

**MOUNT COMFORT ROAD
CORRIDOR STUDY**

PHASE I

**Prepared for:
INDIANAPOLIS METROPOLITAN
PLANNING ORGANIZATION**

**Prepared by
JACOBS ENGINEERING GROUP, INC.**

JULY 25, 2008

CONTENTS

	Page
INTRODUCTION	1
STATEMENT OF PURPOSE AND NEED	2
DESIGN OBJECTIVES.....	3
DESIGN CRITERIA	4
EXISTING CONDITIONS.....	5
DESCRIPTION OF ALTERNATIVES	6
OPINIONS OF PROBABLE CONSTRUCTION COSTS	8
EVALUATION CRITERIA.....	11
NEXT STEPS	14

APPENDIX

- DETAIL SHEET INDEX AND SEGMENT KEY**
 - DETAIL SHEET 1**
 - DETAIL SHEET 2**
 - DETAIL SHEET 3**
 - DETAIL SHEET 4**
 - DETAIL SHEET 5**
 - DETAIL SHEET 6**
-

INTRODUCTION

This report documents the first phase of a process to determine transportation improvements needed to serve the Mount Comfort Road Corridor. The report was prepared for the Indianapolis Metropolitan Planning Organization (MPO).

The MPO has been designated by Federal Regulations to be responsible for conducting a continuing, cooperative and comprehensive transportation planning process for the Indianapolis Metropolitan Planning Area (MPA). The MPA includes all of Marion County and portions of the surrounding counties of Boone, Hamilton, Hancock, Hendricks, Shelby, Morgan and Johnson.

The Mount Comfort Road* Corridor is within the MPA. The three mile wide corridor extends 26 miles between I-74 in Shelby County, I-70 in Hancock County, and I-69 in Hamilton County. Urban development within this corridor has intensified in recent years, resulting in greater traffic demands and growing concerns about congestion and safety.

As a result of new development, localized segments of the rural two lane Mount Comfort Road have been, or soon will be, widened to four or five urban lanes:

- Olio Road in Hamilton County from SR 238 to the south edge of Geist Reservoir (complete)
- Olio Road in Hamilton County from the south edge of Geist Reservoir to 96th Street (to be completed by 2009)
- Mount Comfort Road in Hancock County between CR 300N and 200N in conjunction with I-70 interchange improvements (to be completed in 2010)

This report investigates the need for further improvements along this corridor within the context of the regional transportation plan.

* Mount Comfort Road is also known as CR 600W in Hancock County, Olio Road in Hamilton County and CR 700W in Shelby County.

STATEMENT OF PURPOSE AND NEED

Suburban development in the Indianapolis metropolitan area is occurring northeast, east and southeast of Marion County in Hamilton, Hancock and Shelby Counties. These areas are currently connected to the urban center by a radial system of roadways including I-69, I-70, I-74, US 36, US 40 and US 52.

However, there is a need for a safe, high capacity roadway along the Mount Comfort Road Corridor to connect with those radial routes. The purpose of such a roadway is to improve the accessibility of existing and potential centers of economic and residential activity, and to improve the efficiency and safety of intra-regional travel.

In addition, all of the counties surrounding Marion are improving their local roads that, in conjunction with the Mount Comfort Road Corridor, would form a circumferential network (Ronald Reagan Parkway, 146th Street, Worthsville Road) around Indianapolis.

DESIGN OBJECTIVES

The following design objectives will assure that the transportation needs of the Mount Comfort Corridor will be met.

- **Continuity:**
 - Provide four continuous travel lanes with dividing median
 - Provide auxiliary turn lanes as needed
- **Connectivity:**
 - Interchange with I-69, I-70, I-74
 - Intersect with other roads
- **Safety:**
 - Separate road grade with railroad grades
 - Reduce crash rate (reduce total conflict points)
- **Access Control and Management:**
 - Minimize intersections and median openings
 - Limit driveways
- **Right-of-Way:**
 - Minimize relocations
- **Economic Development:**
 - Provide service to major activity centers (school, commercial, industrial, airport)
- **Sensitivity:**
 - Minimize or avoid impacts to neighborhoods, schools, parks, cemeteries, churches, environmental areas, and historic areas
- **Costs:**
 - Ensure constructability
 - Minimize operational and maintenance costs
 - Minimize capital costs
- **Mobility:**
 - Improve roadway capacity
 - Reduce travel time
 - Provide for multi-modal travel for bicyclists and pedestrians

DESIGN CRITERIA

The following are the design criteria for the Mount Comfort Road Corridor:

- **Functional Classification:** Suburban Principal Arterial
- **Design Year Traffic:** 2035
- **Design Speed:** 40 – 50 mph
- **Level of Service:** D or better
- **Travel Lane Width:** 12'
- **Auxiliary Lane Width:** 12: where needed
- **Number of Lanes:** 4 with median
- **Right-of-Way Width:** 120'
- **Maximum Grade:** 6%
- **Shoulder Width**
 - **Curbed:** 4' left; 10' right
 - **Uncurbed:** 4' left; 10' right
- **Bicycle Lane:** 5' (in roadway)
- **Bicycle/Pedestrian Path:** 10' (off roadway)

EXISTING CONDITIONS

Mount Comfort (Olio) Road in Hamilton County had been or will be widened to a four or five lane urban section. South of 96th Street, Mount Comfort Road is a rural two lane roadway. Traffic signals and/or auxiliary turn lanes have been established at several major crossroads. Right-of-way dedications to enable widening have been made along many segments adjacent to new development. Otherwise, right-of-way widths are less than 40'.

Mount Comfort Road crosses two active CSX railroad lines (one in New Palestine, and one in McCordsville) where safety and congestion are of concern.

Established older residential and commercial areas in McCordsville and Mount Comfort are close to the narrow right-of-way and constrain the possibility of widening the road without acquiring and relocating homes and businesses.

The corridor also serves several existing schools, industrial parks, commercial areas and the Mount Comfort Airport. As such, it is of local and regional significance.

DESCRIPTION OF ALTERNATIVES

Two generalized alternative concepts (A and B) for developing a high capacity roadway along the Mount Comfort Road Corridor are illustrated by seven (7) attached maps. One map shows both concepts along the entire length of the corridor between I-74 at the south end and I-69 at the north end. That map also provides an index to six (6) additional exhibits that illustrate the two alignments on air photos.

Alternative A is generally along Hancock CR 600W. Alternative B is generally along Hancock CR 400W. Both Alternatives address the Purpose and Need Statement, the Design Objectives and the Design Criteria.

Alternative A

Alternative A begins at the south end with a proposed interchange on I-74 near Shelby CR 500W. The alignment goes northwesterly across "new terrain" to CR 700W near Pumpkinvine Road (see detail sheets 1 and 2). This "new terrain" segment crosses the environmentally sensitive Dry Fork and little Sugar Creeks. Alternative A continues north along CR 700W to the county line where it then becomes known as Hancock CR 600W.

Alternative A then follows CR 600W (also know as Mount Comfort Road in Hancock County and Olio Road in Hamilton County) for its entire length, bridging over the CSX Railroad west of New Palestine, passing through the existing interchange with I-70, and crossing over I-69 at the north end.

An optional alignment east of McCordsville (see detail sheet 5) would enable an overpass of the CSX Railroad and US 36/SR 67 to be constructed. This option would avoid adverse impacts on the cemetery, park school, homes and business that constrain the alignment through McCordsville.

Alternative B

Alternative B begins at the sound end at the same I-74 interchange in Shelby County proposed by Alternative A. The alignment would generally follow Shelby CR 500W northward to the county line where it becomes CR 400W in Hancock County.

Alternative B would intersect US 52, bridge over the CSX Railroad east of New Palestine, and then follow a "new terrain" alignment across environmentally sensitive Sugar to rejoin CR 400W near CR 200S (see detail sheets 2 and 3).

Alternative B then generally follows CR 400W between CR 200S and CR 900N with a proposed interchange at I-70.

A "new terrain" alignment between CR 900N and CR 1000N (96th Street) would carry Alternative B over the CSX Railroad and US 36/SR 67 to Georgia Road in Hamilton County. Alternative B would then follow a route studied by the Town of Fishers along portions of Georgia, Florida and Cyntheanne Roads to a proposed interchange with I-69.

In Shelby County, near CR 1050N the alignment will continue in a southeast direction to near CR 900N and CR 400W. Then at a point approximately 200 feet west of CR 900N and CR 400W then Mount Comfort Road will travel due south on a new alignment to I-74. The existing CR 400W south of CR 900N will now function as a local access road to serve the local residential property in that area.

OPINIONS OF PROBABLE CONSTRUCTION COSTS

Opinions of probable construction costs are shown in Tables 1 and 2 for Alternatives A and B respectively. The cost estimates are based on the previously stated design criteria.

TABLE 1. Opinion of Probable Construction Costs*

Alternative A

Segment	AB-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8-2	A-9 & A-10	TOTAL
Length	5,500'	25,000'	10,2000'	11,200'	17,800***	5,300*	15,600'	23,000'	27,000'	140,600'/ 2663 miles
Main Lanes	\$3,333,000	\$15,150,000	\$6,181,200	\$6,787,200	\$10,786,800	\$24,000,000	\$9,453,600	\$13,938,000	\$6,500,000	\$96,129,800
Turn Lanes	231,000	462,000	231,000	539,000	405,000		542,900	924,000		\$3,334,900
Side Approaches	592,200	1,184,400	592,200	1,381,800	1,038,500		1,391,800	1,630,800		\$7,811,700?
Bridges		2,400,000	700,000	600,000			400,000	800,000		\$4,900,000
RR Overpass				2,702,000				2,702,000		\$5,404,000
Traffic							400,000	300,000		\$1,400,000
Signals	<u>100,000</u>	<u>100,000</u>	<u>100,000</u>	<u>200,000</u>	<u>300,000</u>					
Subtotal	4,156,200	19,296,400	7,804,400	12,210,000	12,530,300	***24,000,00	12,188,300	20,632,800	6,500,000****	\$118,980,400
Interchange	<u>20,000,000</u>									<u>\$20,000,000</u>
Subtotal	24,156,200	19,296,400	7,804,400	12,210,000	12,530,300	24,000,000	12,188,300	20,632,800	6,500,000	\$138,980,400
Eng. & Contingency	<u>6,039,000</u>	<u>4,824,100</u>	<u>1,951,100</u>	<u>3,052,500</u>	<u>3,132,600</u>		<u>3,047,100</u>	<u>5,158,200</u>		<u>\$23,665,550</u>
TOTAL	\$30,195,200	\$24,120,500	\$9,755,500	\$15,262,500	\$15,662,900	\$24,000,000	\$15,235,400	\$25,791,000	\$6,500,000	\$162,645,950

* Opinion is based on year 2007 construction costs

** Excludes I-70 interchange project by INDOT

*** Source of Estimate: Preliminary Plans by Level 5 Consultants for 5,300' segment between CR 200N and CR 300N

**** Source of Estimate: preliminary Plans by United Consulting for 7,250' segment between 96th Street and south end of Geist bridge

\$5,128,096/mile

TABLE 2. Opinion of Probable Construction Costs*

Alternative B

Segment	AB-1	B-2	B-3	B-4	B-5	B-6	B-7	B-8	B-9 & BA-10	TOTAL
Length	5,500'	20,400'	7,300'	15,000'	22,800'	18,400'	16,200'	5,800'	25,080'	136,480'/ 25.85 miles
Main Lanes	\$3,333,000	\$12,362,400	\$4,423,800	\$9,090,000	\$13,816,800	\$11,150,400	\$9,817,200	\$3,514,800		\$67,508,400
Turn Lanes	231,000	462,000	154,000	231,000	385,000	231,000	385,000	154,000		\$2,233,000
Side Approaches	592,200	1,184,400	394,800	592,200	987,000	592,200	987,000	394,800		\$5,724,600
Bridges		1,600,000		600,000			600,000	400,000		\$3,200,000
RR Overpass				2,702,000				2,702,000		\$5,404,000
Traffic Signals		100,000	100,000	200,000	300,000	100,000	200,000	100,000		\$1,100,000
Subtotal	4,156,200	15,708,800	5,072,600	13,415,200	15,488,800	12,073,600	11,989,200	7,265,600	11,078,800**	\$96,248,800
Interchange	<u>20,000,000</u>					<u>20,000,000</u>			<u>20,000,000</u>	<u>\$60,000,000</u>
Subtotal	24,156,200	15,708,800	5,072,600	13,415,200	15,488,800	32,073,600	11,989,200	7,265,600	31,078,800	\$156,980,400
Eng. & Contingency	6,039,000	3,927,200	1,268,150	3,353,800	3,872,200	8,018,400	2,997,300	1,816,400	7,769,700	\$31,562,200
TOTAL	\$30,195,200	\$19,636,000	\$6,340,750	\$16,769,000	\$19,361,000	\$40,092,000	\$14,986,500	\$9,082,000	\$38,848,500	\$195,310,950

* Opinion is based on year 2007 construction costs

** Source of Estimate: Cyntheanne Road Transportation Planning Study prepared by RW Armstrong for Indianapolis Metropolitan Planning Organization; 2006

\$6,104,870/mile

EVALUATION CRITERIA

This initial screening compares the alternatives according to general qualitative criteria. These criteria are based on the design objectives and reflect the most critical aspects of each objective.

The criteria have been grouped into five categories as shown in Table 3.

Table 3. Evaluation Criteria	
A.	Mobility Effects
1.	Highway capacity
2.	Safety
3.	Incorporation of multiple travel modes, transit, bicycle, pedestrian
4.	Access circulation and connectivity
B.	Social and Economic Effects
1.	Effects on social and cultural environment
2.	Effects on economic development
C.	Environmental Effects
1.	Effects on natural environment
2.	Effects on air quality
3.	Effects on land use
D.	Cost Effectiveness & Affordability
1.	Capital costs
2.	Operation and maintenance costs
E.	Other Factors
1.	Consistency with local and regional transportation plans
2.	Compatibility with land use plan
3.	Construction impacts and constructability

Table 4 shows the results of this evaluation using a rating scale of 0 – 10, with 0 rating being no impact to a 10 rating being worst impact. The assessment of these visual impacts is subjective and it is based on the evaluators perception of the transportation improvement impact of the various criteria established for this study.

Based on the evaluation shown in Table 4, Alternative A with a bypass of McCordsville appears to be the best solution.

**Table 4. EVALUATION CRITERIA SCORING
(Scale 0 → 10 No Impact to Worst Case)**

Alternatives By Segment	Mobility	Social & Economic	Environmental	Cost – Effectiveness	Other	Total
No Build:						
Segment A-1/B-1	5	7	5	5	5	
A-1 to A-5*	20	28	20	20	20	
A-6	1	1	1	1	1	
A-7	8	8	5	5	5	
A-8	10	8	5	8	10	
A-9 to A-10*	<u>6</u>	<u>6</u>	<u>6</u>	<u>6</u>	<u>2</u>	
Total	50	58	55	45	43	251
Alternative A:						
Segment A-1/B-1	1	1	1	1	1	
A-1 to A-5*	4	4	4	4	4	
A-6	1	1	1	1	1	
A-7	1	1	1	1	1	
A-8	8	8	6	8	8	
A-9 to A-10*	<u>6</u>	<u>6</u>	<u>6</u>	<u>6</u>	<u>2</u>	
Total	21	21	19	21	17	99
Alternative B:						
Segment A-1/B-1	1	5	1	1	1	
A-1 to A-5*	8	8	8	8	12	
A-6	5	5	3	3	3	
A-7	5	5	3	3	3	
A-8	1	1	3	3	3	
A-9 to A-10*	<u>2</u>	<u>2</u>	<u>6</u>	<u>6</u>	<u>6</u>	
Total	22	26	24	24	28	124
Alternative A (By Pass) **						
Segment A-1/B-1	1	1	1	1	1	
A-1 to A-5*	4	4	4	4	4	
A-6	1	1	1	1	1	
A-7	1	1	1	1	1	
A-8	1	1	1	1	1	
A-9 to A-10*	<u>6</u>	<u>6</u>	<u>6</u>	<u>6</u>	<u>2</u>	
Total	14	14	14	14	10	66

*Accumulative Total

** Alternative A with by pass around McCordville

NEXT STEPS

The following are among the first steps to advance the Mount Comfort Road Corridor improvements:

- **Determine Travel Demands**
Determine future travel demands along the alternative alignments within the corridor using the MPO's current travel demand model.
- **Refine Design Features**
Refine the design features of major intersections and the configuration of the new interchange based on the future travel demands.
- **Amend the Indianapolis Regional Transportation Plan**
Adopt an MPO Amendment to the Transportation Plan to include the Alternate A alignment with new interchange and railroad separation as shown by this report.
- **Amend Local Thoroughfare Plans**
Adopt amendments to local Thoroughfare Plans to include the Alternate A alignment with new interchange and railroad separation as shown by this report.
- **Initiate NEPA Process (National Environmental Protection Act)**
Initiate the NEPA process by submitting early coordination letters to appropriate agencies and groups.
- **Complete Interchange Justification (IJ) Study**
Complete an IJ Study of the proposed corridor interchange with I-74 in Shelby County.
- **Manage Points of Access**
Conduct traffic impact studies of new developments to determine the best locations and spacings between new and existing points of access in order to minimize operational conflicts.
- **Require Dedications of Right-Of-Way**
Require that right-of-way be dedicated along the corridor as a part of the development process.
- **Consider Revenue Sources**
Consider various sources of local and non-local revenue for implementing the corridor improvements.
- **Determine Staging and Sequencing of Roadway Segments**

Additional steps beyond these initial ones include:

- Environmental Analysis
- Preliminary Engineering
- Stage 1 Design
- Stage 2 Design
- Prepare Right-of-Way Plans
- Acquire Right-of-Way
- Stage 3 Design
- Final Design Package
- Construction

APPENDIX

1 724 000

Detail Sheet 6

1 708 000

Detail Sheet 5

1 692 000

Detail Sheet 4

1 656 000

Detail Sheet 3

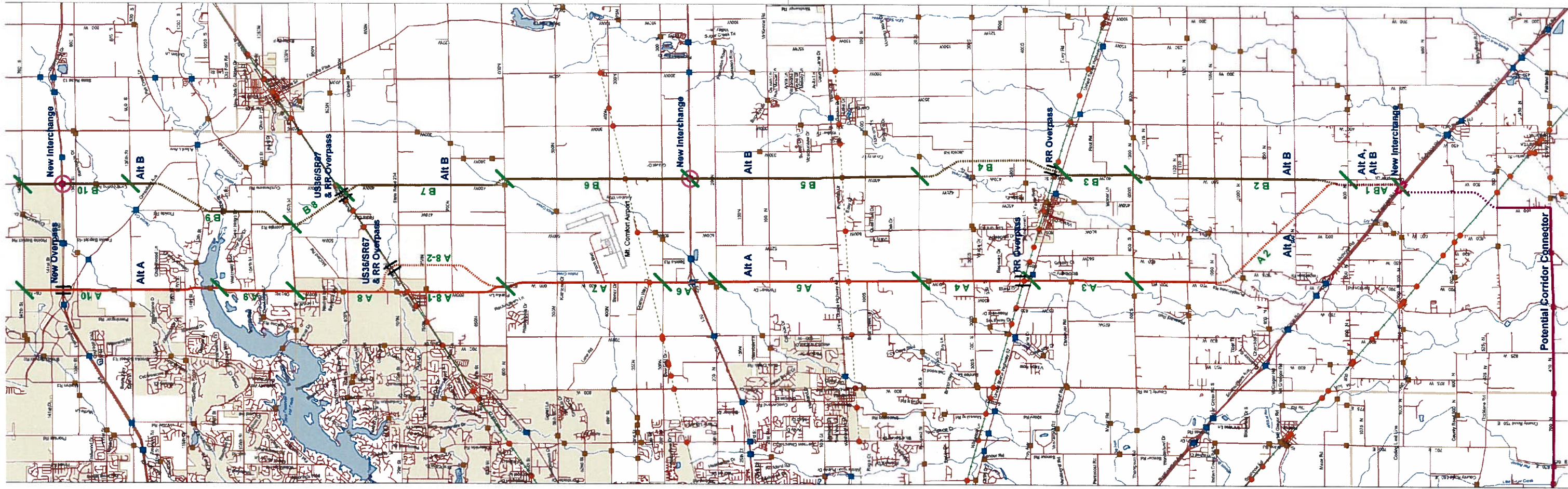
1 620 000

Detail Sheet 2

1 584 000

Detail Sheet 1

1 578 000



Indiana State Plane Coordinates
NAD 83 - North American Datum 1983 (Feet)
East Zone

280 000

Legend

- County Boundary
- Incorporated Areas (2001)
- Roads (INDOT, 2005)
- Active Railroad
- Abandoned Rail
- Lake, Pond, Marsh
- Streams

Transportation Features

- Bridges, INDOT System 1
- Bridges, County / Municipal
- At-Grade Rail Crossings

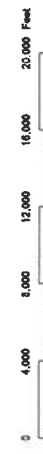
- Alt A - Existing Roads
- Alt A - New Roadway
- Alt B - Existing Roads
- Alt B - New Roadway
- New Interchange
- Alt AB - New Roadway
- Potential Connector - Existing Roads
- Potential Connector - New Roads

Mt. Comfort Road Corridor

Alternative Alignments

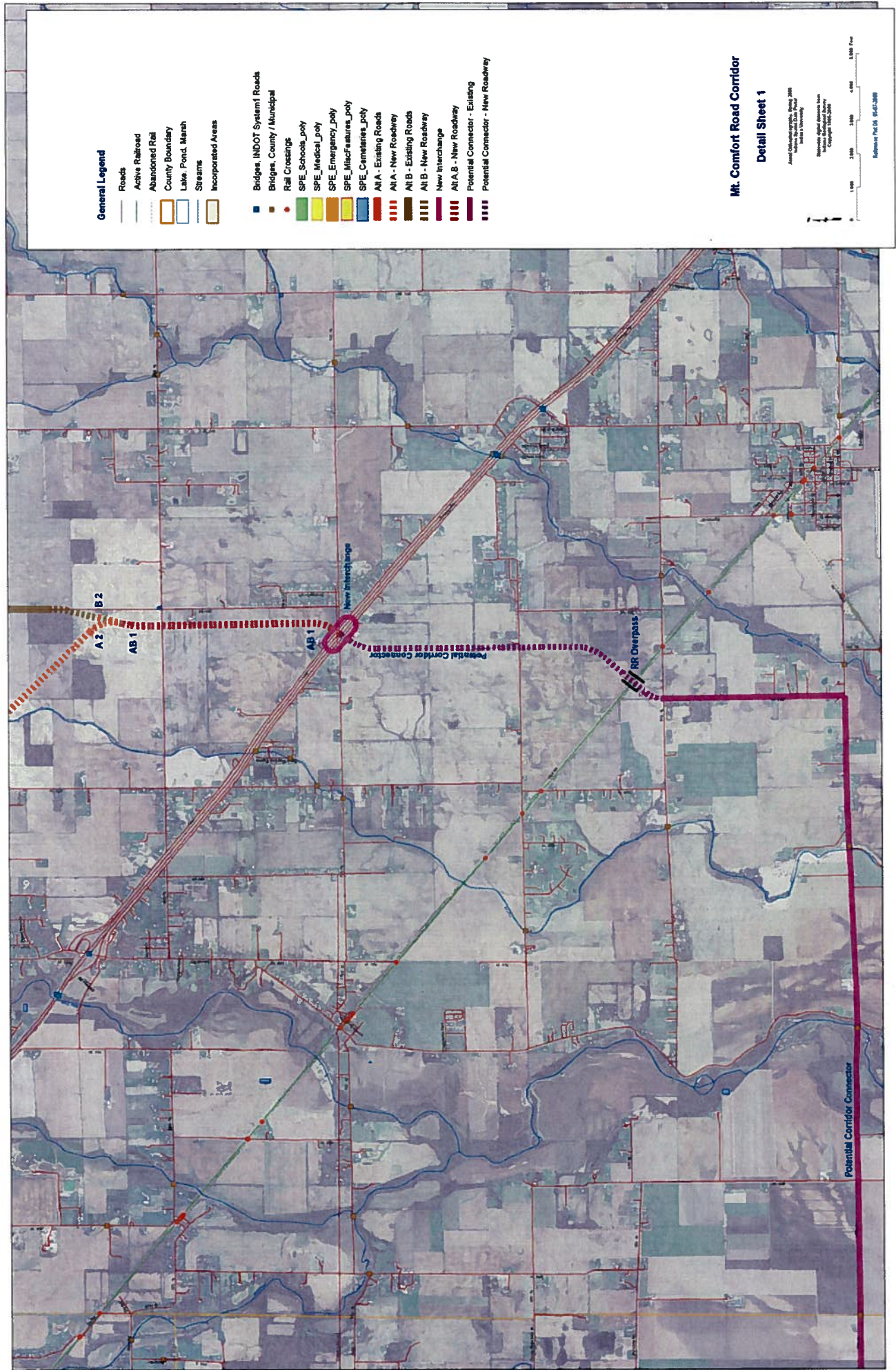
Detail Sheet Index and Segment Key

Statewide origin datasets from
Indiana Department of Transportation
Copyright 1992-2008



Reference File: 05-07-2008





General Legend

- Roads
 - Active Railroad
 - Abandoned Rai
 - County Boundary
 - Lake, Pond, Marsh
 - Streams
 - Incorporated Areas
- Bridges, INDOT System1 Roads
- Bridges, County / Municipal
- Rail Crossings
- SPE_Schools_poly
- SPE_Medical_poly
- SPE_Emergency_poly
- SPE_MiscFeatures_poly
- SPE_Communities_poly
- AI/A - Existing Roads
- AI/A - New Roadway
- AI/B - Existing Roads
- AI/B - New Roadway
- New Interchange
- AI/A, B - New Roadway
- Potential Connector - Existing
- Potential Connector - New Roadway

Mt. Comfort Road Corridor

Detail Sheet 1
 Aerial Orthorectification, Spring 2006
 Digitized by
 Indiana State University
 Indiana State University
 Copyright 1995-2007
 Revision of Part 001 10/27/2009



Potential Corridor Connector

New Interchange

Potential Corridor Connector

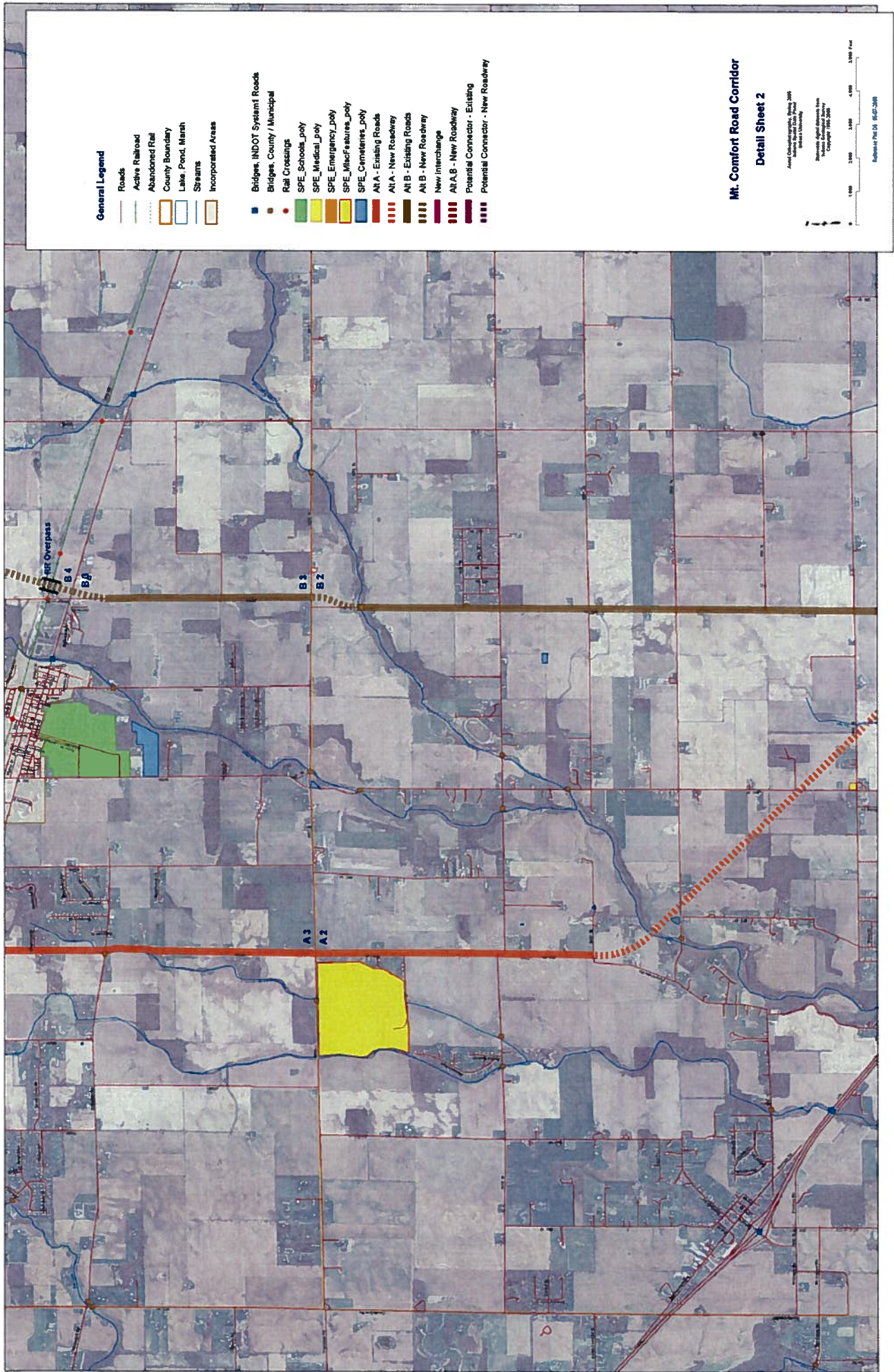
RR Overpass

A2

B2

AB 1

AB 1



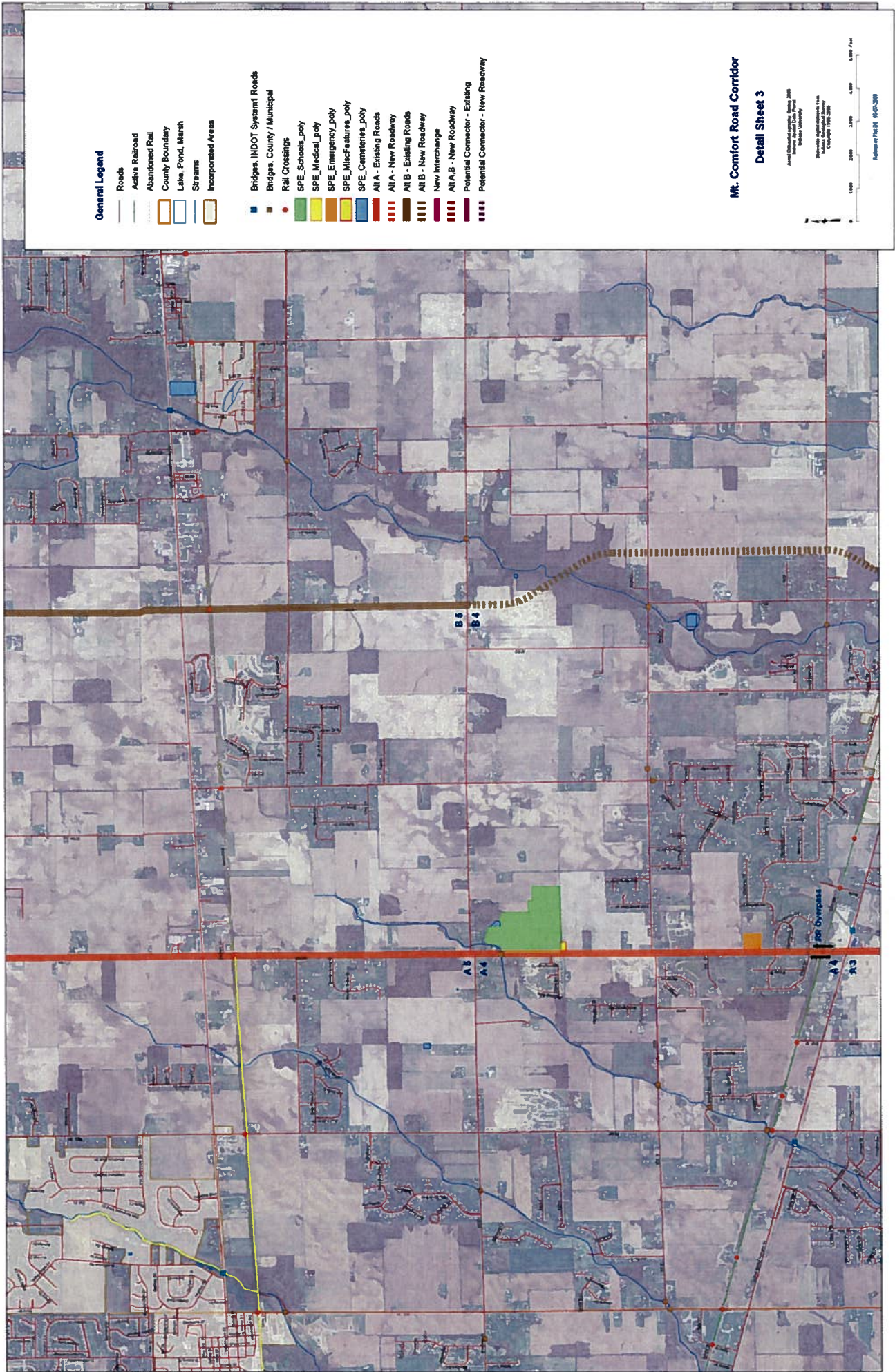
General Legend

- Roads
- Active Railroad
- Abandoned Rail
- County Boundary
- Lake, Pond, Marsh
- Streams
- Incorporated Areas
- Bridges, INDOT System1 Roads
- Bridges, County / Municipal
- Rail Crossings
- SPE_Schools_poly
- SPE_Medical_poly
- SPE_Emergency_poly
- SPE_MicroFeatures_poly
- SPE_Conveniences_poly
- ANA - Existing Roads
- ANA - New Roadway
- ANB - Existing Roads
- ANB - New Roadway
- New Interchange
- ANA,B - New Roadway
- Potential Connector - Existing
- Potential Connector - New Roadway

**Mt. Comfort Road Corridor
Detail Sheet 2**

Amesbury, Ohio 44001
 Prepared by:
 [Firm Name]
 Date: 10/15/2019





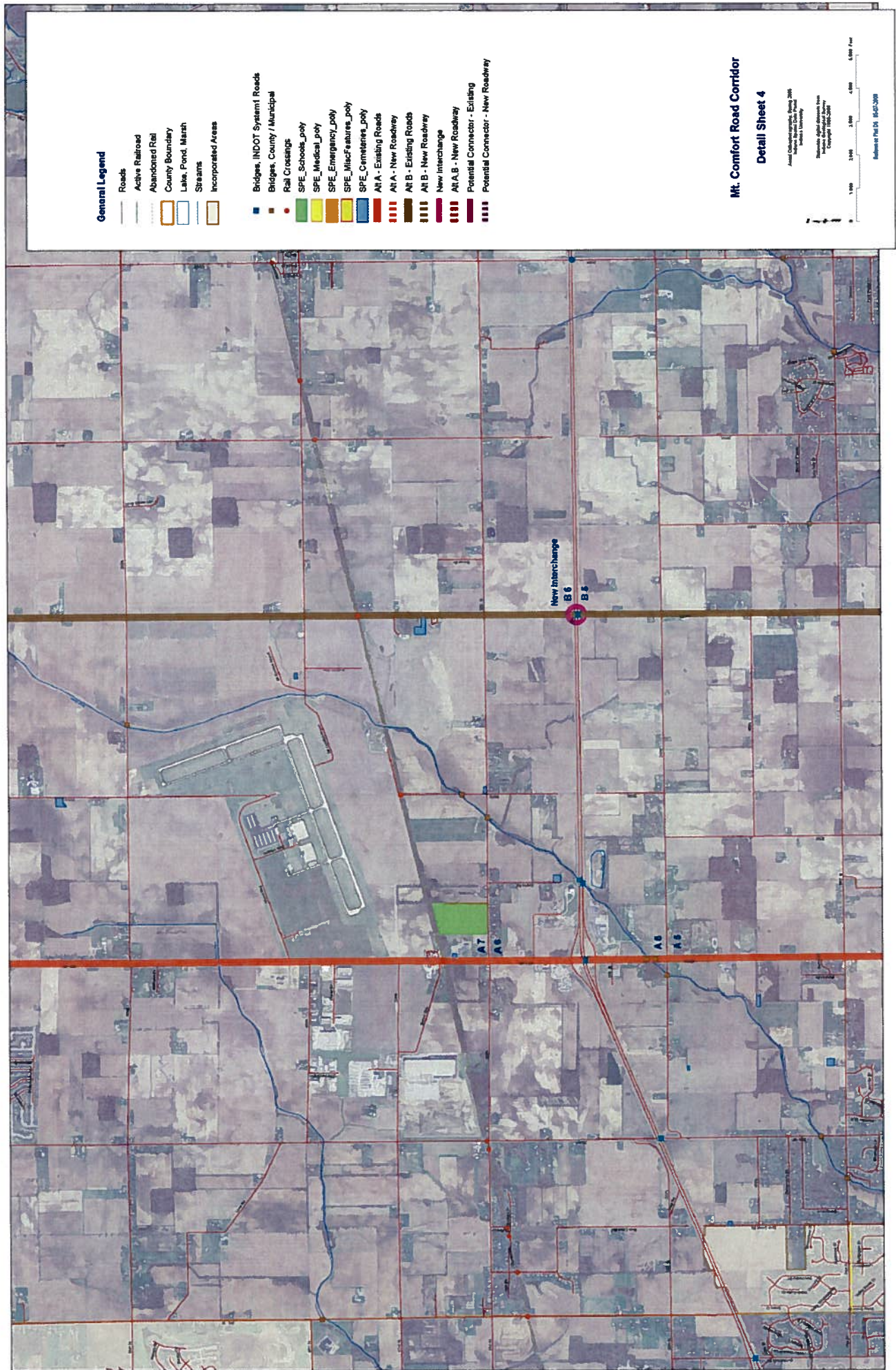
General Legend

- Roads
- Active Railroad
- Abandoned Rail
- County Boundary
- Lake, Pond, Marsh
- Streams
- Incorporated Areas
- Bridges, INDOT System Roads
- Bridges, County / Municipal
- Rail Crossings
- SPE_Schools_poly
- SPE_Medical_poly
- SPE_Emergency_poly
- SPE_MiscFeatures_poly
- SPE_Cemeteries_poly
- A1A - Existing Roads
- A1A - New Roadway
- A1B - Existing Roads
- A1B - New Roadway
- New Interchange
- A1A,B - New Roadway
- Potential Connector - Existing
- Potential Connector - New Roadway

**Mt. Comfort Road Corridor
Detail Sheet 3**

Ames Consulting Group, Inc.
 10000 North 10th Street
 Suite 100
 Minneapolis, MN 55412
 Project No. 10000000000000000000
 Date: 10/15/2010
 Revision: 10/15/2010





General Legend

- Roads
 - Active Railroad
 - Abandoned Rail
 - County Boundary
 - Lake, Pond, Marsh
 - Streams
 - Incorporated Areas
- Bridges, INDOE System Roads
- Bridges, County / Municipal
- Rail Crossings
- SPE_Schools_poly
- SPE_Medical_poly
- SPE_Emergency_poly
- SPE_MiscFeatures_poly
- SPE_Communes_poly
- AI A - Existing Roads
- AI A - New Roadway
- AI B - Existing Roads
- AI B - New Roadway
- New Interchange
- AI A, B - New Roadway
- Potential Connector - Existing
- Potential Connector - New Roadway

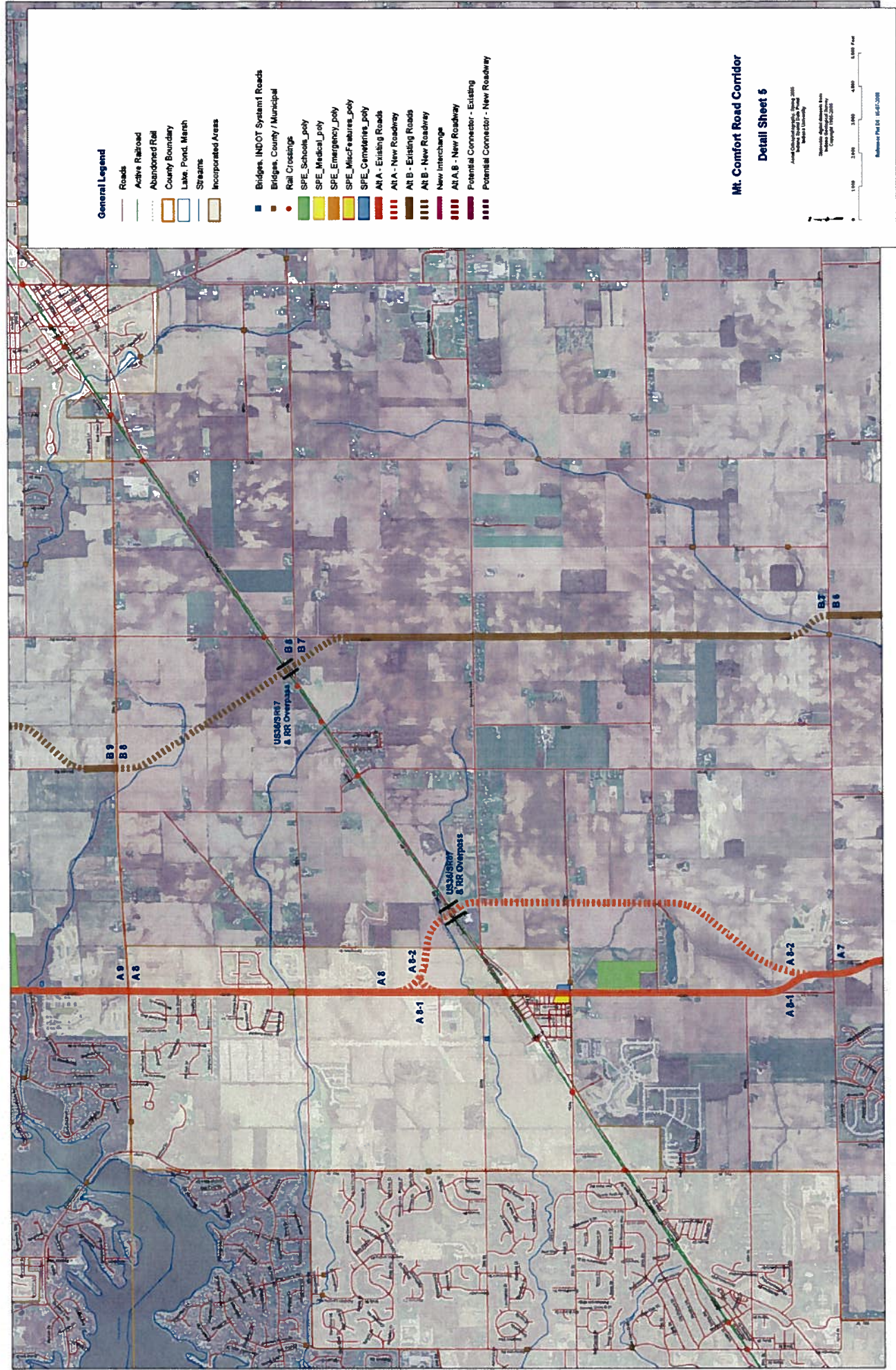
Mt. Comfort Road Corridor

Detail Sheet 4

Aerial Cartography: Spring 2005
 Digitized by:
 James L. Schaefer
 James Schaefer Associates
 Copyright 1995, 2005



Reference File: 05_1847-0305



General Legend

- Roads
 - Active Railroad
 - Abandoned Rail
 - County Boundary
 - Lake, Pond, Marsh
 - Streams
 - Incorporated Areas
- Bridges, INDOT System Roads
- Bridges, County / Municipal
- Rail Crossings
- SPE_Schools_poly
- SPE_Medical_poly
- SPE_Emergency_poly
- SPE_MiscFeatures_poly
- SPE_Communities_poly
- ANA - Existing Roads
- ANA - New Roadway
- ATB - Existing Roads
- ATB - New Roadway
- New Interchange
- ATA,B - New Roadway
- Potential Connector - Existing
- Potential Connector - New Roadway

**Mt. Comfort Road Corridor
Detail Sheet 5**

Aerial Orthorectified, July 2005
 Source: USGS National Wetlands Inventory
 National Wetlands Inventory
 Version: 1985-2001
 Copyright: 1985-2001
 Reference: Part 01 - 10-01-2008

