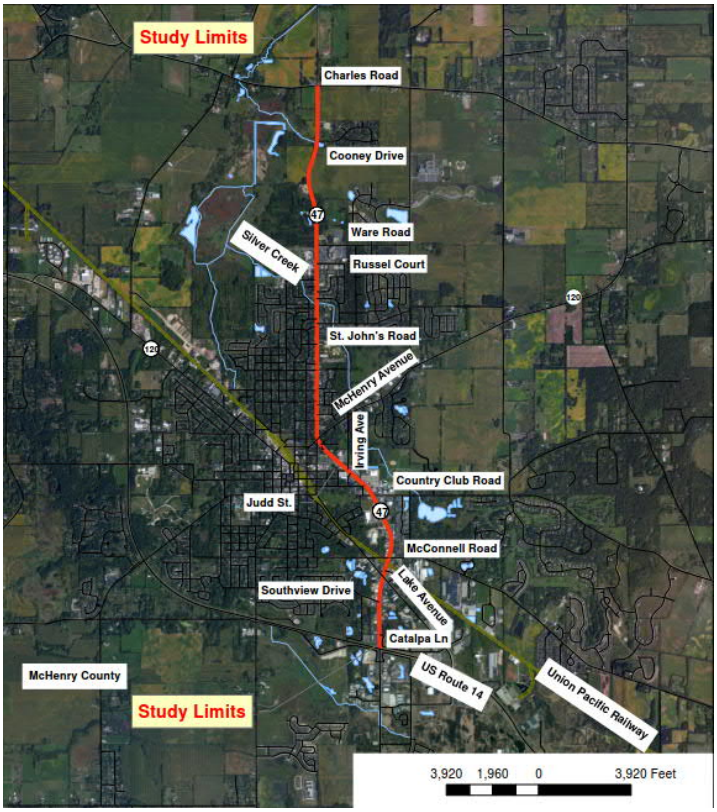
Illinois Department of Transportation

COMBINED DESIGN REPORT

ILLINOIS ROUTE 47

FROM

U.S. ROUTE 14 TO CHARLES ROAD



P-91-007-09

McHenry County, Illinois

IDOT–Office of Highways Project Implementation
District One

April 2019
VOLUME 1–REPORT

Illinois Department of Transportation

Phase I Report Approval

Key Route	Marked Route/Road Name
Illinois Route 47	Eastwood Drive/Seminary Avenue

Job Number	Contract Number	Section
P-91-007-09	60X09 / 60X17	104 WRS-8(13) & (104 & 105) WRS-9(13)

Project Length	PPS Number
4.9 miles	1900130100 & 1900131100

County(ies)

McHenry

Location/Limits

US Route 14 to Charles Road

General Description of Existing Facility

The existing typical section along the Illinois Route 47 corridor from US Route 14 to Ware Road is a three-lane roadway consisting of one 12-foot lane in each direction separated by a 12-foot two-way left-turn lane. Concrete B-6.24 curb and gutter runs on both sides of the roadway. Illinois Route 47 from Ware Road to Charles Road consists of one 12-foot lane in each direction with an 8-foot shoulder (1 foot HMA, 7 feet aggregate) on both sides. Sidewalk is intermittent along the corridor.

Need for Proposed Improvement

Increased travel demands on Illinois Route 47 are creating safety and operational deficiencies along the immediate roadway and adjacent arterials and intersections. The insufficient capacity of the roadway to manage travel demands creates congestion, limits mobility, hinders safe access of adjacent properties and businesses, and leads to safety issues for motorists, bicyclists, and pedestrians. Pedestrian access to adjacent land uses and bicycle accessibility through and across the corridor are limited.

Scope of Project ☐ New Construction ☒ Reconstruction ☐ 3R ☐ 3P ☐ SMART ☐ Other _____

General Description of Proposed Improvement

The proposed improvement consists of reconstructing and widening approximately five miles of Illinois Route 47 from US Route 14 to Charles Road. From US Route 14 to Ware Road, the roadway will consist of two lanes in each direction separated by a raised median. From Ware Road to Charles Road, the roadway will consist of two lanes in each direction with inside and outside shoulders, separated by a mountable median. A shared-use path will run along the east side of the roadway the entire length of the project. A sidewalk is proposed along the west side of the roadway from US Route 14 to Ware Road.

Environmental Processing ☐ EIS ☒ EA ☐ Federal Approved CE

☐ State Approved CE ☐ Other _____

Approximate Amount of ROW to be Purchased: 294

Parcels Totaling 49.5 Acres

Number of Businesses 9 and Residences 3 to be Acquired

ROW Cost: $14,200,000.00

Estimated Program Cost: $74,900,000.00 (in FY N/A)

Fund Type: NHPP

Construction Cost	Utility Relocation Cost	Consultant PE Cost
$90,005,691.00	$6,025,000.00	

Design Exceptions

- Level One Required ☐ Yes ☒ No
- Level Two Required ☒ Yes ☐ No
- If yes, note date approved 02/05/19

Type of Public Involvement Activity

- Public Hearing Offered ☒ Yes ☐ No
- Informational Meeting Held ☒ Yes ☐ No
- Property Owners Contacted ☒ Yes ☐ No

Regional Design Approval

IDOT Regional Engineer Signature: Anthony J. Quigley /AB

Date: 4/11/2019

Contact Information

Job Number: P-91-007-09

Project: Reconstruction and widening of Illinois Route 47 from US Route 14 to Charles Road

Location: Woodstock, IL

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Consultant:

PTB 149/008 **Firm:** Strand Associates, Inc.®

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TABLE OF CONTENTS

VOLUME 1–REPORT

TABLES

FIGURES

VOLUME 2–EXHIBITS

VOLUME 3–APPENDIX A

APPENDIX A–AGENCY COORDINATION

VOLUME 4– APPENDIX B

APPENDIX B–PUBLIC INVOLVEMENT

SUPPLEMENTS

Environmental Assessment	Supplement 1.2-1
Environmental Assessment Errata	Supplement 1.2-2
Finding of No Significant Impact	Supplement 1.2-3
Soil Survey	Supplement 1.2-4
Crash Analysis	Supplement 1.3-1
Bicyclist and Pedestrian Checklist	Supplement 1.3-2
Design Criteria Checklist	Supplement 3.2-1
Design Exception Forms	Supplement 3.5-1
Cross Sections	Supplement 3.6-1
Structure Condition Reports	Supplement 3.7-1
Silver Creek Hydraulic Report	Supplement 3.7-2
Unnamed Tributary to Silver Creek Hydraulic Report	Supplement 3.7-3
Tree Survey	Supplement 3.16-1
Traffic Noise Analysis Report	Supplement 3.20-1
Traffic Management Plan	Supplement 3.22-1
Value Engineering Report and Response	Supplement 3.26-1

Location Drainage Study (under separate cover)

ACRONYMS

ADT	Average Daily Traffic
BDE	Bureau of Design and Environment
CAG	Corridor Advisory Group
CCTV	Closed-Circuit Televising
CMAP	Chicago Metropolitan Agency for Planning
CMP	Congestion Management Process
CNE	Common Noise Environments
CRP	Comprehensive Regional Plan
CSS	Context Sensitive Solutions
DEPARTMENT	Illinois Department of Transportation
DOE	Determination of Eligibility
DSS	Decent, Safe, and Sanitary
EA	Illinois Route 47 Environmental Assessment
EPFO	Eastern Prairie Fringed Orchid
FHWA	Federal Highway Administration
FIRM	Flood Insurance Rate Maps
FQI	Floristic Quality Index
GIS	Geographical Information System
HOV	High Occupancy Vehicle
HSM	Highway Safety Manual
IDNR	Illinois Department of Natural Resources
INAI	Illinois Natural Areas Inventory
INHS	Illinois Natural History Survey
ISGS	Illinois State Geological Survey
ITS	Intelligent Transportation System

ACRONYMS (Continued)

LAWCON	Land and Water Conservation
LOI	Letter of Intent
LOS	Level of Service
MOT	Maintenance of Traffic
mph	Miles Per Hour
MUTCD	Illinois Manual on Uniform Traffic Control Devices
NAAQS	National Ambient Air Quality standards
NAC	Noise Abatement Criteria
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Registry of Historic Properties
PESA	Preliminary Environmental Site Assessment
PIP	Public Information Plan
Project	Study of Illinois Route 47 from US Route 14 approximately five miles north to Charles Road
PSI	Preliminary Site Investigation
REC	Recognized Environmental Condition
SN	Structure Number
SOV	Single Occupancy Vehicle
SRA	Strategic Regional Arterial
SWPPP	Storm Water Pollution Prevention Plan
TCP	Traffic Control Plan
TIP	Transportation Improvement Program
TMA	Transportation Management Area
TMP	Traffic Management Plan
TOP	Transportation Operations Plan
TWLTL	Two-way Left-Turn Lane
UP	Union Pacific
VE	Value Engineering
vpd	Vehicles Per Day

Chapter 1–Need For Improvement

1.1 PROJECT LOCATION AND TERMINI

Illinois Route 47 (IL 47) is a Strategic Regional Arterial (SRA) and a Class II truck route heading north-south through the City of Woodstock and unincorporated McHenry County. This report summarizes the study of IL 47 from US Route 14 (US 14) approximately five miles north to Charles Road (Project). US 14 and Charles Road are both designated SRA routes. Significant intersections affected within the project study area include Lake Avenue (minor arterial), Country Club Road (minor arterial), and Illinois Route 120 (IL 120) (SRA route). Several additional smaller intersections also exist within the project study area. The nearest parallel state highway is Illinois Route 31, located seven miles east of IL 47.

US 14, the southern terminus, matches an existing Phase I study immediately south of this Project that extends from Reed Road to US 14. A project location map is shown in Exhibit 1.1-1.

1.2 DESCRIPTION OF EXISTING CONDITIONS

IL 47 has two locally recognized alternate names: Eastwood Drive from US 14 to IL 120 and Seminary Avenue from IL 120 to Ware Road. The existing conditions (Environmental Survey Request) of the roadway can be found in Exhibit 1.2-1. IL 47 is listed as a Strategic Regional Arterial (SRA). IL 47 existing average daily traffic (ADT) varies from 26,200 vpd between Country Club Road and Irving Avenue to 8,100 vpd at the north end of the Project.

IL 47 has two different roadway classifications within the Project study area. From US 14 at the south to Ware Road at the north, IL 47 is classified as an urban corridor, with businesses or residential housing continuous along most of the section. A representative section of the urban SRA along IL 47 is shown in Figure 1.2-1.

Existing IL 47 is classified as a rural corridor from Ware Road to Charles Road, with sporadic businesses and residential houses located along the corridor. A majority of the land from Ware Road to Charles Road is wetlands or farmland. A representative section of the rural SRA along IL 47 is shown in Figure 1.2-2.

Figure 1.2-1 Illinois Route 47 Urban SRA

Figure 1.2-2 Illinois Route 47 Rural SRA

The existing speed limit along IL 47 varies within the Project study area. IL 47 from US 14 to IL 120 and from Greenwood Circle to Ware Road has an existing posted speed limit of 35 mph. IL 47 from IL 120 to Greenwood Circle has an existing posted speed limit of 30 mph. IL 47 from Ware Road to 0.5 mile north of Ware Road has an existing posted speed limit of 45 mph, and IL 47 from 0.5 mile north of Ware Road to Charles Road has an existing posted speed limit of 55 mph

1.2.1 Typical Section

The existing typical section along IL 47 from US 14 to Ware Road, shown in Figure 1.2-3, is a three-lane roadway consisting of one 12-foot lane in each direction separated by a 12-foot bidirectional left-turn lane. Curb and gutter runs on both sides of the roadway.

From Ware Road to Charles Road, there is one 12-foot lane in each direction with an 8-foot outside shoulder (1 foot HMA and 7 feet aggregate) on both sides.

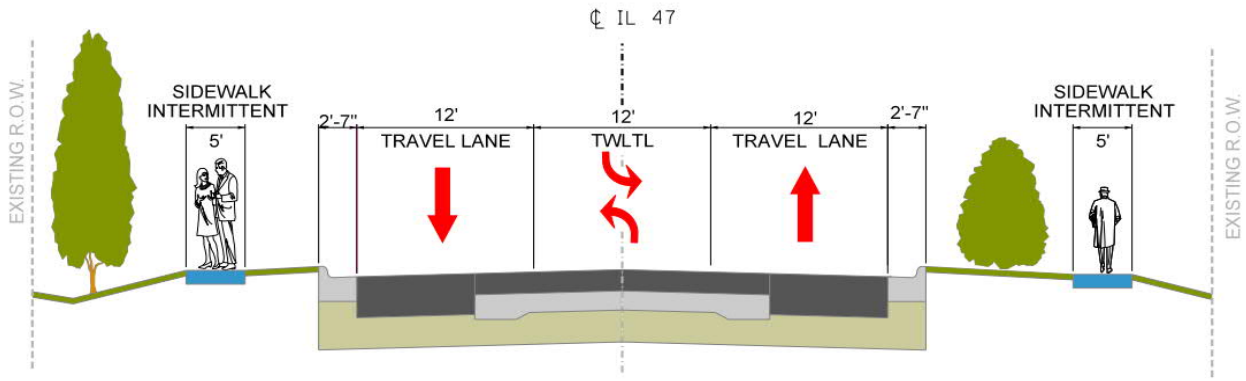


Figure 1.2-3 Existing Typical Section

There are existing sidewalks along IL 47 in intermittent locations between US 14 and Ware Road. The detailed existing typical sections can be found in Exhibit 1.2-2. The existing pedestrian facilities can be found in Exhibit 1.2-3.

1.2.2 Major Intersections

The existing conditions at the major intersections along IL 47 will be described from south to north in Tables 1.2-1 through 1.2-10.

	East Leg	West Leg	North Leg	South Leg
Design Element	**US Route 14 Route 2-305**	**US Route 14 Route 2-305**	**Illinois Route 47 Route 2-326**	**Illinois Route 47 Route 2-326**
Highway functional classification	Other Principal Arterial	Other Principal Arterial	Other Principal Arterial	Other Principal Arterial
Truck route classification	Class II	Class II	Class II	Class II
Strategic Regional Arterial (yes/no)	Yes	Yes	Yes	Yes
On NHS (yes/no)	Yes	Yes	Yes	Yes
Jurisdiction	Department	Department	Department	Department
Current ADT	15,000	15,000	15,200	16,300
% Trucks	13.37	5.6	7.4	10.1
Posted speed	55	55	35	35
Design speed	60	60	40	40
Number of through lanes and widths	Two 12-foot lanes	Two 12-foot lanes	Two 12-foot lanes	Two 12-foot lanes
Turn lanes and widths	One 13-foot RT One 12-foot LT	One 13-foot RT One 12-foot LT	One 12-foot LT	One 12-foot LT
Shoulder or curb type	HMA, Aggregate	HMA	HMA, Aggregate, B-6.24	HMA, Aggregate
Shoulder width (feet)	HMA-varies 0 to 5 Aggregate-varies 0 to 5	varies 5 to 11	HMA-varies 0 to 3 Aggregate-varies 0 to 5	HMA-varies 5 to 10 Aggregate-varies 0 to 5
Clear zone width	30 feet	30 feet	18 feet	18 feet
Sidewalks/paths	No	No	No	No
Parking	No	No	No	No
Roadway lighting	Yes	Yes	Yes	Yes
Traffic control type	Signal	Signal	Signal	Signal

Table 1.2-1 Illinois Route 47 and US Route 14 Intersection Data

	East Leg	West Leg	North Leg	South Leg
Design Element	**Lake Avenue Route 9-33**	**Lake Avenue Route 9-33**	**Illinois Route 47 Route 2-326**	**Illinois Route 47 Route 2-326**
Highway functional classification	Minor Arterial	Minor Arterial	Other Principal Arterial	Other Principal Arterial
Truck route classification	Local Truck	Local Truck	Class II	Class II
Strategic Regional Arterial (yes/no)	No	No	Yes	Yes
On NHS (yes/no)	No	No	Yes	Yes
Jurisdiction	McHenry County	McHenry County	Department	Department
Current ADT	13,200	2,300	24,800	15,200
% Trucks	1.67	2.08	5.7	6.1
Posted speed	40	40	35	35
Design speed	45	45	40	40
Number of through lanes and widths	One 12-foot lane	One 12-foot lane	One 12-foot lane	One 12-foot lane
Turn lanes and widths	One 12-foot LT One 12-foot RT	One 12-foot LT One 12-foot RT	One 13-foot LT	One 13-foot LT
Shoulder or curb type	B-6.24	B-6.24	B-6.24	B-6.24
Shoulder width (feet)	N/A	N/A	N/A	N/A
Clear zone width	Req: 1.5 feet from face of curb Rec: 24-26 feet	Req: 1.5 feet from face of curb Rec: 24-26 feet	Req: 1.5 feet from face of curb Rec: 18 feet	Req: 1.5 feet from face of curb Rec: 18 feet
Sidewalks/paths	Sidewalk on both sides	Sidewalk on south side	Sidewalk on east side	Sidewalk on east side
Parking	No	No	No	No
Roadway lighting	Yes	Yes	Yes	Yes
Traffic control type	Signal	Signal	Signal	Signal

Table 1.2-2 Illinois Route 47 and Lake Avenue Intersection Data

	East Leg	West Leg	North Leg	South Leg
Design Element	**McConnell Road Route 9-35**	**McConnell Road Route 9-35**	**Illinois Route 47 Route 2-326**	**Illinois Route 47 Route 2-326**
Highway functional classification	Major Collector	Local	Other Principal Arterial	Other Principal Arterial
Truck route classification	Local Truck	No	Class II	Class II
Strategic Regional Arterial (yes/no)	No	No	Yes	Yes
On NHS (yes/no)	No	No	Yes	Yes
Jurisdiction	McHenry County	City of Woodstock	Department	Department
Current ADT	6,400	550	22,500	24,800
% Trucks	7.92	0.0	4.4	5.3
Posted speed	30	30	35	35
Design speed	35	35	40	40
Number of through lanes and widths	One 12-foot lane	One 12-foot lane	One 12-foot lane	One 12-foot lane
Turn lanes and widths	One 12-foot LT	One 12-foot LT	One 12-foot LT	One 12-foot LT One 12-foot RT
Shoulder or curb type	B-6.12	N/A	B-6.24	B-6.24
Shoulder width (feet)	N/A	N/A	N/A	N/A
Clear zone width	Req: 1.5 feet from face of curb Rec: 18 feet	7-10 feet	Req: 1.5 feet from face of curb Rec: 18 feet	Req: 1.5 feet from face of curb Rec: 18 feet
Sidewalks/paths	No	No	No	Sidewalk on east side
Parking	No	No	No	No
Roadway lighting	No	No	Yes	Yes
Traffic control type	Signal	Signal	Signal	Signal

Table 1.2-3 Illinois Route 47 and McConnell Road Intersection Data

	East Leg	West Leg	North Leg	South Leg
Design Element	**Country Club Road Route 9-34**	**E South Street Route 9-34**	**Illinois Route 47 Route 2-326**	**Illinois Route 47 Route 2-326**
Highway functional classification	Major Collector	Minor Arterial	Other Principal Arterial	Other Principal Arterial
Truck route classification	No	No	Class II	Class II
Strategic Regional Arterial (yes/no)	No	No	Yes	Yes
On NHS (yes/no)	No	No	Yes	Yes
Jurisdiction	McHenry County	McHenry County	Department	Department
Current ADT	11,000	4,100	26,200	22,500
% Trucks	1.74	2.8	3.2	6.0
Posted speed	30	30	35	35
Design speed	35	35	40	40
Number of through lanes and widths	One 12-foot lane	One 12-foot lane	Two 12-foot lanes	One 12-foot lane
Turn lanes and widths	One 12-foot LT One 13-foot RT	One 12-foot LT	One 12-foot LT	One 12-foot LT
Shoulder or curb type	B-6.12	B-6.12	B-6.24	B-6.24
Shoulder width (feet)	N/A	N/A	N/A	N/A
Clear zone width	Req: 1.5 feet from face of curb Rec: 18 feet	Req: 1.5 feet from face of curb Rec: 18 feet	Req: 1.5 feet from face of curb Rec: 18 feet	Req: 1.5 feet from face of curb Rec: 18 feet
Sidewalks/paths	Sidewalk on both sides	Sidewalk on north side	Sidewalk on both sides	Sidewalk on east side
Parking	No	No	No	No
Roadway lighting	No	No	No	No
Traffic control type	Signal	Signal	Signal	Signal

Table 1.2-4 Illinois Route 47 and Country Club Road Intersection Data

	North Leg	West Leg	Northwest Leg	Southeast Leg
Design Element	**Irving Avenue Route 9-40**	**Judd Street Route 9-40**	**Illinois Route 47 Route 2-326**	**Illinois Route 47 Route 2-326**
Highway functional classification	Major Collector	Local Road or Street	Other Principal Arterial	Other Principal Arterial
Truck route classification	Local Truck	Local Truck	Class II	Class II
Strategic Regional Arterial (yes/no)	No	No	Yes	Yes
On NHS (yes/no)	No	No	Yes	Yes
Jurisdiction	City of Woodstock	City of Woodstock	Department	Department
Current ADT	7300	3500	15,200	26,200
% Trucks	4.12	1.5	4.9	5.4
Posted speed	40	40	35	35
Design speed	45	45	40	40
Number of through lanes and widths	One 12-foot lane	One 10-foot lane	One 12-foot lane	One 12-foot lane
Turn lanes and widths	One 12-foot LT	One 10-foot RT	One 12-foot LT	One 12-foot LT
Shoulder or curb type	B-6.24	B-6.24	B-6.24	B-6.24
Shoulder width (feet)	N/A	N/A	N/A	N/A
Clear zone width	Req: 1.5 feet from face of curb Rec: 12-14 feet	Req: 1.5 feet from face of curb Rec: 12-14 feet	Req: 1.5 feet from face of curb Rec: 18 feet	Req: 1.5 feet from face of curb Rec: 18 feet
Sidewalks/paths	Sidewalk on west side	No	No	No
Parking	No	No	No	No
Roadway lighting	Yes	Yes	Yes	No
Traffic control type	Signal	Signal	Signal	Signal

Table 1.2-5 Illinois Route 47 and Judd Street/Irving Avenue Intersection Data

	Northeast Leg	Southwest Leg	North Leg	Southeast Leg
Design Element	**Illinois Route 120 Route 2-333**	**Illinois Route 120 Route 2-333**	**Illinois Route 47 Route 2-326**	**Illinois Route 47 Route 2-326**
Highway functional classification	Other Principal Arterial	Other Principal Arterial	Other Principal Arterial	Other Principal Arterial
Truck route classification	Class II	No	Class II	Class II
Strategic Regional Arterial (yes/no)	Yes	Yes	Yes	Yes
On NHS (yes/no)	Yes	Yes	Yes	Yes
Jurisdiction	Department	Department	Department	Department
Current ADT	10000	9200	15,600	15,200
% Trucks	6.56	9.07	4.0	5.0
Posted speed	30	30	30	35
Design speed	35	35	35	40
Number of through lanes and widths	One 13-foot lane	One 12-foot lane	One 12-foot lane	One 12-foot lane
Turn lanes and widths	One 12-foot LT	One 12-foot LT	One 13-foot LT	One 13-foot LT
Shoulder or curb type	B-6.24	B-6.24	B-6.24	B-6.24
Shoulder width (feet)	N/A	N/A	N/A	N/A
Clear zone width	Req: 1.5 feet from face of curb Rec: 18 feet	Req: 1.5 feet from face of curb Rec: 18 feet	Req: 1.5 feet from face of curb Rec: 18 feet	Req: 1.5 feet from face of curb Rec: 18 feet
Sidewalks/paths	Sidewalk on both sides	Sidewalk on both sides	Sidewalk on both sides	Sidewalk on east side
Parking	No	No	No	No
Roadway lighting	Yes	Yes	Yes	Yes
Traffic control type	Signal	Signal	Signal	Signal

Table 1.2-6 Illinois Route 47 and Illinois Route 120 Intersection Data

	East Leg	North Leg	South Leg
Design Element	**St. John's Road Route 9-31**	**Illinois Route 47 Route 2-326**	**Illinois Route 47 Route 2-326**
Highway functional classification	Major Collector	Other Principal Arterial	Other Principal Arterial
Truck route classification	No	Class II	Class II
Strategic Regional Arterial (yes/no)	No	Yes	Yes
On NHS (yes/no)	No	Yes	Yes
Jurisdiction	City of Woodstock	Department	Department
Current ADT	2500	15,600	15,600
% Trucks	4.26	5.3	5.2
Posted speed	30	35	35
Design speed	35	40	40
Number of through lanes and widths	None	One 12-foot lane	One 12-foot lane
Turn lanes and widths	One 12-foot LT One 11-foot RT	One 12-foot LT	None
Shoulder or curb type	B-6.12	B-6.24	B-6.24
Shoulder width (feet)	N/A	N/A	N/A
Clear zone width	Req: 1.5 feet from face of curb Rec: 18 feet	Req: 1.5 feet from face of curb Rec: 18 feet	Req: 1.5 feet from face of curb Rec: 18 feet
Sidewalks/paths	Sidewalk on both sides	Sidewalk on both sides	Sidewalk on both sides
Parking	No	No	No
Roadway lighting	No	Yes	Yes
Traffic control type	Stop sign	None	None

Table 1.2-7 Illinois Route 47 and St. Johns Road Intersection Data

	East Leg	West Leg	North Leg	South Leg
Design Element	**Russel Court Route 0-3150**	**School Entrance**	**Illinois Route 47 Route 2-326**	**Illinois Route 47 Route 2-326**
Highway functional classification	Local Road or Street	None	Other Principal Arterial	Other Principal Arterial
Truck route classification	No	No	Class II	Class II
Strategic Regional Arterial (yes/no)	No	No	Yes	Yes
On NHS (yes/no)	No	No	Yes	Yes
Jurisdiction	City of Woodstock	School District 200	Department	Department
Current ADT	4,100	N/A	10,800	15,600
% Trucks	0.0	N/A	5.0	4.5
Posted speed	25	N/A	35	35
Design speed	30	N/A	40	40
Number of through lanes and widths	One 20-foot lane	One 20-foot lane	One 12-foot lane	One 12-foot lane
Turn lanes and widths	None	None	One 12-foot LT	One 12-foot LT
Shoulder or curb type	B-6.24	B-6.24	B-6.24	B-6.24
Shoulder width (feet)	N/A	N/A	N/A	N/A
Clear zone width	Req: 1.5 feet from face of curb Rec: 18 feet	Req: 1.5 feet from face of curb Rec: 18 feet	Req: 1.5 feet from face of curb Rec: 18 feet	Req: 1.5 feet from face of curb Rec: 18 feet
Sidewalks/paths	Sidewalk on both sides	Sidewalk on south side	Sidewalk on east side	Sidewalk on east side
Parking	No	No	No	No
Roadway lighting	No	Yes	Yes	Yes
Traffic control type	Signal	Signal	Signal	Signal

Table 1.2-8 Illinois Route 47 and Russel Court Intersection Data

	East Leg	North Leg	South Leg
Design Element	**Ware Road Route 9-3851**	**Illinois Route 47 Route 2-326**	**Illinois Route 47 Route 2-326**
Highway functional classification	Major Collector	Other Principal Arterial	Other Principal Arterial
Truck route classification	Local Truck	Class II	Class II
Strategic Regional Arterial (yes/no)	No	Yes	Yes
On NHS (yes/no)	No	Yes	Yes
Jurisdiction	City of Woodstock	Department	Department
Current ADT	3,500	8,100	10,800
% Trucks	15.38	8.6	9.4
Posted speed	40	45 and 50	35
Design speed	45	45 and 50	40
Number of through lanes and widths	None	One 12-foot lane	One 12-foot lane
Turn lanes and widths	One 11-foot LT One 12-foot RT	One 12-foot LT	None
Shoulder or curb type	B-6.12	B-6.12 Asphalt Shoulder	B-6.12
Shoulder width (feet)	None	11 (Asphalt)	None
Clear zone width	Req: 1.5 feet from face of curb Rec: 18 feet	18 to 28 feet	Req: 1.5 feet from face of curb Rec: 18 feet
Sidewalks/paths	Sidewalk on north side	None	Sidewalk on east side
Parking	No	No	No
Roadway lighting	No	No	Yes
Traffic control type	Stop sign	None	None

Table 1.2-9 Illinois Route 47 and Ware Road Intersection Data

	East Leg	West Leg	North Leg	South Leg
Design Element	**Charles Road Route 2-333**	**Charles Road Route 2-333**	**Illinois Route 47 Route 2-326**	**Illinois Route 47 Route 2-326**
Highway functional classification	Other Principal Arterial	Major Collector	Other Principal Arterial	Other Principal Arterial
Truck route classification	No	No	Class II	Class II
Strategic Regional Arterial (yes/no)	No	No	Yes	Yes
On NHS (yes/no)	Yes	Yes	Yes	Yes
Jurisdiction	McHenry County	McHenry County	Department	Department
Current ADT	6,100	6,500	4,600	8,100
% Trucks	6.23	2.51	11.0	11.3
Posted speed	55	55	50	50
Design speed	60	60	50	50
Number of through lanes and widths	One 11-foot lane	One 11-foot lane	One 12-foot lane	One 12-foot lane
Turn lanes and widths	None	None	None	None
Shoulder or curb type	HMA, aggregate	HMA, aggregate	HMA, aggregate	HMA, aggregate
Shoulder width (feet)	HMA-4 Aggregate-1	HMA-1.5 Aggregate-1.5	HMA-1 Aggregate-9 to 15	HMA-1 Aggregate-8
Clear zone width	30 feet	30 feet	18 to 28 feet	18 to 28 feet
Sidewalks/paths	None	None	None	None
Parking	No	No	No	No
Roadway lighting	No	No	No	No
Traffic control type	Stop sign	Stop sign	Stop sign	Stop sign

Table 1.2-10 Illinois Route 47 and Charles Road Intersection Data

1.2.3 Land Use

The existing City of Woodstock Land Use Map can be found in Exhibit 1.2.4. US 14 to Lake Avenue is zoned mainly as commercial. Businesses along this route include car dealerships, car repair centers, professional offices, and fast food chains, among others. Many businesses require large trucks that access the business throughout the day.

Lake Avenue to Country Club Road is zoned for commercial businesses, multiple-family residential with a manufacturing/industrial district at the northeast corner of the IL 47 and Lake Avenue intersection.

Businesses along this portion of the Project include grocery stores, major retail, and banks. Many businesses require large trucks that access the business throughout the day.

Land use along IL 47 between Country Club Road and IL 120 is zoned as a commercial district consisting of service and retail offices and shopping centers. There are single- and multiple-family homes near the IL 120 and IL 47 intersection. A manufacturing/industrial district is located on the west side of IL 47.

Land use from IL 120 to St. Johns Road is a mix of commercial shopping centers, elderly care facilities, offices, and single- and multiple-family homes.

The land use between St. Johns Road to Ware Road along IL 47 consists mainly of single-family residential homes on the west side and mixed commercial businesses on the east side. There is a middle school located west of the Ware Road and IL 47 intersection. The McHenry County Government Center and other related offices are located directly east of the intersection.

From Ware Road to Charles Road, land is primarily open space, agricultural farm land, and farm houses. There is also a commercial landscaping business, a real estate business, and a Presbyterian church along IL 47 within this section. There is one subdivision of single-family homes east of the IL 47 and Cooney Drive intersection.

1.2.4 Environmental Resources

There are several environmental resource areas within the IL 47 study area. These include the East Branch of Silver Creek, an unnamed tributary to Silver Creek, a deep-water aquatic habitat, Bates Park, wetlands, floodplains, and farmland.

The *FAP 326 Illinois Route 47, US Route 14 to Charles Road, McHenry County Environmental Assessment* (EA) evaluated impacts to natural resources including wetlands, water quality, floodplains, and threatened and endangered species. The analysis also included an investigation of noise impacts and potential hazardous material within the study area. The EA can be found in Supplement 1.2-1. The EA Errata can be found in Supplement 1.2-2. The Finding of No Significant Impacts (FONSI) was signed on October 24, 2018 and can be found in Supplement 1.2-3.

1.2.5 Public Facilities and Services

Major community facilities along the project study area are schools and government buildings that are located at the intersection of IL 47 and Ware Road. The schools are a part of Public School District No. 200. Several school bus routes use IL 47 within the project study area. The City of Woodstock is the county seat of McHenry County. The government center is located on Ware Road toward the north end of the project study area. The McHenry County fairgrounds are located on Country Club Road two blocks east of IL 47. Places of worship are also located along the project study area.

Two Pace bus routes use IL 47 and include stops along IL 47. No additional future bus routes are proposed for the project study area.

IL 47 passes under the Union Pacific Railway between Lake Avenue and McConnell Road. The nearest alternative crossing is an at-grade crossing on Madison Street, approximately one mile west via Lake

Avenue. Because this dual-track rail line carries frequent commuter and freight traffic, the railroad tracks on the bridge must remain open at all times. The nearest Metra stop to the project study area is located approximately 1,800 feet west of the Project at the intersection of IL 120 and North Benton Street in Woodstock. This Metra stop is outside the Project study area.

1.2.6 Existing Drainage

From US 14 to Ware Road, existing IL 47 is primarily a closed drainage system with curb and gutter running along the outside of the roadway. Intermittent ditches exist behind the curb and gutter. Several outlets exist within this section. Residents have reported pavement flooding along IL 47 between US 14 and McConnell Road. Pavement flooding was also reported at the intersection of IL 47 and Russel Court.

From Ware Road to Charles Road, existing IL 47 is an open drainage system with ditches running along the outside of the roadway or water sheet-flowing out of the right-of-way into open fields.

An unnamed tributary crosses underneath IL 47 via a 10-foot-wide by 8-foot-tall box culvert located approximately 1,200 feet south of South Street. It is in overall good condition.

Silver Creek crosses underneath IL 47 via a 7-foot-wide by 8-foot-tall box culvert between Cherry Court and Birch Road. This culvert is hydraulically insufficient.

An unnamed tributary to Silver Creek crosses underneath IL 47 via a 6-foot-wide by 5-foot-tall box culvert south of Cooney Drive. This culvert is hydraulically insufficient.

The Existing Drainage Plan can be found in the Location Drainage Study under separate cover. A Soil Survey was also conducted for this project and can be found in Supplement 1.2-4.

1.3 OPERATIONAL AND SAFETY ANALYSES, IDENTIFIED DEFICIENCIES

1.3.1 Project History

Previous studies were initiated locally to study the future needs of IL 47 through the City of Woodstock. A study sponsored by the City of Woodstock in 1995 made several recommendations, ultimately incorporating two lanes in each direction throughout the project study area with a center flush median from US 14 to Ware Road and a raised median from Ware Road to Charles Road. The study concluded the section from IL 120 to Charles Road would require a three-lane cross section in the interim. However, the study noted traffic volumes would increase and would ultimately require a five-lane cross section. This study also recommended the implementation of access control strategies, various intersection improvements to increase roadway capacity, and replacement of the Union Pacific railroad bridge. The Department's 1995 *Strategic Regional Arterial Planning Study for Illinois Route 47* recommended these same measures. An additional study was conducted by the City of Woodstock in 2006. A five-lane cross section was recommended from US 14 to IL 120 and from Ware Road to Charles Road, with flush and raised medians, access control, various local improvements, and replacement of the railroad bridge. In this study, a three-lane cross section was recommended through the residential section of the Project from IL 120 to Ware Road.

1.3.2 Identified Deficiencies

Increased travel demands on IL 47 are creating safety and operational deficiencies along the immediate roadway and adjacent arterials and intersections. The insufficient capacity of the roadway to manage travel demands creates congestion, limits mobility, hinders safe access to adjacent properties and businesses, and leads to safety issues for motorists, bicyclists, and pedestrians. Pedestrian access to adjacent land and bicycle accessibility through and across the project study area are limited.

1.3.2.1 Safety Deficiencies

Crash data was collected from Department for years 2010 through 2014. The crash analysis can be found in Supplement 1.3-1. The total number of crashes for the study period was 651, as shown in Figure 1.3-1.

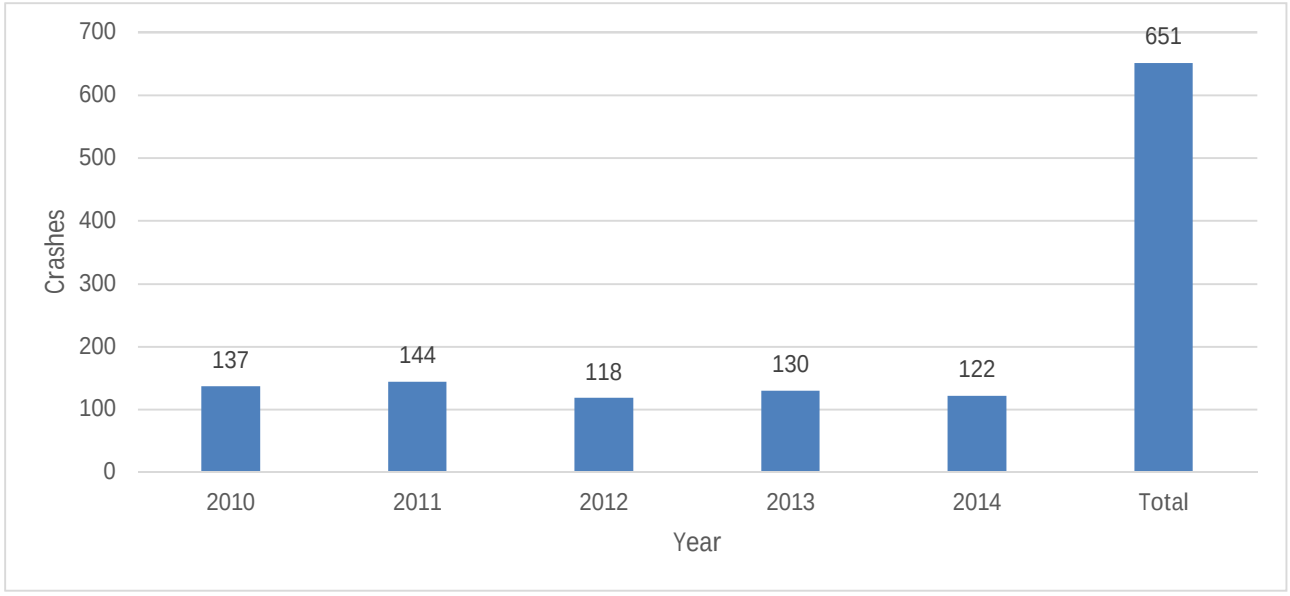


Figure 1.3-1 Total Crashes 2010 to 2014

Figure 1.3-2 describes the 651 crashes by crash type. The predominant crash types for the study period were rear-end (60 percent), turning (18 percent), angle (11 percent), and sideswipe of cars traveling in the same direction (3 percent). Other types of crashes included animal, head-on, sideswipe of vehicles in opposite directions, and fixed objects.

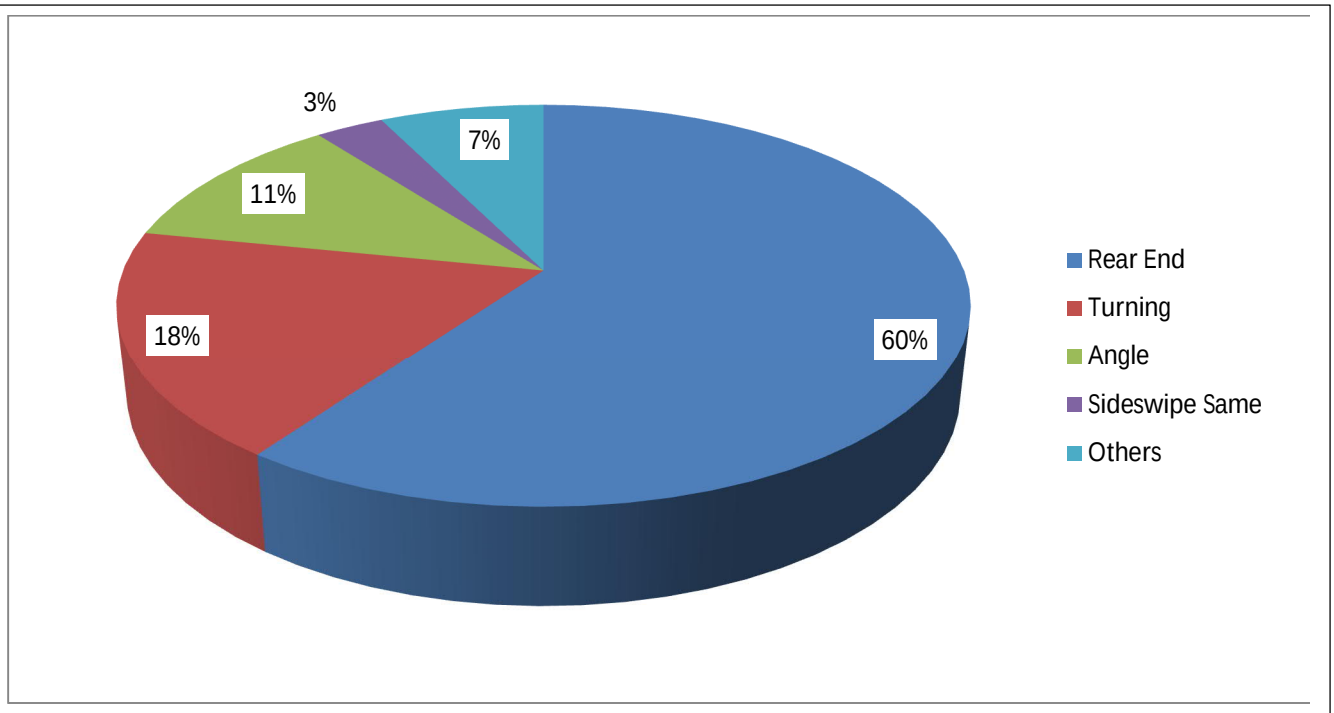


Figure 1.3-2 2010 to 2014 Crash Types

Rear-end, turning, and angle crashes are usually caused by several factors, such as deficiency in the capacity of the roadway, signal timing issues because of lack of signal modernization, improper design of the roadway leading to incomplete channelization of traffic, lack of raised medians, and insufficient drainage of the pavement. The lack of capacity on this two-lane roadway, coupled with the numerous entrances, leads to conflicts that result in crashes.

Of the crashes, 77.7 percent occurred during the day and 79.1 percent occurred during clear weather. This indicates that lighting conditions, weather, and wet pavement do not appear to substantially contribute to crashes.

Of the total crashes, 202 (31.0 percent) were injury crashes that resulted in 306 injuries. There were no fatalities recorded during the study period; however, there were 14 incapacitating Type “A” injuries, which are the most severe injury type that is not a fatality. There were three crashes involving a pedestrian and three crashes involving a bicyclist. The first pedestrian crash occurred during the 11 A.M. hour at the intersection with Lake Avenue and resulted in a reported Type “C” injury. The second pedestrian crash occurred during the 8 P.M. hour at the intersection with Judd Street and Irving Avenue and resulted in a Type “B” injury. The third pedestrian crash occurred during the 11 P.M. hour at the intersection with IL 120, and it resulted in a Type “B” injury. Two bicyclist crashes occurred between the intersections of Lake Avenue and McConnell Drive. Both resulted in Type “B” injuries. The first crash involving a bicyclist occurred during the 10 A.M. hour and the second crash involving a bicyclist occurred during the 3 P.M. hour. The third crash

involving a bicyclist occurred between IL 120 and St. Johns Road during the 6 P.M. hour and it also resulted in a Type “B” injury.

Figure 1.3-3 presents the number of injuries by severity for all 651 crashes. Some crashes resulted in more than one injury.

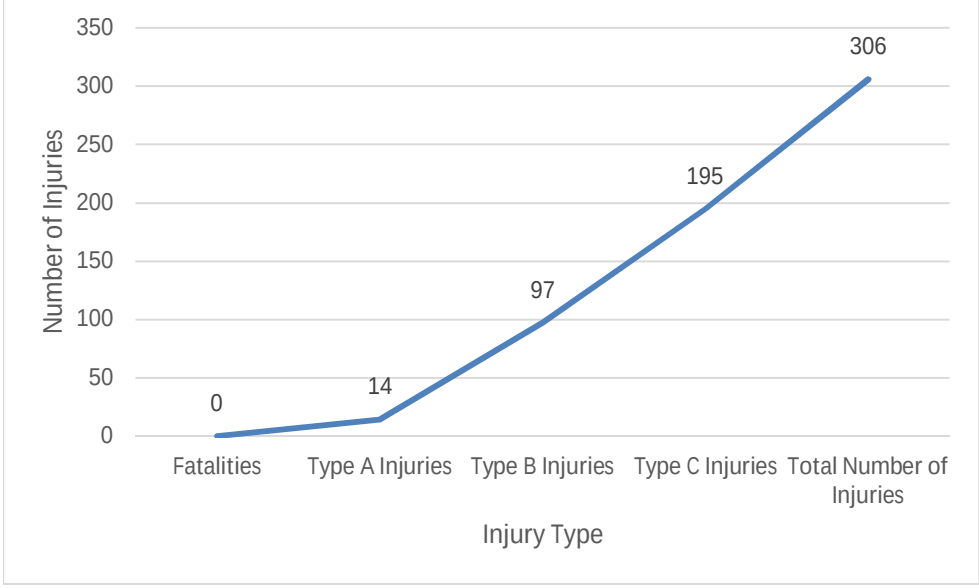


Figure 1.3-3 Injury Crashes 2010 to 2014

The intersection of Lake Avenue and IL 47 is one of the busiest in the project study area and it experienced an elevated number of crashes. There were 94 crashes within the five-year study period. The majority of crashes at this location were rear-end crashes. Signal timing issues or the permitted turn on red could have been contributing factors. The angle of skew of this intersection also could have been a factor causing reduced visibility that led to crashes.

Although there are no 5% locations, the high incidence of crashes in the study period indicates that safety is an issue in the project study area. The number of rear-end crashes indicates that high traffic volumes, insufficient roadway capacity, and poor access management may be contributing to crashes.

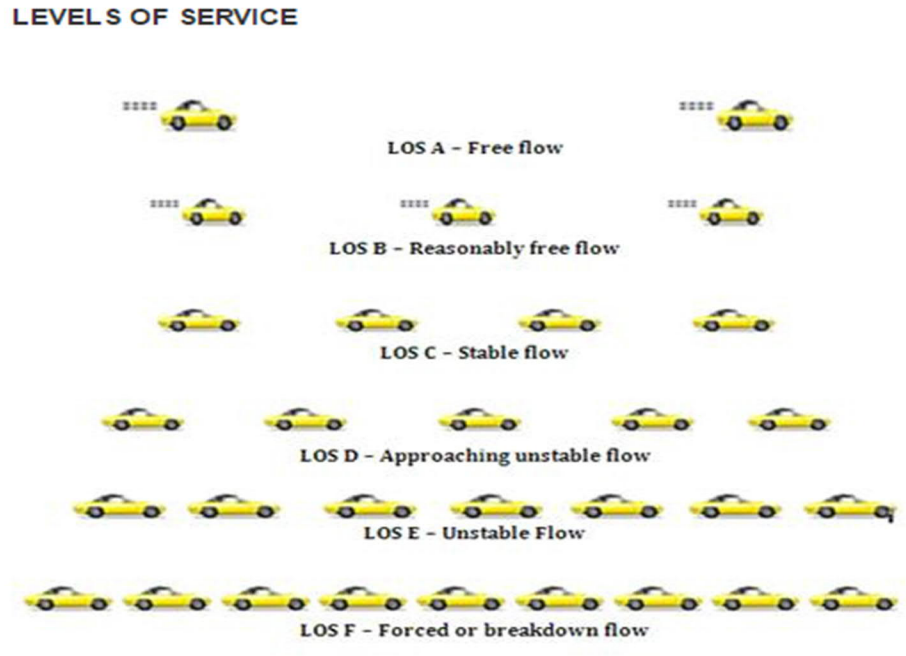
1.3.2.2 Capacity Deficiencies

The Project is also needed to address capacity deficiencies in the project study area. The 2009 Average Daily Traffic (ADT) varies throughout the project study area carrying 16,300 vehicles per day (vpd) at US 14, increasing to 26,200 vpd at Country Club Road, before gradually decreasing to 8,100 vpd at Charles Road. 2009 ADT was used since it was found to be consistent with a broader historical average.

Projected traffic volumes were generated by the Chicago Metropolitan Agency for Planning (CMAP) for the 2040 design year based on the No-Action scenario (i.e., no capacity improvements; only routine maintenance). These future traffic volumes are expected in the range of 17,000 vpd at US 14, increasing to 27,000 vpd at Country Club Road, and decreasing to 16,000 vpd south of Charles Road.

A letter from CMAP detailing projected traffic volumes, dated November 14, 2011, is shown in Appendix A. Updated traffic projections were requested from CMAP in 2015 because of the time elapsed. After comparing the revised traffic projections to the original traffic projections in 2011, it was determined the original traffic projections developed in 2011 were sufficiently accurate to complete a traffic analysis and develop signal timing. The traffic projections sent by CMAP in a letter, dated October 28, 2015, can be found in Appendix A.

The level of service (LOS) of an intersection rates the operational characteristics of traffic volumes to give a measure of traffic flow. The LOS rating is a scale from A to F, with A being optimal free-flow conditions and F indicating the intersection no longer operates properly because demand exceeds capacity. See Figure 1.3-4 for further explanation of LOS.



Adapted from A Policy on Geometric Design of Highways and Streets. AASHTO. 2001

Figure 1.3-4 Level of Service

Sections of IL 47 between intersections were given a transitional LOS value. For example, LOS C-D indicates the section is between an intersection with LOS C and another intersection with LOS D. A schematic of IL 47 showing the relationship between the ADTs and the LOS of the roadway is shown in Figure 1.3-5. This figure shows increasing congestion in the 2040 design year if no improvements are implemented.

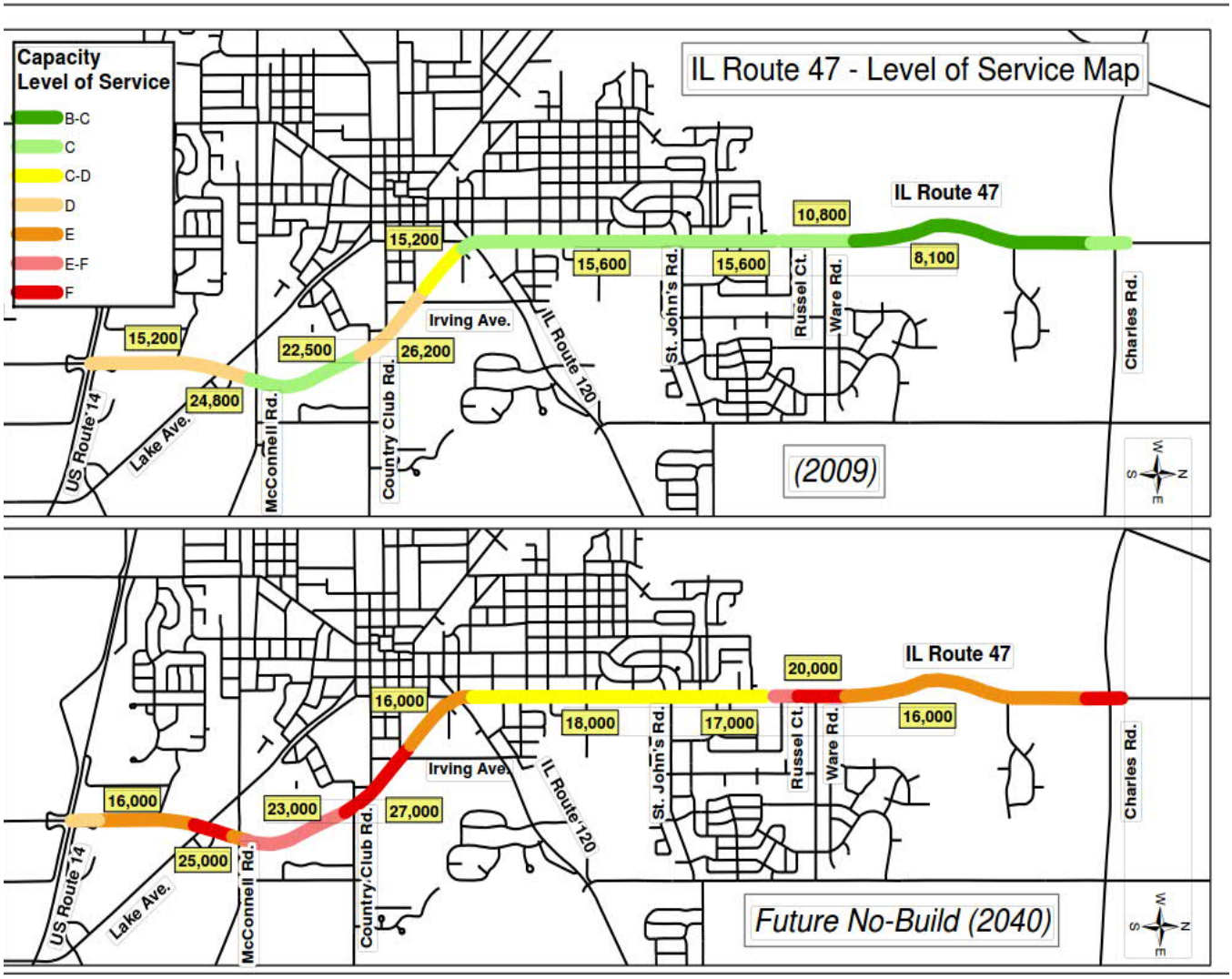


Figure 1.3-5 2009 and Projected 2040 Future No-Build ADT and LOS

Overall, the existing intersection geometry and 2009 traffic volumes result in intersection LOS ranges from C to D. The 2040 no-build scenario intersection LOS ranges from C to F. A summary of the AM and PM LOS and delay for 2009 and the future no-build scenario at each intersection is provided in Table 1.3-1.

	AM Peak Hour				PM Peak Hour			
	2009		2040 No-Build		2009		2040 No-Build	
Intersection	Delay (seconds/ vehicle)	LOS	Delay (seconds/ vehicle)	LOS	Delay (seconds/ vehicle)	LOS	Delay (seconds/ vehicle)	LOS
US Route 14	32.7	C	45.7	D	35.8	D	45.6	D
Lake Avenue	34.2	C	100.8	F	41.8	D	135.4	F
McConnell Road	24.8	C	56.3	E	22.9	C	50.0	D
Country Club Road	32.5	C	99.2	F	37.9	D	131.7	F
Judd Street/ Irving Avenue	31.9	C	136.9	F	38.4	D	184.2	F
Illinois Route 120/ McHenry Avenue	34.6	C	53.8	D	34.0	C	41.4	D
Russel Court	22.9	C	53.7	D	20.8	C	25.4	C

Table 1.3-1 AM and PM 2009 and Future No-Build (2040) LOS and Delay by Intersection

Note: Level of Service colors match the legend provided in Figure 1.3-5.

In the PM peak hour, four of the seven intersections currently experience LOS D. By 2040, three of the seven intersections will experience LOS D, and three signalized intersections will experience LOS F. As a result, the future no-build PM peak hour queues and delays become excessive. For example, the northbound queue at Country Club Road and Judd Street/Irving Avenue are both over 4,000 feet. This decrease in LOS indicates excessive traffic congestion and travel times.

1.3.2.3 Access Management

There is generally no access management along IL 47. This leads to approximately 190 driveways and 31 intersections along the route. Several businesses have multiple, closely spaced entrances serving the same parking lot. Right-in-right-out access points have only been constructed at three driveways throughout the entire five-mile project study area. There is only one side street, East Calhoun Street, where drivers are prevented from turning left onto IL 47.

There are no raised medians present in the project study area; therefore, left turns are not physically restricted at any point. The high number of access points fosters unprotected mid-block turning, including left turns.

Providing raised medians and using access management strategies reduces the number of conflict points at an intersection. This is illustrated in Figure 1.3-6, which was taken from the Federal Highway Administration (FHWA) brochure *Safe Access is Good for Business,* included in Appendix B. As shown in this figure, a three-legged intersection with no access management results in 11 vehicle conflict points, while a three-legged intersection restricting left turns out of the side street results in only six vehicle conflict points.

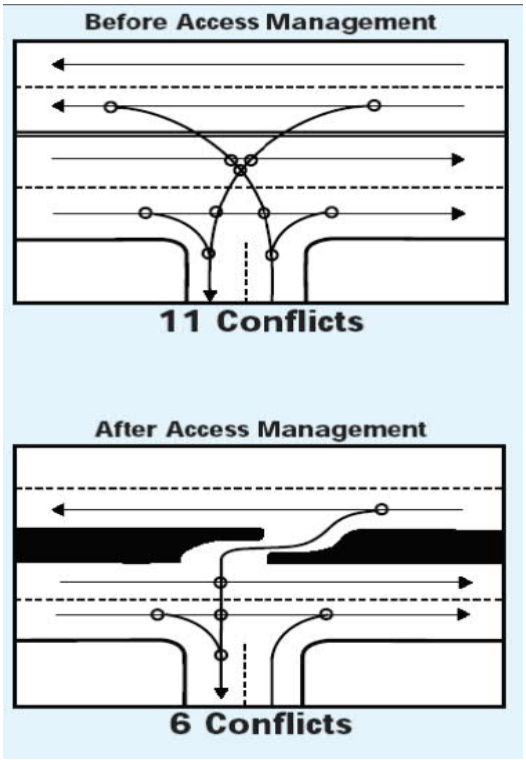


Figure 1.3-6 Access Management Reduces Conflict Points

From 2010 to 2014, there were 337 mid-block crashes in the IL 47 project study area. Of these, 75.7 percent were rear-end or turning crashes. The lack of access management on IL 47 negatively affects operations and leads to a high incidence of conflicts and, ultimately, crashes.

1.3.2.4 Pedestrian and Bicycle Accommodations

The presence of pedestrian facilities varies in the Project study area. Exhibit 1.2-3 shows the locations of existing sidewalk and bicycle facilities in the project study area. There are no existing bicycle paths or bicycle accommodations within the Project study area. Bicyclists must travel on IL 47 with its heavy traffic volumes, high truck volumes, and high turning movements. In the south section, there is 5- to 6-foot-wide sidewalk on both sides of the road at irregular intervals from Catalpa Lane to Judd Street/Irving Avenue. There is no sidewalk from Judd Street/Irving Avenue to IL 120. There are 5- to 6-foot-wide sidewalks on both sides of the road through much of the area from IL 120 to Ware Road. The noncontiguous nature of pedestrian facilities in the project study area means pedestrians must walk through parking lots, along grass parkways, and even on roadway shoulders, as shown in Figure 1.3-7. The intersections of IL 120 and Russel Court are the only locations with striped pedestrian crossings and pedestrian signals. There are no pedestrian facilities north of Ware Road.

Figure 1.3-7 Incomplete Facilities Make Pedestrian Travel Difficult

There are several bike and pedestrian generators located along or near the project study area. The Bicycle and Pedestrian

Checklist for the Project can be found in Supplement 1.3-2. In addition to the residential and commercial properties immediately adjacent to the roadway, there are several unique land uses with regional significance that generate pedestrian traffic, including the McHenry County Fairgrounds (immediately east of the intersection of IL 47 and Country Club Road), a Metra train station (approximately 0.4 mile west of IL 47 in downtown Woodstock), and the McHenry County Government Center Campus (at the intersection of IL 47 and Ware Road). Other generators include Bates Park (south of St. Johns Road), a learning center at the intersection of IL 47 and Russel Court, and two schools at the intersection of IL 47 and Ware Road. Alternate routes to IL 47 are limited. Potential secondary roads are not continuous and do not provide a direct north-south route to these destinations.

Figure 1.3-8 Skewed Intersections

Without improvements, IL 47's limited pedestrian and bicycle accommodations will remain. Increased motor vehicle traffic will magnify the effect of these deficiencies. It will become more difficult for pedestrians and bicyclists to cross IL 47 or to use the corridor for travel.

1.3.2.5 Geometric and Design Deficiencies

Geometric and design deficiencies along IL 47 contribute to safety deficiencies and reduced roadway capacity. The overall horizontal and vertical geometrics generally fall within Department standards, except as noted in this section.

As detailed previously, there are several skewed intersections in the project study area. The Department recommends that roadways intersect at an angle within 15 degrees of perpendicular to maintain visibility.

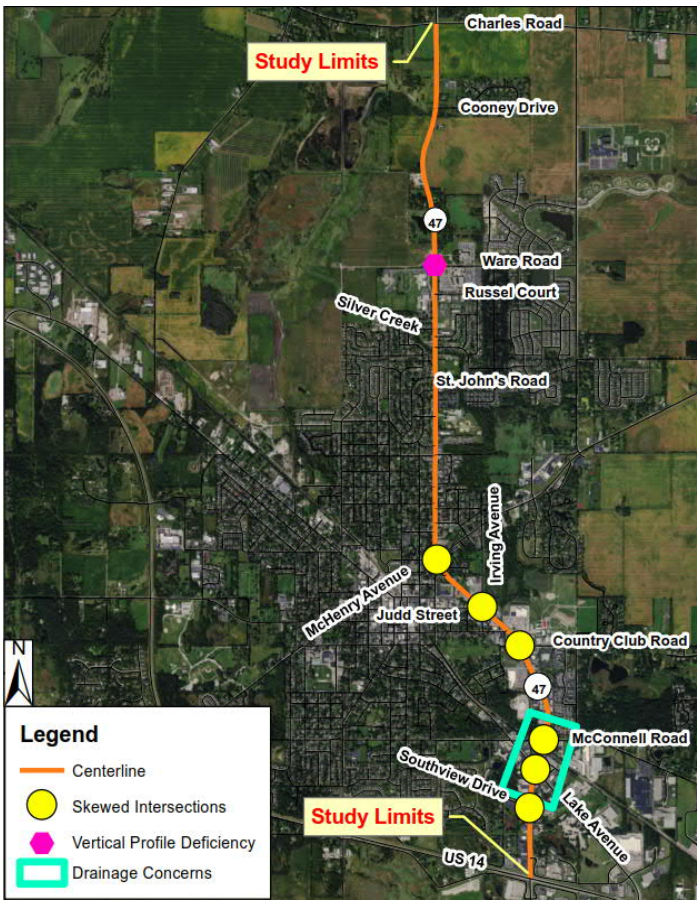


Figure 1.3-9 Geometric and Design Deficiencies

The Department allows a maximum skew of 30 degrees where correcting the skew would be impractical. See Figure 1.3-8 for further explanation of skew.

The six intersections that exceed a 15-degree skew are shown in yellow in Figure 1.3-9: Southview Drive, Lake Avenue, McConnell Road, Country Club Road, Judd Street/Irving Avenue, and McHenry Avenue. The skew of three of these intersections exceeds the maximum 30 degrees: Lake Avenue, Country Club Road, and Judd Street/Irving Avenue. Intersection sight distance is also restricted at the intersection of Judd Street and Irving Avenue because of its irregular alignment and the building at the northwest corner of the intersection.

A vertical curve located just north of Ware Road is the only profile vertical deficiency within the project study area. The recommended intersection sight distance is not achieved because of this curve and the 45-mile-per-hour posted speed limit.

IL 47 has had consistent reports of poor drainage between the intersections at Lake Avenue and McConnell Road. These intersections flood during heavy rain events. Specifically, in the area underneath the Union Pacific Railway bridge, water ponds on the roadway and creates a hazard.

These geometric and design deficiencies contribute to mobility, safety, and operational issues, which will only worsen as traffic volumes increase.

1.4 PROJECT PURPOSE

The purpose of the Project is to address transportation safety, capacity, access management, pedestrian and bicycle needs, and geometric deficiencies.

This chapter describes the design criteria and alternatives considered to meet the Purpose and Need.

2.1 DESIGN CRITERIA AND ALTERNATIVES DEVELOPMENT PROCESS

SRA design criteria in accordance with Department Bureau of Design and Environment (BDE) Manual, Chapter 46 was used to develop IL 47 alternatives. The possibility of converting IL 47 from a rural cross section to an urban or suburban cross section from Ware Road to Charles Road was evaluated as a part of this Project and is further discussed in Section 2.3.4.

Table 2.1-1 presents the controlling geometric design criteria items as recommended by the BDE Manual. Criteria is presented for urban, suburban, and rural cross sections because of the varying cross section alternatives from Ware Road to Charles Road.

Design Criteria	Urban SRA	Suburban SRA	Rural SRA
Design Speed Limit	30 to 40 mph	45 mph	60 mph
Number of Lanes	2 or 3 for each travel direction	2 or 3 for each direction of travel	2 or 3 for each direction of travel
Lane Width	11-foot restricted ROW 12’ desired	12 feet	12 feet
Median Width and Type	18- to 22-foot raised median 11- to 14-foot flush median	18- to 30-foot raised median 12- to 14-foot flush median	50 feet with depressed median 22 feet raised median
Profile Grade	7% maximum 0.3% minimum (0.5% desired)	6% maximum 0.3% minimum (0.5% desired)	4% maximum 0% minimum (0.5% desired)
Edge Treatment	Curb and Gutter	10-foot-wide shoulder or curb and gutter	10-foot-wide shoulder

Table 2.1-1 IL 47 Geometric Design Criteria

The existing speed limit along IL 47 varies within the Project study area. IL 47 from US 14 to IL 120 and from Greenwood Circle to Ware Road has an existing posted speed limit of 35 mph. IL 47 from IL 120 to Greenwood Circle has an existing posted speed limit of 30 mph. IL 47 from Ware Road to 0.5 mile north of Ware Road has an existing posted speed limit of 45 mph, and IL 47 from 0.5 mile north of Ware Road to Charles Road has an existing posted speed limit of 55 mph. IL 47 will maintain existing speed limits from US 14 to 0.5 mile north of Ware Road and a design speed of 5 mph greater than the posted speed limit will be used. For the section 0.5 mile north of Ware Road and Charles Road, the proposed posted and design speed will be 50 mph. Multiple proposed posted and design speeds were evaluated as part of this Project and are discussed further in Section 2.3.4. A map of the existing speed limits and proposed design speeds along IL 47 is shown in Figure 2.1-1.

Figure 2.1-1 Existing Speed Limit and Proposed Design Speed Map

The Purpose and Need for this Project described in Chapter 1 summarizes the existing IL 47 deficiencies and demonstrates the need for action. Deficiencies identified in the Purpose and Need include safety, traffic operations, access management, pedestrian accommodations, and geometrics.

Establishment of the Project Purpose and Need aided in the identification of Project alternatives. Additional input on alternatives resulted from the overall agency and public involvement process using a Context Sensitive Solutions (CSS) Project development process. The CSS Project development process gathered public input to assist in identification of deficiencies and corridor needs, alternative concepts, and specific Project elements. Public input was received from a variety of sources including the Project Study Group, Corridor Advisory Group (CAG), public meetings, NEPA/404 merger meetings, one-on-one stakeholder meetings, small group business meetings, a Public Hearing, and comments received through the Project website and mailings. The IL 47 CAG comprises many local officials, business owners, adjacent property owners, and other interested persons.

The culmination of this effort combined with the technical evaluation of the Purpose and Need, resulted in the identification of a reasonable range of build alternatives to be considered.

The No-Action Alternative and Build Alternatives developed are presented in the Environmental Assessment. The EA can be found in Supplement 1.2-1. Included for each alternative is a description of the alternative, its ability to meet the Purpose and Need, the estimated environmental impacts associated with the alternative, and an overview of the initial feedback received from the CAG on each alternative. Each alternative presents a discussion of the impact to the existing Union Pacific Railway bridge or impact to the Union Pacific Railway line, as applicable. A summary follows.

2.2 ALTERNATIVES CONSIDERED

Alternatives were considered to address the needs of the project and were evaluated for engineering obstacles and screened against the Purpose and Need. The No-Action alternative was carried forward, as required by the National Environmental Policy Act, to be used as a benchmark for evaluating the benefits and impacts of the Build Alternatives. However, the No-Action alternative alone did not satisfy the Purpose and Need of the Project. The full range of alternatives considered were identified using existing roadway characteristics, future traffic demand, land use, available right-of-way, and the CSS process and are shown in Figure 2.2-1. Table 2.2-1 provides a brief summary of each alternative considered.

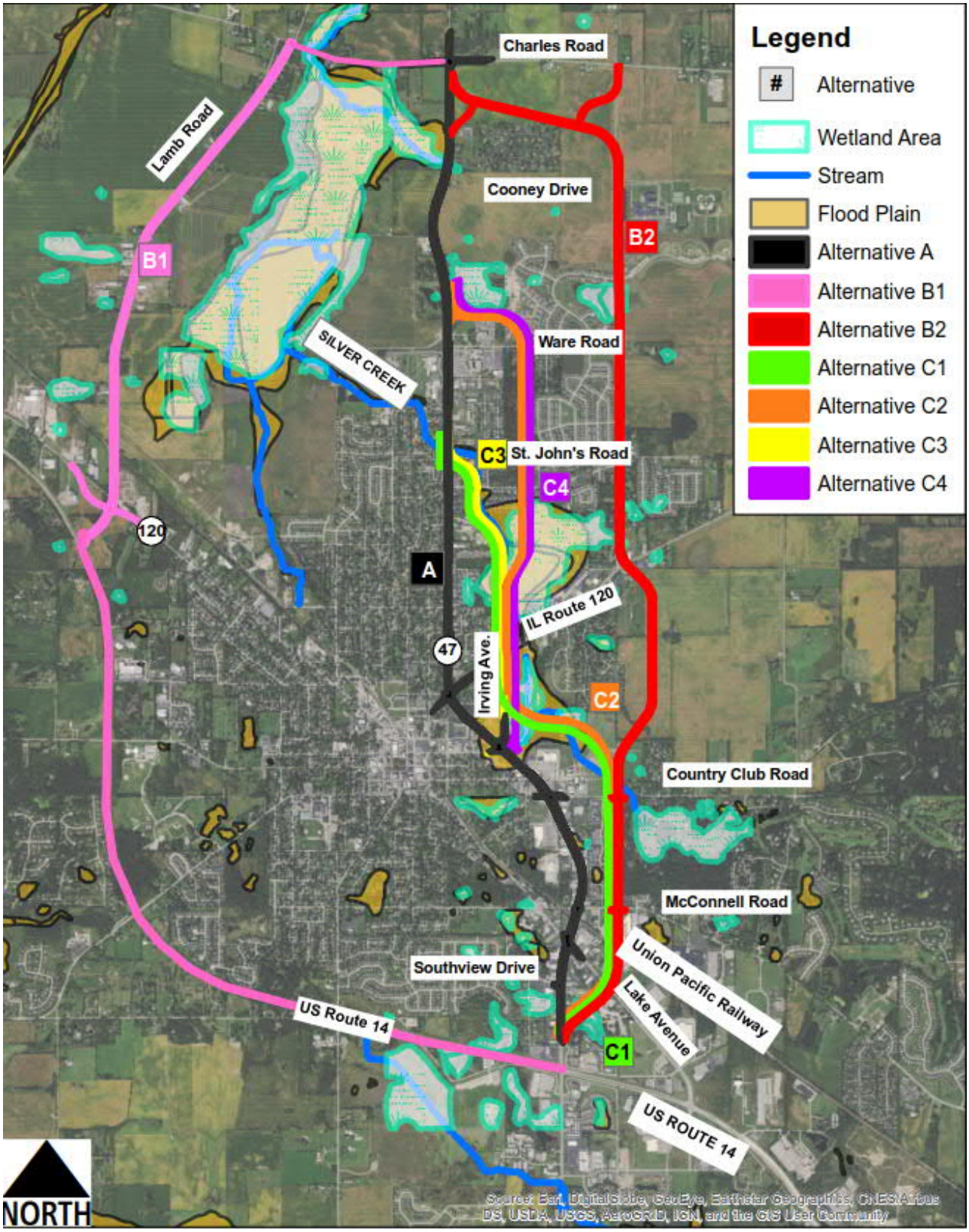


Figure 2.2-1 IL 47 Full Range of Alternatives with Environmental Resources

Alternative	Alignment and Characteristics
Alternative A	Widening along the existing IL 47 alignment between US 14 and Charles Road with two lanes in each direction and a raised center median.
Alternative B1	IL 47 western bypass around Woodstock using US 14, Lamb Road, Charles Road, and new roadway. The cross section included two lanes in each direction and a raised center median.
Alternative B2	IL 47 eastern bypass around Woodstock using Zimmerman Road, Raffel Road, and new roadway. The cross section included two lanes in each direction and a raised center median.
Alternative C1	One-way couplet splitting the northbound and southbound IL 47 traffic between Southview Drive and St. John's Road. Southbound traffic would stay on the existing IL 47 alignment and northbound traffic would be along new roadway, Zimmerman Road, and Irving Avenue. Northbound IL 47 would be an urban two-lane cross section and southbound IL 47 would remain a three-lane cross section. Outside the couplet, IL 47 would be expanded to two lanes in each direction with a raised center median.
Alternative C2	One-way couplet splitting the northbound and southbound IL 47 traffic between Southview Drive and Ware Road. Southbound traffic would stay on the existing IL 47 alignment and northbound traffic would be along new roadway, Zimmerman Road, and Hickory Road. Northbound IL 47 would be an urban two-lane cross section and southbound IL 47 would remain a three-lane cross section. Outside the couplet, IL 47 would be expanded to two lanes in each direction with a raised center median.
Alternative C3	One-way couplet splitting the northbound and southbound IL 47 traffic between Irving Avenue and St. John's Road. Southbound traffic would stay on the existing IL 47 alignment and northbound traffic would be along Irving Avenue and new roadway. Outside the couplet, IL 47 would be expanded to two lanes in each direction with a raised center median.
Alternative C4	One-way couplet splitting the northbound and southbound IL 47 traffic between Irving Avenue and Ware Road. Southbound traffic would stay on the existing IL 47 alignment and northbound traffic would be along Irving Avenue, Hickory Road, and a new roadway. Outside the couplet, IL 47 would be expanded to two lanes in each direction with a raised center median.

Table 2.2-1 Illinois Route 47 Full Range of Alternatives Description

A summary of the preliminary potential impacts of each build alternative is shown in Table 2.2-2. Wetland, floodplain, and stream crossing impacts for the bypass and couplet alternatives were determined using National Wetland Inventory maps. No survey on site was completed for the bypass and couplet alternatives.

	Property Impacts				Environmental Impacts		
Alternative	Right-of-Way (acres)	Potential Relocated Residences	Potential Relocated Businesses	Additional Properties Affected by Railroad Work	Wetland (acres)	Floodplain (acres)	Stream Crossings
A	18.9	11	3	5 to 14	0.2	5.8	2
B1	25.5	3	0	4	0.4	0.3	1
B2	68.1	6	4	6 to 14	3.1	0.0	1
C1	46.9	2	3	6 to 14	4.1	7.5	3
C2	38.7	3	3	6 to 14	6.0	9.0	3
C3	36.5	2	1	5 to 14	1.5	9.0	2
C4	28.3	3	1	5 to 14	3.4	10.5	2

Table 2.2-2 Impacts Summary Table

The existing alignment build alternative (Alternative A) met the Project Purpose and Need and was recommended to be carried forward for further analysis. It will increase roadway capacity, will include pedestrian and bicycle accommodations, and will provide feasible and practical repairs to geometric deficiencies.

The bypass alternatives (Alternatives B1 and B2) did not satisfy the Purpose and Need and were not carried forward for further analysis. The traffic congestion, related safety deficiencies, and geometric deficiencies on existing IL 47 would continue in these alternatives. Additionally, designating a bypass route would not address access management or pedestrian and bicycle accommodations.

Each of the one-way couplet alternatives could satisfy the Project Purpose and Need because both existing IL 47 and the new corridor would be improved. The traffic model showed that traffic congestion and delay would be reduced and, therefore, would improve safety. The existing IL 47 edge of pavement would be sufficient in the adjacent one-way couplet areas, but work would be required to implement access management, provide pedestrian accommodations, and address the geometric issues. In discussions with the IL 47 CAG, there was no support for the one-way couplet alternatives. While the alternatives met the Purpose and Need, the lack of support for the one-way couplet alternatives provided adequate justification to not carry them forward for further consideration.

For the reasons mentioned above, it was recommended that Bypass Alternatives B1 and B2, and Couplet Alternatives C1, C2, C3, and C4 not be carried forward. Alternative A, the existing alignment alternative with pedestrian accommodations, was be carried forward for further analysis.

2.3 FURTHER EVALUATION OF EXISTING ALIGNMENT ALTERNATIVE

As previously discussed, Alternative A, the on-alignment alternative, was the only alternative carried forward for further evaluation. This section of the report evaluates different subalternatives of Alternative A to determine a preferred alternative. Each subalternative consists of two lanes in each direction with a shared-use path on the east side and sidewalk on the west side of IL 47.

2.3.1 Median Selection–US 14 to Ware Road

A 13-foot-wide TWLTL, 18-foot-wide raised median, and 22-foot-wide raised median were subalternatives considered for the median along IL 47.

The raised median was selected and limits the number of access points, thereby limiting the number of conflict points and potential crash locations. Median break locations were coordinated with the City and businesses and are at key access locations.

2.3.2 Intersection Alternatives

Roundabout intersections were evaluated at the following six locations:

1. IL 47 and Lake Avenue
2. IL 47 and McConnell Road
3. IL 47 and Irving Avenue/Judd Street
4. IL 47 and IL 120
5. IL 47 and Ware Road
6. IL 47 and Charles Road

Five of the intersections operate better as roundabouts. The intersection of IL 47 and IL 120 functions better as a signal and will remain a signalized intersection.

Signal warrant analysis at St. Johns Road determined the existing minor leg, stop-controlled intersection will operate more efficiently as a signalized intersection.

In general, roundabouts typically reduce the rate of angle crashes and injury crashes. The lower speeds at which a roundabout operates will likely result in less severe crashes. One study showed that conversion to roundabout control has reduced an average of 39 percent of the total crashes and 76 percent of the injury crashes at 24 intersections studied (From Insurance Institute for Highway Safety Status Report Vol. 35, No 5).

Roundabouts also increase the safety of skewed intersections. The intersections of Lake Avenue, McConnell Road, and Judd Street/Irving Avenue all exceed the maximum recommended intersection skew of 15 degrees. Roundabouts help eliminate the skew of the intersection, lowering the sight angle required by drivers. Roundabouts also only require drivers to look in one direction when entering the intersection.

Finally, roundabouts reduce the number of conflict points when compared to a traditional signalized intersection. A traditional signalized intersection has 32 conflict points, while a roundabout intersection only has eight conflict points.

2.3.3 Detailed Alignments–US 14 to Ware Road

IL 47 at IL 120:
The horizontal curve radius was increased improving the sight distance and eliminating the need for superelevation.

Greenwood Avenue:
The west leg of Greenwood Avenue was realigned to the north to align with Greenwood Circle.

2.3.4 Alternatives from Ware Road to Charles Road

2.3.4.1 Speed Limit/Design Speed Alternatives from Ware Road to Charles Road

Three alternatives were considered for the posted and design speed limits between Ware Road and Charles Road. These alternatives are:

Alternative 1–Match Existing 45 and 55mph Posted and use 50 and 60 mph Design Speeds

Alternative 2–45 and 50mph Posted Speed, 50mph Design Speed

Alternative 3–45mph Posted Speed, 50mph Design Speed

Speed Limit/Design Speed to be Carried Forward

Based on the analyses, Speed Limit Alternative 2, consisting of a 45 mph proposed posted speed limit (50 mph design speed) from Ware Road to 0.5 mile north of Ware Road, and a 50 mph proposed posted speed (50 mph design speed) from 0.5 mile north of Ware Road to Charles Road was carried forward as the preferred alternative.

2.3.4.2 Typical Section Alternatives from Ware Road to Charles Road

Three different typical section alternatives were considered for the section along IL 47 from Ware Road to Charles Road and can be found in Exhibit 2.3-1.

Alternative 1–Smallest Footprint, Closed Drainage System includes mountable curb off the outside shoulder and no 5’ sidewalk shelf on the west side of IL 47 and a shallow ditch with storm sewer on the east side of IL 47.

Alternative 2–Smallest Footprint, Open Drainage System includes a 1:4 foreslope off the outside shoulder and no 5’ sidewalk shelf on the west side of IL 47.

Alternative 3–Largest Footprint, Open Drainage System includes a 1:6 foreslope off the outside shoulder and a 5’ sidewalk shelf on the west side of IL 47.

Typical Section to be Carried Forward–Based on impacts associated with each alternative, the design criteria for the section, and the future anticipated use of the section, Alternative 2 was carried forward as the preferred alternative.

CHAPTER 3
DESCRIPTION OF PROPOSED IMPROVEMENTS

3.1 INTRODUCTION

As discussed in Chapter 2, the on-alignment alternative was selected as the preferred alternative because the bypass and couplet alternatives failed to meet the Project Purpose and Need. After the on-alignment alternative was selected as the preferred alternative, further alternative analysis was completed for select sections of the project study area. This section discusses more detailed design aspects of the preferred alternative selected.

3.2 DESIGN CRITERIA UTILIZED

IL 47 is a reconstruction project and uses the SRA design criteria in accordance with the Department BDE Manual, Chapter 46. IL 47 is classified as an urban SRA from US 14 to Ware Road and a rural SRA from Ware Road to Charles Road. The Design Criteria Checklist can be found in Supplement 3.2-1.

3.3 GEOMETRIC IMPROVEMENTS

On-alignment improvements were selected as the Project preferred alternative. Throughout the Project, the proposed roadway consists of two 12-foot lanes in each direction separated by a median. Lane widths narrow to 11-foot lanes under the Union Pacific Railroad bridge and between Judd/Irving Avenue and Christian Way. Widening to two lanes in each direction is necessary throughout the Project study area to accommodate current traffic needs and projected 2040 traffic needs. Proposed typical sections can be found in Exhibit 3.3-1. Proposed Plan and Profile Drawings can be found in Exhibit 3.3-2.

From US 14 to Ware Road, an 18-foot raised median is proposed to separate the travel directions. A raised median was selected as a part of the preferred alternative because of the increased safety it provides when compared to a TWLTL. Median break openings were selected based on traffic needs, public input, and design criteria for median break spacing. B-6.24 curb and gutter will run along the perimeter of the median and at the edge of pavement.

From Ware Road to Charles Road, 4-foot-wide paved inside shoulders are proposed along with a 14-foot-wide mountable median. The paved inside shoulders are not shown in the preferred alternative drawings but will be included in the Phase II design. M-4.24 curb and gutter will run along the perimeter of the median. A 10-foot-wide paved asphalt shoulder is proposed at the outside edge of pavement. Drainage ditches are proposed outside the asphalt shoulder. The mountable median, asphalt shoulders, and drainage ditches were selected as a part of the preferred alternative because of the increased design speed in this section and the rural design criteria.

A 5-foot sidewalk will be constructed west of the roadway from US 14 to Ware Road, and a 10-foot shared-use path will be constructed east of the roadway throughout the length of the Project.

The Project Purpose and Need identified several intersections currently operating at a poor LOS because of the number of through- and turning-lanes. Also, several intersections are currently skewed, resulting in decreased visibility. Major intersections are proposed to be widened and reconstructed as a part of the Project to accommodate traffic needs. Five roundabouts are proposed as part of the Project because they address visibility issues, increase traffic capacity, and increase safety. Signalized and roundabout intersections within the project study area are discussed further in Section 3.8.

According to BDE Manual Chapter 46, it is recommended urban curbed facilities attempt to meet horizontal clear zone requirements of uncurbed facilities and curbed facilities in rural areas. For design speeds of 40 mph or less and ADT values of 6,000 vpd or more, similar to IL 47 from US 14 to Ware Road, this clear zone requirement is 16 to 18 feet. This clear zone cannot be met because of the narrow urban corridor. However, the BDE Manual also recognizes urban curbed corridors are often unable to meet the clear zone requirements and states a minimum horizontal, obstruction-free clearance of 1.5 feet should be provided as measured from the face of curb. There will not be any obstructions within the 1.5-foot horizontal clearance.

According to BDE Manual Chapter 38, a clear zone of 18 to 28 feet is required in rural cross areas with a design speed of 45 to 50 mph and ADT values over 6000 vehicles per day, similar to IL 47 from Ware Road to Charles Road. This clear zone will be provided for a majority of the section. Where the clear zone cannot be provided, guardrail will be designed to protect vehicles from obstructions as part of the contract plan preparation process.

3.4 PAVEMENT DRAINAGE

From US 14 to Ware Road, curb and gutter is proposed along the raised median and edge of pavement. The pavement runoff will be captured via inlets located within the curb and gutter draining to a closed drainage system. A majority of the right-of-way tributary to the road will drain over the curb and into the gutter. In some areas where practical, ditches will be constructed between the sidewalk or path and curb to minimize flow into the roadway. The culvert carrying the and un-named tributary south of South Street will be repaired and extended. The culvert carrying Silver Creek underneath IL 47 between Cherry Court and Birch Road will be reconstructed.

From Ware Road to Charles Road, curb and gutter with inlets and storm sewer is proposed along the median to capture water within the median. Drainage ditches are proposed on the outside of the roadway to convey water to the appropriate outlets. The culvert carrying an unknown tributary to Silver Creek underneath IL 47 directly south of Cooney Drive will be reconstructed.

Best management practices will be incorporated into the proposed drainage plan. Several outlets are proposed throughout the project study area. Eight detention basins are proposed from US 14 to Charles Road. The proposed drainage plan can be found in the Location Drainage Study, under separate cover.

3.5 DESIGN EXCEPTIONS

There are 63 design exceptions for the Project. A Design Exception Summary Table can be found in Exhibit 3.5-1. These exceptions were presented and approved at the February 5, 2019 Bureau of Design and Environment/Federal Highway Administration Coordination Meeting. Design Exception Forms can be found in Supplement 3.5-1.

3.6 RIGHT-OF-WAY

Land Use Summary: The transportation improvements will require that a total of ten buildings on nine properties be displaced. Eight of these buildings will need to be taken completely because they will no longer be functional after the transportation improvements. These properties include three businesses, two business complexes occupied by four total businesses, and three residential homes. The remaining

two properties requiring building displacements will still be functional and will allow the buildings to be rebuilt at a different location on the property. Both of these buildings are commercial businesses. The proposed action will also require one commercial building modification.

The *Uniform Relocation Assistance and Real Property Acquisition Policies Act of* 1970, as amended, and the *Department Land Acquisition Procedures Manual* will be followed. All housing resources are available to all relocates without discrimination. Housing of last resort will be provided if necessary.

According to the Uniform Act of 1970 (49 CFR 24), Decent, Safe, and Sanitary (DSS) housing must be available prior to requiring those affected by the Project to leave their existing dwelling. DSS residential properties of various sizes within the project study area were identified by the Department in accordance with relocation planning procedures under 49 CFR 24.205.

Preliminary cross sections were developed for the preferred alternative to determine right-of-way needs and Project limits. The preferred alternative cross sections can be found in Supplement 3.6-1. The right-of-way impacts associated with the preferred alternative are summarized below.

Temporary Easements:	16.255 total acres
Permanent Easement:	0.173 total acres
Permanent Right-of-Way:	33.088 total acres
Total Parcels:	294

Land Use Summary: Existing right-of-way was determined using available plats, and it was estimated based on existing fence and sidewalk locations. Existing right-of-way should be verified during the contract plan preparation process. Frontage right-of-way is required from a majority of the properties along IL 47 within the project study area because of roadway widening and pedestrian accommodations. In total, right-of-way or easements are required from 151 commercial properties, 100 single-family residential properties, 16 agricultural properties, 13 governmental/institutional properties, 11 multi-family residential properties, and 3 industrial properties.

3.7 STRUCTURES

The Union Pacific Railway bridge crosses over IL 47 between Lake Avenue and McConnell Road (Structure Number [SN] 056-0044). The Union Pacific Railway bridge will not be reconstructed as part of the Project. Minor rehabilitation to the bridge is necessary. A pedestrian tunnel is proposed east of the roadway bridge to accommodate pedestrians and bicyclists. The Union Pacific Railway bridge condition report can be found in Supplement 3.7-1. Agency Coordination Documentation can be found in Appendix A.

A 10-foot-wide by 8-foot-high box culvert carries IL 47 over a drainage ditch approximately 1,200 feet south of South Street (SN 056-0241). Because of the overall good condition of the existing structure, it is recommended the structure be repaired and extended as part of the Project. The culvert condition report can be found in Supplement 3.7-1.

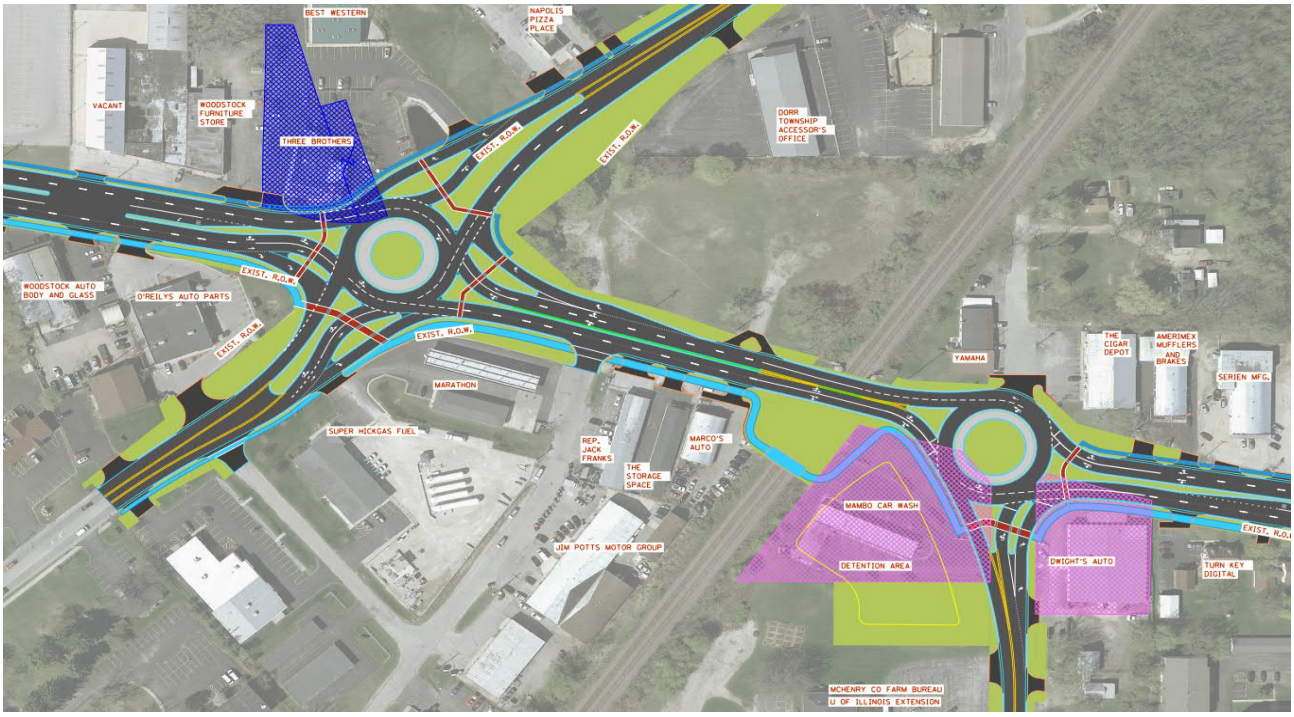
A dual corrugated metal pipe culvert carries a private drive over the drainage ditch located approximately 1,290 feet south of South Street and 100 feet east of IL 47. This structure shall remain in place with no proposed improvements. This culvert does not have a structure number. The culvert condition report can be found in Supplement 3.7-1.

An existing 7-foot-wide by 8-foot-high box culvert carries IL 47 over Silver Creek, approximately 200 feet south of Birch Road. This structure is proposed to be replaced as part of the Project. The proposed culvert will be a 16-foot-wide by 9-foot-high box culvert. The culvert condition report can be found in Supplement 3.7-1. The hydraulic report for this structure requires structure replacement and can be found in Supplement 3.7-2.

An existing 6-foot-wide by 5-foot-high box culvert carries IL 47 over an unnamed tributary to Silver Creek approximately 70 feet south of Cooney Drive. This structure is proposed to be replaced as a part of the Project. The proposed culvert will be a 12-foot-wide by 7-foot-high box culvert. A 6-foot-wide by 7-foot-high overflow box culvert is also proposed directly south of the main structure at this location, with a weir wall at the upstream end of the overflow culvert. The culvert condition report can be found in Supplement 3.7-1. The hydraulic report for this structure requires replacement and can be found in Supplement 3.7-3.

3.8 TRAFFIC SIGNAL MODERNIZATION/INSTALLATION AND ROUNDABOUTS

Traffic signals are proposed to be modernized or replaced at the intersections of IL 47 and US 14, Country Club Road, IL 120, and Russel Court. Warrants are met for these intersections because the existing intersection is signalized. New traffic signals are proposed at the intersection of IL 47 and St. John's Road. The new signalized intersection at St. John's Road is warranted based on crash history according to an analysis completed in 2007. Signalized intersections are not proposed to be interconnected within the project study area because there are no signalized intersections within one-half-mile of each other. Multilane roundabouts will be constructed at the intersections with Lake Avenue, McConnell Road, Judd Street/Irving Avenue, Ware Road, and Charles Road. See Figure 3.8-1 through Figure 3.8-4. No other intersections within the project study area meet signal warrant criteria. Therefore, all other intersections will remain as minor stop control. The Intersection Design Studies can be found in Exhibit 3.8-1.



LEGEND

- PROPOSED PAVEMENT
- PROPOSED GRASS
- PROPOSED CURB/MEDIAN
- PROPOSED SIDEWALK
- PROPOSED CROSSWALK
- PROPOSED SHARED-USE PATH
- PROPOSED BUILDING RELOCATION
- PROPOSED BUILDING MODIFICATION

Figure 3.8-1 Lake Avenue and McConnell Road Roundabouts

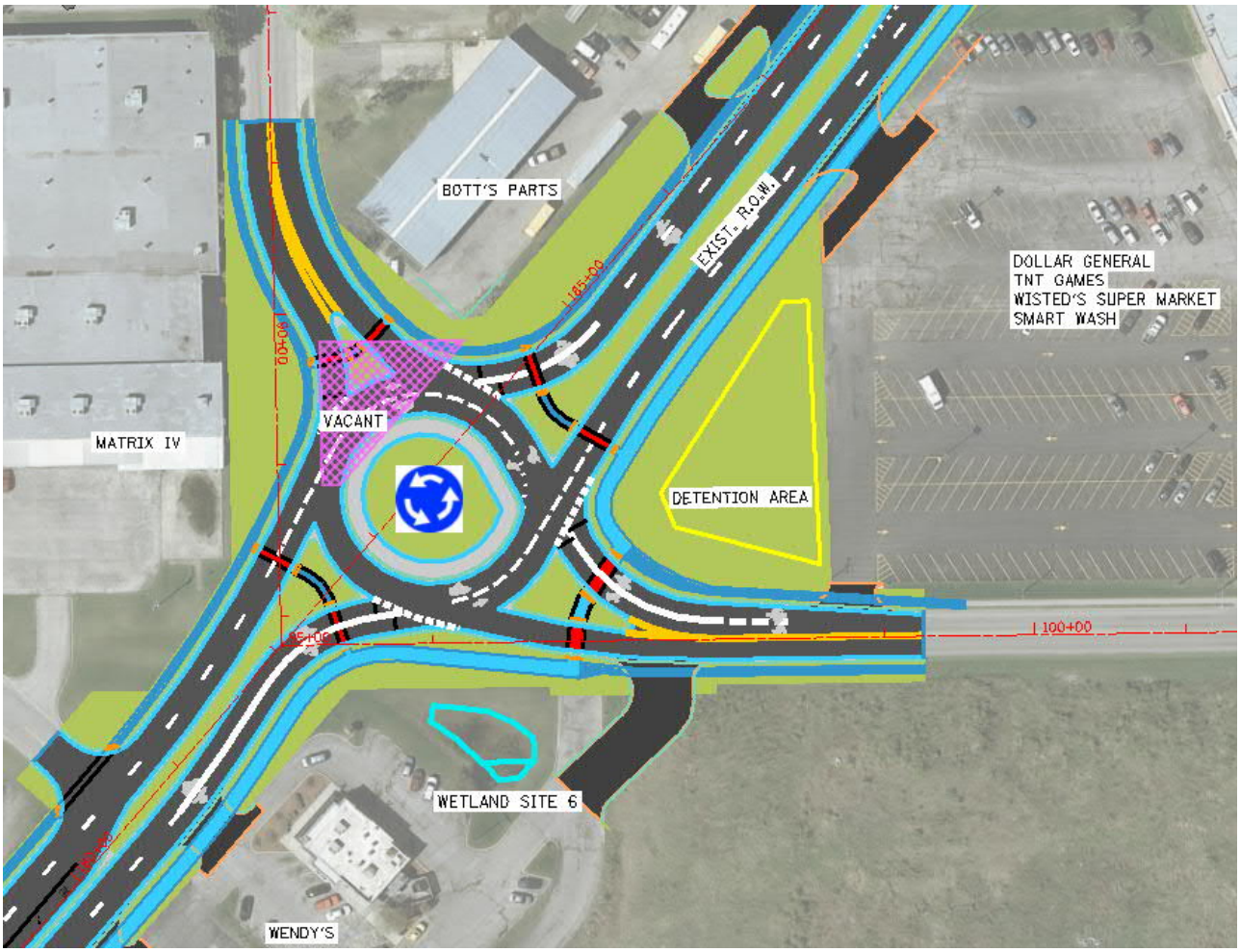


Figure 3.8-2 Judd Street/Irving Avenue Roundabout

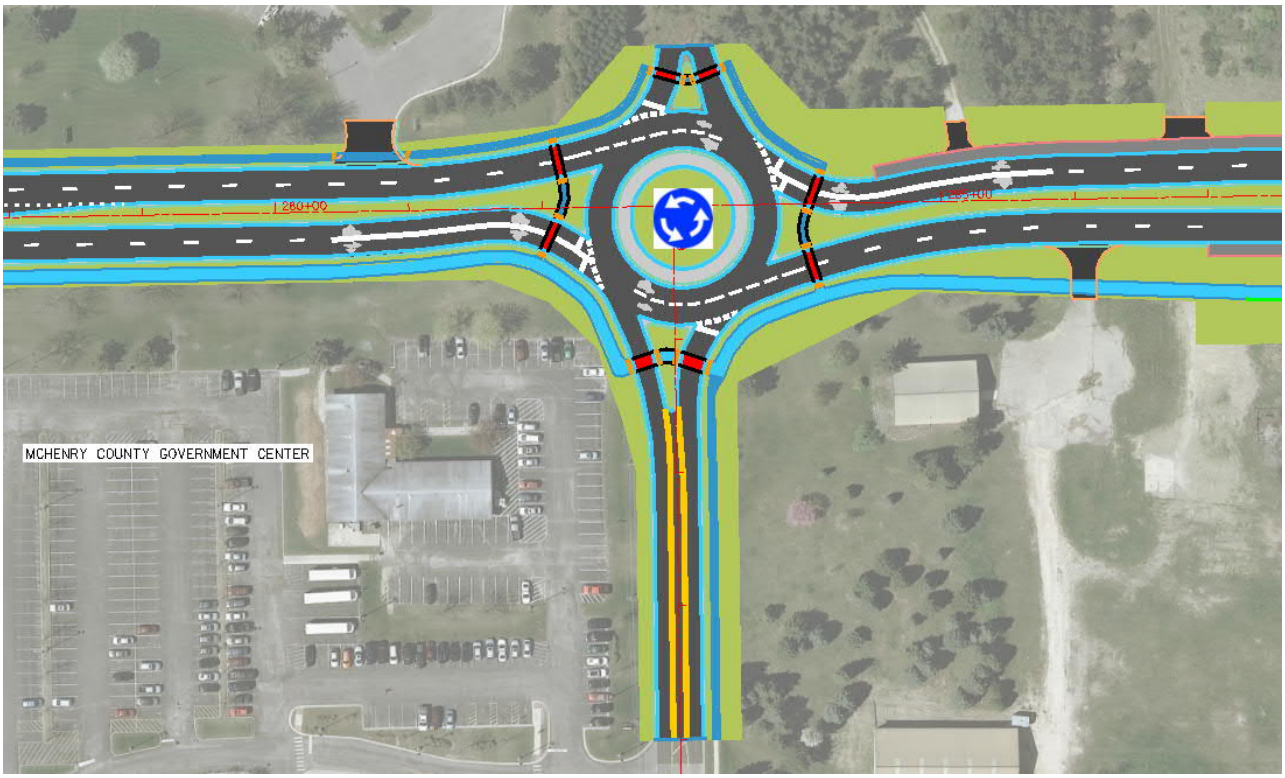


Figure 3.8-3 Ware Road Roundabout

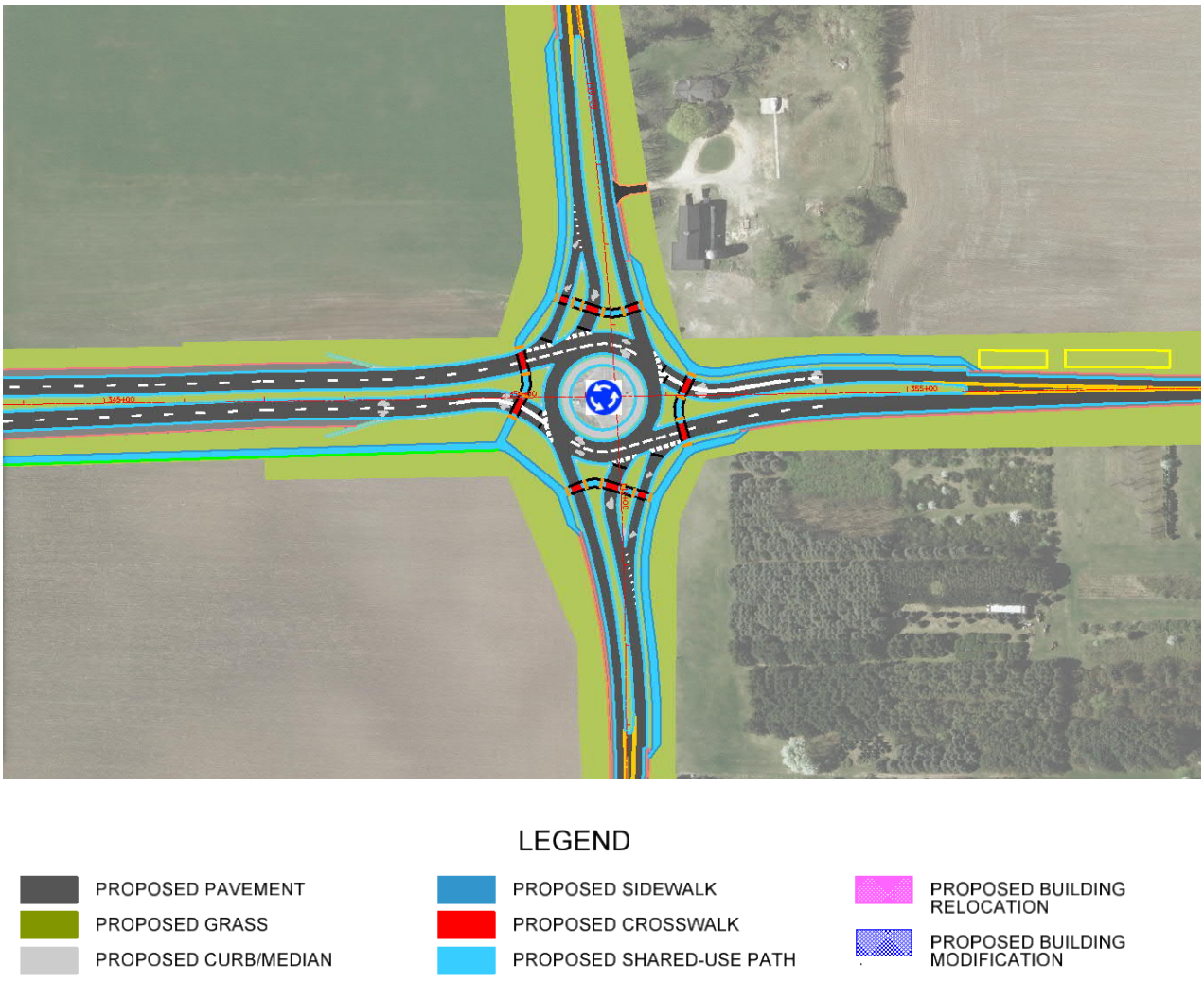


Figure 3.8-4 Charles Road Roundabout

3.9 LIGHTING

IL 47 currently has beacon lighting at intersections throughout the project study area.

Roadway lighting can be provided throughout the project study area if the City of Woodstock (City) agrees to participate in cost sharing for the lighting. For roadway lighting, the City is responsible for 100 percent of the installation cost and maintenance. Department has provided the City with anticipated local costs associated with the Project via a Letter of Intent (LOI). The LOI is included in the Agency Coordination Documentation can be found in Appendix A. It is up to the City to state its intent to accept or decline these elements of the Project and the associated costs. Corridor lighting would have an average spacing of 140 feet, with lights on both sides of the street. Roadway lighting will be required approaching and at the roundabout intersections. The proposed roundabouts are subject to local cost participation and maintenance. Lighting will be located behind the sidewalk or shared-use path. The sidewalk or shared-use path will shift slightly closer to the roadway at light pole locations to accommodate the required light pole location.

3.10 PARKING

No on-street parking currently exists within the project study area and no on-street parking is proposed as a part of the Project.

Widening IL 47 reduces the number of existing parking spaces for businesses. Parking will be replaced or relocated to the extent possible. A list of businesses and the quantity of lost or relocated parking caused by the Project improvement is provided in Table 3.10-1. In total, 41 properties have a change in the number of parking spaces. There are 221 parking spaces being removed.

Property	Property Address	Number of Parking Spaces Lost
US Route 14 to Country Club Road		
Rosati's Pizza	1652 South Eastwood Drive	3
Vacant	1648 South Eastwood Drive	10
Bull Valley Ford Mercury	1460 South Eastwood Drive	32
Woodstock Furniture	1280 South Eastwood Drive	4
Yamaha	1000 South Eastwood Drive	2
Vaughans Family Restaurant	790 South Eastwood Drive	10
Best Western Woodstock Inn	990 Lake Ave	19
Napoli's Pizza Place	930 Lake Avenue	8
Bob's Woodstock Motel	930 Lake Avenue	2
Colonial Antique Mall Restoration Center	890 Lake Avenue	12
Murphy's Flooring	2104 South Eastwood Drive	3
Woodstock Farm and Lawn Center	2020 South Eastwood Drive	1
Marco's Auto	1175 South Eastwood Drive	8
Turn Key Digital	995 South Eastwood Drive	1
Woodstock Auto Body	1295 South Eastwood Drive	10
Citgo	501 South Eastwood Drive	4
Goodyear	681 South Eastwood Drive	2
Cost Cutters	677 South Eastwood Drive	2
Dental Center	669 South Eastwood Drive	2
Quiznos Subs	667 South Eastwood Drive	2
Pro Nails Spa	665 South Eastwood Drive	2
Family Dentistry of Woodstock	651 South Eastwood Drive	2
State Farm	717 South Eastwood Drive	5
Universal Cash Express	713 South Eastwood Drive	5
Nails 2000	709 South Eastwood Drive	5
Domino's Pizza	701 South Eastwood Drive	5
Gas Cap Fuels	401 South Eastwood Drive	4
Country Club Road to Ware Road		
Great Lakes Credit Union	180 South Eastwood Drive	6
Matrix IV	610 East Judd Street	4
Bott's Parts	315 North Eastwood Drive	3
Beef Village	1125 North Seminary Avenue	2
RD Signs	1143 North Seminary Avenue	1
RDS Cycling	1143 North Seminary Avenue	1
Calligraphy Studio	1143 North Seminary Avenue	1
Schneider Leucht Merwin & Cooney Funeral Home	1211 North Seminary Avenue	16
Artistica Wave Beauty Salon Universal Travel	1317 North Seminary Avenue	1
Wisted's Super Market	330 North Eastwood Drive	2
McHenry County Housing Authority	1018 North Seminary Avenue	3
Free Methodist Church	934 North Seminary Avenue	3
Farmers Insurance Boe Hanlin & Emery Group LLC McHenry County USBS Assoc.	1216 North Seminary Avenue	1
Michel J Mcnerney Attorney at Law	1320 North Seminary Avenue	2
Crossroads Care Center	309 McHenry Avenue	11
Mapletree Apartments	1917 Sheila Street	12
St. John's Lutheran Church	401 St. Johns Road	14
Ware Road to Charles Road		
None	-	-
Total Stalls Impacted	**-**	**221**

Table 3.10-1 Impacted Parking Spaces

3.11 BICYCLISTS AND PEDESTRIANS

In accordance with the Complete Streets Policy, pedestrian and bicyclist accommodations are required, because the through-lanes are proposed to be moved.

There are existing sidewalks along IL 47 in intermittent locations. There are only striped crosswalk facilities with pedestrian pushbuttons located at the intersections of IL 47 and IL 120, and at IL 47 and Russel Court.

The proposed improvements will include construction of a 5-foot sidewalk on the west side of IL 47 from US 14 to Ware Road. The sidewalk will typically be offset three feet from the back of curb. When the sidewalk is required to be located at the back of the curb because of right-of-way constraints or obstructions, the sidewalk widens to seven feet. Existing sidewalk will be replaced on sideroads within the construction limits.

A 10-foot shared-use path is proposed on the east side of IL 47 throughout the project study area. The path will be offset five feet from the face of the curb south of Ware Road. North of Ware Road, the path will generally be located outside the roadside ditch, increasing the distance between the roadway and shared-use path. At two locations along IL 47, the path width is reduced to eight feet to minimize right-of-way impacts.

Pedestrian crosswalks will be provided at all signalized and roundabout intersections. The splitter islands of roundabouts will provide a place of refuge for pedestrians crossing the intersections. All pedestrian improvements will meet Americans with Disabilities Act requirements.

As previously mentioned, a pedestrian tunnel under the railroad is proposed east of the Union Pacific Railway bridge between Lake Avenue and McConnell Drive.

3.12 MASS TRANSPORTATION

Section 1.2.5 discussed the two existing Pace Bus routes that use IL 47 within the project study area, as well as the Union Pacific Railway that crosses IL 47 between Lake Avenue and McConnell Road.

Concrete pads, 25 feet long, are proposed between the proposed curb and gutter and proposed sidewalk or shared-use path at six locations along IL 47 to accommodate pedestrians at Pace bus stops. A 9-foot-wide by 13.5-foot-long concrete pad is also proposed behind the proposed shared-use path approximately 200 feet north of Greenwood Circle to accommodate a future Pace bus shelter and replace the existing bus shelter that is in conflict with the preferred alternative near this location.

The Department has coordinated with Pace Bus and the Union Pacific Railway throughout the Project to best accommodate their needs while still fulfilling the Purpose and Need of the Project. Bus turnout locations are not included in the design because of restricted right-of-way. Agency Coordination Documentation can be found in Appendix A.

3.13 UTILITY CONFLICTS

There are several public and private utility conflicts throughout the Project. Public utility conflicts include City of Woodstock water main, storm sewer, sanitary sewer, and fiber optic lines. Private utilities exist above and below ground within the project study area. Several power poles will require relocation. Intermittent gas lines, electric lines, and telephone lines will also require relocation. Utility companies will be required to determine the location of any utilities required to be relocated by the Project. Exact locations of utility conflicts will be determined in the design phase of the Project.

3.14 ENCROACHMENTS

Right-of-way infringements exist intermittently along IL 47. These infringements are primarily used for commercial parking lots. The proposed improvements will require the purchase of additional right-of-way and the removal of the current right-of-way infringements. No letters have been sent to property owners regarding infringements.

3.15 MAIL DROP-OFF

Mail is delivered to individual mailboxes within the project study area via United States Postal Service mail carriers. From US 14 to Beech Avenue, a majority of the mailboxes are located on private property offset from the roadway. From Beech Avenue to Charles Road, a majority of the residential mailboxes are located adjacent to the roadway, allowing for mail trucks to stop along IL 47 and deliver mail. A majority of the mailboxes located adjacent to the roadway between Beech Avenue and Charles Road will require relocation because of roadway widening. No mailbox turnouts currently exist or are proposed within the project study area.

3.16 LANDSCAPE/ROADSIDE DEVELOPMENT

All areas disturbed by construction will be restored to turf cover in accordance with the *Guideline for Use of Landscape Items* as appropriate for the project study area. All trees and other plants removed for construction will be replaced on a one-to-one nursery stock basis at a minimum wherever feasible and appropriate under Department guidelines. Forested areas or dense strands of trees and shrubs may be replaced with seedling trees on a three-to-one basis where appropriate. Wildflower plantings will be considered for inclusion where applicable to the Project.

A copy of the tree survey is included in Supplement 3.16-1. Recommendations to save or remove trees are primarily based on the size and quality of the trees, as well as proposed geometrics. Final grading and new utility locations may not be known at the time of the tree impact analysis; therefore, removals may increase in the design phase. However, all efforts shall be made to keep removals to a minimum in accordance with Departmental Policy D&E-18, “A Policy on Removal and Replacement of Trees”.

Protection and care will be provided for all existing trees and shrubs to remain within the project study area, as provided in Section 201 of the Department’s *Standard Specifications for Road and Bridge Construction*, adopted April 1, 2016. Existing trees and shrubs that are to remain will be delineated on the plans, as will those that are to be removed.

3.17 LIFT STATIONS

A lift station exists along the east side of IL 47 approximately 980 feet north of McConnell Road. The lift station is privately owned by the business complex located on the east side of IL 47 at this location. The lift station currently conflicts with the proposed bike path.

3.18 RETAINING WALLS

A total of 11 retaining walls are proposed as part of the Project. Retaining walls are proposed to minimize right-of-way and environmental impacts.

3.19 OTHER

The following items were investigated and have been determined to be Not Applicable to this Project.

Dry land bridges
At-grade railroad crossing
Surveillance

3.20 ENVIRONMENTAL RESOURCES

The *FAP 326 Illinois Route 47 US Route 14 to Charles Road, McHenry County Environmental Assessment* (EA) evaluated impacts to natural resources including wetlands, water quality, floodplains, and threatened and endangered species and provides detailed information on environmental resources and potential environmental and socioeconomic impacts that would result from implementation of the Project. The EA can be found in Supplement 1.2-1. The EA Errata can be found in Supplement 1.2-2. The Finding of No Significant Impacts (FONSI) was signed on October 24, 2018 and can be found in Supplement 1.2-3. The following table provide a synopsis of this information.

Resources	Impact	Details
Land Use		
Residential Displacements	3 displacements	
Business Displacements	7 displacements	2 of the 7 business displacements will allow the business to be rebuilt at a different location on the property. This will avoid a complete take of those 2 properties. The proposed actions will also require one commercial building modification.
Proposed Right-of-way	33.088 acres	
Temporary Easement	16.428 acres	
Agricultural Land Conversion	17.900 acres	No further coordination will be necessary with NRCS because the Project impacts less than 10 acres of farmland per linear mile.
Wetlands and Waters of the U.S.		
Jurisdictional Impacts - Wetlands	0.310 acres	Wetland impacts are anticipated to be mitigated at a 3:1 or 1.5:1 ratio through the use of a wetland bank.
Jurisdictional Impacts - WOUS	0.244 acres	This includes two streams, a deepwater aquatic habitat, and a ditch.

Resources	Impact	Details
Biological Resources		
Federally Threatened and Endangered Species		
State Threatened and Endangered Species		
Floodplain	1.34 acres	This includes permanent right-of-way and temporary easement at the crossing of the East Branch of Silver Creek across IL 47 and an unnamed tributary to Silver Creek along IL 47 south of Cooney Drive.
Cultural Resources	No impact	
4(f) Lands	No impact	No individual 4(f) coordination was necessary as part of this project. Four-week temporary occupancy was granted for access to Bates Park during construction.
6(f) Lands	No impact	No individual 6(f) coordination was necessary as part of this project.
Special Waste	TBD	214 RECs were identified by the PESA Report. An update to the PESA, and a PSI, if necessary, will be performed in Phase II.
Air Quality	No impact	
Noise	No impact	Noise barriers did not meet IDOT feasibility and reasonableness criteria. The Noise Report can be found in Supplement 3.20-1.

Table 3.20-1 Environmental Resource Impacts

3.21 EROSION AND SEDIMENT CONTROL

The need for erosion and sediment control measures (and any additional right-of-way necessary to accommodate their implementation) has been evaluated for the Project.

I. Project Description

a) Proposed Construction Activity

The proposed Project consists of reconstructing and widening IL 47 from US 14 to Charles Road in Woodstock, Illinois.

b) Soil Disturbance

☒ ≥ 1.0 acre NPDES SWPPP documentation necessary

c) Sensitive Environmental Resources--The presence of sensitive environmental resources requiring special consideration for protection from sedimentation, or other resources which require special commitments for protection will require attention during the preparation of the erosion control plan whether or not a permit is required.

☒ yes See Commitments section

II. Information for the Erosion Control Plan

The Project will result in the disturbance of 1.0 acre or more of total land area and is subject to the statewide general National Pollutant Discharge Elimination System (NPDES) Storm Water Permit for Construction Site Activities. The District is responsible for preparing and updating as necessary throughout subsequent stages of Project implementation, a Storm Water Pollution Prevention Plan (SWPPP). The portions of the Plan describing the construction activity, describing the erosion and sediment control measures intended for use and the associated maintenance practices, and describing any requirements applicable under approved State or local erosion and sediment control plans shall be prepared prior to Project implementation.

Temporary measures in accordance with applicable Department standards will be used to control erosion and sedimentation while the Project is under construction, prior to establishment of permanent measures. Permanent measures as necessary will be part of the completed Project and will be used to prevent erosion and sedimentation after completion of construction. The designer shall include appropriate pay items and details in the plans and specifications to implement the selected erosion and sediment control measures. The Project may also involve sensitive environmental resources to be protected during all stages of Project implementation (see Section III).

The following section includes information that will be required in the preparation of the suggested erosion control plan.

1. Additional information for the preparation of the erosion control plan

a) Area of Disturbance: 103 acres

b) Environmental Resources or Critical Areas

Water resource crossings will be critical areas for the Project. Special attention will be necessary when constructing the Silver Creek crossing box culvert located south of Birch Road, and for the Unnamed Tributary to Silver Creek crossing box located south of Cooney Drive.

c) Sequence of Activity and Anticipated Erosion Control Items

Sequence

- Install sediment and erosion control systems
- Install tree protection
- Complete tree removal
- Install storm sewer and structures
- Complete roadway reconstruction with sidewalks and shared-use path
- Install center medians
- Place topsoil, seeding, and permanent erosion control items
- Remove temporary erosion control items

Items

- Perimeter erosion barrier
- Temporary and permanent erosion control blanket
- Inlet and pipe protection/inlet filters
- Temporary ditch checks
- Sediment traps
- Temporary erosion control seeding

3.22 TRAFFIC MANAGEMENT PLAN

IL 47 is considered a significant route in the Work Zone Safety and Mobility Significant Route Location Map. The Project Traffic Management Plan (TMP) can found in in Supplement 3.22-1.

The IL 47 staging conditions reflect the existing conditions with minimal deviation, providing one 11-foot through lane in each direction and a 10-foot bidirectional left turn lane. This configuration will not increase delays significantly over the existing traffic conditions.

IL 120 is also considered a Significant Route in the area of IL 47. The IL 120 staging conditions reflect the existing conditions with minimal deviation and will not increase delays significantly over the existing traffic conditions.

The IL 47 corridor maintenance of traffic (MOT) plan is divided into two distinct sections, US 14 to Ware Road and Ware Road to Charles Road. These sections were determined based on their unique roadway characteristics and land use. Following is a description of the proposed staging. MOT typical sections are included in Exhibit 3.22-1.

3.22.1 IL 47–US 14 to Ware Road

US 14 to Ware Road will be constructed in three primary stages.

Pre-Stage 1 will consist of removing the existing curb and gutter along the west side of IL 47 and installing temporary pavement approximately 14 feet wide. Temporary striping, signals, and drainage will also be performed during the pre-stage.

Stage 1 from US 14 to Ware Road consists of maintaining one lane in each direction separated by a two-way left-turn lane (TWLTL). Southbound traffic will be shifted onto the temporary pavement constructed during Pre-Stage 1. The existing southbound lane will be used for a TWLTL. Northbound traffic will use the existing TWLTL. Stage 1 operations will include construction of the two permanent northbound travel lanes, curb and gutter running along the outside edge of northbound pavement, a shared-use path located east of the roadway, earthwork, the proposed drainage system, temporary drainage pipes, roadway lighting, and signal posts. Stage 1a, prior to Stage 2, from US 14 to Ware will be used to construct temporary widening along the inside edge of the newly constructed northbound lanes. Constructing the temporary widening along the northbound lanes in this stage reduces the amount of temporary widening needed along the west side of the IL 47 southbound lanes in Pre-Stage 1. Stage 1a consists of maintaining one lane in each direction on their respective sides of the roadway with left turn lanes. The construction zone would be located in the roadway median. Southbound traffic will remain in the same location as Stage 1. Northbound traffic will use the outside permanent northbound lane constructed in Stage 1.

Stage 2 from US 14 to Ware Road consists of maintaining one lane in each direction separated by a TWLTL. Northbound traffic will use the outside permanent northbound lane constructed in Stage 1. The inside permanent northbound lane will be used for a TWLTL. Southbound traffic will use a combination of the inside permanent northbound travel lane and temporary pavement. Temporary wedges will be necessary to connect the inside permanent northbound travel lane to the existing pavement where vertical grades are different. Stage 2 operations will include construction of the two permanent southbound travel lanes, curb and gutter running along the southbound outside edge of pavement, a sidewalk located west of the roadway, earthwork, the proposed drainage system, temporary drainage pipes, roadway lighting, and signal posts.

Stage 3 from US 14 to Ware Road consists of maintaining one lane in each direction and will include left-turn lanes for each travel direction. Northbound traffic will use the outside permanent northbound lane constructed in Stage 1. The inside permanent northbound lane will be used as a left-turn lane for northbound traffic. Southbound traffic will use the outside permanent southbound lane constructed in Stage 2. The inside permanent southbound lane will be used as a left-turn lane for southbound traffic. Stage 3 operations will include construction of the proposed barrier median and inside curb and gutter, earthwork, the proposed drainage system, and signal posts.

3.22.2 IL 47–Ware Road to Charles Road

Ware Road to Charles Road will be constructed in two primary stages.

Pre-Stage 1 will consist of installing temporary pavement approximately six feet wide. Temporary striping will also be performed during the pre-stage. It is anticipated that the temporary widening would be constructed under a moving lane closure with flaggers.

Stage 1 from Ware Road to Charles Road consists of maintaining one lane in each direction. Southbound traffic will use the temporary pavement constructed during Pre-Stage 1 and a portion of the existing southbound travel lane. Northbound traffic will use a combination of the existing southbound travel lane and the existing northbound travel lane. Stage 1 operations will include construction of the two permanent northbound travel lanes, asphalt shoulder running along the northbound pavement, a shared-use path located east of the roadway, earthwork, and roadway lighting.

Stage 2 from US 14 to Ware Road consists of maintaining one lane in each direction. Northbound traffic will use the outside asphalt shoulder along the east side of IL 47 constructed in Stage 1. Southbound traffic will use the outside northbound travel lane constructed in Stage 1. Stage 2 operations will include the construction of the inside 4-foot shoulder, mountable median, two permanent southbound travel lanes, asphalt shoulder running along the southbound pavement, earthwork, and roadway lighting.

3.22.3 IL 47 Roundabout MOT

There are roundabouts proposed at five IL 47 intersections. Roundabouts will be included at Lake Avenue, McConnell Road, Judd Street/Irving Avenue, Ware Road, and Charles Road. The roundabouts will generally be constructed as follows:

The Stage 1 construction of IL 47 will involve removing and replacing the northbound lanes. The east side of the roundabout intersections will be built during Stage 1 along with the roadway portion of the project. Side streets on the east side of IL 47 will be constructed in quarter sections to maintain full side-street access. Some temporary pavement may be needed on the side streets to accommodate traffic during construction. Side-streets on the west side of IL 47 can be left open. To maintain turning movements and future staging options, the central island curbing in the roundabout and splitter island curbing on the side streets will not be installed during Stage 1 or Stage 2 construction. Instead, temporary asphalt, intersection control and pavement markings will be installed to maintain traffic movements.

Stage 2 construction of IL 47 will involve shifting traffic to the newly improved roadway and southbound IL 47 will be constructed. Roundabout intersection construction will involve building the west side roadway and exterior curbing for the roundabout in conjunction with the mainline. Side-streets will be constructed in quarter sections to maintain full side-street access. Some temporary pavement may be needed on the side-streets to accommodate traffic during construction. To maintain turning movements and future staging options, the central island curbing in the roundabout and splitter island curbing on the side streets will not be installed during Stage 1 or Stage 2 construction. Instead, temporary asphalt, intersection control, and pavement markings will be installed to maintain traffic movements.

Once mainline IL 47 is completed, traffic will be shifted in Stage 3 to provide one lane of traffic in each direction along IL 47 and the side-streets. Stage 3 will provide space for removal of the temporary pavement and installation of the side-street splitter island and central island curbing at each roundabout. Once the curbing is complete, the central islands and splitter islands can be fully restored.

The TMP as described meets the requirements of the Work Zone Safety and Mobility Rule.

3.23 TRANSPORTATION OPERATIONS PLAN

During the Phase I Engineering and Environmental Study, the Bureau of Programming recommends using the following Transportation Operations Plan (TOP) strategies which include traffic radio, portable changeable message signs, speed limit reduction initiatives, variable work hours, signal timing/coordination improvements, temporary traffic signals, parking and turn restrictions, heavy vehicle restrictions, coordination with adjacent projects, incidence response coordination, Intelligent Transportation System monitoring, surveillance through closed circuit TV and loop detectors, traffic screens, and local detour routes among others. Details of the Transportation Operations Plan will be finalized during Phase II engineering design.

3.24 PUBLIC INFORMATION PLAN

During the Phase I, Engineering and Environmental, Study the Bureau of Programming recommends using the following Public Information Plan (PIP) strategies which can include brochures/mailers, press releases and media advisories, paid advertisements, telephone hotlines, websites, public hearings and meetings, press conferences, community task forces, coordination with media outlets, municipalities, schools and emergency services, work zone education campaigns, and signage, among others. Details of the Public Information Plan will be finalized during Phase II engineering design.

Please note, any major deviations during Phase II, Design and Contract Plan Preparation, from the proposed recommendations in this Transportation Management Plan may require a reevaluation of the Work Zone Safety and Mobility Impact Analysis by the Phase II Design Engineer. Phase II will be responsible for coordinating the approval of the changes with the Bureau of Safety Programs and Engineering.

All traffic control devices will conform to the Illinois Manual on Uniform Traffic Control Devices (ILMUTCD). All signs, barricades, and temporary striping will conform to the ILMUTCD. Vehicular access to local properties will be maintained at all times during construction, except when paving operations occur directly on or in front of entrances. In this case, flag persons will be used to direct traffic. All properties will have access at the end of every workday.

3.25 PUBLIC INVOLVEMENT

The Department designated the IL 47 Phase I Study as a Context Sensitive Solutions (CSS) project. CSS is a collaborative approach that involves all stakeholders to develop a facility that fits into its surroundings and preserves scenic, aesthetic, historic, and environmental resources while maintaining safety and mobility. In accordance with the Department's CSS procedures, a stakeholder is anyone who could be affected by the Project and has a stake in its outcome.

A website containing information regarding the Project was made available to the public. The website is located at http://www.il47woodstockstudy.com.

Brief summaries of the Corridor Advisory Group and Public Meetings follow. Detailed Public Involvement information can be found in Appendix B.

All comments received at the Public Meetings were noted, investigated, and responded to. Common comment themes included congestion on the existing roadway, safety concerns, drainage and flooding issues, property acquisition, the possibility of bypasses, support of the roundabouts, pedestrian accommodations, and access management. The general public and agencies have primarily shown support and agree with the need for the Project. Questions or concerns brought up by businesses and agencies were also discussed and responses provided.

3.25.1 Corridor Advisory Group

The Department established a Corridor Advisory Group (CAG) to provide a forum for discussion of details for the planning and design of IL 47. The CAG consists of representatives from the Department and its consultant staff, governmental bodies, transportation agencies, project study area elected officials, interested groups or organizations, local businesses, and residents. The Corridor Advisory Group met seven times and has provided technical input and broad perspectives as well as community level input regarding various aspects of IL 47. A summary of the seven Corridor Advisory Group meetings follows.

CAG Meeting No. 1:

Held on January 21, 2010, the meeting included a PowerPoint presentation focusing on the study process, schedule, public outreach program, and CAG member roles and responsibilities. The second portion of the meeting was an interactive workshop used to identify transportation issues and concerns regarding the corridor and Project objectives for issues and concerns, goals, and an objectives summary.

CAG Meeting No. 2:

Held on March 18, 2010, the meeting included a PowerPoint presentation that reiterated CAG Meeting No. 1 and Public Meeting No. 1, discussed the Draft Problem Statement created from stakeholder feedback from the CAG Meeting No. 1 and Public Meeting No. 1 comment period, and reviewed the existing conditions and deficiencies in the corridor.

CAG Meeting No. 3:

Held on September 1, 2010, the meeting included a PowerPoint presentation that reiterated previous CAG Meeting Nos. 1 and 2 and Public Meeting No. 1, confirmed the Project Problem Statement, presented the draft Purpose and Need, and included an alternatives workshop to seek input on potential improvements to the corridor.

CAG Meeting No. 4:

Held on May 12, 2011, the meeting included a PowerPoint presentation that reiterated the results and Project milestones achieved at previous CAG Meeting Nos. 1, 2, and 3, and Public Meeting Nos. 1 and 2. The study team also provided an overview of the CMAP modeling that occurred during the past several months specifically for this Project. The alternatives development process was explained, including a discussion and acceptance of alternatives evaluation criteria, and a presentation of the initial conceptual Project alternatives. This was followed by a workshop seeking CAG input on the presented alternatives.

CAG Meeting No. 5:

Held on March 21, 2012, the meeting included a PowerPoint presentation that reiterated the results and Project milestones achieved at previous CAG and Public Meetings, including a review of the alternatives development process and the previously presented range of preliminary alternatives. The study team then presented the Refined On-Alignment Alternative, which was developed as a result of stakeholder input and technical analysis compiled to date, followed by a workshop for CAG members to review and comment on the proposed improvement plan.

CAG Meeting No. 6:

Held on May 15, 2014, the meeting included a PowerPoint presentation that showed a Project update and an overview of the on-alignment alternatives. An on-alignment alternatives workshop followed with a discussion of the next steps to be taken.

CAG Meeting No. 7:

Held on October 19, 2017, the meeting included a PowerPoint presentation presenting the Refined On-Alignment Alternative that was developed as a result of stakeholder input and technical analysis compiled to date.

3.25.2 Public Meetings

A total of three public meetings have been held for the Project. All public meetings were in open house format with a continuous PowerPoint presentation, exhibit boards for review, and aerials of the Project for which meeting attendees could provide comments suggestions, issues, and concerns. Brief summaries of each meeting follow.

Public Meeting No. 1:

Held on February 3, 2010, various methods were used to inform the public about the meeting and its purpose. The purpose of the meeting was to identify current and future transportation issues and needs for the IL 47 Project. A total of 59 people attended the meeting, and a total of 29 comment forms were received at the public meeting or within the comment period. Common comment themes included property acquisition, congestion, safety, bypass alternatives, drainage and flooding, and opinions on widening IL 47.

Public Meeting No. 2:

Held on September 15, 2010, various methods were used to inform the public about the meeting and its purpose. The purpose of the meeting was to present a general overview of the Project's Purpose and Need and to solicit input and ideas to begin the development of potential alternatives. A total of 64 people attended the meeting and a total of nine comment forms were received at the public meeting or within the comment period. Common comment themes included discussion of potential bypass routes, pedestrian desires, and IL 47 widening impacts.

Public Meeting No. 3:

Held on July 9, 2014, various methods were used to inform the public about the meeting and its purpose. The purpose of the meeting was to solicit input on the intersection and roadway alternatives. A total of 75 people attended the meeting and a total of 27 comment forms were received at the public meeting or within the comment period. Common comment themes included pedestrian accommodations, roundabout support, roundabout safety, and access management.

3.25.3 Business Meetings

Two grouped business meetings and ten small group business meetings were held as part of the public involvement process.

The first meeting was held on July 26, 2012. The purpose of the meeting was to introduce the Project to business owners and solicit input on individual businesses' needs and access. A total of 95 letters were mailed to business owners inviting them to the meeting and explaining the Project. The meeting included a PowerPoint presentation summarizing the Project purpose, need, schedule, and design alternatives. Businesses were provided questionnaires regarding delivery truck sizes, delivery truck schedules, delivery truck travel directions, and business hours.

The second meeting was held on October 23, 2014. The City of Woodstock Chamber of Commerce went door-to-door before the meeting inviting all businesses within the corridor to the meeting. The purpose of the meeting was to reintroduce the Project to business owners, present the preferred alternative, and solicit input on the alternative. The meeting included a PowerPoint presentation summarizing the Project and extended roll plot drawings of the preferred alternative with sticky notes available for comments. A total of 66 people attended the meeting and 11 comment forms were received along with sticky note comments on the drawings. Common concerns about the Project included access management and the implementation of barrier median.

In December 2016 through February 2017, a total of ten small group meetings were conducted for business and property owners located adjacent to the corridor, starting from the southern part of the project study area and moving north. The intent was to review the preliminary preferred alternative, to discuss opportunities for cross access along the corridor and to provide business and property owners an opportunity to provide feedback in a smaller group setting. All meetings were held at the Woodstock Public Library. Each meeting consisted of a 20-minute PowerPoint presentation followed by a 65-minute breakout session to discuss individual property concerns at smaller tables. An initial list of property and business owners, including current tenants, was developed by the Project study team. The list was then vetted by the City of Woodstock. An e-mail invitation was sent to the business or property owner. Each invitee on the list was followed up with a personal phone call if they did not respond to the e-mail invitation. A total of 121 individual business/property owners attended one of the meetings. Comments received from the meetings included concerns regarding access, property impacts, and the land acquisition process.

3.25.4 Public Hearing

The Public Hearing was held Thursday, June 7, 2018, from 4 to 7 P.M. at the Challenger Learning Center in Woodstock, Illinois. Advertisement for the meeting was published in the Daily Herald (Fox Valley) on May 17, 2018 and May 31, 2018, in the Northwest Herald on May 17, 2018 and May 31, 2018, and in The Woodstock Independent on May 16, 2018 and May 30, 2018. In addition, meeting invitations/brochures were sent out in the mail. The meeting was attended by 131 people. At the Public Forum, three people participated. Twelve comment forms were received at the meeting. By the end of the public comment period, 3 letters and a total of 35 comments were received. Attendees signed in and a brochure was provided. There were two rooms for attendees to learn more about the Project. The first room contained a continuous audio-visual presentation that described the Project summary, provided the study process and schedule, purpose and need, preferred alternative, environmental impacts, and

opportunity for input. The second room contained more detailed Project information, comment forms, a court reporter, and Project study team representatives. Information in the second room included exhibit boards, a video of the roundabout intersection at Lake Avenue intersection, drainage plans, roll plot maps and Environmental Assessment and a Draft Project Report.

The first room was also used for the public forum. A court reporter for verbal comments was available in the second room from 4 to 6 P.M., and the court reporter recorded verbal comments at the public forum from 6 to 7 P.M.

The purpose of the meeting was to obtain public input on the Project study including the Environmental Assessment.

3.26 VALUE ENGINEERING STUDY

A Value Engineering (VE) Study was conducted September 17, 2018 to September 21, 2018 according to guidelines of the Illinois Department of Transportation, the Federal Highway Administration, and the American Association of Highway and Transportation Officials. The report provides the Value Engineering Team's recommendations and supporting documentation for consideration by the decision-makers of the Illinois Department of Transportation regarding IL 47 from US 14 to Charles Road in McHenry County, Illinois. The Executive Summary includes a description of each recommendation. The Study Identification section contains information about the project and the Team. The Value Engineering Recommendations section presents a more detailed description and support information about each recommendation. The Appendix includes a complete record of the Team's activities and findings. The entire report can be found in Supplement 3.26-1.

CHAPTER 4
COMMITMENTS

4.1 COMMITMENTS

An environmental commitment is any action that represents a condition that must be put in place to receive Project approval or has been committed to as part of the environmental review process.

1. The contractor shall receive four weeks to construct the shared-use path and driveway entrance on the Bates Park property.

CHAPTER 5
SPECIAL DESIGN AND CONSTRUCTION CONSIDERATIONS

5.1 SPECIAL DESIGN AND CONSTRUCTION CONSIDERATIONS

1. Phase II shall coordinate with Environmental Studies Unit one year prior to Project letting when a permit is required for in-stream work or wetland impacts. One year is needed to provide ample time for the review process and to conduct any necessary field surveys that will need to be performed.

2. A PESA has been completed for this Project. Further studies may be required if the Project will require land acquisition or linear excavation from or adjacent to a property with sites identified in the PESA. It is the responsibility of Phase II to determine if any of the sites with PESA sites or right-of-way adjacent to the sites will be impacted with the proposed work.

3. Phase II will be responsible for preparing agreements with the Union Pacific Railway. The Illinois Commerce Commission will also be required to approve the final design at the railroad viaduct. Both railroad tracks will need to remain operational at all times during construction.

4. If the property located at 1220 South Eastwood Dr, Woodstock, IL becomes a full displacement during Phase II Land Acquisition, a re-evaluation of the roundabout design and geometry should be coordinated with the Phase I Geometric Studies Unit. This was further discussed on 10/4/2017 with the City of Woodstock. The meeting minutes and exhibits from this meeting can be found in Appendix A-5.

5. Accidental spills of hazardous materials and wastes during construction or operation of the transportation system require special response measures. Occurrences will be handled in accordance with local government response procedures. Refueling, storage of fuels, or maintenance of construction equipment will not be allowed within 100 feet of wetlands or water bodies to avoid accidental spills that could impact these resources.

6. Special waste issues that may arise in the construction phase will be managed in accordance with the Department's *Standard Specifications for Road and Bridge Construction* and *Supplemental Specifications and Recurring Special Provisions*.

7. A Preliminary Site Investigation (PSI) will be conducted prior to acquisition of any contaminated parcel, and/or required temporary or permanent easements, and whether the proposed improvements require excavation on or adjacent to a property identified with a REC or require excavation, including subsurface utility relocation, on a property with an easement. The PSI will include assessment for lead-based paint- and asbestos-containing materials.

CHAPTER 6
PRELIMINARY COST ESTIMATE

PRELIMINARY COST ESTIMATE

WORK CLASSIFICATION	Estimated Costs			
	Segments			
	1-US Route 14 to Illinois Route 120	2- Illinois Route 120 to Ware Road	3- Ware Road to Charles Road	Totals
Clear and Grub (minor removals and demolition)	$1,967,844	$1,121,602	$591,841	$3,681,288
Earthwork	$1,279,495	$1,756,615	$2,099,475	$5,135,585
Pavement	$12,370,090	$7,830,092	$7,505,608	$27,705,790
Sidewalk	$556,240	$354,189	$14,311	$924,741
Shared Use-Path	$316,338	$190,131	$235,600	$742,068
Grade Separations (Shared-Use Path Tunnel)	$983,528	$0	$0	$983,528
Temporary Pavement	$1,487,440	$983,280	$534,007	$3,004,727
Drainage	$3,598,079	$2,181,188	$2,133,348	$7,912,614
Structures (Culverts and walls)	$724,634	$1,012,022	$666,297	$2,402,954
Miscellaneous Items (Guardrail, landscape, erosion control, signing, pavement marking, etc.)	$4,677,096	$4,512,610	$4,374,362	$13,564,068
Subtotal	$27,960,783	$19,941,729	$18,154,849	$66,057,362
Transportation Management Plan Costs (10%)	$2,796,078	$1,994,173	$1,815,485	$6,605,736
Subtotal	$30,756,862	$21,935,902	$19,970,334	$72,663,098
Roadway Lighting	$468,011	$146,254	$160,879	$775,144
Signals	$942,000	$624,500	$0	$1,566,500
Subtotal	$32,166,873	$22,706,656	$20,131,213	$75,004,742
Contingencies (20%)	$6,433,375	$4,541,331	$4,026,243	$15,000,948
Construction Total	$38,600,247	$27,247,987	$24,157,456	$90,005,691
Right-of-way, Permanent Easement, Temporary Easement	$9,588,525	$3,507,675	$1,093,800	$14,200,000
Total Cost	$48,188,772	$30,755,662	$25,251,256	$104,205,691
Less City and County Portion	$1,937,345	$1,076,575	$894,107	$3,908,027
Total IDOT Cost	$46,251,427	$29,679,087	$24,357,149	$100,297,664