

---

**To:** Gus Psihoyos, PE, City Engineer, City of Dubuque  
**From:** Ben Wilkinson, PE and Brian Huibregtse  
**Subject:** Five Flags Center – 5<sup>th</sup> Street Closure  
**Date:** November 29, 2018

---

At the request of the City of Dubuque, MSA Professional Services, Inc. (MSA) completed a preliminary impact assessment for a potential closure of 5<sup>th</sup> Street between Main Street and Locust Street in downtown Dubuque. The purpose of the potential closure is due to a proposal to expand the Five Flags Center. A complete Traffic Impact Study is recommended when more details of the proposed development is known. This memorandum will assist with determining the study area for the Traffic Impact Study.

### ***Data Collection***

The City of Dubuque provided weekday AM and PM turning movement traffic counts at 15 intersections on November 8, 2018 along the 3<sup>rd</sup> Street, 4<sup>th</sup> Street and 5<sup>th</sup> Street corridors (See Exhibit 1).

3 <sup>rd</sup> Street & Bluff Street	4 <sup>th</sup> Street & Bluff Street	5 <sup>th</sup> Street & Bluff Street
3 <sup>rd</sup> Street & Locust Street	4 <sup>th</sup> Street & Locust Street	5 <sup>th</sup> Street & Locust Street
3 <sup>rd</sup> Street & Main Street	4 <sup>th</sup> Street & Main Street	5 <sup>th</sup> Street & Main Street
	4 <sup>th</sup> Street & Iowa Street	5 <sup>th</sup> Street & Iowa Street
	4 <sup>th</sup> Street & Central Avenue	5 <sup>th</sup> Street & Central Avenue
	4 <sup>th</sup> Street & White Street	5 <sup>th</sup> Street & White Street

Traffic counts were also obtained by the City on November 15 while 5<sup>th</sup> Street was closed for an event at the Five Flags Center. Those counts were obtained for the 3<sup>rd</sup> Street and Main Street intersection and along the 9<sup>th</sup> Street corridor from White Street to Bluff Street. The counts at 3<sup>rd</sup> Street & Main Street collected during the closure assisted with determining the magnitude of the impacts during the normal PM peak (4PM – 5PM), but were likely impacted while a train was blocking 5<sup>th</sup> Street for 45 of the 60 minutes in the peak hour. The train blocking traffic likely changed the characteristics of the normal daily traffic, but is a regular occurrence that also needs to be considered.

### ***5th Street Corridor Assessment***

As part of this preliminary impact assessment, MSA reviewed existing traffic volumes during the AM and PM weekday peak hour and intersection control types to better understand how the network is currently

## MEMO

November 28, 2018

---

used. See Exhibit 1 showing the existing traffic volumes, locations of traffic signals and net gain and loss between intersections. The differences in numbers between the intersections were used to assess the number of trips with a destination or origin along the corridor. Using this information, MSA developed maps showing potential alternative routes for traffic affected by the closure for the AM and PM weekday traffic. See Exhibits 2 and 3 for expected routes for eastbound and westbound 5<sup>th</sup> Street traffic that will divert to other routes.

A series of observations and assumptions were used when generating the possible alternative route maps including:

- Daily traffic along the 5<sup>th</sup> Street corridor appears to be primarily traffic with an origin or destination along 5<sup>th</sup> Street. These trips appear to primarily be traveling to or from downtown parking ramps or other locations within the corridor. It appears that limited through traffic is using the 5<sup>th</sup> Street corridor.
- Due to the roadway characteristics of Main St and Iowa St, these roads act more as local streets than collector streets and would likely not facilitate through traffic as efficiently without some geometric and control changes.
- The expected traffic diversions are based on perceived easiest routes for traffic to get to expected destinations.
- Based on the observation that most traffic using 5<sup>th</sup> Street does not travel along the entire corridor, it is unlikely that the traffic will divert to 9<sup>th</sup> Street. The traffic is more likely to divert to adjacent streets.
  - Traffic moving westbound on 5<sup>th</sup> Street will likely divert to 4<sup>th</sup> Street or 3<sup>rd</sup> Street if the ultimate destination is Bluff Street.
  - It does not appear that much traffic is traveling westbound from beyond White Street on 5<sup>th</sup> Street and then turning northbound on Locust Street. The traffic making that movement during the PM peak hour is likely coming from the parking ramps or other downtown locations. The assumption is that traffic with an ultimate destination west on 9<sup>th</sup> Street will use White Street as there are less traffic signals and better overall traffic flow along that corridor. The traffic counts also appear to support that assumption as the numbers grow moving westbound along the 5<sup>th</sup> Street corridor after Iowa Street. Traffic originating along 5<sup>th</sup> Street will likely divert to 4<sup>th</sup> Street and back to Locust Street, or travel northbound along Iowa Street.
- There is a significant amount of AM peak hour traffic traveling northbound on Locust Street and turning eastbound on 5<sup>th</sup> Street. Most of that traffic appears to have a destination along 5<sup>th</sup> Street as shown with the 102 vehicles lost between Main Street and Iowa Street. This traffic will likely divert to other routes adjacent to 5<sup>th</sup> Street. Since little of that traffic is moving all the way through the corridor, it is expected that the traffic making that movement will turn eastbound on either 3<sup>rd</sup> Street or 4<sup>th</sup> Street and use Main Street or Iowa Street to get to the parking structures.
- There is a nominal amount of southbound Bluff Street traffic turning eastbound onto 5<sup>th</sup> Street. Traffic currently making that movement is likely to divert to 4<sup>th</sup> Street or 3<sup>rd</sup> Street. If their

## MEMO

November 28, 2018

---

destination is a location along 5<sup>th</sup> Street, the traffic may divert to 8<sup>th</sup> Street or 9<sup>th</sup> Street and then to Main Street or Iowa Street.

- Events at the Five Flags Center are unlikely to have a large effect on the normal peak hour traffic.
- Events at the Port of Dubuque are unlikely to cause significant traffic issue due to the 5<sup>th</sup> Street closure. However, event traffic should be further evaluated by obtaining traffic counts during an event at the Port of Dubuque along the 5<sup>th</sup> Street and 3<sup>rd</sup> Street corridors.

After making the observations shared above, the potential magnitude of traffic diverted is shown in Exhibits 4 and 5. The primary routes affected by the 5<sup>th</sup> Street closure are likely to be the 3<sup>rd</sup> Street and 4<sup>th</sup> Street corridors along with Main Street and Iowa Street between 3<sup>rd</sup> Street and 5<sup>th</sup> Street. Secondary affects along 8<sup>th</sup> Street and 9<sup>th</sup> Street between Bluff Street and Iowa Street may also occur.

### ***Conclusion***

While it may be feasible to close the desired section of 5<sup>th</sup> Street to accommodate the development, MSA strongly recommends additional detailed study to verify impacts and unanticipated consequences of the proposed closure. Based on the existing information collected and provided to MSA, it is anticipated that the closure of 5<sup>th</sup> Street between Main Street and Locust Street will have an adverse effect on the operation of other nearby intersections.

When details for the future expansion of the Five Flags Center are known, a full Traffic Impact Study should be conducted following the guidelines for Traffic Impact Studies provided by the City of Dubuque. A possible scope for that study is included in Attachment A.

It is also known that there have been discussions of conversion to two-way streets in the central business district. That conversion would have significant impacts on traffic in the downtown and should be considered as part of the analysis conducted for the Five Flags Center.



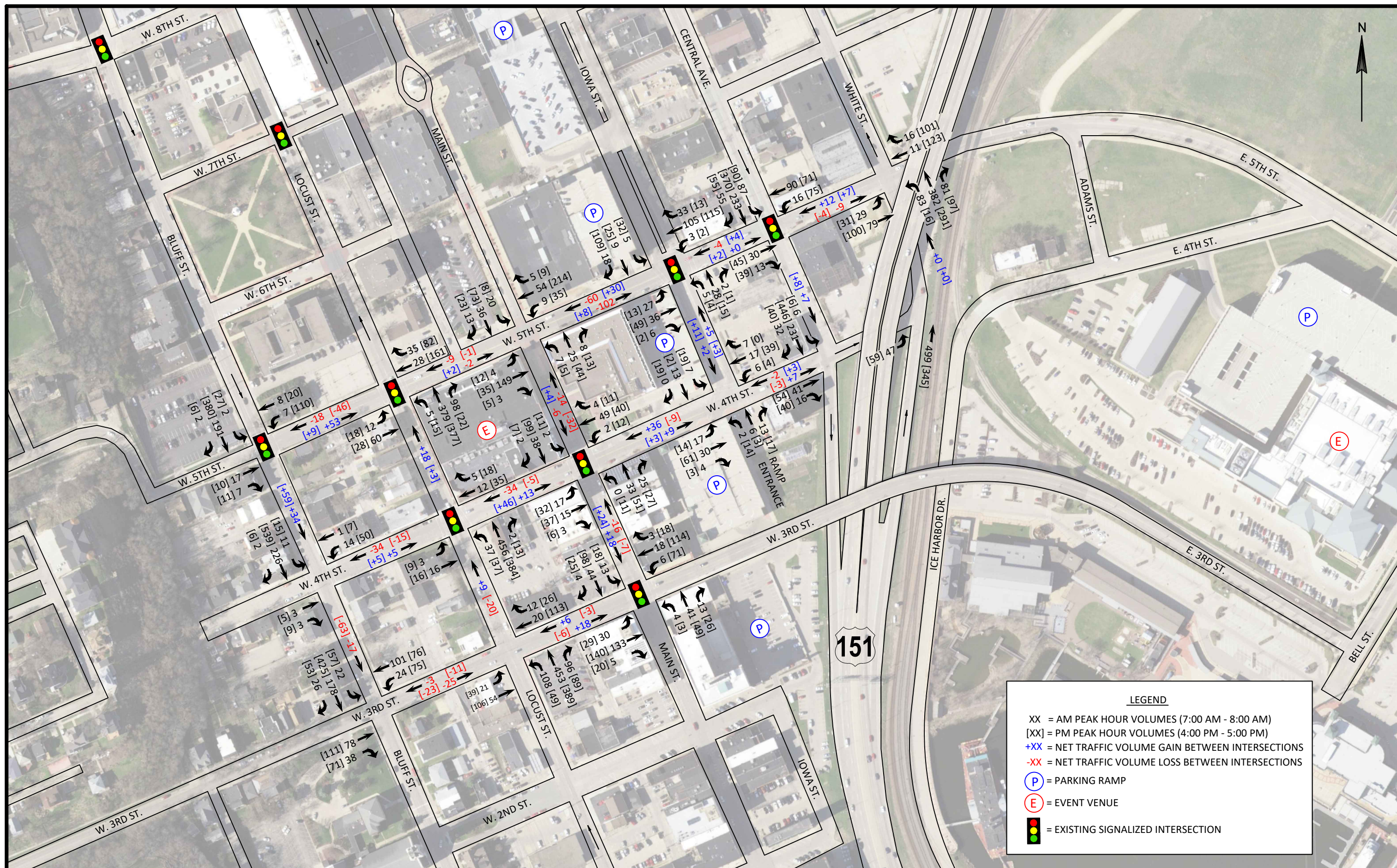


Exhibit 1: Existing 2018 Traffic Volumes



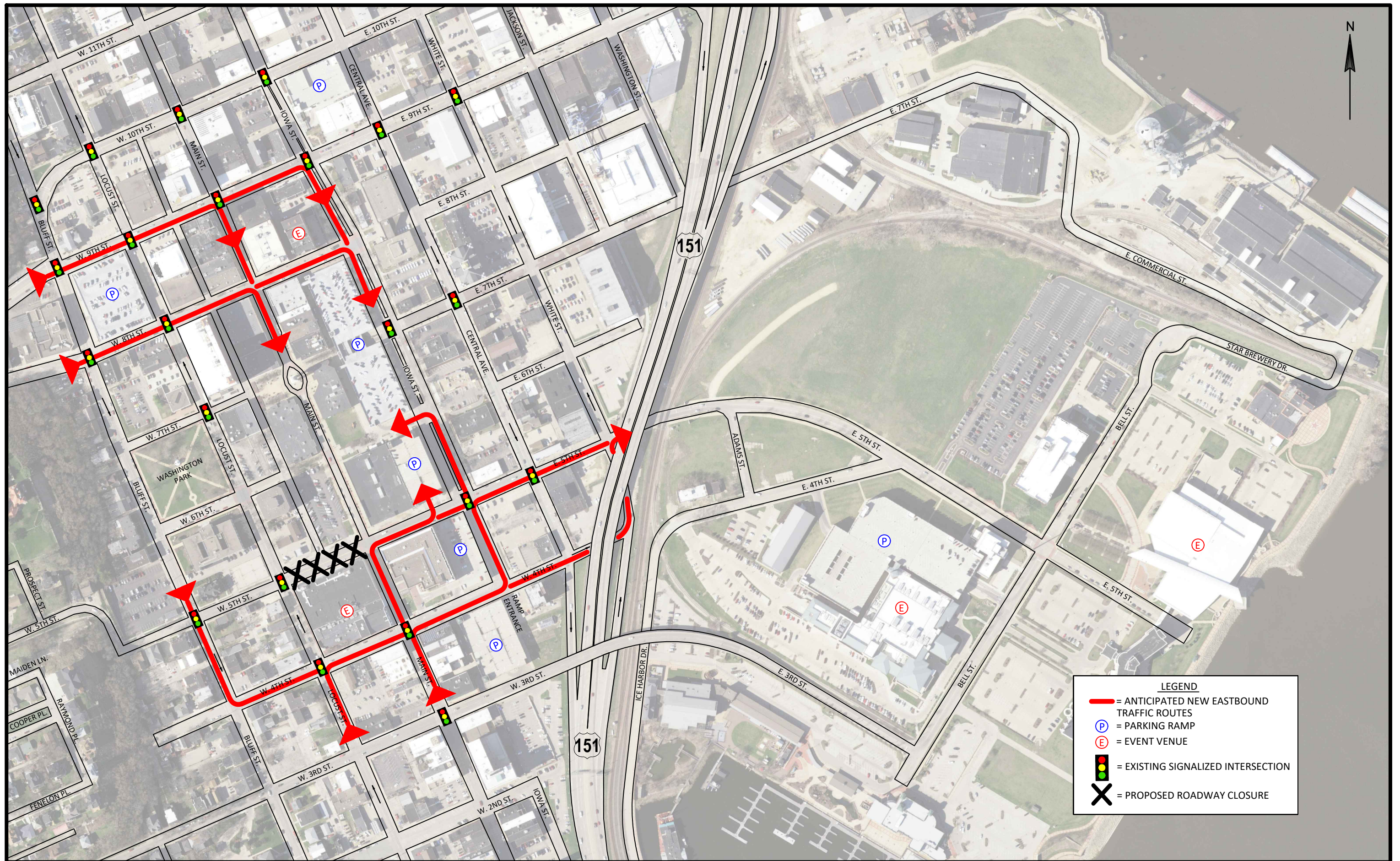


Exhibit 2: 5th Street Eastbound Routes



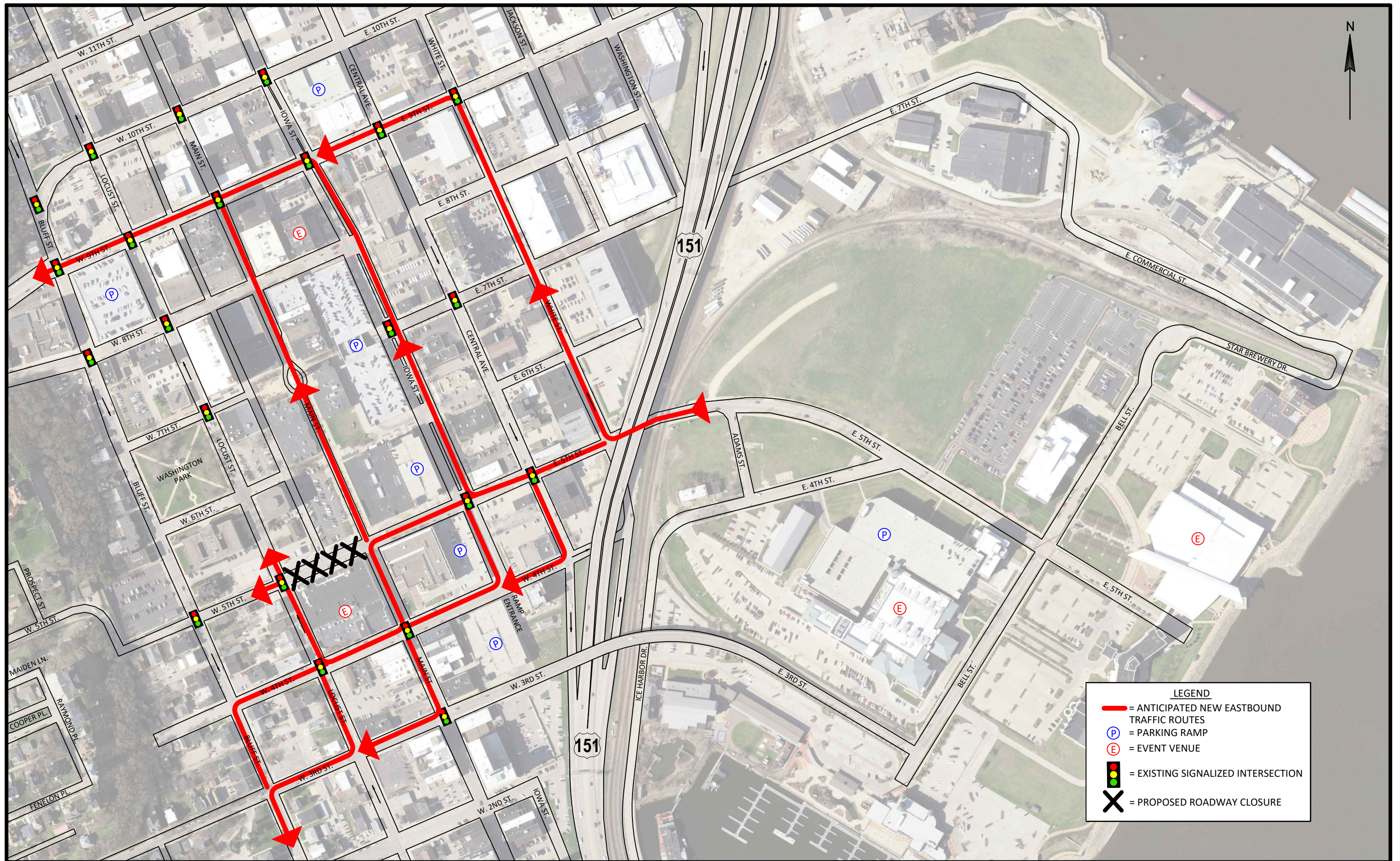


Exhibit 3: 5th Street Westbound Routes



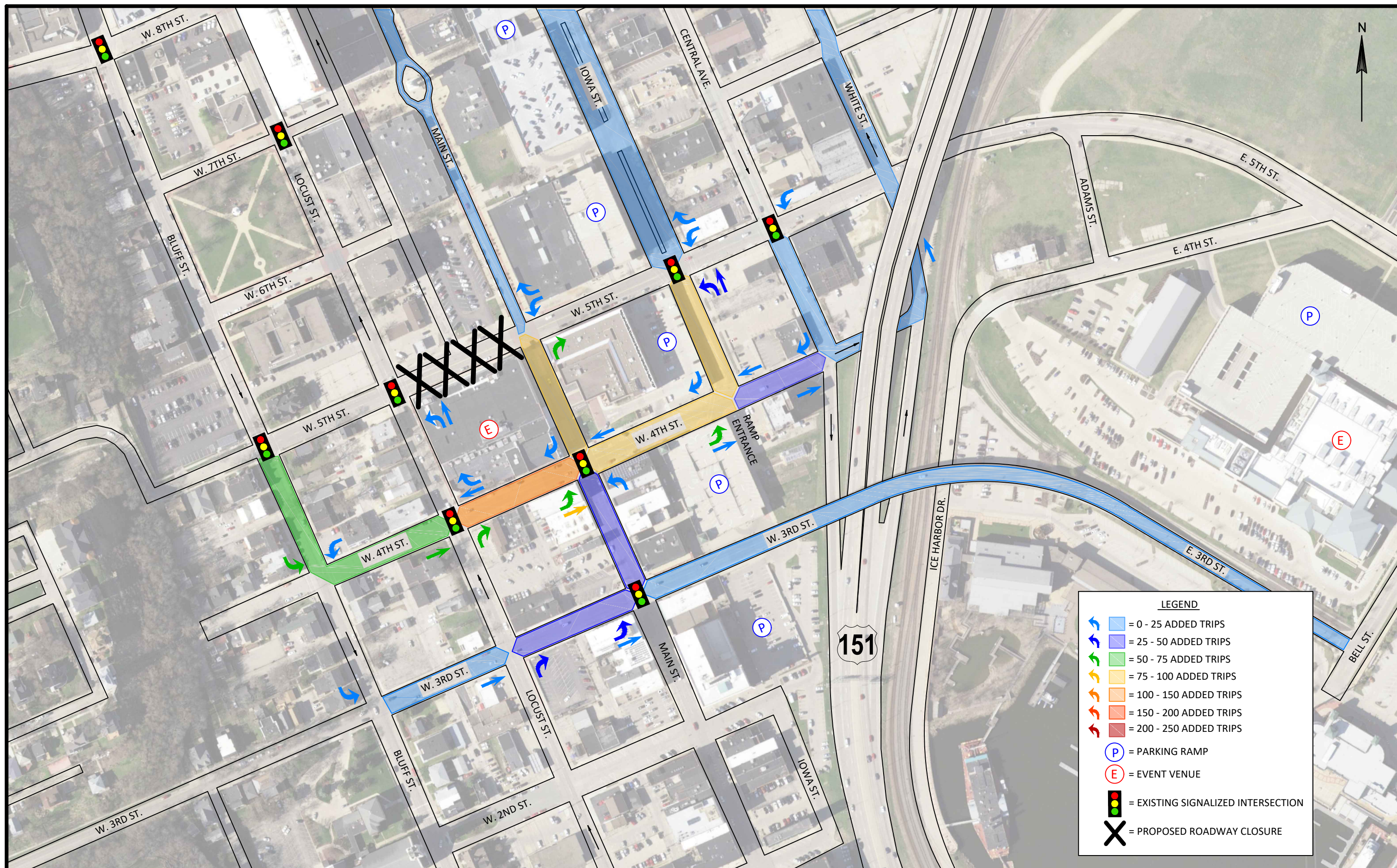


Exhibit 4: Projected AM Peak Hour Volume Increase By Block



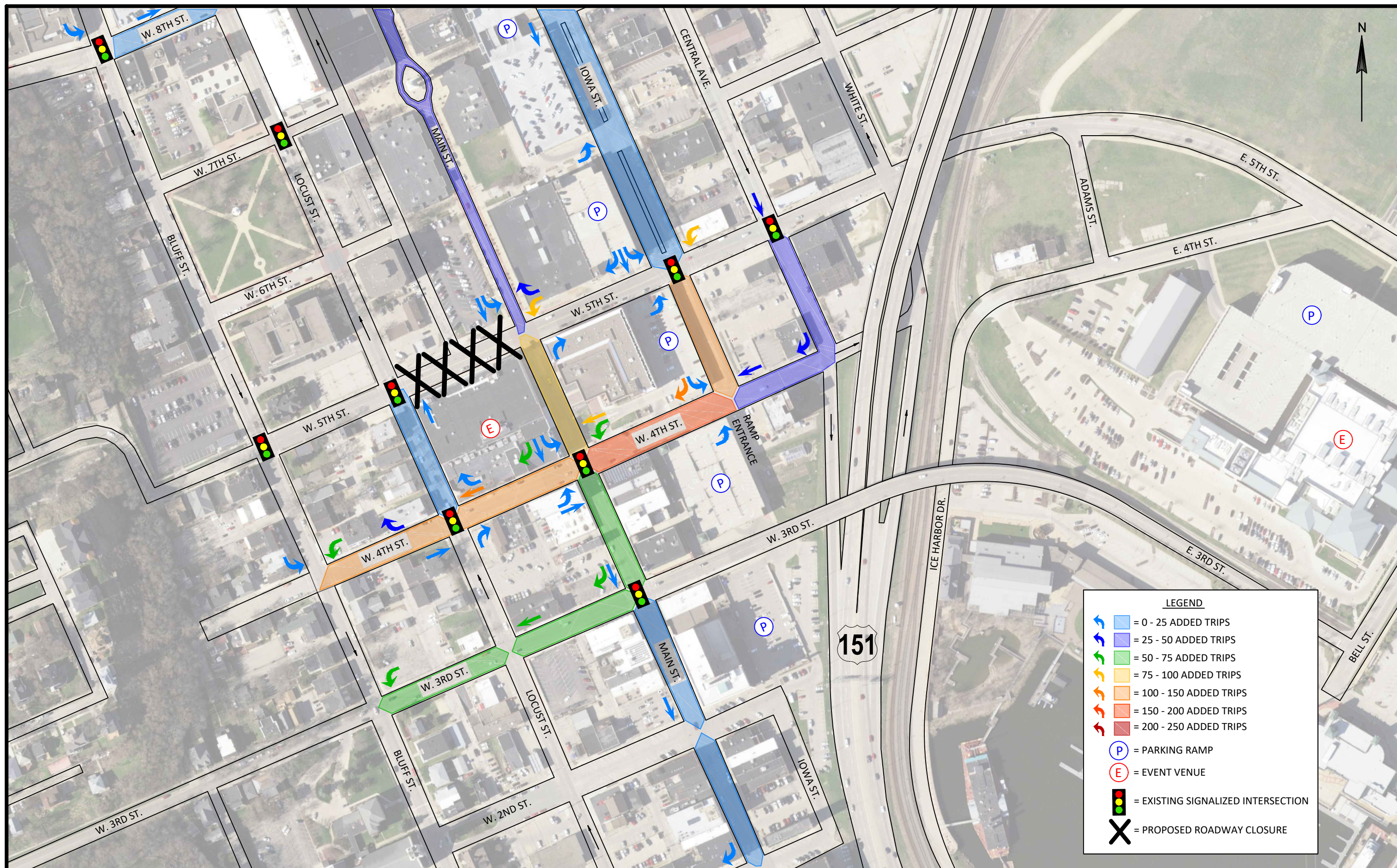


Exhibit 5: Projected PM Peak Hour Volume Increase By Block



## **PROPOSED TRAFFIC IMPACT STUDY SCOPE OF SERVICES**

The Traffic Impact Study (TIS) for the Five Flags Center development should follow the guidelines and procedures outlined in the City of Dubuque Guidelines for Traffic Impact Studies which includes consideration for additional traffic due to the expansion of the site. The following text provides supplemental scope considerations for any possible traffic impact study for the development.

### **Study Area**

The proposed study area for the TIS is separated into two categories. The primary areas affected by the 5<sup>th</sup> Street closure are likely to be the 3<sup>rd</sup> Street and 4<sup>th</sup> Street corridors along with Main Street and Iowa Street between 3<sup>rd</sup> Street and 5<sup>th</sup> Street. The secondary area is along 8<sup>th</sup> Street and 9<sup>th</sup> Street between Bluff Street and Iowa Street. The secondary study area includes the intersections that are likely to see some increase in traffic but with limited impacts. Review of the secondary study area should be further considered if other changes in the downtown are anticipated that would influence those locations (such as the conversion to two-way streets).

#### ***Primary Study Area***

5 <sup>th</sup> Street & Bluff Street	4 <sup>th</sup> Street & Locust Street
5 <sup>th</sup> Street & Locust Street	4 <sup>th</sup> Street & Main Street
5 <sup>th</sup> Street & Main Street	4 <sup>th</sup> Street & Iowa Street
5 <sup>th</sup> Street & Iowa Street	4 <sup>th</sup> Street & Central Avenue
5 <sup>th</sup> Street & Central Avenue	3 <sup>rd</sup> Street & Bluff Street
5 <sup>th</sup> Street & White Street	3 <sup>rd</sup> Street & Locust Street
4 <sup>th</sup> Street & Bluff Street	3 <sup>rd</sup> Street & Main Street

#### ***Secondary Study Area***

9 <sup>th</sup> Street & Bluff Street	9 <sup>th</sup> Street & White Street
9 <sup>th</sup> Street & Locust Street	8 <sup>th</sup> Street & Bluff Street
9 <sup>th</sup> Street & Main Street	8 <sup>th</sup> Street & Locust Street
9 <sup>th</sup> Street & Iowa Street	8 <sup>th</sup> Street & Main Street
9 <sup>th</sup> Street & Central Avenue	8 <sup>th</sup> Street & Iowa Street



## **Traffic Counts**

While existing traffic counts have already been provided for most of the study area, additional counts are needed and it is recommended that vehicle turning movement counts be collected on a typical weekday (Tuesday through Thursday) during the AM and PM peak hours at the selected study area intersections. The counts should be collected on a weekday with a typical schedule (no special events, etc.) and average, precipitation free weather conditions. All counts should be collected on the same day or week if possible, which may require re-counting some of the intersections.

It is also recommended that vehicle turning movement counts be collected while special events are being held in the downtown area. Those special counts should be coordinated with City of Dubuque traffic staff and may include events at the Five Flags Center, the Millwork or Main Street areas, the Port of Dubuque, etc. Counts should begin 2-hours before the start of the event and continue for at least 1-hour after completion of the event at the selected study area intersections.

## **Analysis**

A full traffic model of the study area should be created to determine if the existing traffic control is adequate or will require changes. Analysis should include special events as coordinated with the City of Dubuque traffic staff. Analysis should consider typical conditions for AM and PM peak hours with and without the closure of 5<sup>th</sup> Street. Event traffic is likely to overlap with PM peak hour traffic and should be accounted for after considering typical PM traffic diversions and growth. Weekend traffic should be considered at the discretion of the city traffic engineer.