

# **Railroad Overpass Feasibility Study**

## **Starke, Florida**

### **FPID 436558-1-22-01**

**January 2016**



## **EXECUTIVE SUMMARY**

This feasibility study develops construction alternatives that provide a grade separated railroad overpass in Starke, Bradford County, Florida. This study documents alternatives considered, public involvement efforts and presents a recommendation for alternatives to carry forward to the PD&E Study.

The primary goal of this study is to alleviate congestion caused by vehicles having to stop at blocked railroad crossings. A grade separated railroad overpass for the City of Starke will also provide emergency responders a reliable response time when a train is blocking the at-grade crossing. The existing at-grade crossing contributes to local travel delay in excess of two minutes while the gates are closed for a train passing.

Emergency responders experience increased response times as a result of the trains. A grade separated overpass will provide more timely emergency response in a situation where railroad crossings are blocked. All of the emergency services are located on the west side of the railroad while the hospital is located on the east side of the railroad. The railroad creates a barrier for emergency responders when a train is present. Minutes of delay can be significant in the transport of a critical condition patient.

Vehicles stopped at a blocked SR 100 railroad crossing routinely queue, or stack-up, to the US 301 intersection and at times extend to Winn Dixie. Excessive queues also occur at the SR 16 railroad crossing. This creates an undesirable situation with a risk of vehicles blocking the US 301 intersection and increasing the risk of vehicle crashes.

After a thorough review of the project study area, constraints were identified that limited potential locations of the overpass. In the initial phase, seven alternatives were studied including a tunnel option. At this time the SE 144<sup>th</sup> Avenue, SR 100 and no-build alternative are still under consideration.

A public meeting will be held January 4<sup>th</sup>, 2016 to seek input from stakeholders on these two build alternatives. After this meeting FDOT will seek feedback from the City and County Commissions. After receiving input, FDOT will make a recommendation on the preferred alternative and hold a public hearing to advise the public of the decision and seek additional public input.



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# **1. PROJECT INFORMATION**

## **1.1 Introduction**

The Florida Department of Transportation is conducting a Project Development and Environment (PD&E) study to evaluate the feasibility for construction of an east-west grade separated railroad overpass over the CSX S-line in the City of Starke in Bradford County Florida. A PD&E study is a process that utilizes engineering and environmental analysis to evaluate social, economic, natural and physical environmental impacts associated with a proposed transportation improvement. During the PD&E Study, alternatives are proposed and evaluated with regards to community, social economic, environmental and historical/cultural conditions and project cost factors such as right-of-way acquisition, business damages and construction. Safety as well as stakeholder input are also important elements of the study.

The City of Starke is currently divided by the CSX railroad that runs parallel to the US 301 corridor. There are approximately 29 trains per day that utilize the CSX S-line and this number is anticipated to increase based on normal growth. A train blocked crossing results in motorist delay and potentially disrupts emergency vehicle response times. Although there are currently nine at-grade railroad crossings in Starke, there are no raised crossings over the railroad.

## **1.2 Purpose and Need**

The primary goal of this study is to alleviate congestion of vehicles queued at blocked railroad crossings. A grade separated railroad overpass for the City of Starke will also provide emergency responders a reliable response time when a train is blocking the at-grade crossing. The existing at-grade crossing contribute to local travel delay in excess of two minutes while the gates are closed for a train passing. Emergency services are located on the west side of the railroad and access to/from the east maybe hindered by the rail traffic.

State Road (SR) 100 and SR 16 are the two primary east-west roadways that cross the railroad. The existing (2015) Average Annual Daily Traffic (AADT) for SR 100 and SR 16 is approximately 8,900 and 7,600 vehicles per day, respectively. It is anticipated that these roadways would see an increase in traffic of more than 10 percent by 2040. The roadways currently operate acceptably and are not operating beyond their capacity. The primary needs for the project are to reduce travel delay experienced by motorists, improve safety and decrease emergency response time.

The purpose of this feasibility study is to develop construction alternatives. This study documents alternatives considered, public involvement efforts and presents recommendations for alternatives to carry forward to the PD&E Study.

## **1.3 Study Area**

The limits of the project study is bounded by SE 144<sup>th</sup> Avenue to the south, SR 16 to the north, US 301 (SR 200) to the west and SR 100/Water Street to the east. The project study area is shown in Figure 1.



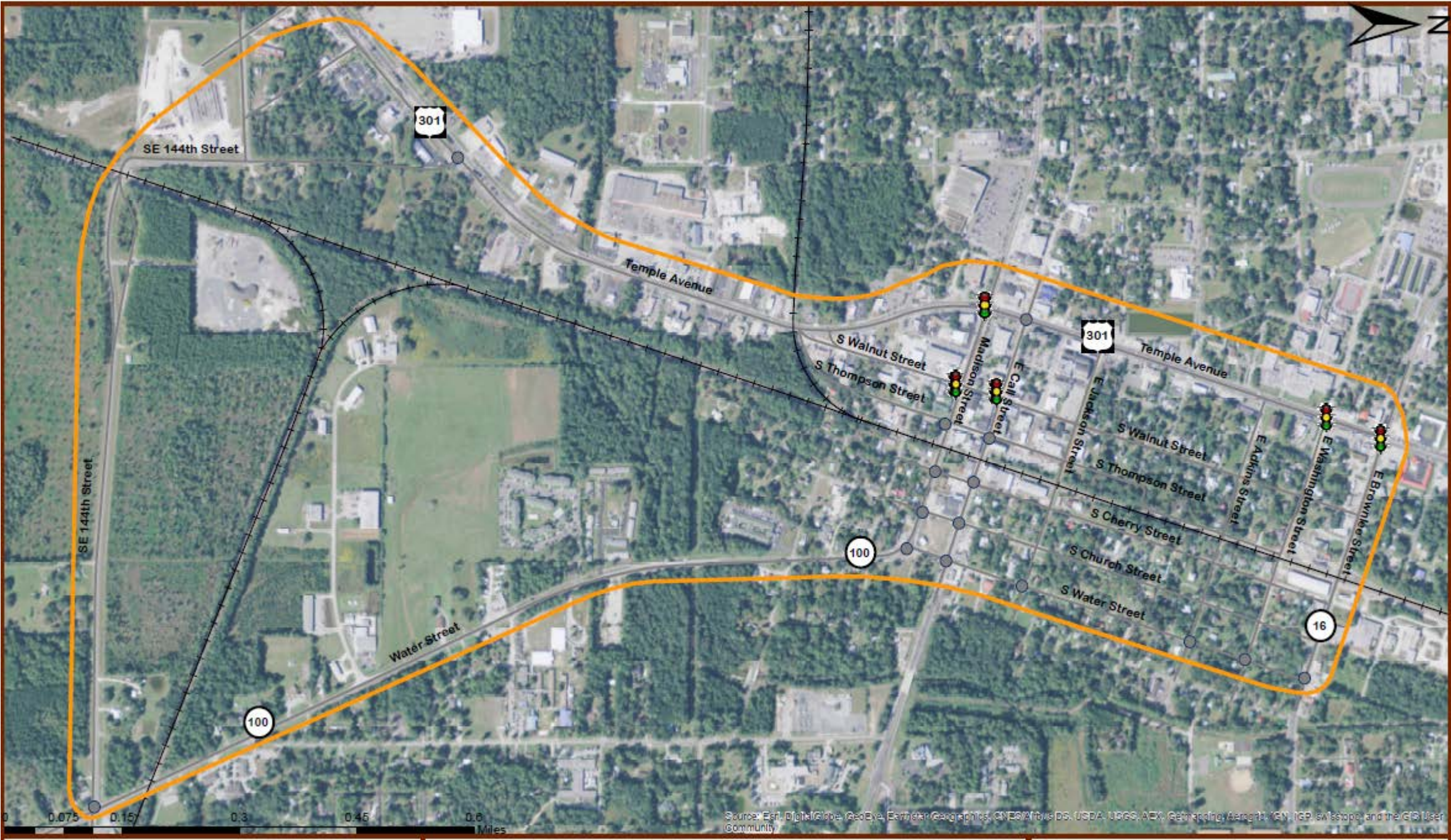


Figure 1: Project Location Map, City of Starke, Bradford County, Florida



## 2. EXISTING CONDITIONS

Starke was founded in 1858 with a total area of approximately 40 acres and a documented population of 138. During this same year, the Florida Railroad arrived in Starke creating a transportation and agricultural hub for the region. The principal industrial activities for Starke were lumber, cotton and naval store production. The introduction of the railroad to Starke helped to facilitate the growth of these industries and the population in this community.

Today, Starke represents the largest city in Bradford County with a population of 5,449 and city limits encompassing 7.2 square miles (2010 U.S. census data). Starke continues to be located at a major transportation hub where the north-south U.S. 301 roadway corridor intersects the SR 100 and SR 16 east-west roadway corridors near the downtown area. The Bradford County Seat is located in Starke as well as a hospital, emergency response services, educational/judicial facilities and a large number of businesses representing a variety of industries. This section documents the existing roadway and rail networks as well as existing traffic conditions and analysis.

### 2.1 Roadways

Starke has several major roadways that serve regional traffic in addition to the local roadway network. These major roadways are US 301, SR 100, SR 230 (Call Street) and SR 16. US 301, SR 100 and SR 16 are all part of the Florida's Strategic Intermodal System (SIS). The SIS is a transportation system that is made up of facilities and services of statewide and interregional significance (strategic), contains all forms of transportation for moving both people and goods, including linkages that provide for smooth and efficient transfers between modes and major facilities (intermodal) and integrates individual facilities, services, forms of transportation (modes) and linkages into a single, integrated transportation network (system).

US-301 is a major arterial roadway through Starke and provides the primary north-south traffic movement. Starke has predominately developed along US 301 with the majority of businesses fronting that roadway. Starke has three major east-west arterial roadways SR 100, SR 230 and SR 16. SR 100 is a major arterial roadway serving northeastern Florida from Lake City to Flagler Beach. SR 230 connects US 301 in Starke to SR 16 at Camp Blanding. SR 16 is a major arterial roadway connecting Raiford to St. Augustine.

#### 2.1.1 Traffic Data Collection

A comprehensive traffic count program was performed for this project. Roadway and intersection data was collected within the project study area. The traffic data collection task effort included twelve 48-hour volume counts and thirteen 8-hour intersection turning movement counts. The *Technical Traffic Memorandum*, including all collected traffic data, can be found in Appendix A.

#### 2.1.2 Existing Traffic Volumes

The traffic count data collected was seasonally adjusted utilizing the FDOT seasonal adjustment factors. The existing traffic information, including assumptions and analysis, can be found in Appendix A in the *Technical Traffic Memorandum*.

## 2.2 Rail

CSX is a Class I railroad operating over 1,500 route miles in the State of Florida. CSX's Florida route miles represent an estimated eight percent of the company's 23,000 national route miles. CSX, headquartered in Jacksonville, provides the state with its principal connections to the national rail network. There are two major north-south rail corridors in Florida the CSX "A" Line and the "S" Line.

The CSX "A" Line is a major north-south rail line, primarily located along the eastern portion of Florida. The line spans approximately 200 miles from Callahan to Tampa. The CSX "S" Line is located west of the CSX "A" Line, extending from Callahan through the Central Florida region providing rail service to Tampa and Miami.

A 61-mile segment of the existing "A" Line between DeLand and Poinciana has been purchased from CSX Transportation for SunRail. SunRail is a commuter rail system in the Orlando, Florida area that began service on May 1, 2014. Although CSX still runs a limited number of trains along the line at night, the majority of the traffic has been rerouted from the "A" Line to the "S" Line. This diversion of traffic along the "S" Line has increased the number of trains though Starke and other towns located along the "S" Line.

Railroad overpasses along US 301 have been constructed in Ocala, Hawthorne, Orange Heights, Maxville and Ocala. As part of the Baldwin Bypass Project, an overpass over the railroad will be constructed. This project is scheduled to go to construction in the spring of 2017.

An important consideration for this study is that CSX is not a public entity and is a private property owner. Agreements must be made with CSX to ensure the safety of maintaining any at-grade rail crossings associated with any location that maintains at grade crossings.

### 2.2.1 Railroad Crossing Data Collection

Data was collected at three of the nine railroad crossings in Starke: SE 144<sup>th</sup> Avenue, SR 100 and SR 16. Data was collected for three weekdays in June 2015 and included train travel direction, time of gate closure, minutes of gate closure and number of vehicles in the queue. Table 1 summarizes the information gathered in the field. Detailed data of the railroad crossing data can be found in the *Technical Traffic Memorandum* in Appendix A.



**Table 1: Railroad Crossing Data**

Intersection	Control Type
Average numbers of trains per day	29 trains
Average minutes the gates are down for each train event	2.24 minutes
Average number of hours per day the railroad gates are closed	1.10 hours
Average number of minutes per peak periods (6 hours representing 7-9 am, 11 am-1 pm, 4-6 pm) when the railroad gates are closed	Approximately 19 minutes
Average number of vehicles in queue per day when the railroad gates are closed	4-5% of the AADT at every crossing
Average number of vehicles in queue per peak periods (6 hours) when the railroad gates are closed	43-46 percent of the daily volume of vehicles affected by the railroad gate closure

### 2.3 Origin-Destination Study

An Origin-Destination (O-D) survey was used to determine travel patterns of traffic during a typical day. Vehicle trips were defined as one-way, from where a vehicle starts (origin) to where the vehicle is going (destination). The objective of this task was to determine the travel patterns of traffic during a typical weekday. Vehicle identification using Bluetooth signal data has emerged as an effective and economical means for collecting traffic data including O-D information, which is crucial for transportation planning. Bluetooth technology was used to conduct the O-D Survey. The Bluetooth receivers were placed at 16 locations.

Given the characteristics of Starke, the Bluetooth data was collected for 72-hours instead of 24-hours to obtain more data samples and a better estimate of travel patterns. The Bluetooth data was collected from May 19, 2015 (Tuesday) through May 21, 2015 (Thursday). A summary of the O-D survey data and analysis of this data can be found in the *Technical Traffic Memorandum* in Appendix A.

Demand was analyzed for both the local and regional traffic to determine where the demand was for the major east-west corridors. It should be noted that the destinations do not sum to 100%, the reason for this is that although a trip may have been recorded at one location it did not pass through any additional locations where Bluetooth data was collected.

Table 2 below documents the destinations for the three major east-west corridors (SR 100, SR 230 and SR 16) for the local and regional trips combined. These sites as shown on Figure 2 are all located in the city limits and are representative of both local and regional trips combined. The results show that the primary destination for the SR 100 location just east of US 301 is to travel on US 301 just south of Edwards Road (28%). At Call Street the primary destination was split between SR 100 (32%) and US 301 just south of Edwards Road (35%). At the SR 16 location, there were also two primary destinations, US 301 South of Edwards Road (26%) and US 301 South of Davis Street (27%).

**Table 2: Local and Regional Trip Daily Traffic Origin and Destinations**

Origin (Site No.)	Destination (Site No.)	% of Daily Traffic
SR 100, East of US 301 (7)	US 301, South of Edwards Road (4)	28%
	SR 100, West of US 301 (6)	17%
	SR 16, West of US 301 (11)	6%
	US 301, South of Davis Street (14)	15%
	SR 16, East of US 301 (12)	13%
	Call Street, East of Redgrave Street (8)	6%
Call Street, East of Redgrave Street (8)	US 301, South of Edwards Road (4)	32%
	SR 100, West of US 301 (6)	13%
	SR 16, West of US 301 (11)	8%
	US 301, South of Davis Street (14)	10%
	SR 16, East of US 301 (12)	13%
	SR 100, East of US 301 (7)	35%
SR 16, East of US 301 (12)	US 301, South of Edwards Road (4)	26%
	SR 100, West of US 301 (6)	8%
	SR 16, West of US 301 (11)	14%
	US 301, South of Davis Street (14)	27%
	Call Street, East of Redgrave Street (8)	2%
	SR 100, East of US 301 (7)	13%



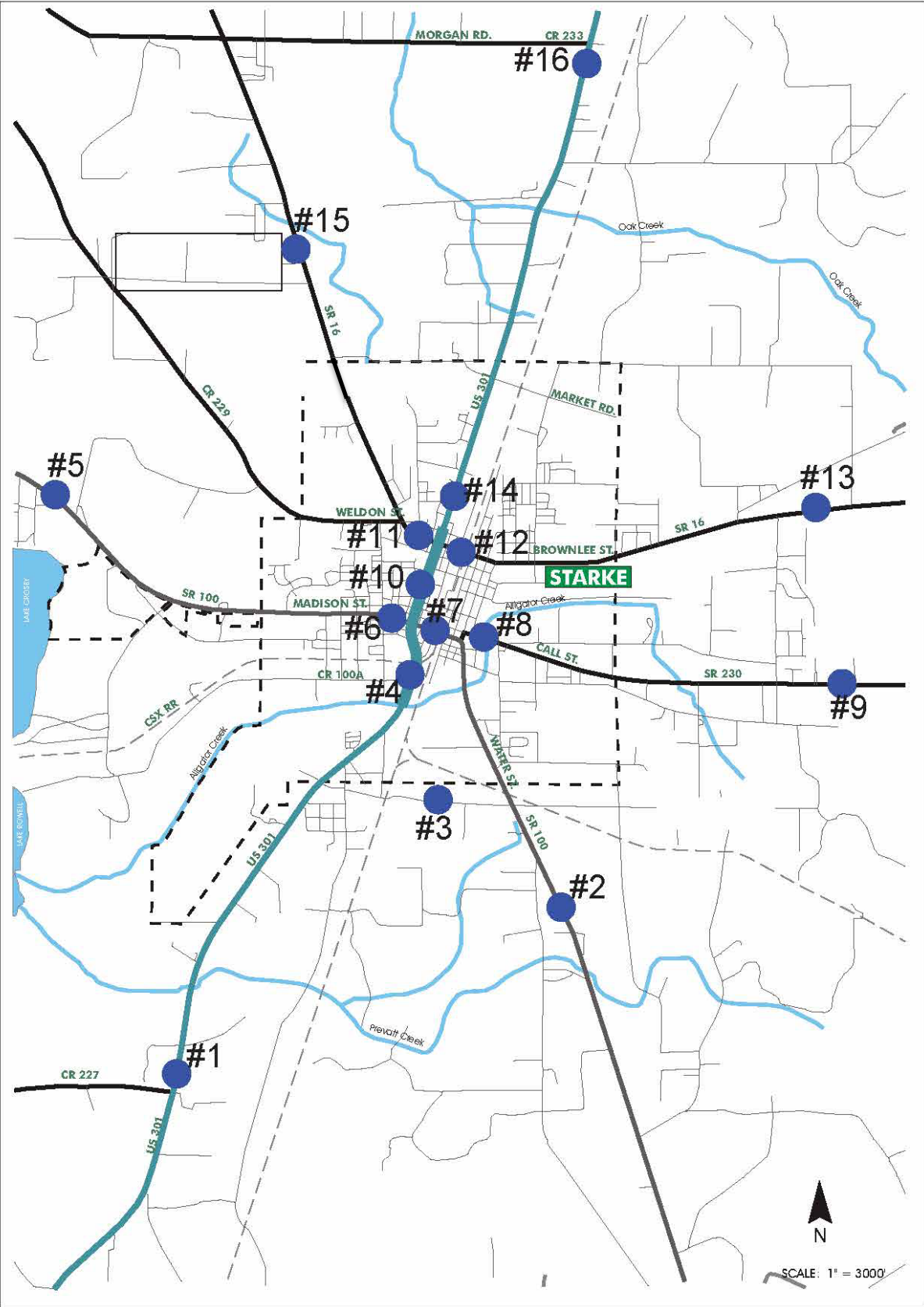


Figure 2: Bluetooth Collection Locations

The O-D data was also reviewed to see if there were any patterns for the regional trips, to determine the destination for trips outside the city limits. A regional trip might demonstrate a different overpass location need, compared to the data collected within the city limits. These are summarized in Table 3. The results show that for the SR 100 location south of 21<sup>st</sup> Avenue, the major trip was SR 100 east of SW 64<sup>th</sup> Avenue (28%). This shows demand for traffic passing through Starke and continuing along SR 100 outside of the city limits of Starke. The SR 230 data shows that the major destination is US 301 south of Starke (35%). Similarly, the SR 16 location showed the major destination as US 301 south of Starke (34%).

**Table 3: Regional Trip Daily Traffic Origin and Destinations**

Origin (Site No.)	Destination (Site No.)	% of Daily Traffic
SR 100, South of SE 21 <sup>st</sup> Avenue (2)	US 301, South of SE 21 <sup>st</sup> Avenue (1)	2%
	SR 100, East of SW 64 <sup>th</sup> Avenue (5)	28%
	SR 16, North of NW 179 <sup>th</sup> Street (15)	11%
	US 301, South of CR 233 (16)	11%
	SR 16, East of NE 12 <sup>th</sup> Avenue (13)	2%
	Call Street, East of NE 6 <sup>th</sup> Lane (9)	3%
SR 230, East of NE 6 <sup>th</sup> Lane(9)	US 301, South of SE 21 <sup>st</sup> Avenue (1)	35%
	SR 100, East of SW 64 <sup>th</sup> Avenue (5)	18%
	SR 16, North of NW 179 <sup>th</sup> Street (15)	2%
	US 301, South of CR 233 (16)	3%
	SR 16, East of NE 12 <sup>th</sup> Avenue (13)	6%
	SR 100, South of SE 21 <sup>st</sup> Avenue (2)	7%
SR 16, East of 12 <sup>th</sup> Avenue (13)	US 301, South of SE 21 <sup>st</sup> Avenue (1)	34%
	SR 100, East of SW 64 <sup>th</sup> Avenue (5)	12%
	SR 16, North of NW 179 <sup>th</sup> Street (15)	4%
	US 301, South of CR 233 (16)	9%
	Call Street, East of NE 6 <sup>th</sup> Lane (9)	3%
	SR 100, South of SE 21 <sup>st</sup> Avenue (2)	5%

## 2.4 Land Use

Existing and future land use data was obtained from the comprehensive plans from Bradford County and the City of Starke utilizing the North Central Florida Regional Planning Council data. The data in Figure 3 and Figure 4 show that the existing land use within the project limits is a mix of low density residential, medium density residential, commercial (primarily along US 301), agriculture and public. The anticipate changes to the future land use within the project limits suggest an increase in the medium density residential.



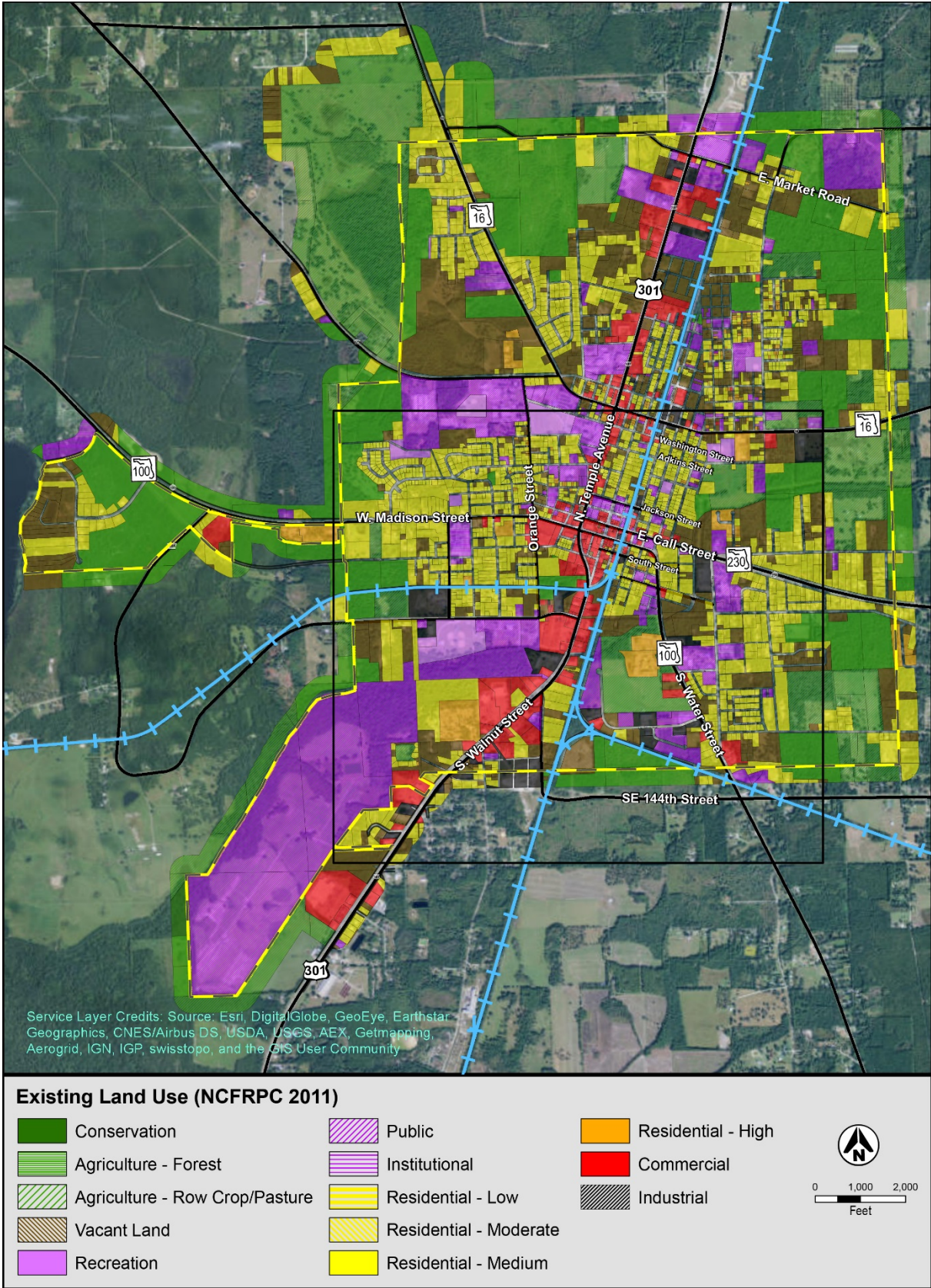


Figure 3: Existing Land Use, City of Starke, Bradford County Florida



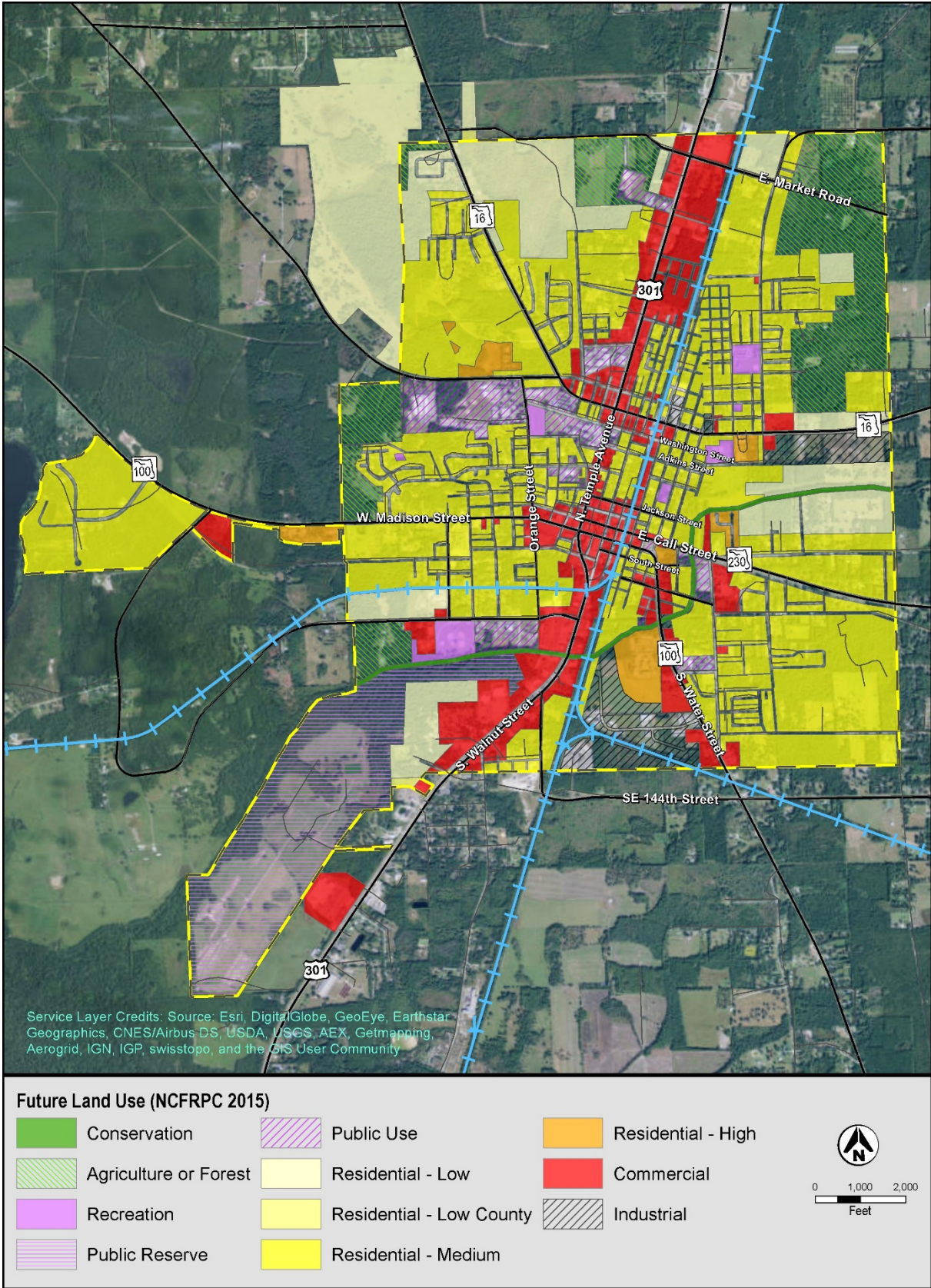


Figure 4: Future Land Use, City of Starke, Bradford County Florida



## **2.5 Safety**

At-grade crossings introduce a conflict point between rail and vehicular traffic when roadways intersect the rail alignment at the same level. Trains have the right-of-way, resulting in delay. This delay occurs because roadway crossings traverse the rail right-of-way which is private property of the respective railroad owners. Some drivers choose to ignore crossing gates and proceed, without yielding to oncoming trains.

Emergency responders experience increased response times as a result of the trains. A grade separated overpass will provide more timely emergency response through the rail crossing. All of the emergency services are located on the west side of the railroad while the hospital is located on the east side of the railroad. The railroad creates a barrier for emergency responders when a train is present. Minutes of delay can be significant in the transport of a critical condition patient. The fire department is located on the northeast corner of Jackson and Walnut Street and is also subject to delays in response time when a train is present at the crossing.

Lastly, vehicles stopped at a blocked SR 100 railroad crossing routinely queue up to the US 301 intersection and at times these extend to Winn Dixie. Excessive queues also occur at the SR 16 railroad crossing. This creates an undesirable situation with a risk of vehicles blocking the US 301 intersection and increasing the risk of vehicle crashes.

## **2.6 Festivals**

Several significant festivals and events are held on Call Street every year. These events increase commerce for local businesses and merchants. The festivals are held on Call Street between US 301 and Water Street. During this time Call Street is closed to vehicular traffic, allowing only pedestrians. In April the Strawberry Festival attracts thousands to the Call Street area. In October the Bike Festival is held at the same location.

## **2.7 US 301 Starke Alternate Truck Route**

The US 301 Alternate Truck Route is scheduled to go out to bid for construction in the summer of 2016. Construction is estimated to be complete in fiscal year 2019. The alternate truck route is estimated to reduce traffic on US 301 by approximately 50 percent. The facility will carry 25,300 vehicles a day in 2020 and increase to 31,400 vehicles a day in 2040. This 7.3-mile long limited access four-lane truck route on the west side of Starke will be built between CR 227 and CR 233. The purpose of this new roadway is to relieve congestion on the US 301 corridor within Starke and provide the needed capacity for future traffic growth. The alternate route for trucks carrying freight will reduce congestion in downtown Starke that hinders local traffic flow for the community.

### **3. ALTERNATIVES**

As part of the initial data collection effort, one of the first steps was to identify locations where an overpass would be feasible. The Department looked at various options and used a tiered approach to developing alternatives/concepts. The tiered approach was a three step process and further refined the alternatives as the study progressed. In addition to the build alternatives, the no-build alternative is also under consideration.

#### **3.1 No-build Alternative**

The no-build alternative is considered a viable option and will remain so during the duration of the study. The no-build alternative involves no changes to the transportation facilities within the project study area beyond currently planned and programmed projects. In addition, the no-build alternative forms the basis of the comparative analysis for each of the build alternatives.

#### **3.2 Build Alternatives**

##### *3.2.1 Study Area Constraints*

Various build alternative options were examined to determine locations to provide an east-west railroad overpass. The project team conducted field visits to the project site to identify suitable railroad overpass locations. Previous studies were also reviewed to determine any known constraints in the project area.

A field review of the historic and cultural resources in the area was completed. This documentation is included in a technical memorandum in Appendix B. The purpose of the cultural resources review is to identify any potential and previously recorded historic resources listed, or eligible for listing, in the National Register of Historic Places (NRHP). The Florida Master Site File (FMSF) database was reviewed for any previous surveys or previously recorded resources. In addition, the Bradford County Property Appraiser's database was reviewed to determine the location of unrecorded historic buildings (i.e. parcels with build dates prior to 1970).

The Call Street Historic District was listed in the NRHP on December 12, 1985. The District contains 41 resources. Of these 41 resources, 24 are considered contributing resources, and 17 are considered noncontributing resources to the District. Three of the contributing resources, the Bradford County Bank Building, the Original Bradford County Bank, and the Vaughn-Johnson Co/Coke Plant, are also individually eligible for listing in the NRHP. The District is bounded by Jefferson Street to the north, the south side of W. Call Street to the south, Temple Ave. (US 301) on the west, and the Florida Railroad on the east.

The Call Street Historic District is primarily a commercial area. Buildings in the Call Street Historic District include smaller wood-framed and masonry commercial buildings, including buildings used as offices, shops, restaurants, and storage facilities. The district has a distinct concentration of commercial resources with a unified setting and feeling, and although development has continued around it, the area itself is more representative of its period of significance, ca. 1887—1938. In contrast, modern development and the alteration and demolition of historic resources within the Starke community has limited the ability of that community to convey its historic setting and feeling.

The preliminary evaluation also showed other resources as being eligible for listing in the NRHP within the project study area. Due to the geographical area that the Call Street Historic District encompasses and historical significance it was determined that this area will be avoided since there were feasible alternatives outside the historic district. Additional work will be needed once a preferred alternative has been selected which will include a more detailed review to look at potential effects on other historic properties.

It is necessary to avoid or minimize impacts to cultural and historic resources. It was determined that the area north of SR 100 and south of SR 16 would be avoided due to the Call Street Historic District. The number of residential homes located along both the east and west side of the railroad in that area, is also a concern.

Approximately 900 linear feet of slope transition is needed on both roadway approaches to the railroad. This provides the required vertical clearance over the railroad to meet urban design standards. North of SR 100, the buffer distance between the railroad and US 301 remains consistent at approximately 900 feet. Between SE 144<sup>th</sup> Avenue to SR 100 the railroad and US 301 converge closer providing only 400 feet of buffer in some locations. To bridge the railroad between SE 144<sup>th</sup> Avenue and SR 100, an additional bridge would be needed to take the overpass over US 301 and a loop ramp would be needed to tie back into existing US 301. This approach was not deemed practical due to the cost required for an additional bridge structure over US 301 and the impacts associated to businesses located along both sides of US 301.

In summary, the study area constraints limited the potential locations of the overpass to south of SE 144<sup>th</sup> Avenue, SE 144<sup>th</sup> Avenue, SR 100, SR16 and north of SR 16.

### *3.2.2 Tier I*

In the first tier of the study, concepts were developed for several locations. Several of these were presented to the public at the Kickoff Meeting that was held as part of this project. The public involvement effort is documented in Section 5. The initial concepts are shown in Figure 5 and are discussed below.

#### **SE 144th Avenue**

SE 144<sup>th</sup> Avenue was an unimproved roadway and has recently been paved by the county. In 2015, SE 144<sup>th</sup> Avenue was reconstructed to tie into the northernmost driveway of the shopping center (Deerfoot Village) located across from Alexander Road. The median opening on US 301 was shifted to the northern most driveway of the shopping center and new turn lanes were constructed on US 301. A traffic signal was installed at this location. The traffic signal at the south shopping center driveway was removed and the median opening at that driveway was closed. A new directional median opening was constructed at the driveway south of the removed traffic signal for the US 301 southbound traffic to turn left into the commercial property on the east side of US 301. This reconstructed intersection became the western terminus of the SE 144<sup>th</sup> Avenue alternative. Similarly the intersection of SR 100 and SE 144<sup>th</sup> Avenue that was recently paved by the county was the eastern terminus of the alternative. This alternative would provide a new overpass over the railroad and also the railroad spur located to the west of the main railroad tracks. This alternative is located outside the city limits and is the southernmost alternative that was

studied.

#### SR 100

Two initial alternatives were developed for SR 100. The first being the new alignment concept that would shift the alignment of SR 100 south of its existing alignment between Walnut and Water Streets. This alternative was developed in order to reduce impacts to the local traffic utilizing SR 100 during construction. The second alternative would construct the overpass along the existing SR 100 alignment. This concept would require SR 100 to be closed to traffic during the majority of the construction phase. Call Street located one block to the north of SR 100 would primarily be used for maintenance of traffic for this alternative. Both of these options at SR 100 would provide an overpass over the railroad.

#### Laura Street

Since providing access to the hospital is an important need for this project, a concept on new alignment was developed that would connect at the intersection of Walnut Street and SR 100 and tie into the Laura Street and SR 100 intersection. The concept would connect into a central location at Walnut Street while providing a connection to the hospital by utilizing Laura Street. This alternative was discarded due to the impacts to the residential neighborhoods, located along the proposed corridor. Also there was concern regarding how much traffic would actually utilize this concept since the existing SR 100 connection is more direct than Laura Street.

#### SR 16

The SR 16 location was studied to develop a suitable alternative at this location. It was determined that it would be very difficult to provide an overpass at SR 16. There were several concerns that the project team felt would be very difficult to mitigate for. For example several businesses and residences are located on both sides of SR 16. Access to Clark Street was also a concern. Frontage roads were considered to provide access. Additional right-of-way is needed to construct them and would result in substantial impacts. Maintenance of traffic during construction was also a significant concern as there were no feasible detours available. A decision was made to develop an overpass alternative one block to the north. This new alternative would utilize Weldon Street to allow traffic to remain on SR 16 during construction and SR 16 was eliminated from consideration.

#### Weldon Street

The Weldon Street concept was developed based on the concerns the SR 16 existing corridor provided. This alternative would connect to SR 16 west of US 301 near the CR 229 (Brownlee Road) and SR 16 intersection and also connect into existing SR 16 at Walnut Street.

#### SR 16 to Market Road

Several concepts were looked at between Weldon Street and Market Road. These concepts were discarded early due to low traffic demand in the area. Concepts in this area would utilize local streets through residential neighborhoods to reach a major east-west corridor thus creating an undesirable situation.

#### Jackson Street Tunnel Option

As part of this project a technical memorandum was completed to investigate the feasibility of tunneling under the CSX railroad along Jackson Street in Starke. As part of this effort, contractors were engaged to gain an understanding of the construction methods and costs. Two types of construction methods were examined. The top down method which would require the closing of the CSX line for a period of time. The second type of construction would be similar to a jack and bore type method. Due to the sensitive nature of the CSX railroad the contractors did not think the jack and bore method would be a viable option. The best option would be the top down construction method.

The depth of the tunnel along with the high water table in the area would require the use of a stormwater pump. The pump would increase the cost of the project but also require yearly maintenance. The tunnel would impact approximately 11 parcels. The construction cost has been estimated at \$39.5 million for the tunnel. Due to the cost, closing of the CSX line for a period of time, and the annual maintenance associated with the pump the tunnel option was not carried forward.

#### Alternatives Carried Forward

Initially three locations were carried forward to the Tier II Study. As mentioned above these alternatives were presented to the public at the public kickoff meeting. The alternatives that were carried forward to Tier II were:

- SE 144<sup>th</sup> Street
- SR 100
- Weldon Street



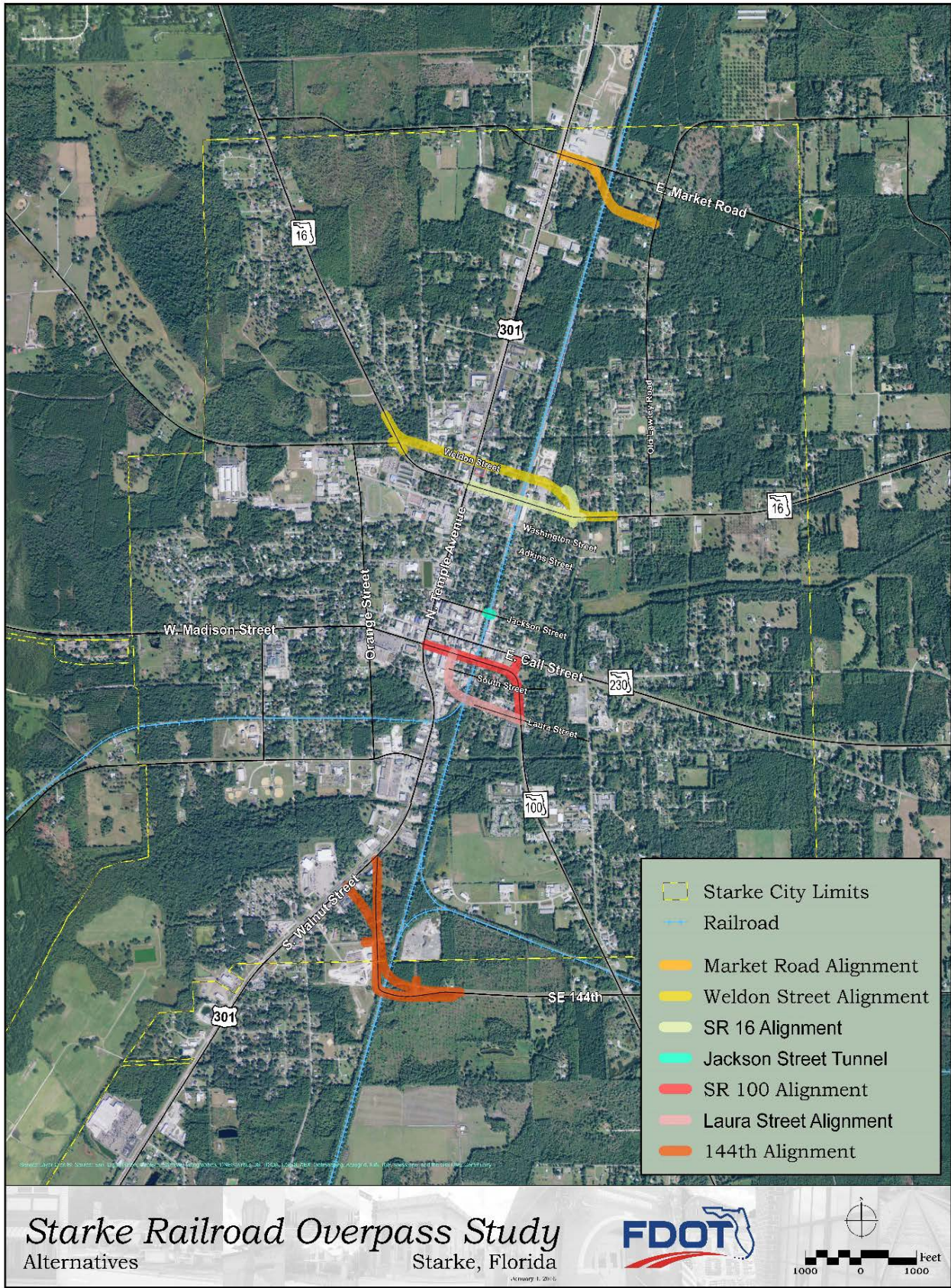


Figure 5: Tier I Alternatives, City of Starke, Bradford County, Florida



### 3.2.3 *Tier Two*

In the second tier of the analysis three locations for a railroad overpass were evaluated. These three locations were SE 144<sup>th</sup> Avenue, SR 100 and Weldon Street.

#### SE 144<sup>th</sup> Avenue

This concept underwent minor revisions during this portion of the study. The cost estimate along with the right-of-way estimate were updated.

#### SR 100

Based on comments received from local stakeholders regarding access, maintenance of traffic during construction, and aesthetics, the two options presented to the public at the kickoff meeting underwent substantial modifications. The comments received stated that an overpass at SR 100 should provide reasonable access to the local businesses along Call Street. Maintenance of traffic would need to be maintained primarily during construction along SR 100. A repeated comment received was how this overpass would blend into the local community.

Based on these comments, both SR 100 options were discarded and a revised alternative was developed. This revised option has a one-way frontage road along both the north and south sides of the overpass. The frontage roads would provide local circulation but also provide an area where community events could be held and additional parking could be provided for local businesses. The frontage roads would also be used to maintain traffic during construction while the contractor built the overpass between the frontage roads.

The vertical profile of the overpass was thoroughly examined during this stage of the project and it was determined that Walnut Street would need to be closed to northbound and southbound through traffic. Walnut Street would need to be closed in order to provide sufficient distance for westbound SR 100 traffic to stop at the stop bar while the signal was red allowing room for traffic to queue up. This has been accomplished by lowering the profile of the overpass and tie-down point further east on SR 100. In doing so, this would not provide sufficient height for traffic to travel underneath the overpass at Walnut Street. Traffic utilizing Walnut Street from the south would need to take the eastbound frontage road to Thompson Street to reach the downtown Call Street area. Traffic north of SR 100 on Walnut Street would utilize the westbound frontage road to access US 301. A separate signal phase would be required at the US 301 and SR 100 intersection to allow westbound frontage road traffic to access US 301 or continue on SR 100.

The initial reaction to this westbound frontage road requiring an additional phase, was that it would further increase the delay at the signal since it introduces an additional phase at the US 301 and SR 100 intersection. With the construction of the Alternate Truck Route, the traffic on US 301 is expected to be reduced by half. Although, closing Walnut Street will require some traffic to change their current traffic patterns, these shifts will be minor and the benefit provided by closing Walnut will result in safer operations. This is further explained in Section 4.

A significant amount of work went into developing aesthetic options that incorporated the

historical and architecture history of Starke into the SR 100 concept. Aesthetic impacts are a major drawback to this location. An initial concept was developed that blended the railroad overpass into the surrounding landscape.

#### **Weldon Street**

It was decided to eliminate the Weldon Street alternative from consideration. Feedback from local stakeholders suggested that this alternative could add traffic to the local street network and around the schools. One major drawback with this option and the SR 16 location was that Water Street would be used in order to provide direct access to the hospital. This would increase traffic through a local roadway with a residential setting.

### **3.2.4 Tier Three**

The SR 100 and SE 144<sup>th</sup> Avenue alternatives are still under consideration and were presented to the public at the August 17, 2015 meeting. Minor revisions were made to these concepts since the August 2015 public meeting and will be presented to the public on January 4, 2016. As part of the August 2015 meeting, stakeholders provided comments on the access to local businesses and the connection of SR 100 and Water Street. These concerns were researched and the alternatives have been revised since that time. The intersection of SR 100 and Water Street would be signalized due to concerns with sight distance.

### **3.2.5 Aesthetics**

#### **SR 100**

The historic alignment of SR 100 traverses through historic Downtown Starke. As design alternatives were considered for the corridor, the SR 100 alignment through downtown necessitated a unique approach to maintain and enhance the economic vitality of the city. The historic city plan and timeless architecture created the opportunity to tie urban features found within downtown Starke to the proposed roadway improvements. As the alignment and footprint of the redesigned roadway is a key feature of the SR 100 plan, the roadway design approach focuses on maintaining existing street networks to maximize connectivity and enhance safety. As through traffic movements are proposed to be elevated on a bridge structure, the opportunity to redevelop historic East Madison Street below the bridge was realized. East Madison Street is proposed as a slow speed set of 1 way pairs to provide vehicular, bicycle and pedestrian connectivity to the city grid below the bridge. By separating the one way pairs, directly below the SR 100 bridge, a central linear park space could be developed for city events. It is envisioned that the resulting public space will enhance opportunities for proposed civic events such as the Bike Festival, Strawberry Festive and potentially a farmers markets. The public park space also offers the city economic redevelopment possibilities along East Madison Street frontage to respond to the grand park space. The park is designed with pedestrian aesthetic features which respond to the architectural patterns found in historic Downtown Starke. The revised footprint also reconnects the residential neighborhoods to the south with downtown in a safe and efficient manner. The elevation of the through traffic on an overhead bridge eliminates high volume traffic on grade and established a greener footprint for the city.

From an aesthetic perspective, the SR 100 alternative will have a major visual impact to the corridor and downtown Starke. By emphasizing and highlighting aesthetic treatments

to the retaining walls, barrier rails, beams and piers the structure can have a positive impact on its historic context. With the use of arches, finishes in brick and stone, and metal accents, the attention to detail will create a bridge that is more attractive. The space underneath the bridge will create a shaded pedestrian promenade with seating, lighting and appropriate landscape areas that will create connectivity to existing and proposed parks, farmers' markets, food kiosks and downtown businesses. Integrated into the pedestrian promenade approach will be accentuated intersections and crosswalks to surface streets with wide sidewalks ensuring a seamless pedestrian and vehicular linkage to the central business corridor along Call Street and the downtown residential neighborhood to the south. A conceptual option of aesthetics for the SR 100 is shown in Figure 6.

East Madison Street offers tremendous opportunities to develop streetscape features complimentary to the downtown aesthetics. Brick, street lights, signage, furnishings and additional parking within the corridor could offer economic redevelopment incentives for parcels along the frontage. With the development of East Madison Street, on street parking is offered in both directions to support downtown retail and civic needs.

Bicycle and pedestrian accommodations are proposed within the East Madison Street corridor to ensure a complete streets approach. Water features developed for retention and open space areas are proposed opportunities for sustainable landscape plantings. The resulting corridor solution will enhance the vibrant Call Street downtown area.

#### SE 144<sup>th</sup> Avenue

The location of the proposed 144<sup>th</sup> Street corridor is primarily south of the urban core and located in a relatively undeveloped location. The proposed project corridor traverses through undeveloped lands with limited development in the vicinity. The corridor does have some impacts to existing commercial, residential and industrial parcels at the US 301 connection. The roadway facility is proposed as an at-grade facility for the majority of the alignment. A bridge is proposed over the existing railroad tracks near the connection to US 301. Due to the location being in an undeveloped location, the impacts of the bridge to adjacent development are relatively minor. Aesthetically, FDOT proposes normal aesthetic treatment for the bridge and would not receive enhanced aesthetics due to location, cost and maintenance requirements.



Figure 6: SR 100 Aesthetics



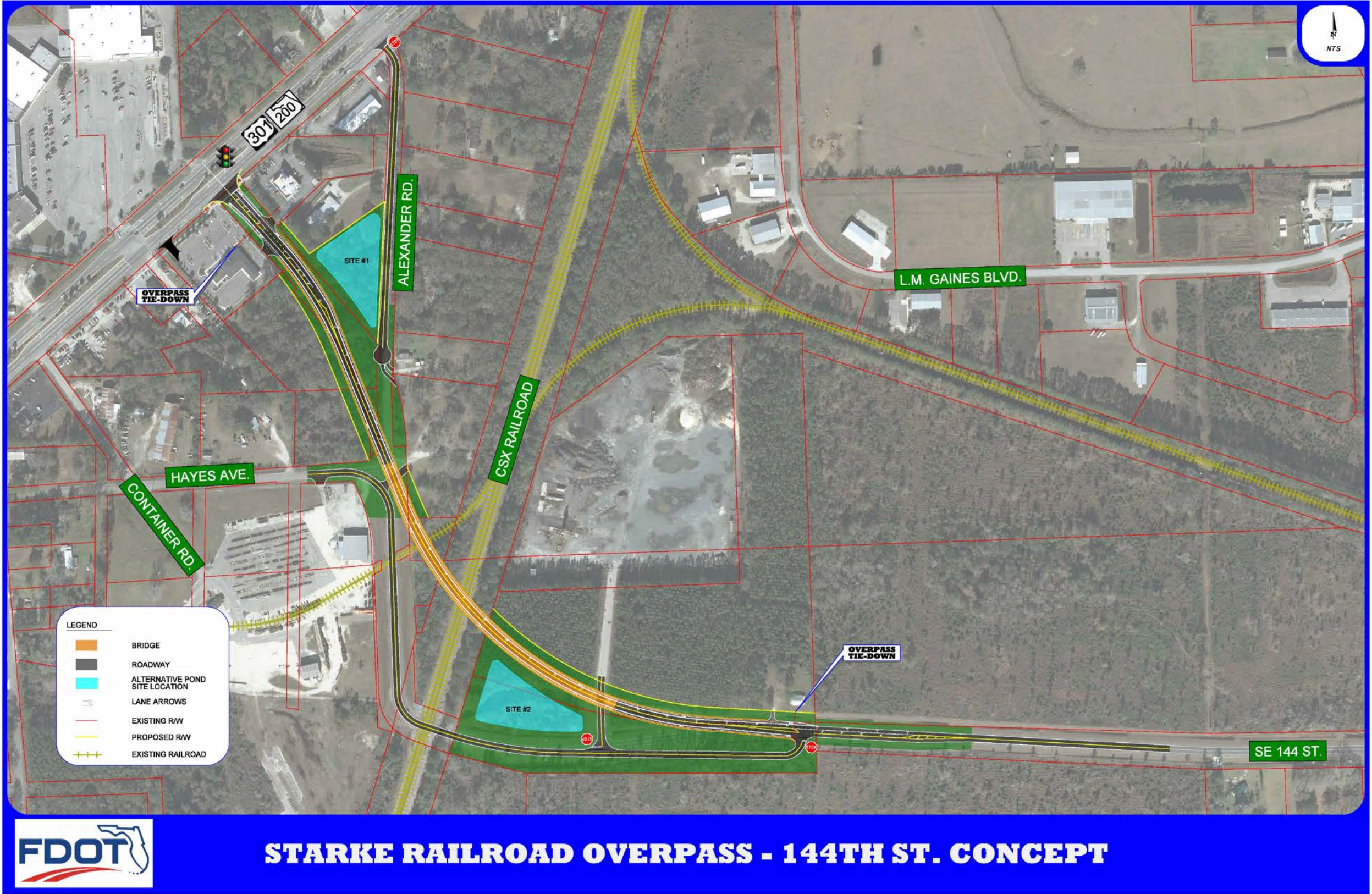


Figure 7: Southeast 144<sup>th</sup> Avenue Concept





Figure 8: SR 100 Alternative



## **4. FUTURE YEAR TRAFFIC FORECAST**

### **4.1 Introduction**

The development of traffic projections for the study corridor requires the examination of several factors including:

- Historical growth on the corridor
- Proposed developments within the corridor vicinity
- Population projections
- Local traffic patterns
- Other traffic characteristics

Traffic is analyzed and reported generally as a Level of Service (LOS). LOS is a qualitative measure of congestion that describes operational conditions of traffic. LOS is used to analyze roadways by categorizing traffic flow and assigning quality levels of traffic based upon traffic volumes in relation to the roadways capacity. These measures are described using letters “A” through “F”, with “A” being the best and “F” being the worst. Detailed traffic forecasts and analysis can be found in the *Technical Traffic Memorandum* in Appendix A.

### **4.2 Analysis Years**

The following years were used for the study corridor. Opening year was estimated to be 2023 while the design year was estimated to be 2043.

### **4.3 Future Travel Demand**

The development of traffic forecasts for study intersections included a review of the historical traffic growth along major study roadways, population estimates for Bradford County and Starke and a review of the future year model forecasts. Due to the specific conditions associated with any roadway, it is necessary to utilize the various methods in projecting future traffic forecasts (such as trends analysis, population estimates, Travel Demand Models and previous studies) for comparison purposes. The following sections discuss the various methodologies used in developing future travel demand for this study area.

### **4.4 Travel Demand Model**

This effort included the comparison of no-build (no railroad overpass) model forecasts and forecasts using historic AADT traffic and growth trends (2004-2014). The no-build model includes the future US 301 Alternate Truck Route. The model results show the demand volumes on US 301 are expected to approximately double by year 2040 and approximately half of the traffic will utilize the US 301 Alternate Truck Route while half will utilize the existing US 301 corridor. Therefore, the 2043 volumes through town are expected to remain similar to existing volumes.

### **4.5 Historical Traffic Growth**

Trend analysis, based on the historical count information obtained from the FDOT Traffic Information DVD, was performed for 10 count stations. Based on a review of the 10 sites, historical growth trends throughout Starke show a decrease in traffic over the past 10 years. These

trends are similar to statewide trends that are a result of the recession that was experienced in 2008. An increase in traffic has been noticed since 2011 along US 301.

#### 4.6 Population Projections

In addition to the trends analysis, population from US Census and population projections published by the Bureau of Economic and Business Research (BEBR) at the University of Florida were used for comparison purposes. Table 4 shows the 2000 and 2010 Census Populations for Bradford County, City of Starke and the State of Florida.

**Table 4: 2000 and 2010 Census Population Data**

Year	Florida	Bradford	City of Starke
2000 (Population)	15,982,349	26,088	5,863
2010 (Population)	18,801,310	28,520	5,449
Annual Growth Rate	17.68%	9.32%	-7.06%

Based on the Census counts, Bradford County shows a growth of 9.32% between 2000 and 2010 Census, the City of Starke shows a decrease in population of 414 people which accounts to -7.06%.

Finally medium population projections for Bradford County were obtained from BEBR and analyzed to determine future traffic growth. Table 5 shows the project population of Bradford County from 2010 through 2040 as well as interpolated annual population and growth rate. Between 2010 through 2020 the population is anticipated to decrease by 0.03%, but will start increasing by 0.48% between 2020 and 2030 and 0.35% between 2030 and 2040. The population of Bradford County is projected to increase by 9% in the next 30 years.

**Table 5: Population Projections for Bradford County**

Year	Population Projections	Estimated Annual Growth Rate between previous period
2010	28,520	--
2020	28,446	-0.03%
2030	29,882	0.48%
2040	30,979	0.35%

#### 4.7 Recommended Growth Rate

Looking at overall macro trends, the population of Bradford County is projected to grow by 9% in the next 30 years. The traffic counts along the project area are beginning to show a positive growth from 2011 onward. Given the amount of available land for development, the increasing population projections, a growth rate of 1% is reasonable and recommended for this study. The projected opening year 2023 and design year 2043 turning movement volumes based on this growth rate will be analyzed for the major intersections along the project study area. Build intersection turning movements based on the location of the railroad overpass and traffic characteristics observed in the study area. No-build and build intersection turning movement volumes along with the methodology can be found in the *Technical Traffic Memorandum* in Appendix A.

## 4.8 Alternatives

### 4.8.1 *No-build*

#### No-build Traffic Methodology and assumptions

Intersections where count data was available were set as control intersections and the volumes for the remaining intersections were developed and adjusted for differences. Movements at control intersections where the peak hour count data was zero were changed to 5 vehicles per hour if the movement was permitted. As mentioned above, a growth rate of 1% was applied to existing counts to develop volumes for the opening year and design year. All turning movement volumes can be found in the *Technical Traffic Memorandum* found in Appendix A.

#### No-build Opening Year 2023 Analysis

Traffic operations analyses were conducted for the no-build alternative for opening year 2023 conditions. The opening year 2023 intersections analyses for the no-build conditions show that the study intersections operate at acceptable LOS of D or better during AM and PM peak hours. Detailed traffic analysis results for all alternatives can be found in the *Technical Traffic Memorandum* found in Appendix A.

#### No-build Design Year 2043 Analysis

Traffic operations analyses were conducted for the no-build Alternative for design year 2043 conditions. The design year 2043 intersections analyses for the no-build conditions show that the study intersections operate at acceptable LOS of D or better during AM and PM peak hours.

### 4.8.2 *SR 100 Alternative*

#### SR 100 Traffic Methodology and Assumptions

The first step in developing traffic distribution due to project changes was to estimate the number of trips that will be diverted due to the overpass and redirected in the network. To predict the estimated number of peak-hour trips that would be attracted to utilize the overpass on SR 100, the O-D data was referenced. It was assumed that traffic on SR 16 headed towards south of SR 100 on US 301 will utilize Water Street and turn left on SR 100 to utilize the overpass. Similarly, in order to avoid the rail road crossing on SR16, northbound traffic on US 301 headed towards SR 16 will turn right at SR 100 to utilize the travel time savings because of the overpass. Under existing and build conditions, westbound left turns are not allowed from E Call Street onto US 301. Therefore traffic on Call Street headed south of SR 100 is already utilizing SR 100. Due to the close proximity of Call Street to SR 100, it is assumed that 50% of the northbound right and southbound left turning traffic at US 301/E Call Street intersection will turn at SR 100 to utilize the travel time savings from the overpass. A conservative approach was adopted to estimate the distribution of westbound traffic on SR 100. In reality, some of the westbound traffic will use South Street to access local business. However, for this analysis, it was assumed that the westbound traffic on SR 100 will turn right at Water Street to access local businesses. This approach was adopted to test the operational sensitivity of the E Call Street/Water Street intersection due to volumes changes.

Since the through access on Walnut Street will be cut off due to the project, traffic was distributed to Thompson Street, Cherry Street and Church Street. As a result, volumes on these streets will increase. As the traffic moves through the network, a shift of volume will also affect Adkins Street, Washington Street and Walnut Street. Since the O-D pair for eastbound traffic utilizing the overpass bridge on SR 100 was not available, it was assumed that 60% of the traffic will utilize the bridge due to its travel time savings.

The following intersections were signalized with the SR 100 alternative:

- SR 100 frontage roads and Thompson Street
- SR 100 frontage roads and Cherry Street
- SR 100 and Water Street

These three intersections have been assumed to be signalized during this phase of the project due to sight distance issues. As the project progresses and more detailed analysis will be conducted at these intersections to verify that this is the proper traffic control for these intersections.

#### SR 100 Opening Year 2023 Analysis

Traffic operations analyses were conducted for opening year 2023 conditions. The opening year 2023 intersections analyses for the SR 100 alternative show that the study intersections operate at acceptable LOS of D or better during AM and PM peak hours.

The intersections of SR 100 at Cherry Street, SR 100 at Thompson Street and SR 100 at Water Street were assumed to be signalized under the SR 100 alternative conditions. Significant reduction in delay was observed at the following intersections as compared to the no-build due to travel pattern changes:

- US 301 at W Pratt Street
- US 301 at Washington Street
- US 301 at Brownlee Street
- SR 100 at Church Street

The intersections of SR 100 at Thompson Street, SR 100 at Cherry Street and Call Street at Water Street experienced an increase in delay caused by the traffic diversion resulting from the proposed overpass. It should also be noted that there is no direct comparison of intersection delay at SR 100 at Thompson Street and SR 100 at Cherry Street due to the changes in intersection control and configuration. All the intersections will provide an acceptable LOS in 2023.

#### SR 100 Design Year 2043 Analysis

Traffic operations analyses were conducted for the design year 2043 conditions. The design year 2043 intersections analyses show that the study intersections operate at acceptable LOS of D or better during AM and PM peak hours except for Call Street at Water Street. As observed in opening year 2023 analyses, a reduction in delay was observed at the following intersections as compared to the no-build in design year 2043:



- US 301 at W Pratt Street
- US 301 at Washington Street
- US 301 at Brownlee Street
- SR 100 at Church Street

The intersections of US 301 at Pratt Street and SR 100 at Church Street also experienced an improvement in LOS due to the overpass and due to the changes in travel patterns through the system. The intersections of SR 100 at Thompson Street, SR 100 at Cherry Street and Call Street at Water Street experienced an increase in delay caused by the traffic diversion resulting from the proposed overpass. This is because traffic will divert to these intersections when the through access of Walnut Street is eliminated. The intersection of Call Street at Water Street will operate at LOS F. This intersection was analyzed as unsignalized and is expected to operate at acceptable LOS under signal control.

#### 4.8.3 *SE 144<sup>th</sup> Avenue*

##### **SE 144<sup>th</sup> Avenue Traffic Methodology and Assumptions**

The number of trips diverted for the SE 144<sup>th</sup> alternative is very limited due to the location of the overpass. The SE 144<sup>th</sup> alternative does not have a significant impact on traffic distribution of the study intersections. It was assumed that approximately 30% of the traffic headed towards SR 16 and SR 100, west of US 301, will utilize the overpass on SE144th Street. Diverted traffic from SR 100 passing over the bridge on SE 144th Street will have to travel more than half a mile to complete the same movement. This alternative provides minimal travel time benefits and therefore a small percentage of diverted trips were assumed for this alternative.

Similarly, a reasonable percentage of diverted trips from SR 16 (AM 5%; PM 12%) and SR 100 (AM 8%; PM 12%) were assumed for southbound traffic headed towards south of SE 144<sup>th</sup> Street.

##### **Opening Year 2023 SE 144<sup>th</sup> Avenue Analysis**

Traffic operations analyses were conducted for Alternative 2 for opening year 2023 conditions. The opening year 2023 intersections analyses for the Alternative 2 conditions show that the study intersections operate at acceptable LOS of D or better during AM and PM peak hours. As stated in the methodology and assumptions, the shift in traffic due to the overpass on SE144th Street will be minimal because of its distance from SR 100. A minor shift of traffic from SR 100 to US 301 will slightly improve the LOS along SR 100 from Water Street to Walnut Street. Due to the distant location of the overpass bridge at SE 144<sup>th</sup> Street, the overpass bridge will be underutilized and traffic within Starke downtown will not see any travel time savings.

##### **Design Year 2043 SE 144<sup>th</sup> Avenue Analysis**

Traffic operations analyses were conducted for design year 2043 conditions. The design year 2043 intersection analyses shows that the study intersections operate at acceptable LOS of D or better during AM and PM peak hours. Due to the distant location of the overpass bridge at SE 144<sup>th</sup> Street, the overpass bridge will be underutilized and traffic

within downtown Starke downtown will not see any travel time savings in 2043.

## **4.9 Traffic Forecast and Analysis Summary**

### **4.9.1 SR 100 Alternative**

Based on the review of local traffic, there will be a shift in traffic patterns with the SR 100 alternative. Certain vehicle trips east of US 301 between SR 16 and SR 100 will utilize the SR 100 overpass to ensure that their travel times are reliable and no longer influenced by the possibility of being delayed by a train. This will result in travel time savings for motorists. Travel time savings will increase in the future years as the number of trains increase.

The results of the traffic analysis shows that several local intersections will experience a small increase in delay caused by the traffic diversion from the SR 100 alternative as a result of the proposed overpass. The increased delay is very minimal and will likely go unnoticed by the traveling public. All intersections except the US 301 and SR 100 intersection and the Call Street and Market Road intersection will operate at LOS C or better in 2023. These two intersections will operate at an acceptable LOS D in 2023.

The SR 100 alternative will slightly increase delay at the SR 100 and US 301 intersection; however, this intersection will still provide an acceptable LOS through the design year. This increase is due to the additional signal phase associated with the westbound frontage road as well as the increase in traffic at this location from the diversion of the other local roadways. The diversion of traffic to SR 100 will reduce the delay at the US 301 intersections with Pratt Street, Washington Street and SR 16.

All intersections will provide LOS C in 2043 except the US 301 and SR 100 intersection, Call Street and Water Street and also the intersection of SR 100 frontage roads at Thompson Street. The Call Street and Water Street intersection will operate at LOS F in 2043. This intersection will need to be signalized in order to provide acceptable operations by 2043. If a signal is provided it will result in LOS B in 2043. The remaining two intersections will provide an acceptable LOS D.

With the SR 100 alternative, three additional intersections have been assumed to be signalized in the future due to concerns with sight distance. Signalizing the intersections will need to be reviewed, if this alternative is selected, in the design phase once specific details on the bridge design are known. These intersections are: SR 100 frontage roads at Thompson Street, SR 100 frontage roads at Cherry Street and SR 100 at Water Street. All three of the intersections will provide acceptable traffic operations. Currently, Thompson Street is a one-way way limited to southbound traffic only. If the SR 100 alternative is selected, this street will be converted back to a two-way street between the SR 100 frontage roads and Call Street.

The location of the overpass bridge has a greater area of influence at SR 100 and therefore the return on investment due to reduced travel time and vehicle delay are higher. The SE 144<sup>th</sup> Avenue railroad crossing is located approximately 1.1 miles south of the SR 100 crossing and 1.65 miles south of SR 16. Since the SR 100 and SR 16 railroad crossings are only 0.55 miles apart, this allows traffic to easily divert if the motorists want to insure that they are provided with a reliable travel time. The local grid network between SR 100 and SR 16 provide motorists with several options to utilize to reach the SR 100 overpass.

#### *4.9.2 SE 144<sup>th</sup> Avenue*

Based on the data collected, the number of diverted trips that would utilize the overpass at SE 144<sup>th</sup> Avenue is very limited because of its location and the spacing between SR 100 and US 301. It was assumed that 30% of the traffic headed towards SR 16 and SR 100, west of US 301 will utilize the overpass on SE 144<sup>th</sup> Avenue. A reasonable percentage of trips were diverted from SR 16 (5% in the AM; 12% in the PM) and SR 100 (8% in the AM; 12% in the PM) with a destination on southbound US 301 was assumed to be traveling south of SE 144<sup>th</sup> Avenue.

The traffic analysis showed that all intersections analyzed provided similar if not improved LOS with the SE 144<sup>th</sup> Avenue alternative. This is anticipated due to the minor traffic diversion associated with this alternative. The only intersection that showed an increase in delay was the US 301 at SE 144<sup>th</sup> Avenue intersection. This intersection would provide an acceptable LOS through the design year.

## **5. PUBLIC INVOLVEMENT**

An important component of this study is public involvement. As part of the study the Department held several meetings with local stakeholders to seek input and feedback in order to determine the best solution for the local community.

### **5.1 Public Meetings**

#### *5.1.1 Kickoff Meeting*

On April 6, 2015 a project kickoff meeting was held. The meeting began at 4:30 p.m. at which time the public viewed the project maps and asked questions of the project team. At 6:30 p.m. there was a public comment period which allowed the stakeholders the opportunity to make public comment. In addition, there was a comment box that allowed people the option to make written comments as well. Seventy-three people attended the meeting. The purpose of this meeting was to engage the public and let local stakeholders know that the study was being conducted. Several concepts were presented as well as maps that allowed the local stakeholders an opportunity to sketch any concepts that we may have not studied or considered. The concepts that were presented included the SE 144<sup>th</sup> Avenue, two options at SR 100, Laura Street, Weldon Street and Market Road. The feedback received showed support for the SE 144<sup>th</sup> Avenue, SR 100, and Weldon Street. Also, we received several comments on the aesthetics and potential impacts to the local businesses and communities with the SR 100 options. Due to the comments we received regarding the aesthetics and potential business impacts regarding access, the project team focused on addressing these concerns at the SR 100 location.

#### *5.1.2 Alternatives Meeting*

A public alternatives meeting was held on August 17, 2015. There were 89 people in attendance for the meeting. Similar to the kickoff meeting the doors opened at 4:30 p.m. allowing the public to review the maps and ask the project team questions followed by a comment period at 6:30 p.m. There was also a presentation provided that gave an update on the project including the updated concepts, schedule, and revisions made based on public input. Based on the feedback received, the comments support was split between the SE 144<sup>th</sup> Avenue alternative and the SR 100 location.

### **5.2 Local Stakeholder Meetings**

In addition to the public meetings, several meetings were held with local stakeholders as requested to provide an update on the project and receive additional input. Meeting or project updates were held with the following entities:

- Rotary Club – July 1, 2015
- Kiwanis Club – September 8, 2015
- City of Starke – August 4, 2015
- City Commission – June 9, 2015, June 16, 2015, August 4<sup>th</sup> 2015 and August 18, 2015
- County Commission – February 4, 2015
- Chamber of Commerce – June 9, 2015 and August 4, 2015



### **5.3 Future Meetings**

A Public Alternatives Meeting is planned for January 4, 2016. The SE 144<sup>th</sup> Avenue concept and the SR-100 concept will be presented at this meeting along with project updates since the last meeting. Doors will open at 4:30 p.m. and at 6:30 p.m. a formal presentation will be made along with a public comment period.

## 6. RECOMMENDED ALTERNATIVE, COSTS AND SCHEDULE

### 6.1 Recommended Alternative

At this time there is no recommended alternative. Both the SE 144<sup>th</sup> Avenue and SR 100 alternatives are still under consideration. After the alternatives public meeting in January 2016, FDOT will request a resolution from both the City and County Commissions on which alternative they recommend. After receiving the resolutions, FDOT will make a recommendation on the preferred alternative and hold a public hearing to advise the public of the decision and seek public input.

### 6.2 Costs

The costs for both the SE 144<sup>th</sup> Alternative and the SR 100 concept are shown in the table below. The total project cost shows that the SE 144<sup>th</sup> Avenue alternative construction cost is \$11.2 million more than the SR 100 concept while the right-of-way for the SR 100 alternative is \$8.7 million additional. The difference in the costs is the fact that the SR-100 alternative impacts more business and residential properties than the SE 144<sup>th</sup> Avenue alternative. The SE 144<sup>th</sup> Avenue alternative requires approximately 2640 feet from tie-down point to tie-down point while the SR 100 alternative requires only 1620 feet between the tie-down points. The additional distance is needed at the SE 144<sup>th</sup> Avenue location due to the bridge being designed to rural roadway standards while the SR 100 alternative is designed to the urban design standards. In addition, the SE 144<sup>th</sup> Avenue alternative must overpass both the railroad spur and the CSX mainline tracks. The CSX right-of-way is 200 feet wide at this location. The proposed bridge over the railroad would need to be constructed on a curve and due to the coordination required to place any piers in CSX right-of-way, the cost estimate assumed that no piers were placed within the CSX right-of-way. This increases both the engineering and construction cost associated with the bridge.

**Table 6: Cost Matrix (Millions)**

	No-build	SE 144 <sup>th</sup> Avenue	SR 100
Engineering	\$0.0	\$8.5	\$4.8
Right-of-way	\$0.0	\$1.6	\$10.3
Construction	\$0.0	\$28.2	\$17.0
<b>Total Cost</b>	<b>\$0.0</b>	<b>\$38.3</b>	<b>\$32.1</b>

### 6.3 Schedule

The project is schedule to go to construction in 2020. The right-of-way phase is funded for fiscal year 2018. Consultant acquisition is underway to get a design team under contract to begin the design effort. No design work will occur until a decision is made for the railroad overpass.

## **Appendix A**

# Technical Traffic Memorandum

## Starke Railroad Overpass PD&E Study

From US 301 to East of CSX Railroad

Bradford County, Florida

Financial Management Number: 436558-1

Prepared For:



Prepared By:

Hanson Professional Services Inc.

November 2015



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## 1. INTRODUCTION

The Florida Department of Transportation (FDOT), District Two is conducting a Project Development and Environment (PD&E) Study to evaluate the feasibility for constructing a railroad overpass in the City of Starke. During the PD&E Study, design options are developed and evaluated with regards to social, environmental, historical, cultural factors, and cost factors such as right-of-way acquisition, business damages and construction. Safety needs and public input are also important elements of this study.

The City of Starke is currently divided by the CSX railroad that runs parallel to SR 200/US 301. There are approximately 29 trains per day that utilize the tracks and this number is expected to grow. This results in longer wait time throughout the day for emergency vehicles and other motorists. Although there are numerous locations to cross the tracks, there are no raised crossing over the railroad in Starke. An overpass would improve emergency response times and allow traffic to flow more freely. The purpose of the study is to identify a suitable location for this overpass within the City of Starke. The No-Build Alternative will be considered a viable alternative throughout this PD&E Study. The project location and study area are illustrated on Figure 1.

### 1.1 Purpose and Need

The purpose of this Technical Traffic Memorandum is to document the information necessary to confirm the need for this project and select a Build Alternative. The No-Build and Build Alternatives will be reviewed and included as part of the analysis and evaluated for traffic impacts. Impacts at the different intersections associated to the Build Alternatives will be analyzed as part of this report. The development of the traffic forecast for this study will assist on the selection of a recommended alternative.

The primary need for the project is to develop a railroad overpass for the City of Starke to alleviate traffic congestion generated by the trains traversing through the city.





Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

<p> Signalized Intersection</p> <p> Study Area</p> <p> Unsignalized Intersection</p>	<h1>Starke Railroad Overpass Traffic Study</h1>	<p>Figure 1</p> <p>Project Location &amp; Study Area Map</p>
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## 2. EXISTING CONDITIONS

### 2.1 Existing Roadway Characteristics

The existing roadway characteristics for the major roadways within the study area are listed in Table 1.

Table 1 - Existing Roadway Characteristics		
Roadway	Characteristics	
US 301/SR 200	SHS	Yes
	Functional Classification	Urban Principal Arterial - Other
	Facility Type	From SE 144 <sup>th</sup> Ave to S. of Edwards Rd: Divided From S. of Edwards Rd to N. of SR 16: Undivided
	Number of Lanes	From SE 144 <sup>th</sup> Ave to S. of Edwards Rd: 4 Lanes From S. of Edwards Rd to N. of SR 16: 5 Lanes
	Area Type	Urban
	Speed Limit	30 MPH
SR 16/ Brownlee Street	SHS	Yes
	Functional Classification	From McMahon St to US 301: Urban Minor Arterial From US 301 to Water St: Urban Other Principal Arterial
	Facility Type	Undivided
	Number of Lanes	From McMahon St to Clark St: 3 Lanes From Clark St to Water St: 2 Lanes
	Area Type	Urban
	Speed Limit	30 MPH
SR 100/ Madison Street	SHS	Yes
	Functional Classification	Urban Minor Arterial
	Facility Type	Undivided
	Number of Lanes	From Bay St to Laura St :3 Lanes From Laura St to SE 144 <sup>th</sup> Ave: 2 Lanes
	Area Type	Urban
	Speed Limit	From Bay St to Laura St: 35 MPH From Laura St to SE 144 <sup>th</sup> Ave: 45 MPH

## 2.2 Traffic Data Collection

A comprehensive traffic count program was performed for the Starke Railroad Overpass PD&E Study during the month of July 2015. Roadway and intersection traffic data was collected within the project study area in the City of Starke. The traffic data collection task effort included twelve 48-hour volume counts and thirteen 8-hour intersection turning movement counts. Table 2 lists the locations and type of traffic counts collected for the study. The data recorded as part of the traffic count program is included in Appendix B.

Table 2 - Count Location Description	
Roadway	Type
SR 100 East of S. Water Street	Hose count <sup>1</sup>
Water Street North of SR 100	Hose count <sup>1</sup>
Walnut Street South of SR 100	Hose count <sup>1</sup>
SR 100 South of Laura Street	Hose count <sup>1</sup>
US 301 South of Washington Street	Hose count <sup>1</sup>
US 301 North of Weldon Street	Hose count <sup>1</sup>
SR 16 East of Railroad Crossing	Hose count <sup>1</sup>
Weldon Street West of US 301	Hose count <sup>1</sup>
Weldon Street East of US 301	Hose count <sup>1</sup>
St. Clair Street South of SR 16	Hose count <sup>1</sup>
US 301 South of Starke Limit	Hose count <sup>1</sup>
US 301 North of Starke Limit	Hose count <sup>1</sup>
US 301 at Walnut Street	Turning Movement Count <sup>2</sup>
US 301 at SR-100	Turning Movement Count <sup>2</sup>
US 301 at Call Street	Turning Movement Count <sup>2</sup>
SR 100 at Walnut Street	Turning Movement Count <sup>2</sup>
SR 100 at Church Street	Turning Movement Count <sup>2</sup>
SR 100 at Water Street	Turning Movement Count <sup>2</sup>
SR 100 at Laura Street	Turning Movement Count <sup>2</sup>
Call Street at Water Street	Turning Movement Count <sup>2</sup>
US 301 at Washington Street	Turning Movement Count <sup>2</sup>
US 301 at SR 16	Turning Movement Count <sup>2</sup>
US 301 at Weldon Street	Turning Movement Count <sup>2</sup>
SR 16. at St. Clair Street	Turning Movement Count <sup>2</sup>
SR 16 at Weldon Street (W. of US 301)	Turning Movement Count <sup>2</sup>

<sup>1</sup> 48-hour volume count

<sup>2</sup> 8-hour (7AM to 9 AM, 11AM to 1 PM and 2 PM to 6 PM) intersection turning movement counts

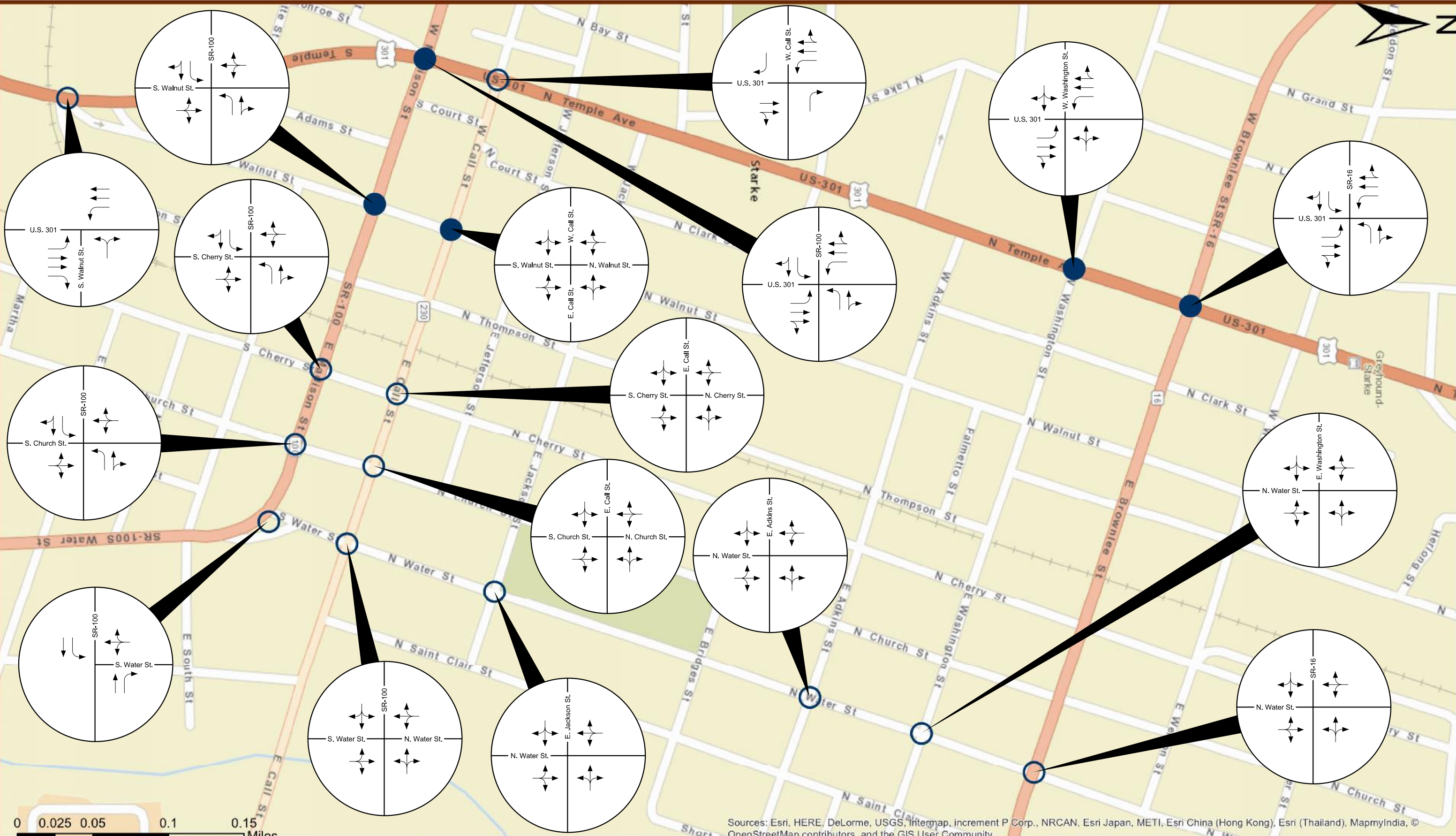
### 2.3 Existing Intersection Geometry

Table 3 lists the control type and Figure 2 provides the existing year 2015 intersection geometry for all the intersections analyzed within the study area. The year 2015 intersection geometry information was obtained and verified based on field visits and aerial photography. Approach counts and turning movements were collected in the field during the AM, Midday and PM Peak Periods at the intersections listed in Table 2.

Table 3 - Study Intersections	
Intersection	Control Type
US 301 at SE 144 <sup>th</sup> Avenue	Signalized Intersection
US 301 at SR 100/Madison Street	Signalized Intersection
US 301 at Call Street	Unsignalized Intersection
US 301 at Washington Street	Signalized Intersection
US 301 at SR 16	Signalized Intersection
SR 100 at Walnut Street	Signalized Intersection
SR 100 at Walnut Street	Signalized Intersection
SR 100 at Thompson Street	Unsignalized Intersection
SR 100 at Cherry Street	Unsignalized Intersection
SR 100 at Church Street	Unsignalized Intersection
SR 100 at Water Street	Unsignalized Intersection
SR 100 at SE 144 <sup>th</sup> Avenue	Unsignalized Intersection
Call Street at Walnut Street	Signalized Intersection
Call Street at Thompson Street	Unsignalized Intersection
Call Street at Cherry Street	Unsignalized Intersection
Call Street at Church Street	Unsignalized Intersection
Call Street at Water Street	Unsignalized Intersection
Jackson Street at Water Street	Unsignalized Intersection
Adkins Street at Water Street	Unsignalized Intersection
Washington Street at Water Street	Unsignalized Intersection
SR 16 at Water Street	Unsignalized Intersection

### 2.4 Existing Traffic Volumes

The traffic count data collected was seasonally adjusted utilizing the FDOT seasonal adjustment factors for Bradford County. Figure 3 provides the existing turning movement counts for the study intersections.

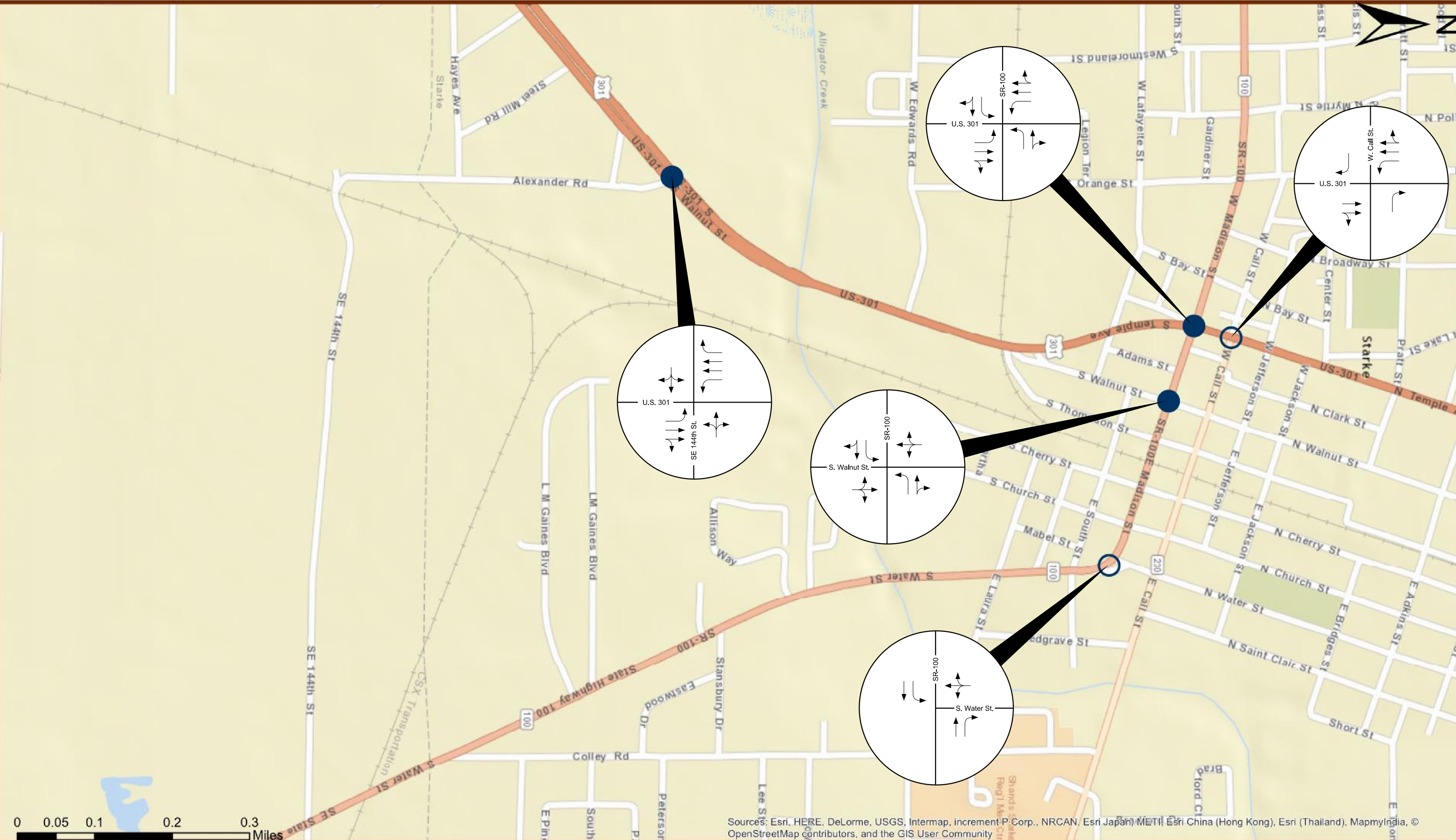


Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), MapmyIndia, © OpenStreetMap contributors, and the GIS User Community


0 0.025 0.05 0.1 0.15 Miles

# Starke Railroad Overpass Traffic Study





Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

  
Signalized Intersection

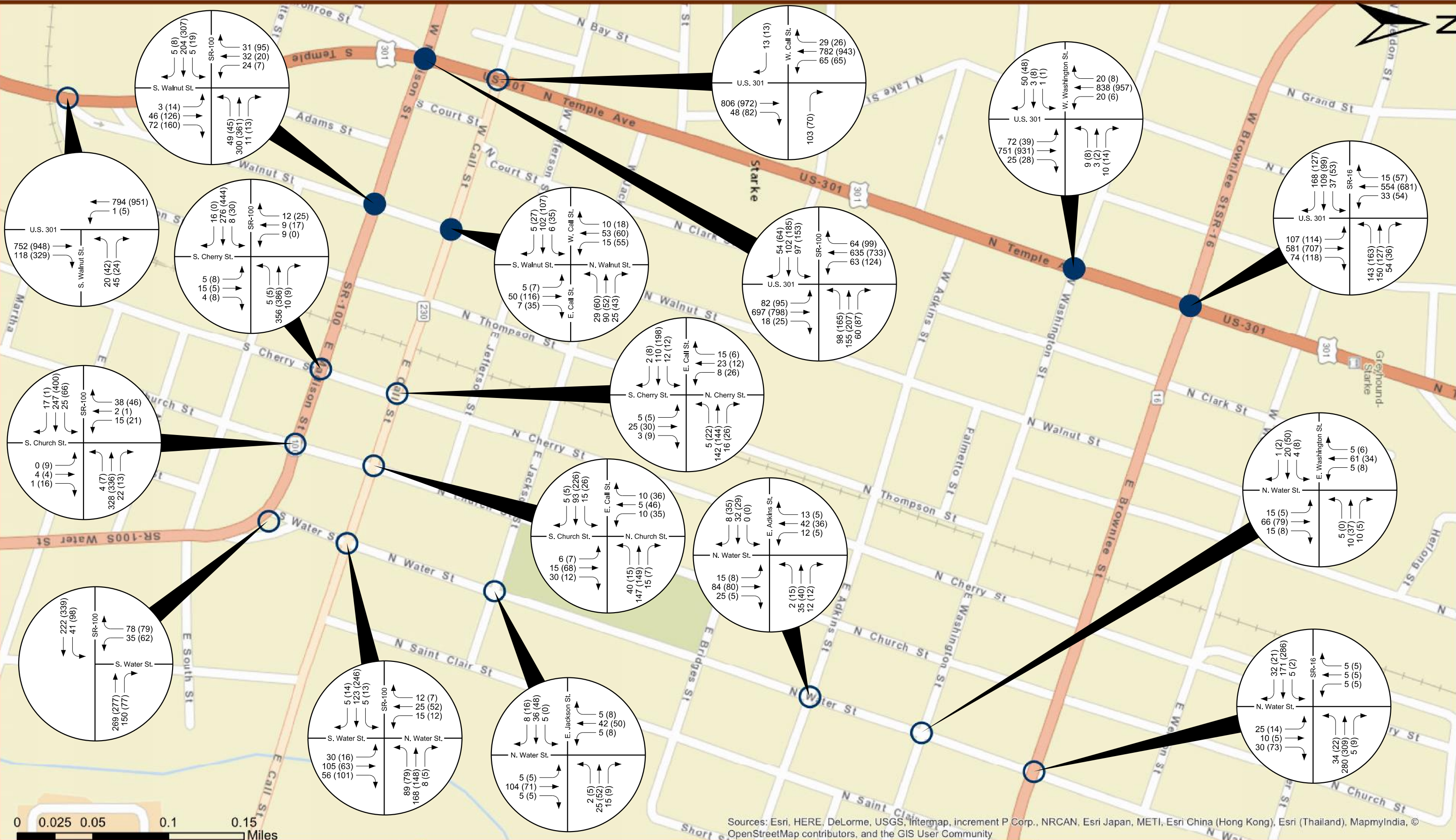
  
Unsignalized Intersection


0 0.05 0.1 0.2 0.3 Miles


**Legend**

# Starke Railroad Overpass Traffic Study





**Signalized Intersection**

**Unsignalized Intersection**

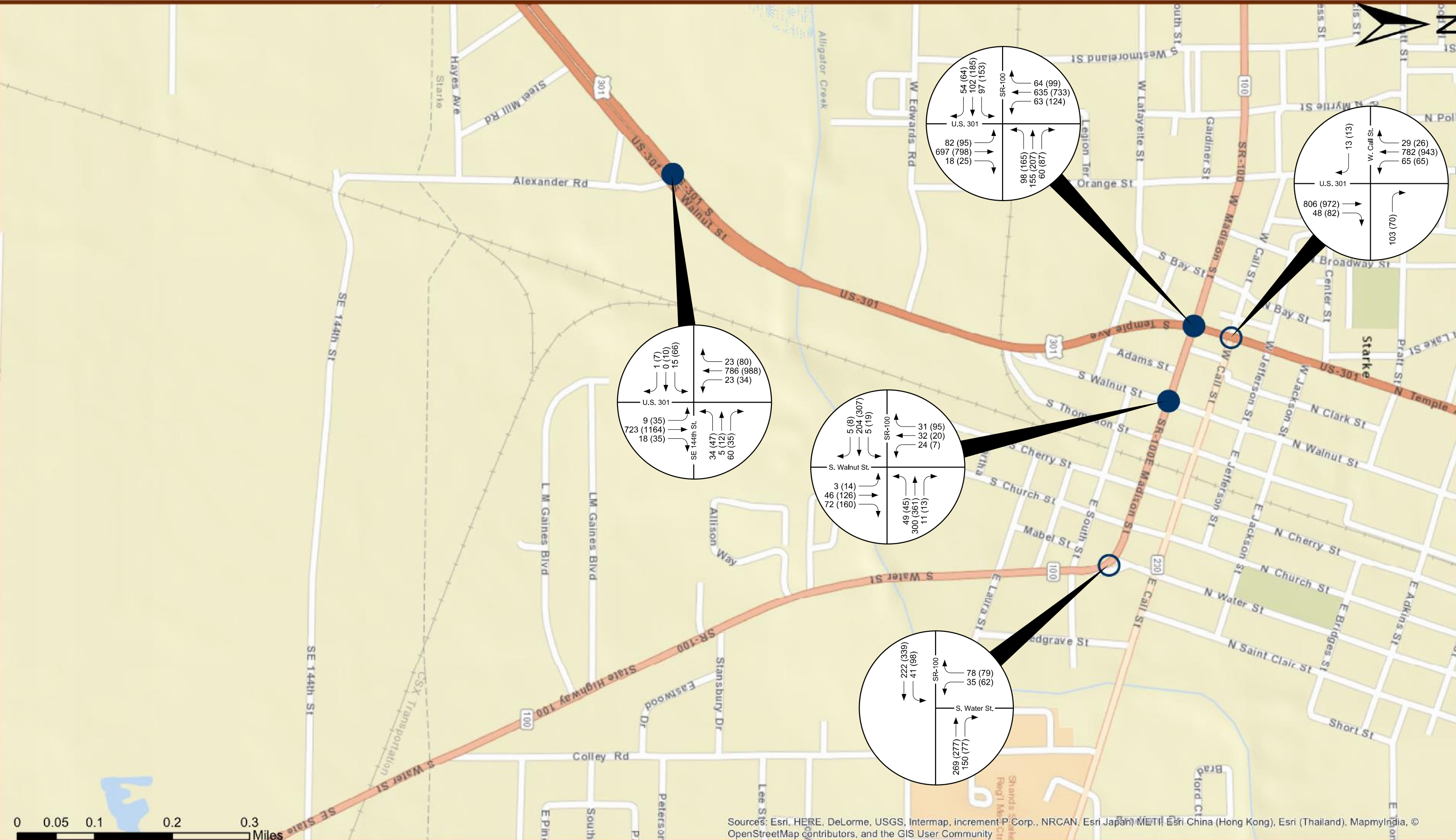
**Legend**

xxx (xxx) AM (PM)

# Starke Railroad Overpass Traffic Study

Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), MapmyIndia, OpenStreetMap contributors, and the GIS User Community





Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

# Starke Railroad Overpass Traffic Study

Existing Year 2015 AM (PM)  
Intersection Turning Movement Volumes

## 2.5 Railroad Crossing Data Collection

Data was collected at the three most heavily traveled of the nine railroad crossings; SR 16, SR 100 and SE 144<sup>th</sup> Avenue. Data was collected for three weekdays in June 2015 and included train travel direction, time of gate closure, minutes of gate closure, number of vehicles in queue at the gate, and if any emergency vehicles (police, fire, ambulance) were in the queue. Table 4 summarizes the information gathered in the field. The complete summary sheets can be found in Appendix C.

Table 4 - Railroad Crossing Data Summary	
Intersection	Control Type
Average number of trains per day	29 trains
Average minutes the gate is down for each train event	2.24 minutes
Average number of hours per day the railroad gates are closed	1.10 hours
Average number of minutes per peak periods (6 hours representing 7-9 am, 11 am-1 pm, 4-6 pm) when the railroad gates are closed	Approximately 19 minutes
Average number of vehicles in queue per day when the railroad gates are closed	4-5% of the AADT
Average number of vehicles in queue per peak periods (6 hours) when the railroad gates are closed	43-46 percent of the daily volume of vehicles affected by the railroad gate closure

## 2.6 Origin-Destination Survey

An Origin-Destination (O-D) Survey was used to determine travel patterns of traffic during a typical day. Trips were defined as one-way movement, from where a person starts (origin) to where the person is going (destination). The objective of this task was to determine the travel patterns of traffic during a typical weekday. Vehicle re-identification using Bluetooth signal data has emerged as an effective and economical means for collecting traffic data including O-D information, which is crucial for transportation planning. Bluetooth technology was used to conduct the O-D Survey. The Bluetooth receivers were placed at 16 locations as identified by FDOT. Table 5 shows the 16 locations where the Bluetooth receivers were placed along the study area.

Table 5 - O-D Survey Locations	
Receiver	Location
Location 1	US 301, North of CR 227
Location 2	SR 100, South of SE 21 <sup>st</sup> Avenue
Location 3	SE 144 <sup>th</sup> Avenue, West of SR 100
Location 4	US 301, South of CR 100A
Location 5	SR 100, East of SW 64 <sup>th</sup> Avenue
Location 6	SR 100, West of US 301
Location 7	SR 100, East of US 301
Location 8	SR 230, East of Redgrave Street
Location 9	SR 230, East of NE 6 <sup>th</sup> Lane
Location 10	US 301, South of West Pratt Street
Location 11	SR 16, West of US 301
Location 12	SR 16, East of US 301
Location 13	SR 16, East of NE 12 <sup>th</sup> Avenue
Location 14	US 301, South of Davis Street
Location 15	SR 16, North of NW 179 <sup>th</sup> Street
Location 16	US 301, South of CR 233

Given the characteristics of the City of Starke, the Bluetooth data was collected for 72-hours instead of 24-hours to obtain more data samples and a better estimate of travel patterns. The Bluetooth data was collected from May 19, 2015 (Tuesday) through May 21, 2015 (Thursday). A summary of the O-D Survey can be found in Appendix D.



### 3. DEVELOPMENT OF FUTURE TRAFFIC FORECAST

The development of traffic projections for the study corridor requires the examination of several factors including:

- Historical growth on the corridor
- Proposed developments within the corridor vicinity
- Population projections
- Local traffic patterns
- Other traffic Characteristics

#### 3.1 Analysis Years

The following analysis years were used for the study corridor:

- Opening Year: 2023
- Design Year: 2043

#### 3.2 Future Travel Demand

The development of traffic forecasts for study intersections included a review of the historical traffic growth along major study roadways, population estimates for Bradford County and City of Starke and a review of the future year model forecasts. Due to the specific conditions associated with any roadway, it is necessary to utilize the various methods in projecting future traffic forecasts (such as trends analysis, population estimates, Travel Demand Models and previous studies) for comparison purposes. The following sections discuss the various methodologies used in developing future travel demand for this study area.

##### 3.2.1 Travel Demand Model

This effort included the comparison of No-Build (no railroad overpass) model forecasts and forecasts using historic AADT traffic and growth trends (2004-2014). The No-Build model includes the future US 301 Bypass which will bypass Starke on the west side of town. The model results show the demand volume on US 301 is expected to approximately double by year 2040, and approximately half of the traffic will take the bypass and half will remain in town. Therefore, the volume through town is expected to remain similar to current volumes. The assumption that

volumes will remain similar to existing volumes on U.S. 301 into the future is also corroborated by the observed historic traffic growth.

### 3.2.2 Historical Traffic Growth

Trend analysis, based on the historic count information obtained from the FDOT Traffic Information DVD, was performed for 10 FDOT count stations. Historical trend graphs are shown in Figures 4 through 13. Based on a review of the 10 sites, historic growth trends throughout Starke generally show a decrease in traffic over the past 10 years. A slight increase in traffic has been noticed since 2011 along US 301.

Figure 4 - Historical Traffic Growth – Call Street

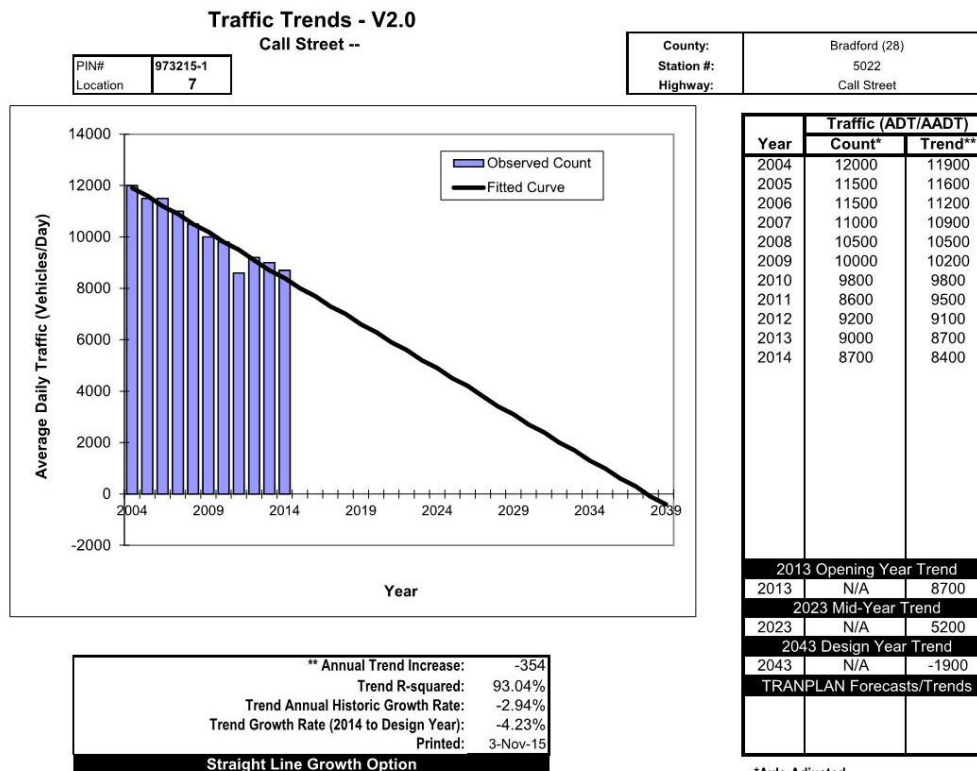


Figure 5 - Historical Traffic Growth - SR 16

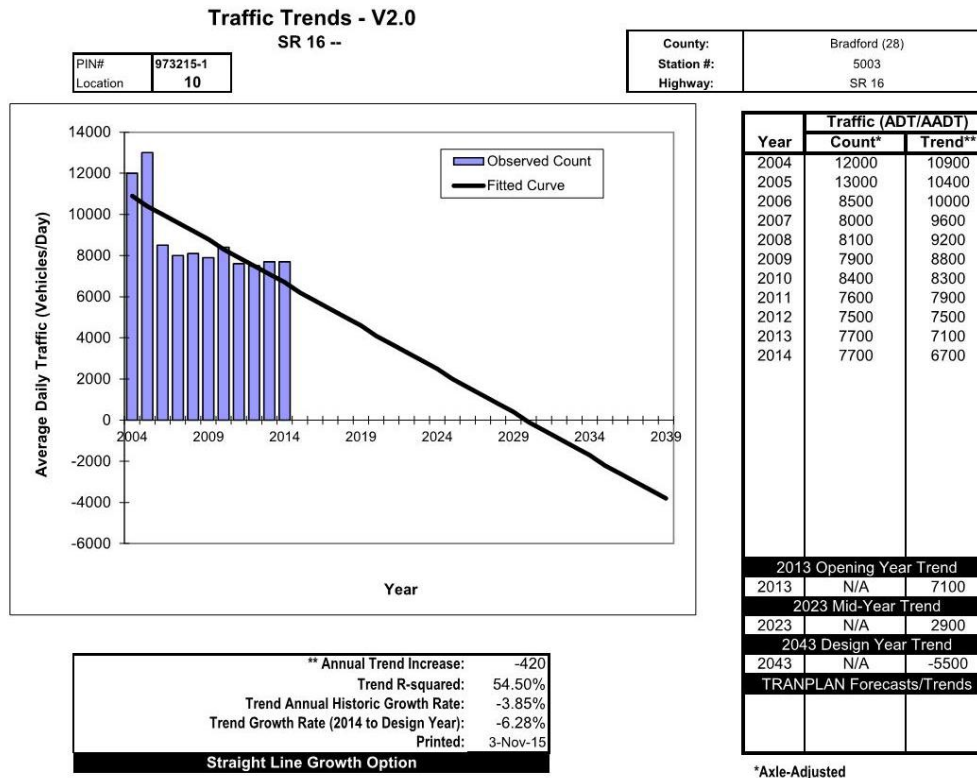


Figure 6 - Historical Traffic Growth - SR 100

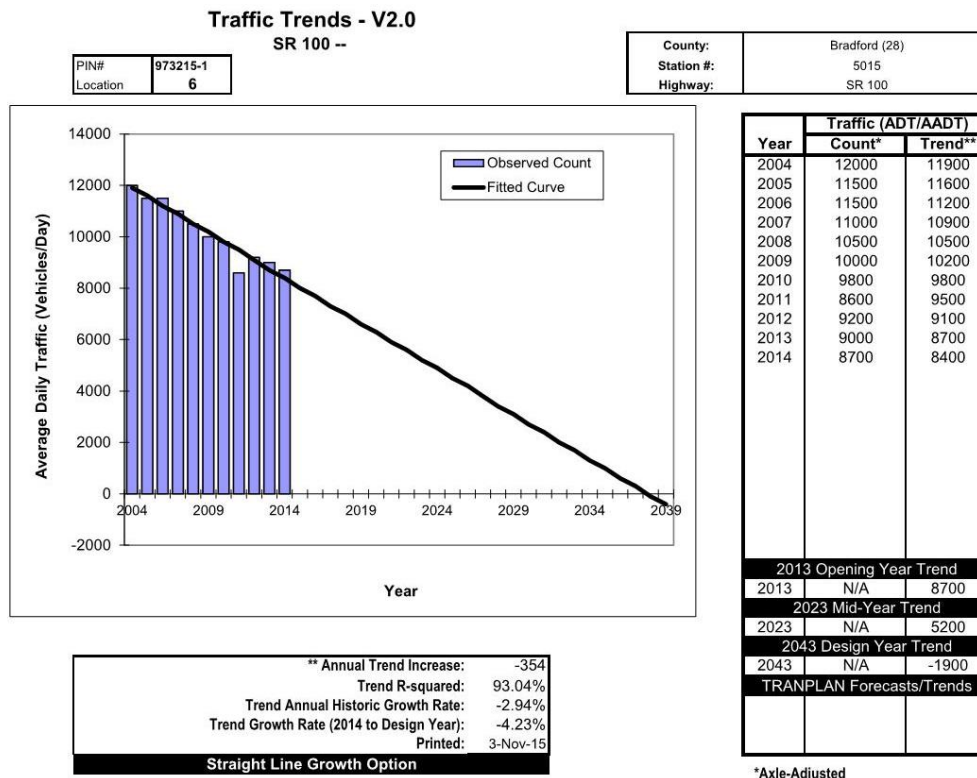


Figure 7 - Historical Traffic Growth - SR 100

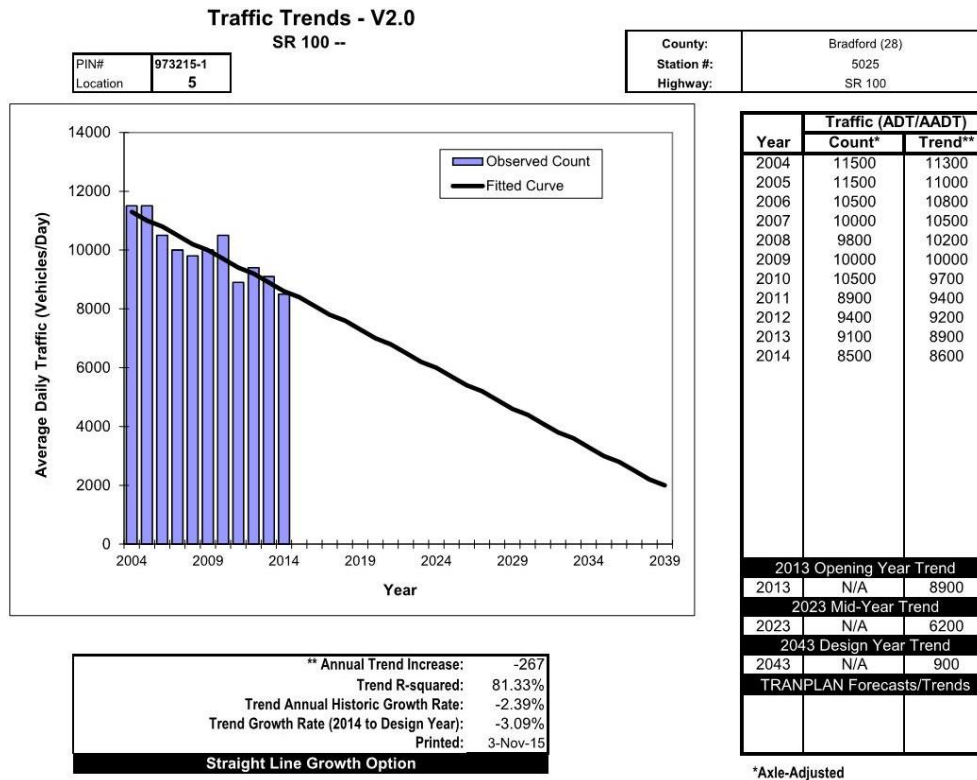


Figure 8 - Historical Traffic Growth - US 301

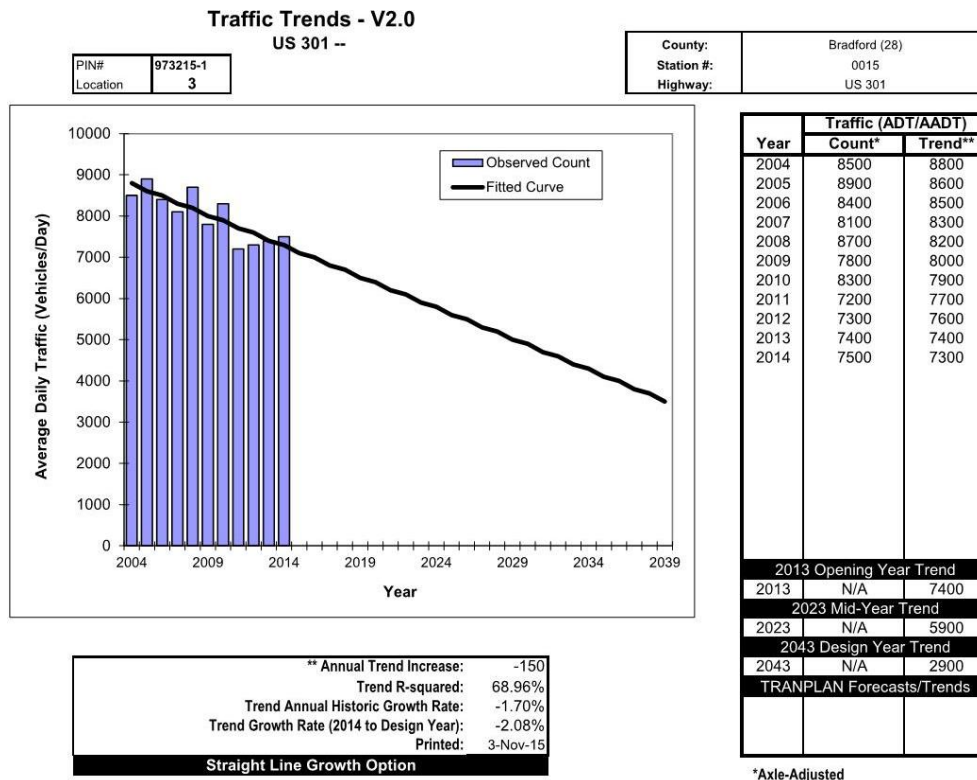


Figure 9 - Historical Traffic Growth - US 301

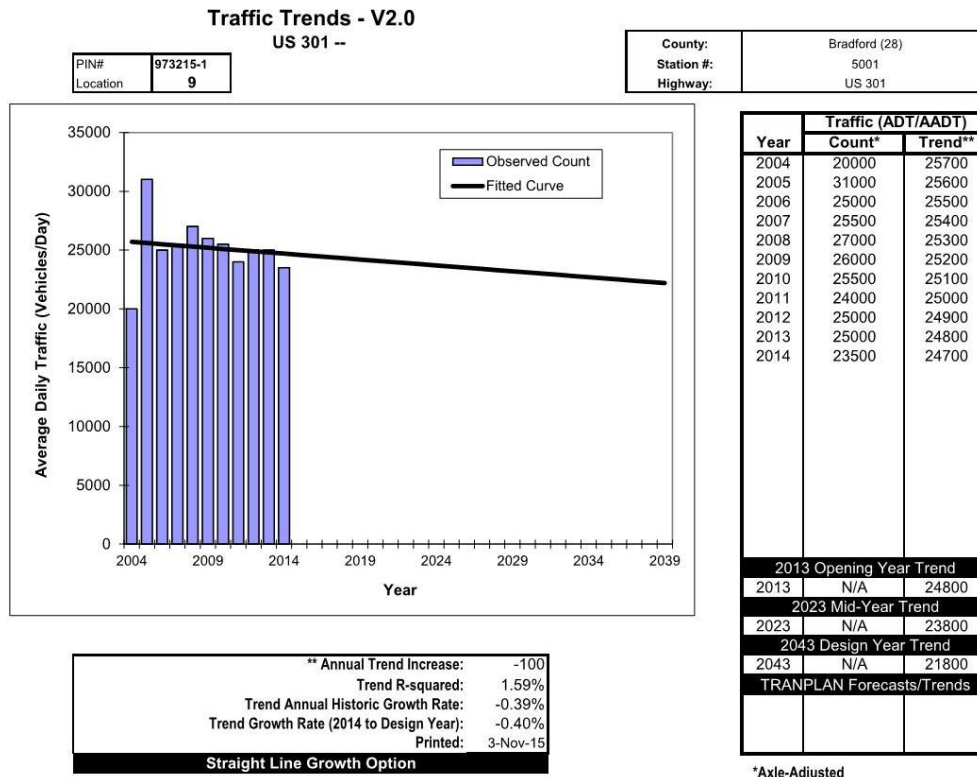


Figure 10 - Historical Traffic Growth - US 301

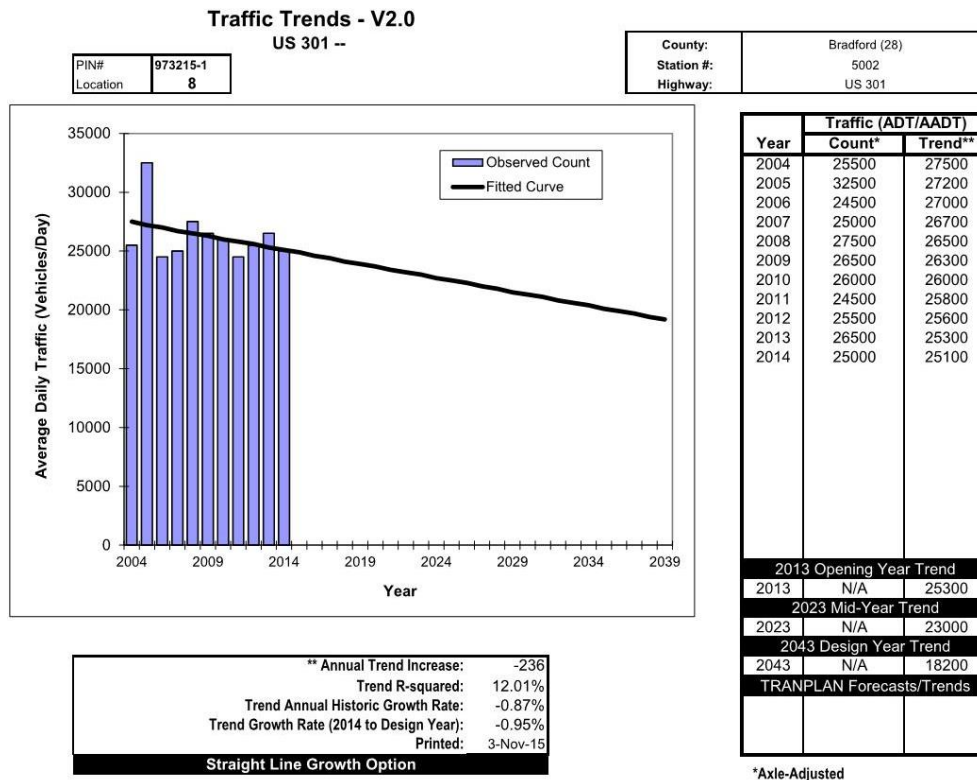




Figure 11 - Historical Traffic Growth - US 301

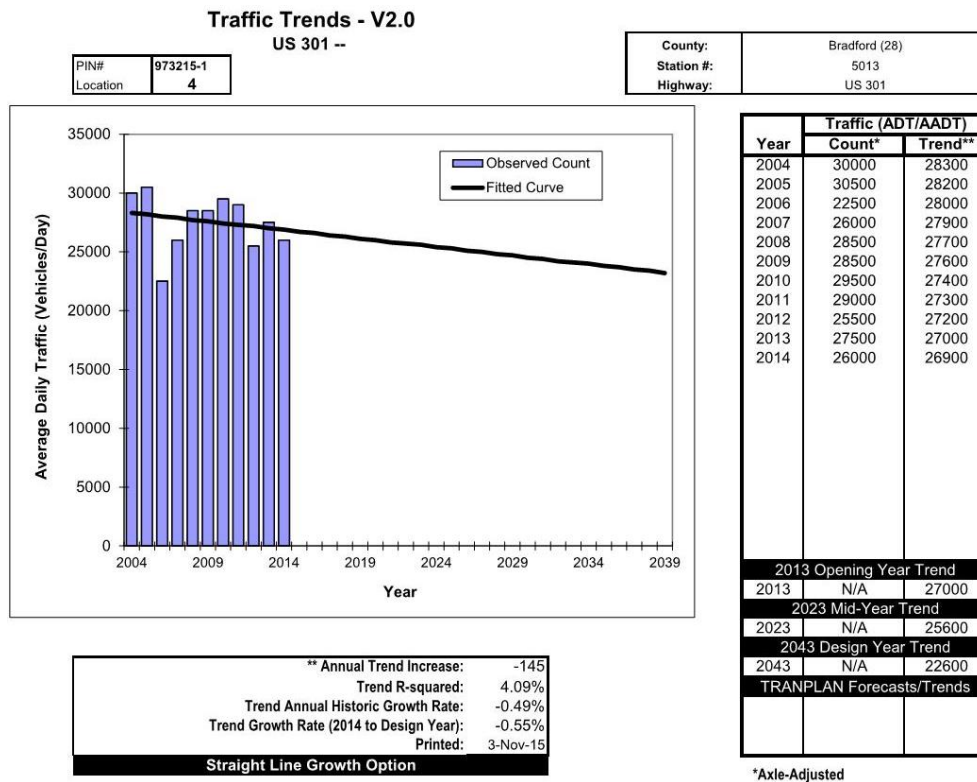


Figure 12 - Historical Traffic Growth - US 301

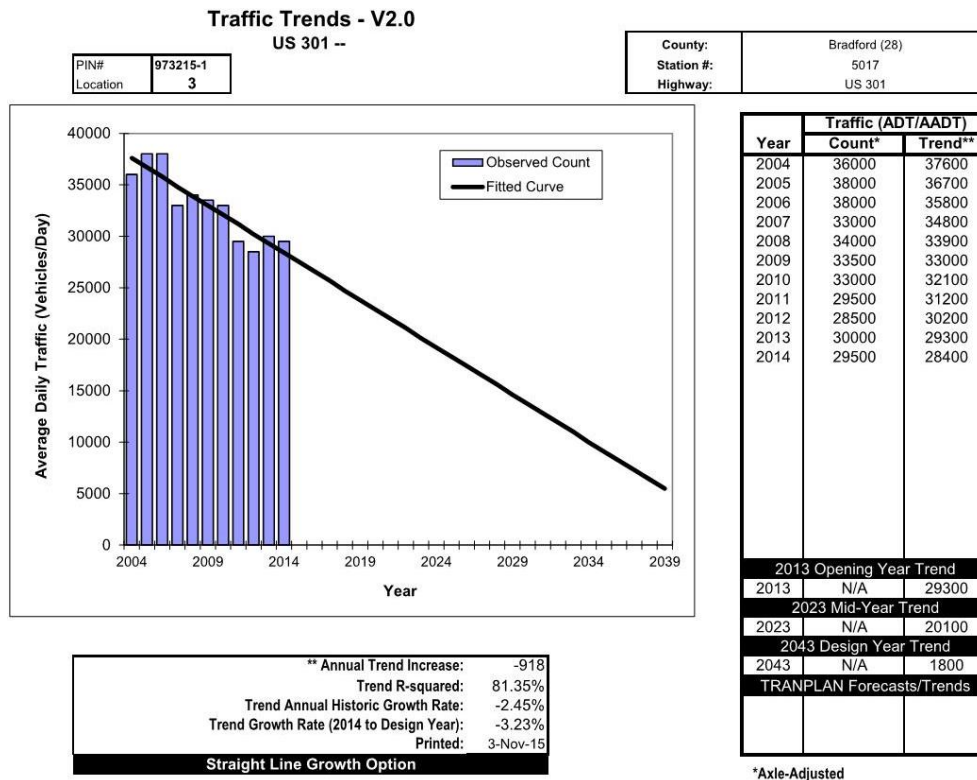
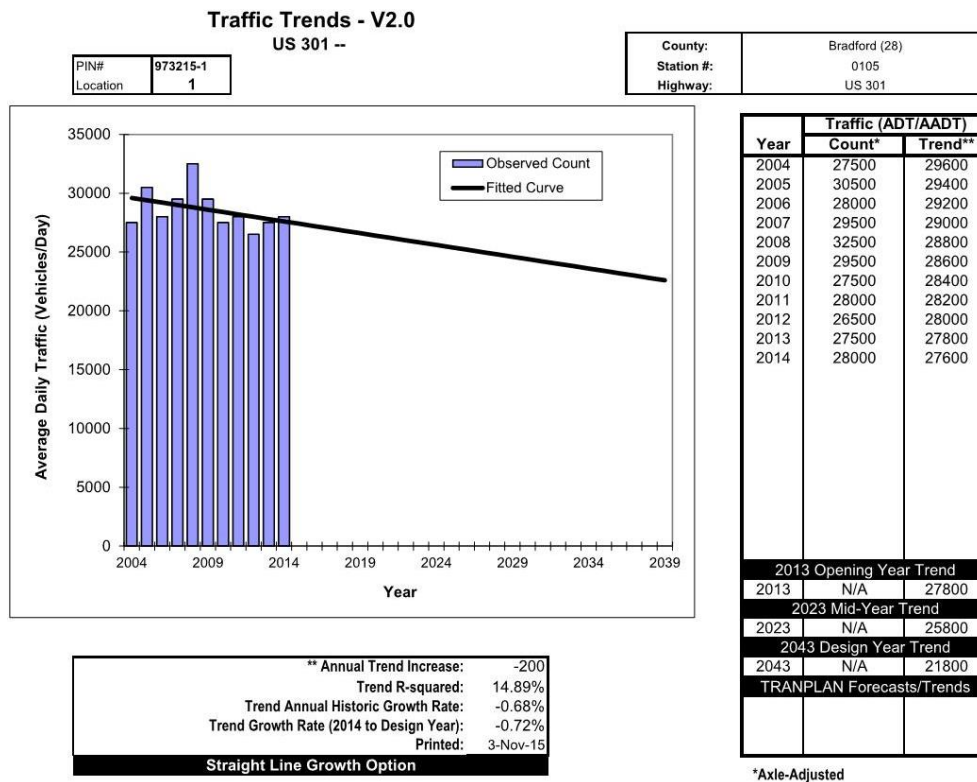


Figure 13 - Historical Traffic Growth - US 301



### 3.2.3 Population Projections

In addition to the trends analysis, population data from U.S. Census and population projections published by the Bureau of Economic and Business Research (BEBR) at the University of Florida were used for comparison purposes. Table 6 shows the 2000 and 2010 Census Populations for Bradford County, City of Starke and State of Florida.

Table 6 - 2000 and 2010 Census Population – Bradford County			
Year	Florida	Bradford	City of Starke
2000 (Population)	15,982,349	26,088	5,863
2010 (Population)	18,801,310	28,520	5,449
Annual Growth Rate	17.68%	9.32%	-7.06%

Based on Census population counts, although Bradford County shows a growth rate of 9.32% between 2000 and 2010 Census, the city of Stark shows a decrease in population of 7.06%.

Finally, medium population projections for Bradford County were obtained from the University of Florida BEBR and analyzed to determine future traffic growth. Table 7 shows the projected population of Bradford County from 2010 through 2040 as well as interpolated annual population and growth rate. Between 2010 and 2020 the population is anticipated to decrease by 0.03%, but it will start increasing by 0.50% between 2020 and 2030 and 0.36% between 2030 and 2040. The population of Bradford County is projected to increase by 9% in the next 30 years.

Table 7 - Population Projections for Bradford County			
Year	Population Projections (Source: UF BEBR)	Annual Population Projection	Estimated Annual Growth Rate
<b>2010</b>	<b>28,520</b>	<b>28,520</b>	<b>-0.03%</b>
2011		28,513	-0.03%
2012		28,505	-0.03%
2013		28,498	-0.03%
2014		28,490	-0.03%
2015		28,483	-0.03%
2016		28,476	-0.03%
2017		28,468	-0.03%
2018		28,461	-0.03%
2019		28,453	-0.03%
<b>2020</b>	<b>28,446</b>	<b>28,446</b>	<b>-0.03%</b>
2021		28,590	0.50%
2022		28,733	0.50%
2023		28,877	0.50%
2024		29,020	0.49%
2025		29,164	0.49%
2026		29,308	0.49%
2027		29,451	0.49%
2028		29,595	0.49%
2029		29,738	0.48%
<b>2030</b>	<b>29,882</b>	<b>29,882</b>	<b>0.48%</b>
2031		29,992	0.37%
2032		30,101	0.36%
2033		30,211	0.36%
2034		30,321	0.36%
2035		30,431	0.36%
2036		30,540	0.36%
2037		30,650	0.36%
2038		30,760	0.36%
2039		30,869	0.36%
<b>2040</b>	<b>30,979</b>	<b>30,979</b>	<b>0.35%</b>

#### 3.2.4 Previous Studies

For comparison purposes, traffic projections from the Final Environmental Impact Statement (FEIS) – US 301 were reviewed. The traffic projections were prepared in November 2006 and did not anticipate the decline in traffic associated with the 2008-2009 recession. As a result, all of the traffic projections for year 2015 were much higher than actual 2015 traffic counts.

#### 3.3 Recommended Growth Rates

Looking at overall macro trends, the population of Bradford County is projected to grow by 9% in the next 30 years. The traffic counts along the project area are beginning to show a positive growth from 2011 onward. Given the amount of available land for development, and increasing population projections, a growth rate of 1% is reasonable and recommended for this study. The projected opening year 2023 and design year 2043 turning movement volumes based on this growth rate will be analyzed for the major intersections along the project study area. Build intersection turning movement volumes were developed by distributing the No-Build intersection turning movements based on the location of the railroad overpass and traffic characteristics observed in the study area. No-Build and Build intersection turning movement volumes along with the methodology and assumptions are presented in Section 4.



## 4 ALTERNATIVES

This Section discusses the concept, traffic development methodology and assumptions for the No-Build and two (2) Build Alternatives analyzed in this study. The pros and cons of the Build Alternatives are summarized and intersection turning movement volumes have been included on figures.

### 4.1 No Build Alternative

The No-Build Alternative represents no modifications along the project area associated to the railroad overpass. This scenario consists of not constructing a railroad overpass for the City of Starke or any other improvements recommended as part of this project. Improvements recommended as part of the US 301 Alternate Truck Route PD&E Study are included as part of the No-Build scenario.

#### Traffic Methodology and assumptions:

Intersections where count data was available were set as control intersections and the volumes for the remaining intersections were developed and adjusted for differences. Movements at control intersections where the peak hour count data was zero were changed to 5 vehicles per hour if the movement was permitted. As mentioned in Section 3, a growth rate of 1% was applied to existing counts to develop volumes for the opening year and design year. The No-Build turning movement volumes can be found in the No-Build 2023 and 2043 AM (PM) Intersection Turning Movement Figures 14 and 15 respectively.

### 4.2 SR 100 Build Alternative (Alternative 1) – SR 100 Existing Alignment Concept

This alternative is located in downtown Starke. The proposed railroad overpass would be located on SR 100 from approximately Adams Street to South Street. The majority of the bridge would be open underneath and would allow the use of that space for various activities. One-way frontage roads would be provided on both the north and south side of the bridge to allow local traffic access to Thompson, Cherry, and Church Street. Walnut Street would no longer connect through the SR 100 intersection. Traffic utilizing Walnut Street would have to travel one block to the east of Thompson Street or travel west to US 301. Traffic would be maintained during construction primarily through the use of the frontage roads. Measures will be taken to minimize disruptions to

local traffic during construction. The preliminary concept for this alternative is illustrated in Appendix A.

Traffic Methodology and Assumptions:

The first step in developing traffic distribution due to project changes was to estimate the number of trips that will be diverted due to the overpass and redirected in the network. To predict the estimated number of peak-hour trips that would be attracted to utilize the overpass on SR 100, the O-D data was referenced.

It was assumed that traffic on SR 16 headed towards south of SR 100 on US 301 will utilize Water Street and turn left on SR 100 to utilize the overpass. Similarly, in order to avoid the rail road crossing on SR16, northbound traffic on US 301 headed towards SR 16 will turn right at SR 100 to utilize the travel time savings because of the overpass. The percentage of diverted traffic was established on the basis of the O-D pair (AM 35%; PM 27%).

The O-D pairs of US 301 with Jefferson Street, Jackson Street and Adkins Street resulted in less than 10 diverted trips and hence were ignored for this analysis.

Under existing and build conditions, westbound left turns are not allowed from E Call Street onto US 301. Therefore traffic on E Call Street headed south of SR 100 is already utilizing SR 100. Due to the close proximity of E Call Street to SR 100, it is assumed that 50% of the northbound right and southbound left turning traffic at US 301/E Call Street intersection will turn at SR 100 to utilize the travel time savings from the overpass.

A conservative approach was adopted to estimate the distribution of westbound traffic on SR 100. In real life scenario, some of the westbound traffic will use South Street to access local business. However, for this analysis, it was assumed that the westbound traffic on SR 100 will turn right at Water Street to access local businesses. This approach was adopted to test the operational sensitivity of the E Call Street/Water Street intersection due to volumes changes. The percentage of westbound traffic on SR 100 using the bridge was derived from the O-D study (AM 64%; PM 69%).

Since the through access on Walnut Street will be cut off due to the project, traffic was distributed to Thompson Street, Cherry Street and Church Street. As a result, volumes on these streets will increase. As the traffic moves through the network, a shift of volume will also affect Adkins Street, Washington Street and Walnut Street.

Based on the O-D data, it was assumed that 60% of the traffic will utilize the bridge due to its travel time savings.

The following intersections were assumed to be signalized for SR 100 Build Alternative for safety and sight distance concerns and lack of storage space between intersections under the bridge. As project moves to the next phases, the need for signalization will need to be reevaluated:

- SR 100 @ Thompson Street (north and south of the bridge)
- Thompson Street is assumed to operate as a two-way section between E Call Street and SR 100
- SR 100 @ Cherry Street (north and south of the bridge)
- SR 100 @ Water Street

The SR 100 Build Alternative turning movement volumes can be found in the Build Alternative 1 2023 and 2043 AM (PM) Intersection Turning Movement Figure 16 and Figure 17.

#### 4.3 SE 144<sup>th</sup> Avenue Build Alternative (Alternative 2) – SE 144<sup>th</sup> Avenue Concept

This alternative is located south of Starke's city limits. The proposed railroad overpass would be located along 144<sup>th</sup> Street beginning at US 301 and traveling east to tie into existing 144<sup>th</sup> Street. Alexander Road will be reconstructed into a cul-de-sac and no longer connect to 144<sup>th</sup> Street. Hayes Avenue will be realigned with 144<sup>th</sup> Street to allow through traffic. Once the bridge construction is complete, local roads will be reopened to traffic. The preliminary concept for this alternative is illustrated in Appendix A.

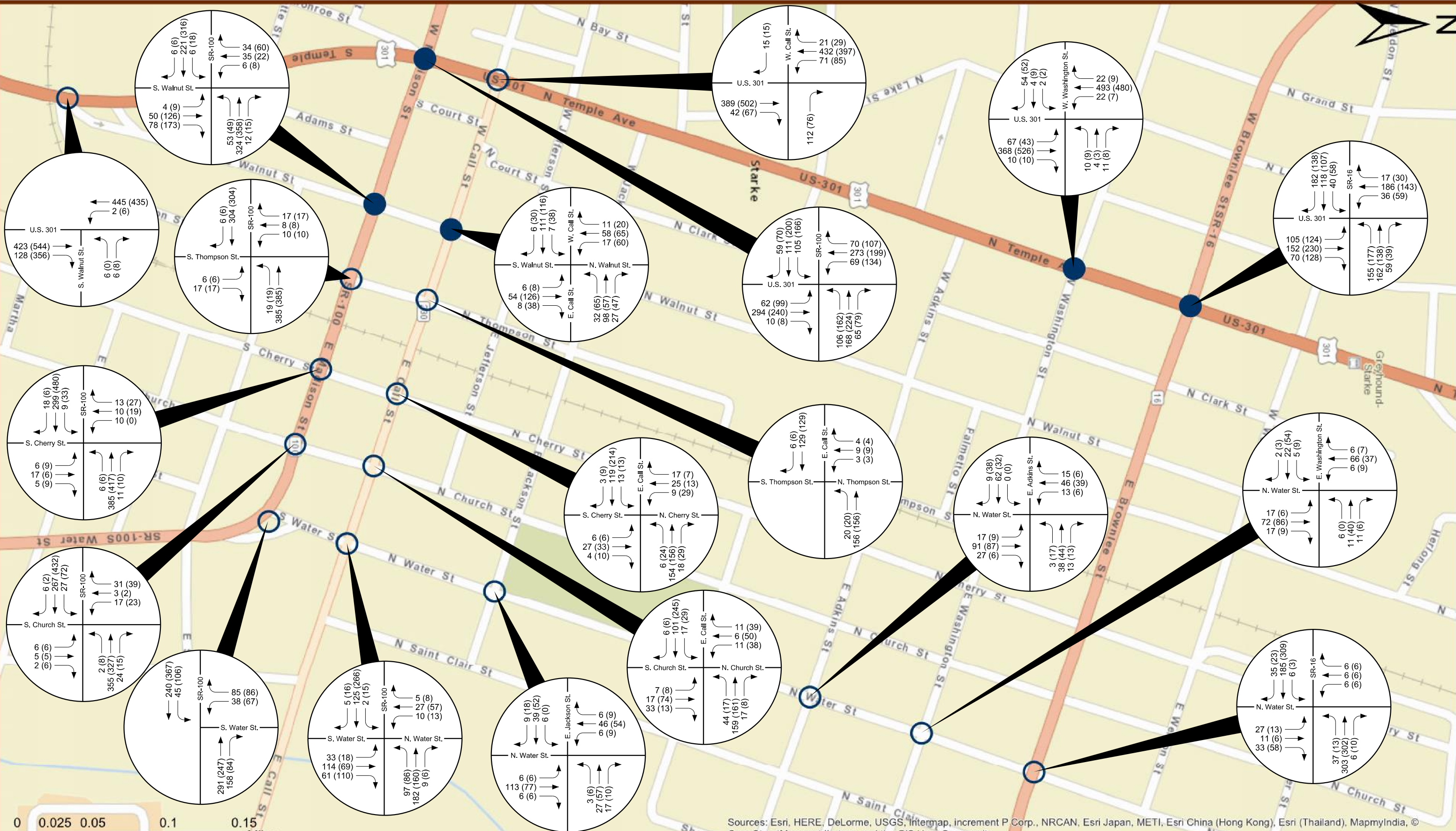
#### Traffic Development Methodology and Assumptions

The number of trips diverted under SE 144<sup>th</sup> Avenue Build Alternative is very limited due to the location of the overpass. SE 144<sup>th</sup> Avenue Build Alternative does not have a significant impact on traffic distribution of the study intersections. It was assumed that approximately 30% of the traffic headed towards SR 16 and SR 100, west of US 301, will utilize the overpass on SE 144<sup>th</sup> Street. Diverted traffic from SR 100 passing over the bridge on SE 144<sup>th</sup> Avenue will have to travel more than half a mile to complete the same movement. This alternative provides minimal travel time benefits and therefore a small percentage of diverted trips were assumed for this alternative.

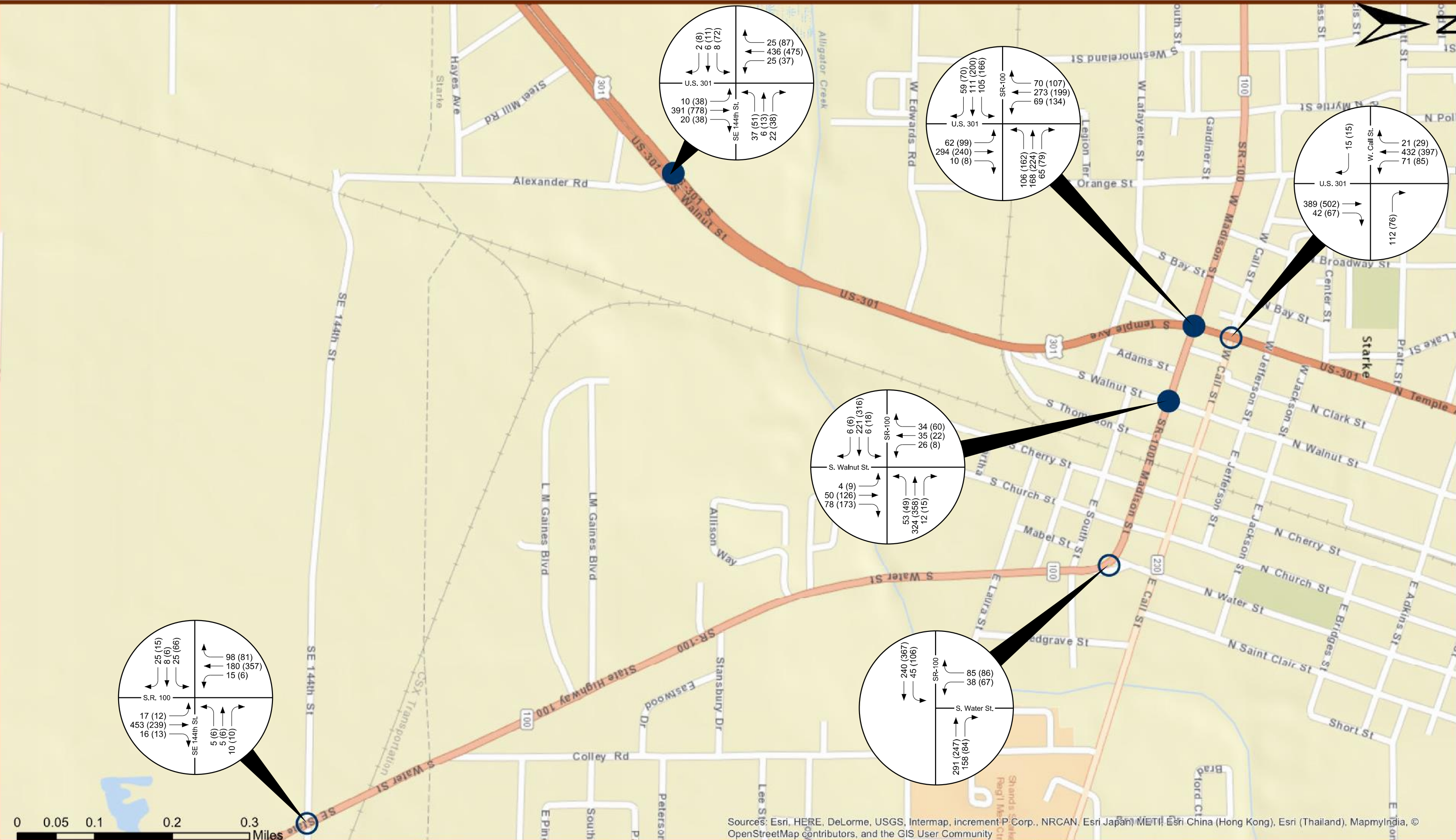
Similarly, a reasonable percentage of diverted trips from SR 16 (AM 5%; PM 12%) and SR 100 (AM 8%; PM 12%) were assumed for southbound traffic headed towards south of SE 144<sup>th</sup> Avenue.

The SE 144<sup>th</sup> Avenue Build Alternative turning volumes can be found in the SE 144<sup>th</sup> Avenue Build Alternative (Build Alternative 2) 2023 and 2043 AM (PM) Intersection Turning Movement Figures: Figure 18 and Figure 19.







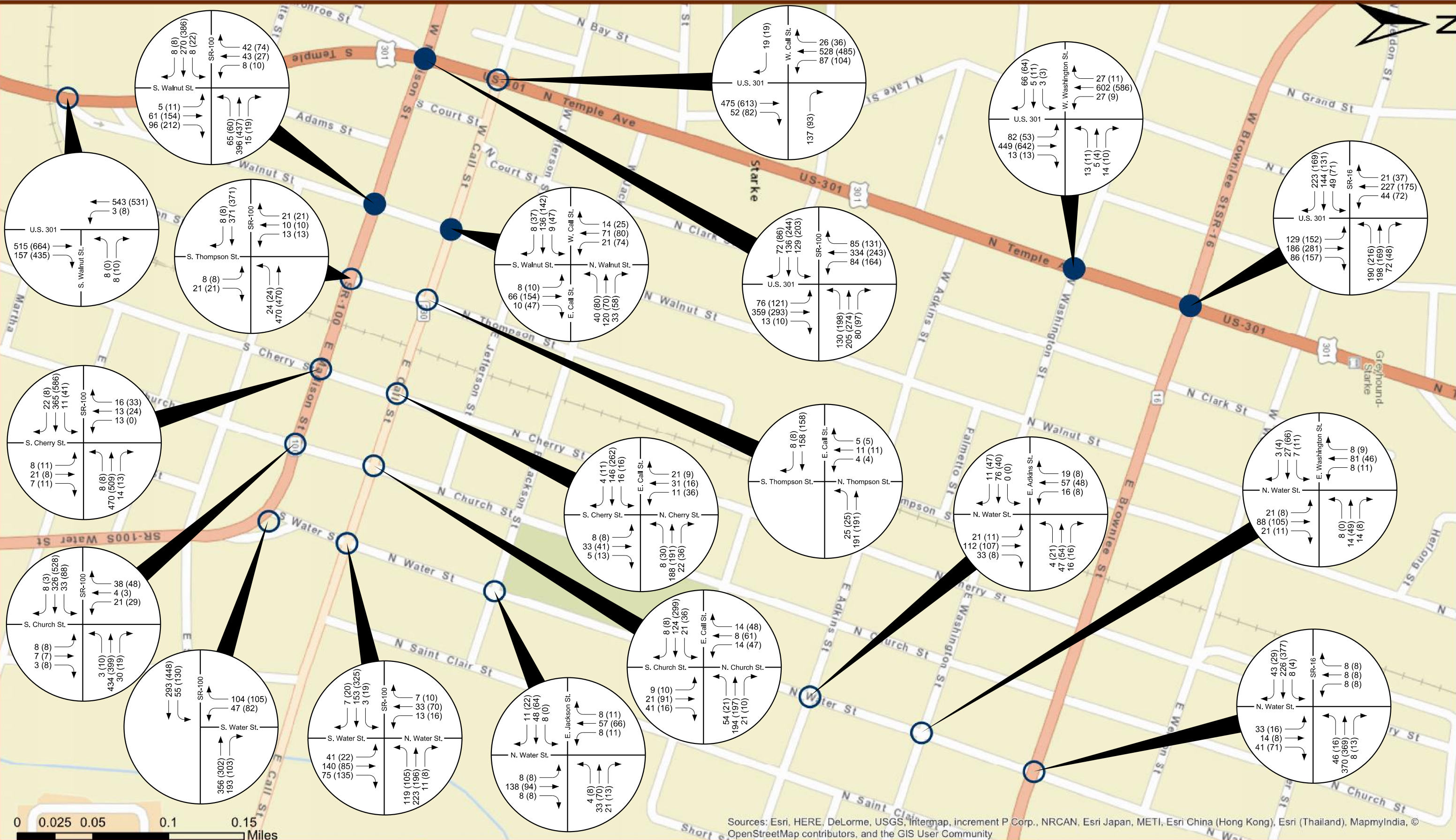


Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

# Starke Railroad Overpass Traffic Study

Figure 14  
Sheet 2  
No Build - Opening Year 2023 AM (PM)  
Intersection Turning Movement Volumes



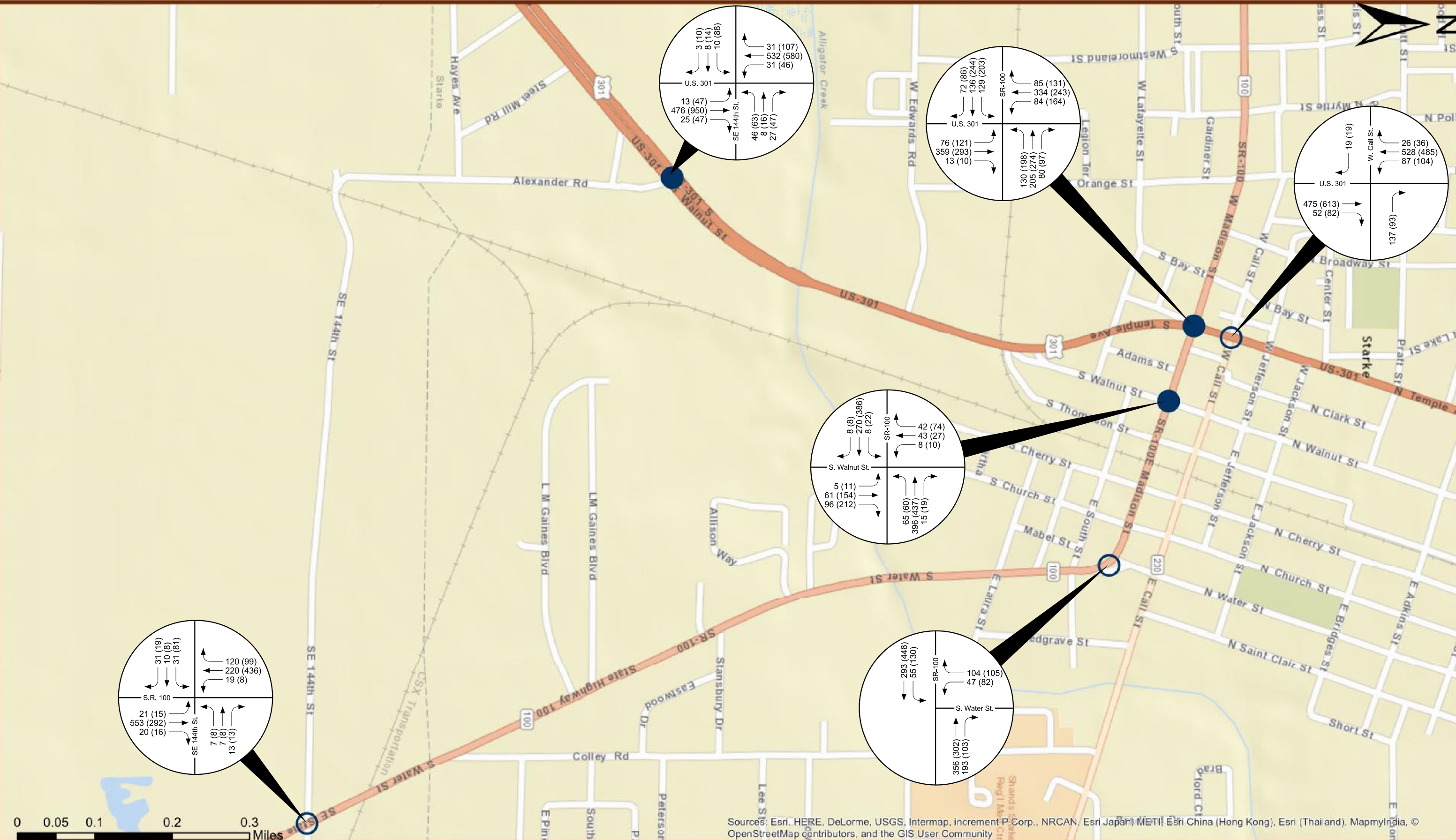



Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

# Starke Railroad Overpass Traffic Study


**Figure 15**  
**Sheet 1**  
**No Build - Design Year 2043 AM (PM)**  
**Intersection Turning Movement Volumes**





  
Signalized Intersection

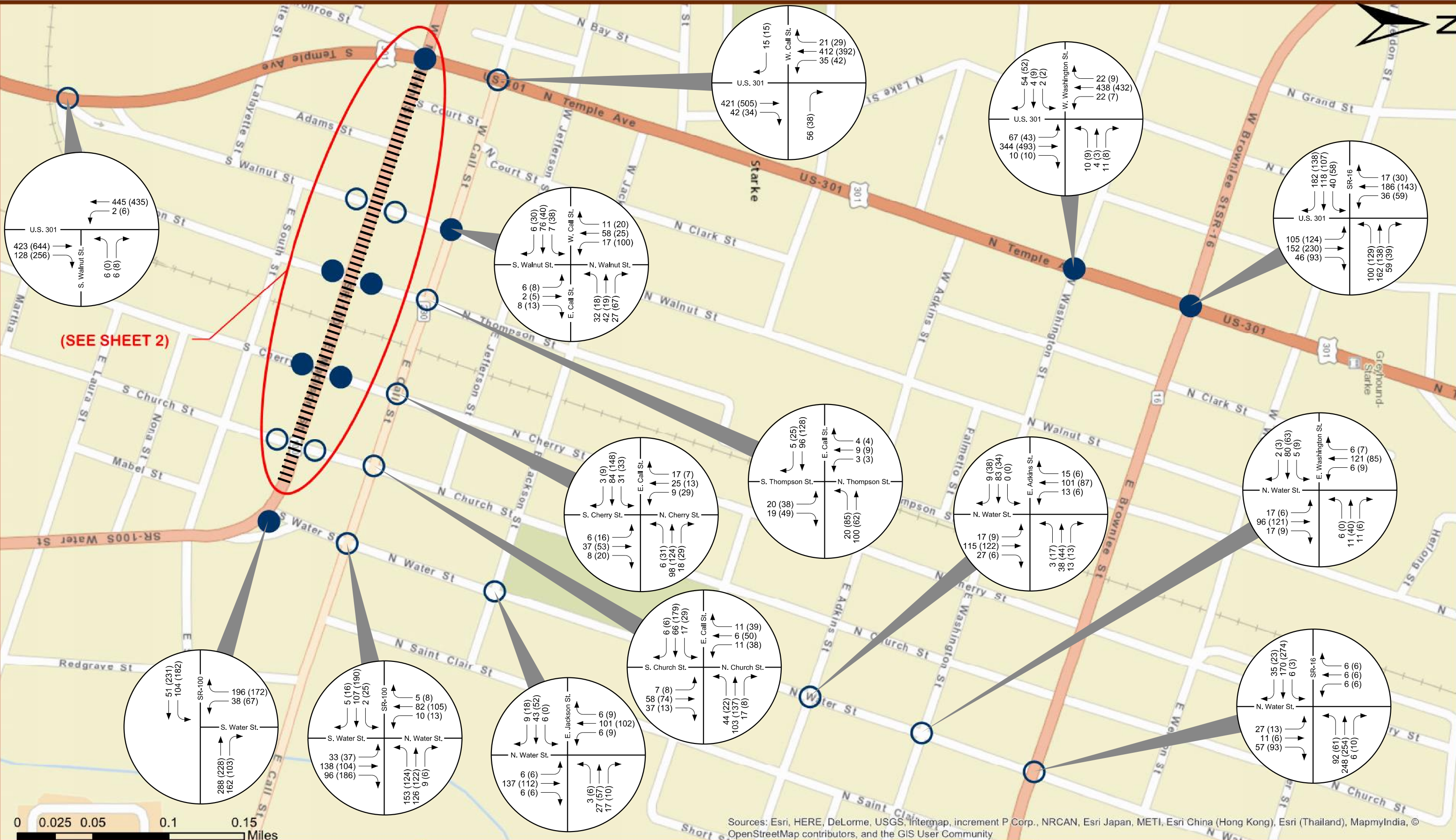
**Legend**  
xxx (xxx) AM (PM)

  
Unsignalized Intersection

# Starke Railroad Overpass Traffic Study

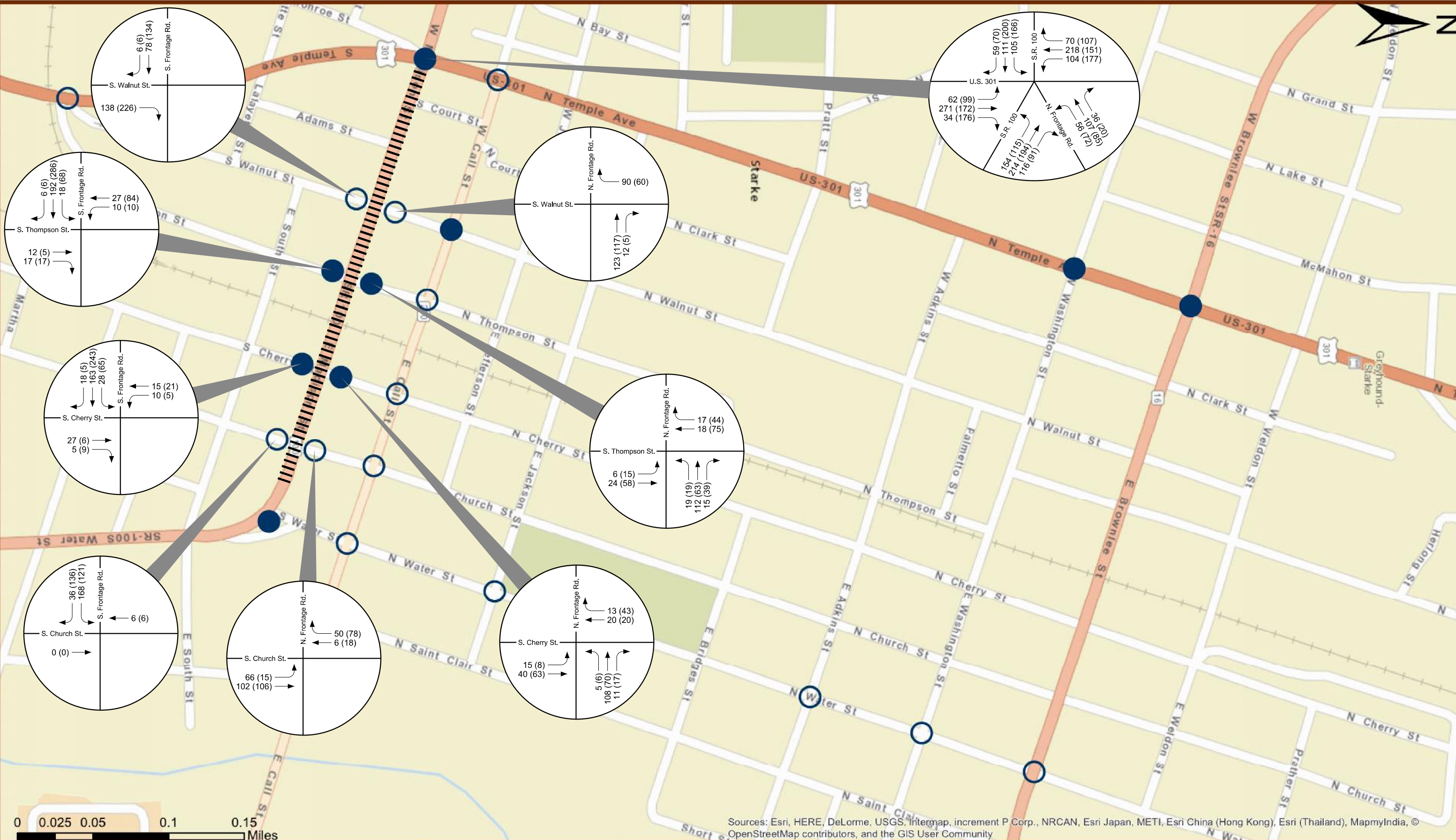
Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), MapmyIndia, © OpenStreetMap contributors, and the GIS User Community





Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), MapmyIndia, OpenStreetMap contributors, and the GIS User Community





0 0.025 0.05 0.1 0.15 Miles

Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

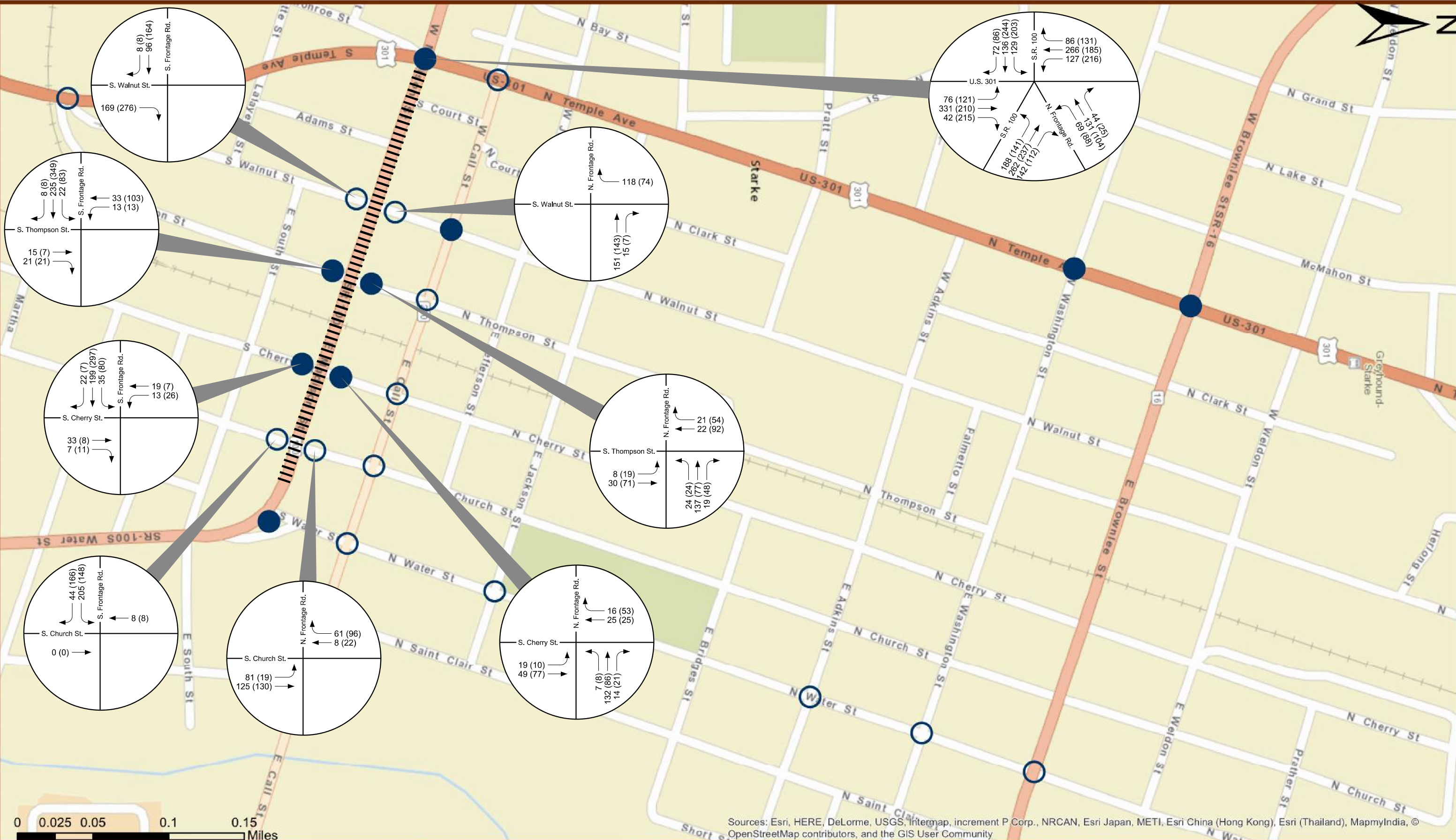
# Starke Railroad Overpass Traffic Study

**Figure 16**  
**Build Alt. 1 - Opening Year 2023 AM (PM)**  
**Sheet 2**  
**Intersection Turning Movement Volumes**



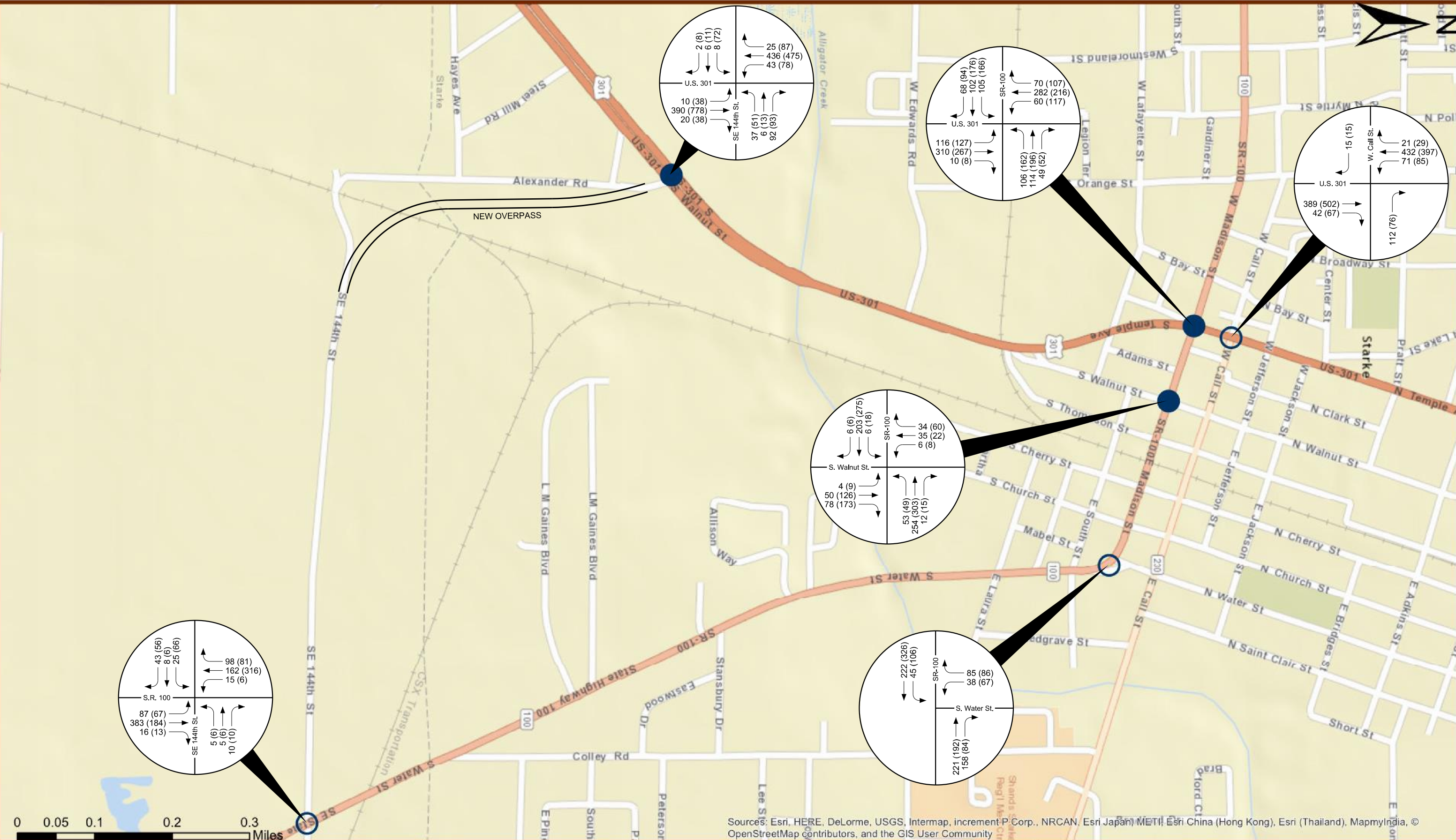






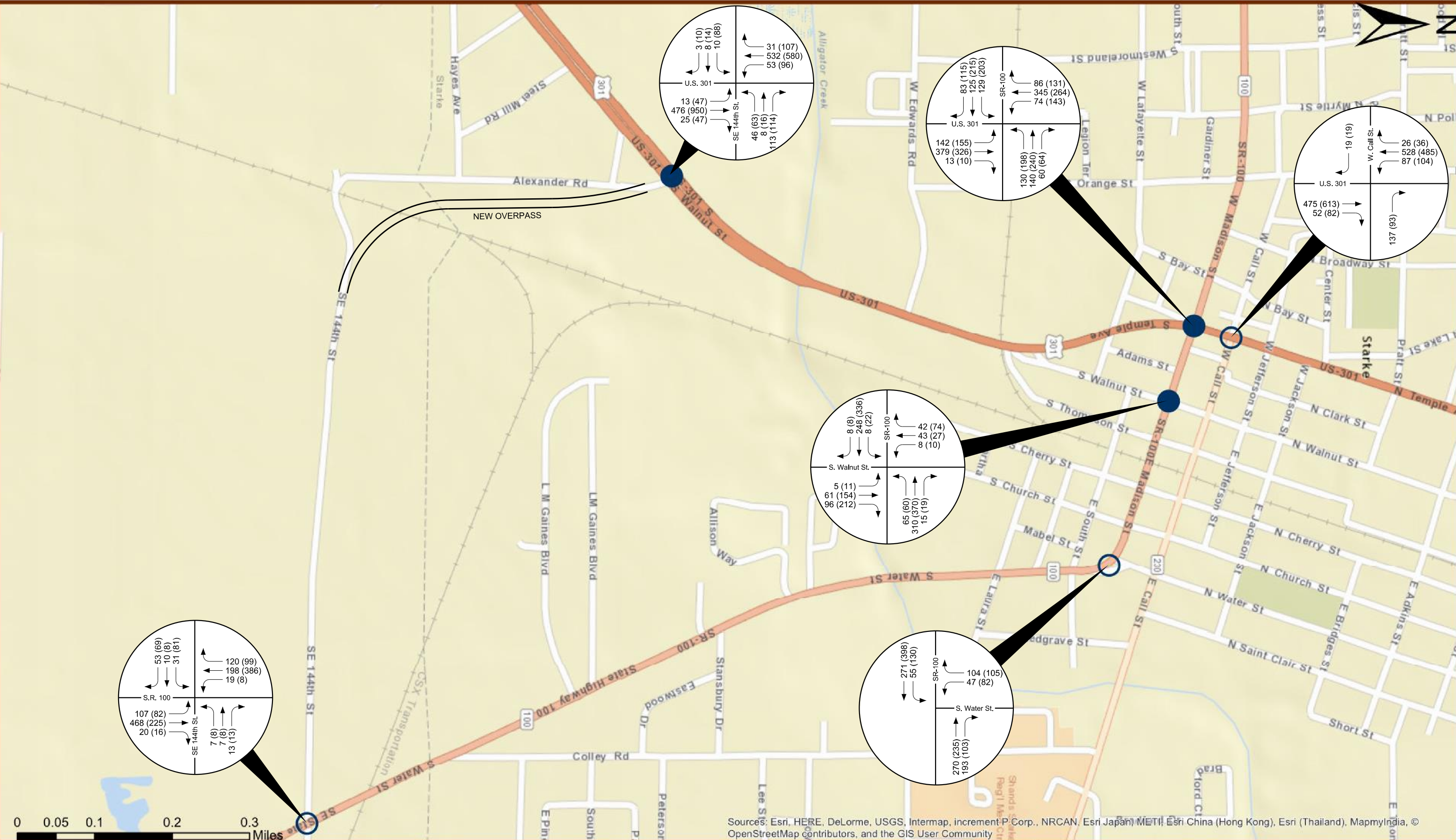
Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), MapmyIndia, © OpenStreetMap contributors, and the GIS User Community





Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), MapmyIndia, © OpenStreetMap contributors, and the GIS User Community





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# Starke Railroad Overpass Traffic Study

Build Alt. 2 - Design Year 2043 AM (PM)  
Intersection Turning Movement Volumes

Figure 19

## 5 EVALUATION OF ALTERNATIVES

### 5.1 Introduction

The analysis findings presented in this traffic technical memorandum is intended to assist the FDOT and the Federal Highway Administration (FHWA) in reaching a decision on the optimal Railroad Overpass alternative for the City of Starke. Traffic analysis is one of several factors that should be considered in selection of a recommended alternative. Other factors to consider include, but are not limited to: social, environmental, historical, cultural factors, and cost factors such as right-of-way acquisition, business damages and construction which will be determined as part of the ongoing PD&E Study and subsequent design phase of the project.

Study intersections for No-Build, SR 100 Build Alternative and SE 144<sup>th</sup> Avenue Build Alternative were analyzed using Synchro 9.0. LOS analyses were conducted in accordance with procedures of the Highway Capacity Manual (HCM) 2010 Edition. An LOS standard of “D” has been assumed for the study intersections. Delay and LOS have been reported for the signalized and unsignalized study intersections. A comparison of the No-Build with the two Build Alternatives has been included. Operational analysis files for the No-Build and Build alternatives analyzed are included in Appendix E.

### 5.2 Opening Year 2023 No-Build Analysis

Traffic operations analyses were conducted for the No-Build Alternative for opening year 2023 conditions. The results are summarized in Table 8 and Figure 20.

The opening year 2023 intersections analyses for the No-Build conditions show that the study intersections operate at acceptable LOS of D or better during AM and PM peak hours.

### 5.3 Design Year 2043 No-Build Analysis

Traffic operations analyses were conducted for the No-Build Alternative for design year 2043 conditions. The results are summarized in Table 9 and Figure 21.

The design year 2043 intersections analyses for the No-Build conditions show that the study intersections operate at acceptable LOS of D or better during AM and PM peak hours.

Table 8 - Opening Year 2023 No-Build Intersection Analysis Results

Intersection	AM Peak		PM Peak	
	Delay <sup>1</sup>	LOS	Delay <sup>1</sup>	LOS
US 301 at SE 144 <sup>th</sup> Avenue <sup>1</sup>	14.7	B	17.1	B
US 301 at Walnut Street	11.2	B	12.0	B
US 301 at SR 100/Madison Street <sup>1</sup>	35.2	D	35.7	D
US 301 at Call Street	9.5	A	10.1	B
US 301 at Washington Street <sup>1</sup>	26.1	C	31.0	C
US 301 at SR 16 <sup>1</sup>	21.7	C	18.5	B
SR 100 at Walnut Street <sup>1</sup>	28.7	C	34.2	C
SR 100 at Thompson Street	12.0	B	12.0	B
SR 100 at Cherry Street	12.4	B	14.1	B
SR 100 at Church Street	12.3	B	13.8	B
SR 100 at Water Street	--	A	--	A
SR 100 at SE 144 <sup>th</sup> Avenue	15.1	C	18.1	C
Call Street at Walnut Street <sup>1</sup>	29.9	C	33.6	C
Call Street at Thompson Street	10.9	B	11.0	B
Call Street at Cherry Street	11.6	B	13.9	B
Call Street at Church Street	11.7	B	16.1	C
Call Street at Water Street	19.2	C	20.9	C
Jackson Street at Water Street	10.4	B	10.6	B
Adkins Street at Water Street	11.1	B	10.6	B
Washington Street at Water Street	10.5	B	10.6	B
SR 16 at Water Street	14.2	B	15.2	C

1 = Signalized Intersection

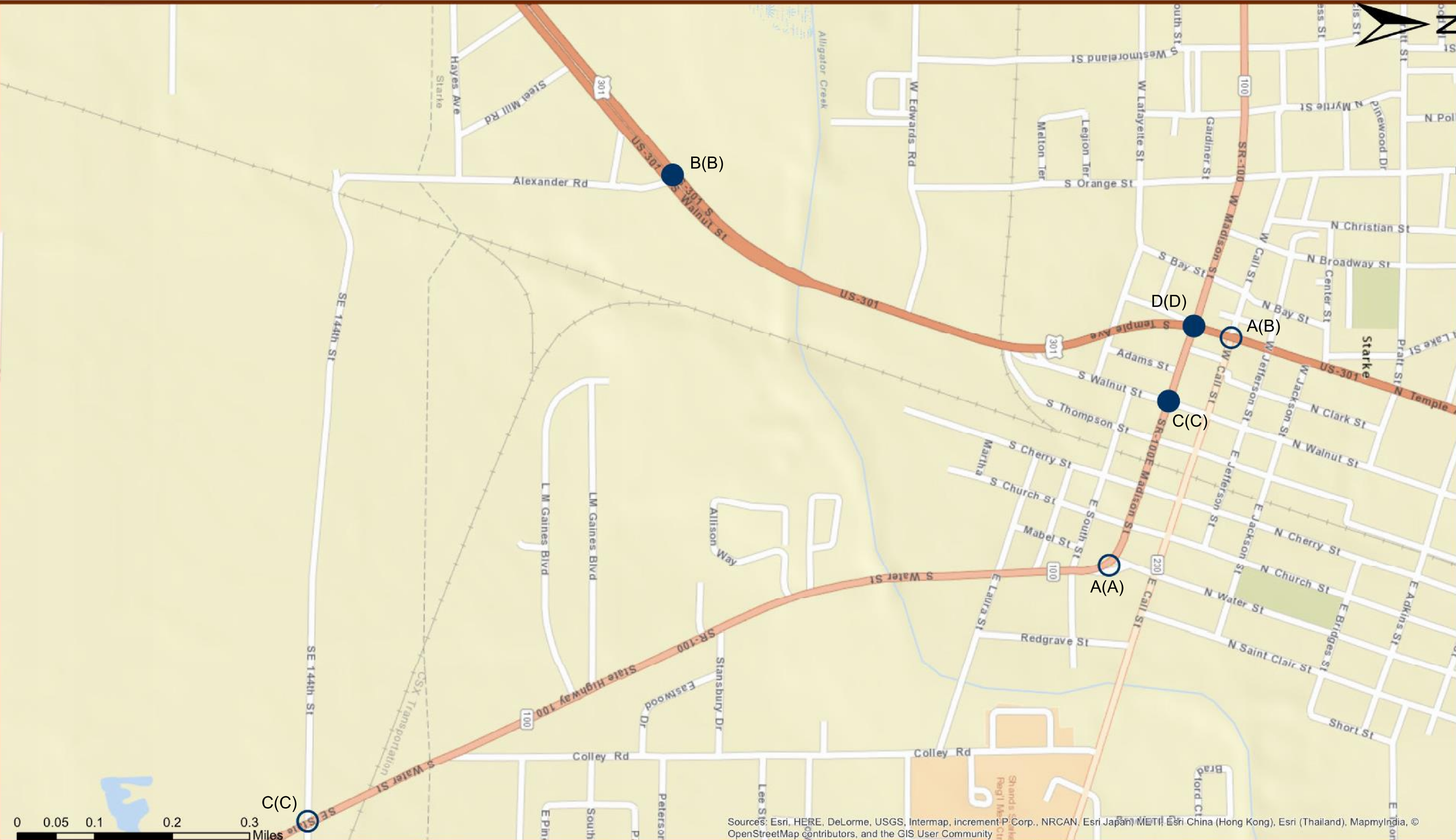
For unsignalized intersections, maximum approach delay is reported

-- = as reported by Synchro









Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

  
Signalized Intersection

**Legend**  
LOS: C (D) AM (PM)

  
Unsignalized Intersection

# Starke Railroad Overpass Traffic Study

No Build: Opening Year 2023 AM (PM)  
Intersection LOS

**Figure 20**  
Sheet 2

Table 9 – Design Year 2043 No-Build Intersection Analysis Results

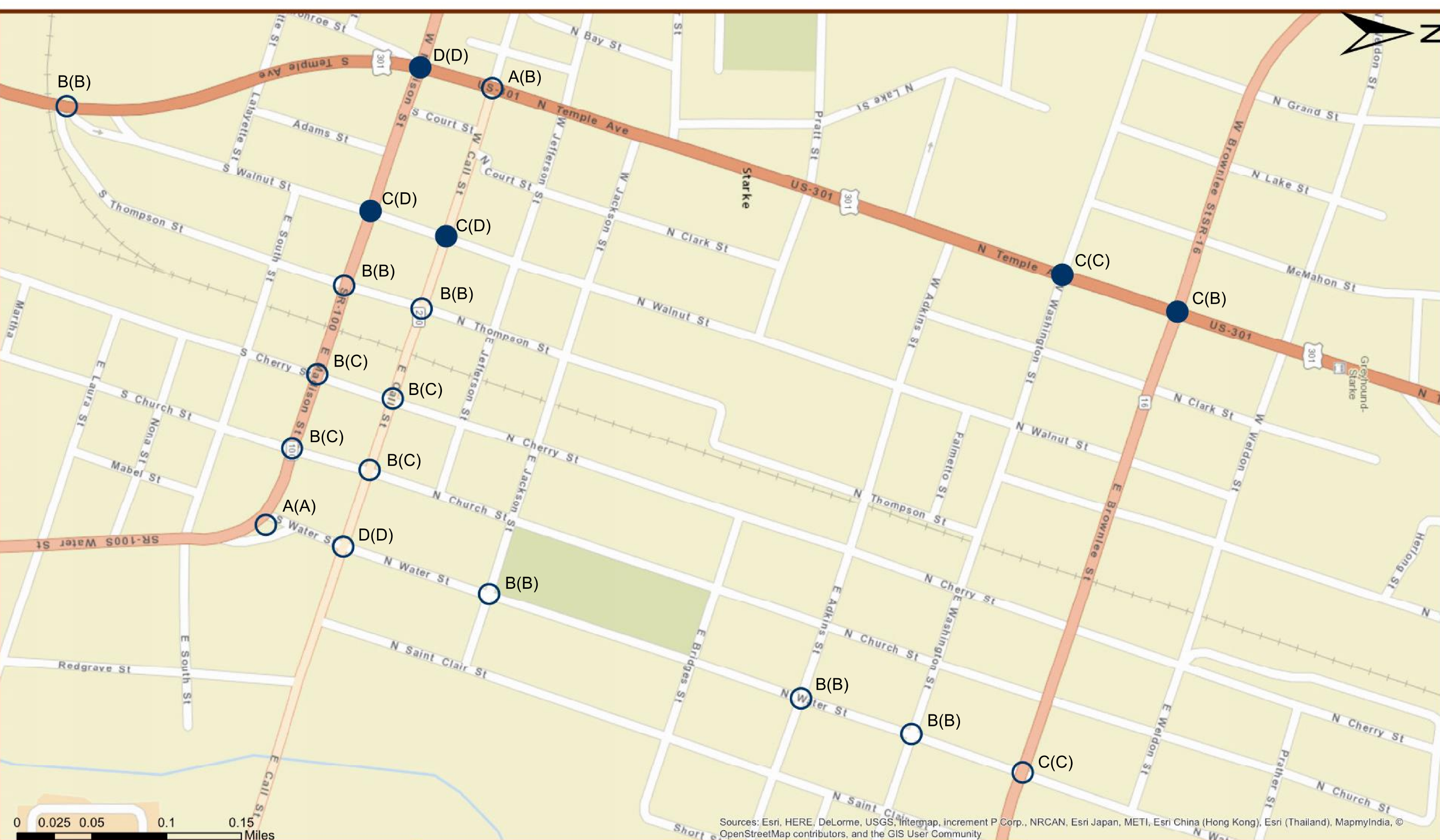
Intersection	AM Peak		PM Peak	
	Delay <sup>1</sup>	LOS	Delay <sup>1</sup>	LOS
US 301 at SE 144 <sup>th</sup> Avenue <sup>1</sup>	14.6	B	17.9	B
US 301 at Walnut Street	12.0	B	13.3	B
US 301 at SR 100/Madison Street <sup>1</sup>	36.3	D	44.1	D
US 301 at Call Street	9.8	A	10.6	B
US 301 at Washington Street <sup>1</sup>	29.0	C	33.6	C
US 301 at SR 16 <sup>1</sup>	23.5	C	19.4	B
SR 100 at Walnut Street <sup>1</sup>	34.3	C	47.4	D
SR 100 at Thompson Street	13.4	B	13.3	B
SR 100 at Cherry Street	13.6	B	16.5	C
SR 100 at Church Street	13.6	B	16.1	C
SR 100 at Water Street	--	A	--	A
SR 100 at SE 144 <sup>th</sup> Avenue	19.1	C	25.1	D
Call Street at Walnut Street <sup>1</sup>	30.8	C	37.7	D
Call Street at Thompson Street	11.5	B	11.7	B
Call Street at Cherry Street	12.6	B	16.6	C
Call Street at Church Street	13.0	B	22.6	C
Call Street at Water Street	32.6	D	34.0	D
Jackson Street at Water Street	11.0	B	11.2	B
Adkins Street at Water Street	11.9	B	11.2	B
Washington Street at Water Street	11.0	B	11.1	B
SR 16 at Water Street	16.9	C	18.6	C

1 = Signalized Intersection

For unsignalized intersections, maximum approach delay is reported

-- = as reported by Synchro





Signalized Intersection

LOS: C (D) AM (PM)

Unsignalized Intersection

# Starke Railroad Overpass Traffic Study

No Build: Design Year 2043 AM (PM)  
Intersection LOS

Figure 21  
Sheet 1

Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), MapmyIndia, © OpenStreetMap contributors, and the GIS User Community





#### 5.4 Opening Year 2023 SR 100 Build Alternative Analysis

Traffic operations analyses were conducted for SR 100 Build Alternative for opening year 2023 conditions. The results are summarized in Table 10 and Figure 22.

The opening year 2023 intersections analyses for the SR 100 Build Alternative conditions show that the study intersections operate at acceptable LOS of D or better during AM and PM peak hours. Certain trips east of US 301 between SR 16 and SR 100 will utilize the SR 100 overpass to ensure that their travel times are reliable and no longer influenced by the possibility of being delayed by a train. This will result in an overall reduction of travel time savings for motorists. This travel time savings will increase in the future years as the number of trains increase.

The intersections of SR 100 at Cherry Street, SR 100 at Thompson Street, and SR 100 at Water Street were assumed to be signalized under SR 100 Build Alternative conditions. They were assumed to be signalized for SR 100 Build Alternative for safety and sight distance concerns and lack of storage space between intersections. As project moves to next phases, the need for signalization will be reevaluated. Significant reduction in delay was observed at the following intersections as compared to the No-Build due to travel pattern changes:

- US 301 at Washington Street
- US 301 at SR 16
- SR 100 at Walnut Street
- SR 100 at Church Street

The intersection of SR 100 at Walnut Street experienced an improvement in LOS due to the overpass and due to the fact that most traffic will shift to nearby intersections in the network since traffic will not be able to continue through the intersection. The intersections of SR 100 at Thompson Street, SR 100 at Cherry Street and Call Street at Water Street experienced an increase in delay caused by the traffic diversion resulting from the proposed overpass. The increased delay is minimal. It should also be noted that there is no direct comparison of intersection delay at SR 100 at Thompson Street, SR 100 at Cherry Street, and SR 100 at Walnut Street due to the changes in intersection control and configuration.



Table 10 - Opening Year 2023 SR 100 Build Alternative Intersection Analysis Results

Intersection	AM Peak		PM Peak	
	Delay <sup>1</sup>	LOS	Delay <sup>1</sup>	LOS
US 301 at Walnut Street	11.2	B	12.0	B
US 301 at SR 100/Madison Street <sup>1</sup>	42.0	D	43.2	D
US 301 at Call Street	9.2	A	10.4	B
US 301 at Washington Street <sup>1</sup>	24.4	C	29.6	C
US 301 at SR 16 <sup>1</sup>	20.6	C	18.3	B
SR 100 at Walnut Street	N of Bridge	9.3	A	9.2
	S of Bridge	9.4	A	10.5
SR 100 at Thompson Street <sup>1</sup>	N of Bridge	14.3	B	27.3
	S of Bridge	34.3	C	31.9
SR 100 at Cherry Street <sup>1</sup>	N of Bridge	23.7	C	23.9
	S of Bridge	22.9	C	11.8
SR 100 at Church Street	N of Bridge	8.1	A	7.7
	S of Bridge	8.3	A	8.2
SR 100 at Water Street <sup>1</sup>	13.0	B	14.3	B
Call Street at Walnut Street <sup>1</sup>	29.5	C	26.5	C
Call Street at Thompson Street	10.3	B	11.7	B
Call Street at Cherry Street	11.3	B	13.9	B
Call Street at Church Street	11.5	B	14.5	B
Call Street at Water Street	26.6	D	34.5	D
Jackson Street at Water Street	11.2	B	11.4	B
Adkins Street at Water Street	12.3	B	11.4	B
Washington Street at Water Street	12.1	B	11.5	B
SR 16 at Water Street	15.3	C	16.3	C

1 = Signalized Intersection

For unsignalized intersections, maximum approach delay is reported



### 5.5 Design Year 2043 SR 100 Build Alternative Analysis

Traffic operations analyses were conducted for SR 100 Build Alternative for design year 2043 conditions. The results are summarized in Table 11 and Figure 23.

The design year 2043 intersections analyses for the SR 100 Build Alternative conditions show that the study intersections operate at acceptable LOS of D or better during AM and PM peak hours except for the intersection of Call Street at Water Street.

The intersections of SR 100 at Cherry Street, SR 100 at Thompson Street and SR 100 at Water Street were assumed to be signalized under SR 100 Build Alternative conditions due to concerns with sight distance and inadequate storage between the intersections under the overpass. Signalizing the intersections will need to be reviewed, if this alternative is selected, in the design phase once specific details on the bridge design are known. As observed in opening year 2023 analyses, a reduction in delay was observed at the following intersections as compared to the No-Build in design year 2043:

- US 301 at Washington Street
- US 301 at SR 16
- SR 100 at Walnut Street
- SR 100 at Church Street

The intersections of SR 100 at Walnut Street and SR 100 at Church Street also experienced an improvement in LOS due to the overpass and due to the changes in travel patterns through the system. The intersections of SR 100 at Thompson Street, SR 100 at Cherry Street and Call Street at Water Street experienced an increase in delay caused by the traffic diversion resulting from the proposed overpass. This is because traffic will divert to these intersections when the through access of Walnut Street is restricted. The Call Street and Water Street intersection will operate at LOS F in 2043. This intersection will need to be signalized in order to provide acceptable operations by 2043. If a signal is provided it will result in LOS B in 2043. The remaining two intersections will provide an acceptable LOS D. This intersection was analyzed as unsignalized and is expected to operate at acceptable LOS under signal control.



Table 11 – Design Year 2043 SR 100 Build Alternative Intersection Analysis Results

Intersection		AM Peak		PM Peak	
		Delay <sup>1</sup>	LOS	Delay <sup>1</sup>	LOS
US 301 at Walnut Street		12.1	B	13.3	B
US 301 at SR 100/Madison Street <sup>1</sup>		50.2	D	50.1	D
US 301 at Call Street		9.2	A	11.1	B
US 301 at Washington Street <sup>1</sup>		27.1	C	32.1	C
US 301 at SR 16 <sup>1</sup>		21.5	C	18.8	B
SR 100 at Walnut Street	N of Bridge	9.5	A	9.5	A
	S of Bridge	9.7	A	11.4	B
SR 100 at Thompson Street <sup>1</sup>	N of Bridge	16.9	B	33.2	C
	S of Bridge	41.5	D	32.7	C
SR 100 at Cherry Street <sup>1</sup>	N of Bridge	25.0	C	25.7	C
	S of Bridge	29.7	C	13.9	B
SR 100 at Church Street	N of Bridge	8.5	A	8.0	A
	S of Bridge	8.7	A	8.8	A
SR 100 at Water Street <sup>1</sup>		13.1	B	15.4	B
Call Street at Walnut Street <sup>1</sup>		30.5	C	27.9	C
Call Street at Thompson Street		10.7	B	12.9	B
Call Street at Cherry Street		12.1	B	16.6	C
Call Street at Church Street		12.7	B	18.6	C
Call Street at Water Street		81.1	F	161.2	F
Jackson Street at Water Street		12.1	B	12.3	B
Adkins Street at Water Street		13.7	B	12.4	B
Washington Street at Water Street		13.4	B	12.5	B
SR 16 at Water Street		18.9	C	20.9	C

1 = Signalized Intersection

For unsignalized intersections, maximum approach delay is reported



## 5.6 Opening Year 2023 SE 144<sup>th</sup> Avenue Build Alternative Analysis

Traffic operations analyses were conducted for SE 144<sup>th</sup> Avenue Build Alternative for opening year 2023 conditions. The results are summarized in Table 12 and Figure 24.

The opening year 2023 intersections analyses for the SE 144<sup>th</sup> Avenue Build Alternative conditions show that the study intersections operate at acceptable LOS of D or better during AM and PM peak hours.

As stated in the methodology and assumptions, the shift in traffic due to the overpass on SE144<sup>th</sup> Street will be minimal. A minor shift of traffic from SR 100 to US 301 will slightly improve the LOS along SR 100 from Water Street to Walnut Street.

Due to the distant location of the overpass bridge at SE 144<sup>th</sup> Avenue, the overpass bridge will be underutilized due to less volume of traffic diversion from central city location and savings in travel time will be minimal.

**Table 12 - Opening Year 2023 SE 144<sup>th</sup> Avenue Build Alternative Intersection Analysis Results**

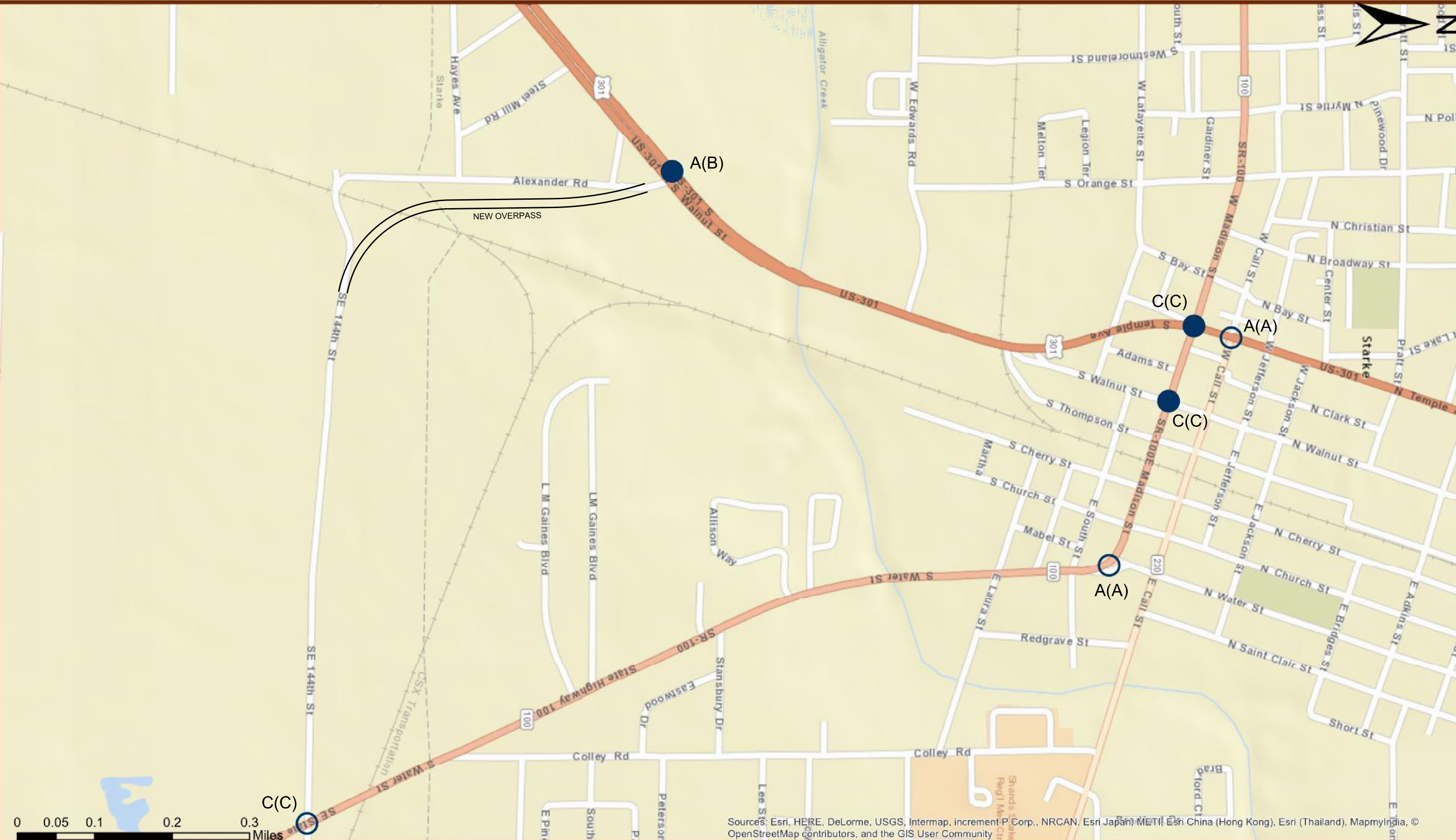
Intersection	AM Peak		PM Peak	
	Delay <sup>1</sup>	LOS	Delay <sup>1</sup>	LOS
US 301 at SE 144 <sup>th</sup> Avenue <sup>1</sup>	7.7	A	16.3	B
US 301 at SR 100/Madison Street <sup>1</sup>	32.1	C	33.4	C
US 301 at Call Street	9.5	A	10.0	A
SR 100 at Walnut Street <sup>1</sup>	25.2	C	31.1	C
SR 100 at Water Street	--	A	--	A
SR 100 at SE 144 <sup>th</sup> Avenue	15.9	C	16.6	C

1 = Signalized Intersection


For unsignalized intersections, maximum approach delay is reported

-- = as reported by Synchro






Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

  
Signalized Intersection

**Legend**  
LOS: C (D) AM (PM)  
RR Overpass

  
Unsignalized Intersection

# Starke Railroad Overpass Traffic Study

**Figure 24**  
Build Alt. 2 - Opening Year 2023 AM (PM)  
Intersection LOS

## 5.7 Year 2043 SE 144<sup>th</sup> Avenue Build Alternative Analysis

Traffic operations analyses were conducted for SE 144<sup>th</sup> Avenue Build Alternative for design year 2043 conditions. The results are summarized in Table 13 and Figure 25.

The design year 2043 intersections analyses for the SE 144<sup>th</sup> Avenue Build Alternative conditions show that the study intersections operate at acceptable LOS of D or better during AM and PM peak hours.

Due to the distant location of the overpass bridge at SE 144<sup>th</sup> Avenue, the overpass bridge will be underutilized and traffic within Starke downtown will experience minimal travel time savings in 2043.

**Table 13 - Design Year 2043 SE 144<sup>th</sup> Avenue Build Alternative Intersection Analysis Results**

Intersection	AM Peak		PM Peak	
	Delay <sup>1</sup>	LOS	Delay <sup>1</sup>	LOS
US 301 at SE 144 <sup>th</sup> Avenue <sup>1</sup>	14.3	B	17.2	B
US 301 at SR 100/Madison Street <sup>1</sup>	33.5	C	38.8	D
US 301 at Call Street	9.7	A	10.4	B
SR 100 at Walnut Street <sup>1</sup>	28.0	C	39.1	D
SR 100 at Water Street	--	A	--	A
SR 100 at SE 144 <sup>th</sup> Avenue	21.4	C	23.0	C

1 = Signalized Intersection

For unsignalized intersections, maximum approach delay is reported

-- = as reported by Synchro

Figure 25 – SE 144<sup>th</sup> Avenue Build Alternative Design Year 2043 AM (PM) Intersection LOS



## 6 CONCLUSIONS

The purpose of this Technical Traffic Memorandum is to document the information necessary to confirm the need for a railroad crossing overpass in the City of Starke and select a Build Alternative. The No-Build and two (2) Build Alternatives were analyzed and evaluated for traffic impacts. The Build Alternatives developed for this study included – SR 100 Build Alternative: Overpass on SR 100 and SE 144<sup>th</sup> Avenue Build Alternative: Overpass on SE 144<sup>th</sup> Avenue. Impacts at the different intersections associated to the build alternatives were analyzed and documented. Both the Build Alternatives assumed the US 301 bypass through Starke to be open by year 2019. The analysis years for the study alternatives are Opening Year 2023 and Design Year 2043.

The major conclusions of the study based on operational analysis and recommendations of the study are listed below.

### Conclusions

1. Build Alternatives provide travel time savings and improved operations at the study intersections compared to the No-Build. The following intersections experience improvement in delay or LOS under the Build conditions:
  - US 301 at Washington Street
  - US 301 at SR 16
  - SR 100 at Walnut Street
  - SR 100 at Church Street

The intersections of SR 100 at Thompson Street, SR 100 at Cherry Street and Call Street at Water Street experienced an increase in delay caused by the traffic diversion resulting from the proposed overpass. The intersection of Call Street at Water Street will operate at acceptable LOS under signal control.

2. SR 100 Build Alternative provides more operational benefits as compared to SE 144<sup>th</sup> Avenue Build Alternative as traffic diversion occurs over a larger area due to the overpass.
3. The average number of train crossings per day is 29 (based on the data collected for three weekdays in June 2015). In addition to the train crossings, there were instances when the gates were closed when no train was present. The increase in the number of train

crossings by 2043, coupled with the added travel time for queue dissipation, traffic will utilize the proposed railroad overpass bridge on SE 100.

4. Traffic headed towards south of SR 100 from SR 16 will utilize the bridge on SR 100 because it will result in a travel time savings of approximately 2-3 minutes under 2015 conditions. Network wide savings in travel time are expected to be greater for future years when the number of train crossings increase.
5. The strategic location of the overpass bridge has a greater area of influence under SR 100 Build Alternative and therefore the cost savings due to reduced travel time and delay are higher. The location of the overpass bridge has a greater area of influence at SR 100 and therefore the return on investment due to reduced travel time and vehicle delay are higher. The SE 144<sup>th</sup> Avenue railroad crossing is located approximately 1.1 miles south of the SR 100 crossing and 1.65 miles south of SR 16. Since the SR 100 and SR 16 railroad crossings are only 0.55 miles apart, this allows traffic to easily divert if the motorists want to insure that they are provided with a reliable travel time. The local grid network between SR 100 and SR 16 provide motorists with several options to utilize to reach the SR 100 overpass.
6. The number of diverted trips that will utilize the overpass bridge on SE 144<sup>th</sup> Avenue is very limited under SE 144<sup>th</sup> Avenue Build Alternative because of its distant location and the spacing between SR 100 and US 301. If the northbound traffic on SR 100 at SE 144<sup>th</sup> Avenue passes over the bridge to get to US 301/SR 100 intersection, it would have travelled an additional distance of more than half a mile. At a constant speed of 30 mph, this will add approximately one minute to the commute. For the most part, traffic will continue to travel northbound on SR 100 because the travel time savings of 1.3 minutes may not be worth the additional travelled distance.

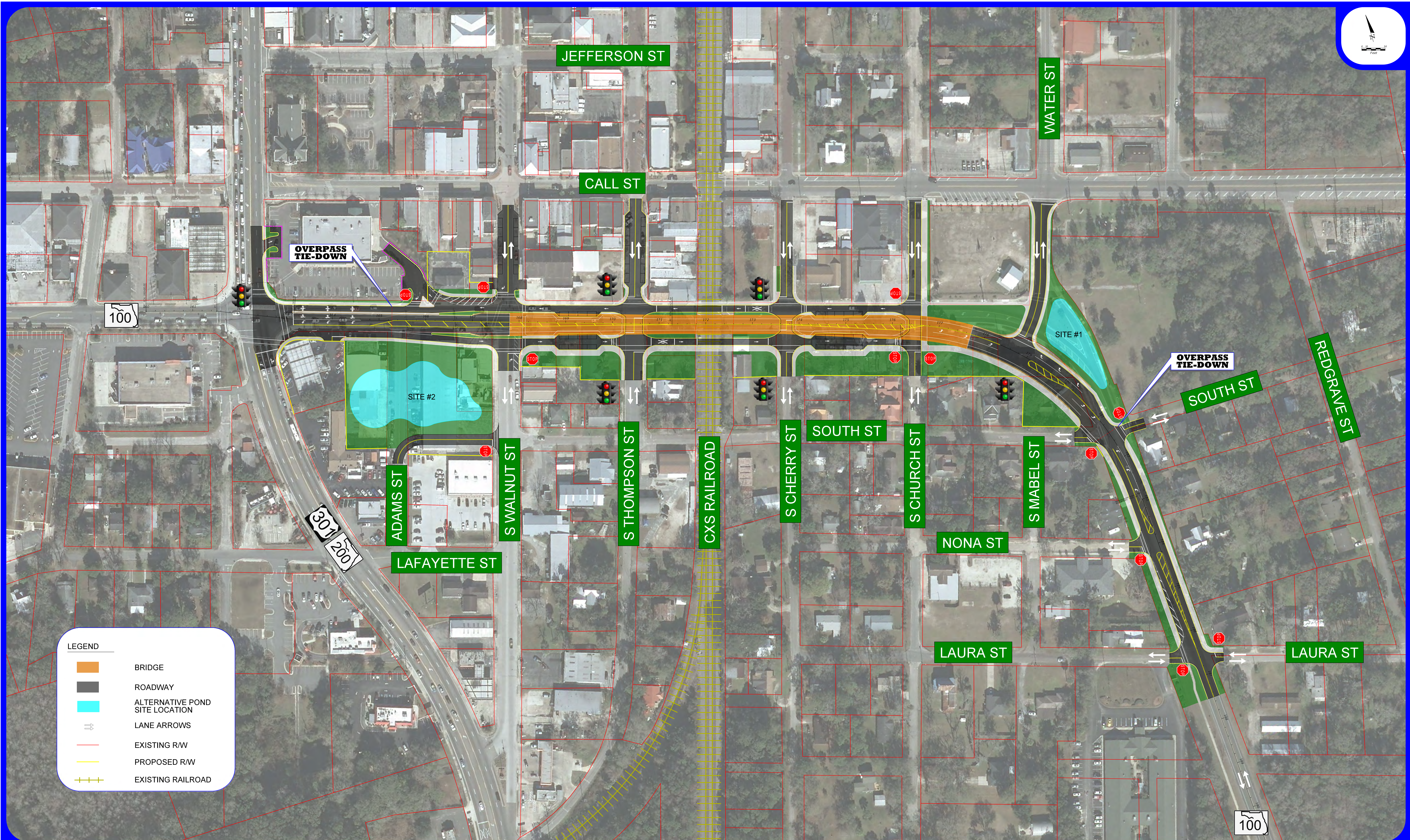
The summary of the findings found in this report are intended to assist the Florida Department of Transportation (FDOT) and the Federal Highway Administration (FHWA) in reaching a decision on the optimal Railroad Overpass alternative for the City of Starke. Traffic analysis is one of several factors that should be considered in selection of a recommended alternative. Other factors to consider include, but are not limited to: social, environmental, historical, cultural factors, and cost factors such as right-of-way acquisition, business damages and construction which will be determined as part of the ongoing PD&E Study and subsequent design phase of the project.

# Appendix



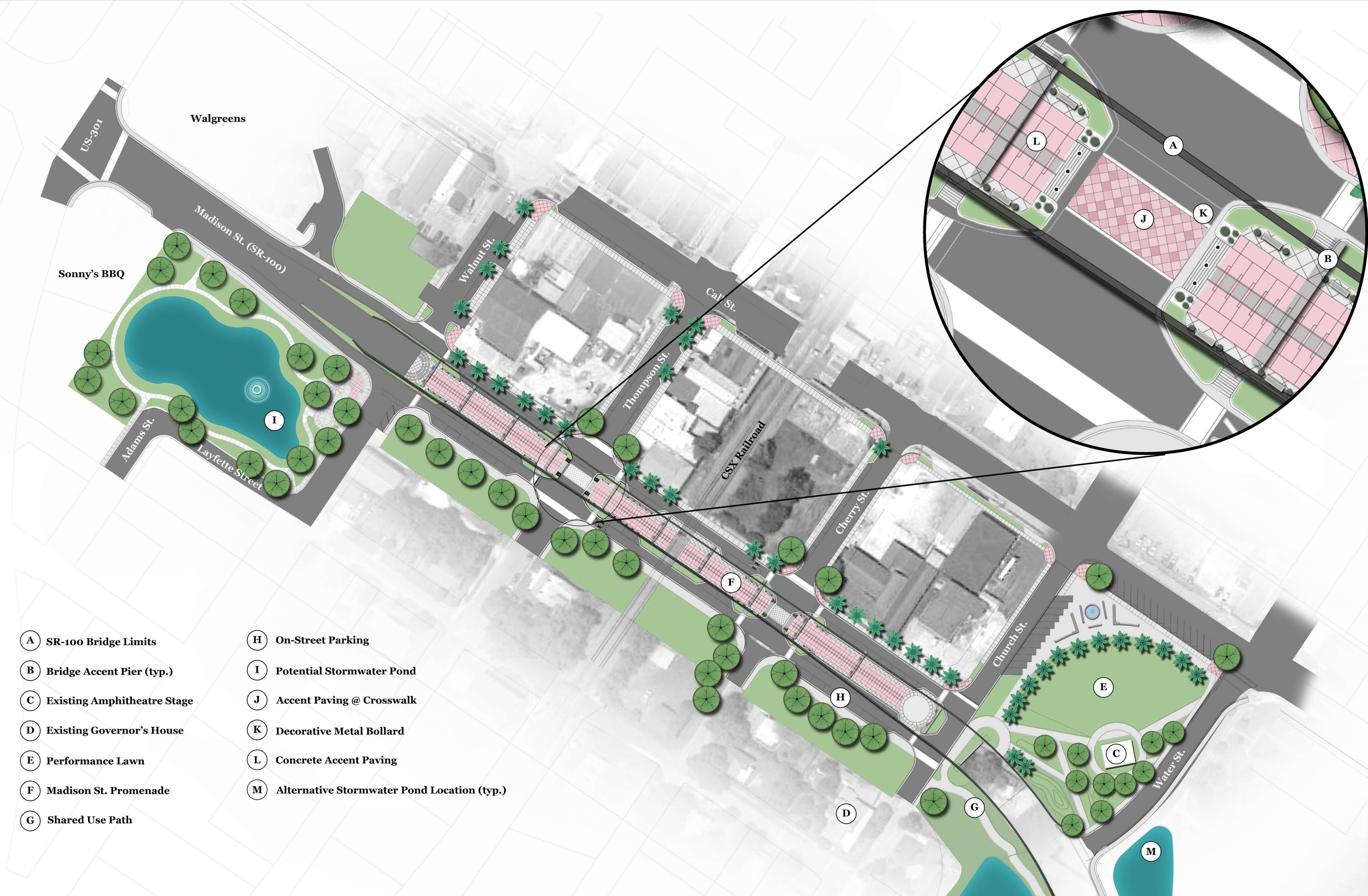
# Appendix A: Railroad Overpass Concept Drawings





# STARKE RAILROAD OVERPASS - SR 100 CONCEPT









perspective

# *Historic Madison Street Urban Design Study*

State Road 100 Bridge Overpass

Starke, Florida



August 4, 2015

















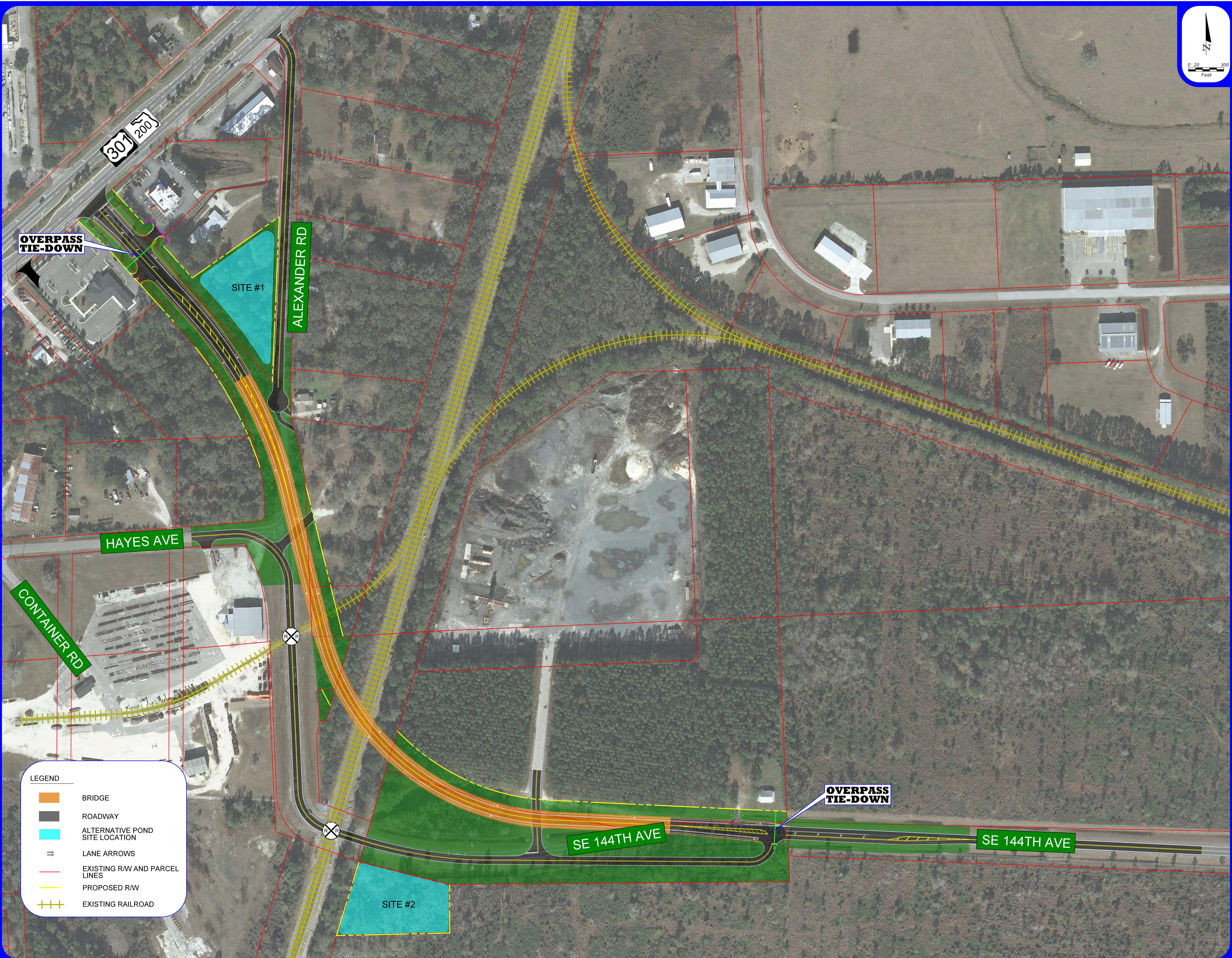
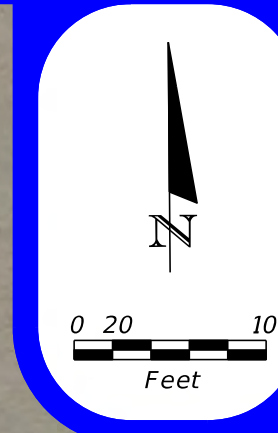












**LEGEND**

- BRIDGE
- ROADWAY
- ALTERNATIVE POND SITE LOCATION
- LANE ARROWS
- EXISTING R/W AND PARCEL LINES
- PROPOSED R/W
- EXISTING RAILROAD



**144TH AVENUE CONCEPT  
BRADFORD COUNTY - FPID: 436558-1**



## Appendix B:

# Data Collection Memorandum



**Date:** June 16<sup>th</sup>, 2015

**To:** Stephen Browning, FDOT, District Two  
Chris Presnell, P.E., Jacobs Engineering Group, Inc.

**From:** Babuji Ambikapathy, P.E., VHB, Inc.

**RE: Starke Railroad Overpass PD&E Study – Data Collection**

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The purpose of this memorandum is summarize the work effort performed by Vanasse Hangen Brustlin, Inc. (VHB) as a sub-consultant to Jacobs Engineering Group, Inc. in support of Starke Railroad Overpass PD&E study. VHB was tasked to collect roadway and intersection traffic data in the City of Starke. The data collection task effort included 12 48-hour volume counts and 13 8-hour intersection turning movement counts.

The 48-hour volume counts were collected at the following 12 locations:

- 1) SR-100 East of S. Water Street
- 2) Water Street North of SR-100
- 3) Walnut Street South of SR-100
- 4) SR-100 South of Laura Street
- 5) US-301 South of Washington Street
- 6) US-301 North of Weldon Street
- 7) Brownlee Street East of Railroad Crossing
- 8) Weldon Street West of US-301
- 9) Weldon Street East of US-301
- 10) St. Clair Street South of Brownlee Street
- 11) US-301 South of Starke Limit
- 12) US-301 North of Starke Limit

**Table 1** summarizes the traffic count information along with the measured K and D factors, peak hour, peak hour volume and peak direction. The Annual Average Daily Traffic (AADT) for the 12 locations are depicted in **Figure 1**. The detail traffic count information can be found in **Appendix**.

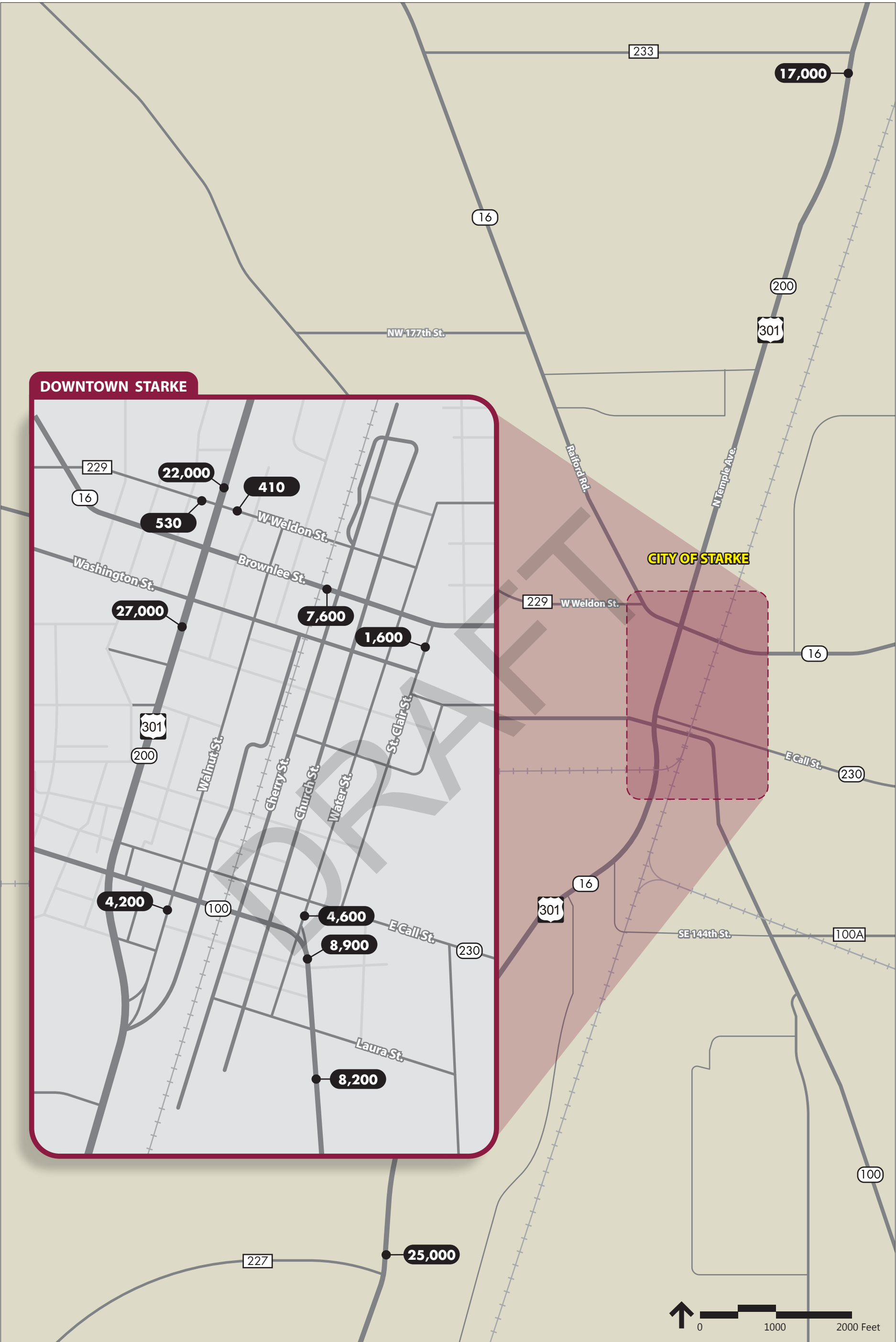
The 8-hour (7AM to 9 AM, 11AM to 1 PM and 2 PM to 6 PM) intersection turning movement counts were collected at the following 13 intersections:

- 1) US-301 at Walnut Street
- 2) US-301 at SR-100
- 3) US-301 at Call Street
- 4) SR-100 at Walnut Street
- 5) SR-100 at Church Street
- 6) SR-100 at Water Street
- 7) SR-100 at Laura Street
- 8) Call Street at Water Street

- 9) US-301 at Washington Street
- 10) US-301 at Brownlee Street
- 11) US-301 at Weldon Street
- 12) Brownlee St. at St. Clair Street
- 13) SR 16 at Weldon Street (W. of US 301)

The A.M., Mid-Day and P.M. peak hour intersection volumes are depicted in **Figure 2**. Detailed 15 minute interval intersection turning movement volumes can be found in **Appendix**.

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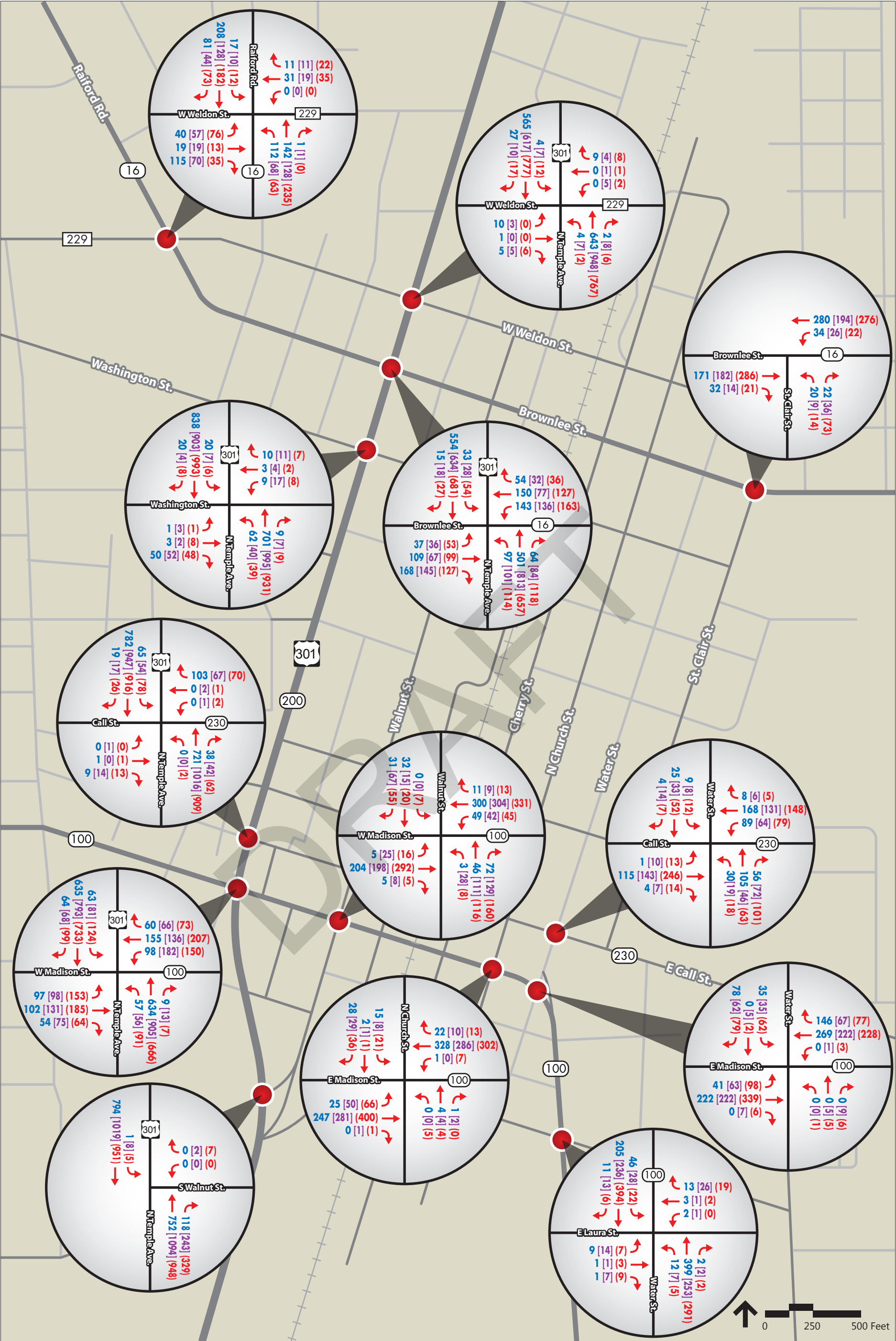


**Figure 1**  
**Existing Year 2015 AADTs**



Table 1: Existing Traffic Volume Summary  
Starke Railroad Overpass PD&E Study

Roadway	Segment	Count Date	ADT	Seasonal Factor	Axle Factor	AADT	FDOT Station #	Peak Hour Volume	Peak Hour Time Period	Peak Direction	K Factor	D Factor
US 301	North of Market Street					18,500	280100					
	North of Weldon Street	4/28/2015	29,888	0.97	0.77	22,000		2,100	12:00 PM to 1:00 PM	NB	7.03%	57.1%
	South of SR 16					23,500	285001					
	South of Washington Street	4/28/2015	36,222	0.97	0.77	27,000		2,553	11:45 AM to 12:45 PM	NB	7.05%	57.4%
	North of SR 100					25,000	285002					
	South of SR 100					26,000	285013					
	North of Alexander Road					29,500	285017					
	South of Alexander Road					28,000	280105					
	South of Starke Limit	4/28/2015	30,000	0.97	0.85	25,000		2,122	4:15 PM to 5:15 PM	SB	7.07%	50.1%
	North of Strake Limit	4/28/2015	22,171	0.97	0.77	17,000		1,519	1:15 PM to 2:15 PM	NB	6.85%	58.9%
SR 100	West of US 301					9,100	285020					
	West of Walnut Street					8,700	285015					
	West of Water Street					8,500	285025					
	East of S. Water Street	4/28/2015	9,865	0.97	0.93	8,900		883	4:45 PM to 5:45 PM	EB	8.95%	51.0%
	South of Laura Street	4/28/2015	9,136	0.97	0.93	8,200		843	4:45 PM to 5:45 PM	SB	9.23%	52.7%
	North of North CR 100A					7,500	280015					
	North of South CR 100A					6,100	280048					
Water Street	North of SR 100	4/28/2015	4,773	0.97	1.00	4,600		430	4:45 PM to 5:45 PM	NB	9.01%	60.0%
Walnut Street	South of SR 100	4/28/2015	4,301	0.97	1.00	4,200		388	5:15 PM to 6:15 PM	NB	9.02%	83.3%
Wledon Street	West of US 301	4/28/2015	547	0.97	1.00	530		55	3:00 PM to 4:00 PM	WB	10.05%	58.2%
	East of US 301	4/28/2015	426	0.97	1.00	410		41	3:30 PM to 4:30 PM	EB	9.62%	56.1%
SR 16	North of CR 229					5,700	285024					
	South of CR 229					6,300	285008					
	East of US 301					7,700	285003					
	East of Railroad Crossing	4/28/2015	8,298	0.97	0.95	7,600		679	4:45 PM to 5:45 PM	WB	8.18%	51.4%
	East of St. Clair Street					7,200	285023					
St. Clair Street	South of Brownlee Street	4/28/2015	1,604	0.97	1.00	1,600		155	5:00 PM to 6:00 PM	NB	9.66%	56.1%



→ Traffic Movement  
AM [MID] [PM] Traffic Volume



**Figure 2**  
**Existing Year 2015 Peak Hour**  
**Turning Movement Volumes**

## Appendix



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**Appendix**

**Traffic Count Information**

# Traffic Count Data

*Vanasse Hangen Brustlin, Inc.*

PROJECT	Starke Railroad Overpass PD&E Study
LOCATION CODE	1
COUNT LOCATION	#1 - US 301 (N. of Starke Limits)
VHB PROJECT #	62580.01

TYPE OF COUNT:

48-Hour APPROACH VOLUME COUNT

TIME OF COUNT:

Start Date	April 28, 2015	Start Time	12:00 AM
End Date	May 1, 2015	End Time	12:00 AM

VOLUME AVERAGES

		<b>Total</b>	<b>NB</b>	<b>SB</b>
ADT		22,171	12,125	10,046
Peak Hour	1:15 PM	to	2:15 PM	
	<b>Peak Hour Total</b>		<b>NB</b>	<b>SB</b>
	1,519		894	625

MEASURED TRAVEL CHARACTERISTICS

\*Peak to Daily Ratio\*

K = 6.85%      D = 58.9%



# Hourly Distribution of Traffic Volumes

*Vanasse Hangen Brustlin, Inc.*

PROJECT	Starke Railroad Overpass PD&E Study
LOCATION CODE	1
COUNT LOCATION	#1 - US 301 (N. of Starke Limits)
VHB PROJECT #	62580.01

HOURLY END AT	HOURLY VOLUME DIRECTION (NB)	HOURLY VOLUME DIRECTION (SB)	TOTAL VOLUMES BOTH DIRECTIONS	DISTRIBUTION PERCENT DIRECTION (NB)	DISTRIBUTION PERCENT DIRECTION (SB)	TOTAL PERCENT BOTH DIRECTIONS
1:00 AM	163	104	267	1.34%	1.04%	1.20%
2:00 AM	114	110	224	0.94%	1.09%	1.01%
3:00 AM	126	114	240	1.04%	1.13%	1.08%
4:00 AM	90	142	232	0.74%	1.41%	1.05%
5:00 AM	146	189	335	1.20%	1.88%	1.51%
6:00 AM	333	231	564	2.75%	2.30%	2.54%
7:00 AM	501	414	915	4.13%	4.12%	4.13%
8:00 AM	542	621	1,163	4.47%	6.18%	5.25%
9:00 AM	599	584	1,183	4.94%	5.81%	5.34%
10:00 AM	712	551	1,263	5.87%	5.48%	5.70%
11:00 AM	800	579	1,379	6.60%	5.76%	6.22%
12:00 PM	885	618	1,503	7.30%	6.15%	6.78%
1:00 PM	919	580	1,499	7.58%	5.77%	6.76%
2:00 PM	889	600	1,489	7.33%	5.97%	6.72%
3:00 PM	739	640	1,379	6.09%	6.37%	6.22%
4:00 PM	772	673	1,445	6.37%	6.70%	6.52%
5:00 PM	729	690	1,419	6.01%	6.87%	6.40%
6:00 PM	838	659	1,497	6.91%	6.56%	6.75%
7:00 PM	558	540	1,098	4.60%	5.38%	4.95%
8:00 PM	467	417	884	3.85%	4.15%	3.99%
9:00 PM	463	350	813	3.82%	3.48%	3.67%
10:00 PM	328	274	602	2.71%	2.73%	2.72%
11:00 PM	249	210	459	2.05%	2.09%	2.07%
12:00 AM	163	156	319	1.34%	1.55%	1.44%
TOTALS	12,125	10,046	22,171	99.98%	100.00%	100.00%



# Roadway Count Summary

Vanasse Hangen Brustlin, Inc.

Start Date : April 28, 2015  
 Stop Date : April 30, 2015  
 County : Bradford  
 Location : #1 - US 301 (N. of Starke Limits)

Start Time 00:00  
 Stop Time 24:00

VHB Project #: 62580.01

## 28-Apr-15

### Northbound Volume for Lane 1

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	43	41	50	24	28	73	113	127	158	167	179	181
30	42	23	30	27	39	90	129	128	122	185	191	226
45	50	33	24	12	31	84	107	163	153	186	209	212
00	36	38	25	27	47	97	161	125	160	162	187	223
<b>Hr Total</b>	<b>171</b>	<b>135</b>	<b>129</b>	<b>90</b>	<b>145</b>	<b>344</b>	<b>510</b>	<b>543</b>	<b>593</b>	<b>700</b>	<b>766</b>	<b>842</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	218	208	201	233	190	185	154	98	111	111	62	37
30	233	200	253	193	187	152	120	119	123	86	78	55
45	228	240	180	238	229	155	131	114	118	65	56	39
00	223	217	168	192	183	140	140	96	112	59	58	39
<b>Hr Total</b>	<b>902</b>	<b>865</b>	<b>802</b>	<b>856</b>	<b>789</b>	<b>632</b>	<b>545</b>	<b>427</b>	<b>464</b>	<b>321</b>	<b>254</b>	<b>170</b>

24 Hour Total : 11,995  
 AM Peak Hour begins : 11:00  
 PM Peak Hour begins : 13:30

AM Peak Volume : 842  
 PM Peak Volume : 911  
 AM Peak Hour Factor : 0.93  
 PM Peak Hour Factor : 0.90

## 28-Apr-15

### Southbound Volume for Lane 2

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	23	43	35	39	49	56	81	147	156	141	166	175
30	26	19	26	34	56	69	97	169	147	129	134	161
45	23	14	37	38	51	63	93	171	138	121	150	157
00	23	24	29	35	44	65	129	149	148	141	128	125
<b>Hr Total</b>	<b>95</b>	<b>100</b>	<b>127</b>	<b>146</b>	<b>200</b>	<b>253</b>	<b>400</b>	<b>636</b>	<b>589</b>	<b>532</b>	<b>578</b>	<b>618</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	147	144	164	166	151	175	127	105	91	65	58	30
30	172	182	137	159	147	172	131	115	76	70	47	31
45	129	147	155	127	182	175	118	107	75	86	58	45
00	135	139	155	151	215	175	111	78	84	57	53	28
<b>Hr Total</b>	<b>583</b>	<b>612</b>	<b>611</b>	<b>603</b>	<b>695</b>	<b>697</b>	<b>487</b>	<b>405</b>	<b>326</b>	<b>278</b>	<b>216</b>	<b>134</b>

24 Hour Total : 9,921  
 AM Peak Hour begins : 7:15  
 PM Peak Hour begins : 16:30

AM Peak Volume : 645  
 PM Peak Volume : 744  
 AM Peak Hour Factor : 0.94  
 PM Peak Hour Factor : 0.87

## 28-Apr-15

### Total Volume for All Lanes

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	66	84	85	63	77	129	194	274	314	308	345	356
30	68	42	56	61	95	159	226	297	269	314	325	387
45	73	47	61	50	82	147	200	334	291	307	359	369
00	59	62	54	62	91	162	290	274	308	303	315	348
<b>Hr Total</b>	<b>266</b>	<b>235</b>	<b>256</b>	<b>236</b>	<b>345</b>	<b>597</b>	<b>910</b>	<b>1,179</b>	<b>1,182</b>	<b>1,232</b>	<b>1,344</b>	<b>1,460</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	365	352	365	399	341	360	281	203	202	176	120	67
30	405	382	390	352	334	324	251	234	199	156	125	86
45	357	387	335	365	411	330	249	221	193	151	114	84
00	358	356	323	343	398	315	251	174	196	116	111	67
<b>Hr Total</b>	<b>1,485</b>	<b>1,477</b>	<b>1,413</b>	<b>1,459</b>	<b>1,484</b>	<b>1,329</b>	<b>1,032</b>	<b>832</b>	<b>790</b>	<b>599</b>	<b>470</b>	<b>304</b>

24 Hour Total : 21,916  
 AM Peak Hour begins : 11:00  
 PM Peak Hour begins : 16:15

AM Peak Volume : 1,460  
 PM Peak Volume : 1,503  
 AM Peak Hour Factor : 0.94  
 PM Peak Hour Factor : 0.91



# Roadway Count Summary

*Vanasse Hangen Brustlin, Inc.*

Start Date : April 28, 2015  
 Stop Date : April 30, 2015  
 County : Bradford  
 Location : #1 - US 301 (N. of Starke Limits)

Start Time : 00:00  
 Stop Time : 24:00

VHB Project #: 62580.01

## 29-Apr-15

### Northbound Volume for Lane 1

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	30	22	32	26	34	66	122	117	148	167	229	251
30	43	27	30	20	33	85	114	154	144	181	203	205
45	47	25	31	12	40	72	125	139	155	192	184	203
00	31	17	29	31	38	97	128	130	158	184	217	266
<b>Hr Total</b>	<b>151</b>	<b>91</b>	<b>122</b>	<b>89</b>	<b>145</b>	<b>320</b>	<b>489</b>	<b>540</b>	<b>605</b>	<b>724</b>	<b>833</b>	<b>925</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	218	219	236	159	165	213	141	169	95	87	64	34
30	272	224	199	189	167	257	141	117	111	102	56	31
45	220	225	110	182	154	313	156	117	129	71	69	33
00	225	243	129	158	181	260	130	101	125	75	54	56
<b>Hr Total</b>	<b>935</b>	<b>911</b>	<b>674</b>	<b>688</b>	<b>667</b>	<b>1,043</b>	<b>568</b>	<b>504</b>	<b>460</b>	<b>335</b>	<b>243</b>	<b>154</b>

24 Hour Total : 12,216  
 AM Peak Hour begins : 11:00  
 PM Peak Hour begins : 17:00

AM Peak Volume : 925  
 PM Peak Volume : 1,043  
 AM Peak Hour Factor : 0.87  
 PM Peak Hour Factor : 0.83

## 29-Apr-15

### Southbound Volume for Lane 2

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	28	31	18	31	42	42	105	132	142	156	152	168
30	29	28	22	42	46	52	108	158	142	137	132	153
45	23	34	38	25	58	40	92	145	149	121	158	147
00	30	25	21	38	30	73	121	168	143	155	137	148
<b>Hr Total</b>	<b>110</b>	<b>118</b>	<b>99</b>	<b>136</b>	<b>176</b>	<b>207</b>	<b>426</b>	<b>603</b>	<b>576</b>	<b>569</b>	<b>579</b>	<b>616</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	133	142	172	178	173	158	166	144	86	70	55	49
30	134	136	152	169	187	155	151	94	99	73	44	37
45	162	158	172	186	158	159	137	95	97	73	62	38
00	147	150	171	208	166	147	137	94	90	51	41	51
<b>Hr Total</b>	<b>576</b>	<b>586</b>	<b>667</b>	<b>741</b>	<b>684</b>	<b>619</b>	<b>591</b>	<b>427</b>	<b>372</b>	<b>267</b>	<b>202</b>	<b>175</b>

24 Hour Total : 10,122  
 AM Peak Hour begins : 10:30  
 PM Peak Hour begins : 15:30

AM Peak Volume : 616  
 PM Peak Volume : 754  
 AM Peak Hour Factor : 0.92  
 PM Peak Hour Factor : 0.91

## 29-Apr-15

### Total Volume for All Lanes

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	58	53	50	57	76	108	227	249	290	323	381	419
30	72	55	52	62	79	137	222	312	286	318	335	358
45	70	59	69	37	98	112	217	284	304	313	342	350
00	61	42	50	69	68	170	249	298	301	339	354	414
<b>Hr Total</b>	<b>261</b>	<b>209</b>	<b>221</b>	<b>225</b>	<b>321</b>	<b>527</b>	<b>915</b>	<b>1,143</b>	<b>1,181</b>	<b>1,293</b>	<b>1,412</b>	<b>1,541</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	351	361	408	337	338	371	307	313	181	157	119	83
30	406	360	351	358	354	412	292	211	210	175	100	68
45	382	383	282	368	312	472	293	212	226	144	131	71
00	372	393	300	366	347	407	267	195	215	126	95	107
<b>Hr Total</b>	<b>1,511</b>	<b>1,497</b>	<b>1,341</b>	<b>1,429</b>	<b>1,351</b>	<b>1,662</b>	<b>1,159</b>	<b>931</b>	<b>832</b>	<b>602</b>	<b>445</b>	<b>329</b>

24 Hour Total : 22,338  
 AM Peak Hour begins : 11:00  
 PM Peak Hour begins : 17:00

AM Peak Volume : 1,541  
 PM Peak Volume : 1,662  
 AM Peak Hour Factor : 0.92  
 PM Peak Hour Factor : 0.88



# Roadway Count Summary

*Vanasse Hangen Brustlin, Inc.*

Start Date : April 28, 2015  
 Stop Date : April 30, 2015  
 County : Bradford  
 Location : #1 - US 301 (N. of Starke Limits)

Start Time 00:00  
 Stop Time 24:00

VHB Project #: 62580.01

AVERAGE		Northbound Volume for Lane 1										
End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	37	32	41	25	31	70	118	122	153	167	204	216
30	43	25	30	24	36	88	122	141	133	183	197	216
45	49	29	28	12	36	78	116	151	154	189	197	208
00	34	28	27	29	43	97	145	128	159	173	202	245
<b>Hr Total</b>	<b>163</b>	<b>114</b>	<b>126</b>	<b>90</b>	<b>146</b>	<b>333</b>	<b>501</b>	<b>542</b>	<b>599</b>	<b>712</b>	<b>800</b>	<b>885</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	218	214	219	196	178	199	148	134	103	99	63	36
30	253	212	226	191	177	205	131	118	117	94	67	43
45	224	233	145	210	192	234	144	116	124	68	63	36
00	224	230	149	175	182	200	135	99	119	67	56	48
<b>Hr Total</b>	<b>919</b>	<b>889</b>	<b>739</b>	<b>772</b>	<b>729</b>	<b>838</b>	<b>558</b>	<b>467</b>	<b>463</b>	<b>328</b>	<b>249</b>	<b>163</b>

24 Hour Total : 12,125  
 AM Peak Hour begins : 11:00  
 PM Peak Hour begins : 12:00

AM Peak Volume : 885  
 PM Peak Volume : 919  
 AM Peak Hour Factor : 0.90  
 PM Peak Hour Factor : 0.91

AVERAGE		Southbound Volume for Lane 2										
End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	26	37	27	35	46	49	93	140	149	149	159	172
30	28	24	24	38	51	61	103	164	145	133	133	157
45	23	24	38	32	55	52	93	158	144	121	154	152
00	27	25	25	37	37	69	125	159	146	148	133	137
<b>Hr Total</b>	<b>104</b>	<b>110</b>	<b>114</b>	<b>142</b>	<b>189</b>	<b>231</b>	<b>414</b>	<b>621</b>	<b>584</b>	<b>551</b>	<b>579</b>	<b>618</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	140	143	168	172	162	167	147	125	89	68	57	40
30	153	159	145	164	167	164	141	105	88	72	46	34
45	146	153	164	157	170	167	128	101	86	80	60	42
00	141	145	163	180	191	161	124	86	87	54	47	40
<b>Hr Total</b>	<b>580</b>	<b>600</b>	<b>640</b>	<b>673</b>	<b>690</b>	<b>659</b>	<b>540</b>	<b>417</b>	<b>350</b>	<b>274</b>	<b>210</b>	<b>156</b>

24 Hour Total : 10,046  
 AM Peak Hour begins : 7:15  
 PM Peak Hour begins : 16:15

AM Peak Volume : 630  
 PM Peak Volume : 695  
 AM Peak Hour Factor : 0.96  
 PM Peak Hour Factor : 0.91

AVERAGE		Total Volume for All Lanes										
End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	63	69	68	60	77	119	211	262	302	316	363	388
30	71	49	54	62	87	149	225	305	278	316	330	373
45	72	53	66	44	91	130	209	309	298	310	351	360
00	61	53	52	66	80	166	270	287	305	321	335	382
<b>Hr Total</b>	<b>267</b>	<b>224</b>	<b>240</b>	<b>232</b>	<b>335</b>	<b>564</b>	<b>915</b>	<b>1,163</b>	<b>1,183</b>	<b>1,263</b>	<b>1,379</b>	<b>1,503</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	358	357	387	368	340	366	295	259	192	167	120	76
30	406	371	371	355	344	369	272	223	205	166	113	77
45	370	386	309	367	362	401	272	217	210	148	123	78
00	365	375	312	355	373	361	259	185	206	121	103	88
<b>Hr Total</b>	<b>1,499</b>	<b>1,489</b>	<b>1,379</b>	<b>1,445</b>	<b>1,419</b>	<b>1,497</b>	<b>1,098</b>	<b>884</b>	<b>813</b>	<b>602</b>	<b>459</b>	<b>319</b>

24 Hour Total : 22,171  
 AM Peak Hour begins : 11:00  
 PM Peak Hour begins : 13:15

AM Peak Volume : 1,503  
 PM Peak Volume : 1,519  
 AM Peak Hour Factor : 0.97  
 PM Peak Hour Factor : 0.98



# Traffic Count Data

*Vanasse Hangen Brustlin, Inc.*

PROJECT	Starke Railroad Overpass PD&E Study
LOCATION CODE	2
COUNT LOCATION	#2 - US 301 (S. of Starke Limits)
VHB PROJECT #	62580.01

TYPE OF COUNT:

48-Hour APPROACH VOLUME COUNT

TIME OF COUNT:

Start Date	April 28, 2015	Start Time	12:00 AM
End Date	May 1, 2015	End Time	12:00 AM

## VOLUME AVERAGES

		<b>Total</b>		<b>NB</b>		<b>SB</b>
ADT		30,000		15,904		14,096
Peak Hour	4:15 PM	to	5:15 PM			
		<b>Peak Hour Total</b>		<b>NB</b>		<b>SB</b>
		2,122		1,060		1,062

## MEASURED TRAVEL CHARACTERISTICS

\*Peak to Daily Ratio\*

K = 7.07%

D = 50.1%



# Hourly Distribution of Traffic Volumes

*Vanasse Hangen Brustlin, Inc.*

PROJECT	Starke Railroad Overpass PD&E Study
LOCATION CODE	2
COUNT LOCATION	#2 - US 301 (S. of Starke Limits)
VHB PROJECT #	62580.01

HOURLY END AT	HOURLY VOLUME DIRECTION (NB)	HOURLY VOLUME DIRECTION (SB)	TOTAL VOLUMES BOTH DIRECTIONS	DISTRIBUTION PERCENT DIRECTION (NB)	DISTRIBUTION PERCENT DIRECTION (SB)	TOTAL PERCENT BOTH DIRECTIONS
1:00 AM	187	115	302	1.18%	0.82%	1.01%
2:00 AM	141	132	273	0.89%	0.94%	0.91%
3:00 AM	131	121	252	0.82%	0.86%	0.84%
4:00 AM	103	166	269	0.65%	1.18%	0.90%
5:00 AM	181	235	416	1.14%	1.67%	1.39%
6:00 AM	343	329	672	2.16%	2.33%	2.24%
7:00 AM	569	690	1,259	3.58%	4.90%	4.20%
8:00 AM	797	908	1,705	5.01%	6.44%	5.68%
9:00 AM	906	817	1,723	5.70%	5.80%	5.74%
10:00 AM	946	820	1,766	5.95%	5.82%	5.89%
11:00 AM	1,014	797	1,811	6.38%	5.65%	6.04%
12:00 PM	1,147	811	1,958	7.21%	5.75%	6.53%
1:00 PM	1,163	827	1,990	7.31%	5.87%	6.63%
2:00 PM	1,156	825	1,981	7.27%	5.85%	6.60%
3:00 PM	1,094	844	1,938	6.88%	5.99%	6.46%
4:00 PM	1,050	877	1,927	6.60%	6.22%	6.42%
5:00 PM	1,085	1,000	2,085	6.82%	7.09%	6.95%
6:00 PM	1,037	1,023	2,060	6.52%	7.26%	6.87%
7:00 PM	827	746	1,573	5.20%	5.29%	5.24%
8:00 PM	584	602	1,186	3.67%	4.27%	3.95%
9:00 PM	567	502	1,069	3.57%	3.56%	3.56%
10:00 PM	376	424	800	2.36%	3.01%	2.67%
11:00 PM	271	288	559	1.70%	2.04%	1.86%
12:00 AM	229	197	426	1.44%	1.40%	1.42%
<b>TOTALS</b>	<b>15,904</b>	<b>14,096</b>	<b>30,000</b>	<b>100.01%</b>	<b>100.00%</b>	<b>100.00%</b>



# Roadway Count Summary

*Vanasse Hangen Brustlin, Inc.*

Start Date : April 28, 2015  
 Stop Date : April 30, 2015  
 County : Bradford  
 Location : #2 - US 301 (S. of Starke Limits)

Start Time : 00:00  
 Stop Time : 24:00

VHB Project #: 62580.01

## 28-Apr-15

### Northbound Volume for Lane 1

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	48	32	43	26	36	79	111	159	230	231	239	257
30	61	40	34	19	43	86	121	199	223	216	251	272
45	44	36	32	30	39	84	176	189	221	257	244	267
00	47	44	19	27	69	93	180	246	239	239	243	299
<b>Hr Total</b>	<b>200</b>	<b>152</b>	<b>128</b>	<b>102</b>	<b>187</b>	<b>342</b>	<b>588</b>	<b>793</b>	<b>913</b>	<b>943</b>	<b>977</b>	<b>1,095</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	301	284	285	274	273	237	225	175	162	127	91	55
30	279	263	246	272	316	252	191	143	154	76	66	65
45	300	310	310	221	262	262	186	112	159	77	71	40
00	267	261	287	271	264	295	166	132	116	78	56	49
<b>Hr Total</b>	<b>1,147</b>	<b>1,118</b>	<b>1,128</b>	<b>1,038</b>	<b>1,115</b>	<b>1,046</b>	<b>768</b>	<b>562</b>	<b>591</b>	<b>358</b>	<b>284</b>	<b>209</b>

24 Hour Total : 15,784  
 AM Peak Hour begins : 11:00  
 PM Peak Hour begins : 12:00

AM Peak Volume : 1,095  
 PM Peak Volume : 1,147  
 AM Peak Hour Factor : 0.92  
 PM Peak Hour Factor : 0.95

## 28-Apr-15

### Southbound Volume for Lane 2

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	38	40	33	41	39	77	151	224	216	189	194	168
30	29	32	25	43	63	80	176	262	201	183	210	238
45	34	28	30	32	67	92	179	233	204	206	185	212
00	15	21	37	55	73	115	160	204	175	200	218	187
<b>Hr Total</b>	<b>116</b>	<b>121</b>	<b>125</b>	<b>171</b>	<b>242</b>	<b>364</b>	<b>666</b>	<b>923</b>	<b>796</b>	<b>778</b>	<b>807</b>	<b>805</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	196	180	208	213	228	263	191	148	108	132	87	64
30	198	206	216	222	227	258	187	177	130	104	70	49
45	241	220	189	210	233	204	175	112	100	119	64	35
00	198	192	223	209	222	249	172	155	116	89	78	37
<b>Hr Total</b>	<b>833</b>	<b>798</b>	<b>836</b>	<b>854</b>	<b>910</b>	<b>974</b>	<b>725</b>	<b>592</b>	<b>454</b>	<b>444</b>	<b>299</b>	<b>185</b>

24 Hour Total : 13,818  
 AM Peak Hour begins : 7:00  
 PM Peak Hour begins : 16:30

AM Peak Volume : 923  
 PM Peak Volume : 976  
 AM Peak Hour Factor : 0.88  
 PM Peak Hour Factor : 0.93

## 28-Apr-15

### Total Volume for All Lanes

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	86	72	76	67	75	156	262	383	446	420	433	425
30	90	72	59	62	106	166	297	461	424	399	461	510
45	78	64	62	62	106	176	355	422	425	463	429	479
00	62	65	56	82	142	208	340	450	414	439	461	486
<b>Hr Total</b>	<b>316</b>	<b>273</b>	<b>253</b>	<b>273</b>	<b>429</b>	<b>706</b>	<b>1,254</b>	<b>1,716</b>	<b>1,709</b>	<b>1,721</b>	<b>1,784</b>	<b>1,900</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	497	464	493	487	501	500	416	323	270	259	178	119
30	477	469	462	494	543	510	378	320	284	180	136	114
45	541	530	499	431	495	466	361	224	259	196	135	75
00	465	453	510	480	486	544	338	287	232	167	134	86
<b>Hr Total</b>	<b>1,980</b>	<b>1,916</b>	<b>1,964</b>	<b>1,892</b>	<b>2,025</b>	<b>2,020</b>	<b>1,493</b>	<b>1,154</b>	<b>1,045</b>	<b>802</b>	<b>583</b>	<b>394</b>

24 Hour Total : 29,602  
 AM Peak Hour begins : 11:00  
 PM Peak Hour begins : 16:00

AM Peak Volume : 1,900  
 PM Peak Volume : 2,025  
 AM Peak Hour Factor : 0.93  
 PM Peak Hour Factor : 0.93



# Roadway Count Summary

Vanasse Hangen Brustlin, Inc.

Start Date : April 28, 2015  
Stop Date : April 30, 2015  
County : Bradford  
Location : #2 - US 301 (S. of Starke Limits)

Start Time 00:00  
Stop Time 24:00

VHB Project #: 62580.01

## 29-Apr-15

### Northbound Volume for Lane 1

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	34	26	24	21	30	63	102	162	221	228	244	278
30	49	27	41	15	44	75	126	196	228	215	238	270
45	56	36	27	33	40	90	153	203	233	238	260	308
00	34	39	39	33	59	115	165	237	215	264	307	340
<b>Hr Total</b>	<b>173</b>	<b>128</b>	<b>131</b>	<b>102</b>	<b>173</b>	<b>343</b>	<b>546</b>	<b>798</b>	<b>897</b>	<b>945</b>	<b>1,049</b>	<b>1,196</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	295	305	269	283	256	243	219	164	146	113	75	50
30	326	273	240	247	235	264	225	178	134	108	67	27
45	252	326	274	248	304	259	240	145	130	102	63	90
00	305	288	277	281	257	260	202	115	132	70	52	80
<b>Hr Total</b>	<b>1,178</b>	<b>1,192</b>	<b>1,060</b>	<b>1,059</b>	<b>1,052</b>	<b>1,026</b>	<b>886</b>	<b>602</b>	<b>542</b>	<b>393</b>	<b>257</b>	<b>247</b>

24 Hour Total : 15,975  
AM Peak Hour begins : 11:00  
PM Peak Hour begins : 12:45

AM Peak Volume : 1,196  
PM Peak Volume : 1,209  
AM Peak Hour Factor : 0.88  
PM Peak Hour Factor : 0.93

## 29-Apr-15

### Southbound Volume for Lane 2

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	28	36	25	32	44	59	154	227	224	219	175	210
30	26	32	26	34	53	76	184	224	197	243	195	206
45	26	37	35	51	74	71	170	225	191	185	212	198
00	33	37	29	41	55	87	203	216	225	213	201	202
<b>Hr Total</b>	<b>113</b>	<b>142</b>	<b>115</b>	<b>158</b>	<b>226</b>	<b>293</b>	<b>711</b>	<b>892</b>	<b>837</b>	<b>860</b>	<b>783</b>	<b>816</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	214	208	203	216	268	356	213	185	156	144	96	64
30	218	208	201	227	272	277	195	141	135	81	57	55
45	187	220	233	209	288	236	174	135	121	96	71	42
00	202	216	212	244	259	200	184	148	135	81	50	47
<b>Hr Total</b>	<b>821</b>	<b>852</b>	<b>849</b>	<b>896</b>	<b>1,087</b>	<b>1,069</b>	<b>766</b>	<b>609</b>	<b>547</b>	<b>402</b>	<b>274</b>	<b>208</b>

24 Hour Total : 14,326  
AM Peak Hour begins : 7:00  
PM Peak Hour begins : 16:30

AM Peak Volume : 892  
PM Peak Volume : 1,180  
AM Peak Hour Factor : 0.98  
PM Peak Hour Factor : 0.83

## 29-Apr-15

### Total Volume for All Lanes

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	62	62	49	53	74	122	256	389	445	447	419	488
30	75	59	67	49	97	151	310	420	425	458	433	476
45	82	73	62	84	114	161	323	428	424	423	472	506
00	67	76	68	74	114	202	368	453	440	477	508	542
<b>Hr Total</b>	<b>286</b>	<b>270</b>	<b>246</b>	<b>260</b>	<b>399</b>	<b>636</b>	<b>1,257</b>	<b>1,690</b>	<b>1,734</b>	<b>1,805</b>	<b>1,832</b>	<b>2,012</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	509	513	472	499	524	599	432	349	302	257	171	114
30	544	481	441	474	507	541	420	319	269	189	124	82
45	439	546	507	457	592	495	414	280	251	198	134	132
00	507	504	489	525	516	460	386	263	267	151	102	127
<b>Hr Total</b>	<b>1,999</b>	<b>2,044</b>	<b>1,909</b>	<b>1,955</b>	<b>2,139</b>	<b>2,095</b>	<b>1,652</b>	<b>1,211</b>	<b>1,089</b>	<b>795</b>	<b>531</b>	<b>455</b>

24 Hour Total : 30,301  
AM Peak Hour begins : 11:00  
PM Peak Hour begins : 16:30

AM Peak Volume : 2,012  
PM Peak Volume : 2,248  
AM Peak Hour Factor : 0.93  
PM Peak Hour Factor : 0.94



# Roadway Count Summary

*Vanasse Hangen Brustlin, Inc.*

Start Date : April 28, 2015  
 Stop Date : April 30, 2015  
 County : Bradford  
 Location : #2 - US 301 (S. of Starke Limits)

Start Time : 00:00  
 Stop Time : 24:00

VHB Project #: 62580.01

AVERAGE Northbound Volume for Lane 1												
End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	41	29	34	24	33	71	107	161	226	230	242	268
30	55	34	38	17	44	81	124	198	226	216	245	271
45	50	36	30	32	40	87	165	196	227	248	252	288
00	41	42	29	30	64	104	173	242	227	252	275	320
<b>Hr Total</b>	<b>187</b>	<b>141</b>	<b>131</b>	<b>103</b>	<b>181</b>	<b>343</b>	<b>569</b>	<b>797</b>	<b>906</b>	<b>946</b>	<b>1,014</b>	<b>1,147</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	298	295	277	279	265	240	222	170	154	120	83	53
30	303	268	243	260	276	258	208	161	144	92	67	46
45	276	318	292	235	283	261	213	129	145	90	67	65
00	286	275	282	276	261	278	184	124	124	74	54	65
<b>Hr Total</b>	<b>1,163</b>	<b>1,156</b>	<b>1,094</b>	<b>1,050</b>	<b>1,085</b>	<b>1,037</b>	<b>827</b>	<b>584</b>	<b>567</b>	<b>376</b>	<b>271</b>	<b>229</b>

24 Hour Total : 15,904  
 AM Peak Hour begins : 11:00  
 PM Peak Hour begins : 12:45

AM Peak Volume : 1,147  
 PM Peak Volume : 1,167  
 AM Peak Hour Factor : 0.90  
 PM Peak Hour Factor : 0.92

AVERAGE Southbound Volume for Lane 2												
End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	33	38	29	37	42	68	153	226	220	204	185	189
30	28	32	26	39	58	78	180	243	199	213	203	222
45	30	33	33	42	71	82	175	229	198	196	199	205
00	24	29	33	48	64	101	182	210	200	207	210	195
<b>Hr Total</b>	<b>115</b>	<b>132</b>	<b>121</b>	<b>166</b>	<b>235</b>	<b>329</b>	<b>690</b>	<b>908</b>	<b>817</b>	<b>820</b>	<b>797</b>	<b>811</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	205	194	206	215	248	310	202	167	132	138	92	64
30	208	207	209	225	250	268	191	159	133	93	64	52
45	214	220	211	210	261	220	175	124	111	108	68	39
00	200	204	218	227	241	225	178	152	126	85	64	42
<b>Hr Total</b>	<b>827</b>	<b>825</b>	<b>844</b>	<b>877</b>	<b>1,000</b>	<b>1,023</b>	<b>746</b>	<b>602</b>	<b>502</b>	<b>424</b>	<b>288</b>	<b>197</b>

24 Hour Total : 14,096  
 AM Peak Hour begins : 7:00  
 PM Peak Hour begins : 16:30

AM Peak Volume : 908  
 PM Peak Volume : 1,080  
 AM Peak Hour Factor : 0.93  
 PM Peak Hour Factor : 0.87

AVERAGE Total Volume for All Lanes												
End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	74	67	63	61	75	139	260	387	446	434	427	457
30	83	66	64	56	102	159	304	441	425	429	448	493
45	80	69	63	74	111	169	340	425	425	444	451	493
00	65	71	62	78	128	205	355	452	427	459	485	515
<b>Hr Total</b>	<b>302</b>	<b>273</b>	<b>252</b>	<b>269</b>	<b>416</b>	<b>672</b>	<b>1,259</b>	<b>1,705</b>	<b>1,723</b>	<b>1,766</b>	<b>1,811</b>	<b>1,958</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	503	489	483	494	513	550	424	337	286	258	175	117
30	511	475	452	485	526	526	399	320	277	185	131	98
45	490	538	503	445	544	481	388	253	256	198	135	104
00	486	479	500	503	502	503	362	276	250	159	118	107
<b>Hr Total</b>	<b>1,990</b>	<b>1,981</b>	<b>1,938</b>	<b>1,927</b>	<b>2,085</b>	<b>2,060</b>	<b>1,573</b>	<b>1,186</b>	<b>1,069</b>	<b>800</b>	<b>559</b>	<b>426</b>

24 Hour Total : 30,000  
 AM Peak Hour begins : 11:00  
 PM Peak Hour begins : 16:15

AM Peak Volume : 1,958  
 PM Peak Volume : 2,122  
 AM Peak Hour Factor : 0.95  
 PM Peak Hour Factor : 0.97



# Traffic Count Data

*Vanasse Hangen Brustlin, Inc.*

PROJECT	Starke Railroad Overpass PD&E Study
LOCATION CODE	3
COUNT LOCATION	#3 - US-301 South of Washington St.
VHB PROJECT #	62580.01

TYPE OF COUNT:

48-Hour APPROACH VOLUME COUNT

TIME OF COUNT:

Start Date	April 28, 2015	Start Time	12:00 AM
End Date	May 1, 2015	End Time	12:00 AM

VOLUME AVERAGES

	<b>Total</b>	<b>NB</b>	<b>SB</b>
ADT	36,222	18,790	17,432
Peak Hour	11:45 AM to 12:45 PM		
	<b>Peak Hour Total</b>	<b>NB</b>	<b>SB</b>
	2,553	1,465	1,088

MEASURED TRAVEL CHARACTERISTICS

\*Peak to Daily Ratio\*

K = 7.05%      D = 57.4%



# Hourly Distribution of Traffic Volumes

*Vanasse Hangen Brustlin, Inc.*

PROJECT	Starke Railroad Overpass PD&E Study
LOCATION CODE	3
COUNT LOCATION	#3 - US-301 South of Washington St.
VHB PROJECT #	62580.01

HOURLY END AT	HOURLY VOLUME DIRECTION (NB)	HOURLY VOLUME DIRECTION (SB)	TOTAL VOLUMES BOTH DIRECTIONS	DISTRIBUTION PERCENT DIRECTION (NB)	DISTRIBUTION PERCENT DIRECTION (SB)	TOTAL PERCENT BOTH DIRECTIONS
1:00 AM	236	162	398	1.26%	0.93%	1.10%
2:00 AM	169	169	338	0.90%	0.97%	0.93%
3:00 AM	191	170	361	1.02%	0.98%	1.00%
4:00 AM	130	215	345	0.69%	1.23%	0.95%
5:00 AM	233	312	545	1.24%	1.79%	1.50%
6:00 AM	452	407	859	2.41%	2.33%	2.37%
7:00 AM	677	762	1,439	3.60%	4.37%	3.97%
8:00 AM	885	1,028	1,913	4.71%	5.90%	5.28%
9:00 AM	1,069	1,060	2,129	5.69%	6.08%	5.88%
10:00 AM	1,091	1,080	2,171	5.81%	6.20%	5.99%
11:00 AM	1,182	1,017	2,199	6.29%	5.83%	6.07%
12:00 PM	1,285	1,104	2,389	6.84%	6.33%	6.60%
1:00 PM	1,473	1,068	2,541	7.84%	6.13%	7.02%
2:00 PM	1,427	1,019	2,446	7.59%	5.85%	6.75%
3:00 PM	1,152	1,046	2,198	6.13%	6.00%	6.07%
4:00 PM	1,181	1,212	2,393	6.29%	6.95%	6.61%
5:00 PM	1,055	1,272	2,327	5.61%	7.30%	6.42%
6:00 PM	1,315	1,118	2,433	7.00%	6.41%	6.72%
7:00 PM	969	885	1,854	5.16%	5.08%	5.12%
8:00 PM	751	730	1,481	4.00%	4.19%	4.09%
9:00 PM	734	591	1,325	3.91%	3.39%	3.66%
10:00 PM	498	438	936	2.65%	2.51%	2.58%
11:00 PM	377	328	705	2.01%	1.88%	1.95%
12:00 AM	258	239	497	1.37%	1.37%	1.37%
TOTALS	18,790	17,432	36,222	100.02%	100.00%	100.00%



# Roadway Count Summary

*Vanasse Hangen Brustlin, Inc.*

Start Date : April 28, 2015  
 Stop Date : April 30, 2015  
 County : Bradford  
 Location : #3 - US-301 South of Washington St.

Start Time : 00:00  
 Stop Time : 24:00

VHB Project #: 62580.01

## 28-Apr-15

### Northbound Volume for Lane 1

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	66	53	66	39	56	99	137	187	228	312	294	286
30	73	33	47	34	54	114	153	227	227	307	287	318
45	67	58	52	28	47	111	177	227	319	243	277	333
00	46	54	21	27	76	120	218	242	287	245	283	301
<b>Hr Total</b>	<b>252</b>	<b>198</b>	<b>186</b>	<b>128</b>	<b>233</b>	<b>444</b>	<b>685</b>	<b>883</b>	<b>1,061</b>	<b>1,107</b>	<b>1,141</b>	<b>1,238</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	370	327	326	320	264	280	234	172	190	147	108	72
30	360	373	363	362	335	278	245	202	197	136	104	82
45	366	351	309	367	353	268	223	189	191	101	82	49
00	341	361	308	312	267	277	204	169	174	98	90	63
<b>Hr Total</b>	<b>1,437</b>	<b>1,412</b>	<b>1,306</b>	<b>1,361</b>	<b>1,219</b>	<b>1,103</b>	<b>906</b>	<b>732</b>	<b>752</b>	<b>482</b>	<b>384</b>	<b>266</b>

24 Hour Total : 18,916  
 AM Peak Hour begins : 11:00  
 PM Peak Hour begins : 12:00

AM Peak Volume : 1,238  
 PM Peak Volume : 1,437  
 AM Peak Hour Factor : 0.93  
 PM Peak Hour Factor : 0.97

## 28-Apr-15

### Southbound Volume for Lane 2

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	52	61	45	56	72	88	155	249	243	278	280	281
30	47	36	39	58	86	110	191	255	245	269	266	301
45	29	29	50	60	87	127	180	277	238	229	243	312
00	30	28	45	54	79	118	219	278	298	247	237	277
<b>Hr Total</b>	<b>158</b>	<b>154</b>	<b>179</b>	<b>228</b>	<b>324</b>	<b>443</b>	<b>745</b>	<b>1,059</b>	<b>1,024</b>	<b>1,023</b>	<b>1,026</b>	<b>1,171</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	259	261	253	286	268	335	248	175	145	127	121	55
30	310	275	278	324	255	268	207	200	132	106	80	52
45	254	230	221	273	266	289	204	193	104	141	68	56
00	225	242	279	254	326	258	199	145	124	80	78	48
<b>Hr Total</b>	<b>1,048</b>	<b>1,008</b>	<b>1,031</b>	<b>1,137</b>	<b>1,115</b>	<b>1,150</b>	<b>858</b>	<b>713</b>	<b>505</b>	<b>454</b>	<b>347</b>	<b>211</b>

24 Hour Total : 17,111  
 AM Peak Hour begins : 11:00  
 PM Peak Hour begins : 16:45

AM Peak Volume : 1,171  
 PM Peak Volume : 1,218  
 AM Peak Hour Factor : 0.94  
 PM Peak Hour Factor : 0.91

## 28-Apr-15

### Total Volume for All Lanes

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	118	114	111	95	128	187	292	436	471	590	574	567
30	120	69	86	92	140	224	344	482	472	576	553	619
45	96	87	102	88	134	238	357	504	557	472	520	645
00	76	82	66	81	155	238	437	520	585	492	520	578
<b>Hr Total</b>	<b>410</b>	<b>352</b>	<b>365</b>	<b>356</b>	<b>557</b>	<b>887</b>	<b>1,430</b>	<b>1,942</b>	<b>2,085</b>	<b>2,130</b>	<b>2,167</b>	<b>2,409</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	629	588	579	606	532	615	482	347	335	274	229	127
30	670	648	641	686	590	546	452	402	329	242	184	134
45	620	581	530	640	619	557	427	382	295	242	150	105
00	566	603	587	566	593	535	403	314	298	178	168	111
<b>Hr Total</b>	<b>2,485</b>	<b>2,420</b>	<b>2,337</b>	<b>2,498</b>	<b>2,334</b>	<b>2,253</b>	<b>1,764</b>	<b>1,445</b>	<b>1,257</b>	<b>936</b>	<b>731</b>	<b>477</b>

24 Hour Total : 36,027  
 AM Peak Hour begins : 11:00  
 PM Peak Hour begins : 14:45

AM Peak Volume : 2,409  
 PM Peak Volume : 2,519  
 AM Peak Hour Factor : 0.93  
 PM Peak Hour Factor : 0.92



# Roadway Count Summary

*Vanasse Hangen Brustlin, Inc.*

Start Date : April 28, 2015  
 Stop Date : April 30, 2015  
 County : Bradford  
 Location : #3 - US-301 South of Washington St.

Start Time : 00:00  
 Stop Time : 24:00

VHB Project #: 62580.01

## 29-Apr-15

### Northbound Volume for Lane 1

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	47	33	50	50	57	79	141	177	254	255	294	332
30	70	35	50	17	53	119	170	251	238	279	300	282
45	60	47	52	26	50	113	197	222	281	255	293	365
00	40	24	42	37	70	148	159	236	302	284	335	352
<b>Hr Total</b>	<b>217</b>	<b>139</b>	<b>194</b>	<b>130</b>	<b>230</b>	<b>459</b>	<b>667</b>	<b>886</b>	<b>1,075</b>	<b>1,073</b>	<b>1,222</b>	<b>1,331</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	422	351	363	278	220	362	251	213	187	143	102	46
30	369	382	209	283	217	409	286	169	159	148	88	36
45	387	341	217	225	233	448	229	222	191	136	105	104
00	328	366	207	213	220	307	264	163	177	86	74	63
<b>Hr Total</b>	<b>1,506</b>	<b>1,440</b>	<b>996</b>	<b>999</b>	<b>890</b>	<b>1,526</b>	<b>1,030</b>	<b>767</b>	<b>714</b>	<b>513</b>	<b>369</b>	<b>249</b>

24 Hour Total : 18,622  
 AM Peak Hour begins : 11:00  
 PM Peak Hour begins : 17:00

AM Peak Volume : 1,331  
 PM Peak Volume : 1,526  
 AM Peak Hour Factor : 0.91  
 PM Peak Hour Factor : 0.85

## 29-Apr-15

### Southbound Volume for Lane 2

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	51	54	29	44	65	77	182	215	272	328	256	243
30	41	33	42	53	65	86	192	265	259	288	233	273
45	29	45	61	53	100	82	171	239	290	263	258	255
00	43	49	26	49	66	123	230	278	273	256	258	264
<b>Hr Total</b>	<b>164</b>	<b>181</b>	<b>158</b>	<b>199</b>	<b>296</b>	<b>368</b>	<b>775</b>	<b>997</b>	<b>1,094</b>	<b>1,135</b>	<b>1,005</b>	<b>1,035</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	295	258	241	264	375	335	255	252	153	125	98	77
30	236	249	280	346	331	267	244	182	189	102	71	62
45	280	281	270	376	347	241	210	157	168	111	82	59
00	276	240	269	299	373	242	200	155	165	84	56	68
<b>Hr Total</b>	<b>1,087</b>	<b>1,028</b>	<b>1,060</b>	<b>1,285</b>	<b>1,426</b>	<b>1,085</b>	<b>909</b>	<b>746</b>	<b>675</b>	<b>422</b>	<b>307</b>	<b>266</b>

24 Hour Total : 17,703  
 AM Peak Hour begins : 8:30  
 PM Peak Hour begins : 16:00

AM Peak Volume : 1,179  
 PM Peak Volume : 1,426  
 AM Peak Hour Factor : 0.90  
 PM Peak Hour Factor : 0.95

## 29-Apr-15

### Total Volume for All Lanes

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	98	87	79	94	122	156	323	392	526	583	550	575
30	111	68	92	70	118	205	362	516	497	567	533	555
45	89	92	113	79	150	195	368	461	571	518	551	620
00	83	73	68	86	136	271	389	514	575	540	593	616
<b>Hr Total</b>	<b>381</b>	<b>320</b>	<b>352</b>	<b>329</b>	<b>526</b>	<b>827</b>	<b>1,442</b>	<b>1,883</b>	<b>2,169</b>	<b>2,208</b>	<b>2,227</b>	<b>2,366</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	717	609	604	542	595	697	506	465	340	268	200	123
30	605	631	489	629	548	676	530	351	348	250	159	98
45	667	622	487	601	580	689	439	379	359	247	187	163
00	604	606	476	512	593	549	464	318	342	170	130	131
<b>Hr Total</b>	<b>2,593</b>	<b>2,468</b>	<b>2,056</b>	<b>2,284</b>	<b>2,316</b>	<b>2,611</b>	<b>1,939</b>	<b>1,513</b>	<b>1,389</b>	<b>935</b>	<b>676</b>	<b>515</b>

24 Hour Total : 36,325  
 AM Peak Hour begins : 11:00  
 PM Peak Hour begins : 16:45

AM Peak Volume : 2,366  
 PM Peak Volume : 2,655  
 AM Peak Hour Factor : 0.95  
 PM Peak Hour Factor : 0.95



# Roadway Count Summary

*Vanasse Hangen Brustlin, Inc.*

Start Date : April 28, 2015  
 Stop Date : April 30, 2015  
 County : Bradford  
 Location : #3 - US-301 South of Washington St.

Start Time : 00:00  
 Stop Time : 24:00

VHB Project #: 62580.01

AVERAGE		Northbound Volume for Lane 1										
End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	57	43	58	45	57	89	139	182	241	284	294	309
30	72	34	49	26	54	117	162	239	233	293	294	300
45	64	53	52	27	49	112	187	225	300	249	285	349
00	43	39	32	32	73	134	189	239	295	265	309	327
<b>Hr Total</b>	<b>236</b>	<b>169</b>	<b>191</b>	<b>130</b>	<b>233</b>	<b>452</b>	<b>677</b>	<b>885</b>	<b>1,069</b>	<b>1,091</b>	<b>1,182</b>	<b>1,285</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	396	339	345	299	242	321	243	193	189	145	105	59
30	365	378	286	323	276	344	266	186	178	142	96	59
45	377	346	263	296	293	358	226	206	191	119	94	77
00	335	364	258	263	244	292	234	166	176	92	82	63
<b>Hr Total</b>	<b>1,473</b>	<b>1,427</b>	<b>1,152</b>	<b>1,181</b>	<b>1,055</b>	<b>1,315</b>	<b>969</b>	<b>751</b>	<b>734</b>	<b>498</b>	<b>377</b>	<b>258</b>

24 Hour Total : 18,790  
 AM Peak Hour begins : 11:00  
 PM Peak Hour begins : 12:00

AM Peak Volume : 1,285  
 PM Peak Volume : 1,473  
 AM Peak Hour Factor : 0.92  
 PM Peak Hour Factor : 0.93

AVERAGE		Southbound Volume for Lane 2										
End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	52	58	37	50	69	83	169	232	258	303	268	262
30	44	35	41	56	76	98	192	260	252	279	250	287
45	29	37	56	57	94	105	176	258	264	246	251	284
00	37	39	36	52	73	121	225	278	286	252	248	271
<b>Hr Total</b>	<b>162</b>	<b>169</b>	<b>170</b>	<b>215</b>	<b>312</b>	<b>407</b>	<b>762</b>	<b>1,028</b>	<b>1,060</b>	<b>1,080</b>	<b>1,017</b>	<b>1,104</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	277	260	247	275	322	335	252	214	149	126	110	66
30	273	262	279	335	293	268	226	191	161	104	76	57
45	267	256	246	325	307	265	207	175	136	126	75	58
00	251	241	274	277	350	250	200	150	145	82	67	58
<b>Hr Total</b>	<b>1,068</b>	<b>1,019</b>	<b>1,046</b>	<b>1,212</b>	<b>1,272</b>	<b>1,118</b>	<b>885</b>	<b>730</b>	<b>591</b>	<b>438</b>	<b>328</b>	<b>239</b>

24 Hour Total : 17,432  
 AM Peak Hour begins : 8:30  
 PM Peak Hour begins : 16:15

AM Peak Volume : 1,132  
 PM Peak Volume : 1,285  
 AM Peak Hour Factor : 0.93  
 PM Peak Hour Factor : 0.92

AVERAGE		Total Volume for All Lanes										
End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	109	101	95	95	126	172	308	414	499	587	562	571
30	116	69	90	82	130	215	354	499	485	572	544	587
45	93	90	108	84	143	217	363	483	564	495	536	633
00	80	78	68	84	146	255	414	517	581	517	557	598
<b>Hr Total</b>	<b>398</b>	<b>338</b>	<b>361</b>	<b>345</b>	<b>545</b>	<b>859</b>	<b>1,439</b>	<b>1,913</b>	<b>2,129</b>	<b>2,171</b>	<b>2,199</b>	<b>2,389</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	673	599	592	574	564	656	495	407	338	271	215	125
30	638	640	565	658	569	612	492	377	339	246	172	116
45	644	602	509	621	600	623	433	381	327	245	169	135
00	586	605	532	540	594	542	434	316	321	174	149	121
<b>Hr Total</b>	<b>2,541</b>	<b>2,446</b>	<b>2,198</b>	<b>2,393</b>	<b>2,327</b>	<b>2,433</b>	<b>1,854</b>	<b>1,481</b>	<b>1,325</b>	<b>936</b>	<b>705</b>	<b>497</b>

24 Hour Total : 36,222  
 AM Peak Hour begins : 11:00  
 PM Peak Hour begins : 12:00

AM Peak Volume : 2,389  
 PM Peak Volume : 2,541  
 AM Peak Hour Factor : 0.94  
 PM Peak Hour Factor : 0.94



# Traffic Count Data

*Vanasse Hangen Brustlin, Inc.*

PROJECT	Starke Railroad Overpass PD&E Study
LOCATION CODE	4
COUNT LOCATION	#4 - US-301 North of Weldon St
VHB PROJECT #	62580.01

TYPE OF COUNT:

48-Hour APPROACH VOLUME COUNT

TIME OF COUNT:

Start Date	April 28, 2015	Start Time	12:00 AM
End Date	May 1, 2015	End Time	12:00 AM

VOLUME AVERAGES

	<b>Total</b>	<b>NB</b>	<b>SB</b>
ADT	29,888	15,541	14,347
Peak Hour	12:00 PM to 1:00 PM		
	<b>Peak Hour Total</b>	<b>NB</b>	<b>SB</b>
	2,100	1,200	900

MEASURED TRAVEL CHARACTERISTICS

\*Peak to Daily Ratio\*

K = 7.03%      D = 57.1%



# Hourly Distribution of Traffic Volumes

*Vanasse Hangen Brustlin, Inc.*

PROJECT	Starke Railroad Overpass PD&E Study
LOCATION CODE	4
COUNT LOCATION	#4 - US-301 North of Weldon St
VHB PROJECT #	62580.01

HOURLY END AT	HOURLY VOLUME DIRECTION (NB)	HOURLY VOLUME DIRECTION (SB)	TOTAL VOLUMES BOTH DIRECTIONS	DISTRIBUTION PERCENT DIRECTION (NB)	DISTRIBUTION PERCENT DIRECTION (SB)	TOTAL PERCENT BOTH DIRECTIONS
1:00 AM	213	152	365	1.37%	1.06%	1.22%
2:00 AM	155	166	321	1.00%	1.16%	1.07%
3:00 AM	172	176	348	1.11%	1.23%	1.16%
4:00 AM	114	213	327	0.73%	1.48%	1.09%
5:00 AM	209	283	492	1.34%	1.97%	1.65%
6:00 AM	397	324	721	2.55%	2.26%	2.41%
7:00 AM	559	583	1,142	3.60%	4.06%	3.82%
8:00 AM	680	809	1,489	4.38%	5.64%	4.98%
9:00 AM	848	846	1,694	5.46%	5.90%	5.67%
10:00 AM	916	811	1,727	5.89%	5.65%	5.78%
11:00 AM	1,019	853	1,872	6.56%	5.95%	6.26%
12:00 PM	1,094	975	2,069	7.04%	6.80%	6.92%
1:00 PM	1,200	900	2,100	7.72%	6.27%	7.03%
2:00 PM	1,158	842	2,000	7.45%	5.87%	6.69%
3:00 PM	968	917	1,885	6.23%	6.39%	6.31%
4:00 PM	947	919	1,866	6.09%	6.41%	6.24%
5:00 PM	890	994	1,884	5.73%	6.93%	6.30%
6:00 PM	1,032	939	1,971	6.64%	6.54%	6.59%
7:00 PM	770	711	1,481	4.95%	4.96%	4.96%
8:00 PM	620	590	1,210	3.99%	4.11%	4.05%
9:00 PM	633	491	1,124	4.07%	3.42%	3.76%
10:00 PM	406	374	780	2.61%	2.61%	2.61%
11:00 PM	330	272	602	2.12%	1.90%	2.01%
12:00 AM	211	207	418	1.36%	1.44%	1.40%
TOTALS	15,541	14,347	29,888	99.99%	100.00%	100.00%



# Roadway Count Summary

*Vanasse Hangen Brustlin, Inc.*

Start Date : April 28, 2015  
 Stop Date : April 30, 2015  
 County : Bradford  
 Location : #4 - US-301 North of Weldon St

Start Time : 00:00  
 Stop Time : 24:00

VHB Project #: 62580.01

## 28-Apr-15

### Northbound Volume for Lane 1

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	62	49	62	35	50	99	134	131	176	237	238	256
30	69	30	42	30	49	92	132	171	205	260	226	270
45	63	52	44	22	42	100	135	184	230	225	273	252
00	42	52	19	23	72	107	169	201	226	220	223	269
<b>Hr Total</b>	<b>236</b>	<b>183</b>	<b>167</b>	<b>110</b>	<b>213</b>	<b>398</b>	<b>570</b>	<b>687</b>	<b>837</b>	<b>942</b>	<b>960</b>	<b>1,047</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	292	275	266	230	218	209	169	139	167	124	81	52
30	307	282	286	271	264	212	202	161	176	106	102	73
45	300	298	264	270	268	189	182	167	168	85	69	36
00	300	280	255	251	225	191	149	122	169	76	84	45
<b>Hr Total</b>	<b>1,199</b>	<b>1,135</b>	<b>1,071</b>	<b>1,022</b>	<b>975</b>	<b>801</b>	<b>702</b>	<b>589</b>	<b>680</b>	<b>391</b>	<b>336</b>	<b>206</b>

24 Hour Total : 15,457  
 AM Peak Hour begins : 11:00  
 PM Peak Hour begins : 12:00

AM Peak Volume : 1,047  
 PM Peak Volume : 1,199  
 AM Peak Hour Factor : 0.97  
 PM Peak Hour Factor : 0.98

## 28-Apr-15

### Southbound Volume for Lane 2

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	53	65	56	59	71	84	133	199	200	179	254	249
30	40	42	45	63	81	108	133	218	198	201	228	277
45	34	24	53	58	83	88	135	242	188	181	189	269
00	32	29	53	54	74	88	177	208	259	210	219	225
<b>Hr Total</b>	<b>159</b>	<b>160</b>	<b>207</b>	<b>234</b>	<b>309</b>	<b>368</b>	<b>578</b>	<b>867</b>	<b>845</b>	<b>771</b>	<b>890</b>	<b>1,020</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	191	193	233	238	215	321	207	126	123	117	99	50
30	288	235	246	216	209	221	155	166	123	74	65	44
45	206	195	186	202	226	243	182	164	91	126	60	56
00	208	203	229	190	263	217	143	128	91	73	70	38
<b>Hr Total</b>	<b>893</b>	<b>826</b>	<b>894</b>	<b>846</b>	<b>913</b>	<b>1,002</b>	<b>687</b>	<b>584</b>	<b>428</b>	<b>390</b>	<b>294</b>	<b>188</b>

24 Hour Total : 14,353  
 AM Peak Hour begins : 11:00  
 PM Peak Hour begins : 16:45

AM Peak Volume : 1,020  
 PM Peak Volume : 1,048  
 AM Peak Hour Factor : 0.92  
 PM Peak Hour Factor : 0.82

## 28-Apr-15

### Total Volume for All Lanes

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	115	114	118	94	121	183	267	330	376	416	492	505
30	109	72	87	93	130	200	265	389	403	461	454	547
45	97	76	97	80	125	188	270	426	418	406	462	521
00	74	81	72	77	146	195	346	409	485	430	442	494
<b>Hr Total</b>	<b>395</b>	<b>343</b>	<b>374</b>	<b>344</b>	<b>522</b>	<b>766</b>	<b>1,148</b>	<b>1,554</b>	<b>1,682</b>	<b>1,713</b>	<b>1,850</b>	<b>2,067</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	483	468	499	468	433	530	376	265	290	241	180	102
30	595	517	532	487	473	433	357	327	299	180	167	117
45	506	493	450	472	494	432	364	331	259	211	129	92
00	508	483	484	441	488	408	292	250	260	149	154	83
<b>Hr Total</b>	<b>2,092</b>	<b>1,961</b>	<b>1,965</b>	<b>1,868</b>	<b>1,888</b>	<b>1,803</b>	<b>1,389</b>	<b>1,173</b>	<b>1,108</b>	<b>781</b>	<b>630</b>	<b>394</b>

24 Hour Total : 29,810  
 AM Peak Hour begins : 11:00  
 PM Peak Hour begins : 12:00

AM Peak Volume : 2,067  
 PM Peak Volume : 2,092  
 AM Peak Hour Factor : 0.95  
 PM Peak Hour Factor : 0.88



# Roadway Count Summary

Vanasse Hangen Brustlin, Inc.

Start Date : April 28, 2015  
 Stop Date : April 30, 2015  
 County : Bradford  
 Location : #4 - US-301 North of Weldon St

Start Time 00:00  
 Stop Time 24:00

VHB Project #: 62580.01

## 29-Apr-15

### Northbound Volume for Lane 1

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	35	30	48	38	47	75	127	129	253	207	284	290
30	65	34	47	18	52	100	141	187	176	236	241	257
45	51	36	37	24	47	95	139	172	215	214	270	273
00	37	25	42	36	56	125	139	185	211	232	280	318
<b>Hr Total</b>	<b>188</b>	<b>125</b>	<b>174</b>	<b>116</b>	<b>202</b>	<b>395</b>	<b>546</b>	<b>673</b>	<b>855</b>	<b>889</b>	<b>1,075</b>	<b>1,138</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	299	284	322	190	196	288	208	189	137	123	88	40
30	304	301	191	284	203	335	214	136	131	118	71	30
45	318	282	183	213	202	378	189	183	155	109	102	89
00	278	312	167	182	203	258	224	141	160	69	59	55
<b>Hr Total</b>	<b>1,199</b>	<b>1,179</b>	<b>863</b>	<b>869</b>	<b>804</b>	<b>1,259</b>	<b>835</b>	<b>649</b>	<b>583</b>	<b>419</b>	<b>320</b>	<b>214</b>

24 Hour Total : 15,569  
 AM Peak Hour begins : 11:00  
 PM Peak Hour begins : 17:00

AM Peak Volume : 1,138  
 PM Peak Volume : 1,259  
 AM Peak Hour Factor : 0.90  
 PM Peak Hour Factor : 0.83

## 29-Apr-15

### Southbound Volume for Lane 2

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	41	48	25	46	61	53	141	143	203	219	190	220
30	32	32	32	51	58	78	149	215	197	205	192	240
45	26	45	56	46	85	57	125	187	223	208	214	262
00	46	45	28	47	52	90	173	204	220	217	218	204
<b>Hr Total</b>	<b>145</b>	<b>170</b>	<b>141</b>	<b>190</b>	<b>256</b>	<b>278</b>	<b>588</b>	<b>749</b>	<b>843</b>	<b>849</b>	<b>814</b>	<b>926</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	249	204	215	260	288	229	213	214	122	104	73	72
30	178	219	254	228	287	230	175	123	149	88	58	46
45	240	220	243	244	276	210	165	126	138	93	70	50
00	239	212	226	260	223	204	181	132	143	71	47	57
<b>Hr Total</b>	<b>906</b>	<b>855</b>	<b>938</b>	<b>992</b>	<b>1,074</b>	<b>873</b>	<b>734</b>	<b>595</b>	<b>552</b>	<b>356</b>	<b>248</b>	<b>225</b>

24 Hour Total : 14,297  
 AM Peak Hour begins : 10:45  
 PM Peak Hour begins : 15:45

AM Peak Volume : 940  
 PM Peak Volume : 1,111  
 AM Peak Hour Factor : 0.90  
 PM Peak Hour Factor : 0.96

## 29-Apr-15

### Total Volume for All Lanes

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	76	78	73	84	108	128	268	272	456	426	474	510
30	97	66	79	69	110	178	290	402	373	441	433	497
45	77	81	93	70	132	152	264	359	438	422	484	535
00	83	70	70	83	108	215	312	389	431	449	498	522
<b>Hr Total</b>	<b>333</b>	<b>295</b>	<b>315</b>	<b>306</b>	<b>458</b>	<b>673</b>	<b>1,134</b>	<b>1,422</b>	<b>1,698</b>	<b>1,738</b>	<b>1,889</b>	<b>2,064</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	548	488	537	450	484	517	421	403	259	227	161	112
30	482	520	445	512	490	565	389	259	280	206	129	76
45	558	502	426	457	478	588	354	309	293	202	172	139
00	517	524	393	442	426	462	405	273	303	140	106	112
<b>Hr Total</b>	<b>2,105</b>	<b>2,034</b>	<b>1,801</b>	<b>1,861</b>	<b>1,878</b>	<b>2,132</b>	<b>1,569</b>	<b>1,244</b>	<b>1,135</b>	<b>775</b>	<b>568</b>	<b>439</b>

24 Hour Total : 29,866  
 AM Peak Hour begins : 11:00  
 PM Peak Hour begins : 17:00

AM Peak Volume : 2,064  
 PM Peak Volume : 2,132  
 AM Peak Hour Factor : 0.96  
 PM Peak Hour Factor : 0.91



# Roadway Count Summary

Vanasse Hangen Brustlin, Inc.

Start Date : April 28, 2015  
 Stop Date : April 30, 2015  
 County : Bradford  
 Location : #4 - US-301 North of Weldon St

Start Time 00:00  
 Stop Time 24:00

VHB Project #: 62580.01

AVERAGE		Northbound Volume for Lane 1										
End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	49	40	55	37	49	87	131	130	215	222	261	273
30	67	32	45	24	51	96	137	179	191	248	234	264
45	57	44	41	23	45	98	137	178	223	220	272	263
00	40	39	31	30	64	116	154	193	219	226	252	294
<b>Hr Total</b>	<b>213</b>	<b>155</b>	<b>172</b>	<b>114</b>	<b>209</b>	<b>397</b>	<b>559</b>	<b>680</b>	<b>848</b>	<b>916</b>	<b>1,019</b>	<b>1,094</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	296	280	294	210	207	249	189	164	152	124	85	46
30	306	292	239	278	234	274	208	149	154	112	87	52
45	309	290	224	242	235	284	186	175	162	97	86	63
00	289	296	211	217	214	225	187	132	165	73	72	50
<b>Hr Total</b>	<b>1,200</b>	<b>1,158</b>	<b>968</b>	<b>947</b>	<b>890</b>	<b>1,032</b>	<b>770</b>	<b>620</b>	<b>633</b>	<b>406</b>	<b>330</b>	<b>211</b>

24 Hour Total : 15,541  
 AM Peak Hour begins : 11:00  
 PM Peak Hour begins : 12:00

AM Peak Volume : 1,094  
 PM Peak Volume : 1,200  
 AM Peak Hour Factor : 0.93  
 PM Peak Hour Factor : 0.97

AVERAGE		Southbound Volume for Lane 2										
End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	47	57	41	53	66	69	137	171	202	199	222	235
30	36	37	39	57	70	93	141	217	198	203	210	259
45	30	35	55	52	84	73	130	215	206	195	202	266
00	39	37	41	51	63	89	175	206	240	214	219	215
<b>Hr Total</b>	<b>152</b>	<b>166</b>	<b>176</b>	<b>213</b>	<b>283</b>	<b>324</b>	<b>583</b>	<b>809</b>	<b>846</b>	<b>811</b>	<b>853</b>	<b>975</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	220	199	224	249	252	275	210	170	123	111	86	61
30	233	227	250	222	248	226	165	145	136	81	62	45
45	223	208	215	223	251	227	174	145	115	110	65	53
00	224	208	228	225	243	211	162	130	117	72	59	48
<b>Hr Total</b>	<b>900</b>	<b>842</b>	<b>917</b>	<b>919</b>	<b>994</b>	<b>939</b>	<b>711</b>	<b>590</b>	<b>491</b>	<b>374</b>	<b>272</b>	<b>207</b>

24 Hour Total : 14,347  
 AM Peak Hour begins : 10:45  
 PM Peak Hour begins : 16:15

AM Peak Volume : 979  
 PM Peak Volume : 1,017  
 AM Peak Hour Factor : 0.92  
 PM Peak Hour Factor : 0.93

AVERAGE		Total Volume for All Lanes										
End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	96	97	96	90	115	156	268	301	417	421	483	508
30	103	69	84	81	121	189	278	396	389	451	444	523
45	87	79	96	75	129	171	267	393	429	415	474	529
00	79	76	72	81	127	205	329	399	459	440	471	509
<b>Hr Total</b>	<b>365</b>	<b>321</b>	<b>348</b>	<b>327</b>	<b>492</b>	<b>721</b>	<b>1,142</b>	<b>1,489</b>	<b>1,694</b>	<b>1,727</b>	<b>1,872</b>	<b>2,069</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	516	479	518	459	459	524	399	334	275	235	171	107
30	539	519	489	500	482	500	373	294	290	193	149	97
45	532	498	439	465	486	511	360	320	277	207	151	116
00	513	504	439	442	457	436	349	262	282	145	131	98
<b>Hr Total</b>	<b>2,100</b>	<b>2,000</b>	<b>1,885</b>	<b>1,866</b>	<b>1,884</b>	<b>1,971</b>	<b>1,481</b>	<b>1,210</b>	<b>1,124</b>	<b>780</b>	<b>602</b>	<b>418</b>

24 Hour Total : 29,888  
 AM Peak Hour begins : 11:00  
 PM Peak Hour begins : 12:00

AM Peak Volume : 2,069  
 PM Peak Volume : 2,100  
 AM Peak Hour Factor : 0.98  
 PM Peak Hour Factor : 0.97



# Traffic Count Data

*Vanasse Hangen Brustlin, Inc.*

PROJECT	Starke Railroad Overpass PD&E Study
LOCATION CODE	5
COUNT LOCATION	#5 - Brownlee St. East of RR Crossing
VHB PROJECT #	62580.01

TYPE OF COUNT:

48-Hour APPROACH VOLUME COUNT

TIME OF COUNT:

Start Date	April 28, 2015	Start Time	12:00 AM
End Date	May 1, 2015	End Time	12:00 AM

VOLUME AVERAGES

	<b>Total</b>	<b>EB</b>	<b>WB</b>
ADT	8,298	3,828	4,470
Peak Hour	4:45 PM to 5:45 PM		
	<b>Peak Hour Total</b>	<b>EB</b>	<b>WB</b>
	679	330	349

MEASURED TRAVEL CHARACTERISTICS

\*Peak to Daily Ratio\*

K = 8.18%      D = 51.4%



# Hourly Distribution of Traffic Volumes

*Vanasse Hangen Brustlin, Inc.*

PROJECT	Starke Railroad Overpass PD&E Study
LOCATION CODE	5
COUNT LOCATION	#5 - Brownlee St. East of RR Crossing
VHB PROJECT #	62580.01

HOURLY END AT	HOURLY VOLUME DIRECTION (EB)	HOURLY VOLUME DIRECTION (WB)	TOTAL VOLUMES BOTH DIRECTIONS	DISTRIBUTION PERCENT DIRECTION (EB)	DISTRIBUTION PERCENT DIRECTION (WB)	TOTAL PERCENT BOTH DIRECTIONS
1:00 AM	28	21	49	0.73%	0.47%	0.59%
2:00 AM	15	12	27	0.39%	0.27%	0.33%
3:00 AM	20	15	35	0.52%	0.34%	0.42%
4:00 AM	13	21	34	0.34%	0.47%	0.41%
5:00 AM	29	42	71	0.76%	0.94%	0.86%
6:00 AM	50	105	155	1.31%	2.35%	1.87%
7:00 AM	147	187	334	3.84%	4.18%	4.03%
8:00 AM	236	363	599	6.17%	8.12%	7.22%
9:00 AM	207	334	541	5.41%	7.47%	6.52%
10:00 AM	196	296	492	5.12%	6.62%	5.93%
11:00 AM	181	226	407	4.73%	5.06%	4.90%
12:00 PM	207	243	450	5.41%	5.44%	5.42%
1:00 PM	213	232	445	5.56%	5.19%	5.36%
2:00 PM	229	236	465	5.98%	5.28%	5.60%
3:00 PM	260	286	546	6.79%	6.40%	6.58%
4:00 PM	315	313	628	8.23%	7.00%	7.57%
5:00 PM	297	361	658	7.76%	8.08%	7.93%
6:00 PM	342	309	651	8.93%	6.91%	7.85%
7:00 PM	272	258	530	7.11%	5.77%	6.39%
8:00 PM	183	189	372	4.78%	4.23%	4.48%
9:00 PM	158	194	352	4.13%	4.34%	4.24%
10:00 PM	115	111	226	3.00%	2.48%	2.72%
11:00 PM	75	72	147	1.96%	1.61%	1.77%
12:00 AM	40	44	84	1.04%	0.98%	1.01%
<b>TOTALS</b>	<b>3,828</b>	<b>4,470</b>	<b>8,298</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>



# Roadway Count Summary

Vanasse Hangen Brustlin, Inc.

Start Date : April 28, 2015      Start Time      00:00  
 Stop Date : April 30, 2015      Stop Time      24:00  
 County : Bradford  
 Location : #5 - Brownlee St. East of RR Crossing

VHB Project #: 62580.01

## 28-Apr-15

### Eastbound Volume for Lane 1

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	7	6	4	3	12	9	17	56	51	62	47	41
30	7	2	2	4	5	11	34	55	43	49	30	55
45	7	4	7	4	4	12	37	64	51	49	38	53
00	2	3	5	2	9	15	46	61	65	58	46	51
<b>Hr Total</b>	<b>23</b>	<b>15</b>	<b>18</b>	<b>13</b>	<b>30</b>	<b>47</b>	<b>134</b>	<b>236</b>	<b>210</b>	<b>218</b>	<b>161</b>	<b>200</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	44	57	71	59	73	90	82	49	38	27	23	11
30	48	53	77	89	76	83	60	49	28	27	16	6
45	54	61	65	90	83	75	61	39	56	37	14	8
00	64	56	62	89	61	78	50	40	25	30	20	9
<b>Hr Total</b>	<b>210</b>	<b>227</b>	<b>275</b>	<b>327</b>	<b>293</b>	<b>326</b>	<b>253</b>	<b>177</b>	<b>147</b>	<b>121</b>	<b>73</b>	<b>34</b>

24 Hour Total : 3,768  
 AM Peak Hour begins : 7:00  
 PM Peak Hour begins : 15:15

AM Peak Volume : 236      AM Peak Hour Factor : 0.92  
 PM Peak Volume : 341      PM Peak Hour Factor : 0.95

## 28-Apr-15

### Westbound Volume for Lane 2

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	5	6	1	1	11	24	49	90	82	99	51	62
30	6	0	3	5	5	29	39	94	72	65	51	52
45	2	2	2	12	10	42	48	99	73	70	61	64
00	6	3	2	3	21	23	44	84	100	62	53	63
<b>Hr Total</b>	<b>19</b>	<b>11</b>	<b>8</b>	<b>21</b>	<b>47</b>	<b>118</b>	<b>180</b>	<b>367</b>	<b>327</b>	<b>296</b>	<b>216</b>	<b>241</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	62	60	58	78	95	70	67	41	45	46	29	9
30	64	55	82	67	88	69	60	41	31	20	24	7
45	48	48	68	79	82	85	54	52	47	21	17	7
00	69	67	87	73	88	61	63	27	43	21	11	8
<b>Hr Total</b>	<b>243</b>	<b>230</b>	<b>295</b>	<b>297</b>	<b>353</b>	<b>285</b>	<b>244</b>	<b>161</b>	<b>166</b>	<b>108</b>	<b>81</b>	<b>31</b>

24 Hour Total : 4,345  
 AM Peak Hour begins : 7:00  
 PM Peak Hour begins : 16:00

AM Peak Volume : 367      AM Peak Hour Factor : 0.93  
 PM Peak Volume : 353      PM Peak Hour Factor : 0.93

## 28-Apr-15

### Total Volume for All Lanes

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	12	12	5	4	23	33	66	146	133	161	98	103
30	13	2	5	9	10	40	73	149	115	114	81	107
45	9	6	9	16	14	54	85	163	124	119	99	117
00	8	6	7	5	30	38	90	145	165	120	99	114
<b>Hr Total</b>	<b>42</b>	<b>26</b>	<b>26</b>	<b>34</b>	<b>77</b>	<b>165</b>	<b>314</b>	<b>603</b>	<b>537</b>	<b>514</b>	<b>377</b>	<b>441</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	106	117	129	137	168	160	149	90	83	73	52	20
30	112	108	159	156	164	152	120	90	59	47	40	13
45	102	109	133	169	165	160	115	91	103	58	31	15
00	133	123	149	162	149	139	113	67	68	51	31	17
<b>Hr Total</b>	<b>453</b>	<b>457</b>	<b>570</b>	<b>624</b>	<b>646</b>	<b>611</b>	<b>497</b>	<b>338</b>	<b>313</b>	<b>229</b>	<b>154</b>	<b>65</b>

24 Hour Total : 8,113  
 AM Peak Hour begins : 7:00  
 PM Peak Hour begins : 15:30

AM Peak Volume : 603      AM Peak Hour Factor : 0.93  
 PM Peak Volume : 663      PM Peak Hour Factor : 0.98



# Roadway Count Summary

Vanasse Hangen Brustlin, Inc.

Start Date : April 28, 2015

Stop Date : April 30, 2015

County : Bradford

Location : #5 - Brownlee St. East of RR Crossing

Start Time 00:00

Stop Time 24:00

VHB Project #: 62580.01

## 29-Apr-15

### Eastbound Volume for Lane 1

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	6	4	4	7	14	9	29	56	63	39	43	48
30	10	3	4	4	2	13	31	63	45	51	36	50
45	7	4	6	0	4	10	51	54	45	42	55	63
00	7	3	7	2	6	20	48	63	50	40	65	50
<b>Hr Total</b>	<b>30</b>	<b>14</b>	<b>21</b>	<b>13</b>	<b>26</b>	<b>52</b>	<b>159</b>	<b>236</b>	<b>203</b>	<b>172</b>	<b>199</b>	<b>211</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	53	54	48	68	71	102	74	65	42	32	20	13
30	63	52	68	92	78	98	73	36	33	31	25	5
45	47	56	55	47	79	77	68	51	53	28	12	14
00	50	66	71	93	72	79	73	35	39	16	17	12
<b>Hr Total</b>	<b>213</b>	<b>228</b>	<b>242</b>	<b>300</b>	<b>300</b>	<b>356</b>	<b>288</b>	<b>187</b>	<b>167</b>	<b>107</b>	<b>74</b>	<b>44</b>

24 Hour Total : 3,842

AM Peak Hour begins : 7:15

PM Peak Hour begins : 17:00

AM Peak Volume : 243

PM Peak Volume : 356

AM Peak Hour Factor : 0.96

PM Peak Hour Factor : 0.87

## 29-Apr-15

### Westbound Volume for Lane 2

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	6	6	8	4	7	15	38	65	98	89	68	58
30	6	4	7	2	9	18	50	98	85	80	56	70
45	6	2	5	7	8	22	52	95	72	64	53	58
00	3	1	0	4	12	34	52	100	84	61	57	59
<b>Hr Total</b>	<b>21</b>	<b>13</b>	<b>20</b>	<b>17</b>	<b>36</b>	<b>89</b>	<b>192</b>	<b>358</b>	<b>339</b>	<b>294</b>	<b>234</b>	<b>245</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	56	54	59	87	74	84	70	66	40	27	17	16
30	50	59	71	77	95	87	66	52	42	33	15	14
45	49	71	71	68	84	101	63	42	63	28	17	12
00	64	57	72	94	113	61	71	54	75	22	13	11
<b>Hr Total</b>	<b>219</b>	<b>241</b>	<b>273</b>	<b>326</b>	<b>366</b>	<b>333</b>	<b>270</b>	<b>214</b>	<b>220</b>	<b>110</b>	<b>62</b>	<b>53</b>

24 Hour Total : 4,545

AM Peak Hour begins : 7:15

PM Peak Hour begins : 16:45

AM Peak Volume : 391

PM Peak Volume : 385

AM Peak Hour Factor : 0.98

PM Peak Hour Factor : 0.85

## 29-Apr-15

### Total Volume for All Lanes

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	12	10	12	11	21	24	67	121	161	128	111	106
30	16	7	11	6	11	31	81	161	130	131	92	120
45	13	6	11	7	12	32	103	149	117	106	108	121
00	10	4	7	6	18	54	100	163	134	101	122	109
<b>Hr Total</b>	<b>51</b>	<b>27</b>	<b>41</b>	<b>30</b>	<b>62</b>	<b>141</b>	<b>351</b>	<b>594</b>	<b>542</b>	<b>466</b>	<b>433</b>	<b>456</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	109	108	107	155	145	186	144	131	82	59	37	29
30	113	111	139	169	173	185	139	88	75	64	40	19
45	96	127	126	115	163	178	131	93	116	56	29	26
00	114	123	143	187	185	140	144	89	114	38	30	23
<b>Hr Total</b>	<b>432</b>	<b>469</b>	<b>515</b>	<b>626</b>	<b>666</b>	<b>689</b>	<b>558</b>	<b>401</b>	<b>387</b>	<b>217</b>	<b>136</b>	<b>97</b>

24 Hour Total : 8,387

AM Peak Hour begins : 7:15

PM Peak Hour begins : 16:45

AM Peak Volume : 634

PM Peak Volume : 734

AM Peak Hour Factor : 0.97

PM Peak Hour Factor : 0.99



# Roadway Count Summary

Vanasse Hangen Brustlin, Inc.

Start Date : April 28, 2015

Stop Date : April 30, 2015

County : Bradford

Location : #5 - Brownlee St. East of RR Crossing

Start Time 00:00

Stop Time 24:00

VHB Project #: 62580.01

AVERAGE Eastbound Volume for Lane 1												
End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	7	5	4	5	13	9	23	56	57	51	45	45
30	9	3	3	4	4	12	33	59	44	50	33	53
45	7	4	7	2	4	11	44	59	48	46	47	58
00	5	3	6	2	8	18	47	62	58	49	56	51
<b>Hr Total</b>	<b>28</b>	<b>15</b>	<b>20</b>	<b>13</b>	<b>29</b>	<b>50</b>	<b>147</b>	<b>236</b>	<b>207</b>	<b>196</b>	<b>181</b>	<b>207</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	49	56	60	64	72	96	78	57	40	30	22	12
30	56	53	73	91	77	91	67	43	31	29	21	6
45	51	59	60	69	81	76	65	45	55	33	13	11
00	57	61	67	91	67	79	62	38	32	23	19	11
<b>Hr Total</b>	<b>213</b>	<b>229</b>	<b>260</b>	<b>315</b>	<b>297</b>	<b>342</b>	<b>272</b>	<b>183</b>	<b>158</b>	<b>115</b>	<b>75</b>	<b>40</b>

24 Hour Total : 3,828

AM Peak Hour begins : 7:15

PM Peak Hour begins : 17:00

AM Peak Volume : 237

PM Peak Volume : 342

AM Peak Hour Factor : 0.96

PM Peak Hour Factor : 0.89

AVERAGE Westbound Volume for Lane 2												
End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	6	6	5	3	9	20	44	78	90	94	60	60
30	6	2	5	4	7	24	45	96	79	73	54	61
45	4	2	4	10	9	32	50	97	73	67	57	61
00	5	2	1	4	17	29	48	92	92	62	55	61
<b>Hr Total</b>	<b>21</b>	<b>12</b>	<b>15</b>	<b>21</b>	<b>42</b>	<b>105</b>	<b>187</b>	<b>363</b>	<b>334</b>	<b>296</b>	<b>226</b>	<b>243</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	59	57	59	83	85	77	69	54	43	37	23	13
30	57	57	77	72	92	78	63	47	37	27	20	11
45	49	60	70	74	83	93	59	47	55	25	17	10
00	67	62	80	84	101	61	67	41	59	22	12	10
<b>Hr Total</b>	<b>232</b>	<b>236</b>	<b>286</b>	<b>313</b>	<b>361</b>	<b>309</b>	<b>258</b>	<b>189</b>	<b>194</b>	<b>111</b>	<b>72</b>	<b>44</b>

24 Hour Total : 4,470

AM Peak Hour begins : 7:15

PM Peak Hour begins : 16:00

AM Peak Volume : 375

PM Peak Volume : 361

AM Peak Hour Factor : 0.97

PM Peak Hour Factor : 0.89

AVERAGE Total Volume for All Lanes												
End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	13	11	9	8	22	29	67	134	147	145	105	105
30	15	5	8	8	11	36	78	155	123	123	87	114
45	11	6	11	12	13	43	94	156	121	113	104	119
00	10	5	7	6	25	47	95	154	150	111	111	112
<b>Hr Total</b>	<b>49</b>	<b>27</b>	<b>35</b>	<b>34</b>	<b>71</b>	<b>155</b>	<b>334</b>	<b>599</b>	<b>541</b>	<b>492</b>	<b>407</b>	<b>450</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	108	113	119	147	157	173	147	111	83	67	45	25
30	113	110	150	163	169	169	130	90	68	56	41	17
45	100	119	130	143	164	169	124	92	110	58	30	21
00	124	123	147	175	168	140	129	79	91	45	31	21
<b>Hr Total</b>	<b>445</b>	<b>465</b>	<b>546</b>	<b>628</b>	<b>658</b>	<b>651</b>	<b>530</b>	<b>372</b>	<b>352</b>	<b>226</b>	<b>147</b>	<b>84</b>

24 Hour Total : 8,298

AM Peak Hour begins : 7:15

PM Peak Hour begins : 16:45

AM Peak Volume : 612

PM Peak Volume : 679

AM Peak Hour Factor : 0.98

PM Peak Hour Factor : 0.98



# Traffic Count Data

*Vanasse Hangen Brustlin, Inc.*

PROJECT	Starke Railroad Overpass PD&E Study
LOCATION CODE	6
COUNT LOCATION	#6 - Weldon St. West of US-301
VHB PROJECT #	62580.01

TYPE OF COUNT:

48-Hour APPROACH VOLUME COUNT

TIME OF COUNT:

Start Date	April 28, 2015	Start Time	12:00 AM
End Date	May 1, 2015	End Time	12:00 AM

VOLUME AVERAGES

ADT	Total	EB	WB
	547	229	318
Peak Hour	3:00 PM to 4:00 PM		
	Peak Hour Total	EB	WB
	55	23	32

MEASURED TRAVEL CHARACTERISTICS

\*Peak to Daily Ratio\*

K = 10.05% D = 58.2%



# Hourly Distribution of Traffic Volumes

*Vanasse Hangen Brustlin, Inc.*

PROJECT	Starke Railroad Overpass PD&E Study
LOCATION CODE	6
COUNT LOCATION	#6 - Weldon St. West of US-301
VHB PROJECT #	62580.01

HOURLY END AT	HOURLY VOLUME DIRECTION (EB)	HOURLY VOLUME DIRECTION (WB)	TOTAL VOLUMES BOTH DIRECTIONS	DISTRIBUTION PERCENT DIRECTION (EB)	DISTRIBUTION PERCENT DIRECTION (WB)	TOTAL PERCENT BOTH DIRECTIONS
1:00 AM	2	1	3	0.87%	0.31%	0.55%
2:00 AM	3	2	5	1.31%	0.63%	0.91%
3:00 AM	3	2	5	1.31%	0.63%	0.91%
4:00 AM	3	0	3	1.31%	0.00%	0.55%
5:00 AM	4	1	5	1.75%	0.31%	0.91%
6:00 AM	3	1	4	1.31%	0.31%	0.73%
7:00 AM	6	5	11	2.62%	1.57%	2.01%
8:00 AM	8	23	31	3.49%	7.23%	5.67%
9:00 AM	18	31	49	7.86%	9.75%	8.96%
10:00 AM	12	21	33	5.24%	6.60%	6.03%
11:00 AM	21	14	35	9.17%	4.40%	6.40%
12:00 PM	16	24	40	6.99%	7.55%	7.31%
1:00 PM	13	23	36	5.68%	7.23%	6.58%
2:00 PM	13	22	35	5.68%	6.92%	6.40%
3:00 PM	12	22	34	5.24%	6.92%	6.22%
4:00 PM	23	32	55	10.04%	10.06%	10.05%
5:00 PM	13	29	42	5.68%	9.12%	7.68%
6:00 PM	17	19	36	7.42%	5.97%	6.58%
7:00 PM	9	12	21	3.93%	3.77%	3.84%
8:00 PM	10	11	21	4.37%	3.46%	3.84%
9:00 PM	11	10	21	4.80%	3.14%	3.84%
10:00 PM	6	8	14	2.62%	2.52%	2.56%
11:00 PM	3	3	6	1.31%	0.94%	1.10%
12:00 AM	0	2	2	0.00%	0.63%	0.37%
<b>TOTALS</b>	<b>229</b>	<b>318</b>	<b>547</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>



# Roadway Count Summary

*Vanasse Hangen Brustlin, Inc.*

Start Date : April 28, 2015  
 Stop Date : April 30, 2015  
 County : Bradford  
 Location : #6 - Weldon St. West of US-301

Start Time : 00:00  
 Stop Time : 24:00

VHB Project #: 62580.01

## 28-Apr-15

### Eastbound Volume for Lane 1

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	0	0	1	1	1	1	1	1	5	6	3	0
30	0	0	0	0	0	0	0	4	8	2	4	3
45	0	1	0	0	1	1	0	1	5	1	4	2
00	1	1	0	0	2	0	2	2	3	2	7	4
<b>Hr Total</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>4</b>	<b>2</b>	<b>3</b>	<b>8</b>	<b>21</b>	<b>11</b>	<b>18</b>	<b>9</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	2	1	4	7	3	4	3	3	1	0	2	0
30	1	6	1	12	1	6	0	1	5	1	0	0
45	1	1	4	6	3	2	2	6	2	1	0	0
00	4	1	2	4	0	3	1	0	1	2	1	0
<b>Hr Total</b>	<b>8</b>	<b>9</b>	<b>11</b>	<b>29</b>	<b>7</b>	<b>15</b>	<b>6</b>	<b>10</b>	<b>9</b>	<b>4</b>	<b>3</b>	<b>0</b>

24 Hour Total : 192  
 AM Peak Hour begins : 8:15  
 PM Peak Hour begins : 15:00

AM Peak Volume : 22  
 PM Peak Volume : 29  
 AM Peak Hour Factor : 0.69  
 PM Peak Hour Factor : 0.60

## 28-Apr-15

### Westbound Volume for Lane 2

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	0	0	1	0	1	0	0	8	9	7	5	7
30	0	0	0	0	0	0	2	5	3	2	6	4
45	0	0	0	0	0	1	1	6	7	5	1	4
00	0	0	0	0	0	0	0	3	13	6	3	9
<b>Hr Total</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>22</b>	<b>32</b>	<b>20</b>	<b>15</b>	<b>24</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	6	3	2	10	4	5	1	4	2	3	1	0
30	6	8	6	9	7	5	6	3	2	0	0	2
45	4	6	6	5	1	4	1	1	3	1	2	0
00	3	2	7	5	3	4	3	1	2	1	1	2
<b>Hr Total</b>	<b>19</b>	<b>19</b>	<b>21</b>	<b>29</b>	<b>15</b>	<b>18</b>	<b>11</b>	<b>9</b>	<b>9</b>	<b>5</b>	<b>4</b>	<b>4</b>

24 Hour Total : 282  
 AM Peak Hour begins : 8:00  
 PM Peak Hour begins : 14:30

AM Peak Volume : 32  
 PM Peak Volume : 32  
 AM Peak Hour Factor : 0.62  
 PM Peak Hour Factor : 0.80

## 28-Apr-15

### Total Volume for All Lanes

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	0	0	2	1	2	1	1	9	14	13	8	7
30	0	0	0	0	0	0	2	9	11	4	10	7
45	0	1	0	0	1	2	1	7	12	6	5	6
00	1	1	0	0	2	0	2	5	16	8	10	13
<b>Hr Total</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>5</b>	<b>3</b>	<b>6</b>	<b>30</b>	<b>53</b>	<b>31</b>	<b>33</b>	<b>33</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	8	4	6	17	7	9	4	7	3	3	3	0
30	7	14	7	21	8	11	6	4	7	1	0	2
45	5	7	10	11	4	6	3	7	5	2	2	0
00	7	3	9	9	3	7	4	1	3	3	2	2
<b>Hr Total</b>	<b>27</b>	<b>28</b>	<b>32</b>	<b>58</b>	<b>22</b>	<b>33</b>	<b>17</b>	<b>19</b>	<b>18</b>	<b>9</b>	<b>7</b>	<b>4</b>

24 Hour Total : 474  
 AM Peak Hour begins : 8:00  
 PM Peak Hour begins : 14:45

AM Peak Volume : 53  
 PM Peak Volume : 58  
 AM Peak Hour Factor : 0.83  
 PM Peak Hour Factor : 0.69



# Roadway Count Summary

Vanasse Hangen Brustlin, Inc.

Start Date : April 28, 2015  
Stop Date : April 30, 2015  
County : Bradford  
Location : #6 - Weldon St. West of US-301

Start Time : 00:00  
Stop Time : 24:00

VHB Project #: 62580.01

## 29-Apr-15

### Eastbound Volume for Lane 1

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	0	0	0	2	0	0	2	2	2	2	0	7
30	2	2	1	0	0	0	1	1	4	3	13	5
45	0	0	1	0	0	1	0	1	2	3	2	3
00	1	1	0	1	1	1	3	2	5	4	6	6
<b>Hr Total</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>3</b>	<b>1</b>	<b>2</b>	<b>6</b>	<b>6</b>	<b>13</b>	<b>12</b>	<b>21</b>	<b>21</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	3	3	4	7	6	10	1	0	3	0	0	0
30	2	5	4	0	1	5	3	1	2	2	1	0
45	5	5	2	6	2	2	3	3	3	1	0	0
00	6	2	2	3	8	1	2	4	2	3	0	0
<b>Hr Total</b>	<b>16</b>	<b>15</b>	<b>12</b>	<b>16</b>	<b>17</b>	<b>18</b>	<b>9</b>	<b>8</b>	<b>10</b>	<b>6</b>	<b>1</b>	<b>0</b>

24 Hour Total : 221  
AM Peak Hour begins : 10:15  
PM Peak Hour begins : 16:30

AM Peak Volume : 28  
PM Peak Volume : 25  
AM Peak Hour Factor : 0.54  
PM Peak Hour Factor : 0.63

## 29-Apr-15

### Westbound Volume for Lane 2

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	0	0	0	0	0	0	0	3	5	7	5	1
30	0	1	1	0	0	0	1	11	4	3	0	9
45	1	0	0	0	0	1	2	5	8	7	3	8
00	0	1	0	0	0	0	2	3	11	4	5	4
<b>Hr Total</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>5</b>	<b>22</b>	<b>28</b>	<b>21</b>	<b>13</b>	<b>22</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	5	4	3	9	12	6	2	3	1	3	0	0
30	1	4	5	5	8	4	3	3	2	3	0	0
45	11	7	8	12	17	3	4	1	5	0	0	0
00	7	7	5	6	5	4	1	4	2	2	1	0
<b>Hr Total</b>	<b>24</b>	<b>22</b>	<b>21</b>	<b>32</b>	<b>42</b>	<b>17</b>	<b>10</b>	<b>11</b>	<b>10</b>	<b>8</b>	<b>1</b>	<b>0</b>

24 Hour Total : 314  
AM Peak Hour begins : 8:15  
PM Peak Hour begins : 15:45

AM Peak Volume : 30  
PM Peak Volume : 43  
AM Peak Hour Factor : 0.68  
PM Peak Hour Factor : 0.63

## 29-Apr-15

### Total Volume for All Lanes

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	0	0	0	2	0	0	2	5	7	9	5	8
30	2	3	2	0	0	0	2	12	8	6	13	14
45	1	0	1	0	0	2	2	6	10	10	5	11
00	1	2	0	1	1	1	5	5	16	8	11	10
<b>Hr Total</b>	<b>4</b>	<b>5</b>	<b>3</b>	<b>3</b>	<b>1</b>	<b>3</b>	<b>11</b>	<b>28</b>	<b>41</b>	<b>33</b>	<b>34</b>	<b>43</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	8	7	7	16	18	16	3	3	4	3	0	0
30	3	9	9	5	9	9	6	4	4	5	1	0
45	16	12	10	18	19	5	7	4	8	1	0	0
00	13	9	7	9	13	5	3	8	4	5	1	0
<b>Hr Total</b>	<b>40</b>	<b>37</b>	<b>33</b>	<b>48</b>	<b>59</b>	<b>35</b>	<b>19</b>	<b>19</b>	<b>20</b>	<b>14</b>	<b>2</b>	<b>0</b>

24 Hour Total : 535  
AM Peak Hour begins : 10:45  
PM Peak Hour begins : 16:00

AM Peak Volume : 44  
PM Peak Volume : 59  
AM Peak Hour Factor : 0.79  
PM Peak Hour Factor : 0.78



# Roadway Count Summary

Vanasse Hangen Brustlin, Inc.

Start Date : April 28, 2015  
 Stop Date : April 30, 2015  
 County : Bradford  
 Location : #6 - Weldon St. West of US-301

Start Time 00:00  
 Stop Time 24:00

VHB Project #: 62580.01

AVERAGE Eastbound Volume for Lane 1												
End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	0	0	1	2	1	1	2	2	4	4	2	4
30	1	1	1	0	0	0	1	3	6	3	9	4
45	0	1	1	0	1	1	0	1	4	2	3	3
00	1	1	0	1	2	1	3	2	4	3	7	5
<b>Hr Total</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>4</b>	<b>3</b>	<b>6</b>	<b>8</b>	<b>18</b>	<b>12</b>	<b>21</b>	<b>16</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	3	2	4	7	5	7	2	2	2	0	1	0
30	2	6	3	6	1	6	2	1	4	2	1	0
45	3	3	3	6	3	2	3	5	3	1	0	0
00	5	2	2	4	4	2	2	2	2	3	1	0
<b>Hr Total</b>	<b>13</b>	<b>13</b>	<b>12</b>	<b>23</b>	<b>13</b>	<b>17</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>6</b>	<b>3</b>	<b>0</b>

24 Hour Total : 229  
 AM Peak Hour begins : 10:15 AM Peak Volume : 23 AM Peak Hour Factor : 0.64  
 PM Peak Hour begins : 15:00 PM Peak Volume : 23 PM Peak Hour Factor : 0.82

AVERAGE Westbound Volume for Lane 2												
End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	0	0	1	0	1	0	0	6	7	7	5	4
30	0	1	1	0	0	0	2	8	4	3	3	7
45	1	0	0	0	0	1	2	6	8	6	2	6
00	0	1	0	0	0	0	1	3	12	5	4	7
<b>Hr Total</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>5</b>	<b>23</b>	<b>31</b>	<b>21</b>	<b>14</b>	<b>24</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	6	4	3	10	8	6	2	4	2	3	1	0
30	4	6	6	7	8	5	5	3	2	2	0	1
45	8	7	7	9	9	4	3	1	4	1	1	0
00	5	5	6	6	4	4	2	3	2	2	1	1
<b>Hr Total</b>	<b>23</b>	<b>22</b>	<b>22</b>	<b>32</b>	<b>29</b>	<b>19</b>	<b>12</b>	<b>11</b>	<b>10</b>	<b>8</b>	<b>3</b>	<b>2</b>

24 Hour Total : 318  
 AM Peak Hour begins : 8:00 AM Peak Volume : 31 AM Peak Hour Factor : 0.65  
 PM Peak Hour begins : 14:45 PM Peak Volume : 32 PM Peak Hour Factor : 0.80

AVERAGE Total Volume for All Lanes												
End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	0	0	2	2	2	1	2	8	11	11	7	8
30	1	2	2	0	0	0	3	11	10	6	12	11
45	1	1	1	0	1	2	2	7	12	8	5	9
00	1	2	0	1	2	1	4	5	16	8	11	12
<b>Hr Total</b>	<b>3</b>	<b>5</b>	<b>5</b>	<b>3</b>	<b>5</b>	<b>4</b>	<b>11</b>	<b>31</b>	<b>49</b>	<b>33</b>	<b>35</b>	<b>40</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	9	6	7	17	13	13	4	6	4	3	2	0
30	6	12	9	13	9	11	7	4	6	4	1	1
45	11	10	10	15	12	6	6	6	7	2	1	0
00	10	7	8	10	8	6	4	5	4	5	2	1
<b>Hr Total</b>	<b>36</b>	<b>35</b>	<b>34</b>	<b>55</b>	<b>42</b>	<b>36</b>	<b>21</b>	<b>21</b>	<b>21</b>	<b>14</b>	<b>6</b>	<b>2</b>

24 Hour Total : 547  
 AM Peak Hour begins : 8:00 AM Peak Volume : 49 AM Peak Hour Factor : 0.77  
 PM Peak Hour begins : 15:00 PM Peak Volume : 55 PM Peak Hour Factor : 0.81



# Traffic Count Data

*Vanasse Hangen Brustlin, Inc.*

PROJECT	Starke Railroad Overpass PD&E Study
LOCATION CODE	7
COUNT LOCATION	#7 - Weldon St. East of US-301
VHB PROJECT #	62580.01

TYPE OF COUNT:

48-Hour APPROACH VOLUME COUNT

TIME OF COUNT:

Start Date	April 28, 2015	Start Time	12:00 AM
End Date	May 1, 2015	End Time	12:00 AM

VOLUME AVERAGES

	<b>Total</b>	<b>EB</b>	<b>WB</b>
ADT	426	196	230
Peak Hour	3:30 PM to 4:30 PM		
	<b>Peak Hour Total</b>	<b>EB</b>	<b>WB</b>
	41	23	18

MEASURED TRAVEL CHARACTERISTICS

\*Peak to Daily Ratio\*

K = 9.62% D = 56.1%



# Hourly Distribution of Traffic Volumes

*Vanasse Hangen Brustlin, Inc.*

PROJECT	Starke Railroad Overpass PD&E Study
LOCATION CODE	7
COUNT LOCATION	#7 - Weldon St. East of US-301
VHB PROJECT #	62580.01

HOURLY END AT	HOURLY VOLUME DIRECTION (EB)	HOURLY VOLUME DIRECTION (WB)	TOTAL VOLUMES BOTH DIRECTIONS	DISTRIBUTION PERCENT DIRECTION (EB)	DISTRIBUTION PERCENT DIRECTION (WB)	TOTAL PERCENT BOTH DIRECTIONS
1:00 AM	1	1	2	0.51%	0.43%	0.47%
2:00 AM	0	3	3	0.00%	1.30%	0.70%
3:00 AM	0	1	1	0.00%	0.43%	0.23%
4:00 AM	0	0	0	0.00%	0.00%	0.00%
5:00 AM	0	0	0	0.00%	0.00%	0.00%
6:00 AM	2	1	3	1.02%	0.43%	0.70%
7:00 AM	3	6	9	1.53%	2.61%	2.11%
8:00 AM	6	12	18	3.06%	5.22%	4.23%
9:00 AM	11	12	23	5.61%	5.22%	5.40%
10:00 AM	9	12	21	4.59%	5.22%	4.93%
11:00 AM	9	9	18	4.59%	3.91%	4.23%
12:00 PM	13	15	28	6.63%	6.52%	6.57%
1:00 PM	14	11	25	7.14%	4.78%	5.87%
2:00 PM	11	16	27	5.61%	6.96%	6.34%
3:00 PM	14	16	30	7.14%	6.96%	7.04%
4:00 PM	19	16	35	9.69%	6.96%	8.22%
5:00 PM	22	17	39	11.22%	7.39%	9.15%
6:00 PM	15	18	33	7.65%	7.83%	7.75%
7:00 PM	15	22	37	7.65%	9.57%	8.69%
8:00 PM	13	18	31	6.63%	7.83%	7.28%
9:00 PM	6	12	18	3.06%	5.22%	4.23%
10:00 PM	10	9	19	5.10%	3.91%	4.46%
11:00 PM	2	2	4	1.02%	0.87%	0.94%
12:00 AM	1	1	2	0.51%	0.43%	0.47%
<b>TOTALS</b>	<b>196</b>	<b>230</b>	<b>426</b>	<b>99.96%</b>	<b>100.00%</b>	<b>100.00%</b>

# Roadway Count Summary

Vanasse Hangen Brustlin, Inc.

Start Date : April 28, 2015  
 Stop Date : April 30, 2015  
 County : Bradford  
 Location : #7 - Weldon St. East of US-301

Start Time 00:00  
 Stop Time 24:00

VHB Project #: 62580.01

## 28-Apr-15

### Eastbound Volume for Lane 1

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	0	0	0	0	0	0	0	0	1	0	1	2
30	0	0	0	0	0	0	0	1	1	1	1	1
45	0	0	0	0	0	0	0	0	2	6	3	3
00	0	0	0	0	0	0	3	4	3	2	1	3
<b>Hr Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>5</b>	<b>7</b>	<b>9</b>	<b>6</b>	<b>9</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	2	3	3	4	3	4	2	4	4	0	1	0
30	2	2	6	5	5	4	9	7	2	0	0	0
45	1	1	0	4	4	1	1	3	0	5	0	1
00	5	4	2	4	4	1	1	5	1	2	1	0
<b>Hr Total</b>	<b>10</b>	<b>10</b>	<b>11</b>	<b>17</b>	<b>16</b>	<b>10</b>	<b>13</b>	<b>19</b>	<b>7</b>	<b>7</b>	<b>2</b>	<b>1</b>

24 Hour Total : 162  
 AM Peak Hour begins : 8:45  
 PM Peak Hour begins : 19:00

AM Peak Volume : 10  
 PM Peak Volume : 19  
 AM Peak Hour Factor : 0.42  
 PM Peak Hour Factor : 0.68

## 28-Apr-15

### Westbound Volume for Lane 2

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	0	0	1	0	0	0	0	5	5	3	1	1
30	0	0	0	0	0	0	1	1	2	2	0	4
45	0	0	0	0	0	0	0	2	0	7	0	3
00	0	2	0	0	0	1	4	2	4	2	1	3
<b>Hr Total</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>5</b>	<b>10</b>	<b>11</b>	<b>14</b>	<b>2</b>	<b>11</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	3	3	2	3	2	6	1	2	4	2	1	0
30	0	1	2	3	3	2	10	7	2	0	0	0
45	3	6	3	10	3	8	2	0	1	3	0	1
00	2	6	1	5	7	3	4	9	3	4	0	0
<b>Hr Total</b>	<b>8</b>	<b>16</b>	<b>8</b>	<b>21</b>	<b>15</b>	<b>19</b>	<b>17</b>	<b>18</b>	<b>10</b>	<b>9</b>	<b>1</b>	<b>1</b>

24 Hour Total : 200  
 AM Peak Hour begins : 8:45  
 PM Peak Hour begins : 16:45

AM Peak Volume : 16  
 PM Peak Volume : 23  
 AM Peak Hour Factor : 0.57  
 PM Peak Hour Factor : 0.72

## 28-Apr-15

### Total Volume for All Lanes

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	0	0	1	0	0	0	0	5	6	3	2	3
30	0	0	0	0	0	0	1	2	3	3	1	5
45	0	0	0	0	0	0	0	2	2	13	3	6
00	0	2	0	0	0	1	7	6	7	4	2	6
<b>Hr Total</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>8</b>	<b>15</b>	<b>18</b>	<b>23</b>	<b>8</b>	<b>20</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	5	6	5	7	5	10	3	6	8	2	2	0
30	2	3	8	8	8	6	19	14	4	0	0	0
45	4	7	3	14	7	9	3	3	1	8	0	2
00	7	10	3	9	11	4	5	14	4	6	1	0
<b>Hr Total</b>	<b>18</b>	<b>26</b>	<b>19</b>	<b>38</b>	<b>31</b>	<b>29</b>	<b>30</b>	<b>37</b>	<b>17</b>	<b>16</b>	<b>3</b>	<b>2</b>

24 Hour Total : 362  
 AM Peak Hour begins : 8:45  
 PM Peak Hour begins : 19:15

AM Peak Volume : 26  
 PM Peak Volume : 39  
 AM Peak Hour Factor : 0.50  
 PM Peak Hour Factor : 0.70



# Roadway Count Summary

Vanasse Hangen Brustlin, Inc.

Start Date : April 28, 2015  
 Stop Date : April 30, 2015  
 County : Bradford  
 Location : #7 - Weldon St. East of US-301

Start Time 00:00  
 Stop Time 24:00

VHB Project #: 62580.01

## 29-Apr-15

### Eastbound Volume for Lane 1

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	0	0	0	0	0	0	0	2	2	1	2	0
30	1	0	0	0	0	1	0	2	4	2	3	3
45	0	0	0	0	0	0	1	0	5	1	3	7
00	0	0	0	0	0	1	0	1	0	2	3	6
<b>Hr Total</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>5</b>	<b>11</b>	<b>6</b>	<b>11</b>	<b>16</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	5	3	6	6	8	7	2	2	1	5	1	0
30	6	3	2	1	7	8	5	2	0	1	0	0
45	3	3	1	6	10	3	5	0	0	5	0	1
00	2	2	5	7	1	1	4	1	3	0	0	0
<b>Hr Total</b>	<b>16</b>	<b>11</b>	<b>14</b>	<b>20</b>	<b>26</b>	<b>19</b>	<b>16</b>	<b>5</b>	<b>4</b>	<b>11</b>	<b>1</b>	<b>1</b>

24 Hour Total : 197  
 AM Peak Hour begins : 11:00  
 PM Peak Hour begins : 15:45

AM Peak Volume : 16  
 PM Peak Volume : 32

AM Peak Hour Factor : 0.57  
 PM Peak Hour Factor : 0.80

## 29-Apr-15

### Westbound Volume for Lane 2

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	0	0	0	0	0	0	1	2	1	3	2	4
30	0	0	0	0	0	0	0	4	4	3	8	5
45	1	1	0	0	0	0	2	2	3	1	0	5
00	0	1	0	0	0	0	1	3	4	1	4	3
<b>Hr Total</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>11</b>	<b>12</b>	<b>8</b>	<b>14</b>	<b>17</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	2	5	3	2	4	1	3	5	2	2	0	0
30	4	5	7	1	5	5	7	4	5	2	2	0
45	3	3	5	4	3	6	9	5	5	4	0	0
00	3	2	7	2	6	2	5	1	0	0	0	0
<b>Hr Total</b>	<b>12</b>	<b>15</b>	<b>22</b>	<b>9</b>	<b>18</b>	<b>14</b>	<b>24</b>	<b>15</b>	<b>12</b>	<b>8</b>	<b>2</b>	<b>0</b>

24 Hour Total : 220  
 AM Peak Hour begins : 10:45  
 PM Peak Hour begins : 18:15

AM Peak Volume : 18  
 PM Peak Volume : 26

AM Peak Hour Factor : 0.90  
 PM Peak Hour Factor : 0.72

## 29-Apr-15

### Total Volume for All Lanes

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	0	0	0	0	0	0	1	4	3	4	4	4
30	1	0	0	0	0	1	0	6	8	5	11	8
45	1	1	0	0	0	0	3	2	8	2	3	12
00	0	1	0	0	0	1	1	4	4	3	7	9
<b>Hr Total</b>	<b>2</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>5</b>	<b>16</b>	<b>23</b>	<b>14</b>	<b>25</b>	<b>33</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	7	8	9	8	12	8	5	7	3	7	1	0
30	10	8	9	2	12	13	12	6	5	3	2	0
45	6	6	6	10	13	9	14	5	5	9	0	1
00	5	4	12	9	7	3	9	2	3	0	0	0
<b>Hr Total</b>	<b>28</b>	<b>26</b>	<b>36</b>	<b>29</b>	<b>44</b>	<b>33</b>	<b>40</b>	<b>20</b>	<b>16</b>	<b>19</b>	<b>3</b>	<b>1</b>

24 Hour Total : 417  
 AM Peak Hour begins : 11:00  
 PM Peak Hour begins : 15:45

AM Peak Volume : 33  
 PM Peak Volume : 46

AM Peak Hour Factor : 0.69  
 PM Peak Hour Factor : 0.89

# Roadway Count Summary

*Vanasse Hangen Brustlin, Inc.*

Start Date : April 28, 2015  
 Stop Date : April 30, 2015  
 County : Bradford  
 Location : #7 - Weldon St. East of US-301

Start Time : 00:00  
 Stop Time : 24:00

VHB Project #: 62580.01

AVERAGE Eastbound Volume for Lane 1												
End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	0	0	0	0	0	0	0	1	2	1	2	1
30	1	0	0	0	0	1	0	2	3	2	2	2
45	0	0	0	0	0	0	1	0	4	4	3	5
00	0	0	0	0	0	1	2	3	2	2	2	5
<b>Hr Total</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>3</b>	<b>6</b>	<b>11</b>	<b>9</b>	<b>9</b>	<b>13</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	4	3	5	5	6	6	2	3	3	3	1	0
30	4	3	4	3	6	6	7	5	1	1	0	0
45	2	2	1	5	7	2	3	2	0	5	0	1
00	4	3	4	6	3	1	3	3	2	1	1	0
<b>Hr Total</b>	<b>14</b>	<b>11</b>	<b>14</b>	<b>19</b>	<b>22</b>	<b>15</b>	<b>15</b>	<b>13</b>	<b>6</b>	<b>10</b>	<b>2</b>	<b>1</b>

24 Hour Total : 196  
 AM Peak Hour begins : 11:00 AM Peak Volume : 13 AM Peak Hour Factor : 0.65  
 PM Peak Hour begins : 15:45 PM Peak Volume : 25 PM Peak Hour Factor : 0.89

AVERAGE Westbound Volume for Lane 2												
End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	0	0	1	0	0	0	1	4	3	3	2	3
30	0	0	0	0	0	0	1	3	3	3	4	5
45	1	1	0	0	0	0	1	2	2	4	0	4
00	0	2	0	0	0	1	3	3	4	2	3	3
<b>Hr Total</b>	<b>1</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>6</b>	<b>12</b>	<b>12</b>	<b>12</b>	<b>9</b>	<b>15</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	3	4	3	3	3	4	2	4	3	2	1	0
30	2	3	5	2	4	4	9	6	4	1	1	0
45	3	5	4	7	3	7	6	3	3	4	0	1
00	3	4	4	4	7	3	5	5	2	2	0	0
<b>Hr Total</b>	<b>11</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>17</b>	<b>18</b>	<b>22</b>	<b>18</b>	<b>12</b>	<b>9</b>	<b>2</b>	<b>1</b>

24 Hour Total : 230  
 AM Peak Hour begins : 10:45 AM Peak Volume : 15 AM Peak Hour Factor : 0.75  
 PM Peak Hour begins : 18:15 PM Peak Volume : 24 PM Peak Hour Factor : 0.67

AVERAGE Total Volume for All Lanes												
End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	0	0	1	0	0	0	1	5	5	4	4	4
30	1	0	0	0	0	1	1	5	6	5	6	7
45	1	1	0	0	0	0	2	2	6	8	3	9
00	0	2	0	0	0	2	5	6	6	4	5	8
<b>Hr Total</b>	<b>2</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>9</b>	<b>18</b>	<b>23</b>	<b>21</b>	<b>18</b>	<b>28</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	7	7	8	8	9	10	4	7	6	5	2	0
30	6	6	9	5	10	10	16	11	5	2	1	0
45	5	7	5	12	10	9	9	5	3	9	0	2
00	7	7	8	10	10	4	8	8	4	3	1	0
<b>Hr Total</b>	<b>25</b>	<b>27</b>	<b>30</b>	<b>35</b>	<b>39</b>	<b>33</b>	<b>37</b>	<b>31</b>	<b>18</b>	<b>19</b>	<b>4</b>	<b>2</b>

24 Hour Total : 426  
 AM Peak Hour begins : 11:00 AM Peak Volume : 28 AM Peak Hour Factor : 0.78  
 PM Peak Hour begins : 15:30 PM Peak Volume : 41 PM Peak Hour Factor : 0.85



# Traffic Count Data

*Vanasse Hangen Brustlin, Inc.*

PROJECT	Starke Railroad Overpass PD&E Study
LOCATION CODE	8
COUNT LOCATION	#8 - St. Clair St. South of Brownlee St.
VHB PROJECT #	62580.01

TYPE OF COUNT:

48-Hour APPROACH VOLUME COUNT

TIME OF COUNT:

Start Date	April 28, 2015	Start Time	12:00 AM
End Date	May 1, 2015	End Time	12:00 AM

## VOLUME AVERAGES

	<b>Total</b>	<b>NB</b>	<b>SB</b>
ADT	1,604	840	764
Peak Hour	5:00 PM to 6:00 PM		
	<b>Peak Hour Total</b>	<b>NB</b>	<b>SB</b>
	155	87	68

## MEASURED TRAVEL CHARACTERISTICS

\*Peak to Daily Ratio\*

K = 9.66%      D = 56.1%

# Hourly Distribution of Traffic Volumes

*Vanasse Hangen Brustlin, Inc.*

PROJECT	Starke Railroad Overpass PD&E Study
LOCATION CODE	8
COUNT LOCATION	#8 - St. Clair St. South of Brownlee St.
VHB PROJECT #	62580.01

HOURLY END AT	HOURLY VOLUME DIRECTION (NB)	HOURLY VOLUME DIRECTION (SB)	TOTAL VOLUMES BOTH DIRECTIONS	DISTRIBUTION PERCENT DIRECTION (NB)	DISTRIBUTION PERCENT DIRECTION (SB)	TOTAL PERCENT BOTH DIRECTIONS
1:00 AM	6	5	11	0.71%	0.65%	0.69%
2:00 AM	6	2	8	0.71%	0.26%	0.50%
3:00 AM	3	4	7	0.36%	0.52%	0.44%
4:00 AM	1	3	4	0.12%	0.39%	0.25%
5:00 AM	1	4	5	0.12%	0.52%	0.31%
6:00 AM	7	6	13	0.83%	0.79%	0.81%
7:00 AM	17	20	37	2.02%	2.62%	2.31%
8:00 AM	38	71	109	4.52%	9.29%	6.80%
9:00 AM	38	44	82	4.52%	5.76%	5.11%
10:00 AM	41	35	76	4.88%	4.58%	4.74%
11:00 AM	34	32	66	4.05%	4.19%	4.11%
12:00 PM	43	44	87	5.12%	5.76%	5.42%
1:00 PM	41	38	79	4.88%	4.97%	4.93%
2:00 PM	47	29	76	5.60%	3.80%	4.74%
3:00 PM	56	59	115	6.67%	7.72%	7.17%
4:00 PM	67	59	126	7.98%	7.72%	7.86%
5:00 PM	67	58	125	7.98%	7.59%	7.79%
6:00 PM	87	68	155	10.36%	8.90%	9.66%
7:00 PM	74	56	130	8.81%	7.33%	8.10%
8:00 PM	61	45	106	7.26%	5.89%	6.61%
9:00 PM	38	34	72	4.52%	4.45%	4.49%
10:00 PM	32	25	57	3.81%	3.27%	3.55%
11:00 PM	19	12	31	2.26%	1.57%	1.93%
12:00 AM	16	11	27	1.90%	1.44%	1.68%
<b>TOTALS</b>	<b>840</b>	<b>764</b>	<b>1,604</b>	<b>99.99%</b>	<b>100.00%</b>	<b>100.00%</b>



# Roadway Count Summary

*Vanasse Hangen Brustlin, Inc.*

Start Date : April 28, 2015      Start Time      00:00  
 Stop Date : April 30, 2015      Stop Time      24:00  
 County : Bradford  
 Location : #8 - St. Clair St. South of Brownlee St.

VHB Project #: 62580.01

## 28-Apr-15

### Northbound Volume for Lane 1

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	0	2	1	0	0	3	0	3	11	11	10	6
30	2	2	1	0	0	3	3	10	8	10	6	15
45	1	0	0	0	0	1	5	15	7	5	4	8
00	2	0	1	2	0	2	9	12	10	12	8	15
<b>Hr Total</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>0</b>	<b>9</b>	<b>17</b>	<b>40</b>	<b>36</b>	<b>38</b>	<b>28</b>	<b>44</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	9	7	14	16	17	18	16	12	9	11	3	3
30	12	11	18	19	26	18	27	22	11	7	4	3
45	12	14	14	11	11	19	13	14	4	1	6	1
00	7	11	11	17	13	27	16	9	15	0	3	3
<b>Hr Total</b>	<b>40</b>	<b>43</b>	<b>57</b>	<b>63</b>	<b>67</b>	<b>82</b>	<b>72</b>	<b>57</b>	<b>39</b>	<b>19</b>	<b>16</b>	<b>10</b>

24 Hour Total : 791  
 AM Peak Hour begins : 7:15      AM Peak Volume : 48      AM Peak Hour Factor : 0.80  
 PM Peak Hour begins : 17:30      PM Peak Volume : 89      PM Peak Hour Factor : 0.82

## 28-Apr-15

### Southbound Volume for Lane 2

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	1	1	2	1	2	0	4	15	15	13	10	10
30	1	1	1	0	1	2	5	19	6	5	5	12
45	1	0	0	0	1	0	5	21	7	5	7	10
00	2	0	1	0	0	3	3	12	12	4	5	11
<b>Hr Total</b>	<b>5</b>	<b>2</b>	<b>4</b>	<b>1</b>	<b>4</b>	<b>5</b>	<b>17</b>	<b>67</b>	<b>40</b>	<b>27</b>	<b>27</b>	<b>43</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	15	5	13	16	17	14	14	9	9	9	2	3
30	5	3	11	12	18	13	10	5	2	8	3	1
45	11	6	19	12	11	13	20	13	7	2	4	0
00	12	9	18	15	5	18	3	6	7	5	4	2
<b>Hr Total</b>	<b>43</b>	<b>23</b>	<b>61</b>	<b>55</b>	<b>51</b>	<b>58</b>	<b>47</b>	<b>33</b>	<b>25</b>	<b>24</b>	<b>13</b>	<b>6</b>

24 Hour Total : 681  
 AM Peak Hour begins : 7:00      AM Peak Volume : 67      AM Peak Hour Factor : 0.80  
 PM Peak Hour begins : 14:30      PM Peak Volume : 65      PM Peak Hour Factor : 0.86

## 28-Apr-15

### Total Volume for All Lanes

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	1	3	3	1	2	3	4	18	26	24	20	16
30	3	3	2	0	1	5	8	29	14	15	11	27
45	2	0	0	0	1	1	10	36	14	10	11	18
00	4	0	2	2	0	5	12	24	22	16	13	26
<b>Hr Total</b>	<b>10</b>	<b>6</b>	<b>7</b>	<b>3</b>	<b>4</b>	<b>14</b>	<b>34</b>	<b>107</b>	<b>76</b>	<b>65</b>	<b>55</b>	<b>87</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	24	12	27	32	34	32	30	21	18	20	5	6
30	17	14	29	31	44	31	37	27	13	15	7	4
45	23	20	33	23	22	32	33	27	11	3	10	1
00	19	20	29	32	18	45	19	15	22	5	7	5
<b>Hr Total</b>	<b>83</b>	<b>66</b>	<b>118</b>	<b>118</b>	<b>118</b>	<b>140</b>	<b>119</b>	<b>90</b>	<b>64</b>	<b>43</b>	<b>29</b>	<b>16</b>

24 Hour Total : 1,472  
 AM Peak Hour begins : 7:15      AM Peak Volume : 115      AM Peak Hour Factor : 0.80  
 PM Peak Hour begins : 17:45      PM Peak Volume : 145      PM Peak Hour Factor : 0.81

# Roadway Count Summary

Vanasse Hangen Brustlin, Inc.

Start Date : April 28, 2015

Stop Date : April 30, 2015

County : Bradford

Location : #8 - St. Clair St. South of Brownlee St.

Start Time 00:00

Stop Time 24:00

VHB Project #: 62580.01

## 29-Apr-15

### Northbound Volume for Lane 1

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	2	3	0	0	0	0	2	7	14	16	11	9
30	2	3	0	0	0	1	2	9	2	7	9	8
45	3	0	0	0	0	0	4	6	10	6	9	10
00	0	0	0	0	1	1	7	12	11	12	7	13
<b>Hr Total</b>	<b>7</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>15</b>	<b>34</b>	<b>37</b>	<b>41</b>	<b>36</b>	<b>40</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	9	11	10	15	18	27	20	24	10	17	6	2
30	5	12	12	21	10	19	20	12	9	11	1	7
45	14	15	11	19	21	25	16	12	8	10	7	6
00	13	11	20	14	17	18	17	17	9	6	5	4
<b>Hr Total</b>	<b>41</b>	<b>49</b>	<b>53</b>	<b>69</b>	<b>66</b>	<b>89</b>	<b>73</b>	<b>65</b>	<b>36</b>	<b>44</b>	<b>19</b>	<b>19</b>

24 Hour Total : 842

AM Peak Hour begins : 8:30

PM Peak Hour begins : 17:00

AM Peak Volume : 44

PM Peak Volume : 89

AM Peak Hour Factor : 0.69

PM Peak Hour Factor : 0.82

## 29-Apr-15

### Southbound Volume for Lane 2

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	0	1	0	0	0	1	3	14	9	13	9	14
30	2	1	0	0	1	1	3	21	17	12	7	11
45	0	0	1	1	1	0	5	25	11	9	11	9
00	0	0	0	2	2	2	10	14	10	8	8	8
<b>Hr Total</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>3</b>	<b>4</b>	<b>4</b>	<b>21</b>	<b>74</b>	<b>47</b>	<b>42</b>	<b>35</b>	<b>42</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	7	8	13	12	16	20	21	15	8	9	0	6
30	12	8	17	15	14	16	13	13	10	3	3	2
45	5	3	10	21	15	20	13	12	6	7	3	2
00	8	13	16	13	19	20	14	15	16	5	3	4
<b>Hr Total</b>	<b>32</b>	<b>32</b>	<b>56</b>	<b>61</b>	<b>64</b>	<b>76</b>	<b>61</b>	<b>55</b>	<b>40</b>	<b>24</b>	<b>9</b>	<b>14</b>

24 Hour Total : 801

AM Peak Hour begins : 7:00

PM Peak Hour begins : 17:15

AM Peak Volume : 74

PM Peak Volume : 77

AM Peak Hour Factor : 0.74

PM Peak Hour Factor : 0.92

## 29-Apr-15

### Total Volume for All Lanes

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	2	4	0	0	0	1	5	21	23	29	20	23
30	4	4	0	0	1	2	5	30	19	19	16	19
45	3	0	1	1	1	0	9	31	21	15	20	19
00	0	0	0	2	3	3	17	26	21	20	15	21
<b>Hr Total</b>	<b>9</b>	<b>8</b>	<b>1</b>	<b>3</b>	<b>5</b>	<b>6</b>	<b>36</b>	<b>108</b>	<b>84</b>	<b>83</b>	<b>71</b>	<b>82</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	16	19	23	27	34	47	41	39	18	26	6	8
30	17	20	29	36	24	35	33	25	19	14	4	9
45	19	18	21	40	36	45	29	24	14	17	10	8
00	21	24	36	27	36	38	31	32	25	11	8	8
<b>Hr Total</b>	<b>73</b>	<b>81</b>	<b>109</b>	<b>130</b>	<b>130</b>	<b>165</b>	<b>134</b>	<b>120</b>	<b>76</b>	<b>68</b>	<b>28</b>	<b>33</b>

24 Hour Total : 1,643

AM Peak Hour begins : 7:15

PM Peak Hour begins : 17:00

AM Peak Volume : 110

PM Peak Volume : 165

AM Peak Hour Factor : 0.89

PM Peak Hour Factor : 0.88



# Roadway Count Summary

Vanasse Hangen Brustlin, Inc.

Start Date : April 28, 2015

Stop Date : April 30, 2015

County : Bradford

Location : #8 - St. Clair St. South of Brownlee St.

Start Time 00:00

Stop Time 24:00

VHB Project #: 62580.01

AVERAGE		Northbound Volume for Lane 1											
End Time	00	01	02	03	04	05	06	07	08	09	10	11	
15	1	3	1	0	0	2	1	5	13	14	11	8	
30	2	3	1	0	0	2	3	10	5	9	8	12	
45	2	0	0	0	0	1	5	11	9	6	7	9	
00	1	0	1	1	1	2	8	12	11	12	8	14	
<b>Hr Total</b>	<b>6</b>	<b>6</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>7</b>	<b>17</b>	<b>38</b>	<b>38</b>	<b>41</b>	<b>34</b>	<b>43</b>	

End Time	12	13	14	15	16	17	18	19	20	21	22	23	
15	9	9	12	16	18	23	18	18	10	14	5	3	
30	9	12	15	20	18	19	24	17	10	9	3	5	
45	13	15	13	15	16	22	15	13	6	6	7	4	
00	10	11	16	16	15	23	17	13	12	3	4	4	
<b>Hr Total</b>	<b>41</b>	<b>47</b>	<b>56</b>	<b>67</b>	<b>67</b>	<b>87</b>	<b>74</b>	<b>61</b>	<b>38</b>	<b>32</b>	<b>19</b>	<b>16</b>	

24 Hour Total : 840

AM Peak Hour begins : 7:15

PM Peak Hour begins : 17:00

AM Peak Volume : 46

PM Peak Volume : 87

AM Peak Hour Factor : 0.89

PM Peak Hour Factor : 0.95

AVERAGE		Southbound Volume for Lane 2											
End Time	00	01	02	03	04	05	06	07	08	09	10	11	
15	1	1	1	1	1	1	4	15	12	13	10	12	
30	2	1	1	0	1	2	4	20	12	9	6	12	
45	1	0	1	1	1	0	5	23	9	7	9	10	
00	1	0	1	1	1	3	7	13	11	6	7	10	
<b>Hr Total</b>	<b>5</b>	<b>2</b>	<b>4</b>	<b>3</b>	<b>4</b>	<b>6</b>	<b>20</b>	<b>71</b>	<b>44</b>	<b>35</b>	<b>32</b>	<b>44</b>	

End Time	12	13	14	15	16	17	18	19	20	21	22	23	
15	11	7	13	14	17	17	18	12	9	9	1	5	
30	9	6	14	14	16	15	12	9	6	6	3	2	
45	8	5	15	17	13	17	17	13	7	5	4	1	
00	10	11	17	14	12	19	9	11	12	5	4	3	
<b>Hr Total</b>	<b>38</b>	<b>29</b>	<b>59</b>	<b>59</b>	<b>58</b>	<b>68</b>	<b>56</b>	<b>45</b>	<b>34</b>	<b>25</b>	<b>12</b>	<b>11</b>	

24 Hour Total : 764

AM Peak Hour begins : 7:00

PM Peak Hour begins : 17:15

AM Peak Volume : 71

PM Peak Volume : 69

AM Peak Hour Factor : 0.77

PM Peak Hour Factor : 0.91

AVERAGE		Total Volume for All Lanes											
End Time	00	01	02	03	04	05	06	07	08	09	10	11	
15	2	4	2	1	1	3	5	20	25	27	21	20	
30	4	4	2	0	1	4	7	30	17	18	14	24	
45	3	0	1	1	1	1	10	34	18	13	16	19	
00	2	0	2	2	2	5	15	25	22	18	15	24	
<b>Hr Total</b>	<b>11</b>	<b>8</b>	<b>7</b>	<b>4</b>	<b>5</b>	<b>13</b>	<b>37</b>	<b>109</b>	<b>82</b>	<b>76</b>	<b>66</b>	<b>87</b>	

End Time	12	13	14	15	16	17	18	19	20	21	22	23	
15	20	16	25	30	35	40	36	30	19	23	6	8	
30	18	18	29	34	34	34	36	26	16	15	6	7	
45	21	20	28	32	29	39	32	26	13	11	11	5	
00	20	22	33	30	27	42	26	24	24	8	8	7	
<b>Hr Total</b>	<b>79</b>	<b>76</b>	<b>115</b>	<b>126</b>	<b>125</b>	<b>155</b>	<b>130</b>	<b>106</b>	<b>72</b>	<b>57</b>	<b>31</b>	<b>27</b>	

24 Hour Total : 1,604

AM Peak Hour begins : 7:15

PM Peak Hour begins : 17:00

AM Peak Volume : 114

PM Peak Volume : 155

AM Peak Hour Factor : 0.84

PM Peak Hour Factor : 0.92

# Traffic Count Data

*Vanasse Hangen Brustlin, Inc.*

PROJECT	Starke Railroad Overpass PD&E Study
LOCATION CODE	9
COUNT LOCATION	#9 - SR-100 East of S. Water St.
VHB PROJECT #	62580.01

TYPE OF COUNT:

48-Hour APPROACH VOLUME COUNT

TIME OF COUNT:

Start Date	April 28, 2015	Start Time	12:00 AM
End Date	May 1, 2015	End Time	12:00 AM

VOLUME AVERAGES

	<b>Total</b>	<b>EB</b>	<b>WB</b>
ADT	9,865	4,713	5,152
Peak Hour	4:45 PM to 5:45 PM		
	<b>Peak Hour Total</b>	<b>EB</b>	<b>WB</b>
	883	450	433

MEASURED TRAVEL CHARACTERISTICS

\*Peak to Daily Ratio\*

K = 8.95% D = 51.0%



# Hourly Distribution of Traffic Volumes

*Vanasse Hangen Brustlin, Inc.*

PROJECT	Starke Railroad Overpass PD&E Study
LOCATION CODE	9
COUNT LOCATION	#9 - SR-100 East of S. Water St.
VHB PROJECT #	62580.01

HOURLY END AT	HOURLY VOLUME DIRECTION (EB)	HOURLY VOLUME DIRECTION (WB)	TOTAL VOLUMES BOTH DIRECTIONS	DISTRIBUTION PERCENT DIRECTION (EB)	DISTRIBUTION PERCENT DIRECTION (WB)	TOTAL PERCENT BOTH DIRECTIONS
1:00 AM	33	19	52	0.70%	0.37%	0.53%
2:00 AM	21	14	35	0.45%	0.27%	0.35%
3:00 AM	16	18	34	0.34%	0.35%	0.34%
4:00 AM	13	16	29	0.28%	0.31%	0.29%
5:00 AM	22	48	70	0.47%	0.93%	0.71%
6:00 AM	66	132	198	1.40%	2.56%	2.01%
7:00 AM	182	229	411	3.86%	4.44%	4.17%
8:00 AM	278	420	698	5.90%	8.15%	7.08%
9:00 AM	225	335	560	4.77%	6.50%	5.68%
10:00 AM	237	264	501	5.03%	5.12%	5.08%
11:00 AM	228	267	495	4.84%	5.18%	5.02%
12:00 PM	270	284	554	5.73%	5.51%	5.62%
1:00 PM	290	302	592	6.15%	5.86%	6.00%
2:00 PM	306	286	592	6.49%	5.55%	6.00%
3:00 PM	328	420	748	6.96%	8.15%	7.58%
4:00 PM	358	411	769	7.60%	7.98%	7.80%
5:00 PM	382	445	827	8.11%	8.64%	8.38%
6:00 PM	433	388	821	9.19%	7.53%	8.32%
7:00 PM	318	292	610	6.75%	5.67%	6.18%
8:00 PM	227	179	406	4.82%	3.47%	4.12%
9:00 PM	219	156	375	4.65%	3.03%	3.80%
10:00 PM	124	105	229	2.63%	2.04%	2.32%
11:00 PM	81	76	157	1.72%	1.48%	1.59%
12:00 AM	56	46	102	1.19%	0.89%	1.03%
TOTALS	4,713	5,152	9,865	100.03%	100.00%	100.00%

# Roadway Count Summary

Vanasse Hangen Brustlin, Inc.

Start Date : April 28, 2015  
 Stop Date : April 30, 2015  
 County : Bradford  
 Location : #9 - SR-100 East of S. Water St.

Start Time 00:00  
 Stop Time 24:00

VHB Project #: 62580.01

## 28-Apr-15

### Eastbound Volume for Lane 1

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	8	10	2	4	3	5	31	48	59	40	50	64
30	16	3	5	8	8	9	41	68	65	63	58	77
45	3	4	1	0	9	26	57	79	51	62	70	83
00	7	2	10	1	4	26	66	77	68	61	61	68
<b>Hr Total</b>	<b>34</b>	<b>19</b>	<b>18</b>	<b>13</b>	<b>24</b>	<b>66</b>	<b>195</b>	<b>272</b>	<b>243</b>	<b>226</b>	<b>239</b>	<b>292</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	75	76	85	87	73	98	96	73	49	40	13	20
30	67	69	96	82	86	122	75	50	53	30	23	12
45	67	82	77	102	92	119	90	64	56	23	17	7
00	80	88	68	79	106	88	75	49	24	16	18	16
<b>Hr Total</b>	<b>289</b>	<b>315</b>	<b>326</b>	<b>350</b>	<b>357</b>	<b>427</b>	<b>336</b>	<b>236</b>	<b>182</b>	<b>109</b>	<b>71</b>	<b>55</b>

24 Hour Total : 4,694  
 AM Peak Hour begins : 11:00  
 PM Peak Hour begins : 16:45

AM Peak Volume : 292  
 PM Peak Volume : 445  
 AM Peak Hour Factor : 0.88  
 PM Peak Hour Factor : 0.91

## 28-Apr-15

### Westbound Volume for Lane 2

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	7	4	1	6	2	28	56	88	100	73	61	70
30	4	0	5	4	15	32	57	112	78	77	83	56
45	2	7	7	3	5	36	55	130	71	67	72	64
00	5	5	0	4	18	34	65	106	98	53	77	54
<b>Hr Total</b>	<b>18</b>	<b>16</b>	<b>13</b>	<b>17</b>	<b>40</b>	<b>130</b>	<b>233</b>	<b>436</b>	<b>347</b>	<b>270</b>	<b>293</b>	<b>244</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	84	62	99	93	102	90	78	36	36	26	20	16
30	69	77	129	80	103	90	74	34	29	32	15	12
45	78	71	72	85	81	78	73	45	37	23	21	5
00	84	76	90	74	77	74	65	36	45	15	9	13
<b>Hr Total</b>	<b>315</b>	<b>286</b>	<b>390</b>	<b>332</b>	<b>363</b>	<b>332</b>	<b>290</b>	<b>151</b>	<b>147</b>	<b>96</b>	<b>65</b>	<b>46</b>

24 Hour Total : 4,870  
 AM Peak Hour begins : 7:15  
 PM Peak Hour begins : 14:00

AM Peak Volume : 448  
 PM Peak Volume : 390  
 AM Peak Hour Factor : 0.86  
 PM Peak Hour Factor : 0.76

## 28-Apr-15

### Total Volume for All Lanes

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	15	14	3	10	5	33	87	136	159	113	111	134
30	20	3	10	12	23	41	98	180	143	140	141	133
45	5	11	8	3	14	62	112	209	122	129	142	147
00	12	7	10	5	22	60	131	183	166	114	138	122
<b>Hr Total</b>	<b>52</b>	<b>35</b>	<b>31</b>	<b>30</b>	<b>64</b>	<b>196</b>	<b>428</b>	<b>708</b>	<b>590</b>	<b>496</b>	<b>532</b>	<b>536</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	159	138	184	180	175	188	174	109	85	66	33	36
30	136	146	225	162	189	212	149	84	82	62	38	24
45	145	153	149	187	173	197	163	109	93	46	38	12
00	164	164	158	153	183	162	140	85	69	31	27	29
<b>Hr Total</b>	<b>604</b>	<b>601</b>	<b>716</b>	<b>682</b>	<b>720</b>	<b>759</b>	<b>626</b>	<b>387</b>	<b>329</b>	<b>205</b>	<b>136</b>	<b>101</b>

24 Hour Total : 9,564  
 AM Peak Hour begins : 7:15  
 PM Peak Hour begins : 16:45

AM Peak Volume : 731  
 PM Peak Volume : 780  
 AM Peak Hour Factor : 0.87  
 PM Peak Hour Factor : 0.92



# Roadway Count Summary

Vanasse Hangen Brustlin, Inc.

Start Date : April 28, 2015  
Stop Date : April 30, 2015  
County : Bradford  
Location : #9 - SR-100 East of S. Water St.

Start Time 00:00  
Stop Time 24:00

VHB Project #: 62580.01

## 29-Apr-15

### Eastbound Volume for Lane 1

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	12	13	3	4	7	16	25	66	53	53	42	53
30	9	4	3	2	1	7	45	56	52	55	65	70
45	5	0	5	1	6	12	39	88	51	75	59	62
00	4	3	2	4	4	29	60	73	50	63	48	59
<b>Hr Total</b>	<b>30</b>	<b>20</b>	<b>13</b>	<b>11</b>	<b>18</b>	<b>64</b>	<b>169</b>	<b>283</b>	<b>206</b>	<b>246</b>	<b>214</b>	<b>244</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	56	83	107	86	100	136	77	56	69	41	31	11
30	72	66	90	106	102	106	77	50	63	41	25	11
45	81	70	65	88	103	112	79	57	61	29	18	16
00	79	75	68	85	100	84	64	53	62	26	15	16
<b>Hr Total</b>	<b>288</b>	<b>294</b>	<b>330</b>	<b>365</b>	<b>405</b>	<b>438</b>	<b>297</b>	<b>216</b>	<b>255</b>	<b>137</b>	<b>89</b>	<b>54</b>

24 Hour Total : 4,686  
AM Peak Hour begins : 7:00  
PM Peak Hour begins : 16:45

AM Peak Volume : 283  
PM Peak Volume : 454  
AM Peak Hour Factor : 0.80  
PM Peak Hour Factor : 0.84

## 29-Apr-15

### Westbound Volume for Lane 2

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	3	6	3	4	9	27	43	72	94	79	60	75
30	6	0	10	0	15	32	58	119	77	74	68	80
45	5	3	2	7	7	31	53	116	68	43	50	88
00	4	2	5	4	23	42	68	95	81	60	60	79
<b>Hr Total</b>	<b>18</b>	<b>11</b>	<b>20</b>	<b>15</b>	<b>54</b>	<b>132</b>	<b>222</b>	<b>402</b>	<b>320</b>	<b>256</b>	<b>238</b>	<b>322</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	79	82	94	143	124	131	91	59	44	35	24	14
30	69	76	111	117	118	124	69	56	42	23	28	11
45	78	58	121	109	126	117	77	43	36	32	15	10
00	61	68	121	120	157	69	55	47	41	20	18	9
<b>Hr Total</b>	<b>287</b>	<b>284</b>	<b>447</b>	<b>489</b>	<b>525</b>	<b>441</b>	<b>292</b>	<b>205</b>	<b>163</b>	<b>110</b>	<b>85</b>	<b>44</b>

24 Hour Total : 5,382  
AM Peak Hour begins : 7:15  
PM Peak Hour begins : 16:30

AM Peak Volume : 424  
PM Peak Volume : 538  
AM Peak Hour Factor : 0.89  
PM Peak Hour Factor : 0.86

## 29-Apr-15

### Total Volume for All Lanes

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	15	19	6	8	16	43	68	138	147	132	102	128
30	15	4	13	2	16	39	103	175	129	129	133	150
45	10	3	7	8	13	43	92	204	119	118	109	150
00	8	5	7	8	27	71	128	168	131	123	108	138
<b>Hr Total</b>	<b>48</b>	<b>31</b>	<b>33</b>	<b>26</b>	<b>72</b>	<b>196</b>	<b>391</b>	<b>685</b>	<b>526</b>	<b>502</b>	<b>452</b>	<b>566</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	135	165	201	229	224	267	168	115	113	76	55	25
30	141	142	201	223	220	230	146	106	105	64	53	22
45	159	128	186	197	229	229	156	100	97	61	33	26
00	140	143	189	205	257	153	119	100	103	46	33	25
<b>Hr Total</b>	<b>575</b>	<b>578</b>	<b>777</b>	<b>854</b>	<b>930</b>	<b>879</b>	<b>589</b>	<b>421</b>	<b>418</b>	<b>247</b>	<b>174</b>	<b>98</b>

24 Hour Total : 10,068  
AM Peak Hour begins : 7:15  
PM Peak Hour begins : 16:30

AM Peak Volume : 694  
PM Peak Volume : 983  
AM Peak Hour Factor : 0.85  
PM Peak Hour Factor : 0.92

# Roadway Count Summary

Vanasse Hangen Brustlin, Inc.

Start Date : April 28, 2015  
Stop Date : April 30, 2015  
County : Bradford  
Location : #9 - SR-100 East of S. Water St.

Start Time 00:00  
Stop Time 24:00

VHB Project #: 62580.01

AVERAGE		Eastbound Volume for Lane 1										
End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	10	12	3	4	5	11	28	57	56	47	46	59
30	13	4	4	5	5	8	43	62	59	59	62	74
45	4	2	3	1	8	19	48	84	51	69	65	73
00	6	3	6	3	4	28	63	75	59	62	55	64
<b>Hr Total</b>	<b>33</b>	<b>21</b>	<b>16</b>	<b>13</b>	<b>22</b>	<b>66</b>	<b>182</b>	<b>278</b>	<b>225</b>	<b>237</b>	<b>228</b>	<b>270</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	66	80	96	87	87	117	87	65	59	41	22	16
30	70	68	93	94	94	114	76	50	58	36	24	12
45	74	76	71	95	98	116	85	61	59	26	18	12
00	80	82	68	82	103	86	70	51	43	21	17	16
<b>Hr Total</b>	<b>290</b>	<b>306</b>	<b>328</b>	<b>358</b>	<b>382</b>	<b>433</b>	<b>318</b>	<b>227</b>	<b>219</b>	<b>124</b>	<b>81</b>	<b>56</b>

24 Hour Total : 4,713  
AM Peak Hour begins : 7:00  
PM Peak Hour begins : 16:45

AM Peak Volume : 278  
PM Peak Volume : 450  
AM Peak Hour Factor : 0.83  
PM Peak Hour Factor : 0.96

AVERAGE		Westbound Volume for Lane 2										
End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	5	5	2	5	6	28	50	80	97	76	61	73
30	5	0	8	2	15	32	58	116	78	76	76	68
45	4	5	5	5	6	34	54	123	70	55	61	76
00	5	4	3	4	21	38	67	101	90	57	69	67
<b>Hr Total</b>	<b>19</b>	<b>14</b>	<b>18</b>	<b>16</b>	<b>48</b>	<b>132</b>	<b>229</b>	<b>420</b>	<b>335</b>	<b>264</b>	<b>267</b>	<b>284</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	82	72	97	118	113	111	85	48	40	31	22	15
30	69	77	120	99	111	107	72	45	36	28	22	12
45	78	65	97	97	104	98	75	44	37	28	18	8
00	73	72	106	97	117	72	60	42	43	18	14	11
<b>Hr Total</b>	<b>302</b>	<b>286</b>	<b>420</b>	<b>411</b>	<b>445</b>	<b>388</b>	<b>292</b>	<b>179</b>	<b>156</b>	<b>105</b>	<b>76</b>	<b>46</b>

24 Hour Total : 5,152  
AM Peak Hour begins : 7:15  
PM Peak Hour begins : 16:00

AM Peak Volume : 437  
PM Peak Volume : 445  
AM Peak Hour Factor : 0.89  
PM Peak Hour Factor : 0.95

AVERAGE		Total Volume for All Lanes										
End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	15	17	5	9	11	39	78	137	153	123	107	132
30	18	4	12	7	20	40	101	178	137	135	138	142
45	8	7	8	6	14	53	102	207	121	124	126	149
00	11	7	9	7	25	66	130	176	149	119	124	131
<b>Hr Total</b>	<b>52</b>	<b>35</b>	<b>34</b>	<b>29</b>	<b>70</b>	<b>198</b>	<b>411</b>	<b>698</b>	<b>560</b>	<b>501</b>	<b>495</b>	<b>554</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	148	152	193	205	200	228	172	113	99	72	44	31
30	139	145	213	193	205	221	148	95	94	64	46	24
45	152	141	168	192	202	214	160	105	96	54	36	20
00	153	154	174	179	220	158	130	93	86	39	31	27
<b>Hr Total</b>	<b>592</b>	<b>592</b>	<b>748</b>	<b>769</b>	<b>827</b>	<b>821</b>	<b>610</b>	<b>406</b>	<b>375</b>	<b>229</b>	<b>157</b>	<b>102</b>

24 Hour Total : 9,865  
AM Peak Hour begins : 7:15  
PM Peak Hour begins : 16:45

AM Peak Volume : 714  
PM Peak Volume : 883  
AM Peak Hour Factor : 0.86  
PM Peak Hour Factor : 0.97



# Traffic Count Data

*Vanasse Hangen Brustlin, Inc.*

PROJECT	Starke Railroad Overpass PD&E Study
LOCATION CODE	10
COUNT LOCATION	#10 - Water St. North of SR-100
VHB PROJECT #	62580.01

TYPE OF COUNT:

48-Hour APPROACH VOLUME COUNT

TIME OF COUNT:

Start Date	April 28, 2015	Start Time	12:00 AM
End Date	May 1, 2015	End Time	12:00 AM

VOLUME AVERAGES

	<b>Total</b>	<b>NB</b>	<b>SB</b>
ADT	4,773	2,581	2,192
Peak Hour	4:45 PM to 5:45 PM		
	<b>Peak Hour Total</b>	<b>NB</b>	<b>SB</b>
	430	258	172

MEASURED TRAVEL CHARACTERISTICS

\*Peak to Daily Ratio\*

K = 9.01%      D = 60.0%

# Hourly Distribution of Traffic Volumes

*Vanasse Hangen Brustlin, Inc.*

PROJECT	Starke Railroad Overpass PD&E Study
LOCATION CODE	10
COUNT LOCATION	#10 - Water St. North of SR-100
VHB PROJECT #	62580.01

HOURLY END AT	HOURLY VOLUME DIRECTION (NB)	HOURLY VOLUME DIRECTION (SB)	TOTAL VOLUMES BOTH DIRECTIONS	DISTRIBUTION PERCENT DIRECTION (NB)	DISTRIBUTION PERCENT DIRECTION (SB)	TOTAL PERCENT BOTH DIRECTIONS
1:00 AM	17	15	32	0.66%	0.68%	0.67%
2:00 AM	10	10	20	0.39%	0.46%	0.42%
3:00 AM	13	8	21	0.50%	0.36%	0.44%
4:00 AM	9	14	23	0.35%	0.64%	0.48%
5:00 AM	10	19	29	0.39%	0.87%	0.61%
6:00 AM	40	44	84	1.55%	2.01%	1.76%
7:00 AM	80	106	186	3.10%	4.84%	3.90%
8:00 AM	195	129	324	7.56%	5.89%	6.79%
9:00 AM	152	127	279	5.89%	5.79%	5.85%
10:00 AM	109	147	256	4.22%	6.71%	5.36%
11:00 AM	120	109	229	4.65%	4.97%	4.80%
12:00 PM	139	130	269	5.39%	5.93%	5.64%
1:00 PM	157	142	299	6.08%	6.48%	6.26%
2:00 PM	141	122	263	5.46%	5.57%	5.51%
3:00 PM	202	147	349	7.83%	6.71%	7.31%
4:00 PM	202	169	371	7.83%	7.71%	7.77%
5:00 PM	227	167	394	8.80%	7.62%	8.25%
6:00 PM	254	160	414	9.84%	7.30%	8.67%
7:00 PM	174	144	318	6.74%	6.57%	6.66%
8:00 PM	114	102	216	4.42%	4.65%	4.53%
9:00 PM	85	82	167	3.29%	3.74%	3.50%
10:00 PM	60	57	117	2.32%	2.60%	2.45%
11:00 PM	47	32	79	1.82%	1.46%	1.66%
12:00 AM	24	10	34	0.93%	0.46%	0.71%
TOTALS	2,581	2,192	4,773	100.01%	100.00%	100.00%



# Roadway Count Summary

Vanasse Hangen Brustlin, Inc.

Start Date : April 28, 2015  
Stop Date : April 30, 2015  
County : Bradford  
Location : #10 - Water St. North of SR-100

Start Time 00:00  
Stop Time 24:00

VHB Project #: 62580.01

## 28-Apr-15

### Northbound Volume for Lane 1

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	4	1	1	3	1	10	15	35	41	26	27	37
30	4	1	5	2	3	7	22	59	36	27	29	31
45	6	3	1	1	0	8	22	69	32	28	19	38
00	3	3	4	4	3	15	20	60	44	21	35	26
<b>Hr Total</b>	<b>17</b>	<b>8</b>	<b>11</b>	<b>10</b>	<b>7</b>	<b>40</b>	<b>79</b>	<b>223</b>	<b>153</b>	<b>102</b>	<b>110</b>	<b>132</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	50	30	49	38	42	51	58	28	30	11	13	6
30	23	26	43	39	53	48	37	19	18	16	9	4
45	42	38	42	53	33	52	48	19	17	15	10	2
00	37	26	63	47	36	51	44	24	13	7	9	8
<b>Hr Total</b>	<b>152</b>	<b>120</b>	<b>197</b>	<b>177</b>	<b>164</b>	<b>202</b>	<b>187</b>	<b>90</b>	<b>78</b>	<b>49</b>	<b>41</b>	<b>20</b>

24 Hour Total : 2,369  
AM Peak Hour begins : 7:15  
PM Peak Hour begins : 17:15

AM Peak Volume : 229  
PM Peak Volume : 209  
AM Peak Hour Factor : 0.83  
PM Peak Hour Factor : 0.90

## 28-Apr-15

### Southbound Volume for Lane 2

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	5	5	0	5	5	6	26	34	28	26	27	37
30	3	1	2	2	5	2	30	27	30	40	27	25
45	3	3	0	2	6	9	24	30	35	32	25	27
00	4	5	0	3	7	20	23	36	32	35	25	17
<b>Hr Total</b>	<b>15</b>	<b>14</b>	<b>2</b>	<b>12</b>	<b>23</b>	<b>37</b>	<b>103</b>	<b>127</b>	<b>125</b>	<b>133</b>	<b>104</b>	<b>106</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	27	30	45	36	35	34	43	31	18	14	10	3
30	28	31	24	54	44	36	38	16	17	18	6	2
45	34	27	38	38	27	50	29	26	19	12	8	1
00	54	43	39	41	33	33	25	29	14	10	8	1
<b>Hr Total</b>	<b>143</b>	<b>131</b>	<b>146</b>	<b>169</b>	<b>139</b>	<b>153</b>	<b>135</b>	<b>102</b>	<b>68</b>	<b>54</b>	<b>32</b>	<b>7</b>

24 Hour Total : 2,080  
AM Peak Hour begins : 9:15  
PM Peak Hour begins : 15:00

AM Peak Volume : 134  
PM Peak Volume : 169  
AM Peak Hour Factor : 0.84  
PM Peak Hour Factor : 0.78

## 28-Apr-15

### Total Volume for All Lanes

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	9	6	1	8	6	16	41	69	69	52	54	74
30	7	2	7	4	8	9	52	86	66	67	56	56
45	9	6	1	3	6	17	46	99	67	60	44	65
00	7	8	4	7	10	35	43	96	76	56	60	43
<b>Hr Total</b>	<b>32</b>	<b>22</b>	<b>13</b>	<b>22</b>	<b>30</b>	<b>77</b>	<b>182</b>	<b>350</b>	<b>278</b>	<b>235</b>	<b>214</b>	<b>238</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	77	60	94	74	77	85	101	59	48	25	23	9
30	51	57	67	93	97	84	75	35	35	34	15	6
45	76	65	80	91	60	102	77	45	36	27	18	3
00	91	69	102	88	69	84	69	53	27	17	17	9
<b>Hr Total</b>	<b>295</b>	<b>251</b>	<b>343</b>	<b>346</b>	<b>303</b>	<b>355</b>	<b>322</b>	<b>192</b>	<b>146</b>	<b>103</b>	<b>73</b>	<b>27</b>

24 Hour Total : 4,449  
AM Peak Hour begins : 7:00  
PM Peak Hour begins : 17:15

AM Peak Volume : 350  
PM Peak Volume : 371  
AM Peak Hour Factor : 0.88  
PM Peak Hour Factor : 0.91

# Roadway Count Summary

Vanasse Hangen Brustlin, Inc.

Start Date : April 28, 2015  
 Stop Date : April 30, 2015  
 County : Bradford  
 Location : #10 - Water St. North of SR-100

Start Time 00:00  
 Stop Time 24:00

VHB Project #: 62580.01

## 29-Apr-15

### Northbound Volume for Lane 1

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	0	5	5	1	1	7	20	27	48	39	39	26
30	8	4	5	0	4	4	22	44	39	34	34	40
45	5	1	1	2	1	11	16	47	31	21	18	41
00	2	0	3	3	4	15	22	47	30	18	37	35
<b>Hr Total</b>	<b>15</b>	<b>10</b>	<b>14</b>	<b>6</b>	<b>10</b>	<b>37</b>	<b>80</b>	<b>165</b>	<b>148</b>	<b>112</b>	<b>128</b>	<b>142</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	45	39	38	62	67	70	46	47	19	24	8	8
30	29	23	56	49	74	86	34	31	22	12	14	10
45	51	46	56	47	74	100	44	32	23	20	9	6
00	35	51	54	68	72	48	36	25	26	12	18	3
<b>Hr Total</b>	<b>160</b>	<b>159</b>	<b>204</b>	<b>226</b>	<b>287</b>	<b>304</b>	<b>160</b>	<b>135</b>	<b>90</b>	<b>68</b>	<b>49</b>	<b>27</b>

24 Hour Total : 2,736  
 AM Peak Hour begins : 7:15  
 PM Peak Hour begins : 16:45

AM Peak Volume : 186  
 PM Peak Volume : 328  
 AM Peak Hour Factor : 0.97  
 PM Peak Hour Factor : 0.82

## 29-Apr-15

### Southbound Volume for Lane 2

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	6	3	2	6	3	10	18	31	33	40	27	36
30	4	1	3	1	3	4	35	38	23	51	29	34
45	2	1	2	4	5	17	20	26	30	30	28	51
00	0	0	5	2	2	19	35	34	39	39	29	31
<b>Hr Total</b>	<b>12</b>	<b>5</b>	<b>12</b>	<b>13</b>	<b>13</b>	<b>50</b>	<b>108</b>	<b>129</b>	<b>125</b>	<b>160</b>	<b>113</b>	<b>152</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	39	42	37	38	44	59	40	34	19	19	7	3
30	35	26	46	40	52	32	32	20	26	22	4	2
45	34	19	31	41	40	41	40	19	21	7	9	3
00	32	25	33	48	57	32	39	26	28	9	10	4
<b>Hr Total</b>	<b>140</b>	<b>112</b>	<b>147</b>	<b>167</b>	<b>193</b>	<b>164</b>	<b>151</b>	<b>99</b>	<b>94</b>	<b>57</b>	<b>30</b>	<b>12</b>

24 Hour Total : 2,258  
 AM Peak Hour begins : 8:30  
 PM Peak Hour begins : 16:15

AM Peak Volume : 160  
 PM Peak Volume : 208  
 AM Peak Hour Factor : 0.78  
 PM Peak Hour Factor : 0.88

## 29-Apr-15

### Total Volume for All Lanes

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	6	8	7	7	4	17	38	58	81	79	66	62
30	12	5	8	1	7	8	57	82	62	85	63	74
45	7	2	3	6	6	28	36	73	61	51	46	92
00	2	0	8	5	6	34	57	81	69	57	66	66
<b>Hr Total</b>	<b>27</b>	<b>15</b>	<b>26</b>	<b>19</b>	<b>23</b>	<b>87</b>	<b>188</b>	<b>294</b>	<b>273</b>	<b>272</b>	<b>241</b>	<b>294</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	84	81	75	100	111	129	86	81	38	43	15	11
30	64	49	102	89	126	118	66	51	48	34	18	12
45	85	65	87	88	114	141	84	51	44	27	18	9
00	67	76	87	116	129	80	75	51	54	21	28	7
<b>Hr Total</b>	<b>300</b>	<b>271</b>	<b>351</b>	<b>393</b>	<b>480</b>	<b>468</b>	<b>311</b>	<b>234</b>	<b>184</b>	<b>125</b>	<b>79</b>	<b>39</b>

24 Hour Total : 4,994  
 AM Peak Hour begins : 7:15  
 PM Peak Hour begins : 16:45

AM Peak Volume : 317  
 PM Peak Volume : 517  
 AM Peak Hour Factor : 0.97  
 PM Peak Hour Factor : 0.92



# Roadway Count Summary

Vanasse Hangen Brustlin, Inc.

Start Date : April 28, 2015  
 Stop Date : April 30, 2015  
 County : Bradford  
 Location : #10 - Water St. North of SR-100

Start Time : 00:00  
 Stop Time : 24:00

VHB Project #: 62580.01

AVERAGE		Northbound Volume for Lane 1											
End Time	00	01	02	03	04	05	06	07	08	09	10	11	
15	2	3	3	2	1	9	18	31	45	33	33	32	
30	6	3	5	1	4	6	22	52	38	31	32	36	
45	6	2	1	2	1	10	19	58	32	25	19	40	
00	3	2	4	4	4	15	21	54	37	20	36	31	
<b>Hr Total</b>	<b>17</b>	<b>10</b>	<b>13</b>	<b>9</b>	<b>10</b>	<b>40</b>	<b>80</b>	<b>195</b>	<b>152</b>	<b>109</b>	<b>120</b>	<b>139</b>	

End Time	12	13	14	15	16	17	18	19	20	21	22	23	
15	48	35	44	50	55	61	52	38	25	18	11	7	
30	26	25	50	44	64	67	36	25	20	14	12	7	
45	47	42	49	50	54	76	46	26	20	18	10	4	
00	36	39	59	58	54	50	40	25	20	10	14	6	
<b>Hr Total</b>	<b>157</b>	<b>141</b>	<b>202</b>	<b>202</b>	<b>227</b>	<b>254</b>	<b>174</b>	<b>114</b>	<b>85</b>	<b>60</b>	<b>47</b>	<b>24</b>	

24 Hour Total : 2,581  
 AM Peak Hour begins : 7:15  
 PM Peak Hour begins : 16:45

AM Peak Volume : 209  
 PM Peak Volume : 258  
 AM Peak Hour Factor : 0.90  
 PM Peak Hour Factor : 0.85

AVERAGE		Southbound Volume for Lane 2											
End Time	00	01	02	03	04	05	06	07	08	09	10	11	
15	6	4	1	6	4	8	22	33	31	33	27	37	
30	4	1	3	2	4	3	33	33	27	46	28	30	
45	3	2	1	3	6	13	22	28	33	31	27	39	
00	2	3	3	3	5	20	29	35	36	37	27	24	
<b>Hr Total</b>	<b>15</b>	<b>10</b>	<b>8</b>	<b>14</b>	<b>19</b>	<b>44</b>	<b>106</b>	<b>129</b>	<b>127</b>	<b>147</b>	<b>109</b>	<b>130</b>	

End Time	12	13	14	15	16	17	18	19	20	21	22	23	
15	33	36	41	37	40	47	42	33	19	17	9	3	
30	32	29	35	47	48	34	35	18	22	20	5	2	
45	34	23	35	40	34	46	35	23	20	10	9	2	
00	43	34	36	45	45	33	32	28	21	10	9	3	
<b>Hr Total</b>	<b>142</b>	<b>122</b>	<b>147</b>	<b>169</b>	<b>167</b>	<b>160</b>	<b>144</b>	<b>102</b>	<b>82</b>	<b>57</b>	<b>32</b>	<b>10</b>	

24 Hour Total : 2,192  
 AM Peak Hour begins : 8:30  
 PM Peak Hour begins : 16:15

AM Peak Volume : 148  
 PM Peak Volume : 174  
 AM Peak Hour Factor : 0.80  
 PM Peak Hour Factor : 0.91

AVERAGE		Total Volume for All Lanes											
End Time	00	01	02	03	04	05	06	07	08	09	10	11	
15	8	7	4	8	5	17	40	64	76	66	60	69	
30	10	4	8	3	8	9	55	85	65	77	60	66	
45	9	4	2	5	7	23	41	86	65	56	46	79	
00	5	5	7	7	9	35	50	89	73	57	63	55	
<b>Hr Total</b>	<b>32</b>	<b>20</b>	<b>21</b>	<b>23</b>	<b>29</b>	<b>84</b>	<b>186</b>	<b>324</b>	<b>279</b>	<b>256</b>	<b>229</b>	<b>269</b>	

End Time	12	13	14	15	16	17	18	19	20	21	22	23	
15	81	71	85	87	95	108	94	71	44	35	20	10	
30	58	54	85	91	112	101	71	43	42	34	17	9	
45	81	65	84	90	88	122	81	49	40	28	19	6	
00	79	73	95	103	99	83	72	53	41	20	23	9	
<b>Hr Total</b>	<b>299</b>	<b>263</b>	<b>349</b>	<b>371</b>	<b>394</b>	<b>414</b>	<b>318</b>	<b>216</b>	<b>167</b>	<b>117</b>	<b>79</b>	<b>34</b>	

24 Hour Total : 4,773  
 AM Peak Hour begins : 7:15  
 PM Peak Hour begins : 16:45

AM Peak Volume : 336  
 PM Peak Volume : 430  
 AM Peak Hour Factor : 0.94  
 PM Peak Hour Factor : 0.88

# Traffic Count Data

*Vanasse Hangen Brustlin, Inc.*

PROJECT	Starke Railroad Overpass PD&E Study
LOCATION CODE	11
COUNT LOCATION	#11 - Walnut St South of SR-100
VHB PROJECT #	62580.01

TYPE OF COUNT:

48-Hour APPROACH VOLUME COUNT

TIME OF COUNT:

Start Date	April 28, 2015	Start Time	12:00 AM
End Date	May 1, 2015	End Time	12:00 AM

## VOLUME AVERAGES

	<b>Total</b>	<b>NB</b>	<b>SB</b>
ADT	4,301	3,306	995
Peak Hour	5:15 PM to 6:15 PM		
	<b>Peak Hour Total</b>	<b>NB</b>	<b>SB</b>
	388	323	65

## MEASURED TRAVEL CHARACTERISTICS

\*Peak to Daily Ratio\*

K = 9.02%      D = 83.3%



# Hourly Distribution of Traffic Volumes

*Vanasse Hangen Brustlin, Inc.*

PROJECT	Starke Railroad Overpass PD&E Study
LOCATION CODE	11
COUNT LOCATION	#11 - Walnut St South of SR-100
VHB PROJECT #	62580.01

HOURLY END AT	HOURLY VOLUME DIRECTION (NB)	HOURLY VOLUME DIRECTION (SB)	TOTAL VOLUMES BOTH DIRECTIONS	DISTRIBUTION PERCENT DIRECTION (NB)	DISTRIBUTION PERCENT DIRECTION (SB)	TOTAL PERCENT BOTH DIRECTIONS
1:00 AM	23	7	30	0.70%	0.70%	0.70%
2:00 AM	11	4	15	0.33%	0.40%	0.35%
3:00 AM	10	3	13	0.30%	0.30%	0.30%
4:00 AM	7	7	14	0.21%	0.70%	0.33%
5:00 AM	8	11	19	0.24%	1.11%	0.44%
6:00 AM	23	29	52	0.70%	2.91%	1.21%
7:00 AM	89	68	157	2.69%	6.83%	3.65%
8:00 AM	127	77	204	3.84%	7.74%	4.74%
9:00 AM	130	57	187	3.93%	5.73%	4.35%
10:00 AM	168	52	220	5.08%	5.23%	5.12%
11:00 AM	187	51	238	5.66%	5.13%	5.53%
12:00 PM	257	58	315	7.77%	5.83%	7.32%
1:00 PM	294	76	370	8.89%	7.64%	8.60%
2:00 PM	268	59	327	8.11%	5.93%	7.60%
3:00 PM	204	61	265	6.17%	6.13%	6.16%
4:00 PM	209	57	266	6.32%	5.73%	6.18%
5:00 PM	202	69	271	6.11%	6.93%	6.30%
6:00 PM	309	64	373	9.35%	6.43%	8.67%
7:00 PM	267	48	315	8.08%	4.82%	7.32%
8:00 PM	187	41	228	5.66%	4.12%	5.30%
9:00 PM	154	45	199	4.66%	4.52%	4.63%
10:00 PM	94	31	125	2.84%	3.12%	2.91%
11:00 PM	48	10	58	1.45%	1.01%	1.35%
12:00 AM	30	10	40	0.91%	1.01%	0.93%
<b>TOTALS</b>	<b>3,306</b>	<b>995</b>	<b>4,301</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>

# Roadway Count Summary

*Vanasse Hangen Brustlin, Inc.*

Start Date : April 28, 2015  
 Stop Date : April 30, 2015  
 County : Bradford  
 Location : #11 - Walnut St South of SR-100

Start Time : 00:00  
 Stop Time : 24:00

VHB Project #: 62580.01

## 28-Apr-15

### Northbound Volume for Lane 1

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	8	3	0	0	2	4	13	24	36	37	38	62
30	9	1	2	1	1	3	22	37	24	32	37	61
45	4	3	2	0	2	8	26	29	35	45	39	75
00	2	1	3	2	2	5	25	33	29	36	60	56
<b>Hr Total</b>	<b>23</b>	<b>8</b>	<b>7</b>	<b>3</b>	<b>7</b>	<b>20</b>	<b>86</b>	<b>123</b>	<b>124</b>	<b>150</b>	<b>174</b>	<b>254</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	84	68	67	61	66	62	77	61	48	31	10	6
30	83	67	49	64	69	84	63	37	42	15	10	6
45	70	64	48	81	73	70	76	42	42	22	18	11
00	72	61	60	67	57	88	54	41	26	17	4	7
<b>Hr Total</b>	<b>309</b>	<b>260</b>	<b>224</b>	<b>273</b>	<b>265</b>	<b>304</b>	<b>270</b>	<b>181</b>	<b>158</b>	<b>85</b>	<b>42</b>	<b>30</b>

24 Hour Total : 3,380  
 AM Peak Hour begins : 10:45  
 PM Peak Hour begins : 17:15

AM Peak Volume : 258  
 PM Peak Volume : 319  
 AM Peak Hour Factor : 0.86  
 PM Peak Hour Factor : 0.91

## 28-Apr-15

### Southbound Volume for Lane 2

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	1	1	0	3	0	5	16	17	19	18	23	23
30	2	0	0	0	3	1	20	22	10	14	8	12
45	1	0	0	2	2	5	12	19	15	11	16	17
00	0	1	0	1	2	15	16	25	11	5	8	7
<b>Hr Total</b>	<b>4</b>	<b>2</b>	<b>0</b>	<b>6</b>	<b>7</b>	<b>26</b>	<b>64</b>	<b>83</b>	<b>55</b>	<b>48</b>	<b>55</b>	<b>59</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	25	19	16	19	20	14	12	16	6	5	3	5
30	25	17	13	6	17	20	13	8	7	7	1	0
45	9	10	16	21	7	23	14	10	11	5	5	2
00	18	16	15	11	17	15	10	7	7	7	2	0
<b>Hr Total</b>	<b>77</b>	<b>62</b>	<b>60</b>	<b>57</b>	<b>61</b>	<b>72</b>	<b>49</b>	<b>41</b>	<b>31</b>	<b>24</b>	<b>11</b>	<b>7</b>

24 Hour Total : 961  
 AM Peak Hour begins : 7:15  
 PM Peak Hour begins : 12:00

AM Peak Volume : 85  
 PM Peak Volume : 77  
 AM Peak Hour Factor : 0.85  
 PM Peak Hour Factor : 0.77

## 28-Apr-15

### Total Volume for All Lanes

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	9	4	0	3	2	9	29	41	55	55	61	85
30	11	1	2	1	4	4	42	59	34	46	45	73
45	5	3	2	2	4	13	38	48	50	56	55	92
00	2	2	3	3	4	20	41	58	40	41	68	63
<b>Hr Total</b>	<b>27</b>	<b>10</b>	<b>7</b>	<b>9</b>	<b>14</b>	<b>46</b>	<b>150</b>	<b>206</b>	<b>179</b>	<b>198</b>	<b>229</b>	<b>313</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	109	87	83	80	86	76	89	77	54	36	13	11
30	108	84	62	70	86	104	76	45	49	22	11	6
45	79	74	64	102	80	93	90	52	53	27	23	13
00	90	77	75	78	74	103	64	48	33	24	6	7
<b>Hr Total</b>	<b>386</b>	<b>322</b>	<b>284</b>	<b>330</b>	<b>326</b>	<b>376</b>	<b>319</b>	<b>222</b>	<b>189</b>	<b>109</b>	<b>53</b>	<b>37</b>

24 Hour Total : 4,341  
 AM Peak Hour begins : 10:45  
 PM Peak Hour begins : 17:15

AM Peak Volume : 318  
 PM Peak Volume : 389  
 AM Peak Hour Factor : 0.86  
 PM Peak Hour Factor : 0.94



# Roadway Count Summary

Vanasse Hangen Brustlin, Inc.

Start Date : April 28, 2015  
Stop Date : April 30, 2015  
County : Bradford  
Location : #11 - Walnut St South of SR-100

Start Time : 00:00  
Stop Time : 24:00

VHB Project #: 62580.01

## 29-Apr-15

### Northbound Volume for Lane 1

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	5	7	2	3	2	12	13	29	28	36	58	47
30	11	3	3	1	2	2	16	31	37	55	45	71
45	5	0	3	2	3	5	33	33	32	56	37	51
00	0	3	3	4	0	5	28	36	37	36	60	89
<b>Hr Total</b>	<b>21</b>	<b>13</b>	<b>11</b>	<b>10</b>	<b>7</b>	<b>24</b>	<b>90</b>	<b>129</b>	<b>134</b>	<b>183</b>	<b>200</b>	<b>258</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	69	76	67	39	33	55	68	46	34	33	12	9
30	54	55	47	47	42	87	64	50	45	27	14	9
45	74	72	32	24	36	98	60	51	30	25	12	7
00	80	72	37	33	24	72	69	42	40	17	15	3
<b>Hr Total</b>	<b>277</b>	<b>275</b>	<b>183</b>	<b>143</b>	<b>135</b>	<b>312</b>	<b>261</b>	<b>189</b>	<b>149</b>	<b>102</b>	<b>53</b>	<b>28</b>

24 Hour Total : 3,187  
AM Peak Hour begins : 11:00  
PM Peak Hour begins : 17:15

AM Peak Volume : 258  
PM Peak Volume : 325  
AM Peak Hour Factor : 0.73  
PM Peak Hour Factor : 0.83

## 29-Apr-15

### Southbound Volume for Lane 2

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	1	1	0	3	2	3	18	17	10	18	9	12
30	4	3	2	1	3	3	17	16	11	16	14	14
45	2	0	1	2	3	6	13	24	13	10	13	14
00	1	0	2	1	6	19	22	13	23	10	9	14
<b>Hr Total</b>	<b>8</b>	<b>4</b>	<b>5</b>	<b>7</b>	<b>14</b>	<b>31</b>	<b>70</b>	<b>70</b>	<b>57</b>	<b>54</b>	<b>45</b>	<b>54</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	20	10	17	12	18	17	21	11	16	8	2	6
30	22	21	10	17	24	12	7	7	11	8	3	0
45	20	11	15	9	10	9	11	11	13	14	1	4
00	10	12	17	16	22	17	6	9	18	5	1	1
<b>Hr Total</b>	<b>72</b>	<b>54</b>	<b>59</b>	<b>54</b>	<b>74</b>	<b>55</b>	<b>45</b>	<b>38</b>	<b>58</b>	<b>35</b>	<b>7</b>	<b>11</b>

24 Hour Total : 981  
AM Peak Hour begins : 6:45  
PM Peak Hour begins : 16:00

AM Peak Volume : 79  
PM Peak Volume : 74  
AM Peak Hour Factor : 0.82  
PM Peak Hour Factor : 0.77

## 29-Apr-15

### Total Volume for All Lanes

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	6	8	2	6	4	15	31	46	38	54	67	59
30	15	6	5	2	5	5	33	47	48	71	59	85
45	7	0	4	4	6	11	46	57	45	66	50	65
00	1	3	5	5	6	24	50	49	60	46	69	103
<b>Hr Total</b>	<b>29</b>	<b>17</b>	<b>16</b>	<b>17</b>	<b>21</b>	<b>55</b>	<b>160</b>	<b>199</b>	<b>191</b>	<b>237</b>	<b>245</b>	<b>312</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	89	86	84	51	51	72	89	57	50	41	14	15
30	76	76	57	64	66	99	71	57	56	35	17	9
45	94	83	47	33	46	107	71	62	43	39	13	11
00	90	84	54	49	46	89	75	51	58	22	16	4
<b>Hr Total</b>	<b>349</b>	<b>329</b>	<b>242</b>	<b>197</b>	<b>209</b>	<b>367</b>	<b>306</b>	<b>227</b>	<b>207</b>	<b>137</b>	<b>60</b>	<b>39</b>

24 Hour Total : 4,168  
AM Peak Hour begins : 11:00  
PM Peak Hour begins : 17:15

AM Peak Volume : 312  
PM Peak Volume : 384  
AM Peak Hour Factor : 0.76  
PM Peak Hour Factor : 0.90

# Roadway Count Summary

*Vanasse Hangen Brustlin, Inc.*

Start Date : April 28, 2015  
 Stop Date : April 30, 2015  
 County : Bradford  
 Location : #11 - Walnut St South of SR-100

Start Time : 00:00  
 Stop Time : 24:00

VHB Project #: 62580.01

AVERAGE		Northbound Volume for Lane 1											
End Time	00	01	02	03	04	05	06	07	08	09	10	11	
15	7	5	1	2	2	8	13	27	32	37	48	55	
30	10	2	3	1	2	3	19	34	31	44	41	66	
45	5	2	3	1	3	7	30	31	34	51	38	63	
00	1	2	3	3	1	5	27	35	33	36	60	73	
<b>Hr Total</b>	<b>23</b>	<b>11</b>	<b>10</b>	<b>7</b>	<b>8</b>	<b>23</b>	<b>89</b>	<b>127</b>	<b>130</b>	<b>168</b>	<b>187</b>	<b>257</b>	

End Time	12	13	14	15	16	17	18	19	20	21	22	23	
15	77	72	67	50	50	59	73	54	41	32	11	8	
30	69	61	48	56	56	86	64	44	44	21	12	8	
45	72	68	40	53	55	84	68	47	36	24	15	9	
00	76	67	49	50	41	80	62	42	33	17	10	5	
<b>Hr Total</b>	<b>294</b>	<b>268</b>	<b>204</b>	<b>209</b>	<b>202</b>	<b>309</b>	<b>267</b>	<b>187</b>	<b>154</b>	<b>94</b>	<b>48</b>	<b>30</b>	

24 Hour Total : 3,306  
 AM Peak Hour begins : 11:00  
 PM Peak Hour begins : 17:15

AM Peak Volume : 257  
 PM Peak Volume : 323  
 AM Peak Hour Factor : 0.88  
 PM Peak Hour Factor : 0.94

AVERAGE		Southbound Volume for Lane 2											
End Time	00	01	02	03	04	05	06	07	08	09	10	11	
15	1	1	0	3	1	4	17	17	15	18	16	18	
30	3	2	1	1	3	2	19	19	11	15	11	13	
45	2	0	1	2	3	6	13	22	14	11	15	16	
00	1	1	1	1	4	17	19	19	17	8	9	11	
<b>Hr Total</b>	<b>7</b>	<b>4</b>	<b>3</b>	<b>7</b>	<b>11</b>	<b>29</b>	<b>68</b>	<b>77</b>	<b>57</b>	<b>52</b>	<b>51</b>	<b>58</b>	

End Time	12	13	14	15	16	17	18	19	20	21	22	23	
15	23	15	17	16	19	16	17	14	11	7	3	6	
30	24	19	12	12	21	16	10	8	9	8	2	0	
45	15	11	16	15	9	16	13	11	12	10	3	3	
00	14	14	16	14	20	16	8	8	13	6	2	1	
<b>Hr Total</b>	<b>76</b>	<b>59</b>	<b>61</b>	<b>57</b>	<b>69</b>	<b>64</b>	<b>48</b>	<b>41</b>	<b>45</b>	<b>31</b>	<b>10</b>	<b>10</b>	

24 Hour Total : 995  
 AM Peak Hour begins : 6:45  
 PM Peak Hour begins : 12:00

AM Peak Volume : 77  
 PM Peak Volume : 76  
 AM Peak Hour Factor : 0.88  
 PM Peak Hour Factor : 0.79

AVERAGE		Total Volume for All Lanes											
End Time	00	01	02	03	04	05	06	07	08	09	10	11	
15	8	6	1	5	3	12	30	44	47	55	64	73	
30	13	4	4	2	5	5	38	53	42	59	52	79	
45	7	2	4	3	6	13	43	53	48	62	53	79	
00	2	3	4	4	5	22	46	54	50	44	69	84	
<b>Hr Total</b>	<b>30</b>	<b>15</b>	<b>13</b>	<b>14</b>	<b>19</b>	<b>52</b>	<b>157</b>	<b>204</b>	<b>187</b>	<b>220</b>	<b>238</b>	<b>315</b>	

End Time	12	13	14	15	16	17	18	19	20	21	22	23	
15	100	87	84	66	69	75	90	68	52	39	14	14	
30	93	80	60	68	77	102	74	52	53	29	14	8	
45	87	79	56	68	64	100	81	58	48	34	18	12	
00	90	81	65	64	61	96	70	50	46	23	12	6	
<b>Hr Total</b>	<b>370</b>	<b>327</b>	<b>265</b>	<b>266</b>	<b>271</b>	<b>373</b>	<b>315</b>	<b>228</b>	<b>199</b>	<b>125</b>	<b>58</b>	<b>40</b>	

24 Hour Total : 4,301  
 AM Peak Hour begins : 11:00  
 PM Peak Hour begins : 17:15

AM Peak Volume : 315  
 PM Peak Volume : 388  
 AM Peak Hour Factor : 0.94  
 PM Peak Hour Factor : 0.95



# Traffic Count Data

*Vanasse Hangen Brustlin, Inc.*

PROJECT	Starke Railroad Overpass PD&E Study
LOCATION CODE	12
COUNT LOCATION	#12 - SR-100 South of Laura St.
VHB PROJECT #	62580.01

TYPE OF COUNT:

48-Hour APPROACH VOLUME COUNT

TIME OF COUNT:

Start Date	April 28, 2015	Start Time	12:00 AM
End Date	May 1, 2015	End Time	12:00 AM

## VOLUME AVERAGES

	<b>Total</b>	<b>NB</b>	<b>SB</b>
ADT	9,136	4,714	4,422
Peak Hour	4:45 PM to 5:45 PM		
	<b>Peak Hour Total</b>	<b>NB</b>	<b>SB</b>
	843	399	444

## MEASURED TRAVEL CHARACTERISTICS

\*Peak to Daily Ratio\*

K = 9.23%      D = 52.7%

# Hourly Distribution of Traffic Volumes

*Vanasse Hangen Brustlin, Inc.*

PROJECT	Starke Railroad Overpass PD&E Study
LOCATION CODE	12
COUNT LOCATION	#12 - SR-100 South of Laura St.
VHB PROJECT #	62580.01

HOURLY END AT	HOURLY VOLUME DIRECTION (NB)	HOURLY VOLUME DIRECTION (SB)	TOTAL VOLUMES BOTH DIRECTIONS	DISTRIBUTION PERCENT DIRECTION (NB)	DISTRIBUTION PERCENT DIRECTION (SB)	TOTAL PERCENT BOTH DIRECTIONS
1:00 AM	15	32	47	0.32%	0.72%	0.51%
2:00 AM	14	20	34	0.30%	0.45%	0.37%
3:00 AM	16	14	30	0.34%	0.32%	0.33%
4:00 AM	16	12	28	0.34%	0.27%	0.31%
5:00 AM	50	21	71	1.06%	0.47%	0.78%
6:00 AM	132	58	190	2.80%	1.31%	2.08%
7:00 AM	224	154	378	4.75%	3.48%	4.14%
8:00 AM	398	219	617	8.44%	4.95%	6.75%
9:00 AM	319	200	519	6.77%	4.52%	5.68%
10:00 AM	252	216	468	5.35%	4.88%	5.12%
11:00 AM	251	212	463	5.32%	4.79%	5.07%
12:00 PM	249	252	501	5.28%	5.70%	5.48%
1:00 PM	269	273	542	5.71%	6.17%	5.93%
2:00 PM	253	287	540	5.37%	6.49%	5.91%
3:00 PM	384	327	711	8.15%	7.39%	7.78%
4:00 PM	360	351	711	7.64%	7.94%	7.78%
5:00 PM	414	372	786	8.78%	8.41%	8.60%
6:00 PM	350	429	779	7.42%	9.70%	8.53%
7:00 PM	256	296	552	5.43%	6.69%	6.04%
8:00 PM	157	221	378	3.33%	5.00%	4.14%
9:00 PM	142	209	351	3.01%	4.73%	3.84%
10:00 PM	90	118	208	1.91%	2.67%	2.28%
11:00 PM	69	75	144	1.46%	1.70%	1.58%
12:00 AM	34	54	88	0.72%	1.22%	0.96%
TOTALS	4,714	4,422	9,136	100.00%	100.00%	100.00%



# Roadway Count Summary

Vanasse Hangen Brustlin, Inc.

Start Date : April 28, 2015  
 Stop Date : April 30, 2015  
 County : Bradford  
 Location : #12 - SR-100 South of Laura St.

Start Time 00:00  
 Stop Time 24:00

VHB Project #: 62580.01

## 28-Apr-15

### Northbound Volume for Lane 1

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	3	4	1	5	5	28	53	74	89	72	57	62
30	5	0	5	6	13	33	55	109	77	73	70	48
45	2	7	5	3	6	37	52	118	68	65	69	62
00	4	5	0	2	20	33	67	109	89	49	78	47
<b>Hr Total</b>	<b>14</b>	<b>16</b>	<b>11</b>	<b>16</b>	<b>44</b>	<b>131</b>	<b>227</b>	<b>410</b>	<b>323</b>	<b>259</b>	<b>274</b>	<b>219</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	71	62	86	84	95	85	76	30	31	22	14	12
30	65	73	119	71	92	77	62	30	27	29	15	8
45	71	57	72	71	74	67	60	41	36	19	18	3
00	73	70	75	64	74	69	57	32	39	16	11	10
<b>Hr Total</b>	<b>280</b>	<b>262</b>	<b>352</b>	<b>290</b>	<b>335</b>	<b>298</b>	<b>255</b>	<b>133</b>	<b>133</b>	<b>86</b>	<b>58</b>	<b>33</b>

24 Hour Total : 4,459  
 AM Peak Hour begins : 7:15  
 PM Peak Hour begins : 14:00

AM Peak Volume : 425  
 PM Peak Volume : 352  
 AM Peak Hour Factor : 0.90  
 PM Peak Hour Factor : 0.74

## 28-Apr-15

### Southbound Volume for Lane 2

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	9	7	3	3	3	3	26	36	43	39	46	62
30	16	5	6	8	7	6	37	47	61	54	54	68
45	4	4	1	0	9	24	48	71	48	61	62	79
00	7	1	8	1	5	26	52	62	57	54	62	68
<b>Hr Total</b>	<b>36</b>	<b>17</b>	<b>18</b>	<b>12</b>	<b>24</b>	<b>59</b>	<b>163</b>	<b>216</b>	<b>209</b>	<b>208</b>	<b>224</b>	<b>277</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	77	66	88	87	75	92	86	68	52	38	13	20
30	57	64	98	73	88	114	66	46	50	28	20	13
45	65	82	76	103	85	119	82	58	51	20	20	6
00	71	83	61	76	106	93	74	49	26	19	16	15
<b>Hr Total</b>	<b>270</b>	<b>295</b>	<b>323</b>	<b>339</b>	<b>354</b>	<b>418</b>	<b>308</b>	<b>221</b>	<b>179</b>	<b>105</b>	<b>69</b>	<b>54</b>

24 Hour Total : 4,398  
 AM Peak Hour begins : 11:00  
 PM Peak Hour begins : 16:45

AM Peak Volume : 277  
 PM Peak Volume : 431  
 AM Peak Hour Factor : 0.88  
 PM Peak Hour Factor : 0.91

## 28-Apr-15

### Total Volume for All Lanes

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	12	11	4	8	8	31	79	110	132	111	103	124
30	21	5	11	14	20	39	92	156	138	127	124	116
45	6	11	6	3	15	61	100	189	116	126	131	141
00	11	6	8	3	25	59	119	171	146	103	140	115
<b>Hr Total</b>	<b>50</b>	<b>33</b>	<b>29</b>	<b>28</b>	<b>68</b>	<b>190</b>	<b>390</b>	<b>626</b>	<b>532</b>	<b>467</b>	<b>498</b>	<b>496</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	148	128	174	171	170	177	162	98	83	60	27	32
30	122	137	217	144	180	191	128	76	77	57	35	21
45	136	139	148	174	159	186	142	99	87	39	38	9
00	144	153	136	140	180	162	131	81	65	35	27	25
<b>Hr Total</b>	<b>550</b>	<b>557</b>	<b>675</b>	<b>629</b>	<b>689</b>	<b>716</b>	<b>563</b>	<b>354</b>	<b>312</b>	<b>191</b>	<b>127</b>	<b>87</b>

24 Hour Total : 8,857  
 AM Peak Hour begins : 7:15  
 PM Peak Hour begins : 16:45

AM Peak Volume : 648  
 PM Peak Volume : 734  
 AM Peak Hour Factor : 0.86  
 PM Peak Hour Factor : 0.96

# Roadway Count Summary

Vanasse Hangen Brustlin, Inc.

Start Date : April 28, 2015  
 Stop Date : April 30, 2015  
 County : Bradford  
 Location : #12 - SR-100 South of Laura St.

Start Time 00:00  
 Stop Time 24:00

VHB Project #: 62580.01

## 29-Apr-15

### Northbound Volume for Lane 1

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	2	6	3	4	9	23	39	70	87	68	52	60
30	4	1	9	0	14	33	57	111	74	74	69	68
45	4	3	2	6	7	32	52	112	65	43	47	78
00	4	1	5	3	23	43	72	93	86	58	58	73
<b>Hr Total</b>	<b>14</b>	<b>11</b>	<b>19</b>	<b>13</b>	<b>53</b>	<b>131</b>	<b>220</b>	<b>386</b>	<b>312</b>	<b>243</b>	<b>226</b>	<b>279</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	71	67	88	126	110	124	82	51	39	27	22	8
30	64	69	96	100	108	114	61	46	38	18	25	8
45	68	50	116	93	126	106	59	40	35	29	13	9
00	52	55	115	109	148	54	53	42	37	18	18	9
<b>Hr Total</b>	<b>255</b>	<b>241</b>	<b>415</b>	<b>428</b>	<b>492</b>	<b>398</b>	<b>255</b>	<b>179</b>	<b>149</b>	<b>92</b>	<b>78</b>	<b>34</b>

24 Hour Total : 4,923  
 AM Peak Hour begins : 7:15  
 PM Peak Hour begins : 16:30

AM Peak Volume : 403  
 PM Peak Volume : 512  
 AM Peak Hour Factor : 0.90  
 PM Peak Hour Factor : 0.87

## 29-Apr-15

### Southbound Volume for Lane 2

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	10	12	1	5	6	12	24	45	45	52	41	50
30	7	6	3	2	1	5	39	43	48	48	57	55
45	5	0	2	1	6	11	29	74	45	67	51	57
00	3	3	1	3	3	26	52	58	50	55	48	63
<b>Hr Total</b>	<b>25</b>	<b>21</b>	<b>7</b>	<b>11</b>	<b>16</b>	<b>54</b>	<b>144</b>	<b>220</b>	<b>188</b>	<b>222</b>	<b>197</b>	<b>225</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	58	79	98	80	95	135	75	58	62	35	30	13
30	65	62	90	109	94	114	72	47	60	45	22	11
45	80	66	71	86	102	109	75	61	61	27	13	14
00	71	70	70	85	97	80	60	52	56	21	14	15
<b>Hr Total</b>	<b>274</b>	<b>277</b>	<b>329</b>	<b>360</b>	<b>388</b>	<b>438</b>	<b>282</b>	<b>218</b>	<b>239</b>	<b>128</b>	<b>79</b>	<b>53</b>

24 Hour Total : 4,395  
 AM Peak Hour begins : 7:30  
 PM Peak Hour begins : 16:45

AM Peak Volume : 225  
 PM Peak Volume : 455  
 AM Peak Hour Factor : 0.76  
 PM Peak Hour Factor : 0.84

## 29-Apr-15

### Total Volume for All Lanes

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	12	18	4	9	15	35	63	115	132	120	93	110
30	11	7	12	2	15	38	96	154	122	122	126	123
45	9	3	4	7	13	43	81	186	110	110	98	135
00	7	4	6	6	26	69	124	151	136	113	106	136
<b>Hr Total</b>	<b>39</b>	<b>32</b>	<b>26</b>	<b>24</b>	<b>69</b>	<b>185</b>	<b>364</b>	<b>606</b>	<b>500</b>	<b>465</b>	<b>423</b>	<b>504</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	129	146	186	206	205	259	157	109	101	62	52	21
30	129	131	186	209	202	228	133	93	98	63	47	19
45	148	116	187	179	228	215	134	101	96	56	26	23
00	123	125	185	194	245	134	113	94	93	39	32	24
<b>Hr Total</b>	<b>529</b>	<b>518</b>	<b>744</b>	<b>788</b>	<b>880</b>	<b>836</b>	<b>537</b>	<b>397</b>	<b>388</b>	<b>220</b>	<b>157</b>	<b>87</b>

24 Hour Total : 9,318  
 AM Peak Hour begins : 7:15  
 PM Peak Hour begins : 16:30

AM Peak Volume : 623  
 PM Peak Volume : 960  
 AM Peak Hour Factor : 0.84  
 PM Peak Hour Factor : 0.93



# Roadway Count Summary

Vanasse Hangen Brustlin, Inc.

Start Date : April 28, 2015  
 Stop Date : April 30, 2015  
 County : Bradford  
 Location : #12 - SR-100 South of Laura St.

Start Time 00:00  
 Stop Time 24:00

VHB Project #: 62580.01

AVERAGE		Northbound Volume for Lane 1										
End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	3	5	2	5	7	26	46	72	88	70	55	61
30	5	1	7	3	14	33	56	110	76	74	70	58
45	3	5	4	5	7	35	52	115	67	54	58	70
00	4	3	3	3	22	38	70	101	88	54	68	60
<b>Hr Total</b>	<b>15</b>	<b>14</b>	<b>16</b>	<b>16</b>	<b>50</b>	<b>132</b>	<b>224</b>	<b>398</b>	<b>319</b>	<b>252</b>	<b>251</b>	<b>249</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	71	65	87	105	103	105	79	41	35	25	18	10
30	65	71	108	86	100	96	62	38	33	24	20	8
45	70	54	94	82	100	87	60	41	36	24	16	6
00	63	63	95	87	111	62	55	37	38	17	15	10
<b>Hr Total</b>	<b>269</b>	<b>253</b>	<b>384</b>	<b>360</b>	<b>414</b>	<b>350</b>	<b>256</b>	<b>157</b>	<b>142</b>	<b>90</b>	<b>69</b>	<b>34</b>

24 Hour Total : 4,714  
 AM Peak Hour begins : 7:15  
 PM Peak Hour begins : 16:15

AM Peak Volume : 414  
 PM Peak Volume : 416  
 AM Peak Hour Factor : 0.90  
 PM Peak Hour Factor : 0.94

AVERAGE		Southbound Volume for Lane 2										
End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	10	10	2	4	5	8	25	41	44	46	44	56
30	12	6	5	5	4	6	38	45	55	51	56	62
45	5	2	2	1	8	18	39	73	47	64	57	68
00	5	2	5	2	4	26	52	60	54	55	55	66
<b>Hr Total</b>	<b>32</b>	<b>20</b>	<b>14</b>	<b>12</b>	<b>21</b>	<b>58</b>	<b>154</b>	<b>219</b>	<b>200</b>	<b>216</b>	<b>212</b>	<b>252</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	68	73	93	84	85	114	81	63	57	37	22	17
30	61	63	94	91	91	114	69	47	55	37	21	12
45	73	74	74	95	94	114	79	60	56	24	17	10
00	71	77	66	81	102	87	67	51	41	20	15	15
<b>Hr Total</b>	<b>273</b>	<b>287</b>	<b>327</b>	<b>351</b>	<b>372</b>	<b>429</b>	<b>296</b>	<b>221</b>	<b>209</b>	<b>118</b>	<b>75</b>	<b>54</b>

24 Hour Total : 4,422  
 AM Peak Hour begins : 11:00  
 PM Peak Hour begins : 16:45


AM Peak Volume : 252  
 PM Peak Volume : 444  
 AM Peak Hour Factor : 0.93  
 PM Peak Hour Factor : 0.97

AVERAGE		Total Volume for All Lanes										
End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	13	15	4	9	12	34	71	113	132	116	99	117
30	17	7	12	8	18	39	94	155	131	125	126	120
45	8	7	6	6	15	53	91	188	114	118	115	138
00	9	5	8	5	26	64	122	161	142	109	123	126
<b>Hr Total</b>	<b>47</b>	<b>34</b>	<b>30</b>	<b>28</b>	<b>71</b>	<b>190</b>	<b>378</b>	<b>617</b>	<b>519</b>	<b>468</b>	<b>463</b>	<b>501</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	139	138	180	189	188	219	160	104	92	62	40	27
30	126	134	202	177	191	210	131	85	88	61	41	20
45	143	128	168	177	194	201	139	101	92	48	33	16
00	134	140	161	168	213	149	122	88	79	37	30	25
<b>Hr Total</b>	<b>542</b>	<b>540</b>	<b>711</b>	<b>711</b>	<b>786</b>	<b>779</b>	<b>552</b>	<b>378</b>	<b>351</b>	<b>208</b>	<b>144</b>	<b>88</b>

24 Hour Total : 9,136  
 AM Peak Hour begins : 7:15  
 PM Peak Hour begins : 16:45

AM Peak Volume : 636  
 PM Peak Volume : 843  
 AM Peak Hour Factor : 0.85  
 PM Peak Hour Factor : 0.96


Site Information	
Feature	1
Site	280100
Description	SR 200 .1 MI. N. OF MARKET ST.
Section	28010000
Milepoint	9.816
AADT	18500
Site Type	Portable
Class Data	No
K Factor	9
D Factor	54.7
T Factor	23.9
TRAFFIC REPORTS (provided in  format)	
Bradford County	<a href="#">Annual Average Daily Traffic</a>
	<a href="#">Historical AADT Data</a>
	No Synopsis Report Available

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Site Information	
Feature	1
Site	285001
Description	SR 200 150' S. OF SR 16
Section	28010000
Milepoint	8.583
AADT	23500
Site Type	Portable
Class Data	No
K Factor	9
D Factor	54.7
T Factor	23.9
TRAFFIC REPORTS (provided in  format)	
Bradford County	<a href="#">Annual Average Daily Traffic</a>
	<a href="#">Historical AADT Data</a>
	No Synopsis Report Available

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Site Information	
Feature	1
Site	285002
Description	SR 200 100' N. OF CALL ST.
Section	28010000
Milepoint	8.139
AADT	25000
Site Type	Portable
Class Data	No
K Factor	9
D Factor	54.7
T Factor	23.9
TRAFFIC REPORTS (provided in  format)	
Bradford County	<a href="#">Annual Average Daily Traffic</a>
	<a href="#">Historical AADT Data</a>
	No Synopsis Report Available

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Site Information	
Feature	1
Site	285013
Description	SR 200 100' S. OF SR 100
Section	28010000
Milepoint	8.049
AADT	26000
Site Type	Portable
Class Data	No
K Factor	9
D Factor	54.7
T Factor	16.8
TRAFFIC REPORTS (provided in  format)	
Bradford County	<a href="#">Annual Average Daily Traffic</a>
	<a href="#">Historical AADT Data</a>
	No Synopsis Report Available

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Site Information	
Feature	1
Site	285017
Description	SR 200 100' N. OF CR 100A
Section	28010000
Milepoint	7.721
AADT	29500
Site Type	Portable
Class Data	No
K Factor	9
D Factor	54.7
T Factor	16.8
TRAFFIC REPORTS (provided in  format)	
Bradford County	<a href="#">Annual Average Daily Traffic</a>
	<a href="#">Historical AADT Data</a>
	No Synopsis Report Available

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Site Information	
Feature	1
Site	280105
Description	SR 200 .1 MI. N. OF NE 10 TH AVE.
Section	28010000
Milepoint	6.818
AADT	28000
Site Type	Portable
Class Data	No
K Factor	9
D Factor	54.7
T Factor	16.8
TRAFFIC REPORTS (provided in  format)	
Bradford County	<a href="#">Annual Average Daily Traffic</a>
	<a href="#">Historical AADT Data</a>
	No Synopsis Report Available

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Site Information	
Feature	1
Site	285020
Description	SR 100 100' W. OF SR 200
Section	28020000
Milepoint	11.617
AADT	9100
Site Type	Portable
Class Data	No
K Factor	9
D Factor	53.8
T Factor	14.3
TRAFFIC REPORTS (provided in  format)	
Bradford County	<a href="#">Annual Average Daily Traffic</a>
	<a href="#">Historical AADT Data</a>
	No Synopsis Report Available

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Site Information	
Feature	1
Site	285015
Description	SR 100 100' W. OF WALNUT ST.
Section	28020000
Milepoint	11.514
AADT	8700
Site Type	Portable
Class Data	No
K Factor	9
D Factor	53.8
T Factor	7
TRAFFIC REPORTS (provided in  format)	
Bradford County	<a href="#">Annual Average Daily Traffic</a>
	<a href="#">Historical AADT Data</a>
	No Synopsis Report Available

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Site Information	
Feature	1
Site	285025
Description	SR 100 50' E. OF CHURCH ST.
Section	28020000
Milepoint	11.34
AADT	8500
Site Type	Portable
Class Data	No
K Factor	9
D Factor	53.8
T Factor	7
TRAFFIC REPORTS (provided in  format)	
Bradford County	<a href="#">Annual Average Daily Traffic</a>
	<a href="#">Historical AADT Data</a>
	No Synopsis Report Available

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Site Information	
Feature	1
Site	280048
Description	SR 100 75' N. OF CR 100A TO NE
Section	28020000
Milepoint	7.92
AADT	6100
Site Type	Portable
Class Data	No
K Factor	9.5
D Factor	53.8
T Factor	7
TRAFFIC REPORTS (provided in  format)	
Bradford County	<a href="#">Annual Average Daily Traffic</a>
	<a href="#">Historical AADT Data</a>
	No Synopsis Report Available

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Site Information	
Feature	1
Site	280015
Description	SR 100 .1 MI. NW OF CR 100-A
Section	28020000
Milepoint	10.321
AADT	<b>7500</b>
Site Type	Portable
Class Data	Yes
K Factor	9
D Factor	53.8
T Factor	7
TRAFFIC REPORTS (provided in  format)	
Bradford County	<a href="#">Annual Average Daily Traffic</a>
	<a href="#">Annual Vehicle Classification</a>
	<a href="#">Historical AADT Data</a>
	No Synopsis Report Available
	<a href="#">Vehicle Class History</a>

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Site Information	
Feature	1
Site	285024
Description	SR 16 100' N. OF S 229
Section	28030001
Milepoint	8.782
AADT	5700
Site Type	Portable
Class Data	No
K Factor	9
D Factor	53.8
T Factor	4
TRAFFIC REPORTS (provided in  format)	
Bradford County	<a href="#">Annual Average Daily Traffic</a>
	<a href="#">Historical AADT Data</a>
	No Synopsis Report Available

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Site Information	
Feature	1
Site	285008
Description	SR 16 200' W. OF SR 200
Section	28030001
Milepoint	9
AADT	6300
Site Type	Portable
Class Data	No
K Factor	9
D Factor	53.8
T Factor	4
TRAFFIC REPORTS (provided in  format)	
Bradford County	<a href="#">Annual Average Daily Traffic</a>
	<a href="#">Historical AADT Data</a>
	No Synopsis Report Available

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# Roadway Count Summary

Vanasse Hangen Brustlin, Inc.

County Bradford  
Intersection US 301  
Date April 28, 2015

City Starke  
& Walnut St

All Vehicles

VHB Project #: 62580.01

## AM Peak Hour

Time Period	Northbound			Southbound			Eastbound			Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
7:00 AM - 7:15 AM	0	133	23	0	232	0	0	0	0	0	0	1
7:15 AM - 7:30 AM	0	146	25	0	222	0	0	0	0	0	0	1
7:30 AM - 7:45 AM	0	163	29	0	228	0	0	0	0	0	0	1
7:45 AM - 8:00 AM	0	188	29	0	219	0	0	0	0	0	0	1
8:00 AM - 8:15 AM	0	167	31	0	206	0	0	0	0	0	0	0
8:15 AM - 8:30 AM	0	163	23	0	185	0	0	0	0	0	0	0
8:30 AM - 8:45 AM	0	210	32	1	191	0	0	0	0	0	0	0
8:45 AM - 9:00 AM	0	212	32	0	212	0	0	0	0	0	0	0
TOTAL	0	1,382	224	1	1,695	0	0	0	0	0	0	4
Peak Hour 8:00 AM - 9:00 AM	0	752	118	1	794	0	0	0	0	0	0	0

## Mid-day

Time Period	Northbound			Southbound			Eastbound			Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
11:00 AM - 11:15 AM	0	259	57	2	232	0	0	0	0	0	0	1
11:15 AM - 11:30 AM	0	257	53	2	260	0	0	0	0	0	0	2
11:30 AM - 11:45 AM	0	238	65	0	266	0	0	0	0	0	0	1
11:45 AM - 12:00 PM	0	260	54	3	246	0	0	0	0	0	0	0
12:00 PM - 12:15 PM	0	290	62	1	259	0	0	0	0	0	0	2
12:15 PM - 12:30 PM	0	285	68	3	257	0	0	0	0	0	0	0
12:30 PM - 12:45 PM	0	259	59	1	257	0	0	0	0	0	0	0
12:45 PM - 1:00 PM	0	283	66	3	207	0	0	0	0	0	0	2
TOTAL	0	2,131	484	15	1,984	0	0	0	0	0	0	8
Peak Hour 11:45 AM - 12:45 PM	0	1,094	243	8	1,019	0	0	0	0	0	0	2

## PM Peak Hour

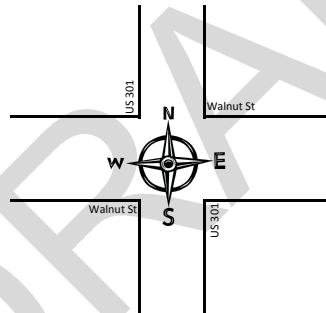
Time Period	Northbound			Southbound			Eastbound			Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2:00 PM - 2:15 PM	0	240	56	0	215	0	0	0	0	0	0	0
2:15 PM - 2:30 PM	0	232	39	0	224	0	0	0	0	0	0	2
2:30 PM - 2:45 PM	0	215	45	0	203	0	0	0	0	0	0	2
2:45 PM - 3:00 PM	0	202	50	0	227	0	0	0	0	0	0	1
3:00 PM - 3:15 PM	0	248	59	1	223	0	0	0	0	0	0	0
3:15 PM - 3:30 PM	0	283	57	0	228	0	0	0	0	0	0	0
3:30 PM - 3:45 PM	0	190	75	0	244	0	0	0	0	0	0	1
3:45 PM - 4:00 PM	0	254	66	1	228	0	0	0	0	0	0	0
4:00 PM - 4:15 PM	0	235	66	0	243	0	0	0	0	0	0	2
4:15 PM - 4:30 PM	0	273	75	0	248	0	0	0	0	0	0	1
4:30 PM - 4:45 PM	0	215	68	0	238	0	0	0	0	0	1	0
4:45 PM - 5:00 PM	0	216	66	0	250	0	0	0	0	0	0	0
5:00 PM - 5:15 PM	0	235	77	0	268	0	0	0	0	0	0	1
5:15 PM - 5:30 PM	0	214	71	0	230	0	0	0	0	0	0	2
5:30 PM - 5:45 PM	0	257	83	2	223	0	0	0	0	0	0	0
5:45 PM - 6:00 PM	0	242	98	3	230	0	0	0	0	0	0	4
TOTAL	0	3,751	1,051	7	3,722	0	0	0	0	0	1	17
Peak Hour 5:00 PM - 6:00 PM	0	948	329	5	951	0	0	0	0	0	0	7

## Pedestrian & Bicycle Summary

Project #: 62580.01 NB/SB: US 301  
Date: 4/28/2015 EB/WB: Walnut St

		Hour								
		7:00	8:00	11:00	12:00	14:00	15:00	16:00	17:00	
		1	2	3	4	5	6	7	8	
Eastbound	Bike	0	0	0	0	0	0	0	0	0
	Ped	0	0	0	0	0	0	0	0	0
Westbound	Bike	0	0	0	0	0	0	1	0	1
	Ped	1	0	0	0	0	0	1	0	2

		Southbound			Northbound		
Hour		Ped	▼	Bike	Ped	▲	Bike
1	7:00	0		0	0		0
2	8:00	0		0	0		0
3	11:00	0		0	0		0
4	12:00	0		0	0		0
5	14:00	0		0	0		0
6	15:00	0		0	0		0
7	16:00	0		0	0		0
8	17:00	0		0	0		0
		0		0	0		0



		Southbound			Northbound			Hour
		Ped	▼	Bike	Ped	▲	Bike	
1	7:00	0		0	0		0	1 7:00
2	8:00	0		0	0		0	2 8:00
3	11:00	0		0	0		0	3 11:00
4	12:00	0		0	0		0	4 12:00
5	14:00	0		0	0		0	5 14:00
6	15:00	0		0	0		0	6 15:00
7	16:00	0		0	0		0	7 16:00
8	17:00	0		0	0		0	8 17:00
		0		0	0		0	

Eastbound	Bike	0	0	0	0	0	0	0	0
	Ped	0	0	0	0	0	0	0	0
Westbound	Bike	1	0	0	0	0	0	0	1
	Ped	1	0	0	0	0	0	0	1

7:00	8:00	11:00	12:00	14:00	15:00	16:00	17:00
1	2	3	4	5	6	7	8

Hour



# Roadway Count Summary

Vanasse Hangen Brustlin, Inc.

County      Bradford  
Intersection      US 301  
Date      April 28, 2015

City      Starke  
&      SR 100

All Vehicles

VHB Project #:      62580.01

## AM Peak Hour

Time Period	Northbound			Southbound			Eastbound			Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
7:00 AM - 7:15 AM	10	95	1	11	154	9	22	18	24	36	47	14
7:15 AM - 7:30 AM	10	136	1	18	165	15	23	34	18	29	44	17
7:30 AM - 7:45 AM	8	128	1	19	164	8	19	32	17	26	44	17
7:45 AM - 8:00 AM	32	144	3	26	168	7	34	35	12	29	35	10
8:00 AM - 8:15 AM	12	127	0	11	157	19	28	32	12	20	44	16
8:15 AM - 8:30 AM	15	151	3	22	149	8	23	21	12	28	30	15
8:30 AM - 8:45 AM	15	172	3	16	137	11	29	20	17	26	43	10
8:45 AM - 9:00 AM	15	184	3	14	192	26	17	29	13	24	38	19
TOTAL	117	1,137	15	137	1,286	103	195	221	125	218	325	118
Peak Hour 8:00 AM - 9:00 AM	57	634	9	63	635	64	97	102	54	98	155	60

## Mid-day

Time Period	Northbound			Southbound			Eastbound			Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
11:00 AM - 11:15 AM	11	233	3	20	187	13	20	25	18	35	31	14
11:15 AM - 11:30 AM	28	180	3	14	157	16	35	38	11	41	45	7
11:30 AM - 11:45 AM	14	227	1	28	216	19	25	32	27	48	35	21
11:45 AM - 12:00 PM	12	196	3	23	177	19	27	30	13	47	28	19
12:00 PM - 12:15 PM	16	236	6	20	200	16	25	34	20	37	41	15
12:15 PM - 12:30 PM	14	246	3	10	200	14	21	35	15	50	32	11
12:30 PM - 12:45 PM	28	226	5	16	180	11	17	28	18	48	33	28
12:45 PM - 1:00 PM	25	241	7	15	158	17	29	32	10	44	36	22
TOTAL	148	1,785	31	146	1,475	125	199	254	132	350	281	137
Peak Hour 11:30 AM - 12:30 PM	56	905	13	81	793	68	98	131	75	182	136	66

## PM Peak Hour

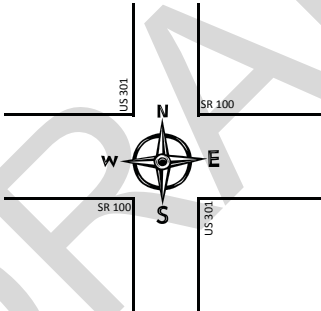
Time Period	Northbound			Southbound			Eastbound			Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2:00 PM - 2:15 PM	27	191	1	14	138	14	41	43	15	33	42	20
2:15 PM - 2:30 PM	18	204	2	23	148	18	28	40	15	36	55	15
2:30 PM - 2:45 PM	14	176	1	26	149	18	41	26	21	36	51	18
2:45 PM - 3:00 PM	20	180	1	17	140	19	33	50	14	44	55	16
3:00 PM - 3:15 PM	20	199	1	23	176	23	19	46	18	36	46	14
3:15 PM - 3:30 PM	20	210	2	25	161	19	38	49	13	35	55	8
3:30 PM - 3:45 PM	26	179	2	22	165	28	30	43	16	30	49	8
3:45 PM - 4:00 PM	27	187	3	18	163	17	33	39	19	33	46	11
4:00 PM - 4:15 PM	20	184	3	22	164	31	32	43	17	44	59	10
4:15 PM - 4:30 PM	22	213	1	20	160	21	35	39	14	44	52	18
4:30 PM - 4:45 PM	21	190	0	33	162	26	36	39	14	44	46	25
4:45 PM - 5:00 PM	18	166	1	27	180	22	43	54	16	31	53	17
5:00 PM - 5:15 PM	21	153	3	30	217	24	39	41	12	36	51	15
5:15 PM - 5:30 PM	31	157	3	34	174	27	35	51	22	39	57	16
5:30 PM - 5:45 PM	34	172	2	25	164	30	33	52	19	33	47	10
5:45 PM - 6:00 PM	24	161	2	32	181	21	33	44	21	36	42	12
TOTAL	363	2,922	28	391	2,642	358	549	699	266	590	806	233
Peak Hour 4:30 PM - 5:30 PM	91	666	7	124	733	99	153	185	64	150	207	73

## Pedestrian & Bicycle Summary

Project #: 62580.01 NB/SB: US 301  
Date: 4/28/2015 EB/WB: SR 100

		Hour								
		7:00	8:00	11:00	12:00	14:00	15:00	16:00	17:00	
		1	2	3	4	5	6	7	8	
Eastbound	Bike	0	0	0	0	0	0	0	0	0
	Ped	0	0	1	0	0	0	0	0	1
Westbound	Bike	0	0	0	0	0	0	1	0	1
	Ped	0	0	0	1	0	0	1	0	2

		Southbound		Northbound	
Hour		Ped	Bike	Ped	Bike
1	7:00	0	0	0	0
2	8:00	1	0	0	0
3	11:00	0	0	0	0
4	12:00	0	0	0	0
5	14:00	0	0	1	0
6	15:00	0	0	0	0
7	16:00	1	0	2	0
8	17:00	0	0	0	0
		2	0	3	0



		Southbound		Northbound		Hour	
		Ped	Bike	Ped	Bike		
1	7:00	0	0	0	0		
2	8:00	0	0	0	0		
3	11:00	0	0	0	0		
4	12:00	0	0	2	0		
5	14:00	0	1	0	0		
6	15:00	0	0	0	0		
7	16:00	1	0	1	0		
8	17:00	0	0	0	0		
		1	1	3	0		

Eastbound	Bike	1	0	0	0	0	0	0	0	1
	Ped	0	0	0	1	1	0	0	0	2
Westbound	Bike	0	0	0	0	0	0	0	0	0
	Ped	0	0	0	0	0	1	0	0	1

7:00	8:00	11:00	12:00	14:00	15:00	16:00	17:00
1	2	3	4	5	6	7	8

Hour



# Roadway Count Summary

Vanasse Hangen Brustlin, Inc.

County Bradford  
Intersection US 301  
Date April 28, 2015

City Starke  
& Call St

All Vehicles

VHB Project #: 62580.01

## AM Peak Hour

Time Period	Northbound			Southbound			Eastbound			Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
7:00 AM - 7:15 AM	0	141	3	12	189	5	0	0	0	0	0	25
7:15 AM - 7:30 AM	0	168	12	14	200	5	0	0	2	0	0	25
7:30 AM - 7:45 AM	0	179	6	13	208	1	0	1	2	0	0	31
7:45 AM - 8:00 AM	0	180	12	20	181	7	0	0	2	0	0	24
8:00 AM - 8:15 AM	0	194	8	18	193	6	0	0	3	0	0	23
8:15 AM - 8:30 AM	1	169	8	13	169	1	0	0	2	0	0	17
8:30 AM - 8:45 AM	0	202	7	13	164	1	0	0	2	0	1	17
8:45 AM - 9:00 AM	0	182	5	16	194	4	0	0	2	0	0	34
TOTAL	1	1,415	61	119	1,498	30	0	1	15	0	1	196
Peak Hour 7:15 AM - 8:15 AM	0	721	38	65	782	19	0	1	9	0	0	103

## Mid-day

Time Period	Northbound			Southbound			Eastbound			Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
11:00 AM - 11:15 AM	1	230	8	15	199	2	0	1	3	0	0	15
11:15 AM - 11:30 AM	0	241	13	10	225	3	0	0	0	1	1	11
11:30 AM - 11:45 AM	0	238	11	12	258	2	0	0	4	0	1	14
11:45 AM - 12:00 PM	0	254	9	11	248	4	0	0	3	0	1	18
12:00 PM - 12:15 PM	0	243	14	18	218	4	1	0	3	0	0	19
12:15 PM - 12:30 PM	0	281	8	13	223	7	0	0	4	1	0	16
12:30 PM - 12:45 PM	1	259	9	9	197	6	0	0	8	1	0	18
12:45 PM - 1:00 PM	0	269	9	16	170	1	1	0	5	0	0	21
TOTAL	2	2,015	81	104	1,738	29	2	1	30	3	3	132
Peak Hour 11:30 AM - 12:30 PM	0	1,016	42	54	947	17	1	0	14	1	2	67

## PM Peak Hour

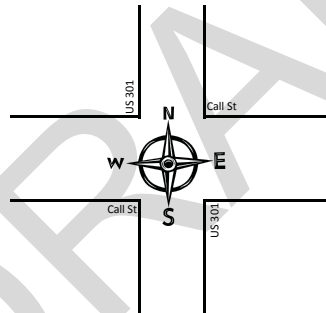
Time Period	Northbound			Southbound			Eastbound			Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2:00 PM - 2:15 PM	0	249	12	10	198	3	0	0	1	0	0	18
2:15 PM - 2:30 PM	0	237	9	14	205	6	0	0	2	0	0	28
2:30 PM - 2:45 PM	0	221	10	12	176	4	0	0	5	0	0	12
2:45 PM - 3:00 PM	0	219	12	12	202	9	1	0	3	0	1	18
3:00 PM - 3:15 PM	0	219	7	14	210	2	0	0	4	0	0	19
3:15 PM - 3:30 PM	0	260	14	31	204	4	0	1	4	0	0	28
3:30 PM - 3:45 PM	0	187	15	26	198	3	0	0	3	1	0	16
3:45 PM - 4:00 PM	0	222	21	22	202	2	0	1	5	0	0	14
4:00 PM - 4:15 PM	0	221	11	23	222	8	0	0	3	0	0	17
4:15 PM - 4:30 PM	1	255	11	18	207	5	0	1	3	1	1	13
4:30 PM - 4:45 PM	0	238	18	24	209	5	0	0	2	1	0	17
4:45 PM - 5:00 PM	1	217	17	13	233	6	0	0	3	0	0	18
5:00 PM - 5:15 PM	0	199	16	23	267	10	0	0	5	0	0	22
5:15 PM - 5:30 PM	0	210	14	18	235	6	0	0	4	0	0	22
5:30 PM - 5:45 PM	0	232	19	15	215	4	0	0	3	0	0	21
5:45 PM - 6:00 PM	0	224	10	12	223	4	0	0	8	0	0	14
TOTAL	2	3,610	216	287	3,406	81	1	3	58	3	2	297
Peak Hour 4:15 PM - 5:15 PM	2	909	62	78	916	26	0	1	13	2	1	70

## Pedestrian & Bicycle Summary

Project #: 62580.01 NB/SB: US 301  
Date: 4/28/2015 EB/WB: Call St

		Hour								
		7:00	8:00	11:00	12:00	14:00	15:00	16:00	17:00	
		1	2	3	4	5	6	7	8	
Eastbound	Bike	0	0	0	0	0	0	0	1	1
	Ped	3	0	1	3	0	1	2	2	12
Westbound	Bike	1	0	0	0	0	1	1	0	3
	Ped	0	0	0	3	0	0	0	1	4

		Southbound		Northbound	
Hour		Ped	Bike	Ped	Bike
1	7:00	0	0	1	0
2	8:00	0	0	1	0
3	11:00	1	0	1	0
4	12:00	0	0	0	0
5	14:00	7	0	0	0
6	15:00	0	0	0	0
7	16:00	0	0	1	0
8	17:00	0	0	2	0
		8	0	6	0



		Southbound		Northbound		Hour	
		Ped	Bike	Ped	Bike		
1	7:00	0	0	0	0		
2	8:00	0	0	0	0		
3	11:00	0	1	0	0		
4	12:00	0	0	0	0		
5	14:00	0	0	0	0		
6	15:00	0	0	2	0		
7	16:00	0	0	0	0		
8	17:00	2	0	1	0		
		2	1	3	0		

Eastbound	Bike	1	0	0	0	0	0	0	1
	Ped	0	2	0	0	0	1	3	9
Westbound	Bike	2	0	0	0	0	0	0	2
	Ped	0	0	0	1	0	1	0	4

7:00	8:00	11:00	12:00	14:00	15:00	16:00	17:00
1	2	3	4	5	6	7	8

Hour



# Roadway Count Summary

Vanasse Hangen Brustlin, Inc.

County      Bradford  
Intersection      Walnut St  
Date      April 28, 2015

City      Starke  
&      SR 100

All Vehicles

VHB Project #:      62580.01

## AM Peak Hour

Time Period	Northbound			Southbound			Eastbound			Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
7:00 AM - 7:15 AM	3	5	18	0	6	21	1	26	0	12	70	0
7:15 AM - 7:30 AM	0	9	23	0	6	8	0	54	0	11	81	0
7:30 AM - 7:45 AM	1	17	10	0	9	9	1	57	0	14	74	1
7:45 AM - 8:00 AM	1	9	21	0	2	3	3	54	5	13	73	6
8:00 AM - 8:15 AM	1	11	18	0	5	11	1	39	0	11	72	4
8:15 AM - 8:30 AM	2	8	15	0	4	9	0	45	0	6	60	3
8:30 AM - 8:45 AM	3	10	21	0	3	8	3	33	0	13	71	3
8:45 AM - 9:00 AM	3	11	13	2	2	7	0	42	0	10	78	6
<b>TOTAL</b>	<b>14</b>	<b>80</b>	<b>139</b>	<b>2</b>	<b>37</b>	<b>76</b>	<b>9</b>	<b>350</b>	<b>5</b>	<b>90</b>	<b>579</b>	<b>23</b>
<b>Peak Hour</b> <b>7:15 AM - 8:15 AM</b>	<b>3</b>	<b>46</b>	<b>72</b>	<b>0</b>	<b>22</b>	<b>31</b>	<b>5</b>	<b>204</b>	<b>5</b>	<b>49</b>	<b>300</b>	<b>11</b>

## Mid-day

Time Period	Northbound			Southbound			Eastbound			Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
11:00 AM - 11:15 AM	3	20	30	0	4	8	1	42	0	16	69	11
11:15 AM - 11:30 AM	8	14	30	0	1	13	4	47	0	12	74	1
11:30 AM - 11:45 AM	13	22	29	2	6	16	2	58	3	6	81	4
11:45 AM - 12:00 PM	9	16	29	2	5	12	11	46	2	4	61	3
12:00 PM - 12:15 PM	11	26	35	0	7	18	8	53	1	13	79	2
12:15 PM - 12:30 PM	6	33	33	0	5	16	4	49	3	14	65	5
12:30 PM - 12:45 PM	5	22	33	0	1	17	5	46	1	9	81	2
12:45 PM - 1:00 PM	6	30	28	0	2	16	8	50	3	6	79	0
<b>TOTAL</b>	<b>61</b>	<b>183</b>	<b>247</b>	<b>4</b>	<b>31</b>	<b>116</b>	<b>43</b>	<b>391</b>	<b>13</b>	<b>80</b>	<b>589</b>	<b>28</b>
<b>Peak Hour</b> <b>12:00 PM - 1:00 PM</b>	<b>28</b>	<b>111</b>	<b>129</b>	<b>0</b>	<b>15</b>	<b>67</b>	<b>25</b>	<b>198</b>	<b>8</b>	<b>42</b>	<b>304</b>	<b>9</b>

## PM Peak Hour

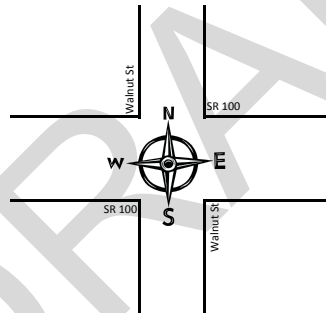
Time Period	Northbound			Southbound			Eastbound			Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2:00 PM - 2:15 PM	4	25	32	0	7	17	7	50	0	7	68	7
2:15 PM - 2:30 PM	4	10	32	2	3	16	2	69	2	6	92	3
2:30 PM - 2:45 PM	2	19	32	1	6	14	7	48	0	10	78	3
2:45 PM - 3:00 PM	4	16	29	0	3	9	1	50	2	10	91	3
3:00 PM - 3:15 PM	5	22	29	0	2	10	2	69	2	11	86	4
3:15 PM - 3:30 PM	13	22	24	0	2	7	2	70	2	5	72	5
3:30 PM - 3:45 PM	6	27	34	0	5	13	2	56	3	13	74	4
3:45 PM - 4:00 PM	6	30	27	0	2	10	1	61	0	10	79	3
4:00 PM - 4:15 PM	7	19	36	0	6	8	6	58	0	12	100	0
4:15 PM - 4:30 PM	0	30	33	1	5	16	5	53	1	5	98	3
4:30 PM - 4:45 PM	6	27	32	0	2	20	5	65	0	6	85	1
4:45 PM - 5:00 PM	4	19	30	2	8	12	4	74	0	9	74	1
5:00 PM - 5:15 PM	2	26	30	1	6	16	4	70	0	7	95	4
5:15 PM - 5:30 PM	5	23	49	3	5	19	4	80	2	14	90	6
5:30 PM - 5:45 PM	1	24	37	2	7	12	2	75	2	12	74	2
5:45 PM - 6:00 PM	0	43	44	1	2	8	6	67	1	12	72	1
<b>TOTAL</b>	<b>69</b>	<b>382</b>	<b>530</b>	<b>13</b>	<b>71</b>	<b>207</b>	<b>60</b>	<b>1,015</b>	<b>17</b>	<b>149</b>	<b>1,328</b>	<b>50</b>
<b>Peak Hour</b> <b>5:00 PM - 6:00 PM</b>	<b>8</b>	<b>116</b>	<b>160</b>	<b>7</b>	<b>20</b>	<b>55</b>	<b>16</b>	<b>292</b>	<b>5</b>	<b>45</b>	<b>331</b>	<b>13</b>

## Pedestrian & Bicycle Summary

Project #: 62580.01 NB/SB: Walnut St  
Date: 4/28/2015 EB/WB: SR 100

		Hour								
		7:00	8:00	11:00	12:00	14:00	15:00	16:00	17:00	
		1	2	3	4	5	6	7	8	
Eastbound	Bike	0	0	0	0	0	0	0	0	0
	Ped	0	0	0	0	0	1	0	0	1
Westbound	Bike	0	0	1	0	0	0	0	0	1
	Ped	1	0	0	0	1	1	2	3	8

		Southbound			Northbound		
Hour		Ped	▼	Bike	Ped	▲	Bike
1	7:00	0		0	0		0
2	8:00	1		0	1		0
3	11:00	0		0	0		0
4	12:00	0		0	2		0
5	14:00	2		0	0		0
6	15:00	0		2	0		0
7	16:00	2		0	0		0
8	17:00	0		0	0		0
		5		2	3		0



		Southbound			Northbound			Hour
		Ped	▼	Bike	Ped	▲	Bike	
1	7:00	0		0	0		0	1
2	8:00	1		0	0		0	2
3	11:00	0		0	1		0	3
4	12:00	0		0	2		0	4
5	14:00	1		0	0		0	5
6	15:00	0		0	1		0	6
7	16:00	1		0	0		1	7
8	17:00	1		0	0		0	8
		4		0	4		1	

Eastbound	Bike	0	0	1	0	0	0	0	1
	Ped	0	1	0	1	0	2	0	4
Westbound	Bike	0	1	0	0	0	0	0	1
	Ped	1	0	1	1	0	1	0	4

7:00	8:00	11:00	12:00	14:00	15:00	16:00	17:00
1	2	3	4	5	6	7	8

Hour



# Roadway Count Summary

Vanasse Hangen Brustlin, Inc.

County      Bradford  
Intersection      Church St  
Date      April 28, 2015

City      Starke  
&      SR 100

All Vehicles

VHB Project #:      62580.01

## AM Peak Hour

Time Period	Northbound			Southbound			Eastbound			Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
7:00 AM - 7:15 AM	1	0	0	2	0	10	3	38	1	0	79	1
7:15 AM - 7:30 AM	0	0	0	4	0	5	8	66	0	0	84	5
7:30 AM - 7:45 AM	0	1	1	6	1	6	4	66	0	1	81	12
7:45 AM - 8:00 AM	0	3	0	2	1	10	7	62	0	0	87	2
8:00 AM - 8:15 AM	0	0	0	3	0	7	6	53	0	0	76	3
8:15 AM - 8:30 AM	0	1	0	2	1	4	9	46	1	0	65	2
8:30 AM - 8:45 AM	0	0	0	3	0	4	7	46	0	0	71	3
8:45 AM - 9:00 AM	0	3	1	4	1	7	5	56	0	1	85	2
TOTAL	1	8	2	26	4	53	49	433	2	2	628	30
Peak Hour 7:15 AM - 8:15 AM	0	4	1	15	2	28	25	247	0	1	328	22

## Mid-day

Time Period	Northbound			Southbound			Eastbound			Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
11:00 AM - 11:15 AM	1	1	0	3	1	9	9	62	1	0	71	0
11:15 AM - 11:30 AM	2	0	0	4	0	11	5	66	0	0	56	1
11:30 AM - 11:45 AM	0	1	0	6	1	9	12	80	2	0	67	1
11:45 AM - 12:00 PM	1	0	0	6	1	9	10	64	2	0	49	2
12:00 PM - 12:15 PM	0	2	0	3	0	9	13	75	0	0	72	2
12:15 PM - 12:30 PM	0	1	0	0	0	8	16	63	0	0	63	4
12:30 PM - 12:45 PM	0	1	1	3	0	7	13	69	0	0	78	1
12:45 PM - 1:00 PM	0	0	1	2	1	5	8	74	1	0	73	3
TOTAL	4	6	2	27	4	67	86	553	6	0	529	14
Peak Hour 12:00 PM - 1:00 PM	0	4	2	8	1	29	50	281	1	0	286	10

## PM Peak Hour

Time Period	Northbound			Southbound			Eastbound			Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2:00 PM - 2:15 PM	0	2	0	7	0	8	7	71	0	0	76	4
2:15 PM - 2:30 PM	0	0	0	1	1	6	9	100	1	0	87	12
2:30 PM - 2:45 PM	0	0	1	0	2	8	8	73	0	0	68	3
2:45 PM - 3:00 PM	0	0	0	3	1	9	25	58	0	1	76	0
3:00 PM - 3:15 PM	1	1	0	3	1	12	13	82	2	0	76	6
3:15 PM - 3:30 PM	0	2	0	5	0	7	10	90	1	0	69	2
3:30 PM - 3:45 PM	1	0	0	6	3	10	9	74	1	0	65	3
3:45 PM - 4:00 PM	1	1	0	4	1	8	11	77	0	0	65	0
4:00 PM - 4:15 PM	2	1	0	6	2	9	24	75	2	0	95	4
4:15 PM - 4:30 PM	0	1	0	1	0	5	17	85	0	0	85	4
4:30 PM - 4:45 PM	1	2	0	5	1	4	14	81	1	0	68	3
4:45 PM - 5:00 PM	1	0	0	4	1	9	15	91	0	1	70	2
5:00 PM - 5:15 PM	1	2	0	6	0	13	14	94	0	1	71	8
5:15 PM - 5:30 PM	3	0	0	7	1	11	15	118	1	0	90	2
5:30 PM - 5:45 PM	1	0	0	4	0	8	17	99	0	1	67	2
5:45 PM - 6:00 PM	0	2	0	4	0	4	20	89	0	5	74	1
TOTAL	12	14	1	66	14	131	228	1,357	9	9	1,202	56
Peak Hour 5:00 PM - 6:00 PM	5	4	0	21	1	36	66	400	1	7	302	13

Project #: 62580.01      NB/SB: Church St  
Date: 4/28/2015      EB/WB: SR 100

Hour

7:00	8:00	11:00	12:00	14:00	15:00	16:00	17:00
1	2	3	4	5	6	7	8

**Eastbound**

	Bike	0	0	0	0	0	0	0
Ped	0	0	0	0	0	0	0	0

**Westbound**

	Bike	0	0	0	0	0	0	0
Ped	0	0	0	0	0	0	0	0

**Southbound**

Hour	Ped ▼ Bike
1 7:00	1 0
2 8:00	1 0
3 11:00	0 0
4 12:00	0 0
5 14:00	0 0
6 15:00	0 0
7 16:00	0 4
8 17:00	1 0

**Northbound**

Hour	Ped ▲ Bike
1 7:00	0 0
2 8:00	0 0
3 11:00	0 0
4 12:00	2 0
5 14:00	0 0
6 15:00	0 2
7 16:00	0 0
8 17:00	0 0

**Southbound**

Hour	Ped ▼ Bike
1 7:00	0 0
2 8:00	0 0
3 11:00	0 0
4 12:00	0 0
5 14:00	0 0
6 15:00	0 0
7 16:00	0 1
8 17:00	0 0

**Northbound**

Hour	Ped ▲ Bike
1 7:00	1 0
2 8:00	0 0
3 11:00	0 1
4 12:00	0 0
5 14:00	0 1
6 15:00	1 0
7 16:00	0 1
8 17:00	0 0

**Eastbound**

	Bike	0	0	0	0	0	0	0	1
Ped	0	0	0	0	0	0	0	0	0

**Westbound**

	Bike	0	0	0	0	0	0	0	0
Ped	1	0	0	0	0	0	0	0	0

Hour

7:00	8:00	11:00	12:00	14:00	15:00	16:00	17:00
1	2	3	4	5	6	7	8

The map shows the intersection of Church St and SR 100. Church St runs north-south, and SR 100 runs east-west. A compass rose indicates North (N), South (S), East (E), and West (W). The intersection is marked with a central circle. The map is overlaid with a large, semi-transparent 'DRAFT' watermark.



# Roadway Count Summary

Vanasse Hangen Brustlin, Inc.

County      Bradford  
Intersection      Water St  
Date      April 28, 2015

City      Starke  
&      SR 100

All Vehicles

VHB Project #:      62580.01

## AM Peak Hour

Time Period	Northbound			Southbound			Eastbound			Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
7:00 AM - 7:15 AM	0	0	0	9	0	24	9	34	0	0	60	23
7:15 AM - 7:30 AM	0	0	0	7	0	16	14	57	0	0	67	38
7:30 AM - 7:45 AM	0	0	0	10	0	18	10	62	0	0	78	50
7:45 AM - 8:00 AM	0	0	0	7	0	27	9	54	0	0	66	37
8:00 AM - 8:15 AM	0	0	0	11	0	17	8	49	0	0	58	21
8:15 AM - 8:30 AM	0	0	0	13	0	13	8	41	0	0	54	18
8:30 AM - 8:45 AM	0	0	0	8	0	24	10	40	0	1	54	20
8:45 AM - 9:00 AM	0	1	1	12	0	16	13	48	0	1	63	17
TOTAL	0	1	1	77	0	155	81	385	0	2	500	224
Peak Hour 7:15 AM - 8:15 AM	0	0	0	35	0	78	41	222	0	0	269	146

## Mid-day

Time Period	Northbound			Southbound			Eastbound			Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
11:00 AM - 11:15 AM	1	0	1	10	0	18	11	50	0	0	45	15
11:15 AM - 11:30 AM	0	0	0	3	0	22	13	59	0	0	39	16
11:30 AM - 11:45 AM	0	0	0	7	0	18	17	74	0	1	45	12
11:45 AM - 12:00 PM	0	0	1	1	0	12	17	49	0	1	43	9
12:00 PM - 12:15 PM	0	1	1	4	2	15	18	60	0	1	56	22
12:15 PM - 12:30 PM	0	1	3	7	1	12	9	52	3	0	47	14
12:30 PM - 12:45 PM	0	2	2	11	1	18	25	46	2	0	60	14
12:45 PM - 1:00 PM	0	1	3	13	1	17	11	64	2	0	59	17
TOTAL	1	5	11	56	5	132	121	454	7	3	394	119
Peak Hour 12:00 PM - 1:00 PM	0	5	9	35	5	62	63	222	7	1	222	67

## PM Peak Hour

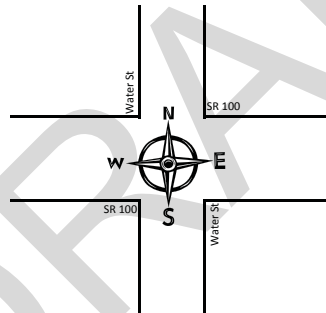
Time Period	Northbound			Southbound			Eastbound			Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2:00 PM - 2:15 PM	0	0	0	10	0	21	15	50	1	0	63	22
2:15 PM - 2:30 PM	0	0	0	11	1	10	16	86	0	0	87	21
2:30 PM - 2:45 PM	1	0	2	14	3	14	14	54	2	0	53	11
2:45 PM - 3:00 PM	0	1	1	11	0	19	18	43	0	0	60	26
3:00 PM - 3:15 PM	0	2	0	13	0	18	21	67	2	1	63	20
3:15 PM - 3:30 PM	0	0	2	13	0	19	15	79	0	0	53	22
3:30 PM - 3:45 PM	0	0	0	19	0	19	20	62	0	0	47	26
3:45 PM - 4:00 PM	0	0	0	11	0	25	17	61	0	1	49	19
4:00 PM - 4:15 PM	2	4	0	11	1	20	22	56	1	1	70	16
4:15 PM - 4:30 PM	1	0	2	17	3	21	21	58	3	1	66	24
4:30 PM - 4:45 PM	1	1	3	15	0	10	13	69	2	0	64	18
4:45 PM - 5:00 PM	0	1	1	12	0	15	16	81	1	0	51	19
5:00 PM - 5:15 PM	0	1	3	15	1	16	19	79	5	0	67	23
5:15 PM - 5:30 PM	0	0	2	14	0	20	31	98	0	0	68	15
5:30 PM - 5:45 PM	1	1	1	18	0	21	21	88	1	2	46	23
5:45 PM - 6:00 PM	0	3	0	15	1	22	27	74	0	1	47	16
TOTAL	6	14	17	219	10	290	306	1,105	18	7	954	321
Peak Hour 5:00 PM - 6:00 PM	1	5	6	62	2	79	98	339	6	3	228	77

## Pedestrian & Bicycle Summary

Project #: 62580.01 NB/SB: Water St  
 Date: 4/28/2015 EB/WB: SR 100

		Hour								
		7:00	8:00	11:00	12:00	14:00	15:00	16:00	17:00	
		1	2	3	4	5	6	7	8	
Eastbound	Bike	0	0	0	0	0	0	0	0	0
	Ped	0	0	0	0	0	0	0	0	0
Westbound	Bike	0	0	0	0	0	0	0	0	0
	Ped	0	0	0	0	1	0	0	0	1

		Southbound			Northbound		
Hour		Ped	▼	Bike	Ped	▲	Bike
1	7:00	0		0	0		0
2	8:00	0		0	2		0
3	11:00	0		0	0		0
4	12:00	0		0	2		0
5	14:00	0		0	0		0
6	15:00	0		0	0		0
7	16:00	0		2	0		0
8	17:00	0		0	0		0
		0		2	4		0



		Southbound			Northbound			Hour
		Ped	▼	Bike	Ped	▲	Bike	
1	7:00	0		0	2		0	1
2	8:00	0		0	1		0	2
3	11:00	0		0	0		0	3
4	12:00	0		0	0		0	4
5	14:00	0		0	0		0	5
6	15:00	0		0	0		0	6
7	16:00	0		0	3		1	7
8	17:00	0		0	0		0	8
		0		0	6		1	

Eastbound	Bike	0	0	0	0	0	0	0	0	0
	Ped	0	0	0	0	0	0	0	0	0
Westbound	Bike	0	0	0	0	0	0	0	0	0
	Ped	0	0	0	0	0	0	0	0	0

7:00	8:00	11:00	12:00	14:00	15:00	16:00	17:00
1	2	3	4	5	6	7	8

Hour



# Roadway Count Summary

Vanasse Hangen Brustlin, Inc.

County      Bradford  
Intersection      Laura St  
Date      April 28, 2015

City      Starke  
&      SR 100

All Vehicles

VHB Project #:      62580.01

## AM Peak Hour

Time Period	Northbound			Southbound			Eastbound			Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
7:00 AM - 7:15 AM	0	69	0	10	32	2	3	1	0	0	0	13
7:15 AM - 7:30 AM	2	97	1	20	40	0	3	0	0	1	0	2
7:30 AM - 7:45 AM	2	126	1	8	70	2	3	0	0	1	2	5
7:45 AM - 8:00 AM	7	96	0	9	47	5	2	0	0	0	0	4
8:00 AM - 8:15 AM	1	80	0	9	48	4	1	1	1	0	1	2
8:15 AM - 8:30 AM	0	80	0	2	48	4	1	0	2	0	1	1
8:30 AM - 8:45 AM	0	72	1	3	40	6	2	0	2	0	0	3
8:45 AM - 9:00 AM	1	81	0	1	58	5	0	0	0	3	1	3
TOTAL	13	701	3	62	383	28	15	2	5	5	5	33
Peak Hour 7:15 AM - 8:15 AM	12	399	2	46	205	11	9	1	1	2	3	13

## Mid-day

Time Period	Northbound			Southbound			Eastbound			Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
11:00 AM - 11:15 AM	2	51	0	5	56	1	3	0	1	0	1	5
11:15 AM - 11:30 AM	2	50	0	13	54	0	2	0	1	0	1	4
11:30 AM - 11:45 AM	3	55	1	2	73	4	2	2	1	1	0	4
11:45 AM - 12:00 PM	0	42	1	3	58	0	4	0	3	0	0	5
12:00 PM - 12:15 PM	1	67	0	5	62	0	3	1	3	0	0	10
12:15 PM - 12:30 PM	2	62	0	6	51	8	1	0	1	0	1	4
12:30 PM - 12:45 PM	1	59	0	5	53	3	6	0	1	1	0	5
12:45 PM - 1:00 PM	3	65	2	12	70	2	4	0	2	0	0	7
TOTAL	14	451	4	51	477	18	25	3	13	2	3	44
Peak Hour 12:00 PM - 1:00 PM	7	253	2	28	236	13	14	1	7	1	1	26

## PM Peak Hour

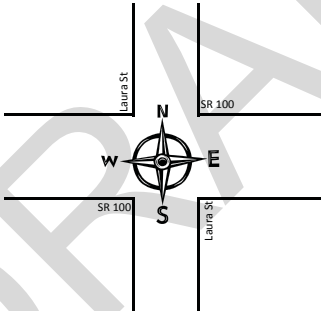
Time Period	Northbound			Southbound			Eastbound			Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2:00 PM - 2:15 PM	1	73	3	3	68	1	4	1	3	1	2	8
2:15 PM - 2:30 PM	2	97	2	7	91	1	2	2	5	2	1	5
2:30 PM - 2:45 PM	4	64	0	4	69	3	3	1	1	0	1	2
2:45 PM - 3:00 PM	1	76	0	6	50	4	5	2	1	1	1	10
3:00 PM - 3:15 PM	1	77	1	2	76	4	3	1	1	3	1	5
3:15 PM - 3:30 PM	0	68	0	12	82	1	4	3	1	4	2	1
3:30 PM - 3:45 PM	0	61	0	7	72	0	3	0	4	1	0	9
3:45 PM - 4:00 PM	1	68	0	5	71	1	3	1	3	0	1	4
4:00 PM - 4:15 PM	1	75	3	3	66	1	2	1	1	2	1	10
4:15 PM - 4:30 PM	2	82	1	4	79	1	1	0	4	1	1	10
4:30 PM - 4:45 PM	1	71	1	8	79	5	5	0	4	0	2	3
4:45 PM - 5:00 PM	0	69	0	3	95	3	0	1	2	0	1	1
5:00 PM - 5:15 PM	3	83	0	7	88	1	2	1	1	0	0	4
5:15 PM - 5:30 PM	1	74	1	5	108	1	3	1	3	0	1	6
5:30 PM - 5:45 PM	1	65	1	7	103	1	2	0	3	0	0	8
5:45 PM - 6:00 PM	0	55	1	2	88	0	3	4	3	1	0	2
TOTAL	19	1,158	14	85	1,285	28	45	19	40	16	15	88
Peak Hour 4:45 PM - 5:45 PM	5	291	2	22	394	6	7	3	9	0	2	19

## Pedestrian & Bicycle Summary

Project #: 62580.01 NB/SB: Laura St  
 Date: 4/28/2015 EB/WB: SR 100

		Hour									
		7:00	8:00	11:00	12:00	14:00	15:00	16:00	17:00		
		1	2	3	4	5	6	7	8		
Eastbound	Bike	0	0	0	0	0	0	1	0	1	
	Ped	2	1	0	0	2	1	0	0	6	
Westbound	Bike	0	0	0	0	0	0	0	0	0	
	Ped	0	0	0	0	0	0	0	0	0	

		Southbound			Northbound		
Hour		Ped	▼	Bike	Ped	▲	Bike
1	7:00	0		0	0		0
2	8:00	0		0	0		0
3	11:00	0		0	0		0
4	12:00	0		0	0		0
5	14:00	0		0	0		0
6	15:00	0		0	0		0
7	16:00	0		0	0		0
8	17:00	0		0	0		0
		0		0	0		0



		Southbound			Northbound				
Hour		Ped	▼	Bike	Ped	▲	Bike		
1	7:00	0		0	0		0	1	7:00
2	8:00	0		0	0		0	2	8:00
3	11:00	0		0	0		0	3	11:00
4	12:00	0		0	0		0	4	12:00
5	14:00	0		0	0		0	5	14:00
6	15:00	0		0	0		0	6	15:00
7	16:00	0		0	0		0	7	16:00
8	17:00	0		0	0		0	8	17:00
		0		0	0		0		

Eastbound	Bike	0	0	0	0	0	0	1	1	2	
	Ped	0	2	0	2	2	1	0	4	11	
Westbound	Bike	0	0	0	0	0	0	0	0	0	
	Ped	0	0	0	0	0	0	0	0	0	

7:00	8:00	11:00	12:00	14:00	15:00	16:00	17:00
1	2	3	4	5	6	7	8

Hour



# Roadway Count Summary

Vanasse Hangen Brustlin, Inc.

County      Bradford  
Intersection      Water St  
Date      April 28, 2015

City      Starke  
&      Call St

All Vehicles

VHB Project #:      62580.01

## AM Peak Hour

Time Period	Northbound			Southbound			Eastbound			Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
7:00 AM - 7:15 AM	5	19	8	1	6	1	0	19	0	27	50	3
7:15 AM - 7:30 AM	6	26	18	4	5	1	0	31	3	16	41	2
7:30 AM - 7:45 AM	11	29	20	1	8	2	0	33	0	21	39	3
7:45 AM - 8:00 AM	8	31	10	3	6	0	1	32	1	25	38	0
8:00 AM - 8:15 AM	5	15	14	4	12	2	1	38	2	14	21	3
8:15 AM - 8:30 AM	1	15	11	1	12	2	1	28	3	11	34	0
8:30 AM - 8:45 AM	3	15	10	0	7	4	1	33	1	23	28	2
8:45 AM - 9:00 AM	6	11	16	1	16	1	1	19	0	12	48	1
TOTAL	45	161	107	15	72	13	5	233	10	149	299	14
Peak Hour 7:00 AM - 8:00 AM	30	105	56	9	25	4	1	115	4	89	168	8

## Mid-day

Time Period	Northbound			Southbound			Eastbound			Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
11:00 AM - 11:15 AM	3	10	14	2	6	1	1	29	4	19	30	4
11:15 AM - 11:30 AM	3	10	15	0	3	3	1	25	2	21	38	2
11:30 AM - 11:45 AM	1	12	18	1	8	1	0	33	2	15	29	2
11:45 AM - 12:00 PM	2	7	15	0	4	0	0	31	0	10	33	1
12:00 PM - 12:15 PM	6	11	26	1	6	3	3	42	1	14	35	0
12:15 PM - 12:30 PM	2	12	10	2	5	2	4	37	3	12	29	1
12:30 PM - 12:45 PM	8	9	24	3	7	2	2	34	3	21	35	3
12:45 PM - 1:00 PM	3	14	12	2	15	7	1	30	0	17	32	2
TOTAL	28	85	134	11	54	19	12	261	15	129	261	15
Peak Hour 12:00 PM - 1:00 PM	19	46	72	8	33	14	10	143	7	64	131	6

## PM Peak Hour

Time Period	Northbound			Southbound			Eastbound			Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2:00 PM - 2:15 PM	6	15	16	0	9	1	2	38	1	22	39	2
2:15 PM - 2:30 PM	7	9	20	2	7	2	3	22	3	12	34	1
2:30 PM - 2:45 PM	0	14	17	2	10	4	2	42	3	20	25	2
2:45 PM - 3:00 PM	7	23	18	5	9	2	1	48	2	20	33	2
3:00 PM - 3:15 PM	2	16	21	0	10	3	1	32	2	18	35	2
3:15 PM - 3:30 PM	4	14	18	0	14	0	2	46	6	19	33	4
3:30 PM - 3:45 PM	8	19	19	4	11	2	1	57	4	16	34	1
3:45 PM - 4:00 PM	5	18	16	3	15	2	2	59	3	18	24	0
4:00 PM - 4:15 PM	1	20	18	1	15	0	2	53	3	16	34	1
4:15 PM - 4:30 PM	4	19	25	0	13	0	3	59	2	24	33	2
4:30 PM - 4:45 PM	2	15	15	3	14	1	2	48	2	11	34	3
4:45 PM - 5:00 PM	4	13	17	3	11	1	3	49	1	14	36	3
5:00 PM - 5:15 PM	6	14	23	5	13	5	3	64	1	17	43	2
5:15 PM - 5:30 PM	3	15	30	5	18	1	5	54	2	14	50	0
5:30 PM - 5:45 PM	5	18	18	2	9	1	3	58	5	28	28	2
5:45 PM - 6:00 PM	4	16	30	0	12	0	2	70	6	20	27	1
TOTAL	68	258	321	35	190	25	37	799	46	289	542	28
Peak Hour 5:00 PM - 6:00 PM	18	63	101	12	52	7	13	246	14	79	148	5

## Pedestrian & Bicycle Summary

Project #: 62580.01

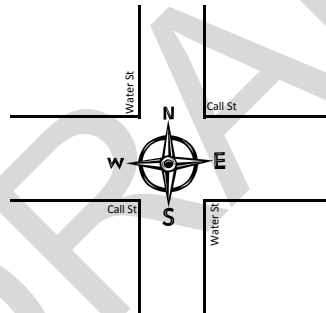
NB/SB: Water St

Date: 4/28/2015

EB/WB: Call St

		Hour								
		7:00	8:00	11:00	12:00	14:00	15:00	16:00	17:00	
		1	2	3	4	5	6	7	8	
Eastbound	Bike	0	0	0	0	0	0	0	0	0
	Ped	0	0	1	1	0	0	0	1	3
Westbound	Bike	0	0	0	0	0	0	0	0	0
	Ped	0	0	0	0	1	1	0	0	2

		Southbound			Northbound		
Hour		Ped	▼	Bike	Ped	▲	Bike
1	7:00	0		0	1		0
2	8:00	0		0	1		1
3	11:00	1		0	0		0
4	12:00	0		0	0		1
5	14:00	0		0	2		0
6	15:00	0		0	0		1
7	16:00	0		0	0		0
8	17:00	1		0	3		0
		2		0	7		3



		Southbound			Northbound				
Hour		Ped	▼	Bike	Ped	▲	Bike		
1	7:00	0		0	2		0		
2	8:00	0		1	0		1		
3	11:00	0		0	0		1		
4	12:00	0		0	0		0		
5	14:00	0		0	0		0		
6	15:00	0		0	2		1		
7	16:00	2		0	2		0		
8	17:00	0		0	2		1		
		2		1	8		4		

Eastbound	Bike	0	0	0	0	0	0	0	0	0
	Ped	0	0	1	1	0	0	1	0	3
Westbound	Bike	0	1	0	0	0	0	0	0	1
	Ped	0	0	0	0	0	0	0	0	0

7:00	8:00	11:00	12:00	14:00	15:00	16:00	17:00
1	2	3	4	5	6	7	8

Hour



# Roadway Count Summary

Vanasse Hangen Brustlin, Inc.

County Bradford  
Intersection US 301  
Date April 28, 2015

City Starke  
& Washington St

All Vehicles  
VHB Project #: 62580.01

## AM Peak Hour

Time Period	Northbound			Southbound			Eastbound			Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
7:00 AM - 7:15 AM	9	146	4	0	193	3	0	1	5	3	0	0
7:15 AM - 7:30 AM	12	169	1	6	212	2	0	0	9	1	0	2
7:30 AM - 7:45 AM	18	172	1	5	212	7	0	2	11	1	0	2
7:45 AM - 8:00 AM	16	182	4	2	211	7	0	0	19	2	2	3
8:00 AM - 8:15 AM	16	178	3	7	203	4	1	1	11	5	1	3
8:15 AM - 8:30 AM	16	160	1	2	172	2	0	1	9	2	0	2
8:30 AM - 8:45 AM	23	196	1	3	177	4	2	0	8	3	1	2
8:45 AM - 9:00 AM	28	183	2	2	180	4	1	2	25	6	6	3
TOTAL	138	1,386	17	27	1,560	33	4	7	97	23	10	17
Peak Hour 7:15 AM - 8:15 AM	62	701	9	20	838	20	1	3	50	9	3	10

## Mid-day

Time Period	Northbound			Southbound			Eastbound			Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
11:00 AM - 11:15 AM	8	217	1	3	228	0	0	0	8	4	0	0
11:15 AM - 11:30 AM	12	243	3	3	218	2	1	1	11	4	1	2
11:30 AM - 11:45 AM	8	244	0	0	255	1	0	1	8	4	0	5
11:45 AM - 12:00 PM	11	236	2	4	201	0	1	0	11	8	3	3
12:00 PM - 12:15 PM	9	255	3	2	203	2	0	1	24	4	1	3
12:15 PM - 12:30 PM	12	260	2	1	244	1	2	0	9	1	0	0
12:30 PM - 12:45 PM	11	229	1	4	177	2	0	1	12	3	0	8
12:45 PM - 1:00 PM	9	247	3	2	173	2	0	0	8	3	5	3
TOTAL	80	1,931	15	19	1,699	10	4	4	91	31	10	24
Peak Hour 11:30 AM - 12:30 PM	40	995	7	7	903	4	3	2	52	17	4	11

## PM Peak Hour

Time Period	Northbound			Southbound			Eastbound			Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2:00 PM - 2:15 PM	8	240	2	6	200	2	0	0	11	1	1	2
2:15 PM - 2:30 PM	9	251	5	3	211	0	1	1	4	3	1	2
2:30 PM - 2:45 PM	7	223	0	2	195	0	0	0	9	2	1	4
2:45 PM - 3:00 PM	5	208	1	0	208	4	1	3	7	1	2	0
3:00 PM - 3:15 PM	3	200	3	1	210	3	0	0	14	2	4	2
3:15 PM - 3:30 PM	16	208	3	5	177	4	2	5	55	2	4	1
3:30 PM - 3:45 PM	12	239	2	1	192	1	1	2	20	2	3	3
3:45 PM - 4:00 PM	11	234	2	1	195	2	0	2	17	0	2	3
4:00 PM - 4:15 PM	13	221	4	1	226	2	0	2	13	1	1	0
4:15 PM - 4:30 PM	9	240	3	1	227	1	0	1	10	0	1	1
4:30 PM - 4:45 PM	10	256	4	1	224	2	1	3	15	2	1	2
4:45 PM - 5:00 PM	8	223	0	2	273	1	0	3	9	3	0	2
5:00 PM - 5:15 PM	12	212	2	2	269	4	0	1	14	3	0	2
5:15 PM - 5:30 PM	18	202	5	2	220	2	1	0	13	1	1	2
5:30 PM - 5:45 PM	11	230	1	0	245	1	1	3	10	1	0	1
5:45 PM - 6:00 PM	9	221	2	2	196	0	0	0	14	4	1	1
TOTAL	161	3,608	39	30	3,468	29	8	26	235	28	23	28
Peak Hour 4:15 PM - 5:15 PM	39	931	9	6	993	8	1	8	48	8	2	7

Project #: 62580.01      NB/SB: US 301  
Date: 4/28/2015      EB/WB: Washington St

Hour

	7:00	8:00	11:00	12:00	14:00	15:00	16:00	17:00	
	1	2	3	4	5	6	7	8	

**Eastbound**

Bike	0	1	1	2	0	0	1	0
Ped	0	1	1	0	1	0	0	0

5  
3

**Westbound**

Bike	0	0	0	0	0	0	0	0
Ped	0	2	2	0	0	1	0	0

0  
5

**Southbound**

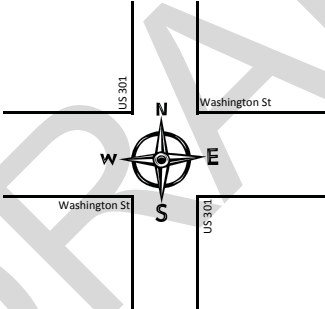
Ped ▼ Bike	0	0
7:00	0	0
8:00	0	0
11:00	0	0
12:00	0	0
14:00	0	0
15:00	1	0
16:00	0	0
17:00	1	0

2      0

**Northbound**

Ped ▲ Bike	0	0
7:00	0	0
8:00	7	0
11:00	0	0
12:00	0	0
14:00	0	0
15:00	4	0
16:00	1	2
17:00	0	0

12    2



**Southbound**

Ped ▼ Bike	0	0
7:00	0	0
8:00	0	1
11:00	0	0
12:00	0	0
14:00	0	0
15:00	0	0
16:00	1	0
17:00	1	0

2      1

**Northbound**

Ped ▲ Bike	0	0
7:00	0	0
8:00	0	0
11:00	0	0
12:00	0	0
14:00	0	0
15:00	22	0
16:00	1	0
17:00	1	0

24    0

**Eastbound**

Bike	0	0	1	0	0	1	0	1
Ped	2	15	1	0	1	2	0	1

3  
22

**Westbound**

Bike	0	1	0	0	0	0	0	0
Ped	1	2	1	0	0	1	0	0

1  
5

	7:00	8:00	11:00	12:00	14:00	15:00	16:00	17:00	
	1	2	3	4	5	6	7	8	

Hour



# Roadway Count Summary

Vanasse Hangen Brustlin, Inc.

County           Bradford  
Intersection      US 301  
Date             April 28, 2015

City             Starke  
&   Brownlee St

All Vehicles

VHB Project #:       62580.01

## AM Peak Hour

Time Period	Northbound			Southbound			Eastbound			Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
7:00 AM - 7:15 AM	28	90	24	4	119	6	7	17	28	44	25	6
7:15 AM - 7:30 AM	31	113	15	9	135	4	9	27	31	35	46	9
7:30 AM - 7:45 AM	33	132	12	8	151	6	12	32	50	32	50	11
7:45 AM - 8:00 AM	17	127	20	6	130	2	12	32	44	43	32	20
8:00 AM - 8:15 AM	16	129	17	10	138	3	4	18	43	33	22	14
8:15 AM - 8:30 AM	19	118	14	6	106	5	11	10	39	37	22	12
8:30 AM - 8:45 AM	15	164	24	3	129	5	11	15	22	26	29	13
8:45 AM - 9:00 AM	18	141	18	9	136	13	16	34	23	37	40	11
TOTAL	177	1,014	144	55	1,044	44	82	185	280	287	266	96
Peak Hour 7:15 AM - 8:15 AM	97	501	64	33	554	15	37	109	168	143	150	54

## Mid-day

Time Period	Northbound			Southbound			Eastbound			Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
11:00 AM - 11:15 AM	15	173	12	2	178	3	8	22	28	23	21	7
11:15 AM - 11:30 AM	22	201	22	5	175	6	10	16	21	31	25	5
11:30 AM - 11:45 AM	23	198	11	8	176	4	4	24	44	33	17	7
11:45 AM - 12:00 PM	30	188	25	8	147	5	11	17	34	30	22	7
12:00 PM - 12:15 PM	26	198	22	6	127	4	15	17	34	35	22	12
12:15 PM - 12:30 PM	22	229	26	6	184	5	6	9	33	38	16	6
12:30 PM - 12:45 PM	26	218	19	6	124	4	9	18	26	29	14	9
12:45 PM - 1:00 PM	27	221	24	10	145	7	12	14	15	26	24	13
TOTAL	191	1,626	161	51	1,256	38	75	137	235	245	161	66
Peak Hour 11:30 AM - 12:30 PM	101	813	84	28	634	18	36	67	145	136	77	32

## PM Peak Hour

Time Period	Northbound			Southbound			Eastbound			Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2:00 PM - 2:15 PM	28	185	30	6	157	4	13	20	24	27	30	6
2:15 PM - 2:30 PM	29	184	28	7	149	4	13	23	26	35	28	16
2:30 PM - 2:45 PM	30	182	27	8	145	6	13	16	24	24	18	13
2:45 PM - 3:00 PM	12	165	17	7	125	6	5	21	34	38	35	8
3:00 PM - 3:15 PM	17	149	18	11	151	9	13	23	33	27	36	10
3:15 PM - 3:30 PM	18	170	24	15	156	3	19	36	29	23	18	11
3:30 PM - 3:45 PM	21	175	17	16	122	8	17	45	31	35	44	11
3:45 PM - 4:00 PM	31	195	28	8	152	3	15	30	25	33	18	18
4:00 PM - 4:15 PM	20	162	28	12	143	3	7	25	28	40	33	10
4:15 PM - 4:30 PM	20	178	26	13	129	13	12	24	36	40	36	12
4:30 PM - 4:45 PM	30	188	34	13	155	4	9	29	25	44	28	8
4:45 PM - 5:00 PM	24	153	31	3	202	2	16	15	29	42	34	5
5:00 PM - 5:15 PM	40	138	27	25	195	8	16	31	37	37	29	11
5:15 PM - 5:30 PM	43	136	27	10	163	8	10	34	35	27	32	8
5:30 PM - 5:45 PM	36	149	27	5	178	5	7	31	24	39	32	7
5:45 PM - 6:00 PM	28	135	46	15	147	4	7	18	29	30	26	9
TOTAL	427	2,644	435	174	2,469	90	192	421	469	541	477	163
Peak Hour 4:15 PM - 5:15 PM	114	657	118	54	681	27	53	99	127	163	127	36

## Pedestrian & Bicycle Summary

Project #: 62580.01

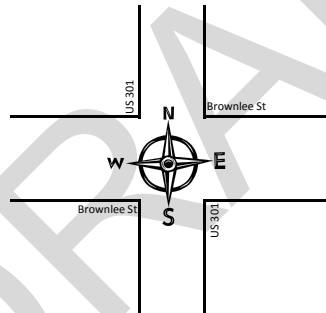
NB/SB: US 301

Date: 4/28/2015

EB/WB: Brownlee St

		Hour								
		7:00	8:00	11:00	12:00	14:00	15:00	16:00	17:00	
		1	2	3	4	5	6	7	8	
Eastbound	Bike	0	0	0	0	0	0	0	0	0
	Ped	0	0	0	0	0	0	0	1	1
Westbound	Bike	0	1	0	0	0	0	0	0	1
	Ped	0	0	1	1	1	0	0	0	3

		Southbound			Northbound		
Hour		Ped	▼	Bike	Ped	▲	Bike
1	7:00	1		0	0		0
2	8:00	0		0	0		1
3	11:00	0		0	1		0
4	12:00	1		0	1		0
5	14:00	2		1	1		0
6	15:00	0		0	0		1
7	16:00	1		0	0		0
8	17:00	0		0	0		0
		5		1	3		2



		Southbound			Northbound			Hour
		Ped	▼	Bike	Ped	▲	Bike	
1	7:00	0		0	0		1	1
2	8:00	0		0	1		0	2
3	11:00	2		0	0		0	3
4	12:00	0		0	1		1	4
5	14:00	2		1	0		0	5
6	15:00	1		0	2		0	6
7	16:00	0		0	0		0	7
8	17:00	2		0	0		0	8
		7		1	4		2	

Eastbound	Bike	0	0	0	0	0	0	0	0	0
	Ped	3	0	0	0	1	0	0	0	4
Westbound	Bike	0	0	0	0	0	0	0	0	0
	Ped	0	0	0	1	0	1	0	0	2

7:00	8:00	11:00	12:00	14:00	15:00	16:00	17:00
1	2	3	4	5	6	7	8

Hour



# Roadway Count Summary

Vanasse Hangen Brustlin, Inc.

County      Bradford  
Intersection      US 301  
Date      April 28, 2015

City      Starke  
&      Weldon St

All Vehicles

VHB Project #:      62580.01

## AM Peak Hour

Time Period	Northbound			Southbound			Eastbound			Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
7:00 AM - 7:15 AM	0	105	0	1	133	6	1	0	0	0	0	4
7:15 AM - 7:30 AM	1	126	0	0	155	13	0	0	0	0	0	1
7:30 AM - 7:45 AM	0	152	0	0	158	2	0	0	0	0	1	1
7:45 AM - 8:00 AM	1	151	0	1	141	3	1	0	0	0	0	2
8:00 AM - 8:15 AM	1	150	0	1	145	6	3	0	1	0	0	4
8:15 AM - 8:30 AM	0	149	0	1	122	5	2	0	3	0	0	2
8:30 AM - 8:45 AM	3	186	0	1	132	5	3	1	0	0	0	0
8:45 AM - 9:00 AM	0	158	2	1	166	11	2	0	1	0	0	3
TOTAL	6	1,177	2	6	1,152	51	12	1	5	0	1	17
Peak Hour 8:00 AM - 9:00 AM	4	643	2	4	565	27	10	1	5	0	0	9

## Mid-day

Time Period	Northbound			Southbound			Eastbound			Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
11:00 AM - 11:15 AM	0	194	1	1	178	5	0	0	0	0	0	1
11:15 AM - 11:30 AM	1	208	2	2	185	4	0	0	3	0	0	2
11:30 AM - 11:45 AM	1	223	3	0	176	3	0	1	1	0	0	1
11:45 AM - 12:00 PM	2	196	4	2	157	6	2	0	2	0	0	0
12:00 PM - 12:15 PM	3	232	3	0	151	4	1	0	1	1	0	0
12:15 PM - 12:30 PM	1	233	4	1	169	3	0	0	1	2	0	1
12:30 PM - 12:45 PM	1	239	0	3	141	2	0	0	1	1	1	2
12:45 PM - 1:00 PM	2	244	1	3	156	1	2	0	2	1	0	1
TOTAL	11	1,769	18	12	1,313	28	5	1	11	5	1	8
Peak Hour 12:00 PM - 1:00 PM	7	948	8	7	617	10	3	0	5	5	1	4

## PM Peak Hour

Time Period	Northbound			Southbound			Eastbound			Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2:00 PM - 2:15 PM	0	204	0	1	157	3	2	0	1	2	0	1
2:15 PM - 2:30 PM	1	211	2	3	166	5	1	0	2	0	0	0
2:30 PM - 2:45 PM	1	214	0	0	151	6	0	0	3	1	0	2
2:45 PM - 3:00 PM	2	185	3	1	168	6	0	0	0	0	0	1
3:00 PM - 3:15 PM	2	187	1	0	160	9	0	1	5	2	0	2
3:15 PM - 3:30 PM	1	207	0	3	157	7	4	1	7	0	0	2
3:30 PM - 3:45 PM	1	209	3	4	150	1	1	0	4	1	1	5
3:45 PM - 4:00 PM	0	217	6	2	153	6	0	0	1	0	0	3
4:00 PM - 4:15 PM	0	180	0	3	173	4	1	0	1	0	0	1
4:15 PM - 4:30 PM	2	196	1	1	159	5	0	0	1	1	0	0
4:30 PM - 4:45 PM	0	211	3	2	178	3	0	0	2	0	0	1
4:45 PM - 5:00 PM	0	183	2	4	216	3	0	0	0	1	0	3
5:00 PM - 5:15 PM	0	177	0	5	224	6	0	0	3	0	1	4
5:15 PM - 5:30 PM	2	149	3	1	166	2	2	0	6	0	0	4
5:30 PM - 5:45 PM	1	158	4	1	178	3	0	0	2	0	0	4
5:45 PM - 6:00 PM	1	157	1	1	153	3	1	0	3	0	0	2
TOTAL	14	3,045	29	32	2,709	72	12	2	41	8	2	35
Peak Hour 4:15 PM - 5:15 PM	2	767	6	12	777	17	0	0	6	2	1	8

Project #: 62580.01      NB/SB: US 301  
Date: 4/28/2015      EB/WB: Weldon St

7:00	8:00	11:00	12:00	14:00	15:00	16:00	17:00
1	2	3	4	5	6	7	8

Hour



# Roadway Count Summary

Vanasse Hangen Brustlin, Inc.

County      Bradford  
Intersection      St Clair St  
Date      April 28, 2015

City      Starke  
&      Brownlee St

All Vehicles

VHB Project #:      62580.01

## AM Peak Hour

Time Period	Northbound			Southbound			Eastbound			Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
7:00 AM - 7:15 AM	3	0	3	0	0	0	0	41	7	7	78	0
7:15 AM - 7:30 AM	8	0	6	0	0	0	0	39	10	9	62	0
7:30 AM - 7:45 AM	5	0	7	0	0	0	0	40	8	8	75	0
7:45 AM - 8:00 AM	4	0	6	0	0	0	0	51	7	10	65	0
8:00 AM - 8:15 AM	6	0	8	0	0	0	0	30	2	6	66	0
8:15 AM - 8:30 AM	4	0	4	0	0	0	0	36	3	3	65	0
8:30 AM - 8:45 AM	3	0	1	0	0	0	0	42	0	8	63	0
8:45 AM - 9:00 AM	8	0	4	0	0	0	0	41	8	8	74	0
TOTAL	41	0	39	0	0	0	0	320	45	59	548	0
Peak Hour 7:00 AM - 8:00 AM	20	0	22	0	0	0	0	171	32	34	280	0

## Mid-day

Time Period	Northbound			Southbound			Eastbound			Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
11:00 AM - 11:15 AM	2	0	6	2	0	0	0	40	4	5	48	0
11:15 AM - 11:30 AM	3	0	9	0	0	0	0	42	6	8	41	0
11:30 AM - 11:45 AM	0	0	8	0	0	0	0	37	5	4	50	0
11:45 AM - 12:00 PM	3	0	12	0	0	0	0	44	3	5	52	0
12:00 PM - 12:15 PM	1	0	11	0	0	0	0	36	4	7	47	0
12:15 PM - 12:30 PM	3	0	9	0	0	0	0	45	3	6	49	0
12:30 PM - 12:45 PM	2	0	4	0	0	0	0	57	4	8	46	0
12:45 PM - 1:00 PM	1	0	3	0	0	0	0	45	2	3	58	0
TOTAL	15	0	62	2	0	0	0	346	31	46	391	0
Peak Hour 11:45 AM - 12:45 PM	9	0	36	0	0	0	0	182	14	26	194	0

## PM Peak Hour

Time Period	Northbound			Southbound			Eastbound			Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2:00 PM - 2:15 PM	5	0	13	0	0	0	0	67	5	2	43	0
2:15 PM - 2:30 PM	3	0	10	0	0	0	0	60	10	6	59	0
2:30 PM - 2:45 PM	2	0	8	0	0	0	0	53	7	9	57	0
2:45 PM - 3:00 PM	6	0	10	0	0	0	0	52	5	11	60	0
3:00 PM - 3:15 PM	6	0	11	0	0	0	0	47	8	5	56	0
3:15 PM - 3:30 PM	4	0	9	0	0	0	0	74	15	4	53	0
3:30 PM - 3:45 PM	4	0	5	0	0	0	0	72	4	6	55	0
3:45 PM - 4:00 PM	4	0	11	0	0	0	0	72	9	4	50	0
4:00 PM - 4:15 PM	4	0	16	0	0	0	0	75	7	11	78	0
4:15 PM - 4:30 PM	5	0	34	0	0	0	0	69	7	6	63	0
4:30 PM - 4:45 PM	3	0	12	0	0	0	0	79	3	3	58	0
4:45 PM - 5:00 PM	2	0	11	0	0	0	0	63	4	2	77	0
5:00 PM - 5:15 PM	4	0	12	0	0	0	0	74	13	7	56	0
5:15 PM - 5:30 PM	7	0	15	0	0	0	0	66	5	2	57	0
5:30 PM - 5:45 PM	3	0	17	0	0	0	0	66	9	11	78	0
5:45 PM - 6:00 PM	2	0	16	0	0	0	0	74	6	6	52	0
TOTAL	64	0	210	0	0	0	0	1,063	117	95	952	0
Peak Hour 4:00 PM - 5:00 PM	14	0	73	0	0	0	0	286	21	22	276	0

## Pedestrian & Bicycle Summary

Project #: 62580.01

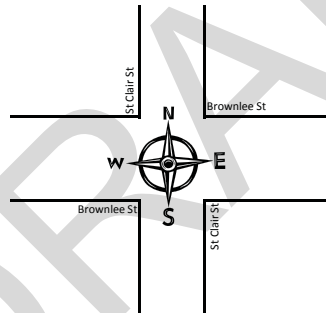
NB/SB: St Clair St

Date: 4/28/2015

EB/WB: Brownlee St

		Hour								
		7:00	8:00	11:00	12:00	14:00	15:00	16:00	17:00	
		1	2	3	4	5	6	7	8	
Eastbound	Bike	0	0	0	0	0	0	0	0	0
	Ped	0	0	0	0	2	0	0	0	2
Westbound	Bike	0	0	0	0	0	0	0	0	0
	Ped	0	0	0	0	0	0	0	0	0

		Southbound			Northbound		
Hour		Ped	▼	Bike	Ped	▲	Bike
1	7:00	0		0	0		0
2	8:00	3		0	0		1
3	11:00	0		0	0		0
4	12:00	1		0	1		0
5	14:00	2		1	2		0
6	15:00	3		0	0		0
7	16:00	2		0	1		0
8	17:00	0		0	0		2
		11		1	4		3



		Southbound			Northbound			Hour
		Ped	▼	Bike	Ped	▲	Bike	
1	7:00	0		0	0		0	1
2	8:00	2		1	0		1	2
3	11:00	0		0	0		0	3
4	12:00	0		0	1		0	4
5	14:00	1		1	1		1	5
6	15:00	1		0	1		1	6
7	16:00	3		0	1		0	7
8	17:00	1		0	1		2	8
		8		2	5		5	

Eastbound	Bike	0	0	0	0	0	0	0	0	0
	Ped	0	0	0	0	0	0	0	0	0
Westbound	Bike	0	0	0	0	0	0	0	0	0
	Ped	0	0	0	0	0	0	0	0	0

7:00	8:00	11:00	12:00	14:00	15:00	16:00	17:00
1	2	3	4	5	6	7	8

Hour



# Roadway Count Summary

Vanasse Hangen Brustlin, Inc.

County      Bradford  
Intersection      SR 16  
Date      April 28, 2015

City      Starke  
&      Weldon St

All Vehicles

VHB Project #:      62580.01

## AM Peak Hour

Time Period	Northbound			Southbound			Eastbound			Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
7:00 AM - 7:15 AM	19	34	0	2	46	14	4	2	10	0	10	2
7:15 AM - 7:30 AM	34	37	1	4	37	25	11	5	28	0	12	3
7:30 AM - 7:45 AM	43	48	0	3	65	27	12	2	39	0	6	3
7:45 AM - 8:00 AM	16	23	0	8	60	15	13	10	38	0	3	3
8:00 AM - 8:15 AM	12	18	0	4	44	12	6	8	16	0	7	0
8:15 AM - 8:30 AM	16	15	0	1	43	20	6	9	15	0	4	3
8:30 AM - 8:45 AM	19	18	0	4	36	16	8	8	18	0	4	3
8:45 AM - 9:00 AM	30	25	0	7	35	27	6	9	17	0	9	4
TOTAL	189	218	1	33	366	156	66	53	181	0	55	21
Peak Hour 7:00 AM - 8:00 AM	112	142	1	17	208	81	40	19	115	0	31	11

## Mid-day

Time Period	Northbound			Southbound			Eastbound			Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
11:00 AM - 11:15 AM	16	22	0	3	34	9	6	5	15	0	7	5
11:15 AM - 11:30 AM	16	27	0	1	33	6	10	4	7	1	4	5
11:30 AM - 11:45 AM	17	32	0	2	55	10	9	2	11	0	3	2
11:45 AM - 12:00 PM	22	27	0	1	24	12	13	7	22	0	4	0
12:00 PM - 12:15 PM	17	37	1	2	25	10	14	4	24	0	7	6
12:15 PM - 12:30 PM	12	32	0	5	24	12	21	6	13	0	5	3
12:30 PM - 12:45 PM	17	27	0	0	31	7	6	9	15	0	3	4
12:45 PM - 1:00 PM	16	31	0	1	31	5	14	6	13	0	1	1
TOTAL	133	235	1	15	257	71	93	43	120	1	34	26
Peak Hour 11:30 AM - 12:30 PM	68	128	1	10	128	44	57	19	70	0	19	11

## PM Peak Hour

Time Period	Northbound			Southbound			Eastbound			Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2:00 PM - 2:15 PM	24	41	0	1	25	9	13	10	27	0	6	1
2:15 PM - 2:30 PM	18	40	0	1	29	6	12	2	25	0	5	3
2:30 PM - 2:45 PM	13	41	1	3	32	8	15	5	14	0	10	2
2:45 PM - 3:00 PM	18	25	1	1	45	7	18	5	21	0	6	3
3:00 PM - 3:15 PM	31	25	0	4	40	13	15	5	23	0	5	6
3:15 PM - 3:30 PM	28	32	0	3	35	8	31	15	45	0	10	4
3:30 PM - 3:45 PM	46	42	0	1	27	8	30	8	25	0	6	3
3:45 PM - 4:00 PM	15	38	0	4	37	12	22	1	24	0	9	4
4:00 PM - 4:15 PM	19	33	0	2	34	7	23	5	18	0	4	4
4:15 PM - 4:30 PM	21	40	0	1	38	11	11	1	16	0	3	4
4:30 PM - 4:45 PM	13	46	0	1	33	16	13	2	15	1	1	4
4:45 PM - 5:00 PM	11	61	0	5	42	23	15	4	8	0	7	5
5:00 PM - 5:15 PM	26	55	0	1	48	19	21	3	11	0	17	9
5:15 PM - 5:30 PM	10	66	0	4	45	22	23	4	11	0	6	4
5:30 PM - 5:45 PM	16	53	0	2	47	9	17	2	5	0	5	4
5:45 PM - 6:00 PM	10	38	1	2	27	19	15	2	13	0	4	4
TOTAL	319	676	3	36	584	197	294	74	301	1	104	64
Peak Hour 4:45 PM - 5:45 PM	63	235	0	12	182	73	76	13	35	0	35	22

**Project #:** 62580.01 **NB/SB:** SR 16  
**Date:** 4/28/2015 **EB/WB:** Weldon St

Hour

	7:00	8:00	11:00	12:00	14:00	15:00	16:00	17:00
	1	2	3	4	5	6	7	8

**Eastbound**

	Bike	0	1	1	0	0	0	1	1
	Ped	0	1	1	1	0	0	0	0

**Westbound**

	Bike	0	0	0	0	1	0	0	0
	Ped	0	0	0	1	1	0	0	2

**Southbound**

Hour	Ped ▼ Bike
7:00	0 0
8:00	1 0
11:00	0 0
12:00	0 0
14:00	0 1
15:00	0 0
16:00	0 0
17:00	0 0

**Northbound**

Hour	Ped ▲ Bike
7:00	0 0
8:00	0 0
11:00	0 0
12:00	0 0
14:00	0 0
15:00	0 0
16:00	0 0
17:00	0 0

**Southbound**

Hour	Ped ▼ Bike
7:00	1 0
8:00	1 0
11:00	0 0
12:00	0 0
14:00	0 0
15:00	0 0
16:00	4 0
17:00	0 0

**Northbound**

Hour	Ped ▲ Bike
7:00	0 0
8:00	0 0
11:00	0 0
12:00	0 0
14:00	0 0
15:00	0 0
16:00	0 0
17:00	0 0

**Eastbound**

	Bike	0	0	1	0	0	0	0	1
	Ped	2	0	0	0	0	3	1	0

**Westbound**

	Bike	0	1	0	0	0	0	0	0
	Ped	0	0	0	0	2	0	0	1

Hour

	7:00	8:00	11:00	12:00	14:00	15:00	16:00	17:00
	1	2	3	4	5	6	7	8



## Appendix C:

### Train Crossing Summary Data

# MEMORANDUM

**To:** Stephen Browning, PE  
**From:** Jennifer Vrynios, PE, PTOE  
**Date:** August 6, 2015  
**RE:** Starke Railroad Overpass Future Traffic Diversion Estimate

---

This traffic diversion estimate has been done to support work being completed to evaluate four locations for the construction of an overpass of the railroad tracks that parallel U.S. 301 in Starke, Florida. An estimate of the increase of annual average daily traffic (AADT) at each railroad overpass location when trains are present is summarized and figures estimating future turning movements are provided.

Basic assumptions are the railroad overpass will not induce new traffic into the Starke area, and will not change traffic flow patterns other than during the times a train is present.

## Summary

Assuming train activity doubles by year 2040, the diversion of vehicles to the proposed railroad overpass location was estimated assuming all vehicles that normally get blocked by a passing train, from S.R. 16 to South Street, divert to the overpass. The vehicles crossing at Market Road and SE 144<sup>th</sup> Street were assumed to not divert due to their distance from the other locations. This method was chosen to provide conservative (higher diversion) values to the new overpass.

This estimate results with year 2040 AADT volume increases on the roadways with the railroad overpass, when a train is present, by:

- S.R.100 Concepts (two concepts) = 16% (1,830 vpd) increase in AADT
- SE 144<sup>th</sup> Street Concept = 0% increase in AADT
- Weldon Street/S.R.16 = 20% (1,960 vpd) increase in AADT

Currently, the average number of trains per day is 29 trains, closing the gates for an average of 2.24 minutes each time. Over a day, the railroad gates are closed an average of 1.10 hours, including times the gates close without a train present.

Peak period (6 hours representing 7-9 am, 11 am-1 pm, 4-6 pm) volumes affected by the trains represent nearly fifty percent of all traffic affected by the trains.

This evaluation included the following steps:

## Step 1 – Determine 2040 Forecasts

This effort included the comparison of No-Build (no railroad overpass) model forecasts (done by VHB, Inc.) and forecasts using historic AADT traffic and growth trends (1993-2014).

The No-Build model includes the future U.S. 301 Bypass which will bypass Starke on the west side of town. The model results show the demand volume on US 301 is expected to approximately double by year 2040, and approximately half of the traffic will take the bypass



and half will remain in town. Therefore, the volume through town is similar to current volumes.

The assumption that volumes will remain similar to existing volumes on U.S. 301 into the future is also corroborated by historic traffic growth through town. Based on a review of 22 sites, historic growth trends throughout Starke generally show little to no growth over the past 21 years. Some of the growth trend charts are provided in **Attachment A** and show results for U.S. 301, S.R. 16, S.R. 100 and S.R. 230. The constant line on each chart is the growth trend line.

Based on review of the data and discussion with FDOT staff, a growth rate of 1.0% per year was chosen to calculate the 2040 forecasts for all roadways except for U.S. 301. U.S. 301 volumes are expected to be similar to current volumes due to the bypass being available to handle the future demand of vehicles traveling through town.

## **Step 2 - Review of Train Closure Data**

Data was collected at the three most heavily traveled of the nine railroad crossings; S.R. 16, S.R. 100 and SE 144<sup>th</sup> Street. Data was collected for three weekdays in June, 2015 and included train travel direction, time of gate closure, minutes of gate closure, number of vehicles in queue at the gate, and if any emergency vehicles (police, fire, ambulance) were in the queue. The summary sheets are in **Attachment B**.

Based on the information gathered:

- Average number of trains per day is 29 trains
- Average minutes the gate is down for each train event is 2.24 minutes
- Average number of hours per day the railroad gates are closed is 1.10 hours
- Average number of minutes per peak periods (6 hours representing 7-9 am, 11 am-1 pm, 4-6 pm) when the railroad gates are closed is approximately 19 minutes
- Average number of vehicles in queue per day when the railroad gates are closed represents 4-5 percent of the AADT
- Average number of vehicles in queue per peak periods (6 hours) when the railroad gates are closed represents 43-46 percent of the daily volume of vehicles affected by the railroad gate closure
- Gates close when no train is present
- Emergency vehicles were stopped by trains, but none were actively responding to an emergency

## **Step 3 – Estimate Number of Vehicles affected by Train Closure in year 2040**

The assumption is traffic will divert to the new railroad overpass. This evaluation is focused on the volume changes at the railroad crossings only (not throughout Starke). The estimate is based on rounded values of:

- 2040 number of trains per day = 50
- 2040 AADT = Existing AADT increased at 1.0% growth per year on roadways except for U.S. 301

- 2040 AADT affected by train closure = 10% of AADT, increased from current 5% to reflect increased number of trains
- 2040 Peak Period (6 hour) volume affected by train closure = 50% of AADT affected by train closure
- 2040 Peak Hour volume affected by train closure = 1/3 of 6-hour Peak Period affected by train closure. This was chosen instead of 1/6 of 6-hour Peak Period to be conservative

#### **Step 4 – Estimate Trip Diversion (AADT) - Traffic Diverts to Railroad Overpass**

This estimate assumes when the railroad gate is closed at S.R. 16, Washington Street, Adkins Street, Jackson Street, Call Street (S.R. 230), S.R. 100 or South Street, the gate is closed at all of them, and traffic diverts to the railroad overpass location. If gates are closed at Market Road or SE 144<sup>th</sup> Street, due to the distance to the other crossings, this estimate assumes no other crossings are closed and therefore no traffic diverts.

To determine the AADT for each proposed railroad overpass location, ten percent of the AADT of each roadway with a railroad crossing is calculated and added to the roadway with the railroad overpass. For example, if the railroad overpass is at S.R. 16, ten percent of the AADT of the other six railroad crossings are added to the AADT of S.R. 16 to represent the total volume crossing the overpass.

Using the calculation assumptions of Step 3, the rounded values for existing and future AADT and estimated number of vehicles that will be blocked by a train are shown in **Table 1**. The five existing minor railroad crossings are each assumed to have an existing AADT of 1,000 vpd. The other four crossing AADT volumes are based on counts.

**Table 1 – Future 2040 Traffic Blocked by Train (vehicles per day)**

<b>Railroad Crossing Roadway</b>	<b>Existing AADT</b>	<b>Future 2040 AADT (1%/yr growth)</b>	<b>Future AADT Blocked by Train (10% of AADT)</b>
Market Rd.	1,000	1,300	130
S.R. 16	7,700	10,000	1,00
Washington St.	1,000	1,300	130
Adkins St.	1,000	1,300	130
Jackson St.	1,000	1,300	130
Call St./S.R. 230	2,400	3,100	310
S.R. 100	8,700	11,300	1,130
South St.	1,000	1,300	130
SE 144 <sup>th</sup> St.	1,400	1,800	180



Using the AADT values in **Table 1**, the estimated amount of traffic expected to divert to each railroad overpass concept on a daily basis, and the daily percent increase over No-Build volume is shown in **Table 2**.

**Table 2 – Railroad Overpass Alignment Option – 2040 Daily Diverted Traffic Summary**

Overpass Alignment Concept	2040 Additional Traffic per Day	2040 AADT with Diverted Traffic	Increase of AADT over No-Build (%)
S.R. 100 (both concepts)	1,830	13,130	16%
SE 144 <sup>th</sup> Street	0	1,800	0% (no traffic diverts due to distance from other crossings)
Weldon Street /S.R. 16	1,960	11,960	20% (assumes all S.R. 16 traffic uses Weldon Street alignment)

#### **Step 5 – Estimate Trip Diversion (Peak Hour) - Traffic Diverts to Railroad Overpass**

Based on discussion with FDOT, the estimate of future turning movement counts are based on current turning movement data. Turning movements for 13 locations in Starke for morning, midday and evening peak hours were provided by VHB Inc. An additional count was done at SE 144<sup>th</sup> Street to supplement the data already provided. The existing counts are shown in **Attachment C**.

Similar to the future AADT calculations, a growth rate of 1.0% per year was applied to the existing counts (on all but U.S. 301) to create a 2040 No-Build, and no train present, base condition. If a volume was 0, a value of 5 vehicles was assumed. All values were rounded to the nearest five vehicles, and volumes were balanced between nearby intersections. Note that since the overpass concept at SE 144<sup>th</sup> Street is too far from the other locations to result in vehicles diverting to this location, the future volumes are the same as No-Build volumes. These values are shown in **Figure 1**.

To determine the change in peak hour volumes for each proposed railroad overpass location at each intersection, the total amount of vehicles that will divert was determined first by calculating the peak period volume affected by the train. Based on traffic data collected when trains are present, 50 percent of the daily traffic affected by train closure occurs during the six hours of 7-9 am, 11 am-1 pm, and 4-6 pm (therefore, each hour in the peak period would average one-sixth of the peak period totals). To be conservative and for simplicity, one-third of the peak period totals is calculated to apply to each No-Build peak hour. These rounded diversion values are shown in **Table 3**.

**Table 3 – Future 2040 Traffic Blocked by Train (Peak Periods)**

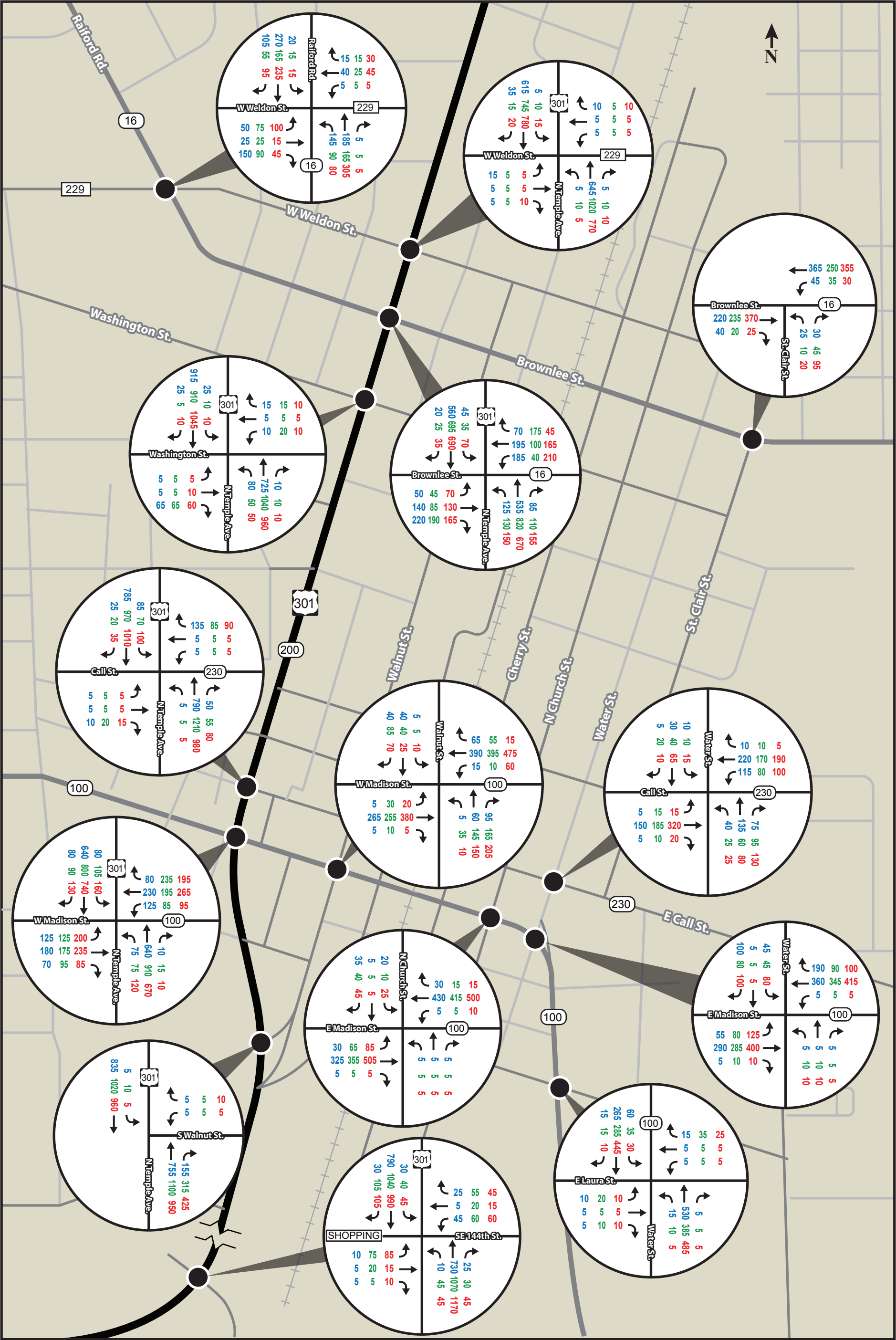
<b>Railroad Crossing Roadway</b>	<b>Future 6-hour Peak Period Blocked by Train (50% of Blocked AADT)</b>	<b>Peak Hour Volume to Apply to No-Build (Approximately 1/3 of Peak Period)</b>
Market Rd.	-	-
S.R. 16	500	170
Washington St.	65	25
Adkins St.	65	25
Jackson St.	65	25
Call St./S.R. 230	155	55
S.R. 100	565	190
South St.	65	25
SE 144 <sup>th</sup> St.	-	-

Based on this method, in year 2040 approximately 325 vehicles will divert to the S.R. 100 railroad overpass, and 345 will divert to the S.R. 16 railroad overpass during peak hours when a train is present.

Using the “Peak Hour Volume to Apply to No-Build” volumes shown in **Table 3**, judgment was used as to which roadways the diverted traffic will use to drive to the railroad overpass. Data from the train counts show that during peak periods 51 percent of the queued vehicles are headed westbound and 49 percent eastbound. This information was used to estimate which side of the railroad tracks the diverted vehicles are approaching. Movements that will be eliminated due to each concept were rerouted to nearby intersections. The volumes were added and subtracted to the No-Build volumes and rounded to the nearest 5 vehicles.

The peak hour volumes for the S.R 100 Existing and S.R. 16/Weldon Street overpass options are shown on **Figure 2** and **Figure 3**. These volumes represent an estimate when a train is present on an hourly basis. If a train is not present, the volumes would be similar to the No-Build (no train) condition.





Legend

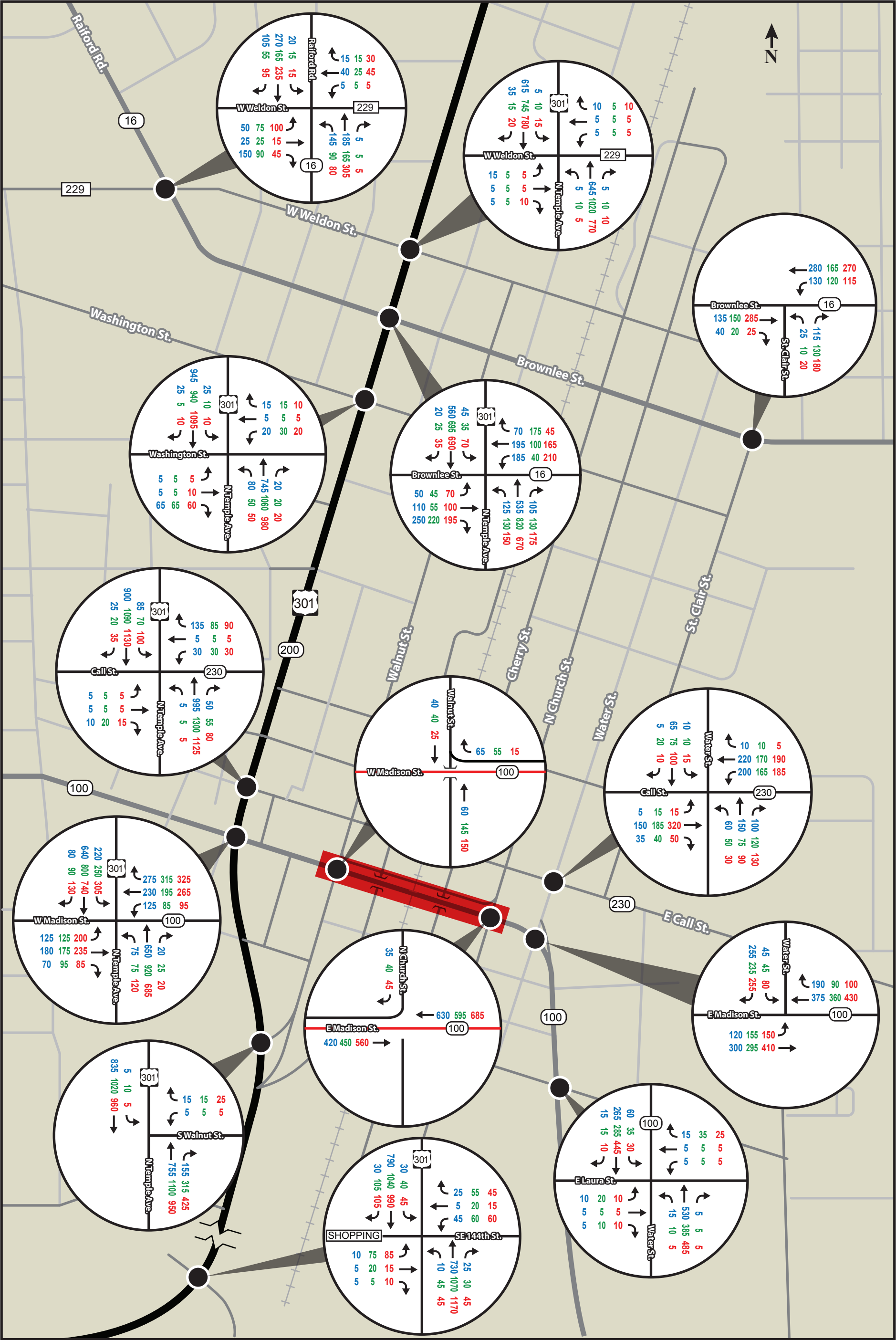
Traffic Movement

AM MID PM

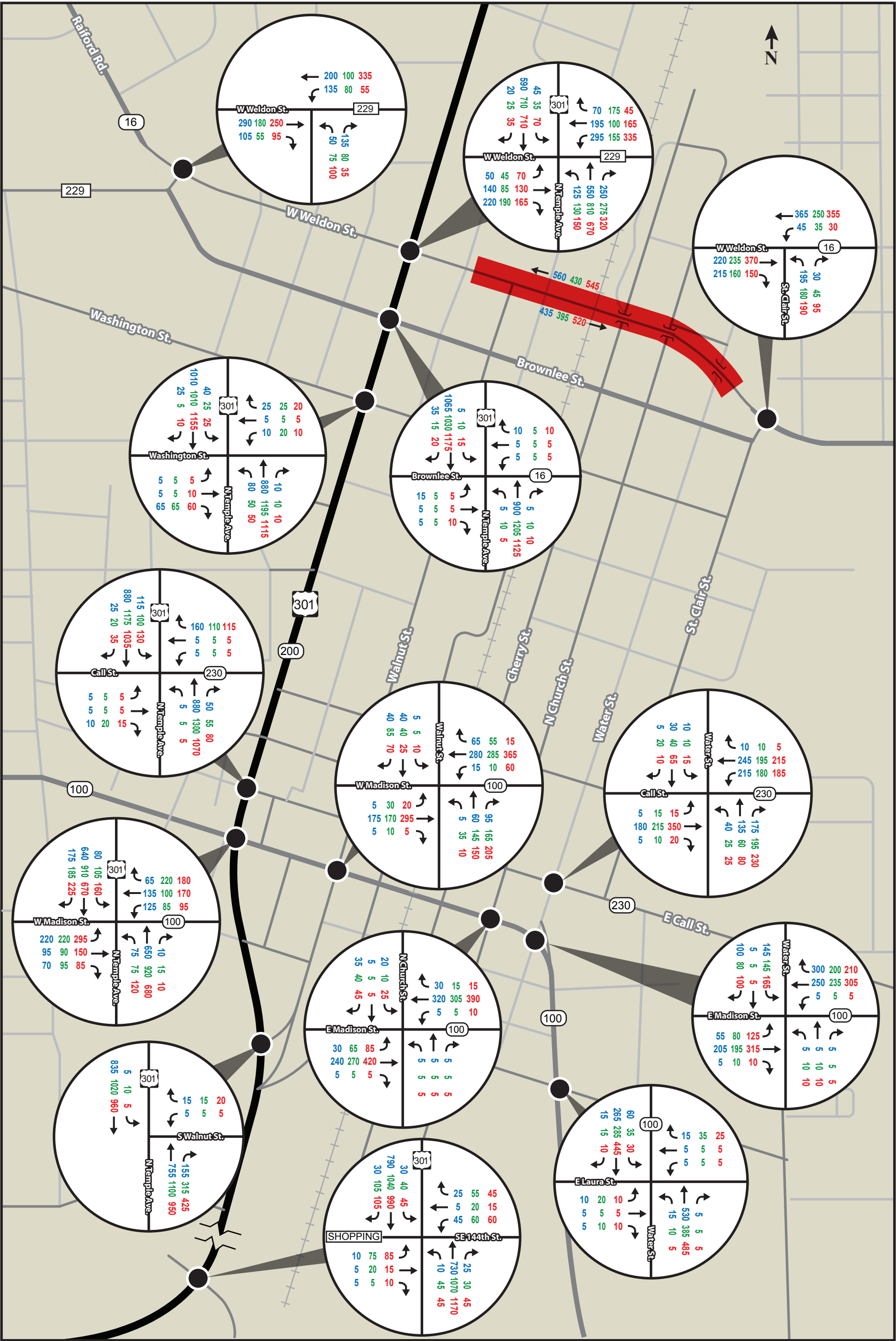
Peak Hour Traffic Volume



Figure 1  
2040 No-Build and SE 144th Street Concept  
Peak Hour Volumes







Legend

Traffic Movement

AM MID PM

Peak Hour Traffic Volume

New Railroad Overpass



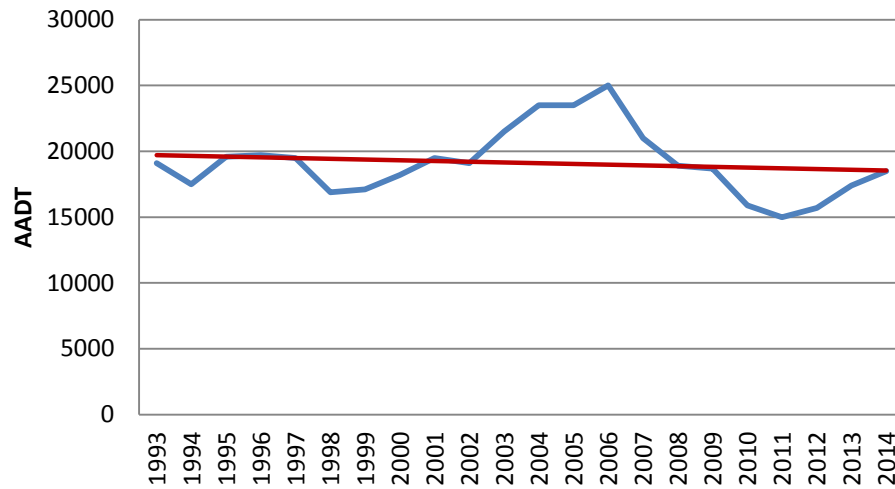
Figure 3  
2040 S.R. 16/Weldon Street Concept  
Peak Hour Volumes (when train is present)

# **ATTACHMENT A**

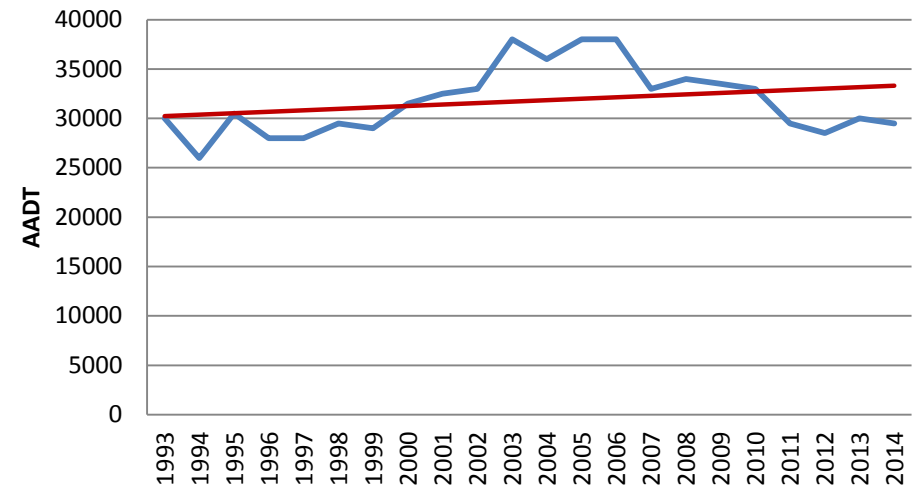
## **Historic AADT Charts**



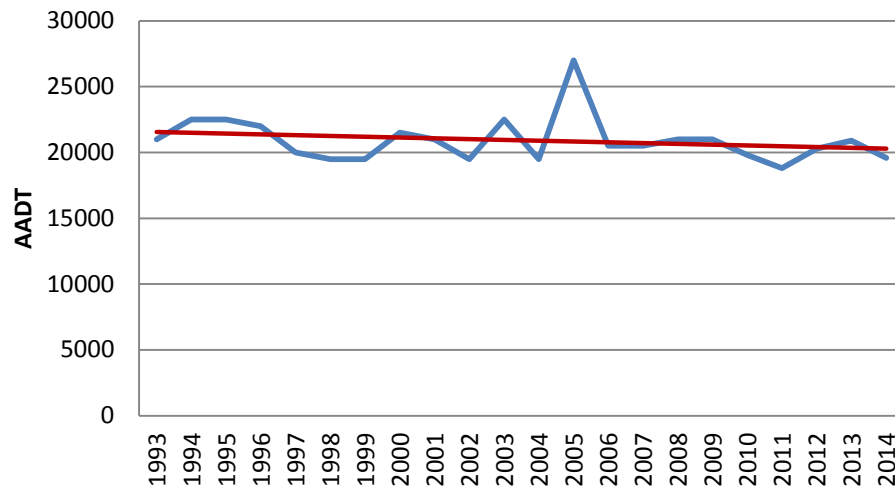
**Site 280100: U.S. 301 at North City Limits**



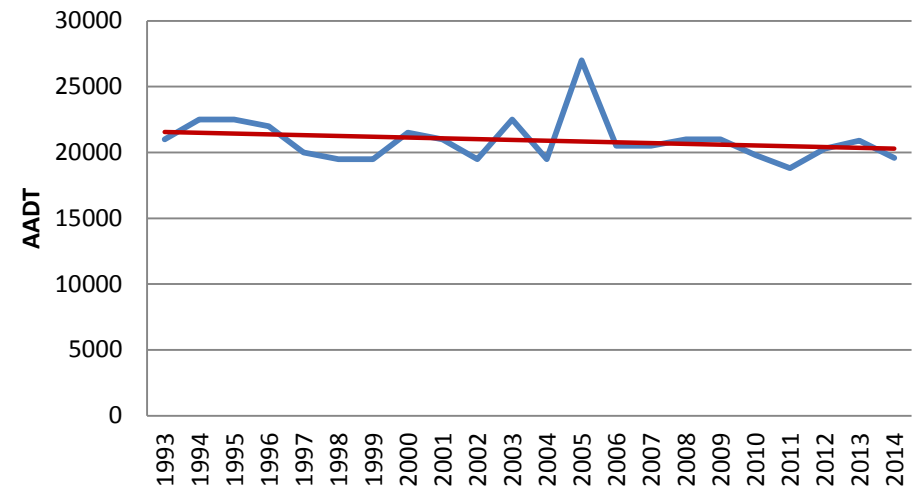
**Site 285017: U.S. 301 North of C.R. 100A**



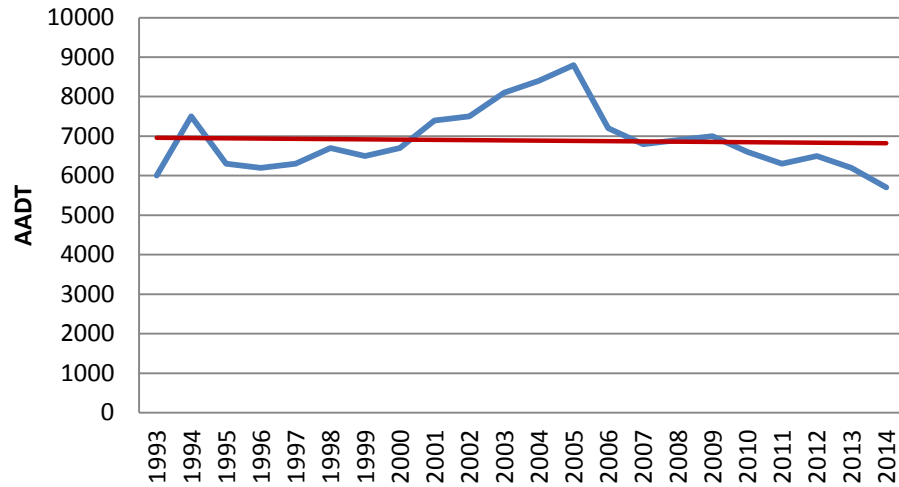
**Site 285009: U.S. 301 North of S.R. 16 (in Town)**



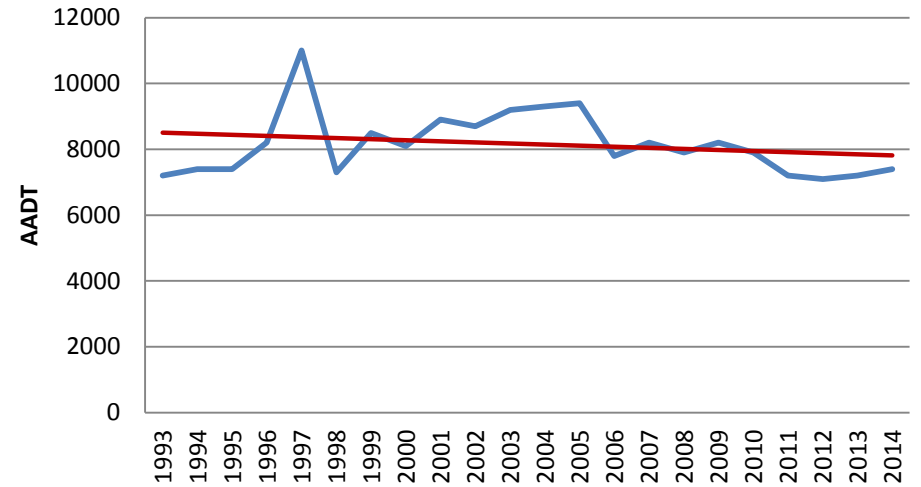
**Site 285009: U.S. 301 North of S.R. 16 (in Town)**



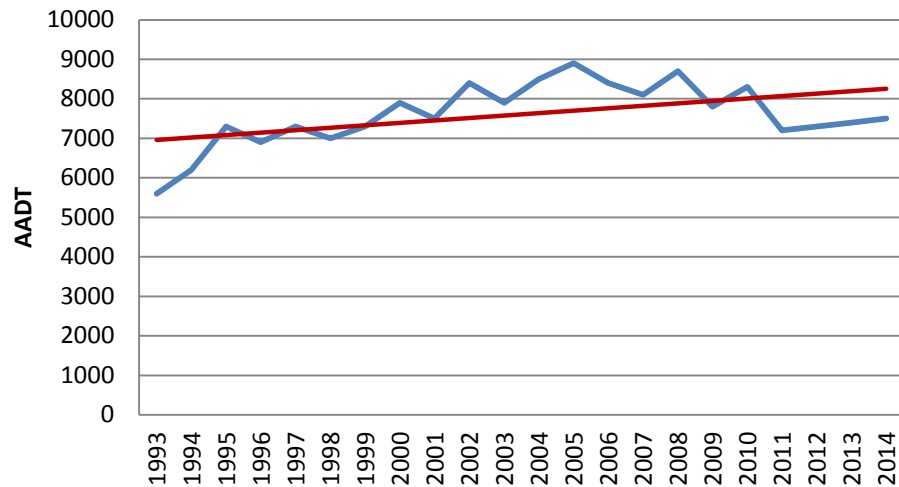
**Site 285024: S.R. 16 North of C.R. 229**



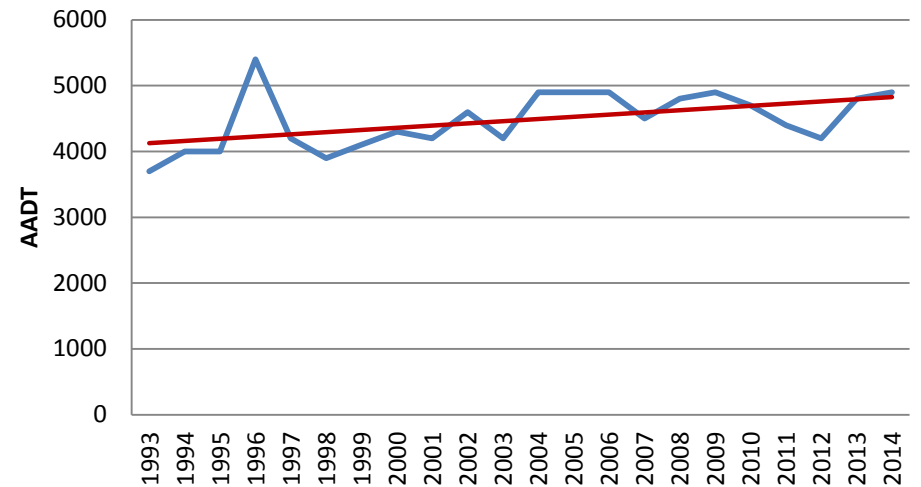
**Site 285021: S.R. 230 West of U.S. 301 (in Town)**



**Site 280015: S.R. 100 at South City Limits**



**Site 280101: S.R. 230 at East City Limits**





**ATTACHMENT B**  
**Train Crossing Summary Data**





## Peggy Malone &amp; Associates, Inc.

2. Emergency Vehicles P = Police Car, A = Ambulance, F = Fire Truck

## Peggy Malone &amp; Associates, Inc.

Train of the day	Train Direction North / South	Date	Time Crossing Arm Closed Crossing	Time Crossing Arm Opened Crossing	Total Time Crossing Closed	EB Queue			WB Queue		
						# of Vehicles	Length	Emergency Vehcile(s) in Queue	# of Vehicles	Length	Emergency Vehcile(s) in Queue
SR-16											
1	N	6/18/2015	0:25:20	0:26:59	0:01:39	1	25	no	1	25	no
2	S	6/18/2015	1:10:38	1:12:02	0:01:24	-	-	-	2	50	no
3	S	6/18/2015	2:04:42	2:11:55	0:07:13	1	25	no	2	50	no
4	N	6/18/2015	2:09:11	2:10:34							
5	N	6/18/2015	2:22:00	2:23:23	0:01:23	-	-	-	1	75	no
6	N	6/18/2015	3:55:14	3:57:16	0:02:02	1	25	no	-	-	-
7	N	6/18/2015	4:43:06	4:45:28	0:02:22	-	-	-	1	25	no
8	N	6/18/2015	4:59:14	5:05:15	0:06:01	3	75	no	10	400	no
9	N	6/18/2015	6:39:11	6:41:54	0:02:43	12	300	no	15	375	no
10	S	6/18/2015	7:30:33	7:31:29	0:00:56	4	100	no	1	25	no
11	S	6/18/2015	8:27:31	8:29:11	0:01:40	10	300	no	13	375	no
12	N	6/18/2015	8:43:15	8:46:53	0:03:38	13	375	no	20+	500+	no
13	S	6/18/2015	12:23:07	12:24:29	0:01:22	2	50	no	2	50	no
14	N	6/18/2015	12:45:39	12:48:00	0:02:21	14	450	no	8	200	no
15	S	6/18/2015	13:11:29	13:13:24	0:01:55	13	325	no	9	250	no
16	N	6/18/2015	14:16:23	14:17:06	0:00:43	7	225	no	4	100	no
17	S	6/18/2015	15:10:11	15:12:48	0:02:37	11	300	no	13	325	no
18	S	6/18/2015	15:17:14	15:19:07	0:01:53	9	250	no	16	450	no
19	S	6/18/2015	18:11:36	18:12:35	0:00:59	4	100	no	3	75	no
20	S	6/18/2015	18:25:04	18:26:51	0:01:47	20	500	Yes-P	5	125	no
21	S	6/18/2015	18:39:29	18:41:03	0:01:34	8	200	no	5	125	no
22	N	6/18/2015	19:40:50	19:42:34	0:01:44	6	150	no	11	275	no
23	S	6/18/2015	20:26:04	20:27:00	0:00:56	4	100	no	2	50	no
24	N	6/18/2015	20:28:25	20:31:06	0:02:41	3	75	no	5	125	no
25	S	6/18/2015	22:13:05	22:15:58	0:02:53	2	50	no	7	175	no
26	N	6/18/2015	23:04:48	23:06:28	0:01:40	2	50	no	4	100	no
27	N	6/18/2015	23:22:57	23:23:47	0:00:50	-	-	-	1	25	no
Total Road Delay from Train Closures					0:56:56	150	4,050		141	3,850	
Average Road Delay from Train Closures					0:02:11						
Maximum Road Delay from Train Closure					0:07:13						
Minimum Road Delay From Train Closure					0:00:43						
Maximum Queue Vehicles & Length						20	500		20+	500+	
Average Queue Vehicles & Length						5.8	156		6.2	167	
Crossing Arms Coming Down with No Train Passing											
		6/18/2015	1:55:51	1:56:46	0:00:55						
		6/18/2015	2:03:31	2:03:50	0:00:19						
		6/18/2015	3:12:43	3:13:31	0:00:48						
		6/18/2015	3:14:58	3:15:27	0:00:29						
		6/18/2015	6:44:16	6:44:42	0:00:26						
		6/18/2015	6:45:04	6:45:35	0:00:31						
		6/18/2015	17:51:28	17:51:56	0:00:28						
		6/18/2015	17:52:22	17:53:12	0:00:50						
		6/18/2015	23:55:34	23:57:28	0:01:54						
		6/18/2015	23:58:25	23:58:53	0:00:28						
Total Non Train Closure Time					0:07:08						
Notes:											
1. Queue measured to furthestest stopped Vehicle that can be identified, (Cars = 25', Medium Truck 50', Heavy Truck 75'											
2. Emergency Vehicles P = Police Car, A = Ambulance, F = Fire Truck											
3. Trains passing at crossing same time - queue and crossing closure time only counted once											









## Peggy Malone &amp; Associates, Inc.

Train of the day	Train Direction North / South	Date	Time Crossing Arm Closed Crossing	Time Crossing Arm Opened Crossing	Total Time Crossing Closed	EB Queue			WB Queue		
						# of Vehicles	Length	Emergency Vehcile(s) in Queue	# of Vehicles	Length	Emergency Vehcile(s) in Queue
SR-100											
1	N	6/18/2015	0:23:55	0:25:44	0:01:49	1	25	no	3	75	no
2	S	6/18/2015	1:10:48	1:12:17	0:01:29	-	-	-	2	50	no
3	N	6/18/2015	2:07:24	2:09:22	0:01:58						
4	S	6/18/2015	2:08:43	2:12:35	0:03:13	4	125	no	2	50	no
5	N	6/18/2015	2:19:28	2:21:34	0:02:06	3	100	no	1	25	no
6	N	6/18/2015	3:53:45	3:56:00	0:02:15	1	25	no	-	-	-
7	N	6/18/2015	4:41:02	4:43:48	0:02:46	-	-	-	1	25	no
8	N	6/18/2015	4:57:42	5:00:49	0:03:07	2	100	no	5	125	no
9	N	6/18/2015	6:37:44	6:40:42	0:02:58	5	125	no	20	500+	no
10	S	6/18/2015	7:31:28	7:33:12	0:01:44	-	-	-	8	225	Yes-P
11	S	6/18/2015	8:27:59	8:30:08	0:02:09	10	275	no	7	175	no
12	N	6/18/2015	8:41:20	8:45:21	0:04:01	12	325	no	18	500	no
13	S	6/18/2015	12:23:29	12:25:06	0:01:37	16	475	no	14	350	no
14	N	6/18/2015	12:44:15	12:46:35	0:02:20	20+	500+	no	13	325	no
15	S	6/18/2015	13:11:48	13:13:40	0:01:52	12	350	no	13	375	Yes-P
16	N	6/18/2015	14:14:57	14:15:46	0:00:49	1	25	no	11	275	no
17	S	6/18/2015	15:11:04	15:14:30	0:03:26	20+	500+	no	19	500+	no
18	S	6/18/2015	15:17:28	15:19:22	0:01:54	12	300	no	18	500+	no
19	S	6/18/2015	18:12:55	18:14:22	0:01:27	8	200	no	7	175	no
20	S	6/18/2015	18:25:14	18:27:05	0:01:51	13	375	no	12	300	no
21	S	6/18/2015	18:39:42	18:41:30	0:01:48	20+	500+	no	3	75	no
22	N	6/18/2015	19:39:26	19:41:21	0:01:55	12	300	no	7	225	no
23	S	6/18/2015	20:26:29	20:27:48	0:01:19						
24	N	6/18/2015	20:27:34	20:29:51	0:02:03	6	150	no	2	50	no
25	S	6/18/2015	22:13:25	22:16:18	0:02:53	5	125	no	6	150	no
26	N	6/18/2015	23:03:27	23:05:16	0:01:49	4	100	no	11	275	no
27	N	6/18/2015	23:21:11	23:22:16	0:01:05	-	-	-	-	-	-
Total Road Delay from Train Closures					0:57:43						
Average Road Delay from Train Closures					0:02:08						
Maximum Road Delay from Train Closure					0:04:01						
Minimum Road Delay From Train Closure					0:00:49						
Maximum Queue Vehicles & Length						20+	500+		20+	500+	
Average Queue Vehicles & Length						6.9	185		7.5	197	
Crossing Arms Coming Down with No Train Passing											
		6/18/2015	18:14:48	18:15:05	0:00:17						
Total Non Train Closure Time					0:00:17						
Notes:											
1. Queue measured to furthestest stopped Vehicle that can be identified, (Cars = 25', Medium Truck 50', Heavy Truck 75'											
2. Emergency Vehicles P = Police Car, A = Ambulance, F = Fire Truck											
3. Trains passing at crossing same time - queue and crossing closure time only counted once - Total Crossing time adjusted so not to double count time											
4. Walnut St two blocks west of RR crossing signal controlled EB vehicles that were in the queue but could not block intersection											

## Peggy Malone &amp; Associates, Inc.

Train of the day	Train Direction North / South	Date	Time Crossing Arm Closed Crossing	Time Crossing Arm Opened Crossing	Total Time Crossing Closed	EB Queue			WB Queue		
						# of Vehicles	Length	Emergency Vehcile(s) in Queue	# of Vehicles	Length	Emergency Vehcile(s) in Queue
SE 144th St											
1	S	6/16/2015	0:02:14	0:04:58	0:02:44	-	-	-	1	25	no
2	S	6/16/2015	1:11:59	1:14:23	0:02:24	-	-	-	-	-	-
3	N	6/16/2015	2:01:20	2:04:21	0:03:01	-	-	-	-	-	-
4	N	6/16/2015	2:15:13	2:18:45	0:03:32	-	-	-	2	50	no
5	N	6/16/2015	4:27:32	4:30:01	0:02:29	-	-	-	-	-	-
6	S	6/16/2015	5:08:33	5:13:05	0:04:32	-	-	-	-	-	-
7	N	6/16/2015	5:46:14	5:50:18	0:04:04	1	25	no	2	50	no
8	N	6/16/2015	6:05:12	6:10:06	0:04:54	1	75	no	2	50	no
9	N	6/16/2015	7:22:57	7:27:23	0:04:26	2	50	no	4	100	no
10	S	6/16/2015	7:42:22	7:43:16	0:00:54	-	-	-	1	25	no
11	S	6/16/2015	8:47:52	8:51:23	0:03:31	-	-	-	6	150	no
12	N	6/16/2015	11:01:18	11:03:06	0:01:48	2	50	no	4	100	no
13	N	6/16/2015	11:26:49	11:29:04	0:02:15	2	50	no	3	75	no
14	S	6/16/2015	12:37:17	12:41:48	0:04:31	6	150	no	6	175	no
15	N	6/16/2015	13:13:55	13:14:52	0:00:57	-	-	-	1	25	no
16	S	6/16/2015	14:13:18	14:14:57	0:01:39	-	-	-	1	25	no
17	N	6/16/2015	15:35:11	15:36:29	0:01:18	1	25	no	-	-	-
18	N	6/16/2015	15:48:37	15:51:32	0:02:55	2	50	no	3	75	no
19	S	6/16/2015	16:23:47	16:27:02	0:03:15	3	75	no	4	100	no
20	S	6/16/2015	17:22:21	17:24:17	0:01:56	2	50	no	-	-	-
21	N	6/16/2015	17:51:38	17:53:46	0:02:08	1	25	no	1	25	no
22	S	6/16/2015	18:59:17	19:00:30	0:01:13	-	-	-	-	-	-
23	S	6/16/2015	21:15:21	21:17:04	0:01:43	2	50	no	1	25	no
24	S	6/16/2015	22:41:37	22:43:06	0:01:29	-	-	-	2	50	no
25	S	6/16/2015	23:07:24	23:08:49	0:01:25	-	-	-	-	-	-
Total Road Delay from Train Closures					1:05:03						
Average Road Delay from Train Closures					0:02:36						
Maximum Road Delay from Train Closure					0:04:54						
Minimum Road Delay From Train Closure					0:00:54						
Maximum Queue Vehicles & Length						6	150		6	175	
Average Queue Vehicles & Length						1.0	27		1.6	45	
Crossing Arms Coming Down with No Train Passing											
		6/16/2015	7:27:57	7:30:17	0:02:20						
		6/16/2015	7:30:32	7:31:39	0:01:07						
		6/16/2015	9:42:02	9:43:30	0:01:28						
		6/16/2015	9:48:25	9:49:27	0:01:02						
		6/16/2015	9:50:07	9:50:36	0:00:29						
		6/16/2015	12:36:48	12:37:01	0:00:13						
		6/16/2015	14:12:48	14:12:58	0:00:10						
		6/16/2015	17:22:00	17:22:11	0:00:11						
Total Non Train Closure Time					0:07:00						
Notes:											
1. Queue measured to furthestest stopped Vehicle that can be identified, (Cars = 25', Medium Truck 50', Heavy Truck 75'											
2. Emergency Vehicles P = Police Car, A = Ambulance, F = Fire Truck											





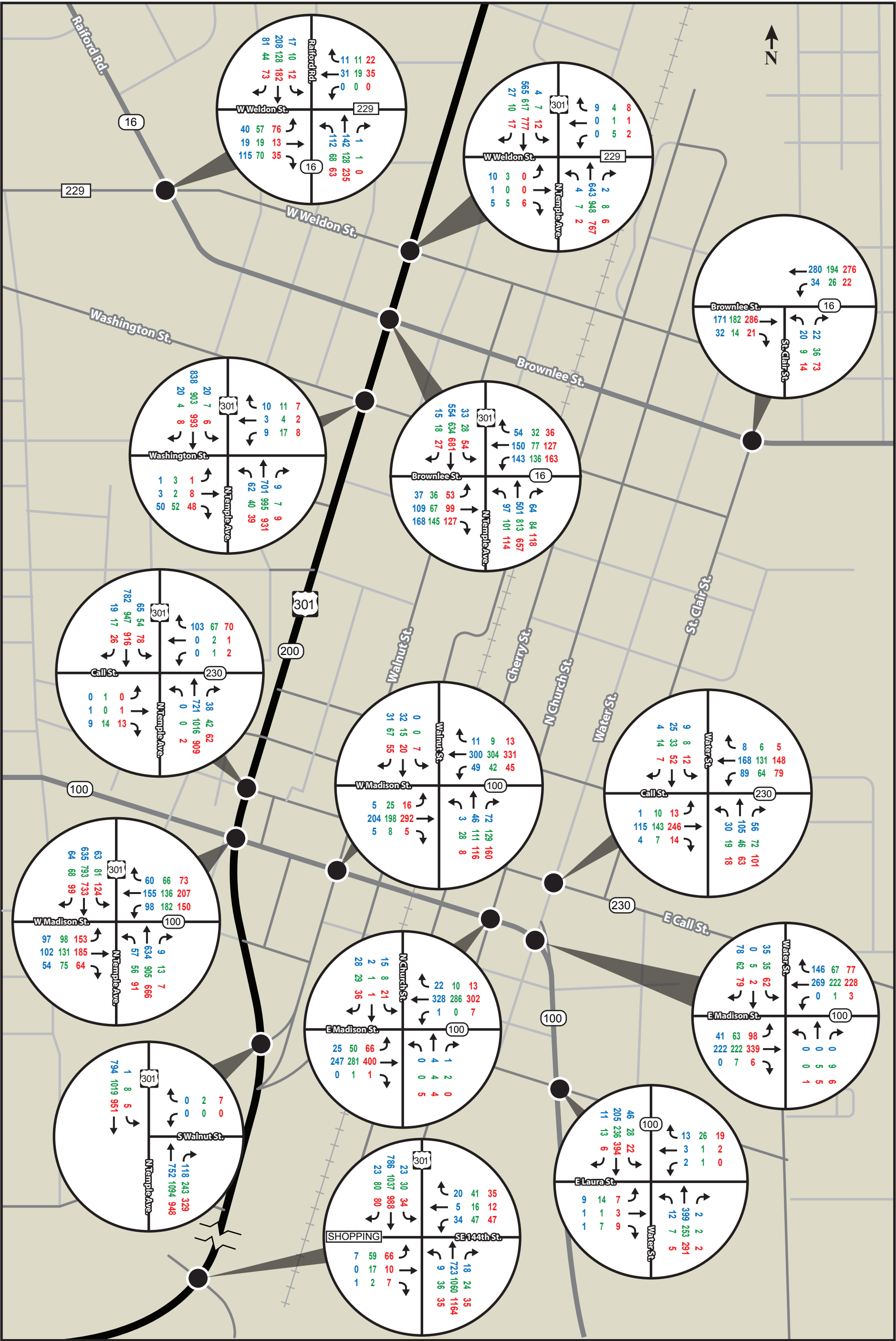
## Peggy Malone &amp; Associates, Inc.

Train of the day	Train Direction North / South	Date	Time Crossing Arm Closed Crossing	Time Crossing Arm Opened Crossing	Total Time Crossing Closed	EB Queue			WB Queue		
						# of Vehicles	Length	Emergency Vehcile(s) in Queue	# of Vehicles	Length	Emergency Vehcile(s) in Queue
SE 144th St											
1	N	6/18/2015	0:23:04	0:24:42	0:01:38	-	-	-	-	-	-
2	S	6/18/2015	1:12:46	1:14:20	0:01:34	-	-	-	-	-	-
3	N	6/18/2015	2:06:28	2:08:19	0:01:51	-	-	-	-	-	-
4	S	6/18/2015	2:11:41	2:15:10	0:03:29	-	-	-	-	-	-
5	N	6/18/2015	3:52:55	3:54:56	0:02:01	-	-	-	-	-	-
6	N	6/18/2015	4:56:47	4:59:13	0:02:26	1	25	no	-	-	-
7	N	6/18/2015	6:36:54	6:39:41	0:02:47	-	-	-	1	25	no
8	S	6/18/2015	7:34:21	7:35:17	0:00:56	-	-	-	1	25	no
9	N	6/18/2015	8:39:59	8:43:43	0:03:44	2	50	no	2	50	no
10	S	6/18/2015	8:45:43	8:47:55	0:02:12	-	-	-	2	50	no
11	N	6/18/2015	12:43:04	12:45:26	0:02:22	1	25	no	3	75	no
12	S	6/18/2015	12:46:48	12:49:00	0:02:12	3	75	no	2	50	no
13	S	6/18/2015	13:13:22	13:15:46	0:02:24	2	50	no	-	-	-
14	N	6/18/2015	14:14:11	14:15:04	0:00:53	-	-	-	1	25	no
15	S	6/18/2015	15:19:26	15:21:21	0:01:55	1	75	no	4	100	no
16	S	6/18/2015	15:26:05	15:28:07	0:02:02	2	50	no	3	75	no
17	S	6/18/2015	18:27:15	18:29:06	0:01:51	1	25	no	3	75	no
18	S	6/18/2015	18:41:57	18:44:00	0:02:03	2	50	no	3	75	no
19	N	6/18/2015	19:38:26	19:40:14	0:01:48	-	-	-	2	50	no
20	N	6/18/2015	20:26:11	20:28:48	0:02:37	-	-	-	-	-	-
21	S	6/18/2015	20:30:15	20:31:36	0:01:21	-	-	-	-	-	-
22	S	6/18/2015	22:15:54	22:18:26	0:02:32	1	25	no	1	25	no
23	N	6/18/2015	23:02:31	23:04:14	0:01:43	1	25	no	-	-	-
Total Road Delay from Train Closures					0:48:21						
Average Road Delay from Train Closures					0:02:06						
Maximum Road Delay from Train Closure					0:03:44						
Minimum Road Delay From Train Closure					0:00:53						
Maximum Queue Vehicles & Length						3	75		4	100	
Average Queue Vehicles & Length						0.7	21		1.2	30	
Crossing Arms Coming Down with No Train Passing											
		6/18/2015	12:25:04	12:25:17	0:00:13						
		6/18/2015	12:25:36	12:27:36	0:02:00						
		6/18/2015	13:13:05	13:13:17	0:00:12						
		6/18/2015	15:13:37	15:13:47	0:00:10						
Total Non Train Closure Time					0:02:35						
Notes:											
1. Queue measured to furthestest stopped Vehicle that can be identified, (Cars = 25', Medium Truck 50', Heavy Truck 75'											
2. Emergency Vehicles P = Police Car, A = Ambulance, F = Fire Truck											



# **ATTACHMENT C**

## **Existing Peak Hour Counts**



Legend

Traffic Movement

AM

MID

PM

Peak Hour Traffic Volume



Attachment C  
Existing Year 2015  
Peak Hour Volumes

Starke Railroad Overpass  
Traffic Diversion Memorandum



## Appendix D: Origin and Destination Survey

**Date:** June 16<sup>th</sup>, 2015

**To:** Stephen Browning, FDOT, District Two  
Chris Presnell, P.E., Jacobs Engineering Group, Inc.

**From:** Babuji Ambikapathy, P.E., VHB, Inc.

**RE: Starke Railroad Overpass PD&E Study – Origin and Destination Survey**

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The purpose of this memorandum is to summarize the work effort performed by Vanasse Hangen Brustlin, Inc. (VHB) as a sub-consultant to Jacobs Engineering Group, Inc. in support of Starke Railroad Overpass PD&E study.

In order to determine the transportation needs and appropriate solutions for the study area it is important to have an understanding of the underlying characteristics of travel. The origins and destinations of traffic are among the most important of these characteristics.

An origin-destination study is used to determine travel patterns of traffic during a typical day. Trips are defined as one-way movement, from where a person starts (origin) to where the person is going (destination).

Vehicle re-identification using Bluetooth (BT) signal data has emerged as an effective and economical means for collecting traffic data including Origin Destination (OD) information which is crucial for transportation planning.

The objective of this task was to determine the travel patterns of traffic during a typical weekday. Bluetooth technology was used to conduct the Origin-Destination (O-D) study. The Bluetooth receivers were placed at 16 locations as identified by FDOT. A copy of the map showing the 16 locations where the Bluetooth receivers were placed can be found in **Appendix**.

The location descriptions are as follows:

- 1) Location 1: US 301, North of CR 227
- 2) Location 2: SR 100, South of SE 21<sup>st</sup> Avenue
- 3) Location 3: SE 144 Street, West of SR 100
- 4) Location 4: US 301, South of CR 100A
- 5) Location 5: SR 100, East of SW 64<sup>th</sup> Avenue
- 6) Location 6: SR 100, West of US 301
- 7) Location 7: SR 100, East of US 301
- 8) Location 8: SR 230, East of Redgrave Street
- 9) Location 9: SR 230, East of NE 6<sup>th</sup> Lane
- 10) Location 10: US 301, South of West Pratt Street
- 11) Location 11: SR 16, West of US 301



- 12) Location 12: SR 16, East of US 301
- 13) Location 13: SR 16, East of NE 12<sup>th</sup> Avenue
- 14) Location 14: US 301, South of Davis Street
- 15) Location 15: SR 16, North of NW 179<sup>th</sup> Street
- 16) Location 16: US 301, South of CR 233

Given the characteristics of City of Starke, the Bluetooth data was collected for 72-hours instead of 24-hours to obtain more data samples and a better estimate of travel patterns. The Bluetooth data was collected from May 19<sup>th</sup>, 2015 (Tuesday) through May 21<sup>st</sup>, 2015 (Wednesday).

The initial O-D matches between the 16 locations were adjusted for reasonability and to balance O-D percentages between locations. The initial O-D matches and O-D percentages can be found in appendix. Tables 1 through 6 summarizes the adjusted O-D matches and percentages for Daily, A.M. peak period (7:00 A.M. to 9:00 A.M.), P.M. peak period (4:00 P.M. to 6:00 P.M.).

**Table 1** through **6** depicts the summaries of the adjusted O-D matches and percentages for 72-hours period, and, A.M. and P.M. peak periods.

**Figures 1** through **16** depicts the adjusted O-D percentages for A.M. peak period (7:00 A.M. to 9:00 A.M.), P.M. peak period (4:00 P.M. to 6:00 P.M.) and Daily conditions for each of the 16 survey locations.

Table1: Daily Origin - Destination Matches

From \ To	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1		11	57	4,500	140	430	951	195	142	3,001	536	1,515	245	2,855	91	2,827
2	25		80	193	286	434	711	77	27	221	165	149	18	231	119	109
3	82	87		86	46	68	120	30	13	54	40	35	14	31	10	25
4	3,712	51	137		314	815	1,624	357	126	4,215	605	1,631	173	3,282	146	2,997
5	200	260	45	342		957	551	85	45	214	83	160	96	103	32	72
6	635	305	65	1,019	889		1,031	142	64	638	312	462	94	445	101	398
7	1,193	679	125	1,757	554	1,070		405	201	1,294	394	786	123	929	95	885
8	225	59	21	366	84	151	405		271	194	93	153	41	118	39	81
9	104	21	13	131	54	67	190	258		42	20	20	18	15	5	10
10	2,918	258	56	4,101	198	642	1,083	206	46		815	2,211	300	3,699	216	3,127
11	579	92	28	564	83	275	374	97	16	972		827	80	502	290	447
12	1,394	146	40	1,588	159	475	769	125	35	2,341	826		396	1,644	158	1,366
13	252	34	6	258	90	140	141	51	23	405	150	523		110	32	63
14	2,293	158	32	2,793	90	442	870	86	30	3,779	427	1,278	60		72	3,387
15	101	71	11	138	27	56	95	41	18	271	300	155	25	84		83
16	2,509	122	21	2,530	61	132	197	66	17	2,859	165	197	42	3,221	69	

Table2: Daily Origin - Destination Percentages

From \ To	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1		0%	1%	99%	3%	9%	21%	4%	3%	66%	12%	33%	5%	63%	2%	62%
2	2%		8%	19%	28%	42%	69%	7%	3%	21%	16%	14%	2%	22%	11%	11%
3	18%	19%		19%	10%	15%	26%	7%	3%	12%	9%	8%	3%	7%	2%	6%
4	34%	0%	1%		3%	8%	15%	3%	1%	39%	6%	15%	2%	30%	1%	28%
5	17%	22%	4%	29%		82%	47%	7%	4%	18%	7%	14%	8%	9%	3%	6%
6	18%	9%	2%	28%	25%		29%	4%	2%	18%	9%	13%	3%	12%	3%	11%
7	19%	11%	2%	28%	9%	17%		6%	3%	21%	6%	13%	2%	15%	2%	14%
8	20%	5%	2%	32%	7%	13%	35%		24%	17%	8%	13%	4%	10%	3%	7%
9	35%	7%	4%	44%	18%	23%	64%	87%		14%	7%	7%	6%	5%	2%	3%
10	23%	2%	0%	33%	2%	5%	9%	2%	0%		6%	18%	2%	29%	2%	25%
11	22%	4%	1%	22%	3%	11%	14%	4%	1%	38%		32%	3%	19%	11%	17%
12	23%	2%	1%	26%	3%	8%	13%	2%	1%	38%	14%		6%	27%	3%	22%
13	34%	5%	1%	35%	12%	19%	19%	7%	3%	55%	20%	71%		15%	4%	9%
14	26%	2%	0%	31%	1%	5%	10%	1%	0%	43%	5%	14%	1%		1%	38%
15	22%	15%	2%	30%	6%	12%	20%	9%	4%	58%	64%	33%	5%	18%		18%
16	76%	4%	1%	77%	2%	4%	6%	2%	1%	87%	5%	6%	1%	98%	2%	



Table 3: AM Peak Period Origin - Destination Matches

From \ To	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1		0	5	403	15	38	66	13	7	308	32	119	17	249	6	225
2	3		16	16	35	62	91	10	1	26	22	26	0	32	10	17
3	4	4		9	5	9	15	3	2	6	1	1	1	2	0	2
4	392	2	11		17	55	120	27	8	375	36	132	11	271	5	242
5	19	25	4	35		122	62	9	5	21	6	10	8	9	3	7
6	66	25	4	107	99		124	17	4	66	21	42	7	44	6	32
7	120	65	8	184	62	118		41	16	114	24	72	7	79	3	68
8	22	7	2	32	7	19	61		22	29	6	23	2	18	3	14
9	11	0	0	13	1	6	19	26		3	0	0	0	0	0	0
10	299	19	4	403	21	63	93	27	3		62	207	24	351	16	268
11	40	9	1	51	7	21	30	10	2	106		77	6	39	25	27
12	106	14	2	152	19	50	73	13	1	266	88		34	157	19	114
13	25	0	0	25	7	9	9	0	0	41	10	62		9	3	8
14	184	4	1	262	5	37	72	7	0	377	46	145	4		5	306
15	10	4	0	17	1	4	5	5	2	26	31	13	0	7		4
16	233	3	1	234	4	19	22	11	0	275	19	16	3	315	6	

Table 4: AM Peak Period Origin - Destination Percentages

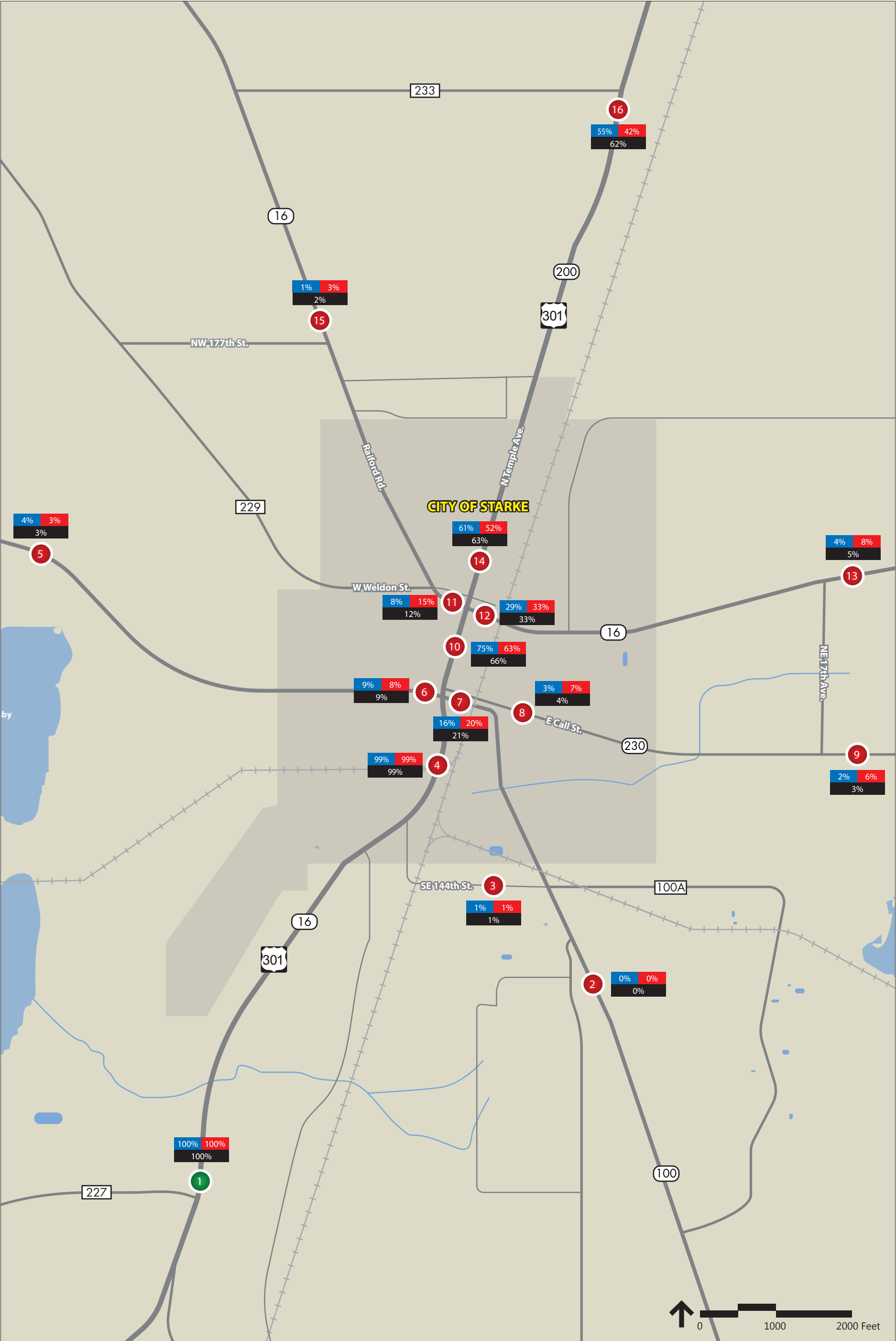
From \ To	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1		0%	1%	99%	4%	9%	16%	3%	2%	75%	8%	29%	4%	61%	1%	55%
2	2%		11%	11%	24%	43%	64%	7%	1%	18%	15%	18%	0%	22%	7%	12%
3	11%	11%		24%	14%	24%	41%	8%	5%	16%	3%	3%	3%	5%	0%	5%
4	40%	0%	1%		2%	6%	12%	3%	1%	38%	4%	13%	1%	28%	1%	25%
5	13%	17%	3%	24%		85%	43%	6%	3%	15%	4%	7%	6%	6%	2%	5%
6	17%	6%	1%	27%	25%		31%	4%	1%	17%	5%	11%	2%	11%	2%	8%
7	20%	11%	1%	30%	10%	19%		7%	3%	19%	4%	12%	1%	13%	0%	11%
8	15%	5%	1%	22%	5%	13%	42%		15%	20%	4%	16%	1%	12%	2%	10%
9	42%	0%	0%	50%	4%	23%	73%	100%		12%	0%	0%	0%	0%	0%	0%
10	25%	2%	0%	34%	2%	5%	8%	2%	0%		5%	18%	2%	30%	1%	23%
11	16%	4%	0%	21%	3%	9%	12%	4%	1%	43%		31%	2%	16%	10%	11%
12	17%	2%	0%	24%	3%	8%	12%	2%	0%	42%	14%		5%	25%	3%	18%
13	35%	0%	0%	35%	10%	13%	13%	0%	0%	58%	14%	87%		13%	4%	11%
14	21%	0%	0%	30%	1%	4%	8%	1%	0%	43%	5%	17%	0%		1%	35%
15	24%	10%	0%	40%	2%	10%	12%	12%	5%	62%	74%	31%	0%	17%		9%
16	73%	1%	0%	73%	1%	6%	7%	3%	0%	86%	6%	5%	1%	98%	2%	

Table 5: PM Peak Period Origin - Destination Matches

From \ To	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1		1	6	609	17	48	120	45	39	387	91	206	47	317	18	261
2	4		7	25	37	39	81	4	1	31	20	23	2	26	16	13
3	13	10		8	11	13	18	3	1	8	8	5	3	2	1	2
4	420	4	16		57	109	213	61	34	551	89	208	31	415	23	389
5	28	41	1	51		142	73	11	8	32	13	26	10	14	5	13
6	60	45	6	97	130		123	16	7	70	34	51	12	57	16	56
7	121	83	12	161	81	128		67	41	138	52	81	17	100	12	96
8	22	1	3	24	16	23	47		52	20	12	17	5	16	7	9
9	12	1	1	17	8	10	27	34		7	1	5	3	7	0	5
10	347	38	4	464	30	67	89	12	2		115	251	55	462	36	401
11	72	16	5	75	12	25	31	14	0	117		94	15	66	35	64
12	133	24	2	178	23	51	66	11	1	223	109		64	194	21	163
13	23	2	0	25	9	17	26	11	5	41	22	52		16	1	13
14	256	34	3	349	21	41	71	3	3	435	54	114	10		6	428
15	16	14	2	21	2	7	15	1	0	40	38	21	5	9		15
16	282	21	0	287	8	20	23	1	1	330	15	19	13	364	6	

Table 6: PM Peak Period Origin - Destination Percentages

From \ To	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1		0%	1%	99%	3%	8%	20%	7%	6%	63%	15%	33%	8%	52%	3%	42%
2	3%		6%	21%	32%	33%	69%	3%	1%	26%	17%	20%	2%	22%	14%	11%
3	22%	17%		13%	18%	22%	30%	5%	2%	13%	13%	8%	5%	3%	2%	3%
4	31%	0%	1%		4%	8%	16%	4%	2%	40%	6%	15%	2%	30%	2%	28%
5	16%	24%	1%	29%		82%	42%	6%	5%	18%	7%	15%	6%	8%	3%	7%
6	14%	11%	1%	23%	31%		29%	4%	2%	17%	8%	12%	3%	14%	4%	13%
7	18%	12%	2%	23%	12%	19%		10%	6%	20%	8%	12%	2%	15%	2%	14%
8	15%	1%	2%	17%	11%	16%	32%		36%	14%	8%	12%	3%	11%	5%	6%
9	29%	2%	2%	40%	19%	24%	64%	81%		17%	2%	12%	7%	17%	0%	12%
10	24%	3%	0%	32%	2%	5%	6%	1%	0%		8%	17%	4%	32%	2%	28%
11	23%	5%	2%	24%	4%	8%	10%	4%	0%	38%		30%	5%	21%	11%	21%
12	20%	4%	0%	27%	3%	8%	10%	2%	0%	33%	16%		10%	29%	3%	24%
13	24%	2%	0%	27%	10%	18%	28%	12%	5%	44%	23%	55%		17%	1%	14%
14	25%	3%	0%	34%	2%	4%	7%	0%	0%	42%	5%	11%	1%		1%	42%
15	26%	23%	3%	34%	3%	11%	24%	2%	0%	65%	61%	34%	8%	15%		24%
16	76%	6%	0%	78%	2%	5%	6%	0%	0%	89%	4%	5%	4%	98%	2%	



AM PM Traffic Volume Distribution  
Daily

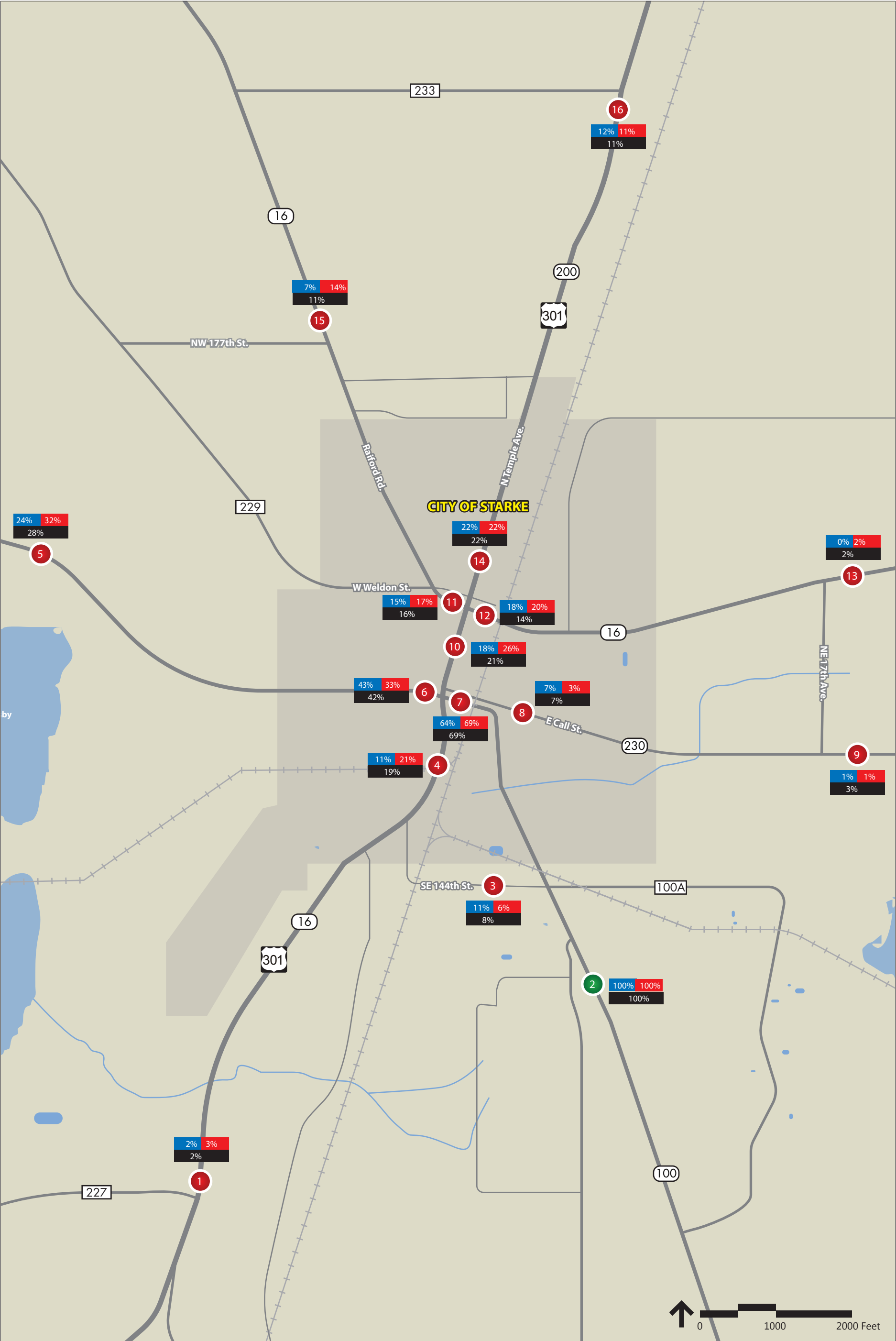
● Location of Origin

● Location of Destination



**Figure 1**  
**Origin Location 1**  
**Traffic Volume Distribution Percentage**





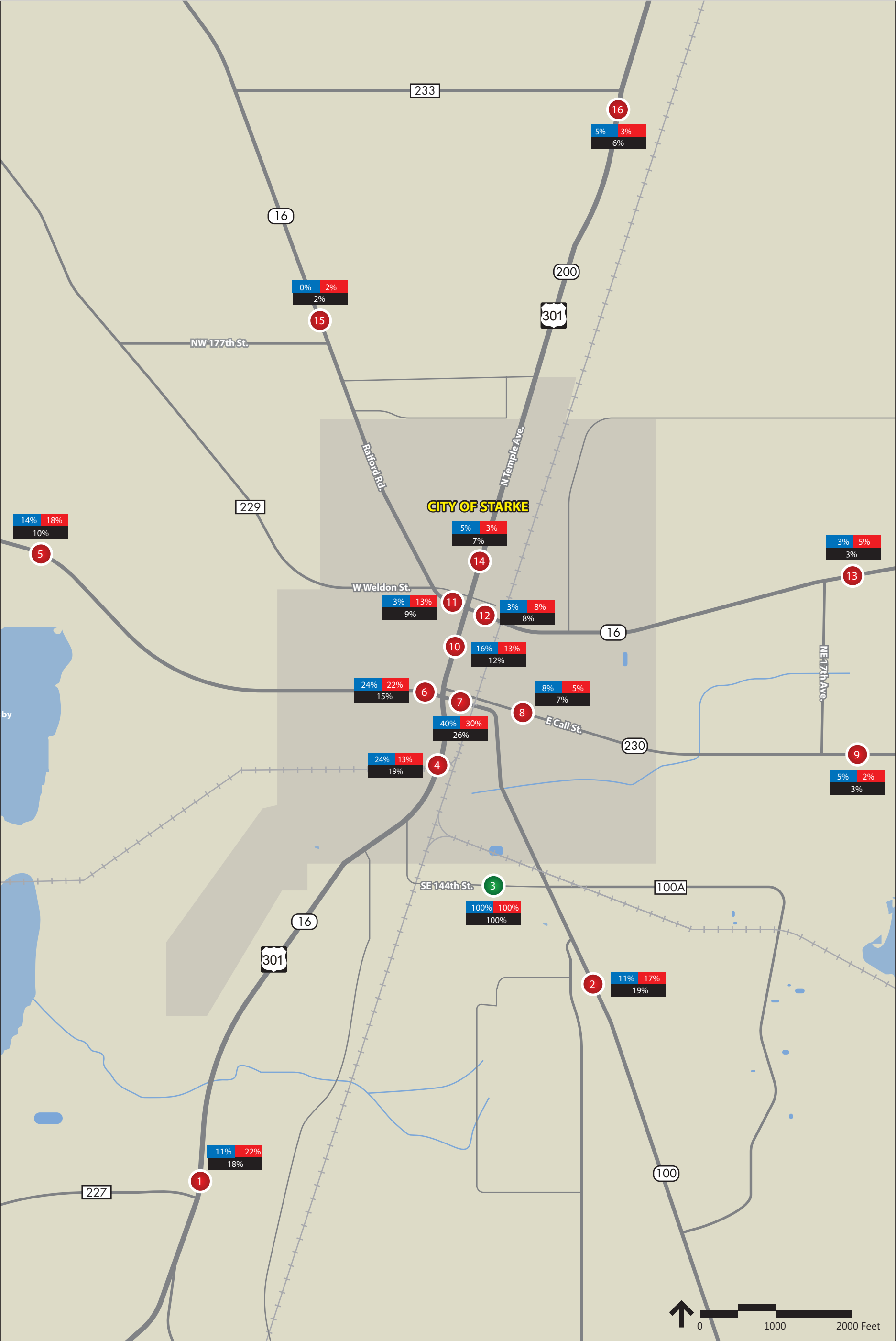
AM PM Traffic Volume Distribution  
Daily

● Location of Origin

● Location of Destination



**Figure 2**  
**Origin Location 2**  
**Traffic Volume Distribution Percentage**



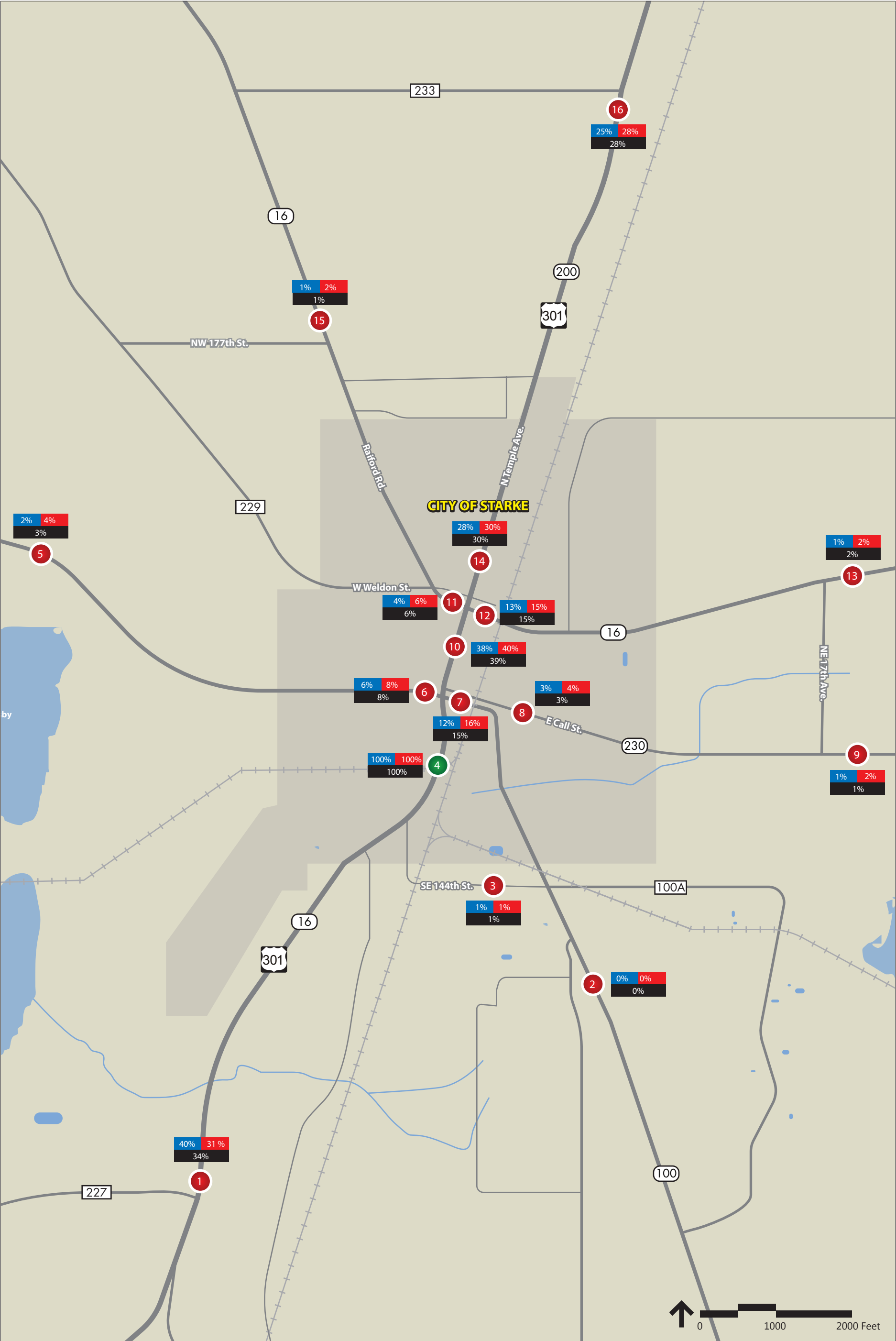
AM PM Traffic Volume Distribution  
Daily

● Location of Origin

● Location of Destination



**Figure 3**  
**Origin Location 3**  
**Traffic Volume Distribution Percentage**

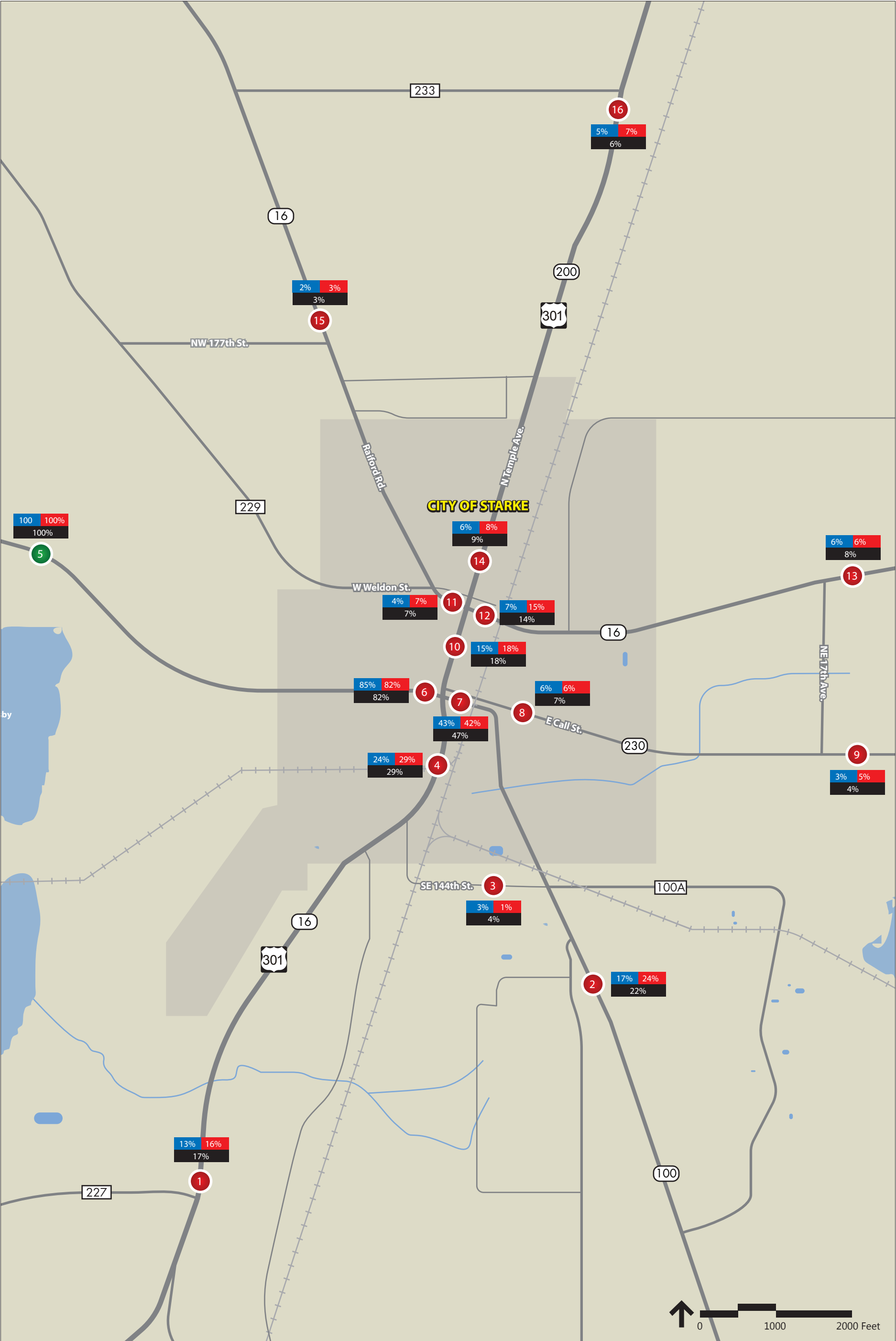


AM PM Traffic Volume Distribution  
Daily  
Location of Origin  
Location of Destination



**Figure 4**  
**Origin Location 4**  
**Traffic Volume Distribution Percentage**





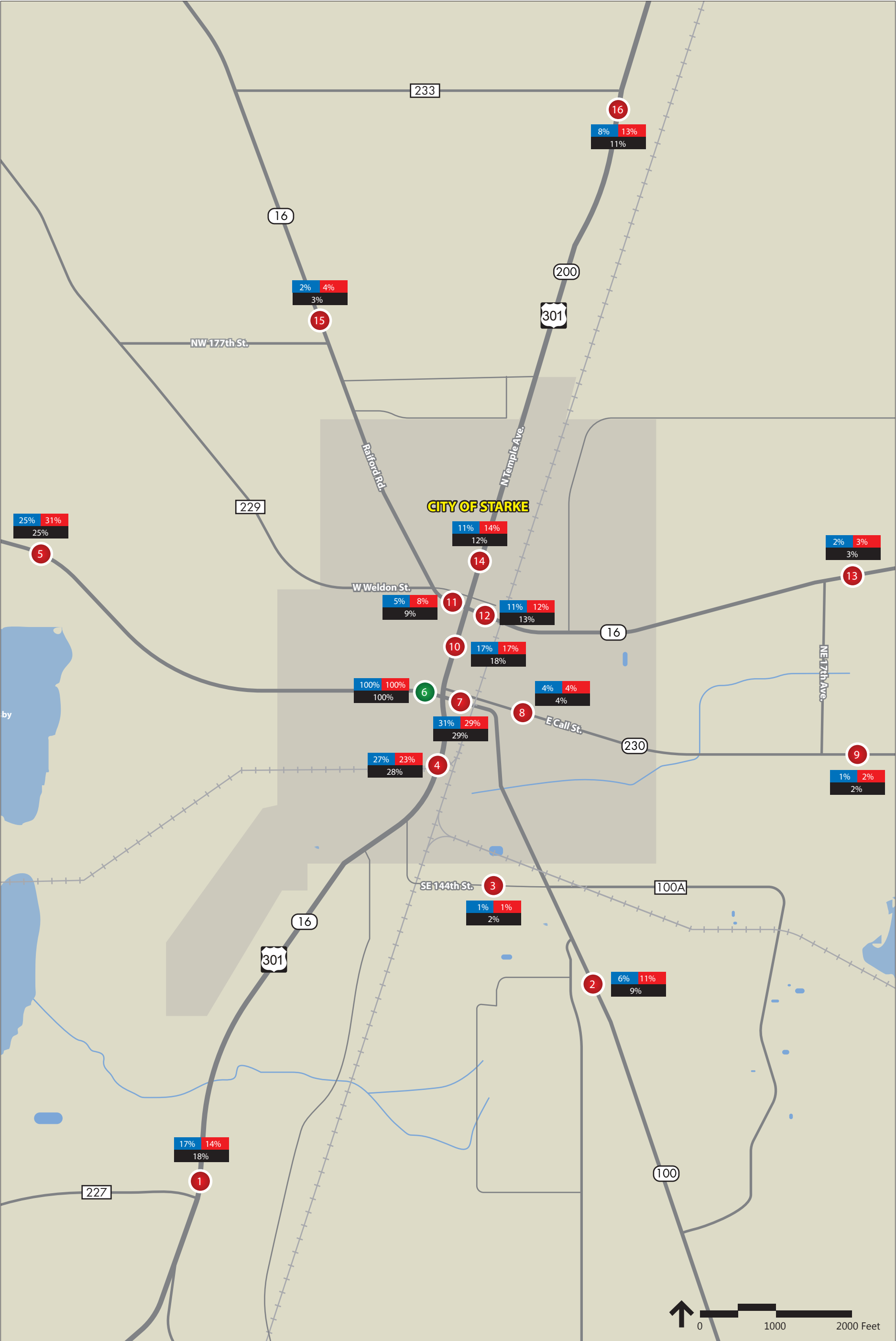
AM PM Traffic Volume Distribution  
Daily

● Location of Origin

● Location of Destination



**Figure 5**  
**Origin Location 5**  
**Traffic Volume Distribution Percentage**



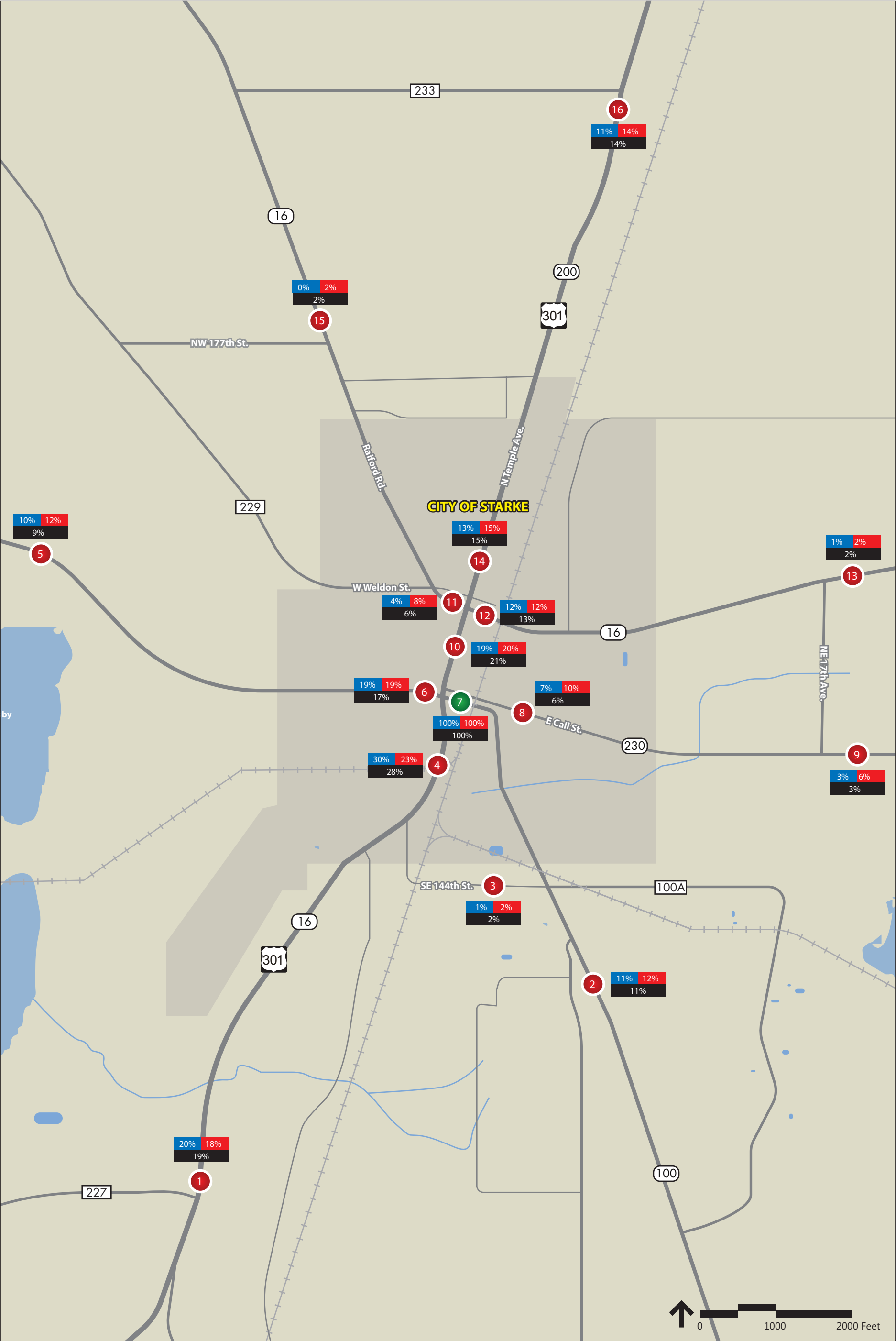
AM PM Traffic Volume Distribution  
Daily

● Location of Origin

● Location of Destination

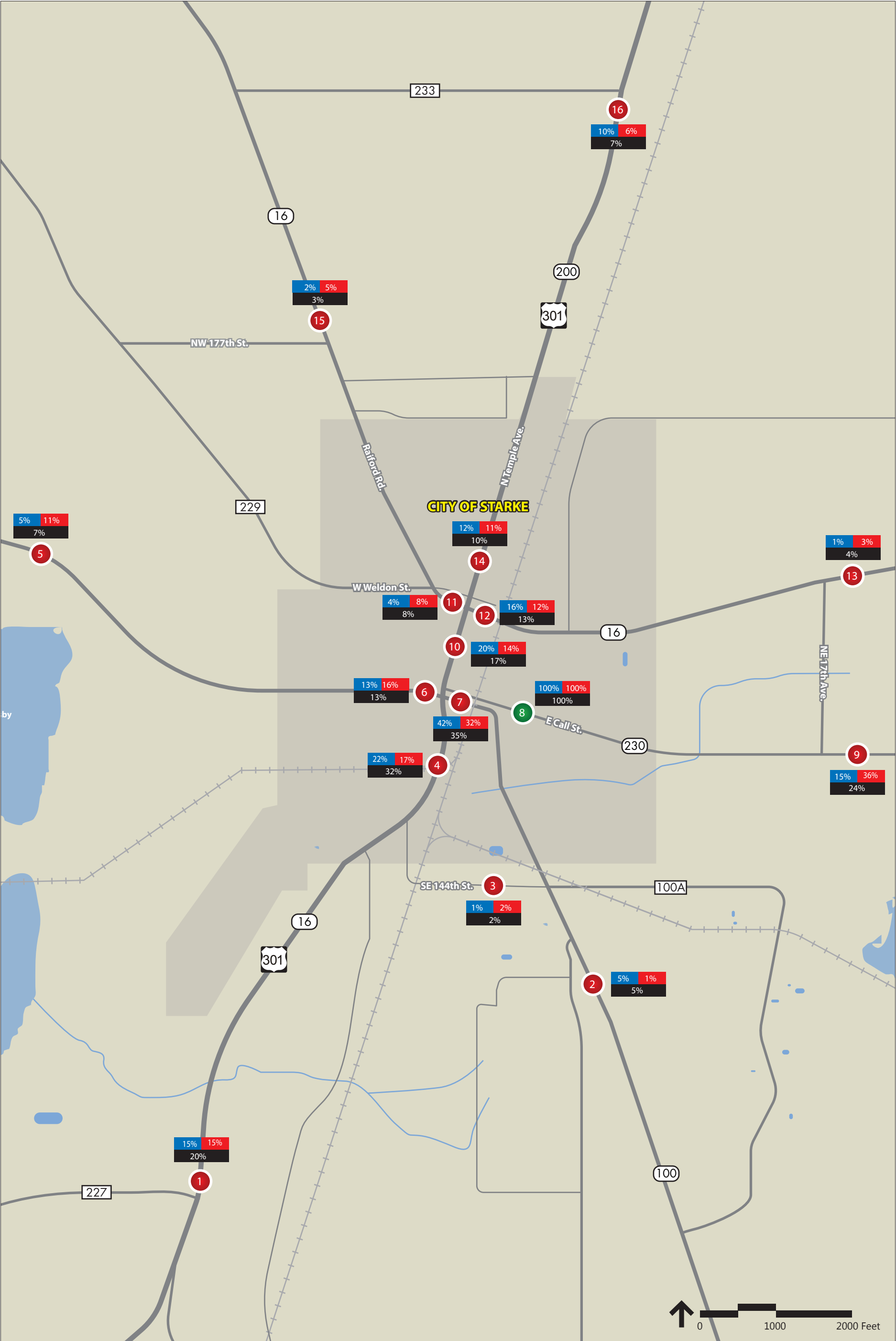


**Figure 6**  
**Origin Location 6**  
**Traffic Volume Distribution Percentage**

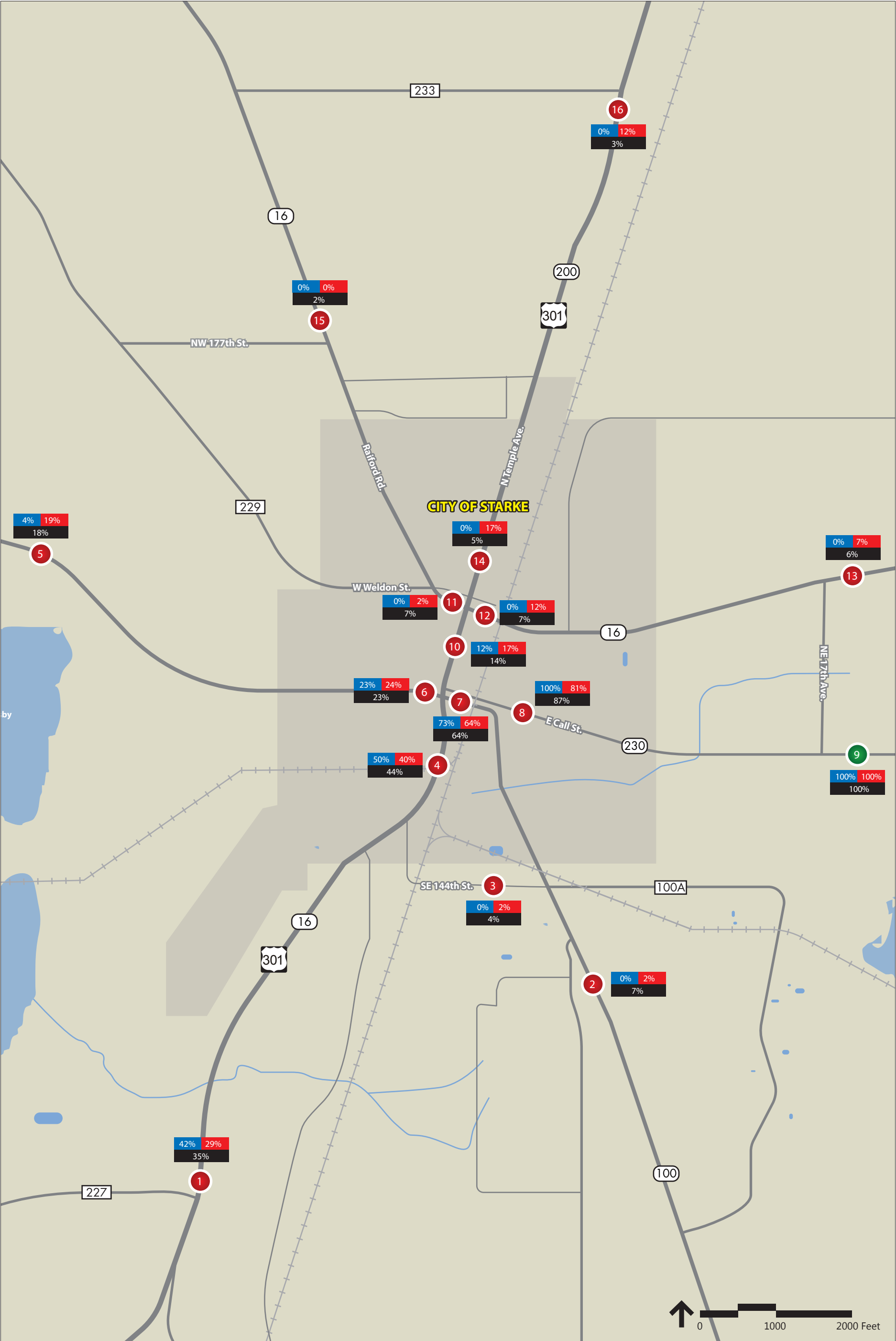


**Figure 7**  
**Origin Location 7**  
**Traffic Volume Distribution Percentage**

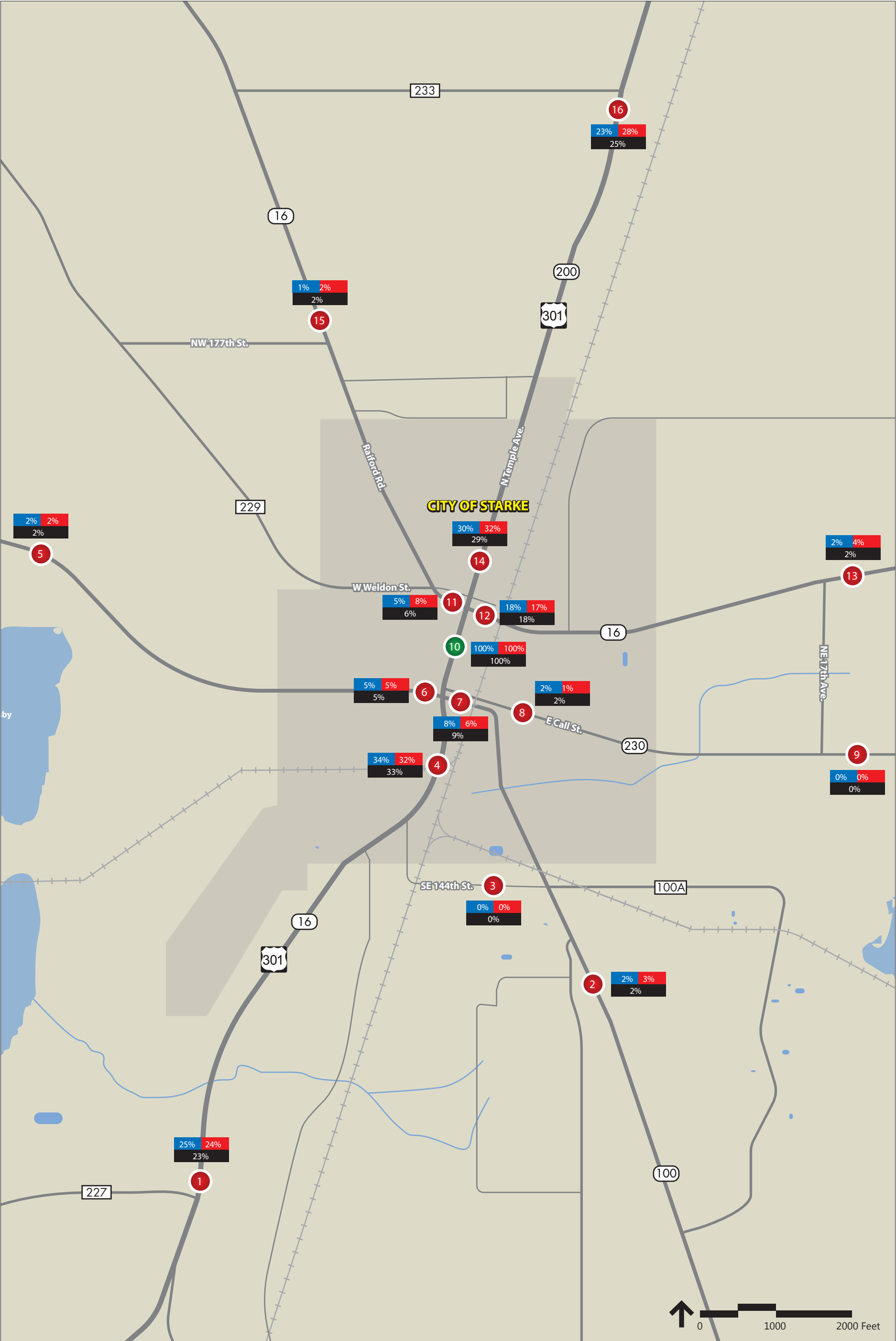




**Figure 8**  
**Origin Location 8**  
**Traffic Volume Distribution Percentage**

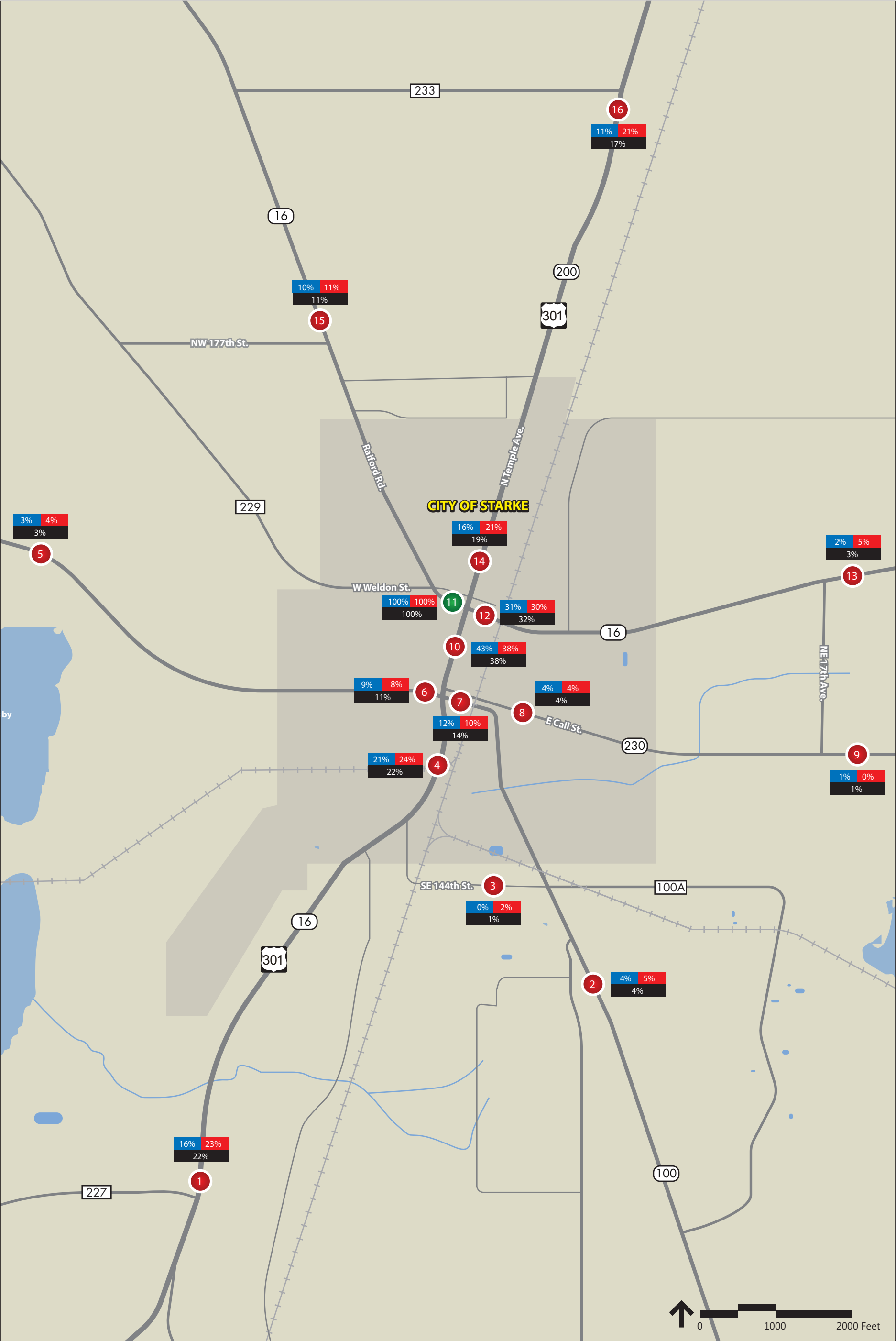


**Figure 9**  
**Origin Location 9**  
**Traffic Volume Distribution Percentage**



**Figure 10**  
**Origin Location 10**  
**Traffic Volume Distribution Percentage**

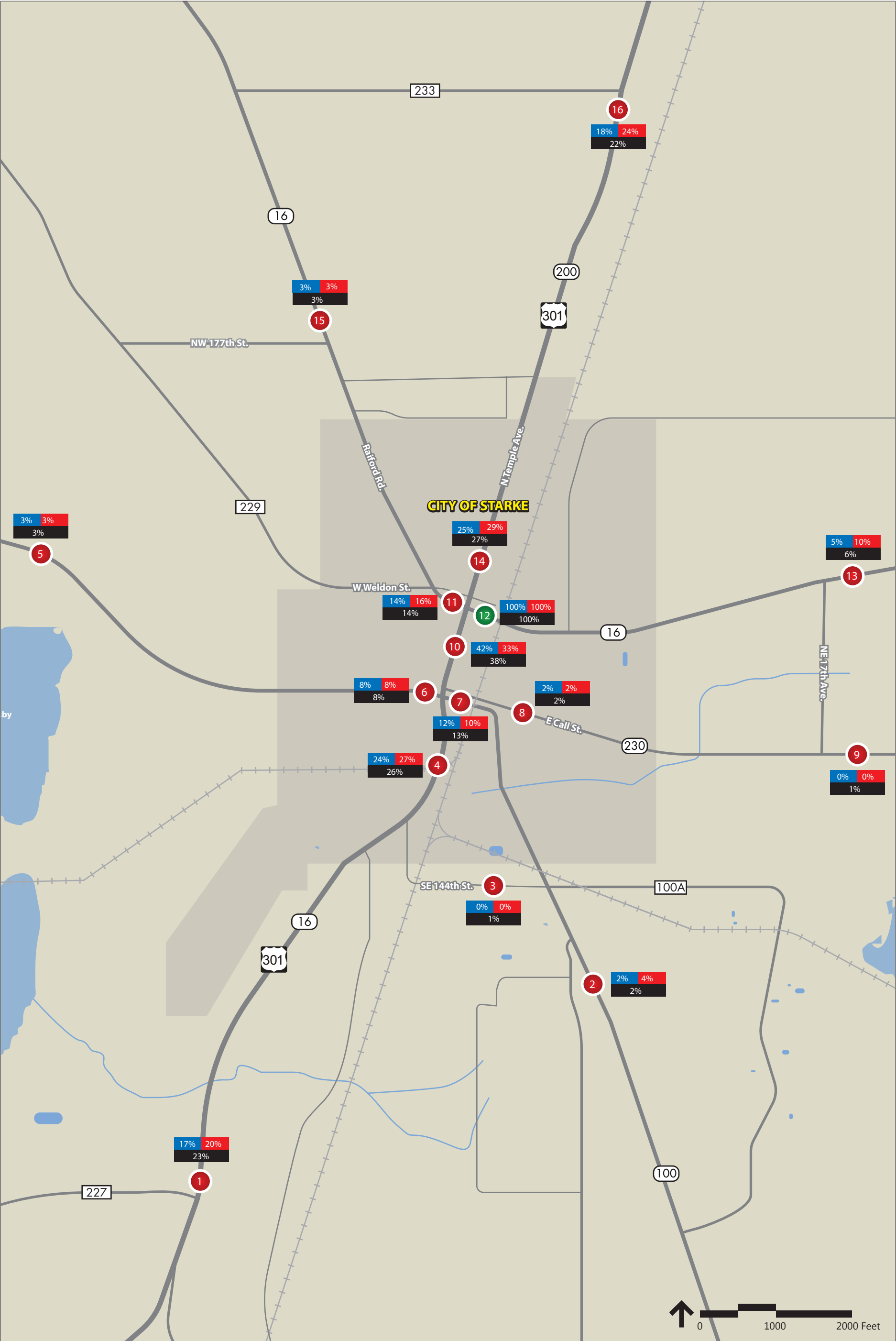




AM PM Traffic Volume Distribution  
Daily  
● Location of Origin  
● Location of Destination



**Figure 11**  
**Origin Location 11**  
**Traffic Volume Distribution Percentage**



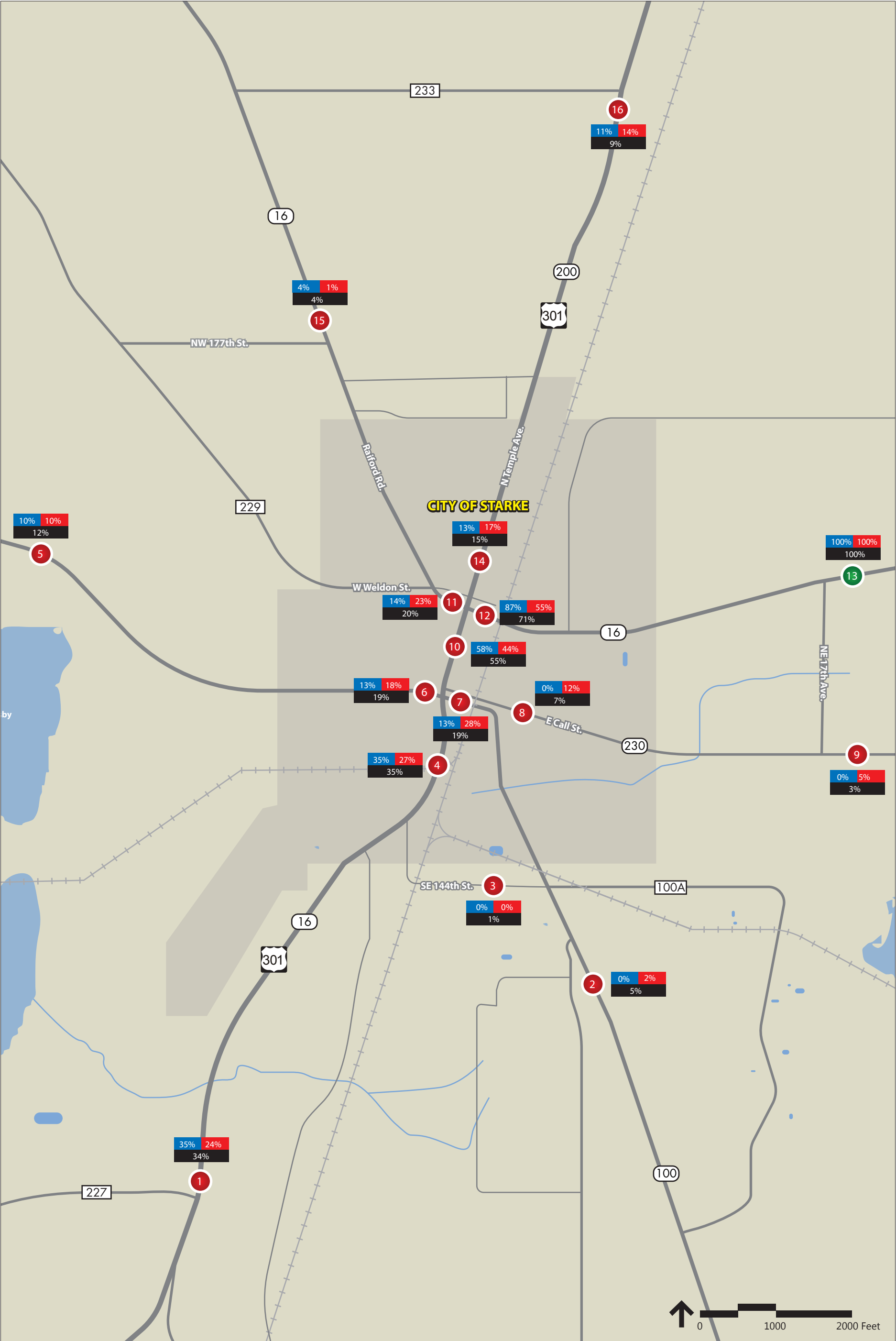
AM PM Traffic Volume Distribution  
Daily

● Location of Origin

● Location of Destination



**Figure 12**  
**Origin Location 12**  
**Traffic Volume Distribution Percentage**



AM PM  
Daily Traffic Volume Distribution

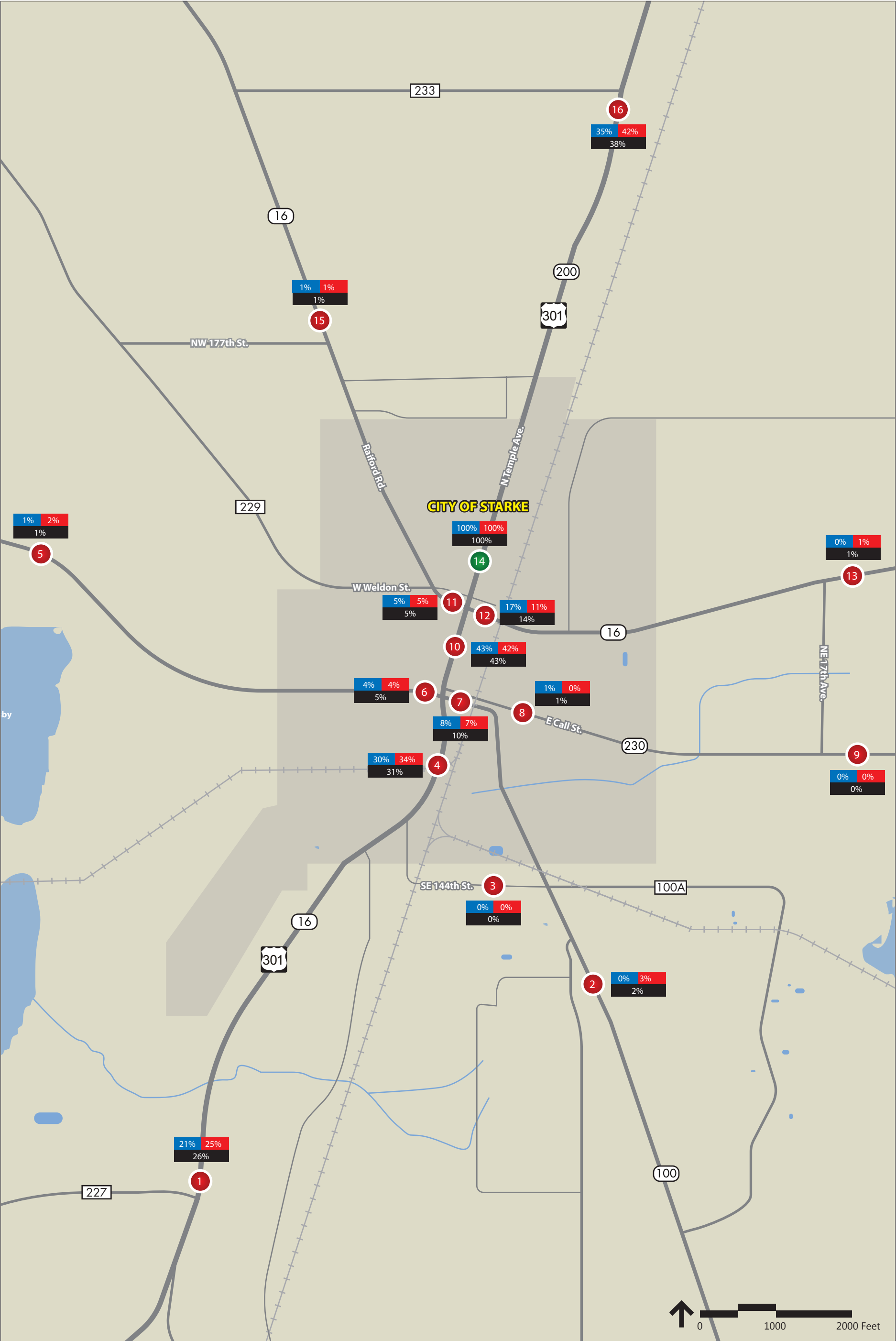
Location of Origin

Location of Destination



**Figure 13**  
**Origin Location 13**  
**Traffic Volume Distribution Percentage**





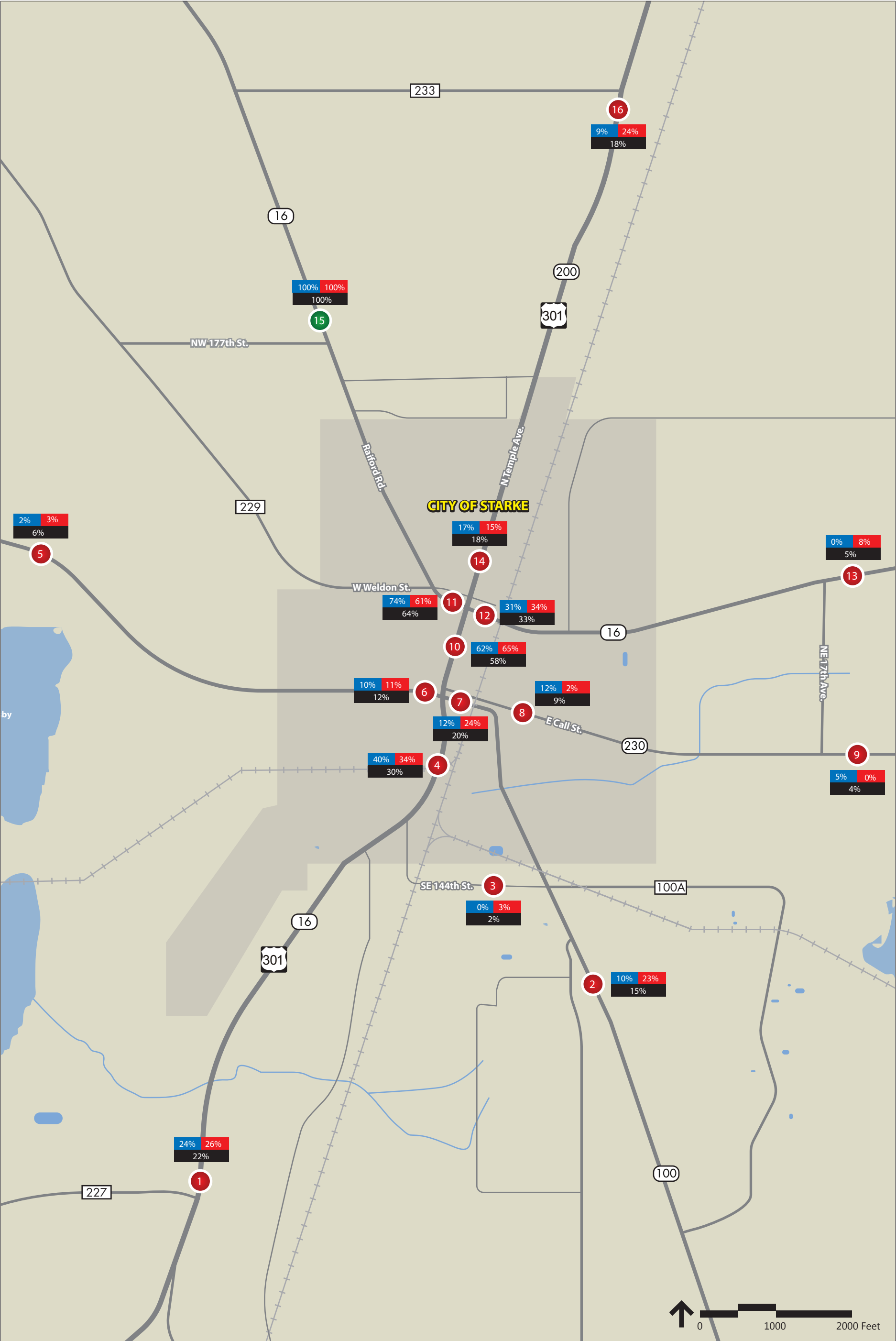
AM PM Traffic Volume Distribution  
Daily

● Location of Origin

● Location of Destination



**Figure 14**  
**Origin Location 14**  
**Traffic Volume Distribution Percentage**



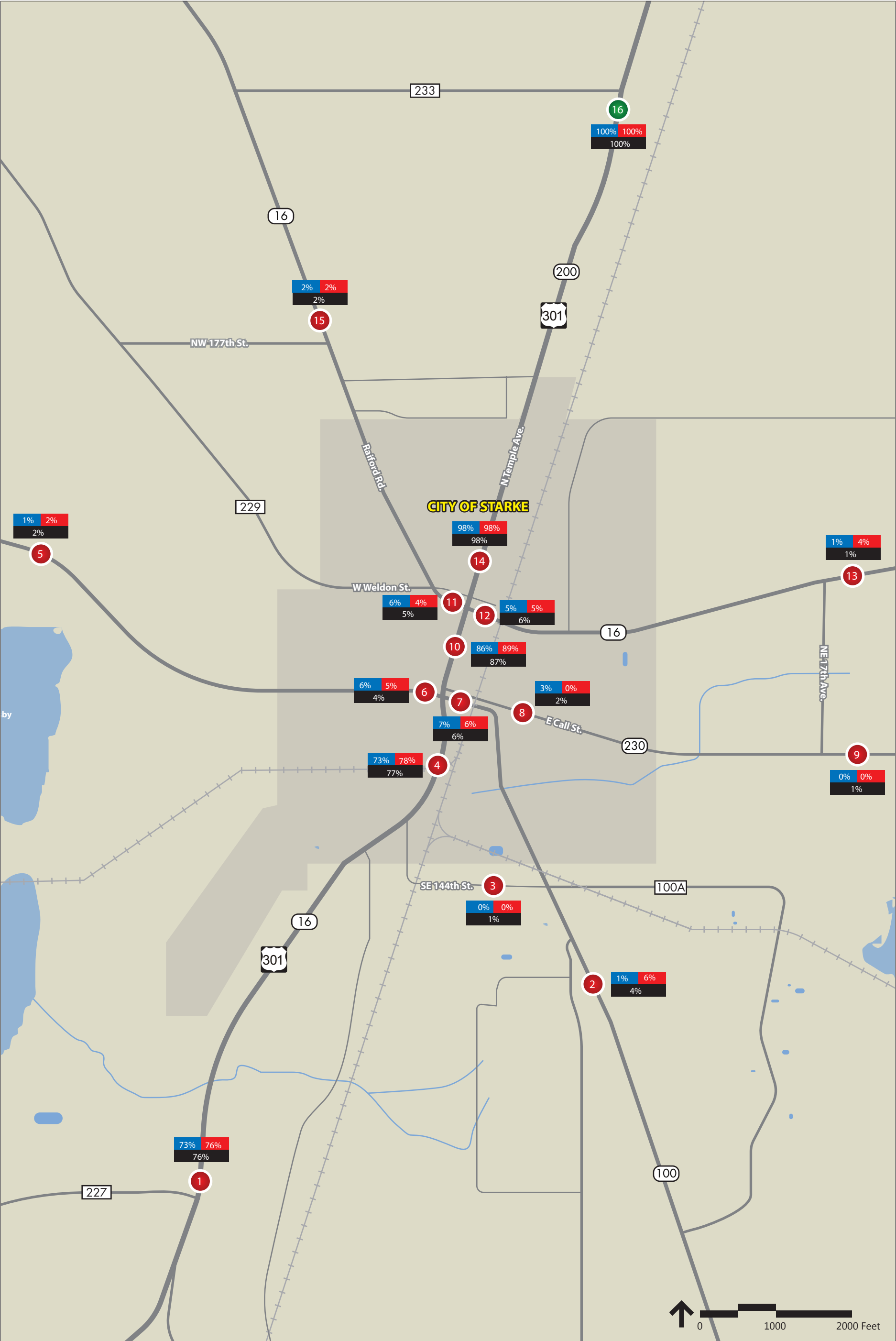
AM PM Traffic Volume Distribution  
Daily

● Location of Origin

● Location of Destination



**Figure 15**  
**Origin Location 15**  
**Traffic Volume Distribution Percentage**



AM	PM
Daily	

 Traffic Volume Distribution

● Location of Origin

● Location of Destination

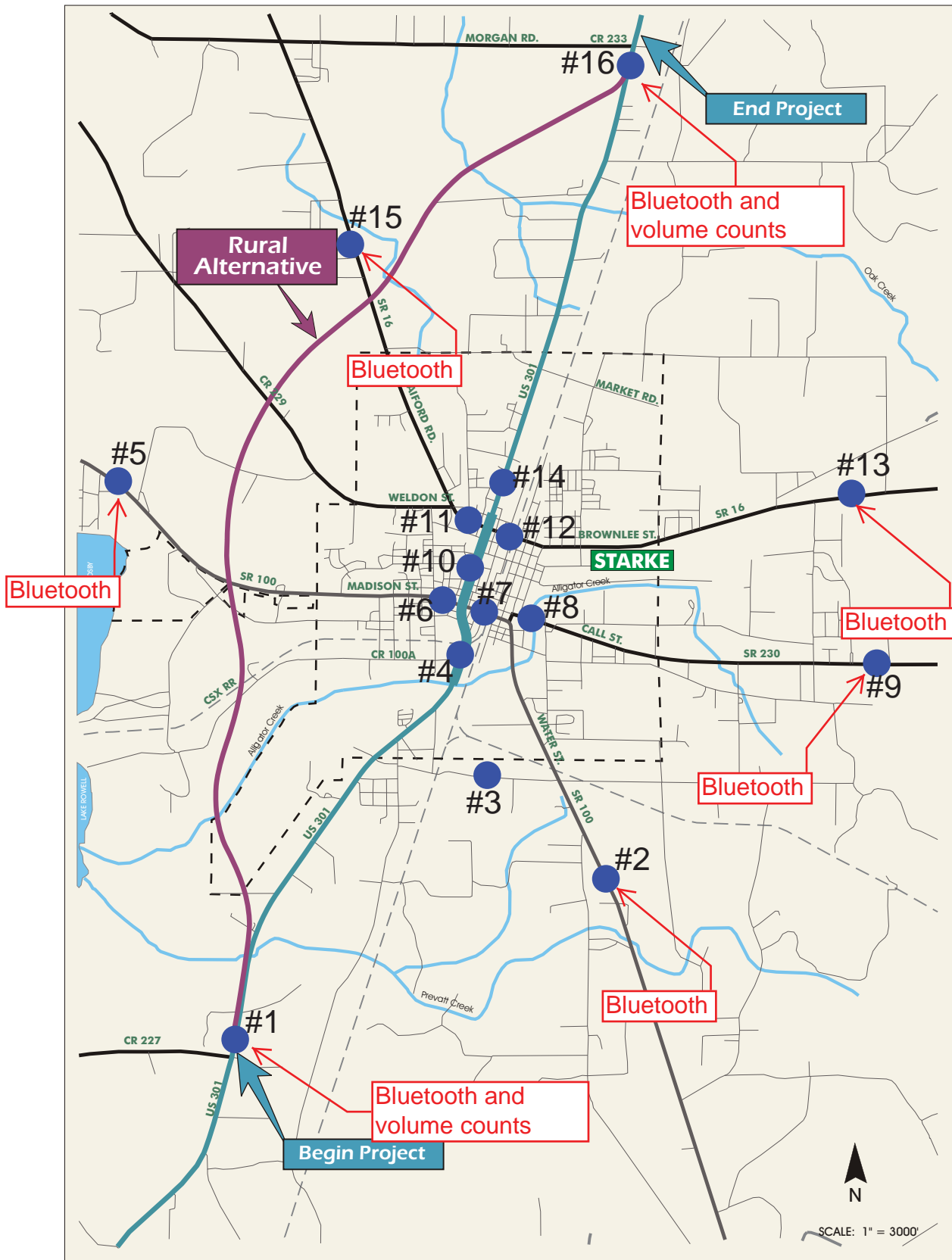


**Figure 16**  
**Origin Location 16**  
**Traffic Volume Distribution Percentage**



## Appendix

# Project Limits



## Origin - Destination Summary (Raw Data)

*72-Hour Period Matches*

<div>From \ To</div>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1		11	57	4,500	140	430	951	195	142	2,855	536	1,515	245	3,001	91	2,827
2	25		80	158	286	383	711	77	27	221	81	149	18	134	50	109
3	82	89		86	46	68	120	30	13	54	40	35	14	25	10	31
4	3,712	137	51		314	812	1,624	357	126	4,215	605	1,631	173	3,282	146	2,997
5	200	260	45	342		957	551	85	45	214	83	160	96	103	32	72
6	635	305	65	1,045	889		1,031	142	64	638	312	462	94	445	101	398
7	1,193	679	125	1,757	554	1,070		406	201	1,294	394	786	123	929	95	885
8	225	59	21	366	84	151	405		271	194	93	153	41	118	39	81
9	104	21	13	131	54	67	190	258		42	20	19	18	15	5	10
10	2,918	258	56	4,101	198	642	1,083	206	46		816	2,211	300	3,699	216	3,127
11	579	92	28	564	83	275	374	97	16	970		827	80	502	290	447
12	1,588	146	40	1,394	159	475	769	125	35	2,341	826		411	1,644	158	1,366
13	424	34	6	258	90	140	141	51	23	405	150	523		63	32	110
14	2,793	158	32	2,293	90	442	870	86	30	3,779	427	1,278	60		72	3,387
15	101	71	11	138	27	56	95	41	18	271	300	155	25	84		83
16	2,772	122	21	3,031	61	431	911	66	17	2,922	407	1,079	42	3,221	69	

*72-Hour Period Percentage*

<div>From \ To</div>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1		0%	1%	99%	3%	9%	21%	4%	3%	63%	12%	33%	5%	66%	2%	62%
2	2%		8%	15%	28%	37%	69%	7%	3%	21%	8%	14%	2%	13%	5%	11%
3	18%	20%		19%	10%	15%	26%	7%	3%	12%	9%	8%	3%	5%	2%	7%
4	34%	1%	0%		3%	8%	15%	3%	1%	39%	6%	15%	2%	30%	1%	28%
5	17%	22%	4%	29%		82%	47%	7%	4%	18%	7%	14%	8%	9%	3%	6%
6	18%	8%	2%	29%	25%		29%	4%	2%	18%	9%	13%	3%	12%	3%	11%
7	19%	11%	2%	28%	9%	17%		7%	3%	21%	6%	13%	2%	15%	2%	14%
8	20%	5%	2%	32%	7%	13%	35%		24%	17%	8%	13%	4%	10%	3%	7%
9	35%	7%	4%	44%	18%	23%	64%	87%		14%	7%	6%	6%	5%	2%	3%
10	23%	2%	0%	33%	2%	5%	9%	2%	0%		7%	18%	2%	29%	2%	25%
11	22%	4%	1%	22%	3%	11%	14%	4%	1%	37%		32%	3%	19%	11%	17%
12	26%	2%	1%	23%	3%	8%	13%	2%	1%	38%	14%		7%	27%	3%	22%
13	57%	5%	1%	35%	12%	19%	19%	7%	3%	55%	20%	71%		9%	4%	15%
14	31%	2%	0%	26%	1%	5%	10%	1%	0%	43%	5%	14%	1%		1%	38%
15	22%	15%	2%	30%	6%	12%	20%	9%	4%	58%	64%	33%	5%	18%		18%
16	84%	4%	1%	92%	2%	13%	28%	2%	1%	89%	12%	33%	1%	98%	2%	



# Origin - Destination Summary (Raw Data)

AM Peak Period Matches

From \ To	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1		0	5	403	15	38	66	13	7	308	32	119	17	249	6	225
2	3		16	12	35	60	91	10	1	26	11	26	0	18	7	17
3	5	4		10	5	9	15	2	3	6	1	1	1	2	0	2
4	392	11	2		17	55	120	27	8	375	36	132	11	271	5	242
5	19	25	4	35		122	62	9	5	21	6	10	8	9	3	7
6	66	25	4	107	99		124	17	4	64	21	42	7	44	6	32
7	120	65	8	184	62	120		41	16	114	24	72	7	79	3	68
8	22	7	2	57	7	19	60		22	28	6	23	2	18	3	14
9	11	0	0	14	1	6	19	26		3	0	0	0	0	1	0
10	299	19	4	403	21	65	93	27	3		62	207	24	351	16	268
11	51	9	1	40	7	21	30	10	2	106		77	6	39	25	27
12	152	14	2	106	19	50	73	13	1	266	88		34	157	19	114
13	40	0	0	25	7	9	9	0	0	41	10	63		0	3	8
14	262	4	1	184	5	37	72	7	0	377	46	144	4		5	306
15	10	6	0	17	1	4	5	5	2	26	31	13	0	7		4
16	259	3	1	265	4	34	73	11	0	275	35	104	3	315	6	

AM Peak Period Percentage

From \ To	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1		0%	1%	99%	4%	9%	16%	3%	2%	75%	8%	29%	4%	61%	1%	55%
2	2%		11%	8%	24%	42%	64%	7%	1%	18%	8%	18%	0%	13%	5%	12%
3	13%	11%		26%	13%	24%	39%	5%	8%	16%	3%	3%	3%	5%	0%	5%
4	40%	1%	0%		2%	6%	12%	3%	1%	39%	4%	14%	1%	28%	1%	25%
5	13%	17%	3%	24%		85%	43%	6%	3%	15%	4%	7%	6%	6%	2%	5%
6	17%	6%	1%	27%	25%		31%	4%	1%	16%	5%	11%	2%	11%	2%	8%
7	20%	11%	1%	30%	10%	20%		7%	3%	19%	4%	12%	1%	13%	0%	11%
8	15%	5%	1%	40%	5%	13%	42%		15%	19%	4%	16%	1%	13%	2%	10%
9	42%	0%	0%	54%	4%	23%	73%	100%		12%	0%	0%	0%	0%	4%	0%
10	25%	2%	0%	34%	2%	6%	8%	2%	0%		5%	18%	2%	30%	1%	23%
11	21%	4%	0%	16%	3%	9%	12%	4%	1%	43%		31%	2%	16%	10%	11%
12	24%	2%	0%	17%	3%	8%	12%	2%	0%	42%	14%		5%	25%	3%	18%
13	56%	0%	0%	35%	10%	13%	13%	0%	0%	57%	14%	88%		0%	4%	11%
14	30%	0%	0%	21%	1%	4%	8%	1%	0%	43%	5%	16%	0%		1%	35%
15	24%	14%	0%	40%	2%	10%	12%	12%	5%	62%	74%	31%	0%	17%		9%
16	81%	1%	0%	83%	1%	11%	23%	3%	0%	86%	11%	32%	1%	98%	2%	

### Origin - Destination Summary (Raw Data)

*PM Peak Period Matches*

From \ To	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1		1	6	609	17	48	120	45	39	317	91	206	47	387	18	378
2	4		7	25	37	39	81	4	1	31	20	23	2	26	16	13
3	13	10		8	11	13	18	3	1	8	8	5	3	2	1	2
4	420	16	4		57	109	212	61	34	551	89	208	31	415	23	389
5	28	41	1	51		142	73	11	8	32	13	26	10	14	5	13
6	60	45	6	97	130		123	16	7	68	34	51	12	57	16	56
7	121	83	12	161	81	128		67	41	138	52	81	17	100	12	96
8	37	1	3	34	16	23	47		52	20	12	17	5	16	7	9
9	12	1	3	32	18	14	27	34		7	1	5	3	7	0	5
10	347	38	4	464	30	63	89	12	2		115	251	55	462	36	401
11	75	16	5	72	12	42	46	14	0	117		94	15	66	35	64
12	178	24	2	133	23	51	66	11	1	223	109		64	194	21	163
13	50	2	0	25	9	17	26	11	5	41	22	52		13	1	16
14	349	34	3	256	21	41	71	3	3	435	54	114	10		6	428
15	16	14	2	21	2	7	15	1	0	40	38	21	5	9		15
16	360	21	0	383	8	47	90	1	1	349	46	118	13	364	6	

*PM Peak Period Percentage*

From \ To	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1		0%	1%	99%	3%	8%	20%	7%	6%	52%	15%	33%	8%	63%	3%	61%
2	3%		6%	21%	32%	33%	69%	3%	1%	26%	17%	20%	2%	22%	14%	11%
3	22%	17%		13%	18%	22%	30%	5%	2%	13%	13%	8%	5%	3%	2%	3%
4	31%	1%	0%		4%	8%	16%	4%	3%	41%	7%	15%	2%	31%	2%	29%
5	16%	24%	1%	29%		82%	42%	6%	5%	18%	7%	15%	6%	8%	3%	7%
6	14%	11%	1%	23%	31%		29%	4%	2%	16%	8%	12%	3%	14%	4%	13%
7	18%	12%	2%	23%	12%	19%		10%	6%	20%	8%	12%	2%	15%	2%	14%
8	26%	1%	2%	23%	11%	16%	32%		36%	14%	8%	12%	3%	11%	5%	6%
9	29%	2%	7%	76%	43%	33%	64%	81%		17%	2%	12%	7%	17%	0%	12%
10	24%	3%	0%	32%	2%	4%	6%	1%	0%		8%	17%	4%	32%	2%	28%
11	24%	5%	2%	23%	4%	13%	15%	4%	0%	38%		30%	5%	21%	11%	21%
12	27%	4%	0%	20%	3%	8%	10%	2%	0%	33%	16%		10%	29%	3%	24%
13	53%	2%	0%	27%	10%	18%	28%	12%	5%	44%	23%	55%		14%	1%	17%
14	34%	3%	0%	25%	2%	4%	7%	0%	0%	42%	5%	11%	1%		1%	42%
15	26%	23%	3%	34%	3%	11%	24%	2%	0%	65%	61%	34%	8%	15%		24%
16	97%	6%	0%	104%	2%	13%	24%	0%	0%	94%	12%	32%	4%	98%	2%	

## **Appendix B**



**TECHNICAL MEMORANDUM:  
CULTURAL RESOURCE FIELD REVIEW FOR THE  
STARKE RAILROAD OVERPASS PROJECT IN  
BRADFORD COUNTY, FLORIDA**

<b>CONSULTANT:</b>	SEARCH 315 NW 138 Terrace, Newberry, FL, 32669
<b>ARCHITECTURAL HISTORIANS:</b>	Ryan VanDyke, MA; Ben Roberts, MA
<b>CLIENT:</b>	Jacobs; Florida Department of Transportation, District 2
<b>DATE:</b>	November 2014
<b>FM#:</b>	434560-1-12-01

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This technical memorandum details the results of a cultural resources field review conducted in support of the Feasibility Study for the Starke Railroad Overpass in Bradford County, Florida. The City of Starke is currently divided by a north/south railroad that parallels State Road (SR) 200/US Highway 301. The railroad impedes motorists as well as emergency vehicles, and although there are numerous streets crossing the railroad, there are no grade separated crossings. The goal of the Feasibility Study is to identify a suitable location for a grade separated crossing to provide access over the railroad.

At the request of the Florida Department of Transportation (FDOT), District 2, and in coordination with Jacobs Engineering Group, SEARCH conducted a field review of three Study Areas being considered for the proposed railroad overpass (**Figure 1**). The three Study Areas encompass six alternatives that have been developed for the proposed overpass. The purpose of the field review was to identify cultural resource potential and previously recorded historic resources that are listed, or may be eligible for listing, in the National Register of Historic Places (NRHP). The Florida Master Site File (FMSF) database was reviewed for any previous surveys or previously recorded resources. In addition, the Bradford County Property Appraiser's database was reviewed to determine the location of unrecorded historic buildings (i.e., parcels with build dates prior to 1970). This background research was field-verified by two SEARCH architectural historians in order to develop a series of maps and tables illustrating the locations of historic resources and to provide preliminary NRHP evaluations.

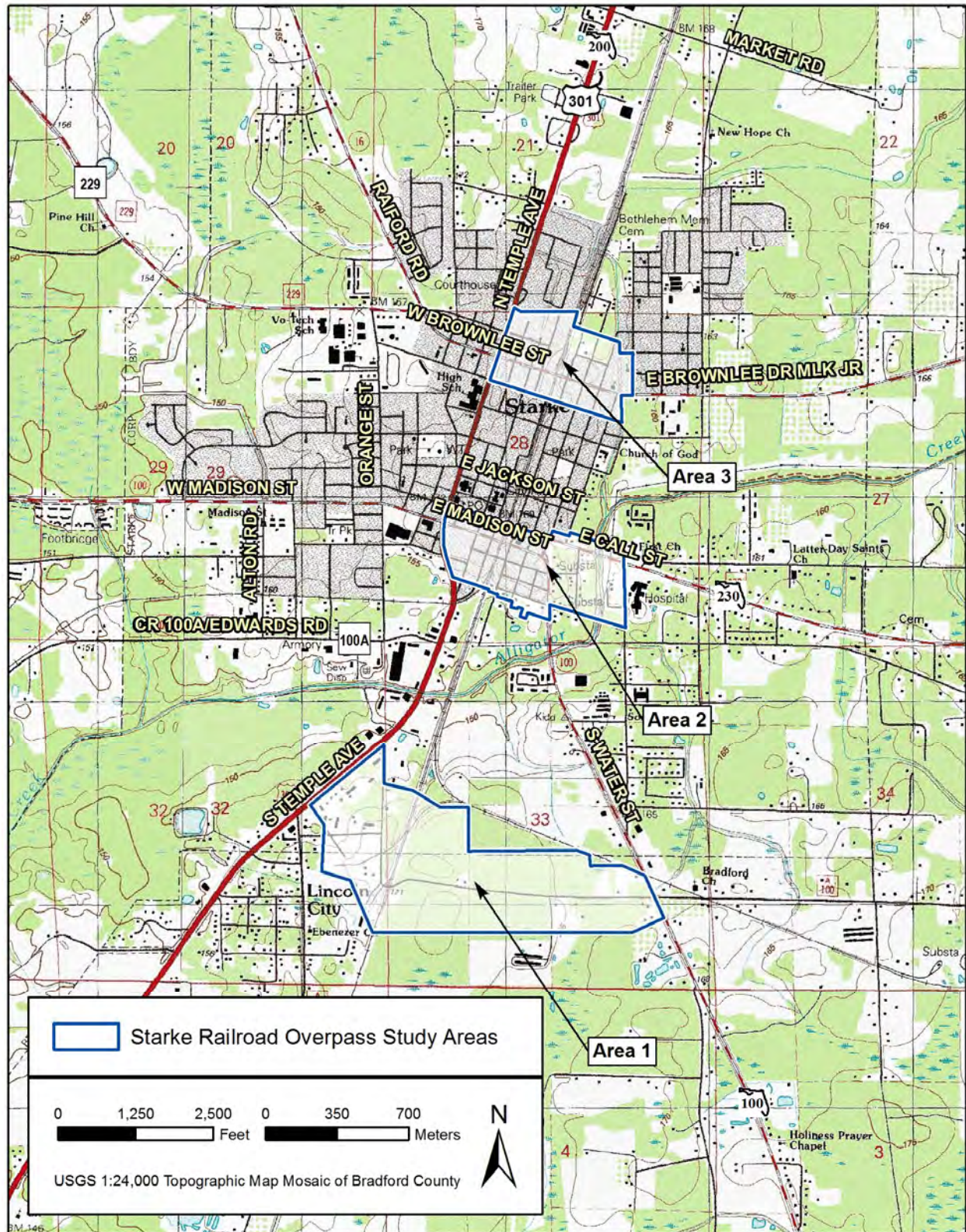


Figure 1. Location of the three Study Areas considered for the Starke Railroad Overpass Feasibility Study in Bradford County.

## NRHP CRITERIA

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Cultural resources identified within the project study areas were evaluated according to the criteria for listing in the NRHP. As defined by the National Park Service (NPS), the quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:

- A. that are associated with events or activities that have made a significant contribution to the broad patterns of our history; or
- B. that are associated with the lives of persons significant in our past; or
- C. that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- D. that have yielded, or may be likely to yield, information important in prehistory or history.

NRHP-eligible districts must possess a significant concentration, linkage, or continuity of sites, buildings, structures, or objects united historically or aesthetically by plan or physical development. NRHP-eligible districts and buildings must also possess historic significance, historic integrity, and historical context.

## RESULTS

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In October 2014, SEARCH architectural historians conducted fieldwork in the three Study Areas to identify any previously recorded or newly recorded historic resources located within the project areas. During the background research and fieldwork, SEARCH staff focused on identifying the following types of resources within each Study Area:

- Recorded Historic Structures
- Unrecorded Historic Resources (based on Property Appraiser data and field review)
- Recorded Resource Group
- Unrecorded Resource Group
- Recorded NRHP-eligible or listed resources
- Unrecorded NRHP-eligible or listed resources

This information is summarized in **Table 1**.



**Table 1. Historic Resources within each Study Area.**

Study Area	Recorded Historic Resources	Unrecorded Historic Resources	Recorded Resource Group	Unrecorded Resource Group	Recorded NRHP-Eligible or Listed Resources	Unrecorded NRHP-Eligible or Listed Resources
1	Yes	Yes	Yes	Yes	Yes	No
2	Yes	Yes	Yes	No	Yes	Yes
3	Yes	Yes	Yes	No	Yes	No

The results of the architectural history survey are summarized by Study Area below.

## STUDY AREA 1

Study Area 1 is roughly bounded by:

- SR 200/US 301/S. Walnut Street
- Container Road
- Alexander Road
- SR 100/ S. Water Street

### Historic Resources within Study Area 1

Study Area 1 is located within commercial and residential areas that date from the 1920s to the late 1960s (**Tables 2 and 3**). A total of 15 historic buildings and three historic linear resources were identified within Study Area 1. The buildings within Study Area 1 are primarily commercial and residential buildings that have been altered. One resource, the Florida Railroad (8BF00165), was determined eligible by the Florida State Historic Preservation Officer (SHPO) on December 8, 2008. The portion of Resource 8BF00165 within Study Area 1 is recommended eligible for listing in the NRHP as a contributing segment to the overall Florida Railroad resource group, which is eligible for listing in the NRHP under Criterion A for its prominent role in developing Florida's economy during the Civil War era, and under Criterion B for its association with prominent Floridian David Levy Yulee.

**Table 2. Previously Recorded Historic Resources within Area 1.**

FMSF Number	Parcel ID	Name/Address	Year Built	Preliminary NRHP Evaluation
8BF00165	06302-0-00000; 06301-0-00000	Florida Railroad	ca. 1855	Eligible
8BF00724	04233-0-00000	1520 S. Walnut Street	ca. 1920	Not Eligible
8BF00725	04233-0-00000	1534 S. Walnut Street	ca. 1945	Not Eligible
8BF00776	04443-0-00000	109 Alexander Road	ca. 1940	Not Eligible
8BF00777	04236-0-00000	111 Alexander Road	ca. 1946	Not Eligible
8BF00778	04248-0-00000	Seaboard Air Line Railroad Spur	ca. 1957	Not Eligible

*Yellow shading indicates NRHP-eligible resources.*

**Table 3. Unrecorded Historic Resources within Area 1.**

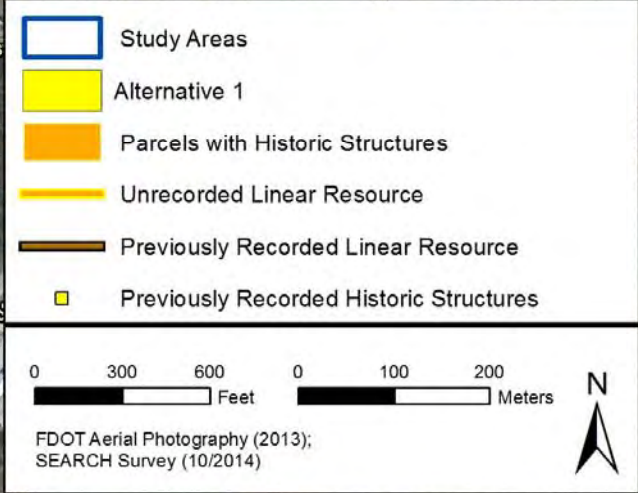
Parcel ID	Name/Address	Year Built	Preliminary NRHP Evaluation
04225-0-00000	1250 S. Walnut Street	ca. 1949	Not Eligible
04233-0-00100	S. Walnut Street - House	ca. 1940	Not Eligible
04231-0-00000	S. Walnut Street - Commercial	ca. 1957	Not Eligible
04233-0-00000	S. Walnut Street – Commercial	ca. 1957	Not Eligible
04233-0-00000	Starke Transmission Shop	ca. 1957	Not Eligible
04242-0-00000	103 Container Road - House	ca. 1957	Not Eligible
04444-0-00000	3955 SE 144 <sup>th</sup> Street	ca. 1949	Not Eligible
04460-0-00000	3687 SE 144 <sup>th</sup> Street	ca. 1960	Not Eligible
04460-0-00101	SE 8 <sup>th</sup> Avenue – Mobile Home	ca. 1956	Not Eligible
04466-0-00000	10322 SE SR 100 – House	ca. 1958	Not Eligible
04465-0-00000	10308 SE SR 100	ca. 1958	Not Eligible
NA	Camp Blanding Railroad	ca. 1940	Not Eligible

During the fieldwork, SEARCH identified no new potentially significant historic resources within Study Area 1. The Seaboard Air Line Railroad Spur was determined ineligible for the NRHP by the Florida SHPO on August 14, 2014. The portion of the Camp Blanding Railroad is unrecorded in Bradford County; however, the adjacent portion of the railroad through Clay County (8CL00995) was determined ineligible for listing in the NRHP by the Florida SHPO on July 29, 2008. Further research would be needed to determine if that determination would apply to the portion located within Area 1. Although many of the buildings located within Study Area 1 were constructed before 1970, these buildings represent highly prevalent approaches to residential and commercial design in Florida, as well as the United States in general. Representative resource photos are provided in **Figure 2**. **Figure 3** provides a map showing unrecorded historic parcels and the previously recorded resources. **Figure 4** provides a map showing the location of the NRHP-eligible resource.



**Figure 2. Examples of resources within Study Area 1: Florida Railroad (8BF00165), facing north (top left); 125 S. Walnut Street, facing northeast (top right); Parcel ID 04231-0-00000, Walnut Street, facing south (middle left); 109 Alexander Street (8BF006776), facing northeast (middle right); 10308 SE SR 100, facing west (bottom left); and 10322 SE SR 100, facing west (bottom right).**





**Figure 3. Previously Recorded Resources and Unrecorded Historic Parcels within Study Area 1.**



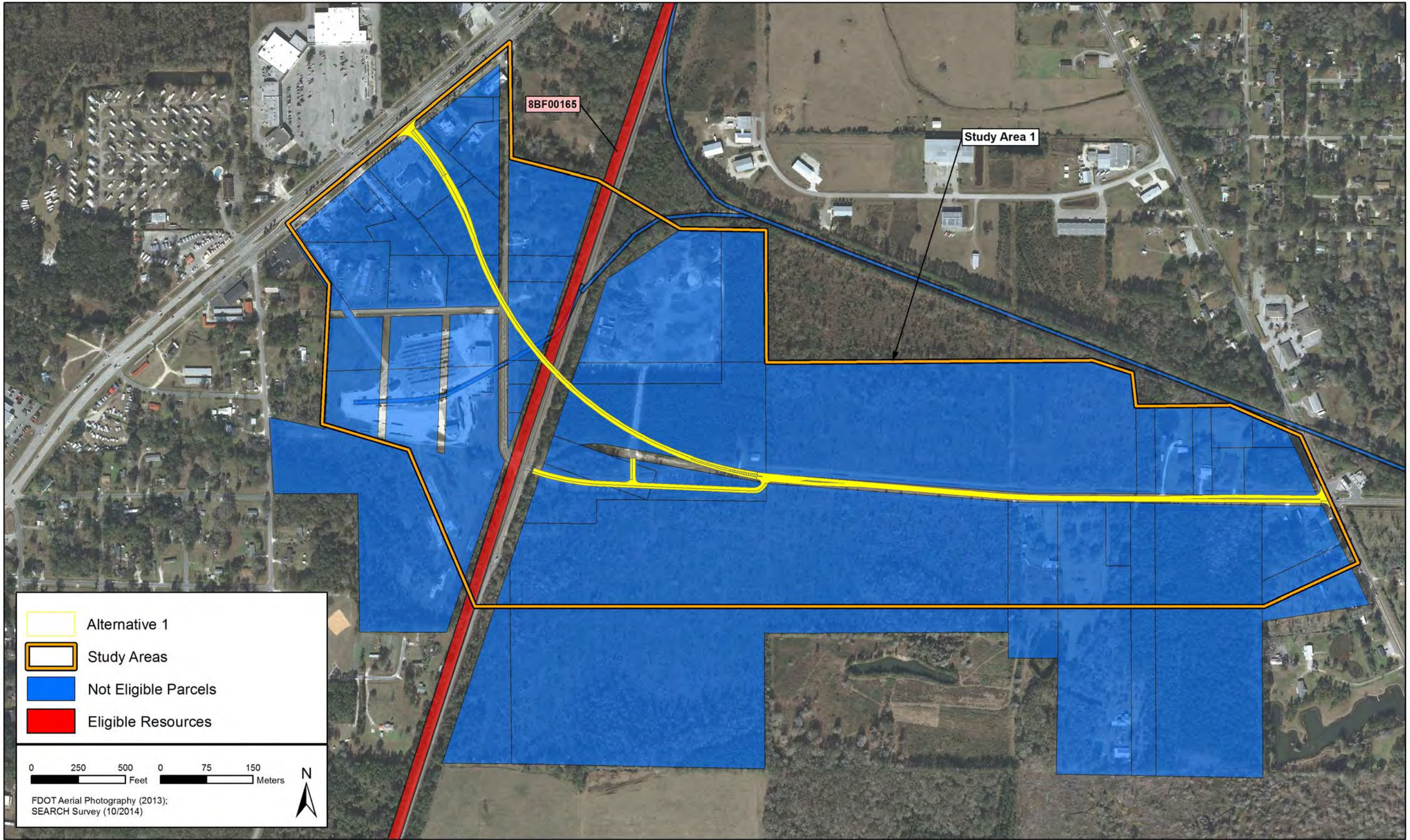


Figure 4. NRHP-Eligible Resources within Study Area 1.



## STUDY AREA 2

Study Area 2 is roughly bounded by:

- SR 200/US 301/S. Temple Street
- SR 230/Call Street
- Laura Street
- Colley Road

## Historic Resources within Study Area 2

Study Area 2 is located within commercial and residential areas that date from the late 1880s to the present (**Tables 4 and 5**). A total of 106 historic buildings, one district, one historic bridge, and two historic linear resources were identified within Study Area 2. The buildings within Study Area 2 are primarily commercial and residential buildings that have been altered.

**Table 4. Previously Recorded Historic Resources within Area 2.**

FMSF Number	Parcel ID	Name/Address	Year Built	Preliminary NRHP Evaluation
8BF00023	03107-0-00000	Bradford County Bank (100 E. Call Street)	ca. 1914	Eligible, Contributing to Call Street District (8BF00056)
8BF00024	03104-0-00000	112 E. Call Street	ca. 1895	Contributing to Call Street District (8BF00056)
8BF00026	03100-0-00000	134 E. Call Street	ca. 1901	Contributing to Call Street District (8BF00056)
	03098-0-00000	134 E. Call Street	ca. 1906	Contributing to Call Street District (8BF00056)
	03097-0-00000	138 E. Call Street	ca. 1906	Contributing to Call Street District (8BF00056)
8BF00027	03108-0-00000	Original Bradford County Bank (200 E. Call Street)	1888	Eligible, Contributing to Call Street District (8BF00056)
8BF00031	03111-0-00000	Vaughn-Johnson Co/Coke Plant (140 S. Thompson Street)	ca. 1925	Eligible, Contributing to Call Street District (8BF00056)
8BF00032	03108-0-00100	212 E. Call Street	ca. 1884	Contributing to Call Street District (8BF00056)
8BF00033	03101-0-00000	126 E. Call Street	ca. 1890	Contributing to Call Street District (8BF00056)
8BF00038	03112-0-00000	320 E. Call Street	ca. 1924	Contributing to Call Street District (8BF00056)
8BF00040	03089-0-00000	110 W. Call Street	ca. 1885	Contributing to Call Street District (8BF00056)
	03088-0-00000	104 W. Call Street (100 W. Call Street)	ca. 1885	Contributing to Call Street District (8BF00056)
8BF00044	03103-0-00000	117 S. Thompson Street	ca. 1935	Contributing to Call Street District (8BF00056)
8BF00045	03102-0-00000	120 E. Call Street	ca. 1890	Contributing to Call Street District (8BF00056)



**Table 4. Previously Recorded Historic Resources within Area 2.**

FMSF Number	Parcel ID	Name/Address	Year Built	Preliminary NRHP Evaluation
8BF00048	03094-0-00000	131 S. Walnut Street	ca. 1956	Not Eligible
8BF00051	03091-0-00000	124 W. Call Street	ca. 1885	Non-contributing resource to Call Street District (8BF00056)
8BF00052	03155-0-00000	134 W. Call Street	ca. 1931	Non-contributing resource to Call Street District (8BF00056)
8BF00055	03153-0-00000	144 W. Call Street	ca. 1931	Non-contributing resource to Call Street District (8BF00056)
8BF00056	03106-0-00000	108 E. Call Street	ca. 1885	Non-contributing resource to Call Street District (8BF00056)
8BF00057	NA	Call Street Historic District	1857-ca. 1931	Eligible (Listed 12-12-1985)
8BF00146	03791-0-00000	725 E. Laura Street	ca. 1950	Not Eligible
8BF00164	03134-0-00100	218 S. Walnut Street	ca. 1938	Not Eligible
8BF00165	NA	Florida Railroad	ca. 1855	Eligible
8BF00260	03114-0-00000	416 E. Call Street	ca. 1948	Not Eligible
8BF00261	03116-0-00000	435 E. Madison Street	ca. 1948	Not Eligible
8BF00262	03122-0-00000	438 E. Madison Street	ca. 1936	Not Eligible
8BF00263	03122-0-00000	420 E. Madison Street	ca. 1930	Not Eligible
8BF00264	03121-0-00000	510 E. Madison Street	ca. 1942	Not Eligible
8BF00265	03744-0-00600	234 S. Church Street	ca. 1949	Not Eligible
8BF00266	03123-0-00000	415 E. South Street	ca. 1928	Not Eligible
8BF00267	03747-0-00200	302 S. Church Street	ca. 1920	Not Eligible
8BF00268	03744-0-00501	511 E. South Street	ca. 1920	Not Eligible
8BF00269	03747-0-00100	512 E. South Street	ca. 1948	Not Eligible
8BF00270	03744-0-00501	515 South Street	ca. 1940	Not Eligible
8BF00271	03748-0-00101	532 E. South Street	ca. 1947	Not Eligible
8BF00272	03744-0-00103	241 S. Water Street	ca. 1947	Not Eligible
8BF00273	02989-0-00000	308 S. Water Street	ca. 1940	Eligible
8BF00274	03796-0-00000	326 S. Water Street	ca. 1947	Not Eligible
8BF00275	03748-0-00103	327 S. Water Street	ca. 1940	Not Eligible
8BF00276	03792-0-00000	400 S. Water Street	ca. 1910	Not Eligible
8BF00277	03795-0-00000	436 S. Water Street	ca. 1942	Not Eligible
8BF00278	03749-0-00104	639 E. Laura Street	ca. 1940	Not Eligible
8BF00283	03749-0-00600	424 S. Mable Street	ca. 1942	Not Eligible
8BF00285	03747-0-00501	511 E. Nona Street	ca. 1948	Not Eligible
8BF00286	03746-0-00700	313 S. Church Street	ca. 1940	Not Eligible
8BF00287	03746-0-00600	401 Nona Street (403 S. Cherry Street)	ca. 1950	Not Eligible
8BF00289	03764-0-00200	402 E. South Street	ca. 1930	Not Eligible
8BF00290	03124-0-00000	224 S. Cherry Street	ca. 1930	Not Eligible
8BF00291	03126-0-00000	213 S. Cherry Street	ca. 1900	Eligible
8BF00660	03138-0-00000	228 S. Walnut Street	ca. 1940	Not Eligible
8BF00661	03144-0-00000	134 E. South Street (120 E. South Street)	ca. 1921	Not Eligible
8BF00662	03148-0-00000	308 S. Thompson	ca. 1940	Eligible

**Table 4. Previously Recorded Historic Resources within Area 2.**

FMSF Number	Parcel ID	Name/Address	Year Built	Preliminary NRHP Evaluation
		Street/E. South Street		
8BF00663	03132-0-00000	237 S. Thompson Street	ca. 1948	Not Eligible
8BF00664	03130-0-00000	224 S. Thompson Street	ca. 1903	Not Eligible
8BF00665	03157-0-0000	413 S. Thompson Street	ca. 1913	Eligible
8BF00666	03165-0-00100	418 S. Thompson Street	ca. 1904	Not Eligible
8BF00686	03117-0-00000	150 S. Cherry Street	ca. 1940	Not Eligible
8BF00687	03129-0-00000	200 E. Madison Street	ca. 1949	Not Eligible
8BF00688	03111-0-00000	120 S. Thompson Street	ca. 1924	Contributing to Call Street District (8BF00056)
8BF00689	03110-0-00000	118 S. Thompson Street	ca. 1940	Non-contributing resource to Call Street District (8BF00056)
8BF00691	03088-0-00100	110 W. Call Street (104 W. Call Street)	ca. 1885	Contributing to Call Street District (8BF00056)
8BF00759	NA	Atlantic, Suwannee River & Gulf Railroad	ca. 1893	Eligible
8BF00763	NA	FDOT Bridge #280941	ca. 1941	Not Eligible
8BF00768	03779-0-00000	212 Redgrave Street	ca. 1949	Not Eligible

*Yellow shading indicates NRHP-eligible resources.*

The Call Street Historic District (8BF00057) was listed in the NRHP on December 12, 1985. The District contains 21 resources, which are located within the boundaries of Study Area 2. Of these 21 resources, 15 are considered contributing resources, and five are considered noncontributing resources to the District. Three of the contributing resources, the Bradford County Back Building (8BF00023), the Original Bradford County Bank (8BF00027), and the Vaughn-Johnson Co/Coke Plant (8BF00031), are also individually eligible for listing in the NRHP.

The Florida Railroad (8BF00165) was determined eligible by the Florida SHPO on December 8, 2008. The portion of Resource 8BF00165 within Study Area 2 is recommended eligible for listing in the NRHP as a contributing segment to the overall Florida Railroad resource group under Criterion A for its prominent role in developing Florida's economy during the Civil War era, and under Criterion B for its association with prominent Floridian David Levy Yulee.

Five additional potentially eligible buildings are located within Study Area 2. These buildings are eligible for listing in the NRHP under Criterion C as excellent examples of a specific style of architecture. Resources 8BF00291 and 8BF00662 are excellent examples of Industrial Vernacular buildings built in the early twentieth century. Resources 8BF00273, 8BF00665, and Parcel ID 03754-0-00200 are excellent examples of Folk Victorian residences from the early twentieth century. Resource 8BF00759, the Atlantic, Suwannee River, & Gulf Railroad (ASR&G), branches southwest from the Florida Railroad (8BF00165) near the intersection of E. South Street and S. Thompson Street. The portion of Resource 8BF00759 within Study Area 2 is

**Table 5. Unrecorded Historic Resources within Area 2.**

Parcel ID	Name/Address	Year Built	Preliminary NRHP Evaluation
02949-0-00102	601 E. Call Street	ca. 1961	Not Eligible
00949-0-00314	701 E. Call Street	ca. 1959	Not Eligible
03164-0-00000	206 W. Madison Street	ca. 1948	Not Eligible
03096-0-00000	114 W. Madison Street	ca. 1964	Not Eligible
03131-0-00000	132 E. Madison Street	ca. 1948	Not Eligible
03119-0-00000	520 E. Madison Street	ca. 1967	Not Eligible
03129-0-00100	224 S. Thompson Street	ca. 1960	Not Eligible
03130-0-00100	224 S. Thompson Street	ca. 1960	Not Eligible
03136-0-00000	237 S. Thompson Street	ca. 1948	Not Eligible
03156-0-00000	406 S. Thompson Street	ca. 1947	Not Eligible
03166-0-00000	428 S. Thompson Street	ca. 1940	Not Eligible
03126-0-00000	213 S. Cherry Street-1	ca. 1965	Not Eligible
03126-0-00000	213 S. Cherry Street - Barn	ca. 1939	Not Eligible
03125-0-00000	238 S. Cherry Street	ca. 1939	Not Eligible
03745-0-00200	403 S. Cherry Street	ca. 1940	Not Eligible
03745-0-00700	415 S. Cherry Street	ca. 1935	Not Eligible
03745-0-00801	417 S. Cherry Street	ca. 1956	Not Eligible
03105-0-00000	128 S. Walnut Street	ca. 1950	Not Eligible
03140-0-00000	207 S. Walnut Street	ca. 1950	Not Eligible
03137-0-00000	238 S. Walnut Street	ca. 1939	Not Eligible
03142-0-00000	308 S. Walnut Street	ca. 1965	Not Eligible
03160-0-00000	408 S. Walnut Street	ca. 1960	Not Eligible
03728-0-00000	411 S. Walnut Street	ca. 1958	Not Eligible
03730-0-00100	531 S. Walnut Street	ca. 1963	Not Eligible
03167-0-00100	230 S. Temple Street	ca. 1965	Not Eligible
03162-0-00000	236 S. Temple Street	ca. 1968	Not Eligible
03137-0-00100	115A E. South Street	ca. 1939	Not Eligible
03746-0-00102	410 E. South Street	ca. 1930	Not Eligible
02986-0-00100	651 South Street	ca. 1953	Not Eligible
02989-0-00100	620 South Street	ca. 1950	Not Eligible
02989-0-00400	666 South Street	ca. 1950	Not Eligible
03780-0-00000	708 E. South Street	ca. 1948	Not Eligible
03746-0-00500	307 S. Church Street	ca. 1959	Not Eligible
03747-0-00601	312 S. Church Street	ca. 1948	Not Eligible
03750-0-00100	514 E. Nona Street	ca. 1950	Not Eligible
03747-0-00500	515 E. Nona Street	ca. 1948	Not Eligible
03754-0-00200	504 E. Laura Street	ca. 1930	Eligible
03754-0-00101	510 E. Laura Street	ca. 1963	Not Eligible
03793-0-00000	Laura Street	ca. 1948	Not Eligible
03794-0-00000	719 E. Laura Street	ca. 1948	Not Eligible
03789-0-00000	309 S. Redgrave Street	ca. 1947	Not Eligible
03790-0-00000	Redgrave Street	ca. 1947	Not Eligible
03783-0-00000	318 Redgrave Street	ca. 1946	Not Eligible
03786-0-00000	408 Redgrave Street	ca. 1948	Not Eligible
03800-0-00000	Colley Road – Bldg 1	ca. 1960	Not Eligible
03800-0-00000	Colley Road – Bldg 2	ca. 1960	Not Eligible

*Yellow shading indicates NRHP-eligible resources.*



recommended eligible for listing in the NRHP as a contributing segment to the overall ASR&G resource group under Criterion A for its association with the development of railroads in north central Florida and for its support of the timber industry.

Although many of the buildings located within Study Area 2 were constructed before 1970, these buildings represent highly prevalent approaches to residential and commercial design in Florida, as well as the United States in general. Representative photos of the Call Street Historic District are provided in **Figure 5**, and representative photos of other resources within Study Area 2 are provided in **Figure 6**. Due to the high density of resources within Study Area 2, the previously recorded resources are shown in **Figure 7**. The unrecorded historic parcels are shown in **Figure 8**. **Figure 9** provides a map showing the location of the NRHP-eligible resources.



**Figure 5. Representative photos of the Call Street Historic District (8BF0057). Street views of the Call Street facing west (top left) and facing east (bottom left). Resource 8BF00023 (100 E. Call Street), facing south (right).**



**Figure 6. Examples of eligible resources within Study Area 2: Resource 8BF00273 (308 S. Water Street), facing east (top left); Parcel ID 03754-0-00200, 504 E. Laura Street, facing south (top right); Resource 8BF00665 (413 S. Thompson Street), facing west (middle left); Resource 8BF00662 (308 E. South Street), facing north (middle right); Resource 8BF00031 (140 S. Thompson Street), facing northeast (bottom left); and the Florida Railroad (8BF00165), facing south (bottom right).**



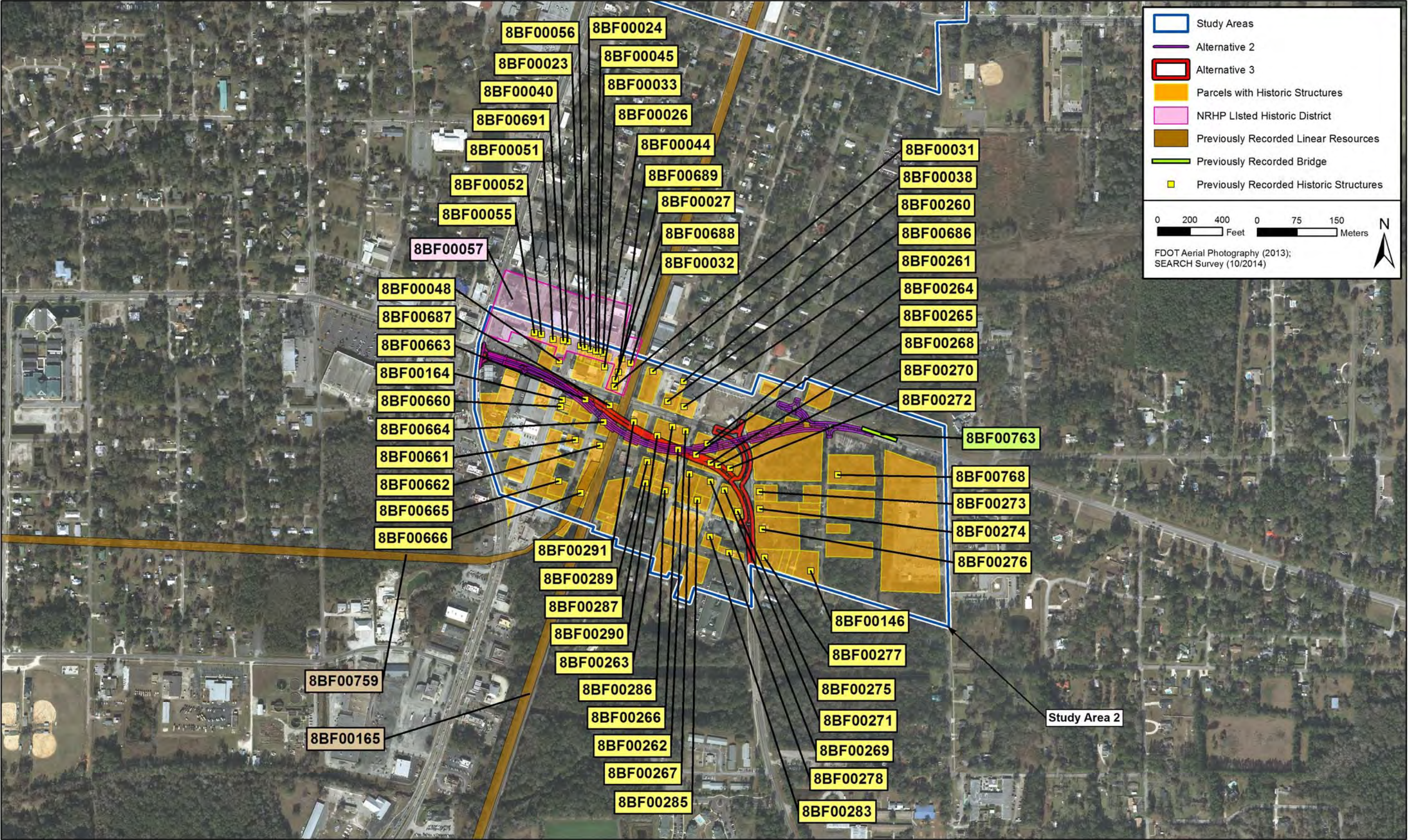


Figure 7. Previously Recorded Resources within Study Area 2.



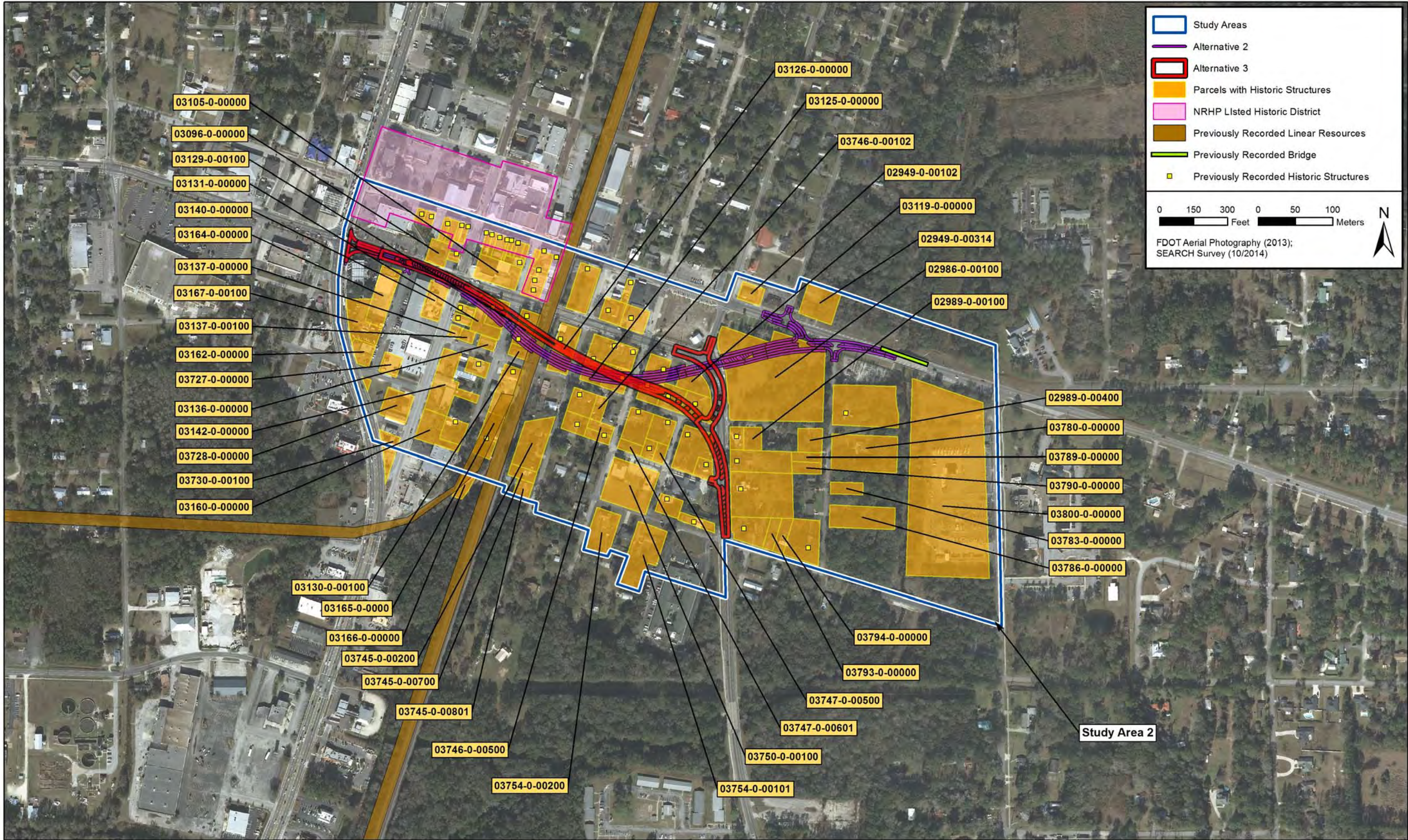


Figure 8. Unrecorded Historic Parcels within Study Area 2.



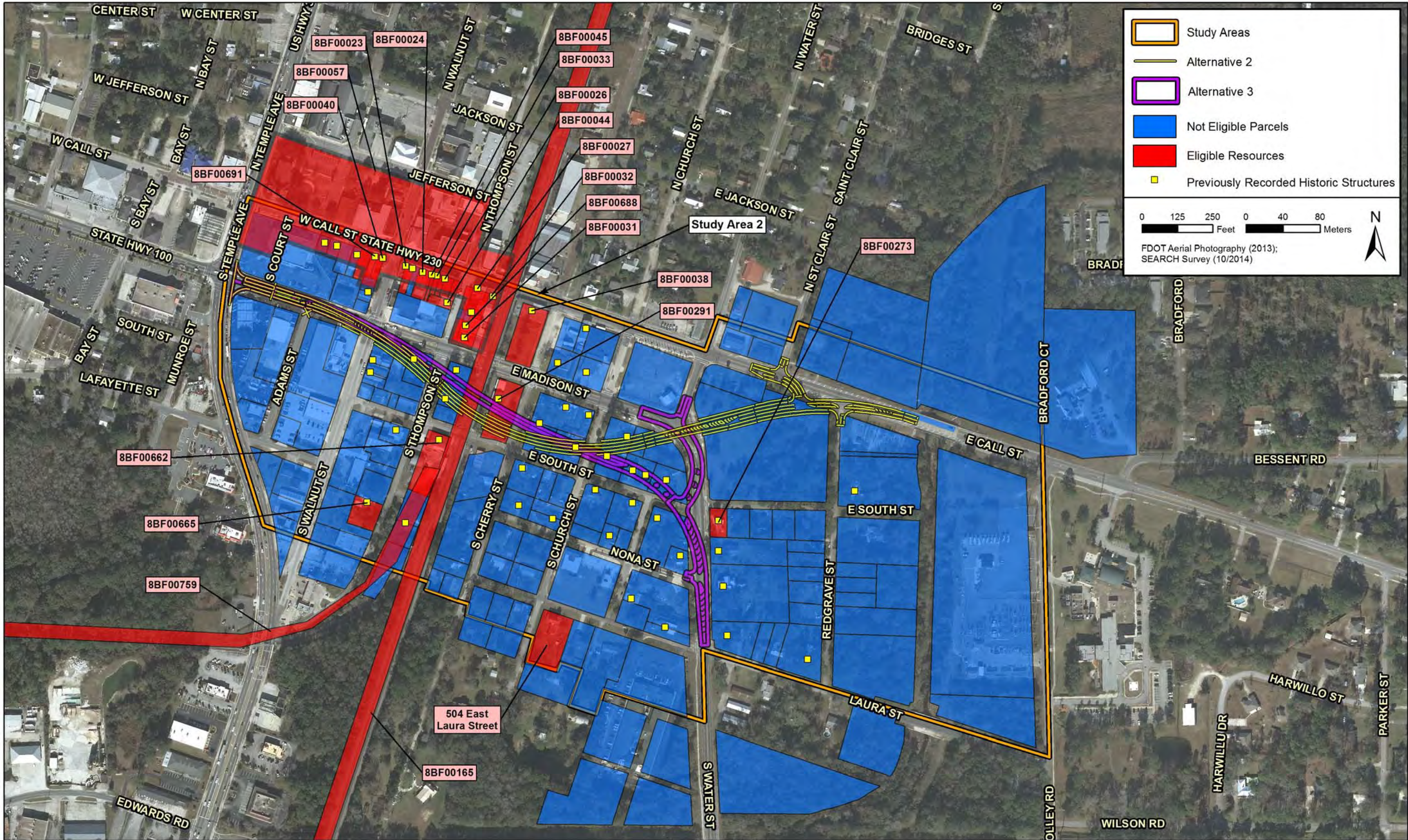


Figure 9. NRHP-Eligible Resources within Study Area 2.



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## STUDY AREA 3

Study Area 3 is roughly bounded by:

- SR 200/US 301/S. Temple Street
- Washington Street
- Oak Street
- Long Street
- Florida Street
- North of Wheldon Street

## Historic Resources within Study Area 3

Study Area 3 is located within commercial and residential areas that date from the 1920s to the 1970s (**Tables 6 and 7**). A total of 67 historic buildings and two historic linear resources were identified within Study Area 3. The buildings within Study Area 3 are primarily commercial and residential buildings that have been altered.

**Table 6. Previously Recorded Historic Resources within Area 3.**

FMSF Number	Parcel ID	Name/Address	Year Built	Preliminary NRHP Evaluation
8BF00165	NA	Florida Railroad	ca. 1855	Eligible
8BF00172	03609-0-00000	137 W. Washington Street	ca. 1947	Not Eligible
8BF00174	03610-0-00000	125 W. Washington Street	ca. 1947	Not Eligible
8BF00175	03614-0-00000	111 W. Washington Street	ca. 1948	Not Eligible
8BF00234	03472-0-00000	646 N. Church Street	ca. 1930	Not Eligible
8BF00235	03471-0-00000	624-626 N. Church Street	ca. 1940	Not Eligible
8BF00236	03470-0-00000	511 E. Washington Street	ca. 1950	Not Eligible
8BF00307	03475-0-00000	637 N. Water Street	ca. 1950	Not Eligible
8BF00308	03491-0-00100	644 N. Water Street	ca. 1948	Not Eligible
8BF00309	03491-0-00200	664 N. Water Street	ca. 1948	Not Eligible
8BF00310	03474-0-00000	538 E. Brownlee Street	ca. 1940	Not Eligible
8BF00313	03600-0-00000	801 N. Thompson Street	ca. 1948	Not Eligible
8BF00314	03603-0-00200	762 N. Walnut Street	ca. 1950	Not Eligible
8BF00315	03603-0-00300	746 N. Walnut Street	ca. 1956	Not Eligible
8BF00316	03618-0-00000	737 N. Walnut Street	ca. 1946	Not Eligible
8BF00317	03619-0-00000	715 N. Walnut Street	ca. 1940	Not Eligible
8BF00318	03604-0-00000	708 N. Walnut Street	ca. 1940	Eligible
8BF00319	03603-0-00100	749 N. Thompson Street	ca. 1956	Not Eligible
8BF00320	03603-0-00400	747 N. Thompson Street	ca. 1956	Not Eligible
8BF00321	03595-0-00000	744 N. Thompson Street	ca. 1948	Not Eligible
8BF00327	03625-0-00000	864 N. Temple Avenue	ca. 1960	Not Eligible
8BF00328	03623-0-00100	830 N. Temple Avenue	ca. 1956	Not Eligible
8BF00329	03622-0-00000	800 N. Temple Avenue	ca. 1958	Not Eligible
8BF00382	03395-0-00000	803 N. Oak Street	ca. 1948	Not Eligible
8BF00410	03481-0-00000	740 N. Church Street	ca. 1946	Not Eligible
8BF00411	03420-0-00000	416 E. Brownlee Street	ca. 1945	Not Eligible

**Table 6. Previously Recorded Historic Resources within Area 3.**

FMSF Number	Parcel ID	Name/Address	Year Built	Preliminary NRHP Evaluation
8BF00412	NA	Starke Railroad Depot (274 E. Brownlee Street)	ca. 1939	Contributing element to Florida Railroad Resource Group (8BF00165)
8BF00414	03435-0-00000	402 E. Brownlee Street	ca. 1950	Not Eligible
8BF00415	03429-0-00000	419 E. Brownlee Street	ca. 1953	Not Eligible
8BF00416	03403-0-00000	711 E. Brownlee Street	ca. 1942	Not Eligible
8BF00417	03493-0-00200	613 N. St. Clair Street	ca. 1956	Not Eligible
8BF00418	03528-0-00000	646 N. St. Clair Street	ca. 1946	Not Eligible
8BF00419	03494-0-00000	615 E. Washington Street	ca. 1946	Not Eligible
8BF00658	03163-0-00000	627 N. Walnut Street	ca. 1947	Not Eligible
8BF00659	03612-0-00000	637 N. Walnut Street	ca. 1947	Not Eligible
8BF00682	NA	Brick Paver Streets	ca. 1915	Eligible

*Yellow shading indicates NRHP-eligible resources.*

**Table 7. Unrecorded Historic Resources within Area 3.**

Parcel ID	Name/Address	Year Built	Preliminary NRHP Evaluation
03623-0-00000	838 N. Temple Avenue	ca. 1958	Not Eligible
03628-0-00000	744 N. Temple Avenue	ca. 1964	Not Eligible
03630-0-00000	668 N. Temple Avenue	ca. 1960	Not Eligible
03624-0-00000	N. Clark Street	ca. 1948	Not Eligible
03617-0-00000	155 W. Brownlee Street	ca. 1965	Not Eligible
03603-0-00000	734 N. Walnut Street	ca. 1956	Not Eligible
03599-0-00100	909 N. Thompson Street	ca. 1960	Not Eligible
03598-0-00000	1124 N. Thompson Street	ca. 1965	Not Eligible
03596-0-00000	806 N. Thompson Street	ca. 1969	Not Eligible
03597-0-00000	N. Thompson Street	ca. 1964	Not Eligible
03595-0-00100	766 N. Thompson Street	ca. 1959	Not Eligible
03594-0-00000	734 N. Thompson Street	ca. 1959	Not Eligible
03606-0-00000	642 N. Walnut Street	ca. 1946	Not Eligible
03607-0-00000	E. Brownlee Street – Thrift Store	ca. 1965	Not Eligible
03615-0-00100	645 N. Walnut Street	ca. 1940	Not Eligible
03632-0-00000	215 W. Washington Street	ca. 1948	Not Eligible
03423-0-00000	417 E. Wheldon Street - Office	ca. 1946	Not Eligible
03423-0-00000	417 E. Wheldon Street - Trailer	ca. 1960s	Not Eligible
03481-0-00100	742 N. Church Street	ca. 1956	Not Eligible
03480-0-00000	734 N. Church Street	ca. 1946	Not Eligible
03432-0-00000	644 N. Cherry Street	ca. 1940	Not Eligible
03434-0-00100	634 N. Cherry Street	ca. 1946	Not Eligible
03433-0-00000	635 N. Church Street	ca. 1959	Not Eligible
03431-0-00100	615 N. Church Street	ca. 1959	Not Eligible
03476-0-00000	513 E. Washington Street	ca. 1948	Not Eligible
03476-0-00100	N. Water Street	ca. 1948	Not Eligible
03478-0-00000	523 E. Brownlee Street	ca. 1963	Not Eligible
03487-0-00000	607 E. Brownlee Street	ca. 1950	Not Eligible
03493-0-00000	614 N. Water Street	ca. 1959	Not Eligible
03493-0-00400	N. Water Street	ca. 1959	Not Eligible
03493-0-00300	607 N. St. Clair Street	ca. 1956	Not Eligible
03489-0-00000	E. Brownlee Street	ca. 1960	Not Eligible
03404-0-00000	E. Brownlee Street	ca. 1960	Not Eligible

The Florida Railroad (8BF00165) was determined eligible by the Florida SHPO on December 8, 2008. The portion of Resource 8BF00165 within Study Area 3 is recommended eligible for listing in the NRHP as a contributing segment to the overall Florida Railroad resource group, which is eligible for listing in the NRHP under Criterion A for its prominent role in developing Florida's economy during the Civil War era and under Criterion B for its association with prominent Floridian David Levy Yulee. One resource, 8BF00412 (Starke Railroad Depot), was recommended eligible as a contributing resource to the overall Florida Railroad resource group.

Two additional potentially eligible resources are located within Study Area 3. Resource 8BF00318 (Dr. Mark B. Herlong House, 708 N. Walnut Street) is recommended eligible for listing in the NRHP under Criterion B for its association with a prominent Starke physician, Dr. M.B. Herlong, who used the residence for patient examinations and under Criterion C as an excellent example of a residence built in the Queen Anne style. Resource 8BF00682 (Brick Paver Streets) extends within Study Area 3 along N. Walnut Street, just north of the intersection with Washington Street. This resource is recommended eligible for listing in the NRHP under Criterion A for its association with Starke's period of rapid growth in the 1910s.

During the fieldwork, SEARCH identified no new potentially significant historic resources within Study Area 3. Although many of the buildings located within Study Area 3 were constructed before 1970, these buildings represent highly prevalent approaches to residential and commercial design in Florida, as well as the United States in general. Representative resource photos are provided in **Figure 10**. **Figure 11** provides a map showing unrecorded historic parcels and the previously recorded resources. **Figure 12** provides a map showing the location of the NRHP-eligible resource.





**Figure 10. Examples of resources within Study Area 3: Florida Railroad (8BF00165), facing northeast (top left); Brick Paver Streets (8BF00682), facing northeast (top right); Starke Railroad Depot (8BF00412), facing west (middle left); 708 N. Walnut Street (8BF00318), facing north (middle right); 511 E. Washington Street (8BF00236), facing north (bottom left); and 800 N. Temple Avenue (8BF00329), facing northeast (bottom right).**





Figure 11. Previously Recorded Resources and Unrecorded Historic Parcels within Study Area 3.



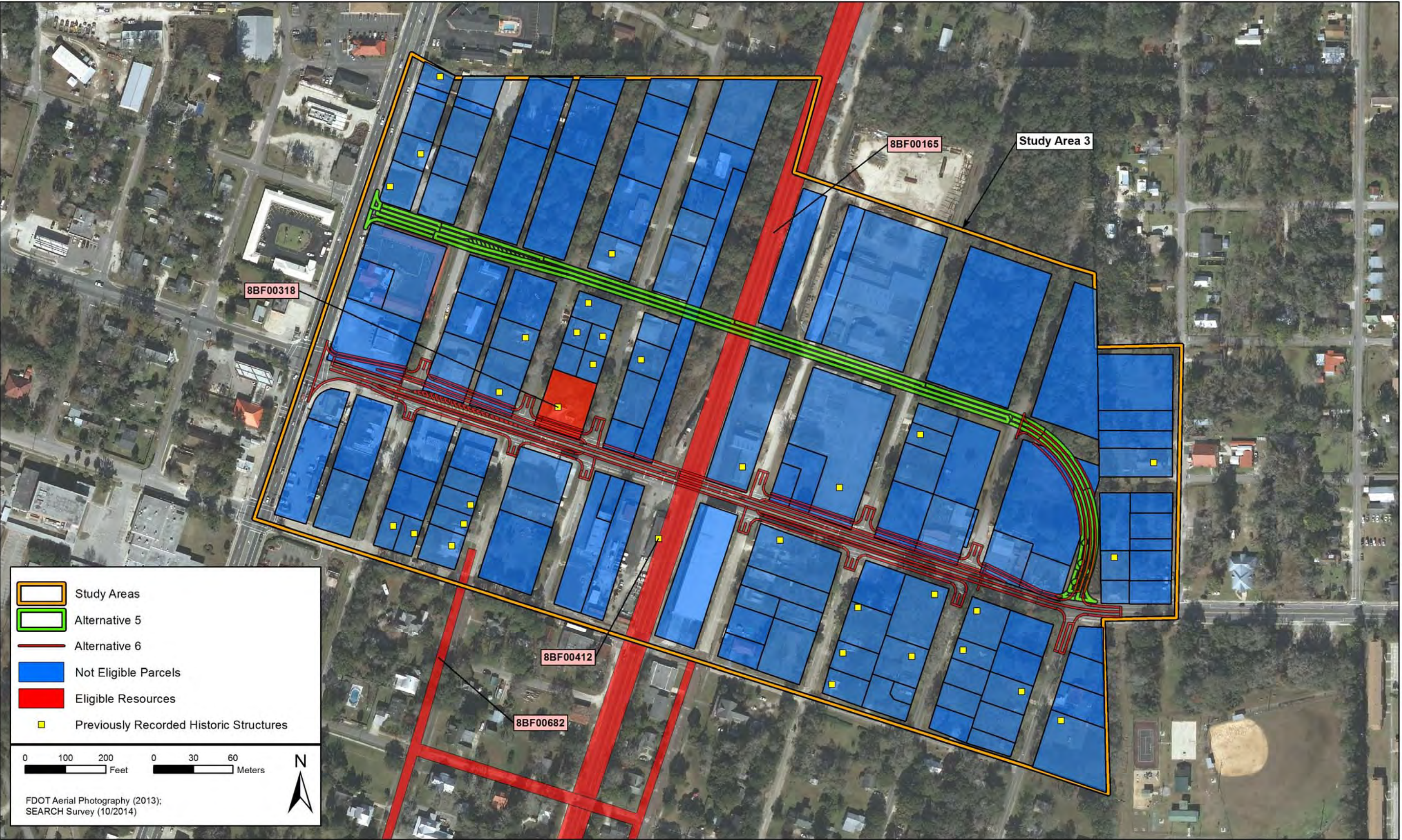


Figure 12. NRHP-Eligible Resources within Study Area 3.



## CONCLUSION

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In October 2014, SEARCH conducted a field review of three Study Areas considered for the proposed railroad overpass. Study Area 1 contains a total of four previously recorded structures, 11 unrecorded historic parcels, two previously recorded linear resources, and one unrecorded linear resource. Only one resource, the Florida Railroad (8BF00165) is recommended eligible within Study Area 1. Study Area 2 contains a total of 106 historic structures, including 60 previously recorded and 46 unrecorded historic parcels. Of these structures, 15 are considered contributing resources to the NRHP-listed Call Street Historic District (8BF00057). An additional five buildings are recommended eligible for listing in the NRHP. Two linear resources, the Florida Railroad (8BF00165) and the ASR&G Railroad (8BF00759) are also recommended eligible within Study Area 2. One previously recorded historic bridge (8BF00763, FDOT Bridge #280941) is located within Study Area 2; however, it was determined not eligible by the Florida SHPO on June 30, 2012. The final area, Study Area 3, contains a total of 67 historic structures and two historic linear resources. Both linear resources, the Florida Railroad (8BF00165) and the Brick Paver Streets (8BF00682), are recommended eligible for listing in the NRHP. Additionally, two structures are recommended eligible for listing within Study Area 3.

Once a preferred alignment for the railroad overpass has been selected, an Area of Potential Effect (APE) should be developed to consider the potential effects on historic properties. Any pre-1970 buildings within the APE should be recorded and evaluated for NRHP eligibility. The APE should also be subjected to subsurface testing to determine if any prehistoric or historic archaeological sites are present. The identified historic structures and archaeological sites, if any, should be assessed for their potential eligibility for listing in the NRHP. The results of this evaluation should then be reviewed by the Federal Highway Administration (FHWA) and the Florida State Historic Preservation Officer (SHPO) for their concurrence and possible comment.