CITIZENS ADVISORY COMMITTEE

May 25, 2023
6:30 – 8:00 pm
Bloomington City Hall - McCloskey Room and Virtual Location via Zoom
Join Zoom Meeting
https://bloomington.zoom.us/j/8657231124?pwd=VG9sQWZsNTZpU1ZBa0lzdjJSNkQ5dz09
Meeting ID: 865 723 1124
Passcode: BMCMPO
Dial by your location
+1 312 626 6799 US (Chicago)
Find your local number: https://bloomington.zoom.us/u/ky1ihyfjN
Clicking on the link will take you to the meeting. You will automatically receive a dial-in number if you want to use your phone for audio and not your computer microphone.

The City is committed to providing equal access to information. However, despite our efforts, at times, portions of our board and commission packets are not accessible for some individuals. If you encounter difficulties accessing material in this packet, please contact the Melissa Hirtzel at hirtzelm@bloomington.in.gov and provide your name, contact information, and a link to or description of the document or web page you are having problems with.

I. Call to Order and Introductions

II. Approval of Meeting Agenda*

III. Approval of Minutes*
   a. April 26, 2022

IV. Communications from the Chair and Vice Chair

V. Reports from Officers and/or Committees

VI. Reports from the MPO Staff

VII. Old Business
   a. BMCMPO FY2024-2028 Transportation Improvement Program (TIP) - DRAFT*

VIII. New Business
   a. FY 2022 - 2026 Transportation Improvement Program (TIP) Amendments*
      (1) DES#TBD - Bloomington Transit - Six (6) Paratransit/Microtransit
      (2) DES#TBD - Bloomington Transit - Replacement of CAC/AVL hardware, equipment and associated systems
   b. Engineers Report - Old SR 37 South and Dillman Road Intersection Improvement - Discussion

IX. Public Comment on Matters Not Included on the Agenda *(non-voting items)*
Limited to five minutes per speaker, and may be reduced by the committee if numerous people wish to speak

X. Communications from Committee Members on Matters Not Included on the Agenda *(non-voting items)*
   a. Communications
   b. Topic Suggestions for Future Agendas

XI. Upcoming Meetings
   a. Policy Committee - June 30, 2023 at 1:30 p.m. (Hybrid)
   b. Technical Advisory Committee - June 28, 2023 at 10:00 a.m. (Hybrid)
   c. Citizens Advisory Committee - June 28, 2023 at 6:30 p.m. (Hybrid)

XII. Adjournment

**Action Requested / Public comment prior to vote (limited to five minutes per speaker*).
Auxiliary aids for people with disabilities are available upon request with adequate notice. Please call 812-349-3429 or e-mail human.rights@bloomington.in.gov.

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CITIZENS ADVISORY COMMITTEE
Meeting Minutes
April 26, 2023
6:30 - 8:00 p.m.

Citizens Advisory Committee minutes reflect transcriptions in a summarized outline manner. Audio recordings of the meeting are available in the Planning & Transportation Department for reference.

Members present: Paul Ash, Elizabeth Cox-Ash, Mary Jane Hall, Sarah Ryterband, John Kennedy

Guests: None

Staff present: Rachael Sargent, Pat Martin, Ryan Robling

I. Call to Order and Introductions 6:30pm

II. Approval of Meeting Agenda*
****Mary Jane Hall motioned to approve of the meeting agenda. John Kennedy seconded. Motion passed by a unanimous voice vote 5-0.****

III. Approval of Minutes*
a. February 22, 2023
****John Kennedy motioned to approve of the meeting minutes of February 22nd. Mary Jane Hall seconded. Motion passed by a unanimous voice vote 5-0.****

IV. Communications from the Chair and Vice Chair
a. None

V. Reports from Officers and/or Committees
a. None

VI. Reports from the MPO Staff
a. Staff Introduction - Pat Martin introduced Rachael Sargent. Rachael noted her background, academic achievements, and experience in the private sector focusing on sustainability. Discussion ensued.
b. City of Bloomington - College and Walnut Corridor Study – Pat Martin noted the study initiated by the Planning staff, purpose & need, important information links, and study next steps with encouragement for volunteer participation. Discussion ensued.

VII. Old Business
a. BMCMPO FY2023-2024 Unified Planning Work Program - FY2024 FINAL*
Pat Martin highlighted the federal focus areas, the associated budget, and the allocation of funds among tasks with an emphasis on a *2050 Metropolitan Transportation Plan Update* beginning in July. Discussion ensued. ****John Kennedy motioned to approve of the FY 2023-

2024 UPWP as presented. Mary Jane Hall seconded. Motion passed by a unanimous voice vote 5-0.**

VIII. New Business

a. FY 2022 - 2026 Transportation Improvement Program (TIP) Amendments*
   (1) DES#1802086 - I-69 CCTV-DMS Sections 1-5 - 02-15-23
   (2) DES#2300274 - Electric Vehicle Charging Infrastructure at Various Locations along the Indiana Interstate System.
   Pat Martin presented the proposed FY 2022-2026 TIP Amendments. Discussion ensued. ****John Kennedy motioned to approve of the proposed FY 2022-2026 TIP Amendments. Mary Jane Hall seconded. Motion passed by a unanimous voice vote 5-0.****

b. FY 2024-2027 Transportation Improvement Program - DRAFT*
   (1) BMCMPO Federal Program Category Allocations
   (2) BMCMPO Applications Received
      (a) Bloomington Transit
      (b) Rural Transit
      (c) Monroe County
      (d) City of Bloomington
   (3) FY 2024 - 2028 Fiscally Constrained Program of Projects
   Pat Martin and Rachael Sargent presented the Draft FY 2024-2028 TIP noting the federal program category allocations, the applications received, and the achievement of required fiscal constraint. ****Mary Jane Hall motioned to approve of the Draft FY 2024-2028 Transportation Improvement Program. John Kennedy seconded. Motion passed by a unanimous voice vote 5-0**.**

IX. Public Comment on Matters Not Included on the Agenda - None.

X. Communications from Committee Members on Matters Not Included on the Agenda *(non-voting items)*

a. Communications - None.
b. Topic Suggestions for Future Agendas - Pat Martin noted upcoming staff studies.

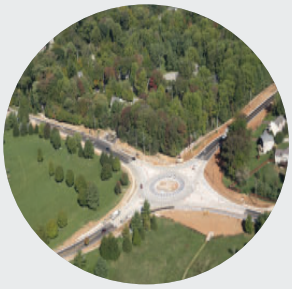
XI. Upcoming Meetings

a. Policy Committee - May 12, 2023 at 1:30 p.m. (Hybrid)
b. Technical Advisory Committee – May 24, 2023 at 10:00 a.m. (Hybrid)
c. Citizens Advisory Committee - May 24, 2023 at 6:30 p.m. (Hybrid)

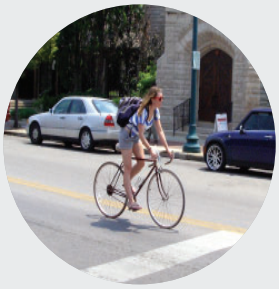
XII. Adjournment

i. Sarah Ryterband adjourned the meeting.

Transportation Improvement Program
Fiscal Years 2024-2028






May 17, 2023 - DRAFT

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Disclaimer

Preparation of the *Bloomington-Monroe County FY 2024-2028 Transportation Improvement Program* (TIP) has been financed in part through grants from the Federal Highway Administration and Federal Transit Administration, U.S. Department of Transportation, under the Metropolitan Planning Program, Section 104(f) of Title 23, U.S. Code. The contents of this report do not necessarily reflect the official views or policy of the U.S. Department of Transportation or the Indiana Department of Transportation.

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Projects

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Acknowledgments

The Bloomington-Monroe County Metropolitan Planning Organization *Fiscal Year 2024-2028 Transportation Improvement Program* included the assistance and efforts of numerous organizational groups and individual residents. The staff acknowledges and greatly appreciates all representatives and residents who participated in public meetings, public workshops thereby giving the community active participatory voices for policy decision makers and our collective state and federal partners.

Policy Committee

Lisa Ridge, Chair	Monroe County Highway Department
Steve Volan, Vice Chair	City of Bloomington City Council
Jason Banach	Indiana University
Margaret Clements	Monroe County Plan Commission
John Hamilton	City of Bloomington Mayor
Doug Horn	Bloomington Transit
Jillian Kinzie	City of Bloomington Plan Commission
Tony McClellan	Indiana Department of Transportation, Seymour District
Geoff McKim	Monroe County Council
Sarah Ryterband	Citizens Advisory Committee
Pamela Samples	Town of Ellettsville
Julie Thomas	Monroe County Commissioners
Adam Wason	City of Bloomington Public Works Department
Kelley Brookins (non-voting)	Federal Transit Administration, Region V
Jermaine R. Hannon (non-voting)	Federal Highway Administration, Indiana Division

Technical Advisory Committee

Nate Nickel, Chair	Bloomington Transit
Paul Satterly, P.E., Vice Chair	Monroe County Highway Department
John Baeten	Monroe County Surveyor Department
Meghan Blair	City of Bloomington Information Technology Services
Andrew Cibor, P.E., P.T.O.E.	City of Bloomington Engineering Department
Scott Waddell	Monroe County Community School Corporation
John Connell	Bloomington Transit
Jane Fleig, P.E.	City of Bloomington Utilities
Jackie N. Jelen	Monroe County, Planning Department
Brian Jones	Indiana Department of Transportation, Public Transit
Carlos Laverty	Monroe County Airport
Denise Line	Town of Ellettsville
Audrey Myers	Richland-Bean Blossom Community School Corporation
Chris Myers	Rural Transit, Area 10 Agency on Aging
Emmanuel Nsonwu	Indiana Department of Transportation
Rebecca Packer	Indiana Department of Transportation, Seymour District
Scott Robinson, AICP	City of Bloomington, Planning and Transportation
Catherine Smith	Monroe County Auditor
Danny Stalcup	Town of Ellettsville Street Department

Tim Street	City of Bloomington Parks and Recreation
Jeff Underwood	City of Bloomington City Controller
Joe VanDeventer	City of Bloomington Street Operations
Justin Reid VanLeeuwen	Indiana University Campus Bus
Kelli Witmer	Monroe County Parks and Recreation
Patrick Carpenter (Non-voting)	Federal Highway Administration
Cecilia Godfrey (Non-voting)	Federal Transit Administration
John Kennedy (Non-voting)	Citizens Advisory Committee

Citizens Advisory Committee

Sarah Ryterband, Chair	Prospect Hill Neighborhood
John Kennedy, Vice Chair	Council of Neighborhood Associations
Paul Ash	McDoel Gardens Neighborhood
Elizabeth Cox-Ash	McDoel Gardens Neighborhood
Mary Jane Hall	Bloomington Board of Realtors

Bloomington-Monroe County Metropolitan Planning Organization Staff

Pat Martin
Rachael Sargent

Introduction

The Transportation Improvement Program (TIP) represents a strategic capital planning document of the Bloomington-Monroe County Metropolitan Planning Organization (BMCMPO) for transportation projects using federal-aid funds. The TIP additionally serves as a subset of multimodal transportation system needs from the *BMCMPO 2045 Metropolitan Transportation Plan (MTP)*.

The Fiscal Year (FY) 2024-2028 TIP includes the following check list items for state and federal review partners:

- A complete fiscally-constrained five (5) year list of priority projects for planning, right-of-way acquisition, construction engineering, construction, transit operating assistance, and transit capital acquisition in individual years of the documented established multi-year timeframe pursuant to the Infrastructure Investment and Jobs Act (IIJA) Infrastructure Investment (Public Law 117-58, also known as the "Bipartisan Infrastructure Law" or "BIL").
- Cost estimates derived by local public agencies (LPAs) for local projects and the Indiana Department of Transportation (INDOT) for state projects using recognized civil engineering methods, such as RSMeans (https://www.rsmeans.com). Local projects assume an annual 4% inflation rate or rates that reflect rates by INDOT.
- FY 2024-2028 TIP projects have consistency with the adopted *BMCMPO 2045 MTP*, Bloomington Transit's *Transit Development Plan*, and other planning studies developed by the BMCMPO for the Indiana Department of Transportation (INDOT), Federal Highway Administration (FHWA), and the Federal Transit Administration (FTA) in collaboration with all relevant state and local stakeholders.
- FY 2024-2028 TIP projects identify a funding year and federal amount, state amount, and total project identified and included for programmed projects prior to including the TIP in the FY2024-2028 STIP.
- "Total project cost" are illustrated for all projects including the full cost of the project from PE to CN, costs programmed prior to this TIP, and costs that will be programmed beyond this TIP. This paragraph notes "total project cost" as defined by https://www.fhwa.dot.gov/majorprojects/cost_estimating/process.cfm.
- Operations and maintenance identified in the financial plan narrative "protects existing capital investments which include operation and maintenance and reconstruction (including pavement resurfacing, bridge rehabilitation transit operations, and bicycle/pedestrian facilities) of existing transportation facilities and services." INDOT and all LPAs have responsibility for operations and maintenance beyond the scope of the FY 2024-2028 TIP.
- One BMCMPO LPA uses grouped projects as reflected in the program pages for the Vernal Pike Connector (DES#1702957 & DES#1900406) and Fullerton Pike Phase III new road/bridge project (DES#2001721 and DES#180277).

- The FY 2024-2028 TIP includes the Vernal Pike and Fullerton Pike III new road/bridge as major projects carried over from the FY 2022-2026 TIP.

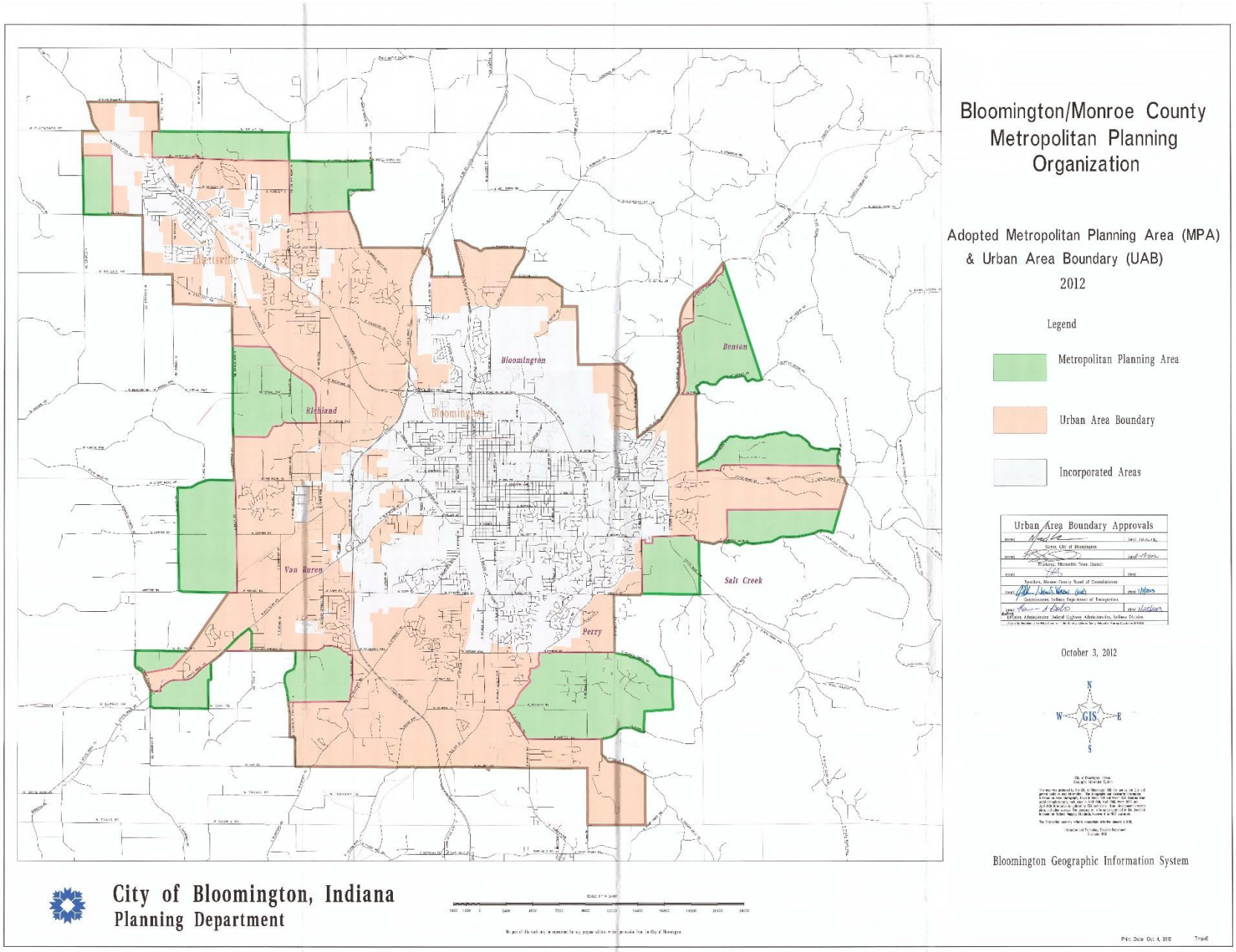
The TIP documents the distribution of all BMCMPO federal-aid transportation funding among the various multimodal jurisdictional needs of the region. Inclusion within the TIP signifies a major milestone in the development process of a project, enabling the project to receive allocations and spend federal transportation funds for established community infrastructure needs.

The FY 2024-2028 TIP is a capital budgeting tool that specifies an implementation timetable, funding sources and agencies responsible for transportation related projects within the metropolitan planning area. Projects may come from any one of the following implementing agencies:

- Town of Ellettsville
- Bloomington Transit
- Rural Transit
- Indiana University (IU) Campus Bus
- Monroe County
- City of Bloomington
- Indiana Department of Transportation (Note: All INDOT projects listed in the BMCMPO FY 2024-2028 TIP match INDOT Draft Statewide Transportation Improvement Program (STIP) listings.)

The STIP identifies the funding and timing of the state's transportation projects by fiscal year. The Draft FY 2024-028 STIP identifies approximately $3.5 billion for programmed projects. The STIP encompasses regionally significant projects prepared in cooperation with local government entities throughout Indiana, including Transportation Planning Regions, Metropolitan Planning Organizations (MPOs), and Regional Planning Organizations. The STIP identifies the funding and the scheduling of transportation projects and programs by state fiscal year (July 1 through June 30) and includes all state and local transportation projects funded with federal highway and/or federal transit funding along with 100% state funded transportation projects (including highway, passenger rail, freight, public transit, bicycle and pedestrian, and projects in national parks).

The BMCMPO is responsible for developing plans and programs that provide for the development, management, and operation of the transportation network as the designated MPO for the Bloomington and Monroe County Metropolitan Planning Area (MPA). The BMCMPO's current jurisdiction for transportation planning consists of the City of Bloomington, the Town of Ellettsville, and the urbanizing area of Monroe County. An online electronic map of the urbanized area illustrated on the following page is available at https://bloomington.in.gov/sites/default/files/2017-05/map_urbanized_area_boundary.pdf.


Bloomington/Monroe County
Metropolitan Planning
Organization
Adopted Metropolitan Planning Area (MPA)
& Urban Area Boundary (UAB)
2012
Legend
Metropolitan Planning Area
Urban Area Boundary
Incorporated Areas
Urban Area Boundary Approvals
October 3, 2012
Bloomington Geographic Information System
Bloomington
Benton
Richland
Van Buren
Salt Creek
Perry
City of Bloomington, Indiana
Planning Department

Transportation Improvement Programming

The Fiscal Year (FY) 2024-2028 Transportation Improvement Program (TIP) achieved fiscal constraint for FY 2024-2028 by individual years and include only those projects for which funding has been identified using current or reasonably available revenue sources. All FY 2027-2028 projects are illustrative. An "Illustrative Project" means an additional transportation project that may (but is not required to) be included in a financial plan for a metropolitan transportation plan (MTP), TIP, or Statewide Transportation Improvement Program (STIP) if reasonable additional resources were to become available pursuant to 23 CFR 450.104 Definitions. Illustrative projects must achieve conformance with the MTP and the TIP prior to federal action. The formal programming of an illustrative project will be accomplished through the TIP Amendment process to Pursuant to 23 CFR 450.330 (e) TIP action by the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA).

The Bloomington-Monroe County Metropolitan Planning Organization (BMCMPO) in cooperation with the State of Indiana and area transit operators develop the TIP financial plan by providing the BMCMPO with information early in the TIP development process. The information provided by these groups concerns the likely amount of federal and state funding available to the BMCMPO in order to enable the BMCMPO to conduct adequate financial planning.

The BMCMPO, the FHWA, and the FTA must jointly determine that new, or amended, TIP documents conform to the State's Air Quality Plan's purpose of attaining the National Ambient Air Quality Standards (NAAQS). The only exception is for amendments involving projects explicitly exempted by the U.S. Environmental Protection Agency's (USEPA) conformity regulation. The BMCMPO is exempt from the air quality requirements because it is in an air quality attainment area.

Projects listed in the TIP typically originate in the MTP developed by the BMCMPO in cooperation with the respective implementing agencies involved in the planning process. These implementing agencies then carry out the transportation plan's specific elements in the TIP. The TIP therefore serves as a strategic management tool that accomplishes the objectives of the Bloomington and Monroe County MTP.

Project prioritization is an important element of the TIP since the demand for federal-aid transportation projects often exceeds the level of available federal funds. The Indiana Department of Transportation (INDOT) prioritizes state highway projects in the TIP. Resource availability for Monroe County, the Town of Ellettsville, Bloomington Transit (BT), Indiana University (IU) Campus Bus, Area 10's Rural Transit, and the City of Bloomington determines local project prioritizations. Transportation improvement projects in the BMCMPO's urbanized area often achieve prioritization based on the following general hierarchy:

1. Unfunded capital projects that have been programmed and are ready for contract letting

2. Capital projects programmed for construction that will be ready for contract letting in the immediate future

3. Projects involving traffic operation or system management improvements

4. Projects programmed for right-of-way acquisition

5. Projects programmed for preliminary engineering and/or advanced studies

The type of activity scheduled and the federal funding category determine locally initiated project priorities. Additional project prioritization influences include state and local policy-level decision-making and the availability of federal, state, and local funds. Wherever possible, technical and non-technical factors jointly determine projects which have the greatest need for implementation.

The BMCMPO evaluates TIP amendments pursuant to the procedures outlined in the Public Participation Plan. The scope of a TIP amendment dictates the level of public participation solicited (major amendment, minor amendment, and administrative modification).

Amendment Process

TIP amendments are subject to the BMCMPO's adopted Public Participation Plan procedures. The scope of a TIP amendment dictates the level of public participation solicited (major amendment, minor amendment, and administrative modification). The TIP must have approvals by the BMCMPO Policy Committee and the Governor of the State of Indiana as well as conformity determinations by the FHWA and the FTA. Once approved, the TIP then becomes part of the STIP. The frequency and cycle for updating the TIP shall have compatibility with that of the STIP. Until this TIP, and project amendments herein, is approved by the FHWA, FTA, and INDOT, and until all project amendments are subsequently listed in an approved corresponding STIP, all project amendments and administrative modifications to the current FY 2022-2026 TIP will automatically be included in the new FY 2024-2028 TIP along with their coinciding project funding sources and amounts; however, a TIP application for both TIPs must be submitted to MPO staff for processing.

Transportation Improvement Program Projects

Background

This discussion provides a central reference point for the identification of recommended Bloomington-Monroe County Metropolitan Planning Organization (BMCMPO) *Fiscal Year (FY) 2024-2028 Transportation Improvement Program (TIP)* multimodal projects administered by Monroe County, the Town of Ellettsville, the City of Bloomington, Bloomington Transit (BT), Indiana University (IU) Campus Bus, Area 10 Agency on Aging Rural Transit, and the Indiana Department of Transportation (INDOT).

Project Cost Estimation

The *FY 2024-2028 TIP* relies on a "cost to complete" or more precisely a "total project estimated cost" supplied from the Local Planning Agencies (LPAs) and INDOT. This includes all project phases, including any phases that are completed or that extend beyond the four-year TIP period. The official definition from INDOT states:

> *"The STIP must include the cost of each phase of the project that is listed in the STIP and also include the total project cost (23 CFR 450.218(i)). Total project cost is the cost of all phases of the project i.e. PE, design, ROW, construction including phases that are outside the 4-year period of the STIP."*

INDOT will provide the BMCMPO with updated total estimated cost figures for each of its projects. The BMCMPO will additionally calculate the total estimated cost for all LPA projects. These totals will then have reflection within the BMCMPO TIP and within INDOT's STIP.

The BMCMPO uses this process for the *FY 2024-2028 TIP* and future TIP publications.

Federal Funding Sources

Projects programmed within the TIP categorize project phases by fiscal year along with the associated federal funding source accompanied by its appropriate local match as is necessary. Project phases will normally include:

- Preliminary Engineering (PE)
- Right-of-Way Acquisition (RW)
- Construction Engineering (CE)
- Construction (CN)

Projects use various federal transportation sources based on the type of project. In most circumstances, each federal funding source requires a certain percentage of local or state matching funding. The following narrative briefly highlights major transportation funding sources found under current TIP legislation.

- *Surface Transportation Program* (STPB) funds projects to preserve and improve the conditions and performance on any federal-aid highway, bridge/tunnel project on any public road, pedestrian, and bicycle infrastructure, and transit capital projects, including bus terminals. The BMCMPO receives Group II STBG fund allocations based on the 2010 Census urbanized area population. INDOT has allocated unspent Group III (areas less than 50,000 population) allocations to the urban area Monroe County in recent years for the construction of facilities impacted with I-69 construction.

- *Highway Safety Improvement Program* (HSIP) funds projects with the goal of achieving a significant reduction in traffic fatalities and serious injuries on all public roads including non-state-owned public roads.

- *National Highway Performance Program* (NHPP) funds construction of new facilities on the National Highway System. These funds ensure that investments in federal-aid funds in highway construction support progress toward the achievement of performance targets (also known as "measures") established in a state's asset management plan for the National Highway System.

- *Section 164 Penalty* (164 Penalty) funds HSIP projects with the goal of achieving a significant reduction in repeat intoxicated driver offender traffic fatalities and serious injuries on all public roads including non-state-owned public roads. Section 164 Penalty Funds originate from federal legislation/regulations applicable to any state that does not enact and enforce conforming repeat intoxicated driver laws. Indiana is one such state.

- *Carbon Reduction Program* (CRP) funds must involve projects designed to reduce transportation emissions, defined as carbon dioxide (CO_2) emissions from on-road highway sources.

- *PROTECT* (Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transportation) formula funds must involve preliminary engineering and design work, and other preconstruction activities; and construction, reconstruction, rehabilitation, and acquisition of real property (including land related to the project and improvements to land), environmental mitigation, and construction contingencies.

- *Section 130 RR Safety* funds train-activated safety improvements authorized in Section 130 of United States Code Title 23 (23 U.S.C.).

- *Bridge Programs* (BR) funds bridge safety, inspection, and improvement projects on state and local jurisdictional levels.

- *Transportation Alternatives Program* (TA) funds a variety of alternative transportation projects such as transportation enhancements, recreational trails, and Safe Routes to School.

- *Federal Transit Administration (FTA)* funding programs vary according to urban area use. Bloomington Transit, for example, relies on FTA Section 5307 operating assistance through formula allocations, Section 5310 funds for enhanced mobility of seniors and individuals with disabilities, and Section 5339 funds for capital bus/vehicle and bus facility needs. Rural Transit relies on Section 5311 funds for the provision of rural transportation services.

- *Indiana Public Mass Transit Fund* (PMTF) funds projects that promote and develop public transportation within Indiana and targeted to increase local financial involvement and encourage the delivery of efficient, effective transportation.

- *Indiana Trails Program* (ITP) funds projects that develop and maintain recreational trails and trail-related facilities for both non-motorized and motorized recreational trail uses. The State of Indiana, through a cooperative agreement between INDOT and the Indiana Department of Natural Resources (IDNR), converted this program into a wholly state funded "Indiana Recreational Trails Program" in calendar year 2020. Eligible entities for program project funding must submit applications through the IDNR, State Parks Section. The FY 2024-2028 TIP reflects this administrative program change.

Table 1 - Federal Transportation Funding Programs

Primary Federal, State, Local Funding Source Descriptions		
Funding Program*	**Abbreviation**	**Brief Description****
Surface Transportation Block Grant	STPBG	Projects that preserve and improve the conditions and performance on any federal-aid highway, bridge/tunnel project on functionally classified public road, pedestrian and bicycle infrastructure, and transit capital projects, including bus terminals.
Highway Safety Improvement Program	HSIP	Projects capable of achieving significant reductions in traffic fatalities and serious injuries on all public roads and non-state-owned roads.
National Highway Performance Program	NHPP	Facility investments on the Interstate or National Highway System (NHS) directed to support progress toward the achievement of performance targets established in a state's asset management plan for the NHS.
Section 164 Penalty	164 Penalty	Funds originating from legislation/regulations applicable to any state that does not enact and enforce conforming repeat intoxicated driver laws.
Section 130 RR Safety	130 RR Safety	Train-activated safety improvements authorized in Section 130 of United States Code Title 23 (23 U.S.C.).
Bridge Programs	Local Bridge or BR	Projects involving bridge safety, inspection, reconstruction, or replacement.
Transportation Alternatives	TA	Projects supporting both on/off-road pedestrian and bicycle facilities, environmental mitigation, and creating/improving recreational trails.
Federal Transit Administration	FTA	• Section 5307 operating assistance through formula allocations. • Section 5310 funds Enhanced Mobility of Seniors and Individuals with Disabilities. • Section 5311 funds rural transportation. • Section 5339 funds buses and bus facilities.
Indiana Public Mass Transit Fund	PMTF	A special fund created by the State of Indiana under state statute (I.C. 8-23-3-8) to promote and develop transportation within Indiana.
Carbon Reduction Program	CRP	Projects that support the reduction of transportation emissions.
Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transportation	PROTECT	Resiliency to natural hazards, including climate change, sea level rise, flooding, extreme weather events, and other natural disasters.
*Note: Not all funding programs for transit related projects in this TIP are displayed in this table.		
**Note: Descriptions of funding programs are adapted from the U.S. Department of Transportation Federal Highway Administration (FHWA) (https://fhwa.dot.gov/) and Federal Transit Administration (FTA).		

Red Flag Investigations

The National Environmental Policy Act of 1969 (NEPA) established policy safeguards the nation's social, economic, and environmental resources from adverse impacts of federal actions or programs. The Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA) are responsible for implementing the NEPA process for federally-funded transportation projects at the state and local levels.

All transportation projects have the potential to impact environmental, cultural, or historical resources. Local Public Agencies (LPAs) have a requirement to conduct Red Flag Investigations (RFI) for all local projects that may use federal funds. Each RFI identifies a project's potential impacts to nearby (1/2 mile) infrastructure, mining/mineral exploration, hazardous materials, water resources, ecological resources, and cultural resources to promote early and efficient consideration of these issues.

Periodic Evaluation of Facilities Repeatedly Requiring Repair and Reconstruction Due to Emergency Events

The Code of Federal Regulations (CFR 2020 23-Chapter 1, Part 667) requires states to conduct periodic evaluations of facilities repeatedly requiring repair and reconstruction due to emergency events, utilizing permanent repairs with Emergency Relief funds. The regulation defines "repeatedly" as two (2) or more similar repairs to the same facility during different events. INDOT requested the addition of the following narrative to the BMCMPO FY 2024-2028 TIP and the inclusion of attached statewide Emergency Relief map to address the federal requirements. While Part 667 imparts other requirements on INDOT that other INDOT Divisions have completed, this action should satisfy the requirements regarding the STIP.

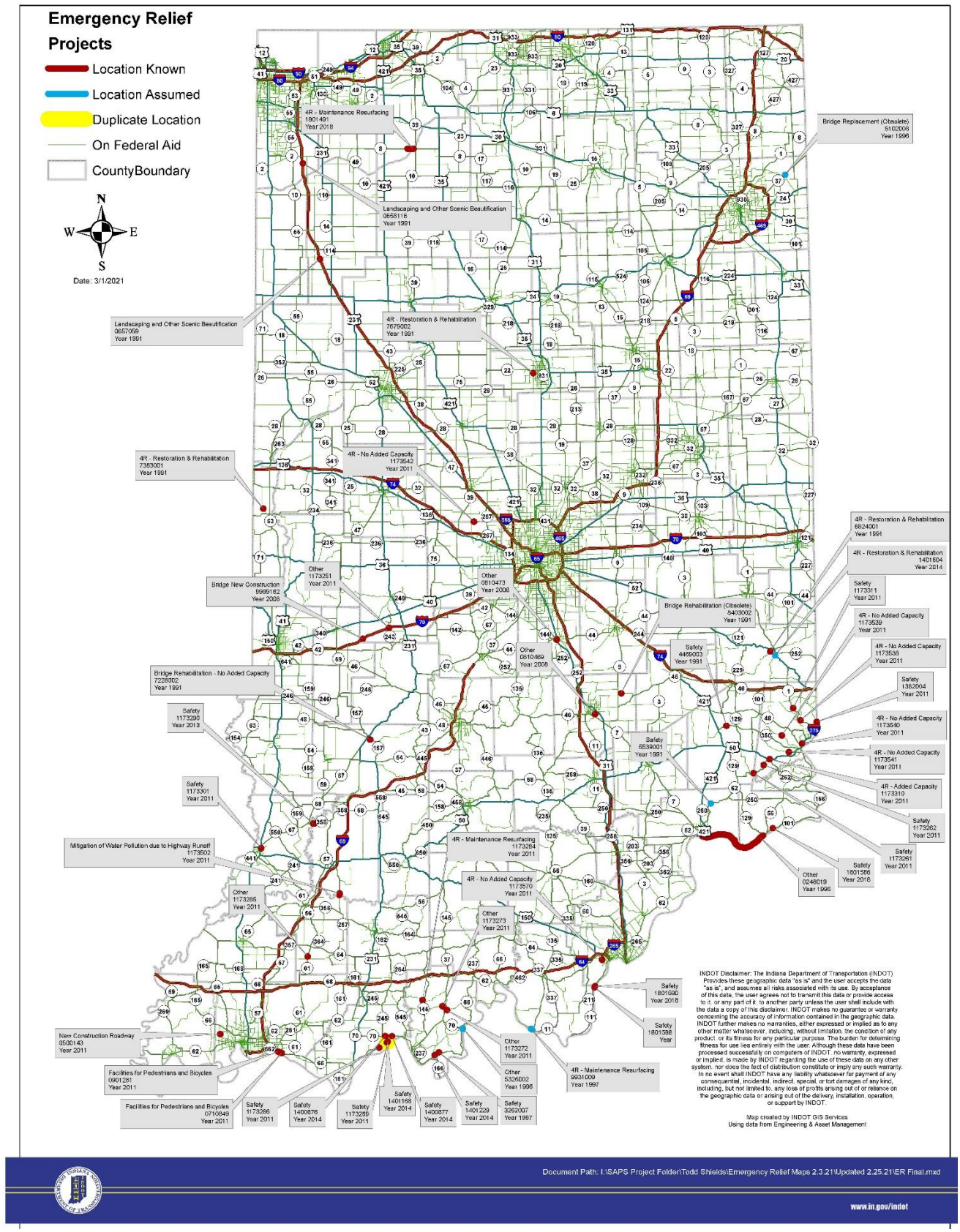
Federal Transportation Regulations require state departments of transportation (DOTs) to conduct periodic statewide evaluations to determine if there are reasonable alternatives to roads, highways, and bridges that have required repair and reconstruction activities on two or more occasions due to emergency events.

To comply with this requirement, INDOT has conducted an evaluation and compiled a listing of the identified locations in Indiana where emergency events have resulted in repairs to its transportation infrastructure. The following map illustrates locations and dates where emergency repairs have taken place. INDOT has identified only one (1) location where two (2) permanent repairs caused by different events on the same facility. The location is in Spencer County in southwestern Indiana on State Road 66, approximately 2.5 miles west of State Road 70. The emergency repairs were slide repairs to restore the roadway. INDOT will continue monitoring locations where emergency repairs occurred and will review and update the entire evaluation once every four years for the FHWA.

If in the future, a second emergency-situation occurs where repairs are required at any of the locations identified, INDOT will review alternatives and enhancements intended to mitigate or eliminate the need for any future emergency repairs at the same location. For example, if a bridge keeps washing out during a flood, INDOT could consider raising the bridge or installing an overflow structure.

Any projects programmed or amended into the STIP at locations that have had a permanent Emergency Repair will have alternatives considered to mitigate the need for future emergency repairs.

The BMCMPO urban area does not currently have any projects programed with federal Emergency Relief funds.


Emergency Relief Projects
Location Known
Location Assumed
Duplicate Location
On Federal Aid
CountyBoundary
N
W
E
S
Date: 3/1/2021
4R - Maintenance Resurfacing 1901491 Year 2018
Bridge Replacement (Obsolete) 5102006 Year 1996
Landscaping and Other Scenic Beautification 0658116 Year 1991
Landscaping and Other Scenic Beautification 0657056 Year 1991
4R - Restoration & Rehabilitation 7679002 Year 1991
4R - Restoration & Rehabilitation 7383001 Year 1991
4R - No Added Capacity 1173542 Year 2011
4R - Restoration & Rehabilitation 6824001 Year 1991
4R - Restoration & Rehabilitation 1401604 Year 2014
Other 1173251 Year 2011
Bridge New Construction 6999162 Year 2008
Other 0810473 Year 2008
Safety 1173311 Year 2011
Bridge Rehabilitation (Obsolete) 8403002 Year 1991
4R - No Added Capacity 1173539 Year 2011
Other 0810469 Year 2008
Safety 4485003 Year 1991
4R - No Added Capacity 1173538 Year 2011
Bridge Rehabilitation - No Added Capacity 7226002 Year 1991
Safety 1382004 Year 2011
Safety 1173290 Year 2013
4R - No Added Capacity 1173540 Year 2011
Safety 5539001 Year 1991
4R - No Added Capacity 1173541 Year 2011
Safety 1173301 Year 2011
4R - Added Capacity 1173310 Year 2011
Safety 1173262 Year 2011
Mitigation of Water Pollution due to Highway Runoff 1173502 Year 2011
4R - Maintenance Resurfacing 1173284 Year 2011
Safety 1173261 Year 2011
Other 0246019 Year 1996
Safety 1801586 Year 2018
4R - No Added Capacity 1173570 Year 2011
Other 1173285 Year 2011
Other 1173273 Year 2011
Safety 1801590 Year 2018
Safety 1801588 Year
New Construction Roadway 0500143 Year 2011
Other 1173272 Year 2011
Other 5326002 Year 1998
4R - Maintenance Resurfacing 9931009 Year 1997
Facilities for Pedestrians and Bicycles 0901281 Year 2011
Facilities for Pedestrians and Bicycles 0710849 Year 2011
Safety 1173286 Year 2011
Safety 1400876 Year 2014
Safety 1173289 Year 2011
Safety 1401168 Year 2014
Safety 1400877 Year 2014
Safety 1401229 Year 2014
Safety 3262007 Year 1997
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Transportation Improvement Program Funding

The Transportation Improvement Program (TIP) must achieve fiscal constraint by balancing estimated project expenditures with expected fiscal year funding revenues. Each specific source of funding must additionally have a use consistent with its designated project purpose. The process of balancing expenditures across the portfolio of available funds requires cooperation and support from all of all Bloomington-Monroe Metropolitan Planning Organization (BMCMPO) local public agencies (LPA), stakeholders, and state/federal funding partners.

The Fiscal Years (FY) used for the purposes of the TIP begin on July 1 and end on June 30. Therefore, Fiscal Year 2024 begins on July 1, 2023 and Fiscal Year 2028 ends on June 30, 2028.

Federal revenue forecasts rely upon past receipts typically allocated on a per capita basis for Indiana's Group II urban areas, projections from the Indiana Department of Transportation (INDOT), the Federal Highway Administration (FHWA), and the Federal Transit Administration (FTA) of anticipated federal spending authorization levels, and consultations with appropriate federal and state funding agencies.

Local funding forecast derivations employ a similar methodology coupled with extensive local public agency coordination. The source for project expenditure estimates include industry-standard construction cost estimating tools, such as RSMeans data (https://www.rsmeans.com) or similar standard industry sources, and a project-specific combination of prior construction experiential data, cost assessments, and program evaluation tools.

The following FY 2024-2028 TIP funding tables summarize the projected revenues and expenditures for the BMCMPO urban area. INDOT's programmed projects are subject to statewide financial constraints beyond the jurisdictional control of the BMCMPO.

Bloomington-Monroe Couty Metropolitan Planning Organization (BMCMPO)
Anticipated FY 2024-2028 TIP Federal Program Revenue Levels*

Program	FY 2024	FY 2025	FY 2026	FY 2027 (Illustrative)	FY 2028 (Illustrative)
STPBG	$3,118,927	$3,179,488	$3,241,261	$3,241,261	$3,241,261
HSIP	$559,328	$571,731	$584,382	$584,382	$584,382
TA	$389,209	$396,993	$404,933	$404,933	$404,933
SEC. 164 PENALTY**	$133,293	$135,958	$138,678	$138,678	$138,678
CRP	$339,592	$346,384	$353,312	$353,312	$353,312
PROTECT	$125,693	$128,207	$130,771	$130,771	$130,771
STPBG Group III	$7,372,000	$0	$0	$0	$0
TOTAL	$12,038,042	$4,758,761	$4,853,337	$4,853,337	$4,853,337

***Source:** Indiana MPO Council/INDOT-BMCMPO Local Share of Federal Formula Apportionments, 01-26-23.
**HSIP applicable projects.

Bloomington-Monroe County Metropolitan Planning Organization (BMCMPO)
LPA Funding Requests & Funding Type by Fiscal Year
(Note: FY 2027 – 2028 are Illustrative Fiscal Years)
May 12, 2023

BMCMPO STPBG Funding						
	Fiscal Year					Totals*
LPA	2024	2025	2026	2027	2028	
Bloomington Transit	$ -	$ -	$ -	$ -	$ -	$ -
City of Bloomington	$ 242,110	$ 3,179,488	$ 3,241,261	$ 2,989,261	$ 849,261	$ 10,501,381
Monroe County	$ 2,869,217	$ -	$ -	$ 252,000	$ 2,392,000	$ 5,513,217
Rural Transit	$ 7,600	$ -	$ -	$ -	$ -	$ 7,600
Total Funding Requested	$ 3,118,927	$ 3,179,488	$ 3,241,261	$ 3,241,261	$ 3,241,261	$ 16,022,198
Total Available	$ 3,118,927	$ 3,179,488	$ 3,241,261	$ 3,241,261	$ 3,241,261	$ 16,022,198
Difference	$ -	$ -	$ -	$ -	$ -	$ -

BMCMPO HSIP Funding						
	Fiscal Year					Totals*
LPA	2024	2025	2026	2027	2028	
Bloomington Transit	$ -	$ -	$ -	$ -	$ -	$ -
City of Bloomington	$ 382,500	$ 571,731	$ 102,882	$ 584,382	$ 584,382	$ 2,225,877
Monroe County	$ 176,828	$ -	$ 481,500	$ -	$ -	$ 658,328
Rural Transit	$ -	$ -	$ -	$ -	$ -	$ -
Total Funding Requested	$ 559,328	$ 571,731	$ 584,382	$ 584,382	$ 584,382	$ 2,884,205
Total Available	$ 559,328	$ 571,731	$ 584,382	$ 584,382	$ 584,382	$ 2,884,205
Difference	$ -	$ -	$ -	$ -	$ -	$ -

BMCMPO TA Funding						
	Fiscal Year					Totals*
LPA	2024	2025	2026	2027	2028	
Bloomington Transit	$ -	$ -	$ -	$ -	$ -	$ -
City of Bloomington	$ -	$ 396,993	$ 404,933	$ 404,933	$ 404,933	$ 1,611,792
Monroe County	$ 389,209	$ -	$ -	$ -	$ -	$ 389,209
Rural Transit	$ -	$ -	$ -	$ -	$ -	$ -
Total Funding Requested	$ 389,209	$ 396,993	$ 404,933	$ 404,933	$ 404,933	$ 2,001,001
Total Available	$ 389,209	$ 396,993	$ 404,933	$ 404,933	$ 404,933	$ 2,001,001
Difference	$ -	$ -	$ -	$ -	$ -	$ -

BMCMPO Section 164 Funding						
	Fiscal Year					Totals*
LPA	2024	2025	2026	2027	2028	
Bloomington Transit	$ -	$ -	$ -	$ -	$ -	$ -
City of Bloomington	$ 133,293	$ 135,958	$ 138,678	$ 138,678	$ 138,678	$ 685,285
Monroe County	$ -	$ -	$ -	$ -	$ -	$ -
Rural Transit	$ -	$ -	$ -	$ -	$ -	$ -
Total Funding Requested	$ 133,293	$ 135,958	$ 138,678	$ 138,678	$ 138,678	$ 685,285
Total Available	$ 133,293	$ 135,958	$ 138,678	$ 138,678	$ 138,678	$ 685,285
Difference	$ -	$ -	$ -	$ -	$ -	$ -

BMCMPO CRP Funding						
	Fiscal Year					Totals*
LPA	2024	2025	2026	2027	2028	
Bloomington Transit	$ -	$ -	$ -	$ -	$ -	$ -
City of Bloomington	$ 339,592	$ 346,384	$ 353,312	$ 353,312	$ 353,312	$ 1,745,912
Monroe County	$ -	$ -	$ -	$ -	$ -	$ -
Rural Transit	$ -	$ -	$ -	$ -	$ -	$ -
Total Funding Requested	$ 339,592	$ 346,384	$ 353,312	$ 353,312	$ 353,312	$ 1,745,912
Total Available	$ 339,592	$ 346,384	$ 353,312	$ 353,312	$ 353,312	$ 1,745,912
Difference	$ -	$ -	$ -	$ -	$ -	$ -

BMCMPO PROTECT Funding						
	Fiscal Year					Totals*
LPA	2024	2025	2026	2027	2028	
Bloomington Transit	$ -	$ -	$ -	$ -	$ -	$ -
City of Bloomington	$ 125,693	$ 128,207	$ 130,771	$ 130,771	$ 130,771	$ 646,213
Monroe County	$ -	$ -	$ -	$ -	$ -	$ -
Rural Transit	$ -	$ -	$ -	$ -	$ -	$ -
Total Funding Requested	$ 125,693	$ 128,207	$ 130,771	$ 130,771	$ 130,771	$ 646,213
Total Available	$ 125,693	$ 128,207	$ 130,771	$ 130,771	$ 130,771	$ 646,213
Difference	$ -	$ -	$ -	$ -	$ -	$ -

The following FY 2024-2028 TIP summary funding tables outline the projected revenues and expenditures for FY 2024-2028 for the BMCMPO urban area. The summary tables for the State of Indiana's programmed funds or projects are subject to statewide financial constraints beyond the jurisdictional control of the BMCMPO. The programmed expenditures tables demonstrate a fully constrained list of proposed expenditures for FY 2024-2026. FY 2027-2028 shall remain "illustrative" and therefore not subject to federal fiscal constraint requirements.

The following tables summarize funding sources for Monroe County, the City of Bloomington, Rural Transit, Bloomington Transit (BT), Indiana University (IU), and INDOT projects by programmed fiscal year.

Monroe County FY 2024 - 2028 TIP Summary Table						
	Fiscal Year					Totals*
Funding Source	2024	2025	2026	2027	2028	
HSIP	$ 176,828	$ -	$ 481,500	$ -	$ -	$ 658,328
Local	$ 20,712,294	$ 2,262	$ 87,824	$ 621,322	$ 632,730	$ 22,056,432
Local Bridge	$ 5,182,274	$ 459,046	$ 6,378,548	$ 2,233,289	$ 138,918	$ 14,392,075
STPBG	$ 2,869,217	$ -	$ -	$ 252,000	$ 2,392,000	$ 5,513,217
STPBG III	$ 9,854,000	$ -	$ -	$ -	$ -	$ 9,854,000
TA	$ 389,209	$ -	$ -	$ -	$ -	$ 389,209
Totals	$ 39,183,822	$ 461,308	$ 6,947,872	$ 3,106,611	$ 3,163,648	$ 52,863,261

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

City of Bloomington FY 2024 - 2028 TIP Summary Table						
	Fiscal Year					Totals*
Funding Source	2024	2025	2026	2027	2028	
CRP	$ 339,592	$ 346,384	$ 353,312	$ 353,312	$ 353,312	$ 1,745,912
HSIP	$ 382,500	$ 571,731	$ 102,882	$ 584,382	$ 584,382	$ 2,225,877
Local	$ 4,564,171	$ 1,421,239	$ 2,833,803	$ 1,188,296	$ 2,286,281	$ 12,293,790
PROTECT	$ 125,693	$ 128,207	$ 130,771	$ 130,771	$ 130,771	$ 646,213
Sec 164	$ 133,293	$ 135,958	$ 138,678	$ 138,678	$ 138,678	$ 685,285
STPBG	$ 242,110	$ 3,179,488	$ 3,241,261	$ 2,989,261	$ 849,261	$ 10,501,381
STPBG III	$ 340,051	$ -	$ -	$ -	$ -	$ 340,051
TA	$ -	$ 396,993	$ 404,933	$ 404,933	$ 404,933	$ 1,611,792
Totals	$ 6,127,410	$ 6,180,000	$ 7,205,640	$ 5,789,633	$ 4,747,618	$ 30,050,301

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

Rural Transit FY 2024 - 2028 TIP Summary Table						
	Fiscal Year					Totals*
Funding Source	2024	2025	2026	2027	2028	
Fares & In-Kind	$ 629,133	$ 654,298	$ 680,470	$ 707,689	$ 735,997	$ 3,407,587
FTA 5311	$ 891,641	$ 927,036	$ 964,399	$ 1,002,975	$ 1,043,094	$ 4,829,145
Local	$ 1,900	$ -	$ -	$ -	$ -	$ 1,900
PMTF	$ 309,812	$ 322,204	$ 335,093	$ 348,496	$ 361,436	$ 1,677,041
STPBG	$ 7,600	$ -	$ -	$ -	$ -	$ 7,600
Totals	$ 1,840,086	$ 1,903,538	$ 1,979,962	$ 2,059,160	$ 2,140,527	$ 9,923,273

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

Bloomington Transit FY 2024 - 2028 TIP Summary Table						
	Fiscal Year					Totals*
Funding Source	2024	2025	2026	2027	2028	
Fares	$ 1,611,732	$ 1,627,849	$ 1,660,406	$ 1,693,614	$ 1,727,487	$ 8,321,088
FTA 5307	$ 2,457,481	$ 2,584,780	$ 2,634,051	$ 2,668,923	$ 2,673,824	$ 13,019,059
FTA 5310	$ -	$ 4,300,000	$ 4,386,000	$ 228,888	$ 233,466	$ 9,148,354
FTA 5339	$ 6,000,000	$ 35,000,000	$ -	$ 4,400,000	$ 4,500,000	$ 49,900,000
Local	$ 3,481,591	$ 10,202,010	$ 3,376,175	$ 3,586,632	$ 3,758,092	$ 24,404,500
PMTF	$ 2,700,000	$ 2,754,000	$ 2,809,080	$ 2,865,262	$ 2,922,567	$ 14,050,909
Totals	$ 16,250,804	$ 56,468,639	$ 14,865,712	$ 15,443,319	$ 15,815,436	$ 118,843,910

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

Indiana Department of Transportation FY 2024 - 2028 TIP Summary Table															
Funding Source	Fiscal Year										Total Federal*	Total State*	Total*
	2024		2025		2026		2027		2028				
	Federal	State	Federal	State	Federal	State	Federal	State	Federal	State			
Safety Construction	$ 1,209,600	$ 302,400	$ 4,589,600	$ 1,147,400	$ -	$ -	$ 4,235,125	$ 838,000	$ -	$ -	$ 10,034,325	$ 2,287,800	$ 12,322,125
NHPP	$ 2,765,854	$ 601,464	$ 160,599	$ 40,150	$ 5,709,000	$ 703,400	$ -	$ -	$ -	$ -	$ 8,635,453	$ 1,345,014	$ 9,980,467
STBG	$ 3,240,000	$ 810,000	$ -	$ -	$ 862,400	$ 215,600	$ -	$ -	$ -	$ -	$ 4,102,400	$ 1,025,600	$ 5,128,000
Bridge ROW	$ 80,000	$ 20,000	$ 20,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 100,000	$ 20,000	$ 120,000
Bridge Construction	$ 3,916,044	$ 716,592	$ 3,148,000	$ 787,000	$ 3,782,200	$ 233,300	$ 4,494,133	$ 266,300	$ -	$ -	$ 15,340,377	$ 2,003,192	$ 17,343,569
District Other Construction	$ -	$ -	$ 3,326,038	$ 369,600	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,326,038	$ 369,600	$ 3,695,638
Road Construction	$ 800,000	$ 200,000	$ 12,661,600	$ 3,165,400	$ -	$ -	$ -	$ -	$ -	$ -	$ 13,461,600	$ 3,365,400	$ 16,827,000
Mobility Construction	$ 7,859,094	$ -	$ 2,689,600	$ 672,400	$ -	$ -	$ 5,671,000	$ -	$ -	$ -	$ 16,219,694	$ 672,400	$ 16,892,094
Statewide Construction	$ 106,327	$ -	$ 167,200	$ 41,800	$ -	$ -	$ -	$ -	$ -	$ -	$ 273,527	$ 41,800	$ 315,327
Bridge Consulting	$ 60,000	$ 15,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 60,000	$ 15,000	$ 75,000
Mobility ROW	$ 320,000	$ 80,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 320,000	$ 80,000	$ 400,000
Safety Consulting	$ 400,000	$ 100,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 400,000	$ 100,000	$ 500,000
Totals	$ 20,756,919	$ 2,845,456	$ 26,762,637	$ 6,223,750	$ 10,353,600	$ 1,152,300	$ 14,400,258	$ 1,104,300	$ -	$ -	$ 72,273,414	$ 11,325,806	$ 83,599,220

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

FY 2024-2028 Project List
Monroe County

Old SR 37 South and Dillman Road [TBD]							
Project Phase	Funding Source	Fiscal Year					Totals*
		2024	2025	2026	2027	2028	
PE	HSIP	$ -	$ -	$ 481,500	$ -	$ -	$ 481,500
PE	Local	$ -	$ -	$ 53,500	$ -	$ -	$ 53,500
RW	STPBG	$ -	$ -	$ -	$ 156,000	$ -	$ 156,000
RW	Local	$ -	$ -	$ -	$ 39,000	$ -	$ 39,000
UT	STPBG	$ -	$ -	$ -	$ 96,000	$ -	$ 96,000
UT	Local	$ -	$ -	$ -	$ 24,000		$ 24,000
CE	STPBG	$ -	$ -	$ -	$ -	$ 312,000	$ 312,000
CE	Local	$ -	$ -	$ -	$ -	$ 78,000	$ 78,000
CN	STPBG	$ -	$ -	$ -	$ -	$ 2,080,000	$ 2,080,000
CN	Local	$ -	$ -	$ -	$ -	$ 520,000	$ 520,000
Totals		$ -	$ -	$ 535,000	$ 315,000	$ 2,990,000	$ 3,840,000

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

Vernal Pike Connector [1702957 & 1900406]							
Project Phase	Funding Source	Fiscal Year					Totals*
		2024	2025	2026	2027	2028	
CE	STPBG III	$ 812,320	$ -	$ -	$ -	$ -	$ 812,320
CE	Local	$ 203,080	$ -	$ -	$ -	$ -	$ 203,080
CN	STPBG III	$ 9,041,680	$ -	$ -	$ -	$ -	$ 9,041,680
CN	Local	$ 2,155,013					$ 2,155,013
Totals		$ 12,212,093	$ -	$ -	$ -	$ -	$ 12,212,093

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

Fullerton Pike, Phase III, roadway [1802977]							
Project Phase	Funding Source	Fiscal Year					Totals*
		2024	2025	2026	2027	2028	
CE	Local	$ 757,101	$ -	$ -	$ -	$ -	$ 757,101
CN	STPBG	$ 2,750,133	$ -	$ -	$ -	$ -	$ 2,750,133
CN	Local	$ 3,306,672	$ -	$ -	$ -	$ -	$ 3,306,672
Totals		$ 6,813,906	$ -	$ -	$ -	$ -	$ 6,813,906

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

Liberty Drive Connection to Karst Trail [1900405]							
Project Phase	Funding Source	Fiscal Year					Totals*
		2024	2025	2026	2027	2028	
RW	Local	$ 295,000	$ -	$ -	$ -	$ -	$ 295,000
CE	Local	$ 238,000	$ -	$ -	$ -	$ -	$ 238,000
CN	TA	$ 389,209	$ -	$ -	$ -	$ -	$ 389,209
CN	Local	$ 1,510,791	$ -	$ -	$ -	$ -	$ 1,510,791
Totals		$ 2,433,000	$ -	$ -	$ -	$ -	$ 2,433,000

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

2022-2026 Bridge Safety Inspection & Inventory [2100084]							
Project Phase	Funding Source	Fiscal Year					Totals*
		2024	2025	2026	2027	2028	
PE	Local Bridge	$ 118,974	$ 9,046	$ 137,298	$ 14,889	$ 138,918	$ 419,125
PE	Local	$ 29,743	$ 2,262	$ 34,324	$ 3,722	$ 34,730	$ 104,781
Totals		$ 148,717	$ 11,308	$ 171,622	$ 18,611	$ 173,648	$ 523,906

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

Fullerton Pike, Phase III bridge [2001721]							
Project Phase	Funding Source	Fiscal Year					Totals*
		2024	2025	2026	2027	2028	
CE	Local	$ 1,177,227	$ -	$ -	$ -	$ -	$ 1,177,227
CE	Local Bridge	$ 222,000	$ -	$ -	$ -	$ -	$ 222,000
CN	Local	$ 9,713,812	$ -	$ -	$ -	$ -	$ 9,713,812
CN	Local Bridge	$ 1,480,000	$ -	$ -	$ -	$ -	$ 1,480,000
Totals		$ 12,593,039	$ -	$ -	$ -	$ -	$ 12,593,039

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

Rockport Road, Bridge #308 Replacement [1902772]							
Project Phase	Funding Source	Fiscal Year					Totals*
		2024	2025	2026	2027	2028	
PE	Local Bridge	$ 256,500	$ -	$ -	$ -	$ -	$ 256,500
PE	Local	$ 64,140	$ -	$ -	$ -	$ -	$ 64,140
RW	Local Bridge	$ 120,000	$ -	$ -	$ -	$ -	$ 120,000
RW	Local	$ 30,000	$ -	$ -	$ -	$ -	$ 30,000
CE	Local Bridge	$ 336,000	$ -	$ -	$ -	$ -	$ 336,000
CE	Local	$ 214,000	$ -	$ -	$ -	$ -	$ 214,000
CN	Local Bridge	$ 1,324,800	$ -	$ -	$ -	$ -	$ 1,324,800
CN	Local	$ 852,200	$ -	$ -	$ -	$ -	$ 852,200
Totals		$ 3,197,640	$ -	$ -	$ -	$ -	$ 3,197,640

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

Pedestrian Trail Crossing Improvements [1900493]							
Project Phase	Funding Source	Fiscal Year					Totals*
		2024	2025	2026	2027	2028	
CE	HSIP	$ 176,828	$ -	$ -	$ -	$ -	$ 176,828
CE	Local	$ 3,615	$ -	$ -	$ -	$ -	$ 3,615
CN	STPBG	$ 119,084	$ -	$ -	$ -	$ -	$ 119,084
CN	Local	$ 24,100	$ -	$ -	$ -	$ -	$ 24,100
Totals		$ 323,627	$ -	$ -	$ -	$ -	$ 323,627

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

Dillman Road, Bridge #83 replacement [2101712]							
Project Phase	Funding Source	Fiscal Year					Totals*
		2024	2025	2026	2027	2028	
PE	Local	$ 105,800	$ -	$ -	$ -	$ -	$ 105,800
PE	Local Bridge	$ 423,200	$ -	$ -	$ -	$ -	$ 423,200
RW	Local	$ 32,000	$ -	$ -	$ -	$ -	$ 32,000
RW	Local Bridge	$ 128,000	$ -	$ -	$ -	$ -	$ 128,000
CE	Local	$ -	$ -	$ -	$ 84,000	$ -	$ 84,000
CE	Local Bridge	$ -	$ -	$ -	$ 336,000	$ -	$ 336,000
CN	Local	$ -	$ -	$ -	$ 470,600	$ -	$ 470,600
CN	Local Bridge	$ -	$ -	$ -	$ 1,882,400	$ -	$ 1,882,400
Totals		$ 689,000	$ -	$ -	$ 2,773,000	$ -	$ 3,462,000

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

Eagleson Avenue Bridge over IN RR [2200146]							
Project Phase	Funding Source	Fiscal Year					Totals*
		2024	2025	2026	2027	2028	
PE	Local Bridge	$ 772,800	$ -	$ -	$ -	$ -	$ 772,800
RW	Local Bridge	$ -	$ 450,000	$ -	$ -	$ -	$ 450,000
CE	Local Bridge	$ -	$ -	$ 1,248,250	$ -	$ -	$ 1,248,250
CN	Local Bridge	$ -	$ -	$ 4,993,000	$ -	$ -	$ 4,993,000
Totals		$ 772,800	$ 450,000	$ 6,241,250	$ -	$ -	$ 7,464,050

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

FY 2024-2028 Project List

City of Bloomington

High Street Intersection Modernizations and Multiuse Path [2200020]							
Project Phase	Funding Source	Fiscal Year					Totals*
		2024	2025	2026	2027	2028	
RW	Local	$ 1,100,000	$ -	$ -	$ -	$ -	$ 1,100,000
CE	Local	$ -	$ -	$ 640,000	$ -	$ -	$ 640,000
CN	Local	$ -	$ -	$ 1,842,779	$ -	$ -	$ 1,842,779
CN	STPBG	$ -	$ -	$ 3,241,261	$ -	$ -	$ 3,241,261
CN	TA	$ -	$ -	$ 404,933	$ -	$ -	$ 404,933
CN	CRP	$ -	$ -	$ 180,256	$ -	$ -	$ 180,256
CN	PROTECT	$ -	$ -	$ 130,771	$ -	$ -	$ 130,771
Totals		$ 1,100,000	$ -	$ 6,440,000	$ -	$ -	$ 7,540,000

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

Covenanter Protected Bike Lanes and Intersection Improvements [TBD]							
Project Phase	Funding Source	Fiscal Year					Totals*
		2024	2025	2026	2027	2028	
PE	Local	$ 700,000	$ -	$ -	$ -	$ -	$ 700,000
RW	Local	$ -	$ 90,000	$ -	$ -	$ -	$ 90,000
CE	Local	$ -	$ -	$ -	$ 90,000	$ -	$ 90,000
CE	STPBG	$ -	$ -	$ -	$ 360,000	$ -	$ 360,000
CN	Local	$ -	$ -	$ -	$ 835,035	$ -	$ 835,035
CN	STPBG	$ -	$ -	$ -	$ 2,629,261	$ -	$ 2,629,261
CN	TA	$ -	$ -	$ -	$ 404,933	$ -	$ 404,933
CN	PROTECT	$ -	$ -	$ -	$ 130,771	$ -	$ 130,771
Totals		$ 700,000	$ 90,000	$ -	$ 4,450,000	$ -	$ 5,240,000

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

Downtown Curb Ramps Phase 4 [2200021]							
Project Phase	Funding Source	Fiscal Year					Totals*
		2024	2025	2026	2027	2028	
PE	Sec 164	$ 133,293	$ -	$ -	$ -	$ -	$ 133,293
PE	Local	$ 1,707	$ -	$ -	$ -	$ -	$ 1,707
CE	Local	$ -	$ -	$ -	$ 90,000	$ -	$ 90,000
CN	HSIP	$ -	$ -	$ -	$ 584,382	$ -	$ 584,382
CN	Sec 164	$ -	$ -	$ -	$ 138,678	$ -	$ 138,678
CN	Local	$ -	$ -	$ -	$ 76,940	$ -	$ 76,940
Totals		$ 135,000	$ -	$ -	$ 890,000	$ -	$ 1,025,000

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

Crosswalk Safety Improvements Project (Phase 3) [TBD]							
Project Phase	Funding Source	Fiscal Year					Totals*
		2024	2025	2026	2027	2028	
PE	Local	$ -	$ 19,064	$ -	$ -	$ -	$ 19,064
PE	HSIP	$ -	$ 140,936	$ -	$ -	$ -	$ 140,936
CE	Local	$ -	$ -	$ -	$ -	$ 90,000	$ 90,000
CN	Local	$ -	$ -	$ -	$ -	$ 76,940	$ 76,940
CN	HSIP	$ -	$ -	$ -	$ -	$ 584,382	$ 584,382
CN	Sec 164	$ -	$ -	$ -	$ -	$ 138,678	$ 138,678
Totals		$ -	$ 160,000	$ -	$ -	$ 890,000	$ 1,050,000

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

Downtown Curb Ramps Phase 5 [TBD]							
Project Phase	Funding Source	Fiscal Year					Totals*
		2024	2025	2026	2027	2028	
PE	HSIP	$ -	$ -	$ 102,882	$ -	$ -	$ 102,882
PE	Sec 164	$ -	$ -	$ 138,678	$ -	$ -	$ 138,678
PE	Local	$ -	$ -	$ 11,440	$ -	$ -	$ 11,440
Totals		$ -	$ -	$ 253,000	$ -	$ -	$ 253,000

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

North Dunn Street Multiuse Path [TBD]							
Project Phase	Funding Source	Fiscal Year					Totals*
		2024	2025	2026	2027	2028	
PE	Local	$ 500,000	$ -	$ -	$ -	$ -	$ 500,000
RW	Local	$ -	$ -	$ 80,000	$ -	$ -	$ 80,000
CE	Local	$ -	$ -	$ -	$ -	$ 390,000	$ 390,000
CN	Local	$ -	$ -	$ -	$ -	$ 1,448,900	$ 1,448,900
CN	STPBG	$ -	$ -	$ -	$ -	$ 849,261	$ 849,261
CN	TA	$ -	$ -	$ -	$ -	$ 404,933	$ 404,933
CN	CRP	$ -	$ -	$ -	$ -	$ 166,135	$ 166,135
CN	PROTECT	$ -	$ -	$ -	$ -	$ 130,771	$ 130,771
Totals		$ 500,000	$ -	$ 80,000	$ -	$ 3,390,000	$ 3,970,000

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

Crosswalk Safety Improvements Project (Phase 2) [2200014]							
Project Phase	Funding Source	Fiscal Year					Totals*
		2024	2025	2026	2027	2028	
CE	Local	$ -	$ 7,745	$ -	$ -	$ -	$ 7,745
CE	HSIP	$ -	$ 66,255	$ -	$ -	$ -	$ 66,255
CN	Local	$ -	$ 49,502	$ -	$ -	$ -	$ 49,502
CN	HSIP	$ -	$ 364,540	$ -	$ -	$ -	$ 364,540
CN	Sec 164	$ -	$ 135,958	$ -	$ -	$ -	$ 135,958
Totals		$ -	$ 624,000	$ -	$ -	$ -	$ 624,000

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

Signal Timing Project [1900400]							
Project Phase	Funding Source	Fiscal Year					Totals*
		2024	2025	2026	2027	2028	
PE	HSIP	$ 382,500	$ -	$ -	$ -	$ -	$ 382,500
PE	Local	$ 42,500	$ -	$ -	$ -	$ -	$ 42,500
Totals		$ 425,000	$ -	$ -	$ -	$ -	$ 425,000

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

B-Line Trail Connection [1700735]							
Project Phase	Funding Source	Fiscal Year					Totals*
		2024	2025	2026	2027	2028	
CE	Local	$ 257,410	$ -	$ -	$ -	$ -	$ 257,410
CN	Local	$ 1,362,554	$ -	$ -	$ -	$ -	$ 1,362,554
CN	STPBG III	$ 340,051	$ -	$ -	$ -	$ -	$ 340,051
CN	STPBG	$ 242,110	$ -	$ -	$ -	$ -	$ 242,110
CN	CRP	$ 339,592	$ -	$ -	$ -	$ -	$ 339,592
CN	PROTECT	$ 125,693	$ -	$ -	$ -	$ -	$ 125,693
Totals		$ 2,667,410	$ -	$ -	$ -	$ -	$ 2,667,410

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

Go Bloomington, Transportation Demand Management (TDM) program for Bloomington and Monroe County [TBD]							
Project Phase	Funding Source	Fiscal Year					Totals*
		2024	2025	2026	2027	2028	
PE	Local	$ 400,000	$ 249,600	$ 259,584	$ 96,321	$ 280,441	$ 1,285,946
PE	CRP	$ -	$ 166,400	$ 173,056	$ 353,312	$ 187,177	$ 879,945
Totals		$ 400,000	$ 416,000	$ 432,640	$ 449,633	$ 467,618	$ 2,165,891

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

West 2nd Street Modernization and Safety Improvements [2200012]							
Project Phase	Funding Source	Fiscal Year					Totals*
		2024	2025	2026	2027	2028	
RW	Local	$ 200,000	$ -	$ -	$ -	$ -	$ 200,000
CE	Local	$ -	$ 100,000	$ -	$ -	$ -	$ 100,000
CE	STPBG	$ -	$ 390,000	$ -	$ -	$ -	$ 390,000
CN	Local	$ -	$ 905,328	$ -	$ -	$ -	$ 905,328
CN	STPBG	$ -	$ 2,789,488	$ -	$ -	$ -	$ 2,789,488
CN	TA	$ -	$ 396,993	$ -	$ -	$ -	$ 396,993
CN	CRP	$ -	$ 179,984	$ -	$ -	$ -	$ 179,984
CM	PROTECT	$ -	$ 128,207	$ -	$ -	$ -	$ 128,207
Totals		$ 200,000	$ 4,890,000	$ -	$ -	$ -	$ 5,090,000

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

FY 2024-2028 Project List

Rural Transit

Rural Transit Operations [TBD]							
Project Phase	Funding Source	Fiscal Year					Totals*
		2024	2025	2026	2027	2028	
PE	FTA 5311	$ 891,641	$ 927,036	$ 964,399	$ 1,002,975	$ 1,043,094	$ 4,829,145
PE	PMTF	$ 309,812	$ 322,204	$ 335,093	$ 348,496	$ 361,436	$ 1,677,041
PE	Fares & In-Kind	$ 629,133	$ 654,298	$ 680,470	$ 707,689	$ 735,997	$ 3,407,587
Totals		$ 1,830,586	$ 1,903,538	$ 1,979,962	$ 2,059,160	$ 2,140,527	$ 9,913,773

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

Four Camera w/DVR Systems for 10 RT [TBD]							
Project Phase	Funding Source	Fiscal Year					Totals*
		2024	2025	2026	2027	2028	
CN	STPBG	$ 7,600					$ 7,600
CN	Local	$ 1,900					$ 1,900
Totals		$ 9,500	$ -	$ -	$ -	$ -	$ 9,500

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

FY 2024-2028 Project List
Bloomington Transit

Federal, State and Local Assistance for the services including late weeknight service [TBD]							
Project Phase	Funding Source	Fiscal Year 2024	2025	2026	2027	2028	Totals*
Operations	FTA 5307	$ 2,300,000	$ 2,346,000	$ 2,392,920	$ 2,440,778	$ 2,489,594	$ 11,969,292
Operations	PMTF	$ 2,700,000	$ 2,754,000	$ 2,809,080	$ 2,865,262	$ 2,922,567	$ 14,050,909
Operations	Local	$ 2,242,221	$ 2,287,065	$ 2,441,192	$ 2,600,568	$ 2,765,342	$ 12,336,388
Operations	Fares	$ 1,611,732	$ 1,627,849	$ 1,660,406	$ 1,693,614	$ 1,727,487	$ 8,321,088
Totals		$ 8,853,953	$ 9,014,914	$ 9,303,598	$ 9,600,222	$ 9,904,990	$ 46,677,677

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

Purchase of 40-foot BEB Buses & Charging Equip [TBD]							
Project Phase	Funding Source	Fiscal Year 2024	2025	2026	2027	2028	Totals*
Capital	FTA 5339	$ -	$ -	$ -	$ 4,400,000	$ 4,500,000	$ 8,900,000
Capital	Local	$ -	$ -	$ -	$ 880,000	$ 900,000	$ 1,780,000
Totals		$ -	$ -	$ -	$ 5,280,000	$ 5,400,000	$ 10,680,000

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

Purchase of 35-foot Electric Buses, Charging Stations [TBD]							
Project Phase	Funding Source	Fiscal Year 2024	2025	2026	2027	2028	Totals*
Capital	FTA 5310	$ -	$ 4,080,000	$ 4,161,600	$ -	$ -	$ 8,241,600
Capital	Local	$ -	$ 816,000	$ 832,320	$ -	$ -	$ 1,648,320
Totals		$ -	$ 4,896,000	$ 4,993,920	$ -	$ -	$ 9,889,920

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

Purchase BT Access Vehicles [TBD]							
Project Phase	Funding Source	Fiscal Year 2024	2025	2026	2027	2028	Totals*
Capital	FTA 5310	$ -	$ 220,000	$ 224,400	$ 228,888	$ 233,466	$ 906,754
Capital	Local	$ -	$ 44,000	$ 44,880	$ 45,778	$ 46,693	$ 181,351
Totals		$ -	$ 264,000	$ 269,280	$ 274,666	$ 280,159	$ 1,088,105

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

Land Acquisition for Grimes Lane Expansion [TBD]							
Project Phase	Funding Source	Fiscal Year 2024	2025	2026	2027	2028	Totals*
Capital	FTA 5339	$ 6,000,000	$ -	$ -	$ -	$ -	$ 6,000,000
Capital	Local	$ 1,200,000					$ 1,200,000
Totals		$ 7,200,000	$ -	$ -	$ -	$ -	$ 7,200,000

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

Capitalize the Purchase of Engine/Transmission Rebuilds, Hybrid Energy Units, & Tires [TBD]							
Project Phase	Funding Source	Fiscal Year 2024	2025	2026	2027	2028	Totals*
Capital	FTA 5307	$ 157,481	$ 163,780	$ 170,331	$ 177,145	$ 184,230	$ 852,967
Capital	Local	$ 39,370	$ 40,945	$ 42,583	$ 44,286	$ 46,057	$ 213,241
Totals		$ 196,851	$ 204,725	$ 212,914	$ 221,431	$ 230,287	$ 1,066,208

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

Purchase Support & Maintenance Vehicles [TBD]							
Project Phase	Funding Source	Fiscal Year 2024	2025	2026	2027	2028	Totals*
Capital	FTA 5307	$ -	$ 75,000	$ 70,800	$ 51,000	$ -	$ 196,800
Capital	Local	$ -	$ 14,000	$ 15,200	$ 16,000	$ -	$ 45,200
Totals		$ -	$ 89,000	$ 86,000	$ 67,000	$ -	$ 242,000

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

Design and construction of Grimes Lane expansion [TBD]							
Project Phase	Funding Source	Fiscal Year 2024	2025	2026	2027	2028	Totals*
Capital	FTA 5339	$ -	$ 35,000,000	$ -	$ -	$ -	$ 35,000,000
Capital	Local	$ -	$ 7,000,000	$ -	$ -	$ -	$ 7,000,000
Totals		$ -	$ 42,000,000	$ -	$ -	$ -	$ 42,000,000

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

FY 2024-2028 Project List

Indiana Department of Transportation

The Indiana Department of Transportation Draft FY2024-2028 Statewide Transportation Improvement Program (STIP) (https://www.in.gov/indot/files/STIP_2024-2028-draft.pdf) program of proposed projects did not achieve a public release date until May 1, 2023.

The BMCMPO staff shall include these proposed projects within the Draft BMCMPO FY 2024-2026 TIP by mid-May 2023.

SR 37 at Intersection with Dillman Road [1800371]													
Project Phase	Funding Source	Fiscal Year										Totals*	
		2024		2025		2026		2027		2028			
		Federal	State	Federal	State	Federal	State	Federal	State	Federal	State		
CN	Safety Construction	$ 1,209,600	$ 302,400	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$	1,512,000
Totals		$ 1,209,600	$ 302,400	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$	1,512,000

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

SR 37 - 3.65 Miles South of SR 45 over Abandoned Railroad Northbound Lane [1801171]													
Project Phase	Funding Source	Fiscal Year										Totals*	
		2024		2025		2026		2027		2028			
		Federal	State	Federal	State	Federal	State	Federal	State	Federal	State		
CN	NHPP	$ 329,854	$ 82,464	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$	412,318
Totals		$ 329,854	$ 82,464	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$	412,318

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

SR 46 Bridge Superstructure Replacement at 6.04 Miles W of SR 37 at Jacks Defeat Creek (WBL) [1900098]													
Project Phase	Funding Source	Fiscal Year										Totals*	
		2024		2025		2026		2027		2028			
		Federal	State	Federal	State	Federal	State	Federal	State	Federal	State		
PE	NHPP	$ 60,000	$ 15,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$	75,000
CN	NHPP	$ 1,968,000	$ 492,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$	2,460,000
Totals		$ 2,028,000	$ 507,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$	2,535,000

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

SR 45 Bridge over BR Indian Creek, 3.62 mile S of SR 37 [2000365]													
Project Phase	Funding Source	Fiscal Year										Totals*	
		2024		2025		2026		2027		2028			
		Federal	State	Federal	State	Federal	State	Federal	State	Federal	State		
CN	STBG	$ 1,160,000	$ 290,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$	1,450,000
Totals		$ 1,160,000	$ 290,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$	1,450,000

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

SR 46 Bridge This Deck Overlay Over BR N Fork Salt Creek, 4.86 Miles E of SR 46 [2002034]													
Project Phase	Funding Source	Fiscal Year										Totals*	
		2024		2025		2026		2027		2028			
		Federal	State	Federal	State	Federal	State	Federal	State	Federal	State		
CN	NHPP	$ -	$ -	$ 160,599	$ 40,150	$ -	$ -	$ -	$ -	$ -	$ -	$	200,749
Totals		$ -	$ -	$ 160,599	$ 40,150	$ -	$ -	$ -	$ -	$ -	$ -	$	200,749

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

Twenty-three (23) Bridge Thin Deck Overlays on I-69 in Seymour District [2100726 (lead), 2100590, 2100591, 2100592, 2100593, 2100594, 2100595, 2100596, 2100597, 2100598, 2100599, 2100600, 2100628, 2100629, 2100658, 2100659, 2100660, 210061, 2100662, 2100663, 2100664, 2100682, 2100684]													
Project Phase	Funding Source	Fiscal Year										Totals*	
		2024		2025		2026		2027		2028			
		Federal	State	Federal	State	Federal	State	Federal	State	Federal	State		
CN	NHPP	$ -	$ -	$ -	$ -	$ 5,207,400	$ 578,000	$ -	$ -	$ -	$ -	$	5,785,400
Totals		$ -	$ -	$ -	$ -	$ 5,207,400	$ 578,000	$ -	$ -	$ -	$ -	$	5,785,400

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

SR 46 Bridge Deck Overlay on SR 46 at N. Hartstrait Rd over branch Jacks Defeat Creek, 0.02 miles S of SR 46 [2100752]														
Project Phase	Funding Source	Fiscal Year												Totals*
		2024		2025		2026		2027		2028				
		Federal	State	Federal	State	Federal	State	Federal	State	Federal	State			
CN	STBG	$ -	$ -	$ -	$ -	$ 862,400	$ 215,600	$ -	$ -	$ -	$ -	$ 1,078,000		
Totals		$ -	$ -	$ -	$ -	$ 862,400	$ 215,600	$ -	$ -	$ -	$ -	$ 1,078,000		

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

SR 48 Small Structure Replacement on ST over Unnamed Ditch, 2.34 Miles E of SR 43 [2100808]														
Project Phase	Funding Source	Fiscal Year												Totals*
		2024		2025		2026		2027		2028				
		Federal	State	Federal	State	Federal	State	Federal	State	Federal	State			
RW	Bridge ROW	$ 8,000	$ 2,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 10,000		
PE	Bridge Construction	$ -	$ -	$ -	$ -	$ 16,000	$ 4,000	$ -	$ -	$ -	$ -	$ 20,000		
CN	Bridge Construction	$ -	$ -	$ -	$ -	$ 233,200	$ 58,300	$ -	$ -	$ -	$ -	$ 291,500		
Totals		$ 8,000	$ 2,000	$ -	$ -	$ 249,200	$ 62,300	$ -	$ -	$ -	$ -	$ 321,500		

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

SR 37 Small Structure Pipe Lining on SR 37 over UNT Clear Creek, 1.45 Miles S of I-69 [2100766]														
Project Phase	Funding Source	Fiscal Year												Totals*
		2024		2025		2026		2027		2028				
		Federal	State	Federal	State	Federal	State	Federal	State	Federal	State			
RW	Bridge ROW	$ 16,000	$ 4,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 20,000		
CN	Bridge Construction	$ -	$ -	$ -	$ -	$ 684,000	$ 171,000	$ -	$ -	$ -	$ -	$ 855,000		
Totals		$ 16,000	$ 4,000	$ -	$ -	$ 684,000	$ 171,000	$ -	$ -	$ -	$ -	$ 875,000		

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

SR 46 Bridge Deck Overlay on SR 46 over Stephens Creek, 3.00 Miles E of SR 446 [2100688]														
Project Phase	Funding Source	Fiscal Year												Totals*
		2024		2025		2026		2027		2028				
		Federal	State	Federal	State	Federal	State	Federal	State	Federal	State			
CN	NHPP	$ -	$ -	$ -	$ -	$ 501,600	$ 125,400	$ -	$ -	$ -	$ -	$ 627,000		
Totals		$ -	$ -	$ -	$ -	$ 501,600	$ 125,400	$ -	$ -	$ -	$ -	$ 627,000		

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

SR 45 Added Travel Lane on SR 45 from the Bloomington Bypass to the Intersection on Pete Ellis Drive [1800086]														
Project Phase	Funding Source	Fiscal Year												Totals*
		2024		2025		2026		2027		2028				
		Federal	State	Federal	State	Federal	State	Federal	State	Federal	State			
CN	District Other Construct	$ -	$ -	$ 1,597,638	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,597,638		
PE	District Other Construct	$ -	$ -	$ 250,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 250,000		
Totals		$ -	$ -	$ 1,847,638	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,847,638		

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

SR 46 Bridge Superstructure Replacement at 4.83 Miles W of SR 37 at Jacks Defeat Creek [2000311]														
Project Phase	Funding Source	Fiscal Year												Totals*
		2024		2025		2026		2027		2028				
		Federal	State	Federal	State	Federal	State	Federal	State	Federal	State			
CN	Bridge Construction	$ 528,768	$ 132,192	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 660,960		
PE	Bridge Construction	$ 40,000	$ 10,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 50,000		
Totals		$ 528,768	$ 132,192	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 710,960		

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

SR 46 HMA Overlay 15.24 Miles from SR 446 to W Junction of SR 135 [1900331]														
Project Phase	Funding Source	Fiscal Year												Totals*
		2024		2025		2026		2027		2028				
		Federal	State	Federal	State	Federal	State	Federal	State	Federal	State			
RW	Bridge ROW	$ 56,000	$ 14,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 70,000		
CN	Road Construction	$ -	$ -	$ 12,661,600	$ 3,165,400	$ -	$ -	$ -	$ -	$ -	$ -	$ 15,827,000		
CN	Bridge Construction	$ -	$ -	$ 3,148,000	$ 787,000	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,935,000		
Totals		$ 56,000	$ 14,000	$ 15,809,600	$ 3,952,400	$ -	$ -	$ -	$ -	$ -	$ -	$ 19,832,000		

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

I-69 Wrong Way Signage with LED Lights at the Intersections of I-69 & Fullerton Pike and I-69 & SR 45/W Bloomfield Rd [2101774] - Proposed														
Project Phase	Funding Source	Fiscal Year												Totals*
		2024		2025		2026		2027		2028				
		Federal	State	Federal	State	Federal	State	Federal	State	Federal	State			
CN	NHPP	$ 108,000	$ 12,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 120,000		
Totals		$ 108,000	$ 12,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 120,000		

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

Repair or Replace Lighting a Various Locations in the Seymour District [2101785] - Proposed																					
Project Phase	Funding Source	Fiscal Year																		Totals*	
		2024				2025				2026				2027				2028			
		Federal		State		Federal		State		Federal		State		Federal		State		Federal		State	
CN	STBG	$	2,080,000	$	520,000	$	-	$	-	$	-	$	-	$	-	$	-	$	-	$	-	$	2,600,000
Totals		$	2,080,000	$	520,000	$	-	$	-	$	-	$	-	$	-	$	-	$	-	$	-	$	2,600,000

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

SR 45/46 From .2 mi E of I-69 (Arlington) to 0.93 mi E of I-69 (Kinser) [1700198]																					
Project Phase	Funding Source	Fiscal Year																		Totals*	
		2024				2025				2026				2027				2028			
		Federal		State		Federal		State		Federal		State		Federal		State		Federal		State	
CN	Mobility Construction	$	7,859,094	$	-	$	-	$	-	$	-	$	-	$	-	$	-	$	-	$	-	$	7,859,094
RW	NHPP	$	300,000			$	-	$	-	$	-	$	-	$	-	$	-	$	-	$	-	$	300,000
Totals		$	8,159,094	$	-	$	-	$	-	$	-	$	-	$	-	$	-	$	-	$	-	$	8,159,094

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

SR 45 At the intersection of Pete Ellis Dr [1800199]																					
Project Phase	Funding Source	Fiscal Year																		Totals*	
		2024				2025				2026				2027				2028			
		Federal		State		Federal		State		Federal		State		Federal		State		Federal		State	
CN	Safety Construction	$	-	$	-	$	4,229,600	$	1,057,400	$	-	$	-	$	-	$	-	$	-	$	-	$	5,287,000
CN	District Other Construct	$	-	$	-	$	1,478,400	$	369,600	$	-	$	-	$	-	$	-	$	-	$	-	$	1,848,000
Totals		$	-	$	-	$	5,708,000	$	1,427,000	$	-	$	-	$	-	$	-	$	-	$	-	$	7,135,000

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

SR 37 03.65 miles S of SR 45 over Abandoned RR NBL [1801171]																					
Project Phase	Funding Source	Fiscal Year																		Totals*	
		2024				2025				2026				2027				2028			
		Federal		State		Federal		State		Federal		State		Federal		State		Federal		State	
CN	Bridge Construction	$	329,600	$	82,400	$	-	$	-	$	-	$	-	$	-	$	-	$	-	$	-	$	412,000
Totals		$	329,600	$	82,400	$	-	$	-	$	-	$	-	$	-	$	-	$	-	$	-	$	412,000

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

SR 37 03.65 miles S of SR 45 over Abandoned RR SBL [1801172]																					
Project Phase	Funding Source	Fiscal Year																		Totals*	
		2024				2025				2026				2027				2028			
		Federal		State		Federal		State		Federal		State		Federal		State		Federal		State	
CN	Bridge Construction	$	206,159	$	-	$	-	$	-	$	-	$	-	$	-	$	-	$	-	$	-	$	206,159
Totals		$	206,159	$	-	$	-	$	-	$	-	$	-	$	-	$	-	$	-	$	-	$	206,159

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

Seymour District ITS & Signal Maintenance Contract - FY 24 [1801358]																					
Project Phase	Funding Source	Fiscal Year																		Totals*	
		2024				2025				2026				2027				2028			
		Federal		State		Federal		State		Federal		State		Federal		State		Federal		State	
CN	Statewide Construction	$	106,327	$	-	$	-	$	-	$	-	$	-	$	-	$	-	$	-	$	-	$	106,327
Totals		$	106,327	$	-	$	-	$	-	$	-	$	-	$	-	$	-	$	-	$	-	$	106,327

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

SR 46 06.04 miles W of SR 37 @ Jacks Defeat Creek WBL [1900098]																					
Project Phase	Funding Source	Fiscal Year																		Totals*	
		2024				2025				2026				2027				2028			
		Federal		State		Federal		State		Federal		State		Federal		State		Federal		State	
CN	Bridge Construction	$	1,968,000	$	492,000	$	-	$	-	$	-	$	-	$	-	$	-	$	-	$	-	$	2,460,000
PE	Bridge Consulting	$	60,000	$	15,000	$	-	$	-	$	-	$	-	$	-	$	-	$	-	$	-	$	75,000
Totals		$	2,535,000	$	507,000	$	-	$	-	$	-	$	-	$	-	$	-	$	-	$	2,535,000	$	2,535,000

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

SR 45 From the SR 46 bypass to N Russell Rd [2000231]																					
Project Phase	Funding Source	Fiscal Year																		Totals*	
		2024				2025				2026				2027				2028			
		Federal		State		Federal		State		Federal		State		Federal		State		Federal		State	
CN	Mobility Construction	$	-	$	-	$	2,689,600	$	672,400	$	-	$	-	$	-	$	-	$	-	$	-	$	3,362,000
RW	Mobility ROW	$	320,000	$	80,000	$	-	$	-	$	-	$	-	$	-	$	-	$	-	$	-	$	400,000
Totals		$	400,000	$	2,769,600	$	3,362,000	$	672,400	$	-	$	-	$	-	$	-	$	-	$	-	$	3,762,000

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

SR 48 Bridge Over Richland Creek, 01.15 mile E SR 43 [2000359]																					
Project Phase	Funding Source	Fiscal Year																		Totals*	
		2024				2025				2026				2027				2028			
		Federal		State		Federal		State		Federal		State		Federal		State		Federal		State	
CN	Bridge Construction	$	823,517	$	-	$	-	$	-	$	-	$	-	$	-	$	-	$	-	$	-	$	823,517
PE	Bridge Construction	$	20,000	$	-	$	-	$	-	$	-	$	-	$	-	$	-	$	-	$	-	$	20,000
Totals		$	843,517	$	-	$	-	$	-	$	-	$	-	$	-	$	-	$	-	$	-	$	843,517

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

I-69 NBL over UNT Clear Creek, 2.12 S SR 37 [2100590]														
Project Phase	Funding Source	Fiscal Year												Totals*
		2024		2025		2026		2027		2028				
		Federal	State	Federal	State	Federal	State	Federal	State	Federal	State			
CN	Bridge Construction	$ -	$ -	$ -	$ -	$ 286,000	$ -	$ -	$ -	$ -	$ -			$ 286,000
	Totals	$ -	$ -	$ -	$ -	$ 286,000	$ -	$ -	$ -	$ -	$ -			$ 286,000

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

I-69 SBL over UNT Clear Creek, 2.12 S SR 37 [2100591]														
Project Phase	Funding Source	Fiscal Year												Totals*
		2024		2025		2026		2027		2028				
		Federal	State	Federal	State	Federal	State	Federal	State	Federal	State			
CN	Bridge Construction	$ -	$ -	$ -	$ -	$ 286,000	$ -	$ -	$ -	$ -	$ -			$ 286,000
	Totals	$ -	$ -	$ -	$ -	$ 286,000	$ -	$ -	$ -	$ -	$ -			$ 286,000

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

I-69 NBL over UNT Clear Creek, 1.20 S SR 37 [2100592]														
Project Phase	Funding Source	Fiscal Year												Totals*
		2024		2025		2026		2027		2028				
		Federal	State	Federal	State	Federal	State	Federal	State	Federal	State			
CN	Bridge Construction	$ -	$ -	$ -	$ -	$ 297,000	$ -	$ -	$ -	$ -	$ -			$ 297,000
	Totals	$ -	$ -	$ -	$ -	$ 297,000	$ -	$ -	$ -	$ -	$ -			$ 297,000

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

I-69 SBL over UNT Clear Creek, 1.20 S SR 37 [2100593]														
Project Phase	Funding Source	Fiscal Year												Totals*
		2024		2025		2026		2027		2028				
		Federal	State	Federal	State	Federal	State	Federal	State	Federal	State			
CN	Bridge Construction	$ -	$ -	$ -	$ -	$ 297,000	$ -	$ -	$ -	$ -	$ -			$ 297,000
	Totals	$ -	$ -	$ -	$ -	$ 297,000	$ -	$ -	$ -	$ -	$ -			$ 297,000

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

SR 37 NB ramp to I-69 SB bridge over I-69 NB/SB, 2.91 miles S of SR-45 [2100600]														
Project Phase	Funding Source	Fiscal Year												Totals*
		2024		2025		2026		2027		2028				
		Federal	State	Federal	State	Federal	State	Federal	State	Federal	State			
CN	Bridge Construction	$ -	$ -	$ -	$ -	$ 220,000	$ -	$ -	$ -	$ -	$ -			$ 220,000
	Totals	$ -	$ -	$ -	$ -	$ 220,000	$ -	$ -	$ -	$ -	$ -			$ 220,000

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

I-69 NBL over Bolin Lane, 00.59 SR 37 [2100628]														
Project Phase	Funding Source	Fiscal Year												Totals*
		2024		2025		2026		2027		2028				
		Federal	State	Federal	State	Federal	State	Federal	State	Federal	State			
CN	Bridge Construction	$ -	$ -	$ -	$ -	$ 187,000	$ -	$ -	$ -	$ -	$ -			$ 187,000
	Totals	$ -	$ -	$ -	$ -	$ 187,000	$ -	$ -	$ -	$ -	$ -			$ 187,000

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

I-69 SBL over Bolin Lane, 00.59 SR 37 [2100629]														
Project Phase	Funding Source	Fiscal Year												Totals*
		2024		2025		2026		2027		2028				
		Federal	State	Federal	State	Federal	State	Federal	State	Federal	State			
CN	Bridge Construction	$ -	$ -	$ -	$ -	$ 187,000	$ -	$ -	$ -	$ -	$ -			$ 187,000
	Totals	$ -	$ -	$ -	$ -	$ 187,000	$ -	$ -	$ -	$ -	$ -			$ 187,000

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

I-69 SB ramp to SR 37 SB Bridge over I-69 NB/SB, 3.00 miles S of SR-45 [2100658]														
Project Phase	Funding Source	Fiscal Year												Totals*
		2024		2025		2026		2027		2028				
		Federal	State	Federal	State	Federal	State	Federal	State	Federal	State			
CN	Bridge Construction	$ -	$ -	$ -	$ -	$ 231,000	$ -	$ -	$ -	$ -	$ -			$ 231,000
	Totals	$ -	$ -	$ -	$ -	$ 231,000	$ -	$ -	$ -	$ -	$ -			$ 231,000

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

I-69 SBL over S Lodge Rd, 3.03 S SR 37 [2100659]														
Project Phase	Funding Source	Fiscal Year												Totals*
		2024		2025		2026		2027		2028				
		Federal	State	Federal	State	Federal	State	Federal	State	Federal	State			
CN	Bridge Construction	$ -	$ -	$ -	$ -	$ 176,000	$ -	$ -	$ -	$ -	$ -			$ 176,000
	Totals	$ -	$ -	$ -	$ -	$ 176,000	$ -	$ -	$ -	$ -	$ -			$ 176,000

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

I-69 NBL over W Tramway Rd, 01.79 S SR 37 [2100660]														
Project Phase	Funding Source	Fiscal Year												Totals*
		2024		2025		2026		2027		2028				
		Federal	State	Federal	State	Federal	State	Federal	State	Federal	State			
CN	Bridge Construction	$ -	$ -	$ -	$ -	$ 187,000	$ -	$ -	$ -	$ -	$ -			$ 187,000
	Totals	$ -	$ -	$ -	$ -	$ 187,000	$ -	$ -	$ -	$ -	$ -			$ 187,000

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

I-69 SBL over W Tramway Rd, 01.79 S SR 37 [2100661]

Project Phase	Funding Source	Fiscal Year										Totals*
		2024		2025		2026		2027		2028		
		Federal	State	Federal	State	Federal	State	Federal	State	Federal	State	
CN	Bridge Construction	$ -	$ -	$ -	$ -	$ 187,000	$ -	$ -	$ -	$ -	$ -	$ 187,000
	Totals	$ -	$ -	$ -	$ -	$ 187,000	$ -	$ -	$ -	$ -	$ -	$ 187,000

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

I-69 W Vernal Pike Bridge over I-69, 0.59 miles S of SR 46 [2100682]

Project Phase	Funding Source	Fiscal Year										Totals*
		2024		2025		2026		2027		2028		
		Federal	State	Federal	State	Federal	State	Federal	State	Federal	State	
CN	Bridge Construction	$ -	$ -	$ -	$ -	$ 308,000	$ -	$ -	$ -	$ -	$ -	$ 308,000
	Totals	$ -	$ -	$ -	$ -	$ 308,000	$ -	$ -	$ -	$ -	$ -	$ 308,000

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

Various locations in the Seymour District [2200005]

Project Phase	Funding Source	Fiscal Year										Totals*
		2024		2025		2026		2027		2028		
		Federal	State	Federal	State	Federal	State	Federal	State	Federal	State	
CN	Mobility Construction	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,134,200	$ -	$ -	$ -	$ 1,134,200
CN	Mobility Construction	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,134,200	$ -	$ -	$ -	$ 1,134,200
CN	Mobility Construction	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,134,200	$ -	$ -	$ -	$ 1,134,200
CN	Mobility Construction	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,134,200	$ -	$ -	$ -	$ 1,134,200
CN	Mobility Construction	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,134,200	$ -	$ -	$ -	$ 1,134,200
	Totals	$ -	$ -	$ -	$ -	$ -	$ -	$ 5,671,000	$ -	$ -	$ -	$ 5,671,000

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

IDIQ, Various locations throughout the Seymour District [2200476]

Project Phase	Funding Source	Fiscal Year										Totals*
		2024		2025		2026		2027		2028		
		Federal	State	Federal	State	Federal	State	Federal	State	Federal	State	
CN	Road Construction	$ 800,000	$ 200,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,000,000
	Totals	$ 800,000	$ 200,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,000,000

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

SR 446 Over Unnamed Ditch, 5.1 miles N of SR 58 [2200572]

Project Phase	Funding Source	Fiscal Year										Totals*
		2024		2025		2026		2027		2028		
		Federal	State	Federal	State	Federal	State	Federal	State	Federal	State	
RW	Bridge ROW	$ -	$ -	$ 20,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 20,000
PE	Bridge Construction	$ -	$ -	$ -	$ -	$ -	$ -	$ 10,000	$ -	$ -	$ -	$ 10,000
CN	Bridge Construction	$ -	$ -	$ -	$ -	$ -	$ -	$ 582,671	$ -	$ -	$ -	$ 582,671
	Totals	$ -	$ -	$ 20,000	$ -	$ -	$ -	$ 592,671	$ -	$ -	$ -	$ 612,671

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

I-69 West Arlington Road, 0.07 mile N of SR 46 [2200619]

Project Phase	Funding Source	Fiscal Year										Totals*
		2024		2025		2026		2027		2028		
		Federal	State	Federal	State	Federal	State	Federal	State	Federal	State	
CN	Bridge Construction	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,396,700	$ 266,300	$ -	$ -	$ 2,663,000
	Totals	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,396,700	$ 266,300	$ -	$ -	$ 2,663,000

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

I-69 NBL over Griffy Creek, 2.97 miles N of SR 46 [2200632]

Project Phase	Funding Source	Fiscal Year										Totals*
		2024		2025		2026		2027		2028		
		Federal	State	Federal	State	Federal	State	Federal	State	Federal	State	
CN	Bridge Construction	$ -	$ -	$ -	$ -	$ -	$ -	$ 362,048	$ -	$ -	$ -	$ 362,048
	Totals	$ -	$ -	$ -	$ -	$ -	$ -	$ 362,048	$ -	$ -	$ -	$ 362,048

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

I-69 SBL over Griffy Creek, 2.97 miles N of SR 46 [2200633]

Project Phase	Funding Source	Fiscal Year										Totals*
		2024		2025		2026		2027		2028		
		Federal	State	Federal	State	Federal	State	Federal	State	Federal	State	
CN	Bridge Construction	$ -	$ -	$ -	$ -	$ -	$ -	$ 362,048	$ -	$ -	$ -	$ 362,048
	Totals	$ -	$ -	$ -	$ -	$ -	$ -	$ 362,048	$ -	$ -	$ -	$ 362,048

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

I-69 Walnut Street SB Ramp over I-69 NB/SB, 2.92 miles N of SR 46 [2200634]																	
Project Phase	Funding Source	Fiscal Year														Totals*	
		2024		2025		2026		2027		2028							
		Federal	State	Federal	State	Federal	State	Federal	State	Federal	State						
CN	Bridge Construction	$ -	$ -	$ -	$ -	$ -	$ -	$ 226,280	$ -	$ -	$ -	$ 226,280					
Totals		$ -	$ -	$ -	$ -	$ -	$ -	$ 226,280	$ -	$ -	$ -	$ 226,280					

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

I-69 Over Bean Blossom Overflow, 3.28 miles N of SR 46 [2200635]																	
Project Phase	Funding Source	Fiscal Year														Totals*	
		2024		2025		2026		2027		2028							
		Federal	State	Federal	State	Federal	State	Federal	State	Federal	State						
CN	Bridge Construction	$ -	$ -	$ -	$ -	$ -	$ -	$ 339,420	$ -	$ -	$ -	$ 339,420					
Totals		$ -	$ -	$ -	$ -	$ -	$ -	$ 339,420	$ -	$ -	$ -	$ 339,420					

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

I-69 Kinser Pike, 2.47 miles N of SR 46 [2200734]																	
Project Phase	Funding Source	Fiscal Year														Totals*	
		2024		2025		2026		2027		2028							
		Federal	State	Federal	State	Federal	State	Federal	State	Federal	State						
CN	Bridge Construction	$ -	$ -	$ -	$ -	$ -	$ -	$ 214,966	$ -	$ -	$ -	$ 214,966					
Totals		$ -	$ -	$ -	$ -	$ -	$ -	$ 214,966	$ -	$ -	$ -	$ 214,966					

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

Seymour District Systemic Safety - New or Slotted Left Turn (No ROW) [2200940]																	
Project Phase	Funding Source	Fiscal Year														Totals*	
		2024		2025		2026		2027		2028							
		Federal	State	Federal	State	Federal	State	Federal	State	Federal	State						
CN	Safety Construction	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,592,000	$ 648,000	$ -	$ -	$ 3,240,000					
PE	Safety Consulting	$ 400,000	$ 100,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 500,000					
Totals		$ 400,000	$ 100,000	$ -	$ -	$ -	$ -	$ 2,592,000	$ 648,000	$ -	$ -	$ 3,740,000					

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

District Wide Pedestrian Crossings [2200995]																	
Project Phase	Funding Source	Fiscal Year														Totals*	
		2024		2025		2026		2027		2028							
		Federal	State	Federal	State	Federal	State	Federal	State	Federal	State						
CN	Safety Construction	$ -	$ -	$ -	$ -	$ -	$ -	$ 883,125	$ -	$ -	$ -	$ 883,125					
Totals		$ -	$ -	$ -	$ -	$ -	$ -	$ 883,125	$ -	$ -	$ -	$ 883,125					

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

Seymour District ITS & Signal Maintenance Contract - FY 25 [2201139]																	
Project Phase	Funding Source	Fiscal Year														Totals*	
		2024		2025		2026		2027		2028							
		Federal	State	Federal	State	Federal	State	Federal	State	Federal	State						
CN	Statewide Construction	$ -	$ -	$ 167,200	$ 41,800	$ -	$ -	$ -	$ -	$ -	$ -	$ 209,000					
Totals		$ -	$ -	$ 167,200	$ 41,800	$ -	$ -	$ -	$ -	$ -	$ -	$ 209,000					

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

Traffic Signal Modernizations at various locations in Seymour District [2201149]																	
Project Phase	Funding Source	Fiscal Year														Totals*	
		2024		2025		2026		2027		2028							
		Federal	State	Federal	State	Federal	State	Federal	State	Federal	State						
CN	Safety Construction	$ -	$ -	$ -	$ -	$ -	$ -	$ 760,000	$ 190,000	$ -	$ -	$ 950,000					
Totals		$ -	$ -	$ -	$ -	$ -	$ -	$ 760,000	$ 190,000	$ -	$ -	$ 950,000					

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

Various locations in Seymour District raised pavement markings [2201216]																	
Project Phase	Funding Source	Fiscal Year														Totals*	
		2024		2025		2026		2027		2028							
		Federal	State	Federal	State	Federal	State	Federal	State	Federal	State						
CN	Safety Construction	$ -	$ -	$ 360,000	$ 90,000	$ -	$ -	$ -	$ -	$ -	$ -	$ 450,000					
Totals		$ -	$ -	$ 360,000	$ 90,000	$ -	$ -	$ -	$ -	$ -	$ -	$ 450,000					

*Estimated Total Project Cost (23 CFR 45.326(g)(2))

Appendices

Appendix A:
Financial Analysis Assumptions

Introduction

Financial resources define the feasibility, timing, and scope of Fiscal Year (FY) 2024-2028 Transportation Improvement Program (TIP) project selection and implementation. This appendix defines reasonable financial forecasts that support the recommended multimodal transportation needs plan for the Bloomington and Monroe County urbanized area. The resulting fiscally constrained plan of projects is a requirement first set forth in the Intermodal Surface Transportation Efficiency Act of 1991. Successive federal transportation legislation (TEA-21, SAFETEA-LU, MAP-21 and FAST) continued this requirement and permitted the inclusion of "illustrative" transportation projects for potential implementation if additional funding were to become available during the established final program FY 2028 planning period.

Financial resources for federal, state, and local highway transportation projects are set aside for three categorical areas:

- *eSafety and Security* – represent the highest multimodal transportation system priority by protecting people, system users, and infrastructure investments.

- *Facility maintenance and Preservation* - protects existing capital investments which include operation and maintenance and reconstruction (including pavement resurfacing, bridge rehabilitation transit operations, and bicycle/pedestrian facilities) of existing transportation facilities and services.

- *Capacity Expansion* – adds to the functional capacity of the multimodal transportation system through the addition of travel lanes, new transit facilities, sidewalks, and new bicycle/pedestrian multi-use pathways.

- *New Facilities* – represent major new capital investments including new roadways, bridges, and interchanges where such facilities do not currently exist.

Federal Resource Programs

The Bipartisan Infrastructure Law (BIL) (Pub. L. No. 117-58) governs current federal funding for highway, transit, and railroad facilities. The BIL provides $550 billion over fiscal years 2022 through 2026 in new Federal infrastructure investments for roads, bridges, mass transit, water infrastructure, resilience, and broadband access services

The BIL apportions federal program funds using a formula or a set of formulas, takedowns, and set-asides. Legally established formulas determine sum amounts for each state's federal-aid

apportionment. These sums may further subdivide among different programs (outlined below) based upon legally defined percentages. Federal legislation further requires the distribution of various programs within the state to promote the fair and equitable use of funds and to meet certain priorities. Apportioned funds account for the overwhelming majority of Federal Highway Administration (FHWA) funds.

Major funding programs administered by the FHWA and the Federal Transit Administration (FTA) under current BIL legislation include the:

- **National Highway Performance Program (NHPP):** This program provides support for the condition and performance of the National Highway System (NHS), for the construction of new facilities on the NHS, and to ensure that investments of federal-aid funds in highway construction directly support progress toward the achievement of performance targets established in a State of Indiana's asset management plan for the NHS.

- **Surface Transportation Block Grant Program (STBG):** This program provides flexible funding for use by states and localities to preserve and improve the conditions and performance on any federal-aid highway or bridge on any public road, pedestrian and bicycle infrastructure, and transit capital projects.

- **Highway Safety Improvement Program (HSIP):** Within the STBG, the HSIP serves as a core federal-aid program with the purpose of achieving significant reductions in traffic fatalities and serious injuries on all public roads, including non-state-owned roads and roads on tribal land. The HSIP requires a data-driven, strategic approach to improving highway safety on all public roads with a focus on performance. The main elements of HSIP include the Strategic Highway Safety Plan (SHSP), the state HSIP or program of highway safety improvement projects, and the Railway-Highway Crossings Program (RHCP).

- **Congestion Mitigation and Air Quality Improvement Program (CMAQ):** This program directs flexible funding resources to state and local governments for transportation projects and programs to help meet the requirements of the Clean Air Act (CAA). Funding is available to reduce congestion and improve air quality for areas that do not meet the National Ambient Air Quality Standards (NAAQS) for ozone, carbon monoxide, or particulate matter (nonattainment areas) and for former nonattainment areas that are now in compliance (maintenance areas). The Bloomington-Monroe County metropolitan planning area (MPA) does not exceed established air quality levels. CMAQ funds are therefore not available to the BMCMPO.

- **Metropolitan Planning Program (PL):** Under the FAST Act, the Metropolitan Planning Program directs a cooperative, continuous, and comprehensive multimodal planning framework for making transportation investment decisions in metropolitan areas. Program oversight is a joint Federal Highway Administration and Federal Transit

Administration responsibility. The FAST Act continues to require metropolitan transportation plans (MTPs) and TIPs to provide for facilities that enable an intermodal transportation system, including pedestrian and bicycle facilities.

- **National Highway Freight Program (NHFP):** This program provides states with highway-focused formula funding for use on freight-related projects, and a new program (FASTLANE) which provides discretionary grants for nationally-significant freight and highway projects.

Federal Funding Projections

Surface Transportation Block Grant (STBG)

The STBG program funds represent the primary source of federal support for improvements to Bloomington-Monroe County urbanized area roadways. The STBG funding category promotes flexibility in State and local transportation decisions and provides flexible funding to best address State and local transportation needs.

Urbanized areas with a population of 200,000 or more persons (referred to as Group I areas) have a dedicated funding allocation stipulated by federal statute. Indiana urbanized areas, such as Bloomington, with a population of 50,000 to less than 200,000 persons (referred to as Group II areas) receive funding allocations based on a proportion of statewide population. Under a sharing agreement for surface transportation programs, the Indiana Department of Transportation (INDOT) retains 75% of the federal funds received by the State of Indiana. INDOT distributes the remaining 25% federal fund balances to local jurisdictions, including Metropolitan Planning Organizations.

The projected FY 2024 STBG fund allocation for the BMCMPO as of January 2023 was $3.12 million. The forecast of STBG funds available between FY 2024 and 2028 assumed a constant (non-inflationary) dollar growth rate of approximately 4.0%.

Highway Safety Improvement Program (HSIP)

HSIP project funding delivers to road user's cost-effective countermeasures to hazards identified through data analysis as the greatest contributors to serious injury or fatality crashes. The BMCMPO will receive an allocation of $559,000 in FY 2024. The forecast of HSIP funds available between FY 2024 and 2028 assumed a constant (non-inflationary) dollar growth rate of approximately 4.0%.

Transportation Alternatives (TA) Program

The Transportation Alternatives (TA) program provides federal funding for programs and projects defined as transportation alternatives, including on and off-road pedestrian and bicycle facilities, infrastructure projects for improving non-driver access to public transportation, and enhanced mobility. The BMCMPO will receive an allocation of $389,000 in FY 2024. The forecast

of TA funds available between FY 2024 and 2028 assumed a constant (non-inflationary) dollar growth rate of approximately 4.0%.

Section 164 Penalty Program Funds
The BMCMPO will receive a FY 2024 Section 164 program fund allocation of approximately $133,300 in FY 2024 as a supplement to eligible HSIP projects. The forecast of Section 164 funds available between FY 2024 and 2028 assumed a constant (non-inflationary) dollar growth rate of approximately 4.0%.

Carbon Reduction Program (CRP) Funds
CRP funds represent a new federal-aid program under the BIL, and may be obligated for projects that support the reduction of transportation emissions. The BMCMPO will receive a CRP allocation of $339,600 in FY 2024. The forecast of CRP funds available between FY 2024 and 2028 assumed a constant (non-inflationary) dollar growth rate of approximately 4.0%.

PROTECT (Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transportation) Funds
PROTECT funds represent another new federal-aid program under the BIL directed at project activities that promote resilience to climate change and natural disasters. The BMCMPO will receive a PROTECT fund allocation of $125,700 in FY 2024. The forecast of PROTECT funds available between FY 2024 and 2028 assumed a constant (non-inflationary) dollar growth rate of approximately 4.0%.

State of Indiana Investments

With the exception of geometric safety improvements along the SR 45 corridor on Bloomington's east side, INDOT does not have any committed major capital projects identified for construction in Bloomington and Monroe County between FY 2024 and FY 2048 given the recent completion of the I-69 corridor through the MPA.

A majority of INDOT's investment priorities shall focus on safety enhancements and system preservation and maintenance of existing state corridors.

Federal Transit Program Formula Grants, Capital Investment Grants, and State Assistance

- *Federal Transit Administration (FTA)* funding programs vary according to Bloomington-Monroe County urban area use. Bloomington Transit, for example, relies on FTA Section 5307 operating assistance through formula allocations, Section 5310 funds for enhanced mobility of seniors and individuals with disabilities, and Section 5339 funds for capital bus/vehicle and bus facility needs. Rural Transit relies on Section 5311 funds for the provision of rural transportation services.

- *Indiana Public Mass Transit Fund* (PMTF) funds projects that promote and develop public transportation within Indiana and targeted to increase local financial involvement and encourage the delivery of efficient, effective transportation.

Local Resources

Primary resources for locally initiated transportation projects include Motor Vehicle Highway Account (MVHA) fund receipts, Local Road and Street Funds, the Wheel Tax, the Cumulative Bridge Fund, the Major Bridge Fund, Cumulative Capital Development Funds, alternative transportation funds and, in certain instances, Tax Increment Financing District funds and general obligation bonds.

Fiscal Constraint

The BMCMPO FY 2024-2028 must demonstrate fiscal-constraint with the inclusion of project expected phases that shall achieve full funding within the five (5) year program timeframe. Illustrative projects have been included as additional resources become available. The BMCMPO shall update the TIP every two years or as directed by state and federal funding sources. The TIP and all amendments must achieve FHWA and FTA approvals.

The financial forecast of the revenue sources for Monroe County, the City of Bloomington, Rural Transit, and Bloomington Transit remain strong with economic growth and capital investment levels exceeding urban area pre-pandemic levels.

Appendix B:
Transportation Planning Requirements

Introduction

The Bloomington-Monroe County Metropolitan Transportation Organization (BMCMPO) *2045 Metropolitan Transportation Plan (MTP)* and the Fiscal Year (FY) 2024-2028 Transportation Improvement Program (TIP) were prepared in compliance with the Federal Fixing America's Surface Transportation (FAST) Act (Pub. L. No. 114-94) and predecessor federal legislation applicable to metropolitan transportation planning. Metropolitan Planning Organizations (MPO) are required to have a continuous, cooperative and comprehensive ("3C") planning processes that implement projects, strategies, and services that will address the ten (10) core planning factors. This Appendix addresses the core federal planning factors (23 CFR 450.306(d)(4)(vi)) and further notes how the FY 2024-2028 TIP incorporates each core planning factor from the *2045 MTP.*

Federal Transportation Planning Factors

Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency.

The FY 2024-2028 TIP based on the BMCMPO *2045 MTP* supports and builds upon the locally adopted 2012 Monroe County Comprehensive Plan, the 2018 City of Bloomington Comprehensive Plan, the 2018 Monroe County Transportation Alternatives Plan, and the 2019 City of Bloomington Transportation Plan in supporting the local economic development goals of partner communities. The *2045 MTP* and the FY 2024-2028 TIP promote a safe and efficient multimodal compact urban form transportation network with high levels of travel time reliability and on-time delivery/service maintenance by strengthened network circulation. The *2045 MTP* and the FY 2024-2028 TIP address and incorporate connectivity and the ease of movement by persons and freight goods in and through the metropolitan area by making multimodal investments thereby ensuring the availability of multiple sustainable travel options and bringing a comprehensive balance to the transportation system.

Increase the safety of the transportation system for motorized and non-motorized users. Safety investments are a high priority for the 2045 Metropolitan Transportation Plan.

The FY 2024-2028 TIP mirrors the *2045 MTP* by focusing on increased safety of the transportation system for motorized and non-motorized users in the following ways:

- The FY 2024-2028 TIP and the *2045 MTP* fully support the national transportation safety measures and safety targets of the Indiana Department of Transportation (INDOT).

- The FY 2024-2028 TIP and the *2045 MTP* advocate system preservation over capacity expansion, thereby limiting the addition of lane-miles where potential multimodal user conflicts could occur.

- The FY 2024-2028 TIP and the *2045 MTP* support increased investment in bicycle, pedestrian, and transit modes, providing opportunities for safer and more efficient travel by users of those modes.

- The projects contained in the FY 2024-2028 TIP reduce congestion by providing alternative routes for user needs thereby decreasing system conflicts and enhancing safety.

- The BMCMPO *Complete Streets Policy* requires local planning agencies (LPAs) to consider the needs of all users within a corridor when designing a project investment. New projects programmed within the FY 2024-2028 TIP undergo Complete Streets Policy evaluations.

- As a new safety policy, the *2045 MTP* recommends the adoption of a BMCMPO-specific "Vision Zero" guiding principle goal under the premise that traffic deaths and severe injuries are largely preventable. This commitment shall define a timeline and bring stakeholders together to ensure a basic right of safety for all transportation system users through clear, measurable strategies.

Increase the security of the transportation system for motorized, non-motorized, and transit users.

The *2045 MTP* enhances the security of all transportation users in several ways. Increasing roadway connectivity provides redundancy in the system, allowing for multiple motorist, freight, transit, and non-motorist routes of ingress and egress in addition to flexibility in planning evacuation routes in emergency situations. The Monroe County Emergency Management Agency (EMA) is the lead county agency for security issues and BMCMPO shall serve in a supporting role providing assistance as needed.

Bloomington Transit, IU Campus Bus, and Rural Transit have multiple security strategies in operation including access control, surveillance and monitoring on system vehicles, the downtown transfer center, and office/maintenance facilities. Operations include Computer-Aided Dispatching and Automatic Vehicle Locater technology on all vehicles.

Increase the accessibility and mobility options available to people and freight.

The *2045 MTP* and the *FY 2024-2028 TIP* create and strengthen accessibility on two distinct levels. One focuses on improving the continuity of the road network. The other provides additional connections and improvements between modes of travel. All residents, travelers, and businesses benefit from this dual approach. The FY 2024-2028 TIP reduces travel and delivery time by increasing accessibility through the completion of key new connections and the enhancement of existing corridors. Access to the I-69 highway corridor through Monroe County increases statewide and national connectivity for local and regional interstate system users, including the movement of freight origin-destination operations within the urban metropolitan planning area.

The FY 2024-2028 TIP is consistent with the *2045 MTP* through increased bicycle and pedestrian mobility, as well as the safety of transit riders since all proposed road improvements are required to include provisions for these modes through an adopted *Complete Streets Policy*. Transit users, bicyclists, and pedestrians achieve greater safety with the availability of well-maintained sidewalks, curb ramps meeting current Americans with Disabilities Act (ADA) standards, side-paths, multi-use pathways, and trails.

Protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and State and local planned growth and economic development patterns.

The FY 2024-2028 TIP and the *2045 MTP* clearly support these goals by recommending the implementation of transportation projects that are consistent with adopted local land use plans. Local land use decisions within the BMCMPO urban area have the greatest impact on transportation system performance. It is therefore paramount that transportation investments made by the MPO are supportive of best practices in land use planning, including focusing development density in existing urban centers rather than encouraging sprawl development.

The FY 2024-2028 TIP focuses on system preservation over expansion as well as an emphasis on investment in non-motorized transportation facilities that shall support environmental protection and enhancement.

Finally, the FY 2024-2028 TIP strongly supports additional public transit systems services aimed at reducing single-occupant vehicle usage on the roadway network, and vehicle carbon emissions which contribute to climate change.

Enhance the integration and connectivity of the transportation system, across and between modes.

The FY 2024-2028 TIP sets forth a program projects that support the integration and connectivity goals of the transportation system. Roadway network improvements focus on enhancing the existing system while simultaneously providing key new connections. Investments across all surface transportation modes will expand travel options for community residents.

The FY 2024-2028 TIP additionally builds upon the multimodal plans and programs of the *2045 MTP* and previous adopted metropolitan transportation plans where freight movements, transit system use, bicycling, and walking play an increased regional role. Programmed projects for public transit, bicycling, and walking promote multimodal travel while reducing congestion, energy conservation, vehicle emissions, and generating quality of life improvements.

Promote efficient system management and operation.

The BMCMPO's local partners have refined pavement, bridge, traffic, and transit asset management systems. These systems allow responsible jurisdictions to monitor system performance, identify deficiencies, specify needs, and then define target projects to address needs.

Pavement, bridge, traffic, transit, and other asset management systems provide state and local jurisdictional authorities the ability to use existing transportation facilities more efficiently and effectively in response to every changing system needs. All jurisdictions within the BMCMPO are continuously updating individual asset management systems to address ADA needs and to establish multimodal investment priorities.

Bloomington Transit, IU Campus Bus, and Rural Transit have mature asset and system management practices that promote safety, mobility and more efficient use of their existing transportation infrastructure as evidenced by the employment of information management, fleet maintenance and acquisition, marketing, schedule adherence and strategic planning, all contributing to public transit systems that successfully provides an alternative to automobiles.

Emphasize the preservation of the existing transportation system.

System preservation is a key tenet of the *2045 MTP* guiding principles vision and goals. The *2045 MTP* advocates a "fix it first" methodology to ensure that maintenance and system preservation represent a higher priority over investments that would expand the capacity of existing roads or the creation of new corridors. The FY 2024-2028 TIP reflects this policy approach.

All newly proposed FY 2024-2028 TIP roadway and roadway reconstruction improvements are on existing transportation corridors. Projects identified within the FY 2024-2028 TIP follow changes in land use thereby necessitating modernization investments for roadway safety, updated design standards, and the accommodation of multimodal transit, bicycle, and pedestrian users.

Improve the resiliency and reliability of the transportation system and reduce or mitigate storm water impacts of surface transportation.

The Monroe County EMA is the local community's lead for crisis and disaster response. The MPOs local partners have representation on the Local Emergency Planning Committee. The EMA additionally works in close cooperation with Community Organizations Active in Disaster for Monroe County as well as District 8 Indiana EMA, a multi-county regional EMA. Established local asset management systems allow for the timely assessment, speedy repair, and recovery from unexpected infrastructure damage. Bloomington and Monroe County have long operated storm water utilities that manage such infrastructure and provide for its maintenance and enhancement over time. All programmed roadway corridors include storm water runoff control as a mandatory design component.

Enhance travel and tourism.

Monroe County and the City of Bloomington are historically recognized throughout the Midwest United States and Indiana as major travel and tourism destinations for:

- *Arts and Cultural Opportunities* within and outside of the Indiana Arts Commission's recognized Bloomington Entertainment and Arts District (BEAD). BEAD includes the "what to do" element of art galleries, museums, cultural centers, historic landmarks, and regional trails. The "what to eat" element of BEAD incorporates American and International cuisine restaurants, food trucks and carts, coffee & sweet shops, bars & pubs, breweries, and wineries and distilleries. BEAD's "where to stay" element includes hotels and motels, inns and Bed & Breakfasts, cabins and guesthouses, apartments and suites;

- *Outdoor Recreation Opportunities* given the presence of the Hoosier National Forest, the Charles C. Deam Wilderness Area, the Morgan-Monroe State Forest, the Paynetown State Recreational Area, Lake Monroe, Lake Lemon, Griffy Lake Reservoir, nature preserves, hiking/biking trails, extensive county and community parks, recreational facilities, and alternative transportation multimodal pathway systems offering a full range of alternative active or passive recreational choices for all residents and visitors;

- *Major "Big Ten Conference" Sporting Events and Cycling Events* throughout the Indiana University (IU) academic calendar, including the women's and men's

Little 500 Bike Races on the IU Bloomington Campus and the Bloomington Bicycle Club's Hilly Hundred Bike Ride;

- Regional and local retail shopping locations; and

- Access to high quality research through the Indiana University School of Medicine, major regional health care providers, diverse health care services, and regional health care facilities.

Given this context of travel and tourism, Monroe County and the City of Bloomington will maintain and continually modernize existing multimodal transportation system corridors for diverse travel and tourism needs while continually expanding pedestrian and bicycle infrastructure investments with new investments directed toward safety, convenience, and seamless connectivity.

Appendix C:
Performance-Based Transportation Planning Targets

Introduction

The Fixing America's Surface Transportation (FAST) Act (Pub. L. No. 114-94) and the Moving Ahead for Progress in the 21st Century (MAP-21) Act (P.L. 112-141) established new requirements for transportation planning performance management. The following national performance goals meet established in seven (7) key areas in accordance with 23 USC 150: *National Performance Measure Goals*. Individual states and metropolitan planning organizations (MPOs) must establish performance targets in support of the national goals. The national performance goals for Federal Highway Administration (FHWA) programs are:

- **Safety** – To achieve a significant reduction in traffic fatalities and serious injuries on all public roads.

- **Infrastructure Condition** – To maintain the highway infrastructure asset system in a state of good repair.

- **Congestion Reduction** – To achieve a significant reduction in congestion on the National Highway System (NHS).

- **System Reliability** – To improve the efficiency of the surface transportation system.

- **Freight Movement and Economic Vitality** – To improve the national freight network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development.

- **Environmental Sustainability** – To enhance the performance of the transportation system while protecting and enhancing the natural environment.

- **Reduced Project Delivery Delays** – To reduce project costs, promote jobs and the economy, and expedite the movement of people and goods by accelerating project completion through the elimination of delays in the project development and delivery process, including reducing regulatory burdens and improving agencies' work practices.

The following discussion notes each of these key areas.

Performance Measures

The FHWA and Federal Transit Administration (FTA) issued new transportation planning rules on the statewide and metropolitan transportation planning processes to reflect the use of a

performance based approach to decision-making in support of the national goals. These processes must document in writing how the Metropolitan Planning Organizations (MPOs), the Indiana Department of Transportation (INDOT), and providers of public transportation shall jointly agree to cooperatively develop and share information related to transportation performance data, the selection of performance targets, the reporting of performance to be used in tracking progress toward attainment of critical outcomes for the region of the MPO (23 CFR 450.306(d)), and the collection of data for the INDOT asset management plan for the National Highway System (NHS) as specified in 23 CFR 450.314(h).

The FTA's performance measures for Transit Asset Management are published and currently in effect. FHWA currently has performance measures and final regulations published for safety, bridge and pavement conditions, congestion reduction, and system reliability.

INDOT along with the MPOs and FHWA will continue collaborating to identify performance targets for each performance measure. Once performance targets are established, the Transportation Improvement Program (TIP) and Statewide Transportation Improvement Program (STIP) shall require modification reflecting this information.

For FHWA and FTA to approve any TIP amendments after May 27, 2018, INDOT, MPOs and Public Transit Operators must reflect this information and describe how projects in the TIP/STIP, shall (to the maximum extent practicable) achieve the federally required performance targets identified in the Statewide and Metropolitan Transportation Plans, linking investment priorities to these performance targets.

Safety Target Performance Measures

INDOT, the MPOs, FHWA, and the Indiana Criminal Justice Institute actively discuss and collaborate on the Indiana's Safety Performance Measures and Safety Performance Targets. INDOT initially submitted Safety Performance Target Measures in 2018 followed by annual target updates.

Most Indiana MPOs support INDOT's Safety Targets. The Highway Safety Improvement Program (HSIP) is a primary source of federal funds for qualifying safety improvement projects. INDOT and the Indiana's MPOs use HSIP along with other funding sources for the implementation of safety improvements with the purpose to reduce roadway crashes, and a corresponding reduction in fatalities and serious injuries on all public roads. The five specific safety performance measures are:

- Number of fatalities;
- Rate of fatalities;
- Number of serious injuries;
- Rate of serious injuries; and
- Number of non-motorized fatalities and non-motorized serious injuries.

The Bloomington-Monroe County Metropolitan Planning Organization (BMCMPO) agreed in January 2020 to support the 2020 safety targets established by the Indiana Department of Transportation as reported to the National Highway Traffic Safety Administration and Federal Highway Administration.

INDOT completed the annual process in 2022 to establish jointly with the Indiana Criminal Justice Institute and the MPO Council, the PM1 Safety Performance Targets for the Year 2023.

The Indiana Statewide Targets that were established are 5 year averages as follows:

- Number of Fatalities = 894.2
- Rate of Fatalities = 1.088
- Number of Suspected Serious Injuries = 3348.1
- Rate of Suspected = 4.068
- Number of Non-Motorized Fatalities and Serious Injuries = 399.6

The BMCMPO will support INDOT's maximum safety targets by incorporating planning activities, programs, and projects in the 2045 Metropolitan Transportation Plan and the FY 2024-2028 TIP. The BMCMPO Policy Committee approved this action at a regularly scheduled meeting on February 10, 2023.

Pavement Condition Target Performance Measures

The BMCMPO will support the Pavement Condition targets established by INDOT for reporting to the FHWA by incorporating planning activities, programs, and projects in the adopted Metropolitan Transportation Plan (MTP) and the TIP. The BMCMPO Policy Committee approved this action at their regularly scheduled meeting on September 10, 2021. The pavement targets based on a certified Transportation Asset Management Plan include:

- Percent of Interstate pavements in Good condition
- Percent of Interstate pavements in Poor condition
- Percent of non-Interstate NHS pavements in Good condition
- Percent of non-Interstate NHS pavements in Poor condition

Bridge Performance Measures

The BMCMPO will support the NHS Bridge Condition targets established by INDOT for reporting to the FHWA by incorporating planning activities, programs, and projects in the adopted MTP and the TIP. The BMCMPO Policy Committee approved this action at their regularly scheduled meeting on September 10, 2021. The pavement targets based on a certified Transportation Asset Management Plan include:

- Percent of NHS bridges by deck area classified as in Good condition
- Percent of NHS bridges by deck area classified as in Poor condition

System Performance

The system performance measures are also applicable to the Interstate and non-Interstate NHS. These performance measures assess NHS truck travel time reliability and interstate freight reliability targets, and performance measures for on-road mobile source emissions consistent with the national Congestion Mitigation and Air Quality (CMAQ) Program.

NHS Truck Travel Time Reliability Targets

The BMCMPO will support the NHS Truck Travel Time Reliability targets established by the INDOT for reporting to the FHWA by incorporating planning activities, programs, and projects in the Adopted MTP and TIP. The BMCMPO Policy Committee approved this action at their regularly scheduled meeting on September 10, 2021.

These targets include:

- Level of Travel Time Reliability on Interstate
- Level of Travel Time Reliability on non-Interstate NHS

Interstate Freight Reliability Targets

The BMCMPO will support the Interstate Freight Reliability targets established by INDOT for reporting to the FHWA by incorporating planning activities, programs, and projects in the Adopted MTP and the TIP. The BMCMPO Policy Committee approved this action at their regularly scheduled meeting on September 10, 2021.

INDOT - BMCMPO Performance Measure Targets

Performance Measure		2023 Target
Safety	**Total Fatalities**	894.2
	VMT/(Hundred Million VMT)	823.07
	Rate of Fatalities (Per HMVMT)	1.088
	Number of Serious Injuries	3348.1
	Rate of Serious Injuries (Per HMVMT)	4.068
	Number of Non-Motorized Fatalities & Serious Inj.	399.6

Performance Measure		2024 2-Year Target	2026 4-Year Target	Measured Units
Bridge	Percentage of NHS Bridges Classified as in Good Condition	49.0%	47.5%	
	Percentage of NHS Bridges Classified as in Poor Condition	3.0%	3.0%	
Pavement	Percentage of Pavements of the Interstate System in Good Condition	60.0%	62.0%	
	Percentage of Pavements of the Interstate System in Poor Condition	1.0%	1.0%	
	Percentage of Pavements of the Non-Interstate NHS in Good Condition	50.0%	48.0%	
	Percentage of Pavements of the Non-Interstate NHS in Poor Condition	1.5%	1.5%	
System Performance/Freight	Interstate System - % of person-miles traveled that are reliable Level of travel time reliability (LOTTR)	93.0%	93.5%	% of Person Miles Reliable
	Non-Interstate NHS System -% of person-miles traveled that are reliable Level of travel time reliability (LOTTR)	93.0%	93.5%	% of Person Miles Reliable
	Truck Travel Time Reliability Index (TTTR)	1.32	1.30	TTTR Index

Source: INDOT Technical Planning Section and BMCMPO, 03-20-23.

Transit Performance Measures

The Transit Asset Management Final Rule requires transit providers to set performance targets for state of good repair by January 1, 2017. The FT initially extended that deadline to January 1, 2018. The Planning Rule requires each MPO to establish targets not later than 180 days after the date on which the relevant provider of public transportation establishes its performance targets. The adopted BMCMPO *2045 MTP* includes the following FY 2021 targets established by Bloomington Transit (BT) in the following categories:

- ***Bloomington Transit Rolling Stock (Revenue Vehicles):*** Percent of revenue vehicles that have met or exceeded their useful life benchmark.
    - *FY 2021 Rolling Stock Target = 25%*
    - *FY 2021 Cutaway Bus Target = 0%*
    - *FY 2021 Minivan Target = 0%*

- ***Bloomington Transit Equipment:*** Percent of service vehicles that have met or exceeded their useful life benchmark.
    - *FY 2021 Non-revenue automobiles = 35%*
    - *FY 2021 Trucks = 0%*
    - *FY 2021 Vans = 70%*
    - *FY 2021 Bus Wash = 100%*
    - *FY 2021 Forklift = 100%*

- ***Bloomington Transit Facility:*** Percent of facilities rated below 3 on the condition scale.
    - *FY 2021 Administration/Maintenance facility = 0%*
    - *FY 2021 Passenger facility (downtown transit center) = 0%*

Conclusion

The Bloomington and Monroe County Metropolitan Planning Area (MPA) anticipates INDOT's issuance of newly updated performance-based planning targets on a continuous basis throughout the balance of FY 2024 and into future fiscal years. The BMCMPO Policy Committee shall adopt all relevant INDOT performance targets consistent with FHWA and FTA requirements after initial reviews and adoption recommendations by the BMCMPO Technical Advisory Committee and the Citizens Advisory Committee.

Appendix D:
Environmental Justice

Introduction

The U.S. Environmental Protection Agency (USEPA) defines Environmental Justice (EJ) as "fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies."

Federal Statutes

Title VI of the Civil Rights Act of 1964 requires that no person in the United States shall on the grounds of race, color, national origin, gender, age, or disability be excluded from participation in, or be denied the benefits of, or be subjected to discrimination under any provision or activity of federal aid recipients, sub-recipients or contractors. Title VI established a standard of conduct for all federal activities that prohibits discrimination.

Executive Order 12898, issued on February 11, 1994 titled *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, and the President's Memorandum on Environmental Justice, directed every federal agency to make environmental justice part of its mission by identifying and addressing the effects of all programs, policies and activities on "minority populations and low-income populations".

The institution of environmental justice (EJ) ensures equal protection under federal laws, including the following:

- Title VI of the Civil Rights Act of 1964 (42 U.S.C. § 2000d *et seq*., 78 stat. 252);
- The National Environmental Policy Act (NEPA) of 1969, 42 U.S.C. § 4321;
- The Uniform Relocation Assistance and Real Property Acquisitions Policies Act of 1970, as amended, 42 U.S.C. § 4601;
- Section 504 of the Rehabilitation Act of 1973, (29 U.S.C. § 794 *et seq*.) as amended, (prohibits discrimination on the basis of disability);
- The Age Discrimination Act of 1975, as amended, (42 U.S.C. § 6101 *et seq*.), (prohibits discrimination on the basis of age); and
- The Americans with Disabilities Act of 1990, as amended, (42 U.S.C. § 12101 *et seq.),* (prohibits discrimination on the basis of disability).

All policies, programs, and other activities undertaken, funded, or approved by the Federal Highway Administration (FHWA), Federal Transit Administration (FTA), or other United States departments of transportation components must comply with EJ requirements from initial concept development through post-construction operations and maintenance (policy decisions, systems planning, project development and NEPA review, preliminary design, final design, right of way, construction, operations, and maintenance).

The underlying principle of Title VI for the *2045 Metropolitan Transportation Plan (MTP)* is that minority and low-income residents should:

- Participate in the planning process;
- Benefit from planned transportation improvements; and
- Not bear an unfair burden of the environmental impacts.

The *2045 MTP* estimated growth patterns using 2010 Census data and future transportation needs which aid in assessing the benefits and burdens that future transportation projects might have on traditionally disadvantaged populations. Plan development provides growth projections to evaluate opportunities for all populations to provide input (Public Participation Plan), assess the effects of future decisions on neighborhoods, the environment, and the economy, and help ensure that the benefits and impacts of future transportation systems are equally distributed.

Methodology & Results

The *2045 MTP* EJ methodology relied upon demographic and socioeconomic data from the U.S. Bureau of the Census, *American Community Survey (ACS) 2013-2017 Five-Year Estimate, and Poverty Status* for each of Monroe County's sixteen (16) Census Tracts. Examinations of each census tract incorporated estimates of total population in relation to minority populations and percentage of population below poverty status. ***Table 1*** summarizes the percentage of non-white and below poverty populations per Census Tract for Monroe County given currently available data. Individual Census Tract identifications relied on two environmental justice characteristics:

- *High minority population tracts where 50 percent or more of the residents in the tract consists of "minority" populations;* and
- *Low income tracts where 50 percent or more of the individuals within the tract are classified as living below poverty level*.

Monroe County census tracts with 50 percent or more of either of the two (2) EJ characteristics identify locations of importance for transportation planning and project development needs.

The identified areas with high proportions of minority population and poverty levels within Monroe County encompass:

- **Census Tract 1** covering the Bloomington Central Business District and immediate surrounding areas;
- **Census Tract 2.01** covering the northern portion of the Indiana University campus;
- **Census Tract 2.02** covering the southern portion of the Indiana University campus;
- **Census Tract 6.01** covering the west portion of the City of Bloomington;
- **Census Tract 6.02** covering the northwestern portion of the City of Bloomington; and
- **Census Tract 16** covering the area north of downtown Bloomington and immediately northwest of the Indiana University campus.

Figure 1 illustrates the Monroe County census tracts with 50 percent or more of the two (2) environmental justice characteristics subject to compliance for current or future transportation system projects. The *2045 MTP* does not foresee any residential project displacements, commercial project displacements, or adverse environmental impact for any project within Monroe County's identified EJ census tracts. The BMCMPO Draft FY 2024-2028 TIP does not foresee any residential project displacements, commercial project displacements, or adverse environmental impact for any project within Monroe County's identified EJ census tracts.

The EJ census tracts identified for 2045 MTP and the Draft FY 2024-2028 YIP plan encompass large areas of the Indiana University campus housing and/or illustrate high concentrations of off-campus/adjacent-campus housing desired by the university's student populations that place them in close proximity to the campus physical environment. The high percentage low to moderate income classification for these tracts very likely reflects the large number of undergraduate and graduate students residing within geographically established Indiana University campus boundaries. Tract 2.02, for example, has a high minority proportion reflecting international student residents. By comparison, the Bloomington Housing Authority manages a large low-income housing complex within Tract 6.01 as do several other agencies within this tract. Tract 6.01 is close to meeting the EJ characteristics, but offers some context when comparing it to the balance of EJ census tracts that have high student populations. The City of Bloomington Engineering Department, Bloomington Transit, and IU Campus Bus are highly responsive to Transportation Improvement Program (TIP) programming needs in these areas the need to address specific EJ concerns as a projects moves forward with implementation.

Public transit service is an additional EJ consideration. ***Figure 1*** provides a useful reference for assessing the spatial relationship between Transit services and environmental justice compliance. Bloomington Transit (BT), Indiana University (IU) Campus Bus, and Rural Transit provide expansive transit service coverage within and in close proximity to the Indiana University campus and the Downtown Bloomington area (Tracts 1, 2.01, 2.02, 6.01, 6.02, and 16). Taken together, Bloomington Transit (with regular scheduled service coupled with microtransit, & paratransit services), IU Campus Bus, and Rural Transit provide a

comprehensive range of public transportation services to all Environmental Justice Tracts within Monroe County. Future transit investments supported by the *2045 MTP* and the BMCMPO FY 2024-2028 TIP shall continue to enhance mobility and service for all Environmental Justice tract populations.

The multimodal transportation improvements contained in the *2045 MTP and the FY 2024-2028 TIP* will benefit areas with a concentration of low-income households through improved mobility and accessibility without having any "disproportionately high" or "adverse" impacts. No households will undergo displacement in implementing transportation improvements within these low-income or high minority areas. Finally, the *2045 MTP* and the FY 2024-2028 TIP makes multimodal transportation investments within, and to, low-income areas ensuring that low-income groups receive a proportionate share of benefits, without enduring adverse social, economic, or environmental impacts. Given these consideration factors, the *2045 MTP* and the FY 2024-2028 TIP are in compliance with Title VI relative to Environmental Justice.

Environmental Justice Conclusions

Table 1 and ***Figure 1*** define current Monroe County EJ census tracts with respective minority populations and low-income thresholds meeting Title VI requirements as they relate to transportation planning. Census tracts 1, 2.01, 2.02, and 16 illustrate a high minority population and lower income level concentrations specifically within and immediately surrounding the Indiana University campus. Conversely, environmental justice census tracts 6.01 and 6.02 reflect the City of Bloomington's lower income levels along the west and northwest corporate boundaries. No other environmental justice areas reside within balance of the metropolitan planning area or more rural areas of Monroe County.

Environmental Justice – Future Reassessments

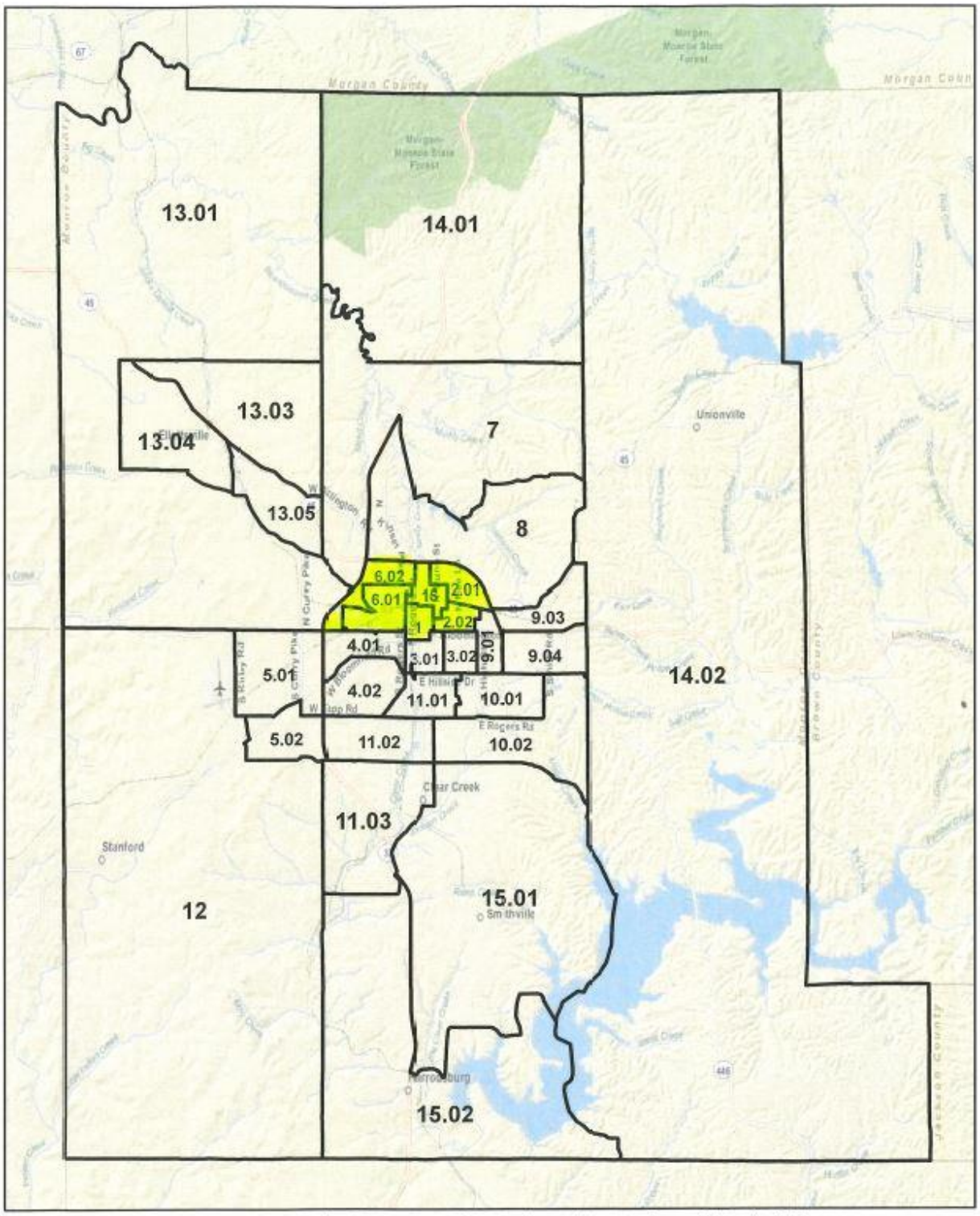
Future reassessments of identifiable Monroe County environmental justice census tracts will coincide with the release of the 2020 Census data in calendar year 2023.

Table 1 – Monroe County Census Tracts:
Environmental Justice Population Estimates*

Census Tract	Population	White	Non-White	% Minority	% Below Poverty
1.00	5286	4656	630	11.9%	72.7
2.01	564	124	440	78.0%	65.6
2.02	60	56	4	6.7%	81.7
6.02	3137	2350	787	25.1%	59.1
16.00	4971	4355	616	12.4%	76.9

Source: U.S. Census Bureau / ACS 2015 5 Year Estimate, December 2019.

Figure 1 - Monroe County, Indiana - Environmental Justice Census Tracts *



*Source: U.S. Census Bureau, ACS 2013-2017 Five-Year Estimate, Poverty Status in the past 12 months. Prepared December 2019.

Appendix E:
Air Quality and Climate Change Assessments

Overview

The Clean Air Act of 1970 (CAA 1970) requires the development of a State Implementation Program (SIP) for achieving National Ambient Air Quality Standards (NAAQS) in non-attainment areas. The relationship between transportation planning and air quality planning formalized with the Clean Air Act Amendments of 1990. Locally, this led to the establishment of a direct relationship between projects in the Bloomington-Monroe County Metropolitan Planning Organization's (BMCMPO) Transportation Improvement Program (TIP) and air quality compliance.

Air quality conformity determinations are required under current federal requirements for major transportation investments in designated air quality "non-attainment" and "maintenance" areas. The composite of major transportation investments contained in a Metropolitan Planning Area's (MPA) Long Range Transportation Plan (LRTP) must therefore demonstrate air quality improvement or, at minimum, no degradation in air quality relative to the "Existing Plus Committed" transportation network. The BMCMPO study area that includes the urbanized area within Monroe County is an air quality attainment area.

The State of Indiana's Ambient Air Quality Monitoring Network includes the operation of one (1) air quality monitoring site within the Bloomington-Monroe County Metropolitan Planning Area. This monitoring site, located at Binford Elementary School (Figures E1 and E2) and active since April 1, 2009 (https://www.in.gov/idem/airmonitoring/air-quality-data/), continuously samples fine particulate matter with a diameter of 2.5 microns or less ($PM_{2.5}$) in hourly increments. The creation of this fine particulate matter primarily originates from industrial processes and fuel combustion.

As noted by the Indiana Department of Environmental Management (IDEM), "the annual standard for $PM_{2.5}$ is 12.0 micrograms per cubic meter ($\mu g/m^3$). Attainment is determined by evaluating the average of the annual arithmetic means over a three-year period. The three-year average of the weighted annual mean of $PM_{2.5}$ concentrations from a single monitor must be less than or equal to 12.0 $\mu g/m^3$. A monitor that measures 12.05 $\mu g/m^3$ or higher identifies as nonattainment. The annual site design value is the average of the annual mean over three-years. An annual mean is the average of that year's four quarterly averages, unrounded. A quarterly mean is the average of all available data from the respective quarter. The annual site design value rounds to one decimal place. The United States Environmental Protection Agency (USEPA) revised the annual standard for fine particulate matter on December 14, 2012. This standard was effective March 18, 2013. Therefore, design values are not comparable to the new annual standard until the year ending 2013."

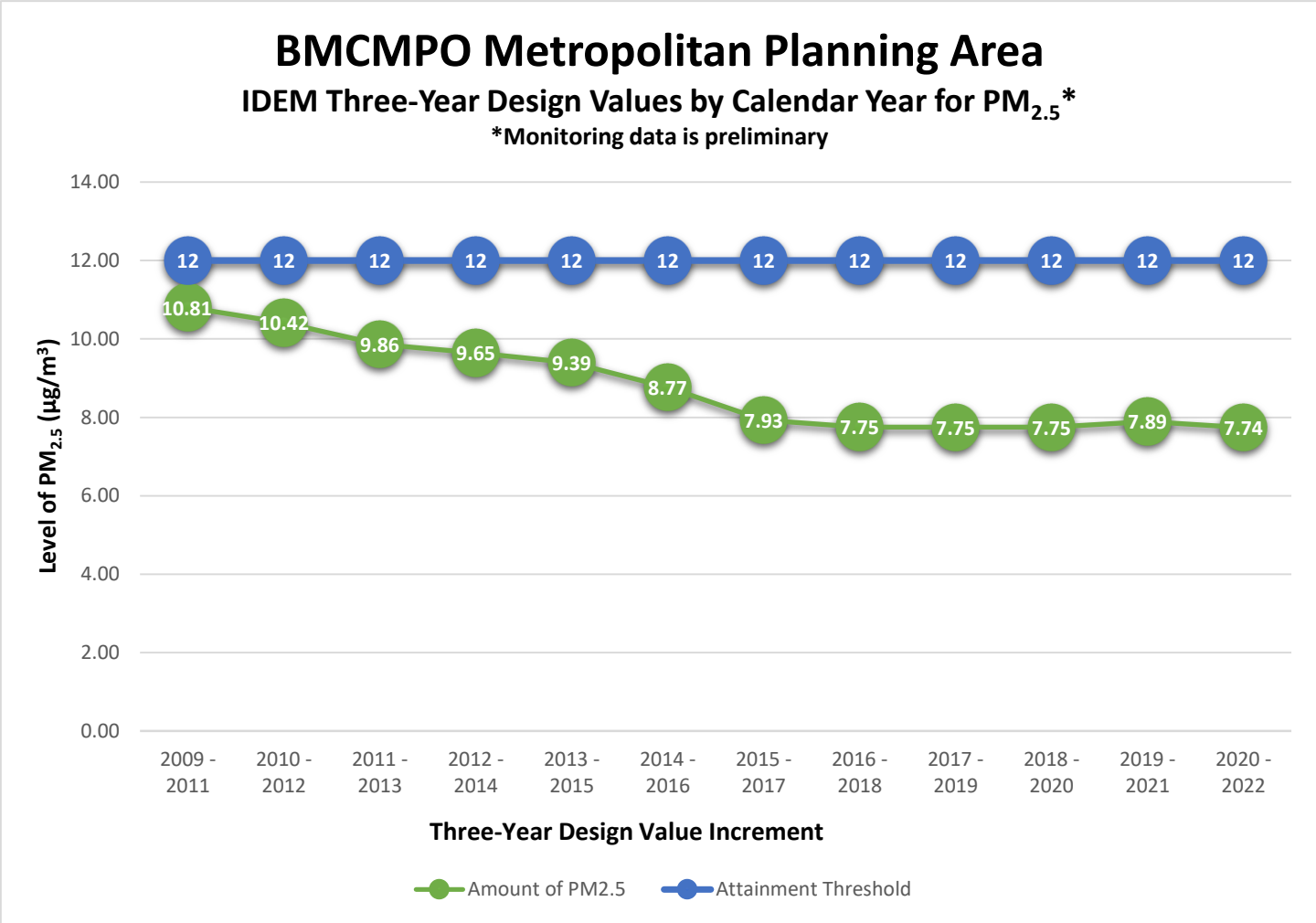
IDEM's $PM_{2.5}$ Annual Monitoring Data from April 2009 through December 31, 2022 for the Bloomington-Monroe County Binford Elementary School site shows a consistent $PM_{2.5}$ decline within the urban area from 10.62 µg/m^3 to 7.1 µg/m^3. As previously noted, a monitor that measures 12.05 µg/m^3 or higher achieves nonattainment status.

The 2020 - 2022 three-year design value for the Bloomington-Monroe County $PM_{2.5}$ monitor is 7.74 µg/m^3. Reference data are publically available at https://www.in.gov/idem/airmonitoring/files/monitoring_quick_view_pm25.xlsx.

Air Quality Compliance

Monroe County and the City of Bloomington currently meet federal air quality standards, and the region is therefore in "*attainment*" for criteria pollutants. The NAAQS set limits on atmospheric concentrations of six criteria pollutants (i.e., lead, carbon monoxide, nitrogen dioxide, sulfur dioxide, ozone, and particulate matter) that cause smog, acid rain, and other health hazards.

Figure E1: Annual Air Quality Monitoring Data within the BMCMPO Metropolitan Panning Area.



An air quality conformity determination is not required for the Bloomington and Monroe County Metropolitan Planning Area (MPA). The projects programmed in the *2045 MTP* should therefore result in an improvement to air quality given a system-wide investment focus on multimodal safety, maintenance and preservation, public transit, and bicycle/pedestrian facilities. The travel demand model analysis completed for the *2040 MTP* indicates that vehicle miles of travel will increase for the "No-Build, Do-Nothing" (Existing Plus Committed) and alternative transportation network over the next two decades years given forecast assumptions about:

- System-wide roadway network volume-to-capacity ratios;
- Roadway network miles operating below Level-of-Service "C";
- Vehicle-miles of travel on facilities operating on below Level-of-Service "C";
- Congested vehicle-hours of travel; and
- Total vehicle-miles of travel.

The BMCMPO travel demand forecast model suggests that air quality could degrade over the Year 2045 forecast period if agencies within the Bloomington and Monroe County MPA make no further major transportation investments for system preservation. This finding assumes (1) continued growth of vehicles miles of travel, (2) a correlation of congestion and air quality to vehicle speeds, (3) total vehicles, and (4) vehicle miles of travel. Simply stated, an increase in mobile source generated carbon monoxide and ozone (hydrocarbons and nitrous oxides) could occur under a "no-build" Transportation Plan alternative scenario.

Conversely, the most favorable of the Travel Demand Model scenario alternatives for air quality (e.g., "Peak Oil", a quantitative decrease of overall urban area vehicle miles traveled or a dedicated policy of a compact urban form, e.g., "Urban Infill") documented in the *2040 MTP* and the *2045 MTP* focus on (1) public transportation and alternative transportation without adding capacity and (2) emphasizing system-wide capacity preservation and maintenance that could result in air quality improvements over the no-build condition through the achievement of reductions in:

- System-wide volume-to-capacity ratios;
- Congested roadways;
- Vehicle miles of travel on congested roadways;
- Congested vehicle hours of travel; and
- Continued implementation of federal automobile fuel efficiency standards (i.e., corporate average fuel economy known as "CAFE").

Forecast growth in population, employment, households, and real disposable income will bring about increased transportation demands within the Bloomington and Monroe County MPA during the forecast period extending to Year 2045 under current economic assumptions. The recommendations of the *2045 MTP* will, however, contribute to overall air quality improvement through a systematic application of transportation capacity preservation, minimal capacity expansion projects, and continued multimodal system growth of the public transportation, bicycle, and pedestrian systems.

Updated Corporate Average Fuel Economy (CAFE) standards became effective July 1, 2022 (https://www.federalregister.gov/documents/2022/05/02/2022-07200/corporate-average-fuel-economy-standards-for-model-years-2024-2026-passenger-cars-and-light-trucks). This federal rule directs manufacturers to achieve an 8% annual increase in vehicle fuel efficiency in model years 2024 – 2025 as well as a 10% annual increase in vehicle fuel efficiency in model year 2026. The transportation sector of the national economy is the largest source of climate change greenhouse gases in the United States according to USEPA scientifically documented data.

In April 2022, the Council on Environmental Quality (CEQ) published in the *Federal Register* a Final Rule to "amend certain provisions of its regulations for implementing the National Environmental Policy Act (NEPA), addressing the purpose and need of a proposed action,

agency NEPA procedures for implementing CEQ's NEPA regulations, and the definition of 'effects.' The amendments generally restore provisions that were in effect for decades before being modified in 2020."

Climate Change Scientific Assessments

Climate change is a critical concern of the BMCMPO. Climate change represents an immediate, near-term, and long-term threat to human health, welfare, economic activity, existing public infrastructure investments, public water resources, agriculture, forestry, energy generation and use, foreseen urban environments, and aggregate regional ecosystems. Climate change within the context of the *2045 MTP* means the long-term rise in the average temperature of the Earth's climate system, a major aspect of climate change scientifically demonstrated by direct temperature measurements and by measurements of various effects of the warming.

The *Indiana Climate Change Impacts Assessment* (https://docs.lib.purdue.edu/climatetr/2/) identifies rising average annual temperatures and rising average annual precipitation for more than a century as the most significant climate change threats to the State of Indiana's residents, Indiana's food system, and the state's economic viability. The conclusion of this March 2018 scientific study notes:

- *"This assessment documents that significant changes in Indiana's climate have been underway for over a century, with the largest changes occurring in the past few decades. The findings in this assessment highlight the projected future changes using two scenarios representing the rise of heat-trapping gases over the next century. These projections generally suggest that the trends that are already occurring will continue and the rates of these changes will accelerate. They indicate that Indiana's climate will warm dramatically in the coming decades, particularly in summer. Both the number of hot days and the hottest temperatures of the year are projected to increase markedly. Indiana's winters and springs are projected to become considerably wetter, and the frequency and intensity of extreme precipitation events are expected to increase, although more research is needed in this area to better determine the details."*

Climate change vulnerabilities for Monroe County documented through additional independent scientific research by the Indiana University Environmental Resilience Institute (https://hri.eri.iu.edu/index.html and (https://hri.eri.iu.edu/climate-vulnerability/index.html?placeid=MONROE%20County#climateExpoHead) further identifies primary community metrics in a geographic information system (GIS) format identifying forecast events of extreme temperatures, the alteration of precipitation levels, climate impacts on land use, and sociological/demographic individualities.

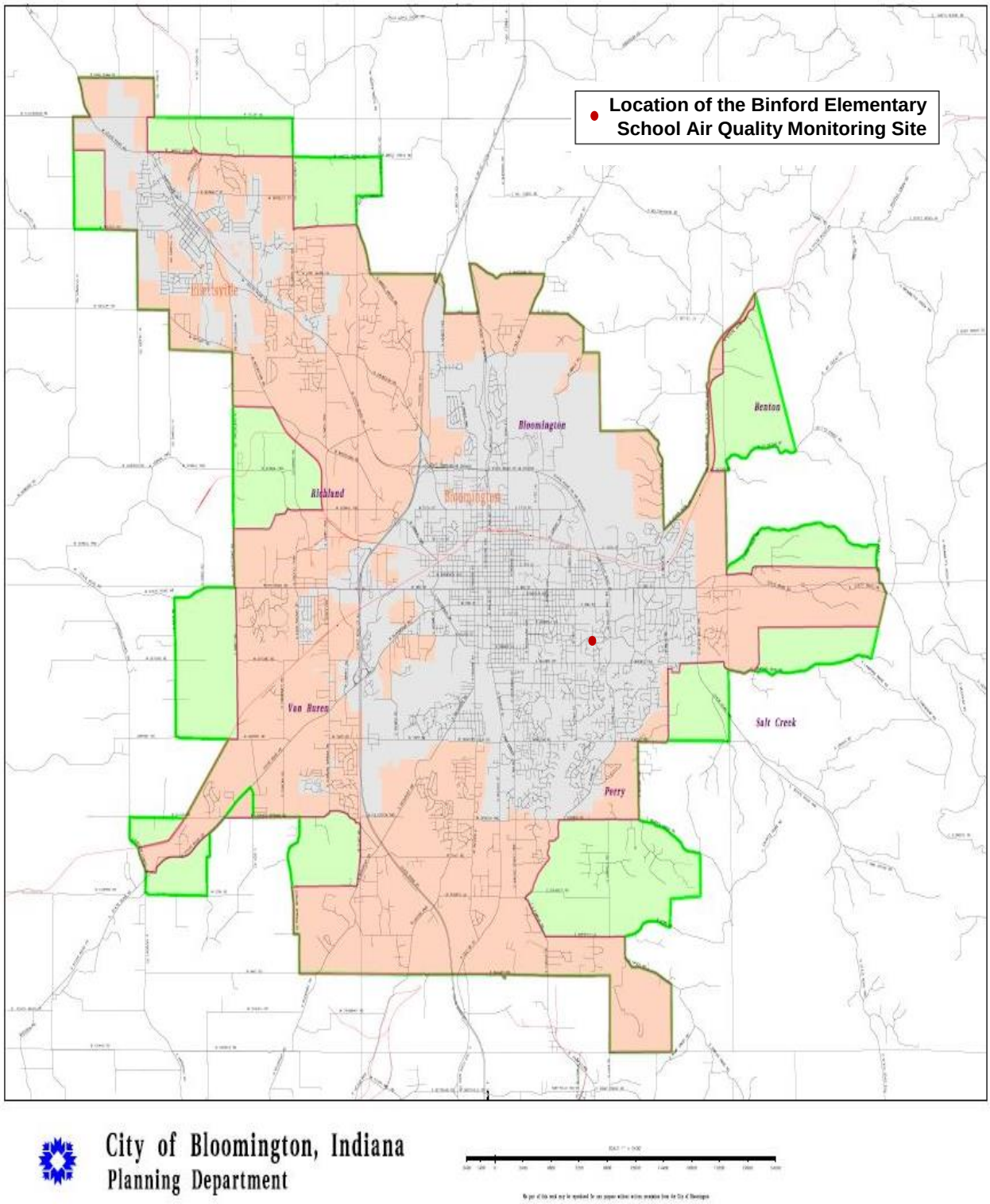
Climate Change Scientific Assessment Conclusions

Irrefutable scientific data from the U.S. Environmental Protection Agency (USEPA), IDEM, Purdue University, Indiana University, and countless national and international sources

document climate change currently underway within the State of Indiana and the metropolitan planning area.

This ongoing scientific fact of climate change has profound implications for resident health, economic livelihood, and all infrastructure. Planning for climate change adaptation is a critical next step (https://www.epa.gov/arc-x/planning-climate-change-adaptation).

Figure E2: Location of the Binford Elementary School Air Quality Monitoring Site



Appendix F:
BMCMPO Complete Streets Policy:
Safe Streets and Roads for All (SS4A)

The list of *FY 2024-2028 Transportation Improvement Program (TIP)* projects identified within this section were subject to a Bloomington-Monroe County Metropolitan Planning Organization (BMCMPO) *Complete Streets Policy* review. Complete Streets are roadway projects designed to accommodate all users, including, but not limited to, pedestrians, bicyclists, users of public transit, and individual mobility devices, people with disabilities, the elderly, motorists, freight providers, emergency responders, and adjacent land users. Through complete streets, the safety and mobility for vulnerable road users is as much of a priority as all other modes.

The BMCMPO's adopted Complete Streets Policy initially established in 2009 mirroring criteria from Smart Growth America (https://smartgrowthamerica.org/program/national-complete-streets-coalition/policy-atlas/), creates an equitable, balanced, and effective transportation system for all types of users integrated with adjacent land uses where every roadway user can safely and comfortably travel throughout the local community. The adopted BMCMPO Complete Streets Policy website posting is found at the following link: https://bloomington.in.gov/sites/default/files/2019-02/BMCMPO%20Complete%20Streets%20Policy%20-%20FINAL%20-%20ADOPTED%2011-09-18.pdf.

The following **Table F-1**, Recommended Place Measures and Metrics, is inspired, adapted by, and adopted from *Evaluating Complete Streets Projects: A Guide for Practitioners*, a resource created by American Association of Retired Persons (AARP) and Smart Growth America (SGA) for measuring the results of alternative transportation projects. Place Measures adopted by the BMCMPO fall under the macro-level headings of "Place", "Crash Risk", and "Equity." Application scales consider project and network levels. Detailed applicable project and network "metrics" represent the foundation of each Place Measure and relevant application scale. **Table F-2** details the Transportation Improvement Program Project Prioritization Criteria using Complete Streets guidance reaffirmed by the Policy Committee in 2020.

Table F-1: BMCMPO Recommended Place Measures and Metrics*

PLACE MEASURE	APPLICATION SCALE	METRIC
PLACE Being aware of community context, including existing and plane land use and buildings can result in streets that are vital public spaces. Place-based focused measurements ensure a product that is compatible and enhances the community.		
Quality of bicycling environment	Project	• Width of bicycle facilities • Pavement condition of bicycling facility • Bicyclist level of comfort. Comfort is in accord with separation of traffic, volume and speed of cars • Right turn on red restrictions
Quality of pedestrian environment	Project	• Crossing distance and time • Presence of enhanced crosswalks • Wait time at intersection • Width of walking facility • Right turn on red restrictions • Planting of new or maintaining existing trees
Quality of transit environment	Project	• Transit Level of Service/Multimodal Level of Service (MMLOS) at segment and/or intersection • Quality of accommodations for passengers at stops • Presence of wayfinding and system information • Real-time arrival information • Off-board payment option
Resident participation	Project	• Number of responses gathered • Number of people at meetings
Quality of automobile trips	Project	• Travel lane pavement condition
CRASH RISK Safe travel is a fundamental transportation goal. Safety measures should watch for elements associated with injurious crashes and those associated with perceptions of safety.		
Compliance with posted speed limit	Project	• Percentage of drivers exceeding the posted speed limit • Match between target speed, design speed, and 85th percentile
Crashes	Project	• Number of crashes by mode on project (before and after) • Crash severity by mode and location
Crashes	Network	• Total Number • Rate and location by mode
Fatalities	Project	• Number of fatalities by mode on project (before and after)
Fatalities	Network	• Number of fatalities suffered by all modes

Table F-1: BMCMPO Recommended Place Measures and Metrics (continued)

PLACE MEASURE	APPLICATION SCALE	METRIC
EQUITY Transportation services impact some populations and neighborhoods more than others. In project selection and evaluation, the distribution of impacts and benefits should examine the needs for traditional disadvantaged populations.		
Auto trips	Project	• Driving trips as portion of total trips along project
Auto trips	Network	• Driving trips to primary and secondary schools • Vehicle Miles Traveled (VMT) per capita • Driving commutes to work as portion of total commutes to work
Bicycle trips	Project	• Bicycling trips as portion of total trips along project
Bicycle trips	Network	• Bicycling trips as portion of total trips • Bicycling commutes to work as portion of total commutes to work
Transit trips	Network	• Transit trips as portion of total trips • Transit commutes to work as portion of total commutes to work
Walk trips	Project	• Walk trips as portion of total trips along project
Walk trips	Network	• Walk trips as portion of total trips in community • Walk commutes to work as portion of total commutes to work

Source: BMCMPO, Complete Streets Policy, November 2019.

The following Complete Streets Policy Project Prioritization Criteria serves the BMCMPO Citizens Advisory Committee, the Technical Advisory Committee, and the Policy Committee as a guiding prioritization framework for the placement of projects into the Transportation Improvement Program (TIP).

Table F-2 BMCMPO Transportation Improvement Program – Project Prioritization Criteria

BMCMPO TIP - Project Prioritization Criteria		
	Weighting	**Yes = 1, No = 0**
System Preservation and Maintenance		
Project improves upon *existing* infrastructure or serves to retrofit missing infrastructure (e.g. filling in sidewalk gaps)		
Project addresses a maintenance need (e.g. repaving, bridge repair)	**15%**	
Project is located within existing right of way		
	Total	**0**
Safety		
Project addresses a known high crash risk location		
Project location is identified in the most recent MPO Crash Report's top 50 crash locations		
Project location is identified in the most recent MPO Crash Report's top 15 bicycle and pedestrian crash locations		
Project incorporates strategies that reduce crash risk		
Geometrical improvement for motorized safety	**20%**	
Geometrical Improvement for non-motorized safety		
Signalization Improvement		
Signage/Wayfinding		
Project improves safe travel to nearby schools (within 1 mile)		
Other improvements with rationale as to how the project reduces crash risk		
	Total	**0**
Multi-Modal Options		
Project incorporates Multi-Modal solutions		
Project located along existing transit service		
Project located along existing pedestrian/bicycle facility		
Project reduces modal conflict (e.g. traffic signals, grade separation, dedicated lanes)		
Project includes transit accommodations (e.g. pullouts, shelters, dedicated lanes, signal priority)	**20%**	
Project includes sidewalk improvements		
Project includes bicycle facility improvements		
Project contains high comfort bicycle infrastructure appropriate to facility function (e.g. protected bike lane, multi-use path)		
Project contains high comfort pedestrian infrastructure appropriate to facility function (e.g. curb extension, refuge island, crosswalk enhancement)		
Project makes a connection to an existing active mode facility		
	Total	**0**
Congestion Management		
Project incorporates congestion management strategies		
Grade separation or dedicated travel space for individual modes		
Improvements to access management		
Signalization improvement	**10%**	
Improves parallel facility or contributes to alternative routing		
Provides capacity for non-motorized modes		
Adds transit capacity		
Other strategies		
	Total	**0**
Health and Equity		
Project provides increased accessibility for people with a low income & minorities		
Project corrects ADA non-compliance		
Project promotes physical activity	**10%**	
Project reduces vehicle emissions		
Project will not have a negative impact for a natural resource		
Project will not have a negative impact for a socio-cultural resources		
	Total	**0**
Consistency with Adopted Plans		
Project located along planned transit service		
Project located along planned pedestrian/bicycle facility		
Local Master Thoroughfare Plan Priority		
Transit Plan Priority	**10%**	
Bicycle/Pedestrian Plan Priority		
Project supports goals and principles of MPO Metropolitan Transportation Plan		
Project supports goals and principles of local land use plans		
Other applicable planning documents		
	Total	**0**
Context Sensitivity and Land Use		
Project contributes to the sense of place and matches the surrounding land use		
Project balances the need to move people with other desirable outcomes		
Project involves minimal disruption to the community (e.g. limited land acquisition, limited change in traffic circulation)		
Project is seen as adding lasting value to the community	**15%**	
Project supports high quality growth and land use principles		
Project improves accessibility and/or connectivity to existing land use development		
Project location supports infill/redevelopment		
Project contributes to transportation network grid development/roadway network connectivity		
	Total	**0**
	Overall Total	**0**

Source: BMCMPO, Complete Streets Policy, November 2019.

Table F-3

BMCMPO FY 2024-2028 TIP: New Projects Evaluated for Complete Streets Policy Compliance

Project	Brief Description	Compliant	Exempt	N/A
Crosswalk Safety Improvements – Phase III	**Safety - *Safe Streets & Roads for All*** - Install or enhance existing pedestrian crosswalks, pedestrian curb ramps, and pedestrian refuge islands throughout the City of Bloomington prioritized focused on areas of low accessibility compliance and high crash risk.	●		
Downtown Curb Ramps - Phase V	**Safety** - ***Safe Streets & Roads for All*** - Install or improve pedestrian curb ramps including new pedestrian curb ramps and refuge areas of high conflict between pedestrians and vehicular traffic in and near downtown Bloomington.	●		
Covenanter Protected Bike Lanes	**Safety & Mobility - *Safe Streets & Roads for All*** - Project priorities include improving safety and expanding capacity by adding facilities for non-motorized modes that connect to existing pedestrian and bicycle facilities. By improving pedestrian and bicycle connections this project will improve the City's ability to transport people while also working toward goals of equity and sustainability. This project is part of the Transportation Plan's High Priority Bicycle Network which is intended to form a basic east-west and north-south bicycle network to achieve the biggest impact within a short timeframe to advance multimodal transportation in the City. This network connects parks, trails, schools, employers, retail, and housing. Within the limits of this project there is a hardware store, a grocery store, restaurants, high-density housing where this census block has the city's south east side highest population density.	●		
North Dunn Street Multiuse Path	**Safety & Mobility - *Safe Streets & Roads for All*** - Project priorities include improving safety by reducing conflicts between modes with the construction of a physically separated facility for people walking and bicycling plus expanding capacity by adding facilities for non-motorized modes that connect to other existing pedestrian and bicycle facilities. By improving pedestrian and bicycle connections, this project will improve the City's ability to transport people while also working toward goals of equity and sustainability. This project will improve connectivity between north-side residences and Parks with the rest of Bloomington. The new multiuse path will connect residential neighborhoods to the existing multiuse paths on the Bypass and on Dunn Street south of 17th Street. It will provide those neighborhoods with improved connectivity to IU Campus as well as the rest of Bloomington. It will also build towards a more accessible route for the majority of Bloomington to access the Griffy Lake Nature Preserve. All intersections within the project limits will be evaluated for options to provide improved pedestrian and bicycle access from the multiuse path to adjacent neighborhoods. These access improvements may involve curb bumpouts, flashing beacons, or other features. The project will also include signage and marking updates to improve predictability along the corridor.	●		

Old SR 37 at Dillman Rd. Intersection Improvement	**Safety** – Intersection improvement with dedicated turn lanes, crosswalks, sidewalks, and multi-use path for a conventional traffic signal or, alternatively, a roundabout construction if topography, roadway grades, as available land will allow for construction to reduce crash frequency and crash severity.	●		

The BMCMPO Complete Streets Policy established in 2009 with a subsequent 2018 update and annual reviews in calendar years 2019 through 2022 supports local public agency initiatives aimed at the following objectives:

- Implementing improvements along an expanded multimodal network of reconfigured roads with separated bicycle lanes and improved safety features for pedestrian crossings.

- Applying low-cost safety treatments (e.g., rumble strips, wider edge lines, flashing beacons, and better signage) along multiuse urban area corridors.

- Implementing traffic calming road design changes and establishing appropriate speed limits for all road users.

- Installing safety enhancements such as safer pedestrian crossings, sidewalks, and additional lighting for people walking, rolling, or using mobility assistive devices.

- Making street design changes informed by community outreach and cultural education

- Creating safer routes for schools and public transit services from design leading to multiple projects that lead to people safely walking, biking, and rolling in underserved communities.

The following pages show the BMCMPO FY 2024-2028 TIP Complete Streets Project Prioritization/Safe Streets and Roads for All (SS4A) Scores for

- City of Bloomington - Crosswalks Safety Improvements - Phase III
- City of Bloomington - Downtown Curb Ramps - Phase IV project
- City of Bloomington - Covenanter Protected Bike Lanes project
- City of Bloomington - North Dunn Street Multiuse Path project, and
- Monroe County - Old S.R. 37 at Dillman Road Intersection project.

The derivation of all resultant Complete Streets Project Prioritization Scores were achieved after consultations with Local Planning Agencies (LPA) technical staffs in May 2023.

DES#TBD - Crosswalk Safety Improvements Project - Phase III

Bloomington-Monroe County Metropolitan Planning Organization (BMCMPO) Transportation Improvement Program (TIP) - Project Prioritization Criteria		
	Weighting	**Yes = 1, No = 0**
System Preservation and Maintenance		
Project improves upon *existing* infrastructure or serves to retrofit missing infrastructure (e.g. filling in sidewalk gaps)	15%	1
Project addresses a maintenance need (e.g. repaving, bridge repair)		1
Project is located within existing right of way		1
	Total	**0.45**
Safety		
Project addresses a known high crash risk location	20%	
Project location is identified in the most recent MPO Crash Report's top 50 crash locations		0
Project location is identified in the most recent MPO Crash Report's top 15 bicycle and pedestrian crash locations		0
Project incorporates strategies that reduce crash risk		
Geometrical improvement for motorized safety		0
Geometrical Improvement for non-motorized safety		1
Signalization Improvement		1
Signage/Wayfinding		1
Project improves safe travel to nearby schools (within 1 mile)		1
Other improvements with rationale as to how the project reduces crash risk		1
	Total	**1**
Multi-Modal Options		
Project incorporates Multi-Modal solutions	20%	
Project located along existing transit service		1
Project located along existing pedestrian/bicycle facility		1
Project reduces modal conflict (e.g. traffic signals, grade separation, dedicated lanes)		1
Project includes transit accommodations (e.g. pullouts, shelters, dedicated lanes, signal priority)		0
Project includes sidewalk improvements		1
Project includes bicycle facility improvements		1
Project contains high comfort bicycle infrastructure appropriate to facility function (e.g. protected bike lane, multi-use path)		0
Project contains high comfort pedestrian infrastructure appropriate to facility function (e.g. curb extension, refuge island, crosswalk enhancement)		1
Project makes a connection to an existing active mode facility		1
	Total	**1.4**
Congestion Management		
Project incorporates congestion management strategies	10%	
Grade separation or dedicated travel space for individual modes		1
Improvements to access management		1
Signalization improvement		1
Improves parallel facility or contributes to alternative routing		1
Provides capacity for non-motorized modes		1
Adds transit capacity		1
Other strategies		1
	Total	**0.7**
Health and Equity		
Project provides increased accessibility for people with a low income & minorities	10%	1
Project corrects ADA non-compliance		1
Project promotes physical activity		1
Project reduces vehicle emissions		1
Project will not have a negative impact for a natural resource		1
Project will not have a negative impact for a socio-cultural resources		1
	Total	**0.6**
Consistency with Adopted Plans		
Project located along planned transit service	10%	1
Project located along planned pedestrian/bicycle facility		1
Local Master Thoroughfare Plan Priority		1
Transit Plan Priority		0
Bicycle/Pedestrian Plan Priority		1
Project supports goals and principles of MPO Metropolitan Transportation Plan		1
Project supports goals and principles of local land use plans		1
Other applicable planning documents		1
	Total	**0.7**
Context Sensitivity and Land Use		
Project contributes to the sense of place and matches the surrounding land use	15%	
Project balances the need to move people with other desirable outcomes		1
Project involves minimal disruption to the community (e.g. limited land acquisition, limited change in traffic circulation)		1
Project is seen as adding lasting value to the community		1
Project supports high quality growth and land use principles		
Project improves accessibility and/or connectivity to existing land use development		1
Project location supports infill/redevelopment		1
Project contributes to transportation network grid development/roadway network connectivity		1
	Total	**0.9**
	Overall Total	**5.75**

Source: BMCMPO Complete Streets Policy, November 2018.

DES#TBD - Downtown Curb Ramps - Phase 4

Bloomington-Monroe County Metropolitan Planning Organization (BMCMPO) Transportation Improvement Program (TIP) - Project Prioritization Criteria		
	Weighting	**Yes = 1, No = 0**
System Preservation and Maintenance		
Project improves upon *existing* infrastructure or serves to retrofit missing infrastructure (e.g. filling in sidewalk gaps)	15%	1
Project addresses a maintenance need (e.g. repaving, bridge repair)		1
Project is located within existing right of way		1
	Total	**0.45**
Safety		
Project addresses a known high crash risk location	20%	
Project location is identified in the most recent MPO Crash Report's top 50 crash locations		0
Project location is identified in the most recent MPO Crash Report's top 15 bicycle and pedestrian crash locations		0
Project incorporates strategies that reduce crash risk		
Geometrical improvement for motorized safety		0
Geometrical Improvement for non-motorized safety		1
Signalization Improvement		0
Signage/Wayfinding		1
Project improves safe travel to nearby schools (within 1 mile)		1
Other improvements with rationale as to how the project reduces crash risk		1
	Total	**0.8**
Multi-Modal Options		
Project incorporates Multi-Modal solutions	20%	
Project located along existing transit service		1
Project located along existing pedestrian/bicycle facility		1
Project reduces modal conflict (e.g. traffic signals, grade separation, dedicated lanes)		1
Project includes transit accommodations (e.g. pullouts, shelters, dedicated lanes, signal priority)		1
Project includes sidewalk improvements		1
Project includes bicycle facility improvements		1
Project contains high comfort bicycle infrastructure appropriate to facility function (e.g. protected bike lane, multi-use path)		1
Project contains high comfort pedestrian infrastructure appropriate to facility function (e.g. curb extension, refuge island, crosswalk enhancement)		1
Project makes a connection to an existing active mode facility		1
	Total	**1.8**
Congestion Management		
Project incorporates congestion management strategies	10%	
Grade separation or dedicated travel space for individual modes		0
Improvements to access management		1
Signalization improvement		0
Improves parallel facility or contributes to alternative routing		1
Provides capacity for non-motorized modes		1
Adds transit capacity		0
Other strategies		1
	Total	**0.4**
Health and Equity		
Project provides increased accessibility for people with a low income & minorities	10%	1
Project corrects ADA non-compliance		1
Project promotes physical activity		1
Project reduces vehicle emissions		1
Project will not have a negative impact for a natural resource		1
Project will not have a negative impact for a socio-cultural resources		1
	Total	**0.6**
Consistency with Adopted Plans		
Project located along planned transit service	10%	1
Project located along planned pedestrian/bicycle facility		1
Local Master Thoroughfare Plan Priority		1
Transit Plan Priority		0
Bicycle/Pedestrian Plan Priority		1
Project supports goals and principles of MPO Metropolitan Transportation Plan		1
Project supports goals and principles of local land use plans		1
Other applicable planning documents		1
	Total	**0.7**
Context Sensitivity and Land Use		
Project contributes to the sense of place and matches the surrounding land use	15%	
Project balances the need to move people with other desirable outcomes		1
Project involves minimal disruption to the community (e.g. limited land acquisition, limited change in traffic circulation)		1
Project is seen as adding lasting value to the community		1
Project supports high quality growth and land use principles		
Project improves accessibility and/or connectivity to existing land use development		1
Project location supports infill/redevelopment		1
Project contributes to transportation network grid development/roadway network connectivity		1
	Total	**0.9**
	Overall Total	**5.65**

Source: BMCMPO Complete Streets Policy, November 2018.

DES#TBD - Covenanter Protected Bike Lanes & Intersection Improvements

Bloomington-Monroe County Metropolitan Planning Organization (BMCMPO) Transportation Improvement Program (TIP) - Project Prioritization Criteria		
	Weighting	**Yes = 1, No = 0**
System Preservation and Maintenance		
Project improves upon *existing* infrastructure or serves to retrofit missing infrastructure (e.g. filling in sidewalk gaps)	15%	1
Project addresses a maintenance need (e.g. repaving, bridge repair)		1
Project is located within existing right of way		1
	Total	**0.45**
Safety		
Project addresses a known high crash risk location	20%	
Project location is identified in the most recent MPO Crash Report's top 50 crash locations		0
Project location is identified in the most recent MPO Crash Report's top 15 bicycle and pedestrian crash locations		0
Project incorporates strategies that reduce crash risk		
Geometrical improvement for motorized safety		0
Geometrical Improvement for non-motorized safety		1
Signalization Improvement		1
Signage/Wayfinding		1
Project improves safe travel to nearby schools (within 1 mile)		1
Other improvements with rationale as to how the project reduces crash risk		1
	Total	**1**
Multi-Modal Options		
Project incorporates Multi-Modal solutions	20%	
Project located along existing transit service		1
Project located along existing pedestrian/bicycle facility		1
Project reduces modal conflict (e.g. traffic signals, grade separation, dedicated lanes)		1
Project includes transit accommodations (e.g. pullouts, shelters, dedicated lanes, signal priority)		0
Project includes sidewalk improvements		1
Project includes bicycle facility improvements		1
Project contains high comfort bicycle infrastructure appropriate to facility function (e.g. protected bike lane, multi-use path)		1
Project contains high comfort pedestrian infrastructure appropriate to facility function (e.g. curb extension, refuge island, crosswalk enhancement)		1
Project makes a connection to an existing active mode facility		1
	Total	**1.6**
Congestion Management		
Project incorporates congestion management strategies	10%	
Grade separation or dedicated travel space for individual modes		1
Improvements to access management		1
Signalization improvement		1
Improves parallel facility or contributes to alternative routing		1
Provides capacity for non-motorized modes		1
Adds transit capacity		0
Other strategies		1
	Total	**0.6**
Health and Equity		
Project provides increased accessibility for people with a low income & minorities	10%	1
Project corrects ADA non-compliance		1
Project promotes physical activity		1
Project reduces vehicle emissions		1
Project will not have a negative impact for a natural resource		1
Project will not have a negative impact for a socio-cultural resources		1
	Total	**0.6**
Consistency with Adopted Plans		
Project located along planned transit service	10%	1
Project located along planned pedestrian/bicycle facility		1
Local Master Thoroughfare Plan Priority		1
Transit Plan Priority		0
Bicycle/Pedestrian Plan Priority		1
Project supports goals and principles of MPO Metropolitan Transportation Plan		1
Project supports goals and principles of local land use plans		1
Other applicable planning documents		1
	Total	**0.7**
Context Sensitivity and Land Use		
Project contributes to the sense of place and matches the surrounding land use	15%	
Project balances the need to move people with other desirable outcomes		1
Project involves minimal disruption to the community (e.g. limited land acquisition, limited change in traffic circulation)		1
Project is seen as adding lasting value to the community		1
Project supports high quality growth and land use principles		
Project improves accessibility and/or connectivity to existing land use development		1
Project location supports infill/redevelopment		1
Project contributes to transportation network grid development/roadway network connectivity		1
	Total	**0.9**
	Overall Total	**5.85**

Source: BMCMPO Complete Streets Policy, November 2018.

DES#TBD - North Dunn Street Multimodal Path

Bloomington-Monroe County Metropolitan Planning Organization (BMCMPO) Transportation Improvement Program (TIP) - Project Prioritization Criteria		
	Weighting	**Yes = 1, No = 0**
System Preservation and Maintenance		
Project improves upon *existing* infrastructure or serves to retrofit missing infrastructure (e.g. filling in sidewalk gaps)	15%	1
Project addresses a maintenance need (e.g. repaving, bridge repair)		1
Project is located within existing right of way		1
	Total	**0.45**
Safety		
Project addresses a known high crash risk location	20%	
Project location is identified in the most recent MPO Crash Report's top 50 crash locations		0
Project location is identified in the most recent MPO Crash Report's top 15 bicycle and pedestrian crash locations		0
Project incorporates strategies that reduce crash risk		
Geometrical improvement for motorized safety		0
Geometrical Improvement for non-motorized safety		1
Signalization Improvement		1
Signage/Wayfinding		1
Project improves safe travel to nearby schools (within 1 mile)		1
Other improvements with rationale as to how the project reduces crash risk		1
	Total	**1**
Multi-Modal Options		
Project incorporates Multi-Modal solutions	20%	
Project located along existing transit service		1
Project located along existing pedestrian/bicycle facility		1
Project reduces modal conflict (e.g. traffic signals, grade separation, dedicated lanes)		1
Project includes transit accommodations (e.g. pullouts, shelters, dedicated lanes, signal priority)		0
Project includes sidewalk improvements		1
Project includes bicycle facility improvements		1
Project contains high comfort bicycle infrastructure appropriate to facility function (e.g. protected bike lane, multi-use path)		1
Project contains high comfort pedestrian infrastructure appropriate to facility function (e.g. curb extension, refuge island, crosswalk enhancement)		1
Project makes a connection to an existing active mode facility		1
	Total	**1.6**
Congestion Management		
Project incorporates congestion management strategies	10%	
Grade separation or dedicated travel space for individual modes		1
Improvements to access management		1
Signalization improvement		1
Improves parallel facility or contributes to alternative routing		1
Provides capacity for non-motorized modes		1
Adds transit capacity		0
Other strategies		1
	Total	**0.6**
Health and Equity		
Project provides increased accessibility for people with a low income & minorities	10%	1
Project corrects ADA non-compliance		1
Project promotes physical activity		1
Project reduces vehicle emissions		1
Project will not have a negative impact for a natural resource		1
Project will not have a negative impact for a socio-cultural resources		1
	Total	**0.6**
Consistency with Adopted Plans		
Project located along planned transit service	10%	1
Project located along planned pedestrian/bicycle facility		1
Local Master Thoroughfare Plan Priority		1
Transit Plan Priority		0
Bicycle/Pedestrian Plan Priority		1
Project supports goals and principles of MPO Metropolitan Transportation Plan		1
Project supports goals and principles of local land use plans		1
Other applicable planning documents		1
	Total	**0.7**
Context Sensitivity and Land Use		
Project contributes to the sense of place and matches the surrounding land use	15%	
Project balances the need to move people with other desirable outcomes		1
Project involves minimal disruption to the community (e.g. limited land acquisition, limited change in traffic circulation)		1
Project is seen as adding lasting value to the community		1
Project supports high quality growth and land use principles		
Project improves accessibility and/or connectivity to existing land use development		1
Project location supports infill/redevelopment		1
Project contributes to transportation network grid development/roadway network connectivity		1
	Total	**0.9**
	Overall Total	**5.85**

Source: BMCMPO Complete Streets Policy, November 2018.

DES#TBD - Old SR 37 & Dillman Rd Intersection

Bloomington-Monroe County Metropolitan Planning Organization (BMCMPO) Transportation Improvement Program (TIP) - Project Prioritization Criteria		
	Weighting	**Yes = 1, No = 0**
System Preservation and Maintenance		
Project improves upon *existing* infrastructure or serves to retrofit missing infrastructure (e.g. filling in sidewalk gaps)	15%	1
Project addresses a maintenance need (e.g. repaving, bridge repair)		0
Project is located within existing right of way		0
	Total	**0.15**
Safety		
Project addresses a known high crash risk location	20%	
Project location is identified in the most recent MPO Crash Report's top 50 crash locations		0
Project location is identified in the most recent MPO Crash Report's top 15 bicycle and pedestrian crash locations		0
Project incorporates strategies that reduce crash risk		
Geometrical improvement for motorized safety		1
Geometrical Improvement for non-motorized safety		1
Signalization Improvement		1
Signage/Wayfinding		1
Project improves safe travel to nearby schools (within 1 mile)		1
Other improvements with rationale as to how the project reduces crash risk		1
	Total	**1.2**
Multi-Modal Options		
Project incorporates Multi-Modal solutions	20%	
Project located along existing transit service		0
Project located along existing pedestrian/bicycle facility		0
Project reduces modal conflict (e.g. traffic signals, grade separation, dedicated lanes)		1
Project includes transit accommodations (e.g. pullouts, shelters, dedicated lanes, signal priority)		0
Project includes sidewalk improvements		1
Project includes bicycle facility improvements		1
Project contains high comfort bicycle infrastructure appropriate to facility function (e.g. protected bike lane, multi-use path)		0
Project contains high comfort pedestrian infrastructure appropriate to facility function (e.g. curb extension, refuge island, crosswalk enhancement)		0
Project makes a connection to an existing active mode facility		0
	Total	**0.6**
Congestion Management		
Project incorporates congestion management strategies	10%	
Grade separation or dedicated travel space for individual modes		0
Improvements to access management		1
Signalization improvement		0
Improves parallel facility or contributes to alternative routing		1
Provides capacity for non-motorized modes		1
Adds transit capacity		0
Other strategies		1
	Total	**0.4**
Health and Equity		
Project provides increased accessibility for people with a low income & minorities	10%	0
Project corrects ADA non-compliance		1
Project promotes physical activity		1
Project reduces vehicle emissions		1
Project will not have a negative impact for a natural resource		1
Project will not have a negative impact for a socio-cultural resources		1
	Total	**0.5**
Consistency with Adopted Plans		
Project located along planned transit service	10%	0
Project located along planned pedestrian/bicycle facility		0
Local Master Thoroughfare Plan Priority		1
Transit Plan Priority		0
Bicycle/Pedestrian Plan Priority		0
Project supports goals and principles of MPO Metropolitan Transportation Plan		1
Project supports goals and principles of local land use plans		1
Other applicable planning documents		1
	Total	**0.4**
Context Sensitivity and Land Use		
Project contributes to the sense of place and matches the surrounding land use	15%	
Project balances the need to move people with other desirable outcomes		1
Project involves minimal disruption to the community (e.g. limited land acquisition, limited change in traffic circulation)		1
Project is seen as adding lasting value to the community		1
Project supports high quality growth and land use principles		
Project improves accessibility and/or connectivity to existing land use development		0
Project location supports infill/redevelopment		1
Project contributes to transportation network grid development/roadway network connectivity		0
	Total	**0.6**
	Overall Total	**3.85**

Source: BMCMPO Complete Streets Policy, November 2018.

Appendix G:
Plan Development & Public Involvement Methodology

Introduction

The FY 2024-2028 Transportation Improvement Program (TIP) prepared by the Bloomington-Monroe County Metropolitan Planning Organization (BMCMPO) staff relied on consultation guidance from the Federal Highway Administration-Indiana Division, the Federal Transit Administration (FTA) Region 5 office, the Indiana Department of Transportation Indianapolis central office and Seymour District staff, Monroe County, the Town of Ellettsville, Rural Transit, Bloomington Transit, Indiana University (IU) Campus Bus, and the City of Bloomington.

This appendix highlights the public outreach efforts used by the MPO throughout development of the FY 2024-2028 TIP from April 2023 to adoption with guidance from federal, state, and local partners. The BMCMPO demonstrated explicit consideration and response to public input received during the development of the TIP. The BMCMPO sought out and considered the needs of those traditionally underserved by existing transportation systems, such as low-income and minority households, who may face challenges accessing employment and other services.

The staff focused on an extensive public involvement/public input process through open hybrid and in-person virtual public meetings of the BMCMPO Citizen Advisory Committee (CAC), the Technical Advisory Committee (TAC), and the Policy Committee (PC). The recent COVID-19 pandemic necessitated a shift to hybrid platforms for all meetings using Zoom. All meetings of the Policy Committee are routinely recorded for community viewing by the Citizens Access Television System (CATS https://www.catstv.net/) and continued uninterrupted throughout FY 2023 as the staff presented selective elements and the Draft FY 2024-2028 TIP. The Draft FY 2024-2028 TIP had additional postings on the BMCMPO website (https://bloomington.in.gov/mpo/transportation-improvement-program) along with a discussion/adoption schedule.

Staff presentations and public meeting discussions adhered to the following schedule throughout calendar year 2023:

January 6, 2023 – Local Public Agency Distribution Announcement

- Call for Projects Issued — January 6, 2023
- Call for Projects (Updated) — January 26, 2023
- Project Request Application Deadline — February 10, 2023
- Technical Advisory Committee (TAC) and Citizens Advisory Committee (CAC) Project Requests, Project Reviews and Fiscal Constraint Issues — February 22, 2023

- Policy Committee (PC) Project Requests, Project Reviews and Fiscal Constraint Issues — March 10, 2023
- TAC an CAC Federal Program Category Allocations, LPA Applications Received, Fiscally Constrained Program — April 26, 2023
- PC Federal Program Category Allocations, LPA Applications Received, Fiscally Constrained Program — May 12, 2023
- Legal Advertisements — May 12 and May 14, 2023
- Thirty (30) Day Public Comment Period Begins — May 12, 2023
- Draft FY 2024-2028 TIP Submission to INDOT — May 15, 2023
- Draft FY 2024-2028 TIP Public Input Meeting — May 22, 2023
- TAC and CAC Final Draft Reviews and Recommendations — May 24, 2023
- Thirty (30) Day Public comment Period Ends — June 10, 2023
- Receipt of INDOT, FHWA, FTA Review Comments — June 30, 2023
- PC Approval of Final FY 2024 - 2028 TIP — August 11, 2023
- Adopted Submission to INDOT of FY 2024 - 2028 TIP — August 11, 2023
- FHWA/FTA/INDOT FY 2024 - 2028 TIP Approval Letter — September 2023

Public Outreach Process

The public outreach process for the FY 2024-2028 TIP included:

- Posting the Draft FY 2024-2028 TIP for public review and comment on the City of Bloomington website page (https://bloomington.in.gov/mpo/transportation-improvement-program)

- Posting of Draft FY 2024-2028 Transportation Improvement Program - Public Comment Form on the City of Bloomington website page under the Draft document link.

- Legal Advertisements in the *Bloomington-Herald Times* on Friday, May 12th and Sunday, May 14th 2023. Proof of legal advertisement made available upon request from the BMCMPO staff.

- City of Bloomington Public Meeting Press Release:

FOR IMMEDIATE RELEASE
May 18, 2023

For more information, please contact:
Pat Martin, Senior Transportation Planner, martipa@bloomington.in.gov or 812-349-3530; or Rachael Sargent, MPO Transportation Planner, rachael.sargent@bloomington.in.gov or 812-349-3588.

Public Invited to Provide Input about Local Transportation Projects

Bloomington, Ind. -The Bloomington-Monroe County Metropolitan Planning Organization (BMCMPO) will hold a hybrid Public Information Meeting on **Monday, May 22, from 6:00 to 8:00 p.m.** in the Bloomington City Hall Council Chambers with the goal of gaining public input for development of the **Fiscal Year 2024-2028 Transportation Improvement Program (TIP)**.

Join Zoom Meeting
https://bloomington.zoom.us/j/8657231124?pwd=VG9sQWZsNTZpU1ZBa0lzdjJSNkQ5dz09
Meeting ID: 865 723 1124
Passcode: BMCMPO
Dial by your location
+1 312 626 6799 US (Chicago)
Find your local number: https://bloomington.zoom.us/u/ky1ihyfjN

The FY 2024-2028 TIP is a comprehensive list of planned and federally funded multi-modal transportation projects programmed for the Indiana Department of Transportation, Monroe County, Rural Transit, Bloomington Transit, and the City of Bloomington.

Development of the new TIP requires a public involvement process that includes a public review by the BMCMPO Citizens Advisory Committee, the Technical Advisory Committee, and adoption by the Policy Committee before submission to state and federal agencies for final approval. In providing feedback on the proposed list of TIP projects, meeting attendees will help shape the project investment priorities for the next five years.

Members of the public may submit comments regarding this draft document at the public meeting or directly to BMCMPO staff by email at martipa@bloomington.in.gov or rachael.sargent@bloomington.in.gov.

A copy of the *Draft FY 2024-2028 Transportation Improvement Program* is available for public review in a printed paper format at:

- City of Bloomington Planning and Transportation Department
  401 N. Morton St. Ste. 130
  Bloomington, IN 47404; or

- Online electronically and downloadable at:
  https://bloomington.in.gov/mpo/transportation-improvement-program

The BMCMPO will accept written comments during the ongoing public review period until June 10, 2023. Written comments can be submitted to:

Bloomington-Monroe County Metropolitan Planning Organization (BMCMPO)
P.O. Box 100
Bloomington, IN 47402

The BMCMPO staff will document and share all public comments, questions, and concerns with the MPO's committees. The Technical Advisory and Citizens Advisory Committees will meet June 28th to recommend adoption of the Draft TIP, which the Policy Committee will vote to adopt June 30, 2023.

# # #

- *Hybrid Public Meeting from 6:00 p.m. - 8:00 p.m. on Monday, May 22, 2023.* Presentation materials included an overview of the FY 2024-2028 TIP purpose and need, a Bloomington-Monroe County urban area boundary map, project types, fiscal constraints, and the draft program of projects for Monroe County, Rural Transit, Bloomington Transit, the City of Bloomington, and the Indiana Department of Transportation. Open discussion included all relevant topics as follows:

DRAFT FY 2024 - 2028 TRANSPORTATION IMPROVEMENT PROGRAM (TIP)

PUBLIC INFORMATION MEETING

May 22, 2023
7:30 - 8:30 p.m.
City of Bloomington – City Hall - Council Chambers
And Virtual Location via Zoom
Join Zoom Meeting
https://bloomington.zoom.us/j/8657231124?pwd=VG9sQWZsNTZpU1ZBa0lzdjJSNkQ5dz09
Meeting ID: 865 723 1124
Passcode: BMCMPO
Dial by your location
+1 312 626 6799 US (Chicago)
Find your local number: https://bloomington.zoom.us/u/ky1ihyfjN

I. Welcome and Introductions

II. Draft BMCMPO FY 2022- 2026 Transportation Improvement Program
   a. Introduction
      (1) Purpose and Need
      (2) Legislative Requirements
      (3) Local Planning Agencies
      (4) Urban Area Boundary

b. Transportation Improvement Programming
   (1) Project Prioritization
   (2) Amendment Process

c. Transportation Improvement Projects
   (1) Background and Call for FY2022-2026 Projects
   (2) Anticipated FY 2022 - 2026 TIP Federal Program Revenue Levels
   (3) Project Application Requirements
   (4) Fiscally unconstrained/constrained funding request summary
   (5) Draft FY 2022-2026 TIP LPA Funding Requests and Funding Type by Fiscal Year
      (a) Monroe County Summary Table
      (b) City of Bloomington Funding table
      (c) Bloomington Transit Funding Table
      (d) Rural Transit Funding table
   (6) FY 2022 - 2026 TIP LPA and INDOT Projects
   (7) FY 2022 - 2026 TIP Appendices
      (a) Appendix A: Financial Forecast
      (b) Appendix B: Transportation Planning Requirements
      (c) Appendix C: Performance-Based Transportation Planning Targets
      (d) Appendix D: Environmental Justice
      (a) Appendix E: Air Quality and Climate Change Assessment
      (b) Appendix F: BMCMPO Complete Streets Policy
      (c) Appendix G: Plan Developments & Public Involvement Methodology
      (d) Appendix H: Glossary

Draft Submission Schedule, Legal Advertisements, Public Comment Period

- FHWA/FTA/INDOT Draft Review and Comments – May/June 2023

Final Draft Review/Approval, and Final Submission Dates

- Technical Advisory Committee -June 28. 2023 at 10:00 a.m. (Hybrid)
- Citizens Advisory Committee – June 28, 2023 at 6:30 p.m. (Hybrid)
- Policy Committee – June 30, 2023 at 1:30 p.m. (Hybrid)

Adjournment

Auxiliary aids for people with disabilities are available upon request with adequate notice. Please call 812-349-3429 or e-mail human.rights@bloomington.in.gov.

Interagency Consultation/Coordination: Calendar Year 2022 and 2023

The BMCMPO staff continuously consulted and coordinated with federal, state, and local transportation agencies throughout the FY 2024-2028 TIP development process beginning in December 2021 through June 2023 to ensure the attainment of federal and state requirements. The consultation/coordination process further ensured the receipt of corresponding comments. This interagency consultation and coordination ensured the completion of appropriate technical level reviews prior Final FY 2024-2028 TIP adoption by the BMCMPO Policy Committee on August 11, 2023.

Appendix H:
Glossary

3C Planning means the Comprehensive, Cooperative, and Continuous transportation planning process.

ADA means the Americans with Disabilities Act of 1990 (42 U.S.C. § 12101), a civil rights law that prohibits discrimination based on disability and affords similar protections against discrimination to Americans with disabilities as the Civil Rights Act of 1964, which made discrimination based on race, religion, sex, national origin, and other characteristics illegal, and later sexual orientation. The ADA Act of 1990 additionally requires covered employers to provide reasonable accommodations to employees with disabilities, and mandates accessibility requirements for public accommodations.

Air Quality Conformity means a determination required under current federal requirements for major transportation investments in designated air quality "non-attainment" and "maintenance" areas.

Alternative Transportation Funds means the City of Bloomington's established funding mechanism exclusively for pedestrian and bicycle infrastructure maintenance, preservation, and facility expansions more than a decade ago. Fund allocations come through annual municipal budget approvals.

Analysis Area means any geographic area such as a zone or group of zones combined for the purpose of making an analysis.

Apportionment means any method for dividing federal funds by an established formula. An apportionment operates like a line of credit to sub-federal governments.

Authorization means the level of funding designated by Congress for specific legislation.

Average Daily Traffic (ADT) means the average number of vehicles passing a specified point during a 24 hour period.

Bike Lane means a portion of the road designated and designed for the exclusive use of bicycles with distinct signage and pavement markings.

BIL means Bipartisan Infrastructure Law. See Infrastructure Investment and Jobs Act.

Bloomington Transit (BT) is a municipal public transportation corporation that provides public transportation within the City of Bloomington limits.

Bloomington Entertainment and Arts District (BEAD) includes the "what to do," "what to eat," and "where to stay" elements in Bloomington.

BMCMPO means the Bloomington-Monroe County Metropolitan Planning Organization established by the Governor of the State of Indiana for the for the Bloomington urbanized area in March 1982 as a prerequisite for obtaining approval of transportation improvement projects funded by the FHWA and/or FTA.

Bottleneck means the point of minimum capacity along a highway segment.

Build Condition, Option, Alternative, or Alternate means a transportation plan, program, or alternative involving a major capital investment.

Carbon Reduction Program means the program created under the Bipartisan Infrastructure Law (BIL) for planning and construction activities that support the reduction of carbon emissions.

Capacity means the maximum rate of flow at which persons or vehicles reasonably expected to traverse a point or uniform segment of a lane or roadway during a specified time period under prevailing roadway, traffic, and control conditions, usually expressed in persons per hour or vehicles per hour.

Capacity Expansion Project means a major transportation investment that expands the capacity of any highway or transit system to accommodate additional vehicles. Highway expansion projects involve projects that add through travel lanes including major roadway widening, new roadways, new freeway interchanges, and substantial realignments of existing roadways.

Capacity Preservation Project means a transportation investment to preserve the capacity of the existing highway or transit system. Such projects include bridge rehabilitation and replacement, pavement rehabilitation and reconstruction, and low capital cost investments such as traffic signal improvements or safety improvements (e.g. guardrails and minor horizontal/vertical curve realignments). Typical transit projects involve bus and equipment replacement, transit shelters, and garage facility maintenance.

Carpool means any vehicle (usually a car) or arrangement in which two or more occupants, including the driver, share use or cost in traveling between fixed, multiple, or variable points (also referred to as ridesharing).

Census Tract means an area with generally stable boundaries, defined within counties and statistically equivalent entities, usually used to analyze smaller regions of a population. The U.S. Census Bureau establishes census tracts as relatively homogeneous with respect to population characteristics, economic status, and living conditions.

Central Business District (CBD) means an area of a city that contains the greatest concentration of commercial activity. The traditional downtown retail, trade, and commercial area of a city or an area of very high land valuation, traffic flow, and concentration of retail business offices, theaters, hotels, and services compared to adjacent land uses.

CE means construction engineering associated with project construction.

Citizens Advisory Committee (CAC) is a committee, organized under the Metropolitan Planning Organization comprised of residents representing a broad spectrum of the community tasked with providing recommendations to the Policy Committee and Technical Advisory Committee on transportation-related topics within the Metropolitan Planning Area and that affect the Metropolitan Planning Organization.

Climate Change means the long-term rise in the average temperature of the Earth's climate system, a major aspect of climate change demonstrated by direct temperature measurements and by measurements of various effects of the warming. The *Indiana Climate Change Impacts Assessment* (https://docs.lib.purdue.edu/climatetr/2/) identifies rising average annual temperatures and rising average annual precipitation as the most significant climate change impacts in the state. The climate vulnerabilities for Monroe County include extreme heat and extreme precipitation leading to adverse impacts on the built environment and people (https://hri.eri.iu.edu/climate-ulnerability/index.html?placeid=MONROE%20County#climateExpoHead and https://hri.eri.iu.edu/doc/hri-readiness-assessment-20200124.pdf). Learn more about climate change impacts in Bloomington at bloomington.in.gov/sustainability and the current Climate Action Plan at https://bloomington.in.gov/sustainability/2020-climate-action-plan.

CN means project construction or a capital acquisition such as new vehicles or transit buses.

Congestion Mitigation and Air Quality Improvement Program (CMAQ) directs flexible funding resources to state and local governments for transportation projects and programs to help meet the requirements of the Clean Air Act (CAA). Funding is available to reduce congestion and improve air quality for areas that do not meet the National Ambient Air Quality Standards (NAAQS) for ozone, carbon monoxide, or particulate matter (nonattainment areas) and for former nonattainment areas that are now in compliance (maintenance areas). The Bloomington-Monroe County metropolitan planning area (MPA) does not exceed established air quality levels. CMAQ funds are therefore not available to the BMCMPO.

Committed Improvement means funded transportation investments including under construction, but not yet open for operation. Committed projects may additionally involve projects for which design is completed and any environmental clearances approved for construction bid letting.

Complete Streets means a transportation policy and design approach that requires streets to be planned, designed, operated, and maintained to enable safe, convenient, and comfortable travel and access for users of all ages and abilities regardless of their mode of transportation. Complete Streets allow for safe travel by those walking, cycling, driving automobiles, riding public transportation, or delivering goods.

Comprehensive Planning means a planning process that requires inclusion of land use, transportation, water and sewage, education, health, and other elements.

COVID-19 or SARS-CoV-2 means the global novel Coronavirus infectious disease which originated in 2019 which is a severe acute respiratory syndrome primarily spread by close personal contact. January 2020 marked the first reported United States COVID-19 case with a subsequent evolution into a once-in-a-century national public health crisis with over 9.4 million documented cases and 655,000 deaths nationwide as of September 1, 2021. SARS-CoV-2 genetic variants have since emerged and circulated throughout world populations. Locally, Monroe County has more than 13,600 confirmed cases of COVID-19 resulting in 187 deaths attributed to the disease as of September 1, 2021. In many cases, survivors will experience long-term respiratory and health related symptoms (https://coronavirus.jhu.edu/map.html).

Cross-Town Routes means a non-radial bus or rail service which does not enter the Central Business District.

Cumulative Bridge Funds provide revenues for construction, occasional maintenance, and repair of bridges, approaches, and grade separations. Cumulative bridge fund receipts come from a tax levied on each one hundred dollars ($100) assessed valuation of all taxable personal and real property within the county or municipality.

Cumulative Capital Development Funds are sometimes used for major roadway capital investments or other purposes prescribed by the Indiana General Assembly.

Daily Vehicle Miles Traveled (DVMT) means the total number of miles driven per day in a specified area by all vehicle types.

Deadhead Miles means the miles a transit vehicle travels without passengers or cargo on board, often to and from a garage or from one route to another.

Discrimination means any intentional or unintentional act, or any failure to act, which has the effect of excluding or denying a person from participation in benefits, or has otherwise

subjected a person to unequal treatment under any program or activity because of, but not limited to, race, color, or national origin.

Divided Highway means a multi-lane facility with a positive barrier median, or a median that is four (4) feet or wider.

Economic Recession means a periodic decline in industrial production, employment, real income, and wholesale-retail trade as defined by the National Bureau of Economic Research (NBER). The current United States national recession began in March 2020 with a sharp downturn of economic activities brought about by the COVID-19 pandemic.

Environmental Justice (EJ) means the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.

Equity means the just and fair inclusion into a society in which all can participate, prosper, and reach their full potential. In the context of the *2045 MTP*, transportation equity means achieving the goal of sustainable mobility providing access to employment, education, healthcare, and an improved quality of life for all residents.

Farebox Revenue means all fare revenue from case fares, passes, and tickets.

FAST Act means the Fixing America's Surface Transportation Act enacted on December 4, 2015, funding surface transportation programs authorizing a $305 billion investment over fiscal years 2016 through 2020 with provisions for streamlining, performance-based measurements and multimodal transportation.

Federal Fiscal Year (FFY) means a twelve month period from October 1st to September 30th.

Federal Highway Administration (FHWA) is part of the U.S. Department of Transportation and is responsible for administering federal-aid transportation funds and programs.

Federal Transit Administration (FTA) is part of the U.S. Department of Transportation and is responsible for administering federal-aid public transportation funds and programs.

Geographic Information System (GIS) means spatial data, presented in an electronic map format, which geographically represents the geometry of the roadways, and its geographically referenced component attributes data integrated through cartography and technology to perform analysis.

Grant means an agreement between the federal government and a state or local government, whereby the federal government provides funds or aid-in-kind to carry out specified programs.

Headway means the time between consecutive services. If one catches a transit vehicle that "comes every half hour", then the service you catch has a headway of 30 minutes.

Highway Safety Improvement Program (HSIP) is the FHWA's "core federal-aid program with the purpose to achieve a significant reduction in traffic fatalities and serious injuries on all public roads, including non-state-owned roads and roads on tribal land. The HSIP requires a data-driven, strategic approach to improving highway safety on all public roads with a focus on performance. The HSIP consists of three main components, the Strategic Highway Safety Plan (SHSP), State HSIP or program of highway safety improvement projects, and the Railway-Highway Crossing Program (RHCP). In addition, some states also have a High Risk Rural Roads (HRRR) program if they had increasing fatality rate on rural roads."

Infrastructure Investment and Jobs Act (IIJA), also known as the Bipartisan Infrastructure Deal or Bipartisan Infrastructure Law (BIL), is federal legislation passed by the U.S. Congress in November 2021 that aims to enhance drinking water infrastructure, internet infrastructure, and transportation infrastructure.

Illustrative Project means an additional transportation project that may (but not required to) have inclusion in a financial plan for a metropolitan transportation plan, TIP, or STIP if reasonable additional resources were to become available Pursuant to CFR 450. 104 Definitions. If an illustrative project is included in the TIP, no federal action may be taken on that project by the FHWA and the FTA until it is formally included in the financially constrained and conforming Metropolitan Plan and TIP. The TIP Amendment process to Pursuant to CFR 450.330 (e) TIP action by the FHWA and the FTA makes this action possible.

Indiana Department of Natural Resources (IDNR) is the agency that regulates and manages Indiana's natural, cultural, and recreational resources.

Indiana Department of Transportation (INDOT) is the agency that administers and funds multimodal transportation needs within the State of Indiana.

Indiana Statewide Transportation Improvement Program (INSTIP or STIP) is Indiana's multi-year program of transportation projects that is comprised of the Transportation Improvement Programs from all of the State's Metropolitan Planning Organizations.

Indiana University, headquartered in Bloomington, has a student population of nearly 50,000 people.

Land Use means the purpose or use for land or a structure.

Level of Service (LOS) means a qualitative measure describing operational conditions within a traffic flow stream, generally described in terms of such factors as speed and travel time, freedom to maneuver, traffic interruptions, comfort, convenience, and safety. Typically, a scoring system of A through F describes the level of service. For highways, the LOS definitions

found in the *Highway Capacity Manual* (Transportation Research Board Special Report 209) are used.

LPA means local public agency as defined under Indiana state statutes.

Local Road and Street means the account used exclusively for engineering, land acquisition, construction, resurfacing, restoration, and rehabilitation of highway facilities. Local Road and Street account funds, including accelerated allocations, are available for capital investment; however, a portion of the funds must be set aside for preservation projects such as resurfacing, intersection/signalization, and safety improvements.

Local Share and Local Match means the non-federal matching funds provided by a local entity for federal matching funds.

Long Range Transportation Plan (LRTP, Plan or MTP) means the official multimodal transportation plan adopted by the MPO for the metropolitan area in accordance with federal metropolitan transportation planning guidelines. As a minimum, the transportation plan must have a twenty (20) year horizon and updated every five years (every three years in air quality non-attainment areas). INDOT and FHWA/FTA primarily use LRTP. MPOs interchangeably use the term MTP (Metropolitan Transportation Plan).

Maintenance Area means any geographic region of the United States designated as non-attainment pursuant to the Clean Air Act Amendments of 1990 (Section 102e, United States Code 7410 et seq.), and subsequently re-designated to attainment status subject to the requirement to develop a maintenance plan under Section 175 of the Clean Air Act as amended.

Major Bridge Fund means (established under IC8-16-3.1) a special fund to address a major obstruction between commercial or population centers which is capable of causing an economic hardship because of excess travel time to conduct a normal level of commerce between the two (2) centers. A major bridge is defined as a structure of 200-feet or longer or 100-feet in a qualified city. The tax levy shall not exceed $0.0333 per $100 assessed valuation within the eligible county.

Major (Metropolitan) Transportation Investment means a high-type highway or transit improvement of substantial cost that is expected to have a significant effect on capacity, traffic flow, level of service, or mode share at the transportation corridor or sub-area scale.

Mass Transportation/Mass Transit means the provision of general or special transportation service, either publicly or privately, to the public on a regular and continuing basis in an urban area. This does not include a school bus, charter, or sightseeing service.

Management System means a systematic process, designed to assist decision-makers in selecting cost effective strategies/actions to improve efficiency and safety of, and protect the investment in the nation's infrastructure. Typical management systems include the pavement management system, bridge management system, transit management system, congestion management system, safety management system, and intermodal management system.

MAP-21 means Moving Ahead for Progress in the 21st Century Act signed into law in July 2012. MAP-21 consolidated federal funding programs by two thirds, streamlined environmental reviews, altered pedestrian, and bicycle funding, granted development of a national freight policy, and allowed for greater use of innovative financing.

Metropolitan Planning Organization (MPO) means the forum for cooperative transportation decision-making for the metropolitan planning area. An MPO, designated by the governor of each state, is composed of the chief-elected officials of the metropolitan planning area.

Metropolitan Planning Area (MPA) is the transportation planning area designed by the MPO. As a minimum, the MPA must cover the Urbanized Area (UZA) and the contiguous areas as likely urbanized within a minimum twenty (20) year forecast period covered by the metropolitan transportation plan.

Metropolitan Planning Program (PL) directs a cooperative, continuous, and comprehensive multimodal planning framework for making transportation investment decisions in metropolitan areas, under the FAST Act. Program oversight is a joint Federal Highway Administration and Federal Transit Administration responsibility. The FAST Act continues to require metropolitan transportation plans and transportation improvement plans to provide for facilities that enable an intermodal transportation system, including pedestrian and bicycle facilities.

Metropolitan Transportation Plan (MTP) means the official inter-modal transportation plan developed and adopted through the metropolitan transportation planning process for the metropolitan area. The MTP is a long range transportation plan with a minimum twenty (20) year horizon.

Micro-transit means a form of demand-response transit service offering flexible routing and/or flexible scheduling, often with minibus vehicles.

Monroe County Emergency Management Agency (EMA) is the lead county agency for security issues and BMCMPO shall serve in a supporting role providing assistance as needed.

Motor Vehicle Highway Account (MVHA) means the account which derives receipts from motor vehicle registration fees, licenses, driver's and chauffeur's license fees, gasoline taxes, vehicle transfer fees, certificate of title fees, weight taxes or excise taxes, and all other special

taxes, duties, or excises of all kinds on motor vehicles, trailers, motor vehicle fuel, or motor vehicle owners or operators.

Multi-Use Trail or Pathway means a hard surface, off-road path for use by bike, foot, and other non-motorized traffic typically not within the road right-of-way.

National Ambient Air Quality Standards (NAAQS) are standard requirements set by the U.S. Environmental Protection Agency for six criteria air pollutants: carbon monoxide (CO), lead (Pb), Nitrogen Dioxide (NO_2), Ozone (O_3), Particulate Matter ($PM_{2.5}$ and PM_{10}), and Sulfur Dioxide (SO_2).

National Environmental Policy Act (NEPA) requires federal agencies to assess the environmental effects of their proposed actions prior to making decisions.

National Highway Freight Program (NHFP) provides states with highway-focused formula funding for use on freight-related projects, and a new program (FASTLANE) which provides discretionary grants for nationally-significant freight and highway projects.

National Highway Performance Program (NHPP) provides support for the condition and performance of the National Highway System (NHS), for the construction of new facilities on the NHS, and to ensure that investments of federal-aid funds in highway construction directly support progress toward the achievement of performance targets established in a State of Indiana's asset management plan for the NHS.

National Highway System (NHS) means a federal transportation program, authorized in 1995, that includes the Interstate Highway System and other roads important to national defense, commerce, and mobility. The NHS in Indiana includes 2,897 miles of roadways developed by the U.S. Department of Transportation, in cooperation with INDOT and the State's MPOs.

No Build Condition, Option, Alternative, or Alternate means a transportation plan, program, or alternative involving no major capital investment, additionally known as the "do-nothing" option. The No Build condition typically includes the existing transportation system plus committed or already programmed improvements to the transportation system.

Non-Attainment Area means a geographic region of the United States that fails to meet National Ambient Air Quality Standards (NAAQS) for transportation related pollutants as designated by the Environmental Protection Agency (EPA).

Operating Expense means the total of all operating costs incurred during the reporting period.

Operating Subsidy means the revenue received through federal, state, and local cash grants or reimbursements to fulfill operating expense obligations not covered by fares or other revenues generated by the transit system.

Operational Improvement means a capital investment for the installation of traffic surveillance and control equipment, computerized signal systems, motorist information systems, integrated traffic control systems, incident management programs, and transportation demand management facilities, strategies, or programs.

Pandemic means the COVID-19 global coronavirus pandemic first identified in the latter half of calendar year 2019 leading to socioeconomic disruptions and a global economic recession bordering on economic depression.

Pathway means a hard surface path physically separated from the road with a grass or tree plot within a road right of way for the use of pedestrians, bicyclists, and other non-motorized users.

Peak Direction means the direction of higher demand during a peak commuting period.

Peak Hour means that one-hour period during which the maximum amount of travel occurs.

Policy Committee (PC) is a committee of the MPO which reviews and approves transportation policy. It is composed of local elected and appointed officials from area municipalities, Indiana University, and state and federal transportation agencies.

Preliminary Engineering (PE) means the first phase of a transportation improvement project which defines scope and project design.

Primary Arterial means a class of street serving major movement of traffic, typically carrying over 20,000 vehicles per day.

Primary Collectors means roadways that typically carry 3,000 to 10,000 vehicles per day.

PROTECT means the Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transportation (PROTECT) formula funds program involving preliminary engineering and design work, and other preconstruction activities; and construction, reconstruction, rehabilitation, and acquisition of real property (including land related to the project and improvements to land), environmental mitigation, and construction contingencies.

Public Mass Transportation Fund (PMTF) means a special fund created by the State of Indiana under state statute (I.C. 8-23-3-8) to promote and develop transportation within Indiana. The allocation of funds to Indiana public transit systems relies on a performance-based formula.

Racial Justice means the systematic fair treatment of people of all races that results in equitable opportunities and outcomes for everyone by ensuring that all people are able to achieve their full potential in life, regardless of race, ethnicity, or the community in which they live. A racial justice framework can move us from a reactive posture to a more powerful,

proactive, and even preventive approach. The “Black Lives Matter” movement is an example of people coming together to promote and demand racial justice, and the MTP strives to follow its lead as a guiding principle.

Radial Routes means transit service patterns, in which most routes converge into and diverge from a central transfer point or hub, like spokes of a wheel. Routes timed to arrive and depart at the same time represent a “pulse system”.

Railway Highway Crossing Program (RHCP) is a Federal Highway Administration program that provides funding for the elimination of hazards at railway-highway crossings.

Red Flag Investigation identifies a project’s potential impacts to nearby (1/2 mile) infrastructure, mining/mineral exploration, hazardous materials, water resources, ecological resources, and cultural resources to promote early and efficient consideration of these issues.

Regional Transit Authority means a special-purpose district organized as either a corporation chartered by statute, or a governmental agency, created for the purpose of providing public transportation within a specific region.

Revenue means all operating funds associated with the provision of transit service in the context of public transportation.

Roadway means any road, street, parkway, or freeway/expressway that includes right-of-way, bridges, railroad/highway crossings, tunnels, drainage structures, signs, guardrails, and protective structures in connection with highways.

Rural Transit (RT) means a local public agency transportation service provide by the Area 10 Agency on Aging offering service in Monroe, Lawrence, Owen, and Putnam Counties.

SAFETEA-LU refers to the Safe, Accountable, Flexible, Efficient Transportation Equity Act: a Legacy for Users. This is the five-year federal transportation program authorizing the annual funding for federal transportation programs and replaced TEA-21.

Secondary Arterial means a street typically carrying 10,000 to 20,000 vehicles per day.

Secondary Collector means roadways in Bloomington that typically carry less than 3,000 vehicles per day.

Sidewalk means a hard-surface path within the street right-of-way designated for the exclusive use of pedestrian traffic.

Strategic Highway Safety Plan (SHSP) means the *Indiana Strategic Highway Safety Plan* required under title 23 U.S.C. § 148 that identifies critical highway safety problems and

opportunities for saving lives, reducing suffering and economic losses resulting from traffic crashes. The SHSP additionally coordinates the traffic safety activities of state agencies, municipal entities, and private highway safety organizations.

Signed Bike Routes means a street that is safe for use by both vehicles and bicycles without a designated bike facility. These routes have appropriate signage markings.

Social Justice means that all people should have equal access to wealth, health, well-being, justice, privileges, and opportunity regardless of their legal, political, economic, or other circumstances.

State Fiscal Year (FY) means the State of Indiana's twelve month period from July 1st to June 30th.

Statewide Transportation Improvement Program (STIP or INSTIP) means the official statewide, multimodal transportation plan developed through the statewide transportation planning process.

Surface Transportation Block Grant Program (STBG) means the FAST Act [FAST Act § 1109(a)] conversion of the Surface Transportation Program (STP) into the Surface Transportation *Block Grant Program* (STBG) that promotes flexibility in state and local transportation decisions and provides flexible funding to best address state and local transportation needs.

Sustainable Development means development that meets the needs of the present without compromising the ability of future generations to equitably meet their own environmental, economic, and social needs.

Sustainability means meeting our own present environmental, economic, and social needs without compromising the ability of future generations to meet their own environmental, economic, and social needs.

Thoroughfare Plan means the official plan for the designation and preservation of major public road rights-of-way in accordance with the Indiana Code (IC 36-7-4-506).

Technical Advisory Committee (TAC) is a committee of the MPO which provides technical advice on transportation projects and programs. It consists of planners, engineers, transit system managers, and other relevant managers from local public agencies from within an MPO metropolitan planning area.

TIF (Tax Increment Financing Funds) refers to taxes payable on assessed value in excess of taxes attributable to the assessed value constituting the base—the "base" being the assessed value of the property in the area that existed prior to the designation of the area as a designated redevelopment allocation area.

Transportation Alternatives (TA) means a set-aside of Fast Act STBG funding for transportation alternatives encompassing a variety of smaller-scale transportation projects such as pedestrian and bicycle facilities, recreational trails, safe routes to school projects, community improvements such as historic preservation and vegetation management, and environmental mitigation related to storm water and habitat connectivity. The FAST Act sets aside an average of $844 million per year for TA. Unless a state opts out, it must use a specified portion of its TA funds for recreational trails projects.

Transportation Asset Management Plan (TAMP) refers to INDOT's 10-year tactical-level management plan which focuses on the achievement of strategic objectives through analysis, options development, programs, delivery mechanisms, and reporting mechanisms established under 23 CFR Part 490.

Transportation Demand Management (TDM) means strategies or actions taken to reduce or shift the peak-hour of travel demand or to shift the mode of travel demand. Typical actions to shift or reduce the peak-hour of travel demand involve programs to shift work hours, limit the trip generation of new development, and congestion tools. Typical actions to shift the mode of travel include transit fare subsidy programs, control of parking fees, and expansions of transit services, construction/designation of high occupancy vehicle lanes or preferential parking areas, and construction of pedestrian and bicycle facilities.

Transportation Equity Act for the 21st Century (TEA-21) means a former six-year federal ground transportation program covering highways, transit, and transportation enhancement activities. TEA-21 authorized annual funding for federal transportation programs prior to the approval of SAFETEA-LU in 2005.

Transportation Improvement Program (TIP) means the staged, multi-year, multimodal program of transportation projects which is consistent with the metropolitan transportation plan.

Transportation System Management (TSM) means a variety of low-cost capital investments or programs to preserve roadway capacity including signal system improvements, intersection improvements (adding turn lanes), access control policies, and transportation demand management strategies.

U.S. Environmental Protection Agency (USEPA) is a federal agency designated to protect human health and the environment.

Urbanized Area (UZA) means a statistical geographic area defined by the U.S. Census Bureau that consists of a central core and adjacent densely settled territory containing a population of at least 50,000 people.

Unified Planning Work Program (UPWP) means the document describing urban transportation and transportation related activities undertaken in an area during a specified period of time. The Metropolitan Planning Organization (MPO) prepares the UPWP.

Vision Zero means a multi-national road traffic safety program that aims to achieve a highway system with no fatalities or serious injuries involving road traffic.

Volume to Capacity (V/C) Ratio means the observed number of vehicles or persons passing a point on a lane, roadway, or travel-way compared to the maximum rate of flow at that point.

Wheel Tax means the motor vehicle excise surtax and wheel tax that are county option taxes on motor vehicles which provide revenue to counties, cities, and towns for road construction, reconstruction, repair, or maintenance of streets, roads, and bridges.

Appendix I:
Self-Certification

FY 2022 TRANSPORTATION PLANNING PROCESS CERTIFICATION

In accordance with 23 CFR 450.336, Self-Certifications and Federal Certifications, the Indiana Department of Transportation and the Bloomington Monroe County Metropolitan Planning Organization hereby certify that the transportation planning process is addressing the major issues in the metropolitan planning area and is being conducted in accordance with all applicable requirements of:

1. 23 U.S.C. 134,49 U.S.C. 5303, and 23 CFR part 450.300;
2. Sections 174 and 176(c) and (d) of the Clean Air Act, as amended (42 U.S.C. 7504, 7506(c) and (d)) and 40 CFR part 93;
3. Title VI of the Civil Rights Act of 1964, as amended (42 U.S.C. 2000d-1) and 49 CFR part 21;
4. 49 U.S.C. 5332, prohibiting discrimination on the basis of race, color, creed, national origin, sex, or age in employment or business opportunity;
5. Section 1101(b) of the FAST ACT (Pub. L 114-357) and 49 CFR part 26 regarding the involvement of disadvantages business enterprises in DOT funded projects;
6. 23 C.F.R. part 230, regarding the implementation of an equal employment opportunity program on Federal and Federal-aid highway construction contracts;
7. The provisions of the Americans with Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) and 49 CFR parts 27, 37 and 38;
8. The Older Americans Act, as amended (42 U.S.C. 6101), prohibiting discrimination on the basis of age in programs or activities receiving Federal financial assistance;
9. Section 324 of title 23 U.S.C. regarding the prohibition of discrimination based on gender; and
10. Section 504 of the Rehabilitation Act of 1973 (29 U.S.C. 794) and 49 CFR part 27 regarding discrimination against individuals with disabilities.

Bloomington Monroe County Metropolitan Planning Organization

Patrick P. Martin

Senior Transportation Planner
Title

8/13/21
Date

Indiana Department of Transportation

Roy S. Nunnally

Director, INDOT
Technical Planning & Programming
Title

8/13/2021
Date

Appendix J:
BMCMPO FY 2024-2028 TIP Adoption Resolution

To be Issued as a future date.

Appendix K:
Public Participation Legal Notice

Publish Date: May 12, 2023 and May 14, 2023

Public Participation Notice
BMCMPO FY 2024-2028 Transportation Improvement Program

In accordance with its Public Participation Plan, the Bloomington-Monroe County Metropolitan Planning Organization (BMCMPO) shall hold a thirty (30) day public review of the **Draft Fiscal Year 2024-2028 Transportation Improvement Program (TIP).** Written comments on the Draft Program shall open on **May 12, 2023** and close at 5:00 p.m., on **June 10, 2023.** The BMCMPO Policy Committee shall vote on the FY 2024-2028 TIP at their scheduled meeting held after **June 10, 2023.**

A copy of the *Draft FY 2024-2028 Transportation Improvement Program* is available for public review in a printed paper format at:

- City of Bloomington Planning and Transportation Department
  401 N. Morton St. Ste. 130
  Bloomington, IN 47404; or

- Online electronically and downloadable at:
  https://bloomington.in.gov/mpo/transportation-improvement-program

The BMCMPO will accept written comments during the public review period. Written comments can be submitted to:

Bloomington-Monroe County Metropolitan Planning Organization (BMCMPO)
PO Box 100
Bloomington, IN 47402

Please contact MPO staff at rachael.sargent@bloomington.in.gov or martipa@bloomington.in.gov for further information.

Appendix L:
FY 2024-2028 TIP Approval Letter

To be Issued as a future date.

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BLOOMINGTON • MONROE COUNTY
mpo

FY 2022 - 2026 Transportation Improvement Program
Project Request Form

Mail: Bloomington - Monroe County MPO
401 N Morton Street, Suite 130
Bloomington, Indiana 47402
Email: clemensr@bloomington.in.gov
Fax: (812) 349-3530

Section 1: Local Public Agency Information

- ☐ City of Bloomington
- ☐ Monroe County
- ☐ Town of Ellettsville
- ☐ Indiana University
- ☒ Bloomington Transit
- ☐ Rural Transit
- ☐ INDOT
- ☐ _____

Employee in Responsible Charge (ERC): Christa Browning
Phone: 812-961-0524
Email: browninc@bloomingtontransit.com

Section 2: Verification

I hereby certify that the information submitted as part of this form is complete and accurate. Furthermore, if applicable, I certify that the project complies with the BMCMPO Complete Streets Policy.

Christa Browning — Employee in Responsible Charge (ERC)

4/26/23 — Date

Section 3: Project Information

A. Project Name: Six (6) Paratransit/Mircrotransit Vehicles

B. Is project already in the TIP?
☐ Yes ☒ No

C. DES # (if assigned):

D. Project Location (detailed description of project termini):

City of Bloomington

E. Please identify the primary project type (select only one):

- ☐ Bicycle & Pedestrian
- ☐ Bridge
- ☐ Road – Intersection
- ☐ Road – New/Expanded Roadway
- ☐ Road – Operations & Maintenance
- ☐ Road – Reconstruction/Rehabilitation/Resurfacing
- ☐ Sign
- ☐ Signal
- ☒ Transit

F. Project Support (local plans, LRTP, TDP, etc.):

G. Allied Projects:

H. Does the Project have an Intelligent Transportation Systems (ITS) component?
☐ Yes ☒ No
If yes, is the project included in the MPO's ITS Architecture?
☐ Yes ☐ No

I. Anticipated Letting Date: _____

Section 4: Financial Plan

Identify all anticipated costs for all phases of the project, including any costs anticipated in years beyond the scope of this TIP. All phases must incorporate a four percent (4%) per year inflation factor per BMCMPO policy. All CN phases must include an appropriate amount of funding for construction inspection in addition to project construction costs.

Note: Fiscal Year 2022 begins on July 1, 2021 and ends on June 30, 2022.

Phase	Funding Source	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	*Outlying Years*
	5339	$	$ 500,000	$	$	$	$
	Local	$	$ 125,000	$	$	$	$
	Total	$	$ 625,000	$	$	$	$
RW		$	$	$	$	$	$
		$	$	$	$	$	$
		$	$	$	$	$	$
CE		$	$	$	$	$	$
		$	$	$	$	$	$
		$	$	$	$	$	$
CN		$	$	$	$	$	$
		$	$	$	$	$	$
		$	$	$	$	$	$
	Totals:	$	$	$	$	$	$

Section 5: Complete Streets Policy

A. Select one of the following:

☐ **Compliant** - This project is subject to the Complete Streets Policy because it involves the new construction or reconstruction of local roadways that will use federal funds through the BMCMPO for any phase of project implementation. *Additional Information items 1-8 (below) must be submitted for Compliant projects.*

☒ **Not Applicable** - This project is not subject to the Complete Streets Policy because it is a transit project, a non-roadway project, a resurfacing activity that does not alter the current/existing geometric designs of the roadway, or is a project that uses federal funds for which the BMCMPO does NOT have programming authority. *No Additional Information items (below) have to be provided for projects to which the Complete Streets Policy does not apply.*

☐ **Exempt** – The LPA is requesting that this project be exempted from the Complete Streets Policy due to certain circumstances or special constraints, as detailed in Section IV of the Complete Streets Policy. Please provide a detailed explanation of why the project should be exempted. *Additional Information items 1, 4-8 (below) must be submitted for Exempt projects.*

Justification for Exemption: _____

B. Additional Information:

Attach to this application form the following information as required by the Complete Streets Policy. If any items are unknown at the time of application, the applicant may indicate that "specific information has not yet been determined." Any required information not provided at the time of this application must be reported to the MPO as soon as it becomes available.

1) Detailed Scope of Work – Provide relevant details about the project that would be sufficient to use when seeking consulting services (detailed project description, vehicular elements, non-vehicular elements, new construction/reconstruction).

2) Performance Standards – List specific performance standards for multimodal transportation, including, but not limited to transit, pedestrian, bicycle, and automobile users, ADA and Universal Design, environmental, utilities, land use, right of way, historic preservation, maintenance of services plan, and any other pertinent design component in relation to current conditions, during implementation/construction, and upon project completion.

3) Measurable Outcomes – Identify measurable outcomes the project is seeking to attain (e.g. safety, congestion and/or access management, level-of-service, capacity expansion, utility services, etc.).

4) Project Timeline – Identify anticipated timelines for consultant selection, public participation, design, right-of-way acquisition, construction period, and completion date.

5) Key Milestones – identify key milestones (approvals, permits, agreements, design status, etc.).

6) Project Cost – Identify any anticipated cost limitations, additional funding sources, project timing, and other important cost considerations not included in the table above.

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FY 2022 - 2026 Transportation Improvement Program
Project Request Form

Mail: Bloomington - Monroe County MPO
401 N Morton Street, Suite 130
Bloomington, Indiana 47402
Email: clemensr@bloomington.in.gov
Fax: (812) 349-3530

Section 1: Local Public Agency Information

- ☐ City of Bloomington
- ☐ Monroe County
- ☐ Town of Ellettsville
- ☐ Indiana University
- ☒ Bloomington Transit
- ☐ Rural Transit
- ☐ INDOT
- ☐ _____

Employee in Responsible Charge (ERC): Christa Browning
Phone: 812-961-0524
Email: browninc@bloomingtontransit.com

Section 2: Verification

I hereby certify that the information submitted as part of this form is complete and accurate. Furthermore, if applicable, I certify that the project complies with the BMCMPO Complete Streets Policy.

Christa Browning — Employee in Responsible Charge (ERC)
4/26/23 — Date

Section 3: Project Information

A. Project Name: Replacement of CAD/AVL hardware, equipment and associated systems

B. Is project already in the TIP?
☐ Yes ☒ No

C. DES # (if assigned):

D. Project Location (detailed description of project termini):

City of Bloomington

E. Please identify the primary project type (select only one):

- ☐ Bicycle & Pedestrian
- ☐ Bridge
- ☐ Road – Intersection
- ☐ Road – New/Expanded Roadway
- ☐ Road – Operations & Maintenance
- ☐ Road – Reconstruction/Rehabilitation/Resurfacing
- ☐ Sign
- ☐ Signal
- ☒ Transit

F. Project Support (local plans, LRTP, TDP, etc.):

G. Allied Projects:

H. Does the Project have an Intelligent Transportation Systems (ITS) component?
☐ Yes ☒ No
If yes, is the project included in the MPO's ITS Architecture?
☐ Yes ☐ No

I. Anticipated Letting Date: _____

Section 4: Financial Plan

Identify all anticipated costs for all phases of the project, including any costs anticipated in years beyond the scope of this TIP. All phases must incorporate a four percent (4%) per year inflation factor per BMCMPO policy. All CN phases must include an appropriate amount of funding for construction inspection in addition to project construction costs.

Note: Fiscal Year 2022 begins on July 1, 2021 and ends on June 30, 2022.

Phase	Funding Source	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	*Outlying Years*
	5339	$	$ 600,000	$	$	$	$
	Local	$	$ 150,000	$	$	$	$
	Total	$	$ 750,000	$	$	$	$
RW		$	$	$	$	$	$
		$	$	$	$	$	$
		$	$	$	$	$	$
CE		$	$	$	$	$	$
		$	$	$	$	$	$
		$	$	$	$	$	$
CN		$	$	$	$	$	$
		$	$	$	$	$	$
		$	$	$	$	$	$
	Totals:	$	$	$	$	$	$

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A. Select one of the following:

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8415 E. 56th St. • Suite A
Indianapolis, IN 46216

ENGINEER'S REPORT

Old SR 37 South and Dillman Road Intersection Improvement

Des No. TBD

Monroe County, Indiana

November 2, 2022

Prepared by:

8415 East 56th Street
Indianapolis, Indiana 46216
(317) 544-4996

Prepared for

Monroe County Highway Department
501 N. Morton Street, Suite 216
Bloomington, IN 47404

W

ENGINEER'S REPORT

Old SR 37 South at Dillman Road Intersection Improvement Project

Des No. TBD

Monroe County, Indiana

November 2, 2022

Purpose of Report >>

The purpose of this report is to document the engineering assessment phase of project development, including all coordination that has been completed in preparation for this intersection improvement project. This document outlines the proposal and is intended to serve as a guide for subsequent survey, design, environmental, right-of-way and other project activities leading to construction. The preferred alternative identified in this document is considered predecisional, pending the outcome of environmental studies.

Project Location >>

This project is located on Old SR 37 South, at the intersection with Dillman Road in Monroe County. The GPS Coordinates are latitude 39°5'34.72" North and longitude 86°32'39.16" West. The project is in Perry Township in the south-central portion of Monroe County.

Project location maps and site photos are included in Appendix.

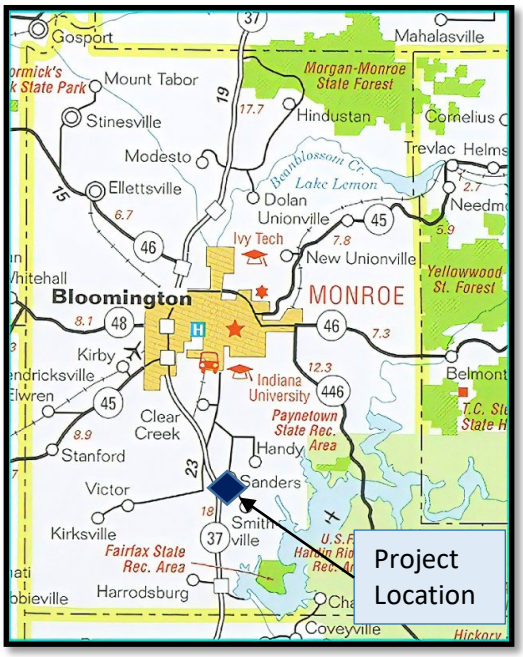


Figure 1: Project Location Map

Project Purpose and Need >>

This intersection has a very high frequency of Crashes (Index of Crash Frequency, ICF is 3.52). The primary manner of collision is "Left Turn, Right Turn or Angle". The main source of these crashes is failure to yield right of way.

The purpose of this project is to reduce the potential for crashes and provide a long-term solution to ensure safe and efficient operation of the Old SR 37 South and Dillman Road intersection.

The need for this project is to reduce the number and severity of the crashes occurring at the intersection.

Existing Facility >>

Old SR 37 South is classified as a Rural Minor Arterial and Dillman Road is classified as a Rural Minor Collector, and both are county roads. The posted speed limit on Old SR 37 South is 40 mph and the posted speed limit on Dillman Road is 30 mph. Geometric Design Criteria Tables are included in the Appendix.

Roadway >>

Table 1 Basic Design Elements			
Geometric Criteria			
Posted Speed, Old SR 37 South	40 mph	Functional Class	Minor Arterial
Posted Speed, Dillman Road	30 mph	Functional Class	Minor Collector
Design Criteria	Reconstruction	Rural/Urban	Rural
Terrain	Rolling	Access Control	None
IDM Figure Reference	IDM 53-2 & IDM 53-4		Rural Arterial Rural Collector
Cross Section			
Number of Through Lanes	2 (1 per direction)	Lane Width	Old SR 37 South 12'-0" Dillman Rd 11'-0"
Auxiliary Lanes	Right Turn Lanes Left Turn Lanes	Auxiliary Lane Width	Old SR 37 South 11'-0" Dillman Rd 10'-0"
Usable Shoulder Width	Old SR 37 South 10'-0" Dillman Rd 10'-0"	Paved Shoulder Width	Old SR 37 South 8'-0" Dillman Rd 8'-0"

Road History >>

Table 2 Pavement History Within Project Limits		
Year	***Work Type***	***Type of Work***
1974	N/A	INDOT relinquished SR 37 and renamed Old SR 37 South
1985	Reconstruction	Dillman Road intersection reconstructed
Varies	Patching/ Wedge and Level	Old SR 37 South and Dillman Road

Structures >>

There are no structures within the project limits.

Existing Drainage >>

Existing drainage through the project is through sheet flow away from the travel way, across shoulders to roadside ditches. Some of the ditches are lined with concrete paved side ditches due to steep ditch gradients. The roadside ditches flow west into INDOT's SR 37 right-of-way and eventually to Clear Creek.

Traffic Data >>

Traffic data was obtained from INDOT's TCDS system. A summary of traffic count data from the Indiana Department of Transportation TCDS follows:

Table 3 Traffic Counts

Road Name	*Location ID*	*Location*	*AADT for Year Shown Shown (vpd)*		
			2019	*2020*	*2021*
Old SR 37 South	L01P331	930 ft S of Rogers St	8,702	7,684	8,176
Old SR 37 South	530396	100 ft S of Empire Mill Rd	9,936	6,068	6,748
Dillman Rd	L01P3215	Between Old SR 37 South and SR 37	1,935	1,709	1,818

See Appendix for traffic data.

The 2020 traffic counts show a decline from previous years due to the pandemic. For all three count locations, traffic growth is returning to normal levels approaching one percent growth rate which was used for this report.

Crash Data and Analysis >>

Three pre-pandemic years of Crash data from 2017 thru 2019 were reviewed as part of this assessment. A RoadHAT analysis was performed to determine the Index of Crash Frequency (I_{CF}) and Index of Crash Cost (I_{CC}) for the intersection. A summary of the crash analysis and RoadHAT output for the intersection is provided below. An exhibit showing crash locations along with the RoadHAT summary table is provided in the Appendix.

Table 4 Crash Summary

I_{CC}	1.01	Number of Crashes	19
I_{CF}	3.34	Number of Fatal and Incapacitating Crashes	0
First Year of Crash Data	2017	Number of Non-Incapacitating Crashes	1
Last Year of Crash Data	2019	Number of Property Damage Only Crashes	18

Table 5 Crash Patterns: Manner of Collision			
Manner of Collision	***Number Crashes***	***Number Injury***	***Percent***
Backing Crash	0	0	0.00%
Collision with Animal (Including Deer) *	0	0	0.00%
Collision with Object in Road	0	0	0.00%
Head On (Between Motor Vehicles)	1	0	5.88%
Left Turn, Right Turn or Angle	11	3	64.71%
Opposite Direction Sideswipe	0	0	0.00%
Ran off Road	2	0	11.76%
Rear End	2	0	11.76%
Same Direction Sideswipe	1	0	5.88%
Other	0	0	0.00%
Total	**17**	**3**	**100.00%**
*	Deer crashes and other animal crashes were removed from the analysis completely prior to completing the RoadHAT report.		

The RoadHAT analysis resulted in an Index of Crash Frequency (I_{CF}) of 3.39, indicating the crash frequency at this intersection is within the 99th percentile compared to similar intersections. The Index of Crash Cost (I_{CC}) of 1.62 indicates that the I_{CC} is within the 95th percentile compared to similar intersections. The primary manner of collision is "Left Turn, Right Turn or Angle". The main source of these crashes is failure to yield right of way.

This analysis indicates that this intersection is not performing like other intersection and that the number of crashes significantly exceeds the expected number of crashes for this type of intersection. The high value of the I_{CF} indicates that the frequency of crashes is higher than should be expected when compared to other intersections. Based on the existing crash patterns, this report will focus alternative development to integrate crash mitigation treatments that will facilitate reduction of the left turn, right turn, and angle crash types.

Alternatives Considered >>

A road safety audit was conducted for the intersection in February 2012. The report recommended 5 low-cost improvements that were implemented and 3 higher cost improvement to be considered for long term solutions. The short-term improvements included installation of an intersection flasher in 2014, installation of Cross Traffic Does Not Stop (W4-4P) signs on Dillman Road and relocating SB intersection warning signs with additional curve warning, chevrons, and Right Lane Must Turn Right (R3-7L) signs in 2017. A copy of the road safety audit is provided in the Appendix.

Crash frequencies continue to be high despite the implementation of the low-cost safety measures recommended in the road safety audit. Further improvements to the intersection to reduce the number and severity of crashes, were evaluated.

Alternative 1 – Do Nothing >>

This alternative does not address the safety issues currently present at this intersection and would not meet the purpose and need of the project. Therefore, this alternative was dismissed.

Alternative 2 – Signalized Intersection >>

Alternative 2 would consist of constructing a traffic signal at the Old SR 37 South and Dillman Road intersection. The proposed signal would include adding left turn lanes on all approaches. The right turn lane on the southbound approach of Old SR 37 South would be maintained. See the Appendix for a larger exhibit for this alternative.

Work on Old SR 37 South would extend approximately 530 ft to the north and 480 ft to the south. The approach work on Dillman Road would extend approximately 435 ft to the west and 530 ft to the east. The west leg would extend to the INDOT SR 37 limits.

This alternative meets the primary purpose and need of reducing the potential for left turn, right turn, and angle crashes at the intersection by controlling turning movement through the signal phasing. Even a two-phase signal operation would provide the protection to turning vehicles if turning volumes are not significant enough to warrant separate left turn phases. Reducing the number of left turn, right turn, and angle crashes occurring at the intersection will significantly improve the safety at the intersection. This alternative will be moved forward for further discussion and analysis.

Alternative 3A – Roundabout Intersection >>

Alternative 3A would consist of a constructing a single lane roundabout at the Old SR 37 South and Dillman Road intersection. The proposed roundabout would be centered generally 50 ft north of the existing intersection to provide the needed deflection for the approaches to the roundabout. This location is desirable as the parcel in the northwest quadrant is vacant land and the northeast quadrant is unusable land due to topography. This location reduces impacts to the southwest quadrant. However, in the southeast quadrant the approach work along Old SR 37 South to the south would be significant and extend approximately 500 ft with right of way takings to two parcels. To the north work on Old SR 37 South would extend approximately 400 ft. The approach work on Dillman Road would extend approximately 370 ft to the west and 350 ft to the east and would require shifting the roadway north for both approaches to the roundabout. The west leg would be curved such that the acquisition of right of way from an electric utility substation adjacent to the vacant parcel would not be required. Such acquisition would involve significant coordination with several electric utility departments and is to be avoided. See the Appendix for a larger exhibit for this alternative.

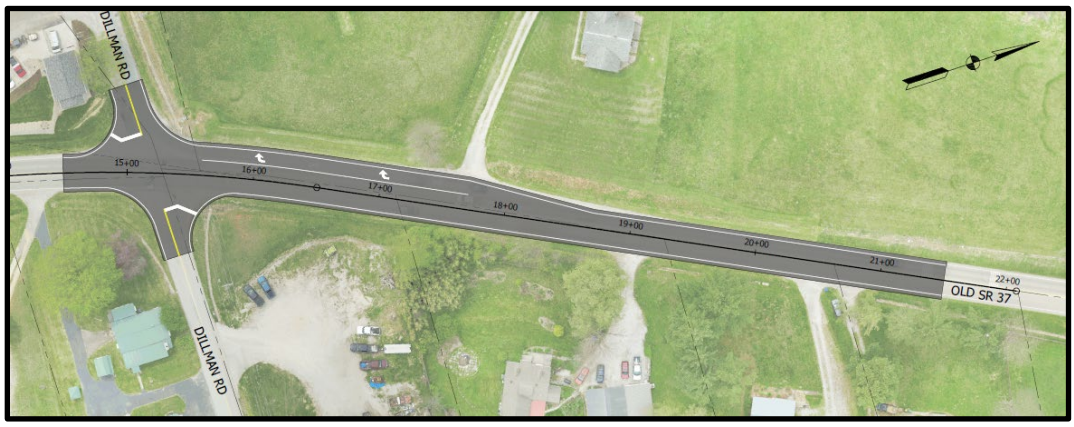
This alternative meets the primary purpose and need of reducing the potential for crashes at the intersection and reducing the number and severity of the crashes occurring by controlling the movements via the roundabout and improving the safety at the intersection. This alternative will be moved forward for further discussion and analysis.

Alternative 3B – Roundabout Intersection >>

Alternative 3B would consist of a constructing a single lane roundabout at the Old SR 37 South and Dillman Road intersection. The proposed roundabout would be centered generally the same location but the west approach of Dillman Road enters the roundabout further north allowing the south approach of Old SR 37 South to remain more on its existing alignment and still provide the needed deflection for the approaches to the roundabout. This location appears desirable as the parcel in the northwest quadrant is vacant land and the northeast quadrant is unusable land due to topography. This location reduces impacts to the southwest and southeast quadrants. Approach work along Old SR 37 South would be minimal and extend approximately 370 ft to the north and 300 ft to the south. The approach work on Dillman Road would extend approximately 370 ft to the west and 350 ft to the east and would require shifting the roadway north for both approaches to the roundabout. The west leg would require acquisition of right of way from an electric utility substation adjacent to the vacant parcel. Such acquisition involves significant coordination with several electric utility departments and generally is to be avoided. See the Appendix for a larger exhibit for this alternative.

This alternative is being dismissed from further consideration even though the alternative addresses the purpose and need of the project due to anticipated right of way impacts to the electric utility substation.

Alternative 4 – Sight Distance Improvements >>



Alternative 4 would consist of improving intersection sight distance for the Dillman Road approaches to the intersection. The required intersection sight distance for crossing Old SR 37 South is 395 ft for a passenger car and 515 ft for a single unit truck. The required intersection sight distance for left turn onto Old SR 37 South is 455 ft for a passenger car and 575 ft for a single unit truck.

This alternative was suggested as part of the Road Safety Audit. The existing crest vertical curve north of the intersection limits the intersection sight distance and would need to be lowered to obtain the required intersection sight distance for both the west and east approaches of Dillman Road. The presence of shallow rock in the area may make this alternative costly versus the other alternatives. An option for this alternative would be to raise the entire intersection to improve the intersection sight distance to the north. This option would reduce the approach gradients of the north and east approaches but would increase the grade of the west and south approaches creating additional adverse impacts and is dismissed from further consideration. See the appendix for a larger exhibit for this alternative.

This alternative meets the primary purpose and need of reducing the potential for crashes at the intersection by improving the intersection sight distance both the west and east approaches of Dillman Road. This alternative will be moved forward for further discussion and analysis.

Evaluation of Alternatives >>

Alternatives 2, 3A and 4 are moved forward as viable alternatives. Additional analysis and discussion are provided on four key elements to evaluate each alternative further. The elements are as follows:

- Safety
- Operational Performance
- Cost
- Environmental Impacts

Safety >>

The old SR 37 South and Dillman Road intersection has experienced 19 crashes from 2018 thru 2021 with 18 crashes that are directly attributable to the intersection configuration and the increase in traffic utilizing the intersection. For the three alternatives being considered, the Crash Reduction Factors (CRF) for each alternative can be found at INDOT's Approved Crash Reduction Factor (CRF) and Crash Modification Factor (CMF) list. The list can be found here: https://www.in.gov/indot/doing-business-with-indot/files/CRF-CMF_Table.pdf.

Another source to check if the alternative is the CMF Clearinghouse.

http://www.cmfclearinghouse.org/about_cmf.cfm.

The following table shows the information obtained from the INDOT's Approved Crash Reduction Factor (CRF) and Crash Modification Factor (CMF) list.

TABLE 9 – Crash Reduction Factors

Category	*Countermeasure*	*Area Type*	*Facility Type*	*CRF*
Intersection Geometry	Convert two-way stop-controlled intersection to a roundabout	Rural	Intersections on two or four lane roads	61.2
Intersection Geometry	Improve intersection sight distance	Urban and Rural	Not Specified	33.0
Intersection Traffic Control	Install new traffic signal at a stop-controlled intersection	Rural	3-leg and 4-leg intersections	44.0

From the crash data provided for the pre-pandemic four years (2016 through 219), the attributable number of property damage only (PDO) crashes at this location is 26 over 4-year period for an average annual (PDO) crashes of 6.5. The attributable number of Fatal/Injury (F/I) crashes at this location is 4 over a 4-year period which is an average annual (F/I) crashes of 1.0.

A benefit/cost analysis was performed for each alternative using the information above. The benefit/cost analysis over a 20-year period. The following table displays the results for each alternative. See Benefit/Cost Analysis Exhibit for each alternative provided in the Appendix.

TABLE 10 – Benefit/Cost Analysis for Each Alternative				
No.	***Alternative***	***Average Annual PDO Crashes***	***Average Annual F/I Crashes***	***B/C Ratio***
2	Signalized Intersection	6.5	1.0	1.34
3A	Roundabout Intersection	6.5	1.0	1.92
4	Intersection Sight Distance	6.5	1.0	1.96

For all alternatives the B/C ratio is greater than 1.0 with the sight distance alternative slightly better than the roundabout alternative due to its lower initial cost. Assumptions made in the B/C ratio analysis are the initial cost was limited to construction cost only, the annual maintenance cost was set at $10,000.00 per year, and the salvage value of an improvement was set at $5000,000 less than the initial cost of the improvement.

Alternative 3A is viewed as the best alternate to reduce left turn and right angle crashes. Roundabouts have been proven to inherently improve intersection safety by reducing conflict points and eliminating the possibility of high-speed right-angle collisions.

Alternative 2 with full signal control is expected to eliminate or greatly reduce right angle crashes by controlling the right of way at the intersection. Alternate 2, with construction of left turn auxiliary lanes along both approaches would tend to mitigate the expected increase in rear end crashes associated with installation of a traffic signal. However, unlike a roundabout, a signalized intersection will not reduce the severity of crashes when they occur due to no reduction in speed or reducing the angle on impact.

Alternative 4 will improve intersection sight distance for both approaches of Dillman Road. By reducing the crest vertical curve north of the intersection, stopped vehicles on Dillman Road will have improved sight distance to see approaching southbound traffic and better judge whether there is sufficient time to cross through or make a turning movement successfully. However, just improving the sight distance for Dillman Road may not reduce the total number of crashes occurring at the intersection without additional improvements at the intersection such as installing a roundabout, a traffic signal, or other intersection improvements. In addition, improving the sight distance alone will not reduce the severity of crashes when they occur due to no reduction in speed or reducing the angle on impact.

Operational Performance >>

An intersection Level of Service (LOS) analysis was performed for all three alternatives (output reports are included in the Appendix). For Alternative 2 the intersection LOS is “C” with an average delay of 23 sec. for the design year (2047). For Alternative 3A the intersection LOS is “A” with an average delay of 5 sec. for the design year (2047). For Alternative 4 the intersection LOS is “A” for Old SR 37 but for Dillman Road the intersection LOS is “F” with an average delay of 674 sec. for the design year (2047) for

eastbound traffic and average delay of 175 sec. for the design year (2047) for westbound traffic. See Appendix "C" for a Level of Service output.

Alternative 3A provided the best intersection LOS of "A" with the lowest average delay of 5 sec. for the design year (2047) this alternative performs best providing the highest level of service and the lowest average vehicle delay through the intersection.

For Alternative 4 the intersection sight distance improvement the intersection LOS is "F" with an average delay of 674 sec. for the design year (2047) for eastbound traffic and average delay of 175 sec. for the design year (2047) for westbound traffic. This alternative does not address the intersection control and therefore is not a viable alternative for operational performance.

For a traffic signal to be installed at an intersection, an engineering study of the roadway, traffic and other conditions must be performed. For alternative 2, the signalized intersection, a review of Chapter 4C. Traffic Control Signal Needs Studies on the Indiana Manual on Uniform Traffic Control Devices (MUTCD) was made. The investigation of the need for a traffic control signal shall include an analysis of factors related to the existing operation and safety at the study location and the potential to improve these conditions, and the applicable factors contained in the following traffic signal warrants:

Warrant 1, Eight-Hour Vehicular Volume
Warrant 2, Four-Hour Vehicular Volume
Warrant 3, Peak Hour
Warrant 4, Pedestrian Volume
Warrant 5, School Crossing
Warrant 6, Coordinated Signal System
Warrant 7, Crash Experience
Warrant 8, Roadway Network
Warrant 9, Intersection Near a Grade Crossing

The MUTCD states that the satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal. Traffic signal warrants are based on vehicular volumes entering the intersection and does not consider geometrics of the intersection such as sight distance, approach gradients and other physical features.

A signal warrant analysis was performed using available hourly volume counts from INDOT's Traffic Count Database System (TCDS) for Old SR 37 South 100 ft South of Empire Mill Road conducted on 9/11/2020 (closest count available) and for Dillman Road between SR 37 and Old SR 37 South conducted on 11/19/2019. These counts were adjusted to the build year 2026.

The volume signal warrants 1 through 3 were not met due to the low volume of traffic through the intersection both on Old SR 37 South and Dillman Road. There are no pedestrian or school traffic for consideration so warrants 4 and 5. With Old SR 37 South being an isolated intersection, consideration of warrants 6 and 8 was discarded along with warrant 9 as there is no railroad crossing near the intersection.

Warrant 7, crash experience may be applicable to this situation. The crash experience signal warrant criteria are intended for application where the severity and frequency of crashes are the principal reasons to consider installing a traffic signal. There are 3 conditions that must be met to meet this warrant. The criteria are:

A. Adequate trial of alternatives with satisfactory observance and enforcement has failed to reduce the crash frequency; and

B. Five or more reported crashes of types susceptible to correction by a traffic control signal, have occurred within a 12-month period, each crash involving personal injury or property damage apparently exceeding the applicable requirements for a reportable crash; and

C. For each of any 8 hours of an average day, the vehicles per hour (vph) given in both of the 80 percent columns of Condition A in Table 4C-1 (see Section 4C.02), or the vph in both of the 80 percent columns of Condition B in Table 4C-1 exists on the major-street and the higher-volume minor-street approach, respectively, to the intersection, or the volume of pedestrian traffic is not less than 80 percent of the requirements specified in the Pedestrian Volume warrant. These major-street and minor-street volumes shall be for the same 8 hours. On the minor street, the higher volume shall not be required to be on the same approach during each of the 8 hours

With the implementation of the road safety audit low-cost suggestions (intersection flasher and signage) for criteria A was met. For criteria B there were 5 left turn, right turn or angle crashes occurring in 2021 as well as in 2018 and 2016. For criteria C due to the low traffic volumes, condition A is not met for any hour and condition B is met for only 2 hours. Therefore, this signal warrant is not met. The complete Signal Warrant Analysis is provided in the Appendix.

Due to low traffic volumes projected at the intersection, installation of a traffic signal is not warranted. This alternative is not a viable option for operational performance.

Therefore, alternative 3A is rated best in terms of Operational Performance. The intersection LOS is “A” with an average delay of 5 sec. for the design year (2047). For alternative 2 the intersection LOS is “C” with an average delay of 23 sec. for the design year (2047). However, traffic volumes are too low to warrant installation of a traffic signal. For alternative 4 the intersection operational performance is not acceptable and other improvements will be necessary to improve operational performance of the intersection.

Cost >>

Comparing estimated cost for each alternative there is no significant difference between Alternative 2 and Alternative 3A with the cost for both alternatives ranging from an estimated $2.5 million to $2.6 million and includes ancillary features such as HMA for sidewalk, curb ramps for other modes of transportation not currently present at the intersection. Generally, traffic signal installations cost less than roundabouts, but more pavement work is required to provide separate left turn lanes on all approaches and a right turn lane for southbound Old SR 37 South. That additional pavement work increased the estimated cost of Alternative 2.

Alternative 4 is least costly with costs of $1.0 million because the scope of work is much less and does not improve the intersection directly. Additionally, it does not include the cost for curb and gutter, curb ramps, sidewalk, and path work that are in the other alternatives.

Environmental Impacts >>

All alternatives pose their own level of environmental impacts due to construction activities and the acquisition of right-of-way from parcels with HAZMAT concerns. Alternative 3A has a slightly larger footprint than alternative 2 with alternative 4 having the smallest footprint. However, there is nothing significant between the alternatives to merit special consideration or impact the choice between any alternative.

Final Recommendation >>

Alternative 3A is the preferred alternative as a roundabout intersection best reduces the potential for crashes at the intersection and provides a long-term solution to ensure safe and efficient operation of the intersection by reducing the severity of crashes roundabouts offer over a signalized intersection. Alternative 2 does not provide a reduction in severity of crashes and does not meet MUTCD signal warrants for installation of traffic signals. Alternative 4 while improving intersection sight distance for the Dillman Road approaches, it does not guarantee the reduction in crashes or improvement of driver behavior to the extent a traffic signal or roundabout would. This alternative does not improve the intersection LOS and does not meet the purpose and need for the project.

Details of the Preferred Alternative >>

Layout and Configuration >>

The preferred alternative will consist of the construction of a single lane roundabout at the intersection. The proposed roundabout would be centered generally 50 ft north of the existing intersection to provide the needed deflection for each approach to roundabout.

The existing approach grades will present a slight challenge to the designer. Dillman Road east of the intersection has a descending 9.29% profile grade that levels off through the intersection then continues dropping at 7.44% towards SR 37. Old SR 37 South approaches the intersection from the south with an ascending 7.48% profile grade with a crest located approximately 250 ft north of the intersection followed by a 5.94% descending profile grade. This existing crest curve reduces sight distance for vehicles traveling east-west on Dillman Road as discussed earlier in the report. The profile grade of the circulating roadway will have to be warped and the inverted bowl of the circulating roadway tilted in a southwest to northeast direction instead of level like most roundabouts. Preliminary profile grades are provided for the circulating roadway and four legs approaching the roundabout. See Roundabout Profiles Exhibits in the Appendix.

The roundabout should be designed to handle a WB-50 design vehicle within the circulating roadway pavement and a WB-67 design vehicle with the pavement and apron area. As mentioned above, the

roundabout will be tilted slightly to the southwest to northeast and the designer should ensure the combination of pavement cross slopes and trailer wheels riding up on the truck apron does not create overturning problems for WB-67 design vehicle. See WB-67 Truck Turning Analysis Exhibit provided in the Appendix.

Approach work on Old SR 37 South would extend approximately 400 ft to the north with the lanes staying generally in the same alignment. Approach work along Old SR 37 South to the south would be significant and extend approximately 500 ft curving east to avoid taking the building in the southwest corner of the intersection. Once past the building, the approach would curve back to the west and return to the existing alignment 500 ft south of the intersection. The approach work on Dillman Road would extend approximately 300 ft to the west and east of the intersection. The center of the circulating roadway would require a slight realignment of both approaches to the roundabout. The west leg should be curved such that the acquisition of right of way from the electric utility's substation north of Dillman Road would not be required.

Drainage >>

Proposed drainage through the project would utilize inlets in curbed areas and sheet flow away from the travel way, across shoulders to roadside ditches on the approaches. There are existing ditches carrying stormwater flows westerly that will require new and longer culverts to convey those flows through the intersection. Existing ditches are lined with concrete paved side ditches due to steep ditch gradients. These roadside ditches flow west towards INDOT's SR 37 roadside ditches and to Clear Creek northwest of the project location. Hydrology and hydraulics of existing conditions will need to be evaluated during design to ensure existing conditions are maintained or improved.

Complete Streets >>

The typical cross-sections from the Monroe County, Indiana Thoroughfare Plan adopted December 12, 2018, incorporate the design practices of "Complete Streets". Complete Streets is an approach to planning, designing, building, operating, and maintaining streets that enable safe access for all people who need to use them, including pedestrians, bicyclist, and motorist.

The designer should include sidewalks and paths and consider bicycle lanes in consultation with Monroe County officials and stakeholders. Even though there are no existing sidewalks and paths near this intersection providing these facilities does not add significant cost to the project and allows future development and road improvement to connect these pieces together more easily.

Maintenance of Traffic During Construction >>

Generally, there are two approaches to maintenance of traffic during construction. Close the intersection and reconstruct the intersection using a short duration closure period where pavement is reconstructed. The second option would be phased construction while maintaining through traffic. To close the intersection, suitable detour routes for Old SR 37 South and Dillman Road are needed. Possible alternatives routes for Old SR 37 South would use Fullerton Pike/Gordon Pike which, will be completed

in 2025 to I-69 to SR 37 would need to be evaluated for suitability to handle the additional traffic. This has detour length of approximately 5.8 miles. Dillman Road traffic would utilize Fairfax Road to Old SR 37 South to Fullerton Pike/Gordon Pike to I-69 to SR 37 with a detour length of approximately 7.7 miles.

A phased construction approach is recommended for this project. A detailed maintenance of traffic plan will be developed during design phase utilizing INDOT Standard Drawings and the Indiana MUTCD.

Opinion of Probable Costs >>

The estimated construction cost for the preferred alternative is expected to be approximately $2,500,000. This includes roadway and path construction, maintenance of traffic, and lighting of the roundabout. The drainage improvements would include maintaining the existing roadside ditches outside the roundabout. Within the roundabout's circulating roadway inlets or curb turnouts will be used to channelize stormwater runoff to the roadside ditches. A detailed construction cost estimate for the proposed alternative is provided in the Appendix.

The estimated costs for the project's development including a breakdown for federal funds and local match funds is provided below.

Table 11 Preliminary Opinion of Probable Costs

Phase	*Year for Phase*	*Total Cost*	*Federal Funds*	*Local Funds*
Preliminary Engineering	2026	$ 570,000.00	$ 513,000.00	$ 57,000.00
Right of Way	2026	$ 205,000.00	$ 184,500.00	$ 20,500.00
Utility	2026	$ 120,000.00	$ 108,000.00	$ 12,000.00
Railroad	N/A	$ -	$ -	$ -
Construction	2027	$ 2,500,000.00	$ 2,250,000.00	$ 250,000.00
Construction Inspection	2028	$ 373,000.00	$ 335,700.00	$ 37,300.00
TOTAL		**$ 3,768,000.00**	**$ 3,391,200.00**	**$ 376,800.00**

- Preliminary Engineering includes survey, geotechnical, road design, right-of-way engineering, utility coordination, permitting, and environmental services.
- Utility coordination includes fees for Quality Level B work to locate utilities as 811 does not guarantee all utilities will be located at the time of survey. Should more detailed utility location including potholing for depths that cost would come from special investigations.
- Right of way includes right-of-way services and anticipated land acquisition costs.
- Utility Phase includes fees to address having relocation costs from CenterPoint Energy and South Monroe Water due to the anticipated shallow depths for these facilities.

Environmental Considerations >>

Environmental Impacts >>

A Preliminary Review of Environmental Red Flags was performed utilizing INDOT SAM ArcGIS Layers, IDNR INFIP, and IDNR SHAARD to identify potential environmental considerations and impacts.

A listing of the potential environmental impacts is provided below.

Table 12 Environmental Impacts		
	Description	***Notes***
☒	Historical (Full 106)	There are mapped Historic Contributing Homes within the project area. Based on the recommended alternative (roundabout), Full Section 106 will be required.
☒	HAZMAT	There are mapped HAZMAT concerns within the project area: 1. The B&B Transfer Monroe Company site mapped on the northeast quadrant of the project area has an Environmental Restrictive Covenant (ERC) placed on the property. According to IDEM's Virtual File Cabinet (VFC) the ERC was placed 2/11/2011. A Phase I/II Environmental Site Assessment (ESA) may be recommended by INDOT ESD if excavation within the vicinity of the project occurs. 2. The former RCI property is mapped as a Brownfield mapped on the north end of the project area. According to the VFC, the property has soils contaminated with lead and was filed as brownfield that was remediated around October 2000. Further investigation into the status of this property may be required by INDOT ESD via Phase I/II ESA. 3. A Leaking Underground Storage Tank (LUST) is mapped in the northeast quadrant. According to GIS, this LUST is registered to Quality Hydraulics. Further investigation into the status of this property may be required by INDOT ESD via Phase I/II ESA.
CE-2	Environmental Document	The preferred alternative assumes greater than 0.5 acre of permanent right of way acquisition. A CE-2 NEPA document will likely be required for the preferred alternative. An opportunity for public involvement will be required for final NEPA approval. If, during project development, HAZMAT concerns are found, a CE-4 document may be required.

Permits >>

A listing of the anticipated permits is provided below.

Table 13 Permits Required		
	Description	***Notes***
☐	USACE 404/IDEM 401	There are no mapped water resources (streams, wetlands, open waters) within the project area. The area should be investigated for potential jurisdictional waterways, but none are anticipated to be found.
☐	IDNR CIF	
☒	IDEM Construction Stormwater General Permit	The recommended alternative results in greater than 1 acre of soil disturbance, therefore a Stormwater Pollution Prevention Plan (SWPPP) shall be submitted to the Monroe County Soil and Water Conservation District for review and approval prior to applying for the Construction Stormwater General Permit (CGSP) and receiving Notice of Intent (NOI) from IDEM's Stormwater Program.
1	Storm Water Quality Manager Level	It is assumed that a Stormwater Quality Manager Level 1 will be required.

No publicly owned parks, recreational areas or historic sites considered as Section 4(f) properties were identified within the project limits. A Section 4(f) analysis is not anticipated as part of the environmental documentation prepared for the project.

Survey Requirements >>

A topographical survey is anticipated for the limits of the project. Limits should extend 500 feet past the anticipated limits of the project along Old SR 37 South and Dillman Road. Survey width should extend a mimimum of 25 feet past the apparent right-of-way width. This will provide enough topographic information to adequately design the improvements.

Right-of-Way Impacts >>

Plans and grant/deeds were requested from INDOT for SR 37 and Old SR 37 South. We did receive plans for SR 37 (SR 37 ST-F-Project No. 893 1961 Code 0941) along with Warranty Deeds or Judgments in the project area. We also received plans for Old SR 37 South (SR 37 Federal Aid Project No. 92-Sec "D" 1927) along with some grants in the project area.

SR 37 ST-F-Project No. 893 1961 Code 0941 Warranty Deeds or Judgments will hold as EXRW. Old SR 37 South Federal Aid Project No. 92-Sec "D" 1927 plans show newer 50 ft R/W in the project area. The grants we received only show a 35 ft-40 ft R/W. The grants were dated in 1927 and were not recorded until 1962. In the absence of the timely recorded grants, the edge of the traveled way will most likely be held as the existing right-of-way.

Looking at Google Earth Street Views, no monuments are visible on SR 37 in the project area. On Old SR 37 South, there is one R/W monument visible in NE quadrant of the intersection of Old SR

37 South and Dillman Road and there appears to be additional EXRW in this area. There is nothing on GIS nor the R/W Plans for Old SR 37 South showing additional R/W in this area. More research may disclose additional EXRW.

The Duncan Subdivision at the southwest quadrant of Dillman Road and Empire Drive has 25 ft EXRW along the south side of Dillman Rd and the west side of Empire Dr.

Railroad Impacts >>

No railroads are located within the project limits. Railroad coordination will follow the INDOT policy.

Utility Impacts >>

An 811 Design Ticket was completed and requests for information obtained from each utility on the ticket. A summary of the utilities with facilities within the existing right-of-way is shown on the table below. Any utilities eligible for reimbursement have been noted. Utilities will only be reimbursable if relocation is required. The extent of relocations is unknown at this time as it is dependent on the amount of right-of-way required and whether design accommodations can be made to minimize relocations.

Table 14 Utility Information

Utility Name	*Facility Information*
CenterPoint Energy	8 in. high pressure steel distribution main crossing Dillman West of the intersection with Old SR 37 South in easement; 6 in. medium pressure steel distribution main on the West side of the intersection; 2 in. medium pressure steel distribution main on the north side of the intersection
Comcast	Aerial and underground coaxial cables on the North side of Dillman Road; an aerial crossing on the West side of Old SR 37 South and Dillman Road that crossing South and then goes underground continuing underground on the West side of SR 37.
Duke Energy – Distribution	Three phase 35.4kV overhead primary, three phase 12.47kV overhead primary, 120/240V overhead secondary, three phase 12.47kV underground primary all east-west along the north side of Dillman Road
Duke Energy – Transmission	Substation located in the Northwest quadrant of Dillman Road and Old SR 37 South. This may require the addition of Duke's substation and real estate groups. There is an overhead 69kV transmission line from the substation running north south parallel to Walnut Street, crossing Dillman Rd. This line is in an easement.
Smithville Communications	Underground fiber duct bank including handholes located on both sides of Old SR 37 South and the North side of Dillman Road,

Table 14 Utility Information	
Utility Name	***Facility Information***
	with a handhole in the Northwest quadrant of the intersection. Inactive copper facilities are located along both sides of Dillman Road crossing at the South side of the intersection with pedestals located in the Southwest and Northwest quadrants of the intersection.
South Monroe Water Corporation	8 in. A/C water line and a 2 in. water line located in easement on the West side of Old SR 37 South.

Related Projects >>

A review of the Entapps Project Compatibility Map: https://entapps.indot.in.gov/dotmaps/nlri/ reveals the following projects currently programmed along the corridor.

Table 15 Related Projects			
Des No.	***Work Type***	***Location***	***Priority Year***
1800371	Preservation	SR 37 at Dillman Road Intersection Improvement (J-Turn Intersection)	
2101712	Bridge Replacement	Bridge over Clear Creek, 3,000 ft W of SR 37	2026

Coordination with INDOT Seymour District and Local Governments should be performed during design to verify related projects that may be impacted or may impact this project.

Concurrence >>

This document was prepared by:

DATE: November 2, 2022

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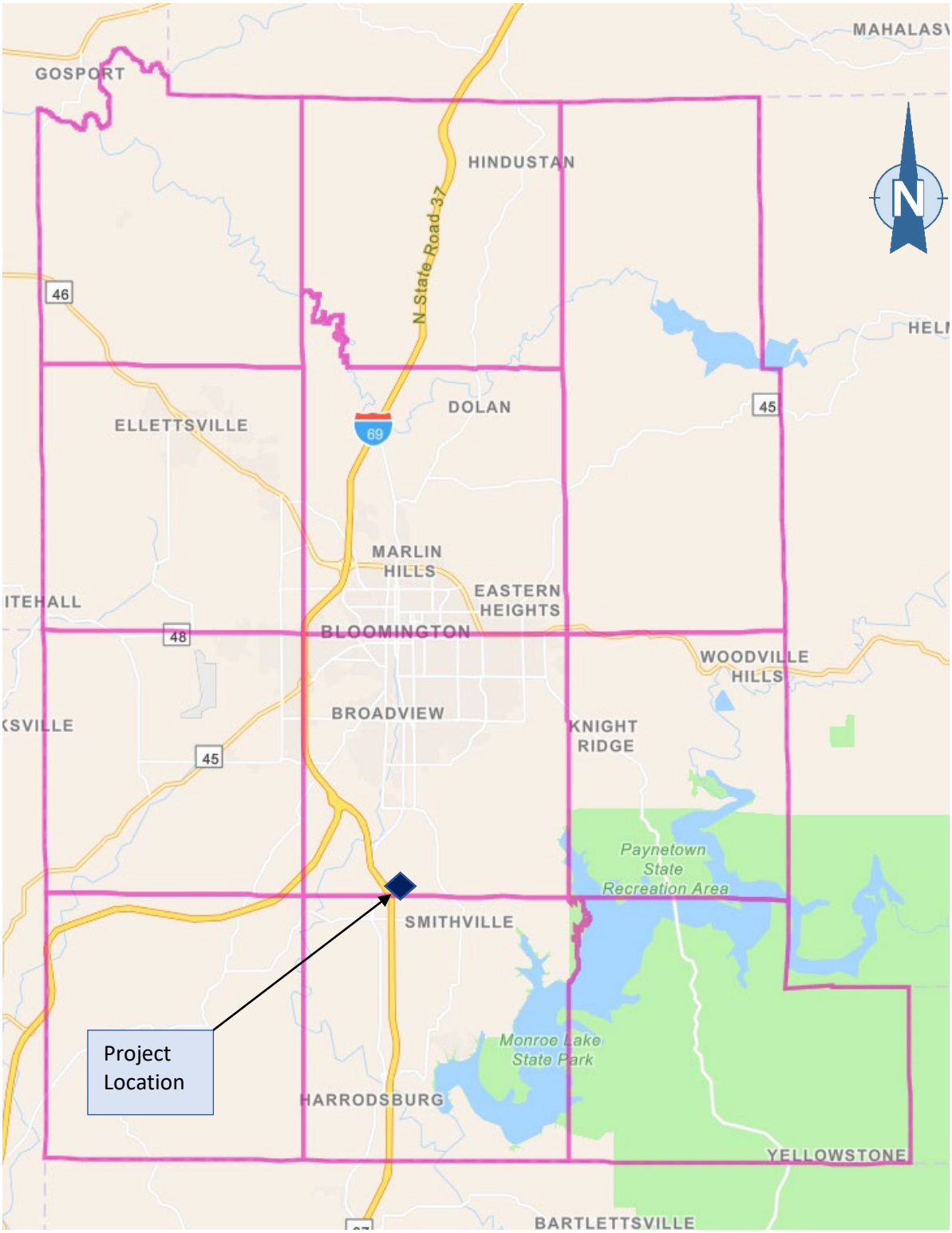
ENGINEER'S REPORT

Old SR 37 South and Dillman Road Intersection Improvement

APPENDIX

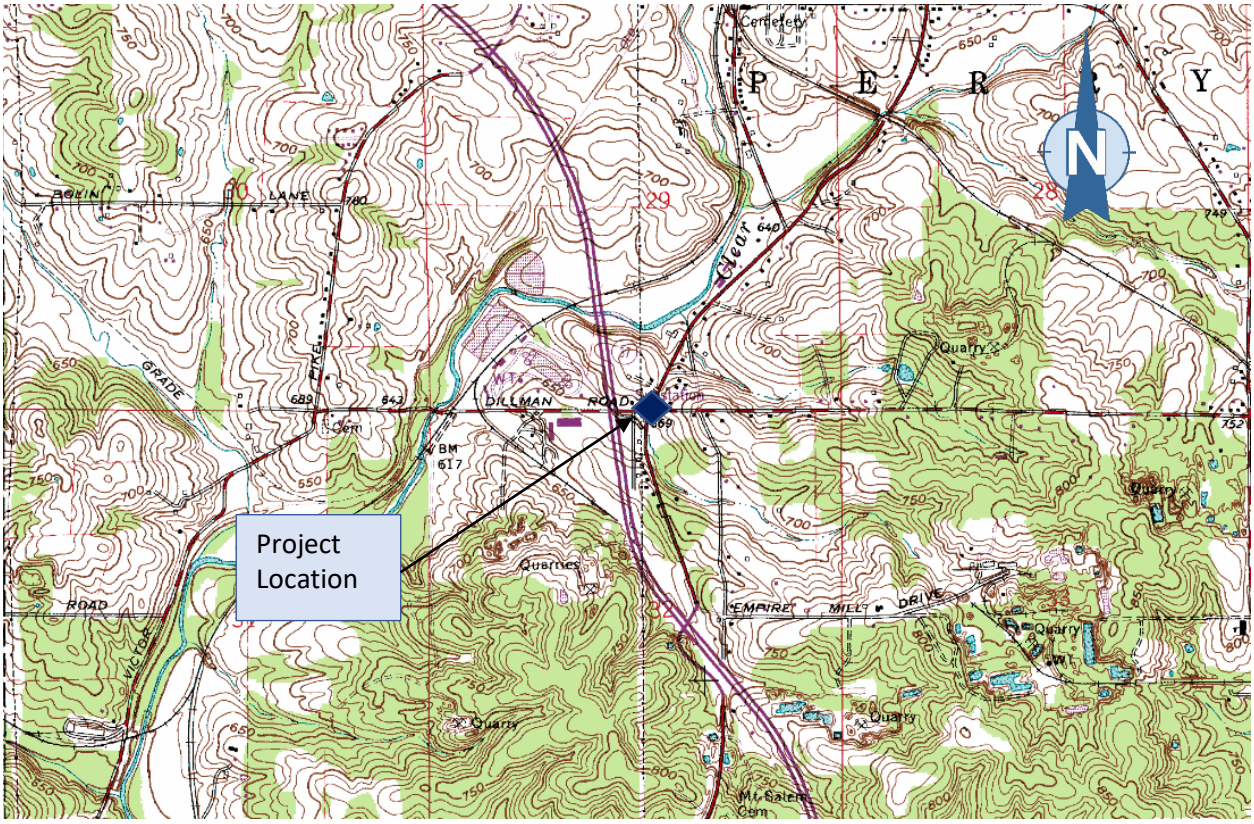
Project Location Maps >>

PROJECT LOCATION MAPS

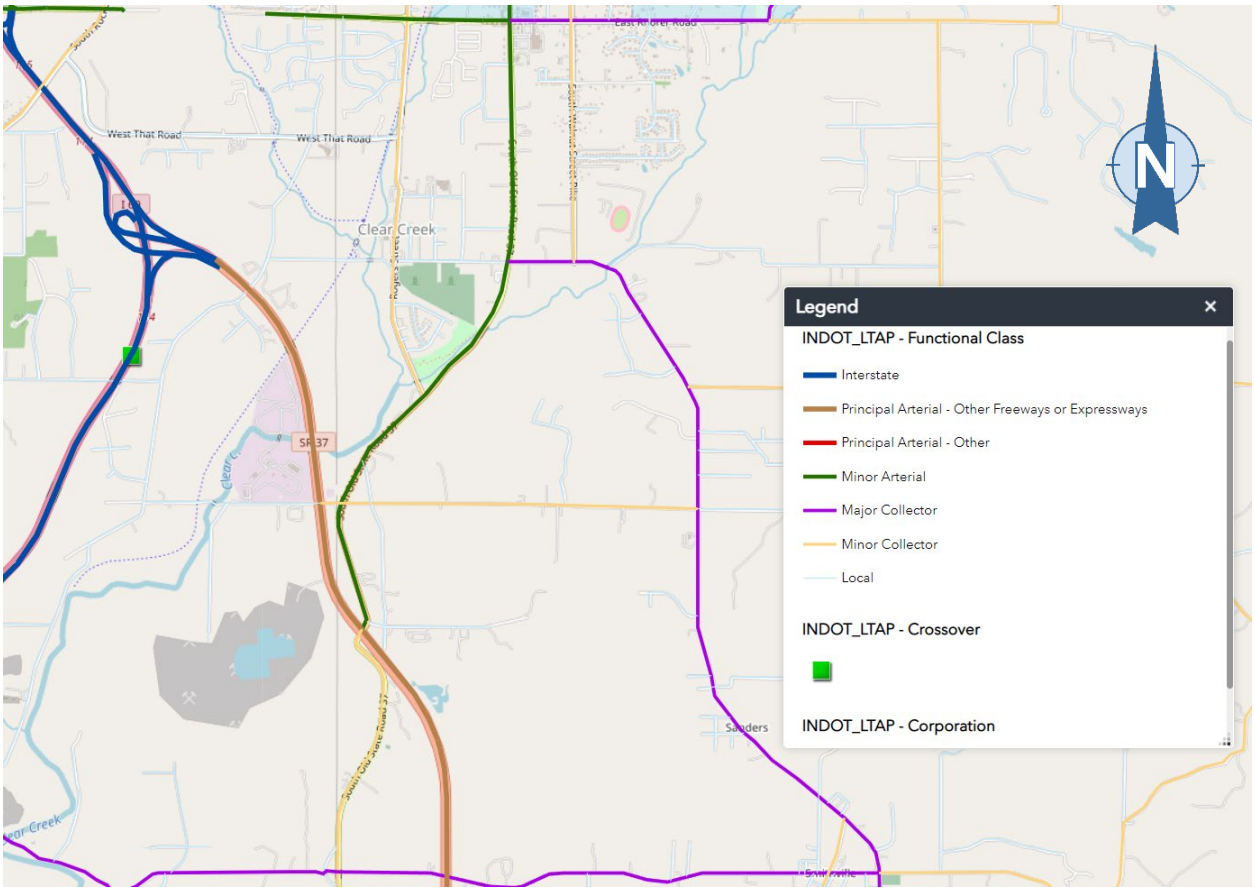


GIS Map of Monroe County, Indiana

PROJECT LOCATION MAPS



USGS Map of Monroe County, Indiana



INDOT Functional Classification Map

Project Site Photos >>

PROJECT SITE PHOTOS

Overhead Aerial View of Old SR 37 at Dillman Road looking Northwest

Overhead Aerial View of Old SR 37 at Dillman Road looking Northeast

PROJECT SITE PHOTOS

Old SR 37 looking North at the intersection with Dillman Road

Old SR 37 looking North towards the intersection with Dillman Road

PROJECT SITE PHOTOS

Southeast corner looking Northwest at overhead electric lines crossing Old SR 37

Old SR 37 looking South towards intersection showing sight distance problem

PROJECT SITE PHOTOS

Southbound Old SR 37 Right Turn Lane at Dillman Road intersection

Old SR 37 at Dillman Road intersection looking South

PROJECT SITE PHOTOS

Dillman Road at SR 37 looking East towards Old SR 37

Dillman Road Pavement Conditions

PROJECT SITE PHOTOS

Dillman Road at the Old SR 37 intersection looking East

Dillman Road looking West towards intersection with Old SR 37

PROJECT SITE PHOTOS

Dillman Road East approach to Old SR 37 looking West

Dillman Road Eastbound approach to Old SR 37

showing grade change along Dillman Road

PROJECT SITE PHOTOS

Business located in Northeast Quadrant of intersection

Utilities and Flasher Controller Cabinet in Northwest Quadrant of intersection

PROJECT SITE PHOTOS

Water Pipeline Marker Northwest Quadrant of intersection

Business located in Southwest Quadrant of intersection

PROJECT SITE PHOTOS

Residence located in Southeast Quadrant of intersection

Driveway to Electric Substation on Northside of Dillman Road

PROJECT SITE PHOTOS

Electric Substation entrance off Dillman Road between SR 37 and Old SR 37

Electric Utility Substation and Overhead Electric lines

Northwest Quadrant of intersection

Geometric Design Criteria >>

Design Element				Manual Section	2 Lanes			4 or More Lanes	
Design Controls	Design-Year Traffic, AADT			40-2.01	< 400	400 ≤ AADT < 2000	≥ 2000	**Undivided	Divided
	Design Forecast Period			40-2.02	20 Years			20 Years	
	*Design Speed, mph (1)			40-3.0	Level: 60 – 70; Rolling: 50 – 60			60	60-70
	Access Control			40-5.0	Partial Control / None			Partial Control / None	
	Level of Service			40-2.0	Desirable: B; Minimum: C			Desirable: B; Minimum: C	
Cross-Section Elements	Travel Lane	*Width		45-1.01	12 ft			12 ft	
		Typical Surface Type (2)		Chp. 304	Asphalt / Concrete			Asphalt / Concrete	
	Shoulder (3)	*Width Usable		45-1.02	6 ft	8 ft	11 ft (3b)	11 ft (3b)	Right: 11 ft (3b) Left: 4 ft (3e)
		*Width Paved		45-1.02	4 ft	6 ft	10 ft (3b)	10 ft (3b)	Right: 10 ft (3b) Left: 4 ft (3e)
		Typical Surface Type (2)		Chp. 304	Asphalt / Concrete			Asphalt / Concrete	
	Cross Slope	*Travel Lane (4)		45-1.01	2%			2%	
		Shoulder (4A)		45-1.02	Paved Width ≤ 4 ft: 2%; Paved Width > 4 ft: 4%			Paved Width ≤ 4 ft: 2%; Paved Width > 4 ft: 4%	
	Auxiliary Lane	Lane Width (5)		45-1.03	Desirable: 12 ft; Minimum: 11 ft			Desirable: 12 ft; Minimum: 11 ft	
		Shoulder Width (6)			Same as Next to Travel Lane			Same as Next to Travel Lane	
	Median Width			45-2.0	N/A			0.0 ft	Desirable: 80 ft Minimum: 16 ft (7)
	Clear-Zone Width			49-2.0	(8)			(8)	
	Side Slopes (9)	Cut	Foreslope	45-3.0	6:1 (10)			6:1 (10)	
			Ditch Width		4 ft (11)			4 ft (11)	
			Backslope		4:1 for 20 ft; 3:1 Max. to Top (12)			4:1 for 20 ft; 3:1 Max. to Top (12)	
		Fill		45-3.0	6:1 to Clear Zone; 3:1 Max. to Toe			6:1 to Clear Zone; 3:1 Max. to Toe	
	Median Slopes			45-2.02	N/A			Desirable: 8:1; Maximum: 5:1	
Bridges	New or Reconstructed Bridge	*Structural Capacity		Chp. 403	HL-93 (13)				
		*Clear-Roadway Width(14)		45-4.01	Full Paved Approach Width				
	Existing Bridge to Remain in Place	*Structural Capacity		Chp. 72	HS-20				
		*Clear-Roadway Width		45-4.01	Travelway Plus 2 ft on Each Side				
	*Vertical Clearance, Arterial Under	New or Replaced Overpassing Bridge (15)		44-4.0	16.5 ft				
		Existing Overpassing Bridge			14 ft				
		Sign Truss / Pedestrian Bridge (15)			New: 17.5 ft; Existing: 17 ft				
	Vertical Clearance, Arterial Over Railroad (16)			Chp. 402-6.01	23 ft				

* Level One controlling criterion, see page 2 of 4

** An arterial of 4 or more lanes on a new location should be designed as Divided.

GEOMETRIC DESIGN CRITERIA FOR RURAL ARTERIAL
(New Construction or Reconstruction)
Figure 53-2 (Page 1 of 4)

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Design Element			Manual Section	Rural Arterial			
Alignment Elements	Design Speed		---	50 mph	55 mph	60 mph	70 mph
	*Stopping Sight Distance		42-1.0	425 ft	495 ft	570 ft	730 ft
	Decision Sight Distance	Speed / Path / Direction Change	42-2.0	750 ft	865 ft	990 ft	1105 ft
		Stop Maneuver		465 ft	535 ft	610 ft	780 ft
	Passing Sight Distance		42-3.0	1835 ft	1985 ft	2135 ft	2480 ft
	Intersection Sight Distance, -3% to +3% (20)		46-10.0	P: 630 ft; SUT: 780 ft	P: 730 ft; SUT: 890 ft	P: 840 ft; SUT: 1020 ft	P: 1030 ft; SUT: 1240 ft
	*Minimum Radius, e=8%		43-2.0	750 ft	1000 ft	1290 ft	1650 ft
	*Superelevation Rate		43-3.0	e_{max} = 8% (17)			
	*Horizontal Sight Distance		43-4.0	(18)			
	*Vertical Curvature, K-value	Crest	44-3.0	84	114	151	247
		Sag		96	115	136	181
	*Maximum Grade (19)	Level	44-1.02	4%	4%	3%	3%
		Rolling		5%	5%	4%	4%
	Minimum Grade		44-1.03	Desirable: 0.5%; Minimum: 0.0%			

* Level One controlling criterion. Except as noted in this chapter, the values shown in AASHTO's *A Policy on Geometric Design of Highways and Streets* (the *Green Book*) may be used as minimum values if they are lower than similar values shown herein. A controlling criterion that does not meet the minimum value is a design exception and is subject to approval. See Section 40-8.0.

These criteria apply to a route either on or off the National Highway System, regardless of funding source.

GEOMETRIC DESIGN CRITERIA FOR RURAL ARTERIAL
(New Construction or Reconstruction)
Figure 53-2 (Page 2 of 4)

Back

(1) Design Speed. The minimum design speed should equal the minimum value from the table or the anticipated posted speed limit after construction, whichever is greater. The legal speed limit is 60 mph on a non-posted divided highway.

(2) Surface Type. The pavement-type selection will be determined by the INDOT Office of Pavement Engineering.

(3) Shoulder. The following will apply.
- a. If there are 3 or more lanes in each direction and there is a median barrier, a 10 ft paved shoulder and a 2 ft offset is required.
- b. For new construction with $2000 \leq AADT < 5000$, this may be 8 ft. On a reconstruction project, the usable shoulder width may be 10 ft, and the paved shoulder width may be 8 ft.
- c. The shoulder is paved to the front face of guardrail. The desirable guardrail offset is 2 ft from the usable shoulder width. See Section 49-4.0 for more information.
- d. Usable shoulder width is defined as the distance from the edge of the travel lane to the shoulder break point.
- e. If there are 3 or more lanes in each direction, a full-width shoulder, 11 ft usable and 10 ft paved, is desirable.
- f. If curbs are to be used, the criteria described in Figure 53-6 or 53-7 should be applied.

(4) Cross Slope, Travel Lanes. Cross slopes of 1.5% are acceptable on an existing bridge to remain in place. Where three or more lanes are sloped in the same direction, each successive pair of lanes may have an increased sideslope.

(4A) Cross Slope, Shoulder. See Figure 45-1A(1) or Figure 45-1A(2) for more specific information.

(5) Auxiliary Lane, Lane Width. Truck climbing-lane width is 12 ft.

(6) Auxiliary Lane, Shoulder Width. At a minimum, a 2 ft shoulder may be used adjacent to an auxiliary lane. At a minimum, the shoulder adjacent to a truck climbing lane is 4 ft.

(7) Median Width, Flush. Value is for new construction. A median of 25 ft or narrower should be avoided at an intersection. A median wider than 60 ft is undesirable at a signalized intersection or at an intersection that may become signalized in the foreseeable future. On a reconstruction project, the minimum flush-median width is 14 ft for a roadway with left-turn lanes, or 22 ft for a roadway with concrete median barrier.

(8) Clear-Zone Width. This will vary according to design speed, traffic volume, side slopes, and horizontal curvature. See Section 49-2.0.

(9) Side Slope. Value is for new construction. See Sections 45-3.0 for more information. For a reconstruction project, see Section 49-3.0.

(10) Foreslope. See Sections 49-2.0 and 49-3.0 for the lateral extent of the foreslope in a ditch section.

(11) Ditch Width. A V-ditch should be used in a rock cut.

GEOMETRIC DESIGN CRITERIA FOR RURAL ARTERIAL
(New Construction or Reconstruction)
Figure 53-2 (Page 3 of 4)

Back

(12) Backslope. The backslope for a rock cut will vary according to the height of the cut and the geotechnical requirements. See Sections 45-3.0 and 107-6.01.

(13) Structural Capacity, New or Reconstructed Bridge. The following will apply.
   a. A State-highway bridge within 15 mi of a Toll-Road gate must be designed for Toll-Road loading.
   b. A bridge on an Extra-Heavy-Duty Highway must be designed for the Michigan Train truck-loading configuration.

(14) Width, New or Reconstructed Bridge. See Section 402-6.02(01) for more information. The bridge clear-roadway width is the algebraic sum of the following:
   a. the approach traveled-way width;
   b. the approach usable shoulder width without guardrail; and
   c. a bridge-railing offset (see Figure 402-6H).

(15) Vertical Clearance, Arterial Under. Value includes an additional 6 in. allowance for future pavement overlays. Vertical clearance applies from usable edge to usable edge of shoulders.

(16) Vertical Clearance, Arterial Over Railroad. See Chapter 402-6.01(03) for additional information on railroad clearance under a highway.

(17) Superelevation Rate. See Section 43-3.0 for value of superelevation rate based on design speed and radius.

(18) Horizontal Sight Distance. For a given design speed, the necessary middle ordinate will be determined by the radius and the sight distance which applies at the site. Sometimes, the stopping-sight-distance value for a truck will apply. See the discussion in Section 43-4.0.

(19) Maximum Grade. A grade of 1% steeper may be used for a downgrade on a one-way roadway.

(20) Intersection Sight Distance. For a left turn onto a 2-lane road: P = Passenger car; SUT = single unit truck. See Figure 46-10G for value for a combination truck.

GEOMETRIC DESIGN CRITERIA FOR RURAL ARTERIAL
(New Construction or Reconstruction)
Figure 53-2 (Page 4 of 4)

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Design Element				Manual Section	2 Lanes			
Design Controls	Design-Year Traffic, AADT			40-2.01	< 400	400 ≤ AADT < 1500	1500 ≤ AADT < 2000	≥ 2000
	Design Forecast Period			40-2.02	20 Years			
	*Design Speed, mph (3)	Level		40-3.0	35 – 55	50 - 55	50 - 55	60
		Rolling			30 - 55	35 - 55	35 - 55	50 - 55
	Access Control			40-5.0	None			
	Level of Service			40-2.0	Desirable: B; Minimum: C			
Cross-Section Elements	Travel Lane	*Width (4)		45-1.01	10 ft (4a)	11 ft	11 ft (4b)	12 ft
		Typical Surface Type		Chp. 304	Asphalt / Concrete			
	Shoulder	*Width Usable		45-1.02	Des: 4 ft Min: 2 ft (5)	Des: 6 ft Min: 4 ft	Des: 8 ft Min: 6 ft	Des: 10 ft Min: 8 ft
		*Width Paved, optional		45-1.02	2 ft	4 ft	6 ft	8 ft
		Typical Surface Type		Chp. 304	Asphalt / Aggregate / Earth			
	Cross Slope	*Travel Lane (6)		45-1.01	2%			
		Shoulder (6A)		45-1.02	Paved Width ≤ 4 ft: 2%; Paved Width > 4 ft: 4% - 6% Asphalt; 6%-8% Aggregate; 8% Earth			
	Auxiliary Lane	Lane Width		45-1.03	10 ft		Desirable: 11 ft Minimum: 10 ft	Desirable: 12 ft Minimum: 10 ft
		Shoulder Width			Desirable: Same as Next to Travel Lane; Minimum: 2 ft			
	Clear-Zone Width			49-2.0	(7)			
	Side Slopes (8)	Cut	Foreslope	45-3.0	Des: 6:1; Max: 4:1 (9)			
			Ditch Width		4 ft (10)			
			Backslope		4:1 for 20 ft; 3:1 Max. to Top (11)			
		Fill		45-3.0	Des: 6:1 to Clear Zone; Max: 3:1 to Toe			
Bridges	New or Reconstructed Bridge	*Structural Capacity		Chp. 403	HL-93			
		*Clear-Roadway Width (12)		45-4.01	Travelway + 4 ft	Travelway + 6 ft	Travelway + 8 ft	Full Paved Approach Width
	Existing Bridge to Remain in Place	*Structural Capacity		Chp. 72	HS-15			
		*Clear-Roadway Width (13)		45-4.01	22 ft	22 ft	24 ft	28 ft
	*Vertical Clearance, Collector Under	New or Replaced Overpassing Bridge (14)		44-4.0	14.5 ft			
		Existing Overpassing Bridge			14 ft			
	Vertical Clearance, Collector Over Railroad (15)			Chp. 402-6.01	23 ft			

Des: Desirable; Min: Minimum.

* Level One controlling criterion, see page 2 of 4

GEOMETRIC DESIGN CRITERIA FOR RURAL COLLECTOR, LOCAL-AGENCY ROUTE

(New Construction or Reconstruction)

Figure 53-4 (Page 1 of 4)

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Design Element			Manual Section	2 Lanes					
Alignment Elements	Design Speed			30 mph	35 mph	45 mph	50 mph	55 mph	60 mph
	*Stopping Sight Distance		42-1.0	200 ft	250 ft	360 ft	425 ft	495 ft	570 ft
	Decision Sight Distance	Speed / path / direction change	42-2.0	450 ft	525 ft	675 ft	750 ft	865 ft	990 ft
		Stop Maneuver		220 ft	275 ft	395 ft	465 ft	535 ft	610 ft
	Passing Sight Distance		42-3.0	1090 ft	1280 ft	1625 ft	1835 ft	1985 ft	2135 ft
	Intersection Sight Distance, -3% to +3% (19)		46-10.0	P: 330 ft SUT: 420 ft	P: 390 ft SUT: 490 ft	P: 500 ft SUT: 630 ft	P: 630 ft SUT: 780 ft	P: 730 ft SUT: 890 ft	P: 840 ft SUT: 1020 ft
	*Minimum Radius, e=8%		43-2.0	270 ft	410 ft	590 ft	750 ft	1000 ft	1290 ft
	*Superelevation Rate		43-3.0	emax = 8% (16)					
	*Horizontal Sight Distance		43-4.0	(17)					
	*Vertical Curvature, K-value	Crest	44-3.0	19	29	61	84	114	151
		Sag		37	49	79	96	115	136
	*Maximum Grade (18)	Level	44-1.02	7%	7%	6%	6%	5.5%	5%
		Rolling		9%	8%	7%	7%	6.5%	6%
	Minimum Grade		44-1.03	Desirable: 0.5%; Minimum: 0.0%					

* Level One controlling criterion. Except as noted in this chapter, the values shown in AASHTO's *A Policy on Geometric Design of Highways and Streets* (the *Green Book*) may be used as minimum values if they are lower than similar values shown herein. A controlling criterion that does not meet the minimum value is a design exception and is subject to approval. See Section 40-8.0.

These criteria apply only to a federal-aid project.

GEOMETRIC DESIGN CRITERIA FOR RURAL COLLECTOR, LOCAL-AGENCY ROUTE
(New Construction or Reconstruction)
Figure 53-4 (Page 2 of 4)

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(1) (Blank.)

(2) (Blank.)

(3) Design Speed. The minimum design speed should equal the minimum value or the anticipated posted speed limit after construction, whichever is greater. The legal speed limit is 55 mph on a non-posted highway.

(4) Travel-Lane Width. The following will apply.
a. Use an 11-ft width if the design speed is 55 mph.
b. Use a 12-ft width if the design speed is 55 mph.

(5) Shoulder Width. The following will apply.
a. If guardrail is required, the minimum width is 4 ft.
b. Usable-shoulder width is defined as the distance from the edge of the travel lane to the shoulder break point.
c. If curbs are to be used, the criteria described in Figure 53-8 should be applied.

(6) Cross Slope, Travel Lanes. Cross slopes of 1.5% are acceptable on an existing bridge to remain in place.

(6A) Cross Slope, Shoulder. See Figure 45-1A(1) or Figure 45-1A(2) for more-specific information.

(7) Clear-Zone Width. This will vary according to design speed, traffic volume, side slopes, and horizontal curvature. See Section 49-2.0.

(8) Side Slope. Value is for new construction. See Section 45-3.0 for more information. For a reconstruction project, see Section 49-3.0.

(9) Foreslope. See Sections 49-2.0 and 49-3.0 for the lateral extent of the foreslope in a ditch section.

(10) Ditch Width. A V-ditch should be used in a rock cut.

(11) Backslope. The backslope for a rock cut will vary according to the height of the cut and the geotechnical requirements. See Sections 45-3.02 and 107-6.02 for typical rock-cut sections.

GEOMETRIC DESIGN CRITERIA FOR RURAL COLLECTOR, LOCAL-AGENCY ROUTE
(New Construction or Reconstruction)
Figure 53-4 (Page 3 of 4)

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(12) Width, New or Reconstructed Bridge. See Section 402-6.02(01) for more information. The bridge clear-roadway width is the algebraic sum of the following:

a. the approach traveled-way width;
b. the approach usable shoulder width without guardrail; and
c. a bridge-railing offset (see Figure 402-6H).

(13) Width, Existing Bridge to Remain in Place. Clear-roadway width will be at least equal to the approach traveled-way width or the table value, whichever is greater. For a bridge longer than 100 ft, the value does not apply. The acceptability of such a bridge will be assessed individually.

(14) Vertical Clearance, Collector Under. Value includes an additional 6 in. allowance for future pavement overlays. Vertical clearance applies from usable edge to usable edge of shoulders.

(15) Vertical Clearance, Collector Over Railroad. See Chapter 402-6.01(03) for additional information on railroad clearance under a highway.

(16) Superelevation Rate. See Section 43-3.0 for value of superelevation rate based on design speed and radius.

(17) Horizontal Sight Distance. For a given design speed, the necessary middle ordinate will be determined by the radius and the sight distance which applies at the site. See Section 43-4.0.

(18) Maximum Grade. For a grade along a longitudinal distance of less than 480 ft (PVT to PVC), a one-way downgrade, or a road with AADT < 400, the maximum grade may be up to 2% steeper than the table value.

(19) Intersection Sight Distance. For a left turn onto a 2-lane roadway: P = Passenger car; SUT = single unit truck. See Figure 46-10G for value for a combination truck.

GEOMETRIC DESIGN CRITERIA FOR RURAL COLLECTOR, LOCAL-AGENCY ROUTE
(New Construction or Reconstruction)
Figure 53-4 (Page 4 of 4)

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Traffic Count Data >>

Indiana Department of Transportation

MS2

Traffic Count Database System (TCDS)

Disclaimer: The data is provided pursuant to the Indiana Open Records Act. It represents accurate reproductions of the records on file with the Indiana Department of Transportation; however, ... more

List View | All DIRs

Record 1 of 1 Goto Record go

Location ID	L01p3215	**MPO ID**	p3215
Type	SPOT	**HPMS ID**	
On NHS	No	**On HPMS**	No
LRS ID	35300000064000001	**LRS Loc Pt.**	0.77699
SF Group	U2_SWG	**Route Type**	County Road
AF Group	U3_A	**Route**	Local
GF Group	U2_SWG	**Active**	Yes
Class Dist Grp		**Category**	
Seas Clss Grp			
WIM Group			
QC Group	Default		
Fnct'l Class	Minor Collector	**Milepost**	
Located On	Dillman Road Between Old SR 37 and SR 37		
Loc On Alias	DILLMAN RD (IR 64)		

More Detail

STATION DATA

Directions: 2-WAY | NEG 1 | POS 1

AADT

Year	AADT	DHV-30	K %	D %	PA	BC	Src
2021	1,818[3]		9	59	1,692 (93%)	124 (7%)	Grown from 2020
2020	1,709[3]		9	59	1,591 (93%)	117 (7%)	Grown from 2019
2019	1,935[3]	181	9	59	1,801 (93%)	133 (7%)	Grown from 2018
2018	1,923						

Travel Demand Model

	Model Year	Model AADT	AM PHV	AM PPV	MD PHV	MD PPV	PM PHV	PM PPV	NT PHV	NT PPV

VOLUME COUNT

	Date	Int	Total

VOLUME TREND

Year	Annual Growth

Indiana Department of Transportation

MS2

Traffic Count Database System (TCDS)

Disclaimer: The data is provided pursuant to the Indiana Open Records Act. It represents accurate reproductions of the records on file with the Indiana Department of Transportation; however, ... more

List View | All DIRs

Record 1 of 1 Goto Record go

Location ID	530396	**MPO ID**	
Type	SPOT	**HPMS ID**	
On NHS	No	**On HPMS**	No
LRS ID	35300000051000001	**LRS Loc Pt.**	6.760903
SF Group	R2_SWGA	**Route Type**	County Road
AF Group	R2_SWGA	**Route**	Local
GF Group	R2_SWGA	**Active**	Yes
Class Dist Grp		**Category**	
Seas Clss Grp			
WIM Group			
QC Group	Default		
Fnct'l Class	Minor Arterial	**Milepost**	
Located On	300 S or IR 50		
Loc On Alias	WALNUT ST (IR 51)		

More Detail

STATION DATA

Directions: 2-WAY | NEG 1 | POS 1

AADT

Year	AADT	DHV-30	K %	D %	PA	BC	Src
2021	6,748[3]		11	65	5,477 (81%)	1,270 (19%)	Grown from 2020
2020	6,068	648	11	65	4,925 (81%)	1,142 (19%)	
2019	9,936[3]						Grown from 2018
2018	9,887[3]						Grown from 2017
2017	9,848[3]						Grown from 2016

|<< < > >>| 1-5 of 9

Travel Demand Model

	Model Year	Model AADT	AM PHV	AM PPV	MD PHV	MD PPV	PM PHV	PM PPV	NT PHV	NT PPV

Indiana Department of Transportation

MS2

Traffic Count Database System (TCDS)

Disclaimer: The data is provided pursuant to the Indiana Open Records Act. It represents accurate reproductions of the records on file with the Indiana Department of Transportation; however, ... more

List View | All DIRs

Record 1 of 1 Goto Record go

Location ID	L01p331	**MPO ID**	p331
Type	SPOT	**HPMS ID**	
On NHS	No	**On HPMS**	No
LRS ID	35300000051000001	**LRS Loc Pt.**	7.66077
SF Group	U2_SWG	**Route Type**	County Road
AF Group	U3_A	**Route**	Local
GF Group	U2_SWG	**Active**	Yes
Class Dist Grp		**Category**	
Seas Clss Grp			
WIM Group			
QC Group	Default		
Fnct'l Class	Minor Arterial	**Milepost**	
Located On	Old State Road 37 South of Rogers		
Loc On Alias	WALNUT ST (IR 51)		

More Detail

STATION DATA

Directions: 2-WAY

AADT

Year	AADT	DHV-30	K %	D %	PA	BC	Src
2021	8,176[3]						Grown from 2020
2020	7,684[3]						Grown from 2019
2019	8,702[3]						Grown from 2018
2018	8,650						

Travel Demand Model

	Model Year	Model AADT	AM PHV	AM PPV	MD PHV	MD PPV	PM PHV	PM PPV	NT PHV	NT PPV

VOLUME COUNT

	Date	Int	Total
No Data			

VOLUME TREND

Year	Annual Growth
2021	6%
2020	-12%
2019	1%

SPEED

	Date	Int	Pace	85th	Total
No Data					

CLASSIFICATION

	Date	Int	Total
No Data			

WEIGH-IN-MOTION

	Date	Axles	Avg GVW	Total
No Data				

PER VEHICLE

	Date	Axles	85th	Total
No Data				

Indiana Department of Transportation

MS2

Traffic Count Database System (TCDS)

Volume Count Report

LOCATION INFO	
Location ID	530396
Type	SPOT
Fnct'l Class	4
Located On	300 S or IR 50
Loc On Alias	WALNUT ST (IR 51)
Direction	2-WAY
County	MONROE
Community	-
MPO ID	
HPMS ID	
Agency	Indiana DOT

COUNT DATA INFO	
Count Status	Accepted
Start Date	Thu 9/10/2020
End Date	Fri 9/11/2020
Start Time	12:00:00 AM
End Time	12:00:00 AM
Direction	2-WAY
Notes	
Station	
Study	
Speed Limit	
Description	
Sensor Type	Tube Class
Source	TcdsBinToVol
Latitude,Longitude	

INTERVAL:15-MIN

Time	15-min Interval 1st	2nd	3rd	4th	Hourly Count
0:00-1:00	12	8	8	4	32
1:00-2:00	4	7	5	5	21
2:00-3:00	5	5	7	2	19
3:00-4:00	0	3	7	9	19
4:00-5:00	7	6	14	11	38
5:00-6:00	21	20	50	56	147
6:00-7:00	64	80	96	126	366
7:00-8:00	112	172	164	170	618
8:00-9:00	115	125	124	94	458
9:00-10:00	100	89	106	74	369
10:00-11:00	62	97	98	91	348
11:00-12:00	92	97	99	92	380
12:00-13:00	100	108	87	99	394
13:00-14:00	84	99	120	85	388
14:00-15:00	119	108	150	108	485
15:00-16:00	98	130	134	131	493
16:00-17:00	160	183	145	152	640
17:00-18:00	154	167	99	126	546
18:00-19:00	111	90	80	86	367
19:00-20:00	63	73	62	66	264
20:00-21:00	59	57	77	61	254
21:00-22:00	48	52	41	31	172
22:00-23:00	28	26	19	17	90
23:00-24:00	17	17	26	10	70
Total					6,978
AADT					5,806
AM Peak					07:15-08:15 621
PM Peak					16:00-17:00 640

Indiana Department of Transportation

MS2

Traffic Count Database System (TCDS)

Volume Count Report

LOCATION INFO	
Location ID	L01p3215
Type	SPOT
Fnct'l Class	6
Located On	Dillman Road Between Old SR 37 and SR 37
Loc On Alias	DILLMAN RD (IR 64)
Direction	2-WAY
County	MONROE
Community	-
MPO ID	p3215
HPMS ID	
Agency	Indiana DOT

COUNT DATA INFO	
Count Status	Accepted
Start Date	Tue 11/19/2019
End Date	Wed 11/20/2019
Start Time	11:00:00 AM
End Time	11:00:00 AM
Direction	2-WAY
Notes	
Station	
Study	
Speed Limit	
Description	
Sensor Type	Tube Class
Source	TcdsBinToVol
Latitude,Longitude	

INTERVAL:15-MIN

Time	15-min Interval 1st	2nd	3rd	4th	Hourly Count
0:00-1:00	0	4	0	0	4
1:00-2:00	1	1	0	2	4
2:00-3:00	0	0	0	3	3
3:00-4:00	2	1	3	1	7
4:00-5:00	9	5	4	2	20
5:00-6:00	2	6	9	16	33
6:00-7:00	13	18	18	30	79
7:00-8:00	25	25	42	44	136
8:00-9:00	32	24	20	33	109
9:00-10:00	21	15	14	19	69
10:00-11:00	23	20	26	32	101
11:00-12:00	28	16	32	17	93
12:00-13:00	27	23	29	28	107
13:00-14:00	20	23	26	23	92
14:00-15:00	24	20	32	35	111
15:00-16:00	36	37	32	28	133
16:00-17:00	52	42	34	49	177
17:00-18:00	45	64	35	37	181
18:00-19:00	22	24	23	15	84
19:00-20:00	11	17	12	12	52
20:00-21:00	10	18	8	13	49
21:00-22:00	8	5	14	7	34
22:00-23:00	3	4	1	3	11
23:00-24:00	5	2	4	7	18
Total					1,707
AM Peak					07:15-08:15 143
PM Peak					16:45-17:45 193

Land Use and Collision Data Exhibit >>

EXISTING R/W

CRASH TYPE LEGEND

AL Animal	OR Off Road	RT Right Turn	* Injury
PD Pedestrian	RA Right Angle	UT U-turn	+ Fatal
HO Head On	BC Backing Crash	ODSS Opposite Direction Sideswipe	
LT Left Turn	RE Rear End	SDSS Same Direction Sideswipe	

NOT FOR CONSTRUCTION

DESIGNED: CC	DRAWN: CC
CHECKED: MB	CHECKED: MB

INDIANA
DEPARTMENT OF TRANSPORTATION

LAND USE AND 2021 COLLISION DATA
OLD SR 37 SOUTH AND DILLLMAN RD

HORIZONTAL SCALE
1" = 40' (34x22)
VERTICAL SCALE
N/A
SURVEY BOOK
CONTRACT

A-1

RoadHAT Summary Table >>

RoadHAT 4D	**Index of Crash Frequency and Cost - Form F1**	RoadHAT 4D
Settings: Indiana local settings	Version: Version 4.1	
Location	Old SR 37 and Dillman Road, Monroe County	
Analyst		
Date	11/2/2022	Date

INPUT	
Road Facility Type	County Local Intersection No AADT
Busiest Road Principal Arterial Indicator (1 if present, 0 otherwise)	0
Busiest Road Minor Arterial Indicator (1 if present, 0 otherwise)	1
Busiest Road Major or Minor Collector Indicator (1 if present, 0 otherwise)	0
Crossing Road Principal or Minor Arterial Indicator (1 if present, 0 otherwise)	0
Crossing Road Major or Minor Collector Indicator (1 if present, 0 otherwise)	1
First Year with Crash Data (yyyy)	2017
Last Year with Crash Data (yyyy)	2019
Number of Crashes (crash/period)	
Fatal and Incapacitating Injury Crashes	2
Non-Incapacitating and Possible Injury Crashes	1
Property Damage Only Crashes	14
Route or Road Type	County Local Intersection No AADT
Average Crash Costs ($)	
Fatal and Incapacitating Injury Crashes	2190300
Non-Incapacitating and Possible Injury Crashes	400600
Property Damage Only Crashes	37000
Crash Cost Year (yyyy)	2017
OUTPUT	
Expected Crash Frequency (crash/year)	
Fatal and Incapacitating Injury Crashes	0.014
Non-Incapacitating and Possible Injury Crashes	0.01
Property Damage Only Crashes	0.24
All Crashes	0.26
Index of Crash Frequency	**3.39**
Index of Crash Cost	**1.62**

2012 Road Safety Audit >>

Road Safety Audit

Old SR 37 at Dillman Road Intersection
Monroe County, IN

Prepared for: Monroe County Highway Department
April 2012

TABLE OF CONTENTS

TABLE OF FIGURES

INTRODUCTION

Location: Old SR 37 at Dillman Road intersection, Monroe County

Field Review Date: February 23, 2012

RSA Team and Participants:

Neal Carboneau – Indiana LTAP
Benjamin Carnahan - Beam, Longest & Neff
Rick Drumm – Federal Highway Administration
Steven Flores - INDOT Seymour District
Michael Fruth - City of Greenfield
Ronald Nordmeyer - The Schneider Corporation
Lisa Ridge - Monroe County Highway Department
Laura Slusher – Indiana LTAP
Bill Williams - Monroe County Highway Department
Chuck Wilson – Monroe County Sheriff's Office

Location Characteristics:

Audit Type: Existing Road
Adjacent Land Use: Semi-rural, neighbors MPO area
Opposite Flow Separation: Undivided
Functional Classification: Minor Arterial
Terrain: Rolling
Climatic Conditions: Cold winter (snow, freezing, icing possible)

Background:

Monroe County requested this Road Safety Audit (RSA) due to a higher than usual number of correctable crashes at the intersection of Old SR 37 and Dillman Road. Both roads are owned and maintained by the Monroe County Highway Department. The intersection is located just east of the intersection of SR 37 and Dillman Road. It is a two-way stop-controlled intersection with Old SR 37 (the higher-volume road) having the right-of-way. On their crash reports, several drivers on Dillman Road noted they thought the intersection operated as an all-way stop. There are no all-way stops in the vicinity of the study intersection.

Old SR 37 is a two-lane roadway with a posted speed limit of 40 mph. The intersection with Dillman Road is located on a vertical curve, with a horizontal curve located south of the intersection. A right-turn lane is located on the northern leg of the intersection.

Dillman Road is a two-lane roadway with a posted speed limit of 30 mph. The intersection with Old SR 37 is located on a vertical curve. There are double stop signs on the eastbound approach and one stop sign on the westbound approach. None of the stop signs have supplemental plaques.

Previous attempts to improve this intersection have included cutting down portions of the hill, adding the right-turn lane, and installing transverse rumble strips and warning signs on the northern leg. The pavement on Old SR 37 was recently resurfaced.

Monroe County collected volume and speed data in February 2012, which is included in the Appendix. Also in the Appendix are a vicinity map, collision diagram and additional site pictures.

RSA OBSERVATIONS

The RSA team noted the following issues through a review of the data and during the field review on February 23, 2012:

- Sight distance / Roadway geometry
- Warning sign locations
- Intersection recognition
- Vehicle operating speeds on Old SR 37

The combination of these issues has created an intersection with the opportunity for improvements, as noted by the history of correctable intersection crashes. In addition to the known crash history, there have been a number of unreported crashes and near misses in the vicinity of the study intersection, according to the Monroe County Sheriff's Department.

SIGHT DISTANCE/ROADWAY GEOMETRY

The geometry of both roads creates sight distance issues at the study intersection. The vertical curves at the intersection present the most challenge for drivers and county engineers. Although there is a horizontal curve south of the intersection, there has not been a significant history of crashes involving northbound vehicles.

Sight distance is an issue for southbound vehicles on Old SR 37 and all entering vehicles on Dillman Road, as evidenced by the crash history: 90% of the vehicles struck were heading southbound on Old SR 37. The presence of the right-turn lane on Old SR 37 compounds the limited sight distance issue for drivers on the western approach. The crash data shows 92% of the crashes occur in daylight conditions, which affirms the sight distance issue since vehicle headlights serve to warn drivers of an approaching car at night well before that same vehicle could be seen during the daytime. Figure 1 shows the limited sight distance available for drivers on Dillman Road due to the vertical curve and right-turn lane on Old SR 37 north of the intersection.

Figure 1: On west leg of intersection looking north

Figure 2 shows the Old SR 37 southbound approach to the intersection downstream of the rumble strips and warning signs and just before the beginning of the right-turn lane. From this point, other than the beginning of the right-turn lane taper, there are no other roadway or roadside indicators of the location of the intersection, which is located near the power pole on the right side in Figure 2.

Figure 2: Southbound approach to intersection

WARNING SIGN LOCATIONS

Figure 3 shows the southbound approach to the intersection prior to the rumble strips and warning signs.

Figure 3: Warning signs and rumble strips on southbound approach

Transverse rumble strips are located at 615 ft, 670 ft, and 760 ft from the intersection. The following advance warning signs are installed, with their distances from intersection noted:

460 ft – Curve warning sign
615 ft – Double intersection warning signs with 25-mph advisory speed

The curve warning sign has no posted advisory speed so its requirement for usage cannot be determined until an engineering study is completed. Additionally, the curve warning sign adds clutter and confusion since the curve is located well beyond the intersection. The intersection warning signs offer some information to drivers, but may be located too far back to be effective. According to the 2011 Indiana

Manual on Uniform Traffic Control Devices (IMUTCD), Table 2C-4, the suggested location for the intersection warning signs is around 225 feet from the intersection. The following guidance is also offered:

> *Warning signs should not be placed too far in advance of the condition, such that drivers might tend to forget the warning because of other driving distractions [Sect 2C.05.03, page 108, IMUTCD]*

However, due to the presence of the vertical curve, the right-turn lane and a driveway, a distance of approximately 300-330 feet from the intersection may be a better location for the intersection warning signs.

INTERSECTION RECOGNITION

As shown in Figure 2 above, there is very little indication of where the intersection is located when traveling southbound on Old SR 37. Figure 4 shows the southbound approach closer to the intersection. The intersecting pavement on both legs of Dillman Road is not easily visible, making it difficult to recognize where the intersection is actually located if there is no vehicle present on Dillman Road.

Figure 4: Southbound approach closer to intersection

At the intersection, there are no stop bars to help define the intersection and differentiate between the major and minor legs. This may contribute to the incorrect perception of an all-way stop condition.

SPEED

Speed data was collected on both legs of Old SR 37 (see Appendix). North of the intersection, 85th percentile speeds were measured at 54mph northbound and 50mph southbound, which is considerably higher than the 40mph speed limit. South of the intersection, 85th percentile speeds were measured at 43mph northbound and 44mph southbound. Excessive speed on Old SR 37 exacerbates the intersection safety issue since perception-reaction time to potential intersection conflicts is decreased.

According to the Sheriff's Department, enforcement on Old SR 37 is challenging due to few suitable areas to pull over speeders.

RSA SUGGESTIONS

The RSA team came up with the following suggestions for Monroe County to consider implementing to improve the safety of the intersection of Old SR 37 and Dillman Road. The suggestions are categorized by cost and objective so that Monroe County can consider implementation based on funding availability and long-term planning.

Countermeasure Objective	Addressed by Suggestion Number(s)
Provide intersection warning	1, 2, 3b, 4
Improve intersection recognition	3a, 4, 6, 7, 8
Reduce speeds on Old SR 37	4, 5, 7
Improve sight distance	6, 7, 8

LOW COST

1. Add Supplemental Plaques

Consider adding a "Cross Traffic Does Not Stop" supplemental plaque (W4-4P) to all stop signs on both approaches of Dillman Road. This should make it clear to drivers that this intersection is not an all-way stop.

2. Relocate Warning Signs

Consider relocating the intersection warning signs closer to the intersection. A distance of approximately 300-330 feet is suggested, using engineering judgment so as not to block sight distance from any of the driveways in the vicinity.

Determine the necessity and ideal location of the curve warning sign on Old SR 37 through an engineering study. If the sign is necessary, relocate it south of the intersection.

3. a. Install Overhead Flasher *or* b. Add Flashing Beacons to Signs

Flashing beacons (overhead or sign-mounted) may be particularly appropriate for unsignalized intersections with patterns of angle crashes related to lack of driver awareness of the intersection.[1] The difference in using an overhead flasher compared to sign-mounted flashing beacons is the overhead flasher prominently locates the intersection for the drivers on Old 37. The flashing beacons on signs will draw attention to the signs, but not necessarily to the intersection location.

Consider installing an overhead flasher at the study intersection to alert drivers they are approaching an intersection and caution the drivers on Old SR 37 to look for entering traffic. This would alleviate the intersection recognition issue and may slightly reduce approach speeds on Old SR 37. An angle crash reduction of 12-58% may be possible with the installation of flashing beacons.[2] The overhead flasher will also help drivers on the eastbound approach when the tree is blocking the stop sign, which was a contributing factor noted on one crash report. It is important to also install the "Cross Traffic Does Not Stop" supplemental plaque (W4-4P) on the Dillman Road stop signs to avoid driver confusion with an all-way stop condition. The overhead flasher should not be used in conjunction with sign-mounted flashing beacons.

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[1] *NCHRP Report 500 Volume 5: A Guide for Addressing Unsignalized Intersection Collisions.* Transportation Research Board, 2003.

[2] *Intersection Safety*, FHWA-SA-11-08, Federal Highway Administration, 2011.

If an overhead flasher is not used, consider adding flashing beacons to any or all of the warning and stop signs. These devices will bring attention to the signs and alert drivers. They could be passive warning (continuous flash) or active warning (actuated by the presence of a vehicle). Active warning devices are considered more effective, but some may require line of sight, which may not be feasible with the topography on this area.

An alternative to flashing beacons on signs is to use LED lights in the signs. These devices also grab the attention of motorists and bring their attention to the sign.

4. Add Pavement Markings

Consider the addition of stop bars on both Dillman Road approaches, which may help drivers realize the intersection is not an all-way stop. A 19% reduction in crashes may be possible with this countermeasure.[2]

Consider the use of pavement markings to channelize traffic on Old SR 37 as a traffic calming measure to potentially slow traffic by narrowing the lane on the intersection approach. This may also help with intersection recognition. Figure 6 shows an example of this countermeasure.

Figure 5: Channelizing Pavement Markings at an Intersection

5. Install Speed Feedback Signs and Increase Enforcement

In order to reduce the operating speeds on Old SR 37, consider the installation of speed feedback signs on Old SR 37 in the vicinity of the intersection, but not in a location that would distract from other signs or overwhelm the driver with too much information. Speed feedback signs are most effective where there is a perceived level of enforcement.[3] The signs should be used to support the regulatory speed limit of 40mph, not the advisory speed for the intersection.

Whether or not the speed feedback signs are used, the County and Sheriff's Department should discuss options for enforcing the speed limit on Old SR 37 because of the vehicle speeds 10-14mph over the speed limit and the related crash history.

[3] *Effectiveness of Dynamic Speed Display Signs (DSDS) in Permanent Applications*, Rose and Ullman, TTI Project Summary Report 0-4475-S, 2003.

HIGHER COST

There are several higher cost options available to improve the safety of the study intersection that the County may find useful for long-range planning.

6. Geometric Improvements

In order to address the sight distance issues, geometric improvements would be necessary. There are several ways to achieve better sight distance, but some may not be as cost effective due to the shallow rock in the area. These options could be implemented alone or in combination with another option.

One option is to raise the west approach to the intersection, which can be accomplished using geo-synthetic reinforced soil and retaining walls to provide an elevation change while accommodating the adjacent property. Another benefit to this option is vehicles will not have to start from a stop on a steep grade, making it easier to accelerate.

Another option is to raise the entire intersection. An additional benefit for this option is decreasing the steep grade on the east leg, making it easier for those vehicles to stop.

Another option is to raise the hill on Old SR 37, which would move the crest of the hill further north to create a longer plateau on the approach to the intersection.

Another option is to cut down the hill on Old SR 37.

7. Roundabout

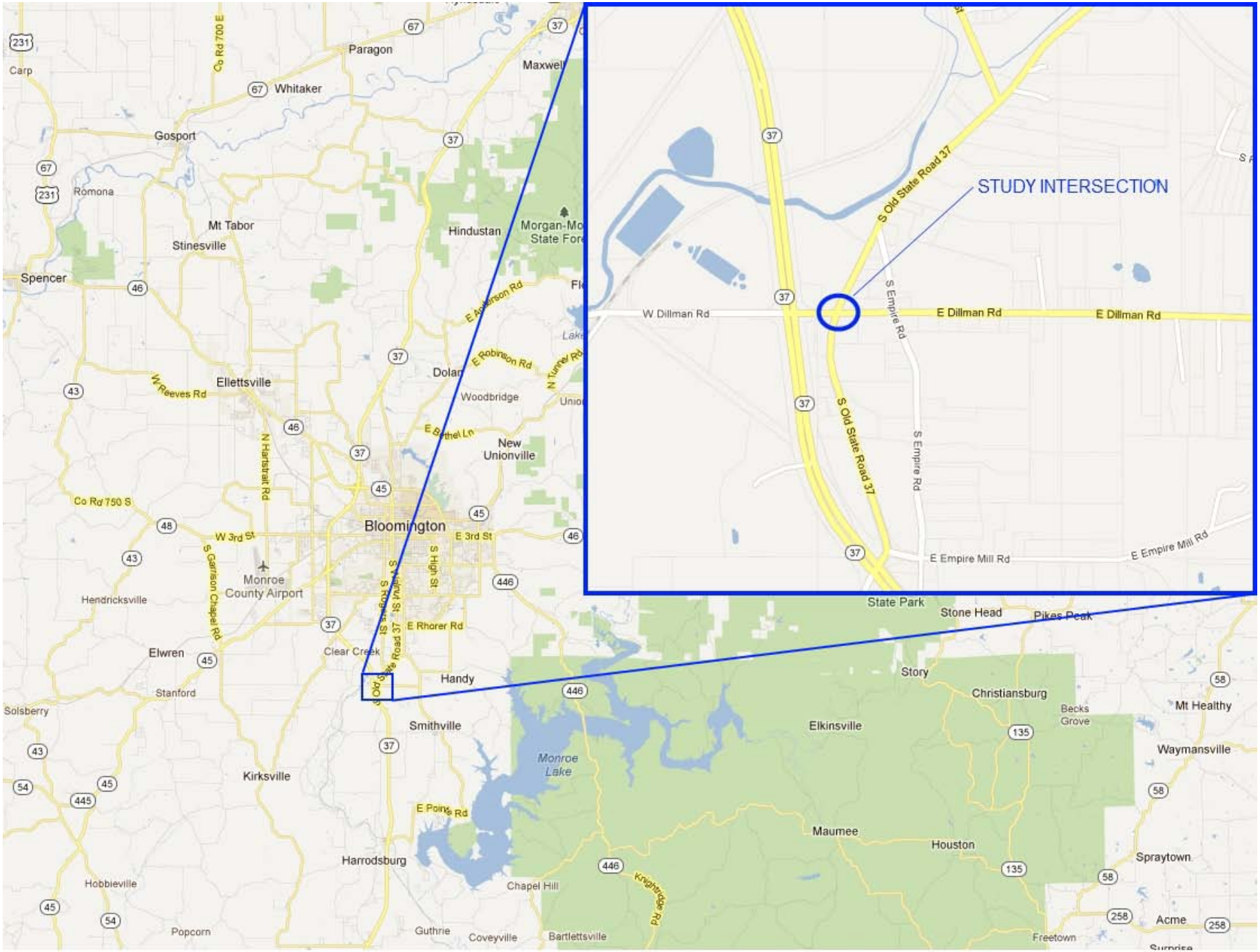
The installation of a roundabout may be another way to increase safety at the study intersection. A roundabout would slow entering traffic and change the potential conflicts to a less severe type. An analysis would have to be done to determine if this is a suitable location for a roundabout. Changing the topography through some of the geometric improvements mentioned above may be necessary in order to accommodate a roundabout at this location.

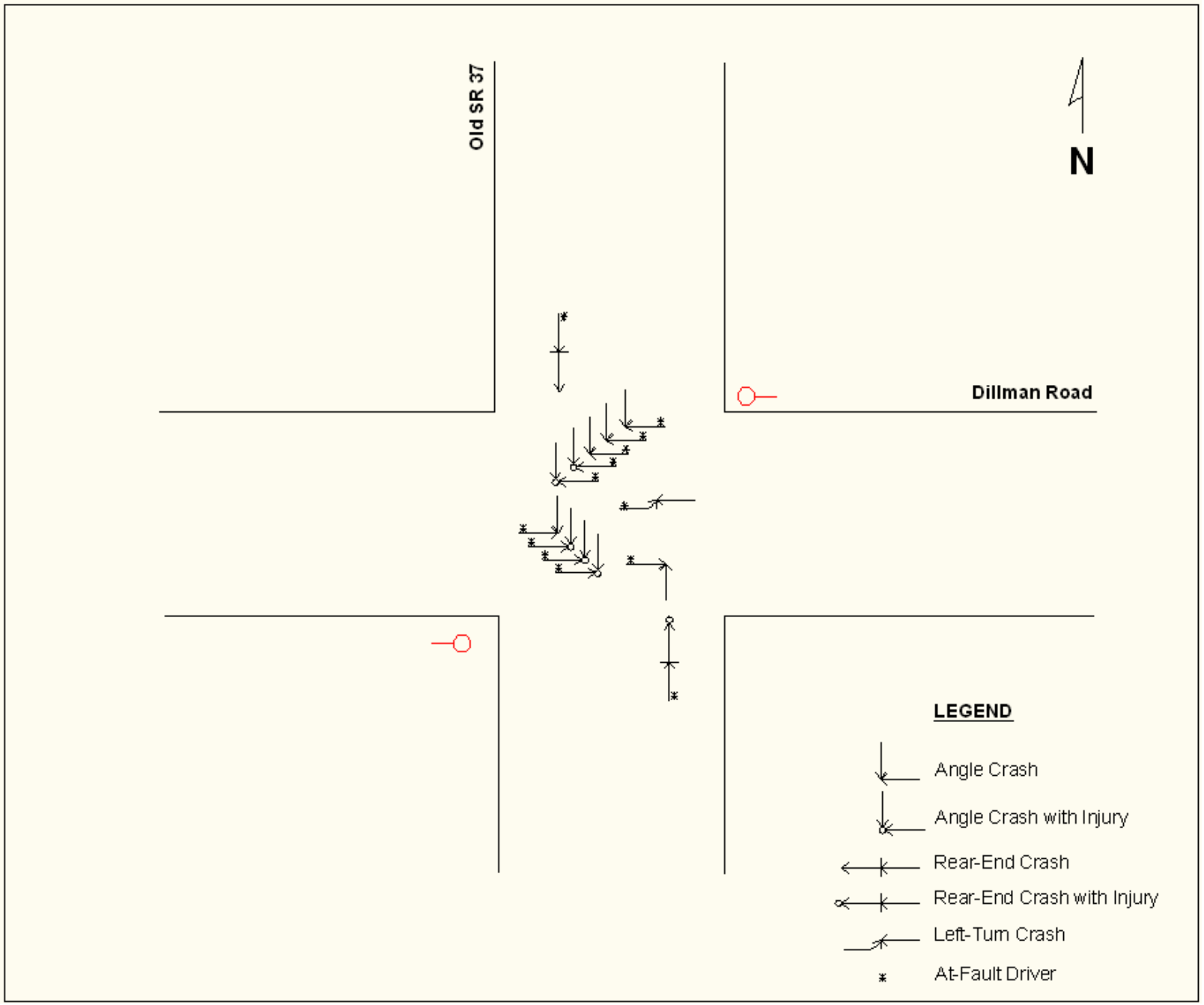
8. Realignment

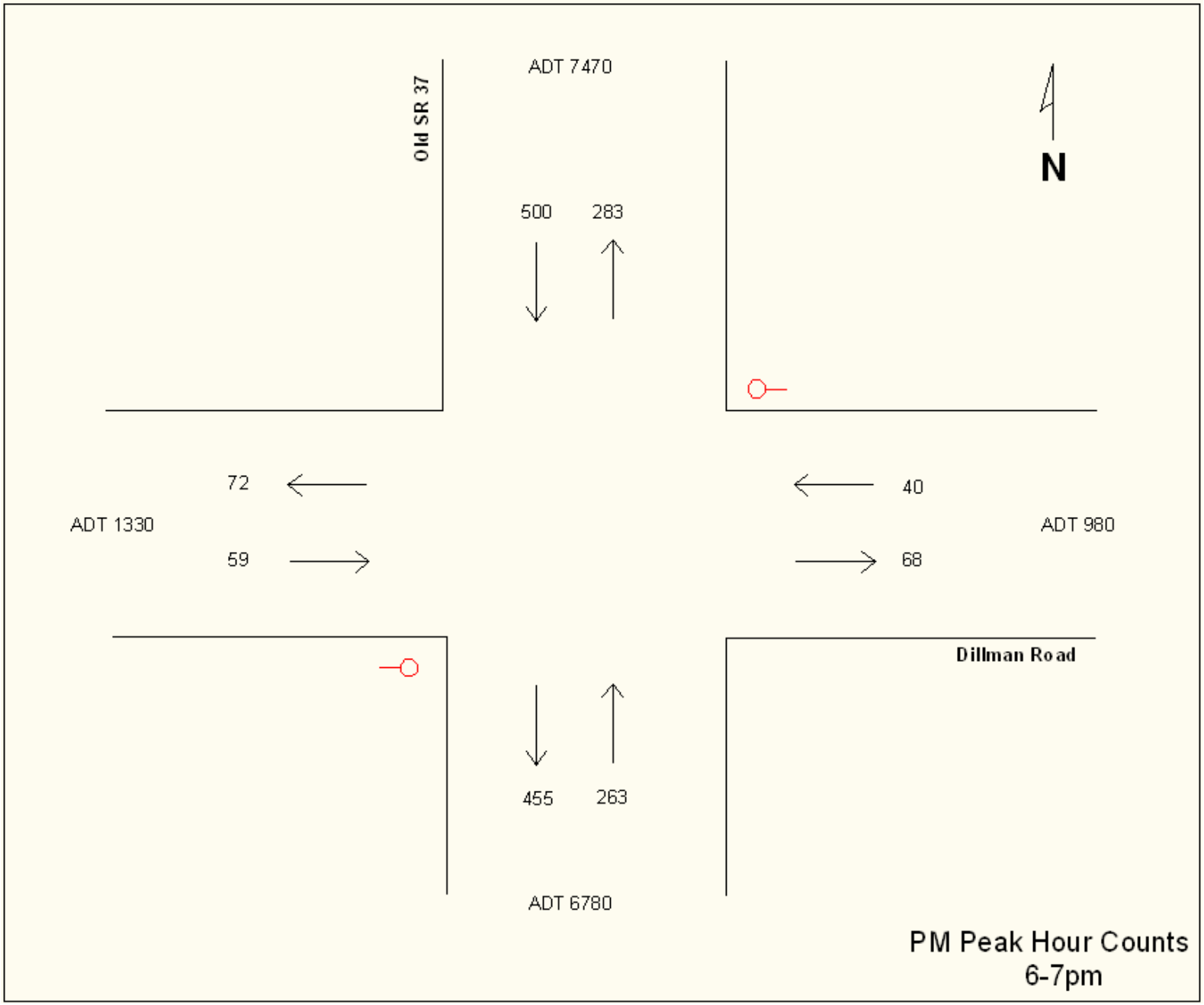
Intersection realignment could be considered with some of the options noted above. There is space available to move the intersection to the northwest. If this option is considered, ensure the design does not create a skewed approach with the west leg.

APPENDIX

VICINITY MAP




Old SR 37
N
Dillman Road
LEGEND
Angle Crash
Angle Crash with Injury
Rear-End Crash
Rear-End Crash with Injury
Left-Turn Crash
At-Fault Driver


ADT 7470
Old SR 37
500
283
N
72
ADT 1330
59
40
ADT 980
68
Dillman Road
455
263
ADT 6780
PM Peak Hour Counts
6-7pm

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(812)349-2555

Old SR 37 South
Between Rogers Street and Dillman Road
Counts taken by Lisa Ridge

Site Code: Apollyon
Station ID: SN:023463

Latitude: 0' 0.000 Undefined

, NB

Start Time	1 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 80	81 85	86 90	91 95	96 999	Total
02/06/12	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
01:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
02:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
03:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
04:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
05:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
06:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
07:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
08:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
09:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
10:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
11:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
12 PM	2	2	19	59	74	20	2	1	0	1	0	0	0	0	180
13:00	6	2	25	60	79	32	5	0	0	0	0	0	0	0	209
14:00	8	4	18	69	57	17	5	1	0	0	0	0	0	0	179
15:00	16	4	20	53	65	21	5	0	0	0	0	0	0	0	184
16:00	8	5	31	83	69	21	0	0	0	0	0	0	0	0	217
17:00	9	6	25	83	93	26	3	2	0	0	0	0	0	0	247
18:00	14	10	38	110	96	11	4	0	0	0	0	0	0	0	283
19:00	8	3	41	72	70	9	0	0	0	0	0	0	0	0	203
20:00	2	2	15	39	30	5	2	0	0	0	0	0	0	0	95
21:00	2	1	13	37	23	5	1	1	0	0	0	0	0	0	83
22:00	1	4	8	22	27	8	1	1	0	0	0	0	0	0	72
23:00	0	0	9	15	14	3	1	1	0	0	0	0	0	0	43
Total	76	43	262	702	697	178	29	7	0	1	0	0	0	0	1995

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Station ID: SN:023463

Latitude: 0' 0.000 Undefined

, NB

Start Time	1 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 80	81 85	86 90	91 95	96 999	Total
02/07/12	0	2	3	13	3	1	0	0	0	0	0	0	0	0	22
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02:00	0	0	0	1	0	1	0	0	0	0	0	0	0	0	2
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05:00	0	1	4	7	10	3	1	0	0	0	0	0	0	0	26
06:00	3	1	8	18	26	7	1	0	0	0	0	0	0	0	64
07:00	1	4	26	99	85	27	1	1	0	0	0	0	0	0	244
08:00	13	0	81	206	150	24	3	0	0	0	0	0	0	0	477
09:00	16	6	29	122	136	54	9	3	0	0	0	0	0	0	375
10:00	5	3	22	77	77	28	7	2	0	0	0	0	0	0	221
11:00	4	7	27	64	55	21	7	2	0	0	0	0	0	0	187
12 PM	2	4	29	56	44	17	4	0	0	0	0	0	0	0	156
13:00	7	8	33	77	65	19	3	0	0	0	0	0	0	0	212
14:00	3	5	20	57	62	11	8	0	0	0	0	0	0	0	166
15:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
16:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
17:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
18:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
19:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
20:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
21:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
22:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
23:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Total	54	41	284	811	719	214	45	10	0	0	0	0	0	0	2178
Grand Total	130	84	546	1513	1416	392	74	17	0	1	0	0	0	0	4173

15th Percentile :	38 MPH
50th Percentile :	48 MPH
85th Percentile :	54 MPH
95th Percentile :	58 MPH

Stats

Mean Speed(Average) :	46 MPH
10 MPH Pace Speed :	46-55 MPH
Number in Pace :	2407
Percent in Pace :	57.7%
Number of Vehicles > 55 MPH :	543
Percent of Vehicles > 55 MPH :	13.0%

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Start Time	1 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 80	81 85	86 90	91 95	96 999	Total
02/06/12	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
01:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
02:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
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07:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
08:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
09:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
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11:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
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15:00	7	23	92	96	32	1	1	0	0	0	0	0	0	0	252
16:00	13	42	133	167	33	6	1	0	0	0	0	0	0	0	395
17:00	15	25	121	203	76	8	0	0	0	0	0	0	0	0	448
18:00	17	30	197	208	44	4	0	0	0	0	0	0	0	0	500
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21:00	8	19	64	69	24	3	0	0	0	0	0	0	0	0	187
22:00	2	12	51	39	17	1	0	0	0	0	0	0	0	0	122
23:00	0	5	24	19	6	2	0	0	0	0	0	0	0	0	56
Total	93	236	1059	1249	393	37	6	1	0	0	0	0	0	0	3074

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Latitude: 0' 0.000 Undefined

Start Time	1 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 80	81 85	86 90	91 95	96 999	Total
02/07/12	1	6	19	13	2	0	0	0	0	0	0	0	0	0	41
01:00	0	2	11	7	3	0	0	0	0	0	0	0	0	0	23
02:00	0	0	2	7	4	0	0	0	0	0	0	0	0	0	13
03:00	0	3	2	9	0	0	0	0	0	0	0	0	0	0	14
04:00	0	0	4	4	0	0	0	0	0	0	0	0	0	0	8
05:00	0	0	1	6	2	1	0	0	0	0	0	0	0	0	10
06:00	1	5	21	17	5	1	0	0	0	0	0	0	0	0	50
07:00	2	10	43	46	19	2	0	0	0	0	0	0	0	0	122
08:00	7	20	89	74	22	1	1	0	0	0	0	0	0	0	214
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14:00	6	14	61	110	39	5	0	0	0	0	0	0	0	0	235
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17:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
18:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
19:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
20:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
21:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
22:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
23:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Total	46	112	508	601	259	46	2	0	0	0	0	0	0	0	1574
Grand Total	139	348	1567	1850	652	83	8	1	0	0	0	0	0	0	4648

15th Percentile :	31 MPH
50th Percentile :	44 MPH
85th Percentile :	50 MPH
95th Percentile :	53 MPH

Stats

Mean Speed(Average) :	42 MPH
10 MPH Pace Speed :	42-51 MPH
Number in Pace :	2623
Percent in Pace :	56.4%
Number of Vehicles > 55 MPH :	134
Percent of Vehicles > 55 MPH :	2.9%

ADDITIONAL SITE PICTURES

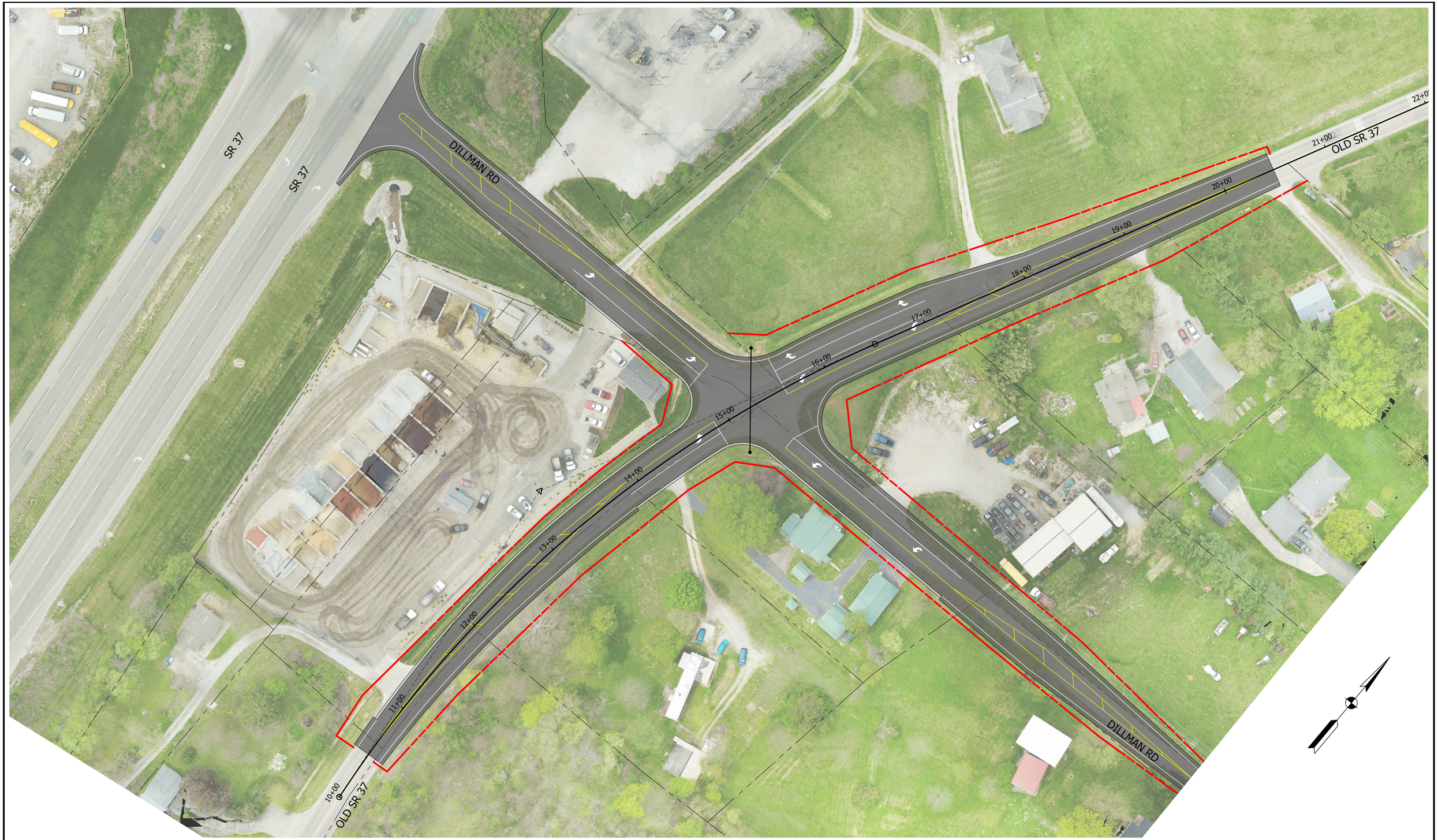
Figure 6: On east leg of intersection looking north

Figure 7: On west leg of intersection looking south

Figure 8: On Dillman Road looking east towards intersection

Figure 9: On Dillman Road looking west towards intersection

Alternative 2 Signalized Intersection >>



EXISTING R/W

PROPOSED R/W

NOT FOR CONSTRUCTION

ALTERNATE 2

DESIGNED: CC	DRAWN: CC
CHECKED: MB	CHECKED: MB

INDIANA
DEPARTMENT OF TRANSPORTATION

SIGNALIZED INTERSECTION
OLD SR 37 SOUTH AND DILLLMAN RD

HORIZONTAL SCALE
1" = 40' (34x22)
VERTICAL SCALE
N/A
SURVEY BOOK
CONTRACT

A-2

Alternative 3A Roundabout Intersection >>

EXISTING R/W

PROPOSED R/W

NOT FOR CONSTRUCTION

ALTERNATE 3A

DESIGNED: CC	DRAWN: CC
CHECKED: MB	CHECKED: MB

INDIANA
DEPARTMENT OF TRANSPORTATION

ROUNDABOUT
OLD SR 37 SOUTH AND DILLLMAN RD

HORIZONTAL SCALE
1" = 40' (34x22)
VERTICAL SCALE
N/A
SURVEY BOOK
CONTRACT

A-3

Alternative 3B Roundabout Intersection >>

EXISTING R/W

PROPOSED R/W

NOT FOR CONSTRUCTION

ALTERNATE 3B

DESIGNED:	CC	DRAWN:	CC
CHECKED:	MB	CHECKED:	MB

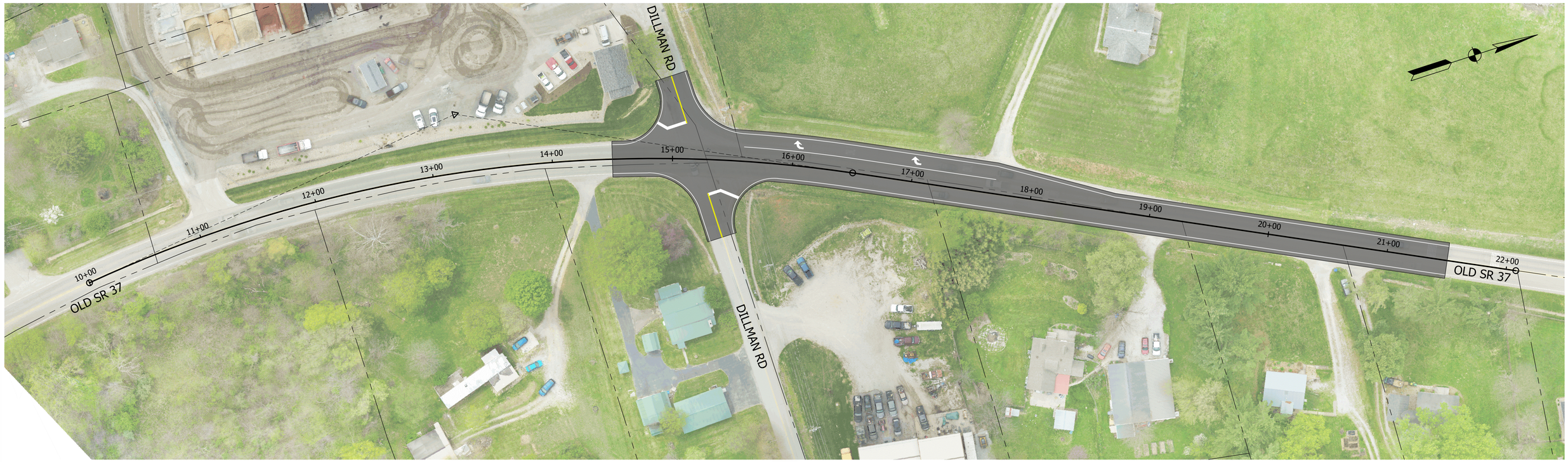
INDIANA
DEPARTMENT OF TRANSPORTATION

ROUNDABOUT
OLD SR 37 SOUTH AND DILLLMAN RD

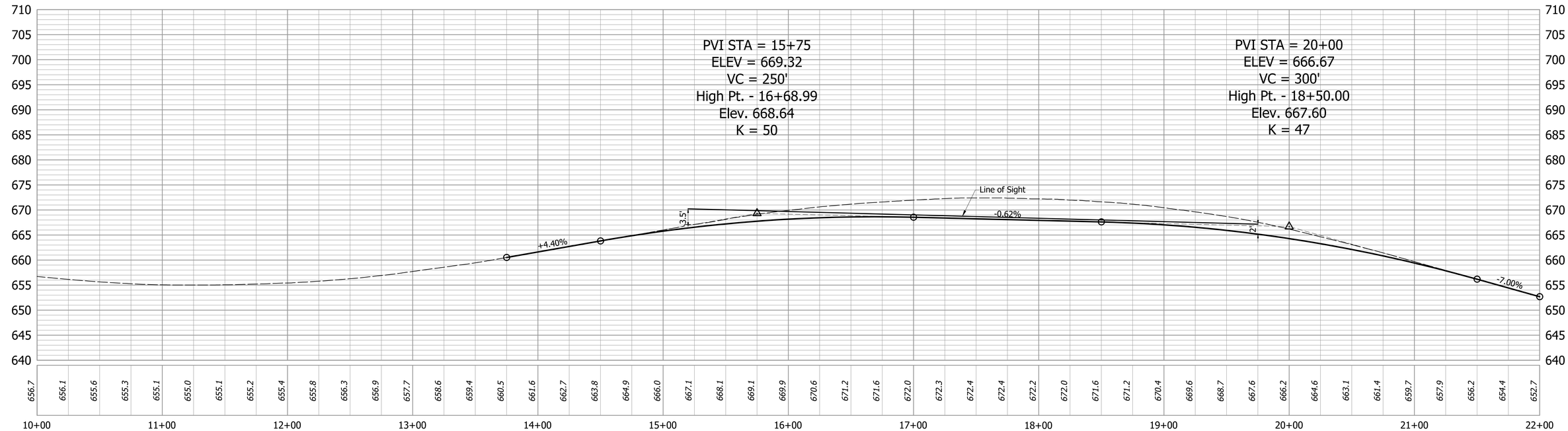
HORIZONTAL SCALE
1" = 40' (34x22)
VERTICAL SCALE
N/A
SURVEY BOOK
CONTRACT

A-4

Alternative 4 Intersection Sight Distance Improvement >>



A



EXISTING R/W

PROPOSED R/W

NOT FOR CONSTRUCTION

ALTERNATE 4

DESIGNED: CC | DRAWN: CC

CHECKED: MB | CHECKED: MB

INDIANA
DEPARTMENT OF TRANSPORTATION

SIGHT DISTANCE IMPROVEMENT
OLD SR 37 SOUTH AND DILLLMAN RD

HORIZONTAL SCALE
1" = 40' (34x22)
VERTICAL SCALE
1" = 5' (34x22)
SURVEY BOOK
CONTRACT

A-5

Benefit/Cost Analysis for the Alternatives >>

Benefit / Cost Analysis
Monroe County Safety Improvement Project

							Crash Reduction			Adjusted Benefits						Benefit / Cost Calculations									
Service Year	Avg Ann PDO Crashes	Avg Ann F/I Crashes	CRF (PDO)	CRF (F/I)	PDO Crashes * CRF	F/I Crashes * CRF	CPF	PDO	F/I	PDO * $22,100	F/I * $192,100	Total Benefits	PWF	Adjusted Benefit	Cum. Year Benefit	Capital Recovery	EUAB	Initial Cost	AMC	PWF-EQ	Salvage Value	PWF - SP	EUAC	B/C	NAB
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**
1	6.50	1.00	0.44	0.44	2.86	0.44	1.00	2.86	0.44	$63,206.00	$84,524.00	$147,730.00	0.9615	$142,042.40	$142,042.40	1.0400	$147,724.09	$2,600,000.00	$10,000.00	0.9615	$2,100,000.00	0.9615	$614,083.60	0.24	-$466,359.51
2	6.50	1.00	0.44	0.44	2.86	0.44	1.02	2.92	0.45	$64,470.12	$86,214.48	$150,684.60	0.9246	$139,322.98	$281,365.38	0.5302	$149,179.92	$2,600,000.00	$10,000.00	1.8861	$2,100,000.00	0.9246	$359,051.97	0.42	-$209,872.05
3	6.50	1.00	0.44	0.44	2.86	0.44	1.04	2.98	0.46	$65,759.52	$87,938.77	$153,698.29	0.8890	$136,637.78	$418,003.16	0.3603	$150,606.54	$2,600,000.00	$10,000.00	2.7751	$2,100,000.00	0.8890	$274,134.62	0.55	-$123,528.08
4	6.50	1.00	0.44	0.44	2.86	0.44	1.06	3.04	0.47	$67,074.71	$89,697.54	$156,772.26	0.8548	$134,008.93	$552,012.08	0.2755	$152,079.33	$2,600,000.00	$10,000.00	3.6299	$2,100,000.00	0.8548	$231,755.83	0.66	-$79,676.51
5	6.50	1.00	0.44	0.44	2.86	0.44	1.08	3.10	0.48	$68,416.21	$91,491.50	$159,907.70	0.8219	$131,428.14	$683,440.22	0.2246	$153,500.67	$2,600,000.00	$10,000.00	4.4518	$2,100,000.00	0.8219	$206,301.39	0.74	-$52,800.71
6	6.50	1.00	0.44	0.44	2.86	0.44	1.10	3.16	0.49	$69,784.53	$93,321.33	$163,105.86	0.7903	$128,902.56	$812,342.78	0.1908	$154,995.00	$2,600,000.00	$10,000.00	5.2421	$2,100,000.00	0.7903	$189,424.52	0.82	-$34,429.52
7	6.50	1.00	0.44	0.44	2.86	0.44	1.13	3.22	0.50	$71,180.22	$95,187.75	$166,367.97	0.7599	$126,423.02	$938,765.81	0.1666	$156,398.38	$2,600,000.00	$10,000.00	6.0021	$2,100,000.00	0.7599	$177,300.88	0.88	-$20,902.50
8	6.50	1.00	0.44	0.44	2.86	0.44	1.15	3.29	0.51	$72,603.83	$97,091.51	$169,695.33	0.7307	$123,996.38	$1,062,762.19	0.1485	$157,820.18	$2,600,000.00	$10,000.00	6.7327	$2,100,000.00	0.7307	$168,229.26	0.94	-$10,409.08
9	6.50	1.00	0.44	0.44	2.86	0.44	1.17	3.35	0.52	$74,055.90	$99,033.34	$173,089.24	0.7026	$121,612.50	$1,184,374.69	0.1345	$159,298.40	$2,600,000.00	$10,000.00	7.4353	$2,100,000.00	0.7026	$161,251.11	0.99	-$1,952.71
10	6.50	1.00	0.44	0.44	2.86	0.44	1.20	3.42	0.53	$75,537.02	$101,014.00	$176,551.03	0.6756	$119,277.87	$1,303,652.56	0.1233	$160,740.36	$2,600,000.00	$10,000.00	8.1109	$2,100,000.00	0.6756	$155,647.63	1.03	$5,092.73
11	6.50	1.00	0.44	0.44	2.86	0.44	1.22	3.49	0.54	$77,047.76	$103,034.28	$180,082.05	0.6496	$116,981.30	$1,420,633.86	0.1141	$162,094.32	$2,600,000.00	$10,000.00	8.7605	$2,100,000.00	0.6496	$151,005.07	1.07	$11,089.25
12	6.50	1.00	0.44	0.44	2.86	0.44	1.24	3.56	0.55	$78,588.72	$105,094.97	$183,683.69	0.6246	$114,728.83	$1,535,362.69	0.1066	$163,669.66	$2,600,000.00	$10,000.00	9.3851	$2,100,000.00	0.6246	$147,341.56	1.11	$16,328.10
13	6.50	1.00	0.44	0.44	2.86	0.44	1.27	3.63	0.56	$80,160.49	$107,196.87	$187,357.36	0.6006	$112,526.83	$1,647,889.52	0.1001	$164,953.74	$2,600,000.00	$10,000.00	9.9856	$2,100,000.00	0.6006	$144,003.46	1.15	$20,950.28
14	6.50	1.00	0.44	0.44	2.86	0.44	1.29	3.70	0.57	$81,763.70	$109,340.81	$191,104.51	0.5775	$110,362.85	$1,758,252.37	0.0947	$166,506.50	$2,600,000.00	$10,000.00	10.5631	$2,100,000.00	0.5775	$141,375.83	1.18	$25,130.67
15	6.50	1.00	0.44	0.44	2.86	0.44	1.32	3.77	0.58	$83,398.97	$111,527.62	$194,926.60	0.5553	$108,242.74	$1,866,495.11	0.0899	$167,797.91	$2,600,000.00	$10,000.00	11.1184	$2,100,000.00	0.5553	$138,900.35	1.21	$28,897.56
16	6.50	1.00	0.44	0.44	2.86	0.44	1.35	3.85	0.59	$85,066.95	$113,758.18	$198,825.13	0.5339	$106,152.74	$1,972,647.85	0.0858	$169,253.19	$2,600,000.00	$10,000.00	11.6523	$2,100,000.00	0.5339	$136,879.57	1.24	$32,373.61
17	6.50	1.00	0.44	0.44	2.86	0.44	1.37	3.93	0.60	$86,768.29	$116,033.34	$202,801.63	0.5134	$104,118.36	$2,076,766.21	0.0822	$170,710.18	$2,600,000.00	$10,000.00	12.1657	$2,100,000.00	0.5134	$135,097.10	1.26	$35,613.08
18	6.50	1.00	0.44	0.44	2.86	0.44	1.40	4.00	0.62	$88,503.66	$118,354.01	$206,857.66	0.4936	$102,104.94	$2,178,871.15	0.0790	$172,130.82	$2,600,000.00	$10,000.00	12.6593	$2,100,000.00	0.4936	$133,512.61	1.29	$38,618.21
19	6.50	1.00	0.44	0.44	2.86	0.44	1.43	4.08	0.63	$90,273.73	$120,721.09	$210,994.82	0.4746	$100,138.14	$2,279,009.29	0.0761	$173,432.61	$2,600,000.00	$10,000.00	13.1339	$2,100,000.00	0.4746	$132,009.07	1.31	$41,423.54
20	6.50	1.00	0.44	0.44	2.86	0.44	1.46	4.17	0.64	$92,079.21	$123,135.51	$215,214.71	0.4564	$98,224.00	$2,377,233.29	0.0736	$174,964.37	$2,600,000.00	$10,000.00	13.5903	$2,100,000.00	0.4564	$130,821.28	**1.34**	$44,143.09

Column	Column Description
1	Service Year - time frame improvement can reasonably impact crash experience
2	Average Annual Property Damage Only (PDO) Crashes
3	Average Annual Fatality or Injury (F/I) Crashes
4	Crash Reduction Factor (CRF) for PDO Crashes
5	Crash Reduction Factor (CRF) for F/I Crashes
6	PDO Crashes multiplied by CRF for PDO Crashes - Col. 2 * Col. 4
7	F/I Crashes multiplied by CRF for F/I Crashes - Col. 3 * Col.5
8	Crash Projection Factor (CPF) - 2% increase in crashes per year (matching traffic growth rate)
9	Crash Reduction for PDO Crashes - Col. 6 * Col. 8
10	Crash Reduction for F/I Crashes - Col. 7 * Col. 8
11	PDO Crashes multiplied by $22,100 - from INDOT Design Manual Figure 50-2A 2001 cost inflated to 2022 (6% inflation)
12	F/I Crashes multiplied by $192,100 - from INDOT Design Manual Figure 50-2A 2001 cost inflated to 2022 (6% inflation)
13	Total Unadjusted Benefits - Sum of Col. 11 and Col. 12

Column	Column Description
14	Present Worth Factor (PWF) - Factor to determine present value of economic benefit during service life
15	Adjusted Benefits - Total unadjusted benefits mult. By PWF - Col. 13 * Col. 14
16	Adjusted cumulative year benefit
17	Capital Recovery Factor (CRF) - Design Manual Figure 50-2C
18	Equivalent Uniform Annual Benefit (EUAB) - CRF mult. By adjusted cumulative year benefit - Col. 16 * Col. 17
19	Initial Cost of the recommended improvement
20	Annual Maintenance Cost (AMC)
21	Present Worth Factor for an Equal Payment Series (PWF-EQ) - from Design Manual 50-2C
22	Salvage value of the improvement at the end of the service life
23	Present Worth Factor for a Single Payment (PWF-SP) - from Design Manual 50-2C
24	Equivalent Uniform Annual Costs (EUAC) - CRF * [initial cost + (AMC*PWF-EQ) - (Salvage Value * PWF-SP)]
25	Benefit to Cost Ratio (B/C) - EUAB divided by EUAC
26	Net Annual Benefit (NAB) - difference between EUAB and EUAC

Benefit / Cost Analysis
Monroe County Safety Improvement Project

							Crash Reduction			Adjusted Benefits						Benefit / Cost Calculations									
Service Year	Avg Ann PDO Crashes	Avg Ann F/I Crashes	CRF (PDO)	CRF (F/I)	PDO Crashes * CRF	F/I Crashes * CRF	CPF	PDO	F/I	PDO * $22,100	F/I * $192,100	Total Benefits	PWF	Adjusted Benefit	Cum. Year Benefit	Capital Recovery	EUAB	Initial Cost	AMC	PWF-EQ	Salvage Value	PWF - SP	EUAC	B/C	NAB
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**
1	6.50	1.00	0.61	0.61	3.98	0.61	1.00	3.98	0.61	$87,913.80	$117,565.20	$205,479.00	0.9615	$197,568.06	$197,568.06	1.0400	$205,470.78	$2,500,000.00	$10,000.00	0.9615	$2,000,000.00	0.9615	$610,079.60	0.34	-$404,608.82
2	6.50	1.00	0.61	0.61	3.98	0.61	1.02	4.06	0.62	$89,672.08	$119,916.50	$209,588.58	0.9246	$193,785.60	$391,353.66	0.5302	$207,495.71	$2,500,000.00	$10,000.00	1.8861	$2,000,000.00	0.9246	$355,054.26	0.58	-$147,558.55
3	6.50	1.00	0.61	0.61	3.98	0.61	1.04	4.14	0.64	$91,465.52	$122,314.83	$213,780.35	0.8890	$190,050.73	$581,404.39	0.3603	$209,480.00	$2,500,000.00	$10,000.00	2.7751	$2,000,000.00	0.8890	$270,135.29	0.78	-$60,655.28
4	6.50	1.00	0.61	0.61	3.98	0.61	1.06	4.22	0.65	$93,294.83	$124,761.13	$218,055.96	0.8548	$186,394.23	$767,798.63	0.2755	$211,528.52	$2,500,000.00	$10,000.00	3.6299	$2,000,000.00	0.8548	$227,755.57	0.93	-$16,227.05
5	6.50	1.00	0.61	0.61	3.98	0.61	1.08	4.31	0.66	$95,160.72	$127,256.35	$222,417.08	0.8219	$182,804.60	$950,603.22	0.2246	$213,505.48	$2,500,000.00	$10,000.00	4.4518	$2,000,000.00	0.8219	$202,301.26	1.06	$11,204.22
6	6.50	1.00	0.61	0.61	3.98	0.61	1.10	4.39	0.68	$97,063.94	$129,801.48	$226,865.42	0.7903	$179,291.74	$1,129,894.96	0.1908	$215,583.96	$2,500,000.00	$10,000.00	5.2421	$2,000,000.00	0.7903	$185,423.45	1.16	$30,160.51
7	6.50	1.00	0.61	0.61	3.98	0.61	1.13	4.48	0.69	$99,005.22	$132,397.51	$231,402.73	0.7599	$175,842.93	$1,305,737.90	0.1666	$217,535.93	$2,500,000.00	$10,000.00	6.0021	$2,000,000.00	0.7599	$173,300.82	1.26	$44,235.11
8	6.50	1.00	0.61	0.61	3.98	0.61	1.15	4.57	0.70	$100,985.32	$135,045.46	$236,030.78	0.7307	$172,467.69	$1,478,205.59	0.1485	$219,513.53	$2,500,000.00	$10,000.00	6.7327	$2,000,000.00	0.7307	$164,230.16	1.34	$55,283.37
9	6.50	1.00	0.61	0.61	3.98	0.61	1.17	4.66	0.72	$103,005.03	$137,746.37	$240,751.40	0.7026	$169,151.93	$1,647,357.52	0.1345	$221,569.59	$2,500,000.00	$10,000.00	7.4353	$2,000,000.00	0.7026	$157,251.08	1.41	$64,318.51
10	6.50	1.00	0.61	0.61	3.98	0.61	1.20	4.75	0.73	$105,065.13	$140,501.30	$245,566.43	0.6756	$165,904.68	$1,813,262.20	0.1233	$223,575.23	$2,500,000.00	$10,000.00	8.1109	$2,000,000.00	0.6756	$151,647.78	1.47	$71,927.45
11	6.50	1.00	0.61	0.61	3.98	0.61	1.22	4.85	0.75	$107,166.43	$143,311.32	$250,477.75	0.6496	$162,710.35	$1,975,972.55	0.1141	$225,458.47	$2,500,000.00	$10,000.00	8.7605	$2,000,000.00	0.6496	$147,007.01	1.53	$78,451.46
12	6.50	1.00	0.61	0.61	3.98	0.61	1.24	4.95	0.76	$109,309.76	$146,177.55	$255,487.31	0.6246	$159,577.37	$2,135,549.92	0.1066	$227,649.62	$2,500,000.00	$10,000.00	9.3851	$2,000,000.00	0.6246	$143,339.80	1.59	$84,309.82
13	6.50	1.00	0.61	0.61	3.98	0.61	1.27	5.05	0.78	$111,495.96	$149,101.10	$260,597.06	0.6006	$156,514.59	$2,292,064.51	0.1001	$229,435.66	$2,500,000.00	$10,000.00	9.9856	$2,000,000.00	0.6006	$140,005.47	1.64	$89,430.19
14	6.50	1.00	0.61	0.61	3.98	0.61	1.29	5.15	0.79	$113,725.87	$152,083.12	$265,809.00	0.5775	$153,504.70	$2,445,569.21	0.0947	$231,595.40	$2,500,000.00	$10,000.00	10.5631	$2,000,000.00	0.5775	$137,374.76	1.69	$94,220.65
15	6.50	1.00	0.61	0.61	3.98	0.61	1.32	5.25	0.81	$116,000.39	$155,124.78	$271,125.18	0.5553	$150,555.81	$2,596,125.02	0.0899	$233,391.64	$2,500,000.00	$10,000.00	11.1184	$2,000,000.00	0.5553	$134,902.50	1.73	$98,489.14
16	6.50	1.00	0.61	0.61	3.98	0.61	1.35	5.35	0.82	$118,320.40	$158,227.28	$276,547.68	0.5339	$147,648.81	$2,743,773.83	0.0858	$235,415.79	$2,500,000.00	$10,000.00	11.6523	$2,000,000.00	0.5339	$132,880.43	1.77	$102,535.36
17	6.50	1.00	0.61	0.61	3.98	0.61	1.37	5.46	0.84	$120,686.81	$161,391.83	$282,078.63	0.5134	$144,819.17	$2,888,593.00	0.0822	$237,442.34	$2,500,000.00	$10,000.00	12.1657	$2,000,000.00	0.5134	$131,097.25	1.81	$106,345.10
18	6.50	1.00	0.61	0.61	3.98	0.61	1.40	5.57	0.86	$123,100.54	$164,619.66	$287,720.21	0.4936	$142,018.69	$3,030,611.69	0.0790	$239,418.32	$2,500,000.00	$10,000.00	12.6593	$2,000,000.00	0.4936	$129,512.05	1.85	$109,906.28
19	6.50	1.00	0.61	0.61	3.98	0.61	1.43	5.68	0.87	$125,562.55	$167,912.06	$293,474.61	0.4746	$139,283.05	$3,169,894.74	0.0761	$241,228.99	$2,500,000.00	$10,000.00	13.1339	$2,000,000.00	0.4746	$128,010.78	1.88	$113,218.21
20	6.50	1.00	0.61	0.61	3.98	0.61	1.46	5.80	0.89	$128,073.81	$171,270.30	$299,344.10	0.4564	$136,620.65	$3,306,515.39	0.0736	$243,359.53	$2,500,000.00	$10,000.00	13.5903	$2,000,000.00	0.4564	$126,820.38	**1.92**	$116,539.15

Column	Column Description
1	Service Year - time frame improvement can reasonably impact crash experience
2	Average Annual Property Damage Only (PDO) Crashes
3	Average Annual Fatality or Injury (F/I) Crashes
4	Crash Reduction Factor (CRF) for PDO Crashes
5	Crash Reduction Factor (CRF) for F/I Crashes
6	PDO Crashes multiplied by CRF for PDO Crashes - Col. 2 * Col. 4
7	F/I Crashes multiplied by CRF for F/I Crashes - Col. 3 * Col.5
8	Crash Projection Factor (CPF) - 2% increase in crashes per year (matching traffic growth rate)
9	Crash Reduction for PDO Crashes - Col. 6 * Col. 8
10	Crash Reduction for F/I Crashes - Col. 7 * Col. 8
11	PDO Crashes multiplied by $22,100 - from INDOT Design Manual Figure 50-2A 2001 cost inflated to 2022 (6% inflation)
12	F/I Crashes multiplied by $192,100 - from INDOT Design Manual Figure 50-2A 2001 cost inflated to 2022 (6% inflation)
13	Total Unadjusted Benefits - Sum of Col. 11 and Col. 12

Column	Column Description
14	Present Worth Factor (PWF) - Factor to determine present value of economic benefit during service life
15	Adjusted Benefits - Total unadjusted benefits mult. By PWF - Col. 13 * Col. 14
16	Adjusted cumulative year benefit
17	Capital Recovery Factor (CRF) - Design Manual Figure 50-2C
18	Equivalent Uniform Annual Benefit (EUAB) - CRF mult. By adjusted cumulative year benefit - Col. 16 * Col. 17
19	Initial Cost of the recommended improvement
20	Annual Maintenance Cost (AMC)
21	Present Worth Factor for an Equal Payment Series (PWF-EQ) - from Design Manual 50-2C
22	Salvage value of the improvement at the end of the service life
23	Present Worth Factor for a Single Payment (PWF-SP) - from Design Manual 50-2C
24	Equivalent Uniform Annual Costs (EUAC) - CRF * [initial cost + (AMC*PWF-EQ) - (Salvage Value * PWF-SP)]
25	Benefit to Cost Ratio (B/C) - EUAB divided by EUAC
26	Net Annual Benefit (NAB) - difference between EUAB and EUAC

Benefit / Cost Analysis
Monroe County Safety Improvement Project

							Crash Reduction			Adjusted Benefits						Benefit / Cost Calculations									
Service Year	Avg Ann PDO Crashes	Avg Ann F/I Crashes	CRF (PDO)	CRF (F/I)	PDO Crashes * CRF	F/I Crashes * CRF	CPF	PDO	F/I	PDO * $22,100	F/I * $192,100	Total Benefits	PWF	Adjusted Benefit	Cum. Year Benefit	Capital Recovery	EUAB	Initial Cost	AMC	PWF-EQ	Salvage Value	PWF - SP	EUAC	B/C	NAB
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**
1	6.50	1.00	0.33	0.33	2.15	0.33	1.00	2.15	0.33	$47,404.50	$63,393.00	$110,797.50	0.9615	$106,531.80	$106,531.80	1.0400	$110,793.07	$1,000,000.00	$10,000.00	0.9615	$500,000.00	0.9615	$550,019.60	0.20	-$439,226.53
2	6.50	1.00	0.33	0.33	2.15	0.33	1.02	2.19	0.34	$48,352.59	$64,660.86	$113,013.45	0.9246	$104,492.24	$211,024.03	0.5302	$111,884.94	$1,000,000.00	$10,000.00	1.8861	$500,000.00	0.9246	$295,088.64	0.38	-$183,203.70
3	6.50	1.00	0.33	0.33	2.15	0.33	1.04	2.23	0.34	$49,319.64	$65,954.08	$115,273.72	0.8890	$102,478.34	$313,502.37	0.3603	$112,954.90	$1,000,000.00	$10,000.00	2.7751	$500,000.00	0.8890	$210,145.34	0.54	-$97,190.43
4	6.50	1.00	0.33	0.33	2.15	0.33	1.06	2.28	0.35	$50,306.03	$67,273.16	$117,579.19	0.8548	$100,506.69	$414,009.06	0.2755	$114,059.50	$1,000,000.00	$10,000.00	3.6299	$500,000.00	0.8548	$167,751.67	0.68	-$53,692.18
5	6.50	1.00	0.33	0.33	2.15	0.33	1.08	2.32	0.36	$51,312.16	$68,618.62	$119,930.78	0.8219	$98,571.11	$512,580.17	0.2246	$115,125.51	$1,000,000.00	$10,000.00	4.4518	$500,000.00	0.8219	$142,299.37	0.81	-$27,173.87
6	6.50	1.00	0.33	0.33	2.15	0.33	1.10	2.37	0.36	$52,338.40	$69,990.99	$122,329.39	0.7903	$96,676.92	$609,257.09	0.1908	$116,246.25	$1,000,000.00	$10,000.00	5.2421	$500,000.00	0.7903	$125,407.31	0.93	-$9,161.05
7	6.50	1.00	0.33	0.33	2.15	0.33	1.13	2.42	0.37	$53,385.17	$71,390.81	$124,775.98	0.7599	$94,817.27	$704,074.36	0.1666	$117,298.79	$1,000,000.00	$10,000.00	6.0021	$500,000.00	0.7599	$113,299.83	1.04	$3,998.96
8	6.50	1.00	0.33	0.33	2.15	0.33	1.15	2.46	0.38	$54,452.87	$72,818.63	$127,271.50	0.7307	$92,997.29	$797,071.64	0.1485	$118,365.14	$1,000,000.00	$10,000.00	6.7327	$500,000.00	0.7307	$104,243.58	1.14	$14,121.55
9	6.50	1.00	0.33	0.33	2.15	0.33	1.17	2.51	0.39	$55,541.93	$74,275.00	$129,816.93	0.7026	$91,209.38	$888,281.02	0.1345	$119,473.80	$1,000,000.00	$10,000.00	7.4353	$500,000.00	0.7026	$97,250.63	1.23	$22,223.17
10	6.50	1.00	0.33	0.33	2.15	0.33	1.20	2.56	0.39	$56,652.77	$75,760.50	$132,413.27	0.6756	$89,458.40	$977,739.42	0.1233	$120,555.27	$1,000,000.00	$10,000.00	8.1109	$500,000.00	0.6756	$91,650.00	1.32	$28,905.27
11	6.50	1.00	0.33	0.33	2.15	0.33	1.22	2.61	0.40	$57,785.82	$77,275.71	$135,061.53	0.6496	$87,735.97	$1,065,475.39	0.1141	$121,570.74	$1,000,000.00	$10,000.00	8.7605	$500,000.00	0.6496	$87,036.05	1.40	$34,534.69
12	6.50	1.00	0.33	0.33	2.15	0.33	1.24	2.67	0.41	$58,941.54	$78,821.23	$137,762.76	0.6246	$86,046.62	$1,151,522.02	0.1066	$122,752.25	$1,000,000.00	$10,000.00	9.3851	$500,000.00	0.6246	$83,313.34	1.47	$39,438.91
13	6.50	1.00	0.33	0.33	2.15	0.33	1.27	2.72	0.42	$60,120.37	$80,397.65	$140,518.02	0.6006	$84,395.12	$1,235,917.14	0.1001	$123,715.31	$1,000,000.00	$10,000.00	9.9856	$500,000.00	0.6006	$80,035.56	1.55	$43,679.75
14	6.50	1.00	0.33	0.33	2.15	0.33	1.29	2.77	0.43	$61,322.78	$82,005.61	$143,328.38	0.5775	$82,772.14	$1,318,689.28	0.0947	$124,879.87	$1,000,000.00	$10,000.00	10.5631	$500,000.00	0.5775	$77,358.63	1.61	$47,521.24
15	6.50	1.00	0.33	0.33	2.15	0.33	1.32	2.83	0.44	$62,549.23	$83,645.72	$146,194.95	0.5553	$81,182.05	$1,399,871.33	0.0899	$125,848.43	$1,000,000.00	$10,000.00	11.1184	$500,000.00	0.5553	$74,934.71	1.68	$50,913.73
16	6.50	1.00	0.33	0.33	2.15	0.33	1.35	2.89	0.44	$63,800.22	$85,318.63	$149,118.85	0.5339	$79,614.55	$1,479,485.89	0.0858	$126,939.89	$1,000,000.00	$10,000.00	11.6523	$500,000.00	0.5339	$72,893.36	1.74	$54,046.53
17	6.50	1.00	0.33	0.33	2.15	0.33	1.37	2.94	0.45	$65,076.22	$87,025.00	$152,101.22	0.5134	$78,088.77	$1,557,574.65	0.0822	$128,032.64	$1,000,000.00	$10,000.00	12.1657	$500,000.00	0.5134	$71,099.47	1.80	$56,933.17
18	6.50	1.00	0.33	0.33	2.15	0.33	1.40	3.00	0.46	$66,377.74	$88,765.50	$155,143.25	0.4936	$76,578.71	$1,634,153.36	0.0790	$129,098.12	$1,000,000.00	$10,000.00	12.6593	$500,000.00	0.4936	$69,503.65	1.86	$59,594.47
19	6.50	1.00	0.33	0.33	2.15	0.33	1.43	3.06	0.47	$67,705.30	$90,540.81	$158,246.11	0.4746	$75,103.61	$1,709,256.97	0.0761	$130,074.46	$1,000,000.00	$10,000.00	13.1339	$500,000.00	0.4746	$68,036.37	1.91	$62,038.09
20	6.50	1.00	0.33	0.33	2.15	0.33	1.46	3.12	0.48	$69,059.41	$92,351.63	$161,411.04	0.4564	$73,668.00	$1,782,924.96	0.0736	$131,223.28	$1,000,000.00	$10,000.00	13.5903	$500,000.00	0.4564	$66,806.94	**1.96**	$64,416.34

Column	Column Description
1	Service Year - time frame improvement can reasonably impact crash experience
2	Average Annual Property Damage Only (PDO) Crashes
3	Average Annual Fatality or Injury (F/I) Crashes
4	Crash Reduction Factor (CRF) for PDO Crashes
5	Crash Reduction Factor (CRF) for F/I Crashes
6	PDO Crashes multiplied by CRF for PDO Crashes - Col. 2 * Col. 4
7	F/I Crashes multiplied by CRF for F/I Crashes - Col. 3 * Col.5
8	Crash Projection Factor (CPF) - 2% increase in crashes per year (matching traffic growth rate)
9	Crash Reduction for PDO Crashes - Col. 6 * Col. 8
10	Crash Reduction for F/I Crashes - Col. 7 * Col. 8
11	PDO Crashes multiplied by $22,100 - from INDOT Design Manual Figure 50-2A 2001 cost inflated to 2022 (6% inflation)
12	F/I Crashes multiplied by $192,100 - from INDOT Design Manual Figure 50-2A 2001 cost inflated to 2022 (6% inflation)
13	Total Unadjusted Benefits - Sum of Col. 11 and Col. 12

Column	Column Description
14	Present Worth Factor (PWF) - Factor to determine present value of economic benefit during service life
15	Adjusted Benefits - Total unadjusted benefits mult. By PWF - Col. 13 * Col. 14
16	Adjusted cumulative year benefit
17	Capital Recovery Factor (CRF) - Design Manual Figure 50-2C
18	Equivalent Uniform Annual Benefit (EUAB) - CRF mult. By adjusted cumulative year benefit - Col. 16 * Col. 17
19	Initial Cost of the recommended improvement
20	Annual Maintenance Cost (AMC)
21	Present Worth Factor for an Equal Payment Series (PWF-EQ) - from Design Manual 50-2C
22	Salvage value of the improvement at the end of the service life
23	Present Worth Factor for a Single Payment (PWF-SP) - from Design Manual 50-2C
24	Equivalent Uniform Annual Costs (EUAC) - CRF * [initial cost + (AMC*PWF-EQ) - (Salvage Value * PWF-SP)]
25	Benefit to Cost Ratio (B/C) - EUAB divided by EUAC
26	Net Annual Benefit (NAB) - difference between EUAB and EUAC

Level of Service Output Reports >>

Intersection	
Int Delay, s/veh	4.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	47	30	19	2	45	5	9	632	9	10	199	60
Future Vol, veh/h	47	30	19	2	45	5	9	632	9	10	199	60
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	200
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	51	33	21	2	49	5	10	687	10	11	216	65

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	977	955	216	1010	1015	692	281	0	0	697	0	0
Stage 1	238	238	-	712	712	-	-	-	-	-	-	-
Stage 2	739	717	-	298	303	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	230	258	824	218	238	444	1282	-	-	899	-	-
Stage 1	765	708	-	423	436	-	-	-	-	-	-	-
Stage 2	409	434	-	711	664	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	186	251	824	187	231	444	1282	-	-	899	-	-
Mov Cap-2 Maneuver	186	251	-	187	231	-	-	-	-	-	-	-
Stage 1	755	697	-	418	430	-	-	-	-	-	-	-
Stage 2	353	428	-	651	654	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	30.5	24.6	0.1	0.3
HCM LOS	D	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1282	-	-	243	240	899	-	-
HCM Lane V/C Ratio	0.008	-	-	0.429	0.236	0.012	-	-
HCM Control Delay (s)	7.8	0	-	30.5	24.6	9.1	0	-
HCM Lane LOS	A	A	-	D	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	2	0.9	0	-	-

Intersection	
Int Delay, s/veh	8.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	46	60	5	6	39	5	13	352	8	30	621	117
Future Vol, veh/h	46	60	5	6	39	5	13	352	8	30	621	117
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	200
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	50	65	5	7	42	5	14	383	9	33	675	127

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1180	1161	675	1256	1284	388	802	0	0	392	0	0
Stage 1	741	741	-	416	416	-	-	-	-	-	-	-
Stage 2	439	420	-	840	868	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	167	195	454	148	165	660	822	-	-	1167	-	-
Stage 1	408	423	-	614	592	-	-	-	-	-	-	-
Stage 2	597	589	-	360	370	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	123	181	454	100	153	660	822	-	-	1167	-	-
Mov Cap-2 Maneuver	123	181	-	100	153	-	-	-	-	-	-	-
Stage 1	399	401	-	600	579	-	-	-	-	-	-	-
Stage 2	537	576	-	282	351	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	81.4	40.3	0.3	0.3
HCM LOS	F	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	822	-	-	155	155	1167	-	-
HCM Lane V/C Ratio	0.017	-	-	0.778	0.351	0.028	-	-
HCM Control Delay (s)	9.5	0	-	81.4	40.3	8.2	0	-
HCM Lane LOS	A	A	-	F	E	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	4.9	1.5	0.1	-	-

Intersection	
Int Delay, s/veh	13.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	60	38	25	2	57	6	11	811	11	13	255	77
Future Vol, veh/h	60	38	25	2	57	6	11	811	11	13	255	77
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	200
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	65	41	27	2	62	7	12	882	12	14	277	84

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1252	1223	277	1293	1301	888	361	0	0	894	0	0
Stage 1	305	305	-	912	912	-	-	-	-	-	-	-
Stage 2	947	918	-	381	389	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	149	179	762	140	161	343	1198	-	-	759	-	-
Stage 1	705	662	-	328	353	-	-	-	-	-	-	-
Stage 2	314	350	-	641	608	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	97	171	762	106	154	343	1198	-	-	759	-	-
Mov Cap-2 Maneuver	97	171	-	106	154	-	-	-	-	-	-	-
Stage 1	691	647	-	321	346	-	-	-	-	-	-	-
Stage 2	248	343	-	565	594	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	123.9	44.2	0.1	0.4
HCM LOS	F	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1198	-	-	141	160	759	-	-
HCM Lane V/C Ratio	0.01	-	-	0.948	0.442	0.019	-	-
HCM Control Delay (s)	8	0	-	123.9	44.2	9.8	0	-
HCM Lane LOS	A	A	-	F	E	A	A	-
HCM 95th %tile Q(veh)	0	-	-	6.6	2	0.1	-	-

Intersection	
Int Delay, s/veh	63.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	58	77	6	7	50	6	17	451	10	38	796	150
Future Vol, veh/h	58	77	6	7	50	6	17	451	10	38	796	150
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	200
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	63	84	7	8	54	7	18	490	11	41	865	163

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1509	1484	865	1606	1642	496	1028	0	0	501	0	0
Stage 1	947	947	-	532	532	-	-	-	-	-	-	-
Stage 2	562	537	-	1074	1110	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	99	125	353	85	100	574	676	-	-	1063	-	-
Stage 1	314	340	-	531	526	-	-	-	-	-	-	-
Stage 2	512	523	-	266	285	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 45	109	353	28	87	574	676	-	-	1063	-	-
Mov Cap-2 Maneuver	~ 45	109	-	28	87	-	-	-	-	-	-	-
Stage 1	302	308	-	511	507	-	-	-	-	-	-	-
Stage 2	435	504	-	172	258	-	-	-	-	-	-	-

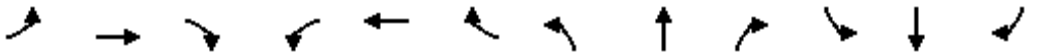
Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 673.8	175.2	0.4	0.3
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	676	-	-	70	75	1063	-	-
HCM Lane V/C Ratio	0.027	-	-	2.189	0.913	0.039	-	-
HCM Control Delay (s)	10.5	0	-	$ 673.8	175.2	8.5	0	-
HCM Lane LOS	B	A	-	F	F	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	14.4	4.7	0.1	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

HCM 6th Signalized Intersection Summary

3: 05/18/2022



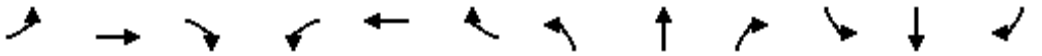
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	49	31	20	2	47	5	9	664	9	10	209	63
Future Volume (veh/h)	49	31	20	2	47	5	9	664	9	10	209	63
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	53	34	22	2	51	5	10	722	10	11	227	68
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	456	295	191	454	467	46	140	801	11	140	814	690
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.08	0.44	0.44	0.08	0.44	0.44
Sat Flow, veh/h	1348	1061	686	1348	1676	164	1781	1840	25	1781	1870	1585
Grp Volume(v), veh/h	53	0	56	2	0	56	10	0	732	11	227	68
Grp Sat Flow(s),veh/h/ln	1348	0	1747	1348	0	1841	1781	0	1866	1781	1870	1585
Q Serve(g_s), s	2.0	0.0	1.6	0.1	0.0	1.5	0.3	0.0	23.7	0.4	5.1	1.6
Cycle Q Clear(g_c), s	3.5	0.0	1.6	1.6	0.0	1.5	0.3	0.0	23.7	0.4	5.1	1.6
Prop In Lane	1.00		0.39	1.00		0.09	1.00		0.01	1.00		1.00
Lane Grp Cap(c), veh/h	456	0	486	454	0	513	140	0	812	140	814	690
V/C Ratio(X)	0.12	0.00	0.12	0.00	0.00	0.11	0.07	0.00	0.90	0.08	0.28	0.10
Avail Cap(c_a), veh/h	456	0	486	454	0	513	140	0	812	140	814	690
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.7	0.0	17.5	18.1	0.0	17.5	27.8	0.0	17.0	27.8	11.8	10.8
Incr Delay (d2), s/veh	0.5	0.0	0.5	0.0	0.0	0.4	1.0	0.0	15.1	1.1	0.9	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.7	0.0	0.0	0.6	0.2	0.0	11.6	0.2	2.0	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.3	0.0	18.0	18.1	0.0	17.9	28.7	0.0	32.1	28.9	12.6	11.1
LnGrp LOS	B	A	B	B	A	B	C	A	C	C	B	B
Approach Vol, veh/h		109			58			742			306	
Approach Delay, s/veh		18.6			17.9			32.1			12.9	
Approach LOS		B			B			C			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.6	32.8		22.6	9.6	32.8		22.6				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.1	28.3		18.1	5.1	28.3		18.1				
Max Q Clear Time (g_c+I1), s	2.4	25.7		5.5	2.3	7.1		3.6				
Green Ext Time (p_c), s	0.0	1.2		0.3	0.0	1.3		0.2				

Intersection Summary			
HCM 6th Ctrl Delay		25.4	
HCM 6th LOS		C	

HCM 6th Signalized Intersection Summary

3: 05/18/2022



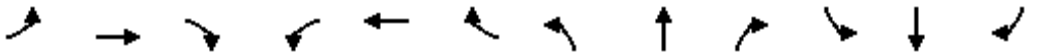
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	48	63	5	6	41	5	14	369	8	31	652	123
Future Volume (veh/h)	48	63	5	6	41	5	14	369	8	31	652	123
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	52	68	5	7	45	5	15	401	9	34	709	134
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	459	477	35	439	458	51	137	785	18	151	820	695
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.08	0.43	0.43	0.08	0.44	0.44
Sat Flow, veh/h	1355	1721	127	1327	1654	184	1781	1822	41	1781	1870	1585
Grp Volume(v), veh/h	52	0	73	7	0	50	15	0	410	34	709	134
Grp Sat Flow(s),veh/h/ln	1355	0	1848	1327	0	1837	1781	0	1863	1781	1870	1585
Q Serve(g_s), s	1.9	0.0	1.9	0.3	0.0	1.3	0.5	0.0	10.4	1.2	22.3	3.4
Cycle Q Clear(g_c), s	3.2	0.0	1.9	2.2	0.0	1.3	0.5	0.0	10.4	1.2	22.3	3.4
Prop In Lane	1.00		0.07	1.00		0.10	1.00		0.02	1.00		1.00
Lane Grp Cap(c), veh/h	459	0	512	439	0	509	137	0	803	151	820	695
V/C Ratio(X)	0.11	0.00	0.14	0.02	0.00	0.10	0.11	0.00	0.51	0.23	0.86	0.19
Avail Cap(c_a), veh/h	459	0	512	439	0	509	137	0	803	151	820	695
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.7	0.0	17.7	18.5	0.0	17.5	27.9	0.0	13.5	27.8	16.5	11.2
Incr Delay (d2), s/veh	0.5	0.0	0.6	0.1	0.0	0.4	1.6	0.0	2.3	3.4	11.7	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.9	0.1	0.0	0.6	0.3	0.0	4.1	0.6	10.4	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.2	0.0	18.3	18.6	0.0	17.9	29.5	0.0	15.8	31.2	28.3	11.8
LnGrp LOS	B	A	B	B	A	B	C	A	B	C	C	B
Approach Vol, veh/h		125			57			425			877	
Approach Delay, s/veh		18.6			17.9			16.3			25.9	
Approach LOS		B			B			B			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.0	32.5		22.5	9.5	33.0		22.5				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.5	28.0		18.0	5.0	28.5		18.0				
Max Q Clear Time (g_c+I1), s	3.2	12.4		5.2	2.5	24.3		4.2				
Green Ext Time (p_c), s	0.0	2.1		0.3	0.0	1.9		0.1				

Intersection Summary												
HCM 6th Ctrl Delay			22.2									
HCM 6th LOS			C									

HCM 6th Signalized Intersection Summary

3: 05/18/2022



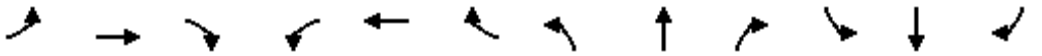
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	38	25	2	57	6	11	811	11	13	255	77
Future Volume (veh/h)	60	38	25	2	57	6	11	811	11	13	255	77
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	65	41	27	2	62	7	12	882	12	14	277	84
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	351	238	157	350	373	42	114	996	14	114	1012	858
Arrive On Green	0.23	0.23	0.23	0.23	0.23	0.23	0.06	0.54	0.54	0.06	0.54	0.54
Sat Flow, veh/h	1332	1052	693	1333	1650	186	1781	1841	25	1781	1870	1585
Grp Volume(v), veh/h	65	0	68	2	0	69	12	0	894	14	277	84
Grp Sat Flow(s),veh/h/ln	1332	0	1746	1333	0	1837	1781	0	1866	1781	1870	1585
Q Serve(g_s), s	3.3	0.0	2.5	0.1	0.0	2.4	0.5	0.0	33.8	0.6	6.4	2.1
Cycle Q Clear(g_c), s	5.7	0.0	2.5	2.6	0.0	2.4	0.5	0.0	33.8	0.6	6.4	2.1
Prop In Lane	1.00		0.40	1.00		0.10	1.00		0.01	1.00		1.00
Lane Grp Cap(c), veh/h	351	0	395	350	0	416	114	0	1010	114	1012	858
V/C Ratio(X)	0.19	0.00	0.17	0.01	0.00	0.17	0.11	0.00	0.89	0.12	0.27	0.10
Avail Cap(c_a), veh/h	351	0	395	350	0	416	114	0	1010	114	1012	858
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.2	0.0	24.9	26.0	0.0	24.9	35.3	0.0	16.2	35.3	9.9	8.9
Incr Delay (d2), s/veh	1.2	0.0	0.9	0.0	0.0	0.9	1.9	0.0	11.3	2.2	0.7	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	1.1	0.0	0.0	1.1	0.3	0.0	14.9	0.3	2.4	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.3	0.0	25.9	26.0	0.0	25.7	37.2	0.0	27.4	37.6	10.5	9.1
LnGrp LOS	C	A	C	C	A	C	D	A	C	D	B	A
Approach Vol, veh/h		133			71			906			375	
Approach Delay, s/veh		27.1			25.7			27.6			11.2	
Approach LOS		C			C			C			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.6	47.8		22.6	9.6	47.8		22.6				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.1	43.3		18.1	5.1	43.3		18.1				
Max Q Clear Time (g_c+I1), s	2.6	35.8		7.7	2.5	8.4		4.6				
Green Ext Time (p_c), s	0.0	3.6		0.3	0.0	1.9		0.2				

Intersection Summary												
HCM 6th Ctrl Delay			23.3									
HCM 6th LOS			C									

HCM 6th Signalized Intersection Summary

3: 05/18/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	58	77	6	7	50	6	17	451	10	38	796	150
Future Volume (veh/h)	58	77	6	7	50	6	17	451	10	38	796	150
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	63	84	7	8	54	7	18	490	11	41	865	163
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	383	409	34	358	389	50	119	911	20	143	960	814
Arrive On Green	0.24	0.24	0.24	0.24	0.24	0.24	0.07	0.50	0.50	0.08	0.51	0.51
Sat Flow, veh/h	1341	1703	142	1306	1622	210	1781	1822	41	1781	1870	1585
Grp Volume(v), veh/h	63	0	91	8	0	61	18	0	501	41	865	163
Grp Sat Flow(s),veh/h/ln	1341	0	1845	1306	0	1833	1781	0	1863	1781	1870	1585
Q Serve(g_s), s	2.9	0.0	3.0	0.4	0.0	2.0	0.7	0.0	13.8	1.6	31.4	4.2
Cycle Q Clear(g_c), s	4.9	0.0	3.0	3.3	0.0	2.0	0.7	0.0	13.8	1.6	31.4	4.2
Prop In Lane	1.00		0.08	1.00		0.11	1.00		0.02	1.00		1.00
Lane Grp Cap(c), veh/h	383	0	443	358	0	440	119	0	931	143	960	814
V/C Ratio(X)	0.16	0.00	0.21	0.02	0.00	0.14	0.15	0.00	0.54	0.29	0.90	0.20
Avail Cap(c_a), veh/h	383	0	443	358	0	440	119	0	931	143	960	814
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.3	0.0	22.8	24.1	0.0	22.4	33.0	0.0	12.8	32.5	16.5	9.9
Incr Delay (d2), s/veh	0.9	0.0	1.0	0.1	0.0	0.7	2.7	0.0	2.2	5.0	13.2	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.0	1.4	0.1	0.0	0.9	0.4	0.0	5.4	0.9	14.4	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.2	0.0	23.8	24.2	0.0	23.1	35.7	0.0	15.0	37.5	29.7	10.5
LnGrp LOS	C	A	C	C	A	C	D	A	B	D	C	B
Approach Vol, veh/h		154			69			519			1069	
Approach Delay, s/veh		24.4			23.2			15.8			27.1	
Approach LOS		C			C			B			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.5	42.0		22.5	9.5	43.0		22.5				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	6.0	37.5		18.0	5.0	38.5		18.0				
Max Q Clear Time (g_c+I1), s	3.6	15.8		6.9	2.7	33.4		5.3				
Green Ext Time (p_c), s	0.0	3.0		0.4	0.0	2.8		0.2				

Intersection Summary			
HCM 6th Ctrl Delay		23.4	
HCM 6th LOS		C	

Intersection	
Intersection Delay, s/veh	114
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	60	38	25	2	57	6	11	811	11	13	255	77
Future Vol, veh/h	60	38	25	2	57	6	11	811	11	13	255	77
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	65	41	27	2	62	7	12	882	12	14	277	84
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	1	1
HCM Control Delay	12.8	11.8	178.4	13.7
HCM LOS	B	B	F	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	1%	49%	3%	5%	0%
Vol Thru, %	97%	31%	88%	95%	0%
Vol Right, %	1%	20%	9%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	833	123	65	268	77
LT Vol	11	60	2	13	0
Through Vol	811	38	57	255	0
RT Vol	11	25	6	0	77
Lane Flow Rate	905	134	71	291	84
Geometry Grp	5	2	2	7	7
Degree of Util (X)	1.336	0.246	0.136	0.488	0.123
Departure Headway (Hd)	5.312	7.412	7.648	6.392	5.653
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	688	488	472	568	638
Service Time	3.325	5.412	5.648	4.092	3.353
HCM Lane V/C Ratio	1.315	0.275	0.15	0.512	0.132
HCM Control Delay	178.4	12.8	11.8	15	9.1
HCM Lane LOS	F	B	B	B	A
HCM 95th-tile Q	37.4	1	0.5	2.7	0.4

Intersection	
Intersection Delay, s/veh	146.9
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	58	77	6	7	50	6	17	451	10	38	796	150
Future Vol, veh/h	58	77	6	7	50	6	17	451	10	38	796	150
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	63	84	7	8	54	7	18	490	11	41	865	163
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	1	1
HCM Control Delay	14.5	12.8	34.8	228.9
HCM LOS	B	B	D	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	4%	41%	11%	5%	0%
Vol Thru, %	94%	55%	79%	95%	0%
Vol Right, %	2%	4%	10%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	478	141	63	834	150
LT Vol	17	58	7	38	0
Through Vol	451	77	50	796	0
RT Vol	10	6	6	0	150
Lane Flow Rate	520	153	68	907	163
Geometry Grp	5	2	2	7	7
Degree of Util (X)	0.844	0.307	0.143	1.54	0.244
Departure Headway (Hd)	6.388	8.013	8.404	6.114	5.379
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	572	452	429	598	667
Service Time	4.388	6.013	6.404	3.855	3.12
HCM Lane V/C Ratio	0.909	0.338	0.159	1.517	0.244
HCM Control Delay	34.8	14.5	12.8	268.3	9.9
HCM Lane LOS	D	B	B	F	A
HCM 95th-tile Q	8.9	1.3	0.5	46.7	1

MOVEMENT SUMMARY

Site: 101 [2027 AM PEAK]

2021-3503
Old SR 37 & Dillman Road
Site Category: (None)
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: Old SR 37 NB												
3	L2	10	3.0	0.456	10.4	LOS B	3.4	86.6	0.35	0.43	0.35	36.9
8	T1	722	3.0	0.456	4.4	LOS A	3.4	86.6	0.34	0.43	0.34	36.9
18	R2	10	3.0	0.104	4.8	LOS A	0.5	12.9	0.29	0.42	0.29	35.9
Approach		741	3.0	0.456	4.5	LOS A	3.4	86.6	0.34	0.43	0.34	36.8
East: Dillman Rd WB												
1	L2	2	3.0	0.084	14.5	LOS B	0.5	11.7	0.69	0.70	0.69	35.3
6	T1	51	3.0	0.084	8.5	LOS A	0.5	11.7	0.69	0.70	0.69	35.3
16	R2	5	3.0	0.084	8.6	LOS A	0.5	11.7	0.69	0.70	0.69	34.2
Approach		59	3.0	0.084	8.8	LOS A	0.5	11.7	0.69	0.70	0.69	35.2
North: Old SR 37 SB												
7	L2	11	3.0	0.165	10.0	LOS B	1.0	24.6	0.22	0.40	0.22	37.3
4	T1	227	3.0	0.165	4.1	LOS A	1.0	24.6	0.22	0.40	0.22	37.2
14	R2	68	3.0	0.068	4.5	LOS A	0.3	8.7	0.23	0.46	0.23	36.1
Approach		307	3.0	0.165	4.4	LOS A	1.0	24.6	0.22	0.41	0.22	37.0
West: Dillman Rd EB												
5	L2	53	3.0	0.102	10.9	LOS B	0.5	11.9	0.38	0.60	0.38	35.6
2	T1	34	3.0	0.102	4.9	LOS A	0.5	11.9	0.38	0.60	0.38	35.5
12	R2	22	3.0	0.102	5.0	LOS A	0.5	11.9	0.38	0.60	0.38	34.4
Approach		109	3.0	0.102	7.8	LOS A	0.5	11.9	0.38	0.60	0.38	35.3
All Vehicles		1215	3.0	0.456	5.0	LOS A	3.4	86.6	0.33	0.45	0.33	36.6

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [2027 PM PEAK]

2021-3503
Old SR 37 & Dillman Road
Site Category: (None)
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: Old SR 37 NB												
3	L2	16	3.0	0.306	10.5	LOS B	2.0	51.2	0.40	0.46	0.40	36.7
8	T1	443	3.0	0.306	4.6	LOS A	2.0	51.2	0.39	0.46	0.39	36.6
18	R2	10	3.0	0.070	5.2	LOS A	0.3	8.7	0.37	0.46	0.37	35.6
Approach		470	3.0	0.306	4.8	LOS A	2.0	51.2	0.39	0.46	0.39	36.6
East: Dillman Rd WB												
1	L2	7	3.0	0.065	12.2	LOS B	0.3	8.2	0.55	0.60	0.55	35.9
6	T1	45	3.0	0.065	6.3	LOS A	0.3	8.2	0.55	0.60	0.55	35.9
16	R2	5	3.0	0.065	6.4	LOS A	0.3	8.2	0.55	0.60	0.55	34.8
Approach		57	3.0	0.065	7.0	LOS A	0.3	8.2	0.55	0.60	0.55	35.8
North: Old SR 37 SB												
7	L2	38	3.0	0.569	10.3	LOS B	5.2	133.8	0.35	0.42	0.35	36.8
4	T1	783	3.0	0.569	4.3	LOS A	5.2	133.8	0.35	0.42	0.35	36.7
14	R2	148	3.0	0.154	4.6	LOS A	0.8	20.4	0.25	0.48	0.25	36.0
Approach		968	3.0	0.569	4.6	LOS A	5.2	133.8	0.33	0.43	0.33	36.6
West: Dillman Rd EB												
5	L2	52	3.0	0.197	15.4	LOS B	1.2	29.9	0.76	0.83	0.76	33.8
2	T1	68	3.0	0.197	9.4	LOS A	1.2	29.9	0.76	0.83	0.76	33.7
12	R2	5	3.0	0.197	9.5	LOS A	1.2	29.9	0.76	0.83	0.76	32.8
Approach		126	3.0	0.197	11.9	LOS B	1.2	29.9	0.76	0.83	0.76	33.7
All Vehicles		1621	3.0	0.569	5.3	LOS A	5.2	133.8	0.39	0.47	0.39	36.3

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [2037 AM PEAK]

2021-3503
Old SR 37 & Dillman Road
Site Category: (None)
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: Old SR 37 NB												
3	L2	11	3.0	0.455	10.3	LOS B	3.4	86.9	0.35	0.43	0.35	36.9
8	T1	798	3.0	0.455	4.4	LOS A	3.4	86.9	0.34	0.43	0.34	36.9
18	R2	11	3.0	0.104	4.7	LOS A	0.5	13.1	0.28	0.42	0.28	35.9
Approach		820	3.0	0.455	4.5	LOS A	3.4	86.9	0.34	0.43	0.34	36.8
East: Dillman Rd WB												
1	L2	2	3.0	0.086	14.8	LOS B	0.5	13.1	0.73	0.71	0.73	35.2
6	T1	57	3.0	0.086	8.8	LOS A	0.5	13.1	0.73	0.71	0.73	35.1
16	R2	5	3.0	0.086	8.9	LOS A	0.5	13.1	0.73	0.71	0.73	34.1
Approach		64	3.0	0.086	9.0	LOS A	0.5	13.1	0.73	0.71	0.73	35.0
North: Old SR 37 SB												
7	L2	12	3.0	0.166	10.0	LOS A	1.0	25.4	0.22	0.40	0.22	37.3
4	T1	251	3.0	0.166	4.0	LOS A	1.0	25.4	0.22	0.40	0.22	37.2
14	R2	76	3.0	0.066	4.4	LOS A	0.3	8.7	0.23	0.46	0.23	36.1
Approach		339	3.0	0.166	4.3	LOS A	1.0	25.4	0.22	0.41	0.22	36.9
West: Dillman Rd EB												
5	L2	59	3.0	0.102	10.8	LOS B	0.5	12.3	0.38	0.59	0.38	35.6
2	T1	38	3.0	0.102	4.8	LOS A	0.5	12.3	0.38	0.59	0.38	35.5
12	R2	24	3.0	0.102	4.9	LOS A	0.5	12.3	0.38	0.59	0.38	34.4
Approach		121	3.0	0.102	7.7	LOS A	0.5	12.3	0.38	0.59	0.38	35.3
All Vehicles		1343	3.0	0.455	4.9	LOS A	3.4	86.9	0.33	0.45	0.33	36.6

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [2037 PM PEAK]

2021-3503
Old SR 37 & Dillman Road
Site Category: (None)
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: Old SR 37 NB												
3	L2	16	3.0	0.275	10.4	LOS B	1.8	45.8	0.39	0.45	0.39	36.7
8	T1	443	3.0	0.275	4.5	LOS A	1.8	45.8	0.39	0.45	0.39	36.6
18	R2	10	3.0	0.063	5.0	LOS A	0.3	8.0	0.36	0.45	0.36	35.6
Approach		470	3.0	0.275	4.7	LOS A	1.8	45.8	0.39	0.45	0.39	36.6
East: Dillman Rd WB												
1	L2	8	3.0	0.064	11.9	LOS B	0.3	8.3	0.54	0.59	0.54	35.9
6	T1	50	3.0	0.064	6.0	LOS A	0.3	8.3	0.54	0.59	0.54	35.9
16	R2	5	3.0	0.064	6.0	LOS A	0.3	8.3	0.54	0.59	0.54	34.8
Approach		63	3.0	0.064	6.7	LOS A	0.3	8.3	0.54	0.59	0.54	35.8
North: Old SR 37 SB												
7	L2	38	3.0	0.517	10.2	LOS B	4.4	112.0	0.32	0.41	0.32	36.9
4	T1	783	3.0	0.517	4.2	LOS A	4.4	112.0	0.32	0.41	0.32	36.8
14	R2	148	3.0	0.133	4.5	LOS A	0.7	17.6	0.24	0.47	0.24	36.0
Approach		968	3.0	0.517	4.5	LOS A	4.4	112.0	0.31	0.42	0.31	36.7
West: Dillman Rd EB												
5	L2	58	3.0	0.185	14.7	LOS B	1.2	29.6	0.76	0.80	0.76	34.1
2	T1	76	3.0	0.185	8.7	LOS A	1.2	29.6	0.76	0.80	0.76	34.1
12	R2	5	3.0	0.185	8.8	LOS A	1.2	29.6	0.76	0.80	0.76	33.1
Approach		139	3.0	0.185	11.2	LOS B	1.2	29.6	0.76	0.80	0.76	34.0
All Vehicles		1640	3.0	0.517	5.2	LOS A	4.4	112.0	0.38	0.47	0.38	36.4

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [2047 AM PEAK]

2021-3503
Old SR 37 & Dillman Road
Site Category: (None)
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: Old SR 37 NB												
3	L2	12	3.0	0.507	10.4	LOS B	4.1	104.0	0.39	0.44	0.39	36.7
8	T1	882	3.0	0.507	4.5	LOS A	4.1	104.0	0.38	0.44	0.38	36.7
18	R2	12	3.0	0.116	4.8	LOS A	0.6	14.8	0.30	0.43	0.30	35.8
Approach		905	3.0	0.507	4.6	LOS A	4.1	104.0	0.38	0.44	0.38	36.7
East: Dillman Rd WB												
1	L2	2	3.0	0.105	16.0	LOS B	0.7	16.9	0.79	0.75	0.79	34.5
6	T1	62	3.0	0.105	10.1	LOS B	0.7	16.9	0.79	0.75	0.79	34.5
16	R2	7	3.0	0.105	10.2	LOS B	0.7	16.9	0.79	0.75	0.79	33.5
Approach		71	3.0	0.105	10.3	LOS B	0.7	16.9	0.79	0.75	0.79	34.4
North: Old SR 37 SB												
7	L2	14	3.0	0.244	10.2	LOS B	1.5	38.8	0.28	0.42	0.28	37.0
4	T1	277	3.0	0.244	4.3	LOS A	1.5	38.8	0.28	0.42	0.28	37.0
14	R2	838	3.0	0.531	4.5	LOS A	4.9	126.6	0.36	0.47	0.36	35.7
Approach		1129	3.0	0.531	4.5	LOS A	4.9	126.6	0.34	0.46	0.34	36.1
West: Dillman Rd EB												
5	L2	65	3.0	0.116	10.9	LOS B	0.6	14.4	0.41	0.61	0.41	35.5
2	T1	41	3.0	0.116	5.0	LOS A	0.6	14.4	0.41	0.61	0.41	35.4
12	R2	27	3.0	0.116	5.0	LOS A	0.6	14.4	0.41	0.61	0.41	34.4
Approach		134	3.0	0.116	7.9	LOS A	0.6	14.4	0.41	0.61	0.41	35.2
All Vehicles		2239	3.0	0.531	4.9	LOS A	4.9	126.6	0.37	0.47	0.37	36.2

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [2047 PM PEAK]

2021-3503
Old SR 37 & Dillman Road
Site Category: (None)
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: Old SR 37 NB												
3	L2	18	3.0	0.309	10.5	LOS B	2.1	53.7	0.42	0.46	0.42	36.6
8	T1	490	3.0	0.309	4.6	LOS A	2.1	53.7	0.42	0.46	0.42	36.5
18	R2	11	3.0	0.071	5.1	LOS A	0.4	9.2	0.39	0.46	0.39	35.5
Approach		520	3.0	0.309	4.8	LOS A	2.1	53.7	0.42	0.46	0.42	36.5
East: Dillman Rd WB												
1	L2	8	3.0	0.073	12.3	LOS B	0.4	9.8	0.58	0.61	0.58	35.8
6	T1	54	3.0	0.073	6.3	LOS A	0.4	9.8	0.58	0.61	0.58	35.8
16	R2	7	3.0	0.073	6.4	LOS A	0.4	9.8	0.58	0.61	0.58	34.7
Approach		68	3.0	0.073	7.0	LOS A	0.4	9.8	0.58	0.61	0.58	35.7
North: Old SR 37 SB												
7	L2	41	3.0	0.574	10.3	LOS B	5.3	136.1	0.37	0.42	0.37	36.8
4	T1	865	3.0	0.574	4.3	LOS A	5.3	136.1	0.37	0.42	0.37	36.7
14	R2	163	3.0	0.148	4.6	LOS A	0.8	19.9	0.26	0.48	0.26	36.0
Approach		1070	3.0	0.574	4.6	LOS A	5.3	136.1	0.35	0.43	0.35	36.6
West: Dillman Rd EB												
5	L2	63	3.0	0.228	15.9	LOS B	1.5	38.6	0.82	0.85	0.82	33.5
2	T1	84	3.0	0.228	9.9	LOS A	1.5	38.6	0.82	0.85	0.82	33.5
12	R2	7	3.0	0.228	10.0	LOS A	1.5	38.6	0.82	0.85	0.82	32.5
Approach		153	3.0	0.228	12.4	LOS B	1.5	38.6	0.82	0.85	0.82	33.5
All Vehicles		1811	3.0	0.574	5.4	LOS A	5.3	136.1	0.42	0.48	0.42	36.2

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Signal Warrant Analysis >>

Indiana Manual of Uniform Traffic Control Devices
Volume Summary
Prepared by USI Consultants for the 2011 Edition of the IMUTCD

Spot Number:	1			
Major Street:	Old SR 37 South		Minor Street:	Dillman Road
Intersection:	Old SR 37 South @ Dillman Road			
City/Twp:	Monroe County			
Date Performed:	9/13/2022	Performed By:	M Breach	
Date Volumes Collected:	11/19/2022			

	Major NB	Major SB	Minor EB	Minor WB	Total Major	Highest Minor	Total
00:01 - 01:00	22	15	3	3	37	3	43
01:00 - 02:00	13	12	3	3	25	3	31
02:00 - 03:00	7	15	2	2	22	2	26
03:00 - 04:00	14	8	5	5	22	5	32
04:00 - 05:00	32	12	12	12	44	12	68
05:00 - 06:00	131	35	19	19	166	19	204
06:00 - 07:00	306	107	46	46	413	46	505
07:00 - 08:00	507	190	79	79	697	79	855
08:00 - 09:00	318	165	63	63	483	63	609
09:00 - 10:00	244	173	40	40	417	40	497
10:00 - 11:00	213	180	59	59	393	59	511
11:00 - 12:00	225	204	54	54	429	54	537
12:00 - 13:00	214	230	62	62	444	62	568
13:00 - 14:00	200	238	53	53	438	53	544
14:00 - 15:00	211	336	64	64	547	64	675
15:00 - 16:00	214	342	77	77	556	77	710
16:00 - 17:00	267	454	102	102	721	102	925
17:00 - 18:00	220	396	104	104	616	104	824
18:00 - 19:00	173	241	49	49	414	49	512
19:00 - 20:00	124	174	30	30	298	30	358
20:00 - 21:00	123	164	29	29	287	29	345
21:00 - 22:00	80	114	20	20	194	20	234
22:00 - 23:00	51	51	7	7	102	7	116
23:00 - 00:00	32	48	11	11	80	11	102
Total	**3941**	**3904**	**993**	**993**	**7845**	**993**	**9831**

Where manual counts were taken on the same day as the machine counts, the spreadsheet will look at the difference between manual and machine counts and adjust the hours without manual counts. This spreadsheet places a higher level of credibility on the manual counts.

In order or Preference the following volumes will be used (Each hour is reviewed independently).

1: Manual Turning Movement Count

2: Machine Counts Adjusted by the Count Ratio for that Approach if Manual Counts are taken o

3: Machine Counts Unadjusted if there are no manual counts or if the manual counts are taken

Summary of Warrants

Spot Number:	1		
Major Street:	Old SR 37 South	Minor Street:	Dillman Road
Intersection:	Old SR 37 South at Dillman Road		
City/Twp:	Monroe County		
Date Performed:	9/13/2022	Performed By:	M Breach
Date Volumes Collected:	11/19/2022		

Warrant	Condition	Is Warrant Met
Data Validation Error		**NO**
WARRANT 1: Eight-Hour Vehicular Volume		**NO**
	Condition A	NO
	Condition B	NO
	Condition A&B	NO
WARRANT 2: Four-Hour Vehicular Volume	(70%)	**NO**
WARRANT 3: Peak-Hour Vehicular Volume	(70%)	**#N/A**
	Condition A	**#N/A**
	Condition B	**NO**
WARRANT 4: Pedestrian Volume	(70%)	**NO**
	Four Hour	NO
	Peak Hour	NO
(Threshold)	HAWK	NO
(Threshold)	RRFB	NO
WARRANT 5: School Crossing		**NO**
WARRANT 6: Coordinated Signal System		**NO**
WARRANT 7: Crash Experience		**NO**
	Condition A	NO
	Condition B	NO
WARRANT 8: Roadway Network		**NO**
WARRANT 9: Intersection Near a Grade Crossing		**#N/A**

Issue to Be Addressed by Signalization:

Crash reduction

Indiana Manual of Uniform Traffic Control Devices
Worksheet for Signal Warrants (Section 4C)
WARRANT 1: Eight-Hour Vehicular Volume

Intersection:	Old SR 37 South @ Dillman Road		
Date	9/13/2022	by	M Breach

2	**: No. of Lanes on Major St?**
2	**: No. of Lanes on Minor St?**
45	**: Speed limit or 85th Percentile? (MPH)**
NO	**: Is the intersection within an Isolated community?**
0	**: if answer 4 is Yes, then what is the of the population isolated community?**
YES	**: Have other remedial measures been tried?**

USE 70% FOR WARRANTS 1A AND 1B. USE 56% FOR WARRANT 1A&B

	Major Volume (Both Apr.)	Minor Volume (One Apr.)	Condition A Major Volume	Condition A Minor Volume	Warrant Condition A Met?	Condition B Major Volume	Condition B Minor Volume	Warrant Condition B Met?	Combination Major A	Combination Minor A	Combination Major B	Combination Minor B	Warrant Condition A&B met?
Time	**N-S**	E-W											
00:01 - 01:00	37	3	420	140	**NO**	630	70	**NO**	336	112	504	56	**NO**
01:00 - 02:00	25	3	420	140	**NO**	630	70	**NO**	336	112	504	56	**NO**
02:00 - 03:00	22	2	420	140	**NO**	630	70	**NO**	336	112	504	56	**NO**
03:00 - 04:00	22	5	420	140	**NO**	630	70	**NO**	336	112	504	56	**NO**
04:00 - 05:00	44	12	420	140	**NO**	630	70	**NO**	336	112	504	56	**NO**
05:00 - 06:00	166	19	420	140	**NO**	630	70	**NO**	336	112	504	56	**NO**
06:00 - 07:00	413	46	420	140	**NO**	630	70	**NO**	336	112	504	56	**NO**
07:00 - 08:00	697	79	420	140	**NO**	630	70	**YES**	336	112	504	56	**NO**
08:00 - 09:00	483	63	420	140	**NO**	630	70	**NO**	336	112	504	56	**NO**
09:00 - 10:00	417	40	420	140	**NO**	630	70	**NO**	336	112	504	56	**NO**
10:00 - 11:00	393	59	420	140	**NO**	630	70	**NO**	336	112	504	56	**NO**
11:00 - 12:00	429	54	420	140	**NO**	630	70	**NO**	336	112	504	56	**NO**
12:00 - 13:00	444	62	420	140	**NO**	630	70	**NO**	336	112	504	56	**NO**
13:00 - 14:00	438	53	420	140	**NO**	630	70	**NO**	336	112	504	56	**NO**
14:00 - 15:00	547	64	420	140	**NO**	630	70	**NO**	336	112	504	56	**NO**
15:00 - 16:00	556	77	420	140	**NO**	630	70	**NO**	336	112	504	56	**NO**
16:00 - 17:00	721	102	420	140	**NO**	630	70	**YES**	336	112	504	56	**NO**
17:00 - 18:00	616	104	420	140	**NO**	630	70	**NO**	336	112	504	56	**NO**
18:00 - 19:00	414	49	420	140	**NO**	630	70	**NO**	336	112	504	56	**NO**
19:00 - 20:00	298	30	420	140	**NO**	630	70	**NO**	336	112	504	56	**NO**
20:00 - 21:00	287	29	420	140	**NO**	630	70	**NO**	336	112	504	56	**NO**
21:00 - 22:00	194	20	420	140	**NO**	630	70	**NO**	336	112	504	56	**NO**
22:00 - 23:00	102	7	420	140	**NO**	630	70	**NO**	336	112	504	56	**NO**
23:00 - 00:00	80	11	420	140	**NO**	630	70	**NO**	336	112	504	56	**NO**

Number of Hours that met the warrant 1A =	**0**
Number of Hours that met the warrant 1B =	**2**
Number of Hours that met the warrant 1 A & B =	**0**

A. Is the Minimum Vehicular Volume Warrant Met? (Condition A)	**NO**
B. Is the Interruption of Continuous Traffic Met? (Condition B)	**NO**
C. Combination of Warrants A and B Criteria Met?	**NO**

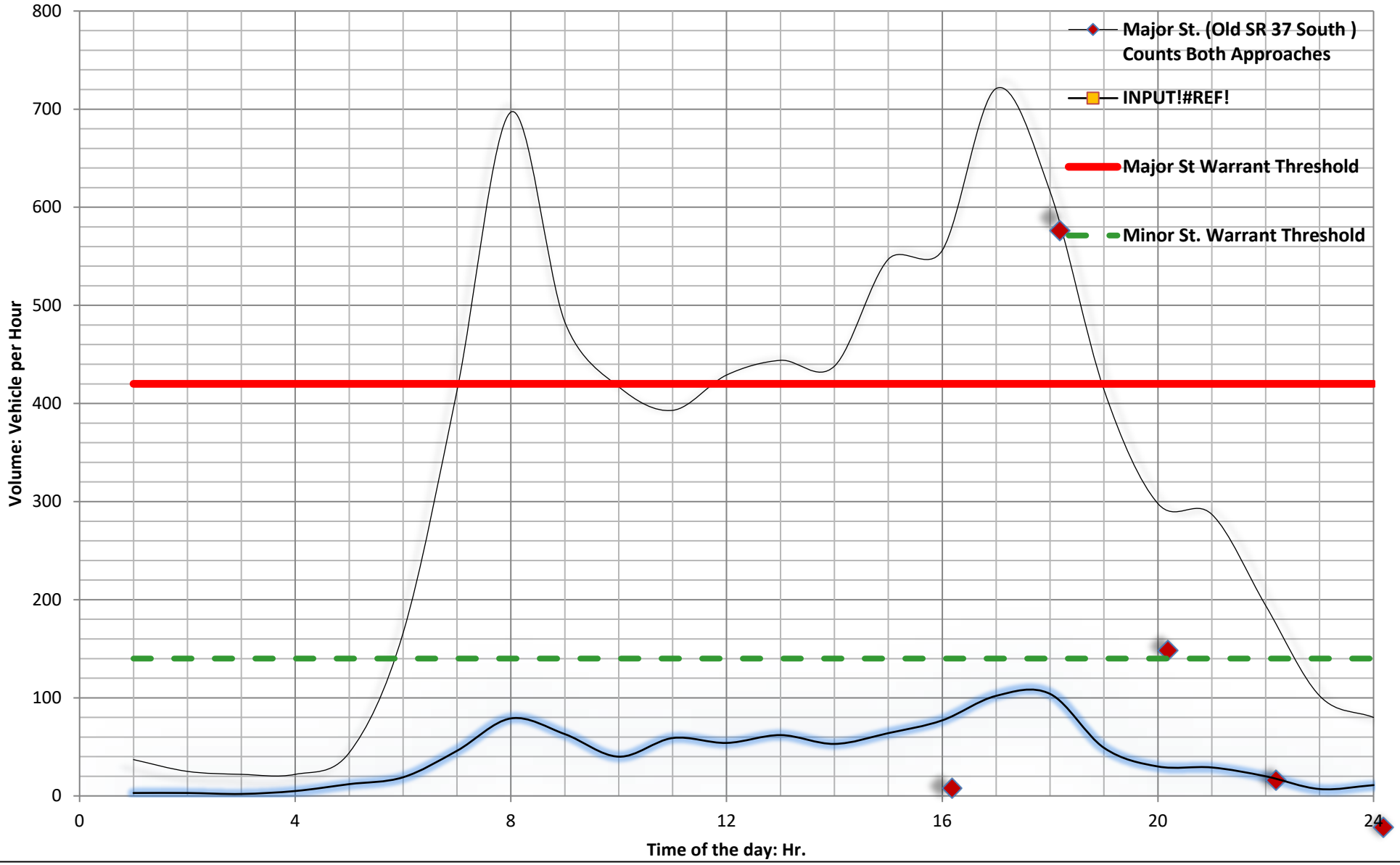


FIGURE 1: WARRANT **1A**

IS THERE A REDUCTION IN THE WARRANT THRESHOLDS TO 70% ...

1- DUE TO SPEED? YES

2- DUE TO ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000? NO

Spot Number: --1

Old SR 37 South @ Dillman Road

NO. OF LANES ON MAJOR ST.? 2

NO. OF LANES ON MINOR ST.? 2

Number of Hours that met the Warrant: 0

Does this intersection meet Warrant 1A for signal installation? NO

Data Collection Date: 11/19/2022

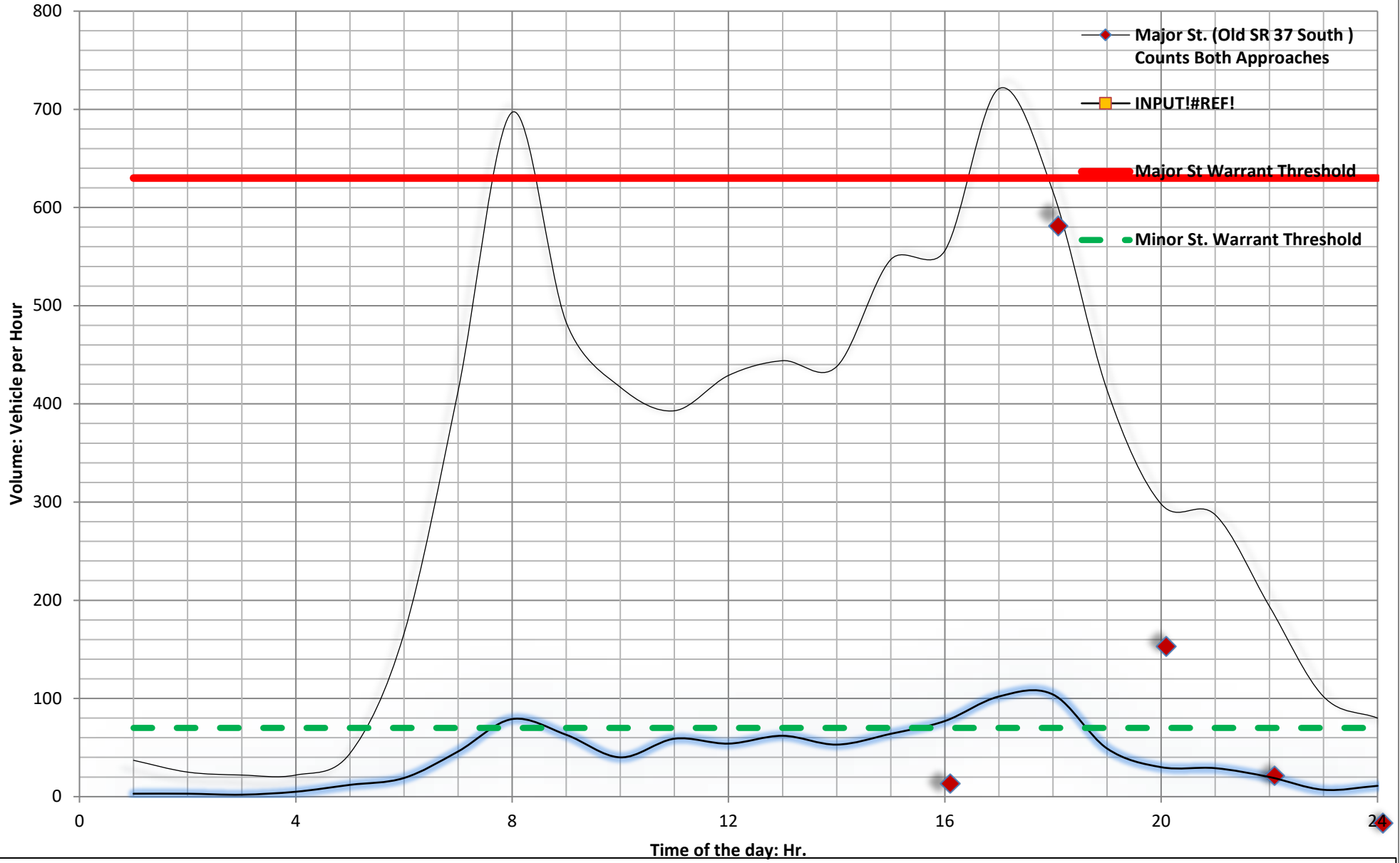


FIGURE 1: WARRANT **1B**

IS THERE A REDUCTION IN THE WARRANT THRESHOLDS TO 70% ...

1- DUE TO SPEED? YES

2- DUE TO ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000? NO

Spot Number: --1

Old SR 37 South @ Dillman Road

NO. OF LANES ON MAJOR ST.? 2

NO. OF LANES ON MINOR ST.? 2

Number of Hours that met the Warrant: 2

Does this intersection meet Warrant 1B for signal installation? NO

Data Collection Date: 11/19/2022

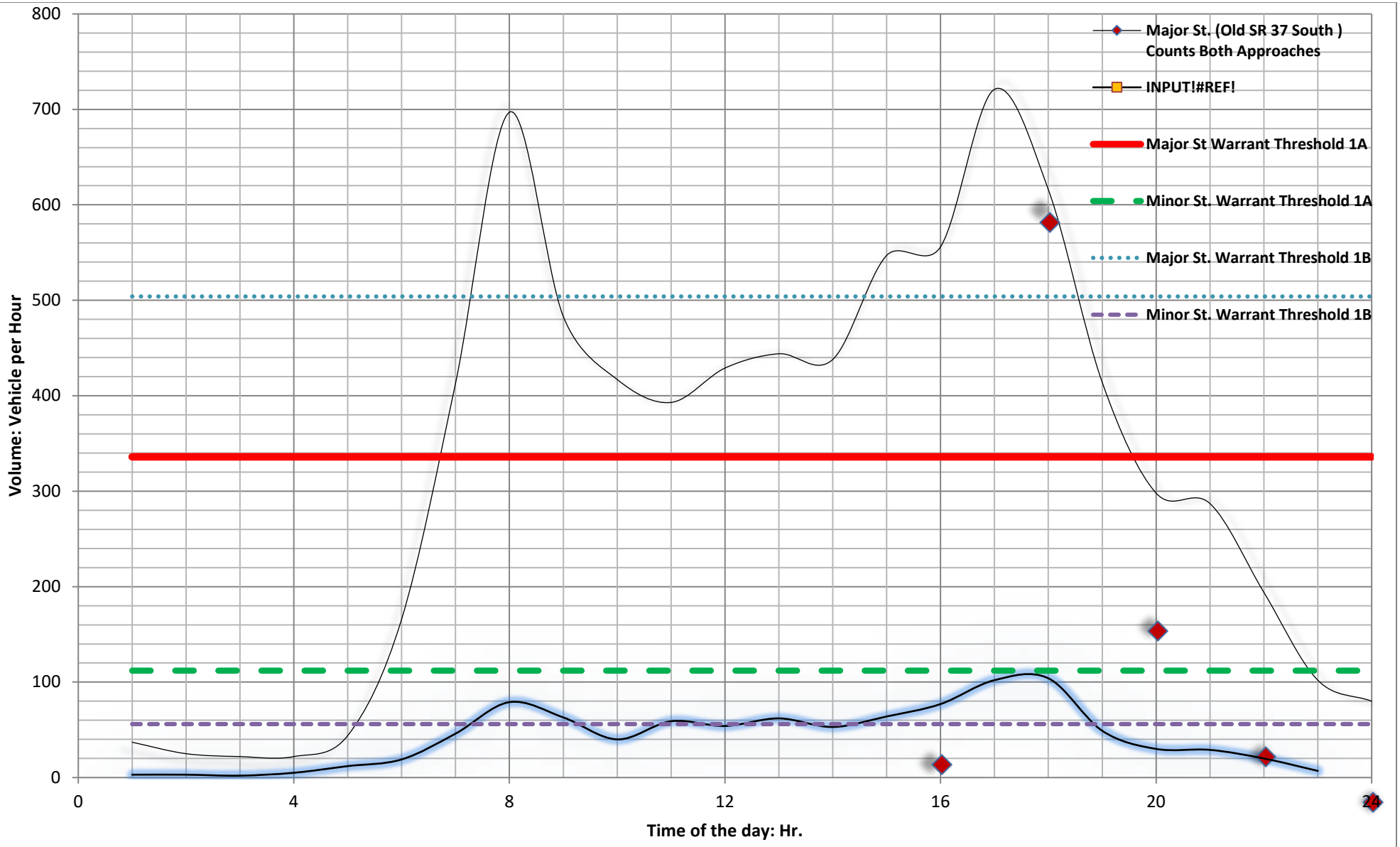


FIGURE 3: WARRANT **1A&B**

IS THERE A REDUCTION IN THE WARRANT THRESHOLDS TO 56% ...

1- DUE TO SPEED? YES

2- DUE TO ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000? NO

Spot Number: --1

Old SR 37 South @ Dillman Road

NO. OF LANES ON MAJOR ST.? 2

NO. OF LANES ON MINOR ST.? 2

Number of Hours that met the Warrant: 0

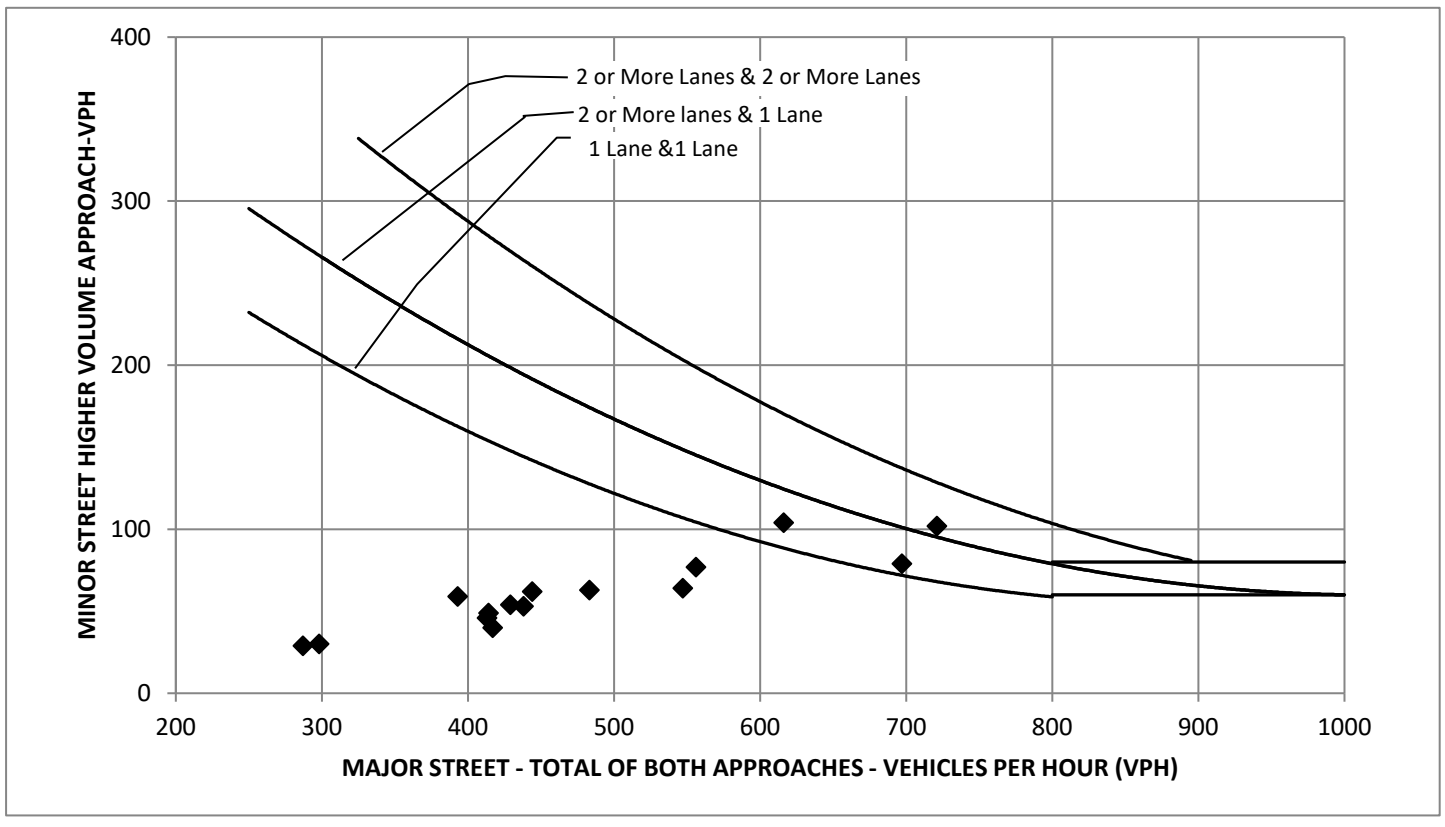
Does this intersection meet Warrant 1A&B for signal installation? NO

Data Collection Date: 11/19/2022

Michigan Manual of Uniform Traffic Control Devices
Worksheet for Signal Warrants (Section 4C)
WARRANT 2: Four-Hour Vehicular Volume

Spot Number:	1		
Intersection:	Old SR 37 South @ Dillman Road		
Date	9/13/2022	by	M Breach

2	**: No. of Lanes on Major St.**
2	**: No. of Lanes on Minor St.**
45	**: Speed limit or 85th Percentile? (MPH)**
NO	**: Is the intersection within an Isolated community?**
0	**: What is the of the population isolated community?**



How Many Hours Are Met	**0**
Is Warrant (70%) Met?	**NO**

Michigan Manual of Uniform Traffic Control Devices
Worksheet for Signal Warrants (Section 4C)
WARRANT 3 A: Peak-Hour Vehicular Volume

Spot Number:	1		
Intersection:	Old SR 37 South @ Dillman Road		
Date	9/13/2022	by	M Breach

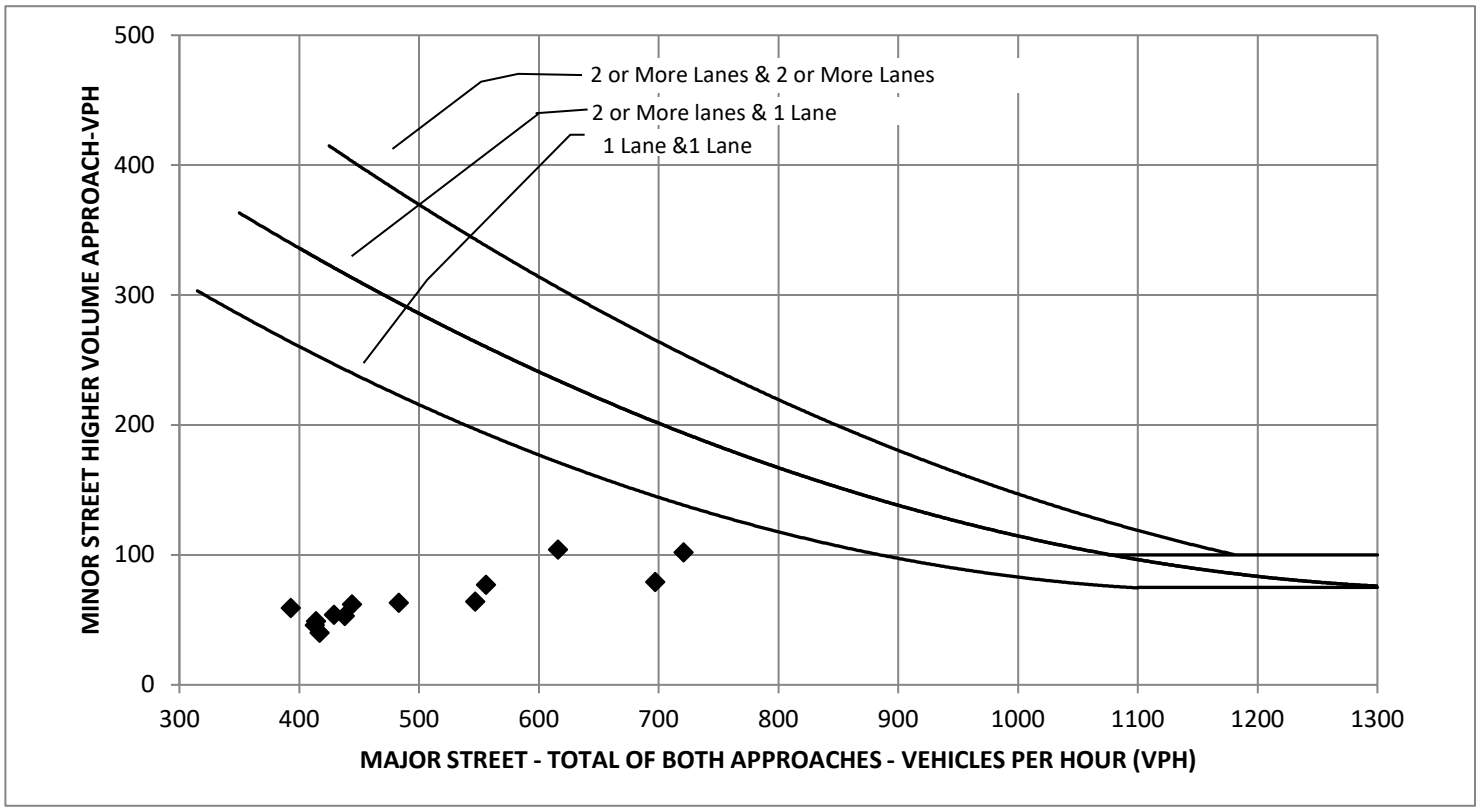
NOT MET	**0**	**: Total Stop Time Delay (hrs)**
	2	**: Minor Street Approach Lanes**
	2	**: Total Approaches**
#N/A	#N/A	**: Minor Approach Volume**
#N/A	#N/A	**: Total Entering Volume**
	0:00	**: Peak Hour**

Is Warrant 3 A Met?	**#N/A**

Indiana Manual of Uniform Traffic Control Devices
Worksheet for Signal Warrants (Section 4C)
WARRANT 3 B(70%): Peak-Hour Vehicular Volume

Spot Number:	1		
Intersection:	Old SR 37 South @ Dillman Road		
Date	9/13/2022	by	M Breach

2	**: No. of Lanes on Major St.**
2	**: No. of Lanes on Minor St.**
45	**: Speed limit or 85th Percentile? (MPH)**
NO	**: Is the intersection within an Isolated community?**
0	**: What is the of the population isolated community?**

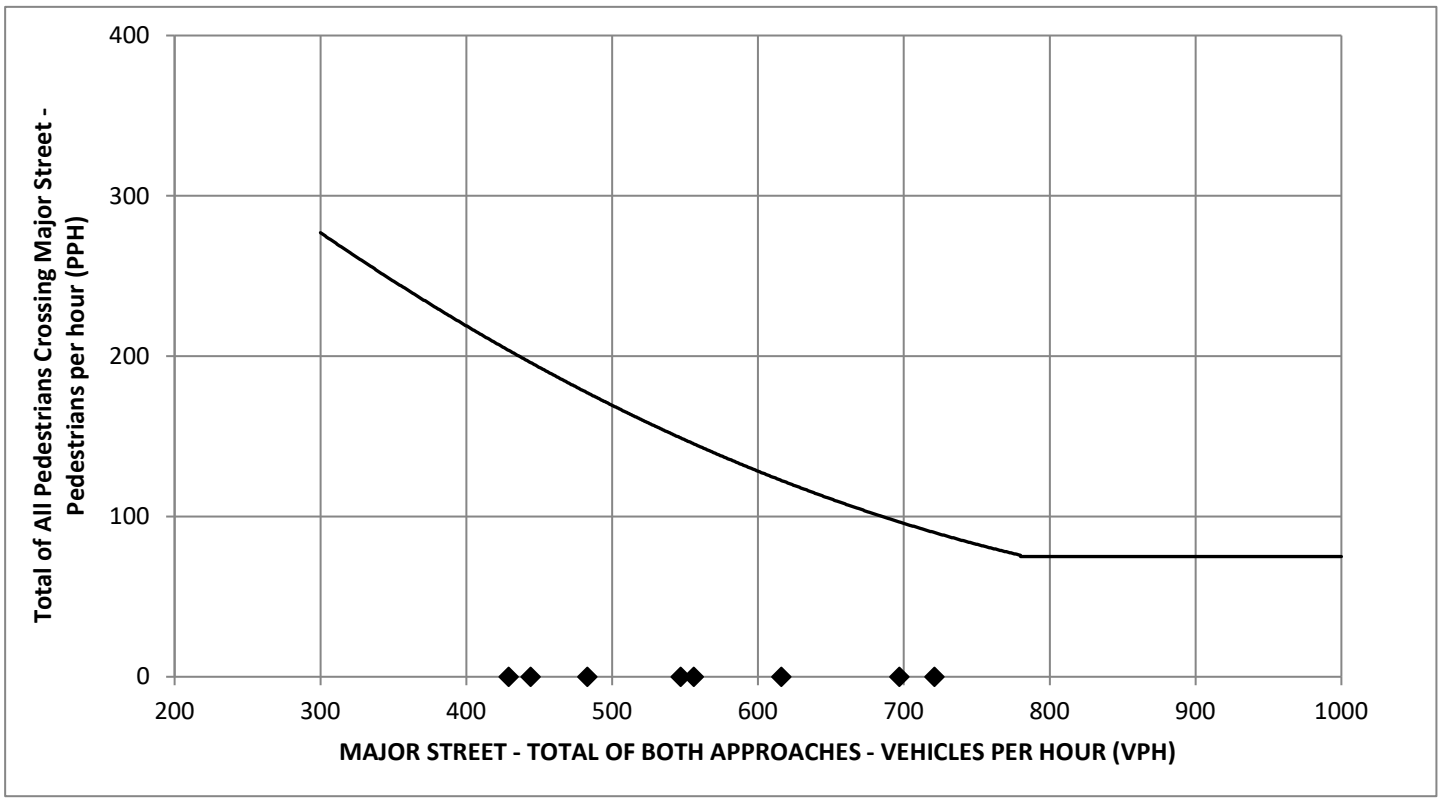


How Many Hours Are Met	**0**
Is Warrant (70%) Met?	**NO**

Indiana Manual of Uniform Traffic Control Devices
Worksheet for Signal Warrants (Section 4C)
WARRANT 4 (70%): Four-Hour Pedestrian Volume

Spot Number:	1		
Intersection:	Old SR 37 South @ Dillman Road		
Date	9/13/2022	by	M Breach

10000	**: Distance to Nearest Signal or Stop Control on Major Road**
0%	**: Percentage Reduction in Pedestrian Volumes**
45	**: Speed limit or 85th Percentile? (MPH)**
NO	**: Is the intersection within an Isolated community?**
0	**: What is the of the population isolated community?**

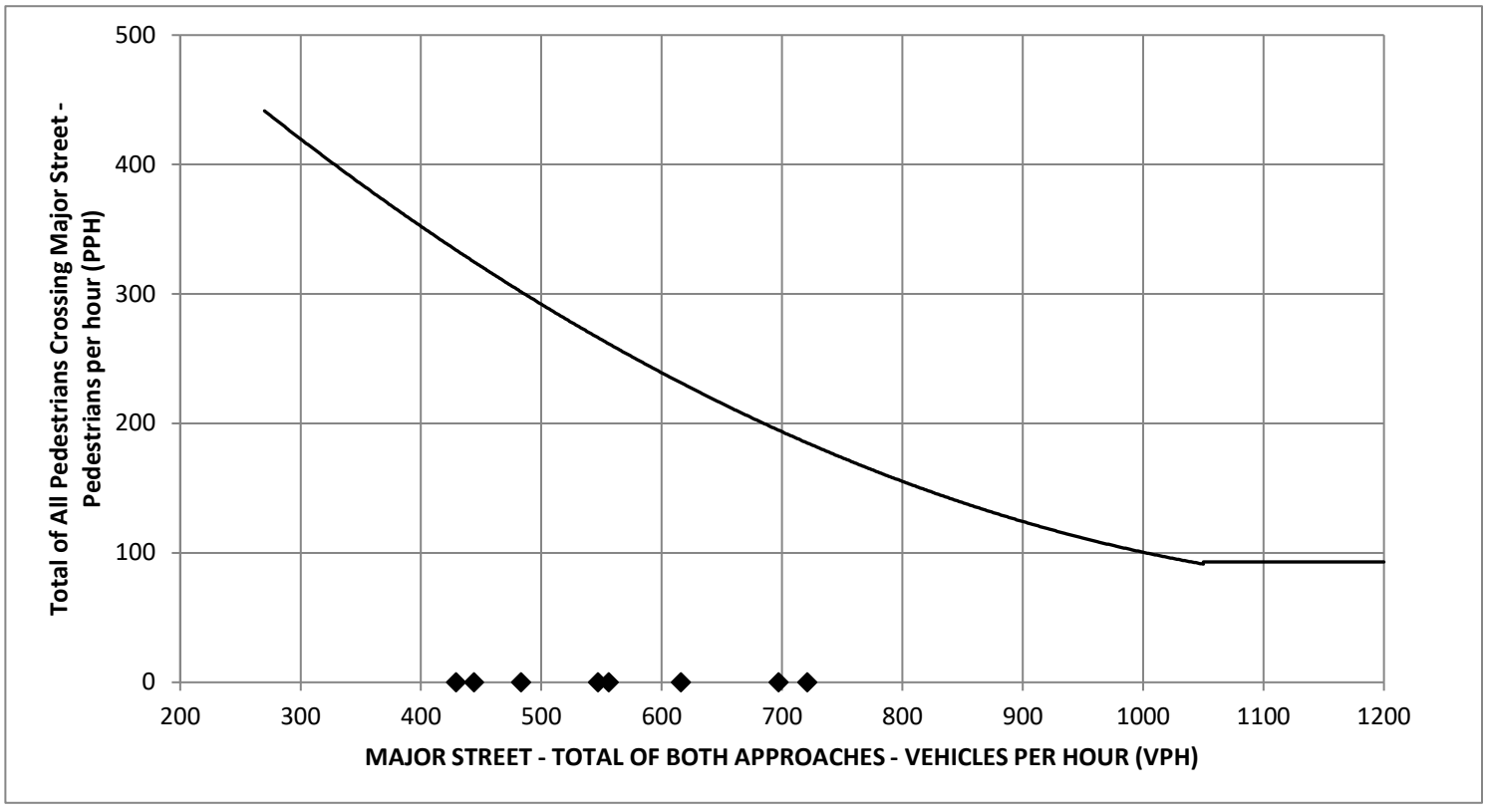


How Many Hours Are Met	**0**
Is Warrant 4 B (70%): Four Hour Met?	**NO**

Indiana Manual of Uniform Traffic Control Devices
Worksheet for Signal Warrants (Section 4C)
WARRANT 4 (70%): Peak-Hour Pedestrian Volume

Spot Number:	1		
Intersection:	Old SR 37 South @ Dillman Road		
Date	9/13/2022	by	M Breach

10000	**: Distance to Nearest Signal or Stop Control on Major Road**
0%	**: Percentage Reduction in Pedestrian Volumes**
45	**: Speed limit or 85th Percentile? (MPH)**
NO	**: Is the intersection within an Isolated community?**
0	**: What is the of the population isolated community?**



How Many Hours Are Met	**0**
Is Warrant 4 B (70%): Peak Hour Met?	**NO**

Indiana Manual of Uniform Traffic Control Devices
Worksheet for Signal Warrants (Section 4C)
WARRANT 5: School Crossing

Spot Number:	1		
Intersection:	Old SR 37 South @ Dillman Road		
Date	9/13/2022	by	M Breach

10000	**: Distance to Nearest Signal or Stop Control on Major Road**
0	**: Width of Street**
0	**: Number of Children per Group**
3	**: Safe Gap (Seconds)**

N/A	**: Number of Gaps in Study Period**
0	**: Study Period (Minutes)**
0	**: Number of School Children**

Is Warrant 5 Met?	**NO**

Indiana Manual of Uniform Traffic Control Devices
Worksheet for Signal Warrants (Section 4C)
WARRANT 6: Coordinated Signal System

Spot Number:	1		
Intersection:	Old SR 37 South @ Dillman Road		
Date	9/13/2022	by	M Breach

The Progressive Movement warrant is satisfied when:

1. On a one-way street or a street which has predominantly unidirectional traffic, the adjacent signals are so far apart that they do not provide the necessary degree of vehicle platooning, or

2. On a two-way street, adjacent signals do not provide the necessary degree of a platooning and the proposed or adjacent signals could constitute a progressive signal system.

The installation of a signal according to this warrant should not be considered where the resultant signal spacing is less than 1,000 feet.

Is Warrant 6 Met?	**NO**

Indiana Manual of Uniform Traffic Control Devices
Worksheet for Signal Warrants (Section 4C)
WARRANT 7: Crash Experience

Spot Number:	1		
Intersection:	Old SR 37 South @ Dillman Road		
Date	9/13/2022	by	M Breach

2	**: No. of Lanes on Major St?**
2	**: No. of Lanes on Minor St?**
YES	**: Has adequate trial of remedial measure with adequate enforcement been tried?**
YES	**: Are there 5 or more Crashes Susceptable to Correction by Signalization in a 12 Month Period?**

	Major Volume (Both Apr.)	Minor Volume (One Apr.)	Condition A Major Volume	Condition A Minor Volume	Warrant Condition A Met?	Condition B Major Volume	Condition B Minor Volume	Warrant Condition B Met?
Time	**N-S**	E-W						
00:01 - 01:00	37	3	336	112	**NO**	504	56	**NO**
01:00 - 02:00	25	3	336	112	**NO**	504	56	**NO**
02:00 - 03:00	22	2	336	112	**NO**	504	56	**NO**
03:00 - 04:00	22	5	336	112	**NO**	504	56	**NO**
04:00 - 05:00	44	12	336	112	**NO**	504	56	**NO**
05:00 - 06:00	166	19	336	112	**NO**	504	56	**NO**
06:00 - 07:00	413	46	336	112	**NO**	504	56	**NO**
07:00 - 08:00	697	79	336	112	**NO**	504	56	**YES**
08:00 - 09:00	483	63	336	112	**NO**	504	56	**NO**
09:00 - 10:00	417	40	336	112	**NO**	504	56	**NO**
10:00 - 11:00	393	59	336	112	**NO**	504	56	**NO**
11:00 - 12:00	429	54	336	112	**NO**	504	56	**NO**
12:00 - 13:00	444	62	336	112	**NO**	504	56	**NO**
13:00 - 14:00	438	53	336	112	**NO**	504	56	**NO**
14:00 - 15:00	547	64	336	112	**NO**	504	56	**YES**
15:00 - 16:00	556	77	336	112	**NO**	504	56	**YES**
16:00 - 17:00	721	102	336	112	**NO**	504	56	**YES**
17:00 - 18:00	616	104	336	112	**NO**	504	56	**YES**
18:00 - 19:00	414	49	336	112	**NO**	504	56	**NO**
19:00 - 20:00	298	30	336	112	**NO**	504	56	**NO**
20:00 - 21:00	287	29	336	112	**NO**	504	56	**NO**
21:00 - 22:00	194	20	336	112	**NO**	504	56	**NO**
22:00 - 23:00	102	7	336	112	**NO**	504	56	**NO**
23:00 - 00:00	80	11	336	112	**NO**	504	56	**NO**

Is there a reduction in the warrant thresholds to 56% = **YES**

Number of Hours that met the warrant 7A = **0**

Number of Hours that met the warrant 7B = **5**

A. Is the Minimum Vehicular Volume Warrant Met Based on Crash Patterns? (Condition A)	**NO**
B. Is the Interruption of Continuous Traffic Met Based on Crash Patterns? (Condition B)	**NO**

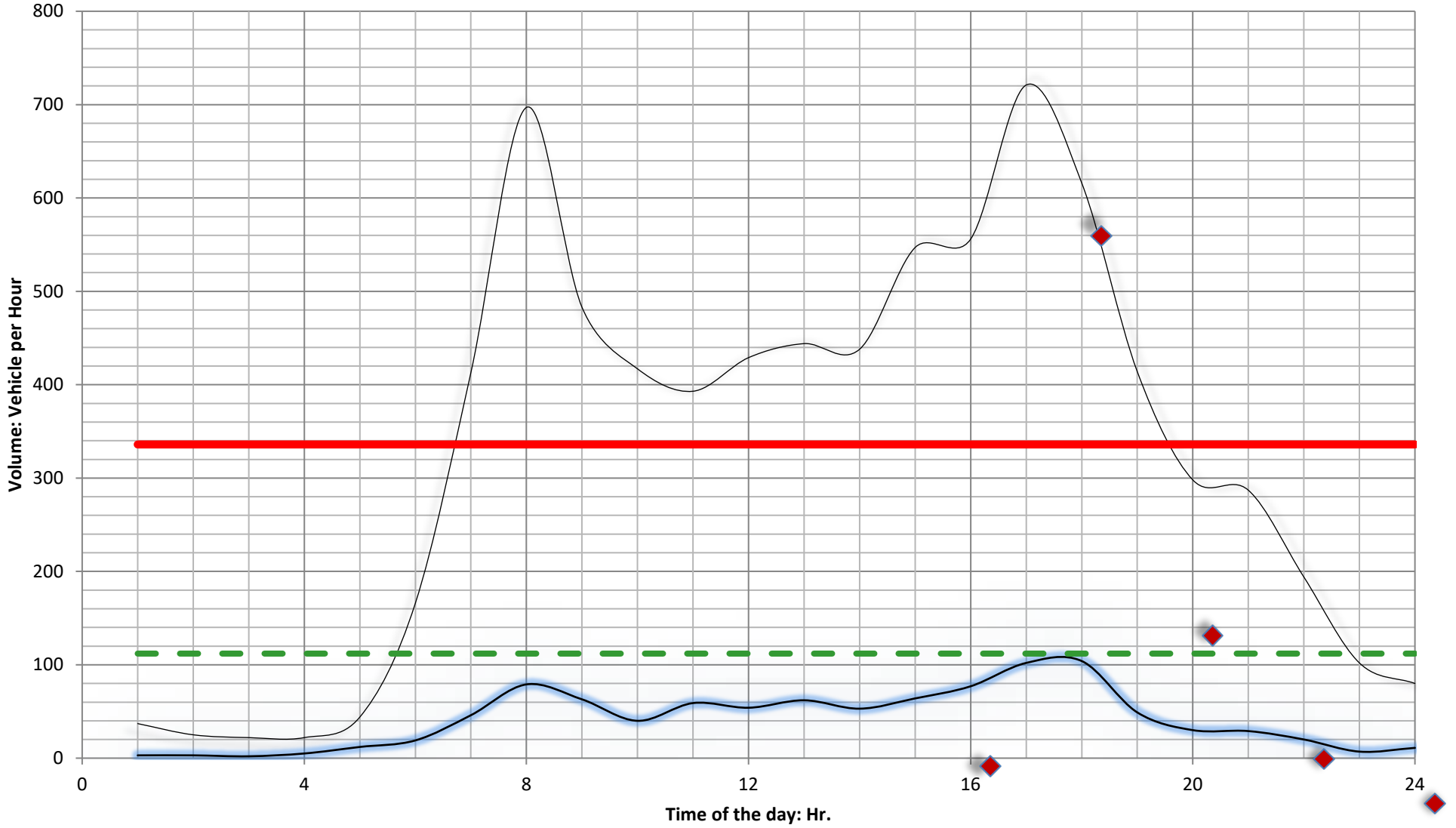


FIGURE 1: WARRANT **7A**

Spot Number: **--1**

Old SR 37 South @ Dillman Road

NO. OF LANES ON MAJOR ST.? **2**

NO. OF LANES ON MINOR ST.? **2**

Is there a reduction in the Warrant Threshold to 56%: **YES**

Number of Hours that met the Warrant: **0**

Does this intersection meet Warrant 7A for signal installation? **NO**

Major St. (Old SR 37 South) Counts Both Approaches

INPUT!#REF!

Major St Warrant Threshold

Minor St. Warrant Threshold

Data Collection Date: **11/19/2022**

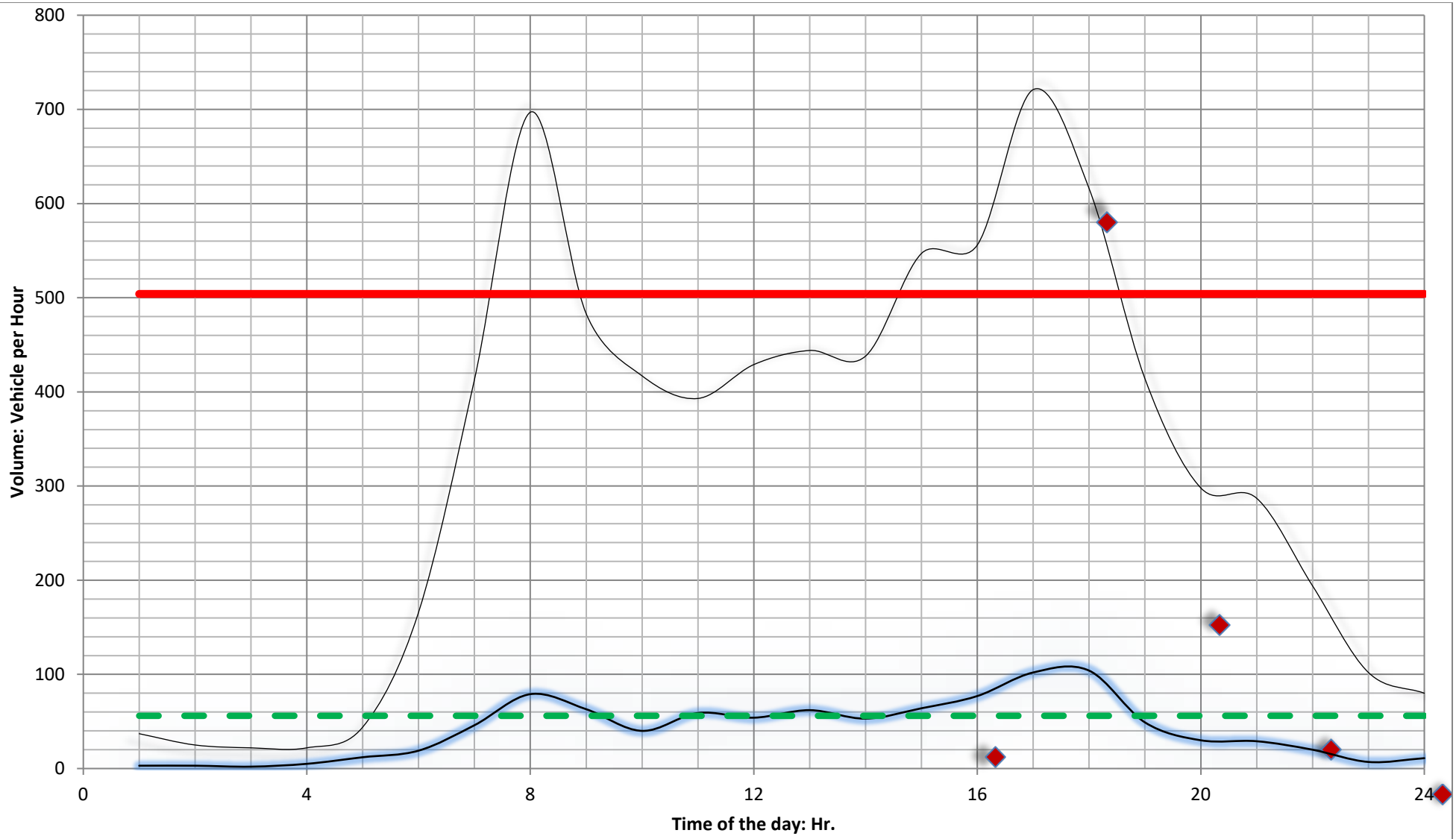


FIGURE 2: WARRANT **7B**

Spot Number: **--1**

Old SR 37 South @ Dillman Road

NO. OF LANES ON MAJOR ST.? **2**

NO. OF LANES ON MINOR ST.? **2**

Is there a reduction in the Warrant Threshold to 56%: **YES**

Number of Hours that met the Warrant: **5**

Does this intersection meet Warrant 7B for signal installation? **NO**

- Major St. (Old SR 37 South) Counts Both Approaches
- INPUT!#REF!
- Major St Warrant Threshold
- Minor St. Warrant Threshold

Data Collection Date: **11/19/2022**

Indiana Manual of Uniform Traffic Control Devices
Worksheet for Signal Warrants (Section 4C)
WARRANT 8: Roadway Network

Spot Number:	1		
Intersection:	Old SR 37 South @ Dillman Road		
Date	9/13/2022	by	M Breach

The need for a traffic signal control study is applicable when the common intersection of two or more major routes meets one or both of the following criteria :

(1) has a total existing, or immediately projected, entering volume of at least 1,000 vehicles during the peak hour and has five-year projected volumes, based on an engineering study, which meet one or more of Warrants 1, 2, and 3 during an average weekday; or

(2) has a total existing or immediately projected entering volume of at least 1,000 vehicles for each of any five hours of a non-normal business day (Saturday and/or Sunday).

Is Warrant 8 Met?	**NO**

Indiana Manual of Uniform Traffic Control Devices
Worksheet for Signal Warrants (Section 4C)
WARRANT 9: Intersection Near a Grade Crossing

Spot Number:	1	
Intersection:	Old SR 37 South @ Dillman Road	
Date	9/13/2022	by M Breach

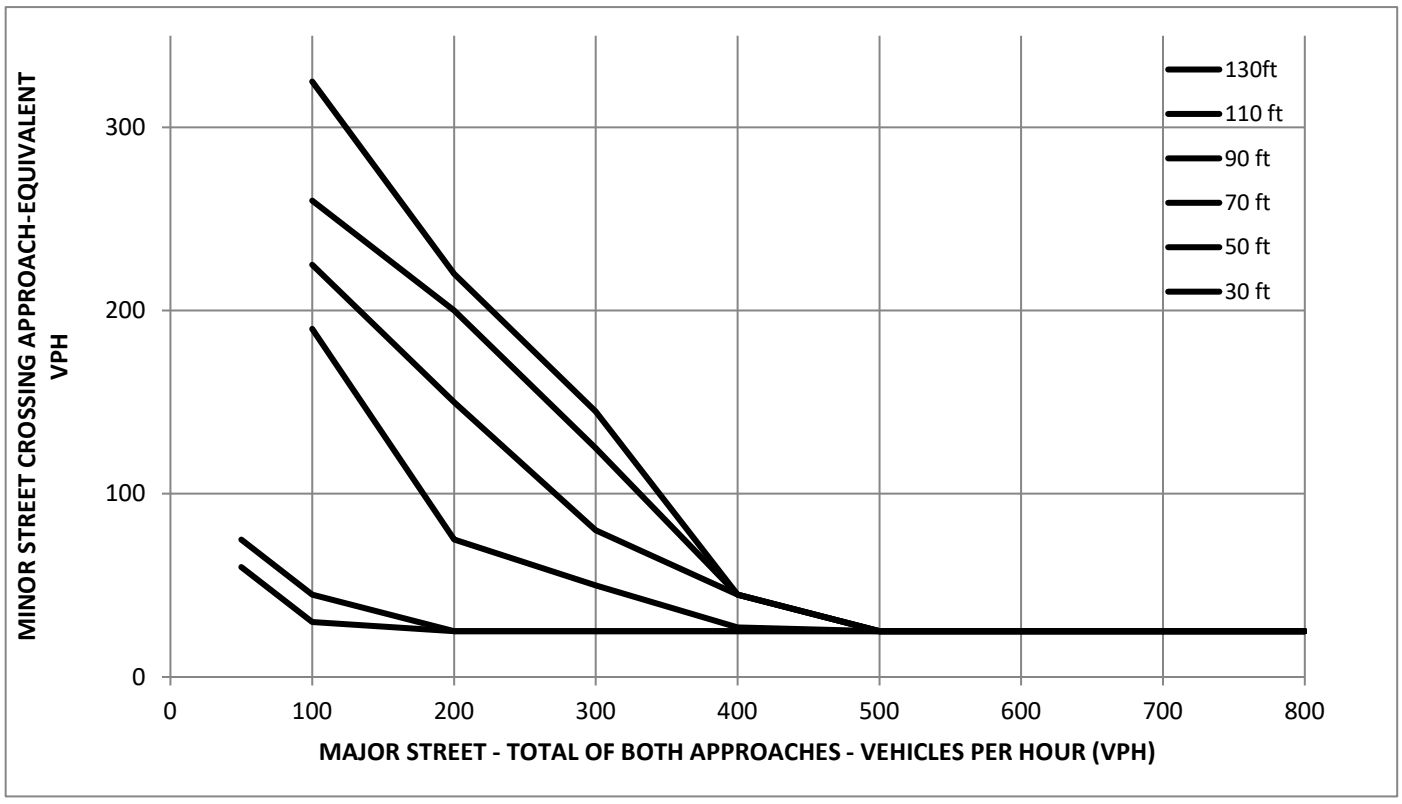
Adjustment Factors		
	0	**: Clear Storage Distance (ft)**
	0	**: Number of Approach Lanes Crossing Tracks**
	0	**: Peak Hour**
	#N/A	**: Peak Hour Major Street Volume**
	#N/A	**: Peak Hour Minor Street Volume**
fail	**0**	**: Trains per Day**
1	**0%**	**: Percentage High Occupancy Busses**
#N/A	**0**	**: Percentage Tractor Trailers**
	#N/A	**: Adjusted Minor Street Volume**
	#N/A	**: Is Figure 4C-10 Satisfied?**

Is Warrant 9 Met?	**#N/A**

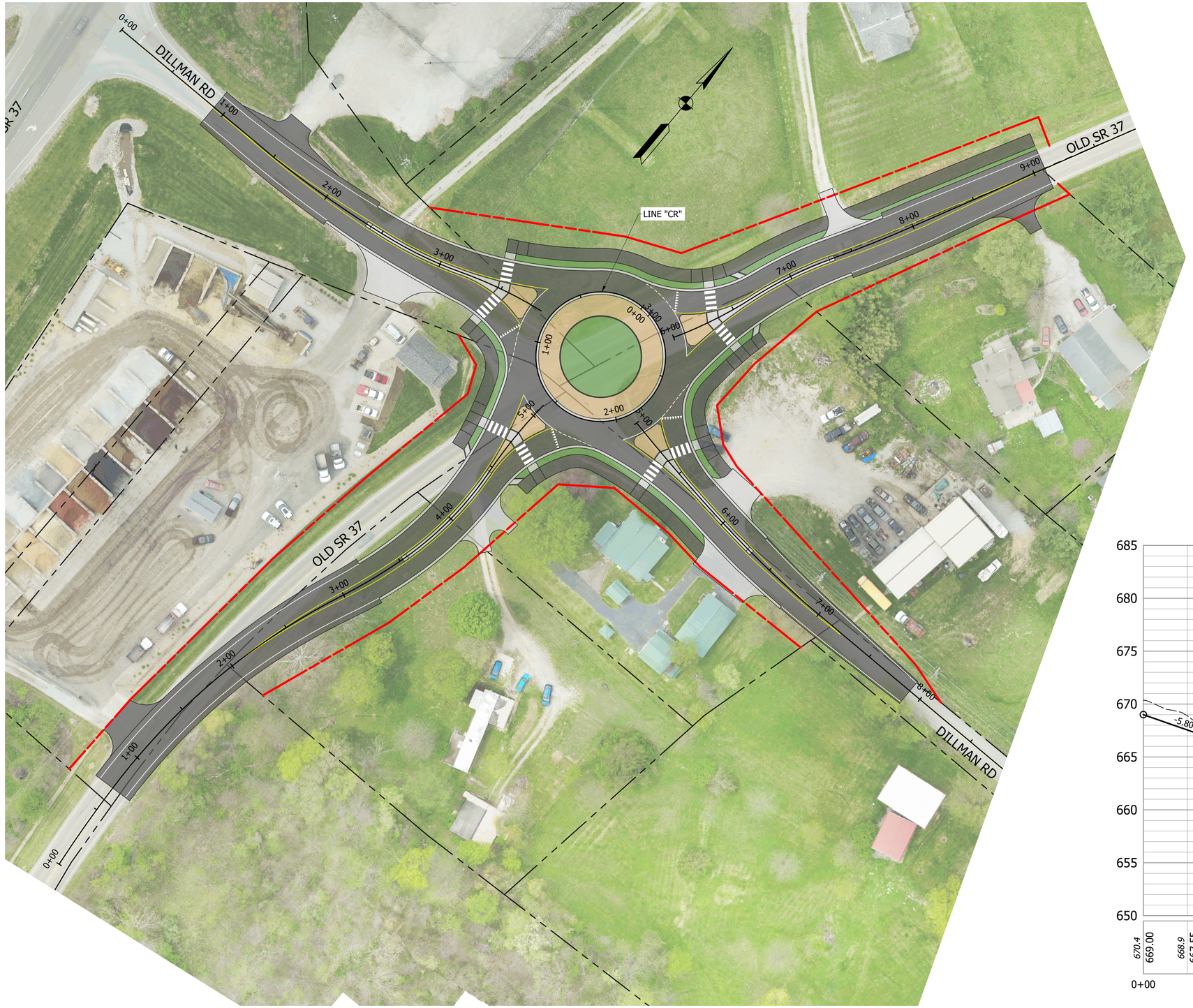
Indiana Manual of Uniform Traffic Control Devices
Worksheet for Signal Warrants (Section 4C)
WARRANT 9: Two or More Lane Approach

Spot Number:	1	
Intersection:	Old SR 37 South @ Dillman Road	
Date	9/13/2022	by M Breach

0	**: Clear Storage Distance (ft)**
#N/A	**: Peak Hour Major Street Volume**
#N/A	**: Peak Hour Minor Street Volume**
0	**: Number of Approach Lanes Crossing Tracks**

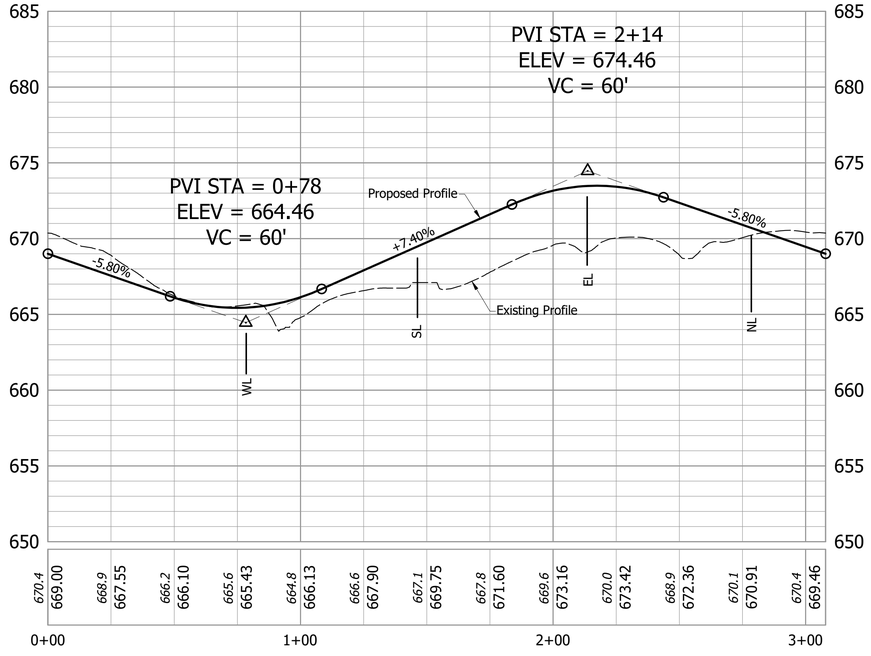


Roundabout Profiles for the Preferred Alternative >>



CR

SCALE:
1" = 30' Horiz.
1" =5' Vert.



EXISTING R/W
PROPOSED R/W

NOT FOR CONSTRUCTION

ALTERNATE 3A

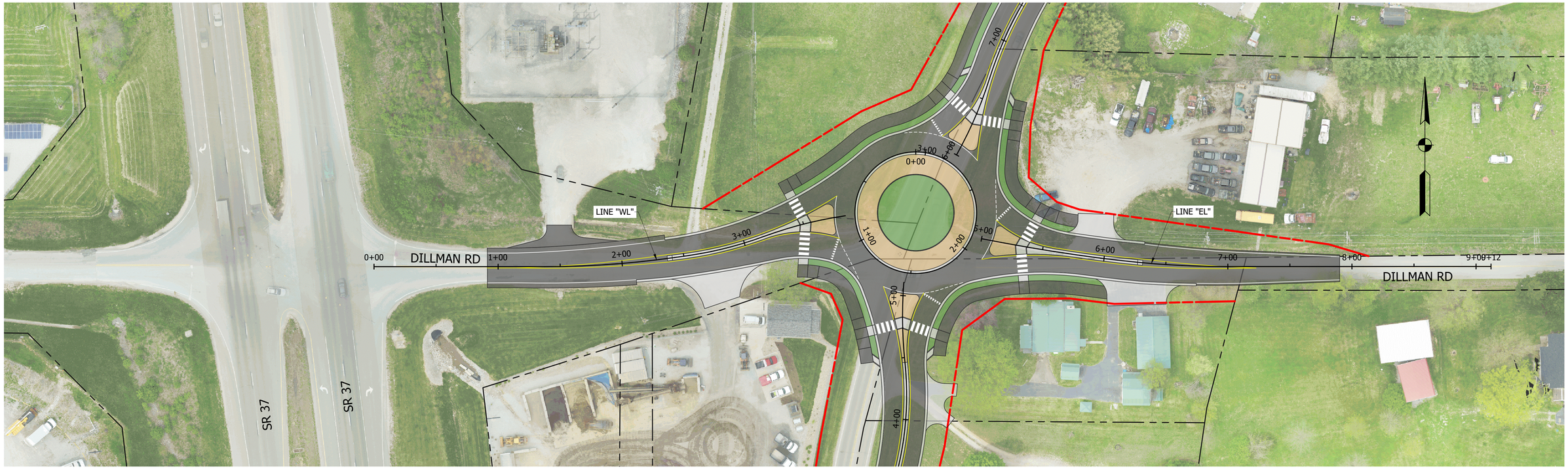
DESIGNED: CC	DRAWN: CC
CHECKED: MB	CHECKED: MB

INDIANA
DEPARTMENT OF TRANSPORTATION

ROUNDABOUT PROFILES
OLD SR 27 SOUTH & DILLLMAN RD

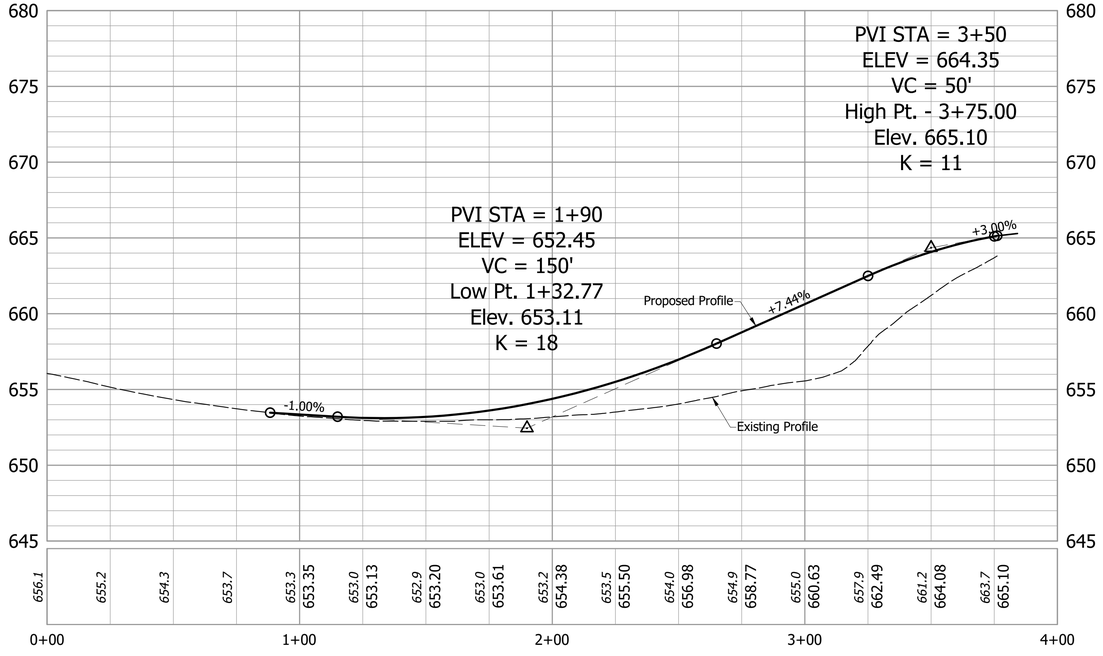
HORIZONTAL SCALE
1" = 40' (34x22)
VERTICAL SCALE
1" = 5' (34x22)
SURVEY BOOK
CONTRACT

A-6



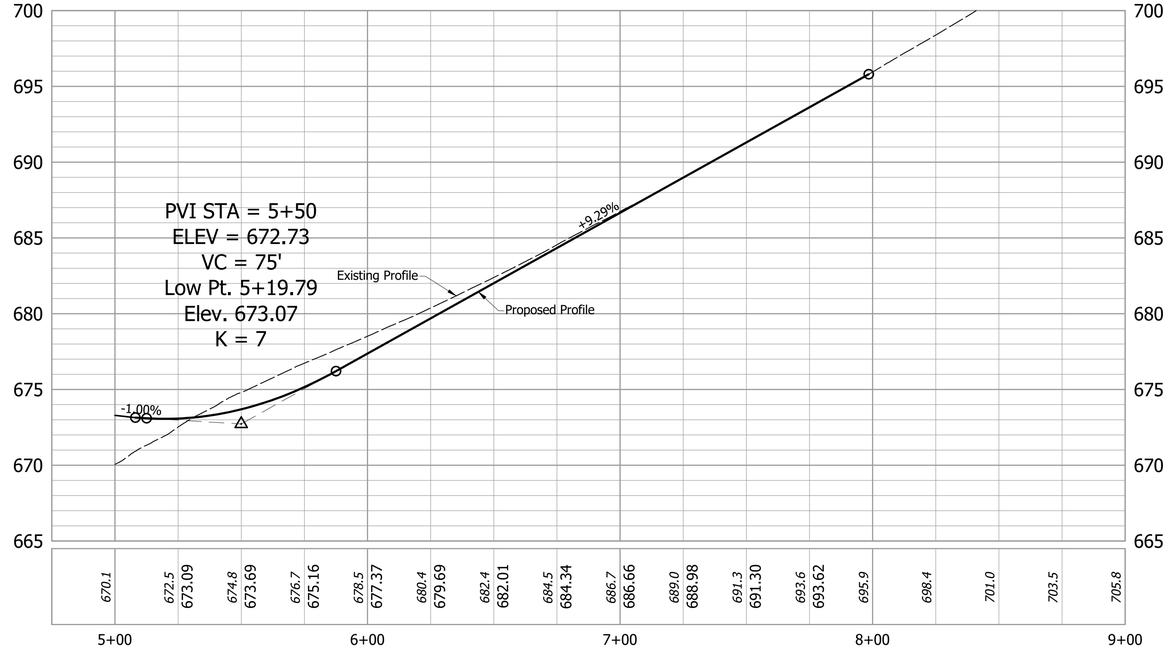
WL

SCALE:
1" = 30' Horiz.
1" =5' Vert.



EL

SCALE:
1" = 30' Horiz.
1" =5' Vert.



EXISTING R/W
PROPOSED R/W

NOT FOR CONSTRUCTION

ALTERNATE 3A

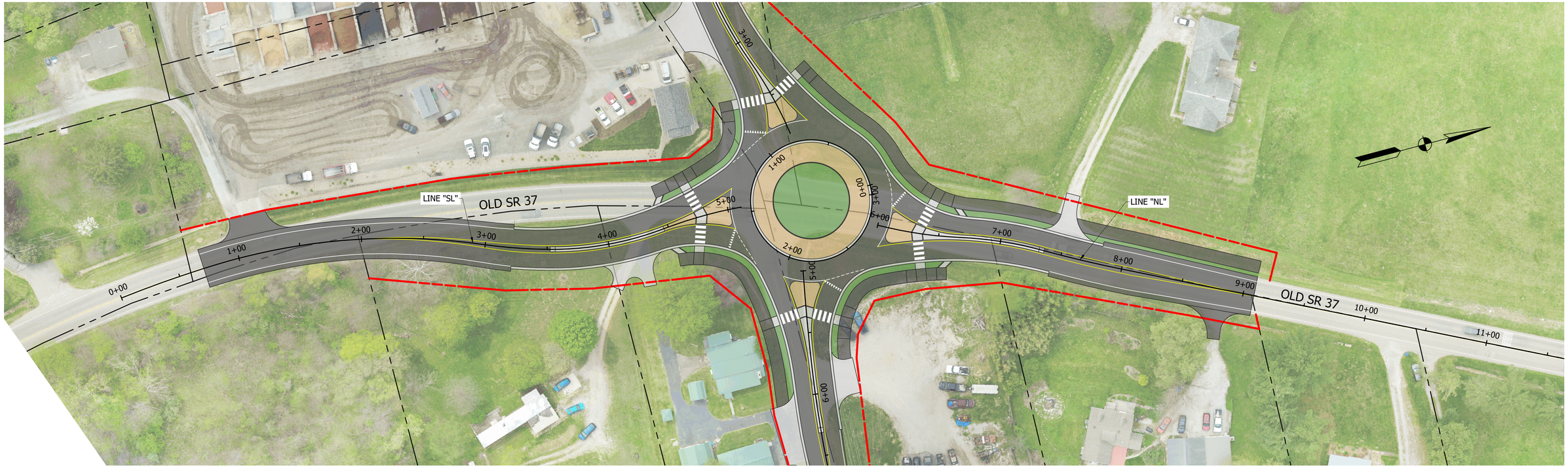
DESIGNED:	DRAWN:
CC	CC
CHECKED:	CHECKED:
MB	MB

INDIANA
DEPARTMENT OF TRANSPORTATION

ROUNDABOUT PROFILES
OLD SR 27 SOUTH & DILLLMAN RD

HORIZONTAL SCALE
1" = 40' (34x22)
VERTICAL SCALE
1" = 5' (34x22)
SURVEY BOOK
CONTRACT

A-7



SL

SCALE:
1" = 30' Horiz.
1" =5' Vert.

NL

SCALE:
1" = 30' Horiz.
1" =5' Vert.

EXISTING R/W

PROPOSED R/W

NOT FOR CONSTRUCTION

ALTERNATE 3A

DESIGNED: CC	DRAWN: CC
CHECKED: MB	CHECKED: MB

INDIANA
DEPARTMENT OF TRANSPORTATION

ROUNDABOUT PROFILES
OLD SR 27 SOUTH & DILLLMAN RD

HORIZONTAL SCALE
1" = 40' (34x22)
VERTICAL SCALE
1" = 5' (34x22)
SURVEY BOOK
CONTRACT

A-8

WB-67 Truck Path Analysis for the Preferred Alternative >>

NOT FOR CONSTRUCTION

INDIANA
DEPARTMENT OF TRANSPORTATION

WB-67 TRUCK PATH ANALYSIS
OLD SR 37 SOUTH AND DILLLMAN RD

DESIGNED:	CC
DRAWN:	CC
CHECKED:	MB
CHECKED:	MB

HORIZONTAL SCALE
1" = 40' (34x22)
VERTICAL SCALE
N/A
SURVEY BOOK
CONTRACT

A-9

Cost Estimates >>

CONSTRUCTION COST ESTIMATE

CLIENT: Monroe County Highway Department

PROJECT: Old SR 37 and Dillman Road Traffic Signal Improvement

PROJECT NO.: TBD

Letting Date
3/1/27

ITEM	ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	105-06845	CONSTRUCTION ENGINEERING	1.00	LS	$ 40,000.00	$ 40,000.00
2	110-01001	MOBILIZATION / DEMOBILIZATION	1.00	LS	$ 100,000.00	$ 100,000.00
3	201-52370	CLEARING RIGHT OF WAY	1.00	LS	$ 20,000.00	$ 20,000.00
4	203-02000	EXCAVATION, COMMON	4,741.00	CYS	$ 26.09	$ 123,692.69
5	203-02070	BORROW	2,667.00	CYS	$ 9.56	$ 25,496.52
6	205-12108	STORM WATER MANAGEMENT BUDGET	25,000.00	DOL	$ 1.00	$ 25,000.00
7	205-12616	STORMWATER MANAGEMENT IMPLEMENTATION	1.00	LS	$ 29,000.00	$ 29,000.00
8	205-12618	SWQCP PREPARATION	1.00	LS	$ 15,000.00	$ 15,000.00
9	207-08264	SUBGRADE TREATMENT, TYPE II	387.00	SYS	$ 19.11	$ 7,395.57
10	207-08266	SUBGRADE TREATMENT, TYPE III	676.00	SYS	$ 3.56	$ 2,406.56
11	207-08268	SUBGRADE TREATMENT, TYPE IV	908.00	SYS	$ 35.76	$ 32,470.08
12	207-12635	SUBGRADE TREATMENT, TYPE IBC	9,044.00	SYS	$ 12.11	$ 109,522.84
13	211-09264	STRUCTURE BACKFILL, TYPE 1	59.00	CYS	$ 45.24	$ 2,669.16
14	214-11796	GEOGRID, TYPE IB	223.00	SYS	$ 3.19	$ 711.37
15	214-12243	GEOTEXTILE FOR PAVEMENT TYPE 2A	38.00	SYS	$ 3.77	$ 143.26
16	302-07455	DENSE GRADED SUBBASE	65.00	CYS	$ 87.81	$ 5,707.65
17	303-01180	COMPACTED AGGREGATE, NO. 53	2,179.00	TON	$ 35.19	$ 76,679.01
18	303-08210	COMPACTED AGGREGATE NO. 53, TEMPORARY	20.00	TON	$ 44.34	$ 886.80
19	304-12623	HMA PATCHING FULL DEPTH, TYPE B	600.00	TON	$ 188.07	$ 112,842.00
20	306-08043	MILLING, TRANSITION	140.00	SYS	$ 4.95	$ 693.00
21	401-07328	QC/QA-HMA, 3, 70, SURFACE, 9.5 mm	756.00	TON	$ 113.39	$ 85,722.84
22	401-07379	QC/QA-HMA, 3, 70, INTERMEDIATE, 12.5 mm	1,249.00	TON	$ 113.37	$ 141,599.13
23	401-07424	QC/QA-HMA, 3, 64, BASE, 19.0 mm	3,086.00	TON	$ 101.57	$ 313,445.02
24	401-10258	JOINT ADHESIVE, SURFACE	4,200.00	LF	$ 0.45	$ 1,890.00
25	401-10259	JOINT ADHESIVE, INTERMEDIATE	4,200.00	LF	$ 0.49	$ 2,058.00
26	401-11785	LIQUID ASPHALT SEALANT	4,200.00	LF	$ 0.15	$ 630.00
27	401-12137	QC/QA-HMA, 4, 76, INTERMEDIATE, OG, 19.0 mm	1,513.00	TON	$ 94.24	$ 142,585.12
28	406-05520	ASPHALT FOR TACK COAT	10.00	TON	$ 692.18	$ 6,921.80
29	604-05528	HMA FOR SIDEWALK	73.00	TON	$ 122.63	$ 8,951.99
30	604-06070	SIDEWALK, CONCRETE	123.00	SYS	$ 77.68	$ 9,554.64
31	604-08086	CURB RAMP, CONCRETE	44.00	SYS	$ 221.51	$ 9,746.44
32	604-12083	DETECTABLE WARNING SURFACES	4.00	SYS	$ 307.79	$ 1,231.16
33	605-06140	CURB AND GUTTER, CONCRETE	926.00	LFT	$ 38.56	$ 35,706.56
34	610-08446	PCCP FOR APPROACHES, 6 IN.	164.00	SYS	$ 98.29	$ 16,119.56
35	610-09108	PCCP FOR APPROACHES, 9 IN.	223.00	SYS	$ 111.84	$ 24,940.32
36	616-06405	RIPRAP, REVETMENT	5.00	TON	$ 68.42	$ 342.10
37	616-12246	GEOTEXTILE FOR RIPRAP TYPE 1A	20.00	SYS	$ 3.98	$ 79.60
38	621-06560	MULCHED SEEDING, U	3,556.00	SYS	$ 2.17	$ 7,716.52
39	621-06567	WATER	3.00	KGAL	$ 4.77	$ 14.31
40	621-06575	SODDING, NURSERY	889.00	SYS	$ 7.41	$ 6,587.49
41	628-09403	FIELD OFFICE, C	9.00	MOS	$ 2,748.97	$ 24,740.73
42	628-11976	COMPUTER SYSTEM EQUIPMENT	1.00	EACH	$ 989.28	$ 989.28
43	715-05048	PIPE, TYPE 4, CIRCULAR, 6 IN.	3,200.00	LFT	$ 10.90	$ 34,880.00
44	715-05151	PIPE, TYPE 2, CIRCULAR, 15 IN.	218.00	LFT	$ 79.57	$ 17,346.26
45	715-05152	PIPE, TYPE 2, CIRCULAR, 18 IN.	248.00	LFT	$ 81.26	$ 20,152.48
46	715-09064	VIDEO INSPECTION FOR PIPE	466.00	LFT	$ 2.05	$ 955.30
47	715-46005	PIPE END SECTION, DIAMETER 15 IN.	12.00	EACH	$ 893.25	$ 10,719.00
48	715-46010	PIPE END SECTION, DIAMETER 18 IN.	8.00	EACH	$ 967.69	$ 7,741.52
49	718-06528	OUTLET PROTECTOR, 1	10.00	EACH	$ 1,266.90	$ 12,669.00
50	718-06532	VIDEO INSPECTION FOR UNDERDRAINS	3,000.00	LFT	$ 1.56	$ 4,680.00
51	718-12305	GEOTEXTILES FOR UNDERDRAIN, TYPE 1A	3,435.00	SYS	$ 2.29	$ 7,866.15
52	718-52610	AGGREGATE FOR UNDERDRAINS	278.00	CYS	$ 72.85	$ 20,252.30
53	720-98555	INLET, C15	12.00	EACH	$ 3,428.48	$ 41,141.76
54	801-04308	ROAD CLOSURE SIGN ASSEMBLY	4.00	EACH	$ 347.03	$ 1,388.12
55	801-06203	TEMPORARY PAVEMENT MARKING, 4 IN.	6,400.00	LFT	$ 0.40	$ 2,560.00
56	801-06640	CONSTRUCTION SIGN, A	21.00	EACH	$ 225.82	$ 4,742.22
57	801-06645	CONSTRUCTION SIGN, B	7.00	EACH	$ 101.91	$ 713.37
58	801-06710	FLASHING ARROW SIGN	90.00	DAY	$ 19.48	$ 1,753.20
59	801-06775	MAINTAINING TRAFFIC	1.00	LS	$ 95,000.00	$ 95,000.00
60	801-07118	BARRICADE, III-A	72.00	LFT	$ 17.74	$ 1,277.28
61	802-05701	SIGN POST, SQUARE, 1, REINFORCED ANCHOR BASE	100.00	LFT	$ 21.89	$ 2,189.00
62	802-05702	SIGN POST, SQUARE, 2, REINFORCED ANCHOR BASE	20.00	LFT	$ 30.11	$ 602.20

CONSTRUCTION COST ESTIMATE

CLIENT: Monroe County Highway Department

PROJECT: Old SR 37 and Dillman Road Traffic Signal Improvement

PROJECT NO.: TBD

Letting Date
3/1/27

ITEM	ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
63	802-09837	SIGN, SHEET, DOUBLE FACED, WITH LEGEND, 0.080 IN.	24.00	SFT	$ 51.33	$ 1,231.92
64	802-09840	SIGN, SHEET, WITH LEGEND, 0.100 IN. THICKNESS	100.00	SFT	$ 25.50	$ 2,550.00
65	802-09842	SIGN, SHEET, WITH LEGEND, 0.125 IN. THICKNESS	20.00	SFT	$ 29.40	$ 588.00
66	805-01579	MISCELLANEOUS EQUIPMENT FOR TRAFFIC SIGNALS	1.00	LS	$ 10,791.16	$ 10,791.16
67	805-01815	SIGNAL POLE FOUNDATION, 36 IN. X 144 IN.	2.00	EACH	$ 4,629.14	$ 9,258.28
68	805-01842	HANDHOLE, SIGNAL	2.00	EACH	$ 1,528.24	$ 3,056.48
69	805-01844	CONDUIT, STEEL, GALVANIZED, 2 IN.	2,983.00	LFT	$ 31.99	$ 95,426.17
70	805-02150	PEDESTRIAN SIGNAL HEAD, COUNTDOWN, 18 IN.	6.00	EACH	$ 873.14	$ 5,238.84
71	805-02645	SIGNAL POLE FOUNDATION, 24 IN. X 24 IN. X 36 IN.	6.00	EACH	$ 1,075.33	$ 6,451.98
72	805-03979	EMERGENCY VEHICLE LIGHT DETECTOR, TWO CHANNEL, TWO DIRECTION	1.00	EACH	$ 2,702.13	$ 2,702.13
73	805-03980	EMERGENCY VEHICLE CONFIRMATION LIGHT KIT	2.00	EACH	$ 552.30	$ 1,104.60
74	805-09539	LOOP DETECTOR DELAY AMPLIFIER, COUNTING, 2 CHANNEL	5.00	EACH	$ 443.09	$ 2,215.45
75	805-11817	PEDESTRIAN PUSH BUTTON, APS	6.00	EACH	$ 1,279.50	$ 7,677.00
76	805-78109	CONTROLLER AND CABINET, SECONDARY MENU DRIVEN, 8 PHASE	1.00	EACH	$ 24,025.11	$ 24,025.11
77	805-78205	TRAFFIC SIGNAL HEAD, 3 SECTION, 12 IN. RED, AMBER, GREEN	9.00	EACH	$ 901.64	$ 8,114.76
78	805-78415	SPAN CATENARY AND TETHER	1.00	EACH	$ 4,323.49	$ 4,323.49
79	805-78420	DISCONNECT HANGER	1.00	EACH	$ 464.75	$ 464.75
80	805-78445	SIGNAL SERVICE	1.00	EACH	$ 1,531.92	$ 1,531.92
81	805-78467	SIGNAL CABLE, 3C 8GA.	46.00	LFT	$ 4.89	$ 224.94
82	805-78470	SIGNAL CABLE, ROADWAY LOOP, 1C 14GA.	5,133.00	LFT	$ 0.75	$ 3,849.75
83	805-78485	SIGNAL CABLE, 5C 14GA.	600.00	LFT	$ 2.79	$ 1,674.00
84	805-78490	SIGNAL CABLE, 7C 14GA.	100.00	LFT	$ 3.09	$ 309.00
85	805-78495	SIGNAL CABLE, 9C 14GA.	76.00	LFT	$ 3.71	$ 281.96
86	805-78510	SIGNAL CABLE, 2C 16GA., SHIELDED	8,778.00	LFT	$ 2.37	$ 20,803.86
87	805-78785	SIGNAL DETECTOR HOUSING	13.00	EACH	$ 1,228.39	$ 15,969.07
88	805-78795	SAW CUT FOR ROADWAY LOOP AND SEALER	904.00	LFT	$ 12.38	$ 11,191.52
89	805-78925	CONTROLLER CABINET FOUNDATION, P1	1.00	EACH	$ 1,735.45	$ 1,735.45
90	805-81060	SIGNAL STRAIN POLE, STEEL, 36 FT.	2.00	EACH	$ 10,670.28	$ 21,340.56
91	807-12202	LUMINAIRE, LOW LUMEN ROADWAY	2.00	EACH	$ 940.30	$ 1,880.60
92	807-86889	CABLE, POLE CIRCUIT, THWN, NO. 10 COPPER, STRANDED 1/C	188.00	LFT	$ 1.70	$ 319.60
93	807-86910	CONNECTOR KIT, UNFUSED	2.00	EACH	$ 56.90	$ 113.80
94	807-86915	CONNECTOR KIT, FUSED	2.00	SFT	$ 57.44	$ 114.88
95	807-86930	INSULATION LINK, NONWATERPROOFED	6.00	EACH	$ 27.72	$ 166.32
96	808-75043	LINE, THERMOPLASTIC, SOLID, WHITE, 6 IN.	600.00	LFT	$ 0.86	$ 516.00
97	808-75247	LINE, THERMOPLASTIC, SOLID, YELLOW, 6 IN.	2,000.00	LFT	$ 0.97	$ 1,940.00
98	808-75297	TRANSVERSE MARKINGS, THERMOPLASTIC, STOP LINE, 24 IN.	100.00	LFT	$ 10.45	$ 1,045.00
99	808-75320	PAVEMENT MESSAGE MARKING, THERMOPLASTIC LANE	9.00	EACH	$ 178.20	$ 1,603.80
					SUBTOTAL	**$ 2,132,350.43**
					CONTINGENCIES @ 20.00%	$ 426,470.09
					CONSTRUCTION TOTAL	**$ 2,558,820.52**
					USE TOTAL	**$ 2,600,000.00**

CONSTRUCTION COST ESTIMATE

CLIENT: Monroe County Highway Department

PROJECT: Old SR 37 and Dillman Road Roundabout Intersection Improvement

PROJECT NO.: TBD

Letting Date
3/1/27

ITEM	ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	105-06845	CONSTRUCTION ENGINEERING	1.00	LS	$ 40,000.00	$ 40,000.00
2	110-01001	MOBILIZATION / DEMOBILIZATION	1.00	LS	$ 100,000.00	$ 100,000.00
3	201-52370	CLEARING RIGHT OF WAY	1.00	LS	$ 20,000.00	$ 20,000.00
4	203-02000	EXCAVATION, COMMON	5,926.00	CYS	$ 26.09	$ 154,609.34
5	203-02070	BORROW	4,741.00	CYS	$ 9.56	$ 45,323.96
6	205-12108	STORM WATER MANAGEMENT BUDGET	25,000.00	DOL	$ 1.00	$ 25,000.00
7	205-12616	STORMWATER MANAGEMENT IMPLEMENTATION	1.00	LS	$ 29,000.00	$ 29,000.00
8	205-12618	SWQCP PREPARATION	1.00	LS	$ 15,000.00	$ 15,000.00
9	207-08264	SUBGRADE TREATMENT, TYPE II	399.00	SYS	$ 19.11	$ 7,624.89
10	207-08266	SUBGRADE TREATMENT, TYPE III	1,089.00	SYS	$ 3.56	$ 3,876.84
11	207-08268	SUBGRADE TREATMENT, TYPE IV	535.00	SYS	$ 35.76	$ 19,131.60
12	207-12635	SUBGRADE TREATMENT, TYPE IBC	5,348.00	SYS	$ 12.11	$ 64,764.28
13	211-09264	STRUCTURE BACKFILL, TYPE 1	87.00	CYS	$ 45.24	$ 3,935.88
14	214-11796	GEOGRID, TYPE IB	235.00	SYS	$ 3.19	$ 749.65
15	214-12243	GEOTEXTILE FOR PAVEMENT TYPE 2A	23.00	SYS	$ 3.77	$ 86.71
16	302-07455	DENSE GRADED SUBBASE	67.00	CYS	$ 87.81	$ 5,883.27
17	303-01180	COMPACTED AGGREGATE, NO. 53	1,488.00	TON	$ 35.19	$ 52,362.72
18	303-08210	COMPACTED AGGREGATE NO. 53, TEMPORARY	20.00	TON	$ 44.34	$ 886.80
19	304-12623	HMA PATCHING FULL DEPTH, TYPE B	354.00	TON	$ 188.07	$ 66,576.78
20	306-08043	MILLING, TRANSITION	140.00	SYS	$ 4.95	$ 693.00
21	401-07328	QC/QA-HMA, 3, 70, SURFACE, 9.5 mm	448.00	TON	$ 113.39	$ 50,798.72
22	401-07379	QC/QA-HMA, 3, 70, INTERMEDIATE, 12.5 mm	736.00	TON	$ 113.37	$ 83,440.32
23	401-07424	QC/QA-HMA, 3, 64, BASE, 19.0 mm	1,766.00	TON	$ 101.57	$ 179,372.62
24	401-10258	JOINT ADHESIVE, SURFACE	1,600.00	LF	$ 0.45	$ 720.00
25	401-10259	JOINT ADHESIVE, INTERMEDIATE	1,600.00	LF	$ 0.49	$ 784.00
26	401-11785	LIQUID ASPHALT SEALANT	1,600.00	LF	$ 0.15	$ 240.00
27	401-12137	QC/QA-HMA, 4, 76, INTERMEDIATE, OG, 19.0 mm	669.00	TON	$ 94.24	$ 63,046.56
28	406-05520	ASPHALT FOR TACK COAT	6.00	TON	$ 692.18	$ 4,153.08
29	502-06327	PCCP, 10 IN.	3,921.00	SYS	$ 90.29	$ 354,027.09
30	604-05528	HMA FOR SIDEWALK	135.00	TON	$ 122.63	$ 16,555.05
31	604-06070	SIDEWALK, CONCRETE	131.00	SYS	$ 77.68	$ 10,176.08
34	605-06120	CURB, CONCRETE	195.00	LFT	$ 43.80	$ 8,541.00
35	605-06140	CURB AND GUTTER, CONCRETE	1,771.00	LFT	$ 38.56	$ 68,289.76
36	605-06255	CENTER CURB, D, CONCRETE	338.00	SYS	$ 138.76	$ 46,900.88
37	610-08446	PCCP FOR APPROACHES, 6 IN.	164.00	SYS	$ 98.29	$ 16,119.56
38	610-09108	PCCP FOR APPROACHES, 9 IN.	235.00	SYS	$ 111.84	$ 26,282.40
39	616-06405	RIPRAP, REVETMENT	5.00	TON	$ 68.42	$ 342.10
40	616-12246	GEOTEXTILE FOR RIPRAP TYPE 1A	20.00	SYS	$ 3.98	$ 79.60
41	621-06560	MULCHED SEEDING, U	3,556.00	SYS	$ 2.17	$ 7,716.52
42	621-06567	WATER	3.00	KGAL	$ 4.77	$ 14.31
43	621-06575	SODDING, NURSERY	889.00	SYS	$ 7.41	$ 6,587.49
44	628-09403	FIELD OFFICE, C	9.00	MOS	$ 2,748.97	$ 24,740.73
45	628-11976	COMPUTER SYSTEM EQUIPMENT	1.00	EACH	$ 989.28	$ 989.28
46	715-05048	PIPE, TYPE 4, CIRCULAR, 6 IN.	3,200.00	LFT	$ 10.90	$ 34,880.00
47	715-05151	PIPE, TYPE 2, CIRCULAR, 15 IN.	218.00	LFT	$ 79.57	$ 17,346.26
48	715-05152	PIPE, TYPE 2, CIRCULAR, 18 IN.	448.00	LFT	$ 81.26	$ 36,404.48
49	715-09064	VIDEO INSPECTION FOR PIPE	666.00	LFT	$ 2.05	$ 1,365.30
50	715-46005	PIPE END SECTION, DIAMETER 15 IN.	12.00	EACH	$ 893.25	$ 10,719.00
51	715-46010	PIPE END SECTION, DIAMETER 18 IN.	8.00	EACH	$ 967.69	$ 7,741.52
52	718-06528	OUTLET PROTECTOR, 1	10.00	EACH	$ 1,266.90	$ 12,669.00
53	718-06532	VIDEO INSPECTION FOR UNDERDRAINS	3,000.00	LFT	$ 1.56	$ 4,680.00
54	718-12305	GEOTEXTILES FOR UNDERDRAIN, TYPE 1A	3,435.00	SYS	$ 2.29	$ 7,866.15
55	718-52610	AGGREGATE FOR UNDERDRAINS	278.00	CYS	$ 72.85	$ 20,252.30
56	720-98555	INLET, C15	12.00	EACH	$ 3,428.48	$ 41,141.76
57	801-04308	ROAD CLOSURE SIGN ASSEMBLY	4.00	EACH	$ 347.03	$ 1,388.12
58	801-06203	TEMPORARY PAVEMENT MARKING, 4 IN.	6,400.00	LFT	$ 0.40	$ 2,560.00
59	801-06640	CONSTRUCTION SIGN, A	21.00	EACH	$ 225.82	$ 4,742.22

CONSTRUCTION COST ESTIMATE

CLIENT: Monroe County Highway Department

PROJECT: Old SR 37 and Dillman Road Roundabout Intersection Improvement

PROJECT NO.: TBD

Letting Date
3/1/27

ITEM	ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
60	801-06645	CONSTRUCTION SIGN, B	7.00	EACH	$ 101.91	$ 713.37
61	801-06710	FLASHING ARROW SIGN	90.00	DAY	$ 100.00	$ 9,000.00
62	801-06775	MAINTAINING TRAFFIC	1.00	LS	$ 95,000.00	$ 95,000.00
63	801-07118	BARRICADE, III-A	72.00	LFT	$ 17.74	$ 1,277.28
64	802-05701	SIGN POST, SQUARE, 1, REINFORCED ANCHOR BASE	100.00	LFT	$ 21.89	$ 2,189.00
65	802-05702	SIGN POST, SQUARE, 2, REINFORCED ANCHOR BASE	20.00	LFT	$ 30.11	$ 602.20
66	802-09837	SIGN, SHEET, DOUBLE FACED, WITH LEGEND, 0.080 IN.	24.00	SFT	$ 51.33	$ 1,231.92
67	802-09840	SIGN, SHEET, WITH LEGEND, 0.100 IN. THICKNESS	100.00	SFT	$ 25.50	$ 2,550.00
68	802-09842	SIGN, SHEET, WITH LEGEND, 0.125 IN. THICKNESS	20.00	SFT	$ 29.40	$ 588.00
69	807-03951	LIGHT POLE, ORNAMENTAL, 30 FT EMH, 8 FT MAST ARM	12.00	EACH	$ 5,297.29	$ 63,567.48
70	807-12791	LIGHTING FOUNDATION, CONVENTIONAL POLE, CONCRETE WITH GROUNDING	12.00	EACH	$ 2,074.47	$ 24,893.64
71	807-86910	CONNECTOR KIT, UNFUSED	12.00	EACH	$ 56.90	$ 682.80
72	807-86915	CONNECTOR KIT, FUSED	12.00	SFT	$ 57.44	$ 689.28
73	807-86920	MULTIPLE COMPRESSION FITTING, NONWATERPROOFED	24.00	EACH	$ 32.54	$ 780.96
74	807-86925	MULTIPLE COMPRESSION FITTING, WATERPROOFED	4.00	EACH	$ 35.24	$ 140.96
75	807-86930	INSULATION LINK, NONWATERPROOFED	38.00	EACH	$ 27.72	$ 1,053.36
76	807-86935	INSULATION LINK, WATERPROOFED	8.00	EACH	$ 32.82	$ 262.56
77	808-00001	PAVEMENT MARKINGS	1.00	LS	$ 15,000.00	$ 15,000.00
					SUBTOTAL	**$ 2,074,630.69**
					CONTINGENCIES @ 20.00%	$ 414,926.14
					CONSTRUCTION TOTAL	**$ 2,489,556.83**
					USE TOTAL	**$ 2,500,000.00**

CONSTRUCTION COST ESTIMATE

CLIENT: Monroe County Highway Department

PROJECT: Old SR 37 and Dillman Road Intersection Sight Distance Improvement

PROJECT NO.: TBD

Letting Date
3/1/27

ITEM	ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	105-06845	CONSTRUCTION ENGINEERING	1.00	LS	$ 20,000.00	$ 20,000.00
2	110-01001	MOBILIZATION / DEMOBILIZATION	1.00	LS	$ 40,000.00	$ 40,000.00
3	201-52370	CLEARING RIGHT OF WAY	1.00	LS	$ 10,000.00	$ 10,000.00
4	203-02000	EXCAVATION, COMMON	8,092.00	CYS	$ 26.09	$ 211,120.28
5	205-12108	STORM WATER MANAGEMENT BUDGET	20,000.00	DOL	$ 1.00	$ 20,000.00
6	205-12616	STORMWATER MANAGEMENT IMPLEMENTATION	1.00	LS	$ 32,000.00	$ 32,000.00
7	205-12618	SWQCP PREPARATION	1.00	LS	$ 10,000.00	$ 10,000.00
9	207-08268	SUBGRADE TREATMENT, TYPE IV	316.00	SYS	$ 35.76	$ 11,300.16
10	207-12635	SUBGRADE TREATMENT, TYPE IBC	3,155.00	SYS	$ 12.11	$ 38,207.05
11	211-09264	STRUCTURE BACKFILL, TYPE 1	24.00	CYS	$ 45.24	$ 1,085.76
12	214-12243	GEOTEXTILE FOR PAVEMENT TYPE 2A	13.00	SYS	$ 3.77	$ 49.01
15	303-08210	COMPACTED AGGREGATE NO. 53, TEMPORARY	10.00	TON	$ 44.34	$ 443.40
16	304-12623	HMA PATCHING FULL DEPTH, TYPE B	209.00	TON	$ 188.07	$ 39,306.63
18	401-07328	QC/QA-HMA, 3, 70, SURFACE, 9.5 mm	263.00	TON	$ 113.39	$ 29,821.57
19	401-07379	QC/QA-HMA, 3, 70, INTERMEDIATE, 12.5 mm	434.00	TON	$ 113.37	$ 49,202.58
20	401-07424	QC/QA-HMA, 3, 64, BASE, 19.0 mm	1,042.00	TON	$ 101.57	$ 105,835.94
21	401-10258	JOINT ADHESIVE, SURFACE	2,300.00	LF	$ 0.45	$ 1,035.00
22	401-10259	JOINT ADHESIVE, INTERMEDIATE	2,300.00	LF	$ 0.49	$ 1,127.00
23	401-11785	LIQUID ASPHALT SEALANT	2,300.00	LF	$ 0.15	$ 345.00
24	401-12137	QC/QA-HMA, 4, 76, INTERMEDIATE, OG, 19.0 mm	395.00	TON	$ 94.24	$ 37,224.80
25	406-05520	ASPHALT FOR TACK COAT	4.00	TON	$ 692.18	$ 2,768.72
27	616-06405	RIPRAP, REVETMENT	5.00	TON	$ 68.42	$ 342.10
28	616-12246	GEOTEXTILE FOR RIPRAP TYPE 1A	20.00	SYS	$ 3.98	$ 79.60
29	621-06560	MULCHED SEEDING, U	1,445.00	SYS	$ 2.17	$ 3,135.65
30	621-06567	WATER	1.00	KGAL	$ 4.77	$ 4.77
31	621-06575	SODDING, NURSERY	362.00	SYS	$ 7.41	$ 2,682.42
32	628-09403	FIELD OFFICE, C	6.00	MOS	$ 2,748.97	$ 16,493.82
33	628-11976	COMPUTER SYSTEM EQUIPMENT	1.00	EACH	$ 989.28	$ 989.28
34	715-05048	PIPE, TYPE 4, CIRCULAR, 6 IN.	650.00	LFT	$ 10.90	$ 7,085.00
35	715-05151	PIPE, TYPE 2, CIRCULAR, 15 IN.	90.00	LFT	$ 79.57	$ 7,161.30
36	715-05152	PIPE, TYPE 2, CIRCULAR, 18 IN.	100.00	LFT	$ 81.26	$ 8,126.00
40	718-06528	OUTLET PROTECTOR, 1	6.00	EACH	$ 1,266.90	$ 7,601.40
40	718-06532	VIDEO INSPECTION FOR UNDERDRAINS	-	LFT	$ 1.56	$ -
41	718-12305	GEOTEXTILES FOR UNDERDRAIN, TYPE 1A	698.00	SYS	$ 2.29	$ 1,598.42
42	718-52610	AGGREGATE FOR UNDERDRAINS	57.00	CYS	$ 72.85	$ 4,152.45
45	801-06640	CONSTRUCTION SIGN, A	10.00	EACH	$ 225.82	$ 2,258.20
47	801-06775	MAINTAINING TRAFFIC	1.00	LS	$ 40,000.00	$ 40,000.00
48	801-07118	BARRICADE, III-A	72.00	LFT	$ 17.74	$ 1,277.28
49	802-05701	SIGN POST, SQUARE, 1, REINFORCED ANCHOR BASE	20.00	LFT	$ 21.89	$ 437.80
51	808-75043	LINE, THERMOPLASTIC, SOLID, WHITE, 6 IN.	1,400.00	LFT	$ 0.86	$ 1,204.00
52	808-75247	LINE, THERMOPLASTIC, SOLID, YELLOW, 6 IN.	1,035.00	LFT	$ 0.97	$ 1,003.95
54	808-75320	PAVEMENT MESSAGE MARKING, THERMOPLASTIC LANE INDICATION ARROW	2.00	EACH	$ 178.20	$ 356.40
					SUBTOTAL	**$ 831,750.96**
					CONTINGENCIES @ 20.00%	$ 166,350.19
					CONSTRUCTION TOTAL	**$ 998,101.15**
					USE TOTAL	**$ 1,000,000.00**

Utility Information >>

Dig Site Information

Street / Address: E DILLMAN RD
Cross Street:
State: IN County: MONROE Township: PERRY

Affected Service Areas

Name	Utility Types	Design Engineer	Alternate
BLOOMINGTON UTILITIES, CITY OF	SEWER, WATER	TOM STALEY (812) 349-3637 600 E MILLER DR BLOOMINGTON, IN 47402	
CENTERPOINT ENERGY (SOUTH) (FORMERLY VECTREN)	GAS	JON EASTHAM (765) 287-2119 publicproject@centerpointenergy.com 1800 W. 26TH ST. MUNCIE, IN 47302	
COMCAST CABLE (SOUTH)	CABLE TV		
DUKE ENERGY	ELECTRIC	APRIL EDWARDS (317) 838-1564 dei-dline-coord@duke-energy.com 1000 E. MAIN ST. PLAINFIELD, IN 46168	DON MCDUFFY (317) 776-5320 dei-dline-coord@duke-energy.com 100 S MILL CREEK RD NOBLESVILLE, IN 46062
SMITHVILLE TELEPHONE COMPANY, INC.	TELEPHONE	BRAD HUDOFF (812) 935-2423 brad.hudoff@smithville.com 1600 W. TEMPERANCE ST. ELLETTSVILLE, IN 47429	CHAD HAWKINS (812) 935-2377 chad.hawkins@smithville.com 1600 W. TEMERANCE ST. ELLETTSVILLE, IN 47429
SOUTHERN MONROE WATER AUTHORITY	WATER	FLOYD MILLER, JR (812) 824-7881 office@southernmonroewater.com 5790 S FAIRFAX RD BLOOMINGTON, IN 47401	

2023 BMCMPO Committee Meeting Schedules

	POLICY COMMITTEE	TECHNICAL ADVISORY COMMITTEE	CITIZENS ADVISORY COMMITTEE
January	**WINTER RECESS**	2/3/2023, 10:00 amº	2/1/2023, 6:30 pm^
February	2/10/2023, 1:30 pm	2/22/2023, 10:00 am	2/22/2023, 6:30 pm
March	3/10/2023, 1:30 pm	3/22/2023, 10:00 am	3/22/2023, 6:30 pm
April	4/14/2023, 1:30 pm	4/26/2023, 10:00 am	4/26/2023, 6:30 pm
May	5/12/2023, 1:30 pm	5/24/2023, 10:00 am	5/24/2023, 6:30 pm
June	6/30/2023, 1:30 pmº	6/28/2023, 10:00 am	6/28/2023, 6:30 pm
July	**SUMMER RECESS**	**SUMMER RECESS**	**SUMMER RECESS**
August	8/11/2023, 1:30 pm	8/23/2023, 10:00 am	8/23/2023, 6:30 pm
September	9/8/2023, 1:30 pm	9/27/2023, 10:00 am	9/27/2023, 6:30 pm
October	10/13/2023, 1:30 pm	10/25/2023, 10:00 am∞	10/25/2023, 6:30 pm∞
November	11/17/2023,1:30 pm^	11/15/2023,10:00 am*	11/15/2023, 6:30 pm*
December	12/8/2023,1:30 pm∞	**WINTER RECESS**	**WINTER RECESS**

** Meeting moved ahead one week due to holiday; ^ Meeting moved back one week due to holiday or weather; º Meeting postponement date; ∞ Meeting to be held if necessary*

ALL MEETINGS WILL BE HELD IN A HYBRID FORMAT
Policy Committee (2nd Fridays)
Technical & Citizens Advisory Committees (4th Wednesdays)

Bloomington-Monroe County Metropolitan Planning Organization
www.bloomington.in.gov/mpo