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# TRAFFIC ENGINEERING ASSISTANCE PROGRAM

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**FINAL**

## City of Knoxville TEAP Study



Prepared for:  
**City of Knoxville, IA**

In Cooperation With:  
Iowa Department of Transportation &  
U.S. Department of Transportation  
Federal Highway Administration

September 16, 2015



INFORMATION SHEET  
IOWA DEPARTMENT OF TRANSPORTATION  
TRAFFIC ENGINEERING ASSISTANCE PROGRAM

CITY OF KNOXVILLE TEAP STUDY  
September 16, 2015

1. Local Jurisdiction: City of Knoxville, IA
2. Reason TEAP Study Originated: Study includes a feasibility/operations study of the traffic signal system (six traffic signals) along the Lincoln Street (Iowa Highway 14) corridor as well as a feasibility/operations study of the traffic signal system (three traffic signals) along the Roche Street corridor. In addition, a high level review of a potential future at-grade multi-use trail crossing alternatives across Lincoln Street will be conducted. These areas of study are within the corporate limits of the City of Knoxville.
3. Scope of Services Provided: Performed field review and observation of existing conditions; reviewed vehicle count data, evaluated relevant crash history and traffic operations; developed recommendations; and prepared illustrative drawings of proposed improvements.
4. The Consultant, HR Green, submitted a final report dated September 16, 2015 with the following recommendations:

**Short Term Recommendations**

- Study Area #1: Lincoln Street Corridor
  - Update traffic signal timing plan as suggested in Appendix E.

**Long Term Recommendations**

- Study Area #1: Lincoln Street Corridor
  - Install new traffic signal infrastructure and traffic signal cabinet equipment, as funding allows.
  - Consider restriping corridor from four lanes to three lanes.
- Study Area #2: Lincoln Street Trail Crossing
  - Two at-grade Lincoln Street crossings scenarios are listed below in order of preference with regards to maximizing safety and effectively managing the interaction of pedestrians, bicycles and vehicle traffic. Design elements pertaining to each scenario are also included.
    - Re-Route Competine Creek Trail Traffic to Madison Street Traffic Signal Intersection
      - Utilize existing Madison Street & Lincoln Street traffic signal and utilize existing sidewalk along Madison Street.
    - At-Grade Crossing at Previously Identified Location with Two-Way Left-Turn Lincoln Street Cross Section
      - 4-lane to 3-lane cross section conversion along Lincoln Street
      - Pedestrian median refuge island
      - High-visibility crosswalk pavement markings and signage
      - Adjacent roadside lighting

- Shift of existing speed limit transition
- Overhead warning flasher beacon system
- Monitor pedestrian/bicyclists traffic and reevaluate the need for a pedestrian activated hybrid signal at the previously identified crossing location.
- Study Area #3: Roche Street Corridor
  - If it is justified by the results of a traffic signal warrant analysis with more accurate traffic volume movement data, remove existing traffic signal infrastructure and replace with Stop sign intersection control as outlined in the Considered Option section.

5. The order of magnitude construction cost opinions for recommended improvements:

Short-Term:

- A. Traffic Signal Timing Revision (Per intersection): \$500-\$1,000

Long-Term:

- A. Crosswalk pavement markings (Per approach): \$200-\$300
- B. Install pedestrian crossing warning signage at identified locations (2 Signs per approach): \$250-\$500
- C. Overhead warning flasher beacon system: \$30,000-\$45,000
- D. 4-Lane to 3-Lane conversion (Per mile): \$20,000-\$30,000
- E. Removal of existing traffic signal (Per intersection): \$2,000-\$2,500
- F. Traffic signal controller (Per unit): \$4,000-\$6,000
- G. Traffic signal conflict monitor (Per unit): \$800-\$1,750
- H. LED traffic signal heads (Per signal head): \$1,000-\$1,500

6. Potential funding sources include the CIRTPA Transportation Alternatives Program (TAP) and Traffic Safety Improvement Program (TSIP).

Traffic Engineering Assistance Program

City of Knoxville TEAP Study

Knoxville, Iowa

**FINAL Report**

September 16, 2015

Prepared For:

City of Knoxville, Iowa

In Cooperation with:

Iowa Department of Transportation

 <p>J. ANDREW SWISHER 17928 IOWA</p>	<p>I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.</p>
	
	<p>9-16-15</p>
	<p>J. ANDREW SWISHER, P.E. DATE</p>
	<p>License Number: 17928</p>
	<p>My license renewal date is DECEMBER 31, 2015.</p>
	<p>Pages or sheets covered by this seal:</p>
	<p>ENTIRE DOCUMENT</p>
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Prepared By:



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## INTRODUCTION

### Purpose and Study Objective

At the request of the Iowa Department of Transportation (DOT) and the City of Knoxville, Iowa, through the Iowa DOT Traffic Engineering Assistance Program (TEAP), this traffic study evaluated traffic operations along the Lincoln Street (Iowa Highway 14) and Roche Street study corridors within the City of Knoxville, Iowa. The study evaluated the existing traffic patterns, traffic signal control, and lane use geometry along the corridors. Additionally, the study examined traffic sign and signal alternatives for a potential future at-grade multi-use trail crossing across Lincoln Street. The evaluation included a traffic signal warrant analysis along Roche Street and traffic operations analysis along Lincoln Street.

## BACKGROUND

### Study Location

Knoxville is located in Marion County, north of Iowa Highway 5/Iowa Highway 92. The City of Knoxville is bisected by Lincoln Street (Iowa Highway 14), a primary highway that carries traffic north/south through the city. In 2010, the population of Knoxville was approximately 7,300 people. The location of Knoxville is shown in **Exhibit 1**.

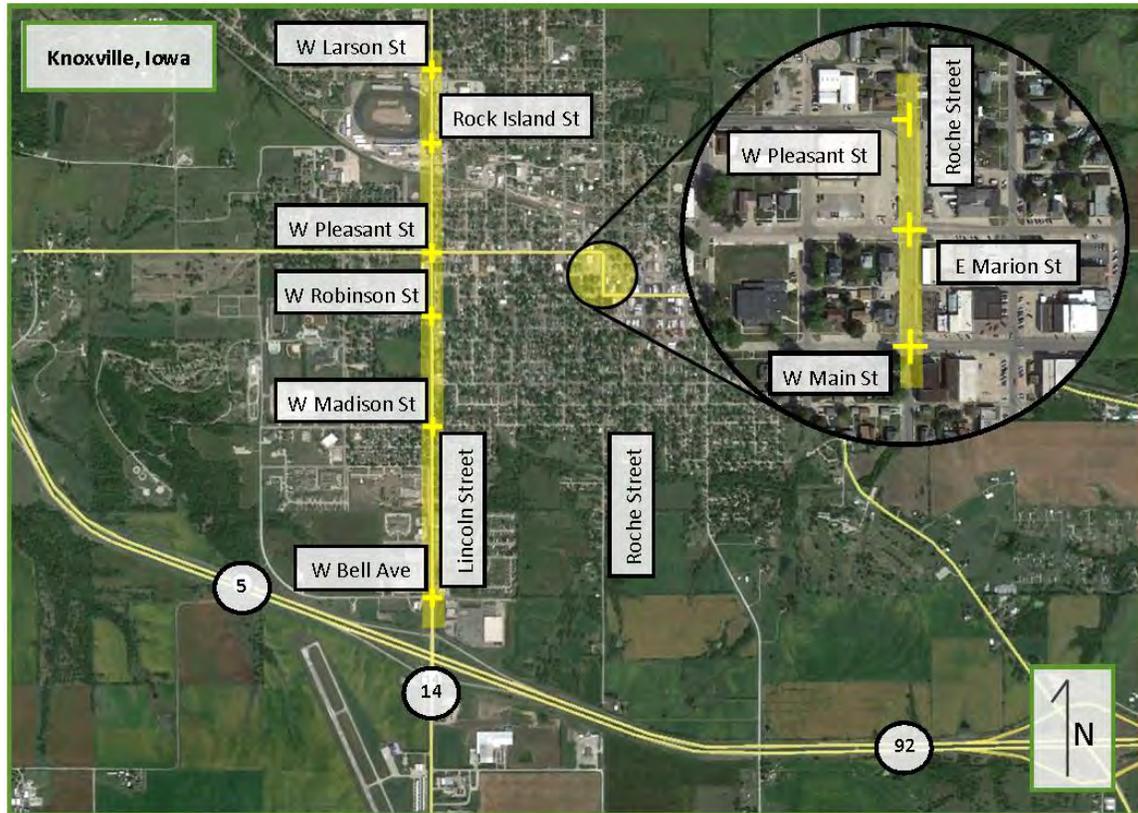
**Exhibit 1 – Location of Knoxville, Iowa**



The City of Knoxville is concerned with the condition of existing traffic signal equipment in use along the Lincoln Street corridor with regard to the visibility of signal heads and

the reliability of the signal controller cabinets which have reportedly failed during times of cold weather conditions. This study will examine the condition of traffic signal cabinet equipment and overall traffic operations at the six signalized intersections along the Lincoln Street corridor. In addition, the study will examine the continuation of signaling three intersections along a portion of Roche Street due to similar concerns with aging infrastructure and the perception, by the City, that the traffic demand has decreased through this corridor. The location of the Lincoln Street and Roche Street study areas can be seen in **Exhibit 2**.

**Exhibit 2 – Project Study Areas**



The Lincoln Street study area includes the corridor along Lincoln Street (Iowa Highway 14), beginning north of the Iowa Highway 5/92 interchange and ending north of the intersection of Lincoln Street & W Larson Street at the northern edge of the City. The Roche Street study area includes the corridor along Roche Street, beginning south of the intersection of Roche Street & W Main Street and ending north of the intersection of Roche Street & W Pleasant Street.

Additionally, the City of Knoxville has a planned extension of the Competine Creek Trail, a multi-use recreational trail system, which requires a crossing at Lincoln Street between the intersections of W Bell Avenue and W Madison Street. The current trail phasing plan includes a grade separated crossing carrying pedestrians/bicyclists over Lincoln Street. The City of Knoxville is interested in potential Lincoln Street crossings not requiring a grade separated structure. This study will provide a high level review of potential at-grade trail crossing alternatives to maximize safety and effectively manage the interaction of pedestrians, bicycles and vehicle traffic.

### Study Area #1: Lincoln Street Corridor

Study Area #1 contains the segment of Lincoln Street beginning north of the Iowa Highway 5/92 interchange and extends north through the intersection with W Larson Street. The cross section of Lincoln Street contains two approximately 11-foot lanes in each direction and curb and gutter. Commercial properties/residential yards are present along Lincoln Street on each side. The posted speed limit along Lincoln Street through the study area ranges from 30 mph to 40 mph. **Exhibit 3** shows the posted speed limits.

Sidewalk runs along the east side and west side of Lincoln Street throughout the majority of the study area. There is no sidewalk located on the west side of Lincoln Street between W Madison Street and W Robinson Street or on the east side of Lincoln Street between W Pleasant Street and Rock Island Street.

Land uses within the study area are primarily commercial or residential along the east and west sides of Lincoln Street. The Knoxville Area Community Hospital is located on the west side of Lincoln Street between the intersections with W Bell Avenue and W Madison Street. The Knoxville Middle School is located on the west side of Lincoln Street between the intersections with W Robinson Street and W Pleasant Street. The Marion County Fairgrounds and Knoxville Raceway are located on the west side of Lincoln Street towards the northern limits of the study area with access provided at the west leg of the Lincoln Street and Rock Island Street intersection.

### Study Area #2: Lincoln Street Trail Crossing

The planned extension of the Competine Creek Trail includes a proposed trail crossing at a previously selected location along Lincoln Street midway (approx. 1,290 feet in each direction) between the intersections with W Bell Avenue and W Madison Street. The current trail phasing plan calls for the use of a grade separated structure to carry pedestrians/bicyclists traffic over Lincoln Street. The Competine Creek Trail system has completed Phase 1 of a multi-phased construction plan. Phase 2 comprises the crossing at Lincoln Street including the grade separated crossing. Additional details regarding the Competine Creek Trail system and anticipated construction phasing plan can be found in **Appendix A**.

**Exhibit 3** displays the features of Study Area #1 and Study Area #2.

**Exhibit 3 – Lincoln Street Corridor Map**



**Exhibits 4 through 9** show the study intersections of the Lincoln Street corridor moving northward from the southern boundary of the study area.

**Exhibit 4 – Lincoln Street & W Bell Avenue**



**Exhibit 5 – Lincoln Street & W Madison Street**



**Exhibit 6 – Lincoln Street & W Robinson Street**



**Exhibit 7 – Lincoln Street & W Pleasant Street**



**Exhibit 8 – Lincoln Street & Rock Island Street**



**Exhibit 9 – Lincoln Street & W Larson Street**



### Study Area #3: Roche Street Corridor

Study Area #3 contains the segment of Roche Street beginning at the intersection with W Main Street and extending through the intersection with W Pleasant Street. The cross section of Roche Street contains one approximately 12-foot lane in each direction with curb and gutter and an approximately 11-foot center lane. Commercial properties/residential yards are present along Roche Street on each side. The posted speed limit along Roche Street through the study area is 20 mph.

An approximately four foot sidewalk runs along the east side and west side of Roche Street through the study area. Pedestrian signal heads and pushbuttons are located at the Roche Street signalized intersections with W Main Street and E Marion Street.

Land uses within the study area are primarily commercial along the east and west sides of Roche Street. There are several residential dwellings on the west side of Roche Street between W Main Street and E Marion Street.

**Exhibit 10** displays the study area and its features.

**Exhibit 10 – Roche Street Corridor Map**



### CRASH HISTORY/INFORMATION

*Iowa DOT Crash Mapping Analysis Tool Data*

HR Green compiled and reviewed crash data for all segments and intersections within the study corridors. The crash data was compiled using the Crash Mapping Analysis Tool (CMAT) software distributed by the Iowa DOT. The crash data review includes the most recent five years of available crash data (2009-2013).

The following is a summary of the crash history for the study corridor. Crash reports from CMAT for the study intersections are contained in **Appendix B**.

### Study Area #1: Lincoln Street Corridor

Study Intersection: Lincoln Street & W Bell Avenue

- Lincoln Street/W Bell Avenue
  - 18 Total Crashes

- 1/18 = Fatal Incidents
- 3/18 = Minor Injury Incidents
- 2/18 = Possible/Unknown Injury Incidents
- 12/18 = PDO incidents
- 4/18 = Ran Traffic Signal
- 3/18 = Failure to Yield Right-of-Way: Making Left Turn
- 5/18 = Occurred between the hours of 2:00 and 4:00 PM
- 7/18 = Broadside Manner of Crash
- 4/18 = Rear-end Manner of Crash
- 3/18 = Sideswipe, Same Direction Manner of Crash
- 1/18 = Angle, Oncoming Left Turn Manner of Crash
- 0.85 Crashes/Million Entering Vehicles (MEV)

Study Intersection: Lincoln Street & W Madison Street

- Lincoln Street/W Madison Street
  - 9 Total Crashes
    - 1/9 = Minor Injury Incidents
    - 3/9 = Possible/Unknown Injury Incidents
    - 5/9 = PDO incidents
  - 4/9 = Ran Traffic Signal
  - 1/9 = Failure to Yield Right-of-Way: Making Left Turn
  - 5/9 = Broadside Manner of Crash
  - 1/9 = Angle, Oncoming Left Turn Manner of Crash
  - 0.4 Crashes/Million Entering Vehicles (MEV)

Study Intersection: Lincoln Street & W Robinson Street

- Lincoln Street/W Robinson Street
  - 37 Total Crashes
    - 1/37 = Major Injury Incidents
    - 2/37 = Minor Injury Incidents
    - 8/37 = Possible/Unknown Injury Incidents
    - 26/37 = PDO incidents
  - 10/37 = Failure to Yield Right-of-Way: Making Left Turn
  - 5/37 = Ran Traffic Signal
  - 11/37 = Occurred Between the Hours of 4:00 and 6:00 PM
  - 14/37 = Broadside Manner of Crash

- 9/37 = Angle, Oncoming Left Turn Manner of Crash
- 9/37 = Rear-end Manner of Crash
- 1.6 Crashes/Million Entering Vehicles (MEV)

Study Intersection: Lincoln Street & W Pleasant Street

- Lincoln Street/W Pleasant Street
  - 20 Total Crashes
    - 1/20 = Major Injury Incidents
    - 2/20 = Minor Injury Incidents
    - 2/20 = Possible/Unknown Injury Incidents
    - 15/20 = PDO incidents
  - 4/20 = Failure to Yield Right-of-Way: Other
  - 3/20 = Failure to Yield Right-of-Way: Making Left Turn
  - 5/20 = Occurred Between the Hours of 2:00 and 4:00
  - 10/20 = Rear-end Manner of Crash
  - 3/20 = Angle, Oncoming Left Turn Manner of Crash
  - 0.81 Crashes/Million Entering Vehicles (MEV)

Study Intersection: Lincoln Street & Rock Island Street

- Lincoln Street/Rock Island Street
  - 5 Total Crashes
    - 1/5 = Major Injury Incidents
    - 1/5 = Minor Injury Incidents
    - 3/5 = PDO incidents
  - 2/5 = Unknown Cause
  - 1/5 = Ran Traffic Signal
  - 1/5 = Followed Too Close
  - 1/5 = Operating Vehicle in Reckless/Aggressive Manner
  - 2/5 = Occurred Between the Hours of 2:00 and 4:00
  - 2/5 = Rear-end Manner of Crash
  - 1/5 = Angle, Oncoming Left Turn Manner of Crash
  - 0.22 Crashes/Million Entering Vehicles (MEV)

Study Intersection: Lincoln Street & W Larson Street

- Lincoln Street/W Larson Street
  - 12 Total Crashes

- 1/12 = Major Injury Incidents
- 1/12 = Minor Injury Incidents
- 4/12 = Possible/Unknown Incidents
- 6/12 = PDO incidents
- 2/12 = Ran Traffic Signal
- 2/12 = Failure to Yield Right-of-Way: Making Left Turn
- 2/12 = Unknown Cause
- 4/12 = Occurred Between the Hours of 2:00 and 4:00
- 5/12 = Broadside Manner of Crash
- 3/12 = Rear-end Manner of Crash
- 2/12 = Angle, Oncoming Left Turn Manner of Crash
- 0.76 Crashes/Million Entering Vehicles (MEV)

From the CMAT data, it can be seen that the study intersections involved various crash types. The study intersections along the Lincoln Street corridor had a total of one (1) fatal crash incident, seven (7) major crash incidents, ten (10) minor injury incidents, nineteen (19) possible/unknown injury incidents and sixty-seven (67) property damage only incidents in the five most recent years of crash data.

The single fatal crash severity incident occurred at the intersection of Lincoln Street & W Bell Avenue. According to the crash report, it was a non-collision, single vehicle incident in which a northbound vehicle ran off the roadway and struck a utility pole. There was no reported surface, light, or weather conditions that contributed to the incident and no drugs/alcohol were involved.

The greatest number of crashes at intersections along the Lincoln Street corridor happened between the hours of 2:00 and 6:00PM. The major causes of crash incidents along the Lincoln Street corridor were drivers that failed to yield right-of-way while making a left turn (15) and drivers that ran traffic signals (11). The highest recorded manner of crashes along the Lincoln Street corridor were broadside incidents (31), rear-end incidents (28), and angle, oncoming left turn incidents (17).

The crash rates calculated at intersections along the study corridor were determined to be between 0.22 and 1.6 Crashes/MEV. The statewide average for a comparable road system (Municipal Primary with City Street) is 0.9 Crashes/MEV. The crash rate for the study intersections were all determined to be below the statewide average for comparable intersection with the exception of the intersection of Lincoln Street & W Robinson Street which was determined to be 1.6 Crashes/MEV which is above the statewide average for comparable intersections.

Inferences drawn from the CMAT data suggest that the majority of crash incidents along this corridor are due to left turning vehicles. The secondary cause of crash incidents was found to be drivers running traffic signals and the highest manner or crash was found to be broadside incidents followed closely by rear-end manner of crash incidents.

### **Study Area #3: Roche Street Corridor**

#### Study Intersection: Roche Street & W Main Street

- Roche Street/W Main Street
  - 2 Total Crashes
    - 1/2 = Possible/Unknown Incidents
    - 1/2 = PDO incidents
  - 1/2 = Crossed Centerline
  - 1/2 = Driving Too Fast for Conditions

#### Study Intersection: Roche Street & W Marion Street

- Roche Street/W Marion Street
  - 11 Total Crashes
    - 1/11 = Minor Injury Incidents
    - 3/11 = Possible/Unknown Incidents
    - 7/11 = PDO incidents
  - 4/11 = Ran Traffic Signal
  - 7/11 = Broadside Manner of Crash

#### Study Intersection: Roche Street & W Pleasant Street

- Roche Street/W Pleasant Street
  - 0 Total Crashes

From the CMAT data, the study intersections involved various crash types. Crash rates were not calculated at the intersections along the Roche Street corridor due to the absence of ADT data for this corridor. The intersection of Roche Street & W Marion Street had 11 reported crash incidents in the last five years with drivers running traffic signals listed as the major cause and broadside collisions listed as the leading manner of crash. At the other two intersections along the Roche Street corridor, there are insufficient crash records to establish a pattern of crashes.

### **Crash History/Information Summary**

From the CMAT data, the Lincoln Street study area had one intersection (Lincoln Street & W Robinson Street) that had a crash rate determined to be higher than the statewide average during the analysis period. The CMAT data suggested that crash incidents at intersections along the Lincoln Street corridor were more likely to occur between the hours of 2:00 and 6:00PM and the major cause of crash incidents was the failure to yield right-of-way while making a left turn. The failure to yield right-of-way while making a left turn, as the major cause of the crash incident, was primarily attributed to southbound traffic. The second highest cause of crash incidents was found to be drivers running traffic signals and the highest manner or crash was found to be broadside crash incidents followed closely by rear-end manner of crash incidents.

The CMAT data did not suggest a trend among crash types at the intersections along the Roche Street study corridor. The intersection of Roche Street & W Marion Street had 11 reported crash incidents in the last five years with drivers running traffic signals listed as the major cause and broadside collisions listed as the leading manner of crash. The other intersections along the Roche Street corridor had an overall number of crashes which was too low to establish a potential pattern of crashes.

## **TRAFFIC HISTORY/INFORMATION**

### **Study Area #1: Lincoln Street Corridor**

#### *Annual Average Daily Traffic*

Traffic flow data was attained from the Iowa DOT for the City of Knoxville, Iowa. Annual average daily traffic (2010 AADT) along Lincoln Street was approximately 6,700 vehicles per day (vpd) at the southern extent and 4,820 vpd at the northern extent of the study area. A maximum AADT of 9,400 vpd was recorded between the intersection of W Madison Street and W Robinson Street. Annual average daily traffic (2014 AADT) along Lincoln Street was approximately 7,600 vehicles per day (vpd) at the southern extent and 5,400 vpd at the northern extent of the study area. A maximum AADT of 10,700 vpd was recorded between the intersection of W Madison Street and W Bell Avenue.

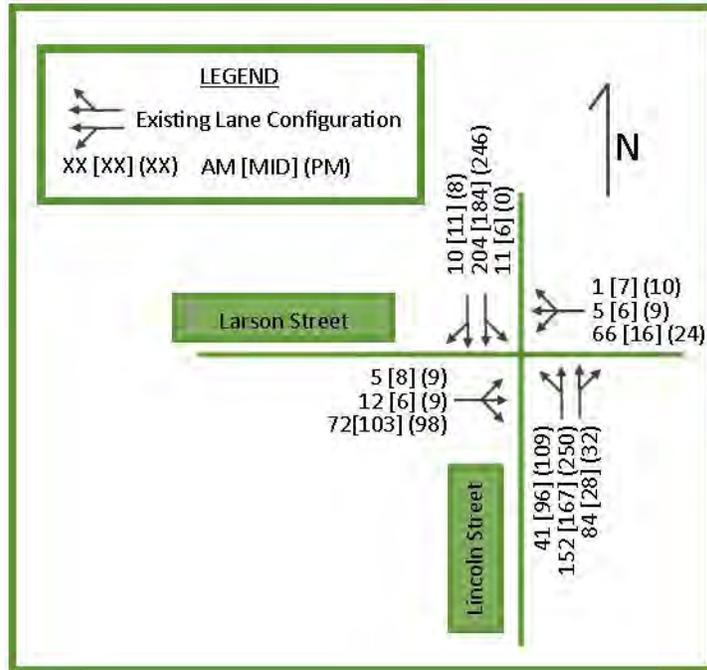
From the traffic flow data, a growth rate of approximately 3% was calculated along the Lincoln Street corridor. Count data attained by the Iowa DOT can be found within **Appendix C**.

#### *Peak Period Traffic Volumes*

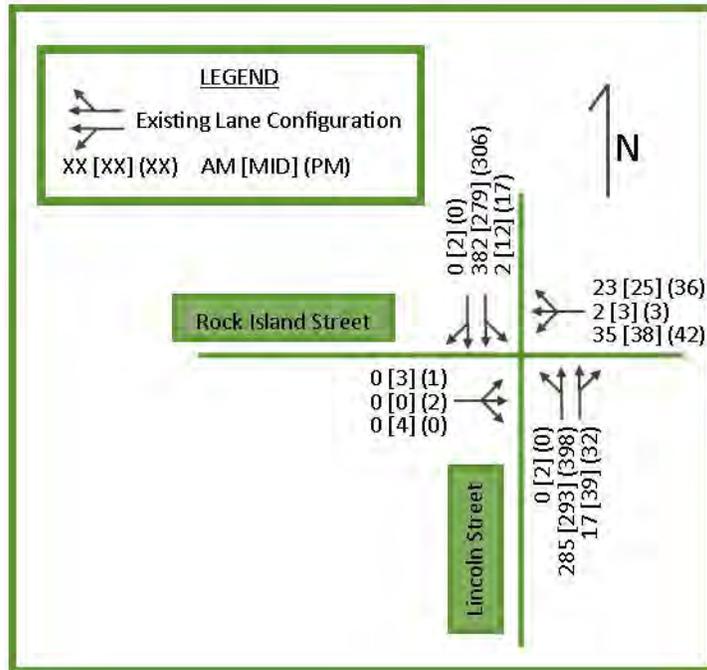
Traffic volume data was attained from the 2014 Iowa DOT peak hour traffic counts for five of the six intersections along Lincoln Street. The hourly traffic count for the remaining intersection (Lincoln Street & Rock Island Street) was collected by City of Knoxville personnel on Tuesday, March 31<sup>st</sup>, 2015 for all intersections movements between the hours of 6:30AM-9:30AM; 11AM-1PM; and 3:30PM-6:30PM. The peak hour vehicle turning movements per intersection were identified for further analysis.

The AM, Midday and PM peak hour traffic movements as well as the existing lane configuration at the six intersections along the Lincoln Street study area are shown in **Exhibit 11, 12, 13, 14, 15, and 16**.

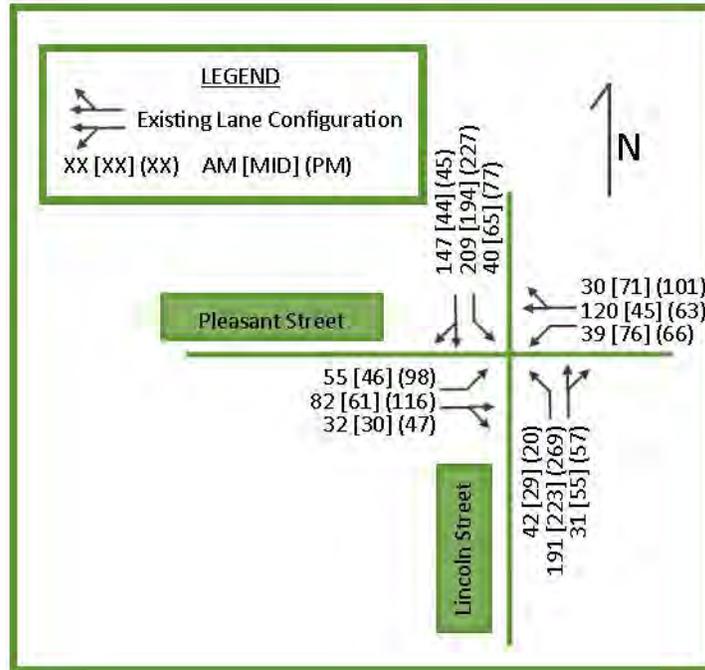
**Exhibit 11 – Intersection of Lincoln Street & W Larson Street Peak Hour Traffic Volumes**



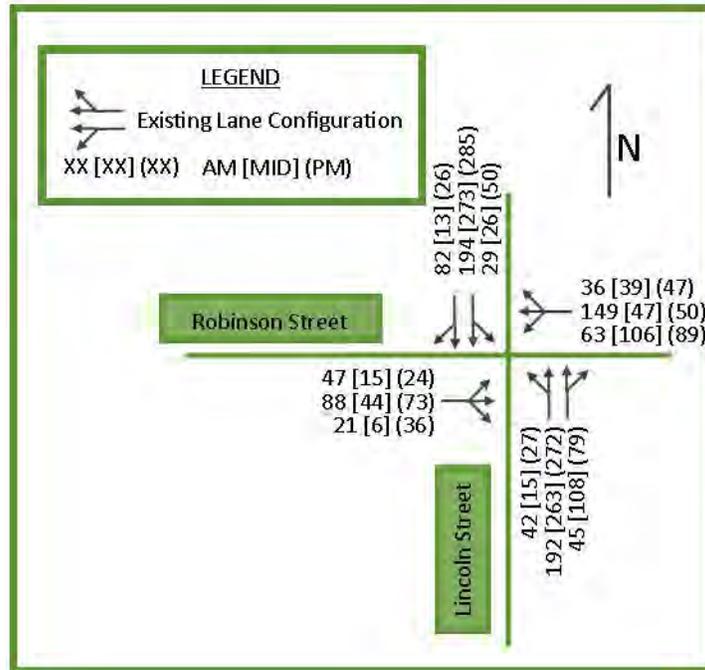
**Exhibit 12 - Intersection of Lincoln Street & Rock Island Street Peak Hour Traffic Volumes**



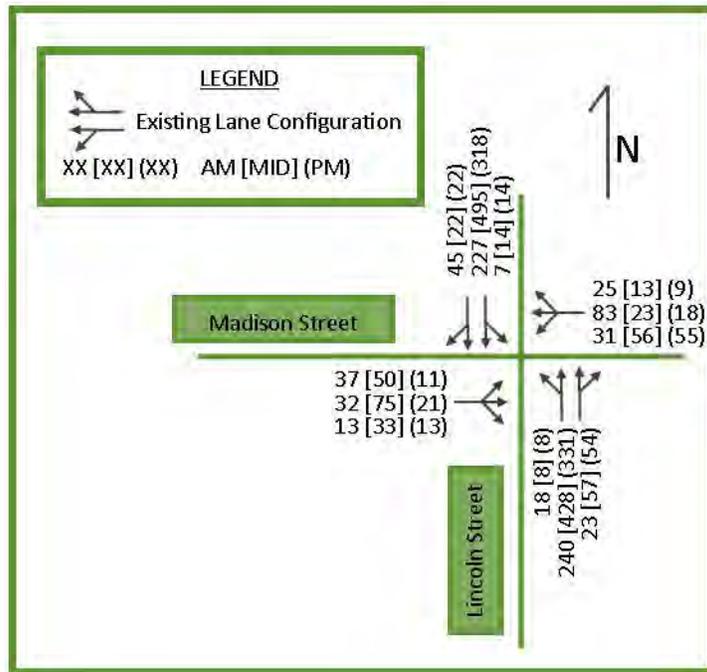
**Exhibit 13 - Intersection of Lincoln Street & W Pleasant Street Peak Hour Traffic Volumes**



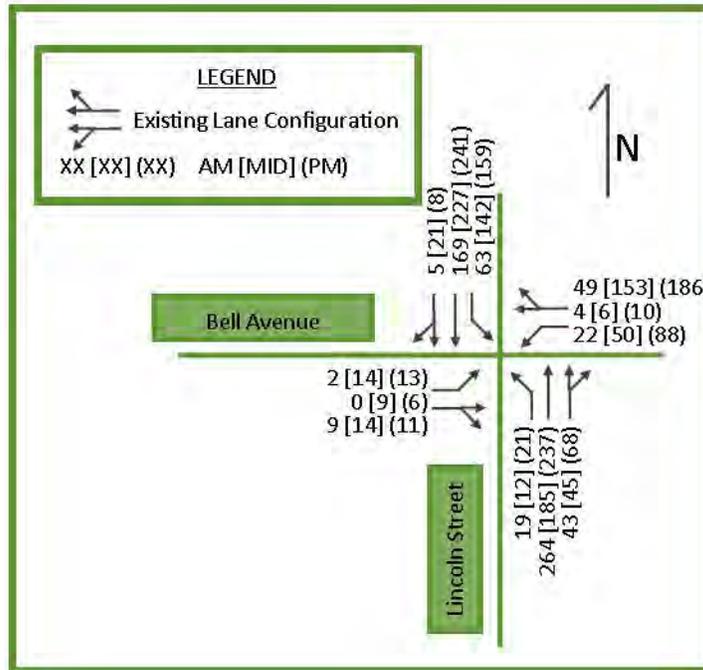
**Exhibit 14 - Intersection of Lincoln Street & W Robinson Street Peak Hour Traffic Volumes**



**Exhibit 15 - Intersection of Lincoln Street & W Madison Street Peak Hour Traffic Volumes**



**Exhibit 16 - Intersection of Lincoln Street & W Bell Avenue Peak Hour Traffic Volumes**



**Study Area #3: Roche Street Corridor**

Annual Average Daily Traffic

Annual average daily traffic along Pleasant Street entering the study area from the northern limits was approximately 6,700 vpd (2010 AADT) and 5,700 vpd (2014 AADT).

The annual average daily traffic along Roche Street entering the study area from the southern limits was approximately 1,000 vpd (2010 AADT) and 1,520 vpd (2014 AADT).

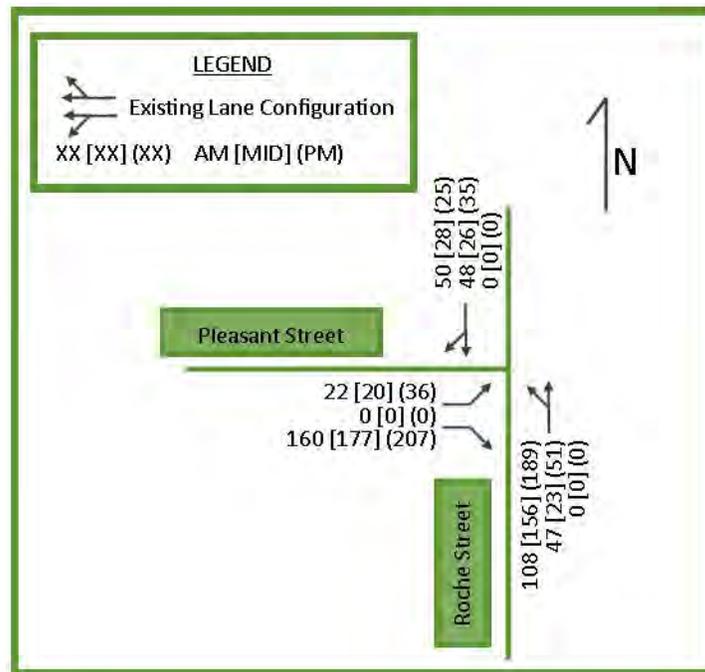
From the traffic flow data, a growth rate of approximately -3.9% was calculated at the northern end of the study area and a growth rate of 11.0% was calculated at the southern end of the study area. Count data attained by the Iowa DOT can be found within **Appendix C**.

Peak Period Traffic Volumes

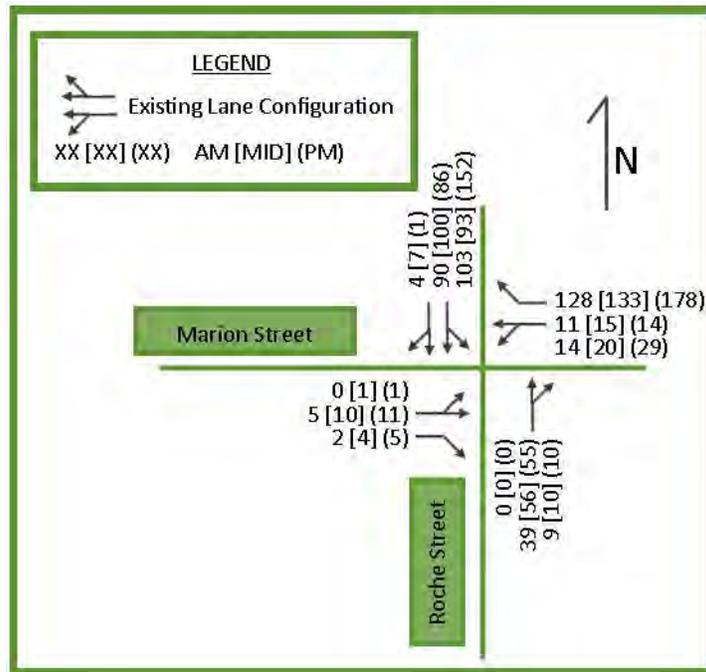
Traffic volume data were collected by City of Knoxville personnel on Tuesday, March 31<sup>st</sup>, 2015 for all intersections movements between the hours of 6:30AM-9:30AM; 11AM-1PM; and 3:30PM-6:30PM. The peak hour vehicle turning movements per intersection were identified for further analysis.

Due to roadway improvement construction projects two blocks east of Roche Street & Main Street and a detour route one block east of the study area, the hourly traffic counts at Roche Street may not represent typical traffic patterns through this area. The Field Review section contains more detailed information about the detour route. The AM, Midday and PM peak hour traffic movements at the three intersections along the Roche Street study corridor are shown in **Exhibit 17, 18, and 19**.

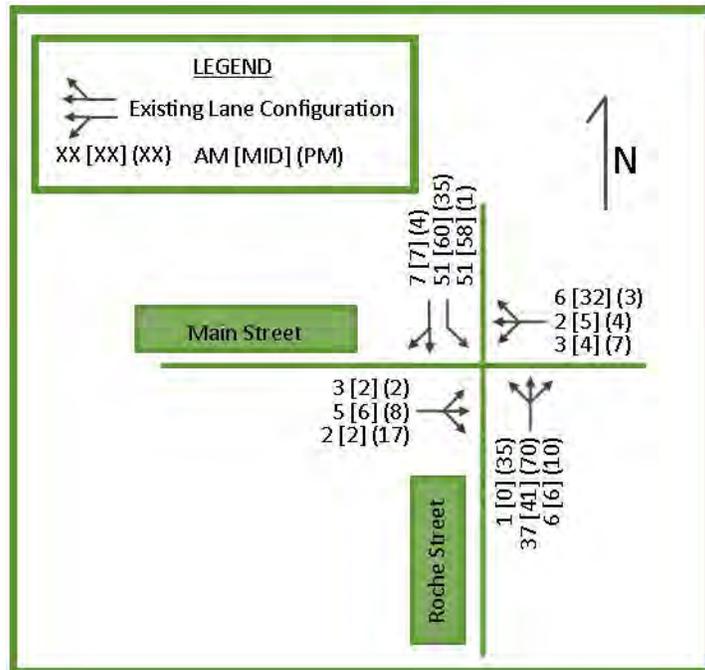
**Exhibit 17 - Intersection of Roche Street & W Pleasant Street Peak Hour Traffic Volumes**



**Exhibit 18 - Intersection of Roche Street & W Marion Street Peak Hour Traffic Volumes**



**Exhibit 19 - Intersection of Roche Street & W Main Street Peak Hour Traffic Volumes**



**STUDY AREA FIELD REVIEW**

HR Green staff conducted a field review of the study area on Tuesday, June 16<sup>th</sup>, 2015 to observe the study area intersections on a typical weekday and inventory the existing traffic signal equipment. An overview of the roadway corridors and intersections, along with findings from field reviews, is presented below.

### **Study Area #1: Lincoln Street Corridor**

The study corridor contains the segment of Lincoln Street beginning at the intersection with W Bell Avenue and extends north through the intersection with W Larson Street. There are six signalized intersections within the study corridor including the intersections of:

- Lincoln Street & W Bell Avenue
- Lincoln Street & W Madison Street
- Lincoln Street & W Robinson Street
- Lincoln Street & W Pleasant Street
- Lincoln Street & Rock Island Street
- Lincoln Street & W Larson Street

A review of the existing traffic signal control equipment was conducted to determine the model type and approximate age. Collected information from the Lincoln Street study intersections are documented in **Exhibit 20**.

**Exhibit 20 – Lincoln Street Traffic Signal Equipment**

Signal Equipment	Brand	Model	Date
<b>Lincoln Street &amp; W Larson Street</b>			
Cabinet	Control Technologies	-	-
Controller	IDC Multisonics	820	mid 1990s
Conflict Monitor	Eberle Design Inc. (EDI)	SSM-6LE	mid 2000s
<b>Lincoln Street &amp; Rock Island Street</b>			
Cabinet	Control Technologies	M-8-4-6	1992
Controller	IDC Multisonics	820A	early 2000s
Conflict Monitor	Eberle Design Inc. (EDI)	SSM-6LE	mid 2000s
<b>Lincoln Street &amp; W Pleasant Street</b>			
Cabinet	Control Technologies	P-12-804-12	1995
Controller	IDC Multisonics	820A	early 2000s
Conflict Monitor	Eberle Design Inc. (EDI)	SSM-12LE	mid 2000s
<b>Lincoln Street &amp; W Robinson Street</b>			
Cabinet	Control Technologies	MPE-8-422-6	1995
Controller	IDC Multisonics	820A	early 2000s
Conflict Monitor	Eberle Design Inc. (EDI)	NSM-6	early 1990s
<b>Lincoln Street &amp; W Madison Street</b>			
Cabinet	Control Technologies	MPE-8-422-6	1995
Controller	IDC Multisonics	820A	early 2000s
Conflict Monitor	Eberle Design Inc. (EDI)	SSM-6LE	mid 2000s
<b>Lincoln Street &amp; W Bell Avenue</b>			
Cabinet	Control Technologies	-	-
Controller	IDC Multisonics	820A	early 2000s
Conflict Monitor	Solid State Devices	Guardian NM12	-

From the review of traffic signal cabinet and controller equipment located at intersections along the Lincoln Street corridor it can be concluded that the current traffic signal cabinets were installed around 1995. Many of the components found within the traffic signal cabinets can also be estimated to date from the mid-1990s to early 2000s time period.

The current traffic signal heads use incandescent halogen bulbs and the City has raised concerns over the brightness of the signal faces. New LED technology offers several benefits over the outdated incandescent designs, including improved efficiency by generating superior light brightness while consuming less power.

### Study Area #2: Lincoln Street Trail Crossing

The planned extension of the Competine Creek Trail includes a proposed trail crossing at a previously selected location along Lincoln Street midway (approx. 1,290 feet in each direction) between the intersections with W Bell Avenue and W Madison Street. The planned Competine Creek Trail crossing is to be located south of a detention pond on the west side of Lincoln Street and north of a commercial property on the east side of Lincoln Street. The proposed location of the crossing is at the low point of a sag vertical curve of approximately 2-3% which provides clear lines of sight in both directions north and south along Lincoln Street. There is a speed limit transition point south of the proposed trail crossing that slows northbound traffic to 35 mph and allows for southbound traffic to increase speeds to 40 mph. There is no overhead street lighting in the immediate area.

Views in each direction of the Competine Creek Trail crossing are seen below in **Exhibit 21** and **22**.

#### Exhibit 21 – Competine Creek Trail Crossing Location Views at Lincoln Street



**Exhibit 22 – Competine Creek Trail Crossing Location Views**



**Study Area #3: Roche Street Corridor**

The study corridor contains the segment of Roche Street beginning at the intersection with E Main Street and extending north through the intersection with W Pleasant Street. There are three signalized intersections within the study corridor including the intersections of:

- Roche Street & W Pleasant Street
- Roche Street & Marion Street
- Roche Street & Main Street

At the time of the field review, the traffic signals along Roche Street were in flashing mode. The intersections of Main Street and W Pleasant Street along Roche Street were flashing red in all directions and operated as an all-way stop. The Intersection of Marion Street with Roche Street flashed in red for the eastbound and westbound directions and yellow in the northbound and southbound directions, operating as a two-way stop. From review of the City of Knoxville's website, the signals have been in flash mode since at least February of 2015.

A review of the existing traffic signal control equipment was conducted to determine the condition and approximate age. Collected information from the Roche Street study intersections are documented in **Exhibit 23**.

**Exhibit 23 - Roche Street Traffic Signal Equipment**

Signal Equipment	Brand	Model	Date
<b>Roche Street &amp; W Pleasant Street</b>			
<b>Cabinet</b>	Control Technologies	-	-
<b>Controller</b>	IDC Multisonics	820A	early 2000s
<b>Conflict Monitor</b>	Eberle Design Inc. (EDI)	SSM-6LE	mid 2000s
<b>Roche Street &amp; E Marion Street</b>			
<b>Cabinet</b>	Control Technologies	M-8-4-6	1995
<b>Controller</b>	IDC Multisonics	820	mid 1990s
<b>Conflict Monitor</b>	PDC	CM-82-06	-
<b>Roche Street &amp; E Main Street</b>			
<b>Cabinet</b>	Control Technologies	M-8-4-6	1995
<b>Controller</b>	IDC Multisonics	820A	early 2000s
<b>Conflict Monitor</b>	PDC	CM-82-06	-

From the review of traffic signal cabinet and controller equipment located at intersections along the Roche Street corridor it can be concluded that the current traffic signal cabinets were installed around 1995. Many of the components found within the traffic signal cabinets can also be estimated to date from the mid-1990s to early 2000s time period.

**Traffic Signal Warrant Evaluation**

It was noted during the field review that an ongoing streetscape reconstruction project in downtown Knoxville was detouring traffic around Main Street beginning one block east of the study area. This detour routed vehicles heading eastbound/westbound on Main Street one block north and three blocks east/west before rejoining Main Street again. Consequently, traffic data collected for the vehicles entering the study intersections on Roche Street may not represent typical traffic patterns through this area. From field observations, it was observed that east/west traffic through the downtown area primarily used the W Marion Street intersection instead of the W Main Street intersection. From review of the traffic count data and field observations, the construction along W Main Street did not substantially modify travel patterns/volumes along the Roche Street corridor within the study area to the point that the traffic signal warrant evaluations should not be conducted as part of this study.

The street closure and detour route can be seen in **Exhibit 24**.

**Exhibit 24 – Main Street Detour Route**



Traffic signal warrants were evaluated at the Roche Street corridor study intersections according to the *Manual on Uniform Traffic Control Devices (MUTCD)*, 2009 Edition. The 2015 peak hour traffic data collected by City of Knoxville personnel was utilized for the traffic signal warrant analysis.

The analysis indicates that a traffic signal is not warranted at any of the study intersections along Roche Street. Below is an overview of the analysis completed at each of the study intersections from north to south through the Roche Street corridor. **Exhibit 25** below summarizes the results of the traffic signal warrant evaluation.

**Exhibit 25 – MUTCD Traffic Signal Warrant Analysis of the Roche Street Corridor**

Traffic Signal Warrant	Roche St & Pleasant St <i>Satisfied?</i>	Roche St & Marion St <i>Satisfied?</i>	Roche St & Main St <i>Satisfied?</i>
Warrant 1 (Eight Hour Vehicular Volume)	NO	NO	NO
Warrant 2 (Four Hour Vehicular Volume)	NO	NO	NO
Warrant 3 (Peak Hour Vehicular Volume)	NO	NO	NO
Warrant 4 (Pedestrian Volume)	NO	NO	NO
Warrant 5 (School Crossing)	N/A	N/A	N/A
Warrant 6 (Coordinated Signal System)	N/A	N/A	N/A
Warrant 7 (Crash Experience)	NO	NO	NO
Warrant 8 (Roadway Network)	NO	NO	NO
Warrant 9 (Intersection near RR Crossing)	N/A	N/A	N/A

The current traffic signal control installations at these intersections do not satisfy any of the nine traffic signal control warrants as described in the 2009 Manual on Uniform Traffic Control Devices (MUTCD) and could be considered for removal pending further traffic analysis to identify the appropriate intersection traffic control device (See Considered Options section) for future use.

Additional details of the study intersection traffic signal warrant evaluation can be found within **Appendix D**. Specific warrant notes include:

- Warrant 1 (Eight Hour Vehicle): The 2015 City of Knoxville provided counts confirm that traffic volumes do not satisfy Warrant 1 volume criteria.
- Warrant 2 (Four Hour Vehicle): The 2015 City of Knoxville provided counts confirm that traffic volumes do not satisfy Warrant 2 volume criteria. Due to the City of Knoxville having a population of less than 10,000, the 70% factor of required traffic levels was used.
- Warrant 3 (Peak Hour Vehicle): The 2015 City of Knoxville provided counts confirm that traffic volumes do not satisfy Warrant 3 volume criteria. Due to the City of Knoxville having a population of less than 10,000, the 70% factor of required traffic levels was used.
- Warrant 4 (Pedestrian): Based on traffic volumes at this location, Warrant 4 would require at least 75 pedestrians per hour for four different hours or greater than 93 pedestrians in a peak hour. Pedestrian volumes counts are not available however it is unlikely pedestrians activity would satisfy Warrant 4 volume criteria.
- Warrant 5 (School Crossing): Warrant 5 would require at least 25 pedestrians per hour during the highest crossing hour. Pedestrian volumes counts are not available however it is unlikely pedestrians activity would satisfy Warrant 5 volume criteria.

## **CONSIDERED OPTIONS**

Concerns were noted and observations were made at each of the study areas and have been described in the previous section. The following section explores options that were considered and may be of interest for improving the safety along the study corridor. The considered options below are not definite recommendations, but rather items that may have associated benefits as well as potential disadvantages and is therefore only a list of options that are deemed worthy of further consideration. Final recommendations for the study corridors can be found within the Final Recommendations section of this report.

### **Study Area #1: Lincoln Street Corridor**

#### *Signal Timing Review/Interconnect Communications along Lincoln Street*

The current traffic signal timings along the Lincoln Street corridor may benefit from a corridor signal timing optimization/retiming review. Signal retiming is a process that optimizes the operation of signalized intersections through a variety of low-cost improvements, including the development and implementation of new signal timing parameters, phasing sequences, and improved control strategies. Signal retiming is considered one of the most cost effective ways to improve traffic flow along a corridor. Traffic signal retiming can significantly reduce delays and stops experienced by motorists, which can improve safety and reduce fuel consumption and emissions.

As indicated within the Crash History/Information section of this report, the second highest cause of crash incidents along Lincoln Street was found to be drivers running traffic signals and the highest manner or crash was found to be broadside crash incidents followed closely by rear-end crash incidents.. The retiming of the traffic signals along the Lincoln Street corridor would aid in progression through the corridor which has the potential to assist with reducing the number of broadside and rear-end crashes.

Existing traffic signal timing parameter information was not available from the City or the City's traffic signal maintenance provider. However, existing timing information was collected from available as-built plans at five of the six intersections, excluding the West Bell Avenue intersection. West Bell Avenue traffic signal timing parameter information was gathered from available paper work found inside of the traffic signal controller cabinet at the time of the field review. Unfortunately, closer examination revealed that the as-built plans were not consistent with the existing road geometry or signal heads that were in place. Because of this fact, it was necessary to use Synchro to optimize the Lincoln Street traffic signals in order to establish a baseline traffic signal timing plan.

As part of the signal timing evaluation, new timings were developed for the yellow and all-red signal parameters as well as the pedestrian clearance phases. The purpose of the yellow phase interval is to alert drivers that their right-of-way is ending, allowing the driver to come to a stop or continue safely through the intersection. The purpose of the all-red phase interval is to allow vehicles that may have entered the intersection during the yellow phase an opportunity to clear any points of conflict before allowing opposing movements the right-of-way. Insufficient yellow time intervals can influence the possibility of rear-end crashes and insufficient all-red time intervals can influence the possibility of broadside crashes. From review of Section 4D.26 of the 2009 MUTCD and Chapter 10 of the 2013 ITE Traffic Control Devices Handbook, the study intersection should have a minimum of the following yellow and all-red timings:

*Lincoln Street & W Bell Avenue*

- NB/SB Approaches
  - Through Movement
    - Yellow: 4.5 seconds
    - All-Red: 1.0 seconds
  - Left Turn Movement
    - Yellow: 3.6 seconds
    - All-Red: 2.3 seconds
- EB/WB Approaches
  - Yellow: 3.8 seconds
  - All-Red: 1.0 seconds

*Lincoln Street & W Madison Street*

- NB/SB Approaches
  - Through Movement
    - Yellow: 4.1 seconds
    - All-Red: 1.0 seconds
- EB/WB Approaches
  - Yellow: 3.8 seconds
  - All-Red: 1.0 seconds

*Lincoln Street & W Robinson Street*

- NB/SB Approaches
  - Yellow: 4.1 seconds
  - All-Red: 1.0 seconds
- EB/WB Approaches
  - Yellow: 3.8 seconds
  - All-Red: 1.0 seconds

*Lincoln Street & W Pleasant Street*

- NB/SB Approaches
  - Through Movement
    - Yellow: 4.1 seconds
    - All-Red: 1.0 seconds
  - Left Turn Movement
    - Yellow: 3.2 seconds
    - All-Red: 1.8 seconds
- EB/WB Approaches
  - Yellow: 3.8 seconds
  - All-Red: 1.0 seconds

*Lincoln Street & Rock Island Street*

- NB/SB Approaches
  - Through Movement
    - Yellow: 4.1 seconds
    - All-Red: 1.0 seconds
  - Left Turn Movement
    - Yellow: 3.2 seconds
    - All-Red: 1.6 seconds
- EB/WB Approaches
  - Yellow: 3.8 seconds
  - All-Red: 1.0 seconds

*Lincoln Street & W Larson Street*

- NB/SB Approaches
  - Yellow: 4.1 seconds
  - All-Red: 1.0 seconds
- EB/WB Approaches
  - Yellow: 3.8 seconds
  - All-Red: 1.0 seconds

Level of service (LOS) at intersections is primarily a function of peak hour turning movement volumes, intersection lane configuration, and traffic control. For intersection analysis, the Highway Capacity Manual (HCM) defines LOS in terms of the average control delay at the intersection in seconds per vehicle. The results of a HCM analysis are typically presented in the form of a letter grade (A-F) that provides a qualitative estimate of the operational efficiency or effectiveness of the intersection. Much like an academic report card, LOS A represents the best range of operating conditions (i.e., motorists experiencing little delay or congestion) and LOS F represents the worst (i.e., extreme delay or severe congestion). **Exhibit 26** defines the control delay range corresponding to each LOS for signalized intersection locations. LOS E is considered to

be at capacity and, typically, LOS D is considered acceptable operations in urban environments.

**Exhibit 26 – Level of Service vs. Control Delay (Signalized Intersections)**

Level Of Service	Delay / Vehicle (s)
A	0 – 10
B	> 10 – 20
C	> 20 – 35
D	> 35 – 55
E	> 55 – 80
F	> 80

Reliable existing traffic signal timing parameter information was not available from the City or the City’s traffic signal maintenance provider. Existing timing parameters for Lincoln Street were optimized using Synchro to establish a baseline traffic signal timing plan. The existing roadway geometry was evaluated with retimed traffic signals and coordinated signals through the study area.

Traffic models for the study intersections were created using Synchro 8 software. The Highway Capacity Manual (HCM) reporting function of Synchro was used to obtain the average delay and corresponding Level-of-Service for each intersection movement. Intersection reports from the Synchro software are available in **Appendix D**.

The results of the Retimed Signal condition operations analysis for the Lincoln Street study intersections are documented in **Exhibit 27**.

**Exhibit 27 – Lincoln Street Intersections: Retimed Signal Operations Analysis**

Peak Hour	Measure of Effectiveness	EB	WB	SB	NB	Overall
<b>Lincoln Street &amp; W Larson Street</b>						
AM	Delay (sec)	32.1	36.5	2.5	1.6	9.7
	Level of Service	C	D	A	A	A
MID-DAY	Delay (sec)	33.2	33.5	2.2	0.7	8.7
	Level of Service	C	C	A	A	A
PM	Delay (sec)	33.3	34.6	2.2	2.3	8.5
	Level of Service	C	C	A	A	A
<b>Lincoln Street &amp; Rock Island Street</b>						
AM	Delay (sec)	0.0	34.3	2.0	2.2	4.7
	Level of Service	A	C	A	A	A
MID-DAY	Delay (sec)	32.2	34.4	2.2	1.8	5.3
	Level of Service	C	C	A	A	A
PM	Delay (sec)	32.0	34.5	2.2	0.8	4.7
	Level of Service	C	C	A	A	A
<b>Lincoln Street &amp; W Pleasant Street</b>						
AM	Delay (sec)	30.7	31.6	5.9	4.1	14.3
	Level of Service	C	C	A	A	B
MID-DAY	Delay (sec)	30.7	31.1	5.5	6.6	14.8
	Level of Service	C	C	A	A	B
PM	Delay (sec)	32.0	29.2	6.1	5.9	16.2
	Level of Service	C	C	A	A	B
<b>Lincoln Street &amp; W Robinson Street</b>						
AM	Delay (sec)	28.2	35.8	2.5	3.0	15.0
	Level of Service	C	D	A	A	B
MID-DAY	Delay (sec)	26.6	33.9	3.0	3.7	11.1
	Level of Service	C	C	A	A	B
PM	Delay (sec)	28.4	37.3	3.4	6.3	13.5
	Level of Service	C	D	A	A	B
<b>Lincoln Street &amp; W Madison Street</b>						
AM	Delay (sec)	31.3	33.1	3.5	1.2	10.8
	Level of Service	C	C	A	A	B
MID-DAY	Delay (sec)	33.3	31.2	2.5	3.1	8.6
	Level of Service	C	C	A	A	A
PM	Delay (sec)	32.5	36.0	1.1	2.4	6.6
	Level of Service	C	D	A	A	A

Lincoln Street & W Bell Avenue						
AM	Delay (sec)	32.4	33.0	3.5	7.6	9.4
	Level of Service	C	C	A	A	A
MID-DAY	Delay (sec)	30.9	31.5	3.2	10.5	13.1
	Level of Service	C	C	A	B	B
PM	Delay (sec)	29.4	30.7	5.0	11.0	14.5
	Level of Service	C	C	A	B	B

**Exhibit 27** above indicates the Lincoln Street corridor study intersections operate at an acceptable Level-of-Service in the AM, Mid-Day and PM peak hours. Minor roads throughout the corridor experience the majority of the intersection delays, but delays remain at acceptable levels.

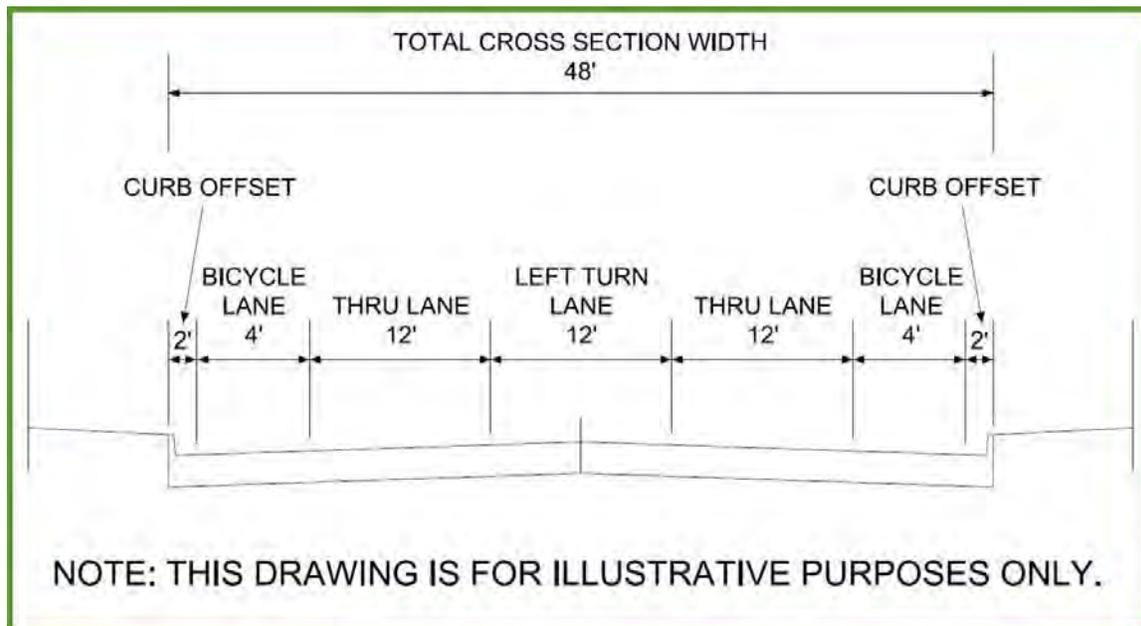
Four to Three Lane Conversion

*Overview:*

Lincoln Street, north of the intersection with W Bell Avenue is a northbound/southbound four lane roadway with two lanes in each travel direction. Consideration could be given to the conversion of Lincoln Street to a three-lane cross section consisting of one through lane in each direction and a continuous two-way left turn lane (TWLTL). It has been found that the conversion can be beneficial from a corridor safety and operational perspective while maintaining acceptable Levels-of-Service.

The proposed cross section includes 4' bicycle lane shoulders, 12' through lanes, and a 12' two-way left turn lane. The Iowa DOT design manual requires a minimum of 12' for the two-way left turn lane.

**Exhibit 28 – Suggested TWLTL Cross Section**



Four-lane to three-lane undivided cross section conversion case study research has indicated a reduction of 85<sup>th</sup> percentile speeds of less than five miles per hour. However, a relatively dramatic 60 to 70 percent reduction in excessive speeding

(traveling more than five miles per hour over the posted speed limit) was recorded. The total number of accidents was reduced by 17 to 62 percent along the studied corridors<sup>1</sup>.

It is recommended that a four-lane undivided cross section to a three-lane cross section conversion be considered feasible when the bi-directional peak-hour volumes are less than 1,500 vehicles per hour (vph). Caution and extra consideration are warranted for potential conversions when the bi-directional peak-hour volume is between 1,500 and 1,750 vehicles per hour. Above 1,750 vehicles per hour, research has found a reduction in the Level-of-Service of the major roadway.

*TWLTL Condition Capacity Analysis:*

From the traffic count data collected by HR Green, the bi-directional peak hour volumes are below 1,500 vph during the identified peak hours.

Operational analysis calculations were completed utilizing Synchro 8 software to determine the effects of the TWLTL modifications beginning north of the intersection with W Bell Avenue and continuing throughout the study area. The signal timing plans developed for each intersection conservatively assumed northbound/southbound protected/permmissive left turn phasing. Reduced delays to minor street movements may result from a more refined analysis as part of the conversion implementation. The Highway Capacity Manual (HCM) reporting function of Synchro was used to obtain the average delay and corresponding Level-of-Service for each intersection movement. Intersection reports from the Synchro software are available in **Appendix D**.

The results of the two-way left-turn lane (TWLTL) condition capacity analysis for the Lincoln Street study intersections are documented in **Exhibit 29**.

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<sup>1</sup> Compliments of Guidelines for the Conversion of Urban Four-Lane Undivided Roadways to Three-Lane Two-Way Left-Turn Lane Facilities, Iowa State University Center for Transportation Research and Education

**Exhibit 29 – Lincoln Street Intersections: TWLTL Operations Analysis**

Peak Hour	Measure of Effectiveness	EB	WB	SB	NB	Overall
<b>Lincoln Street &amp; W Larson Street</b>						
AM	Delay (sec)	36.8	46.9	6.4	1.3	12.7
	Level of Service	D	D	A	A	B
MID-DAY	Delay (sec)	36.2	36.3	7.7	1.7	11.5
	Level of Service	D	D	A	A	B
PM	Delay (sec)	36.4	37.3	6.9	1.0	9.9
	Level of Service	D	D	A	A	A
<b>Lincoln Street &amp; Rock Island Street</b>						
AM	Delay (sec)	0.0	39.6	2.3	4.2	6.0
	Level of Service	A	D	A	A	A
MID-DAY	Delay (sec)	37.0	39.8	3.8	2.9	7.0
	Level of Service	D	D	A	A	A
PM	Delay (sec)	36.9	39.9	2.4	2.6	6.3
	Level of Service	D	D	A	A	A
<b>Lincoln Street &amp; W Pleasant Street</b>						
AM	Delay (sec)	35.5	36.8	6.4	2.9	15.9
	Level of Service	D	D	A	A	B
MID-DAY	Delay (sec)	35.6	36.0	6.0	4.2	15.8
	Level of Service	D	D	A	A	B
PM	Delay (sec)	37.9	33.8	6.9	5.5	18.5
	Level of Service	D	C	A	A	B
<b>Lincoln Street &amp; W Robinson Street</b>						
AM	Delay (sec)	35.2	49.4	5.5	6.9	21.6
	Level of Service	D	D	A	A	C
MID-DAY	Delay (sec)	31.4	42.9	3.0	5.3	13.9
	Level of Service	C	D	A	A	B
PM	Delay (sec)	33.2	50.3	3.5	7.5	16.9
	Level of Service	C	D	A	A	B
<b>Lincoln Street &amp; W Madison Street</b>						
AM	Delay (sec)	36.2	38.9	5.1	6.3	14.8
	Level of Service	D	D	A	A	B
MID-DAY	Delay (sec)	39.8	36.7	8.0	8.8	14.3
	Level of Service	D	D	A	A	B
PM	Delay (sec)	37.3	41.2	3.5	5.6	9.7
	Level of Service	D	D	A	A	A

Lincoln Street & W Bell Avenue						
AM	Delay (sec)	37.4	38.0	4.0	5.8	9.4
	Level of Service	D	D	A	A	A
MID-DAY	Delay (sec)	35.8	36.4	4.2	9.4	14.6
	Level of Service	D	D	A	A	B
PM	Delay (sec)	34.1	35.5	5.3	10.0	15.8
	Level of Service	C	D	A	A	B

**Exhibit 29** above indicates the Lincoln Street corridor study intersections operate at an acceptable Level-of-Service in the AM, Mid-Day and PM peak hours. The side streets throughout the corridor experience the majority of the intersection delays, but delays remain at acceptable levels. The side streets delays are at an increased value when compared to the baseline scenario. From review of **Exhibit 26**, the majority of the side street values between the baseline scenario (**Exhibit 27**) and the TWLTL condition capacity analysis (**Exhibit 29**) are in close proximity to the LOS C/D threshold. Although many of the side street delays shift from LOS C to LOS D under the TWLTL condition analysis, the overall shift in delay value is relatively minor.

*Operations/Safety Benefits:*

Although operations slightly decrease through the study corridor when compared to the baseline scenario the conversion to a three-lane cross section would offer many benefits along Lincoln Street. From field observations, the following benefits were noted:

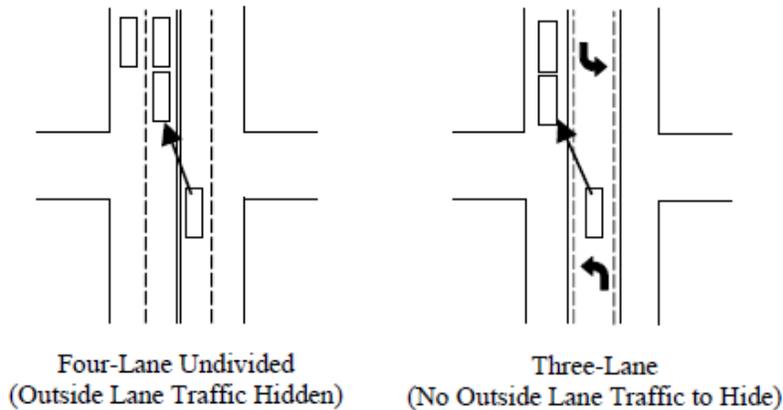
- Improves pedestrian comfort and safety.
- Reduces pedestrian crossing distance across Lincoln Street.
- One lane in each direction would lend to a pace-car setting through Knoxville. This phenomenon exists as one vehicle traveling the speed limit leads following vehicles and prevents them from driving at excessive speeds.
- The shy distance or comfortable distance between the vehicle and curb, for the outside lane traveling motorists along Lincoln Street would be increased.
- Semi-truck and passenger vehicle traffic would be shifted away from the Lincoln Street adjacent curb and sidewalk facilities, lending to increased pedestrian safety and homeowner/business quality of life.
- One lane in each direction would decrease/eliminate the dangerous overtaking scenarios. Overtaking is when a large vehicle is traveling in the outside lane and a smaller vehicle is traveling at a higher speed in the inside travel lane. A pedestrian or stopped vehicle along a side street may not notice the smaller vehicle, or its higher rate of speed, due to the vehicle being blocked by the slower moving large vehicle.
- One lane in each direction would offer safety benefits for vehicles making a left turn from Lincoln Street. Not only would the turning vehicles enjoy the benefit of a dedicated turn lane by removing them from the through lane(s), the vehicle would also have fewer Lincoln Street approach lanes to interpret. Also, the reduction of Lincoln Street approach lanes from two to one lane would eliminate the potential for higher speed vehicle traveling in the outside travel lane being

blocked by slower moving or multiple vehicles in the inside lane. See **Exhibit 30** for an illustrative view of this scenario.

- As a result of the benefits listed above, the number of failure to yield caused crashes and broadside manner of crash as well as rear-end crashes along the study corridor may be reduced.

In addition, the safety at the study corridor would be expected to be improved by the inclusion of dedicated left-turn lanes as part of the three-lane cross section. Installation of dedicated left-turn lanes increases the safety of the intersection. *NCHRP Report 270<sup>2</sup>* reports a California study found a 35 percent reduction in all crashes when left-turn lanes were constructed at signalized intersections with a left-turn phase provided. A separate study<sup>3</sup> found the installation of left-turn lanes along both major-road approaches reduces total crashes by 33 percent. The 2010 Highway Safety Manual reports a 19 percent potential reduction of crashes by installing left-turn lanes along both major-road approaches. Crash types that would particularly benefit from the installation of dedicated left-turn lanes are rear-end and left-turn crashes.

**Exhibit 30 – Hidden Vehicle Scenario**



(Compliments of Guidelines for the Conversion of Urban Four-Lane Undivided Roadways to Three-Lane Two-Way Left-Turn Lane Facilities, Iowa State University Center for Transportation Research and Education)

**Summary:**

The conversion from a 4-lane cross section to a 3-lane cross section along the corridor provides many potential benefits. It is anticipated that the 3-lane cross section would provide safer accommodations for left-turning vehicles from Lincoln Street throughout the corridor.

The capacity analysis determined that dominant movements along the Lincoln Street corridor experience similar minimal delay traveling through the study intersections regardless of a 3-lane or 4-lane Lincoln Street cross section.

As part of further study of the 3-lane cross section, the following items should be included, implications to existing pavement markings, signing, corridor lighting and traffic signal infrastructure along the Lincoln Street corridor. Components within the review of

<sup>2</sup> Neuman, T.R. NCHRP Report 279: Intersection Channelization Design Guide. National Cooperative Highway Research Program (NCHRP), TRB, NRC. Washington, DC: National Academy Press, 1985.

<sup>3</sup> Shebeeb, O. "Safety and efficiency for Exclusive Left-Turn Lanes at Signalized Intersections." ITE Journal, July 1995, pp. 52-59.

the traffic signal infrastructure include traffic signal head locations; length of mast arms, mast arm mounted signing, vehicle detection system, controller cabinet components.

### Traffic Signal Equipment

Failure to maintain traffic signal systems can result in traffic signal failure or malfunctions that can lead to increased motorist costs due to unnecessary stops and delays, increased maintenance costs from recurring repairs or replacement of faulty parts, and increased crashes and liability from negligent maintenance practices. The adverse consequences from improper maintenance of traffic signal systems can place a significant burden on agencies and potentially result in liability judgments.

The traffic signal equipment in use along Lincoln Street is aging and, according to anecdotal evidence provided by the City, has experienced equipment malfunctions on multiple occasions due to the present state of deterioration. The field review has determined that the existing traffic signal controller and related components have been in use for approximately 20 years. Typical design life of traffic signal control equipment is generally assumed to be 15-20 years.

The traffic signal head units in use along Lincoln Street are all incandescent bulb models. The traffic signal heads and other existing infrastructure are assumed to have been installed at the same time as the other equipment in use along this corridor. The current traffic signal heads use incandescent halogen bulbs and the City has raised concerns over the brightness of the signal faces. New LED technology offers several benefits over the outdated incandescent designs, including improved efficiency by generating superior light brightness while consuming less power.

The frequency of rear-end and broadside crash incidents along this corridor suggests that drivers are failing to recognize the signal control. By increasing the number of signal faces or otherwise enhancing the conspicuity of the signal face by installing a retroreflective strip of yellow tape along the perimeter of the signal backplate or increasing the diameter of the signal indicators, a reduction in the crash frequency can be expected. The *CMF Clearinghouse*, an FHWA endorsed online database of crash modification factors related to safety countermeasures, shows the potential for a 17-35 percent reduction in crash incidents due to the addition of a primary signal head, and a potential 15 percent reduction in crashes after adding retroreflective yellow taping to traffic signal backplates.

Once funding becomes available, the traffic signals should be upgraded to current standards of practice. The list below contains items that should be included under further study of the existing traffic signal systems.

- Vehicle Signal Heads – The following items should be studied further:
  - Use of LED signal heads to reduce energy consumption and increase visibility along the intersection approaches.
  - Update protected-permissive left-turn signal heads with current standard of practice flashing yellow arrow signal heads. The 2010 Highway Safety Manual reports a 7.8 percent potential reduction of crashes by changing left-turn phasing from protected-permissive to flashing yellow arrow.
- Street Name Signs - Add street names signs to all traffic signal mast arms to aid in motorist navigation and to decrease errant driving behavior.

- Pedestrian Signal Heads - Use of symbol indications rather than letter wording to provide a clearer intent of the message and increase recognition. Also, use of a countdown display in order to inform pedestrians of the number of seconds remaining in the pedestrian change interval should be used.
- Pedestrian Accommodations – Maintain all pedestrian signal heads and push buttons for movements. The pedestrian devices aid in orderly and safe movement of pedestrians across intersections.
- Signal Poles - Evaluate existing pole placements with respect to pedestrian push button access and lateral sidewalk accessibility needs. Chapter 4E of the MUTCD should be used as reference.
- Cabinet Equipment – The major cabinet components are in excess of their typical service lives. In addition, the traffic signal controller may need to be replaced if flashing yellow left-turn signal heads are implemented.

The traffic signal systems at the study intersections should be inspected by a trained traffic signal technician with appropriate International Municipal Signal Association (IMSA) certification to evaluate the current signal system infrastructure status and to identify existing components in need of repair or replacement. As an example, the existing malfunction management unit (MMU) within the traffic signal controller cabinet may need tested, serviced and/or replaced.

With any potential traffic signal modification such as installation/relocation of a traffic signal pole/pedestrian pole, consideration should be given to Section 12A-2 of the Iowa DOT Design Manual regarding accessible sidewalk requirements. Section 12A-2 contains requirements based upon the *Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way (July 26<sup>th</sup>, 2011) (PROWAG)*. The DOT Manual and PROWAG state that where elements are altered or added (traffic or pedestrian signal) to existing pedestrian facilities, however the pedestrian circulation path is not altered, the pedestrian circulation path is not required to be modified, however, elements that are added shall be made accessible to the maximum extent feasible.

It is also recommended that the City of Knoxville implement an annual traffic signal maintenance plan to address potential issues in a timely manner and assure that the necessary funds/resources are programmed for the maintenance of the traffic signals within the City of Knoxville. As part of the maintenance plan, all existing traffic signals would be assessed to identify potential maintenance needs, such items to consider:

- Alignment of signal heads
- Signal structure integrity
- Signal controller cabinet internal components

Chapter one of the *Institute of Transportation Engineers (ITE) Traffic Signal Maintenance Handbook (2010)* provides guidance for municipalities desiring to develop an in-house traffic signal maintenance plan. The section includes a ten step process to develop a plan.

## **Study Area #2: Lincoln Street Trail Crossing**

### *Multi-use Trail Crossing*

The Competine Creek Trail system has completed Phase 1 of a multi-phased construction plan. Phase 2 includes the crossing at Lincoln Street. The existing Competine Creek Trail consists of approximately 4,500 feet of paved trail, beginning at the intersection of Willetts Drive & Panther Drive following a southeasterly direction as it winds towards Lincoln Street. Currently, the trail ends in an open field approximately 350 feet from the edge-of-road prior to reaching Lincoln Street. Additional details regarding the Competine Creek Trail system and anticipated construction phasing plan can be found in **Appendix A**. The City of Knoxville is interested in potential Lincoln Street crossings not requiring a grade separated structure.

The planned extension of the Competine Creek Trail includes a proposed trail crossing at a previously selected location along Lincoln Street midway (approx. 1,290 feet in each direction) between the intersections with W Bell Avenue and W Madison Street. The current trail phasing plan includes a grade separated crossing carrying pedestrians/bicyclists over Lincoln Street. The planned Competine Creek Trail crossing is to be located south of a detention pond on the west side of Lincoln Street and north of a commercial property on the east side of Lincoln Street. The proposed location of the crossing is at the low point of a sag vertical curve of approximately 2-3% which provides clear lines of sight in both directions north and south along Lincoln Street. Currently, there is a speed limit transition point south of the proposed trail crossing that slows northbound traffic to 35 mph and allows for southbound traffic to increase speeds to 40 mph. There is no overhead street lighting in the immediate area.

Due to the four lanes (2 through lanes in each travel direction) of traffic to be crossed, composition of truck traffic and the current speed limit/transition in the proposed trail crossing area, it is recommended that other trail crossing location alternatives be evaluated further prior to trail crossing implementation. However, if a two-way left-turn lane cross section be implemented along the Lincoln Street corridor (along with other components listed below), the at-grade trail crossing would be considered feasible. From this review, two at-grade Lincoln Street crossings have evolved and are listed below in order of preference with regards to maximizing safety and effectively managing the interaction of pedestrians, bicycles and vehicle traffic. Each of the two scenarios is described further below.

1. Re-Route Competine Creek Trail Traffic to Madison Street Traffic Signal Intersection
2. At-Grade Crossing at Proposed Location with Two-Way Left-Turn Cross Section

### *Re-Route Competine Creek Trail Traffic to Madison Street Traffic Signal Intersection*

Route pedestrian/bicyclists traffic to cross Lincoln Street at a signalized intersection rather than a mid-block uncontrolled location. Under this scenario Phase 3 of the trail phasing plan could be constructed including the connection to Madison Street (adjacent to Dayton Street). The pedestrian/bicyclists traffic would be routed (by means of trail way-finding signage) along the existing sidewalk along the south side of Madison Street between Park Lane Drive and Dayton Street. Pedestrian/bicyclists traffic would utilize the existing pedestrian accommodations at the Madison Street & Lincoln Street signalized intersection. The current trail connection to the south of Madison Street could

continue to be utilized to access the *Knoxville Area Community Hospital* and the existing trail could be connected to the existing sidewalk along the west side of Lincoln Street.

Following the construction of Phase 3, Phases 4 through 7 could continue progressively until a contiguous trail system is provided throughout the City of Knoxville from Willets Drive (western terminus) to Pleasant Street (eastern terminus). At that time and if still desired by the City of Knoxville, the amount of pedestrian/bicyclists traffic utilizing the Competine Creek Trail system across Lincoln Street could be counted/evaluated and thus potentially could justify a pedestrian activated (HAWK) pedestrian signal located at the previously selected trail crossing location (between the intersections with W Bell Avenue and W Madison Street). Additional information regarding the use of a pedestrian activated signal is included within the following section.

*At-Grade Crossing at Proposed Location with Two-Way Left-Turn Cross Section*

Under this scenario, pedestrian/bicyclists traffic would cross Lincoln Street at the previously identified trail crossing location. This scenario does include the conversion of Lincoln Street corridor from a four-lane cross section (2 through lanes in each direction) to a three-lane cross section (1 through lane in each direction). See the *Four to Three Lane Conversion* section of this report for additional information pertaining to the multiple benefits of the conversion. In particular, the benefit of pedestrian/bicyclists traffic needing to only cross one vehicle through lane per direction would be of significance with regards to the potential hidden vehicle scenario.

At the location of the trail crossing, a pedestrian median refuge island could be constructed within the two-way left-turn lane. Pedestrian median refuge islands are a roadway design treatment that permits pedestrians/bicyclists to cross one direction of street traffic at a time. Median refuge islands are typically raised above the roadway surface with an accessible pedestrian path. According to NCHRP Report 562<sup>4</sup>, median refuge islands are considered effective for pedestrian crossings on multi-lane streets with pedestrian crash rates two to four times lower than multi-lane streets without median refuge islands. See **Exhibit 31** for photos of example pedestrian median refuge island installations.

**Exhibit 31 – Pedestrian Median Refuge Island Photos**



<sup>4</sup> National Cooperative Highway Research Program (NCHRP) Report 562, Improving Pedestrian Safety at Unsignalized Crossings, 2006.

In addition to the 3-lane cross section and the median refuge island, the suggested design components below focus on improving driver expectancy and yield compliance at the at-grade trail crossing location.

The absence of roadside lighting and the close proximity of speed limit transition signage should be addressed to enhance driver expectancy. The luminaires present near the proposed trail crossing location are mounted on utility poles located along the east side of Lincoln Street and spaced approximately 100 feet north and 270 feet south of the proposed trail crossing. Providing luminaires above the trail crossing would provide additional safety benefits to pedestrians by illuminating the crossing path during night time hours. The speed limit transition point in the immediate vicinity of the planned trail crossing should be reevaluated to determine whether it can be moved to another point along Lincoln Street. The decision making demands of drivers approaching the trail crossing can be reduced by relocating the speed limit regulatory signs.

There are several Regulatory and Warning signs that can be used to alert road users to pedestrian crossing locations. The MUTCD mandates the standards for the use and placement of these signs which are dependent on the location of crossing points and the intersection control type. Regulatory signs, such as the Yield Here to Pedestrians (MUTCD R1-5) and Stop Here for Pedestrian (MUTCD R1-5B) signs, have standards for use that restrict their placement to uncontrolled intersection locations. Warning signs, such as the Pedestrian Crossing (MUTCD W11-2) sign or Bicycle/ Pedestrian Crossing (MUTCD W11-15) sign can be placed in advance of or at the point of crossing for controlled or uncontrolled intersection locations where pedestrians might be crossing the roadway. If used at the crossing point, the diagonal downward pointing arrow (MUTCD W16-7P) plaque should also be used to show the location of the crossing unless mounted overhead, in which case the diagonal downward pointing arrow (MUTCD W16-7P) plaque should not be used.



It is recommended that a fluorescent yellow-green Bicycle/ Pedestrian Crossing sign (MUTCD W11-15) be utilized to inform motorists that bicyclists and pedestrians, whom require a larger gap than bicyclists due to slower crossing speeds, may be crossing the roadway.

Supplement initial Bicycle/ Pedestrian crossing warning sign with an AHEAD (MUTCD W16-9) plaque. The 2009 MUTCD provides the following guidance:

*If used in advance of a pedestrian and bicycle crossing, a W11-15 sign should be supplemented with an AHEAD or XX FEET plaque to inform road users that they are approaching a point where crossing activity might occur. (Section 2C.49.08)*

The upstream distance for advance warning is based on a stopped condition, necessitating a deceleration from the 85<sup>th</sup> percentile speed to 0 mph. Based on the speed study 85<sup>th</sup> percentile speeds and 2009 MUTCD Table 2C-4 Guidelines for Advance Placement of Warning Signs, the northbound and southbound advance warning distances were calculated with speeds of 40 mph and 35 mph respectively.

It is recommended that the following warning signs, at a minimum, be placed for the trail crosswalk on Lincoln Street:

*At Trail Crossing (Northbound and Southbound)*

- Bicycle/ Pedestrian Crossing Sign (MUTCD W11-15) plus diagonal downward pointing arrow (MUTCD W16-7P) plaque.

*Advance Warning*

- Northbound: Bicycle/ Pedestrian Crossing Sign (MUTCD W11-15) plus AHEAD (MUTCD W16-9) plaque.
  - 125 ft. upstream from trail crossing
- Southbound: Bicycle/ Pedestrian Crossing Sign (MUTCD W11-15) plus AHEAD (MUTCD W16-9) plaque.
  - 100 ft. upstream from trail crossing

Crosswalk pavement markings provide guidance for pedestrians who are crossing roadways by defining and delineating safe roadway crossing paths. In conjunction with signs and other measures, crosswalk markings assist to alert drivers of a designated crossing point across roadways. Chapter 3B of the Manual on Uniform Traffic Control Devices, 2009 edition (MUTCD) provides guidance on the application of crosswalk pavement markings and although the markings are not expressly required, they have been shown to increase safety along a pedestrian route with no adverse operational performance effects on traffic flows.

The typical crosswalk style utilized at the intersections throughout the City of Knoxville is composed of parallel lines across the roadway. A study completed by Iowa State University in 2006<sup>5</sup> found that the parallel line style (international style or ladder style) of pavement markings provided a greater amount of remaining target value over time than the traditional parallel line (transverse style).

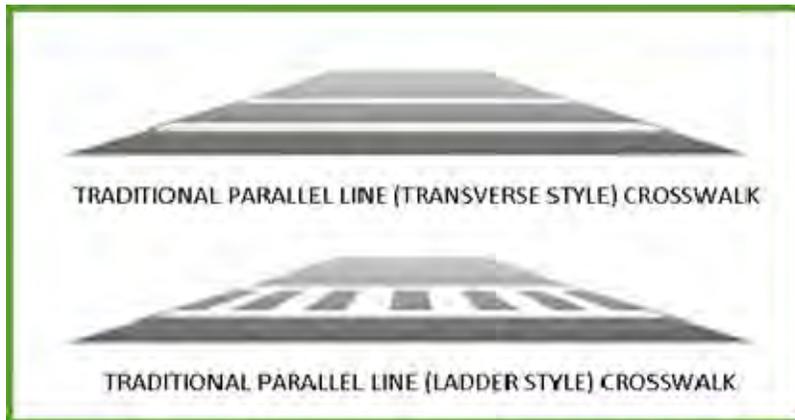
For increased visibility, influence and consistency with other high visibility crosswalks throughout the region, the crosswalk pavement markings should consist of wide white longitudinal lines parallel to traffic flow. The MUTCD states that when crosswalk lines are used, they shall consist of solid white lines and not be less than six inches in width and that the diagonal lines should be 12 inches wide and be orientated at a 45-degree angle to the crosswalk. It is recommended that the longitudinal lines should be 12 to 24 inches wide and separated by gaps of 12 to 60 inches. The gap between the longitudinal lines should not exceed 2.5 times the width of the longitudinal lines. To decrease maintenance upkeep, the design of the lines and gaps should avoid the vehicle wheel paths if possible.

An example illustration of the proposed crosswalk can be seen in **Exhibit 32**.

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<sup>5</sup> Neal Hawkins and Hillary Isebrands, 2006, Internal Staff Review for Six Selected Pedestrian Crossing Locations, Center for Transportation Research and Education, Iowa State University

### Exhibit 32 – Sidewalk Pavement Marking Styles



Exposure to environmental conditions and traffic as well as normal aging will cause pavement markings to deteriorate and fade over time. It is recommended that the City assure that the pavement markings are part of the City pavement marking painting program. If necessary, fresh paint should be applied and other improvements made to keep the crosswalks in good condition. Higher grade pavement markings as well as tape marking products (requiring grooving of pavement) could also be explored. Although initially more expensive, longer-lasting crosswalk marking materials are a better value over time as they require less maintenance.

To increase the awareness and emphasis of the Competine Creek Trail crossing at Lincoln Street, a warning flashing beacon system could be installed. The intent of warning flashing beacons is to provide supplemental emphasis to a warning sign rather than to control traffic. The warning flashing beacon remains dark until a pedestrian activates the system by pushing a pushbutton, or activated automatically by an internal clock programmed to activate at certain times of the day. When activated, the beacons flash brightly, warning motorists that pedestrians are/may be present and wish to cross Lincoln Street. Solar option systems exist that employ solar technologies eliminating the need for trenching conduit and installing power conductors.

The warning beacons could be mounted in conjunction with the roadside crosswalk assemblies, however mounting the beacons along with signage overhead by use of a mast arm connected to a roadside pole would provide greater target value. In addition, the overhead mast arm provides increased visibility benefits with respect to the roadway vertical grades and the roadway cross section width/number of lanes. Two beacons per approach could be used to allow for “ping-pong” flashing operation where one beacon would always be lit. It is recommended that the Bicycle/ Pedestrian Crossing (MUTCD W11-15) sign panel be positioned along the mast arm between the beacons. The Bicycle/ Pedestrian Crossing sign should be colored fluorescent-yellow-green and sized 36”x36”.

If the overhead flashing beacon system is implemented, at-crossing luminaires/mast arms could be incorporated into the pole structure.

See **Exhibit 33** for photos of example overhead warning flashing beacon installations.

**Exhibit 33 – Overhead Warning Flashing Beacon Photos**



After the Competine Creek Trail system has completed the additional phases of planned construction and an established pattern of pedestrian activity at the trail crossing has been observed, the overhead warning flashing beacon installation should be re-evaluated to determine if the need for upgrading to a pedestrian hybrid beacon or HAWK (High-intensity Activated crossWaK beacon) pedestrian signal exists. The need for a pedestrian hybrid beacon considers “major-street volumes, speeds, widths, and gaps in conjunction with pedestrian volumes, walking speeds, and delay” (2009 MUTCD Section 4F.01). Additional data, particularly pedestrian counts at the crossing, would need to be collected to identify applicability/warrants for a pedestrian hybrid beacon.

HAWK pedestrian signals are activated by a pedestrian, triggering the traffic control lights to stop traffic on the conflicting roadway and giving pedestrians on the trail crossing the right of way to proceed safely across. After activation by pushbutton, the HAWK signal displays a flashing yellow indication, which changes to solid yellow informing drivers to prepare to stop, and then displays dual solid red light indications to the roadway while simultaneously providing a WALK signal to crossing pedestrian traffic. After the pedestrian WALK phase has completed and during the flashing don't walk pedestrian phase, an alternating flashing red light indication is provided to the roadway at which point vehicular traffic is allowed to proceed through the crosswalk after determining that driving lanes are clear.

If the overhead flashing beacon system is implemented, the pole vertical uprights and horizontal mast arms could be designed to be conducive to a potential future HAWK signal implementation.

An example of a HAWK signal installation with a four-lane cross section and 35 mph speed limit located in Ankeny, Iowa can be seen in **Exhibit 34**.

**Exhibit 34 – HAWK Pedestrian Signal Installation Photo**



**Study Area #3: Roche Street Corridor**

Traffic Signal Evaluation

Currently, the three study intersections along the Roche Street corridor are signal controlled. The 2015 peak hour traffic data collected by City of Knoxville personnel was utilized for the traffic signal warrant analysis. After conducting a traffic signal warrant review, it was determined that the current traffic signal control installations at these intersections do not satisfy any of the nine traffic signal control warrants as described in the 2009 Manual on Uniform Traffic Control Devices (MUTCD).

However, it was noted during the field review that an ongoing streetscape reconstruction project in downtown Knoxville was detouring traffic around Main Street beginning one block east of the study area. This detour routed vehicles heading eastbound/westbound on Main Street one block north and three blocks east/west before rejoining Main Street again. Consequently, traffic data collected for the vehicles entering the study intersections on Roche Street may not represent typical traffic patterns through this area. Due to this fact a reevaluation of the traffic patterns within the Roche Street corridor should be conducted post roadway construction activities and prior to the actual removal of traffic signal installations at the intersections within the study area.

If the removal of the existing traffic signals and traffic signal poles are justified, the equipment should be salvaged to be used as a backup to the Lincoln Street corridor traffic signal infrastructure until funding can be secured to upgrade the equipment on Lincoln Street.

From field review of the existing geometric conditions and sight distance observations along with guidance of Section 2B of the 2009 MUTCD, the recommended traffic control strategy for the Roche Street study intersections is as follows:

*At Roche Street & Pleasant Street*

- STOP control at EB, SB, and NB approaches

*At Roche Street & Marion Street*

- STOP control at EB and WB approaches

*At Roche Street & Main Street*

- STOP control at EB, SB, WB and NB approaches

The intersection control detailed above is the same as the current traffic signal flashing mode intersection control scenario and will aid in maximizing driver expectancy through the transition phase from traffic signal control to stop sign control. Illustrative view of recommended traffic control strategy is included in **Exhibit 35**.

**Exhibit 35 – Suggested Roche Street Traffic Control**



## **RECOMMENDED IMPROVEMENTS**

Below is a list of recommendations that should be considered in the short term and longer term. Short term recommendations are those that should be able to be implemented fairly quickly and inexpensively. Long term recommendations are those that may require additional prior consideration and planning as well as procurement of funding. The implementation of the short term recommendations may alleviate the concern to the extent that the long term recommendation becomes unnecessary.

The following recommendations are anticipated to improve the overall safety of vehicles and pedestrians. Refer to the Considered Options section of the report for more detail.

### **Short Term Recommendations**

- Study Area #1: Lincoln Street Corridor
  - Update traffic signal timing plan as suggested in Appendix E.

### **Long Term Recommendations**

- Study Area #1: Lincoln Street Corridor
  - Install new traffic signal infrastructure and traffic signal cabinet equipment, as funding allows.
  - Consider restriping corridor from four lanes to three lanes.
- Study Area #2: Lincoln Street Trail Crossing
  - Two at-grade Lincoln Street crossings scenarios are listed below in order of preference with regards to maximizing safety and effectively managing the interaction of pedestrians, bicycles and vehicle traffic. Design elements pertaining to each scenario are also included.
    - Re-Route Competine Creek Trail Traffic to Madison Street Traffic Signal Intersection
      - Utilize existing Madison Street & Lincoln Street traffic signal and utilize existing sidewalk along Madison Street.
    - At-Grade Crossing at Previously Identified Location with Two-Way Left-Turn Lincoln Street Cross Section
      - 4-lane to 3-lane cross section conversion along Lincoln Street
      - Pedestrian median refuge island
      - High-visibility crosswalk pavement markings and signage
      - Adjacent roadside of lighting
      - Shift of existing speed limit transition
      - Overhead warning flasher beacon system
  - Monitor pedestrian/bicyclists traffic and reevaluate the need for a pedestrian activated hybrid signal at the crossing.

- Study Area #3: Roche Street Corridor
  - If it is justified by the results of a traffic signal warrant analysis with more accurate traffic volume movement data, remove existing traffic signal infrastructure and replace with Stop sign intersection control as outlined in the Considered Option section.

**PLANNING LEVEL OPINION OF PROBABLE COSTS**

An order of magnitude opinion of probable cost for the short and long term recommendations presented above is included below.

	Cost Estimate	Notes
<b>SHORT TERM:</b>		
Traffic Signal Timing Revision (Per Intersection)	\$500 - \$1,000	Contractor Implementation
<b>LONG TERM:</b>		
Crosswalk Pavement Markings (Per Approach)	\$200 - \$300	Construction costs only
Crosswalk Warning Signage (Two Signs Per Approach)	\$250 - \$500	Construction costs only
Overhead Warning Flasher Beacon System	\$30,000 - \$45,000	Cost varies depending on style of beacons used and solar vs. hard wired
4-Lane to 3-Lane Conversion (Per Mile)	\$20,000 - \$30,000	Construction costs only
Removal of Existing Traffic Signals (Per Intersection)	\$2,000 - \$2,500	Construction costs only
Traffic Signal Controller (Per Unit)	\$4,000 - \$6,000	Construction costs only
Traffic Signal Conflict Monitor (Per Unit)	\$800 - \$1,750	Construction costs only
LED Traffic Signal Heads (Per Signal Head)	\$1000 - \$1500	Construction costs only
NOTES:		
* This opinion represents approximate construction quantities only and does not provided a detailed list of expected project pay items. The opinion is to be used as a planning number only. Actual costs may vary, as detailed design plans are prepared.		
* Cost do not include any permanent right-of-way and temporary construction easement costs.		
* Costs represent current dollars as of report date.		

**POTENTIAL FUNDING SOURCES**

Many funding sources may be available while pursuing funding for elements of the project recommendations.

**CIRTPA TAP**

Through the Central Iowa Regional Transportation Planning Alliance, the Transportation Alternatives Program (TAP) authorized under Section 1122 of MAP-21 (23 U.S.C. 213(b), 101(a)(29)) provides funding for programs and projects defined as transportation alternatives, including on- and off-road pedestrian and bicycle facilities, infrastructure projects for improving non-driver access to public transportation and enhanced mobility, community improvement activities, and environmental mitigation; recreational trail program projects; safe routes to school projects; and projects for the planning, design or construction of boulevards and other roadways largely in the right-of-way of former Interstate System routes or other divided highways.

TAP funds support projects or programs that enhance the environmental, scenic, or cultural quality of a site or an area. All funded activities (projects) must be accessible to the general public or targeted to a broad segment of the general public. There is no requirement for TAP projects to be located along Federal-aid highways. Safe Routes to School (SRTS) projects must be within approximately two miles of a school for

kindergarten through eighth grade as specified in SAFETEA-LU Section 1404.

TAP projects must fall into at least one of the following eligible activities:

- Bicycle/Pedestrian Facilities,
- Historic Preservation,
- Streetscape,
- Environmental, and
- Safe Routes to School.

Further information related to potential CIRTPA funding sources is available on the Central Iowa Regional Transportation Planning Alliance website at <http://cirtpa.org/transportation-alternative-program/>

### TSIP

Funding for traffic safety improvements on public roads under county, city or state jurisdiction may be available through the “Traffic Safety Improvement Program” (TSIP). The application deadline for TSIP funding is August 15<sup>th</sup> of each year (recently changed from June 15<sup>th</sup> to August 15<sup>th</sup>). The crash history for the study corridor showed a lower rate than the statewide average, which would likely make it difficult for the corridor to compete for site specific funding due to crash history. However, the traffic control devices category for funding includes the “purchase of materials for installation of new traffic control devices such as signs or signals, or replacement of obsolete signs or signals”. TSIP funding may be applicable for the installation of updated corridor signage. Site-specific funding cannot exceed \$500,000 per project. Application forms are available from the Iowa DOT, and application is made to the Iowa DOT Office of Traffic and Safety.

Further information on potential Iowa DOT funding sources is available on the Iowa DOT website at <http://www.iowadot.gov/fundguid.htm>, Information sheets on each of the Iowa DOT programs mentioned are provided in **Appendix F** of this report.

## **APPENDIX A – COMPENTINE CREEK TRAIL SYSTEM**

**KNOXVILLE, IOWA  
COMPETINE CREEK TRAIL  
PHASING PLAN**

\* FUNDS IN PLACE - PREVIOUS BOND -  
\$305,766, STP TE GRANT -  
\$143,461, LOSST - \$163,868



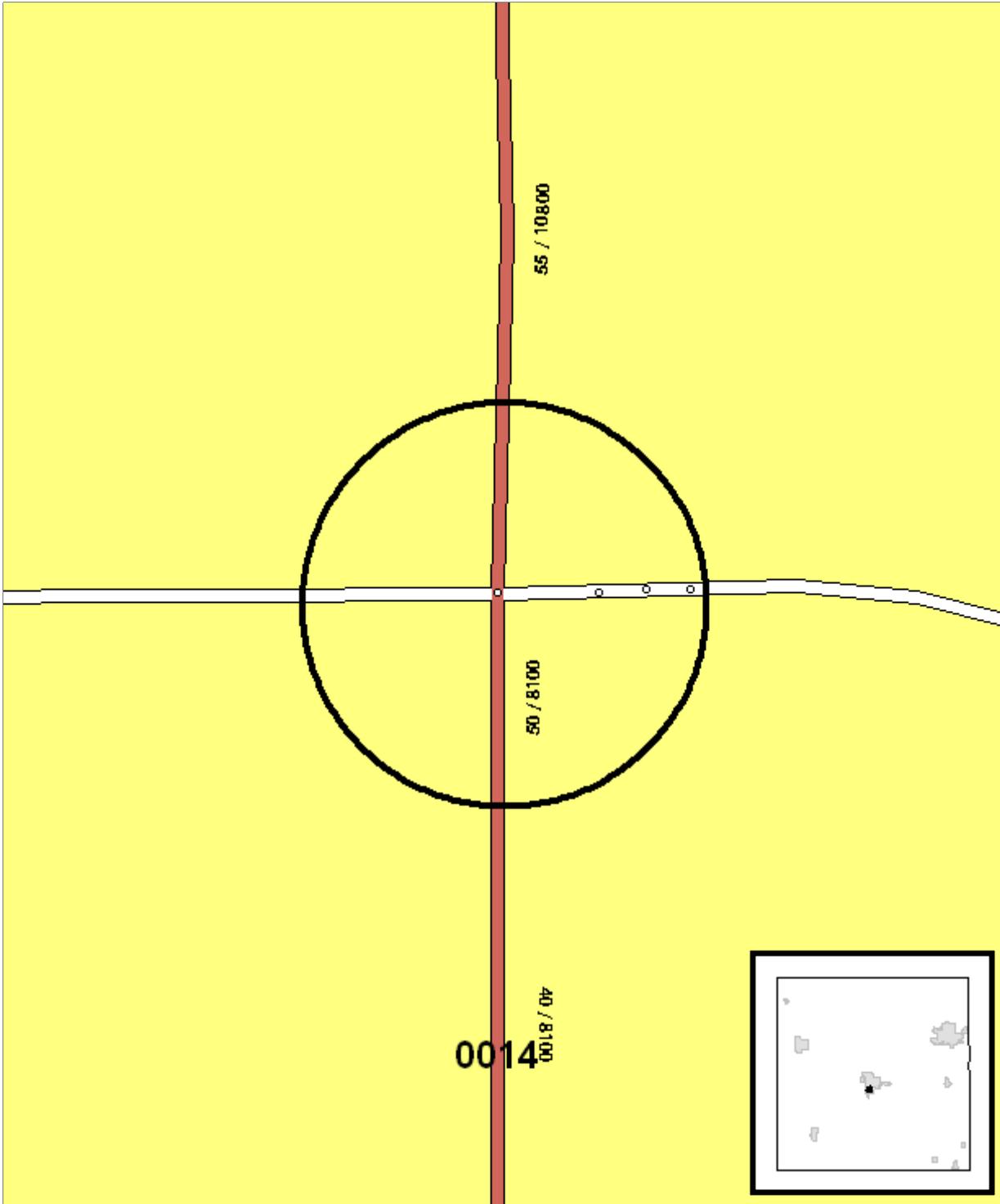
## **APPENDIX B – CMAT CRASH REPORTS**

# Location Map

Lincoln St & W Bell Ave

Incidents: 18

Report Version 1.1 Mar 2005



Analyst: C. Cutler

Notes:



# Major Cause Summary

Lincoln St & W Bell Ave

Report Version 1.1 Jan 2005

**Analysis Years:** 2009 [3], 2010 [3], 2011 [4], 2012 [3], 2013 [5]

Crash Summary:		Injury Summary:		Surface Condition Summary:	
Fatal	1	Fatal	1	Dry	12
Major Injury	-	Major Injury	-	Wet	4
Minor Injury	3	Minor Injury	3	Ice	-
Possible/Unknown	2	Possible	5	Snow	2
PDO	12	Unknown	-	Slush	-
<b>Total Crashes</b>	<b>18</b>	<b>Total Injuries</b>	<b>9</b>	Sand/Dirt/Oil/Gravel	-
<b>TOT Property Damage:</b> \$73,800 <b>AVG Property Damage:</b> \$4,100				Water	-
				Other	-
				Unknown	-
				Not Reported	-
				<b>Total Crashes</b>	<b>18</b>

**Major Cause Summary:**

Animal	Improper Backing
4 Ran Traffic Signal	Illegally Parked/Unattended
1 Ran Stop Sign	1 Swerving/Evasive Action
Crossed Centerline	Over-Correcting/Over-Steering
FTYROW: At Uncontrolled Intersection	Downhill Runaway
FTYROW: Making Right Turn on Red Signal	Equipment Failure
1 FTYROW: From Stop Sign	Separation of Units
FTYROW: From Yield Sign	1 Ran Off Road - Right
3 FTYROW: Making Left Turn	Ran Off Road - Straight
FTYROW: From Driveway	Ran Off Road - Left
FTYROW: From Parked Position	1 Lost Control
FTYROW: To Pedestrian	Inattentive/Distracted By: Passenger
1 FTYROW: Other (explain in narrative)	Inattentive/Distracted By: Use of Phone or Other
Traveling Wrong Way or on Wrong Side of Rd	Inattentive/Distracted By: Fallen Object
Driving Too Fast for Conditions	Inattentive/Distracted By: Fatigued/Asleep
Exceeded Authorized Speed	Other: Vision Obstructed
2 Made Improper Turn	Oversized Load/ Oversized Vehicle
Improper Lane Change	Cargo/Equipment Loss or Shift
1 Followed Too Close	1 Other: Other Improper Action
Disregarded Railroad Signal	1 Unknown
Disregarded Warning Sign	Other: No Improper Action
Operating Vehicle in Reckless/Aggressive Manner	None Indicated

**Selection Filter:**  
 ((YEAR = 2009 or YEAR = 2010 or YEAR = 2011 or YEAR = 2012 or YEAR = 2013))

**Analyst:** C. Cutler

**Notes:**



# Driver and Time Summary

Lincoln St & W Bell Ave

Report Version 1.0 Aug 2006

### Crash Time of Day Summary:

From To	00:00 01:59	02:00 03:59	04:00 05:59	06:00 07:59	08:00 09:59	10:00 11:59	12:00 13:59	14:00 15:59	16:00 17:59	18:00 19:59	20:00 21:59	22:00 23:59	NR	Total	%
SUN	-	-	-	-	2	-	1	1	1	-	-	-	-	5	28
MON	-	-	-	-	-	-	-	1	-	-	-	-	-	1	6
TUE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WED	-	-	-	-	-	-	-	1	-	-	-	-	-	1	6
THU	-	-	-	-	-	-	2	1	1	2	1	-	-	7	39
FRI	-	-	-	-	-	1	-	1	-	-	-	-	-	2	11
SAT	-	-	-	-	1	-	-	-	1	-	-	-	-	2	11
Tot.					3	1	3	5	3	2	1			18	
%					17	6	17	28	17	11	6				100

### Driver Age/Gender Summary:

Age	Male	Female	NR	Drivers	%
<14	-	-	-		
14	-	-	-		
15	-	-	-		
16	2	-	-	2	5
17	1	-	-	1	3
18	-	2	-	2	5
19	-	-	-		
20	1	1	-	2	5
21 to 24	-	3	-	3	8
25 to 29	-	-	-		
30 to 34	4	2	-	6	16
35 to 39	-	-	-		
40 to 44	1	2	-	3	8
45 to 49	3	-	-	3	8
50 to 54	2	2	-	4	11
55 to 59	3	-	-	3	8
60 to 64	-	-	-		
65 to 69	-	2	-	2	5
70 to 74	1	1	-	2	5
75 to 79	-	2	-	2	5
80 to 84	-	-	-		
85 to 89	-	1	-	1	3
90 to 94	-	-	-		
95 plus	-	-	-		
NR	-	-	1	1	3
Drivers	18	18	1	37	
%	49	49	3		100

### Drug/Alcohol Summary:

	Total	%
Drug		
Alcohol, Less than Statutory		
Alcohol, Statutory		
Drug/Alcohol, Less than Statutory		
Drug/Alcohol, Statutory		
Refused		
Under Influence of Alc/Drugs/Meds		
None Indicated	18	100
Total Crashes	18	100

### Fixed Object Struck Summary:

	Vehs.	%
Bridge/Bridge rail/Overpass		
Underpass/Structure Support		
Culvert		
Ditch/Embankment		
Curb/Island/Raised Median		
Guardrail		
Concrete Barrier		
Tree		
Pole - Utility/Light/Etc	1	3
Sign Post		
Mailbox		
Impact Attenuator		
Other Fixed Object		
None	36	97
Total Vehicles	37	100

### Selection Filter:

((YEAR = 2009 or YEAR = 2010 or YEAR = 2011 or YEAR = 2012 or YEAR = 2013))

**Analyst:** C. Cutler

**Notes:**



# Crash Detail Report

Lincoln St & W Bell Ave

Report Version 1.3 Aug 2006

2009508527 05/15/2009 15:35  
County:63 City:Knoxville

BELL AVE and Iowa 0014 / LINCOLN ST

**Major Cause:**FTY making left turn  
**Roadway Type:**Intersection: Four-way intersection  
**Severity:**PDO **Manner of Crash:**Head-on  
**Fatalities:**0 **Surface Conditions:**Wet  
**Major Injuries:**0 **Light Conditions:**Daylight  
**Minor Injuries:**0 **Weather Conditions:**Rain  
**Possible Injuries:**0 **Drug/Alc Involved:**none indicated  
**Unknown Injuries:**0 **Property Damage:**\$4000 **Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	South	North	0
<b>Veh Action:</b>	Turning left	Essentially straight	0
<b>Configuration:</b>	Passenger car	Sport utility vehicle	0
<b>Driver Age:</b>	30	31	0
<b>Driver Gender:</b>	F	F	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	FTY making left turn	Other improper action	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0

2009531445 10/19/2009 15:54  
County:63 City:Knoxville

BELL AVE AND HWY 14 INTERSECTION

**Major Cause:**FTY making left turn  
**Roadway Type:**Intersection: Four-way intersection  
**Severity:**Poss/Unk **Manner of Crash:**Angle, oncoming left turn  
**Fatalities:**0 **Surface Conditions:**Dry  
**Major Injuries:**0 **Light Conditions:**Daylight  
**Minor Injuries:**0 **Weather Conditions:**Clear  
**Possible Injuries:**1 **Drug/Alc Involved:**none indicated  
**Unknown Injuries:**0 **Property Damage:**\$8000 **Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	West	East	0
<b>Veh Action:</b>	Turning left	Essentially straight	0
<b>Configuration:</b>	Passenger car	Passenger car	0
<b>Driver Age:</b>	47	16	0
<b>Driver Gender:</b>	M	M	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	FTY making left turn	none	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0



# Crash Detail Report

Lincoln St & W Bell Ave

Report Version 1.3 Aug 2006

2009540490 12/03/2009 14:56  
County:63 City:Knoxville

BELL AVENUE AT WAL-MART ENTRANCE

**Major Cause:**Made improper turn  
**Roadway Type:**Intersection: T - intersection  
**Severity:**PDO **Manner of Crash:**Broadside  
**Fatalities:**0 **Surface Conditions:**Dry  
**Major Injuries:**0 **Light Conditions:**Daylight  
**Minor Injuries:**0 **Weather Conditions:**Cloudy  
**Possible Injuries:**0 **Drug/Alc Involved:**none indicated  
**Unknown Injuries:**0 **Property Damage:**\$4000 **Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	East	North	0
<b>Veh Action:</b>	Turning right	Turning right	0
<b>Configuration:</b>	Passenger car	Van or mini-van	0
<b>Driver Age:</b>	58	40	0
<b>Driver Gender:</b>	M	F	0
<b>Driver Cond:</b>	Physical impairment	Normal	0
<b>Drivr Contr 1:</b>	none	Made improper turn	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0

2010579098 06/16/2010 14:13  
County:63 City:Knoxville

BELL AVE and Iowa 0014 / LINCOLN ST

**Major Cause:**Ran traffic signal  
**Roadway Type:**Intersection: Four-way intersection  
**Severity:**PDO **Manner of Crash:**Broadside  
**Fatalities:**0 **Surface Conditions:**Dry  
**Major Injuries:**0 **Light Conditions:**Daylight  
**Minor Injuries:**0 **Weather Conditions:**Clear  
**Possible Injuries:**0 **Drug/Alc Involved:**none indicated  
**Unknown Injuries:**0 **Property Damage:**\$2000 **Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	North	West	0
<b>Veh Action:</b>	Essentially straight	Turning left	0
<b>Configuration:</b>	Passenger car	Passenger car	0
<b>Driver Age:</b>	87	18	0
<b>Driver Gender:</b>	F	F	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	Ran traffic signal	none	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0



# Crash Detail Report

Lincoln St & W Bell Ave

Report Version 1.3 Aug 2006

2010588437 08/22/2010 09:16  
County:63 City:Knoxville

BELL AVE and Iowa 0014 / LINCOLN ST

**Major Cause:**Ran off road - right

**Roadway Type:**Intersection: Four-way intersection

**Severity:**Fatal

**Manner of Crash:**Non-collision

**Fatalities:**1

**Surface Conditions:**Dry

**Major Injuries:**0

**Light Conditions:**Daylight

**Minor Injuries:**0

**Weather Conditions:**Partly cloudy

**Possible Injuries:**0

**Drug/Alc Involved:**none indicated

**Unknown Injuries:**0

**Property Damage:**\$5000

**Number of Vehicles:**1

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	North	0	0
<b>Veh Action:</b>	Essentially straight	0	0
<b>Configuration:</b>	Passenger car	0	0
<b>Driver Age:</b>	50	0	0
<b>Driver Gender:</b>	M		
<b>Driver Cond:</b>	unknown	0	0
<b>Drivr Contr 1:</b>	unknown	0	0
<b>Drivr Contr 2:</b>	not reported	0	0
<b>Fixed Object:</b>	Pole: utility/light/etc	0	0

2010609983 10/23/2010 17:53  
County:63 City:Knoxville

BELL AVE and Iowa 0014 / LINCOLN ST

**Major Cause:**unknown

**Roadway Type:**Intersection: Four-way intersection

**Severity:**PDO

**Manner of Crash:**Sideswipe, same direction

**Fatalities:**0

**Surface Conditions:**Dry

**Major Injuries:**0

**Light Conditions:**Daylight

**Minor Injuries:**0

**Weather Conditions:**Partly cloudy

**Possible Injuries:**0

**Drug/Alc Involved:**none indicated

**Unknown Injuries:**0

**Property Damage:**\$8000

**Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	North	North	0
<b>Veh Action:</b>	Changing lanes	Changing lanes	0
<b>Configuration:</b>	Sport utility vehicle	Van or mini-van	0
<b>Driver Age:</b>	16	58	0
<b>Driver Gender:</b>	M	M	
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	unknown	unknown	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0



# Crash Detail Report

Lincoln St & W Bell Ave

Report Version 1.3 Aug 2006

2011623049 02/24/2011 21:55  
County:63 City:Knoxville

BELL AVE and Iowa 0014 / LINCOLN ST

**Major Cause:**Made improper turn  
**Roadway Type:**Intersection: Four-way intersection  
**Severity:**PDO **Manner of Crash:**Sideswipe, same direction  
**Fatalities:**0 **Surface Conditions:**Snow  
**Major Injuries:**0 **Light Conditions:**Dark - roadway lighted  
**Minor Injuries:**0 **Weather Conditions:**Snow  
**Possible Injuries:**0 **Drug/Alc Involved:**none indicated  
**Unknown Injuries:**0 **Property Damage:**\$3000 **Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	North	North	0
<b>Veh Action:</b>	Turning right	Turning right	0
<b>Configuration:</b>	Sport utility vehicle	Passenger car	0
<b>Driver Age:</b>	unknown	51	0
<b>Driver Gender:</b>	NR	F	0
<b>Driver Cond:</b>	unknown	Normal	0
<b>Drivr Contr 1:</b>	Made improper turn	none	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0

2011623055 03/11/2011 11:22  
County:63 City:Knoxville

BELL AVE and Iowa 0014 / LINCOLN ST

**Major Cause:**Ran traffic signal  
**Roadway Type:**Intersection: Four-way intersection  
**Severity:**Minor **Manner of Crash:**Broadside  
**Fatalities:**0 **Surface Conditions:**Dry  
**Major Injuries:**0 **Light Conditions:**Daylight  
**Minor Injuries:**1 **Weather Conditions:**Partly cloudy  
**Possible Injuries:**1 **Drug/Alc Involved:**none indicated  
**Unknown Injuries:**0 **Property Damage:**\$8500 **Number of Vehicles:**3

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	East	West	South
<b>Veh Action:</b>	Essentially straight	Essentially straight	Essentially straight
<b>Configuration:</b>	4-tire light truck	4-tire light truck	Van or mini-van
<b>Driver Age:</b>	31	54	76
<b>Driver Gender:</b>	M	M	F
<b>Driver Cond:</b>	Normal	Normal	Normal
<b>Drivr Contr 1:</b>	none	none	Ran traffic signal
<b>Drivr Contr 2:</b>	not reported	not reported	not reported
<b>Fixed Object:</b>	none	none	none



# Crash Detail Report

Lincoln St & W Bell Ave

Report Version 1.3 Aug 2006

2011639103 07/17/2011 16:44  
County:63 City:Knoxville

BELL AVE and Iowa 0014 / LINCOLN ST

**Major Cause:**Lost control  
**Roadway Type:**Intersection: Four-way intersection  
**Severity:**PDO **Manner of Crash:**Rear-end  
**Fatalities:**0 **Surface Conditions:**Dry  
**Major Injuries:**0 **Light Conditions:**Daylight  
**Minor Injuries:**0 **Weather Conditions:**Clear  
**Possible Injuries:**0 **Drug/Alc Involved:**none indicated  
**Unknown Injuries:**0 **Property Damage:**\$1700 **Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	West	West	0
<b>Veh Action:</b>	Stopped for sign/signal	Essentially straight	0
<b>Configuration:</b>	Passenger car	Passenger car	0
<b>Driver Age:</b>	40	66	0
<b>Driver Gender:</b>	F	F	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	none	Lost control	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0

2011651647 10/02/2011 12:51  
County:63 City:Knoxville

BELL AVE (AT WEST ENTRANCE OF WAL-MART)

**Major Cause:**FTY from stop sign  
**Roadway Type:**Intersection: T - intersection  
**Severity:**PDO **Manner of Crash:**Broadside  
**Fatalities:**0 **Surface Conditions:**Dry  
**Major Injuries:**0 **Light Conditions:**Daylight  
**Minor Injuries:**0 **Weather Conditions:**Partly cloudy  
**Possible Injuries:**0 **Drug/Alc Involved:**none indicated  
**Unknown Injuries:**0 **Property Damage:**\$2000 **Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	East	North	0
<b>Veh Action:</b>	Essentially straight	Turning left	0
<b>Configuration:</b>	Van or mini-van	4-tire light truck	0
<b>Driver Age:</b>	24	17	0
<b>Driver Gender:</b>	F	M	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	none	FTY from stop sign	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0



# Crash Detail Report

Lincoln St & W Bell Ave

Report Version 1.3 Aug 2006

2012678866 02/16/2012 12:30  
County:63 City:Knoxville

W BELL AVE and Iowa 0014 / LINCOLN ST

**Major Cause:**FTY other

**Roadway Type:**Intersection: Four-way intersection

**Severity:**PDO

**Manner of Crash:**Sideswipe, same direction

**Fatalities:**0

**Surface Conditions:**Dry

**Major Injuries:**0

**Light Conditions:**Daylight

**Minor Injuries:**0

**Weather Conditions:**Partly cloudy

**Possible Injuries:**0

**Drug/Alc Involved:**none indicated

**Unknown Injuries:**0

**Property Damage:**\$2000

**Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	North	North	0
<b>Veh Action:</b>	Changing lanes	Essentially straight	0
<b>Configuration:</b>	4-tire light truck	Passenger car	0
<b>Driver Age:</b>	33	31	0
<b>Driver Gender:</b>	M	M	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	FTY other	none	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0

2012692781 05/31/2012 12:48  
County:63 City:Knoxville

W BELL AVE and Iowa 0014 / LINCOLN ST

**Major Cause:**Ran traffic signal

**Roadway Type:**Intersection: Four-way intersection

**Severity:**Minor

**Manner of Crash:**Broadside

**Fatalities:**0

**Surface Conditions:**Wet

**Major Injuries:**0

**Light Conditions:**Daylight

**Minor Injuries:**1

**Weather Conditions:**Rain

**Possible Injuries:**0

**Drug/Alc Involved:**none indicated

**Unknown Injuries:**0

**Property Damage:**\$6500

**Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	South	West	0
<b>Veh Action:</b>	Essentially straight	Essentially straight	0
<b>Configuration:</b>	Van or mini-van	Passenger car	0
<b>Driver Age:</b>	74	71	0
<b>Driver Gender:</b>	F	M	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	Ran traffic signal	none	0
<b>Drivr Contr 2:</b>	Distracted by passenger	not reported	0
<b>Fixed Object:</b>	none	none	0



# Crash Detail Report

Lincoln St & W Bell Ave

Report Version 1.3 Aug 2006

2012702098 08/30/2012 18:19  
County:63 City:Knoxville

W BELL AVE (WAL-MART PARKING LOT)

**Major Cause:**Ran stop sign

**Roadway Type:**Non-intersection: Business drive

**Severity:**PDO

**Manner of Crash:**Broadside

**Fatalities:**0

**Surface Conditions:**Dry

**Major Injuries:**0

**Light Conditions:**Daylight

**Minor Injuries:**0

**Weather Conditions:**Clear

**Possible Injuries:**0

**Drug/Alc Involved:**none indicated

**Unknown Injuries:**0

**Property Damage:**\$2000

**Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	East	South	0
<b>Veh Action:</b>	Essentially straight	Essentially straight	0
<b>Configuration:</b>	Passenger car	4-tire light truck	0
<b>Driver Age:</b>	18	42	0
<b>Driver Gender:</b>	F	M	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	Ran stop sign	none	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0

2013723751 01/20/2013 14:15  
County:63 City:Knoxville

W BELL AVE AND ENTRANCE OF WAL-MART / 400 FEET FROM  
INTERSECTION OF LINCOLN STREET AND BELL AVENUE

**Major Cause:**Swerving/evasive action

**Roadway Type:**Intersection: T - intersection

**Severity:**PDO

**Manner of Crash:**Rear-end

**Fatalities:**0

**Surface Conditions:**Snow

**Major Injuries:**0

**Light Conditions:**Daylight

**Minor Injuries:**0

**Weather Conditions:**Snow

**Possible Injuries:**0

**Drug/Alc Involved:**none indicated

**Unknown Injuries:**0

**Property Damage:**\$1750

**Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	North	North	0
<b>Veh Action:</b>	Stopped for sign/signal	Slowing/stopping	0
<b>Configuration:</b>	4-tire light truck	Passenger car	0
<b>Driver Age:</b>	53	24	0
<b>Driver Gender:</b>	F	F	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	none	Swerved to avoid	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0



# Crash Detail Report

Lincoln St & W Bell Ave

Report Version 1.3 Aug 2006

2013737415 03/10/2013 08:43  
County:63 City:Knoxville

W BELL AVE and Iowa 0014 / LINCOLN ST

**Major Cause:**Ran traffic signal  
**Roadway Type:**Intersection: Four-way intersection  
**Severity:**PDO                      **Manner of Crash:**Broadside  
**Fatalities:**0                      **Surface Conditions:**Wet  
**Major Injuries:**0                      **Light Conditions:**Daylight  
**Minor Injuries:**0                      **Weather Conditions:**Rain  
**Possible Injuries:**0                      **Drug/Alc Involved:**none indicated  
**Unknown Injuries:**0                      **Property Damage:**\$1550                      **Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	West	North	0
<b>Veh Action:</b>	Essentially straight	Essentially straight	0
<b>Configuration:</b>	Passenger car	Passenger car	0
<b>Driver Age:</b>	49	76	0
<b>Driver Gender:</b>	M	F	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	none	Ran traffic signal	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0

2013737422 04/04/2013 16:31  
County:63 City:Knoxville

W BELL AVE and Iowa 0014 / LINCOLN ST

**Major Cause:**Other improper action  
**Roadway Type:**Intersection: Four-way intersection  
**Severity:**Poss/Unk                      **Manner of Crash:**Rear-end  
**Fatalities:**0                      **Surface Conditions:**Dry  
**Major Injuries:**0                      **Light Conditions:**Daylight  
**Minor Injuries:**0                      **Weather Conditions:**Partly cloudy  
**Possible Injuries:**2                      **Drug/Alc Involved:**none indicated  
**Unknown Injuries:**0                      **Property Damage:**\$3000                      **Number of Vehicles:**3

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	South	South	South
<b>Veh Action:</b>	Stopped for sign/signal	Stopped for sign/signal	Slowing/stopping
<b>Configuration:</b>	Passenger car	Passenger car	4-tire light truck
<b>Driver Age:</b>	55	24	45
<b>Driver Gender:</b>	M	F	M
<b>Driver Cond:</b>	Normal	Normal	Normal
<b>Drivr Contr 1:</b>	Other improper action	none	none
<b>Drivr Contr 2:</b>	not reported	not reported	not reported
<b>Fixed Object:</b>	none	none	none



# Crash Detail Report

Lincoln St & W Bell Ave

Report Version 1.3 Aug 2006

2013761203 09/28/2013 09:46  
County:63 City:Knoxville

W BELL AVE and Iowa 0014 / LINCOLN ST

**Major Cause:**FTY making left turn

**Roadway Type:**Intersection: Four-way intersection

**Severity:**Minor

**Manner of Crash:**Angle, oncoming left turn

**Fatalities:**0

**Surface Conditions:**Wet

**Major Injuries:**0

**Light Conditions:**Daylight

**Minor Injuries:**1

**Weather Conditions:**Mist

**Possible Injuries:**1

**Drug/Alc Involved:**none indicated

**Unknown Injuries:**0

**Property Damage:**\$9000

**Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	North	South	0
<b>Veh Action:</b>	Essentially straight	Turning left	0
<b>Configuration:</b>	Passenger car	Passenger car	0
<b>Driver Age:</b>	20	67	0
<b>Driver Gender:</b>	F	F	0
<b>Driver Cond:</b>	Normal	Other	0
<b>Drivr Contr 1:</b>	none	FTY making left turn	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0

2013765836 11/07/2013 18:13  
County:63 City:Knoxville

W BELL AVE and Iowa 0014 / LINCOLN ST

**Major Cause:**Followed too close

**Roadway Type:**Intersection: Four-way intersection

**Severity:**PDO

**Manner of Crash:**Rear-end

**Fatalities:**0

**Surface Conditions:**Dry

**Major Injuries:**0

**Light Conditions:**Dark - roadway lighted

**Minor Injuries:**0

**Weather Conditions:**Partly cloudy

**Possible Injuries:**0

**Drug/Alc Involved:**none indicated

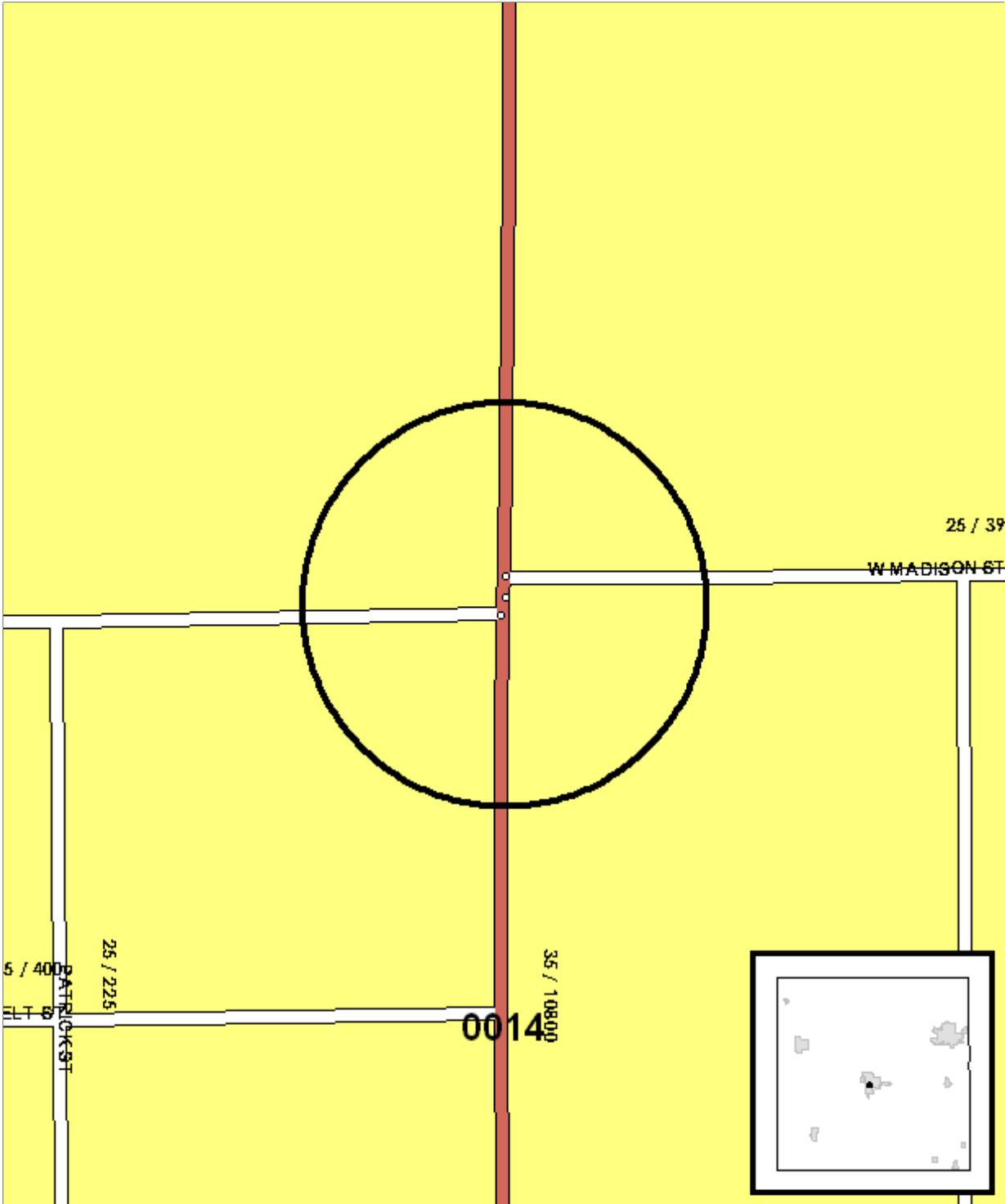
**Unknown Injuries:**0

**Property Damage:**\$1800

**Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	West	West	0
<b>Veh Action:</b>	Stopped for sign/signal	Essentially straight	0
<b>Configuration:</b>	Passenger car	Passenger car	0
<b>Driver Age:</b>	20	32	0
<b>Driver Gender:</b>	M	M	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	none	Followed too close	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0





Analyst: C. Cutler

Notes:



# Major Cause Summary

Lincoln St & W Madison St

Report Version 1.1 Jan 2005

**Analysis Years:** 2009 [4], 2010 [1], 2011 [2], 2012 [1], 2013 [1]

Crash Summary:		Injury Summary:		Surface Condition Summary:	
Fatal	-	Fatal	-	Dry	6
Major Injury	-	Major Injury	-	Wet	1
Minor Injury	1	Minor Injury	1	Ice	-
Possible/Unknown	3	Possible	4	Snow	2
PDO	5	Unknown	-	Slush	-
<b>Total Crashes</b>	<b>9</b>	<b>Total Injuries</b>	<b>5</b>	Sand/Dirt/Oil/Gravel	-
				Water	-
				Other	-
				Unknown	-
				Not Reported	-
				<b>Total Crashes</b>	<b>9</b>

**TOT Property Damage:** \$36,234

**AVG Property Damage:** \$4,026

## Major Cause Summary:

Animal	Improper Backing
4 Ran Traffic Signal	Illegally Parked/Unattended
Ran Stop Sign	Swerving/Evasive Action
1 Crossed Centerline	Over-Correcting/Over-Steering
FTYROW: At Uncontrolled Intersection	Downhill Runaway
FTYROW: Making Right Turn on Red Signal	Equipment Failure
FTYROW: From Stop Sign	Separation of Units
FTYROW: From Yield Sign	Ran Off Road - Right
1 FTYROW: Making Left Turn	Ran Off Road - Straight
FTYROW: From Driveway	Ran Off Road - Left
FTYROW: From Parked Position	1 Lost Control
FTYROW: To Pedestrian	Inattentive/Distracted By: Passenger
FTYROW: Other (explain in narrative)	Inattentive/Distracted By: Use of Phone or Other
Traveling Wrong Way or on Wrong Side of Rd	Inattentive/Distracted By: Fallen Object
1 Driving Too Fast for Conditions	Inattentive/Distracted By: Fatigued/Asleep
Exceeded Authorized Speed	Other: Vision Obstructed
Made Improper Turn	Oversized Load/ Oversized Vehicle
Improper Lane Change	Cargo/Equipment Loss or Shift
1 Followed Too Close	Other: Other Improper Action
Disregarded Railroad Signal	Unknown
Disregarded Warning Sign	Other: No Improper Action
Operating Vehicle in Reckless/Aggressive Manner	None Indicated

## Selection Filter:

((YEAR = 2009 or YEAR = 2010 or YEAR = 2011 or YEAR = 2012 or YEAR = 2013))

**Analyst:** C. Cutler

**Notes:**

# Driver and Time Summary

Lincoln St & W Madison St

**Crash Time of Day Summary:**

From To	00:00 01:59	02:00 03:59	04:00 05:59	06:00 07:59	08:00 09:59	10:00 11:59	12:00 13:59	14:00 15:59	16:00 17:59	18:00 19:59	20:00 21:59	22:00 23:59	NR	Total	%
SUN	-	-	-	-	-	-	-	-	-	2	-	-	-	2	22
MON	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TUE	-	-	-	-	-	-	1	-	-	-	-	-	-	1	11
WED	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
THU	-	-	-	-	-	-	-	-	2	-	-	-	-	2	22
FRI	-	-	-	-	-	-	-	1	-	-	-	-	-	1	11
SAT	1	-	-	-	1	-	1	-	-	-	-	-	-	3	33
Tot.	1				1		2	1	2	2				9	
%	11				11		22	11	22	22					100

**Driver Age/Gender Summary:**

Age	Male	Female	NR	Drivers	%
<14	-	-	-		
14	-	-	-		
15	-	-	-		
16	-	-	-		
17	-	-	-		
18	-	1	-	1	6
19	-	-	-		
20	-	-	-		
21 to 24	-	1	-	1	6
25 to 29	-	-	-		
30 to 34	2	-	-	2	11
35 to 39	1	1	-	2	11
40 to 44	-	-	-		
45 to 49	2	-	-	2	11
50 to 54	2	1	-	3	17
55 to 59	-	1	-	1	6
60 to 64	1	2	-	3	17
65 to 69	-	1	-	1	6
70 to 74	1	-	-	1	6
75 to 79	1	-	-	1	6
80 to 84	-	-	-		
85 to 89	-	-	-		
90 to 94	-	-	-		
95 plus	-	-	-		
NR	-	-	-		
<b>Drivers</b>	10	8	0	18	
<b>%</b>	56	44	0		100

**Drug/Alcohol Summary:**

	Total	%
Drug		
Alcohol, Less than Statutory		
Alcohol, Statutory	2	22
Drug/Alcohol, Less than Statutory		
Drug/Alcohol, Statutory		
Refused		
Under Influence of Alc/Drugs/Meds		
None Indicated	7	78
<b>Total Crashes</b>	<b>9</b>	<b>100</b>

**Fixed Object Struck Summary:**

	Vehs.	%
Bridge/Bridge rail/Overpass		
Underpass/Structure Support		
Culvert		
Ditch/Embankment		
Curb/Island/Raised Median		
Guardrail		
Concrete Barrier		
Tree		
Pole - Utility/Light/Etc	1	6
Sign Post		
Mailbox		
Impact Attenuator		
Other Fixed Object		
None	17	94
<b>Total Vehicles</b>	<b>18</b>	<b>100</b>

**Selection Filter:**

((YEAR = 2009 or YEAR = 2010 or YEAR = 2011 or YEAR = 2012 or YEAR = 2013))

**Analyst:** C. Cutler

**Notes:**



# Crash Detail Report

Lincoln St & W Madison St

Report Version 1.3 Aug 2006

2009488135 01/10/2009 00:07  
County:63 City:Knoxville

MADISON ST and Iowa 0014 / LINCOLN ST

**Major Cause:**Driving too fast for conditions

**Roadway Type:**Intersection: Four-way intersection

**Severity:**PDO

**Manner of Crash:**Non-collision

**Fatalities:**0

**Surface Conditions:**Snow

**Major Injuries:**0

**Light Conditions:**Dark - roadway lighted

**Minor Injuries:**0

**Weather Conditions:**Snow

**Possible Injuries:**0

**Drug/Alc Involved:**Alcohol: Statutory

**Unknown Injuries:**0

**Property Damage:**\$1000

**Number of Vehicles:**1

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	North	0	0
<b>Veh Action:</b>	Turning right	0	0
<b>Configuration:</b>	Passenger car	0	0
<b>Driver Age:</b>	38	0	0
<b>Driver Gender:</b>	M		
<b>Driver Cond:</b>	Infl by alc/drugs/meds	0	0
<b>Drivr Contr 1:</b>	Too fast for conditions	0	0
<b>Drivr Contr 2:</b>	Erratic/reckless/aggrsv	0	0
<b>Fixed Object:</b>	Pole: utility/light/etc	0	0

2009519830 06/21/2009 19:44  
County:63 City:Knoxville

MADISON ST and Iowa 0014 / LINCOLN ST

**Major Cause:**Ran traffic signal

**Roadway Type:**Intersection: Four-way intersection

**Severity:**PDO

**Manner of Crash:**Broadside

**Fatalities:**0

**Surface Conditions:**Dry

**Major Injuries:**0

**Light Conditions:**Daylight

**Minor Injuries:**0

**Weather Conditions:**Clear

**Possible Injuries:**0

**Drug/Alc Involved:**none indicated

**Unknown Injuries:**0

**Property Damage:**\$13000

**Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	North	West	0
<b>Veh Action:</b>	Essentially straight	Turning left	0
<b>Configuration:</b>	4-tire light truck	4-tire light truck	0
<b>Driver Age:</b>	34	54	0
<b>Driver Gender:</b>	M	M	
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	Ran traffic signal	none	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0



# Crash Detail Report

Lincoln St & W Madison St

Report Version 1.3 Aug 2006

2009525195 08/11/2009 13:36  
County:63 City:Knoxville

MADISON ST and Iowa 0014 / LINCOLN ST

**Major Cause:**Followed too close

**Roadway Type:**Intersection: Four-way intersection

**Severity:**Poss/Unk

**Manner of Crash:**Rear-end

**Fatalities:**0

**Surface Conditions:**Dry

**Major Injuries:**0

**Light Conditions:**Daylight

**Minor Injuries:**0

**Weather Conditions:**Clear

**Possible Injuries:**1

**Drug/Alc Involved:**none indicated

**Unknown Injuries:**0

**Property Damage:**\$200

**Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	North	North	0
<b>Veh Action:</b>	Essentially straight	Essentially straight	0
<b>Configuration:</b>	Passenger car	Passenger car	0
<b>Driver Age:</b>	62	56	0
<b>Driver Gender:</b>	M	F	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	Followed too close	none	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0

2009543096 12/10/2009 16:16  
County:63 City:Knoxville

MADISON ST and Iowa 0014 / LINCOLN ST

**Major Cause:**FTY making left turn

**Roadway Type:**Intersection: Four-way intersection

**Severity:**PDO

**Manner of Crash:**Angle, oncoming left turn

**Fatalities:**0

**Surface Conditions:**Snow

**Major Injuries:**0

**Light Conditions:**Daylight

**Minor Injuries:**0

**Weather Conditions:**Clear

**Possible Injuries:**0

**Drug/Alc Involved:**none indicated

**Unknown Injuries:**0

**Property Damage:**\$3000

**Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	North	South	0
<b>Veh Action:</b>	Changing lanes	Turning left	0
<b>Configuration:</b>	Passenger car	4-tire light truck	0
<b>Driver Age:</b>	49	76	0
<b>Driver Gender:</b>	M	M	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	none	FTY making left turn	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0



# Crash Detail Report

Lincoln St & W Madison St

Report Version 1.3 Aug 2006

2010572127 04/10/2010 09:46  
County:63 City:Knoxville

MADISON ST and Iowa 0014 / LINCOLN ST

**Major Cause:**Ran traffic signal  
**Roadway Type:**Intersection: Four-way intersection  
**Severity:**Minor      **Manner of Crash:**Broadside  
**Fatalities:**0      **Surface Conditions:**Dry  
**Major Injuries:**0      **Light Conditions:**Daylight  
**Minor Injuries:**1      **Weather Conditions:**Clear  
**Possible Injuries:**1      **Drug/Alc Involved:**none indicated  
**Unknown Injuries:**0      **Property Damage:**\$4000      **Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	North	West	0
<b>Veh Action:</b>	Essentially straight	Essentially straight	0
<b>Configuration:</b>	Passenger car	Van or mini-van	0
<b>Driver Age:</b>	61	74	0
<b>Driver Gender:</b>	F	M	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	Ran traffic signal	none	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0

2011623051 02/27/2011 18:22  
County:63 City:Knoxville

MADISON ST and Iowa 0014 / LINCOLN ST

**Major Cause:**Crossed centerline  
**Roadway Type:**Intersection: Four-way intersection  
**Severity:**Poss/Unk      **Manner of Crash:**Broadside  
**Fatalities:**0      **Surface Conditions:**Wet  
**Major Injuries:**0      **Light Conditions:**Dark - roadway lighted  
**Minor Injuries:**0      **Weather Conditions:**Clear  
**Possible Injuries:**1      **Drug/Alc Involved:**none indicated  
**Unknown Injuries:**0      **Property Damage:**\$6534      **Number of Vehicles:**3

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	East	North	West
<b>Veh Action:</b>	Turning left	Essentially straight	Stopped for sign/signal
<b>Configuration:</b>	Passenger car	4-tire light truck	Passenger car
<b>Driver Age:</b>	18	50	35
<b>Driver Gender:</b>	F	M	F
<b>Driver Cond:</b>	Normal	Normal	Normal
<b>Drivr Contr 1:</b>	FTY making left turn	none	none
<b>Drivr Contr 2:</b>	not reported	not reported	not reported
<b>Fixed Object:</b>	none	none	none



# Crash Detail Report

Lincoln St & W Madison St

Report Version 1.3 Aug 2006

2011651643 09/22/2011 16:58  
County:63 City:Knoxville

MADISON ST and Iowa 0014 / LINCOLN ST

**Major Cause:**Ran traffic signal

**Roadway Type:**Intersection: Four-way intersection

**Severity:**PDO

**Manner of Crash:**Broadside

**Fatalities:**0

**Surface Conditions:**Dry

**Major Injuries:**0

**Light Conditions:**Daylight

**Minor Injuries:**0

**Weather Conditions:**Partly cloudy

**Possible Injuries:**0

**Drug/Alc Involved:**none indicated

**Unknown Injuries:**0

**Property Damage:**\$4000

**Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	West	North	0
<b>Veh Action:</b>	Essentially straight	Essentially straight	0
<b>Configuration:</b>	Van or mini-van	Sport utility vehicle	0
<b>Driver Age:</b>	61	65	0
<b>Driver Gender:</b>	F	F	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	none	Ran traffic signal	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0

2012678870 02/25/2012 13:42  
County:63 City:Knoxville

Iowa 0014 / LINCOLN ST and W MADISON ST

**Major Cause:**Lost control

**Roadway Type:**Intersection: Four-way intersection

**Severity:**Poss/Unk

**Manner of Crash:**Rear-end

**Fatalities:**0

**Surface Conditions:**Dry

**Major Injuries:**0

**Light Conditions:**Daylight

**Minor Injuries:**0

**Weather Conditions:**Partly cloudy

**Possible Injuries:**1

**Drug/Alc Involved:**Alcohol: Statutory

**Unknown Injuries:**0

**Property Damage:**\$1000

**Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	North	North	0
<b>Veh Action:</b>	Essentially straight	Essentially straight	0
<b>Configuration:</b>	Sport utility vehicle	4-tire light truck	0
<b>Driver Age:</b>	54	46	0
<b>Driver Gender:</b>	F	M	0
<b>Driver Cond:</b>	Normal	Infl by alc/drugs/meds	0
<b>Drivr Contr 1:</b>	none	Lost control	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0



# Crash Detail Report

Lincoln St & W Madison St

Report Version 1.3 Aug 2006

2013732147 03/22/2013 14:14  
County:63 City:Knoxville

W MADISON ST AND STATE 14/LINCOLN ST

**Major Cause:**Ran traffic signal

**Roadway Type:**Intersection: Four-way intersection

**Severity:**PDO

**Manner of Crash:**Broadside

**Fatalities:**0

**Surface Conditions:**Dry

**Major Injuries:**0

**Light Conditions:**Daylight

**Minor Injuries:**0

**Weather Conditions:**Clear

**Possible Injuries:**0

**Drug/Alc Involved:**none indicated

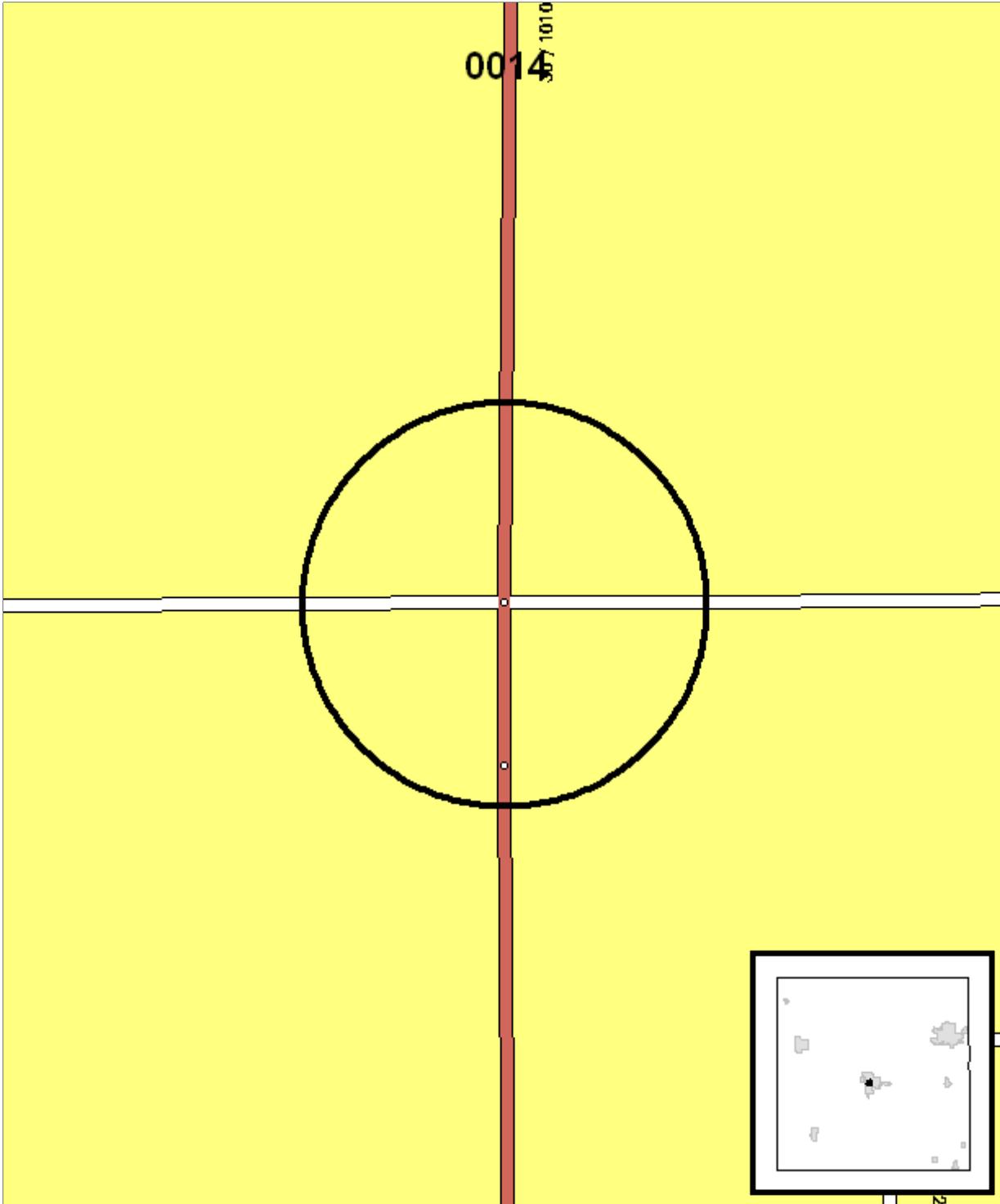
**Unknown Injuries:**0

**Property Damage:**\$3500

**Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	North	West	0
<b>Veh Action:</b>	Essentially straight	Essentially straight	0
<b>Configuration:</b>	Van or mini-van	4-tire light truck	0
<b>Driver Age:</b>	22	31	0
<b>Driver Gender:</b>	F	M	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	Ran traffic signal	none	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0





**Analyst:** C. Cutler

**Notes:**



# Major Cause Summary

Lincoln St & W Robinson St

Report Version 1.1 Jan 2005

**Analysis Years:** 2009 [5], 2010 [9], 2011 [3], 2012 [11], 2013 [9]

Crash Summary:		Injury Summary:		Surface Condition Summary:	
Fatal	-	Fatal	-	Dry	32
Major Injury	1	Major Injury	1	Wet	4
Minor Injury	2	Minor Injury	4	Ice	-
Possible/Unknown	8	Possible	8	Snow	1
PDO	26	Unknown	-	Slush	-
<b>Total Crashes</b>	<b>37</b>	<b>Total Injuries</b>	<b>13</b>	Sand/Dirt/Oil/Gravel	-
<b>TOT Property Damage:</b> \$178,398 <b>AVG Property Damage:</b> \$4,822				Water	-
				Other	-
				Unknown	-
				Not Reported	-
				<b>Total Crashes</b>	<b>37</b>

**Major Cause Summary:**

Animal	Improper Backing
5 Ran Traffic Signal	Illegally Parked/Unattended
Ran Stop Sign	Swerving/Evasive Action
3 Crossed Centerline	Over-Correcting/Over-Steering
FTYROW: At Uncontrolled Intersection	Downhill Runaway
FTYROW: Making Right Turn on Red Signal	Equipment Failure
FTYROW: From Stop Sign	Separation of Units
FTYROW: From Yield Sign	Ran Off Road - Right
10 FTYROW: Making Left Turn	Ran Off Road - Straight
4 FTYROW: From Driveway	Ran Off Road - Left
FTYROW: From Parked Position	Lost Control
FTYROW: To Pedestrian	Inattentive/Distracted By: Passenger
3 FTYROW: Other (explain in narrative)	Inattentive/Distracted By: Use of Phone or Other
Traveling Wrong Way or on Wrong Side of Rd	Inattentive/Distracted By: Fallen Object
Driving Too Fast for Conditions	Inattentive/Distracted By: Fatigued/Asleep
Exceeded Authorized Speed	Other: Vision Obstructed
Made Improper Turn	Oversized Load/ Oversized Vehicle
Improper Lane Change	Cargo/Equipment Loss or Shift
4 Followed Too Close	1 Other: Other Improper Action
Disregarded Railroad Signal	3 Unknown
Disregarded Warning Sign	2 Other: No Improper Action
2 Operating Vehicle in Reckless/Aggressive Manner	None Indicated

**Selection Filter:**  
 ((YEAR = 2009 or YEAR = 2010 or YEAR = 2011 or YEAR = 2012 or YEAR = 2013))

**Analyst:** C. Cutler

**Notes:**



# Driver and Time Summary

Lincoln St & W Robinson St

Report Version 1.0 Aug 2006

### Crash Time of Day Summary:

From To	00:00 01:59	02:00 03:59	04:00 05:59	06:00 07:59	08:00 09:59	10:00 11:59	12:00 13:59	14:00 15:59	16:00 17:59	18:00 19:59	20:00 21:59	22:00 23:59	NR	Total	%
SUN	-	-	-	-	-	-	1	-	1	1	-	-	-	3	8
MON	-	-	-	1	-	-	-	2	3	1	-	-	-	7	19
TUE	-	-	-	3	-	3	-	3	3	-	-	-	-	12	32
WED	-	-	-	-	-	1	-	-	1	-	-	-	-	2	5
THU	-	-	-	1	-	1	1	1	3	-	-	-	-	7	19
FRI	-	-	-	-	-	-	2	2	-	-	-	-	-	4	11
SAT	-	-	-	-	-	-	2	-	-	-	-	-	-	2	5
Tot.				5		5	6	8	11	2				37	
%				14		14	16	22	30	5					100

### Driver Age/Gender Summary:

Age	Male	Female	NR	Drivers	%
<14	-	-	-		
14	-	-	-		
15	1	-	-	1	1
16	-	7	-	7	9
17	2	3	-	5	6
18	1	-	-	1	1
19	-	2	-	2	3
20	-	-	-		
21 to 24	3	3	-	6	8
25 to 29	1	-	-	1	1
30 to 34	4	6	-	10	13
35 to 39	2	2	-	4	5
40 to 44	5	4	-	9	12
45 to 49	2	5	-	7	9
50 to 54	3	4	-	7	9
55 to 59	2	4	-	6	8
60 to 64	1	3	-	4	5
65 to 69	-	1	-	1	1
70 to 74	1	1	-	2	3
75 to 79	-	-	-		
80 to 84	2	1	-	3	4
85 to 89	-	-	-		
90 to 94	-	-	-		
95 plus	-	-	-		
NR	1	-	-	1	1
Drivers	31	46	0	77	
%	40	60	0		100

### Drug/Alcohol Summary:

	Total	%
Drug		
Alcohol, Less than Statutory		
Alcohol, Statutory		
Drug/Alcohol, Less than Statutory		
Drug/Alcohol, Statutory		
Refused		
Under Influence of Alc/Drugs/Meds		
None Indicated	37	100
Total Crashes	37	100

### Fixed Object Struck Summary:

	Vehs.	%
Bridge/Bridge rail/Overpass		
Underpass/Structure Support		
Culvert		
Ditch/Embankment		
Curb/Island/Raised Median		
Guardrail		
Concrete Barrier		
Tree		
Pole - Utility/Light/Etc		
Sign Post		
Mailbox		
Impact Attenuator		
Other Fixed Object		
None	77	100
Total Vehicles	77	100

### Selection Filter:

((YEAR = 2009 or YEAR = 2010 or YEAR = 2011 or YEAR = 2012 or YEAR = 2013))

**Analyst:** C. Cutler

**Notes:**



# Crash Detail Report

Lincoln St & W Robinson St

Report Version 1.3 Aug 2006

2009493820 02/06/2009 14:45  
County:63 City:Knoxville

ROBINSON ST and Iowa 0014 / LINCOLN ST

**Major Cause:**FTY making left turn

**Roadway Type:**Intersection: Four-way intersection

**Severity:**PDO

**Manner of Crash:**Angle, oncoming left turn

**Fatalities:**0

**Surface Conditions:**Dry

**Major Injuries:**0

**Light Conditions:**Daylight

**Minor Injuries:**0

**Weather Conditions:**Clear

**Possible Injuries:**0

**Drug/Alc Involved:**none indicated

**Unknown Injuries:**0

**Property Damage:**\$4500

**Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	North	South	0
<b>Veh Action:</b>	Turning left	Essentially straight	0
<b>Configuration:</b>	4-tire light truck	Passenger car	0
<b>Driver Age:</b>	38	47	0
<b>Driver Gender:</b>	F	F	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	FTY making left turn	none	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0

2009504959 02/24/2009 07:35  
County:63 City:Knoxville

ROBINSON ST and Iowa 0014 / LINCOLN ST

**Major Cause:**Operating in erratic/reckless/careless/aggressive manner

**Roadway Type:**Intersection: Four-way intersection

**Severity:**PDO

**Manner of Crash:**Sideswipe, same direction

**Fatalities:**0

**Surface Conditions:**Dry

**Major Injuries:**0

**Light Conditions:**Daylight

**Minor Injuries:**0

**Weather Conditions:**Clear

**Possible Injuries:**0

**Drug/Alc Involved:**none indicated

**Unknown Injuries:**0

**Property Damage:**\$3000

**Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	North	North	0
<b>Veh Action:</b>	Essentially straight	Changing lanes	0
<b>Configuration:</b>	Passenger car	Sport utility vehicle	0
<b>Driver Age:</b>	41	53	0
<b>Driver Gender:</b>	F	M	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	none	Erratic/reckless/aggrssv	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0



# Crash Detail Report

Lincoln St & W Robinson St

Report Version 1.3 Aug 2006

2009528321 10/01/2009 07:45  
County:63 City:Knoxville

ROBINSON ST and Iowa 0014 / LINCOLN ST

**Major Cause:**Crossed centerline

**Roadway Type:**Intersection: Four-way intersection

**Severity:**PDO

**Manner of Crash:**Angle, oncoming left turn

**Fatalities:**0

**Surface Conditions:**Wet

**Major Injuries:**0

**Light Conditions:**Dawn

**Minor Injuries:**0

**Weather Conditions:**Rain

**Possible Injuries:**0

**Drug/Alc Involved:**none indicated

**Unknown Injuries:**0

**Property Damage:**\$2500

**Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	South	North	0
<b>Veh Action:</b>	Turning left	Essentially straight	0
<b>Configuration:</b>	Passenger car	Passenger car	0
<b>Driver Age:</b>	16	58	0
<b>Driver Gender:</b>	F	F	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	Made improper turn	none	0
<b>Drivr Contr 2:</b>	FTY making left turn	not reported	0
<b>Fixed Object:</b>	none	none	0

2009536560 10/23/2009 15:43  
County:63 City:Knoxville

ROBINSON ST and Iowa 0014 / LINCOLN ST

**Major Cause:**Other: No improper action

**Roadway Type:**Intersection: Four-way intersection

**Severity:**PDO

**Manner of Crash:**Rear-end

**Fatalities:**0

**Surface Conditions:**Dry

**Major Injuries:**0

**Light Conditions:**Daylight

**Minor Injuries:**0

**Weather Conditions:**Clear

**Possible Injuries:**0

**Drug/Alc Involved:**none indicated

**Unknown Injuries:**0

**Property Damage:**\$5000

**Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	South	South	0
<b>Veh Action:</b>	Slowing/stopping	Essentially straight	0
<b>Configuration:</b>	Passenger car	Van or mini-van	0
<b>Driver Age:</b>	42	48	0
<b>Driver Gender:</b>	F	M	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	none	none	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0



# Crash Detail Report

Lincoln St & W Robinson St

Report Version 1.3 Aug 2006

2009547426 12/17/2009 16:48  
County:63 City:Knoxville

ROBINSON ST and Iowa 0014 / LINCOLN ST

**Major Cause:**FTY making left turn

**Roadway Type:**Intersection: Four-way intersection

**Severity:**PDO

**Manner of Crash:**Head-on

**Fatalities:**0

**Surface Conditions:**Dry

**Major Injuries:**0

**Light Conditions:**Dusk

**Minor Injuries:**0

**Weather Conditions:**Clear

**Possible Injuries:**0

**Drug/Alc Involved:**none indicated

**Unknown Injuries:**0

**Property Damage:**\$7000

**Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	South	North	0
<b>Veh Action:</b>	Turning left	Essentially straight	0
<b>Configuration:</b>	4-tire light truck	Passenger car	0
<b>Driver Age:</b>	18	24	0
<b>Driver Gender:</b>	M	F	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	FTY making left turn	none	0
<b>Drivr Contr 2:</b>	Vision obstructed	not reported	0
<b>Fixed Object:</b>	none	none	0

2010547435 01/04/2010 16:40  
County:63 City:Knoxville

Iowa 0014 / LINCOLN ST measuring 123 Feet South from ROBINSON ST and Iowa 0014 / LINCOLN ST

**Major Cause:**FTY from driveway

**Roadway Type:**Non-intersection: Business drive

**Severity:**PDO

**Manner of Crash:**Angle, oncoming left turn

**Fatalities:**0

**Surface Conditions:**Dry

**Major Injuries:**0

**Light Conditions:**Daylight

**Minor Injuries:**0

**Weather Conditions:**Clear

**Possible Injuries:**0

**Drug/Alc Involved:**none indicated

**Unknown Injuries:**0

**Property Damage:**\$4500

**Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	West	North	0
<b>Veh Action:</b>	Turning left	Essentially straight	0
<b>Configuration:</b>	Passenger car	Passenger car	0
<b>Driver Age:</b>	21	30	0
<b>Driver Gender:</b>	M	F	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	FTY from driveway	none	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0



# Crash Detail Report

Lincoln St & W Robinson St

Report Version 1.3 Aug 2006

2010562124 02/02/2010 15:30  
County:63 City:Knoxville

ROBINSON ST and Iowa 0014 / LINCOLN ST

**Major Cause:** unknown  
**Roadway Type:** Non-intersection: No special feature  
**Severity:** PDO      **Manner of Crash:** Rear-end  
**Fatalities:** 0      **Surface Conditions:** Dry  
**Major Injuries:** 0      **Light Conditions:** Daylight  
**Minor Injuries:** 0      **Weather Conditions:** Partly cloudy  
**Possible Injuries:** 0      **Drug/Alc Involved:** none indicated  
**Unknown Injuries:** 0      **Property Damage:** \$1898      **Number of Vehicles:** 2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	not reported	not reported	0
<b>Veh Action:</b>	unknown	Slowing/stopping	0
<b>Configuration:</b>	Passenger car	Passenger car	0
<b>Driver Age:</b>	unknown	16	0
<b>Driver Gender:</b>	M	F	0
<b>Driver Cond:</b>	not reported	Normal	0
<b>Drivr Contr 1:</b>	unknown	unknown	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0

2010575728 06/01/2010 14:49  
County:63 City:Knoxville

ROBINSON ST and Iowa 0014 / LINCOLN ST

**Major Cause:** FTY making left turn  
**Roadway Type:** Intersection: Four-way intersection  
**Severity:** Poss/Unk      **Manner of Crash:** Angle, oncoming left turn  
**Fatalities:** 0      **Surface Conditions:** Dry  
**Major Injuries:** 0      **Light Conditions:** Daylight  
**Minor Injuries:** 0      **Weather Conditions:** Partly cloudy  
**Possible Injuries:** 1      **Drug/Alc Involved:** none indicated  
**Unknown Injuries:** 0      **Property Damage:** \$8000      **Number of Vehicles:** 2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	West	East	0
<b>Veh Action:</b>	Turning left	Essentially straight	0
<b>Configuration:</b>	Passenger car	Passenger car	0
<b>Driver Age:</b>	82	16	0
<b>Driver Gender:</b>	F	F	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	FTY making left turn	none	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0



# Crash Detail Report

Lincoln St & W Robinson St

Report Version 1.3 Aug 2006

2010583450 07/25/2010 19:40  
County:63 City:Knoxville

ROBINSON ST and Iowa 0014 / LINCOLN ST

**Major Cause:**FTY other  
**Roadway Type:**Intersection: Four-way intersection  
**Severity:**PDO                      **Manner of Crash:**Broadside  
**Fatalities:**0                      **Surface Conditions:**Dry  
**Major Injuries:**0                      **Light Conditions:**Daylight  
**Minor Injuries:**0                      **Weather Conditions:**Partly cloudy  
**Possible Injuries:**0                      **Drug/Alc Involved:**none indicated  
**Unknown Injuries:**0                      **Property Damage:**\$6000                      **Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	North	West	0
<b>Veh Action:</b>	Essentially straight	Turning left	0
<b>Configuration:</b>	Passenger car	Passenger car	0
<b>Driver Age:</b>	17	34	0
<b>Driver Gender:</b>	M	M	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	FTY other	none	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0

2010588435 08/24/2010 11:47  
County:63 City:Knoxville

IOWA 0014 / LINCOLN STREET AT CASEY'S SOUTH (203 SOUTH LINCOLN ST)

**Major Cause:**FTY from driveway  
**Roadway Type:**Non-intersection: Business drive  
**Severity:**PDO                      **Manner of Crash:**Broadside  
**Fatalities:**0                      **Surface Conditions:**Dry  
**Major Injuries:**0                      **Light Conditions:**Daylight  
**Minor Injuries:**0                      **Weather Conditions:**Clear  
**Possible Injuries:**0                      **Drug/Alc Involved:**none indicated  
**Unknown Injuries:**0                      **Property Damage:**\$4500                      **Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	West	North	0
<b>Veh Action:</b>	88	Essentially straight	0
<b>Configuration:</b>	Passenger car	Passenger car	0
<b>Driver Age:</b>	24	17	0
<b>Driver Gender:</b>	M	F	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	FTY from driveway	none	0
<b>Drivr Contr 2:</b>	Vision obstructed	not reported	0
<b>Fixed Object:</b>	none	none	0



# Crash Detail Report

Lincoln St & W Robinson St

Report Version 1.3 Aug 2006

2010588436 08/26/2010 17:31  
County:63 City:Knoxville

IOWA 0014 / LINCOLN ST (200 BLOCK) AT CASEYS SOUTH ENTRANCE

**Major Cause:** unknown  
**Roadway Type:** Non-intersection: Business drive  
**Severity:** PDO      **Manner of Crash:** Sideswipe, same direction  
**Fatalities:** 0      **Surface Conditions:** Dry  
**Major Injuries:** 0      **Light Conditions:** Daylight  
**Minor Injuries:** 0      **Weather Conditions:** Partly cloudy  
**Possible Injuries:** 0      **Drug/Alc Involved:** none indicated  
**Unknown Injuries:** 0      **Property Damage:** \$2000      **Number of Vehicles:** 2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	South	South	0
<b>Veh Action:</b>	Essentially straight	Essentially straight	0
<b>Configuration:</b>	Sport utility vehicle	Sport utility vehicle	0
<b>Driver Age:</b>	16	73	0
<b>Driver Gender:</b>	F	F	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	unknown	unknown	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0

2010591528 09/21/2010 16:44  
County:63 City:Knoxville

IOWA 0014 / LINCOLN ST MEASURING 100 FEET SOUTH FROM ROBINSON ST AND IOWA 0014 / LINCOLN ST

**Major Cause:** FTY making left turn  
**Roadway Type:** Non-intersection: Business drive  
**Severity:** PDO      **Manner of Crash:** Broadside  
**Fatalities:** 0      **Surface Conditions:** Wet  
**Major Injuries:** 0      **Light Conditions:** Daylight  
**Minor Injuries:** 0      **Weather Conditions:** Rain  
**Possible Injuries:** 0      **Drug/Alc Involved:** none indicated  
**Unknown Injuries:** 0      **Property Damage:** \$6000      **Number of Vehicles:** 2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	West	North	0
<b>Veh Action:</b>	Turning left	Essentially straight	0
<b>Configuration:</b>	4-tire light truck	Passenger car	0
<b>Driver Age:</b>	15	31	0
<b>Driver Gender:</b>	M	M	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	FTY making left turn	none	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0



# Crash Detail Report

Lincoln St & W Robinson St

Report Version 1.3 Aug 2006

2010591529 09/21/2010 16:51  
County:63 City:Knoxville

IOWA 0014 / LINCOLN ST 200 BLOCK AT INTERSECTION WITH RACEWAY  
TIRE

**Major Cause:**Operating in erratic/reckless/careless/aggressive manner

**Roadway Type:**Non-intersection: Business drive

**Severity:**Poss/Unk

**Manner of Crash:**Rear-end

**Fatalities:**0

**Surface Conditions:**Wet

**Major Injuries:**0

**Light Conditions:**Daylight

**Minor Injuries:**0

**Weather Conditions:**Rain

**Possible Injuries:**1

**Drug/Alc Involved:**none indicated

**Unknown Injuries:**0

**Property Damage:**\$3000

**Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	South	South	0
<b>Veh Action:</b>	Essentially straight	Turning left	0
<b>Configuration:</b>	Sport utility vehicle	Passenger car	0
<b>Driver Age:</b>	39	43	0
<b>Driver Gender:</b>	M	M	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	Erratic/reckless/aggrssv	none	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0

2010609991 12/05/2010 13:05  
County:63 City:Knoxville

ROBINSON ST and Iowa 0014 / LINCOLN ST

**Major Cause:**Ran traffic signal

**Roadway Type:**Intersection: Four-way intersection

**Severity:**PDO

**Manner of Crash:**Broadside

**Fatalities:**0

**Surface Conditions:**Dry

**Major Injuries:**0

**Light Conditions:**Daylight

**Minor Injuries:**0

**Weather Conditions:**Cloudy

**Possible Injuries:**0

**Drug/Alc Involved:**none indicated

**Unknown Injuries:**0

**Property Damage:**\$4000

**Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	West	South	0
<b>Veh Action:</b>	Essentially straight	Essentially straight	0
<b>Configuration:</b>	Sport utility vehicle	Passenger car	0
<b>Driver Age:</b>	47	30	0
<b>Driver Gender:</b>	F	F	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	none	Ran traffic signal	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0



# Crash Detail Report

Lincoln St & W Robinson St

Report Version 1.3 Aug 2006

2011623056 02/28/2011 17:03  
County:63 City:Knoxville

IOWA 0014 / LINCOLN ST MEASURING 70 FEET SOUTH FROM ROBINSON ST AND IOWA 0014 / LINCOLN ST

**Major Cause:**FTY from driveway

**Roadway Type:**Non-intersection: Business drive

**Severity:**PDO

**Manner of Crash:**Broadside

**Fatalities:**0

**Surface Conditions:**Dry

**Major Injuries:**0

**Light Conditions:**Daylight

**Minor Injuries:**0

**Weather Conditions:**Partly cloudy

**Possible Injuries:**0

**Drug/Alc Involved:**none indicated

**Unknown Injuries:**0

**Property Damage:**\$2500

**Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	West	North	0
<b>Veh Action:</b>	Entering (merging)	Essentially straight	0
<b>Configuration:</b>	Passenger car	4-tire light truck	0
<b>Driver Age:</b>	16	58	0
<b>Driver Gender:</b>	F	M	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	FTY from driveway	none	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0

2011631272 05/17/2011 15:40  
County:63 City:Knoxville

IOWA 0014 / LINCOLN ST MEASURING 60 FEET SOUTH FROM ROBINSON ST AND IOWA 0014 / LINCOLN ST

**Major Cause:**FTY from driveway

**Roadway Type:**Non-intersection: Business drive

**Severity:**Poss/Unk

**Manner of Crash:**Angle, oncoming left turn

**Fatalities:**0

**Surface Conditions:**Dry

**Major Injuries:**0

**Light Conditions:**Daylight

**Minor Injuries:**0

**Weather Conditions:**Clear

**Possible Injuries:**1

**Drug/Alc Involved:**none indicated

**Unknown Injuries:**0

**Property Damage:**\$6000

**Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	South	North	0
<b>Veh Action:</b>	88	Essentially straight	0
<b>Configuration:</b>	Van or mini-van	Sport utility vehicle	0
<b>Driver Age:</b>	40	44	0
<b>Driver Gender:</b>	F	M	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	FTY from driveway	none	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0



# Crash Detail Report

Lincoln St & W Robinson St

Report Version 1.3 Aug 2006

2011635299 06/19/2011 17:28  
County:63 City:Knoxville

ROBINSON ST and Iowa 0014 / LINCOLN ST

**Major Cause:**FTY making left turn

**Roadway Type:**Intersection: Four-way intersection

**Severity:**PDO

**Manner of Crash:**Angle, oncoming left turn

**Fatalities:**0

**Surface Conditions:**Dry

**Major Injuries:**0

**Light Conditions:**Daylight

**Minor Injuries:**0

**Weather Conditions:**Partly cloudy

**Possible Injuries:**0

**Drug/Alc Involved:**none indicated

**Unknown Injuries:**0

**Property Damage:**\$2000

**Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	West	East	0
<b>Veh Action:</b>	Turning left	Essentially straight	0
<b>Configuration:</b>	Passenger car	Passenger car	0
<b>Driver Age:</b>	30	16	0
<b>Driver Gender:</b>	F	F	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	FTY making left turn	none	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0

2012666128 01/03/2012 11:27  
County:63 City:Knoxville

ROBINSON ST and Iowa 0014 / LINCOLN ST

**Major Cause:**Ran traffic signal

**Roadway Type:**Intersection: Four-way intersection

**Severity:**PDO

**Manner of Crash:**Broadside

**Fatalities:**0

**Surface Conditions:**Dry

**Major Injuries:**0

**Light Conditions:**Daylight

**Minor Injuries:**0

**Weather Conditions:**Partly cloudy

**Possible Injuries:**0

**Drug/Alc Involved:**none indicated

**Unknown Injuries:**0

**Property Damage:**\$3500

**Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	East	South	0
<b>Veh Action:</b>	Essentially straight	Essentially straight	0
<b>Configuration:</b>	Passenger car	4-tire light truck	0
<b>Driver Age:</b>	53	56	0
<b>Driver Gender:</b>	F	M	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	Ran traffic signal	none	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0



# Crash Detail Report

Lincoln St & W Robinson St

Report Version 1.3 Aug 2006

2012669516 01/19/2012 16:39  
County:63 City:Knoxville

ROBINSON ST and Iowa 0014 / LINCOLN ST

**Major Cause:**FTY making left turn

**Roadway Type:**Intersection: Four-way intersection

**Severity:**Poss/Unk

**Manner of Crash:**Broadside

**Fatalities:**0

**Surface Conditions:**Dry

**Major Injuries:**0

**Light Conditions:**Daylight

**Minor Injuries:**0

**Weather Conditions:**Clear

**Possible Injuries:**1

**Drug/Alc Involved:**none indicated

**Unknown Injuries:**0

**Property Damage:**\$9500

**Number of Vehicles:**3

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	South	North	West
<b>Veh Action:</b>	Turning left	Essentially straight	Stopped for sign/signal
<b>Configuration:</b>	Sport utility vehicle	Sport utility vehicle	Van or mini-van
<b>Driver Age:</b>	30	50	45
<b>Driver Gender:</b>	F	F	F
<b>Driver Cond:</b>	Normal	Normal	Normal
<b>Drivr Contr 1:</b>	FTY making left turn	none	none
<b>Drivr Contr 2:</b>	not reported	not reported	not reported
<b>Fixed Object:</b>	none	none	none

2012673224 02/01/2012 10:14  
County:63 City:Knoxville

W ROBINSON ST and Iowa 0014 / LINCOLN ST

**Major Cause:**FTY making left turn

**Roadway Type:**Intersection: Four-way intersection

**Severity:**PDO

**Manner of Crash:**Head-on

**Fatalities:**0

**Surface Conditions:**Dry

**Major Injuries:**0

**Light Conditions:**Daylight

**Minor Injuries:**0

**Weather Conditions:**Clear

**Possible Injuries:**0

**Drug/Alc Involved:**none indicated

**Unknown Injuries:**0

**Property Damage:**\$5500

**Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	South	North	0
<b>Veh Action:</b>	Turning left	Essentially straight	0
<b>Configuration:</b>	Sport utility vehicle	Passenger car	0
<b>Driver Age:</b>	65	17	0
<b>Driver Gender:</b>	F	M	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	FTY making left turn	none	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0



# Crash Detail Report

Lincoln St & W Robinson St

Report Version 1.3 Aug 2006

2012702101 08/14/2012 17:52  
County:63 City:Knoxville

W ROBINSON ST and Iowa 0014 / LINCOLN ST

**Major Cause:**Other: No improper action  
**Roadway Type:**Intersection: Four-way intersection  
**Severity:**Minor      **Manner of Crash:**Broadside  
**Fatalities:**0      **Surface Conditions:**Dry  
**Major Injuries:**0      **Light Conditions:**Daylight  
**Minor Injuries:**1      **Weather Conditions:**Clear  
**Possible Injuries:**0      **Drug/Alc Involved:**none indicated  
**Unknown Injuries:**0      **Property Damage:**\$8000      **Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	East	South	0
<b>Veh Action:</b>	Turning right	Turning right	0
<b>Configuration:</b>	Passenger car	Tractor/semi-trailer	0
<b>Driver Age:</b>	64	33	0
<b>Driver Gender:</b>	F	M	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	none	none	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0

2012708690 09/11/2012 07:59  
County:63 City:Knoxville

W ROBINSON ST and Iowa 0014 / LINCOLN ST

**Major Cause:**Other improper action  
**Roadway Type:**Non-intersection: No special feature  
**Severity:**PDO      **Manner of Crash:**Rear-end  
**Fatalities:**0      **Surface Conditions:**Dry  
**Major Injuries:**0      **Light Conditions:**Daylight  
**Minor Injuries:**0      **Weather Conditions:**Clear  
**Possible Injuries:**0      **Drug/Alc Involved:**none indicated  
**Unknown Injuries:**0      **Property Damage:**\$2500      **Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	West	West	0
<b>Veh Action:</b>	Essentially straight	Slowing/stopping	0
<b>Configuration:</b>	Passenger car	Sport utility vehicle	0
<b>Driver Age:</b>	16	35	0
<b>Driver Gender:</b>	F	F	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	Other improper action	none	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0



# Crash Detail Report

Lincoln St & W Robinson St

Report Version 1.3 Aug 2006

2012708692 09/14/2012 13:52  
County:63 City:Knoxville

W ROBINSON ST and Iowa 0014 / LINCOLN ST

**Major Cause:**Ran traffic signal

**Roadway Type:**Intersection: Four-way intersection

**Severity:**Poss/Unk

**Manner of Crash:**Broadside

**Fatalities:**0

**Surface Conditions:**Dry

**Major Injuries:**0

**Light Conditions:**Daylight

**Minor Injuries:**0

**Weather Conditions:**Partly cloudy

**Possible Injuries:**1

**Drug/Alc Involved:**none indicated

**Unknown Injuries:**0

**Property Damage:**\$5500

**Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	South	West	0
<b>Veh Action:</b>	Essentially straight	Essentially straight	0
<b>Configuration:</b>	Sport utility vehicle	Van or mini-van	0
<b>Driver Age:</b>	46	42	0
<b>Driver Gender:</b>	F	M	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	Ran traffic signal	none	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0

2012708694 09/17/2012 15:52  
County:63 City:Knoxville

W ROBINSON ST and Iowa 0014 / LINCOLN ST

**Major Cause:**FTY making left turn

**Roadway Type:**Intersection: Four-way intersection

**Severity:**Major

**Manner of Crash:**Angle, oncoming left turn

**Fatalities:**0

**Surface Conditions:**Wet

**Major Injuries:**1

**Light Conditions:**Daylight

**Minor Injuries:**1

**Weather Conditions:**Rain

**Possible Injuries:**0

**Drug/Alc Involved:**none indicated

**Unknown Injuries:**0

**Property Damage:**\$12000

**Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	South	North	0
<b>Veh Action:</b>	Turning left	Essentially straight	0
<b>Configuration:</b>	4-tire light truck	Sport utility vehicle	0
<b>Driver Age:</b>	80	56	0
<b>Driver Gender:</b>	M	F	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	FTY making left turn	none	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0



# Crash Detail Report

Lincoln St & W Robinson St

Report Version 1.3 Aug 2006

2012708695 09/24/2012 07:43

W ROBINSON ST and Iowa 0014 / LINCOLN ST

County:63 City:Knoxville

**Major Cause:**Ran traffic signal

**Roadway Type:**Intersection: Four-way intersection

**Severity:**Poss/Unk

**Manner of Crash:**Broadside

**Fatalities:**0

**Surface Conditions:**Dry

**Major Injuries:**0

**Light Conditions:**Daylight

**Minor Injuries:**0

**Weather Conditions:**Clear

**Possible Injuries:**1

**Drug/Alc Involved:**none indicated

**Unknown Injuries:**0

**Property Damage:**\$8000

**Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	South	East	0
<b>Veh Action:</b>	Essentially straight	Essentially straight	0
<b>Configuration:</b>	Sport utility vehicle	Van or mini-van	0
<b>Driver Age:</b>	63	60	0
<b>Driver Gender:</b>	F	F	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	Ran traffic signal	none	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0

2012711247 10/30/2012 10:49

W ROBINSON ST and Iowa 0014 / LINCOLN ST

County:63 City:Knoxville

**Major Cause:**Ran traffic signal

**Roadway Type:**Intersection: Four-way intersection

**Severity:**PDO

**Manner of Crash:**Broadside

**Fatalities:**0

**Surface Conditions:**Dry

**Major Injuries:**0

**Light Conditions:**Daylight

**Minor Injuries:**0

**Weather Conditions:**Clear

**Possible Injuries:**0

**Drug/Alc Involved:**none indicated

**Unknown Injuries:**0

**Property Damage:**\$13000

**Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	South	West	0
<b>Veh Action:</b>	Essentially straight	Essentially straight	0
<b>Configuration:</b>	4-tire light truck	4-tire light truck	0
<b>Driver Age:</b>	42	28	0
<b>Driver Gender:</b>	M	M	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	Ran traffic signal	none	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0



# Crash Detail Report

Lincoln St & W Robinson St

Report Version 1.3 Aug 2006

2012713115 11/07/2012 17:05  
County:63 City:Knoxville

W ROBINSON ST 125 FEET WEST OF IOWA 0014 / LINCOLN ST AND  
ROBINSON STREET

**Major Cause:**Followed too close

**Roadway Type:**Non-intersection: No special feature

**Severity:**Minor

**Manner of Crash:**Rear-end

**Fatalities:**0

**Surface Conditions:**Dry

**Major Injuries:**0

**Light Conditions:**Dusk

**Minor Injuries:**2

**Weather Conditions:**Cloudy

**Possible Injuries:**0

**Drug/Alc Involved:**none indicated

**Unknown Injuries:**0

**Property Damage:**\$1000

**Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	East	East	0
<b>Veh Action:</b>	Essentially straight	Essentially straight	0
<b>Configuration:</b>	Passenger car	Passenger car	0
<b>Driver Age:</b>	22	19	0
<b>Driver Gender:</b>	F	F	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	none	Followed too close	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0

2012713112 11/15/2012 15:22  
County:63 City:Knoxville

W ROBINSON ST and Iowa 0014 / LINCOLN ST

**Major Cause:**FTY other

**Roadway Type:**Intersection: Four-way intersection

**Severity:**PDO

**Manner of Crash:**Head-on

**Fatalities:**0

**Surface Conditions:**Dry

**Major Injuries:**0

**Light Conditions:**Daylight

**Minor Injuries:**0

**Weather Conditions:**Partly cloudy

**Possible Injuries:**0

**Drug/Alc Involved:**none indicated

**Unknown Injuries:**0

**Property Damage:**\$2000

**Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	South	North	0
<b>Veh Action:</b>	Essentially straight	Turning left	0
<b>Configuration:</b>	Passenger car	Sport utility vehicle	0
<b>Driver Age:</b>	47	50	0
<b>Driver Gender:</b>	M	F	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	FTY other	FTY other	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0



# Crash Detail Report

Lincoln St & W Robinson St

Report Version 1.3 Aug 2006

2013729478 03/05/2013 07:01  
County:63 City:Knoxville

W ROBINSON ST and Iowa 0014 / LINCOLN ST

**Major Cause:** unknown

**Roadway Type:** Intersection: Four-way intersection

**Severity:** PDO                      **Manner of Crash:** Broadside

**Fatalities:** 0                      **Surface Conditions:** Snow

**Major Injuries:** 0                      **Light Conditions:** Daylight

**Minor Injuries:** 0                      **Weather Conditions:** Clear

**Possible Injuries:** 0                      **Drug/Alc Involved:** none indicated

**Unknown Injuries:** 0                      **Property Damage:** \$4000                      **Number of Vehicles:** 2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	South	West	0
<b>Veh Action:</b>	Essentially straight	Essentially straight	0
<b>Configuration:</b>	Passenger car	Sport utility vehicle	0
<b>Driver Age:</b>	82	43	0
<b>Driver Gender:</b>	M	F	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	unknown	unknown	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0

2013737412 03/08/2013 13:35  
County:63 City:Knoxville

W ROBINSON ST and Iowa 0014 / LINCOLN ST

**Major Cause:** Followed too close

**Roadway Type:** Intersection: Four-way intersection

**Severity:** PDO                      **Manner of Crash:** Rear-end

**Fatalities:** 0                      **Surface Conditions:** Dry

**Major Injuries:** 0                      **Light Conditions:** Daylight

**Minor Injuries:** 0                      **Weather Conditions:** Clear

**Possible Injuries:** 0                      **Drug/Alc Involved:** none indicated

**Unknown Injuries:** 0                      **Property Damage:** \$2500                      **Number of Vehicles:** 3

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	West	West	West
<b>Veh Action:</b>	Essentially straight	Slowing/stopping	Stopped for sign/signal
<b>Configuration:</b>	Sport utility vehicle	Passenger car	Passenger car
<b>Driver Age:</b>	70	48	54
<b>Driver Gender:</b>	M	F	M
<b>Driver Cond:</b>	Normal	Normal	Normal
<b>Drivr Contr 1:</b>	Followed too close	none	none
<b>Drivr Contr 2:</b>	not reported	not reported	not reported
<b>Fixed Object:</b>	none	none	none



# Crash Detail Report

Lincoln St & W Robinson St

Report Version 1.3 Aug 2006

2013744745 05/23/2013 12:33  
County:63 City:Knoxville

W ROBINSON ST and Iowa 0014 / LINCOLN ST

**Major Cause:**FTY other  
**Roadway Type:**Intersection: Four-way intersection  
**Severity:**PDO **Manner of Crash:**Broadside  
**Fatalities:**0 **Surface Conditions:**Dry  
**Major Injuries:**0 **Light Conditions:**Daylight  
**Minor Injuries:**0 **Weather Conditions:**Partly cloudy  
**Possible Injuries:**0 **Drug/Alc Involved:**none indicated  
**Unknown Injuries:**0 **Property Damage:**\$3000 **Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	South	East	0
<b>Veh Action:</b>	Essentially straight	Essentially straight	0
<b>Configuration:</b>	4-tire light truck	Van or mini-van	0
<b>Driver Age:</b>	32	52	0
<b>Driver Gender:</b>	M	M	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	FTY other	FTY other	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0

2013753296 07/29/2013 18:23  
County:63 City:Knoxville

W ROBINSON ST and Iowa 0014 / LINCOLN ST

**Major Cause:**FTY making left turn  
**Roadway Type:**Intersection: Four-way intersection  
**Severity:**PDO **Manner of Crash:**Angle, oncoming left turn  
**Fatalities:**0 **Surface Conditions:**Dry  
**Major Injuries:**0 **Light Conditions:**Daylight  
**Minor Injuries:**0 **Weather Conditions:**Partly cloudy  
**Possible Injuries:**0 **Drug/Alc Involved:**none indicated  
**Unknown Injuries:**0 **Property Damage:**\$3000 **Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	North	South	0
<b>Veh Action:</b>	Turning left	Essentially straight	0
<b>Configuration:</b>	Passenger car	Passenger car	0
<b>Driver Age:</b>	22	60	0
<b>Driver Gender:</b>	M	M	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	FTY making left turn	none	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0



# Crash Detail Report

Lincoln St & W Robinson St

Report Version 1.3 Aug 2006

2013761184 08/10/2013 12:07  
County:63 City:Knoxville

W ROBINSON ST and Iowa 0014 / LINCOLN ST

**Major Cause:**Crossed centerline

**Roadway Type:**Intersection: Four-way intersection

**Severity:**PDO

**Manner of Crash:**Rear-end

**Fatalities:**0

**Surface Conditions:**Dry

**Major Injuries:**0

**Light Conditions:**Daylight

**Minor Injuries:**0

**Weather Conditions:**Clear

**Possible Injuries:**0

**Drug/Alc Involved:**none indicated

**Unknown Injuries:**0

**Property Damage:**\$3000

**Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	North	North	0
<b>Veh Action:</b>	Essentially straight	Essentially straight	0
<b>Configuration:</b>	Sport utility vehicle	Passenger car	0
<b>Driver Age:</b>	17	44	0
<b>Driver Gender:</b>	F	M	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	Followed too close	none	0
<b>Drivr Contr 2:</b>	FTY from parked position	not reported	0
<b>Fixed Object:</b>	none	none	0

2013761186 08/15/2013 10:00  
County:63 City:Knoxville

W ROBINSON ST and Iowa 0014 / LINCOLN ST

**Major Cause:**Followed too close

**Roadway Type:**Non-intersection: Business drive

**Severity:**PDO

**Manner of Crash:**Rear-end

**Fatalities:**0

**Surface Conditions:**Dry

**Major Injuries:**0

**Light Conditions:**Daylight

**Minor Injuries:**0

**Weather Conditions:**Clear

**Possible Injuries:**0

**Drug/Alc Involved:**none indicated

**Unknown Injuries:**0

**Property Damage:**\$6500

**Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	South	South	0
<b>Veh Action:</b>	Essentially straight	Turning left	0
<b>Configuration:</b>	4-tire light truck	Passenger car	0
<b>Driver Age:</b>	39	22	0
<b>Driver Gender:</b>	M	F	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	Followed too close	unknown	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0



# Crash Detail Report

Lincoln St & W Robinson St

Report Version 1.3 Aug 2006

2013761192 08/24/2013 12:35  
County:63 City:Knoxville

W ROBINSON ST and Iowa 0014 / LINCOLN ST

**Major Cause:**Followed too close

**Roadway Type:**Intersection: Four-way intersection

**Severity:**Poss/Unk

**Manner of Crash:**Rear-end

**Fatalities:**0

**Surface Conditions:**Dry

**Major Injuries:**0

**Light Conditions:**Daylight

**Minor Injuries:**0

**Weather Conditions:**Clear

**Possible Injuries:**1

**Drug/Alc Involved:**none indicated

**Unknown Injuries:**0

**Property Damage:**\$2500

**Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	North	North	0
<b>Veh Action:</b>	Essentially straight	Turning right	0
<b>Configuration:</b>	Passenger car	4-tire light truck	0
<b>Driver Age:</b>	58	51	0
<b>Driver Gender:</b>	F	F	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	Followed too close	none	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0

2013761193 08/26/2013 14:12  
County:63 City:Knoxville

W ROBINSON ST and Iowa 0014 / LINCOLN ST

**Major Cause:**FTY making left turn

**Roadway Type:**Intersection: Four-way intersection

**Severity:**PDO

**Manner of Crash:**Angle, oncoming left turn

**Fatalities:**0

**Surface Conditions:**Dry

**Major Injuries:**0

**Light Conditions:**Daylight

**Minor Injuries:**0

**Weather Conditions:**Clear

**Possible Injuries:**0

**Drug/Alc Involved:**none indicated

**Unknown Injuries:**0

**Property Damage:**\$4500

**Number of Vehicles:**3

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	North	South	East
<b>Veh Action:</b>	Turning left	Essentially straight	Stopped for sign/signal
<b>Configuration:</b>	Passenger car	Passenger car	Passenger car
<b>Driver Age:</b>	30	17	59
<b>Driver Gender:</b>	F	F	F
<b>Driver Cond:</b>	Normal	Normal	Normal
<b>Drivr Contr 1:</b>	FTY making left turn	unknown	none
<b>Drivr Contr 2:</b>	not reported	not reported	not reported
<b>Fixed Object:</b>	none	none	none



# Crash Detail Report

Lincoln St & W Robinson St

Report Version 1.3 Aug 2006

2013761191 09/09/2013 16:20  
County:63 City:Knoxville

IOWA 0014 / LINCOLN ST IN FRONT OF 203 SOUTH LINCOLN STREET  
ENTRANCE

**Major Cause:**Crossed centerline

**Roadway Type:**Intersection: Other intersection

**Severity:**Poss/Unk

**Manner of Crash:**Broadside

**Fatalities:**0

**Surface Conditions:**Dry

**Major Injuries:**0

**Light Conditions:**Daylight

**Minor Injuries:**0

**Weather Conditions:**Partly cloudy

**Possible Injuries:**1

**Drug/Alc Involved:**none indicated

**Unknown Injuries:**0

**Property Damage:**\$6500

**Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	West	North	0
<b>Veh Action:</b>	Turning left	Essentially straight	0
<b>Configuration:</b>	Passenger car	Passenger car	0
<b>Driver Age:</b>	19	34	0
<b>Driver Gender:</b>	F	F	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	FTY from parked position	Vision obstructed	0
<b>Drivr Contr 2:</b>	Vision obstructed	not reported	0
<b>Fixed Object:</b>	none	none	0

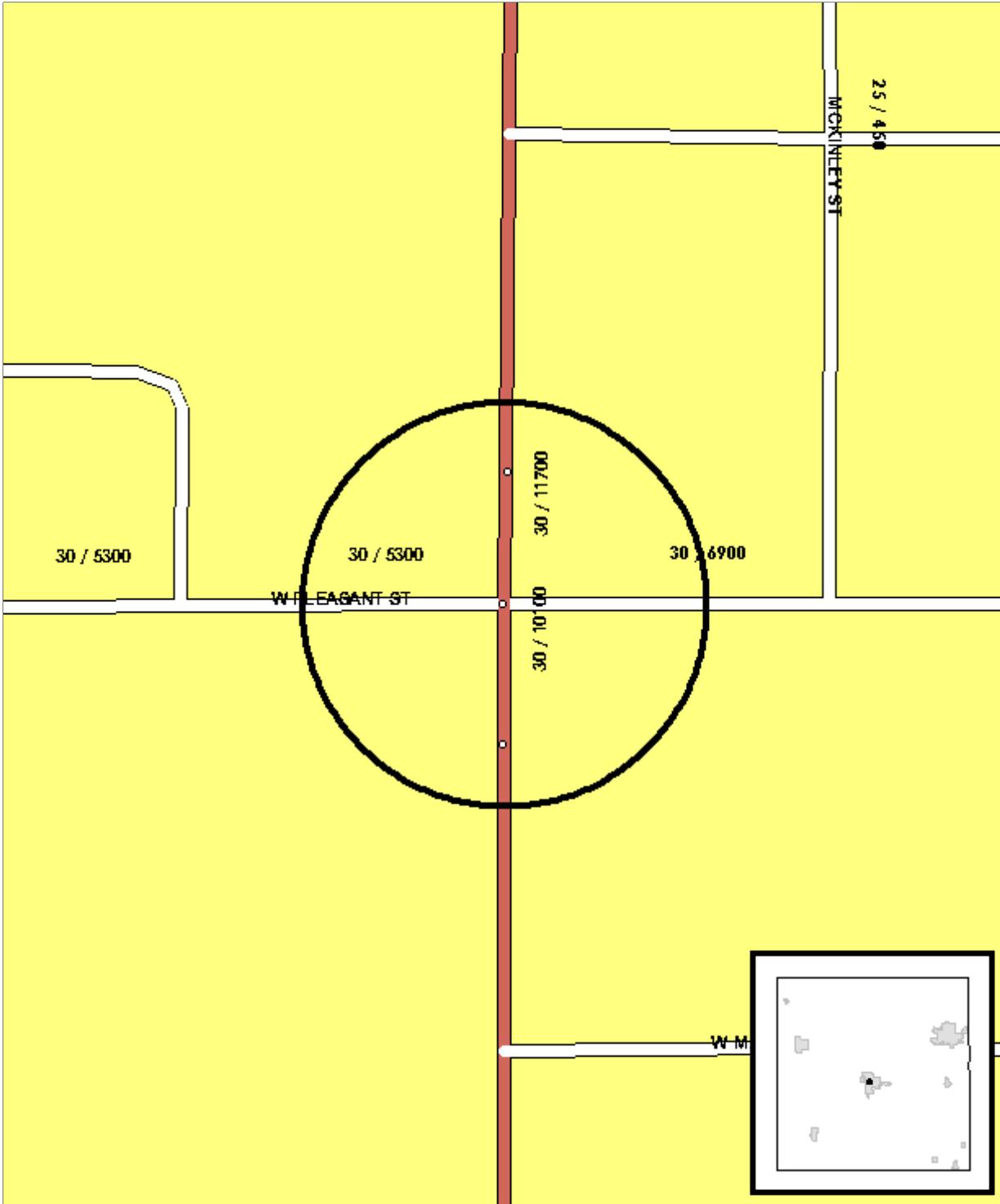


# Location Map

Lincoln St & W Pleasant St

Incidents: 20

Report Version 1.1 Mar 2005



Analyst: C. Cutler

Notes:



# Major Cause Summary

Lincoln St & W Pleasant St

Report Version 1.1 Jan 2005

**Analysis Years:** 2009 [2], 2010 [4], 2011 [7], 2012 [4], 2013 [3]

Crash Summary:		Injury Summary:		Surface Condition Summary:	
Fatal	-	Fatal	-	Dry	15
Major Injury	1	Major Injury	1	Wet	3
Minor Injury	2	Minor Injury	3	Ice	1
Possible/Unknown	2	Possible	6	Snow	-
PDO	15	Unknown	-	Slush	-
<b>Total Crashes</b>	<b>20</b>	<b>Total Injuries</b>	<b>10</b>	Sand/Dirt/Oil/Gravel	1
<p><b>TOT Property Damage:</b> \$85,565</p> <p><b>AVG Property Damage:</b> \$4,278</p>				Water	-
				Other	-
				Unknown	-
				Not Reported	-
				<b>Total Crashes</b>	<b>20</b>

**Major Cause Summary:**

Animal	Improper Backing
1 Ran Traffic Signal	Illegally Parked/Unattended
Ran Stop Sign	Swerving/Evasive Action
1 Crossed Centerline	Over-Correcting/Over-Steering
FTYROW: At Uncontrolled Intersection	Downhill Runaway
FTYROW: Making Right Turn on Red Signal	Equipment Failure
FTYROW: From Stop Sign	Separation of Units
FTYROW: From Yield Sign	Ran Off Road - Right
3 FTYROW: Making Left Turn	Ran Off Road - Straight
FTYROW: From Driveway	Ran Off Road - Left
FTYROW: From Parked Position	2 Lost Control
FTYROW: To Pedestrian	Inattentive/Distracted By: Passenger
4 FTYROW: Other (explain in narrative)	1 Inattentive/Distracted By: Use of Phone or Other
Traveling Wrong Way or on Wrong Side of Rd	Inattentive/Distracted By: Fallen Object
2 Driving Too Fast for Conditions	Inattentive/Distracted By: Fatigued/Asleep
Exceeded Authorized Speed	1 Other: Vision Obstructed
Made Improper Turn	Oversized Load/ Oversized Vehicle
Improper Lane Change	Cargo/Equipment Loss or Shift
Followed Too Close	1 Other: Other Improper Action
Disregarded Railroad Signal	3 Unknown
Disregarded Warning Sign	1 Other: No Improper Action
Operating Vehicle in Reckless/Aggressive Manner	None Indicated

**Selection Filter:**  
 ((YEAR = 2009 or YEAR = 2010 or YEAR = 2011 or YEAR = 2012 or YEAR = 2013))

**Analyst:** C. Cutler

**Notes:**



# Driver and Time Summary

Lincoln St & W Pleasant St

Report Version 1.0 Aug 2006

### Crash Time of Day Summary:

From To	00:00 01:59	02:00 03:59	04:00 05:59	06:00 07:59	08:00 09:59	10:00 11:59	12:00 13:59	14:00 15:59	16:00 17:59	18:00 19:59	20:00 21:59	22:00 23:59	NR	Total	%
SUN	-	-	-	-	-	1	-	-	1	-	-	-	-	2	10
MON	-	-	-	-	1	-	-	-	-	-	-	-	-	1	5
TUE	-	-	-	1	2	-	-	1	-	1	-	-	-	5	25
WED	-	-	-	-	-	-	1	2	1	1	-	-	-	5	25
THU	-	-	-	-	-	-	-	2	-	-	-	-	-	2	10
FRI	-	-	-	-	1	-	-	-	1	-	1	1	-	4	20
SAT	-	-	-	-	-	-	-	-	1	-	-	-	-	1	5
Tot.				1	4	1	1	5	4	2	1	1		20	
%				5	20	5	5	25	20	10	5	5			100

### Driver Age/Gender Summary:

Age	Male	Female	NR	Drivers	%
<14	-	-	-		
14	1	-	-	1	2
15	-	-	-		
16	2	-	-	2	5
17	1	1	-	2	5
18	-	1	-	1	2
19	-	-	-		
20	-	-	-		
21 to 24	4	-	-	4	10
25 to 29	2	3	-	5	12
30 to 34	1	1	-	2	5
35 to 39	-	3	-	3	7
40 to 44	1	1	-	2	5
45 to 49	-	3	-	3	7
50 to 54	1	4	-	5	12
55 to 59	2	-	-	2	5
60 to 64	-	1	-	1	2
65 to 69	1	-	-	1	2
70 to 74	2	2	-	4	10
75 to 79	1	-	-	1	2
80 to 84	-	1	-	1	2
85 to 89	-	-	-		
90 to 94	1	-	-	1	2
95 plus	-	-	-		
NR	-	-	-		
Drivers	20	21	0	41	
%	49	51	0		100

### Drug/Alcohol Summary:

	Total	%
Drug		
Alcohol, Less than Statutory		
Alcohol, Statutory		
Drug/Alcohol, Less than Statutory		
Drug/Alcohol, Statutory		
Refused		
Under Influence of Alc/Drugs/Meds		
None Indicated	20	100
<b>Total Crashes</b>	<b>20</b>	<b>100</b>

### Fixed Object Struck Summary:

	Vehs.	%
Bridge/Bridge rail/Overpass		
Underpass/Structure Support		
Culvert		
Ditch/Embankment		
Curb/Island/Raised Median		
Guardrail		
Concrete Barrier		
Tree		
Pole - Utility/Light/Etc		
Sign Post		
Mailbox		
Impact Attenuator		
Other Fixed Object		
None	41	100
<b>Total Vehicles</b>	<b>41</b>	<b>100</b>

### Selection Filter:

((YEAR = 2009 or YEAR = 2010 or YEAR = 2011 or YEAR = 2012 or YEAR = 2013))

**Analyst:** C. Cutler

**Notes:**



# Crash Detail Report

Lincoln St & W Pleasant St

Report Version 1.3 Aug 2006

2009499137 03/05/2009 15:27  
County:63 City:Knoxville

200 BLK N. LINCOLN

**Major Cause:**Inattentive/distracted by: Use of phone or other device

**Roadway Type:**Non-intersection: No special feature

**Severity:**Major

**Manner of Crash:**Rear-end

**Fatalities:**0

**Surface Conditions:**Dry

**Major Injuries:**1

**Light Conditions:**Daylight

**Minor Injuries:**0

**Weather Conditions:**Clear

**Possible Injuries:**2

**Drug/Alc Involved:**none indicated

**Unknown Injuries:**0

**Property Damage:**\$3000

**Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	North	North	0
<b>Veh Action:</b>	Essentially straight	Essentially straight	0
<b>Configuration:</b>	4-tire light truck	Passenger car	0
<b>Driver Age:</b>	42	48	0
<b>Driver Gender:</b>	F	F	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	Distracted phone/device	none	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0

2009614014 08/14/2009 23:02  
County:63 City:Knoxville

PLEASANT ST and Iowa 0014 / LINCOLN ST

**Major Cause:**Other: No improper action

**Roadway Type:**Intersection: Four-way intersection

**Severity:**PDO

**Manner of Crash:**Rear-end

**Fatalities:**0

**Surface Conditions:**Dry

**Major Injuries:**0

**Light Conditions:**Dark - roadway lighted

**Minor Injuries:**0

**Weather Conditions:**Clear

**Possible Injuries:**0

**Drug/Alc Involved:**none indicated

**Unknown Injuries:**0

**Property Damage:**\$3000

**Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	South	South	0
<b>Veh Action:</b>	Turning left	Turning left	0
<b>Configuration:</b>	Passenger car	4-tire light truck	0
<b>Driver Age:</b>	17	25	0
<b>Driver Gender:</b>	M	M	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	none	none	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0



# Crash Detail Report

Lincoln St & W Pleasant St

Report Version 1.3 Aug 2006

2010547434 01/04/2010 09:15  
County:63 City:Knoxville

PLEASANT ST and Iowa 0014 / LINCOLN ST

**Major Cause:** unknown  
**Roadway Type:** Intersection: Four-way intersection  
**Severity:** PDO                      **Manner of Crash:** Broadside  
**Fatalities:** 0                      **Surface Conditions:** Sand/mud/dirt/oil/gravel  
**Major Injuries:** 0                      **Light Conditions:** Daylight  
**Minor Injuries:** 0                      **Weather Conditions:** Clear  
**Possible Injuries:** 0                      **Drug/Alc Involved:** none indicated  
**Unknown Injuries:** 0                      **Property Damage:** \$4500                      **Number of Vehicles:** 2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	South	West	0
<b>Veh Action:</b>	Essentially straight	Essentially straight	0
<b>Configuration:</b>	Passenger car	Passenger car	0
<b>Driver Age:</b>	72	26	0
<b>Driver Gender:</b>	F	F	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	unknown	unknown	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0

2010575730 06/01/2010 18:47  
County:63 City:Knoxville

PLEASANT ST and Iowa 0014 / LINCOLN ST

**Major Cause:** Other improper action  
**Roadway Type:** Non-intersection: No special feature  
**Severity:** PDO                      **Manner of Crash:** Rear-end  
**Fatalities:** 0                      **Surface Conditions:** Wet  
**Major Injuries:** 0                      **Light Conditions:** Daylight  
**Minor Injuries:** 0                      **Weather Conditions:** Rain  
**Possible Injuries:** 0                      **Drug/Alc Involved:** none indicated  
**Unknown Injuries:** 0                      **Property Damage:** \$3100                      **Number of Vehicles:** 2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	East	East	0
<b>Veh Action:</b>	Essentially straight	Essentially straight	0
<b>Configuration:</b>	4-tire light truck	4-tire light truck	0
<b>Driver Age:</b>	52	23	0
<b>Driver Gender:</b>	M	M	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	Other improper action	none	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0



# Crash Detail Report

Lincoln St & W Pleasant St

Report Version 1.3 Aug 2006

2010579099 06/18/2010 16:40 PLEASANT ST and Iowa 0014 / LINCOLN ST  
County:63 City:Knoxville

**Major Cause:**Ran traffic signal

**Roadway Type:**Intersection: Four-way intersection

**Severity:**PDO

**Manner of Crash:**Sideswipe, same direction

**Fatalities:**0

**Surface Conditions:**Dry

**Major Injuries:**0

**Light Conditions:**Daylight

**Minor Injuries:**0

**Weather Conditions:**Cloudy

**Possible Injuries:**0

**Drug/Alc Involved:**none indicated

**Unknown Injuries:**0

**Property Damage:**\$2500

**Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	South	West	0
<b>Veh Action:</b>	Essentially straight	Turning left	0
<b>Configuration:</b>	Tractor/semi-trailer	Sport utility vehicle	0
<b>Driver Age:</b>	73	79	0
<b>Driver Gender:</b>	M	M	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	Ran traffic signal	none	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0

2010579100 06/19/2010 17:53 PLEASANT ST and Iowa 0014 / LINCOLN ST  
County:63 City:Knoxville

**Major Cause:**FTY making left turn

**Roadway Type:**Intersection: Four-way intersection

**Severity:**PDO

**Manner of Crash:**Angle, oncoming left turn

**Fatalities:**0

**Surface Conditions:**Dry

**Major Injuries:**0

**Light Conditions:**Daylight

**Minor Injuries:**0

**Weather Conditions:**Clear

**Possible Injuries:**0

**Drug/Alc Involved:**none indicated

**Unknown Injuries:**0

**Property Damage:**\$7000

**Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	North	South	0
<b>Veh Action:</b>	Essentially straight	Turning left	0
<b>Configuration:</b>	Passenger car	Passenger car	0
<b>Driver Age:</b>	24	54	0
<b>Driver Gender:</b>	M	F	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	none	FTY making left turn	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0



# Crash Detail Report

Lincoln St & W Pleasant St

Report Version 1.3 Aug 2006

2011623891 02/03/2011 15:19  
County:63 City:Knoxville

PLEASANT ST and Iowa 0014 / LINCOLN ST

**Major Cause:**FTY other  
**Roadway Type:**Intersection: Four-way intersection  
**Severity:**PDO                      **Manner of Crash:**Broadside  
**Fatalities:**0                      **Surface Conditions:**Dry  
**Major Injuries:**0                  **Light Conditions:**Daylight  
**Minor Injuries:**0                  **Weather Conditions:**Partly cloudy  
**Possible Injuries:**0              **Drug/Alc Involved:**none indicated  
**Unknown Injuries:**0              **Property Damage:**\$6000                      **Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	East	South	0
<b>Veh Action:</b>	Essentially straight	Essentially straight	0
<b>Configuration:</b>	4-tire light truck	Passenger car	0
<b>Driver Age:</b>	16	32	0
<b>Driver Gender:</b>	M	F	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	FTY other	none	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0

2011624735 03/29/2011 08:29  
County:63 City:Knoxville

PLEASANT ST and Iowa 0014 / LINCOLN ST

**Major Cause:**Driving too fast for conditions  
**Roadway Type:**Intersection: Four-way intersection  
**Severity:**PDO                      **Manner of Crash:**Rear-end  
**Fatalities:**0                      **Surface Conditions:**Wet  
**Major Injuries:**0                  **Light Conditions:**Daylight  
**Minor Injuries:**0                  **Weather Conditions:**Cloudy  
**Possible Injuries:**0              **Drug/Alc Involved:**none indicated  
**Unknown Injuries:**0              **Property Damage:**\$1500                      **Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	West	West	0
<b>Veh Action:</b>	Essentially straight	Stopped for sign/signal	0
<b>Configuration:</b>	4-tire light truck	4-tire light truck	0
<b>Driver Age:</b>	35	54	0
<b>Driver Gender:</b>	F	F	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	Too fast for conditions	none	0
<b>Drivr Contr 2:</b>	Lost control	not reported	0
<b>Fixed Object:</b>	none	none	0



# Crash Detail Report

Lincoln St & W Pleasant St

Report Version 1.3 Aug 2006

2011639911 07/20/2011 12:30  
County:63 City:Knoxville

IOWA 0014 / LINCOLN ST MEASURING 135 FEET NORTH FROM PLEASANT ST AND IOWA 0014 / LINCOLN ST

**Major Cause:**Lost control

**Roadway Type:**Non-intersection: No special feature

**Severity:**Minor

**Manner of Crash:**Non-collision

**Fatalities:**0

**Surface Conditions:**Dry

**Major Injuries:**0

**Light Conditions:**Daylight

**Minor Injuries:**1

**Weather Conditions:**Partly cloudy

**Possible Injuries:**0

**Drug/Alc Involved:**none indicated

**Unknown Injuries:**0

**Property Damage:**\$250

**Number of Vehicles:**1

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	North	0	0
<b>Veh Action:</b>	Essentially straight	0	0
<b>Configuration:</b>	Moped/ATV	0	0
<b>Driver Age:</b>	14	0	0
<b>Driver Gender:</b>	M		
<b>Driver Cond:</b>	Normal	0	0
<b>Drivr Contr 1:</b>	Lost control	0	0
<b>Drivr Contr 2:</b>	not reported	0	0
<b>Fixed Object:</b>	none	0	0

2011641330 08/02/2011 09:31  
County:63 City:Knoxville

PLEASANT ST and Iowa 0014 / LINCOLN ST

**Major Cause:**FTY making left turn

**Roadway Type:**Intersection: Four-way intersection

**Severity:**PDO

**Manner of Crash:**Angle, oncoming left turn

**Fatalities:**0

**Surface Conditions:**Dry

**Major Injuries:**0

**Light Conditions:**Daylight

**Minor Injuries:**0

**Weather Conditions:**Clear

**Possible Injuries:**0

**Drug/Alc Involved:**none indicated

**Unknown Injuries:**0

**Property Damage:**\$6500

**Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	North	South	0
<b>Veh Action:</b>	Essentially straight	Turning left	0
<b>Configuration:</b>	4-tire light truck	4-tire light truck	0
<b>Driver Age:</b>	59	73	0
<b>Driver Gender:</b>	M	M	
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	none	FTY making left turn	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0



# Crash Detail Report

Lincoln St & W Pleasant St

Report Version 1.3 Aug 2006

2011646295 08/12/2011 08:15  
County:63 City:Knoxville

PLEASANT ST and Iowa 0014 / LINCOLN ST

**Major Cause:**Lost control  
**Roadway Type:**Intersection: Four-way intersection  
**Severity:**PDO **Manner of Crash:**Rear-end  
**Fatalities:**0 **Surface Conditions:**Dry  
**Major Injuries:**0 **Light Conditions:**Daylight  
**Minor Injuries:**0 **Weather Conditions:**Cloudy  
**Possible Injuries:**0 **Drug/Alc Involved:**none indicated  
**Unknown Injuries:**0 **Property Damage:**\$4900 **Number of Vehicles:**3

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	South	South	South
<b>Veh Action:</b>	Turning right	Essentially straight	Essentially straight
<b>Configuration:</b>	Sport utility vehicle	Sport utility vehicle	Passenger car
<b>Driver Age:</b>	39	67	38
<b>Driver Gender:</b>	F	M	F
<b>Driver Cond:</b>	Normal	Normal	Normal
<b>Drivr Contr 1:</b>	none	none	Lost control
<b>Drivr Contr 2:</b>	not reported	not reported	not reported
<b>Fixed Object:</b>	none	none	none

2011654423 10/26/2011 15:23  
County:63 City:Knoxville

PLEASANT ST and Iowa 0014 / LINCOLN ST

**Major Cause:**FTY other  
**Roadway Type:**Intersection: Four-way intersection  
**Severity:**PDO **Manner of Crash:**Rear-end  
**Fatalities:**0 **Surface Conditions:**Dry  
**Major Injuries:**0 **Light Conditions:**Daylight  
**Minor Injuries:**0 **Weather Conditions:**Clear  
**Possible Injuries:**0 **Drug/Alc Involved:**none indicated  
**Unknown Injuries:**0 **Property Damage:**\$3000 **Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	East	East	0
<b>Veh Action:</b>	Essentially straight	Stopped for sign/signal	0
<b>Configuration:</b>	Passenger car	Sport utility vehicle	0
<b>Driver Age:</b>	92	28	0
<b>Driver Gender:</b>	M	F	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	FTY other	none	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0



# Crash Detail Report

Lincoln St & W Pleasant St

Report Version 1.3 Aug 2006

2011654424 10/26/2011 16:05  
County:63 City:Knoxville

IOWA 0014 / LINCOLN ST (400 BLOCK NORTH LINCOLN)

**Major Cause:**FTY other  
**Roadway Type:**Intersection: Four-way intersection  
**Severity:**PDO **Manner of Crash:**Rear-end  
**Fatalities:**0 **Surface Conditions:**Dry  
**Major Injuries:**0 **Light Conditions:**Daylight  
**Minor Injuries:**0 **Weather Conditions:**Clear  
**Possible Injuries:**0 **Drug/Alc Involved:**none indicated  
**Unknown Injuries:**0 **Property Damage:**\$8500 **Number of Vehicles:**4

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	South	South	South
<b>Veh Action:</b>	Essentially straight	Stopped for sign/signal	Essentially straight
<b>Configuration:</b>	Sport utility vehicle	Passenger car	Passenger car
<b>Driver Age:</b>	16	54	29
<b>Driver Gender:</b>	M	F	F
<b>Driver Cond:</b>	Normal	Normal	Normal
<b>Drivr Contr 1:</b>	FTY other	none	unknown
<b>Drivr Contr 2:</b>	not reported	not reported	not reported
<b>Fixed Object:</b>	none	none	none

2012678869 02/14/2012 07:49  
County:63 City:Knoxville

W PLEASANT ST and Iowa 0014 / LINCOLN ST

**Major Cause:**Driving too fast for conditions  
**Roadway Type:**Intersection: Four-way intersection  
**Severity:**PDO **Manner of Crash:**Rear-end  
**Fatalities:**0 **Surface Conditions:**Ice  
**Major Injuries:**0 **Light Conditions:**Dawn  
**Minor Injuries:**0 **Weather Conditions:**Fog/smoke  
**Possible Injuries:**0 **Drug/Alc Involved:**none indicated  
**Unknown Injuries:**0 **Property Damage:**\$3700 **Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	South	South	0
<b>Veh Action:</b>	Essentially straight	Essentially straight	0
<b>Configuration:</b>	Passenger car	Van or mini-van	0
<b>Driver Age:</b>	45	55	0
<b>Driver Gender:</b>	F	M	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	Too fast for conditions	Other improper action	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0



# Crash Detail Report

Lincoln St & W Pleasant St

Report Version 1.3 Aug 2006

2012684855 05/01/2012 15:14  
County:63 City:Knoxville

W PLEASANT ST and Iowa 0014 / LINCOLN ST

**Major Cause:** unknown

**Roadway Type:** Intersection: Four-way intersection

**Severity:** PDO      **Manner of Crash:** Rear-end

**Fatalities:** 0      **Surface Conditions:** Dry

**Major Injuries:** 0      **Light Conditions:** Daylight

**Minor Injuries:** 0      **Weather Conditions:** Clear

**Possible Injuries:** 0      **Drug/Alc Involved:** none indicated

**Unknown Injuries:** 0      **Property Damage:** \$2000      **Number of Vehicles:** 2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	South	South	0
<b>Veh Action:</b>	Turning right	Essentially straight	0
<b>Configuration:</b>	Passenger car	4-tire light truck	0
<b>Driver Age:</b>	26	40	0
<b>Driver Gender:</b>	M	M	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	none	unknown	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0

2012692783 06/06/2012 19:12  
County:63 City:Knoxville

W PLEASANT ST and Iowa 0014 / LINCOLN ST

**Major Cause:** unknown

**Roadway Type:** Intersection: Four-way intersection

**Severity:** Poss/Unk      **Manner of Crash:** Broadside

**Fatalities:** 0      **Surface Conditions:** Dry

**Major Injuries:** 0      **Light Conditions:** Daylight

**Minor Injuries:** 0      **Weather Conditions:** Clear

**Possible Injuries:** 3      **Drug/Alc Involved:** none indicated

**Unknown Injuries:** 0      **Property Damage:** \$8000      **Number of Vehicles:** 2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	South	East	0
<b>Veh Action:</b>	Essentially straight	Essentially straight	0
<b>Configuration:</b>	Passenger car	Passenger car	0
<b>Driver Age:</b>	24	17	0
<b>Driver Gender:</b>	M	F	0
<b>Driver Cond:</b>	Emotional/angry/disturbed	Normal	0
<b>Drivr Contr 1:</b>	unknown	unknown	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0



# Crash Detail Report

Lincoln St & W Pleasant St

Report Version 1.3 Aug 2006

2012700432 07/22/2012 16:15  
County:63 City:Knoxville

W PLEASANT ST and Iowa 0014 / LINCOLN ST

**Major Cause:**Crossed centerline

**Roadway Type:**Intersection: Four-way intersection

**Severity:**PDO

**Manner of Crash:**Rear-end

**Fatalities:**0

**Surface Conditions:**Dry

**Major Injuries:**0

**Light Conditions:**Daylight

**Minor Injuries:**0

**Weather Conditions:**Clear

**Possible Injuries:**0

**Drug/Alc Involved:**none indicated

**Unknown Injuries:**0

**Property Damage:**\$2115

**Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	West	West	0
<b>Veh Action:</b>	Stopped for sign/signal	Slowing/stopping	0
<b>Configuration:</b>	Sport utility vehicle	Passenger car	0
<b>Driver Age:</b>	80	46	0
<b>Driver Gender:</b>	F	F	0
<b>Driver Cond:</b>	unknown	unknown	0
<b>Drivr Contr 1:</b>	none	Too fast for conditions	0
<b>Drivr Contr 2:</b>	not reported	Other improper action	0
<b>Fixed Object:</b>	none	none	0

2013737413 04/10/2013 14:40  
County:63 City:Knoxville

W PLEASANT ST and Iowa 0014 / LINCOLN ST

**Major Cause:**Other: Vision obstructed

**Roadway Type:**Intersection: Four-way intersection

**Severity:**PDO

**Manner of Crash:**Sideswipe, same direction

**Fatalities:**0

**Surface Conditions:**Wet

**Major Injuries:**0

**Light Conditions:**Daylight

**Minor Injuries:**0

**Weather Conditions:**Rain

**Possible Injuries:**0

**Drug/Alc Involved:**none indicated

**Unknown Injuries:**0

**Property Damage:**\$7200

**Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	North	North	0
<b>Veh Action:</b>	Essentially straight	Changing lanes	0
<b>Configuration:</b>	Passenger car	Tractor/semi-trailer	0
<b>Driver Age:</b>	73	30	0
<b>Driver Gender:</b>	F	M	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	none	Vision obstructed	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0



# Crash Detail Report

Lincoln St & W Pleasant St

Report Version 1.3 Aug 2006

2013744744 06/07/2013 21:22  
County:63 City:Knoxville

W PLEASANT ST and Iowa 0014 / LINCOLN ST

**Major Cause:**FTY making left turn

**Roadway Type:**Intersection: Four-way intersection

**Severity:**Minor

**Manner of Crash:**Angle, oncoming left turn

**Fatalities:**0

**Surface Conditions:**Dry

**Major Injuries:**0

**Light Conditions:**Dark - roadway lighted

**Minor Injuries:**2

**Weather Conditions:**Clear

**Possible Injuries:**0

**Drug/Alc Involved:**none indicated

**Unknown Injuries:**0

**Property Damage:**\$7000

**Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	West	East	0
<b>Veh Action:</b>	Turning left	Essentially straight	0
<b>Configuration:</b>	Sport utility vehicle	4-tire light truck	0
<b>Driver Age:</b>	18	21	0
<b>Driver Gender:</b>	F	M	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	FTY making left turn	none	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0

2013768176 11/10/2013 11:41  
County:63 City:Knoxville

W PLEASANT ST and Iowa 0014 / LINCOLN ST

**Major Cause:**FTY other

**Roadway Type:**Intersection: Four-way intersection

**Severity:**Poss/Unk

**Manner of Crash:**Sideswipe, same direction

**Fatalities:**0

**Surface Conditions:**Dry

**Major Injuries:**0

**Light Conditions:**Daylight

**Minor Injuries:**0

**Weather Conditions:**Clear

**Possible Injuries:**1

**Drug/Alc Involved:**none indicated

**Unknown Injuries:**0

**Property Damage:**\$1800

**Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	East	East	0
<b>Veh Action:</b>	Changing lanes	Essentially straight	0
<b>Configuration:</b>	Sport utility vehicle	Passenger car	0
<b>Driver Age:</b>	52	62	0
<b>Driver Gender:</b>	F	F	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	FTY other	none	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0

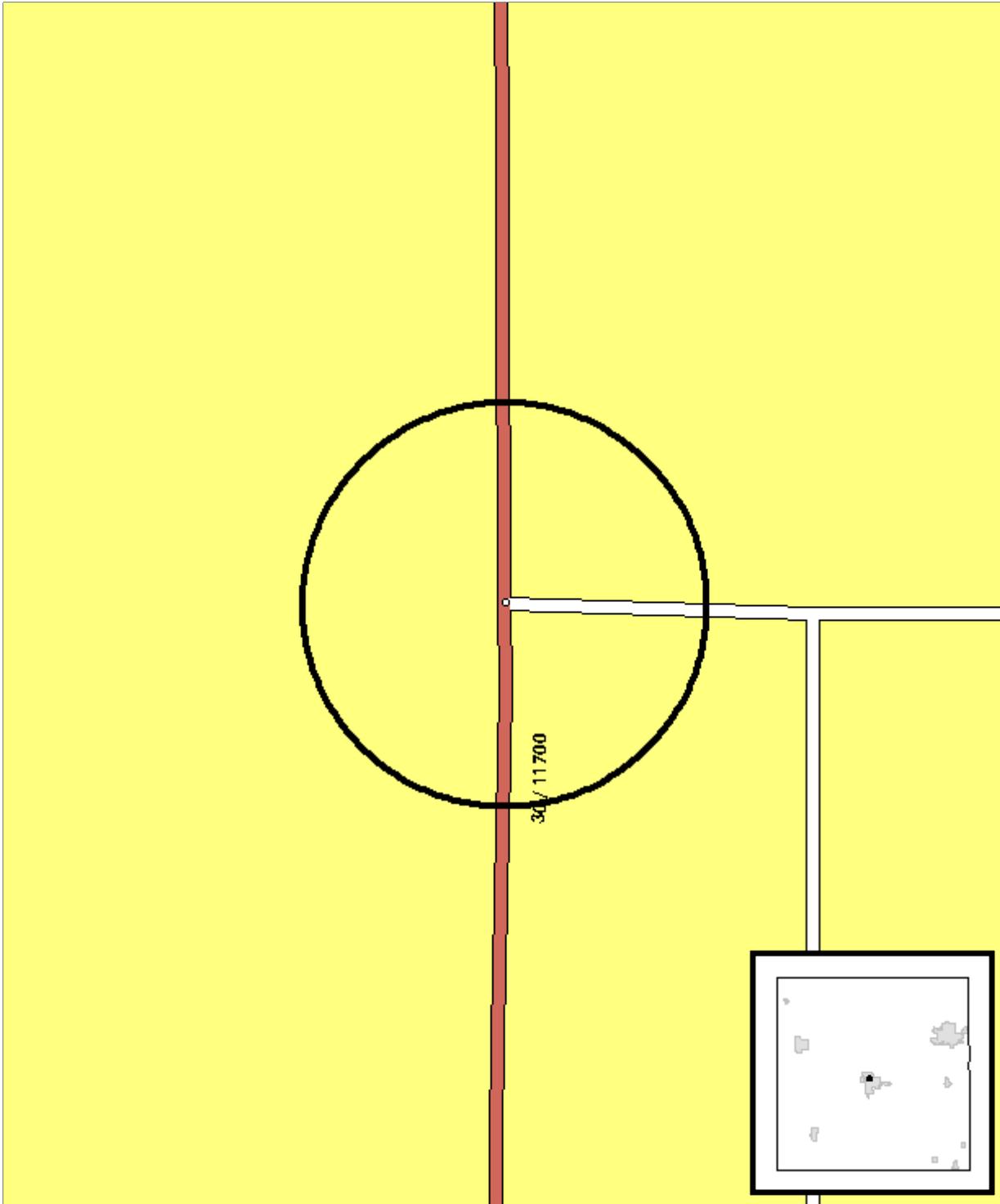


# Location Map

Lincoln St & Rock Island St

Incidents: 5

Report Version 1.1 Mar 2005



Analyst: C. Cutler

Notes:



# Major Cause Summary

Lincoln St & Rock Island St

Report Version 1.1 Jan 2005

**Analysis Years:** 2009 [1], 2012 [1], 2013 [3]

### Crash Summary:

Fatal	-
Major Injury	1
Minor Injury	1
Possible/Unknown	-
PDO	3
<b>Total Crashes</b>	<b>5</b>

### Injury Summary:

Fatal	-
Major Injury	1
Minor Injury	1
Possible	1
Unknown	-
<b>Total Injuries</b>	<b>3</b>

### Surface Condition Summary:

Dry	5
Wet	-
Ice	-
Snow	-
Slush	-
Sand/Dirt/Oil/Gravel	-
Water	-
Other	-
Unknown	-
Not Reported	-
<b>Total Crashes</b>	<b>5</b>

**TOT Property Damage:** \$20,650

**AVG Property Damage:** \$4,130

### Major Cause Summary:

- |   |   |
|---|---|
| <ul style="list-style-type: none"> <li>Animal</li> <li>1 Ran Traffic Signal</li> <li>Ran Stop Sign</li> <li>Crossed Centerline</li> <li>FTYROW: At Uncontrolled Intersection</li> <li>FTYROW: Making Right Turn on Red Signal</li> <li>FTYROW: From Stop Sign</li> <li>FTYROW: From Yield Sign</li> <li>FTYROW: Making Left Turn</li> <li>FTYROW: From Driveway</li> <li>FTYROW: From Parked Position</li> <li>FTYROW: To Pedestrian</li> <li>FTYROW: Other (explain in narrative)</li> <li>Traveling Wrong Way or on Wrong Side of Rd</li> <li>Driving Too Fast for Conditions</li> <li>Exceeded Authorized Speed</li> <li>Made Improper Turn</li> <li>Improper Lane Change</li> <li>1 Followed Too Close</li> <li>Disregarded Railroad Signal</li> <li>Disregarded Warning Sign</li> <li>1 Operating Vehicle in Reckless/Aggressive Manner</li> </ul> | <ul style="list-style-type: none"> <li>Improper Backing</li> <li>Illegally Parked/Unattended</li> <li>Swerving/Evasive Action</li> <li>Over-Correcting/Over-Steering</li> <li>Downhill Runaway</li> <li>Equipment Failure</li> <li>Separation of Units</li> <li>Ran Off Road - Right</li> <li>Ran Off Road - Straight</li> <li>Ran Off Road - Left</li> <li>Lost Control</li> <li>Inattentive/Distracted By: Passenger</li> <li>Inattentive/Distracted By: Use of Phone or Other</li> <li>Inattentive/Distracted By: Fallen Object</li> <li>Inattentive/Distracted By: Fatigued/Asleep</li> <li>Other: Vision Obstructed</li> <li>Oversized Load/ Oversized Vehicle</li> <li>Cargo/Equipment Loss or Shift</li> <li>Other: Other Improper Action</li> <li>2 Unknown</li> <li>Other: No Improper Action</li> <li>None Indicated</li> </ul> |
|---|---|

### Selection Filter:

((YEAR = 2009 or YEAR = 2010 or YEAR = 2011 or YEAR = 2012 or YEAR = 2013))

**Analyst:** C. Cutler

**Notes:**



# Driver and Time Summary

Lincoln St & Rock Island St

Report Version 1.0 Aug 2006

### Crash Time of Day Summary:

From To	00:00 01:59	02:00 03:59	04:00 05:59	06:00 07:59	08:00 09:59	10:00 11:59	12:00 13:59	14:00 15:59	16:00 17:59	18:00 19:59	20:00 21:59	22:00 23:59	NR	Total	%
SUN	-	-	-	-	-	-	-	1	-	-	-	-	-	1	20
MON	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TUE	-	-	-	-	-	1	-	-	-	1	-	-	-	2	40
WED	-	-	-	-	-	-	-	1	-	-	-	-	-	1	20
THU	-	-	-	-	-	-	-	-	1	-	-	-	-	1	20
FRI	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SAT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Tot.</b>						1		2	1	1				5	
<b>%</b>						20		40	20	20					100

### Driver Age/Gender Summary:

Age	Male	Female	NR	Drivers	%
<14	-	-	-	-	-
14	1	-	-	1	10
15	-	-	-	-	-
16	-	-	-	-	-
17	-	-	-	-	-
18	-	-	-	-	-
19	1	-	-	1	10
20	-	-	-	-	-
21 to 24	-	-	-	-	-
25 to 29	-	-	-	-	-
30 to 34	-	1	-	1	10
35 to 39	-	1	-	1	10
40 to 44	-	1	-	1	10
45 to 49	-	-	-	-	-
50 to 54	-	-	-	-	-
55 to 59	1	-	-	1	10
60 to 64	-	1	-	1	10
65 to 69	-	1	-	1	10
70 to 74	1	-	-	1	10
75 to 79	1	-	-	1	10
80 to 84	-	-	-	-	-
85 to 89	-	-	-	-	-
90 to 94	-	-	-	-	-
95 plus	-	-	-	-	-
NR	-	-	-	-	-
<b>Drivers</b>	5	5	0	10	
<b>%</b>	50	50	0		100

### Drug/Alcohol Summary:

	Total	%
Drug		
Alcohol, Less than Statutory		
Alcohol, Statutory		
Drug/Alcohol, Less than Statutory		
Drug/Alcohol, Statutory		
Refused		
Under Influence of Alc/Drugs/Meds		
None Indicated	5	100
<b>Total Crashes</b>	5	100

### Fixed Object Struck Summary:

	Vehs.	%
Bridge/Bridge rail/Overpass		
Underpass/Structure Support		
Culvert		
Ditch/Embankment		
Curb/Island/Raised Median		
Guardrail		
Concrete Barrier		
Tree		
Pole - Utility/Light/Etc		
Sign Post		
Mailbox		
Impact Attenuator		
Other Fixed Object		
None	10	100
<b>Total Vehicles</b>	10	100

### Selection Filter:

((YEAR = 2009 or YEAR = 2010 or YEAR = 2011 or YEAR = 2012 or YEAR = 2013))

**Analyst:** C. Cutler

**Notes:**



# Crash Detail Report

Lincoln St & Rock Island St

Report Version 1.3 Aug 2006

2009493821 02/01/2009 14:17  
County:63 City:Knoxville

Iowa 0014 / LINCOLN ST (Milepost 44) and ROCK ISLAND ST

<b>Major Cause:</b> unknown		<b>Manner of Crash:</b> Sideswipe, same direction	
<b>Roadway Type:</b> unknown		<b>Surface Conditions:</b> Dry	
<b>Severity:</b> PDO	<b>Light Conditions:</b> Daylight		
<b>Fatalities:</b> 0	<b>Weather Conditions:</b> Clear		
<b>Major Injuries:</b> 0	<b>Drug/Alc Involved:</b> none indicated		
<b>Minor Injuries:</b> 0	<b>Property Damage:</b> \$3500	<b>Number of Vehicles:</b> 2	
<b>Possible Injuries:</b> 0			
<b>Unknown Injuries:</b> 0			

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	South	West	0
<b>Veh Action:</b>	Essentially straight	Turning left	0
<b>Configuration:</b>	Passenger car	Van or mini-van	0
<b>Driver Age:</b>	19	60	0
<b>Driver Gender:</b>	M	F	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	unknown	unknown	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0

2012708691 10/10/2012 15:35  
County:63 City:Knoxville

Iowa 0014 / LINCOLN ST (Milepost 44) and W ROCK ISLAND ST

<b>Major Cause:</b> Ran traffic signal		<b>Manner of Crash:</b> Broadside	
<b>Roadway Type:</b> Intersection: Four-way intersection		<b>Surface Conditions:</b> Dry	
<b>Severity:</b> PDO	<b>Light Conditions:</b> Daylight		
<b>Fatalities:</b> 0	<b>Weather Conditions:</b> Clear		
<b>Major Injuries:</b> 0	<b>Drug/Alc Involved:</b> none indicated		
<b>Minor Injuries:</b> 0	<b>Property Damage:</b> \$1900	<b>Number of Vehicles:</b> 2	
<b>Possible Injuries:</b> 0			
<b>Unknown Injuries:</b> 0			

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	North	East	0
<b>Veh Action:</b>	Essentially straight	Essentially straight	0
<b>Configuration:</b>	Passenger car	4-tire light truck	0
<b>Driver Age:</b>	35	56	0
<b>Driver Gender:</b>	F	M	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	Ran traffic signal	none	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0



# Crash Detail Report

Lincoln St & Rock Island St

Report Version 1.3 Aug 2006

2013723747 01/15/2013 18:45  
County:63 City:Knoxville

Iowa 0014 / LINCOLN ST (Milepost 44) and W ROCK ISLAND ST

**Major Cause:**Followed too close  
**Roadway Type:**Intersection: T - intersection  
**Severity:**PDO **Manner of Crash:**Rear-end  
**Fatalities:**0 **Surface Conditions:**Dry  
**Major Injuries:**0 **Light Conditions:**Dark - roadway lighted  
**Minor Injuries:**0 **Weather Conditions:**Partly cloudy  
**Possible Injuries:**0 **Drug/Alc Involved:**none indicated  
**Unknown Injuries:**0 **Property Damage:**\$1750 **Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	North	North	0
<b>Veh Action:</b>	Essentially straight	Essentially straight	0
<b>Configuration:</b>	Van or mini-van	Passenger car	0
<b>Driver Age:</b>	75	72	0
<b>Driver Gender:</b>	M	M	
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	Followed too close	none	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0

2013737414 04/11/2013 17:54  
County:63 City:Knoxville

Iowa 0014 / LINCOLN ST (Milepost 44) and W ROCK ISLAND ST

**Major Cause:**unknown  
**Roadway Type:**Intersection: Four-way intersection  
**Severity:**Minor **Manner of Crash:**Angle, oncoming left turn  
**Fatalities:**0 **Surface Conditions:**Dry  
**Major Injuries:**0 **Light Conditions:**Daylight  
**Minor Injuries:**1 **Weather Conditions:**Partly cloudy  
**Possible Injuries:**1 **Drug/Alc Involved:**none indicated  
**Unknown Injuries:**0 **Property Damage:**\$8000 **Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	South	North	0
<b>Veh Action:</b>	Turning left	Essentially straight	0
<b>Configuration:</b>	Passenger car	4-tire light truck	0
<b>Driver Age:</b>	69	31	0
<b>Driver Gender:</b>	F	F	
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	unknown	unknown	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0



# Crash Detail Report

Lincoln St & Rock Island St

Report Version 1.3 Aug 2006

2013753299 07/16/2013 11:47  
County:63 City:Knoxville

Iowa 0014 / LINCOLN ST (Milepost 44) and W ROCK ISLAND ST

**Major Cause:**Operating in erratic/reckless/careless/aggressive manner

**Roadway Type:**Intersection: T - intersection

**Severity:**Major

**Manner of Crash:**Rear-end

**Fatalities:**0

**Surface Conditions:**Dry

**Major Injuries:**1

**Light Conditions:**Daylight

**Minor Injuries:**0

**Weather Conditions:**Clear

**Possible Injuries:**0

**Drug/Alc Involved:**none indicated

**Unknown Injuries:**0

**Property Damage:**\$5500

**Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	South	South	0
<b>Veh Action:</b>	Essentially straight	Stopped for sign/signal	0
<b>Configuration:</b>	Moped/ATV	Sport utility vehicle	0
<b>Driver Age:</b>	14	40	0
<b>Driver Gender:</b>	M	F	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	Erratic/reckless/aggrssv	none	0
<b>Drivr Contr 2:</b>	Other improper action	not reported	0
<b>Fixed Object:</b>	none	none	0

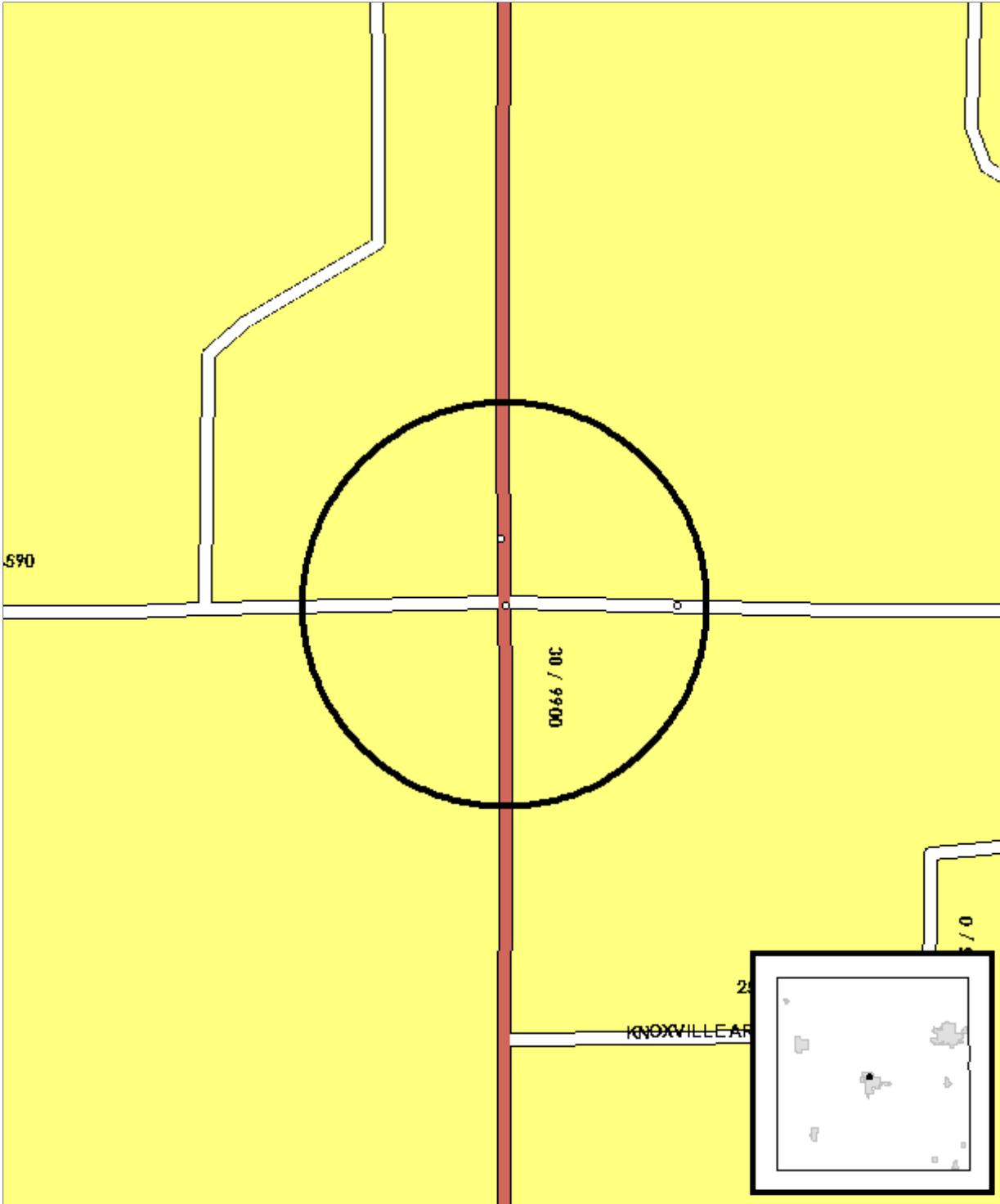


# Location Map

Lincoln St & W Larson St

Incidents: 12

Report Version 1.1 Mar 2005



Analyst: C. Cutler

Notes:



# Major Cause Summary

Lincoln St & W Larson St

Report Version 1.1 Jan 2005

**Analysis Years:** 2010 [3], 2011 [4], 2012 [3], 2013 [2]

### Crash Summary:

Fatal	-
Major Injury	1
Minor Injury	1
Possible/Unknown	4
PDO	6
<b>Total Crashes</b>	<b>12</b>

### Injury Summary:

Fatal	-
Major Injury	1
Minor Injury	1
Possible	5
Unknown	1
<b>Total Injuries</b>	<b>8</b>

### Surface Condition Summary:

Dry	11
Wet	1
Ice	-
Snow	-
Slush	-
Sand/Dirt/Oil/Gravel	-
Water	-
Other	-
Unknown	-
Not Reported	-
<b>Total Crashes</b>	<b>12</b>

**TOT Property Damage:** \$56,897

**AVG Property Damage:** \$4,741

### Major Cause Summary:

Animal	Improper Backing
2 Ran Traffic Signal	Illegally Parked/Unattended
Ran Stop Sign	1 Swerving/Evasive Action
Crossed Centerline	Over-Correcting/Over-Steering
FTYROW: At Uncontrolled Intersection	Downhill Runaway
1 FTYROW: Making Right Turn on Red Signal	Equipment Failure
FTYROW: From Stop Sign	Separation of Units
FTYROW: From Yield Sign	Ran Off Road - Right
2 FTYROW: Making Left Turn	Ran Off Road - Straight
1 FTYROW: From Driveway	Ran Off Road - Left
FTYROW: From Parked Position	Lost Control
FTYROW: To Pedestrian	Inattentive/Distracted By: Passenger
FTYROW: Other (explain in narrative)	Inattentive/Distracted By: Use of Phone or Other
Traveling Wrong Way or on Wrong Side of Rd	Inattentive/Distracted By: Fallen Object
Driving Too Fast for Conditions	Inattentive/Distracted By: Fatigued/Asleep
Exceeded Authorized Speed	Other: Vision Obstructed
1 Made Improper Turn	Oversized Load/ Oversized Vehicle
Improper Lane Change	Cargo/Equipment Loss or Shift
1 Followed Too Close	Other: Other Improper Action
Disregarded Railroad Signal	2 Unknown
Disregarded Warning Sign	1 Other: No Improper Action
Operating Vehicle in Reckless/Aggressive Manner	None Indicated

### Selection Filter:

((YEAR = 2009 or YEAR = 2010 or YEAR = 2011 or YEAR = 2012 or YEAR = 2013))

**Analyst:** C. Cutler

**Notes:**



# Driver and Time Summary

Lincoln St & W Larson St

Report Version 1.0 Aug 2006

### Crash Time of Day Summary:

From To	00:00 01:59	02:00 03:59	04:00 05:59	06:00 07:59	08:00 09:59	10:00 11:59	12:00 13:59	14:00 15:59	16:00 17:59	18:00 19:59	20:00 21:59	22:00 23:59	NR	Total	%
SUN	-	-	-	-	-	-	1	-	-	-	-	-	-	1	8
MON	-	-	-	-	-	1	-	-	-	-	-	-	-	1	8
TUE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WED	-	-	-	-	-	-	-	1	-	-	-	-	-	1	8
THU	1	-	-	-	-	1	-	-	-	-	-	-	-	2	17
FRI	-	-	-	-	-	-	3	1	1	-	-	-	-	5	42
SAT	-	-	-	-	1	-	-	-	1	-	-	-	-	2	17
<b>Tot.</b>	1	-	-	-	1	2	4	2	2	-	-	-	-	12	-
<b>%</b>	8	-	-	-	8	17	33	17	17	-	-	-	-	-	100

### Driver Age/Gender Summary:

Age	Male	Female	NR	Drivers	%
<14	-	-	-	-	-
14	-	-	-	-	-
15	-	-	-	-	-
16	-	1	-	1	5
17	1	-	-	1	5
18	-	-	-	-	-
19	-	-	-	-	-
20	-	1	-	1	5
21 to 24	-	1	-	1	5
25 to 29	-	-	-	-	-
30 to 34	1	1	-	2	9
35 to 39	-	-	-	-	-
40 to 44	1	-	-	1	5
45 to 49	5	-	-	5	23
50 to 54	1	2	-	3	14
55 to 59	1	1	-	2	9
60 to 64	1	-	-	1	5
65 to 69	1	-	-	1	5
70 to 74	1	1	-	2	9
75 to 79	-	-	-	-	-
80 to 84	1	-	-	1	5
85 to 89	-	-	-	-	-
90 to 94	-	-	-	-	-
95 plus	-	-	-	-	-
NR	-	-	-	-	-
<b>Drivers</b>	14	8	0	22	-
<b>%</b>	64	36	0	100	-

### Drug/Alcohol Summary:

	Total	%
Drug	-	-
Alcohol, Less than Statutory	-	-
Alcohol, Statutory	-	-
Drug/Alcohol, Less than Statutory	-	-
Drug/Alcohol, Statutory	-	-
Refused	-	-
Under Influence of Alc/Drugs/Meds	-	-
None Indicated	12	100
<b>Total Crashes</b>	12	100

### Fixed Object Struck Summary:

	Vehs.	%
Bridge/Bridge rail/Overpass	-	-
Underpass/Structure Support	-	-
Culvert	-	-
Ditch/Embankment	-	-
Curb/Island/Raised Median	-	-
Guardrail	-	-
Concrete Barrier	-	-
Tree	-	-
Pole - Utility/Light/Etc	1	5
Sign Post	-	-
Mailbox	-	-
Impact Attenuator	-	-
Other Fixed Object	-	-
None	21	95
<b>Total Vehicles</b>	22	100

### Selection Filter:

((YEAR = 2009 or YEAR = 2010 or YEAR = 2011 or YEAR = 2012 or YEAR = 2013))

**Analyst:** C. Cutler

**Notes:**



# Crash Detail Report

Lincoln St & W Larson St

Report Version 1.3 Aug 2006

2010561150 03/05/2010 12:48  
County:63 City:Knoxville

LARSON ST and Iowa 0014 / LINCOLN ST

**Major Cause:**Ran traffic signal  
**Roadway Type:**Intersection: Four-way intersection  
**Severity:**Poss/Unk      **Manner of Crash:**Broadside  
**Fatalities:**0      **Surface Conditions:**Wet  
**Major Injuries:**0      **Light Conditions:**Daylight  
**Minor Injuries:**0      **Weather Conditions:**Mist  
**Possible Injuries:**1      **Drug/Alc Involved:**none indicated  
**Unknown Injuries:**0      **Property Damage:**\$12000      **Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	West	South	0
<b>Veh Action:</b>	Essentially straight	Essentially straight	0
<b>Configuration:</b>	Passenger car	Passenger car	0
<b>Driver Age:</b>	72	44	0
<b>Driver Gender:</b>	F	M	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	none	Ran traffic signal	0
<b>Drivr Contr 2:</b>	not reported	Distracted by passenger	0
<b>Fixed Object:</b>	none	none	0

2010583452 07/14/2010 15:06  
County:63 City:Knoxville

LARSON ST and Iowa 0014 / LINCOLN ST

**Major Cause:**unknown  
**Roadway Type:**Intersection: Four-way intersection  
**Severity:**PDO      **Manner of Crash:**Rear-end  
**Fatalities:**0      **Surface Conditions:**Dry  
**Major Injuries:**0      **Light Conditions:**Daylight  
**Minor Injuries:**0      **Weather Conditions:**Clear  
**Possible Injuries:**0      **Drug/Alc Involved:**none indicated  
**Unknown Injuries:**0      **Property Damage:**\$2000      **Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	East	East	0
<b>Veh Action:</b>	Backing	Stopped for sign/signal	0
<b>Configuration:</b>	4-tire light truck	Passenger car	0
<b>Driver Age:</b>	49	50	0
<b>Driver Gender:</b>	M	F	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	unknown	none	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0



# Crash Detail Report

Lincoln St & W Larson St

Report Version 1.3 Aug 2006

2010591349 09/04/2010 16:47 LARSON ST and Iowa 0014 / LINCOLN ST  
County:63 City:Knoxville

**Major Cause:**FTY making left turn  
**Roadway Type:**Intersection: Four-way intersection  
**Severity:**PDO **Manner of Crash:**Angle, oncoming left turn  
**Fatalities:**0 **Surface Conditions:**Dry  
**Major Injuries:**0 **Light Conditions:**Daylight  
**Minor Injuries:**0 **Weather Conditions:**Clear  
**Possible Injuries:**0 **Drug/Alc Involved:**none indicated  
**Unknown Injuries:**0 **Property Damage:**\$8000 **Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	North	South	0
<b>Veh Action:</b>	Turning left	Essentially straight	0
<b>Configuration:</b>	Passenger car	Sport utility vehicle	0
<b>Driver Age:</b>	17	34	0
<b>Driver Gender:</b>	M	M	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	FTY making left turn	none	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0

2011638311 07/07/2011 00:41 LARSON ST and Iowa 0014 / LINCOLN ST  
County:63 City:Knoxville

**Major Cause:**Made improper turn  
**Roadway Type:**Intersection: Four-way intersection  
**Severity:**PDO **Manner of Crash:**Non-collision  
**Fatalities:**0 **Surface Conditions:**Dry  
**Major Injuries:**0 **Light Conditions:**Dark - roadway lighted  
**Minor Injuries:**0 **Weather Conditions:**Clear  
**Possible Injuries:**0 **Drug/Alc Involved:**none indicated  
**Unknown Injuries:**0 **Property Damage:**\$5000 **Number of Vehicles:**1

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	East	0	0
<b>Veh Action:</b>	Turning right	0	0
<b>Configuration:</b>	Tractor/semi-trailer	0	0
<b>Driver Age:</b>	71	0	0
<b>Driver Gender:</b>	M	0	0
<b>Driver Cond:</b>	Normal	0	0
<b>Drivr Contr 1:</b>	Made improper turn	0	0
<b>Drivr Contr 2:</b>	not reported	0	0
<b>Fixed Object:</b>	Pole: utility/light/etc	0	0



# Crash Detail Report

Lincoln St & W Larson St

Report Version 1.3 Aug 2006

2011639913 07/15/2011 12:24  
County:63 City:Knoxville

LARSON ST and Iowa 0014 / LINCOLN ST

**Major Cause:** unknown  
**Roadway Type:** Intersection: Four-way intersection  
**Severity:** Poss/Unk      **Manner of Crash:** Broadside  
**Fatalities:** 0      **Surface Conditions:** Dry  
**Major Injuries:** 0      **Light Conditions:** Daylight  
**Minor Injuries:** 0      **Weather Conditions:** Partly cloudy  
**Possible Injuries:** 0      **Drug/Alc Involved:** none indicated  
**Unknown Injuries:** 1      **Property Damage:** \$3647      **Number of Vehicles:** 2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	North	East	0
<b>Veh Action:</b>	Essentially straight	Turning left	0
<b>Configuration:</b>	Passenger car	Passenger car	0
<b>Driver Age:</b>	51	23	0
<b>Driver Gender:</b>	M	F	0
<b>Driver Cond:</b>	unknown	Normal	0
<b>Drivr Contr 1:</b>	unknown	unknown	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0

2011646294 08/06/2011 09:18  
County:63 City:Knoxville

LARSON ST (AT 905 WEST LARSON STREET)

**Major Cause:** Other: No improper action  
**Roadway Type:** Intersection: Other intersection  
**Severity:** PDO      **Manner of Crash:** Broadside  
**Fatalities:** 0      **Surface Conditions:** Dry  
**Major Injuries:** 0      **Light Conditions:** Daylight  
**Minor Injuries:** 0      **Weather Conditions:** Cloudy  
**Possible Injuries:** 0      **Drug/Alc Involved:** none indicated  
**Unknown Injuries:** 0      **Property Damage:** \$2650      **Number of Vehicles:** 2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	East	South	0
<b>Veh Action:</b>	Backing	Backing	0
<b>Configuration:</b>	Sport utility vehicle	Passenger car	0
<b>Driver Age:</b>	32	58	0
<b>Driver Gender:</b>	F	F	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	none	none	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0



# Crash Detail Report

Lincoln St & W Larson St

Report Version 1.3 Aug 2006

2011651646 10/09/2011 13:00  
County:63 City:Knoxville

LARSON ST and Iowa 0014 / LINCOLN ST

**Major Cause:**Swerving/evasive action

**Roadway Type:**Intersection: Four-way intersection

**Severity:**PDO

**Manner of Crash:**Rear-end

**Fatalities:**0

**Surface Conditions:**Dry

**Major Injuries:**0

**Light Conditions:**Daylight

**Minor Injuries:**0

**Weather Conditions:**Clear

**Possible Injuries:**0

**Drug/Alc Involved:**none indicated

**Unknown Injuries:**0

**Property Damage:**\$2000

**Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	North	North	0
<b>Veh Action:</b>	Backing	Stopped for sign/signal	0
<b>Configuration:</b>	Tractor/semi-trailer	4-tire light truck	0
<b>Driver Age:</b>	48	48	0
<b>Driver Gender:</b>	M	M	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	Other improper action	none	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0

2012692776 05/18/2012 16:36  
County:63 City:Knoxville

W LARSON ST and Iowa 0014 / LINCOLN ST

**Major Cause:**FTY making left turn

**Roadway Type:**Intersection: Four-way intersection

**Severity:**Poss/Unk

**Manner of Crash:**Angle, oncoming left turn

**Fatalities:**0

**Surface Conditions:**Dry

**Major Injuries:**0

**Light Conditions:**Daylight

**Minor Injuries:**0

**Weather Conditions:**Partly cloudy

**Possible Injuries:**1

**Drug/Alc Involved:**none indicated

**Unknown Injuries:**0

**Property Damage:**\$6000

**Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	South	North	0
<b>Veh Action:</b>	Essentially straight	Turning left	0
<b>Configuration:</b>	Passenger car	Passenger car	0
<b>Driver Age:</b>	62	20	0
<b>Driver Gender:</b>	M	F	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	none	FTY making left turn	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0



# Crash Detail Report

Lincoln St & W Larson St

Report Version 1.3 Aug 2006

2012708697 09/27/2012 11:59  
County:63 City:Knoxville

W LARSON ST and Iowa 0014 / LINCOLN ST

**Major Cause:**Ran traffic signal  
**Roadway Type:**Intersection: Four-way intersection  
**Severity:**Poss/Unk      **Manner of Crash:**Broadside  
**Fatalities:**0      **Surface Conditions:**Dry  
**Major Injuries:**0      **Light Conditions:**Daylight  
**Minor Injuries:**0      **Weather Conditions:**Clear  
**Possible Injuries:**3      **Drug/Alc Involved:**none indicated  
**Unknown Injuries:**0      **Property Damage:**\$2300      **Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	South	East	0
<b>Veh Action:</b>	Essentially straight	Essentially straight	0
<b>Configuration:</b>	Sport utility vehicle	Moped/ATV	0
<b>Driver Age:</b>	67	47	0
<b>Driver Gender:</b>	M	M	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	Ran traffic signal	none	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0

2012721597 12/24/2012 10:12  
County:63 City:Knoxville

W LARSON ST and Iowa 0014 / LINCOLN ST

**Major Cause:**Followed too close  
**Roadway Type:**Intersection: Four-way intersection  
**Severity:**PDO      **Manner of Crash:**Rear-end  
**Fatalities:**0      **Surface Conditions:**Dry  
**Major Injuries:**0      **Light Conditions:**Daylight  
**Minor Injuries:**0      **Weather Conditions:**Snow  
**Possible Injuries:**0      **Drug/Alc Involved:**none indicated  
**Unknown Injuries:**0      **Property Damage:**\$2000      **Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	North	North	0
<b>Veh Action:</b>	Essentially straight	Slowing/stopping	0
<b>Configuration:</b>	Sport utility vehicle	Passenger car	0
<b>Driver Age:</b>	50	57	0
<b>Driver Gender:</b>	F	M	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	Followed too close	none	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0



# Crash Detail Report

Lincoln St & W Larson St

Report Version 1.3 Aug 2006

2013740668 05/17/2013 12:52  
County:63 City:Knoxville

LINCOLN STREET, MEASURING 573 FEET SOUTH OF LARSON ST

**Major Cause:**FTY from driveway  
**Roadway Type:**Non-intersection: Business drive  
**Severity:**Major      **Manner of Crash:**Broadside  
**Fatalities:**0      **Surface Conditions:**Dry  
**Major Injuries:**1      **Light Conditions:**Daylight  
**Minor Injuries:**0      **Weather Conditions:**Clear  
**Possible Injuries:**0      **Drug/Alc Involved:**none indicated  
**Unknown Injuries:**0      **Property Damage:**\$11000      **Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	West	North	0
<b>Veh Action:</b>	Turning left	Essentially straight	0
<b>Configuration:</b>	Passenger car	Motorcycle	0
<b>Driver Age:</b>	16	46	0
<b>Driver Gender:</b>	F	M	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	FTY from driveway	none	0
<b>Drivr Contr 2:</b>	Vision obstructed	not reported	0
<b>Fixed Object:</b>	none	none	0

2013753291 06/28/2013 15:00  
County:63 City:Knoxville

W LARSON ST and Iowa 0014 / LINCOLN ST

**Major Cause:**FTY making right turn on red signal  
**Roadway Type:**Intersection: Four-way intersection  
**Severity:**Minor      **Manner of Crash:**Non-collision  
**Fatalities:**0      **Surface Conditions:**Dry  
**Major Injuries:**0      **Light Conditions:**Daylight  
**Minor Injuries:**1      **Weather Conditions:**Partly cloudy  
**Possible Injuries:**0      **Drug/Alc Involved:**none indicated  
**Unknown Injuries:**0      **Property Damage:**\$300      **Number of Vehicles:**1

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	East	0	0
<b>Veh Action:</b>	Turning right	0	0
<b>Configuration:</b>	Sport utility vehicle	0	0
<b>Driver Age:</b>	82	0	0
<b>Driver Gender:</b>	M	0	0
<b>Driver Cond:</b>	Normal	0	0
<b>Drivr Contr 1:</b>	FTY right turn on red	0	0
<b>Drivr Contr 2:</b>	FTY to pedestrian	0	0
<b>Fixed Object:</b>	none	0	0

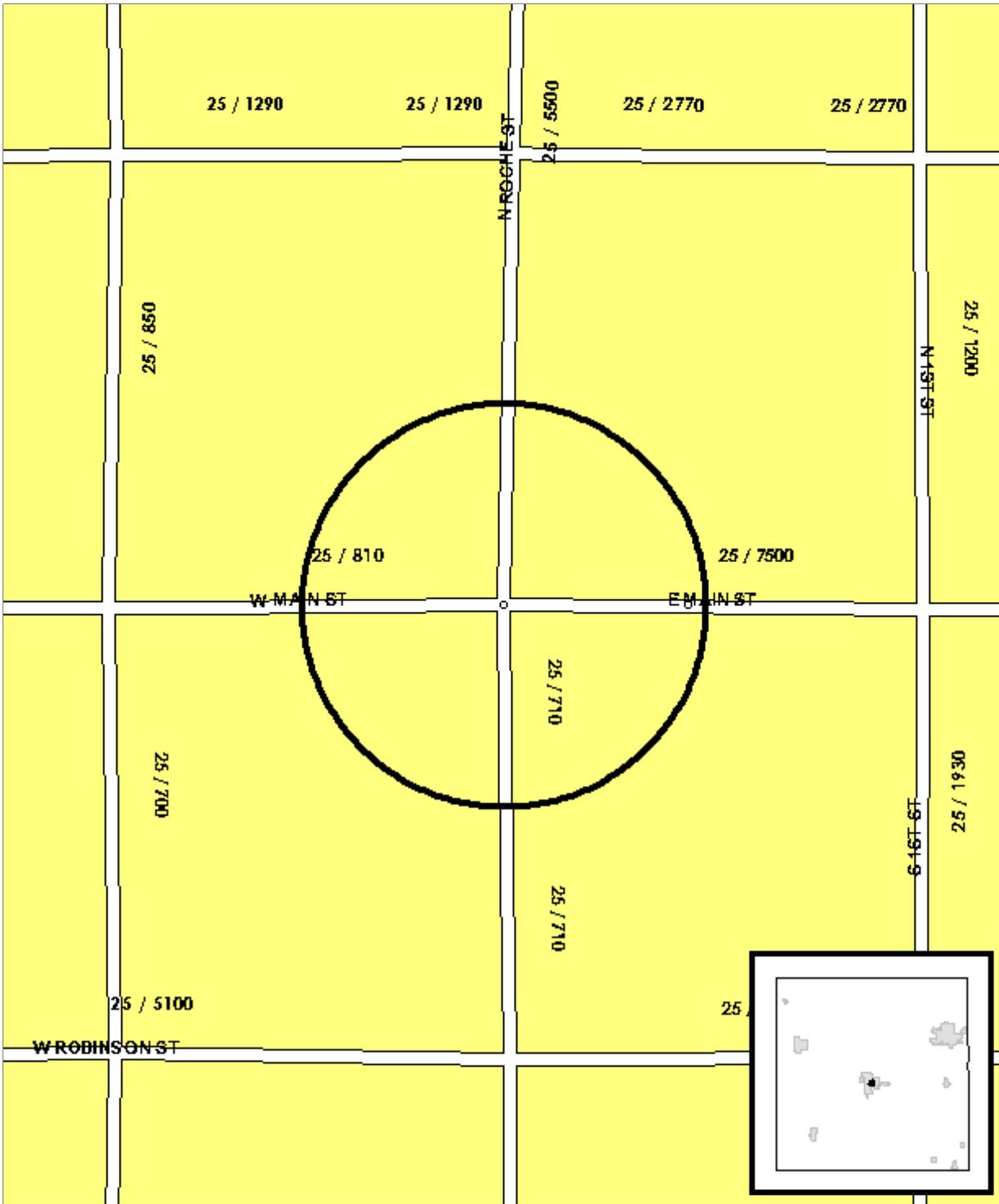


# Location Map

Roche St & W Main St

Incidents: 2

Report Version 1.1 Mar 2005



Analyst: C. Cutler

Notes:



# Major Cause Summary

Roche St & W Main St

Report Version 1.1 Jan 2005

Analysis Years: 2012 [1], 2013 [1]

### Crash Summary:

Fatal	-
Major Injury	-
Minor Injury	-
Possible/Unknown	1
PDO	1
<b>Total Crashes</b>	<b>2</b>

### Injury Summary:

Fatal	-
Major Injury	-
Minor Injury	-
Possible	1
Unknown	-
<b>Total Injuries</b>	<b>1</b>

### Surface Condition Summary:

Dry	2
Wet	-
Ice	-
Snow	-
Slush	-
Sand/Dirt/Oil/Gravel	-
Water	-
Other	-
Unknown	-
Not Reported	-
<b>Total Crashes</b>	<b>2</b>

TOT Property Damage: \$7,300

AVG Property Damage: \$3,650

### Major Cause Summary:

- |   |  |
|---|--|
| Animal  | Improper Backing                                 |
| Ran Traffic Signal                              | Illegally Parked/Unattended                      |
| Ran Stop Sign                                   | Swerving/Evasive Action                          |
| 1 Crossed Centerline                            | Over-Correcting/Over-Steering                    |
| FTYROW: At Uncontrolled Intersection            | Downhill Runaway                                 |
| FTYROW: Making Right Turn on Red Signal         | Equipment Failure                                |
| FTYROW: From Stop Sign                          | Separation of Units                              |
| FTYROW: From Yield Sign                         | Ran Off Road - Right                             |
| FTYROW: Making Left Turn                        | Ran Off Road - Straight                          |
| FTYROW: From Driveway                           | Ran Off Road - Left                              |
| FTYROW: From Parked Position                    | Lost Control                                     |
| FTYROW: To Pedestrian                           | Inattentive/Distracted By: Passenger             |
| FTYROW: Other (explain in narrative)            | Inattentive/Distracted By: Use of Phone or Other |
| Traveling Wrong Way or on Wrong Side of Rd      | Inattentive/Distracted By: Fallen Object         |
| 1 Driving Too Fast for Conditions               | Inattentive/Distracted By: Fatigued/Asleep       |
| Exceeded Authorized Speed                       | Other: Vision Obstructed                         |
| Made Improper Turn                              | Oversized Load/ Oversized Vehicle                |
| Improper Lane Change                            | Cargo/Equipment Loss or Shift                    |
| Followed Too Close                              | Other: Other Improper Action                     |
| Disregarded Railroad Signal                     | Unknown  |
| Disregarded Warning Sign                        | Other: No Improper Action                        |
| Operating Vehicle in Reckless/Aggressive Manner | None Indicated                                   |

### Selection Filter:

((YEAR = 2009 or YEAR = 2010 or YEAR = 2011 or YEAR = 2012 or YEAR = 2013))

Analyst: C. Cutler

Notes:



# Driver and Time Summary

Roche St & W Main St

Report Version 1.0 Aug 2006

### Crash Time of Day Summary:

From To	00:00 01:59	02:00 03:59	04:00 05:59	06:00 07:59	08:00 09:59	10:00 11:59	12:00 13:59	14:00 15:59	16:00 17:59	18:00 19:59	20:00 21:59	22:00 23:59	NR	Total	%
SUN	-	-	-	-	-	-	-	-	-	-	-	-	-		
MON	-	-	-	-	-	-	-	-	-	-	-	-	-		
TUE	-	-	-	-	-	-	-	-	-	-	-	-	-		
WED	-	-	-	-	-	1	-	-	-	-	-	-	-	1	50
THU	-	-	-	-	-	-	-	-	-	1	-	-	-	1	50
FRI	-	-	-	-	-	-	-	-	-	-	-	-	-		
SAT	-	-	-	-	-	-	-	-	-	-	-	-	-		
Tot.						1				1				2	
%						50				50					100

### Driver Age/Gender Summary:

Age	Male	Female	NR	Drivers	%
<14	-	-	-		
14	-	-	-		
15	-	-	-		
16	-	-	-		
17	-	-	-		
18	-	-	-		
19	-	-	-		
20	-	-	-		
21 to 24	-	-	-		
25 to 29	1	-	-	1	25
30 to 34	-	-	-		
35 to 39	-	-	-		
40 to 44	-	-	-		
45 to 49	-	-	-		
50 to 54	1	-	-	1	25
55 to 59	1	-	-	1	25
60 to 64	-	-	-		
65 to 69	1	-	-	1	25
70 to 74	-	-	-		
75 to 79	-	-	-		
80 to 84	-	-	-		
85 to 89	-	-	-		
90 to 94	-	-	-		
95 plus	-	-	-		
NR	-	-	-		
<b>Drivers</b>	4	0	0	4	
<b>%</b>	100	0	0		100

### Drug/Alcohol Summary:

	Total	%
Drug		
Alcohol, Less than Statutory		
Alcohol, Statutory		
Drug/Alcohol, Less than Statutory		
Drug/Alcohol, Statutory		
Refused		
Under Influence of Alc/Drugs/Meds		
None Indicated	2	100
<b>Total Crashes</b>	<b>2</b>	<b>100</b>

### Fixed Object Struck Summary:

	Vehs.	%
Bridge/Bridge rail/Overpass		
Underpass/Structure Support		
Culvert		
Ditch/Embankment		
Curb/Island/Raised Median		
Guardrail		
Concrete Barrier		
Tree		
Pole - Utility/Light/Etc		
Sign Post		
Mailbox		
Impact Attenuator		
Other Fixed Object		
None	4	100
<b>Total Vehicles</b>	<b>4</b>	<b>100</b>

### Selection Filter:

((YEAR = 2009 or YEAR = 2010 or YEAR = 2011 or YEAR = 2012 or YEAR = 2013))

**Analyst:** C. Cutler

**Notes:**



# Crash Detail Report

Roche St & W Main St

Report Version 1.3 Aug 2006

2012682094 04/04/2012 11:05  
County:63 City:Knoxville

W MAIN ST AND E MAIN ST AND S ROCHE ST AND N ROCHE ST

**Major Cause:**Driving too fast for conditions  
**Roadway Type:**Non-intersection: Business drive  
**Severity:**Poss/Unk      **Manner of Crash:**Sideswipe, opposite direction  
**Fatalities:**0      **Surface Conditions:**Dry  
**Major Injuries:**0      **Light Conditions:**Daylight  
**Minor Injuries:**0      **Weather Conditions:**Cloudy  
**Possible Injuries:**1      **Drug/Alc Involved:**none indicated  
**Unknown Injuries:**0      **Property Damage:**\$1800      **Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	North	South	0
<b>Veh Action:</b>	Backing	Essentially straight	0
<b>Configuration:</b>	4-tire light truck	Passenger car	0
<b>Driver Age:</b>	55	25	0
<b>Driver Gender:</b>	M	M	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	none	Too fast for conditions	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0

2013742674 05/09/2013 18:39  
County:63 City:Knoxville

60' EAST OF 1ST ST. ON MAIN.

**Major Cause:**Crossed centerline  
**Roadway Type:**Non-intersection: No special feature  
**Severity:**PDO      **Manner of Crash:**unknown  
**Fatalities:**0      **Surface Conditions:**Dry  
**Major Injuries:**0      **Light Conditions:**Daylight  
**Minor Injuries:**0      **Weather Conditions:**Partly cloudy  
**Possible Injuries:**0      **Drug/Alc Involved:**none indicated  
**Unknown Injuries:**0      **Property Damage:**\$5500      **Number of Vehicles:**2

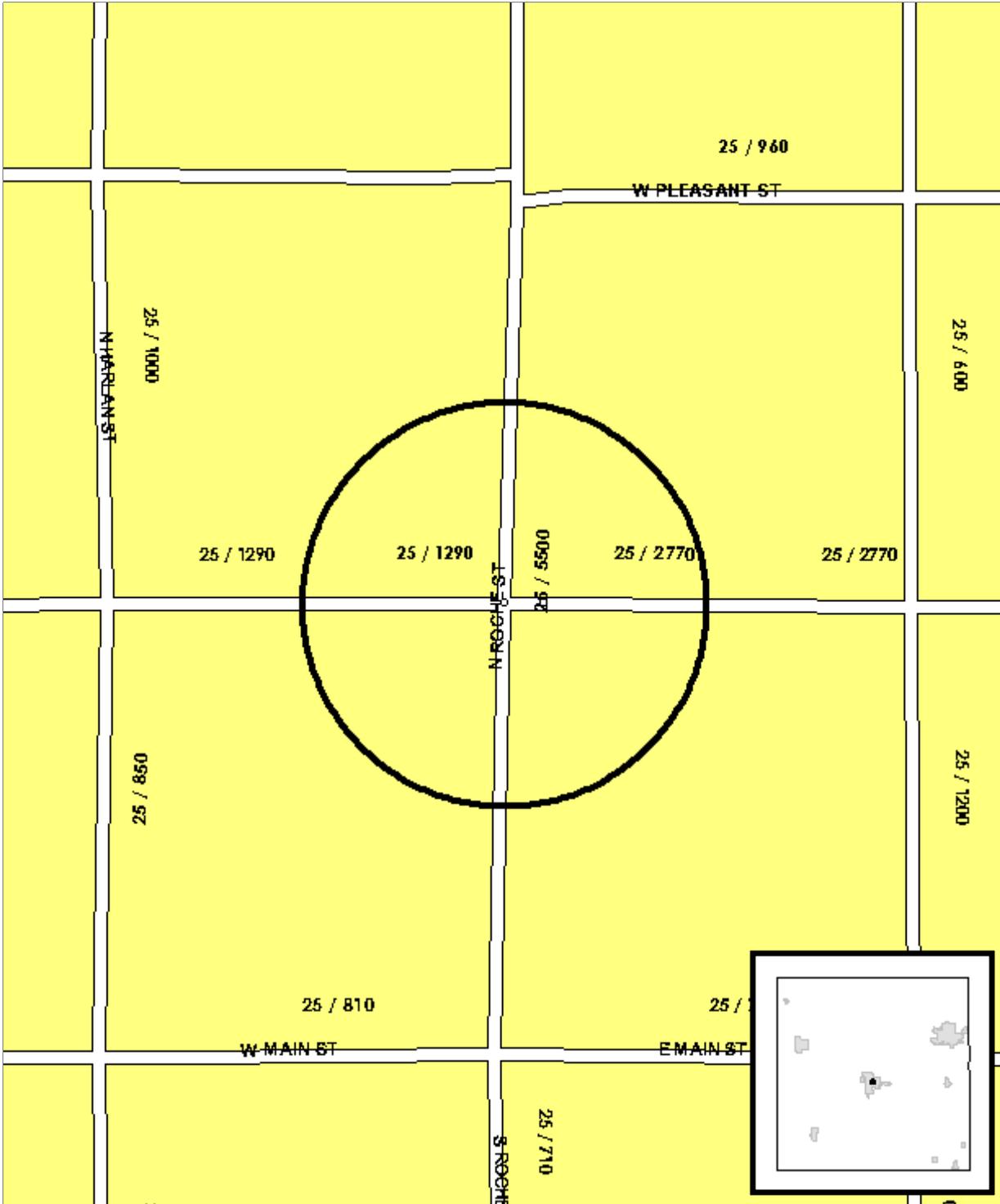
	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	South	West	0
<b>Veh Action:</b>	Backing	Essentially straight	0
<b>Configuration:</b>	Passenger car	Passenger car	0
<b>Driver Age:</b>	52	68	0
<b>Driver Gender:</b>	M	M	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	FTY from parked position	none	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0

# Location Map

Roche St & W Marion St

Incidents: 11

Report Version 1.1 Mar 2005



Analyst: C. Cutler

Notes:



# Major Cause Summary

Roche St & W Marion St

Report Version 1.1 Jan 2005

**Analysis Years:** 2009 [5], 2010 [3], 2011 [1], 2012 [1], 2013 [1]

Crash Summary:		Injury Summary:		Surface Condition Summary:	
Fatal	-	Fatal	-	Dry	6
Major Injury	-	Major Injury	-	Wet	2
Minor Injury	1	Minor Injury	1	Ice	-
Possible/Unknown	3	Possible	3	Snow	2
PDO	7	Unknown	-	Slush	1
<b>Total Crashes</b>	<b>11</b>	<b>Total Injuries</b>	<b>4</b>	Sand/Dirt/Oil/Gravel	-
				Water	-
				Other	-
				Unknown	-
				Not Reported	-
				<b>Total Crashes</b>	<b>11</b>

**TOT Property Damage:** \$61,200

**AVG Property Damage:** \$5,564

## Major Cause Summary:

Animal	Improper Backing
4 Ran Traffic Signal	Illegally Parked/Unattended
Ran Stop Sign	Swerving/Evasive Action
1 Crossed Centerline	Over-Correcting/Over-Steering
FTYROW: At Uncontrolled Intersection	Downhill Runaway
FTYROW: Making Right Turn on Red Signal	Equipment Failure
FTYROW: From Stop Sign	Separation of Units
FTYROW: From Yield Sign	Ran Off Road - Right
2 FTYROW: Making Left Turn	Ran Off Road - Straight
FTYROW: From Driveway	Ran Off Road - Left
FTYROW: From Parked Position	Lost Control
FTYROW: To Pedestrian	Inattentive/Distracted By: Passenger
FTYROW: Other (explain in narrative)	Inattentive/Distracted By: Use of Phone or Other
Traveling Wrong Way or on Wrong Side of Rd	Inattentive/Distracted By: Fallen Object
Driving Too Fast for Conditions	Inattentive/Distracted By: Fatigued/Asleep
Exceeded Authorized Speed	Other: Vision Obstructed
Made Improper Turn	Oversized Load/ Oversized Vehicle
Improper Lane Change	Cargo/Equipment Loss or Shift
Followed Too Close	Other: Other Improper Action
Disregarded Railroad Signal	2 Unknown
Disregarded Warning Sign	2 Other: No Improper Action
Operating Vehicle in Reckless/Aggressive Manner	None Indicated

## Selection Filter:

((YEAR = 2009 or YEAR = 2010 or YEAR = 2011 or YEAR = 2012 or YEAR = 2013))

**Analyst:** C. Cutler

**Notes:**



# Driver and Time Summary

Roche St & W Marion St

Report Version 1.0 Aug 2006

### Crash Time of Day Summary:

From To	00:00 01:59	02:00 03:59	04:00 05:59	06:00 07:59	08:00 09:59	10:00 11:59	12:00 13:59	14:00 15:59	16:00 17:59	18:00 19:59	20:00 21:59	22:00 23:59	NR	Total	%
SUN	-	-	-	-	-	-	-	-	-	-	-	-	-		
MON	-	-	-	-	-	1	-	2	1	-	-	-	-	4	36
TUE	-	-	-	-	-	-	-	-	-	-	-	-	-		
WED	-	-	-	-	-	-	-	1	-	-	-	-	-	1	9
THU	-	-	-	-	-	-	1	-	-	-	-	-	-	1	9
FRI	-	-	-	-	1	1	1	1	-	-	1	-	-	5	45
SAT	-	-	-	-	-	-	-	-	-	-	-	-	-		
<b>Tot.</b>					1	2	2	4	1		1			11	
<b>%</b>					9	18	18	36	9		9				100

### Driver Age/Gender Summary:

Age	Male	Female	NR	Drivers	%
<14	-	-	-		
14	-	-	-		
15	-	-	-		
16	-	-	-		
17	-	2	-	2	9
18	1	-	-	1	5
19	-	-	-		
20	-	-	-		
21 to 24	1	1	-	2	9
25 to 29	2	2	-	4	18
30 to 34	1	1	-	2	9
35 to 39	-	-	-		
40 to 44	-	1	-	1	5
45 to 49	-	-	-		
50 to 54	-	-	-		
55 to 59	-	1	-	1	5
60 to 64	1	1	-	2	9
65 to 69	1	2	-	3	14
70 to 74	1	-	-	1	5
75 to 79	-	2	-	2	9
80 to 84	1	-	-	1	5
85 to 89	-	-	-		
90 to 94	-	-	-		
95 plus	-	-	-		
NR	-	-	-		
<b>Drivers</b>	9	13	0	22	
<b>%</b>	41	59	0		100

### Drug/Alcohol Summary:

	Total	%
Drug		
Alcohol, Less than Statutory		
Alcohol, Statutory		
Drug/Alcohol, Less than Statutory		
Drug/Alcohol, Statutory		
Refused		
Under Influence of Alc/Drugs/Meds		
None Indicated	11	100
<b>Total Crashes</b>	11	100

### Fixed Object Struck Summary:

	Vehs.	%
Bridge/Bridge rail/Overpass		
Underpass/Structure Support		
Culvert		
Ditch/Embankment		
Curb/Island/Raised Median		
Guardrail		
Concrete Barrier		
Tree		
Pole - Utility/Light/Etc		
Sign Post		
Mailbox		
Impact Attenuator		
Other Fixed Object		
None	22	100
<b>Total Vehicles</b>	22	100

### Selection Filter:

((YEAR = 2009 or YEAR = 2010 or YEAR = 2011 or YEAR = 2012 or YEAR = 2013))

**Analyst:** C. Cutler

**Notes:**



# Crash Detail Report

Roche St & W Marion St

Report Version 1.3 Aug 2006

2009488137 01/16/2009 20:58 MARION ST and ROCHE ST  
County:63 City:Knoxville

**Major Cause:**Ran traffic signal  
**Roadway Type:**Intersection: Four-way intersection  
**Severity:**PDO **Manner of Crash:**Broadside  
**Fatalities:**0 **Surface Conditions:**Slush  
**Major Injuries:**0 **Light Conditions:**Dark - roadway lighted  
**Minor Injuries:**0 **Weather Conditions:**Partly cloudy  
**Possible Injuries:**0 **Drug/Alc Involved:**none indicated  
**Unknown Injuries:**0 **Property Damage:**\$10000 **Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	East	South	0
<b>Veh Action:</b>	Essentially straight	Essentially straight	0
<b>Configuration:</b>	Passenger car	Passenger car	0
<b>Driver Age:</b>	21	22	0
<b>Driver Gender:</b>	F	M	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	Ran traffic signal	none	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0

2009489504 01/26/2009 10:25 ROCHE AND MARION  
County:63 City:Knoxville

**Major Cause:**Ran traffic signal  
**Roadway Type:**Intersection: Four-way intersection  
**Severity:**Poss/Unk **Manner of Crash:**Broadside  
**Fatalities:**0 **Surface Conditions:**Snow  
**Major Injuries:**0 **Light Conditions:**Daylight  
**Minor Injuries:**0 **Weather Conditions:**Snow  
**Possible Injuries:**1 **Drug/Alc Involved:**none indicated  
**Unknown Injuries:**0 **Property Damage:**\$4700 **Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	South	East	0
<b>Veh Action:</b>	Essentially straight	Essentially straight	0
<b>Configuration:</b>	Passenger car	Passenger car	0
<b>Driver Age:</b>	41	67	0
<b>Driver Gender:</b>	F	F	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	Ran traffic signal	none	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0



# Crash Detail Report

Roche St & W Marion St

Report Version 1.3 Aug 2006

2009494911 02/13/2009 15:19  
County:63 City:Knoxville

MARION ST and ROCHE ST

**Major Cause:**Other: No improper action

**Roadway Type:**Intersection: Four-way intersection

**Severity:**PDO

**Manner of Crash:**Broadside

**Fatalities:**0

**Surface Conditions:**Snow

**Major Injuries:**0

**Light Conditions:**Daylight

**Minor Injuries:**0

**Weather Conditions:**Snow

**Possible Injuries:**0

**Drug/Alc Involved:**none indicated

**Unknown Injuries:**0

**Property Damage:**\$1100

**Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	West	South	0
<b>Veh Action:</b>	Turning right	Stopped for sign/signal	0
<b>Configuration:</b>	4-tire light truck	Passenger car	0
<b>Driver Age:</b>	33	29	0
<b>Driver Gender:</b>	M	M	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	none	none	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0

2009510348 06/04/2009 12:58  
County:63 City:Knoxville

MARION ST and ROCHE ST

**Major Cause:**FTY making left turn

**Roadway Type:**Intersection: Four-way intersection

**Severity:**Poss/Unk

**Manner of Crash:**Head-on

**Fatalities:**0

**Surface Conditions:**Dry

**Major Injuries:**0

**Light Conditions:**Daylight

**Minor Injuries:**0

**Weather Conditions:**Partly cloudy

**Possible Injuries:**1

**Drug/Alc Involved:**none indicated

**Unknown Injuries:**0

**Property Damage:**\$16000

**Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	North	South	0
<b>Veh Action:</b>	Essentially straight	Turning left	0
<b>Configuration:</b>	Sport utility vehicle	Passenger car	0
<b>Driver Age:</b>	26	73	0
<b>Driver Gender:</b>	F	M	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	none	FTY making left turn	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0



# Crash Detail Report

Roche St & W Marion St

Report Version 1.3 Aug 2006

2009528318 09/25/2009 10:44  
County:63 City:Knoxville

MARION ST and ROCHE ST

**Major Cause:** unknown

**Roadway Type:** Intersection: Four-way intersection

**Severity:** PDO                      **Manner of Crash:** Broadside

**Fatalities:** 0                      **Surface Conditions:** Wet

**Major Injuries:** 0                      **Light Conditions:** Daylight

**Minor Injuries:** 0                      **Weather Conditions:** Partly cloudy

**Possible Injuries:** 0                      **Drug/Alc Involved:** none indicated

**Unknown Injuries:** 0                      **Property Damage:** \$3500                      **Number of Vehicles:** 2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	East	North	0
<b>Veh Action:</b>	Essentially straight	Essentially straight	0
<b>Configuration:</b>	Passenger car	Van or mini-van	0
<b>Driver Age:</b>	68	78	0
<b>Driver Gender:</b>	M	F	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	unknown	unknown	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0

2010575731 05/24/2010 14:09  
County:63 City:Knoxville

MARION ST and ROCHE ST

**Major Cause:** Other: No improper action

**Roadway Type:** Intersection: Four-way intersection

**Severity:** Poss/Unk                      **Manner of Crash:** Rear-end

**Fatalities:** 0                      **Surface Conditions:** Dry

**Major Injuries:** 0                      **Light Conditions:** Daylight

**Minor Injuries:** 0                      **Weather Conditions:** Clear

**Possible Injuries:** 1                      **Drug/Alc Involved:** none indicated

**Unknown Injuries:** 0                      **Property Damage:** \$5000                      **Number of Vehicles:** 2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	North	North	0
<b>Veh Action:</b>	Slowing/stopping	Slowing/stopping	0
<b>Configuration:</b>	Passenger car	Passenger car	0
<b>Driver Age:</b>	63	65	0
<b>Driver Gender:</b>	F	F	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	none	none	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0



# Crash Detail Report

Roche St & W Marion St

Report Version 1.3 Aug 2006

2010583456 07/19/2010 16:24  
County:63 City:Knoxville

MARION ST and ROCHE ST

**Major Cause:**Ran traffic signal

**Roadway Type:**Intersection: Four-way intersection

**Severity:**PDO

**Manner of Crash:**Broadside

**Fatalities:**0

**Surface Conditions:**Dry

**Major Injuries:**0

**Light Conditions:**Daylight

**Minor Injuries:**0

**Weather Conditions:**Cloudy

**Possible Injuries:**0

**Drug/Alc Involved:**none indicated

**Unknown Injuries:**0

**Property Damage:**\$4000

**Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	East	South	0
<b>Veh Action:</b>	Essentially straight	Essentially straight	0
<b>Configuration:</b>	Passenger car	Sport utility vehicle	0
<b>Driver Age:</b>	76	26	0
<b>Driver Gender:</b>	F	F	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	none	Ran traffic signal	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0

2010614020 09/03/2010 12:29  
County:63 City:Knoxville

MARION ST and ROCHE ST

**Major Cause:**unknown

**Roadway Type:**Intersection: Four-way intersection

**Severity:**PDO

**Manner of Crash:**Broadside

**Fatalities:**0

**Surface Conditions:**Dry

**Major Injuries:**0

**Light Conditions:**Daylight

**Minor Injuries:**0

**Weather Conditions:**Clear

**Possible Injuries:**0

**Drug/Alc Involved:**none indicated

**Unknown Injuries:**0

**Property Damage:**\$5000

**Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	South	West	0
<b>Veh Action:</b>	Essentially straight	Essentially straight	0
<b>Configuration:</b>	4-tire light truck	Passenger car	0
<b>Driver Age:</b>	27	56	0
<b>Driver Gender:</b>	M	F	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	unknown	unknown	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0



# Crash Detail Report

Roche St & W Marion St

Report Version 1.3 Aug 2006

2011631274 05/06/2011 08:59  
County:63 City:Knoxville

MARION ST and ROCHE ST

**Major Cause:**Crossed centerline

**Roadway Type:**Intersection: Four-way intersection

**Severity:**Minor

**Manner of Crash:**Sideswipe, same direction

**Fatalities:**0

**Surface Conditions:**Dry

**Major Injuries:**0

**Light Conditions:**Daylight

**Minor Injuries:**1

**Weather Conditions:**Partly cloudy

**Possible Injuries:**0

**Drug/Alc Involved:**none indicated

**Unknown Injuries:**0

**Property Damage:**\$4500

**Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	West	West	0
<b>Veh Action:</b>	Turning right	Turning right	0
<b>Configuration:</b>	Tractor/semi-trailer	Passenger car	0
<b>Driver Age:</b>	60	82	0
<b>Driver Gender:</b>	M	M	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	Vision obstructed	none	0
<b>Drivr Contr 2:</b>	not reported	not reported	0
<b>Fixed Object:</b>	none	none	0

2012692788 06/27/2012 15:53  
County:63 City:Knoxville

W MARION ST and N ROCHE ST

**Major Cause:**Ran traffic signal

**Roadway Type:**Intersection: Four-way intersection

**Severity:**PDO

**Manner of Crash:**Broadside

**Fatalities:**0

**Surface Conditions:**Dry

**Major Injuries:**0

**Light Conditions:**Daylight

**Minor Injuries:**0

**Weather Conditions:**Clear

**Possible Injuries:**0

**Drug/Alc Involved:**none indicated

**Unknown Injuries:**0

**Property Damage:**\$5000

**Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	South	West	0
<b>Veh Action:</b>	Essentially straight	Essentially straight	0
<b>Configuration:</b>	Passenger car	Passenger car	0
<b>Driver Age:</b>	17	34	0
<b>Driver Gender:</b>	F	F	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	Ran traffic signal	none	0
<b>Drivr Contr 2:</b>	Vision obstructed	not reported	0
<b>Fixed Object:</b>	none	none	0



# Crash Detail Report

Roche St & W Marion St

Report Version 1.3 Aug 2006

2013768174 11/11/2013 15:32  
County:63 City:Knoxville

W MARION ST and N ROCHE ST

**Major Cause:**FTY making left turn

**Roadway Type:**Intersection: Four-way intersection

**Severity:**PDO

**Manner of Crash:**Angle, oncoming left turn

**Fatalities:**0

**Surface Conditions:**Wet

**Major Injuries:**0

**Light Conditions:**Dusk

**Minor Injuries:**0

**Weather Conditions:**Snow

**Possible Injuries:**0

**Drug/Alc Involved:**none indicated

**Unknown Injuries:**0

**Property Damage:**\$2400

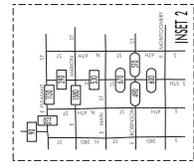
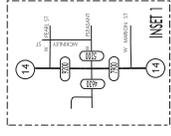
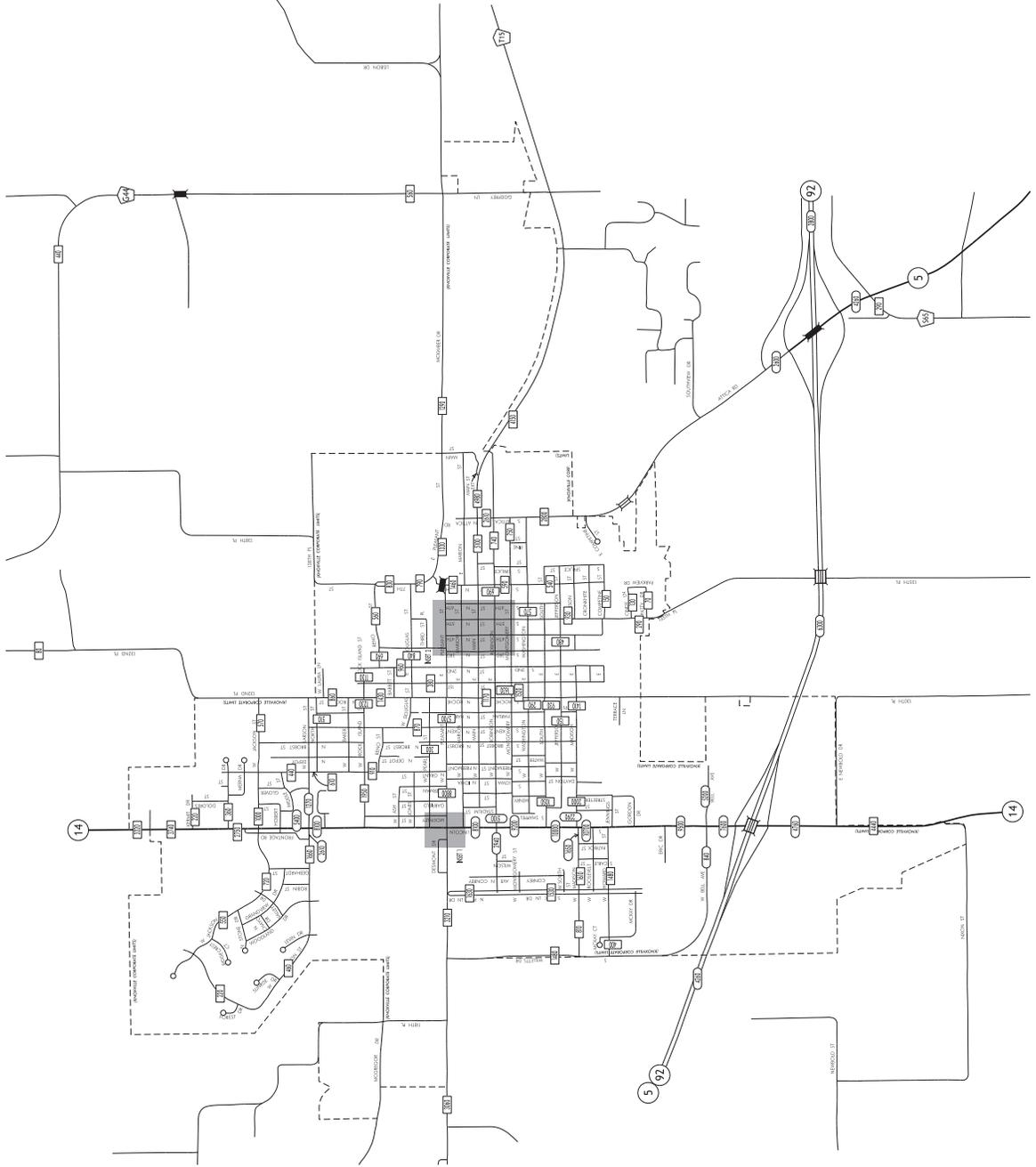
**Number of Vehicles:**2

	Unit 1	Unit 2	Unit 3
<b>Init Trav Dir:</b>	South	North	0
<b>Veh Action:</b>	Turning left	Essentially straight	0
<b>Configuration:</b>	Passenger car	Van or mini-van	0
<b>Driver Age:</b>	18	17	0
<b>Driver Gender:</b>	M	F	0
<b>Driver Cond:</b>	Normal	Normal	0
<b>Drivr Contr 1:</b>	Followed too close	none	0
<b>Drivr Contr 2:</b>	FTY making left turn	not reported	0
<b>Fixed Object:</b>	none	none	0

**APPENDIX C – TRAFFIC DATA**



TRAFFIC FLOW MAP OF  
**KNOXVILLE**  
**MARION COUNTY**  
 2014 ANNUAL AVERAGE DAILY TRAFFIC





TURNING MOVEMENT COUNT

Location: Lincoln & Rock Island  
 Start Date: 3/21/2015  
 Start Time: 6:30 AM  
 Site Code: -

Start Time	Eastbound			Westbound			Northbound			Southbound					
	Across Leg Pedestrians	Cars	Trucks	Left	Thru	Right	Across Leg Pedestrians	Cars	Trucks	Left	Thru	Right			
6:30 AM				3	1	2				1	39				
6:45 AM				2	1					2	60	4			
7:00 AM	1			6		8				48	4				
7:15 AM	3			3		5	1			65	3				
7:30 AM	4			12	2	4				100	5				
7:45 AM	2			14		6				150	7				
8:00 AM			1	8		5				104	4				
8:15 AM	3			5		6				52	3				
8:30 AM				7	1	1				8	37	4			
8:45 AM				4		4				63	10				
9:00 AM	2		1	4		6				54	4	2			
9:15 AM				7		3				45	3				
<b>Total:</b>	15	1	0	76	1	4	0	50	0	1	0	637	36	42	2
TOTAL ENTERING VEH.	3			131			717			894					
% OF ENTERING VEH.	0.17%			7.51%			41.09%			51.23%					
TURN MOVEMENT %	33.33%	33.33%	33.33%	58.78%	3.05%	38.17%	0.00%	93.86%	6.14%	2.68%	97.09%	0.22%			
PEAK HOUR TRUCK VOL	0	0	0	0	0	0	0	13	1	1	19	0			
PEAK HOUR TOTAL VOL.	0	0	1	39	2	21	0	334	25	5	425	0			
MAX PERIOD	0	0	1	14	2	6	0	126	8	2	157	0			
PEAK HOUR FACTOR	0.00	0.00	0.25	0.70	0.25	0.88	0.00	0.66	0.78	0.63	0.68	0.00			
% TRUCKS - PEAK HOUR	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.89%	4.00%	2.00%	4.47%	0.00%			







TURNING MOVEMENT COUNT

Location: Roche St & Main St  
 Start Date: 3/21/2015  
 Start Time: 6:30 AM  
 Site Code: -

Start Time	Eastbound			Westbound			Northbound			Southbound																			
	Across Leg Pedestrians	Cars	Trucks	Across Leg Pedestrians	Cars	Trucks	Across Leg Pedestrians	Cars	Trucks	Across Leg Pedestrians	Cars	Trucks																	
6:30 AM																													
6:45 AM																													
7:00 AM																													
7:15 AM																													
7:30 AM																													
7:45 AM																													
8:00 AM																													
8:15 AM																													
8:30 AM																													
8:45 AM																													
9:00 AM																													
9:15 AM																													
<b>Total:</b>	5	8	0	15	0	6	0	7	12	0	12	0	29	1	10	2	0	65	5	11	0	6	90	3	101	3	8	2	
TOTAL ENTERING VEH.	29																												
% OF ENTERING VEH.	7.77%																												
TURN MOVEMENT %	27.59%	51.72%	20.69%	22.22%	22.22%	55.56%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	22.25%	84.34%	13.25%	0.00%	0.00%	0.00%	44.93%	50.24%	4.83%	0.00%	0.00%	0.00%
PEAK HOUR TRUCK VOL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	0	0	0	0	1	2	1	0	0
PEAK HOUR TOTAL VOL.	3	5	2	3	2	6	0	3	2	1	4	0	1	1	1	1	1	1	7	7	6	0	0	0	51	51	7	2	2
MAX PERIOD	2	3	2	2	1	4	0	2	1	1	4	0	1	1	1	1	1	1	15	15	4	0	0	0	16	17	3	1	1
PEAK HOUR FACTOR	0.38	0.42	0.25	0.38	0.50	0.38	0.00%	0.38	0.50	0.38	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.25	0.62	0.38	0.00%	0.00%	0.00%	0.80	0.75	0.58	0.16	0.16	
% TRUCKS - PEAK HOUR	0.00%																												
TOTAL ENTERING VEH.	83																												
% OF ENTERING VEH.	22.25%																												
TURN MOVEMENT %	2.41%	84.34%	13.25%	2.41%	22.22%	55.56%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	22.25%	84.34%	13.25%	0.00%	0.00%	0.00%	44.93%	50.24%	4.83%	0.00%	0.00%	0.00%
PEAK HOUR TRUCK VOL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	0	0	0	1	2	1	0	0	
PEAK HOUR TOTAL VOL.	3	5	2	3	2	6	0	3	2	1	4	0	1	1	1	1	1	7	7	6	0	0	0	51	51	7	2	2	
MAX PERIOD	2	3	2	2	1	4	0	2	1	1	4	0	1	1	1	1	1	15	15	4	0	0	0	16	17	3	1	1	
PEAK HOUR FACTOR	0.38	0.42	0.25	0.38	0.50	0.38	0.00%	0.38	0.50	0.38	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.25	0.62	0.38	0.00%	0.00%	0.00%	0.80	0.75	0.58	0.16	0.16	
% TRUCKS - PEAK HOUR	0.00%																												







TURNING MOVEMENT COUNT

Location: Roche St & Marion St  
 Start Date: 3/21/2015  
 Start Time: 6:30 AM  
 Site Code: -

Start Time	Eastbound			Westbound			Northbound			Southbound					
	Across Leg Pedestrians	Cars	Trucks	Left	Thru	Right	Across Leg Pedestrians	Cars	Trucks	Left	Thru	Right			
6:30 AM			6		3	19					4				
6:45 AM		1	2	1	1	17				20	5				
7:00 AM				1	4	26				12	9				
7:15 AM	1	1		4	3	23				3	6				
7:30 AM			1	5	5	40				15	13	2			
7:45 AM	3			4	3	39				24	2	2			
8:00 AM				4	3	25				29	29				
8:15 AM	2		1	1	2	20				32	19				
8:30 AM	5			2	2	27		1		13	12	2			
8:45 AM	2		1	3	2	25				17	3	23			
9:00 AM			1	2	2	21				22	16				
9:15 AM				3	2	28				14	14	1			
<b>Total:</b>	13	2	0	30	0	310	0	1	0	81	5	19	3	5	0
TOTAL ENTERING VEH.	380														
% OF ENTERING VEH.	40.90%														
TURN MOVEMENT %	10.53%		78.95%	10.53%	7.89%	84.21%	0.92%		78.90%	20.18%	55.58%		43.23%	1.19%	
PEAK HOUR TRUCK VOL	0	0	0	0	0	4	0	0	2	0	0	0	0	0	0
PEAK HOUR TOTAL VOL.	0	5	2	14	11	128	0	39	9	103	90	4	29	2	0
MAX PERIOD	0	3	2	5	5	41	0	17	3	32	29	2	0.78	0.50	0
PEAK HOUR FACTOR	0.00	0.42	0.25	0.70	0.55	0.78	0.00	0.57	0.75	0.80	0.78	0.50	0.00	0.00	0.00
% TRUCKS - PEAK HOUR	0.00%		0.00%	0.00%	0.00%	3.13%	0.00%		5.13%	0.00%	2.91%		0.00%	0.00%	0.00%





TURNING MOVEMENT COUNT

Location: Roche St & Marion St  
 Start Date: 3/21/2015  
 Start Time: 3:30 PM  
 Site Code: -

Start Time	Eastbound			Westbound			Northbound			Southbound		
	Across Leg Pedestrians	Cars	Trucks	Left	Thru	Right	Across Leg Pedestrians	Cars	Trucks	Left	Thru	Right
3:30 PM	1	4	1	2	10	1	2	10	1	50	1	32
3:45 PM			3	1	4	43	2	2	2	43	2	1
4:00 PM		1	1	8	3	45	1	13	1	42	23	42
4:15 PM	3	1	3	7	6	37		14	2	32	23	32
4:30 PM		2	2	7	5	42	1	8	1	31	1	31
4:45 PM		1	1	6	11	55	1	12	1	23	1	23
5:00 PM	2		5	3	4	31		8	2	1	23	1
5:15 PM	5		1	7	7	45	1	15	1	35	1	32
5:30 PM	3		3	5	5	40	1	9	1	27	20	27
5:45 PM	1		3	3	1	35	6	10	1	38	29	38
6:00 PM		1	2	4	3	26	3	10	1	25	21	25
6:15 PM	1		2	5	9	51	3	11	1	4	33	4
<b>Total:</b>	16	2	0	68	2	60	21	0	0	135	5	23
<b>TOTAL ENTERING VEH.</b>	635											
<b>% OF ENTERING VEH.</b>	41.67%											
<b>TURN MOVEMENT %</b>	4.65%	60.47%	34.88%	11.02%	9.45%	79.53%	0.00%	85.89%	14.11%	0.00%	10.70%	44.82%
<b>PEAK HOUR TRUCK VOL</b>	0	0	0	0	0	3	0	3	0	0	3	0
<b>PEAK HOUR TOTAL VOL.</b>	1	11	5	29	14	178	0	55	10	152	86	1
<b>MAX PERIOD</b>	1	4	3	10	6	51	0	16	3	45	23	1
<b>PEAK HOUR FACTOR</b>	0.25	0.69	0.42	0.73	0.58	0.87	0.00	0.86	0.83	0.84	0.93	0.25
<b>% TRUCKS - PEAK HOUR</b>	0.00%	0.00%	0.00%	0.00%	0.00%	1.69%	0.00%	5.45%	0.00%	0.66%	1.16%	0.00%



TURNING MOVEMENT COUNT

Location: Roche St & W Pleasant St  
 Start Date: 3/21/2015  
 Start Time: 6:30 AM  
 Site Code: -

Start Time	Eastbound			Westbound			Northbound			Southbound		
	Across Leg Pedestrians	Cars	Trucks	Left	Thru	Right	Across Leg Pedestrians	Cars	Trucks	Left	Thru	Right
6:30 AM		1										
6:45 AM		1										
7:00 AM		3										
7:15 AM		7										
7:30 AM		4										
7:45 AM		6										
8:00 AM		3										
8:15 AM		11										
8:30 AM		2										
8:45 AM		3										
9:00 AM		1										
9:15 AM												
<b>Total:</b>	0	42	2	0	0	0	0	293	12	91	7	0
TOTAL ENTERING VEH.	400											
% OF ENTERING VEH.	40.69%											
TURN MOVEMENT %	11.00%	0.00%	0.00%	0.00%	0.00%	0.00%	75.68%	24.32%	0.00%	0.00%	41.11%	58.89%
PEAK HOUR TRUCK VOL	2	0	0	0	0	0	3	4	0	0	0	2
PEAK HOUR TOTAL VOL.	22	0	0	0	0	0	108	47	0	48	50	21
MAX PERIOD	7	0	0	0	0	0	41	18	0	18	21	6
PEAK HOUR FACTOR	0.79	0.00	0.00	0.00	0.00	0.00	0.66	0.65	0.00	0.67	0.60	0.60
% TRUCKS - PEAK HOUR	9.09%	0.00%	0.00%	0.00%	0.00%	0.00%	2.78%	8.51%	0.00%	0.00%	4.00%	4.00%





TURNING MOVEMENT COUNT

Location: Roche St & W Pleasant St  
 Start Date: 3/21/2015  
 Start Time: 3:30 PM  
 Site Code: -

Start Time	Eastbound			Westbound			Northbound			Southbound			
	Across Leg Pedestrians	Cars	Trucks										
3:30 PM	11	7	42	2	0	0	55	1	12	0	11	7	
3:45 PM	7	58	52	0	0	0	40	2	18	0	15	6	
4:00 PM	11	52	50	1	0	0	46	14	14	0	5	6	
4:15 PM	5	43	46	1	0	0	1	43	7	0	4	6	
4:30 PM	3	46	43	0	0	0	2	41	9	1	8	7	
4:45 PM	7	46	46	1	0	0	57	11	11	1	5	13	
5:00 PM	7	56	56	1	0	0	33	9	9	0	8	7	
5:15 PM	7	42	42	1	0	0	42	18	18	0	14	9	
5:30 PM	3	64	64	0	0	0	36	14	14	1	4	5	
5:45 PM	3	41	41	0	0	0	37	8	8	0	5	7	
6:00 PM	6	43	43	0	0	0	30	7	7	0	7	2	
6:15 PM	0	74	74	0	0	0	1	52	10	1	9	5	
<b>Total:</b>	0	74	3	0	0	0	4	512	8	137	1	0	80
TOTAL ENTERING VEH.	671			0			658			175			
% OF ENTERING VEH.	44.61%			0.00%			43.75%			11.64%			
TURN MOVEMENT %	11.48%			0.00%			79.03%			0.00%			
PEAK HOUR TRUCK VOL.	0			0			5			0			
PEAK HOUR TOTAL VOL.	36			0			189			35			
MAX PERIOD	11			0			56			15			
PEAK HOUR FACTOR	0.82			0.00			0.84			0.58			
% TRUCKS - PEAK HOUR	0.00%			0.00%			2.65%			0.00%			

**Iowa Department of Transportation**  
**Turning Movement Traffic Count Summary**  
 Annualized Daily Traffic For All Vehicles

**Station Number:**  
63226689099

---

**Count Date:**  
Thursday, May 29, 2014

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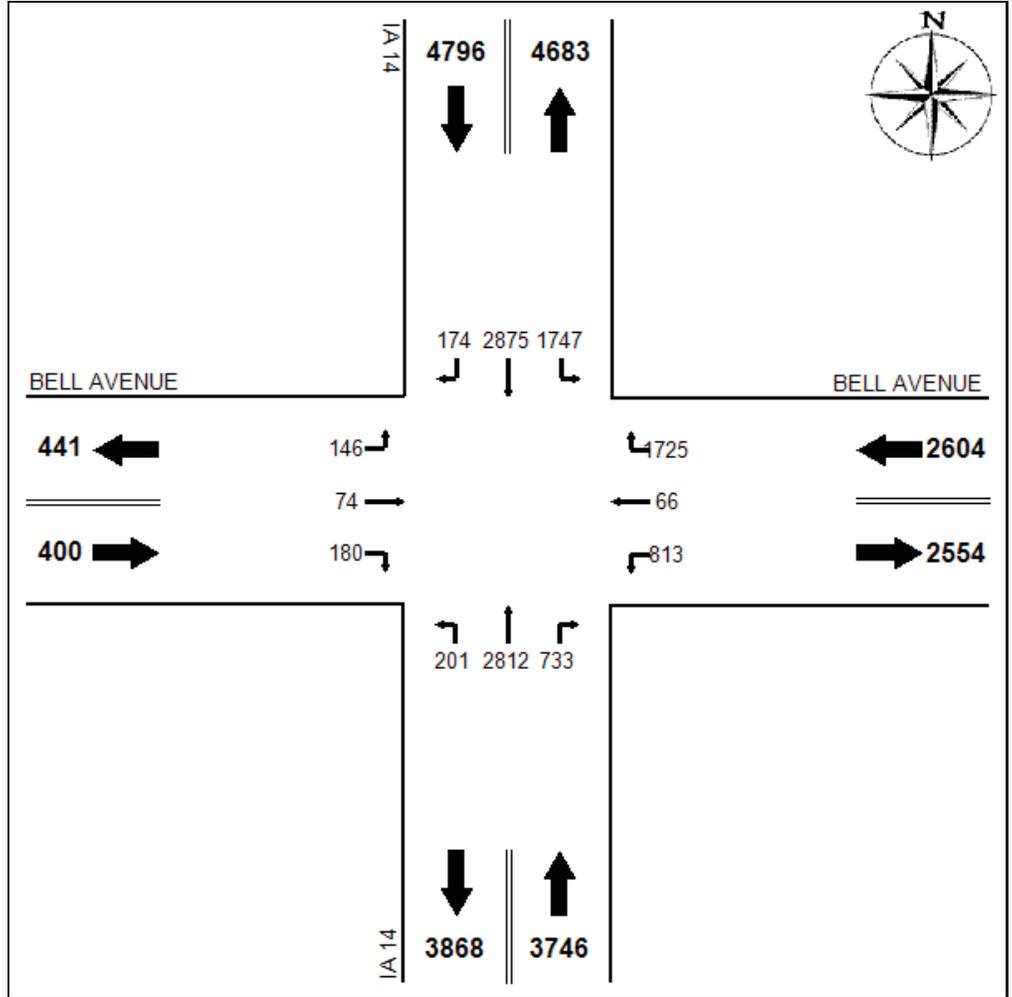
**County:**  
Marion

---

**Location Description:**  
IA 14 & BELL AVE

---

**Volume Factor:** 1.804  
**Pass Class Factor:** 1.850  
**SU Class Factor:** 1.522  
**Combo Class Factor:** 1.556



Raw Data-All Vehicles

**PRELIMINARY**

	N Leg			E Leg			S Leg			W Leg		
	L	T	R	L	T	R	L	T	R	L	T	R
<b>07:00</b>	63	169	5	22	4	49	19	264	43	2	0	9
<b>08:00</b>	73	156	6	28	2	64	12	161	32	4	5	11
<b>11:00</b>	143	255	21	56	4	148	14	239	57	21	3	11
<b>12:00</b>	142	227	21	50	6	153	12	185	45	14	9	14
<b>15:00</b>	171	274	18	90	5	158	16	221	83	11	8	28
<b>16:00</b>	196	255	15	107	5	177	17	234	71	14	9	17
<b>17:00</b>	159	241	8	88	10	186	21	237	68	13	6	11

**Iowa Department of Transportation**  
**Turning Movement Traffic Count Summary**  
 Vehicle Type: Passenger Vehicles

**Station Number:**  
63226689099

---

**Count Date:**  
Thursday, May 29, 2014

---

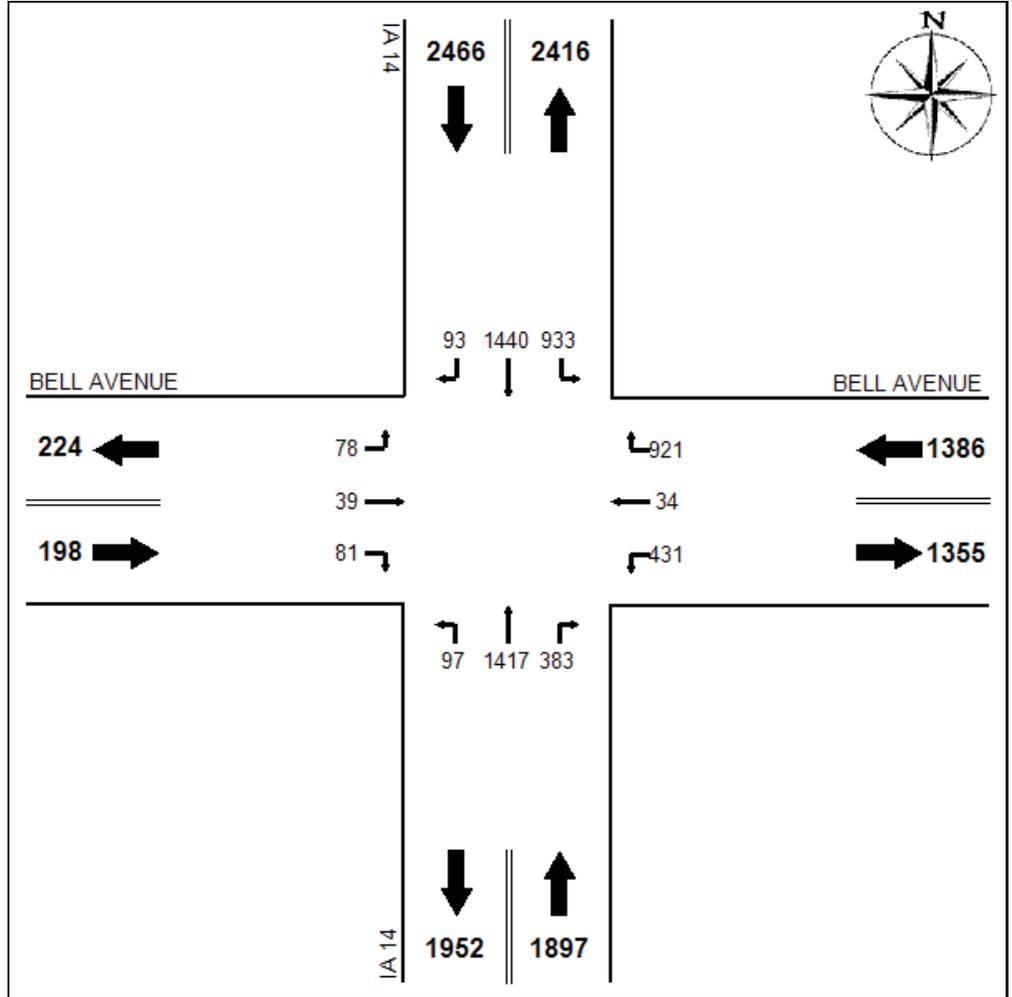
**County:**  
Marion

---

**Location Description:**  
IA 14 & BELL AVE

---

**Volume Factor:** N/A  
**Pass Class Factor:** N/A  
**SU Class Factor:** N/A  
**Combo Class Factor:** N/A



Raw Data-Passenger Vehicles:

**PRELIMINARY**

	N Leg			E Leg			S Leg			W Leg		
	L	T	R	L	T	R	L	T	R	L	T	R
<b>07:00</b>	62	152	5	22	4	49	16	251	42	2	0	5
<b>08:00</b>	71	133	6	26	2	61	9	149	29	4	5	8
<b>11:00</b>	140	222	21	54	3	142	12	214	52	21	3	10
<b>12:00</b>	140	203	20	49	6	149	11	161	42	14	8	10
<b>15:00</b>	170	255	18	90	5	157	12	210	82	11	8	22
<b>16:00</b>	192	248	15	104	4	177	17	211	69	14	9	15
<b>17:00</b>	158	227	8	86	10	186	20	221	67	12	6	11

**Iowa Department of Transportation**  
**Turning Movement Traffic Count Summary**  
 Vehicle Type: Single-Unit Trucks

**Station Number:**  
63226689099

---

**Count Date:**  
Thursday, May 29, 2014

---

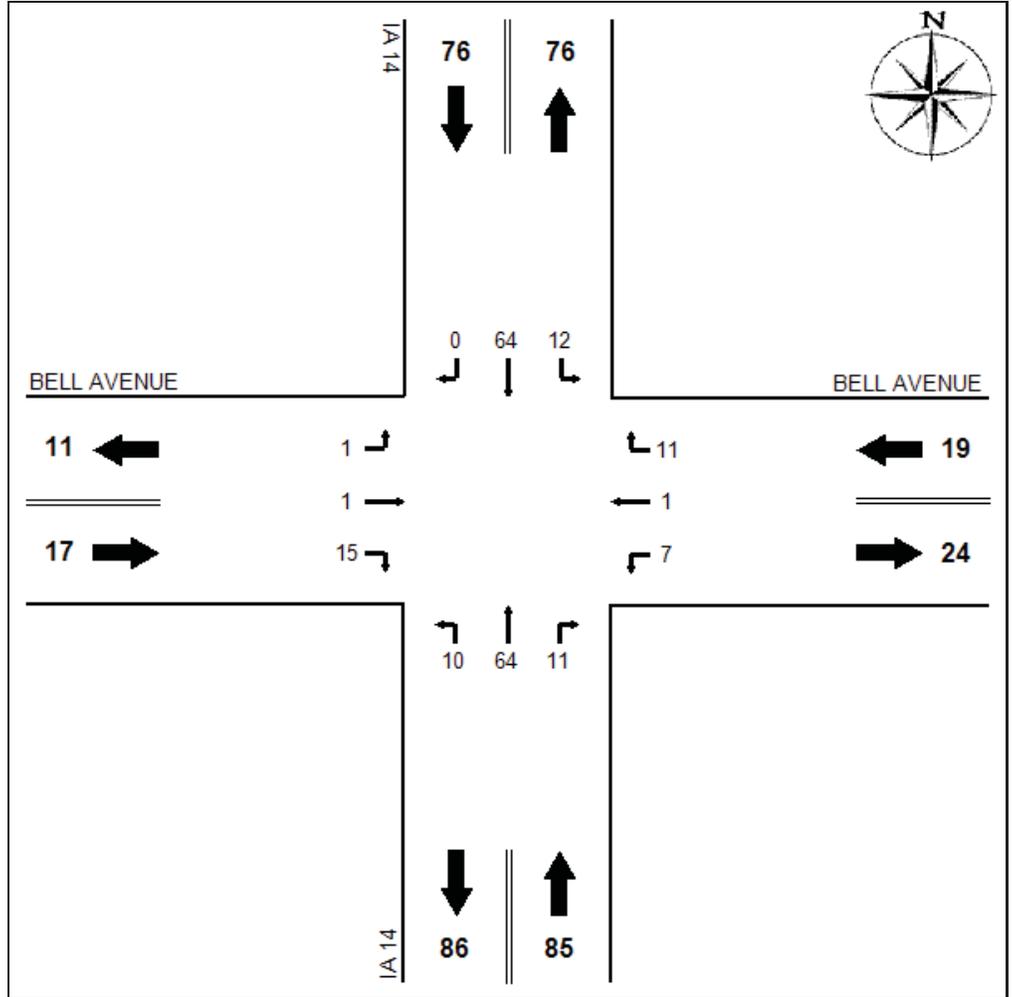
**County:**  
Marion

---

**Location Description:**  
IA 14 & BELL AVE

---

**Volume Factor:** N/A  
**Pass Class Factor:** N/A  
**SU Class Factor:** N/A  
**Combo Class Factor:** N/A



Raw Data-Single-Unit Trucks:

**PRELIMINARY**

	N Leg			E Leg			S Leg			W Leg		
	L	T	R	L	T	R	L	T	R	L	T	R
<b>07:00</b>	1	11	0	0	0	0	3	9	0	0	0	1
<b>08:00</b>	2	9	0	2	0	1	1	7	3	0	0	2
<b>11:00</b>	3	17	0	2	1	6	2	14	5	0	0	1
<b>12:00</b>	1	15	0	1	0	3	0	10	1	0	1	3
<b>15:00</b>	1	6	0	0	0	1	3	6	1	0	0	6
<b>16:00</b>	3	1	0	1	0	0	0	11	0	0	0	2
<b>17:00</b>	1	5	0	1	0	0	1	7	1	1	0	0

**Iowa Department of Transportation**  
**Turning Movement Traffic Count Summary**  
 Vehicle Type: Combination Trucks

**Station Number:**  
63226689099

---

**Count Date:**  
Thursday, May 29, 2014

---

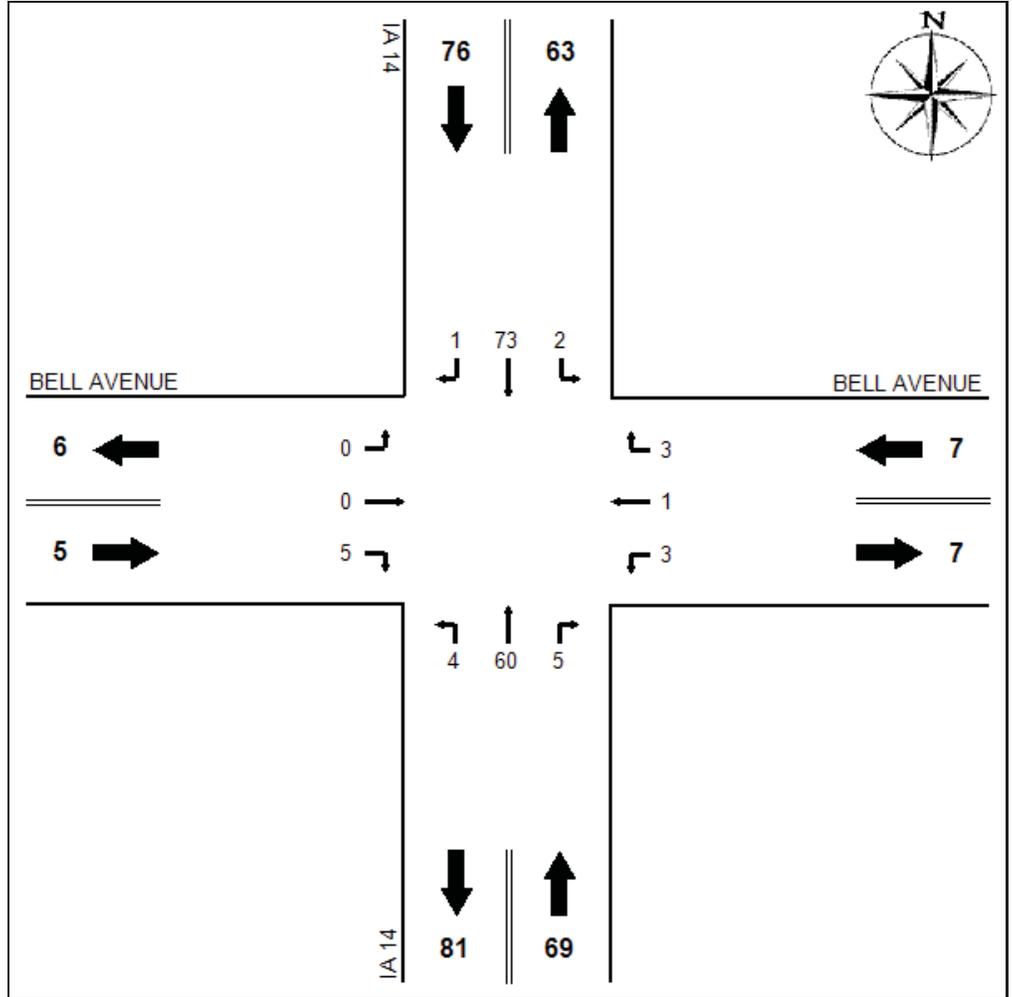
**County:**  
Marion

---

**Location Description:**  
IA 14 & BELL AVE

---

**Volume Factor:** N/A  
**Pass Class Factor:** N/A  
**SU Class Factor:** N/A  
**Combo Class Factor:** N/A



**PRELIMINARY**

Raw Data-Combination Trucks:

	N Leg			E Leg			S Leg			W Leg		
	L	T	R	L	T	R	L	T	R	L	T	R
07:00	0	6	0	0	0	0	0	4	1	0	0	3
08:00	0	14	0	0	0	2	2	5	0	0	0	1
11:00	0	16	0	0	0	0	0	11	0	0	0	0
12:00	1	9	1	0	0	1	1	14	2	0	0	1
15:00	0	13	0	0	0	0	1	5	0	0	0	0
16:00	1	6	0	2	1	0	0	12	2	0	0	0
17:00	0	9	0	1	0	0	0	9	0	0	0	0

**Iowa Department of Transportation**  
**Turning Movement Traffic Count Summary**  
 Annualized Daily Traffic For All Vehicles

**Station Number:**  
63227388099

---

**Count Date:**  
Monday, August 25, 2014

---

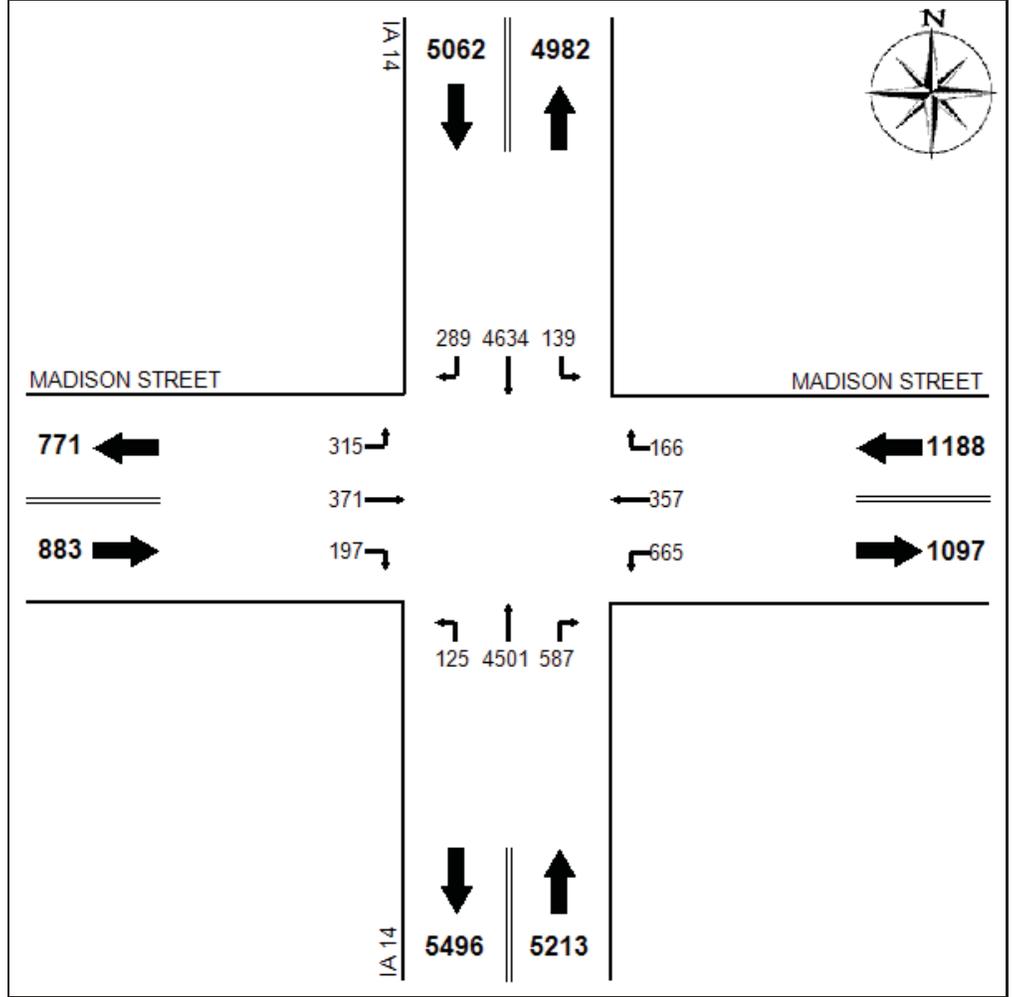
**County:**  
Marion

---

**Location Description:**  
IA 14 & MADISON ST

---

**Volume Factor:** 1.883  
**Pass Class Factor:** 1.935  
**SU Class Factor:** 1.654  
**Combo Class Factor:** 1.682



Raw Data-All Vehicles

**PRELIMINARY**

	N Leg			E Leg			S Leg			W Leg		
	L	T	R	L	T	R	L	T	R	L	T	R
<b>07:00</b>	7	227	45	31	83	25	18	240	23	37	32	13
<b>08:00</b>	3	255	9	31	10	9	9	241	24	21	13	12
<b>11:00</b>	9	384	25	43	19	11	9	350	41	12	17	8
<b>12:00</b>	14	495	22	56	23	13	8	428	57	50	75	33
<b>15:00</b>	9	320	9	69	22	9	5	358	54	14	17	14
<b>16:00</b>	16	410	18	60	10	10	8	393	51	18	17	9
<b>17:00</b>	14	318	22	55	18	9	8	331	54	11	21	13

**Iowa Department of Transportation**  
**Turning Movement Traffic Count Summary**  
 Vehicle Type: Passenger Vehicles

**Station Number:**  
63227388099

---

**Count Date:**  
Monday, August 25, 2014

---

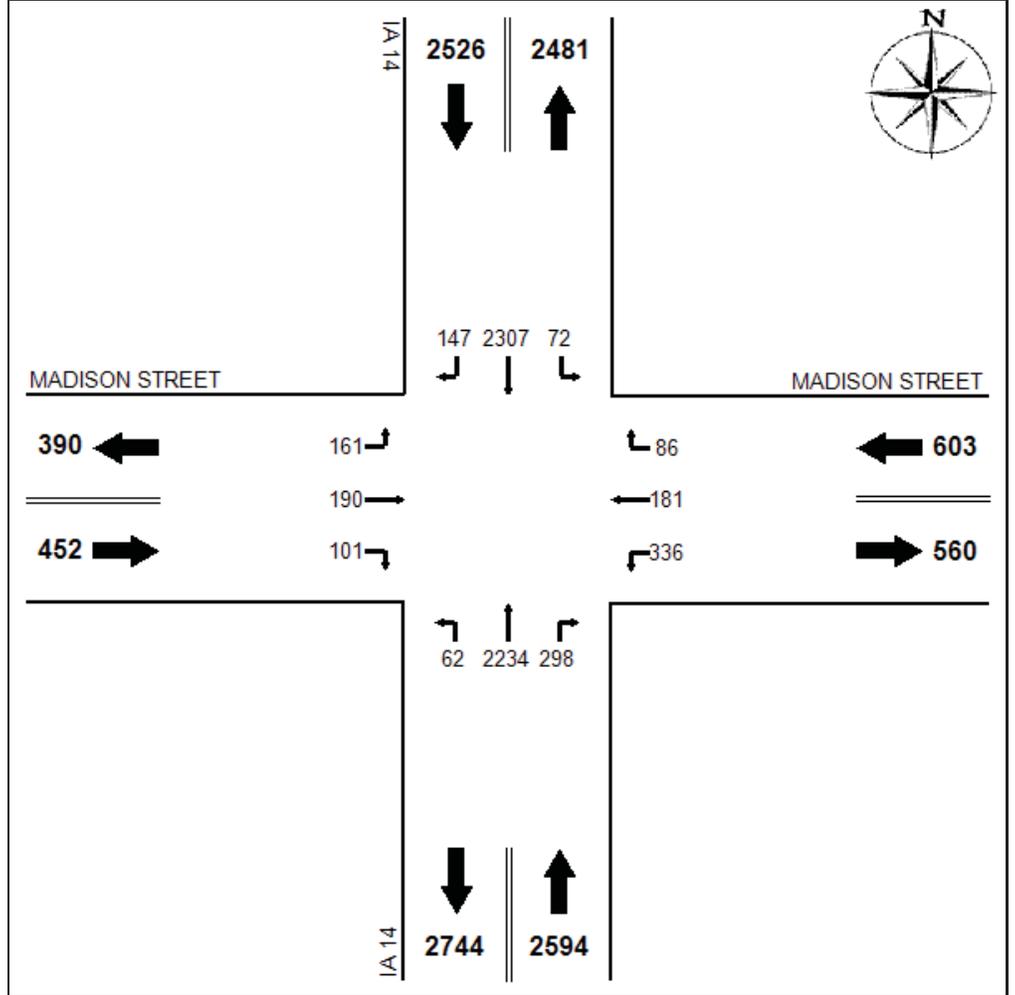
**County:**  
Marion

---

**Location Description:**  
IA 14 & MADISON ST

---

**Volume Factor:** N/A  
**Pass Class Factor:** N/A  
**SU Class Factor:** N/A  
**Combo Class Factor:** N/A



Raw Data-Passenger Vehicles:

**PRELIMINARY**

	N Leg			E Leg			S Leg			W Leg		
	L	T	R	L	T	R	L	T	R	L	T	R
<b>07:00</b>	7	206	44	30	79	25	17	223	21	35	32	12
<b>08:00</b>	3	247	9	30	10	9	9	233	24	21	13	12
<b>11:00</b>	9	363	25	43	19	11	8	326	41	12	17	8
<b>12:00</b>	14	476	21	56	23	13	8	412	57	50	73	33
<b>15:00</b>	9	310	9	66	22	9	4	343	53	14	17	14
<b>16:00</b>	16	397	18	59	10	10	8	379	51	18	17	9
<b>17:00</b>	14	308	21	52	18	9	8	318	51	11	21	13

**Iowa Department of Transportation**  
**Turning Movement Traffic Count Summary**  
 Vehicle Type: Single-Unit Trucks

**Station Number:**  
63227388099

---

**Count Date:**  
Monday, August 25, 2014

---

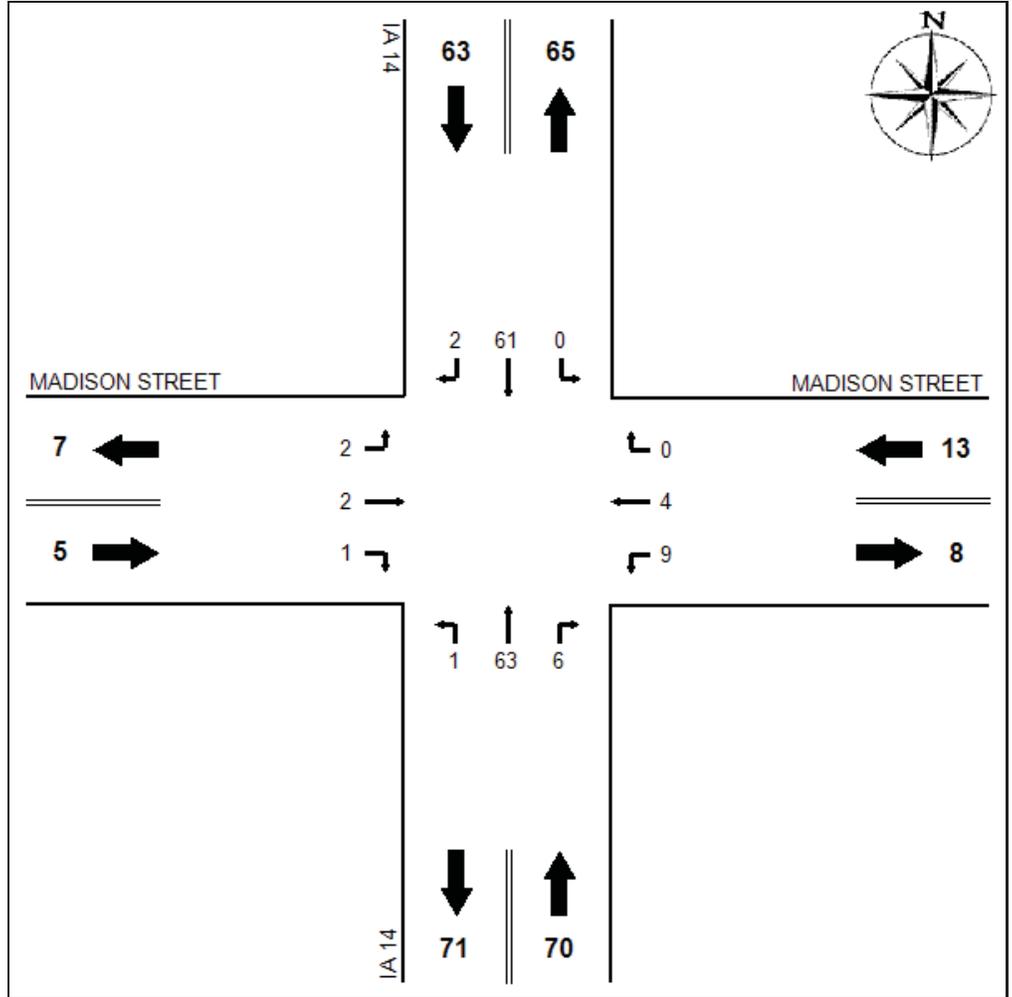
**County:**  
Marion

---

**Location Description:**  
IA 14 & MADISON ST

---

**Volume Factor:** N/A  
**Pass Class Factor:** N/A  
**SU Class Factor:** N/A  
**Combo Class Factor:** N/A



Raw Data-Single-Unit Trucks:

**PRELIMINARY**

	N Leg			E Leg			S Leg			W Leg		
	L	T	R	L	T	R	L	T	R	L	T	R
07:00	0	16	1	1	4	0	1	11	2	2	0	1
08:00	0	4	0	1	0	0	0	5	0	0	0	0
11:00	0	11	0	0	0	0	0	11	0	0	0	0
12:00	0	8	1	0	0	0	0	9	0	0	2	0
15:00	0	8	0	3	0	0	0	9	1	0	0	0
16:00	0	9	0	1	0	0	0	7	0	0	0	0
17:00	0	5	0	3	0	0	0	11	3	0	0	0

**Iowa Department of Transportation**  
**Turning Movement Traffic Count Summary**  
 Vehicle Type: Combination Trucks

**Station Number:**  
63227388099

---

**Count Date:**  
Monday, August 25, 2014

---

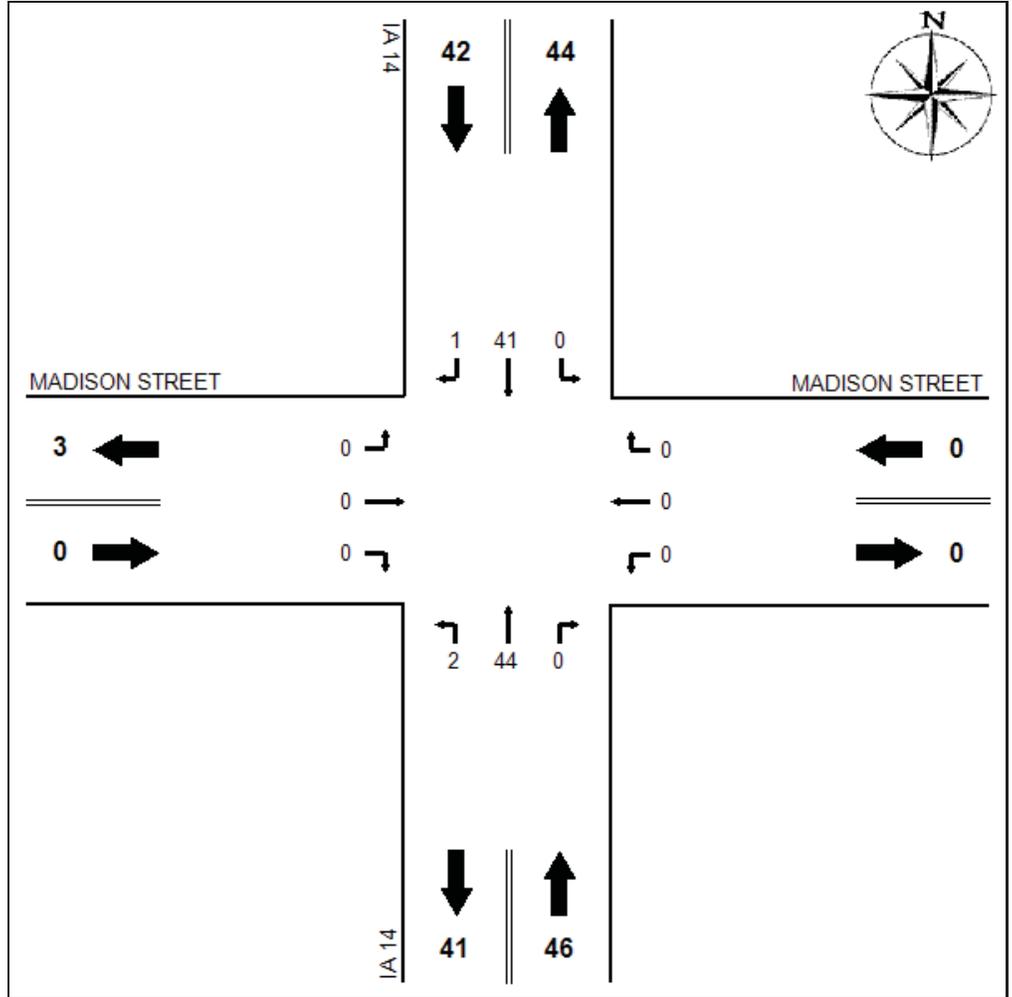
**County:**  
Marion

---

**Location Description:**  
IA 14 & MADISON ST

---

**Volume Factor:** N/A  
**Pass Class Factor:** N/A  
**SU Class Factor:** N/A  
**Combo Class Factor:** N/A



Raw Data-Combination Trucks:

**PRELIMINARY**

	N Leg			E Leg			S Leg			W Leg		
	L	T	R	L	T	R	L	T	R	L	T	R
<b>07:00</b>	0	5	0	0	0	0	0	6	0	0	0	0
<b>08:00</b>	0	4	0	0	0	0	0	3	0	0	0	0
<b>11:00</b>	0	10	0	0	0	0	1	13	0	0	0	0
<b>12:00</b>	0	11	0	0	0	0	0	7	0	0	0	0
<b>15:00</b>	0	2	0	0	0	0	1	6	0	0	0	0
<b>16:00</b>	0	4	0	0	0	0	0	7	0	0	0	0
<b>17:00</b>	0	5	1	0	0	0	0	2	0	0	0	0

**Iowa Department of Transportation**  
**Turning Movement Traffic Count Summary**  
 Annualized Daily Traffic For All Vehicles

*Station Number:*  
 63227889099

---

*Count Date:*  
 Tuesday, August 26, 2014

---

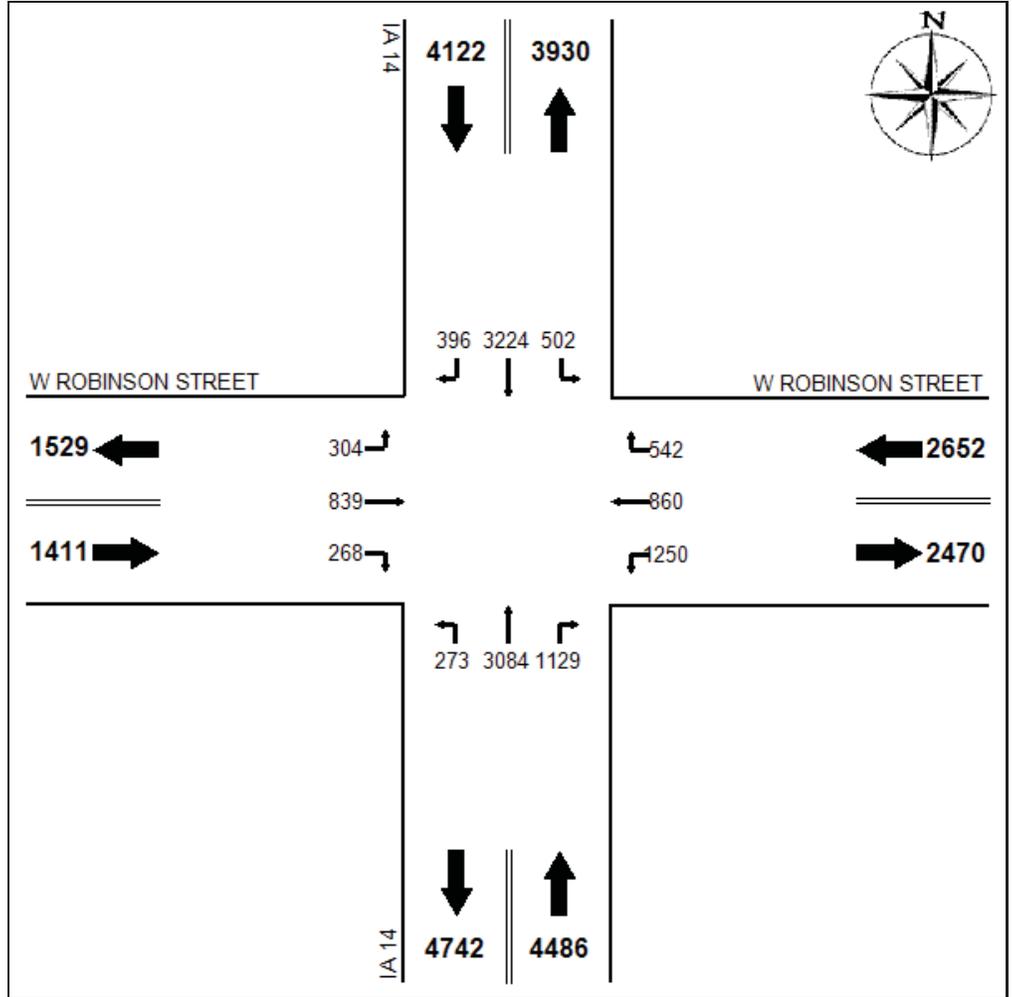
*County:*  
 Marion

---

*Location Description:*  
 IA 14 & ROBINSON ST

---

*Volume Factor:* 1.862  
*Pass Class Factor:* 1.904  
*SU Class Factor:* 1.600  
*Combo Class Factor:* 1.676



Raw Data-All Vehicles

**PRELIMINARY**

	N Leg			E Leg			S Leg			W Leg		
	L	T	R	L	T	R	L	T	R	L	T	R
<b>07:00</b>	29	194	82	63	149	36	42	192	45	47	88	21
<b>08:00</b>	42	167	15	72	33	32	6	151	68	13	52	19
<b>11:00</b>	29	238	12	88	45	43	12	250	75	17	44	11
<b>12:00</b>	26	273	13	106	47	39	15	263	108	15	44	6
<b>15:00</b>	37	244	32	119	69	42	13	250	110	25	92	31
<b>16:00</b>	51	309	29	122	61	47	29	257	110	19	49	17
<b>17:00</b>	50	285	26	89	50	47	27	272	79	24	73	36

**Iowa Department of Transportation**  
**Turning Movement Traffic Count Summary**  
 Vehicle Type: Passenger Vehicles

**Station Number:**  
63227889099

---

**Count Date:**  
Tuesday, August 26, 2014

---

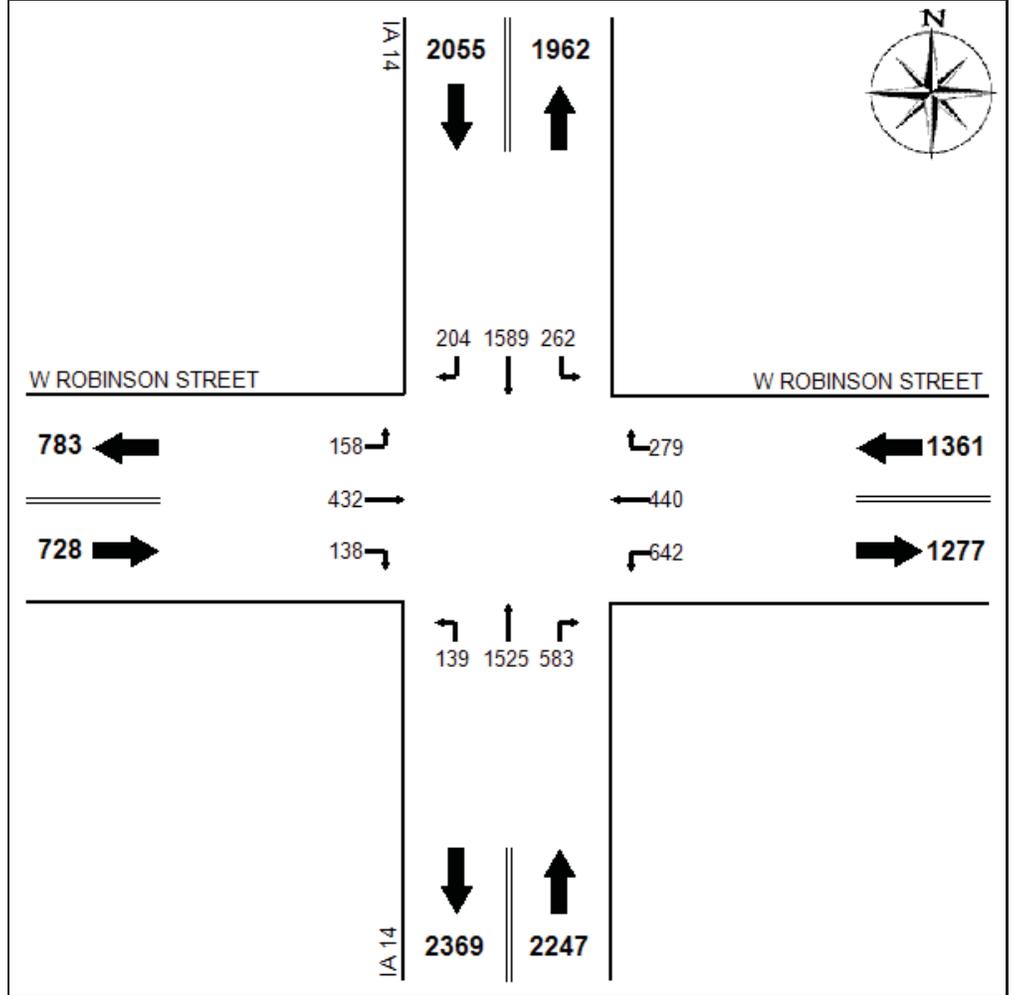
**County:**  
Marion

---

**Location Description:**  
IA 14 & ROBINSON ST

---

**Volume Factor:** N/A  
**Pass Class Factor:** N/A  
**SU Class Factor:** N/A  
**Combo Class Factor:** N/A



Raw Data-Passenger Vehicles:

**PRELIMINARY**

	N Leg			E Leg			S Leg			W Leg		
	L	T	R	L	T	R	L	T	R	L	T	R
<b>07:00</b>	29	171	78	61	146	34	42	172	44	47	86	21
<b>08:00</b>	42	150	15	71	33	31	6	140	65	13	52	17
<b>11:00</b>	28	222	12	85	43	42	12	222	73	17	43	10
<b>12:00</b>	26	250	13	103	46	37	15	246	105	15	44	6
<b>15:00</b>	37	230	32	115	64	42	13	235	108	24	85	31
<b>16:00</b>	50	293	28	120	59	46	24	248	109	19	49	17
<b>17:00</b>	50	273	26	87	49	47	27	262	79	23	73	36

**Iowa Department of Transportation**  
**Turning Movement Traffic Count Summary**  
 Vehicle Type: Single-Unit Trucks

**Station Number:**  
63227889099

---

**Count Date:**  
Tuesday, August 26, 2014

---

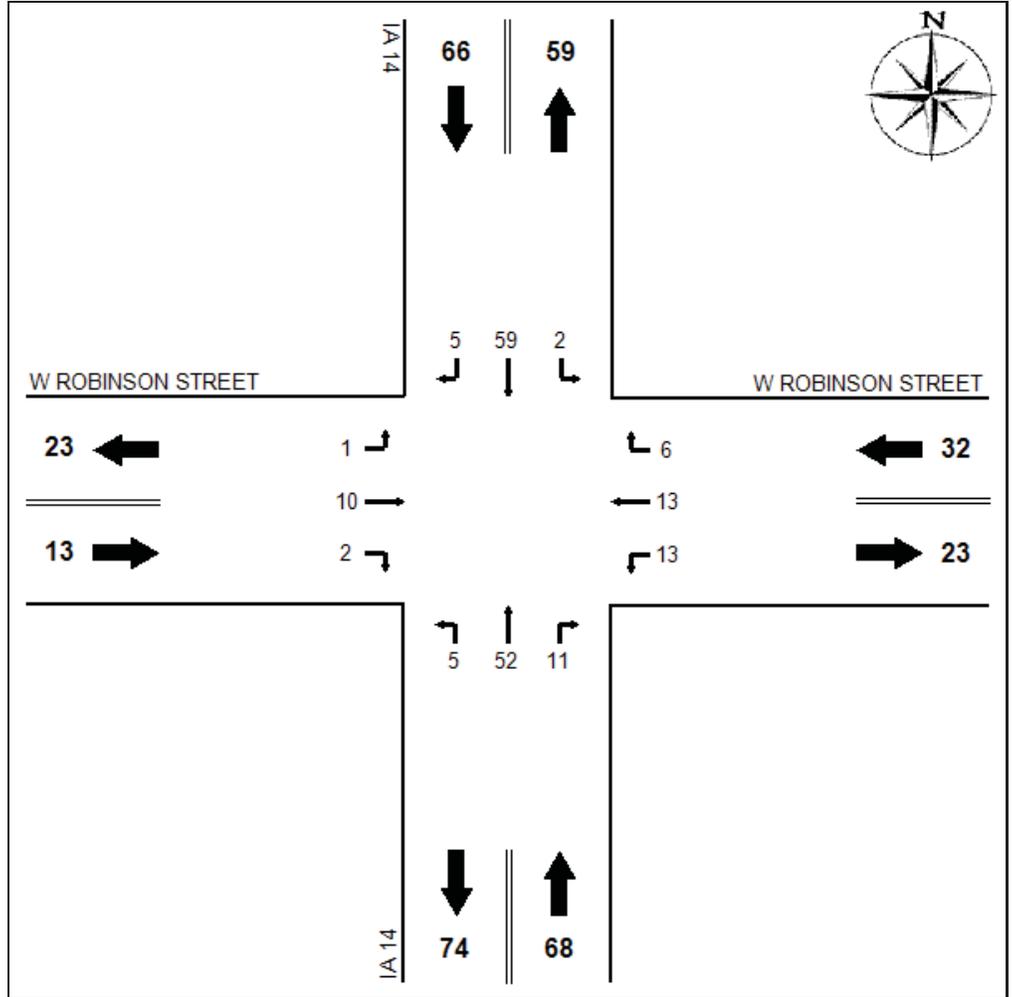
**County:**  
Marion

---

**Location Description:**  
IA 14 & ROBINSON ST

---

**Volume Factor:** N/A  
**Pass Class Factor:** N/A  
**SU Class Factor:** N/A  
**Combo Class Factor:** N/A



Raw Data-Single-Unit Trucks:

	N Leg			E Leg			S Leg			W Leg		
	L	T	R	L	T	R	L	T	R	L	T	R
07:00	0	11	4	1	2	2	0	9	0	0	2	0
08:00	0	11	0	1	0	1	0	4	3	0	0	1
11:00	1	5	0	2	2	1	0	14	2	0	1	1
12:00	0	6	0	2	1	1	0	5	3	0	0	0
15:00	0	8	0	3	5	0	0	8	2	0	7	0
16:00	1	10	1	2	2	1	5	6	1	0	0	0
17:00	0	8	0	2	1	0	0	6	0	1	0	0

**Iowa Department of Transportation**  
**Turning Movement Traffic Count Summary**  
 Vehicle Type: Combination Trucks

**Station Number:**  
63227889099

---

**Count Date:**  
Tuesday, August 26, 2014

---

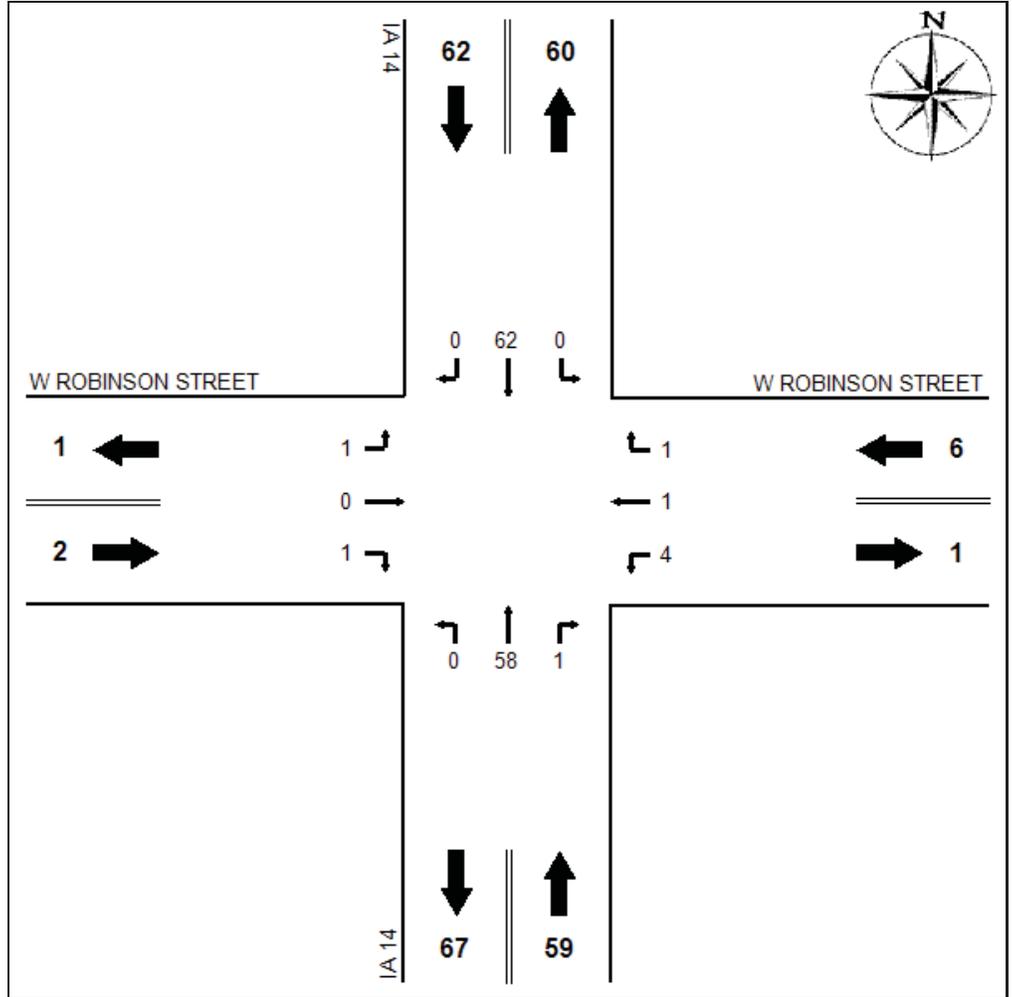
**County:**  
Marion

---

**Location Description:**  
IA 14 & ROBINSON ST

---

**Volume Factor:** N/A  
**Pass Class Factor:** N/A  
**SU Class Factor:** N/A  
**Combo Class Factor:** N/A



Raw Data-Combination Trucks:

**PRELIMINARY**

	N Leg			E Leg			S Leg			W Leg		
	L	T	R	L	T	R	L	T	R	L	T	R
<b>07:00</b>	0	12	0	1	1	0	0	11	1	0	0	0
<b>08:00</b>	0	6	0	0	0	0	0	7	0	0	0	1
<b>11:00</b>	0	11	0	1	0	0	0	14	0	0	0	0
<b>12:00</b>	0	17	0	1	0	1	0	12	0	0	0	0
<b>15:00</b>	0	6	0	1	0	0	0	7	0	1	0	0
<b>16:00</b>	0	6	0	0	0	0	0	3	0	0	0	0
<b>17:00</b>	0	4	0	0	0	0	0	4	0	0	0	0

**Iowa Department of Transportation**  
**Turning Movement Traffic Count Summary**  
 Annualized Daily Traffic For All Vehicles

**Station Number:**  
63228186099

---

**Count Date:**  
Wednesday, August 27, 2014

---

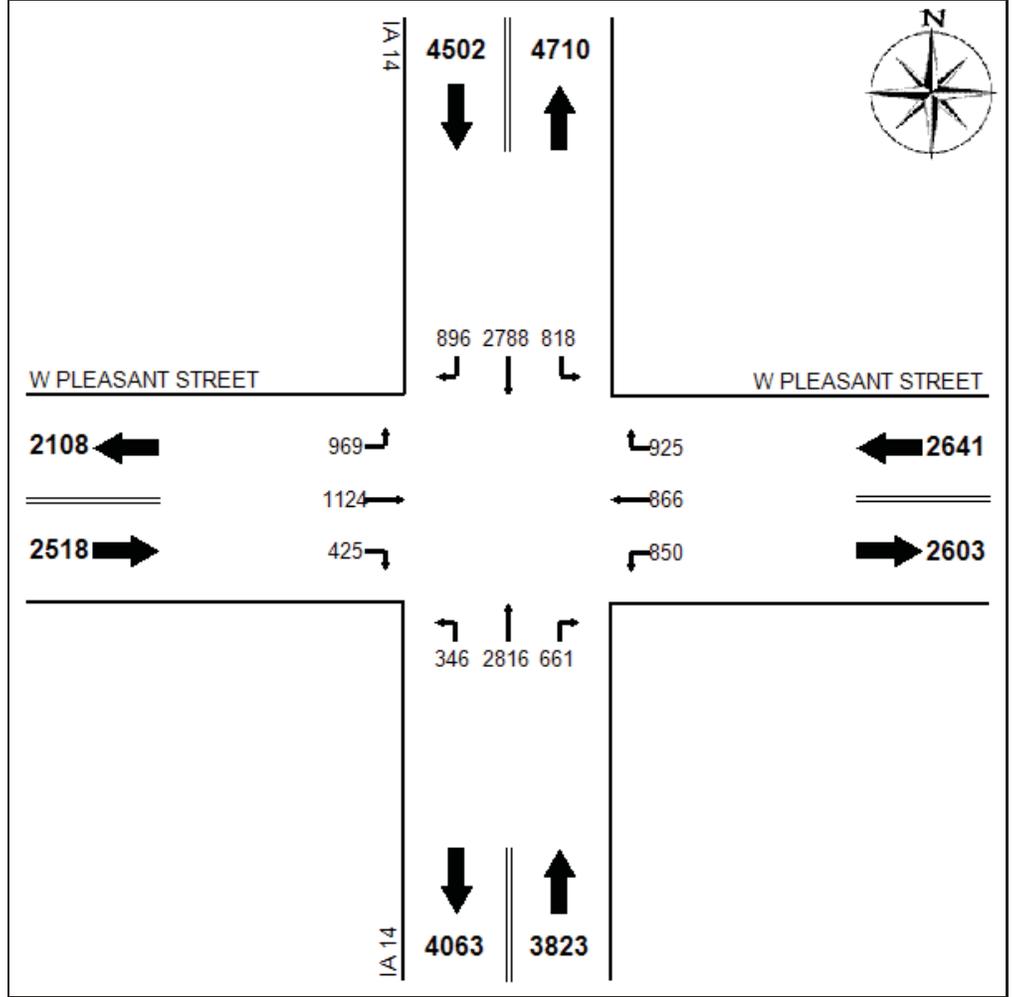
**County:**  
Marion

---

**Location Description:**  
IA 14, BUSINESS IA 92 &  
PLEASANT ST

---

**Volume Factor:** 1.850  
**Pass Class Factor:** 1.897  
**SU Class Factor:** 1.601  
**Combo Class Factor:** 1.617



Raw Data-All Vehicles

**PRELIMINARY**

	N Leg			E Leg			S Leg			W Leg		
	L	T	R	L	T	R	L	T	R	L	T	R
<b>07:00</b>	40	209	147	39	120	30	42	191	31	55	82	32
<b>08:00</b>	54	174	51	48	55	47	37	162	35	60	69	26
<b>11:00</b>	68	199	55	70	42	55	18	181	54	67	58	25
<b>12:00</b>	65	194	44	76	45	71	29	223	55	46	61	30
<b>15:00</b>	66	255	73	73	62	82	21	227	66	102	101	26
<b>16:00</b>	64	226	60	78	72	104	16	245	53	85	109	39
<b>17:00</b>	77	227	45	66	63	101	20	269	57	98	116	47

**Iowa Department of Transportation**  
**Turning Movement Traffic Count Summary**  
 Vehicle Type: Passenger Vehicles

**Station Number:**  
63228186099

---

**Count Date:**  
Wednesday, August 27, 2014

---

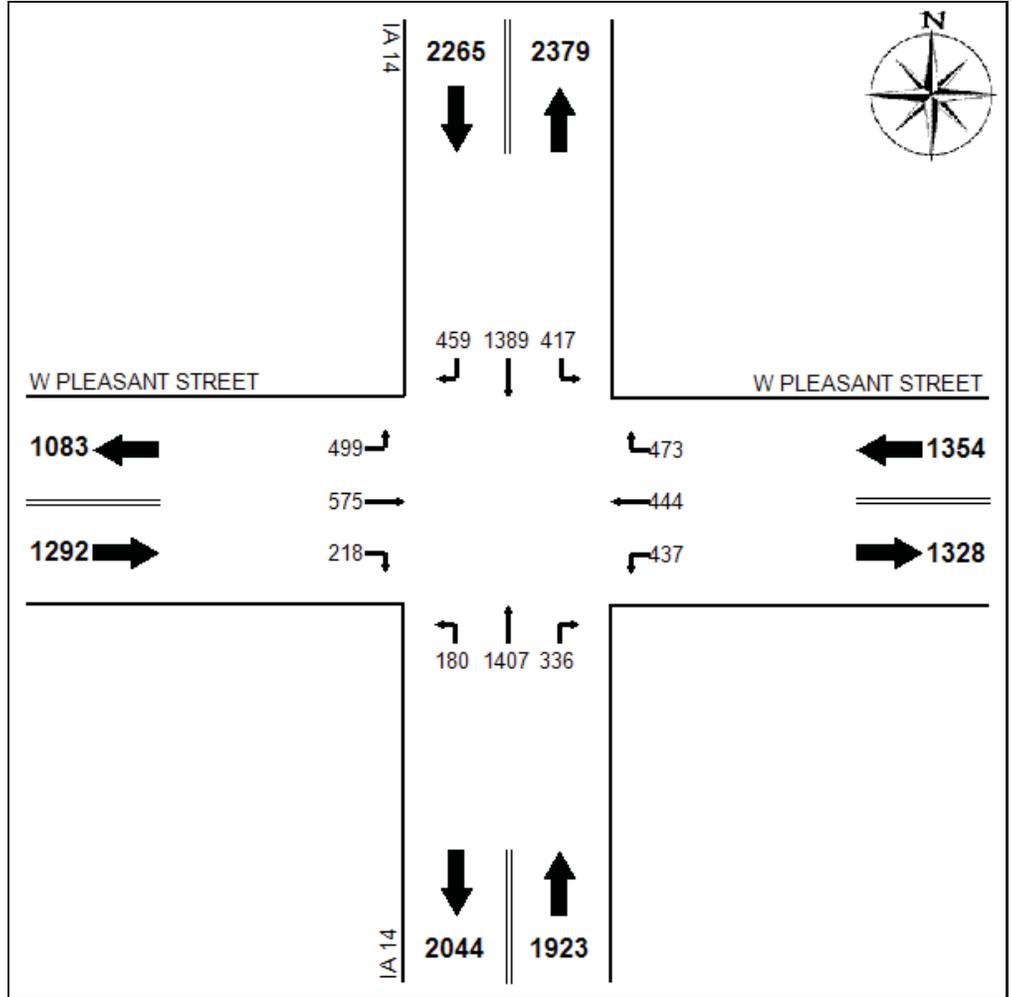
**County:**  
Marion

---

**Location Description:**  
IA 14, BUSINESS IA 92 &  
PLEASANT ST

---

**Volume Factor:** N/A  
**Pass Class Factor:** N/A  
**SU Class Factor:** N/A  
**Combo Class Factor:** N/A



Raw Data-Passenger Vehicles:

**PRELIMINARY**

	N Leg			E Leg			S Leg			W Leg		
	L	T	R	L	T	R	L	T	R	L	T	R
<b>07:00</b>	36	189	140	39	118	27	42	176	29	51	78	31
<b>08:00</b>	54	160	51	45	52	43	36	153	32	60	68	24
<b>11:00</b>	66	178	51	67	40	53	17	167	52	65	55	25
<b>12:00</b>	57	177	43	72	44	69	29	202	53	43	56	30
<b>15:00</b>	63	250	72	70	57	78	20	212	63	98	96	24
<b>16:00</b>	64	220	58	78	71	104	16	241	51	84	107	39
<b>17:00</b>	77	215	44	66	62	99	20	256	56	98	115	45

**Iowa Department of Transportation**  
**Turning Movement Traffic Count Summary**  
 Vehicle Type: Single-Unit Trucks

**Station Number:**  
63228186099

---

**Count Date:**  
Wednesday, August 27, 2014

---

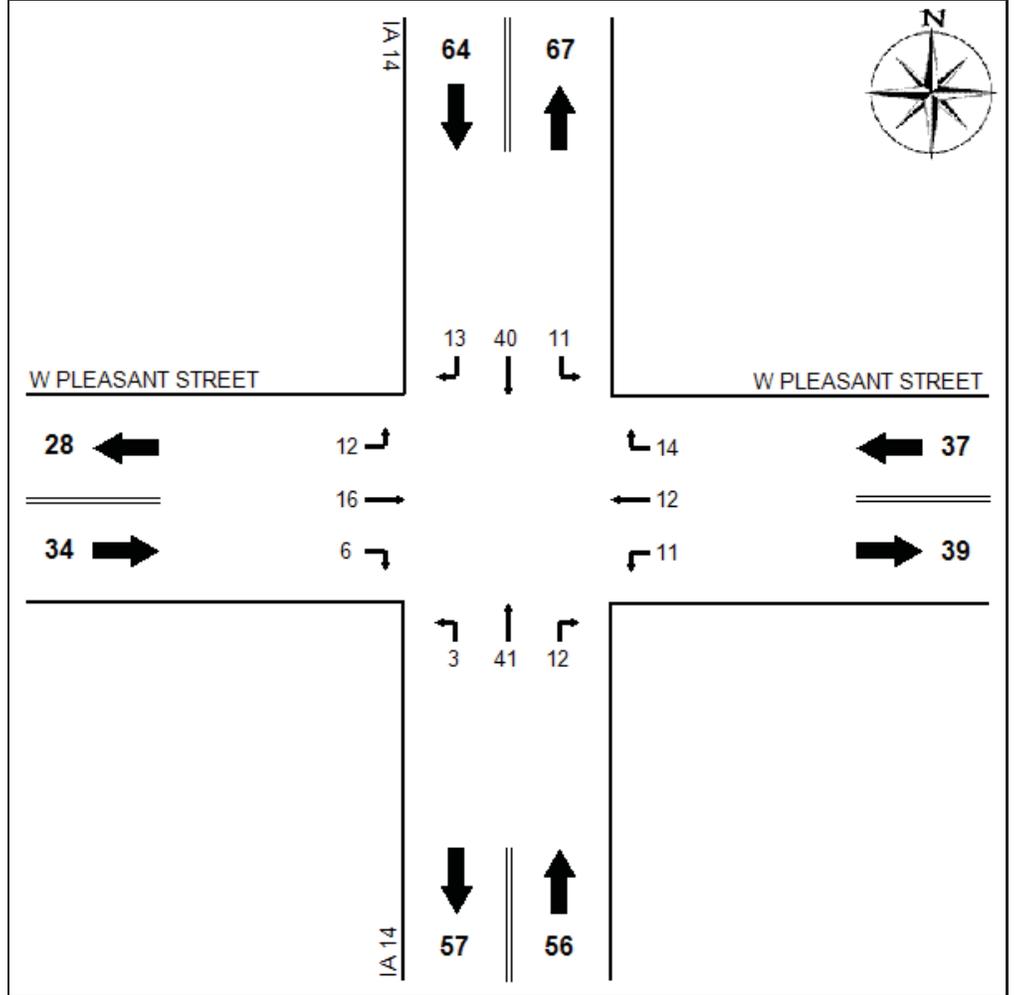
**County:**  
Marion

---

**Location Description:**  
IA 14, BUSINESS IA 92 &  
PLEASANT ST

---

**Volume Factor:** N/A  
**Pass Class Factor:** N/A  
**SU Class Factor:** N/A  
**Combo Class Factor:** N/A



Raw Data-Single-Unit Trucks

**PRELIMINARY**

	N Leg			E Leg			S Leg			W Leg		
	L	T	R	L	T	R	L	T	R	L	T	R
<b>07:00</b>	2	8	4	0	0	3	0	12	1	4	3	1
<b>08:00</b>	0	6	0	3	3	3	1	6	2	0	0	2
<b>11:00</b>	1	5	4	2	2	2	1	7	2	2	2	0
<b>12:00</b>	5	7	1	3	1	2	0	8	2	3	4	0
<b>15:00</b>	3	3	1	3	5	4	1	3	3	3	5	1
<b>16:00</b>	0	3	2	0	0	0	0	1	1	0	1	0
<b>17:00</b>	0	8	1	0	1	0	0	4	1	0	1	2

**Iowa Department of Transportation**  
**Turning Movement Traffic Count Summary**  
 Vehicle Type: Combination Trucks

**Station Number:**  
63228186099

---

**Count Date:**  
Wednesday, August 27, 2014

---

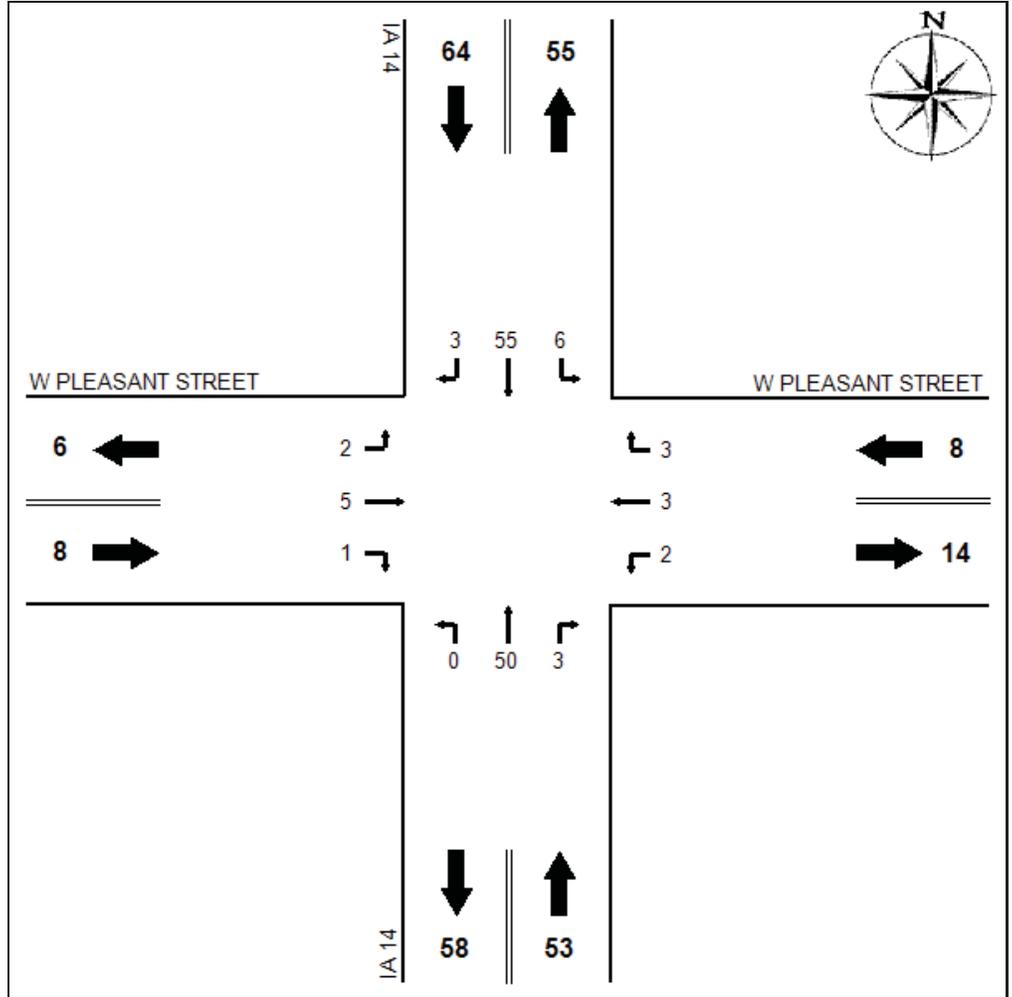
**County:**  
Marion

---

**Location Description:**  
IA 14, BUSINESS IA 92 &  
PLEASANT ST

---

**Volume Factor:** N/A  
**Pass Class Factor:** N/A  
**SU Class Factor:** N/A  
**Combo Class Factor:** N/A



Raw Data-Combination Trucks:

**PRELIMINARY**

	N Leg			E Leg			S Leg			W Leg		
	L	T	R	L	T	R	L	T	R	L	T	R
<b>07:00</b>	2	12	3	0	2	0	0	3	1	0	1	0
<b>08:00</b>	0	8	0	0	0	1	0	3	1	0	1	0
<b>11:00</b>	1	16	0	1	0	0	0	7	0	0	1	0
<b>12:00</b>	3	10	0	1	0	0	0	13	0	0	1	0
<b>15:00</b>	0	2	0	0	0	0	0	12	0	1	0	1
<b>16:00</b>	0	3	0	0	1	0	0	3	1	1	1	0
<b>17:00</b>	0	4	0	0	0	2	0	9	0	0	0	0

# Iowa Department of Transportation

## Turning Movement Traffic Count Summary

### Annualized Daily Traffic For All Vehicles

**Station Number:**  
63229089099

---

**Count Date:**  
Wednesday, May 28, 2014

---

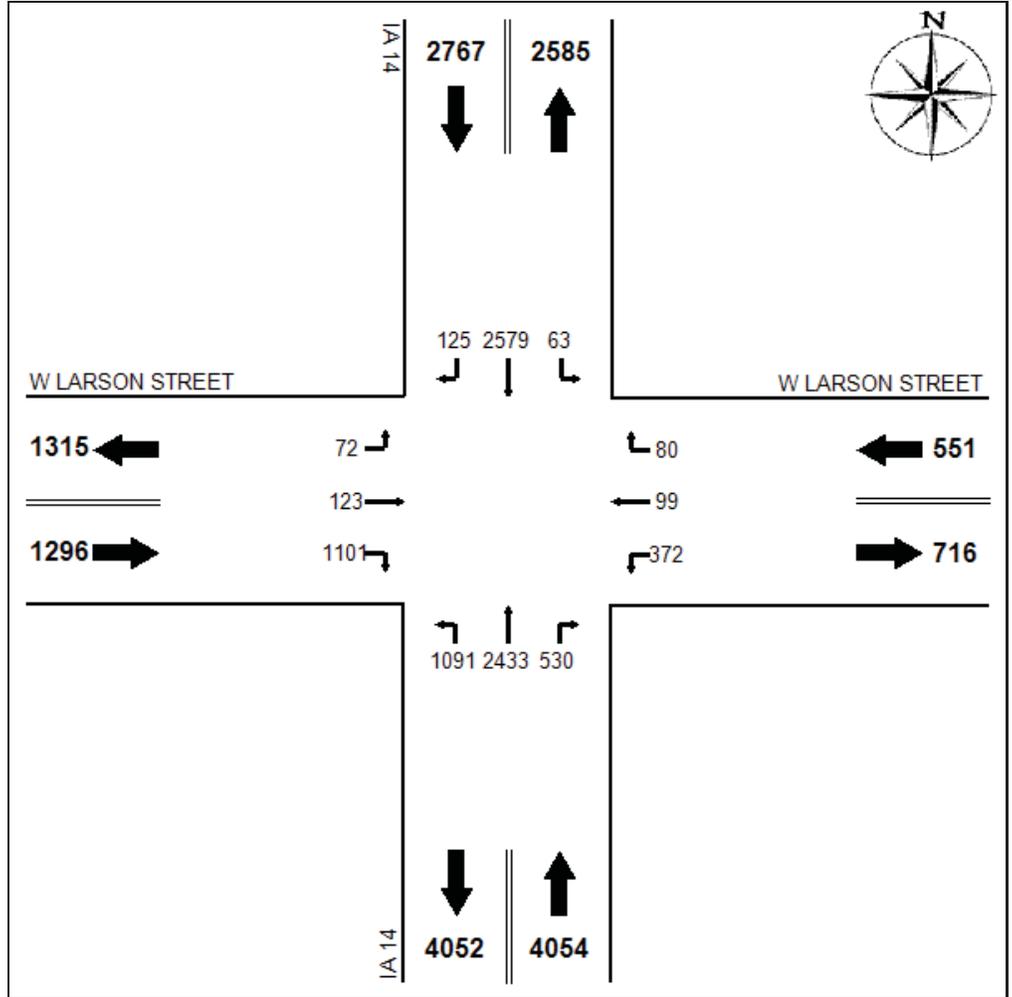
**County:**  
Marion

---

**Location Description:**  
IA 14 & Larson St

---

**Volume Factor:** 1.810  
**Pass Class Factor:** 1.869  
**SU Class Factor:** 1.454  
**Combo Class Factor:** 1.502



Raw Data-All Vehicles

PRELIMINARY

	N Leg			E Leg			S Leg			W Leg		
	L	T	R	L	T	R	L	T	R	L	T	R
<b>07:00</b>	11	204	10	66	5	1	41	152	84	5	12	72
<b>08:00</b>	1	171	3	29	7	4	45	108	36	3	6	48
<b>11:00</b>	4	187	12	10	6	3	90	182	18	5	7	90
<b>12:00</b>	6	184	11	16	6	7	96	167	28	8	6	103
<b>15:00</b>	6	197	12	27	10	10	100	218	63	4	14	94
<b>16:00</b>	6	215	11	29	10	9	106	244	24	5	12	86
<b>17:00</b>	0	246	8	24	9	10	109	250	32	9	9	98

**Iowa Department of Transportation**  
**Turning Movement Traffic Count Summary**  
 Vehicle Type: Passenger Vehicles

**Station Number:**  
63229089099

---

**Count Date:**  
Wednesday, May 28, 2014

---

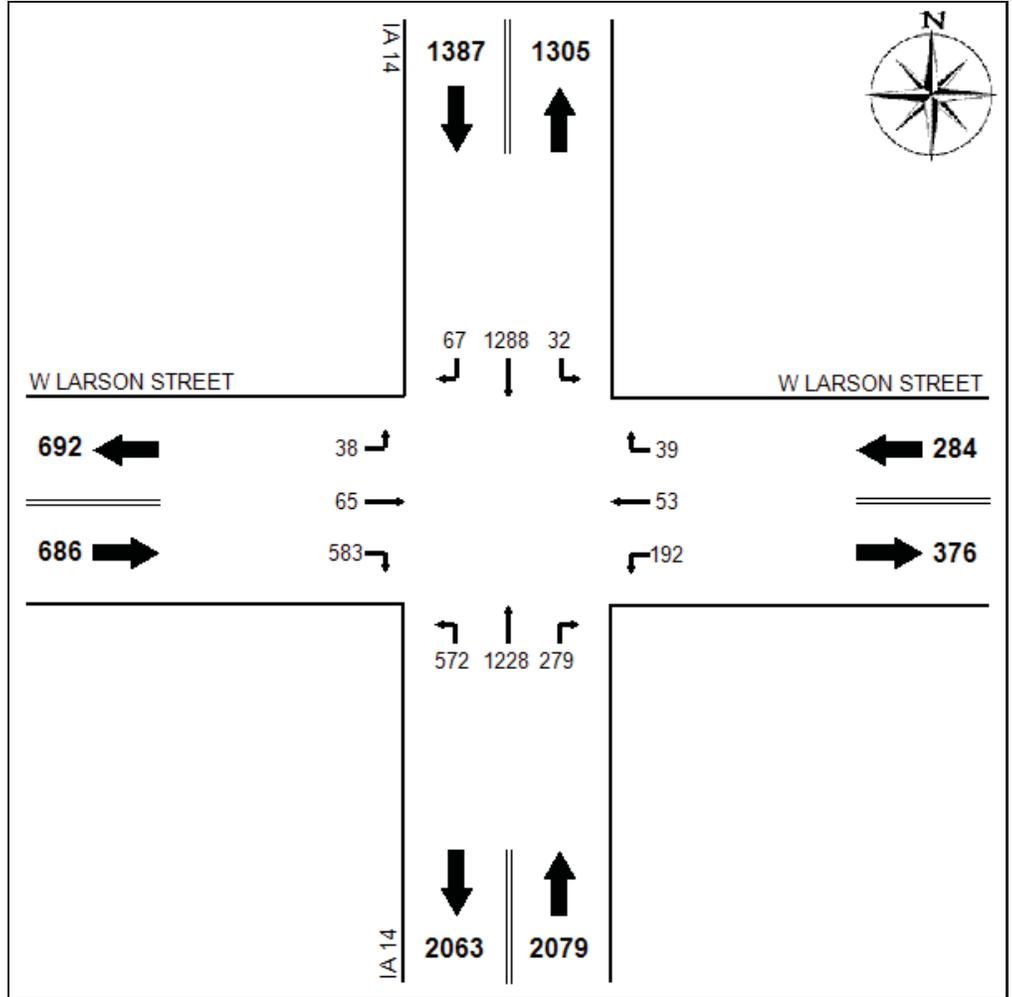
**County:**  
Marion

---

**Location Description:**  
IA 14 & Larson St

---

**Volume Factor:** N/A  
**Pass Class Factor:** N/A  
**SU Class Factor:** N/A  
**Combo Class Factor:** N/A



Raw Data-Passenger Vehicles:

**PRELIMINARY**

	N Leg			E Leg			S Leg			W Leg		
	L	T	R	L	T	R	L	T	R	L	T	R
<b>07:00</b>	10	192	10	60	5	1	38	139	84	5	12	72
<b>08:00</b>	1	154	3	29	7	4	45	102	35	3	6	48
<b>11:00</b>	4	166	12	9	6	3	88	152	18	5	7	88
<b>12:00</b>	6	160	11	16	6	6	94	150	26	8	6	102
<b>15:00</b>	6	183	12	27	10	6	97	210	61	3	13	92
<b>16:00</b>	5	196	11	27	10	9	101	235	24	5	12	85
<b>17:00</b>	0	237	8	24	9	10	109	240	31	9	9	96

**Iowa Department of Transportation**  
**Turning Movement Traffic Count Summary**  
 Vehicle Type: Single-Unit Trucks

**Station Number:**  
63229089099

---

**Count Date:**  
Wednesday, May 28, 2014

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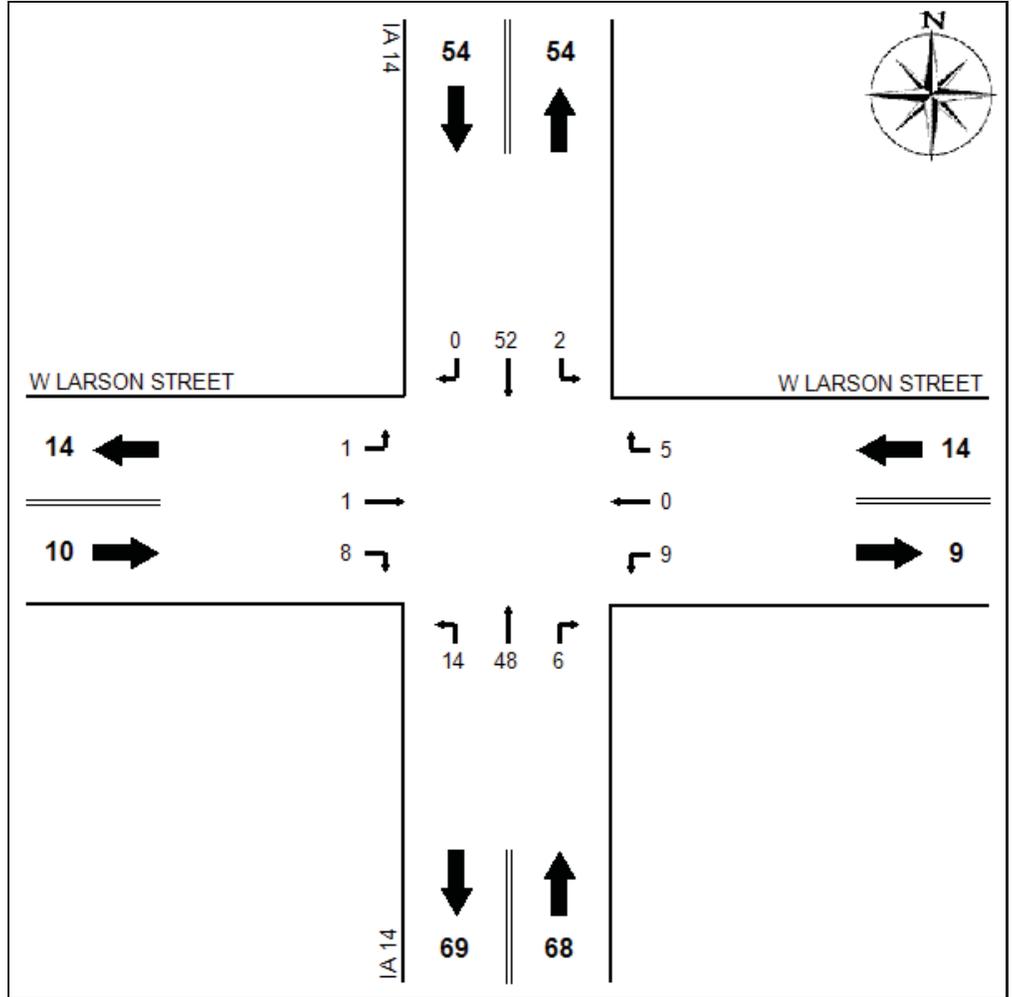
**County:**  
Marion

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**Location Description:**  
IA 14 & Larson St

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**Volume Factor:** N/A  
**Pass Class Factor:** N/A  
**SU Class Factor:** N/A  
**Combo Class Factor:** N/A



Raw Data-Single-Unit Trucks:

PRELIMINARY

	N Leg			E Leg			S Leg			W Leg		
	L	T	R	L	T	R	L	T	R	L	T	R
07:00	1	5	0	6	0	0	3	8	0	0	0	0
08:00	0	5	0	0	0	0	0	2	1	0	0	0
11:00	0	10	0	1	0	0	2	14	0	0	0	2
12:00	0	8	0	0	0	1	2	9	2	0	0	1
15:00	0	11	0	0	0	4	3	6	2	1	1	2
16:00	1	7	0	2	0	0	4	3	0	0	0	1
17:00	0	6	0	0	0	0	0	6	1	0	0	2

**Iowa Department of Transportation**  
**Turning Movement Traffic Count Summary**  
 Vehicle Type: Combination Trucks

**Station Number:**  
63229089099

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**Count Date:**  
Wednesday, May 28, 2014

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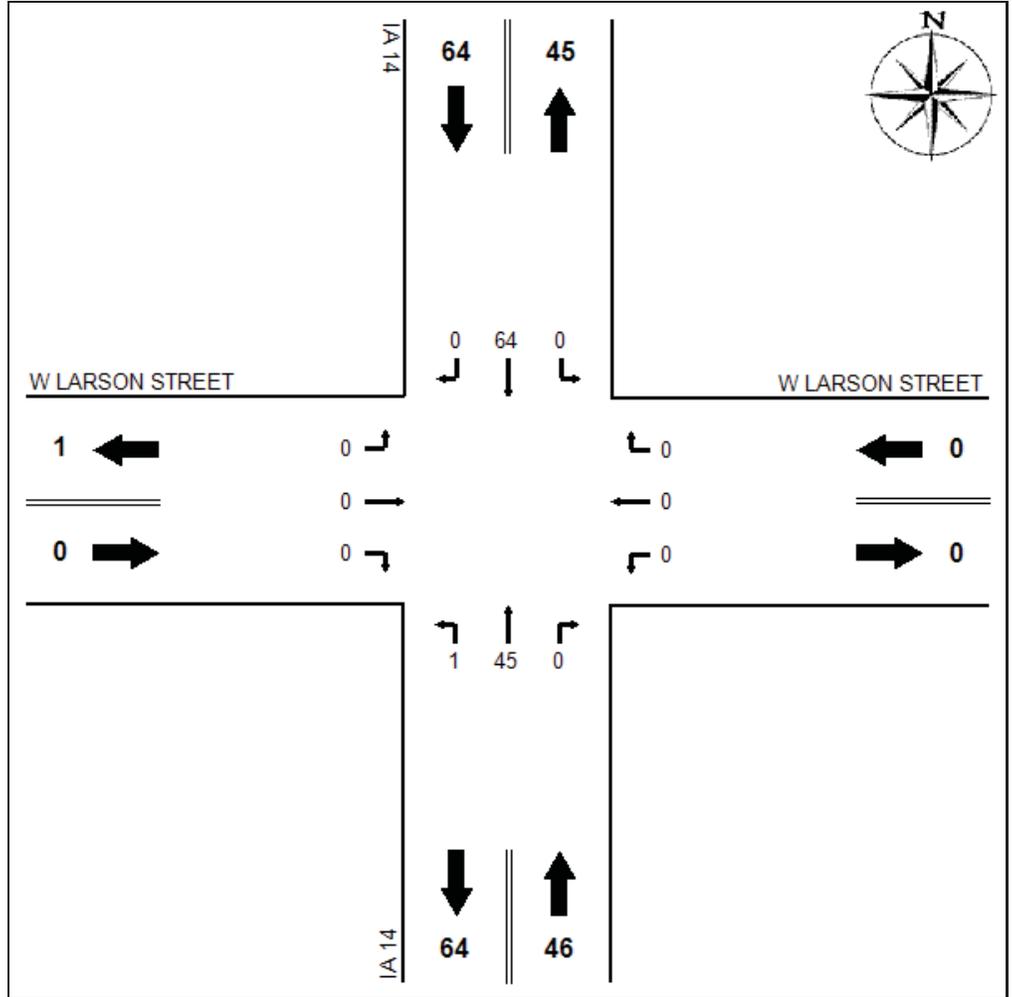
**County:**  
Marion

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**Location Description:**  
IA 14 & Larson St

---

**Volume Factor:** N/A  
**Pass Class Factor:** N/A  
**SU Class Factor:** N/A  
**Combo Class Factor:** N/A



Raw Data-Combination Trucks:

	N Leg			E Leg			S Leg			W Leg		
	L	T	R	L	T	R	L	T	R	L	T	R
<b>07:00</b>	0	7	0	0	0	0	0	5	0	0	0	0
<b>08:00</b>	0	12	0	0	0	0	0	4	0	0	0	0
<b>11:00</b>	0	11	0	0	0	0	0	16	0	0	0	0
<b>12:00</b>	0	16	0	0	0	0	0	8	0	0	0	0
<b>15:00</b>	0	3	0	0	0	0	0	2	0	0	0	0
<b>16:00</b>	0	12	0	0	0	0	1	6	0	0	0	0
<b>17:00</b>	0	3	0	0	0	0	0	4	0	0	0	0

**APPENDIX D – SYNCHRO ANALYSIS REPORTS**

# HCM Signalized Intersection Capacity Analysis

## 17: Lincoln Street & Knoxville Raceway/Rock Island St

7/24/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (vph)	0	0	0	35	2	23	0	285	17	2	382	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.8			5.7			5.7	
Lane Util. Factor					1.00			0.95			0.95	
Frt					0.95			0.99			1.00	
Flt Protected					0.97			1.00			1.00	
Satd. Flow (prot)					1716			3510			3538	
Flt Permitted					0.82			1.00			0.95	
Satd. Flow (perm)					1447			3510			3377	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	38	2	25	0	310	18	2	415	0
RTOR Reduction (vph)	0	0	0	0	22	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	43	0	0	325	0	0	417	0
Turn Type				Perm	NA			NA		Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)					8.2			61.3			61.3	
Effective Green, g (s)					8.2			61.3			61.3	
Actuated g/C Ratio					0.10			0.77			0.77	
Clearance Time (s)					4.8			5.7			5.7	
Vehicle Extension (s)					3.0			3.0			3.0	
Lane Grp Cap (vph)					148			2689			2587	
v/s Ratio Prot								0.09				
v/s Ratio Perm					c0.03						c0.12	
v/c Ratio					0.29			0.12			0.16	
Uniform Delay, d1					33.2			2.4			2.5	
Progression Factor					1.00			0.88			0.74	
Incremental Delay, d2					1.1			0.1			0.1	
Delay (s)					34.3			2.2			2.0	
Level of Service					C			A			A	
Approach Delay (s)		0.0			34.3			2.2			2.0	
Approach LOS		A			C			A			A	

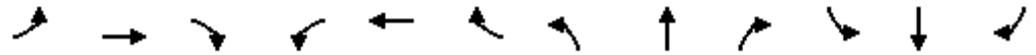
### Intersection Summary

HCM 2000 Control Delay	4.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.18		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	10.5
Intersection Capacity Utilization	29.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

## 3: Lincoln Street & W Bell Ave

7/24/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↕		↖	↗	
Volume (vph)	2	0	9	22	4	49	19	264	43	63	169	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.8	4.8		4.8	4.8		5.9	5.5		5.9	5.5	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.85		1.00	0.86		1.00	0.98		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1583		1770	1603		1770	3465		1770	3525	
Flt Permitted	0.72	1.00		0.75	1.00		0.63	1.00		0.55	1.00	
Satd. Flow (perm)	1341	1583		1399	1603		1179	3465		1025	3525	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	0	10	24	4	53	21	287	47	68	184	5
RTOR Reduction (vph)	0	9	0	0	48	0	0	10	0	0	1	0
Lane Group Flow (vph)	2	1	0	24	9	0	21	324	0	68	188	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	8.0	8.0		8.0	8.0		50.4	47.0		61.2	52.4	
Effective Green, g (s)	8.0	8.0		8.0	8.0		50.4	47.0		61.2	52.4	
Actuated g/C Ratio	0.10	0.10		0.10	0.10		0.63	0.59		0.77	0.65	
Clearance Time (s)	4.8	4.8		4.8	4.8		5.9	5.5		5.9	5.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	134	158		139	160		767	2035		866	2308	
v/s Ratio Prot		0.00			0.01		0.00	c0.09		c0.01	0.05	
v/s Ratio Perm	0.00			c0.02			0.02			0.05		
v/c Ratio	0.01	0.01		0.17	0.06		0.03	0.16		0.08	0.08	
Uniform Delay, d1	32.4	32.4		33.0	32.6		5.6	7.5		2.4	5.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		0.83	0.80	
Incremental Delay, d2	0.0	0.0		0.6	0.2		0.0	0.2		0.0	0.1	
Delay (s)	32.5	32.4		33.6	32.7		5.6	7.7		2.0	4.1	
Level of Service	C	C		C	C		A	A		A	A	
Approach Delay (s)		32.4			33.0			7.6			3.5	
Approach LOS		C			C			A			A	

### Intersection Summary

HCM 2000 Control Delay	9.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.15		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	16.2
Intersection Capacity Utilization	37.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

## 20: Lincoln Street & W Larson St

7/24/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (vph)	5	12	72	66	5	1	41	152	84	11	204	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.8			4.8			4.8			4.8	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frt		0.89			1.00			0.95			0.99	
Flt Protected		1.00			0.96			0.99			1.00	
Satd. Flow (prot)		1654			1777			3354			3507	
Flt Permitted		0.98			0.69			0.88			0.94	
Satd. Flow (perm)		1629			1274			2984			3301	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	13	78	72	5	1	45	165	91	12	222	11
RTOR Reduction (vph)	0	69	0	0	1	0	0	21	0	0	2	0
Lane Group Flow (vph)	0	27	0	0	77	0	0	280	0	0	243	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		9.3			9.3			61.1			61.1	
Effective Green, g (s)		9.3			9.3			61.1			61.1	
Actuated g/C Ratio		0.12			0.12			0.76			0.76	
Clearance Time (s)		4.8			4.8			4.8			4.8	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		189			148			2279			2521	
v/s Ratio Prot												
v/s Ratio Perm		0.02			c0.06			c0.09			0.07	
v/c Ratio		0.14			0.52			0.12			0.10	
Uniform Delay, d1		31.8			33.3			2.5			2.4	
Progression Factor		1.00			1.00			0.59			1.00	
Incremental Delay, d2		0.3			3.3			0.1			0.1	
Delay (s)		32.1			36.5			1.6			2.5	
Level of Service		C			D			A			A	
Approach Delay (s)		32.1			36.5			1.6			2.5	
Approach LOS		C			D			A			A	

### Intersection Summary

HCM 2000 Control Delay	9.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.18		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.6
Intersection Capacity Utilization	39.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

## 6: Lincoln Street & W Madison St

7/24/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (vph)	37	32	13	31	83	25	18	240	23	7	227	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.8			4.8			5.1			5.1	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frt		0.98			0.98			0.99			0.98	
Flt Protected		0.98			0.99			1.00			1.00	
Satd. Flow (prot)		1783			1798			3484			3449	
Flt Permitted		0.76			0.92			0.93			0.95	
Satd. Flow (perm)		1387			1678			3242			3272	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	40	35	14	34	90	27	20	261	25	8	247	49
RTOR Reduction (vph)	0	10	0	0	12	0	0	6	0	0	13	0
Lane Group Flow (vph)	0	79	0	0	139	0	0	300	0	0	291	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		12.5			12.5			57.6			57.6	
Effective Green, g (s)		12.5			12.5			57.6			57.6	
Actuated g/C Ratio		0.16			0.16			0.72			0.72	
Clearance Time (s)		4.8			4.8			5.1			5.1	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		216			262			2334			2355	
v/s Ratio Prot												
v/s Ratio Perm		0.06			c0.08			c0.09			0.09	
v/c Ratio		0.37			0.53			0.13			0.12	
Uniform Delay, d1		30.2			31.1			3.5			3.4	
Progression Factor		1.00			1.00			0.31			0.98	
Incremental Delay, d2		1.1			2.1			0.1			0.1	
Delay (s)		31.3			33.1			1.2			3.5	
Level of Service		C			C			A			A	
Approach Delay (s)		31.3			33.1			1.2			3.5	
Approach LOS		C			C			A			A	

### Intersection Summary

HCM 2000 Control Delay	10.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.20		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.9
Intersection Capacity Utilization	37.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

## 12: Lincoln Street & W Pleasant St

7/24/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	55	82	32	39	120	30	42	191	31	40	209	147
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.8	4.8		4.8	4.8		5.0	5.1		5.0	5.1	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.97		1.00	0.98		1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1784		1770	1806		1770	1823		1770	1747	
Flt Permitted	0.56	1.00		0.67	1.00		0.49	1.00		0.61	1.00	
Satd. Flow (perm)	1043	1784		1247	1806		912	1823		1133	1747	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	60	89	35	42	130	33	46	208	34	43	227	160
RTOR Reduction (vph)	0	21	0	0	13	0	0	5	0	0	21	0
Lane Group Flow (vph)	60	103	0	42	150	0	46	237	0	43	366	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4			4			2			6		
Actuated Green, G (s)	13.0	13.0		13.0	13.0		52.1	47.3		52.1	47.3	
Effective Green, g (s)	13.0	13.0		13.0	13.0		52.1	47.3		52.1	47.3	
Actuated g/C Ratio	0.16	0.16		0.16	0.16		0.65	0.59		0.65	0.59	
Clearance Time (s)	4.8	4.8		4.8	4.8		5.0	5.1		5.0	5.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	169	289		202	293		645	1077		776	1032	
v/s Ratio Prot		0.06			c0.08		c0.00	0.13		0.00	c0.21	
v/s Ratio Perm	0.06			0.03			0.04			0.03		
v/c Ratio	0.36	0.36		0.21	0.51		0.07	0.22		0.06	0.35	
Uniform Delay, d1	29.8	29.8		29.0	30.6		6.6	7.7		5.1	8.5	
Progression Factor	1.00	1.00		1.00	1.00		0.52	0.49		0.56	0.62	
Incremental Delay, d2	1.3	0.8		0.5	1.5		0.0	0.5		0.0	1.0	
Delay (s)	31.1	30.5		29.6	32.1		3.5	4.2		2.9	6.2	
Level of Service	C	C		C	C		A	A		A	A	
Approach Delay (s)		30.7			31.6			4.1			5.9	
Approach LOS		C			C			A			A	

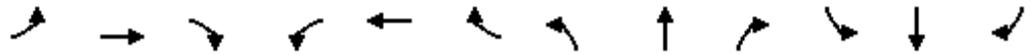
### Intersection Summary

HCM 2000 Control Delay	14.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	14.9
Intersection Capacity Utilization	59.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

## 9: Lincoln Street & W Robinson St

7/24/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (vph)	47	88	21	63	149	36	42	192	45	29	194	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.8			4.8			5.1			5.1	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frt		0.98			0.98			0.98			0.96	
Flt Protected		0.99			0.99			0.99			1.00	
Satd. Flow (prot)		1802			1803			3428			3381	
Flt Permitted		0.77			0.86			0.87			0.91	
Satd. Flow (perm)		1416			1574			2991			3075	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	51	96	23	68	162	39	46	209	49	32	211	89
RTOR Reduction (vph)	0	8	0	0	8	0	0	17	0	0	31	0
Lane Group Flow (vph)	0	162	0	0	261	0	0	287	0	0	301	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		18.2			18.2			51.9			51.9	
Effective Green, g (s)		18.2			18.2			51.9			51.9	
Actuated g/C Ratio		0.23			0.23			0.65			0.65	
Clearance Time (s)		4.8			4.8			5.1			5.1	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		322			358			1940			1994	
v/s Ratio Prot												
v/s Ratio Perm		0.11			c0.17			0.10			c0.10	
v/c Ratio		0.50			0.73			0.15			0.15	
Uniform Delay, d1		27.0			28.6			5.5			5.5	
Progression Factor		1.00			1.00			0.52			0.43	
Incremental Delay, d2		1.2			7.2			0.2			0.2	
Delay (s)		28.2			35.8			3.0			2.5	
Level of Service		C			D			A			A	
Approach Delay (s)		28.2			35.8			3.0			2.5	
Approach LOS		C			D			A			A	

### Intersection Summary

HCM 2000 Control Delay	15.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.9
Intersection Capacity Utilization	46.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

## 17: Lincoln Street & Knoxville Raceway/Rock Island St

7/24/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (vph)	3	0	4	38	3	25	2	293	39	12	279	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.8			4.8			5.7			5.7	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frt		0.92			0.95			0.98			1.00	
Flt Protected		0.98			0.97			1.00			1.00	
Satd. Flow (prot)		1683			1718			3477			3529	
Flt Permitted		0.88			0.82			0.95			0.94	
Satd. Flow (perm)		1506			1445			3318			3318	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	0	4	41	3	27	2	318	42	13	303	2
RTOR Reduction (vph)	0	6	0	0	24	0	0	6	0	0	0	0
Lane Group Flow (vph)	0	1	0	0	47	0	0	356	0	0	318	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		8.3			8.3			61.2			61.2	
Effective Green, g (s)		8.3			8.3			61.2			61.2	
Actuated g/C Ratio		0.10			0.10			0.77			0.77	
Clearance Time (s)		4.8			4.8			5.7			5.7	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		156			149			2538			2538	
v/s Ratio Prot												
v/s Ratio Perm		0.00			c0.03			c0.11			0.10	
v/c Ratio		0.00			0.31			0.14			0.13	
Uniform Delay, d1		32.1			33.2			2.5			2.4	
Progression Factor		1.00			1.00			0.69			0.85	
Incremental Delay, d2		0.0			1.2			0.1			0.1	
Delay (s)		32.2			34.4			1.8			2.2	
Level of Service		C			C			A			A	
Approach Delay (s)		32.2			34.4			1.8			2.2	
Approach LOS		C			C			A			A	

### Intersection Summary

HCM 2000 Control Delay	5.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.16		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	10.5
Intersection Capacity Utilization	33.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

## 3: Lincoln Street & W Bell Ave

7/24/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	14	9	14	50	6	153	12	185	45	142	227	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.8	4.8		4.8	4.8		5.9	5.5		5.9	5.5	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.91		1.00	0.86		1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1695		1770	1595		1770	3435		1770	3494	
Flt Permitted	0.49	1.00		0.74	1.00		0.59	1.00		0.60	1.00	
Satd. Flow (perm)	905	1695		1380	1595		1091	3435		1112	3494	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	15	10	15	54	7	166	13	201	49	154	247	23
RTOR Reduction (vph)	0	13	0	0	144	0	0	19	0	0	5	0
Lane Group Flow (vph)	15	12	0	54	29	0	13	231	0	154	265	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	10.4	10.4		10.4	10.4		42.2	40.6		58.9	51.8	
Effective Green, g (s)	10.4	10.4		10.4	10.4		42.2	40.6		58.9	51.8	
Actuated g/C Ratio	0.13	0.13		0.13	0.13		0.53	0.51		0.74	0.65	
Clearance Time (s)	4.8	4.8		4.8	4.8		5.9	5.5		5.9	5.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	117	220		179	207		589	1743		923	2262	
v/s Ratio Prot		0.01			0.02		0.00	0.07		c0.03	0.08	
v/s Ratio Perm	0.02			c0.04			0.01			c0.10		
v/c Ratio	0.13	0.05		0.30	0.14		0.02	0.13		0.17	0.12	
Uniform Delay, d1	30.8	30.5		31.5	30.8		9.0	10.4		3.2	5.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		0.56	0.70	
Incremental Delay, d2	0.5	0.1		1.0	0.3		0.0	0.2		0.1	0.1	
Delay (s)	31.3	30.6		32.5	31.1		9.1	10.6		1.9	3.9	
Level of Service	C	C		C	C		A	B		A	A	
Approach Delay (s)		30.9			31.5			10.5			3.2	
Approach LOS		C			C			B			A	

### Intersection Summary

HCM 2000 Control Delay	13.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.20		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	16.2
Intersection Capacity Utilization	41.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

## 20: Lincoln Street & W Larson St

7/24/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (vph)	8	6	103	16	6	7	96	167	28	6	184	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.8			4.8			4.8			4.8	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frt		0.88			0.97			0.99			0.99	
Flt Protected		1.00			0.97			0.98			1.00	
Satd. Flow (prot)		1637			1753			3432			3505	
Flt Permitted		0.98			0.69			0.79			0.95	
Satd. Flow (perm)		1603			1251			2755			3323	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	9	7	112	17	7	8	104	182	30	7	200	12
RTOR Reduction (vph)	0	100	0	0	7	0	0	4	0	0	2	0
Lane Group Flow (vph)	0	28	0	0	25	0	0	312	0	0	217	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		8.3			8.3			62.1			62.1	
Effective Green, g (s)		8.3			8.3			62.1			62.1	
Actuated g/C Ratio		0.10			0.10			0.78			0.78	
Clearance Time (s)		4.8			4.8			4.8			4.8	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		166			129			2138			2579	
v/s Ratio Prot												
v/s Ratio Perm		0.02			c0.02			c0.11			0.07	
v/c Ratio		0.17			0.19			0.15			0.08	
Uniform Delay, d1		32.7			32.8			2.3			2.1	
Progression Factor		1.00			1.00			0.27			1.00	
Incremental Delay, d2		0.5			0.7			0.1			0.1	
Delay (s)		33.2			33.5			0.7			2.2	
Level of Service		C			C			A			A	
Approach Delay (s)		33.2			33.5			0.7			2.2	
Approach LOS		C			C			A			A	

### Intersection Summary

HCM 2000 Control Delay	8.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.15		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.6
Intersection Capacity Utilization	37.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

## 6: Lincoln Street & W Madison St

7/24/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (vph)	50	75	33	56	23	13	8	428	57	14	495	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.8			4.8			5.1			5.1	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frt		0.97			0.98			0.98			0.99	
Flt Protected		0.98			0.97			1.00			1.00	
Satd. Flow (prot)		1782			1773			3475			3513	
Flt Permitted		0.88			0.65			0.95			0.94	
Satd. Flow (perm)		1597			1190			3291			3302	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	54	82	36	61	25	14	9	465	62	15	538	24
RTOR Reduction (vph)	0	13	0	0	8	0	0	10	0	0	3	0
Lane Group Flow (vph)	0	159	0	0	92	0	0	526	0	0	574	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		13.8			13.8			56.3			56.3	
Effective Green, g (s)		13.8			13.8			56.3			56.3	
Actuated g/C Ratio		0.17			0.17			0.70			0.70	
Clearance Time (s)		4.8			4.8			5.1			5.1	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		275			205			2316			2323	
v/s Ratio Prot												
v/s Ratio Perm		c0.10			0.08			0.16			c0.17	
v/c Ratio		0.58			0.45			0.23			0.25	
Uniform Delay, d1		30.4			29.7			4.2			4.2	
Progression Factor		1.00			1.00			0.68			0.52	
Incremental Delay, d2		2.9			1.6			0.2			0.3	
Delay (s)		33.3			31.2			3.1			2.5	
Level of Service		C			C			A			A	
Approach Delay (s)		33.3			31.2			3.1			2.5	
Approach LOS		C			C			A			A	

### Intersection Summary

HCM 2000 Control Delay	8.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.9
Intersection Capacity Utilization	42.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

## 12: Lincoln Street & W Pleasant St

7/24/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	46	61	30	76	45	71	29	223	55	65	194	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.8	4.8		4.8	4.8		5.0	5.1		5.0	5.1	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	0.91		1.00	0.97		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1770		1770	1692		1770	1807		1770	1811	
Flt Permitted	0.66	1.00		0.69	1.00		0.60	1.00		0.55	1.00	
Satd. Flow (perm)	1227	1770		1291	1692		1116	1807		1029	1811	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	50	66	33	83	49	77	32	242	60	71	211	48
RTOR Reduction (vph)	0	27	0	0	65	0	0	8	0	0	6	0
Lane Group Flow (vph)	50	72	0	83	61	0	32	294	0	71	253	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4			4			2			6		
Actuated Green, G (s)	12.1	12.1		12.1	12.1		47.8	44.6		58.1	49.8	
Effective Green, g (s)	12.1	12.1		12.1	12.1		47.8	44.6		58.1	49.8	
Actuated g/C Ratio	0.15	0.15		0.15	0.15		0.60	0.56		0.73	0.62	
Clearance Time (s)	4.8	4.8		4.8	4.8		5.0	5.1		5.0	5.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	185	267		195	255		692	1007		825	1127	
v/s Ratio Prot		0.04			0.04		0.00	c0.16		c0.01	c0.14	
v/s Ratio Perm	0.04			c0.06			0.03			0.05		
v/c Ratio	0.27	0.27		0.43	0.24		0.05	0.29		0.09	0.22	
Uniform Delay, d1	30.0	30.0		30.8	29.9		6.7	9.4		3.8	6.6	
Progression Factor	1.00	1.00		1.00	1.00		0.76	0.64		0.91	0.85	
Incremental Delay, d2	0.8	0.5		1.5	0.5		0.0	0.7		0.0	0.5	
Delay (s)	30.8	30.6		32.3	30.4		5.1	6.8		3.5	6.1	
Level of Service	C	C		C	C		A	A		A	A	
Approach Delay (s)		30.7			31.1			6.6			5.5	
Approach LOS		C			C			A			A	

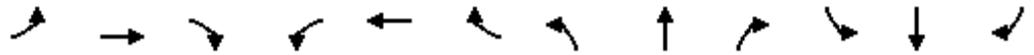
### Intersection Summary

HCM 2000 Control Delay	14.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	14.9
Intersection Capacity Utilization	45.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

## 9: Lincoln Street & W Robinson St

7/24/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (vph)	15	44	6	106	47	39	15	263	108	26	273	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.8			4.8			5.1			5.1	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frt		0.99			0.97			0.96			0.99	
Flt Protected		0.99			0.97			1.00			1.00	
Satd. Flow (prot)		1817			1763			3385			3503	
Flt Permitted		0.93			0.82			0.94			0.90	
Satd. Flow (perm)		1702			1487			3182			3181	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	16	48	7	115	51	42	16	286	117	28	297	14
RTOR Reduction (vph)	0	6	0	0	13	0	0	38	0	0	3	0
Lane Group Flow (vph)	0	65	0	0	195	0	0	381	0	0	336	0
Turn Type	Perm	NA										
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		16.3			16.3			53.8			53.8	
Effective Green, g (s)		16.3			16.3			53.8			53.8	
Actuated g/C Ratio		0.20			0.20			0.67			0.67	
Clearance Time (s)		4.8			4.8			5.1			5.1	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		346			302			2139			2139	
v/s Ratio Prot												
v/s Ratio Perm		0.04			0.13			0.12			0.11	
v/c Ratio		0.19			0.65			0.18			0.16	
Uniform Delay, d1		26.4			29.2			4.9			4.8	
Progression Factor		1.00			1.00			0.71			0.58	
Incremental Delay, d2		0.3			4.7			0.2			0.2	
Delay (s)		26.6			33.9			3.7			3.0	
Level of Service		C			C			A			A	
Approach Delay (s)		26.6			33.9			3.7			3.0	
Approach LOS		C			C			A			A	

### Intersection Summary

HCM 2000 Control Delay	11.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.9
Intersection Capacity Utilization	49.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

## 17: Lincoln Street & Knoxville Raceway/Rock Island St

7/24/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (vph)	1	2	0	42	3	36	0	398	32	17	306	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.8			4.8			5.7			5.7	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frt		1.00			0.94			0.99			1.00	
Flt Protected		0.98			0.97			1.00			1.00	
Satd. Flow (prot)		1832			1707			3500			3530	
Flt Permitted		0.91			0.83			1.00			0.93	
Satd. Flow (perm)		1689			1461			3500			3276	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	2	0	46	3	39	0	433	35	18	333	0
RTOR Reduction (vph)	0	0	0	0	35	0	0	4	0	0	0	0
Lane Group Flow (vph)	0	3	0	0	53	0	0	464	0	0	351	0
Turn Type	Perm	NA		Perm	NA			NA		Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		8.5			8.5			61.0			61.0	
Effective Green, g (s)		8.5			8.5			61.0			61.0	
Actuated g/C Ratio		0.11			0.11			0.76			0.76	
Clearance Time (s)		4.8			4.8			5.7			5.7	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		179			155			2668			2497	
v/s Ratio Prot								c0.13				
v/s Ratio Perm		0.00			c0.04						0.11	
v/c Ratio		0.02			0.34			0.17			0.14	
Uniform Delay, d1		32.0			33.2			2.6			2.5	
Progression Factor		1.00			1.00			0.27			0.82	
Incremental Delay, d2		0.0			1.3			0.1			0.1	
Delay (s)		32.0			34.5			0.8			2.2	
Level of Service		C			C			A			A	
Approach Delay (s)		32.0			34.5			0.8			2.2	
Approach LOS		C			C			A			A	

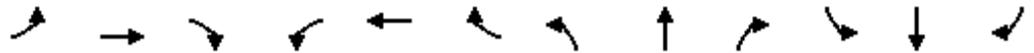
### Intersection Summary

HCM 2000 Control Delay	4.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.19		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	10.5
Intersection Capacity Utilization	38.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

## 3: Lincoln Street & W Bell Ave

7/24/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↕		↖	↕	
Volume (vph)	13	6	11	88	10	186	21	237	68	159	241	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.8	4.8		4.8	4.8		5.9	5.5		5.9	5.5	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.91		1.00	0.86		1.00	0.97		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1686		1770	1598		1770	3421		1770	3522	
Flt Permitted	0.40	1.00		0.75	1.00		0.58	1.00		0.55	1.00	
Satd. Flow (perm)	749	1686		1388	1598		1089	3421		1027	3522	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	14	7	12	96	11	202	23	258	74	173	262	9
RTOR Reduction (vph)	0	10	0	0	171	0	0	24	0	0	2	0
Lane Group Flow (vph)	14	9	0	96	42	0	23	308	0	173	269	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	12.1	12.1		12.1	12.1		43.4	40.1		57.2	48.4	
Effective Green, g (s)	12.1	12.1		12.1	12.1		43.4	40.1		57.2	48.4	
Actuated g/C Ratio	0.15	0.15		0.15	0.15		0.54	0.50		0.72	0.60	
Clearance Time (s)	4.8	4.8		4.8	4.8		5.9	5.5		5.9	5.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	113	255		209	241		618	1714		842	2130	
v/s Ratio Prot		0.01			0.03		0.00	0.09		c0.03	0.08	
v/s Ratio Perm	0.02			c0.07			0.02			c0.12		
v/c Ratio	0.12	0.03		0.46	0.17		0.04	0.18		0.21	0.13	
Uniform Delay, d1	29.4	29.0		31.0	29.6		8.6	10.9		3.9	6.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		0.85	0.86	
Incremental Delay, d2	0.5	0.1		1.6	0.3		0.0	0.2		0.1	0.1	
Delay (s)	29.9	29.0		32.6	29.9		8.6	11.2		3.4	5.9	
Level of Service	C	C		C	C		A	B		A	A	
Approach Delay (s)		29.4			30.7			11.0			5.0	
Approach LOS		C			C			B			A	

### Intersection Summary

HCM 2000 Control Delay	14.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.27		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	16.2
Intersection Capacity Utilization	42.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

## 20: Lincoln Street & W Larson St

7/24/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (vph)	9	9	98	24	9	10	109	250	32	0	246	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.8			4.8			4.8			4.8	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frt		0.89			0.97			0.99			1.00	
Flt Protected		1.00			0.97			0.99			1.00	
Satd. Flow (prot)		1644			1755			3448			3522	
Flt Permitted		0.97			0.65			0.78			1.00	
Satd. Flow (perm)		1603			1178			2739			3522	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	10	10	107	26	10	11	118	272	35	0	267	9
RTOR Reduction (vph)	0	96	0	0	10	0	0	4	0	0	1	0
Lane Group Flow (vph)	0	31	0	0	37	0	0	421	0	0	275	0
Turn Type	Perm	NA		Perm	NA		Perm	NA			NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		8.3			8.3			62.1			62.1	
Effective Green, g (s)		8.3			8.3			62.1			62.1	
Actuated g/C Ratio		0.10			0.10			0.78			0.78	
Clearance Time (s)		4.8			4.8			4.8			4.8	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		166			122			2126			2733	
v/s Ratio Prot											0.08	
v/s Ratio Perm		0.02			c0.03			c0.15				
v/c Ratio		0.19			0.30			0.20			0.10	
Uniform Delay, d1		32.8			33.2			2.4			2.2	
Progression Factor		1.00			1.00			0.88			1.00	
Incremental Delay, d2		0.5			1.4			0.2			0.1	
Delay (s)		33.3			34.6			2.3			2.2	
Level of Service		C			C			A			A	
Approach Delay (s)		33.3			34.6			2.3			2.2	
Approach LOS		C			C			A			A	

### Intersection Summary

HCM 2000 Control Delay	8.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.21		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.6
Intersection Capacity Utilization	40.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

## 6: Lincoln Street & W Madison St

7/24/2015

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Volume (vph)	11	21	13	55	18	9	8	331	54	14	318	22	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.8			4.8			5.1			5.1		
Lane Util. Factor		1.00			1.00			0.95			0.95		
Frt		0.96			0.98			0.98			0.99		
Flt Protected		0.99			0.97			1.00			1.00		
Satd. Flow (prot)		1769			1776			3462			3499		
Flt Permitted		0.93			0.77			0.95			0.94		
Satd. Flow (perm)		1665			1412			3284			3282		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	12	23	14	60	20	10	9	360	59	15	346	24	
RTOR Reduction (vph)	0	12	0	0	7	0	0	10	0	0	4	0	
Lane Group Flow (vph)	0	37	0	0	83	0	0	418	0	0	381	0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA		
Protected Phases		4			4			2			2		
Permitted Phases	4			4			2			2			
Actuated Green, G (s)		9.2			9.2			60.9			60.9		
Effective Green, g (s)		9.2			9.2			60.9			60.9		
Actuated g/C Ratio		0.11			0.11			0.76			0.76		
Clearance Time (s)		4.8			4.8			5.1			5.1		
Vehicle Extension (s)		3.0			3.0			3.0			3.0		
Lane Grp Cap (vph)		191			162			2499			2498		
v/s Ratio Prot													
v/s Ratio Perm		0.02			c0.06			c0.13			0.12		
v/c Ratio		0.19			0.51			0.17			0.15		
Uniform Delay, d1		32.0			33.3			2.6			2.6		
Progression Factor		1.00			1.00			0.85			0.36		
Incremental Delay, d2		0.5			2.7			0.1			0.1		
Delay (s)		32.5			36.0			2.4			1.1		
Level of Service		C			D			A			A		
Approach Delay (s)		32.5			36.0			2.4			1.1		
Approach LOS		C			D			A			A		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			6.6									HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.21										
Actuated Cycle Length (s)			80.0									Sum of lost time (s)	9.9
Intersection Capacity Utilization			38.7%									ICU Level of Service	A
Analysis Period (min)			15										
c	Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

## 12: Lincoln Street & W Pleasant St

7/24/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	98	116	47	66	63	101	20	269	57	77	227	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.8	4.8		4.8	4.8		5.0	5.1		5.0	5.1	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.91		1.00	0.97		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1782		1770	1690		1770	1814		1770	1816	
Flt Permitted	0.54	1.00		0.54	1.00		0.58	1.00		0.47	1.00	
Satd. Flow (perm)	1006	1782		1010	1690		1079	1814		871	1816	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	107	126	51	72	68	110	22	292	62	84	247	49
RTOR Reduction (vph)	0	21	0	0	85	0	0	7	0	0	6	0
Lane Group Flow (vph)	107	156	0	72	93	0	22	347	0	84	290	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4			4			2			6		
Actuated Green, G (s)	14.6	14.6		14.6	14.6		47.2	44.0		53.8	47.3	
Effective Green, g (s)	14.6	14.6		14.6	14.6		47.2	44.0		53.8	47.3	
Actuated g/C Ratio	0.18	0.18		0.18	0.18		0.59	0.55		0.67	0.59	
Clearance Time (s)	4.8	4.8		4.8	4.8		5.0	5.1		5.0	5.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	183	325		184	308		664	997		658	1073	
v/s Ratio Prot		0.09			0.06		0.00	c0.19		c0.01	c0.16	
v/s Ratio Perm	c0.11			0.07			0.02			0.08		
v/c Ratio	0.58	0.48		0.39	0.30		0.03	0.35		0.13	0.27	
Uniform Delay, d1	29.9	29.3		28.8	28.3		6.8	10.0		4.8	8.0	
Progression Factor	1.00	1.00		1.00	1.00		0.47	0.51		0.78	0.77	
Incremental Delay, d2	4.7	1.1		1.4	0.6		0.0	0.9		0.1	0.6	
Delay (s)	34.6	30.4		30.2	28.8		3.2	6.0		3.9	6.7	
Level of Service	C	C		C	C		A	A		A	A	
Approach Delay (s)		32.0			29.2			5.9			6.1	
Approach LOS		C			C			A			A	

### Intersection Summary

HCM 2000 Control Delay	16.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	14.9
Intersection Capacity Utilization	58.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

## 9: Lincoln Street & W Robinson St

7/24/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (vph)	24	73	36	89	50	47	27	272	79	50	285	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.8			4.8			5.1			5.1	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frt		0.96			0.97			0.97			0.99	
Flt Protected		0.99			0.98			1.00			0.99	
Satd. Flow (prot)		1779			1757			3416			3477	
Flt Permitted		0.92			0.74			0.91			0.85	
Satd. Flow (perm)		1658			1337			3126			2987	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	26	79	39	97	54	51	29	296	86	54	310	28
RTOR Reduction (vph)	0	19	0	0	17	0	0	23	0	0	6	0
Lane Group Flow (vph)	0	125	0	0	185	0	0	388	0	0	386	0
Turn Type	Perm	NA										
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		16.0			16.0			54.1			54.1	
Effective Green, g (s)		16.0			16.0			54.1			54.1	
Actuated g/C Ratio		0.20			0.20			0.68			0.68	
Clearance Time (s)		4.8			4.8			5.1			5.1	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		331			267			2113			2019	
v/s Ratio Prot												
v/s Ratio Perm		0.08			0.14			0.12			0.13	
v/c Ratio		0.38			0.69			0.18			0.19	
Uniform Delay, d1		27.7			29.7			4.8			4.8	
Progression Factor		1.00			1.00			1.28			0.66	
Incremental Delay, d2		0.7			7.6			0.2			0.2	
Delay (s)		28.4			37.3			6.3			3.4	
Level of Service		C			D			A			A	
Approach Delay (s)		28.4			37.3			6.3			3.4	
Approach LOS		C			D			A			A	

### Intersection Summary

HCM 2000 Control Delay	13.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.9
Intersection Capacity Utilization	50.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

## 17: Lincoln Street & Knoxville Raceway/Rock Island St

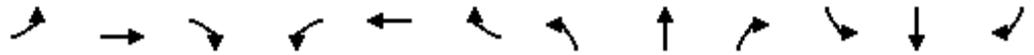
7/9/2015

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Volume (vph)	0	0	0	35	2	23	0	285	17	2	382	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)					4.8			5.7		4.8	5.7		
Lane Util. Factor					1.00			1.00		1.00	1.00		
Frt					0.95			0.99		1.00	1.00		
Flt Protected					0.97			1.00		0.95	1.00		
Satd. Flow (prot)					1716			1847		1770	1863		
Flt Permitted					0.82			1.00		0.56	1.00		
Satd. Flow (perm)					1447			1847		1048	1863		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	0	0	0	38	2	25	0	310	18	2	415	0	
RTOR Reduction (vph)	0	0	0	0	23	0	0	1	0	0	0	0	
Lane Group Flow (vph)	0	0	0	0	42	0	0	327	0	2	415	0	
Turn Type				Perm	NA		pm+pt	NA		pm+pt	NA		
Protected Phases		4			4		5	2		1	6		
Permitted Phases	4			4			2			6			
Actuated Green, G (s)					8.3			64.6		72.1	71.2		
Effective Green, g (s)					8.3			64.6		72.1	71.2		
Actuated g/C Ratio					0.09			0.72		0.80	0.79		
Clearance Time (s)					4.8			5.7		4.8	5.7		
Vehicle Extension (s)					3.0			3.0		3.0	3.0		
Lane Grp Cap (vph)					133			1325		854	1473		
v/s Ratio Prot								0.18		0.00	c0.22		
v/s Ratio Perm					c0.03					0.00			
v/c Ratio					0.32			0.25		0.00	0.28		
Uniform Delay, d1					38.2			4.4		1.8	2.5		
Progression Factor					1.00			0.86		0.80	0.72		
Incremental Delay, d2					1.4			0.4		0.0	0.5		
Delay (s)					39.6			4.2		1.4	2.3		
Level of Service					D			A		A	A		
Approach Delay (s)		0.0			39.6			4.2			2.3		
Approach LOS		A			D			A			A		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			6.0		HCM 2000 Level of Service						A		
HCM 2000 Volume to Capacity ratio			0.30										
Actuated Cycle Length (s)			90.0		Sum of lost time (s)						15.3		
Intersection Capacity Utilization			37.2%		ICU Level of Service						A		
Analysis Period (min)			15										
c Critical Lane Group													

# HCM Signalized Intersection Capacity Analysis

## 3: Lincoln Street & W Bell Ave

7/9/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	2	0	9	22	4	49	19	264	43	63	169	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.8	4.8		4.8	4.8		5.9	5.5		5.9	5.5	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.85		1.00	0.86		1.00	0.98		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1583		1770	1603		1770	3465		1770	3525	
Flt Permitted	0.72	1.00		0.75	1.00		0.63	1.00		0.52	1.00	
Satd. Flow (perm)	1341	1583		1399	1603		1179	3465		973	3525	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	0	10	24	4	53	21	287	47	68	184	5
RTOR Reduction (vph)	0	9	0	0	48	0	0	7	0	0	1	0
Lane Group Flow (vph)	2	1	0	24	9	0	21	327	0	68	188	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	8.0	8.0		8.0	8.0		62.6	59.4		69.0	62.6	
Effective Green, g (s)	8.0	8.0		8.0	8.0		62.6	59.4		69.0	62.6	
Actuated g/C Ratio	0.09	0.09		0.09	0.09		0.70	0.66		0.77	0.70	
Clearance Time (s)	4.8	4.8		4.8	4.8		5.9	5.5		5.9	5.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	119	140		124	142		841	2286		802	2451	
v/s Ratio Prot		0.00			0.01		0.00	c0.09		c0.01	0.05	
v/s Ratio Perm	0.00			c0.02			0.02			c0.06		
v/c Ratio	0.02	0.01		0.19	0.06		0.02	0.14		0.08	0.08	
Uniform Delay, d1	37.4	37.4		38.0	37.6		4.2	5.7		2.6	4.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.0		0.8	0.2		0.0	0.1		0.0	0.1	
Delay (s)	37.5	37.4		38.8	37.7		4.2	5.9		2.7	4.5	
Level of Service	D	D		D	D		A	A		A	A	
Approach Delay (s)		37.4			38.0			5.8			4.0	
Approach LOS		D			D			A			A	

### Intersection Summary

HCM 2000 Control Delay	9.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.14		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	16.2
Intersection Capacity Utilization	37.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

## 20: Lincoln Street & W Larson St

7/9/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↘		↗	↘	
Volume (vph)	5	12	72	66	5	1	41	152	84	11	204	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.8			4.8		5.0	4.8		5.0	4.8	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.89			1.00		1.00	0.95		1.00	0.99	
Flt Protected		1.00			0.96		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1654			1777		1770	1763		1770	1850	
Flt Permitted		0.98			0.63		0.61	1.00		0.60	1.00	
Satd. Flow (perm)		1629			1178		1143	1763		1119	1850	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	13	78	72	5	1	45	165	91	12	222	11
RTOR Reduction (vph)	0	70	0	0	1	0	0	12	0	0	1	0
Lane Group Flow (vph)	0	26	0	0	77	0	45	244	0	12	232	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4			4			2			6		
Actuated Green, G (s)		9.7			9.7		70.5	64.1		60.5	58.9	
Effective Green, g (s)		9.7			9.7		70.5	64.1		60.5	58.9	
Actuated g/C Ratio		0.11			0.11		0.78	0.71		0.67	0.65	
Clearance Time (s)		4.8			4.8		5.0	4.8		5.0	4.8	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		175			126		942	1255		763	1210	
v/s Ratio Prot							c0.00	c0.14		0.00	0.13	
v/s Ratio Perm		0.02			c0.07		0.03			0.01		
v/c Ratio		0.15			0.61		0.05	0.19		0.02	0.19	
Uniform Delay, d1		36.4			38.4		2.2	4.3		4.9	6.1	
Progression Factor		1.00			1.00		0.36	0.24		1.00	1.00	
Incremental Delay, d2		0.4			8.5		0.0	0.3		0.0	0.4	
Delay (s)		36.8			46.9		0.8	1.4		4.9	6.5	
Level of Service		D			D		A	A		A	A	
Approach Delay (s)		36.8			46.9			1.3			6.4	
Approach LOS		D			D			A			A	

### Intersection Summary

HCM 2000 Control Delay	12.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.25		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	14.6
Intersection Capacity Utilization	42.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

## 6: Lincoln Street & W Madison St

7/9/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↘		↗	↘	
Volume (vph)	37	32	13	31	83	25	18	240	23	7	227	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.8			4.8		5.2	5.1		5.2	5.1	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.98			0.98		1.00	0.99		1.00	0.98	
Flt Protected		0.98			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1783			1798		1770	1838		1770	1816	
Flt Permitted		0.73			0.92		0.51	1.00		0.58	1.00	
Satd. Flow (perm)		1326			1679		959	1838		1089	1816	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	40	35	14	34	90	27	20	261	25	8	247	49
RTOR Reduction (vph)	0	9	0	0	9	0	0	3	0	0	6	0
Lane Group Flow (vph)	0	80	0	0	142	0	20	283	0	8	290	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4			4			2			6		
Actuated Green, G (s)		13.3			13.3		60.0	60.0		58.4	58.4	
Effective Green, g (s)		13.3			13.3		60.0	60.0		58.4	58.4	
Actuated g/C Ratio		0.15			0.15		0.67	0.67		0.65	0.65	
Clearance Time (s)		4.8			4.8		5.2	5.1		5.2	5.1	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		195			248		668	1225		718	1178	
v/s Ratio Prot							0.00	c0.15		0.00	c0.16	
v/s Ratio Perm		0.06			c0.08		0.02			0.01		
v/c Ratio		0.41			0.57		0.03	0.23		0.01	0.25	
Uniform Delay, d1		34.8			35.7		5.3	5.9		5.6	6.6	
Progression Factor		1.00			1.00		1.00	1.00		0.74	0.70	
Incremental Delay, d2		1.4			3.2		0.0	0.4		0.0	0.5	
Delay (s)		36.2			38.9		5.3	6.4		4.2	5.1	
Level of Service		D			D		A	A		A	A	
Approach Delay (s)		36.2			38.9			6.3			5.1	
Approach LOS		D			D			A			A	

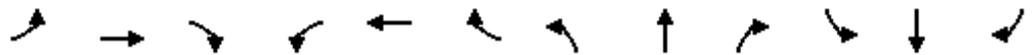
### Intersection Summary

HCM 2000 Control Delay	14.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	15.1
Intersection Capacity Utilization	31.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

## 12: Lincoln Street & W Pleasant St

7/9/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	55	82	32	39	120	30	42	191	31	40	209	147
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.8	4.8		4.8	4.8		5.0	5.1		5.0	5.1	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.97		1.00	0.98		1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1784		1770	1806		1770	1823		1770	1747	
Flt Permitted	0.52	1.00		0.64	1.00		0.49	1.00		0.61	1.00	
Satd. Flow (perm)	972	1784		1185	1806		921	1823		1131	1747	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	60	89	35	42	130	33	46	208	34	43	227	160
RTOR Reduction (vph)	0	19	0	0	12	0	0	4	0	0	19	0
Lane Group Flow (vph)	60	105	0	42	151	0	46	238	0	43	368	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4			4			2			6		
Actuated Green, G (s)	13.8	13.8		13.8	13.8		61.3	56.5		61.3	56.5	
Effective Green, g (s)	13.8	13.8		13.8	13.8		61.3	56.5		61.3	56.5	
Actuated g/C Ratio	0.15	0.15		0.15	0.15		0.68	0.63		0.68	0.63	
Clearance Time (s)	4.8	4.8		4.8	4.8		5.0	5.1		5.0	5.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	149	273		181	276		672	1144		804	1096	
v/s Ratio Prot		0.06			c0.08		c0.00	0.13		0.00	c0.21	
v/s Ratio Perm	0.06			0.04			0.04			0.03		
v/c Ratio	0.40	0.39		0.23	0.55		0.07	0.21		0.05	0.34	
Uniform Delay, d1	34.4	34.3		33.4	35.2		6.3	7.2		4.8	7.9	
Progression Factor	1.00	1.00		1.00	1.00		0.24	0.38		0.79	0.74	
Incremental Delay, d2	1.8	0.9		0.7	2.2		0.0	0.4		0.0	0.8	
Delay (s)	36.2	35.2		34.1	37.4		1.5	3.1		3.8	6.6	
Level of Service	D	D		C	D		A	A		A	A	
Approach Delay (s)		35.5			36.8			2.9			6.4	
Approach LOS		D			D			A			A	

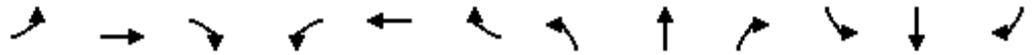
### Intersection Summary

HCM 2000 Control Delay	15.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	14.9
Intersection Capacity Utilization	59.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

## 9: Lincoln Street & W Robinson St

7/9/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↘		↗	↘	
Volume (vph)	47	88	21	63	149	36	42	192	45	29	194	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.8			4.8		5.4	5.1		5.4	5.1	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.98			0.98		1.00	0.97		1.00	0.96	
Flt Protected		0.99			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1802			1803		1770	1810		1770	1780	
Flt Permitted		0.74			0.84		0.55	1.00		0.58	1.00	
Satd. Flow (perm)		1345			1530		1018	1810		1086	1780	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	51	96	23	68	162	39	46	209	49	32	211	89
RTOR Reduction (vph)	0	6	0	0	7	0	0	8	0	0	15	0
Lane Group Flow (vph)	0	164	0	0	262	0	46	250	0	32	285	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4			4			2			6		
Actuated Green, G (s)		18.8			18.8		55.9	51.1		55.9	51.1	
Effective Green, g (s)		18.8			18.8		55.9	51.1		55.9	51.1	
Actuated g/C Ratio		0.21			0.21		0.62	0.57		0.62	0.57	
Clearance Time (s)		4.8			4.8		5.4	5.1		5.4	5.1	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		280			319		672	1027		711	1010	
v/s Ratio Prot							c0.00	0.14		0.00	c0.16	
v/s Ratio Perm		0.12			c0.17		0.04			0.03		
v/c Ratio		0.58			0.82		0.07	0.24		0.05	0.28	
Uniform Delay, d1		32.1			34.0		7.9	9.8		7.2	10.0	
Progression Factor		1.00			1.00		0.61	0.69		0.64	0.49	
Incremental Delay, d2		3.1			15.5		0.0	0.6		0.0	0.7	
Delay (s)		35.2			49.4		4.8	7.3		4.7	5.6	
Level of Service		D			D		A	A		A	A	
Approach Delay (s)		35.2			49.4			6.9			5.5	
Approach LOS		D			D			A			A	

### Intersection Summary

HCM 2000 Control Delay	21.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	15.3
Intersection Capacity Utilization	51.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

## 17: Lincoln Street & Knoxville Raceway/Rock Island St

7/9/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↘		↗	↘	
Volume (vph)	3	0	4	38	3	25	2	293	39	12	279	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.8			4.8		4.8	5.7		4.8	5.7	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.92			0.95		1.00	0.98		1.00	1.00	
Flt Protected		0.98			0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1683			1718		1770	1830		1770	1861	
Flt Permitted		0.88			0.82		0.57	1.00		0.54	1.00	
Satd. Flow (perm)		1505			1445		1070	1830		1008	1861	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	0	4	41	3	27	2	318	42	13	303	2
RTOR Reduction (vph)	0	6	0	0	24	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	1	0	0	47	0	2	357	0	13	305	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4			4			2			6		
Actuated Green, G (s)		8.4			8.4		66.3	64.7		66.3	64.7	
Effective Green, g (s)		8.4			8.4		66.3	64.7		66.3	64.7	
Actuated g/C Ratio		0.09			0.09		0.74	0.72		0.74	0.72	
Clearance Time (s)		4.8			4.8		4.8	5.7		4.8	5.7	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		140			134		800	1315		756	1337	
v/s Ratio Prot							0.00	c0.20		c0.00	0.16	
v/s Ratio Perm		0.00			c0.03		0.00			0.01		
v/c Ratio		0.00			0.35		0.00	0.27		0.02	0.23	
Uniform Delay, d1		37.0			38.2		3.1	4.4		3.3	4.3	
Progression Factor		1.00			1.00		0.75	0.55		0.83	0.80	
Incremental Delay, d2		0.0			1.6		0.0	0.5		0.0	0.4	
Delay (s)		37.0			39.8		2.3	2.9		2.8	3.8	
Level of Service		D			D		A	A		A	A	
Approach Delay (s)		37.0			39.8			2.9			3.8	
Approach LOS		D			D			A			A	

### Intersection Summary

HCM 2000 Control Delay	7.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.27		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	15.3
Intersection Capacity Utilization	34.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

## 3: Lincoln Street & W Bell Ave

7/9/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	14	9	14	50	6	153	12	185	45	142	227	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.8	4.8		4.8	4.8		5.9	5.5		5.9	5.5	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.91		1.00	0.86		1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1695		1770	1595		1770	3435		1770	3494	
Flt Permitted	0.43	1.00		0.74	1.00		0.59	1.00		0.60	1.00	
Satd. Flow (perm)	792	1695		1380	1595		1091	3435		1112	3494	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	15	10	15	54	7	166	13	201	49	154	247	23
RTOR Reduction (vph)	0	13	0	0	146	0	0	15	0	0	4	0
Lane Group Flow (vph)	15	12	0	54	27	0	13	235	0	154	266	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	10.6	10.6		10.6	10.6		52.0	50.4		68.7	61.6	
Effective Green, g (s)	10.6	10.6		10.6	10.6		52.0	50.4		68.7	61.6	
Actuated g/C Ratio	0.12	0.12		0.12	0.12		0.58	0.56		0.76	0.68	
Clearance Time (s)	4.8	4.8		4.8	4.8		5.9	5.5		5.9	5.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	93	199		162	187		642	1923		942	2391	
v/s Ratio Prot		0.01			0.02		0.00	0.07		c0.02	0.08	
v/s Ratio Perm	0.02			c0.04			0.01			c0.10		
v/c Ratio	0.16	0.06		0.33	0.14		0.02	0.12		0.16	0.11	
Uniform Delay, d1	35.7	35.3		36.5	35.6		8.1	9.4		2.9	4.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.8	0.1		1.2	0.4		0.0	0.1		0.1	0.1	
Delay (s)	36.5	35.4		37.7	36.0		8.1	9.5		3.0	4.9	
Level of Service	D	D		D	D		A	A		A	A	
Approach Delay (s)		35.8			36.4			9.4			4.2	
Approach LOS		D			D			A			A	

### Intersection Summary

HCM 2000 Control Delay	14.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.20		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	16.2
Intersection Capacity Utilization	41.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

## 20: Lincoln Street & W Larson St

7/9/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↘		↗	↘	
Volume (vph)	8	6	103	16	6	7	96	167	28	6	184	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.8			4.8		5.0	4.8		5.0	4.8	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.88			0.97		1.00	0.98		1.00	0.99	
Flt Protected		1.00			0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1637			1753		1770	1823		1770	1847	
Flt Permitted		0.98			0.75		0.63	1.00		0.63	1.00	
Satd. Flow (perm)		1607			1351		1165	1823		1165	1847	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	9	7	112	17	7	8	104	182	30	7	200	12
RTOR Reduction (vph)	0	99	0	0	7	0	0	4	0	0	2	0
Lane Group Flow (vph)	0	29	0	0	25	0	104	208	0	7	210	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4			4			2			6		
Actuated Green, G (s)		10.4			10.4		69.8	63.4		57.2	55.6	
Effective Green, g (s)		10.4			10.4		69.8	63.4		57.2	55.6	
Actuated g/C Ratio		0.12			0.12		0.78	0.70		0.64	0.62	
Clearance Time (s)		4.8			4.8		5.0	4.8		5.0	4.8	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		185			156		966	1284		751	1141	
v/s Ratio Prot							c0.01	c0.11		0.00	c0.11	
v/s Ratio Perm		0.02			c0.02		0.07			0.01		
v/c Ratio		0.16			0.16		0.11	0.16		0.01	0.18	
Uniform Delay, d1		35.8			35.9		2.5	4.4		6.0	7.4	
Progression Factor		1.00			1.00		0.32	0.41		1.00	1.00	
Incremental Delay, d2		0.4			0.5		0.0	0.3		0.0	0.4	
Delay (s)		36.2			36.3		0.8	2.1		6.0	7.8	
Level of Service		D			D		A	A		A	A	
Approach Delay (s)		36.2			36.3			1.7			7.7	
Approach LOS		D			D			A			A	

### Intersection Summary

HCM 2000 Control Delay	11.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.18		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	14.6
Intersection Capacity Utilization	37.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

## 6: Lincoln Street & W Madison St

7/9/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	75	33	56	23	13	8	428	57	14	495	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.8			4.8		5.2	5.1		5.2	5.1	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.97			0.98		1.00	0.98		1.00	0.99	
Flt Protected		0.98			0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1782			1773		1770	1830		1770	1851	
Flt Permitted		0.88			0.62		0.34	1.00		0.46	1.00	
Satd. Flow (perm)		1585			1134		633	1830		856	1851	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	54	82	36	61	25	14	9	465	62	15	538	24
RTOR Reduction (vph)	0	12	0	0	7	0	0	4	0	0	1	0
Lane Group Flow (vph)	0	160	0	0	93	0	9	523	0	15	561	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4			4			2			6		
Actuated Green, G (s)		14.6			14.6		58.7	58.7		58.7	58.7	
Effective Green, g (s)		14.6			14.6		58.7	58.7		58.7	58.7	
Actuated g/C Ratio		0.16			0.16		0.65	0.65		0.65	0.65	
Clearance Time (s)		4.8			4.8		5.2	5.1		5.2	5.1	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		257			183		433	1193		574	1207	
v/s Ratio Prot							0.00	c0.29		0.00	c0.30	
v/s Ratio Perm		c0.10			0.08		0.01			0.02		
v/c Ratio		0.62			0.51		0.02	0.44		0.03	0.46	
Uniform Delay, d1		35.1			34.4		6.6	7.6		5.9	7.8	
Progression Factor		1.00			1.00		1.00	1.00		0.81	0.87	
Incremental Delay, d2		4.7			2.2		0.0	1.2		0.0	1.3	
Delay (s)		39.8			36.7		6.6	8.8		4.8	8.1	
Level of Service		D			D		A	A		A	A	
Approach Delay (s)		39.8			36.7			8.8			8.0	
Approach LOS		D			D			A			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			14.3				HCM 2000 Level of Service			B		
HCM 2000 Volume to Capacity ratio			0.51									
Actuated Cycle Length (s)			90.0				Sum of lost time (s)			15.1		
Intersection Capacity Utilization			45.0%				ICU Level of Service			A		
Analysis Period (min)			15									
c	Critical Lane Group											

# HCM Signalized Intersection Capacity Analysis

## 12: Lincoln Street & W Pleasant St

7/9/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	46	61	30	76	45	71	29	223	55	65	194	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.8	4.8		4.8	4.8		5.0	5.1		5.0	5.1	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	0.91		1.00	0.97		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1770		1770	1692		1770	1807		1770	1811	
Flt Permitted	0.62	1.00		0.69	1.00		0.60	1.00		0.55	1.00	
Satd. Flow (perm)	1157	1770		1291	1692		1109	1807		1032	1811	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	50	66	33	83	49	77	32	242	60	71	211	48
RTOR Reduction (vph)	0	24	0	0	66	0	0	6	0	0	6	0
Lane Group Flow (vph)	50	75	0	83	60	0	32	296	0	71	253	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4			4			2			6		
Actuated Green, G (s)	12.6	12.6		12.6	12.6		58.7	53.9		66.3	57.7	
Effective Green, g (s)	12.6	12.6		12.6	12.6		58.7	53.9		66.3	57.7	
Actuated g/C Ratio	0.14	0.14		0.14	0.14		0.65	0.60		0.74	0.64	
Clearance Time (s)	4.8	4.8		4.8	4.8		5.0	5.1		5.0	5.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	161	247		180	236		758	1082		830	1161	
v/s Ratio Prot		0.04			0.04		0.00	c0.16		c0.01	0.14	
v/s Ratio Perm	0.04			c0.06			0.03			0.05		
v/c Ratio	0.31	0.30		0.46	0.25		0.04	0.27		0.09	0.22	
Uniform Delay, d1	34.8	34.8		35.6	34.5		5.7	8.7		4.0	6.7	
Progression Factor	1.00	1.00		1.00	1.00		0.64	0.42		0.88	0.92	
Incremental Delay, d2	1.1	0.7		1.9	0.6		0.0	0.6		0.0	0.4	
Delay (s)	35.9	35.5		37.4	35.1		3.7	4.2		3.6	6.6	
Level of Service	D	D		D	D		A	A		A	A	
Approach Delay (s)		35.6			36.0			4.2			6.0	
Approach LOS		D			D			A			A	

### Intersection Summary

HCM 2000 Control Delay	15.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.28		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	14.9
Intersection Capacity Utilization	45.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

## 9: Lincoln Street & W Robinson St

7/9/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↘		↗	↘	
Volume (vph)	15	44	6	106	47	39	15	263	108	26	273	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.8			4.8		5.4	5.1		5.4	5.1	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.99			0.97		1.00	0.96		1.00	0.99	
Flt Protected		0.99			0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1817			1763		1770	1782		1770	1850	
Flt Permitted		0.92			0.82		0.49	1.00		0.53	1.00	
Satd. Flow (perm)		1690			1489		915	1782		978	1850	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	16	48	7	115	51	42	16	286	117	28	297	14
RTOR Reduction (vph)	0	5	0	0	11	0	0	13	0	0	1	0
Lane Group Flow (vph)	0	66	0	0	197	0	16	390	0	28	310	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4			4			2			6		
Actuated Green, G (s)		16.7			16.7		53.8	53.8		56.4	56.4	
Effective Green, g (s)		16.7			16.7		53.8	53.8		56.4	56.4	
Actuated g/C Ratio		0.19			0.19		0.60	0.60		0.63	0.63	
Clearance Time (s)		4.8			4.8		5.4	5.1		5.4	5.1	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		313			276		562	1065		649	1159	
v/s Ratio Prot							0.00	c0.22		0.00	c0.17	
v/s Ratio Perm		0.04			c0.13		0.02			0.02		
v/c Ratio		0.21			0.72		0.03	0.37		0.04	0.27	
Uniform Delay, d1		31.1			34.4		7.6	9.3		6.5	7.5	
Progression Factor		1.00			1.00		0.52	0.47		0.35	0.34	
Incremental Delay, d2		0.3			8.5		0.0	0.9		0.0	0.6	
Delay (s)		31.4			42.9		4.0	5.3		2.3	3.1	
Level of Service		C			D		A	A		A	A	
Approach Delay (s)		31.4			42.9			5.3			3.0	
Approach LOS		C			D			A			A	

### Intersection Summary

HCM 2000 Control Delay	13.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	15.3
Intersection Capacity Utilization	47.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

## 17: Lincoln Street & Knoxville Raceway/Rock Island St

7/9/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↘		↗	↘	
Volume (vph)	1	2	0	42	3	36	0	398	32	17	306	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.8			4.8			5.7		4.8	5.7	
Lane Util. Factor		1.00			1.00			1.00		1.00	1.00	
Frt		1.00			0.94			0.99		1.00	1.00	
Flt Protected		0.98			0.97			1.00		0.95	1.00	
Satd. Flow (prot)		1832			1707			1842		1770	1863	
Flt Permitted		0.92			0.83			1.00		0.47	1.00	
Satd. Flow (perm)		1713			1461			1842		869	1863	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	2	0	46	3	39	0	433	35	18	333	0
RTOR Reduction (vph)	0	0	0	0	35	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	3	0	0	53	0	0	466	0	18	333	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4			4			2			6		
Actuated Green, G (s)		8.6			8.6			62.8		71.8	70.9	
Effective Green, g (s)		8.6			8.6			62.8		71.8	70.9	
Actuated g/C Ratio		0.10			0.10			0.70		0.80	0.79	
Clearance Time (s)		4.8			4.8			5.7		4.8	5.7	
Vehicle Extension (s)		3.0			3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)		163			139			1285		726	1467	
v/s Ratio Prot								c0.25		0.00	c0.18	
v/s Ratio Perm		0.00			c0.04					0.02		
v/c Ratio		0.02			0.38			0.36		0.02	0.23	
Uniform Delay, d1		36.9			38.2			5.5		2.8	2.5	
Progression Factor		1.00			1.00			0.34		0.87	0.83	
Incremental Delay, d2		0.0			1.7			0.8		0.0	0.4	
Delay (s)		36.9			39.9			2.6		2.4	2.4	
Level of Service		D			D			A		A	A	
Approach Delay (s)		36.9			39.9			2.6			2.4	
Approach LOS		D			D			A			A	

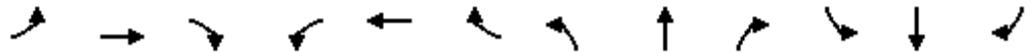
### Intersection Summary

HCM 2000 Control Delay	6.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	15.3
Intersection Capacity Utilization	40.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

## 3: Lincoln Street & W Bell Ave

7/9/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	13	6	11	88	10	186	21	237	68	159	241	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.8	4.8		4.8	4.8		5.9	5.5		5.9	5.5	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.91		1.00	0.86		1.00	0.97		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1686		1770	1598		1770	3421		1770	3522	
Flt Permitted	0.35	1.00		0.75	1.00		0.58	1.00		0.55	1.00	
Satd. Flow (perm)	648	1686		1388	1598		1089	3421		1027	3522	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	14	7	12	96	11	202	23	258	74	173	262	9
RTOR Reduction (vph)	0	10	0	0	174	0	0	19	0	0	1	0
Lane Group Flow (vph)	14	9	0	96	39	0	23	313	0	173	270	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	12.6	12.6		12.6	12.6		53.0	49.7		66.7	57.9	
Effective Green, g (s)	12.6	12.6		12.6	12.6		53.0	49.7		66.7	57.9	
Actuated g/C Ratio	0.14	0.14		0.14	0.14		0.59	0.55		0.74	0.64	
Clearance Time (s)	4.8	4.8		4.8	4.8		5.9	5.5		5.9	5.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	90	236		194	223		666	1889		856	2265	
v/s Ratio Prot		0.01			0.02		0.00	0.09		c0.03	0.08	
v/s Ratio Perm	0.02			c0.07			0.02			c0.12		
v/c Ratio	0.16	0.04		0.49	0.18		0.03	0.17		0.20	0.12	
Uniform Delay, d1	34.0	33.5		35.8	34.1		7.8	9.9		3.6	6.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.8	0.1		2.0	0.4		0.0	0.2		0.1	0.1	
Delay (s)	34.8	33.5		37.7	34.5		7.8	10.1		3.7	6.3	
Level of Service	C	C		D	C		A	B		A	A	
Approach Delay (s)		34.1			35.5			10.0			5.3	
Approach LOS		C			D			A			A	

### Intersection Summary

HCM 2000 Control Delay	15.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.26		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	16.2
Intersection Capacity Utilization	42.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

## 20: Lincoln Street & W Larson St

7/9/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↘		↗	↘	
Volume (vph)	9	9	98	24	9	10	109	250	32	0	246	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.8			4.8		5.0	4.8			4.8	
Lane Util. Factor		1.00			1.00		1.00	1.00			1.00	
Frt		0.89			0.97		1.00	0.98			1.00	
Flt Protected		1.00			0.97		0.95	1.00			1.00	
Satd. Flow (prot)		1644			1755		1770	1831			1854	
Flt Permitted		0.97			0.68		0.58	1.00			1.00	
Satd. Flow (perm)		1608			1225		1083	1831			1854	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	10	10	107	26	10	11	118	272	35	0	267	9
RTOR Reduction (vph)	0	95	0	0	10	0	0	2	0	0	1	0
Lane Group Flow (vph)	0	32	0	0	37	0	118	305	0	0	275	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4			4			2			6		
Actuated Green, G (s)		10.4			10.4		70.0	70.0			58.6	
Effective Green, g (s)		10.4			10.4		70.0	70.0			58.6	
Actuated g/C Ratio		0.12			0.12		0.78	0.78			0.65	
Clearance Time (s)		4.8			4.8		5.0	4.8			4.8	
Vehicle Extension (s)		3.0			3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		185			141		891	1424			1207	
v/s Ratio Prot							0.01	c0.17			c0.15	
v/s Ratio Perm		0.02			c0.03		0.09					
v/c Ratio		0.17			0.26		0.13	0.21			0.23	
Uniform Delay, d1		35.9			36.3		2.7	2.7			6.4	
Progression Factor		1.00			1.00		0.27	0.28			1.00	
Incremental Delay, d2		0.5			1.0		0.1	0.3			0.4	
Delay (s)		36.4			37.3		0.8	1.1			6.9	
Level of Service		D			D		A	A			A	
Approach Delay (s)		36.4			37.3			1.0			6.9	
Approach LOS		D			D			A			A	

### Intersection Summary

HCM 2000 Control Delay	9.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.24		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	14.6
Intersection Capacity Utilization	43.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

## 6: Lincoln Street & W Madison St

7/9/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↘		↗	↘	
Volume (vph)	11	21	13	55	18	9	8	331	54	14	318	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.8			4.8		5.2	5.1		5.2	5.1	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.96			0.98		1.00	0.98		1.00	0.99	
Flt Protected		0.99			0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1769			1776		1770	1823		1770	1845	
Flt Permitted		0.93			0.82		0.53	1.00		0.49	1.00	
Satd. Flow (perm)		1667			1500		981	1823		920	1845	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	12	23	14	60	20	10	9	360	59	15	346	24
RTOR Reduction (vph)	0	13	0	0	5	0	0	4	0	0	2	0
Lane Group Flow (vph)	0	36	0	0	85	0	9	415	0	15	368	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4			4			2			6		
Actuated Green, G (s)		9.6			9.6		65.3	63.7		65.3	63.7	
Effective Green, g (s)		9.6			9.6		65.3	63.7		65.3	63.7	
Actuated g/C Ratio		0.11			0.11		0.73	0.71		0.73	0.71	
Clearance Time (s)		4.8			4.8		5.2	5.1		5.2	5.1	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		177			160		725	1290		682	1305	
v/s Ratio Prot							0.00	c0.23		c0.00	0.20	
v/s Ratio Perm		0.02			c0.06		0.01			0.02		
v/c Ratio		0.21			0.53		0.01	0.32		0.02	0.28	
Uniform Delay, d1		36.7			38.1		3.9	5.0		4.3	4.8	
Progression Factor		1.00			1.00		1.00	1.00		0.61	0.62	
Incremental Delay, d2		0.6			3.1		0.0	0.7		0.0	0.5	
Delay (s)		37.3			41.2		3.9	5.6		2.6	3.5	
Level of Service		D			D		A	A		A	A	
Approach Delay (s)		37.3			41.2			5.6			3.5	
Approach LOS		D			D			A			A	

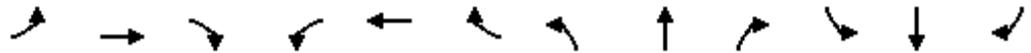
### Intersection Summary

HCM 2000 Control Delay	9.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	15.1
Intersection Capacity Utilization	39.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

## 12: Lincoln Street & W Pleasant St

7/9/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	98	116	47	66	63	101	20	269	57	77	227	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.8	4.8		4.8	4.8		5.0	5.1		5.0	5.1	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.91		1.00	0.97		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1782		1770	1690		1770	1814		1770	1816	
Flt Permitted	0.51	1.00		0.51	1.00		0.56	1.00		0.50	1.00	
Satd. Flow (perm)	947	1782		952	1690		1045	1814		939	1816	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	107	126	51	72	68	110	22	292	62	84	247	49
RTOR Reduction (vph)	0	18	0	0	74	0	0	6	0	0	5	0
Lane Group Flow (vph)	107	159	0	72	104	0	22	348	0	84	291	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4			4			2			6		
Actuated Green, G (s)	15.8	15.8		15.8	15.8		53.7	50.5		64.4	56.1	
Effective Green, g (s)	15.8	15.8		15.8	15.8		53.7	50.5		64.4	56.1	
Actuated g/C Ratio	0.18	0.18		0.18	0.18		0.60	0.56		0.72	0.62	
Clearance Time (s)	4.8	4.8		4.8	4.8		5.0	5.1		5.0	5.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	166	312		167	296		649	1017		753	1131	
v/s Ratio Prot		0.09			0.06		0.00	c0.19		c0.01	c0.16	
v/s Ratio Perm	c0.11			0.08			0.02			0.07		
v/c Ratio	0.64	0.51		0.43	0.35		0.03	0.34		0.11	0.26	
Uniform Delay, d1	34.5	33.6		33.1	32.6		8.1	10.7		5.5	7.6	
Progression Factor	1.00	1.00		1.00	1.00		0.43	0.45		0.53	0.99	
Incremental Delay, d2	8.3	1.3		1.8	0.7		0.0	0.9		0.1	0.5	
Delay (s)	42.8	34.9		34.9	33.3		3.5	5.7		3.0	8.1	
Level of Service	D	C		C	C		A	A		A	A	
Approach Delay (s)		37.9			33.8			5.5			6.9	
Approach LOS		D			C			A			A	

### Intersection Summary

HCM 2000 Control Delay	18.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	14.9
Intersection Capacity Utilization	58.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

## 9: Lincoln Street & W Robinson St

7/9/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↘		↗	↘	
Volume (vph)	24	73	36	89	50	47	27	272	79	50	285	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.8			4.8		5.4	5.1		5.4	5.1	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.96			0.97		1.00	0.97		1.00	0.99	
Flt Protected		0.99			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1779			1757		1770	1800		1770	1840	
Flt Permitted		0.92			0.71		0.46	1.00		0.54	1.00	
Satd. Flow (perm)		1643			1285		858	1800		997	1840	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	26	79	39	97	54	51	29	296	86	54	310	28
RTOR Reduction (vph)	0	15	0	0	15	0	0	10	0	0	3	0
Lane Group Flow (vph)	0	129	0	0	187	0	29	372	0	54	335	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4			4			2			6		
Actuated Green, G (s)		16.8			16.8		52.0	52.0		54.7	54.7	
Effective Green, g (s)		16.8			16.8		52.0	52.0		54.7	54.7	
Actuated g/C Ratio		0.19			0.19		0.58	0.58		0.61	0.61	
Clearance Time (s)		4.8			4.8		5.4	5.1		5.4	5.1	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		306			239		528	1040		656	1118	
v/s Ratio Prot							0.00	c0.21		0.01	c0.18	
v/s Ratio Perm		0.08			c0.15		0.03			0.04		
v/c Ratio		0.42			0.78		0.05	0.36		0.08	0.30	
Uniform Delay, d1		32.3			34.9		8.6	10.1		7.3	8.5	
Progression Factor		1.00			1.00		0.59	0.67		0.38	0.35	
Incremental Delay, d2		0.9			15.4		0.0	0.9		0.1	0.7	
Delay (s)		33.2			50.3		5.1	7.7		2.9	3.7	
Level of Service		C			D		A	A		A	A	
Approach Delay (s)		33.2			50.3			7.5			3.5	
Approach LOS		C			D			A			A	

### Intersection Summary

HCM 2000 Control Delay	16.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	15.3
Intersection Capacity Utilization	55.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

## **APPENDIX E – TRAFFIC SIGNAL TIMING REPORTS**

Timings  
 17: Lincoln Street & Knoxville Raceway/Rock Island St

AM Peak Hour  
 7/24/2015



Lane Group	WBL	WBT	NBT	SBL	SBT
Lane Configurations		↕	↕		↕
Volume (vph)	35	2	285	2	382
Turn Type	Perm	NA	NA	Perm	NA
Protected Phases		4	2		2
Permitted Phases	4			2	
Detector Phase	4	4	2	2	2
Switch Phase					
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	27.8	27.8	35.5	35.5	35.5
Total Split (s)	32.0	32.0	48.0	48.0	48.0
Total Split (%)	40.0%	40.0%	60.0%	60.0%	60.0%
Maximum Green (s)	27.2	27.2	42.3	42.3	42.3
Yellow Time (s)	3.8	3.8	4.1	4.1	4.1
All-Red Time (s)	1.0	1.0	1.6	1.6	1.6
Lost Time Adjust (s)		0.0	0.0		0.0
Total Lost Time (s)		4.8	5.7		5.7
Lead/Lag					
Lead-Lag Optimize?					
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	16.0	16.0	12.0	12.0	12.0
Pedestrian Calls (#/hr)	0	0	0	0	0

Intersection Summary

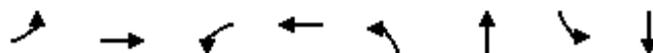
Cycle Length: 80  
 Actuated Cycle Length: 80  
 Offset: 50 (63%), Referenced to phase 2:NBSB, Start of Green  
 Natural Cycle: 65  
 Control Type: Actuated-Coordinated

Splits and Phases: 17: Lincoln Street & Knoxville Raceway/Rock Island St



Timings  
3: Lincoln Street & W Bell Ave

AM Peak Hour  
7/24/2015

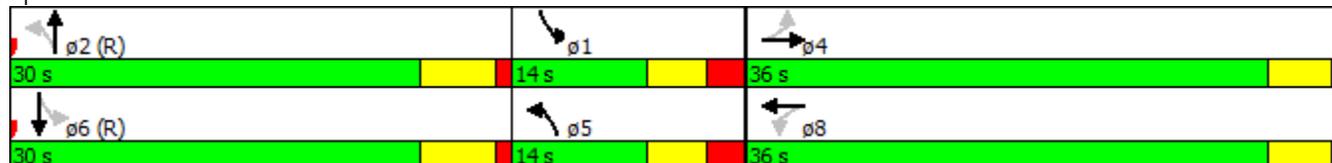


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↖	↗	↖	↗	↖	↕	↖	↕
Volume (vph)	2	0	22	4	19	264	63	169
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases		4		8	5	2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	8.0	10.0	8.0	10.0
Minimum Split (s)	35.8	35.8	35.8	35.8	13.9	28.5	13.9	28.5
Total Split (s)	36.0	36.0	36.0	36.0	14.0	30.0	14.0	30.0
Total Split (%)	45.0%	45.0%	45.0%	45.0%	17.5%	37.5%	17.5%	37.5%
Maximum Green (s)	31.2	31.2	31.2	31.2	8.1	24.5	8.1	24.5
Yellow Time (s)	3.8	3.8	3.8	3.8	3.6	4.5	3.6	4.5
All-Red Time (s)	1.0	1.0	1.0	1.0	2.3	1.0	2.3	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.8	4.8	4.8	4.8	5.9	5.5	5.9	5.5
Lead/Lag					Lag	Lead	Lag	Lead
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	None	C-Min	None	C-Min
Walk Time (s)	7.0	7.0	7.0	7.0		7.0		7.0
Flash Dont Walk (s)	23.0	23.0	23.0	23.0		14.0		14.0
Pedestrian Calls (#/hr)	0	0	0	0		0		0

Intersection Summary

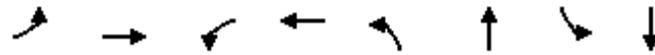
Cycle Length: 80  
 Actuated Cycle Length: 80  
 Offset: 31 (39%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green  
 Natural Cycle: 80  
 Control Type: Actuated-Coordinated

Splits and Phases: 3: Lincoln Street & W Bell Ave



Timings  
20: Lincoln Street & W Larson St

AM Peak Hour  
7/24/2015

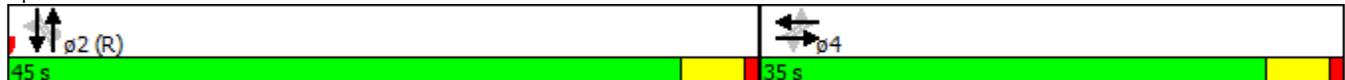


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↕		↕		↕		↕
Volume (vph)	5	12	66	5	41	152	11	204
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		4		2		2
Permitted Phases	4		4		2		2	
Detector Phase	4	4	4	4	2	2	2	2
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	25.8	25.8	25.8	25.8	34.0	34.0	34.0	34.0
Total Split (s)	35.0	35.0	35.0	35.0	45.0	45.0	45.0	45.0
Total Split (%)	43.8%	43.8%	43.8%	43.8%	56.3%	56.3%	56.3%	56.3%
Maximum Green (s)	30.2	30.2	30.2	30.2	40.2	40.2	40.2	40.2
Yellow Time (s)	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0		0.0		0.0		0.0
Total Lost Time (s)		4.8		4.8		4.8		4.8
Lead/Lag								
Lead-Lag Optimize?								
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	14.0	14.0	14.0	14.0	10.0	10.0	10.0	10.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0

Intersection Summary

Cycle Length: 80  
 Actuated Cycle Length: 80  
 Offset: 50 (63%), Referenced to phase 2:NBSB, Start of Green  
 Natural Cycle: 60  
 Control Type: Actuated-Coordinated

Splits and Phases: 20: Lincoln Street & W Larson St



Timings  
6: Lincoln Street & W Madison St

AM Peak Hour  
7/24/2015



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↕		↕		↕		↕
Volume (vph)	37	32	31	83	18	240	7	227
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		4		2		2
Permitted Phases	4		4		2		2	
Detector Phase	4	4	4	4	2	2	2	2
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	24.8	24.8	24.8	24.8	49.1	49.1	49.1	49.1
Total Split (s)	28.0	28.0	28.0	28.0	52.0	52.0	52.0	52.0
Total Split (%)	35.0%	35.0%	35.0%	35.0%	65.0%	65.0%	65.0%	65.0%
Maximum Green (s)	23.2	23.2	23.2	23.2	46.9	46.9	46.9	46.9
Yellow Time (s)	3.8	3.8	3.8	3.8	4.1	4.1	4.1	4.1
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0		0.0		0.0		0.0
Total Lost Time (s)		4.8		4.8		5.1		5.1
Lead/Lag								
Lead-Lag Optimize?								
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	13.0	13.0	13.0	13.0	10.0	10.0	10.0	10.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0

Intersection Summary

Cycle Length: 80  
 Actuated Cycle Length: 80  
 Offset: 53 (66%), Referenced to phase 2:NBSB, Start of Green  
 Natural Cycle: 75  
 Control Type: Actuated-Coordinated

Splits and Phases: 6: Lincoln Street & W Madison St



Timings  
12: Lincoln Street & W Pleasant St

AM Peak Hour  
7/24/2015

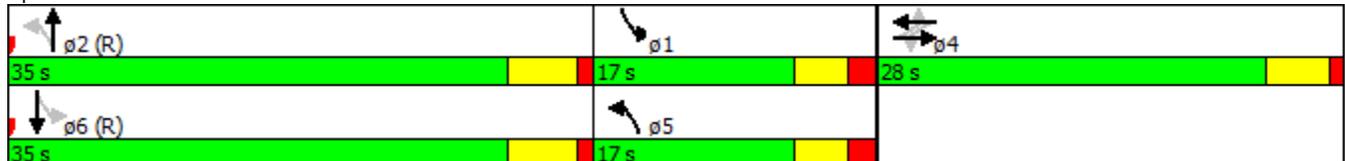


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↖	↗	↖	↗	↖	↗	↖	↗
Volume (vph)	55	82	39	120	42	191	40	209
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases		4		4	5	2	1	6
Permitted Phases	4		4		2		6	
Detector Phase	4	4	4	4	5	2	1	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	8.0	10.0	8.0	10.0
Minimum Split (s)	27.8	27.8	27.8	27.8	17.0	28.1	17.0	28.1
Total Split (s)	28.0	28.0	28.0	28.0	17.0	35.0	17.0	35.0
Total Split (%)	35.0%	35.0%	35.0%	35.0%	21.3%	43.8%	21.3%	43.8%
Maximum Green (s)	23.2	23.2	23.2	23.2	12.0	29.9	12.0	29.9
Yellow Time (s)	3.8	3.8	3.8	3.8	3.2	4.1	3.2	4.1
All-Red Time (s)	1.0	1.0	1.0	1.0	1.8	1.0	1.8	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.8	4.8	4.8	4.8	5.0	5.1	5.0	5.1
Lead/Lag					Lag	Lead	Lag	Lead
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0		7.0		7.0
Flash Dont Walk (s)	16.0	16.0	16.0	16.0		16.0		16.0
Pedestrian Calls (#/hr)	0	0	0	0		0		0

Intersection Summary

Cycle Length: 80  
 Actuated Cycle Length: 80  
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green, Master Intersection  
 Natural Cycle: 75  
 Control Type: Actuated-Coordinated

Splits and Phases: 12: Lincoln Street & W Pleasant St



Timings  
9: Lincoln Street & W Robinson St

AM Peak Hour  
7/24/2015



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↕		↕		↕		↕
Volume (vph)	47	88	63	149	42	192	29	194
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		4		2		2
Permitted Phases	4		4		2		2	
Detector Phase	4	4	4	4	2	2	2	2
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	25.8	25.8	25.8	25.8	50.0	50.0	50.0	50.0
Total Split (s)	29.0	29.0	29.0	29.0	51.0	51.0	51.0	51.0
Total Split (%)	36.3%	36.3%	36.3%	36.3%	63.8%	63.8%	63.8%	63.8%
Maximum Green (s)	24.2	24.2	24.2	24.2	45.9	45.9	45.9	45.9
Yellow Time (s)	3.8	3.8	3.8	3.8	4.1	4.1	4.1	4.1
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0		0.0		0.0		0.0
Total Lost Time (s)		4.8		4.8		5.1		5.1
Lead/Lag								
Lead-Lag Optimize?								
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	14.0	14.0	14.0	14.0	10.0	10.0	10.0	10.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0

Intersection Summary

Cycle Length: 80  
 Actuated Cycle Length: 80  
 Offset: 79 (99%), Referenced to phase 2:NBSB, Start of Green  
 Natural Cycle: 80  
 Control Type: Actuated-Coordinated

Splits and Phases: 9: Lincoln Street & W Robinson St



Timings  
17: Lincoln Street & Knoxville Raceway/Rock Island St

Mid-Day Peak Hour  
7/24/2015

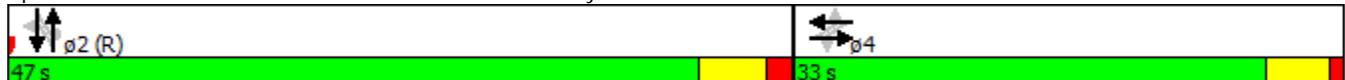


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↕		↕		↕		↕
Volume (vph)	3	0	38	3	2	293	12	279
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		4		2		2
Permitted Phases	4		4		2		2	
Detector Phase	4	4	4	4	2	2	2	2
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	27.8	27.8	27.8	27.8	35.5	35.5	35.5	35.5
Total Split (s)	33.0	33.0	33.0	33.0	47.0	47.0	47.0	47.0
Total Split (%)	41.3%	41.3%	41.3%	41.3%	58.8%	58.8%	58.8%	58.8%
Maximum Green (s)	28.2	28.2	28.2	28.2	41.3	41.3	41.3	41.3
Yellow Time (s)	3.8	3.8	3.8	3.8	4.1	4.1	4.1	4.1
All-Red Time (s)	1.0	1.0	1.0	1.0	1.6	1.6	1.6	1.6
Lost Time Adjust (s)		0.0		0.0		0.0		0.0
Total Lost Time (s)		4.8		4.8		5.7		5.7
Lead/Lag								
Lead-Lag Optimize?								
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	16.0	16.0	16.0	16.0	12.0	12.0	12.0	12.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0

Intersection Summary

Cycle Length: 80  
 Actuated Cycle Length: 80  
 Offset: 79 (99%), Referenced to phase 2:NBSB, Start of Green  
 Natural Cycle: 65  
 Control Type: Actuated-Coordinated

Splits and Phases: 17: Lincoln Street & Knoxville Raceway/Rock Island St



Timings  
3: Lincoln Street & W Bell Ave

Mid-Day Peak Hour  
7/24/2015



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↖	↗	↖	↗	↖	↕	↖	↕
Volume (vph)	14	9	50	6	12	185	142	227
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases		4		8	5	2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	8.0	10.0	8.0	10.0
Minimum Split (s)	34.8	34.8	34.8	34.8	13.9	26.5	13.9	26.5
Total Split (s)	35.0	35.0	35.0	35.0	14.0	30.0	15.0	31.0
Total Split (%)	43.8%	43.8%	43.8%	43.8%	17.5%	37.5%	18.8%	38.8%
Maximum Green (s)	30.2	30.2	30.2	30.2	8.1	24.5	9.1	25.5
Yellow Time (s)	3.8	3.8	3.8	3.8	3.6	4.5	3.6	4.5
All-Red Time (s)	1.0	1.0	1.0	1.0	2.3	1.0	2.3	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.8	4.8	4.8	4.8	5.9	5.5	5.9	5.5
Lead/Lag					Lag	Lead	Lag	Lead
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	None	C-Min	None	C-Min
Walk Time (s)	7.0	7.0	7.0	7.0		7.0		7.0
Flash Dont Walk (s)	23.0	23.0	23.0	23.0		14.0		14.0
Pedestrian Calls (#/hr)	0	0	0	0		0		0

Intersection Summary

Cycle Length: 80  
 Actuated Cycle Length: 80  
 Offset: 73 (91%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green  
 Natural Cycle: 80  
 Control Type: Actuated-Coordinated

Splits and Phases: 3: Lincoln Street & W Bell Ave



Timings  
20: Lincoln Street & W Larson St

Mid-Day Peak Hour  
7/24/2015

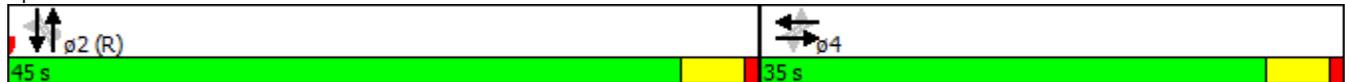


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↕		↕		↕		↕
Volume (vph)	8	6	16	6	96	167	6	184
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		4		2		2
Permitted Phases	4		4		2		2	
Detector Phase	4	4	4	4	2	2	2	2
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	25.8	25.8	25.8	25.8	34.0	34.0	34.0	34.0
Total Split (s)	35.0	35.0	35.0	35.0	45.0	45.0	45.0	45.0
Total Split (%)	43.8%	43.8%	43.8%	43.8%	56.3%	56.3%	56.3%	56.3%
Maximum Green (s)	30.2	30.2	30.2	30.2	40.2	40.2	40.2	40.2
Yellow Time (s)	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0		0.0		0.0		0.0
Total Lost Time (s)		4.8		4.8		4.8		4.8
Lead/Lag								
Lead-Lag Optimize?								
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	14.0	14.0	14.0	14.0	10.0	10.0	10.0	10.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0

Intersection Summary

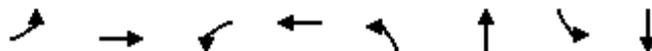
Cycle Length: 80  
 Actuated Cycle Length: 80  
 Offset: 26 (33%), Referenced to phase 2:NBSB, Start of Green  
 Natural Cycle: 60  
 Control Type: Actuated-Coordinated

Splits and Phases: 20: Lincoln Street & W Larson St



Timings  
6: Lincoln Street & W Madison St

Mid-Day Peak Hour  
7/24/2015



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	50	75	56	23	8	428	14	495
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		4		2		2
Permitted Phases	4		4		2		2	
Detector Phase	4	4	4	4	2	2	2	2
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	24.8	24.8	24.8	24.8	49.1	49.1	49.1	49.1
Total Split (s)	26.0	26.0	26.0	26.0	54.0	54.0	54.0	54.0
Total Split (%)	32.5%	32.5%	32.5%	32.5%	67.5%	67.5%	67.5%	67.5%
Maximum Green (s)	21.2	21.2	21.2	21.2	48.9	48.9	48.9	48.9
Yellow Time (s)	3.8	3.8	3.8	3.8	4.1	4.1	4.1	4.1
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0		0.0		0.0		0.0
Total Lost Time (s)		4.8		4.8		5.1		5.1
Lead/Lag								
Lead-Lag Optimize?								
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	13.0	13.0	13.0	13.0	10.0	10.0	10.0	10.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0

Intersection Summary

Cycle Length: 80  
 Actuated Cycle Length: 80  
 Offset: 5 (6%), Referenced to phase 2:NBSB, Start of Green  
 Natural Cycle: 75  
 Control Type: Actuated-Coordinated

Splits and Phases: 6: Lincoln Street & W Madison St



Timings  
12: Lincoln Street & W Pleasant St

Mid-Day Peak Hour  
7/24/2015

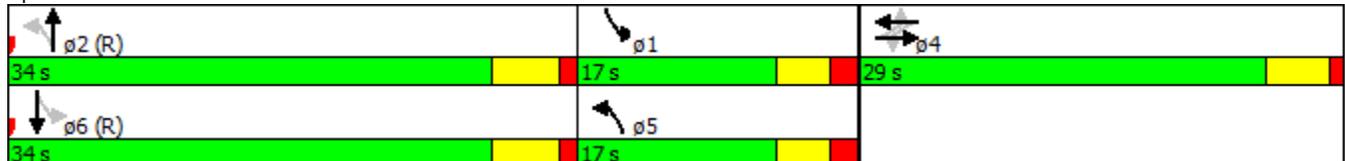


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↖	↗	↖	↗	↖	↗	↖	↗
Volume (vph)	46	61	76	45	29	223	65	194
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases		4		4	5	2	1	6
Permitted Phases	4		4		2		6	
Detector Phase	4	4	4	4	5	2	1	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	8.0	10.0	8.0	10.0
Minimum Split (s)	27.8	27.8	27.8	27.8	17.0	28.1	17.0	28.1
Total Split (s)	29.0	29.0	29.0	29.0	17.0	34.0	17.0	34.0
Total Split (%)	36.3%	36.3%	36.3%	36.3%	21.3%	42.5%	21.3%	42.5%
Maximum Green (s)	24.2	24.2	24.2	24.2	12.0	28.9	12.0	28.9
Yellow Time (s)	3.8	3.8	3.8	3.8	3.2	4.1	3.2	4.1
All-Red Time (s)	1.0	1.0	1.0	1.0	1.8	1.0	1.8	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.8	4.8	4.8	4.8	5.0	5.1	5.0	5.1
Lead/Lag					Lag	Lead	Lag	Lead
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0		7.0		7.0
Flash Dont Walk (s)	16.0	16.0	16.0	16.0		16.0		16.0
Pedestrian Calls (#/hr)	0	0	0	0		0		0

Intersection Summary

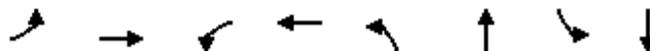
Cycle Length: 80  
 Actuated Cycle Length: 80  
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green, Master Intersection  
 Natural Cycle: 75  
 Control Type: Actuated-Coordinated

Splits and Phases: 12: Lincoln Street & W Pleasant St



Timings  
9: Lincoln Street & W Robinson St

Mid-Day Peak Hour  
7/24/2015



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↕		↕		↕		↕
Volume (vph)	15	44	106	47	15	263	26	273
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		4		2		2
Permitted Phases	4		4		2		2	
Detector Phase	4	4	4	4	2	2	2	2
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	25.8	25.8	25.8	25.8	50.0	50.0	50.0	50.0
Total Split (s)	28.0	28.0	28.0	28.0	52.0	52.0	52.0	52.0
Total Split (%)	35.0%	35.0%	35.0%	35.0%	65.0%	65.0%	65.0%	65.0%
Maximum Green (s)	23.2	23.2	23.2	23.2	46.9	46.9	46.9	46.9
Yellow Time (s)	3.8	3.8	3.8	3.8	4.1	4.1	4.1	4.1
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0		0.0		0.0		0.0
Total Lost Time (s)		4.8		4.8		5.1		5.1
Lead/Lag								
Lead-Lag Optimize?								
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	14.0	14.0	14.0	14.0	10.0	10.0	10.0	10.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0

Intersection Summary

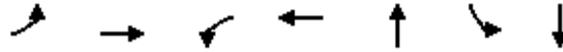
Cycle Length: 80  
 Actuated Cycle Length: 80  
 Offset: 0 (0%), Referenced to phase 2:NBSB, Start of Green  
 Natural Cycle: 80  
 Control Type: Actuated-Coordinated

Splits and Phases: 9: Lincoln Street & W Robinson St



Timings  
 17: Lincoln Street & Knoxville Raceway/Rock Island St

PM Peak Hour  
 7/24/2015

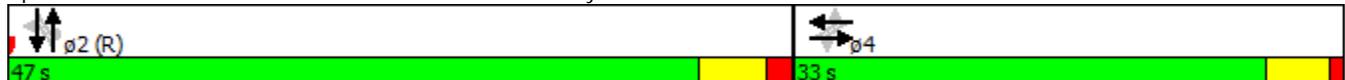


Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Configurations		↕		↕	↕↔		↕↔
Volume (vph)	1	2	42	3	398	17	306
Turn Type	Perm	NA	Perm	NA	NA	Perm	NA
Protected Phases		4		4	2		2
Permitted Phases	4		4			2	
Detector Phase	4	4	4	4	2	2	2
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	27.8	27.8	27.8	27.8	35.5	35.5	35.5
Total Split (s)	33.0	33.0	33.0	33.0	47.0	47.0	47.0
Total Split (%)	41.3%	41.3%	41.3%	41.3%	58.8%	58.8%	58.8%
Maximum Green (s)	28.2	28.2	28.2	28.2	41.3	41.3	41.3
Yellow Time (s)	3.8	3.8	3.8	3.8	4.1	4.1	4.1
All-Red Time (s)	1.0	1.0	1.0	1.0	1.6	1.6	1.6
Lost Time Adjust (s)		0.0		0.0	0.0		0.0
Total Lost Time (s)		4.8		4.8	5.7		5.7
Lead/Lag							
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	16.0	16.0	16.0	16.0	12.0	12.0	12.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0

Intersection Summary

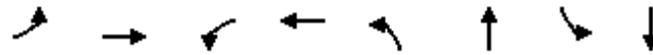
Cycle Length: 80  
 Actuated Cycle Length: 80  
 Offset: 45 (56%), Referenced to phase 2:NBSB, Start of Green  
 Natural Cycle: 65  
 Control Type: Actuated-Coordinated

Splits and Phases: 17: Lincoln Street & Knoxville Raceway/Rock Island St



Timings  
3: Lincoln Street & W Bell Ave

PM Peak Hour  
7/24/2015

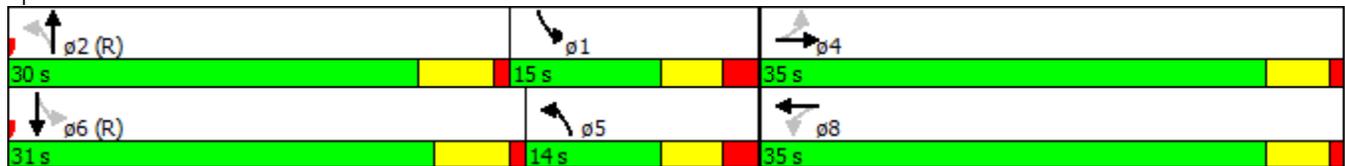


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↖	↗	↖	↗	↖	↕	↖	↕
Volume (vph)	13	6	88	10	21	237	159	241
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases		4		8	5	2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	8.0	10.0	8.0	10.0
Minimum Split (s)	34.8	34.8	34.8	34.8	13.9	26.5	13.9	26.5
Total Split (s)	35.0	35.0	35.0	35.0	14.0	30.0	15.0	31.0
Total Split (%)	43.8%	43.8%	43.8%	43.8%	17.5%	37.5%	18.8%	38.8%
Maximum Green (s)	30.2	30.2	30.2	30.2	8.1	24.5	9.1	25.5
Yellow Time (s)	3.8	3.8	3.8	3.8	3.6	4.5	3.6	4.5
All-Red Time (s)	1.0	1.0	1.0	1.0	2.3	1.0	2.3	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.8	4.8	4.8	4.8	5.9	5.5	5.9	5.5
Lead/Lag					Lag	Lead	Lag	Lead
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	None	C-Min	None	C-Min
Walk Time (s)	7.0	7.0	7.0	7.0		7.0		7.0
Flash Dont Walk (s)	23.0	23.0	23.0	23.0		14.0		14.0
Pedestrian Calls (#/hr)	0	0	0	0		0		0

Intersection Summary

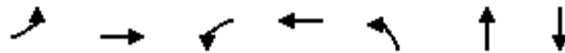
Cycle Length: 80  
 Actuated Cycle Length: 80  
 Offset: 73 (91%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green  
 Natural Cycle: 80  
 Control Type: Actuated-Coordinated

Splits and Phases: 3: Lincoln Street & W Bell Ave



Timings  
20: Lincoln Street & W Larson St

PM Peak Hour  
7/24/2015



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT
Lane Configurations		↕		↕		↕	↕
Volume (vph)	9	9	24	9	109	250	246
Turn Type	Perm	NA	Perm	NA	Perm	NA	NA
Protected Phases		4		4		2	2
Permitted Phases	4		4		2		
Detector Phase	4	4	4	4	2	2	2
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	25.8	25.8	25.8	25.8	34.0	34.0	34.0
Total Split (s)	33.0	33.0	33.0	33.0	47.0	47.0	47.0
Total Split (%)	41.3%	41.3%	41.3%	41.3%	58.8%	58.8%	58.8%
Maximum Green (s)	28.2	28.2	28.2	28.2	42.2	42.2	42.2
Yellow Time (s)	3.8	3.8	3.8	3.8	3.8	3.8	3.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0		0.0		0.0	0.0
Total Lost Time (s)		4.8		4.8		4.8	4.8
Lead/Lag							
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	14.0	14.0	14.0	14.0	10.0	10.0	10.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0

Intersection Summary

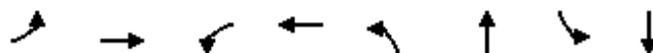
Cycle Length: 80  
 Actuated Cycle Length: 80  
 Offset: 37 (46%), Referenced to phase 2:NBSB, Start of Green  
 Natural Cycle: 60  
 Control Type: Actuated-Coordinated

Splits and Phases: 20: Lincoln Street & W Larson St



Timings  
6: Lincoln Street & W Madison St

PM Peak Hour  
7/24/2015



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↕		↕		↕		↕
Volume (vph)	11	21	55	18	8	331	14	318
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		4		2		2
Permitted Phases	4		4		2		2	
Detector Phase	4	4	4	4	2	2	2	2
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	24.8	24.8	24.8	24.8	49.1	49.1	49.1	49.1
Total Split (s)	27.0	27.0	27.0	27.0	53.0	53.0	53.0	53.0
Total Split (%)	33.8%	33.8%	33.8%	33.8%	66.3%	66.3%	66.3%	66.3%
Maximum Green (s)	22.2	22.2	22.2	22.2	47.9	47.9	47.9	47.9
Yellow Time (s)	3.8	3.8	3.8	3.8	4.1	4.1	4.1	4.1
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0		0.0		0.0		0.0
Total Lost Time (s)		4.8		4.8		5.1		5.1
Lead/Lag								
Lead-Lag Optimize?								
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	13.0	13.0	13.0	13.0	10.0	10.0	10.0	10.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0

Intersection Summary

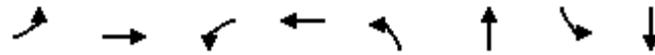
Cycle Length: 80  
 Actuated Cycle Length: 80  
 Offset: 56 (70%), Referenced to phase 2:NBSB, Start of Green  
 Natural Cycle: 75  
 Control Type: Actuated-Coordinated

Splits and Phases: 6: Lincoln Street & W Madison St



Timings  
12: Lincoln Street & W Pleasant St

PM Peak Hour  
7/24/2015



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↖	↗	↖	↗	↖	↗	↖	↗
Volume (vph)	98	116	66	63	20	269	77	227
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases		4		4	5	2	1	6
Permitted Phases	4		4		2		6	
Detector Phase	4	4	4	4	5	2	1	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	8.0	10.0	8.0	10.0
Minimum Split (s)	27.8	27.8	27.8	27.8	17.0	28.1	17.0	28.1
Total Split (s)	29.0	29.0	29.0	29.0	17.0	34.0	17.0	34.0
Total Split (%)	36.3%	36.3%	36.3%	36.3%	21.3%	42.5%	21.3%	42.5%
Maximum Green (s)	24.2	24.2	24.2	24.2	12.0	28.9	12.0	28.9
Yellow Time (s)	3.8	3.8	3.8	3.8	3.2	4.1	3.2	4.1
All-Red Time (s)	1.0	1.0	1.0	1.0	1.8	1.0	1.8	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.8	4.8	4.8	4.8	5.0	5.1	5.0	5.1
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0		7.0		7.0
Flash Dont Walk (s)	16.0	16.0	16.0	16.0		16.0		16.0
Pedestrian Calls (#/hr)	0	0	0	0		0		0

Intersection Summary

Cycle Length: 80  
 Actuated Cycle Length: 80  
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green, Master Intersection  
 Natural Cycle: 75  
 Control Type: Actuated-Coordinated

Splits and Phases: 12: Lincoln Street & W Pleasant St



Timings  
9: Lincoln Street & W Robinson St

PM Peak Hour  
7/24/2015



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↕		↕		↕		↕
Volume (vph)	24	73	89	50	27	272	50	285
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		4		2		2
Permitted Phases	4		4		2		2	
Detector Phase	4	4	4	4	2	2	2	2
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	25.8	25.8	25.8	25.8	50.0	50.0	50.0	50.0
Total Split (s)	28.0	28.0	28.0	28.0	52.0	52.0	52.0	52.0
Total Split (%)	35.0%	35.0%	35.0%	35.0%	65.0%	65.0%	65.0%	65.0%
Maximum Green (s)	23.2	23.2	23.2	23.2	46.9	46.9	46.9	46.9
Yellow Time (s)	3.8	3.8	3.8	3.8	4.1	4.1	4.1	4.1
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0		0.0		0.0		0.0
Total Lost Time (s)		4.8		4.8		5.1		5.1
Lead/Lag								
Lead-Lag Optimize?								
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	14.0	14.0	14.0	14.0	10.0	10.0	10.0	10.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0

Intersection Summary

Cycle Length: 80  
 Actuated Cycle Length: 80  
 Offset: 65 (81%), Referenced to phase 2:NBSB, Start of Green  
 Natural Cycle: 80  
 Control Type: Actuated-Coordinated

Splits and Phases: 9: Lincoln Street & W Robinson St



## **APPENDIX F – POTENTIAL FUNDING SOURCES**

# Federal Transportation Alternatives Program

## Intent of program

The Federal Transportation Alternatives Program (TAP) funds programs and projects defined as transportation alternatives, including:

- on- and off-road pedestrian and bicycle facilities, infrastructure projects for improving non-driver access to public transportation and enhanced mobility, community improvement activities, and environmental mitigation;
- recreational trail projects;
- safe routes to school projects; and
- projects for planning, designing, or constructing boulevards and other roadways largely in the right-of-way of former divided highways.

The TAP replaced funding from pre-MAP-21 programs including the Transportation Enhancement Program, Safe Routes to School Program, and National Scenic Byways Program.

## Who is eligible to request funding?

MAP-21 allows the following entities to apply for Transportation Alternatives Program funding:

- Local governments.
- Regional Transportation Authorities.
- Transit Agencies.
- Natural Resource or public lands agencies.
- School Districts, local education agencies or schools.
- Tribal governments.
- Any other local or regional governmental entity with responsibility for oversight of transportation or recreational trails (other than a metropolitan planning organization or a State agency that the State determines to be eligible).

A non-eligible project sponsor (such as a non-profit) may partner with an eligible co-sponsor in applying for funds.

## Qualifications for funding

- A local match of 20 percent or more is required.
- Projects must have a direct relationship to existing or planned surface transportation facilities.
- Projects must fit into one or more of the following categories:
  - Construction, planning, and design of on-road and off-road trail facilities for pedestrians, bicyclists, and other non-motorized forms of transportation, including sidewalks, bicycle infrastructure, pedestrian and bicycle signals, traffic calming techniques, lighting and other safety-related infrastructure, and transportation projects to achieve compliance with the Americans with Disabilities Act of 1990.
  - Construction, planning, and design of infrastructure-related projects and systems that will provide safe routes for non-drivers, including children, older adults, and individuals with disabilities to access daily needs.
  - Conversion and use of abandoned railroad corridors for trails for pedestrians, bicyclists, or other non-motorized transportation users.
  - Construction of turnouts, overlooks, and viewing areas.
  - Community improvement activities, which include but are not limited to:
    - Inventory, control, or removal of outdoor advertising.
    - Historic preservation and rehabilitation of historic transportation facilities.
    - Vegetation management practices in transportation rights-of-way to improve roadway safety, prevent against invasive species, and provide erosion control.
    - Archaeological activities relating to impacts from implementation of a transportation project eligible under this title.

- Streetscaping and corridor landscaping.
- Any environmental mitigation activity, including pollution prevention and pollution abatement activities and mitigation to:
- Address stormwater management, control, and water pollution prevention or abatement related to highway construction or due to highway runoff, including activities described in sections 133(b)(11), 328(a), and 329; or
- Reduce vehicle-caused wildlife mortality or to restore and maintain connectivity among terrestrial or aquatic habitats.
- Infrastructure-Related Safe Routes to School Projects
  - The planning, design, and construction of infrastructure-related projects that will substantially improve the ability of students to walk and bicycle to school, including:
    - Sidewalk improvements,
    - Traffic calming and speed reduction improvements,
    - Pedestrian and bicycle crossing improvements,
    - On-street bicycle facilities,
    - Off-street bicycle and pedestrian facilities,
    - Secure bicycle parking facilities, and
    - Traffic diversion improvements in the vicinity of schools. (section 1404(f)(1)(a))
- Non-Infrastructure Related Safe Routes to School Projects
  - Activities to encourage walking and bicycling to school, including:
    - Public awareness campaigns and outreach to media and community leaders,
    - Traffic education and enforcement in the vicinity of K-8 schools,
    - Student sessions on bicycle and pedestrian safety, health, and environment, and
    - Funding for training, volunteers, and managers of safe routes to school programs. (section 1404(f)(2)(a))
- Recreational Trails Program Projects
  - Eligible Recreational Trails Program projects include:
    - Maintenance and restoration of existing recreational trails;
    - Development and rehabilitation of trailside and trailhead facilities and trail linkages;
    - Purchase and lease of recreational trail construction and maintenance equipment;
    - Construction of new recreational trails (with some restrictions for new trails on Federal lands);
    - Acquisition of easements and fee simple title to property for recreational trails or recreational trail corridors;
    - Assessment of trail conditions for accessibility and maintenance;
    - Development and dissemination of publications and operation of educational programs to promote safety and environmental protection, (as those objectives relate to one or more of the use of recreational trails, supporting non-law enforcement trail safety and trail use monitoring patrol programs, and providing trail-related training), but in an amount not to exceed 5 percent of the apportionment made to the State for the fiscal year; and
    - Payment of costs to the State incurred in administering the program, but in an amount not to exceed 7 percent of the apportionment made to the State for the fiscal year.

*Note: this list is all-inclusive; a project must fit into one or more of the above categories to be eligible for funding.*

### **Type of submittal required**

Depending on the impact of the project (*regional or statewide*), applications can be submitted to either the DOT or the appropriate RPA/MPO.

- Projects considered *statewide* are only those with a truly statewide or multi-regional significance. Applications for projects that are primarily local impact projects (such as trails) will not be scored

favorably. Statewide projects require filing an application on a form provided by the DOT. Applications are available from the DOT and at <https://forms.iowadot.gov/Default.aspx>; and program information is available at [www.iowadot.gov/systems\\_planning/trans\\_enhance.htm](http://www.iowadot.gov/systems_planning/trans_enhance.htm).

- For application requirements regarding *regional* (non-statewide) projects – contact the appropriate RPA/MPO. (see [www.iowadot.gov/systems\\_planning/distplannercontact.htm](http://www.iowadot.gov/systems_planning/distplannercontact.htm))

### **Application deadline**

October 1 for *statewide* project applications (RPAs and MPOs may have different deadlines for regional/metropolitan applications).

### **Special project requirements**

- Federal Highway Administration environmental concurrence is required.
- Right-of-way activities must comply with applicable federal and state laws.
- Plans and specifications must be prepared by an Iowa licensed professional engineer/architect/landscape architect.
- If federal-aid dollars are used for a consulting engineer/architect/landscape architect, the Federal-Aid Consultant Selection Process must be used.
- Approval by DOT for plans and specifications is required.
- Davis-Bacon wage requirements must be met.
- Competitive bids or quotes are required.

### **Type of approval required**

RPAs/MPOs select regional (*non-statewide*) projects for funding. DOT staff makes recommendations to the Iowa Transportation Commission for funding of *statewide* projects. The Commission makes final awards for funding.

### **Program's annual funding level**

- approximately \$1.0 million for *statewide* projects
- approximately \$7.8 million for *regional* projects

### **More information/applications**

Iowa Department of Transportation  
Office of Systems Planning  
800 Lincoln Way  
Ames, Iowa 50010  
515-239-1810

[http://www.iowadot.gov/systems\\_planning/trans\\_enhance.htm](http://www.iowadot.gov/systems_planning/trans_enhance.htm)

**Traffic Safety Improvement Program** - Also known as “TSIP,” “Traffic Safety Funds,” “TSF,” or “Half-Percent”

**Intent of program**

The Traffic Safety Improvement Program provides funding for traffic safety improvements or studies on any public roads under county, city or state jurisdiction.

**Who is eligible to request funding?**

State, county or city

**Qualifications for funding**

Eligible projects will fall into one of three categories:

- construction or improvement of traffic safety and operations at a specific site with an accident history;
- purchase of materials for installation of new traffic control devices such as signs or signals, or replacement of obsolete signs or signals; or
- transportation safety research, studies or public information initiatives such as sign inventory, work zone safety and accident data.

**Type of submittal required**

Application forms are available from the DOT or at [www.iowadot.gov/tsip.htm](http://www.iowadot.gov/tsip.htm).

**Application amount minimum/maximum**

Site-specific project funding cannot exceed \$500,000 per project.

**Application deadline**

August 15 is the deadline for all types of projects.

**Special project requirements**

Refer to the Iowa Administrative Code, Sec. 761, Chapter 164.

**Type of approval required**

DOT staff, along with a city/county committee, recommends prioritization of projects to the Iowa Transportation Commission, which then approves funding of specific projects.

- Site-specific projects are evaluated by benefit/cost ratio analysis and other criteria.
- Funding for traffic control devices is awarded on the basis of safety benefits of eligible applications, the annual funding level and other criteria.
- Funding for research, studies and public information initiatives is awarded on the basis of safety research needs, impact on safety, the annual funding level, and other criteria.

**Average length of time for acceptance decision**

Applications due: August 15

Iowa Transportation Commission decision: usually by December

Funding available: July 1 (Funds may be available sooner for special cases.)

**Program’s annual funding level**

The program’s annual funding level is one-half percent of Iowa’s Road Use Tax Fund (approximately \$5.4 million per year). Total funding for all traffic control device projects cannot exceed \$500,000 annually.

Total funding for all research studies and public information initiatives cannot exceed \$500,000 annually.

**More information/applications**

Iowa Department of Transportation

Office of Traffic and Safety

800 Lincoln Way

Ames, Iowa 50010

515-239-1267