

Engineer's Report
Engineering Assessment Section
Division of Environment, Planning, and Engineering
Indiana Department of Transportation

ROAD REPLACEMENT



**US 52 (Sagamore Parkway)
SR 38 to Beech Lane
(1.20 mi South of SR 26 to 1.20 mi North of SR 26)
City of Lafayette, Tippecanoe County**

DES. NO. 9802510

Prepared By:



Paul I. Cripe, Inc.
7172 Graham Road
Indianapolis, IN 46250

November 16, 2004

MEMORANDUM

To: Brad Steckler, Manager
Engineering Assessment Section
Division of Environment, Planning, & Engineering
Indiana Department of Transportation

November 16, 2004

Thru: Phillip S. Banton, P.E.
Paul I. Cripe, Inc.

From: Matthew J. Crane, P.E.
Paul I. Cripe, Inc.

Subject: **Engineer's Report**
Des. No. 9802510
Road Replacement
US 52 from SR 38 to Beech Lane
City of Lafayette, Tippecanoe County

1. Purpose of Report

The purpose of this Engineer's Report is to document the engineering assessment phase, including an outline of the proposal for improvements along US 52. The report provides all the information and coordination associated with the development of this project's recommended improvements. This report will serve as a guide for preparing ongoing environmental studies and succeeding survey and design. (This document is pre-decisional and deliberative pending completion of environmental studies.)

2. Project Location

The project is located along US 52 (Sagamore Parkway) from SR 38 [Main Street] (RP 49+57) to Beech Lane (RP 47+19), in INDOT's Crawfordsville District. The project termini are 1.20 miles south and north of SR 26 (South Street). The project is entirely within the limits of the City of Lafayette, Tippecanoe County. The project lies totally within the Tippecanoe County Area Plan Commission (TCAPC) Metropolitan Planning Organization (MPO) area. Refer to Appendices A-1.1 and A-2.1 for maps further detailing the location of the project.

3. Project Need and Purpose

The need for this project is principally based on the undesirable base pavement condition through this section of US 52 that is, in part, due to the poor roadway drainage and the overall age of the pavement. Other deficiencies include the condition of storm sewerage, traffic service levels, and crash frequency. The essential purpose of the project is to address the pavement condition and enhance and update to contemporary standards the overall design of the roadway.

4. Existing Conditions

Existing roadway plans dated 1968 are available for this section of US 52. The aerial and ground level photographs in Appendices A-3 and A-4 show the existing conditions through the corridor.

This section of US 52 is classified as an “*Urban Principal Arterial*.” US 52 is not on the National Highway System or the National Truck Network but is part of Indiana’s 3R roadway network.

This section of US 52 displays urban characteristics, with the existing adjacent land use along US 52 consisting mainly of commercial and industrial properties.

US 52, through the study limits, is a multi-lane divided highway. The roadway generally consists of two 13 ft travel lanes with curb and gutter on both the inside and outside of the travel lanes in each direction divided by a variable width median. Several left and right turn lanes exist along the corridor. The raised inside curbs and/or depressed grass median is typically 30 ft wide. South of Kossuth Street, the median is raised with curb adjacent to the inside travel lane. Between Kossuth Street and Union Street, the median is depressed with curb adjacent to the inside travel lane. North of Union Street, the median is flush with no curb adjacent to the inside travel lane. Guardrail, where present, is substandard tubular aluminum guardrail with buried end treatments.

The existing right-of-way along US 52 ranges from approximately 100 ft to 130 ft in total width through the limits of the project.

US 52 is on a tangent horizontal alignment throughout the study limits, oriented north-south. The vertical alignment of US 52 is relatively flat through most of the corridor. North of Union Street, the vertical alignment begins gradually sloping downward as the road continues north toward the project terminus (Beech Lane) and eventually to the Wabash River.

The existing concrete pavement was originally built in 1970. The section of roadway between SR 38 and McCarthy Lane was resurfaced with asphalt in 1989. The pavement is in poor condition throughout the corridor. The concrete pavement shows signs of joint spalling, and “D” cracking. INDOT’s *Pavement Surface Report* [Data year 2003] indicates the pavement quality index (PQI) is 53 and the international roughness index (IRI) is 213. A PQI less than 70 is considered poor. Likewise, an IRI above 200 is considered poor. Overall, the curbs, gutters, inlets, and sidewalk (where they exist) are in fair to poor condition.

An industrial spur for the Norfolk Southern rail line crosses US 52 approximately 920 ft north of SR 26. The crossing itself is characterized by gates, mast-mounted flashing lights, bells, walkway flashing lights, and preemptive simultaneous traffic lights. Train volume is three trains per day, traveling 1 mph to 10 mph through the crossing.

US 52 intersects eight public roads and one major commercial entrance through the project limits:

SR 38 / Main Street
McCarthy Lane
National Street
Kossuth Street

SR 26 / South Street
Union Street
Greenbush Street
Beech Lane

With the exception of Beech Lane, all of the intersections within the project limits are signalized. All turn lanes at the signalized intersections meet storage requirements for current traffic counts; however, deceleration lengths at these turn lanes do not exist. The southbound right turn lane to Kossuth Street does not meet current storage or deceleration lengths.

- SR 38 / Main Street: SR 38, a *State Urban Principal Arterial*, has a 5-lane section (2 through lanes each direction and a continuous median/left turn lane), which approaches US 52 from the east. The west leg of the intersection is Main Street. Main Street is a 4-lane roadway at US 52 but transitions to a 2-lane section approximately 0.4 mile west of US 52. It is classified as a *Local Urban Minor Arterial*.
- McCarthy Lane is classified as a *Local Urban Collector* and is a 4-lane roadway.
- National Street is classified as a *Local Urban Road* and effectively operates as a commercial drive for Aldi's, Bob Rohrman, and Wabash National. Most of the traffic created by Wabash National is truck traffic.
- Kossuth Street is a 2-lane roadway classified as a *Local Urban Minor Arterial*. The east leg of Kossuth Street extends only 0.3 mile east of US 52.
- SR 26 (South Street) is a *State Urban Principal Arterial*, which is a 4-lane divided roadway east of US 52 and a 2-lane roadway west of US 52.
- The Target Plaza entrance is a commercial entrance serving multiple retail businesses, (Target relocated in 1999, reducing the volume of traffic using this entrance).
- Union Street is a 4-lane roadway classified as a *Local Urban Minor Arterial*.
- Greenbush Street is a 2-lane roadway classified as a *Local Urban Minor Arterial*.
- Beech Lane is a 2-lane roadway classified as a *Local Urban Road*, which mainly serves a residential area.

The following table describes the lane configurations at each intersection:

Intersection with US 52	North Approach			South Approach			East Approach			West Approach		
	RTL	LTL	Thru	RTL	LTL	Thru	RTL	LTL	Thru	RTL	LTL	Thru
SR 38	1	1	2	1	1	2	NA	1	2	NA	1	2
SR 26	1	1	2	1	1	2	NA	1	2	1	1	1
McCarthy Ln.	1	1	2	1	1	2	NA	1	1	NA	1	1
Kossuth St.	NA	1	2	1	1	2	NA	1	1	NA	1	1
Union St.	1	1	2	1	1	2	NA	1	2	1	1	1
National St.	NA	1	2	NA	1	2	NA			NA	NA	1
Greenbush St.	1	1	2	1	1	2	NA	1	1	NA	1	1
Beech Ln.	1	NA	2	NA	1	2	NA			NA	NA	1

RTL: right turn lane LTL: left turn lane

All existing traffic signals are interconnected and were installed in 1991.

Drainage through the corridor is primarily closed, utilizing an underground storm sewer system draining toward Elliott Ditch to the south and Wildcat Creek and the Wabash River to the north. This system is currently ineffective at draining the roadway due to a general lack of hydraulically adequate trunk lines and insufficiently spaced inlets. According to the District, ponding occurs at numerous locations throughout the project, especially between Kossuth Street and SR 26.

Miscellaneous small guide, regulatory, warning, and street name signs are present along US 52 throughout the project. Conventional street lighting, which is owned by the local electric company and leased by the City of Lafayette, is also present in various locations, primarily at intersections along the project.

Aerial electric and telephone utilities are located throughout the project along both sides of US 52. Water and sanitary sewer, gas, and cable are also present within the project limits.

The posted speed limit throughout the project is 40 mph.

5. Traffic Data and Analysis

Traffic volumes were compiled by INDOT for this section of US 52. A summary of traffic volumes along US 52 and major cross streets is as follows:

Roadway			AADT		
			2002	2007	2027
US 52					
at SR 38 / Main St.			31,640	33,220	39,550
at McCarthy Lane			30,260	31,770	37,830
at Kossuth Street			33,130	34,790	41,420
at SR 26 / South St.			28,750	30,190	35,940
at Union Street			32,890	34,540	41,120
at Greenbush St.			30,890	32,430	38,610
at Beech Drive			29,160	31,340	37,320
% DHV:	8%				
Commercial Vehicles:	6%	AADT			
	6%	DHV			
SR 38 / Main St.					
at US 52			19,450	20,420	24,320
% DHV:	9%				
Commercial Vehicles:	3%	AADT			
	4%	DHV			

Table Continued on Next Page

			AADT		
<u>Roadway</u>			2002	2007	2027
McCarthy Lane					
at US 52			12,020	12,620	15,030
% DHV:	7%				
Commercial Vehicles:	6%	AADT			
	6%	DHV			
Kossuth Street					
at US 52			10,910	11,460	13,640
% DHV:	8%				
Commercial Vehicles:	4%	AADT			
	5%	DHV			
SR 26 / South Street					
at US 52			28,870	30,310	36,090
% DHV:	8%				
Commercial Vehicles:	4%	AADT			
	5%	DHV			
Union Street					
at US 52			16,380	17,200	20,480
% DHV:	8%				
Commercial Vehicles:	4%	AADT			
	4%	DHV			
Greenbush Street					
at US 52			14,070	15,480	17,590
% DHV:	7%				
Commercial Vehicles:	3%	AADT			
	4%	DHV			
Beech Lane					
at US 52			1,490	1,570	1,870
% DHV:	8%				
Commercial Vehicles:	3%	AADT			
	4%	DHV			

Refer to Appendix B-1.1-1.14 for additional details regarding traffic data.

Under existing conditions, US 52 is operating at a level-of-service (LOS) C, (based on intersection analysis of this data using 2000 HCM methodology), based on an average of intersection LOS's through the corridor. In 2027, traffic volumes indicate that US 52 will operate at an acceptable level-of-service (LOS) D with existing geometry, based on an average of intersection LOS's through the corridor.

A summary of intersection levels-of-service (LOS) along US 52 is as follows:

	2002	2027	2027
	(w/Exist. Geometry)	(w/Exist. Geometry)	(w/Prop. Geometry)
SR 38	C	E	D
McCarthy Lane	B	C	
Kossuth Street	A	B	
SR 26	D	F	D
Union Street	B	B	
Greenbush Street	B	C	

Based on the existing geometrics (number of through and auxiliary turn lanes on intersection approaches) each signalized intersection will operate at an acceptable (LOS D or higher) in 2027, with the exception of US 52/SR 38 and US 52/SR 26. However, individual movements within an intersection, particularly left-turn movements, will have an unacceptable LOS in many cases.

The Indiana Department of Transportation and the City of Lafayette developed a SR 26/SR 38 Corridor Study in March 2002. It is the desire of these two entities to implement improved intersection configurations at SR 26 and SR 38 based on the Corridor Study report. However, due to the high volume at these intersections, in 2027 with the proposed intersection configurations, (using 2000 HCM methodology) the intersection will operate at a minimal level-of-service (LOS) D. The designer is encouraged to coordinate early with the INDOT Signal Unit during the design phase to optimize the signal cycle at all signalized intersections.

6. Crash Data and Analysis

A review of available crash (accident) data for 1997 through 1999 indicates 716 crashes (accidents) within the project limits during this time period. Of these accidents, 138 (19%) involved personal injuries, and the rest were limited to property damage only. No fatalities were recorded.

Over half (65%) of the crashes were rear end incidents. Approximately 22% of the incidents involved some type of right angle collision. According to Figure 55-8E of the INDOT Design Manual, the high percentage of rear end incidents suggests potential contributing factors as the roadway is operating as congested or a lack of sufficient left/right turn refuge for vehicles. Congested traffic operation and lack of gaps in the mainline traffic stream may also contribute to the level of right angle type accidents.

7. Project Recommendations

The project shall be designed in accordance to the 4R [reconstruction] design criteria as outlined in Table 53-6 of Chapter 53 [New Construction/Reconstruction] of the Indiana Design Manual. The essential design element criteria are as follows:

Design Classification: 4R, Multi-Lane Urban Arterial (Intermediate)
 Design Speed: 40 mph

The project along US 52 shall begin 1.20 miles south of SR 26 at the north side of the US 52 and SR 38/Main Street intersection and end 1.20 miles north of SR 26 at Beech Lane, consisting of a total project length of approximately 2.40 miles.

The US 52 roadway and roadside cross section elements (pavement, curbs, storm sewer, etc.) shall be replaced throughout the project limits. (Expansion of US 52 in the form of a 3rd mainline through lane in each direction is beyond the scope of this project), thus, a typical cross-section will consist of two 12 ft travel lanes, two in each direction, divided by a continuous median/left-turn lane with inside and outside gutter and curb.

Adjacent to the outside curb shall typically be a 5 ft grass “utility strip” and a 5 ft sidewalk throughout most of the project limits. (The sidewalk along the west side of the roadway shall not continue north of Greenbush Street. Along the east side of the roadway in front of the Essex building, north of Union Street, sidewalk does not appear feasible due to the location of the building; however, the designer shall reassess the matter and provide the sidewalk through this area if found feasible and reasonable. Although less desirable than providing a grass buffer between the back of curb and inside of sidewalk, a 6 ft sidewalk directly behind the curb at select locations where the right-of-way is constrained shall be considered). A conventional “urban” median/left turn lane with raised median “mid-block” (curbed, planted with grass) shall typically be adjacent to curb along the inside travel lanes. All guardrail within the existing median shall be removed.

The following lane configurations shall be used at the intersections along US 52. Shaded areas denote a change from the existing configuration.

Intersection with US 52	South Approach			North Approach			West Approach			East Approach		
	RTL	LTL	Thru	RTL	LTL	Thru	RTL	LTL	Thru	RTL	LTL	Thru
Beech Ln.	1	NA	2	NA	1	2	NA			0	0	1
Greenbush St.	1	1	2	1	1	2	0	1	1	0	1	1
Union St.	1	1	2	1	1	2	0	1	2	1	1	1
SR 26	1	2	2	1	2	2	1	2	3	1	2	3
Kossuth St.	0	1	2	1	1	2	0	1	1	0	1	1
National St.	0	1	2	0	1	2	NA			0	0	1
McCarthy Ln.	1	1	2	1	2	2	0	1	1	0	1	1
SR 38	1	2	2	1	2	2	1	1	3	1	1	2

The following table lists the tentatively proposed storage lengths to be used for turn lanes at intersections (The designer shall verify these dimensions during the design phase). Due to the urban conditions and moderate design speed, no deceleration length is proposed for the design of the turn lane lengths.

Intersecting Roadway	South Apr.		North Apr.		West Apr.		East Apr.	
	RTL	LTL	RTL	LTL	RTL	LTL	RTL	LTL
Greenbush St.	230	385	220	360	NA	NA	NA	200
Union St.	190	220	320	275	210	250	NA	100
SR 26 / South St.	440	220	330	135	270	270	Match Existing	
Kossuth St.	NA	205	285	180	NA	275	NA	155
National St.	NA	205	NA	150	NA	NA	NA	NA
McCarthy Ln.	150	130	120	200	NA	110	NA	155
SR 38/Main St.	350	150	720	170	540	240	250	165

US 52 shall remain generally along its current horizontal alignment. The vertical alignment of the roadway shall remain through the length of the project to the extent that suitable drainage can be obtained.

Preliminary pavement design, provided by the INDOT Pavement Engineer of the Materials and Test Division, suggests full depth (16” asphalt or 12” concrete) replacement of the existing roadway. The final pavement design shall be coordinated with INDOT's Materials and Test Division during the design phase of the project. Refer to Appendix B-3.1 for further details on this recommendation.

Drainage shall continue to be via an enclosed storm sewer system. The entire existing storm sewer system shall be replaced utilizing a new storm sewer system. Refer to Appendix B-2 for additional details regarding drainage for the project.

The existing Norfolk Southern Railroad crossing shall be replaced as a part of this project. It shall remain at grade. The designer shall verify the location and appropriate design of the warning system with the INDOT Railroad Unit in the Design Division.

All traffic signal hardware at US 52’s signalized intersections and its associated interconnect system shall be replaced through the project limits. (The District has requested the use of a spread spectrum interconnected traffic signal system through the project limits. The designer shall investigate the use of such a system related to compatibility with any local interconnect system.)

The City of Lafayette has expressed an interest in landscaping and decorative street lighting, not to be owned or maintained by INDOT, to be placed along US 52 as a part of this project. The city shall pay all costs for decorative lighting and any landscaping/architectural elements considered beyond INDOT’s standard practice. The designer shall further coordinate with the City of Lafayette officials during the design phase of the project with respect to lighting, landscaping, and other context-sensitive design elements to be incorporated into the US 52 reconstruction project.

It is anticipated that utilities will require relocation as part of this project. The designer shall coordinate early in the project development with the utility companies and INDOT's Utility Unit regarding the extent of these relocations.

Signs shall be replaced as part of this project. The designer shall coordinate this design with INDOT's Signing Unit early in the design phase of the project.

8. Estimated Costs (Year 2004)

Construction Items

Pavement (includes curb, sidewalk, etc)	\$ 13,000,000
Storm Sewer System, Drainage	\$ 1,500,000
Traffic Signal System	\$ 800,000
Railroad Crossing	\$ 300,000
Maintenance of Traffic	\$ 800,000
<u>Miscellaneous (15%)</u>	<u>\$ 2,500,000</u>
<i>Construction Total</i>	<i>\$ 18,900,000</i>

Non-Construction Items

Engineering	\$ 950,000
<u>Right-of-Way*</u>	<u>\$ 480,000</u>

Project Total **\$20,330,000**

* Includes internal agency administrative fees of \$5,000/parcel.

9. Environmental Considerations

It is not anticipated that this project will generate any significant social, economic, or environmental impacts. Some disruption to traffic service and access is expected in light of the scale of work and anticipated term of the construction phase. INDOT's Environmental Assessment Section will further evaluate impacts and prepare the appropriate environmental document.

10. Survey Limits

Survey will be required along the entire project length at a width of 150 feet. Survey shall begin on US 52 approximately 1000 ft south of SR 38 and extend 500 ft north of the Beech Lane intersection. Survey shall extend 500 ft in each direction along all intersecting roadways. Cross sections will be required along all drives within the limits of the project. Approximately 22,000 feet of route survey will be required as part of this project.

11. Right-of-Way Summary

A total of approximately 0.90 acres of right-of-way from eight parcels will be required. The new right-of-way will consist of primarily an additional 0.75 acres around the SR 38 / US 52 intersection and intersection corner cuts. Two parcels will need to be relocated in the northeast corner of SR 38 / US 52 intersection. Refer to Appendix A-3 for additional detail on the location of the proposed right-of-way.

12. Maintenance of Traffic

Provisional traffic maintenance strategy options are presented as follows. The matter must be re-visited and refined during the design phase.

Option 1

US 52 would be closed and constructed in segments of a few blocks at a time. This option will allow for a minimal construction time. A local detour, which will vary based on which segment is under construction, would be used. The City of Lafayette expressed concern that any extended closures or restrictions to the roadway will be detrimental to local businesses.

Option 2

US 52 would be constructed by the use of phased construction. All traffic would be shifted to one side of the roadway while the other side is being constructed.

Option 2 is tentatively the preferred option. The designer shall further develop the maintenance of traffic scheme during the design phase of the project, ensuring to coordinate with the Crawfordsville District, the City of Lafayette, and the Tippecanoe County Area Plan Commission (TCAPC) MPO.

13. Other Projects, Studies, and Long Range Plans

The subject project is scheduled for a ready for contracts (RFC) date of April 2007. A review of the current INDOT Directory of Proposed Highway Projects (December 2002) indicates that the following programmed projects are in the vicinity:

- Des No. 9134885 – Added Travel Lanes on SR 26 from I-65 east 1.5 miles in Lafayette. RFC: 11/15/03
- Des No. 9802780 – Interchange Modification of SR 26 at I-65 in Lafayette. RFC: 2/15/07
- Des No. 9700830 – New (multi-lane) Road Construction (relocation) for US 231 from River Road (north side of the Wabash River) to SR 26 (State Street) in West Lafayette. RFC: 4/15/04
- Des No. 9802890 – New (multi-lane) Road Construction (relocation) for US 231 from SR 26 (State Street) to US 52 in West Lafayette. The des. number applies to the recently completed environmental phase. RFC: To be determined (2006 in Long Range Plan, as “placeholder”)
- Des. No. 0300431 – New Road Construction for US 231 from SR 26 to US 52 around west side of West Lafayette. RFC 3/25/09

The following elements are listed in INDOT’s *25 Year Long Range Plan*. INDOT has no long-range expectation to expand (add through lanes to) US 52 in Tippecanoe County.

- Number 477 – Added Travel Lanes on I-65 from SR 38 to SR 43 in Lafayette. RFC: 2013 (“placeholder”)
- Number 479 – New (multi-lane) Road Construction (relocation) for US 231 from US 52 to I-65 in West Lafayette. RFC: 2022 (“placeholder”)
- Number 141 – Added Travel Lanes on SR 26 from US 52 to I-65 in Lafayette. RFC: 2013 (“placeholder”).
 - Bernardin, Lochmueller, and Associates completed a corridor planning study of SR 26 and SR 38 under contract with the City of Lafayette (with funding from INDOT). The purpose of this study is to address the existing congestion and safety deficiencies along the SR 26 and SR 38 corridor from I-65 to US 52. Preliminary recommendations include widening SR 26 and improvements to the SR 26/US 52 and SR 38/US 52 intersections. The proposal outlined in this Engineer’s Report for US 52 reconstruction incorporates elements of the preliminary findings of the planning study, in the form of lane additions at the SR 38 and SR 26 intersections with US 52. The planning study suggests phasing-in incremental improvements as part of the subject US 52 road reconstruction project. To the extent possible, this is being done. As well, provision is being made in the design layout of the US 52 project to allow for the ultimate full build-out prescribed in the SR 26 and SR 38 planning corridor study.

The City of Lafayette has planned a road rehabilitation project along Greenbush Street from US 52 to Creasy Lane (which is scheduled for construction complete in 2005), and along Farabee Drive (which is scheduled for construction complete in 2004).

14. Coordination

Coordination of this project has been undertaken with the following, among others:

1. Engineering Assessment Section, Division of Environment, Planning, & Engineering (Brad Steckler, Harshad Shah)
2. Design Division (Mary Jo Hamman and others)
3. Crawfordsville District (Bruce Conrad, Steve Isenhower, Wes Shaw, Bill Smith)
4. Materials and Tests Division (Kumar Dave)
5. Tippecanoe County Area Planning Commission (Sallie Fahey, Doug Poad, Brian Webber)
6. City of Lafayette (Opal Kuhl, Anna Licon)
7. SR 26/SR 38 Corridor Study, Bernardin, Lochmueller, and Associates (Steve Hardesty)

A field check was conducted on March 8, 2002 among the consultant, Materials and Test Division, the Crawfordsville District, the City of Lafayette, and Tippecanoe County Area Planning Commission. INDOT's Design Division and Environmental Assessment Section were invited. Refer to Appendix C for details of this meeting.

15. Changes to Proposal

The Engineering Assessment Section shall be consulted if the proposal is to be changed. The person initiating the change should send a letter to the Engineering Assessment Section Manager for concurrence. Any request originating from the designer should be routed through the attending Design Development Section Manager. The letter should include justification for the change and the estimated cost difference.

Concur:  11-16-04
Brad Steckler, Manager
Engineering Assessment Section

cc: Saundra Vaughn, INDOT Design Division (3 Copies)
Mike Holowaty, INDOT Design Division (Specialty Group)
William Schmidt, INDOT Design Division (Survey)
Matt Thomas, INDOT Design Division (Utilities)
Sally Morgan, INDOT Land Acquisition
Lyle Sadler, INDOT Environmental Assessment
Athar Kahn, INDOT Geotechnical Engineering
Steve Isenhower, INDOT Crawfordsville District (District Development)
Joseph Lewien, INDOT Crawfordsville District (Traffic Engineering)
Opal Kuhl, City of Lafayette (City Engineer)
Doug Poad (TCAPC-MPO)
Brad Steckler (Originals + 1 copy)
File: 70156

APPENDICES

LOCATION INFORMATION

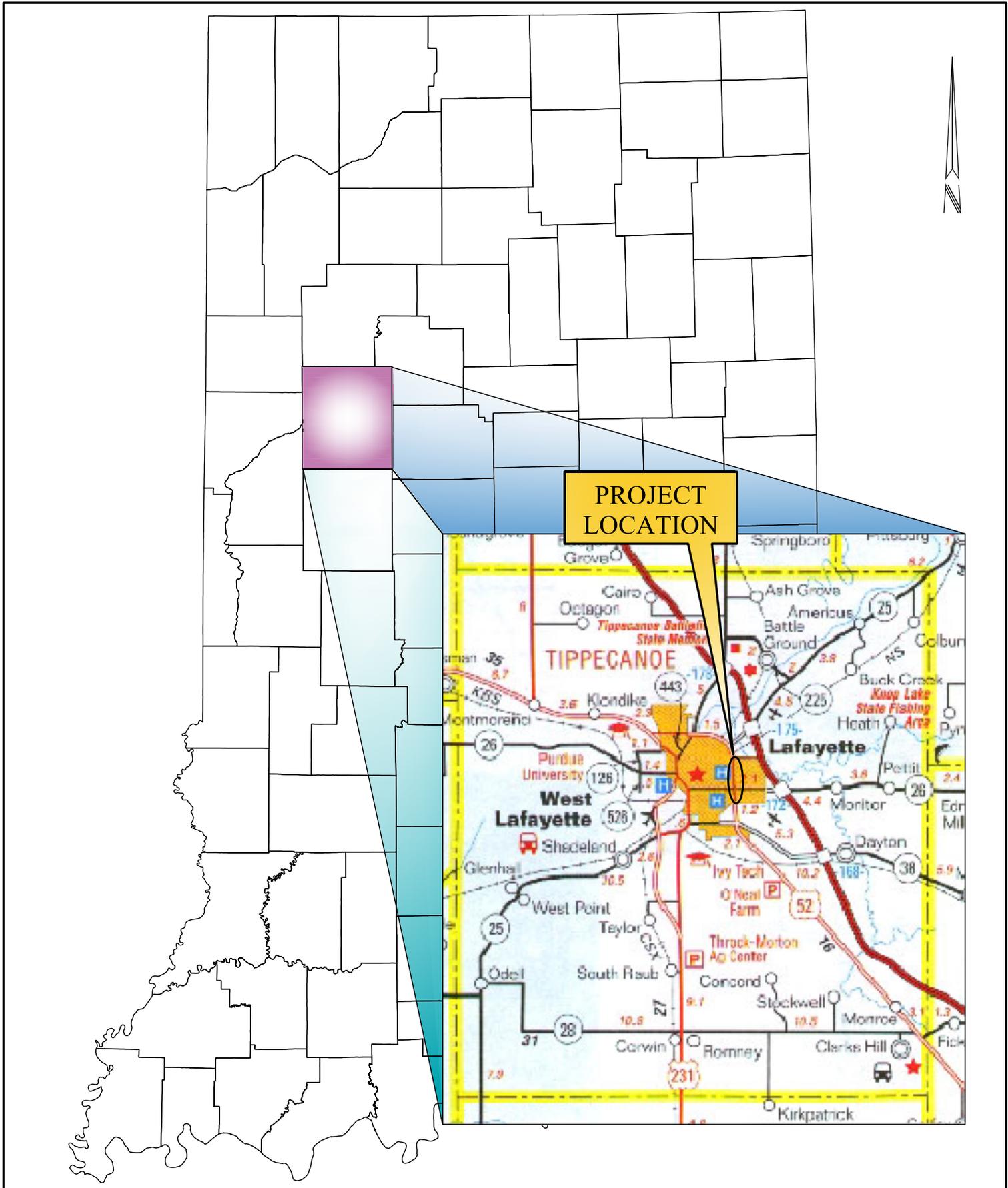
Project Location Maps	A-1.1 & A-2.1
Aerial Photographs.....	A-3.1-3.13
Ground-Level Photographs.....	A-4.1-4.1

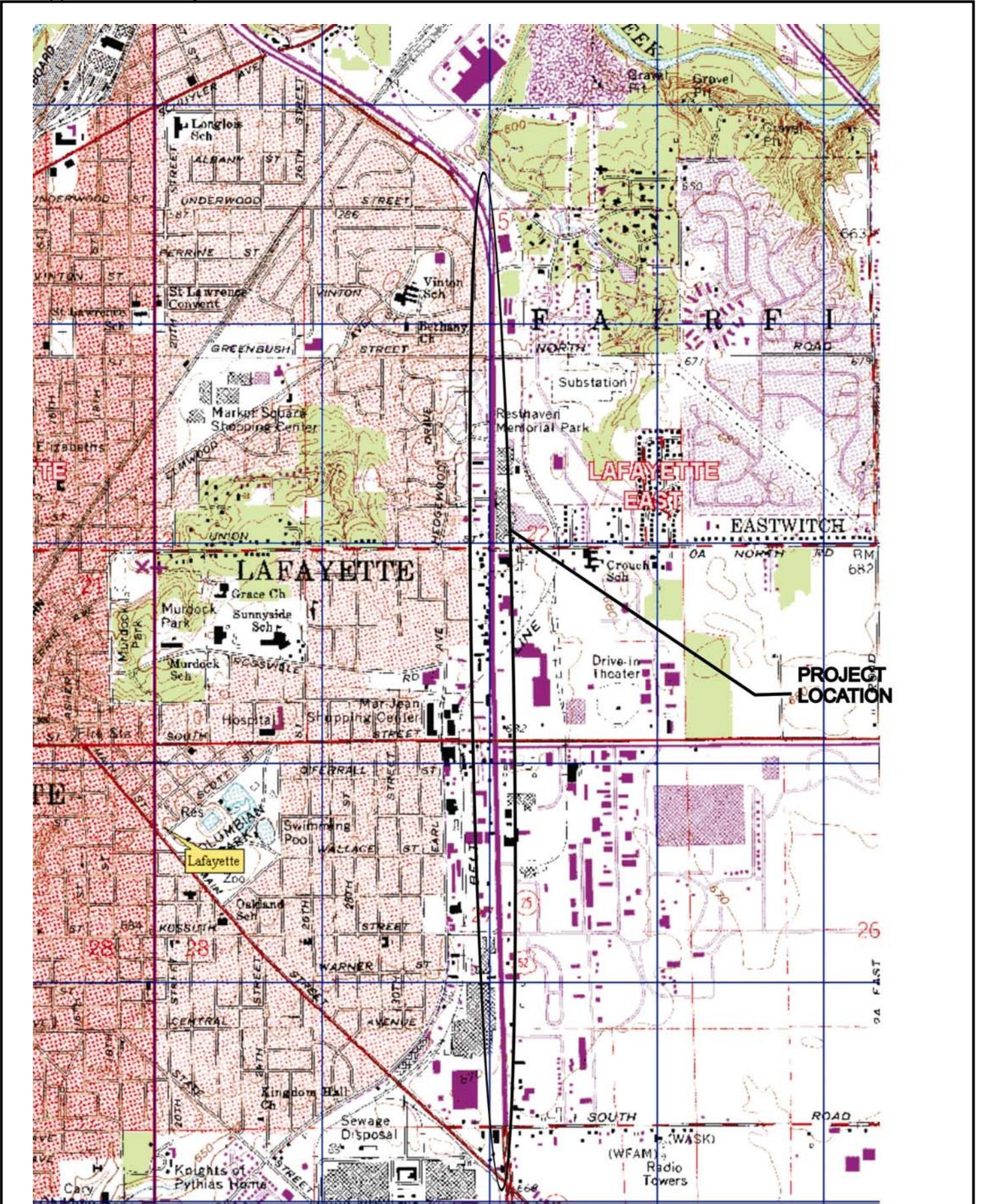
PROJECT DATA

Traffic Data.....	B-1.1-1.15
Hydraulic Data.....	B-2.1
Preliminary Pavement Design.....	B-3.1

COORDINATION

Field Check Minutes	C-1.1-1.2
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Road Replacement
 US 52
 Tippecanoe County, Lafayette

INDIANA
 DEPARTMENT OF TRANSPORTATION

INDOT DES 9802510
 Scale: 1"=100'

CONCEPTUAL DRAWING

A-3.1



Road Replacement
 US 52
 Tippecanoe County, Lafayette

INDIANA
 DEPARTMENT OF TRANSPORTATION

INDOT DES 9802510
 Scale: 1"=100'

CONCEPTUAL DRAWING

A-3.2



Road Replacement
US 52
Tippecanoe County, Lafayette

INDIANA
DEPARTMENT OF TRANSPORTATION

INDOT DES 9802510
Scale: 1"=100'

CONCEPTUAL DRAWING

A-3.3



Road Replacement
 US 52
 Tippecanoe County, Lafayette

INDIANA
 DEPARTMENT OF TRANSPORTATION

INDOT DES 9802510
 Scale: 1"=100'

CONCEPTUAL DRAWING

A-3.4



Road Replacement
 US 52
 Tippecanoe County, Lafayette

INDIANA
 DEPARTMENT OF TRANSPORTATION

INDOT DES 9802510
 Scale: 1"=100'

CONCEPTUAL DRAWING

A-3.5



Road Replacement
 US 52
 Tippecanoe County, Lafayette

INDIANA
 DEPARTMENT OF TRANSPORTATION

INDOT DES 9802510
 Scale: 1"=100'

CONCEPTUAL DRAWING

A-3.6



Road Replacement
 US 52
 Tippecanoe County, Lafayette

INDIANA
 DEPARTMENT OF TRANSPORTATION

INDOT DES 9802510
 Scale: 1"=100'

CONCEPTUAL DRAWING

A-3.7



Road Replacement
 US 52
 Tippecanoe County, Lafayette

INDIANA
 DEPARTMENT OF TRANSPORTATION

INDOT DES 9802510
 Scale: 1"=100'

CONCEPTUAL DRAWING

A-3.8



PATRIOTIC
FIREWORKS
(ABANDONED)

JOHN BOES
BOTTLED WATER

NORTH/SOUTH
PLAZA

RESTHAVEN
MEMORIAL PARK
CEMETARY

US 52

ESSEX

EX. R/W

EX. R/W

Road Replacement
US 52
Tippecanoe County, Lafayette

INDIANA
DEPARTMENT OF TRANSPORTATION

INDOT DES 9802510
Scale: 1"=100'

CONCEPTUAL DRAWING

A-3.9



Road Replacement
US 52
Tippecanoe County, Lafayette

INDIANA
DEPARTMENT OF TRANSPORTATION

INDOT DES 9802510
Scale: 1"=100'

CONCEPTUAL DRAWING

A-3.10



Road Replacement
US 52
Tippecanoe County, Lafayette

INDIANA
DEPARTMENT OF TRANSPORTATION

INDOT DES 9802510
Scale: 1"=100'

CONCEPTUAL DRAWING

A-3.11



SR 38 INTERSECTION CONCEPT

Road Replacement
 US 52
 Tippecanoe County, Lafayette

INDIANA
 DEPARTMENT OF TRANSPORTATION

INDOT DES 9802510
 Scale: 1"=100'

CONCEPTUAL DRAWING

A-3.12



SR 26 INTERSECTION CONCEPT

Road Replacement
 US 52
 Tippecanoe County, Lafayette

INDIANA
 DEPARTMENT OF TRANSPORTATION

INDOT DES 9802510
 Scale: 1"=100'

CONCEPTUAL DRAWING

A-3.13



Looking South along US 52 from SR 38



Looking East along SR 38 from US 52



Looking West along SR 38 from US 52



Looking North along US 52 from SR 38



Looking South along US 52 from McCarty Lane



Looking East along McCarty Lane from US 52



Looking West along McCarty Lane from US 52



Looking North along US 52 from McCarty Lane



Looking South along US 52 from Kossuth Street



Looking East along Kossuth Street from US 52



Looking West along Kossuth Street from US 52



Looking North along US 52 from Kossuth Street



Looking South along US 52 between SR 26 and Kossuth Street



Looking South along US 52 from SR 26



Looking East along SR 26 from US 52



Looking West along SR 26 from US 52



Looking North along US 52 from SR 26



Looking South along US 52 from Union Street



Looking East along Union Street from US 52



Looking West along Union Street from US 52



Looking North along US 52 from Union Street



Looking South along US 52 between Greenbush St. and Union St.



Looking North along US 52 between Greenbush St. and Union St.



Looking South along US 52 from Greenbush Street



Looking East along Greenbush Street from US 52



Looking West along Greenbush Street from US 52



Looking North along US 52 from Greenbush Street



Looking South along US 52 from Beech Lane



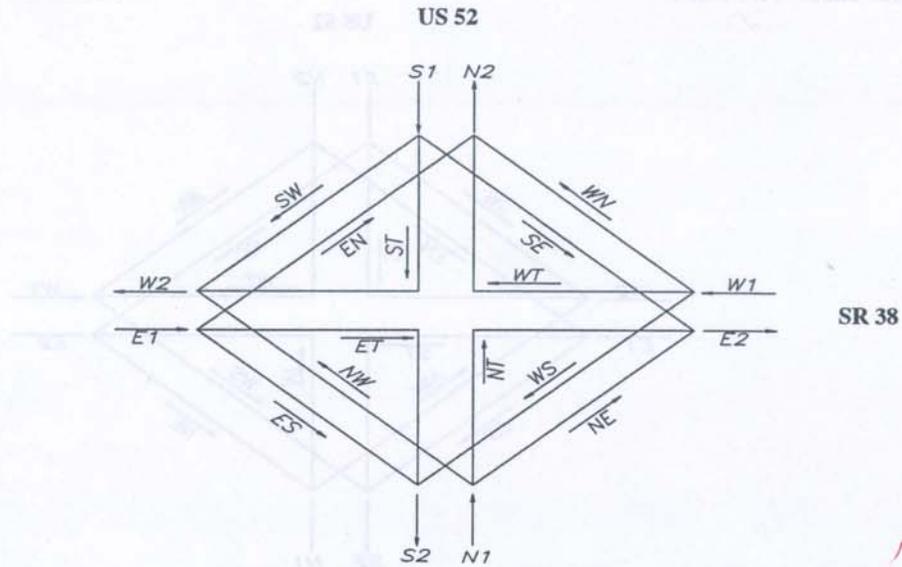
Looking East along Beech Lane from US 52



Looking North along US 52 from Beech Lane

TRAFFIC VOLUME FORECAST FOR INTERSECTIONS

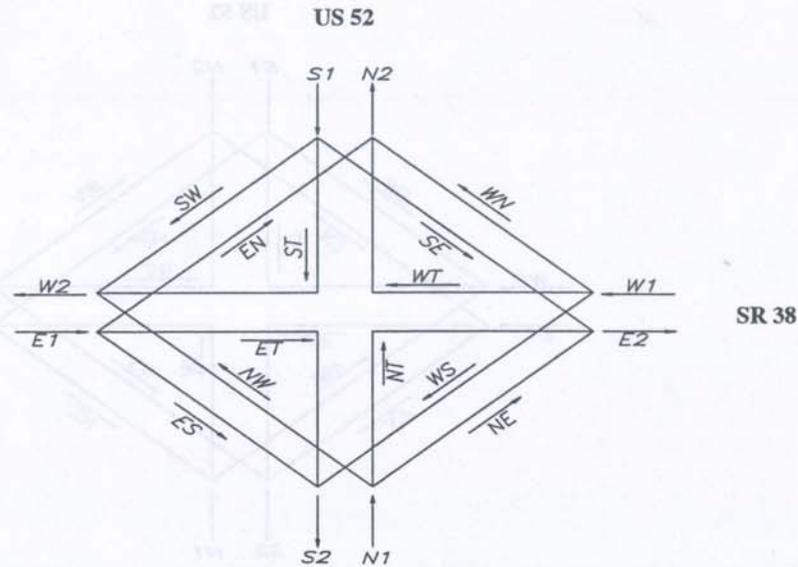
Date: August 2002
Project: Des. No. 9802510
Route: US Route 52 at State Road 38
County: Tippecanoe County
Other Info: AM-DHV



Turning Movements	AADT					DHV %	COMMERCIAL VEHICLES	
	2002	2007	2012	2017	2027		% AADT	% DHV
NE	1680	1760	1850	1930	2100	7	7	9
NW	2570	2700	2830	2960	3210	5	3	3
NT	11830	12420	13010	13600	14790	7	8	10
SE	2970	3120	3270	3420	3710	8	2	4
SW	180	190	200	210	230	6	3	6
ST	10290	10800	11320	11830	12860	7	7	10
ES	3030	3180	3330	3480	3790	7	4	6
EN	400	420	440	460	500	9	2	3
ET	4570	4800	5030	5260	5710	8	2	3
WN	3250	3410	3580	3740	4060	8	3	5
WS	2240	2350	2460	2580	2800	6	7	11
WT	4740	4980	5210	5450	5930	7	3	4
N1	16080	16880	17690	18490	20100	7	7	9
S2	15560	16330	17110	17890	19450	7	6	9
S1	13440	14110	14790	15460	16800	7	6	9
N2	15480	16250	17030	17800	19350	7	7	9
E1	8000	8400	8800	9200	10000	7	3	4
W2	7490	7870	8240	8620	9370	6	3	4
W1	10230	10740	11250	11770	12790	7	4	6
E2	9220	9680	10150	10610	11520	8	3	4

TRAFFIC VOLUME FORECAST FOR INTERSECTIONS

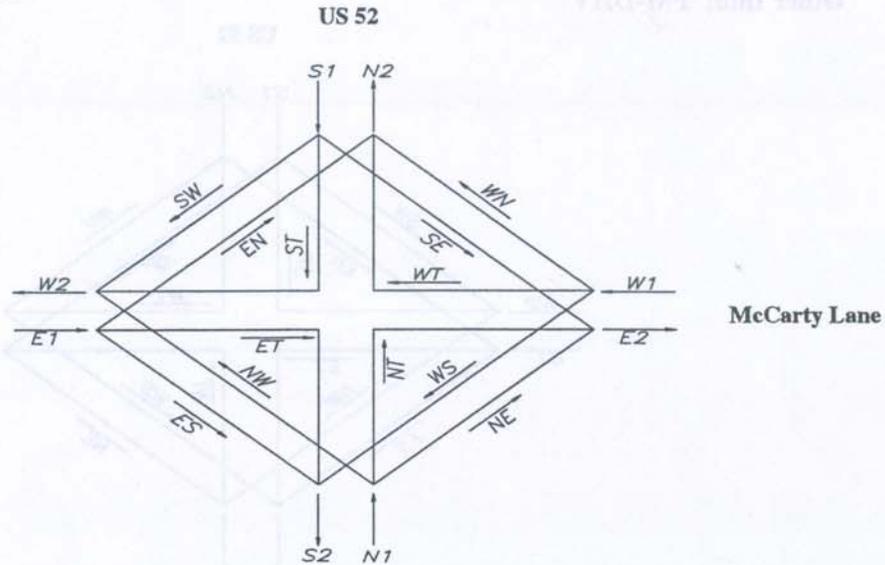
Date: August 2002
Project: Des. No. 9802510
Route: US Route 52 at State Road 38
County: Tippecanoe County
Other Info: PM-DHV



Turning Movements	AADT					DHV %	COMMERCIAL VEHICLES	
	2002	2007	2012	2017	2027		% AADT	% DHV
NE	1680	1760	1850	1930	2100	6	7	5
NW	2570	2700	2830	2960	3210	9	3	3
NT	11830	12420	13010	13600	14790	7	8	6
SE	2970	3120	3270	3420	3710	9	2	2
SW	180	190	200	210	230	12	3	2
ST	10290	10800	11320	11830	12860	8	7	5
ES	3030	3180	3330	3480	3790	9	4	4
EN	400	420	440	460	500	11	2	2
ET	4570	4800	5030	5260	5710	11	2	2
WN	3250	3410	3580	3740	4060	7	3	2
WS	2240	2350	2460	2580	2800	6	7	5
WT	4740	4980	5210	5450	5930	7	3	2
N1	16080	16880	17690	18490	20100	7	7	5
S2	15560	16330	17110	17890	19450	8	6	5
S1	13440	14110	14790	15460	16800	8	6	4
N2	15480	16250	17030	17800	19350	7	7	5
E1	8000	8400	8800	9200	10000	10	3	3
W2	7490	7870	8240	8620	9370	8	3	2
W1	10230	10740	11250	11770	12790	7	4	3
E2	9220	9680	10150	10610	11520	9	3	3

TRAFFIC VOLUME FORECAST FOR INTERSECTIONS

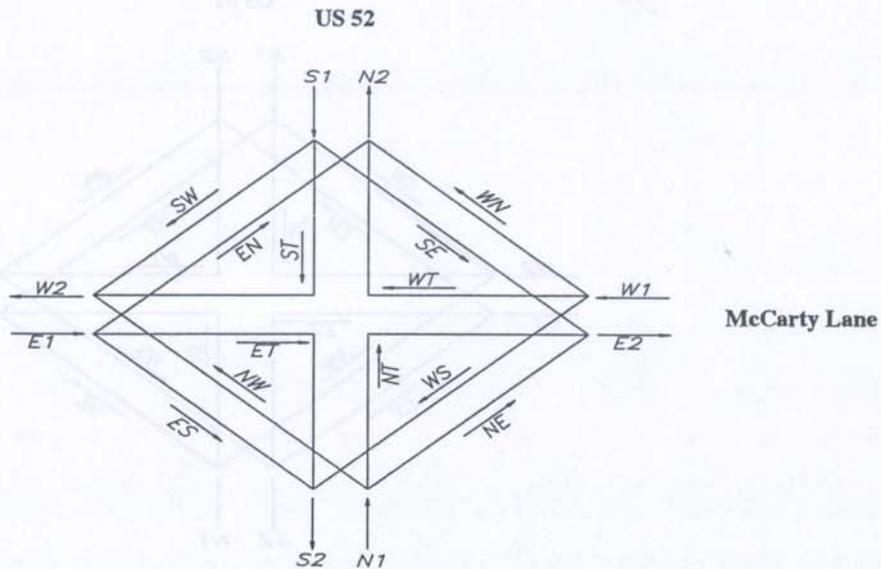
Date: August 2002
Project: Des. No. 9802510
Route: US Route 52 at McCarty Lane
County: Tippecanoe County
Other Info: AM-DHV



Turning Movements	AADT					DHV %	COMMERCIAL VEHICLES	
	2002	2007	2012	2017	2027		% AADT	% DHV
NE	1970	2070	2170	2270	2460	8	8	11
NW	480	500	530	550	600	5	8	16
NT	12920	13570	14210	14860	16150	7	6	5
SE	2260	2370	2490	2600	2830	7	6	6
SW	350	370	390	400	440	6	2	4
ST	12230	12840	13450	14060	15290	8	5	4
ES	160	170	180	180	200	7	11	17
EN	440	460	480	510	550	7	5	6
ET	1720	1810	1890	1980	2150	6	6	5
WN	2060	2160	2270	2370	2580	6	6	7
WS	1790	1880	1970	2060	2240	7	9	11
WT	2220	2330	2440	2550	2780	5	4	3
N1	15370	16140	16910	17680	19210	7	6	6
S2	14180	14890	15600	16300	17730	8	6	5
S1	14840	15580	16330	17060	18560	8	5	4
N2	15420	16190	16960	17740	19280	7	6	5
E1	2320	2440	2550	2670	2900	6	6	6
W2	3050	3200	3360	3500	3820	5	4	5
W1	6070	6370	6680	6980	7600	6	6	7
E2	5950	6250	6550	6850	7440	7	7	7

TRAFFIC VOLUME FORECAST FOR INTERSECTIONS

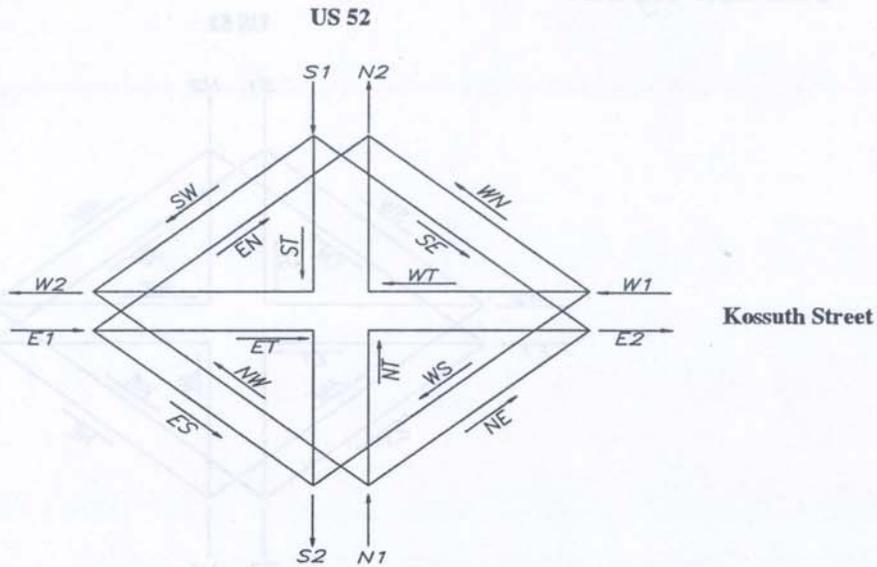
Date: August 2002
Project: Des. No. 9802510
Route: US Route 52 at McCarty Lane
County: Tippecanoe County
Other Info: PM-DHV



Turning Movements	AADT					DHV %	COMMERCIAL VEHICLES	
	2002	2007	2012	2017	2027		% AADT	% DHV
NE	1970	2070	2170	2270	2460	6	8	5
NW	480	500	530	550	600	6	8	2
NT	12920	13570	14210	14860	16150	8	6	4
SE	2260	2370	2490	2600	2830	8	6	6
SW	350	370	390	400	440	7	2	2
ST	12230	12840	13450	14060	15290	9	5	4
ES	160	170	180	180	200	6	11	8
EN	440	460	480	510	550	8	5	3
ET	1720	1810	1890	1980	2150	7	6	4
WN	2060	2160	2270	2370	2580	8	6	4
WS	1790	1880	1970	2060	2240	7	9	7
WT	2220	2330	2440	2550	2780	6	4	4
N1	15370	16140	16910	17680	19210	7	6	4
S2	14180	14890	15600	16300	17730	8	6	4
S1	14840	15580	16330	17060	18560	9	5	4
N2	15420	16190	16960	17740	19280	8	6	4
E1	2320	2440	2550	2670	2900	7	6	4
W2	3050	3200	3360	3500	3820	6	4	3
W1	6070	6370	6680	6980	7600	7	6	5
E2	5950	6250	6550	6850	7440	7	7	5

TRAFFIC VOLUME FORECAST FOR INTERSECTIONS

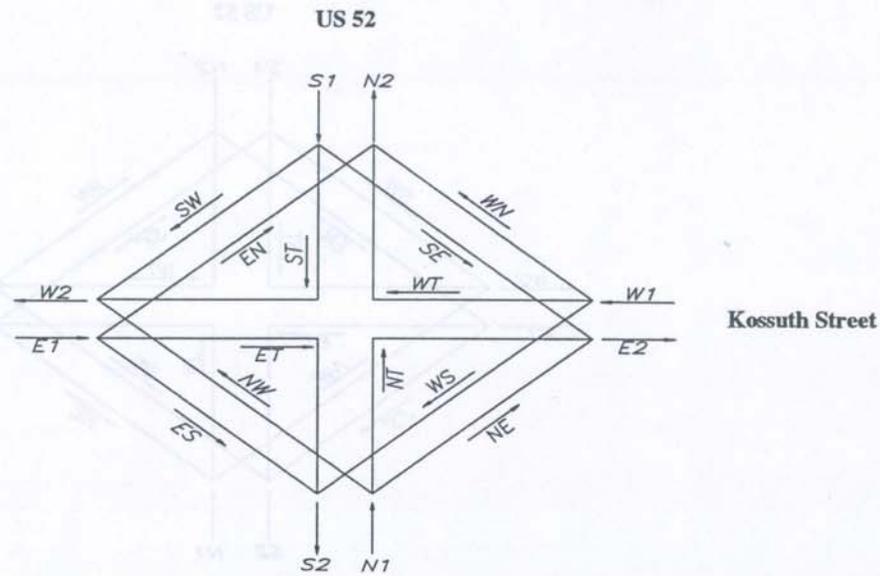
Date: August 2002
Project: Des. No. 9802510
Route: US Route 52 at Kossuth Street
County: Tippecanoe County
Other Info: AM-DHV



Turning Movements	AADT					DHV %	COMMERCIAL VEHICLES	
	2002	2007	2012	2017	2027		% AADT	% DHV
NE	1390	1460	1530	1600	1740	6	7	7
NW	1050	1100	1160	1210	1310	7	6	8
NT	13320	13990	14650	15320	16650	7	4	5
SE	760	800	840	870	950	7	4	4
SW	2480	2600	2730	2850	3100	8	3	4
ST	13910	14610	15300	16000	17390	6	5	6
ES	1360	1430	1500	1560	1700	6	3	3
EN	1880	1970	2070	2160	2350	9	3	3
ET	2290	2400	2520	2630	2860	7	3	3
WN	780	820	860	900	980	9	8	11
WS	1030	1080	1130	1180	1290	5	8	9
WT	1850	1940	2040	2130	2310	6	4	5
N1	15760	16550	17340	18130	19700	7	4	5
S2	16300	17120	17930	18740	20380	6	5	6
S1	17150	18010	18870	19720	21440	7	5	6
N2	15980	16780	17580	18380	19980	8	4	5
E1	5530	5800	6090	6350	6910	7	3	3
W2	5380	5640	5930	6190	6720	7	4	5
W1	3660	3840	4030	4210	4580	6	6	7
E2	4440	4660	4890	5100	5550	7	4	4

TRAFFIC VOLUME FORECAST FOR INTERSECTIONS

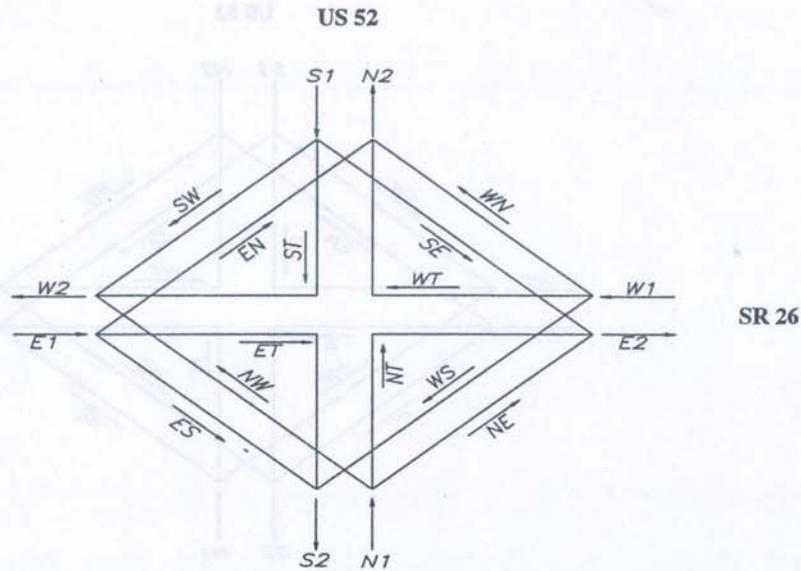
Date: August 2002
Project: Des. No. 9802510
Route: US Route 52 at Kossuth Street
County: Tippecanoe County
Other Info: PM-DHV



Turning Movements	AADT					DHV %	COMMERCIAL VEHICLES	
	2002	2007	2012	2017	2027		% AADT	% DHV
NE	1390	1460	1530	1600	1740	10	7	8
NW	1050	1100	1160	1210	1310	10	6	3
NT	13320	13990	14650	15320	16650	8	4	3
SE	760	800	840	870	950	6	4	4
SW	2480	2600	2730	2850	3100	6	3	3
ST	13910	14610	15300	16000	17390	8	5	4
ES	1360	1430	1500	1560	1700	9	3	4
EN	1880	1970	2070	2160	2350	6	3	3
ET	2290	2400	2520	2630	2860	9	3	3
WN	780	820	860	900	980	6	8	5
WS	1030	1080	1130	1180	1290	12	8	7
WT	1850	1940	2040	2130	2310	10	4	2
N1	15760	16550	17340	18130	19700	8	4	3
S2	16300	17120	17930	18740	20380	8	5	4
S1	17150	18010	18870	19720	21440	8	5	4
N2	15980	16780	17580	18380	19980	7	4	3
E1	5530	5800	6090	6350	6910	8	3	3
W2	5380	5640	5930	6190	6720	8	4	3
W1	3660	3840	4030	4210	4580	10	6	4
E2	4440	4660	4890	5100	5550	9	4	5

TRAFFIC VOLUME FORECAST FOR INTERSECTIONS

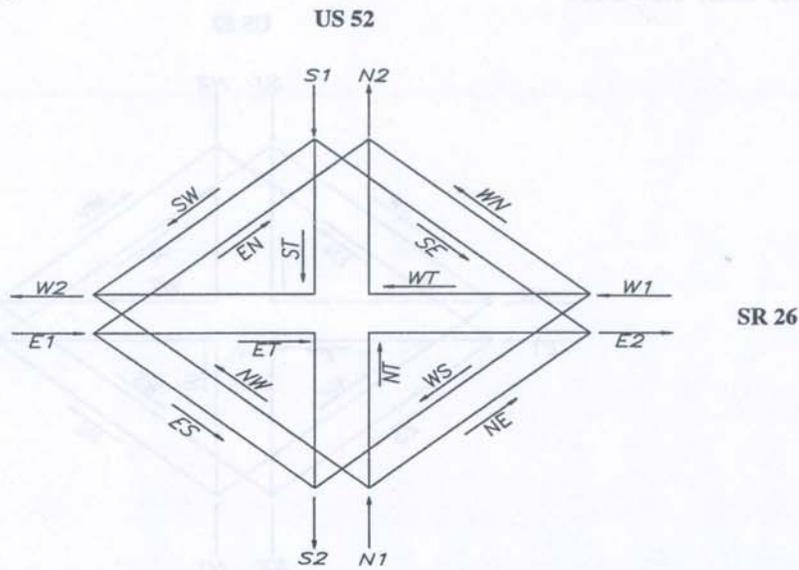
Date: August 2002
Project: Des. No. 9802510
Route: US Route 52 at State Road 26
County: Tippecanoe County
Other Info: AM-DHV



Turning Movements	AADT					DHV %	COMMERCIAL VEHICLES	
	2002	2007	2012	2017	2027		% AADT	% DHV
NE	2970	3120	3270	3420	3710	10	6	8
NW	1490	1560	1640	1710	1860	8	3	5
NT	8890	9330	9780	10220	11110	8	5	7
SE	4090	4290	4500	4700	5110	7	6	7
SW	1800	1890	1980	2070	2250	7	3	4
ST	8150	8560	8970	9370	10190	6	5	6
ES	1580	1660	1740	1820	1980	6	3	3
EN	2100	2210	2310	2420	2630	6	2	4
ET	7760	8150	8540	8920	9700	7	4	4
WN	3720	3910	4090	4280	4650	7	5	6
WS	2960	3110	3260	3400	3700	6	5	6
WT	7370	7740	8110	8480	9210	6	3	4
N1	13350	14010	14690	15350	16680	9	5	7
S2	12690	13330	13970	14590	15870	6	5	6
S1	14040	14740	15450	16140	17550	6	5	6
N2	14710	15450	16180	16920	18390	8	5	6
E1	11440	12020	12590	13160	14310	7	3	4
W2	10660	11190	11730	12260	13320	7	3	4
W1	14050	14760	15460	16160	17560	6	4	5
E2	14820	15560	16310	17040	18520	7	5	6

TRAFFIC VOLUME FORECAST FOR INTERSECTIONS

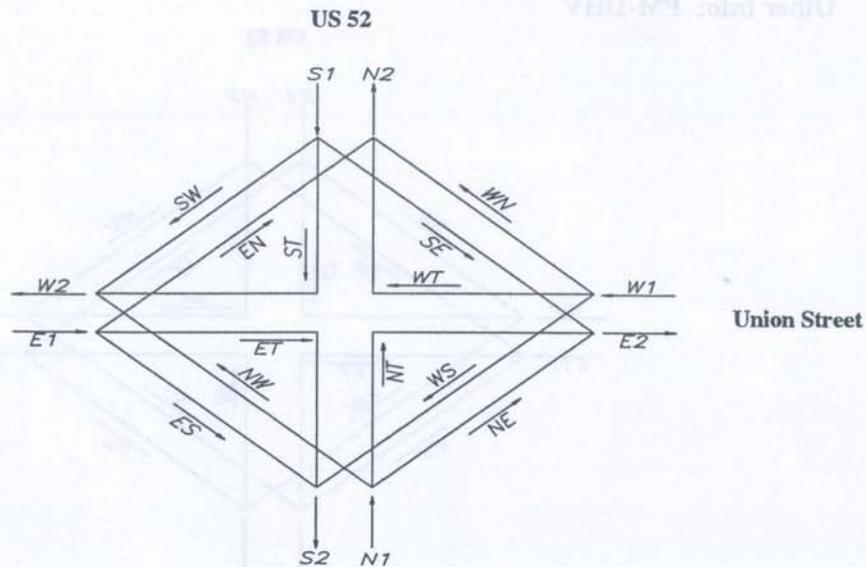
Date: August 2002
Project: Des. No. 9802510
Route: US Route 52 at State Road 26
County: Tippecanoe County
Other Info: PM-DHV



Turning Movements	AADT					DHV %	COMMERCIAL VEHICLES	
	2002	2007	2012	2017	2027		% AADT	% DHV
NE	2970	3120	3270	3420	3710	7	6	5
NW	1490	1560	1640	1710	1860	7	3	1
NT	8890	9330	9780	10220	11110	8	5	3
SE	4090	4290	4500	4700	5110	7	6	5
SW	1800	1890	1980	2070	2250	6	3	3
ST	8150	8560	8970	9370	10190	8	5	4
ES	1580	1660	1740	1820	1980	9	3	3
EN	2100	2210	2310	2420	2630	9	2	1
ET	7760	8150	8540	8920	9700	8	4	3
WN	3720	3910	4090	4280	4650	7	5	5
WS	2960	3110	3260	3400	3700	8	5	5
WT	7370	7740	8110	8480	9210	6	3	3
N1	13350	14010	14690	15350	16680	7	5	3
S2	12690	13330	13970	14590	15870	8	5	4
S1	14040	14740	15450	16140	17550	8	5	4
N2	14710	15450	16180	16920	18390	8	5	3
E1	11440	12020	12590	13160	14310	9	3	3
W2	10660	11190	11730	12260	13320	6	3	3
W1	14050	14760	15460	16160	17560	7	4	4
E2	14820	15560	16310	17040	18520	8	5	4

TRAFFIC VOLUME FORECAST FOR INTERSECTIONS

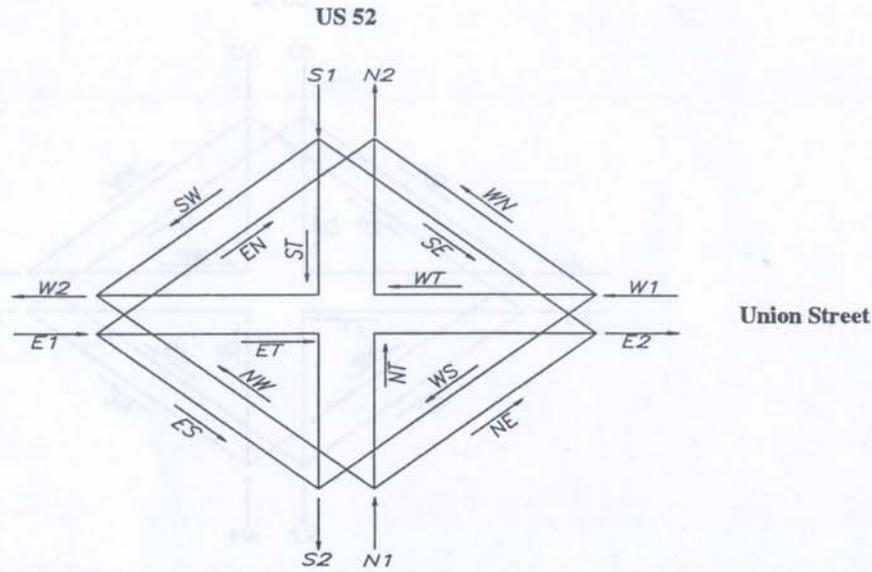
Date: August 2002
Project: Des. No. 9802510
Route: US Route 52 at Union Street
County: Tippecanoe County
Other Info: AM-DHV



Turning Movements	AADT					DHV %	COMMERCIAL VEHICLES	
	2002	2007	2012	2017	2027		% AADT	% DHV
NE	1170	1230	1290	1350	1460	7	5	6
NW	2160	2270	2380	2480	2700	8	4	5
NT	11760	12350	12940	13520	14700	6	6	7
SE	1920	2020	2110	2210	2400	5	7	8
SW	2590	2720	2850	2980	3240	7	3	5
ST	12470	13090	13720	14340	15590	7	5	7
ES	1690	1770	1860	1940	2110	9	2	4
EN	2320	2440	2550	2670	2900	6	3	5
ET	3570	3750	3930	4110	4460	6	2	3
WN	1830	1920	2010	2100	2290	4	3	2
WS	1190	1250	1310	1370	1490	7	3	3
WT	4050	4250	4460	4660	5060	6	4	3
N1	15090	15850	16610	17350	18860	7	6	7
S2	15350	16110	16890	17650	19190	7	5	6
S1	16980	17830	18680	19530	21230	7	5	7
N2	15910	16710	17500	18290	19890	6	5	6
E1	7580	7960	8340	8720	9470	7	2	4
W2	8800	9240	9690	10120	11000	7	4	4
W1	7070	7420	7780	8130	8840	6	4	3
E2	6660	7000	7330	7670	8320	6	4	5

TRAFFIC VOLUME FORECAST FOR INTERSECTIONS

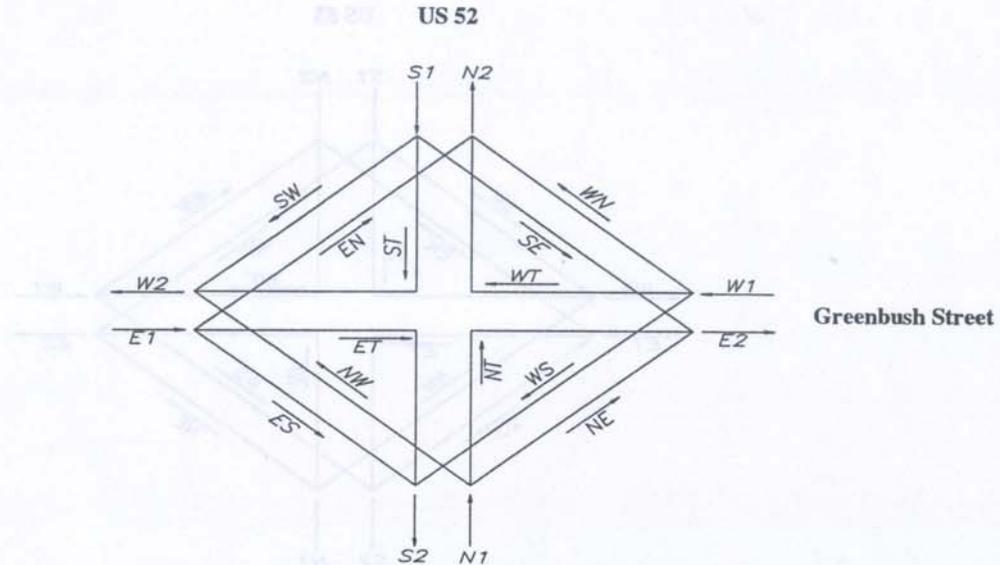
Date: August 2002
Project: Des. No. 9802510
Route: US Route 52 at Union Street
County: Tippecanoe County
Other Info: PM-DHV



Turning Movements	AADT					DHV %	COMMERCIAL VEHICLES	
	2002	2007	2012	2017	2027		% AADT	% DHV
NE	1170	1230	1290	1350	1460	7	5	5
NW	2160	2270	2380	2480	2700	8	4	4
NT	11760	12350	12940	13520	14700	8	6	4
SE	1920	2020	2110	2210	2400	7	7	6
SW	2590	2720	2850	2980	3240	8	3	2
ST	12470	13090	13720	14340	15590	8	5	4
ES	1690	1770	1860	1940	2110	10	2	2
EN	2320	2440	2550	2670	2900	12	3	2
ET	3570	3750	3930	4110	4460	12	2	2
WN	1830	1920	2010	2100	2290	7	3	3
WS	1190	1250	1310	1370	1490	7	3	3
WT	4050	4250	4460	4660	5060	7	4	4
N1	15090	15850	16610	17350	18860	8	6	4
S2	15350	16110	16890	17650	19190	8	5	4
S1	16980	17830	18680	19530	21230	8	5	4
N2	15910	16710	17500	18290	19890	8	5	4
E1	7580	7960	8340	8720	9470	11	2	2
W2	8800	9240	9690	10120	11000	8	4	3
W1	7070	7420	7780	8130	8840	7	4	4
E2	6660	7000	7330	7670	8320	10	4	4

TRAFFIC VOLUME FORECAST FOR INTERSECTIONS

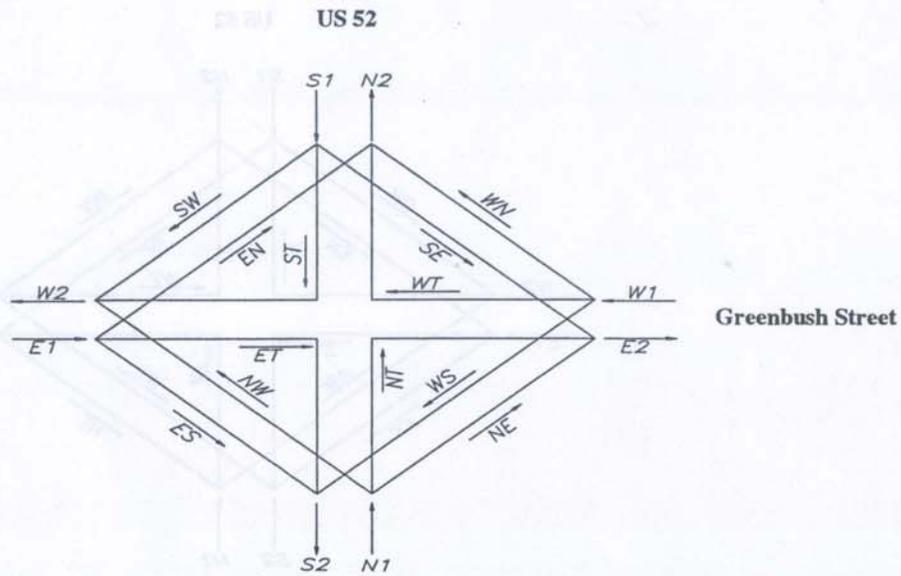
Date: August 2002
Project: Des. No. 9802510
Route: US Route 52 at Greenbush Street
County: Tippecanoe County
Other Info: AM-DHV



Turning Movements	AADT					DHV %	COMMERCIAL VEHICLES	
	2002	2007	2012	2017	2027		% AADT	% DHV
NE	1340	1410	1470	1540	1680	7	2	4
NW	2050	2150	2260	2360	2560	9	4	6
NT	11620	12200	12780	13360	14530	6	6	9
SE	1940	2040	2130	2230	2430	7	4	5
SW	1010	1060	1110	1160	1260	8	2	3
ST	11830	12420	13010	13600	14790	6	6	7
ES	2460	2580	2710	2830	3080	7	3	4
EN	1270	1330	1400	1460	1590	6	4	6
ET	3210	3370	3530	3690	4010	7	2	4
WN	2190	2300	2410	2520	2740	5	5	7
WS	1590	1670	1750	1830	1990	7	2	2
WT	3800	3990	4180	4370	4750	8	3	3
N1	15010	15760	16510	17260	18770	6	5	8
S2	15880	16670	17470	18260	19860	7	5	6
S1	14780	15520	16250	16990	18480	7	5	6
N2	15080	15830	16590	17340	18860	6	6	8
E1	6940	7280	7640	7980	8680	7	3	4
W2	6860	7200	7550	7890	8570	8	3	4
W1	7580	7960	8340	8720	9480	7	3	4
E2	6490	6820	7130	7460	8120	7	3	4

TRAFFIC VOLUME FORECAST FOR INTERSECTIONS

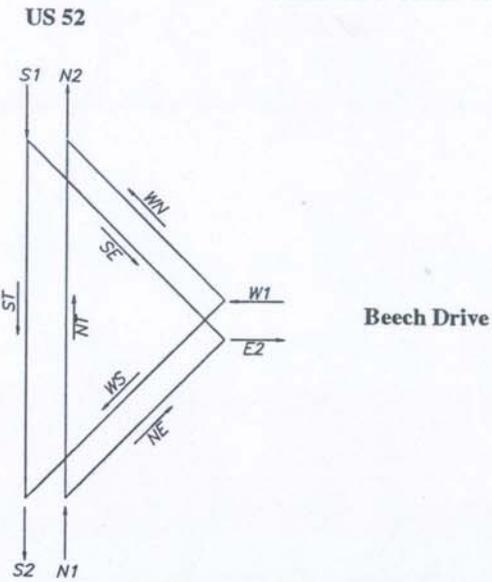
Date: August 2002
Project: Des. No. 9802510
Route: US Route 52 at Greenbush Street
County: Tippecanoe County
Other Info: PM-DHV



Turning Movements	AADT					DHV %	COMMERCIAL VEHICLES	
	2002	2007	2012	2017	2027		% AADT	% DHV
NE	1340	1410	1470	1540	1680	13	2	2
NW	2050	2150	2260	2360	2560	9	4	3
NT	11620	12200	12780	13360	14530	8	6	4
SE	1940	2040	2130	2230	2430	11	4	4
SW	1010	1060	1110	1160	1260	8	2	2
ST	11830	12420	13010	13600	14790	7	6	4
ES	2460	2580	2710	2830	3080	5	3	3
EN	1270	1330	1400	1460	1590	6	4	3
ET	3210	3370	3530	3690	4010	10	2	1
WN	2190	2300	2410	2520	2740	7	5	4
WS	1590	1670	1750	1830	1990	7	2	2
WT	3800	3990	4180	4370	4750	8	3	2
N1	15010	15760	16510	17260	18770	9	5	4
S2	15880	16670	17470	18260	19860	7	5	4
S1	14780	15520	16250	16990	18480	8	5	4
N2	15080	15830	16590	17340	18860	8	6	4
E1	6940	7280	7640	7980	8680	7	3	2
W2	6860	7200	7550	7890	8570	8	3	2
W1	7580	7960	8340	8720	9480	7	3	3
E2	6490	6820	7130	7460	8120	11	3	2

TRAFFIC VOLUME FORECAST FOR INTERSECTIONS

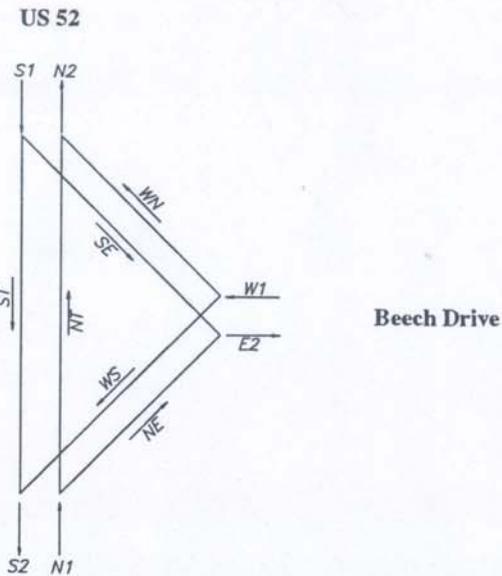
Date: August 2002
Project: Des. No. 9802510
Route: US Route 52 at Beech Drive
County: Tippecanoe County
Other Info: AM-DHV



Turning Movements	AADT					DHV %	COMMERCIAL VEHICLES	
	2002	2007	2012	2017	2027		% AADT	% DHV
NE	550	580	610	630	690	8	3	4
NW								
NT	14470	15190	15920	16640	18090	6	5	6
SE	200	210	220	230	250	9	3	4
SW								
ST	14290	15000	15720	16430	17860	6	6	7
ES								
EN								
ET								
WN	200	210	220	230	250	7	3	4
WS	540	570	590	620	680	7	3	4
WT								
N1	15020	15770	16530	17270	18780	6	5	6
S2	14830	15570	16310	17050	18540	6	6	7
S1	14490	15210	15940	16660	18110	6	6	7
N2	14670	15400	16140	16870	18340	6	5	6
E1								
W2								
W1	740	780	810	850	930	7	3	4
E2	750	790	830	860	940	8	3	4

TRAFFIC VOLUME FORECAST FOR INTERSECTIONS

Date: August 2002
Project: Des. No. 9802510
Route: US Route 52 at Beech Drive
County: Tippecanoe County
Other Info: PM-DHV



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INDIANA DEPARTMENT OF TRANSPORTATION
DESIGN DIVISION
INDIANAPOLIS, INDIANA 46204-2249
INTER-DEPARTMENT COMMUNICATION

September 28, 2002

TO: Mr. Brad Steckler
Preliminary Engineering Studies Manager

FROM: Mr. Bruce E. Bowman BB
Hydraulics Unit Engineer

SUBJECT: PRELIMINARY HYDRAULIC REVIEW
Road: U.S.52
Description: U.S. 52 from S.R. 38 to Beech Street (1.25 mi. N.
of S.R. 26)
Project No: STP-138-1()
County: Tippecanoe (City of Lafayette)
Des. No.: 9802510

The preliminary hydraulic review has been completed for the subject project. Outlets for the proposed storm sewers are discussed below. The Hydraulics Unit typically does not provide storm sewer sizes for Preliminary Engineering projects. Standard cost estimation procedures should be adequate for the proposed storm sewers.

The existing storm sewer system appears to have adequate hydraulic capacity for current INDOT standards. The designer should check the inlet spacing to determine if additional inlets are necessary for either pavement or off-site drainage.

A sanitary sewer (6" diameter) is shown entering INDOT's storm sewer system approximately 0.93 mi. S. of S.R. 26 (Sta. 293+85, Line "EE", Proj. No. U-74(57)). This sanitary flow must be separated from INDOT's storm flow. Coordination with IDEM and the City of Lafayette will be necessary.

The storm sewer at the N. end of the proposed project (Sta. 187+50 to 232+95, Line "EE", Proj. No. U-74-(49) and (57)) was constructed under an agreement with the City of Lafayette. Any work on this sewer will require coordination with the City of Lafayette.

The standard survey should be adequate for this project, provided that enough off-site survey is obtained to determine drainage areas for the proposed storm sewer system(s). No legal drains are present within the project limits.

If you have any questions or comments, please contact me at (317) 232-5332.

BEB
cc: Hydraulic file (2)



Indiana Department of Transportation

Materials and Tests Division

120 South Shortridge Road P.O. Box 19389
Indianapolis, Indiana 46219-0389
Phone: (317) 232-5280 Fax: (317) 356-9351

March 20, 2002

MEMORANDUM

TO : Mr. Matthew J. Crane, P.E.
Paul I. Cripe, Inc
7171 Graham Road, Indianapolis, IN 46250

THRU: Mr. David H. Andrewski
Materials Engineer

FROM: Mr. Kumar P. Dave
Pavement Design Engineer

RE : Preliminary Pavement Design
Des No : 9802510
District : Crawfordsville
Route : US 52 from Union Street to McCarty Street in City of Lafayette, Tippecanoe
Conty

US 52 is a four-lane divided urban highway with curbs and gutter. The pavement history indicates that this roadway is 10 inches reinforced concrete pavement built in 1970. The District has extensively patched in the past and informed at the field check that this is beyond repair and has drainage problem. The existing concrete pavement has distresses like joint spalling, "D" cracking, faulting and rough ride. The 1999 Pavement Management data also indicates poor condition of road (PQI=53 & IRI=209). This section carries approximately 30000 AADT with 10 to 15% trucks.

As discussed during the field check on March 8, 2002, the primary purpose of the project, as confirmed by the District, is to replace the existing deteriorating pavement along US 52 within the project limits. A secondary purpose of the project is to address other geometric features such as substandard turn lanes and removing the existing curb & guard rails in the median and replacing with raised median. The overall drainage will also be improved as part of this project.

Based on the history of deteriorating pavement and scope of the project the existing pavement shall be replaced. The proposed typical section will remain same as existing which is 2 lanes in each direction with curb and gutter and divided raised median.

For preliminary pavement design for new pavement use 400+/-75mm of HMA or 300+/-25 mm of PCCP. The final pavement design will be given after completion of the geotechnical investigation and traffic data submitted.

KPD
cc: Mr. Klika,
File



7172 Graham Road
Indianapolis, IN 46250
317-842-6777
FAX: 317-841-4798
www.picripe.com

SCOPE MEETING MINUTES

Road Reconstruction
US 52 from 0.5 Mi. W. of SR 26 to 1.01 Miles E. of SR 26
(Union Street to McCarty Street)
Project No.: STP-138-1 ()
Des. No.: 9802510

A scope meeting was held **Friday, March 8, 2002** for the above referenced project. The following individuals were in attendance:

• Architecture	Mr. Steve Isenhower	INDOT Crawfordsville District (Development)
	Mr. Bruce Conrad	INDOT Crawfordsville District (Development)
• Construction Administration	Mr. Wes Shaw	INDOT Crawfordsville District (Construction)
	Mr. Bill Smith	INDOT Crawfordsville District (Traffic)
• Engineering	Mr. Kumar Dave	INDOT Materials and Tests Division
	Ms. Opal Kuhl	City of Lafayette Engineering
	Ms. Anna Licon	City of Lafayette Engineering
	Mr. Brian Weber	Tippecanoe County Area Planning Commission
• Environmental Consulting	Mr. Doug Poad	Tippecanoe County Area Planning Commission
	Mr. Matthew Crane	Paul I. Cripe, Inc.
	Mr. Derek Schoon	Paul I. Cripe, Inc.

A summary of the issues discussed are as follows:

The primary need for the project is to address the poor pavement condition through the project limits. The original project limits extended from Union Street to McCarty Street. Upon further inspection, and to be consistent with the need of the project, the District has requested to amend these limits to extend further north to Beech Lane and further south to the north edge of SR 38.

The project is currently scheduled for construction in 2007, with design anticipated to begin in approximately one year.

The City of Lafayette currently has planned two future construction projects in the area of the subject project. Construction along Farabee Drive from SR 26 to Kossuth Street, and along Greenbush Street from US 52 to Creasy Lane are slated to be built in 2002 and 2003 respectively.

Bernardin, Lochmueller, and Associates is currently working on a corridor study along SR 26 for the City of Lafayette and INDOT. It was suggested the study could be used as a resource for the completion of the study of the subject project.

Due to the projected construction schedule, it was requested all signal hardware be replaced through the limits of the project. The signals along US 52 currently interconnected, with the current system being installed in 1991. Replacement of the signal hardware should include replacement of the interconnect system. The possibility of utilizing a wireless, radio frequency based interconnect system should be investigated.



"Excellence is not a single act, but a habit."

The City of Lafayette requested that the study investigate the feasibility of including sidewalk and lighting in the design. The city also requested that landscape enhancements (trees, planters, etc.) be included as part of this project, suggesting the median may be the most feasible area to include these items.

The District did feel it was desirable to change the existing cross sectional width of the roadway. Excessive impacts to adjacent properties would most likely result from the addition of travel lanes or turn lanes through the project limits. It is suspected the median-side left turn lanes are of substandard length and should be improved as part of the project. Additionally, a second left turn lane may be warranted at the US 52 / SR 38 intersection for southbound to eastbound traffic. All intersections, including this one, will be analyzed as part of this study.

District traffic requested the median guardrail be removed through the project limits.

The District inquired to the possibility of this portion of US 52 being relinquished to the city at some point in the future. Cripe will investigate this issue further as part of the study of this project.

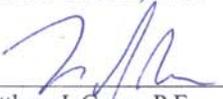
Drainage is generally fair along US 52 through the project limits, though spot areas of poor drainage exist, particularly between SR 26 and Kossuth Street. It is suspected several inlets have deteriorated beyond repair. It is anticipated that most of the existing drainage system will be replaced as part of this project.

Two concepts for maintaining traffic during construction were discussed; partial, segmental closures of US 52 (few blocks at a time) to minimize construction time, or traditional phased construction over a probable two construction season time period. The City of Lafayette expressed concern that any extended closures or restrictions will be detrimental to the businesses along the corridor. Cripe will work with the City and INDOT during the study phase, to detail, to the extent possible, the feasible strategies and maintenance of traffic concepts for the project.

The Planning Commission requested a copy of any traffic counts which are being performed as part of this study.

Meeting minutes prepared by:

PAUL I. CRIFE, INC.



Matthew J. Crane, P.E.

3-19-02
Date

CC: Attendees
Mr. Brad Steckler, INDOT Engineering Assessment
Ms. Mary Jo Hamman, INDOT Design
Mr. Jim Juricic, INDOT Environmental Assessment
File

