment period. In addition, review comments were received from federal and state agencies involved in the environmental documentation process. All substantive comments are addressed in Section 8.4. Transcripts of the public hearings, sign-in sheets, handouts, public hearing presentation materials, and all public comments received during the period of public comment on the DEIS are in Appendix A2.

8.3 COORDINATION WITH REGULATORY AGENCIES, GOVERNMENT JURISDICTIONS, ORGANIZATIONS

Early coordination was undertaken with regulatory agencies, elected officials, governmental agencies, and organizations. Coordination continued throughout the project, and meetings were held at key intervals to accomplish project goals that include: development of a Purpose and Need statement, identification of environmental features and existing conditions in the project area, identification of the most feasible and desirable corridors to study in further detail, selection of alternative alignments worthy of detailed analysis in the DEIS, and recommendation of a Preferred Alternative.

Key agency coordination meetings, including the Interagency Review of the *Preferred Alternative and Mitigation Package*, are described in the following sections. Correspondence from resource agencies, government officials, and organizations having an interest in the project is included in Appendix A1 (pre-DEIS comment period) or A3 (post-DEIS comment period). Correspondence received during the official public comment period (September 13–November 1, 2002) appears in Appendix A2.

8.3.1 Key Agency Coordination Meetings

February 15, 2000—Scoping Meeting: Representatives of federal, state and local agencies and INDOT met to determine the scope and significance of issues and the degree of analysis required in the environmental phase of the project, and to discuss Purpose and Need, environmental constraints, Section 106 cultural resources, ecological resources, socioeconomic issues, and traffic engineering issues. In addition to FHWA and INDOT, the following agencies were represented at the meeting: USEPA (Region 5), USFWS, USACE (Louisville District), IDNR Division of Historic Preservation and Archaeology, IDEM, as well as the Tippecanoe Area Plan Commission (the area MPO). In addition representatives from the following local jurisdictions and organizations attended:

- Tippecanoe County Highway Department
- Carroll County Area Plan Commission
- Carroll County Engineer
- Carroll County Economic Development Corporation
- City of Delphi
- Logansport/Cass County Area Plan Commission
- Logansport/Cass County Economic Development Foundation
- Cass County Engineer
- City of Logansport

A key feature of the meeting was the review of and comment on the draft Purpose and Need Statement. The representative of USEPA indicated the Purpose and Need Statement should be agreed upon before any alternative corridors are discarded. It was agreed that it would be revised and provided to the resource agencies for review. A summary of potential environmental constraints in each of 40 possible corridor combinations was presented. The meeting participants were then divided into the following four groups to discuss the project scope and range of alternatives. Cultural Resources, Ecological Resources, Socioeconomic Issues, and Traffic and Engineering. Each group then reported on the discussions of issues to be addressed as part of the study. Following the meeting, a bus tour of the study area was conducted.

March 2000—Early Coordination Request: In March 2000, “Early Coordination Request” letters were sent to government officials and agencies on the local, state and national levels, along with an information packet that included project area mapping, project description, minutes of the above-referenced Scoping Meeting, and a list of packet recipients.

Recipients included members of the U.S. Senate and House of Representatives and Indiana State Senate (members representing the project area), as well as the following agencies: USEPA (Region V), U.S. Department of the Interior’s National Park Service (NPS) and USFWS, USACE (Louisville District), USDA Natural Resources Conservation Service, U.S. Department of Housing and Urban Development (HUD), the U.S. Coast Guard (Eighth District), IDNR Division of Historic Preservation and Archaeology, IDEM, and the Indiana Geological Survey. Native American Tribes among the recipients were: Miami Nation of Indiana, Miami Tribe of Oklahoma, Peoria Indian Tribe of Oklahoma, Citizen Potawatomi Nation, Hannahville Indian Community Council, Prairie Band Potawatomi, Forest County Potawatomi, and Pokagon Band of Potawatomi. Also receiving packets were the following state and local jurisdictions and organizations:

- Tippecanoe Area Plan Commission (area MPO)
- Historic Landmarks of Indiana, Inc.
- Tippecanoe County Highway Department
- Tippecanoe County Council
- Tippecanoe County Board of Commissioners
- Tippecanoe County Soil and Water Conservation District
- Tippecanoe County Historical Association
- City of Lafayette, Mayor
- Lafayette City Council
- City of West Lafayette
- West Lafayette Common Council
- Camden Town Council
- Flora Town Council
- Battle Ground Town Council
- Museum at Prophetstown, Inc.
- Carroll County Historic Bridge Coalition
- Carroll County Historical Society
- Carroll County Wabash and Erie Canal, Inc.
- Carroll County Council
- Carroll County Commissioners
- Carroll County Area Plan Commission
- Carroll County Soil and Water Conservation District
- Carroll County Economic Development Corporation
- City of Delphi, Mayor
- Cass County Historical Society
- Cass County Council
- Cass County Board of Commissioners

- Cass County Engineer
- Cass County Historian
- Cass County Soil and Water Conservation District
- Logansport/Cass County Area Plan Commission
- Logansport City Council
- City of Logansport, Mayor

June 8, 2000—Purpose and Need/Preliminary Corridor Evaluation Report Review: Representatives of USEPA (Region V), IDNR, IDEM, Indiana Geological Survey, USACE, USDA Natural Resources Conservation Service, USFWS, Tippecanoe Area Plan Commission, and Logansport/Cass County Planning Commission were provided a copy of the preliminary SR 25 *Corridor Evaluation Report*, and invited to meet with FHWA and INDOT to discuss the project's Purpose and Need and review the preliminary corridors recommended to be dropped from further consideration. The discussion included the following:

- The relationship between the 1995 Study and the current study was explained: The earlier study did not meet the federal requirements for the NEPA process and the goal of this current study was to develop an acceptable EIS.
- Safety was identified as an important reason the project is needed, and it was recommended that language be added to clarify how a new SR 25 will help improve the safety of existing SR 25 (i.e. by reducing traffic volumes, particularly trucks and regional traffic, on the existing road).
- The pros and cons of including the “economic development” purpose for the project were discussed. It was recommended that economic development be addressed in the impacts section of the DEIS.

The meeting concluded with the general consensus that while the Purpose and Need Statement needed some minor clarification there appeared to be a clear need for the project. There was also agreement with the alternatives recommended for additional analysis:

- Western Segment—Orange, Teal, Purple, and Black (connectors)
- Central Segment—Orange, Teal, Purple, Yellow, and Black (connectors)
- Eastern Segment—Purple
- Logansport Segment—Purple and Teal

May 18, 2001—Preliminary Alternatives Analysis Report Review: Representatives of the federal and state participating agencies, local and state government jurisdictions, and local organizations were invited to meet with FHWA and INDOT May 18, 2001, to review the *Preliminary Alternatives Report* and present preliminary field investigation findings. Agencies invited to attend were USEPA (Region V), USFWS, USACE (Louisville District), USDA Natural Resources Conservation Service, IDNR, IDEM, and the Indiana Geological Survey. As the area MPO, the Tippecanoe Area Plan Commission was also invited. Native American Tribes invited were as follows: Miami Nation of Indiana, Miami Tribe of Oklahoma, Peoria Indian Tribe of Oklahoma, and Citizen Potawatomi Nation. In addition, the following state and local jurisdictions and organizations were asked to send representatives:

- Indiana State Senate (members representing project area)
- Tippecanoe County Highway Department
- Tippecanoe County Board of Commissioners
- Tippecanoe County Soil and Water Conservation District

- Carroll County Commissioners
- Carroll County Area Plan Commission
- Carroll County Engineer
- Carroll County Economic Development Corporation
- City of Delphi, Mayor
- Cass County Engineer
- Greater Lafayette Chamber of Commerce
- City of Logansport, Mayor
- Wabash County Economic Development
- Logansport/Cass County Chamber of Commerce
- INPSCO
- Cinergy PSI Lafayette
- Logansport/Cass County Economic Development

Discussion of the report included the following comments:

- The Purple alternatives at Logansport should be eliminated because those alternatives split the industrial area and would cause traffic/safety problems because of large truck volumes.
- Regarding the Western Segment: The western Purple alternative would probably have more archaeology sites and impact more endangered species because of wooded areas and steep slopes at stream crossings. Also, it is a local goal to eliminate more at-grade railroad crossings to improve safety. This would be an extension of the recently completed railroad crossing elimination project in Lafayette. Safety benefits associated with the Orange alternative in the west should be well documented in the DEIS.
- The Purpose and Need Statement should focus on the primary needs for the project—capacity, congestion and safety.
- The DEIS should have a solid secondary and cumulative impacts analysis to address recent or planned development and associated environmental impacts, and urban/suburban sprawl.
- Regarding wetlands: Wetland issues may be more critical than farmland concerns because of the big difference in the number of acres of the two resources now and in the past. Potential wetland mitigation sites should be identified in the DEIS.
- The Delphi-Camden Road should remain open.

June 6, 2001—Coordination Meeting With IDNR: The meeting was held to discuss issues related to natural areas—particularly Delphi Swamp—and historic resources in the project corridor. The discussion included the following comments:

- Regarding Delphi Swamp: Endangered species identified in the area are the eastern Massasauga rattlesnake, Kirtland's snake, and spotted turtle. The area is fed by water south of SR 25, so it is important to avoid inhibiting water flow toward the swamp area or damaging the area with highway runoff. An alignment on the south side of existing SR 25 could be agreeable, as long as good design practices were used to maintain groundwater, avoid runoff and avoid introduction of intrusive plant species. The possibility of INDOT buying a portion(s) of Delphi Swamp and other parcels for mitigation (enhancement/rebuild/restoration) was presented. INDOT would need to have a willing seller and some agreement from other regulatory agencies as to the site and mitigation plan. IDNR Division of Nature Preserves supported this approach.
- The Purple alternative between Lafayette and Delphi would impact a sensitive wetland (Americus Fen).

- Regarding issues related to historic resources: The Area of Potential Effects (APE) was defined as “ the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties, if any such properties exist.” Effects could include visual, noise, vibration, changes in use, and acquisition. The APE boundary should be determined, and then a search for historic properties within the boundary should be undertaken.

April 4, 2003—Coordination Meeting With Natural Resource Regulatory Agencies:

Following INDOT’s announcement of a Preferred Alternative but prior to the formal Interagency Review Meeting required by INDOT’s *Streamlining* procedures, representatives of USACE, USFWS, IDEM and IDNR were invited to meet with FHWA and INDOT on April 4, 2003, to discuss the potential impact of **Preferred Alternative 2** on Indiana bats and formal Section 7 consultation, wetlands, streams, upland forests, and riparian areas; and to identify potential measures to mitigate the potential impacts that could not be avoided. Representatives from USEPA and IDEM could not attend but requested and received minutes and other materials related to the meeting. The following were the primary issues addressed:

- Formal Section 7 Consultation: The representative of USFWS requested additional information to help in determining whether a Biological Assessment and formal Section 7 consultation would be required. The information requested consisted of an aerial photograph of the area (with scale) showing the road alignment, and data identifying the approximate number of acres of forest within the right-of-way. (The materials were later provided. In a letter dated May 28, 2003, in Appendix A3, USFWS concluded the project was not likely “to adversely affect the Indiana bat provided that tree-clearing at all forested stream crossings and other areas of suitable summer habitat is avoided” between April 15–September 15. The letter stated that formal Section 7 consultation would not be required unless significant changes in the project plans are made).
- Wetland Impacts: Purchase of some portion of Delphi Swamp and, potentially, of buffer areas around the swamp was viewed as a very desirable means of providing some mitigation for impacts to wetlands and, possibly, riparian areas. The representative of IDNR Nature Preserves Division stated interest in participating with INDOT in such an effort. The representative of USACE noted additional mitigation may be necessary and that purchase and enhancement might reduce requirements (ratios) for replacement but that, at a minimum, there should be no net loss of wetlands. Further, all wetland mitigation should be included in one permit application mitigation package for submittal to USACE, including the isolated wetlands under IDEM jurisdiction. The seven wetlands potentially directly impacted by the project were briefly reviewed. Wetlands “U” and “S” were considered to be the highest quality. Replacement, alone, would not suffice for wetlands “S” and “U,” according to USFWS. Enhancement and restoration of existing wetland areas would be necessary. Also regarding wetland “S,” it appeared the wetland might be bridged by the project and, therefore, would not be directly impacted. However, the boundary had not been surveyed because access to the property had been prohibited. So long as there would be no fill/excavation to impact the wetland, USACE would not require a 404 permit. (The survey was conducted and the boundary established for “S” and two previously unidentified wetlands: “AE” and “AF.”) Wetlands and the potential impacts associated with each are described in Chapter 4, Section 4.13 and shown on Exhibit 4, pages II-49–II-55.

- Stream/Riparian Area Impacts: USACE would require mitigation for stream and riparian area impacts. The potential purchase of Delphi Swamp for wetland mitigation might also apply to riparian area mitigation. The representative of USACE noted the benefit of improving the channel at the new road's crossing of Robinson Branch near Delphi Swamp, thus providing a buffer zone on either side. While the need for and extent of mitigation for stream crossings cannot be determined until final design, where stream crossings do occur, mitigation for impacts to fish and wildlife habitats will be developed in accordance with USFWS, IDNR and USACE guidelines
- Concluding Discussion: INDOT has made the commitment to try to purchase a portion of Delphi Swamp, in fee simple, at or near fair market value, assuming a willing seller. It was concluded that specific areas suitable for mitigation should be identified and recommendations for mitigation measures made, even though one or more identified areas might not be available when the time comes for project construction and mitigation. To this end, a field trip to Delphi Swamp was proposed.

June 19, 2003—Field Trip to Delphi Swamp: Representatives of USACE (Louisville District), IDNR, IDEM and USFWS were invited to join with those from FHWA and INDOT on a tour of portions of Delphi Swamp being considered for mitigation of potential wetland, stream and riparian impacts. Several wetland areas were visited, as was a section of Robinson Branch where degraded creek banks caused by cattle crossings were in evidence. It was generally agreed the swamp offered mitigation potential, the exact nature and extent of which would depend upon whether and which sections could be obtained by INDOT. In a letter of July 15, 2003, the representative of IDNR Nature Preserves who participated in the field reconnaissance described the site, noted restoration opportunities, and identified agency's interest in obtaining portions of the swamp as a state nature preserve. Based on the field review and previous coordination with agencies, a Conceptual Wetland Mitigation Plan (Plan) was prepared that proposes improvements to a stretch of Robinson Branch in a portion of the Delphi Swamp that is being considered for purchase by INDOT. The *Preferred Alternative and Mitigation Package*, Appendix A3, contains the full text of the Plan, as well as the July 15, 2003, INDR letter referenced above.

January 8, 2004—Preferred Alternative and Mitigation Package Interagency Review Meeting: In keeping with *Indiana's Streamlined EIS Procedures*, a *Preferred Alternative and Mitigation Package* (PAMP) was prepared and submitted in November 2003 to participating agencies for review and comment (see Appendix A3). Agencies receiving the document, in addition to FHWA were as follows: Tippecanoe APC (the area's MPO), USACE, USEPA, USFWS, U.S. Coast Guard, USDA Natural Resource Conservation Service, IDNR, IDEM, Federal Railroad Administration, Federal Transit Administration, Federal Aviation Administration, Greater Lafayette Public Transportation Corporation (CityBus), and Purdue University Airport. The document was also sent for review to federal, state, and local government officials having jurisdiction within the project area. The PAMP document contained the following elements:

- Summary description of the project, the evaluation of alternatives, the selection of the Preferred Alternative, and mitigation.
- Description of **Preferred Alternative 2** (including maps).
- Rationale for selecting **Preferred Alternative 2** and not others.
- Summary of the major public and agency issues and how they were addressed. The issues included impacts to natural resources, consideration of the "Mears/300W Route,"

impacts to cultural resources, hiking trails in the Delphi area, and an interchange at Burlington Avenue in Logansport.

- Two addenda: 1) a summary of the proposed mitigation measures and commitments to be included in the FEIS, and 2) the Conceptual Wetland Mitigation Plan.

Streamlining procedures call for a 60-day review and comment period, approximately halfway through which an Interagency Review Meeting is to be held to obtain agency feedback on the document—specifically, responsiveness to agency issues, rationale for recommending **Preferred Alternative 2** over others considered, and adequacy of mitigation measures presented in the PAMP. Agencies were also invited to submit written comments within the 60-day period.

Representatives of INDOT and FHWA met with representatives of the following agencies at the Interagency Review Meeting, January 8, 2004, in Indianapolis: USFWS, IDNR Division of Historic Preservation and Archaeology, IDNR Division of Nature Preserves, and the Tippecanoe County Area Plan Commission. The contents of each section of the PAMP were summarized at the meeting, and general discussion followed. The majority of the discussion concerned impacts to natural resources and proposed commitments and mitigation. Discussions related to these topics are summarized, below. Where applicable, responses to the agencies' issues/concerns are summarized after each discussion section. The USFWS and the USEPA provided written comments subsequent to the meeting. In addition to impacts to natural resources, the USEPA also commented on proposed interchanges and on impacts to cultural resources. The agencies' written comments are included in the discussion and response sections, below, and the full text of each is in Appendix A3, which also contains the meeting minutes.

- Section 7: The representative from USFWS confirmed the agency's earlier conclusion (see letter dated May 28, 2003, Appendix A3) that further Section 7 consultation would not be needed unless significant changes to the project occur.
- Stream Crossing Impacts: The USFWS representative noted the project's stream crossing impacts (including more than 700 linear feet at two locations) would have to be addressed. In subsequent correspondence (see letter of January 23, 2004, Appendix A3), the USFWS reiterated its concern about the Deer Creek crossing and recommended INDOT "continue to research design features to minimize impacts in this area." In the same letter, the agency noted that other stream crossings—including those at Robinson Branch and Bridge Creek—would be of concern owing to issues such as:

...direct loss of aquatic and riparian habitats, and alterations in channel dimensions and hydraulics which may result in indirect effects such as increased bank erosion, increased sediment load and channel instability. Crossings should be designed to minimize the linear extent of channel and bank modifications and to avoid channel alterations below the low-water elevation.... INDOT should also investigate options for stream mitigation... The potential need for and extent of stream mitigation...can not be addressed until final design has been completed. There are areas along Robinson Branch within the Delphi Swamp parcel that are degraded and could be restored for stream mitigation, however because Robinson Branch is a legal drain it is not known at this time what ecological improvements can be achieved.... Future mitigation planning will need to address this issue.

Response: In the case of the Bridge Creek crossing (north of Carroll CR 200N), a bridge is proposed that would minimize stream impacts and avoid adjacent and nearby wetland areas. At this stage in the design, placement of piers in the channel is not proposed.

Regarding the impacts at Robinson Branch, a 750-foot drainage structure is proposed that would enclose and realign a section of the existing channel and remove some 12.5 acres of forest. In a letter dated May 28, 2003 (Appendix A3), USFWS recommended construction of a bridge rather than placement of a culvert at the crossing, or “shifting a short section of existing SR 25 westward to allow for an intersection outside the Robinson Branch forest corridor.” A review of preliminary design indicates shifting existing SR 25 westward would not substantially reduce the length of the drainage structure, and the forest impacts would still occur as a result of the placement of fill material. Regarding construction of a bridge, it does not appear that a bridge is needed to sustain existing stream hydraulics, and the cost of a bridge is not deemed warranted at this time. During final design, hydraulic analysis may determine that a bridge is warranted. Mitigation could include installing a three-sided culvert that would retain the natural channel bottom, thereby facilitating the migration of stream fauna through the culvert, and reducing impacts to the flow rate. The culvert should be of sufficient size to prevent upstream bed instability and erosion of downstream banks.

INDOT will continue to investigate design features that would minimize impacts at stream crossings. While the need for and extent of mitigation for stream crossings cannot be determined until final design, where stream crossing do occur, mitigation for impacts to the channels, and to fish and wildlife habitats will be developed in accordance with INDOT policies and procedures and applicable regulatory agencies’ guidelines. See Chapter 4, Section 4.14, for a discussion of stream crossing impacts, and Chapter 5 for proposed measures to mitigate potentially unavoidable impacts.

- Wetland Impacts: The Conceptual Wetland Mitigation Plan (Plan) was reviewed. The main feature of the plan is INDOT’s commitment to try to purchase a portion of Delphi Swamp at or near fair market value and SR 25 assuming a willing seller(s). INDOT would then deed the land to IDNR Division of Nature Preserves to manage. The owners of tracts of interest to IDNR have been approached by a representative of the agency about a possible sale and were interested in discussing the matter. It is possible conditions in Delphi Swamp are sufficiently diverse to provide all required mitigation for impacts to wetlands and streams owing to the potential for restoring a degraded section of Robinson Branch, which flows through the swamp. Regarding the status of Robinson Branch as a legal drain, the USFWS representative said the Carroll County engineer would have to be contacted about proposed stream modifications.

Questions arose regarding how much of the Delphi Swamps’ 80+ acres INDOT would be expected to purchase to mitigate wetland impacts, and why a specific size area for purchase had not been identified. The Plan does not require or suggest that the entire swamp acreage be purchased; however, more than the 2.68 acres of wetlands directly impacted is involved, since stream, riparian area, and upland forest impacts must also be mitigated. The ability to obtain one specific area, albeit large, in which to provide mitigation could ultimately cost less than trying to obtain small, suitable areas in various locations. The specifics of size and locations have been kept general in the Plan because acquisition is several years away and conditions/acquisition opportunities may have changed when time to acquire arrives.

In its letter of January 28, 2004 (Appendix A3), the USFWS stated its support for the proposal to “acquire and permanently protect a portion of Delphi Swamp for wetland mitigation for this project.” The agency cited as of particular merit the fact that IDNR Division of Nature Preserves would receive and manage the property and “take a lead role in determining what type of restoration measures should be included in the mitigation package.” The agency further stated, “We encourage INDOT to look for restorable areas within the properties of interest that can also qualify as wetland replacements.”

The USEPA also submitted written comments (February 3, 2004, Appendix A3) that included general agreement “that the acquisition and enhancement of portions of Delphi Swamp would provide adequate mitigation for those impacts that can not be avoided and minimized.” However, the agency also noted that:

INDOT’s proposal ...does not guarantee that the acquisition will occur. Consequently, the FEIS should address the likelihood that portions of the Delphi Swamp can be acquired for mitigation purposes. The FEIS should identify and assess additional mitigation sites if portions of the Delphi Swamp are not likely to be acquired... In order to avoid and minimize impacts to wetlands, streams, and wildlife/wildlife habitat, we strongly recommend that the FEIS and Record of Decision (ROD) contain firm statements of commitment to bridge over all streams and their associated wetlands and floodplains. These streams include Buck Creek, Sugar Creek, Bridge Creek, Deer Creek, Robinson Branch, and Rock Creek. An especially important resource to avoid is the forested hillside seep associated with Bridge Creek.

Responses: At present, the likelihood that at least some portions of Delphi Swamp could be made available for purchase by INDOT appears good, based on conversations with owners of two of the three parcels identified as composing the swamp. Alternative mitigation scenarios will be pursued if the commitment to purchase a portion Delphi Swamp cannot be carried through purchase agreements cannot be reached with owners or other, as yet unforeseen, circumstances arise. INDOT will be responsible for retaining the services of individuals qualified to delineate and design wetland mitigation sites during final design. Given that wetlands may naturally increase, decrease, be eliminated, or be created, FHWA believes it is a more prudent expenditure of public funds to develop detailed mitigation plans during final design to meet the requirements of the USACE, when details exist to support such development.

Regarding bridging all streams and associated wetlands and floodplains, INDOT will explore bridging streams and wetlands and, where determined appropriate, will do so. The “forested hillside seep” about which USEPA expressed concern will not be directly impacted by the project, as the project bridges the area where the site is located.

- Interchange Locations: USEPA’s comment letter contained the recommendation that “interchanges be kept to a minimum and not be located near streams and their associated wetlands and floodplains.”

Response: In response to comments received during the period of public comment on the DEIS, Interchanges serving US 421 in Delphi and SR 29-Burlington Avenue in Logansport have been included as elements of Preferred Alternative 2. No stream, floodplain or wetland impacts are associated with the interchange locations.

- Impacts to Cultural Resources: USEPA's comment letter also contained the recommendation that the signed MOA be included in the FEIS.

Response: The signed MOA comprises Appendix B1 of the FEIS.

8.3.2 Consulting Parties Coordination Under Section 106

Consulting Parties Meetings: Four Consulting Parties meetings were held during the course of the project. The first meeting was July 11, 2001, to discuss the area of potential effect (APE) and the eligibility of properties for listing on the National Register of Historic Places. The second meeting was March 21, 2002, to review the project status, APE, and eligible historic properties, and to discuss the possible effects of the project on the properties. The third meeting was on April 16, 2003, after the recommendation of the Preferred Alternative in January 2003. The meeting was held to discuss measures to mitigate the project's potential adverse visual impacts on several historic resources. The fourth meeting was held March 4, 2004, to review the draft MOA identifying measures to mitigate potential impacts to historic resources. Chapter 4, Section 4.21, "Archaeological and Historical Preservation," explains the Section 106 process as it applied to the SR 25 project, and details the results of the Consulting Parties meetings. Chapter 5 summarizes the stipulations in the MOA that address mitigation for potential impacts to cultural resources.

As explained in Chapter 4, Section 4.21.1, a Consulting Party/owner of an NRHP-eligible resource—the Josephus Atkinson Farm—disagreed with the initial boundary determination for the resource, stating, among other concerns, that the boundary excluded pastureland of historic import. Ultimately, the matter was submitted to the Keeper of the National Register, who determined the boundary should be reduced rather than expanded. Pertinent documentation regarding the Josephus Atkinson Farm boundary and related issues, including submittals by the Consulting Party and the findings of the Keeper, is contained in Appendix B3.

Archaeological Resources—Notification of Native American Tribes: The six Native American tribes that are Consulting Parties owing to their established interest in the project area are: Citizen Potawatomi Nation, Prairie Band Potawatomi Nation, Peoria Indian Tribe of Oklahoma, Miami Tribe of Oklahoma, Hannahville Indian Community and Forest County Potawatomi. The tribes were identified as Consulting Parties in the earliest phase of the project and have been included in all Section 106 activities, including receiving invitations to Consulting Parties meetings and all materials (agendas, handouts, minutes, etc.) related to the meetings.

When the requisite Phase 1a archaeological reconnaissance of the entire **Preferred Alternative 2** corridor was completed in spring 2003, the tribes were provided information about the report findings and asked to submit additional information and/or comments. Comments were received from two tribes: The Peoria Tribe of Indians of Oklahoma and the Prairie Band Potawatomi Nation. The Peoria Tribe noted no objection to construction of the project, but stated if human remains or "any objects falling under the Native American Grave Protection and Repatriation Act (NAGPRA) are uncovered during construction, the construction should stop immediately, and the appropriate persons, including state and tribal NAGPRA representatives contacted." The Prairie Band Potawatomi provided the name and address of the new tribal chairman/NAGPRA tribal representative, to whom future correspondence should be sent. The draft MOA that was submitted to all Consulting Parties, including the six tribes, also referenced the report's findings together with stipulations for mitigating potential impacts to archaeological resources. The tribes were included in the invitation to the March 4, 2004, Consulting Parties meeting to discuss the

draft MOA. No comments on the draft were received from any of the tribes, and no tribal representatives attended the meeting.

In general, those tribes that have submitted comments on the project have noted that they do not anticipate the project encountering archaeological sites of concern to the tribes, and they want to be informed should anything of potential cultural significance be encountered during construction—particularly if human remains are located. The MOA was signed on September 3, 2004. The stipulations in the MOA assure the latter request would be honored. All Consulting Parties, including the tribes, received a copy of the signed MOA and were invited to sign as concurring parties. Appendix B1 contains the signed MOA.

Given the length of the project corridor and the potential number of sites that might require more in-depth study, it is not likely the additional archaeological fieldwork associated with the Phase 1a recommendations could be completed within the anticipated timeframe of the Record of Decision for this project (fourth quarter 2004). The MOA was signed prior to the conclusion of further archaeological investigations/evaluations required. However, this approach—referred to as “phasing”—places stipulations in the MOA regarding treatment of any archaeological resources that might be found during further investigation, as well as during construction. Chapter 4, Section 4.21.2, contains a discussion of the Phase 1a report’s findings and recommendations.

8.4 COMMENTS ON THE DEIS AND RESPONSES TO COMMENTS

8.4.1 Introduction

The DEIS comment period extended from September 13 to November 1, 2002. Within this period, public hearings were held at three locations, on three consecutive nights: October 1 in Lafayette, October 2 in Delphi, and October 3 in Logansport. All comments on the DEIS received during this period were entered into a database to permit tracking of individual comments. Copies of all of the written submittals and transcripts of oral statements made at the public hearings, as well as INDOT’s presentation at the public hearings, comprise Appendix A2.

Table 8.1, page VIII-17, summarizes the comments by format submitting comments. Table 8.2, pages VIII-41–44, summarizes the database, listing commenters’ names and comment formats, and identifying where the responses to substantive comments are located in Chapter 8. The table also identifies (by FEIS ID number) where each commenter’s submittal(s) can be found in Appendix A2. Comments were received in the following formats.

- **Oral Statements:** A court reporter recorded oral statements delivered at each of the three public hearings. The transcribed statements are included in Appendix A2. A total of 72 persons spoke at the public hearings, three of whom spoke at more than one public hearing.
- **Personal Correspondence:** This category comprises letters, emails, and comment sheets (provided at each public hearing site) received during the period of public comment on the DEIS. Personal correspondence was submitted by 162 persons, some of whom made more than one submittal in this format and/or submitted in one or more of the other formats.
- **Form Letters:** Several versions of form letters were received, including newspaper clip-out form with a pre-printed message. All form letters support the call for a Supplemental Environmental Impact Statement (SEIS) to study an alignment referred to as the

“Mears/300W Route.” Form letters were submitted by 63 persons, some of whom made more than one submittal in this format and/or submitted in one or more of the other formats.

- **Petitions:** Two petitions were submitted during the public comment period. Some persons who signed petitions also submitted in one or more of the other formats.

Petition P-1 signatories support an SEIS to study the “Mears/300W Route.” A total of 134 persons signed this petition. Table 8.3, page VIII-46, lists all persons who signed petition P-1.

Petition P-2 signatories support the alignment north of the railroad between Delphi and Logansport (Eastern Segment alternative P-EA, a component of **Preferred Alternative 2**). A total of 240 persons signed this petition. Table 8.4, page VIII-47, lists all persons who signed petition P-2.

A total of 611 individuals submitted comments, including 52 persons who submitted comments in two or more formats. Those who submitted in multiple formats are counted, in the table below, in each format in which they submitted.

TABLE 8.1—Summary of Comments Received on the DEIS

Format of Submittals	Number of Persons Submitting *		
	Agency and Elected Officials	All Others	Total Number of Persons Submitting in Each Format
Oral Statements	24	48	72
Personal Correspondence	16	146	162
Form Letters	0	63	63
Petitions:			
P-1 Supporting SEIS to study “Mears/300W Route”	0	134	134
P-2 Supporting north-of-rail alignment between Delphi and Logansport	0	240	240

* Several persons submitted in more than one format. Therefore, while totaling each row provides an accurate count of the number of persons commenting in each format, totaling each column would not accurately reflect the number of individuals who submitted comments.

Because most comments typically addressed similar issues, they could be organized into eight categories, each of which has been assigned an identification letter (i.e., A, B, C, etc.), as follows:

- Category A—General Support of/Opposition to the Project**
- Category B—Western Segment Alternatives**
- Category C—Central Segment Alternatives**
- Category D—Eastern-Logansport Segments Alternatives**
- Category E—Environmental Impacts**
- Category F—Miscellaneous Comments**
- Category G—Concerns About Specific Property**
- Category H—Requests for Information or General Comments**

All comments falling within each category are identified by the category ID followed by a number indicating order of appearance (i.e., A-1, A-2, etc.). This letter-number combination becomes the ID code for each comment/response set. Table 8.2 provides a means of linking each commenter with the pertinent comment/response set via the ID codes, as well as a means of locating the full text of each submittal in Appendix A2. The table identifies all commenters, the submittal format

(Personal Correspondence, Public Hearing Speaker, Form Letter, and Petition), the substantive issues raised, and the ID code locating the applicable response(s) in Section 8.4.2, below.

8.4.2 Comments and Responses

Within each category in this section, one-of-a-kind comments are individually summarized and addressed in a comment/response set, while comments similar in nature received from multiple sources are collectively summarized and responded to as a single comment/response set.

CATEGORY A—GENERAL SUPPORT OF / OPPOSITION TO THE PROJECT

This category comprises persons who expressly stated their support for or opposition to completing the Hoosier Heartland Highway between Lafayette and Logansport. Most commenters who supported the project elaborated on their statements of support—some identifying specific design preferences, others citing a variety of benefits they anticipate would result from the project. Those opposed cited cost as the reason or recommended improvements to existing SR 25 rather than new construction. The following subcategories summarize the comments:

A-1. The project should be constructed for reasons that include the following: improved local and regional access, safety (including reducing the number of at-grade railroad crossing on public roads), traffic handling improvements, and compatibility with local planning initiatives, particularly with regard to preserving farmland, reducing the number of at-grade railroad crossings, and providing a multi-modal transportation corridor.

Response: A build alternative—Alternative 2—has been recommended as the Preferred Alternative. Chapter 2, Section 2.4.1 describes the alternative and identifies the reasons for its recommendation as preferred.. Commenters in this subcategory are noted on Table 8.2.

A-2. The project is too costly at a time when state government budgets are tight. There is no reason to spend millions on a new highway that will destroy more land.

Response: The *Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA)* identified the Hoosier Heartland Industrial Corridor from Lafayette, Indiana, to Toledo, Ohio, as “High Priority Corridor #4.” Section 1105, “High Priority Corridors on the National Highway System,” stated:

...the development of transportation corridors is the most efficient and effective way of integrating regions and improving efficiency and safety of commerce and travel and further promoting economic development.

The *Transportation Equity Act for the 21st Century (TEA-21)*, enacted in 1998, identified the Hoosier Heartland corridor, between Lafayette and Fort Wayne, as a high priority corridor and provided \$18.75 million toward implementation of the project. At the state level, the improvement to the SR 25 corridor from Lafayette to Logansport is identified in the statewide transportation plan (*Transportation In Indiana: Multi-modal Plan Development For The 1990's And Beyond*) as a part of one of 27 “Major Commercial Routes.” SR 25 is a Statewide Mobility Corridor in INDOT’s *2000-2025 Long Range Plan Update*, published in 2002. As noted in the plan:

Statewide Mobility Corridors serve as the connection between urban areas of 25,000 persons or greater in Indiana and neighboring states, provide macro-level accessibility to cities and regions around the state, and play a vital role in economic development.

The state's portion of funding for the project comes from gas tax dollars, which are dedicated to highway construction. Locally, improving the SR 25 corridor, as part of the Hoosier Heartland Highway project, is supported by government officials, planning agencies, and economic development groups within the affected jurisdictions for reasons that include stimulating economic development. Impacts to land uses in the project area are described throughout Chapter 4. Where possible impacts have been avoided or minimized. Mitigation for unavoidable impacts is addressed in Chapter 5.

A-3. Rather than construct the project, improve existing SR 25 by widening the roadway or providing more passing lanes.

Response: Improving existing SR 25 was evaluated as an alternative to new construction and eliminated for reasons detailed in Chapter 2, Section 2.2.2. In summary, the alternative was eliminated because improvements to the existing road could not eliminate the conflict points caused by the high number of at-grade intersections, remove at-grade railroad crossings on the mainline, upgrade roadside recovery zones, and provide adequate shoulders throughout the corridor. In addition, development along the existing corridor is dense in many locations, and major impacts—particularly to residences and businesses—would occur were the existing roadway to be widened.

A-4. Adopt a plan that will eliminate as many at-grade railroad crossings as possible between Lafayette and Logansport.

Response: **Preferred Alternative 2** eliminates 16 at-grade railroad crossings on public roads, Alternative 1 would eliminate 11, Alternative 3 would eliminate 7, and Alternative 4 would eliminate 12.

A-5. The Heartland Highway project is ready to build in an environmentally safe manner. Positions expressed in an ad run in the Carroll County Comet October 23, 2002 are a distortion of the truth and meant to delay the project. This mis-information must be corrected in the public record.

Response: USEPA issued a "Lack of Objection" (LO) to the DEIS. The LO rating indicates USEPA believes "that the proposed project will result in minimum adverse impacts to the environment with appropriate mitigation and that we did not identify any outstanding environmental issues that need additional analysis" (see correspondence dated November 1, 2002, Appendix A2). The ad cited above was in support of a Supplemental EIS to consider an alignment south of Delphi referred to as the "Mears/300W Route." The response to Comment C-2 addresses issues associated with the "Mears/300W Route."

CATEGORY B—WESTERN SEGMENT ALTERNATIVES

This category comprises comments related to DEIS build alternatives—or individual design elements thereof—in the Western Segment of the project corridor, namely O-WA1 (a component of **Preferred Alternative 2**, and Alternative 4) and O-WA (a component of Alternatives 1 and 3). In some cases, the commenters referred to Alternative 1, Alternative 2, etc., rather than to the individual segment; however, as their comments clearly related to the Western Segment, only, they have been included in this category. The following subcategories summarize the comments made regarding Western Segment alternatives:

B-1. West Division Line Road (Tippecanoe CR 900N) is a major transportation corridor connecting eastern Carroll County with existing SR 25 and Lafayette, where many Carroll County residents work. Direct access from CR 900N to new SR 25 (provided by O-WA) would allow the established travel patterns of many residents and businesses to remain intact, whereas O-WA1 would require indirect “doglegged” access, via CR 800W, that would be less convenient and efficient.

Response: O-WA1 overpasses CR 900N, which will remain open to existing SR 25. Thus, the established travel patterns can be maintained. From West Division Line Road, access to new SR 25 will be available at US 421 and at Carroll CR 800W. In addition, a proposed new local service road traveling southward from existing SR 25 to new SR 25, just east of CR 900N’s proposed grade-separation with new SR 25, could also provide an alternative routing for people now using CR 900N and wanting to access new SR 25. The additional travel length is offset by 1) improved travel time once on new SR 25, and 2) avoidance of delays and safety issues related to the at-grade railroad crossing that direct access via O-WA would have required. It should be noted that refinements will continue to be made in later project development phases to horizontal alignment, vertical grade lines, access, and cross-sections, among other design elements.

B-2. O-WA1 appears to take several residences along Tippecanoe CR 500E.

Response: In developing alternatives, the number of residential relocations was minimized to the maximum extent practicable in light of other environmental constraints, transportation benefits, and engineering factors provided by each alternative. O-WA1, a component of **Preferred Alternative 2**, was determined to be the most feasible and prudent alternative—meeting the project’s Purpose and Need while minimizing environmental impacts to the extent possible. Whereas O-WA is estimated to require the acquisition of fourteen single-family residences, O-WA1 is estimated to require the acquisition of seven. Residential relocation impacts are discussed in Chapter 4, Section 4.4.

B-3. O-WA1 best meets the project’s Purpose and Need; eliminates more at-grade railroad crossings, thus is safer and more efficient than O-WA; has less impact to agricultural land; requires fewer residential relocations, and is compatible with local and regional planning initiatives, which recommend a next-to-rail roadway corridor.

Response: O-WA1 is a component of **Preferred Alternative 2**, which was recommended because it best meets the project’s Purpose and Need, and responds to local planning initiatives while minimizing environmental and socioeconomic impacts.

B-4. Overpasses rather than at-grade intersections with Tippecanoe CR 900E and CR 500E would lessen accident potential, maintain access for emergency providers, and be preferable for school buses.

Response: CR 900E and CR 500E will overpass the new mainline, as shown in the DEIS, and access to new SR 25 will be provided via a one-quadrant interchange at each location.

B-5. The higher cost of O-WA1 is outweighed by its anticipated benefits.

Response: The alignment’s higher cost is attributable to the cost of constructing the structures that will carry intersecting public crossroads over the railroad track in this segment of the project area. O-WA1’s elimination of several at-grade railroad crossings is cited in local and regional planning initiatives as among the alignment’s principal benefits and most desired features.

B-6. Support O-WA1, but with some modifications:

- *Tippecanoe County APC: Provide a grade separation at CR 450N with no direct connection to new SR 25, and close CR 900N.*
- *Tippecanoe School Corporation: For safety and efficiency, close CR 800N and CR 600N on the east side of the railroad and leave private access for properties to the west; construct an overpass for CR 400N rather than CR 625E, and close CR 625E; and close CR 900N east of the railroad and carry CR 900N over new SR 25 to the road closure west of the railroad.*

Response: As shown in the DEIS, CR 900N will remain open in response to concerns expressed by Carroll County officials about continuity of local traffic. CR 900N will overpass new SR 25 and have no direct connection to the new road (see Response to Comment B-1). Providing access to the new road at CR 450N and CR 625E facilitates travel to/from the community of Buck Creek. Refinements will continue to be made in later project development phases to horizontal alignment, vertical grade lines, access, and cross-sections, among other design elements.

B-7. For safety, put a signal or a two-way stop rather than a four-way stop at the at-grade intersection with Buck Creek Road (CR 450N).

Response: There would not be a four-way stop at any new SR 25/public crossroad intersection. There would be a stop sign on CR 450N at both approaches to new SR 25. Consideration could be given to signaling the intersection should future traffic volumes warrant.

B-8. Build the Lafayette to Delphi segment first to relieve traffic on the section of existing SR 25 that is has severe safety inadequacies.

Response: Several factors—including timeframes for completing design work, utilities relocations, displacement and relocation of businesses and residents, and availability of funding—will determine the selection of the first segment for construction.

B-9. Since Tippecanoe CR 800N will be closed at the highway, move the highway adjacent to the railroad, thus saving land usage and money.

Response: Both engineering and environmental constraints dictate the alignment of the new road in this area. The alignment away from the railroad allows for an acceptable angle of approach for overpassing the Norfolk Southern railroad and CR 1100E, facilitates access to existing SR 25 via construction of a new connector, and avoids a notable Bridge Creek floodplain area adjacent to the railroad.

B-10. Rather than bring the new road back in to the congested area of SR 25 as you come into Lafayette, run it around the east and south side of Lafayette and get rid of the congestion of all the through traffic coming into the city.

Response: A corridor farther south would locate the new roadway south of the Norfolk Southern railroad and retain at-grade railroad crossings that will be eliminated by the Preferred Alternative. Local and regional planning initiatives stress the need for eliminating as many at-grade railroad crossings on public roads as possible to improve travel time and safety. An alignment south of the railroad would also be too distant from existing SR 25 to relieve traffic and, thereby, improve traffic flow and safety on a segment of the existing road that has the highest number of deficiencies of any section between Lafayette and Logansport.

CATEGORY C—CENTRAL SEGMENT ALTERNATIVES

This category comprises comments related to DEIS build alternatives—or individual design elements thereof—in the Central Segment of the project corridor, namely P-CA1 (a component of Alternative 1 and **Preferred Alternative 2**) and P-CA2 (a component of Alternatives 3 and 4). Some commenters favored the alignment close to Delphi—the alignment shared by P-CA1 and P-CA2 through most of the project’s Central Segment. Not all of these commenters identified the alignment by its P-CA1/A2 designation, and none specified a preference for one over the other. (A few commenters referred to the alignment as the “Corradino” route, but taken in context the referenced alignment appears to be that of P-CA1/A2). All commenters supporting P-CA1/2 were addressing issues related to the call by other commenters for the study of an alternative south of Delphi referred to as the “Mears/300W Route.” Signatories to a petition requested a Supplemental Environmental Impact Statement (SEIS) be prepared to address the matter. Comments about alternatives and issues focusing on the Central Segment of the project corridor are addressed the subcategories, below.

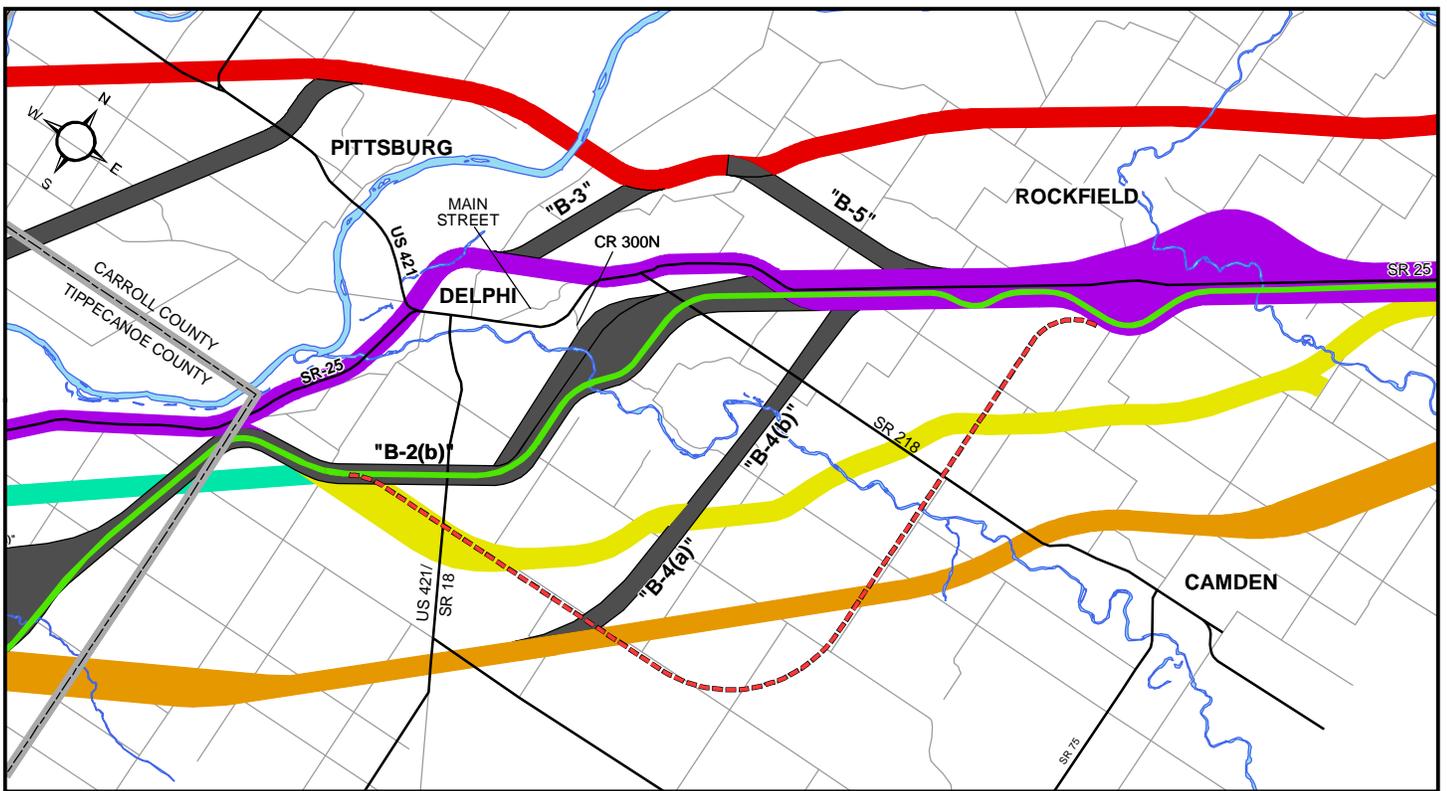
C-1. The location of the alignment just east of Delphi and the relocation of the crossing of Deer Creek is the best means of preserving farmland and livelihood dependent on farming; preserving the falls, cliffs, and the entire Deer Creek Valley; and benefiting Delphi businesses. The route’s benefits include providing better local traffic flow and congestion relief within Delphi, thus improving emergency access in the area; facilitating economic growth of the community; being less disruptive to agricultural land, the Deer Creek Commerce Center businesses, and the Old Order Baptist community; preserving historical, archaeological, geological, ecological, and recreational areas within the Deer Creek Valley; and improving public safety. Carry on with the recommended route close to Delphi.

Response: The alignment near Delphi is a component of the Preferred Alternative, which was recommended because it best meets the project’s Purpose and Need, and responds to local planning initiatives while minimizing environmental and socioeconomic impacts. See Category E, Environmental Impacts, for further discussion of the Deer Creek and Bridge Creek areas.

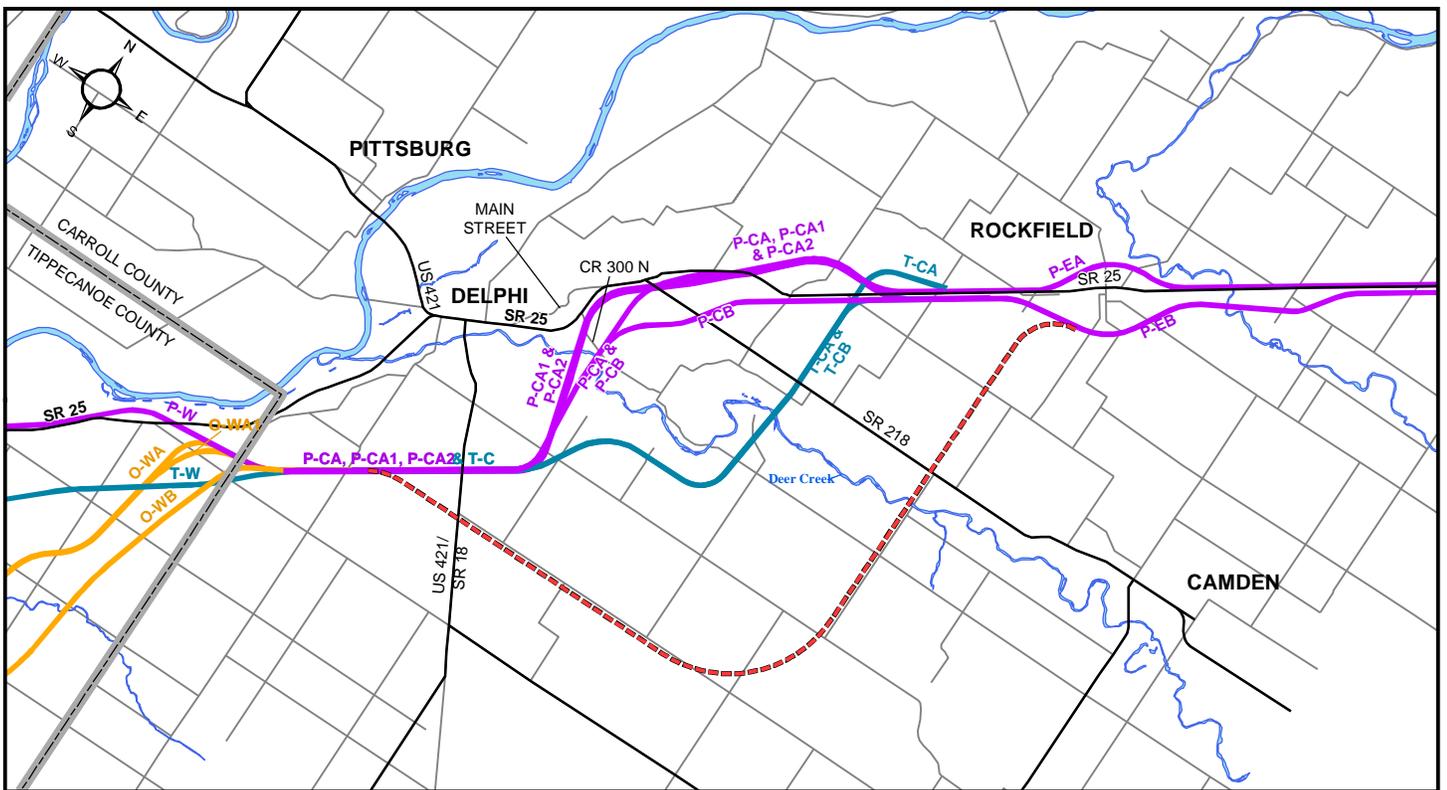
C-2. Consideration should be given to an alternative alignment referred to as the “Mears/300W Route” (see Figure 9, page VIII-23). This route was proposed early in the alternatives development process but not evaluated in the DEIS. As a feasible alternative, it must be evaluated according to National Environmental Policy Act (NEPA) requirements. Regarding the need for consideration of the route, it would reduce project costs by eliminating the need for several bridges, and avoid the environmentally sensitive natural areas encountered by the build alternative at the Bridge Creek and Deer Creek crossings, and avoid construction of an unsafe at-grade intersection with US 421 near the IPC plant and county schools. Some commenters seeking consideration of the “Mears/300W Route” requested a Supplemental EIS (SEIS) be prepared to evaluate the route.

Response: Comments and a petition were received during the period of public comment on the DEIS suggesting another reasonable alternative should have been analyzed in the DEIS and thus a Supplemental EIS must be prepared. The *National Environmental Policy Act* regulations require that federal agencies:

Rigorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated. (See 40 CFR 1502.14(a)).



ALL CORRIDORS CONSIDERED COMPARED WITH MEARS/300W ROUTE



PRELIMINARY BUILD ALTERNATIVES COMPARED WITH MEARS/300W ROUTE

----- Mears/300 W Route

Figure 9

Sheet 1 of 1

SR 25: Hoosier Heartland Highway
Lafayette to Logansport, Indiana

**MEARS/300W
ROUTE LOCATION**

Not To Scale

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In the DEIS (Chapter 2, Section 2.4.1), three corridors—Orange, Yellow, and Teal—in close proximity to the “Mears/300W Route” were evaluated. Orange and Yellow were eliminated because alternatives that could be located within those corridors were too far from the existing transportation corridor to meet Purpose and Need, particularly regarding relieving traffic on existing SR 25 and providing system linkage via a direct connection to Delphi. Most of the Teal corridor components were advanced for further analysis, including the portion nearest to the Mears route. Alternatives developed within that corridor (T-CA and T-CB) only partially met the identified performance measures (see Chapter 2, Section 2.2.4.1, herein) with respect to providing relief from traffic on existing SR 25 and regarding system linkage. At this stage of development, the Teal Alternative was carried forward to provide an alternative that avoided the Deer Creek Valley Rural Historic District, now listed on the National Register of Historic Places, and a Section 4(f) resource. Figure 9, page VIII-23, shows the “Mears/300W Route” in relationship to both the corridors and the build alternatives that were evaluated.

During the preliminary build alternatives development and evaluation (see Chapter 2, Section 2.4.2 in the FEIS) the Purple Alternative was modified to avoid the Rural Historic District near Delphi. The Purple Alternative performed better than the Teal Alternative with respect to the relief of traffic on existing SR 25 and regarding system linkage. Because the Purple Alternative performed better than the Teal Alternative and avoided the Rural Historic District, the Teal Alternative was eliminated from detailed analysis in the DEIS. Based on the traffic analysis of the Teal Alternative and experience with similar projects, the FHWA has concluded that the proposed Mears route would not perform as well as the Teal Alternative, which was eliminated for detailed analysis because it did not fully address the identified performance measures, and because it would impact an Old Order German Baptist community. Alternatives nearest the existing alignment tend to have better performance relative to traffic relief than those alternatives farther away from the existing alignment. Furthermore, because the Teal Alternative was not carried forward in the DEIS for detailed analysis, it is not considered a reasonable alternative by FHWA. Therefore, the Mears route is also not considered a reasonable alternative and will not be studied in the context of a Supplemental EIS.

Appendix A2 includes comments on the “Mears/300W Route” and request for an SEIS submitted during the period of public comment on the DEIS. Appendix D contains additional documentation pertaining to the “Mears/300W Route,” including correspondence submitted after the close of the period of public comment on the DEIS. Category E, “Environmental Impact,” contains responses to comments about impacts to the Deer Creek and Bridge Creek areas.

C-3. Several interconnecting hiking trails—collectively referred to as the High Bridge Trail Loop—should be considered eligible for having Section 4(f) involvement, and a federally funded trail plan should be included in the Memorandum of Agreement (MOA) as mitigation for project impacts in the Deer Creek Valley area—particularly visual impacts to the Deer Creek Valley Rural Historic District.

Response: The trails are not marked or developed and for most of their length they traverse private properties, access to which is not available to the general public except during organized hikes conducted a few times each year. Since the trails are not on publicly owned land and open to the public, potential impacts to them do not have Section 4(f) involvement. Also, development of trails is not considered a measure to mitigate visual impacts to historic resources in the Deer Creek Valley area; therefore, the proposal is not included in the MOA.

Development of the trails has strong support from local officials. Delphi and Carroll County elected officials, agency representatives, and representatives of two organizations advocating trail development—Delphi Heritage Trails and Carroll County Wabash & Erie Canal, Inc.—have met with FHWA and INDOT representatives to discuss local officials' interest in and commitment to securing and developing the trails for public use; and the impacts of new SR 25 on trail access and the potential for accommodating access via roadway design, pedestrian bridges, or other means. INDOT indicated its ability to participate in the trail development effort on condition that a long-range trails master plan is developed and approved by officials who would have jurisdiction over ownership and management of the trails. Because state participation in trail development requires guaranteed public use of the trails into the future, the master plan would have to address methods for securing guaranteed public use by such means as purchase or donation of land, obtaining easements, etc.

The Canal group is currently working to obtain from private landowners donations of land for the proposed trails, with the goal of eventually deeding the land to the appropriate government jurisdictions to ensure public ownership of and long-term access to the trails, once developed. Carroll County and City of Delphi officials have passed resolutions expressing their support for this effort. According to trail proponents, the development of a long-range master plan is expected to begin in spring 2005. Because the efforts of Delphi Historic Trails to establish municipally owned and operated trails for the Delphi area is a concurrent development with this project, INDOT will work through final design with the municipal entity responsible for the new public trails to make every reasonable effort to maintain continuity of these trails crossing the new alignment. Until a municipal entity approves a public trails master plan and assumes ownership and management of the trails, INDOT cannot commit to any specific design accommodations. The trails are discussed in Chapter 4, Section 4.7, and in Chapter 5. Appendix A3 contains documentation relating to the effort to establish the trails.

C-4. The at-grade intersection proposed with US 421 is near Delphi High School and potentially dangerous, owing to the large number of teenage drivers on the road daily.

Response: Preferred Alternative 2 has been modified to include an interchange with US 421 (see Response to Comment C-7).

C-5. Northeast of Delphi, one or two overpasses of the railroad can be eliminated if the curve from north to northeast is maintained on the south side of the railroad track. This route avoids the historical district and gives greater accessibility to the Andersons' facility.

Response: The evaluation of alternative alignments early in the study showed that right-of-way requirements for an alignment south of the railroad in this location result in substantial impacts to businesses, including the Andersons' facilities. Furthermore, two overpasses would still be required with a south-of-rail alignment in this area: one at SR 218 and another to gain the north side of the track to tie into the north-of-rail alignment in the Eastern Segment.

C-6. Consider slightly extending the north leg of Carroll CR 800W's intersection with the new highway to correct a curve at CR 800W / CR 100N.

Response: Consideration could be given to this proposal during the final design phase.

C-7. Provide an interchange, rather than an at-grade intersection, with US 421.

Response: **Preferred Alternative 2** has been modified to include an interchange with US 421, as discussed in Chapter 2, Section 2.4.1. Environmental impacts associated with the interchange are discussed in Chapter 4, Sections 4.1–4.5, and Chapter 5.

C-8. It is important that providing a grade separation with Carroll CR 300N be retained as a design feature.

Response: CR 300N will be grade-separated from the new mainline and there will be no direct access to CR 300N from new SR 25, as stipulated in the Memorandum of Agreement (see Appendix B1) identifying measures to mitigate impacts to historic resources, including the Deer Creek Valley Rural Historic District.

C-9. To properly provide for emergency services and facilitate local access, do not close Carroll CR 500W at the new mainline. Instead, provide an at-grade intersection with CR 500W and with CR 600N, and close CR 400W, which is a gravel road that is not suited for connection to the new mainline.

Response: CR 500W and CR 600N will not be closed north and south of the new mainline, as initially proposed. CR 500W will overpass the new mainline and have no direct connection to it. Access to the new mainline, and to destinations south of the Norfolk Southern track, will be possible via CR 500W/CR 525W to existing SR 25, and then to the new connector that intersects new SR 25. CR 600N will have access via a connector that will intersect new SR 25 at grade. CR 400W will be closed and access to the new mainline will now be provided at CR 600N. These modifications to the preliminary plans presented in the DEIS are described in Chapter 2, Section 2.4.1.

C-10. Access to the new mainline should be provided via Carroll CR 500W (incorrectly identified as CR 550 owing to an error on a DEIS exhibit) rather than existing SR 25 to provide better access for residences and farms.

Response: See Response to Comment C-9.

C-11. CR 500W carries a high volume of traffic that commutes to Delphi and Lafayette. The closest alternative route cannot safely handle the additional traffic; elderly persons would have difficulty traversing the alternative routes; and emergency response times would be slowed, with potentially fatal results.

Response: See Response to Comment C-9.

C-12. An NRHP-eligible resource (residence on CR 500W) will be detrimentally impacted by traffic noise level/vibrations with Hoosier Heartland Highway traffic at 70 mph and in close proximity.

Response: The posted speed limit on the new mainline will be 55 mph. With construction of the project, the noise level at the site is not projected to approach or exceed the NAC standard of 67dBA, nor is it projected to be substantially (15 dBA) higher than the existing noise level. Regarding impacts to the historic resource, FHWA determined the project would result in an adverse visual impact to the historic resource. FHWA did not determine noise to be an adverse effect. On September 3, 2004, FHWA, the SHPO, and INDOT signed a Memorandum of

Agreement (Appendix B1) that identifies measures to mitigate potential impacts to historic resources. Impacts and related mitigation measures are discussed in Chapter 4, Section 4.21, and in Chapter 5. Appendix B provides documents on the identification and evaluation of historic resources and FHWA determinations of eligibility and effect.

C-13. Through Carroll County (specifically, in the Delphi area), construct the alternative recommended in the 1995 SR 25 study (referred to as “the Corradino route”). This route, which is south of and generally parallel to the Norfolk Southern railroad, impacts fewer businesses and residences, is the least costly, impacts less prime farmland, and could minimize travel problems for the German Baptist community.

Response: The evaluation of alternatives early in the study included an alignment in the Central Segment that was referred to as P-CB, an approximation of the Corradino alignment. The alternative was eliminated primarily because of impacts to the Deer Creek Valley Rural Historic District and businesses in the Deer Creek Commerce Center (see Chapter 2, Section 2.2.4.3). The P-EB alignment (similar to the Corradino route) continued south of the railroad through the Eastern Segment of the project corridor, and was eliminated for reasons included in the Response to Comment D-2.

C-14. In the vicinity of Carroll CR 500W, keep the alignment south of the railroad where fewer houses and less segmenting of farmland will occur.

Response: See Response to Comment C-13.

C-15. Bypass Delphi entirely to the south of Camden, along SR 218 and SR 75, a route that would be easier and avoid bridges.

Response: The alignment is too far from the existing transportation corridor to serve the project’s Purpose and Need.

C-16. Do not consider the “Mears/300W Route” for reasons that include impacts to the German Baptist community and prime farmland, its distance from Delphi, and/or the cost and delays associated with additional studies of a route not favored by the majority of the citizens.

Response: See Response to Comment C-2.

C-17. The DEIS Table 4.3 shows Cass CR 500S is to be closed. That road should be grade-separated from new SR 25.

Response: The table has been corrected to show a grade separation is proposed for CR 500S.

C-18. Non-resident landowners were only recently made aware of the route finalized without notification to property owners encroached upon.

Response: An extensive public information and involvement effort has been an integral part of the SR 25 project from the outset. The primary focus of the effort has been directed toward those persons residing/working in communities within and surrounding the project area. While it is not standard practice to notify absentee landowners of a project during the planning stages, the intent of our public involvement plan has always been to inform the community as a whole of project

related activities via various modes of notification (i.e. written notification, media releases, paid newspaper advertising, the SR 25 project website, accessibility to project related documents, and etc.) Specific landowners are generally not contacted regarding right-of-way acquisition until design activities are well underway and specific right-of-way requirements are known. At this point in the SR 25 project, only preliminary plans have been prepared and, in fact, the route has not been finalized. Although a Preferred Alternative was identified in January 2003, after the close of the public comment period (November 1, 2002), it has not yet been approved by the FHWA via issuance of a Record of Decision. Should the Preferred Alternative be approved by FHWA, refinements will still continue to be made in later project development phases to horizontal alignment, vertical grade lines, access, and cross-sections, among other design elements. Contact with affected property owners will occur during the design and right-of-way acquisition stages, as public involvement efforts will intensify and more detailed information will be available.

CATEGORY D—EASTERN SEGMENT AND LOGANSPORT SEGMENT ALTERNATIVES

This category comprises comments related to DEIS build alternatives—or individual design elements thereof—in the Eastern and Logansport Segments of the project corridor. Two substantive issues were the focus of most comments related to these segments: (1) whether the new mainline should be located north or south of the Norfolk Southern railroad, and (2) what type of access should be provided at Burlington Avenue. The comments relating to the new road's location apply to alternatives extending through both segments—namely, P-EA / Y-LA (components of **Preferred Alternative 2**, and Alternative 4) and P-EB /Y-LB (components of Alternatives 3 and 4). Therefore, these two segments are combined in one category to facilitate responses to these comments. As a result, comments related to Burlington Avenue access (a component of Logansport Segment alternatives) are also addressed in this category.

D-1. The north-of-rail alignment impacts less prime farmland; uses some existing right-of-way, thereby saving land acquisition and existing SR 25 maintenance costs; eliminates more at-grade railroad crossings; is the preferred route of a local township volunteer fire department, and has the support of local governmental officials and agencies. The northern route creates a multi-modal transportation corridor through the southern part of the county, and does not bottle up the railroad between a county road (existing SR 25) and a new four-lane highway.

Response: **Preferred Alternative 2**, north of the railroad, was recommended because it best meets the project's Purpose and Need and is responsive to local planning initiatives, including eliminating nine at-grade railroad crossings on public roads (versus five with the south of rail alternatives) while minimizing environmental and socioeconomic impacts. Chapter 2 describes the alternative evaluation process and Section 2.4, therein, details the reasons the north-of-rail alternative was recommended as the Preferred Alternative. Appendix A2 includes a petition signed by supporters of the north-of-rail alignment.

D-2. The south-of-rail alignment has fewer bridge structures, therefore is less costly; it permits the use of existing SR 25 for local access and slower moving traffic such as farm machinery; it provides emergency responders with better local access and quicker response time; avoids cul-de-sacking the “main streets” (existing SR 25) of Burrows and Rockfield; it has fewer residential impacts because most of the land south of the tracks is farmland, it is safer (has fewer hills and curves) and/or it impacts fewer wetlands.

Response: **Preferred Alternative 2**, north of the railroad, was recommended as the Preferred Alternative because it better serves the project's Purpose and Need while minimizing socioeconomic and environmental impacts and responding to local planning initiatives. Where impacts—including those to wetlands—cannot be avoided, mitigation measures are proposed, in coordination with appropriate regulatory agencies (see Chapter 5). The Preferred Alternative incorporates most of existing SR 25, thereby carrying all traffic on a new four-lane divided roadway constructed to current standards, rather than leave the existing road, with deficiencies, in place as would a south-of-rail alignment. In addition, by eliminating much of existing SR 25, maintenance costs are reduced for jurisdictions that will assume the responsibility for the remainder of the existing roadway. Use of existing right-of-way also potentially reduces land acquisition costs and reduces impacts to property owners along the route. With regard to improving safety and providing quicker emergency response time, the north-of-rail alternative eliminates nine at-grade railroad crossings on local public crossroads. Three of the crossroads will overpass the railroad, thus maintaining access north and south of the track. The south-of-rail alignment eliminated five crossings on public crossroads. Local officials and planning/economic development groups supported the north-of-rail alternative for reasons of safety, fewer farmland impacts, and economic viability.

The acquisition of additional right-of-way for the Preferred Alternative through this area will result in an estimated five residential relocations and one business displacement. With the south-of rail alignment, it is estimated there would be one residential relocation and one business displacement. The Preferred Alternative's overall benefits outweigh this constraint. Relocation and displacement impacts and mitigation are discussed in Chapter 4, Sections 4.4.1 and 4.4.2, and Chapter 5. Appendix A1 contains a petition from Camden officials supporting a south-of-rail alignment.

D-3. The DEIS does not fully or accurately report on the historical significance of the Josephus Atkinson Farm. By ignoring the pasture as part of the historical site, the DEIS understates the impact of Alternatives 1 and 2 on the site. The DEIS limits the impact to visual and claims that no part of the historical site is taken. Cutting into the fields and pastures for the highway will destroy the historical setting. The north-of-rail alternative will increase noise at this historic site. The DEIS appears to be inaccurate when it claims that as a result of moving the double traffic lanes to within 300-500 feet of the house that the noise levels will decline. Also, the proposed elevated structure at CR 400W will have a great impact on the farm from an aesthetic standpoint and on the historic residence as a result of headlight glare and highway lighting. Other feasible alternatives, namely the south-of-rail route, should be looked at. The southern route would minimize or avoid impacts—including visual and noise—to the NRHP-eligible resource.

Response: The Josephus Atkinson farmstead (H-6 on Exhibits 3 and 4) is eligible for the NRHP. FHWA issued the determination of eligibility and effect July 8, 2002, based on recommendations in the cultural resources survey report of March 2001 (revised December 2001), and in concurrence with the SHPO. The determination listed both agricultural association (Criterion A) and architecture (Criterion C) as the reasons for eligibility. NRHP-eligible elements within the historic boundary included the farmhouse, several outbuildings and an adjacent woodlot). It was determined that **Preferred Alternative 2**, north of the railroad, will have an adverse visual effect on the resource. The noise analysis (discussed in Chapter 4, Section 4.9) indicated that the projected noise level with the project would not approach or exceed the NAC standard (67 dBA), nor would the projected noise level be substantially (15 dBA or greater) higher than the existing

noise level. Therefore, it was determined that the project would not have an adverse noise impact on the resource. The alternatives south of the railroad would have an adverse visual impact on two sites in the Eastern Segment: an NRHP-listed schoolhouse, and a house deemed eligible for listing (H-4 and H-5 on the exhibits). Other reasons for eliminating the south-of-rail alignment are cited in the Response to Comment D-2.

On September 3, 2004, FHWA, the SHPO, and INDOT signed a Memorandum of Agreement (see Appendix B1) that identifies measures to mitigate potential impacts to historic resources, including the potential visual impacts to the Josephus Atkinson Farm. Impacts and related mitigation measures are also discussed in Chapter 4, Section 4.21, and in Chapter 5. Appendix B provides documents on the identification and evaluation of historic resources and FHWA determinations of eligibility and effect.

NOTE: During meetings with Consulting Parties that continued beyond the period of public comment on the DEIS, the Consulting Party/owner of farm continued to disagree with the initial boundary determination that excluded the pastureland. A detailed literature search and on-site reconnaissance of the property were performed, resulting in a recommendation that the pastureland not be determined eligible. FHWA, in consultation with the SHPO, concurred with the report's recommendation. Ultimately, the matter was submitted to the Keeper of the National Register, who is the final arbiter in matters of eligibility. The Keeper determined that the boundary should not be expanded, but should be reduced to exclude the woodlot, and that the farmstead is eligible under Criterion C (architecture), only. Chapter 4, Section 4.21, addresses eligibility and other issues relating to this resource in more detail. Pertinent documentation, including submittals by the Consulting Party and the findings of the Keeper, is contained in Appendix B3. Appendix B3, Figure I and Figure I Revised, show the original and revised boundaries of the historic resource.

D-4. Constructing the project south of the railroad would avoid involving either the Norfolk Southern Railroad (NSR) or ADM and The Andersons, Inc., which are directly served by the NSR. If the north-of-rail alignment is recommended, NSR would be agreeable to investigate an alternative that would permit its direct service to both industries via trackage owned by WSRY.

Response: A north-of-rail alignment is recommended as the Preferred Alternative. **Preferred Alternative 2** can provide for the same level of rail service currently available by using the WSRY line or the NS spur. Maintaining industry access to rail service through coordination with NSR and WSRY will continue during the final design and right-of-way acquisition phases of the project.

D-5. How will property owners along existing SR 25 from Clymers to Logansport access their fields, homes, businesses and other destinations if existing SR 25 is incorporated into the new mainline, as is proposed with the north-of-rail alignment?

Response: Throughout the entire project length, local access is maintained in a variety of ways, including reconstructing public crossroads to overpass the new mainline, bridging of the public crossroads by the mainline, constructing local service roads, and providing public crossroads with at-grade intersections with the new mainline. Where public crossroads will be closed at the new mainline, access to other public roads and/or the new mainline is generally available in the vicinity. In some cases, however, travel patterns will be notably altered and travel times will

increase as a result of the project. In other cases, properties could be landlocked. Specific access issues will be addressed in the final design and right-of-way acquisition stages.

D-6. More hazardous waste sites may require Phase II investigation if the north-of-rail route is selected.

Response: The DEIS identified four sites throughout the entire project area potentially requiring Phase II investigation. Additional site reconnaissance indicated minimal visible contamination present, and the potential for contamination no greater than for any other HAZMAT site identified in the project corridor. Therefore, Phase II is not recommended at these sites. During construction consideration will be given to further investigation should conditions be found to exist that warrant such investigation.

D-7. To avoid impacts to an NRHP-eligible historic resource (H-7 on Exhibits 3 and 4) that is also a family farm, and to three other residences, cross to the south of the tracks just east of Cass CR 300N.

Response: FHWA, in consultation with the SHPO, has issued its determination that an adverse visual impact would result from the proximity of Alternatives 1 and **Preferred Alternative 2** to the resource. FHWA, the SHPO, and INDOT signed a Memorandum of Agreement (Appendix B1) that identifies measures to mitigate potential impacts to historic resources, including the potential visual impacts to this resource. Impacts to historic resources and related mitigation measures are discussed in Chapter 4, Section 4.21, and in Chapter 5. Appendix B provided documents the identification and evaluation of historic resources and the FHWA determinations of eligibility and effect. Regarding potential impacts to the farm operations and to nearby residences, design parameters/ geometrics involved with providing an acceptable angle of approach and crossing of the railroad would also cause impacts to farmland and, potentially, to residences and farm operations south of the railroad. Residential and business (including farms) impacts associated with acquisition of land for right-of-way for the project will be addressed during the final design and right-of-way acquisition phase of the project.

D-8 For safety, traffic handling, compatibility with local planning initiatives, and the need for a “gateway” access to Logansport, construct an interchange rather than an at-grade intersection with Burlington Avenue (sometimes identified as SR 29 by commenters). The Logansport Thoroughfare Plan 2002, which is an element of the city’s comprehensive plan, calls for a grade-separated interchange with Burlington Avenue.

Response: An interchange has been incorporated into **Preferred Alternative 2** in the Logansport area. The interchange provides access to both SR 29 and Burlington Avenue. The interchange was selected because it improves connectivity with the area’s roadway network by providing access to SR 29, a state highway that ties into US 24/US 35 northwest of the project area, and Burlington Avenue, which is to become the “gateway” entrance into Logansport. The primary impacts of this change will be as follows:

- An estimated five additional residential relocations.
- The higher cost of constructing an interchange rather than an at-grade intersection.
- The acquisition of 14.3 additional acres of land in the Logansport Segment for right-of-way.

Environmental impacts associated with the interchange and, where applicable, mitigation measures, are discussed in Chapter 1, Section 1.4.1, Chapter 2, Section 2.4.1, Chapter 4,

Sections 4.1–4.4, and Chapter 5. Appendix C contains reports prepared by independent consultants for the City of Logansport, Cass County, and Logansport-Cass County Economic Development Foundation, and the Hoosier Heartland Industrial Corridor (HHIC) coalition to evaluate the need for an interchange.

D-9. To save money, use as much as possible of the existing US 24/US 35 roadway from Burlington Avenue to SR 29, reconstruct the existing overpass with Burlington Avenue to provide access to Burlington Avenue, cross SR 29, then swing south, thereby eliminating the cost of a bridge over or intersection with SR 29.

Response: Alternatives that utilized a portion of existing US 24/US 35 between Burlington Avenue and SR 29 and then swung southward were considered and eliminated early in the alternatives' evaluation process because of potential impacts to wetlands and to local businesses and industries. Also, these alternatives (P-LA, P-LB, T-LA, and T-LB) were not responsive to planning initiatives and had little support from local government officials, planners, and the public.

D-10. Between Delphi and Logansport, construct the new four-lane mainline as two lanes in one direction north of the railroad tracks (on existing SR 25 right-of-way) and two lanes in the other direction south of the tracks (on new alignment).

Response: This alternative would not meet the project Purpose and Need, particularly with regard to improving transportation efficiency and safety, nor would it be prudent from an engineering or fiscal standpoint; i.e., additional (and in some cases longer) bridges would be required—thus, expense incurred—for crossing railroad tracks and streams, and for providing local access on public crossroads. Furthermore, the need for additional right-of-way to provide for two roadways would result in increased impacts to farmland, wetlands, residences, businesses, and historic resources in the corridor.

D-11. A Phase 1a Archaeological Field Reconnaissance, performed for the town of Rockfield as part of a proposed wastewater treatment plant study, identified three previously unregistered archaeological sites that appear to be within or near the P-CA1 right-of-way.

Response: As part of the SR 25 project, a Phase 1a reconnaissance has been conducted along the SR 25 **Preferred Alternative 2** corridor. The reconnaissance included the area referenced in the Rockfield survey. Chapter 4, Section 4.21.2, addresses issues related to archaeological resources within or near the project right-of-way. On September 3, 2004, FHWA, the SHPO, and INDOT signed a Memorandum of Agreement that identifies potential measures to mitigate impacts to eligible sites, should it be determined that they could be impacted by the project.

D-12. Provide a grade separation with Cass CR 500S, as shown on the exhibits but not reflected in the text (i.e., Table 4.3 in the DEIS).

Response: A grade separation with direct access to the new mainline is a feature of **Preferred Alternative 2**. The table was in error.

D-13. The DEIS summary of potential business displacements did not mention the potential adverse impacts of the south-of-rail alignment on a hog farm operation near Carroll CR 900N.

Response: The document has been amended to reference potential impacts to this business. Impacts to the farm operations applied only to the south-of-rail alternatives. The north-of-rail **Alternative 2** has been recommended as the Preferred Alternative.

D-14. [Proponents of the south-of-rail alternatives quoting the Clinton Township Volunteer Fire Department letter of February 22, 2000 (Appendix A1)]: “...Old 25 along this new route must be left as an access road to tie all of the existing county roads together....” In addition, the letter said it would be necessary to have “grade crossings” at Cass CR 300S, CR 400S, and CR 500S.

Response: The letter cited included support for a north-of-rail alignment that would, apparently, parallel but not use the right-of-way of existing SR 25 through the Clymers area. Reasons for recommending as preferred an alternative with a north-of-rail alignment in this area included its use of existing SR 25 right-of-way to minimize social and environmental impacts, reduce county maintenance costs, and provide a roadway that is constructed to current design standards. Regarding the referenced roadways, CR 300S will have direct connection to new SR 25 from the north, and be closed south of the new road and railroad; CR 400S will have an at-grade intersection with new SR 25, and CR 500S will overpass and not have direct connection with new SR 25. Refinements will continue to be made, in later project development phases, to horizontal alignment, vertical grade lines, access, and cross-sections, among other design elements.

D-15. Do not disturb the Mullins School.

Response: Assuming the reference is to the NRHP-listed District School # 3 (H-5 on Exhibits 3 and 4), neither Alternative 1 nor **Preferred Alternative 2** would impact the resource, which is located south of the Norfolk Southern track. Alternatives 3 and 4 would have an adverse visual effect on the resource.

D-16. The proposed northern route threatens to terminate The Andersons’ direct access to the mainline of the Norfolk Southern railroad, a vital component in maintaining the value and usefulness of the industry’s integrated terminal at Clymers. The company is willing to work toward a solution that allows the company to support the proposed northern route; however, the company is opposed to any solution involving trackage rights with the Winamac Southern Railroad, or having the potential to diminish direct Norfolk Southern mainline rail service at Clymers.

Response: See Response to Comment D-4

D-17. The proposed P-CA1 alignment on the north side of Rockfield divides property zoned for residential development. It is crucial that any potential design for P-CA1 provide sewer access to the north of the proposed alignment so that the property zoned for residential development can be provided sewer service.

Response: Issues arising from the acquisition of property right-of-way and utility relocation will be addressed in the final design and right-of-way acquisition stages of the project.

CATEGORY E—ENVIRONMENTAL IMPACTS

This category comprises comments from regulatory agencies and the public regarding potential environmental impacts of the build alternatives—or individual design elements thereof. Substantive issues that were the focus of most comments included impacts to (1) natural and cultural resources in the Bridge Creek and Deer Creek areas, (2) specific wetlands, and (3) wildlife/wildlife habitat, riparian areas, and streams. Some comments addressed Section 4(f) and Section 7 issues, and the possible purchase of portions of Delphi Swamp to mitigate impacts to wetlands and other sensitive resources.

E-1. It is important to build roads with the utmost sensitivity to preserving natural woodland areas for recreation and wildlife.

Response: The USEPA has issued a Lack of Objection (LO) to the DEIS, indicating USEPA believes the project will result in “minimum adverse impacts to the environment with appropriate mitigation,” and that “no outstanding environmental issues were identified that need additional analysis” (see correspondence dated November 1, 2002, Appendix A2). In coordination with resource agencies, appropriate measures to mitigate environmental impacts that could not be avoided have been identified and included in this FEIS (see Chapter 5).

E-2. Plans are to bridge scenic areas of Bridge and Deer Creeks comprising floodplains, wetlands, small creeks, weeping slate and shale hillsides, ravines, springs, acres of native trees, and areas with historical associations. Three bridges in less than two miles in this wet, difficult terrain will be expensive and hard to construct, and costly to maintain. The route will destroy the 80-foot-high slate bluffs and the 30-foot-high Bassard waterfall and other scenic features.

Response: The P-CA1/A2 alternative (a shared alignment and component of **Preferred Alternative 2**) was realigned prior to the issuance of the DEIS to reduce impacts to the slate bluffs, to avoid Bassard Falls, and to avoid direct impact to the Deer Creek Valley Rural Historic District and other NRHP-listed/eligible resources in the project area. Extensive shifting to totally avoid all impacts in the vicinity of the creek crossings was not possible owing to the proximity and locations of the Rural Historic District, Bassard Falls, a section of riffles in Deer Creek, and wetlands. Mitigation measures are proposed where impacts cannot be avoided. Chapter 2 contains a description and evaluation of alternatives, including reasons for eliminating some while advancing others for analysis in the DEIS. Alternatives farther south of existing SR 25 (i.e., south of the Rural Historic District), which would have crossed Deer Creek at different locations than the Preferred Alternative, were evaluated and eliminated for reasons explained in Chapter 2.

E-3. Locate the alignment farther east of Delphi—the way the highway corridor was originally planned—to comply with the federal mandate regarding wetland protection and minimize harm to the sensitive natural areas in INDOT’s planned corridor from Deer Creek south to CR 200N (referred to as “the Bridge Creek area”). Mandated environmental laws clearly dictate the planned corridor should avoid the Bridge Creek area.

Response: In the Deer Creek-Bridge Creek area, several alternative alignments—including P-CB, which approximated the “original” (1995 study) alignment—were evaluated during the course of this project to identify the alignment that would best meet the project’s Purpose and Need while

minimizing environmental and socioeconomic impacts. The P-CA1 alignment, a component of **Preferred Alternative 2**, has been recommended as the alternative that best meets these criteria. The other alternatives, including P-CB, were eliminated for reasons detailed in Chapter 2. Coordination with resource agencies such as USEPA, USFWS, USACE, IDNR, and IDEM throughout the alternatives evaluation process has resulted in modifications to minimize impacts where possible, and identification of measures to mitigate impacts (see Chapter 5) that are unavoidable.

E-4. An individual Section 4(f) Evaluation has not been included as a separate section of the DEIS. A fully signed copy of the Memorandum of Agreement should be included in the draft and/or final Section 4(f) Evaluation.

Response: A Section 4(f) evaluation is not warranted, as there is no use of any Section 4(f) land within the project limits. All Section 4(f) lands adjacent to the project will be avoided and no property will be acquired from these properties or incorporated into the transportation facility.

E-5. Wetland U (Site 9 on exhibits 3 and 4) was probably originally a unique wetland type and appears to be reverting to a higher quality condition. This factor should be considered in project design and in selecting a wetland replacement site and design for Wetland U.

Response: A Conceptual Wetland Mitigation Plan (the Plan) has been prepared to address mitigation measures for wetland impacts, as well as impacts to wildlife/wildlife habitat and streams. The Plan proposes that a portion of Delphi Swamp be purchased, restored, placed into a 5-year monitoring and management plan, and permanent protection of the property as an IDNR Nature Preserve. An added benefit of this site for mitigation is the presence of Robinson Branch that borders the swamp. This presents an additional opportunity to compensate for impacts to riparian habitat. INDOT has made a commitment to try to purchase a portion of Delphi Swamp at or near fair market value, assuming a willing seller(s). Impacts to natural resources and mitigation measures, including the conceptual plan, are discussed in the FEIS, Chapters 4 (impacts) and 5 (mitigation). Further efforts to minimize impacts to the sensitive natural areas may be possible in the final design phase.

E-6. The discussion of water body modification and wildlife impacts (DEIS Section 4.14) is inadequate. This sub-section should be expanded to include an analysis of impacts to upland forest and effects on migratory birds. Cumulative stream impacts will be substantial; therefore mitigation is recommended in the form of riparian reforestation and, possibly, restoration of degraded stream reaches in the affected watersheds.

Response: The section has been expanded to address impacts to streams and wildlife/wildlife habitat, including impacts to upland forest and effects on migratory birds. The exact extent and locations of any stream modifications that may be required would be site dependent and defined in the final design. It is expected that clearing will occur at the final chosen crossing sites that will result in impacts to habitat at certain locations. Some of the crossing sites currently exist as wooded riparian habitat (upland forest) and the loss of such areas can potentially impact wildlife usage of these areas. Clearing of riparian areas also poses a potential impact to aquatic life. Thermal loading to these waterways caused by exposing the stream surface to incident solar radiation can potentially limit usage of exposed stream reaches to full light-tolerant aquatic species of plant and animal life. Where stream crossings occur, mitigation for impacts to fish and wildlife habitats are being developed in accordance with IDNR and USACE guidelines. Mitigation

measures—such as seasonal tree clearing to minimize impact to the Indiana bat's summer habitat; the proposed purchase of a portion of Delphi Swamp (see Response to Comment E-5) for enhancement, restoration and protection; riparian reforestation; and, possibly, restoration of degraded stream reaches in the affected watersheds—are proposed (see Chapter 5).

E-7. The U.S. Department of the Interior strongly supports the proposal to explore using Delphi Swamp as a focal area for compensatory wetland mitigation.

Response: INDOT has committed to try to purchase a portion of Delphi Swamp for wetland protection, restoration and enhancement. The ability to meet the commitment depends upon purchase from a willing seller(s) at or near fair market value. The proposal is explained in the Conceptual Wetland Mitigation Plan for addressing wetland and related impacts resulting from the project (see Chapter 5). The conceptual plan also addresses some of the concerns regarding potential riparian habitat and stream impacts due to the project.

E-8. The discussion of federally endangered and threatened species (Chapter 4, Section 4.15) is generally adequate. Based on current information, USFWS concurs with the conclusion of no adverse impacts to any of the species other than the Indiana bat. Due to the capture of an Indiana bat during surveys on Sugar Creek, additional consultation will be required pursuant to Section 7 of the Endangered Species Act. The DEIS states that if a build alternative is selected as the preferred option, a Biological Assessment will be prepared.

Response: Coordination with USFWS following the recommendation of the Preferred Alternative resulted in the agency's determination that neither a Biological Assessment nor further Section 7 consultation are required (see letter dated May 28, 2003, Appendix A3). Further consultation would be required should "new information on endangered species at the site" become available or if there is a "significant change" in project plans.

E-9. Note in the FEIS that the 1997 *Indiana Bat Revised Recovery Plan* has not been adopted by USFWS and is likely to undergo substantial redrafting prior to being adopted.

Response: The notation has been made in the document (Chapter 4, Section 4.15).

E-10. DEIS Table 4.1 (Chapter 4, Section 4.1) summarizing land use impacts should include a category for wildlife habitat.

Response: This category has been added to the table. The category includes all land uses not considered to be in residential, commercial/industrial, agricultural (cultivable), or institutional use.

E-11. Efforts should be made in the final design to reduce the extent of stream and riparian impacts, especially for the highest quality streams.

Response: INDOT will continue to investigate design features that would minimize impacts at stream crossings. During final design, coordination with USACE and IDNR, and the property owners will occur to determine where right-of-way and construction limits can and should be minimized. INDOT will also consider bridging wetlands and streams and, if determined appropriate, bridging will be done.

E-12. Wetland S (Site 16), a small, unique, seep wetland, will be eliminated under all four alternatives due to route constraints in adjacent areas. The wetland delineation report estimated the size as 0.2 acre, but state that it could not be surveyed due to lack of permission for access. It would be difficult or impossible to replace this wetland and its surrounding habitat in-kind. Therefore, serious consideration should be given to acquisition and protection of the remaining unique wetlands in this area.

Response: An April 2003 field investigation of Wetland “S” resulted in the determination that the wetland, actually 0.04 acres in size, is partially within the project right-of-way, but no direct impacts are anticipated because the new roadway bridges the area and bridge piers would not be located in the wetland area. Regarding acquisition and protection of remaining unique wetlands in the area, INDOT has made a commitment to try to purchase a portion of Delphi Swamp (see Response to Comment E-5).

E-13. USFWS disagrees with the statement in the DEIS that, because forested riparian habitats (important for Indiana bat summer roosting and foraging) are not very suitable for development, significant indirect impacts from future development are not anticipated. Loss and fragmentation of upland forest habitat can adversely affect a colony’s forage base. While riparian areas are generally not developed directly, they are often adversely affected by vegetation removal, stream channel modifications and crossings, and watershed alterations.

Response: The statement has been amended and the section of the FEIS dealing with stream and wildlife/wildlife habitat has been expanded (see Response to Comment E-6).

CATEGORY F—MISCELLANEOUS COMMENTS

F-1. Locate utility poles a safe distance from the roadway.

Response: The new roadway will be constructed to AASHTO and INDOT design standards, as detailed in INDOT’s *Design Manual for Rural Arterials—New Construction/Reconstruction for a New Roadway*, and AASHTO’s publication, *A Policy on Geometric Design of Highway and Streets*. The standards provide guidance regarding the location of structures, utilities, etc., within the right-of-way. As a matter of policy, INDOT does not permit conventional utility lines to parallel an access-controlled facility. New SR 25 will be an access-controlled highway, specifically partial access control with limited access right-of-way.

F-2. If any planned activities will disturb or destroy geodetic control monuments, the National Ocean Service (NOS) requires not less than 90 days’ notification in advance of such activities to plan for their relocation. NOS recommends funding for this project include the cost of any relocation(s) required.

Response: Monuments that would be impacted by the project (if any) will be identified during the final design stage, and NOS will be notified within the timeframe stipulated.

F-3. The DEIS does not address how dangers along SR 25 will be ameliorated during construction if the existing two lanes are reduced to one. The congestion that will occur will probably result in serious injuries.

Response: A plan to provide for maintenance of traffic flow during construction will be developed during the final design stage of the project. During plan development, consideration will be given to maintaining one lane of traffic in each direction at all times. Traffic flow maintenance and construction sequences will be scheduled to minimize traffic delays on existing public crossroads and SR 25, where necessary. Signs will be used to notify the traveling public of road closures and other pertinent information. The local news media will be notified in advance of road closings and other construction-related activities that could excessively inconvenience the community so motorists can plan travel routes in advance. As additional safety measures, the posted speed limit will be reduced and temporary barriers put in place, as needed, in construction areas.

F-4. Missing from the DEIS are correspondence and comment by individuals, pertinent newspaper editorials and letters to the editor, and a petition supporting the north-of-rail route.

Response: Correspondence received from regulatory agencies, elected officials, government agency representatives, organizations with interest in the project prior to the issuance of the DEIS was included in the DEIS (Appendices A—C). Correspondence from individuals, newspaper commentary, etc., was retained in the project record files but was not included in the DEIS. The only petition included in the DEIS was one signed by a group of Camden town officials and Preservation Society members.

Submittals of comments on the DEIS received from all sources during the period of public comment on the DEIS (September 13–November 1, 2002) are included in the FEIS Appendix A2, and all substantive comments are addressed in this chapter. The referenced petition supporting the north-of-rail alignment was resubmitted during the comment period; therefore, it is included in Appendix A2.

Some correspondence from regulatory agencies received during the public comment period was not directly related to the DEIS; therefore, it is located in FEIS Appendix A1, by agency and date. Correspondence received from regulatory agencies, elected officials, government agency representatives, and organizations received after the close of the DEIS comment period is contained in FEIS Appendix A3. Correspondence received from Consulting Parties after the close of the public comment period is included in Appendix B of the FEIS as part of the required documentation of mitigation coordination and regulatory compliance. Correspondence and additional documents related to the “Mears/300W Route” submitted after the public comment period comprise Appendix D. Other submittals from the public received after the close of the comment period have been retained in the project record files but not included in the environmental documentation.

F-5. Where bridges will carry public roads over the new mainline roadway, the bridges should accommodate pedestrians and bicycles.

Response: In Indiana’s 1995 *Statewide Long Range Multimodal Transportation Plan (Plan)*, INDOT’s policy toward bicycle and pedestrian transportation is stated as follows:

INDOT will support non-motorized modes of travel as a means to increase system efficiency of the existing surface transportation network, reduce congestion, improve air quality, conserve fuel and promote tourism benefits. INDOT will remove unnecessary barriers to pedestrian and bicycle travel. (Plan, 7-19).

INDOT has added provisions to some highway projects to accommodate bicycles and pedestrians. Refinements to the preliminary plans for SR 25 will be made in the later project development phases, and accommodation of pedestrians and bicycles could be considered, particularly in developed areas and where access to important amenities and services exist. Where established bicycle routes on public crossroads encounter the new mainline (see Figure 7, Chapter 3, page III-21), the new mainline either overpasses the crossroads or the crossroads intersect new SR 25 at grade.

CATEGORY G—CONCERNS ABOUT SPECIFIC PROPERTY

Several correspondents' remarks involved questions or expressions of concern about impacts to their properties, particularly their residences or farms.

Response: During the development of alternatives, the number of residential relocations was minimized to the maximum extent practicable in light of other environmental constraints, transportation benefits, and engineering factors provided by each alternative. Details regarding land acquisition for right-of-way will be developed during the final design stage of the project, and impacts resulting from acquisition—including residential relocation, business displacement, farmland severance, etc.—will be addressed during the right-of-way acquisition stage. Land use, agricultural, and relocation/displacement impacts are discussed in Chapter 4, Sections 4.1, 4.2, and 4.4, respectively.

CATEGORY H—REQUESTS FOR INFORMATION OR GENERAL COMMENTS

In several cases, the only comments were requests for information, project maps, etc., or statements about the website. Email responses and, where practicable, the materials requested were provided.

TABLE 8.2—Agency and Public Comments on the Draft Environmental Impact Statement

AGENCY COMMENTS					
Identification				Format: Type of Submittal	Comment/Response Categories: FEIS Chapter 8—ID Codes
Organization / Agency	Last Name	First Name	FEIS ID		
U.S. Environmental Protection Agency, Region 5: Environmental Planning and Evaluation Branch	Westlake	Kenneth A.	1AR	C	Agency issued Lack of Objection to DEIS: No response needed
U.S. Department of the Interior, Fish and Wildlife Service	Taylor Pruitt	Willie R. Scott E.	2 AR	C C	E-4 thru E 13 E-5, E-8, E-12
Tippecanoe County APC	Hawley	James	3 AR	C, H1	B-3, B-6
Indiana Department of Natural Resources: Division of Historic Preservation and Archaeology	Smith	Jon C.	4 AR	C	No response needed
U.S. Department of Commerce: Office of the Assistant Secretary for Oceans and Atmosphere	Burgess, III	James P.	5 AR	C	F-2
Indiana U: Indiana Geological Survey	Olejnik	Jennifer	6 AR	C	No response needed
PUBLIC COMMENTS					
Identification				Format: Type of Submittal	Comment/Response Categories: FEIS Chapter 8-ID Codes
Last Name	First Name	Organization / Agency	FEIS ID		
Abbott	Arnold & Mary H.		145	F	C-2
Albers	Mark	Tippecanoe County Highway Dept.	88	C, H-1	B-3, B-5
Allen	Robert & Shirley		99	C	C-1
Allread	John		209	H3, P2	D-1
Allread-Trueblood	Susan		22	C, P2	G, D-1, D-13
Alting	Ronnie	Indiana State Senator	153	C, H1	B-5
Anderson	Michael	The Andersons, Inc.	84	C	C-1, D-16
Ashby	Shawn		51	C	H
Ashby	Steve		38	C	A-1
Ashley	Don & Frances		129	F	C-2
Austin	Gary		159	F	C-2
Ayers	Kelly		33	C	A-1, D-1, D-8
Baker	Eldon		1	C	B-1
Balsan	Richard		161	F	C-2
Beale	Alberta		114	F	C-2
Beale	Charles		115	F	C-2
Beale	Jennifer		116	F	C-2
Beale	Joseph		172	F	C-2
Beckman	Alvin	Cass County EMA	213	H3	D-2, D-8
Beeler	Jana		34	C	G
Beesley	Myron & Lois		133	F	C-2
Benson	KD	Tippecanoe Co. Commissioner	100	C, H-1	B-3, 5
Berry	Sid & Jean		47	C	G
Bickley	James		23	C	H
Bissell	Harley		134	F	C-2
Black	Annette & Tim		101	C	C-1
Boone	Daniel		184	H2, P1	D-2
Bowlin	John		149	C	G
Brettnacher	Patricia		110	F	C-2
Briggs	Susan		102	C	C-1
Bronar	Dr.		186	H2	F-1
Brown	Jane		2	C, F, P1, H2	C-2, C-4, G, E-2
Brown	Paul & Lana		130	F	C-2
Brown	Richard		140	F	C-2
Brown	Robert		123	F	C-2
Brown	Tim	Indiana State Representative	174	H1	A-1
Brown	W. Michael		111	F	C-2
Brown	William	Carroll County Commissioner	29	C, H2	A-1, B-1, B-3, B-6, B-8, D-2
Bumbleburg	Joseph		85	C	A-1, B-3, C-1, D-1
Burke	Girzelle		55	C	G
Burkhardt	Karl	Logansport Chamber of Commerce	210	H3	A-1, D-1, D-8
Carbaugh	Bill	Committee for Fair Alignment	71	C, H2, H3	A-1, C-1
Chambers	Gary	Clinton Township Trustee	196	H3	D-2
Chandler	Lisle		57	C	A-1
Chapman	Ed	Delphi Police Dept.	36	C	A-1
Coblentz	Jodi	Cass County Engineer	203	H3	D-1, D-8
Corey	John	Vision 2020	89	C, H-1	B-3

TABLE 8.2—Agency and Public Comments on the Draft Environmental Impact Statement (Continued)

Identification				Format:	Comment/Response Categories:
Last Name	First Name	Organization / Agency	FEIS ID	Type of Submittal	FEIS Chapter 8-ID Codes
Corson, Ph.D.	Lynn	Delphi Preservation Society	183	H2, P1	C-2
Cotner	Mary	Logansport City Council	195	H3	A-1, D-1
Cramer	Arden		212	H3	A-1, D-8
Cree	Valeria		141	F	C-2
Crimmins	Sara	Cass County Council	197	H3	A-1, D-1
Daehler	Marcia	Wildcat Group, Sierra Club	70	C, P1	C-2
Davis	Mark		223	H3	C-16
Deel	Grace		20	C	C-2
Deiwert	Sam		152	C	C-2
Denton	Michael	Carroll County Highway Engineer	28	C, H2	A-1, B-1, B-6, C-6 thru C-9, C-17, D-1
Derryberry	Herbert		215	H3	D-9
Dirschell	Bert		49	C	A-2
Duff	Bob & Pat		68	C	(Unclear reference)
Duff	Wanda		61	C	C-13
Duff	William		59	C	C-13
Eckhart	Peggy		35	C	B-3
Edson	Steve	Logansport-Cass County APC	204	H3	A-1, D-1, D-8
Emerson	Barry	Attorney-at-Law	86	C	E-3
Ferguson	John & Phyllis		46	C	H
Ferrier	James		163	F	C-2
Fincher	Mike	Logansport City Council	199	H3	A-1, D-8
Fisher	Norbert	Lafayette City Council	3	C	A-1, B-3
Flory	Brent & Marilyn	Freedom Lawns	103	C	B-1
Flory	Richard		164	F	C-2
Forth	Kelly	Square D	207	H3	A-1
Foust	Larry		43	C	G
Garrison	Andrew		104	C	D-2
Geese	Chuck		189	H2	B-3, C-1, D-1
German	Douglas & Jennifer		142	F	C-2
Gibson	Mike	Greater Lafayette Chamber of	179	H1	B-3
Goudy	Charles		4	C	B-8, D-1, D-8
Graybill	Rollin		5	C	D-2
Griffin	Robert	Lafayette Police Dept. (Ret.)	6	C	B-7
Harford	Bill & Jean		135	F	C-2
Harris	S. Rex	Cass County Commissioners	93	C	A-1, D-1, D-8
Harter	Doris		131	F	C-2
Hartline	Jean	Mannick & Smith	202	H3	(Presented consultant's report)
Hensel	Patricia		221	H3	D-8
Hershman	Brandt	Indiana State Senator	173	H1, H2	A-1
Hesler	Thomas	Auto Express Car Wash	39	C	A-1
Hettinger	Dick	Mayor, Logansport	194	H3	A-1, D-1, D-8
Hill	Brian		53	C	H
Hoard	Lee	Mayor, Delphi	182	H2	C-1
Holcomb	Ron	Logansport Fire Dept.	220	H3	D-8
Hoose	Donald		124	F	C-2
Howell	Kevin		37	C	H
Huff	Betty		125	F, P1	C-2
Huff	Don		112	F, P1, H3	C-2
Huff	Melody		117	F	C-2
Huffman	Ron	Logansport Chamber of Commerce	214	H3	D-1
Janz	Martha		127	F	C-2
Johnson	Larry		126	F	C-2
Jordan	Susy		76	C	E-1
Joyce	Richard		171	F, P1	C-2
Joyce	Stephanie		118	F, P1	C-2
Justice	Elizabeth	Attorney-at-Law	62	C, H3	D-2, D-3, D-5, D-6, D14, F-3, G
Justice	Mark		165	C	G
Justice	Jonathan	Attorney-at-Law	62	C, H2	D-2, D-3, D-5, D-6, D14, F-3, G
Kennedy	Ronald		40	C	A-1, D-1
Kizer	Noble	Sycamore Audubon Society	91	C, P1	C-2
Klinker	Gerald		150	C	D-1

TABLE 8.2—Agency and Public Comments on the Draft Environmental Impact Statement (Continued)

Identification				Format:	Comment/Response Categories:
Last Name	First Name	Organization / Agency	FEIS ID	Type of Submittal	FEIS Chapter 8-ID Codes
Knight	Aldis		169	C	B-5
Knochel	John	Tippecanoe County Commissioner	92	C, H-1	A-1, B-3
Knott	Andrew	Hoosier Environmental Council	157	C	C-2
Kochert	Dennis		146	F	C-2
Kraud	Scott	Logansport Common Council	193	H3	A-1, D-1, D-8
Kremer	Kevin		166	C	C-14
Kruger	Roy & Laura		7	C	G, D-10
Kuker	Nolan	Logansport City Council	200	H3	A-1, D-1, D-8
Lacy	Terry		105	C	D-1
Land	John	Cole Hardwood	201	H3	A-1, D-1, D-8
Lane	Charles		222	H3	D-1
Leaman	Joe		106	C	G, B-9
Liebert	Ruth		119	F, P1	C-2
Loehman	Edna	Wildcat Group, Sierra Club	177	H1, P1	C-2, E-2
MacKay	John, Eileen, Susan		128	F	C-2
Mansfield	Douglas	Greater Lafayette Progress Inc.	95	C	B-3
Margerum	Sonya	Mayor, West Lafayette	175	H1	B-3, C-1, D-1
Martin	Chris	Wabash County Economic Dev. Corp.	52	C	A-1, D-8
Marvin	Barb		188	H2	A-1
Matheson	Don		8	C	B-3
McCain	Dan	Carroll Co. Wabash & Erie Canal, Inc.	65	C	C-3
McClain	Rich	Indiana State Representative	191	H3	A-1
McDaniel	Bob		167	C	D-7
McKenler	John		136	F	C-2
McNally	Donna		132	F	C-2
McNary	Patrick		211	H3	A-1, D-8
Mears	Lois		72	C, P1	C-2
Mears	Sherry		137	F, P1	C-2
Meeks	Steven		73	C	C-16
Miller	Kay		9	C	B-4
Miller	Neal	Architect	10	C	D-8
Million	June		124	F	C-2
Moon, II	John T.	Norfolk Southern Corp.	66	C	D-4
Morgan	Steve		156	C	C-13
Morris	Tom Jr.	T. M. Morris Mfg.	217	H3	A-1, D-8
Mugford	George & Nancy		24	C	G
Mugg	Philip	Tippecanoe School Corporation	97	C	B-3, 6
Mullin	Keith		82	C, P2	B-8, D-1, F-4
Mullin	Lewis	Attorney-at-Law	60	C	C-1, D-1
Murray	Ken & Joyce		151	C	C-16
Myers	Vickie W.		75	C	C-2
Needham	Joe	The Andersons, Inc.	98	C	A-1, D-16
Nevus	Mary Anne		154	C	C-2
Newell	Donna		21	C, P2	C-16
Newell	Kenneth		83	C	A-1, G
Newell	Richard		21	C	C-16
Norris	Ben		176	H1	B-10
O'Farrell	Shanon		147	F	C-2
Ortman	Raymond	CEO Kokomo Grain, President WSRV	155	C	A-1
Parish	Kenneth & Marce		50	C	B-2, G
Patchen	Marty & Nancy		120	F	C-2
Penn	Carl & Carolyn		11	C, F	C-2, D-2
Peterson	David		162	F	C-2
Pleasants	Stacia		121	F, P1	C-2
Prendergast	Sandra		27	C	C-2
Ratcliff	Dean & Joanne		41	C	C-1, D-1
Read	Rick		122	F	C-2
Reed	Beth		143	F	C-2
Rhine	Donald	Carroll County Commissioner	29	C, H2	A-1, B-1, B-6, B-8, D1
Rider	Clara	Carroll County Commissioner	29	C, H2	A-1, B-1, B-6, B-8
Rinehart	Brett		158	C	D-11, D-17
Rinehart	Richard & Polly		26	C	D-2
Robbins	Donald & Darilee		25	C	A-1, C-1

TABLE 8.2—Agency and Public Comments on the Draft Environmental Impact Statement (Continued)

Identification		Organization / Agency	FEIS ID	Format:	Comment/Response Categories:
Last Name	First Name			Type of Submittal	FEIS Chapter 8-ID Codes
Roberts	Jeffrey		56	C	G
Rusk	Dick	Cass County Commissioner	93	C	A-1, D-1, D-8
Samuels	Joan Mohr		42	C, F, H1, H2, P1	C-2, C-4, E-2
Schieber	Allen	Logansport Savings Bank	74	C	D-1, D-8
Schimmoeiler	Betty		12	C	A-1, C-16, E-2
Schnepp	Karen		63	C	A-3, G
Schock	Bill	Delphi Volunteer Fire Dept. Tri-TWP	44	C	C-9
Scholer	Sue	Indiana State Representative	178	H1	B-3
Scott	Jason		224	H3, P2	D-1
Scott	Joan		67		D-1
Scott	Joe David		31	C, F	C-2, C-5, C-11 thru C-13, C-18, G
Scott Ward	Carol		31	C, F	C-2, C-5, C-11 thru C-13, C-18, G
Seese	Carl		13	C, P1	C-10
Shallenberger	Ann		113	F	C-2
Shelhart	Don	Cass County Council	192	H3	A-1, D-1, D-8
Shively	Dave		148	C	H
Shoaf-Ransom	Susan		106	C	G, B-9
Shook	James	Shook Commercial Realty	32	C	A-4
Slusser	Bernard		107	C, P2	D-1
Snoeberger	Everett		187	H2, P2	D-1
Solberg	Elizabeth		94	C, H-1	B-3
Sozen	Mete		78	C	C-2
Stan	Carl		219	H3	A-1
Steinberger	Jim	Steinberger Construction Co.	96	C	A-1
Steinberger	Tom	Steinberger Construction Co.	45	C	A-1, D-8
Stephenson	George		14	C	D-9
Stevenson	Constance		15	C	B-3
Stevenson	David		16	C	B-3
Stirm	Brian & Judy	Delphi Municipal Airport	17	C	B-1
Strahlem	Dave	Cass County Highway Superintendent	205	H3	A-1, D-1, D-8
Sui	Yinghui		54	C	H
Sullivan	Joe	Wildcat Group, Sierra Club	87	C, P1, H2	C-2
Sullivan	Mike		185	H2	A-1
Sullivan	Ralph		160	F	C-2
Swayze	Ronald & Donna		168	C, P2	C-1
Thomas	Joe & Jane		144	F	C-2
Thompson	Kelly	Cass County Commissioner	93	C, H-3	A-1, D-1, D-8
Ulrich	Susan	NICHES Land Trust	108	C, P1	C-2
UNKNOWN	Gary		170	C	C-1
UNKNOWN	John		180	H1	B-3
UNKNOWN	UNKNOWN	Greater Lafayette Chamber, Farm Bureau	181	H1	B-3
UNKNOWN	UNKNOWN	UNKNOWN	81	C	A-1, D-15
UNKNOWN	UNKNOWN	Williams-Lynn-James Inc.	64	C	A-5
UNKNOWN	UNKNOWN		216	H3	D-8
Vass	Linda		18	C, H2	A-3
Viney	Edward		109	C	C-15
Wagoner	Peter		138	F	C-2
Walton	Kenneth &		30	C	B-1, C-1, G
Walton	Robert & Doris		77	C	B-1
Ward	Geoff	Square D	208	H3	A-1
Ward	Timothy		19	C	C-5
Waser	Mary Sue		69	C, P1	C-2
Waser	Peter		79	C	C-2
Watson	Jeffrey	Watson Construction	58	C	H
Weatherwax	Thomas	Indiana State Senator	190	H3	A-1, D-8
Weaver	Jim	LCCEDF	206	H3	A-1, D-1, D-8
Whiteman	Louise		139	F	C-2
Wiles	Richard	City Council (Peru)	198	H3	A-1
Winberg	Chris & Nancy,		80	C, P2	D-1, G
Wolfe	Dale		48	C	G
Wood	Richard	Tippecanoe School Corporation	97	C	B-3, 6
Worthington	Gary		218	H3	A-1
--	--	[Numbering error]	90	--	--

TABLE 8.2—Agency and Public Comments on the Draft Environmental Impact Statement

Table Key

UNKNOWN indicates handwriting illegible or information not provided.

Column Heading Notes:

FEIS ID Column—The number locates the commenter's personal correspondence/form letters and public hearing statements in Appendix A2. (Persons who only signed a petition are not identified by ID number. In Appendix A2, the petitions are placed after the correspondence and public hearing transcripts.)

Format Column—

H# = *Public Hearing*: Persons who spoke at the public hearing(s): H1 = October 1 in Lafayette; H2 = October 2 in Delphi; H3 = October 3 in Logansport.

C = *Personal Correspondence*: Comment sheets, letters, emails.

F = *Form Letter*: Several versions of form letters were submitted. All form letters support the call for an SEIS to study the "Mears/300W Route."

P# = *Petition*: Petition P1 signatories support an SEIS to study the "Mears/300W Route." A total of 134 persons signed this petition, but only those who also submitted some other form of comment were assigned an ID number and listed in Table 8.2. Table 8.3 lists all persons who signed petition P1. Petition P2 signatories support the alignment north of the railroad between Delphi and Logansport (a component of **Preferred Alternative 2**). A total of 240 persons signed this petition, but only those who also submitted some other form of comment are listed in Table 8.2. Table 8.4 lists all persons who signed petition P2.

TABLE 8.3—Petition P-1: Requesting Supplemental EIS to Consider the “Mears/300W Route”

Last Name	First Name	Location	Last Name	First Name	Location	Last Name	First Name	Location
Allbaugh	Robin	Delphi	Huse	Tom	Delphi	Read	Deborah	Monticello
Allbaugh	Rex	Delphi	Jargstof	Mark	Delphi	Rider	Byron	Delphi
Anderson	Jill	Lafayette	Jones	Robert	Flora	Riley	Betty	W. Lafayette
Appleton	William	Delphi	Joyce* (171)	Richard	Delphi	Robinetto	Patty	Delphi
Ayres	Janet	Delphi	Joyce* (118)	Stephanie	Delphi	Routh	Darrell	Camden
Bawhey	Cheryl	Lafayette	Kizer* (091)	Nobel	Lafayette	Rule	Jolene	UNKNOWN
Beale	Betty	Delphi	Klopfenstein	Lester	Rockfield	Samuels* (042)	Joan Mohr	W. Lafayette
Beale	Michael	Delphi	Knochlin	Ruth	W. Lafayette	Saul	Matt	Delphi
Bergner	Barbara	Delphi	Krivcheni	Mark	W. Lafayette	Scott-Morningly	Catherine	Otterbein
Boone* (184)	Daniel	Delphi	Krohne	Dave	Westport	Seese* (013)	Carl	Delphi
Boone	Linda	Delphi	Layer	Edwin	Lafayette	Seese	Beverly	Delphi
Boone	Daniel R.	Delphi	Lemphe	Martha	W. Lafayette	Seese	Martin	Delphi
Bresnahan	Bruce	Lafayette	Lemphe	Mary	W. Lafayette	Shank	Kathy	W. Lafayette
Brewster	James	W. Lafayette	Liebert* (119)	Ruth	Delphi	Sheagley	C. L.	Brookston
Brewster	Christine	W. Lafayette	Liebert	Jim	Delphi	Smith	Mark	Brookston
Brown* (002)	Jane	Delphi	Liebert	Sara	Delphi	Smith	Gilbert	W. Lafayette
Bush	David	Delphi	Liebert	Teresa	Delphi	Stevenson	Selita	Lafayette
Calender	Jessica	Delphi	Liebert	Jesse	Delphi	Stuart	Julie Ann	W. Lafayette
Carson	Bette Jane	W. Lafayette	Liebert	David	Delphi	Sullivan* (087)	Joe	Lafayette
Corson* (183)	Lynn	Delphi	Logan	Jeannie	Delphi	Sullivan	Jo	Lafayette
Cutler	Mary	W. Lafayette	Loehman* (177)	Edna	Lafayette	Thomas	Robert	Greencastle
Daehler* (070)	Marcia	W. Lafayette	Marzoli	Jane	W. Lafayette	Thomas	Doris	Greencastle
Dahl	Beth	W. Lafayette	Marzoli	Stephan	W. Lafayette	Thompson	Ian	Lafayette
Dahl	Bernie	W. Lafayette	McCain	Joan	Bringhurst	Tunis	Brian	Lafayette
Dana	Michael	W. Lafayette	McCain	Richard	Bringhurst	Ulrich* (108)	Susan	Otterbein
Deiwert	Sam	Delphi	McNally	Kevin	Delphi	Walker	Barbara	W. Lafayette
Delaney	Michael	Francesville	Mears* (137)	Sherry	Delphi	Waser* (069)	Mary Sue	Lafayette
Delaney	Charles	Delphi	Mears	George	Delphi	Weis	Doris	Buck Creek
Delk	Frank	Flora	Mears	Mary	Delphi	Weis	Chuck	Buck Creek
Delk	Patricia	Flora	Mears	John	Delphi	Whirman	Ed	Rockfield
Dukes	Mike	Delphi	Mears* (072)	Lois	Delphi	Williams	Chris	Delphi
Flora	Ellen	Flora	Mears	Keith	Delphi	Wolf	Anthony	Delphi
Flora	John	Flora	Metzinger	Donna	Delphi	Wolf	Patricia	Delphi
Gerard	Charles	Delphi	Metzinger	Tammy	Delphi	Yerkes	Dawn	Rockfield
Germond	Joanne	Delphi	Metzinger	Bob	Delphi	UNKNOWN	John	Brookston
Germond	Kirk	Delphi	Middleton	Suzanne	Camden	UNKNOWN	Susie	Delphi
Griffey	Michael	Delphi	Moore	Dave	Lafayette	UNKNOWN	Walter	Rockfield
Griffey	James	Camden	Morris	Wallace	Otterbein	UNKNOWN	Jack	Delphi
Hale	Scott	Delphi	Mumford	Russell	W. Lafayette			
Hall	Pam	W. Lafayette	Mumford	Vivian	Lafayette			
Harris	Ted	Crawfordsville	Noonkester	Darrel	Delphi			
Heathcote	Shirley	W. Lafayette	Osborne	Savannah	Delphi			
Heathcote	Ralph	W. Lafayette	Packett	Diane	W. Lafayette			
Hickman	Donald	Delphi	Parker	George	W. Lafayette			
Hoges	James	Camden	Pearson	Sue	Delphi			
Huff* (125)	Betty	Delphi	Peterson	James	Lafayette			
Huff* (112)	Donald	Delphi	Phelps	Joe	W. Lafayette			
Humphrey	Bonnie	W. Lafayette	Pleasants* (121)	Stacia	Lafayette	Total		134

* Denotes persons who also spoke at the public hearing and/or submitted personal correspondence and/or form letters during the public comment period. They are also listed on Table 8.2, “Comments on the DEIS,” by the ID number indicated in parentheses.

UNKNOWN indicates handwriting illegible or information not provided.

TABLE 8.4—Petition P-2: Supporting North-of-Rail (P-EA) Alignment From Delphi to Logansport

Last Name	First Name	Location	Last Name	First Name	Location	Last Name	First Name	Location	Last Name	First Name	Location
Adams	Bernice	Delphi	Hathaway	Kelly	Logansport	McGuire	George	Camden	Shriver	Delbert	Walton
Adams	Philip	Delphi	Heckard	Mike	Logansport	McGuire	Linda	Camden	Shriver	Anita	Walton
Allread* (022)	Susan	Camden	Hess	Robert	Camden	Mills	Pam	Delphi	Slusser* (107)	Bernard	Logansport
Allread* (209)	John	Camden	Hess	Ellen	Camden	Minich	Marilyn	Logansport	Slusser	Jane	Logansport
Appleton	Joe	Logansport	Hess	Harold	Camden	Minich	David	Logansport	Slusser	Clara	Logansport
Appleton	Gerald	Logansport	Hetsko	Nancy	Delphi	Minnick	Dan	Logansport	Slusser	Toni	Logansport
Appleton	Marcia	Logansport	Hile	Dana	Logansport	Morris	Tim	Logansport	Slusser	Rex	Logansport
Appleton	Robert	Camden	Hile	Scott	Logansport	Moss	Edna	Logansport	Slusser	Larry	Logansport
Baber	Bill	Logansport	Hinkler	Barbara	Logansport	Mullin* (082)	Keith	Delphi	Snoeberger	Richard	Camden
Baker	Carl	Flora	Hinkler	Kevin	Logansport	Mullin	Bill	Delphi	Snoeberger	Wiadean	Camden
Baker	John	Logansport	Homburg	Lucille	Logansport	Mullin	Clara	Delphi	Snoeberger* (187)	Everett	Camden
Beauchaf	Jack	Logansport	Homburg	Ronald	Logansport	Mullin	Hazel	Delphi	Snoeberger	Beth	Camden
Beauchaf	Carolyn	Logansport	Hurley	Robert	Logansport	Mullin	Lewis	Delphi	Spence	Renee	Camden
Beeman	Blanche	Logansport	Hylton	Donna	Camden	Mullin	Mabel	Delphi	Start	Scott	Boswell
Beeman	Jeff	Logansport	Hylton	Bill	Camden	Mullin	Lisa	Delphi	Stephens	Paul	Logansport
Camp	Mike	Logansport	Johnson	Eric	Camden	Mylet	Tom	Camden	Stephens	Patricia	Logansport
Chambers	Brent	Logansport	Johnson	Larry	Logansport	Newell* (021)	Donna	Delphi	Stephenson	Chuck	Logansport
Clark	Deb	Logansport	Johnson	Laura	Logansport	O'Donnell	Patrick J.	Camden	Stevens	Suzanne	Logansport
Clark	Mike	Logansport	Johnson	Mark	UNKNOWN	O'Donnell	Patrick	Camden	Stevens	Michael	Logansport
Clark	Anna	Camden	Julian	Erin	Delphi	O'Donnell	Mary	Camden	Swayze* (168)	Ronald	Camden
Clark	Donald	Logansport	Julian	Sue	Logansport	Patterson	Gene	Camden	Swayze* (168)	Donna	Camden
Clark	Virginia	Logansport	Julian	Keith	Logansport	Penn	Louis	Logansport	Trueblood	William	Delphi
Conn	John	Logansport	Kauffman	Ralph	Buffalo	Petkovich	John	Logansport	Turner	Cathy	Camden
Conn	Jana	Logansport	Kauffman	Janet	Buffalo	Porter	Michael	Logansport	Turner	Michael	Camden
Conn	Anita	Logansport	Kechkerlyo	Tim	Delphi	Porter	Ralph	Camden	Viney	Gilbert	Camden
Conn	Philip	Logansport	Keller	Walter	UNKNOWN	Ramen	Dennis	Walton	Viney	Betty	Camden
Coppernal	Wesley	Burrows	Kepner	Andrea	Logansport	Redding	Elizabeth	Delphi	Walbolt	John	Logansport
Coppernal	Vera	Burrows	Kieler	Suzie	Burrows	Reid	Fred	Camden	Wall	Mark	Logansport
Cripe	Connie	Camden	Kieler	Marvin	Burrows	Reid	Belinda	Camden	Watson	Juanita	Logansport
Cripe	Dean	Camden	Kinsey	Gary	Logansport	Ringer	Lisa	Camden	Watson	Thomas	Logansport
Cripe	Ralph	Logansport	Kleckner	Susan	Camden	Ringer	David	Delphi	Wherley	Brandon	Delphi
Cripe	Mary	Logansport	Kleckner	John	Camden	Ringer	George	Delphi	Williamson	NJ	Camden
Dahlenburg	Douglas	Logansport	Knutson	Sandra	Logansport	Ringer	Nancy	Delphi	Winberg* (080)	Christopher	Delphi
Dahlenburg	June	Logansport	Knutson	George	Logansport	Robeson	Dotty	Camden	Winberg* (080)	Nancy	Delphi
Deitrich	Carol	Logansport	Krpan	Tammy	Logansport	Robeson	Carl	Camden	Winberg* (080)	Patrick Scott	Delphi
Deitrich	Kenneth	Logansport	Krpan	Bob	Logansport	Robeson	Eldon	Logansport	Winberg* (080)	Roberta	Delphi
Deitrich	Duane	Logansport	Lane	Diane	Logansport	Robeson	Wilma	Logansport	Woolve	Clyde	Walter
Deitrich	Ronald	Logansport	Lane	Tom	Logansport	Robeson	LeRoy	Logansport	Wyant	Marna	Logansport
Dibble	Tami	Logansport	Lane	Kathryn	Logansport	Robeson	Charline	Logansport	Wyant	James	Logansport
Dietrich	Theresa	Camden	Lane	Cecil	Logansport	Robeson	Kevin	Logansport	Yeakley	Kenneth	Logansport
Dillon	Ben	Logansport	Leazenby	Arlene	Logansport	Roberson	Timothy	Delphi	UNKNOWN	UNKNOWN	UNKNOWN
Dillon	James	Logansport	Lesh	Ward	Logansport	Rose	UNKNOWN	Galveston	UNKNOWN	UNKNOWN	Peru
Dillman	Dale	Logansport	Lyman	Charles	Logansport	Rumell	Darlene	Camden	UNKNOWN	UNKNOWN	UNKNOWN
Dillman	Mary	Logansport	Manner	Alvin	Walton	Rumell	Brian	Camden	UNKNOWN	Jeff	UNKNOWN
Dillman	Roger	Logansport	Manner	Jill	Walton	Sailors	Marjorie	Logansport	UNKNOWN	UNKNOWN	Royal Center
Dillman	Carol	Logansport	Marcellino	Virginia	Camden	Scott* (067)	Joan	Burrows	UNKNOWN	Paul	Logansport
Downham	Douglas	Camden	Marcellino	George	Camden	Scott	James	Burrows	UNKNOWN	Martha	Logansport
Downham	Donna	Camden	Martin	John	Walton	Scott	Patsy	Delphi	UNKNOWN	UNKNOWN	UNKNOWN
Forgey	Helen	Camden	Martin	Fred	Logansport	Scott	Monica	Delphi	UNKNOWN	Marie	UNKNOWN
Fouts	Bill	Galveston	Maynard	Bill	Delphi	Scott	Richard	Camden	UNKNOWN	UNKNOWN	Logansport
Fry	Grace	Camden	Maynard	Connie	Delphi	Scott	Sara	Camden	UNKNOWN	Gary	Logansport
Fry	Harry	Camden	Maynard	Jenny	Delphi	Scott	Shaun	Camden	UNKNOWN	Helen L.	Camden
Gotshall	Ken	Logansport	Maynard	Jess	Delphi	Scott	Steven	Camden	UNKNOWN	Richard	Camden
Gotshall	Janet	Logansport	Mauilins	Paul	Camden	Scott	Winona	Camden	UNKNOWN	UNKNOWN	Logansport
Graves	John	Delphi	McCain	Barbara	Camden	Scott* (224)	Jason	Delphi			
Graves	Carolyn	Logansport	McCarty	Anna	Delphi	Shafer	Ross	Logansport			
Graves	Lysle	Logansport	McCarty	Diane	Delphi	Shafer	Ren	Logansport			
Gremelspach	Matt	Walton	McCarty	Charles	Delphi	Shafer	Linda	Logansport			
Gremelspach	Susan	Walton	McCloskey	Patricia	Logansport	Shafer	Tom	Logansport			
Guckien	John	Camden	McCloskey	Kevin	Logansport	Shaffer	Bonnie	Burrows			
Guckien	Marilyn	Camden	McFatrige	Rosanna	Logansport	Shaffer	Jeffrey	Burrows			
Hardy	William	Camden	McFatrige	Charles	Logansport	Sherman	Pauline	Logansport	Total		240

* Denotes persons who also spoke at the public hearing and/or submitted personal correspondence and/or form letters during the public comment period. They are also listed on Table 8.2, "Comments on the DEIS," by the ID number indicated in parentheses.

UNKNOWN indicates handwriting illegible or information not provided.

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