

**MISSOURI TRAFFIC ENGINEERING ASSISTANCE PROGRAM**

**BICYCLE ANALYSIS**

**Jackson Street and Downtown Bicycle Access Traffic Study**

Prepared for  
**CITY OF WARSAW**

By



**EXPERIENCE** | Transportation

**April 2016**



**TranSystems**

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April 15, 2016

Mr. Randy Pogue  
City Administrator/Planner  
181 W. Harrison Street  
Warsaw, MO 65355

**Re: Bicycle Analysis  
Jackson Street and Downtown Bicycle Access Traffic Study  
Warsaw, Missouri**

Dear Mr. Pogue:

In accordance with your request, TranSystems has prepared the following analysis to develop a plan for bicycle access to improve connectivity between Route 7 at Jackson Street and the downtown area. In general, the study focused on a review of the existing physical, safety, and operational conditions in the study area and identification of potential bicycle infrastructure improvements. Our data collection efforts, analysis, and recommendations are summarized in the attached report.

We have appreciated this opportunity to be of service to the Missouri Department of Transportation and the City of Warsaw. We will be available to review this study with you at your convenience.

Sincerely,

**TranSystems**

By:   
John Zimmermann, PE, ENV-SP

JJS:JJW:P101160052

## Introduction

TranSystems has prepared the following analysis to develop a plan for bicycle access to improve connectivity between Route 7 at Jackson Street and the downtown area in the City of Warsaw. The study focused on a review of the existing physical, safety, and operational conditions in the study area and the identification of potential bicycle infrastructure improvements. The study area, including the Jackson Street overpass, city's downtown area, and surrounding street system, is shown in Figure 1. This study was requested by Mr. Randy Pogue, City Administrator/Planner, under the Traffic Engineering Assistance Program (TEAP), administered by the Missouri Department of Transportation (MoDOT).

## Study Purpose

The City of Warsaw recently completed its Comprehensive Plan, *Building on Success to Capitalize on the Future (2015)*. One of the key themes in the Comprehensive Plan is to enhance access and circulation for bicyclists and pedestrians to connect to downtown. The *Livable Community Transportation Improvement Project (2015)* also emphasizes bicycle connectivity to the downtown area but specifically highlights building upon recent infrastructure investments. MoDOT recently completed improvements on Route 7. These improvements included removing the 10-foot wide chip and seal shoulder and replacing it with asphalt shoulders with a four-foot wide bicycle lane and six-foot wide buffer on each side of the route. However, there is a disconnect due to the lack of bicycle infrastructure connecting from Route 7 into the community.

City officials and residents have expressed concern about bicycle safety as Route 7 has become a well-traveled bicycle route. There are limited opportunities for bicyclists and pedestrians to safely cross Route 7 to access downtown. The at-grade intersection of Route 7 and Main Street, the most common crossing point currently utilized by bicyclists and pedestrians, is a two-way stop-controlled intersection with vehicle speeds of 45 mph on Route 7. The alternate option, the at-grade intersection of Route 7 and Polk Street about 0.5 miles to the northeast, presents similar traffic characteristics.

As a result of these concerns, the City of Warsaw has requested a review of the existing vehicular activity and bicycle patterns along Route 7 and the roadway network leading to downtown in order to develop recommendations focused on improving bicycle traffic circulation and access. The analysis specifically reviews the feasibility of bicycle access between Route 7 at Jackson Street and multiple route options to connect to downtown and adjacent neighborhoods. Other study elements include recommendations related to traffic control devices in compliance with the current edition of the *Manual Uniform on Traffic Control Devices (MUTCD)* which is the Federal Highway Administration (FHWA) reference adopted as the standard governing the use of traffic control devices in the State of Missouri.

## Scope of Study

The following program was developed to complete the analysis:

### 1. Data Collection

- a. Obtain the most current 24-hour vehicular traffic volume counts for Route 7 from MoDOT.
- b. Review the bicycle- and pedestrian-related crash history for the study area.
- c. Observe vehicular, bicycle, and pedestrian traffic patterns within the study area.
- d. Inventory roadway characteristics and traffic control devices within the study area.
- e. Collect survey data for the Jackson Street overpass at Route 7.

### 2. Traffic Operation Analysis

- a. Determine the safety, operational, and regulatory issues related to a bicycle interchange.
- b. Review connection points to the bicycle lanes on Route 7 and the intersection treatments and transitions from the Jackson Street bicycle accommodations.
- c. Evaluate other alternatives to provide bicycle connections to Route 7.
- d. Recommend improvements based on the technical evaluation of alternatives.

### 3. Findings and Recommendations

- a. Summarize the data collection, analysis, and recommendation in a brief report.

Figure 1: Location Map



## Data Collection

Data collection for this study and the methods used in its collection conform to current MUTCD guidelines and recognized traffic engineering data collection procedures of the Institute of Transportation Engineers (ITE).

### Vehicular Traffic Volume

Vehicular traffic volume was collected from 2013 *MoDOT Traffic Volume Maps* for Route 7 within and near the City of Warsaw. The average daily traffic on Route 7 west of the city was 4,861 vehicles. Prior to the interchange with U.S. Route 65, the average daily traffic on Route 7 was 2,677 vehicles.

### Bicycle and Pedestrian-Related Crash History

Crash history data was collected from MoDOT for the City of Warsaw for the five-year period from 2011 to 2015. The bicycle or pedestrian-related collisions that occurred within the study period are outlined in Table 1. Four collisions occurred within the five-year period, three of which resulted in personal injury and one in a fatality.

### Roadway Characteristic Inventory and Traffic Observations

TranSystems completed observations at Route 7 at Jackson Street and within the downtown area in April 2016 to inventory roadway characteristics and observe vehicular, bicycle, and pedestrian traffic patterns in the study area. The goal of the observations was to identify routes that would be preferred candidates for bicycle infrastructure to enhance access between Route 7 and the downtown area.

The roadway characteristics are summarized in Table 2. Route 7 is an arterial roadway with high traffic volumes and four-foot wide bicycle lanes. Five roadways within the study area are classified by the City of Warsaw *Transportation Improvement Plan* as connectors, which generally have moderate traffic volumes. All other roadways are classified as local streets with low traffic volumes. According to available GIS data, all roadways in the downtown area have approximately 65 feet of right-of-way.

Only Commercial Street, a connector, and Harrison Street, a local street, have bicycle infrastructure in the form of shared lanes. Commercial Street northeast of Jackson Street is designated a bicycle route. Harrison Street from Benton Road to southeast of State Street is designated a bicycle route. Harrison Street connects to the Drake Harbor Trail that travels along the waterfront south of downtown. Several pedestrians and bicyclists were observed utilizing the Drake Harbor Trail during the site visit.

During observation, staff noted a ridgeline, or primary line of high ground, generally travels north-south from the intersection of Jefferson Street and Seminary Street to the Jackson Street overpass. The terrain in study area is displayed in Figure 2. This ridgeline and surrounding terrain will likely impact decisions as far as the selection of preferred bicycle routes. Staff also noted a local business, Truman Lakes Bikes, is located near the intersection of Seminary Street and Washington Street would likely be a popular destination for bicyclists. A surface parking lot near the intersection of Harrison Street and Seminary Street could also serve as a potential trailhead and connection to the Drake Harbor Trail south of downtown.

### Survey Data

TranSystems collected topographical survey data for the Jackson Street overpass at Route 7 in April 2016. The topographical survey information contains elevation points to assist with the review of a bicycle interchange at Route 7 and Jackson Street.

**Table 1: Bicycle- and Pedestrian-Related Crash History**

Date	Type	Location	Severity
September 2014	Bicycle	Van Buren Street & Osage Street	Personal Injury
June 2013	Bicycle	Polk Street & Jackson Street	Personal Injury
January 2013	Pedestrian	Route 7 & Main Street	Fatality
February 2011	Pedestrian	Jackson Street & State Street	Personal Injury

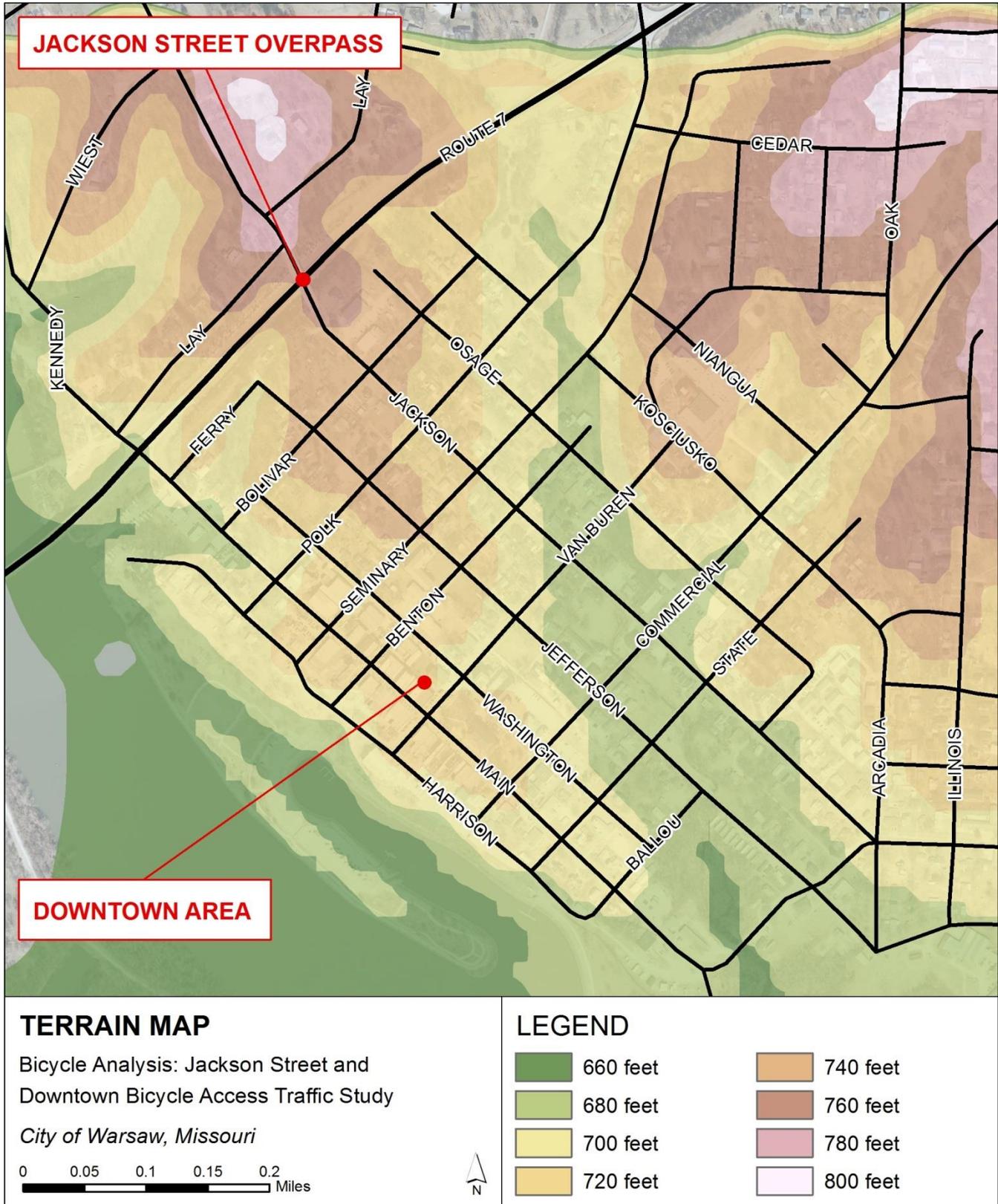
**Table 2: Roadway Characteristics**

Roadway	Classification <sup>1</sup>	Traffic	On-Street Parking	Bicycle Infrastructure	Grade
Jackson Street	Connector	Moderate	No	None	High
Jefferson Street	Local	Low	No	None	Moderate
Washington Street	Local	Low	Yes	None	Low
Main Street	Connector	Moderate	Yes	None	Low
Harrison Street	Local	Low	No	Shared Lane	Moderate
Lay Avenue	Local	Low	No	None	High
Route 7	Arterial	High	No	Bicycle Lane	Moderate
Ferry Street	Local	Low	No	None	Moderate
Bolivar Street	Local	Low	No	None	High
Polk Street	Connector	Moderate	No	None	Moderate
Seminary Street	Local	Low	Yes <sup>2</sup>	None	Low
Benton Street	Local	Low	Yes <sup>2</sup>	None	Moderate
Van Buren Street	Connector	Low	Yes <sup>2</sup>	None	Moderate
Commercial Street	Connector	Moderate	Yes <sup>2</sup>	Shared Lane	Moderate
State Street	Local	Low	No	None	Low

<sup>1</sup> City of Warsaw *Transportation Improvement Plan*

<sup>2</sup> On-street parking between Washington Street and Main Street

Figure 2: Terrain Map



## Bicycle Access Analysis

Based on the observations and data collected, this study includes the analysis of a bicycle interchange at Route 7 and Jackson Street, an assessment of preferred bicycle circulation and access to the downtown area, the need for traffic control devices, and other alternatives.

### Bicycle Interchange

To access downtown and the waterfront trail system from Route 7, bicyclists must currently use either the at-grade, two-way stop-controlled intersection of Route 7 and Main Street or the at-grade, two-way stop-controlled intersection of Route 7 and Polk Street. Both locations force bicyclists entering or exiting Route 7 to cross or merge into vehicular traffic traveling up to 45 mph along the corridor. In an effort to provide an upgraded access point for bicyclists along Route 7 with fewer vehicular conflicts, the Jackson Street overpass was explored as a potential bicycle-only interchange. Photos of the Jackson Street overpass are displayed in Figure 3 and Figure 4.

Survey data surrounding the Jackson Street overpass was utilized to assess the preferred location and design of the bicycle interchange ramps. Due to the terrain, the bicycle interchange ramps would be best located in the northeast and southeast quadrants of the overpass. The interchange ramps will likely need to extend approximately 500 feet east of the overpass in order to provide an appropriate grade for the ramps as well as required site distance for bicyclists. The design should consider means to deter vehicles from attempting to utilize the bicycle interchange ramps while also providing appropriate pavement markings and signage per MUTCD regulations to direct bicycle users.

### Bicycle Circulation

Main Street, the main commercial strip in downtown, is a destination but not a bicycle-friendly environment. Main Street, as displayed in Figure 5, is a busy roadway that has parallel and angled on-street parking from Seminary Street to State Street. Bicycle friendly improvements to the corridor, such as modifying or eliminating on-street parking were impractical. Bicycle access and circulation was focused on accessing Main Street from a trailhead where the cyclists could secure their bicycles and access Main Street as pedestrians. Main Street is a pedestrian-friendly roadway that has wide sidewalks, bulb-outs at the crosswalks, striped crosswalks, and pedestrian scale amenities.

When considering preferred bicycle circulation routes to access the downtown area from the bicycle interchange at Route 7 and Jackson Street, roadway characteristics such as traffic volume and grade were assessed. Jackson Street, classified as a connector, has moderate traffic volume and a significant change in grade that may prove challenging to bicyclists. However, Jefferson Street, a local street one block to the south, has lower traffic volumes and a less drastic changes in grade, which would provide a more pleasant bicycling experience. Based on the analysis, Jefferson Street, rather than Jackson Street, is the preferred designated bicycle route. To establish connectivity between the bicycle interchange at the Jackson Street overpass and Jefferson Street, it is suggested that the designated bicycle route attempt to follow the ridgeline to offer minimal changes in grade for bicyclists.

Then, to access the downtown area from the Jefferson Street corridor, seven roadways were also assessed to determine the preferred designated bicycle route. Preferred roadways are typically corridors with low traffic volume and minimal changes in grade. Preferred roadways also lead bicyclists to desired destinations such as retail, commercial, or civic uses or connect to existing bicycle facilities to expand the overall system. As noted in the *Data Collection* section, all roadways have approximately 65 feet of right-of-way; therefore, available right-of-way for improvements was not a major factor in determining potential corridors for bicycle accommodations.

The assessment of the seven roadways included:

- Bolivar Street: This roadway has significant changes in grade, and is therefore not preferred.
- Polk Street: This roadway has moderate traffic volume and moderate changes in grade, and is therefore not preferred.

- Seminary Street: This roadway has low traffic volume and minimal changes in grade. In addition, Seminary Street has several commercial areas near downtown, including Truman Likes Bikes. Seminary Street can also connect to the existing designated bicycle route on Harrison Street and underutilized parking lot near the harbor. This parking lot would be an ideal location for a bicycle trailhead. Therefore, Seminary Street is likely a preferred option for a designated bicycle route.
- Benton Street: This roadway has moderate changes in grade, and is therefore not preferred.
- Van Buren Street: This roadway has moderate changes in grade, and is therefore not preferred.
- Commercial Street: This roadway has moderate traffic volumes and moderate changes in grade. However, Commercial Street north of Jackson Street is currently a designated bicycle route, providing potential expansion of the system, and also connects to the existing designated bicycle route on Harrison Street. The roadway leads to several commercial areas near downtown as well. Therefore, Commercial Street is likely a preferred option for a designated bicycle route.
- State Street: This roadway has low traffic volumes and minimal changes in grade. However, State Street passes through the southeastern edge of the downtown area with fewer commercial uses, and is therefore not preferred.

Based on the analysis of roadway and traffic characteristics, Seminary Street and Commercial Street are the preferred designated bicycle routes to connect from Jefferson Street to the downtown area and waterfront trail system.

### Bicycle Traffic Control Devices

In addition to analyzing and identifying preferred designated bicycle routes, the type of preferred bicycle facility was also assessed. The three bicycle facility options explored were shared lanes, bicycle lanes, and bicycle boulevards:

- Shared Lane: A roadway that is officially designated and marked as a bicycle route, but which is open to motor vehicle travel and upon which no bicycle lane is designated.
- Bicycle Lane: A portion of a roadway that has been designated for preferential or exclusive use by bicyclists by pavement markings, and if used, signs.
- Bicycle Boulevard: A low-volume, low-speed roadway that has been optimized for bicycle traffic by allowing local motor vehicle traffic but discouraging cut-through motor vehicle traffic.

Due to the low traffic volumes on the preferred designated bicycle corridors identified above, shared lanes are the most likely bicycle facility candidates for Jefferson Street, Seminary Street, and Commercial Street. Bicycle lanes could be potential facility options for the three roadways; however, significant investment in terms of roadway improvements and consideration of drainage and parking impacts would be needed in order to provide adequate roadway width for vehicular travel lanes and bicycle lanes.

As described above, a signing plan with appropriate pavement markings and signage per MUTCD regulations should be incorporated into the design of the interchange ramps. Similar consideration should be given to the designated bicycle route to provide appropriate information to both bicyclists and other roadway users. *Part 9: Traffic Control for Bicycle Facilities* of the MUTCD will be consulted to determine signage, pavement markings, and other wayfinding elements.

### Alternatives

In addition to the analysis to determine the preferred designated bicycle route to connect Route 7 to the downtown area, other potential bicycle connections were explored:

- Lay Avenue: The bicycle facility on Jackson Street should extend northwest past the Jackson Street overpass to provide connectivity north and south of Route 7. Kennedy Drive and Lay Avenue could provide additional bicycle access on the north side of Route 7, particularly to the Drake Harbor Trail trailhead and swinging bridge shared-use path. Due to the significant changes in grade on Lay Avenue between Kennedy Drive and Jackson Street, the use of this route is likely limited to advanced bicyclists.

- Ferry Street: On the south side of Route 7, a future trail that generally follows the alignment of Ferry Street could also connect the Drake Harbor Trail to the bicycle interchange at the Jackson Street overpass. However, it is important to note that this route would require trail construction, bypasses potential destinations in the downtown area, could impact private property, and has moderate changes in grade.
- Polk Street: An alternative route to connect Route 7 to the downtown area is Polk Street, which intersects with Route 7 as an at-grade, two-way stop-controlled intersection. Polk Street could serve as a low-cost alternative to the bicycle interchange at the Jackson Street overpass.

### Pedestrian Circulation

With the inclusion of the Ferry Street Trail, pedestrian crossings of Route 7 at Main Street could be prohibited. Pedestrians would be directed to cross under Route 7 via the Ferry Street Trail and Drake Harbor Trail. Some additional modifications may be needed to make this a fully functional and inviting crossing.

### Figure 3: Jackson Street Overpass



View of Jackson Street overpass looking west from Route 7

**Figure 4: Jackson Street Overpass**



View of Jackson Street overpass looking north from Jackson Street

**Figure 5: Main Street**



View of Main Street looking west in between Van Buren Street and Commercial Street

## Conclusion

Based on the data collection efforts and bicycle access analysis, the following recommendations are focused on improving bicycle traffic circulation and access in the City of Warsaw. The recommendations focus on connectivity between Route 7 and the downtown area.

## Recommendations

### *Bicycle Interchange*

The bicycle interchange ramps are an innovative approach to providing safe bicycle access to bicycle lanes on Route 7. Per the preliminary design displayed in Figure 6 (Option A), one bicycle interchange ramp is located in the northeast quadrant of the bicycle interchange area. This bi-directional ramp serves as the westbound off-ramp and the westbound on-ramp. One interchange ramp is also located in the southeast quadrant of the bicycle interchange. This bi-directional ramp serves as the eastbound off-ramp and the eastbound on-ramp. An alternate design for the eastbound ramp is displayed in Figure 7 (Option B). This ramp option passes underneath the Jackson Street overpass and hooks to intersect with Jackson Street on the west side of the street rather than the east side.

Due to the elevation changes in the area, the bicycle ramps extend approximately 500 east of the overpass in order to provide an appropriate grade for the bicycle interchange ramps as well as required sight distance for bicyclists. Both stop-condition ramps are designed with a tight, small radius curve at the access point on Route 7 to discourage vehicular traffic from using the bicycle ramps, as well as a single bollard at the Jackson Street connection to prevent vehicular access. Each ramp has centerline pavement markings to indicate bi-directional bicycle traffic to users and appropriate signage per MUTCD regulations, as displayed on the signing plan in Figure 8.

### *Bicycle Circulation*

As displayed in Figure 9, the recommended designated bicycle route generally begins at the bicycle interchange on Jackson Street, travels primarily on Jefferson Street, and then provides two connections into the downtown area via Seminary Street or Commercial Street. All roadway segments are recommended to be shared lane bicycle facilities due to low traffic volumes and ease of implementation. Specifically, the bicycle route includes:

- Jackson Street from Route 7 to Bolivar Street (0.1 miles)
- Bolivar Street from Jackson Street to Jefferson Street (0.1 miles)
- Jefferson Street from Bolivar Street to Commercial Street (0.3 miles)
- Seminary Street from Jefferson Street to Harrison Street (0.2 miles)
- Commercial Street from Jefferson Street to Harrison Street (0.15 miles)

As discussed in the *Alternatives* section, Figure 9 also displays alternative bicycle connections via Jackson Street north of Route 7, Lay Avenue, Kennedy Drive, Ferry Street, and Polk Street.

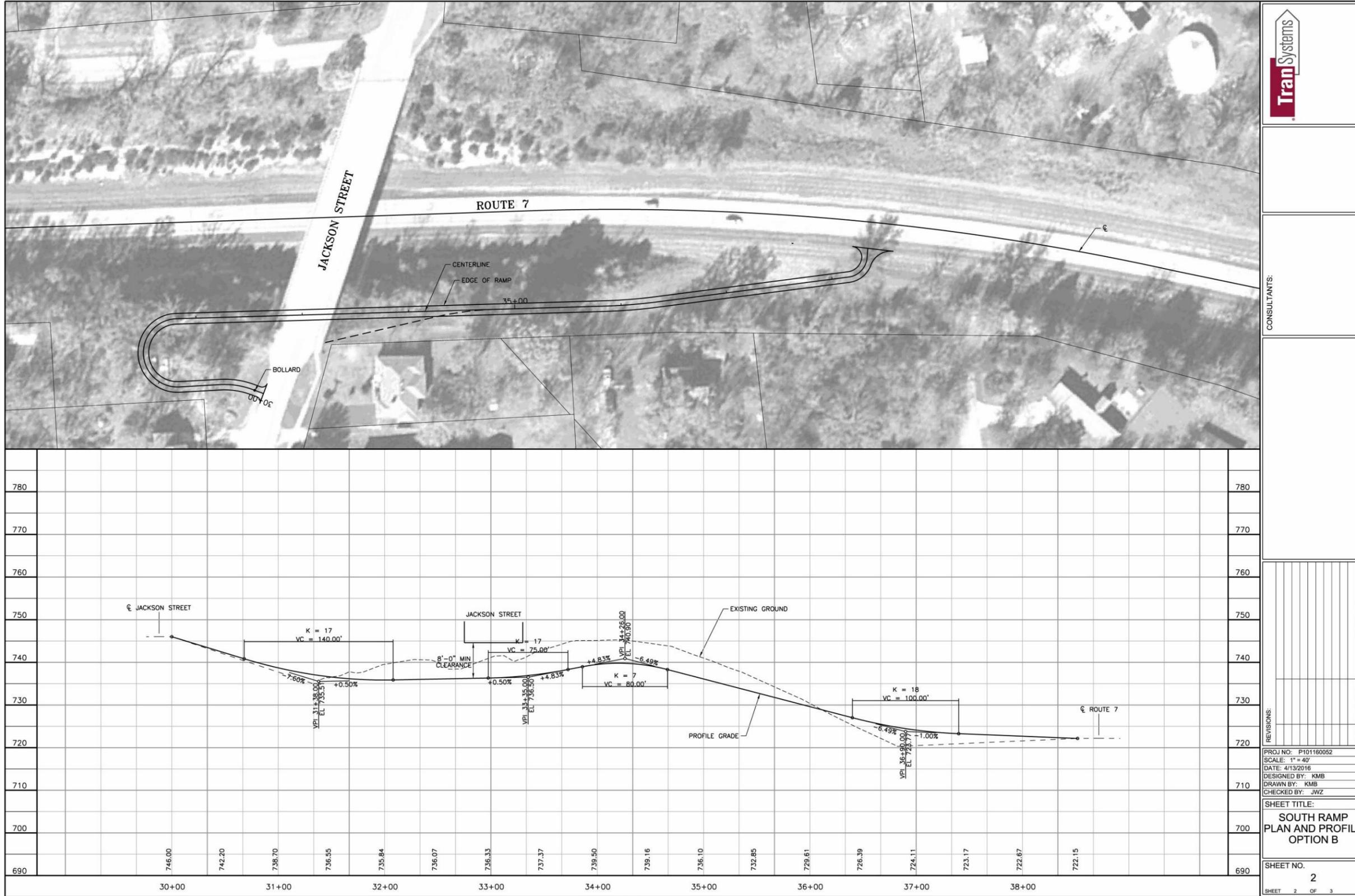
### *Bicycle Traffic Control Devices*

In addition to the specific traffic control devices for the bicycle interchange ramps discussed above, the designated bicycle route from the Jackson Street overpass to the downtown area should be shared lane facilities. Per MUTCD regulations, this can include generic bicycle route signs, or the route could be given a route name to better identify the route for bicyclists, such as the example displayed in Figure 10. In addition to bicycle route signing, the addition of shared lane arrows will provide visual cues to the motorist to alert them to the presence of bicyclists and offer a more inviting facility for bicyclists.

Wayfinding signs can also be used to direct bicyclists to multiple destinations that may or may not be on the bicycle route. These can be simple guide signs or can include a brand of a trail or town.



Figure 7: Bicycle Interchange (Option B)



**TranSystems**

CONSULTANTS:

REVISIONS:	MARK	DATE	DESCRIPTION

PROJ NO: P101160052  
 SCALE: 1" = 40'  
 DATE: 4/13/2016  
 DESIGNED BY: KMB  
 DRAWN BY: KMB  
 CHECKED BY: JWZ

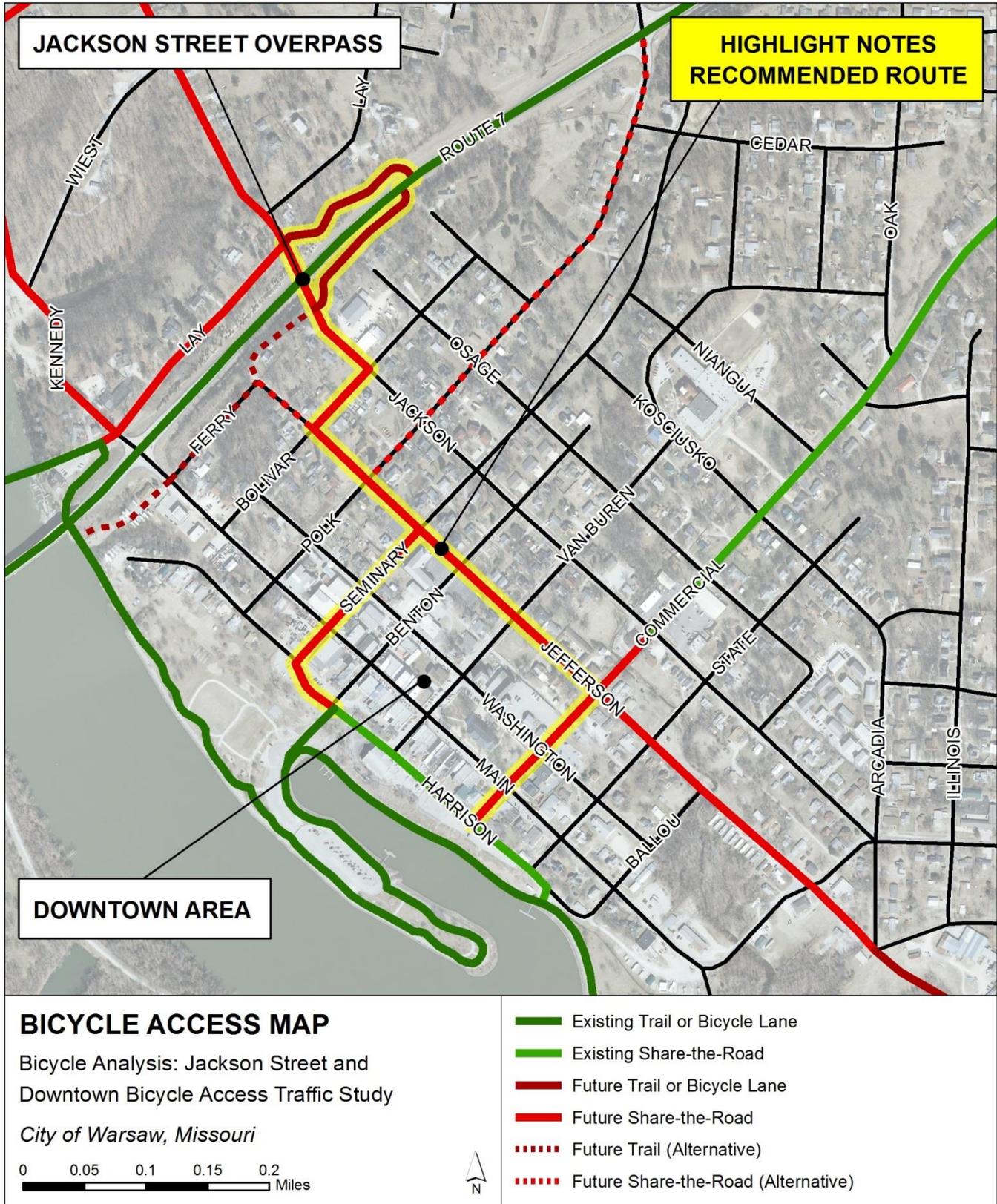
SHEET TITLE:  
**SOUTH RAMP  
 PLAN AND PROFILE  
 OPTION B**

SHEET NO. **2**  
 SHEET 2 OF 3





Figure 9: Bicycle Access Map



## Figure 10: Signage and Wayfinding Examples



Example in Kansas City, Missouri



Example in Shawnee, Kansas

										
Route 7 - Jackson Street Bicycle Interchange										
Warsaw, Missouri										
Engineer's Estimate										
								Printed	4/18/2016	
NORTH RAMP AND OPTION A					NORTH RAMP AND OPTION B					
Item No:	DESCRIPTION	Quantity	Unit	Unit Price	Cost	Quantity	Unit	Unit Price	Cost	
1	Mobilization	1	L.S.	\$ 70,000	\$ 70,000	1	L.S.	\$ 70,000	\$ 70,000	
2	Contractor Construction Staking	1	L.S.	\$ 5,000	\$ 5,000	1	L.S.	\$ 6,000	\$ 6,000	
3	Work Zone Traffic Control	1	L.S.	\$ 20,000	\$ 20,000	1	L.S.	\$ 20,000	\$ 20,000	
4	Removal of Improvements	1	L.S.	\$ 25,000	\$ 25,000	1	L.S.	\$ 15,000	\$ 15,000	
5	Clearing and Grubbing	1.40	Acres	\$ 5,000	\$ 7,000	1.50	Acres	\$ 8,000	\$ 12,000	
6	Temporary Seeding and Mulching	1.40	Acres	\$ 1,500	\$ 2,100	1.50	Acres	\$ 1,500	\$ 2,250	
7	Straw Wattle	2,000	L.F.	\$ 5	\$ 10,000	2,350	L.F.	\$ 5	\$ 11,750	
8	Topsoil Salvage	1,100	C.Y.	\$ 4	\$ 4,400	1,200	C.Y.	\$ 4	\$ 4,800	
9	Unclassified Excavation	1,000	C.Y.	\$ 25	\$ 25,000	1,500	C.Y.	\$ 25	\$ 37,500	
10	Embankment	4,500	C.Y.	\$ 10	\$ 45,000	5,500	C.Y.	\$ 10	\$ 55,000	
11	Unsuitable Material	150	C.Y.	\$ 50	\$ 7,500	180	C.Y.	\$ 50	\$ 9,000	
12	Pugged Aggregate Base, 4", Type 5	1,800	S.Y.	\$ 6	\$ 10,800	2,300	S.Y.	\$ 6	\$ 13,800	
13	Concrete Trail, 6"	1,500	S.Y.	\$ 55	\$ 82,500	1,900	S.Y.	\$ 55	\$ 104,500	
14	Concrete Sidewalk, 4"	150	S.Y.	\$ 48	\$ 7,200	150	S.Y.	\$ 48	\$ 7,200	
15	Drainage	1	L.S.	\$ 15,000	\$ 15,000	1	L.S.	\$ 15,000	\$ 15,000	
16	Chain Link Fence, 6'	100	L.F.	\$ 50	\$ 5,000	100	L.F.	\$ 50	\$ 5,000	
17	Wood Fence, 6'	200	L.F.	\$ 70	\$ 14,000	80	L.F.	\$ 70	\$ 5,600	
18	Bollards	2	Each	\$ 800	\$ 1,600	2	Each	\$ 800	\$ 1,600	
19	Safety Rail	200	L.F.	\$ 90	\$ 18,000	350	L.F.	\$ 90	\$ 31,500	
20	Retaining Wall, MSE	1,000	S.F.	\$ 45	\$ 45,000	500	S.F.	\$ 45	\$ 22,500	
21	Seeding and Mulching	1.40	Acres	\$ 1,500	\$ 2,100	1.50	Acres	\$ 1,500	\$ 2,250	
22	Pavement Markings, Paint	1,500	L.F.	\$ 6	\$ 9,000	1,850	L.F.	\$ 6	\$ 11,100	
23	Permanent Signing	1	L.S.	\$ 15,000	\$ 15,000	1	L.S.	\$ 15,000	\$ 15,000	
CONT	Contingency (20%)	1	L.S.	\$ 89,200	\$ 89,200	1	L.S.	\$ 95,700	\$ 95,700	
ROW	Easement Acquisition	1	L.S.	\$ 20,000	\$ 20,000	NONE				
ENG	Survey and Design	1	L.S.	\$ 64,000	\$ 64,000	1	L.S.	\$ 69,000	\$ 69,000	
INSP	Construction Inspection	1	L.S.	\$ 43,000	\$ 43,000	1	L.S.	\$ 46,000	\$ 46,000	
<b>Total</b>					<b>\$662,400</b>	<b>Total</b>				
						<b>\$689,050</b>				
Note:										
	1. Costs are in 2017 dollars.									
	2. Utility relocations are not anticipated, but should be investigated.									
	3. No right-of-way or boundary investigations were completed.									
	4. Lighting is not included.									