E. WASHINGTON ST.
E. BASE RD.
INDIANA 46
S. FRANKLIN ST.
N. FRANKLIN ST.
S. ASH ST.
N. ASH ST.
N. LINCOLN ST.
N. WASHINGTON ST.
S. POPLAR ST.
N. POPLAR ST.
S. PINE ST.
N. PINE ST.
N. WALNUT ST.
LEGEND
GRASS AREA
DRIVEWAY
SIDEWALK
PAVEMENT
EXISTING R/W LINE
PROPOSED R/W LINE
PROPOSED TEMPORARY R/W
CONSTRUCTION LIMITS
N
SCALE: 1" = 30'
0' 30' 60' 120'

Sign-in Sheet for the Public

Des. Number(s): 1800255 and 1800256
SR 46, Pavement Replacement Project
Greensburg, Decatur County, Indiana **May 10, 2022**

No.	Name (Please print)	Address, City, State	Zip Code
1	PHILLIP JACKSON, JR.	629 W. MAIN ST. GREENSBURG	47240
2	TOM CARROW	364 CURTIS COURT BATESVILLE	
3	Shirley Pastogal	345 E. Main Street Greensburg, In	47240
4	Jennifer Thomas	635 W. Main St Greensburg, IN ~~47240~~	47240
5	Shannon Willard	432 E. Main St Greensburg, IN	47240
6	BILL & JAN HUBBARD	417 W. FIRST ST GREENSBURG	47240
7	Jim McIntyre	1810 N. Carver Greensburg	47240
8	Terry Buening	110 N Sunset	47240

Page 1

Sign-in Sheet for the Public

Des. Number(s): 1800255 and 1800256
SR 46, Pavement Replacement Project
Greensburg, Decatur County, Indiana **May 10, 2022**

No.	Name (Please print)	Address, City, State	Zip Code
9	Tom Welage	1135 S. Mill Creek Rd Greensburg	47240
10	Lori Garringer	1212 W Rebecca Pkwy Greensburg IN	47240
11	WENDY WHITEHEAD	524 E MAIN ST GBURG, IN	47240
12	Tim Reece	806 W Washington St Greensburg	47240
13	DAN MANUS	437 E KESSLER GREENSBURG	47240
14			
15			
16			

Sign-in Sheet for the Public

Des. Number(s): 1800255 and 1800256
SR 46, Pavement Replacement Project
Greensburg, Decatur County, Indiana **May 10, 2022**

No.	Name (Please print)	Address, City, State	Zip Code
17	GREG CARLETON	SYMMR, IN	47274
18	Lynda M. Smith	615 E. Main, Greensburg	47240
19	Rob McIntyre	1810 N Carver Greensburg	47240
20	Alvin Blankman	629 E Main St Greensburg	47240
21	Tony Schwartz	524 E Main St. Greensburg	47240
22	Jerry Adams	950 E Main St Greensburg	47240
23	Alexa Adams	950 E Main St Greensburg	47240
24	WM O. SMITH	615 EAST MAIN GBRG	47240

Sign-in Sheet for the Public

Des. Number(s): 1800255 and 1800256
SR 46, Pavement Replacement Project
Greensburg, Decatur County, Indiana **May 10, 2022**

No.	Name (Please print)	Address, City, State	Zip Code
25	PAUL STONE	921 E MAIN ST	47240
26	TIM STONE	" "	"
27	BRYAN MESSOR	755 W. MAIN ST	47240
28	Drew Messer	755 W Main St	
29	Sandy Profitt	532 E Baili Ct.	47240
30	Rodney R. King	528 E. BAILI CT.	47240
31			
32			

Categorical Exclusion

Appendix H

Air Quality

SPONSOR	CONTRACT # / LEAD DES	STIP NAME	ROUTE	WORK TYPE	LOCATION	DISTRICT	MILES	FEDERAL CATEGORY	Total Cost of Project*	PROGRAM	PHASE	FEDERAL	MATCH	2022	2023	2024	2025	2026
Performance Measure Impacted: Bridge Condition																		
Comments:Include DES 1600502																		
Indiana Department of Transportation	41460 / 1801008	Init.	US 421	Small Structure Replacement	10.91 mi N of SR 229	Seymour	0	NHPP	$1,257,403.00	Bridge Construction	CN	$600,686.40	$150,171.60		$750,858.00			
										Bridge Consulting	PE	$10,400.00	$2,600.00		$13,000.00			
										Bridge ROW	RW	$32,000.00	$8,000.00	$40,000.00				
Performance Measure Impacted: Bridge Condition																		
Comments:Include DES 1801021, 1801023, 1801037, 1801008																		
Indiana Department of Transportation	41463 / 1800256	Init.	SR 46	Pavement Replacement	E Jct US 421 to 0.83 miles E of E Jct US 421 (Base Rd)	Seymour	.839	NHPP	$10,836,888.00	Road ROW	RW	$320,000.00	$80,000.00	$400,000.00				
										Road Construction	CN	$7,212,292.00	$1,803,073.00	$4,000.00		$9,011,365.00		
Performance Measure Impacted: Pavement Condition																		
Comments:Include DES 1800255, 1800256																		
Indiana Department of Transportation	42527 / 1802988	Init.	US 421	Small Structure Replacement	10.08 mile N of SR 229	Seymour	0	STBG	$1,559,472.00	Bridge Construction	CN	$908,193.60	$227,048.40			$1,135,242.00		
										Bridge ROW	RW	$64,000.00	$16,000.00	$80,000.00				
Performance Measure Impacted: Bridge Condition																		
Comments:Include DES 1802985, 1802988																		
Indiana Department of Transportation	42697 / 1902885	Init.	US 421	Intersection Improvement, Roundabout	Intersection of Old US Hwy 421, 0.26 mile south of I-74 (NE of Greensburg)	Seymour	0	STBG	$887,200.00	Mobility Construction	CN	$520,000.00	$130,000.00		$650,000.00			
Performance Measure Impacted: Safety																		
Comments:Include DES 1902885																		
Indiana Department of Transportation	42846 / 2000141	Init.	SR 46	Bridge Deck Overlay	Bridge over Fall Fork Clifty Creek, 03.42 miles W of SR 3	Seymour	0	NHPP	$1,267,241.00	Bridge Construction	CN	$917,792.80	$229,448.20		$1,147,241.00			
										Bridge Consulting	PE	$31,040.00	$7,760.00	$38,800.00				
Performance Measure Impacted: Bridge Condition																		
Comments:Include DES 2000140, 2000141																		
Indiana Department of Transportation	43245 / 2001494	Init.	I 74	Repair Or Replace Lighting	At SR 3 in Greensburg	Seymour	0	NHPP	$375,000.00	Safety Construction	CN	$337,500.00	$37,500.00	$375,000.00				
Performance Measure Impacted: Safety																		
Comments:Include DES 2001494																		
Indiana Department of Transportation	43275 / 2002145	Init.	US 421	Bridge Thin Deck Overlay	OVER MUDDY FORK SAND CREEK, 00.30 mi S of I-74	Seymour	0	STBG	$267,666.00	Bridge Construction	CN	$214,132.80	$53,533.20				$267,666.00	
Performance Measure Impacted: Bridge Condition																		

*Estimated Costs left to Complete Project column is for costs that may extend beyond the four years of a STIP. This column is not fiscally constrained and is for information purposes.

Categorical Exclusion

Appendix I

Additional Studies

Land and Water Conservation Fund (LWCF) County Property List for Indiana (Last Updated March 2022)

ProjectNumber	SubProjectCode	County	Property
1800426	1800426	Decatur	Decatur County Park

*Park names may have changed. If acquisition of publically owned land or impacts to publically owned land is anticipated, coordination with IDNR, Division of Outdoor Recreation, should occur.

Analysis of Two Census Tracts in Washington Township Decatur County, Indiana

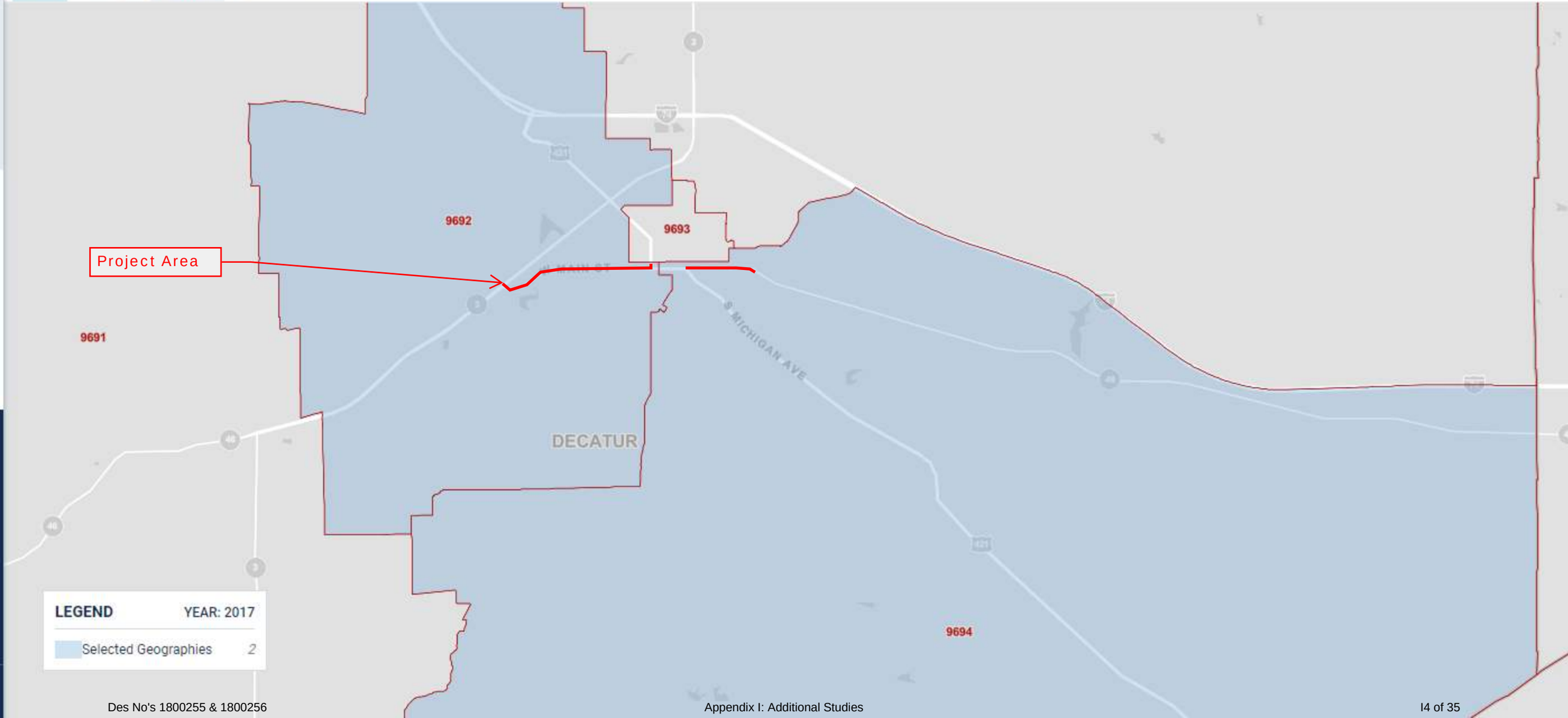
		COC	AC1	AC2
		Washington Township, Decatur County, Indiana	**Census Tract 9692, Decatur County, Indiana**	**Census Tract 9694, Decatur County, Indiana**
	LOW-INCOME			
B17001001	Population for whom poverty status is determined: Total	13,337	4,792	6,291
B17001002	Population for whom poverty status is determined: Income in past 12 months below poverty level	1,482	594	811
	Percent Low-income	**11.1%**	**12.4%**	**12.9%**
	125 Percent of COC	**13.9%**	**AC ≤ 125% COC**	**AC ≤ 125% COC**
	Potential Low-income EJ Impact?		**No**	**No**
	MINORITY			
B03002001	Total population: Total	13,694	4,939	6,437
B03002002	Total population: Not Hispanic or Latino	13,317	4,899	6,432
B03002003	Total population: Not Hispanic or Latino; White alone	12,757	4,535	6,306
B03002004	Total population: Not Hispanic or Latino; Black or African American alone	96	70	19
B03002005	Total population: Not Hispanic or Latino; American Indian and Alaska Native alone	0	0	53
B03002006	Total population: Not Hispanic or Latino; Asian alone	376	255	0
B03002007	Total population: Not Hispanic or Latino; Native Hawaiian and Other Pacific Islander alone	0	0	0
B03002008	Total population: Not Hispanic or Latino; Some other race alone	60	10	0
B03002009	Total population: Not Hispanic or Latino; Two or more races	88	39	54
B03002010	Total population: Hispanic or Latino	377	40	5
B03002011	Total population: Hispanic or Latino; White alone	278	26	5
B03002012	Total population: Hispanic or Latino; Black or African American alone	0	0	0
B03002013	Total population: Hispanic or Latino; American Indian and Alaska Native alone	85	0	0
B03002014	Total population: Hispanic or Latino; Asian alone	0	0	0
B03002015	Total population: Hispanic or Latino; Native Hawaiian and Other Pacific Islander alone	0	0	0
B03002016	Total population: Hispanic or Latino; Some other race alone	0	0	0
B03002017	Total population: Hispanic or Latino; Two or more races	14	14	0
	Number Non-white/minority (B03002001-B03002003)	**937**	**404**	**131**
	Percent Non-white/Minority	**6.8%**	**8.2%**	**2.0%**
	125 Percent of COC	**8.6%**	**AC ≤ 125% COC**	**AC ≤ 125% COC**
	Potential Minority EJ Impact?		**No**	**No**

Project Area
Washington township
Clay township
DECATUR
Saltcreek township
Legend
13,694—13,694 1
No Data 0

CENSUS TRACT SELECTION MAP

Geographies: Census Tract **Year:** 2017

Select | Clear Geos | Basemap | Table | Notes



HISPANIC OR LATINO ORIGIN BY RACE

Note: The table shown may have been modified by user selections. Some information may be missing.

DATA NOTES	
TABLE ID:	B03002
SURVEY/PROGRAM:	American Community Survey
VINTAGE:	2019
DATASET:	ACSDT5Y2019
PRODUCT:	ACS 5-Year Estimates Detailed Tables
UNIVERSE:	Total population
FTP URL:	None
API URL:	https://api.census.gov/data/2019/acs/acs5
USER SELECTIONS	
GEOS	Decatur County, Indiana; Washington township, Decatur County, Indiana; Census Tract 9692, Decatur County, Indiana; Census Tract 9694, Decatur County, Indiana
EXCLUDED COLUMNS	None
APPLIED FILTERS	None
APPLIED SORTS	None
WEB ADDRESS	https://data.census.gov/cedsci/table?text=B03002&g=0500000US18031_0600000US1803180558_1400000US18031969200,18031969400&tid=ACSDT5Y2019.B03002&hidePreview=true
TABLE NOTES	Although the American Community Survey (ACS) produces population, demographic and housing unit estimates, it is the Census Bureau's Population Estimates Program that produces and disseminates the official estimates of the population for the nation, states, counties, cities, and towns and estimates of housing units for states and counties.

Table: ACSDT5Y2019.B03002

	Washington township, Decatur County, Indiana		Census Tract 9692, Decatur County, Indiana		Census Tract 9694, Decatur County, Indiana	
Label	**Estimate**	**Margin of Error**	**Estimate**	**Margin of Error**	**Estimate**	**Margin of Error**
Total:	13,694	±39	4,939	±382	6,437	±387
Not Hispanic or Latino:	13,317	±124	4,899	±384	6,432	±389
White alone	12,757	±147	4,535	±383	6,306	±379
Black or African American alone	96	±81	70	±81	19	±21
American Indian and Alaska Native alone	0	±19	0	±12	53	±62
Asian alone	376	±41	255	±106	0	±17
Native Hawaiian and Other Pacific Islander alone	0	±19	0	±12	0	±17
Some other race alone	0	±19	0	±12	0	±17
Two or more races:	88	±73	39	±46	54	±58
Two races including Some other race	12	±19	12	±19	0	±17
Two races excluding Some other race, and three or more races	76	±71	27	±43	54	±58
Hispanic or Latino:	377	±116	40	±52	5	±10
White alone	278	±146	26	±43	5	±10
Black or African American alone	0	±19	0	±12	0	±17
American Indian and Alaska Native alone	85	±116	0	±12	0	±17
Asian alone	0	±19	0	±12	0	±17
Native Hawaiian and Other Pacific Islander alone	0	±19	0	±12	0	±17
Some other race alone	0	±19	0	±12	0	±17
Two or more races:	14	±24	14	±24	0	±17
Two races including Some other race	0	±19	0	±12	0	±17
Two races excluding Some other race, and three or more races	14	±24	14	±24	0	±17

POVERTY STATUS IN THE PAST 12 MONTHS BY SEX BY AGE

United States Census Bureau

Note: The table shown may have been modified by user selections. Some information may be missing.

DATA NOTES	
TABLE ID:	B17001
SURVEY/PROGRAM:	American Community Survey
VINTAGE:	2019
DATASET:	ACSDT5Y2019
PRODUCT:	ACS 5-Year Estimates Detailed Tables
UNIVERSE:	Population for whom poverty status is determined
FTP URL:	None
API URL:	https://api.census.gov/data/2019/acs/acs5
USER SELECTIONS	
GEOS	Decatur County, Indiana; Washington township, Decatur County, Indiana; Census Tract 9692, Decatur County, Indiana; Census Tract 9694, Decatur County, Indiana
EXCLUDED COLUMNS	None
APPLIED FILTERS	None
APPLIED SORTS	None
WEB ADDRESS	https://data.census.gov/cedsci/table?q=&text=B17001&g=0500000US18031_0600000US1803180558_1400000US18031969200,18031969400&tid=ACSDT5Y2019.B17001&hidePreview=true
TABLE NOTES	Although the American Community Survey (ACS) produces population, demographic and housing unit estimates, it is the Census Bureau's Population Estimates Program that produces and disseminates the official estimates of the population for the nation, states, counties, cities, and towns and estimates of housing units for states and counties.
	Supporting documentation on code lists, subject definitions, data accuracy, and statistical testing can be found on the American Community Survey website in the Technical Documentation section. Sample size and data quality measures (including coverage rates, allocation rates, and response rates) can be found on the American Community Survey website in the Methodology section.
	Source: U.S. Census Bureau, 2015-2019 American Community Survey 5-Year Estimates

Table: ACSDT5Y2019.B17001

	Washington township, Decatur County, Indiana		Census Tract 9692, Decatur County, Indiana		Census Tract 9694, Decatur County, Indiana	
Label	**Estimate**	**Margin of Error**	**Estimate**	**Margin of Error**	**Estimate**	**Margin of Error**
Total:	13,337	±133	4,792	±384	6,291	±386
Income in the past 12 months below poverty level:	1,482	±491	594	±247	811	±493
Income in the past 12 months at or above poverty level:	11,855	±523	4,198	±411	5,480	±504

STATE ROAD 46 PAVEMENT IMPROVEMENTS
GREENSBURG (DECATUR COUNTY), IN

Des. No. 1800255 and 1800256

Indiana Department of Transportation

Engineering Assessment

May 2019

CMT Engineers and Consultants

8790 Purdue Road

Indianapolis, IN 46268

1.0 Project Description

1.1 Purpose of Report

The Engineering Assessment phase describes the project at a preliminary level using data readily available. The conclusion of this report will guide the subsequent design and environmental phases.

1.2 Project Location

The proposed projects are located along SR 46 in and near the city of Greensburg in Decatur County.

1.2.1 DES NO 1800255

The limits of Des. No. 1800255 are from the East Junction with SR 3 (RP 117 - 0.08) to the West Junction with US 421 (RP 118 + 0.705), approximately 1.8 miles in total length. There is a planned intersection improvement project at the N junction of SR 3 and SR 46, the western limits of Des 1800255 may need to be revised through coordination with this adjacent project will be required during subsequent design phases.

1.2.2 DES NO 1800256

The limits of Des. No. 1800256 are from the East Junction with US 421 (RP 120 – 0.835) to Base Road (RP 120 + 0.00), approximately 0.8 miles in total length. Location maps for the proposed project area can be found in ***Appendix A – Project Graphics.***

1.3 Project Need and Purpose

The existing pavement of SR 46 was resurfaced in 2007-2008, and minor cracks in the pavement were sealed in 2017. The portion of Des No 1800255 from the railroad crossing to the East Junction with US 421, and the entirety of the project limits of Des No 1800256 exhibit a high amount of functional (longitudinal) cracking, areas of fatigue and a high IRI (majority identified as poor). The portion of Des No 1800255 from the western limits at SR 3 to the railroad crossing does not exhibit these same deteriorated conditions, however, a preventative maintenance treatment is recommended due to the age (over 10 years) of the last preventative maintenance project.

The need for these projects is due to pavement deterioration. This pavement failure is exhibited by: transverse cracking, longitudinal cracking, rutting, wheel path fatigue cracking, previous patching and isolated areas of potholing. In addition to the need to improve the pavement, inadequate drainage and substandard pedestrian facilities exist throughout the project limits.

The purpose of these projects is to add service life to the pavement by addressing the structural and functional deficiencies and improve the overall pavement condition by restoring the load carrying capacity. Drainage improvements will be completed, resulting in improved pavement life and vehicular safety by removing ponding water and pedestrian facilities will be added and/or upgraded were necessary providing safer travel for pedestrians.

2.0 Existing Facilities

2.1 Roadway

2.1.1 DES NO 1800255

From the western project limits at SR 3 to N. West St, SR 46 is predominately in a commercial/industrial area and runs west-east with a posted speed limit of 45 mph, which is reduced to 30 mph at the Sunset Drive intersection. SR 46 is functionally classified as a principal arterial; it is not on the National Highway System nor on the National Truck Network. SR 46 consists mainly of two 12-foot travel lanes with paved shoulders varying in width from 8-feet near the western limits to 4-feet near N. West St. Guardrails are placed along the approaches to the reinforced concrete arch culvert at Muddy Fork of Sand Creek, and the condition will be reviewed to determine if replacement is warranted; guardrail end treatments will be upgraded to meet current standards.

Minor pavement distresses are exhibited throughout the roadway. These distresses are expected as the last preventative maintenance treatment was completed in 2008 with a design life of nine years. Pavement distresses consist of reflective cracking and fatigue cracking.

From N. West St to the eastern project limits at the west Junction US 421, SR 46 is predominately in a residential area and runs west-east with a posted speed limit of 30 mph. SR 46 consists mainly of two 12-foot travel lanes with 4-foot paved shoulders. The roadway widens to a 3-lane section with a parking lane on the north side (46-foot total width) approaching the west Junction US 421 intersection. Curbs are present from the Anderson St intersection to the west Junction US 421; the curb has experienced major deterioration and exhibits minimal curb exposure due to prior resurfacing projects. Curb is not present from the N West St intersection to the Anderson St intersection, which allows stormwater runoff to flow directly onto the residential properties on the southside of the roadway.

Most private approaches consist of concrete and asphalt. Some of these locations east of N. West St. have significant surface discontinuities and slope deflections and will require improvement for pedestrian accessibility. Further investigation is necessary to determine the extent of the potential repairs.

2.1.2 DES NO 1800256

Throughout the entire project limits, SR 46 is predominately in a residential area and runs west-east with a posted speed limit of 30 mph. From the western project limits to Wilder St, the total paved width of SR 46 varies from 40 to 47.5 feet bounded by concrete curb on both sides, and consist of 1-travel lane in each direction, eastbound left turn lane and westbound right turn lane at the N. Lincoln St intersection and parking lanes east of N. Lincoln St. From Wilder St to a point approximately 500 feet west of Base Road, SR 46 consists mainly of two 11-foot travel lanes with a 7-foot parking lane bounded by concrete curb on both sides (36-foot total pavement width); east of this location, SR 46 consists of 12-foot travel lanes with 6-foot paved shoulders.

All existing curb within the project limits has experienced major deterioration and exhibits minimal curb exposure due to prior resurfacing projects.

Most private approaches consist of concrete and asphalt. Some locations have significant surface discontinuities and slope deflections and will require improvement for pedestrian accessibility. Further investigation is necessary to determine the extent of the potential repairs.

2.2 Drainage

Existing drainage infrastructure was determined by a combination of Google Earth, aerial imaging, initial site investigation and information provided by the City of Greensburg. A preliminary drainage investigation of the existing storm sewer inlets has been conducted to determine if the existing inlet spacing is sufficient to meet the requirements of Section 203-4.0 of the Indiana Design Manual (IDM); however a detailed hydraulic analysis , including determining the capacity of the existing storm sewer system and condition of existing inlets and pipes was not completed as part of this investigation. Results of the inlet spacing review can be found in ***Appendix B – Project Data.***

2.2.1 DES NO 1800255

Along the segment of SR 46 from the western limits to a point approximately 0.5 mile east, drainage is conveyed via shallow roadside ditches and swales to a 24” culvert crossing under SR 46, which flows southwest to the Greensburg City Park Lake. From this point to the railroad tracks, drainage is conveyed via shallow roadside ditches and swales to Muddy Fork of Sand Creek, approximately 0.54 miles east of SR 3; SR 46 is carried over Muddy Fork of Sand Creek via a 60-foot span, reinforced concrete arch, which flows southwest to the Greensburg City Park Lake. Within this area, Decatur County installed a storm sewer system consisting of area inlets located off the pavement from near the Sunset Drive intersection, west to Muddy Fork. Along the segment of SR 46 from the railroad tracks to N West St, drainage is conveyed via shallow roadside ditches and swales to a drainage ditch just east of the railroad crossing, which flows northwest along the railroad to an ephemeral stream near the railroad crossing along SR 3. Within this area, the City of Greensburg has noted that water regularly ponds along the south side of SR 46, likely contributing to the poor pavement condition, and improvements are necessary.

From N West St to the West Junction with US 421 (N Ireland St), drainage is conveyed with curbs along the edges of SR 46 and within a closed storm sewer system. Existing inlets are located at the following locations: approximately 200 feet west of the N. Carver St intersection; north side of SR 46 at the N. Carver intersection; S. Anderson St intersection; N. Ireland St. intersection. The inlets west of N. Carver St appear to be in a sag location along SR 46, with drainage outletting to the south, under a riprapped area on the west property line of the commercial strip development. The inlets at the N. Anderson St intersection appear to be in a sag location along SR 46; the outlet location for this low point is assumed to be to the south along N. Anderson St. Within this area, the City of Greensburg has noted that water regularly ponds in the Anderson St intersection.

2.2.2 DES NO 1800256

Throughout the majority of the project limits, drainage is conveyed with curbs along the edges of SR 46 and within a closed storm sewer system, outletting at Gas Creek, approximately 630 feet east of US 421; the existing structure carrying SR 46 over Gas Creek is to be replaced with a flat top, three-sided structure under Des No 1400150. Existing inlets are located at the following locations: N Lincoln St intersection; Gas Creek culvert crossing; SE corner S. Poplar St intersection; NE corner N. Lathrop St intersection; SE corner S. Vine St intersection; NE corner N. Stewart St intersection; NW, NE and SE corners Wilder St intersection; NE corner N Warren St intersection and along the south side of SR 46 at the same location; NE corner N. Davidson St intersection. Within this area, the City of Greensburg has noted that water regularly ponds at the low point near the Gas Creek crossing. The City also believes the inlet spacing and/or pipe capacity of the entire storm sewer system may be inadequate due to the spread that is encountered during rain events.

2.3 Utilities and Railroad

An early coordination letter was sent to utilities which have facilities in the project limits; information received can be found in ***Appendix B – Project Data***. A summary of the 811 search and responses includes:

- **CenturyLink (CTLCL)**
  - Drawings provided to indicate the approximate locations of CenturyLink underground telecommunications facilities.
- **Comcast Cable (South)**
  - Notified of an underground line on the north side of SR 46 from a point near the Decatur County REMC building to a riser pole west of the Sunset Drive intersection
  - Notified of an aerial pole line on the south side of SR 46 from the riser pole to the eastern project limits
- **Decatur County REMC**
  - Numerous attempts were made to contact Decatur County REMC to obtain information related to their facilities; however, no response was provided.
- **Decatur County Rural Water**
  - Numerous attempts were made to contact Decatur County Rural Water to obtain information related to their facilities; however, no response was provided.
- **Duke Energy**
  - Duke Energy provided a NOI Response Form along with drawings to indicate the approximate location of aerial electric facilities
- **Enhanced Telecom Corp**
  - Drawings provided to indicate the approximate locations of Enhanced Telecom's underground and aerial telecommunications facilities.
- **Frontier**

  - Numerous attempts were made to contact Frontier to obtain information related to their facilities; however, no response was provided.
- **Greensburg Municipal Water**
  - Drawings provided to indicate the approximate locations of underground water mains
- **Greensburg Wastewater**
  - Drawings provided to indicate the approximate locations of underground sanitary sewers
- **Level 3 Communications**
  - Same response used for CenturyLink as they are the same company.
- **Sprint**
  - Drawings provided to indicate the approximate locations of Sprint underground telecommunications facilities.
- **Vectren Gas**
  - Drawings provided to indicate the approximate locations of Vectren Gas Distribution facilities. Vectren does not have any gas transmission facilities in the project area.
- **Zayo Bandwidth**
  - Drawings provided to indicate the approximate locations of Zayo underground telecommunications facilities

The Central Railroad Company of Indiana (CIND) has an at-grade, single track crossing of SR 46, located approximately 1.25 miles east of SR 3 within the limits of Des No 1800255 as part of their Class III short-line railroad. The crossing is skewed and has a surface length of 47 feet and consists of an asphalt surface with rubber seals along the rails; the surface is in fair condition, with minor settling and surface cracks. Safety devices include stop bars and cantilevered lights and gates. Sidewalks do not cross the railroad.

2.4 Pavement Condition

2.4.1 DES NO 1800255

Based on historical information, this segment of SR 46 was constructed in 1946 as a gravel roadway. The existing conditions are further described in four segments, from west to east, as shown in the conceptual plan sheets in ***Appendix A – Project Graphics***:

2.4.1.1 Western project limits to approximately 400 feet east

This segment consists of 11” of HMA. The bottom 1” was observed to be striped, with the remaining portion is sound. Pavement distresses consist of minor transverse cracking.

2.4.1.2 Approximately 400 feet east of western project limits to near ABM Bearing, Inc.

This segment consists of a composite pavement of 2 ½ - 3” of HMA over 9 -9 ½” Concrete, with the majority of the pavement in sound condition. Pavement distresses consist of reflective cracking at the PCCP joints, which have been sealed.

2.4.1.3 Near ABM Bearing, Inc. CIND railroad crossing

This segment consists of a full depth HMA pavement, ranging in thickness from 9 ¾" to 13 ¼", with the observed condition of the pavement being good. Pavement distresses consist of an isolated area of severe wheel path fatigue cracking, along with minor transverse and longitudinal cracking,

2.4.1.4 CIND Railroad crossing to the West Junction with US 421

This segment consists of a composite pavement averaging 4 ½" of HMA over 3 ½" of brick, with the majority of the pavement in fair to poor condition. The area near the CIND railroad crossing consists of a thicker HMA section, presumably due to wedging at the crossing. Additionally, isolated areas may consist of HMA over concrete, due to previous repairs of the underlying brick pavement. Pavement distresses consist of transverse cracking, longitudinal cracking, rutting, wheel path fatigue cracking, previous patching and isolated areas of potholing.

2.4.2 DES NO 1800256

Based on historical information, this segment of SR 46 was constructed as a brick roadway. In 1941, the portion for the east junction with US 421 to Davidson Street was overlaid with asphaltic concrete, and the portion for Davidson Street to the eastern project limits was reconstructed with an alternate of concrete or HMA. The existing conditions are further described in three segments, from west to east as shown in the conceptual plan sheets in ***Appendix A – Project Graphics***:

2.4.2.1 East Junction with US 421 to Warren Street

This segment consists of a composite pavement averaging 4 ½" of HMA over 3 ½" of brick, with the majority of the pavement in fair to poor condition. Isolated areas may consist of HMA over concrete, due to previous repairs of the underlying brick pavement. Pavement distresses consist of transverse cracking, longitudinal cracking, rutting, wheel path fatigue cracking, previous patching and isolated areas of potholing.

2.4.2.2 Warren Street to near the Greensburg Public Library

This segment consists of a composite pavement of 1 ¼ - 6 ¾" of HMA over 5 – 8" Concrete. 2 pavement cores exhibited completely fractured PCCP, with a third core exhibiting fractured PCCP near the bottom. Pavement distresses consist of moderate to severe reflective cracking with isolated areas of previous patching.

2.4.2.3 Near the Greensburg Public Library to the eastern project limits

This segment consists of an HMA pavement, ranging in thickness from 5 ¼" - 13 ¼", and is in sound condition. This segment has received a chip seal, which may have covered some surface distresses.

2.5 Curb Ramp Conditions

All existing curb ramps along SR 46 within the project limits of both Des No 1800255 and 1800256 are out of compliance with ADA and PROWAG guidelines; either due to cross slope, running slope, or the presence of corrugations in the transition areas.

2.5.1 DES NO 1800255

Curb ramps are present beginning at the N. West Street intersection and continue to the eastern project limits at the West Junction with US 421 (N. Ireland St). All curb ramps are recommended to be replaced to meet current guidelines.

2.5.2 DES NO 1800256

Curb ramps are present beginning at the western project limits N. West Street intersection and continue to the N. Davidson Street intersection. All curb ramps are recommended to be replaced to meet current guidelines.

2.6 Sidewalk Conditions

During the initial sight investigation, the majority of the existing concrete sidewalks along both sides of SR 46 within the project limits of both Des No 1800255 and 1800256 were observed to be either out of compliance with ADA and PROWAG guidelines (e.g. cross slope > 2%, width < 4 ft) or are in fair to poor condition (cracked and upheaved, posing tripping hazards). Per INDOT geometric design criteria for urban collectors, the desirable width and buffer for sidewalks is 5 feet sidewalk width, with a 5-foot buffer. Sidewalks located immediately adjacent the curb, should have a 6-foot width to allow additional space for street and highway hardware as well as to provide pedestrian comfort due to the proximity of traffic. Where insufficient space is available, the sidewalk width may be reduced to 4 ft for short distances; however, where the clear width is less than 5 ft, a passing space must be provided at no more than 200-ft intervals.

2.6.1 DES NO 1800255

Sidewalks are present along the north side of SR 46 from the commercial strip development located 300 feet west of N. West Street and continue to the eastern project limits at the West Junction with US 421 (N. Ireland St). The existing conditions are further described, from west to east:

- Western limits of commercial strip development: sidewalk width is 4 feet, with no grass buffer, and no curb; 4-foot offset from travel lane.
- Eastern limits of commercial strip development: sidewalk width is 5 feet, with a 9-foot grass buffer, and no curb. Sidewalk cross slope is < 2% and the surface is in good condition.
- West of N West St: sidewalk width is 4 feet, with a 6-foot grass buffer, and no curb; 9-foot offset from travel lane. Sidewalk cross slope is < 2% and the surface is in good condition; however, there is not a compliant curb ramp at the N. West St intersection.
- N West St to N Carver Street: sidewalk width is 5 feet, with a minimum 4-foot grass buffer, and no curb; 8-foot minimum offset from travel lane. Sidewalk surface is in poor condition, including some trip hazards.
    - East of the church, approximately 54 LFT of the existing sidewalk is a brick surfaced sidewalk

- N Carver St to N Anderson St: sidewalk width is 5 feet, with a 7-foot grass buffer, and no curb; 14-foot offset from travel lane. Sidewalk surface is in poor condition, including some trip hazards.
- N Anderson St to West Junction US 421 (N Ireland St): sidewalk width is 5 feet, with a 7-foot grass buffer, with curb along the edge of pavement. Sidewalk cross slope is > 2% in some locations, and the surface is in poor condition, including some trip hazards, throughout the majority of this area.

Sidewalks are present along the south side of SR 46 from the residential properties located 150 feet west of N. West Street and continue to the eastern project limits at the West Junction with US 421 (N. Ireland St). The existing conditions are further described, from west to east:

- West of N. West St to commercial strip development west of S. Anderson St: sidewalk width is 5 feet, with a 5-foot grass buffer, and no curb; 9-foot offset from travel lane. Sidewalk surface is in poor condition, including some trip hazards.
- Commercial strip development west of S. Anderson St: sidewalk width is 5 feet, with a 5-foot landscaped (rock) buffer, with curb along the edge of pavement. Sidewalk cross slope is > 2% in some locations, and the surface is in good condition.
- Commercial strip development west of S. Anderson St to S. Anderson St: sidewalk width is 5 feet, with a 7-foot grass buffer, and no curb; 14-foot offset from travel lane. Sidewalk surface is in poor condition, including some trip hazards.
- S. Anderson St to West Junction US 421 (N Ireland St): sidewalk width is 5 feet, with a 7-foot grass buffer, with curb along the edge of pavement. Sidewalk cross slope is > 2% in some locations, and the surface is in poor condition, including some trip hazards, throughout the majority of this area.

2.6.2 DES NO 1800256

Sidewalks are present along the north side of SR 46 from the western project limits and continue to the Greensburg - Decatur County Library. The existing conditions are further described, from west to east:

- Western project limits to N Lincoln St: sidewalk width is 5 feet (minimum), with an 8-foot grass buffer, with curb along the edge of pavement. Sidewalk cross slope is > 2% in some locations, and the surface is in fair to poor condition, including some trip hazards, throughout the majority of this area.
- N Lincoln St to N Lathrop St: sidewalk width is 5 feet, with an 8-foot grass buffer, with limestone curb along the edge of pavement. Sidewalk cross slope is > 2% in some locations, and the surface is in fair to poor condition, including some trip hazards, throughout the majority of this area.
    - 61 LFT of the existing sidewalk fronting the first residence east of N Lincoln St is in good condition with an acceptable cross slope
- N Lathrop St to N Stewart St: sidewalk width is 6 feet, with a 9-foot grass buffer, with limestone curb along the edge of pavement. Sidewalk cross slope is > 2% in some

locations, and the surface is in fair to poor condition, including some trip hazards, throughout the majority of this area.

- N Stewart St to N Wilder St: sidewalk width is 6 feet, with a 9-foot grass buffer, with limestone curb along the edge of pavement. Sidewalk cross slope is > 2% in some locations, and the surface is in fair to poor condition, including some trip hazards, throughout the majority of this area.
    - 72 LFT of the existing sidewalk fronting the second residence west of N Wilder St is in good condition with an acceptable cross slope
- N Wilder St to N Warren St: sidewalk width is 6 feet, with a 9-foot grass buffer, with limestone curb along the edge of pavement. Sidewalk cross slope is > 2% in some locations, and the surface is in fair to poor condition, including some trip hazards, throughout the majority of this area.
    - 72 LFT of the existing sidewalk fronting the first residence east of N Wilder St is in good condition with an acceptable cross slope
- N Warren St to N Davidson St: sidewalk width is 6 feet, with a 9-foot grass buffer, with curb along the edge of pavement. Sidewalk cross slope is > 2% in some locations, and the surface is in fair to poor condition, including some trip hazards, throughout the majority of this area.
- N Davidson St to commercial development 450 feet west of the library: sidewalk width is 5 feet, with a 6-foot grass buffer, with curb along the edge of pavement. Sidewalk cross slope is > 2% in some locations, and the surface is in fair to poor condition, including some trip hazards, throughout the majority of this area.
- Commercial development 450 feet west of the library to the library: sidewalk width is 6 feet, with no grass buffer and no curb; 5.5-foot offset from travel lane. Sidewalk cross slope is > 2% in some locations, and the surface is in good to fair condition, including some trip hazards, throughout the majority of this area.

Sidewalks are present along the south side of SR 46 from the western project limits and continue to the auto parts store, 250 feet east of N Davidson St. The existing conditions are further described, from west to east:

- Western project limits to S Poplar St: sidewalk width is 5 feet, with an 8-foot (minimum) grass buffer, with curb along the edge of pavement. Sidewalk cross slope is > 2% in some locations, and the surface is in fair to poor condition, including some trip hazards, throughout the majority of this area.
- S Poplar St to S Vine St: sidewalk width is 6 feet, with a 9-foot grass buffer, with curb along the edge of pavement. Sidewalk cross slope is > 2% in some locations, and the surface is in fair to poor condition, including some trip hazards, throughout the majority of this area.
- S Vine St to S Wilder St: sidewalk width is 6 feet, with a 9-foot grass buffer, with limestone curb along the edge of pavement. Sidewalk cross slope is > 2% in some locations, and

the surface is in fair to poor condition, including some trip hazards, throughout the majority of this area.

- 84 LFT of the existing sidewalk fronting the first residence east of S Vine St is in good condition with an acceptable cross slope

- S Wilder St to auto parts store: sidewalk width is 6 feet, with a 5-foot (minimum) grass buffer, with curb along the edge of pavement. Sidewalk cross slope is > 2% in some locations, and the surface is in fair to poor condition, including some trip hazards, throughout the majority of this area.

An estimate to replace the existing sidewalk with new 5-foot wide sidewalk has been included in ***Appendix B –Sidewalk Estimate*** for informational purposes. A buffer that meets the desired width is present throughout the majority of the project limits, however, increasing the buffer to the desired width in the locations that are currently less than the desired is not included, as providing this width is not feasible within the existing right of way (see typical sections for additional information related to buffer widths).

3.0 Safety and Traffic Analysis

3.1 Crash Data and Safety Analysis

INDOT crash data from 9/1/2014 to 8/1/2018 was made available for this study. During this time 27 crashes occurred within the limits of Des No 1800255 and 28 crashes occurred within the limits of Des No 1800256. The following table provides a summary of the crash data.

Table 1A – Crash Data (DES NO 1800255)

Location	Total	PD	PI	F	RE	RA	LT/RT	SS	HO	Other
SR 3	19	12	7	0	8	4	0	2	0	5
CR 200W	4	2	2	0	0	1	2	0	0	1
Sunset Dr	3	1	2	0	0	0	0	0	2	1
N West St	0	0	0	0	0	0	0	0	0	0
N Carver St	1	1	0	0	1	0	0	0	0	0
N Anderson St	0	0	0	0	0	0	0	0	0	0
US 421 W Jct	1	2	0	0	2	0	0	0	0	0

*PD = Property Damage; PI = Personal Injury; F = Fatality; RE = Rear end; RA = Right angle; LT/RT = Left turn/Right turn; SS = Sideswipe; HO = Head on

Table 1B – Crash Data (DES NO 1800256)

Location	Total	PD	PI	F	RE	RA	LT/RT	SS	HO	Other
US 421 E Jct	4	4	0	0	2	0	0	0	0	2
S East St	0	0	0	0	0	0	0	0	0	0
N Lincoln St	7	0	0	0	3	3	1	0	0	0
S Poplar St	0	0	0	0	0	0	0	0	0	0
N Lathrop St	0	0	0	0	0	0	0	0	0	0
S Vine St	3	3	0	0	1	1	0	0	1	0
N Stewart	1	1	0	0	1	0	0	0	0	0
Wilder St	8	8	0	0	3	0	0	3	0	2
N Warren St	0	0	0	0	0	0	0	0	0	0
N Davidson St	4	3	1	0	1	1	0	0	0	2
E Washington St	0	0	0	0	0	0	0	0	0	0
Base Rd	1	1	0	0	0	0	0	0	0	1

*PD = Property Damage; PI = Personal Injury; F = Fatality; RE = Rear end; RA = Right angle; LT/RT = Left turn/Right turn; SS = Sideswipe; HO = Head on

Based upon the four years of crash history obtained, an average of 7 crashes per year occur along State Road 46 with the limits of Des No 1800255 and an average of 7 crashes per year occur along State Road 46 with the limits of Des No 1800256. Also, throughout the four-year period, a total of 11 crashes resulted in personal injury within the limits of Des No 180255; however, 7 of these were near the SR 3 intersection, which is outside the limits of this project. Within the limits of Des No 1800256, 1 crash (rear end collision at Davidson St) resulted in personal injury. None of the person injury crashes were due to a deficiency in the safety of the roadway.

Various Index of Crash Frequency (I_{cf}) and Index of Crash Cost (I_{cc}) were calculated along SR 46 using the Road Hazard Analysis Tool (RoadHAT); the RoadHAT output can be found in ***Appendix B – Project Data.*** The following table provides a summary of the analysis.

Table 2A – RoadHat Data (DES NO 1800255)

Road Segment	I_{cf}	I_{cc}
SR 3 – N West St	1.27	0.36
N West St – US 421 W Jct	-0.49	-0.59

Table 2B – RoadHat Data (DES NO 1800256)

Road Segment	I_{cf}	I_{cc}
US 421 E Jct – Davidson St	-0.19	-0.85
SR 46 at N Lincoln St	-0.65	-1.00
SR 46 at Wilder St	0.84	-0.11
Davidson St – Base Rd	-0.67	-0.50

3.2 Mainline Traffic Data

Mainline traffic data was obtained from the INDOT Traffic County Database System (TCDS) and is summarized by road segment below:

Table 3A – Traffic Data (DES NO 1800255)

Road Segment	2017 (Count Year)	2023 (Construction Year)	2043 (Design Year)	% DHV
Start of Project to Sunset Drive	4773	5110	6380	10
Sunset Drive to Anderson Street	4995	5340	6680	9
Anderson Street to W. Jct US 421	5382	5760	7190	9

Table 3B – Traffic Data (DES NO 1800256)

Road Segment	2017 (Count Year)	2023 (Construction Year)	2043 (Design Year)	% DHV
E. Jct US 421 to N. Lincoln Street	10,573	11310	14120	9
N. Lincoln Street to N. Lathrop Street	8123	8690	10850	9
N. Lathrop Street to N. Stewart Street	7573	8100	10120	10

Utilizing the two most recent years of traffic counts available (2015 and 2017), the average annual increase of AADT for each segment were calculated to be 0.1 %, -4.2 %, -11.5 %, 21.1 %, -0.4 %, 0.8 % and 2 % listed from West to East in the above tables. Examining the existing land use in the area, potential for future development, the aforementioned growth patterns from the INDOT Traffic Count Database website, as well as an area estimate from the Statewide Travel Demand Model, an annual growth rate was assumed to be 1.1% per year, and was applied to determine the design year AADT's.

4.0 Alternatives and Recommendations

Refer to the Conceptual Typical Cross Sections and Plan Sheets, depicting the proposed pavement, curbing, drainage and sidewalk improvements provided in ***Appendix A – Project Graphics*** for additional details.

4.1 Alternative Pavement Sections

4.1.1 DES NO 1800255

Based on the geotechnical/pavement investigation, preliminary pavement design options were developed (see appendices for additional details). The recommendation for the portion of SR 46 from the western limits to the railroad crossing is an HMA Preventative Maintenance (PM) overlay with partial and full depth patching at select locations. From the railroad crossing to the west Junction with US 421, full pavement replacement is recommended. The pavement design recommendations, including partial and full depth patching locations, will be reviewed and the final recommendations prepared during the subsequent design phases.

4.1.1.1 Western project limits to approximately 400 feet east

Segment length is approximately 400 LFT and will consist of an HMA Preventative Maintenance Treatment – 2” mill and overlay (including shoulders) with a 9-year (minimum) service life.

4.1.1.2 Approximately 400 feet east of western project limits to near ABM Bearing, Inc.

Segment length is approximately 0.7 miles and will consist of an HMA Preventative Maintenance Treatment – Scarification of existing pavement and 2” overlay (including shoulders) with a 9-year (minimum) service life. This treatment will result in a grade raise, however, due to the limited number of driveways and no existing curbs in this segment, this treatment is the preferred alternative per consultation with INDOT. Existing public road approaches will be overlaid to the right-of-way line in accordance with Section 56-4.05(01) of the IDM. The paving at all private drives will be in accordance with Section 56-4.05(02) of the IDM. Existing guardrail will be adjusted or replaced to accommodate the grade raise.

Partial depth patching (4” mill and overlay) and full depth patching (11” HMA on Subgrade Treatment Type IC, Modified) will be required at the locations indicated in the patching table (see typical sections).

4.1.1.3 Near ABM Bearing, Inc. to CIND railroad crossing

Segment length is approximately 0.5 miles and will consist of an HMA Preventative Maintenance Treatment – 2” mill and overlay (including shoulders) with a 9-year (minimum) service life.

Partial depth patching (4” mill and overlay) and full depth patching (11” HMA on Subgrade Treatment Type IC, Modified) will be required at the locations indicated in the patching table (see typical sections).

4.1.1.4 CIND Railroad crossing to the West Junction with US 421

Segment length is approximately 0.5 miles and will consist of Full Depth Pavement Replacement; two alternatives were considered.

- Alternative 1 – Full Depth HMA: 11" HMA (including open graded drainage layer) on 4" compacted aggregate on Subgrade Treatment Type IB (14 in. chemical soil modification) with a 20-year (minimum) service life.
- Alternative 2 – PCCP: 9" PCCP (15 foot joint spacing with 1.25" dowel bars) on 9" subbase for PCCP (3" coarse aggregate No. 8 on 6" compacted aggregate No. 53) on Subgrade Treatment Type IB (14 in. chemical soil modification) with a 30-year (minimum) service life.

Comparing the pavement costs per lane-mile, Alternative 1 is $227,000 and Alternative 2 is $307,500, when factoring in the longer design life of Alternative 2 (30 years vs. 20 years), the per lane-mile per year cost of Alternative 2 is slightly less than Alternative 1 ($10,300 vs. $11,400). Due to the lower initial cost, along with maintaining a consistent pavement type throughout the corridor, Alternative 1, Full Depth HMA pavement is the recommended alternative.

4.1.2 DES NO 1800256

Based on the geotechnical/pavement investigation, preliminary pavement design options were developed (see appendices for additional details). The recommendation for the portion of SR 46 from the western limits to the Greensburg Public Library is a full depth pavement replacement. From the library to the eastern project limits, an HMA Preventative Maintenance (PM) overlay is recommended.

4.1.2.1 East Junction with US 421 to Just East of the Greensburg Public Library Entrance

Segment length is approximately 0.7 miles and will consist of Full Depth Pavement Replacement; two alternatives were considered.

- Alternative 1 – Full Depth HMA: 11" HMA (including open graded drainage layer) on 4" compacted aggregate on Subgrade Treatment Type IB (14 in. chemical soil modification) with a 20-year (minimum) service life.
- Alternative 2 – PCCP: 9" PCCP (15 foot joint spacing with 1.25" dowel bars) on 9" subbase for PCCP (3" coarse aggregate No. 8 on 6" compacted aggregate No. 53) on Subgrade Treatment Type IB (14 in. chemical soil modification) with a 30-year (minimum) service life.

Comparing the pavement costs per lane-mile, Alternative 1 is $715,500 and Alternative 2 is $967,500, when factoring in the longer design life of Alternative 2 (30 years vs. 20 years), the per lane-mile per year cost of Alternative 2 is slightly less than Alternative 1 ($32,300 vs. $35,800). Due to the lower initial cost, along with maintaining a consistent pavement type throughout the corridor, Alternative 1, Full Depth HMA pavement is the recommended alternative.

4.1.2.2 Just East of the Greensburg Public Library Entrance to the eastern project limits

Segment length is approximately 500 LFT and will consist of an HMA Preventative Maintenance Treatment – 1.5" mill and overlay (including shoulders) with a 9-year (minimum) service life.

For the portions of the projects with a preventative maintenance recommendation, the project will be developed following the Partial 3R criteria in Chapter 56 of the Indiana Design Manual (IDM).

The portions of the projects with a full depth pavement replacement will be designed as a 4R urban arterial and will be developed following the Reconstruction Project criteria in Section 14-2.01 of the IDM.

Table 4 – Design Guidelines

Item	SR 46
Design Year	2043
Design Classification	4R
Design Vehicle	IDV
Functional Classification	Urban Principal Arterial
Design Speed	30
Terrain	Level
Access Control	None
FHWA Oversight	Not Required

4.2 Public Road Approaches and Drives

4.2.1 DES NO 1800255

There are approximately 70 public road approaches, alleys and drives with the limits of this project. Of the public road approaches, all are functionally classified as local roads/city streets except for CR 200 W (Major Collector) and US 421 (Principal Arterial). CR 200 W is within the preventative maintenance portion of the project and will be overlaid to the right-of-way line in accordance with Section 56-4.05(01) of the IDM; US 421 is outside the limits of the proposed improvements, and no work is required. The paving at all private drives within the preventative maintenance portion of the project (west of the railroad crossing) will be in accordance with Section 56-4.05(02) of the IDM.

Within the full depth pavement replacement portion of the project (east of the railroad crossing), drives and public road approaches will be reconstructed as necessary to tie-into the new edge of pavement along SR 46 and to accommodate sidewalks and satisfy ADA requirements. The wide commercial drives between the railroad crossing and N. West Street will be reconfigured to be in accordance with the INDOT standard drawings and the INDOT Driveway Permit Manual.

4.2.2 DES NO 1800256

There are approximately 70 public road approaches, alleys and drives with the limits of this project. Of the public road approaches, all are functionally classified as local roads/city streets except for N. Lincoln St (Minor Arterial) and Base Road (Major Collector). Within the full depth pavement replacement portion of the project, drives and public road approaches will be reconstructed as necessary to tie-into the new edge of pavement along SR 46 and to

accommodate sidewalks and satisfy ADA requirements; N. Lincoln St was recently reconstructed by the City of Greensburg, and should not require additional improvements.

The paving at public road approaches and private drives within the preventative maintenance portion of the project (east of the Greensburg Public Library) will be in accordance with Sections 56-4.05(01) and 56-4.05(02) of the IDM.

4.3 Intersection Improvements

4.3.1 N. Lincoln St.

The crash data obtained identified the N. Lincoln Street intersection as having a higher number of crashes than at other intersections within the corridor; however, the Index of Crash Frequency (I_{cf}) and Index of Crash Cost (I_{cc}) obtained from the RoadHAT analysis did not support the need for major improvements. The existing intersection is signalized, and the eastbound SR 46 lanes are less than 12 feet wide and the eastbound left turn lane is approximately 110 feet long with no deceleration length provided. As part of the proposed pavement replacement, 12 foot lane widths should be provided along both eastbound and westbound SR 46 at the intersection (sidewalk buffer widths will be reduced to 5 feet to allow the wider lanes to be provided within the existing right-of-way) and the pavement markings for the eastbound left turn lane should be extended an additional 200 feet to provide for some deceleration.

4.3.2 Wilder St.

The crash data obtained identified the Wilder Street intersection as having a higher number of crashes than at other intersections within the corridor; however, the Index of Crash Frequency (I_{cf}) and Index of Crash Cost (I_{cc}) obtained from the RoadHAT analysis did not support the need for major improvements. As part of the proposed pavement sidewalk reconstruction, “bump outs” are recommended at the west side of the intersection to improve the pedestrian access, which will also result in a traffic calming, slowing vehicular speeds through the intersection.

4.4 Drainage

4.4.1 DES NO 1800255

No drainage improvements are anticipated for the portion of the project west of the railroad crossing which are to receive a preventative maintenance pavement treatment. The condition of the existing culverts and storm sewer inlets and pipes should be inspected, and the capacity of the existing storm sewer system from near the Sunset Drive intersection, draining west and outletting at the Muddy Fork to Sand Creek, will need to be reviewed during the design phase to determine if improvements are necessary.

For the portion of the project east of the railroad crossing to the west Junction with US 421, which requires full pavement replacement, curb and gutter with a new storm sewer system should be provided to address the existing drainage problems. From the railroad crossing to N. West St, curbs are not currently present (except along the north side, near the strip mall/commercial development) and new curb and gutter is proposed is this segment to improve the drainage as well as better define the egress points for the various commercial and industrial

properties. New curb inlets adequately spaced to limit the spread and control the water within the SR 46 roadway should be provided. The new curb inlets should connect to a new storm sewer trunkline with the use of manholes, and the trunkline should outlet to the ditch near the railroad crossing; per the available information, this ditch is within the SR 46 R/W. This ditch flows northwest, along the railroad, to an ephemeral stream near the railroad crossing along SR 3

From N. West St to N. Carver St, the existing curbs should be replaced with new curb and gutter as part of the pavement replacement. All existing curb inlets should be removed, and new curb inlets adequately spaced to limit the spread and control the water within the SR 46 roadway should be provided. The existing curb inlets connect to an existing trunkline within the pavement of SR 46; the capacity of the existing trunkline should be reviewed, and a new trunkline with manholes should be provided if necessary. Drainage in this area outlets to the south, under a riprapped area on the west property line of the commercial strip development west of N. Carver St; the conceptual construction cost estimate included with this report assumes replacement of the existing trunkline to the outlet connection.

From N. Carver St to the west Junction with US 421 curb inlets, adequately spaced to limit the spread and control the water within the SR 46 roadway should be provided. The capacity of the existing trunkline should be reviewed, and a new trunkline with manholes should be provided if necessary; drainage in this area outlets to the south, along N. Anderson St.

4.4.2 DES NO 1800256

For the portion of the project from western project limits to near the Greensburg Public Library, which requires full pavement, curb and gutter with a new storm sewer system should be provided to address the existing drainage problems. From the western project limits to a high point near the Kubota Tractor business, all existing curb inlets should be removed, and new curb inlets adequately spaced to limit the spread and control the water within the SR 46 roadway should be provided. The existing curb inlets connect to an existing trunkline within the pavement of SR 46; the capacity of the existing trunkline should be reviewed, and a new trunkline with manholes should be provided if necessary. Drainage in this area outlets at Grass Creek, where a new 3-sided slab top culvert is being provided under SR 46; the conceptual construction cost estimate included with this report assumes replacement of the existing trunkline to the outlet connection.

From the high point near the Kubota Tractor business to the Greensburg Public Library, there are locations along the south side of SR 46 where curbs are not currently present and new curb and gutter is proposed to improve the drainage. New curb inlets adequately spaced to limit the spread and control the water within the SR 46 roadway should be provided. The new curb inlets should connect to a new storm sewer trunkline with the use of manholes, and the trunkline should outlet to the roadside ditch on the south side of SR 46 near Base Road, which flows east to Sand Cree; the conceptual construction cost estimate included with this report assumes replacement of the existing trunkline to the outlet connection.

4.5 ADA / PROWAG Improvements

4.5.1 DES NO 1800255

The intersections of N West St, N Carver St and N/S Anderson St (including a crossing of SR 46 at this intersection) are recommended to be updated to current ADA and PROWAG standards. The pricing for the reconstruction of these intersections are included in the costing for this project. In addition to the sidewalks that parallel SR 46, numerous existing entrance walks to residences and commercial properties will need to be reconstructed to tie-into the reconstructed sidewalks. A few properties also contain steps that may need reconstructed and handrails added.

4.5.2 DES NO 1800256

The intersections of N Lincoln St, S Poplar St, N Lathrop St, S Vine St, N Stewart St, Wilder St, N Warren St and Davidson St are recommended to be updated to current ADA and PROWAG standards. In addition, curb "bump-outs" are recommended on the west side of the Lathrop and Wilder St intersections, providing a shorter distance for pedestrians to cross SR 46. The pricing for the reconstruction of these intersections are included in the costing for this project.

During the initial field investigations, the running slope of the existing curb ramps on the northeast and northwest corners at the east Junction of US 421 (Michigan Ave) were measured to exceed the maximum slope per ADA/PROWAG standards. However, these ramps are outside the limits of the proposed project, and not included in the proposed improvements.

4.6 Sidewalk Improvements

The City of Greensburg has submitted an FA-3 application to obtain Federal Funding to reconstruct all existing sidewalks along SR 46, from the N. West St intersection to the Greensburg-Decatur Library. In addition to the sidewalks that parallel SR 46, numerous existing entrance walks to residences and commercial properties will need to be reconstructed to tie-into the reconstructed sidewalks. A few properties also contain steps that may need reconstructed and handrails added. Sidewalk reconstruction (outside of curb ramp areas) is considered optional for the pavement rehabilitation projects, and the cost to reconstruct the sidewalks has been provided, separate from the other project costs, for reference and consideration. See ***Appendix B – Engineer's Opinion of Probable Costs***.

4.6.1 DES NO 1800256

To adequately reconstruct the existing sidewalks, while remaining within the existing right-of-way, gravity-type retaining walls (height < 5 feet) may be needed along the north side of SR 46, west of N Lincoln St: Approx. 125 LFT fronting the residential property west of the gas station.

In addition to reconstructing the existing sidewalks, consideration should be given to adding sidewalk along the south side of SR 46 from the auto parts store to the east, across from the Greensburg-Decatur Library; a pedestrian crossing of SR 46 would need to be added at this location. Approximately 65 LFT of a gravity-type retaining wall (height < 5 feet) may be needed fronting the property east of the overhead door commercial business. The conceptual cost

estimate included with this report assumes the construction of this additional sidewalk and retaining wall.

5.0 Maintenance of Traffic

An evaluation of the existing roadway network, the proposed scope of work, the footprint required for construction, and the constraints associated with the adjacent land uses was made to conceptualize a maintenance of traffic plan that minimizes costs and overall impact to the travelling public.

5.1 DES NO 1800255

For the mill and overlay/preventative maintenance portion of the project, it is recommended to temporarily close one lane at a time while maintaining two-way traffic utilizing standard flagging operations.

For the pavement reconstruction portions, a road closure with detour during construction is recommended. The official/signed detour would utilize State Road 3 and US 421/Ireland St (a distance of approximately 2.6 miles or adding 0.8 miles to a through trip).

5.2 DES NO 1800256

For the pavement reconstruction portions within Des No 1800256, a road closure with detour during construction is recommended. The official/signed detour would utilize State Road 3, I-74 and SR 229 (a distance of approximately 18.2 miles or adding 1.5 miles to a through trip). Decatur County officials should be consulted regarding the use of CR 850 E as part of the signed/detour.

For the benefit of local traffic, full closures within the limits of either Des No. should be limited to segments between side streets (as opposed to the entire length). Access to individual properties must be maintained at all times, potentially requiring the use of temporary aggregate.

A phased construction could also be implemented within the areas of pavement reconstruction to maintain current daily traffic. A three phased construction would consist of: Phase I, reduce lane width to 11 feet, shift traffic to one side of SR 46, and reconstruct 16 feet of pavement (including storm sewers and curb) on the opposite side; Phase II, maintain 11 foot reduced lane widths and one direction of traffic near the curb, shift one direction of traffic onto the newly reconstructed portion, and reconstruct 8 feet of pavement along the centerline; Phase III, maintain 11 foot reduced lane widths, shift all traffic onto the newly reconstructed pavement, and reconstruct the remaining portion of pavement (including storm sewers and curb). It is expected that implementing multiple phases would increase construction cost and duration, as well as complicate access to properties. Contractor safety is also a concern due to the narrow minimal working space and the need to provide cross access for properties. Therefore, the phased approach is not recommended.

6.0 Environmental Issues

6.1 DES NO 1800255

The Indiana State Historic Architectural and Archaeological Research Database (SHAARD) located six properties rated as "contributing" within the project limits. These sites have been noted for their architecture, construction, and/or date of construction, however, they are unlikely to be eligible for the National Register of Historic Places and they are not located within a historic district.

A hazardous materials database review was also completed. Eleven Hazardous Material sites were identified using information contained within IndianaMAP and IDEM's virtual file cabinet. None of the identified sites are likely to impact the proposed project. A voluntary remediation program (VRP) site is located at the southwestern end of the project corridor. Due to the project activity of only resurfacing in that area, the VRP site is not expected to have impact on the project. Two National Pollutant Discharge Elimination Systems (NPDES) are located along the corridor; both facilities are privately owned with no reported violations.

6.2 DES NO 1800256

The Indiana State Historic Architectural and Archaeological Research Database (SHAARD) located one site on the National Register of Historic Places within the project limits; the Charles Zoller House, located on the south side of SR 46 near the N. Lincoln Street intersection. Ten "notable" or "outstanding" properties are located within the project limits, all of which are in the Greensburg Eastside Residential Historic District (23001-068). SHAARD located 37 additional properties/structures (rated "contributing" or "non-contributing") within the project limits.

A hazardous materials database review was also completed. Nine hazardous material sites were identified using information contained within IndianaMAP and IDEM's virtual file cabinet. Two properties contain multiple hazardous material sites and have the potential to impact the proposed project. Two leaking underground storage tank sites are within an Institutional Control Site with an Environmental Restrictive Covenant in place at Ketchum Shell Station. Further inspection and coordination with this site may be necessary if soil disturbance is required for pavement replacement or sidewalk, curb, and drainage improvements. A State Cleanup site is located within the corridor and received no further action status and site closure in 2000. A former Brownfield site is located approximately 360 feet west of the project boundary; the completion documents were issued in 2008, and no impact is expected due to status and location.

7.0 Permits

7.1 DES NO 1800255

Permits anticipated for this project include a US Army Corps of Engineers Regional General Permit, IDEM 401 Water Quality Certification and an IDEM Rule 5 permit.

7.2 DES NO 1800256

An IDEM Rule 5 permit is anticipated for this project.

8.0 Right of Way Impacts

Per correspondence with the City of Greensburg, most of the right-of-way along SR 46 within the city limits was platted to the City in the 1800s, prior to the roadway becoming a state highway, and there are no known records of property rights transfer from the City to the State. Existing property lines from publicly available GIS information is plotted on the conceptual plan sheets, and various locations of the existing sidewalk is shown to be on private property. Through the completion of the topographic survey and right-of-way engineering efforts, more precise existing right of way can be established. There is no intent to acquire new permanent right-of-way on this project, and sidewalk buffer widths may need to be reduced so that the back of the sidewalk remains in the right-of-way. If a minimum buffer width of 2 feet cannot be provided, the sidewalk should be placed adjacent to the back of curb, and the sidewalk width increased to 6 feet.

Temporary right-of-way is anticipated to be required to provide the required ADA accessibility, reconstruct the sidewalks and construct driveway approaches. Until the topographic survey and right-of-way engineering is complete, the full extent of the temporary right-of-way requirements cannot be determined, therefore this will be assessed during subsequent design phases. of the conceptual cost estimate includes a “worst-case” dollar amount that assumes temporary right-of-way will be required from all parcels within the areas of full depth pavement replacement and sidewalk reconstruction.

9.0 Railroad Impacts

No impacts to the CIND railroad crossing are anticipated. The project paving limits will tie into the existing crossing surface, which was noted to be in fair condition, and the existing safety devices appear to be adequate and working properly. Railroad coordination will be completed during the subsequent design phases and the final determination related to railroad impacts and corresponding improvements will be finalized.

10.0 Utility Impacts

Based on the early utility coordination completed, the project recommendations are anticipated to result in the following utility impacts.

10.1 Overhead Facilities (Electric and Telecommunications)

All existing overhead facilities appear to be within the existing right-of-way, with the majority being located within the buffer strip between the proposed back of curb and sidewalk. Efforts will be made during the subsequent design phases to minimize impacts; however, any impacts should not be eligible for reimbursement.

10.2 Gas

The majority of the existing gas facilities appear to be within the existing right-of-way and located off the edge of the existing pavement or near the existing sidewalk. Vectren maintains an 8” steel high pressure main on the north side of SR 46 near the eastern project limits that may be within an existing easement; however, impacts are not anticipated.

10.3 Underground Fiber Optic

Zayo maintains underground fiber optic facilities from Davidson St to the eastern project limits; no information was obtained related to the exact location or reimbursable position of these facilities. Efforts will be made during the subsequent design phases to minimize impacts to these facilities.

10.4 Greensburg Water and Sewer

The City of Greensburg has both water and sewer facilitates within the existing pavement that may be impacted due to the proposed storm sewer construction. Per coordination with the city engineer, much of the Right-of-Way for Main Street in the City of Greensburg was platted to the City as early as the 1800s, prior to the existence of INDOT. However, there are no known records of any property rights transfer from the City to the State and Main Street contains the oldest areas of the City and likely the earliest installation of infrastructure. For the above reasons, The City Water and Wastewater Utility has property interests for some, if not all, of the facilities involved with this project; additional investigations will likely be necessary to further define such interests. Impacts to these facilities are anticipated to be reimbursable or included as in-contract items.

11.0 Conceptual Construction Cost Estimate

Construction cost estimates are provided in ***Appendix B – Engineer's Opinion of Probable Costs.*** A summary of the preliminary construction costs for the projects is provided in Table 5.

Table 5A – Conceptual Construction Cost Estimate (DES NO 1800255)

Roadway Construction	$2,000,000
Sidewalk Construction	$150,000
Temporary Right-of-Way Acquisition[1]	$241,500
Railroad	$0
Utility[2]	$100,000
TOTAL COST	**$2,491,500**

[1] Conceptual cost based on worst-case scenario without the benefit of topographic survey and right-of-way engineering information

[2] Conceptual cost based upon very limited amount of utility information gathering and is limited to potential City of Greensburg Water and Sewer impacts.

Table 5B – Conceptual Construction Cost Estimate (DES NO 1800256)

Roadway Construction	$2,970,000
Sidewalk Construction	$440,000
Temporary Right-of-Way Acquisition[3]	$452,000
Railroad	$0
Utility[4]	$200,000
TOTAL COST	**$4,062,000**

12.0 Adjacent Projects

INDOT currently has the following projects programmed in the vicinity of these pavement projects:

- Des No. 1400150: Small Structure Replacement with Bridge on SR 46 over Gas Creek, 0.09 miles east of US 421 – Scheduled for Letting on 03/06/2019; Project limits to be included as paving exception.
- Des No. 1800972: Preventative Maintenance HMA Overlay on SR 46 from RP 120 – 0.161 to RP 133 + 0.427 – Scheduled for Letting on 07/08/2020
- Des 1700050: Intersection Improvement at N junction of SR 3 and SR 46 – Scheduled for Letting on 11/17/2021. During the subsequent design phases for Des No 1800255, the limits may need to be revised through coordination with this adjacent project will be required during subsequent design phases
- Des 1600489: Bridge Deck Replacement on SR 46 Bridge over Sand Creek, RP 120+07 – Scheduled for Letting in 2022

13.0 Changes to Project Scope

The Project Manager should be notified if a deviation from this project's recommended scope is proposed during subsequent design phases.

[3] Conceptual cost based on worst-case scenario without the benefit of topographic survey and right-of-way engineering information

[4] Conceptual cost based upon very limited amount of utility information gathering and is limited to potential City of Greensburg Water and Sewer impacts.

14.0 Concurrence

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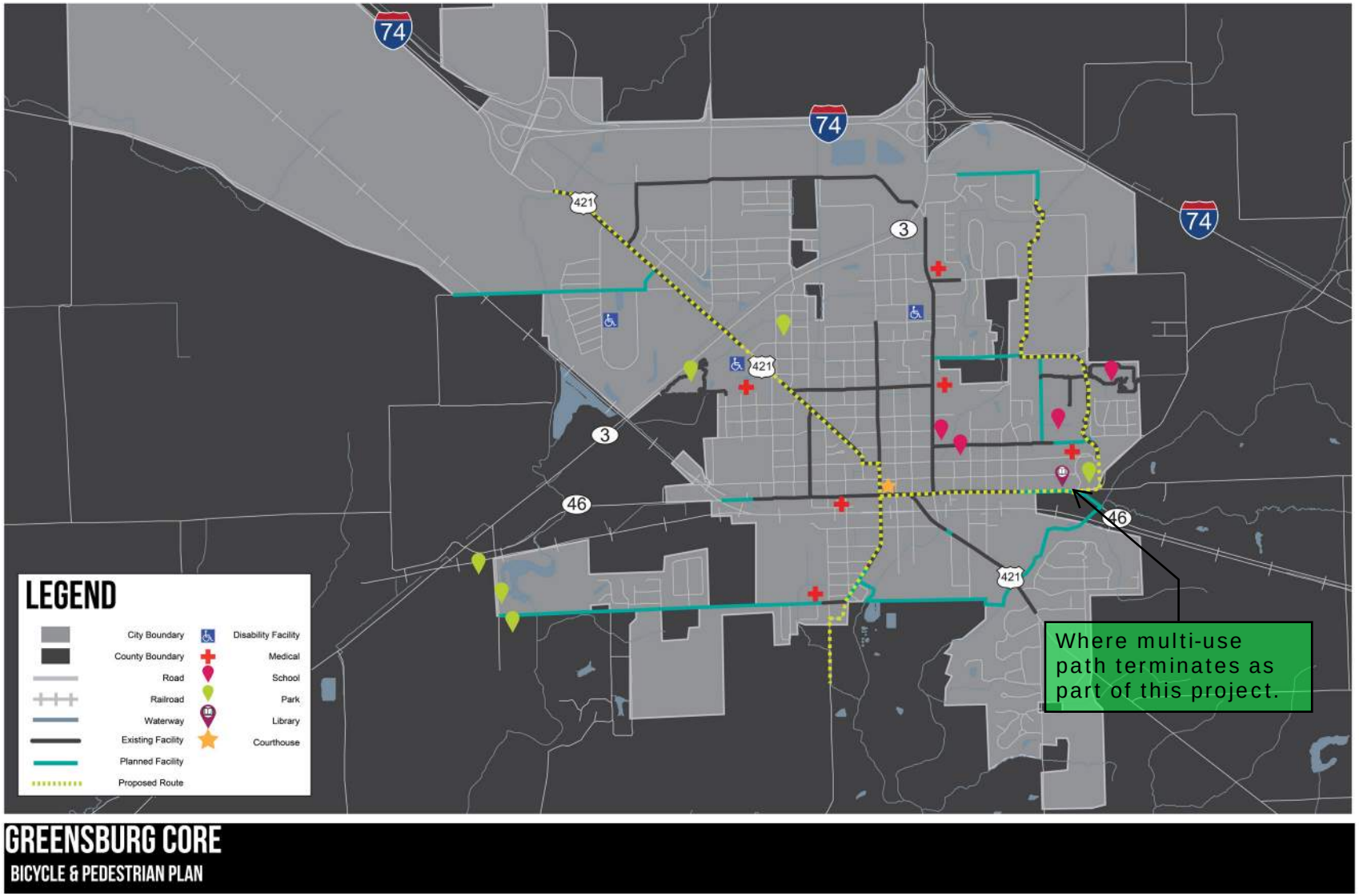
GREENSBURG BICYCLE AND PEDESTRIAN SYSTEM PLAN

Vocab 1: Core Connections

Vocabulary 1 emphasizes the connection to the core, or downtown, of Greensburg. This route relies heavily on US 421 and Lincoln Street to connect downtown and other existing facilities. Vocab 1 consists of 11.5 miles of trail overall, with 5.1 miles already existing or planned. Vocab 1 also provides limited access to City Park, which many survey respondents marked as a necessity.



Map showing proposed routes utilizing the core, or downtown, of Greensburg.
SOURCE: Decatur County GIS, Homeland Infrastructure Foundation Level Database, IndianaMAP.