



AGENDA
CITY OF CEDAR FALLS, IOWA
COMMITTEE OF THE WHOLE MEETING
MONDAY, DECEMBER 17, 2018
5:15 PM AT CITY HALL

1. Recognition of Art & Culture Board member Joni Krejchi.
(5 Minutes)
2. Greenhill Road Traffic Study update.
(60 Minutes)
3. Middle Cedar Watershed Plan update.
(25 Minutes)
4. Bills & Payroll.
(5 Minutes)



DEPARTMENT OF COMMUNITY DEVELOPMENT

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MEMORANDUM
Engineering Division

TO: Honorable Mayor James P. Brown and City Council

FROM: Jon Resler, PE, City Engineer

DATE: December 12, 2018

SUBJECT: Greenhill Road Corridor Traffic Study – Committee of the Whole
Project Number: SY-000-3158
Final Report, Final Report Presentation, Citizen Letters, Neighborhood Meeting Summary

Please find attached the Final Report, Final Report Presentation, Citizen Letters, and Neighborhood Meeting Summary for the Greenhill Road Corridor Traffic Study for review and discussion at the 12/17/18 Committee of the Whole Meeting. The purpose of this study was to evaluate the current and future traffic demands for all modes of transportation in the Greenhill Road corridor from Hudson Road to Cedar Heights Drive in order to develop short and long-range plans for functional lane needs, intersection improvements, and pedestrian/bicycle needs. Other areas of focus were future traffic demand changes due to new land use development, complete streets considerations, and appropriate traffic control for intersections such as traffic signalization or roundabouts. Engineering is concluding the discussion recommending that Council move forward with approving the study. A resolution would then be brought forward at a future Council Meeting.

xc: Stephanie Houk Sheetz, Director of Community Development

GREENHILL ROAD CORRIDOR TRAFFIC STUDY
HUDSON ROAD TO CEDAR HEIGHTS DRIVE
CITY OF CEDAR FALLS

Cedar Falls, Iowa | December 12, 2018

GREENHILL ROAD CORRIDOR TRAFFIC STUDY
 HUDSON ROAD TO CEDAR HEIGHTS DRIVE
 CITY OF CEDAR FALLS

Cedar Falls, Iowa | December 12, 2018

Prepared for:

City of Cedar Falls
 220 Clay Street
 Cedar Falls, Iowa 50613

Snyder & Associates, Inc. Project No. 118.0463

Prepared by:

	<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><i>Mark A. Perington</i> _____ 12/12/2018 Mark A. Perington, P.E. Date</p> <p>License Number 12399 My License Renewal Date is December 31, 2019 Pages or sheets covered by this seal: all _____ _____</p>
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EXECUTIVE SUMMARY

The City of Cedar Falls requested a traffic study of the Greenhill Road corridor from Hudson Road to Cedar Heights Drive. The study included all public street intersections shown below except for the intersection with Iowa Highway 58 which is being studied separately by the Iowa DOT.



The purpose of the study is to evaluate the current and future traffic demands for all modes of transportation in the Greenhill Rd corridor in order to develop short- and long-range plans for functional lane needs, intersection improvements, and pedestrian/bicycle needs. Other areas of focus for the study were potential for traffic demand change due to new land use development, “complete streets” considerations, and appropriate traffic control for intersections such as traffic signalization or roundabouts.

Public input - A series of three public meetings were conducted to gather feedback and communicate with neighbors and interested citizens on the existing and forecasted conditions, and to present alternatives for intersection improvements. A summary of the comments received were tabulated based on location of interest and subject of the comment.

Intersections (# of comments)

- S Main St (51) *
- Overall Corridor (25)
- Estate/Coneflower (8)
- Prairie Parkway (8)
- Orchard (4)
- Hudson (4)
- Rownd (3)
- Oster (1)
- Algonquin (1)

Comment subject (# of comments)

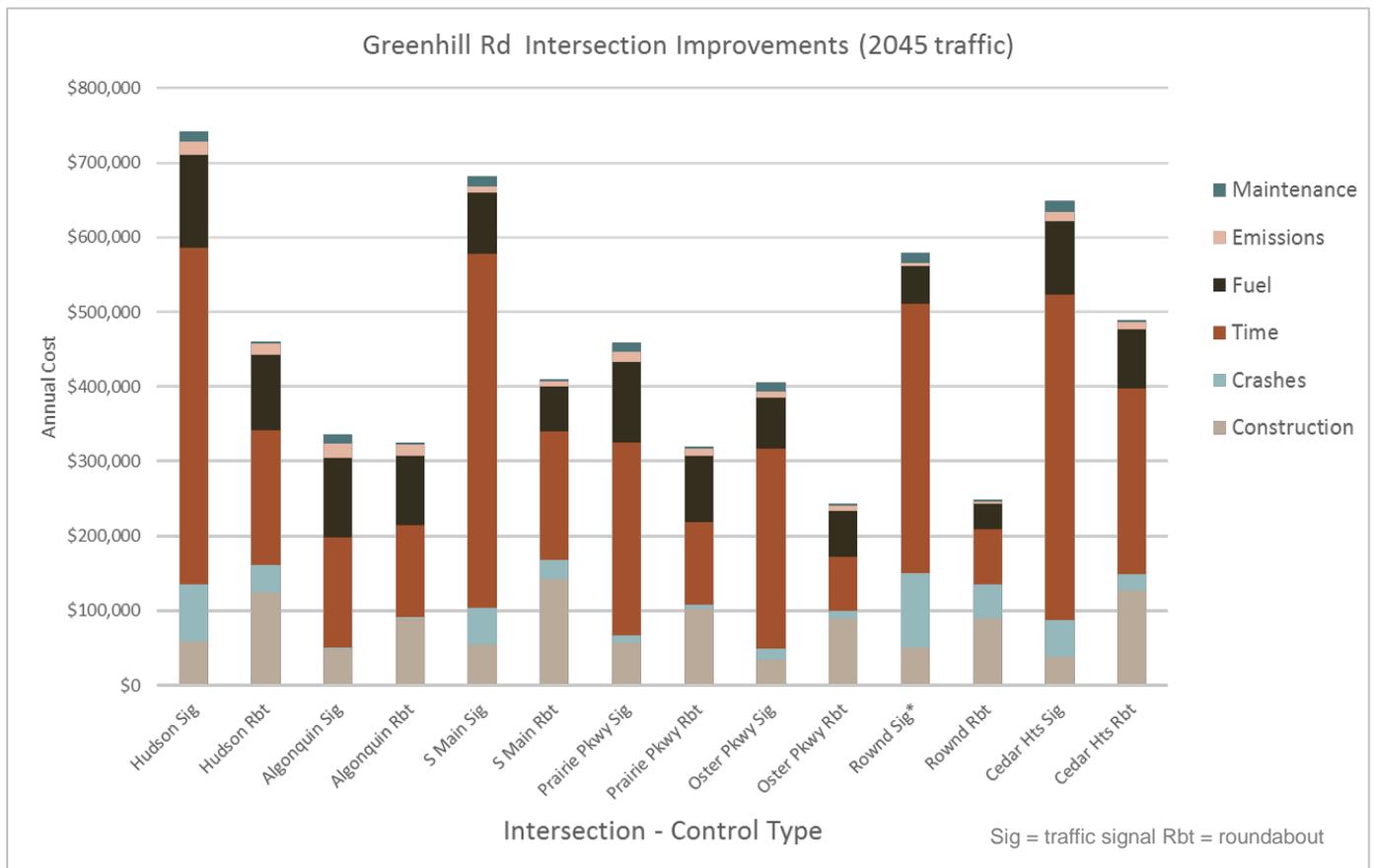
- Roundabout positive (17)
- Turn lanes (11)
- Pedestrian related (9)
- Safety concerns (9)
- Capacity/delay (7)
- Left turn signals (7)
- Roundabout negative (5)
- Right-of-way (4)
- Ped signal timings (4)
- Emergency vehicles (3)
- Sufficient gaps (3)
- Sunday Traffic (3)

Traffic planning and engineering analysis - Work included data collection, safety performance review, traffic forecasts, and operations analysis of existing and proposed improvement conditions.

Safety performance for the corridor intersections has been a generally overall good performance with crash rates and severity typically under the statewide average for similar urban corridors. Rownd St was the one exception but interim Greenhill Rd left turn lane changes were made in fall of 2017, and those have negated left turn crashes so far in 2018.

Continued growth of the community and the Pinnacle Prairie area has resulted in continuous traffic growth, and potential for 60-80% more traffic growth over the next 25 years is possible based on land use plans. This results in current daily traffic ranges of 8,000 – 11,000 vehicles per day increasing to 14,000 – 19,000 vehicles per day in the future.

Life cycle cost analysis evaluated initial construction cost but also potential safety benefits, value of users time, fuel costs, emissions and maintenance. This chart shows the comparative present value life cycle annual cost analysis of the intersection alternatives for a traffic signal or roundabout at the intersections requiring traffic control beyond two way STOP.



Based on these forecast needs, safety and operation issues, and life cycle cost analysis, the following recommendations were developed for the corridor for short term improvement needs as well as long term improvements as they become warranted and can be programmed in the City Capital Improvement Program.

Short Term Recommendations

1. Update vehicle (yellow and all-red) clearance timings at signals
2. Update pedestrian clearance timings (flashing don't walk) at signals
3. Continue sidewalk connectivity of Greenhill Rd on south side with development
4. Pavement mark and sign south approaches of Algonquin Dr /Ashworth Dr to provide a left turn lane and a right turn lane
5. Reinforce lane designations at the Estate Dr / Coneflower Pkwy, Prairie Pkwy, Orchard Hill Dr, and Briarwood Hills Dr / Oster Pkwy with signing and pavement marking
6. Implement leading westbound Greenhill Rd left turn phase at Prairie Pkwy intersection

Long Term Recommendations

Overall intersection improvement recommendations for lane widening and signalization improvements or potential conversion of intersection to roundabouts considered safety, operations, and life cycle cost analysis.

Intersection	Recommendation	Cost Opinion	Time Frame
Hudson Rd	Signal	\$1,20,000	5-10 years
Algonquin Dr	Signal	\$1,000,000	5-10 years
Ashworth Dr	Widen for Turn Lanes	\$800,000	5-10 years
S Main St	Roundabout Balboa RIRO	\$2,800,000	<5 years
Estate Dr / Coneflower Pkwy	Widen for Turn Lanes	\$725,000	5-10 years
Prairie Pkwy	Roundabout	\$2,10,000	10 years
Orchard Hill Dr	Widen for Turn Lanes	\$700,000	>10 years
Briarwood Hills Dr / Oster Pkwy	Roundabout	\$1,800,000	>10 years
Rownd St	Roundabout	\$1,800,000	>10 years
Green Creek Rd	Widen for Turn Lane	\$600,000	>10 years
Cedar Heights Dr	Roundabout	\$2,500,000	<5 years

1. INTRODUCTION

The City of Cedar Falls requested Snyder & Associates conduct a traffic study of the Greenhill Road corridor from Hudson Road to Cedar Heights Drive. The study corridor intersections are shown in **Figure 1**. All the intersections on Greenhill Rd are included in the study other than the intersection with Iowa Highway 58 (IA 58) which is being studied separately by the Iowa DOT. The purpose of the study is to evaluate the current and future traffic demands for all modes of transportation in the Greenhill Rd corridor in order to develop short- and long-range plans for functional lane needs, intersection improvements, and pedestrian/bicycle needs. Other areas of focus for the study are potential for traffic demand change due to new land use development, “complete streets” considerations, and appropriate traffic control for intersections such as traffic signalization or roundabouts. Public input was included in the study process through a series of three public meetings to gather feedback and communicate with neighbors and interested citizens.



Figure 1. Study Corridor Intersections

2. EXISTING CORRIDOR

Greenhill Rd is currently a four-lane undivided road throughout the study area. It is approximately 52 feet wide (from back-of-curb to back-of-curb) with 12-foot lanes and a 2.5-foot curb and gutter on each side. There is a 10-foot shared use trail on the north side of Greenhill Rd throughout the entirety of the study area, and there is sidewalk along the south side through most of the corridor.

Of the 11 study intersections, five are currently signalized and the remaining intersections are STOP controlled on the side street approaches (two-way STOP controlled or TWSC). The five signalized intersections from west to east are Hudson Rd, S Main St, Prairie Pkwy, Rownd St, and Cedar Heights Dr. Figure 2 provides aerial photos of each of the study intersections to display their current functional layouts.

There are several unique lane configurations at intersections within this corridor. At S Main St, one of the WB through lanes is terminated to create a WB left turn lane, with the second WB through lane reestablished west of the intersection. Similarly, at Rownd St, in both the EB and WB directions, the inside through lane is terminated in advance of the intersection to create a left turn lane at the signalized intersection. These improvements were implemented over the years as a function of safety need for Greenhill Rd left turn traffic. It is also worth noting that EB and WB left turn lanes are not provided at Prairie Parkway or any of the TWSC intersections.



Hudson Rd - signalized



Algonquin Dr - side street STOP



Ashworth Dr - side street STOP



S Main St - signalized



Estate Dr - side street STOP



Prairie Pkwy - signalized



Orchard Hill Dr - side street STOP



Oster Pkwy - side street STOP



Rownd St - signalized



Green Creek Rd - side street STOP



Cedar Heights Dr - signalized

Figure 2: Existing Intersections

3. CRASH HISTORY

The crash history of the corridor was reviewed from 2013 through 2017 using reported crash data obtained from the Iowa DOT's iCAT. Crashes were reviewed for overall frequency as well as crash rates calculated based on annual average daily traffic (AADT) estimated from turning movement counts at the intersections. The review also included the crash severity, crash type, major causes, driver demographics, and time of day distribution. This section briefly summarizes the findings of the review, and a more detailed discussion is included in the *Crash History Technical Memorandum* in Appendix D.

Table 1 shows the summary of crashes throughout the corridor and **Table 2** shows a similar summary for the signalized intersections. The statewide average crash rates for similar corridors and intersections are 382 crashes per hundred million vehicle miles (HMVM) and 0.8 crashes per million entering vehicles (MEV) respectively.

Table 1. Corridor Crash Summary for Greenhill Rd (2013-2017)

Corridor Section	Crashes (Injury)	Crash Severity	Crash Rate*	Predominant Crash Types (Crashes)	Predominant Major Causes (Crashes)
Greenhill Rd	164 (47)	1 Fatal 3 Major 15 Minor 28 Possible	282	<ul style="list-style-type: none"> • Rear-end (63) • Oncoming Left Turn (47) • Broadside (16) 	<ul style="list-style-type: none"> • FTYROW: Making left turn (48) • Followed Too Close (28) • Driving too fast for conditions (8) • Animal (8)
Greenhill Rd (without IA 58)	100 (29)	3 Major 8 Minor 18 Possible	189	<ul style="list-style-type: none"> • Rear-end (36) • Oncoming Left Turn (32) • Non-collision (13) 	<ul style="list-style-type: none"> • FTYROW: Making left turn (29) • Followed Too Close (13) • Animal (6) • Crossed Centerline (4)

* Crashes per hundred million vehicle-miles traveled

Table 2. Signalized Intersection Crash Summary for Greenhill Rd (2013-2017)

Intersection	Crashes (Injury)	Crash Severity	Crash Rate*	Predominant Crash Types (Crashes)	Predominant Major Causes (Crashes)
Hudson Rd	17 (6)	3 Minor 3 Possible	0.47	<ul style="list-style-type: none"> • Rear-end (7) • Oncoming Left Turn (2) • Non-collision (2) 	<ul style="list-style-type: none"> • FTYROW: Making left turn (2) • Driving Too Fast for Conditions (2) • Followed Too Close (2)
S Main St	14 (4)	1 Minor 3 Possible	0.48	<ul style="list-style-type: none"> • Rear-end (6) • Oncoming Left Turn (6) • Sideswipe, Same Direction (1) 	<ul style="list-style-type: none"> • FTYROW: Making Left Turn (5) • Ran Traffic Signal (1) • Crossed Centerline (1)
Prairie Pkwy	3 (1)	1 Minor	0.12	<ul style="list-style-type: none"> • Rear-end (3) 	<ul style="list-style-type: none"> • Followed Too Close (2) • Driver Distraction (1)
Rownd St	23 (5)	2 Major 1 Minor 2 Possible	1.01	<ul style="list-style-type: none"> • Oncoming Left Turn (16) • Rear-end (5) • Broadside (2) 	<ul style="list-style-type: none"> • FTYROW: Making Left Turn (16) • FTYROW: From Stop Sign (1) • Followed Too Close (2)
Cedar Heights Dr	18 (7)	1 Major 2 Minor 4 Possible	0.56	<ul style="list-style-type: none"> • Oncoming Left Turn (6) • Rear-end (6) • Non-collision (3) 	<ul style="list-style-type: none"> • Oncoming Left Turn (4) • Followed Too Close (3) • Ran Traffic Signal (2)

* Crashes per million entering vehicles / FTYROW = Failure to Yield Right of Way

In general, Greenhill Rd has performed well with respect safety with a lower than average corridor crash rate and only one intersection above the average crash rate. Additionally, the intersection with an above average crash rate, Rownd St, was reconfigured to provide EB and WB left turn lanes to address the crash problems in late 2017. There have not been any crashes reported at the Rownd St intersection after the introduction of the left turn lanes (through October of 2018). The predominate crash types are rear-ends and oncoming left turns, caused mostly by following too close and failing to yield making a left turn.

4. TRAFFIC HISTORY

The traffic history on Greenhill Rd was reviewed using traffic counts from the Iowa DOT’s rotating annual count program as well as counts from previous studies in and around the corridor. **Figure 3** shows the AADT (vehicles/day) over time on Greenhill Rd at the IA 58 intersection from the Iowa DOT. **Figure 4** shows the AADT over time at the cross streets at which the Iowa DOT collected counts. This section briefly summarizes the traffic history, and a more detailed discussion is included in the *Traffic History and Data Collection Technical Memorandum*, in Appendix D

There is a clear trend of growth along Greenhill Rd, though it appears to have leveled off since 2013. The cross streets have also shown some growth since 1997, though they appear to have remained at about the same level since 2005.

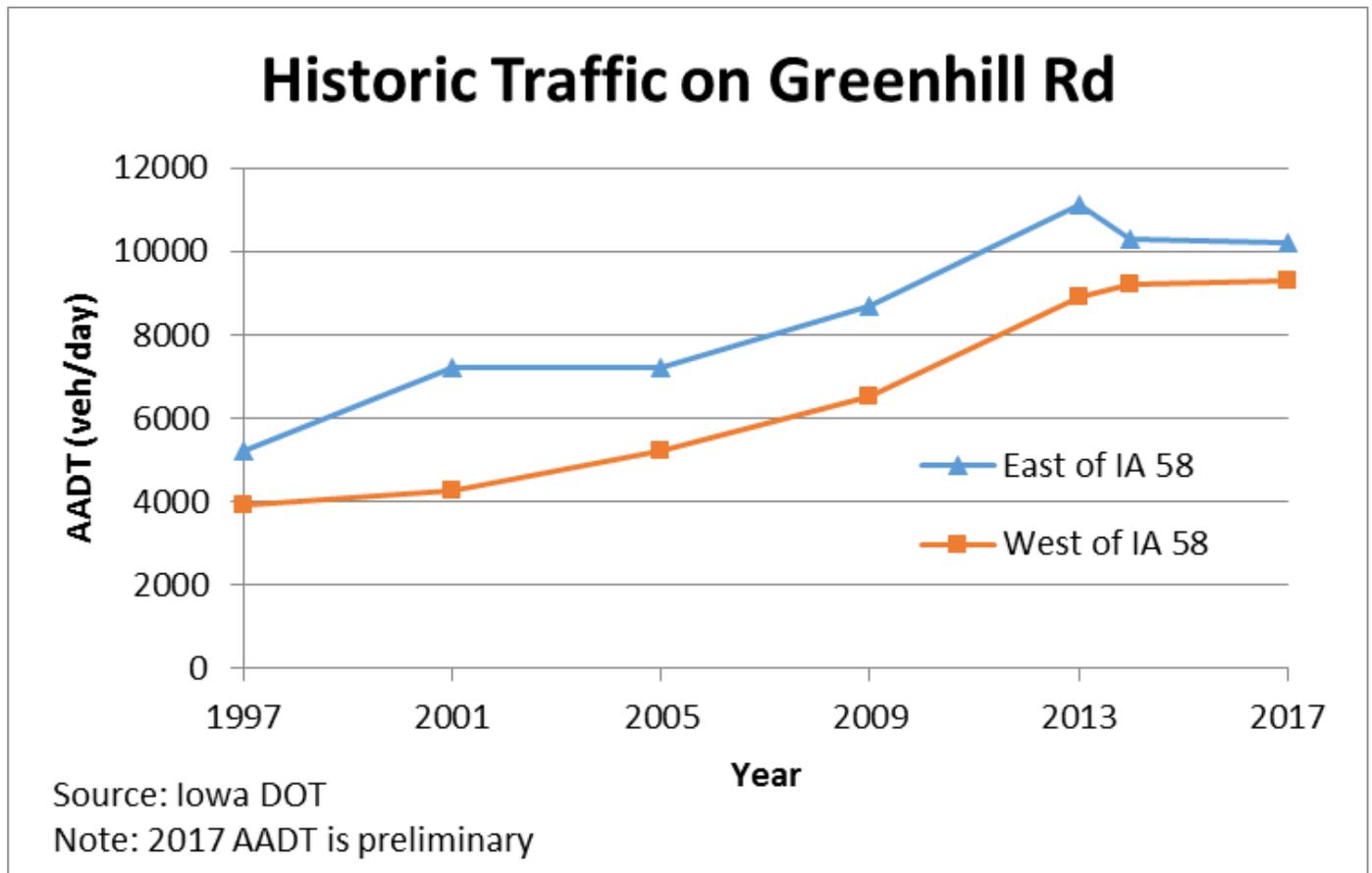


Figure 3. Historic AADT on Greenhill Rd at Iowa 58

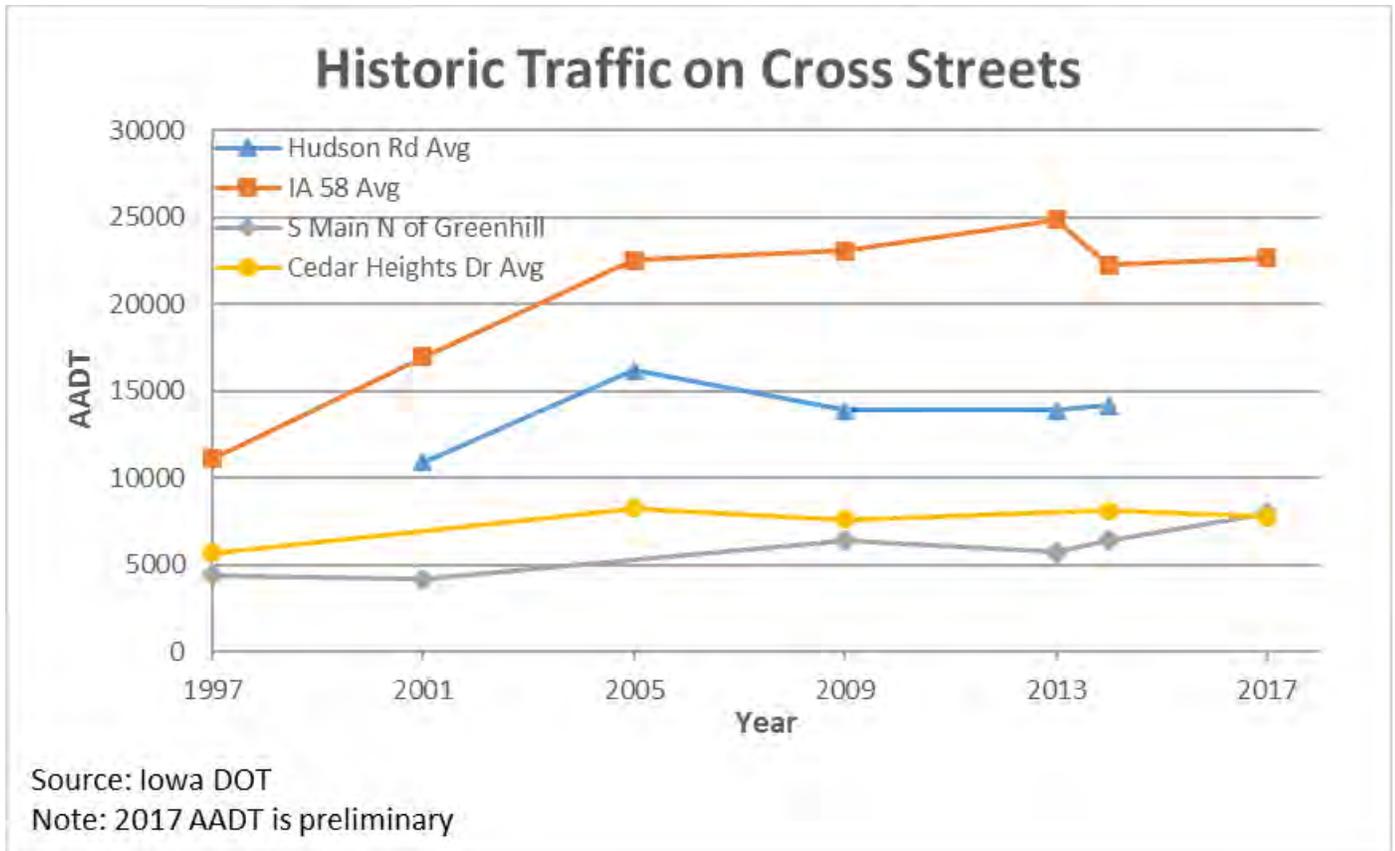


Figure 4. Historic AADT on Cross Streets across Greenhill Rd

5. EXISTING TRAFFIC

Traffic data was collected throughout the study corridor. The data collected included 13-hour turning movement counts at all the study intersections except Cedar Heights Dr, which was counted by the Iowa DOT in 2017. Additionally, road tubes were used to collect supplementary counts and speed data throughout the corridor. This data collection occurred May 9 through May 11, 2018. This section briefly summarizes the existing traffic, and a more detailed discussion is included in the *Traffic History and Data Collection Technical Memorandum* in Appendix D.

Figure 5 shows the estimated AADT on Greenhill Rd from the Snyder & Associates counts in 2018 compared to the counts from the Iowa DOT in 2017. The 2018 volumes were significantly higher than the 2017 counts. Based on field observations and discussion with the City, it was determined this volume increase on Greenhill Rd was due to construction at the intersection of Viking Rd and IA 58 that limited its capacity and resulted in diverted traffic. Due to this, the 2018 volumes were adjusted as summarized in **Figure 5**. Exhibits included in the *Traffic Forecasts and Existing Conditions Analysis Technical Memorandum* in Appendix D show the unadjusted and adjusted peak hour and daily volumes throughout the corridor. Additional discussion of the existing traffic volumes and adjustments can be found in the technical memorandum.

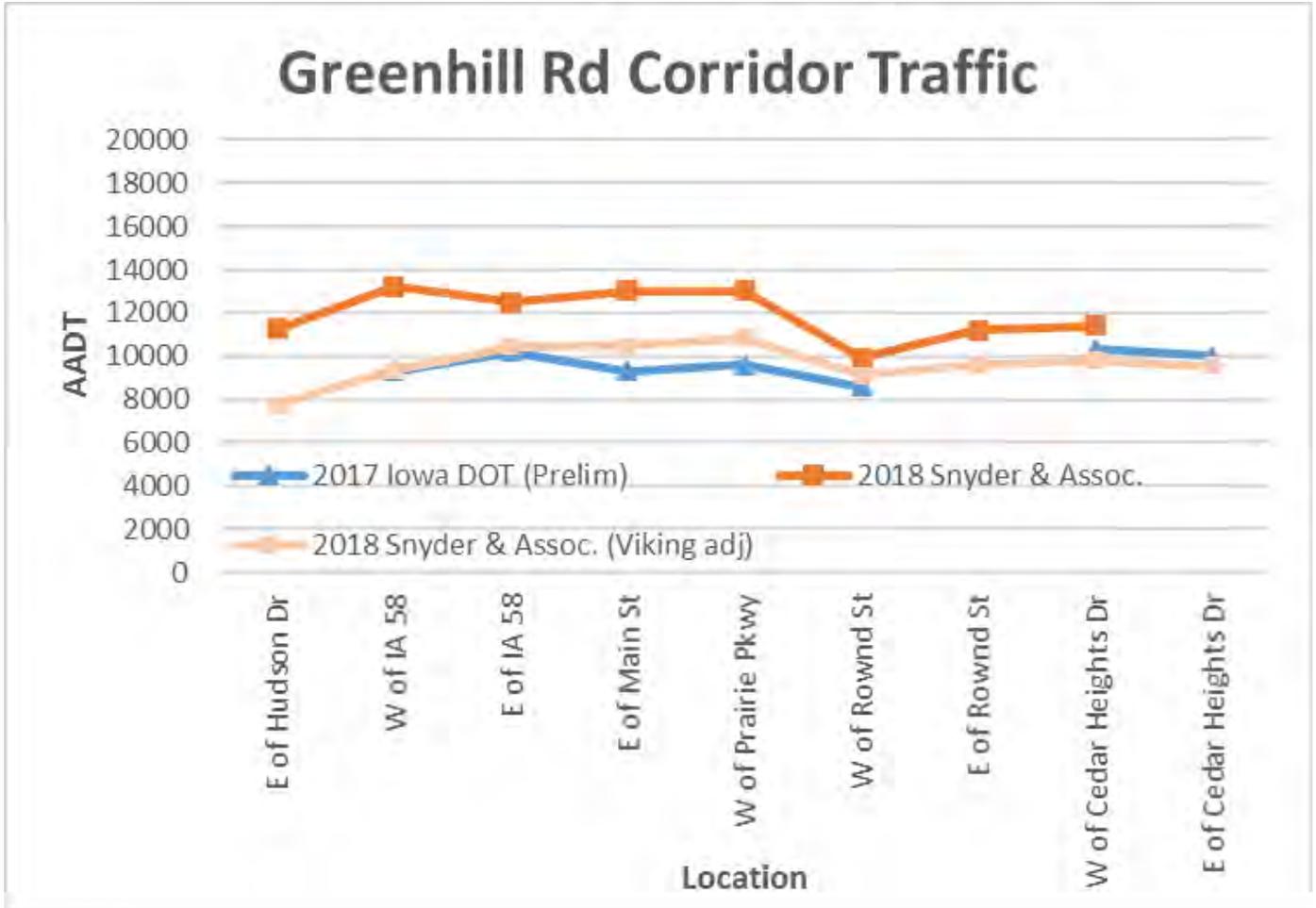


Figure 5. Comparison of Recent Counts and Volume Adjustment

6. FORECASTED TRAFFIC

In order to evaluate the improvements that might be necessary at each of the study intersections and the corridor in general, traffic forecasts were created. The forecasts were developed for the year 2045 with consideration for the growth history on the corridor and side streets, the development potential (especially the Pinnacle Prairie development and Sartori Hospital), and the forecasted volumes from Iowa Northland Regional Council of Governments (INRCOG). **Figure 6** shows a comparison of the existing daily traffic with the INRCOG forecasts and the forecasts used for this study. Exhibits included in the *Traffic Forecasts and Existing Conditions Analysis Technical Memorandum* in Appendix D.

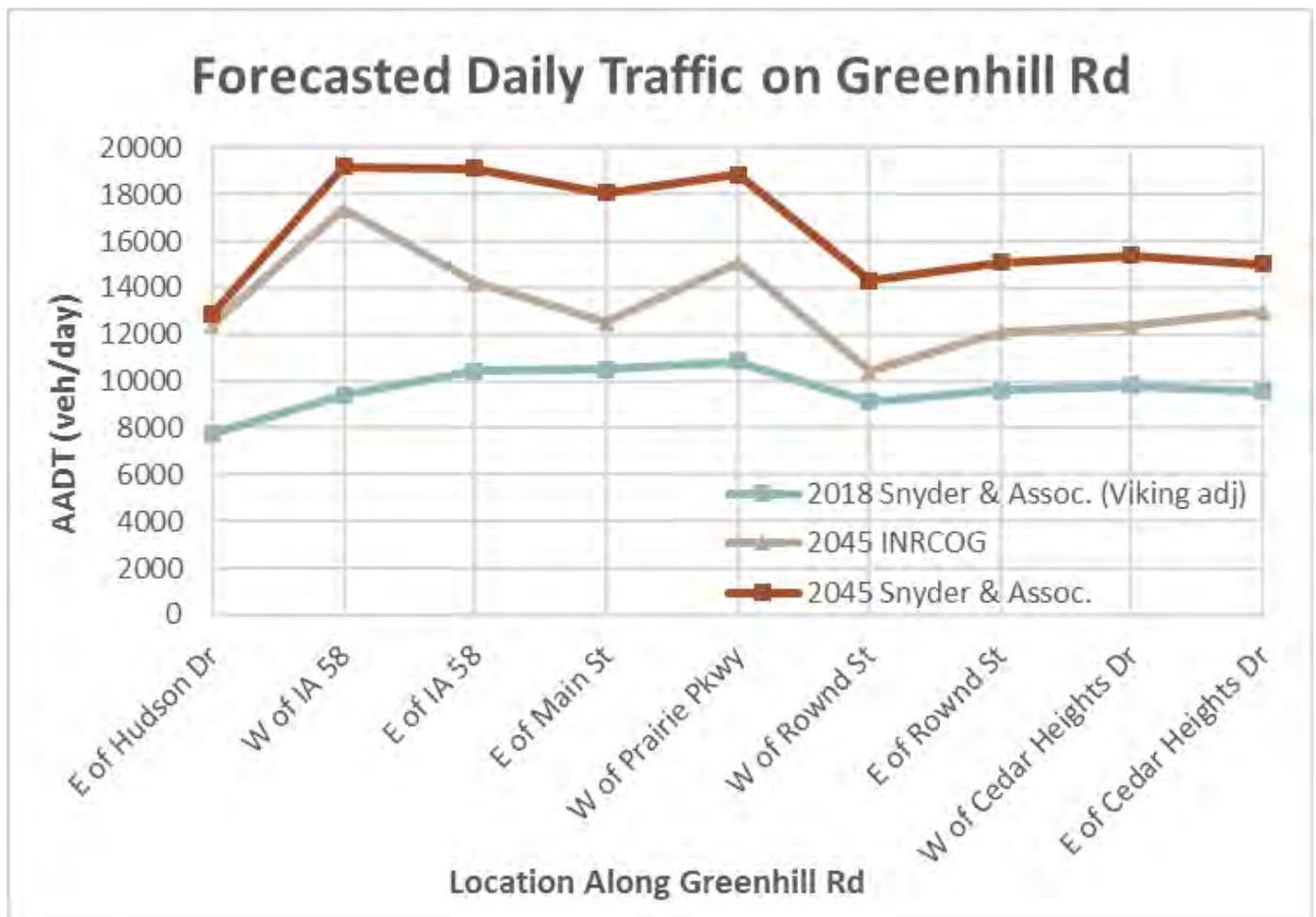


Figure 6. Comparison of Existing and Forecast Daily Traffic on Greenhill Rd

7. EXISTING OPERATIONS

The traffic operations at the study intersections with existing geometry, traffic control, and signal timings were analyzed using the *Synchro version 10 (Synchro 10)* traffic analysis software and its built-in *Highway Capacity Manual 6 (HCM 6)* functionality. The *HCM 6* uses Level of Service (LOS) to evaluate intersection and corridor operations. The LOS is a qualitative measure of the driver's experience that is based on delay where an LOS A is the least delay and LOS F is the most delay. Typically, LOS D is the minimum acceptable operational LOS for urban intersections and is considered the point at which demand during a specific hour or peak period approaches the capacity of an intersection or roadway. Acceptable public opinion of busy roadways and intersections in Cedar Falls, would lean more to a design LOS threshold between C and D to provide the long term goals of acceptable operation. Side streets can sometimes experience LOS E or F in peak periods if the main street is particularly busy. The LOS thresholds according to the *HCM 6* are given in **Table 3**.

Table 3. Level of Service Definition (HCM 6)

LOS	Average Delay per Vehicle (seconds)	
	Signalized Intersection	Unsignalized Intersection
A	< 10	< 10
B	10 to 20	10 to 15
C	20 to 35	15 to 25
D	35 to 55	25 to 35
E	55 to 80	35 to 50
F	> 80 or V/C > 1.0	> 50 or V/C > 1.0

V/C - Volume to Capacity Ratio

The analysis focused on the PM peak because the PM peak hour volumes are higher than the AM peak throughout the corridor. The results are summarized in **Table 4**. A more detailed discussion is included in the *Traffic Forecasts and Existing Conditions Analysis Technical Memorandum* in Appendix D.

In general, operations are acceptable throughout the corridor. However, both the S Main St and Cedar Heights Dr intersections are LOS D with some movements that are LOS E or worse. The SB and WB approaches at S Main St experience the most delay due to having a single lane for all SB traffic and a single lane for WB through and right turning vehicles. Cedar Heights Dr primarily experiences long delays due to the split signal phasing for NB and SB traffic.

8. FORECASTED OPERATIONS – EXISTING

After the forecasted volumes were developed, traffic operations for the existing geometry with the forecasted volumes (year 2045) were analyzed with the same methodology as the existing traffic. **Figure 7** shows a comparison of LOS results for existing lane and traffic control conditions with current 2018 traffic and future 2045 forecast traffic. **Table 4** shows the detailed analysis results for the existing geometry with forecasted traffic. It can be seen that without improvements, several intersections and approaches experience unacceptable delay (LOS E or F). All the existing signalized study intersections have at least one approach LOS E or worse with the future forecasted traffic demand. At the TWSC intersections, several approaches are LOS E or worse, but many of these approaches have relatively little traffic and alternative routes available that would allow use of an existing signalized intersection. Additionally, the delay at the Algonquin Dr and Ashworth Dr intersections is strongly tied to the anticipated future Sartori Hospital and surrounding development and the associated site plans. See the *Traffic Forecasts and Existing Conditions Analysis Technical Memorandum* in Appendix D for additional discussion of the forecasted operations with existing geometry and signal timings.

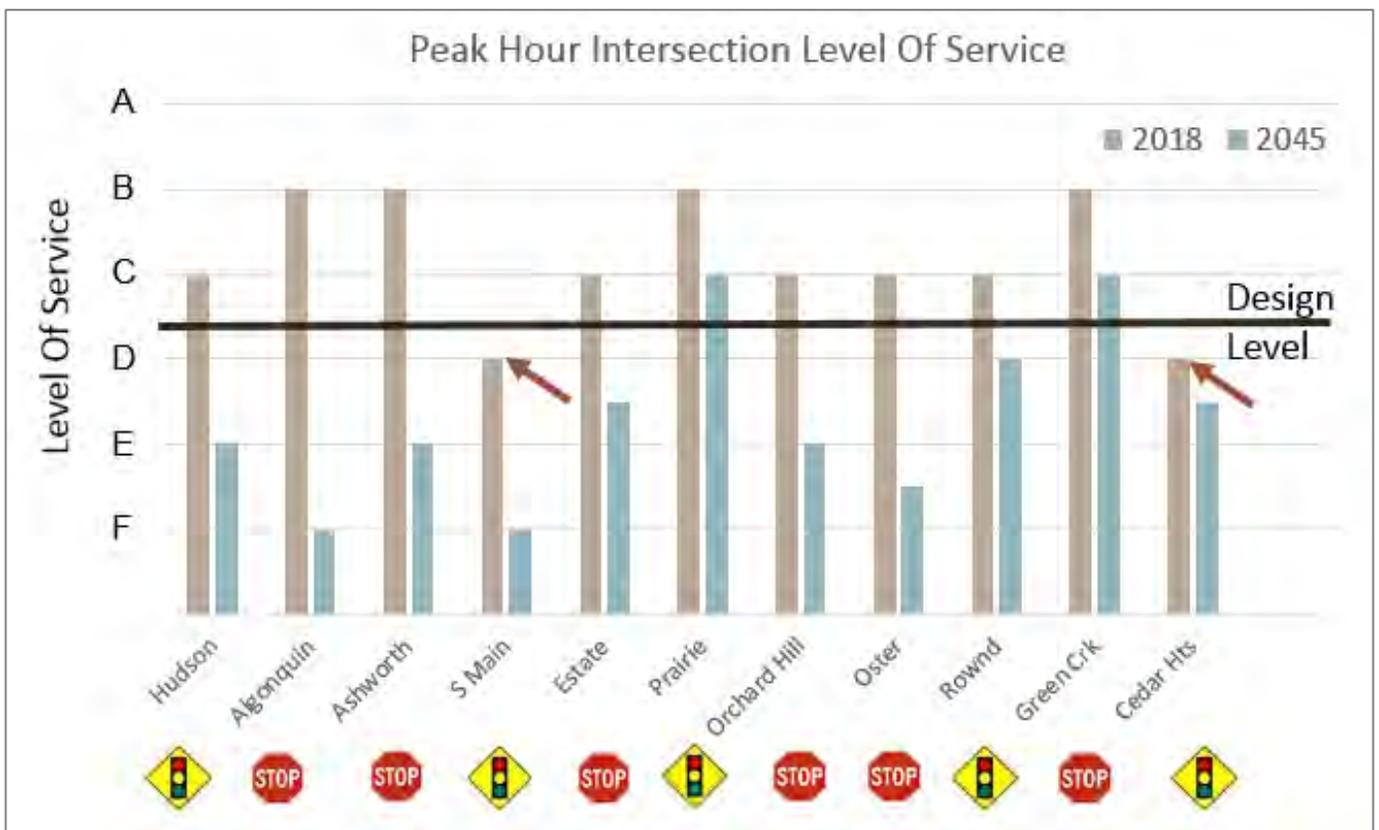


Figure 7. LOS Results – Existing Conditions w/ 2018 or 2045 Traffic

Table 4. Synchro 10 Existing Geometry Analysis Results (PM Peak, 2018 and 2045)

Intersection	Control	Approach	2018 PM Peak		2045 PM Peak	
			Delay (sec/veh)	Longest 95 th %ile Queue (ft)	Delay (sec/veh)	Longest 95 th %ile Queue (ft)
Hudson Rd	Signal	NB	26 / C	310	30 / C	490
		SB	16 / B	160	17 / B	210
		EB	22 / C	40	34 / C	80
		WB	28 / C	#350	100+ / F	#810
		Overall	23 / C	-	67 / E	-
Algonquin Dr	TWSC	NB	14 / B	< 25	44 / E	100
		SB	-	-	11 / B	80
Ashworth Dr	TWSC	NB	11 / B	< 25	32 / D	70
		SB	-	-	100+ / F	Analysis failed
S Main St	Signal	NB	22 / C	91	28 / C	165
		SB	59 / E	#526	100+ / F	#972
		EB	25 / C	173	51 / D	#391
		WB	47 / D	557	100+ / F	#1236
		Overall	39 / D	-	100+ / F	-
Estate Dr / Coneflower Pkwy	TWSC	NB	15 / C	< 25	19 / C	< 25
		SB	12 / B	< 25	35 / E	< 25
Prairie Pkwy	Signal	NB	17 / B	100	75 / E	#440
		SB	11 / B	< 25	16 / B	30
		EB	8 / A	80	11 / B	160
		WB	10 / B	90	20 / C	180
		Overall	11 / B	-	31 / C	-
Orchard Hill Dr	TWSC	NB	21 / C	< 25	52 / F	< 25
		SB	14 / B	< 25	27 / D	40
Briarwood Hills Dr / Oster Pkwy	TWSC	NB	19 / C	< 25	88 / F	130
		SB	16 / C	< 25	43 / E	30
Rownd St	Signal	NB	31 / C	60	57 / E	#180
		SB	16 / B	100	17 / B	120
		EB	14 / B	210	32 / C	500
		WB	29 / C	440	68 / E	#860
		Overall	22 / C	-	47 / D	-
Green Creek Rd	TWSC	NB	11 / B	< 25	15 / C	< 25
Cedar Heights Dr	Signal	NB	39 / D	310	60 / E	#580
		SB	40 / D	290	61 / E	#490
		EB	37 / D	210	48 / D	330
		WB	35 / D	200	46 / D	300
		Overall	38 / D	-	53 / D	-

- 95th %ile queue exceeds capacity, queue may be longer (length shown after two cycles)

9. PAVEMENT CONDITION

Greenhill Rd was originally constructed in 1991 with 9-inch thick PCC pavement, 6-inch granular subbase, and 2 feet of selected backfill. The cross-section also included subdrains throughout. It was designed for 9,500 to 12,500 vehicles per day (vpd) in 1992 and a projected volume of 12,300 to 16,100 vpd in 2012 with 10 percent trucks. Both the projected volume and truck percentage are higher than current levels.

Based on Iowa State University's Pavement Management Program (PMP) data and a visual assessment of the pavement condition throughout the corridor, it was determined that the majority of the corridor is in fair to good condition, indicating mostly preventative maintenance is necessary. However, the pavement at and around the Cedar Heights Dr intersection is in poor condition. **Figure 8** shows the condition summary data from the Iowa State University PMP.

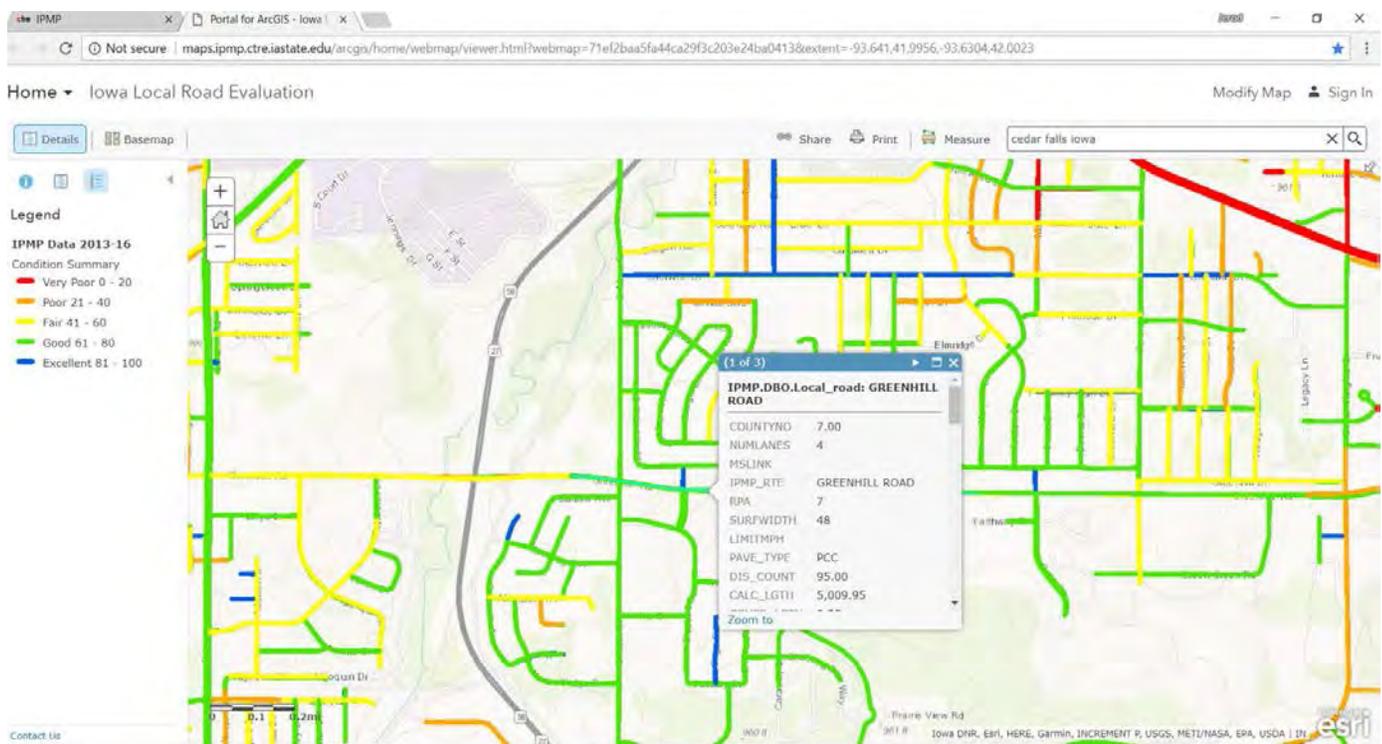


Figure 8. Pavement Condition Data from Iowa State University PMP

10. PEDESTRIAN AND MULTI-MODAL ACCOMMODATIONS

In general, the Greenhill Rd corridor provides a key east-west connection for the pedestrian and bicycle network in Cedar Falls. There is existing trail on the north side of the road throughout the study area that is continued to the east and to the west, which provides substantial mobility to pedestrians and bicyclists. However, there is room for improvement in the existing network. For example, there are gaps in the sidewalk provided on the south side of Greenhill Rd and some crosswalks do not have detectable warning panels. Providing continuous sidewalk and detectable warning panels at every crosswalk will create a more accessible network for users with disabilities. In addition, pedestrian signal timings should be reviewed to ensure adequate time is provided for crossing at signalized intersections. See the *Pedestrian & Bicycle Facilities Review Technical Memorandum* in Appendix D for more information.

11.ALTERNATIVES

The existing conditions analysis revealed that operations would likely become unacceptable as traffic increases with continuing development. *Synchro 10* and its built in *HCM 6* analysis procedures were used to evaluate which improvements were necessary to achieve acceptable operations. For design purposes, LOS C was selected as the minimum level of service for signals and roundabouts, to provide additional capacity for any unexpected growth that could occur with densification of land use or alternative land uses not considered in the current comprehensive plan.

At each of the currently signalized intersections and at TWSC intersections that were deemed to likely require additional traffic control, they were analyzed to determine functional lane needs for a traffic signal and a roundabout. Some TWSC intersections were not considered for additional traffic control despite poor peak hour LOS due to low side street traffic volumes and alternate routes to signals available for more difficult left turn or crossing movements. Additionally, widening to provide left turn lanes on Greenhill Rd based on turn lane warrants was considered at TWSC intersections that were not likely to require additional traffic control.

Intersection improvement alternative exhibits are included in Appendix A. These exhibits show the functional lane needs for widening and traffic signal alternative or at some intersections a roundabout alternative. Conceptual roundabout layouts were created for the S Main St, Prairie Pkwy, Oster, Rownd, and Cedar Heights Dr intersections. S Main St and Cedar Heights Dr were selected for more detailed layouts due to the immediacy of the improvement need and plans for major improvements in the near future. Prairie Pkwy, Oster, and Rownd were selected for a more detailed layout because of the turning movement patterns, existing signalization, or projected future signalization needs. More information about all the alternatives is included in *Forecasted Improvement Needs/Alternatives Operations Analysis Technical Memorandum* in Appendix D.

12. FORECASTED OPERATIONS – ALTERNATIVES

Once the functional layouts were determined for the alternatives, the analysis results were recorded and compared. **Figure 9** compares the relative LOS for each intersection improvement alternative considering future traffic demand, and the type of traffic control. (STOP control was not reviewed at intersections currently signalized).

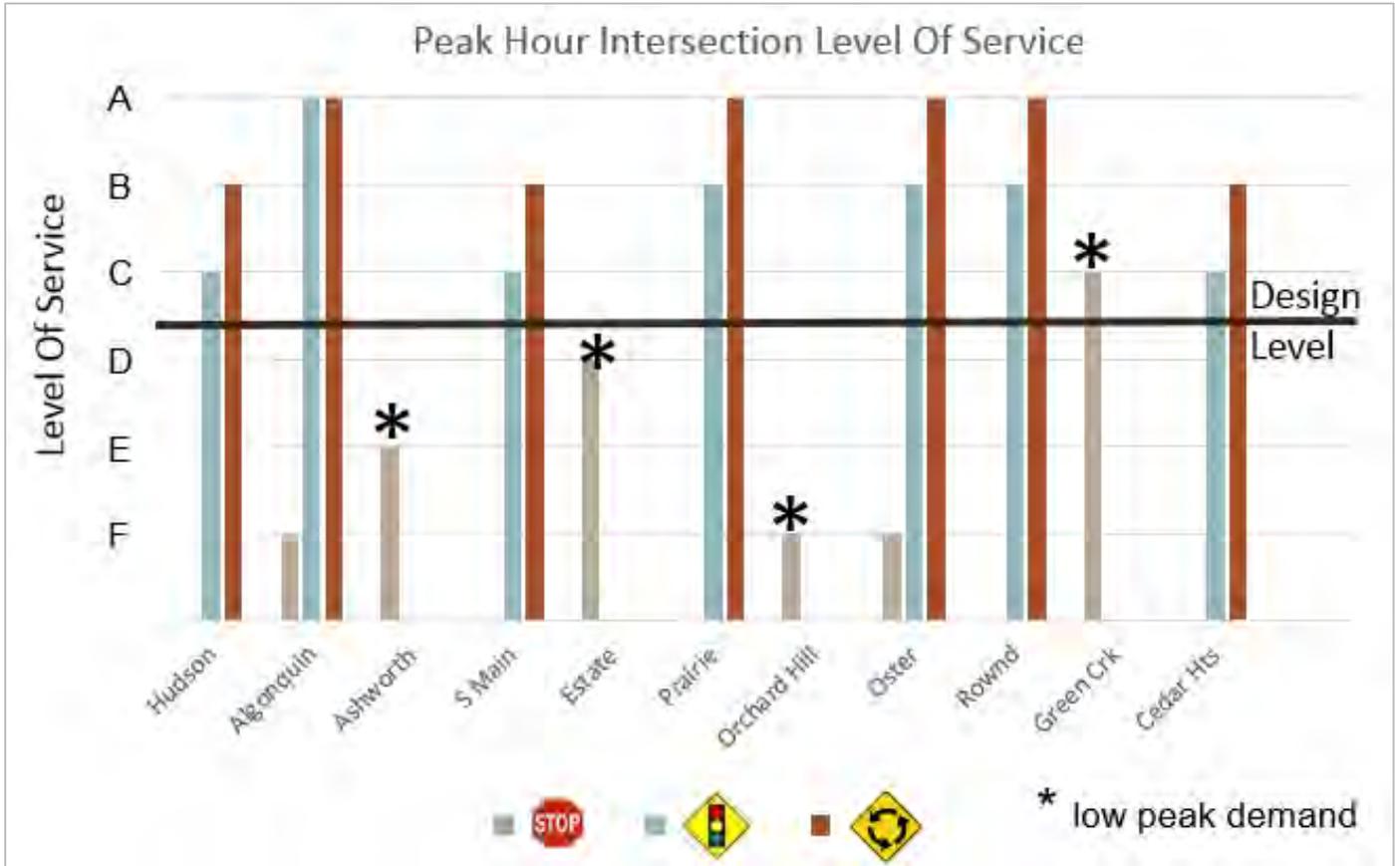


Figure 9. Future Traffic 2045 - Improvement Alternatives LOS

Table 5 provides detailed results of the capacity analysis and summarizes the operations at the study intersections for each of the improvement alternatives. At TWSC, the higher delay of the STOP-controlled approaches is reported. At signals and roundabouts, a volume-weighted average delay for the overall intersection is reported. All intersections operate acceptably with the improvements. The Orchard Hill Dr intersection has LOS F on the side street approach as a TWSC intersection, however that approach has little demand in the PM peak (about 15 vehicles). The roundabouts experience less delay and have shorter queues than signalized intersections throughout the study area. More detailed analysis results are included in the *Forecasted Improvement Needs/Alternatives Operations Analysis Technical Memorandum* in Appendix D.

Table 5. Synchro 10 Alternatives Operations Analysis Results (PM Peak, 2045)

Intersection	Control	TWSC (side street)		Signal		Roundabout	
		Delay (s/veh)	Longest 95 th Queue (ft)	Delay (s/veh)	Longest 95 th Queue (ft)	Delay (s/veh)	Longest 95 th Queue (ft)
Hudson Rd*	Signal/ Roundabout	-	-	25 / C	#352 (NBT)	14 / B	170 (NBLT)
Algonquin Dr	TWSC	41 / E (SB)	70 (SBL)	-	-	-	-
Ashworth Dr	TWSC or Signal/ Roundabout	100+ / F (SB)	Analysis failed (SBL)	9 / A	148 (WBTR)	7 / A	60 (WBT)
S Main St	Signal/ Roundabout	-	-	24 / C	#309 (SBTR)	14 / B	153 (EBTR)
Estate Dr / Coneflower Pkwy	TWSC	30 / D (SB)	17 (NBL)	-	-	-	-
Prairie Pkwy	Signal/ Roundabout	-	-	18 / B	274 (NBL)	9 / A	68 (NB)
Orchard Hill Dr	TWSC	52 / F (NB)	36 (SBL)	-	-	-	-
Briarwood Hills Dr / Oster Pkwy	TWSC or Signal/ Roundabout	88 / F (NB)	129 (NBL)	16 / B	188 (EBTR)	6 / A	40 (EB)
Rownd St	Signal/ Roundabout	-	-	19 / B	208 (WBTR)	8 / A	58 (SB)
Green Creek Rd	TWSC	15 / C (NB)	7 (NB)	-	-	-	-
Cedar Heights Dr	Signal/ Roundabout	-	-	26 / C	#232 (SBT)	13 / B	205 (NBTR)

(#) - 95th %-ile queue exceeds capacity, queue may be longer (length shown after two cycles)

(*) – Considerations for special event peak traffic were discussed in the 2012 Hudson Rd Corridor Study & relationship to signalized vs roundabout control

13.IMPROVEMENT COST OPINIONS

Order of magnitude construction cost opinions were prepared for each of the study intersection improvement alternatives. For the widening alternative, it was assumed that the widening on Greenhill Rd would occur evenly to the north and south. Additionally, where the distance between intersections was not sufficient to return to a four-lane cross section, the costs in between the intersections were split evenly between the two. Cost opinions were only prepared for the roundabouts with more immediate need at S. Main St, Prairie Pkwy, or Cedar Heights Rd, however, those costs were used as a planning guide for potential costs at Oster Pkwy and Rownd St. The cost opinions included construction costs, right of way, utility relocations, engineering, and a contingency.

Table 6 provides a summary of the cost opinions at study intersections and detailed cost opinions for each intersection are included in Appendix B. The signals and widening alternative has a lower initial cost than the roundabout alternative in each case.

Table 6. Construction Cost Opinion for Traffic Signal or Roundabout Alternative

Intersection	Widening/Traffic Signal Alternative Estimate	Roundabout Alternative Estimate
Hudson Rd	\$1,200,000	--
Algonquin Dr	\$1,000,000	--
Ashworth Dr	\$800,000	--
S Main St	\$1,100,000	\$2,800,000
Estate Dr / Coneflower Pkwy	\$725,000	--
Prairie Pkwy	\$1,200,000	\$2,100,000
Orchard Hill Dr	\$700,000	--
Briarwood Hills Dr / Oster Pkwy	\$1,100,000	\$1,800,000
Rownd St	\$1,000,000	\$1,800,000
Green Creek Rd	\$600,000	--
Cedar Heights Dr	\$775,000	\$2,500,000

14.LIFE-CYCLE COST ANALYSIS

In addition to the initial construction cost, the long-term operation costs and safety benefits of the signal and roundabout improvement alternatives were compared. Intersections that were expected to remain TWSC because of a lack of need for additional traffic control were not included in the comparison. The additional factors considered were safety, value of time for users, fuel costs, emissions, and maintenance. The process of quantifying these considerations is described in this section, but it should be noted that there are other more difficult to quantify considerations. These other considerations include personal preference for signals and roundabouts, aesthetic differences, and benefits to pedestrians and bicyclists.

- Safety
 - Based on existing crash rates and established crash modification factors from the CMF Clearinghouse (www.cmfclearinghouse.org).
 - Societal costs of crashes from the Iowa DOT's Traffic Safety Improvement Plan (Fatal – \$4,500,00; Major – \$325,000; Minor – \$65,000; Possible – \$35,000, Property Damage Only - \$7,400)
- Value of time
 - Based on delay output at intersections in *SimTraffic 10* models of the corridor.
 - Value of time – \$15.21 per hour. Based on a weighted average of personal use and truck driver time from Benefit-Cost Analysis Guidance for Discretionary Grant Programs from the FHWA.
- Fuel Costs
 - Based on fuel consumption output in *SimTraffic 10* models of the corridor.
 - Cost of gas – \$3.00 per hour. Based on current fuel prices in Cedar Falls and expected cost increases over the next 20 years.
- Emissions
 - Based on emissions output for nitrogen oxides (NO_x), volatile organic compounds (VOCs), and carbon dioxide (CO₂) in *SimTraffic 10* models of the corridor.
 - Societal costs of emissions from Benefit-Cost Analysis Guidance for Discretionary Grant Programs from the FHWA and its underlying research. (NO_x – \$7,508 per ton, VOCs – \$1,905 per ton, and CO₂ – \$39 per ton)
- Maintenance Costs
 - Pavement Life and rehabilitation needs
 - Traffic signals power & upkeep, lighting, signing, markings

Figure 10 shows the combined annual costs at each of the intersections as a traffic signal or a roundabout. The construction costs are the initial costs spread over a 20-year design life. The analysis of delay and emissions was based on the 2045 traffic because most of the intersection improvements will only occur once traffic has increased to the point where they are necessary. Throughout the corridor, roundabouts have a higher initial construction cost but much lower costs in the other factors considered. This effect is especially noticeable at the busier intersections and with safety and delay costs.

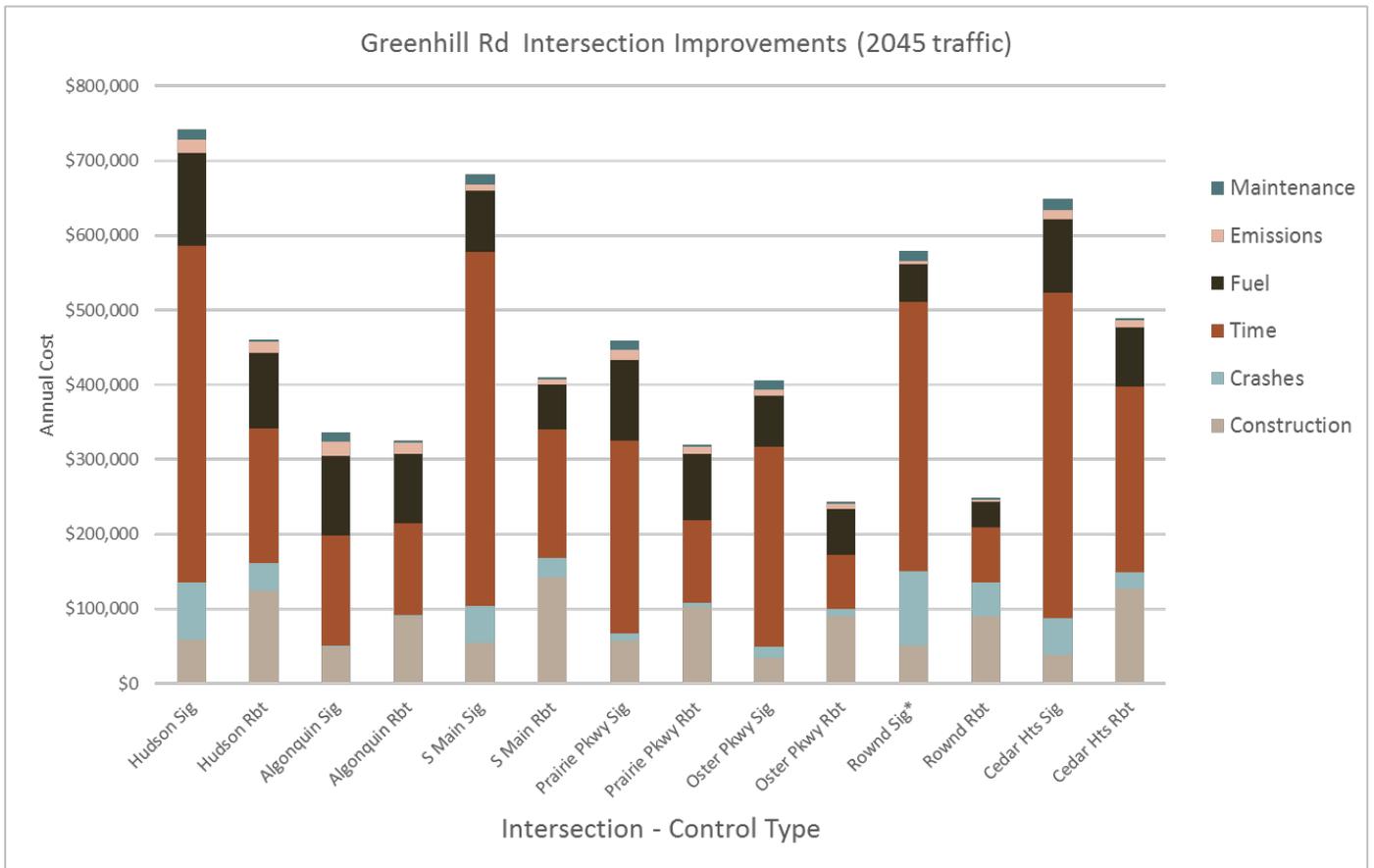


Figure 10. Life Cycle Cost Analysis by Intersection
 (Sig = signalized intersection / Rbt = roundabout intersection)

15. ALTERNATIVES DISCUSSION

This section will discuss the considerations for the alternatives at each of the intersections. Further information on the alternatives considered at each intersection is included in the *Forecasted Improvement Needs / Alternatives Operation Analysis Technical Memorandum* in Appendix D.

a. Hudson Rd

Located at the west end of the study corridor, the currently signalized Hudson Rd intersection has large traffic demand for the NB through, NB right, SB through, and WB left movements. The EB approach was recently connected to University Ave after previously being a dead-end. The northeast corner of the intersection could see development in the relatively near future with the Sartori Hospital relocation proposals. Additional residential development is continuing to the west with the new Greenhill Rd connection to University Ave.

The Hudson Rd corridor is an important north/south arterial in Cedar Falls and is one of the primary routes from US Hwy 20 to the UNI campus and the UNI-Dome. It is a currently a signalized corridor and must be capable of handling large volumes of special event traffic to the UNI campus. Roundabout operations at this intersection would not work as well during these additional traffic loading times compared to being provided extended green time by a signal. The intersection also experiences more than typical large tractor trailer truck traffic with NB right and WB left turn movements.

Additionally, it should be noted that while the analysis indicates one WB left turn lane would be sufficient for acceptable operations as a signal, if the conflicting EB traffic grows more than expected, dual WB left turn lanes could be necessary. So if it remains signalized, the signal modifications should be designed to accommodate dual WB left turn lanes and matching EB alignment as needed in a future date. Basic improvement needs for the signalized intersection are shown in **Figure 11**, and include a NB right turn lane, WB left turn lane, and widening for EB turn lane alignment. **Figure 12** shows the basic functional lane needs that were evaluated if the intersection would be converted to a roundabout.



Figure 11. Signalized Hudson Rd Lane Configuration

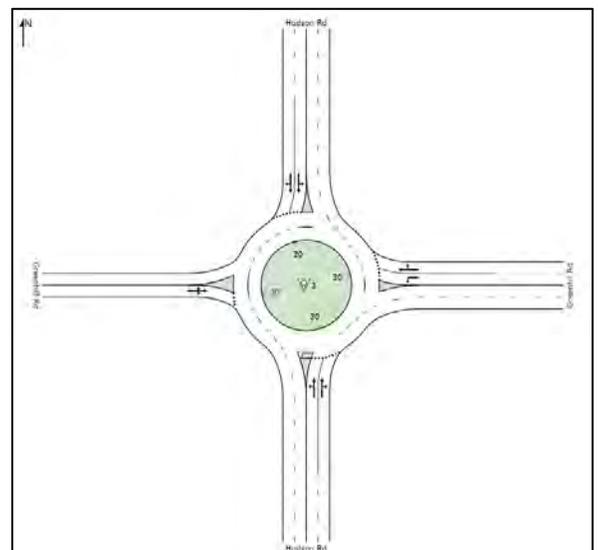


Figure 12. Roundabout Hudson Rd Lane Configuration

b. Algonquin Dr

Currently, this three-leg intersection is stop controlled for the Algonquin Dr approach. It has relatively low traffic demand on the side street. A north approach would be added in conjunction with the future anticipated Sartori Hospital development. This development would add additional traffic demand to the intersection, especially turning traffic, which would also be influenced by the site layout and other access points. This traffic could lead to a need for additional traffic control, though widening for EB and WB left turn lanes before implementing additional traffic control should be the first step.

It is expected that one intersection or the other could require additional traffic control between Algonquin Dr and Ashworth Dr, but not both. Efforts should be made to concentrate the traffic at the Algonquin Dr intersection to maintain separation from the future IA 58 intersection/ interchange.

c. Ashworth Dr

Currently, this three-leg intersection is stop controlled for the Algonquin Dr approach. It has relatively low traffic demand on the side street. Though the site being considered for the Sartori Hospital development does not extend to Ashworth Dr, there may be related development which would affect this intersection. For planning purposes, it was assumed a north approach would be added in the future with any sort of development. Similar to the Algonquin Dr intersection, turn lanes should be added to Greenhill Rd before additional traffic control is considered. Algonquin Dr is the preferred intersection for additional traffic control due to proximity to IA 58. Basic improvement needs for the signalized intersection are shown in **Figure 13**, and includes the basic widening for EB / WB left turn lanes on Greenhill Rd. **Figure 14** shows the basic functional lane needs that were evaluated if either intersection would be converted to a roundabout.

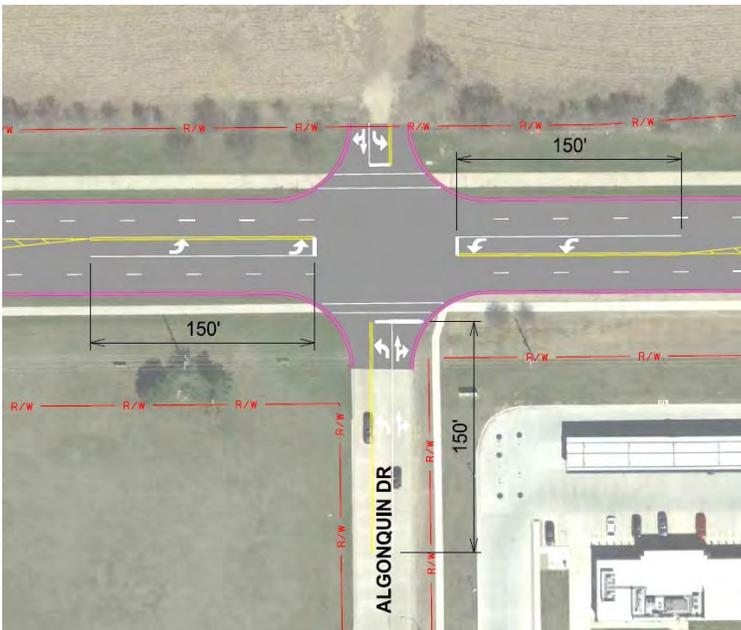


Figure 13. Algonquin Dr/Ashworth Dr TWSC/Signal Lane Configuration

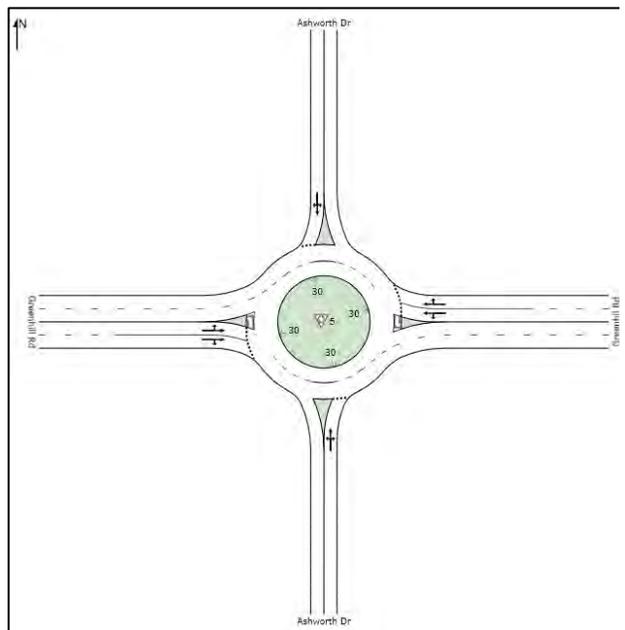


Figure 14. Algonquin Dr/Ashworth Dr Roundabout Lane Configuration

d. S Main St

This intersection is currently signalized and is one of the busiest in the corridor. It has constrained capacity WB and SB with one shared through/right lane WB and one shared left/through/right lane SB. There were recent interim signal changes that provide protected-permissive left turn phasing for the EB, WB, and NB approaches. While these changes improve operations for left turning traffic, they do not address the existing capacity constraints. Traffic volumes are expected to increase as the nearby developments are completed and as Pinnacle Prairie continues to development.

This intersection has the most constrained public ROW of the study intersections, especially in the NE and SW corners. Additionally there are a number of nearby utilities including gas, water, communications, and electric. In particular, a large utility pole with a deep foundation in the SW corner would require relocation or underground conversion pending intersection layout. Finally, significant elevation changes in the NE corner would require a retaining wall to widen toward that corner. Basic improvement needs for the signalized intersection are shown in **Figure 15**, and include a WB through lane, and additional SB lane. **Figure 16** shows the roundabout concept layout that was evaluated.

The signal alternative would not require ROW acquisition or only minimal amounts and would require minimal utility relocations. However, the roundabout alternative at this intersection would likely require ROW from at least two properties (NE/SW quadrants) and would require significant utility relocations with initial estimates from CFU of approximately \$446,000.

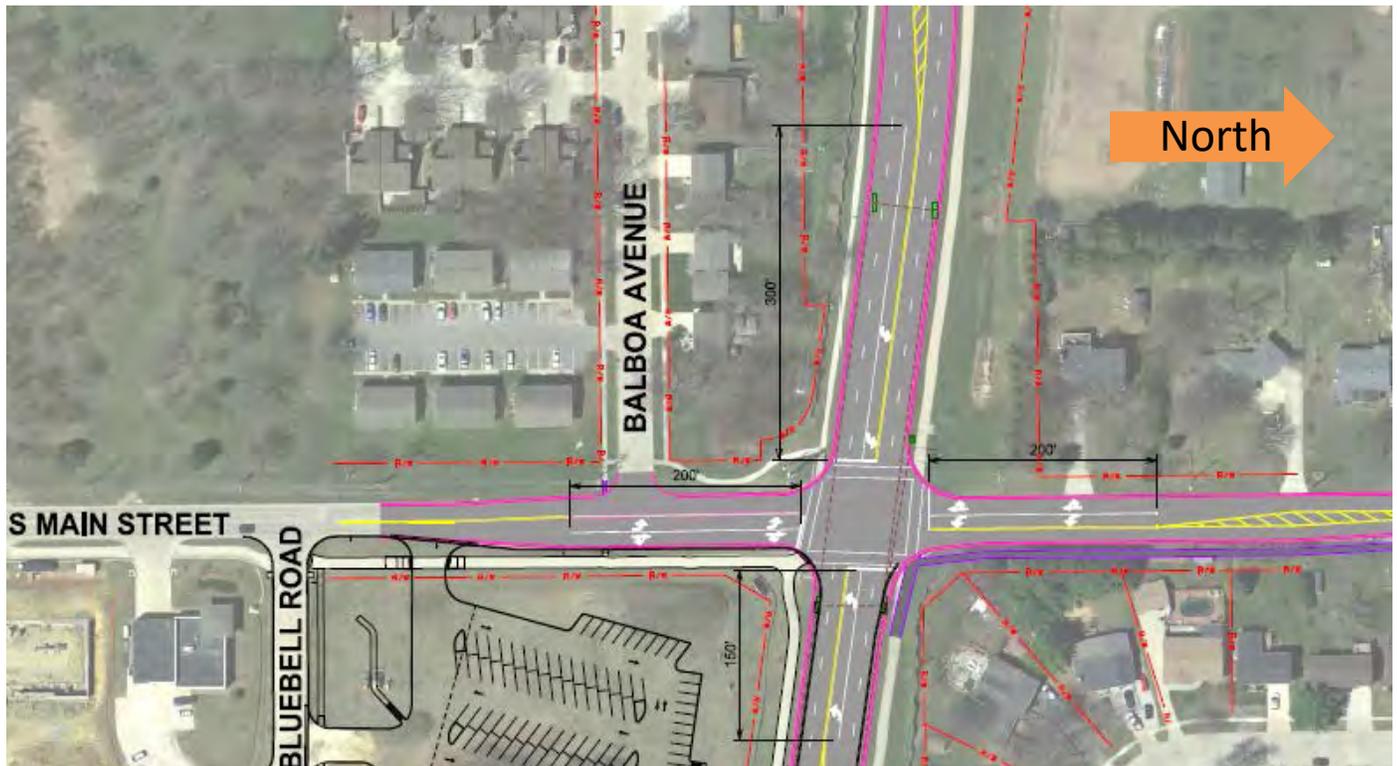


Figure 15. S Main St Signalized Lane Configuration

In either scenario, the nearby Balboa Ave intersection to the south should be converted to a right-in/right-out (RIRO) with a median on S Main St between Greenhill Rd and Bluebell Rd to the south. This would reduce the potential conflict near the intersection, especially when NB queues reach past Balboa Ave. Vehicles wanting to turn left to or from Balboa Ave would be able to access the area via Cordoba Ave to the south.

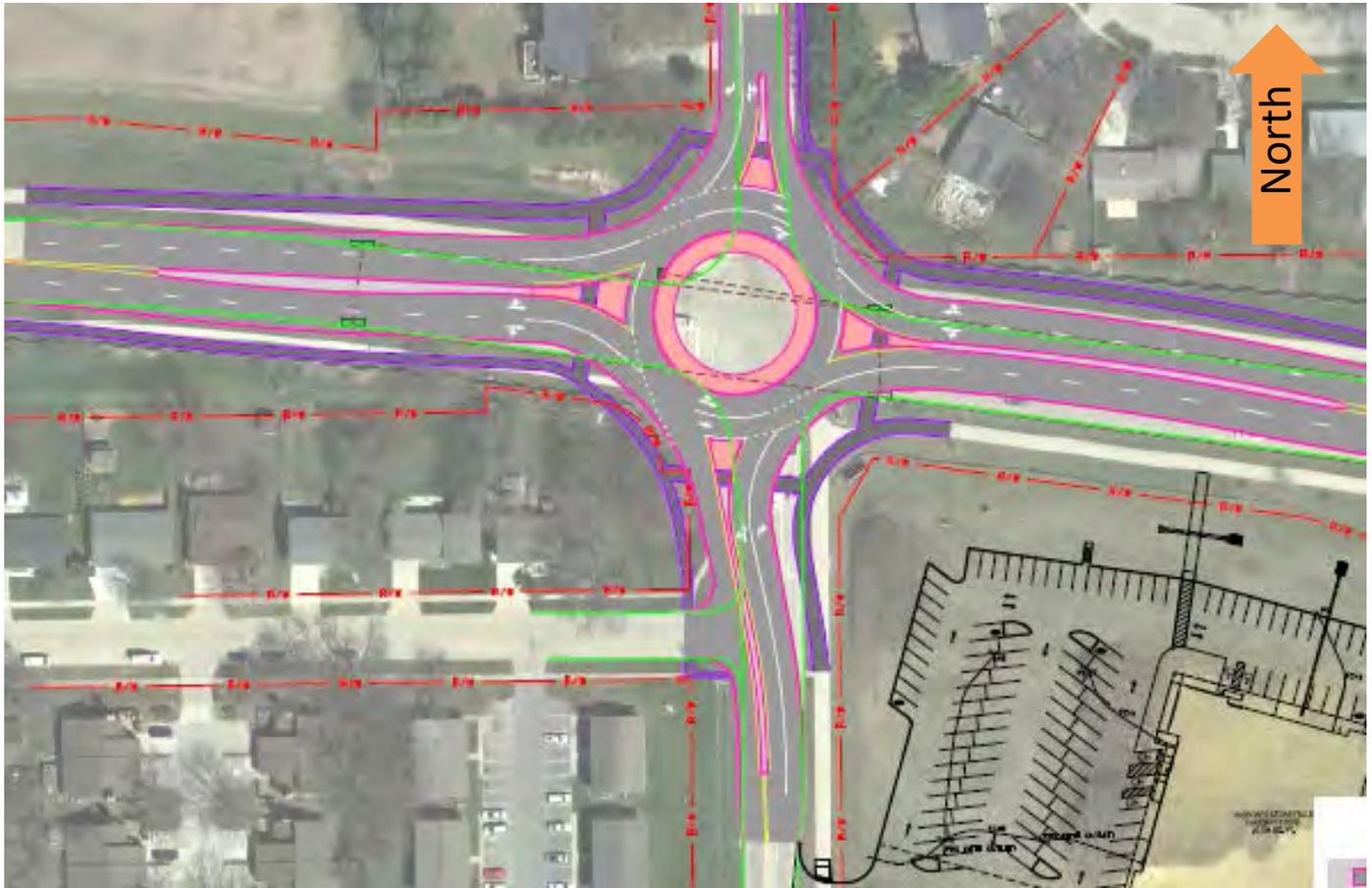


Figure 16. S Main St Roundabout Lane Configuration

e. Estate Dr / Coneflower Pkwy

This intersection is currently TWSC with relatively low demand on the side streets. Some growth is likely south of the intersection when the KwikStar is constructed and as Pinnacle Prairie continues to develop. Additional traffic control is not expected to be necessary due to the proximity of adjacent signals and availability of alternative routes to those signals. However, EB and WB left turn lanes should be provided to separate turning traffic from through traffic for safety and capacity benefits. An EB right turn lane was recommended for installation in conjunction with KwikStar development per prior study.

f. Prairie Pkwy

This intersection was previously a three-leg intersection with no north approach and STOP control on the south approach. The intersection was signalized between 2014 and 2016 around the time Prairie Pkwy was connected to Viking Rd to the south. The north approach was constructed in 2017. Left turn lanes are not currently provided on Greenhill Rd.

Traffic is expected to grow at this intersection, especially to and from the south approach, as the Pinnacle Prairie area continues to develop. One potential interim solution to improve safety and operations prior to major improvements is to provide a leading WB left turn traffic signal phase. This would reduce crash potential and reduce the delay for existing WB left turning traffic and likely growth with development. It would also reduce the instances of WB left turning vehicles stopped in a through lane. Basic improvement needs for the signalized intersection are shown in **Figure 17**, and include EB/EB left turn lanes and an EB right turn lane. **Figure 18** shows the roundabout concept layout that was evaluated. For the major long term improvements, the turn lane widening / signal alternative would be entirely within the existing ROW and would have little to no utility conflict. The roundabout may require a small amount of ROW and has the potential for more utility conflict than the signal, though there are not any obvious major conflicts.



Figure 17. Prairie Pkwy Signalized Lane Configuration

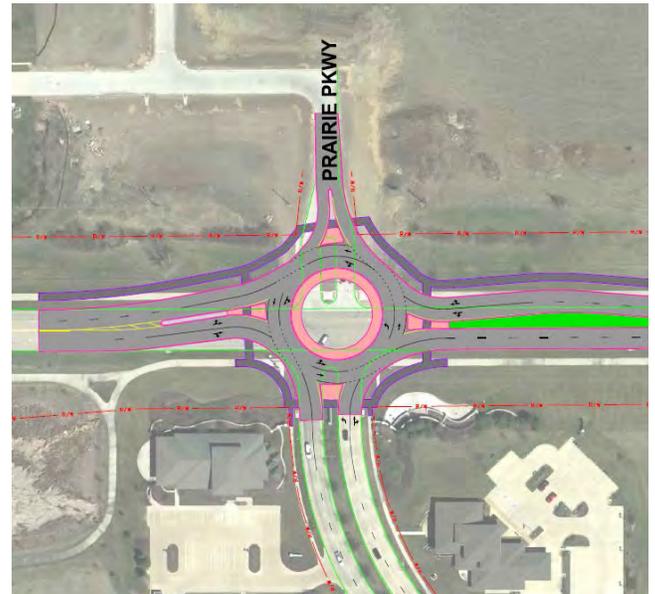


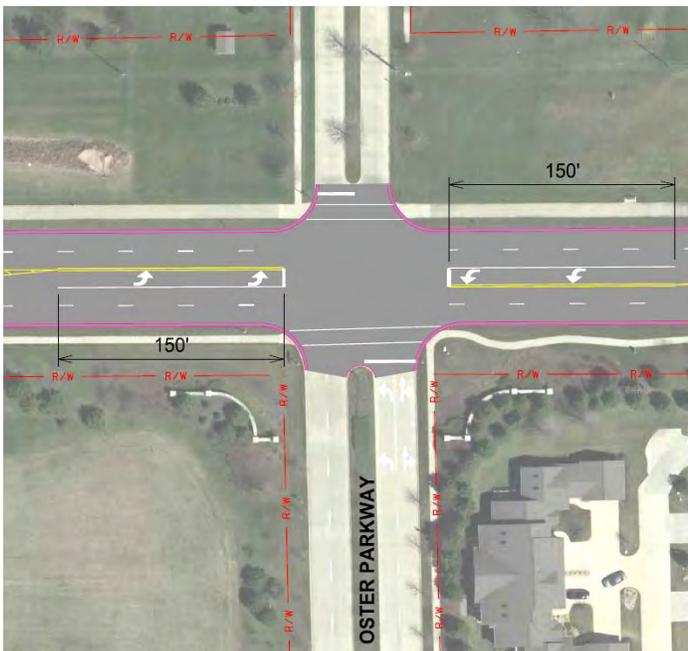
Figure 18. Prairie Pkwy Roundabout Lane Configuration

g. Orchard Hill Dr

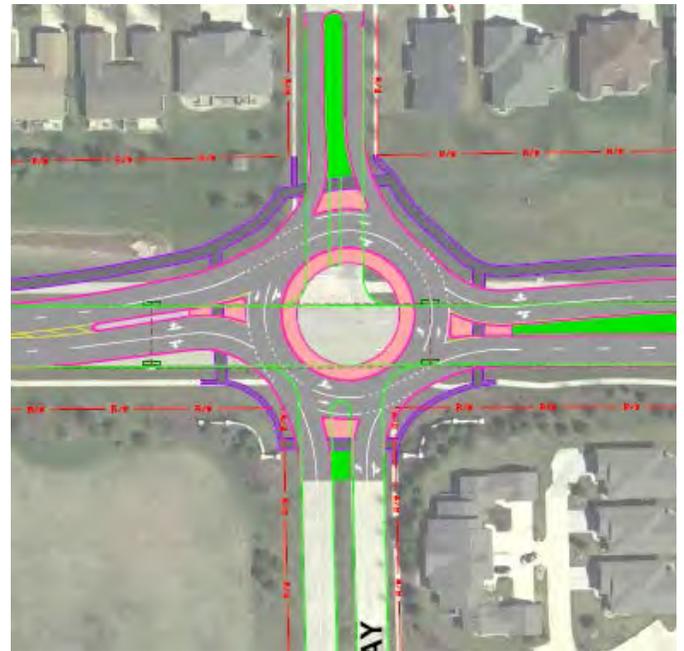
This intersection is currently TWSC with relatively low demand on the side streets. There is not much growth anticipated as the north approach leads to a built-out residential area and the south approach serves a church with no plans to connect the drive/roadway to any of the Pinnacle Prairie development. There are short bursts of traffic on Sundays or other specific church event days/times both north and south of the intersection, but these occur during lower volume periods on Greenhill Rd. Additional traffic control is not expected to be necessary due to the low side street demand and proximity to an intersection that is a stronger candidate for additional traffic control (Briarwood Hills Dr / Oster Pkwy). However, EB and WB left turn lanes should be provided to separate turning traffic from through traffic to improve safety and capacity.

h. Briarwood Hills Dr / Oster Pkwy

This intersection is currently TWSC with relatively low demand on the side streets. Growth is expected on the south approach as the Pinnacle Prairie area continues to develop. Additionally, the current Pinnacle Prairie Master Plan calls for Oster Pkwy to be connected to Viking Rd to the south. Traffic at this intersection should be monitored as development continues and especially when Oster Pkwy is connected to Viking Rd. However, EB and WB left turn lanes should be installed prior to additional traffic control, unless it is determined that additional traffic control is immediately necessary. Basic improvement needs for the intersection are shown in **Figure 19**, and include EB/WB left turn lanes. **Figure 20** shows the roundabout concept layout that was evaluated.



**Figure 19. Briarwood Hills Dr / Oster Pkwy
Signalized Lane Configuration**



**Figure 20. Briarwood Hills Dr / Oster Pkwy
Roundabout Lane Configuration**

i. Rownd St

This intersection is currently signalized and Greenhill Rd was reconfigured with pavement markings in 2017 to provide EB and WB left turn lanes by merging all traffic in to single EB and WB through lanes. This change significantly improved left turn safety but also introduced a capacity constraint for traffic on Greenhill Rd. The impact is relatively minor with existing traffic and the safety benefit was important. However, as traffic grows on Greenhill Rd, this capacity constraint with merging through traffic will lead to declining operations and ultimately other sideswipe/rear end crash type safety potential. Additionally, traffic on the south approach is expected to increase with the Pinnacle Prairie development. Basic improvement needs for the intersection are shown in **Figure 21**, and include EB/WB left turn lanes, and south approach widening to match NB alignment with SB lanes. **Figure 22** shows the roundabout concept layout that was evaluated.

For the signal alternative, a small bit of ROW may be required to widen the south approach. For the roundabout alternative, the proximity to nearby Greenhill Dr (less than 200 feet) would need to be addressed in the design process. Similar to the Balboa proximity to Greenhill Rd at S Main Street, monitoring of safety history and conflict will need to continue for possible restrictive median and right in / right out potential for Greenhill Dr.



Figure 21. Rownd St Signalized Lane Configuration

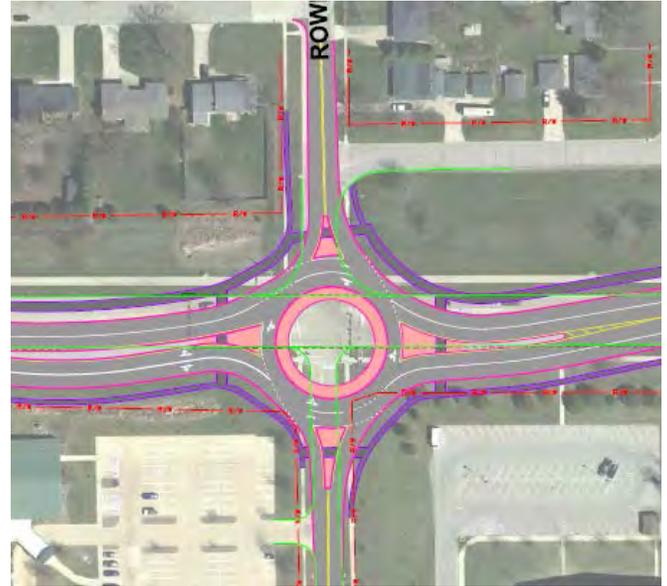


Figure 22. Rownd St Roundabout Lane Configuration

j. Green Creek Rd

This intersection is currently a three-leg approach “Tee” with relatively low demand on Green Creek Rd. There is not much growth anticipated as the south approach leads to a small residential area that will not directly connect to the rest of the Pinnacle Prairie development. It is not anticipated that a north approach will be constructed. Additional traffic control is not expected to be necessary due to the low side street demand and proximity to Rownd St. Turn lanes on Greenhill Rd are not currently warranted based on turn lane volume capacity or safety history to date. However, a WB left turn lane may be considered to separate turning traffic from through traffic if safety becomes an issue as Greenhill Rd through traffic grows over time.

k. Cedar Heights Dr

This intersection is currently signalized and one of the busier intersections in the corridor. The NB and SB traffic is “split phased” by the traffic signal, meaning that the NB traffic and SB traffic travel through the intersection one at a time. This mode of operation improves safety by reducing conflict in particular for left turns but is very inefficient compared to more standard phasing with NB and SB traffic receiving the green simultaneously. Split phasing is frequently implemented when there is a lack of left turn lanes or poor lane alignment does not allow for protected-permissive left turns.

Basic improvement needs for the signalized intersection are shown in **Figure 23**, and include a south approach widening to create a three lane (left, through, right) layout that could be matched with the north approach.

Some additional widening in the NE corner would be required as well for turning traffic, and the traffic signal would be modified/reconstructed. **Figure 24** shows the roundabout concept layout that was evaluated. The signal alternative corrects the alignment NB/SB, which would allow the NB and SB lefts to operate as protected-permissive, improving operations while maintaining a high level of safety. The roundabout alternative would improve operations and safety. The signal alternative would be entirely within the existing ROW, and the roundabout would require little to no ROW acquisition as well. There are more utility conflicts for the roundabout alternative. The roundabout option should consider relocation of the church driveway in the NE quadrant further north from the existing location.

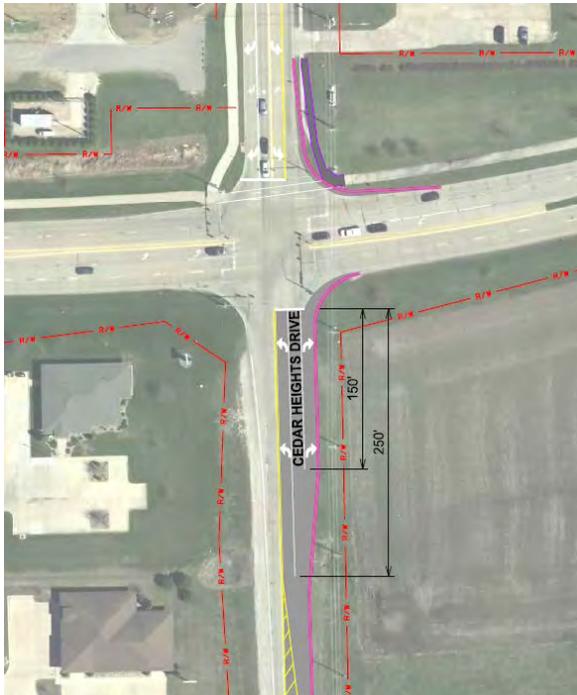


Figure 23. Rownd St Signalized Lane Configuration



Figure 24. Rownd St Roundabout Lane Configuration

16.PUBLIC INPUT

Three meetings were conducted throughout the project to solicit public input. The first meeting was a kick-off meeting that occurred June 12, 2018. The second meeting presented analysis results and improvement concepts and occurred August 9, 2018. The final meeting presented the recommendations for the future of the corridor and occurred November 1, 2018. In addition to comments received at the meetings, comments were also received by the City and shared with Snyder & Associates after each of the meetings. A summary of the comments were tabulated based on location of interest and subject of the comment and are listed below. A more detailed summary of the public process and public comments received is included in Appendix C.

<u>Intersections (# of comments)</u>	<u>Comment subject (# of comments)</u>
<ul style="list-style-type: none"> • S Main St (51) * • Overall Corridor (25) • Estate/Coneflower (8) • Prairie Parkway (8) • Orchard (4) • Hudson (4) • Rownd (3) • Oster (1) • Algonquin (1) 	<ul style="list-style-type: none"> • Roundabout positive (17) • Turn lanes (11) • Pedestrian related (9) • Safety concerns (9) • Capacity/delay (7) • Left turn signals (7) • Roundabout negative (5) • Right-of-way (4) • Ped signal timings (4) • Emergency vehicles (3) • Sufficient gaps (3) • Sunday Traffic (3)

*- high frequency of S Main Street comments result of initial public meeting mail notification to nearby neighbors based on public comment about intersection operations due to IA 58 & Viking construction diversion traffic

17. CONCLUSIONS/RECOMMENDATIONS

This study evaluated the Greenhill Rd corridor from Hudson Rd to Cedar Heights Dr. It considered safety, existing operations, development and growth potential, projected operations, intersection alternatives, and public input. These considerations were used to develop both short- and long-term recommendations for intersection improvements to be implemented throughout the corridor as they become necessary. The short-term recommendations are described below.

a. Short-term Recommendations

1. Review and update vehicle (yellow and all-red) clearance timings at signals
2. Review and update pedestrian clearance timings at signals
3. Continue to improve sidewalk connectivity on the south side of Greenhill Rd in conjunction with development
4. Restripe the NB approaches of Algonquin Dr and Ashworth Dr to provide a left turn lane and a shared through/right lane
5. Review and reinforce lane designations with signing and pavement marking at the Estate Dr / Coneflower Pkwy, Prairie Pkwy, Orchard Hill Dr, and Briarwood Hills Dr / Oster Pkwy
6. Implement leading WB left turn phase at Prairie Pkwy intersection

b. Long-term Recommendations

Overall intersection improvement recommendations for lane widening and signalization improvements or potential conversion of intersection to roundabouts considered safety, operations, and life cycle cost analysis previously discussed in this report. Long-term recommendations for each intersection are listed in **Table 7**.

Table 7. Long-Term Recommendations by Intersection

Intersection	Recommendation	Cost Opinion	Time Frame	Notes/Considerations
Hudson Rd	Signal	\$1,20,000	5-10 years	<ul style="list-style-type: none"> Likely based on hospital and growth south/west Special event traffic for UNI Corridor consistency on Hudson R Truck traffic – Hudson Rd to Greenhill Rd/IA 58
Algonquin Dr	Signal	\$1,000,000	5-10 years	<ul style="list-style-type: none"> Development driven (hospital) Incorporate improvement with hospital design Emergency vehicle access
Ashworth Dr	Widen for Turn Lanes	\$800,000	5-10 years	<ul style="list-style-type: none"> Development driven (hospital or other north) Incorporate improvements with development
S Main St	Roundabout Balboa RIRO	\$2,800,000	<5 years	<ul style="list-style-type: none"> Improves intersection safety & efficiency Will require ROW acquisition Significant utility coordination / relocation Life cycle cost benefits Current CIP design 2020 / construction 2021
Estate Dr / Coneflower Pkwy	Widen for Turn Lanes	\$725,000	5-10 years	<ul style="list-style-type: none"> To reduce turning conflict Safety driven
Prairie Pkwy	Roundabout	\$2,10,000	10 years	<ul style="list-style-type: none"> Could be sooner (development driven) Provides efficient flow for traffic pattern
Orchard Hill Dr	Widen for Turn Lanes	\$700,000	>10 years	<ul style="list-style-type: none"> Could be sooner (development driven) Sunday morning demands Lack of connectivity to the south

Intersection	Recommendation	Cost Opinion	Time Frame	Notes/Considerations
Briarwood Hills Dr / Oster Pkwy	Roundabout	\$1,800,000	>10 years	<ul style="list-style-type: none"> • Could be sooner (development driven) • Pinnacle Prairie development • Connectivity south to Viking Rd • New pedestrian crossing point
Rownd St	Roundabout	\$1,800,000	>10 years	<ul style="list-style-type: none"> • Could be sooner (development driven) • Pinnacle Prairie development • Connectivity south to Viking Rd • Close proximity of Greenhill Dr to the north
Green Creek Rd	Widen for Turn Lane	\$600,000	>10 years	<ul style="list-style-type: none"> • Safety driven
Cedar Heights Dr	Roundabout	\$2,500,000	<5 years	<ul style="list-style-type: none"> • Incorporate with Cedar Heights Dr reconstruction to south • Possible small ROW need in SW and SE corners • Church parking lot access in NE corner (possible relocation) • Current CIP design 2019 / construction 2020

APPENDIX A
IMPROVEMENT ALTERNATIVE EXHIBITS

Hudson Rd Widening

Algonquin Dr Widening

Ashworth Dr Widening

S Main St Widening or Roundabout

Coneflower Pkwy / Estate Dr Widening

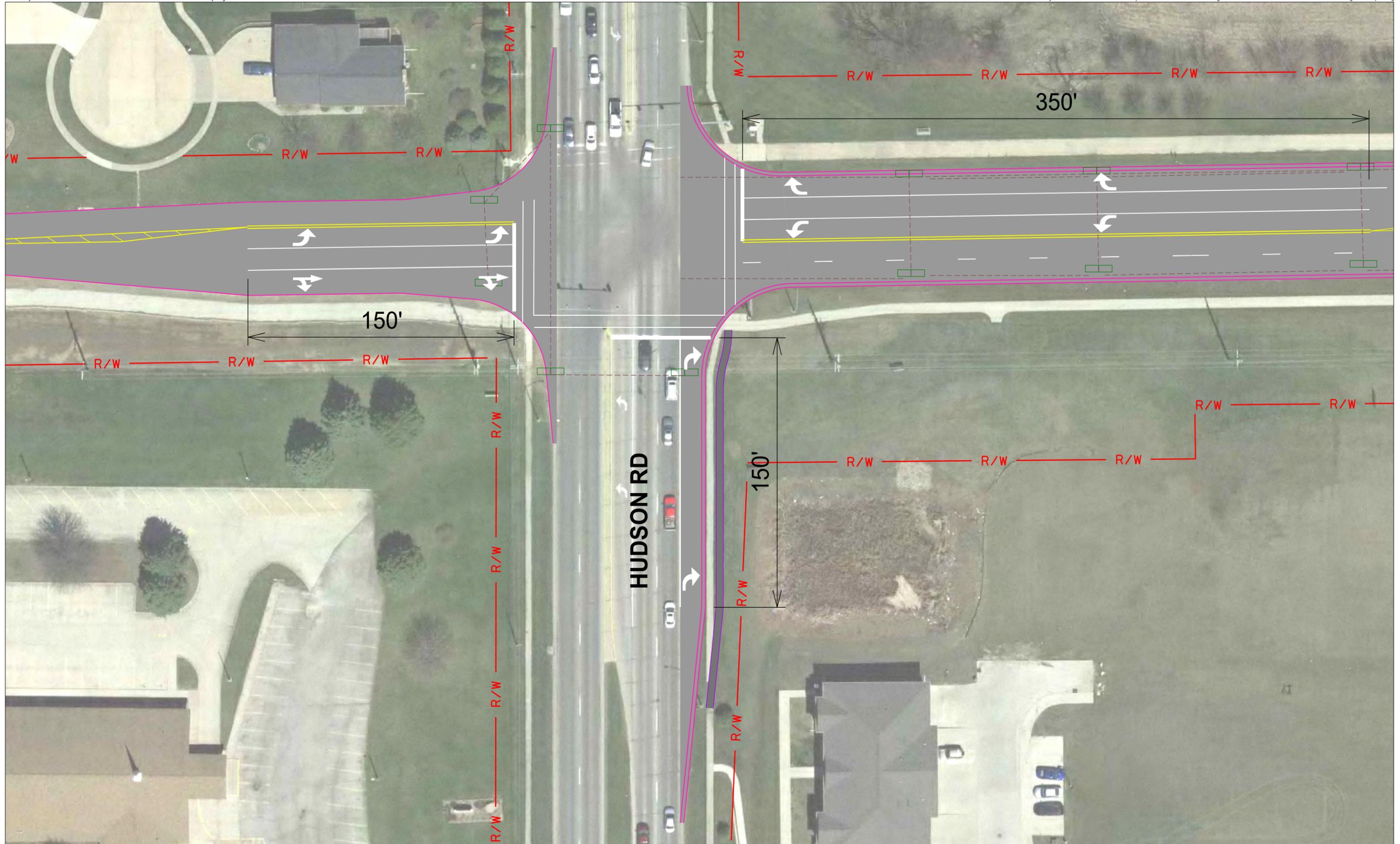
Prairie Pkwy Widening or Roundabout

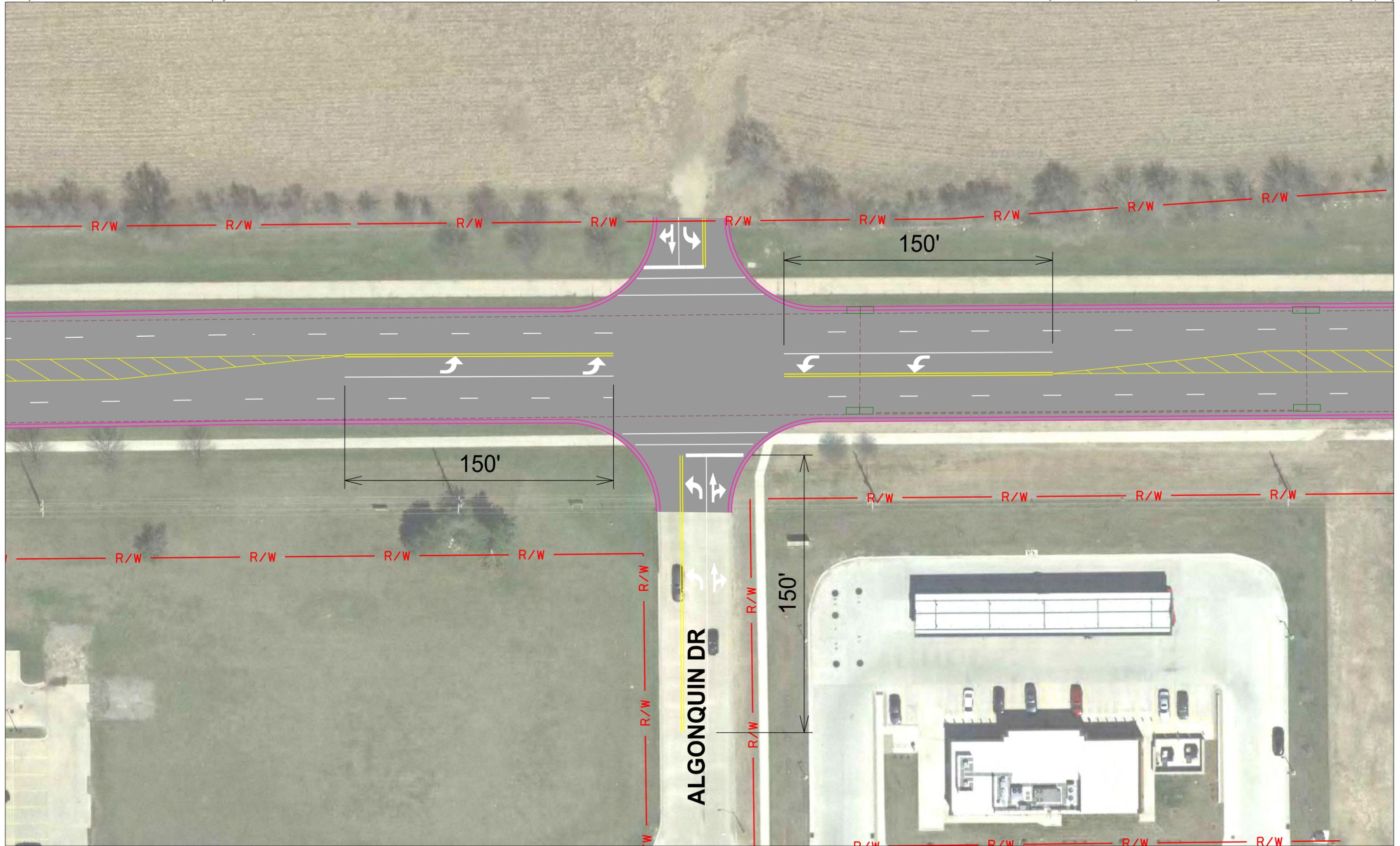
Orchard Hill Dr Widening

Oster Pkwy Widening or Roundabout

Rownd St Widening or Roundabout

Cedar Heights Widening or Roundabout



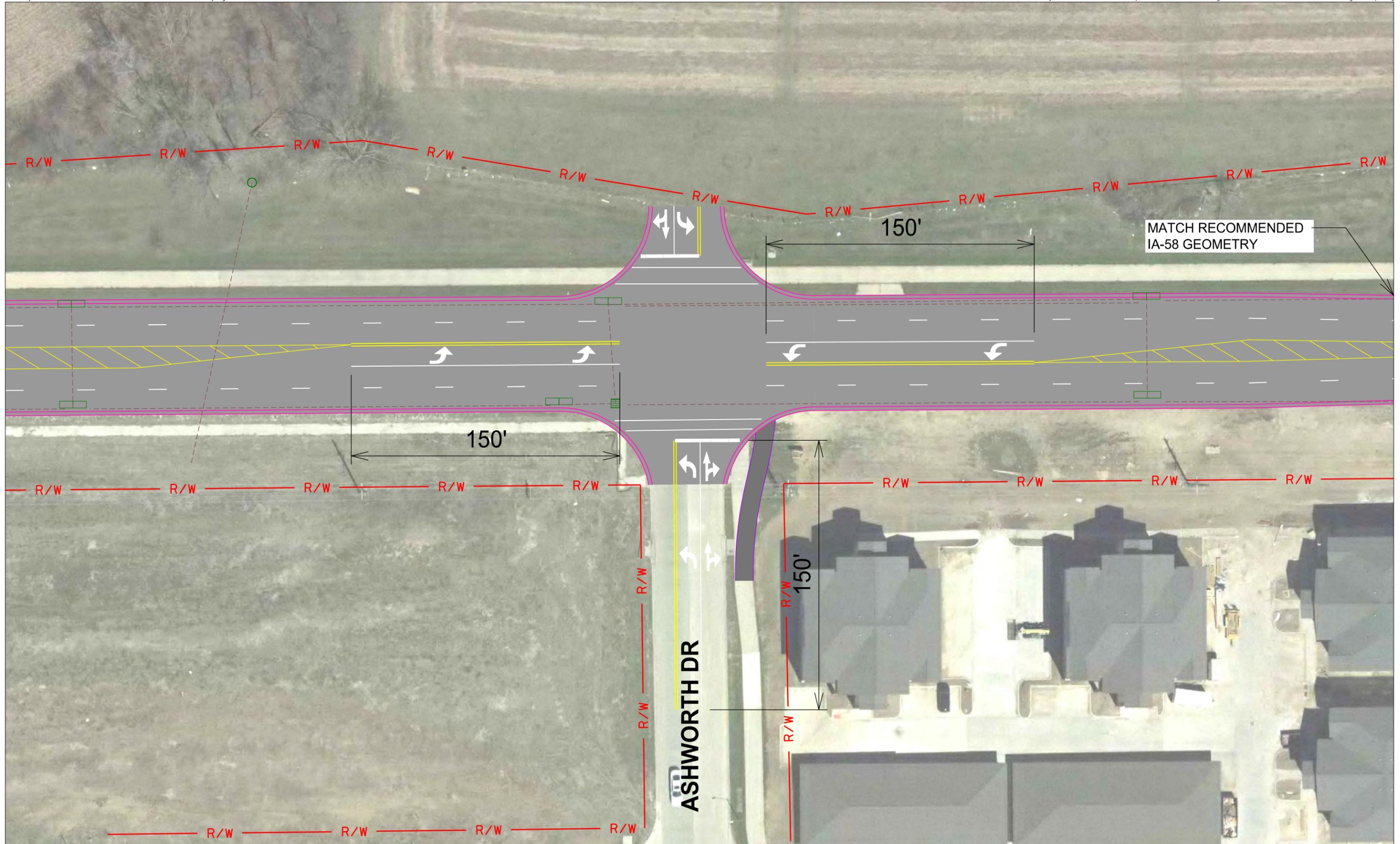


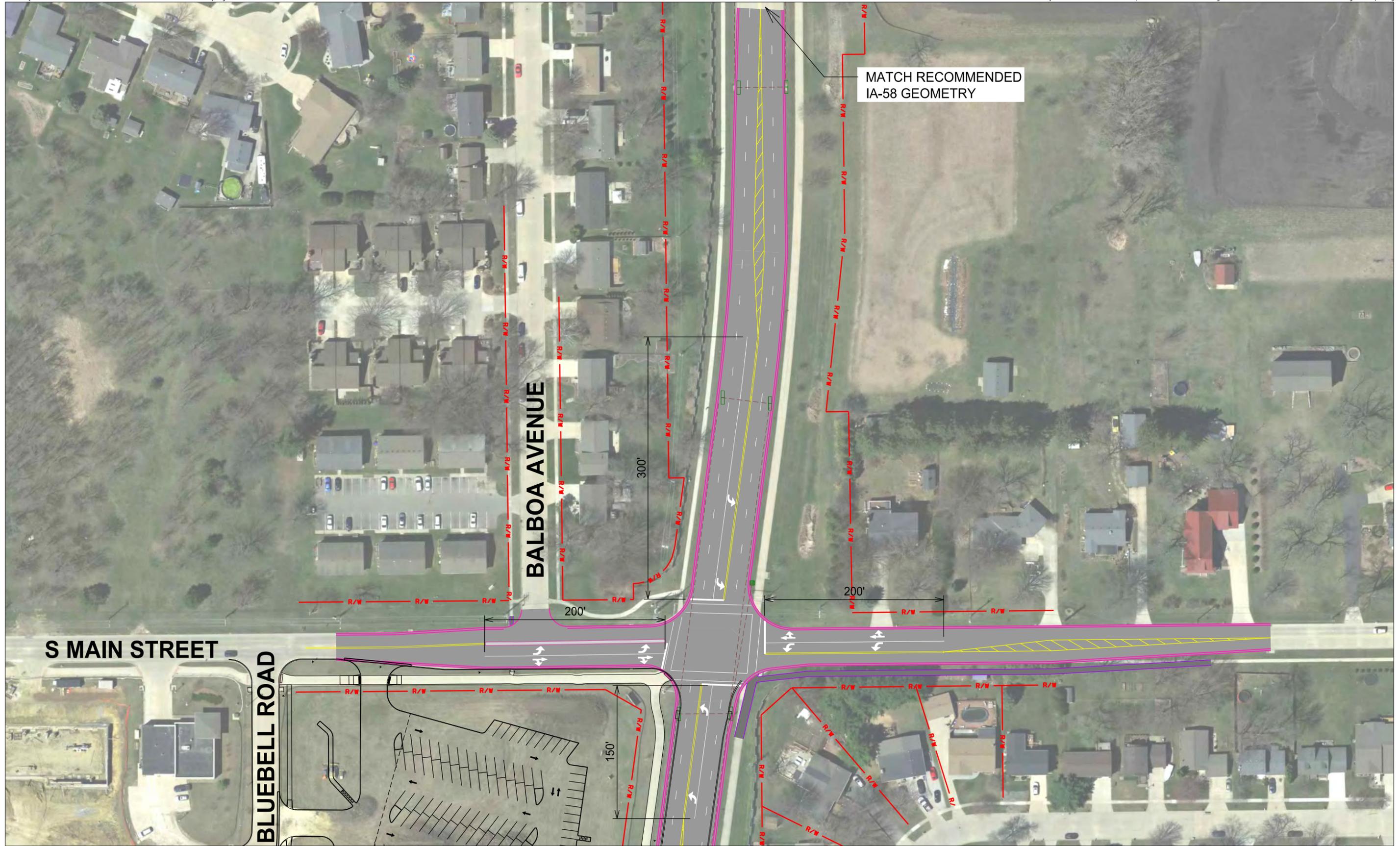
ALGONQUIN DR

150'

150'

150'



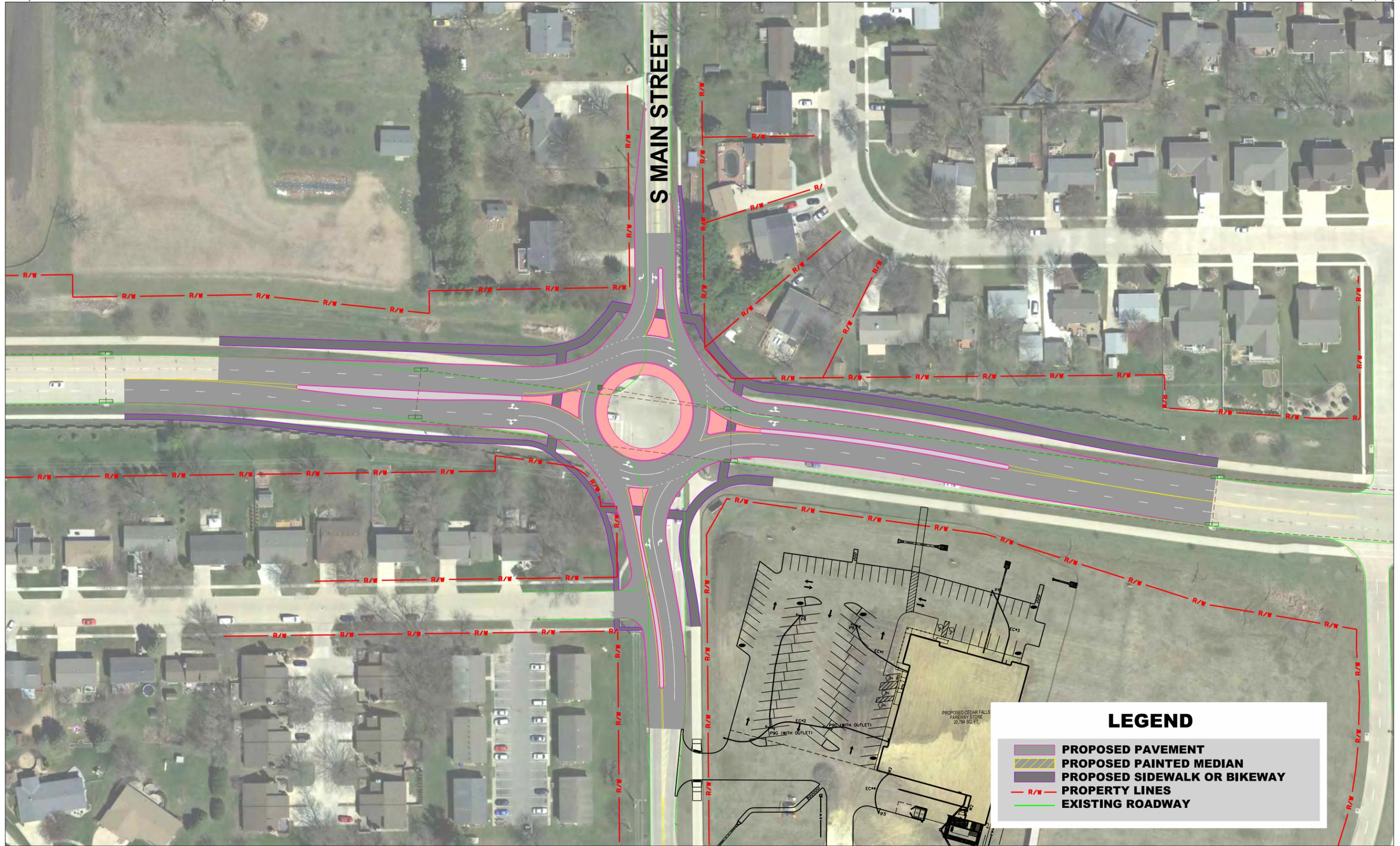


MATCH RECOMMENDED
IA-58 GEOMETRY

BALBOA AVENUE

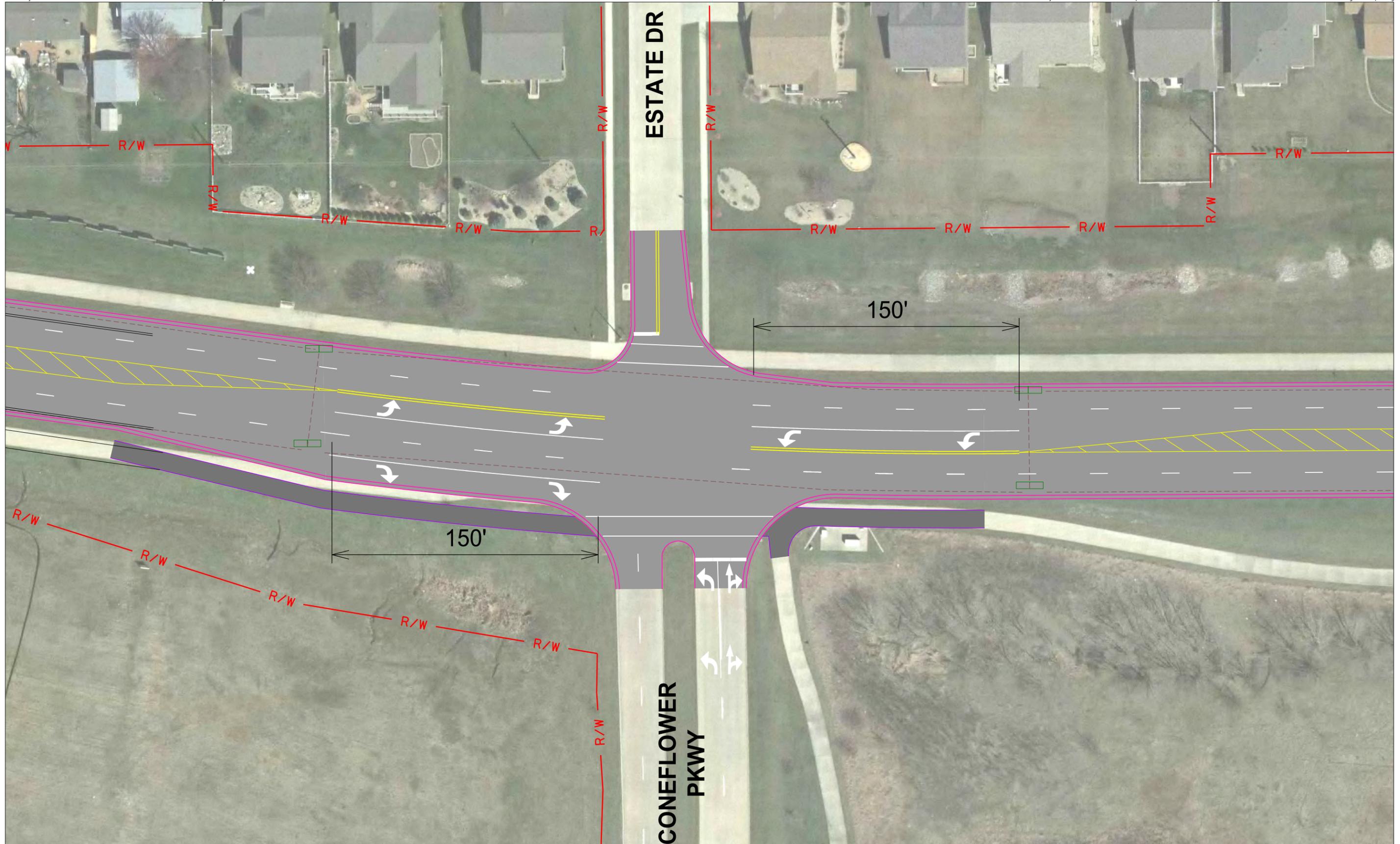
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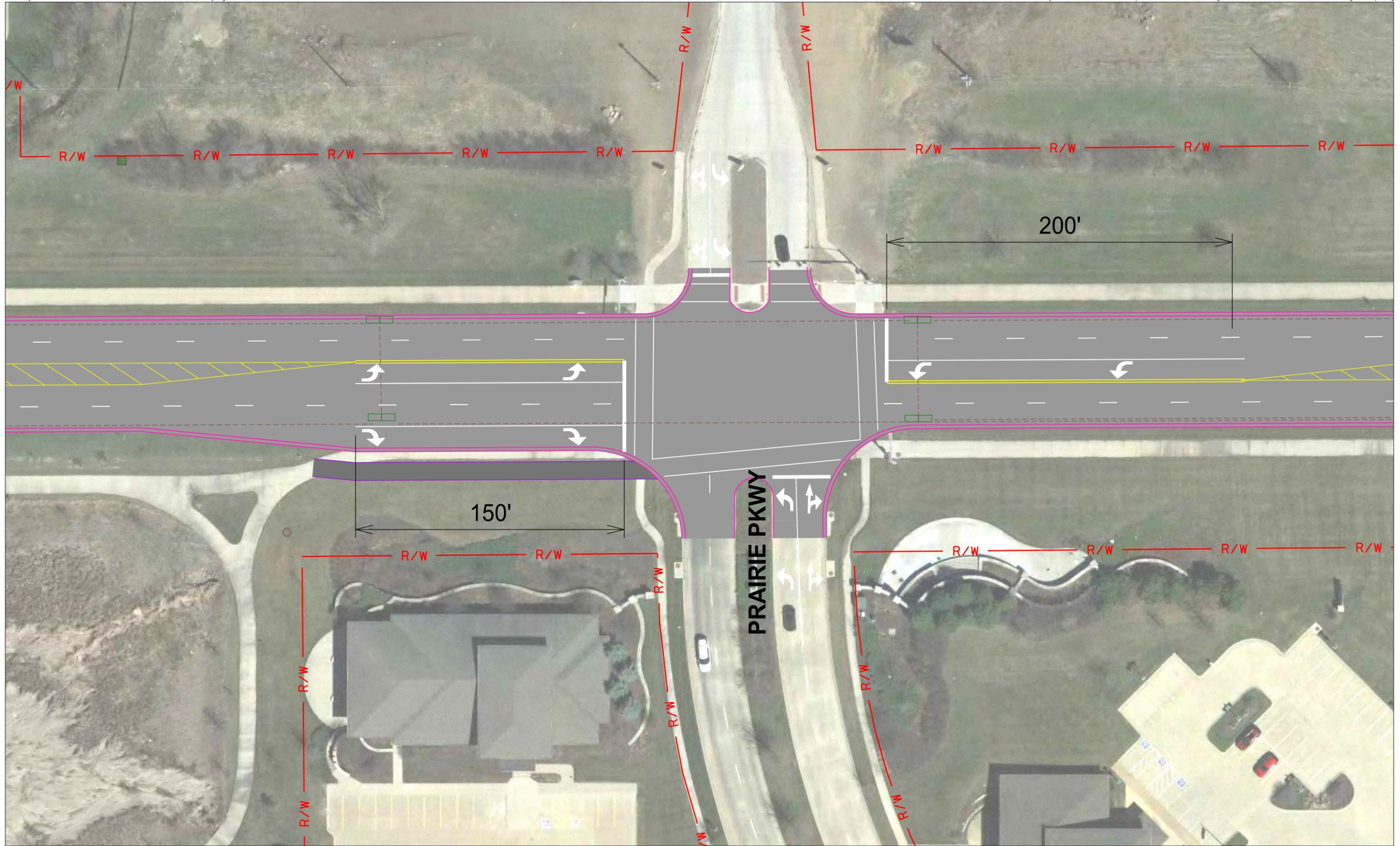
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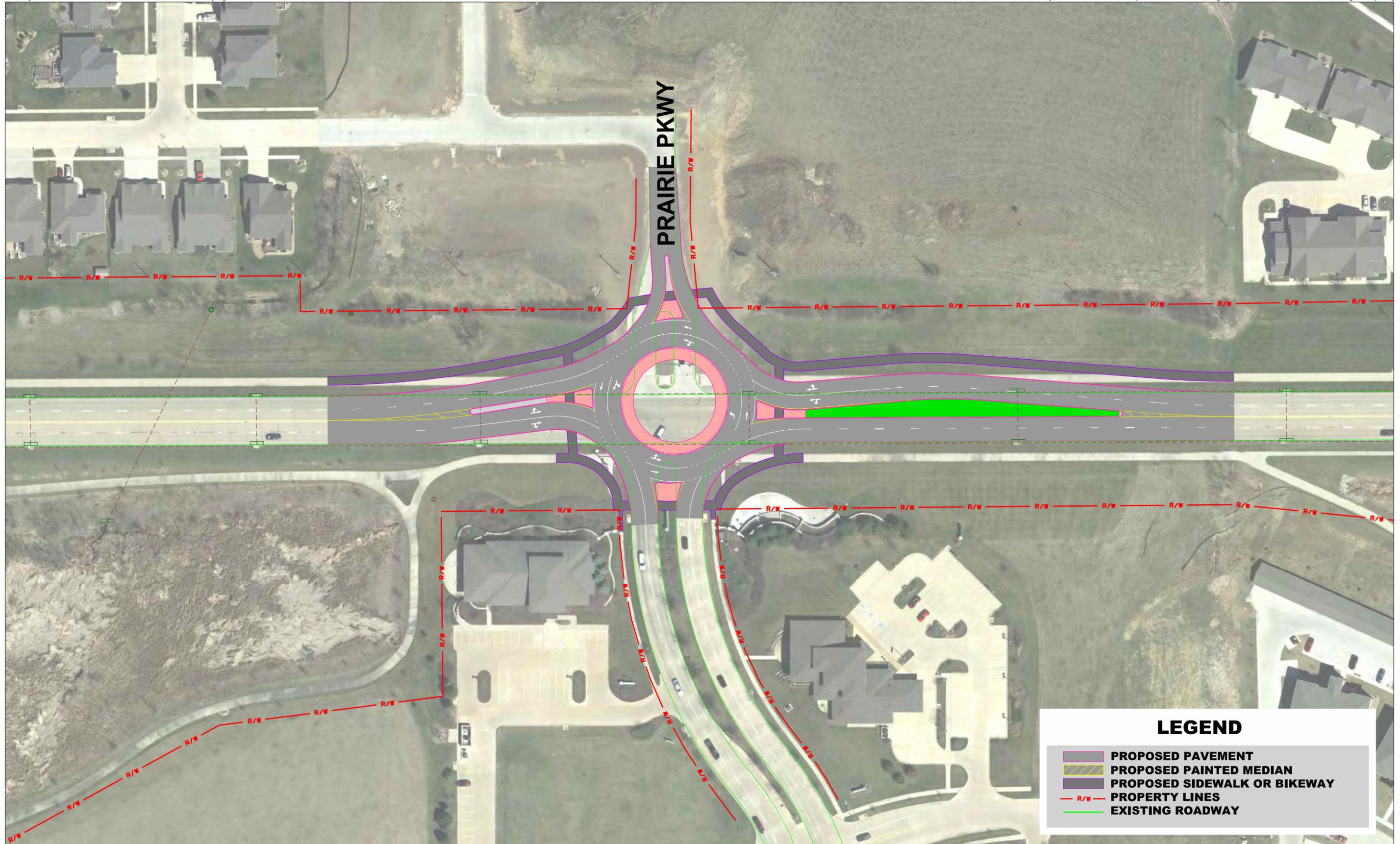


LEGEND

- PROPOSED PAVEMENT
- PROPOSED PAINTED MEDIAN
- PROPOSED SIDEWALK OR BIKEWAY
- R/W — PROPERTY LINES
- EXISTING ROADWAY



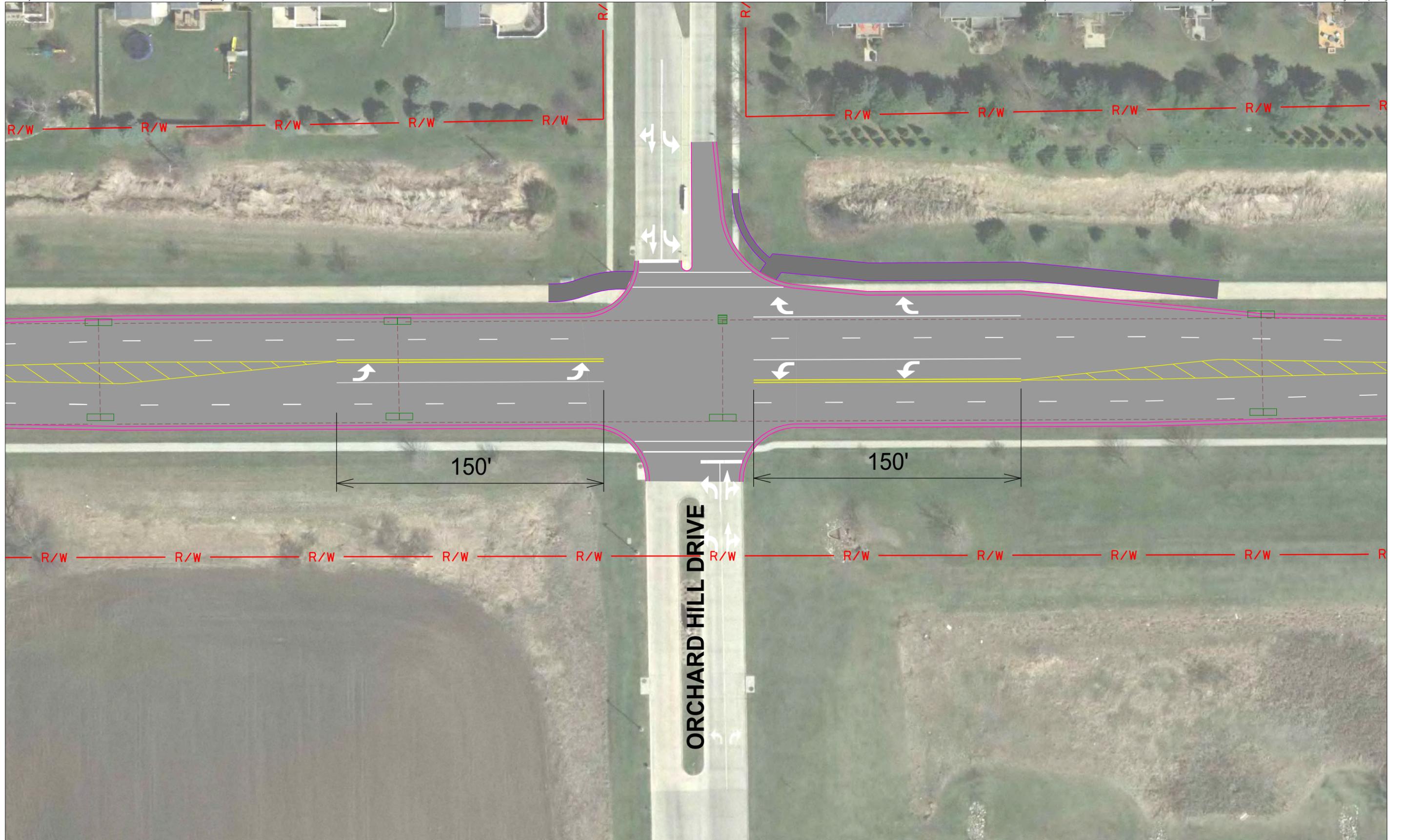


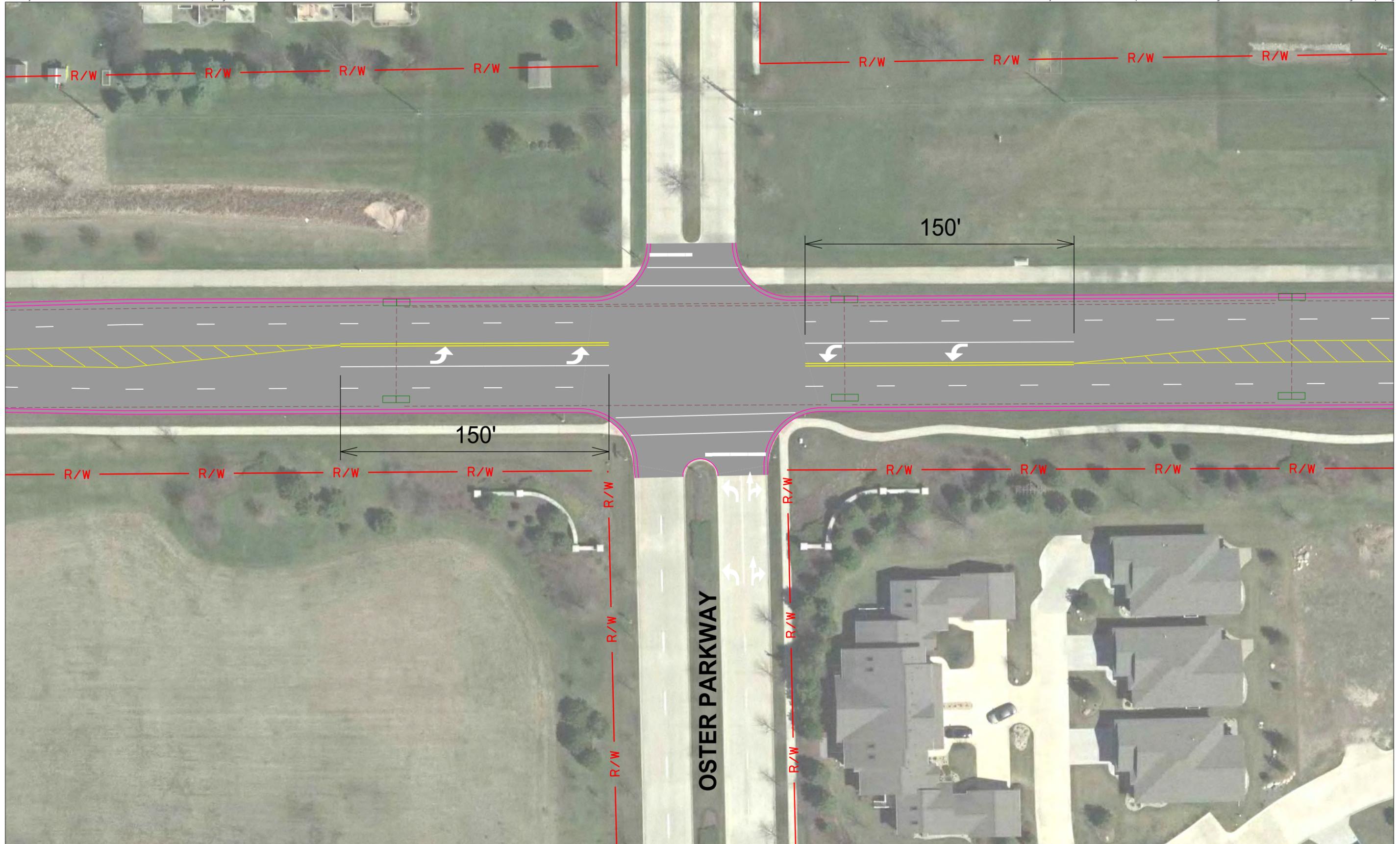


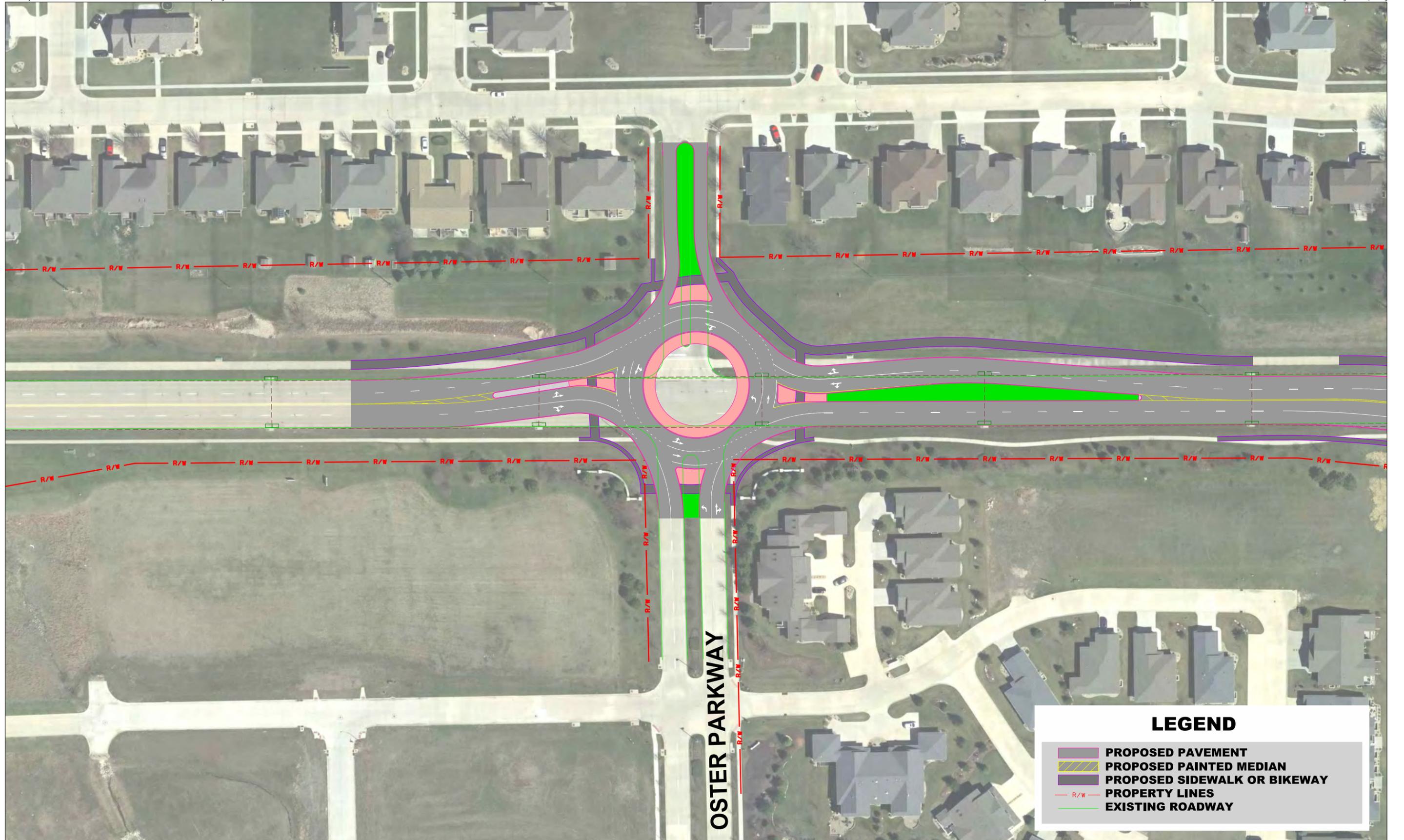
LEGEND

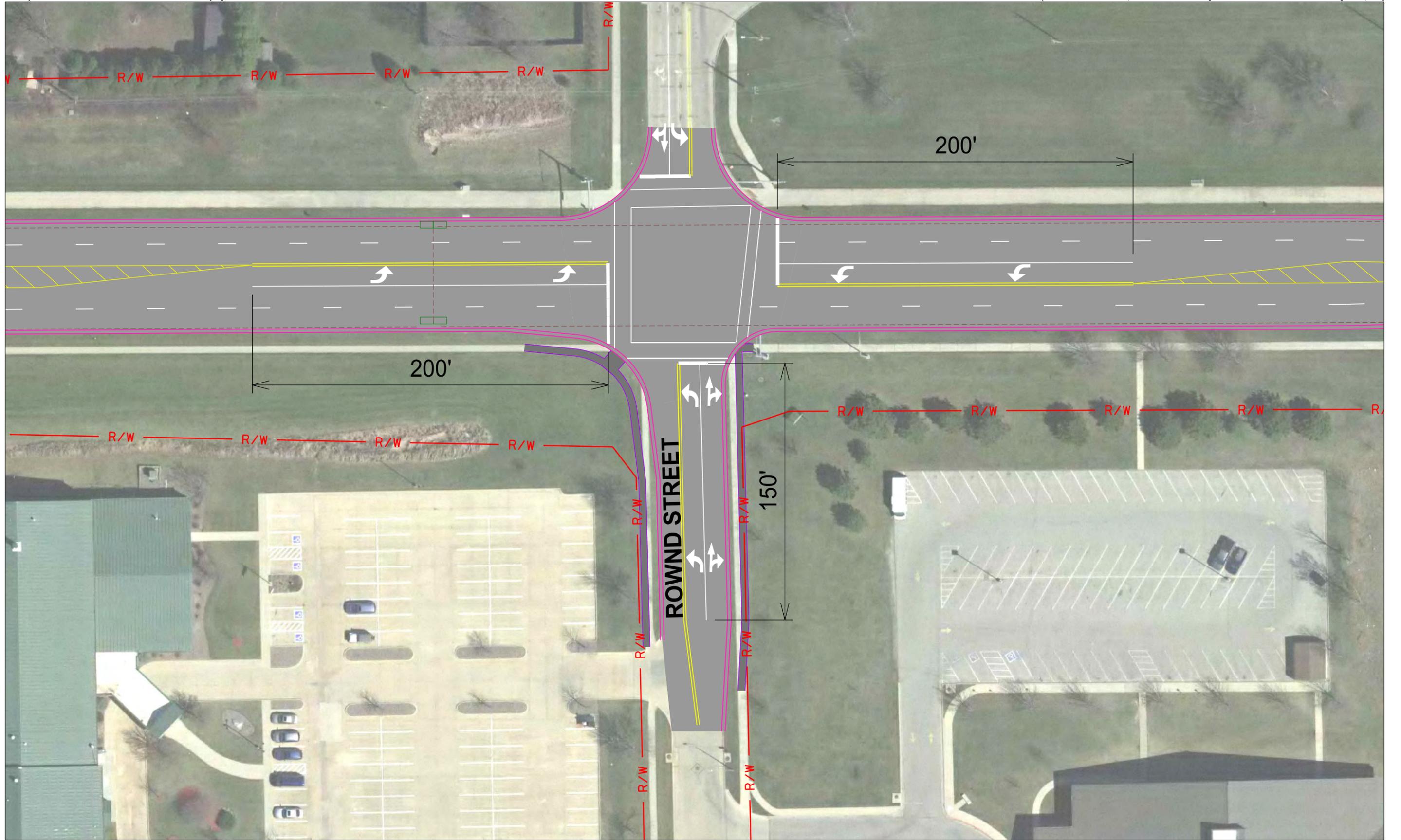
- PROPOSED PAVEMENT
- PROPOSED PAINTED MEDIAN
- PROPOSED SIDEWALK OR BIKEWAY
- PROPERTY LINES
- EXISTING ROADWAY

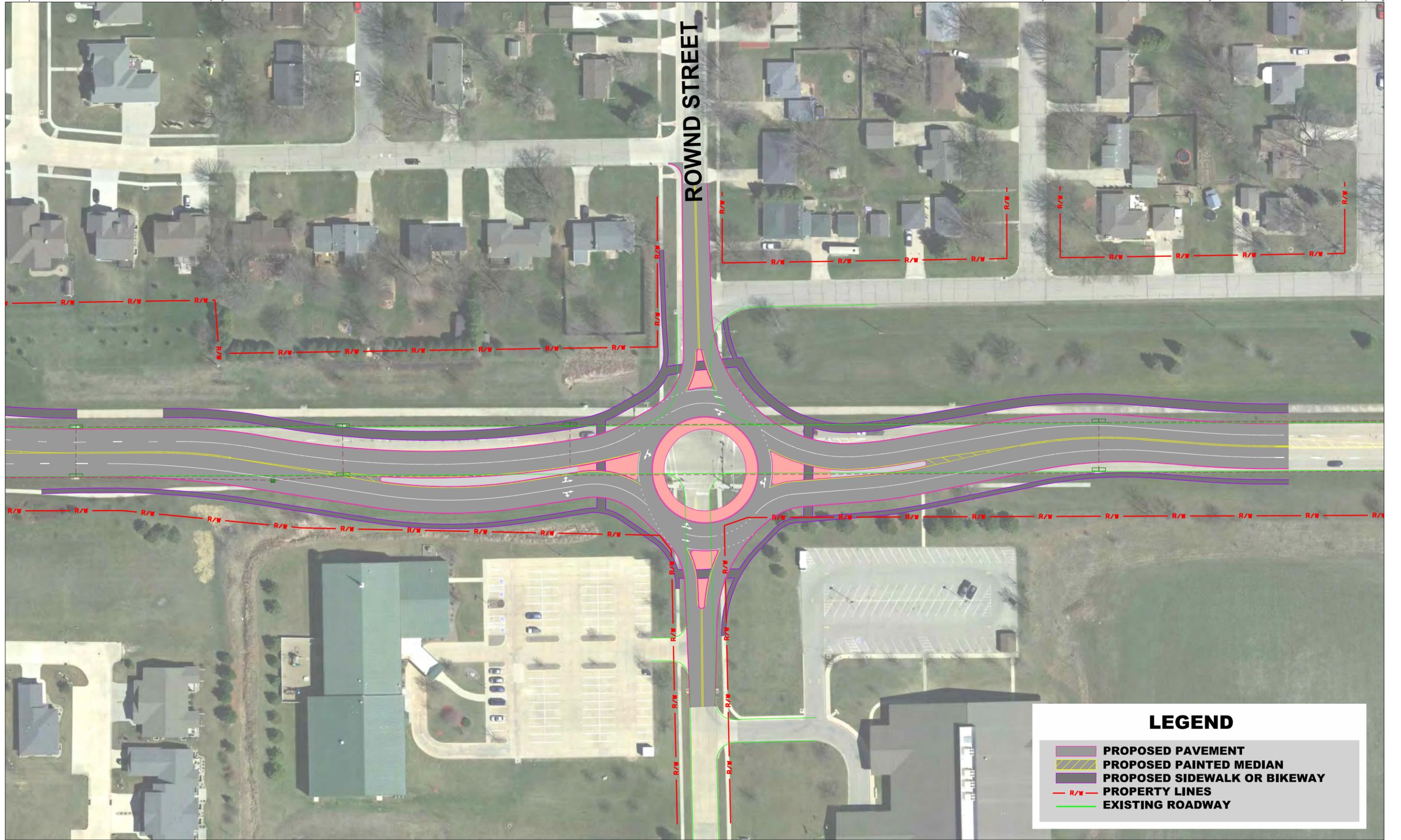




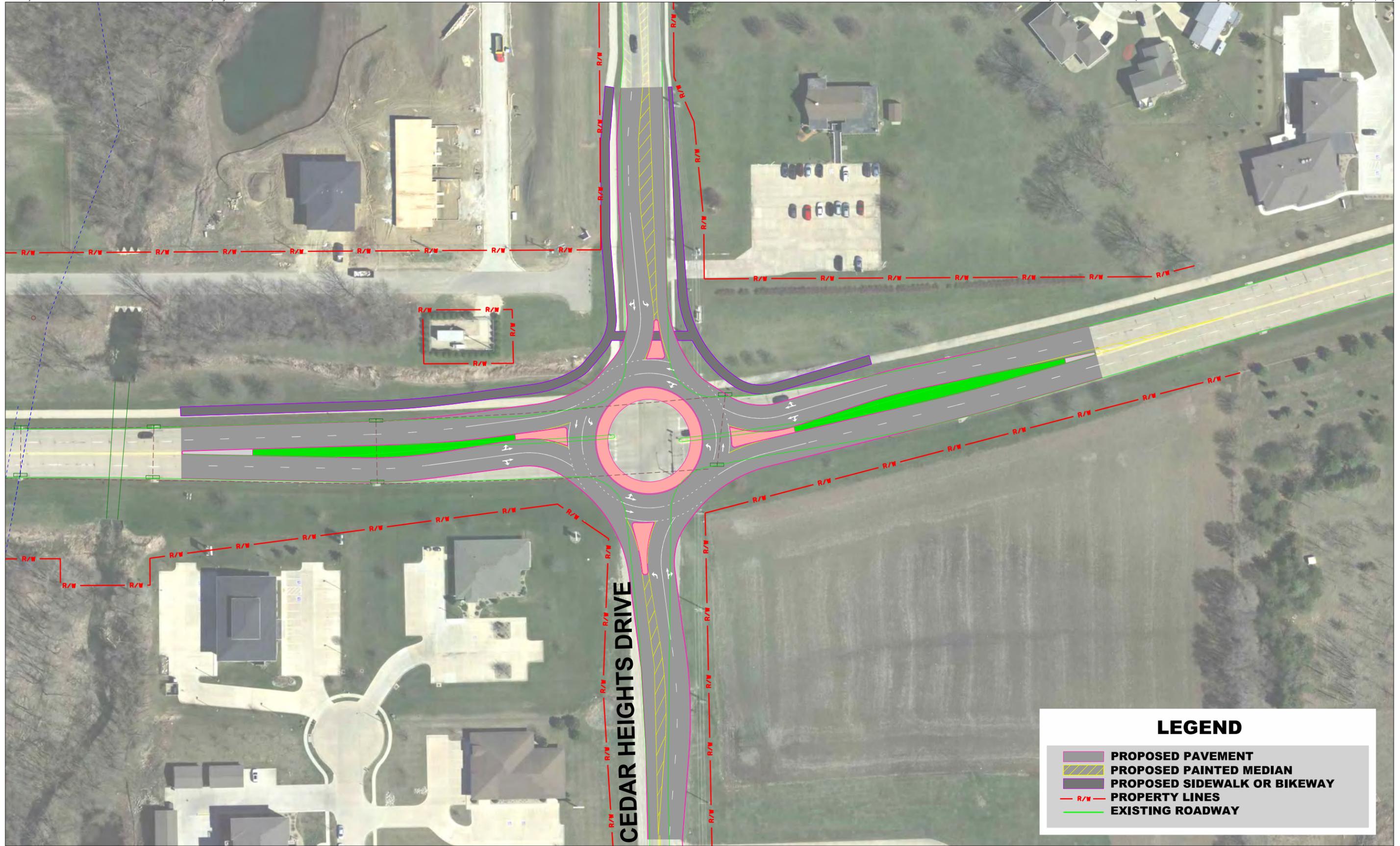












LEGEND

- PROPOSED PAVEMENT
- PROPOSED PAINTED MEDIAN
- PROPOSED SIDEWALK OR BIKEWAY
- PROPERTY LINES
- EXISTING ROADWAY

APPENDIX B
IMPROVEMENT ALTERNATIVE COST OPINIONS

OPINION OF PROBABLE PROJECT COSTS SUMMARY



GREENHILL RD CORRIDOR TRAFFIC STUDY
October 2, 2018
 CEDAR FALLS, IOWA
 PROJECT NO. 118.0463

INTERSECTION	WIDENING/TRAFFIC SIGNAL ALTERNATIVE ESTIMATE	ROUNDAABOUT ALTERNATIVE ESTIMATE
HUDSON RD & GREENHILL RD	\$1,180,200	-
ALGONQUIN DR & GREENHILL RD	\$977,950	-
ASHWORTH DR & GREENHILL RD	\$784,100	-
S. MAIN ST & GREENHILL RD	\$1,099,850	\$2,833,750
CONEFLOWER PKWY & GREENHILL RD	\$714,000	-
PRAIRIE PKWY & GREENHILL RD	\$1,163,400	\$2,059,400
ORCHARD HILL DR & GREENHILL RD	\$697,350	-
OSTER PKWY & GREENHILL RD	\$1,082,850	\$1,800,000 *
ROWND ST & GREENHILL RD	\$1,020,250	\$1,800,000 *
CEDAR HEIGHTS DR & GREENHILL RD	\$756,700	\$2,543,650

* Planning estimate for roundabout based on comparative intersection estimates

OPINION OF PROBABLE PROJECT COSTS



**GREENHILL RD CORRIDOR TRAFFIC STUDY
HUDSON RD & GREENHILL RD WIDENING
CEDAR FALLS, IOWA
PROJECT NO. 118.0463**

ITEM #	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	EXTENDED PRICE
1	Excavation, Class 10	1500	CY	\$ 7.00	\$ 10,500.00
2	Subgrade Preparation (1)	2900	SY	\$ 3.00	\$ 8,700.00
3	Modified Subbase (2)	2900	SY	\$ 12.00	\$ 34,800.00
4	Topsoil, Strip, Salvage and Respread (3)	1000	CY	\$ 8.00	\$ 8,000.00
5	Remove Existing Storm Intake (4)	15	EA	\$ 800.00	\$ 12,000.00
6	Remove Existing Storm Manhole (5)	1	EA	\$ 800.00	\$ 800.00
7	Manhole Adjustment	2	EA	\$ 500.00	\$ 1,000.00
8	Remove Existing Storm Sewer, RCP <24"	1000	LF	\$ 25.00	\$ 25,000.00
9	Storm Sewer, RCP, <24"	1200	LF	\$ 100.00	\$ 120,000.00
10	Storm Sewer Intake, Street (4)	15	EA	\$ 5,000.00	\$ 75,000.00
11	Storm Sewer Manhole	1	EA	\$ 5,000.00	\$ 5,000.00
12	Removal of Pavement	850	SY	\$ 5.00	\$ 4,250.00
13	PCC Pavement (6)	2350	SY	\$ 65.00	\$ 152,750.00
14	Pavement Markings	1	LS	\$ 10,000.00	\$ 10,000.00
15	Removal of Sidewalk	600	SY	\$ 20.00	\$ 12,000.00
16	Sidewalk, 4" (7)	200	SY	\$ 40.00	\$ 8,000.00
17	Sidewalk, 5" (8)	400	SY	\$ 40.00	\$ 16,000.00
18	Sidewalk, 6" (9)	50	SY	\$ 70.00	\$ 3,500.00
19	Detectable Warnings (9)	120	SF	\$ 45.00	\$ 5,400.00
20	PCC Repair/Rehab (10)	600	SY	\$ 70.00	\$ 42,000.00
21	Mobilization	1	LS	\$ 50,000.00	\$ 50,000.00
22	Traffic Control	1	LS	\$ 15,000.00	\$ 15,000.00
23	Traffic Signal Replacement	1	LS	\$ 200,000.00	\$ 200,000.00
24	Construction Survey	1	LS	\$ 15,000.00	\$ 15,000.00
25	Surface Restoration	1	LS	\$ 3,000.00	\$ 3,000.00
26	Erosion Control	1	LS	\$ 5,000.00	\$ 5,000.00
Subtotal:					\$ 842,700.00
Contingency (20%):					\$ 170,000.00
CONSTRUCTION TOTAL:					\$ 1,012,700.00
<u>Other Project Costs</u>					
Landscaping ¹¹ :					\$ -
Lighting ¹² :					\$ 7,500.00
Right of Way ¹³ :					\$ -
Utility Relocations ¹⁴ :					\$ -
Engineering, Construction, and Administration (~16%):					\$ 160,000.00
TOTAL PROJECT COST:					\$ 1,180,200.00

Notes - HUDSON RD & GREENHILL RD WIDENING

- (1) Assumes 1' of subgrade preparation extended 2' beyond the back of curb.
- (2) Assumes a minimum of 6" of modified subbase extended 2' beyond the back of curb.
- (3) Assumes 8" of topsoil strip and placement within the construction limits.
- (4) Remove and replace intakes to new back of curb.
- (5) Remove and replace manhole outside of proposed pavement.
- (6) Assumes an 8" pavement thickness.
- (7) Replacement of approx. 275' of 4' and 5' sidewalk within the project limits.
- (8) Replacement of approx. 350' of 10' shared use path within the project limits.
- (9) Construction of ADA ramps at intersection.
- (10) Assumes approximately 10% of the existing paved area will need maintenance rehab.
- (11) Assumes no landscaping enhancement.
- (12) Assumes relocation of one standard pole.
- (13) Assumes all improvements are within existing right-of-way.
- (14) Assumes there will be no major utility relocations.

OPINION OF PROBABLE PROJECT COSTS



GREENHILL RD CORRIDOR TRAFFIC STUDY
ALGONQUIN DR & GREENHILL RD WIDENING
CEDAR FALLS, IOWA
PROJECT NO. 118.0463

ITEM #	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	EXTENDED PRICE
1	Excavation, Class 10	1500	CY	\$ 7.00	\$ 10,500.00
2	Subgrade Preparation (1)	2700	SY	\$ 3.00	\$ 8,100.00
3	Modified Subbase (2)	2700	SY	\$ 12.00	\$ 32,400.00
4	Topsoil, Strip, Salvage and Respread (3)	600	CY	\$ 8.00	\$ 4,800.00
5	Remove Existing Storm Intake (4)	4	EA	\$ 800.00	\$ 3,200.00
6	Manhole Adjustment	2	EA	\$ 500.00	\$ 1,000.00
7	Remove Existing Storm Sewer, RCP <24"	1000	LF	\$ 25.00	\$ 25,000.00
8	Storm Sewer, RCP, <24"	1100	LF	\$ 100.00	\$ 110,000.00
9	Storm Sewer Intake, Street (4)	4	EA	\$ 5,000.00	\$ 20,000.00
10	Removal of Pavement	1050	SY	\$ 5.00	\$ 5,250.00
11	PCC Pavement (5)	2300	SY	\$ 65.00	\$ 149,500.00
12	Pavement Markings	1	LS	\$ 10,000.00	\$ 10,000.00
13	Removal of Sidewalk	200	SY	\$ 20.00	\$ 4,000.00
14	Sidewalk, 4" (6)	30	SY	\$ 40.00	\$ 1,200.00
15	Sidewalk, 5" (7)	45	SY	\$ 40.00	\$ 1,800.00
16	Sidewalk, 6" (8)	50	SY	\$ 70.00	\$ 3,500.00
17	Detectable Warnings (8)	60	SF	\$ 45.00	\$ 2,700.00
18	PCC Full Depth Patches (9)	650	SY	\$ 70.00	\$ 45,500.00
19	Mobilization	1	LS	\$ 50,000.00	\$ 50,000.00
20	Traffic Control	1	LS	\$ 10,000.00	\$ 10,000.00
21	Traffic Signal Installation	1	LS	\$ 200,000.00	\$ 200,000.00
22	Construction Survey	1	LS	\$ 15,000.00	\$ 15,000.00
23	Surface Restoration	1	LS	\$ 2,000.00	\$ 2,000.00
24	Erosion Control	1	LS	\$ 5,000.00	\$ 5,000.00
Subtotal:					\$ 720,450.00
Contingency (20%):					\$ 150,000.00
CONSTRUCTION TOTAL:					\$ 870,450.00
<u>Other Project Costs</u>					
Landscaping ¹⁰ :					\$ -
Lighting ¹¹ :					\$ 7,500.00
Right of Way ¹² :					\$ -
Utility Relocations ¹³ :					\$ -
Engineering, Construction, and Administration (~16%):					\$ 100,000.00
TOTAL PROJECT COST:					\$ 977,950.00

Notes - ALGONQUIN DR & GREENHILL RD WIDENING

- (1) Assumes 1' of subgrade preparation extended 2' beyond the back of curb.
- (2) Assumes a minimum of 6" of modified subbase extended 2' beyond the back of curb.
- (3) Assumes 8" of topsoil strip and placement within the construction limits.
- (4) Remove and replace intakes to new back of curb.
- (5) Assumes an 8" pavement thickness.
- (6) Replacement of approx. 50' of 5' sidewalk within the project limits.
- (7) Replacement of approx. 40' of 10' shared use path within the project limits.
- (8) Construction of ADA ramps at intersection.
- (9) Assumes approximately 10% of the existing paved area will need maintenance rehab.
- (10) Assumes no landscaping enhancement.
- (11) Assumes relocation of one standard pole.
- (12) Assumes all improvements are within existing right-of-way.
- (13) Assumes there will be no major utility relocations.

OPINION OF PROBABLE PROJECT COSTS



GREENHILL RD CORRIDOR TRAFFIC STUDY
 ASHWORTH DR & GREENHILL ROAD WIDENING
 CEDAR FALLS, IOWA
 PROJECT NO. 118.0463

ITEM #	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	EXTENDED PRICE
1	Excavation, Class 10	1500	CY	\$ 7.00	\$ 10,500.00
2	Subgrade Preparation (1)	2700	SY	\$ 3.00	\$ 8,100.00
3	Modified Subbase (2)	2700	SY	\$ 12.00	\$ 32,400.00
4	Topsoil, Strip, Salvage and Respread (3)	700	CY	\$ 8.00	\$ 5,600.00
5	Remove Existing Storm Intake (4)	6	EA	\$ 800.00	\$ 4,800.00
8	Remove Existing Storm Sewer, RCP <24"	1000	LF	\$ 25.00	\$ 25,000.00
9	Storm Sewer, RCP, <24"	1100	LF	\$ 100.00	\$ 110,000.00
10	Storm Sewer Intake, Street (4)	6	EA	\$ 5,000.00	\$ 30,000.00
12	Removal of Pavement	800	SY	\$ 5.00	\$ 4,000.00
13	PCC Pavement (6)	2200	SY	\$ 65.00	\$ 143,000.00
14	Pavement Markings	1	LS	\$ 10,000.00	\$ 10,000.00
15	Removal of Sidewalk	300	SY	\$ 20.00	\$ 6,000.00
17	Sidewalk, 5" (7)	100	SY	\$ 40.00	\$ 4,000.00
18	Sidewalk, 6" (8)	50	SY	\$ 70.00	\$ 3,500.00
19	Detectable Warnings (8)	60	SF	\$ 45.00	\$ 2,700.00
20	PCC Full Depth Patches (9)	700	SY	\$ 70.00	\$ 49,000.00
21	Mobilization	1	LS	\$ 40,000.00	\$ 40,000.00
22	Traffic Control	1	LS	\$ 15,000.00	\$ 15,000.00
23	Traffic Signal (10)	1	LS	\$ -	\$ -
24	Construction Survey	1	LS	\$ 15,000.00	\$ 15,000.00
25	Surface Restoration	1	LS	\$ 3,000.00	\$ 3,000.00
26	Erosion Control	1	LS	\$ 5,000.00	\$ 5,000.00
Subtotal:					\$ 526,600.00
Contingency (20%):					\$ 110,000.00
CONSTRUCTION TOTAL:					\$ 636,600.00
<u>Other Project Costs</u>					
Landscaping ¹¹ :					\$ -
Lighting ¹² :					\$ 7,500.00
Right of Way ¹³ :					\$ -
Utility Relocations ¹⁴ :					\$ -
Engineering, Construction, and Administration (~16%):					\$ 140,000.00
TOTAL PROJECT COST:					\$ 784,100.00

Notes - ASHWORTH DR & GREENHILL ROAD WIDENING

- (1) Assumes 1' of subgrade preparation extended 2' beyond the back of curb.
- (2) Assumes a minimum of 6" of modified subbase extended 2' beyond the back of curb.
- (3) Assumes 8" of topsoil strip and placement within the construction limits.
- (4) Remove and replace intakes to new back of curb.
- (5) Remove and replace manhole outside of proposed pavement.
- (6) Assumes an 8" pavement thickness.
- (7) Replacement of approx. 90' of 10' shared use path within the project limits.
- (8) Construction of ADA ramps at intersection.
- (9) Assumes approximately 10% of the existing paved area will need maintenance rehab.
- (10) Either Ashworth or Algonquin may require additional traffic control. Cost incl w/ Algonquin.
- (11) Assumes no landscaping enhancement.
- (12) Assumes relocation of one standard pole.
- (13) Assumes all improvements are within existing right-of-way.
- (14) Assumes there will be no major utility relocations.

OPINION OF PROBABLE PROJECT COSTS



GREENHILL RD CORRIDOR TRAFFIC STUDY
 S. MAIN ST & GREENHILL RD WIDENING
 CEDAR FALLS, IOWA
 PROJECT NO. 118.0463

ITEM #	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	EXTENDED PRICE
1	Excavation, Class 10	2000	CY	\$ 7.00	\$ 14,000.00
2	Subgrade Preparation (1)	4000	SY	\$ 3.00	\$ 12,000.00
3	Modified Subbase (2)	4000	SY	\$ 12.00	\$ 48,000.00
4	Topsoil, Strip, Salvage and Respread (3)	1000	CY	\$ 8.00	\$ 8,000.00
5	Remove Existing Storm Intake (4)	7	EA	\$ 800.00	\$ 5,600.00
6	Manhole Adjustment	1	EA	\$ 500.00	\$ 500.00
7	Remove Existing Storm Sewer, RCP <24"	350	LF	\$ 25.00	\$ 8,750.00
8	Storm Sewer, RCP, <24"	400	LF	\$ 100.00	\$ 40,000.00
9	Storm Sewer Intake, Street (4)	7	EA	\$ 5,000.00	\$ 35,000.00
10	Removal of Pavement	1700	SY	\$ 5.00	\$ 8,500.00
11	PCC Pavement (5)	3400	SY	\$ 65.00	\$ 221,000.00
12	Pavement Markings	1	LS	\$ 10,000.00	\$ 10,000.00
13	Removal of Sidewalk	450	SY	\$ 20.00	\$ 9,000.00
14	Sidewalk, 4" (6)	350	SY	\$ 40.00	\$ 14,000.00
15	Sidewalk, 5" (7)	150	SY	\$ 40.00	\$ 6,000.00
16	Sidewalk, 6" (8)	50	SY	\$ 70.00	\$ 3,500.00
17	Detectable Warnings (8)	100	SF	\$ 45.00	\$ 4,500.00
18	PCC Full Depth Patches (9)	700	SY	\$ 70.00	\$ 49,000.00
19	Mobilization	1	LS	\$ 40,000.00	\$ 40,000.00
20	Traffic Control	1	LS	\$ 15,000.00	\$ 15,000.00
21	Traffic Signal Replacement	1	LS	\$ 200,000.00	\$ 200,000.00
22	Construction Survey	1	LS	\$ 15,000.00	\$ 15,000.00
23	Surface Restoration	1	LS	\$ 5,000.00	\$ 5,000.00
24	Erosion Control	1	LS	\$ 5,000.00	\$ 5,000.00
Subtotal:					\$ 777,350.00
Contingency (20%):					\$ 160,000.00
CONSTRUCTION TOTAL:					\$ 937,350.00
<u>Other Project Costs</u>					
Landscaping ¹⁰ :					\$ -
Lighting ¹¹ :					\$ -
Right of Way ¹² :					\$ -
Utility Relocations ¹³ :					\$ 12,500.00
Engineering, Construction, and Administration (~16%):					\$ 150,000.00
TOTAL PROJECT COST:					\$ 1,099,850.00

Notes - S. MAIN ST & GREENHILL RD WIDENING

- (1) Assumes 1' of subgrade preparation extended 2' beyond the back of curb.
- (2) Assumes a minimum of 6" of modified subbase extended 2' beyond the back of curb.
- (3) Assumes 8" of topsoil strip and placement within the construction limits.
- (4) Remove and replace intakes to new back of curb.
- (5) Assumes an 8" pavement thickness.
- (6) Replacement of approx. 520' of 5' sidewalk within the project limits.
- (7) Replacement of approx. 150' of 10' shared use path within the project limits.
- (8) Construction of ADA ramps at intersection.
- (9) Assumes approximately 10% of the existing paved area will need maintenance rehab.
- (10) Assumes no landscaping enhancement.
- (11) Assumes no additional lighting is needed for the improvements.
- (12) Assumes all improvements are within existing right-of-way.
- (13) Assumes there will be no major utility relocations, minor gas relocation elements per CFU.

OPINION OF PROBABLE PROJECT COSTS



GREENHILL RD CORRIDOR TRAFFIC STUDY
 CONEFLOWER PARKWAY & GREENHILL RD WIDENING
 CEDAR FALLS, IOWA
 PROJECT NO. 118.0463

ITEM #	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	EXTENDED PRICE
1	Excavation, Class 10	1500	CY	\$ 7.00	\$ 10,500.00
2	Subgrade Preparation (1)	3100	SY	\$ 3.00	\$ 9,300.00
3	Modified Subbase (2)	3100	SY	\$ 12.00	\$ 37,200.00
4	Topsoil, Strip, Salvage and Respread (3)	800	CY	\$ 8.00	\$ 6,400.00
5	Remove Existing Storm Intake (4)	5	EA	\$ 800.00	\$ 4,000.00
6	Remove Existing Storm Sewer, RCP <24"	500	LF	\$ 25.00	\$ 12,500.00
7	Storm Sewer, RCP, <24"	550	LF	\$ 100.00	\$ 55,000.00
8	Storm Sewer Intake, Street (4)	5	EA	\$ 5,000.00	\$ 25,000.00
9	Removal of Pavement	1300	SY	\$ 5.00	\$ 6,500.00
10	PCC Pavement (5)	2600	SY	\$ 65.00	\$ 169,000.00
11	Pavement Markings	1	LS	\$ 10,000.00	\$ 10,000.00
12	Removal of Sidewalk	550	SY	\$ 20.00	\$ 11,000.00
13	Sidewalk, 4" (6)	30	SY	\$ 40.00	\$ 1,200.00
14	Sidewalk, 5" (7)	500	SY	\$ 40.00	\$ 20,000.00
15	Sidewalk, 6" (8)	40	SY	\$ 70.00	\$ 2,800.00
16	Detectable Warnings (8)	80	SF	\$ 45.00	\$ 3,600.00
17	PCC Full Depth Patches (9)	600	SY	\$ 70.00	\$ 42,000.00
18	Mobilization	1	LS	\$ 40,000.00	\$ 40,000.00
19	Traffic Control	1	LS	\$ 15,000.00	\$ 15,000.00
20	Traffic Signal Modification	1	LS	\$ -	\$ -
21	Construction Survey	1	LS	\$ 15,000.00	\$ 15,000.00
22	Surface Restoration	1	LS	\$ 3,000.00	\$ 3,000.00
23	Erosion Control	1	LS	\$ 5,000.00	\$ 5,000.00
Subtotal:					\$ 504,000.00
Contingency (20%):					\$ 110,000.00
CONSTRUCTION TOTAL:					\$ 614,000.00
<u>Other Project Costs</u>					
Landscaping ¹⁰ :					\$ -
Lighting ¹¹ :					\$ -
Right of Way ¹² :					\$ -
Utility Relocations ¹³ :					\$ -
Engineering, Construction, and Administration (~16%):					\$ 100,000.00
TOTAL PROJECT COST:					\$ 714,000.00

Notes - CONEFLOWER PARKWAY & GREENHILL RD WIDENING

- (1) Assumes 1' of subgrade preparation extended 2' beyond the back of curb.
- (2) Assumes a minimum of 6" of modified subbase extended 2' beyond the back of curb.
- (3) Assumes 8" of topsoil strip and placement within the construction limits.
- (4) Remove and replace intakes to new back of curb.
- (5) Assumes an 8" pavement thickness.
- (6) Replacement of approx. 60' of 4' sidewalk within the project limits.
- (7) Replacement of approx. 380' of 10' shared use path within the project limits.
- (8) Construction of ADA ramps at intersection.
- (9) Assumes approximately 10% of the existing paved area will need maintenance rehab.
- (10) Assumes no landscaping enhancement.
- (11) Assumes no additional lighting is needed for the improvements.
- (12) Assumes all improvements are within existing right-of-way.
- (13) Assumes there will be no major utility relocations.

OPINION OF PROBABLE PROJECT COSTS



GREENHILL RD CORRIDOR TRAFFIC STUDY
 PRAIRIE PARKWAY & GREENHILL RD WIDENING
 CEDAR FALLS, IOWA
 PROJECT NO. 118.0463

ITEM #	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	EXTENDED PRICE
1	Excavation, Class 10	1300	CY	\$ 7.00	\$ 9,100.00
2	Subgrade Preparation (1)	3800	SY	\$ 3.00	\$ 11,400.00
3	Modified Subbase (2)	3800	SY	\$ 12.00	\$ 45,600.00
4	Topsoil, Strip, Salvage and Respread (3)	900	CY	\$ 8.00	\$ 7,200.00
5	Remove Existing Storm Intake (4)	12	EA	\$ 800.00	\$ 9,600.00
6	Remove Existing Storm Sewer, RCP <24"	1400	LF	\$ 25.00	\$ 35,000.00
7	Storm Sewer, RCP, <24"	1500	LF	\$ 100.00	\$ 150,000.00
8	Storm Sewer Intake, Street (4)	12	EA	\$ 5,000.00	\$ 60,000.00
9	Removal of Pavement	1500	SY	\$ 5.00	\$ 7,500.00
10	PCC Pavement (5)	3200	SY	\$ 65.00	\$ 208,000.00
11	Pavement Markings	1	LS	\$ 10,000.00	\$ 10,000.00
12	Removal of Sidewalk	400	SY	\$ 20.00	\$ 8,000.00
13	Sidewalk, 4" (6)	40	SY	\$ 40.00	\$ 1,600.00
14	Sidewalk, 5" (7)	250	SY	\$ 40.00	\$ 10,000.00
15	Sidewalk, 6" (8)	150	SY	\$ 70.00	\$ 10,500.00
16	Detectable Warnings (8)	120	SF	\$ 45.00	\$ 5,400.00
17	PCC Full Depth Patches (9)	950	SY	\$ 70.00	\$ 66,500.00
18	Mobilization	1	LS	\$ 40,000.00	\$ 40,000.00
19	Traffic Control	1	LS	\$ 15,000.00	\$ 15,000.00
20	Traffic Signal Modification	1	LS	\$ 100,000.00	\$ 100,000.00
21	Construction Survey	1	LS	\$ 15,000.00	\$ 15,000.00
22	Surface Restoration	1	LS	\$ 3,000.00	\$ 3,000.00
23	Erosion Control	1	LS	\$ 5,000.00	\$ 5,000.00
Subtotal:					\$ 833,400.00
Contingency (20%):					\$ 170,000.00
CONSTRUCTION TOTAL:					\$ 1,003,400.00
<u>Other Project Costs</u>					
Landscaping ¹⁰ :					\$ -
Lighting ¹¹ :					\$ -
Right of Way ¹² :					\$ -
Utility Relocations ¹³ :					\$ -
Engineering, Construction, and Administration (~16%):					\$ 160,000.00
TOTAL PROJECT COST:					\$ 1,163,400.00

Notes - PRAIRIE PARKWAY & GREENHILL RD WIDENING

- (1) Assumes 1' of subgrade preparation extended 2' beyond the back of curb.
- (2) Assumes a minimum of 6" of modified subbase extended 2' beyond the back of curb.
- (3) Assumes 8" of topsoil strip and placement within the construction limits.
- (4) Remove and replace intakes to new back of curb.
- (5) Assumes an 8" pavement thickness.
- (6) Replacement of approx. 65' of 5' sidewalk within the project limits.
- (7) Replacement of approx. 200' of 10' shared use path within the project limits.
- (8) Construction of ADA ramps at intersection.
- (9) Assumes approximately 10% of the existing paved area will need maintenance rehab.
- (10) Assumes no landscaping enhancement.
- (11) Assumes no additional lighting is needed for the improvements.
- (12) Assumes all improvements are within existing right-of-way.
- (13) Assumes there will be no major utility relocations.

OPINION OF PROBABLE PROJECT COSTS



GREENHILL RD CORRIDOR TRAFFIC STUDY
 ORCHARD HILL DR & GREENHILL RD WIDENING
 CEDAR FALLS, IOWA
 PROJECT NO. 118.0463

ITEM #	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	EXTENDED PRICE
1	Excavation, Class 10	1000	CY	\$ 7.00	\$ 7,000.00
2	Subgrade Preparation (1)	2700	SY	\$ 3.00	\$ 8,100.00
3	Modified Subbase (2)	2700	SY	\$ 12.00	\$ 32,400.00
4	Topsoil, Strip, Salvage and Respread (3)	1000	CY	\$ 8.00	\$ 8,000.00
5	Remove Existing Storm Intake (4)	8	EA	\$ 800.00	\$ 6,400.00
6	Remove Existing Storm Sewer, RCP <24"	550	LF	\$ 25.00	\$ 13,750.00
7	Storm Sewer, RCP, <24"	650	LF	\$ 100.00	\$ 65,000.00
8	Storm Sewer Intake, Street (4)	8	EA	\$ 5,000.00	\$ 40,000.00
9	Removal of Pavement	1000	SY	\$ 5.00	\$ 5,000.00
10	PCC Pavement (5)	2200	SY	\$ 65.00	\$ 143,000.00
11	Pavement Markings	1	LS	\$ 10,000.00	\$ 10,000.00
12	Removal of Sidewalk	450	SY	\$ 20.00	\$ 9,000.00
13	Sidewalk, 4" (6)	10	SY	\$ 40.00	\$ 400.00
14	Sidewalk, 5" (7)	375	SY	\$ 40.00	\$ 15,000.00
15	Sidewalk, 6" (8)	30	SY	\$ 70.00	\$ 2,100.00
16	Detectable Warnings (8)	60	SF	\$ 45.00	\$ 2,700.00
17	PCC Full Depth Patches (9)	700	SY	\$ 70.00	\$ 49,000.00
18	Mobilization	1	LS	\$ 40,000.00	\$ 40,000.00
19	Traffic Control	1	LS	\$ 15,000.00	\$ 15,000.00
20	Traffic Signal	1	LS	\$ -	\$ -
21	Construction Survey	1	LS	\$ 15,000.00	\$ 15,000.00
22	Surface Restoration	1	LS	\$ 3,000.00	\$ 3,000.00
23	Erosion Control	1	LS	\$ 5,000.00	\$ 5,000.00
Subtotal:					\$ 494,850.00
Contingency (20%):					\$ 100,000.00
CONSTRUCTION TOTAL:					\$ 594,850.00
<u>Other Project Costs</u>					
Landscaping ¹⁰ :					\$ -
Lighting ¹¹ :					\$ 7,500.00
Right of Way ¹² :					\$ -
Utility Relocations ¹³ :					\$ -
Engineering, Construction, and Administration (~16%):					\$ 95,000.00
TOTAL PROJECT COST:					\$ 697,350.00

Notes - PRAIRIE PARKWAY & GREENHILL RD WIDENING

- (1) Assumes 1' of subgrade preparation extended 2' beyond the back of curb.
- (2) Assumes a minimum of 6" of modified subbase extended 2' beyond the back of curb.
- (3) Assumes 8" of topsoil strip and placement within the construction limits.
- (4) Remove and replace intakes to new back of curb.
- (5) Assumes an 8" pavement thickness.
- (6) Replacement of approx. 20' of 4' sidewalk within the project limits.
- (7) Replacement of approx. 340' of 10' shared use path within the project limits.
- (8) Construction of ADA ramps at intersection.
- (9) Assumes approximately 10% of the existing paved area will need maintenance rehab.
- (10) Assumes no landscaping enhancement.
- (11) Assumes relocation of one standard pole.
- (12) Assumes all improvements are within existing right-of-way.
- (13) Assumes there will be no major utility relocations.

OPINION OF PROBABLE PROJECT COSTS



GREENHILL RD CORRIDOR TRAFFIC STUDY
 OSTER PARKWAY & GREENHILL RD WIDENING
 CEDAR FALLS, IOWA
 PROJECT NO. 118.0463

ITEM #	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	EXTENDED PRICE
1	Excavation, Class 10	1000	CY	\$ 7.00	\$ 7,000.00
2	Subgrade Preparation (1)	2800	SY	\$ 3.00	\$ 8,400.00
3	Modified Subbase (2)	2800	SY	\$ 12.00	\$ 33,600.00
4	Topsoil, Strip, Salvage and Respread (3)	1000	CY	\$ 8.00	\$ 8,000.00
5	Remove Existing Storm Intake (4)	10	EA	\$ 800.00	\$ 8,000.00
6	Remove Existing Storm Sewer, RCP <24"	1100	LF	\$ 25.00	\$ 27,500.00
7	Storm Sewer, RCP, <24"	1200	LF	\$ 100.00	\$ 120,000.00
8	Storm Sewer Intake, Street (4)	10	EA	\$ 5,000.00	\$ 50,000.00
9	Removal of Pavement	1200	SY	\$ 5.00	\$ 6,000.00
10	PCC Pavement (5)	2300	SY	\$ 65.00	\$ 149,500.00
11	Pavement Markings	1	LS	\$ 10,000.00	\$ 10,000.00
12	Removal of Sidewalk	100	SY	\$ 20.00	\$ 2,000.00
13	Sidewalk, 4" (6)	20	SY	\$ 40.00	\$ 800.00
14	Sidewalk, 6" (7)	70	SY	\$ 70.00	\$ 4,900.00
15	Detectable Warnings (7)	70	SF	\$ 45.00	\$ 3,150.00
16	PCC Full Depth Patches (8)	800	SY	\$ 70.00	\$ 56,000.00
17	Mobilization	1	LS	\$ 40,000.00	\$ 40,000.00
18	Traffic Control	1	LS	\$ 15,000.00	\$ 15,000.00
19	Traffic Signal Installation	1	LS	\$ 200,000.00	\$ 200,000.00
20	Construction Survey	1	LS	\$ 15,000.00	\$ 15,000.00
21	Surface Restoration	1	LS	\$ 3,000.00	\$ 3,000.00
22	Erosion Control	1	LS	\$ 5,000.00	\$ 5,000.00
Subtotal:					\$ 772,850.00
Contingency (20%):					\$ 160,000.00
CONSTRUCTION TOTAL:					\$ 932,850.00
<u>Other Project Costs</u>					
Landscaping ⁹ :					\$ -
Lighting ¹⁰ :					\$ -
Right of Way ¹¹ :					\$ -
Utility Relocations ¹² :					\$ -
Engineering, Construction, and Administration (~16%):					\$ 150,000.00
TOTAL PROJECT COST:					\$ 1,082,850.00

Notes - OSTER PARKWAY & GREENHILL RD WIDENING

- (1) Assumes 1' of subgrade preparation extended 2' beyond the back of curb.
- (2) Assumes a minimum of 6" of modified subbase extended 2' beyond the back of curb.
- (3) Assumes 8" of topsoil strip and placement within the construction limits.
- (4) Remove and replace intakes to new back of curb.
- (5) Assumes an 8" pavement thickness.
- (6) Replacement of approx. 20' of 4' sidewalk within the project limits.
- (7) Construction of ADA ramps at intersection.
- (8) Assumes approximately 10% of the existing paved area will need maintenance rehab.
- (9) Assumes no landscaping enhancement.
- (10) Assumes no additional lighting is needed for the improvements.
- (11) Assumes all improvements are within existing right-of-way.
- (12) Assumes there will be no major utility relocations.

OPINION OF PROBABLE PROJECT COSTS



GREENHILL RD CORRIDOR TRAFFIC STUDY
 ROWND ST & GREENHILL RD WIDENING
 CEDAR FALLS, IOWA
 PROJECT NO. 118.0463

ITEM #	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	EXTENDED PRICE
1	Excavation, Class 10	1200	CY	\$ 7.00	\$ 8,400.00
2	Subgrade Preparation (1)	3500	SY	\$ 3.00	\$ 10,500.00
3	Modified Subbase (2)	3500	SY	\$ 12.00	\$ 42,000.00
4	Topsoil, Strip, Salvage and Respread (3)	1000	CY	\$ 8.00	\$ 8,000.00
5	Remove Existing Storm Intake (4)	6	EA	\$ 800.00	\$ 4,800.00
6	Remove Existing Storm Sewer, RCP <24"	1200	LF	\$ 25.00	\$ 30,000.00
7	Storm Sewer, RCP, <24"	1250	LF	\$ 100.00	\$ 125,000.00
8	Storm Sewer Intake, Street (4)	6	EA	\$ 5,000.00	\$ 30,000.00
9	Removal of Pavement	1200	SY	\$ 5.00	\$ 6,000.00
10	PCC Pavement (5)	2800	SY	\$ 65.00	\$ 182,000.00
11	Pavement Markings	1	LS	\$ 10,000.00	\$ 10,000.00
12	Removal of Sidewalk	325	SY	\$ 20.00	\$ 6,500.00
13	Sidewalk, 4" (6)	290	SY	\$ 40.00	\$ 11,600.00
14	Sidewalk, 5" (7)	15	SY	\$ 40.00	\$ 600.00
15	Sidewalk, 6" (8)	60	SY	\$ 70.00	\$ 4,200.00
16	Detectable Warnings (8)	70	SF	\$ 45.00	\$ 3,150.00
17	PCC Full Depth Patches (9)	850	SY	\$ 70.00	\$ 59,500.00
18	Mobilization	1	LS	\$ 40,000.00	\$ 40,000.00
19	Traffic Control	1	LS	\$ 15,000.00	\$ 15,000.00
20	Traffic Signal Modification	1	LS	\$ 100,000.00	\$ 100,000.00
21	Construction Survey	1	LS	\$ 15,000.00	\$ 15,000.00
22	Surface Restoration	1	LS	\$ 3,000.00	\$ 3,000.00
23	Erosion Control	1	LS	\$ 5,000.00	\$ 5,000.00
Subtotal:					\$ 720,250.00
Contingency (20%):					\$ 150,000.00
CONSTRUCTION TOTAL:					\$ 870,250.00
<u>Other Project Costs</u>					
Landscaping ¹⁰ :					\$ -
Lighting ¹¹ :					\$ -
Right of Way ¹² :					\$ 10,000.00
Utility Relocations ¹³ :					\$ -
Engineering, Construction, and Administration (~16%):					\$ 140,000.00
TOTAL PROJECT COST:					\$ 1,020,250.00

Notes - ROWND ST & GREENHILL RD WIDENING

- (1) Assumes 1' of subgrade preparation extended 2' beyond the back of curb.
- (2) Assumes a minimum of 6" of modified subbase extended 2' beyond the back of curb.
- (3) Assumes 8" of topsoil strip and placement within the construction limits.
- (4) Remove and replace intakes to new back of curb.
- (5) Assumes an 8" pavement thickness.
- (6) Replacement of approx. 20' of 4' sidewalk within the project limits.
- (7) Replacement of approx. 340' of 10' shared use path within the project limits.
- (8) Construction of ADA ramps at intersection.
- (9) Assumes approximately 10% of the existing paved area will need maintenance rehab.
- (10) Assumes no landscaping enhancement.
- (11) Assumes relocation of one standard pole.
- (12) Assumes acquisition of 800 sf of right-of-way south of the intersection to accommodate the widening of Round Street.
- (13) Assumes there will be no major utility relocations.

OPINION OF PROBABLE PROJECT COSTS



GREENHILL RD CORRIDOR TRAFFIC STUDY
 CEDAR HEIGHTS DR & GREENHILL RD WIDENING
 CEDAR FALLS, IOWA
 PROJECT NO. 118.0463

ITEM #	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	EXTENDED PRICE
1	Excavation, Class 10	600	CY	\$ 7.00	\$ 4,200.00
2	Subgrade Preparation (1)	1600	SY	\$ 3.00	\$ 4,800.00
3	Modified Subbase (2)	1600	SY	\$ 12.00	\$ 19,200.00
4	Topsoil, Strip, Salvage and Respread (3)	1000	CY	\$ 8.00	\$ 8,000.00
5	Remove Existing Storm Intake (4)	3	EA	\$ 800.00	\$ 2,400.00
6	Remove Existing Storm Sewer, RCP <24"	50	LF	\$ 25.00	\$ 1,250.00
7	Storm Sewer, RCP, <24"	60	LF	\$ 100.00	\$ 6,000.00
8	Storm Sewer Intake, Street (4)	3	EA	\$ 5,000.00	\$ 15,000.00
9	Removal of Pavement	600	SY	\$ 5.00	\$ 3,000.00
10	PCC Pavement (5)	1500	SY	\$ 65.00	\$ 97,500.00
11	Pavement Markings	1	LS	\$ 10,000.00	\$ 10,000.00
12	Removal of Sidewalk	80	SY	\$ 20.00	\$ 1,600.00
13	Sidewalk, 4" (6)	100	SY	\$ 40.00	\$ 4,000.00
14	Sidewalk, 5" (7)	15	SY	\$ 40.00	\$ 600.00
15	Sidewalk, 6" (8)	25	SY	\$ 70.00	\$ 1,750.00
16	Detectable Warnings (8)	20	SF	\$ 45.00	\$ 900.00
17	PCC Full Depth Patches (9)	500	SY	\$ 70.00	\$ 35,000.00
18	Mobilization	1	LS	\$ 40,000.00	\$ 40,000.00
19	Traffic Control	1	LS	\$ 15,000.00	\$ 15,000.00
20	Traffic Signal Replacement	1	LS	\$ 200,000.00	\$ 200,000.00
21	Construction Survey	1	LS	\$ 15,000.00	\$ 15,000.00
22	Surface Restoration	1	LS	\$ 3,000.00	\$ 3,000.00
23	Erosion Control	1	LS	\$ 5,000.00	\$ 5,000.00
Subtotal:					\$ 493,200.00
Contingency (20%):					\$ 100,000.00
CONSTRUCTION TOTAL:					\$ 593,200.00
<u>Other Project Costs</u>					
Landscaping ¹⁰ :					\$ -
Lighting ¹¹ :					\$ -
Right of Way ¹² :					\$ -
Utility Relocations ¹³ :					\$ 18,500.00
Engineering, Construction, and Administration (~16%):					\$ 100,000.00
TOTAL PROJECT COST:					\$ 711,700.00

Notes - CEDAR HEIGHTS DR & GREENHILL RD WIDENING

- (1) Assumes 1' of subgrade preparation extended 2' beyond the back of curb.
- (2) Assumes a minimum of 6" of modified subbase extended 2' beyond the back of curb.
- (3) Assumes 8" of topsoil strip and placement within the construction limits.
- (4) Remove and replace intakes to new back of curb.
- (5) Assumes an 8" pavement thickness.
- (6) Replacement of approx. 100' of 5' sidewalk within the project limits.
- (7) Replacement of approx. 20' of 10' shared use path within the project limits.
- (8) Construction of ADA ramps at intersection.
- (9) Assumes approximately 10% of the existing paved area will need maintenance rehab.
- (10) Assumes no landscaping enhancement.
- (11) Assumes relocation of one standard pole.
- (12) Assumes all improvements are within existing right-of-way.
- (13) Assumes there will be no major utility relocations, minor gas relocation elements per CFU.

OPINION OF PROBABLE PROJECT COSTS



GREENHILL RD CORRIDOR TRAFFIC STUDY
S MAIN STREET - ROUNDABOUT ALTERNATIVE
CEDAR FALLS, IOWA
PROJECT NO. 118.0463

ITEM #	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	EXTENDED PRICE
1	Excavation, Class 10	5000	CY	\$ 7.00	\$ 35,000.00
2	Subgrade Preparation (1)	12200	SY	\$ 3.00	\$ 36,600.00
3	Modified Subbase (2)	12200	SY	\$ 12.00	\$ 146,400.00
4	Topsoil, Strip, Salvage and Respread (3)	3300	CY	\$ 8.00	\$ 26,400.00
2	Remove Existing Storm Intake (4)	6	EA	\$ 800.00	\$ 4,800.00
3	Remove Existing Storm Manhole (5)	1	EA	\$ 800.00	\$ 800.00
4	Remove Existing Storm Sewer, RCP <24"	540	LF	\$ 25.00	\$ 13,500.00
5	Storm Sewer, RCP, <24"	1000	LF	\$ 100.00	\$ 100,000.00
6	Storm Sewer Intake, Street (4)	6	EA	\$ 5,000.00	\$ 30,000.00
7	Storm Sewer Manhole	2	EA	\$ 5,000.00	\$ 10,000.00
8	Removal of Pavement	9600	SY	\$ 5.00	\$ 48,000.00
9	PCC Pavement (6)	10300	SY	\$ 65.00	\$ 669,500.00
10	Concrete Median	345	SY	\$ 60.00	\$ 20,700.00
11	Concrete Median, Colored Concrete	220	SY	\$ 85.00	\$ 18,700.00
12	Truck Apron, Colored	435	SY	\$ 90.00	\$ 39,150.00
13	Pavement Markings	1	LS	\$ 10,000.00	\$ 10,000.00
14	Removal of Sidewalk	2200	SY	\$ 20.00	\$ 44,000.00
15	Sidewalk, 4" (7)	550	SY	\$ 40.00	\$ 22,000.00
16	Sidewalk, 5" (8)	1700	SY	\$ 40.00	\$ 68,000.00
17	Sidewalk, 6" (9)	200	SY	\$ 70.00	\$ 14,000.00
18	Detectable Warnings (9)	340	SF	\$ 45.00	\$ 15,300.00
19	Removal and Replacement of Wood Fence	1200	LF	\$ 50.00	\$ 60,000.00
20	Retaining Wall (10)	41	CY	\$ 900.00	\$ 36,900.00
21	Mobilization	1	LS	\$ 75,000.00	\$ 75,000.00
22	Traffic Control	1	LS	\$ 20,000.00	\$ 20,000.00
23	Traffic Signal Removal	1	LS	\$ 50,000.00	\$ 50,000.00
24	Construction Survey	1	LS	\$ 15,000.00	\$ 15,000.00
25	Surface Restoration	1	LS	\$ 8,000.00	\$ 8,000.00
26	Erosion Control	1	LS	\$ 10,000.00	\$ 10,000.00

Subtotal: \$ 1,647,750.00
Contingency (20%): \$ 330,000.00
CONSTRUCTION TOTAL: \$ 1,977,750.00

Other Project Costs

Landscaping¹¹: \$ 40,000.00
Lighting¹²: \$ 60,000.00
Right of Way¹³: \$ 20,000.00
Utility Relocations¹⁴: \$ 426,000.00
Engineering, Construction, and Administration (~16%): \$ 310,000.00

TOTAL PROJECT COST: \$ 2,833,750.00

Notes S MAIN STREET - ROUNDABOUT ALTERNATIVE

- (1) Assumes 1' of subgrade preparation extended 2' beyond the back of curb.
- (2) Assumes a minimum of 6" of modified subbase extended 2' beyond the back of curb.
- (3) Assumes 8" of topsoil strip and placement within the construction limits.
- (4) Remove and replace intakes to new back of curb.
- (5) Remove and replace manhole outside of proposed pavement.
- (6) Assumes an 8" pavement thickness.
- (7) Replacement of approx. 835' of 4' and 6' sidewalk within the project limits.
- (8) Replacement of approx. 1500' of 10' shared use path within the project limits.
- (9) Construction of ADA ramps at roundabout.
- (10) NE Quadrant - retaining wall / sidewalk 275
LF, avg ht 4 FT, 12" thick
- (11) Assumes no landscaping enhancement.
- (12) Assumes the addition of 8 standard light poles for intersection lighting.
- (13) Assumes a total ROW acquisition of approx. 17,500 sf in the NE and SW corners of the roundabout.
- (14) There are significant impacts to utilities within the right-of-way. Costs per CFU utilities review for Jon R.
9/20-21/18
Gas - \$20,800 / Water - \$120,000 / Elec - \$210,000 / Comm - \$75,000

OPINION OF PROBABLE PROJECT COSTS



GREENHILL RD CORRIDOR TRAFFIC STUDY
 PRAIRIE PARKWAY - ROUNDABOUT ALTERNATIVE
 CEDAR FALLS, IOWA
 PROJECT NO. 118.0463

ITEM #	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	EXTENDED PRICE
1	Excavation, Class 10	4000	CY	\$ 7.00	\$ 28,000.00
2	Subgrade Preparation (1)	10300	SY	\$ 3.00	\$ 30,900.00
3	Modified Subbase (2)	10300	SY	\$ 12.00	\$ 123,600.00
4	Topsoil, Strip, Salvage and Respread (3)	2200	CY	\$ 8.00	\$ 17,600.00
5	Remove Existing Storm Intake (4)	10	EA	\$ 800.00	\$ 8,000.00
6	Remove Existing Storm Sewer, RCP <24"	1200	LF	\$ 25.00	\$ 30,000.00
7	Storm Sewer, RCP, <24"	1400	LF	\$ 100.00	\$ 140,000.00
8	Storm Sewer Intake, Street (4)	10	EA	\$ 5,000.00	\$ 50,000.00
9	Storm Sewer Manhole	2	EA	\$ 5,000.00	\$ 10,000.00
10	Removal of Pavement	8100	SY	\$ 5.00	\$ 40,500.00
11	PCC Pavement (5)	8000	SY	\$ 65.00	\$ 520,000.00
12	Concrete Median	80	SY	\$ 60.00	\$ 4,800.00
13	Concrete Median, Colored Concrete	220	SY	\$ 85.00	\$ 18,700.00
14	Truck Apron, Colored	480	SY	\$ 90.00	\$ 43,200.00
15	Pavement Markings	1	LS	\$ 10,000.00	\$ 10,000.00
16	Removal of Sidewalk	1500	SY	\$ 20.00	\$ 30,000.00
17	Sidewalk, 4" (6)	20	SY	\$ 40.00	\$ 800.00
18	Sidewalk, 5" (7)	1350	SY	\$ 40.00	\$ 54,000.00
19	Sidewalk, 6" (8)	200	LF	\$ 70.00	\$ 14,000.00
20	Detectable Warnings (8)	340	SF	\$ 45.00	\$ 15,300.00
21	Mobilization	1	LS	\$ 70,000.00	\$ 70,000.00
22	Traffic Control	1	LS	\$ 20,000.00	\$ 20,000.00
23	Traffic Signal Removal	1	LS	\$ 50,000.00	\$ 50,000.00
24	Construction Survey	1	LS	\$ 15,000.00	\$ 15,000.00
25	Surface Restoration	1	LS	\$ 5,000.00	\$ 5,000.00
26	Erosion Control	1	LS	\$ 10,000.00	\$ 10,000.00
Subtotal:					\$ 1,359,400.00
Contingency (20%):					\$ 280,000.00
CONSTRUCTION TOTAL:					\$ 1,639,400.00
<u>Other Project Costs</u>					
Landscaping ⁹ :					\$ 40,000.00
Lighting ¹⁰ :					\$ 60,000.00
Right of Way ¹¹ :					\$ 10,000.00
Utility Relocations ¹² :					\$ 50,000.00
Engineering, Construction, and Administration (~16%):					\$ 260,000.00
TOTAL PROJECT COST:					\$ 2,059,400.00

Notes PRAIRIE PARKWAY - ROUNDABOUT ALTERNATIVE

- (1) Assumes 1' of subgrade preparation extended 2' beyond the back of curb.
- (2) Assumes a minimum of 6" of modified subbase extended 2' beyond the back of curb.
- (3) Assumes 8" of topsoil strip and placement within the construction limits.
- (4) Remove and replace intakes to new back of curb.
- (5) Assumes an 8" pavement thickness.
- (6) Replacement of approx. 35' of 5' sidewalk within the project limits.
- (7) Replacement of approx. 1190' of 10' shared use path within the project limits.
- (8) Construction of ADA ramps at roundabout.
- (9) Assumes no landscaping enhancement.
- (10) Assumes the addition of 8 standard light poles for intersection lighting.
- (11) Assumes a total ROW acquisition of approx. 870 sf in the NW and NE corners of the roundabout.
- (12) Assuming no major utility relocations during construction, but incremental amount per S Main & Cedar Heights estimates per CFU correspondence

OPINION OF PROBABLE PROJECT COSTS



GREENHILL RD CORRIDOR TRAFFIC STUDY
 CEDAR HEIGHTS DRIVE - ROUNDABOUT ALTERNATIVE
 CEDAR FALLS, IOWA
 PROJECT NO. 118.0463

ITEM #	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	EXTENDED PRICE
1	Excavation, Class 10	5500	CY	\$ 7.00	\$ 38,500.00
2	Subgrade Preparation (1)	13400	SY	\$ 3.00	\$ 40,200.00
3	Modified Subbase (2)	13400	SY	\$ 12.00	\$ 160,800.00
4	Topsoil, Strip, Salvage and Respread (3)	2100	CY	\$ 8.00	\$ 16,800.00
2	Remove Existing Storm Intake (4)	10	EA	\$ 800.00	\$ 8,000.00
3	Remove Existing Storm Sewer, RCP <24"	1200	LF	\$ 25.00	\$ 30,000.00
4	Storm Sewer, RCP, <24"	1600	LF	\$ 100.00	\$ 160,000.00
5	Storm Sewer Intake, Street (4)	12	EA	\$ 5,000.00	\$ 60,000.00
6	Storm Sewer Manhole	3	EA	\$ 5,000.00	\$ 15,000.00
7	Removal of Pavement	10800	SY	\$ 5.00	\$ 54,000.00
8	PCC Pavement (5)	11000	SY	\$ 65.00	\$ 715,000.00
9	Concrete Median	60	SY	\$ 60.00	\$ 3,600.00
10	Concrete Median, Colored Concrete	280	SY	\$ 85.00	\$ 23,800.00
11	Truck Apron, Colored	480	SY	\$ 90.00	\$ 43,200.00
12	Pavement Markings	1	LS	\$ 10,000.00	\$ 10,000.00
13	Removal of Sidewalk	1300	SY	\$ 20.00	\$ 26,000.00
14	Sidewalk, 5" (6)	1350	SY	\$ 40.00	\$ 54,000.00
15	Sidewalk, 6" (7)	45	SY	\$ 70.00	\$ 3,150.00
16	Detectable Warnings (7)	80	SF	\$ 45.00	\$ 3,600.00
17	Mobilization	1	LS	\$ 70,000.00	\$ 70,000.00
18	Traffic Control	1	LS	\$ 20,000.00	\$ 20,000.00
19	Traffic Signal Removal	1	LS	\$ 50,000.00	\$ 50,000.00
20	Construction Survey	1	LS	\$ 15,000.00	\$ 15,000.00
21	Surface Restoration	1	LS	\$ 5,000.00	\$ 5,000.00
22	Erosion Control	1	LS	\$ 10,000.00	\$ 10,000.00
Subtotal:					\$ 1,635,650.00
Contingency (20%):					\$ 330,000.00
CONSTRUCTION TOTAL:					\$ 1,965,650.00
<u>Other Project Costs</u>					
Landscaping ⁸ :					\$ -
Lighting ⁹ :					\$ 60,000.00
Right of Way ¹⁰ :					\$ 10,000.00
Utility Relocations ¹¹ :					\$ 193,000.00
Engineering, Construction, and Administration (~16%):					\$ 315,000.00
TOTAL PROJECT COST:					\$ 2,543,650.00

Notes CEDAR HEIGHTS DRIVE - ROUNDABOUT ALTERNATIVE

- (1) Assumes 1' of subgrade preparation extended 2' beyond the back of curb.
- (2) Assumes a minimum of 6" of modified subbase extended 2' beyond the back of curb.
- (3) Assumes 8" of topsoil strip and placement within the construction limits.
- (4) Remove and replace intakes to new back of curb. Addition of 4 street intakes to the south along Cedar Heights Dr. in new curbed section of street.
- (5) Assumes an 8" pavement thickness.
- (6) Replacement of approx. 1280' of 10' shared use path within the project limits.
- (7) Construction of ADA ramps at roundabout.
- (8) Assumes no landscaping enhancement.
- (9) Assumes the addition of 8 standard light poles for intersection lighting.
- (10) Assumes a total ROW acquisition of approx. 1,800 sf in the SW and SE corners of the roundabout.
- (11) Possible significant impacts to utilities within the right-of-way. Costs per CFU utilities review for Jon R. 9/20-21/18
Gas - \$18,500 / Water - \$84,000 / Elec - \$65,000 / Comm - \$25,000

APPENDIX C
PUBLIC INPUT PROCESS & COMMENT

Public Input Process

Meeting Handouts

Meeting Sign-In Sheets

Comment Sheets

Comments Compilation

Memorandum

To: Jon Resler, P.E., City Engineer **Date:** 12/11/18

From: Mark Perington, P.E., PTOE
Andrew Houchin, E.I.

CC: Stephanie Houk Sheetz, AICP, Community Development Director

RE: Public Input Process
Greenhill Rd Corridor Traffic Study
Cedar Falls, IA
Snyder & Associates Project No.: 118.0463.01

Introduction

This memorandum documents the public input process undertaken as part of the Greenhill Road Corridor Traffic Study in Cedar Falls. It included conducting three public information meetings; receiving comments at and following the meetings; and compiling and summarizing those comments to understand the most interesting topics for the public with respect to corridor needs.

Public Meetings

Three public information meetings were conducted as part of this study. Details of the meetings are outlined below, including when they occurred and what they covered.

- Public Meeting 1 – June 12, 2018
 - Provided background information regarding the existing corridor including traffic and crash history
 - Conversations focused mostly on the intersection of Greenhill Rd and S Main St, and what interim measures could be provided prior to major reconstruction
 - Received comments via post-it notes on a corridor map, direct conversations, and written comment sheets that were provided at all meetings
- Public Meeting 2 – August 9, 2018
 - Provided information on forecasted traffic volumes and future needs
 - Presented widening and roundabout functional geometry alternatives for each of corridor study intersections
 - Answered questions from the public about the alternatives
- Public Meeting 3 – November 1, 2018
 - Presented preferred alternative for each of the study intersections
 - Cost opinions for alternative improvements
 - Life cycle cost analysis of each alternative based on public costs beyond initial construction
 - Answered questions from the public about the preferred alternatives

Comment Summary

Comments about the corridor study were received in several forms: comment sheets turned in at the meeting, comment sheets turned in after the meeting, emails received by the City after the meeting, and post-it notes from the first meeting. Those comments were then compiled into spreadsheets and summarized based on the location and topic of the comment. In all, 64 comments were received by November 15, and those comments are summarized in Table 1 and Table 2 below. Note that some of the comments covered several locations and topics, so the totals will not be the same. Additionally, topics that only had one comment were excluded for brevity.

Table 1. Summary of Comments by Location

Location	Count
S Main St	51
Corridor	25
Prairie Pkwy	8
Orchard Hill Dr	4
Hudson Rd	4
Estate Dr	4
Coneflower Pkwy	4
Rownd St	3
Oster Pkwy	1
Algonquin Dr	1

Table 2. Summary of Comments by Topic

Topic	Count
Roundabout (positive)	17
Turn lanes	11
Safety concerns	9
Turn signals	7
Roundabout (negative)	5
Pedestrian Timings	4
Capacity	4
Right-of-way	4
Speed	4
Emergency vehicles	3
Queuing	3
Signage	3
Sufficient gaps in traffic	3
Sunday Traffic	3
Pedestrian Facilities	3
Trucks	3
Closure	2
Pedestrian Yielding	2
Signal timings	2
Traffic Signal	2

The location with the most comments was the S Main St intersection, with the next most common being about the corridor in general. It should be noted that the first meeting notification by mail were initially sent to households near the S Main St intersection due to prior neighborhood concerns about operations, and IA 58 & Viking diversion traffic, and related land use development at this intersection. This may explain some of the high interest in the S Main St intersection, but it is clearly still the primary focus of much of the public attention in the Greenhill corridor. The topics of interest were more widespread. Roundabouts were a common discussion item, with more positive comments about them (17) than negative (5). Turn lanes and turn signals at intersections were also popular comment topics.

Attached: Public meeting handouts, sign-in sheets, comment sheets, and compilation of comments

Work Tasks

- Data Collection — counts, operations review ✓
- Analysis — Crash history, traffic growth potential, intersection operations, pedestrians and bicyclists
- Improvements
 - Specific short term at Main Street
 - Functional lane and intersection needs
 - Short term / long term
 - Concept design / cost opinion

Schedule

- | | | |
|---------------------------|-------------------------------|------------------|
| • Kick off Meeting | June 12, 2018 | ➔ TONIGHT |
| • Analysis | June — July | |
| • Update Meeting | Mid July | |
| • Improvements | August | |
| • Recommendations Meeting | Late August / Early September | |
| • Present to Council | Mid / Late September | |

Notes:



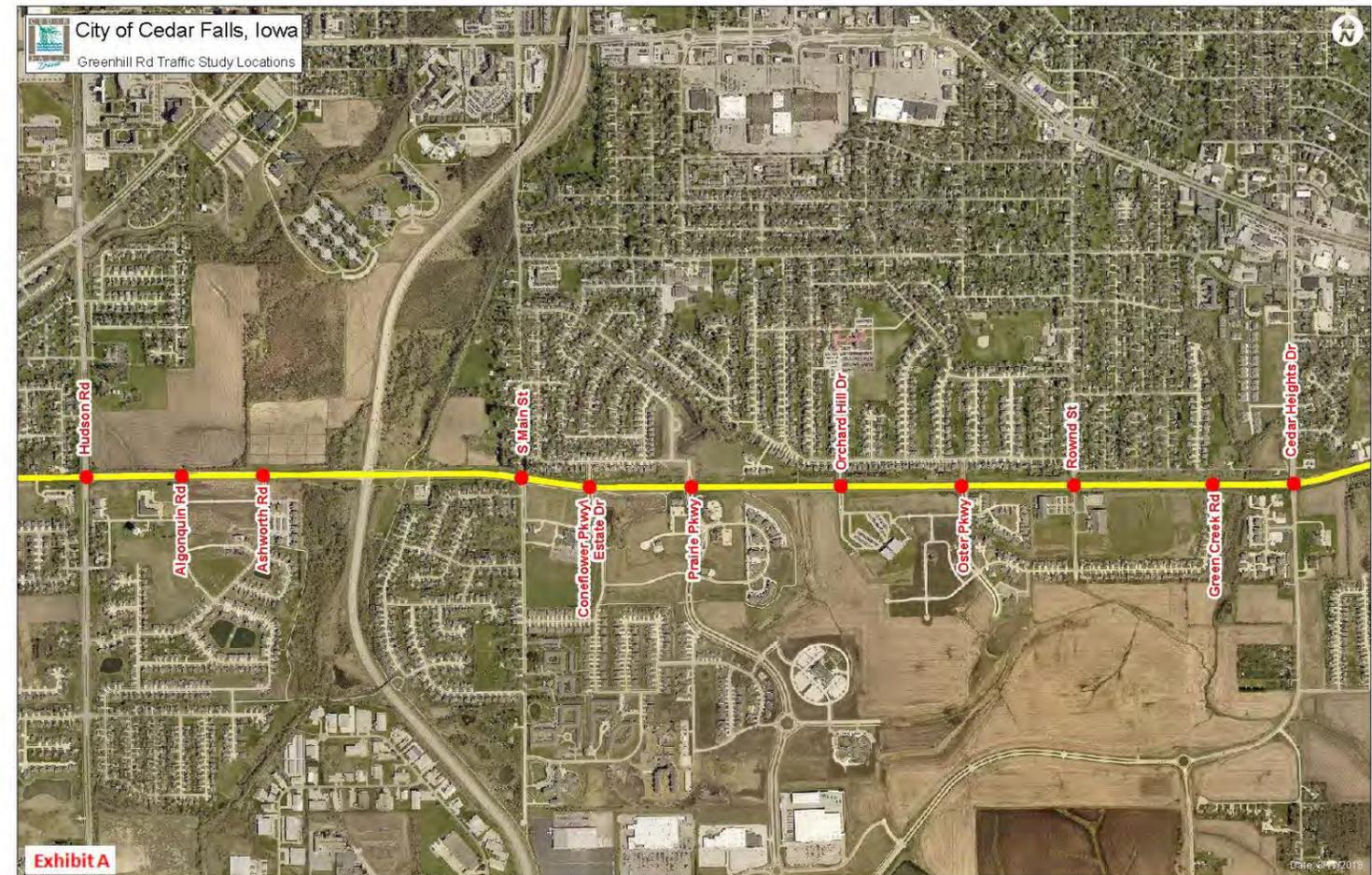
Project Questions/Comments:

Jon Resler, P.E.
 City Engineer
 City of Cedar Falls
 220 Clay Street
 Cedar Falls, IA 50613
 Phone: 319-268-5161
 Fax: 319-268-5197
Jon.Resler@cedarfalls.com

PUBLIC INFORMATION MEETING

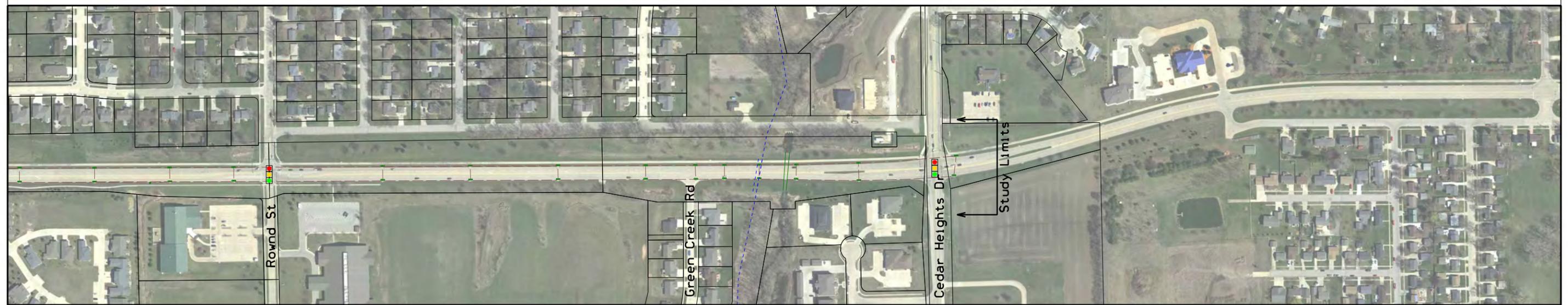
GREENHILL ROAD CORRIDOR TRAFFIC STUDY

HUDSON ROAD TO CEDAR HEIGHTS DRIVE



Tonight's meeting is an open house style format at which you can visit with City staff and the engineering consultant. The goal is to discuss the Greenhill Road Corridor from Hudson Road through Cedar Heights Drive and seek input on potential improvements to be considered as the City conducts a traffic study of the corridor with respect to future improvement work at corridor intersections, based on safety, operations, and complete streets policy.

June 12, 2018



Work Tasks

- Data Collection — counts, operations review ✓
- Analysis — Crash history, traffic growth potential, intersection operations, pedestrians and bicyclists ✓
- Improvements
 - Specific short term at Main Street ✓
 - Functional lane and intersection needs ✓
 - Short term / long term
 - Concept design / cost opinion

Schedule

- | | |
|---------------------------|---------------------------------|
| • Kick off Meeting | June 12, 2018 |
| • Analysis | June — July |
| • Update Meeting | August 9, 2018 → TONIGHT |
| • Improvement Concept | August — September |
| • Recommendations Meeting | Late September |
| • Present to Council | Mid October |

Notes:



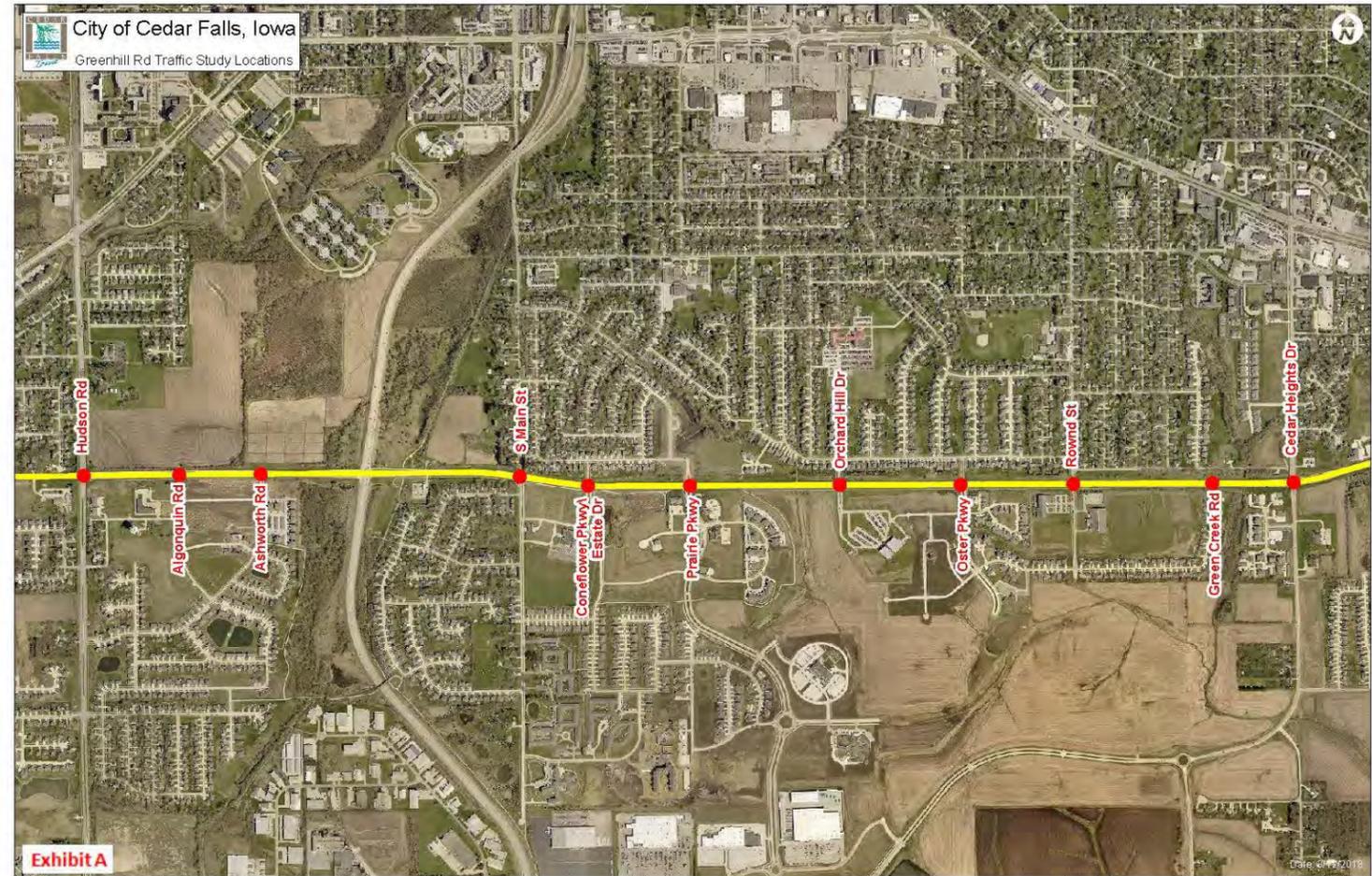
Project Questions/Comments:

Jon Resler, P.E.
 City Engineer
 City of Cedar Falls
 220 Clay Street
 Cedar Falls, IA 50613
 Phone: 319-268-5161
 Fax: 319-268-5197
Jon.Resler@cedarfalls.com

PUBLIC INFORMATION MEETING #2

GREENHILL ROAD CORRIDOR TRAFFIC STUDY

HUDSON ROAD TO CEDAR HEIGHTS DRIVE



Tonight's meeting is an open house style format at which you can visit with City staff and the engineering consultant. The goal is to discuss the Greenhill Road Corridor from Hudson Road through Cedar Heights Drive and seek input on potential intersection improvement concepts based on safety, operations, future traffic, and complete streets policy. The City is conducting traffic study of the corridor with respect to future improvement needs at corridor intersections.

August 9, 2018

Work Tasks

- Data Collection — Counts, operations review ✓
- Analysis — Crash history, traffic growth potential, intersection operations, pedestrians and bicyclists ✓
- Improvements
 - Specific short term at Main Street ✓
 - Functional lane and intersection needs ✓
 - Short term / long term ✓
 - Concept design / cost opinion ✓
 - Preferred alternatives ✓

Schedule

- | | | |
|---------------------------|--------------------|-----------|
| • Kick off Meeting | June 12, 2018 | |
| • Analysis | June — July | |
| • Update Meeting | August 9, 2018 | |
| • Improvement Concept | August — September | |
| • Recommendations Meeting | November 1, 2018 | ➔ TONIGHT |
| • Present to Council | December 3, 2018 | |

Notes:



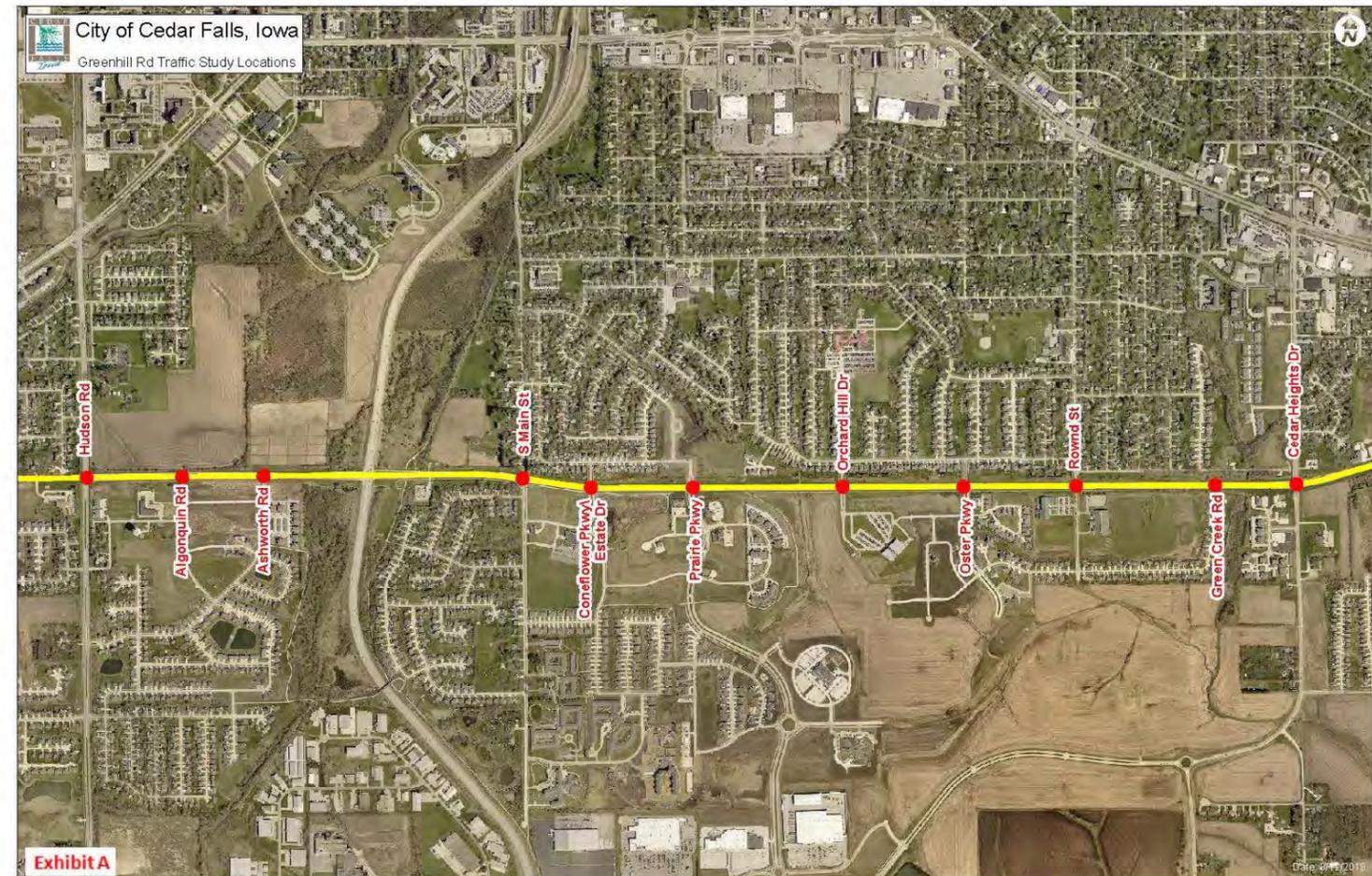
Project Questions/Comments:

Jon Resler, P.E.
 City Engineer
 City of Cedar Falls
 220 Clay Street
 Cedar Falls, IA 50613
 Phone: 319-268-5161
 Fax: 319-268-5197
Jon.Resler@cedarfalls.com

PUBLIC INFORMATION MEETING #3

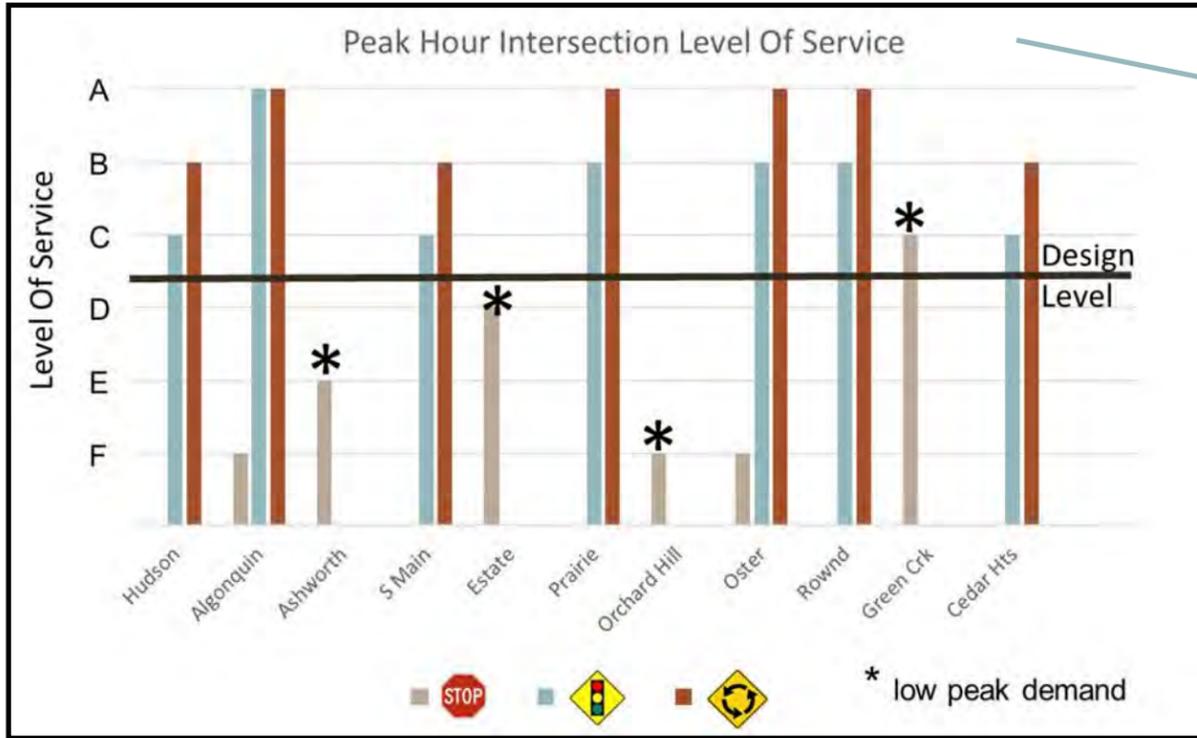
GREENHILL ROAD CORRIDOR TRAFFIC STUDY

HUDSON ROAD TO CEDAR HEIGHTS DRIVE



Tonight's meeting will include a presentation, followed by an open house style format at which you can visit with City staff and the engineering consultant. The goal is to discuss the Greenhill Road Corridor from Hudson Road through Cedar Heights Drive, and seek input on preferred intersection improvement concepts based on safety, operations, future traffic, and complete streets policy. The City is conducting a traffic study of the corridor with respect to future improvement needs at corridor intersections.

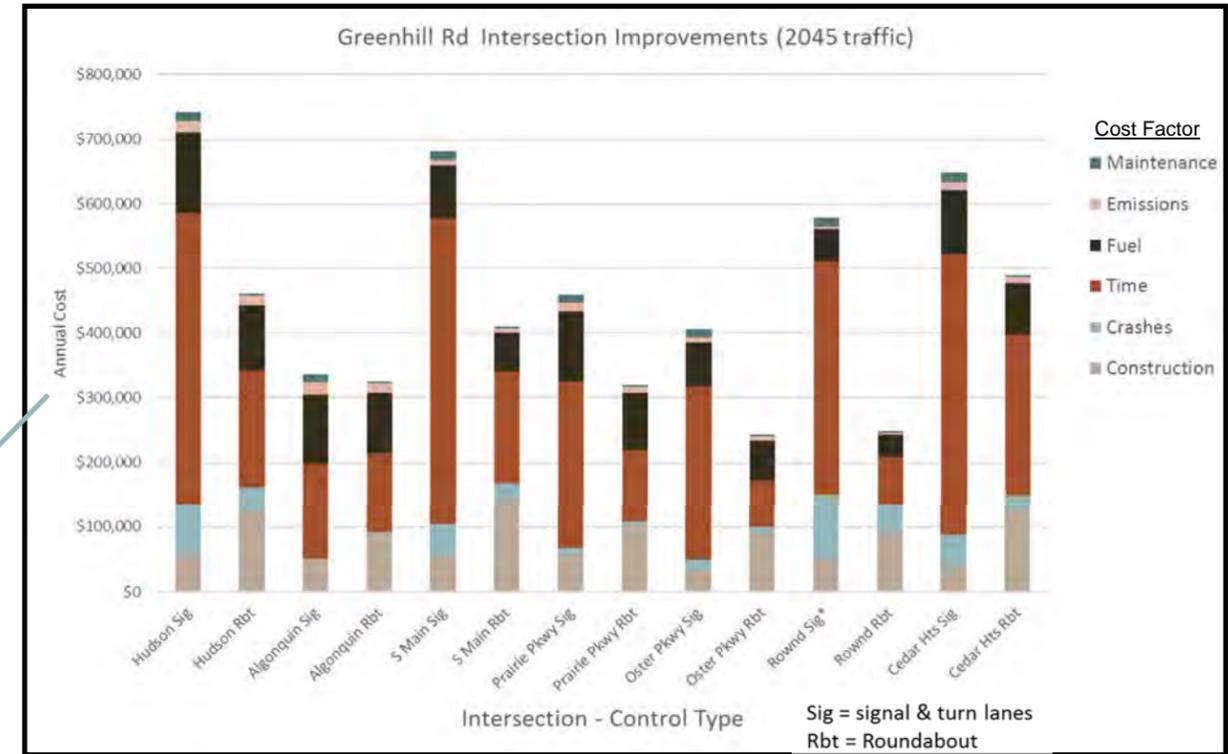
Corridor Operations - Future Traffic (2045) Improvement Alternatives



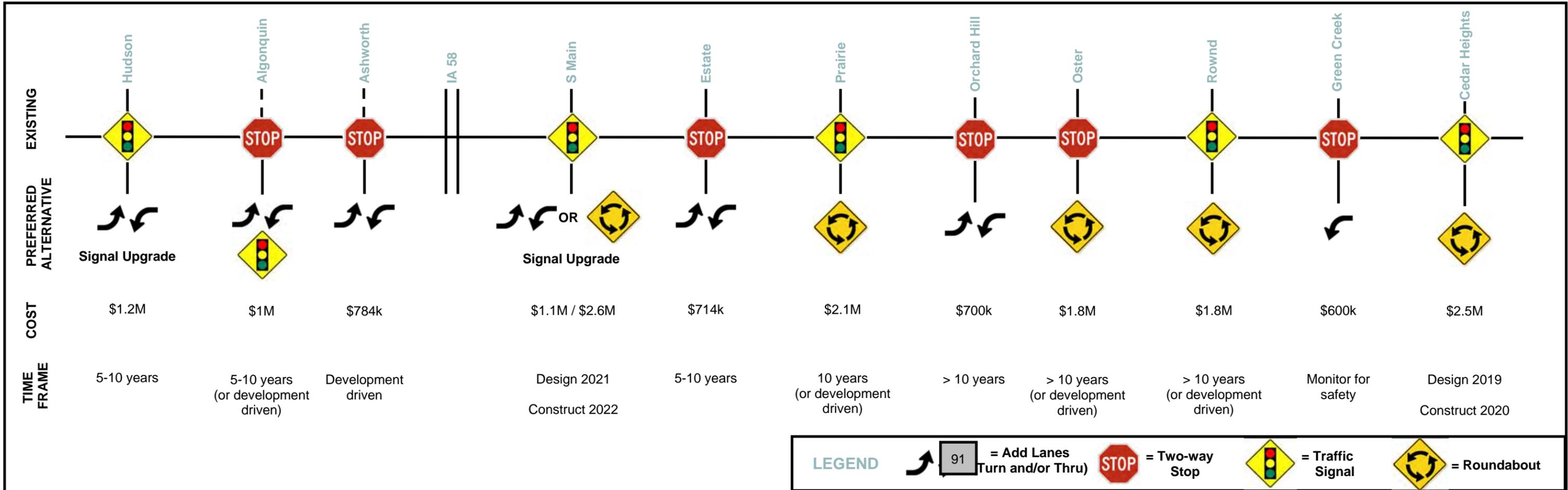
Level of Service
Relative grading scale for ability of intersection to serve traffic demand

Annual Cost
Total user costs per intersection type

Present Value Life Cycle Annual Cost



Preferred Improvement Alternative



Greenhill Road Corridor Traffic Study / Hudson Road to Cedar Heights Drive
 Public Informational Meeting / June 12, 2018
Sign-In Sheet

Name	Address	Phone	Email
Bob & Rosemary Brock	5018 Sage Rd - Hudson Hm	266-6140	booky bob 2 @ cfu
Mary & Jim Wilson	4319 S Main, C.F.	266-5057	tabbypriincess1@gmail.com
Gill Fisher	203 Cordoba, C.F.	290-8770	jfisher203@cfu.net
Max & Jennifer Lamb	5048 Kael Trail CF	266-3567	jeniferlamb@cfu.net
Patti Cole	4576 Whispering Pines CF	573-619-5156	—
Barbara McDonald	4580 Whispering Pines CF	268-1061	
Susan Ilax	4732 P. Zarro Court CF	266-1568	sueilax@cfu.net
Keith Brown	323 Balboa C.F.	277-0725	
Penny Popp	4805 S Main	266 3772	peterpenny1@gmail.com
LARRY WILCOX	4701 ECCO BLVD	939 3383	
Frank Darnall	1915 Greenhill Dr.	290-0388	wfd@cfu.net

Greenhill Road Corridor Traffic Study / Hudson Road to Cedar Heights Drive
 Public Informational Meeting #2 / August 9, 2018
 Sign-In Sheet

Name	Address	Phone	Email
ARMANDO SESMA	113 BALBOA AVE	319-290-3275	NANDO 2449@GMAIL.COM
Margaret Ritchie	1927 Hilton Dr CF	319-266-1279	ritchie mfa@gmail.com
Fred Ritchie	1927 Hilton Dr CF	319-266-1279	ritchie mfa@gmail.com
* BRUCE DECKER	4807 Rownd		brooze1@yahoo.com
Jill Fisher	303 Cordova Ave	319-290-8770	Jfisher203@cfu.net
Mike + Coleen Wagner	217 Spruce Hills Dr CF	319-240-3493	mwags@cfu.net
Bob Primary Beach	5018 Sage Rd CF	319 266-6140	booky bob 2 e su.
Larry Roth	302 Spruce Hills	319 266 4234	ROTH@CFU.NET
Deb Blanchard	4227 Orchard Hill Dr CF	319-277-7454	dk.blanchard@cfu.net
Frank Darrar	1915 Greenhill Rd CF	317-290-0381	wfd@cfu.net
Kyle Holland	228 Alvarado Ave CF	319-231-9430	ktheHland@cfu.net
LARRY NOUBOLTZ	4603 BRIDWOOD DRIVE	266-3985	
Karen E. Colwin	41703 BRIDWOOD DR.		
John + ^{Judy} Judy Focht	222 IRIS Dr	830 1928	JJfocht@cfu.net

Greenhill Road Corridor Traffic Study / Hudson Road to Cedar Heights Drive
 Public Informational Meeting #2 / August 9, 2018
 Sign-In Sheet

Name	Address	Phone	Email
Marlene Brim	5105 Bluebell Rd CF	319-939-2735	—
LYLE BRIM	"	319-939-9946	LANDMBRIM@YAHOO.COM ↗
Marie Ore	2413 Minnetonka Dr.	—	—
LARRY Gregory	219 Cordoba Ave CF	277 4162	lrsola@cfu.net
ROD LARSEN	4516 QUESADA CT		RLH@CFU.NET
Craig Blanchard	4227 Orchard Hill Dr CF	277-7454	ca.blanchard@cfu.net
Steve + LaVonne Paustian	4825 S. Main St. CF		
Ann Crawford	128 Balboa A-1, CF	404-1290	apercraw@aol.com
Patricia Nantuly + Virginia	4603 Briarwood Dr. C.F.	—	—
DAVID SAND	201 BALBOA AVE CF		
Susan Ilax	4732 Pizarro Ct. CF		
DAVE WILLIAMS	4119 S MAIN CF	464-6168	WILLIAMS@CFU.NET
Ron Flory	301 Spruce Hill Dr CF	319-239-5945	ronflory@cfu.net
Amanda Owen	4941 Kylie Ct.		amewendat@gmail.com
Kent + Paula Hann	4602 Whispering Pine Circle CF	319-515-7542	Keribh@gmail.com

Greenhill Road Corridor Traffic Study / Hudson Road to Cedar Heights Drive
Public Informational Meeting #2 / August 9, 2018
Sign-In Sheet

Name	Address	Phone	Email
Ida Morris	5626 Sable Rv	319 290 0815	
Alona M. Morris	" " " "	319-266-5184	
Carol Lilly	2628 Green Creek Rd	319-429-0468	Carol.lilly@cfu.net
Chris Lilly	2628 Green Creek Rd	319-404-0738	clilly@cfu.net
Nancy Hamilton	1730 W. 18 th #202, CF	319-230-4754	hamilton@uni.edu
Richard W. Stanford	527 Rosemary CF	319 277 1011	
Jane & Larry Gregory	219 Cordelia Ave CF	319-266-5802	
Ruth Walker	2208 Coventry Ln, CF	319-266-8822	ruthdbwalker@yahoo.com
Russ Reeves	430 Balboa	319-404-4463	rreeves430@hotmail.com
Carol R Boise	801 IRIS	262 5586	
Penny Sund	201 Balboa Ave	231-6874	pennysund@cfu.net
Sharon Olson	3707 S Main	939-1628	
Kurt Olson	3707 S Main	240-7207	kwolson@cfu.net
Denise Flory	301 Spruce Hill Dr	239-5708	
Benjamin Flessner	3533 Panther Ln		benalf@flessnerfarm.com
Arnold Flessner	4221 Eastpark Rd	230-3593	arnjeanfless@gmail.com
Michelle Sweeney	501 Sycamore St-Suite 222	319-874-6589	michelle.sweeney@aecom.com
Mark Redbeck	5021 Thyme Rd CF		
Luann Aleman	2317 Coventry Ln CF	319 266 8021	l.aleman@assoc@cfu.net

Greenhill Road Corridor Traffic Study / Hudson Road to Cedar Heights Drive
 Public Informational Meeting #3 / November 1, 2018
 Sign-In Sheet

Name	Address	Phone	Email
Rosemary Beach	5018 Sage Road	266-6140	
Martin Norman	525 Rosemary Dr	266-8621	
Kurt Olson	3907 South Main	240-7207	
Karen E Colwin	4703 Briarwood Dr		
Penny Popp	4805 S Main	266 3772	peter.penny1@gmail.com
Ron & Mary Bro	5106 Bluebell Rd	266-2725	
Larry Naumoy & Virginia	4603 Briarwood Dr	266-3995	
Fred Mische	4566 Whispering Pines Cir		fred@mattandfred.com
Truman Stone	4306 Stewart Lane	290-8604	
Bill Bader	4315 Sterling Lane	231-3935	billbader@cfu.net
Craig Blanchard	4227 Orchard Hill Drive	277-7454	ca.blanchard@cfu.net
Andrew Tilkes	4309 S. Main St.	515 450 6958	andrew.tilkes@gmail.com
Steve Kelly	223 Spruce Hills Dr.	319-240-7041	sdkelly@cfu.net
LARRY WIELE	4701 E. BIRCHWOOD Dr		
Cindi Hendrickson	4803 Briarwood Dr		chendrickson@cfu.net
Genny Van Dorn	4124 Thresher Ct Unit 304	290-5303	vandorn.gt@cfu.net

**Greenhill Road Corridor Traffic Study
Public Informational Meeting**

Comment Sheet
June 12, 2018

The purpose of this meeting is for you to provide the study team with your initial comments on the safety and operations of Greenhill Rd for consideration in analysis of potential improvements in the corridor.

If a roundabout is being considered, how will vehicles on Coneflower and Estate enter Greenhill when there is a constant flow of traffic?
Can a temporary fix be implemented before 2020?
Suggest alternating lights & turn signals at Greenhill and S. Main.

Note: Additional space for comments can be found on the reverse side.

Name: Jill Fisher
Address: 203 Cordoba Ave.
C.F.

If returning comment sheet by mail, please mail to:
City of Cedar Falls
220 Clay Street
Cedar Falls, Iowa 50613
Attn: Jon Resler

If returning by email, please email to:
Jon.Resler@cedarfalls.com

The comment period closes on June 29, 2018

Greenhill Road Corridor Traffic Study
Public Informational Meeting

Comment Sheet

June 12, 2018

The purpose of this meeting is for you to provide the study team with your initial comments on the safety and operations of Greenhill Rd for consideration in analysis of potential improvements in the corridor.

Short term - Change lights to alternate the lane at a time
Greenhill/Main - Prairie Parkway/Greenhill
1
4 close accidents already - I
work at MidWestOne Bank we are
hearing the squealing breaks too
often

Note: Additional space for comments can be found on the reverse side.

Name: Sue Ambrecht

Address: MidWestOne Bank + Live
on 4120 Daina Dr - CF

If returning comment sheet by mail, please mail to:
City of Cedar Falls
220 Clay Street
Cedar Falls, Iowa 50613
Attn: Jon Resler

If returning by email, please email to:
Jon.Resler@cedarfalls.com

The comment period closes on June 29, 2018

**Greenhill Road Corridor Traffic Study
Public Informational Meeting**

Comment Sheet

June 12, 2018

The purpose of this meeting is for you to provide the study team with your initial comments on the safety and operations of Greenhill Rd for consideration in analysis of potential improvements in the corridor.

At intersection of So Main and Greenhill
When I am southbound and turn left on Greenhill
it is difficult to see Main St. Northbound coming
straight thru it is difficult to see that traffic
with cars in the Northbound left turn.

Note: Additional space for comments can be found on the reverse side.

Name: _____

Address: _____

If returning comment sheet by mail, please mail to:
City of Cedar Falls
220 Clay Street
Cedar Falls, Iowa 50613
Attn: Jon Resler

If returning by email, please email to:
Jon.Resler@cedarfalls.com

The comment period closes on June 29, 2018

**Greenhill Road Corridor Traffic Study
Public Informational Meeting #2**

Comment Sheet
August 9, 2018

The purpose of this meeting is for you to provide the study team with your comments on the proposed concepts for intersection improvements in the future.

I would Love to see signal buttons that sit closer to the path rather than on the light Pole itself. Some Poles sit a good distance from the Path	

Note: Additional space for comments can be found on the reverse side.

Name: Nicholas Knepper
Address: 4421 Hudson

If returning comment sheet by mail, please mail to:
City of Cedar Falls
220 Clay Street
Cedar Falls, Iowa 50613
Attn: Jon Resler

If returning by email, please email to:
Jon.Resler@cedarfalls.com

The comment period closes on August 24, 2018

Greenhill Road Corridor Traffic Study
Public Informational Meeting #2

Comment Sheet
August 9, 2018

The purpose of this meeting is for you to provide the study team with your comments on the proposed concepts for intersection improvements in the future.

I've frequently experienced the corner at Prairie ~~Rd~~ Parkway and believe a roundabout would be a great improvement there. I've used this corner more in recent weeks because of the road construction in our neighborhood and have seen some near misses in left turns and crossings from ~~north~~ south to north.

Roundabouts work!
Put everywhere it
doesn't cost too much
to acquire the property!

Note: Additional space for comments can be found on the

Name: Andy Gleason
Address: 4221 Eastpark Rd
Cedar Falls.

If returning comment sheet by mail, please mail to:
City of Cedar Falls
220 Clay Street
Cedar Falls, Iowa 50613
Attn: Jon Resler

The comment period closes on August 24, 2018

Greenhill Road Corridor Traffic Study
Public Informational Meeting #2

Comment Sheet
August 9, 2018

The purpose of this meeting is for you to provide the study team with your comments on the proposed concepts for intersection improvements in the future.

Traffic circles or roundabouts are fully supported by myself. Greenhill and South Main is an ideal candidate for a circle. The recent work by City getting in the turn arrows has greatly improved the situation. But is only temp solution with increasing traffic expected.

Put in the roundabout at Greenhill and S Main

Note: Additional space for comments can be found on the reverse side.

Name: Brace Kacer
Address: 504 Cordoba Ave

319 266 6060

If returning comment sheet by mail, please mail to:
City of Cedar Falls
220 Clay Street
Cedar Falls, Iowa 50613
Attn: Jon Resler

If returning by email, please email to:
Jon.Resler@cedarfalls.com

The comment period closes on August 24, 2018

Greenhill Road Corridor Traffic Study
Public Informational Meeting #2

Comment Sheet
August 9, 2018

The purpose of this meeting is for you to provide the study team with your comments on the proposed concepts for intersection improvements in the future.

I AM CONSIDERING A 5 LANE
on greenhill turn Right on S MAIN ST
I AM OPPOSE TO ROUNDABOUT
I DRIVE PART TIME FOR NEW ALDEYA
TAKIN PATIENTS TO MEDICAL APPT
I SEEN TO MANY PEOPLE DRIVEN ON
ROUNDABOUTS THAT THEY ARE GOING TOO
FAST, BECAUSE MY JOB I SEEN TO
MANY CLOSE ACCIDENTS, NO CONSIDERING
ROUNDABOUT IN GREENHILL & S MAIN
Thank you.

Note: Additional space for comments can be found on the reverse side.

Name: ARMANDO SESMA
Address: 113 BALBOA AVE
CEDAR FALLS IA 50613
319-290-3275

If returning comment sheet by mail, please mail to:
City of Cedar Falls
220 Clay Street
Cedar Falls, Iowa 50613
Attn: Jon Resler

If returning by email, please email to:
Jon.Resler@cedarfalls.com

The comment period closes on August 24, 2018

Greenhill Road Corridor Traffic Study
Public Informational Meeting #2

Comment Sheet
August 9, 2018

The purpose of this meeting is for you to provide the study team with your comments on the proposed concepts for intersection improvements in the future.

Roundabout at oster is good because not much traffic from side street. we live on orchard Hill Drive and we would use roundabout on oster when traffic is really busy on Greenhill. Now we go to Round street to go east on Greenhill. Roundabout on Prairie parkway may be good due to sporadic traffic coming from prairie and much turning traffic from west bound greenhill. Signals would seem to work better at the major intersections like Cedar Heights, South Main and Hudson, where there is continuous traffic from all directions. I am not sure what would work best at Round Street. Avoid having signals at every intersection so as to not create a situation like university was. when the Greenhill corridor plan is determined, a study should be done on south main from ~~the~~ Greenhill to University. problem intersections

Note: Additional space for comments can be found on the reverse side.

Name: Craig Blanchard

Address: 4227 orchard Hill Drive CF

If returning comment sheet by mail, please mail to:
City of Cedar Falls
220 Clay Street
Cedar Falls, Iowa 50613
Attn: Jon Resler

If returning by email, please email to:
Jon.Resler@cedarfalls.com

The comment period closes on August 24, 2018

are at Orchard Drive and the road from the swimming pool. As the prairie area is developed, the traffic on South main to university will really increase.

Adding turn lanes on Greenhill is a great idea!

Keeping two lanes in both directions is good.

**Greenhill Road Corridor Traffic Study
Public Informational Meeting #2**

Comment Sheet
August 9, 2018

The purpose of this meeting is for you to provide the study team with your comments on the proposed concepts for intersection improvements in the future.

Please continue to manage additional access onto Greenhill in the current manner. Limiting access points will help keep the corridor efficient.
Roundabouts are <u>welcome</u> & help keep traffic flowing.
— Thanks for your continued efforts to keep the public involved & informed.

Note: Additional space for comments can be found on the reverse side.

Name: Caul Gull

Address: 2628 Green Creek Rd

If returning comment sheet by mail, please mail to:
City of Cedar Falls
220 Clay Street
Cedar Falls, Iowa 50613
Attn: Jon Resler

If returning by email, please email to:
Jon.Resler@cedarfalls.com

The comment period closes on August 24, 2018

Greenhill Road Corridor Traffic Study
Public Informational Meeting #2

Comment Sheet
August 9, 2018

The purpose of this meeting is for you to provide the study team with your comments on the proposed concepts for intersection improvements in the future.

Pedestrian / bike traffic along the corridor should be carefully considered:

- The pedestrian signal at Round turns green at the same time as the EB left turn signal in Greenhill, EB bike/peel has to look behind to see oncoming left turns.
- Needs to be bike/peel signal and clearly marked crosswalk at Greenhill + Hudson Rd.
- Greenhill + Hwy 58 is very tough!
- Need to educate bikes/peds about roundabouts similarly to the efforts made for drivers.
- Be open to suggestions/comments from CFBPAC - city is very good about this :)

Note: Additional space for comments can be found on the reverse side.

Name: Nancy Hamilton
Address: 1730 W. 18th St #202
CF

If returning comment sheet by mail, please mail to:
City of Cedar Falls
220 Clay Street
Cedar Falls, Iowa 50613
Attn: Jon Resler

If returning by email, please email to:
Jon.Resler@cedarfalls.com

The comment period closes on August 24, 2018

- Re draw Greenhill/Hudson Rd plan to keep bike/ped trail on north side as opposed to crossing both streets - OR consider an "all stop" when bike/ped signal is activated.

Greenhill Road Corridor Traffic Study
Public Informational Meeting #2

Comment Sheet
August 9, 2018

The purpose of this meeting is for you to provide the study team with your comments on the proposed concepts for intersection improvements in the future.

Orchard Dr. & Greenhill is terrifying for a couple hours every Sunday. W/E turn lanes will help, but it's the N/S exiting when both churches let out that is dangerous. A traffic signal is certainly too much for two hours a week, but something should be done to help on Sunday mornings.

I'm all for roundabouts where possible!

Does Iowa ever use "right lane right turn only" lanes? Once middle turn lanes are added, these could help with flow - especially on Eastbound

Note: Additional space for comments can be found on the reverse side.

Name: Benjamin Flesner

Address: 3533 Panther Ln.

If returning comment sheet by mail, please mail to:
City of Cedar Falls
220 Clay Street
Cedar Falls, Iowa 50613
Attn: Jon Resler

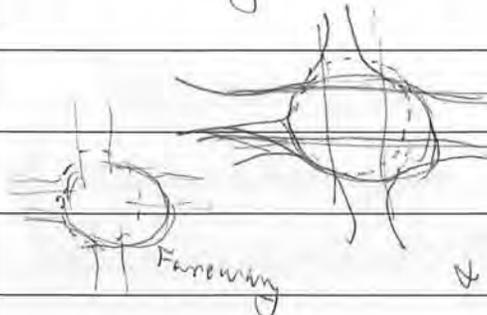
If returning by email, please email to:
Jon.Resler@cedarfalls.com

The comment period closes on August 24, 2018

Greenhill around Algonquin - that right-turn for Casey's seems to come as a surprise to many, and the traffic volume doesn't seem to require two lanes (...yet...)

Greenhill Road Corridor Traffic Study
Public Informational Meeting #3
 Comment Sheet
 November 1, 2018

The purpose of this meeting is for you to provide the study team with your comments on the proposed concepts for intersection improvements in the future.

① RE South Main proposed Roundabout on Greenhill
 Could the RAB be skewed to use more of the
 Foreway area? So it is not centered in the
 intersection, but oblong = 
 or = 
 The dog bone at University
 & 58 is off center. 

② Prairie Parkway - north & south is precarious
 when you have people turning east from the
 north & west from the south and people
 going straight through. Designated turn lanes &
 light arrows would be helpful.

Note: Additional space for comments can be found on the reverse side.

Name: Denise Flory
 Address: 301 Spruce Hills Dr
CF

③ Any thought of lights
 along the bike/ped lane
 on Greenhill? Very dark
 btwn street lights.

If returning comment sheet by mail, please mail to:
 City of Cedar Falls
 220 Clay Street
 Cedar Falls, Iowa 50613
 Attn: Jon Resler

If returning by email, please email to:
Jon.Resler@cedarfalls.com

The comment period closes on November 16, 2018

There is a learning curve with roundabouts -
When drivers are working through a roundabout,
they rarely see pedestrians or cyclists.

4 Any thoughts to having a bridge from
place to place? (for pedestrians & bikers)

5 We are looking at 10 years out for much
of these changes - we still have to tolerate Greenhill
speeders and distracted drivers for 10 years

6 I support an enhanced light & expanded turn
lanes on Greenhill & So. Main - expanding
towards the Foreway & Kwik Star/Strip on the
south side. The people invested in Cedar Falls
living on the north side of Greenhill have
lost enough already.

roundabouts
bike, paths trail
deer

Greenhill Road Corridor Traffic Study
Public Informational Meeting #3

Comment Sheet
November 1, 2018

The purpose of this meeting is for you to provide the study team with your comments on the proposed concepts for intersection improvements in the future.

I reside in Whispering Pines Condominiums. We enjoy the improvements in our general area. I would love to make a couple of recommendations

1.) Asphalt overlay on Greenhill. This will reduce sound (pollution) from the very ~~loud~~ white of tires on the cross-cuts of the roadway.

2.) Round-about, Round-a-bout, Round-about. I was against them on University Ave. I still am ~~not~~ an advocate for them - wrong application ~~at~~ on a commercial area. I am for them along the Greenhill Corridor, the idea is a better match for moving traffic along, with fewer stops

3.) A ~~safe~~ safety improvement would be lighting along the

Note: Additional space for comments can be found on the reverse side.

Name: Fred Melker

Address: 4456 Whispering Pines Ct

If returning comment sheet by mail, please mail to:
City of Cedar Falls
220 Clay Street
Cedar Falls, Iowa 50613
Attn: Jon Resler

bike / pedestrian trail.
It is very dark & unsafe early morning & after ~~noon~~ sundown. There is a good amount of traffic after/before dark, and I would anticipate it having more traffic if
If returning by email, please email to: lighting@cedarfalls.com added

snow removal would be a welcome
The comment period closes on November 16, 2018
on the pathways. There is a significant number of residents that would bike, walk, run at below freezing temps.

4) Some thought should be made to create a safer situation between Green Creek & Cedar Hts Dr. due to Deer traffic (~~not~~ John Deere). There is a significant amount of deer herd movement which leads to property damage.

Greenhill Road Corridor Traffic Study

Public Informational Meeting #3

Comment Sheet

November 1, 2018

The purpose of this meeting is for you to provide the study team with your comments on the proposed concepts for intersection improvements in the future.

1. Please implement ^{an} immediate change to the west bound intersection of Greenhill & Prairie Parkway. I regularly have to answer "sorry" to make the ^{left} turn, and often continue to main, which adds traffic to that intersection.

2. Support median south of Greenhill @ main! This conversation is making me think about my driving as I make the turn from Greenhill onto main!

Note: Additional space for comments can be found on the reverse side.

Name: Eileen Daley
 Address: 5313 Caraway Lane
#301
CF

3. No cost solution - slow down Greenhill to "35 mph"

If returning comment sheet by mail, please mail to:
 City of Cedar Falls
 220 Clay Street
 Cedar Falls, Iowa 50613
 Attn: Jon Resler

If returning by email, please email to:
Jon.Resler@cedarfalls.com

The comment period closes on November 16, 2018

Thank You!

**Greenhill Road Corridor Traffic Study
Public Informational Meeting #3**

Comment Sheet
November 1, 2018

The purpose of this meeting is for you to provide the study team with your comments on the proposed concepts for intersection improvements in the future.

We need additional ped, bike & traffic safety measures @ Greenhill & Main as well as Greenhill & Rowland
Nice presentation — Thank you for your work —

Note: Additional space for comments can be found on the reverse side.

Name: Penny Popp
Address: 4805 S. Main
Cedar Falls Iowa 50613
peterpenny7@gmail.com

If returning comment sheet by mail, please mail to:
City of Cedar Falls
220 Clay Street
Cedar Falls, Iowa 50613
Attn: Jon Resler

If returning by email, please email to:
Jon.Resler@cedarfalls.com

The comment period closes on November 16, 2018

Greenhill Road Corridor Traffic Study
Public Comments

No.	Name	Comment Date	Comment	Keywords
1	Jill Fisher	6/12/2018	If a roundabout is being considered, how will vehicles on Coneflower and Estate enter Greenhill when there is a constant flow of traffic? Can a temporary fix be implemented before 2020? Suggest alternating lights and turn signals at Greenhill and S Main.	- Coneflower, Estate, S Main - Sufficient gaps in traffic, turn signals
2	Sue Armbrrecht / Midwest One Bank and Live	6/12/2018	Short term - Change lights to alternate one lane at a time. Greenhill/Main - Prairie Parkway/Greenhill - 4 close accidents already. I work at Mid West One Bank we are hearing the squealing breaks too often.	- S Main, Prairie Pkwy - Safety concerns
3	Ron Flory	6/12/2018	White pedestrian walk light is too brief, especially when going across Greenhill, even at 3.0 mph walking.	- Corridor - Pedestrian timings
4	Carol Lilly	6/12/2018	Please consider roundabouts as a long term solution where possible on the corridor. Short term changes needed at Main and Greenhill.	- Corridor - Roundabout (+)
5	None	6/12/2018	At intersection of S Main and Greenhill - When I am SB and turn left on Greenhill it is difficult to see Main St NB coming straight through it is difficult to see that traffic with cars in the NB left turn.	- S Main - Sight obstruction
6	Janice Smith	6/14/2018	I LOVE the changes that are coming to this area! I was 100% for the changes as we live on Balboa Ave. My only concern is the intersection on Main and Greenhill. Coming from Balboa, going North on Main St., that intersection is awful right now and the Fareway isn't even up and running. It is extremely hard to make a left turn on Greenhill when you have the constant flow of traffic going South on Main. There are times when I sit there for various cycles of lights cause people can't get out. There is always a constant flow going South that unless you "gun it", you won't get out. You just hope and pray that the car behind the one turning doesn't speed up and run into you. It would be AWESOME if there were alternating lights on Main St like there are further up on North Main St. Where we would have a Left turn light so the people living South Main can leave the area without feeling like we are risking our lives everytime we want to make a left hand turn. I know a few months back, the city sat and monitored that intersection. To sit and watch is different than driving it. If the city could actually get on the road and try to make a left turn on Greenhill it would make a difference in the perspective as well.	- S Main - Turn signals, Signal timings
7	Steve Husome	6/14/2018	My name is Steve Husome. I live at 4909 Quesada Ave in Cedar Falls. Between my wife and I we pass through the Main & Greenhill Road intersection at least 8-10 times per day. As the area is experiencing rapid growth with many new projects now under construction, I would like to offer these suggestions to improve the intersection. I would like to see S Main widened at the intersection to provide both a left and right turn lane and a through lane going in each direction. The left turn lanes should have left turn directional lights to allow for smooth traffic flow while turning across traffic. I would like to see S. Main widened to allow for a right turn lane to enter the new Fareway and continued to the intersection to turn right onto Greenhill. I would like to see Greenhill Road widened to allow for dedicated left turn lanes with directional lights going each direction as well as a right turn lane added to turn right onto S. Main Street and continue past the intersection to turn right into the new Fareway Store while allowing through traffic to continue a smooth flow without continuous stopping. I know this is a big wish list, but I feel the city has one opportunity to get this right in handling the increased activity through this intersection. With new businesses making large investments in the neighborhood, we should do everything possible to make it as easy to access these new stores as possible. I appreciate you reaching out to the neighborhood for insight and suggestions.	- S Main - Turn lanes, turn signals
8	Chad Swanson	6/14/2018	As a Nextdoor Fairview member and a CF citizen, I was encouraged to direct comments your way. I am a member at Candeo Church and there already exists a significant traffic problem on Sundays with the combination of Candeo Church and Orchard Hill congregations getting out at the same time and trying to make turns onto Greenhill. I realize it is a Sunday problem, but I am concerned that someone is going to get seriously hurt or killed soon at that intersection. Personally, I think the University Avenue experience is already showing the positive effects of roundabouts. I think drivers using Greenhill would get through the corridor faster and more safely with roundabouts instead of turning it into stop and go signalized traffic like Hudson Road. In addition, designated left and right turn lanes should be given serious consideration.	- Orchard, Corridor - Sunday traffic, safety concerns, roundabout (+), turn lanes
9	Amy Jardon	6/14/2018	Yesterday I had another opportunity to need to turn left/north onto Main St from Greenhill. I was the third car waiting to turn left when I got into the turn lane and I was only able to go on the third cycle of lights. The car in front of me peeled out/on his left turn in front of a fast approaching vehicle, as both were going on a yellow light. Very dangerous. Is there a way to add in a left turn light for the lane? Is there a way to make this into a 'round robin' intersection where only one direction goes at any given time? I cannot see the traffic letting up at any time, given the construction on Hwy 58 at Univ and also at Viking, as well as the construction happening for the new Fareway and KwikStar.	- S Main - Signal timings, turn signals
10	Denise Flory	6/14/2018	1) If a rounabout is contemplated at So. Main & Greenhill, in the interim, use the safest & least expensive means to control traffic. I believe that would be the alternate signals - like at 57 & Greenhill and Cedar Heights & Greenhill. It works. Traffic would stop but then go unchallenged. 2) Greenhill & So. Main's pedestrian signal is too short. Signage should be added - pedestriains have right of way or no turn on red. 3) Greenhill & Prairie Pkwy - better signage is needed to direct traffic flow 4) Close Estate Drive. There is adequate acces to Spruce Hill via Prairie Pkwy, Heritage, and Bergstrom at Main. Traffic going west slows for cars turning onto Estate as lanes are reduced and a traffic light is ahead. Cars turning onto Estate heading east again slow traffic and cross a very busy lane heading west. Estate has become a pass through/bypass for Greenhill & Main. It makes sense to me to eliminate this 1 block street. 5) As new concrete is laid on Greenhill, make the traction cuts lengthwise instead of the washboard crosswise cuts. I understand from Steve Ephraim, this is not only safer but quieter. 6) Add noise abatement elements to the area behind the homes that back Greenhill Dr. between Estate Dr. & So. Main. While several homes have the earthen berm and sound fence, the newer homes do not. An earthen berm with evergreens would be aesthetically pleasing & reduce the increasing road noise to the established homes. Side comment - At the city council meetings regarding Kwik Star, those in attendance were told we would not have a traffic problem at So. Main & Greenhill with all the road work and development. If there are no changes to lights & the intersection, people will have to slow down & be patient. It is only for 3 years or so.	- S Main, Prairie Pkwy, Estate - Pedestrian timings, signage, closure
11	Brian Kalina	6/14/2018	From Jon: Brian lives out of town but his mother is the first house on Balboa. He is concerned about future impacts to the property. I took his information and told him we would keep him in the loop on future meetings and updates to the study. 113 Balboa Ave	- S Main - Right-of-way
12	Arlene Prather-O'Kane	6/14/2018	I would suggest that this intersection be widened to accommodate drivers turning onto Greenhill from Main if possible. It seems to be a bottleneck at that intersection and with the many houses, apartments and businesses going up, it would help.	- S Main - Turn lanes

13	Paula Davis	6/16/2018	Just two comments on Greenhill Road and Main Street in Cedar Falls. I think a round about would be great there. The round abouts keep traffic moving in all directions and easy to maneuver through. No need to sit at lights during heavy traffic times As far as the discussions on the Casey's going in where the Fareway is being built, I have no real comment on that. Most people think it will increase traffic but the Fareway by itself will as well. However there is a new gas station down the road	- S Main - Roundabout (+)
14	Karen and Les Blount	6/16/2018	It is our understanding that the city is taking comments on this subject. We live on Stewart Lane, just north of Greenhill, so travel it frequently. Our concerns are the following: <ul style="list-style-type: none"> • Speeding is an issue. It is very dangerous turning onto Estate Drive from the west. Always worry about being rear ended due to speedy drivers. • Due to increased traffic on Greenhill, maybe the Estate Drive intersection should be eliminated? Just force all turns in that area of Greenhill to either South Main or Melendy Drive. • Which gets us to South Main/Greenhill intersection. This is no longer an adequate intersection due to increased traffic, which will obviously become much heavier with the completion of a Fareway, Kwik Star, and the Public Safety building going in. A roundabout would be ideal here. At the very least, turn lanes, etc. Once again, the traffic speed along Greenhill also needs to be reduced for safety. Please, let's get these issues addressed prior to an abundance of accidents when the developments have gone in and traffic is that much heavier along here. Thank you and please share with the appropriate individuals involved and concerned about public safety on city streets and highways in Cedar Falls.	- Corridor, Estate, S Main - Speed, closure, roundabout (+)
15	Pat Worple	6/16/2018	I think you probably have enough roundabouts in Cedar Falls, if you add them on Greenhill I would have to wonder where the traffic will go. I don't think I Rainbow can handle it. Greenhill has had to take all the traffic, as people avoid the new University.	- Corridor - Roundabout (-), capacity
16	Teresa Shock	6/15/2018	Subject: Green hill and S Main I think there really needs to be a turn signal put in at this intersection. During high traffic times only 1 car is able to turn at a time and it is usually on a red light. This causes major back ups and people to risk getting in an accident	- S Main - Turn signals, queuing
17	Denise Flory	6/18/2018	I have another comment / concern regarding the Greenhill Corridor. This weekend, I looked at the 4 openings of the Public Safety Building that face Greenhill. When operational, the fire trucks will exit onto Bluebell and either will turn right onto South Main or left onto Coneflower. These streets will have traffic entering and exiting commercial businesses in operation - the Fareway and the Kwik Star. It is hard to visualize the movement of a firetruck and supporting vehicles along South Main when there is one lane with a turn lane at the South Main / Greenhill intersection with traffic backed up, as currently happens. Moving along Coneflower will likely be easier, since it is 2 lanes. Bluebell is another 1 lane street. Even if everyone stops on Bluebell and Main, the emergency vehicle will need to travel in the opposite lanes of traffic. Entering Greenhill, in an emergent situation, will be precarious for all vehicles at the current traffic flow levels. I think all involved in the decisions to develop this area with the Public Safety Building, the Fareway and the Kwik Star were not thinking of traffic flow or anticipating the increased traffic volumes, especially with the planned detours from Hwy 58 onto Greenhill. Jon, you were at the council meetings so you know the traffic concerns voiced by the residents of the South Main and Greenhill areas. Here we are. I have no solution. Controlling the current traffic flow at South Main and Greenhill with the alternating signals will help. Traffic flow and safety when the businesses are operational and the Public Safety Building is utilized will be another matter. I hope you all are thinking of not only the current needs but also the needs for the foreseeable future when planning for the Greenhill Corridor.	- S Main, Coneflower - Emergency vehicles, capacity
18	Jordan Dees	6/18/2018	My wife, daughter and I have been a resident in the Alvarado Ave cul-de-sac for several years and are very excited about the new Fairway, Kwik Star, and Public Safety buildings that are going up near us. Thank you very much for reconsidering those. I understand that with growth comes both sacrifices and conveniences and find myself to be a very understanding easy going person about both. I am concerned that my current frustrations with the intersection of Greenhill and South Main are going to get worse, much worse when these nice new businesses open up. It is mostly tolerable for now because the only people going down south Main are residents to the small El Dorado Heights neighborhood and some from the Western Home. I am afraid that the traffic situation will slowly grow out of control and eventually cause a lot of disgust for the area if left unresolved. I am asking for your help in making this a safer and quicker intersection for all that pass through it. I have almost been hit and almost hit someone several times at that intersection because of the impatient drivers that get frustrated at no dedicated turning lanes going southbound. I have also seen where cars had to pull into the intersection when the firetrucks are trying to get through because everything is packed full. I would like to see at a minimum a dedicated two lane straight and a dedicated left turn lane with protected arrow on all sides or a small round-a-bout. I feel that either of those solutions would work well for the increased traffic flow. Lastly, I wanted to thank you for your consideration with my suggestions and good luck with finding a solution.	- S Main - Safety concerns, turn lanes, emergency vehicles, roundabout (+), right-of-way
19	Brian Kalina	6/21/2018	Thank you for your presentation last week which discussed potential improvements to the intersection of Greenhill Rd. and South Main St. in Cedar Falls, IA. While I didn't get a chance to attend the presentation, I did watch a video taken of it. I thought you did a great job of outlining where the process is right now. You mentioned a desire to get input from people on what they would like to see, especially in the long term, so I wanted to share my thoughts with you. What's most important to me is actually something very personal. My mother lives at 113 Balboa Avenue, very close to this intersection. I admit we've been fearful as to whether any proposed modifications might involve taking some of our property, or worse yet, taking our entire house. I can certainly appreciate how re-engineering this intersection can help with traffic, but I can't understate what a hardship it would be to lose our house. There was a study done on this intersection, I want to say it was back in 2014, and the study discussed how installing something like a roundabout would require significant property right-of-way acquisition. Ever since reading this, I have taken a personal interest in keeping up to date with what the city's thoughts are on the future of this intersection. In this, I suppose you could say that reaching out to you has been a few years in the making! Anyway, that's a brief summary of something that greatly concerns me. Again, thank you very much for having given that presentation. I'll be keeping my eye out for when the next meeting is. I hope I can make it. It would be great to me you. Best regards, Brian Kalina	- S Main - Right-of-way
20	Tabitha Hanson	6/21/2018	I was prompted by another resident to share input regarding an intersection in town. I was glad to be given a means of communication about this intersection. A left turn arrow eastbound on Greenhill at South Main is very much needed. As a Southdale parent, I've sat through numerous lights daily. Several times I've seen 2-3 cars run the red light because you can't get through. With this being well-traveled for walking and biking too, it becomes a serious safety issue.	- S Main - Turn signals, safety concerns
21	Russ Reeves	8/9/2018	Before Fareway is done, put right turn lane on Main and move sidewalk over. (Post-it) Please plan for child/cognitive impaired pedestrians who cannot judge well when to cross near a roundabout. I'd like to see a button to press to get a traffic light to reliably stop traffic.	- S Main - Turn lanes, pedestrian accessibility, roundabout (+)
22	Bruce Kacer	8/9/2018	Traffic circles or roundabouts are fully supported by myself. Greenhill and South Main is an ideal candidate for a circle. The recent work by the City putting in the turn arrows has generally improved the situation. But is only temp solution with unnecessary traffic signal. Put in the roundabout at Greenhill and So Main	- S Main - Roundabout (+)
23	Nicholas Knepper	8/9/2018	I would love to see signal buttons that sit closer to the path rather than on the light pole itself. Some poles site a good distance from the path. (Post-it) Hudson & Greenhill biketrail on North side. Consider implement bikability walkability for future planning.	- Corridor, Hudson - Pushbutton distance, trail expansion
24	Armando Sesma	8/9/2018	I am considering a 5 lane on Greenhill turn right on S Main St. I am opposed to roundabout. I drive part time for new Aldeya takin patients to medical appt. I seen to many people driven on roundabouts that they are going too fast. Because my job I seen too many close accidents. No considering roundabout on Greenhill and S Main. Thank you.	- S Main - Roundabout (-), turn lanes, safety

25	Craig Blanchard	8/9/2018	<p>Roundabout at Oster is good because not much traffic from side street. We live on Orchard Hill Drive and we would use a roundabout on Oster when traffic is really busy on Greenhill. Now we go to Rownd St to go east on Greenhill. Roundabout on Prairie Parkway may be good due to sporadic traffic coming from Prairie and much turning traffic from westbound Greenhill. Signals would seem to work better at the major intersections like Cedar Heights, South Main, and Hudson where there is continuous traffic from all directions. I am not sure what would work best at Rownd Street.</p> <p>Avoid having signals at every intersection so as to not create a situation like Univesity was.</p> <p>When the Greenhill corridor plan is determined, a study should be done on South Main from Greenhill to University. Problem intersections are at Orchard Drive and the road from the swimming pool. As the Prairie area is developed, the traffic on South Main to University will really increase.</p> <p>Adding turn lanes on Greenhill is a great idea! Keeping two lanes in both directions is good.</p>	<p>- Oster, Prairie Pkwy, S Main</p> <p>- Roundabout (+), capacity</p>
26	Bruce Decker	8/9/2018	I still have a question about the traffic model/prediction: How much uncertainty is around the 2045 prediction? Is it plus/minus 100, plus/minus 100? This seems to be pretty important if the prediction is being used for planning.	
27	Carol Lilly	8/9/2018	<p>Please continue to manage additional access onto Greenhill in the current manner. Limiting access points will help keep the corridor efficient. Roundabouts are welcome and help keep traffic flowing.</p> <p>Thanks for your continued efforts to keep the public involved and informed.</p>	<p>- Corridor</p> <p>- Access management, roundabout (+)</p>
28	Nancy Hamilton	8/9/2018	<p>Pedestrian/bike traffic along the corridor should be carefully considered:</p> <ul style="list-style-type: none"> - The pedestrian signal at Rownd turns green at the same time as the EB left turn signal on Greenhill. EB bike/ped has to look behind to see oncoming left turns. - Needs to be bike/ped signal and clearly marked crosswalk at Greenhill and Hudson Rd. - Greenhill and Hwy 58 is very tough! - Need to educated bikes/peds about roundabouts similarly to the efforts made for drivers. - Be open to suggestions/comments from CFBPAL - city is very good about this :) - Redraw Greenhill/Hudson Rd plan to keep bike/ped train on north side as opposed to crossing both streets - or consider an "all stop" when bike/ped signal is actuated 	<p>- Rownd, Hudson</p> <p>- Pedestrian timings, safety concerns, marked crosswalks</p>
29	Benjamin Flessner	8/9/2018	<p>Orchard Dr & Greenhill is terrifying for a couple hours every Sunday. W/E turn lanes will help, but it's the N/S exiting when both churches let out that is dangerous. A traffic signal is certainly too much for two hours a week, but something should be done to help on Sunday mornings.</p> <p>I'm all for roundabouts where possible!</p> <p>Does Iowa ever use "right lane right turn only" lanes? Once middle turn lanes are added, these could help with flow - especially on Eastbound Greenhill around Algonquin - that right-turn for Casey's seems to come as a surprise to many, and the traffic volume doesn't seem to require two lanes (...yet...)</p>	<p>- Orchard, Corridor, Algonquin</p> <p>- Sunday traffic, turn lanes, roundabout (+)</p>
30	Arnold Flessner	8/9/2018	<p>I've frequently experienced the corner at Prairie Parkway and believe a roundabout would be a great improvement there. I've used this more in recent weeks because of the road construction in our neighborhood and have seen some near misses in left turns and crossings from south to north.</p> <p>(Post-it)</p> <p>Roundabouts work! Put everywhere it doesn't cost too much to acquire the property!</p>	<p>- Prairie Pkwy</p> <p>- Roundabout (+)</p>
31	Brian Kalina	8/15/2018	<p>Thank you for helping share some very useful information at last Thursday's Greenhill Corridor meeting. I was out of town at the time and was unable to make it in person, but I did manage to watch the whole presentation live on Rob Green's YouTube channel. My stepdad Armando Sesma was able to make it, and he said he enjoyed talking with you. For the next meeting you can definitely count on me being there.</p> <p>As the city moves forward in pinning down ideas for potential future modifications to the intersection of Greenhill and South Main, I do need to express my concerns regarding some of the roundabout discussions. A study the city had done back in 2014 (I believe this was the year) showed a roundabout design which appeared to overlap with a significant portion of my family's property at 113 Balboa Avenue. If this design of roundabout is similar to any currently being considered, I have to admit that my mom, stepdad, and I would find that distressing. We can be open to parting with a small portion of our property, but having to do something like give up most of our backyard would be very hard to do. Even further, if property acquisition went so far as to take our entire house (my mother's home of almost 40 years, and my childhood home), the gravity of that kind of hardship would be devastating to my family. I know we talked about this a little when I called you about a week after the first Greenhill Corridor meeting. I really appreciate you affirming that the city tries hard to avoid taking residential property, especially if it causes personal hardship. You went on to mention that, with a situation like the one we have at Greenhill and South Main, a roundabout design could likely be made to incorporate a degree of offset, in effect minimizing how much residential property its footprint ends up consuming. I'm encouraged to hear that tweaks like these are something you've readily given thought to. Come to think of it, I want to say the city's engineering team came up with some great ideas for reducing the amount of property right-of-way acquisition for the University Avenue reconstruction project.</p> <p>I do have other concerns of lesser importance, but I think I'll leave these be for now until we get a better idea about what proposals are more firmly being considered. I certainly look forward to talking with you more, and all my gratitude to you and the rest of the city for understanding how important my family's home is to us.</p>	<p>- S Main</p> <p>- Right-of-way</p>
32	Mike & Coleen Wagner	8/18/2018	<p>You asked for comments at the meeting last week about Greenhill Road. I am trying hard to find something positive to say about this, but unfortunately, it is difficult.</p> <p>Since the University Ave. project began, a large portion of traffic that traveled that road started changing to Greenhill. I believe many people still use Greenhill to avoid the roundabouts. We have lived in our home over 25 years and the increase of traffic on Greenhill is unbelievable. Trying to get onto or off of Greenhill via Estate Drive is next to impossible. Several times every day traffic is lined up from South Main clear past Estate Drive so there is no way to use that road. When cars get to the intersection of Greenhill and Prairie Parkway, they can see traffic backed up that far so they use Spruce Hills Dr. as an alternate route. Traffic on Spruce Hills Dr. is horrible and cars speed through way over the speed limit. Even with the Traffic Department placing one of the machines that shows the speed you are traveling on that road, cars still go past it at 30 – 35 mph or faster even with the machine blinking telling them to slow down. Where the lane on Prairie Parkway is marked as "turn only" heading east, cars ignore that and go right strait through. In fact, a couple times this week had there been three more cars lined up, the line would have been down to Prairie Parkway.</p> <p>I am not sure roundabouts are the answer for Greenhill. We have had a few close calls already on three of the different roundabouts. Cars will be coming right at us going the wrong way. It is very dangerous. Painting the slanted lines on the road to make traffic go into one lane does not seem to work either. We have witnessed many times where cars drive right over the lines like they are not even there.</p> <p>If Kwik Star Station does build on the South Main/Greenhill corner, traffic will more than double what it is already. That should not be allowed to happen.</p> <p>I think stop lights are really the best way to handle this but they will need to be timed in such a way to avoid the long lines of backed up traffic especially at the Greenhill/South Main intersection.</p> <p>Thank you for your work on this project. I am certain it is not an easy thing to do.</p>	<p>- Corridor, Estate, Prairie Pkwy, S Main</p> <p>- Roundabout (-), sufficient gaps in traffic, queuing, speed, traffic signal</p>

33	Ann Crawford	8/23/2018	<p>Mr. Resler, I live on Balboa Ave. just a couple of lots West of South Main Street and am very concerned about how all of the additional traffic is going to affect our lives. I lived on Orchard Dr. when Greenhill Road was constructed. What a nice thru-way it was! What was once a great way to cross from one side of town to the other has become a pathway with too many lane changes and lights. I don't think the lane changes at Rownd Street are a good solution at all. Those basically change the road to two lanes for a significant distance.</p> <p>I know there are thoughts about RoundABOUTs and, I for one, don't care for them. I can understand the benefit for one once in awhile, but they must not be overdone. I truly believe the combination of roundabouts and special turn offs are confusing on University Avenue and certainly affect my interest in doing business along that stretch of road. I am not a person who fights change but some things don't always make as much sense as they might initially seem.</p> <p>I have looked at solutions as I drive around town and in other communities. I would like to suggest finding a way to move to 5 lanes with painted turn either direction arrows in the center. An example is on 1st street near Thunderidge and seems to make a lot of sense without requiring a lot of extra expense and major construction. I have also seem this used in Coralville and other communities in the area.</p> <p>We don't need to do something totally new. We can use tried and true solutions instead of ones that may seem like they are better but long term have not been proven, yet cost a lot of extra money that might not be the best expenditure of funds.</p> <p>It would seem to me that widening Greenhill Road one more lane would set the stage for many years to come, giving a space to make other lane upgrades in the future if needed without causing such major upheaval during construction as roundabouts. It would be wise to do this before more businesses and homes are built along the Greenhill Corridor, being cognizant of the negative impact this extra lane might have on the homeowners along the way in the future. From casual observation, it would seem that enough space is available away from homes along most of the way with some planning that would be required to avoid affecting the homes o the South side of Greenhill, West from South Main to hwy 58.</p> <p>Please listen to the people who live in this area and not so much to people who are not directly affected by this topic. We live this everyday. We don't just drive in once in a while. We are already facing come major changes to our traffic pattern and living space so whatever is done, please consider that much of what the impact will be on this area is not yet evident and even though on paper, some ideas look good, they don't always work in practicality.</p>	<p>- Corridor</p> <p>- 5-lane, roundabout (-)</p>
58	Denise Flory	11/1/2018	<p>1 - RE South Main proposed Roundabout on Greenhill. Could the RAB be planned to take more of the Fareway area? So it is not centered in the intersection, but oblong toward Fareway. The dogbone at University and 58 is off center.</p> <p>2 - Prairie Pkwy - north and south is precarious when you have people turning east from the north and west from the south and people going straight through. Designated turn lane and light arrow would be helpful.</p> <p>3 - Any thoughts of lights along the bike/ped lane on Greenhill? Very dark btwn street lights.</p> <p>There is a learning curve with roundabouts - when drivers are working though a roundabout, they rarely see pedestrians or cyclists.</p> <p>4 - Any thoughts to having a bridge from place to place? (for pedestrians and bikers)</p> <p>5 - We are looking at 10 years out for much of these changes - we still have to tolerate Greenhill speeders and distracted drivers fo 10 years</p> <p>6 - I support an enhanced light and expanded turn lanes on Greenhill and So. Main - expanding towards the Fareway and Kwik Star/trip on the southside. The people invested in Cedar Falls living on the north side of Greenhill have lost enough already.</p>	<p>- S Main, Prairie Pkwy, Corridor</p> <p>- Right-of-way, turn lanes, pedestrian facilities, speed, traffic signal</p>
59	Fred Mieke	11/1/2018	<p>I reside in Whispering Pines Condominiums. We enjoy the improvements in our general area. I would love to make a couple more recommendations.</p> <p>1) Asphalt overlay on Greenhill. This will reduce sound (pollution) for the very loud whine of tires on the cross-cuts of the roadway.</p> <p>2) Round-a-bout, round-a-bout, round-a-bout. I was against them on University. I still am not an advocate for them - wrong application on a commercial area. I am for them along the Greenhill Corridor, the idea is a better match for moving traffic along, with fewer stops.</p> <p>3) A safety improvement would be lighting along the bike/pedestrian trail. It is very dark and unsafe early morning and after sundown. There is a good amount of traffic after/before dark, and I would anticipate it having more traffic if lighting is added. Snow removal would be a welcome on the pathways. There is a significant number of residents that would bike, walk, run at below freezing temps.</p> <p>4) Some thought should be made to create a safer situation between Green Creek and Cedar Heights Dr due to deer traffic (not John Deere). There is a significant amount of deer heard movement which leads to property damage.</p>	<p>- Corridor</p> <p>- Noise, roundabout (+), deer</p>
60	Eileen Daley	11/1/2018	<p>1. Please implement an immediate change to the westbound intersection @ Greenhill and Prairie Parkway. I regularly have to ???? to make the left turn; and often continue to Main, which adds traffic @ that intersection.</p> <p>2. Support median south of Greenhill @ Main! This conversation is making me think about my driving as I make the turn from Greenhill onto Main!</p> <p>3. No cost solution - slow down Greenhill to "35 mph"</p> <p>Thank you!</p>	<p>- Prairie Pkwy, S Main, Corridor</p> <p>- Turn signals, median, speed</p>
61	Penny Pop	11/1/2018	<p>We need additional ped, bike and traffic safety measures @ Greenhill and Main as well as Greenhill and Rownd.</p> <p>Nice presentation - thank you for your work</p>	<p>- S Main, Rownd</p> <p>- Safety concerns</p>
62	Kristin Moser	11/2/2018	<p>Hi all,</p> <p>I'm writing to express my support for adding roundabouts to Greenhill Road. It is clear that the roundabouts on University are an overwhelming success. It makes sense to follow this plan on the Greenhill work.</p> <p>Thank you for the work you do.</p>	<p>- Corridor</p> <p>- Roundabout (+)</p>
63	Paula Davis	11/2/2018	<p>I would like to recommend the round abouts for both locations {S Main St and Cedar Heights Dr}.</p> <p>The round abouts are easy to maneuver and keeps traffic flowing. People just need to know cars in the round about have the right of way</p> <p>There will be way too much congestion at Especially Main and Greenhill after Fareway is completed.</p> <p>The wait for the lights will be horrendous especially since , it seems, people don't know how to make left turns without holding up traffic.</p> <p>Thank you</p>	<p>- Corridor, S Main</p> <p>- Roundabout (+), capacity</p>

64	Jeff & Janice Smith	11/15/2018	<p>I am a resident on Balboa Ave. The Main St. Greenhill corridor will impact us GREATLY if a roundabout is added at that intersection. The flow of traffic coming from the North on Main St is NEVER ENDING. It was so bad that we needed a turning arrow for us residents to get out on Greenhill road. If a roundabout is put at that intersection, there will be constant cars on that roundabout. And again, us residents on Balboa won't be able to get out of our neighborhood.</p> <p>With Fareway almost done, the entrance and exit was put right on Main st. So traffic coming from Fareway, then a roundabout would block us residents in. Lights would at least put a break in traffic flow, to give us residents a chance to get out.</p> <p>I agree that the intersection needs to be bigger with LIGHTS, AND TURNING LIGHTS. The whole Main st from University to Greenhill almost needs to be 4 lanes with as busy as it is. PLEASE, PLEASE DO NOT put a roundabout at Greenhill and Main!! There is no way we will be able to pull out of Balboa Ave. Already, Balboa is very close to Greenhill. Many times when I try to pull out and someone makes a right hand turn off of Greenhill on South Main St. they seem to speed up and pretend to hit you when pulling out. It is very close to Greenhill that cars just fly around on that corner. It is hard enough to judge those turns. Add a roundabout, a Fareway, and as busy as that road is...it will become a bad intersection and a complete nightmare for us residents!!</p> <p>Already worried when Fareway opens. That could have been designed to pull traffic on a frontage road over to Coneflower. With the gas station, it would work great to pull the traffic flow on a frontage road that can only be accessed from Coneflower. Really wish, this was different.</p> <p>Thanks! Concerned Balboa resident!!</p>	<p>- S Main - Roundabout (-)</p>
65	Penny Popp	11/12/2018	<p>Questions / conversation with Penny. She is looking to answer questions from the home owner's association.</p> <ol style="list-style-type: none"> 1. What is the square footage of the right-of-way needed for the roundabout option at Greenhill and Main? Can the roundabout be shifted to have less impact on right-of-way? <ol style="list-style-type: none"> a. Penny says property owners have square footage information for the right-of-way needed. I told her these were concepts. We don't have detailed square footage information on right-of-way. That will come with detailed design. If property owners were quoting specific numbers, that information did not come from the City. b. The roundabout was shifted at a conceptual level to minimize right-of-way impacts. Moving it east or north has a greater impact on the NE corner. Moving it west or south has a greater impact on the SW corner. She also brought up right-of-way impacts to Fareway and could the roundabout be shifted towards Fareway? Shifting the roundabout towards Fareway would have negative impacts on other right-of-way. Exact impacts won't be known until detailed design is done. 2. Construction costs <ol style="list-style-type: none"> a. How did Snyder annualize the construction costs? 3. Cost for wall repairs <ol style="list-style-type: none"> a. I told Penny wall repair costs were not in the Snyder numbers from the presentation. That is either going to be a Public Works item or a separate CIP. 4. CFU costs <ol style="list-style-type: none"> a. I told her we have those costs and they were included in Snyder's numbers but she asked to see those costs broken out. 5. She asked about the median for Balboa and incorrectly assumed it was only for one of the options. I told her it would go in with either the signal or roundabout option and would be installed with the project. 6. How did Snyder calculate / annualize cost of time for the different options? 7. How did Snyder calculate / annualize cost of emissions for the different options? Did they take into account that cars will have less emissions in the future? 8. How did Snyder factor in the demographics of the neighborhood? Did they forecast senior housing out to 2045? Did they factor in that Western Homes is a permanent population? 9. She asked about right-of-way impacts at Cedar Heights vs. Main. I said none were anticipated at Cedar Heights at this time and that was because we have more right-of-way at Cedar Heights. <p>With some of these questions, I explained that we use the best information we have at the time. Very detailed questions in general. We can talk tomorrow at our weekly meeting.</p>	

APPENDIX D
TRAFFIC DATA & TECHNICAL ANALYSIS MEMORANDUMS

S Main St & Greenhill Rd Interim Improvements

Crash History

Traffic History & Data Collection

Traffic Forecasts and Existing Conditions Analysis

Pedestrian & Bicycle Facilities Review

Forecasted Improvement Needs/Alternatives Operations Analysis

Life Cycle Cost Analysis – Intersection Improvement Alternatives

Memorandum

To: Jon Resler, P.E., City Engineer **Date:** 6/21/18

From: Mark Perington, P.E. PTOE
Andrew Houchin, E.I.

CC: Stephanie Sheetz, AICP Community Development Director

RE: S Main St & Greenhill Rd Interim Improvements
Greenhill Rd Corridor Traffic Study
Snyder & Associates Project No.: 118.0463

The City of Cedar Falls has requested that Snyder & Associates conduct a traffic study of the Greenhill Rd corridor from Hudson Rd to Cedar Heights Dr. As part of that study, specific attention was focused on the S Main St intersection and potential short-term solutions prior to the intersection improvement project programmed for 2021. This memo summarizes the analysis and recommendations for short-term improvements at the intersection.

Background

Greenhill Rd is a four-lane undivided road with a 45 mph speed limit, and S Main St is a two-lane undivided road with a 35 mph speed limit. Parking is not allowed on either side of either street. At the intersection, one of the westbound (WB) through lanes is eliminated to create left turn lanes for the EB and WB traffic. The NB approach has a left turn lane and a thru/right lane; the SB approach has one lane (see Figure 1). The intersection is currently controlled with a traffic signal that does not include protected phases for any of the left turn movements (i.e. all left turns must wait for an acceptable gap in oncoming traffic to make their turn).

This intersection has also experienced a recent increase in traffic, likely due to diverted traffic trying to avoid delays in the construction staging at the intersection of IA 58 and Viking Rd. This additional traffic has decreased the number of gaps available for left turning traffic to execute their turns significantly increasing delay and creating frustration for drivers. In addition, the City has received several public comments about safety at this intersection, particularly left turn movements. Left turn conflicts on S Main St are exacerbated by a negative offset between the north and south approaches restricting sight distance for NB and SB lefts. Additionally, the two planned developments south of Greenhill Rd between S Main St and Coneflower Pkwy (Fareway grocery store and Kwik Star gas station/convenience store) will contribute additional traffic to the intersection when they are opened. The expanded Public Safety Center on Bluebell should be complete in early summer of 2019 increasing the occurrence of emergency vehicles traveling through the intersection as well.



Figure 1. S Main St and Greenhill Rd Intersection

Crash History

Reported crashes at the intersection were reviewed through the Iowa DOT SAVER database for 2013-2017. In the five years, 14 crashes were reported with only one minor injury. Given current traffic volumes and this history, the calculated crash rate for the intersection is 0.40 crashes per million entering vehicles (MEV), which is well below the statewide average crash rate for urban arterial intersections of 0.8 – 1.0 crashes/MEV. Of the 14 crashes, six were described as “Angle/Oncoming Left Turn”. The 2018 history was also reviewed and just 1 property damage only single vehicle crash has been reported through May. An intersection crash summary worksheet and collision diagram are attached to the memorandum.

Analysis

The objective of this analysis was to identify potential short-term, relatively low-cost/limited construction solutions to improve safety and operations at the intersection. Alternatives evaluated included providing left turn phasing (protected-permissive) to certain directions, providing left turn phasing for all directions, and minor widening of the SB approach. Both delays and queue lengths were considered in the analysis. The analysis was conducted using *Highway Capacity Manual 6th Ed. (HCM 6)* methodologies built into the traffic analysis software *Synchro 10* for delays, and using *Synchro 10* and its simulation companion software *SimTraffic 10* for queue lengths. Traffic volumes used were collected on May 9-10, 2018 (see Figure 2 and Figure 3 for peak hour counts and the attached count information for the entire 13 hour count data).



Figure 2. 2018 AM Peak Hour Volumes



Figure 3. 2018 PM Peak Hour Volumes

Table 1 summarizes the analysis results for selected alternatives in the PM peak for the critical movements (those with the most demand/conflict: the SB approach, EB lefts, and WB thru/rights).

- Currently only the EB left movement is operating at a LOS D or worse
- Introducing protected-permissive left turn phasing EB/WB:
 - Improves the left turn delays and queues
 - Increases the delay for other movements, especially for the SB approach and WB thru/right movement
- Providing NB/SB “split” phases (separate NB/SB movements)
 - Produces the most delay and longest queues of any of the options evaluated
- Adding an additional SB lane with minor widening
 - Significantly improves the delays and queues SB
 - Offsets the additional delay from the EB/WB left turn phases
- Introducing NB/SB protected-permissive left turn phasing
 - Slightly increases delays and queues in the analysis
 - Provides a protected phase for potentially conservative drivers to execute their turn rather than needing to judge an acceptable gap
- Providing a SB leading phase
 - Improves delays SB by ensuring some lefts are able to clear every cycle
 - Would not allow for NB lefts to be protected-permissive
- None of the options are able to improve the WB thru/right delays and queues
 - Capacity constraint – two through lanes (or a right turn lane) are needed WB
 - Widening along Greenhill would be a higher cost item that would not likely be achieved on an interim basis
 - Some reassignment of green time may provide improvement, but could add delays for other movements

Table 1. Delay and Queue Length Analysis Summary

Alternative	Movement/ Approach	Storage Length	Delay (sec)	LOS	Synchro 95 th %ile Q (feet)	SimTraffic 95 th %ile Q (feet)
Existing	SB	-	30	C	280	216
	EBL	150	51	D	#149	270
	WBTR	-	30	C	#649	423 [^]
	Intersection Total		25	C	-	-
Option 1: EB/WB Left Pro+Perm (NB/SB Split)	SB	-	113	F	#554	547
	EBL	150	46	D	#133	113
	WBTR	-	73	E	#861	565 [^]
	Intersection Total		63	E	-	-
Option 2: EB/WB/NB Left Pro+Perm (SB Perm)	SB	-	69	E	#507	336
	EBL	150	40	D	#114	120
	WBTR	-	71	E	#776	518 [^]
	Intersection Total		50	D	-	-
Option 3: Add SB Lane and Pro+Perm for All Directions (8-phase)	SB	170	46	D	134	210
	EBL	150	22	C	#68	114
	WBTR	-	44	D	#639	340
	Intersection Total		34	C	-	-
Selected Other Options Evaluated						
EB/WB Left Pro+Perm (NB/SB Perm)	SB	-	71	E	#404	275
	EBL	150	23	C	#66	95
	WBTR	-	48	D	#626	425 [^]
	Intersection Total		40	D	-	-
EB/WB Left Pro+Perm and SB Leading (NB Perm)	SB	-	44	D	#384	303
	EBL	150	26	C	#72	94
	WBTR	-	49	D	#776	422 [^]
	Intersection Total		34	C	-	-
Add SB Lane and EB/WB Left Pro+Perm (NB/SB Perm)	SB	170	29	C	132	176
	EBL	150	17	B	38	128
	WBTR	-	47	D	#521	373
	Intersection Total		30	C	-	-

- 95th %ile volumes exceed capacity

[^] - Queue near model uplink distance (Queue may be longer than simulation reports)

Recommendations

Signal Improvements

According to the City, the signal cabinet controlling this intersection is currently being upgraded to allow for protected-permissive left turn phasing. The City should complete the signal cabinet upgrade and provide the following additional signal upgrades and modifications. (See Figure 4).

1. Provide protected-permissive phasing for EB/WB approaches
 - a. Adding a head over the left turn lane for the EB approach requires a span-wire support
 - b. Option to lead or lag SB phase, however unique head placement and operation consideration with NB if implemented w/ existing SB single lane
 - c. If SB approach widened, provide protected-permissive operation NB/SB
 - d. NB/SB can revert to permissive only phasing in off-peak times

2. NB (and SB, if it is widened) detection should be updated to ensure each lane can be detected separately
 - a. Likely through one radar detection unit per approach, or other non-intrusive device like video
3. If signal improvements prove inadequate at reducing delay and funding budget becomes available, consider widening SB S Main St to provide additional lane and four-section flashing yellow arrow signal heads for all four approaches.
 - a. These allow for greater flexibility in signal phasing
4. Other miscellaneous signal operation modifications:
 - a. Vehicle and pedestrian clearance intervals should be updated, will follow up with recommendations
 - b. Phase splits should be determined from field observations and adjustments
 - c. Emergency vehicle preemption line of sight for Strobecom system should be tested with the new public safety building exiting path for emergency vehicles
5. Approximate Cost: \$20,000 - \$25,000
 - a. Cabinet, radar detection units, and signal heads can be reused at other intersections

Widen SB Approach

Should the proposed signal improvements prove inadequate at reducing delay and improving traffic conditions, and funding budget becomes available, additional operation benefit will be realized by widening the SB approach to provide a SB left turn lane and a shared thru/right lane. (See Figure 5).

1. Existing delay and queueing on the SB approach increases if EB/WB left turn phasing is implemented without the SB widening.
2. Clarifies the gaps for NB permissive lefts by separating the SB lefts from the SB thru/rights
3. Should be at least 170 feet long if possible, but even 100 of storage provides benefit and improves signal operation efficiency
4. Can be implemented with approximately 5-6 feet of widening to the west
5. Must verify any utility conflicts in the 8-10 feet area behind curb impacted by widening.
6. Approximate Cost: \$25,000 – \$35,000

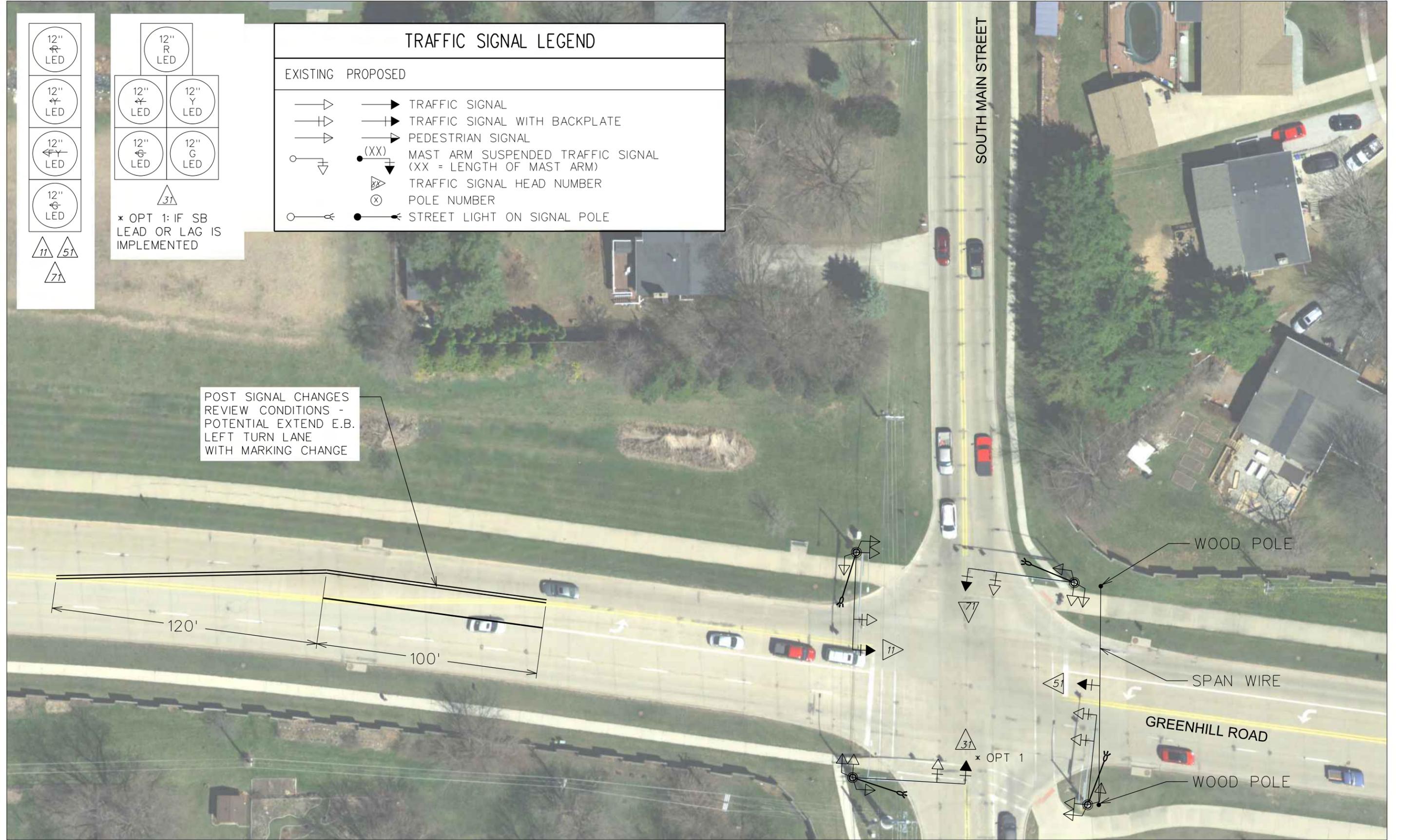
Pavement Markings

If the SB widening were implemented or in conjunction with normal pavement restriping efforts, the EB left turn lane should be lengthened by 100 feet.

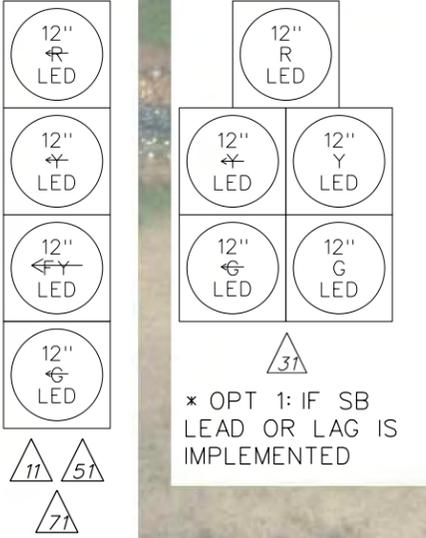
1. Depending on the gap acceptance of drivers making EB left turns in the permissive phase, the existing 150 feet of storage may not be adequate
2. Does not adversely impact any other movements
3. Option to wait until other improvements are implemented to determine its necessity and complete in conjunction with routine pavement marking repainting
4. Approximate Cost: \$1,000 - \$1,500

Attachments:

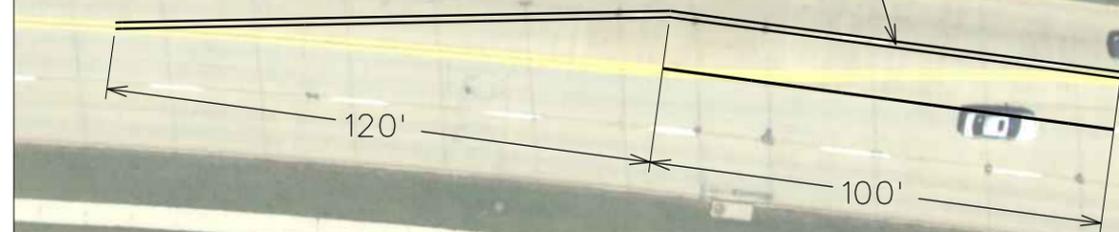
- Intersection Crash Summary & Collision Diagram
- 13 Hour Count at S Main St and Greenhill Rd (May 9-10, 2018)



TRAFFIC SIGNAL LEGEND	
EXISTING	PROPOSED
	TRAFFIC SIGNAL
	TRAFFIC SIGNAL WITH BACKPLATE
	PEDESTRIAN SIGNAL
	MAST ARM SUSPENDED TRAFFIC SIGNAL (XX = LENGTH OF MAST ARM)
	TRAFFIC SIGNAL HEAD NUMBER
	POLE NUMBER
	STREET LIGHT ON SIGNAL POLE



POST SIGNAL CHANGES
 REVIEW CONDITIONS -
 POTENTIAL EXTEND E.B.
 LEFT TURN LANE
 WITH MARKING CHANGE





TRAFFIC SIGNAL LEGEND	
EXISTING	PROPOSED
	TRAFFIC SIGNAL
	TRAFFIC SIGNAL WITH BACKPLATE
	PEDESTRIAN SIGNAL
	MAST ARM SUSPENDED TRAFFIC SIGNAL (XX = LENGTH OF MAST ARM)
	TRAFFIC SIGNAL HEAD NUMBER
	POLE NUMBER
	STREET LIGHT ON SIGNAL POLE

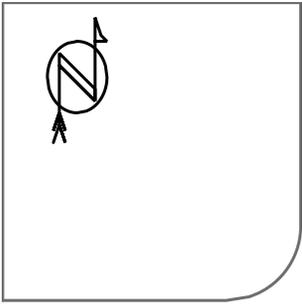
-
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POST SIGNAL CHANGES
 REVIEW CONDITIONS -
 POTENTIAL EXTEND E.B.
 LEFT TURN LANE
 WITH MARKING CHANGE

5'-6 PAVEMENT WIDENING
 FOR ADD'L S.B. LANE

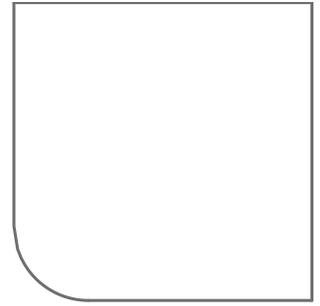
14 Crashes

Clear



2/28/2014
9/2/2016

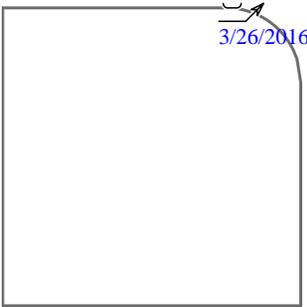
6/12/2016
11/11/2016
8/25/2017



3/23/2014
6/25/2015
6/7/2017
9/3/2017

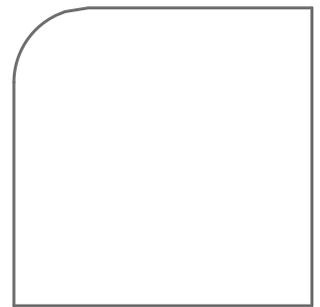
12/22/2014
3/13/2015

7/6/2017



3/26/2016

9/29/2013



(0) crashes could not be placed in this schematic

- ← Straight
- ←| Stopped
- ← Unknown
- ↔ Backing
- ↔ Overtaking
- ↔ Sideswipe

- ▭ Parked
- ↔ Erratic
- ↔ Out of control
- ↗ Right turn
- ↖ Left turn
- ↻ U-turn

- ⊗ Pedestrian
- ⊗ Bicycle
- Injury
- Fatality
- ⚡ Nighttime
- ⚡ DUI

Fixed objects:

- General
- ⊠ Signal
- ⊠ Tree
- ⊠ Pole
- ⊠ Curb
- ⊠ Animal
- ◁ 3rd vehicle
- * Extra data

Intersection Crash Summary

Location: Green Hill Rd & S Main St Intersection
 City/County: Cedar Falls, IA
 Time Period: 2013-2017 Crash Period = 5 years
 Prepared by: AJH

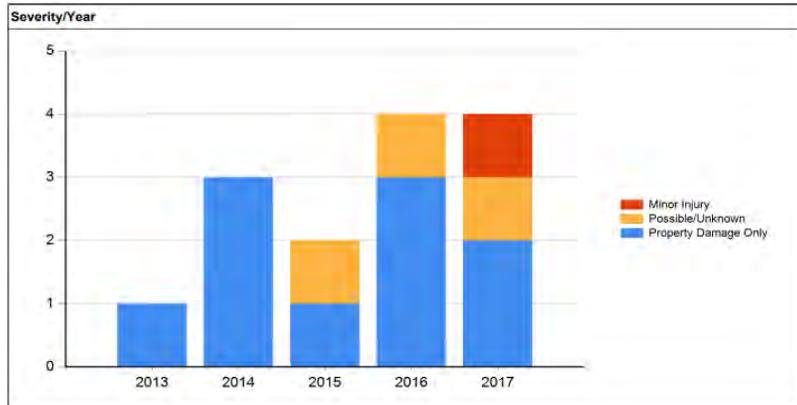
NUMBER OF CRASHES

<u>0</u> Fatal Crashes	<u>0</u> fatalities	<u>0</u> injuries
<u>0</u> Major Injury Crashes		<u>0</u> injuries
<u>1</u> Minor Injury Crashes		<u>1</u> injuries
<u>3</u> Possible/Unknown Injury Crashes		<u>3</u> injuries
<u>10</u> Property Damage Only Crashes		
Totals: <u>14</u> Crashes <u>0</u> fatalities <u>4</u> injuries		

CRASH RATES

Total Crash Rate =	14 /	34.57 MEV =	0.40 Total Crashes/MEV
Fatal Crash Rate =	0 /	34.57 MEV =	0.00 Fatal Crashes/MEV
Fatal/Injury Crash Rate =	4 /	34.57 MEV =	0.12 F & I Crashes/MEV

CRASH FREQUENCY



CRASH TYPE

0 Head-on 6 Rear-end Crash 1 Broadside/Right angle Crash 6 Angle, Oncoming Left Turn 0 Backing	1 Sideswipe, Same Direction 0 Sideswipe, Opposite Direction 0 Non Vehicle Collision 0 Other 0 Unknown	<u>Non Vehicle Collision Type</u> 0 Pedestrian 0 Animal 0 Fixed Object 0 Other
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TRAFFIC - AADT

North Approach =	<u>8350</u>
South Approach =	<u>3990</u>
East Approach =	<u>13090</u>
West Approach =	<u>12460</u>
Million Entering Vehicles (MEV) =	<u>34.57</u>

Notes:
Adj 2018 Snyder 13 hr Count



Turning Movement Count Summary

Greenhill Rd & Main St
 Greenhill Road Traffic Study
 Cedarfalls, IA
 118.0463.01

File Name : 13hr_Greenhill_Mainst_tmc_2018-05-09
 Site Code :
 Start Date : 5/9/2018
 Page No : 1

Groups Printed- Cars+ - Heavy Vehicles

Start Time	Main St SB					Greenhill Rd WB					Main St NB					Greenhill Rd EB					Int. Total
	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	
06:00 AM	4	3	9	0	16	2	16	9	2	29	2	2	3	0	7	9	19	5	0	33	85
06:15 AM	13	4	11	0	28	2	27	6	0	35	10	1	2	0	13	4	39	6	0	49	125
06:30 AM	14	8	20	0	42	2	31	8	0	41	10	6	9	0	25	7	60	9	1	77	185
06:45 AM	19	5	24	0	48	7	43	20	0	70	12	12	7	0	31	11	85	11	0	107	256
Total	50	20	64	0	134	13	117	43	2	175	34	21	21	0	76	31	203	31	1	266	651
07:00 AM	24	8	30	0	62	4	45	30	0	79	18	7	10	0	35	15	45	7	1	68	244
07:15 AM	25	3	22	0	50	2	43	32	0	77	23	17	13	1	54	28	68	7	0	103	284
07:30 AM	36	18	32	0	86	8	65	40	0	113	17	23	13	0	53	31	83	21	0	135	387
07:45 AM	30	12	39	0	81	4	66	39	0	109	21	24	10	0	55	26	106	28	0	160	405
Total	115	41	123	0	279	18	219	141	0	378	79	71	46	1	197	100	302	63	1	466	1320
08:00 AM	31	11	39	0	81	2	52	27	0	81	10	11	8	0	29	30	81	12	0	123	314
08:15 AM	31	16	28	0	75	8	50	34	0	92	8	18	9	0	35	35	86	20	2	143	345
08:30 AM	29	15	25	1	70	7	56	26	0	89	10	20	9	0	39	47	81	9	0	137	335
08:45 AM	48	13	21	0	82	3	53	30	0	86	15	18	10	2	45	22	82	15	0	119	332
Total	139	55	113	1	308	20	211	117	0	348	43	67	36	2	148	134	330	56	2	522	1326
09:00 AM	24	15	16	0	55	5	45	26	0	76	13	17	13	0	43	17	70	20	0	107	281
09:15 AM	34	7	19	0	60	2	40	22	0	64	12	2	4	0	18	18	46	9	0	73	215
09:30 AM	30	11	20	0	61	2	44	36	0	82	12	6	9	0	27	20	63	7	0	90	260
09:45 AM	25	8	10	0	43	3	55	38	0	96	10	14	5	0	29	19	56	13	0	88	256
Total	113	41	65	0	219	12	184	122	0	318	47	39	31	0	117	74	235	49	0	358	1012
10:00 AM	27	6	12	0	45	6	34	23	0	63	9	16	4	0	29	28	55	10	0	93	230
10:15 AM	30	13	10	0	53	5	56	29	0	90	7	11	6	0	24	21	62	4	0	87	254
10:30 AM	28	11	21	0	60	5	55	24	0	84	12	8	6	0	26	19	54	14	0	87	257
10:45 AM	28	10	19	0	57	7	59	44	0	110	13	11	13	0	37	26	70	16	0	112	316
Total	113	40	62	0	215	23	204	120	0	347	41	46	29	0	116	94	241	44	0	379	1057
11:00 AM	32	15	10	0	57	7	65	52	0	124	12	12	10	0	34	32	72	18	0	122	337
11:15 AM	26	10	29	0	65	9	70	42	0	121	15	18	4	0	37	25	69	16	0	110	333
11:30 AM	29	9	28	0	66	5	56	50	0	111	14	14	6	0	34	37	81	16	0	134	345
11:45 AM	24	8	24	0	56	14	75	41	1	131	13	14	11	0	38	26	73	15	0	114	339
Total	111	42	91	0	244	35	266	185	1	487	54	58	31	0	143	120	295	65	0	480	1354
12:00 PM	26	18	22	1	67	14	62	39	0	115	12	12	9	0	33	34	89	18	0	141	356
12:15 PM	21	15	16	0	52	5	68	43	0	116	13	8	7	0	28	26	92	25	0	143	339
12:30 PM	22	12	20	0	54	11	71	37	0	119	13	12	8	1	34	24	75	14	0	113	320
12:45 PM	31	9	24	0	64	10	73	37	0	120	21	12	12	0	45	19	88	22	0	129	358
Total	100	54	82	1	237	40	274	156	0	470	59	44	36	1	140	103	344	79	0	526	1373
01:00 PM	25	10	9	0	44	10	76	34	0	120	14	6	15	1	36	28	90	22	0	140	340
01:15 PM	25	14	15	0	54	16	87	35	0	138	9	12	3	0	24	19	71	16	0	106	322
01:30 PM	35	11	16	0	62	8	67	57	0	132	13	10	6	0	29	12	80	19	0	111	334
01:45 PM	31	13	16	0	60	12	74	37	0	123	12	16	7	2	37	18	70	17	0	105	325
Total	116	48	56	0	220	46	304	163	0	513	48	44	31	3	126	77	311	74	0	462	1321
02:00 PM	33	12	15	1	61	8	59	54	1	122	14	12	14	0	40	25	77	20	0	122	345
02:15 PM	42	17	32	0	91	6	68	52	0	126	15	16	4	0	35	27	90	16	1	134	386
02:30 PM	41	13	33	0	87	11	82	66	0	159	14	17	6	0	37	19	81	12	0	112	395
02:45 PM	34	13	30	0	77	13	92	46	0	151	13	26	7	0	46	20	87	17	0	124	398
Total	150	55	110	1	316	38	301	218	1	558	56	71	31	0	158	91	335	65	1	492	1524
03:00 PM	47	29	31	1	108	9	88	56	0	153	7	10	11	0	28	21	88	20	0	129	418
03:15 PM	48	21	25	0	94	13	94	58	0	165	21	15	9	0	45	30	93	16	0	139	443
03:30 PM	40	20	24	0	84	14	111	53	0	178	33	18	10	0	61	25	110	17	0	152	475
03:45 PM	49	14	29	0	92	7	103	58	0	168	12	15	7	0	34	27	100	14	0	141	435
Total	184	84	109	1	378	43	396	225	0	664	73	58	37	0	168	103	391	67	0	561	1771
04:00 PM	43	10	32	0	85	5	97	64	0	166	11	17	11	0	39	25	111	23	0		449



Turning Movement Count Summary

Greenhill Rd & Main St
 Greenhill Road Traffic Study
 Cedarfalls, IA
 118.0463.01

File Name : 13hr_Greenhill_Mainst_tmc_2018-05-09
 Site Code :
 Start Date : 5/9/2018
 Page No : 2

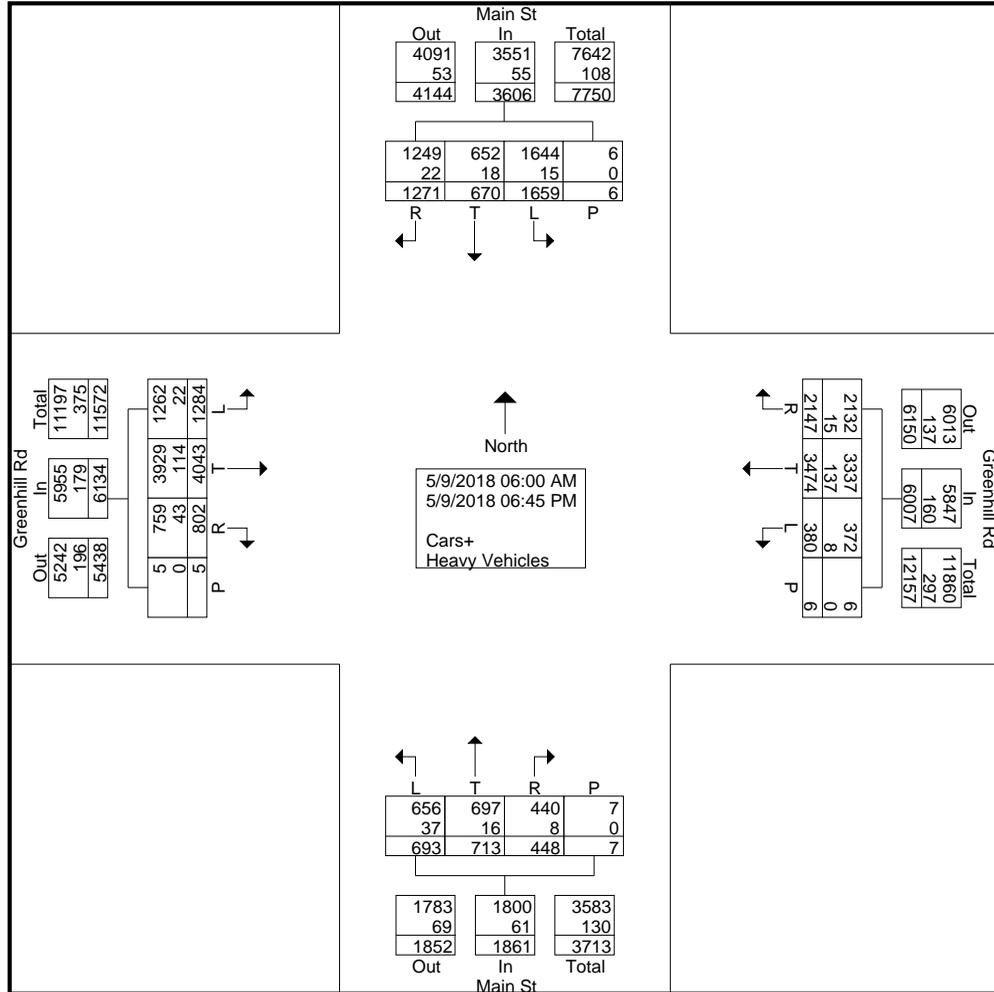
Groups Printed- Cars+ - Heavy Vehicles

Start Time	Main St SB					Greenhill Rd WB					Main St NB					Greenhill Rd EB					Int. Total
	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	
04:15 PM	44	21	39	0	104	8	107	65	0	180	16	21	9	0	46	26	114	19	0	159	489
04:30 PM	46	17	31	0	94	12	124	66	0	202	19	21	14	0	54	18	112	28	0	158	508
04:45 PM	48	21	32	0	101	10	100	69	2	181	19	21	14	0	54	35	131	25	0	191	527
Total	181	69	134	0	384	35	428	264	2	729	65	80	48	0	193	104	468	95	0	667	1973
05:00 PM	34	20	50	0	104	8	123	62	0	193	15	15	11	0	41	19	112	21	0	152	490
05:15 PM	49	14	38	1	102	8	99	51	0	158	16	10	13	0	39	43	96	14	0	153	452
05:30 PM	28	19	39	0	86	13	72	53	0	138	15	31	9	0	55	34	71	21	0	126	405
05:45 PM	35	23	32	0	90	4	63	50	0	117	8	19	4	0	31	34	85	11	0	130	368
Total	146	76	159	1	382	33	357	216	0	606	54	75	37	0	166	130	364	67	0	561	1715
06:00 PM	45	6	32	0	83	7	55	46	0	108	9	9	13	0	31	46	59	12	0	117	339
06:15 PM	42	13	28	0	83	4	54	42	0	100	15	15	9	0	39	27	70	11	0	108	330
06:30 PM	24	16	30	0	70	5	52	48	0	105	7	4	4	0	15	23	54	12	0	89	279
06:45 PM	30	10	13	1	54	8	52	41	0	101	9	11	8	0	28	27	41	12	0	80	263
Total	141	45	103	1	290	24	213	177	0	414	40	39	34	0	113	123	224	47	0	394	1211
Grand Total	1659	670	1271	6	3606	380	3474	2147	6	6007	693	713	448	7	1861	1284	4043	802	5	6134	17608
Apprch %	46	18.6	35.2	0.2		6.3	57.8	35.7	0.1		37.2	38.3	24.1	0.4		20.9	65.9	13.1	0.1		
Total %	9.4	3.8	7.2	0	20.5	2.2	19.7	12.2	0	34.1	3.9	4	2.5	0	10.6	7.3	23	4.6	0	34.8	
Cars+	1644	652	1249	6	3551	372	3337	2132	6	5847	656	697	440	7	1800	1262	3929	759	5	5955	17153
% Cars+	99.1	97.3	98.3	100	98.5	97.9	96.1	99.3	100	97.3	94.7	97.8	98.2	100	96.7	98.3	97.2	94.6	100	97.1	97.4
Heavy Vehicles	15	18	22	0	55	8	137	15	0	160	37	16	8	0	61	22	114	43	0	179	455
% Heavy Vehicles	0.9	2.7	1.7	0	1.5	2.1	3.9	0.7	0	2.7	5.3	2.2	1.8	0	3.3	1.7	2.8	5.4	0	2.9	2.6

Turning Movement Count Summary

Greenhill Rd & Main St
 Greenhill Road Traffic Study
 Cedarfalls, IA
 118.0463.01

File Name : 13hr_Greenhill_Mainst_tmc_2018-05-09
 Site Code :
 Start Date : 5/9/2018
 Page No : 3

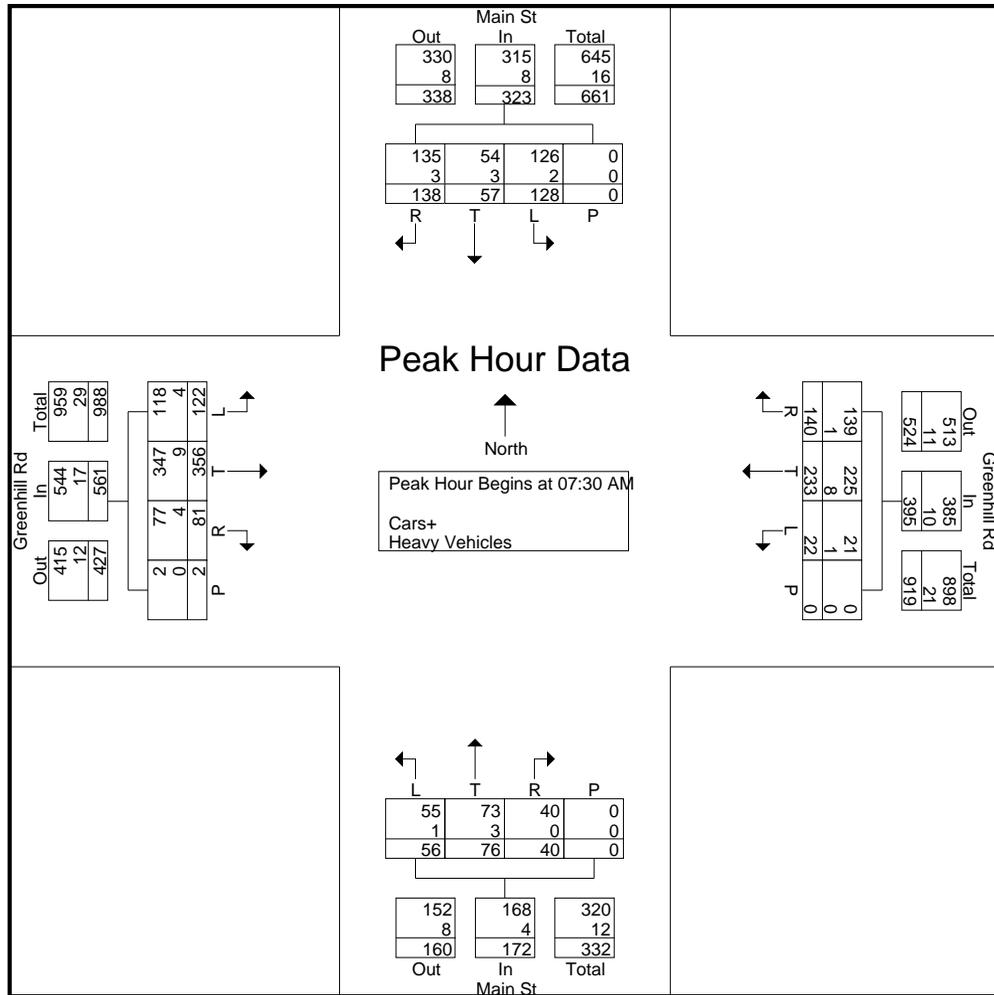


Turning Movement Count Summary

Greenhill Rd & Main St
 Greenhill Road Traffic Study
 Cedarfalls, IA
 118.0463.01

File Name : 13hr_Greenhill_Mainst_tmc_2018-05-09
 Site Code :
 Start Date : 5/9/2018
 Page No : 4

Start Time	Main St SB					Greenhill Rd WB					Main St NB					Greenhill Rd EB					Int. Total
	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	
Peak Hour Analysis From 06:00 AM to 09:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	36	18	32	0	86	8	65	40	0	113	17	23	13	0	53	31	83	21	0	135	387
07:45 AM	30	12	39	0	81	4	66	39	0	109	21	24	10	0	55	26	106	28	0	160	405
08:00 AM	31	11	39	0	81	2	52	27	0	81	10	11	8	0	29	30	81	12	0	123	314
08:15 AM	31	16	28	0	75	8	50	34	0	92	8	18	9	0	35	35	86	20	2	143	345
Total Volume	128	57	138	0	323	22	233	140	0	395	56	76	40	0	172	122	356	81	2	561	1451
% App. Total	39.6	17.6	42.7	0		5.6	59	35.4	0		32.6	44.2	23.3	0		21.7	63.5	14.4	0.4		
PHF	.889	.792	.885	.000	.939	.688	.883	.875	.000	.874	.667	.792	.769	.000	.782	.871	.840	.723	.250	.877	.896
Cars+	126	54	135	0	315	21	225	139	0	385	55	73	40	0	168	118	347	77	2	544	1412
% Cars+	98.4	94.7	97.8	0	97.5	95.5	96.6	99.3	0	97.5	98.2	96.1	100	0	97.7	96.7	97.5	95.1	100	97.0	97.3
Heavy Vehicles	2	3	3	0	8	1	8	1	0	10	1	3	0	0	4	4	9	4	0	17	39
% Heavy Vehicles	1.6	5.3	2.2	0	2.5	4.5	3.4	0.7	0	2.5	1.8	3.9	0	2.3	3.3	2.5	4.9	0	3.0	2.7	2.7

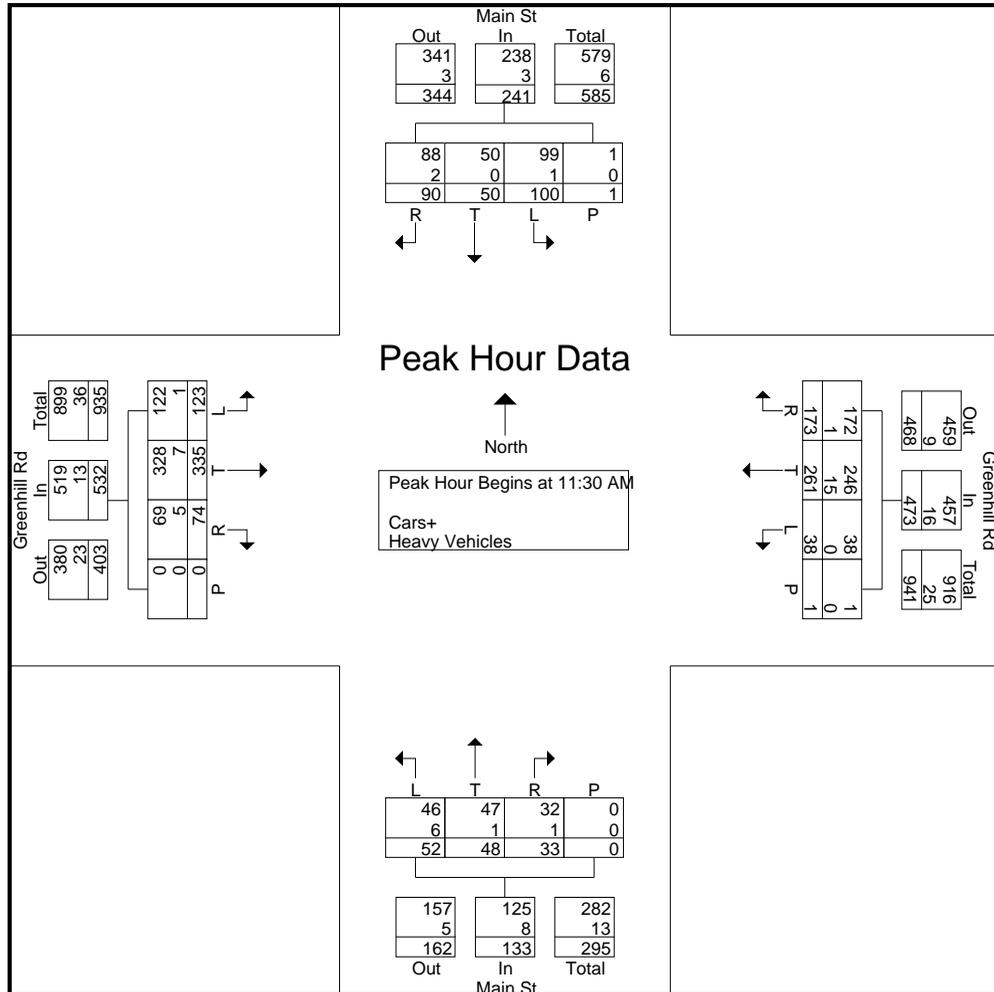


Turning Movement Count Summary

Greenhill Rd & Main St
 Greenhill Road Traffic Study
 Cedarfalls, IA
 118.0463.01

File Name : 13hr_Greenhill_Mainst_tmc_2018-05-09
 Site Code :
 Start Date : 5/9/2018
 Page No : 5

Start Time	Main St SB					Greenhill Rd WB					Main St NB					Greenhill Rd EB					Int. Total
	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 11:30 AM																					
11:30 AM	29	9	28	0	66	5	56	50	0	111	14	14	6	0	34	37	81	16	0	134	345
11:45 AM	24	8	24	0	56	14	75	41	1	131	13	14	11	0	38	26	73	15	0	114	339
12:00 PM	26	18	22	1	67	14	62	39	0	115	12	12	9	0	33	34	89	18	0	141	356
12:15 PM	21	15	16	0	52	5	68	43	0	116	13	8	7	0	28	26	92	25	0	143	339
Total Volume	100	50	90	1	241	38	261	173	1	473	52	48	33	0	133	123	335	74	0	532	1379
% App. Total	41.5	20.7	37.3	0.4		8	55.2	36.6	0.2		39.1	36.1	24.8	0		23.1	63	13.9	0		
PHF	.862	.694	.804	.250	.899	.679	.870	.865	.250	.903	.929	.857	.750	.000	.875	.831	.910	.740	.000	.930	.968
Cars+	99	50	88	1	238	38	246	172	1	457	46	47	32	0	125	122	328	69	0	519	1339
% Cars+	99.0	100	97.8	100	98.8	100	94.3	99.4	100	96.6	88.5	97.9	97.0	0	94.0	99.2	97.9	93.2	0	97.6	97.1
Heavy Vehicles	1	0	2	0	3	0	15	1	0	16	6	1	1	0	8	1	7	5	0	13	40
% Heavy Vehicles	1.0	0	2.2	0	1.2	0	5.7	0.6	0	3.4	11.5	2.1	3.0	0	6.0	0.8	2.1	6.8	0	2.4	2.9

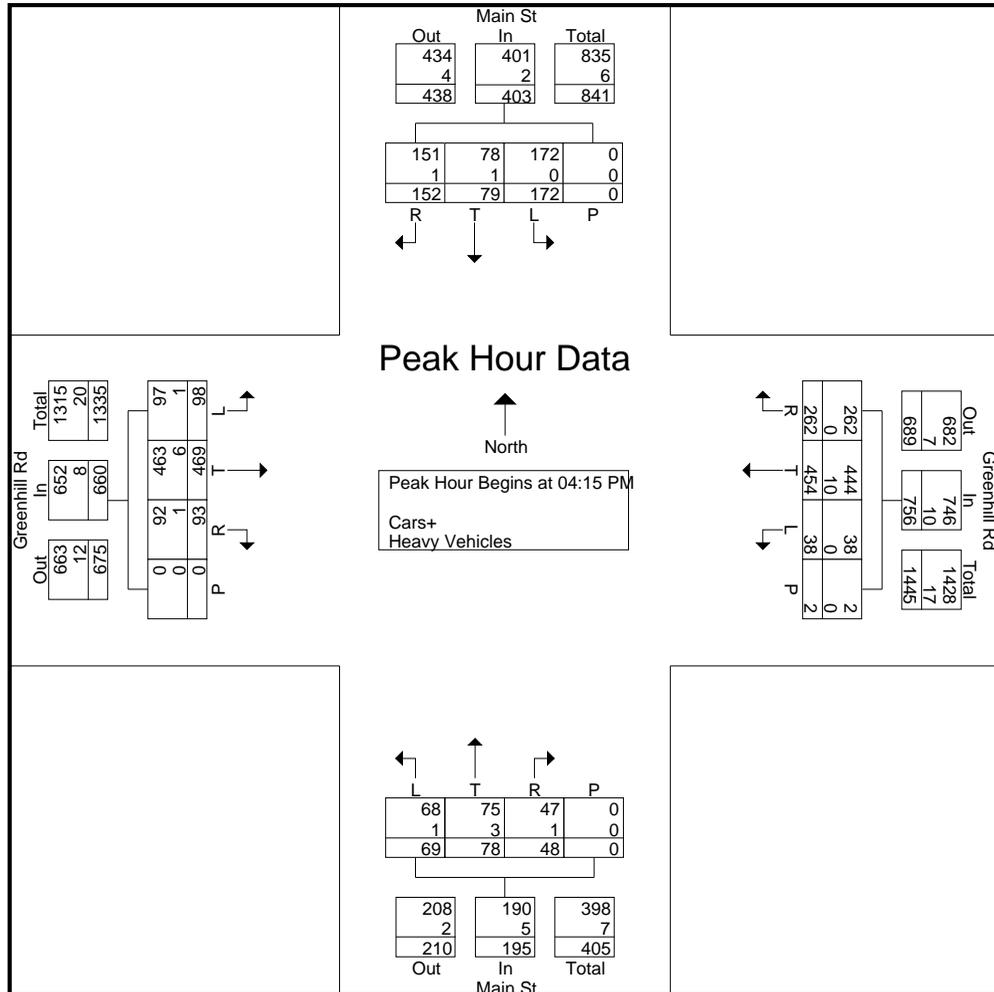


Turning Movement Count Summary

Greenhill Rd & Main St
 Greenhill Road Traffic Study
 Cedarfalls, IA
 118.0463.01

File Name : 13hr_Greenhill_Mainst_tmc_2018-05-09
 Site Code :
 Start Date : 5/9/2018
 Page No : 6

Start Time	Main St SB					Greenhill Rd WB					Main St NB					Greenhill Rd EB					Int. Total
	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	
Peak Hour Analysis From 02:00 PM to 06:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:15 PM																					
04:15 PM	44	21	39	0	104	8	107	65	0	180	16	21	9	0	46	26	114	19	0	159	489
04:30 PM	46	17	31	0	94	12	124	66	0	202	19	21	14	0	54	18	112	28	0	158	508
04:45 PM	48	21	32	0	101	10	100	69	2	181	19	21	14	0	54	35	131	25	0	191	527
05:00 PM	34	20	50	0	104	8	123	62	0	193	15	15	11	0	41	19	112	21	0	152	490
Total Volume	172	79	152	0	403	38	454	262	2	756	69	78	48	0	195	98	469	93	0	660	2014
% App. Total	42.7	19.6	37.7	0		5	60.1	34.7	0.3		35.4	40	24.6	0		14.8	71.1	14.1	0		
PHF	.896	.940	.760	.000	.969	.792	.915	.949	.250	.936	.908	.929	.857	.000	.903	.700	.895	.830	.000	.864	.955
Cars+	172	78	151	0	401	38	444	262	2	746	68	75	47	0	190	97	463	92	0	652	1989
% Cars+	100	98.7	99.3	0	99.5	100	97.8	100	100	98.7	98.6	96.2	97.9	0	97.4	99.0	98.7	98.9	0	98.8	98.8
Heavy Vehicles	0	1	1	0	2	0	10	0	0	10	1	3	1	0	5	1	6	1	0	8	25
% Heavy Vehicles	0	1.3	0.7	0	0.5	0	2.2	0	0	1.3	1.4	3.8	2.1	0	2.6	1.0	1.3	1.1	0	1.2	1.2



Memorandum

To: Jon Resler, P.E., City Engineer **Date:** 8/1/18

From: Mark Perington, P.E., PTOE
Andrew Houchin, E.I.

CC: Stephanie Sheetz, AICP, Community Development Director

RE: Crash History
Greenhill Rd Corridor Traffic Study
Snyder & Associates Project No.: 118.0463.01

Introduction

The City of Cedar Falls has requested that Snyder & Associates conduct a traffic study of the Greenhill Road corridor from Hudson Road to Cedar Heights Drive. The study area and intersections are shown in Figure 1. All the intersections on Greenhill Rd are included in the study other than the intersection with Iowa Highway 58 (IA 58) which is being studied separately by the Iowa DOT. The purpose of the study is to evaluate the current and future traffic demands for all modes of transportation in the Greenhill Rd corridor in order to develop short- and long-range plans for lane needs and intersection improvements. Other areas of focus for the study will be potential for traffic demand change due to new land use development, “complete streets” considerations, and appropriate traffic control for intersections such as traffic signalization or roundabouts. This memorandum summarizes the crash history of the corridor and trends in crash types and causes that are potentially correctable.



Figure 1. Study Area Intersections

Crash History

The crash data for this analysis was obtained through the Iowa DOT's webSAVER interface, an online crash data analysis tool. Reported crashes from 2013 through 2017 were reviewed on the Greenhill Rd corridor from the intersection with Hudson Rd to the intersection with Cedar Heights Dr. Greenhill Rd is primarily an undivided four-lane road corridor and the study area extends approximately 2.75 miles. There are 11 total study area intersections (IA 58 is not included in this study), five of which are signalized and the remaining six are unsignalized. Crashes were reviewed for overall frequency as well as crash rates calculated based on annual average daily traffic (AADT) estimated from turning movement counts at the intersections. The analysis also includes the crash severity, crash type, major causes, driver demographics, and time of day distribution.

Corridor

Table 1 summarizes the overall crash history for the Greenhill Rd corridor with and without IA 58, for comparison purposes. The statewide total crash rate average is 382 crashes per hundred million vehicle miles (HMVM) (source: Iowa DOT, *Crash Rates and Crash Densities in Iowa by Road System: 2007-2016, 5-year Averages: 2012-2016, City Streets*).

Greenhill Rd is below the current statewide average for the 2013-2017 crash analysis period, even with the inclusion of the IA 58 intersection. Though it is below the statewide average, there is room for improvement through reducing correctable crashes. Oncoming left turn crashes can be significantly reduced by aligning left turn movements and implementing left turn phasing and signalized intersections or through long-term improvements to roundabouts for intersection function and control. Rear-end crashes at unsignalized intersections can be reduced by the addition of left and right turn lanes on Greenhill Rd where they are warranted by traffic volumes.

Table 1. Corridor Crash Summary for Greenhill Rd (2013-2017)

Corridor Section	Crashes (Injury)	Crash Severity	Crash Rate*	Predominant Crash Types (Crashes)	Predominant Major Causes (Crashes)
Greenhill Rd	164 (47)	1 Fatal 3 Major 15 Minor 28 Possible	282	<ul style="list-style-type: none"> • Rear-end (63) • Oncoming Left Turn (47) • Broadside (16) 	<ul style="list-style-type: none"> • FTYROW: Making left turn (48) • Followed Too Close (28) • Driving too fast for conditions (8) • Animal (8)
Greenhill Rd (without IA 58)	100 (29)	3 Major 8 Minor 18 Possible	189	<ul style="list-style-type: none"> • Rear-end (36) • Oncoming Left Turn (32) • Non-collision (13) 	<ul style="list-style-type: none"> • FTYROW: Making left turn (29) • Followed Too Close (13) • Animal (6) • Crossed Centerline (4)

* Crashes per hundred million vehicle-miles traveled

Pedestrian/Bicycle Crash History

Pedestrian and bicycle crashes were reviewed for a ten-year period from 2008 through June 2018; four crashes were found within the study limits on Greenhill Rd. The crashes involved three bicyclists and a pedestrian, resulting in two possible and two minor injuries. All vehicles involved were making a right turn at an intersection when the crashes occurred. The initial direction of travel

for three of the vehicles was south. The shared-used trail is located on the north side of Greenhill Rd; it is likely that the southbound vehicles were looking left while making the right turn and were not aware of oncoming pedestrian/bicyclists to their right. The major cause for two of the crashes was 'Failure to yield the right of way while making a right turn on red signal', these occurred at the intersections of Cedar Heights Dr and Hudson Rd. One of the drivers reported 'vision obstructed by sun glare' as a major cause for the crash.

Intersections

The total number of crashes and injury crashes at the study intersections and throughout the corridor are summarized in Table 2. Those crashes are further broken down into the most common crash types and causes. The statewide average crash rate is about 0.8 crashes per million entering vehicles (MEV) for similar intersections (source: Iowa DOT *Average Intersection Crash Rates*). For this study, only the intersection of Greenhill Rd and Rownd St exceeds the statewide average with a crash rate of 0.90 crashes/MEV, though this is based on crash data from before the intersection was reconfigured with east/west left turn lanes and signal phasing to address crash concerns in the late fall of 2017.

The most common intersection crash type throughout the corridor is rear-end; however, oncoming lefts, broadsides, sideswipes, and non-collision are also frequently observed. Rear-end crashes are the most common crash type observed at traffic signals in general; however, excessively high rear-end crash totals can be indicative of capacity issues creating long queues or signal timing issues causing unexpected and sudden stopping. Similarly, same direction sideswipes at intersections can be an indication of long queues and uneven lane utilization with vehicles in the longer queue changing lanes in an attempt to reduce delay. Oncoming lefts can indicate issues of decision sight distance and insufficient clearance timing at an intersection for left turning vehicles. Oncoming left turn crashes can be nearly eliminated by implementing protected only left turn phasing, however, this would lead to reduced overall capacity at the intersection.

S Main St

Oncoming left turn angle crashes represent 40% of the total crashes between 2013 and 2017. The intersection of Main St and Greenhill Rd has designated left turn lanes on the northbound, eastbound, and westbound approaches; however, these turns are currently under permitted phasing only (not including the most recent late June implementation of protected left turn phasing implemented by the City). Permitted phasing allows for the left turn movement to take place when there are gaps in oncoming traffic. If there is an insufficient amount of gaps on the corridor, drivers are likely to wait longer and sometimes through several cycles before the opportunity to turn arrives. Long waits can generate frustration among drivers, causing them to turn left during shorter and insufficient gaps in oncoming traffic.

Rear-end crashes represent 40% of all collisions occurring at this intersection; the lane configuration of the westbound approach has unique features. The Greenhill Rd westbound approach transitions from two through lanes to a shared through lane and a designated left turn lane at the intersection of Main St. The main purpose of this transition was to offer a designated left turn lane where there are pavement width and right-of-way constraints; however, the transition also results in reduced capacity. Extended queues have been observed on the westbound and southbound approaches, which could be an explanation for the rear-end crashes happening at this location. This has also intensified with the likely diversion traffic from the IA 58 and Viking roadway construction impacts.

Table 2. Intersection Crash Summary for Greenhill Rd (2013-2017)

Intersection	Crashes (Injury)	Crash Severity	Crash Rate*	Predominant Crash Types (Crashes)	Predominant Major Causes (Crashes)
Hudson Rd	17 (6)	3 Minor 3 Possible	0.47	• Rear-end (7) • Oncoming Left Turn (2) • Non-collision (2)	• FTYROW: Making left turn (2) • Driving Too Fast for Conditions (2) • Followed Too Close (2)
Algonquin Dr	5 (0)		0.32	• Rear-end (4) • Sideswipe, Same Direction (1)	• Followed Too Close (2) • Swerving, Evasive Action (1)
Ashworth Dr	3 (0)		0.17	• Rear-end (1) • Broadside (1)	• Followed Too Close (1) • FTYROW: From Stop Sign (1)
S Main St	14 (4)	1 Minor 3 Possible	0.48	• Rear-end (6) • Oncoming Left Turn (6) • Sideswipe, Same Direction (1)	• FTYROW: Making Left Turn (5) • Ran Traffic Signal (1) • Crossed Centerline (1)
Estate Dr	1 (0)		0.05	• Non-collision (1)	• Crossed Centerline (1)
Prairie Pkwy	3 (1)	1 Minor	0.12	• Rear-end (3)	• Followed Too Close (2) • Driver Distraction (1)
Orchard Hill Dr	6 (4)	1 Minor 3 Possible	0.31	• Rear-end (3) • Non-collision (2) • Oncoming Left Turn (1)	• Followed Too Close (1) • Crossed Centerline (1) • FTYROW: Making Left Turn (1)
Oster Pkwy	5 (3)	1 Minor 2 Possible	0.28	• Rear-end (2) • Oncoming Left Turn (1) • Broadside (1)	• FTYROW: Making Left Turn (1) • FTYROW: From Stop Sign (1) • Driving Too Fast for Conditions (2)
Rownd St	23 (5)	2 Major 1 Minor 2 Possible	1.01	• Oncoming Left Turn (16) • Rear-end (5) • Broadside (2)	• FTYROW: Making Left Turn (16) • FTYROW: From Stop Sign (1) • Followed Too Close (2)
Cedar Heights Dr	18 (7)	1 Major 2 Minor 4 Possible	0.56	• Oncoming Left Turn (6) • Rear-end (6) • Non-collision (3)	• Oncoming Left Turn (4) • Followed Too Close (3) • Ran Traffic Signal (2)

* Crashes per million entering vehicles
FTYROW = Failure to Yield Right of Way

Rownd St

The intersection of Rownd St and Greenhill Rd has the highest number of major injuries and the highest crash rate in comparison with the other junctions included in this study. A crash rate of 1.01 crashes/MEV surpasses the statewide average for the 2013-2017 analysis period with 23 crashes. The major cause of 70% of the crashes involved a driver failing to yield the right of way while making left turn, thus resulting in angle crashes. The majority of these crashes occurred when the westbound and eastbound approaches of Greenhill Rd were composed of two lanes, a shared right-through and a left-through lane. In late 2017, given the high rate of crashes involving left turning vehicles, the intersection was reconfigured with single through lanes and designated left turn lanes EB and WB with protected/permitted signal phasing. The impact that the installation of the designated movements and their respective phasing have on the crash rates for the oncoming years should be monitored. It is expected for these safety countermeasures to reduce the amount of left turn crashes which tend to be mostly associated with severe crashes; however, these countermeasures can also increase the frequency of other type of less severe collisions. There have not been any crashes reported at this intersection in 2018 through June.

Prairie Pkwy

The intersection of Prairie Pkwy and Greenhill Rd has the lowest crash rate of the signalized intersections within the study limits with 0.12 crashes/MEV. This intersection was recently signalized (in 2015 or 2016) and a southbound approach was recently added (in 2017). The five-year crash analysis period is mostly based on its previous three-legged / “Tee” and unsignalized configuration. All three crashes occurring at this intersection are rear-end crashes, and only one of them occurring on dry surface conditions. Pending major residential commercial development in the Pinnacle Prairie project, traffic volumes are expected to increase considerably. The development located south of Greenhill Rd, making Prairie Pkwy one of the main accesses to the development. An increase in traffic, especially turning traffic, results in an increase in the probability of crashes occurring. Traffic volumes and turning patterns should be monitored as development continues.

Cedar Heights Dr

The intersection between Greenhill Rd and Cedar Heights has a rate of 0.56 crashes/MEV for the five-year analysis period. The most predominant manner of crash involves oncoming left turn angle and rear-end crashes, each representing one third of the total crashes. Eastbound and westbound approaches, where the majority of the angle crashes occur, are composed of a designated left turn lane, a through lane, and a shared right-through lane. The southbound and westbound approaches involve the majority of the rear-end crashes. The Greenhill Rd approaches are currently under protected/permitted left turn phasing. The lane configuration of the southbound approach is comprised of a designated right turn lane and a shared left-through lane currently under split phasing control. The northbound approach is comprised of two narrow lanes, a shared right-through and left-through lanes.

Summary

Analysis of crashes at specific intersections offer a case-by-case perspective of possible causes and as well as specialized countermeasures that can be applied. The overall corridor analysis brings the macro scale perspective when compared to other corridors across the state. Crash rates along this corridor, with and without IA 58, are below the statewide average. The intersection of Rownd St had a higher crash rate than the statewide average; however, safety countermeasures have already been installed recently and their impact should be monitored. Some areas south of Greenhill Rd are to be developed into commercial and residential area in the near future. An increase in traffic volumes increases potential vehicular conflict and the probability of crashes; continuous monitoring of traffic patterns, turning movements, and projected new trips from development and implementing safety measure proactively is key for the safety in the corridor.

Appendix

- Corridor Crash Summaries
- Intersection Crash Summaries

Corridor Crash Summary

Corridor: Green Hill Rd
 Location: Hudson Rd to Cedar Heights Dr
 City/County: Cedar Falls, IA
 Time Period: 2013-2017 Crash Period = 5 years
 Prepared by: AJH

NUMBER OF CRASHES

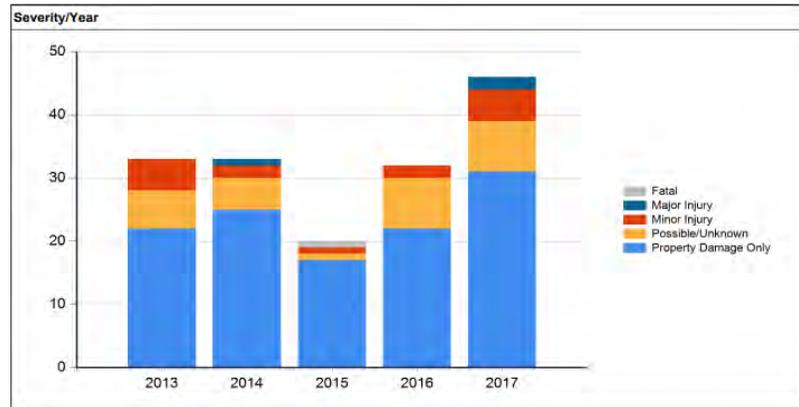
<u>1</u>	Fatal Crashes	<u>1</u>	fatalities	<u>0</u>	injuries
<u>3</u>	Major Injury Crashes			<u>4</u>	injuries
<u>15</u>	Minor Injury Crashes			<u>22</u>	injuries
<u>28</u>	Possible/Unknown Injury Crashes			<u>37</u>	injuries
<u>117</u>	Property Damage Only Crashes				

Totals: 164 Crashes 1 fatalities 63 injuries

CRASH RATES

Total Crash Rate =	164 /	0.58 HMVM =	281.7 Total Crashes/HMVM
Fatal Crash Rate =	1 /	0.58 HMVM =	1.7 Fatal Crashes/HMVM
Fatal/Injury Crash Rate =	47 /	0.58 HMVM =	80.7 F & I Crashes/HMVM

CRASH FREQUENCY



CRASH TYPE

4 Head-on	13 Sideswipe, Same Direction	<u>Non Vehicle Collision Type</u>
63 Rear-end Crash	0 Sideswipe, Opposite Direction	2 Pedestrian/Bike
16 Broadside/Right angle Crash	15 Non Vehicle Collision	8 Animal
47 Angle, Oncoming Left Turn	2 Other	8 Fixed Object
0 Backing	4 Unknown	1 Other

TRAFFIC - AADT

Corridor = 11600
 Corridor Length = 2.75 mi
 Hundred Million Vehicles Miles (HMVM) 0.58

Notes:
2017 Prelim DOT



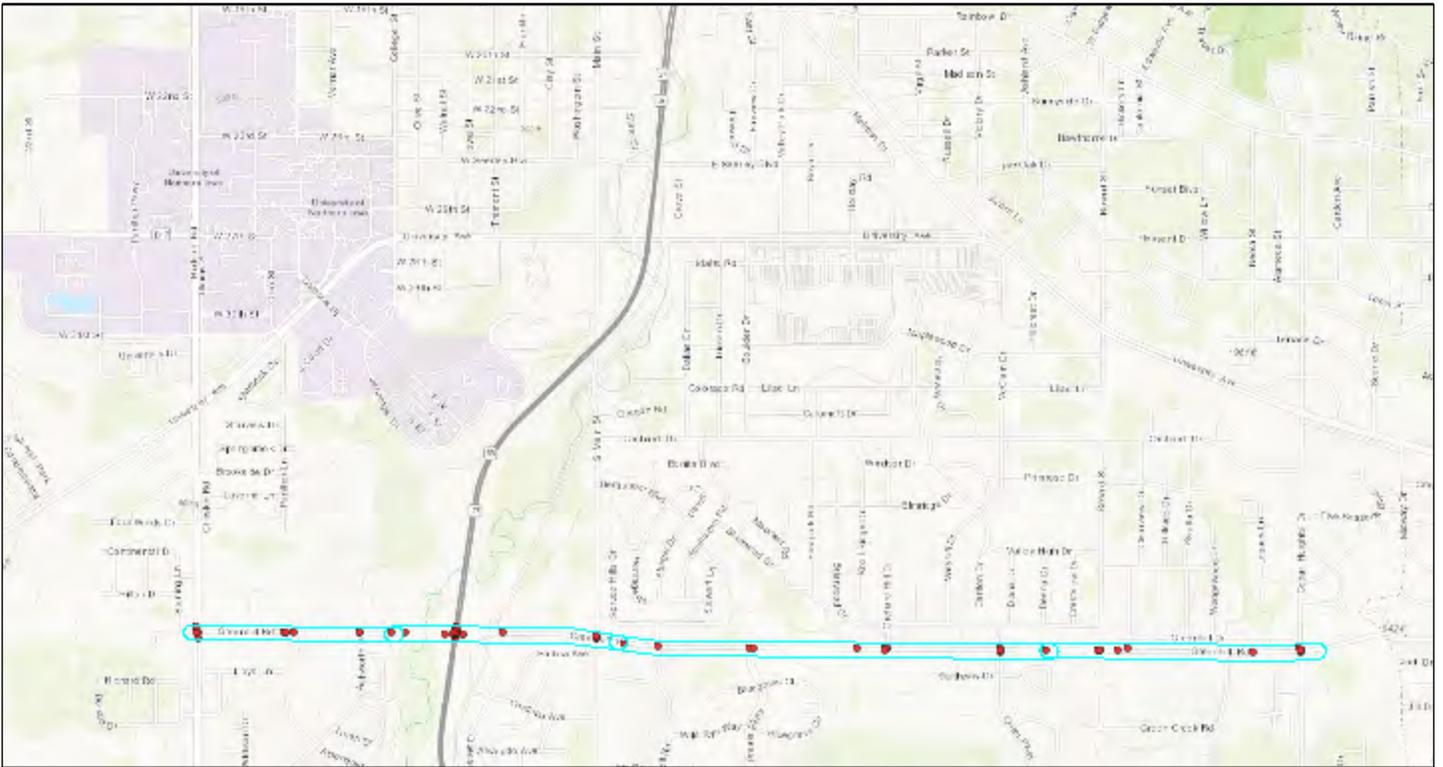
**Safety Analysis, Visualization, and Evaluation Resource (SAVER)
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Crash Severity	164
Fatal	1
Major Injury	3
Minor Injury	15
Possible/Unknown	28
Property Damage Only	117

Injury Status Summary	64
Fatal	1
Suspected serious/incapacitating	4
Suspected minor/non-incapacitating	22
Possible (complaint of pain/injury)	37
Uninjured	0
Fatal, not crash-related	0
Unknown	0
Not reported	0

Property/Vehicles/Occupants	
Property Damage Total (dollars):	1,078,950.00
Average (per crash dollars):	6,578.96
Total Vehicles:	345.00
Average (per crash):	2.10
Total Occupants:	476.00
Average (per crash):	2.90

Average Severity	
Fatalities/Fatal Crash:	1.00
Fatalities/Crash:	0.01
Injuries/Crash:	0.38
Major Injuries/Crash:	0.02
Minor Injuries/Crash:	0.13
Possible/Unknown Injuries/Crash:	0.23





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Major Cause		163
Animal	8 Ran traffic signal	6
Ran stop sign	0 Failed to yield to emergency vehicle	0
FTYROW: At uncontrolled intersection	0 FTYROW: Making right turn on red signal	3
FTYROW: From stop sign	3 FTYROW: From yield sign	0
FTYROW: Making left turn	48 FTYROW: From driveway	0
FTYROW: From parked position	0 FTYROW: To pedestrian	0
FTYROW: Other	2 Drove around RR grade crossing gates	0
Disregarded RR Signal	0 Crossed centerline (undivided)	4
Crossed median (divided)	0 Traveling wrong way or on wrong side of road	0
Aggressive driving/road rage	0 Driving too fast for conditions	8
Exceeded authorized speed	0 Improper or erratic lane changing	1
Operating vehicle in an reckless, erratic, ca...	0 Followed too close	28
Passing: On wrong side	0 Passing: Where prohibited by signs/markings	0
Passing: With insufficient distance/inadequa...	0 Passing: Through/around barrier	0
Passing: Other passing	0 Made improper turn	3
Driver Distraction: Manual operation of an e...	3 Driver Distraction: Talking on a hand-held d...	0
Driver Distraction: Talking on a hands free ...	0 Driver Distraction: Adjusting devices (radio...	1
Driver Distraction: Other electronic device ...	0 Driver Distraction: Passenger	2
Driver Distraction: Unrestrained animal	0 Driver Distraction: Reaching for object(s)/f...	1
Driver Distraction: Inattentive/lost in thou...	2 Driver Distraction: Other interior distracti...	4
Driver Distraction: Exterior distraction	1 Ran off road - right	1
Ran off road - straight	0 Ran off road - left	1
Lost control	5 Swerving/Evasive Action	2
Over correcting/over steering	0 Failed to keep in proper lane	0
Failure to signal intentions	0 Traveling on prohibited traffic way	0
Vehicle stopped on railroad tracks	0 Other: Vision obstructed	0
Other: Improper operation	0 Other: Disregarded warning sign	0
Other: Disregarded signs/road markings	0 Other: Illegal off-road driving	0
Downhill runaway	0 Separation of units	0
Towing improperly	0 Cargo/equipment loss or shift	0
Equipment failure	0 Oversized load/vehicle	0
Other: Getting off/out of vehicle	0 Failure to dim lights/have lights on	0
Improper backing	0 Improper starting	0
Illegally parked/unattended	0 Driving less than the posted speed limit	0
Operator inexperience	0 Other	17
Unknown	8 Not reported	0
Other: No improper action	1	



**Safety Analysis, Visualization, and Evaluation Resource (SAVER)
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Time of Day/Day of Week														
Day of Week	12 AM to 2 AM	2 AM to 4 AM	4 AM to 6 AM	6 AM to 8 AM	8 AM to 10 AM	10 AM to Noon	Noon to 2 PM	2 PM to 4 PM	4 PM to 6 PM	6 PM to 8 PM	8 PM to 10 PM	10 PM to 12 AM	Not reported	Total
Sunday	0	0	1	1	0	4	4	2	5	0	0	0	0	17
Monday	0	0	0	3	3	1	2	5	8	2	2	0	0	26
Tuesday	0	0	1	5	3	2	3	4	7	0	2	0	0	27
Wednesday	0	0	0	2	1	3	3	3	3	0	0	0	0	15
Thursday	0	0	3	3	4	4	2	7	4	0	1	0	0	28
Friday	0	1	0	2	1	2	3	7	2	6	2	3	0	29
Saturday	1	0	0	1	1	4	6	1	2	3	1	2	0	22
Total	1	1	5	17	13	20	23	29	31	11	8	5	0	164

Manner of Crash Collision	164
Non-collision (single vehicle)	15
Head-on (front to front)	4
Rear-end (front to rear)	63
Angle, oncoming left turn	47
Broadside (front to side)	16
Sideswipe, same direction	13
Sideswipe, opposite direction	0
Rear to rear	0
Rear to side	0
Not reported	2
Other	2
Unknown	2

Surface Conditions	164
Dry	112
Wet	22
Ice/frost	10
Snow	13
Slush	2
Mud, dirt	0
Water (standing or moving)	0
Sand	0
Oil	0
Gravel	0
Not reported	5
Other	0
Unknown	0

Fixed Object Struck		345	
Bridge overhead structure	0	Bridge pier or support	0
Bridge/bridge rail parapet	0	Curb/island/raised median	5
Ditch	0	Embankment	0
Ground	0	Culvert/pipe opening	0
Guardrail - face	0	Guardrail - end	0
Concrete traffic barrier (median or right sid...	1	Other traffic barrier	0
Cable barrier	0	Impact attenuator/crash cushion	0
Utility pole/light support	0	Traffic sign support	1
Traffic signal support	0	Other post/pole/support	0
Fire hydrant	1	Mailbox	0
Tree	0	Landscape/shrubbery	0
Snow bank	0	Fence	0
Wall	0	Building	0
Other fixed object	0	None (no fixed object struck)	337



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Driver Age/Driver Gender					
Driver Age - 5 year Bins	Female	Male	Not reported	Unknown	Total
< 14	0	0	0	0	0
= 14	0	0	0	0	0
= 15	1	1	0	0	2
= 16	9	2	0	0	11
= 17	5	7	0	0	12
= 18	5	4	0	0	9
= 19	6	9	0	0	15
= 20	8	7	0	0	15
>= 21 and <= 24	21	16	0	0	37
>= 25 and <= 29	19	23	0	0	42
>= 30 and <= 34	13	18	0	0	31
>= 35 and <= 39	15	15	0	0	30
>= 40 and <= 44	5	18	0	0	23
>= 45 and <= 49	7	9	0	0	16
>= 50 and <= 54	11	15	0	0	26
>= 55 and <= 59	12	4	0	0	16
>= 60 and <= 64	6	8	0	0	14
>= 65 and <= 69	7	3	0	0	10
>= 70 and <= 74	6	12	0	0	18
>= 75 and <= 79	4	1	0	0	5
>= 80 and <= 84	0	6	0	0	6
>= 85 and <= 89	0	3	0	0	3
>= 90 and <= 94	1	1	0	0	2
>= 95	0	0	0	0	0
Not reported	0	0	0	0	0
Unknown	0	0	2	0	2
Total	161	182	2	0	345

Alcohol Test Given	345
None	339
Blood	1
Urine	0
Breath	1
Vitreous	0
Refused	1
Not reported	3

Drug Test Given	345
None	341
Blood	1
Urine	0
Breath	0
Vitreous	0
Refused	0
Not reported	3

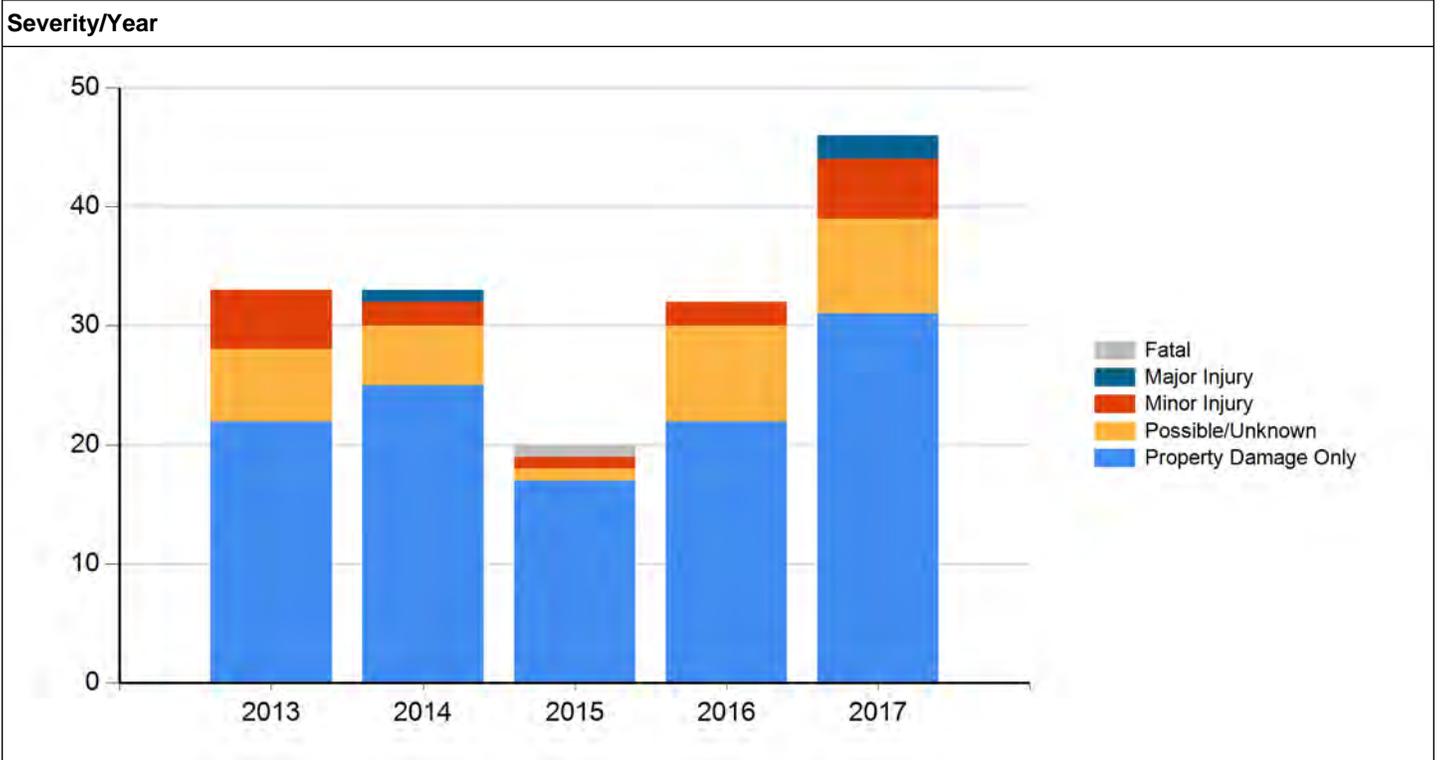
Drug Test Result	345
Negative	0
Cannabis	0
Central Nervous System depressants	0
Central Nervous System stimulants	0
Hallucinogens	0
Inhalants	0
Narcotic Analgesics	0
Dissociative Anesthetic (PCP)	0
Prescription Drug	0
Not reported	345
Other	0

Drug/Alcohol Related	164
Drug	0
Alcohol (< Statutory)	0
Alcohol (Statutory)	1
Drug/Alcohol (< Statutory)	0
Drug/Alcohol (Statutory)	0
Refused	1
Under Influence of Alcohol/Drugs/Medications	1
None Indicated	161

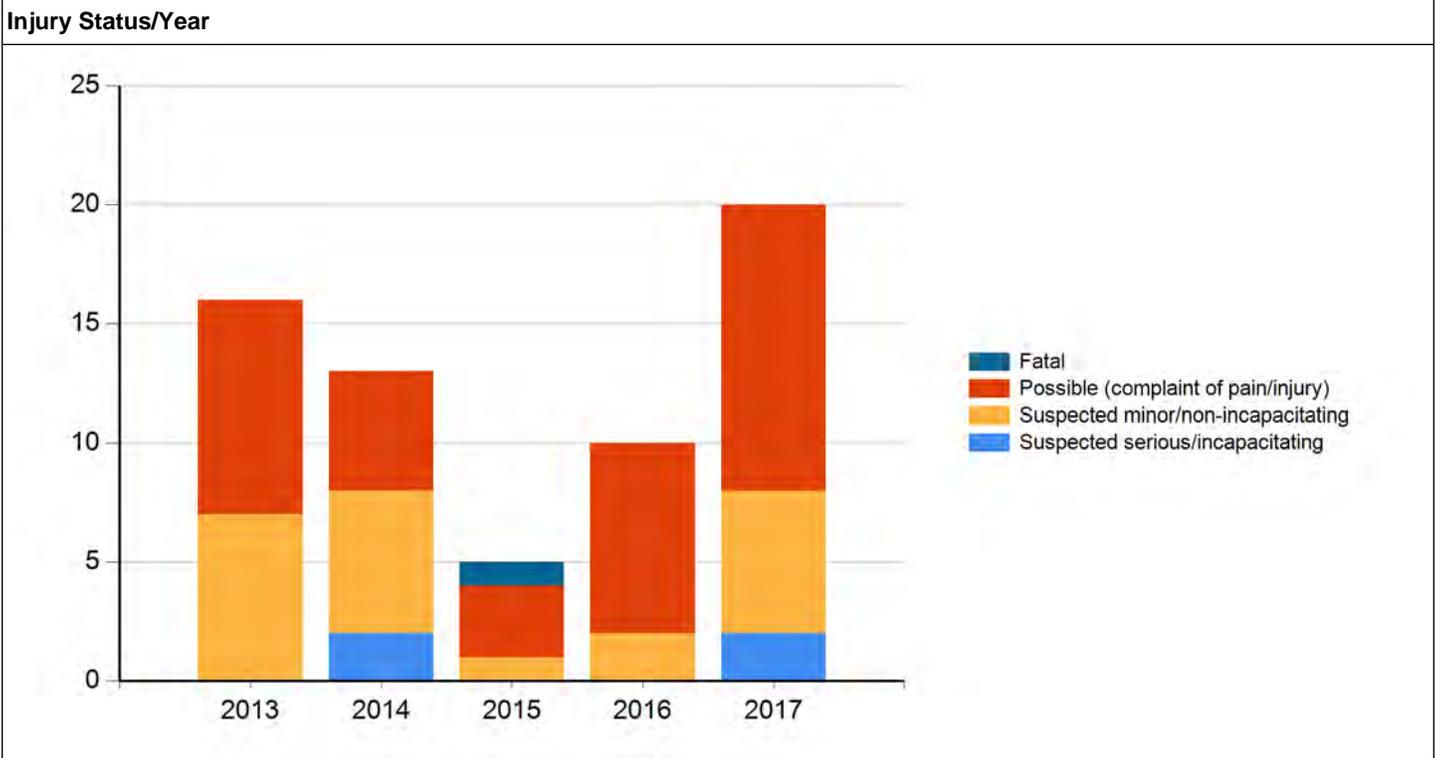


**Safety Analysis, Visualization, and Evaluation Resource (SAVER)
Quick Report
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Crash Severity - Annual							
Crash Year	Fatal	Major Injury	Minor Injury	Possible/Unknown	Property Damage Only	Total	
2008	0	0	0	0	0	0	
2009	0	0	0	0	0	0	
2010	0	0	0	0	0	0	
2011	0	0	0	0	0	0	
2012	0	0	0	0	0	0	
2013	0	0	5	6	22	33	
2014	0	1	2	5	25	33	
2015	1	0	1	1	17	20	
2016	0	0	2	8	22	32	
2017	0	2	5	8	31	46	
2018	0	0	0	0	0	0	
Total	1	3	15	28	117	164	



Injury Status - Annual								
Crash Year	Fatal	Suspected serious/incapacitating	Suspected minor/non-incapacitating	Possible (complaint of pain/injury)	Uninjured	Fatal, not crash-related	Unknown	Total
2008	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0
2011	0	0	0	0	0	0	0	0
2012	0	0	0	0	0	0	0	0
2013	0	0	7	9	0	0	0	16
2014	0	2	6	5	0	0	0	13
2015	1	0	1	3	0	0	0	5
2016	0	0	2	8	0	0	0	10
2017	0	2	6	12	0	0	0	20
2018	0	0	0	0	0	0	0	0
Total	1	4	22	37	0	0	0	64





Meeting the following criteria

Jurisdiction: Statewide
Year: 2013, 2014, 2015, 2016, 2017
Map Selection: Yes
Filter: None

Analyst Information

Corridor Crash Summary

Corridor: Green Hill Rd
 Location: Hudson Rd to Cedar Heights Dr (no IA 58)
 City/County: Cedar Falls, IA
 Time Period: 2013-2017 Crash Period = 5 years
 Prepared by: AJH

NUMBER OF CRASHES

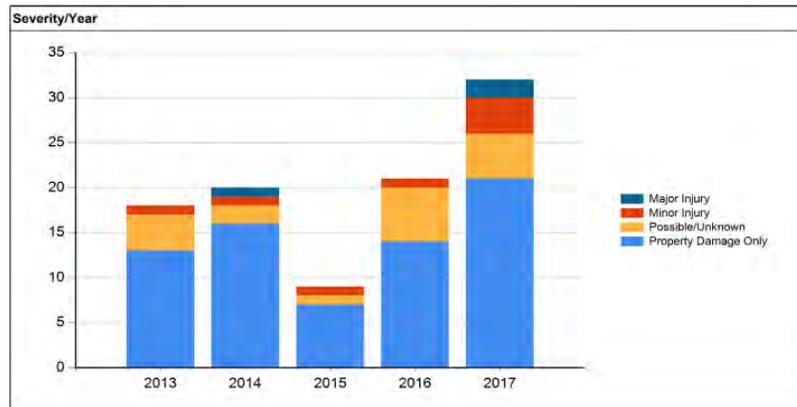
<u>0</u>	Fatal Crashes	<u>0</u>	fatalities	<u>0</u>	injuries
<u>3</u>	Major Injury Crashes			<u>1</u>	injuries
<u>8</u>	Minor Injury Crashes			<u>15</u>	injuries
<u>18</u>	Possible/Unknown Injury Crashes			<u>20</u>	injuries
<u>71</u>	Property Damage Only Crashes				

Totals: 100 Crashes 0 fatalities 36 injuries

CRASH RATES

Total Crash Rate =	100 /	0.53 HMVM =	188.9 Total Crashes/HMVM
Fatal Crash Rate =	0 /	0.53 HMVM =	0.0 Fatal Crashes/HMVM
Fatal/Injury Crash Rate =	29 /	0.53 HMVM =	54.8 F & I Crashes/HMVM

CRASH FREQUENCY



CRASH TYPE

1 Head-on 36 Rear-end Crash 8 Broadside/Right angle Crash 32 Angle, Oncoming Left Turn 0 Backing	6 Sideswipe, Same Direction 0 Sideswipe, Opposite Direction 13 Non Vehicle Collision 2 Other 2 Unknown	<u>Non Vehicle Collision Type</u> 2 Pedestrian/Bike 6 Animal 5 Fixed Object 1 Other
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TRAFFIC - AADT

Corridor = 11600
 Corridor Length = 2.5 mi
 Hundred Million Vehicles Miles (HMVM) 0.53

Notes:
2017 Prelim DOT



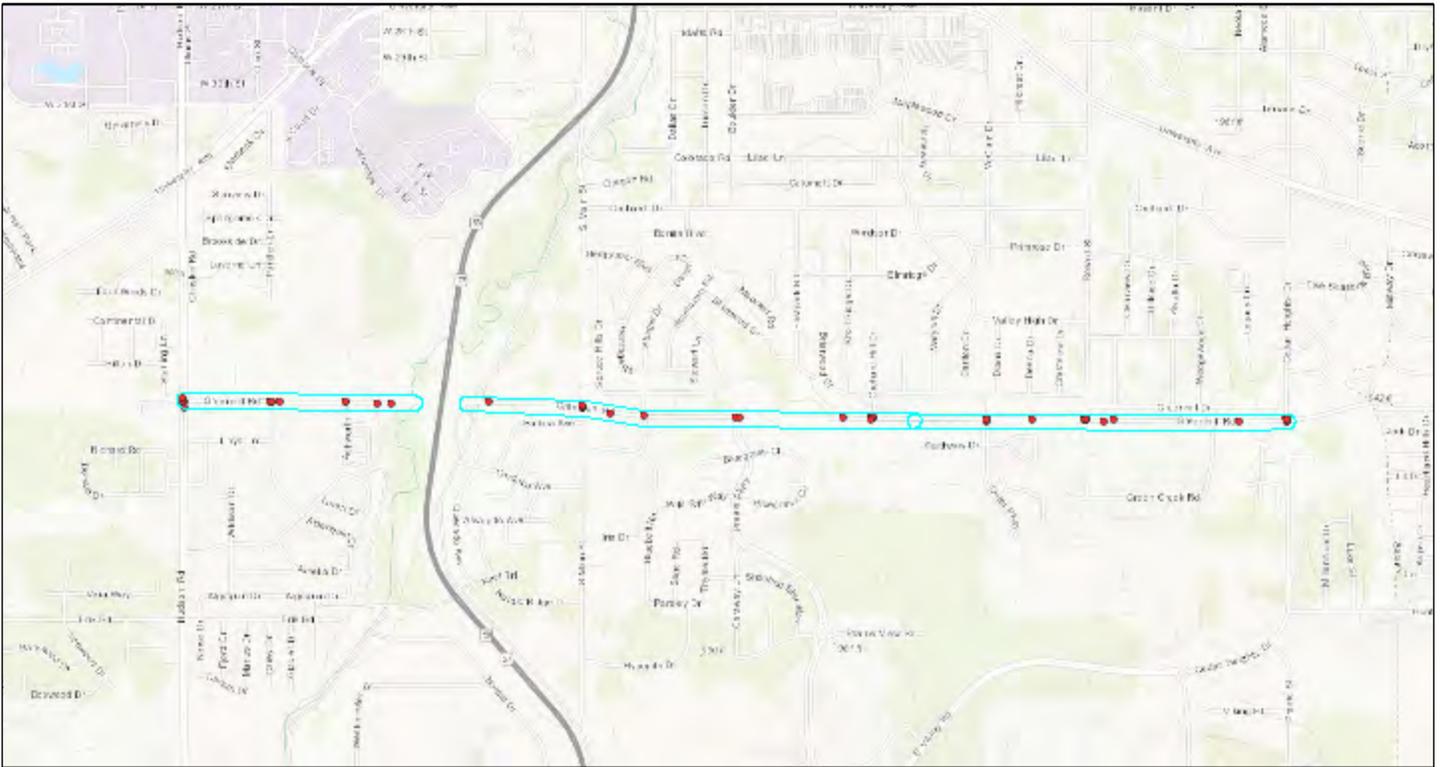
**Safety Analysis, Visualization, and Evaluation Resource (SAVER)
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Crash Severity	100
Fatal	0
Major Injury	3
Minor Injury	8
Possible/Unknown	18
Property Damage Only	71

Injury Status Summary	39
Fatal	0
Suspected serious/incapacitating	4
Suspected minor/non-incapacitating	15
Possible (complaint of pain/injury)	20
Uninjured	0
Fatal, not crash-related	0
Unknown	0
Not reported	0

Property/Vehicles/Occupants	
Property Damage Total (dollars):	659,900.00
Average (per crash dollars):	6,599.00
Total Vehicles:	198.00
Average (per crash):	1.98
Total Occupants:	277.00
Average (per crash):	2.77

Average Severity	
Fatalities/Fatal Crash:	0.00
Fatalities/Crash:	0.00
Injuries/Crash:	0.39
Major Injuries/Crash:	0.04
Minor Injuries/Crash:	0.15
Possible/Unknown Injuries/Crash:	0.20





**Safety Analysis, Visualization, and Evaluation Resource (SAVER)
Quick Report
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Major Cause			100
Animal	6	Ran traffic signal	4
Ran stop sign	0	Failed to yield to emergency vehicle	0
FTYROW: At uncontrolled intersection	0	FTYROW: Making right turn on red signal	2
FTYROW: From stop sign	3	FTYROW: From yield sign	0
FTYROW: Making left turn	29	FTYROW: From driveway	0
FTYROW: From parked position	0	FTYROW: To pedestrian	0
FTYROW: Other	1	Drove around RR grade crossing gates	0
Disregarded RR Signal	0	Crossed centerline (undivided)	4
Crossed median (divided)	0	Traveling wrong way or on wrong side of road	0
Aggressive driving/road rage	0	Driving too fast for conditions	3
Exceeded authorized speed	0	Improper or erratic lane changing	0
Operating vehicle in an reckless, erratic, ca...	0	Followed too close	13
Passing: On wrong side	0	Passing: Where prohibited by signs/markings	0
Passing: With insufficient distance/inadequa...	0	Passing: Through/around barrier	0
Passing: Other passing	0	Made improper turn	1
Driver Distraction: Manual operation of an e...	2	Driver Distraction: Talking on a hand-held d...	0
Driver Distraction: Talking on a hands free ...	0	Driver Distraction: Adjusting devices (radio...	1
Driver Distraction: Other electronic device ...	0	Driver Distraction: Passenger	2
Driver Distraction: Unrestrained animal	0	Driver Distraction: Reaching for object(s)/f...	0
Driver Distraction: Inattentive/lost in thou...	2	Driver Distraction: Other interior distracti...	2
Driver Distraction: Exterior distraction	0	Ran off road - right	1
Ran off road - straight	0	Ran off road - left	0
Lost control	4	Swerving/Evasive Action	1
Over correcting/over steering	0	Failed to keep in proper lane	0
Failure to signal intentions	0	Traveling on prohibited traffic way	0
Vehicle stopped on railroad tracks	0	Other: Vision obstructed	0
Other: Improper operation	0	Other: Disregarded warning sign	0
Other: Disregarded signs/road markings	0	Other: Illegal off-road driving	0
Downhill runaway	0	Separation of units	0
Towing improperly	0	Cargo/equipment loss or shift	0
Equipment failure	0	Oversized load/vehicle	0
Other: Getting off/out of vehicle	0	Failure to dim lights/have lights on	0
Improper backing	0	Improper starting	0
Illegally parked/unattended	0	Driving less than the posted speed limit	0
Operator inexperience	0	Other	11
Unknown	7	Not reported	0
Other: No improper action	1		



**Safety Analysis, Visualization, and Evaluation Resource (SAVER)
Quick Report
2013-2017**

Time of Day/Day of Week														
Day of Week	12 AM to 2 AM	2 AM to 4 AM	4 AM to 6 AM	6 AM to 8 AM	8 AM to 10 AM	10 AM to Noon	Noon to 2 PM	2 PM to 4 PM	4 PM to 6 PM	6 PM to 8 PM	8 PM to 10 PM	10 PM to 12 AM	Not reported	Total
Sunday	0	0	1	0	0	3	3	2	3	0	0	0	0	12
Monday	0	0	0	3	1	0	0	3	7	0	2	0	0	16
Tuesday	0	0	1	3	3	1	2	3	3	0	1	0	0	17
Wednesday	0	0	0	1	0	1	3	0	2	0	0	0	0	7
Thursday	0	0	2	2	1	4	1	4	2	0	1	0	0	17
Friday	0	1	0	1	0	1	2	4	2	3	2	3	0	19
Saturday	1	0	0	0	1	2	4	0	0	2	1	1	0	12
Total	1	1	4	10	6	12	15	16	19	5	7	4	0	100

Manner of Crash Collision	100
Non-collision (single vehicle)	13
Head-on (front to front)	1
Rear-end (front to rear)	36
Angle, oncoming left turn	32
Broadside (front to side)	8
Sideswipe, same direction	6
Sideswipe, opposite direction	0
Rear to rear	0
Rear to side	0
Not reported	0
Other	2
Unknown	2

Surface Conditions	100
Dry	71
Wet	11
Ice/frost	7
Snow	6
Slush	2
Mud, dirt	0
Water (standing or moving)	0
Sand	0
Oil	0
Gravel	0
Not reported	3
Other	0
Unknown	0

Fixed Object Struck		198	
Bridge overhead structure	0	Bridge pier or support	0
Bridge/bridge rail parapet	0	Curb/island/raised median	3
Ditch	0	Embankment	0
Ground	0	Culvert/pipe opening	0
Guardrail - face	0	Guardrail - end	0
Concrete traffic barrier (median or right sid...	0	Other traffic barrier	0
Cable barrier	0	Impact attenuator/crash cushion	0
Utility pole/light support	0	Traffic sign support	1
Traffic signal support	0	Other post/pole/support	0
Fire hydrant	1	Mailbox	0
Tree	0	Landscape/shrubbery	0
Snow bank	0	Fence	0
Wall	0	Building	0
Other fixed object	0	None (no fixed object struck)	193



**Safety Analysis, Visualization, and Evaluation Resource (SAVER)
Quick Report
2013-2017**

Driver Age/Driver Gender					
Driver Age - 5 year Bins	Female	Male	Not reported	Unknown	Total
< 14	0	0	0	0	0
= 14	0	0	0	0	0
= 15	1	0	0	0	1
= 16	7	1	0	0	8
= 17	5	4	0	0	9
= 18	4	2	0	0	6
= 19	3	6	0	0	9
= 20	4	4	0	0	8
>= 21 and <= 24	10	6	0	0	16
>= 25 and <= 29	9	12	0	0	21
>= 30 and <= 34	7	9	0	0	16
>= 35 and <= 39	12	9	0	0	21
>= 40 and <= 44	2	12	0	0	14
>= 45 and <= 49	4	4	0	0	8
>= 50 and <= 54	8	9	0	0	17
>= 55 and <= 59	8	0	0	0	8
>= 60 and <= 64	4	4	0	0	8
>= 65 and <= 69	4	2	0	0	6
>= 70 and <= 74	3	10	0	0	13
>= 75 and <= 79	3	1	0	0	4
>= 80 and <= 84	0	1	0	0	1
>= 85 and <= 89	0	1	0	0	1
>= 90 and <= 94	1	1	0	0	2
>= 95	0	0	0	0	0
Not reported	0	0	0	0	0
Unknown	0	0	1	0	1
Total	99	98	1	0	198

Alcohol Test Given	198
None	195
Blood	1
Urine	0
Breath	1
Vitreous	0
Refused	0
Not reported	1

Drug Test Given	198
None	196
Blood	1
Urine	0
Breath	0
Vitreous	0
Refused	0
Not reported	1

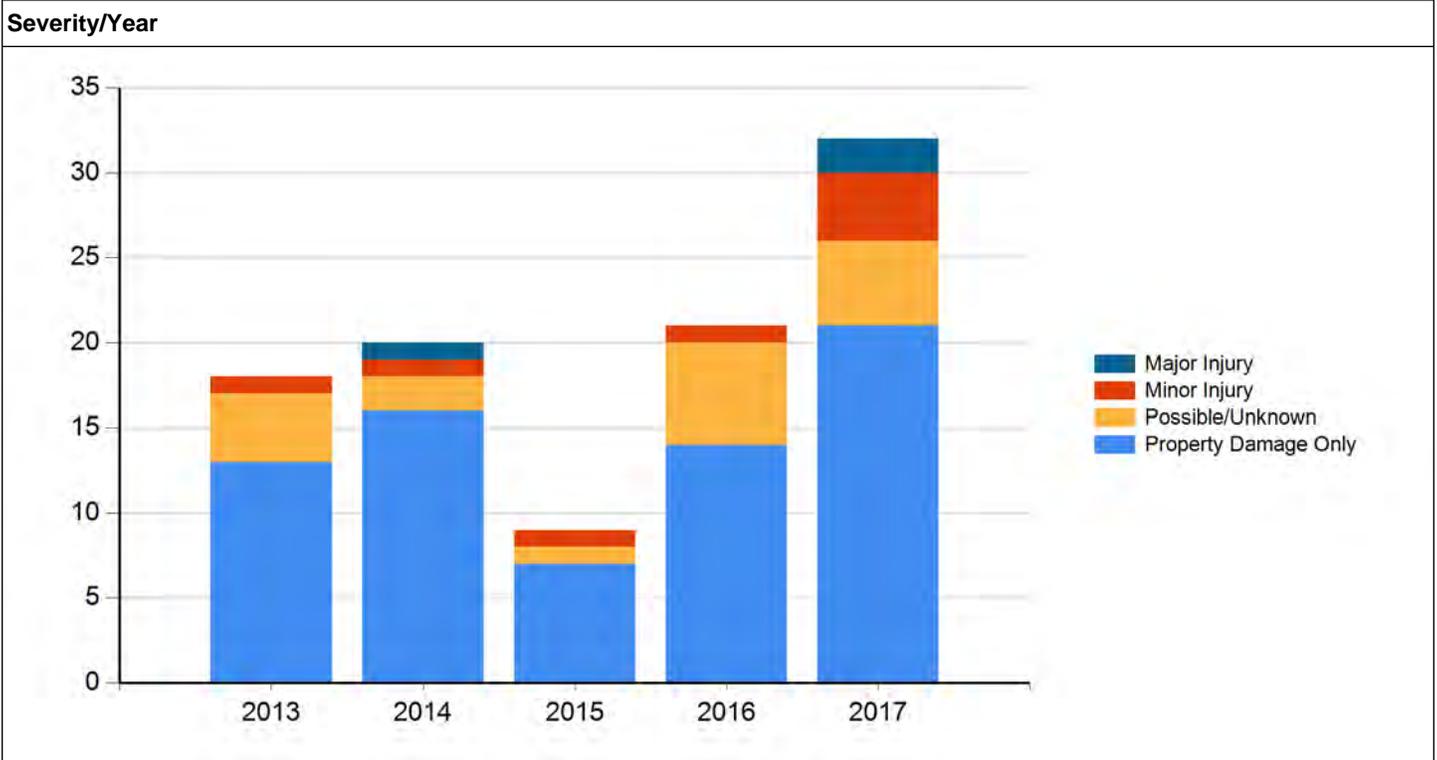
Drug Test Result	198
Negative	0
Cannabis	0
Central Nervous System depressants	0
Central Nervous System stimulants	0
Hallucinogens	0
Inhalants	0
Narcotic Analgesics	0
Dissociative Anesthetic (PCP)	0
Prescription Drug	0
Not reported	198
Other	0

Drug/Alcohol Related	100
Drug	0
Alcohol (< Statutory)	0
Alcohol (Statutory)	1
Drug/Alcohol (< Statutory)	0
Drug/Alcohol (Statutory)	0
Refused	0
Under Influence of Alcohol/Drugs/Medications	1
None Indicated	98

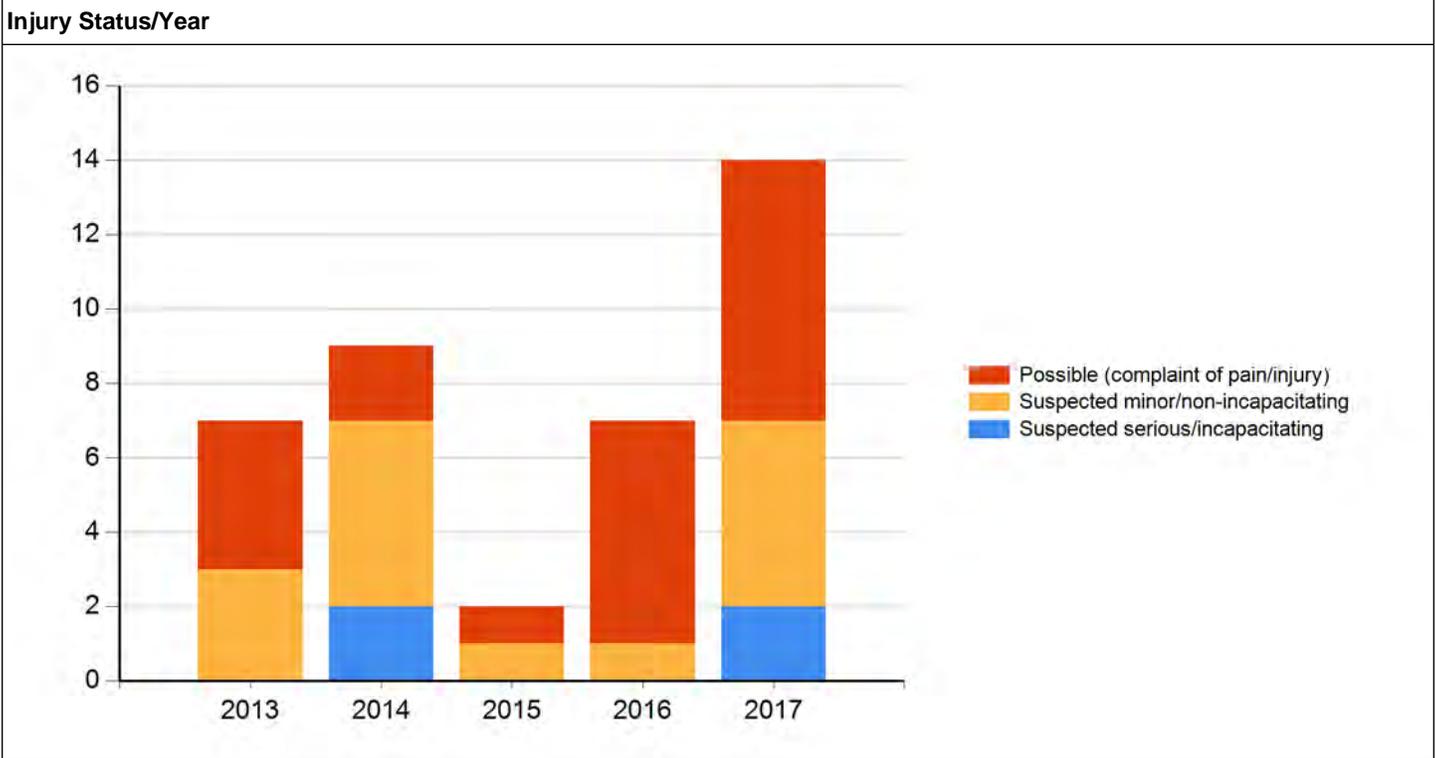


**Safety Analysis, Visualization, and Evaluation Resource (SAVER)
Quick Report
2013-2017**

Crash Severity - Annual							
Crash Year	Fatal	Major Injury	Minor Injury	Possible/Unknown	Property Damage Only	Total	
2008	0	0	0	0	0	0	
2009	0	0	0	0	0	0	
2010	0	0	0	0	0	0	
2011	0	0	0	0	0	0	
2012	0	0	0	0	0	0	
2013	0	0	1	4	13	18	
2014	0	1	1	2	16	20	
2015	0	0	1	1	7	9	
2016	0	0	1	6	14	21	
2017	0	2	4	5	21	32	
2018	0	0	0	0	0	0	
Total	0	3	8	18	71	100	



Injury Status - Annual								
Crash Year	Fatal	Suspected serious/incapacitating	Suspected minor/non-incapacitating	Possible (complaint of pain/injury)	Uninjured	Fatal, not crash-related	Unknown	Total
2008	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0
2011	0	0	0	0	0	0	0	0
2012	0	0	0	0	0	0	0	0
2013	0	0	3	4	0	0	0	7
2014	0	2	5	2	0	0	0	9
2015	0	0	1	1	0	0	0	2
2016	0	0	1	6	0	0	0	7
2017	0	2	5	7	0	0	0	14
2018	0	0	0	0	0	0	0	0
Total	0	4	15	20	0	0	0	39





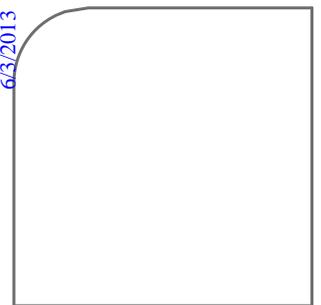
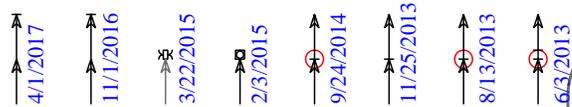
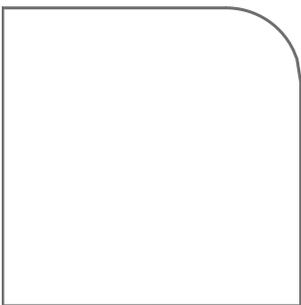
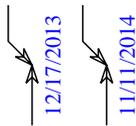
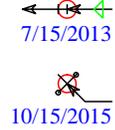
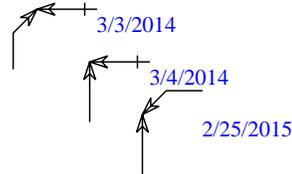
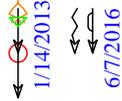
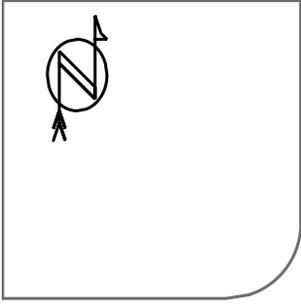
Meeting the following criteria

Jurisdiction: Statewide
Year: 2013, 2014, 2015, 2016, 2017
Map Selection: Yes
Filter: None

Analyst Information

17 Crashes

Clear



(0) crashes could not be placed in this schematic

- ← Straight
- ←| Stopped
- ← Unknown
- ↔ Backing
- ↔ Overtaking
- ↔ Sideswipe

- ▭ Parked
- ↔ Erratic
- ↔ Out of control
- ↔ Right turn
- ↔ Left turn
- ↔ U-turn

- × Pedestrian
- ⊗ Bicycle
- Injury
- Fatality
- ⚡ Nighttime
- ⚠ DUI

Fixed objects:

- General
- ⊠ Signal
- ⊠ Tree
- ⊠ Pole
- ⊠ Curb
- ⊠ Animal
- ◁ 3rd vehicle
- * Extra data

Intersection Crash Summary

Location: Green Hill Rd & Hudson Rd Intersection
 City/County: Cedar Falls, IA
 Time Period: 2013-2017 Crash Period = 5 years
 Prepared by: AJH

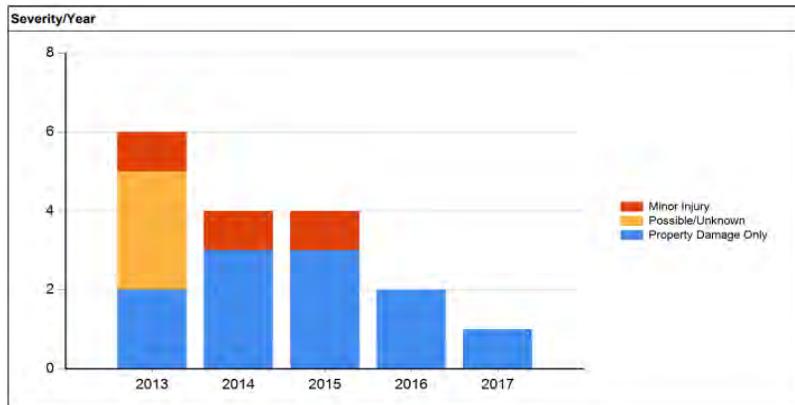
NUMBER OF CRASHES

<u>0</u> Fatal Crashes	<u>0</u> fatalities	<u>0</u> injuries
<u>0</u> Major Injury Crashes		<u>0</u> injuries
<u>3</u> Minor Injury Crashes		<u>5</u> injuries
<u>3</u> Possible/Unknown Injury Crashes		<u>4</u> injuries
<u>11</u> Property Damage Only Crashes		
Totals: <u>17</u> Crashes		
	<u>0</u> fatalities	<u>9</u> injuries

CRASH RATES

Total Crash Rate =	17 /	35.89 MEV =	0.47 Total Crashes/MEV
Fatal Crash Rate =	0 /	35.89 MEV =	0.00 Fatal Crashes/MEV
Fatal/Injury Crash Rate =	6 /	35.89 MEV =	0.17 F & I Crashes/MEV

CRASH FREQUENCY



CRASH TYPE

1 Head-on 7 Rear-end Crash 1 Broadside/Right angle Crash 2 Angle, Oncoming Left Turn 0 Backing	1 Sideswipe, Same Direction 0 Sideswipe, Opposite Direction 2 Non Vehicle Collision 0 Other 3 Unknown	<u>Non Vehicle Collision Type</u> 1 Pedestrian 1 Animal 1 Fixed Object 0 Other
--	---	--

TRAFFIC - AADT

North Approach =	<u>13840</u>
South Approach =	<u>15810</u>
East Approach =	<u>7760</u>
West Approach =	<u>1920</u>
Million Entering Vehicles (MEV) =	<u>35.89</u>

Notes:
 Est AADT from 2018 Snyder 13 hr Count
 (Adj for Viking diversion)



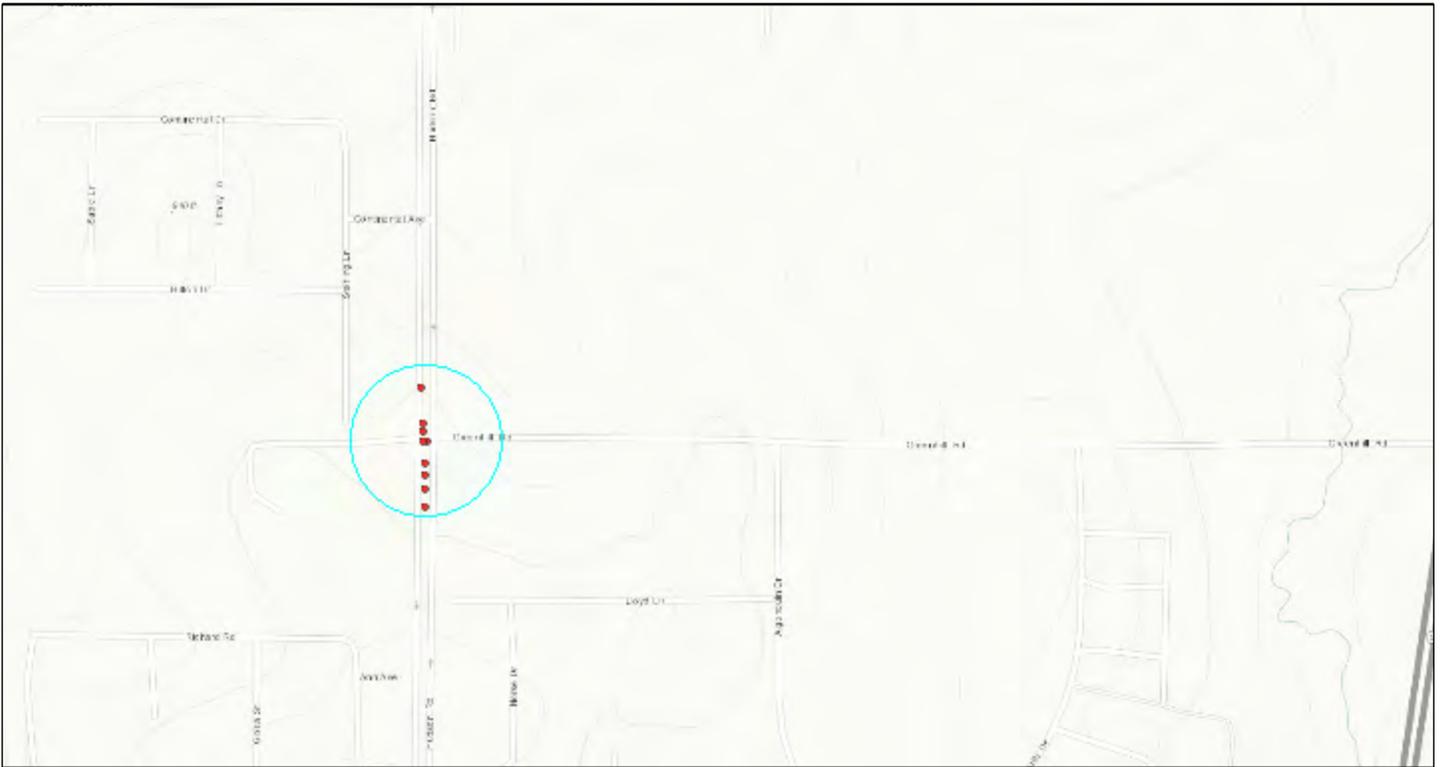
**Safety Analysis, Visualization, and Evaluation Resource (SAVER)
Quick Report
2013-2017**

Crash Severity	17
Fatal	0
Major Injury	0
Minor Injury	3
Possible/Unknown	3
Property Damage Only	11

Injury Status Summary	9
Fatal	0
Suspected serious/incapacitating	0
Suspected minor/non-incapacitating	5
Possible (complaint of pain/injury)	4
Uninjured	0
Fatal, not crash-related	0
Unknown	0
Not reported	0

Property/Vehicles/Occupants	
Property Damage Total (dollars):	109,200.00
Average (per crash dollars):	6,423.53
Total Vehicles:	34.00
Average (per crash):	2.00
Total Occupants:	48.00
Average (per crash):	2.82

Average Severity	
Fatalities/Fatal Crash:	0.00
Fatalities/Crash:	0.00
Injuries/Crash:	0.53
Major Injuries/Crash:	0.00
Minor Injuries/Crash:	0.29
Possible/Unknown Injuries/Crash:	0.24





**Safety Analysis, Visualization, and Evaluation Resource (SAVER)
Quick Report
2013-2017**

Major Cause			17
Animal	1	Ran traffic signal	0
Ran stop sign	0	Failed to yield to emergency vehicle	0
FTYROW: At uncontrolled intersection	0	FTYROW: Making right turn on red signal	1
FTYROW: From stop sign	0	FTYROW: From yield sign	0
FTYROW: Making left turn	2	FTYROW: From driveway	0
FTYROW: From parked position	0	FTYROW: To pedestrian	0
FTYROW: Other	0	Drove around RR grade crossing gates	0
Disregarded RR Signal	0	Crossed centerline (undivided)	1
Crossed median (divided)	0	Traveling wrong way or on wrong side of road	0
Aggressive driving/road rage	0	Driving too fast for conditions	2
Exceeded authorized speed	0	Improper or erratic lane changing	0
Operating vehicle in an reckless, erratic, ca...	0	Followed too close	2
Passing: On wrong side	0	Passing: Where prohibited by signs/markings	0
Passing: With insufficient distance/inadequa...	0	Passing: Through/around barrier	0
Passing: Other passing	0	Made improper turn	0
Driver Distraction: Manual operation of an e...	1	Driver Distraction: Talking on a hand-held d...	0
Driver Distraction: Talking on a hands free ...	0	Driver Distraction: Adjusting devices (radio...	0
Driver Distraction: Other electronic device ...	0	Driver Distraction: Passenger	0
Driver Distraction: Unrestrained animal	0	Driver Distraction: Reaching for object(s)/f...	0
Driver Distraction: Inattentive/lost in thou...	1	Driver Distraction: Other interior distracti...	1
Driver Distraction: Exterior distraction	0	Ran off road - right	0
Ran off road - straight	0	Ran off road - left	0
Lost control	1	Swerving/Evasive Action	0
Over correcting/over steering	0	Failed to keep in proper lane	0
Failure to signal intentions	0	Traveling on prohibited traffic way	0
Vehicle stopped on railroad tracks	0	Other: Vision obstructed	0
Other: Improper operation	0	Other: Disregarded warning sign	0
Other: Disregarded signs/road markings	0	Other: Illegal off-road driving	0
Downhill runaway	0	Separation of units	0
Towing improperly	0	Cargo/equipment loss or shift	0
Equipment failure	0	Oversized load/vehicle	0
Other: Getting off/out of vehicle	0	Failure to dim lights/have lights on	0
Improper backing	0	Improper starting	0
Illegally parked/unattended	0	Driving less than the posted speed limit	0
Operator inexperience	0	Other	0
Unknown	4	Not reported	0
Other: No improper action	0		0



**Safety Analysis, Visualization, and Evaluation Resource (SAVER)
Quick Report
2013-2017**

Time of Day/Day of Week														
Day of Week	12 AM to 2 AM	2 AM to 4 AM	4 AM to 6 AM	6 AM to 8 AM	8 AM to 10 AM	10 AM to Noon	Noon to 2 PM	2 PM to 4 PM	4 PM to 6 PM	6 PM to 8 PM	8 PM to 10 PM	10 PM to 12 AM	Not reported	Total
Sunday	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Monday	0	0	0	2	0	0	0	1	1	0	1	0	0	5
Tuesday	0	0	0	2	2	0	1	0	2	0	0	0	0	7
Wednesday	0	0	0	0	0	1	1	0	0	0	0	0	0	2
Thursday	0	0	0	0	0	1	0	0	0	0	0	0	0	1
Friday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Saturday	0	0	0	0	0	0	0	0	0	1	0	0	0	1
Total	1	0	0	4	2	2	2	1	3	1	1	0	0	17

Manner of Crash Collision	17
Non-collision (single vehicle)	2
Head-on (front to front)	1
Rear-end (front to rear)	7
Angle, oncoming left turn	2
Broadside (front to side)	1
Sideswipe, same direction	1
Sideswipe, opposite direction	0
Rear to rear	0
Rear to side	0
Not reported	1
Other	0
Unknown	2

Surface Conditions	17
Dry	10
Wet	1
Ice/frost	3
Snow	2
Slush	0
Mud, dirt	0
Water (standing or moving)	0
Sand	0
Oil	0
Gravel	0
Not reported	1
Other	0
Unknown	0

Fixed Object Struck	34
Bridge overhead structure	0
Bridge/bridge rail parapet	0
Ditch	0
Ground	0
Guardrail - face	0
Concrete traffic barrier (median or right sid...	0
Cable barrier	0
Utility pole/light support	1
Traffic signal support	0
Fire hydrant	0
Tree	0
Snow bank	0
Wall	0
Other fixed object	0
Bridge pier or support	0
Curb/island/raised median	0
Embankment	0
Culvert/pipe opening	0
Guardrail - end	0
Other traffic barrier	0
Impact attenuator/crash cushion	0
Traffic sign support	0
Other post/pole/support	0
Mailbox	0
Landscape/shrubbery	0
Fence	0
Building	0
None (no fixed object struck)	33



**Safety Analysis, Visualization, and Evaluation Resource (SAVER)
Quick Report
2013-2017**

Driver Age/Driver Gender					
Driver Age - 5 year Bins	Female	Male	Not reported	Unknown	Total
< 14	0	0	0	0	0
= 14	0	0	0	0	0
= 15	0	0	0	0	0
= 16	0	0	0	0	0
= 17	0	1	0	0	1
= 18	1	0	0	0	1
= 19	1	0	0	0	1
= 20	2	1	0	0	3
>= 21 and <= 24	2	1	0	0	3
>= 25 and <= 29	3	2	0	0	5
>= 30 and <= 34	1	6	0	0	7
>= 35 and <= 39	3	1	0	0	4
>= 40 and <= 44	1	1	0	0	2
>= 45 and <= 49	1	1	0	0	2
>= 50 and <= 54	0	1	0	0	1
>= 55 and <= 59	1	0	0	0	1
>= 60 and <= 64	0	0	0	0	0
>= 65 and <= 69	1	0	0	0	1
>= 70 and <= 74	0	2	0	0	2
>= 75 and <= 79	0	0	0	0	0
>= 80 and <= 84	0	0	0	0	0
>= 85 and <= 89	0	0	0	0	0
>= 90 and <= 94	0	0	0	0	0
>= 95	0	0	0	0	0
Not reported	0	0	0	0	0
Unknown	0	0	0	0	0
Total	17	17	0	0	34

Alcohol Test Given	34
None	34
Blood	0
Urine	0
Breath	0
Vitreous	0
Refused	0
Not reported	0

Drug Test Given	34
None	34
Blood	0
Urine	0
Breath	0
Vitreous	0
Refused	0
Not reported	0

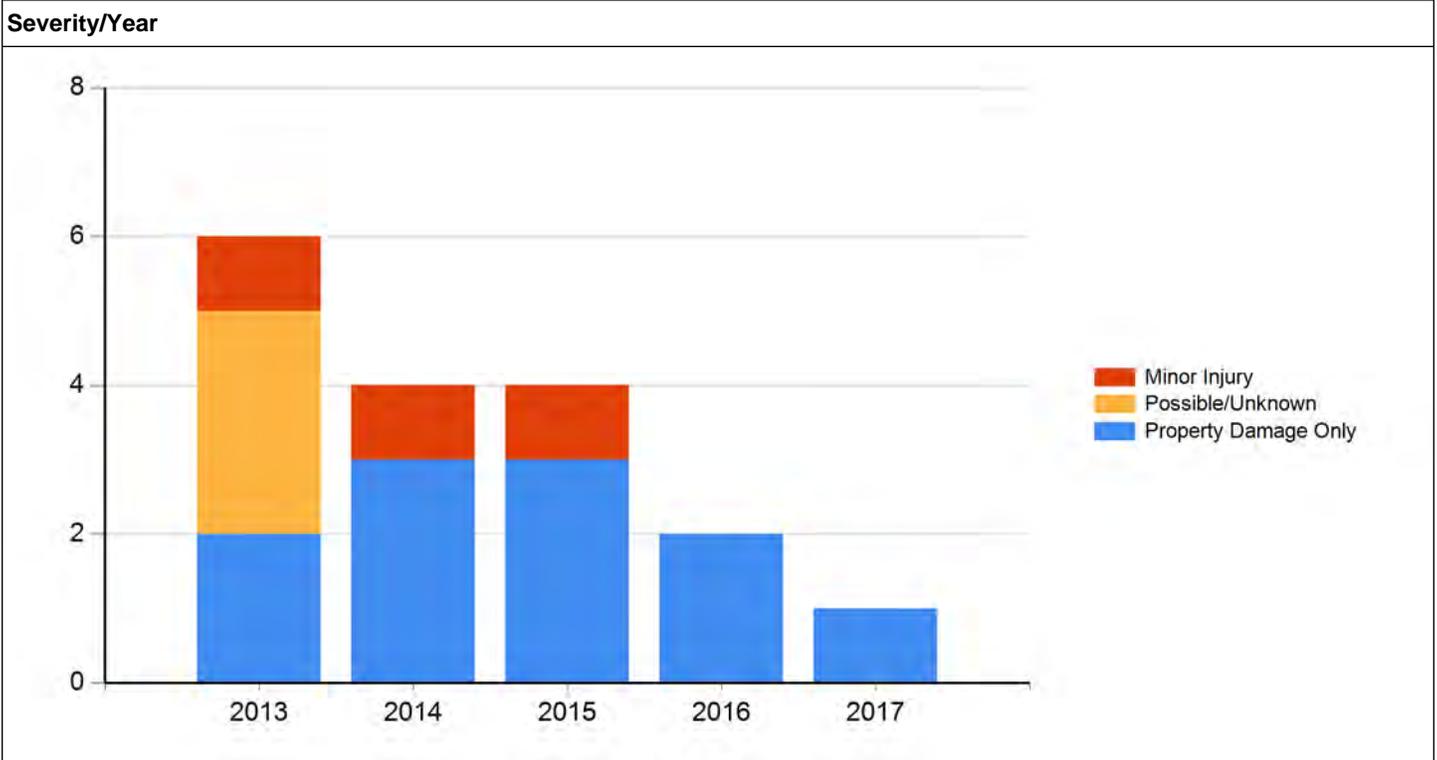
Drug Test Result	34
Negative	0
Cannabis	0
Central Nervous System depressants	0
Central Nervous System stimulants	0
Hallucinogens	0
Inhalants	0
Narcotic Analgesics	0
Dissociative Anesthetic (PCP)	0
Prescription Drug	0
Not reported	34
Other	0

Drug/Alcohol Related	17
Drug	0
Alcohol (< Statutory)	0
Alcohol (Statutory)	0
Drug/Alcohol (< Statutory)	0
Drug/Alcohol (Statutory)	0
Refused	0
Under Influence of Alcohol/Drugs/Medications	0
None Indicated	17

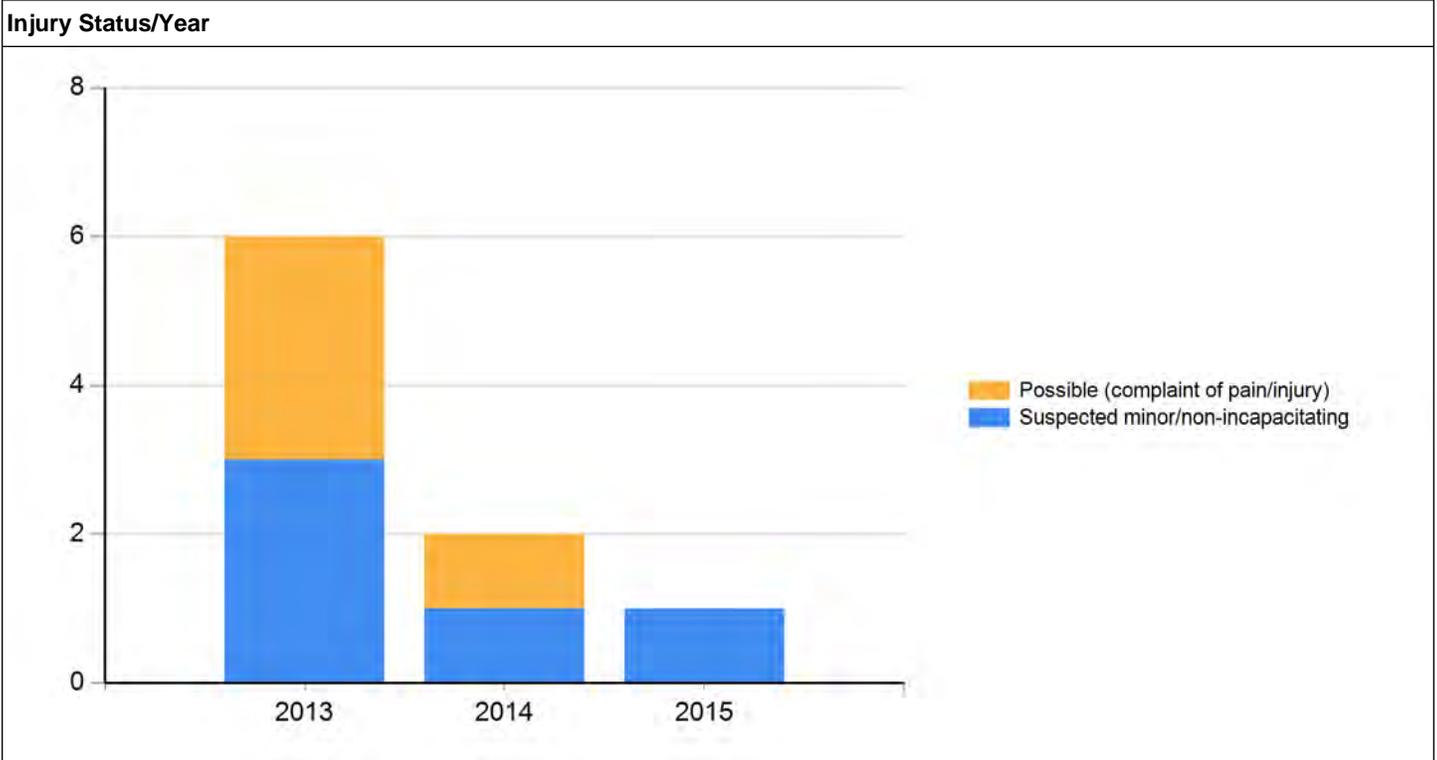


**Safety Analysis, Visualization, and Evaluation Resource (SAVER)
Quick Report
2013-2017**

Crash Severity - Annual							
Crash Year	Fatal	Major Injury	Minor Injury	Possible/Unknown	Property Damage Only	Total	
2008	0	0	0	0	0	0	
2009	0	0	0	0	0	0	
2010	0	0	0	0	0	0	
2011	0	0	0	0	0	0	
2012	0	0	0	0	0	0	
2013	0	0	1	3	2	6	
2014	0	0	1	0	3	4	
2015	0	0	1	0	3	4	
2016	0	0	0	0	2	2	
2017	0	0	0	0	1	1	
2018	0	0	0	0	0	0	
Total	0	0	3	3	11	17	



Injury Status - Annual								
Crash Year	Fatal	Suspected serious/incapacitating	Suspected minor/non-incapacitating	Possible (complaint of pain/injury)	Uninjured	Fatal, not crash-related	Unknown	Total
2008	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0
2011	0	0	0	0	0	0	0	0
2012	0	0	0	0	0	0	0	0
2013	0	0	3	3	0	0	0	6
2014	0	0	1	1	0	0	0	2
2015	0	0	1	0	0	0	0	1
2016	0	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0	0
2018	0	0	0	0	0	0	0	0
Total	0	0	5	4	0	0	0	9



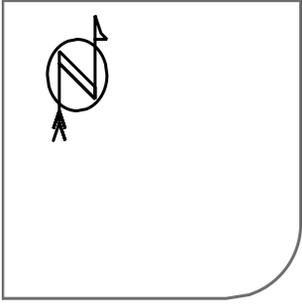


Meeting the following criteria

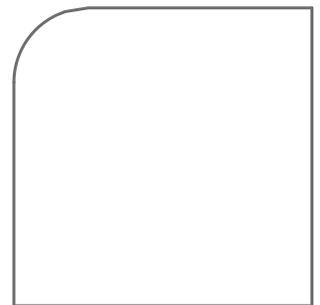
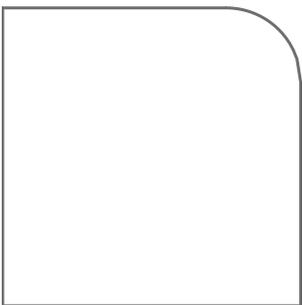
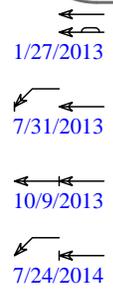
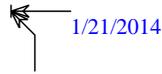
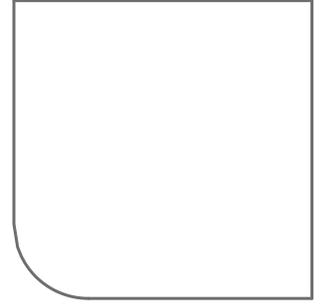
Jurisdiction: Statewide
Year: 2013, 2014, 2015, 2016, 2017
Map Selection: Yes
Filter: None

Analyst Information

5 Crashes



Clear



(0) crashes could not be placed in this schematic

- ← Straight
- ←| Stopped
- ← Unknown
- ↔ Backing
- ↔ Overtaking
- ↔ Sideswipe

- ▭ Parked
- ←~ Erratic
- ←~ Out of control
- ↘ Right turn
- ↙ Left turn
- ↻ U-turn

- × Pedestrian
- ⊗ Bicycle
- Injury
- Fatality
- ⚡ Nighttime
- ⚠ DUI

Fixed objects:

- General
- ▣ Signal
- ⊠ Tree
- ▣ Pole
- ▣ Curb
- ⊠ Animal
- ◁ 3rd vehicle
- * Extra data

180

Intersection Crash Summary

Location: Green Hill Rd & Algonquin Dr Intersection
 City/County: Cedar Falls, IA
 Time Period: 2013-2017 Crash Period = 5 years
 Prepared by: AJH

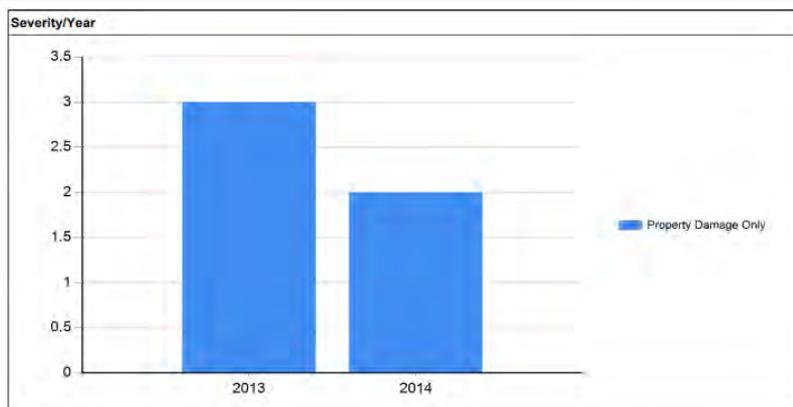
NUMBER OF CRASHES

<u>0</u>	Fatal Crashes	<u>0</u>	fatalities	<u>0</u>	injuries
<u>0</u>	Major Injury Crashes			<u>0</u>	injuries
<u>0</u>	Minor Injury Crashes			<u>0</u>	injuries
<u>0</u>	Possible/Unknown Injury Crashes			<u>0</u>	injuries
<u>5</u>	Property Damage Only Crashes				
<hr/>					
Totals:	<u>5</u> Crashes		<u>0</u> fatalities		<u>0</u> injuries

CRASH RATES

Total Crash Rate =	5 /		15.80 MEV =	0.32 Total Crashes/MEV
Fatal Crash Rate =	0 /		15.80 MEV =	0.00 Fatal Crashes/MEV
Fatal/Injury Crash Rate =	0 /		15.80 MEV =	0.00 F & I Crashes/MEV

CRASH FREQUENCY



CRASH TYPE

<ul style="list-style-type: none"> <u>0</u> Head-on <u>4</u> Rear-end Crash <u>0</u> Broadside/Right angle Crash <u>0</u> Angle, Oncoming Left Turn <u>0</u> Backing 	<ul style="list-style-type: none"> <u>1</u> Sideswipe, Same Direction <u>0</u> Sideswipe, Opposite Direction <u>0</u> Non Vehicle Collision <u>0</u> Other <u>0</u> Unknown 	<p style="text-align: center;"><u>Non Vehicle Collision Type</u></p> <ul style="list-style-type: none"> <u>0</u> Pedestrian <u>0</u> Animal <u>0</u> Fixed Object <u>0</u> Other
---	--	--

TRAFFIC - AADT

North Approach =	<u>0</u>	
South Approach =	<u>1800</u>	
East Approach =	<u>7760</u>	
West Approach =	<u>7760</u>	
Million Entering Vehicles (MEV) =	<u>15.80</u>	

Notes:
 Est AADT from 2018 Snyder 13 hr Count
 (Adj for Viking diversion)



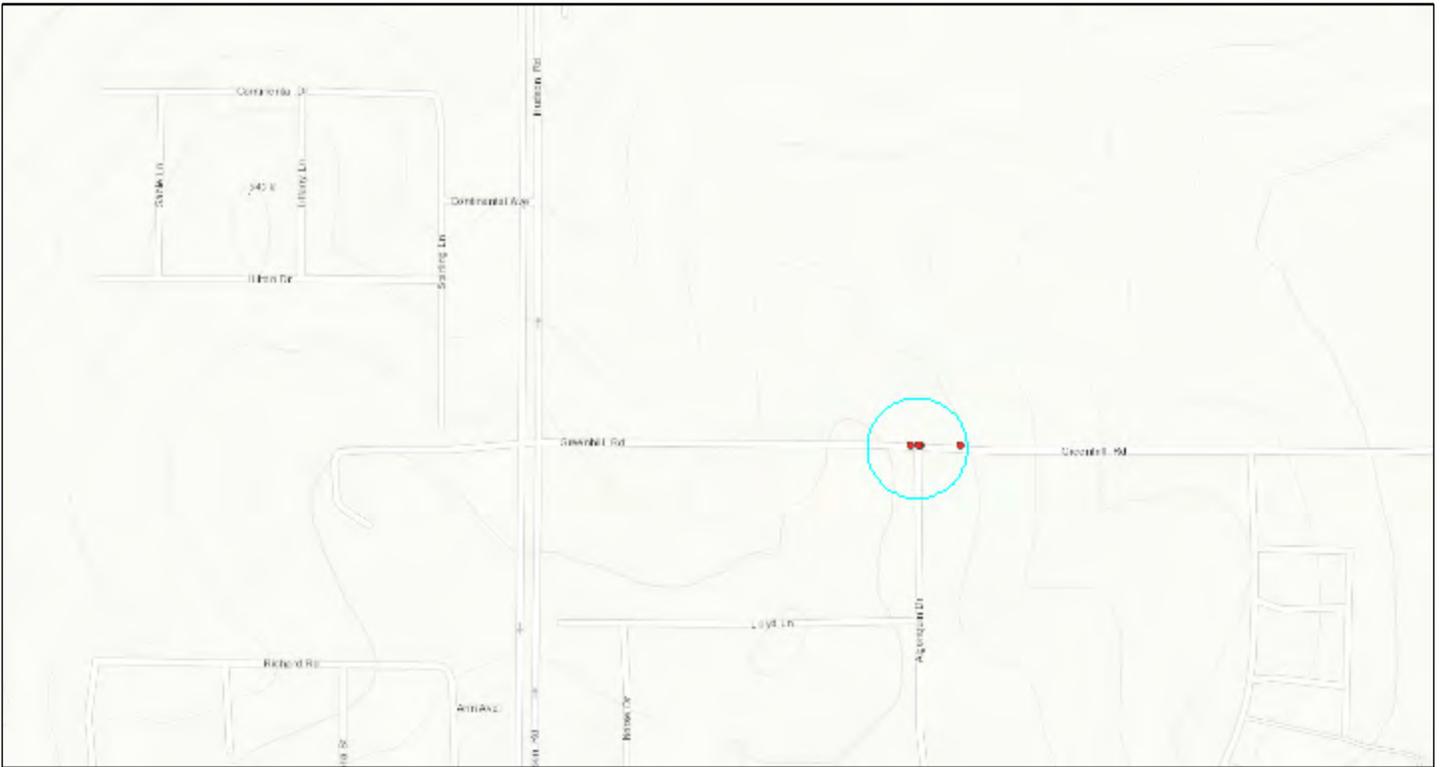
**Safety Analysis, Visualization, and Evaluation Resource (SAVER)
Quick Report
2013-2017**

Crash Severity	5
Fatal	0
Major Injury	0
Minor Injury	0
Possible/Unknown	0
Property Damage Only	5

Injury Status Summary	0
Fatal	0
Suspected serious/incapacitating	0
Suspected minor/non-incapacitating	0
Possible (complaint of pain/injury)	0
Uninjured	0
Fatal, not crash-related	0
Unknown	0
Not reported	0

Property/Vehicles/Occupants	
Property Damage Total (dollars):	19,200.00
Average (per crash dollars):	3,840.00
Total Vehicles:	10.00
Average (per crash):	2.00
Total Occupants:	11.00
Average (per crash):	2.20

Average Severity	
Fatalities/Fatal Crash:	0.00
Fatalities/Crash:	0.00
Injuries/Crash:	0.00
Major Injuries/Crash:	0.00
Minor Injuries/Crash:	0.00
Possible/Unknown Injuries/Crash:	0.00





**Safety Analysis, Visualization, and Evaluation Resource (SAVER)
Quick Report
2013-2017**

Major Cause			5
Animal	0	Ran traffic signal	0
Ran stop sign	0	Failed to yield to emergency vehicle	0
FTYROW: At uncontrolled intersection	0	FTYROW: Making right turn on red signal	0
FTYROW: From stop sign	0	FTYROW: From yield sign	0
FTYROW: Making left turn	0	FTYROW: From driveway	0
FTYROW: From parked position	0	FTYROW: To pedestrian	0
FTYROW: Other	0	Drove around RR grade crossing gates	0
Disregarded RR Signal	0	Crossed centerline (undivided)	0
Crossed median (divided)	0	Traveling wrong way or on wrong side of road	0
Aggressive driving/road rage	0	Driving too fast for conditions	0
Exceeded authorized speed	0	Improper or erratic lane changing	0
Operating vehicle in an reckless, erratic, ca...	0	Followed too close	2
Passing: On wrong side	0	Passing: Where prohibited by signs/markings	0
Passing: With insufficient distance/inadequa...	0	Passing: Through/around barrier	0
Passing: Other passing	0	Made improper turn	0
Driver Distraction: Manual operation of an e...	0	Driver Distraction: Talking on a hand-held d...	0
Driver Distraction: Talking on a hands free ...	0	Driver Distraction: Adjusting devices (radio...	0
Driver Distraction: Other electronic device ...	0	Driver Distraction: Passenger	0
Driver Distraction: Unrestrained animal	0	Driver Distraction: Reaching for object(s)/f...	0
Driver Distraction: Inattentive/lost in thou...	0	Driver Distraction: Other interior distracti...	0
Driver Distraction: Exterior distraction	0	Ran off road - right	0
Ran off road - straight	0	Ran off road - left	0
Lost control	1	Swerving/Evasive Action	1
Over correcting/over steering	0	Failed to keep in proper lane	0
Failure to signal intentions	0	Traveling on prohibited traffic way	0
Vehicle stopped on railroad tracks	0	Other: Vision obstructed	0
Other: Improper operation	0	Other: Disregarded warning sign	0
Other: Disregarded signs/road markings	0	Other: Illegal off-road driving	0
Downhill runaway	0	Separation of units	0
Towing improperly	0	Cargo/equipment loss or shift	0
Equipment failure	0	Oversized load/vehicle	0
Other: Getting off/out of vehicle	0	Failure to dim lights/have lights on	0
Improper backing	0	Improper starting	0
Illegally parked/unattended	0	Driving less than the posted speed limit	0
Operator inexperience	0	Other	1
Unknown	0	Not reported	0
Other: No improper action	0		



**Safety Analysis, Visualization, and Evaluation Resource (SAVER)
Quick Report
2013-2017**

Time of Day/Day of Week														
Day of Week	12 AM to 2 AM	2 AM to 4 AM	4 AM to 6 AM	6 AM to 8 AM	8 AM to 10 AM	10 AM to Noon	Noon to 2 PM	2 PM to 4 PM	4 PM to 6 PM	6 PM to 8 PM	8 PM to 10 PM	10 PM to 12 AM	Not reported	Total
Sunday	0	0	0	0	0	0	0	0	1	0	0	0	0	1
Monday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tuesday	0	0	0	0	1	0	0	0	0	0	0	0	0	1
Wednesday	0	0	0	0	0	0	0	0	2	0	0	0	0	2
Thursday	0	0	0	0	0	1	0	0	0	0	0	0	0	1
Friday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Saturday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	1	1	0	0	3	0	0	0	0	5

Manner of Crash Collision	5
Non-collision (single vehicle)	0
Head-on (front to front)	0
Rear-end (front to rear)	4
Angle, oncoming left turn	0
Broadside (front to side)	0
Sideswipe, same direction	1
Sideswipe, opposite direction	0
Rear to rear	0
Rear to side	0
Not reported	0
Other	0
Unknown	0

Surface Conditions	5
Dry	3
Wet	0
Ice/frost	2
Snow	0
Slush	0
Mud, dirt	0
Water (standing or moving)	0
Sand	0
Oil	0
Gravel	0
Not reported	0
Other	0
Unknown	0

Fixed Object Struck	10
Bridge overhead structure	0
Bridge/bridge rail parapet	0
Ditch	0
Ground	0
Guardrail - face	0
Concrete traffic barrier (median or right sid...)	0
Cable barrier	0
Utility pole/light support	0
Traffic signal support	0
Fire hydrant	0
Tree	0
Snow bank	0
Wall	0
Other fixed object	0
Bridge pier or support	0
Curb/island/raised median	0
Embankment	0
Culvert/pipe opening	0
Guardrail - end	0
Other traffic barrier	0
Impact attenuator/crash cushion	0
Traffic sign support	0
Other post/pole/support	0
Mailbox	0
Landscape/shrubbery	0
Fence	0
Building	0
None (no fixed object struck)	10



**Safety Analysis, Visualization, and Evaluation Resource (SAVER)
Quick Report
2013-2017**

Driver Age/Driver Gender					
Driver Age - 5 year Bins	Female	Male	Not reported	Unknown	Total
< 14	0	0	0	0	0
= 14	0	0	0	0	0
= 15	0	0	0	0	0
= 16	1	0	0	0	1
= 17	0	0	0	0	0
= 18	2	0	0	0	2
= 19	0	0	0	0	0
= 20	0	0	0	0	0
>= 21 and <= 24	1	0	0	0	1
>= 25 and <= 29	1	1	0	0	2
>= 30 and <= 34	0	0	0	0	0
>= 35 and <= 39	0	1	0	0	1
>= 40 and <= 44	0	1	0	0	1
>= 45 and <= 49	1	0	0	0	1
>= 50 and <= 54	0	1	0	0	1
>= 55 and <= 59	0	0	0	0	0
>= 60 and <= 64	0	0	0	0	0
>= 65 and <= 69	0	0	0	0	0
>= 70 and <= 74	0	0	0	0	0
>= 75 and <= 79	0	0	0	0	0
>= 80 and <= 84	0	0	0	0	0
>= 85 and <= 89	0	0	0	0	0
>= 90 and <= 94	0	0	0	0	0
>= 95	0	0	0	0	0
Not reported	0	0	0	0	0
Unknown	0	0	0	0	0
Total	6	4	0	0	10

Alcohol Test Given	10
None	10
Blood	0
Urine	0
Breath	0
Vitreous	0
Refused	0
Not reported	0

Drug Test Given	10
None	10
Blood	0
Urine	0
Breath	0
Vitreous	0
Refused	0
Not reported	0

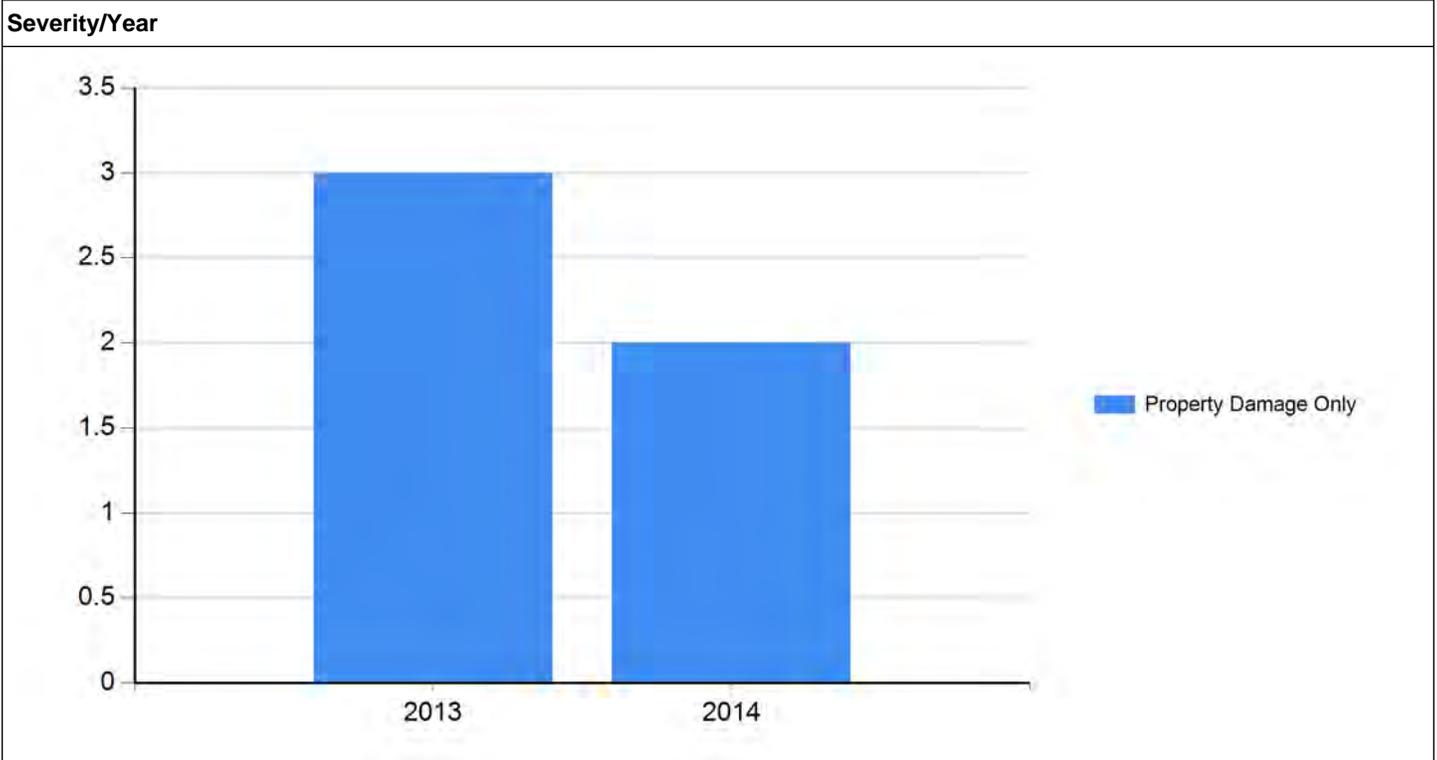
Drug Test Result	10
Negative	0
Cannabis	0
Central Nervous System depressants	0
Central Nervous System stimulants	0
Hallucinogens	0
Inhalants	0
Narcotic Analgesics	0
Dissociative Anesthetic (PCP)	0
Prescription Drug	0
Not reported	10
Other	0

Drug/Alcohol Related	5
Drug	0
Alcohol (< Statutory)	0
Alcohol (Statutory)	0
Drug/Alcohol (< Statutory)	0
Drug/Alcohol (Statutory)	0
Refused	0
Under Influence of Alcohol/Drugs/Medications	0
None Indicated	5



**Safety Analysis, Visualization, and Evaluation Resource (SAVER)
Quick Report
2013-2017**

Crash Severity - Annual							
Crash Year	Fatal	Major Injury	Minor Injury	Possible/Unknown	Property Damage Only	Total	
2008	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0
2011	0	0	0	0	0	0	0
2012	0	0	0	0	0	0	0
2013	0	0	0	0	0	3	3
2014	0	0	0	0	0	2	2
2015	0	0	0	0	0	0	0
2016	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0
2018	0	0	0	0	0	0	0
Total	0	0	0	0	0	5	5





Safety Analysis, Visualization, and Evaluation Resource (SAVER)
Quick Report
2013-2017

Injury Status - Annual								
Crash Year	Fatal	Suspected serious/incapacitating	Suspected minor/non-incapacitating	Possible (complaint of pain/injury)	Uninjured	Fatal, not crash-related	Unknown	Total
2008	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0
2011	0	0	0	0	0	0	0	0
2012	0	0	0	0	0	0	0	0
2013	0	0	0	0	0	0	0	0
2014	0	0	0	0	0	0	0	0
2015	0	0	0	0	0	0	0	0
2016	0	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0	0
2018	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0

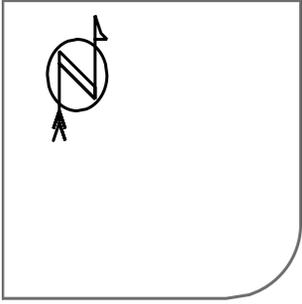


Meeting the following criteria

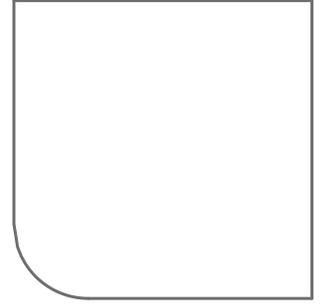
Jurisdiction: Statewide
Year: 2013, 2014, 2015, 2016, 2017
Map Selection: Yes
Filter: None

Analyst Information

3 Crashes

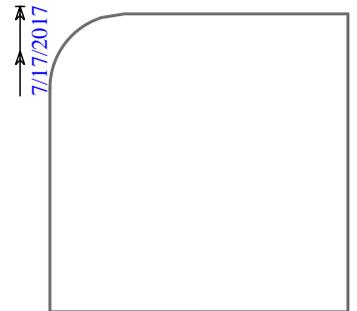
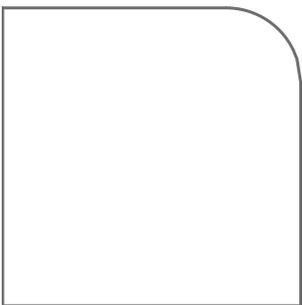


Clear



10/14/2017

3/2/2014



(0) crashes could not be placed in this schematic

- ← Straight
- ←| Stopped
- ← Unknown
- ↔ Backing
- ↔ Overtaking
- ↔ Sideswipe

- Parked
- Erratic
- Out of control
- Right turn
- Left turn
- U-turn

- Pedestrian
- Bicycle
- Injury
- Fatality
- Nighttime
- DUI

Fixed objects:

- General
- Signal
- Tree
- Pole
- Curb
- Animal
- 3rd vehicle
- Extra data

Intersection Crash Summary

Location: Green Hill Rd & Ashworth Dr Intersection
 City/County: Cedar Falls, IA
 Time Period: 2013-2017 Crash Period = 5 years
 Prepared by: AJH

NUMBER OF CRASHES

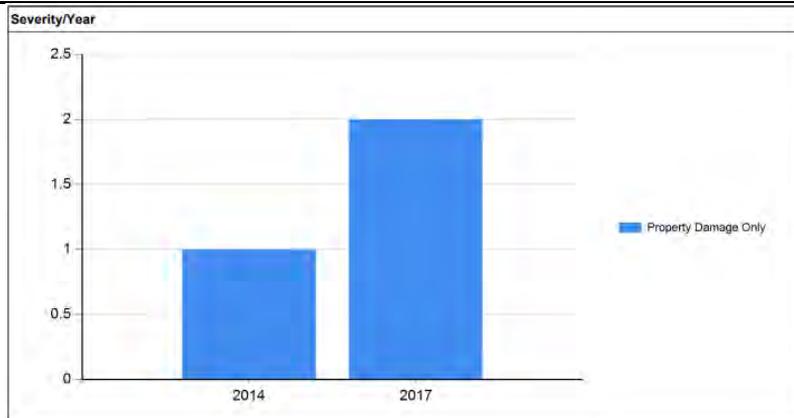
<u>0</u>	Fatal Crashes	<u>0</u>	fatalities	<u>0</u>	injuries
<u>0</u>	Major Injury Crashes			<u>0</u>	injuries
<u>0</u>	Minor Injury Crashes			<u>0</u>	injuries
<u>0</u>	Possible/Unknown Injury Crashes			<u>0</u>	injuries
<u>3</u>	Property Damage Only Crashes				

Totals: 3 Crashes 0 fatalities 0 injuries

CRASH RATES

Total Crash Rate =	3 /	17.34 MEV =	0.17 Total Crashes/MEV
Fatal Crash Rate =	0 /	17.34 MEV =	0.00 Fatal Crashes/MEV
Fatal/Injury Crash Rate =	0 /	17.34 MEV =	0.00 F & I Crashes/MEV

CRASH FREQUENCY



CRASH TYPE

0 Head-on 1 Rear-end Crash 1 Broadside/Right angle Crash 0 Angle, Oncoming Left Turn 0 Backing	0 Sideswipe, Same Direction 0 Sideswipe, Opposite Direction 1 Non Vehicle Collision 0 Other 0 Unknown	Non Vehicle Collision Type 0 Pedestrian 0 Animal 1 Fixed Object 0 Other
--	---	--

TRAFFIC - AADT

North Approach =	<u>0</u>	
South Approach =	<u>1870</u>	
East Approach =	<u>9370</u>	
West Approach =	<u>7760</u>	
Million Entering Vehicles (MEV) =	<u>17.34</u>	

Notes:
 Est AADT from 2018 Snyder 13 hr Count
 (Adj for Viking diversion)



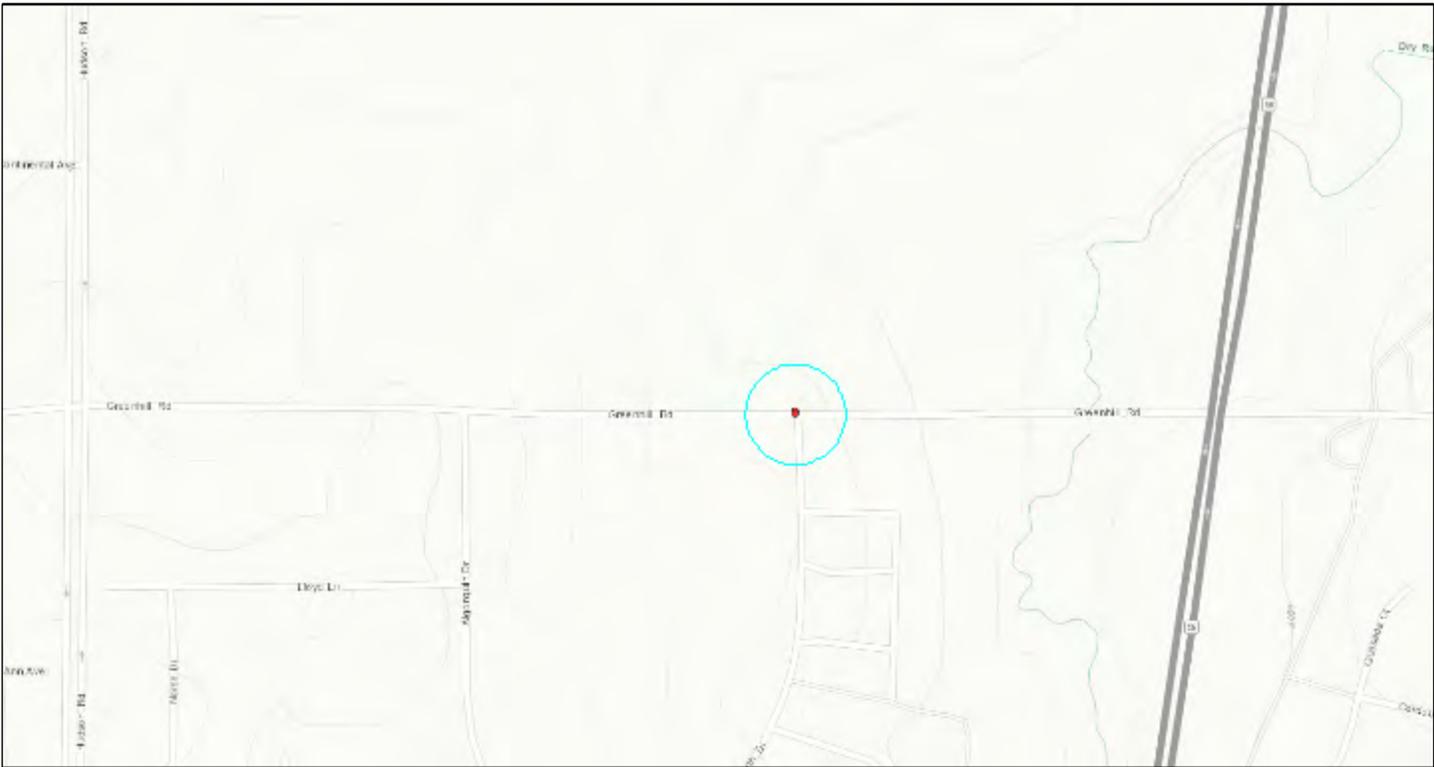
**Safety Analysis, Visualization, and Evaluation Resource (SAVER)
Quick Report
2013-2017**

Crash Severity	3
Fatal	0
Major Injury	0
Minor Injury	0
Possible/Unknown	0
Property Damage Only	3

Injury Status Summary	0
Fatal	0
Suspected serious/incapacitating	0
Suspected minor/non-incapacitating	0
Possible (complaint of pain/injury)	0
Uninjured	0
Fatal, not crash-related	0
Unknown	0
Not reported	0

Property/Vehicles/Occupants	
Property Damage Total (dollars):	9,000.00
Average (per crash dollars):	3,000.00
Total Vehicles:	5.00
Average (per crash):	1.67
Total Occupants:	7.00
Average (per crash):	2.33

Average Severity	
Fatalities/Fatal Crash:	0.00
Fatalities/Crash:	0.00
Injuries/Crash:	0.00
Major Injuries/Crash:	0.00
Minor Injuries/Crash:	0.00
Possible/Unknown Injuries/Crash:	0.00





**Safety Analysis, Visualization, and Evaluation Resource (SAVER)
Quick Report
2013-2017**

Major Cause			3
Animal	0	Ran traffic signal	0
Ran stop sign	0	Failed to yield to emergency vehicle	0
FTYROW: At uncontrolled intersection	0	FTYROW: Making right turn on red signal	0
FTYROW: From stop sign	1	FTYROW: From yield sign	0
FTYROW: Making left turn	0	FTYROW: From driveway	0
FTYROW: From parked position	0	FTYROW: To pedestrian	0
FTYROW: Other	0	Drove around RR grade crossing gates	0
Disregarded RR Signal	0	Crossed centerline (undivided)	0
Crossed median (divided)	0	Traveling wrong way or on wrong side of road	0
Aggressive driving/road rage	0	Driving too fast for conditions	1
Exceeded authorized speed	0	Improper or erratic lane changing	0
Operating vehicle in an reckless, erratic, ca...	0	Followed too close	1
Passing: On wrong side	0	Passing: Where prohibited by signs/markings	0
Passing: With insufficient distance/inadequa...	0	Passing: Through/around barrier	0
Passing: Other passing	0	Made improper turn	0
Driver Distraction: Manual operation of an e...	0	Driver Distraction: Talking on a hand-held d...	0
Driver Distraction: Talking on a hands free ...	0	Driver Distraction: Adjusting devices (radio...	0
Driver Distraction: Other electronic device ...	0	Driver Distraction: Passenger	0
Driver Distraction: Unrestrained animal	0	Driver Distraction: Reaching for object(s)/f...	0
Driver Distraction: Inattentive/lost in thou...	0	Driver Distraction: Other interior distracti...	0
Driver Distraction: Exterior distraction	0	Ran off road - right	0
Ran off road - straight	0	Ran off road - left	0
Lost control	0	Swerving/Evasive Action	0
Over correcting/over steering	0	Failed to keep in proper lane	0
Failure to signal intentions	0	Traveling on prohibited traffic way	0
Vehicle stopped on railroad tracks	0	Other: Vision obstructed	0
Other: Improper operation	0	Other: Disregarded warning sign	0
Other: Disregarded signs/road markings	0	Other: Illegal off-road driving	0
Downhill runaway	0	Separation of units	0
Towing improperly	0	Cargo/equipment loss or shift	0
Equipment failure	0	Oversized load/vehicle	0
Other: Getting off/out of vehicle	0	Failure to dim lights/have lights on	0
Improper backing	0	Improper starting	0
Illegally parked/unattended	0	Driving less than the posted speed limit	0
Operator inexperience	0	Other	0
Unknown	0	Not reported	0
Other: No improper action	0		0



**Safety Analysis, Visualization, and Evaluation Resource (SAVER)
Quick Report
2013-2017**

Time of Day/Day of Week														
Day of Week	12 AM to 2 AM	2 AM to 4 AM	4 AM to 6 AM	6 AM to 8 AM	8 AM to 10 AM	10 AM to Noon	Noon to 2 PM	2 PM to 4 PM	4 PM to 6 PM	6 PM to 8 PM	8 PM to 10 PM	10 PM to 12 AM	Not reported	Total
Sunday	0	0	0	0	0	0	1	0	0	0	0	0	0	1
Monday	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Tuesday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wednesday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Thursday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Friday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Saturday	0	0	0	0	1	0	0	0	0	0	0	0	0	1
Total	0	0	0	1	1	0	1	0	0	0	0	0	0	3

Manner of Crash Collision	3
Non-collision (single vehicle)	1
Head-on (front to front)	0
Rear-end (front to rear)	1
Angle, oncoming left turn	0
Broadside (front to side)	1
Sideswipe, same direction	0
Sideswipe, opposite direction	0
Rear to rear	0
Rear to side	0
Not reported	0
Other	0
Unknown	0

Surface Conditions	3
Dry	1
Wet	1
Ice/frost	0
Snow	1
Slush	0
Mud, dirt	0
Water (standing or moving)	0
Sand	0
Oil	0
Gravel	0
Not reported	0
Other	0
Unknown	0

Fixed Object Struck	5
Bridge overhead structure	0
Bridge/bridge rail parapet	0
Ditch	0
Ground	0
Guardrail - face	0
Concrete traffic barrier (median or right sid...	0
Cable barrier	0
Utility pole/light support	0
Traffic signal support	0
Fire hydrant	1
Tree	0
Snow bank	0
Wall	0
Other fixed object	0
Bridge pier or support	0
Curb/island/raised median	0
Embankment	0
Culvert/pipe opening	0
Guardrail - end	0
Other traffic barrier	0
Impact attenuator/crash cushion	0
Traffic sign support	0
Other post/pole/support	0
Mailbox	0
Landscape/shrubbery	0
Fence	0
Building	0
None (no fixed object struck)	4



**Safety Analysis, Visualization, and Evaluation Resource (SAVER)
Quick Report
2013-2017**

Driver Age/Driver Gender					
Driver Age - 5 year Bins	Female	Male	Not reported	Unknown	Total
< 14	0	0	0	0	0
= 14	0	0	0	0	0
= 15	0	0	0	0	0
= 16	1	0	0	0	1
= 17	0	0	0	0	0
= 18	0	0	0	0	0
= 19	0	0	0	0	0
= 20	0	0	0	0	0
>= 21 and <= 24	0	1	0	0	1
>= 25 and <= 29	1	0	0	0	1
>= 30 and <= 34	0	0	0	0	0
>= 35 and <= 39	0	1	0	0	1
>= 40 and <= 44	0	0	0	0	0
>= 45 and <= 49	0	0	0	0	0
>= 50 and <= 54	1	0	0	0	1
>= 55 and <= 59	0	0	0	0	0
>= 60 and <= 64	0	0	0	0	0
>= 65 and <= 69	0	0	0	0	0
>= 70 and <= 74	0	0	0	0	0
>= 75 and <= 79	0	0	0	0	0
>= 80 and <= 84	0	0	0	0	0
>= 85 and <= 89	0	0	0	0	0
>= 90 and <= 94	0	0	0	0	0
>= 95	0	0	0	0	0
Not reported	0	0	0	0	0
Unknown	0	0	0	0	0
Total	3	2	0	0	5

Alcohol Test Given	5
None	5
Blood	0
Urine	0
Breath	0
Vitreous	0
Refused	0
Not reported	0

Drug Test Given	5
None	5
Blood	0
Urine	0
Breath	0
Vitreous	0
Refused	0
Not reported	0

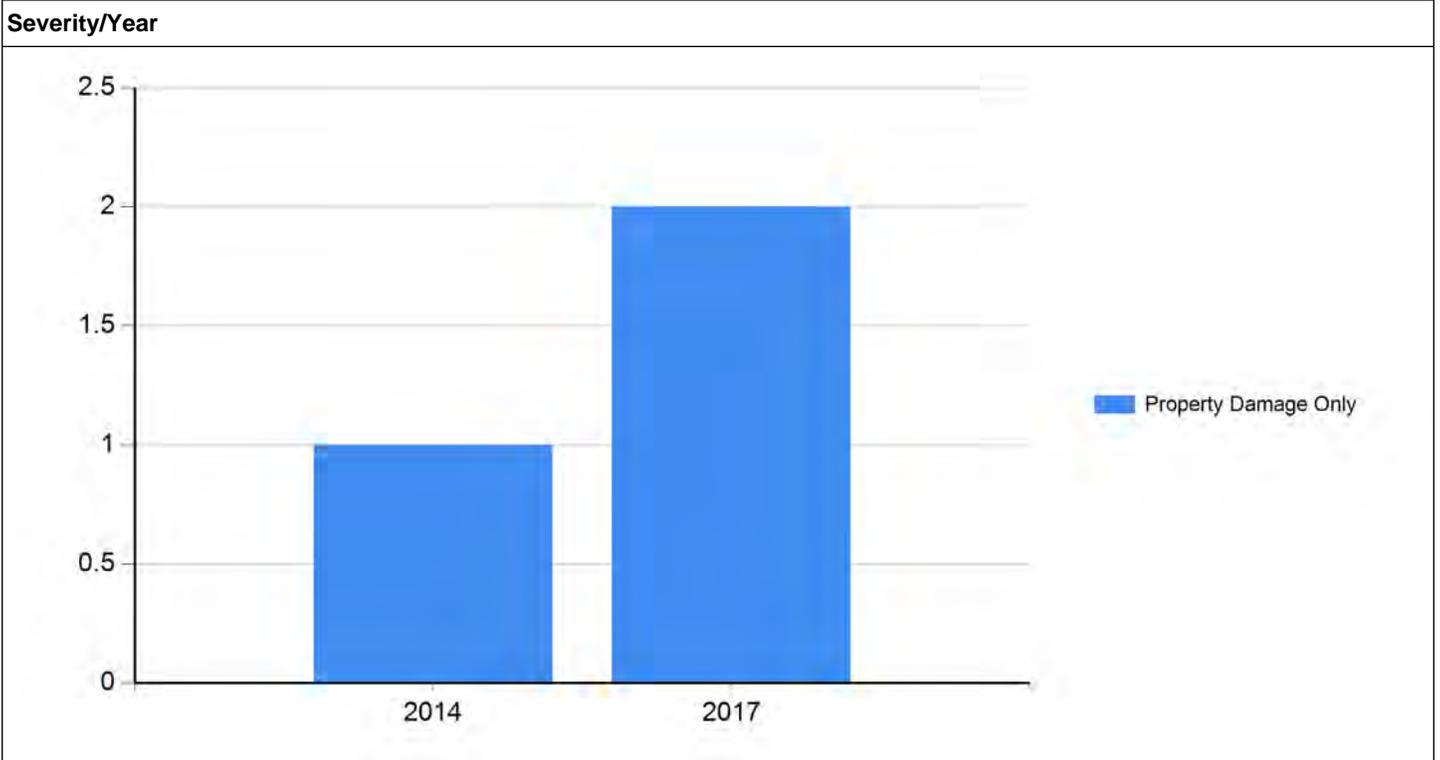
Drug Test Result	5
Negative	0
Cannabis	0
Central Nervous System depressants	0
Central Nervous System stimulants	0
Hallucinogens	0
Inhalants	0
Narcotic Analgesics	0
Dissociative Anesthetic (PCP)	0
Prescription Drug	0
Not reported	5
Other	0

Drug/Alcohol Related	3
Drug	0
Alcohol (< Statutory)	0
Alcohol (Statutory)	0
Drug/Alcohol (< Statutory)	0
Drug/Alcohol (Statutory)	0
Refused	0
Under Influence of Alcohol/Drugs/Medications	0
None Indicated	3



**Safety Analysis, Visualization, and Evaluation Resource (SAVER)
Quick Report
2013-2017**

Crash Severity - Annual							
Crash Year	Fatal	Major Injury	Minor Injury	Possible/Unknown	Property Damage Only	Total	
2008	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0
2011	0	0	0	0	0	0	0
2012	0	0	0	0	0	0	0
2013	0	0	0	0	0	0	0
2014	0	0	0	0	0	1	1
2015	0	0	0	0	0	0	0
2016	0	0	0	0	0	0	0
2017	0	0	0	0	0	2	2
2018	0	0	0	0	0	0	0
Total	0	0	0	0	0	3	3





Safety Analysis, Visualization, and Evaluation Resource (SAVER)
Quick Report
2013-2017

Injury Status - Annual								
Crash Year	Fatal	Suspected serious/incapacitating	Suspected minor/non-incapacitating	Possible (complaint of pain/injury)	Uninjured	Fatal, not crash-related	Unknown	Total
2008	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0
2011	0	0	0	0	0	0	0	0
2012	0	0	0	0	0	0	0	0
2013	0	0	0	0	0	0	0	0
2014	0	0	0	0	0	0	0	0
2015	0	0	0	0	0	0	0	0
2016	0	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0	0
2018	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0



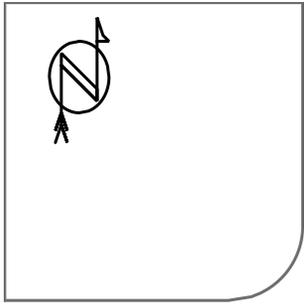
Meeting the following criteria

Jurisdiction: Statewide
Year: 2013, 2014, 2015, 2016, 2017
Map Selection: Yes
Filter: None

Analyst Information

14 Crashes

Clear

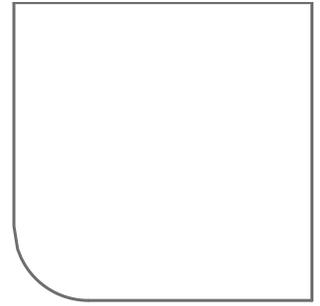


2/28/2014
9/2/2016

6/12/2016

11/11/2016

8/25/2017



3/23/2014

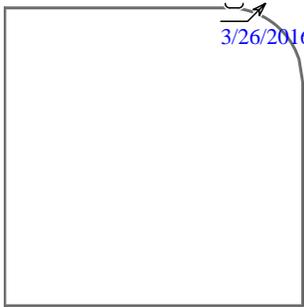
6/25/2015

6/7/2017

9/3/2017

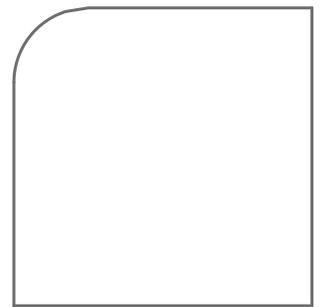
12/22/2014
3/13/2015

7/6/2017



3/26/2016

9/29/2013



(0) crashes could not be placed in this schematic

- ← Straight
- ←| Stopped
- ← Unknown
- ↔ Backing
- ↔ Overtaking
- ↔ Sideswipe

- Parked
- Erratic
- Out of control
- Right turn
- Left turn
- U-turn

- Pedestrian
- Bicycle
- Injury
- Fatality
- Nighttime
- DUI

Fixed objects:

- General
- Signal
- Tree
- Pole
- Curb
- Animal
- 3rd vehicle
- Extra data

Intersection Crash Summary

Location: Green Hill Rd & S Main St Intersection
 City/County: Cedar Falls, IA
 Time Period: 2013-2017 Crash Period = 5 years
 Prepared by: AJH

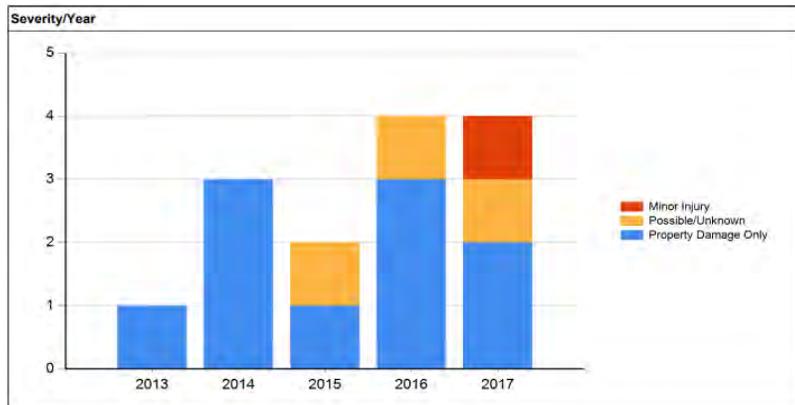
NUMBER OF CRASHES

<u>0</u> Fatal Crashes	<u>0</u> fatalities	<u>0</u> injuries
<u>0</u> Major Injury Crashes		<u>0</u> injuries
<u>1</u> Minor Injury Crashes		<u>1</u> injuries
<u>3</u> Possible/Unknown Injury Crashes		<u>3</u> injuries
<u>10</u> Property Damage Only Crashes		
Totals: <u>14</u> Crashes <u>0</u> fatalities <u>4</u> injuries		

CRASH RATES

Total Crash Rate =	14 /	29.38 MEV =	0.48 Total Crashes/MEV
Fatal Crash Rate =	0 /	29.38 MEV =	0.00 Fatal Crashes/MEV
Fatal/Injury Crash Rate =	4 /	29.38 MEV =	0.14 F & I Crashes/MEV

CRASH FREQUENCY



CRASH TYPE

0 Head-on 6 Rear-end Crash 1 Broadside/Right angle Crash 6 Angle, Oncoming Left Turn 0 Backing	1 Sideswipe, Same Direction 0 Sideswipe, Opposite Direction 0 Non Vehicle Collision 0 Other 0 Unknown	Non Vehicle Collision Type 0 Pedestrian 0 Animal 0 Fixed Object 0 Other
--	---	--

TRAFFIC - AADT

North Approach =	<u>8050</u>
South Approach =	<u>3210</u>
East Approach =	<u>10500</u>
West Approach =	<u>10440</u>
Million Entering Vehicles (MEV) =	<u>29.38</u>

Notes:
 Est AADT from 2018 Snyder 13 hr Count
 (Adj for Viking diversion)



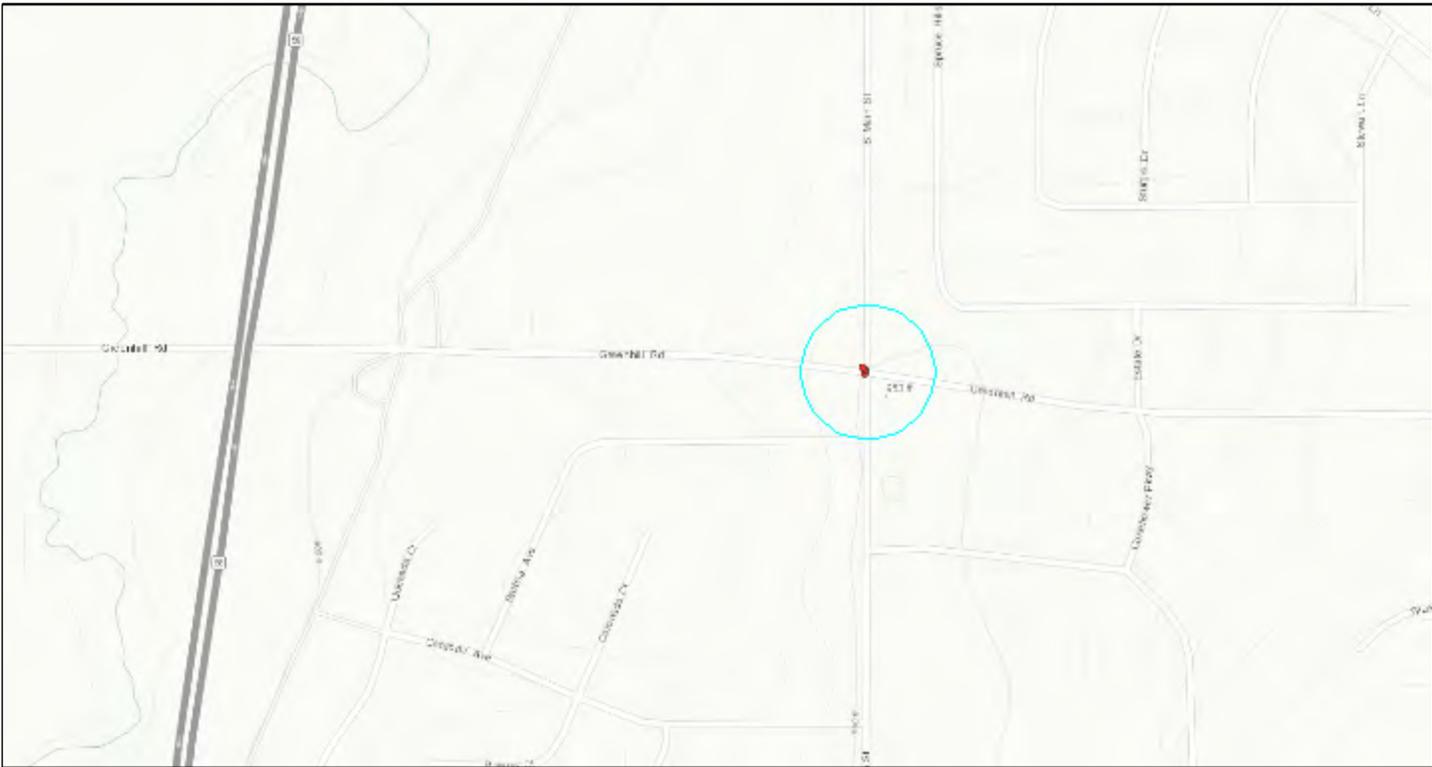
**Safety Analysis, Visualization, and Evaluation Resource (SAVER)
Quick Report
2013-2017**

Crash Severity	14
Fatal	0
Major Injury	0
Minor Injury	1
Possible/Unknown	3
Property Damage Only	10

Injury Status Summary	4
Fatal	0
Suspected serious/incapacitating	0
Suspected minor/non-incapacitating	1
Possible (complaint of pain/injury)	3
Uninjured	0
Fatal, not crash-related	0
Unknown	0
Not reported	0

Property/Vehicles/Occupants	
Property Damage Total (dollars):	66,000.00
Average (per crash dollars):	4,714.29
Total Vehicles:	29.00
Average (per crash):	2.07
Total Occupants:	51.00
Average (per crash):	3.64

Average Severity	
Fatalities/Fatal Crash:	0.00
Fatalities/Crash:	0.00
Injuries/Crash:	0.29
Major Injuries/Crash:	0.00
Minor Injuries/Crash:	0.07
Possible/Unknown Injuries/Crash:	0.21





**Safety Analysis, Visualization, and Evaluation Resource (SAVER)
Quick Report
2013-2017**

Major Cause			14
Animal	0	Ran traffic signal	1
Ran stop sign	0	Failed to yield to emergency vehicle	0
FTYROW: At uncontrolled intersection	0	FTYROW: Making right turn on red signal	0
FTYROW: From stop sign	0	FTYROW: From yield sign	0
FTYROW: Making left turn	5	FTYROW: From driveway	0
FTYROW: From parked position	0	FTYROW: To pedestrian	0
FTYROW: Other	1	Drove around RR grade crossing gates	0
Disregarded RR Signal	0	Crossed centerline (undivided)	1
Crossed median (divided)	0	Traveling wrong way or on wrong side of road	0
Aggressive driving/road rage	0	Driving too fast for conditions	1
Exceeded authorized speed	0	Improper or erratic lane changing	0
Operating vehicle in an reckless, erratic, ca...	0	Followed too close	0
Passing: On wrong side	0	Passing: Where prohibited by signs/markings	0
Passing: With insufficient distance/inadequa...	0	Passing: Through/around barrier	0
Passing: Other passing	0	Made improper turn	0
Driver Distraction: Manual operation of an e...	0	Driver Distraction: Talking on a hand-held d...	0
Driver Distraction: Talking on a hands free ...	0	Driver Distraction: Adjusting devices (radio...	0
Driver Distraction: Other electronic device ...	0	Driver Distraction: Passenger	1
Driver Distraction: Unrestrained animal	0	Driver Distraction: Reaching for object(s)/f...	0
Driver Distraction: Inattentive/lost in thou...	1	Driver Distraction: Other interior distracti...	0
Driver Distraction: Exterior distraction	0	Ran off road - right	0
Ran off road - straight	0	Ran off road - left	0
Lost control	0	Swerving/Evasive Action	0
Over correcting/over steering	0	Failed to keep in proper lane	0
Failure to signal intentions	0	Traveling on prohibited traffic way	0
Vehicle stopped on railroad tracks	0	Other: Vision obstructed	0
Other: Improper operation	0	Other: Disregarded warning sign	0
Other: Disregarded signs/road markings	0	Other: Illegal off-road driving	0
Downhill runaway	0	Separation of units	0
Towing improperly	0	Cargo/equipment loss or shift	0
Equipment failure	0	Oversized load/vehicle	0
Other: Getting off/out of vehicle	0	Failure to dim lights/have lights on	0
Improper backing	0	Improper starting	0
Illegally parked/unattended	0	Driving less than the posted speed limit	0
Operator inexperience	0	Other	3
Unknown	0	Not reported	0
Other: No improper action	0		



**Safety Analysis, Visualization, and Evaluation Resource (SAVER)
Quick Report
2013-2017**

Time of Day/Day of Week														
Day of Week	12 AM to 2 AM	2 AM to 4 AM	4 AM to 6 AM	6 AM to 8 AM	8 AM to 10 AM	10 AM to Noon	Noon to 2 PM	2 PM to 4 PM	4 PM to 6 PM	6 PM to 8 PM	8 PM to 10 PM	10 PM to 12 AM	Not reported	Total
Sunday	0	0	0	0	0	1	2	1	0	0	0	0	0	4
Monday	0	0	0	0	0	0	0	0	1	0	0	0	0	1
Tuesday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wednesday	0	0	0	0	0	1	0	0	0	0	0	0	0	1
Thursday	0	0	0	0	0	0	0	2	0	0	0	0	0	2
Friday	0	0	0	0	0	0	1	1	1	0	1	1	0	5
Saturday	0	0	0	0	0	0	1	0	0	0	0	0	0	1
Total	0	0	0	0	0	2	4	4	2	0	1	1	0	14

Manner of Crash Collision	14
Non-collision (single vehicle)	0
Head-on (front to front)	0
Rear-end (front to rear)	6
Angle, oncoming left turn	6
Broadside (front to side)	1
Sideswipe, same direction	1
Sideswipe, opposite direction	0
Rear to rear	0
Rear to side	0
Not reported	0
Other	0
Unknown	0

Surface Conditions	14
Dry	12
Wet	1
Ice/frost	0
Snow	1
Slush	0
Mud, dirt	0
Water (standing or moving)	0
Sand	0
Oil	0
Gravel	0
Not reported	0
Other	0
Unknown	0

Fixed Object Struck	29
Bridge overhead structure	0
Bridge/bridge rail parapet	0
Ditch	0
Ground	0
Guardrail - face	0
Concrete traffic barrier (median or right sid...	0
Cable barrier	0
Utility pole/light support	0
Traffic signal support	0
Fire hydrant	0
Tree	0
Snow bank	0
Wall	0
Other fixed object	0
Bridge pier or support	0
Curb/island/raised median	1
Embankment	0
Culvert/pipe opening	0
Guardrail - end	0
Other traffic barrier	0
Impact attenuator/crash cushion	0
Traffic sign support	0
Other post/pole/support	0
Mailbox	0
Landscape/shrubbery	0
Fence	0
Building	0
None (no fixed object struck)	28



**Safety Analysis, Visualization, and Evaluation Resource (SAVER)
Quick Report
2013-2017**

Driver Age/Driver Gender					
Driver Age - 5 year Bins	Female	Male	Not reported	Unknown	Total
< 14	0	0	0	0	0
= 14	0	0	0	0	0
= 15	1	0	0	0	1
= 16	1	1	0	0	2
= 17	1	0	0	0	1
= 18	0	0	0	0	0
= 19	0	0	0	0	0
= 20	0	1	0	0	1
>= 21 and <= 24	2	1	0	0	3
>= 25 and <= 29	1	0	0	0	1
>= 30 and <= 34	1	1	0	0	2
>= 35 and <= 39	1	2	0	0	3
>= 40 and <= 44	0	4	0	0	4
>= 45 and <= 49	0	1	0	0	1
>= 50 and <= 54	2	1	0	0	3
>= 55 and <= 59	1	0	0	0	1
>= 60 and <= 64	2	1	0	0	3
>= 65 and <= 69	1	1	0	0	2
>= 70 and <= 74	0	1	0	0	1
>= 75 and <= 79	0	0	0	0	0
>= 80 and <= 84	0	0	0	0	0
>= 85 and <= 89	0	0	0	0	0
>= 90 and <= 94	0	0	0	0	0
>= 95	0	0	0	0	0
Not reported	0	0	0	0	0
Unknown	0	0	0	0	0
Total	14	15	0	0	29

Alcohol Test Given	29
None	29
Blood	0
Urine	0
Breath	0
Vitreous	0
Refused	0
Not reported	0

Drug Test Given	29
None	29
Blood	0
Urine	0
Breath	0
Vitreous	0
Refused	0
Not reported	0

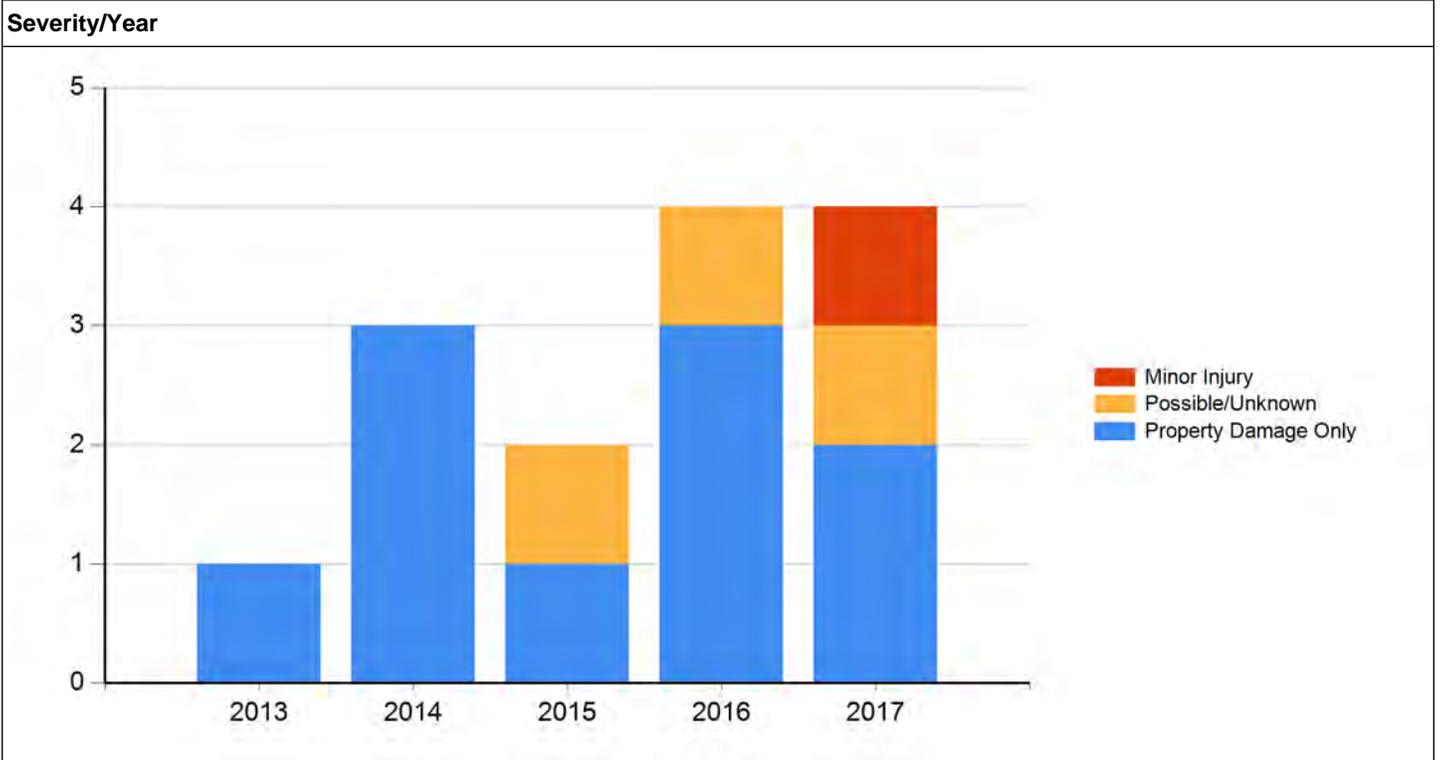
Drug Test Result	29
Negative	0
Cannabis	0
Central Nervous System depressants	0
Central Nervous System stimulants	0
Hallucinogens	0
Inhalants	0
Narcotic Analgesics	0
Dissociative Anesthetic (PCP)	0
Prescription Drug	0
Not reported	29
Other	0

Drug/Alcohol Related	14
Drug	0
Alcohol (< Statutory)	0
Alcohol (Statutory)	0
Drug/Alcohol (< Statutory)	0
Drug/Alcohol (Statutory)	0
Refused	0
Under Influence of Alcohol/Drugs/Medications	0
None Indicated	14

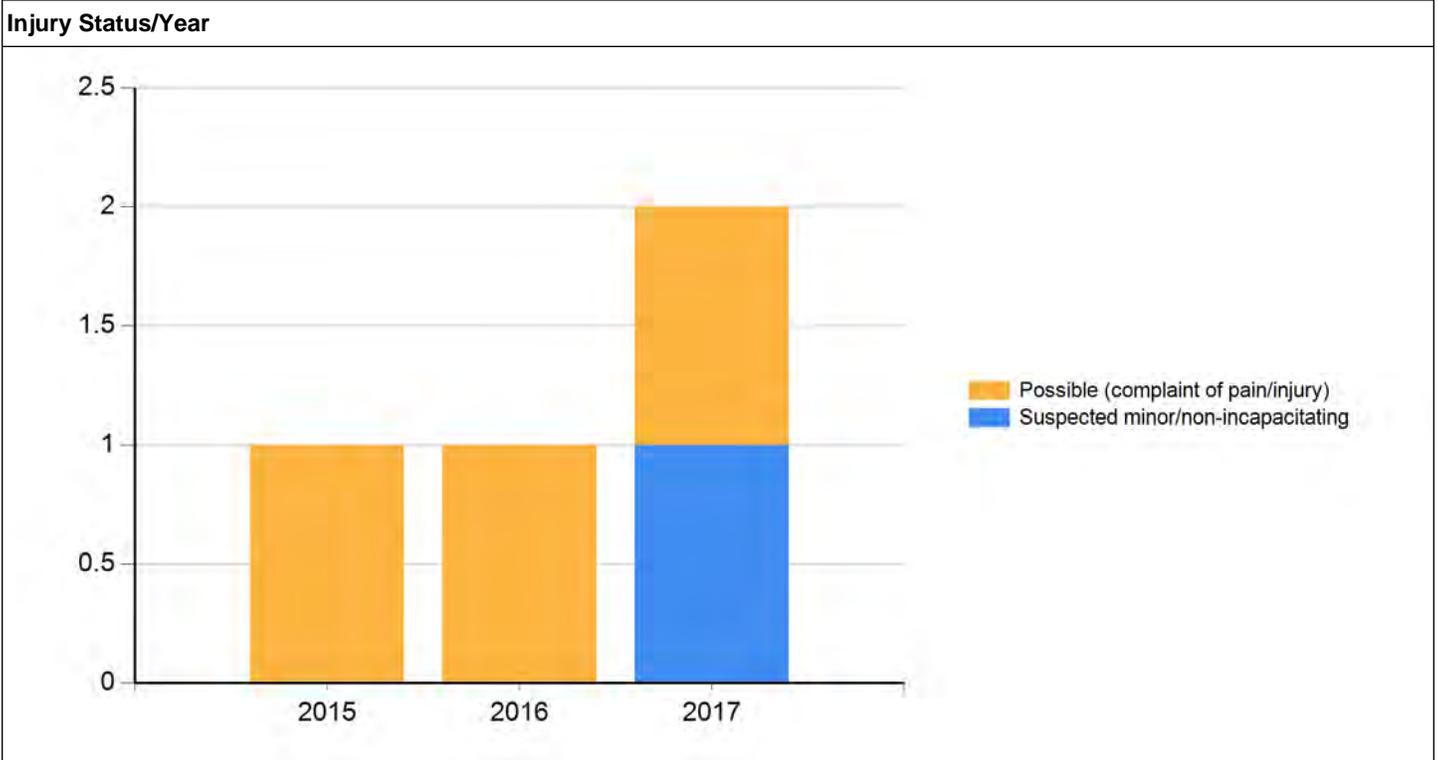


**Safety Analysis, Visualization, and Evaluation Resource (SAVER)
Quick Report
2013-2017**

Crash Severity - Annual							
Crash Year	Fatal	Major Injury	Minor Injury	Possible/Unknown	Property Damage Only	Total	
2008	0	0	0	0	0	0	
2009	0	0	0	0	0	0	
2010	0	0	0	0	0	0	
2011	0	0	0	0	0	0	
2012	0	0	0	0	0	0	
2013	0	0	0	0	1	1	
2014	0	0	0	0	3	3	
2015	0	0	0	1	1	2	
2016	0	0	0	1	3	4	
2017	0	0	1	1	2	4	
2018	0	0	0	0	0	0	
Total	0	0	1	3	10	14	



Injury Status - Annual								
Crash Year	Fatal	Suspected serious/incapacitating	Suspected minor/non-incapacitating	Possible (complaint of pain/injury)	Uninjured	Fatal, not crash-related	Unknown	Total
2008	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0
2011	0	0	0	0	0	0	0	0
2012	0	0	0	0	0	0	0	0
2013	0	0	0	0	0	0	0	0
2014	0	0	0	0	0	0	0	0
2015	0	0	0	1	0	0	0	1
2016	0	0	0	1	0	0	0	1
2017	0	0	1	1	0	0	0	2
2018	0	0	0	0	0	0	0	0
Total	0	0	1	3	0	0	0	4





Meeting the following criteria

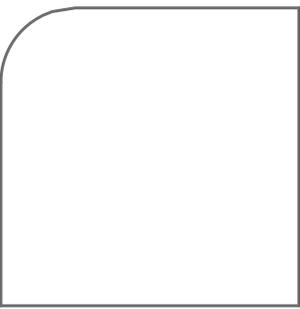
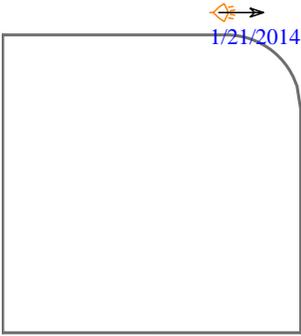
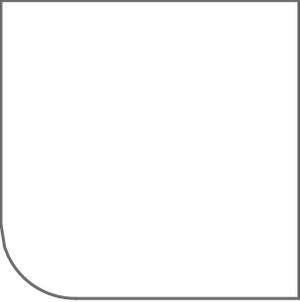
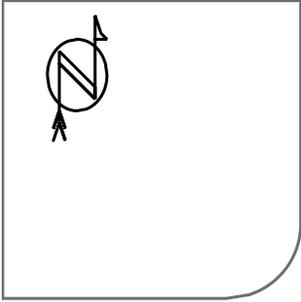
Jurisdiction: Statewide
Year: 2013, 2014, 2015, 2016, 2017
Map Selection: Yes
Filter: None

Analyst Information

Empty box for Analyst Information

1 Crashes

Clear



(0) crashes could not be placed in this schematic

- ← Straight
- ←| Stopped
- ← Unknown
- ↔ Backing
- ↔ Overtaking
- ↔ Sideswipe

- Parked
- Erratic
- Out of control
- Right turn
- Left turn
- U-turn

- Pedestrian
- Bicycle
- Injury
- Fatality
- Nighttime
- DUI

Fixed objects:

- General
- Signal
- Tree
- Pole
- Curb
- Animal
- 3rd vehicle
- Extra data

Intersection Crash Summary

Location: Green Hill Rd & Estate Dr Intersection
 City/County: Cedar Falls, IA
 Time Period: 2013-2017 Crash Period = 5 years
 Prepared by: AJH

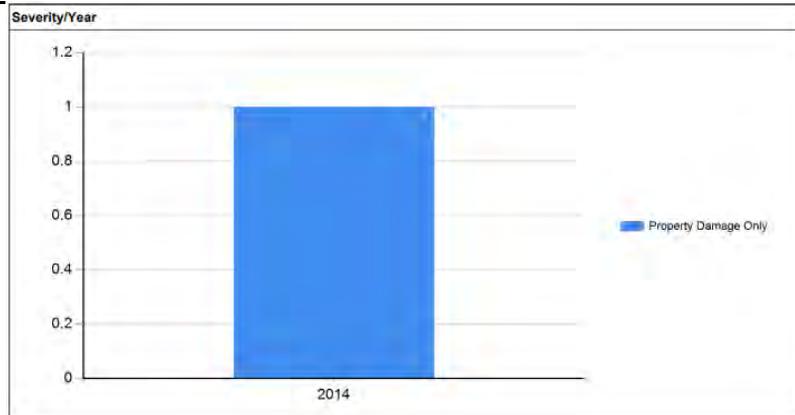
NUMBER OF CRASHES

<u>0</u>	Fatal Crashes	<u>0</u>	fatalities	<u>0</u>	injuries
<u>0</u>	Major Injury Crashes			<u>0</u>	injuries
<u>0</u>	Minor Injury Crashes			<u>0</u>	injuries
<u>0</u>	Possible/Unknown Injury Crashes			<u>0</u>	injuries
<u>1</u>	Property Damage Only Crashes				
<hr/>					
Totals:	<u>1</u> Crashes		<u>0</u> fatalities		<u>0</u> injuries

CRASH RATES

Total Crash Rate =	1 /	20.52 MEV =	0.05 Total Crashes/MEV
Fatal Crash Rate =	0 /	20.52 MEV =	0.00 Fatal Crashes/MEV
Fatal/Injury Crash Rate =	0 /	20.52 MEV =	0.00 F & I Crashes/MEV

CRASH FREQUENCY



CRASH TYPE

<ul style="list-style-type: none"> <u>0</u> Head-on <u>0</u> Rear-end Crash <u>0</u> Broadside/Right angle Crash <u>0</u> Angle, Oncoming Left Turn <u>0</u> Backing 	<ul style="list-style-type: none"> <u>0</u> Sideswipe, Same Direction <u>0</u> Sideswipe, Opposite Direction <u>1</u> Non Vehicle Collision <u>0</u> Other <u>0</u> Unknown 	<p style="text-align: center;"><u>Non Vehicle Collision Type</u></p> <ul style="list-style-type: none"> <u>0</u> Pedestrian <u>0</u> Animal <u>0</u> Fixed Object <u>0</u> Other
---	--	--

TRAFFIC - AADT

North Approach =	<u>690</u>	
South Approach =	<u>440</u>	
East Approach =	<u>10860</u>	
West Approach =	<u>10500</u>	
Million Entering Vehicles (MEV) =	<u>20.52</u>	

Notes:
 Est AADT from 2018 Snyder 13 hr Count
 (Adj for Viking diversion)



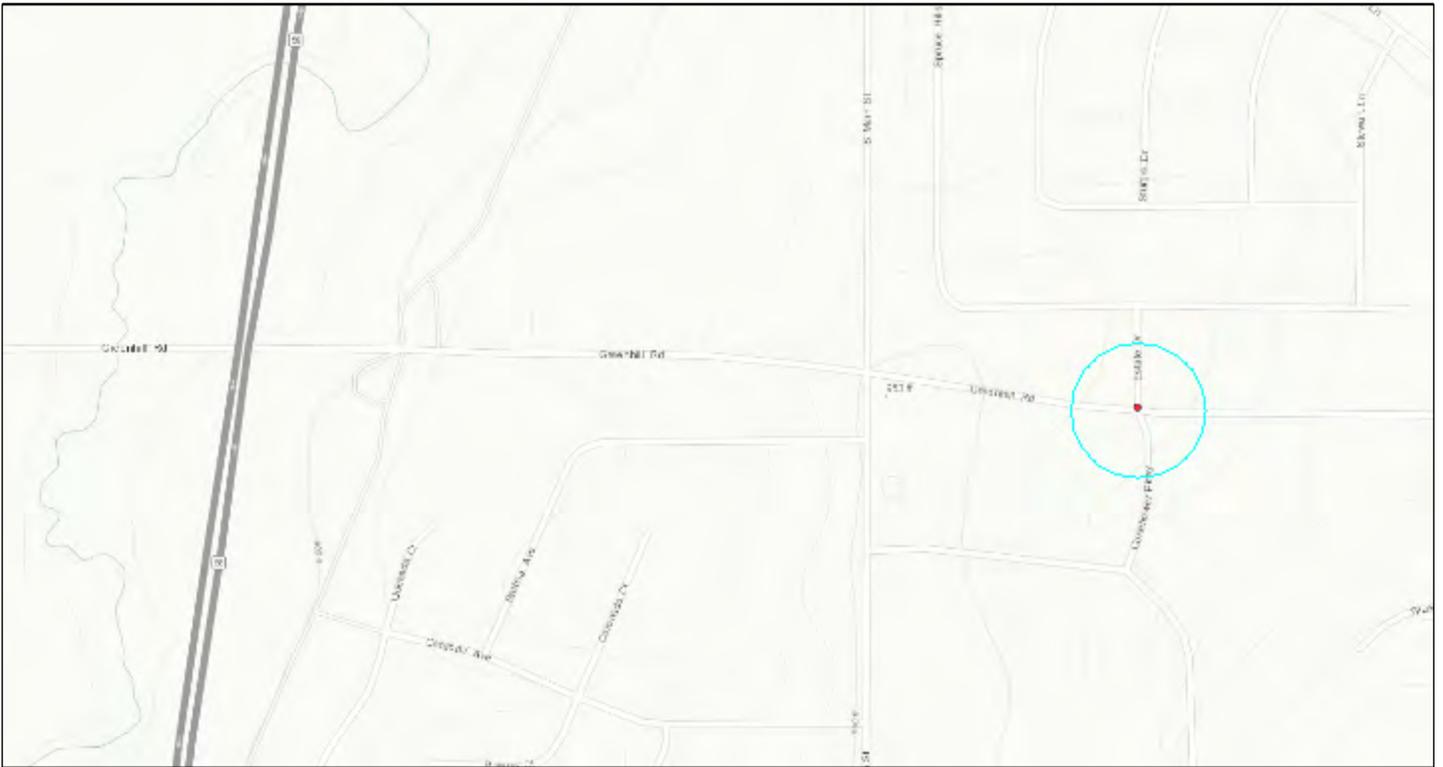
**Safety Analysis, Visualization, and Evaluation Resource (SAVER)
Quick Report
2013-2017**

Crash Severity	1
Fatal	0
Major Injury	0
Minor Injury	0
Possible/Unknown	0
Property Damage Only	1

Injury Status Summary	0
Fatal	0
Suspected serious/incapacitating	0
Suspected minor/non-incapacitating	0
Possible (complaint of pain/injury)	0
Uninjured	0
Fatal, not crash-related	0
Unknown	0
Not reported	0

Property/Vehicles/Occupants	
Property Damage Total (dollars):	1,600.00
Average (per crash dollars):	1,600.00
Total Vehicles:	1.00
Average (per crash):	1.00
Total Occupants:	1.00
Average (per crash):	1.00

Average Severity	
Fatalities/Fatal Crash:	0.00
Fatalities/Crash:	0.00
Injuries/Crash:	0.00
Major Injuries/Crash:	0.00
Minor Injuries/Crash:	0.00
Possible/Unknown Injuries/Crash:	0.00





**Safety Analysis, Visualization, and Evaluation Resource (SAVER)
Quick Report
2013-2017**

Major Cause		1
Animal	0 Ran traffic signal	0
Ran stop sign	0 Failed to yield to emergency vehicle	0
FTYROW: At uncontrolled intersection	0 FTYROW: Making right turn on red signal	0
FTYROW: From stop sign	0 FTYROW: From yield sign	0
FTYROW: Making left turn	0 FTYROW: From driveway	0
FTYROW: From parked position	0 FTYROW: To pedestrian	0
FTYROW: Other	0 Drove around RR grade crossing gates	0
Disregarded RR Signal	0 Crossed centerline (undivided)	1
Crossed median (divided)	0 Traveling wrong way or on wrong side of road	0
Aggressive driving/road rage	0 Driving too fast for conditions	0
Exceeded authorized speed	0 Improper or erratic lane changing	0
Operating vehicle in an reckless, erratic, ca...	0 Followed too close	0
Passing: On wrong side	0 Passing: Where prohibited by signs/markings	0
Passing: With insufficient distance/inadequa...	0 Passing: Through/around barrier	0
Passing: Other passing	0 Made improper turn	0
Driver Distraction: Manual operation of an e...	0 Driver Distraction: Talking on a hand-held d...	0
Driver Distraction: Talking on a hands free ...	0 Driver Distraction: Adjusting devices (radio...	0
Driver Distraction: Other electronic device ...	0 Driver Distraction: Passenger	0
Driver Distraction: Unrestrained animal	0 Driver Distraction: Reaching for object(s)/f...	0
Driver Distraction: Inattentive/lost in thou...	0 Driver Distraction: Other interior distracti...	0
Driver Distraction: Exterior distraction	0 Ran off road - right	0
Ran off road - straight	0 Ran off road - left	0
Lost control	0 Swerving/Evasive Action	0
Over correcting/over steering	0 Failed to keep in proper lane	0
Failure to signal intentions	0 Traveling on prohibited traffic way	0
Vehicle stopped on railroad tracks	0 Other: Vision obstructed	0
Other: Improper operation	0 Other: Disregarded warning sign	0
Other: Disregarded signs/road markings	0 Other: Illegal off-road driving	0
Downhill runaway	0 Separation of units	0
Towing improperly	0 Cargo/equipment loss or shift	0
Equipment failure	0 Oversized load/vehicle	0
Other: Getting off/out of vehicle	0 Failure to dim lights/have lights on	0
Improper backing	0 Improper starting	0
Illegally parked/unattended	0 Driving less than the posted speed limit	0
Operator inexperience	0 Other	0
Unknown	0 Not reported	0
Other: No improper action	0	0



**Safety Analysis, Visualization, and Evaluation Resource (SAVER)
Quick Report
2013-2017**

Time of Day/Day of Week														
Day of Week	12 AM to 2 AM	2 AM to 4 AM	4 AM to 6 AM	6 AM to 8 AM	8 AM to 10 AM	10 AM to Noon	Noon to 2 PM	2 PM to 4 PM	4 PM to 6 PM	6 PM to 8 PM	8 PM to 10 PM	10 PM to 12 AM	Not reported	Total
Sunday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Monday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tuesday	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Wednesday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Thursday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Friday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Saturday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	1	0	0	0	0	0	0	0	0	0	1

Manner of Crash Collision	1
Non-collision (single vehicle)	1
Head-on (front to front)	0
Rear-end (front to rear)	0
Angle, oncoming left turn	0
Broadside (front to side)	0
Sideswipe, same direction	0
Sideswipe, opposite direction	0
Rear to rear	0
Rear to side	0
Not reported	0
Other	0
Unknown	0

Surface Conditions	1
Dry	0
Wet	0
Ice/frost	1
Snow	0
Slush	0
Mud, dirt	0
Water (standing or moving)	0
Sand	0
Oil	0
Gravel	0
Not reported	0
Other	0
Unknown	0

Fixed Object Struck	0	1
Bridge overhead structure	0	0
Bridge/bridge rail parapet	0	0
Ditch	0	0
Ground	0	0
Guardrail - face	0	0
Concrete traffic barrier (median or right sid...	0	0
Cable barrier	0	0
Utility pole/light support	0	0
Traffic signal support	0	0
Fire hydrant	0	0
Tree	0	0
Snow bank	0	0
Wall	0	0
Other fixed object	0	1



**Safety Analysis, Visualization, and Evaluation Resource (SAVER)
Quick Report
2013-2017**

Driver Age/Driver Gender					
Driver Age - 5 year Bins	Female	Male	Not reported	Unknown	Total
< 14	0	0	0	0	0
= 14	0	0	0	0	0
= 15	0	0	0	0	0
= 16	0	0	0	0	0
= 17	1	0	0	0	1
= 18	0	0	0	0	0
= 19	0	0	0	0	0
= 20	0	0	0	0	0
>= 21 and <= 24	0	0	0	0	0
>= 25 and <= 29	0	0	0	0	0
>= 30 and <= 34	0	0	0	0	0
>= 35 and <= 39	0	0	0	0	0
>= 40 and <= 44	0	0	0	0	0
>= 45 and <= 49	0	0	0	0	0
>= 50 and <= 54	0	0	0	0	0
>= 55 and <= 59	0	0	0	0	0
>= 60 and <= 64	0	0	0	0	0
>= 65 and <= 69	0	0	0	0	0
>= 70 and <= 74	0	0	0	0	0
>= 75 and <= 79	0	0	0	0	0
>= 80 and <= 84	0	0	0	0	0
>= 85 and <= 89	0	0	0	0	0
>= 90 and <= 94	0	0	0	0	0
>= 95	0	0	0	0	0
Not reported	0	0	0	0	0
Unknown	0	0	0	0	0
Total	1	0	0	0	1

Alcohol Test Given	1
None	1
Blood	0
Urine	0
Breath	0
Vitreous	0
Refused	0
Not reported	0

Drug Test Given	1
None	1
Blood	0
Urine	0
Breath	0
Vitreous	0
Refused	0
Not reported	0

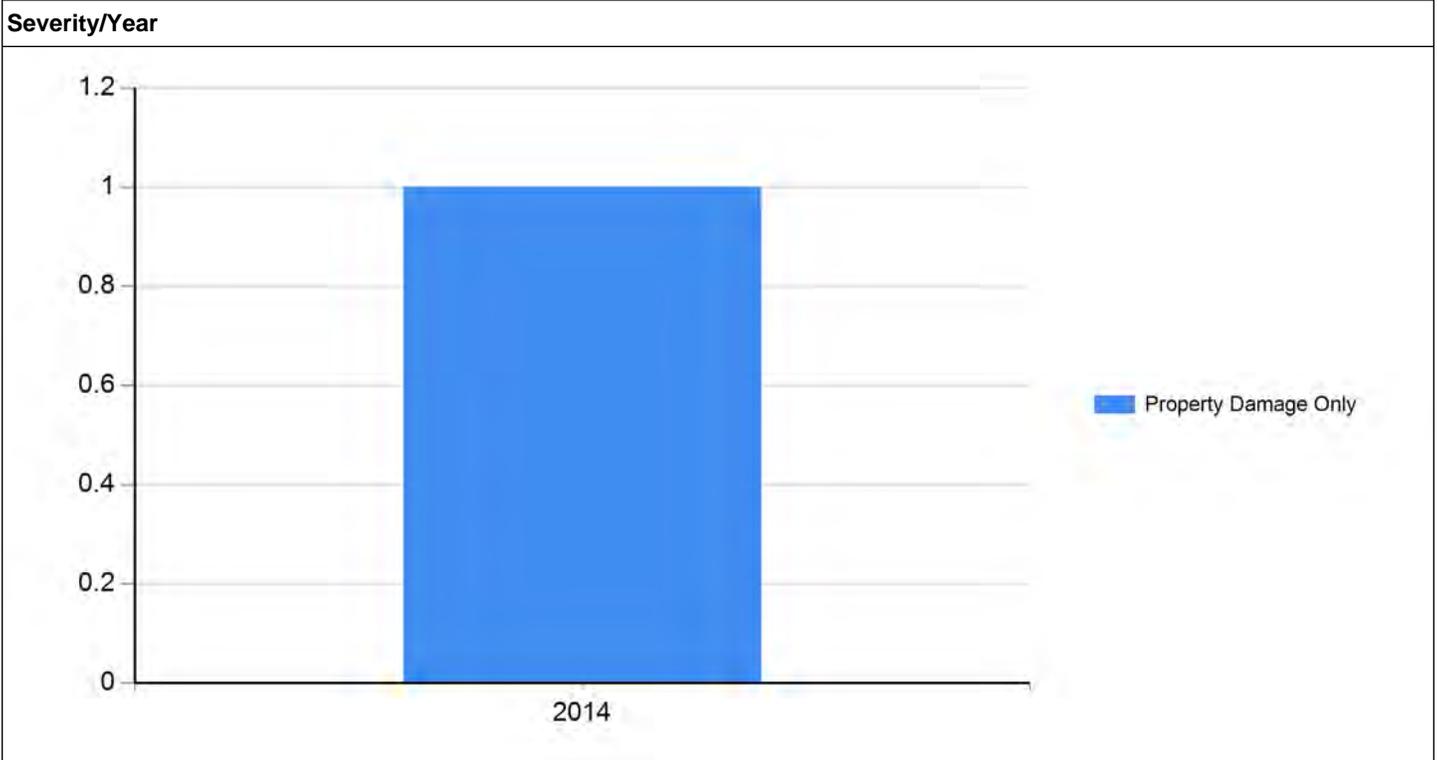
Drug Test Result	1
Negative	0
Cannabis	0
Central Nervous System depressants	0
Central Nervous System stimulants	0
Hallucinogens	0
Inhalants	0
Narcotic Analgesics	0
Dissociative Anesthetic (PCP)	0
Prescription Drug	0
Not reported	1
Other	0

Drug/Alcohol Related	1
Drug	0
Alcohol (< Statutory)	0
Alcohol (Statutory)	0
Drug/Alcohol (< Statutory)	0
Drug/Alcohol (Statutory)	0
Refused	0
Under Influence of Alcohol/Drugs/Medications	0
None Indicated	1



**Safety Analysis, Visualization, and Evaluation Resource (SAVER)
Quick Report
2013-2017**

Crash Severity - Annual							
Crash Year	Fatal	Major Injury	Minor Injury	Possible/Unknown	Property Damage Only	Total	
2008	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0
2011	0	0	0	0	0	0	0
2012	0	0	0	0	0	0	0
2013	0	0	0	0	0	0	0
2014	0	0	0	0	0	1	1
2015	0	0	0	0	0	0	0
2016	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0
2018	0	0	0	0	0	0	0
Total	0	0	0	0	0	1	1





Safety Analysis, Visualization, and Evaluation Resource (SAVER)
Quick Report
2013-2017

Injury Status - Annual								
Crash Year	Fatal	Suspected serious/incapacitating	Suspected minor/non-incapacitating	Possible (complaint of pain/injury)	Uninjured	Fatal, not crash-related	Unknown	Total
2008	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0
2011	0	0	0	0	0	0	0	0
2012	0	0	0	0	0	0	0	0
2013	0	0	0	0	0	0	0	0
2014	0	0	0	0	0	0	0	0
2015	0	0	0	0	0	0	0	0
2016	0	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0	0
2018	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0



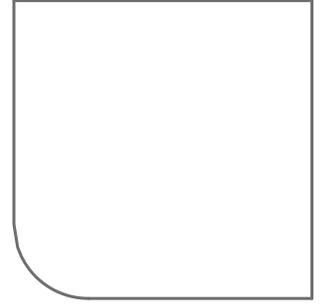
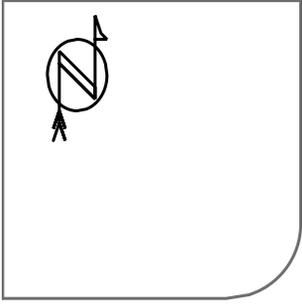
Meeting the following criteria

Jurisdiction: Statewide
Year: 2013, 2014, 2015, 2016, 2017
Map Selection: Yes
Filter: None

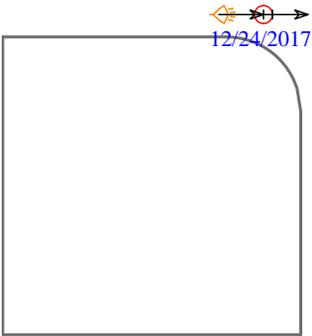
Analyst Information

3 Crashes

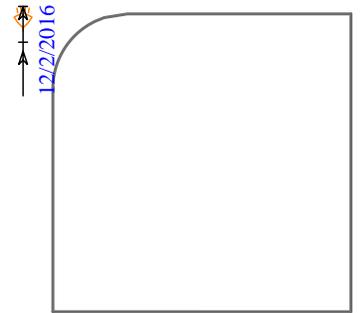
Clear



←←←
12/23/2016



→→→
12/24/2017



↑↑↑
12/2/2016

(0) crashes could not be placed in this schematic

- ← Straight
- ←| Stopped
- ← Unknown
- ↔ Backing
- ↔↔ Overtaking
- ↔↔ Sideswipe

- ▭ Parked
- ↔ Erratic
- ↔ Out of control
- ↗ Right turn
- ↖ Left turn
- ↪ U-turn

- × Pedestrian
- ⌘ Bicycle
- Injury
- Fatality
- ⚡ Nighttime
- ⚠ DUI

Fixed objects:

- General
- ▣ Signal
- ⊠ Tree
- Pole
- ▣ Curb
- ⌘ Animal
- ◁ 3rd vehicle
- * Extra data

Intersection Crash Summary

Location: Green Hill Rd & Prairie Pkwy Intersection
 City/County: Cedar Falls, IA
 Time Period: 2013-2017 Crash Period = 5 years
 Prepared by: AJH

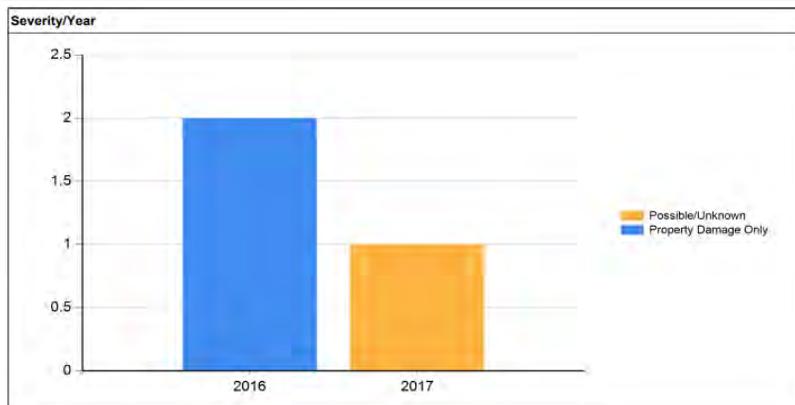
NUMBER OF CRASHES

	<u>0</u>	Fatal Crashes	<u>0</u>	fatalities	<u>0</u>	injuries
	<u>0</u>	Major Injury Crashes			<u>0</u>	injuries
	<u>0</u>	Minor Injury Crashes			<u>0</u>	injuries
	<u>1</u>	Possible/Unknown Injury Crashes			<u>1</u>	injuries
	<u>2</u>	Property Damage Only Crashes				
Totals:	<u>3</u>	Crashes			<u>0</u>	fatalities
					<u>1</u>	injuries

CRASH RATES

Total Crash Rate =	3 /		24.47 MEV =	0.12 Total Crashes/MEV
Fatal Crash Rate =	0 /		24.47 MEV =	0.00 Fatal Crashes/MEV
Fatal/Injury Crash Rate =	1 /		24.47 MEV =	0.04 F & I Crashes/MEV

CRASH FREQUENCY



CRASH TYPE

<ul style="list-style-type: none"> <u>0</u> Head-on <u>3</u> Rear-end Crash <u>0</u> Broadside/Right angle Crash <u>0</u> Angle, Oncoming Left Turn <u>0</u> Backing 	<ul style="list-style-type: none"> <u>0</u> Sideswipe, Same Direction <u>0</u> Sideswipe, Opposite Direction <u>0</u> Non Vehicle Collision <u>0</u> Other <u>0</u> Unknown 	<p style="text-align: center;"><u>Non Vehicle Collision Type</u></p> <ul style="list-style-type: none"> <u>0</u> Pedestrian <u>0</u> Animal <u>0</u> Fixed Object <u>0</u> Other
---	--	--

TRAFFIC - AADT

North Approach =	<u>990</u>
South Approach =	<u>5440</u>
East Approach =	<u>9530</u>
West Approach =	<u>10860</u>
Million Entering Vehicles (MEV) =	<u>24.47</u>

Notes:
 Est AADT from 2018 Snyder 4 hr Count
 (Adj for Viking diversion)



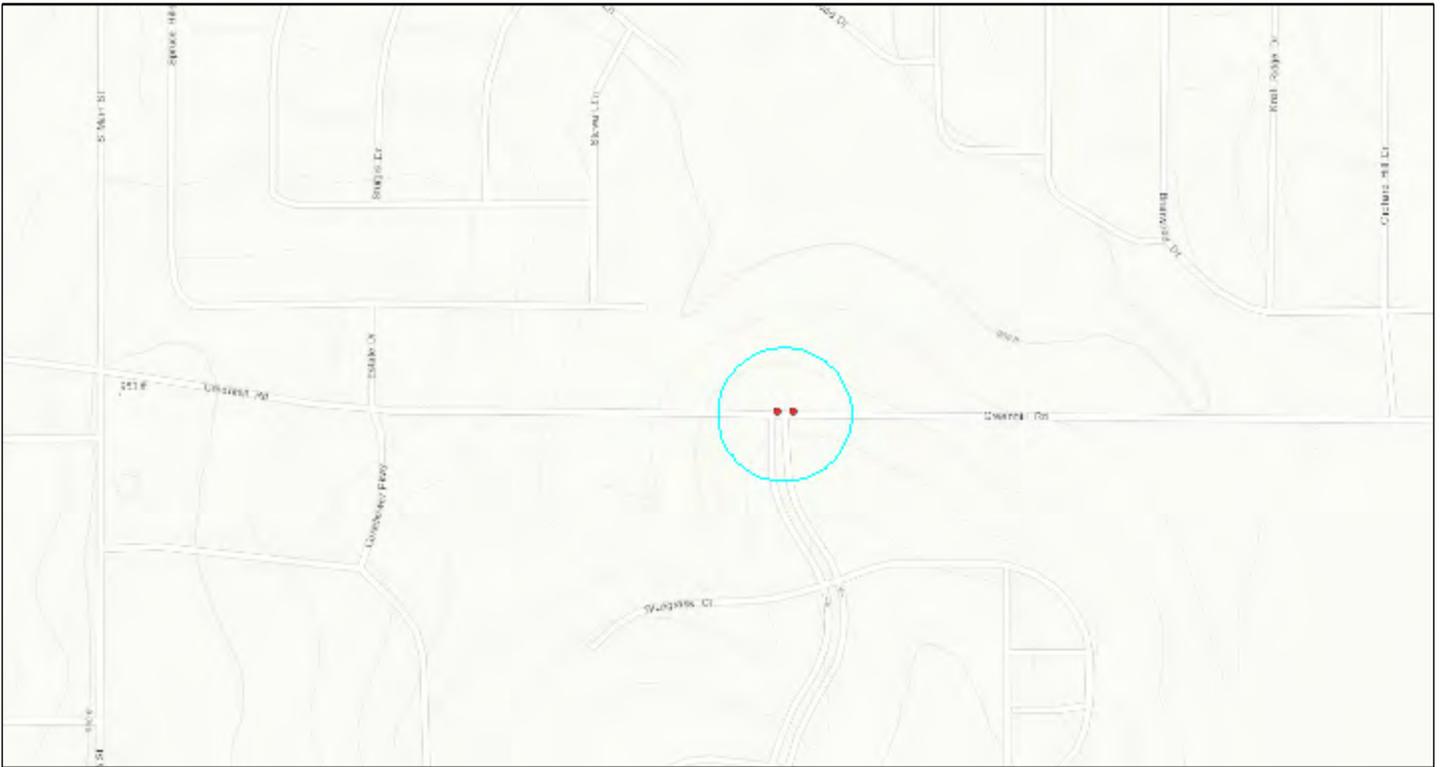
**Safety Analysis, Visualization, and Evaluation Resource (SAVER)
Quick Report
2013-2017**

Crash Severity	3
Fatal	0
Major Injury	0
Minor Injury	0
Possible/Unknown	1
Property Damage Only	2

Injury Status Summary	1
Fatal	0
Suspected serious/incapacitating	0
Suspected minor/non-incapacitating	0
Possible (complaint of pain/injury)	1
Uninjured	0
Fatal, not crash-related	0
Unknown	0
Not reported	0

Property/Vehicles/Occupants	
Property Damage Total (dollars):	17,100.00
Average (per crash dollars):	5,700.00
Total Vehicles:	6.00
Average (per crash):	2.00
Total Occupants:	9.00
Average (per crash):	3.00

Average Severity	
Fatalities/Fatal Crash:	0.00
Fatalities/Crash:	0.00
Injuries/Crash:	0.33
Major Injuries/Crash:	0.00
Minor Injuries/Crash:	0.00
Possible/Unknown Injuries/Crash:	0.33





**Safety Analysis, Visualization, and Evaluation Resource (SAVER)
Quick Report
2013-2017**

Major Cause		3
Animal	0 Ran traffic signal	0
Ran stop sign	0 Failed to yield to emergency vehicle	0
FTYROW: At uncontrolled intersection	0 FTYROW: Making right turn on red signal	0
FTYROW: From stop sign	0 FTYROW: From yield sign	0
FTYROW: Making left turn	0 FTYROW: From driveway	0
FTYROW: From parked position	0 FTYROW: To pedestrian	0
FTYROW: Other	0 Drove around RR grade crossing gates	0
Disregarded RR Signal	0 Crossed centerline (undivided)	0
Crossed median (divided)	0 Traveling wrong way or on wrong side of road	0
Aggressive driving/road rage	0 Driving too fast for conditions	0
Exceeded authorized speed	0 Improper or erratic lane changing	0
Operating vehicle in an reckless, erratic, ca...	0 Followed too close	2
Passing: On wrong side	0 Passing: Where prohibited by signs/markings	0
Passing: With insufficient distance/inadequa...	0 Passing: Through/around barrier	0
Passing: Other passing	0 Made improper turn	0
Driver Distraction: Manual operation of an e...	0 Driver Distraction: Talking on a hand-held d...	0
Driver Distraction: Talking on a hands free ...	0 Driver Distraction: Adjusting devices (radio...	0
Driver Distraction: Other electronic device ...	0 Driver Distraction: Passenger	1
Driver Distraction: Unrestrained animal	0 Driver Distraction: Reaching for object(s)/f...	0
Driver Distraction: Inattentive/lost in thou...	0 Driver Distraction: Other interior distracti...	0
Driver Distraction: Exterior distraction	0 Ran off road - right	0
Ran off road - straight	0 Ran off road - left	0
Lost control	0 Swerving/Evasive Action	0
Over correcting/over steering	0 Failed to keep in proper lane	0
Failure to signal intentions	0 Traveling on prohibited traffic way	0
Vehicle stopped on railroad tracks	0 Other: Vision obstructed	0
Other: Improper operation	0 Other: Disregarded warning sign	0
Other: Disregarded signs/road markings	0 Other: Illegal off-road driving	0
Downhill runaway	0 Separation of units	0
Towing improperly	0 Cargo/equipment loss or shift	0
Equipment failure	0 Oversized load/vehicle	0
Other: Getting off/out of vehicle	0 Failure to dim lights/have lights on	0
Improper backing	0 Improper starting	0
Illegally parked/unattended	0 Driving less than the posted speed limit	0
Operator inexperience	0 Other	0
Unknown	0 Not reported	0
Other: No improper action	0	0



**Safety Analysis, Visualization, and Evaluation Resource (SAVER)
Quick Report
2013-2017**

Time of Day/Day of Week														
Day of Week	12 AM to 2 AM	2 AM to 4 AM	4 AM to 6 AM	6 AM to 8 AM	8 AM to 10 AM	10 AM to Noon	Noon to 2 PM	2 PM to 4 PM	4 PM to 6 PM	6 PM to 8 PM	8 PM to 10 PM	10 PM to 12 AM	Not reported	Total
Sunday	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Monday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tuesday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wednesday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Thursday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Friday	0	0	0	0	0	0	1	0	0	1	0	0	0	2
Saturday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	1	0	0	0	1	0	0	1	0	0	0	3

Manner of Crash Collision	3
Non-collision (single vehicle)	0
Head-on (front to front)	0
Rear-end (front to rear)	3
Angle, oncoming left turn	0
Broadside (front to side)	0
Sideswipe, same direction	0
Sideswipe, opposite direction	0
Rear to rear	0
Rear to side	0
Not reported	0
Other	0
Unknown	0

Surface Conditions	3
Dry	1
Wet	0
Ice/frost	0
Snow	1
Slush	1
Mud, dirt	0
Water (standing or moving)	0
Sand	0
Oil	0
Gravel	0
Not reported	0
Other	0
Unknown	0

Fixed Object Struck	6
Bridge overhead structure	0
Bridge/bridge rail parapet	0
Ditch	0
Ground	0
Guardrail - face	0
Concrete traffic barrier (median or right sid...)	0
Cable barrier	0
Utility pole/light support	0
Traffic signal support	0
Fire hydrant	0
Tree	0
Snow bank	0
Wall	0
Other fixed object	0
Bridge pier or support	0
Curb/island/raised median	0
Embankment	0
Culvert/pipe opening	0
Guardrail - end	0
Other traffic barrier	0
Impact attenuator/crash cushion	0
Traffic sign support	0
Other post/pole/support	0
Mailbox	0
Landscape/shrubbery	0
Fence	0
Building	0
None (no fixed object struck)	6



**Safety Analysis, Visualization, and Evaluation Resource (SAVER)
Quick Report
2013-2017**

Driver Age/Driver Gender					
Driver Age - 5 year Bins	Female	Male	Not reported	Unknown	Total
< 14	0	0	0	0	0
= 14	0	0	0	0	0
= 15	0	0	0	0	0
= 16	1	0	0	0	1
= 17	0	0	0	0	0
= 18	0	0	0	0	0
= 19	0	0	0	0	0
= 20	0	0	0	0	0
>= 21 and <= 24	0	1	0	0	1
>= 25 and <= 29	0	0	0	0	0
>= 30 and <= 34	0	0	0	0	0
>= 35 and <= 39	1	0	0	0	1
>= 40 and <= 44	0	0	0	0	0
>= 45 and <= 49	0	0	0	0	0
>= 50 and <= 54	1	0	0	0	1
>= 55 and <= 59	1	0	0	0	1
>= 60 and <= 64	0	0	0	0	0
>= 65 and <= 69	0	0	0	0	0
>= 70 and <= 74	0	0	0	0	0
>= 75 and <= 79	1	0	0	0	1
>= 80 and <= 84	0	0	0	0	0
>= 85 and <= 89	0	0	0	0	0
>= 90 and <= 94	0	0	0	0	0
>= 95	0	0	0	0	0
Not reported	0	0	0	0	0
Unknown	0	0	0	0	0
Total	5	1	0	0	6

Alcohol Test Given	6
None	6
Blood	0
Urine	0
Breath	0
Vitreous	0
Refused	0
Not reported	0

Drug Test Given	6
None	6
Blood	0
Urine	0
Breath	0
Vitreous	0
Refused	0
Not reported	0

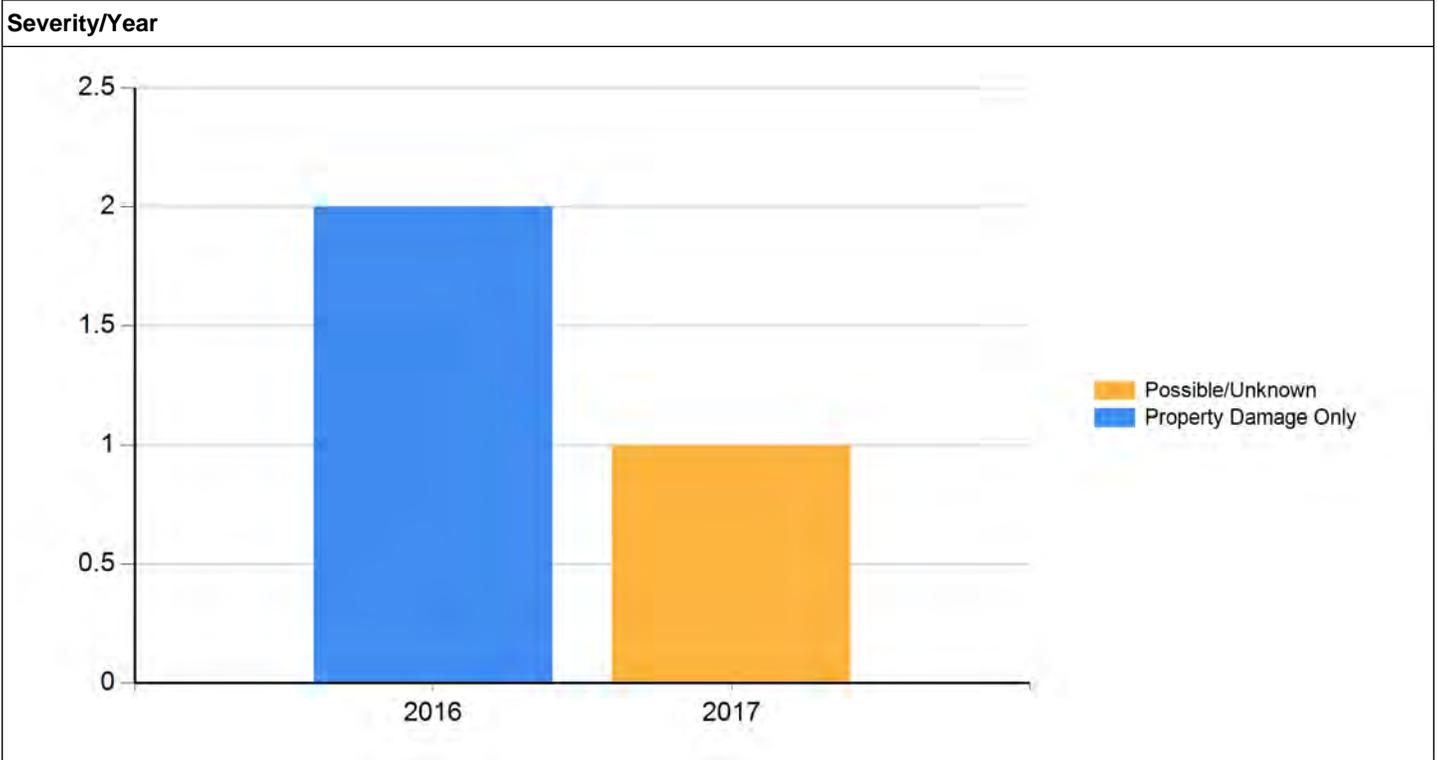
Drug Test Result	6
Negative	0
Cannabis	0
Central Nervous System depressants	0
Central Nervous System stimulants	0
Hallucinogens	0
Inhalants	0
Narcotic Analgesics	0
Dissociative Anesthetic (PCP)	0
Prescription Drug	0
Not reported	6
Other	0

Drug/Alcohol Related	3
Drug	0
Alcohol (< Statutory)	0
Alcohol (Statutory)	0
Drug/Alcohol (< Statutory)	0
Drug/Alcohol (Statutory)	0
Refused	0
Under Influence of Alcohol/Drugs/Medications	0
None Indicated	3

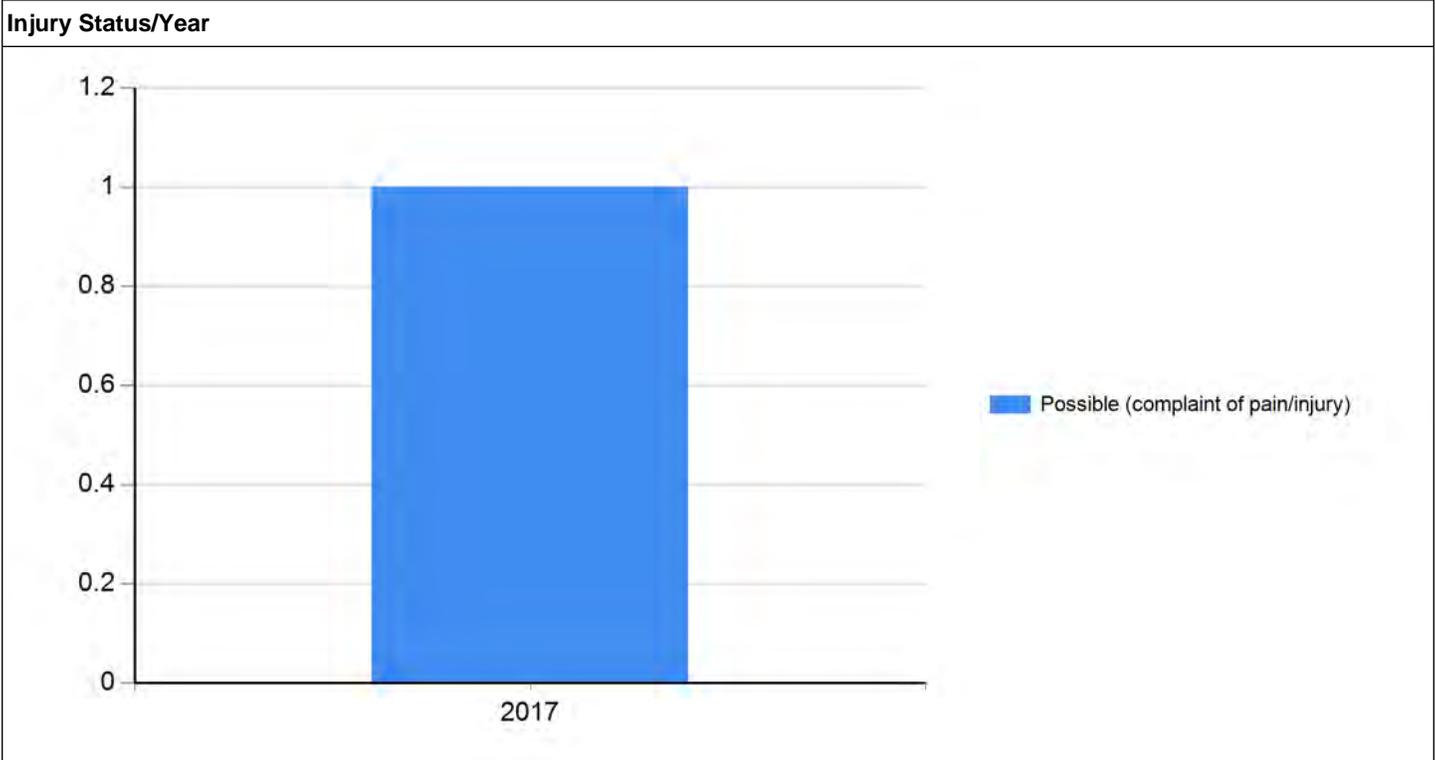


**Safety Analysis, Visualization, and Evaluation Resource (SAVER)
Quick Report
2013-2017**

Crash Severity - Annual							
Crash Year	Fatal	Major Injury	Minor Injury	Possible/Unknown	Property Damage Only	Total	
2008	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0
2011	0	0	0	0	0	0	0
2012	0	0	0	0	0	0	0
2013	0	0	0	0	0	0	0
2014	0	0	0	0	0	0	0
2015	0	0	0	0	0	0	0
2016	0	0	0	0	0	2	2
2017	0	0	0	0	1	0	1
2018	0	0	0	0	0	0	0
Total	0	0	0	1	2	3	



Injury Status - Annual								
Crash Year	Fatal	Suspected serious/incapacitating	Suspected minor/non-incapacitating	Possible (complaint of pain/injury)	Uninjured	Fatal, not crash-related	Unknown	Total
2008	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0
2011	0	0	0	0	0	0	0	0
2012	0	0	0	0	0	0	0	0
2013	0	0	0	0	0	0	0	0
2014	0	0	0	0	0	0	0	0
2015	0	0	0	0	0	0	0	0
2016	0	0	0	0	0	0	0	0
2017	0	0	0	1	0	0	0	1
2018	0	0	0	0	0	0	0	0
Total	0	0	0	1	0	0	0	1





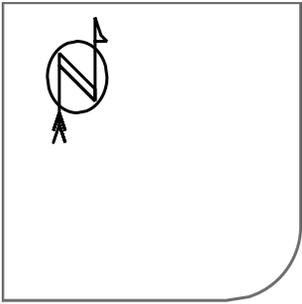
Meeting the following criteria

Jurisdiction: Statewide
Year: 2013, 2014, 2015, 2016, 2017
Map Selection: Yes
Filter: None

Analyst Information

6 Crashes

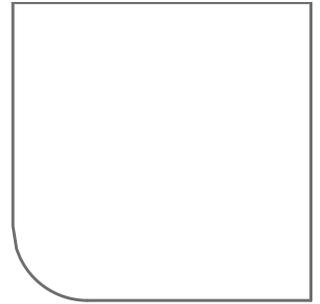
Clear



7/3/2014



9/24/2017



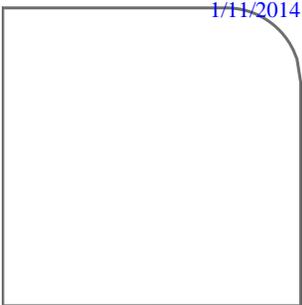
3/25/2017



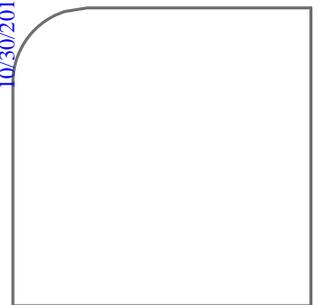
5/1/2016



1/11/2014



10/30/2017



(0) crashes could not be placed in this schematic

- ← Straight
- ←| Stopped
- ← Unknown
- ↔ Backing
- ↔ Overtaking
- ↔ Sideswipe

- ▭ Parked
- ↪ Erratic
- ↪ Out of control
- ↪ Right turn
- ↪ Left turn
- ↪ U-turn

- × Pedestrian
- ⊗ Bicycle
- Injury
- Fatality
- ⚡ Nighttime
- ⚠ DUI

Fixed objects:

- General
- ⊞ Signal
- ⊞ Tree
- Pole
- ⊞ Curb
- ⊞ Animal
- ◁ 3rd vehicle
- * Extra data

Intersection Crash Summary

Location: Green Hill Rd & Orchard Hill Dr Intersection
 City/County: Cedar Falls, IA
 Time Period: 2013-2017 Crash Period = 5 years
 Prepared by: AJH

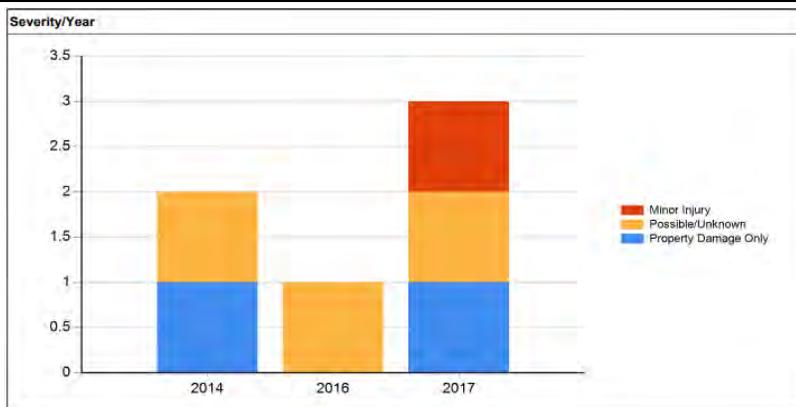
NUMBER OF CRASHES

<u>0</u>	Fatal Crashes	<u>0</u>	fatalities	<u>0</u>	injuries
<u>0</u>	Major Injury Crashes			<u>0</u>	injuries
<u>1</u>	Minor Injury Crashes			<u>1</u>	injuries
<u>3</u>	Possible/Unknown Injury Crashes			<u>4</u>	injuries
<u>2</u>	Property Damage Only Crashes				
<hr/>					
Totals:	<u>6</u> Crashes		<u>0</u> fatalities	<u>5</u>	injuries

CRASH RATES

Total Crash Rate =	6 /	19.36 MEV =	0.31 Total Crashes/MEV
Fatal Crash Rate =	0 /	19.36 MEV =	0.00 Fatal Crashes/MEV
Fatal/Injury Crash Rate =	4 /	19.36 MEV =	0.21 F & I Crashes/MEV

CRASH FREQUENCY



CRASH TYPE

<ul style="list-style-type: none"> 0 Head-on 3 Rear-end Crash 0 Broadside/Right angle Crash 1 Angle, Oncoming Left Turn 0 Backing 	<ul style="list-style-type: none"> 0 Sideswipe, Same Direction 0 Sideswipe, Opposite Direction 2 Non Vehicle Collision 0 Other 0 Unknown 	<p style="text-align: center;"><u>Non Vehicle Collision Type</u></p> <ul style="list-style-type: none"> 1 Pedestrian 0 Animal 1 Fixed Object 0 Other
--	---	--

TRAFFIC - AADT

North Approach =	<u>2420</u>	
South Approach =	<u>60</u>	
East Approach =	<u>9210</u>	
West Approach =	<u>9530</u>	
Million Entering Vehicles (MEV) =	<u>19.36</u>	

Notes:
 Est AADT from 2018 Snyder 13 hr Count
 (Adj for Viking diversion)



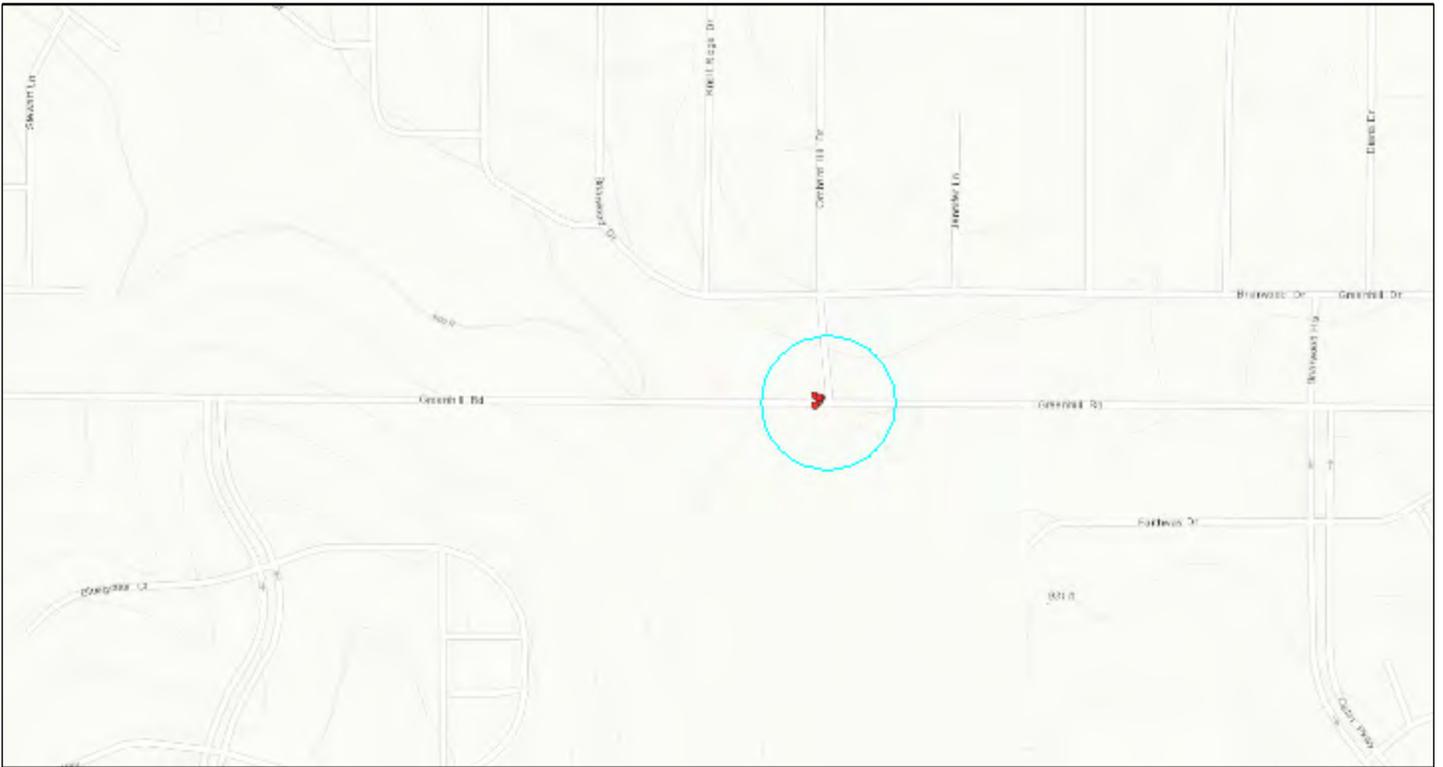
**Safety Analysis, Visualization, and Evaluation Resource (SAVER)
Quick Report
2013-2017**

Crash Severity	6
Fatal	0
Major Injury	0
Minor Injury	1
Possible/Unknown	3
Property Damage Only	2

Injury Status Summary	5
Fatal	0
Suspected serious/incapacitating	0
Suspected minor/non-incapacitating	1
Possible (complaint of pain/injury)	4
Uninjured	0
Fatal, not crash-related	0
Unknown	0
Not reported	0

Property/Vehicles/Occupants	
Property Damage Total (dollars):	59,200.00
Average (per crash dollars):	9,866.67
Total Vehicles:	10.00
Average (per crash):	1.67
Total Occupants:	14.00
Average (per crash):	2.33

Average Severity	
Fatalities/Fatal Crash:	0.00
Fatalities/Crash:	0.00
Injuries/Crash:	0.83
Major Injuries/Crash:	0.00
Minor Injuries/Crash:	0.17
Possible/Unknown Injuries/Crash:	0.67





**Safety Analysis, Visualization, and Evaluation Resource (SAVER)
Quick Report
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Major Cause			6
Animal	0	Ran traffic signal	0
Ran stop sign	0	Failed to yield to emergency vehicle	0
FTYROW: At uncontrolled intersection	0	FTYROW: Making right turn on red signal	0
FTYROW: From stop sign	0	FTYROW: From yield sign	0
FTYROW: Making left turn	1	FTYROW: From driveway	0
FTYROW: From parked position	0	FTYROW: To pedestrian	0
FTYROW: Other	0	Drove around RR grade crossing gates	0
Disregarded RR Signal	0	Crossed centerline (undivided)	1
Crossed median (divided)	0	Traveling wrong way or on wrong side of road	0
Aggressive driving/road rage	0	Driving too fast for conditions	0
Exceeded authorized speed	0	Improper or erratic lane changing	0
Operating vehicle in an reckless, erratic, ca...	0	Followed too close	1
Passing: On wrong side	0	Passing: Where prohibited by signs/markings	0
Passing: With insufficient distance/inadequa...	0	Passing: Through/around barrier	0
Passing: Other passing	0	Made improper turn	0
Driver Distraction: Manual operation of an e...	0	Driver Distraction: Talking on a hand-held d...	0
Driver Distraction: Talking on a hands free ...	0	Driver Distraction: Adjusting devices (radio...	0
Driver Distraction: Other electronic device ...	0	Driver Distraction: Passenger	0
Driver Distraction: Unrestrained animal	0	Driver Distraction: Reaching for object(s)/f...	0
Driver Distraction: Inattentive/lost in thou...	0	Driver Distraction: Other interior distracti...	0
Driver Distraction: Exterior distraction	0	Ran off road - right	0
Ran off road - straight	0	Ran off road - left	0
Lost control	0	Swerving/Evasive Action	0
Over correcting/over steering	0	Failed to keep in proper lane	0
Failure to signal intentions	0	Traveling on prohibited traffic way	0
Vehicle stopped on railroad tracks	0	Other: Vision obstructed	0
Other: Improper operation	0	Other: Disregarded warning sign	0
Other: Disregarded signs/road markings	0	Other: Illegal off-road driving	0
Downhill runaway	0	Separation of units	0
Towing improperly	0	Cargo/equipment loss or shift	0
Equipment failure	0	Oversized load/vehicle	0
Other: Getting off/out of vehicle	0	Failure to dim lights/have lights on	0
Improper backing	0	Improper starting	0
Illegally parked/unattended	0	Driving less than the posted speed limit	0
Operator inexperience	0	Other	2
Unknown	0	Not reported	0
Other: No improper action	1		



**Safety Analysis, Visualization, and Evaluation Resource (SAVER)
Quick Report
2013-2017**

Time of Day/Day of Week														
Day of Week	12 AM to 2 AM	2 AM to 4 AM	4 AM to 6 AM	6 AM to 8 AM	8 AM to 10 AM	10 AM to Noon	Noon to 2 PM	2 PM to 4 PM	4 PM to 6 PM	6 PM to 8 PM	8 PM to 10 PM	10 PM to 12 AM	Not reported	Total
Sunday	0	0	0	0	0	1	0	0	1	0	0	0	0	2
Monday	0	0	0	0	0	0	0	0	1	0	0	0	0	1
Tuesday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wednesday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Thursday	0	0	0	0	0	0	0	1	0	0	0	0	0	1
Friday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Saturday	1	0	0	0	0	0	1	0	0	0	0	0	0	2
Total	1	0	0	0	0	1	1	1	2	0	0	0	0	6

Manner of Crash Collision	6
Non-collision (single vehicle)	2
Head-on (front to front)	0
Rear-end (front to rear)	3
Angle, oncoming left turn	1
Broadside (front to side)	0
Sideswipe, same direction	0
Sideswipe, opposite direction	0
Rear to rear	0
Rear to side	0
Not reported	0
Other	0
Unknown	0

Surface Conditions	6
Dry	3
Wet	2
Ice/frost	1
Snow	0
Slush	0
Mud, dirt	0
Water (standing or moving)	0
Sand	0
Oil	0
Gravel	0
Not reported	0
Other	0
Unknown	0

Fixed Object Struck	10
Bridge overhead structure	0
Bridge/bridge rail parapet	0
Ditch	0
Ground	0
Guardrail - face	0
Concrete traffic barrier (median or right sid...)	0
Cable barrier	0
Utility pole/light support	0
Traffic signal support	0
Fire hydrant	0
Tree	0
Snow bank	0
Wall	0
Other fixed object	0
Bridge pier or support	0
Curb/island/raised median	1
Embankment	0
Culvert/pipe opening	0
Guardrail - end	0
Other traffic barrier	0
Impact attenuator/crash cushion	0
Traffic sign support	0
Other post/pole/support	0
Mailbox	0
Landscape/shrubbery	0
Fence	0
Building	0
None (no fixed object struck)	9



**Safety Analysis, Visualization, and Evaluation Resource (SAVER)
Quick Report
2013-2017**

Driver Age/Driver Gender					
Driver Age - 5 year Bins	Female	Male	Not reported	Unknown	Total
< 14	0	0	0	0	0
= 14	0	0	0	0	0
= 15	0	0	0	0	0
= 16	0	0	0	0	0
= 17	1	0	0	0	1
= 18	1	0	0	0	1
= 19	0	0	0	0	0
= 20	1	1	0	0	2
>= 21 and <= 24	1	0	0	0	1
>= 25 and <= 29	0	0	0	0	0
>= 30 and <= 34	1	0	0	0	1
>= 35 and <= 39	0	1	0	0	1
>= 40 and <= 44	0	0	0	0	0
>= 45 and <= 49	0	0	0	0	0
>= 50 and <= 54	0	1	0	0	1
>= 55 and <= 59	0	0	0	0	0
>= 60 and <= 64	0	0	0	0	0
>= 65 and <= 69	0	0	0	0	0
>= 70 and <= 74	0	1	0	0	1
>= 75 and <= 79	1	0	0	0	1
>= 80 and <= 84	0	0	0	0	0
>= 85 and <= 89	0	0	0	0	0
>= 90 and <= 94	0	0	0	0	0
>= 95	0	0	0	0	0
Not reported	0	0	0	0	0
Unknown	0	0	0	0	0
Total	6	4	0	0	10

Alcohol Test Given	10
None	10
Blood	0
Urine	0
Breath	0
Vitreous	0
Refused	0
Not reported	0

Drug Test Given	10
None	10
Blood	0
Urine	0
Breath	0
Vitreous	0
Refused	0
Not reported	0

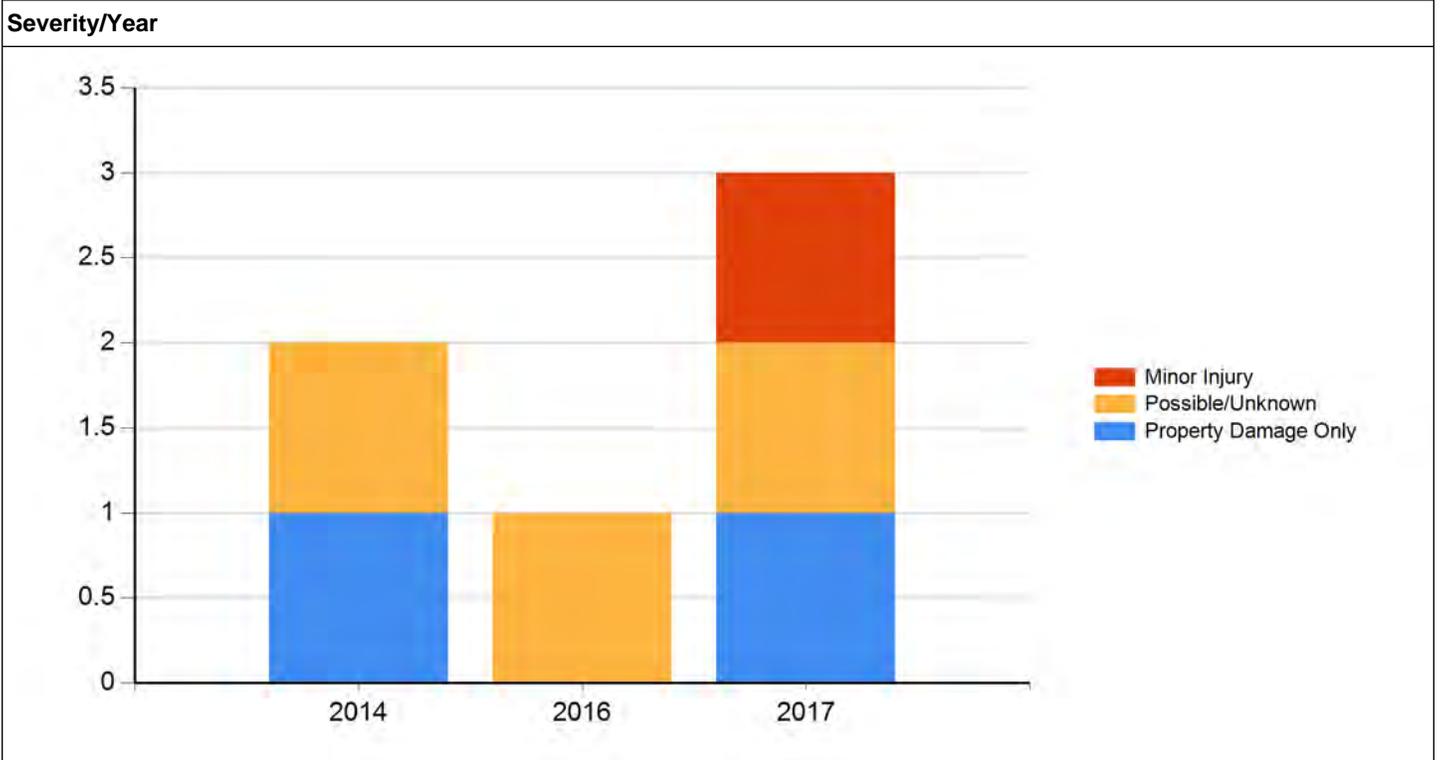
Drug Test Result	10
Negative	0
Cannabis	0
Central Nervous System depressants	0
Central Nervous System stimulants	0
Hallucinogens	0
Inhalants	0
Narcotic Analgesics	0
Dissociative Anesthetic (PCP)	0
Prescription Drug	0
Not reported	10
Other	0

Drug/Alcohol Related	6
Drug	0
Alcohol (< Statutory)	0
Alcohol (Statutory)	0
Drug/Alcohol (< Statutory)	0
Drug/Alcohol (Statutory)	0
Refused	0
Under Influence of Alcohol/Drugs/Medications	0
None Indicated	6

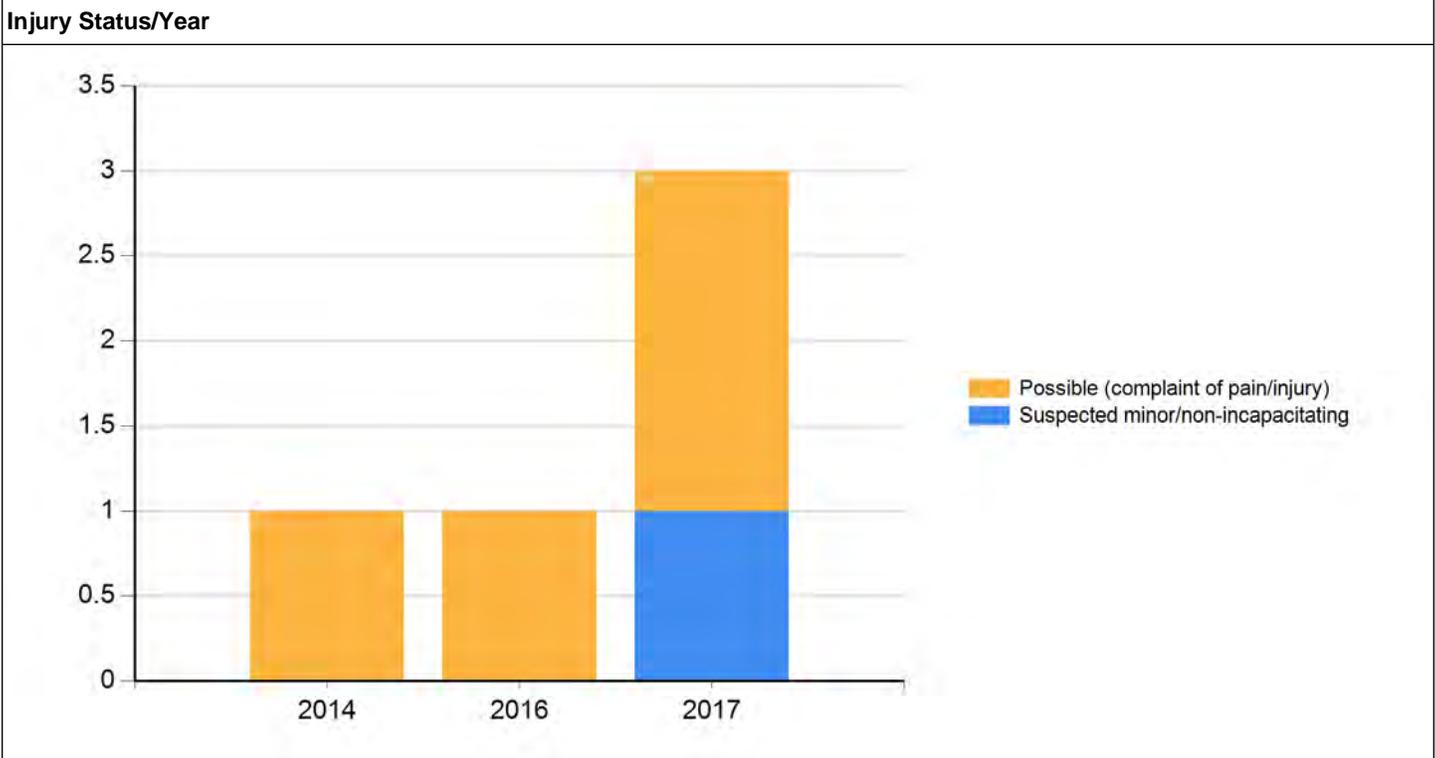


**Safety Analysis, Visualization, and Evaluation Resource (SAVER)
Quick Report
2013-2017**

Crash Severity - Annual							
Crash Year	Fatal	Major Injury	Minor Injury	Possible/Unknown	Property Damage Only	Total	
2008	0	0	0	0	0	0	
2009	0	0	0	0	0	0	
2010	0	0	0	0	0	0	
2011	0	0	0	0	0	0	
2012	0	0	0	0	0	0	
2013	0	0	0	0	0	0	
2014	0	0	0	1	1	2	
2015	0	0	0	0	0	0	
2016	0	0	0	1	0	1	
2017	0	0	1	1	1	3	
2018	0	0	0	0	0	0	
Total	0	0	1	3	2	6	



Injury Status - Annual								
Crash Year	Fatal	Suspected serious/incapacitating	Suspected minor/non-incapacitating	Possible (complaint of pain/injury)	Uninjured	Fatal, not crash-related	Unknown	Total
2008	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0
2011	0	0	0	0	0	0	0	0
2012	0	0	0	0	0	0	0	0
2013	0	0	0	0	0	0	0	0
2014	0	0	0	1	0	0	0	1
2015	0	0	0	0	0	0	0	0
2016	0	0	0	1	0	0	0	1
2017	0	0	1	2	0	0	0	3
2018	0	0	0	0	0	0	0	0
Total	0	0	1	4	0	0	0	5





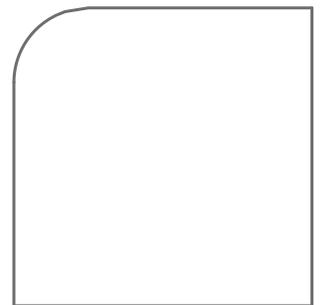
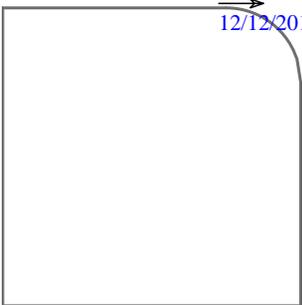
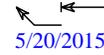
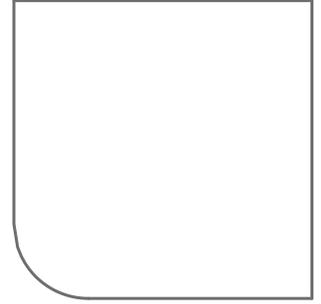
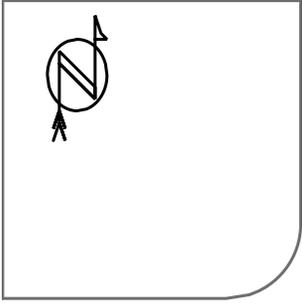
Meeting the following criteria

Jurisdiction: Statewide
Year: 2013, 2014, 2015, 2016, 2017
Map Selection: Yes
Filter: None

Analyst Information

5 Crashes

Clear



(0) crashes could not be placed in this schematic

- ← Straight
- ←| Stopped
- ← Unknown
- ↔ Backing
- ↔ Overtaking
- ↔ Sideswipe

- ▭ Parked
- ↔ Erratic
- ↔ Out of control
- ↗ Right turn
- ↖ Left turn
- ↻ U-turn

- × Pedestrian
- ⊗ Bicycle
- Injury
- Fatality
- ⚡ Nighttime
- ⚠ DUI

Fixed objects:

- General
- ⊞ Signal
- ⊞ Tree
- Pole
- ⊞ Curb
- ⊞ Animal
- ◁ 3rd vehicle
- * Extra data

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Intersection Crash Summary

Location: Green Hill Rd & Oster Pkwy Intersection
 City/County: Cedar Falls, IA
 Time Period: 2013-2017 Crash Period = 5 years
 Prepared by: AJH

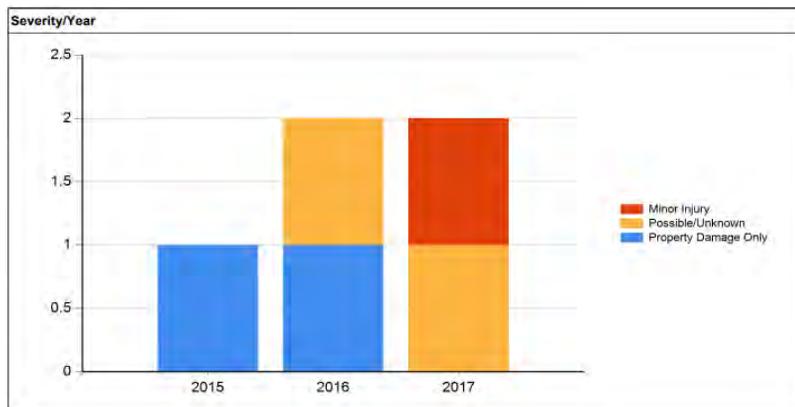
NUMBER OF CRASHES

<u>0</u> Fatal Crashes	<u>0</u> fatalities	<u>0</u> injuries
<u>0</u> Major Injury Crashes		<u>0</u> injuries
<u>1</u> Minor Injury Crashes		<u>1</u> injuries
<u>2</u> Possible/Unknown Injury Crashes		<u>2</u> injuries
<u>2</u> Property Damage Only Crashes		
Totals: <u>5</u> Crashes <u>0</u> fatalities <u>3</u> injuries		

CRASH RATES

Total Crash Rate =	5 /	17.80 MEV =	0.28 Total Crashes/MEV
Fatal Crash Rate =	0 /	17.80 MEV =	0.00 Fatal Crashes/MEV
Fatal/Injury Crash Rate =	3 /	17.80 MEV =	0.17 F & I Crashes/MEV

CRASH FREQUENCY



CRASH TYPE

<ul style="list-style-type: none"> 0 Head-on 2 Rear-end Crash 1 Broadside/Right angle Crash 1 Angle, Oncoming Left Turn 0 Backing 	<ul style="list-style-type: none"> 1 Sideswipe, Same Direction 0 Sideswipe, Opposite Direction 0 Non Vehicle Collision 0 Other 0 Unknown 	<h4 style="text-align: center; margin: 0;">Non Vehicle Collision Type</h4> <ul style="list-style-type: none"> 0 Pedestrian 0 Animal 0 Fixed Object 0 Other
--	---	--

TRAFFIC - AADT

North Approach =	<u>700</u>
South Approach =	<u>480</u>
East Approach =	<u>9120</u>
West Approach =	<u>9210</u>
Million Entering Vehicles (MEV) =	<u>17.80</u>

Notes:
 Est AADT from 2018 Snyder 13 hr Count
 (Adj for Viking diversion)



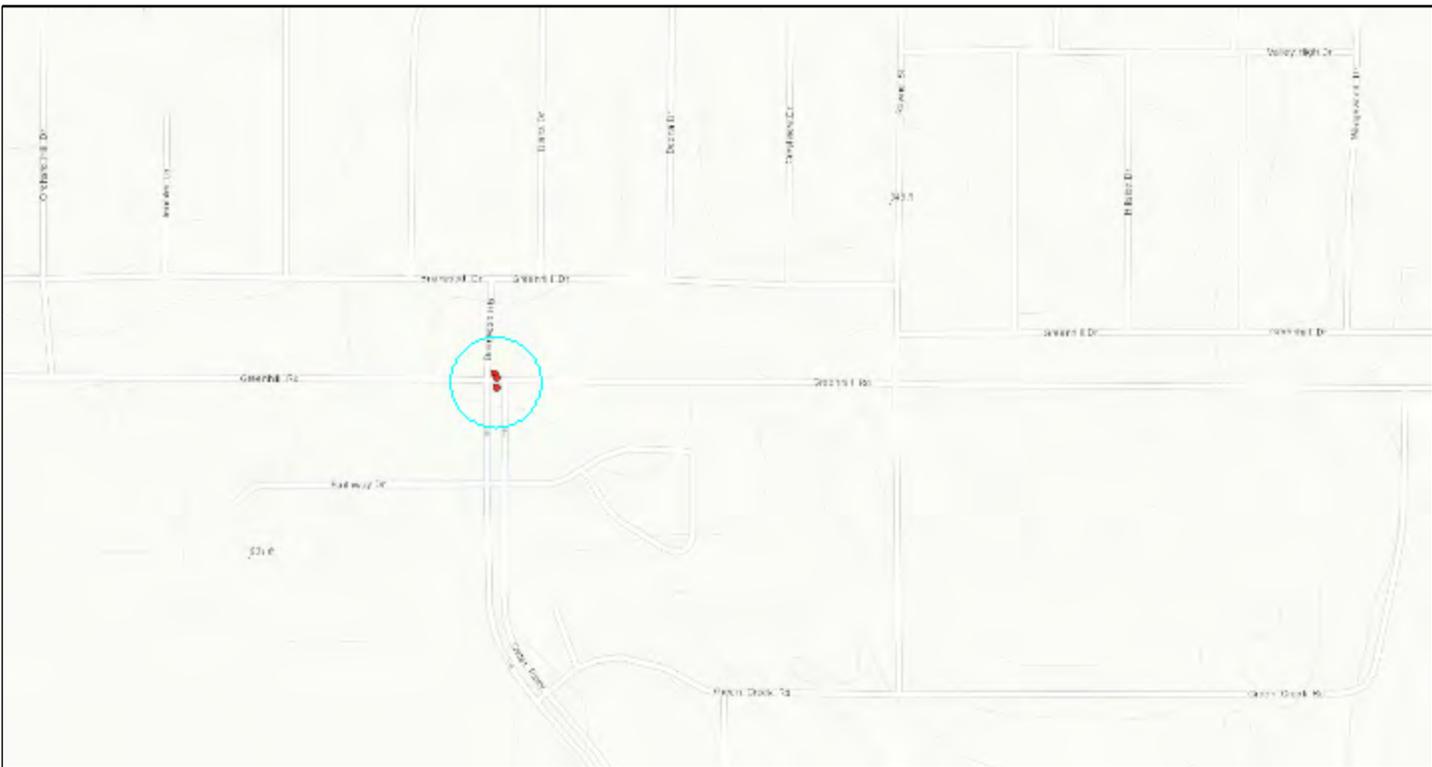
**Safety Analysis, Visualization, and Evaluation Resource (SAVER)
Quick Report
2013-2017**

Crash Severity	5
Fatal	0
Major Injury	0
Minor Injury	1
Possible/Unknown	2
Property Damage Only	2

Injury Status Summary	3
Fatal	0
Suspected serious/incapacitating	0
Suspected minor/non-incapacitating	1
Possible (complaint of pain/injury)	2
Uninjured	0
Fatal, not crash-related	0
Unknown	0
Not reported	0

Property/Vehicles/Occupants	
Property Damage Total (dollars):	39,000.00
Average (per crash dollars):	7,800.00
Total Vehicles:	10.00
Average (per crash):	2.00
Total Occupants:	13.00
Average (per crash):	2.60

Average Severity	
Fatalities/Fatal Crash:	0.00
Fatalities/Crash:	0.00
Injuries/Crash:	0.60
Major Injuries/Crash:	0.00
Minor Injuries/Crash:	0.20
Possible/Unknown Injuries/Crash:	0.40





**Safety Analysis, Visualization, and Evaluation Resource (SAVER)
Quick Report
2013-2017**

Major Cause			5
Animal	0	Ran traffic signal	0
Ran stop sign	0	Failed to yield to emergency vehicle	0
FTYROW: At uncontrolled intersection	0	FTYROW: Making right turn on red signal	0
FTYROW: From stop sign	1	FTYROW: From yield sign	0
FTYROW: Making left turn	1	FTYROW: From driveway	0
FTYROW: From parked position	0	FTYROW: To pedestrian	0
FTYROW: Other	0	Drove around RR grade crossing gates	0
Disregarded RR Signal	0	Crossed centerline (undivided)	0
Crossed median (divided)	0	Traveling wrong way or on wrong side of road	0
Aggressive driving/road rage	0	Driving too fast for conditions	1
Exceeded authorized speed	0	Improper or erratic lane changing	0
Operating vehicle in an reckless, erratic, ca...	0	Followed too close	0
Passing: On wrong side	0	Passing: Where prohibited by signs/markings	0
Passing: With insufficient distance/inadequa...	0	Passing: Through/around barrier	0
Passing: Other passing	0	Made improper turn	0
Driver Distraction: Manual operation of an e...	0	Driver Distraction: Talking on a hand-held d...	0
Driver Distraction: Talking on a hands free ...	0	Driver Distraction: Adjusting devices (radio...	0
Driver Distraction: Other electronic device ...	0	Driver Distraction: Passenger	0
Driver Distraction: Unrestrained animal	0	Driver Distraction: Reaching for object(s)/f...	0
Driver Distraction: Inattentive/lost in thou...	0	Driver Distraction: Other interior distracti...	0
Driver Distraction: Exterior distraction	0	Ran off road - right	0
Ran off road - straight	0	Ran off road - left	0
Lost control	1	Swerving/Evasive Action	0
Over correcting/over steering	0	Failed to keep in proper lane	0
Failure to signal intentions	0	Traveling on prohibited traffic way	0
Vehicle stopped on railroad tracks	0	Other: Vision obstructed	0
Other: Improper operation	0	Other: Disregarded warning sign	0
Other: Disregarded signs/road markings	0	Other: Illegal off-road driving	0
Downhill runaway	0	Separation of units	0
Towing improperly	0	Cargo/equipment loss or shift	0
Equipment failure	0	Oversized load/vehicle	0
Other: Getting off/out of vehicle	0	Failure to dim lights/have lights on	0
Improper backing	0	Improper starting	0
Illegally parked/unattended	0	Driving less than the posted speed limit	0
Operator inexperience	0	Other	1
Unknown	0	Not reported	0
Other: No improper action	0		



**Safety Analysis, Visualization, and Evaluation Resource (SAVER)
Quick Report
2013-2017**

Time of Day/Day of Week														
Day of Week	12 AM to 2 AM	2 AM to 4 AM	4 AM to 6 AM	6 AM to 8 AM	8 AM to 10 AM	10 AM to Noon	Noon to 2 PM	2 PM to 4 PM	4 PM to 6 PM	6 PM to 8 PM	8 PM to 10 PM	10 PM to 12 AM	Not reported	Total
Sunday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Monday	0	0	0	0	0	0	0	1	1	0	0	0	0	2
Tuesday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wednesday	0	0	0	0	0	0	1	0	0	0	0	0	0	1
Thursday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Friday	0	0	0	0	0	0	0	0	0	0	1	0	0	1
Saturday	0	0	0	0	0	0	0	0	0	0	1	0	0	1
Total	0	0	0	0	0	0	1	1	1	0	2	0	0	5

Manner of Crash Collision	5
Non-collision (single vehicle)	0
Head-on (front to front)	0
Rear-end (front to rear)	2
Angle, oncoming left turn	1
Broadside (front to side)	1
Sideswipe, same direction	1
Sideswipe, opposite direction	0
Rear to rear	0
Rear to side	0
Not reported	0
Other	0
Unknown	0

Surface Conditions	5
Dry	4
Wet	1
Ice/frost	0
Snow	0
Slush	0
Mud, dirt	0
Water (standing or moving)	0
Sand	0
Oil	0
Gravel	0
Not reported	0
Other	0
Unknown	0

Fixed Object Struck	10
Bridge overhead structure	0
Bridge/bridge rail parapet	0
Ditch	0
Ground	0
Guardrail - face	0
Concrete traffic barrier (median or right sid...	0
Cable barrier	0
Utility pole/light support	0
Traffic signal support	0
Fire hydrant	0
Tree	0
Snow bank	0
Wall	0
Other fixed object	0
Bridge pier or support	0
Curb/island/raised median	0
Embankment	0
Culvert/pipe opening	0
Guardrail - end	0
Other traffic barrier	0
Impact attenuator/crash cushion	0
Traffic sign support	0
Other post/pole/support	0
Mailbox	0
Landscape/shrubbery	0
Fence	0
Building	0
None (no fixed object struck)	10



**Safety Analysis, Visualization, and Evaluation Resource (SAVER)
Quick Report
2013-2017**

Driver Age/Driver Gender					
Driver Age - 5 year Bins	Female	Male	Not reported	Unknown	Total
< 14	0	0	0	0	0
= 14	0	0	0	0	0
= 15	0	0	0	0	0
= 16	0	0	0	0	0
= 17	0	1	0	0	1
= 18	0	1	0	0	1
= 19	0	0	0	0	0
= 20	0	0	0	0	0
>= 21 and <= 24	0	0	0	0	0
>= 25 and <= 29	1	0	0	0	1
>= 30 and <= 34	1	0	0	0	1
>= 35 and <= 39	2	1	0	0	3
>= 40 and <= 44	1	1	0	0	2
>= 45 and <= 49	0	0	0	0	0
>= 50 and <= 54	0	0	0	0	0
>= 55 and <= 59	0	0	0	0	0
>= 60 and <= 64	0	0	0	0	0
>= 65 and <= 69	1	0	0	0	1
>= 70 and <= 74	0	0	0	0	0
>= 75 and <= 79	0	0	0	0	0
>= 80 and <= 84	0	0	0	0	0
>= 85 and <= 89	0	0	0	0	0
>= 90 and <= 94	0	0	0	0	0
>= 95	0	0	0	0	0
Not reported	0	0	0	0	0
Unknown	0	0	0	0	0
Total	6	4	0	0	10

Alcohol Test Given	10
None	10
Blood	0
Urine	0
Breath	0
Vitreous	0
Refused	0
Not reported	0

Drug Test Given	10
None	10
Blood	0
Urine	0
Breath	0
Vitreous	0
Refused	0
Not reported	0

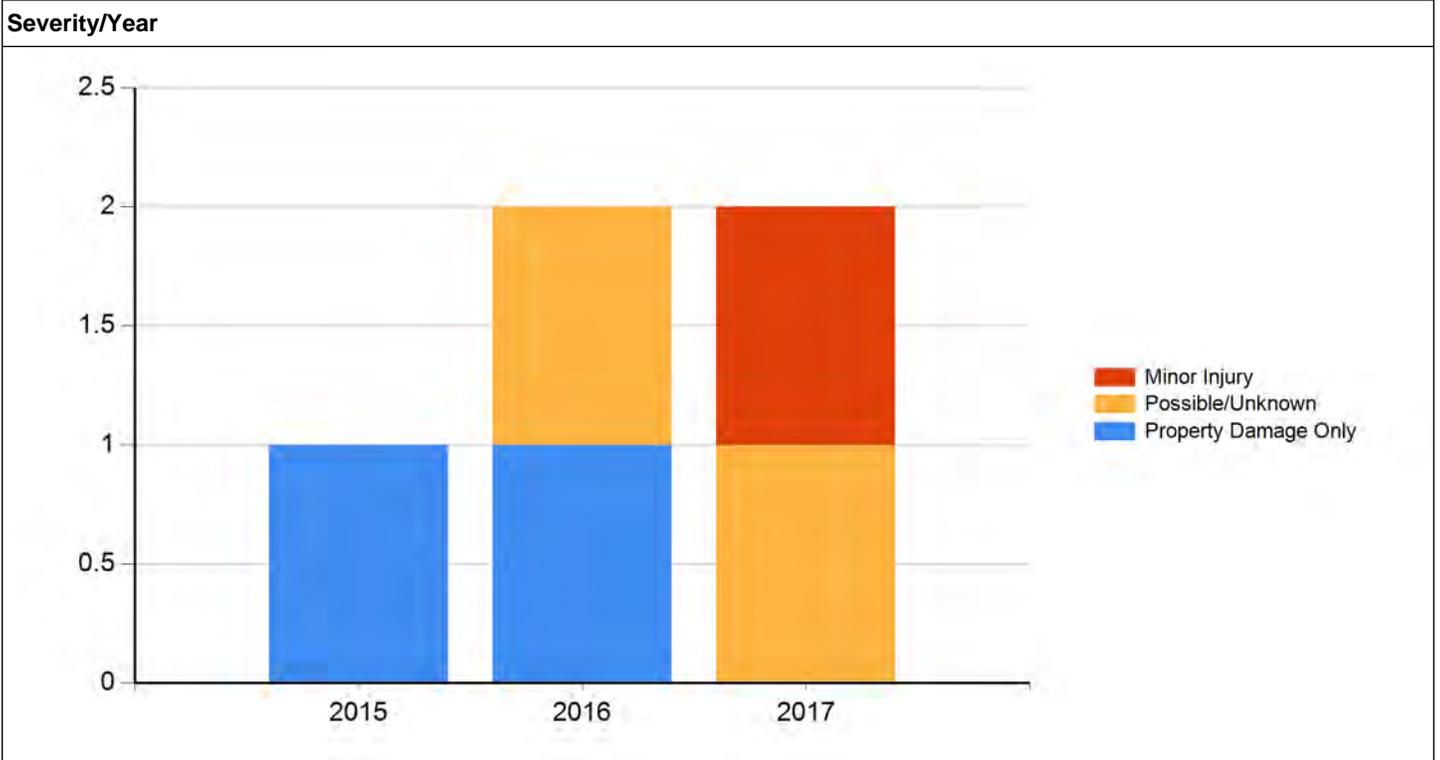
Drug Test Result	10
Negative	0
Cannabis	0
Central Nervous System depressants	0
Central Nervous System stimulants	0
Hallucinogens	0
Inhalants	0
Narcotic Analgesics	0
Dissociative Anesthetic (PCP)	0
Prescription Drug	0
Not reported	10
Other	0

Drug/Alcohol Related	5
Drug	0
Alcohol (< Statutory)	0
Alcohol (Statutory)	0
Drug/Alcohol (< Statutory)	0
Drug/Alcohol (Statutory)	0
Refused	0
Under Influence of Alcohol/Drugs/Medications	0
None Indicated	5



Safety Analysis, Visualization, and Evaluation Resource (SAVER)
Quick Report
2013-2017

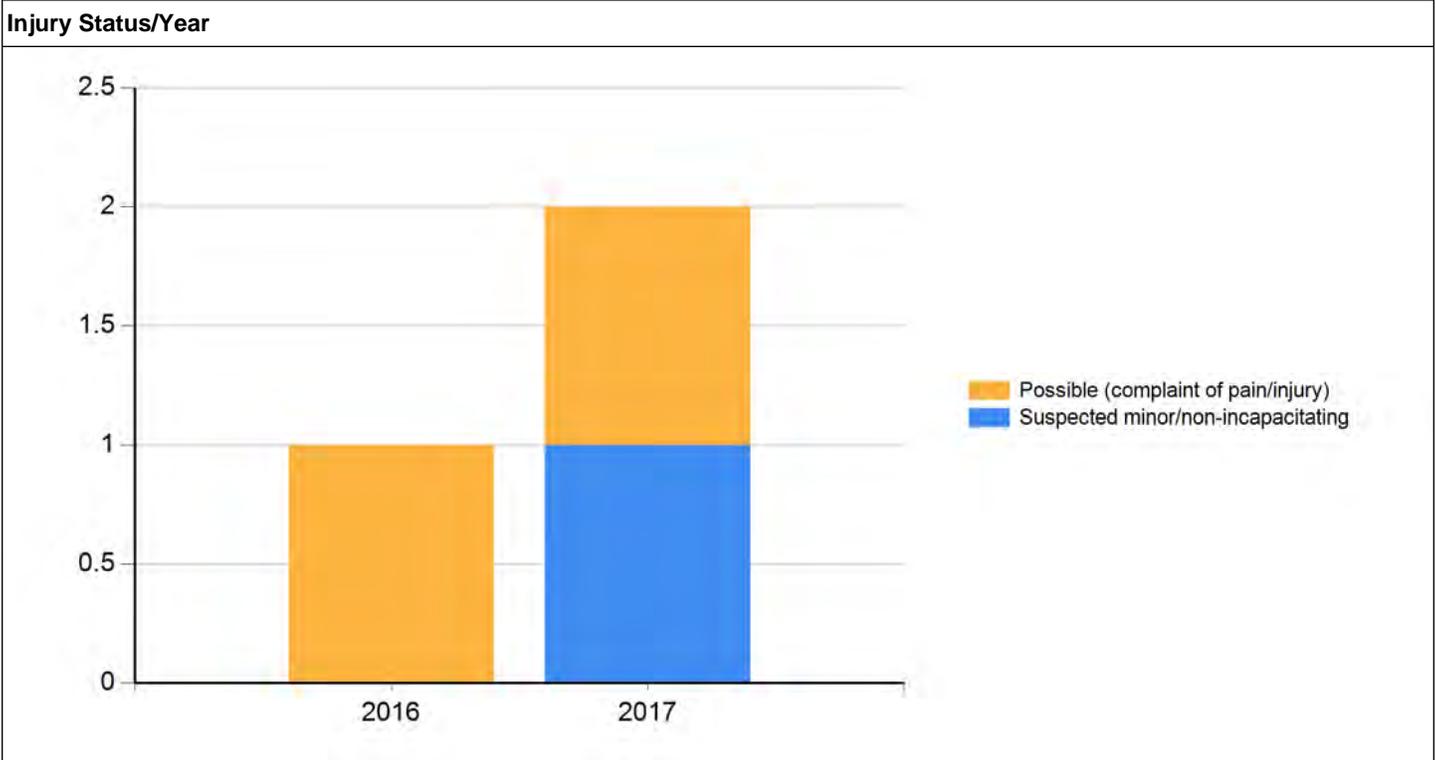
Crash Severity - Annual							
Crash Year	Fatal	Major Injury	Minor Injury	Possible/Unknown	Property Damage Only	Total	
2008	0	0	0	0	0	0	
2009	0	0	0	0	0	0	
2010	0	0	0	0	0	0	
2011	0	0	0	0	0	0	
2012	0	0	0	0	0	0	
2013	0	0	0	0	0	0	
2014	0	0	0	0	0	0	
2015	0	0	0	0	1	1	
2016	0	0	0	1	1	2	
2017	0	0	1	1	0	2	
2018	0	0	0	0	0	0	
Total	0	0	1	2	2	5	





**Safety Analysis, Visualization, and Evaluation Resource (SAVER)
Quick Report
2013-2017**

Injury Status - Annual								
Crash Year	Fatal	Suspected serious/incapacitating	Suspected minor/non-incapacitating	Possible (complaint of pain/injury)	Uninjured	Fatal, not crash-related	Unknown	Total
2008	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0
2011	0	0	0	0	0	0	0	0
2012	0	0	0	0	0	0	0	0
2013	0	0	0	0	0	0	0	0
2014	0	0	0	0	0	0	0	0
2015	0	0	0	0	0	0	0	0
2016	0	0	0	1	0	0	0	1
2017	0	0	1	1	0	0	0	2
2018	0	0	0	0	0	0	0	0
Total	0	0	1	2	0	0	0	3





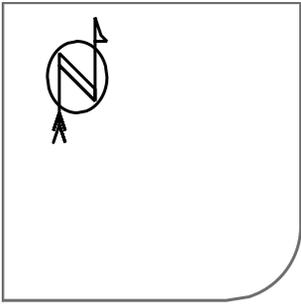
Meeting the following criteria

Jurisdiction: Statewide
Year: 2013, 2014, 2015, 2016, 2017
Map Selection: Yes
Filter: None

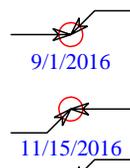
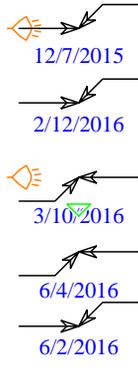
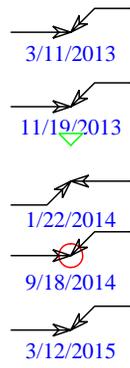
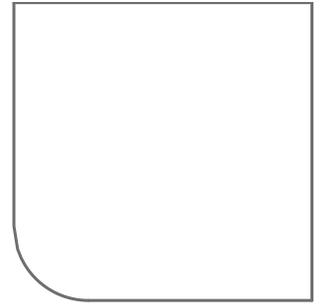
Analyst Information

23 Crashes

Clear



5/18/2017



(0) crashes could not be placed in this schematic

- ← Straight
- ←| Stopped
- ← Unknown
- ↔ Backing
- ↔ Overtaking
- ↔ Sideswipe

- Parked
- Erratic
- Out of control
- Right turn
- Left turn
- U-turn

- Pedestrian
- Bicycle
- Injury
- Fatality
- Nighttime
- DUI

Fixed objects:

- General
- Signal
- Tree
- Pole
- Curb
- Animal
- 3rd vehicle
- Extra data

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Intersection Crash Summary

Location: Green Hill Rd & Rownd St Intersection
 City/County: Cedar Falls, IA
 Time Period: 2013-2017 Crash Period = 5 years
 Prepared by: AJH

NUMBER OF CRASHES

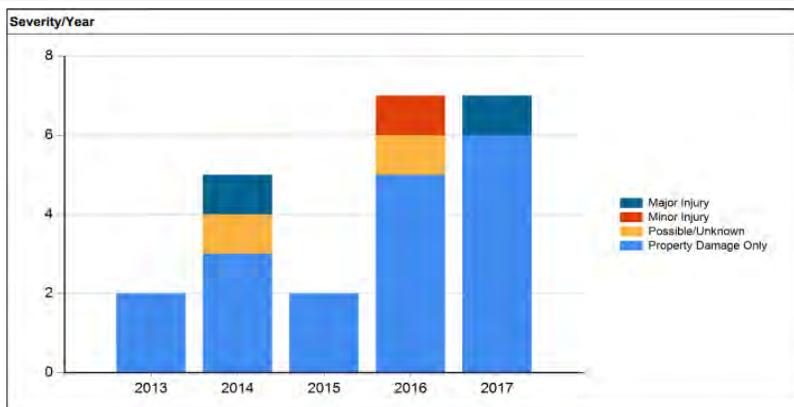
<u>0</u>	Fatal Crashes	<u>0</u>	fatalities	<u>0</u>	injuries
<u>2</u>	Major Injury Crashes			<u>3</u>	injuries
<u>1</u>	Minor Injury Crashes			<u>6</u>	injuries
<u>2</u>	Possible/Unknown Injury Crashes			<u>2</u>	injuries
<u>18</u>	Property Damage Only Crashes				

Totals: 23 Crashes 0 fatalities 11 injuries

CRASH RATES

Total Crash Rate =	23 /		22.67 MEV =	1.01 Total Crashes/MEV
Fatal Crash Rate =	0 /		22.67 MEV =	0.00 Fatal Crashes/MEV
Fatal/Injury Crash Rate =	5 /		22.67 MEV =	0.22 F & I Crashes/MEV

CRASH FREQUENCY



CRASH TYPE

0 Head-on 5 Rear-end Crash 2 Broadside/Right angle Crash 16 Angle, Oncoming Left Turn 0 Backing	0 Sideswipe, Same Direction 0 Sideswipe, Opposite Direction 0 Non Vehicle Collision 0 Other 0 Unknown	<u>Non Vehicle Collision Type</u> 0 Pedestrian 0 Animal 0 Fixed Object 0 Other
---	---	--

TRAFFIC - AADT

North Approach =	<u>5100</u>
South Approach =	<u>1020</u>
East Approach =	<u>9600</u>
West Approach =	<u>9120</u>
Million Entering Vehicles (MEV) =	<u>22.67</u>

Notes:
 Est AADT from 2018 Snyder 13 hr Count
 (Adj for Viking diversion)



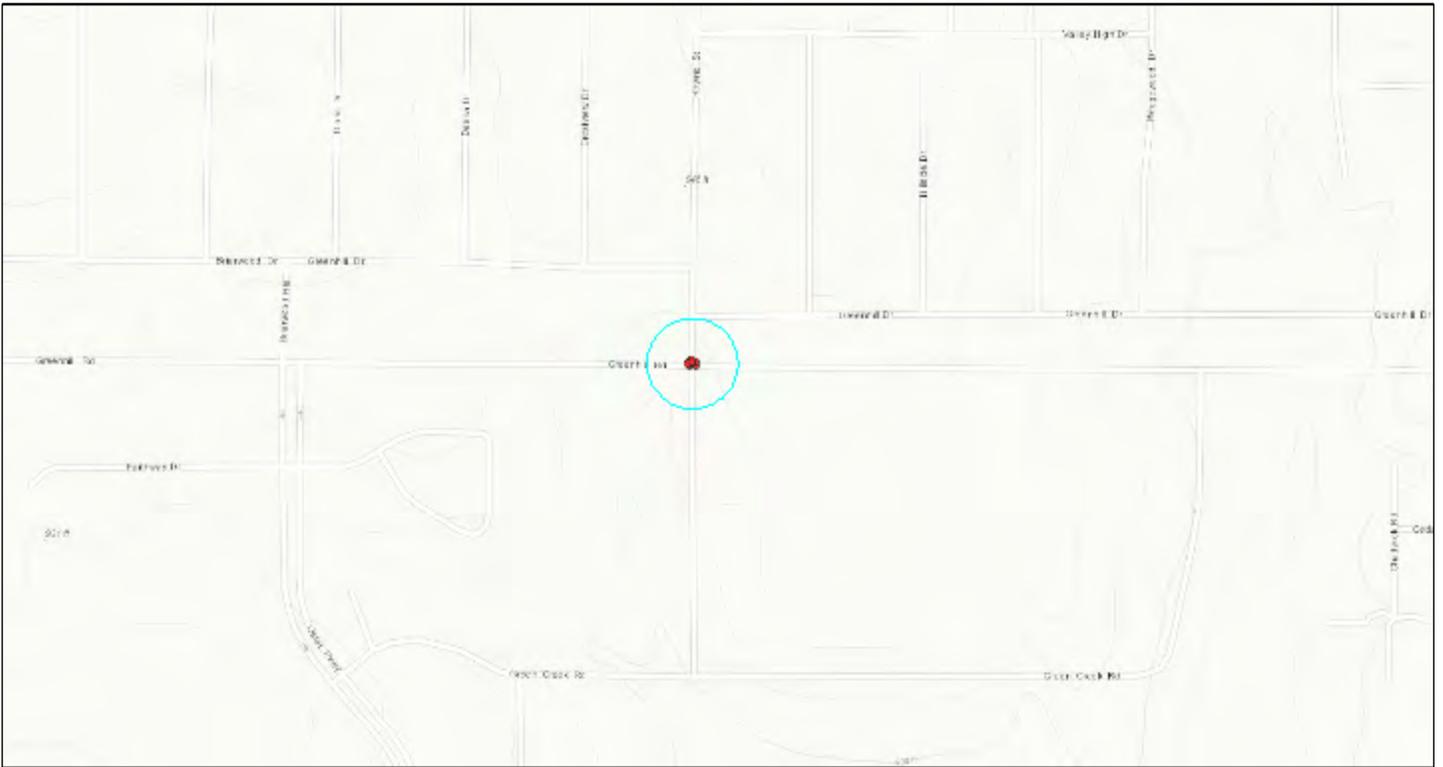
**Safety Analysis, Visualization, and Evaluation Resource (SAVER)
Quick Report
2013-2017**

Crash Severity	23
Fatal	0
Major Injury	2
Minor Injury	1
Possible/Unknown	2
Property Damage Only	18

Injury Status Summary	11
Fatal	0
Suspected serious/incapacitating	3
Suspected minor/non-incapacitating	6
Possible (complaint of pain/injury)	2
Uninjured	0
Fatal, not crash-related	0
Unknown	0
Not reported	0

Property/Vehicles/Occupants	
Property Damage Total (dollars):	206,500.00
Average (per crash dollars):	8,978.26
Total Vehicles:	50.00
Average (per crash):	2.17
Total Occupants:	69.00
Average (per crash):	3.00

Average Severity	
Fatalities/Fatal Crash:	0.00
Fatalities/Crash:	0.00
Injuries/Crash:	0.48
Major Injuries/Crash:	0.13
Minor Injuries/Crash:	0.26
Possible/Unknown Injuries/Crash:	0.09





**Safety Analysis, Visualization, and Evaluation Resource (SAVER)
Quick Report
2013-2017**

Major Cause			23
Animal	0	Ran traffic signal	1
Ran stop sign	0	Failed to yield to emergency vehicle	0
FTYROW: At uncontrolled intersection	0	FTYROW: Making right turn on red signal	0
FTYROW: From stop sign	1	FTYROW: From yield sign	0
FTYROW: Making left turn	16	FTYROW: From driveway	0
FTYROW: From parked position	0	FTYROW: To pedestrian	0
FTYROW: Other	0	Drove around RR grade crossing gates	0
Disregarded RR Signal	0	Crossed centerline (undivided)	0
Crossed median (divided)	0	Traveling wrong way or on wrong side of road	0
Aggressive driving/road rage	0	Driving too fast for conditions	0
Exceeded authorized speed	0	Improper or erratic lane changing	0
Operating vehicle in an reckless, erratic, ca...	0	Followed too close	2
Passing: On wrong side	0	Passing: Where prohibited by signs/markings	0
Passing: With insufficient distance/inadequa...	0	Passing: Through/around barrier	0
Passing: Other passing	0	Made improper turn	0
Driver Distraction: Manual operation of an e...	0	Driver Distraction: Talking on a hand-held d...	0
Driver Distraction: Talking on a hands free ...	0	Driver Distraction: Adjusting devices (radio...	1
Driver Distraction: Other electronic device ...	0	Driver Distraction: Passenger	0
Driver Distraction: Unrestrained animal	0	Driver Distraction: Reaching for object(s)/f...	0
Driver Distraction: Inattentive/lost in thou...	0	Driver Distraction: Other interior distracti...	1
Driver Distraction: Exterior distraction	0	Ran off road - right	0
Ran off road - straight	0	Ran off road - left	0
Lost control	0	Swerving/Evasive Action	0
Over correcting/over steering	0	Failed to keep in proper lane	0
Failure to signal intentions	0	Traveling on prohibited traffic way	0
Vehicle stopped on railroad tracks	0	Other: Vision obstructed	0
Other: Improper operation	0	Other: Disregarded warning sign	0
Other: Disregarded signs/road markings	0	Other: Illegal off-road driving	0
Downhill runaway	0	Separation of units	0
Towing improperly	0	Cargo/equipment loss or shift	0
Equipment failure	0	Oversized load/vehicle	0
Other: Getting off/out of vehicle	0	Failure to dim lights/have lights on	0
Improper backing	0	Improper starting	0
Illegally parked/unattended	0	Driving less than the posted speed limit	0
Operator inexperience	0	Other	1
Unknown	0	Not reported	0
Other: No improper action	0		



**Safety Analysis, Visualization, and Evaluation Resource (SAVER)
Quick Report
2013-2017**

Time of Day/Day of Week														
Day of Week	12 AM to 2 AM	2 AM to 4 AM	4 AM to 6 AM	6 AM to 8 AM	8 AM to 10 AM	10 AM to Noon	Noon to 2 PM	2 PM to 4 PM	4 PM to 6 PM	6 PM to 8 PM	8 PM to 10 PM	10 PM to 12 AM	Not reported	Total
Sunday	0	0	0	0	0	0	0	0	1	0	0	0	0	1
Monday	0	0	0	0	0	0	0	1	3	0	0	0	0	4
Tuesday	0	0	0	1	0	1	0	2	1	0	0	0	0	5
Wednesday	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Thursday	0	0	0	1	1	1	0	1	1	0	1	0	0	6
Friday	0	0	0	1	0	0	0	1	1	0	0	1	0	4
Saturday	0	0	0	0	0	1	1	0	0	0	0	0	0	2
Total	0	0	0	4	1	3	1	5	7	0	1	1	0	23

Manner of Crash Collision	23
Non-collision (single vehicle)	0
Head-on (front to front)	0
Rear-end (front to rear)	5
Angle, oncoming left turn	16
Broadside (front to side)	2
Sideswipe, same direction	0
Sideswipe, opposite direction	0
Rear to rear	0
Rear to side	0
Not reported	0
Other	0
Unknown	0

Surface Conditions	23
Dry	20
Wet	2
Ice/frost	0
Snow	1
Slush	0
Mud, dirt	0
Water (standing or moving)	0
Sand	0
Oil	0
Gravel	0
Not reported	0
Other	0
Unknown	0

Fixed Object Struck	50
Bridge overhead structure	0
Bridge/bridge rail parapet	0
Ditch	0
Ground	0
Guardrail - face	0
Concrete traffic barrier (median or right sid...	0
Cable barrier	0
Utility pole/light support	0
Traffic signal support	0
Fire hydrant	0
Tree	0
Snow bank	0
Wall	0
Other fixed object	0
Bridge pier or support	0
Curb/island/raised median	0
Embankment	0
Culvert/pipe opening	0
Guardrail - end	0
Other traffic barrier	0
Impact attenuator/crash cushion	0
Traffic sign support	0
Other post/pole/support	0
Mailbox	0
Landscape/shrubbery	0
Fence	0
Building	0
None (no fixed object struck)	50



**Safety Analysis, Visualization, and Evaluation Resource (SAVER)
Quick Report
2013-2017**

Driver Age/Driver Gender					
Driver Age - 5 year Bins	Female	Male	Not reported	Unknown	Total
< 14	0	0	0	0	0
= 14	0	0	0	0	0
= 15	0	0	0	0	0
= 16	3	0	0	0	3
= 17	0	1	0	0	1
= 18	1	1	0	0	2
= 19	0	3	0	0	3
= 20	0	0	0	0	0
>= 21 and <= 24	2	2	0	0	4
>= 25 and <= 29	1	2	0	0	3
>= 30 and <= 34	0	3	0	0	3
>= 35 and <= 39	3	1	0	0	4
>= 40 and <= 44	0	3	0	0	3
>= 45 and <= 49	1	2	0	0	3
>= 50 and <= 54	1	3	0	0	4
>= 55 and <= 59	4	0	0	0	4
>= 60 and <= 64	2	2	0	0	4
>= 65 and <= 69	0	1	0	0	1
>= 70 and <= 74	2	3	0	0	5
>= 75 and <= 79	1	0	0	0	1
>= 80 and <= 84	0	0	0	0	0
>= 85 and <= 89	0	1	0	0	1
>= 90 and <= 94	0	1	0	0	1
>= 95	0	0	0	0	0
Not reported	0	0	0	0	0
Unknown	0	0	0	0	0
Total	21	29	0	0	50

Alcohol Test Given	50
None	50
Blood	0
Urine	0
Breath	0
Vitreous	0
Refused	0
Not reported	0

Drug Test Given	50
None	50
Blood	0
Urine	0
Breath	0
Vitreous	0
Refused	0
Not reported	0

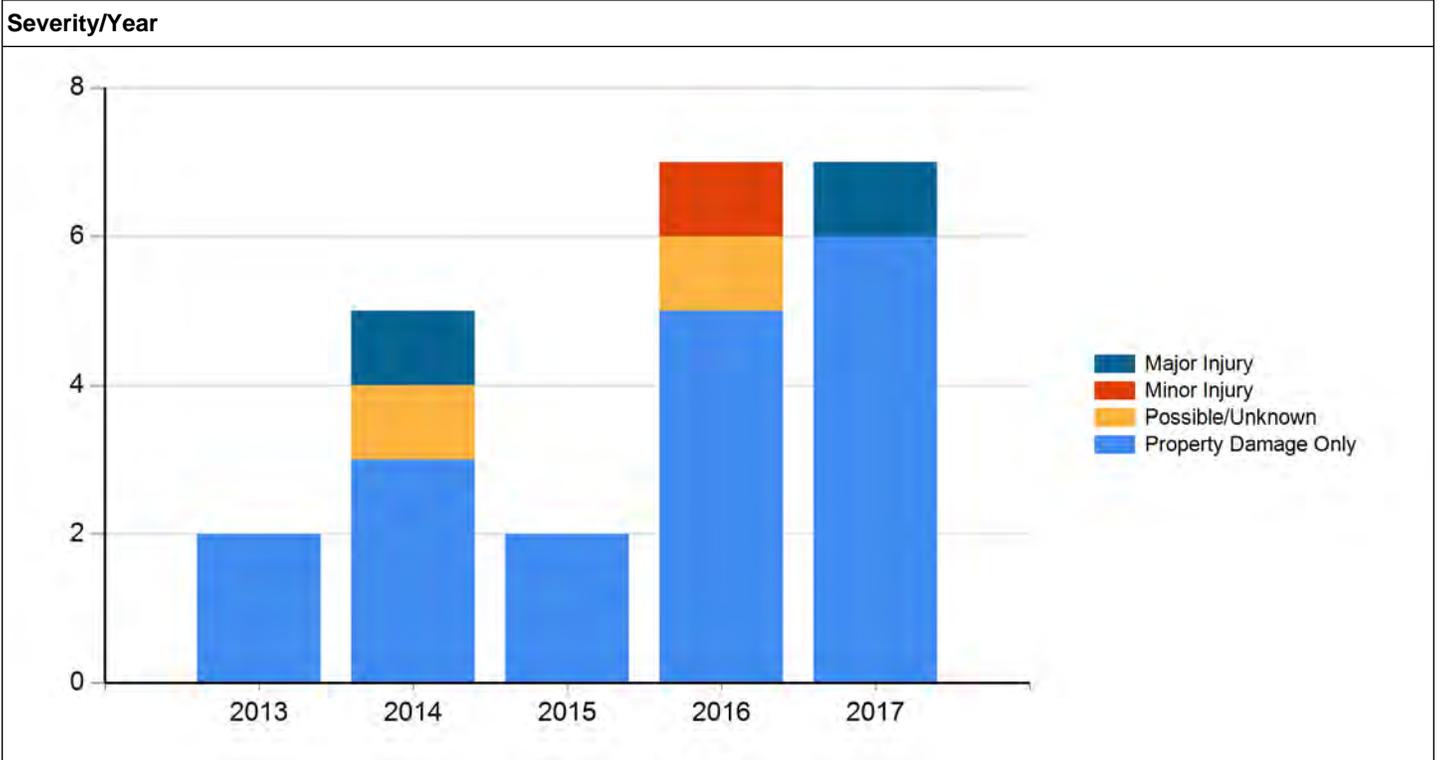
Drug Test Result	50
Negative	0
Cannabis	0
Central Nervous System depressants	0
Central Nervous System stimulants	0
Hallucinogens	0
Inhalants	0
Narcotic Analgesics	0
Dissociative Anesthetic (PCP)	0
Prescription Drug	0
Not reported	50
Other	0

Drug/Alcohol Related	23
Drug	0
Alcohol (< Statutory)	0
Alcohol (Statutory)	0
Drug/Alcohol (< Statutory)	0
Drug/Alcohol (Statutory)	0
Refused	0
Under Influence of Alcohol/Drugs/Medications	0
None Indicated	23

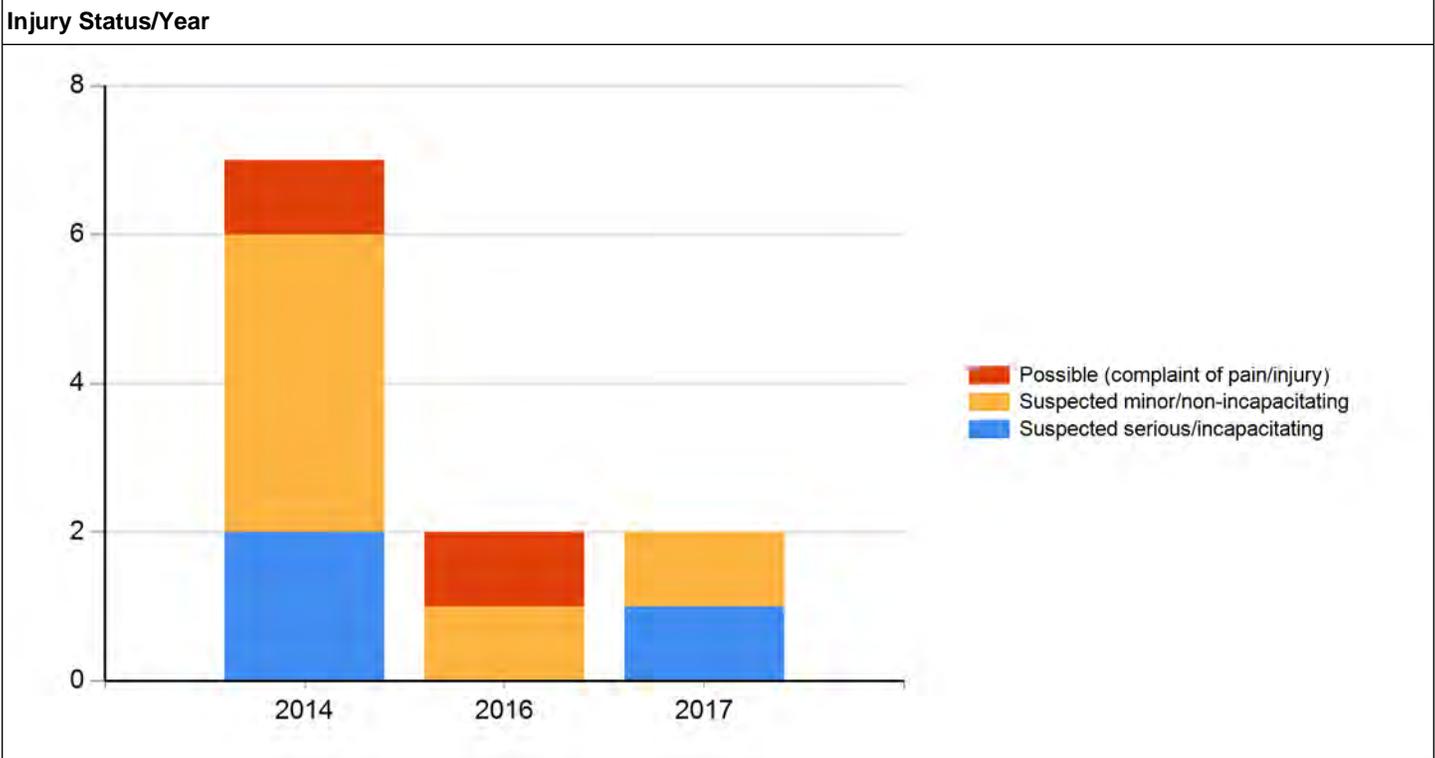


**Safety Analysis, Visualization, and Evaluation Resource (SAVER)
Quick Report
2013-2017**

Crash Severity - Annual							
Crash Year	Fatal	Major Injury	Minor Injury	Possible/Unknown	Property Damage Only	Total	
2008	0	0	0	0	0	0	
2009	0	0	0	0	0	0	
2010	0	0	0	0	0	0	
2011	0	0	0	0	0	0	
2012	0	0	0	0	0	0	
2013	0	0	0	0	2	2	
2014	0	1	0	1	3	5	
2015	0	0	0	0	2	2	
2016	0	0	1	1	5	7	
2017	0	1	0	0	6	7	
2018	0	0	0	0	0	0	
Total	0	2	1	2	18	23	



Injury Status - Annual								
Crash Year	Fatal	Suspected serious/incapacitating	Suspected minor/non-incapacitating	Possible (complaint of pain/injury)	Uninjured	Fatal, not crash-related	Unknown	Total
2008	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0
2011	0	0	0	0	0	0	0	0
2012	0	0	0	0	0	0	0	0
2013	0	0	0	0	0	0	0	0
2014	0	2	4	1	0	0	0	7
2015	0	0	0	0	0	0	0	0
2016	0	0	1	1	0	0	0	2
2017	0	1	1	0	0	0	0	2
2018	0	0	0	0	0	0	0	0
Total	0	3	6	2	0	0	0	11





Meeting the following criteria

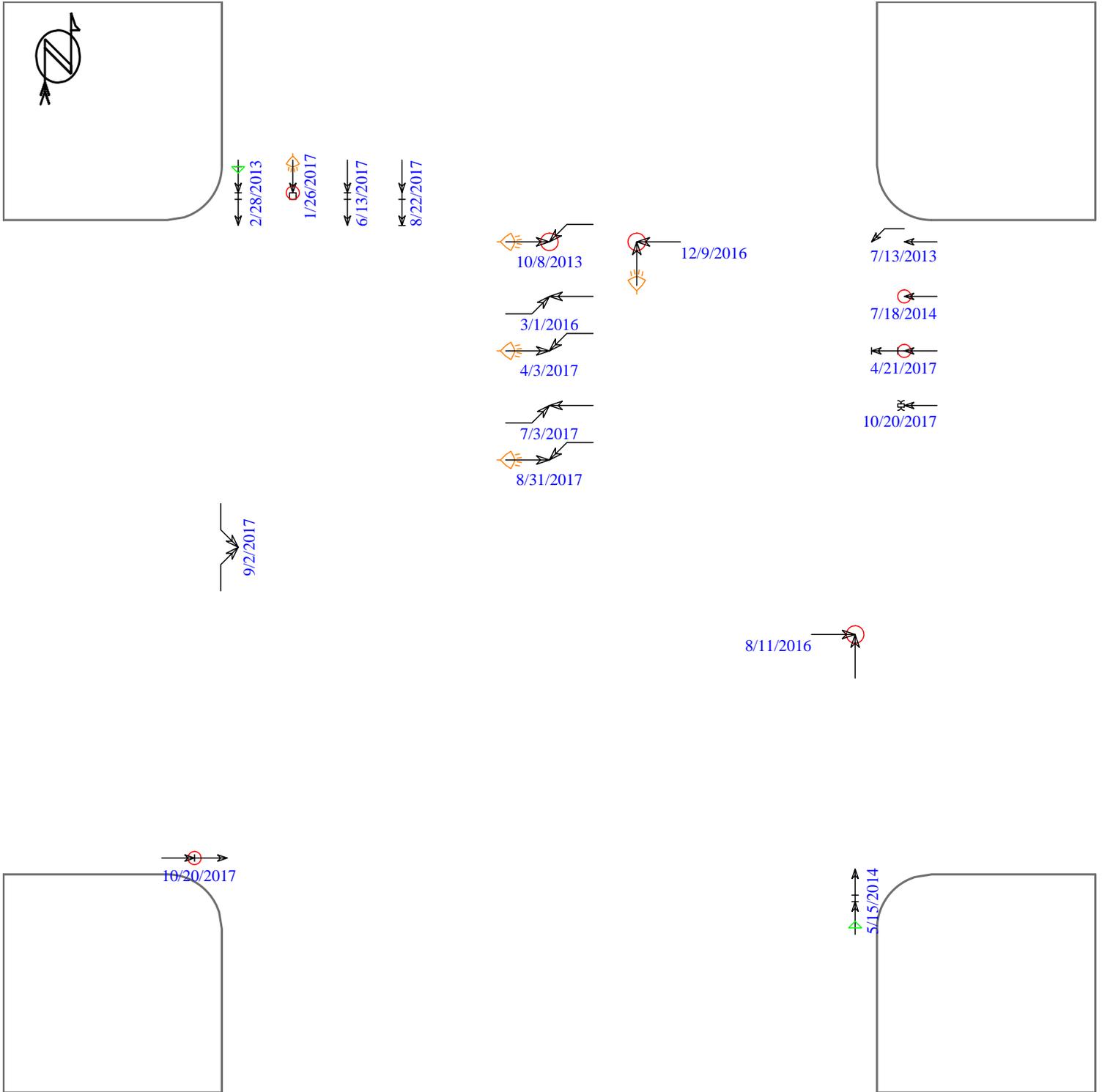
Jurisdiction: Statewide
Year: 2013, 2014, 2015, 2016, 2017
Map Selection: Yes
Filter: None

Analyst Information

Greenhill Rd and Cedar Heights Dr 2013-2017

18 Crashes

Clear



(0) crashes could not be placed in this schematic

- ← Straight
- ←| Stopped
- ← Unknown
- ↔ Backing
- ↔ Overtaking
- ↔ Sideswipe

- ▭ Parked
- ↔ Erratic
- ↔ Out of control
- ↗ Right turn
- ↖ Left turn
- ↪ U-turn

- × Pedestrian
- ⊗ Bicycle
- Injury
- Fatality
- ⚡ Nighttime
- ⚠ DUI

Fixed objects:

- General
- ▣ Pole
- ⊠ Signal
- ▣ Curb
- ⊠ Tree
- ⊠ Animal
- ◁ 3rd vehicle
- * Extra data

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Intersection Crash Summary

Location: Green Hill Rd & Cedar Heights Dr Intersection
 City/County: Cedar Falls, IA
 Time Period: 2013-2017 Crash Period = 5 years
 Prepared by: AJH

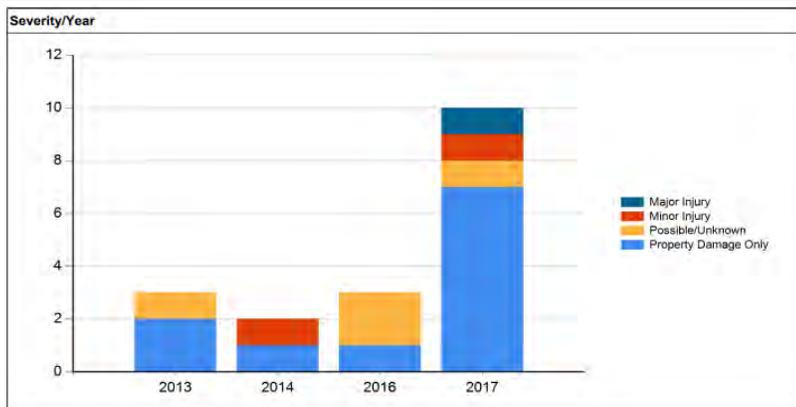
NUMBER OF CRASHES

	<u>0</u>	Fatal Crashes	<u>0</u>	fatalities	<u>0</u>	injuries
	<u>1</u>	Major Injury Crashes			<u>1</u>	injuries
	<u>2</u>	Minor Injury Crashes			<u>2</u>	injuries
	<u>4</u>	Possible/Unknown Injury Crashes			<u>5</u>	injuries
	<u>11</u>	Property Damage Only Crashes				
Totals:	<u>18</u>	Crashes			<u>0</u>	fatalities
					<u>8</u>	injuries

CRASH RATES

Total Crash Rate =	18 /		32.08 MEV =	0.56 Total Crashes/MEV
Fatal Crash Rate =	0 /		32.08 MEV =	0.00 Fatal Crashes/MEV
Fatal/Injury Crash Rate =	7 /		32.08 MEV =	0.22 F & I Crashes/MEV

CRASH FREQUENCY



CRASH TYPE

0 Head-on 6 Rear-end Crash 2 Broadside/Right angle Crash 6 Angle, Oncoming Left Turn 0 Backing	0 Sideswipe, Same Direction 0 Sideswipe, Opposite Direction 3 Non Vehicle Collision 1 Other 0 Unknown	<u>Non Vehicle Collision Type</u> 0 Pedestrian 1 Animal 1 Fixed Object 1 Other
--	---	--

TRAFFIC - AADT

North Approach =		<u>6190</u>	
South Approach =		<u>9610</u>	
East Approach =		<u>9570</u>	
West Approach =		<u>9790</u>	
Million Entering Vehicles (MEV) =			<u>32.08</u>

Notes:
2017 Prelim DOT



**Safety Analysis, Visualization, and Evaluation Resource (SAVER)
Quick Report
2013-2017**

Major Cause			18
Animal	1	Ran traffic signal	2
Ran stop sign	0	Failed to yield to emergency vehicle	0
FTYROW: At uncontrolled intersection	0	FTYROW: Making right turn on red signal	1
FTYROW: From stop sign	0	FTYROW: From yield sign	0
FTYROW: Making left turn	4	FTYROW: From driveway	0
FTYROW: From parked position	0	FTYROW: To pedestrian	0
FTYROW: Other	0	Drove around RR grade crossing gates	0
Disregarded RR Signal	0	Crossed centerline (undivided)	0
Crossed median (divided)	0	Traveling wrong way or on wrong side of road	0
Aggressive driving/road rage	0	Driving too fast for conditions	0
Exceeded authorized speed	0	Improper or erratic lane changing	0
Operating vehicle in an reckless, erratic, ca...	0	Followed too close	3
Passing: On wrong side	0	Passing: Where prohibited by signs/markings	0
Passing: With insufficient distance/inadequa...	0	Passing: Through/around barrier	0
Passing: Other passing	0	Made improper turn	0
Driver Distraction: Manual operation of an e...	1	Driver Distraction: Talking on a hand-held d...	0
Driver Distraction: Talking on a hands free ...	0	Driver Distraction: Adjusting devices (radio...	0
Driver Distraction: Other electronic device ...	0	Driver Distraction: Passenger	0
Driver Distraction: Unrestrained animal	0	Driver Distraction: Reaching for object(s)/f...	0
Driver Distraction: Inattentive/lost in thou...	0	Driver Distraction: Other interior distracti...	0
Driver Distraction: Exterior distraction	0	Ran off road - right	1
Ran off road - straight	0	Ran off road - left	0
Lost control	1	Swerving/Evasive Action	0
Over correcting/over steering	0	Failed to keep in proper lane	0
Failure to signal intentions	0	Traveling on prohibited traffic way	0
Vehicle stopped on railroad tracks	0	Other: Vision obstructed	0
Other: Improper operation	0	Other: Disregarded warning sign	0
Other: Disregarded signs/road markings	0	Other: Illegal off-road driving	0
Downhill runaway	0	Separation of units	0
Towing improperly	0	Cargo/equipment loss or shift	0
Equipment failure	0	Oversized load/vehicle	0
Other: Getting off/out of vehicle	0	Failure to dim lights/have lights on	0
Improper backing	0	Improper starting	0
Illegally parked/unattended	0	Driving less than the posted speed limit	0
Operator inexperience	0	Other	1
Unknown	3	Not reported	0
Other: No improper action	0		



**Safety Analysis, Visualization, and Evaluation Resource (SAVER)
Quick Report
2013-2017**

Time of Day/Day of Week														
Day of Week	12 AM to 2 AM	2 AM to 4 AM	4 AM to 6 AM	6 AM to 8 AM	8 AM to 10 AM	10 AM to Noon	Noon to 2 PM	2 PM to 4 PM	4 PM to 6 PM	6 PM to 8 PM	8 PM to 10 PM	10 PM to 12 AM	Not reported	Total
Sunday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Monday	0	0	0	0	1	0	0	0	0	0	1	0	0	2
Tuesday	0	0	1	0	0	0	1	0	1	0	1	0	0	4
Wednesday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Thursday	0	0	2	1	0	0	1	0	1	0	0	0	0	5
Friday	0	0	0	0	0	1	0	2	0	2	0	0	0	5
Saturday	0	0	0	0	0	1	0	0	0	1	0	0	0	2
Total	0	0	3	1	1	2	2	2	2	3	2	0	0	18

Manner of Crash Collision	18
Non-collision (single vehicle)	3
Head-on (front to front)	0
Rear-end (front to rear)	6
Angle, oncoming left turn	6
Broadside (front to side)	2
Sideswipe, same direction	0
Sideswipe, opposite direction	0
Rear to rear	0
Rear to side	0
Not reported	0
Other	1
Unknown	0

Surface Conditions	18
Dry	13
Wet	3
Ice/frost	1
Snow	0
Slush	0
Mud, dirt	0
Water (standing or moving)	0
Sand	0
Oil	0
Gravel	0
Not reported	1
Other	0
Unknown	0

Fixed Object Struck	36
Bridge overhead structure	0
Bridge/bridge rail parapet	0
Ditch	0
Ground	0
Guardrail - face	0
Concrete traffic barrier (median or right sid...)	0
Cable barrier	0
Utility pole/light support	0
Traffic signal support	0
Fire hydrant	0
Tree	0
Snow bank	0
Wall	0
Other fixed object	0
Bridge pier or support	0
Curb/island/raised median	1
Embankment	0
Culvert/pipe opening	0
Guardrail - end	0
Other traffic barrier	0
Impact attenuator/crash cushion	0
Traffic sign support	0
Other post/pole/support	0
Mailbox	0
Landscape/shrubbery	0
Fence	0
Building	0
None (no fixed object struck)	35



**Safety Analysis, Visualization, and Evaluation Resource (SAVER)
Quick Report
2013-2017**

Driver Age/Driver Gender					
Driver Age - 5 year Bins	Female	Male	Not reported	Unknown	Total
< 14	0	0	0	0	0
= 14	0	0	0	0	0
= 15	0	0	0	0	0
= 16	0	0	0	0	0
= 17	2	1	0	0	3
= 18	0	0	0	0	0
= 19	1	2	0	0	3
= 20	1	0	0	0	1
>= 21 and <= 24	1	0	0	0	1
>= 25 and <= 29	1	7	0	0	8
>= 30 and <= 34	3	2	0	0	5
>= 35 and <= 39	2	0	0	0	2
>= 40 and <= 44	1	2	0	0	3
>= 45 and <= 49	1	0	0	0	1
>= 50 and <= 54	2	2	0	0	4
>= 55 and <= 59	1	0	0	0	1
>= 60 and <= 64	0	0	0	0	0
>= 65 and <= 69	0	0	0	0	0
>= 70 and <= 74	0	2	0	0	2
>= 75 and <= 79	0	1	0	0	1
>= 80 and <= 84	0	0	0	0	0
>= 85 and <= 89	0	0	0	0	0
>= 90 and <= 94	1	0	0	0	1
>= 95	0	0	0	0	0
Not reported	0	0	0	0	0
Unknown	0	0	0	0	0
Total	17	19	0	0	36

Alcohol Test Given	36
None	34
Blood	1
Urine	0
Breath	1
Vitreous	0
Refused	0
Not reported	0

Drug Test Given	36
None	35
Blood	1
Urine	0
Breath	0
Vitreous	0
Refused	0
Not reported	0

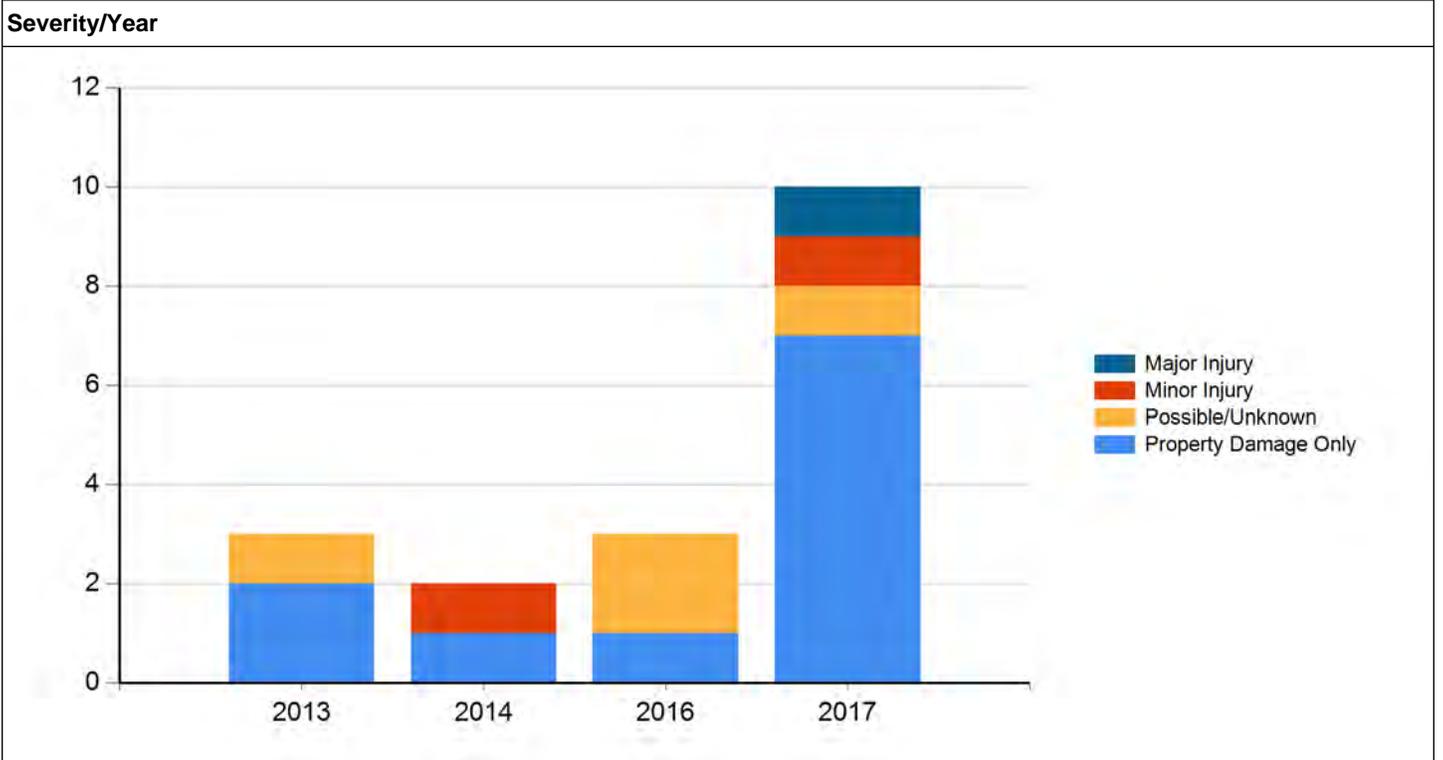
Drug Test Result	36
Negative	0
Cannabis	0
Central Nervous System depressants	0
Central Nervous System stimulants	0
Hallucinogens	0
Inhalants	0
Narcotic Analgesics	0
Dissociative Anesthetic (PCP)	0
Prescription Drug	0
Not reported	36
Other	0

Drug/Alcohol Related	18
Drug	0
Alcohol (< Statutory)	0
Alcohol (Statutory)	1
Drug/Alcohol (< Statutory)	0
Drug/Alcohol (Statutory)	0
Refused	0
Under Influence of Alcohol/Drugs/Medications	1
None Indicated	16



**Safety Analysis, Visualization, and Evaluation Resource (SAVER)
Quick Report
2013-2017**

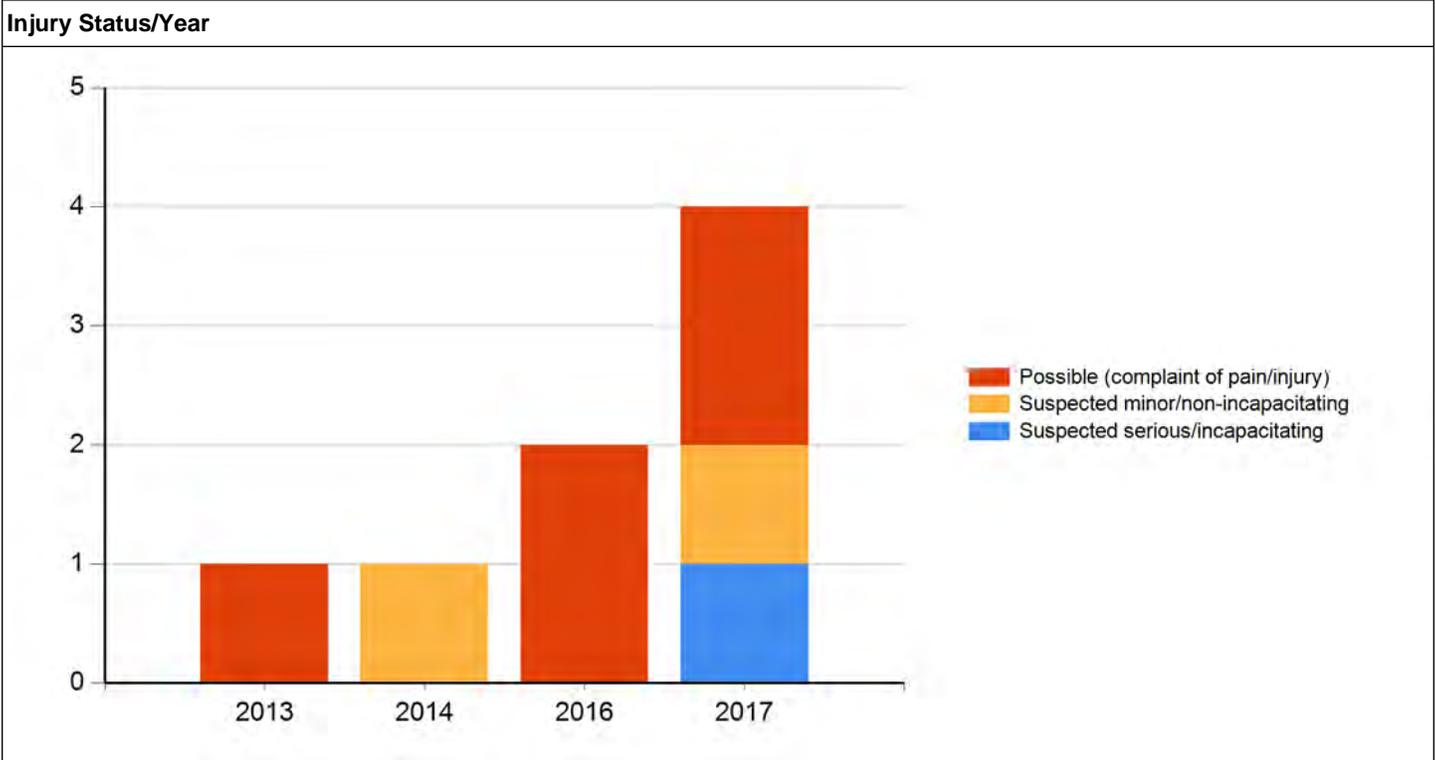
Crash Severity - Annual							
Crash Year	Fatal	Major Injury	Minor Injury	Possible/Unknown	Property Damage Only	Total	
2008	0	0	0	0	0	0	
2009	0	0	0	0	0	0	
2010	0	0	0	0	0	0	
2011	0	0	0	0	0	0	
2012	0	0	0	0	0	0	
2013	0	0	0	1	2	3	
2014	0	0	1	0	1	2	
2015	0	0	0	0	0	0	
2016	0	0	0	2	1	3	
2017	0	1	1	1	7	10	
2018	0	0	0	0	0	0	
Total	0	1	2	4	11	18	





**Safety Analysis, Visualization, and Evaluation Resource (SAVER)
Quick Report
2013-2017**

Injury Status - Annual								
Crash Year	Fatal	Suspected serious/incapacitating	Suspected minor/non-incapacitating	Possible (complaint of pain/injury)	Uninjured	Fatal, not crash-related	Unknown	Total
2008	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0
2011	0	0	0	0	0	0	0	0
2012	0	0	0	0	0	0	0	0
2013	0	0	0	1	0	0	0	1
2014	0	0	1	0	0	0	0	1
2015	0	0	0	0	0	0	0	0
2016	0	0	0	2	0	0	0	2
2017	0	1	1	2	0	0	0	4
2018	0	0	0	0	0	0	0	0
Total	0	1	2	5	0	0	0	8





Meeting the following criteria

Jurisdiction: Statewide
Year: 2013, 2014, 2015, 2016, 2017
Map Selection: Yes
Filter: None

Analyst Information

Memorandum

To: Jon Resler, P.E., City Engineer **Date:** 8/6/18
From: Mark Perington, P.E., PTOE
 Andrew Houchin, E.I.
CC: Stephanie Sheetz, AICP, Community Development Director
RE: Traffic History and Data Collection
 Greenhill Rd Corridor Traffic Study
 Cedar Falls, IA
 Snyder & Associates Project No.: 118.0463.01

Introduction

The City of Cedar Falls has requested that Snyder & Associates conduct a traffic study of the Greenhill Road corridor from Hudson Road to Cedar Heights Drive. The study area and intersections are shown in **Figure 1**. All the intersections on Greenhill Rd are included in the study other than the intersection with Iowa Highway 58 (IA 58) which is being studied separately by the Iowa DOT. The purpose of the study is to evaluate the current and future traffic demands for all modes of transportation in the Greenhill Rd corridor in order to develop short- and long-range plans for lane needs and intersection improvements. Other areas of focus for the study will be potential for traffic demand change due to new land use development, “complete streets” considerations, and appropriate traffic control for intersections such as traffic signalization or roundabouts. This memorandum summarizes the traffic history of the corridor and the traffic data collection completed for the purposes of this study.



Figure 1. Study Area Intersections

Previous Studies

A number of studies have previously been conducted regarding the Greenhill Rd corridor, intersections within it, or developments near it. The City provided the previous studies for informational purposes and to provide supplementary traffic history. **Table 1** summarizes the studies including relevant data they collected and recommendations.

Table 1. Summary of Previous Greenhill Rd Studies

Year	Company	Study/Scope	Relevant Data	Relevant Recommendations
2007	EarthTech	Pinnacle Prairie Traffic Impact Study (TIS) (S Main St to Cedar Heights Dr)	<ul style="list-style-type: none"> - Likely land uses - Area sizes - Peak hr counts - Daily counts - 2017 build-out forecasts 	<ul style="list-style-type: none"> - Signalize Prairie Pkwy - Consider signalizing Oster Pkwy or Rownd St (leaving the other unsignalized)
2013	CGA	Prairie Pkwy	<ul style="list-style-type: none"> - Reviewed and approved use of 2007 forecasts 	<ul style="list-style-type: none"> - 4-lane boulevard cross section for Prairie Pkwy
2014	AECOM	S Main St to Cedar Heights Dr	<ul style="list-style-type: none"> - Peak hr counts - 2040 forecast 	<ul style="list-style-type: none"> - Signalize Prairie Pkwy when connected to Viking Rd - 1 add'l lane SB and WB at S Main St - Signalize Rownd St (no left turn lanes but monitor, design signal to allow future left turn lanes) - Monitor traffic as development continues - Maintain trail on north side and continue to complete trail on south side
2017	Foth	Sartori Hospital TIS (Hudson Rd to IA 58)	<ul style="list-style-type: none"> - Peak hr counts - Development volumes - 2037 forecast 	<ul style="list-style-type: none"> - Signalize Ashworth Dr and Algonquin Dr when operations dictate - Left and shared thru/right lanes NB/SB and add left lanes EB/WB at Ashworth Dr and Algonquin Dr - Add NBR, EBL, EBR, and 2 WBL lanes at Hudson Rd - Storage lengths
2017	Shive-Hattery	Kwik Star TIS and Fareway TIS (S Main St to Estate Dr)	<ul style="list-style-type: none"> - Peak hr counts - 2038 forecast 	<ul style="list-style-type: none"> - Add SBL, SBR, and WBT to S Main St - Add SBL lane to Estate Dr

Traffic History

In addition to the peak hour counts and development volumes from previous traffic studies, the Iowa DOT has estimated annual average daily traffic (AADT), expressed in vehicles per day (veh/day), along the Greenhill Rd corridor every four years as part of their statewide count plan. The most recent year the Iowa DOT counted was 2017, but most of the intersections on the Greenhill Rd corridor were not counted during every cycle. **Figure 2** shows the average AADT immediately east and west of IA 58 based on previous Iowa DOT traffic counts.

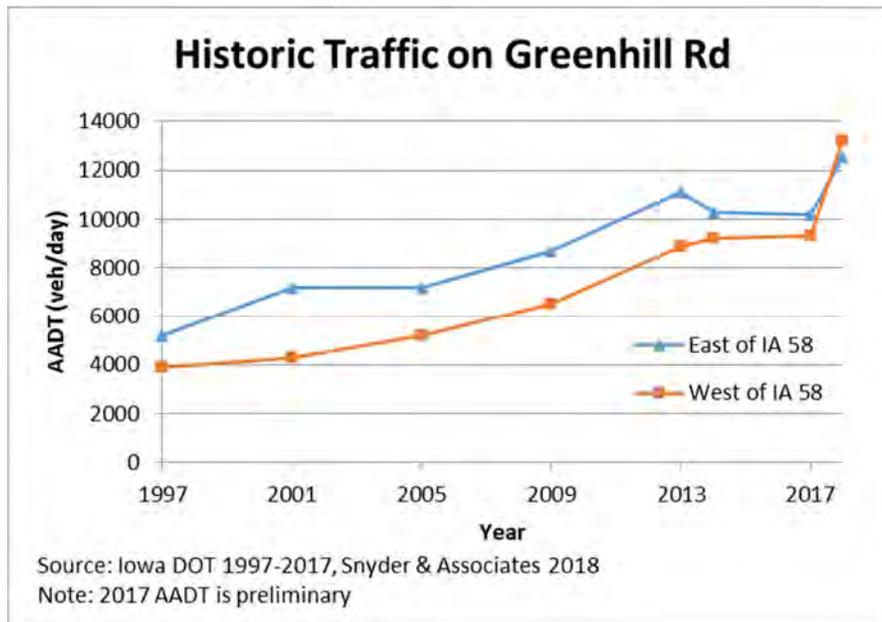


Figure 2. Historic AADT on Greenhill Rd from Iowa DOT counts

Traffic volumes on the Greenhill Rd corridor steadily increased from the year 1997 to 2013 (about 3 to 5 percent per year on average). However, there was a slight decrease in volumes east of IA 58 between the year 2013 and 2014, and volumes appear to have leveled out from 2013 to 2017. This indicates growth in the area may be slowing. There is an increase in 2018 that is discussed in the next section. **Figure 3** shows the average AADT of cross street traffic from the year 1997 to 2017. Volumes on most of the cross streets show a slight increase from the year 1997 to 2017 (about 2 to 3 percent per year on average) due to development in the surrounding area. Volumes on IA 58 more than doubled from 1997 to 2005, but have remained around the same level since then.

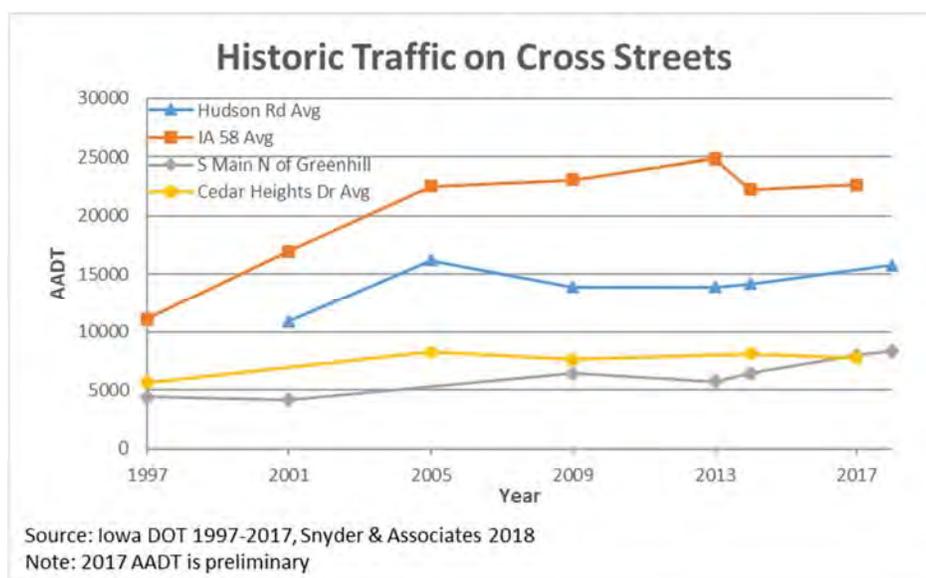


Figure 3. Historic AADT on Cross Streets across Greenhill Rd

Data Collection

Traffic counts and speed data were collected on the Greenhill Rd corridor from May 9 through May 11, 2018. There were 13-hour turning movement counts conducted at ten intersections, a four-hour turning movement count at one intersection, and 48 hour road tube counts and speed data collected at three locations. The four-hour turning movement count was at the Prairie Pkwy intersection as the result of an equipment error, but the count still included the PM peak hour. The count locations are summarized in **Table 2** and the raw traffic counts are included in the appendix. Additionally, the City provided an AM and PM peak hour turning movement count at S Main St and Greenhill Rd from December 5, 2017.

Table 2. Summary of Count Locations

Location	Count Type	Date
Hudson Rd	Turning movement count	May 9-10
Algonquin Rd	Turning movement count	May 9-10
Ashworth Rd	Turning movement count	May 9-10
S Main St	Turning movement count	May 9-10
Coneflower Pkwy/Estate Dr	Turning movement count	May 9-10
Prairie Pkwy	Turning movement count	May 9
Orchard Hill Dr	Turning movement count	May 10-11
Oster Pkwy	Turning movement count	May 10-11
Rownd St	Turning movement count	May 10-11
Green Creek Rd	Turning movement count	May 10-11
Cedar Heights Dr	Turning movement count	May 10-11
Between Algonquin Rd & Ashworth Rd	Road Tube	May 9-11
Between IA 58 & S Main St	Road Tube	May 9-11
Between Oster Pkwy & Orchard Hill Dr	Road Tube	May 9-11

Daily Traffic

The annual average daily traffic (AADT) was estimated throughout the corridor from the turning movements or road tube counts. **Figure 4** shows the estimated 2018 AADT on Greenhill Rd at intersections throughout the corridor compared with the 2017 AADT from the DOT. Volumes are significantly higher in 2018 compared to 2017, especially west of Prairie Pkwy. There were about 2,500 to 4,000 additional vehicles per day west of Prairie Pkwy, and about 1,000 to 1,500 additional vehicles per day east of Prairie Pkwy. There was not significant development in the last year that would lead to this additional volume. However, the existing major construction project limiting the capacity at the IA 58 and Viking Rd intersection to the south has likely contributed to additional traffic utilizing Greenhill Rd to avoid excessive delays, especially in peak hours.

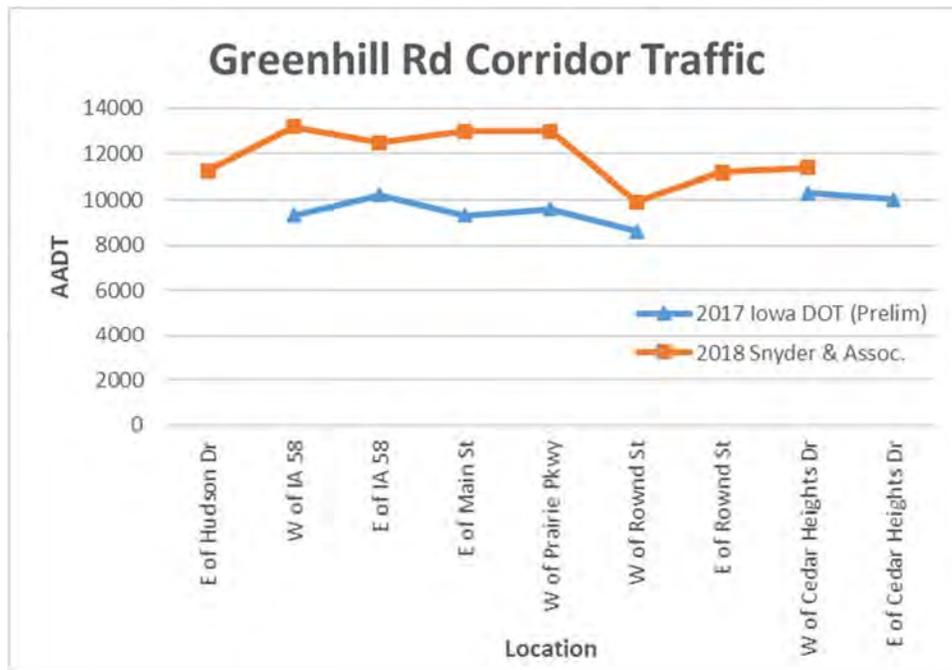


Figure 4. AADT on Greenhill Rd by Location (2017 vs. 2018)

The daily traffic volumes observed on the cross streets in the counts are also elevated from the recent DOT counts. This is likely associated with the construction at the IA 58 and Viking Rd intersection as well. The cross street AADTs for the intersections which were counted for this study are provided in **Table 3** along with the DOT AADTs for the most recent year the DOT counted that intersection.

Table 3. Side Street AADTs (veh/day)

Side Street	Snyder & Associates		Year	Iowa DOT	
	N Approach	S Approach		N Approach	S Approach
Hudson Rd	14,393	17,149	2017	13,421	15,600
Algonquin Rd	-	2,638	-	-	-
Ashworth Rd	-	2,179	-	-	-
IA 58	-	-	2017	22,544	22,746
S Main St	8,347	3,993	2017	7,987	3,628
Coneflower Pkwy/Estate Dr	475	608	-	-	-
Prairie Pkwy	1,045	9,100	-	-	-
Orchard Hill Dr	2,117	59	-	-	-
Oster Pkwy	622	554	-	-	-
Rownd St	5,473	1,272	-	-	-
Green Creek Rd	-	362	-	-	-
Cedar Heights Dr	-	-	2017	6,018	9,477

Traffic Mix

In general, minor arterials such as Greenhill Rd are expected to have about 2 percent truck traffic. The daily truck traffic percentage on Greenhill Rd corridor is about 6 percent west of IA 58 and 3 percent east of IA 58. The daily truck volumes range from 200 to 650 trucks per day (total of both directions) depending on location, with the higher volumes closer to IA 58 and west of IA 58. Similar to total volumes this vehicle mix may be impacted due to the IA 58 & Viking construction.

Peak Hour Traffic

In addition to examining the total daily traffic, peak hour volumes traffic patterns were also evaluated at intersections throughout the Greenhill Rd corridor. It should be noted that some of these traffic patterns might have been affected by the construction on IA 58 and Viking Rd. Some of the general observations related to the peak hour traffic along the corridor include:

- AM Peak
 - Time: 7:15 – 8:15 AM
 - *Directionality*: 55-60% EB west of Prairie Pkwy. 55% WB between Prairie Pkwy and Orchard Hill Dr. 50-55% EB east of Orchard Hill Dr.
 - *Volumes*: 350 - 650 veh/hr in the peak direction (700 – 1,100 veh/hr total of both direction).
 - *Peak hour factor (PHF)*: Ranges from 0.78 – 0.91
 - *Traffic Mix*: 4-6% trucks west of IA 58 and 2-3% trucks east of IA 58.

- PM Peak
 - Time: 4:30 – 5:30 PM
 - *Directionality*: Balanced west of S Main St. 55% WB between S Main St and Prairie Pkwy. Balanced between Prairie Pkwy and Rownd St. 55% WB east of Rownd St.
 - *Volumes*: 550 - 750 veh/hr in the peak direction (1,100 – 1,500 veh/hr total of both direction).
 - *Peak hour factor (PHF)*: Ranges from 0.93-0.99.
 - *Traffic Mix*: 3-4% trucks west of IA 58 and 1% trucks east of IA 58

Speed Data

In addition to supplementary counts, the road tubes were also used to collect speed data at three locations along the Greenhill Rd Corridor. A summary of the speed statistics is provided in **Table 4**. A complete summary of the road tube data is included in the appendix. The speed limit throughout the corridor is consistent at 45 mph posted. In general, the speed data indicates a large portion of drivers currently exceed the speed limit (as high as 87% WB between Oster Pkwy and Orchard Hill Dr). However this is also associated with the roadway characteristics of

good access control, relatively straight horizontal alignment, intersection spacing, and generally more capacity currently than demand, other than limitations at a few signalized intersections during peak hours.

Table 4. Road tube speed data summary

Location	Speed Limit (mph)	Eastbound		Westbound	
		Average (mph)	85 th %-ile (mph)	Average (mph)	85 th %-ile (mph)
Between Algonquin Rd & Ashworth Rd	45	51	57	48	55
Between IA 68 & S Main St	45	42	47	45	50
Between Oster Pkwy & Orchard Hill Dr	45	46	52	51	58

Travel Time Data

The travel time data was collected using a GPS device on May 9-10, 2018. That GPS data was then processed using the software *PC-Travel*. Data was collected from 7:30-9:00 AM, 10:30-12:00 PM, and 4:30-6:00 PM. The data collection method involved driving at the speed limit and with the general flow of traffic whenever possible and avoiding stopping in queues for turning vehicles when it is safe to do so. The length of these runs are consistent with each other during each peak hour. Results for each peak hour period are summarized in **Table 5** as well as detailed below. “Delay” in this data is defined as time spent traveling under five mph or stopped.

- *AM Peak - 7:30-9:00 AM*
 - Five travel time runs were collected in each direction (EB and WB).
 - The average travel time was 6 minutes and 43 seconds EB and 6 minutes 32 seconds WB.
 - Rownd St caused the most delay EB (other than the starting intersection of Hudson Rd) with an average of 20 seconds.
 - Hudson Rd caused the most delay WB (other than the starting intersection of Cedar Heights Dr and the non-study intersection of IA 58) with an average of 28 seconds.

- *Midday Peak - 10:30-12:00 PM*
 - Five travel time runs were collected in each direction (EB and WB).
 - The average travel time was 6 minutes and 31 seconds EB and 6 minutes WB.
 - Cedar Heights caused the most delay EB (other than the starting intersection of Hudson Rd and the non-study intersection of IA 58) with an average of 33 seconds.
 - Hudson Rd caused the most delay WB with an average of 42 seconds.

- *PM Peak - 4:30-6:00 PM*
 - Five travel time runs were collected in each direction (EB and WB).
 - The average travel time was 7 minutes and 16 seconds EB and 5 minutes 55 seconds WB.
 - Cedar Heights Dr caused the most delay EB (other than the starting intersection of Hudson Rd and the non-study intersection of IA 58) with an average of 44 seconds.
 - Hudson Rd caused the most delay WB with an average of 36 seconds.

Table 5. Travel Time Summary

Peak	Direction	Average Travel Time (Sec)	Average Total Delay (sec)	Average Number of Stops	Average Speed (mph)*
AM	EB	403	156	3.4	27
	WB	392	149	3.6	28
Midday	EB	391	145	3.6	28
	WB	360	113	2.8	31
PM	EB	437	191	3.2	25
	WB	355	121	2.6	30

* - Includes time spent stopped

General Observations

While driving through the corridor for the travel time runs, several observations were made about the operations of the corridor:

- During the AM and PM peak hour, vehicles turning eastbound left to northbound Main St from Greenhill Rd form a queue past the storage lane in to the eastbound through lane.
- Presence of heavy vehicles, trucks, is greater west of IA 58.
- Noticeable increase in pedestrian traffic at the Main Street intersection during the AM and PM peak hour periods.
- Hudson Rd was the most common stop in all of the travel time runs.
- Side street queues at unsignalized intersections along the corridor were short.
- Overall, there were relatively few stops at study intersections between Hudson Rd and Cedar Heights Dr.

Appendix

- Turning Movement Counts
- Road Tube Counts
- Road Tube Speed Data
- Travel Time Reports



Turning Movement Count Summary

Greenhill Rd & Hudson Rd
 Greenhill Road Traffic Study
 Cedarfalls, IA
 118.0463.01

File Name : 13hr_Greenhill_Hudson_tmc_2018-05-09
 Site Code :
 Start Date : 5/9/2018
 Page No : 1

Groups Printed- Cars+ - Heavy Vehicles

Start Time	Hudson Rd SB					Greenhill Rd WB					Hudson Rd NB					Greenhill Rd EB					Int. Total
	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	
06:00 AM	12	33	0	0	45	24	3	5	0	32	1	8	23	0	32	2	6	1	0	9	118
06:15 AM	21	42	2	1	66	30	2	5	0	37	1	26	32	0	59	4	9	2	0	15	177
06:30 AM	25	54	3	1	83	45	5	5	0	55	0	21	44	0	65	1	18	1	2	22	225
06:45 AM	34	108	2	0	144	60	6	6	0	72	1	44	49	1	95	7	11	2	0	20	331
Total	92	237	7	2	338	159	16	21	0	196	3	99	148	1	251	14	44	6	2	66	851
07:00 AM	23	89	0	0	112	56	2	15	0	73	0	61	53	0	114	6	7	1	1	15	314
07:15 AM	24	106	2	0	132	61	5	18	0	84	0	124	75	0	199	11	9	1	0	21	436
07:30 AM	34	107	5	0	146	76	7	25	0	108	5	112	82	0	199	13	19	6	1	39	492
07:45 AM	27	149	4	0	180	96	8	19	0	123	5	95	84	0	184	13	29	1	0	43	530
Total	108	451	11	0	570	289	22	77	0	388	10	392	294	0	696	43	64	9	2	118	1772
08:00 AM	34	93	8	0	135	61	7	27	0	95	4	81	51	0	136	8	18	5	1	32	398
08:15 AM	38	100	2	0	140	66	1	24	0	91	2	68	73	0	143	42	15	5	0	62	436
08:30 AM	43	85	7	0	135	63	6	19	0	88	3	72	65	0	140	10	14	3	0	27	390
08:45 AM	49	77	9	0	135	68	6	23	0	97	5	61	43	0	109	9	22	3	0	34	375
Total	164	355	26	0	545	258	20	93	0	371	14	282	232	0	528	69	69	16	1	155	1599
09:00 AM	20	77	9	0	106	47	3	30	0	80	3	66	51	0	120	7	13	2	0	22	328
09:15 AM	17	53	5	0	75	44	3	18	0	65	2	61	38	0	101	8	8	2	0	18	259
09:30 AM	22	53	10	0	85	50	9	22	0	81	4	55	33	0	92	6	10	5	0	21	279
09:45 AM	30	71	6	0	107	42	9	22	0	73	2	54	33	0	89	13	8	4	0	25	294
Total	89	254	30	0	373	183	24	92	0	299	11	236	155	0	402	34	39	13	0	86	1160
10:00 AM	25	70	6	1	102	39	5	20	0	64	0	59	37	0	96	8	11	1	0	20	282
10:15 AM	31	70	9	1	111	40	5	23	0	68	3	50	44	0	97	2	15	2	1	20	296
10:30 AM	24	60	6	0	90	42	9	23	0	74	4	53	37	0	94	6	16	5	0	27	285
10:45 AM	34	71	8	0	113	44	9	28	0	81	0	56	42	0	98	9	14	4	0	27	319
Total	114	271	29	2	416	165	28	94	0	287	7	218	160	0	385	25	56	12	1	94	1182
11:00 AM	37	70	4	0	111	39	7	29	0	75	6	90	43	0	139	4	11	4	0	19	344
11:15 AM	27	83	10	0	120	59	15	21	0	95	7	79	50	0	136	12	16	4	0	32	383
11:30 AM	33	81	14	0	128	47	3	19	0	69	2	84	54	0	140	5	11	7	0	23	360
11:45 AM	26	83	12	0	121	47	4	46	1	98	3	106	64	0	173	14	11	1	0	26	418
Total	123	317	40	0	480	192	29	115	1	337	18	359	211	0	588	35	49	16	0	100	1505
12:00 PM	28	97	11	0	136	64	3	30	0	97	5	102	100	0	207	9	10	10	0	29	469
12:15 PM	38	118	9	0	165	48	11	27	0	86	5	75	68	0	148	5	16	6	0	27	426
12:30 PM	31	116	11	0	158	70	7	25	0	102	4	84	43	0	131	10	2	8	0	20	411
12:45 PM	35	94	8	0	137	62	9	40	0	111	3	75	50	0	128	12	14	3	0	29	405
Total	132	425	39	0	596	244	30	122	0	396	17	336	261	0	614	36	42	27	0	105	1711
01:00 PM	32	94	16	0	142	55	10	31	0	96	1	79	47	0	127	6	12	5	0	23	388
01:15 PM	33	103	14	0	150	70	12	25	0	107	4	85	39	0	128	10	7	3	0	20	405
01:30 PM	29	108	6	0	143	65	6	35	0	106	8	94	44	0	146	11	13	7	0	31	426
01:45 PM	31	78	14	0	123	57	9	29	0	95	5	79	47	0	131	11	12	4	1	28	377
Total	125	383	50	0	558	247	37	120	0	404	18	337	177	0	532	38	44	19	1	102	1596
02:00 PM	23	98	10	0	131	87	6	21	0	114	4	114	49	0	167	14	13	3	0	30	442
02:15 PM	38	94	9	0	141	69	17	37	0	123	4	85	79	0	168	12	7	4	0	23	455
02:30 PM	29	118	8	0	155	65	12	39	0	116	3	102	62	0	167	13	9	6	0	28	466
02:45 PM	38	91	10	0	139	65	9	28	0	102	3	112	55	0	170	5	14	6	0	25	436
Total	128	401	37	0	566	286	44	125	0	455	14	413	245	0	672	44	43	19	0	106	1799
03:00 PM	31	109	8	0	148	59	10	37	0	106	2	97	74	0	173	7	18	3	0	28	455
03:15 PM	36	136	13	0	185	76	14	48	0	138	4	108	78	0	190	4	9	2	0	15	528
03:30 PM	36	118	13	0	167	83	10	44	0	137	5	134	86	0	225	11	15	3	0	29	558
03:45 PM	32	99	11	0	142	77	16	47	0	140	9	117	69	0	195	12	17	6	0	35	512
Total	135	462	45	0	642	295	50	176	0	521	20	456	307	0	783	34	59	14	0	107	2053
04:00 PM	39	106	13	0	158	61	19	33	0	113	3	146	109	0	258	8	12	1	0		550



Turning Movement Count Summary

Greenhill Rd & Hudson Rd
 Greenhill Road Traffic Study
 Cedarfalls, IA
 118.0463.01

File Name : 13hr_Greenhill_Hudson_tmc_2018-05-09
 Site Code :
 Start Date : 5/9/2018
 Page No : 2

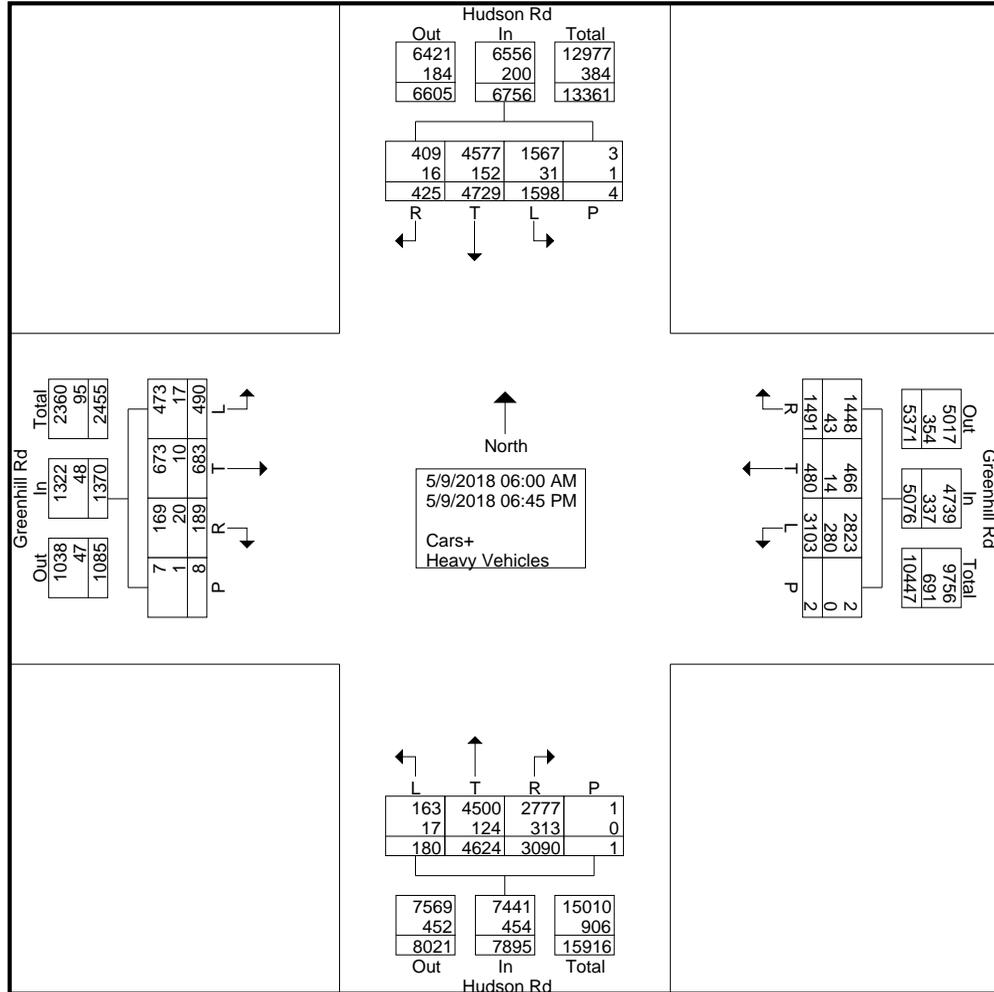
Groups Printed- Cars+ - Heavy Vehicles

Start Time	Hudson Rd SB					Greenhill Rd WB					Hudson Rd NB					Greenhill Rd EB					Int. Total
	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	
04:15 PM	38	110	14	0	162	93	16	43	0	152	4	128	89	0	221	9	23	4	0	36	571
04:30 PM	40	150	7	0	197	63	16	47	0	126	1	154	97	0	252	10	14	2	0	26	601
04:45 PM	36	128	15	0	179	93	19	52	0	164	3	142	101	0	246	16	15	2	0	33	622
Total	153	494	49	0	696	310	70	175	0	555	11	570	396	0	977	43	64	9	0	116	2344
05:00 PM	37	102	11	0	150	87	21	41	0	149	7	149	100	0	256	11	20	2	0	33	588
05:15 PM	31	117	9	0	157	87	13	43	0	143	6	196	95	0	297	7	14	3	0	24	621
05:30 PM	36	112	7	0	155	63	9	37	0	109	5	135	70	0	210	11	15	11	1	38	512
05:45 PM	36	94	8	0	138	56	13	43	0	112	3	110	79	0	192	7	13	2	0	22	464
Total	140	425	35	0	600	293	56	164	0	513	21	590	344	0	955	36	62	18	1	117	2185
06:00 PM	32	62	5	0	99	50	16	38	0	104	3	99	39	0	141	2	14	4	0	20	364
06:15 PM	29	64	6	0	99	54	14	15	0	83	7	79	53	0	139	13	12	2	0	27	348
06:30 PM	15	57	10	0	82	42	13	36	1	92	2	77	38	0	117	7	16	2	0	25	316
06:45 PM	19	71	6	0	96	36	11	28	0	75	4	81	30	0	115	17	6	3	0	26	312
Total	95	254	27	0	376	182	54	117	1	354	16	336	160	0	512	39	48	11	0	98	1340
Grand Total	1598	4729	425	4	6756	3103	480	1491	2	5076	180	4624	3090	1	7895	490	683	189	8	1370	21097
Apprch %	23.7	70	6.3	0.1		61.1	9.5	29.4	0		2.3	58.6	39.1	0		35.8	49.9	13.8	0.6		
Total %	7.6	22.4	2	0	32	14.7	2.3	7.1	0	24.1	0.9	21.9	14.6	0	37.4	2.3	3.2	0.9	0	6.5	
Cars+	1567	4577	409	3	6556	2823	466	1448	2	4739	163	4500	2777	1	7441	473	673	169	7	1322	20058
% Cars+	98.1	96.8	96.2	75	97	91	97.1	97.1	100	93.4	90.6	97.3	89.9	100	94.2	96.5	98.5	89.4	87.5	96.5	95.1
Heavy Vehicles	31	152	16	1	200	280	14	43	0	337	17	124	313	0	454	17	10	20	1	48	1039
% Heavy Vehicles	1.9	3.2	3.8	25	3	9	2.9	2.9	0	6.6	9.4	2.7	10.1	0	5.8	3.5	1.5	10.6	12.5	3.5	4.9

Turning Movement Count Summary

Greenhill Rd & Hudson Rd
 Greenhill Road Traffic Study
 Cedarfalls, IA
 118.0463.01

File Name : 13hr_Greenhill_Hudson_tmc_2018-05-09
 Site Code :
 Start Date : 5/9/2018
 Page No : 3

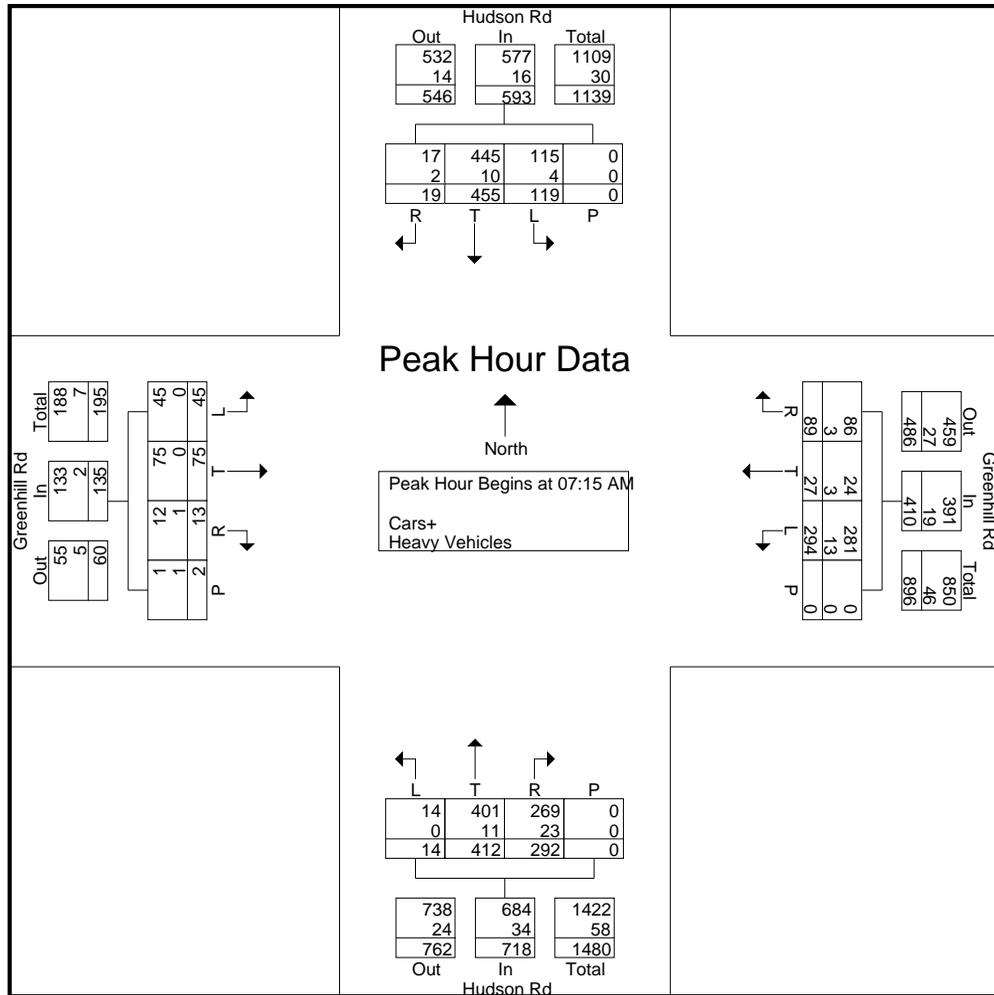


Turning Movement Count Summary

Greenhill Rd & Hudson Rd
 Greenhill Road Traffic Study
 Cedarfalls, IA
 118.0463.01

File Name : 13hr_Greenhill_Hudson_tmc_2018-05-09
 Site Code :
 Start Date : 5/9/2018
 Page No : 4

Start Time	Hudson Rd SB					Greenhill Rd WB					Hudson Rd NB					Greenhill Rd EB					Int. Total
	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	
Peak Hour Analysis From 06:00 AM to 09:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	24	106	2	0	132	61	5	18	0	84	0	124	75	0	199	11	9	1	0	21	436
07:30 AM	34	107	5	0	146	76	7	25	0	108	5	112	82	0	199	13	19	6	1	39	492
07:45 AM	27	149	4	0	180	96	8	19	0	123	5	95	84	0	184	13	29	1	0	43	530
08:00 AM	34	93	8	0	135	61	7	27	0	95	4	81	51	0	136	8	18	5	1	32	398
Total Volume	119	455	19	0	593	294	27	89	0	410	14	412	292	0	718	45	75	13	2	135	1856
% App. Total	20.1	76.7	3.2	0		71.7	6.6	21.7	0		1.9	57.4	40.7	0		33.3	55.6	9.6	1.5		
PHF	.875	.763	.594	.000	.824	.766	.844	.824	.000	.833	.700	.831	.869	.000	.902	.865	.647	.542	.500	.785	.875
Cars+	115	445	17	0	577	281	24	86	0	391	14	401	269	0	684	45	75	12	1	133	1785
% Cars+	96.6	97.8	89.5	0	97.3	95.6	88.9	96.6	0	95.4	100	97.3	92.1	0	95.3	100	100	92.3	50.0	98.5	96.2
Heavy Vehicles	4	10	2	0	16	13	3	3	0	19	0	11	23	0	34	0	0	1	1	2	71
% Heavy Vehicles	3.4	2.2	10.5	0	2.7	4.4	11.1	3.4	0	4.6	0	2.7	7.9	0	4.7	0	0	7.7	50.0	1.5	3.8

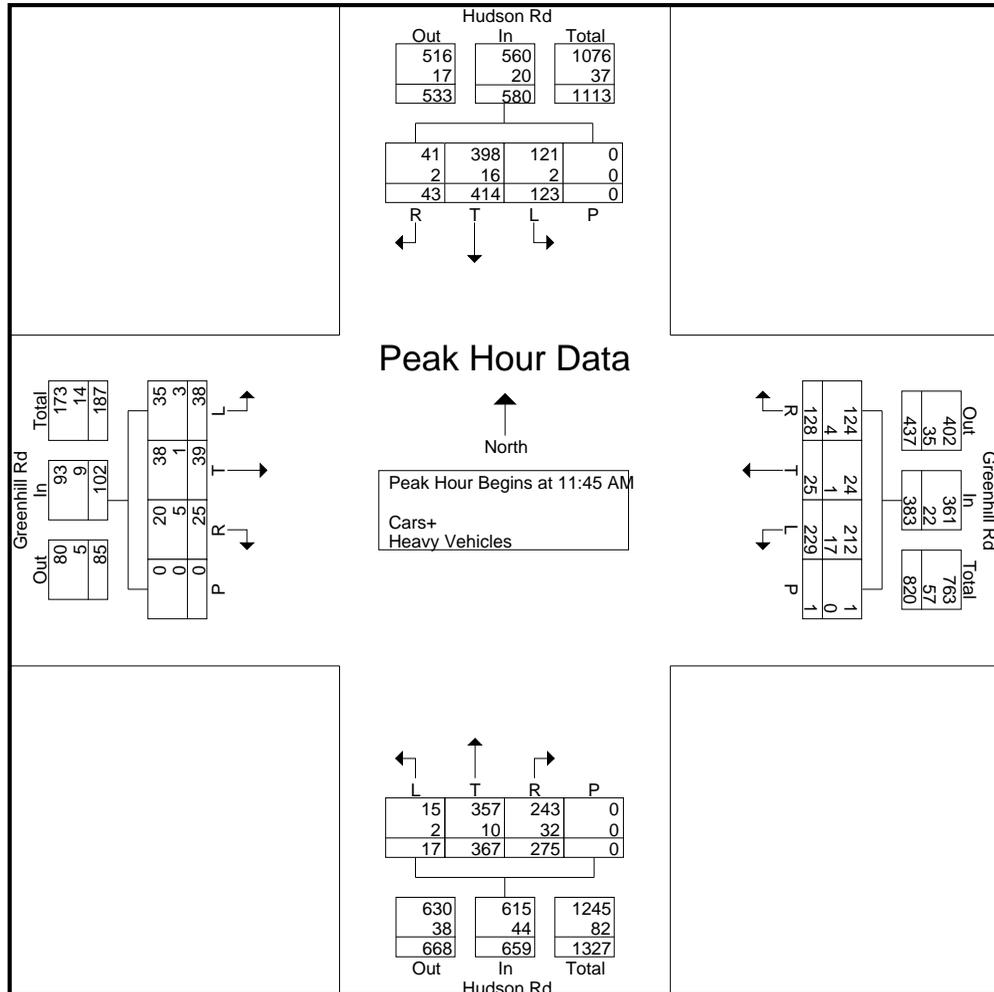


Turning Movement Count Summary

Greenhill Rd & Hudson Rd
 Greenhill Road Traffic Study
 Cedarfalls, IA
 118.0463.01

File Name : 13hr_Greenhill_Hudson_tmc_2018-05-09
 Site Code :
 Start Date : 5/9/2018
 Page No : 5

Start Time	Hudson Rd SB					Greenhill Rd WB					Hudson Rd NB					Greenhill Rd EB					Int. Total
	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 11:45 AM																					
11:45 AM	26	83	12	0	121	47	4	46	1	98	3	106	64	0	173	14	11	1	0	26	418
12:00 PM	28	97	11	0	136	64	3	30	0	97	5	102	100	0	207	9	10	10	0	29	469
12:15 PM	38	118	9	0	165	48	11	27	0	86	5	75	68	0	148	5	16	6	0	27	426
12:30 PM	31	116	11	0	158	70	7	25	0	102	4	84	43	0	131	10	2	8	0	20	411
Total Volume	123	414	43	0	580	229	25	128	1	383	17	367	275	0	659	38	39	25	0	102	1724
% App. Total	21.2	71.4	7.4	0		59.8	6.5	33.4	0.3		2.6	55.7	41.7	0		37.3	38.2	24.5	0		
PHF	.809	.877	.896	.000	.879	.818	.568	.696	.250	.939	.850	.866	.688	.000	.796	.679	.609	.625	.000	.879	.919
Cars+	121	398	41	0	560	212	24	124	1	361	15	357	243	0	615	35	38	20	0	93	1629
% Cars+	98.4	96.1	95.3	0	96.6	92.6	96.0	96.9	100	94.3	88.2	97.3	88.4	0	93.3	92.1	97.4	80.0	0	91.2	94.5
Heavy Vehicles	2	16	2	0	20	17	1	4	0	22	2	10	32	0	44	3	1	5	0	9	95
% Heavy Vehicles	1.6	3.9	4.7	0	3.4	7.4	4.0	3.1	0	5.7	11.8	2.7	11.6	0	6.7	7.9	2.6	20.0	0	8.8	5.5

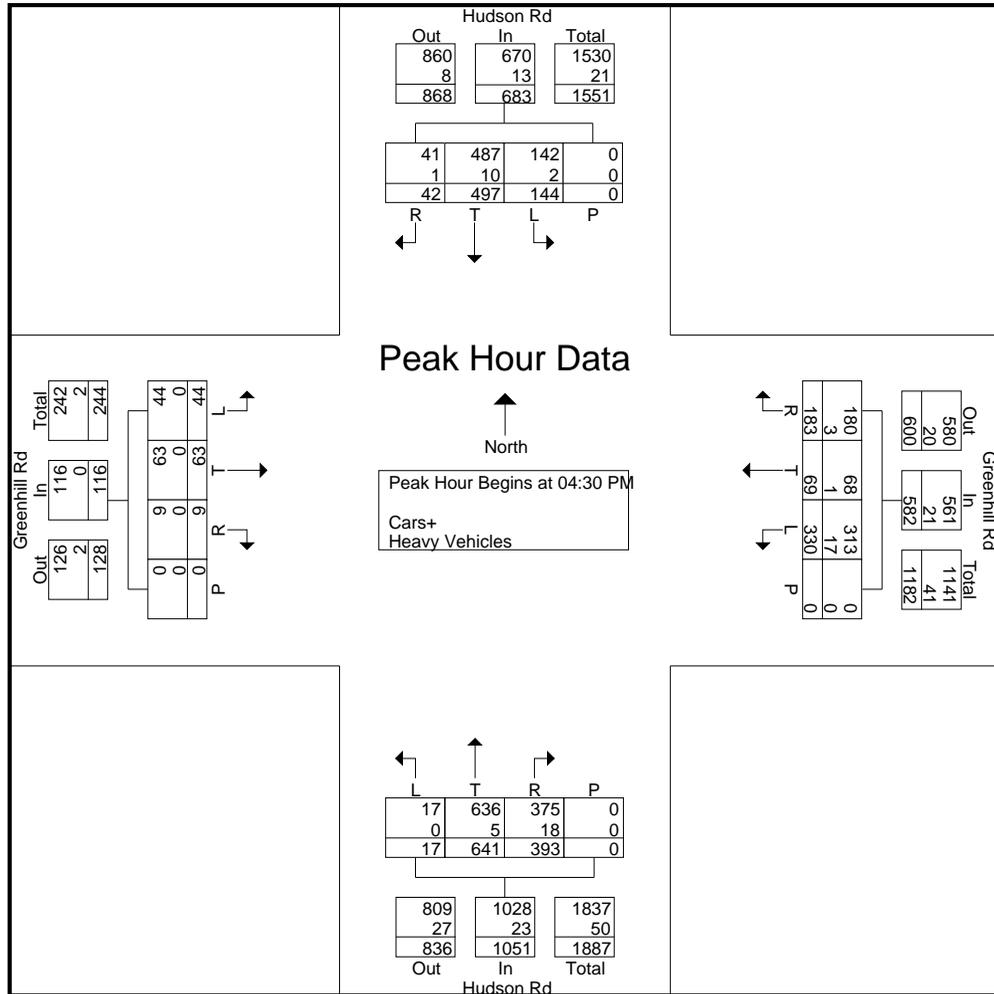


Turning Movement Count Summary

Greenhill Rd & Hudson Rd
 Greenhill Road Traffic Study
 Cedarfalls, IA
 118.0463.01

File Name : 13hr_Greenhill_Hudson_tmc_2018-05-09
 Site Code :
 Start Date : 5/9/2018
 Page No : 6

Start Time	Hudson Rd SB					Greenhill Rd WB					Hudson Rd NB					Greenhill Rd EB					Int. Total
	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	
Peak Hour Analysis From 02:00 PM to 06:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	40	150	7	0	197	63	16	47	0	126	1	154	97	0	252	10	14	2	0	26	601
04:45 PM	36	128	15	0	179	93	19	52	0	164	3	142	101	0	246	16	15	2	0	33	622
05:00 PM	37	102	11	0	150	87	21	41	0	149	7	149	100	0	256	11	20	2	0	33	588
05:15 PM	31	117	9	0	157	87	13	43	0	143	6	196	95	0	297	7	14	3	0	24	621
Total Volume	144	497	42	0	683	330	69	183	0	582	17	641	393	0	1051	44	63	9	0	116	2432
% App. Total	21.1	72.8	6.1	0		56.7	11.9	31.4	0		1.6	61	37.4	0		37.9	54.3	7.8	0		
PHF	.900	.828	.700	.000	.867	.887	.821	.880	.000	.887	.607	.818	.973	.000	.885	.688	.788	.750	.000	.879	.977
Cars+	142	487	41	0	670	313	68	180	0	561	17	636	375	0	1028	44	63	9	0	116	2375
% Cars+	98.6	98.0	97.6	0	98.1	94.8	98.6	98.4	0	96.4	100	99.2	95.4	0	97.8	100	100	100	0	100	97.7
Heavy Vehicles	2	10	1	0	13	17	1	3	0	21	0	5	18	0	23	0	0	0	0	0	57
% Heavy Vehicles	1.4	2.0	2.4	0	1.9	5.2	1.4	1.6	0	3.6	0	0.8	4.6	0	2.2	0	0	0	0	0	2.3





Turning Movement Count Summary

Greenhill Rd & Algonquin Rd
 Greenhill Road Traffic Study
 Cedarfalls, IA
 118.0463.01

File Name : 13hr_Greenhill_Algonquin_tmc_2018-05-09
 Site Code :
 Start Date : 5/9/2018
 Page No : 1

Groups Printed- Cars+ - Heavy Vehicles

Start Time	Algonquin Rd SB					Greenhill Rd WB					Algonquin Rd NB					Greenhill Rd EB					Int. Total
	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	
06:00 AM	0	0	0	0	0	6	28	0	0	34	5	0	6	0	11	0	35	7	0	42	87
06:15 AM	0	0	0	0	0	4	41	0	0	45	10	0	5	0	15	0	58	7	0	65	125
06:30 AM	0	0	0	0	0	4	47	0	0	51	4	0	5	0	9	0	91	7	0	98	158
06:45 AM	0	0	0	0	0	11	70	0	0	81	6	0	8	2	16	0	83	9	0	92	189
Total	0	0	0	0	0	25	186	0	0	211	25	0	24	2	51	0	267	30	0	297	559
07:00 AM	0	0	0	0	0	15	65	0	0	80	9	0	16	0	25	0	66	9	0	75	180
07:15 AM	0	0	1	0	1	6	81	0	0	87	9	0	6	0	15	0	113	9	0	122	225
07:30 AM	0	0	0	0	0	8	113	0	0	121	10	0	13	0	23	0	120	14	0	134	278
07:45 AM	0	0	0	0	0	8	106	0	0	114	8	0	11	0	19	1	130	8	0	139	272
Total	0	0	1	0	1	37	365	0	0	402	36	0	46	0	82	1	429	40	0	470	955
08:00 AM	0	0	0	0	0	13	74	0	0	87	14	0	8	0	22	0	93	7	0	100	209
08:15 AM	0	0	0	0	0	15	87	0	0	102	6	0	14	0	20	0	113	13	0	126	248
08:30 AM	0	0	0	0	0	11	80	0	0	91	17	0	11	0	28	0	111	10	0	121	240
08:45 AM	0	0	0	0	0	12	88	0	0	100	8	0	5	0	13	0	101	12	0	113	226
Total	0	0	0	0	0	51	329	0	0	380	45	0	38	0	83	0	418	42	0	460	923
09:00 AM	0	0	1	0	1	7	69	0	0	76	7	1	7	0	15	0	69	7	0	76	168
09:15 AM	0	0	0	0	0	16	53	0	0	69	11	0	3	0	14	0	53	5	0	58	141
09:30 AM	0	0	0	0	0	10	56	0	0	66	16	0	6	0	22	0	60	7	0	67	155
09:45 AM	0	0	0	0	0	11	75	0	0	86	6	0	12	0	18	0	66	5	0	71	175
Total	0	0	1	0	1	44	253	0	0	297	40	1	28	0	69	0	248	24	0	272	639
10:00 AM	0	0	0	0	0	6	49	0	0	55	13	0	11	0	24	0	70	12	0	82	161
10:15 AM	0	0	0	0	0	8	62	0	0	70	10	0	12	0	22	0	73	10	0	83	175
10:30 AM	0	0	0	0	0	7	71	0	0	78	5	0	9	0	14	0	70	14	0	84	176
10:45 AM	0	0	0	0	0	15	71	0	0	86	10	0	8	0	18	0	77	9	0	86	190
Total	0	0	0	0	0	36	253	0	0	289	38	0	40	0	78	0	290	45	0	335	702
11:00 AM	0	0	0	0	0	15	63	0	0	78	10	0	10	0	20	0	82	15	0	97	195
11:15 AM	0	0	0	0	0	5	84	0	0	89	15	0	18	0	33	0	82	14	0	96	218
11:30 AM	0	0	0	0	0	14	61	0	0	75	6	0	9	1	16	0	84	12	0	96	187
11:45 AM	0	0	0	0	0	18	84	0	0	102	17	0	12	0	29	0	90	19	0	109	240
Total	0	0	0	0	0	52	292	0	0	344	48	0	49	1	98	0	338	60	0	398	840
12:00 PM	0	0	0	0	0	13	79	0	0	92	17	0	14	0	31	0	96	33	0	129	252
12:15 PM	0	0	0	0	0	12	88	0	0	100	15	0	17	0	32	0	99	15	0	114	246
12:30 PM	0	0	0	0	0	19	67	0	0	86	9	0	18	0	27	0	75	11	0	86	199
12:45 PM	0	0	0	0	0	12	94	0	0	106	19	0	14	0	33	0	90	12	0	102	241
Total	0	0	0	0	0	56	328	0	0	384	60	0	63	0	123	0	360	71	0	431	938
01:00 PM	0	0	0	0	0	8	92	0	0	100	9	1	6	0	16	0	69	9	0	78	194
01:15 PM	0	0	0	0	0	21	95	0	0	116	17	0	9	0	26	0	64	18	0	82	224
01:30 PM	0	0	0	0	0	15	93	0	0	108	18	0	19	0	37	0	75	7	0	82	227
01:45 PM	0	0	0	0	0	15	80	0	0	95	9	0	7	0	16	0	92	10	0	102	213
Total	0	0	0	0	0	59	360	0	0	419	53	1	41	0	95	0	300	44	0	344	858
02:00 PM	0	0	0	0	0	12	115	0	0	127	8	0	14	0	22	0	84	12	0	96	245
02:15 PM	0	0	0	0	0	17	112	0	0	129	11	1	11	0	23	0	115	13	0	128	280
02:30 PM	0	0	0	0	0	16	92	0	0	108	16	0	11	0	27	0	90	13	0	103	238
02:45 PM	0	0	0	0	0	15	91	0	0	106	11	0	12	0	23	0	92	15	0	107	236
Total	0	0	0	0	0	60	410	0	0	470	46	1	48	0	95	0	381	53	0	434	999
03:00 PM	0	0	0	0	0	25	95	0	0	120	16	0	9	0	25	0	108	14	0	122	267
03:15 PM	0	0	0	0	0	12	129	0	0	141	12	0	11	0	23	0	105	13	0	118	282
03:30 PM	0	0	0	0	0	23	127	0	0	150	11	0	14	0	25	0	139	12	0	151	326
03:45 PM	0	0	0	0	0	11	128	0	0	139	13	0	14	0	27	0	108	13	0	121	287
Total	0	0	0	0	0	71	479	0	0	550	52	0	48	0	100	0	460	52	0	512	1162
04:00 PM	0	0	0	0	0	17	125	0	0	142	7	0	20	0	27	0	153	17	0		339



Turning Movement Count Summary

Greenhill Rd & Algonquin Rd
 Greenhill Road Traffic Study
 Cedarfalls, IA
 118.0463.01

File Name : 13hr_Greenhill_Algonquin_tmc_2018-05-09
 Site Code :
 Start Date : 5/9/2018
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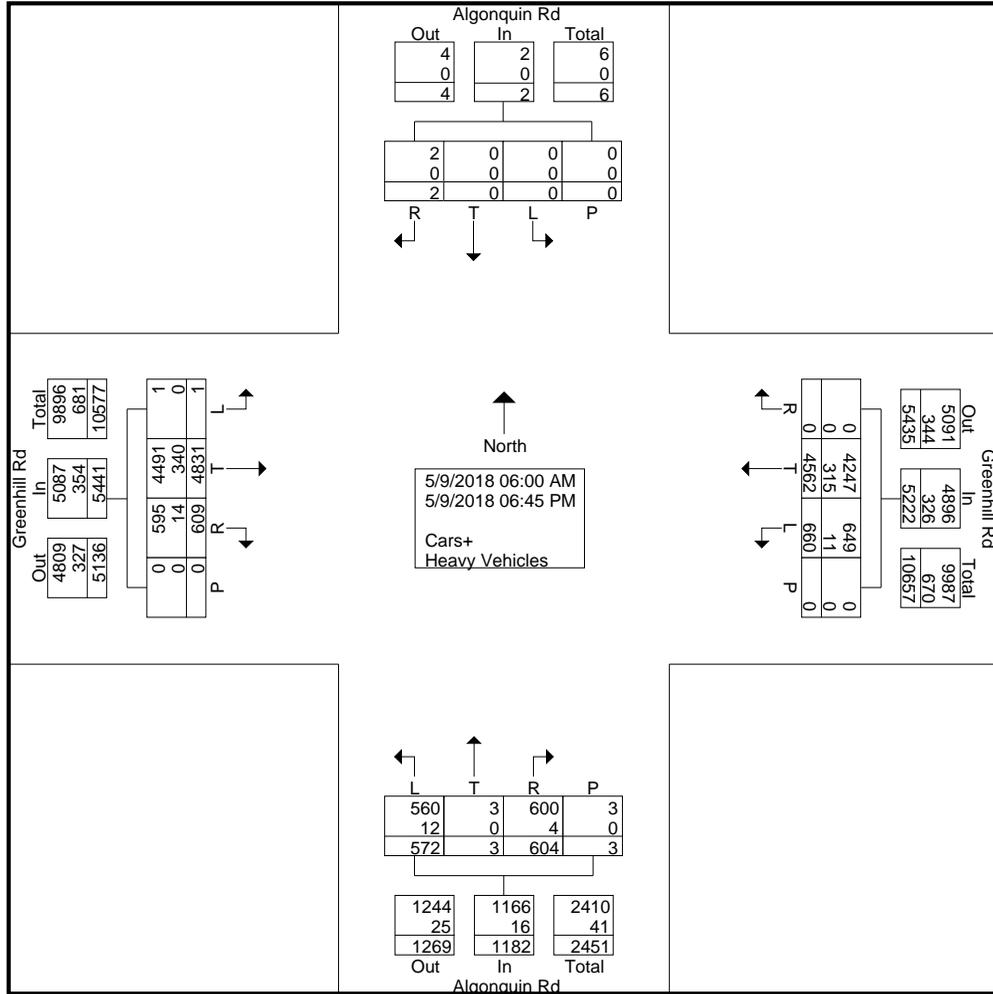
Groups Printed- Cars+ - Heavy Vehicles

Start Time	Algonquin Rd SB					Greenhill Rd WB					Algonquin Rd NB					Greenhill Rd EB					Int. Total
	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	
04:15 PM	0	0	0	0	0	13	138	0	0	151	8	0	16	0	24	0	137	11	0	148	323
04:30 PM	0	0	0	0	0	24	127	0	0	151	12	0	15	0	27	0	137	17	0	154	332
04:45 PM	0	0	0	0	0	15	146	0	0	161	14	0	26	0	40	0	147	9	0	156	357
Total	0	0	0	0	0	69	536	0	0	605	41	0	77	0	118	0	574	54	0	628	1351
05:00 PM	0	0	0	0	0	15	146	0	0	161	10	0	24	0	34	0	138	14	0	152	347
05:15 PM	0	0	0	0	0	14	124	0	0	138	14	0	20	0	34	0	128	7	0	135	307
05:30 PM	0	0	0	0	0	14	107	0	0	121	6	0	8	0	14	0	118	10	0	128	263
05:45 PM	0	0	0	0	0	10	90	0	0	100	8	0	13	0	21	0	102	18	0	120	241
Total	0	0	0	0	0	53	467	0	0	520	38	0	65	0	103	0	486	49	0	535	1158
06:00 PM	0	0	0	0	0	17	96	0	0	113	13	0	14	0	27	0	81	14	0	95	235
06:15 PM	0	0	0	0	0	13	69	0	0	82	12	0	9	0	21	0	81	12	0	93	196
06:30 PM	0	0	0	0	0	9	82	0	0	91	13	0	8	0	21	0	65	5	0	70	182
06:45 PM	0	0	0	0	0	8	57	0	0	65	12	0	6	0	18	0	53	14	0	67	150
Total	0	0	0	0	0	47	304	0	0	351	50	0	37	0	87	0	280	45	0	325	763
Grand Total	0	0	2	0	2	660	4562	0	0	5222	572	3	604	3	1182	1	4831	609	0	5441	11847
Apprch %	0	0	100	0		12.6	87.4	0	0		48.4	0.3	51.1	0.3		0	88.8	11.2	0		
Total %	0	0	0	0	0	5.6	38.5	0	0	44.1	4.8	0	5.1	0	10	0	40.8	5.1	0	45.9	
Cars+	0	0	2	0	2	649	4247	0	0	4896	560	3	600	3	1166	1	4491	595	0	5087	11151
% Cars+	0	0	100	0	100	98.3	93.1	0	0	93.8	97.9	100	99.3	100	98.6	100	93	97.7	0	93.5	94.1
Heavy Vehicles	0	0	0	0	0	11	315	0	0	326	12	0	4	0	16	0	340	14	0	354	696
% Heavy Vehicles	0	0	0	0	0	1.7	6.9	0	0	6.2	2.1	0	0.7	0	1.4	0	7	2.3	0	6.5	5.9

Turning Movement Count Summary

Greenhill Rd & Algonquin Rd
 Greenhill Road Traffic Study
 Cedarfalls, IA
 118.0463.01

File Name : 13hr_Greenhill_Algonquin_tmc_2018-05-09
 Site Code :
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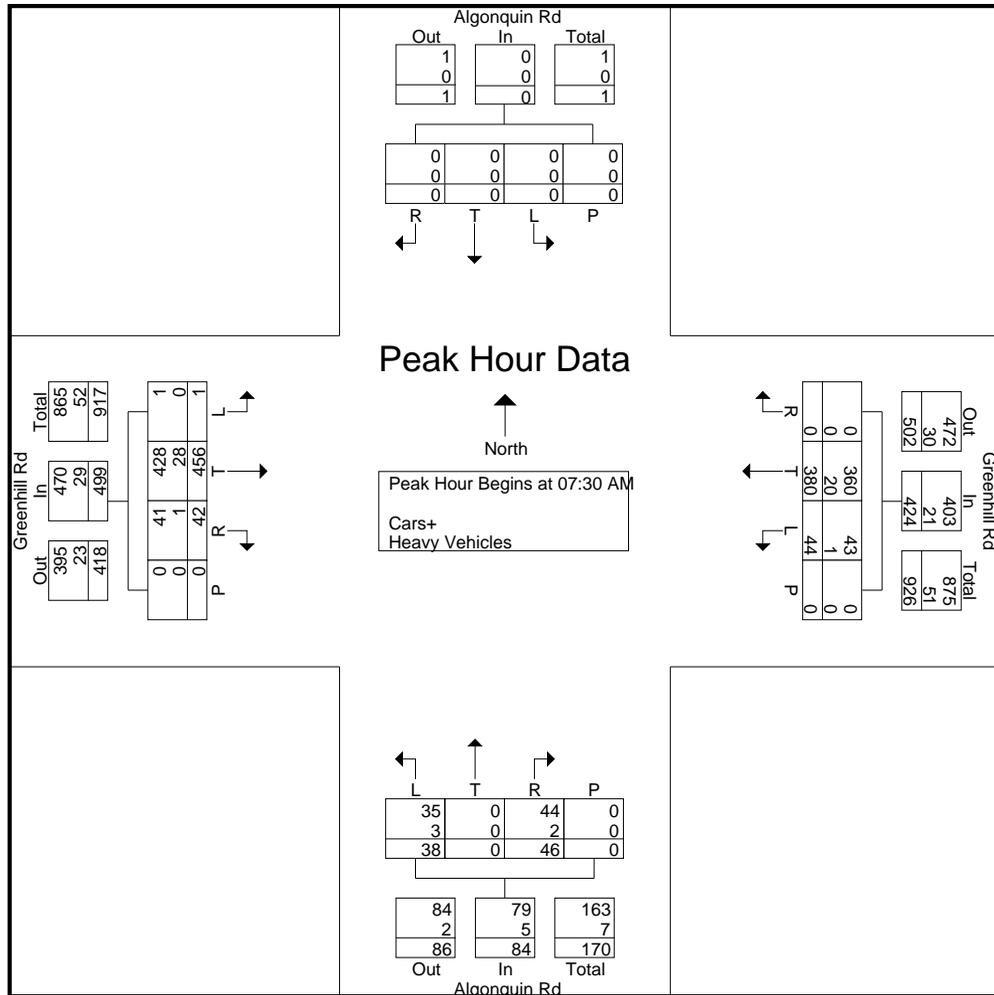


Turning Movement Count Summary

Greenhill Rd & Algonquin Rd
 Greenhill Road Traffic Study
 Cedarfalls, IA
 118.0463.01

File Name : 13hr_Greenhill_Algonquin_tmc_2018-05-09
 Site Code :
 Start Date : 5/9/2018
 Page No : 4

Start Time	Algonquin Rd SB					Greenhill Rd WB					Algonquin Rd NB					Greenhill Rd EB					Int. Total
	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	
Peak Hour Analysis From 06:00 AM to 09:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	0	0	0	0	0	8	113	0	0	121	10	0	13	0	23	0	120	14	0	134	278
07:45 AM	0	0	0	0	0	8	106	0	0	114	8	0	11	0	19	1	130	8	0	139	272
08:00 AM	0	0	0	0	0	13	74	0	0	87	14	0	8	0	22	0	93	7	0	100	209
08:15 AM	0	0	0	0	0	15	87	0	0	102	6	0	14	0	20	0	113	13	0	126	248
Total Volume	0	0	0	0	0	44	380	0	0	424	38	0	46	0	84	1	456	42	0	499	1007
% App. Total	0	0	0	0	0	10.4	89.6	0	0		45.2	0	54.8	0		0.2	91.4	8.4	0		
PHF	.000	.000	.000	.000	.000	.733	.841	.000	.000	.876	.679	.000	.821	.000	.913	.250	.877	.750	.000	.897	.906
Cars+	0	0	0	0	0	43	360	0	0	403	35	0	44	0	79	1	428	41	0	470	952
% Cars+	0	0	0	0	0	97.7	94.7	0	0	95.0	92.1	0	95.7	0	94.0	100	93.9	97.6	0	94.2	94.5
Heavy Vehicles	0	0	0	0	0	1	20	0	0	21	3	0	2	0	5	0	28	1	0	29	55
% Heavy Vehicles	0	0	0	0	0	2.3	5.3	0	0	5.0	7.9	0	4.3	0	6.0	0	6.1	2.4	0	5.8	5.5

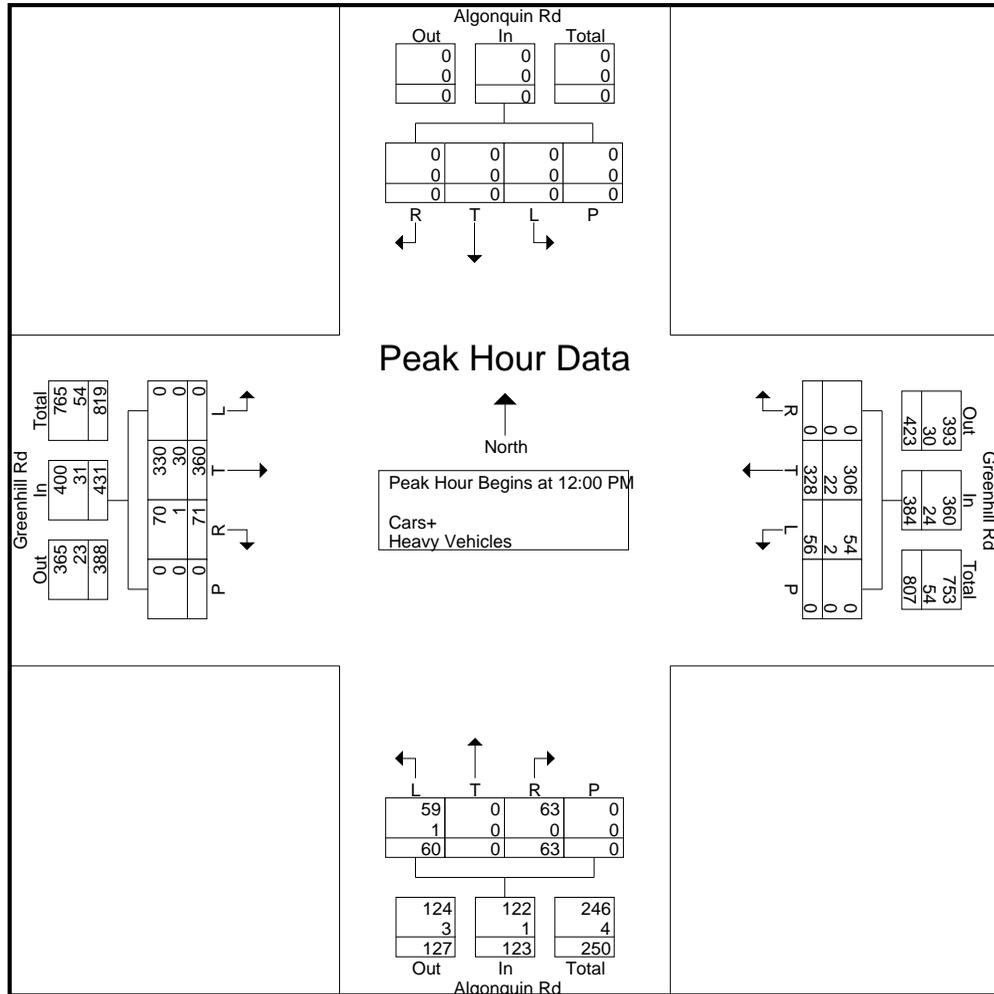


Turning Movement Count Summary

Greenhill Rd & Algonquin Rd
 Greenhill Road Traffic Study
 Cedarfalls, IA
 118.0463.01

File Name : 13hr_Greenhill_Algonquin_tmc_2018-05-09
 Site Code :
 Start Date : 5/9/2018
 Page No : 5

Start Time	Algonquin Rd SB					Greenhill Rd WB					Algonquin Rd NB					Greenhill Rd EB					Int. Total
	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 12:00 PM																					
12:00 PM	0	0	0	0	0	13	79	0	0	92	17	0	14	0	31	0	96	33	0	129	252
12:15 PM	0	0	0	0	0	12	88	0	0	100	15	0	17	0	32	0	99	15	0	114	246
12:30 PM	0	0	0	0	0	19	67	0	0	86	9	0	18	0	27	0	75	11	0	86	199
12:45 PM	0	0	0	0	0	12	94	0	0	106	19	0	14	0	33	0	90	12	0	102	241
Total Volume	0	0	0	0	0	56	328	0	0	384	60	0	63	0	123	0	360	71	0	431	938
% App. Total	0	0	0	0	0	14.6	85.4	0	0	0	48.8	0	51.2	0	0	0	83.5	16.5	0	0	0
PHF	.000	.000	.000	.000	.000	.737	.872	.000	.000	.906	.789	.000	.875	.000	.932	.000	.909	.538	.000	.835	.931
Cars+	0	0	0	0	0	54	306	0	0	360	59	0	63	0	122	0	330	70	0	400	882
% Cars+	0	0	0	0	0	96.4	93.3	0	0	93.8	98.3	0	100	0	99.2	0	91.7	98.6	0	92.8	94.0
Heavy Vehicles	0	0	0	0	0	2	22	0	0	24	1	0	0	0	1	0	30	1	0	31	56
% Heavy Vehicles	0	0	0	0	0	3.6	6.7	0	0	6.3	1.7	0	0	0	0.8	0	8.3	1.4	0	7.2	6.0

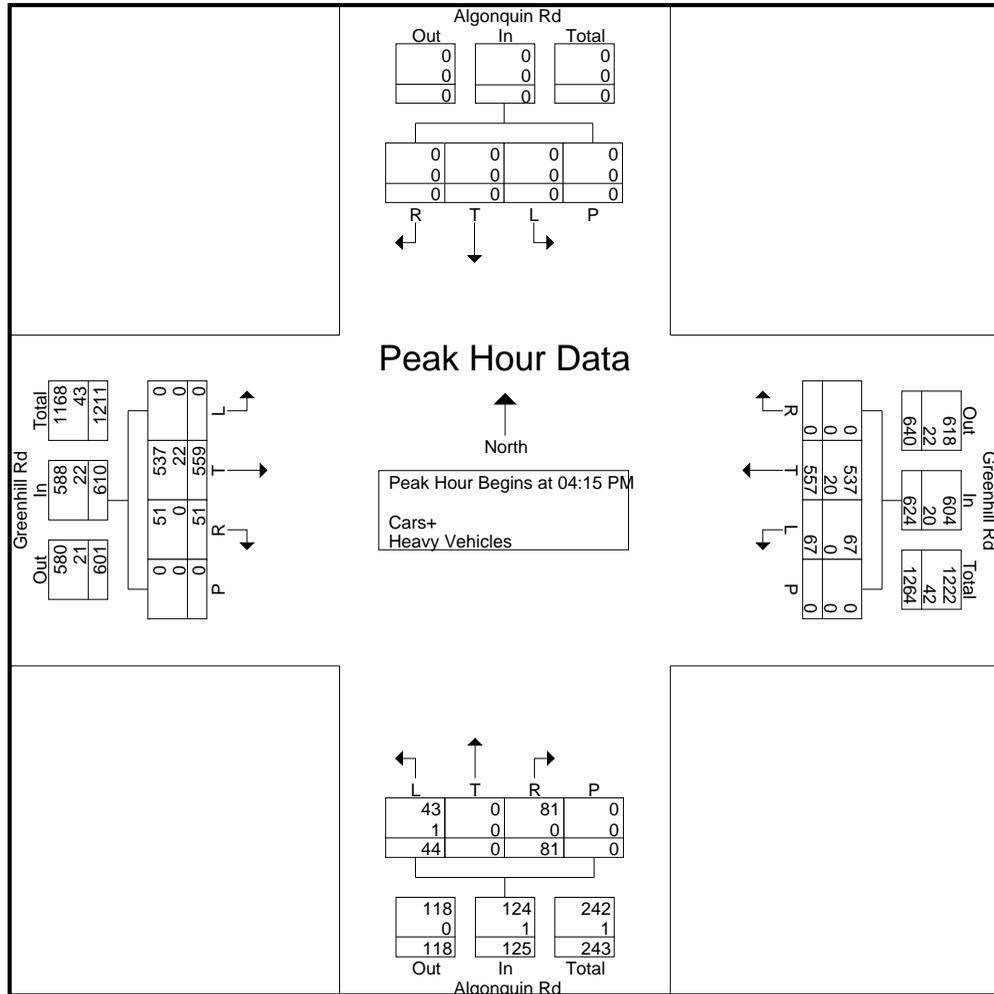


Turning Movement Count Summary

Greenhill Rd & Algonquin Rd
 Greenhill Road Traffic Study
 Cedarfalls, IA
 118.0463.01

File Name : 13hr_Greenhill_Algonquin_tmc_2018-05-09
 Site Code :
 Start Date : 5/9/2018
 Page No : 6

Start Time	Algonquin Rd SB					Greenhill Rd WB					Algonquin Rd NB					Greenhill Rd EB					Int. Total
	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	
Peak Hour Analysis From 02:00 PM to 06:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:15 PM																					
04:15 PM	0	0	0	0	0	13	138	0	0	151	8	0	16	0	24	0	137	11	0	148	323
04:30 PM	0	0	0	0	0	24	127	0	0	151	12	0	15	0	27	0	137	17	0	154	332
04:45 PM	0	0	0	0	0	15	146	0	0	161	14	0	26	0	40	0	147	9	0	156	357
05:00 PM	0	0	0	0	0	15	146	0	0	161	10	0	24	0	34	0	138	14	0	152	347
Total Volume	0	0	0	0	0	67	557	0	0	624	44	0	81	0	125	0	559	51	0	610	1359
% App. Total	0	0	0	0	0	10.7	89.3	0	0	96.9	35.2	0	64.8	0	78.1	0	91.6	8.4	0	97.8	95.2
PHF	.000	.000	.000	.000	.000	.698	.954	.000	.000	.969	.786	.000	.779	.000	.781	.000	.951	.750	.000	.978	.952
Cars+	0	0	0	0	0	67	537	0	0	604	43	0	81	0	124	0	537	51	0	588	1316
% Cars+	0	0	0	0	0	100	96.4	0	0	96.8	97.7	0	100	0	99.2	0	96.1	100	0	96.4	96.8
Heavy Vehicles	0	0	0	0	0	0	20	0	0	20	1	0	0	0	1	0	22	0	0	22	43
% Heavy Vehicles	0	0	0	0	0	0	3.6	0	0	3.2	2.3	0	0	0	0.8	0	3.9	0	0	3.6	3.2





Turning Movement Count Summary

Greenhill Rd & Ashworth Rd
 Greenhill Road Traffic Study
 Cedarfalls, IA
 118.0463.01

File Name : 13hr_Greenhill_Ashworth_tmc_2018-05-09
 Site Code :
 Start Date : 5/9/2018
 Page No : 1

Groups Printed- Cars+ - Heavy Vehicles

Start Time	Ashworth Rd SB					Greenhill Rd WB					Ashworth Rd NB					Greenhill Rd EB					Int. Total
	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	
06:00 AM	0	0	0	0	0	4	33	0	0	37	1	0	10	0	11	0	40	1	0	41	89
06:15 AM	0	0	0	0	0	7	45	0	0	52	1	0	19	0	20	0	60	0	0	60	132
06:30 AM	0	0	0	0	0	10	52	0	0	62	0	0	23	0	23	0	91	0	0	91	176
06:45 AM	0	0	0	0	0	11	79	0	0	90	1	0	31	0	32	0	91	1	0	92	214
Total	0	0	0	0	0	32	209	0	0	241	3	0	83	0	86	0	282	2	0	284	611
07:00 AM	0	0	0	0	0	6	81	0	0	87	2	0	42	0	44	0	85	0	0	85	216
07:15 AM	0	0	0	0	0	5	85	0	0	90	3	0	38	0	41	0	118	0	0	118	249
07:30 AM	0	0	0	0	0	12	116	0	0	128	1	0	48	0	49	0	130	0	0	130	307
07:45 AM	0	0	0	0	0	9	109	0	0	118	3	0	49	0	52	0	139	0	0	139	309
Total	0	0	0	0	0	32	391	0	0	423	9	0	177	0	186	0	472	0	0	472	1081
08:00 AM	0	0	0	0	0	8	83	0	0	91	2	0	34	0	36	0	99	1	0	100	227
08:15 AM	0	0	0	0	0	9	94	0	0	103	2	0	29	0	31	0	124	1	0	125	259
08:30 AM	0	0	0	0	0	7	84	0	0	91	3	0	22	0	25	0	118	0	0	118	234
08:45 AM	0	0	0	0	0	9	101	0	0	110	0	0	20	0	20	0	105	1	0	106	236
Total	0	0	0	0	0	33	362	0	0	395	7	0	105	0	112	0	446	3	0	449	956
09:00 AM	0	0	0	0	0	6	76	0	0	82	0	0	8	0	8	0	77	0	0	77	167
09:15 AM	0	0	0	0	0	4	65	0	0	69	2	0	9	0	11	0	54	2	0	56	136
09:30 AM	0	0	0	0	0	4	66	0	0	70	0	0	9	0	9	0	64	1	0	65	144
09:45 AM	0	0	0	0	0	8	85	0	0	93	1	0	8	0	9	0	78	0	0	78	180
Total	0	0	0	0	0	22	292	0	0	314	3	0	34	0	37	0	273	3	0	276	627
10:00 AM	0	0	0	0	0	11	53	0	0	64	1	0	13	0	14	0	80	0	0	80	158
10:15 AM	0	0	0	0	0	7	69	0	0	76	1	0	7	0	8	0	84	0	0	84	168
10:30 AM	0	0	0	0	0	14	82	0	0	96	1	0	6	0	7	0	75	0	0	75	178
10:45 AM	0	0	0	0	0	7	76	0	0	83	0	0	14	0	14	0	86	1	0	87	184
Total	0	0	0	0	0	39	280	0	0	319	3	0	40	0	43	0	325	1	0	326	688
11:00 AM	0	0	0	0	0	9	77	0	1	87	2	0	13	0	15	0	87	2	0	89	191
11:15 AM	0	0	0	0	0	18	89	0	0	107	0	0	13	0	13	0	97	0	0	97	217
11:30 AM	0	0	0	0	0	20	75	0	0	95	4	0	15	1	20	0	95	1	1	97	212
11:45 AM	0	0	0	0	0	13	103	0	0	116	2	0	17	0	19	0	101	0	0	101	236
Total	0	0	0	0	0	60	344	0	1	405	8	0	58	1	67	0	380	3	1	384	856
12:00 PM	0	0	0	0	0	25	83	0	0	108	5	0	9	0	14	0	111	0	0	111	233
12:15 PM	0	0	0	0	0	12	99	0	0	111	0	0	20	0	20	0	116	2	0	118	249
12:30 PM	0	0	0	0	0	11	85	0	0	96	2	0	14	0	16	0	87	1	0	88	200
12:45 PM	0	0	0	0	0	17	106	0	0	123	3	0	27	0	30	0	101	5	0	106	259
Total	0	0	0	0	0	65	373	0	0	438	10	0	70	0	80	0	415	8	0	423	941
01:00 PM	0	0	0	0	0	15	99	0	0	114	4	0	11	0	15	0	75	2	0	77	206
01:15 PM	0	0	0	0	0	17	111	0	0	128	1	0	20	0	21	0	72	1	0	73	222
01:30 PM	0	0	0	0	0	9	110	0	0	119	1	0	11	0	12	0	91	0	0	91	222
01:45 PM	0	0	0	0	0	8	54	0	0	62	0	0	11	0	11	0	48	0	0	48	121
Total	0	0	0	0	0	49	374	0	0	423	6	0	53	0	59	0	286	3	0	289	771
02:00 PM	0	0	0	0	0	14	127	0	0	141	0	0	10	0	10	0	95	2	0	97	248
02:15 PM	0	0	0	0	0	15	122	0	0	137	3	0	10	0	13	0	120	0	0	120	270
02:30 PM	0	0	0	0	0	19	114	0	0	133	0	0	11	0	11	0	101	3	0	104	248
02:45 PM	0	0	0	0	0	17	107	0	0	124	1	0	18	0	19	0	103	3	0	106	249
Total	0	0	0	0	0	65	470	0	0	535	4	0	49	0	53	0	419	8	0	427	1015
03:00 PM	0	0	0	0	0	15	116	0	0	131	1	0	13	0	14	0	116	2	0	118	263
03:15 PM	0	0	0	0	0	30	134	0	0	164	4	0	23	0	27	0	110	5	0	115	306
03:30 PM	0	0	0	0	0	18	144	0	0	162	2	0	12	0	14	0	154	1	0	155	331
03:45 PM	0	0	0	0	0	29	140	0	0	169	1	0	14	0	15	0	116	2	0	118	302
Total	0	0	0	0	0	92	534	0	0	626	8	0	62	0	70	0	496	10	0	506	1202
04:00 PM	0	0	0	0	0	26	139	0	0	165	1	0	26	0	27	0	173	1	0	174	366



Turning Movement Count Summary

Greenhill Rd & Ashworth Rd
 Greenhill Road Traffic Study
 Cedarfalls, IA
 118.0463.01

File Name : 13hr_Greenhill_Ashworth_tmc_2018-05-09
 Site Code :
 Start Date : 5/9/2018
 Page No : 2

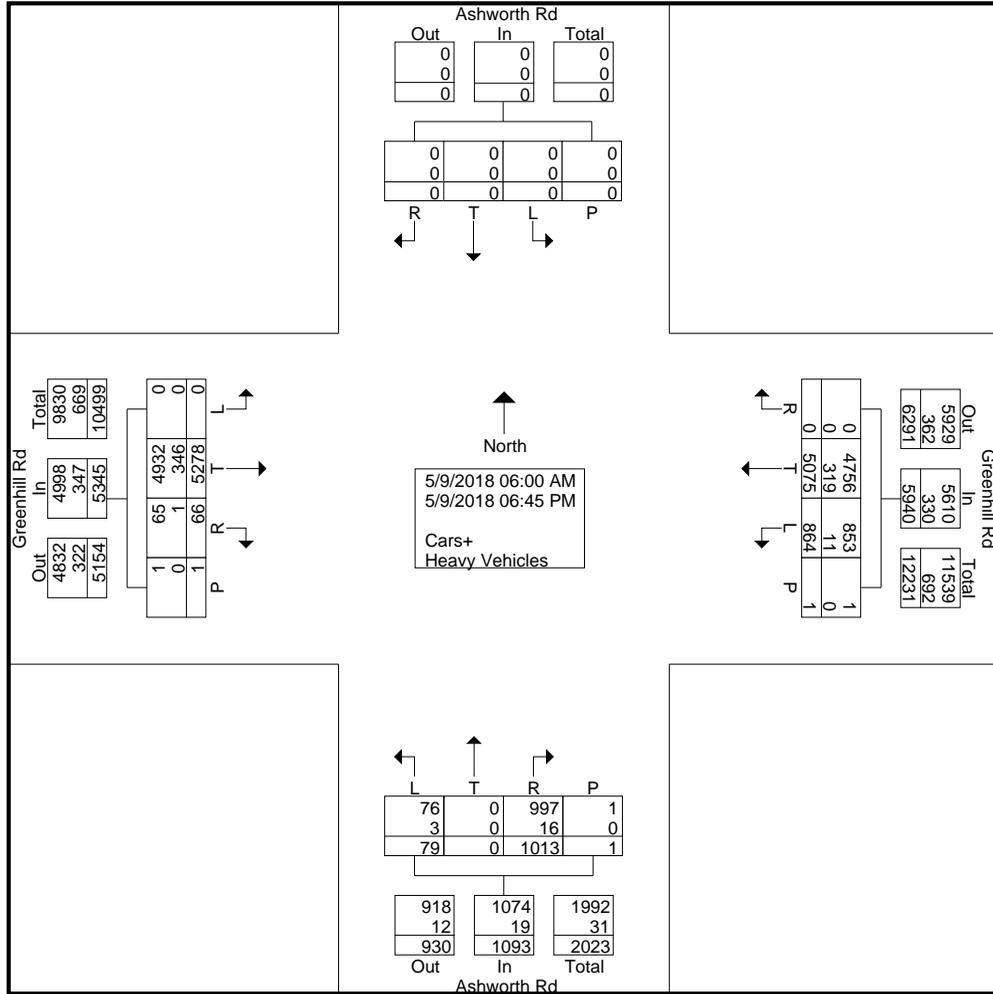
Groups Printed- Cars+ - Heavy Vehicles

Start Time	Ashworth Rd SB					Greenhill Rd WB					Ashworth Rd NB					Greenhill Rd EB					Int. Total
	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	
04:15 PM	0	0	0	0	0	38	142	0	0	180	2	0	27	0	29	0	150	0	0	150	359
04:30 PM	0	0	0	0	0	47	156	0	0	203	2	0	21	0	23	0	144	3	0	147	373
04:45 PM	0	0	0	0	0	34	155	0	0	189	1	0	35	0	36	0	169	2	0	171	396
Total	0	0	0	0	0	145	592	0	0	737	6	0	109	0	115	0	636	6	0	642	1494
05:00 PM	0	0	0	0	0	32	154	0	0	186	1	0	34	0	35	0	163	2	0	165	386
05:15 PM	0	0	0	0	0	39	135	0	0	174	3	0	21	0	24	0	145	4	0	149	347
05:30 PM	0	0	0	0	0	42	122	0	0	164	2	0	22	0	24	0	121	2	0	123	311
05:45 PM	0	0	0	0	0	28	102	0	0	130	3	0	21	0	24	0	117	4	0	121	275
Total	0	0	0	0	0	141	513	0	0	654	9	0	98	0	107	0	546	12	0	558	1319
06:00 PM	0	0	0	0	0	28	107	0	0	135	0	0	22	0	22	0	91	1	0	92	249
06:15 PM	0	0	0	0	0	21	82	0	0	103	1	0	25	0	26	0	88	1	0	89	218
06:30 PM	0	0	0	0	0	20	88	0	0	108	2	0	10	0	12	0	68	5	0	73	193
06:45 PM	0	0	0	0	0	20	64	0	0	84	0	0	18	0	18	0	55	0	0	55	157
Total	0	0	0	0	0	89	341	0	0	430	3	0	75	0	78	0	302	7	0	309	817
Grand Total	0	0	0	0	0	864	5075	0	1	5940	79	0	1013	1	1093	0	5278	66	1	5345	12378
Apprch %	0	0	0	0	0	14.5	85.4	0	0		7.2	0	92.7	0.1		0	98.7	1.2	0		
Total %	0	0	0	0	0	7	41	0	0	48	0.6	0	8.2	0	8.8	0	42.6	0.5	0	43.2	
Cars+	0	0	0	0	0	853	4756	0	1	5610	76	0	997	1	1074	0	4932	65	1	4998	11682
% Cars+	0	0	0	0	0	98.7	93.7	0	100	94.4	96.2	0	98.4	100	98.3	0	93.4	98.5	100	93.5	94.4
Heavy Vehicles	0	0	0	0	0	11	319	0	0	330	3	0	16	0	19	0	346	1	0	347	696
% Heavy Vehicles	0	0	0	0	0	1.3	6.3	0	0	5.6	3.8	0	1.6	0	1.7	0	6.6	1.5	0	6.5	5.6

Turning Movement Count Summary

Greenhill Rd & Ashworth Rd
 Greenhill Road Traffic Study
 Cedarfalls, IA
 118.0463.01

File Name : 13hr_Greenhill_Ashworth_tmc_2018-05-09
 Site Code :
 Start Date : 5/9/2018
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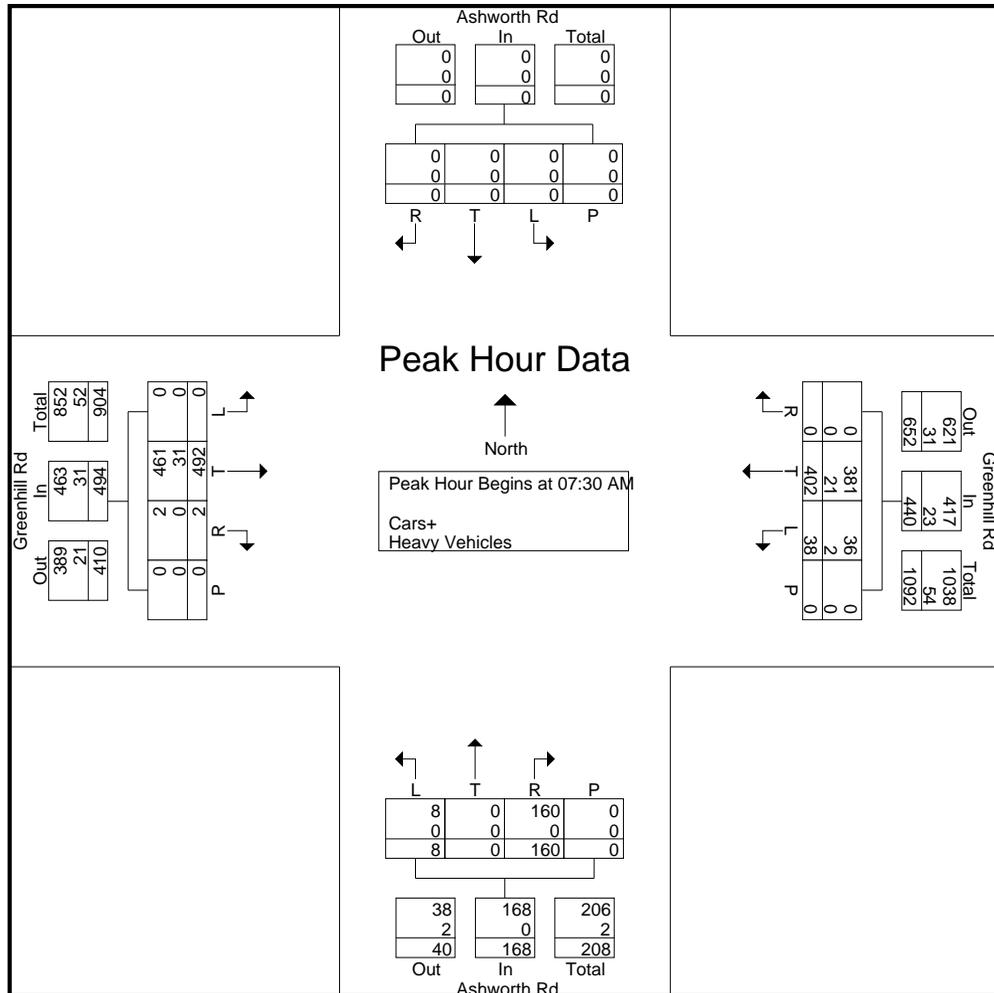


Turning Movement Count Summary

Greenhill Rd & Ashworth Rd
 Greenhill Road Traffic Study
 Cedarfalls, IA
 118.0463.01

File Name : 13hr_Greenhill_Ashworth_tmc_2018-05-09
 Site Code :
 Start Date : 5/9/2018
 Page No : 4

Start Time	Ashworth Rd SB					Greenhill Rd WB					Ashworth Rd NB					Greenhill Rd EB					Int. Total
	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	
Peak Hour Analysis From 06:00 AM to 09:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	0	0	0	0	0	12	116	0	0	128	1	0	48	0	49	0	130	0	0	130	307
07:45 AM	0	0	0	0	0	9	109	0	0	118	3	0	49	0	52	0	139	0	0	139	309
08:00 AM	0	0	0	0	0	8	83	0	0	91	2	0	34	0	36	0	99	1	0	100	227
08:15 AM	0	0	0	0	0	9	94	0	0	103	2	0	29	0	31	0	124	1	0	125	259
Total Volume	0	0	0	0	0	38	402	0	0	440	8	0	160	0	168	0	492	2	0	494	1102
% App. Total	0	0	0	0	0	8.6	91.4	0	0	0	4.8	0	95.2	0	0	0	99.6	0.4	0	0	0
PHF	.000	.000	.000	.000	.000	.792	.866	.000	.000	.859	.667	.000	.816	.000	.808	.000	.885	.500	.000	.888	.892
Cars+	0	0	0	0	0	36	381	0	0	417	8	0	160	0	168	0	461	2	0	463	1048
% Cars+	0	0	0	0	0	94.7	94.8	0	0	94.8	100	0	100	0	100	0	93.7	100	0	93.7	95.1
Heavy Vehicles	0	0	0	0	0	2	21	0	0	23	0	0	0	0	0	0	31	0	0	31	54
% Heavy Vehicles	0	0	0	0	0	5.3	5.2	0	0	5.2	0	0	0	0	0	0	6.3	0	0	6.3	4.9

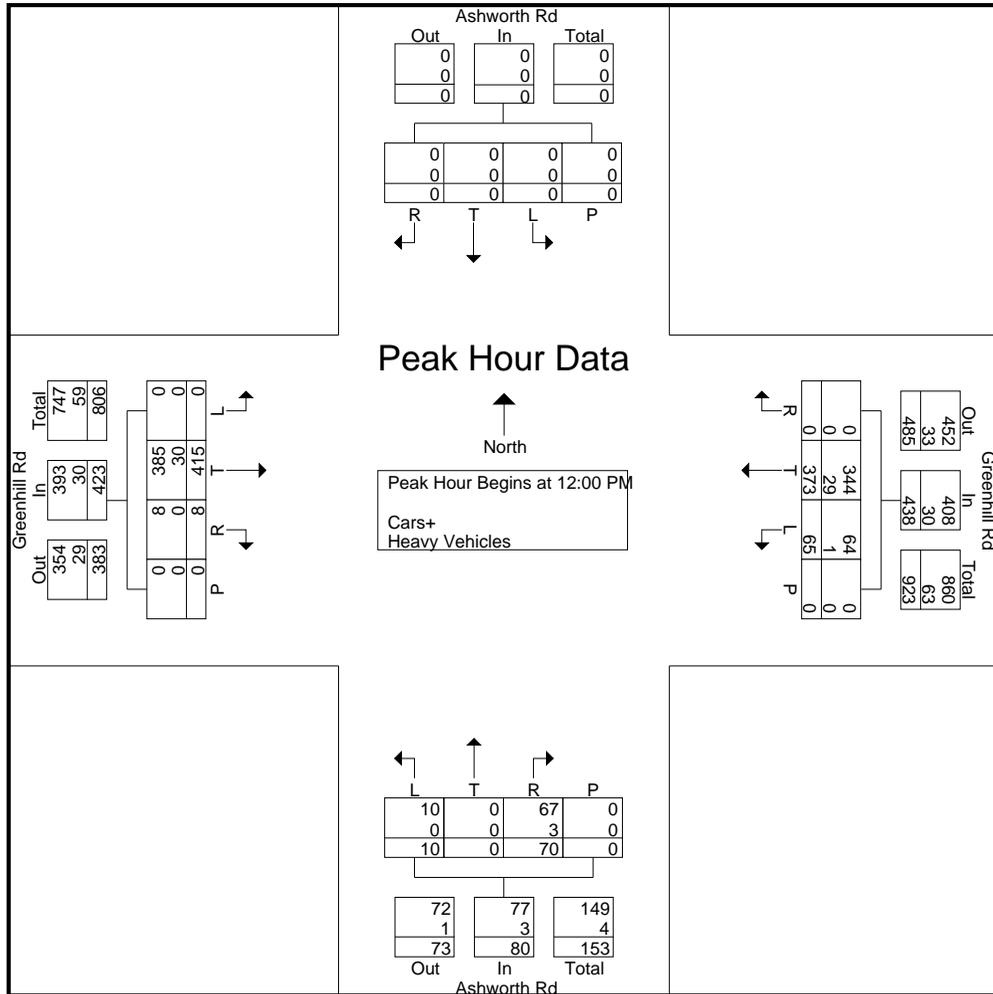


Turning Movement Count Summary

Greenhill Rd & Ashworth Rd
 Greenhill Road Traffic Study
 Cedarfalls, IA
 118.0463.01

File Name : 13hr_Greenhill_Ashworth_tmc_2018-05-09
 Site Code :
 Start Date : 5/9/2018
 Page No : 5

Start Time	Ashworth Rd SB					Greenhill Rd WB					Ashworth Rd NB					Greenhill Rd EB					Int. Total
	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 12:00 PM																					
12:00 PM	0	0	0	0	0	25	83	0	0	108	5	0	9	0	14	0	111	0	0	111	233
12:15 PM	0	0	0	0	0	12	99	0	0	111	0	0	20	0	20	0	116	2	0	118	249
12:30 PM	0	0	0	0	0	11	85	0	0	96	2	0	14	0	16	0	87	1	0	88	200
12:45 PM	0	0	0	0	0	17	106	0	0	123	3	0	27	0	30	0	101	5	0	106	259
Total Volume	0	0	0	0	0	65	373	0	0	438	10	0	70	0	80	0	415	8	0	423	941
% App. Total	0	0	0	0	0	14.8	85.2	0	0	0	12.5	0	87.5	0	0	0	98.1	1.9	0	0	0
PHF	.000	.000	.000	.000	.000	.650	.880	.000	.000	.890	.500	.000	.648	.000	.667	.000	.894	.400	.000	.896	.908
Cars+	0	0	0	0	0	64	344	0	0	408	10	0	67	0	77	0	385	8	0	393	878
% Cars+	0	0	0	0	0	98.5	92.2	0	0	93.2	100	0	95.7	0	96.3	0	92.8	100	0	92.9	93.3
Heavy Vehicles	0	0	0	0	0	1	29	0	0	30	0	0	3	0	3	0	30	0	0	30	63
% Heavy Vehicles	0	0	0	0	0	1.5	7.8	0	0	6.8	0	0	4.3	0	3.8	0	7.2	0	0	7.1	6.7

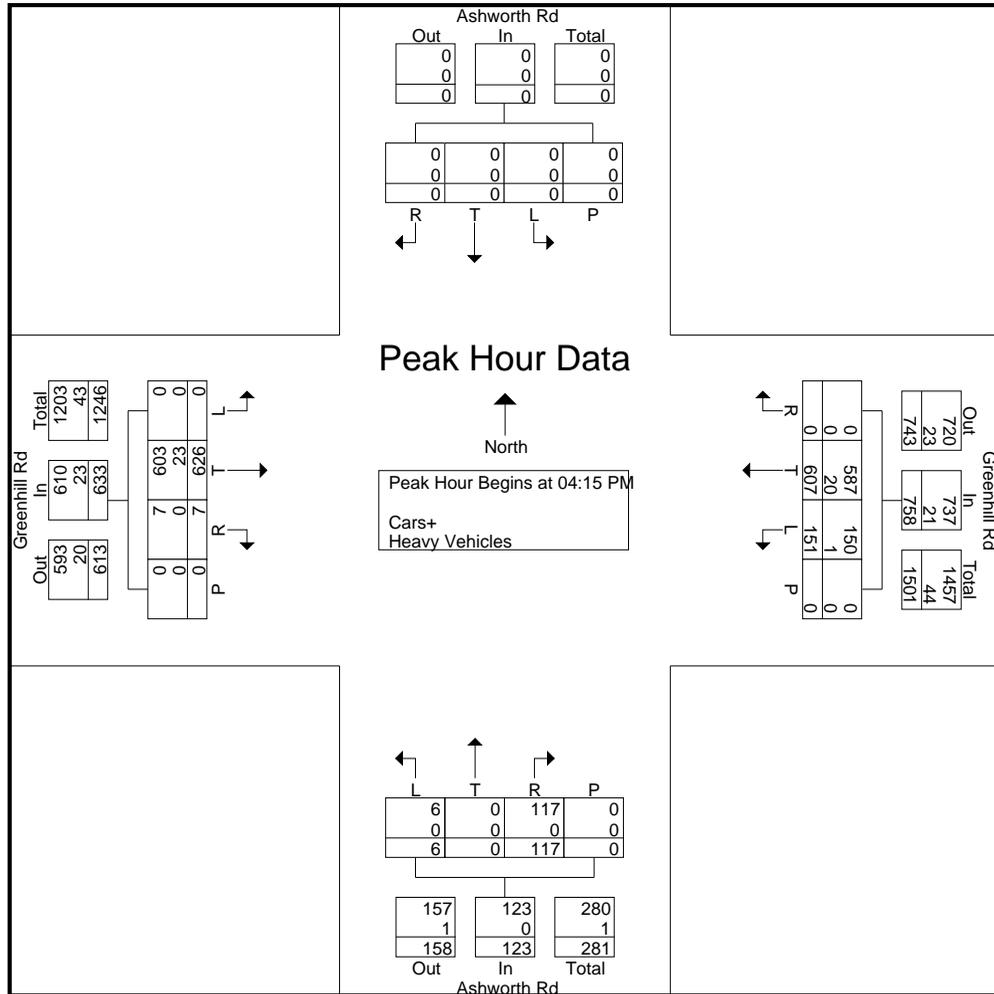


Turning Movement Count Summary

Greenhill Rd & Ashworth Rd
 Greenhill Road Traffic Study
 Cedarfalls, IA
 118.0463.01

File Name : 13hr_Greenhill_Ashworth_tmc_2018-05-09
 Site Code :
 Start Date : 5/9/2018
 Page No : 6

Start Time	Ashworth Rd SB					Greenhill Rd WB					Ashworth Rd NB					Greenhill Rd EB					Int. Total
	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	
Peak Hour Analysis From 02:00 PM to 06:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:15 PM																					
04:15 PM	0	0	0	0	0	38	142	0	0	180	2	0	27	0	29	0	150	0	0	150	359
04:30 PM	0	0	0	0	0	47	156	0	0	203	2	0	21	0	23	0	144	3	0	147	373
04:45 PM	0	0	0	0	0	34	155	0	0	189	1	0	35	0	36	0	169	2	0	171	396
05:00 PM	0	0	0	0	0	32	154	0	0	186	1	0	34	0	35	0	163	2	0	165	386
Total Volume	0	0	0	0	0	151	607	0	0	758	6	0	117	0	123	0	626	7	0	633	1514
% App. Total	0	0	0	0	0	19.9	80.1	0	0	0	4.9	0	95.1	0	0	0	98.9	1.1	0	0	0
PHF	.000	.000	.000	.000	.000	.803	.973	.000	.000	.933	.750	.000	.836	.000	.854	.000	.926	.583	.000	.925	.956
Cars+	0	0	0	0	0	150	587	0	0	737	6	0	117	0	123	0	603	7	0	610	1470
% Cars+	0	0	0	0	0	99.3	96.7	0	0	97.2	100	0	100	0	100	0	96.3	100	0	96.4	97.1
Heavy Vehicles	0	0	0	0	0	1	20	0	0	21	0	0	0	0	0	0	23	0	0	23	44
% Heavy Vehicles	0	0	0	0	0	0.7	3.3	0	0	2.8	0	0	0	0	0	0	3.7	0	0	3.6	2.9





Turning Movement Count Summary

Greenhill Rd & Main St
 Greenhill Road Traffic Study
 Cedarfalls, IA
 118.0463.01

File Name : 13hr_Greenhill_Mainst_tmc_2018-05-09
 Site Code :
 Start Date : 5/9/2018
 Page No : 1

Groups Printed- Cars+ - Heavy Vehicles

Start Time	Main St SB					Greenhill Rd WB					Main St NB					Greenhill Rd EB					Int. Total
	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	
06:00 AM	4	3	9	0	16	2	16	9	2	29	2	2	3	0	7	9	19	5	0	33	85
06:15 AM	13	4	11	0	28	2	27	6	0	35	10	1	2	0	13	4	39	6	0	49	125
06:30 AM	14	8	20	0	42	2	31	8	0	41	10	6	9	0	25	7	60	9	1	77	185
06:45 AM	19	5	24	0	48	7	43	20	0	70	12	12	7	0	31	11	85	11	0	107	256
Total	50	20	64	0	134	13	117	43	2	175	34	21	21	0	76	31	203	31	1	266	651
07:00 AM	24	8	30	0	62	4	45	30	0	79	18	7	10	0	35	15	45	7	1	68	244
07:15 AM	25	3	22	0	50	2	43	32	0	77	23	17	13	1	54	28	68	7	0	103	284
07:30 AM	36	18	32	0	86	8	65	40	0	113	17	23	13	0	53	31	83	21	0	135	387
07:45 AM	30	12	39	0	81	4	66	39	0	109	21	24	10	0	55	26	106	28	0	160	405
Total	115	41	123	0	279	18	219	141	0	378	79	71	46	1	197	100	302	63	1	466	1320
08:00 AM	31	11	39	0	81	2	52	27	0	81	10	11	8	0	29	30	81	12	0	123	314
08:15 AM	31	16	28	0	75	8	50	34	0	92	8	18	9	0	35	35	86	20	2	143	345
08:30 AM	29	15	25	1	70	7	56	26	0	89	10	20	9	0	39	47	81	9	0	137	335
08:45 AM	48	13	21	0	82	3	53	30	0	86	15	18	10	2	45	22	82	15	0	119	332
Total	139	55	113	1	308	20	211	117	0	348	43	67	36	2	148	134	330	56	2	522	1326
09:00 AM	24	15	16	0	55	5	45	26	0	76	13	17	13	0	43	17	70	20	0	107	281
09:15 AM	34	7	19	0	60	2	40	22	0	64	12	2	4	0	18	18	46	9	0	73	215
09:30 AM	30	11	20	0	61	2	44	36	0	82	12	6	9	0	27	20	63	7	0	90	260
09:45 AM	25	8	10	0	43	3	55	38	0	96	10	14	5	0	29	19	56	13	0	88	256
Total	113	41	65	0	219	12	184	122	0	318	47	39	31	0	117	74	235	49	0	358	1012
10:00 AM	27	6	12	0	45	6	34	23	0	63	9	16	4	0	29	28	55	10	0	93	230
10:15 AM	30	13	10	0	53	5	56	29	0	90	7	11	6	0	24	21	62	4	0	87	254
10:30 AM	28	11	21	0	60	5	55	24	0	84	12	8	6	0	26	19	54	14	0	87	257
10:45 AM	28	10	19	0	57	7	59	44	0	110	13	11	13	0	37	26	70	16	0	112	316
Total	113	40	62	0	215	23	204	120	0	347	41	46	29	0	116	94	241	44	0	379	1057
11:00 AM	32	15	10	0	57	7	65	52	0	124	12	12	10	0	34	32	72	18	0	122	337
11:15 AM	26	10	29	0	65	9	70	42	0	121	15	18	4	0	37	25	69	16	0	110	333
11:30 AM	29	9	28	0	66	5	56	50	0	111	14	14	6	0	34	37	81	16	0	134	345
11:45 AM	24	8	24	0	56	14	75	41	1	131	13	14	11	0	38	26	73	15	0	114	339
Total	111	42	91	0	244	35	266	185	1	487	54	58	31	0	143	120	295	65	0	480	1354
12:00 PM	26	18	22	1	67	14	62	39	0	115	12	12	9	0	33	34	89	18	0	141	356
12:15 PM	21	15	16	0	52	5	68	43	0	116	13	8	7	0	28	26	92	25	0	143	339
12:30 PM	22	12	20	0	54	11	71	37	0	119	13	12	8	1	34	24	75	14	0	113	320
12:45 PM	31	9	24	0	64	10	73	37	0	120	21	12	12	0	45	19	88	22	0	129	358
Total	100	54	82	1	237	40	274	156	0	470	59	44	36	1	140	103	344	79	0	526	1373
01:00 PM	25	10	9	0	44	10	76	34	0	120	14	6	15	1	36	28	90	22	0	140	340
01:15 PM	25	14	15	0	54	16	87	35	0	138	9	12	3	0	24	19	71	16	0	106	322
01:30 PM	35	11	16	0	62	8	67	57	0	132	13	10	6	0	29	12	80	19	0	111	334
01:45 PM	31	13	16	0	60	12	74	37	0	123	12	16	7	2	37	18	70	17	0	105	325
Total	116	48	56	0	220	46	304	163	0	513	48	44	31	3	126	77	311	74	0	462	1321
02:00 PM	33	12	15	1	61	8	59	54	1	122	14	12	14	0	40	25	77	20	0	122	345
02:15 PM	42	17	32	0	91	6	68	52	0	126	15	16	4	0	35	27	90	16	1	134	386
02:30 PM	41	13	33	0	87	11	82	66	0	159	14	17	6	0	37	19	81	12	0	112	395
02:45 PM	34	13	30	0	77	13	92	46	0	151	13	26	7	0	46	20	87	17	0	124	398
Total	150	55	110	1	316	38	301	218	1	558	56	71	31	0	158	91	335	65	1	492	1524
03:00 PM	47	29	31	1	108	9	88	56	0	153	7	10	11	0	28	21	88	20	0	129	418
03:15 PM	48	21	25	0	94	13	94	58	0	165	21	15	9	0	45	30	93	16	0	139	443
03:30 PM	40	20	24	0	84	14	111	53	0	178	33	18	10	0	61	25	110	17	0	152	475
03:45 PM	49	14	29	0	92	7	103	58	0	168	12	15	7	0	34	27	100	14	0	141	435
Total	184	84	109	1	378	43	396	225	0	664	73	58	37	0	168	103	391	67	0	561	1771
04:00 PM	43	10	32	0	85	5	97	64	0	166	11	17	11	0	39	25	111	23	0		449

Turning Movement Count Summary

Greenhill Rd & Main St
 Greenhill Road Traffic Study
 Cedarfalls, IA
 118.0463.01

File Name : 13hr_Greenhill_Mainst_tmc_2018-05-09
 Site Code :
 Start Date : 5/9/2018
 Page No : 2

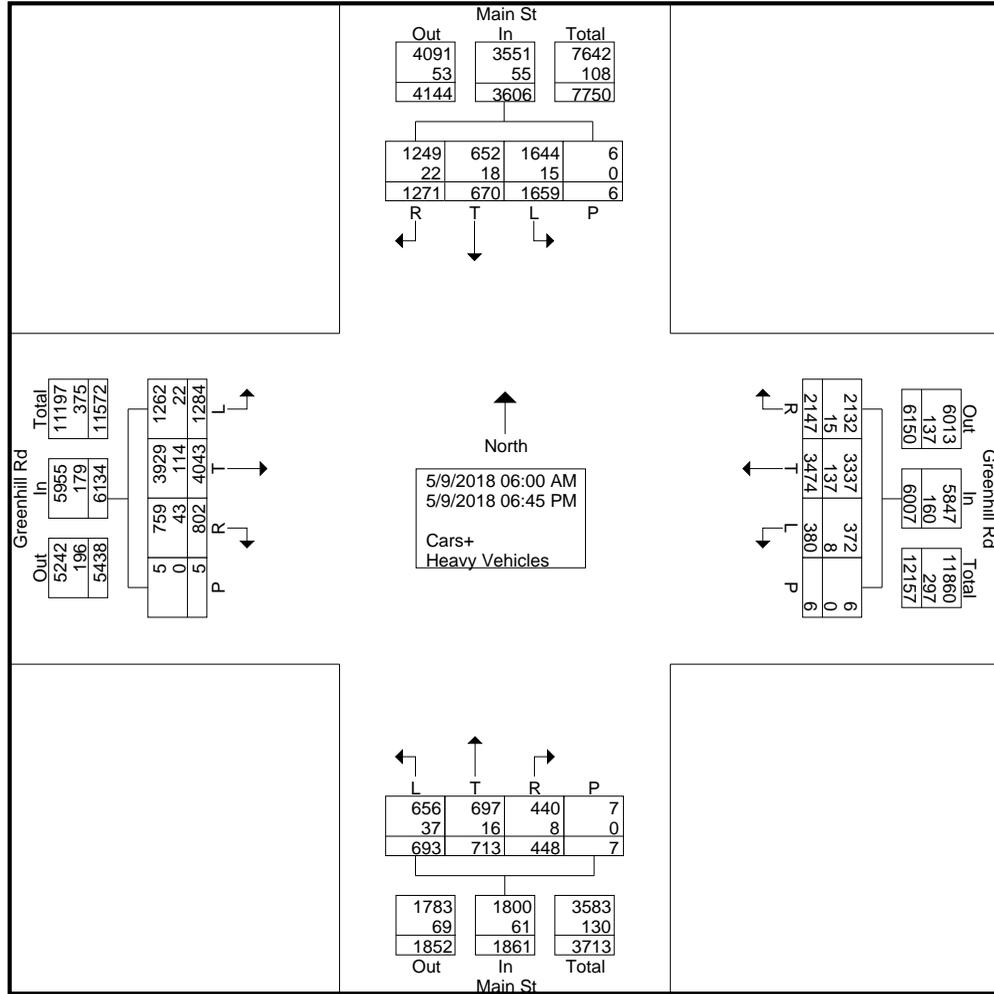
Groups Printed- Cars+ - Heavy Vehicles

Start Time	Main St SB					Greenhill Rd WB					Main St NB					Greenhill Rd EB					Int. Total
	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	
04:15 PM	44	21	39	0	104	8	107	65	0	180	16	21	9	0	46	26	114	19	0	159	489
04:30 PM	46	17	31	0	94	12	124	66	0	202	19	21	14	0	54	18	112	28	0	158	508
04:45 PM	48	21	32	0	101	10	100	69	2	181	19	21	14	0	54	35	131	25	0	191	527
Total	181	69	134	0	384	35	428	264	2	729	65	80	48	0	193	104	468	95	0	667	1973
05:00 PM	34	20	50	0	104	8	123	62	0	193	15	15	11	0	41	19	112	21	0	152	490
05:15 PM	49	14	38	1	102	8	99	51	0	158	16	10	13	0	39	43	96	14	0	153	452
05:30 PM	28	19	39	0	86	13	72	53	0	138	15	31	9	0	55	34	71	21	0	126	405
05:45 PM	35	23	32	0	90	4	63	50	0	117	8	19	4	0	31	34	85	11	0	130	368
Total	146	76	159	1	382	33	357	216	0	606	54	75	37	0	166	130	364	67	0	561	1715
06:00 PM	45	6	32	0	83	7	55	46	0	108	9	9	13	0	31	46	59	12	0	117	339
06:15 PM	42	13	28	0	83	4	54	42	0	100	15	15	9	0	39	27	70	11	0	108	330
06:30 PM	24	16	30	0	70	5	52	48	0	105	7	4	4	0	15	23	54	12	0	89	279
06:45 PM	30	10	13	1	54	8	52	41	0	101	9	11	8	0	28	27	41	12	0	80	263
Total	141	45	103	1	290	24	213	177	0	414	40	39	34	0	113	123	224	47	0	394	1211
Grand Total	1659	670	1271	6	3606	380	3474	2147	6	6007	693	713	448	7	1861	1284	4043	802	5	6134	17608
Apprch %	46	18.6	35.2	0.2		6.3	57.8	35.7	0.1		37.2	38.3	24.1	0.4		20.9	65.9	13.1	0.1		
Total %	9.4	3.8	7.2	0	20.5	2.2	19.7	12.2	0	34.1	3.9	4	2.5	0	10.6	7.3	23	4.6	0	34.8	
Cars+	1644	652	1249	6	3551	372	3337	2132	6	5847	656	697	440	7	1800	1262	3929	759	5	5955	17153
% Cars+	99.1	97.3	98.3	100	98.5	97.9	96.1	99.3	100	97.3	94.7	97.8	98.2	100	96.7	98.3	97.2	94.6	100	97.1	97.4
Heavy Vehicles	15	18	22	0	55	8	137	15	0	160	37	16	8	0	61	22	114	43	0	179	455
% Heavy Vehicles	0.9	2.7	1.7	0	1.5	2.1	3.9	0.7	0	2.7	5.3	2.2	1.8	0	3.3	1.7	2.8	5.4	0	2.9	2.6

Turning Movement Count Summary

Greenhill Rd & Main St
 Greenhill Road Traffic Study
 Cedarfalls, IA
 118.0463.01

File Name : 13hr_Greenhill_Mainst_tmc_2018-05-09
 Site Code :
 Start Date : 5/9/2018
 Page No : 3

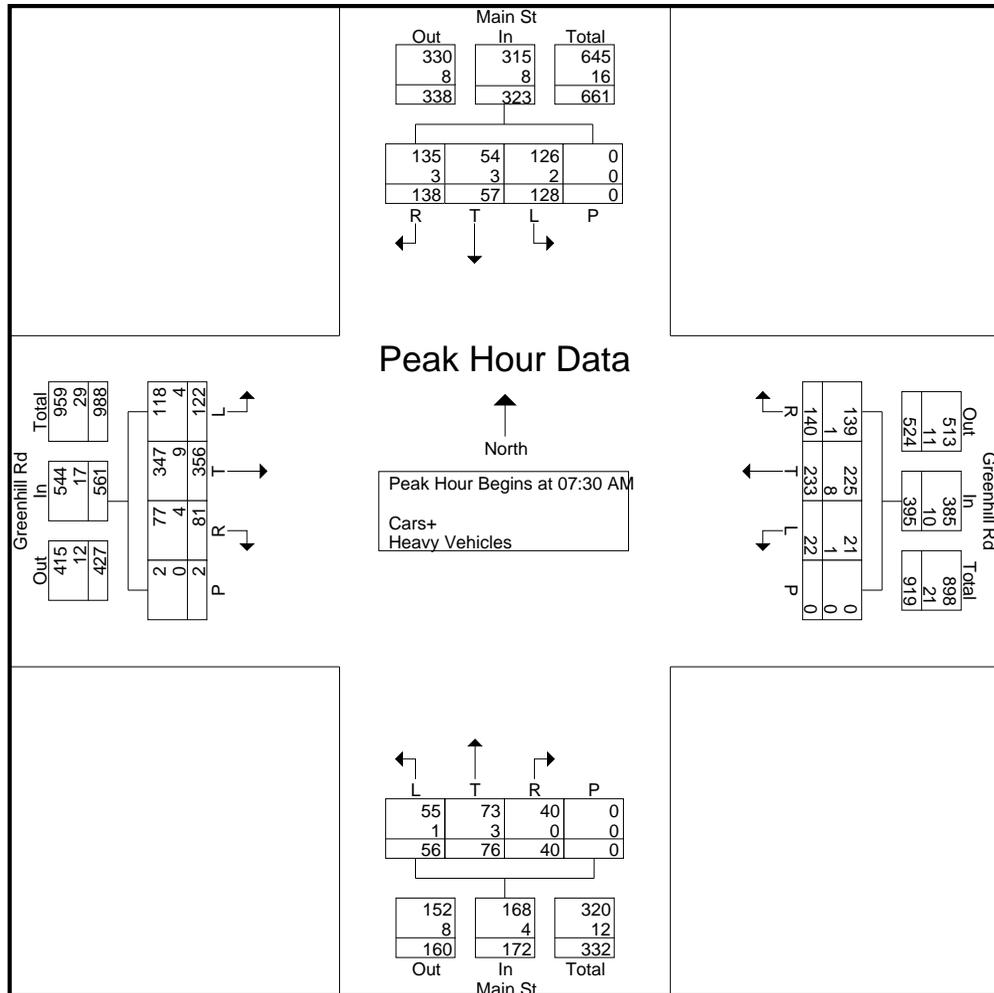


Turning Movement Count Summary

Greenhill Rd & Main St
 Greenhill Road Traffic Study
 Cedarfalls, IA
 118.0463.01

File Name : 13hr_Greenhill_Mainst_tmc_2018-05-09
 Site Code :
 Start Date : 5/9/2018
 Page No : 4

Start Time	Main St SB					Greenhill Rd WB					Main St NB					Greenhill Rd EB					Int. Total
	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	
Peak Hour Analysis From 06:00 AM to 09:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	36	18	32	0	86	8	65	40	0	113	17	23	13	0	53	31	83	21	0	135	387
07:45 AM	30	12	39	0	81	4	66	39	0	109	21	24	10	0	55	26	106	28	0	160	405
08:00 AM	31	11	39	0	81	2	52	27	0	81	10	11	8	0	29	30	81	12	0	123	314
08:15 AM	31	16	28	0	75	8	50	34	0	92	8	18	9	0	35	35	86	20	2	143	345
Total Volume	128	57	138	0	323	22	233	140	0	395	56	76	40	0	172	122	356	81	2	561	1451
% App. Total	39.6	17.6	42.7	0		5.6	59	35.4	0		32.6	44.2	23.3	0		21.7	63.5	14.4	0.4		
PHF	.889	.792	.885	.000	.939	.688	.883	.875	.000	.874	.667	.792	.769	.000	.782	.871	.840	.723	.250	.877	.896
Cars+	126	54	135	0	315	21	225	139	0	385	55	73	40	0	168	118	347	77	2	544	1412
% Cars+	98.4	94.7	97.8	0	97.5	95.5	96.6	99.3	0	97.5	98.2	96.1	100	0	97.7	96.7	97.5	95.1	100	97.0	97.3
Heavy Vehicles	2	3	3	0	8	1	8	1	0	10	1	3	0	0	4	4	9	4	0	17	39
% Heavy Vehicles	1.6	5.3	2.2	0	2.5	4.5	3.4	0.7	0	2.5	1.8	3.9	0	0	2.3	3.3	2.5	4.9	0	3.0	2.7

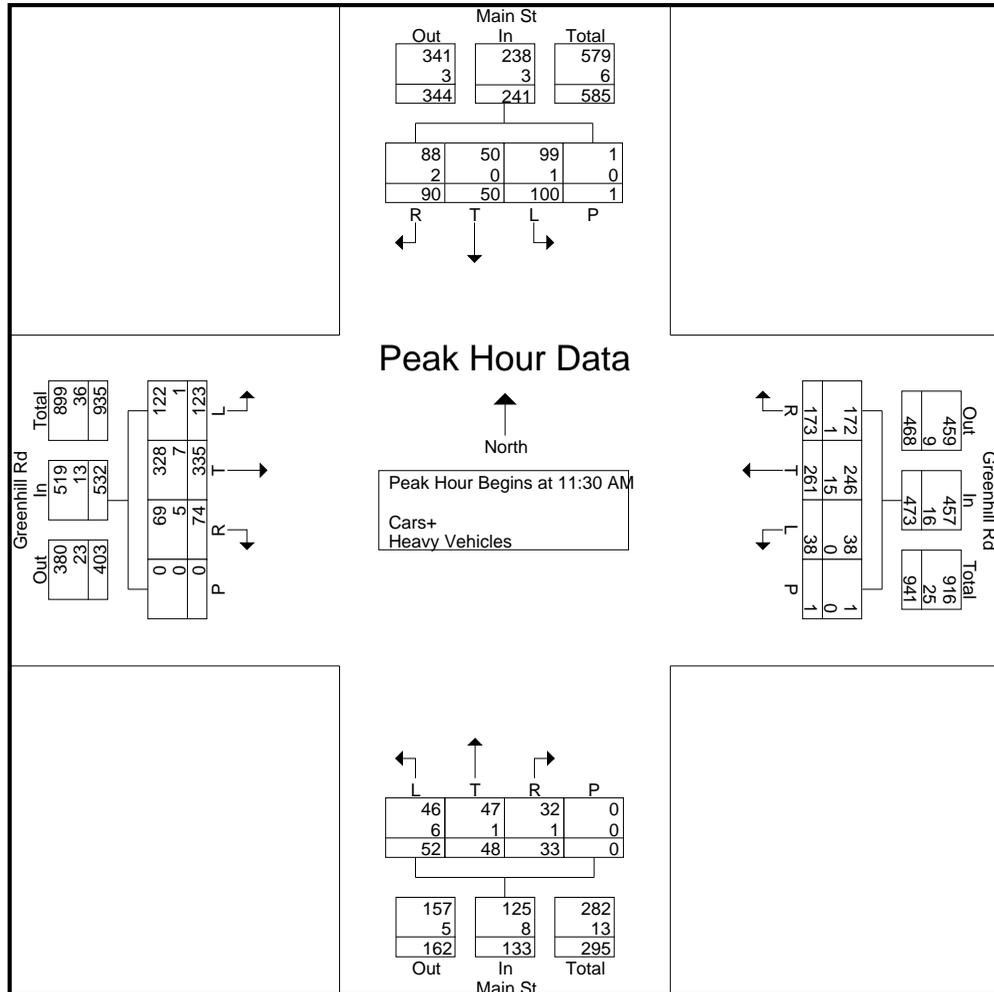


Turning Movement Count Summary

Greenhill Rd & Main St
 Greenhill Road Traffic Study
 Cedarfalls, IA
 118.0463.01

File Name : 13hr_Greenhill_Mainst_tmc_2018-05-09
 Site Code :
 Start Date : 5/9/2018
 Page No : 5

Start Time	Main St SB					Greenhill Rd WB					Main St NB					Greenhill Rd EB					Int. Total
	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 11:30 AM																					
11:30 AM	29	9	28	0	66	5	56	50	0	111	14	14	6	0	34	37	81	16	0	134	345
11:45 AM	24	8	24	0	56	14	75	41	1	131	13	14	11	0	38	26	73	15	0	114	339
12:00 PM	26	18	22	1	67	14	62	39	0	115	12	12	9	0	33	34	89	18	0	141	356
12:15 PM	21	15	16	0	52	5	68	43	0	116	13	8	7	0	28	26	92	25	0	143	339
Total Volume	100	50	90	1	241	38	261	173	1	473	52	48	33	0	133	123	335	74	0	532	1379
% App. Total	41.5	20.7	37.3	0.4		8	55.2	36.6	0.2		39.1	36.1	24.8	0		23.1	63	13.9	0		
PHF	.862	.694	.804	.250	.899	.679	.870	.865	.250	.903	.929	.857	.750	.000	.875	.831	.910	.740	.000	.930	.968
Cars+	99	50	88	1	238	38	246	172	1	457	46	47	32	0	125	122	328	69	0	519	1339
% Cars+	99.0	100	97.8	100	98.8	100	94.3	99.4	100	96.6	88.5	97.9	97.0	0	94.0	99.2	97.9	93.2	0	97.6	97.1
Heavy Vehicles	1	0	2	0	3	0	15	1	0	16	6	1	1	0	8	1	7	5	0	13	40
% Heavy Vehicles	1.0	0	2.2	0	1.2	0	5.7	0.6	0	3.4	11.5	2.1	3.0	0	6.0	0.8	2.1	6.8	0	2.4	2.9

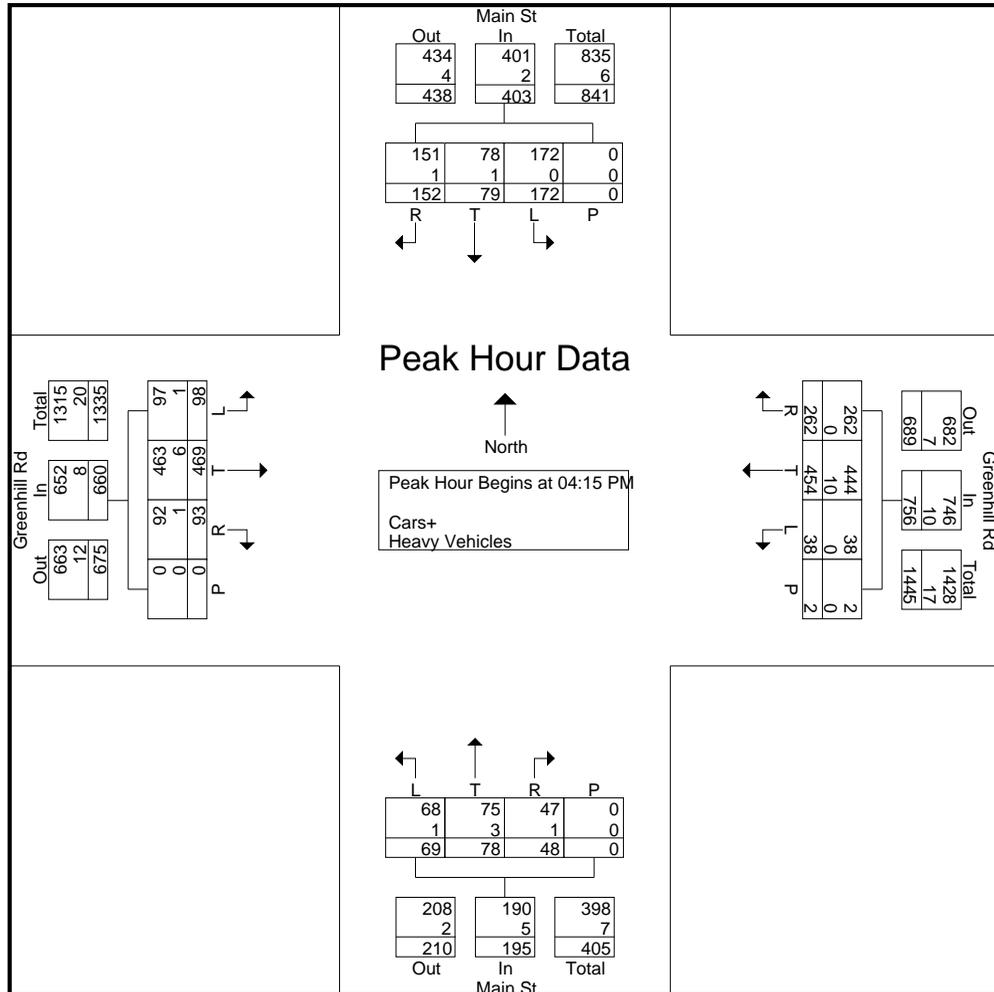


Turning Movement Count Summary

Greenhill Rd & Main St
 Greenhill Road Traffic Study
 Cedarfalls, IA
 118.0463.01

File Name : 13hr_Greenhill_Mainst_tmc_2018-05-09
 Site Code :
 Start Date : 5/9/2018
 Page No : 6

Start Time	Main St SB					Greenhill Rd WB					Main St NB					Greenhill Rd EB					Int. Total
	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	
Peak Hour Analysis From 02:00 PM to 06:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:15 PM																					
04:15 PM	44	21	39	0	104	8	107	65	0	180	16	21	9	0	46	26	114	19	0	159	489
04:30 PM	46	17	31	0	94	12	124	66	0	202	19	21	14	0	54	18	112	28	0	158	508
04:45 PM	48	21	32	0	101	10	100	69	2	181	19	21	14	0	54	35	131	25	0	191	527
05:00 PM	34	20	50	0	104	8	123	62	0	193	15	15	11	0	41	19	112	21	0	152	490
Total Volume	172	79	152	0	403	38	454	262	2	756	69	78	48	0	195	98	469	93	0	660	2014
% App. Total	42.7	19.6	37.7	0		5	60.1	34.7	0.3		35.4	40	24.6	0		14.8	71.1	14.1	0		
PHF	.896	.940	.760	.000	.969	.792	.915	.949	.250	.936	.908	.929	.857	.000	.903	.700	.895	.830	.000	.864	.955
Cars+	172	78	151	0	401	38	444	262	2	746	68	75	47	0	190	97	463	92	0	652	1989
% Cars+	100	98.7	99.3	0	99.5	100	97.8	100	100	98.7	98.6	96.2	97.9	0	97.4	99.0	98.7	98.9	0	98.8	98.8
Heavy Vehicles	0	1	1	0	2	0	10	0	0	10	1	3	1	0	5	1	6	1	0	8	25
% Heavy Vehicles	0	1.3	0.7	0	0.5	0	2.2	0	0	1.3	1.4	3.8	2.1	0	2.6	1.0	1.3	1.1	0	1.2	1.2





Turning Movement Count Summary

Greenhill Rd & Estate Pkwy
 Greenhill Road Traffic Study
 Cedarfalls, IA
 118.0463.01

File Name : 13hr_Greenhill_Estate_tmc_2018-05-09
 Site Code :
 Start Date : 5/9/2018
 Page No : 1

Groups Printed- Cars+ - Heavy Vehicles

Start Time	Estate Pkwy SB					Greenhill Rd WB					Estate Pkwy NB					Greenhill Rd EB					Int. Total
	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	
06:00 AM	1	0	1	0	2	1	30	0	0	31	0	0	0	0	0	0	53	1	0	54	87
06:15 AM	0	0	1	0	1	0	45	0	0	45	1	0	1	0	2	0	84	0	0	84	132
06:30 AM	1	0	3	0	4	0	39	0	0	39	0	0	0	0	0	0	80	1	0	81	124
06:45 AM	0	0	3	1	4	2	62	0	0	64	0	0	0	1	1	1	111	1	1	114	183
Total	2	0	8	1	11	3	176	0	0	179	1	0	1	1	3	1	328	3	1	333	526
07:00 AM	2	0	2	1	5	1	79	0	0	80	1	0	0	1	2	0	76	1	0	77	164
07:15 AM	1	0	2	0	3	2	79	1	0	82	2	0	0	0	2	1	104	1	0	106	193
07:30 AM	2	0	5	0	7	2	104	1	0	107	0	0	3	0	3	0	125	3	0	128	245
07:45 AM	2	0	6	0	8	8	105	0	0	113	0	0	1	0	1	2	146	1	0	149	271
Total	7	0	15	1	23	13	367	2	0	382	3	0	4	1	8	3	451	6	0	460	873
08:00 AM	0	0	6	2	8	5	70	0	2	77	2	0	1	0	3	2	113	3	1	119	207
08:15 AM	0	0	1	0	1	5	93	0	0	98	3	0	5	0	8	4	115	4	0	123	230
08:30 AM	2	0	2	1	5	1	83	0	0	84	1	0	1	0	2	2	121	0	0	123	214
08:45 AM	1	0	3	0	4	3	77	0	0	80	1	0	1	2	4	3	134	2	0	139	227
Total	3	0	12	3	18	14	323	0	2	339	7	0	8	2	17	11	483	9	1	504	878
09:00 AM	2	0	1	1	4	1	73	0	0	74	1	0	3	1	5	0	124	1	0	125	208
09:15 AM	0	0	3	2	5	3	61	1	0	65	1	0	2	0	3	2	82	2	0	86	159
09:30 AM	1	0	1	1	3	2	77	0	0	79	3	0	2	0	5	2	93	3	0	98	185
09:45 AM	1	0	2	0	3	3	95	2	2	102	2	0	3	1	6	2	83	2	0	87	198
Total	4	0	7	4	15	9	306	3	2	320	7	0	10	2	19	6	382	8	0	396	750
10:00 AM	1	0	2	0	3	0	52	2	1	55	4	0	3	0	7	2	80	2	0	84	149
10:15 AM	1	0	1	0	2	2	92	1	0	95	3	0	6	0	9	1	93	2	0	96	202
10:30 AM	0	1	0	0	1	3	83	0	0	86	4	0	5	0	9	1	86	0	0	87	183
10:45 AM	0	0	3	1	4	4	92	0	0	96	6	0	3	1	10	2	106	4	0	112	222
Total	2	1	6	1	10	9	319	3	1	332	17	0	17	1	35	6	365	8	0	379	756
11:00 AM	0	0	4	0	4	4	117	0	0	121	7	0	5	0	12	2	111	1	0	114	251
11:15 AM	1	0	2	0	3	4	112	0	0	116	4	0	5	0	9	2	96	2	0	100	228
11:30 AM	1	1	3	1	6	2	106	0	0	108	4	0	4	0	8	3	114	0	0	117	239
11:45 AM	1	0	3	0	4	1	115	1	1	118	4	3	4	0	11	3	105	0	0	108	241
Total	3	1	12	1	17	11	450	1	1	463	19	3	18	0	40	10	426	3	0	439	959
12:00 PM	2	0	6	2	10	1	102	1	0	104	6	0	9	0	15	8	115	1	0	124	253
12:15 PM	1	0	3	0	4	5	107	0	0	112	4	0	3	0	7	4	116	4	0	124	247
12:30 PM	2	0	4	0	6	4	105	1	0	110	6	0	4	1	11	2	99	1	0	102	229
12:45 PM	2	0	6	0	8	4	107	0	0	111	3	0	3	0	6	3	126	6	0	135	260
Total	7	0	19	2	28	14	421	2	0	437	19	0	19	1	39	17	456	12	0	485	989
01:00 PM	0	0	1	0	1	4	120	1	0	125	3	1	7	1	12	4	115	6	0	125	263
01:15 PM	1	0	3	0	4	4	125	0	0	129	2	1	3	1	7	3	94	2	0	99	239
01:30 PM	1	1	4	0	6	6	123	2	0	131	2	0	3	0	5	2	123	0	0	125	267
01:45 PM	3	1	4	0	8	4	119	1	0	124	0	0	2	0	2	1	109	3	0	113	247
Total	5	2	12	0	19	18	487	4	0	509	7	2	15	2	26	10	441	11	0	462	1016
02:00 PM	1	0	3	0	4	2	118	3	0	123	6	0	4	2	12	3	114	2	0	119	258
02:15 PM	1	0	1	0	2	4	121	2	0	127	4	0	4	2	10	7	101	3	0	111	250
02:30 PM	1	0	3	1	5	6	116	1	0	123	3	1	3	0	7	4	92	3	0	99	234
02:45 PM	0	0	1	0	1	3	139	1	0	143	9	0	6	0	15	4	94	3	0	101	260
Total	3	0	8	1	12	15	494	7	0	516	22	1	17	4	44	18	401	11	0	430	1002
03:00 PM	1	0	4	0	5	2	145	1	0	148	1	0	8	0	9	0	150	0	0	150	312
03:15 PM	0	0	6	0	6	3	158	0	0	161	3	0	2	0	5	5	139	3	0	147	319
03:30 PM	1	1	0	0	2	9	170	2	1	182	2	0	7	0	9	4	157	1	0	162	355
03:45 PM	0	0	0	0	0	1	165	0	0	166	1	0	4	0	5	7	148	4	0	159	330
Total	2	1	10	0	13	15	638	3	1	657	7	0	21	0	28	16	594	8	0	618	1316
04:00 PM	0	0	3	0	3	3	161	1	0	165	3	0	5	0	8	6	155	1	0		338

Turning Movement Count Summary

Greenhill Rd & Estate Pkwy
 Greenhill Road Traffic Study
 Cedarfalls, IA
 118.0463.01

File Name : 13hr_Greenhill_Estate_tmc_2018-05-09
 Site Code :
 Start Date : 5/9/2018
 Page No : 2

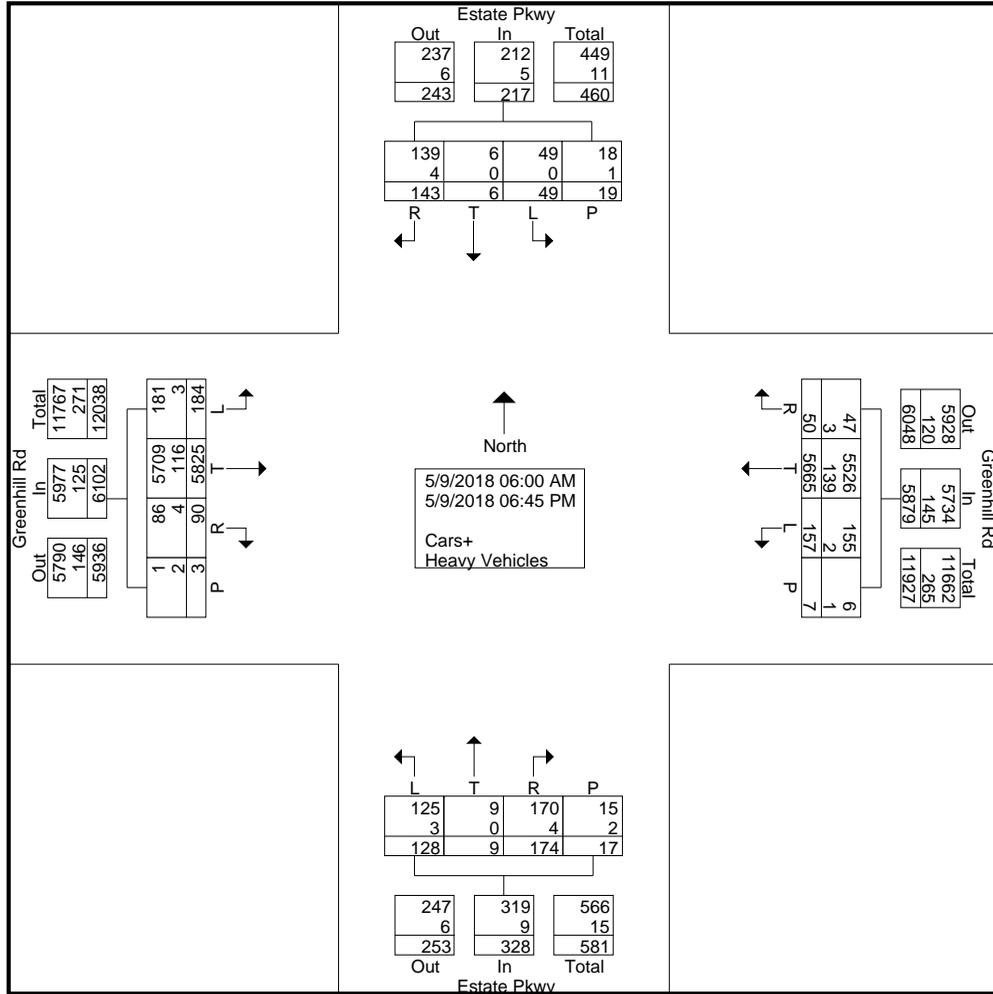
Groups Printed- Cars+ - Heavy Vehicles

Start Time	Estate Pkwy SB					Greenhill Rd WB					Estate Pkwy NB					Greenhill Rd EB					Int. Total
	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	
04:15 PM	0	0	7	1	8	2	168	3	0	173	1	2	2	0	5	12	152	0	1	165	351
04:30 PM	0	0	1	0	1	2	196	1	0	199	3	1	4	0	8	11	164	0	0	175	383
04:45 PM	1	0	3	0	4	1	175	4	0	180	2	0	3	1	6	16	173	1	0	190	380
Total	1	0	14	1	16	8	700	9	0	717	9	3	14	1	27	45	644	2	1	692	1452
05:00 PM	0	1	4	0	5	10	197	4	0	211	1	0	8	0	9	9	143	2	0	154	379
05:15 PM	1	0	4	1	6	5	147	2	0	154	2	0	2	0	4	10	139	3	0	152	316
05:30 PM	2	0	3	0	5	1	132	4	0	137	1	0	6	2	9	7	108	0	0	115	266
05:45 PM	1	0	2	0	3	4	121	3	0	128	3	0	3	0	6	4	117	0	0	121	258
Total	4	1	13	1	19	20	597	13	0	630	7	0	19	2	28	30	507	5	0	542	1219
06:00 PM	1	0	2	0	3	2	106	1	0	109	0	0	6	0	6	1	118	2	0	121	239
06:15 PM	1	0	2	1	4	1	102	1	0	104	1	0	1	0	2	3	107	2	0	112	222
06:30 PM	3	0	2	2	7	3	100	1	0	104	2	0	3	0	5	2	72	0	0	74	190
06:45 PM	1	0	1	0	2	2	79	0	0	81	0	0	1	0	1	5	50	0	0	55	139
Total	6	0	7	3	16	8	387	3	0	398	3	0	11	0	14	11	347	4	0	362	790
Grand Total	49	6	143	19	217	157	5665	50	7	5879	128	9	174	17	328	184	5825	90	3	6102	12526
Apprch %	22.6	2.8	65.9	8.8		2.7	96.4	0.9	0.1		39	2.7	53	5.2		3	95.5	1.5	0		
Total %	0.4	0	1.1	0.2	1.7	1.3	45.2	0.4	0.1	46.9	1	0.1	1.4	0.1	2.6	1.5	46.5	0.7	0	48.7	
Cars+	49	6	139	18	212	155	5526	47	6	5734	125	9	170	15	319	181	5709	86	1	5977	12242
% Cars+	100	100	97.2	94.7	97.7	98.7	97.5	94	85.7	97.5	97.7	100	97.7	88.2	97.3	98.4	98	95.6	33.3	98	97.7
Heavy Vehicles	0	0	4	1	5	2	139	3	1	145	3	0	4	2	9	3	116	4	2	125	284
% Heavy Vehicles	0	0	2.8	5.3	2.3	1.3	2.5	6	14.3	2.5	2.3	0	2.3	11.8	2.7	1.6	2	4.4	66.7	2	2.3

Turning Movement Count Summary

Greenhill Rd & Estate Pkwy
 Greenhill Road Traffic Study
 Cedarfalls, IA
 118.0463.01

File Name : 13hr_Greenhill_Estate_tmc_2018-05-09
 Site Code :
 Start Date : 5/9/2018
 Page No : 3

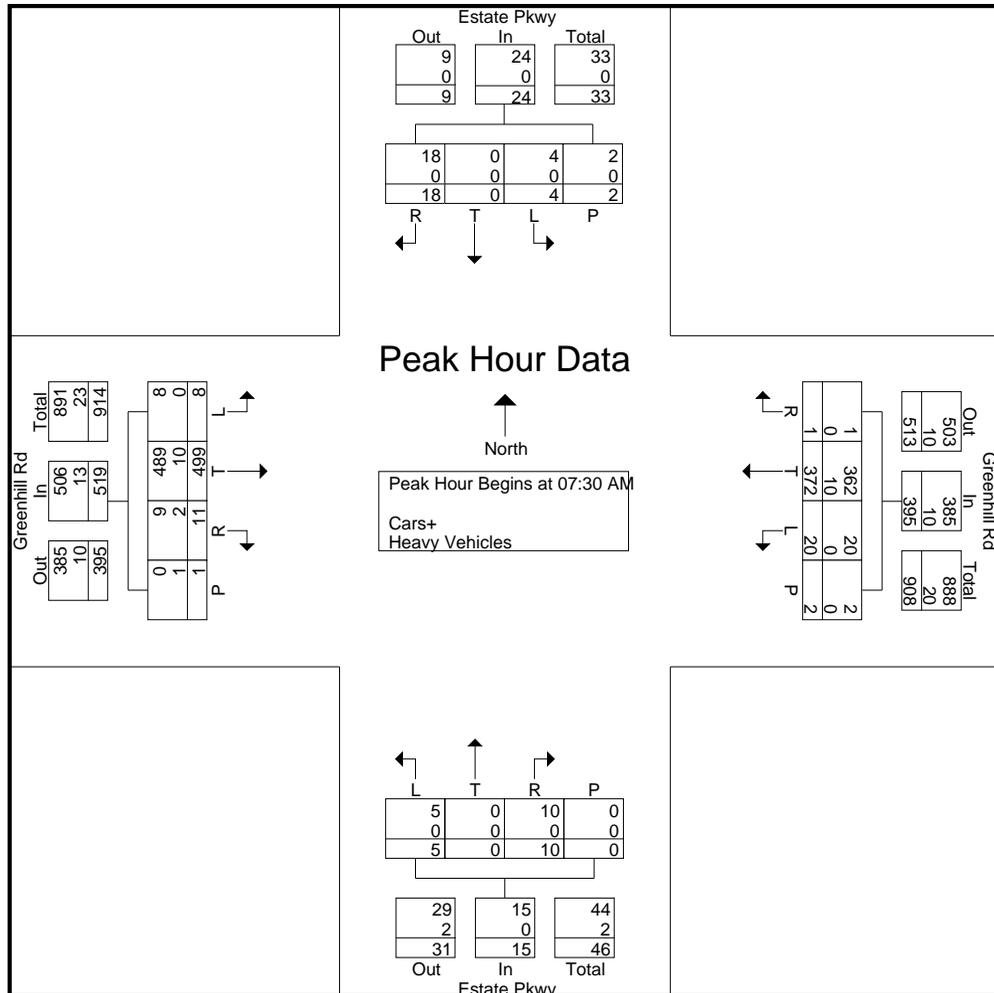


Turning Movement Count Summary

Greenhill Rd & Estate Pkwy
 Greenhill Road Traffic Study
 Cedarfalls, IA
 118.0463.01

File Name : 13hr_Greenhill_Estate_tmc_2018-05-09
 Site Code :
 Start Date : 5/9/2018
 Page No : 4

Start Time	Estate Pkwy SB					Greenhill Rd WB					Estate Pkwy NB					Greenhill Rd EB					Int. Total
	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	
Peak Hour Analysis From 06:00 AM to 09:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	2	0	5	0	7	2	104	1	0	107	0	0	3	0	3	0	125	3	0	128	245
07:45 AM	2	0	6	0	8	8	105	0	0	113	0	0	1	0	1	2	146	1	0	149	271
08:00 AM	0	0	6	2	8	5	70	0	2	77	2	0	1	0	3	2	113	3	1	119	207
08:15 AM	0	0	1	0	1	5	93	0	0	98	3	0	5	0	8	4	115	4	0	123	230
Total Volume	4	0	18	2	24	20	372	1	2	395	5	0	10	0	15	8	499	11	1	519	953
% App. Total	16.7	0	75	8.3		5.1	94.2	0.3	0.5		33.3	0	66.7	0		1.5	96.1	2.1	0.2		
PHF	.500	.000	.750	.250	.750	.625	.886	.250	.250	.874	.417	.000	.500	.000	.469	.500	.854	.688	.250	.871	.879
Cars+	4	0	18	2	24	20	362	1	2	385	5	0	10	0	15	8	489	9	0	506	930
% Cars+	100	0	100	100	100	100	97.3	100	100	97.5	100	0	100	0	100	100	98.0	81.8	0	97.5	97.6
Heavy Vehicles	0	0	0	0	0	0	10	0	0	10	0	0	0	0	0	0	10	2	1	13	23
% Heavy Vehicles	0	0	0	0	0	0	2.7	0	0	2.5	0	0	0	0	0	0	2.0	18.2	100	2.5	2.4

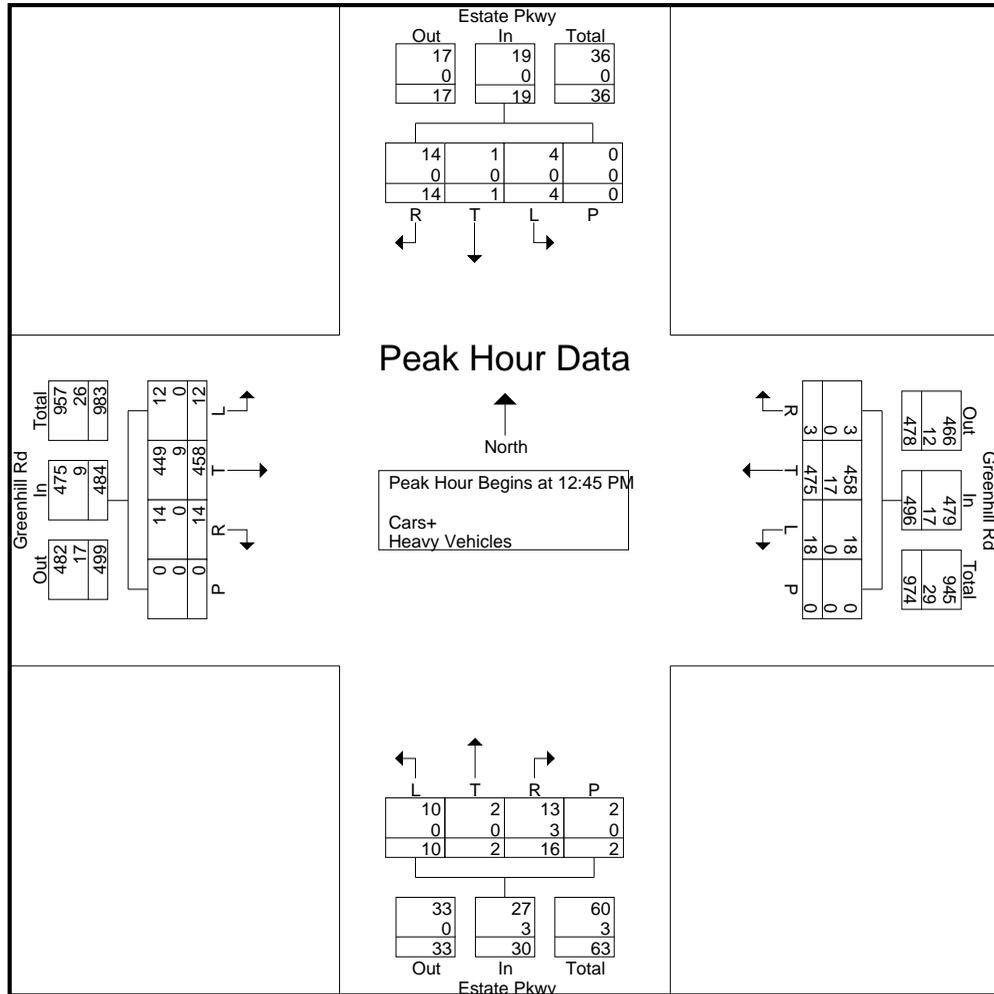


Turning Movement Count Summary

Greenhill Rd & Estate Pkwy
 Greenhill Road Traffic Study
 Cedarfalls, IA
 118.0463.01

File Name : 13hr_Greenhill_Estate_tmc_2018-05-09
 Site Code :
 Start Date : 5/9/2018
 Page No : 5

Start Time	Estate Pkwy SB					Greenhill Rd WB					Estate Pkwy NB					Greenhill Rd EB					Int. Total
	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 12:45 PM																					
12:45 PM	2	0	6	0	8	4	107	0	0	111	3	0	3	0	6	3	126	6	0	135	260
01:00 PM	0	0	1	0	1	4	120	1	0	125	3	1	7	1	12	4	115	6	0	125	263
01:15 PM	1	0	3	0	4	4	125	0	0	129	2	1	3	1	7	3	94	2	0	99	239
01:30 PM	1	1	4	0	6	6	123	2	0	131	2	0	3	0	5	2	123	0	0	125	267
Total Volume	4	1	14	0	19	18	475	3	0	496	10	2	16	2	30	12	458	14	0	484	1029
% App. Total	21.1	5.3	73.7	0		3.6	95.8	0.6	0		33.3	6.7	53.3	6.7		2.5	94.6	2.9	0		
PHF	.500	.250	.583	.000	.594	.750	.950	.375	.000	.947	.833	.500	.571	.500	.625	.750	.909	.583	.000	.896	.963
Cars+	4	1	14	0	19	18	458	3	0	479	10	2	13	2	27	12	449	14	0	475	1000
% Cars+	100	100	100	0	100	100	96.4	100	0	96.6	100	100	81.3	100	90.0	100	98.0	100	0	98.1	97.2
Heavy Vehicles	0	0	0	0	0	0	17	0	0	17	0	0	3	0	3	0	9	0	0	9	29
% Heavy Vehicles	0	0	0	0	0	0	3.6	0	0	3.4	0	0	18.8	0	10.0	0	2.0	0	0	1.9	2.8

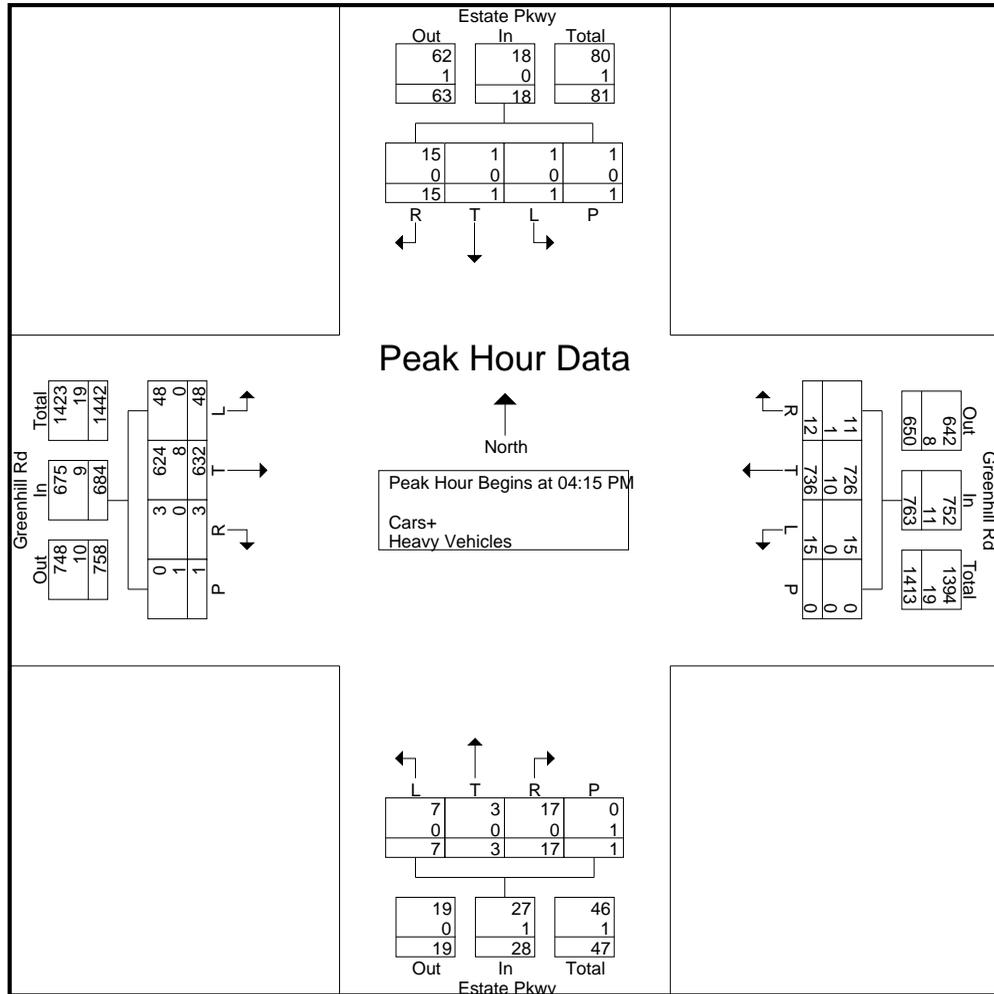


Turning Movement Count Summary

Greenhill Rd & Estate Pkwy
 Greenhill Road Traffic Study
 Cedarfalls, IA
 118.0463.01

File Name : 13hr_Greenhill_Estate_tmc_2018-05-09
 Site Code :
 Start Date : 5/9/2018
 Page No : 6

Start Time	Estate Pkwy SB					Greenhill Rd WB					Estate Pkwy NB					Greenhill Rd EB					Int. Total
	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	
Peak Hour Analysis From 02:00 PM to 06:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:15 PM																					
04:15 PM	0	0	7	1	8	2	168	3	0	173	1	2	2	0	5	12	152	0	1	165	351
04:30 PM	0	0	1	0	1	2	196	1	0	199	3	1	4	0	8	11	164	0	0	175	383
04:45 PM	1	0	3	0	4	1	175	4	0	180	2	0	3	1	6	16	173	1	0	190	380
05:00 PM	0	1	4	0	5	10	197	4	0	211	1	0	8	0	9	9	143	2	0	154	379
Total Volume	1	1	15	1	18	15	736	12	0	763	7	3	17	1	28	48	632	3	1	684	1493
% App. Total	5.6	5.6	83.3	5.6		2	96.5	1.6	0		25	10.7	60.7	3.6		7	92.4	0.4	0.1		
PHF	.250	.250	.536	.250	.563	.375	.934	.750	.000	.904	.583	.375	.531	.250	.778	.750	.913	.375	.250	.900	.975
Cars+	1	1	15	1	18	15	726	11	0	752	7	3	17	0	27	48	624	3	0	675	1472
% Cars+	100	100	100	100	100	100	98.6	91.7	0	98.6	100	100	100	0	96.4	100	98.7	100	0	98.7	98.6
Heavy Vehicles	0	0	0	0	0	0	10	1	0	11	0	0	0	1	1	0	8	0	1	9	21
% Heavy Vehicles	0	0	0	0	0	0	1.4	8.3	0	1.4	0	0	0	100	3.6	0	1.3	0	100	1.3	1.4





Turning Movement Count Summary

Greenhill Rd & Prairie Rd
 Greenhill Road Traffic Study
 Cedarfalls, IA
 118.0463.01

File Name : 4hr_Greenhill_Prairie_tmc_2018-05-10
 Site Code :
 Start Date : 5/10/2018
 Page No : 1

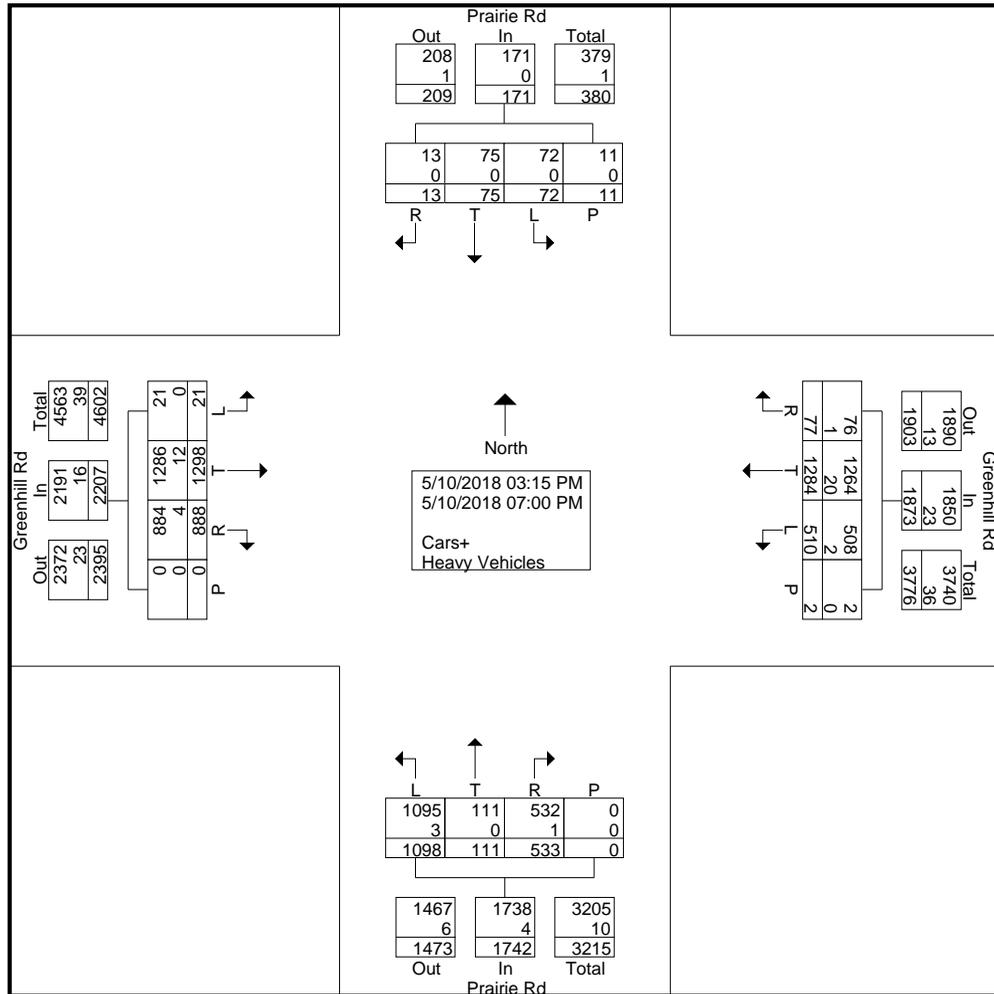
Groups Printed- Cars+ - Heavy Vehicles

Start Time	Prairie Rd SB					Greenhill Rd WB					Prairie Rd NB					Greenhill Rd EB					Int. Total
	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	
03:15 PM	4	1	1	0	6	25	94	3	0	122	76	8	29	0	113	1	89	66	0	156	397
03:30 PM	1	2	3	0	6	44	78	10	0	132	75	7	34	0	116	0	100	47	0	147	401
03:45 PM	4	5	0	0	9	39	103	5	0	147	72	5	25	0	102	2	78	65	0	145	403
Total	9	8	4	0	21	108	275	18	0	401	223	20	88	0	331	3	267	178	0	448	1201
04:00 PM	6	5	0	2	13	40	88	6	0	134	78	7	34	0	119	1	85	52	0	138	404
04:15 PM	2	4	1	2	9	48	86	6	0	140	93	12	35	0	140	0	82	76	0	158	447
04:30 PM	11	3	3	1	18	27	104	1	0	132	77	5	38	0	120	0	107	61	0	168	438
04:45 PM	6	6	0	0	12	37	115	10	0	162	75	5	42	0	122	1	105	73	0	179	475
Total	25	18	4	5	52	152	393	23	0	568	323	29	149	0	501	2	379	262	0	643	1764
05:00 PM	0	10	0	0	10	20	99	9	0	128	87	12	50	0	149	3	110	44	0	157	444
05:15 PM	2	7	1	0	10	44	98	7	0	149	91	10	37	0	138	5	94	73	0	172	469
05:30 PM	8	2	2	1	13	42	78	4	0	124	61	7	39	0	107	2	73	46	0	121	365
05:45 PM	6	9	0	1	16	28	69	3	1	101	65	5	38	0	108	1	78	51	0	130	355
Total	16	28	3	2	49	134	344	23	1	502	304	34	164	0	502	11	355	214	0	580	1633
06:00 PM	4	3	1	0	8	31	63	2	1	97	53	4	36	0	93	0	53	50	0	103	301
06:15 PM	6	6	1	1	14	16	74	4	0	94	48	8	26	0	82	2	44	49	0	95	285
06:30 PM	6	6	0	3	15	22	50	2	0	74	59	8	27	0	94	2	76	46	0	124	307
06:45 PM	2	3	0	0	5	26	41	3	0	70	43	3	21	0	67	0	66	47	0	113	255
Total	18	18	2	4	42	95	228	11	1	335	203	23	110	0	336	4	239	192	0	435	1148
07:00 PM	4	3	0	0	7	21	44	2	0	67	45	5	22	0	72	1	58	42	0	101	247
Grand Total	72	75	13	11	171	510	1284	77	2	1873	1098	111	533	0	1742	21	1298	888	0	2207	5993
Apprch %	42.1	43.9	7.6	6.4		27.2	68.6	4.1	0.1		63	6.4	30.6	0		1	58.8	40.2	0		
Total %	1.2	1.3	0.2	0.2	2.9	8.5	21.4	1.3	0	31.3	18.3	1.9	8.9	0	29.1	0.4	21.7	14.8	0	36.8	
Cars+	72	75	13	11	171	508	1264	76	2	1850	1095	111	532	0	1738	21	1286	884	0	2191	5950
% Cars+	100	100	100	100	100	99.6	98.4	98.7	100	98.8	99.7	100	99.8	0	99.8	100	99.1	99.5	0	99.3	99.3
Heavy Vehicles	0	0	0	0	0	2	20	1	0	23	3	0	1	0	4	0	12	4	0	16	43
% Heavy Vehicles	0	0	0	0	0	0.4	1.6	1.3	0	1.2	0.3	0	0.2	0	0.2	0	0.9	0.5	0	0.7	0.7

Turning Movement Count Summary

Greenhill Rd & Prairie Rd
 Greenhill Road Traffic Study
 Cedarfalls, IA
 118.0463.01

File Name : 4hr_Greenhill_Prairie_tmc_2018-05-10
 Site Code :
 Start Date : 5/10/2018
 Page No : 2

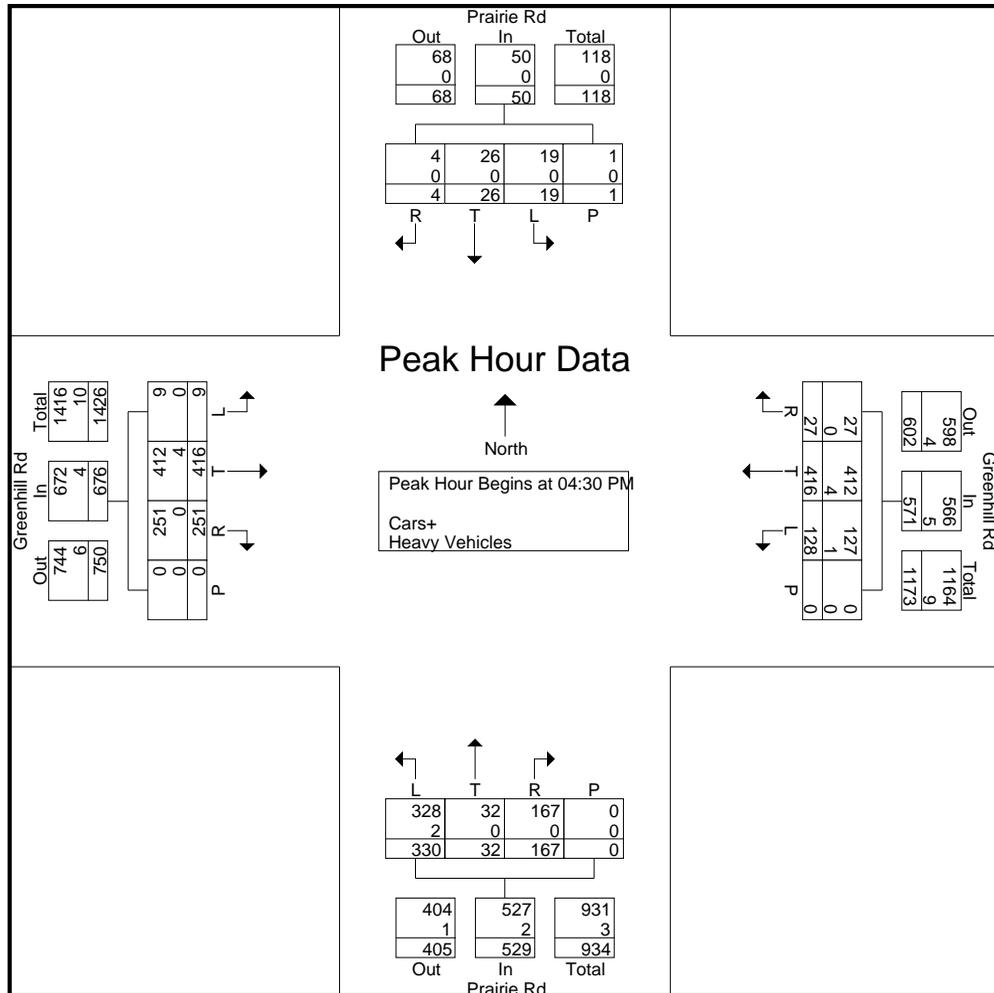


Turning Movement Count Summary

Greenhill Rd & Prairie Rd
 Greenhill Road Traffic Study
 Cedarfalls, IA
 118.0463.01

File Name : 4hr_Greenhill_Prairie_tmc_2018-05-10
 Site Code :
 Start Date : 5/10/2018
 Page No : 3

Start Time	Prairie Rd SB					Greenhill Rd WB					Prairie Rd NB					Greenhill Rd EB					Int. Total	
	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total		
Peak Hour Analysis From 03:15 PM to 07:00 PM - Peak 1 of 1																						
Peak Hour for Entire Intersection Begins at 04:30 PM																						
04:30 PM	11	3	3	1	18	27	104	1	0	132	77	5	38	0	120	0	107	61	0	168	438	
04:45 PM	6	6	0	0	12	37	115	10	0	162	75	5	42	0	122	1	105	73	0	179	475	
05:00 PM	0	10	0	0	10	20	99	9	0	128	87	12	50	0	149	3	110	44	0	157	444	
05:15 PM	2	7	1	0	10	44	98	7	0	149	91	10	37	0	138	5	94	73	0	172	469	
Total Volume	19	26	4	1	50	128	416	27	0	571	330	32	167	0	529	9	416	251	0	676	1826	
% App. Total	38	52	8	2		22.4	72.9	4.7	0		62.4	6	31.6	0		1.3	61.5	37.1	0			
PHF	.432	.650	.333	.250	.694	.727	.904	.675	.000	.881	.907	.667	.835	.000	.888	.450	.945	.860	.000	.944	.961	
Cars+	19	26	4	1	50	127	412	27	0	566	328	32	167	0	527	9	412	251	0	672	1815	
% Cars+	100	100	100	100	100	99.2	99.0	100	0	99.1	99.4	100	100	0	99.6	100	99.0	100	0	99.4	99.4	
Heavy Vehicles	0	0	0	0	0	1	4	0	0	5	2	0	0	0	2	0	4	0	0	0	4	11
% Heavy Vehicles	0	0	0	0	0	0.8	1.0	0	0	0.9	0.6	0	0	0	0.4	0	1.0	0	0	0.6	0.6	





Turning Movement Count Summary

Greenhill Rd & Orchard Hill
 Greenhill Road Traffic Study
 Cedarfalls, IA
 118.0463.01

File Name : 13hr_Greenhill_Orchard_tmc_2018-05-10
 Site Code :
 Start Date : 5/10/2018
 Page No : 1

Groups Printed- Cars+ - Heavy Vehicles

Start Time	Orchard Hill Rd SB					Greenhill Rd WB					Orchard Hill Rd NB					Greenhill Rd EB					Int. Total	
	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total		
06:00 AM	5	0	4	0	9	0	30	0	0	30	0	0	0	0	0	0	24	0	0	0	24	63
06:15 AM	4	0	4	0	8	0	26	2	0	28	0	0	0	0	0	2	37	0	0	0	39	75
06:30 AM	12	0	9	0	21	0	33	1	0	34	0	0	0	0	0	0	57	0	0	0	57	112
06:45 AM	13	0	12	0	25	0	55	4	0	59	0	0	0	0	0	3	44	0	0	0	47	131
Total	34	0	29	0	63	0	144	7	0	151	0	0	0	0	0	5	162	0	0	0	167	381
07:00 AM	15	0	7	0	22	0	54	2	0	56	0	0	0	0	0	3	61	0	0	0	64	142
07:15 AM	7	0	18	0	25	0	87	1	0	88	0	0	0	0	0	4	74	0	0	0	78	191
07:30 AM	15	0	14	0	29	0	91	1	0	92	1	0	0	0	1	6	86	0	0	0	92	214
07:45 AM	6	0	16	0	22	2	113	8	0	123	0	0	0	0	0	7	94	0	0	0	101	246
Total	43	0	55	0	98	2	345	12	0	359	1	0	0	0	1	20	315	0	0	0	335	793
08:00 AM	4	0	10	0	14	0	64	6	0	70	0	0	0	0	0	4	69	0	0	0	73	157
08:15 AM	4	0	17	0	21	0	65	7	0	72	0	0	0	0	0	7	66	0	0	0	73	166
08:30 AM	8	0	11	1	20	1	76	2	0	79	0	1	0	0	1	13	62	0	0	0	75	175
08:45 AM	4	0	17	0	21	0	76	8	0	84	0	0	1	0	1	23	79	0	0	0	102	208
Total	20	0	55	1	76	1	281	23	0	305	0	1	1	0	2	47	276	0	0	0	323	706
09:00 AM	8	0	13	0	21	1	51	4	0	56	0	0	0	0	0	10	59	0	0	0	69	146
09:15 AM	2	0	12	0	14	0	52	3	0	55	1	0	1	0	2	4	63	0	0	0	67	138
09:30 AM	6	1	15	0	22	0	56	4	0	60	0	0	0	0	0	7	59	1	0	0	67	149
09:45 AM	5	0	8	0	13	0	76	0	0	76	1	0	0	0	1	10	60	0	0	0	70	160
Total	21	1	48	0	70	1	235	11	0	247	2	0	1	0	3	31	241	1	0	0	273	593
10:00 AM	3	0	17	0	20	0	66	4	0	70	0	0	0	0	0	7	69	2	0	0	78	168
10:15 AM	3	0	18	0	21	0	51	2	0	53	0	0	0	0	0	11	55	0	0	0	66	140
10:30 AM	5	0	10	0	15	0	79	1	0	80	0	0	0	0	0	7	65	0	0	0	72	167
10:45 AM	5	0	9	0	14	0	63	4	0	67	1	1	0	0	2	6	77	2	0	0	85	168
Total	16	0	54	0	70	0	259	11	0	270	1	1	0	0	2	31	266	4	0	0	301	643
11:00 AM	5	0	13	0	18	0	67	7	0	74	0	0	1	0	1	15	63	0	0	0	78	171
11:15 AM	4	0	10	0	14	0	84	3	0	87	0	0	0	0	0	14	74	0	0	0	88	189
11:30 AM	5	0	13	0	18	0	79	4	0	83	1	0	0	0	1	10	93	0	0	0	103	205
11:45 AM	3	0	8	0	11	0	92	6	0	98	1	0	2	0	3	7	93	0	0	0	100	212
Total	17	0	44	0	61	0	322	20	0	342	2	0	3	0	5	46	323	0	0	0	369	777
12:00 PM	5	0	6	0	11	1	103	6	0	110	0	0	0	0	0	15	104	0	0	0	119	240
12:15 PM	2	0	19	0	21	0	85	7	0	92	0	0	0	0	0	13	85	0	0	0	98	211
12:30 PM	5	0	20	0	25	0	88	10	0	98	1	0	0	0	1	13	95	1	0	0	109	233
12:45 PM	6	0	14	0	20	0	98	7	0	105	0	0	0	1	1	14	81	0	0	0	95	221
Total	18	0	59	0	77	1	374	30	0	405	1	0	0	1	2	55	365	1	0	0	421	905
01:00 PM	4	0	17	0	21	1	96	4	0	101	0	0	1	0	1	14	104	0	0	0	118	241
01:15 PM	3	0	10	0	13	0	79	12	0	91	0	0	1	0	1	10	107	2	0	0	119	224
01:30 PM	5	0	8	0	13	1	83	8	0	92	0	0	1	0	0	20	94	0	0	0	114	219
01:45 PM	7	0	19	0	26	0	106	10	0	116	0	0	0	0	0	10	73	0	0	0	83	225
Total	19	0	54	0	73	2	364	34	0	400	0	0	2	0	2	54	378	2	0	0	434	909
02:00 PM	3	0	21	1	25	0	79	3	0	82	0	0	0	0	0	10	82	0	0	0	92	199
02:15 PM	5	0	14	0	19	1	75	1	0	77	0	0	0	0	0	17	75	0	0	0	92	188
02:30 PM	6	0	9	0	15	0	92	9	0	101	1	0	1	0	2	16	82	1	0	0	99	217
02:45 PM	8	0	13	0	21	0	98	3	0	101	0	0	0	0	0	16	100	0	0	0	116	238
Total	22	0	57	1	80	1	344	16	0	361	1	0	1	0	2	59	339	1	0	0	399	842
03:00 PM	5	0	12	0	17	0	95	10	0	105	0	0	0	0	0	21	134	0	0	0	155	277
03:15 PM	7	0	8	0	15	0	113	15	0	128	0	0	0	0	0	2	123	0	0	0	125	268
03:30 PM	5	1	17	1	24	0	103	10	0	113	1	0	0	0	1	14	101	0	0	0	115	253
03:45 PM	5	0	13	0	18	0	128	6	0	134	1	0	0	1	2	15	107	0	0	0	122	276
Total	22	1	50	1	74	0	439	41	0	480	2	0	0	1	3	52	465	0	0	0	517	1074
04:00 PM	6	0	16	0	22	0	112	14	0	126	0	0	0	0	0	19	117	0	0	0	284	284



Turning Movement Count Summary

Greenhill Rd & Orchard Hill
 Greenhill Road Traffic Study
 Cedarfalls, IA
 118.0463.01

File Name : 13hr_Greenhill_Orchard_tmc_2018-05-10
 Site Code :
 Start Date : 5/10/2018
 Page No : 2

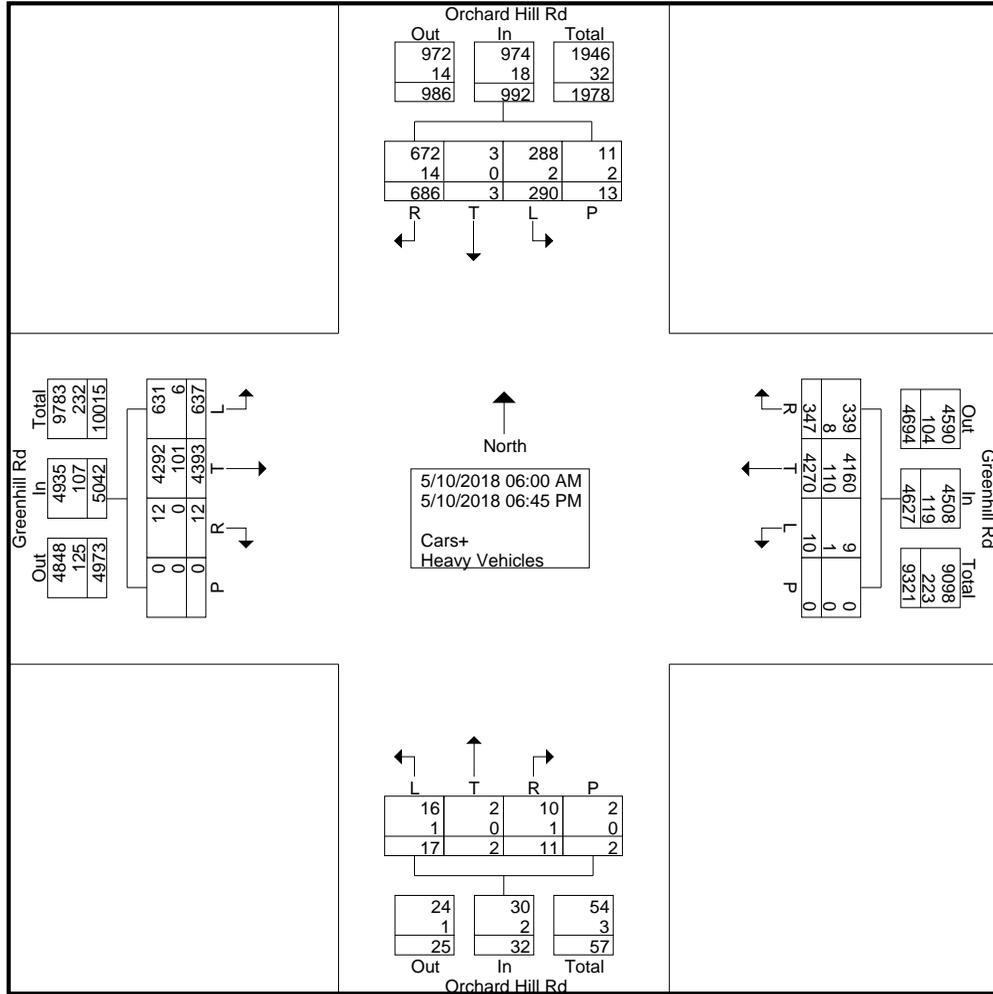
Groups Printed- Cars+ - Heavy Vehicles

Start Time	Orchard Hill Rd SB					Greenhill Rd WB					Orchard Hill Rd NB					Greenhill Rd EB					Int. Total
	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	
04:15 PM	3	0	7	2	12	0	102	12	0	114	0	0	0	0	0	14	113	0	0	127	253
04:30 PM	5	0	20	0	25	0	117	20	0	137	1	0	0	0	1	21	130	0	0	151	314
04:45 PM	5	0	21	0	26	0	138	17	0	155	2	0	1	0	3	26	120	0	0	146	330
Total	19	0	64	2	85	0	469	63	0	532	3	0	1	0	4	80	480	0	0	560	1181
05:00 PM	9	0	14	0	23	0	112	16	0	128	0	0	1	0	1	29	132	0	0	161	313
05:15 PM	5	0	16	1	22	0	132	14	0	146	1	0	0	0	1	24	121	0	0	145	314
05:30 PM	3	1	19	1	24	0	96	10	0	106	1	0	1	0	2	23	107	2	0	132	264
05:45 PM	7	0	11	1	19	0	84	4	0	88	0	0	0	0	0	24	101	0	0	125	232
Total	24	1	60	3	88	0	424	44	0	468	2	0	2	0	4	100	461	2	0	563	1123
06:00 PM	5	0	12	2	19	0	83	12	0	95	2	0	0	0	2	14	86	1	0	101	217
06:15 PM	4	0	20	1	25	2	67	7	0	76	0	0	0	0	0	11	66	0	0	77	178
06:30 PM	1	0	11	1	13	0	63	6	0	69	0	0	0	0	0	19	90	0	0	109	191
06:45 PM	5	0	14	1	20	0	57	10	0	67	0	0	0	0	0	13	80	0	0	93	180
Total	15	0	57	5	77	2	270	35	0	307	2	0	0	0	2	57	322	1	0	380	766
Grand Total	290	3	686	13	992	10	4270	347	0	4627	17	2	11	2	32	637	4393	12	0	5042	10693
Apprch %	29.2	0.3	69.2	1.3		0.2	92.3	7.5	0		53.1	6.2	34.4	6.2		12.6	87.1	0.2	0		
Total %	2.7	0	6.4	0.1	9.3	0.1	39.9	3.2	0	43.3	0.2	0	0.1	0	0.3	6	41.1	0.1	0	47.2	
Cars+	288	3	672	11	974	9	4160	339	0	4508	16	2	10	2	30	631	4292	12	0	4935	10447
% Cars+	99.3	100	98	84.6	98.2	90	97.4	97.7	0	97.4	94.1	100	90.9	100	93.8	99.1	97.7	100	0	97.9	97.7
Heavy Vehicles	2	0	14	2	18	1	110	8	0	119	1	0	1	0	2	6	101	0	0	107	246
% Heavy Vehicles	0.7	0	2	15.4	1.8	10	2.6	2.3	0	2.6	5.9	0	9.1	0	6.2	0.9	2.3	0	0	2.1	2.3

Turning Movement Count Summary

Greenhill Rd & Orchard Hill
 Greenhill Road Traffic Study
 Cedarfalls, IA
 118.0463.01

File Name : 13hr_Greenhill_Orchard_tmc_2018-05-10
 Site Code :
 Start Date : 5/10/2018
 Page No : 3

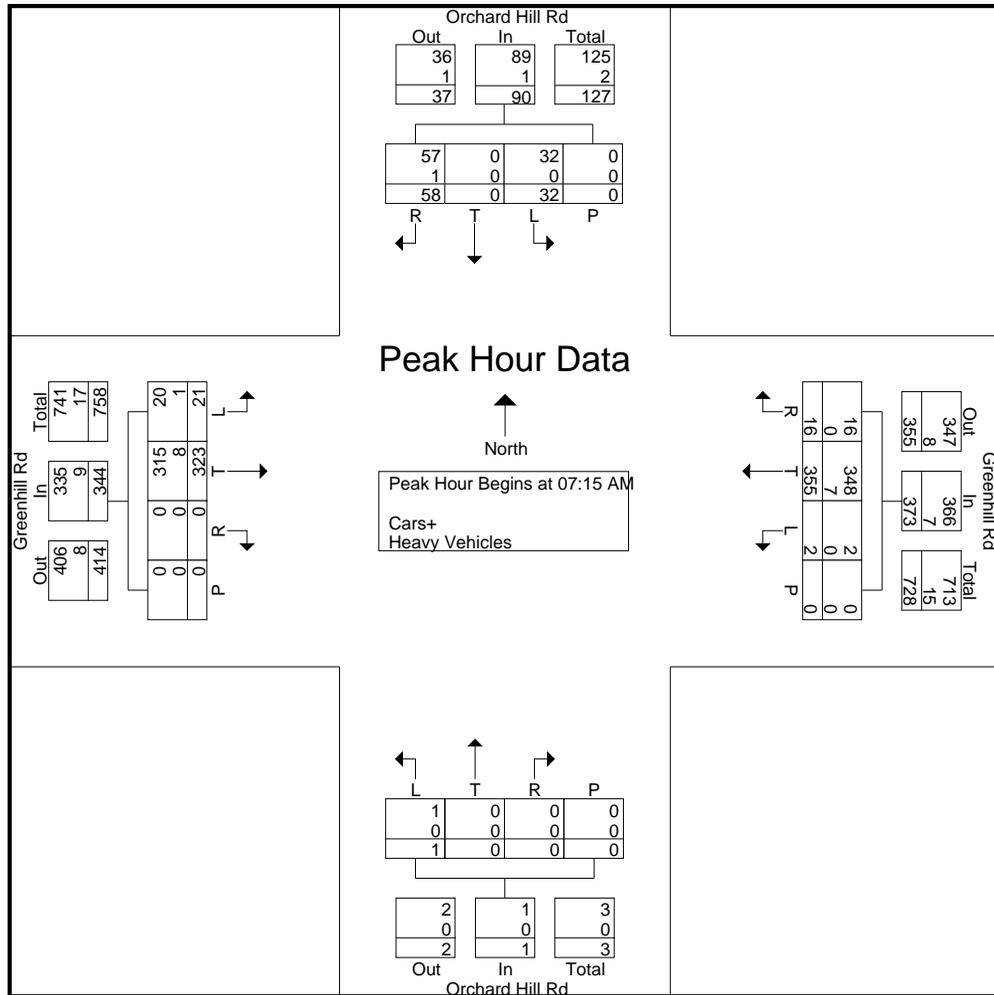


Turning Movement Count Summary

Greenhill Rd & Orchard Hill
 Greenhill Road Traffic Study
 Cedarfalls, IA
 118.0463.01

File Name : 13hr_Greenhill_Orchard_tmc_2018-05-10
 Site Code :
 Start Date : 5/10/2018
 Page No : 4

Start Time	Orchard Hill Rd SB					Greenhill Rd WB					Orchard Hill Rd NB					Greenhill Rd EB					Int. Total
	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	
Peak Hour Analysis From 06:00 AM to 09:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	7	0	18	0	25	0	87	1	0	88	0	0	0	0	0	4	74	0	0	78	191
07:30 AM	15	0	14	0	29	0	91	1	0	92	1	0	0	0	1	6	86	0	0	92	214
07:45 AM	6	0	16	0	22	2	113	8	0	123	0	0	0	0	0	7	94	0	0	101	246
08:00 AM	4	0	10	0	14	0	64	6	0	70	0	0	0	0	0	4	69	0	0	73	157
Total Volume	32	0	58	0	90	2	355	16	0	373	1	0	0	0	1	21	323	0	0	344	808
% App. Total	35.6	0	64.4	0		0.5	95.2	4.3	0		100	0	0	0		6.1	93.9	0	0		
PHF	.533	.000	.806	.000	.776	.250	.785	.500	.000	.758	.250	.000	.000	.000	.250	.750	.859	.000	.000	.851	.821
Cars+	32	0	57	0	89	2	348	16	0	366	1	0	0	0	1	20	315	0	0	335	791
% Cars+	100	0	98.3	0	98.9	100	98.0	100	0	98.1	100	0	0	0	100	95.2	97.5	0	0	97.4	97.9
Heavy Vehicles	0	0	1	0	1	0	7	0	0	7	0	0	0	0	0	1	8	0	0	9	17
% Heavy Vehicles	0	0	1.7	0	1.1	0	2.0	0	0	1.9	0	0	0	0	0	4.8	2.5	0	0	2.6	2.1

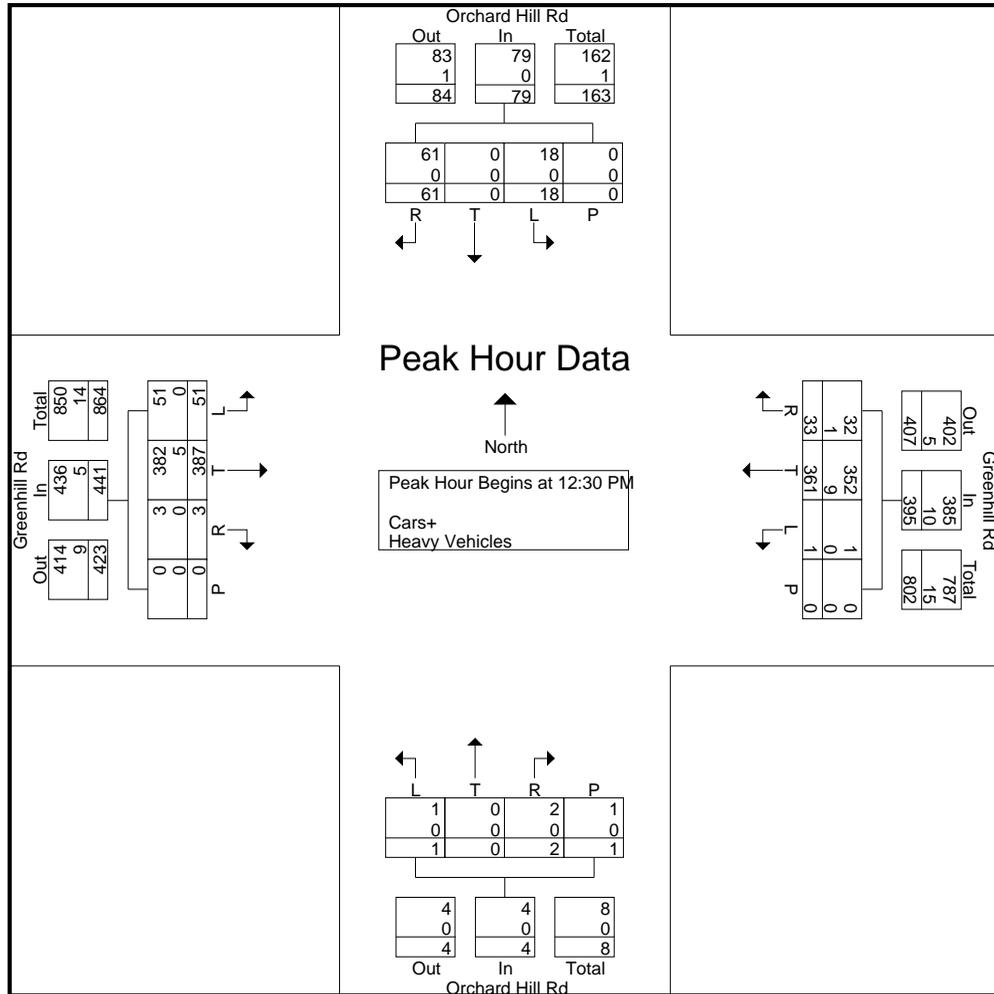


Turning Movement Count Summary

Greenhill Rd & Orchard Hill
 Greenhill Road Traffic Study
 Cedarfalls, IA
 118.0463.01

File Name : 13hr_Greenhill_Orchard_tmc_2018-05-10
 Site Code :
 Start Date : 5/10/2018
 Page No : 5

Start Time	Orchard Hill Rd SB					Greenhill Rd WB					Orchard Hill Rd NB					Greenhill Rd EB					Int. Total
	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 12:30 PM																					
12:30 PM	5	0	20	0	25	0	88	10	0	98	1	0	0	0	1	13	95	1	0	109	233
12:45 PM	6	0	14	0	20	0	98	7	0	105	0	0	0	1	1	14	81	0	0	95	221
01:00 PM	4	0	17	0	21	1	96	4	0	101	0	0	1	0	1	14	104	0	0	118	241
01:15 PM	3	0	10	0	13	0	79	12	0	91	0	0	1	0	1	10	107	2	0	119	224
Total Volume	18	0	61	0	79	1	361	33	0	395	1	0	2	1	4	51	387	3	0	441	919
% App. Total	22.8	0	77.2	0		0.3	91.4	8.4	0		25	0	50	25		11.6	87.8	0.7	0		
PHF	.750	.000	.763	.000	.790	.250	.921	.688	.000	.940	.250	.000	.500	.250	1.00	.911	.904	.375	.000	.926	.953
Cars+	18	0	61	0	79	1	352	32	0	385	1	0	2	1	4	51	382	3	0	436	904
% Cars+	100	0	100	0	100	100	97.5	97.0	0	97.5	100	0	100	100	100	100	98.7	100	0	98.9	98.4
Heavy Vehicles	0	0	0	0	0	0	9	1	0	10	0	0	0	0	0	0	5	0	0	5	15
% Heavy Vehicles	0	0	0	0	0	0	2.5	3.0	0	2.5	0	0	0	0	0	0	1.3	0	0	1.1	1.6

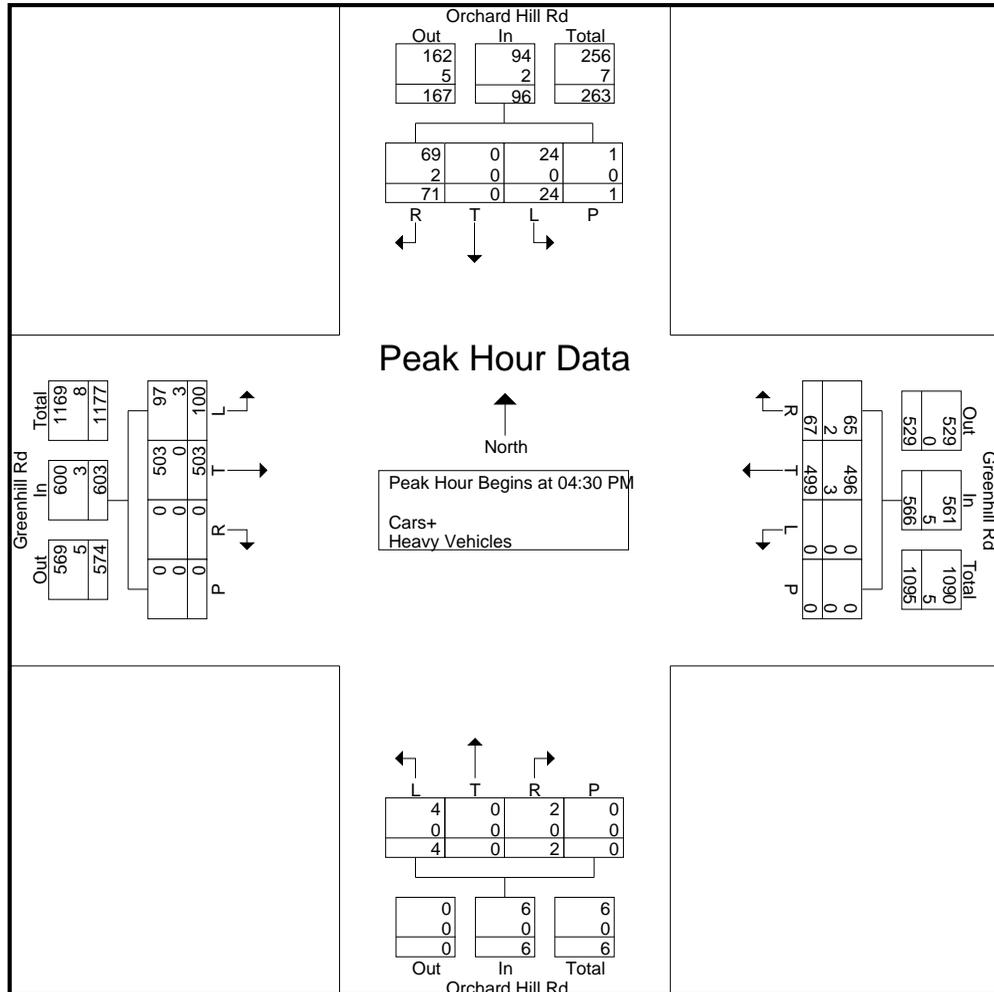


Turning Movement Count Summary

Greenhill Rd & Orchard Hill
 Greenhill Road Traffic Study
 Cedarfalls, IA
 118.0463.01

File Name : 13hr_Greenhill_Orchard_tmc_2018-05-10
 Site Code :
 Start Date : 5/10/2018
 Page No : 6

Start Time	Orchard Hill Rd SB					Greenhill Rd WB					Orchard Hill Rd NB					Greenhill Rd EB					Int. Total
	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	
Peak Hour Analysis From 02:00 PM to 06:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	5	0	20	0	25	0	117	20	0	137	1	0	0	0	1	21	130	0	0	151	314
04:45 PM	5	0	21	0	26	0	138	17	0	155	2	0	1	0	3	26	120	0	0	146	330
05:00 PM	9	0	14	0	23	0	112	16	0	128	0	0	1	0	1	29	132	0	0	161	313
05:15 PM	5	0	16	1	22	0	132	14	0	146	1	0	0	0	1	24	121	0	0	145	314
Total Volume	24	0	71	1	96	0	499	67	0	566	4	0	2	0	6	100	503	0	0	603	1271
% App. Total	25	0	74	1		0	88.2	11.8	0		66.7	0	33.3	0		16.6	83.4	0	0		
PHF	.667	.000	.845	.250	.923	.000	.904	.838	.000	.913	.500	.000	.500	.000	.500	.862	.953	.000	.000	.936	.963
Cars+	24	0	69	1	94	0	496	65	0	561	4	0	2	0	6	97	503	0	0	600	1261
% Cars+	100	0	97.2	100	97.9	0	99.4	97.0	0	99.1	100	0	100	0	100	97.0	100	0	0	99.5	99.2
Heavy Vehicles	0	0	2	0	2	0	3	2	0	5	0	0	0	0	0	3	0	0	0	3	10
% Heavy Vehicles	0	0	2.8	0	2.1	0	0.6	3.0	0	0.9	0	0	0	0	0	3.0	0	0	0	0.5	0.8





Turning Movement Count Summary

Greenhill Rd & Oster Rd
 Greenhill Road Traffic Study
 Cedarfalls, IA
 118.0463.01

File Name : 13hr_Greenhill_Oster_tmc_2018-05-10
 Site Code :
 Start Date : 5/10/2018
 Page No : 1

Groups Printed- Cars+ - Heavy Vehicles

Start Time	Oster Rd SB					Greenhill Rd WB					Oster Rd NB					Greenhill Rd EB					Int. Total
	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	
06:00 AM	0	1	0	0	1	1	23	0	0	24	0	1	0	0	1	1	23	0	0	24	50
06:15 AM	2	0	1	0	3	0	30	0	0	30	1	0	1	0	2	1	47	0	0	48	83
06:30 AM	3	0	0	1	4	0	27	0	0	27	1	0	0	0	1	1	57	0	1	59	91
06:45 AM	4	1	2	0	7	0	53	0	0	53	3	1	1	0	5	0	60	0	0	60	125
Total	9	2	3	1	15	1	133	0	0	134	5	2	2	0	9	3	187	0	1	191	349
07:00 AM	4	1	5	0	10	1	51	0	0	52	2	0	3	0	5	0	69	2	0	71	138
07:15 AM	3	0	11	0	14	1	59	1	0	61	3	0	2	0	5	1	83	2	0	86	166
07:30 AM	7	0	9	0	16	1	75	1	0	77	9	0	0	0	9	2	90	3	0	95	197
07:45 AM	4	1	2	0	7	0	106	0	0	106	4	0	1	0	5	0	107	2	0	109	227
Total	18	2	27	0	47	3	291	2	0	296	18	0	6	0	24	3	349	9	0	361	728
08:00 AM	2	0	6	0	8	2	75	1	0	78	3	0	3	0	6	1	64	5	0	70	162
08:15 AM	2	2	4	0	8	3	66	3	0	72	4	1	3	0	8	1	70	1	0	72	160
08:30 AM	2	0	2	1	5	1	71	2	1	75	3	1	5	0	9	2	56	1	0	59	148
08:45 AM	2	1	3	0	6	1	80	1	0	82	6	2	4	0	12	1	89	2	0	92	192
Total	8	3	15	1	27	7	292	7	1	307	16	4	15	0	35	5	279	9	0	293	662
09:00 AM	2	0	0	0	2	0	57	3	0	60	0	0	0	0	0	0	73	1	0	74	136
09:15 AM	0	1	0	0	1	1	54	3	0	58	0	0	4	0	4	2	58	1	0	61	124
09:30 AM	1	0	2	0	3	1	51	2	0	54	4	1	1	0	6	0	66	2	0	68	131
09:45 AM	6	0	6	0	12	3	77	1	0	81	0	1	2	0	3	0	61	2	0	63	159
Total	9	1	8	0	18	5	239	9	0	253	4	2	7	0	13	2	258	6	0	266	550
10:00 AM	4	0	1	0	5	0	61	1	0	62	0	0	3	0	3	1	71	2	0	74	144
10:15 AM	2	0	1	0	3	1	56	1	0	58	1	1	2	0	4	2	55	4	0	61	126
10:30 AM	0	0	2	0	2	3	67	0	0	70	2	1	1	0	4	2	69	2	0	73	149
10:45 AM	0	1	2	0	3	2	79	4	0	85	2	0	1	0	3	3	66	1	0	70	161
Total	6	1	6	0	13	6	263	6	0	275	5	2	7	0	14	8	261	9	0	278	580
11:00 AM	2	0	0	0	2	0	74	2	0	76	0	1	2	0	3	0	77	3	0	80	161
11:15 AM	5	0	0	0	5	4	71	2	0	77	8	2	3	0	13	1	78	3	0	82	177
11:30 AM	2	0	1	0	3	2	80	3	0	85	3	1	1	0	5	5	75	1	0	81	174
11:45 AM	1	1	0	0	2	3	93	3	0	99	5	0	0	0	5	3	99	2	0	104	210
Total	10	1	1	0	12	9	318	10	0	337	16	4	6	0	26	9	329	9	0	347	722
12:00 PM	5	0	3	0	8	2	101	0	0	103	0	0	1	0	1	5	103	1	0	109	221
12:15 PM	2	0	0	0	2	0	94	3	0	97	4	0	5	0	9	3	83	4	0	90	198
12:30 PM	3	1	4	0	8	2	84	2	0	88	7	0	2	0	9	2	90	4	0	96	201
12:45 PM	4	1	3	0	8	1	105	1	0	107	4	0	4	0	8	2	81	4	0	87	210
Total	14	2	10	0	26	5	384	6	0	395	15	0	12	0	27	12	357	13	0	382	830
01:00 PM	3	0	4	0	7	5	96	3	0	104	1	0	0	0	1	2	104	3	0	109	221
01:15 PM	0	0	4	0	4	0	81	1	0	82	1	0	1	0	2	2	109	2	0	113	201
01:30 PM	3	0	2	1	6	4	86	1	0	91	4	0	1	0	5	1	94	3	0	98	200
01:45 PM	3	2	3	0	8	2	117	2	0	121	4	0	4	0	8	1	78	3	0	82	219
Total	9	2	13	1	25	11	380	7	0	398	10	0	6	0	16	6	385	11	0	402	841
02:00 PM	1	0	2	1	4	1	73	2	0	76	4	1	1	1	7	4	84	2	0	90	177
02:15 PM	4	2	2	0	8	0	71	4	0	75	0	0	1	0	1	5	78	2	0	85	169
02:30 PM	3	0	5	0	8	1	87	5	0	93	2	0	2	1	5	2	81	1	0	84	190
02:45 PM	1	0	2	0	3	1	92	6	0	99	7	0	1	0	8	2	92	7	0	101	211
Total	9	2	11	1	23	3	323	17	0	343	13	1	5	2	21	13	335	12	0	360	747
03:00 PM	2	1	0	0	3	2	106	5	0	113	0	1	1	0	2	5	122	5	0	132	250
03:15 PM	1	0	1	0	2	2	112	4	0	118	9	0	1	0	10	3	117	8	0	128	258
03:30 PM	4	1	1	0	6	3	116	3	0	122	2	0	2	0	4	4	106	2	1	113	245
03:45 PM	1	1	6	0	8	5	123	7	0	135	7	2	2	0	11	5	103	3	0	111	265
Total	8	3	8	0	19	12	457	19	0	488	18	3	6	0	27	17	448	18	1	484	1018
04:00 PM	1	1	1	1	4	0	123	3	0	126	2	0	1	0	3	4	111	3	1	115	252



Turning Movement Count Summary

Greenhill Rd & Oster Rd
 Greenhill Road Traffic Study
 Cedarfalls, IA
 118.0463.01

File Name : 13hr_Greenhill_Oster_tmc_2018-05-10
 Site Code :
 Start Date : 5/10/2018
 Page No : 2

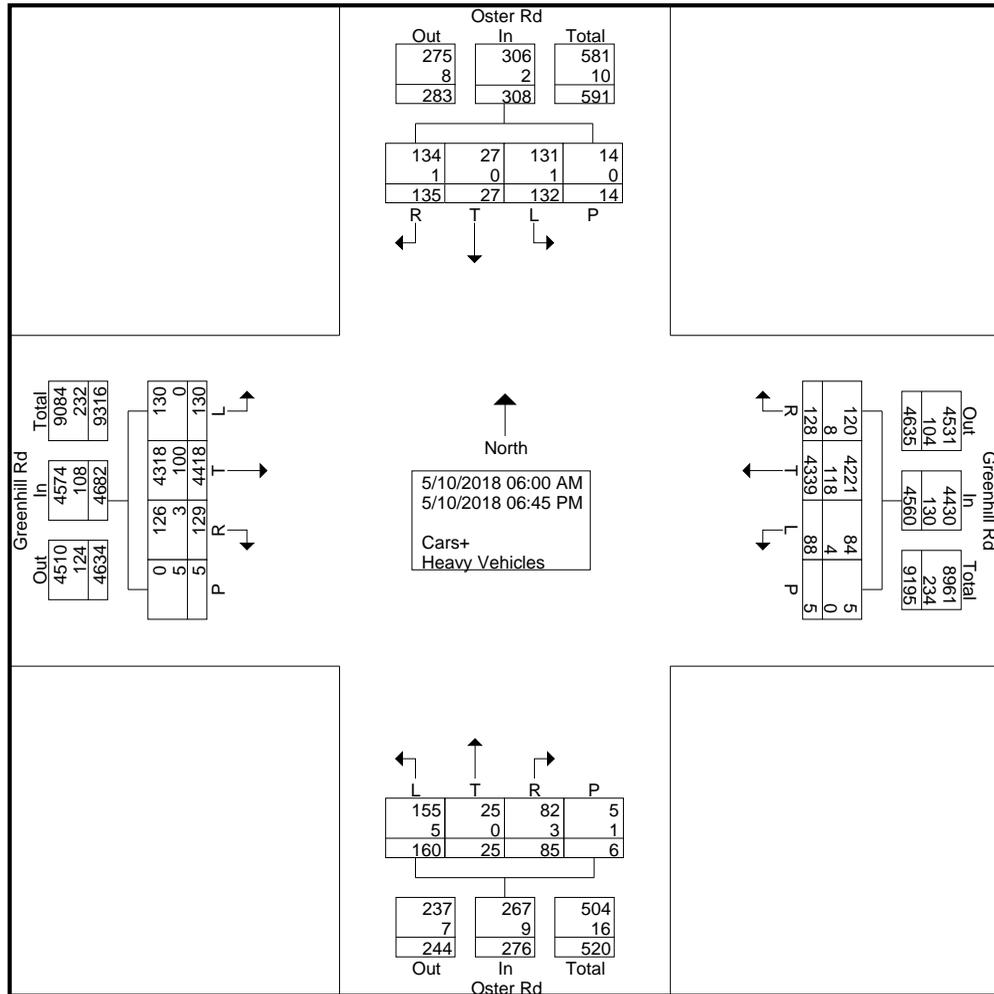
Groups Printed- Cars+ - Heavy Vehicles

Start Time	Oster Rd SB					Greenhill Rd WB					Oster Rd NB					Greenhill Rd EB					Int. Total
	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	
04:15 PM	2	0	3	1	6	3	123	5	0	131	7	0	1	1	9	7	95	5	1	108	254
04:30 PM	4	0	2	2	8	2	120	3	0	125	2	2	0	0	4	8	126	2	1	137	274
04:45 PM	1	1	1	0	3	0	151	7	0	158	6	1	1	0	8	2	128	3	0	133	302
Total	8	2	7	4	21	5	517	18	0	540	17	3	3	1	24	21	460	13	3	497	1082
05:00 PM	3	1	2	0	6	4	121	2	0	127	2	3	2	1	8	6	128	3	0	137	278
05:15 PM	4	2	7	1	14	4	135	7	0	146	3	1	2	0	6	3	129	3	0	135	301
05:30 PM	4	0	4	0	8	6	105	6	0	117	5	0	2	1	8	5	96	3	0	104	237
05:45 PM	1	1	5	1	8	2	91	3	0	96	4	0	2	1	7	6	97	3	0	106	217
Total	12	4	18	2	36	16	452	18	0	486	14	4	8	3	29	20	450	12	0	482	1033
06:00 PM	1	0	3	2	6	2	84	1	0	87	3	0	0	0	3	2	90	3	0	95	191
06:15 PM	5	1	1	0	7	1	75	3	0	79	2	0	1	0	3	3	60	1	0	64	153
06:30 PM	5	1	2	1	9	2	66	3	2	73	3	0	1	0	4	3	87	2	0	92	178
06:45 PM	1	0	2	1	4	0	65	2	2	69	1	0	0	0	1	3	83	2	0	88	162
Total	12	2	8	4	26	5	290	9	4	308	9	0	2	0	11	11	320	8	0	339	684
Grand Total	132	27	135	14	308	88	4339	128	5	4560	160	25	85	6	276	130	4418	129	5	4682	9826
Apprch %	42.9	8.8	43.8	4.5		1.9	95.2	2.8	0.1		58	9.1	30.8	2.2		2.8	94.4	2.8	0.1		
Total %	1.3	0.3	1.4	0.1	3.1	0.9	44.2	1.3	0.1	46.4	1.6	0.3	0.9	0.1	2.8	1.3	45	1.3	0.1	47.6	
Cars+	131	27	134	14	306	84	4221	120	5	4430	155	25	82	5	267	130	4318	126	0	4574	9577
% Cars+	99.2	100	99.3	100	99.4	95.5	97.3	93.8	100	97.1	96.9	100	96.5	83.3	96.7	100	97.7	97.7	0	97.7	97.5
Heavy Vehicles	1	0	1	0	2	4	118	8	0	130	5	0	3	1	9	0	100	3	5	108	249
% Heavy Vehicles	0.8	0	0.7	0	0.6	4.5	2.7	6.2	0	2.9	3.1	0	3.5	16.7	3.3	0	2.3	2.3	100	2.3	2.5

Turning Movement Count Summary

Greenhill Rd & Oster Rd
 Greenhill Road Traffic Study
 Cedarfalls, IA
 118.0463.01

File Name : 13hr_Greenhill_Oster_tmc_2018-05-10
 Site Code :
 Start Date : 5/10/2018
 Page No : 3

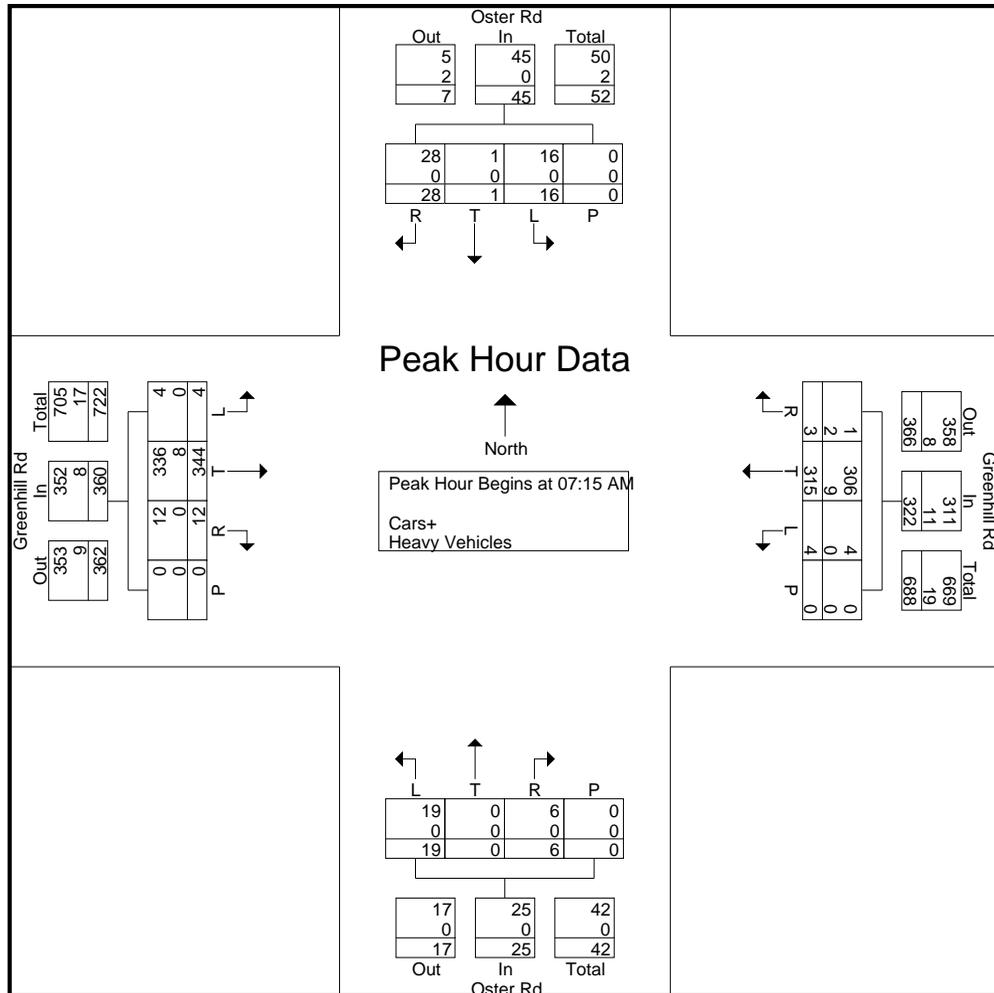


Turning Movement Count Summary

Greenhill Rd & Oster Rd
 Greenhill Road Traffic Study
 Cedarfalls, IA
 118.0463.01

File Name : 13hr_Greenhill_Oster_tmc_2018-05-10
 Site Code :
 Start Date : 5/10/2018
 Page No : 4

Start Time	Oster Rd SB					Greenhill Rd WB					Oster Rd NB					Greenhill Rd EB					Int. Total
	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	
Peak Hour Analysis From 06:00 AM to 09:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	3	0	11	0	14	1	59	1	0	61	3	0	2	0	5	1	83	2	0	86	166
07:30 AM	7	0	9	0	16	1	75	1	0	77	9	0	0	0	9	2	90	3	0	95	197
07:45 AM	4	1	2	0	7	0	106	0	0	106	4	0	1	0	5	0	107	2	0	109	227
08:00 AM	2	0	6	0	8	2	75	1	0	78	3	0	3	0	6	1	64	5	0	70	162
Total Volume	16	1	28	0	45	4	315	3	0	322	19	0	6	0	25	4	344	12	0	360	752
% App. Total	35.6	2.2	62.2	0		1.2	97.8	0.9	0		76	0	24	0		1.1	95.6	3.3	0		
PHF	.571	.250	.636	.000	.703	.500	.743	.750	.000	.759	.528	.000	.500	.000	.694	.500	.804	.600	.000	.826	.828
Cars+	16	1	28	0	45	4	306	1	0	311	19	0	6	0	25	4	336	12	0	352	733
% Cars+	100	100	100	0	100	100	97.1	33.3	0	96.6	100	0	100	0	100	100	97.7	100	0	97.8	97.5
Heavy Vehicles	0	0	0	0	0	0	9	2	0	11	0	0	0	0	0	0	8	0	0	8	19
% Heavy Vehicles	0	0	0	0	0	0	2.9	66.7	0	3.4	0	0	0	0	0	0	2.3	0	0	2.2	2.5

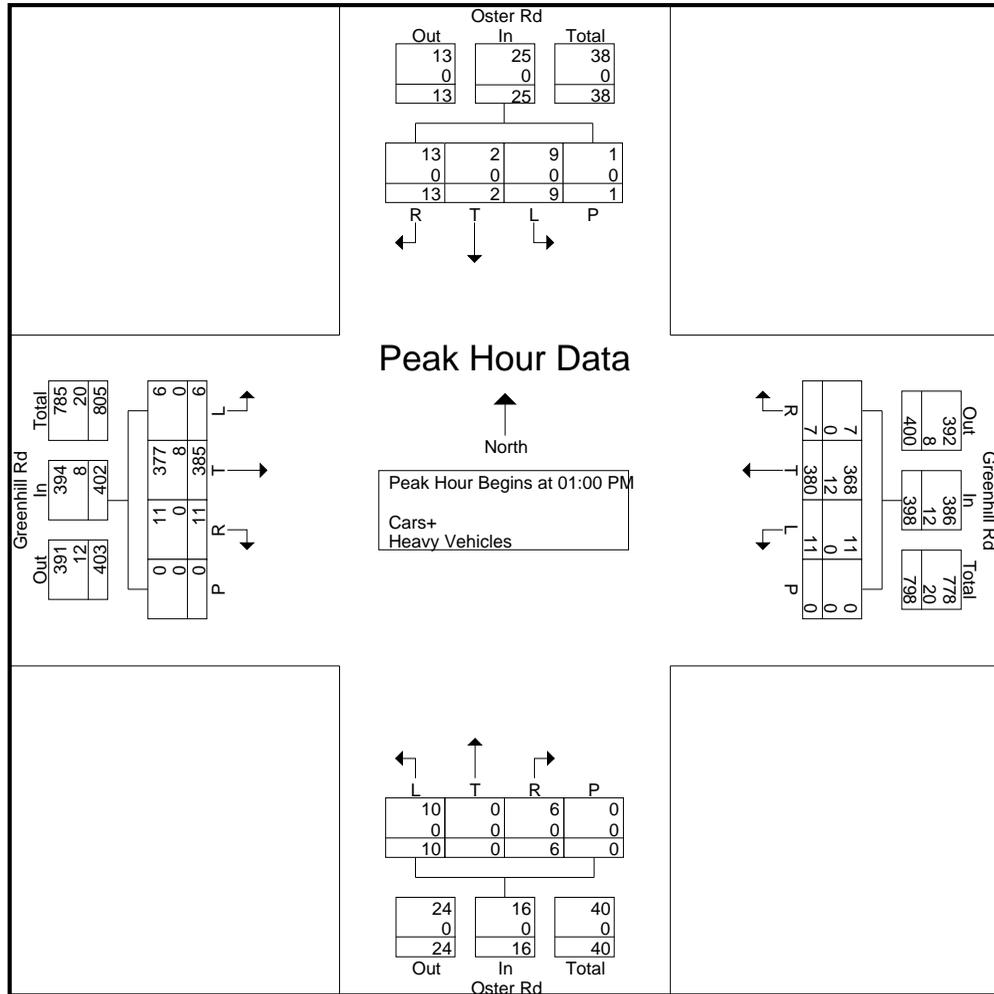


Turning Movement Count Summary

Greenhill Rd & Oster Rd
 Greenhill Road Traffic Study
 Cedarfalls, IA
 118.0463.01

File Name : 13hr_Greenhill_Oster_tmc_2018-05-10
 Site Code :
 Start Date : 5/10/2018
 Page No : 5

Start Time	Oster Rd SB					Greenhill Rd WB					Oster Rd NB					Greenhill Rd EB					Int. Total
	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 01:00 PM																					
01:00 PM	3	0	4	0	7	5	96	3	0	104	1	0	0	0	1	2	104	3	0	109	221
01:15 PM	0	0	4	0	4	0	81	1	0	82	1	0	1	0	2	2	109	2	0	113	201
01:30 PM	3	0	2	1	6	4	86	1	0	91	4	0	1	0	5	1	94	3	0	98	200
01:45 PM	3	2	3	0	8	2	117	2	0	121	4	0	4	0	8	1	78	3	0	82	219
Total Volume	9	2	13	1	25	11	380	7	0	398	10	0	6	0	16	6	385	11	0	402	841
% App. Total	36	8	52	4		2.8	95.5	1.8	0		62.5	0	37.5	0		1.5	95.8	2.7	0		
PHF	.750	.250	.813	.250	.781	.550	.812	.583	.000	.822	.625	.000	.375	.000	.500	.750	.883	.917	.000	.889	.951
Cars+	9	2	13	1	25	11	368	7	0	386	10	0	6	0	16	6	377	11	0	394	821
% Cars+	100	100	100	100	100	100	96.8	100	0	97.0	100	0	100	0	100	100	97.9	100	0	98.0	97.6
Heavy Vehicles	0	0	0	0	0	0	12	0	0	12	0	0	0	0	0	0	8	0	0	8	20
% Heavy Vehicles	0	0	0	0	0	0	3.2	0	0	3.0	0	0	0	0	0	0	2.1	0	0	2.0	2.4

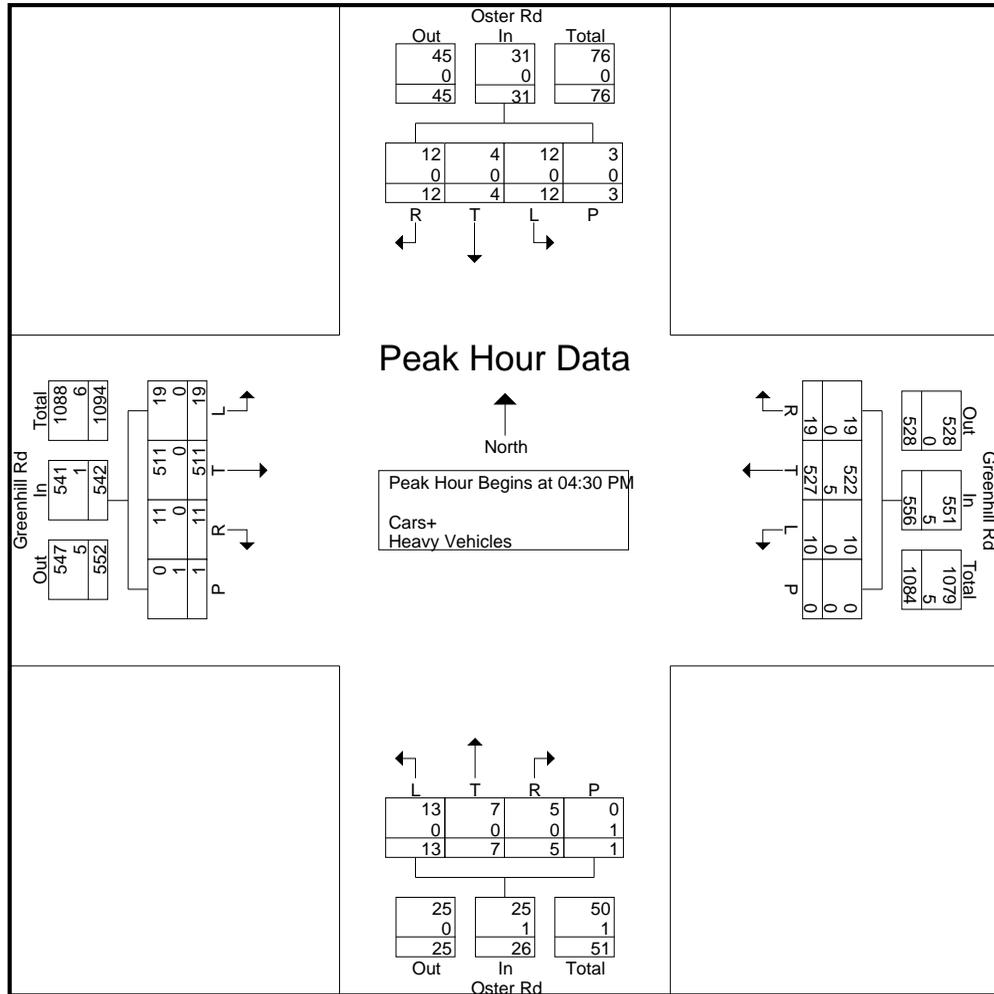


Turning Movement Count Summary

Greenhill Rd & Oster Rd
 Greenhill Road Traffic Study
 Cedarfalls, IA
 118.0463.01

File Name : 13hr_Greenhill_Oster_tmc_2018-05-10
 Site Code :
 Start Date : 5/10/2018
 Page No : 6

Start Time	Oster Rd SB					Greenhill Rd WB					Oster Rd NB					Greenhill Rd EB					Int. Total
	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	
Peak Hour Analysis From 02:00 PM to 06:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	4	0	2	2	8	2	120	3	0	125	2	2	0	0	4	8	126	2	1	137	274
04:45 PM	1	1	1	0	3	0	151	7	0	158	6	1	1	0	8	2	128	3	0	133	302
05:00 PM	3	1	2	0	6	4	121	2	0	127	2	3	2	1	8	6	128	3	0	137	278
05:15 PM	4	2	7	1	14	4	135	7	0	146	3	1	2	0	6	3	129	3	0	135	301
Total Volume	12	4	12	3	31	10	527	19	0	556	13	7	5	1	26	19	511	11	1	542	1155
% App. Total	38.7	12.9	38.7	9.7		1.8	94.8	3.4	0		50	26.9	19.2	3.8		3.5	94.3	2	0.2		
PHF	.750	.500	.429	.375	.554	.625	.873	.679	.000	.880	.542	.583	.625	.250	.813	.594	.990	.917	.250	.989	.956
Cars+	12	4	12	3	31	10	522	19	0	551	13	7	5	0	25	19	511	11	0	541	1148
% Cars+	100	100	100	100	100	100	99.1	100	0	99.1	100	100	100	0	96.2	100	100	100	0	99.8	99.4
Heavy Vehicles	0	0	0	0	0	0	5	0	0	5	0	0	0	1	1	0	0	0	1	1	7
% Heavy Vehicles	0	0	0	0	0	0	0.9	0	0	0.9	0	0	0	100	3.8	0	0	0	100	0.2	0.6





Turning Movement Count Summary

Greenhill Rd & Rownd St
 Greenhill Road Traffic Study
 Cedarfalls, IA
 118.0463.01

File Name : 13hr_Greenhill_Rownd_tmc_2018-05-10
 Site Code :
 Start Date : 5/10/2018
 Page No : 1

Groups Printed- Cars+ - Heavy Vehicles

Start Time	Rownd St SB					Greenhill Rd WB					Rownd St NB					Greenhill Rd EB					Int. Total
	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	
06:00 AM	18	2	6	0	26	1	22	2	0	25	1	0	1	0	2	6	22	0	0	28	81
06:15 AM	16	2	6	0	24	0	19	0	0	19	0	1	1	0	2	5	37	1	0	43	88
06:30 AM	24	0	5	0	29	2	20	7	0	29	4	2	2	0	8	4	68	0	0	72	138
06:45 AM	36	2	13	0	51	2	46	10	0	58	1	2	2	0	5	1	53	3	0	57	171
Total	94	6	30	0	130	5	107	19	0	131	6	5	6	0	17	16	180	4	0	200	478
07:00 AM	28	4	15	0	47	4	29	3	0	36	4	1	1	0	6	7	67	2	0	76	165
07:15 AM	36	3	16	0	55	12	61	16	0	89	4	8	8	0	20	15	70	6	0	91	255
07:30 AM	39	7	16	0	62	21	57	19	0	97	4	4	14	0	22	3	90	7	0	100	281
07:45 AM	32	15	19	0	66	35	80	23	0	138	12	15	23	0	50	8	90	9	0	107	361
Total	135	29	66	0	230	72	227	61	0	360	24	28	46	0	98	33	317	24	0	374	1062
08:00 AM	29	4	13	0	46	4	56	23	0	83	1	6	15	0	22	10	55	7	0	72	223
08:15 AM	23	1	22	0	46	4	48	30	0	82	2	5	5	0	12	9	67	1	1	78	218
08:30 AM	38	5	25	0	68	4	49	19	0	72	0	8	4	0	12	11	55	2	0	68	220
08:45 AM	29	1	19	0	49	4	60	24	0	88	1	4	3	0	8	17	71	2	0	90	235
Total	119	11	79	0	209	16	213	96	0	325	4	23	27	0	54	47	248	12	1	308	896
09:00 AM	19	1	19	0	39	1	41	17	0	59	1	2	1	0	4	11	55	1	0	67	169
09:15 AM	24	1	5	0	30	2	46	16	0	64	0	2	3	0	5	15	47	2	0	64	163
09:30 AM	17	1	12	0	30	0	50	14	0	64	0	1	0	0	1	6	59	1	0	66	161
09:45 AM	17	1	21	0	39	0	53	20	0	73	1	2	0	0	3	14	58	0	0	72	187
Total	77	4	57	0	138	3	190	67	0	260	2	7	4	0	13	46	219	4	0	269	680
10:00 AM	20	2	19	0	41	0	54	18	0	72	1	1	2	0	4	13	62	4	0	79	196
10:15 AM	20	2	14	0	36	3	38	24	0	65	0	1	1	0	2	10	44	0	0	54	157
10:30 AM	21	1	26	0	48	2	54	14	0	70	1	1	1	0	3	15	53	1	0	69	190
10:45 AM	16	3	17	0	36	4	56	28	0	88	2	0	0	0	2	22	52	2	0	76	202
Total	77	8	76	0	161	9	202	84	0	295	4	3	4	0	11	60	211	7	0	278	745
11:00 AM	24	0	21	0	45	3	55	27	0	85	1	0	3	0	4	10	56	5	0	71	205
11:15 AM	26	5	19	0	50	4	59	40	0	103	2	2	9	0	13	16	70	1	0	87	253
11:30 AM	12	3	22	0	37	6	69	32	0	107	2	2	5	0	9	22	66	2	0	90	243
11:45 AM	20	2	22	0	44	7	78	24	0	109	0	0	1	0	1	16	77	5	0	98	252
Total	82	10	84	0	176	20	261	123	0	404	5	4	18	0	27	64	269	13	0	346	953
12:00 PM	31	1	29	0	61	6	77	26	0	109	1	2	0	0	3	22	76	2	0	100	273
12:15 PM	35	4	13	0	52	4	78	30	0	112	0	1	0	0	1	22	63	3	0	88	253
12:30 PM	36	1	29	0	66	4	65	25	0	94	1	1	3	0	5	19	80	1	0	100	265
12:45 PM	32	0	29	0	61	1	68	26	0	95	0	2	2	0	4	21	61	2	0	84	244
Total	134	6	100	0	240	15	288	107	0	410	2	6	5	0	13	84	280	8	0	372	1035
01:00 PM	30	1	33	0	64	0	61	31	0	92	6	4	6	0	16	22	86	1	0	109	281
01:15 PM	37	1	17	0	55	1	68	28	0	97	2	4	2	0	8	19	81	3	0	103	263
01:30 PM	24	1	20	1	46	5	75	24	0	104	1	3	0	0	4	22	77	0	0	99	253
01:45 PM	21	3	26	0	50	2	90	33	0	125	0	0	1	1	2	15	58	2	0	75	252
Total	112	6	96	1	215	8	294	116	0	418	9	11	9	1	30	78	302	6	0	386	1049
02:00 PM	22	3	21	1	47	1	54	19	0	74	1	0	2	0	3	14	70	1	0	85	209
02:15 PM	22	3	21	0	46	0	54	25	0	79	2	2	2	0	6	15	65	2	0	82	213
02:30 PM	22	0	14	0	36	3	79	38	0	120	2	2	2	0	6	15	66	4	0	85	247
02:45 PM	24	3	27	0	54	12	72	37	0	121	1	2	3	0	6	21	71	3	0	95	276
Total	90	9	83	1	183	16	259	119	0	394	6	6	9	0	21	65	272	10	0	347	945
03:00 PM	24	7	19	0	50	17	93	25	0	135	5	0	3	0	8	37	87	6	0	130	323
03:15 PM	23	8	21	0	52	17	87	37	0	141	12	14	46	0	72	25	75	13	0	113	378
03:30 PM	33	2	21	0	56	3	95	49	0	147	9	6	9	0	24	28	88	2	0	118	345
03:45 PM	42	7	35	0	84	5	94	45	0	144	3	1	4	0	8	21	74	3	0	98	334
Total	122	24	96	0	242	42	369	156	0	567	29	21	62	0	112	111	324	24	0	459	1380
04:00 PM	27	3	32	0	62	1	92	50	0	143	8	5	2	0	15	20	97	3	0	120	340



Turning Movement Count Summary

Greenhill Rd & Rownd St
 Greenhill Road Traffic Study
 Cedarfalls, IA
 118.0463.01

File Name : 13hr_Greenhill_Rownd_tmc_2018-05-10
 Site Code :
 Start Date : 5/10/2018
 Page No : 2

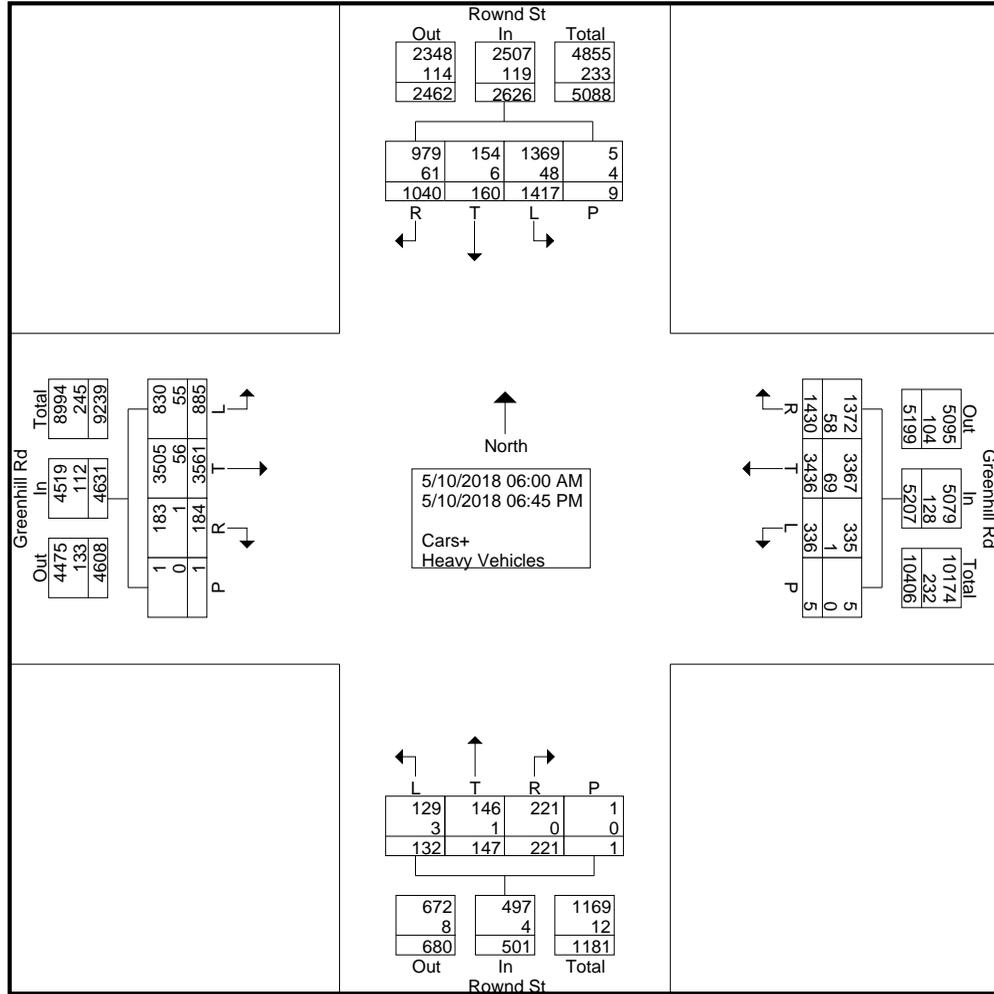
Groups Printed- Cars+ - Heavy Vehicles

Start Time	Rownd St SB					Greenhill Rd WB					Rownd St NB					Greenhill Rd EB					Int. Total
	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	
04:15 PM	35	5	19	0	59	8	99	51	0	158	6	6	3	0	15	21	73	7	0	101	333
04:30 PM	35	9	31	0	75	7	111	49	0	167	10	7	13	0	30	37	102	2	0	141	413
04:45 PM	24	5	23	0	52	5	121	44	0	170	3	2	2	0	7	24	102	5	0	131	360
Total	121	22	105	0	248	21	423	194	0	638	27	20	20	0	67	102	374	17	0	493	1446
05:00 PM	42	4	23	0	69	1	112	43	0	156	3	3	4	0	10	27	101	3	0	131	366
05:15 PM	28	3	29	0	60	7	119	70	1	197	4	1	1	0	6	35	88	3	0	126	389
05:30 PM	30	1	21	0	52	2	87	43	0	132	1	3	0	0	4	20	85	2	0	107	295
05:45 PM	46	1	25	1	73	5	58	28	0	91	0	2	0	0	2	20	76	4	0	100	266
Total	146	9	98	1	254	15	376	184	1	576	8	9	5	0	22	102	350	12	0	464	1316
06:00 PM	27	1	25	0	53	8	67	29	0	104	1	1	2	0	4	24	60	3	0	87	248
06:15 PM	28	4	18	1	51	21	58	28	2	109	2	2	2	0	6	17	46	4	0	67	233
06:30 PM	30	7	11	2	50	44	50	25	2	121	2	0	1	0	3	16	58	24	0	98	272
06:45 PM	23	4	16	3	46	21	52	22	0	95	1	1	1	0	3	20	51	12	0	83	227
Total	108	16	70	6	200	94	227	104	4	429	6	4	6	0	16	77	215	43	0	335	980
Grand Total	1417	160	1040	9	2626	336	3436	1430	5	5207	132	147	221	1	501	885	3561	184	1	4631	12965
Apprch %	54	6.1	39.6	0.3		6.5	66	27.5	0.1		26.3	29.3	44.1	0.2		19.1	76.9	4	0		
Total %	10.9	1.2	8	0.1	20.3	2.6	26.5	11	0	40.2	1	1.1	1.7	0	3.9	6.8	27.5	1.4	0	35.7	
Cars+	1369	154	979	5	2507	335	3367	1372	5	5079	129	146	221	1	497	830	3505	183	1	4519	12602
% Cars+	96.6	96.2	94.1	55.6	95.5	99.7	98	95.9	100	97.5	97.7	99.3	100	100	99.2	93.8	98.4	99.5	100	97.6	97.2
Heavy Vehicles	48	6	61	4	119	1	69	58	0	128	3	1	0	0	4	55	56	1	0	112	363
% Heavy Vehicles	3.4	3.8	5.9	44.4	4.5	0.3	2	4.1	0	2.5	2.3	0.7	0	0	0.8	6.2	1.6	0.5	0	2.4	2.8

Turning Movement Count Summary

Greenhill Rd & Rownd St
 Greenhill Road Traffic Study
 Cedarfalls, IA
 118.0463.01

File Name : 13hr_Greenhill_Rownd_tmc_2018-05-10
 Site Code :
 Start Date : 5/10/2018
 Page No : 3

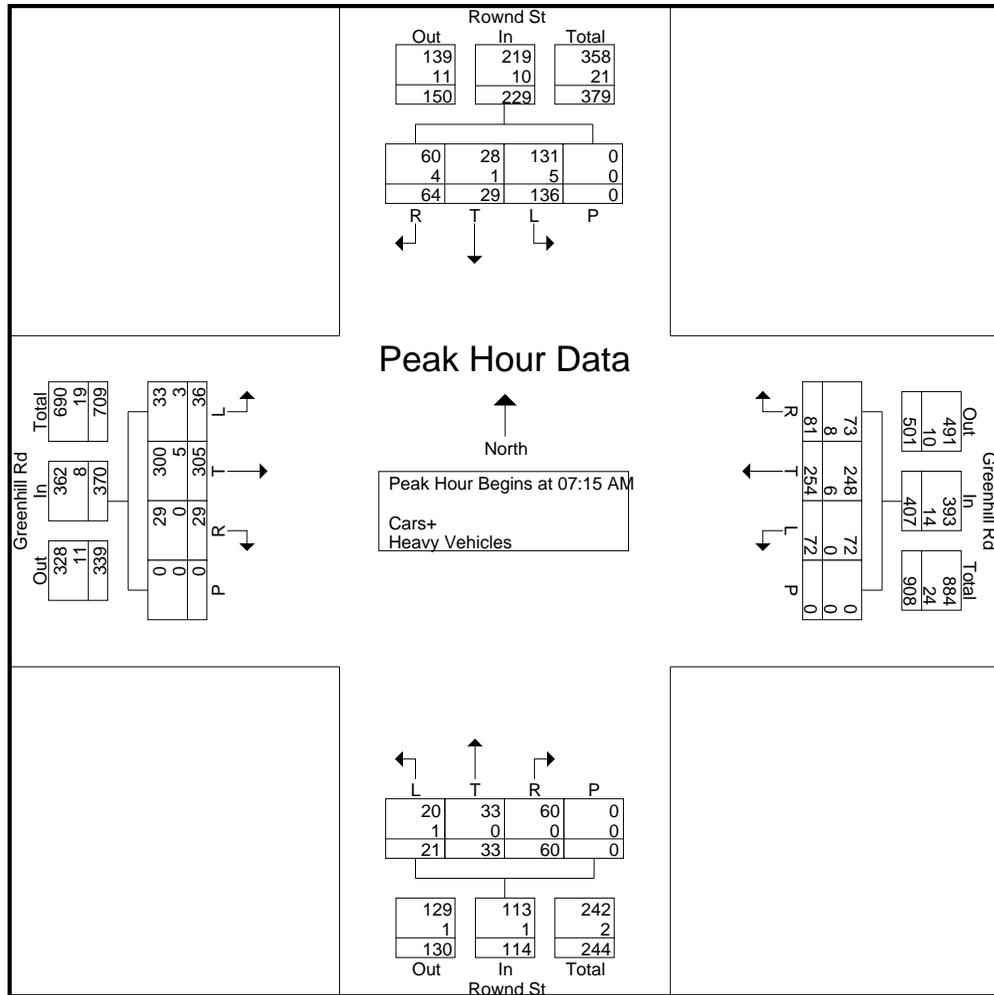


Turning Movement Count Summary

Greenhill Rd & Rownd St
 Greenhill Road Traffic Study
 Cedarfalls, IA
 118.0463.01

File Name : 13hr_Greenhill_Rownd_tmc_2018-05-10
 Site Code :
 Start Date : 5/10/2018
 Page No : 4

Start Time	Rownd St SB					Greenhill Rd WB					Rownd St NB					Greenhill Rd EB					Int. Total
	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	
Peak Hour Analysis From 06:00 AM to 09:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	36	3	16	0	55	12	61	16	0	89	4	8	8	0	20	15	70	6	0	91	255
07:30 AM	39	7	16	0	62	21	57	19	0	97	4	4	14	0	22	3	90	7	0	100	281
07:45 AM	32	15	19	0	66	35	80	23	0	138	12	15	23	0	50	8	90	9	0	107	361
08:00 AM	29	4	13	0	46	4	56	23	0	83	1	6	15	0	22	10	55	7	0	72	223
Total Volume	136	29	64	0	229	72	254	81	0	407	21	33	60	0	114	36	305	29	0	370	1120
% App. Total	59.4	12.7	27.9	0		17.7	62.4	19.9	0		18.4	28.9	52.6	0		9.7	82.4	7.8	0		
PHF	.872	.483	.842	.000	.867	.514	.794	.880	.000	.737	.438	.550	.652	.000	.570	.600	.847	.806	.000	.864	.776
Cars+	131	28	60	0	219	72	248	73	0	393	20	33	60	0	113	33	300	29	0	362	1087
% Cars+	96.3	96.6	93.8	0	95.6	100	97.6	90.1	0	96.6	95.2	100	100	0	99.1	91.7	98.4	100	0	97.8	97.1
Heavy Vehicles	5	1	4	0	10	0	6	8	0	14	1	0	0	0	1	3	5	0	0	8	33
% Heavy Vehicles	3.7	3.4	6.3	0	4.4	0	2.4	9.9	0	3.4	4.8	0	0	0	0.9	8.3	1.6	0	0	2.2	2.9



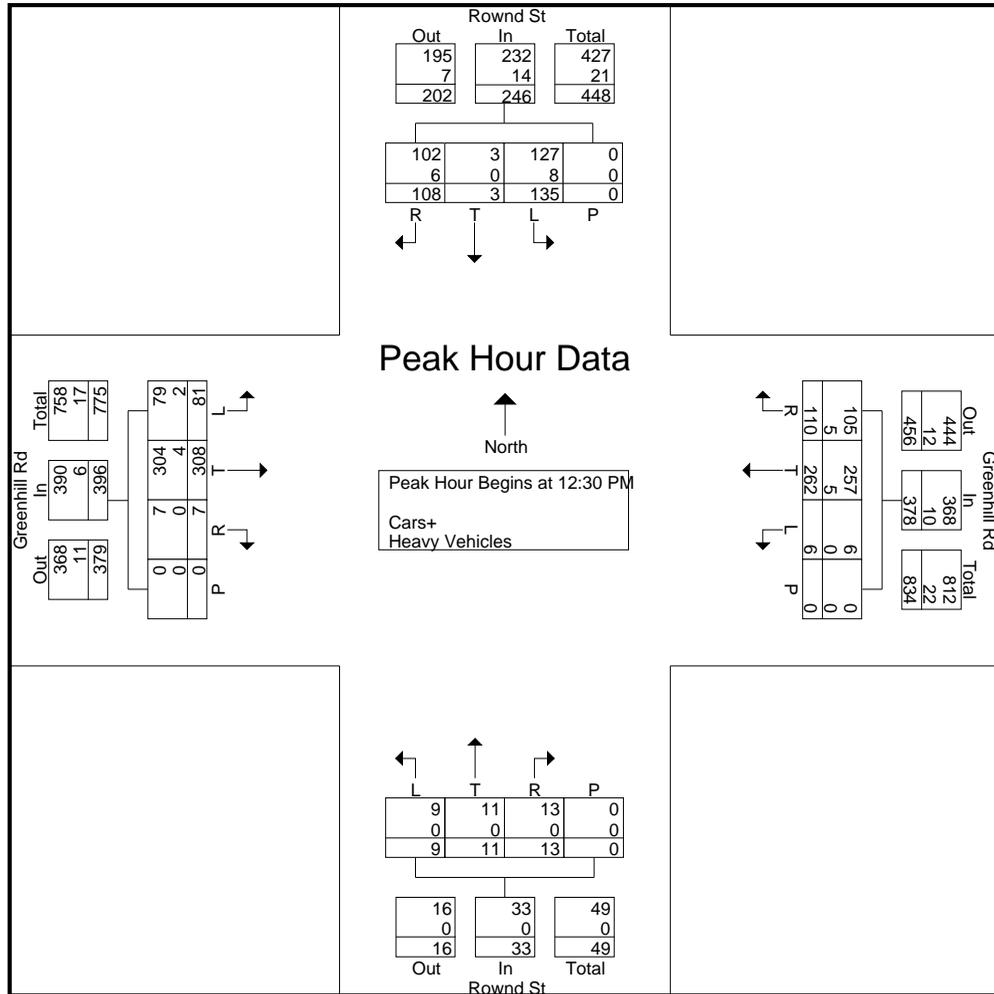


Turning Movement Count Summary

Greenhill Rd & Rownd St
 Greenhill Road Traffic Study
 Cedarfalls, IA
 118.0463.01

File Name : 13hr_Greenhill_Rownd_tmc_2018-05-10
 Site Code :
 Start Date : 5/10/2018
 Page No : 5

Start Time	Rownd St SB					Greenhill Rd WB					Rownd St NB					Greenhill Rd EB					Int. Total
	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 12:30 PM																					
12:30 PM	36	1	29	0	66	4	65	25	0	94	1	1	3	0	5	19	80	1	0	100	265
12:45 PM	32	0	29	0	61	1	68	26	0	95	0	2	2	0	4	21	61	2	0	84	244
01:00 PM	30	1	33	0	64	0	61	31	0	92	6	4	6	0	16	22	86	1	0	109	281
01:15 PM	37	1	17	0	55	1	68	28	0	97	2	4	2	0	8	19	81	3	0	103	263
Total Volume	135	3	108	0	246	6	262	110	0	378	9	11	13	0	33	81	308	7	0	396	1053
% App. Total	54.9	1.2	43.9	0		1.6	69.3	29.1	0		27.3	33.3	39.4	0		20.5	77.8	1.8	0		
PHF	.912	.750	.818	.000	.932	.375	.963	.887	.000	.974	.375	.688	.542	.000	.516	.920	.895	.583	.000	.908	.937
Cars+	127	3	102	0	232	6	257	105	0	368	9	11	13	0	33	79	304	7	0	390	1023
% Cars+	94.1	100	94.4	0	94.3	100	98.1	95.5	0	97.4	100	100	100	0	100	97.5	98.7	100	0	98.5	97.2
Heavy Vehicles	8	0	6	0	14	0	5	5	0	10	0	0	0	0	0	2	4	0	0	6	30
% Heavy Vehicles	5.9	0	5.6	0	5.7	0	1.9	4.5	0	2.6	0	0	0	0	0	2.5	1.3	0	0	1.5	2.8

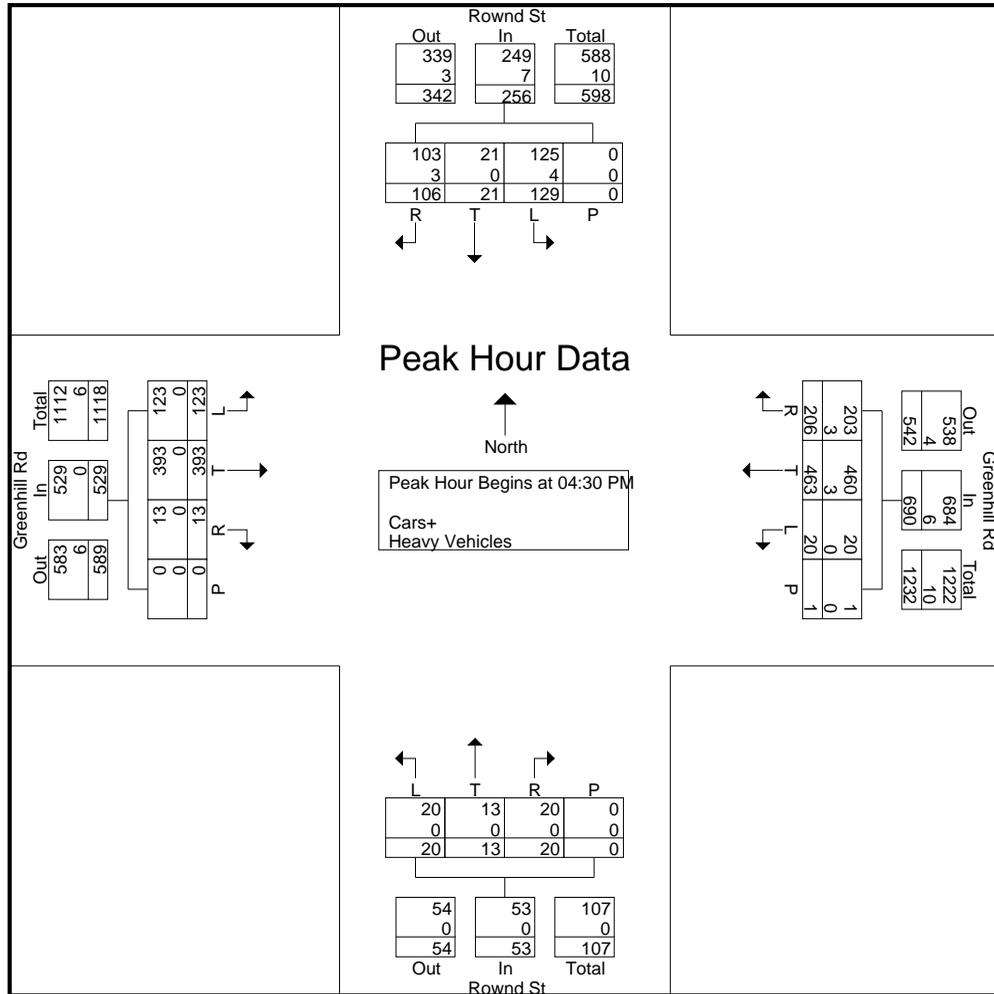


Turning Movement Count Summary

Greenhill Rd & Rownd St
 Greenhill Road Traffic Study
 Cedarfalls, IA
 118.0463.01

File Name : 13hr_Greenhill_Rownd_tmc_2018-05-10
 Site Code :
 Start Date : 5/10/2018
 Page No : 6

Start Time	Rownd St SB					Greenhill Rd WB					Rownd St NB					Greenhill Rd EB					Int. Total
	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	
Peak Hour Analysis From 02:00 PM to 06:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	35	9	31	0	75	7	111	49	0	167	10	7	13	0	30	37	102	2	0	141	413
04:45 PM	24	5	23	0	52	5	121	44	0	170	3	2	2	0	7	24	102	5	0	131	360
05:00 PM	42	4	23	0	69	1	112	43	0	156	3	3	4	0	10	27	101	3	0	131	366
05:15 PM	28	3	29	0	60	7	119	70	1	197	4	1	1	0	6	35	88	3	0	126	389
Total Volume	129	21	106	0	256	20	463	206	1	690	20	13	20	0	53	123	393	13	0	529	1528
% App. Total	50.4	8.2	41.4	0		2.9	67.1	29.9	0.1		37.7	24.5	37.7	0		23.3	74.3	2.5	0		
PHF	.768	.583	.855	.000	.853	.714	.957	.736	.250	.876	.500	.464	.385	.000	.442	.831	.963	.650	.000	.938	.925
Cars+	125	21	103	0	249	20	460	203	1	684	20	13	20	0	53	123	393	13	0	529	1515
% Cars+	96.9	100	97.2	0	97.3	100	99.4	98.5	100	99.1	100	100	100	0	100	100	100	100	0	100	99.1
Heavy Vehicles	4	0	3	0	7	0	3	3	0	6	0	0	0	0	0	0	0	0	0	0	13
% Heavy Vehicles	3.1	0	2.8	0	2.7	0	0.6	1.5	0	0.9	0	0	0	0	0	0	0	0	0	0	0.9





Turning Movement Count Summary

Greenhill Rd & Greencreek Rd
 Greenhill Road Traffic Study
 Cedarfalls, IA
 118.0463.01

File Name : 13hr_Greenhill_Greencreek_tmc_2018-05-10
 Site Code :
 Start Date : 5/10/2018
 Page No : 1

Groups Printed- Cars+ - Heavy Vehicles

Start Time	Greencreek Rd SB					Greenhill Rd WB					Greencreek Rd NB					Greenhill Rd EB					Int. Total
	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	
06:00 AM	0	0	0	0	0	0	34	0	0	34	1	0	0	0	1	0	42	0	0	42	77
06:15 AM	0	0	0	0	0	1	20	0	0	21	1	0	2	0	3	0	54	0	0	54	78
06:30 AM	0	0	0	0	0	0	26	0	0	26	1	0	4	0	5	0	86	1	0	87	118
06:45 AM	0	0	0	0	0	0	58	0	0	58	3	0	6	0	9	0	88	0	0	88	155
Total	0	0	0	0	0	1	138	0	0	139	6	0	12	0	18	0	270	1	0	271	428
07:00 AM	0	0	0	0	0	2	35	0	0	37	3	0	7	0	10	0	96	0	0	96	143
07:15 AM	0	0	0	0	0	2	88	0	0	90	0	0	4	0	4	0	114	2	0	116	210
07:30 AM	0	0	0	0	0	1	97	0	0	98	3	0	1	0	4	0	138	0	0	138	240
07:45 AM	0	0	0	0	0	8	131	0	0	139	3	0	4	0	7	0	145	0	0	145	291
Total	0	0	0	0	0	13	351	0	0	364	9	0	16	0	25	0	493	2	0	495	884
08:00 AM	0	0	0	0	0	1	78	0	0	79	2	0	6	0	8	0	102	2	0	104	191
08:15 AM	0	0	0	0	0	1	81	0	0	82	1	0	6	0	7	0	91	0	0	91	180
08:30 AM	0	0	0	0	0	1	72	0	0	73	2	0	5	0	7	0	98	1	0	99	179
08:45 AM	0	0	0	0	0	1	89	0	0	90	0	0	1	0	1	0	101	0	0	101	192
Total	0	0	0	0	0	4	320	0	0	324	5	0	18	0	23	0	392	3	0	395	742
09:00 AM	0	0	0	0	0	0	58	0	0	58	0	0	1	0	1	0	79	0	0	79	138
09:15 AM	0	0	0	0	0	2	64	0	0	66	2	0	1	0	3	0	74	0	0	74	143
09:30 AM	0	0	0	0	0	0	62	0	0	62	0	0	1	0	1	0	72	0	0	72	135
09:45 AM	0	0	0	0	0	1	72	0	0	73	0	0	0	0	0	0	76	0	0	76	149
Total	0	0	0	0	0	3	256	0	0	259	2	0	3	0	5	0	301	0	0	301	565
10:00 AM	0	0	0	0	0	0	68	0	0	68	1	0	3	0	4	0	84	0	0	84	156
10:15 AM	0	0	0	0	0	1	66	0	0	67	1	0	0	0	1	0	56	2	0	58	126
10:30 AM	0	0	0	0	0	2	68	0	0	70	0	0	0	0	0	0	77	1	0	78	148
10:45 AM	0	0	0	0	0	1	84	0	0	85	0	0	1	0	1	0	61	0	0	61	147
Total	0	0	0	0	0	4	286	0	0	290	2	0	4	0	6	0	278	3	0	281	577
11:00 AM	0	0	0	0	0	1	85	0	0	86	0	0	1	0	1	0	92	0	0	92	179
11:15 AM	0	0	0	0	0	0	103	0	0	103	2	0	3	0	5	0	102	0	0	102	210
11:30 AM	0	0	0	0	0	0	104	0	0	104	1	0	0	0	1	0	82	0	0	82	187
11:45 AM	0	0	0	0	0	1	111	0	0	112	1	0	0	0	1	0	95	1	0	96	209
Total	0	0	0	0	0	2	403	0	0	405	4	0	4	0	8	0	371	1	0	372	785
12:00 PM	0	0	0	0	0	3	113	0	0	116	2	0	0	0	2	0	107	1	0	108	226
12:15 PM	0	0	0	0	0	1	101	0	0	102	1	0	3	0	4	0	99	1	0	100	206
12:30 PM	0	0	0	0	0	1	85	0	0	86	4	0	2	0	6	0	116	0	0	116	208
12:45 PM	0	0	0	0	0	3	94	0	0	97	0	0	3	0	3	0	99	0	0	99	199
Total	0	0	0	0	0	8	393	0	0	401	7	0	8	0	15	0	421	2	0	423	839
01:00 PM	0	0	0	0	0	2	89	0	0	91	1	0	1	0	2	0	115	0	0	115	208
01:15 PM	0	0	0	0	0	3	103	0	0	106	0	0	1	0	1	0	125	0	0	125	232
01:30 PM	0	0	0	0	0	4	105	0	0	109	1	0	4	0	5	0	101	1	0	102	216
01:45 PM	0	0	0	0	0	2	112	0	0	114	0	0	3	0	3	0	85	0	0	85	202
Total	0	0	0	0	0	11	409	0	0	420	2	0	9	0	11	0	426	1	0	427	858
02:00 PM	0	0	0	0	0	4	75	0	0	79	0	0	3	0	3	0	88	3	0	91	173
02:15 PM	0	0	0	0	0	2	80	0	0	82	0	0	1	0	1	0	89	0	0	89	172
02:30 PM	0	0	0	0	0	1	118	0	0	119	0	0	1	0	1	0	90	1	0	91	211
02:45 PM	0	0	0	0	0	1	125	0	0	126	0	0	1	0	1	0	97	0	0	97	224
Total	0	0	0	0	0	8	398	0	0	406	0	0	6	0	6	0	364	4	0	368	780
03:00 PM	0	0	0	0	0	5	136	0	0	141	1	0	2	0	3	0	110	2	0	112	256
03:15 PM	0	0	0	0	0	1	141	0	0	142	3	0	6	0	9	0	144	1	0	145	296
03:30 PM	0	0	0	0	0	4	138	0	0	142	1	0	5	0	6	0	133	2	0	135	283
03:45 PM	0	0	0	0	0	3	145	0	0	148	1	0	1	0	2	0	145	3	0	148	298
Total	0	0	0	0	0	13	560	0	0	573	6	0	14	0	20	0	532	8	0	540	1133
04:00 PM	0	0	0	0	0	5	127	0	0	132	2	0	2	0	4	0	128	1	0		265



Turning Movement Count Summary

Greenhill Rd & Greencreek Rd
 Greenhill Road Traffic Study
 Cedarfalls, IA
 118.0463.01

File Name : 13hr_Greenhill_Greencreek_tmc_2018-05-10
 Site Code :
 Start Date : 5/10/2018
 Page No : 2

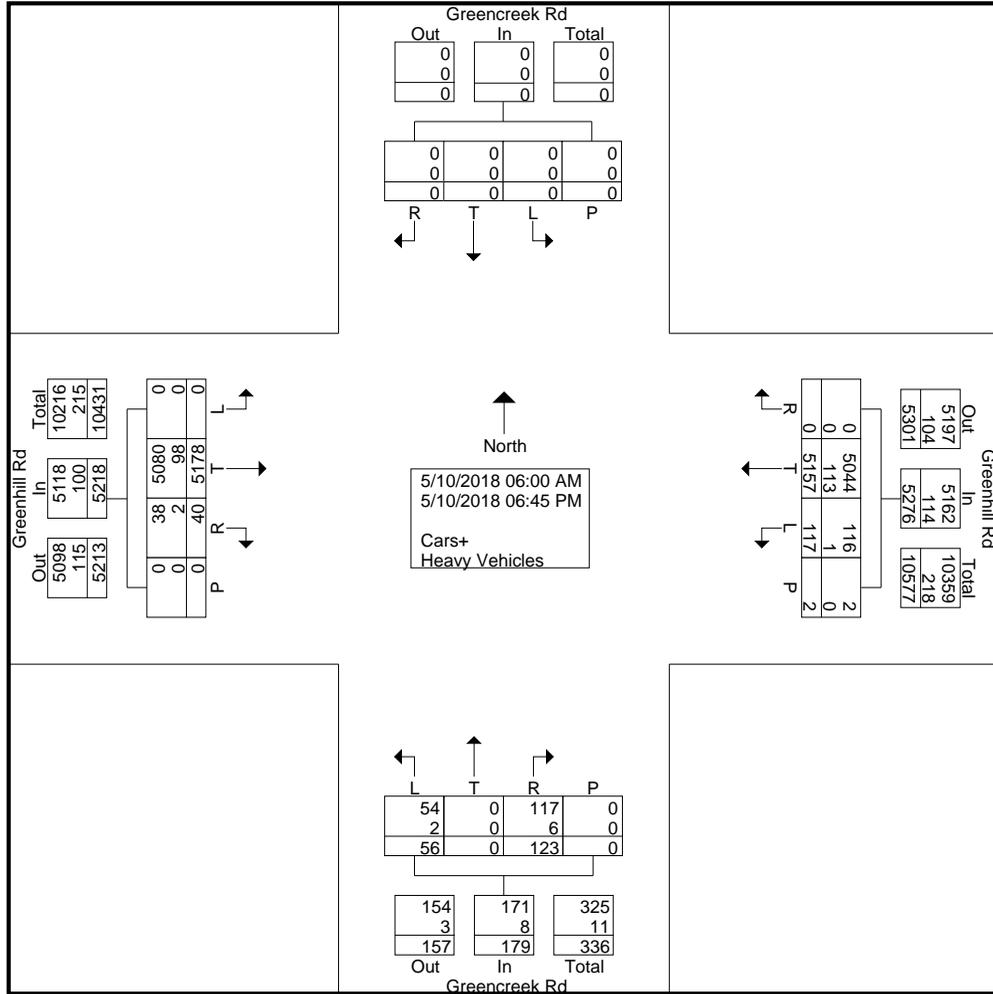
Groups Printed- Cars+ - Heavy Vehicles

Start Time	Greencreek Rd SB					Greenhill Rd WB					Greencreek Rd NB					Greenhill Rd EB					Int. Total
	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	
04:15 PM	0	0	0	0	0	7	165	0	0	172	3	0	5	0	8	0	102	0	0	102	282
04:30 PM	0	0	0	0	0	3	163	0	0	166	0	0	7	0	7	0	140	3	0	143	316
04:45 PM	0	0	0	0	0	6	180	0	0	186	0	0	2	0	2	0	125	2	0	127	315
Total	0	0	0	0	0	21	635	0	0	656	5	0	16	0	21	0	495	6	0	501	1178
05:00 PM	0	0	0	0	0	6	161	0	0	167	0	0	0	0	0	0	151	0	0	151	318
05:15 PM	0	0	0	0	0	4	192	0	0	196	2	0	1	0	3	0	120	2	0	122	321
05:30 PM	0	0	0	0	0	4	127	0	0	131	1	0	1	0	2	0	113	1	0	114	247
05:45 PM	0	0	0	0	0	5	97	0	0	102	3	0	1	0	4	0	117	1	0	118	224
Total	0	0	0	0	0	19	577	0	0	596	6	0	3	0	9	0	501	4	0	505	1110
06:00 PM	0	0	0	0	0	3	99	0	2	104	1	0	1	0	2	0	91	1	0	92	198
06:15 PM	0	0	0	0	0	1	117	0	0	118	0	0	3	0	3	0	77	3	0	80	201
06:30 PM	0	0	0	0	0	2	121	0	0	123	0	0	5	0	5	0	88	1	0	89	217
06:45 PM	0	0	0	0	0	4	94	0	0	98	1	0	1	0	2	0	78	0	0	78	178
Total	0	0	0	0	0	10	431	0	2	443	2	0	10	0	12	0	334	5	0	339	794
Grand Total	0	0	0	0	0	117	5157	0	2	5276	56	0	123	0	179	0	5178	40	0	5218	10673
Apprch %	0	0	0	0		2.2	97.7	0	0		31.3	0	68.7	0		0	99.2	0.8	0		
Total %	0	0	0	0	0	1.1	48.3	0	0	49.4	0.5	0	1.2	0	1.7	0	48.5	0.4	0	48.9	
Cars+	0	0	0	0	0	116	5044	0	2	5162	54	0	117	0	171	0	5080	38	0	5118	10451
% Cars+	0	0	0	0	0	99.1	97.8	0	100	97.8	96.4	0	95.1	0	95.5	0	98.1	95	0	98.1	97.9
Heavy Vehicles	0	0	0	0	0	1	113	0	0	114	2	0	6	0	8	0	98	2	0	100	222
% Heavy Vehicles	0	0	0	0	0	0.9	2.2	0	0	2.2	3.6	0	4.9	0	4.5	0	1.9	5	0	1.9	2.1

Turning Movement Count Summary

Greenhill Rd & Greencreek Rd
 Greenhill Road Traffic Study
 Cedarfalls, IA
 118.0463.01

File Name : 13hr_Greencreek_Greencreek_tmc_2018-05-10
 Site Code :
 Start Date : 5/10/2018
 Page No : 3

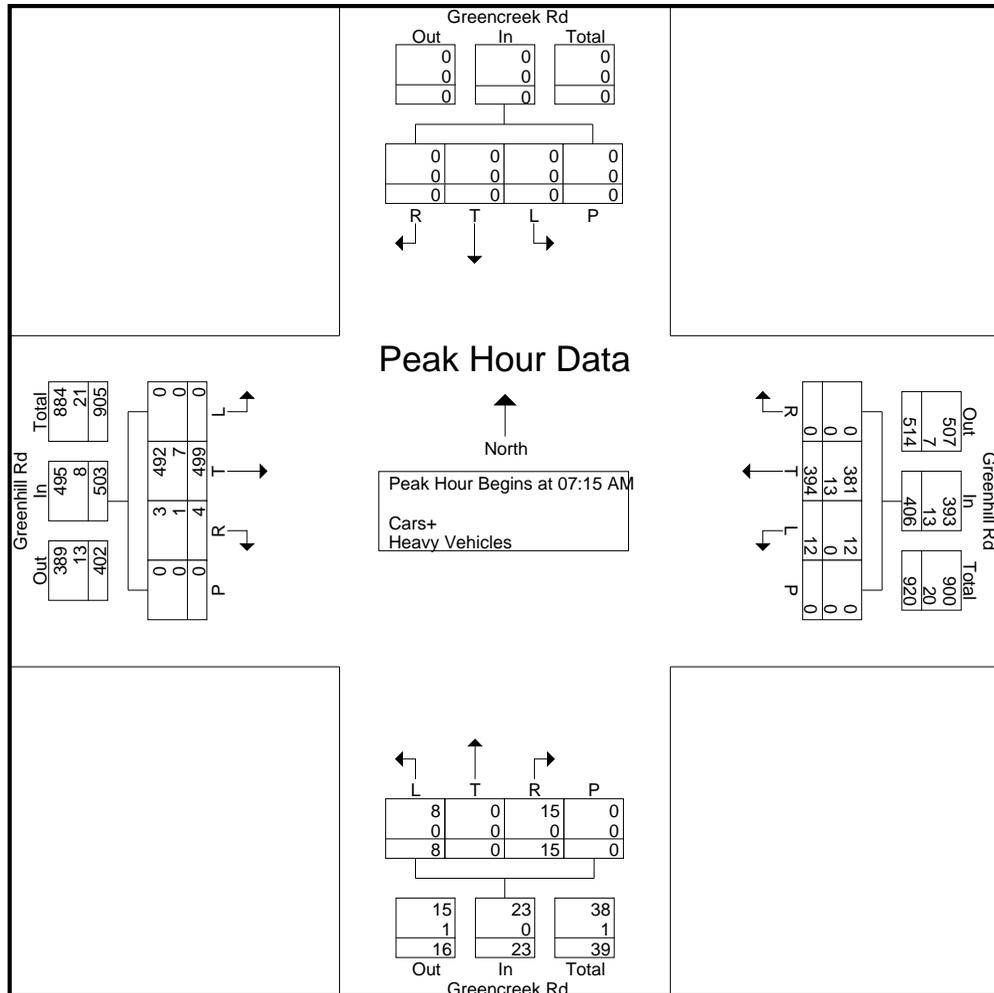


Turning Movement Count Summary

Greenhill Rd & Greencreek Rd
 Greenhill Road Traffic Study
 Cedarfalls, IA
 118.0463.01

File Name : 13hr_Greenhill_Greencreek_tmc_2018-05-10
 Site Code :
 Start Date : 5/10/2018
 Page No : 4

Start Time	Greencreek Rd SB					Greenhill Rd WB					Greencreek Rd NB					Greenhill Rd EB					Int. Total
	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	
Peak Hour Analysis From 06:00 AM to 09:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	0	0	0	0	0	2	88	0	0	90	0	0	4	0	4	0	114	2	0	116	210
07:30 AM	0	0	0	0	0	1	97	0	0	98	3	0	1	0	4	0	138	0	0	138	240
07:45 AM	0	0	0	0	0	8	131	0	0	139	3	0	4	0	7	0	145	0	0	145	291
08:00 AM	0	0	0	0	0	1	78	0	0	79	2	0	6	0	8	0	102	2	0	104	191
Total Volume	0	0	0	0	0	12	394	0	0	406	8	0	15	0	23	0	499	4	0	503	932
% App. Total	0	0	0	0	0	3	97	0	0	0	34.8	0	65.2	0	0	0	99.2	0.8	0	0	0
PHF	.000	.000	.000	.000	.000	.375	.752	.000	.000	.730	.667	.000	.625	.000	.719	.000	.860	.500	.000	.867	.801
Cars+	0	0	0	0	0	12	381	0	0	393	8	0	15	0	23	0	492	3	0	495	911
% Cars+	0	0	0	0	0	100	96.7	0	0	96.8	100	0	100	0	100	0	98.6	75.0	0	98.4	97.7
Heavy Vehicles	0	0	0	0	0	0	13	0	0	13	0	0	0	0	0	0	7	1	0	8	21
% Heavy Vehicles	0	0	0	0	0	0	3.3	0	0	3.2	0	0	0	0	0	0	1.4	25.0	0	1.6	2.3

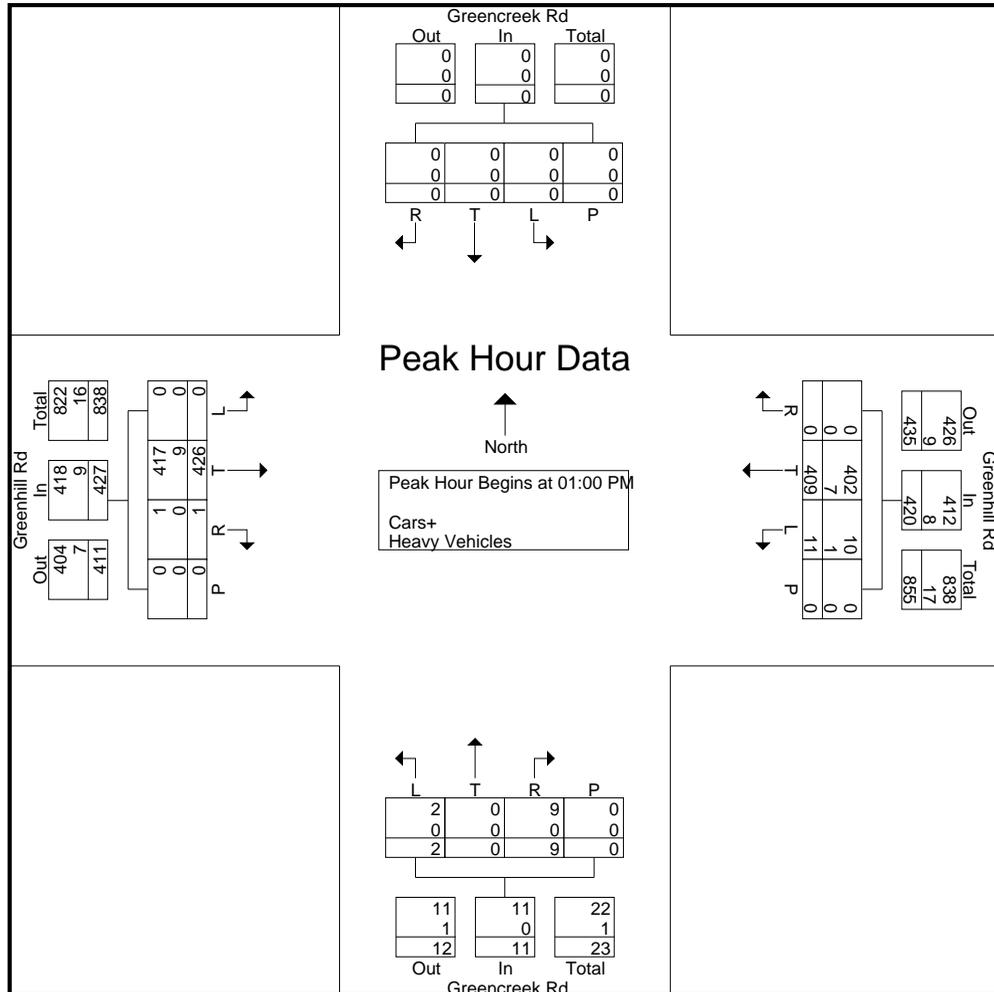


Turning Movement Count Summary

Greenhill Rd & Greencreek Rd
 Greenhill Road Traffic Study
 Cedarfalls, IA
 118.0463.01

File Name : 13hr_Greencreek_Greencreek_tmc_2018-05-10
 Site Code :
 Start Date : 5/10/2018
 Page No : 5

Start Time	Greencreek Rd SB					Greenhill Rd WB					Greencreek Rd NB					Greenhill Rd EB					Int. Total
	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 01:00 PM																					
01:00 PM	0	0	0	0	0	2	89	0	0	91	1	0	1	0	2	0	115	0	0	115	208
01:15 PM	0	0	0	0	0	3	103	0	0	106	0	0	1	0	1	0	125	0	0	125	232
01:30 PM	0	0	0	0	0	4	105	0	0	109	1	0	4	0	5	0	101	1	0	102	216
01:45 PM	0	0	0	0	0	2	112	0	0	114	0	0	3	0	3	0	85	0	0	85	202
Total Volume	0	0	0	0	0	11	409	0	0	420	2	0	9	0	11	0	426	1	0	427	858
% App. Total	0	0	0	0	0	2.6	97.4	0	0	0	18.2	0	81.8	0	0	0	99.8	0.2	0	0	0
PHF	.000	.000	.000	.000	.000	.688	.913	.000	.000	.921	.500	.000	.563	.000	.550	.000	.852	.250	.000	.854	.925
Cars+	0	0	0	0	0	10	402	0	0	412	2	0	9	0	11	0	417	1	0	418	841
% Cars+	0	0	0	0	0	90.9	98.3	0	0	98.1	100	0	100	0	100	0	97.9	100	0	97.9	98.0
Heavy Vehicles	0	0	0	0	0	1	7	0	0	8	0	0	0	0	0	0	9	0	0	9	17
% Heavy Vehicles	0	0	0	0	0	9.1	1.7	0	0	1.9	0	0	0	0	0	0	2.1	0	0	2.1	2.0

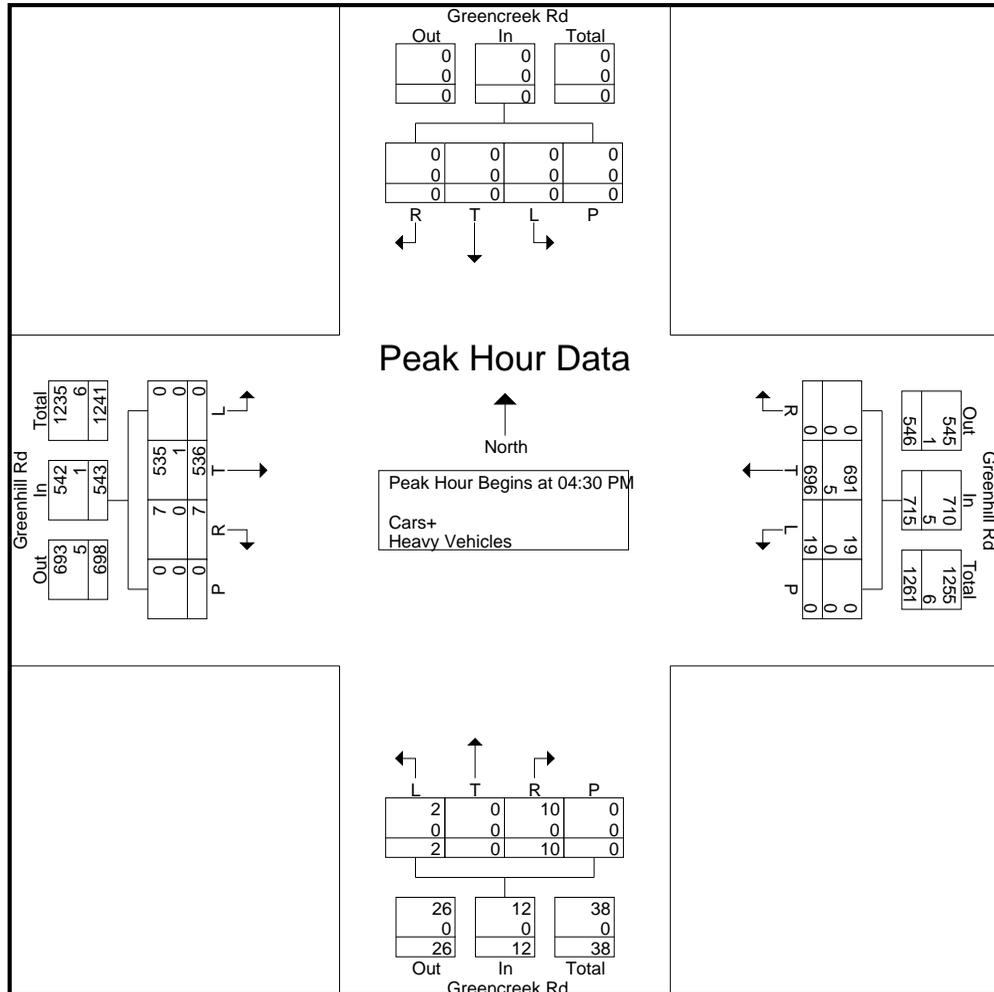


Turning Movement Count Summary

Greenhill Rd & Greencreek Rd
 Greenhill Road Traffic Study
 Cedarfalls, IA
 118.0463.01

File Name : 13hr_Greenhill_Greencreek_tmc_2018-05-10
 Site Code :
 Start Date : 5/10/2018
 Page No : 6

Start Time	Greencreek Rd SB					Greenhill Rd WB					Greencreek Rd NB					Greenhill Rd EB					Int. Total
	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	L	T	R	P	App. Total	
Peak Hour Analysis From 02:00 PM to 06:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	0	0	0	0	0	3	163	0	0	166	0	0	7	0	7	0	140	3	0	143	316
04:45 PM	0	0	0	0	0	6	180	0	0	186	0	0	2	0	2	0	125	2	0	127	315
05:00 PM	0	0	0	0	0	6	161	0	0	167	0	0	0	0	0	0	151	0	0	151	318
05:15 PM	0	0	0	0	0	4	192	0	0	196	2	0	1	0	3	0	120	2	0	122	321
Total Volume	0	0	0	0	0	19	696	0	0	715	2	0	10	0	12	0	536	7	0	543	1270
% App. Total	0	0	0	0	0	2.7	97.3	0	0	91.2	16.7	0	83.3	0	100	0	98.7	1.3	0	99.8	100
PHF	.000	.000	.000	.000	.000	.792	.906	.000	.000	.912	.250	.000	.357	.000	.429	.000	.887	.583	.000	.899	.989
Cars+	0	0	0	0	0	19	691	0	0	710	2	0	10	0	12	0	535	7	0	542	1264
% Cars+	0	0	0	0	0	100	99.3	0	0	99.3	100	0	100	0	100	0	99.8	100	0	99.8	99.5
Heavy Vehicles	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	0	1	0	0	1	6
% Heavy Vehicles	0	0	0	0	0	0	0.7	0	0	0.7	0	0	0	0	0	0	0.2	0	0	0.2	0.5



Location : b/t Algonquin Rd and Ashworth Rd
 Project : Greenhill Road Traffic Study
 Project No : 118.0463.01

Weekly Volume, per Channel

EB									
Interval Start	Mon 5/7/2018	Tue 5/8/2018	Wed 5/9/2018	Thu 5/10/2018	Fri 5/11/2018	Sat 5/12/2018	Sun 5/13/2018	Mon - Fri Average	Weekly Average
12:00 AM	-	-	-	15	26	-	-	20.5	20.5
1:00 AM	-	-	-	16	12	-	-	14.0	14.0
2:00 AM	-	-	-	32	32	-	-	32.0	32.0
3:00 AM	-	-	-	14	14	-	-	14.0	14.0
4:00 AM	-	-	-	37	37	-	-	37.0	37.0
5:00 AM	-	-	-	129	108	-	-	118.5	118.5
6:00 AM	-	-	-	287	245	-	-	266.0	266.0
7:00 AM	-	-	-	464	407	-	-	435.5	435.5
8:00 AM	-	-	-	446	414	-	-	430.0	430.0
9:00 AM	-	-	-	281	301	-	-	291.0	291.0
10:00 AM	-	-	-	328	313	-	-	320.5	320.5
11:00 AM	-	-	-	384	367	-	-	375.5	375.5
12:00 PM	-	-	-	425	378	-	-	401.5	401.5
1:00 PM	-	-	-	340	390	-	-	365.0	365.0
2:00 PM	-	-	-	373	407	-	-	390.0	390.0
3:00 PM	-	-	-	544	504	-	-	524.0	524.0
4:00 PM	-	-	-	594	501	-	-	547.5	547.5
5:00 PM	-	-	-	485	471	-	-	478.0	478.0
6:00 PM	-	-	-	355	320	-	-	337.5	337.5
7:00 PM	-	-	-	239	199	-	-	219.0	219.0
8:00 PM	-	-	155	202	-	-	-	178.5	178.5
9:00 PM	-	-	125	169	-	-	-	147.0	147.0
10:00 PM	-	-	72	116	-	-	-	94.0	94.0
11:00 PM	-	-	34	31	-	-	-	32.5	32.5

Totals 0 0 386 6306 5446 0 0 6069.0 6069.0

Peak Hours

12:00 AM - 12:00 PM	-	-	-	7:30 AM	7:45 AM	-	-	7:30 AM	7:30 AM
Volume	-	-	-	491	444	-	-	467.0	467.0
Factor	-	-	-	0.90	0.87	-	-	0.89	0.89
12:00 PM - 12:00 AM	-	-	8:00 PM	4:00 PM	3:15 PM	-	-	3:15 PM	3:15 PM
Volume	-	-	155	594	518	-	-	551.5	551.5
Factor	-	-	0.82	0.92	0.90	-	-	0.93	0.93

Location : B/t Algonquin Rd and Ashworth Rd
 Project : Greenhill Rd Traffic Study
 Project No : 118.0463.01

Weekly Volume, per Channel

Interval Start	WB							Mon - Fri Average	Weekly Average
	Mon 5/7/2018	Tue 5/8/2018	Wed 5/9/2018	Thu 5/10/2018	Fri 5/11/2018	Sat 5/12/2018	Sun 5/13/2018		
12:00 AM	-	-	-	35	29	-	-	32.0	32.0
1:00 AM	-	-	-	20	12	-	-	16.0	16.0
2:00 AM	-	-	-	14	12	-	-	13.0	13.0
3:00 AM	-	-	-	17	20	-	-	18.5	18.5
4:00 AM	-	-	-	30	29	-	-	29.5	29.5
5:00 AM	-	-	-	130	111	-	-	120.5	120.5
6:00 AM	-	-	-	205	203	-	-	204.0	204.0
7:00 AM	-	-	-	390	363	-	-	376.5	376.5
8:00 AM	-	-	-	376	333	-	-	354.5	354.5
9:00 AM	-	-	-	291	297	-	-	294.0	294.0
10:00 AM	-	-	-	281	314	-	-	297.5	297.5
11:00 AM	-	-	-	338	337	-	-	337.5	337.5
12:00 PM	-	-	-	375	424	-	-	399.5	399.5
1:00 PM	-	-	-	421	406	-	-	413.5	413.5
2:00 PM	-	-	-	400	412	-	-	406.0	406.0
3:00 PM	-	-	-	547	497	-	-	522.0	522.0
4:00 PM	-	-	-	593	575	-	-	584.0	584.0
5:00 PM	-	-	-	525	535	-	-	530.0	530.0
6:00 PM	-	-	-	397	363	-	-	380.0	380.0
7:00 PM	-	-	-	265	277	-	-	271.0	271.0
8:00 PM	-	-	262	225	-	-	-	243.5	243.5
9:00 PM	-	-	133	156	-	-	-	144.5	144.5
10:00 PM	-	-	84	93	-	-	-	88.5	88.5
11:00 PM	-	-	36	38	-	-	-	37.0	37.0

Totals 0 0 515 6162 5549 0 0 6113.0 6113.0

Peak Hours

12:00 AM - 12:00 PM	-	-	-	7:30 AM	7:15 AM	-	-	7:15 AM	7:15 AM
Volume	-	-	-	412	389	-	-	394.5	394.5
Factor	-	-	-	0.87	0.89	-	-	0.88	0.88
12:00 PM - 12:00 AM	-	-	8:00 PM	4:15 PM	3:45 PM	-	-	4:15 PM	4:15 PM
Volume	-	-	262	615	583	-	-	593.5	593.5
Factor	-	-	0.98	0.92	0.92	-	-	0.96	0.96

Location : b/t IA 58 & Main St
 Project : Greenhill Rd Traffic Study
 Project No : 118.0463.01

Weekly Volume, per Channel

EB										
Interval Start	Mon 5/7/2018	Tue 5/8/2018	Wed 5/9/2018	Thu 5/10/2018	Fri 5/11/2018	Sat 5/12/2018	Sun 5/13/2018	Mon - Fri Average	Weekly Average	
12:00 AM	-	-	-	18	29	-	-	23.5	23.5	
1:00 AM	-	-	-	15	7	-	-	11.0	11.0	
2:00 AM	-	-	-	13	19	-	-	16.0	16.0	
3:00 AM	-	-	-	11	18	-	-	14.5	14.5	
4:00 AM	-	-	-	21	15	-	-	18.0	18.0	
5:00 AM	-	-	-	85	76	-	-	80.5	80.5	
6:00 AM	-	-	-	251	203	-	-	227.0	227.0	
7:00 AM	-	-	-	442	377	-	-	409.5	409.5	
8:00 AM	-	-	-	494	446	-	-	470.0	470.0	
9:00 AM	-	-	-	348	358	-	-	353.0	353.0	
10:00 AM	-	-	-	362	378	-	-	370.0	370.0	
11:00 AM	-	-	-	455	471	-	-	463.0	463.0	
12:00 PM	-	-	-	509	468	-	-	488.5	488.5	
1:00 PM	-	-	-	446	502	-	-	474.0	474.0	
2:00 PM	-	-	-	442	433	-	-	437.5	437.5	
3:00 PM	-	-	-	564	539	-	-	551.5	551.5	
4:00 PM	-	-	-	597	571	-	-	584.0	584.0	
5:00 PM	-	-	526	543	-	-	-	534.5	534.5	
6:00 PM	-	-	387	427	-	-	-	407.0	407.0	
7:00 PM	-	-	264	282	-	-	-	273.0	273.0	
8:00 PM	-	-	210	228	-	-	-	219.0	219.0	
9:00 PM	-	-	136	144	-	-	-	140.0	140.0	
10:00 PM	-	-	84	96	-	-	-	90.0	90.0	
11:00 PM	-	-	42	52	-	-	-	47.0	47.0	
Totals	0	0	1649	6845	4910	0	0	6702.0	6702.0	

Peak Hours

12:00 AM - 12:00 PM	-	-	-	7:45 AM	11:00 AM	-	-	7:45 AM	7:45 AM
Volume	-	-	-	529	471	-	-	490.0	490.0
Factor	-	-	-	0.91	0.80	-	-	0.88	0.88
12:00 PM - 12:00 AM	-	-	5:00 PM	4:30 PM	4:00 PM	-	-	4:30 PM	4:30 PM
Volume	-	-	526	625	571	-	-	595.0	595.0
Factor	-	-	0.85	0.92	0.93	-	-	0.93	0.93

Location : b/t IA 58 & Main St
 Project : Greenhill Rd Traffic Study
 Project No : 118.0463.01

Weekly Volume, per Channel

Interval Start	WB							Mon - Fri Average	Weekly Average
	Mon 5/7/2018	Tue 5/8/2018	Wed 5/9/2018	Thu 5/10/2018	Fri 5/11/2018	Sat 5/12/2018	Sun 5/13/2018		
12:00 AM	-	-	-	26	22	-	-	24.0	24.0
1:00 AM	-	-	-	12	11	-	-	11.5	11.5
2:00 AM	-	-	-	9	10	-	-	9.5	9.5
3:00 AM	-	-	-	18	18	-	-	18.0	18.0
4:00 AM	-	-	-	30	37	-	-	33.5	33.5
5:00 AM	-	-	-	85	75	-	-	80.0	80.0
6:00 AM	-	-	-	210	181	-	-	195.5	195.5
7:00 AM	-	-	-	412	364	-	-	388.0	388.0
8:00 AM	-	-	-	352	368	-	-	360.0	360.0
9:00 AM	-	-	-	289	316	-	-	302.5	302.5
10:00 AM	-	-	-	292	336	-	-	314.0	314.0
11:00 AM	-	-	-	402	355	-	-	378.5	378.5
12:00 PM	-	-	-	412	455	-	-	433.5	433.5
1:00 PM	-	-	-	389	454	-	-	421.5	421.5
2:00 PM	-	-	-	418	436	-	-	427.0	427.0
3:00 PM	-	-	-	579	538	-	-	558.5	558.5
4:00 PM	-	-	-	625	603	-	-	614.0	614.0
5:00 PM	-	-	550	563	-	-	-	556.5	556.5
6:00 PM	-	-	356	403	-	-	-	379.5	379.5
7:00 PM	-	-	266	278	-	-	-	272.0	272.0
8:00 PM	-	-	263	244	-	-	-	253.5	253.5
9:00 PM	-	-	136	137	-	-	-	136.5	136.5
10:00 PM	-	-	73	75	-	-	-	74.0	74.0
11:00 PM	-	-	40	36	-	-	-	38.0	38.0
Totals	0	0	1684	6296	4579	0	0	6279.5	6279.5

Peak Hours

12:00 AM - 12:00 PM	-	-	-	7:15 AM	7:15 AM	-	-	7:15 AM	7:15 AM
Volume	-	-	-	426	407	-	-	416.5	416.5
Factor	-	-	-	0.83	0.80	-	-	0.82	0.82
12:00 PM - 12:00 AM	-	-	5:00 PM	4:15 PM	3:45 PM	-	-	3:45 PM	3:45 PM
Volume	-	-	550	652	634	-	-	629.0	629.0
Factor	-	-	0.79	0.96	0.83	-	-	0.94	0.94

Location : b/t OrchardHill Dr & Oster Pkwy
 Project : Greenhill Rd Traffic Study
 Project No : 118.0463.01

Weekly Volume, per Channel

EB									
Interval Start	Mon 5/7/2018	Tue 5/8/2018	Wed 5/9/2018	Thu 5/10/2018	Fri 5/11/2018	Sat 5/12/2018	Sun 5/13/2018	Mon - Fri Average	Weekly Average
12:00 AM	-	-	-	17	27	-	-	22.0	22.0
1:00 AM	-	-	-	12	9	-	-	10.5	10.5
2:00 AM	-	-	-	10	8	-	-	9.0	9.0
3:00 AM	-	-	-	12	15	-	-	13.5	13.5
4:00 AM	-	-	-	17	16	-	-	16.5	16.5
5:00 AM	-	-	-	77	65	-	-	71.0	71.0
6:00 AM	-	-	-	219	194	-	-	206.5	206.5
7:00 AM	-	-	-	369	356	-	-	362.5	362.5
8:00 AM	-	-	-	344	297	-	-	320.5	320.5
9:00 AM	-	-	-	246	259	-	-	252.5	252.5
10:00 AM	-	-	-	297	277	-	-	287.0	287.0
11:00 AM	-	-	-	312	338	-	-	325.0	325.0
12:00 PM	-	-	-	361	371	-	-	366.0	366.0
1:00 PM	-	-	-	341	389	-	-	365.0	365.0
2:00 PM	-	-	-	341	363	-	-	352.0	352.0
3:00 PM	-	-	-	472	474	-	-	473.0	473.0
4:00 PM	-	-	498	494	-	-	-	496.0	496.0
5:00 PM	-	-	481	477	-	-	-	479.0	479.0
6:00 PM	-	-	328	333	-	-	-	330.5	330.5
7:00 PM	-	-	244	249	-	-	-	246.5	246.5
8:00 PM	-	-	198	178	-	-	-	188.0	188.0
9:00 PM	-	-	118	150	-	-	-	134.0	134.0
10:00 PM	-	-	59	85	-	-	-	72.0	72.0
11:00 PM	-	-	33	26	-	-	-	29.5	29.5

Totals 0 0 1959 5439 3458 0 0 5428.0 5428.0

Peak Hours

12:00 AM - 12:00 PM	-	-	-	7:30 AM	7:00 AM	-	-	7:15 AM	7:15 AM
Volume	-	-	-	403	356	-	-	375.5	375.5
Factor	-	-	-	0.86	0.86	-	-	0.88	0.88
12:00 PM - 12:00 AM	-	-	4:30 PM	4:30 PM	3:00 PM	-	-	4:30 PM	4:30 PM
Volume	-	-	556	537	474	-	-	546.5	546.5
Factor	-	-	0.95	0.93	0.90	-	-	0.95	0.95

Location : b/w Orchard Pkwy & Oster Pkwy
 Project : Greenhill Rd Traffic Study
 Project No : 118.0463.01

Weekly Volume, per Channel

Interval Start	WB							Mon - Fri Average	Weekly Average
	Mon 5/7/2018	Tue 5/8/2018	Wed 5/9/2018	Thu 5/10/2018	Fri 5/11/2018	Sat 5/12/2018	Sun 5/13/2018		
12:00 AM	-	-	-	19	18	-	-	18.5	18.5
1:00 AM	-	-	-	13	10	-	-	11.5	11.5
2:00 AM	-	-	-	6	7	-	-	6.5	6.5
3:00 AM	-	-	-	6	6	-	-	6.0	6.0
4:00 AM	-	-	-	15	24	-	-	19.5	19.5
5:00 AM	-	-	-	67	60	-	-	63.5	63.5
6:00 AM	-	-	-	154	136	-	-	145.0	145.0
7:00 AM	-	-	-	359	349	-	-	354.0	354.0
8:00 AM	-	-	-	311	308	-	-	309.5	309.5
9:00 AM	-	-	-	257	243	-	-	250.0	250.0
10:00 AM	-	-	-	263	271	-	-	267.0	267.0
11:00 AM	-	-	-	343	332	-	-	337.5	337.5
12:00 PM	-	-	-	325	400	-	-	362.5	362.5
1:00 PM	-	-	-	358	380	-	-	369.0	369.0
2:00 PM	-	-	-	348	352	-	-	350.0	350.0
3:00 PM	-	-	-	445	458	-	-	451.5	451.5
4:00 PM	-	-	506	519	-	-	-	512.5	512.5
5:00 PM	-	-	446	455	-	-	-	450.5	450.5
6:00 PM	-	-	309	303	-	-	-	306.0	306.0
7:00 PM	-	-	217	226	-	-	-	221.5	221.5
8:00 PM	-	-	194	206	-	-	-	200.0	200.0
9:00 PM	-	-	98	130	-	-	-	114.0	114.0
10:00 PM	-	-	56	53	-	-	-	54.5	54.5
11:00 PM	-	-	25	28	-	-	-	26.5	26.5

Totals 0 0 1851 5209 3354 0 0 5207.0 5207.0

Peak Hours

12:00 AM - 12:00 PM	-	-	-	7:15 AM	7:15 AM	-	-	7:15 AM	7:15 AM
Volume	-	-	-	371	366	-	-	368.5	368.5
Factor	-	-	-	0.84	0.75	-	-	0.79	0.79
12:00 PM - 12:00 AM	-	-	4:30 PM	4:30 PM	3:00 PM	-	-	4:30 PM	4:30 PM
Volume	-	-	511	532	458	-	-	521.5	521.5
Factor	-	-	0.95	0.90	0.89	-	-	0.93	0.93

Location : b/t Algonquin Rd and Ashworth Rd
 Project : Greenhill Road Traffic Study
 Project No : 118.0463.01

Wednesday, 5/9/2018 8:00 PM -
 Friday, 5/11/2018 8:00 PM

Speeds Grand Totals

mph	Hourly Averages													
	Total	0 - < 15	15 - < 20	20 - < 25	25 - < 30	30 - < 35	35 - < 40	40 - < 45	45 - < 50	50 - < 55	55 - < 60	60 - < 65	65 - < 70	70 - < 200
12:00 AM	20.5	0.0	0.0	0.0	0.0	0.0	1.0	4.5	5.0	7.0	2.0	1.0	0.0	0.0
1:00 AM	14.0	0.0	0.0	0.0	0.0	0.0	0.5	2.0	2.5	4.0	3.0	2.0	0.0	0.0
2:00 AM	32.0	0.0	0.0	0.0	0.0	0.5	1.5	4.0	6.5	11.5	5.0	2.0	0.5	0.5
3:00 AM	14.0	0.0	0.0	0.0	0.0	1.0	1.5	1.0	6.0	3.0	1.5	0.0	0.0	0.0
4:00 AM	37.0	0.0	0.0	0.0	0.0	1.0	1.0	4.0	5.5	15.5	5.0	4.0	1.0	0.0
5:00 AM	118.5	0.0	1.0	0.0	0.0	1.0	5.5	5.0	14.5	39.5	33.0	14.0	3.5	1.5
6:00 AM	266.0	1.0	2.0	0.0	0.0	5.0	11.0	16.0	42.5	96.0	54.0	31.5	5.5	1.5
7:00 AM	435.5	0.5	0.5	0.0	2.0	4.5	23.0	37.5	87.5	150.5	91.0	32.0	4.0	2.5
8:00 AM	430.0	0.5	0.5	0.5	1.0	7.0	22.0	52.0	87.0	149.0	74.5	30.0	4.5	1.5
9:00 AM	291.0	0.0	0.0	0.5	0.5	10.0	17.0	43.0	63.5	94.0	40.0	20.0	1.0	1.5
10:00 AM	320.5	0.0	0.5	0.5	1.5	6.0	25.5	49.5	71.5	85.5	59.5	18.5	2.0	0.0
11:00 AM	375.5	0.0	0.0	0.5	1.0	8.5	28.5	66.0	93.5	112.0	47.0	15.0	3.0	0.5
12:00 PM	401.5	0.0	0.5	0.0	0.5	8.5	32.0	48.5	90.5	119.0	70.0	26.5	4.0	1.5
1:00 PM	365.0	0.0	0.0	1.0	0.5	8.5	22.5	40.5	85.0	125.5	54.5	21.0	4.5	1.5
2:00 PM	390.0	0.0	0.0	0.0	1.5	8.5	26.5	42.0	85.0	132.5	61.0	23.5	6.0	3.5
3:00 PM	524.0	0.5	0.5	0.0	0.0	10.5	23.5	51.0	114.5	164.0	112.0	42.0	5.0	0.5
4:00 PM	547.5	0.0	0.5	1.0	1.5	9.5	22.0	65.0	127.0	180.0	97.0	35.5	7.5	1.0
5:00 PM	478.0	0.0	0.5	0.0	1.5	7.5	26.5	49.0	110.5	160.0	84.5	32.0	4.5	1.5
6:00 PM	337.5	0.0	0.0	0.0	1.0	7.5	17.5	32.5	63.0	127.0	62.5	19.5	5.5	1.5
7:00 PM	219.0	0.0	0.0	0.0	0.5	5.0	15.0	19.5	50.0	72.0	43.5	11.5	1.0	1.0
8:00 PM	178.5	0.0	0.0	0.0	0.0	6.5	16.5	25.0	34.5	55.5	29.5	9.5	1.0	0.5
9:00 PM	147.0	0.0	0.0	0.0	0.5	3.0	11.5	31.0	37.0	42.5	17.5	3.0	1.0	0.0
10:00 PM	94.0	0.0	0.0	0.0	0.0	4.0	8.0	11.5	21.0	31.0	14.5	3.0	1.0	0.0
11:00 PM	32.5	0.0	0.0	0.0	0.0	0.0	0.5	6.5	7.0	11.5	6.5	0.0	0.5	0.0
Daily Average	6069.0	2.5	6.5	4.0	13.5	123.5	360.0	706.5	1310.5	1988.0	1068.5	397.0	66.5	22.0
Average (Mean)	50.6 mph	Minimum 10.1 mph			Maximum 84.6 mph			Pace Range 46.5 - 56.5 mph 7180 vehicles (59.2 %)						
Percentile Speeds	10% (mph) 40.9	15% 43.3	50% 51.0	85% 57.3	90% 59.1									
Speeds Exceeded	25 mph 99.8 % (12112)	30 mph 99.6 % (12085)	35 mph 97.5 % (11838)	40 mph 91.6 % (11118)	45 mph 80.0 % (9705)	50 mph 58.4 % (7084)	55 mph 25.6 % (3108)	60 mph 8.0 % (971)						
Study Grand Totals														
Total	0 - < 15	15 - < 20	20 - < 25	25 - < 30	30 - < 35	35 - < 40	40 - < 45	45 - < 50	50 - < 55	55 - < 60	60 - < 65	65 - < 70	70 - < 200	
EB	12138	5	13	8	27	247	720	1413	2621	3976	2137	794	133	44
		0.0 %	0.1 %	0.1 %	0.2 %	2.0 %	5.9 %	11.6 %	21.6 %	32.8 %	17.6 %	6.5 %	1.1 %	0.4 %

Location : B/t Algonquin Rd and Ashworth Rd
 Project : Greenhill Rd Traffic Study
 Project No : 118.0463.01

Wednesday, 5/9/2018 8:00 PM -
 Friday, 5/11/2018 8:00 PM

Speeds Grand Totals

mph	Hourly Averages													
	Total	0 - < 15	15 - < 20	20 - < 25	25 - < 30	30 - < 35	35 - < 40	40 - < 45	45 - < 50	50 - < 55	55 - < 60	60 - < 65	65 - < 70	70 - < 200
12:00 AM	32.0	0.0	0.0	0.0	0.5	0.5	2.0	9.0	7.5	8.0	4.0	0.5	0.0	0.0
1:00 AM	16.0	0.0	0.0	0.0	0.0	1.0	2.0	5.0	4.5	2.0	1.5	0.0	0.0	0.0
2:00 AM	13.0	0.0	0.5	0.5	0.5	0.5	2.5	1.5	2.5	1.5	2.5	0.5	0.0	0.0
3:00 AM	18.5	0.0	0.0	0.0	0.0	0.0	2.0	5.5	3.0	5.5	1.5	0.5	0.0	0.5
4:00 AM	29.5	0.0	0.0	0.0	0.5	0.0	1.0	3.0	8.5	10.0	3.5	2.0	0.0	1.0
5:00 AM	120.5	0.0	0.0	0.0	0.0	3.0	5.5	15.5	38.0	42.0	12.5	3.5	0.0	0.5
6:00 AM	204.0	0.0	0.0	0.0	0.5	2.5	11.5	24.5	50.5	73.5	27.0	12.5	1.5	0.0
7:00 AM	376.5	1.5	0.0	0.5	1.5	12.0	28.5	67.0	111.0	109.0	33.0	11.0	0.5	1.0
8:00 AM	354.5	0.0	0.0	1.0	2.0	13.5	26.0	57.5	103.0	106.5	35.5	8.0	1.0	0.5
9:00 AM	294.0	1.0	0.0	0.0	1.0	10.0	32.0	56.0	84.5	77.0	20.5	11.5	0.5	0.0
10:00 AM	297.5	0.0	1.5	0.5	2.0	12.5	21.5	54.0	87.5	80.0	30.0	7.0	0.0	1.0
11:00 AM	337.5	0.5	0.0	2.0	4.5	11.5	35.5	74.5	108.0	69.0	24.0	7.5	0.5	0.0
12:00 PM	399.5	1.5	0.0	0.0	2.5	13.0	30.0	89.5	115.0	108.5	33.0	6.0	0.5	0.0
1:00 PM	413.5	0.5	1.5	1.5	2.5	12.0	33.0	77.5	122.0	111.5	42.5	6.5	2.0	0.5
2:00 PM	406.0	1.0	0.0	0.5	3.0	16.0	39.0	70.5	114.5	109.5	39.5	11.5	0.5	0.5
3:00 PM	522.0	0.5	0.0	0.5	7.5	14.0	39.5	83.0	144.5	165.5	55.5	8.5	2.0	1.0
4:00 PM	584.0	0.0	1.0	3.0	7.5	17.5	44.5	92.5	175.0	177.0	48.5	15.5	1.5	0.5
5:00 PM	530.0	1.0	1.0	2.5	5.0	16.0	54.0	83.5	152.5	147.0	54.0	11.5	0.5	1.5
6:00 PM	380.0	0.0	0.0	0.5	2.0	10.0	20.0	54.0	118.5	134.0	31.0	8.5	1.5	0.0
7:00 PM	271.0	1.0	0.0	0.0	0.0	2.0	12.0	40.0	86.0	95.0	28.0	7.0	0.0	0.0
8:00 PM	243.5	0.0	0.0	0.5	1.0	5.0	26.0	44.0	72.0	70.5	15.5	7.5	1.0	0.5
9:00 PM	144.5	0.0	0.0	0.5	0.0	8.0	11.5	28.0	46.0	41.0	7.5	2.0	0.0	0.0
10:00 PM	88.5	0.5	0.5	0.0	1.0	1.0	6.5	18.5	30.0	21.5	6.5	1.5	1.0	0.0
11:00 PM	37.0	0.0	0.0	0.0	0.0	1.5	4.0	8.0	9.5	13.0	0.5	0.5	0.0	0.0
Daily Average	6113.0	9.0	6.0	14.0	45.0	183.0	490.0	1062.0	1794.0	1778.0	557.5	151.0	14.5	9.0
Average (Mean)	47.9 mph	Minimum 10.1 mph			Maximum 82.7 mph			Pace Range 44.9 - 54.9 mph			7426 vehicles (60.7 %)			
Percentile Speeds	10% (mph)	15%	50%	85%	90%									
	38.8	40.9	48.4	54.8	55.6									
Speeds Exceeded	25 mph	30 mph	35 mph	40 mph	45 mph	50 mph	55 mph	60 mph						
	99.5 % (12168)	98.8 % (12078)	95.8 % (11712)	87.8 % (10732)	70.4 % (8608)	41.1 % (5020)	12.0 % (1464)	2.9 % (349)						
Study Grand Totals														
	Total	0 - < 15	15 - < 20	20 - < 25	25 - < 30	30 - < 35	35 - < 40	40 - < 45	45 - < 50	50 - < 55	55 - < 60	60 - < 65	65 - < 70	70 - < 200
WB	12226	18	12	28	90	366	980	2124	3588	3556	1115	302	29	18
		0.1 %	0.1 %	0.2 %	0.7 %	3.0 %	8.0 %	17.4 %	29.3 %	29.1 %	9.1 %	2.5 %	0.2 %	0.1 %

Location : b/t IA 58 & Main St
 Project : Greenhill Rd Traffic Study
 Project No : 118.0463.01

Wednesday, 5/9/2018 5:00 PM -
 Friday, 5/11/2018 5:00 PM

Speeds Grand Totals

mph	Hourly Averages EB													
	Total	0 - < 15	15 - < 20	20 - < 25	25 - < 30	30 - < 35	35 - < 40	40 - < 45	45 - < 50	50 - < 55	55 - < 60	60 - < 65	65 - < 70	70 - < 200
12:00 AM	23.5	0.0	0.0	0.5	1.0	1.5	5.0	9.0	5.0	1.0	0.5	0.0	0.0	0.0
1:00 AM	11.0	0.0	0.0	0.0	0.5	1.0	3.5	3.0	2.5	0.5	0.0	0.0	0.0	0.0
2:00 AM	16.0	0.0	0.0	0.5	0.0	0.5	4.5	8.5	1.5	0.5	0.0	0.0	0.0	0.0
3:00 AM	14.5	0.0	0.0	0.0	1.0	2.0	5.0	4.5	2.0	0.0	0.0	0.0	0.0	0.0
4:00 AM	18.0	0.0	0.0	0.0	0.0	0.5	3.0	9.0	4.5	1.0	0.0	0.0	0.0	0.0
5:00 AM	80.5	0.0	0.0	0.0	0.0	1.5	10.5	30.5	30.0	8.0	0.0	0.0	0.0	0.0
6:00 AM	227.0	1.5	0.0	0.5	4.5	4.5	23.0	103.5	69.0	17.5	3.0	0.0	0.0	0.0
7:00 AM	409.5	2.0	0.5	0.5	3.0	12.5	82.5	184.0	105.5	17.0	1.5	0.5	0.0	0.0
8:00 AM	470.0	2.0	0.5	1.5	5.5	27.5	115.0	225.0	78.0	13.5	1.5	0.0	0.0	0.0
9:00 AM	353.0	0.5	2.5	2.0	3.5	25.0	92.5	153.0	63.0	10.5	0.0	0.0	0.0	0.5
10:00 AM	370.0	1.0	0.5	0.0	1.5	27.0	101.5	163.5	59.5	15.0	0.5	0.0	0.0	0.0
11:00 AM	463.0	1.0	1.0	1.5	7.5	33.0	123.5	212.5	68.0	14.5	0.0	0.5	0.0	0.0
12:00 PM	488.5	0.5	0.5	3.0	4.0	24.5	110.5	225.0	105.5	13.5	0.5	1.0	0.0	0.0
1:00 PM	474.0	1.0	1.0	1.5	5.0	27.0	144.0	199.5	82.5	8.5	2.0	1.0	0.0	1.0
2:00 PM	437.5	1.0	1.0	1.5	4.0	22.0	113.5	188.0	88.5	16.0	1.5	0.0	0.0	0.5
3:00 PM	551.5	1.0	0.0	1.0	5.0	29.0	153.5	229.0	106.0	26.5	0.5	0.0	0.0	0.0
4:00 PM	584.0	0.5	1.5	2.5	8.5	42.0	160.0	240.5	113.5	13.5	1.0	0.0	0.0	0.5
5:00 PM	534.5	1.0	0.5	2.0	2.0	23.0	131.0	247.5	105.5	20.0	1.5	0.0	0.0	0.5
6:00 PM	407.0	0.0	1.0	0.0	1.5	15.0	85.0	208.5	74.5	18.0	3.5	0.0	0.0	0.0
7:00 PM	273.0	0.0	0.5	1.0	2.0	7.5	61.0	128.5	60.5	10.5	0.5	1.0	0.0	0.0
8:00 PM	219.0	0.0	0.0	0.0	0.5	7.5	58.5	96.0	46.5	7.5	2.5	0.0	0.0	0.0
9:00 PM	140.0	0.0	0.0	0.0	0.5	8.5	25.0	65.0	33.0	7.5	0.5	0.0	0.0	0.0
10:00 PM	90.0	0.0	0.0	0.0	0.0	3.0	19.0	43.0	20.5	3.5	0.5	0.0	0.0	0.5
11:00 PM	47.0	0.0	0.0	0.5	0.5	4.0	10.0	21.0	8.5	2.0	0.5	0.0	0.0	0.0
Daily Average	6702.0	13.0	11.0	20.0	61.5	349.5	1640.5	2997.5	1333.5	246.0	22.0	4.0	0.0	3.5
Average (Mean)		41.8 mph		Minimum	10.0 mph		Maximum	80.9 mph		Pace Range	37.2 - 47.2 mph	9989 vehicles (74.5 %)		
Percentile Speeds		10%	15%	50%	85%	90%								
(mph)		36.2	37.2	41.8	46.5	47.7								
Speeds Exceeded		25 mph	30 mph	35 mph	40 mph	45 mph	50 mph	55 mph	60 mph					
		99.3 % (13316)	98.4 % (13193)	93.2 % (12494)	68.7 % (9213)	24.0 % (3218)	4.1 % (551)	0.4 % (59)	0.1 % (15)					
Study Grand Totals														
Total		0 - < 15	15 - < 20	20 - < 25	25 - < 30	30 - < 35	35 - < 40	40 - < 45	45 - < 50	50 - < 55	55 - < 60	60 - < 65	65 - < 70	70 - < 200
EB	13404	26	22	40	123	699	3281	5995	2667	492	44	8	0	7
		0.2 %	0.2 %	0.3 %	0.9 %	5.2 %	24.5 %	44.7 %	19.9 %	3.7 %	0.3 %	0.1 %	0.0 %	0.1 %

Location : b/t IA 58 & Main St
 Project : Greenhill Rd Traffic Study
 Project No : 118.0463.01

Wednesday, 5/9/2018 5:00 PM -
 Friday, 5/11/2018 5:00 PM

Speed Grand Totals

mph	Hourly Averages WB													
	Total	0 - < 15	15 - < 20	20 - < 25	25 - < 30	30 - < 35	35 - < 40	40 - < 45	45 - < 50	50 - < 55	55 - < 60	60 - < 65	65 - < 70	70 - < 200
12:00 AM	24.0	0.0	0.0	0.0	0.0	0.5	3.5	7.0	8.5	3.0	1.0	0.5	0.0	0.0
1:00 AM	11.5	0.0	0.0	0.0	0.0	1.0	1.5	3.0	3.5	1.5	1.0	0.0	0.0	0.0
2:00 AM	9.5	0.0	0.0	0.0	0.0	1.5	0.5	2.0	2.0	2.0	0.5	0.5	0.0	0.5
3:00 AM	18.0	0.0	0.0	0.0	0.0	0.0	2.0	3.5	7.0	5.0	0.5	0.0	0.0	0.0
4:00 AM	33.5	0.0	0.0	0.0	0.0	1.0	3.0	4.0	9.5	9.5	5.0	1.0	0.0	0.5
5:00 AM	80.0	0.0	0.0	0.0	0.0	0.0	5.5	22.0	24.5	18.0	7.0	3.0	0.0	0.0
6:00 AM	195.5	0.5	0.0	0.0	0.0	1.5	6.5	46.5	74.0	54.5	10.0	1.5	0.5	0.0
7:00 AM	388.0	2.0	2.0	0.5	0.5	2.0	28.0	119.0	142.0	70.0	17.5	2.5	1.0	1.0
8:00 AM	360.0	0.0	0.0	1.0	0.0	6.5	26.0	120.0	120.5	70.5	13.5	1.5	0.5	0.0
9:00 AM	302.5	0.0	0.0	0.0	0.5	7.5	44.5	109.5	94.5	36.5	7.5	2.0	0.0	0.0
10:00 AM	314.0	0.0	1.0	1.5	2.5	14.0	49.0	120.5	88.0	31.0	6.0	0.5	0.0	0.0
11:00 AM	378.5	1.0	1.0	0.5	3.5	7.5	47.0	147.5	111.0	49.5	6.0	3.5	0.0	0.5
12:00 PM	433.5	1.5	1.0	0.5	2.0	10.0	49.0	145.0	152.0	62.0	9.0	1.0	0.5	0.0
1:00 PM	421.5	1.5	0.0	0.5	2.5	11.5	53.5	151.0	136.5	55.5	8.5	0.5	0.0	0.0
2:00 PM	427.0	1.0	0.5	1.0	1.5	12.0	66.5	160.0	121.5	55.5	6.5	1.0	0.0	0.0
3:00 PM	558.5	1.0	0.5	0.5	2.0	16.5	65.5	224.0	171.5	67.0	8.5	1.0	0.0	0.5
4:00 PM	614.0	2.0	0.0	1.5	0.5	14.0	63.5	229.5	216.5	72.0	10.5	3.0	0.0	1.0
5:00 PM	556.5	0.5	0.0	0.0	0.0	13.0	62.5	209.5	187.0	69.5	11.5	2.0	1.0	0.0
6:00 PM	379.5	0.0	0.0	1.5	1.0	7.0	43.5	140.5	121.5	55.0	5.5	2.5	1.0	0.5
7:00 PM	272.0	0.0	0.0	0.5	0.0	6.5	37.5	105.5	88.5	26.0	6.0	1.5	0.0	0.0
8:00 PM	253.5	0.0	0.0	0.0	0.0	5.5	38.0	95.5	74.5	33.5	5.5	0.5	0.5	0.0
9:00 PM	136.5	0.0	0.0	0.0	0.0	1.5	18.0	52.5	40.5	19.5	4.0	0.0	0.0	0.5
10:00 PM	74.0	0.5	0.0	0.0	0.0	0.0	7.0	21.5	25.0	14.0	5.0	1.0	0.0	0.0
11:00 PM	38.0	0.0	0.0	0.0	0.0	4.0	5.0	10.5	10.5	5.5	1.5	1.0	0.0	0.0
Daily Average	6279.5	11.5	6.0	9.5	16.5	144.5	726.5	2249.5	2030.5	886.0	157.5	31.5	5.0	5.0
Average (Mean)	45.1 mph	Minimum 10.0 mph			Maximum 88.7 mph			Pace Range 40.5 - 50.5 mph			8692 vehicles (69.2 %)			
Percentile Speeds	10% (mph) 38.8	15% 40.0	50% 44.9	85% 50.3	90% 51.7									
Speeds Exceeded	25 mph 99.6 % (12505)	30 mph 99.3 % (12472)	35 mph 97.0 % (12183)	40 mph 85.4 % (10730)	45 mph 49.6 % (6231)	50 mph 17.3 % (2170)	55 mph 3.2 % (398)	60 mph 0.7 % (83)						
Study Grand Totals														
	Total	0 - < 15	15 - < 20	20 - < 25	25 - < 30	30 - < 35	35 - < 40	40 - < 45	45 - < 50	50 - < 55	55 - < 60	60 - < 65	65 - < 70	70 - < 200
WB	12559	23 0.2 %	12 0.1 %	19 0.2 %	33 0.3 %	289 2.3 %	1453 11.6 %	4499 35.8 %	4061 32.3 %	1772 14.1 %	315 2.5 %	63 0.5 %	10 0.1 %	10 0.1 %

Location : b/t OrchardHill Dr & Oster Pkwy
 Project : Greenhill Rd Traffic Study
 Project No : 118.0463.01

Wednesday, 5/9/2018 4:00 PM -
 Friday, 5/11/2018 4:00 PM

Speeds Grand Totals

mph	Hourly Averages													
	Total	0 - < 15	15 - < 20	20 - < 25	25 - < 30	30 - < 35	35 - < 40	40 - < 45	45 - < 50	50 - < 55	55 - < 60	60 - < 65	65 - < 70	70 - < 200
12:00 AM	22.0	0.0	0.0	0.0	0.5	1.0	1.0	4.5	10.0	5.0	0.0	0.0	0.0	0.0
1:00 AM	10.5	0.0	0.0	0.5	0.0	0.0	0.0	2.5	5.0	2.0	0.0	0.5	0.0	0.0
2:00 AM	9.0	0.0	0.0	0.0	0.0	0.0	2.0	2.0	1.0	2.0	2.0	0.0	0.0	0.0
3:00 AM	13.5	0.0	0.0	1.0	0.5	0.0	2.5	3.0	5.0	1.5	0.0	0.0	0.0	0.0
4:00 AM	16.5	0.0	0.0	0.5	1.0	1.0	0.0	2.5	8.0	3.0	0.0	0.5	0.0	0.0
5:00 AM	71.0	0.0	0.0	3.0	5.0	1.5	1.5	12.5	25.5	18.0	1.5	2.5	0.0	0.0
6:00 AM	206.5	0.0	0.0	5.5	24.5	3.5	3.0	25.5	77.5	50.5	12.5	3.5	0.5	0.0
7:00 AM	362.5	0.0	0.5	6.5	27.0	8.5	5.0	67.0	162.5	67.5	15.0	3.0	0.0	0.0
8:00 AM	320.5	0.5	1.0	6.0	12.5	7.5	9.5	65.5	136.0	65.0	12.0	4.0	1.0	0.0
9:00 AM	252.5	0.0	0.5	7.0	12.0	2.5	10.5	64.5	106.5	39.5	7.5	1.5	0.5	0.0
10:00 AM	287.0	0.0	0.5	4.5	12.0	3.0	10.0	72.0	112.0	55.0	15.0	3.0	0.0	0.0
11:00 AM	325.0	0.0	2.0	5.0	11.0	2.5	19.5	67.0	132.0	66.0	17.0	2.5	0.0	0.5
12:00 PM	366.0	0.5	0.0	6.0	13.0	5.5	9.5	65.5	163.5	82.0	15.0	5.5	0.0	0.0
1:00 PM	365.0	0.0	1.0	5.5	11.5	7.5	7.0	81.0	147.0	83.0	18.0	3.5	0.0	0.0
2:00 PM	352.0	0.0	1.0	6.5	15.0	6.5	11.0	77.5	141.5	70.5	19.0	2.0	0.5	1.0
3:00 PM	473.0	0.0	1.0	5.5	14.5	7.0	15.5	111.5	179.0	116.0	16.0	5.0	1.5	0.5
4:00 PM	496.0	0.5	0.0	4.0	11.0	9.0	16.0	99.5	206.5	120.5	21.5	7.0	0.5	0.0
5:00 PM	479.0	0.5	1.5	4.5	10.5	8.5	10.0	95.5	207.5	111.0	24.0	3.0	1.5	1.0
6:00 PM	330.5	0.0	0.0	4.0	11.5	5.0	6.0	62.5	132.0	82.5	21.0	5.0	0.5	0.5
7:00 PM	246.5	0.0	1.0	4.5	8.0	2.0	9.0	49.5	102.0	54.5	11.0	4.5	0.0	0.5
8:00 PM	188.0	0.0	1.0	5.0	8.0	2.5	8.0	47.5	69.5	37.5	8.0	1.0	0.0	0.0
9:00 PM	134.0	0.0	0.5	1.5	6.0	4.0	6.5	34.0	53.0	20.5	5.0	1.5	0.5	1.0
10:00 PM	72.0	0.0	0.0	0.5	2.0	0.5	1.0	18.0	28.0	15.0	5.0	1.5	0.5	0.0
11:00 PM	29.5	0.0	0.0	0.0	0.0	0.0	0.5	7.0	11.0	9.0	1.5	0.0	0.5	0.0
Daily Average	5428.0	2.0	11.5	87.0	217.0	89.0	164.5	1137.5	2221.5	1177.0	247.5	60.5	8.0	5.0
Average (Mean)	46.4 mph	Minimum 11.4 mph			Maximum 84.6 mph			Pace Range 43.3 - 53.3 mph			7722 vehicles (71.1 %)			
Percentile Speeds	10% (mph) 39.6	15% 41.8	50% 47.1	85% 52.4	90% 53.2									
Speeds Exceeded	25 mph 98.1 % (10655)	30 mph 94.2 % (10221)	35 mph 92.5 % (10043)	40 mph 89.5 % (9714)	45 mph 68.5 % (7439)	50 mph 27.6 % (2996)	55 mph 5.9 % (642)	60 mph 1.4 % (147)						
Study Grand Totals														
Total	0 - < 15	15 - < 20	20 - < 25	25 - < 30	30 - < 35	35 - < 40	40 - < 45	45 - < 50	50 - < 55	55 - < 60	60 - < 65	65 - < 70	70 - < 200	
EB	10856	4	23	174	434	178	329	2275	4443	2354	495	121	16	10
		0.0 %	0.2 %	1.6 %	4.0 %	1.6 %	3.0 %	21.0 %	40.9 %	21.7 %	4.6 %	1.1 %	0.1 %	0.1 %

Location : b/w Orchard Pkwy & Oster Pkwy
 Project : Greenhill Rd Traffic Study
 Project No : 118.0463.01

Wednesday, 5/9/2018 4:00 PM -
 Friday, 5/11/2018 4:00 PM

Speeds Grand Totals

mph	Hourly Averages													
	Total	0 - < 15	15 - < 20	20 - < 25	25 - < 30	30 - < 35	35 - < 40	40 - < 45	45 - < 50	50 - < 55	55 - < 60	60 - < 65	65 - < 70	70 - < 200
12:00 AM	18.5	0.0	0.5	0.5	0.5	0.0	0.5	1.0	4.0	8.0	2.5	0.5	0.5	0.0
1:00 AM	11.5	0.0	1.0	1.0	0.0	0.0	0.0	1.5	2.0	2.0	3.0	1.0	0.0	0.0
2:00 AM	6.5	0.0	0.0	0.5	0.0	0.0	0.5	0.5	0.5	2.0	1.5	1.0	0.0	0.0
3:00 AM	6.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.5	2.0	0.5	0.5	0.5
4:00 AM	19.5	0.0	0.0	0.5	0.0	0.0	0.0	0.5	3.0	8.0	6.0	1.0	0.5	0.0
5:00 AM	63.5	0.0	0.5	1.0	0.0	0.0	0.0	2.5	8.5	25.0	17.0	5.5	2.5	1.0
6:00 AM	145.0	0.0	3.0	3.5	0.0	1.0	0.0	3.0	19.5	51.0	42.0	18.0	3.5	0.5
7:00 AM	354.0	0.5	6.5	6.5	0.5	1.0	1.0	8.5	52.5	139.5	93.0	33.0	9.5	2.0
8:00 AM	309.5	0.5	10.0	9.0	1.0	0.5	3.5	9.0	51.0	124.5	70.5	22.0	7.5	0.5
9:00 AM	250.0	1.0	7.0	4.0	0.0	1.0	2.0	11.5	54.0	91.0	61.5	15.0	1.0	1.0
10:00 AM	267.0	1.5	5.5	4.5	0.5	1.5	4.0	11.5	61.5	112.0	48.0	13.5	2.0	1.0
11:00 AM	337.5	1.5	10.5	8.5	1.0	2.0	2.0	17.5	63.0	111.0	83.0	31.0	5.0	1.5
12:00 PM	362.5	0.0	9.5	8.5	2.0	2.0	2.0	13.5	58.5	140.5	88.0	29.0	7.5	1.5
1:00 PM	369.0	2.5	14.5	13.0	2.5	1.0	2.5	17.5	75.5	142.0	72.0	21.0	2.5	2.5
2:00 PM	350.0	2.0	9.0	4.5	1.5	2.5	4.5	15.0	66.0	126.5	87.0	27.0	3.0	1.5
3:00 PM	451.5	1.0	12.0	17.5	3.0	3.5	4.5	13.5	75.5	166.5	112.5	33.0	7.0	2.0
4:00 PM	512.5	2.5	17.5	21.5	6.0	7.5	8.5	24.5	85.5	201.0	108.0	22.0	5.5	2.5
5:00 PM	450.5	1.5	16.0	22.5	4.0	4.5	4.5	19.0	76.5	176.5	94.0	25.5	2.0	4.0
6:00 PM	306.0	1.0	19.0	16.0	1.0	2.0	1.0	9.0	61.0	119.0	56.0	17.5	3.5	0.0
7:00 PM	221.5	0.5	10.5	7.0	2.0	0.0	0.5	10.0	47.0	79.0	44.0	16.5	3.5	1.0
8:00 PM	200.0	1.0	17.0	5.5	0.0	1.0	0.5	11.5	54.5	65.0	29.5	12.5	1.0	1.0
9:00 PM	114.0	0.5	4.5	3.0	0.0	0.0	3.0	8.0	24.0	42.0	21.5	7.0	0.0	0.5
10:00 PM	54.5	0.0	2.0	0.5	0.5	0.0	1.0	3.5	7.5	18.0	14.0	5.5	1.0	1.0
11:00 PM	26.5	0.0	0.5	1.0	0.0	0.0	0.5	2.5	5.5	9.0	4.5	2.0	1.0	0.0
Daily Average	5207.0	17.5	176.5	160.0	26.0	31.0	46.5	214.5	957.5	1960.5	1161.0	360.5	70.0	25.5
Average (Mean)	50.6 mph	Minimum 10.0 mph			Maximum 84.6 mph			Pace Range 48.4 - 58.4 mph			6984 vehicles (67.1 %)			
Percentile Speeds	(mph)	10%	15%	50%	85%	90%								
		42.3	46.0	52.4	58.2	59.1								
Speeds Exceeded	<u>25 mph</u>	<u>30 mph</u>	<u>35 mph</u>	<u>40 mph</u>	<u>45 mph</u>	<u>50 mph</u>	<u>55 mph</u>	<u>60 mph</u>						
	93.2 % (9706)	92.7 % (9654)	92.1 % (9592)	91.2 % (9499)	87.1 % (9070)	68.7 % (7155)	31.1 % (3234)	8.8 % (912)						
Study Grand Totals														
	Total	0 - < 15	15 - < 20	20 - < 25	25 - < 30	30 - < 35	35 - < 40	40 - < 45	45 - < 50	50 - < 55	55 - < 60	60 - < 65	65 - < 70	70 - < 200
WB	10414	35	353	320	52	62	93	429	1915	3921	2322	721	140	51
		0.3 %	3.4 %	3.1 %	0.5 %	0.6 %	0.9 %	4.1 %	18.4 %	37.7 %	22.3 %	6.9 %	1.3 %	0.5 %

PC-Travel Reports for study: TT_Greenhill_AM_EB

<u>Report Name</u>	<u>Page</u>
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Overall Output Statistics	3
Speed/Distance Profiles of All Runs	4
Time/Space Trajectories of All Runs	5

**Snyder &
Associates**
2727 SW Snyder Blvd, Ankeny IA

Study Name : **TT_Greenhill_AM_EB**
Study Date : **5/10/2018**
Page No. : **2**

Study Summary

Runs Used in This Study

Run Title	Start Date	Start Time	Length	Before/After	Run Type
GreenHillDr_AM-1-EB-R001TN	05/10/18	07:33	16211	Before	Primary
GreenHillDr_AM-1-EB-R003T	05/10/18	07:59	16386	Before	Secondary
GreenHillDr_AM-1-EB-R005T	05/10/18	08:15	16325	Before	Secondary
GreenHillDr_AM-1-EB-R007T	05/10/18	08:31	16280	Before	Secondary
GreenHillDr_AM-1-EB-R009T	05/10/18	08:47	16347	Before	Secondary

Node Info

#	Len	Name
1	0	Start
2	1075	Hudson Rd
3	3408	IA 58
4	1840	S Main St
5	1973	Prairie Pkwy
6	4674	Rownd St
7	2724	Cedar Heights Dr
8	517	End

Length of Study Route = 16,211 feet

Notes:

Snyder & Associates
2727 SW Snyder Blvd, Ankeny IA

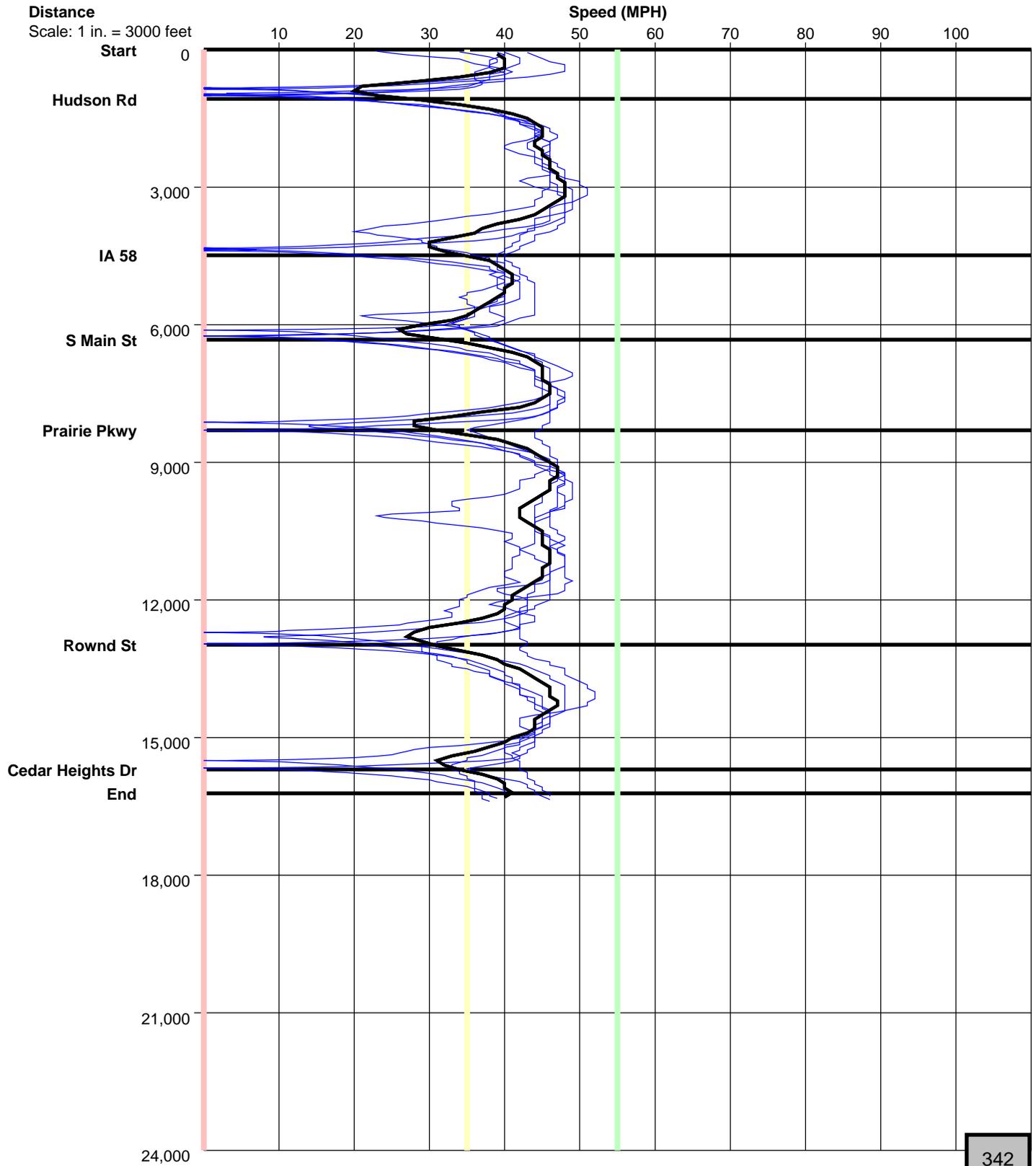
Study Name : **TT_Greenhill_AM_EB**
Study Date : **5/10/2018**
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Overall Output Statistics

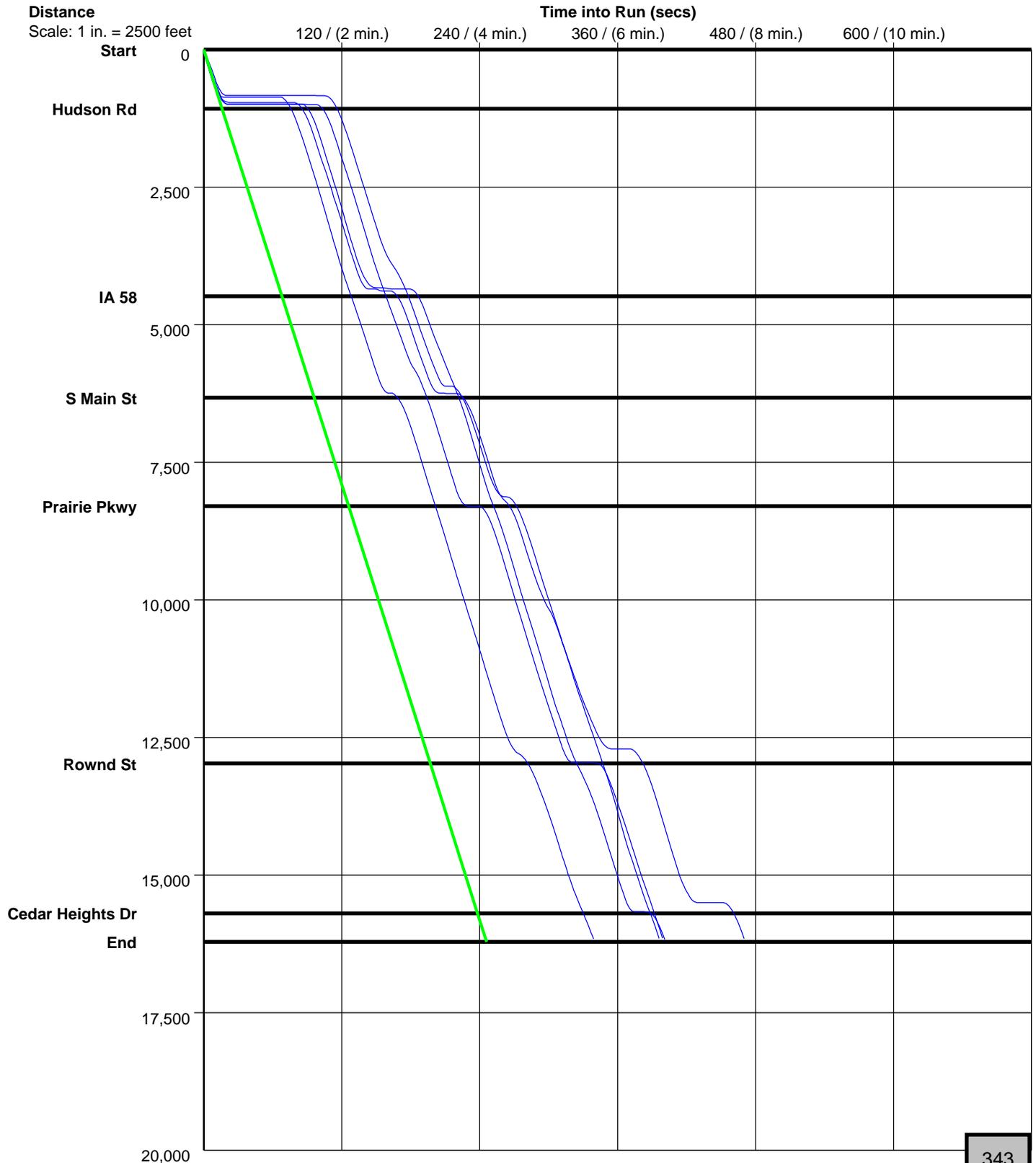
Node #	Length	Node	Travel Time	# of Stops	Avg Speed	Total Delay	Time <= 0 MPH	Time <= 35 MPH	Time <= 55 MPH
1	0	Start							
2	1075	Hudson Rd	95.6	1.0	7.7	79.2	64.0	84.2	95.6
3	3408	IA 58	69.8	0.6	33.3	17.8	6.2	24.8	69.8
4	1840	S Main St	43.0	0.6	29.2	14.8	3.4	19.6	43.0
5	1973	Prairie Pkwy	37.2	0.4	36.2	7.0	0.2	12.2	37.2
6	4674	Rownd St	91.6	0.4	34.8	20.4	8.4	29.4	91.6
7	2724	Cedar Heights Dr	56.4	0.4	32.9	15.0	6.0	21.0	56.4
8	517	End	9.4	0.0	37.5	1.4	0.0	2.8	9.4
Total	16,211		403.0	3.4	27.4	155.6	88.2	194.0	403.0

Stats based on 5 BEFORE runs.
Stops based on a Stop Speed of 5 MPH.
Total Delay based on a Normal Speed of 45 MPH.

Speed/Distance Profiles of All Runs



Time/Space Trajectories of All Runs



Solid Line is Normal Speed of 45 MPH

PC-Travel Reports for study: TT_Greenhill_AM_WB

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Time/Space Trajectories of All Runs	5

**Snyder &
Associates**
2727 SW Snyder Blvd, Ankeny IA

Study Name : **TT_Greenhill_AM_WB**
Study Date : **5/10/2018**
Page No. : **2**

Study Summary

Runs Used in This Study

Run Title	Start Date	Start Time	Length	Before/After	Run Type
GreenHillDr_AM-1-WB-R002TN	05/10/18	07:43	15995	Before	Primary
GreenHillDr_AM-1-WB-R004T	05/10/18	08:08	15917	Before	Secondary
GreenHillDr_AM-1-WB-R006T	05/10/18	08:23	16075	Before	Secondary
GreenHillDr_AM-1-WB-R008T	05/10/18	08:39	15989	Before	Secondary
GreenHillDr_AM-1-WB-R010T	05/10/18	08:56	15994	Before	Secondary

Node Info

#	Len	Name
1	0	Start
2	1061	Cedar Heights Dr
3	2584	Rownd St
4	4789	Prairie Pkwy
5	1962	S Main St
6	1864	IA 58
7	3354	Hudson Rd
8	381	End

Length of Study Route = 15,995 feet

Notes:

Snyder & Associates
2727 SW Snyder Blvd, Ankeny IA

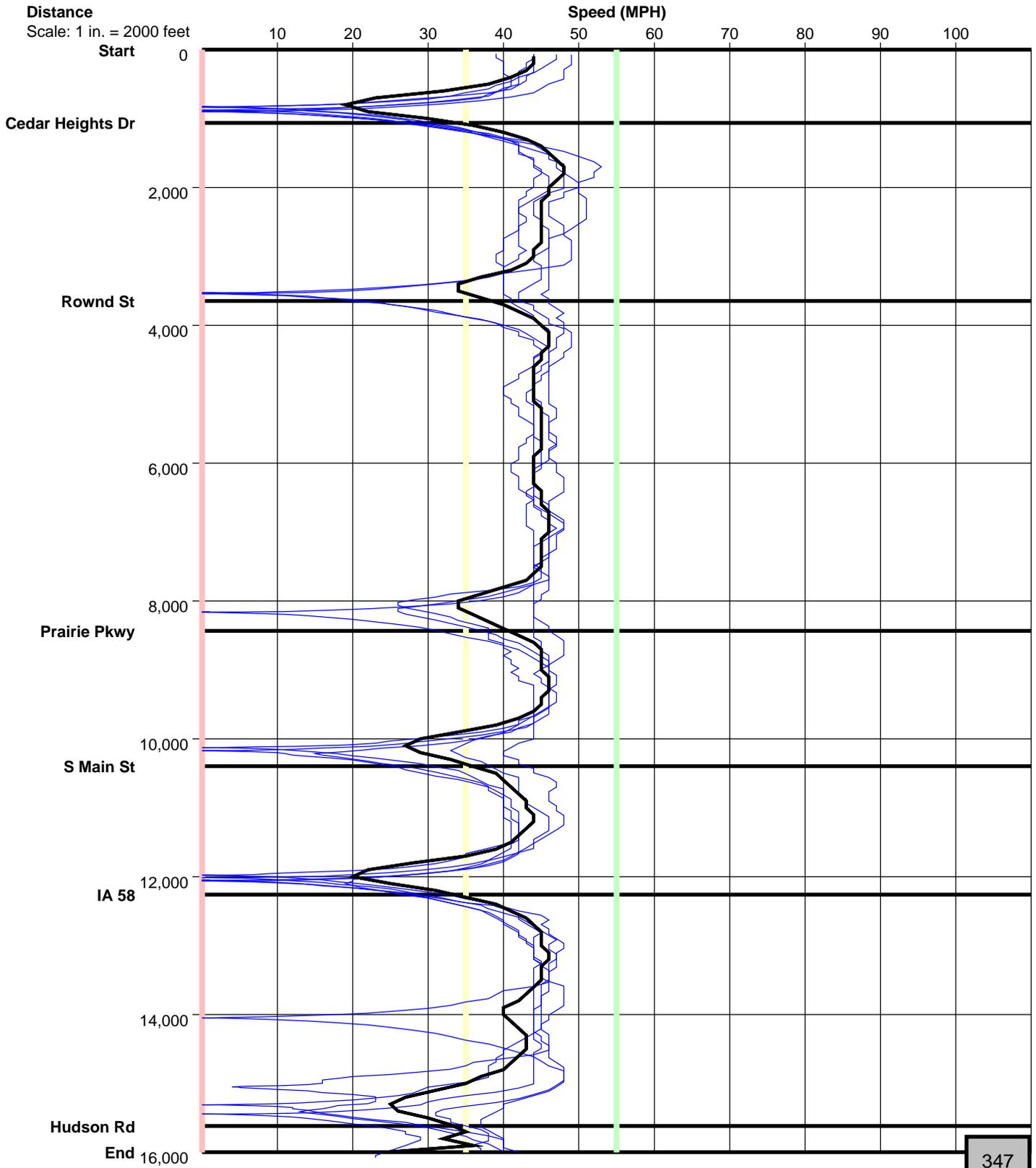
Study Name : **TT_Greenhill_AM_WB**
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Overall Output Statistics

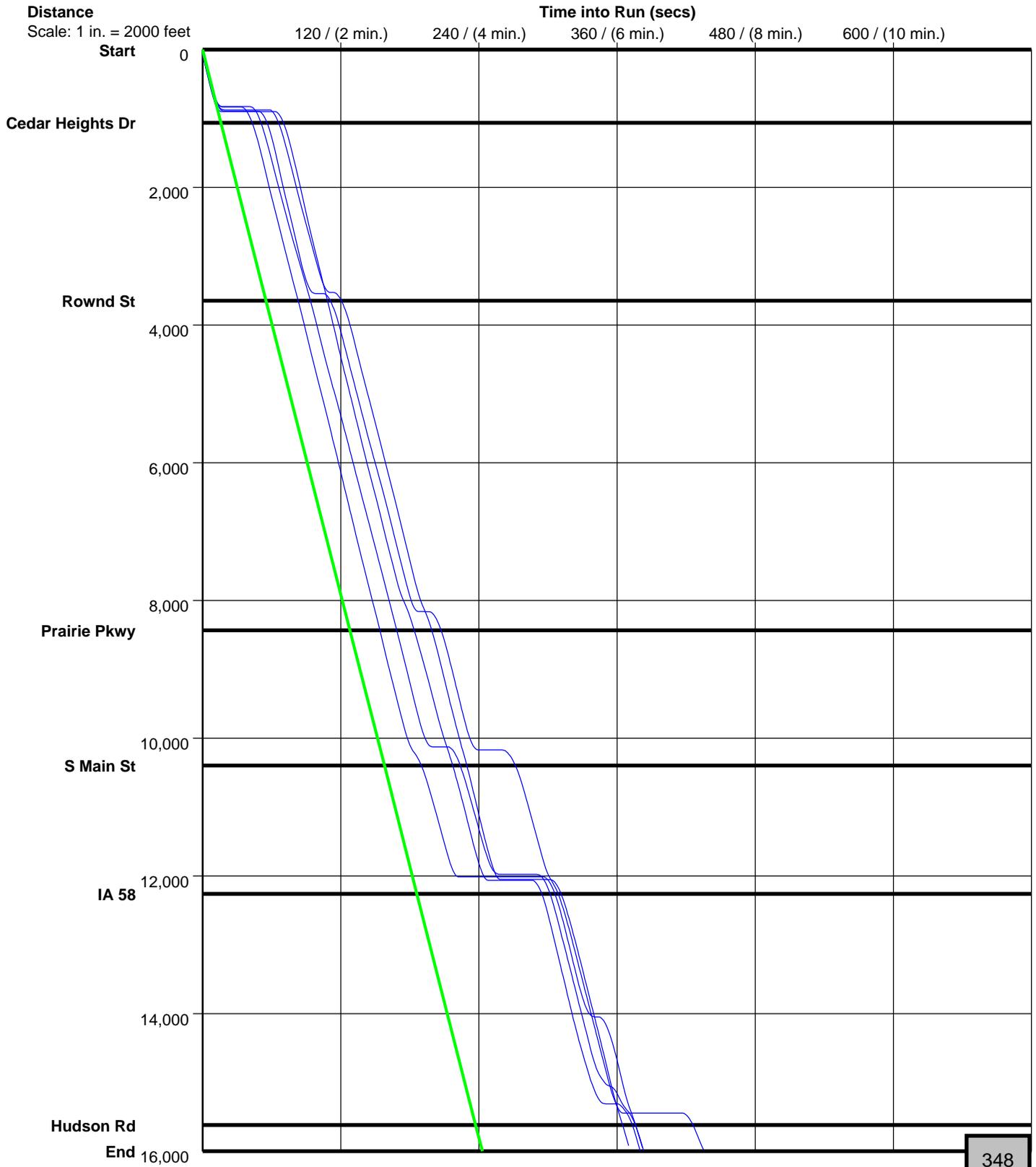
Node #	Length	Node	Travel Time	# of Stops	Avg Speed	Total Delay	Time <= 0 MPH	Time <= 35 MPH	Time <= 55 MPH
1	0	Start							
2	1061	Cedar Heights Dr	58.4	1.0	12.4	42.2	30.2	47.6	58.4
3	2584	Rownd St	46.2	0.4	38.1	7.2	2.0	9.4	46.2
4	4789	Prairie Pkwy	79.4	0.2	41.1	6.8	1.2	11.0	79.4
5	1962	S Main St	43.8	0.4	30.5	13.8	6.6	18.0	43.8
6	1864	IA 58	78.0	0.8	16.3	49.8	36.6	57.0	78.0
7	3354	Hudson Rd	78.6	0.8	29.1	27.6	12.6	36.2	78.6
8	381	End	7.6	0.0	34.2	1.4	0.0	2.8	7.0
Total	15,995		392.0	3.6	27.8	148.8	89.2	182.0	391.4

Stats based on 5 BEFORE runs.
Stops based on a Stop Speed of 5 MPH.
Total Delay based on a Normal Speed of 45 MPH.

Speed/Distance Profiles of All Runs



Time/Space Trajectories of All Runs



Solid Line is Normal Speed of 45 MPH

PC-Travel Reports for study: TT_Greenhill_Mid_EB

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**Snyder &
Associates**
2727 SW Snyder Blvd, Ankeny IA

Study Name : **TT_Greenhill_Mid_EB**
Study Date : **5/10/2018**
Page No. : **2**

Study Summary

Runs Used in This Study

Run Title	Start Date	Start Time	Length	Before/After	Run Type
GreenHillsDr_MID-1-EB-R001TN	05/10/18	10:37	16158	Before	Primary
GreenHillsDr_MID-1-EB-R003T	05/10/18	10:52	16224	Before	Secondary
GreenHillsDr_MID-1-EB-R005T	05/10/18	11:07	16224	Before	Secondary
GreenHillsDr_MID-1-EB-R007T	05/10/18	11:25	16162	Before	Secondary
GreenHillsDr_MID-1-EB-R009T	05/10/18	11:42	15731	Before	Secondary

Node Info

#	Len	Name
1	0	Start
2	1201	Hudson Rd
3	3390	IA 58
4	1812	S Main St
5	1969	Prairie pkway
6	4721	Rownd St
7	2700	Cedar heights Dr
8	365	End

Length of Study Route = 16,158 feet

Notes:

Snyder & Associates
2727 SW Snyder Blvd, Ankeny IA

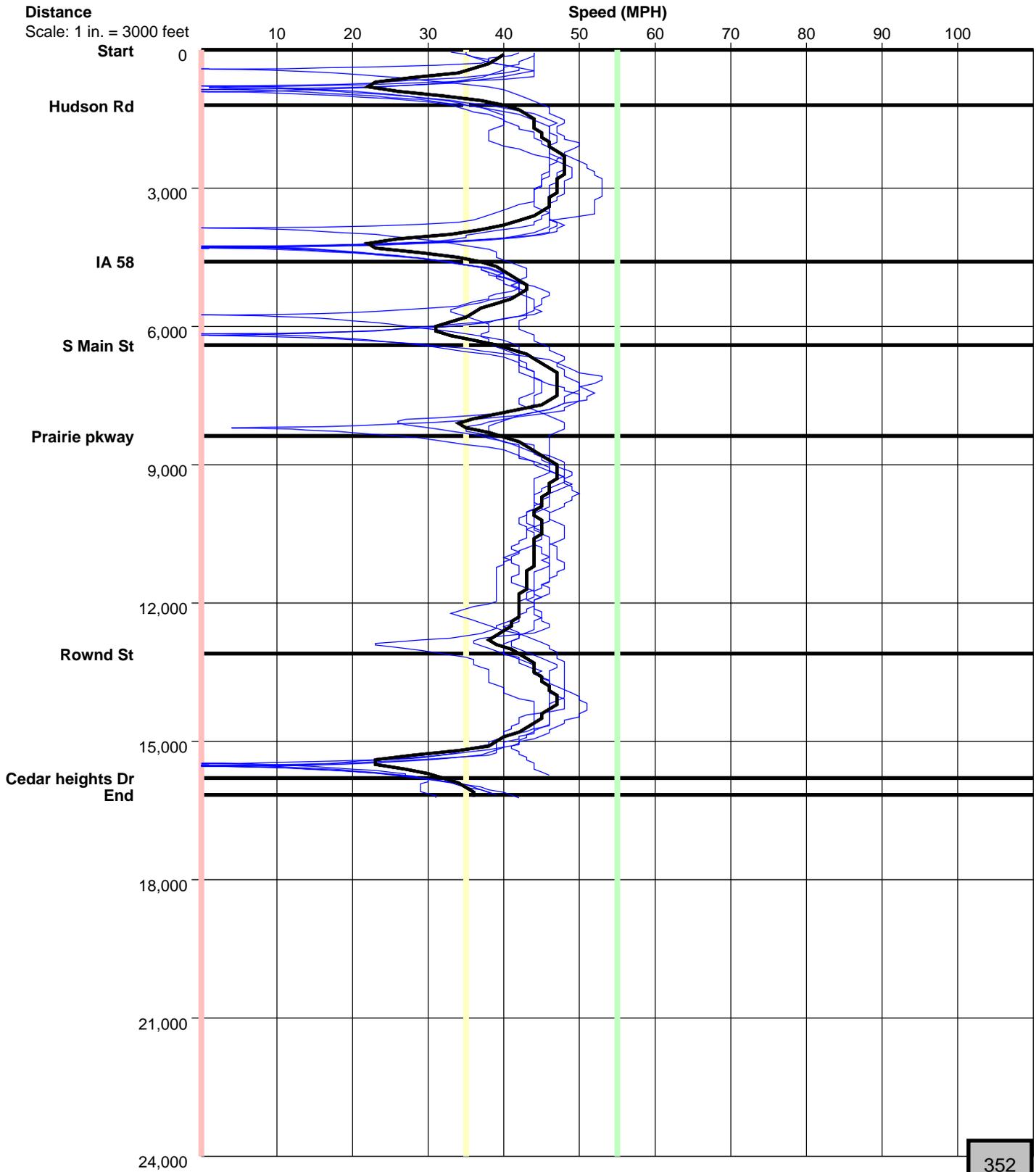
Study Name : **TT_Greenhill_Mid_EB**
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Overall Output Statistics

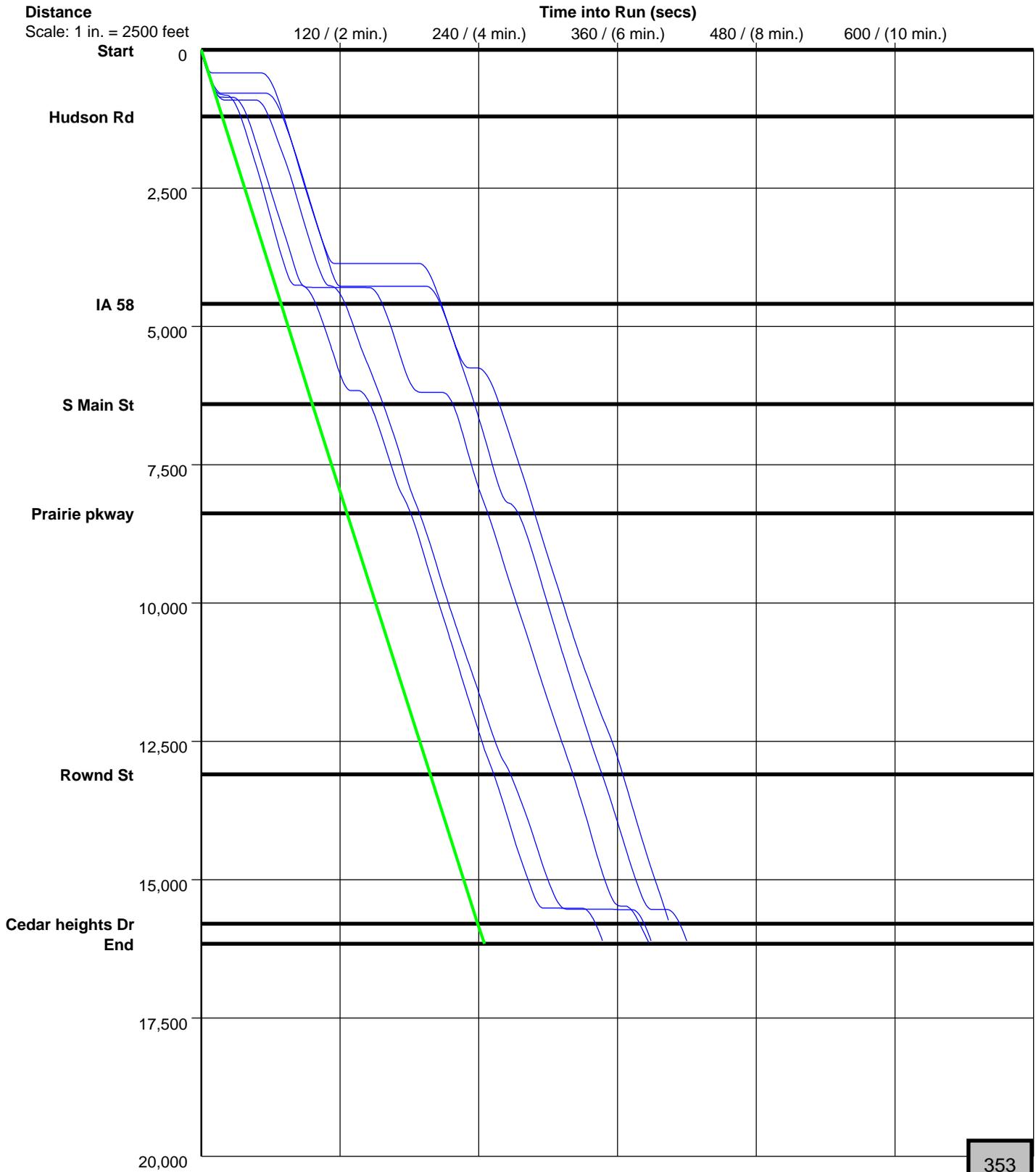
Node #	Length	Node	Travel Time	# of Stops	Avg Speed	Total Delay	Time <= 0 MPH	Time <= 35 MPH	Time <= 55 MPH
1	0	Start							
2	1201	Hudson Rd	56.2	1.0	14.6	37.4	22.2	44.8	56.2
3	3390	IA 58	104.0	1.0	22.2	52.2	39.6	60.8	104.0
4	1812	S Main St	44.2	0.6	28.0	16.4	5.8	20.2	44.2
5	1969	Prairie pkway	32.8	0.2	40.9	2.6	0.0	5.8	32.8
6	4721	Rownd St	74.8	0.0	43.0	2.8	0.0	3.4	74.8
7	2700	Cedar heights Dr	73.8	0.8	24.9	32.8	18.8	39.2	73.6
8	365	End	5.6	0.0	44.4	0.8	0.0	3.4	5.6
Total	16,158		391.4	3.6	28.1	145.0	86.4	177.6	391.2

Stats based on 5 BEFORE runs.
Stops based on a Stop Speed of 5 MPH.
Total Delay based on a Normal Speed of 45 MPH.

Speed/Distance Profiles of All Runs



Time/Space Trajectories of All Runs



Solid Line is Normal Speed of 45 MPH

PC-Travel Reports for study: TT_Greenhill_Mid_WB

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**Snyder &
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2727 SW Snyder Blvd, Ankeny IA

Study Name : **TT_Greenhill_Mid_WB**
Study Date : **5/10/2018**
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Study Summary

Runs Used in This Study

Run Title	Start Date	Start Time	Length	Before/After	Run Type
GreenHillsDr_MID-1-WB-R002T	05/10/18	10:45	16248	Before	Primary
GreenHillsDr_MID-1-WB-R004T	05/10/18	11:01	16202	Before	Secondary
GreenHillsDr_MID-1-WB-R006T	05/10/18	11:16	16170	Before	Secondary
GreenHillsDr_MID-1-WB-R008T	05/10/18	11:34	16179	Before	Secondary
GreenHillsDr_MID-1-WB-R010T	05/10/18	11:51	16223	Before	Secondary

Node Info

#	Len	Name
1	0	Start
2	1272	Cedar heights Dr
3	2625	Rownd St
4	4836	Prairie pkway
5	1907	S Main St
6	1840	IA 58
7	3387	Hudson Rd
8	381	End

Length of Study Route = 16,248 feet

Notes:

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2727 SW Snyder Blvd, Ankeny IA

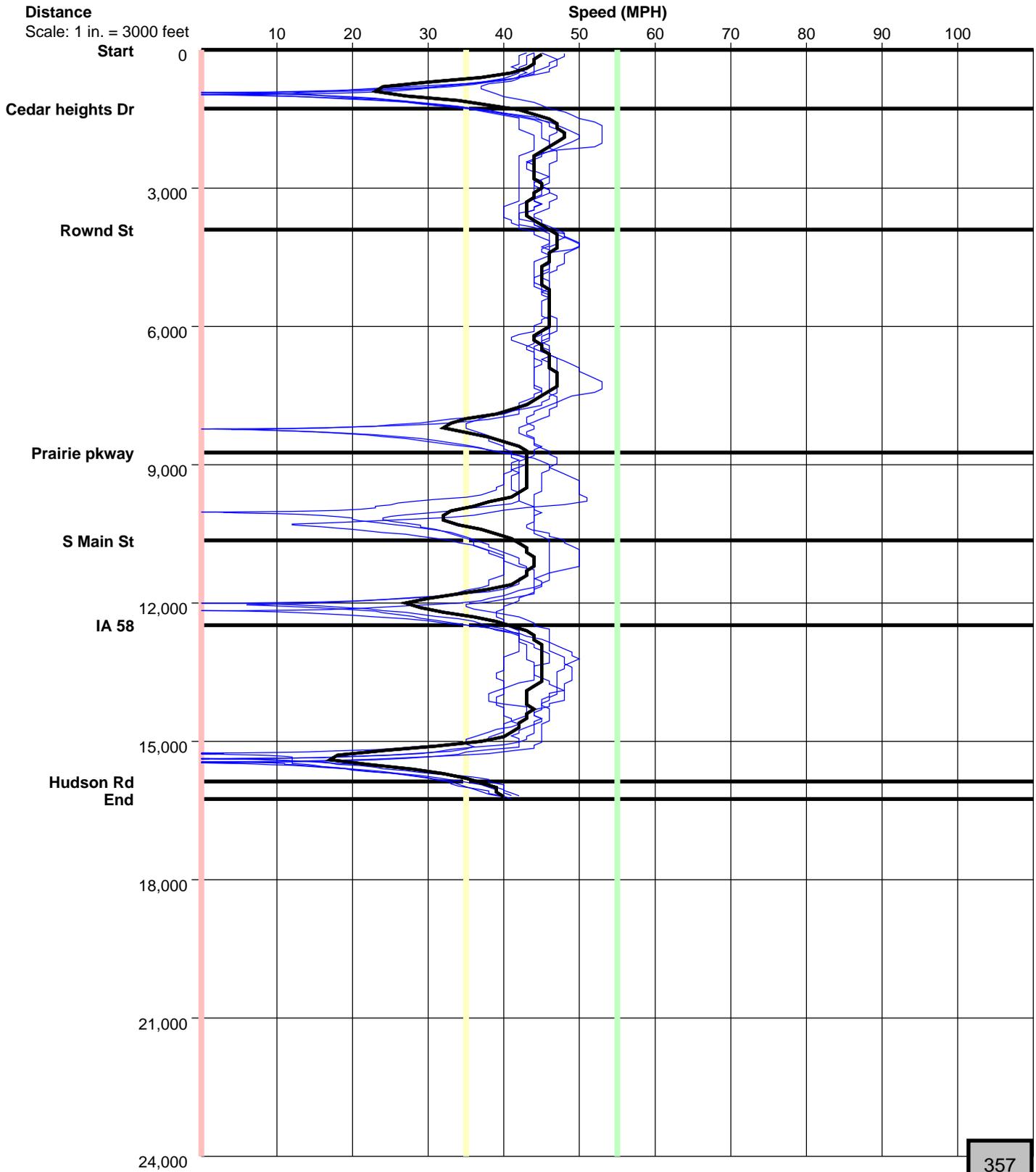
Study Name : **TT_Greenhill_Mid_WB**
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Overall Output Statistics

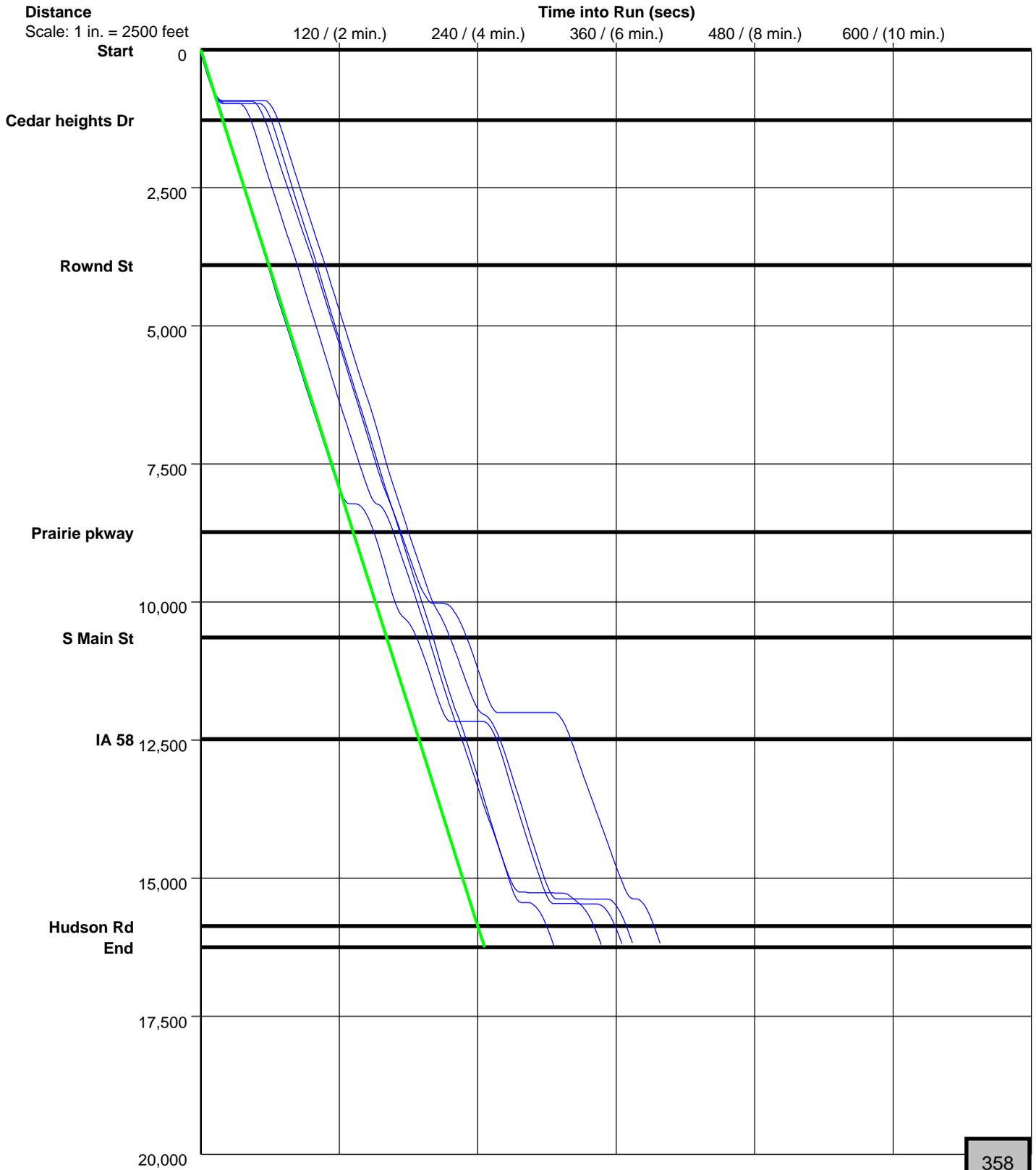
Node #	Length	Node	Travel Time	# of Stops	Avg Speed	Total Delay	Time <= 0 MPH	Time <= 35 MPH	Time <= 55 MPH
1	0	Start							
2	1272	Cedar heights Dr	50.6	0.8	17.1	31.2	20.8	36.4	50.6
3	2625	Rownd St	40.4	0.0	44.3	0.8	0.0	0.0	40.4
4	4836	Prairie pkway	78.8	0.4	41.8	6.0	0.6	9.2	78.8
5	1907	S Main St	38.0	0.2	34.2	8.8	1.6	13.8	38.0
6	1840	IA 58	52.0	0.4	24.1	23.6	15.4	28.4	52.0
7	3387	Hudson Rd	93.6	1.0	24.7	41.8	21.4	50.4	93.6
8	381	End	6.6	0.0	39.4	0.6	0.0	0.8	5.8
Total	16,248		360.0	2.8	30.8	112.8	59.8	139.0	359.2

Stats based on 5 BEFORE runs.
Stops based on a Stop Speed of 5 MPH.
Total Delay based on a Normal Speed of 45 MPH.

Speed/Distance Profiles of All Runs



Time/Space Trajectories of All Runs



Solid Line is Normal Speed of 45 MPH

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**Snyder &
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2727 SW Snyder Blvd, Ankeny IA

Study Name : **TT_Greenhill_PM_EB**
Study Date : **5/9/2018**
Page No. : **2**

Study Summary

Runs Used in This Study

Run Title	Start Date	Start Time	Length	Before/After	Run Type
GreenHillDr_PM-1-EB-R001T	05/09/18	16:46	16257	Before	Primary
GreenHillDr_PM-1-EB-R003T	05/09/18	17:04	16150	Before	Secondary
GreenHillDr_PM-1-EB-R005T	05/09/18	17:21	16216	Before	Secondary
GreenHillDr_PM-1-EB-R007T	05/09/18	17:40	16246	Before	Secondary
GreenHillDr_PM-1-EB-R009T	05/09/18	17:56	15673	Before	Secondary

Node Info

#	Len	Name
1	0	Start
2	1299	Hudson Rd
3	3412	IA 58
4	1792	S Main St
5	2003	Prairie pkway
6	4679	Rownd St
7	2728	Cedar heights Dr
8	344	End

Length of Study Route = 16,257 feet

Notes:

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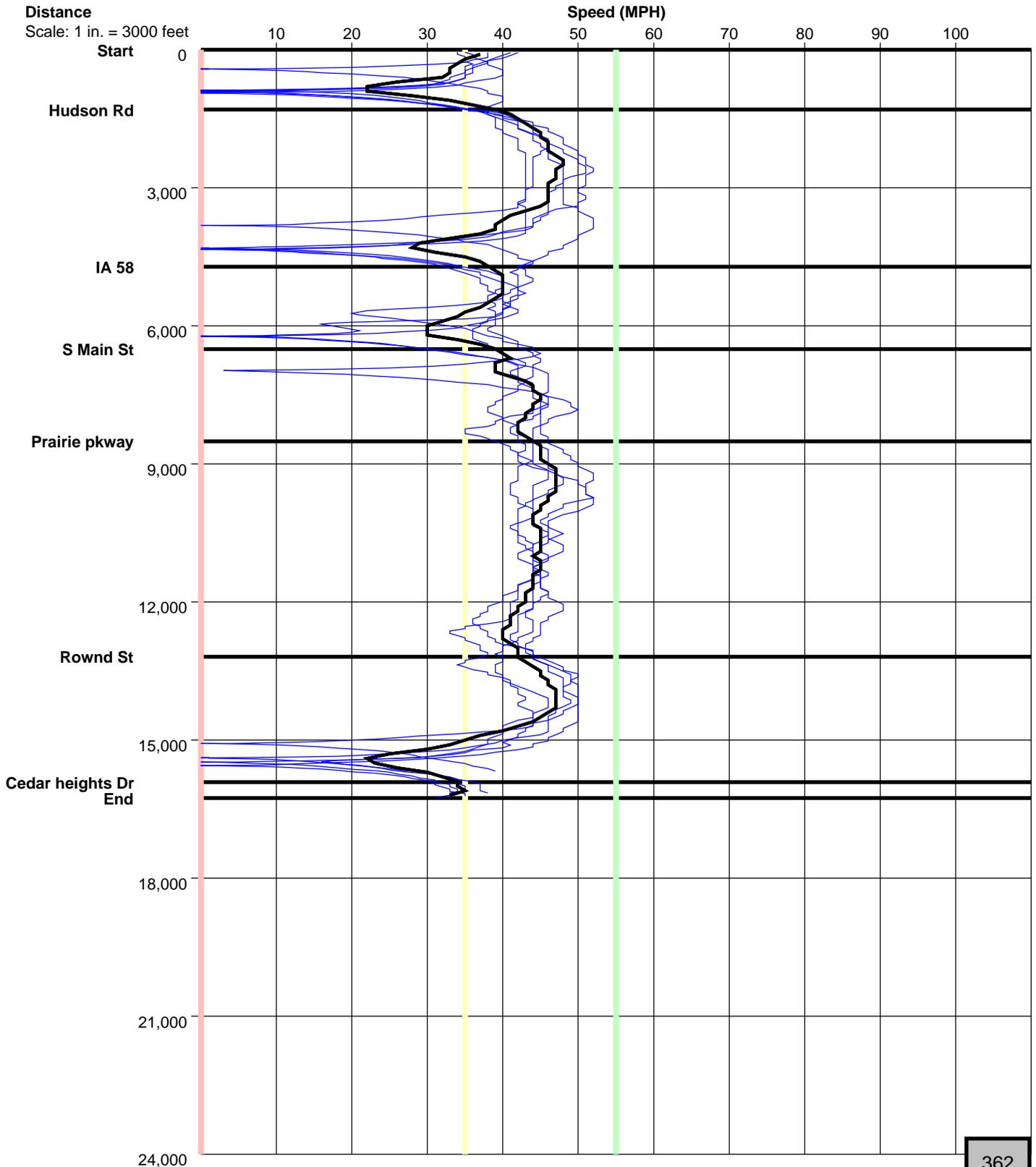
Study Name : **TT_Greenhill_PM_EB**
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Overall Output Statistics

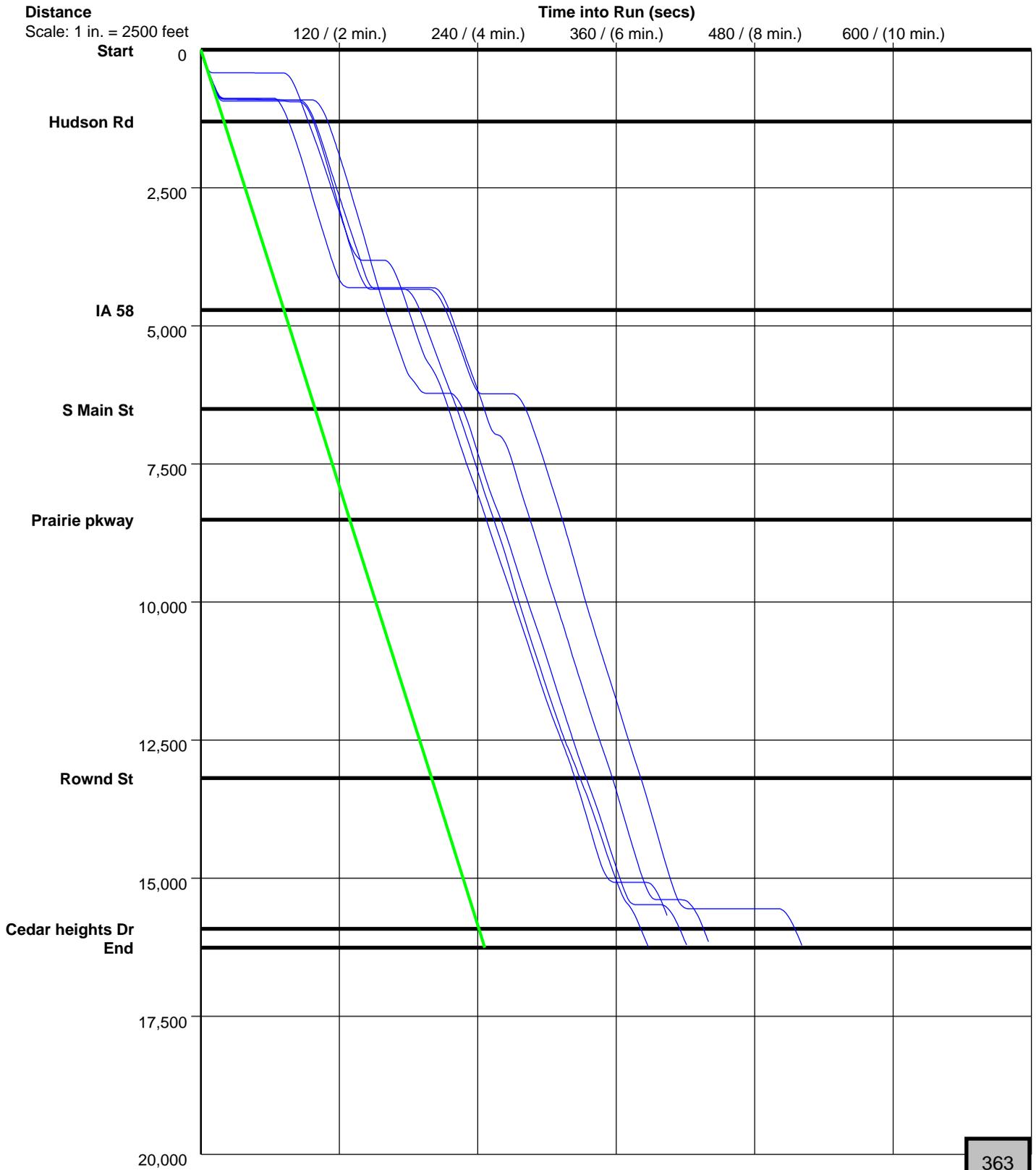
Node #	Length	Node	Travel Time	# of Stops	Avg Speed	Total Delay	Time <= 0 MPH	Time <= 35 MPH	Time <= 55 MPH
1	0	Start							
2	1299	Hudson Rd	96.6	1.0	9.2	76.6	55.2	85.4	96.6
3	3412	IA 58	96.2	0.8	24.2	44.6	32.4	51.6	96.2
4	1792	S Main St	46.8	0.4	26.1	19.2	9.4	22.4	46.8
5	2003	Prairie pkway	33.8	0.2	40.4	3.2	0.0	3.6	33.8
6	4679	Rownd St	73.0	0.0	43.7	2.4	0.0	1.0	73.0
7	2728	Cedar heights Dr	85.2	0.8	21.8	44.2	28.4	55.0	85.0
8	344	End	5.2	0.0	45.1	1.2	0.0	3.6	4.6
Total	16,257		436.8	3.2	25.4	191.4	125.4	222.6	436.0

Stats based on 5 BEFORE runs.
Stops based on a Stop Speed of 5 MPH.
Total Delay based on a Normal Speed of 45 MPH.

Speed/Distance Profiles of All Runs



Time/Space Trajectories of All Runs



Solid Line is Normal Speed of 45 MPH

PC-Travel Reports for study: TT_Greenhill_PM_WB

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**Snyder &
Associates**
2727 SW Snyder Blvd, Ankeny IA

Study Name : **TT_Greenhill_PM_WB**
Study Date : **5/9/2018**
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Study Summary

Runs Used in This Study

Run Title	Start Date	Start Time	Length	Before/After	Run Type
GreenHillDr_PM-1-WB-R002TN	05/09/18	16:56	15346	Before	Primary
GreenHillDr_PM-1-WB-R004T	05/09/18	17:13	16167	Before	Secondary
GreenHillDr_PM-1-WB-R006T	05/09/18	17:32	16162	Before	Secondary
GreenHillDr_PM-1-WB-R008T	05/09/18	17:48	16150	Before	Secondary
GreenHillDr_PM-1-WB-R010T	05/09/18	18:05	16130	Before	Secondary

Node Info

#	Len	Name
1	0	Start
2	506	Cedar heights Dr
3	2609	Rownd St
4	4812	Prairie pkway
5	1898	S Main St
6	1863	IA 58
7	3410	Hudson Rd
8	248	End

Length of Study Route = 15,346 feet

Notes:

Snyder & Associates
2727 SW Snyder Blvd, Ankeny IA

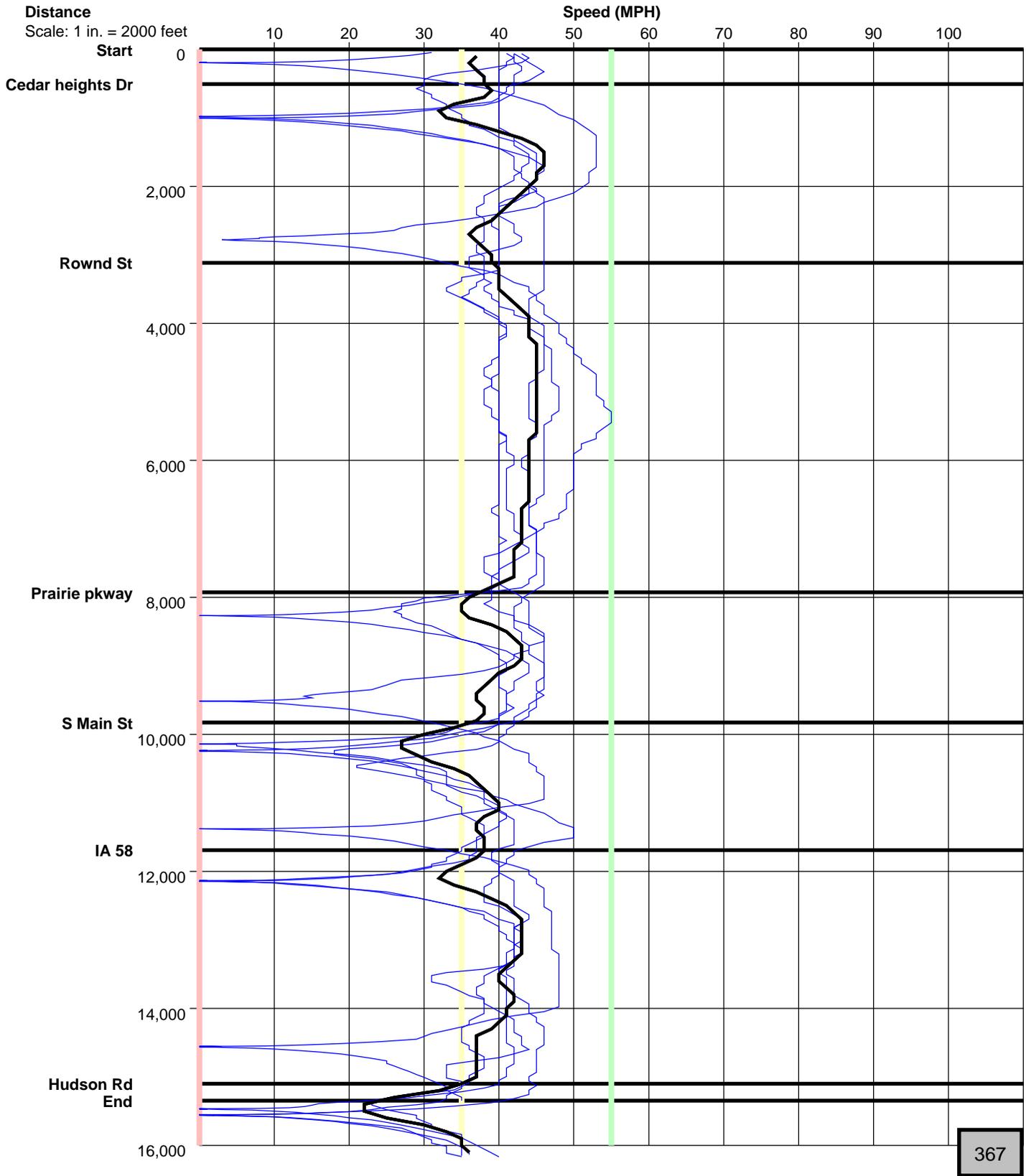
Study Name : **TT_Greenhill_PM_WB**
Study Date : **5/9/2018**
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Overall Output Statistics

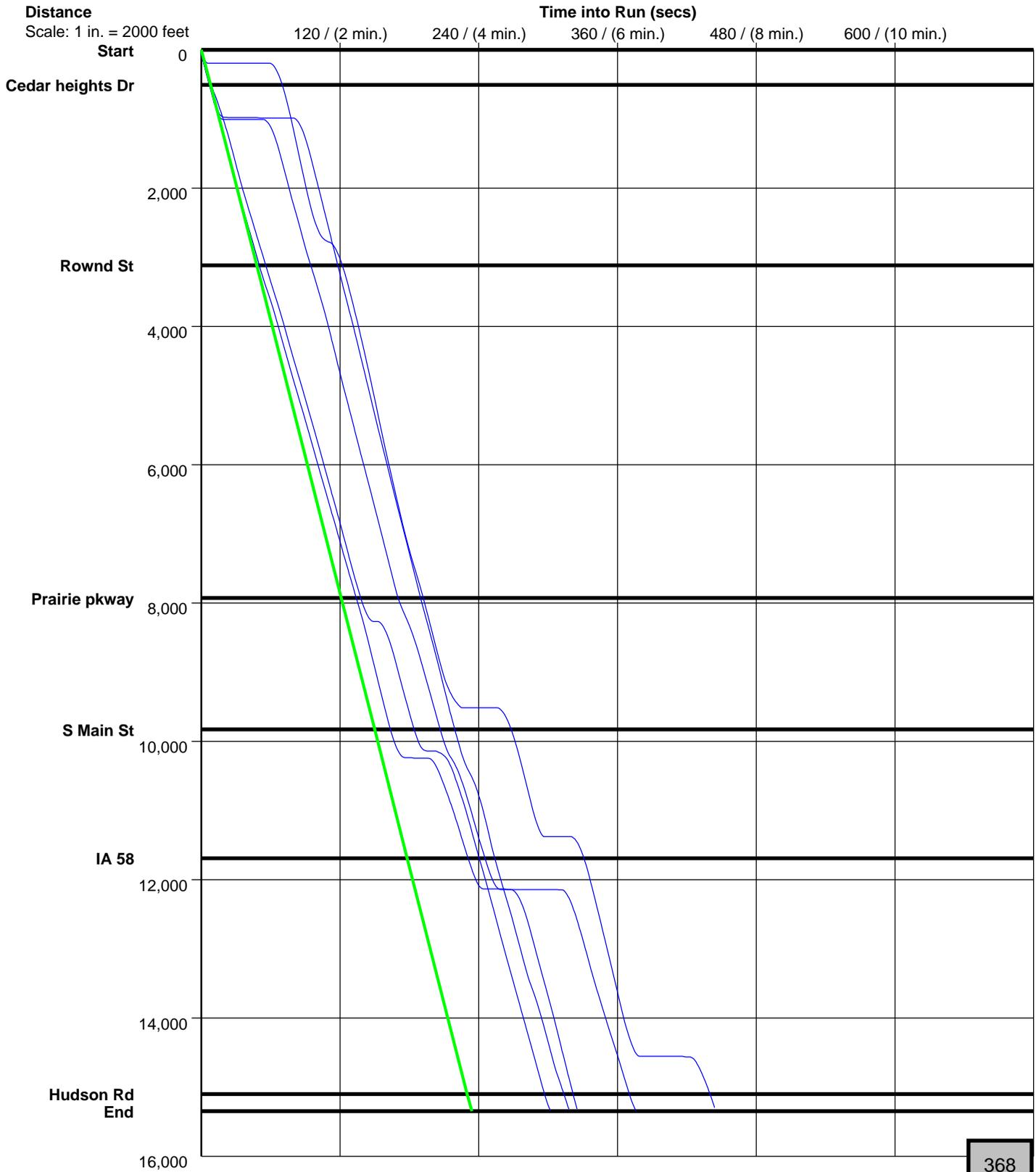
Node #	Length	Node	Travel Time	# of Stops	Avg Speed	Total Delay	Time <= 0 MPH	Time <= 35 MPH	Time <= 55 MPH
1	0	Start							
2	506	Cedar heights Dr	21.4	0.2	16.1	13.4	10.2	15.2	21.4
3	2609	Rownd St	68.2	0.6	26.1	28.2	17.4	32.6	68.2
4	4812	Prairie pkway	76.6	0.0	42.8	4.4	0.0	1.4	76.6
5	1898	S Main St	43.6	0.4	29.7	14.6	6.4	19.6	43.6
6	1863	IA 58	51.8	0.8	24.5	23.4	8.6	34.0	51.8
7	3410	Hudson Rd	88.2	0.6	26.4	36.2	21.4	42.2	88.2
8	248	End	5.2	0.0	32.5	1.2	0.0	4.0	5.2
Total	15,346		355.0	2.6	29.5	121.4	64.0	149.0	355.0

Stats based on 5 BEFORE runs.
Stops based on a Stop Speed of 5 MPH.
Total Delay based on a Normal Speed of 45 MPH.

Speed/Distance Profiles of All Runs



Time/Space Trajectories of All Runs



Solid Line is Normal Speed of 45 MPH

Memorandum

To: Jon Resler, P.E., City Engineer **Date:** 9/4/18

From: Mark Perington, P.E., PTOE
Andrew Houchin, E.I.

CC: Stephanie Sheetz, AICP, Community Development Director

RE: Traffic Forecasts and Existing Conditions Analysis
Greenhill Rd Corridor Traffic Study
Cedar Falls, IA
Snyder & Associates Project No.: 118.0463.01

Introduction

The City of Cedar Falls has requested that Snyder & Associates conduct a traffic study of the Greenhill Road corridor from Hudson Road to Cedar Heights Drive. The study area and intersections are shown in **Figure 1**. All the intersections on Greenhill Rd are included in the study other than the intersection with Iowa Highway 58 (IA 58) which is being studied separately by the Iowa DOT. The purpose of the study is to evaluate the current and future traffic demands for all modes of transportation in the Greenhill Rd corridor in order to develop short- and long-range plans for lane needs and intersection improvements. Other areas of focus for the study will be potential for traffic demand change due to new land use development, “complete streets” considerations, and appropriate traffic control for intersections such as traffic signalization or roundabouts. This memorandum summarizes the traffic forecasting process and analysis of the existing conditions with current and projected traffic.



Figure 1. Study Area Intersections

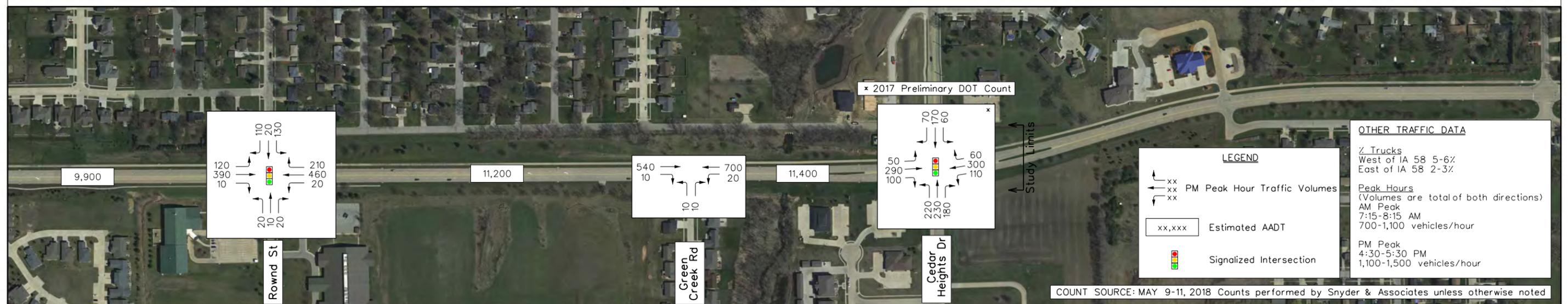
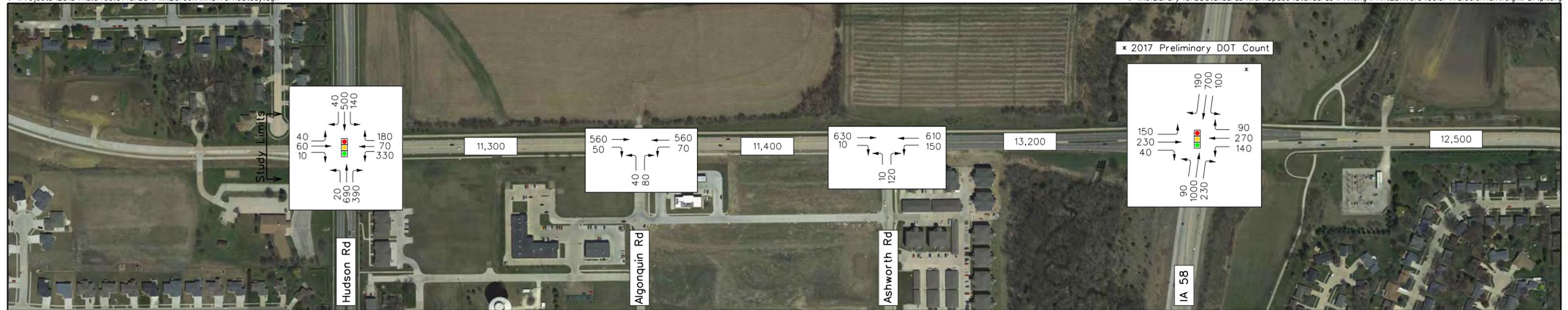
Existing Traffic Summary

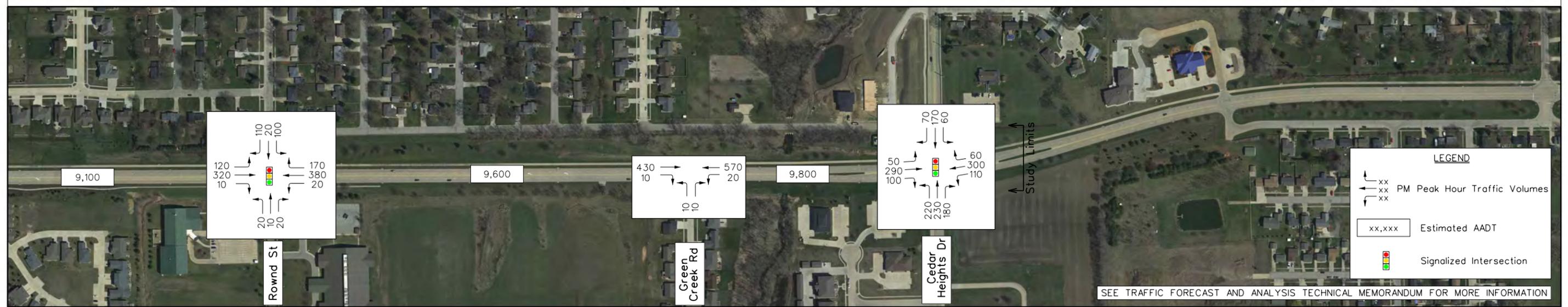
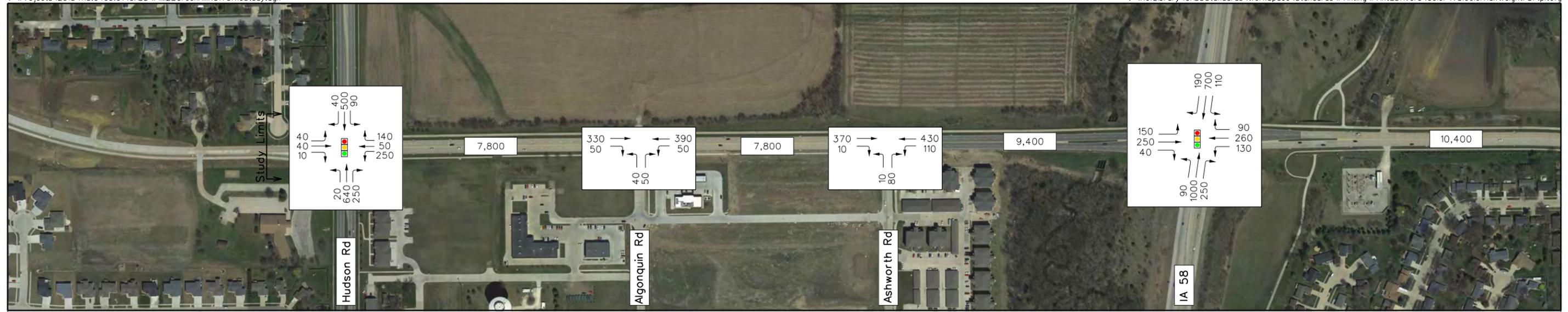
Traffic was counted on Greenhill Rd by the Iowa DOT in the spring of 2017 and by Snyder & Associates in the summer of 2018. Additionally, the City of Cedar Falls counted the AM and PM peak hours at the S Main St and Greenhill Rd intersection in the winter of 2017. Detailed information on those counts is included in the Traffic History and Data Collection Technical Memorandum.

The DOT and Snyder & Associates counts are compared in **Figure 2**. The 2018 daily volumes on Greenhill Rd are significantly higher than 2017 volumes, especially west of Prairie Pkwy. Based on discussions with the City, field observations, and differences in the observed traffic patterns, it was determined this was likely the result of traffic diverting to avoid the intersection of IA 58 and Viking Rd. That intersection was under construction during the 2018 counts, which significantly limited its capacity.

Adjustment for IA 58 and Viking Rd Construction

In order to use the 2018 counts as the basis for peak hour forecasts, they needed to be adjusted for the IA 58 and Viking Rd construction traffic. This was accomplished by starting with peak hour volumes from the 2017 DOT counts at the IA 58 and Cedar Heights Dr intersections, the 2017 DOT count on the south approach of Prairie Pkwy, and the 2017 City count at the S Main St intersection. Then, the volumes at intersections that were counted in 2018 but not 2017 were adjusted based on their existing turning patterns to balance with adjacent intersections. **Figure 2** shows the estimated 2018 daily volumes after being adjusted, and they are clearly more in line with the 2017 counts. **Figure 3** shows the PM peak hour volumes prior to adjustment and **Figure 4** shows them after adjustment.





LEGEND

- xx,xxx PM Peak Hour Traffic Volumes
- xx,xxx Estimated AADT
- Signalized Intersection

SEE TRAFFIC FORECAST AND ANALYSIS TECHNICAL MEMORANDUM FOR MORE INFORMATION

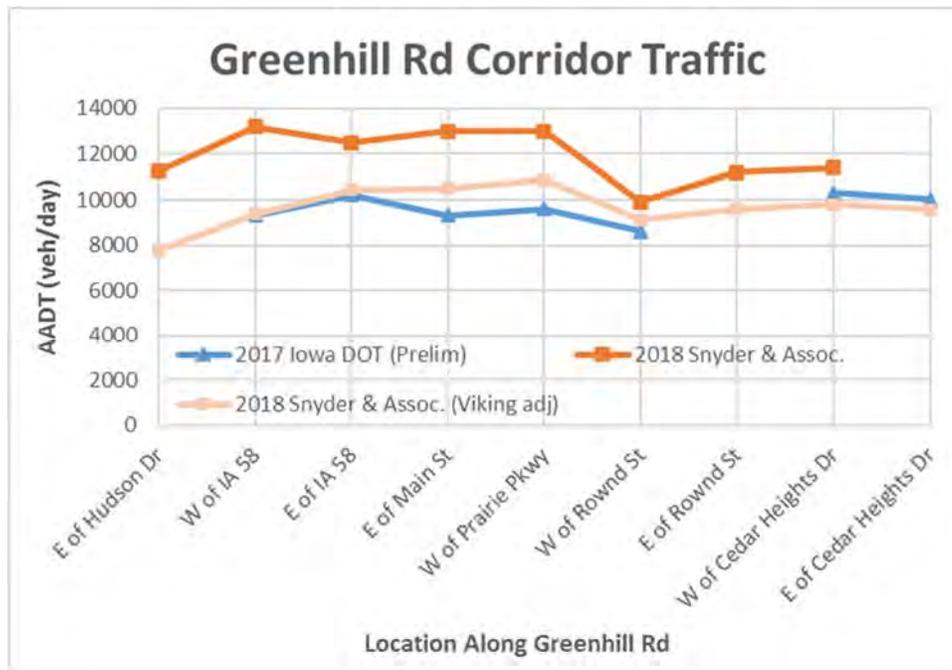


Figure 2. AADT on Greenhill Rd by Location (2017 vs. 2018)

Forecasts

The process of developing traffic forecasts for the Greenhill Rd corridor involved three basic steps. The first step was to examine the traffic history/historic growth rates, previous studies throughout the corridor, the Iowa Northland Regional Council of Government (INRCOG) regional traffic demand model forecast, and general development potential along the corridor. The second step was to use that information to select background growth rates for Greenhill Rd and the cross streets and apply them to the 2018 traffic (after it was adjusted for the IA 58 and Viking Rd construction). Additionally, during this step it was determined that the PM peak hour would be used as the focus of the analysis, because it is significantly higher than the AM peak, and the design year (2045) was selected. Finally, additional traffic from specific developments was added to the background growth. Specifically, the Sartori Hospital and Pinnacle Prairie development were considered separately from general background growth due to the volume of traffic they are expected to create and locations on the corridor.

Historic Growth

Past growth rates were calculated for traffic on Greenhill Rd and major cross streets based on Iowa DOT counts dating to the initial construction of Greenhill Rd in the early 1990s. The count histories for Greenhill Rd and the cross streets are shown in **Figure 5** and **Figure 6**, respectively. The 2018 volumes shown have been adjusted for the IA 58 and Viking Rd construction. Some of notable growth rates and trends are summarized below.

- Greenhill Rd Growth Rates (2001-2017): 5% per year west of IA 58, 2.2% per year east of IA 58, 3.4% per year average

- Cross Streets
 - Hudson Rd: Down since 2005, little growth since 2009
 - IA 58: Doubled from 1997-2005, about same level since 2005
 - N approach of S Main St: About 3% per year 1997-2017 consistent growth
 - Cedar Heights Dr: Nearly 5% per year 1997-2005, about same level since 2005

Other Forecasts

In addition to considering the previous growth in the corridor, forecasts from several sources were also considered. The primary forecast that was examined was the 2045 forecast from INRCOG, and it is shown in **Figure 3** and **Figure 4** along with the existing count history. In addition, other forecasts and projected volumes from past corridor studies and traffic impact studies were compared qualitatively with the INRCOG forecasts. The notable growth rates and trends INRCOG forecasted are summarized below.

- Greenhill Rd: about 12,000-15,000 veh/day (highest 17,000 veh/day W of IA 58)
 - Growth rates: generally 0.7% - 1.6% per year from 2017 to achieve
 - Average of both sides of IA 58 1.75% per year
 - Overall average 1.2% per year
- Cross Streets
 - Hudson Rd: 0.4% per year (from 2014)
 - IA 58: 0.2% per year (from 2017)
 - N approach of S Main St: no growth (from 2017)
 - Cedar Heights Dr: 1% per year (from 2017)

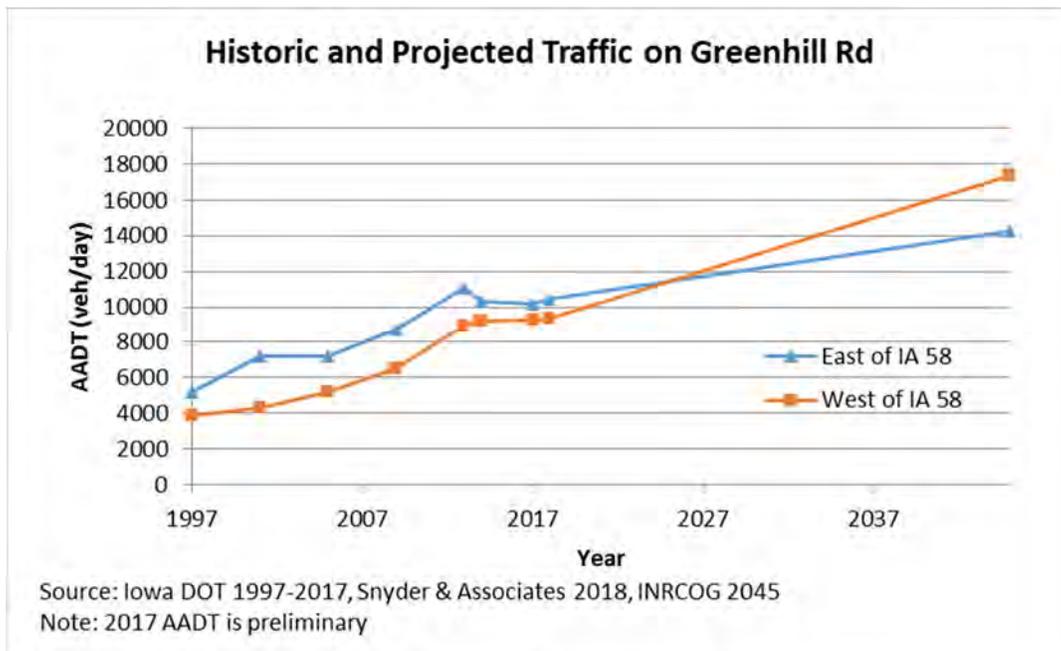


Figure 5. Traffic History and INRCOG Forecasts on Greenhill Rd

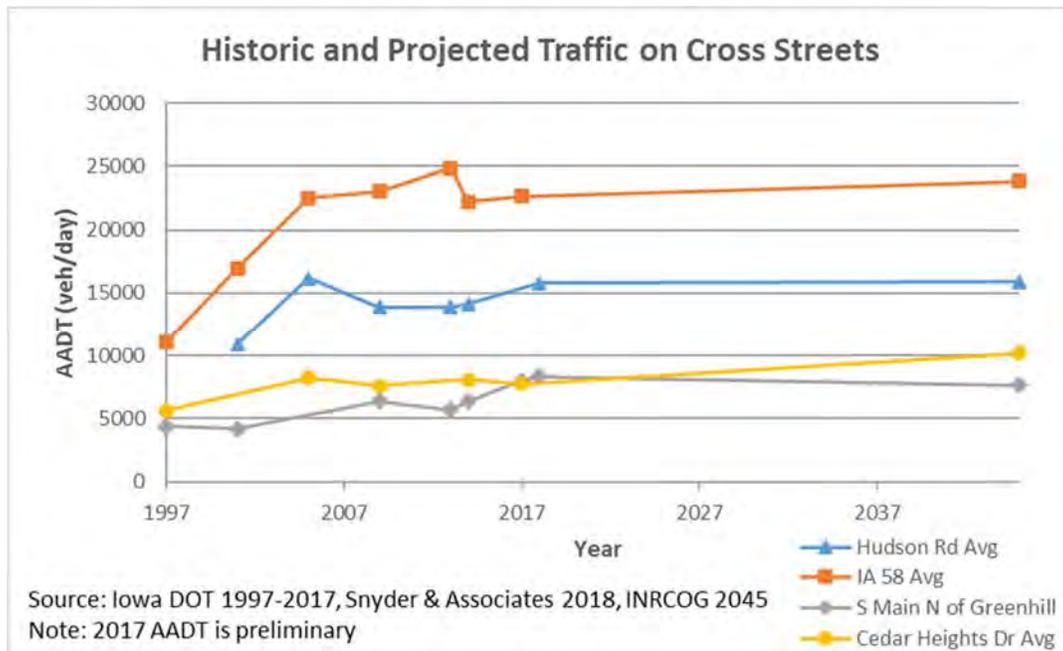


Figure 6. Traffic History and INRCOG Forecasts on Cross Streets

Development Potential

While the INRCOG forecast volumes provides valuable information, they are based on a regional traffic model which may or may not consider specific developments and impacts within a small area (i.e. on the adjacent intersections and short roadway segments). In order to further refine the forecasted traffic for this study, major developments were considered separately from the general background traffic growth. These developments included the Sartori Hospital near Greenhill Rd and Hudson Rd and the Pinnacle Prairie mixed use development south of Greenhill Rd between S Main St and Cedar Heights Dr (see Master Plan in appendix). The Sartori Hospital traffic primarily affects the north approaches of Algonquin Dr and Ashworth Dr. The Pinnacle Prairie traffic primarily affects the south approach of Prairie Pkwy and, to a lesser degree, S Main St, Oster Pkwy, and Rownd St.

Forecast Year (2045) Volumes

Based on the traffic history, forecast information, and engineering judgment regarding the general growth potential, background traffic growth rates were selected for Greenhill Rd and cross streets. Those were used to grow traffic to the forecast year of 2045. This year was selected because it is the model year for the INRCOG forecast, and because the design life for roadway pavement is generally considered to be 20 to 25 years. Then, traffic for the specific developments (Sartori Hospital and Pinnacle Prairie) was added to the relevant intersections. The selected background growth rates and reasoning behind their selection are outlined below. The final PM peak hour forecast volumes and estimated daily traffic volumes are shown in **Figure 7** and compared to the 2045 INRCOG forecast volumes in **Figure 8**.



LEGEND

- xx,xxx PM Peak Hour Traffic Volumes
- xx,xxx Estimated AADT
- Currently Signalized Intersection

SEE TRAFFIC FORECAST AND ANALYSIS TECHNICAL MEMORANDUM FOR MORE INFORMATION

- Selected Background Growth Rates
 - **Greenhill Rd: 1.5%** per year (49% total). History of growth and INRCOG projects growth. Higher side of growth range plus additional volume for specific development is conservative for planning improvements.
 - **Hudson Rd: 1%** (31% tot). Little history of growth and little INRCOG growth. Significant growth shown in Sartori TIS (3.4% per year, which is much higher than previous Hudson Rd study). Good connectivity and potential for development, especially to the south, which indicates some growth is likely.
 - **N approach of S Main St: 1%** (31% tot). History of growth but INRCOG does not project growth. Has some connectivity to areas of growth around Viking Rd, which supports the potential for growth.
 - **N approach of Rownd St: 1%** (31% tot). Assumed similar to S Main St based on similar nature.
 - **Cedar Heights Dr: 1%** (31% tot). No history of growth but INRCOG projects growth. Has potential development along it with Pinnacle Prairie to the west and large amounts of undeveloped land to the south and east. Good connectivity to other areas of growth, which supports the potential for growth.

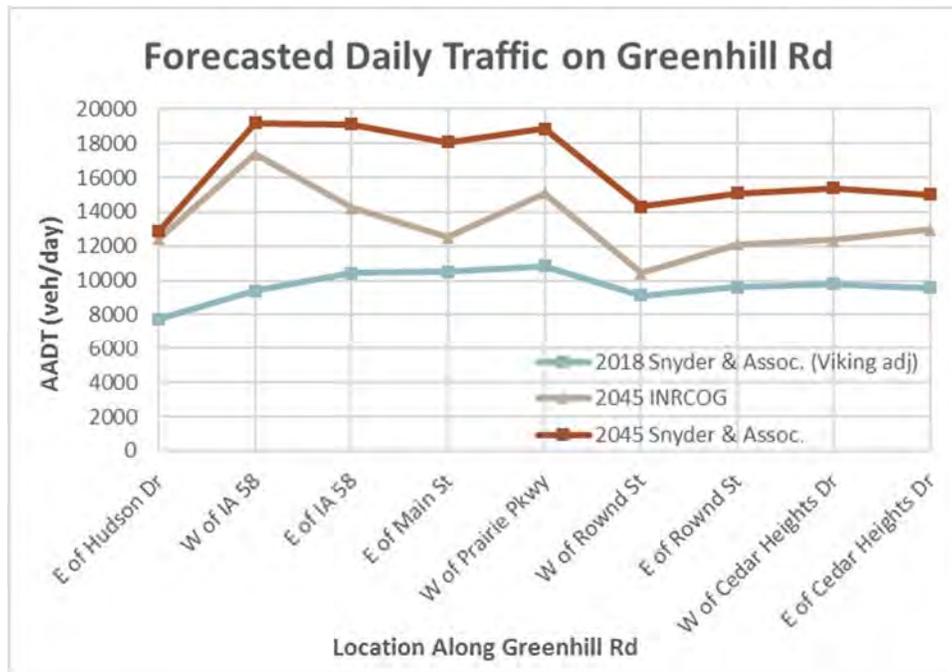


Figure 8. Comparison between 2045 Forecasts

In general, the forecast volumes used in this analysis are somewhat higher than those projected by INRCOG. This is the result of detailed consideration of the traffic history in the area, known developments, development potential, and the corridor’s role in Cedar Falls overall. Growth rates based on INRCOG volumes averaged 1.2% per year, with several locations experiencing less

than 1% per year, which corresponds to slow to moderate growth. Based on the factors outlined above, it is believed this area could experience moderate to high growth. Additionally, growth rates were selected to err on the higher side of likely growth to ensure that the corridor improvements can be designed to accommodate even higher than expected traffic growth.

Existing Conditions Analysis

The traffic operations at the study intersections with existing geometry, traffic control, and signal timings were analyzed using the *Synchro version 10* (*Synchro 10*) traffic analysis software and its built-in *Highway Capacity Manual 6* (*HCM 6*) functionality. The *HCM 6* uses Level of Service (LOS) to evaluate intersection and corridor operations. The LOS is a qualitative measure of the driver's experience that is based on delay where an LOS A is the least delay and LOS F is the most delay. Typically, LOS D is the minimum acceptable level of service for urban intersections and is considered the point at which demand during a specific hour or peak period approaches the capacity of an intersection or roadway. Side streets can sometimes experience LOS E or F in peak periods if the main street is particularly busy. The LOS thresholds according to the *HCM 6* are given in **Table 1**.

Table 1. Level of Service Definition (HCM 6)

LOS	Average Delay per Vehicle (seconds)	
	Signalized Intersection	Unsignalized Intersection
A	< 10	< 10
B	10 to 20	10 to 15
C	20 to 35	15 to 25
D	35 to 55	25 to 35
E	55 to 80	35 to 50
F	> 80 or V/C > 1.0	> 50 or V/C > 1.0

V/C - Volume to Capacity Ratio

The traffic analysis software *Synchro 10* uses similar analysis procedures and the same delay and LOS criteria as the *HCM 6*, however *Synchro 10* is better equipped to analyze a the progression of traffic on a coordinated signal corridor. Additionally, *Synchro 10* provides 95th percentile queuing estimates and analyzes non-standard signal phasing while *HCM 6* does not. For those reasons, *Synchro 10* analysis was used for this study. The results are summarized in the follow section, and a more complete summary of operations by individual movements is in the Appendix.

Existing (2018) Analysis

The current operations in the corridor were analyzed to provide a baseline for comparison with the projected operations. Intersection geometry was collected in the field and signal timings were provided by the City. The 2018 volumes that were adjusted for the IA 58 and Viking Rd construction traffic were used for this analysis. In general, the unadjusted volumes were significantly higher than counts within the last year from the Iowa DOT and City, which would

have resulted in unrealistically poor operations for typical traffic in 2018. The analysis results for the adjusted 2018 traffic with existing geometry and signal timings are provided in **Table 2**.

Currently all the signalized intersections are operating at an acceptable level (LOS D or better), and the side street approaches of two-way stop controlled (TWSC) are all LOS C or better. However, at that the intersection with the most delay, Cedar Heights Dr, there are two NB through lanes that are reduced to one lane just north of the intersection. When modeled as one NB through lane the overall intersection delay increases to 41 sec/veh. Additionally, it is operating as a split phase signal for NB and SB traffic. Split phase intersections are operationally inefficient compared to standard signal phasing, so operations at this intersection would be significantly improved by removing the split phasing.

It should also be noted that while overall intersection operations are acceptable, individual movements could experience longer delays and queues. For example, 95th percentile volume for the WB left turn at Hudson Rd exceeds capacity, which leads to queue lengths at least 350 feet (about 14 cars). The analysis results for individual movements for each intersection are included in the appendix.

Forecast Year (2045) Analysis

In order to evaluate which intersections are likely to require improvements for capacity purposes, the existing roadway network was analyzed with the projected 2045 volumes. There were two intersections where the existing geometry needed to be modified to model the forecasted traffic; Algonquin Dr and Ashworth Dr currently do not continue north of Greenhill Rd, but due to expected development, there is traffic projected there. For this analysis, both north approaches were modeled with one left turn lane, one shared thru/right lane, and one receiving lane as was proposed in the 2017 traffic impact study. However, Greenhill Rd was not widened to include left turn lanes in the analysis to evaluate the potential need for widening. **Table 2** shows the analysis results for the projected 2045 traffic on the current network.

Table 2. Synchro 10 Existing Geometry Analysis Results (PM Peak, 2018 and 2045)

Intersection	Control	Approach	2018 PM Peak		2045 PM Peak	
			Delay (sec/veh)	Longest 95 th %ile Queue (ft)	Delay (sec/veh)	Longest 95 th %ile Queue (ft)
Hudson Rd	Signal	NB	26 / C	310	30 / C	490
		SB	16 / B	160	17 / B	210
		EB	22 / C	40	34 / C	80
		WB	28 / C	#350	100+ / F	#810
		Overall	23 / C	-	67 / E	-
Algonquin Dr	TWSC	NB	14 / B	< 25	44 / E	100
		SB	-	-	11 / B	80
Ashworth Dr	TWSC	NB	11 / B	< 25	32 / D	70
		SB	-	-	100+ / F	Analysis failed
S Main St	Signal	NB	22 / C	91	28 / C	165
		SB	59 / E	#526	100+ / F	#972
		EB	25 / C	173	51 / D	#391
		WB	47 / D	557	100+ / F	#1236
		Overall	39 / D	-	100+ / F	-
Estate Dr / Coneflower Pkwy	TWSC	NB	15 / C	< 25	19 / C	< 25
		SB	12 / B	< 25	35 / E	< 25
Prairie Pkwy	Signal	NB	17 / B	100	75 / E	#440
		SB	11 / B	< 25	16 / B	30
		EB	8 / A	80	11 / B	160
		WB	10 / B	90	20 / C	180
		Overall	11 / B	-	31 / C	-
Orchard Hill Dr	TWSC	NB	21 / C	< 25	52 / F	< 25
		SB	14 / B	< 25	27 / D	40
Briarwood Hills Dr / Oster Pkwy	TWSC	NB	19 / C	< 25	88 / F	130
		SB	16 / C	< 25	43 / E	30
Rownd St	Signal	NB	31 / C	60	57 / E	#180
		SB	16 / B	100	17 / B	120
		EB	14 / B	210	32 / C	500
		WB	29 / C	440	68 / E	#860
		Overall	22 / C	-	47 / D	-
Green Creek Rd	TWSC	NB	11 / B	< 25	15 / C	< 25
Cedar Heights Dr	Signal	NB	39 / D	310	60 / E	#580
		SB	40 / D	290	61 / E	#490
		EB	37 / D	210	48 / D	330
		WB	35 / D	200	46 / D	300
		Overall	38 / D	-	53 / D	-

- 95th %ile queue exceeds capacity, queue may be longer (length shown after two cycles)

In the forecast year (2045), several signalized and TWSC intersections experience unacceptable levels of delay. Below are some of the notable results.

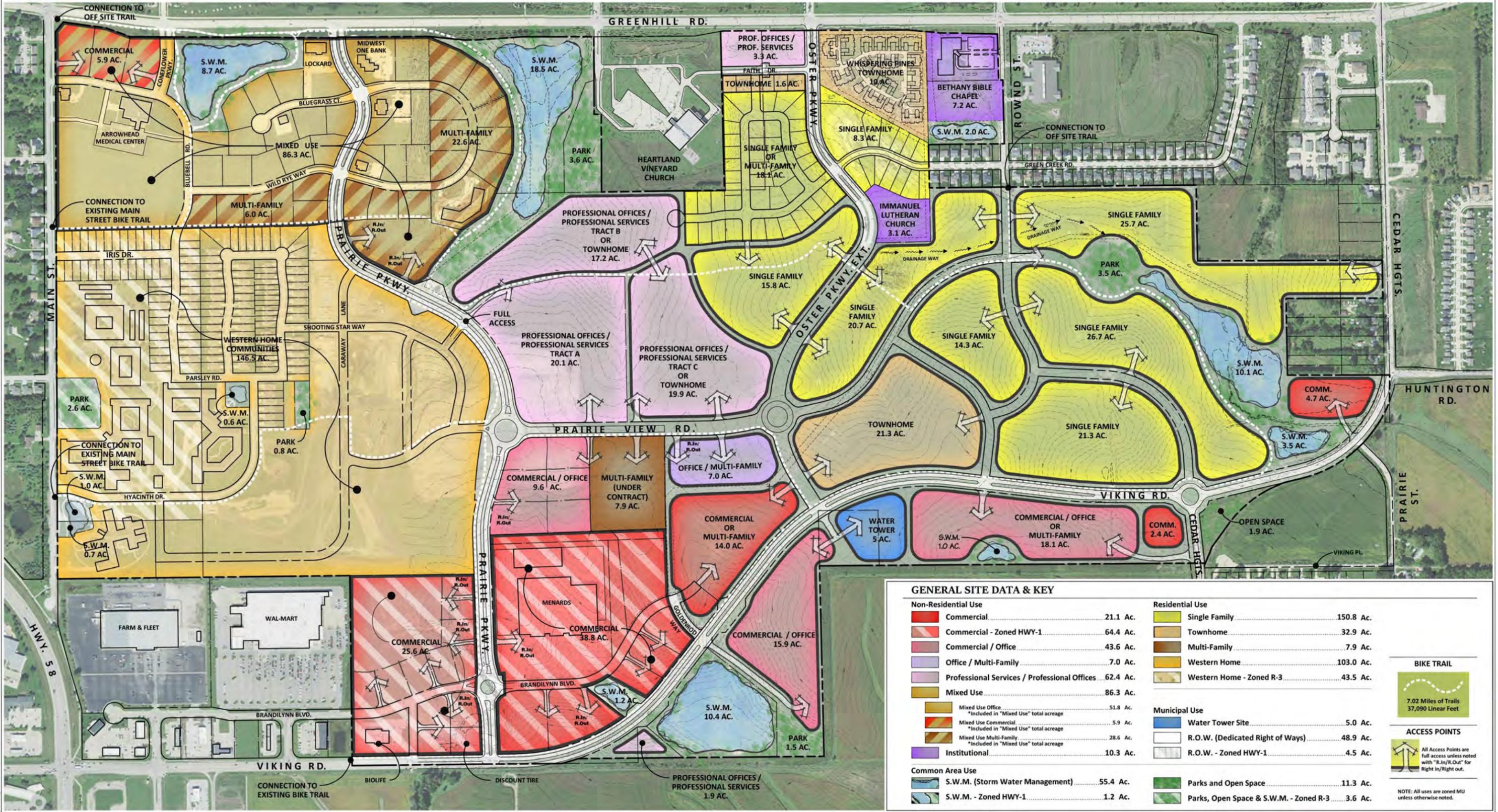
- Hudson Rd and S Main St intersections operate at LOS E or worse overall and have individual approaches and movements at LOS F
- Rownd St and Cedar Heights Dr intersections operate at LOS D overall, but are approaching LOS E and have several approaches operate at LOS D
 - In addition, if Cedar Heights Dr is modeled with one NB thru lane, the overall delay increases to 64 sec/veh (LOS E)
- Prairie Pkwy operates at LOS C, but the NB approach operates at LOS E
- Several TWSC approaches operate at LOS F, however most approaches have low volumes and short queues
 - In most cases, routes to nearby signalized intersections are available
 - It is not unusual for local collector streets that intersect arterials to operate at LOS D-F in peak hours. Safety performance is usually the greater determining factor in decision to add traffic control like signalization or roundabout.
 - SB delay at Ashworth Dr is related to traffic projected in the Sartori Hospital traffic impact study. Analysis should be refined as the site plan is defined.

Summary

This technical memorandum summarized the process for projecting traffic on the Greenhill Rd corridor and presented the resulting traffic forecast volumes for 2045. Daily traffic volumes are projected to grow by an average of 2% per year on average throughout the corridor, with some areas experiencing more growth and others experiencing less. The estimated daily volume is projected as high as 19,000 veh/day near IA 58. Then 2018 and 2045 traffic operations were analyzed for the existing roadway network. The 2018 operations are generally acceptable, though the Cedar Heights Dr intersection would operate significantly more efficiently with standard signal phasing. By 2045, delays at several of the intersections are expected to reach unacceptable levels necessitating improvements in increase intersection capacity to meet LOS C / D operation expectations by the community.

Appendix

- Pinnacle Prairie Master Plan
- *Synchro 10* results for 2018 volumes adjusted for Viking Rd construction
- *Synchro 10* results for 2045 forecasted volumes



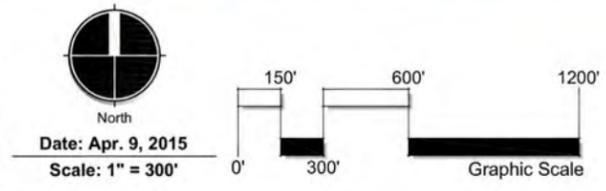
GENERAL SITE DATA & KEY

Non-Residential Use		Residential Use	
Commercial	21.1 Ac.	Single Family	150.8 Ac.
Commercial - Zoned HWY-1	64.4 Ac.	Townhome	32.9 Ac.
Commercial / Office	43.6 Ac.	Multi-Family	7.9 Ac.
Office / Multi-Family	7.0 Ac.	Western Home	103.0 Ac.
Professional Services / Professional Offices	62.4 Ac.	Western Home - Zoned R-3	43.5 Ac.
Mixed Use	86.3 Ac.		
Mixed Use Office	51.8 Ac.	Municipal Use	
Mixed Use Commercial	5.9 Ac.	Water Tower Site	5.0 Ac.
Mixed Use Multi-Family	28.6 Ac.	R.O.W. (Dedicated Right of Ways)	48.9 Ac.
Institutional	10.3 Ac.	R.O.W. - Zoned HWY-1	4.5 Ac.
Common Area Use			
S.W.M. (Storm Water Management)	55.4 Ac.	Parks and Open Space	11.3 Ac.
S.W.M. - Zoned HWY-1	1.2 Ac.	Parks, Open Space & S.W.M. - Zoned R-3	3.6 Ac.

BIKE TRAIL
7.02 Miles of Trails
37,090 Linear Feet

ACCESS POINTS
All Access Points are full access unless noted with "R.In/R.Out" for Right in/Right out.

NOTE: All uses are zoned MU unless otherwise noted.



MASTER PLAN

LOCKARD
4501 Prairie Parkway, Cedar Falls, IA 50613
(319) 277-8000

Oster Partners

sda
Schoppe Design Associates, Inc.
LAND PLANNING & LANDSCAPE ARCHITECTURE

126 S. Ma
Oswego,
p: 630
f: 630
schoppedesign.net

2018 PM PEAK (adjusted for Viking Rd construction)

Intersection	Control Type	Lane Group/ Approach	Synchro Delay	Snychro LOS	HCM 6 Delay	HCM 6 LOS	Synchro 95th Queue	HCM 6 95th Queues
Hudson Rd	Signal	NB Left	10	B	14	B	13	-
		NB Thru/Right	27	C	22	C	310	-
		NB Total	26	C	22	C	-	-
		SB Left	13	B	14	B	48	-
		SB Thru/Right	16	B	15	B	159	-
		SB Total	16	B	15	B	-	-
		EB Left/Thru	22	C	36	D	43	-
		EB Thru/Right	22	C	20	C	43	-
		EB Total	22	C	27	C	-	-
		WB Left/Thru	39	D	28	C	#353	-
		WB Right	6	A	21	C	45	-
WB Total	28	C	26	C	-	-		
INTERSECTION TOTAL			23	C	21	C	-	-
Algonquin Dr	TWSC	NB Left/Thru/Right	14	B	14	B	17	17.5
		NB Total	14	B	14	B	-	-
		WB Left	1	A	8	A	3	2.5
		WB Total	1	A	1	A	-	-
INTERSECTION TOTAL			2	A	2	A	-	-
Ashworth Dr	TWSC	NB Left/Thru/Right	11	B	11	B	10	10
		NB Total	11	B	11	B	-	-
		WB Left	2	A	8	A	8	7.5
		WB Total	2	A	2	A	-	-
INTERSECTION TOTAL			2	A	2	A	-	-
S Main St	Signal	NB Left	24	C	21	C	68	-
		NB Thru/Right	21	C	20	C	91	-
		NB Total	22	C	21	C	-	-
		SB Left/Thru/Right	59	E	40	D	#526	-
		SB Total	59	E	40	D	-	-
		EB Left	29	C	24	C	141	-
		EB Thru/Right	23	C	21	C	173	-
		EB Total	25	C	22	C	-	-
		WB Left	18	B	20	C	34	-
		WB Thru/Right	49	D	39	D	557	-
WB Total	47	D	38	D	-	-		
INTERSECTION TOTAL			39	D	31	C	-	-
Estate Dr / Coneflower Pkwy	TWSC	NB Left/Thru	25	C	26	C	4	5
		NB Right	10	B	10	B	2	3
		NB Total	15	C	16	C	-	-
		SB Left/Thru/Right	12	B	12	B	3	3
		SB Total	12	B	12	B	-	-
		EB Left	1	A	9	A	3	3
		EB Total	1	A	1	A	-	-
		WB Left	1	A	9	A	1	0
WB Total	1	A	1	A	-	-		
INTERSECTION TOTAL			1	A	1	A	-	-

2018 PM PEAK (adjusted for Viking Rd construction)

Prairie Pkwy	Signal	NB Left/Thru	23	C	16	B	102	-
		NB Right	4	A	13	B	23	-
		NB Total	17	B	15	B	-	-
		SB Left/Thru	11	B	15	B	13	-
		SB Thru/Right	11	B	13	B	13	-
		SB Total	11	B	14	B	-	-
		EB Left/Thru	8	A	7	A	83	-
		EB Thru/Right	8	A	7	A	83	-
		EB Total	8	A	7	A	-	-
		WB Left/Thru	10	B	7	A	87	-
		WB Thru/Right	10	B	7	A	87	-
		WB Total	10	B	7	A	-	-
INTERSECTION TOTAL	11	B	9	A	-	-		
Orchard Hill Rd	TWSC	NB Left	27	D	25	D	2	3
		NB Thru/Right	10	B	10	B	0	0
		NB Total	21	C	20	C	-	-
		SB Left	25	D	26	D	10	10
		SB Thru/Right	10	B	11	B	8	8
		SB Total	14	B	14	B	-	-
		EB Left	2	A	9	A	8	8
		EB Total	2	A	2	A	-	-
		WB Left	1	A	1	A	0	0
		WB Total	1	A	1	A	-	-
INTERSECTION TOTAL	2	A	2	A	-	-		
Oster Pkwy	TWSC	NB Left	21	C	21	C	7	8
		NB Thru/Right	10	B	10	B	7	3
		NB Total	19	C	19	C	-	-
		SB Left/Thru/Right	16	C	17	C	7	8
		SB Total	16	C	17	C	-	-
		EB Left	1	A	9	A	1	3
		EB Total	1	A	1	A	-	-
		WB Left	1	A	8	A	1	0
		WB Total	1	A	1	A	-	-
INTERSECTION TOTAL	1	A	1	A	-	-		
Rownd St	Signal	NB Left/Thru/Right	31	C	29	C	60	-
		NB Total	31	C	29	C	-	-
		SB Left	26	C	23	C	95	-
		SB Thru/Right	9	A	20	C	54	-
		SB Total	16	B	21	C	-	-
		EB Left	12	B	15	B	61	-
		EB Thru/Right	15	B	14	B	212	-
		EB Total	14	B	14	B	-	-
		WB Left	9	A	13	B	15	-
		WB Thru/Right	30	C	25	C	435	-
WB Total	29	C	25	C	-	-		
INTERSECTION TOTAL	22	C	21	C	-	-		
Green Creek Rd	TWSC	NB Left/Thru/Right	11	B	11	B	2	3
		NB Total	11	B	11	B	-	-
		WB Left	1	A	8	A	1	3
		WB Total	1	A	1	A	-	-
INTERSECTION TOTAL	1	A	1	A	-	-		
Cedar Heights Dr	Signal	NB Left/Thru	39	D	HCM 6 Can't Evaluate Split Phasing		311	-
		NB Thru/Right	39	D			311	-
		NB Total	39	D			-	-
		SB Left/Thru	51	D			289	-
		SB Right	3	A			10	-
		SB Total	40	D			-	-
		EB Left	28	C			64	-
		EB Thru/Right	38	D			207	-
		EB Total	37	D			-	-
		WB Left	30	C			121	-
		WB Thru/Right	37	D			200	-
		WB Total	35	D			-	-
INTERSECTION TOTAL	38	D	-	-				

2045 PM PEAK - Existing Geometry

Intersection	Control Type	Lane Group/ Approach	Synchro Delay	Synchro LOS	HCM 6 Delay	HCM 6 LOS	Synchro 95th Queue	HCM 6 95th Queues
Hudson Rd	Signal	NB Left	9	A	14	B	16	-
		NB Thru/Right	31	C	28	C	491	-
		NB Total	30	C	28	C	-	-
		SB Left	27	C	23	C	131	-
		SB Thru/Right	15	B	17	B	212	-
		SB Total	17	B	18	B	-	-
		EB Left/Thru	34	C	150	F	78	-
		EB Thru/Right	34	C	27	C	78	-
		EB Total	34	C	84	F	-	-
		WB Left/Thru	284	F	152	F	#810	-
		WB Right	11	B	32	C	94	-
		WB Total	198	F	114	F	-	-
		INTERSECTION TOTAL	67	E	48	D	-	-
Algonquin Dr	TWSC	NB Left/Thru/Right	44	E	41	E	96	90
		NB Total	44	E	41	E	-	-
		SB Left	70	F	61	F	75	68
		SB Thru/Right	11	B	11	B	6	8
		SB Total	45	E	40	E	-	-
		EB Left	1	A	9	A	2	3
		EB Total	1	A	1	A	-	-
		WB Left	1	A	9	A	6	5
		WB Total	1	A	1	A	-	-
				INTERSECTION TOTAL	8	A	8	A
Ashworth Dr	TWSC	NB Left/Thru/Right	32	D	80	F	70	138
		NB Total	32	D	80	F	-	-
		SB Left	ERROR	ERROR	ERROR	ERROR	ERROR	ERROR
		SB Thru/Right	60	F	112	F	37	60
		SB Total	ERROR	ERROR	ERROR	ERROR	-	-
		EB Left	1	A	10	B	1	0
		EB Total	1	A	1	A	-	-
		WB Left	2	A	10	B	17	18
WB Total	2	A	2	A	-	-		
		INTERSECTION TOTAL	ERROR	ERROR	ERROR	ERROR	-	-
S Main St	Signal	NB Left	30	C	30	C	144	-
		NB Thru/Right	26	C	28	C	165	-
		NB Total	28	C	29	C	-	-
		SB Left/Thru/Right	252	F	209	F	#972	-
		SB Total	252	F	209	F	-	-
		EB Left	115	F	121	F	#391	-
		EB Thru/Right	31	C	30	C	368	-
		EB Total	51	D	52	D	-	-
		WB Left	19	B	27	C	52	-
		WB Thru/Right	186	F	208	F	#1236	-
WB Total	174	F	195	F	-	-		
		INTERSECTION TOTAL	127	F	125	F	-	-
Estate Dr / Coneflower Pkwy	TWSC	NB Left/Thru	73	F	131	F	20	33
		NB Right	10	B	13	B	9	15
		NB Total	19	C	30	D	-	-
		SB Left/Thru/Right	35	E	57	F	19	30
		SB Total	35	E	57	F	-	-
		EB Left	1	A	10	B	7	8
		EB Total	1	A	1	A	-	-
		WB Left	1	A	10	B	6	8
WB Total	1	A	1	A	-	-		
		INTERSECTION TOTAL	3	A	4	A	-	-

2045 PM PEAK - Existing Geometry

Intersection	Control Type	Lane Group/ Approach	Synchro Delay	Synchro LOS	HCM 6 Delay	HCM 6 LOS	Synchro 95th Queue	HCM 6 95th Queues
Prairie Pkwy	Signal	NB Left/Thru	108	F	75	E	#440	-
		NB Right	5	A	21	C	46	-
		NB Total	75	E	58	E	-	-
		SB Left/Thru	16	B	36	C	32	-
		SB Thru/Right	16	B	19	B	32	-
		SB Total	16	B	24	C	-	-
		EB Left/Thru	11	B	11	B	160	-
		EB Thru/Right	11	B	11	B	160	-
		EB Total	11	B	11	B	-	-
		WB Left/Thru	20	C	24	C	177	-
		WB Thru/Right	20	C	11	B	177	-
		WB Total	20	C	16	B	-	-
INTERSECTION TOTAL			31	C	25	C	-	-
Orchard Hill Rd	TWSC	NB Left	71	F	70	F	14	13
		NB Thru/Right	11	B	11	B	1	0
		NB Total	52	F	50	F	-	-
		SB Left	69	F	81	F	36	40
		SB Thru/Right	12	B	12	B	11	13
		SB Total	27	D	31	D	-	-
		EB Left	3	A	10	B	17	18
		EB Total	3	A	3	A	-	-
		WB Left	1	A	1	A	0	0
		WB Total	1	A	1	A	-	-
INTERSECTION TOTAL			4	A	4	A	-	-
Oster Pkwy	TWSC	NB Left	138	F	150	F	129	133
		NB Thru/Right	11	B	11	B	8	8
		NB Total	88	F	96	F	-	-
		SB Left/Thru/Right	43	E	43	E	31	30
		SB Total	43	E	43	E	-	-
		EB Left	1	A	9	A	2	3
		EB Total	1	A	1	A	-	-
		WB Left	1	A	10	A	7	8
WB Total	1	A	1	A	-	-		
INTERSECTION TOTAL			9	A	10	B	-	-
Rownd St	Signal	NB Left/Thru/Right	57	E	40	D	#184	-
		NB Total	57	E	40	D	-	-
		SB Left	29	C	28	C	124	-
		SB Thru/Right	8	A	26	C	62	-
		SB Total	17	B	27	C	-	-
		EB Left	34	C	28	C	133	-
		EB Thru/Right	32	C	26	C	496	-
		EB Total	32	C	27	C	-	-
		WB Left	18	B	18	B	80	-
		WB Thru/Right	78	E	64	F	#857	-
WB Total	68	E	57	F	-	-		
INTERSECTION TOTAL			47	D	40	D	-	-
Green Creek Rd	TWSC	NB Left/Thru/Right	15	C	17	C	7	8
		NB Total	15	C	17	C	-	-
		WB Left	1	A	1	A	3	3
		WB Total	1	A	1	A	-	-
INTERSECTION TOTAL			1	A	1	A	-	-
Cedar Heights Dr	Signal	NB Left/Thru	60	E	HCM 6 Can't Evaluate Split Phasing		#575	-
		NB Thru/Right	60	E			#575	-
		NB Total	60	E			-	-
		SB Left/Thru	77	E			#490	-
		SB Right	8	A			44	-
		SB Total	61	E			-	-
		EB Left	32	C			80	-
		EB Thru/Right	50	D			332	-
		EB Total	48	D			-	-
		WB Left	49	D			#165	-
		WB Thru/Right	45	D			297	-
		WB Total	46	D			-	-
INTERSECTION TOTAL			53	D	-	-		

Memorandum

To: Jon Resler, P.E., City Engineer **Date:** 9/5/18

From: Mark Perington, P.E., PTOE
Andrew Houchin, E.I.

CC: Stephanie Sheetz, AICP, Community Development Director

RE: Pedestrian & Bicycle Facilities Review
Greenhill Rd Corridor Traffic Study
Snyder & Associates Project No.: 118.0463.01

Introduction

The City of Cedar Falls has requested that Snyder & Associates conduct a traffic study of the Greenhill Road corridor from Hudson Road to Cedar Heights Drive. The study area and intersections are shown in **Figure 1**. All the intersections on Greenhill Rd are included in the study other than the intersection with Iowa Highway 58 (IA 58) which is being studied separately by the Iowa DOT. The purpose of the study is to evaluate the current and future traffic demands for all modes of transportation in the Greenhill Rd corridor in order to develop short- and long-range plans for lane needs and intersection improvements. Other areas of focus for the study will be potential for traffic demand change due to new land use development, “complete streets” considerations, and appropriate traffic control for intersections such as traffic signalization or roundabouts. This memorandum summarizes the current state of the pedestrian and bicycle facilities in accordance to the Cedar Falls Complete Streets Policy within the study limits.



Figure 1. Study Area Intersections

Mobility Needs - Pedestrian Origins and Destination

Pedestrian destinations are specific locations to which people are more likely to walk. Popular points of interest such as churches, neighboring parks, and nearby schools can be found within the vicinity of the Greenhill Road corridor. Residential areas would be considered as pedestrian origins. In addition to walking to specific destinations, many residents also walk for recreation as the current trail network provided within the corridor creates that opportunity.

Schools: The study limits are located within the Southdale Elementary and Orchard Hill Elementary school boundaries, seen in **Figure 2**. Both institutions are located north of Greenhill Rd, so students that walk to school and live south of corridor rely on sidewalk connectivity and pedestrian facilities within Greenhill Rd. Valley Lutheran School is a private school located south of Greenhill Rd and east of Rownd St. While private schools do not have an attendance boundary, it is reasonable to assume that a portion of the students reside close enough that some walk to and from school, although most are transported by vehicle. Overall there are a total of seven schools within the vicinity of the corridor.

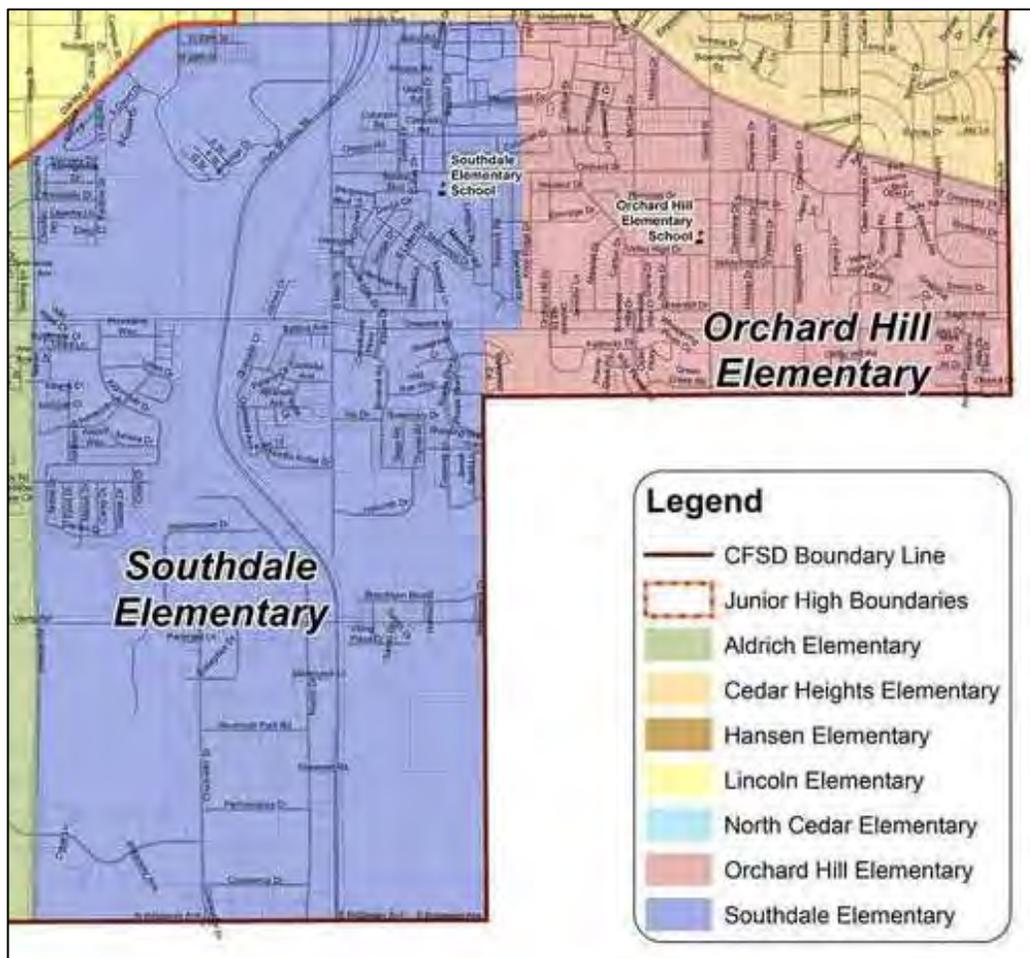


Figure 2. Cedar Falls Community School District Map

Churches: There are 24 religious institutions within the vicinity of the corridor. Traffic counts were not collected during Sunday mornings when church services are held. However, consideration should be given to specific Sunday peak hours while church attendants arrive and leave the establishment, both on car and on foot. **Figure 3** shows the locations of the churches throughout the corridor.

Parks: There are nine parks within the vicinity of Greenhill Rd. These parks are located next to developed neighborhoods and appear to have sidewalk accessibility as well as a consistent connection to the trail system. **Figure 3** shows the locations of the parks throughout the corridor.

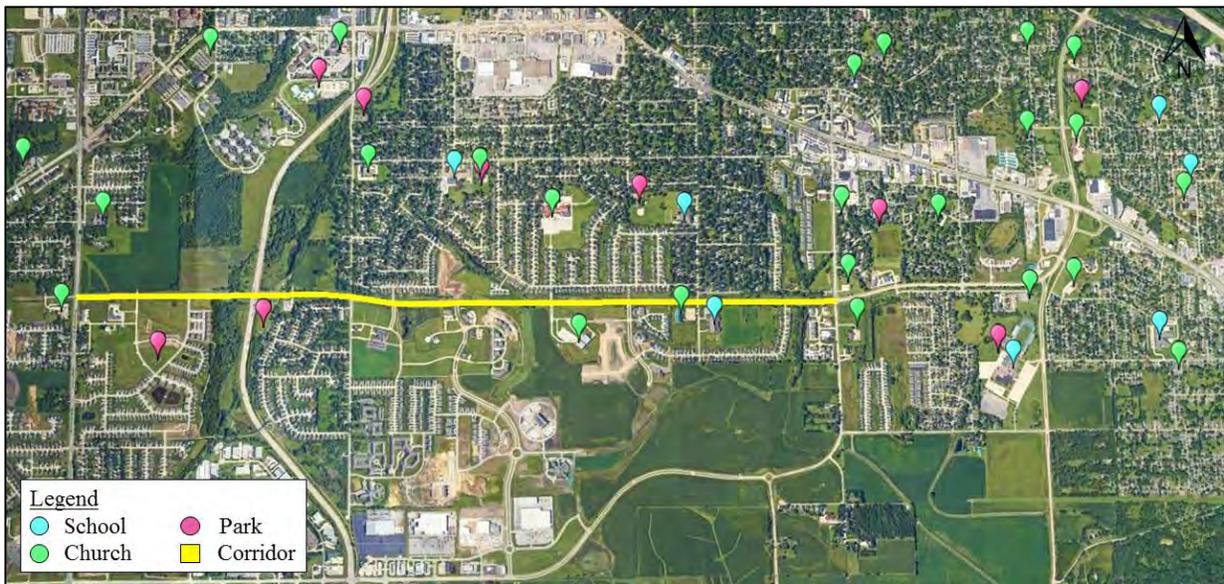


Figure 3. Pedestrian Destination Locations

Pedestrian & Bicycle Crash History

Pedestrian and bicycle crashes were reviewed for a ten-year period from 2008 through June 2018; four crashes were found within the study limits on Greenhill Rd. All four crashes involved bicyclists, resulting in two possible injuries and two minor injuries. All vehicles involved were making a right turn at an intersection when the crashes occurred. The initial direction of travel for three of the vehicles was south. The shared-used trail is located on the north side of Greenhill Rd; it is likely that the southbound vehicles were looking left while making the right turn and were not aware of oncoming pedestrian/bicyclists to their right. The major cause for two of the crashes was “Failure to yield the right of way while making a right turn on red signal”, these occurred at the intersections of Cedar Heights Dr and Hudson Rd. One of the drivers reported “vision obstructed by sun glare” as a major cause for the crash.

Network Connectivity

The Cedar Prairie Trail runs continuously on the north side of Greenhill Rd from the intersection with Hudson Rd to Cedar Heights Dr. This trail is 10 feet wide throughout the corridor and provides a major east-west connection in the overall pedestrian and bicycle network in Cedar Falls. However, pedestrian facilities located on the south side of Greenhill Rd lack continuity in the study limits, more specifically in the following segments:

- There is a 40 feet sidewalk gap approximately 500 feet east of Hudson Rd.
- Sidewalk connectivity is intermittent on Algonquin Dr between Greenhill Rd and the residential developments located south of the corridor, but assumed to be completed with continued development.
- Sidewalk is not present between the intersections of Ashworth Dr and IA 58. IA 58 only has east-west crosswalk on the north leg of the intersection, so the lack of sidewalk is assumed intentional to route pedestrians to this crosswalk.
- Sidewalk is not present between Rownd St and Cedar Heights Dr.
- There is a gap between sidewalk on Green Creek Rd and Greenhill Rd. Greenhill Rd does not have sidewalk on its south side in this segment.

The majority of the north-south pedestrian crossings are located at signalized intersections, while most unsignalized intersections only provide an east-west connection along Greenhill Rd. The only north-south crossing at an unsignalized intersection appears to be at Ashworth Dr, though no signs or markings indicate its presence to drivers on Greenhill Rd. There is also a north-south trail underpass east of IA 58. Pedestrian connections between areas north and south of the corridor are important in order to provide safe and accessible routes to the three schools in the surrounding areas.

Pedestrian and Bicycle Facilities

Condition and presence of pedestrian facilities vary greatly along the Greenhill Rd corridor study limits. The following list is a preliminary evaluation of each of the signalized study intersection's ADA and MUTCD compliance and status of pedestrian facilities. The pedestrian facilities that are being evaluated are shown in **Table 1**; the items addressed in this list are recommended to be considered for installation, repair, modification, and/or replacement as maintenance or other improvements take place along the corridor.

Unsignalized intersections should also be updated to improve pedestrian accommodations. At these intersections, the primary needs are ensuring the pedestrian ramps are ADA compliant and include compliant detectable warning panels (truncated domes). Several approaches throughout the corridor do not currently include detectable warning panels; these should be improved when maintenance is required, the streets nearby are under construction, or under other annual improvement programs by the City.

Table 1. Preliminary Evaluation of Pedestrian Facilities

Intersection	Approach	Truncated Domes	Pedestrian Ramps	Signal Pushbutton	Pedestrian Signs	Pedestrian Signal Head
Hudson Rd	North	-	-	-	Replace	Replace
	East	Install	-	-	Replace	Replace
	West	-	-	-	Replace	Replace
IA 58	North	Install	Modify	-	Replace	-
S Main St	North	-	-	Sidewalk ⁽¹⁾	Replace	Replace Non-Countdowns
	South	-	-	Sidewalk ⁽¹⁾	Install	
	East	-	-	Sidewalk ⁽¹⁾	Install	
	West	Install	-	Sidewalk ⁽¹⁾	Replace	
Prairie Pkwy	North	-	-	-	-	-
	South	-	-	-	-	-
	East	-	-	-	-	-
	West	-	-	-	-	-
Rownd St	North	-	-	-	-	-
	South	-	-	-	-	-
	East	-	-	-	-	-
	West	-	-	-	-	-
Cedar Heights Dr	West	-	Modify	Replace	Replace	-

(1) Pushbutton on signal pole located with gap away from existing adjacent sidewalk, add pavement walk

Pedestrian Signal Timings (Walk/Flashing Don't Walk)

The methodology used to calculate pedestrian signal timing intervals, Walk and Flashing Don't Walk, comes from the MUTCD and ITE *Traffic Control Devices Handbook, 2nd Edition* as cited per NCHRP 731. The calculations take into consideration the geometric characteristics from each intersection, crossing speed, and the associated vehicular phases. The preliminary minimum timings are listed in **Table 2**. Many of the crossings already have sufficient Flashing Don't Walk times provided when compared to the minimum. However, additional Walk time has been listed at several of the intersections based on the distance between the pushbutton and the actual crosswalk location at curb ramp per MUTCD guidance. Clearance timing worksheets that include pedestrian clearance times are in the appendix.

Table 2. Recommended Preliminary Clearance Times Pedestrian Timings (sec)

Intersection	Pedestrian Phase	Walk		Flashing Don't Walk	
		Existing	Proposed	Existing	Proposed
Hudson Rd	NB/SB	7	10	24/16	19
	EB/WB	7	11	27	22
IA 58	EB/WB	5	12	20	33
S Main St*	NB/SB	7	7	20	25
	EB/WB	7	7	20	18
Prairie Pkwy	NB/SB	7	12	18	13
	EB/WB	7	14	25	24
Rownd St	NB/SB	7	9	20	16
	EB/WB	7	9	12/18	15
Cedar Heights Dr	EB/WB	7	12	14	22

* - Calculated using 3.0 ft/sec rather than 3.5 ft/sec due to proximity to retirement community

Conclusion

In general, the Greenhill Rd corridor provides a key east-west connection for the pedestrian and bicycle network in Cedar Falls. There is existing trail on the north side of the road throughout the study area that is continued to the east and to the west, which provides substantial mobility to pedestrians and bicyclists. However, there is room for improvement in the existing network. For example, there are gaps in the sidewalk provided on the south side of Greenhill Rd and some crosswalks do not have detectable warning panels. Providing continuous sidewalk and detectable warning panels at every crosswalk will create a more accessible network for users with disability. In addition, pedestrian signal timings should be reviewed to ensure adequate time is provided for crossing at signalized intersections.

Appendix

- Pedestrian/Bicycle Crashes Summary
- Clearance Timing Worksheets



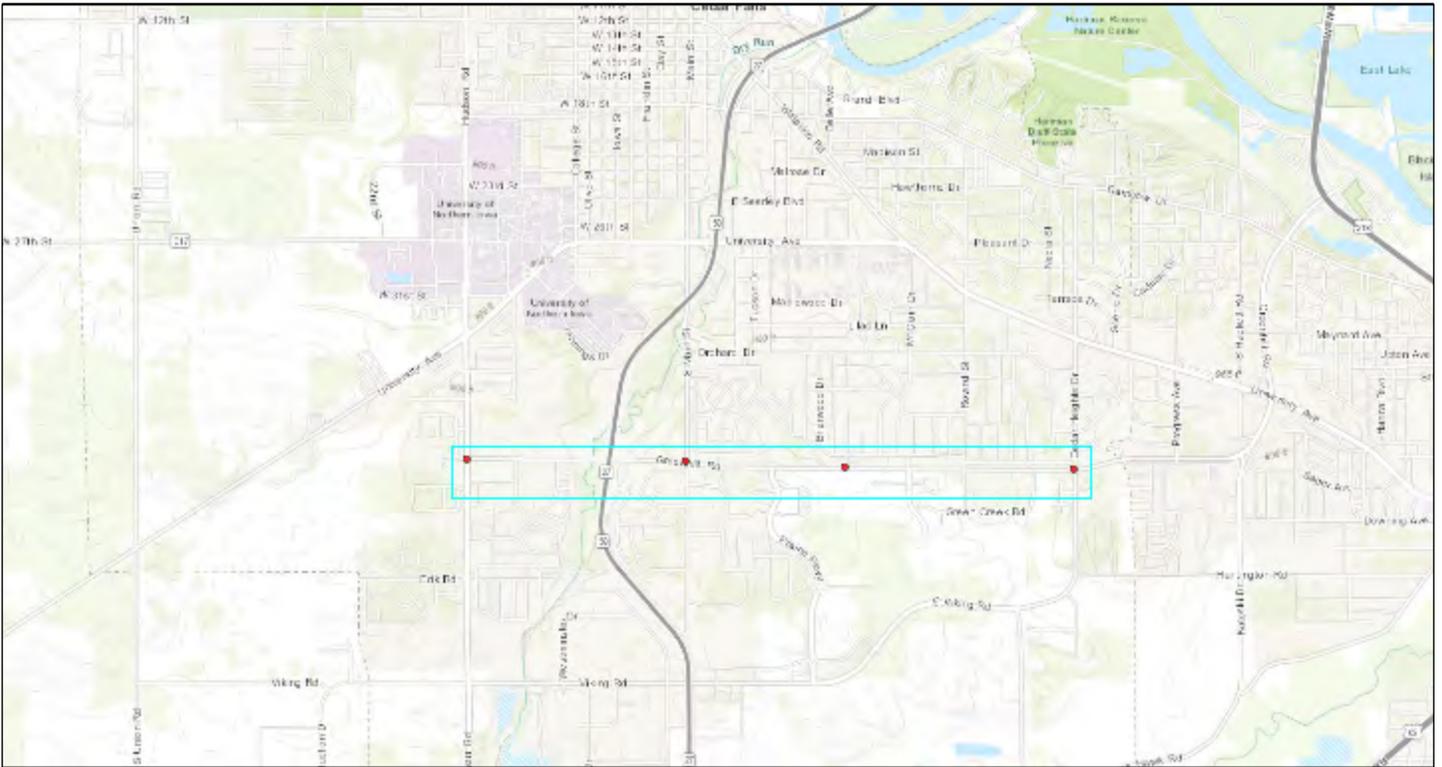
Iowa Crash Analysis Tool
Quick Report
2008-2018

Crash Severity	4
Fatal	0
Major Injury	0
Minor Injury	2
Possible/Unknown	2
Property Damage Only	0

Injury Status Summary	4
Fatal	0
Suspected serious/incapacitating	0
Suspected minor/non-incapacitating	2
Possible (complaint of pain/injury)	2
Uninjured	0
Fatal, not crash-related	0
Unknown	0
Not reported	0

Property/Vehicles/Occupants	
Property Damage Total (dollars):	600.00
Average (per crash dollars):	150.00
Total Vehicles:	4.00
Average (per crash):	1.00
Total Occupants:	4.00
Average (per crash):	1.00

Average Severity	
Fatalities/Fatal Crash:	0.00
Fatalities/Crash:	0.00
Injuries/Crash:	1.00
Major Injuries/Crash:	0.00
Minor Injuries/Crash:	0.50
Possible/Unknown Injuries/Crash:	0.50





Iowa Crash Analysis Tool
Quick Report
2008-2018

Major Cause			4
Animal	0	Ran traffic signal	0
Ran stop sign	0	Failed to yield to emergency vehicle	0
FTYROW: At uncontrolled intersection	0	FTYROW: Making right turn on red signal	2
FTYROW: From stop sign	0	FTYROW: From yield sign	0
FTYROW: Making left turn	0	FTYROW: From driveway	0
FTYROW: From parked position	0	FTYROW: To pedestrian	0
FTYROW: Other	0	Drove around RR grade crossing gates	0
Disregarded RR Signal	0	Crossed centerline (undivided)	0
Crossed median (divided)	0	Traveling wrong way or on wrong side of road	0
Aggressive driving/road rage	0	Driving too fast for conditions	0
Exceeded authorized speed	0	Improper or erratic lane changing	0
Operating vehicle in an reckless, erratic, ca...	0	Followed too close	0
Passing: On wrong side	0	Passing: Where prohibited by signs/markings	0
Passing: With insufficient distance/inadequa...	0	Passing: Through/around barrier	0
Passing: Other passing	0	Made improper turn	0
Driver Distraction: Manual operation of an e...	0	Driver Distraction: Talking on a hand-held d...	0
Driver Distraction: Talking on a hands free ...	0	Driver Distraction: Adjusting devices (radio...	0
Driver Distraction: Other electronic device ...	0	Driver Distraction: Passenger	0
Driver Distraction: Unrestrained animal	0	Driver Distraction: Reaching for object(s)/f...	0
Driver Distraction: Inattentive/lost in thou...	0	Driver Distraction: Other interior distracti...	0
Driver Distraction: Exterior distraction	0	Ran off road - right	0
Ran off road - straight	0	Ran off road - left	0
Lost control	0	Swerving/Evasive Action	0
Over correcting/over steering	0	Failed to keep in proper lane	0
Failure to signal intentions	0	Traveling on prohibited traffic way	0
Vehicle stopped on railroad tracks	0	Other: Vision obstructed	1
Other: Improper operation	0	Other: Disregarded warning sign	0
Other: Disregarded signs/road markings	0	Other: Illegal off-road driving	0
Downhill runaway	0	Separation of units	0
Towing improperly	0	Cargo/equipment loss or shift	0
Equipment failure	0	Oversized load/vehicle	0
Other: Getting off/out of vehicle	0	Failure to dim lights/have lights on	0
Improper backing	0	Improper starting	0
Illegally parked/unattended	0	Driving less than the posted speed limit	0
Operator inexperience	0	Other	0
Unknown	0	Not reported	0
Other: No improper action	1		



**Iowa Crash Analysis Tool
Quick Report
2008-2018**

Time of Day/Day of Week														
Day of Week	12 AM to 2 AM	2 AM to 4 AM	4 AM to 6 AM	6 AM to 8 AM	8 AM to 10 AM	10 AM to Noon	Noon to 2 PM	2 PM to 4 PM	4 PM to 6 PM	6 PM to 8 PM	8 PM to 10 PM	10 PM to 12 AM	Not reported	Total
Sunday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Monday	0	0	0	0	0	0	0	0	0	1	0	0	0	1
Tuesday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wednesday	0	0	0	0	0	0	1	0	0	0	0	0	0	1
Thursday	0	0	0	0	0	1	0	1	0	0	0	0	0	2
Friday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Saturday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	1	1	1	0	1	0	0	0	4

Manner of Crash Collision	4
Non-collision (single vehicle)	4
Head-on (front to front)	0
Rear-end (front to rear)	0
Angle, oncoming left turn	0
Broadside (front to side)	0
Sideswipe, same direction	0
Sideswipe, opposite direction	0
Rear to rear	0
Rear to side	0
Not reported	0
Other	0
Unknown	0

Surface Conditions	4
Dry	4
Wet	0
Ice/frost	0
Snow	0
Slush	0
Mud, dirt	0
Water (standing or moving)	0
Sand	0
Oil	0
Gravel	0
Not reported	0
Other	0
Unknown	0

Fixed Object Struck	4
Bridge overhead structure	0
Bridge/bridge rail parapet	0
Ditch	0
Ground	0
Guardrail - face	0
Concrete traffic barrier (median or right sid...)	0
Cable barrier	0
Utility pole/light support	0
Traffic signal support	0
Fire hydrant	0
Tree	0
Snow bank	0
Wall	0
Other fixed object	0
Bridge pier or support	0
Curb/island/raised median	0
Embankment	0
Culvert/pipe opening	0
Guardrail - end	0
Other traffic barrier	0
Impact attenuator/crash cushion	0
Traffic sign support	0
Other post/pole/support	0
Mailbox	0
Landscape/shrubbery	0
Fence	0
Building	0
None (no fixed object struck)	4



Iowa Crash Analysis Tool
Quick Report
2008-2018

Driver Age/Driver Gender					
Driver Age - 5 year Bins	Female	Male	Not reported	Unknown	Total
< 14	0	0	0	0	0
= 14	0	0	0	0	0
= 15	0	0	0	0	0
= 16	0	0	0	0	0
= 17	0	0	0	0	0
= 18	0	0	0	0	0
= 19	0	0	0	0	0
= 20	0	2	0	0	2
>= 21 and <= 24	0	0	0	0	0
>= 25 and <= 29	0	0	0	0	0
>= 30 and <= 34	0	1	0	0	1
>= 35 and <= 39	0	0	0	0	0
>= 40 and <= 44	0	0	0	0	0
>= 45 and <= 49	0	0	0	0	0
>= 50 and <= 54	0	0	0	0	0
>= 55 and <= 59	0	0	0	0	0
>= 60 and <= 64	0	1	0	0	1
>= 65 and <= 69	0	0	0	0	0
>= 70 and <= 74	0	0	0	0	0
>= 75 and <= 79	0	0	0	0	0
>= 80 and <= 84	0	0	0	0	0
>= 85 and <= 89	0	0	0	0	0
>= 90 and <= 94	0	0	0	0	0
>= 95	0	0	0	0	0
Not reported	0	0	0	0	0
Unknown	0	0	0	0	0
Total	0	4	0	0	4

Alcohol Test Given	4
None	4
Blood	0
Urine	0
Breath	0
Vitreous	0
Refused	0
Not reported	0

Drug Test Given	4
None	4
Blood	0
Urine	0
Breath	0
Vitreous	0
Refused	0
Not reported	0

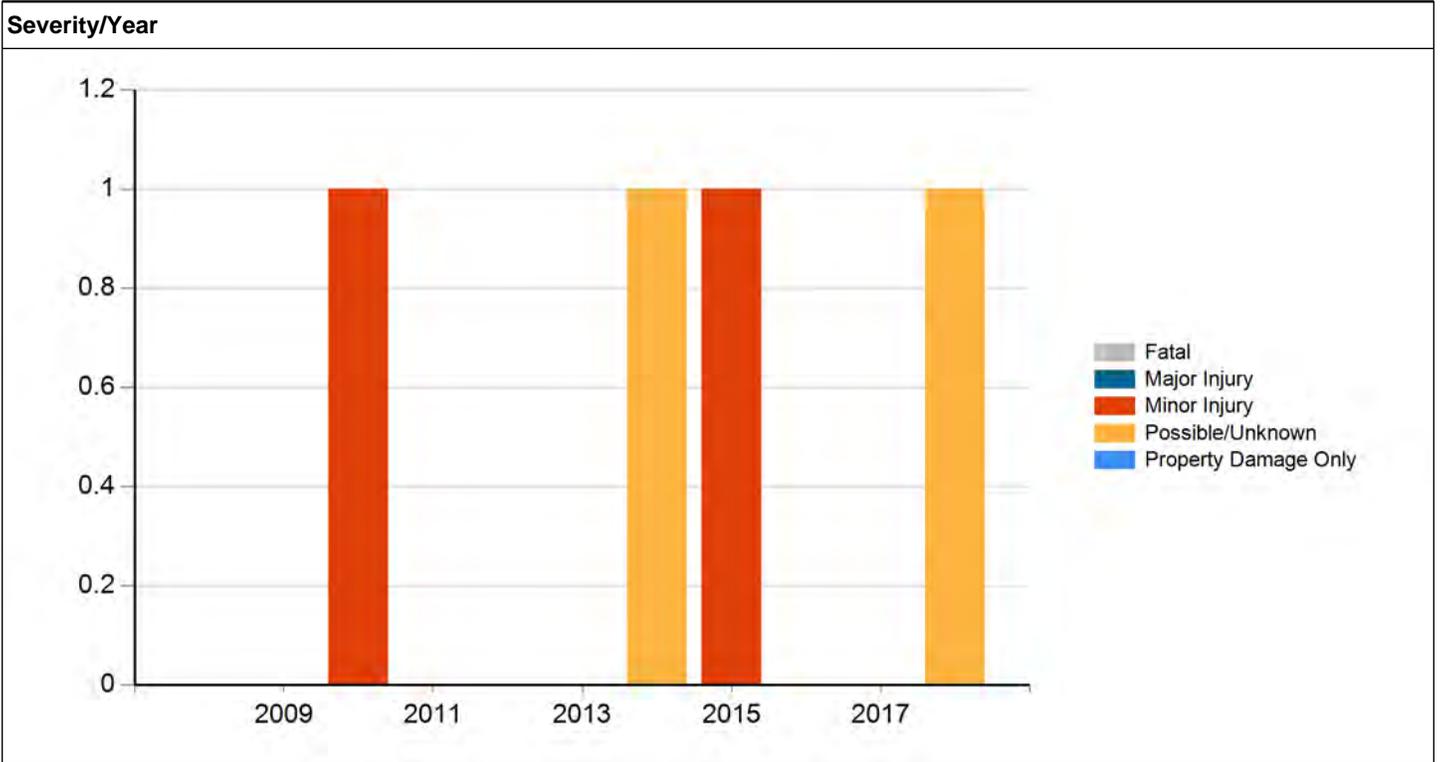
Drug Test Result	4
Negative	0
Cannabis	0
Central Nervous System depressants	0
Central Nervous System stimulants	0
Hallucinogens	0
Inhalants	0
Narcotic Analgesics	0
Dissociative Anesthetic (PCP)	0
Prescription Drug	0
Not reported	4
Other	0

Drug/Alcohol Related	4
Drug	0
Alcohol (< Statutory)	0
Alcohol (Statutory)	0
Drug/Alcohol (< Statutory)	0
Drug/Alcohol (Statutory)	0
Refused	0
Under Influence of Alcohol/Drugs/Medications	0
None Indicated	4

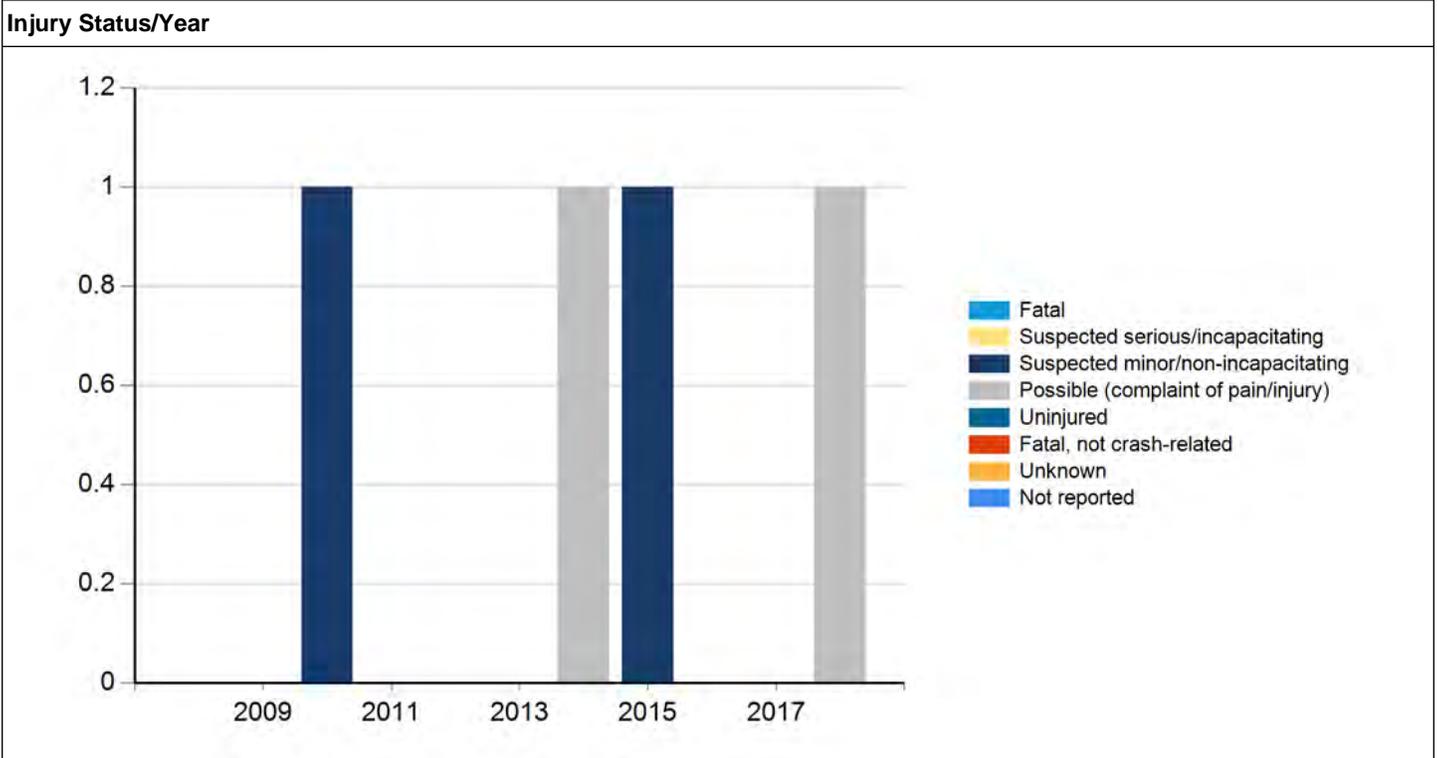


Iowa Crash Analysis Tool
Quick Report
2008-2018

Crash Severity - Annual							
Crash Year	Fatal	Major Injury	Minor Injury	Possible/Unknown	Property Damage Only	Total	
2008	0	0	0	0	0	0	
2009	0	0	0	0	0	0	
2010	0	0	1	0	0	1	
2011	0	0	0	0	0	0	
2012	0	0	0	0	0	0	
2013	0	0	0	0	0	0	
2014	0	0	0	1	0	1	
2015	0	0	1	0	0	1	
2016	0	0	0	0	0	0	
2017	0	0	0	0	0	0	
2018	0	0	0	1	0	1	
Total	0	0	2	2	0	4	



Injury Status - Annual								
Crash Year	Fatal	Suspected serious/incapacitating	Suspected minor/non-incapacitating	Possible (complaint of pain/injury)	Uninjured	Fatal, not crash-related	Unknown	Total
2008	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0
2010	0	0	1	0	0	0	0	1
2011	0	0	0	0	0	0	0	0
2012	0	0	0	0	0	0	0	0
2013	0	0	0	0	0	0	0	0
2014	0	0	0	1	0	0	0	1
2015	0	0	1	0	0	0	0	1
2016	0	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0	0
2018	0	0	0	1	0	0	0	1
Total	0	0	2	2	0	0	0	4





Meeting the following criteria

Jurisdiction: Statewide
Year: 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018
Map Selection: Yes
Filter: Type (Pedestrian, Pedalcyclist (bicycle/tricycle/unicycle/pedal car), Pedalcycle passenger)

Analyst Information

Empty box for analyst information.

PROJECT: Greenhill Rd Corridor Traffic Study

NO.: 118.0463

DATE: 09/05/18

SUBJECT: Hudson Road Clearance Times

BY: AJH

CK: _____

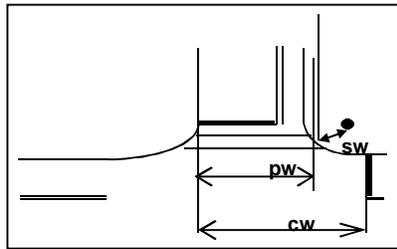
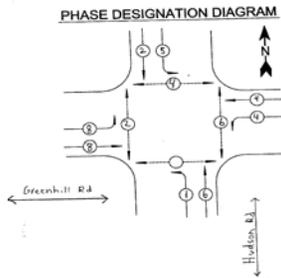
TRAFFIC SIGNAL TIMINGS / CLEARANCE INTERVALS

Enter Values in Shaded Regions

INTERSECTION CHARACTERISTICS

Walk interval (in seconds)= **7**

Phase	Street Name	Posted Speed Limit mph (v)	grade +/- % (g)	vehicle crossing width ft (cw)	pedestrian crossing width ft (pw)	distance from pushbutton to curb ft (sw)	pedestrian walking speed ft/sec (p)
1	Hudson Rd	45	0	80	-	-	-
6		45	0	90	85	18	3.5
5	Hudson Rd	45	0	75	-	-	-
2		45	0	80	52	24	3.5
3	Greenhill Rd	45	0	85	-	-	-
8		45	0	95	-	-	3.5
7	Greenhill Rd	45	0	90	-	-	-
4		45	0	100	95	22	3.5



- (cw) - Vehicle path distance between the stop line and the far cross-street curb line.
- (pw) - Distance between the point the ped enters the street and the far side of the traveled way.
- (p) - Usually 3.5 ft/sec. 3.0 ft/sec. should be considered when ped. traffic is primarily children, elderly, or disabled. (MUTCD)
- (sw) - Distance from pushbutton to curb. If no pushbutton, use 6 ft. (MUTCD)

CALCULATED CLEARANCE INTERVALS (seconds)

Phase	Street Name	Y	R	Total Clearance	Calc Ped Clearance	Min Ped Change Interval	Walk + Ped Clearance Check (3 fps)	Add time to walk interval
1	Hudson Rd	3.94	2.40	6.34	-	-	-	-
6		4.82	1.00	5.82	25	20	35	3
5	Hudson Rd	3.94	2.23	6.17	-	-	-	-
2		4.82	1.00	5.82	15	10	26	4
3	Greenhill Rd	3.94	2.57	6.51	-	-	-	-
8		4.82	1.00	5.82	NA	NA	NA	NA
7	Greenhill Rd	3.94	2.74	6.68	-	-	-	-
4		4.82	1.00	5.82	28	23	39	4

RECOMMENDED CLEARANCE INTERVALS (seconds)

Phase	Street Name	Y	R	Calc Ped Clearance	Walk Interval	Ped Change Interval	Buffer Interval * (3 sec min)	Walk + Ped Clearance Check (3 fps) #
1	Hudson Rd	3.9	2.4	-	-	-	-	-
6		4.8	1.5	25	10	19	6	OK
5	Hudson Rd	3.9	2.4	-	-	-	-	-
2		4.8	1.5	15	10	19	6	OK
3	Greenhill Rd	-	-	-	-	-	-	-
8		4.8	1.9	NA	-	-	-	NA
7	Greenhill Rd	-	-	-	-	-	-	-
4		4.8	1.9	28	11	22	6	OK

* - Sum of Yellow and All Red, rounded down to nearest full second
 # - If not OK, additional time needed to satisfy the 3 fps from pushbutton to cross.

PROJECT: Greenhill Rd Corridor Traffic Study

SUBJECT: Hudson Road Clearance Times

NO.: 118.0463
DATE: 09/05/18
BY: AJH
CK: _____

Calculation Method:

Source: ITE, *Traffic Control Devices Handbook, 2nd Edition*, Chapter 10 as cited per NCHRP 731

$$Y = t + (v / (2a \pm 64.4g))$$

Y = yellow interval, seconds

t = reaction time, set at 1.0 second

v = 85th percentile approach speed (posted limit + 7mph)

Yellow time for left turning vehicles use posted speed - 5 mph

Red time for left turning vehicles use speed of 20 mph regardless of posted speed

a = deceleration rate, set at 10 feet/second/second

g = grade of approach over braking distance percent/100

$$R = (cw + l) / v - 1$$

R = All red interval, seconds

cw = vehicle crossing width, feet

l = length of vehicle, set at 20 feet

May decrease by 1 second due to startup loss

Source: MUTCD 2009, Section 4E.06

Note: Depending on the client, yellow clearance time may be used as part of the pedestrian clearance (FDW) interval.

$$FDW = pw / p$$

FDW = pedestrian clearance interval, seconds

pw = pedestrian crossing width, feet (from curb to far side of traveled way)

p = pedestrian velocity, ft/sec

Source: MUTCD 2009, Section 4E.06

Note: If the time it takes a pedestrian to cross the intersection starting from the pushbutton at 3 ft/sec exceeds the total of the walk and pedestrian clearance interval, the additional time should be provided in the walk interval

IF: $(W + pw/p) < [(pw+sw)/3]$, THEN: W is increased by $(pw+sw)/3 - (W + pw/p)$

W = walk interval, seconds

pw = pedestrian crossing width, feet (from curb to far side of traveled way)

p = pedestrian velocity, ft/sec

sw = sidewalk width, feet (from pushbutton to curb, or 6 feet if no pushbutton)

PROJECT: Greenhill Rd Corridor Traffic Study

NO.: 118.0463

DATE: 09/05/18

SUBJECT: IA 58 Clearance Times

BY: AJH

CK: _____

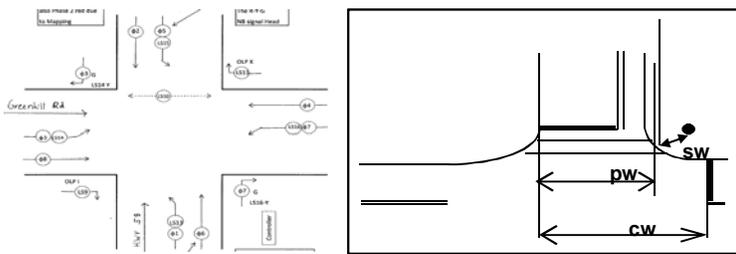
TRAFFIC SIGNAL TIMINGS / CLEARANCE INTERVALS

Enter Values in Shaded Regions

INTERSECTION CHARACTERISTICS

Walk interval (in seconds)= **7**

Phase	Street Name	Posted Speed Limit mph (v)	grade +/- % (g)	vehicle crossing width ft (cw)	pedestrian crossing width ft (pw)	distance from pushbutton to curb ft (sw)	pedestrian walking speed ft/sec (p)
1	IA 58	55	0	90	-	-	-
6		55	0	105	-	-	-
5	IA 58	55	0	100	-	-	-
2		55	0	115	-	-	-
3	Greenhill Rd	45	0	115	-	-	-
8		45	0	115	-	-	-
7	Greenhill Rd	45	0	110	-	-	-
4		45	0	115	138	16	3.5



- (cw) - Vehicle path distance between the stop line and the far cross-street curb line.
- (pw) - Distance between the point the ped enters the street and the far side of the traveled way.
- (p) - Usually 3.5 ft/sec. 3.0 ft/sec. should be considered when ped. traffic is primarily children, elderly, or disabled. (MUTCD)
- (sw) - Distance from pushbutton to curb. If no pushbutton, use 6 ft. (MUTCD)

CALCULATED CLEARANCE INTERVALS (seconds)

Phase	Street Name	Y	R	Total Clearance	Calc Ped Clearance	Min Ped Change Interval	Walk + Ped Clearance Check (3 fps)	Add time to walk interval
1	IA 58	4.68	2.74	7.42	-	-	-	-
6		5.56	1.00	6.56	NA	NA	NA	NA
5	IA 58	4.68	3.08	7.76	-	-	-	-
2		5.56	1.00	6.56	NA	NA	NA	NA
3	Greenhill Rd	3.94	3.59	7.53	-	-	-	-
8		4.82	1.00	5.82	NA	NA	NA	NA
7	Greenhill Rd	3.94	3.42	7.36	-	-	-	-
4		4.82	1.00	5.82	40	35	52	5

RECOMMENDED CLEARANCE INTERVALS (seconds)

Phase	Street Name	Y	R	Calc Ped Clearance	Walk Interval	Ped Change Interval	Buffer Interval * (3 sec min)	Walk + Ped Clearance Check (3 fps) #
1	IA 58	4.7	3.1	-	-	-	-	-
6		5.6	1.8	NA	-	-	-	NA
5	IA 58	4.7	3.1	-	-	-	-	-
2		5.6	1.8	NA	-	-	-	NA
3	Greenhill Rd	3.9	3.6	-	-	-	-	-
8		4.8	2.7	NA	-	-	-	NA
7	Greenhill Rd	3.9	3.6	-	-	-	-	-
4		4.8	2.7	40	12	33	7	OK

* - Sum of Yellow and All Red, rounded down to nearest full second
 # - If not OK, additional time needed to satisfy the 3 fps from pushbutton to cross.

PROJECT: Greenhill Rd Corridor Traffic Study

NO.: 118.0463

DATE: 09/05/18

SUBJECT: IA 58 Clearance Times

BY: AJH

CK: _____

Calculation Method:

Source: ITE, *Traffic Control Devices Handbook, 2nd Edition*, Chapter 10 as cited per NCHRP 731

$$Y = t + (v / (2a \pm 64.4g))$$

Y = yellow interval, seconds

t = reaction time, set at 1.0 second

v = 85th percentile approach speed (posted limit + 7mph)

Yellow time for left turning vehicles use posted speed - 5 mph

Red time for left turning vehicles use speed of 20 mph regardless of posted speed

a = deceleration rate, set at 10 feet/second/second

g = grade of approach over braking distance percent/100

$$R = (cw + l) / v - 1$$

R = All red interval, seconds

cw = vehicle crossing width, feet

l = length of vehicle, set at 20 feet

May decrease by 1 second due to startup loss

Source: MUTCD 2009, Section 4E.06

Note: Depending on the client, yellow clearance time may be used as part of the pedestrian clearance (FDW) interval.

$$FDW = pw / p$$

FDW = pedestrian clearance interval, seconds

pw = pedestrian crossing width, feet (from curb to far side of traveled way)

p = pedestrian velocity, ft/sec

Source: MUTCD 2009, Section 4E.06

Note: If the time it takes a pedestrian to cross the intersection starting from the pushbutton at 3 ft/sec exceeds the total of the walk and pedestrian clearance interval, the additional time should be provided in the walk interval

IF: $(W + pw/p) < [(pw+sw)/3]$, THEN: W is increased by $(pw+sw)/3 - (W + pw/p)$

W = walk interval, seconds

pw = pedestrian crossing width, feet (from curb to far side of traveled way)

p = pedestrian velocity, ft/sec

sw = sidewalk width, feet (from pushbutton to curb, or 6 feet if no pushbutton)

PROJECT: Greenhill Rd Corridor Traffic Study

 SUBJECT: S Main Street Clearance Times

NO.: 118.0463
 DATE: 09/05/18
 BY: AJH
 CK: _____

TRAFFIC SIGNAL TIMINGS / CLEARANCE INTERVALS

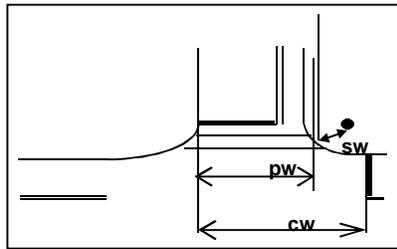
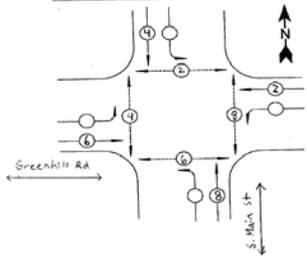
Enter Values in Shaded Regions

INTERSECTION CHARACTERISTICS

Walk interval (in seconds)= **7**

Phase	Street Name	Posted Speed Limit mph (v)	grade +/- % (g)	vehicle crossing width ft (cw)	pedestrian crossing width ft (pw)	distance from pushbutton to curb ft (sw)	pedestrian walking speed ft/sec (p)
1	Greenhill Rd	45	0	60	-	-	-
6		45	0	75	72	20	3.0
5	Greenhill Rd	45	0	70	-	-	-
2		45	0	70	66	20	3.0
3	S Main St	35	0	80	-	-	-
8		35	0	80	88	20	3.0
7	S Main St	35	0	80	-	-	-
4		35	0	90	84	20	3.0

PHASE DESIGNATION DIAGRAM



- (cw) - Vehicle path distance between the stop line and the far cross-street curb line.
- (pw) - Distance between the point the ped enters the street and the far side of the traveled way.
- (p) - Usually 3.5 ft/sec. 3.0 ft/sec. should be considered when ped. traffic is primarily children, elderly, or disabled. (MUTCD)
- (sw) - Distance from pushbutton to curb. If no pushbutton, use 6 ft. (MUTCD)

CALCULATED CLEARANCE INTERVALS (seconds)

Phase	Street Name	Y	R	Total Clearance	Calc Ped Clearance	Min Ped Change Interval	Walk + Ped Clearance Check (3 fps)	Add time to walk interval
1	Greenhill Rd	3.94	1.72	5.66	-	-	-	-
6		4.82	1.00	5.82	24	19	OK	OK
5	Greenhill Rd	3.94	2.06	6.00	-	-	-	-
2		4.82	1.00	5.82	22	17	OK	OK
3	S Main St	3.21	2.40	5.61	-	-	-	-
8		4.09	1.00	5.09	30	25	OK	OK
7	S Main St	3.21	2.40	5.61	-	-	-	-
4		4.09	1.00	5.09	28	23	OK	OK

RECOMMENDED CLEARANCE INTERVALS (seconds)

Phase	Street Name	Y	R	Calc Ped Clearance	Walk Interval	Ped Change Interval	Buffer Interval * (3 sec min)	Walk + Ped Clearance Check (3 fps) #
1	Greenhill Rd	3.9	2.1	-	-	-	-	-
6		4.8	1.2	24	7	18	6	OK
5	Greenhill Rd	3.9	2.1	-	-	-	-	-
2		4.8	1.2	22	7	18	6	OK
3	S Main St	3.2	2.4	-	-	-	-	-
8		4.1	1.5	30	7	25	5	OK
7	S Main St	-	-	-	-	-	-	-
4		4.1	1.5	28	7	25	5	OK

* - Sum of Yellow and All Red, rounded down to nearest full second
 # - If not OK, additional time needed to satisfy the 3 fps from pushbutton to cross.

PROJECT: Greenhill Rd Corridor Traffic Study

NO.: 118.0463

DATE: 09/05/18

SUBJECT: S Main Street Clearance Times

BY: AJH

CK: _____

Calculation Method:

Source: ITE, *Traffic Control Devices Handbook, 2nd Edition*, Chapter 10 as cited per NCHRP 731

$$Y = t + (v / (2a \pm 64.4g))$$

Y = yellow interval, seconds

t = reaction time, set at 1.0 second

v = 85th percentile approach speed (posted limit + 7mph)

Yellow time for left turning vehicles use posted speed - 5 mph

Red time for left turning vehicles use speed of 20 mph regardless of posted speed

a = deceleration rate, set at 10 feet/second/second

g = grade of approach over braking distance percent/100

$$R = (cw + l) / v - 1$$

R = All red interval, seconds

cw = vehicle crossing width, feet

l = length of vehicle, set at 20 feet

May decrease by 1 second due to startup loss

Source: MUTCD 2009, Section 4E.06

Note: Depending on the client, yellow clearance time may be used as part of the pedestrian clearance (FDW) interval.

$$FDW = pw / p$$

FDW = pedestrian clearance interval, seconds

pw = pedestrian crossing width, feet (from curb to far side of traveled way)

p = pedestrian velocity, ft/sec

Source: MUTCD 2009, Section 4E.06

Note: If the time it takes a pedestrian to cross the intersection starting from the pushbutton at 3 ft/sec exceeds the total of the walk and pedestrian clearance interval, the additional time should be provided in the walk interval

IF: $(W + pw/p) < [(pw+sw)/3]$, THEN: W is increased by $(pw+sw)/3 - (W + pw/p)$

W = walk interval, seconds

pw = pedestrian crossing width, feet (from curb to far side of traveled way)

p = pedestrian velocity, ft/sec

sw = sidewalk width, feet (from pushbutton to curb, or 6 feet if no pushbutton)

PROJECT: Greenhill Rd Corridor Traffic Study

NO.: 118.0463

DATE: 09/05/18

SUBJECT: Prairie Parkway Clearance Times

BY: AJH

CK: _____

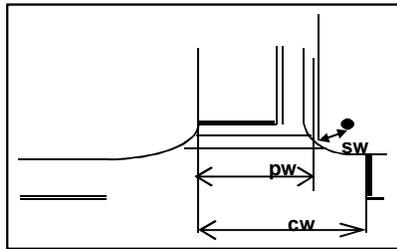
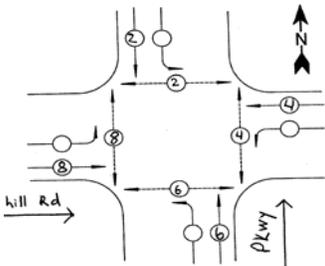
TRAFFIC SIGNAL TIMINGS / CLEARANCE INTERVALS

Enter Values in Shaded Regions

INTERSECTION CHARACTERISTICS

Walk interval (in seconds)= **7**

Phase	Street Name	Posted Speed Limit mph (v)	grade +/- % (g)	vehicle crossing width ft (cw)	pedestrian crossing width ft (pw)	distance from pushbutton to curb ft (sw)	pedestrian walking speed ft/sec (p)	
1	Prairie Pkwy	25	0	90	-	-	-	
6		25	0	80	60	24	3.5	crossing Greenhill
5	Prairie Pkwy	25	0	95	-	-	-	
2		25	0	80	62	26	3.5	crossing Greenhill
3	Greenhill Rd	45	0	95	-	-	-	
8		45	0	115	104	26	3.5	crossing Prairie
7	Greenhill Rd	45	0	95	-	-	-	
4		45	0	110	70	36	3.5	crossing Prairie



- (cw) - Vehicle path distance between the stop line and the far cross-street curb line.
- (pw) - Distance between the point the ped enters the street and the far side of the traveled way.
- (p) - Usually 3.5 ft/sec. 3.0 ft/sec. should be considered when ped. traffic is primarily children, elderly, or disabled. (MUTCD)
- (sw) - Distance from pushbutton to curb. If no pushbutton, use 6 ft. (MUTCD)

CALCULATED CLEARANCE INTERVALS (seconds)

Phase	Street Name	Y	R	Total Clearance	Calc Ped Clearance	Min Ped Change Interval	Walk + Ped Clearance Check (3 fps)	Add time to walk interval
1	Prairie Pkwy	2.47	2.74	5.21	-	-	-	-
6		3.35	1.13	4.48	18	14	28	3
5	Prairie Pkwy	2.47	2.91	5.38	-	-	-	-
2		3.35	1.13	4.48	18	14	30	5
3	Greenhill Rd	3.94	2.91	6.85	-	-	-	-
8		4.82	1.00	5.82	30	25	44	7
7	Greenhill Rd	3.94	2.91	6.85	-	-	-	-
4		4.82	1.00	5.82	20	15	36	9

RECOMMENDED CLEARANCE INTERVALS (seconds)

Phase	Street Name	Y	R	Calc Ped Clearance	Walk Interval	Ped Change Interval	Buffer Interval * (3 sec min)	Walk + Ped Clearance Check (3 fps) #
1	Prairie Pkwy			-	-	-	-	-
6		3.4	2.0	18	12	13	5	OK
5	Prairie Pkwy			-	-	-	-	-
2		3.4	2.0	18	12	13	5	OK
3	Greenhill Rd			-	-	-	-	-
8		4.8	2.1	30	14	24	6	OK
7	Greenhill Rd			-	-	-	-	-
4		4.8	2.1	20	14	24	6	OK

* - Sum of Yellow and All Red, rounded down to nearest full second

- If not OK, additional time needed to satisfy the 3 fps from pushbutton to cross.

PROJECT: Greenhill Rd Corridor Traffic Study

NO.: 118.0463

DATE: 09/05/18

SUBJECT: Prairie Parkway Clearance Times

BY: AJH

CK: _____

Calculation Method:

Source: ITE, *Traffic Control Devices Handbook, 2nd Edition*, Chapter 10 as cited per NCHRP 731

$$Y = t + (v / (2a \pm 64.4g))$$

Y = yellow interval, seconds

t = reaction time, set at 1.0 second

v = 85th percentile approach speed (posted limit + 7mph)

Yellow time for left turning vehicles use posted speed - 5 mph

Red time for left turning vehicles use speed of 20 mph regardless of posted speed

a = deceleration rate, set at 10 feet/second/second

g = grade of approach over braking distance percent/100

$$R = (cw + l) / v - 1$$

R = All red interval, seconds

cw = vehicle crossing width, feet

l = length of vehicle, set at 20 feet

May decrease by 1 second due to startup loss

Source: MUTCD 2009, Section 4E.06

Note: Depending on the client, yellow clearance time may be used as part of the pedestrian clearance (FDW) interval.

$$FDW = pw / p$$

FDW = pedestrian clearance interval, seconds

pw = pedestrian crossing width, feet (from curb to far side of traveled way)

p = pedestrian velocity, ft/sec

Source: MUTCD 2009, Section 4E.06

Note: If the time it takes a pedestrian to cross the intersection starting from the pushbutton at 3 ft/sec exceeds the total of the walk and pedestrian clearance interval, the additional time should be provided in the walk interval

IF: $(W + pw/p) < [(pw+sw)/3]$, THEN: W is increased by $(pw+sw)/3 - (W + pw/p)$

W = walk interval, seconds

pw = pedestrian crossing width, feet (from curb to far side of traveled way)

p = pedestrian velocity, ft/sec

sw = sidewalk width, feet (from pushbutton to curb, or 6 feet if no pushbutton)

PROJECT: Greenhill Rd Corridor Traffic Study

NO.: 118.0463

DATE: 09/05/18

SUBJECT: Rownd Street Clearance Times

BY: AJH

CK: _____

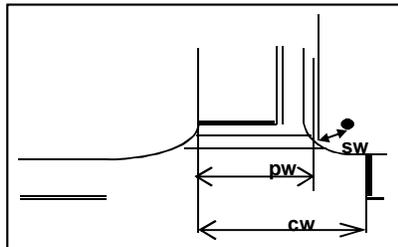
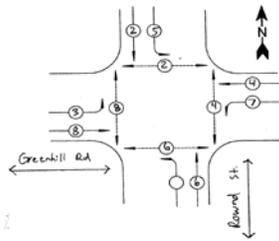
TRAFFIC SIGNAL TIMINGS / CLEARANCE INTERVALS

Enter Values in Shaded Regions

INTERSECTION CHARACTERISTICS

Walk interval (in seconds)= **7**

Phase	Street Name	Posted Speed Limit mph (v)	grade +/- % (g)	vehicle crossing width ft (cw)	pedestrian crossing width ft (pw)	distance from pushbutton to curb ft (sw)	pedestrian walking speed ft/sec (p)
1	Rownd St	35	0	75	-	-	-
6		35	0	80	72	16	3.5
5	Rownd St	35	0	70	-	-	-
2		35	0	80	72	12	3.5
3	Greenhill Rd	45	0	65	-	-	-
8		45	0	50	34	14	3.5
7	Greenhill Rd	45	0	65	-	-	-
4		45	0	65	68	18	3.5



- (cw) - Vehicle path distance between the stop line and the far cross-street curb line.
- (pw) - Distance between the point the ped enters the street and the far side of the traveled way.
- (p) - Usually 3.5 ft/sec. 3.0 ft/sec. should be considered when ped. traffic is primarily children, elderly, or disabled. (MUTCD)
- (sw) - Distance from pushbutton to curb. If no pushbutton, use 6 ft. (MUTCD)

CALCULATED CLEARANCE INTERVALS (seconds)

Phase	Street Name	Y	R	Total Clearance	Calc Ped Clearance	Min Ped Change Interval	Walk + Ped Clearance Check (3 fps)	Add time to walk interval
1	Rownd St	3.21	2.23	5.44	-	-	-	-
6		4.09	1.00	5.09	21	16	30	2
5	Rownd St	3.21	2.06	5.27	-	-	-	-
2		4.09	1.00	5.09	21	16	OK	OK
3	Greenhill Rd	3.94	1.89	5.83	-	-	-	-
8		4.82	1.00	5.82	10	5	OK	OK
7	Greenhill Rd	3.94	1.89	5.83	-	-	-	-
4		4.82	1.00	5.82	20	15	29	2

RECOMMENDED CLEARANCE INTERVALS (seconds)

Phase	Street Name	Y	R	Calc Ped Clearance	Walk Interval	Ped Change Interval	Buffer Interval * (3 sec min)	Walk + Ped Clearance Check (3 fps) #
1	Rownd St	3.2	2.2	-	-	-	-	-
6		4.1	1.4	21	9	16	5	OK
5	Rownd St	3.2	2.2	-	-	-	-	-
2		4.1	1.4	21	9	16	5	OK
3	Greenhill Rd	3.9	1.9	-	-	-	-	-
8		4.8	1.0	10	9	15	5	OK
7	Greenhill Rd	3.9	1.9	-	-	-	-	-
4		4.8	1.0	20	9	15	5	OK

* - Sum of Yellow and All Red, rounded down to nearest full second
 # - If not OK, additional time needed to satisfy the 3 fps from pushbutton to cross.

PROJECT: Greenhill Rd Corridor Traffic Study

NO.: 118.0463

DATE: 09/05/18

SUBJECT: Rownd Street Clearance Times

BY: AJH

CK: _____

Calculation Method:

Source: ITE, *Traffic Control Devices Handbook, 2nd Edition*, Chapter 10 as cited per NCHRP 731

$$Y = t + (v / (2a \pm 64.4g))$$

Y = yellow interval, seconds

t = reaction time, set at 1.0 second

v = 85th percentile approach speed (posted limit + 7mph)

Yellow time for left turning vehicles use posted speed - 5 mph

Red time for left turning vehicles use speed of 20 mph regardless of posted speed

a = deceleration rate, set at 10 feet/second/second

g = grade of approach over braking distance percent/100

$$R = (cw + l) / v - 1$$

R = All red interval, seconds

cw = vehicle crossing width, feet

l = length of vehicle, set at 20 feet

May decrease by 1 second due to startup loss

Source: MUTCD 2009, Section 4E.06

Note: Depending on the client, yellow clearance time may be used as part of the pedestrian clearance (FDW) interval.

$$FDW = pw / p$$

FDW = pedestrian clearance interval, seconds

pw = pedestrian crossing width, feet (from curb to far side of traveled way)

p = pedestrian velocity, ft/sec

Source: MUTCD 2009, Section 4E.06

Note: If the time it takes a pedestrian to cross the intersection starting from the pushbutton at 3 ft/sec exceeds the total of the walk and pedestrian clearance interval, the additional time should be provided in the walk interval

IF: $(W + pw/p) < [(pw+sw)/3]$, THEN: W is increased by $(pw+sw)/3 - (W + pw/p)$

W = walk interval, seconds

pw = pedestrian crossing width, feet (from curb to far side of traveled way)

p = pedestrian velocity, ft/sec

sw = sidewalk width, feet (from pushbutton to curb, or 6 feet if no pushbutton)

PROJECT: Greenhill Rd Corridor Traffic Study

NO.: 118.0463

DATE: 09/05/18

SUBJECT: Cedar Heights Drive Clearance Times

BY: AJH

CK: _____

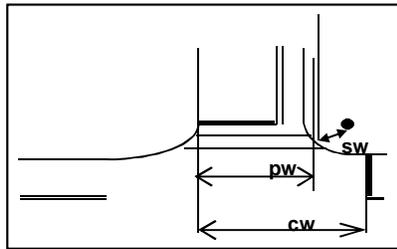
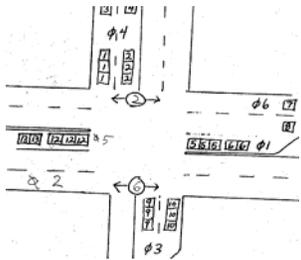
TRAFFIC SIGNAL TIMINGS / CLEARANCE INTERVALS

Enter Values in Shaded Regions

INTERSECTION CHARACTERISTICS

Walk interval (in seconds)= **7**

Phase	Street Name	Posted Speed Limit mph (v)	grade +/- % (g)	vehicle crossing width ft (cw)	pedestrian crossing width ft (pw)	distance from pushbutton to curb ft (sw)	pedestrian walking speed ft/sec (p)
1	Greenhill Rd	45	0	70	-	-	-
6		45	0	80	96	22	3.5
5	Greenhill Rd	45	0	70	-	-	-
2		45	0	75	-	-	3.5
3	Cedar Heights Dr	45	0	90	-	-	-
8		45	0	100	-	-	3.5
7	Cedar Heights Dr	45	0	90	-	-	-
4		45	0	105	-	-	3.5



- (cw) - Vehicle path distance between the stop line and the far cross-street curb line.
- (pw) - Distance between the point the ped enters the street and the far side of the traveled way.
- (p) - Usually 3.5 ft/sec. 3.0 ft/sec. should be considered when ped. traffic is primarily children, elderly, or disabled. (MUTCD)
- (sw) - Distance from pushbutton to curb. If no pushbutton, use 6 ft. (MUTCD)

CALCULATED CLEARANCE INTERVALS (seconds)

Phase	Street Name	Y	R	Total Clearance	Calc Ped Clearance	Min Ped Change Interval	Walk + Ped Clearance Check (3 fps)	Add time to walk interval
1	Greenhill Rd	3.94	2.06	6.00	-	-	-	-
6		4.82	1.00	5.82	28	23	40	5
5	Greenhill Rd	3.94	2.06	6.00	-	-	-	-
2		4.82	1.00	5.82	NA	NA	NA	NA
3	Cedar Heights Dr	3.94	2.74	6.68	-	-	-	-
8		4.82	1.00	5.82	NA	NA	NA	NA
7	Cedar Heights Dr	3.94	2.74	6.68	-	-	-	-
4		4.82	1.00	5.82	NA	NA	NA	NA

RECOMMENDED CLEARANCE INTERVALS (seconds)

Phase	Street Name	Y	R	Calc Ped Clearance	Walk Interval	Ped Change Interval	Buffer Interval * (3 sec min)	Walk + Ped Clearance Check (3 fps) #
1	Greenhill Rd	3.9	2.1	-	-	-	-	-
6		4.8	1.2	28	12	22	6	OK
5	Greenhill Rd	3.9	2.1	-	-	-	-	-
2		4.8	1.2	NA	-	-	-	NA
3	Cedar Heights Dr	3.9	2.7	-	-	-	-	-
8		4.8	1.9	NA	-	-	-	NA
7	Cedar Heights Dr	3.9	2.7	-	-	-	-	-
4		4.8	1.9	NA	-	-	-	NA

* - Sum of Yellow and All Red, rounded down to nearest full second
 # - If not OK, additional time needed to satisfy the 3 fps from pushbutton to cross.

PROJECT: Greenhill Rd Corridor Traffic Study

NO.: 118.0463

DATE: 09/05/18

SUBJECT: Cedar Heights Drive Clearance Times

BY: AJH

CK: _____

Calculation Method:

Source: ITE, *Traffic Control Devices Handbook, 2nd Edition*, Chapter 10 as cited per NCHRP 731

$$Y = t + (v / (2a +/- 64.4g))$$

Y = yellow interval, seconds

t = reaction time, set at 1.0 second

v = 85th percentile approach speed (posted limit + 7mph)

Yellow time for left turning vehicles use posted speed - 5 mph

Red time for left turning vehicles use speed of 20 mph regardless of posted speed

a = deceleration rate, set at 10 feet/second/second

g = grade of approach over braking distance percent/100

$$R = (cw + l) / v - 1$$

R = All red interval, seconds

cw = vehicle crossing width, feet

l = length of vehicle, set at 20 feet

May decrease by 1 second due to startup lose

Source: MUTCD 2009, Section 4E.06

Note: Depending on the client, yellow clearance time may be used as part of the pedestrian clearance (FDW) interval.

$$FDW = pw / p$$

FDW = pedestrian clearance interval, seconds

pw = pedestrian crossing width, feet (from curb to far side of traveled way)

p = pedestrian velocity, ft/sec

Source: MUTCD 2009, Section 4E.06

Note: If the time it takes a pedestrian to cross the intersection starting from the pushbutton at 3 ft/sec exceeds the total of the walk and pedestrian clearance interval, the additional time should be provided in the walk interval

IF: $(W + pw/p) < [(pw+sw)/3]$, THEN: W is increased by $(pw+sw)/3 - (W + pw/p)$

W = walk interval, seconds

pw = pedestrian crossing width, feet (from curb to far side of traveled way)

p = pedestrian velocity, ft/sec

sw = sidewalk width, feet (from pushbutton to curb, or 6 feet if no pushbutton)

Memorandum

To: Jon Resler, P.E., City Engineer **Date:** 9/6/18

From: Mark Perington, P.E., PTOE
Andrew Houchin, E.I.

CC: Stephanie Sheetz, AICP, Community Development Director

RE: Forecasted Improvement Needs/Alternatives Operations Analysis
Greenhill Rd Corridor Traffic Study
Cedar Falls, IA
Snyder & Associates Project No.: 118.0463.01

Introduction

The City of Cedar Falls has requested that Snyder & Associates conduct a traffic study of the Greenhill Road corridor from Hudson Road to Cedar Heights Drive. The study area and intersections are shown in **Figure 1**. All the intersections on Greenhill Rd are included in the study other than the intersection with Iowa Highway 58 (IA 58) which is being studied separately by the Iowa DOT. The purpose of the study is to evaluate the current and future traffic demands for all modes of transportation in the Greenhill Rd corridor in order to develop short- and long-range plans for lane needs and intersection improvements. Other areas of focus for the study will be potential for traffic demand change due to new land use development, “complete streets” considerations, and appropriate traffic control for intersections such as traffic signalization or roundabouts. This memorandum summarizes the functional geometric lane needs, traffic control needs, and alternatives evaluated as well as the operational analysis of those alternatives.



Figure 1. Study Area Intersections

Alternatives

The functional lane and traffic control needs as well as alternatives to be analyzed in this study were determined based on a several step process. First, the existing conditions analysis results were reviewed for current and forecasted traffic to identify intersections where improvements may be necessary based on crash potential and traffic delay as defined by Level-Of-Service (LOS). At currently unsignalized intersections, they were first evaluated to decide whether two-way stop control (TWSC) was sufficient for the forecasted traffic or if additional traffic control would be needed. If additional traffic control to mitigate crash potential or traffic delay was determined to be necessary, then the intersection was analyzed as a signalized intersection and roundabout and lane configurations were adjusted until acceptable operations were reached for either alternative. The operations analysis considered both delay (LOS) and queue lengths.

Currently signalized intersections were also analyzed as both signalized intersections with additional lanes where necessary as well as roundabouts. Finally, at some intersections where geometric improvements were not necessary for capacity, improvements were included in the alternatives to improve safety/reduce conflict, improve sight distance, or meet driver expectations.

Hudson Rd

This intersection is currently signalized. The recommended lane configuration for Hudson Rd and Greenhill Rd to remain signalized is shown in **Figure 2**. The westbound (WB) left turn lane and northbound (NB) right turn lane are recommended to improve intersection operations. The eastbound (EB) left turn lane is recommended to improve alignment for the EB and WB through movements.

The recommended lane configuration schematic for Hudson Rd and Greenhill Rd as a roundabout is shown in **Figure 3**. Note that due to the low forecasted volume on the EB approach, there is only one EB lane continued through the roundabout.



Figure 2. Signalized Hudson Rd Lane Configuration

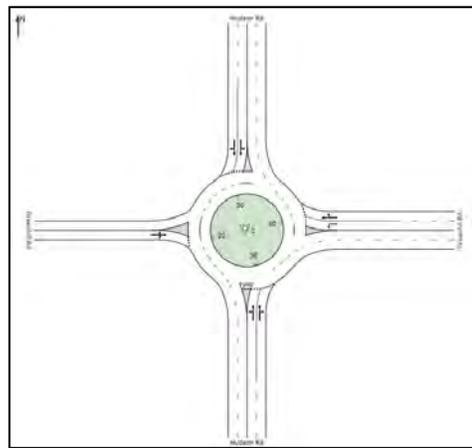


Figure 3. Roundabout Hudson Rd Lane Configuration

Algonquin Dr and Ashworth Dr

Both these intersections are currently TWSC. One of these two intersections could need additional traffic control if the planned Sartori Hospital development and other potential surrounding developments move forward. Based on the forecasted traffic from the Sartori Hospital TIS, it was assumed the intersection that would require additional traffic control was the Ashworth Dr intersection, but it could also be Algonquin Dr based on the development.

At Algonquin Dr, it is recommended that it be widened on Greenhill Rd to include EB and WB left turn lanes to improve safety by separating left turning and through traffic (see **Figure 4**). It is also recommended that the existing width on the NB approach be used to provide a NB left and shared through/right lane with one receiving lane. This configuration should be matched on the southbound (SB) approach when it is constructed and left turn lanes should be aligned.

Ashworth Dr, whether it remains TWSC or becomes signalized, should have the same lane configuration as Algonquin Dr. If it is converted to a roundabout, the recommended lane configuration schematic is shown in **Figure 5**. Only one lane is necessary through the roundabout at the east and west approaches.

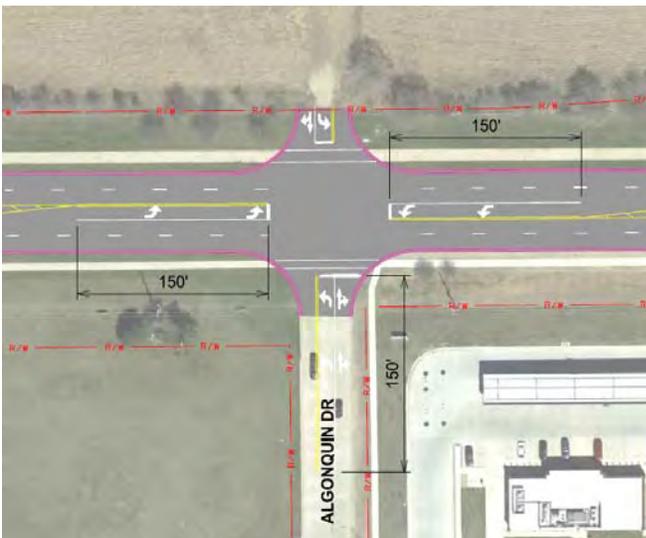


Figure 4. Algonquin Dr/Ashworth Dr TWSC/Signal Lane Configuration

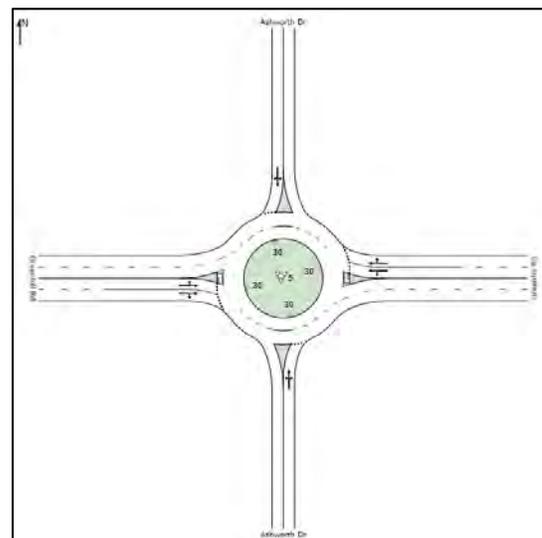


Figure 5. Ashworth Dr Roundabout Lane Configuration

S Main St

This intersection is currently signalized. The recommended lane configuration for S Main St and Greenhill Rd to remain signalized is shown in **Figure 6**. The WB through lane and SB left turn lane are recommended to improve intersection operations. The recommended lane configuration as a roundabout is shown in **Figure 7**. Only one lane is needed through the roundabout at the east and west approaches.

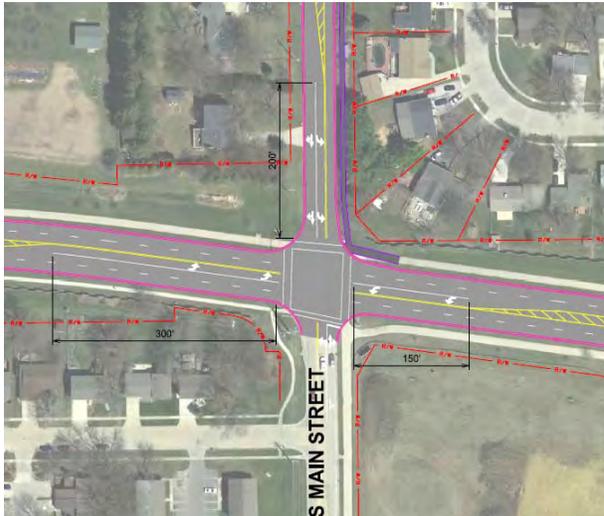


Figure 6. S Main St Signalized Lane Configuration



Figure 7. S Main St Roundabout Lane Configuration

Prairie Pkwy

This intersection is currently signalized. The recommended lane configuration for Prairie Pkwy and Greenhill Rd to remain signalized is shown in **Figure 8**. The EB and WB left turn lanes are recommended to improve intersection operations and for safety. The recommended lane configuration as a roundabout is shown in **Figure 9**.



Figure 8. Prairie Pkwy Signalized Lane Configuration



Figure 9. Prairie Pkwy Roundabout Lane Configuration

Oster Pkwy

This intersection is currently TWSC. It is possible that traffic will grow to the point where additional traffic control is necessary. The current Pinnacle Prairie Master Plan shows Oster Pkwy connecting to Viking Rd, which could provide a desirable connection to the retail area on Viking Rd near IA 58. Whether additional traffic control is eventually necessary or not, it is recommended that EB and WB left turn lanes be provided on Greenhill Rd to improve safety and reduce conflict, especially as the Pinnacle Prairie development continues to progress.

If additional traffic control does become necessary, the recommended lane configuration for signalization is shown in **Figure 10** and is the same as if it remains TWSC. The recommended lane configuration schematic for a roundabout is shown in **Figure 11**. Only one lane is needed through the roundabout at the east and west approaches.



Figure 10. Oster Pkwy Signalized Lane Configuration

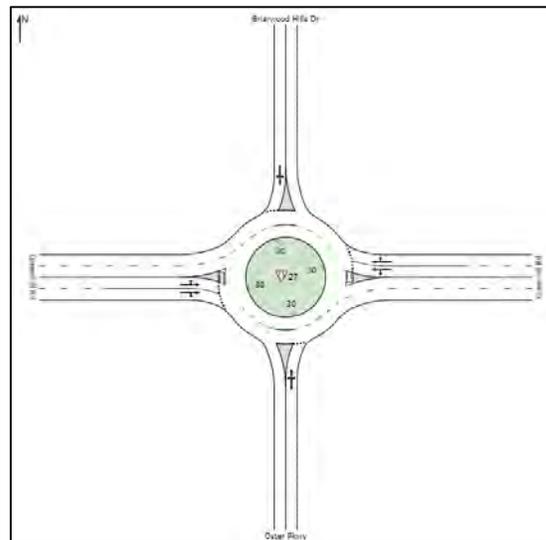


Figure 11. Oster Pkwy Roundabout Lane Configuration

Rownd St

This intersection is currently signalized. It is expected to be nearing capacity by 2045 with several approaches experiencing LOS E and F and excessively long queue lengths. The recommended lane configuration for a signal is shown in **Figure 12**. The EB and WB through lanes and the NB left turn lane are added to improve intersection operations and safety. The lane configuration schematic for a roundabout is shown in **Figure 13**. Only one lane is needed through the roundabout at the east and west approaches.



Figure 12. Rownd St Signalized Lane Configuration

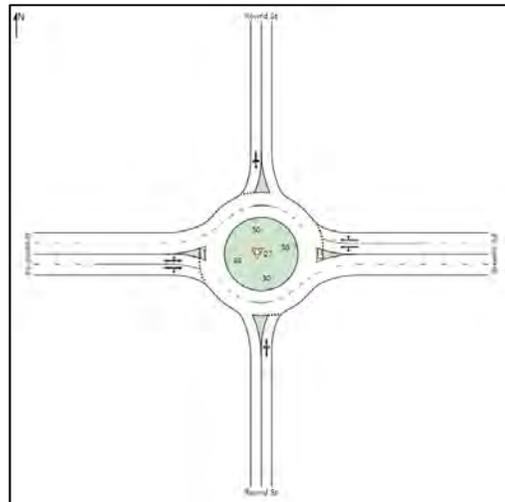


Figure 13. Rownd St Roundabout Lane Configuration

Cedar Heights Dr

This intersection is currently signalized. It operates with the north and south approaches split phased due to safety concerns from negative offset left turns. The recommended lane configuration for a signal is shown in **Figure 14**. The widening on the south approach and restriping on the north approach allow the left turn lanes to be aligned across from each other and operate as protected only or protected plus permissive. The recommended lane configuration for a roundabout is shown in **Figure 15**. Two circulatory lanes are needed throughout the roundabout.



Figure 14. Rownd St Signalized Lane Configuration



Figure 15. Rownd St Roundabout Lane Configuration

Intersections Expected to Remain TWSC

Several intersections within the corridor are currently TWSC and are not expected to require additional traffic control. These intersections are listed below with the geometric improvements which are recommended for each.

- Coneflower Pkwy / Estate Dr – Add EB and WB left turn lanes. Maintain EB right turn lane assumed to be constructed in conjunction with the Kwik Star development.
- Orchard Hill Dr – Add EB and WB left turn lanes. Add WB right turn lane.
- Green Creek Rd – No geometric improvements recommended. Monitor for potential WB left turn need based on safety.

Operations

Intersection operations were evaluated using the same software as the existing conditions analysis (*Synchro 10*) for signalized intersections. For roundabouts, the roundabout analysis software *Sidra version 7 (Sidra 7)* and its built-in *HCM 6* analysis procedures were considered. The *HCM 6* procedures are based on data from roundabouts in the United States so it was selected as the main analysis procedure for roundabout operations. The main measures of effectiveness used for intersection operations were delay per vehicle (and the corresponding LOS) and the 95th percentile queue. The LOS thresholds for delay according to the *HCM 6* are given in **Table 1**. In *HCM 6*, roundabouts use the unsignalized LOS thresholds, which are lower than the signalized LOS thresholds to capture driver expectations for delay when a signal is not present.

Table 1. Level of Service Definition (HCM 6)

LOS	Average Delay per Vehicle (seconds)	
	Signalized Intersection	Unsignalized Intersection
A	< 10	< 10
B	10 to 20	10 to 15
C	20 to 35	15 to 25
D	35 to 55	25 to 35
E	55 to 80	35 to 50
F	> 80 or V/C > 1.0	> 50 or V/C > 1.0

V/C - Volume to Capacity Ratio

Table 2 summarizes the forecasted 2045 operations of the alternatives described above and the appendix includes more detailed operations summaries. All the signals and roundabouts operate at an LOS C or better with the forecasted traffic. There are two intersections that are currently TWSC that could require additional traffic control: either Algonquin Dr or Ashworth Dr (one or the other) and Oster Pkwy. The need for additional traffic control would be heavily dependent on development with significant trip generation. All intersections operate at LOS C or better as a roundabout or a signal, though the roundabouts are generally about one LOS better than the signals.

Table 2. 2045 Alternatives Operations Analysis Results

Intersection	Control	TWSC (side street)		Signal		Roundabout	
		Delay (s/veh)	Longest 95 th Queue (ft)	Delay (s/veh)	Longest 95 th Queue (ft)	Delay (s/veh)	Longest 95 th Queue (ft)
Hudson Rd*	Signal/ Roundabout	-	-	25 / C	#352 (NBT)	14 / B	170 (NBLT)
Algonquin Dr	TWSC	41 / E (SB)	70 (SBL)	-	-	-	-
Ashworth Dr	TWSC or Signal/ Roundabout	100+ / F (SB)	Analysis failed (SBL)	9 / A	148 (WBTR)	7 / A	60 (WBT)
S Main St	Signal/ Roundabout	-	-	24 / C	#309 (SBTR)	14 / B	153 (EBTR)
Estate Dr / Coneflower Pkwy	TWSC	30 / D (SB)	17 (NBL)	-	-	-	-
Prairie Pkwy	Signal/ Roundabout	-	-	18 / B	274 (NBL)	9 / A	68 (NB)
Orchard Hill Dr	TWSC	52 / F (NB)	36 (SBL)	-	-	-	-
Oster Pkwy	TWSC or Signal/ Roundabout	88 / F (NB)	129 (NBL)	16 / B	188 (EBTR)	6 / A	40 (EB)
Rownd St	Signal/ Roundabout	-	-	19 / B	208 (WBTR)	8 / A	58 (SB)
Green Creek Rd	TWSC	15 / C (NB)	7 (NB)	-	-	-	-
Cedar Heights Dr	Signal/ Roundabout	-	-	26 / C	#232 (SBT)	13 / B	205

(#) - 95th %-ile queue exceeds capacity, queue may be longer (length shown after two cycles)

(*) – Considerations for special event peak traffic were discussed in the 2012 Hudson Rd Corridor Study & relationship to signalized vs roundabout control

Appendix

- *Synchro 10* and *HCM 6* results for 2045 at TWSC and signalized intersections
- *Sidra 7* and *HCM 6* results for 2045 at roundabouts

2045 PM PEAK - Signals at major intersections + widening

Intersection	Control Type	Lane Group/ Approach	Synchro Delay	Synchro LOS	HCM 6 Delay	HCM 6 LOS	Synchro 95th Queue	HCM 6 95th Queues	Notes
Hudson Rd	Signal (90 sec cycle coord)	NB Left	15	B	22	C	22	-	- Highlight = Lane Added or control type changed - Dual WB lefts would be beneficial, but would be difficult to widen the EB approach to provide good alignment
		NB Thru	41	D	40	D	#352	-	
		NB Right	2	A	17	B	37	-	
		NB Total	29	C	33	C	-	-	
		SB Left	34	C	29	C	#140	-	
		SB Thru/Right	25	C	28	C	261	-	
		SB Total	26	C	28	C	-	-	
		EB Left	21	C	32	C	50	-	
		EB Thru/Right	30	C	36	D	37	-	
		EB Total	26	C	34	C	-	-	
		WB Left	27	C	28	C	#258	-	
		WB Thru	14	C	24	C	55	-	
		WB Right	4	A	30	C	5	-	
		WB Total	18	C	28	C	-	-	
INTERSECTION TOTAL	25	C	30	C	-	-	-		
Algonquin Dr	TWSC	NB Left	51	F	49	E	59	58	- Recommend EBL and WBL lanes for either the signal or roundabout scenario - Consider EBR and WBR depending on development (based on NCHRP 457 Fig 2-5 and 2-6)
		NB Thru/Right	11	B	11	B	9	10	
		NB Total	31	D	30	D	-	-	
		SB Left	63	F	56	F	70	63	
		SB Thru/Right	10	B	11	B	6	8	
		SB Total	41	E	37	E	-	-	
		EB Left	9	A	9	A	2	3	
		EB Total	1	A	1	A	-	-	
		WB Left	9	A	9	A	6	5	
WB Total	1	A	1	A	-	-			
INTERSECTION TOTAL	7	A	6	A	-	-	-		
Ashworth Dr	Signal (90 sec cycle coord)	NB Left/Thru/Right	10	B	33	C	44	-	IF UNSIGNALIZED - Recommend EBL and WBL lanes for either the signal or roundabout scenario - Consider WBR depending on development (based on NCHRP 457 Fig 2-5 and 2-6) IF SIGNALIZED - Q's given by uncoordinated operation due to metering
		NB Total	10	B	33	C	-	-	
		SB Left	57	E	38	D	115	-	
		SB Thru/Right	20	C	30	C	26	-	
		SB Total	51	D	37	D	-	-	
		EB Left	6	A	4	A	9	-	
		EB Thru/Right	6	A	5	A	107	-	
		EB Total	6	A	5	A	-	-	
		WB Left	5	A	1	A	87	-	
		WB Thru/Right	3	A	1	A	148	-	
WB Total	3	A	1	A	-	-			
INTERSECTION TOTAL	9	A	8	A	-	-	-		
S Main St	Signal (90 sec cycle coord)	NB Left	33	C	30	C	105	-	- Q's given by uncoordinated operation due to metering when coordinated - WBR would be beneficial, but due to apparent ROW and terrain restrictions, it is not shown
		NB Thru/Right	36	D	36	D	157	-	
		NB Total	35	D	33	C	-	-	
		SB Left	29	C	28	C	164	-	
		SB Thru/Right	48	D	59	E	#309	-	
		SB Total	40	D	46	D	-	-	
		EB Left	37	D	49	B	#192	-	
		EB Thru/Right	10	B	17	B	204	-	
		EB Total	17	B	25	B	-	-	
		WB Left	27	C	43	C	#83	-	
WB Thru (x2)/Right	18	C	46	C	284	-			
WB Total	18	C	45	C	-	-			
INTERSECTION TOTAL	24	C	37	C	-	-	-		
Estate Dr / Coneflower Pkwy	TWSC	NB Left/Thru	60	F	105	F	17	28	- Recommend EBL and WBL lanes for either the signal or roundabout scenario (based on NCHRP 457 Fig 2-5)
		NB Right	10	B	13	B	10	15	
		NB Total	18	C	26	D	-	-	
		SB Left/Thru/Right	30	D	47	E	16	25	
		SB Total	30	D	47	E	-	-	
		EB Left	10	B	10	B	7	8	
		EB Total	1	A	1	A	-	-	
		WB Left	10	B	10	B	6	8	
WB Total	1	A	1	A	-	-			
INTERSECTION TOTAL	2	A	3	A	-	-	-		

2045 PM PEAK - Signals at major intersections + widening

Intersection	Control Type	Lane Group/ Approach	Synchro Delay	Synchro LOS	HCM 6 Delay	HCM 6 LOS	Synchro 95th Queue	HCM 6 95th Queues	Notes
Prairie Pkwy	Signal (90 sec cycle coord)	NB Left	37	D	30	C	274	-	- Q's given by uncoordinated operation due to metering when coordinated
		NB Thru/Right	6	A	21	C	60	-	
		NB Total	25	C	27	C	-	-	
		SB Left/Thru	41	D	40	D	50	-	
		SB Thru/Right	41	D	40	D	50	-	
		SB Total	41	D	40	D	-	-	
		EB Left	26	C	31	C	23	-	
		EB Thru	29	C	32	C	237	-	
		EB Right	1	A	5	A	15	-	
		EB Total	20	B	23	C	-	-	
		WB Left	17	B	34	C	97	-	
		WB Thru/Right	8	A	15	B	150	-	
		WB Total	10	B	19	B	-	-	
INTERSECTION TOTAL	19	B	24	C	-	-			
Orchard Hill Rd	TWSC	NB Left	71	F	61	F	14	13	- Recommend EBL and WBL lanes for either the signal or roundabout scenario - Consider WBR currently, recommended as volumes on Greenhill increase (based on NCHRP 457 Fig 2-5 and 2-6)
		NB Thru/Right	11	B	11	B	1	0	
		NB Total	52	F	44	E	-	-	
		SB Left	69	F	67	F	36	33	
		SB Thru/Right	12	B	12	B	11	10	
		SB Total	27	D	27	D	-	-	
		EB Left	10	B	10	B	17	18	
		EB Total	2	A	2	A	-	-	
		WB Left	9	A	9	A	0	0	
		WB Total	1	A	1	A	-	-	
INTERSECTION TOTAL	3	A	3	A	-	-			
Oster Pkwy	Signal (90 sec cycle coord)	NB Left	17	B	10	B	55	-	IF UNSIGNALIZED - Recommend EBL and WBL lanes for either the signal or roundabout scenario - Consider EBR depending on development (based on NCHRP 457 Fig 2-5 and 2-6) IF SIGNALIZED - Q's given by uncoordinated operation due to metering
		NB Thru/Right	7	A	10	B	28	-	
		NB Total	12	B	10	B	-	-	
		SB Left/Thru/Right	12	B	10	B	28	-	
		SB Total	12	B	10	B	-	-	
		EB Left	8	A	29	C	23	-	
		EB Thru/Right	14	B	33	C	188	-	
		EB Total	14	B	33	C	-	-	
		WB Left	10	B	24	C	32	-	
		WB Thru/Right	14	B	23	C	111	-	
WB Total	13	B	23	C	-	-			
INTERSECTION TOTAL	13	B	26	C	-	-			
Rownd St	Signal (90 sec cycle coord)	NB Left	20	C	27	C	59	-	- Q's given by uncoordinated operation due to metering when coordinated
		NB Thru/Right	11	B	35	D	57	-	
		NB Total	14	B	32	C	-	-	
		SB Left	21	C	24	C	106	-	
		SB Thru/Right	9	A	36	D	71	-	
		SB Total	14	B	30	C	-	-	
		EB Left	14	B	36	D	121	-	
		EB Thru (x2)/Right	13	B	36	D	177	-	
		EB Total	13	B	36	D	-	-	
		WB Left	24	C	32	C	92	-	
WB Thru (x2)/Right	28	C	42	D	211	-			
WB Total	28	C	40	D	-	-			
INTERSECTION TOTAL	19	B	36	D	-	-			
Green Creek Rd	TWSC	NB Left/Thru/Right	15	C	17	C	7	8	- Could consider WBL lane for either the signal or roundabout scenario (based on NCHRP 457 Fig 2-5)
		NB Total	15	C	17	C	-	-	
		WB Left	1	A	1	A	3	3	
		WB Total	1	A	1	A	-	-	
INTERSECTION TOTAL	1	A	1	A	-	-			
Cedar Heights Dr	Signal (90 sec cycle coord)	NB Left	28	C	34	C	201	-	
		NB Thru	30	C	32	C	236	-	
		NB Right	4	A	9	A	47	-	
		NB Total	22	C	26	C	-	-	
		SB Left	20	C	30	C	64	-	
		SB Thru	51	D	53	D	#232	-	
		SB Right	1	A	32	C	0	-	
		SB Total	32	C	43	D	-	-	
		EB Left	17	B	29	C	34	-	
		EB Thru/Right	13	B	33	C	90	-	
		EB Total	13	B	33	C	-	-	
		WB Left	34	C	34	C	121	-	
		WB Thru/Right	25	C	26	C	185	-	
		WB Total	27	C	28	C	-	-	
INTERSECTION TOTAL	23	C	31	C	-	-			

2045 PM PEAK - Roundabouts at major intersections

Intersection	Control Type	Lane Group/ Approach	Sidra Delay	Sidra LOS	HCM 6 Delay	HCM 6 LOS	Sidra 95th Queue	HCM 6 95th Queues
Hudson Rd	Roundabout	NB Left/Thru	7	A	12	B	95	170
		NB Thru/Right	7	A	12	B	98	165
		NB Total	7	A	12	B	-	-
		SB Left/Thru	10	B	12	B	78	100
		SB Thru/Right	7	A	12	B	70	103
		SB Total	9	A	12	B	-	-
		EB Left/Thru/Right	12	B	13	B	30	30
		EB Total	12	B	13	B	-	-
		WB Left	15	C	21	C	78	125
		WB Thru/Right	10	B	19	C	70	95
		WB Total	13	B	21	C	-	-
		INTERSECTION TOTAL	9	A	14	B	-	-
Algonquin Dr	TWSC	NB Left	51	F	49	E	59	58
		NB Thru/Right	11	B	11	B	9	10
		NB Total	31	D	30	D	-	-
		SB Left	63	F	56	F	70	63
		SB Thru/Right	10	B	11	B	6	8
		SB Total	41	E	37	E	-	-
		EB Left	9	A	9	A	2	3
		EB Total	1	A	1	A	-	-
		WB Left	9	A	9	A	6	5
		WB Total	1	A	1	A	-	-
		INTERSECTION TOTAL	7	A	6	A	-	-
Ashworth Dr	Roundabout	NB Left/Thru/Right	8	A	8	A	20	20
		NB Total	8	A	8	A	-	-
		SB Left/Thru/Right	13	B	10	B	30	38
		SB Total	13	B	10	B	-	-
		EB Left/Thru	7	A	8	A	43	40
		EB Thru/Right	7	A	7	A	43	40
		EB Total	7	A	7	A	-	-
		WB Left/Thru	7	A	7	A	53	60
		WB Thru/Right	5	A	7	A	55	60
WB Total	6	A	7	A	-	-		
		INTERSECTION TOTAL	7	A	7	A	-	-
S Main St	Roundabout	NB Left/Thru	12	B	19	B	58	80
		NB Right	10	B	10	B	13	10
		NB Total	11	B	18	B	-	-
		SB Left/Thru	12	B	15	B	73	110
		SB Right	8	A	9	B	30	28
		SB Total	10	B	14	B	-	-
		EB Left/Thru	12	B	14	B	118	150
		EB Thru/Right	9	A	14	B	123	153
		EB Total	10	B	14	B	-	-
		WB Left/Thru	10	B	13	B	85	105
WB Thru/Right	8	A	12	B	88	108		
WB Total	9	A	12	B	-	-		
		INTERSECTION TOTAL	10	B	14	B	-	-
Estate Dr / Coneflower Pkwy	TWSC	NB Left/Thru	60	F	105	F	17	28
		NB Right	10	B	13	B	10	15
		NB Total	18	C	26	D	-	-
		SB Left/Thru/Right	30	D	47	E	16	25
		SB Total	30	D	47	E	-	-
		EB Left	10	B	10	B	7	8
		EB Total	1	A	1	A	-	-
		WB Left	10	B	10	B	6	8
WB Total	1	A	1	A	-	-		
		INTERSECTION TOTAL	2	A	3	A	-	-

2045 PM PEAK - Roundabouts at major intersections

Intersection	Control Type	Lane Group/ Approach	Sidra Delay	Sidra LOS	HCM 6 Delay	HCM 6 LOS	Sidra 95th Queue	HCM 6 95th Queues
Prairie Pkwy	Roundabout	NB Left	14	B	12	B	45	65
		NB Left/Thru/Right	9	A	11	B	48	68
		NB Total	11	B	12	B	-	-
		SB Left/Thru/Right	10	B	9	A	15	15
		SB Total	10	B	9	A	-	-
		EB Left/Thru	7	A	8	A	63	65
		EB Thru/Right	6	A	8	A	65	65
		EB Total	6	A	8	A	-	-
		WB Left/Thru	10	B	9	A	45	58
		WB Thru/Right	7	A	9	A	48	58
WB Total	8	A	9	A	-	-		
INTERSECTION TOTAL			8	A	9	A	-	-
Orchard Hill Rd	TWSC	NB Left	71	F	61	F	14	13
		NB Thru/Right	11	B	11	B	1	0
		NB Total	52	F	44	E	-	-
		SB Left	69	F	67	F	36	33
		SB Thru/Right	12	B	12	B	11	10
		SB Total	27	D	27	D	-	-
		EB Left	10	B	10	B	17	18
		EB Total	2	A	2	A	-	-
		WB Left	9	A	9	A	0	0
		WB Total	1	A	1	A	-	-
INTERSECTION TOTAL			3	A	3	A	-	-
Oster Pkwy	TWSC	NB Left/Thru/Right	10	B	7	A	18	18
		NB Total	10	B	7	A	-	-
		SB Left/Thru/Right	9	A	6	A	5	5
		SB Total	9	A	6	A	-	-
		EB Left/Thru	6	A	6	A	38	40
		EB Thru/Right	5	A	6	A	38	40
		EB Total	6	A	6	A	-	-
		WB Left/Thru	7	A	6	A	38	38
		WB Thru/Right	5	A	6	A	40	38
WB Total	6	A	6	A	-	-		
INTERSECTION TOTAL			6	A	6	A	-	-
Rownd St	Roundabout	NB Left/Thru/Right	10	B	8	A	25	25
		NB Total	10	B	8	A	-	-
		SB Left/Thru/Right	11	B	11	B	53	58
		SB Total	11	B	11	B	-	-
		EB Left/Thru	9	A	8	A	45	45
		EB Thru/Right	6	A	7	A	48	45
		EB Total	8	A	7	A	-	-
		WB Left/Thru	8	A	8	A	53	55
		WB Thru/Right	6	A	7	A	53	53
WB Total	7	A	8	A	-	-		
INTERSECTION TOTAL			8	A	8	A	-	-
Green Creek Rd	TWSC	NB Left/Thru/Right	15	C	17	C	7	8
		NB Total	15	C	17	C	-	-
		WB Left	1	A	1	A	3	3
		WB Total	1	A	1	A	-	-
INTERSECTION TOTAL			1	A	1	A	-	-
Cedar Heights Dr	Roundabout	NB Left	14	B	11	B	53	68
		NB Thru/Right	8	A	19	C	98	205
		NB Total	10	B	16	C	-	-
		SB Left	15	B	9	A	18	18
		SB Thru/Right	8	A	16	C	53	85
		SB Total	10	B	14	B	-	-
		EB Left/Thru	8	A	9	A	43	50
		EB Thru/Right	7	A	9	A	45	50
		EB Total	7	A	9	A	-	-
		WB Left/Thru	11	B	13	B	50	75
WB Thru/Right	7	A	12	B	53	78		
WB Total	9	A	12	B	-	-		
INTERSECTION TOTAL			9	A	13	B	-	-

Memorandum

To: Jon Resler, P.E., City Engineer **Date:** 10/23/18

From: Mark Perington, P.E., PTOE
Andrew Houchin, E.I.

CC: Stephanie Sheetz, AICP, Community Development Director

RE: Life Cycle Cost Analysis – Intersection Improvement Alternatives
Greenhill Rd Corridor Traffic Study
Cedar Falls, IA
Snyder & Associates Project No.: 118.0463.01

Introduction

The City of Cedar Falls has requested that Snyder & Associates conduct a traffic study of the Greenhill Road corridor from Hudson Road to Cedar Heights Drive. The study area and intersections are shown in **Figure 1**. All the intersections on Greenhill Rd are included in the study other than the intersection with Iowa Highway 58 (IA 58) which is being studied separately by the Iowa DOT. The purpose of the study is to evaluate the current and future traffic demands for all modes of transportation in the Greenhill Rd corridor in order to develop short- and long-range plans for lane needs and intersection improvements. Other areas of focus for the study will be potential for traffic demand change due to new land use development, “complete streets” considerations, and appropriate traffic control for intersections such as traffic signalization or roundabouts. This memorandum documents the effort to quantify the long-term costs/benefits of traffic signals with turn lanes and roundabout alternatives evaluated at corridor intersections.



Figure 1. Study Area Intersections

Methodology and Assumptions

This analysis quantified five different cost/benefit categories as follows: safety, travel time/delay, fuel usage, emissions, and maintenance. This section documents the general process for determining values for each of the categories and improvement alternatives. These values were annualized for comparison purposes, to establish a basic Present Value Annual Cost per improvement alternative.

Safety

The safety analysis was based on the existing crash history and the expected crash reductions associated with each alternative predictive safety performance. The same five-year period (2013-2017) used in the initial crash history evaluation was used for the life cycle analysis for most of the intersections. The existing crash history was modified for two intersections: Rownd St and Cedar Heights Dr. At Rownd St, the intersection was recently reconfigured (Fall 2017) to provide left turn lanes. To account for this change for future years, the existing left turn crashes (which were the majority of crashes) were reduced by 50 percent. At Cedar Heights Dr, there were consistently zero to three crashes per year from 2013 through 2016 (and at most five crashes going back to 2008), but there were 10 crashes in 2017. Therefore, 2017 was regarded as an outlier for future years and excluded from the life cycle analysis.

The crash reduction factors (CRFs) were obtained from the CMF Clearinghouse (www.cmfclearinghouse.org) which is funded by the FHWA and maintained by the University of North Carolina. A range of factors was considered for each alternative, and the selected CRFs reflect low- to mid-range reductions. **Table 1** shows the CRFs used for the analysis. The societal cost of crashes were based on the values used for Iowa DOT traffic safety funds applications (see **Table 2**).

Table 1. CRFs by Severity of Crash

Improvement	CRF (all)	CRF (inj)
Add turn lanes at TWSC	25%	-
TWSC to Signal w/ lefts	45%	50%
TWSC to Roundabout	60%	70%
Signal to Signal w/ lefts	10%	20%
Signal to Roundabout	5%	65%

Table 2. Societal Cost of Crashes by Severity

Crash Severity	Cost
Major	\$325,000
Minor	\$65,000
Possible/Unknown	\$35,000
PDO	\$7,400

Travel Time/Delay, Fuel Usage, and Emissions

These categories were all analyzed similarly. The PM peak Synchro 10 models used for the traffic analysis in other Technical Memorandum were used to create SimTraffic 10 simulation models. Additionally, the PM peak Synchro 10 models had their traffic reduced to create average off peak models, which were then used to create corresponding SimTraffic 10 models. The average of five simulations with the same random number seeds for each alternative model were used to generate reports with delay, fuel consumption, and emissions outputs per intersection. The emissions output included nitrogen oxides (NO_x), volatile organic compounds (VOCs), and carbon monoxide (CO),

though societal costs could not be readily located for CO. Additionally, carbon dioxide (CO₂) emissions were estimated based on vehicular delay and the 2.5 mph emission factors from the MOBILE 6.2 software (which are used for the Iowa Clean Air Attainment Program, or ICAAP, applications).

The values and societal costs for these categories mostly came from the *Benefit-Cost Analysis Guidance for Discretionary Grant Programs* (US DOT, June 2018) and its supporting research. This document is used as guidance for benefit cost analyses for Better Utilizing Investments to Leverage Development (BUILD) grants.

Table 3 shows the recommended values for travel time based on purpose and operator. A weighted average of the values for personal use and truck drivers based on the heavy vehicle percentage in the corridor resulted in a value of \$15.21 per hour. The fuel cost was estimated based on current fuel costs and expected increases. This resulted in an estimate of \$3.00 per gallon on average throughout the life cycle. **Table 4** shows the recommended values for emissions for NO_x and VOCs. The value for CO₂ was taken from the reference linked on the right side of the table. The value for CO₂ used was \$39 per ton.

Table 3. Recommended Values for Travel Time

Recommended Monetized Value(s)		References and Notes
Recommended Hourly Values of Travel Time Savings (2017 U.S. \$ per person-hour)		Revised Departmental Guidance on Valuation of Travel Time in Economic Analysis https://www.transportation.gov/office-policy/transportation-policy/revised-departmental-guidance-valuation-travel-time-economic
Category	Hourly Value	
In-Vehicle Travel ¹		
Personal ²	\$14.20	
Business ³	\$26.50	
All Purposes ⁴	\$14.80	
Commercial Vehicle Operators ⁵		
Truck Drivers	\$28.60	
Bus Drivers	\$30.00	
Transit Rail Operators	\$48.90	
Locomotive Engineers	\$44.90	

Table 4. Recommended Values for Emissions Costs

Recommended Monetized Value(s)		References and Notes
Emission Type	\$ / short ton* (\$2017)	Corporate Average Fuel Economy for MY2017-MY2025 Passenger Cars and Light Trucks (August 2012), page 922, Table VIII-16, "Economic Values Used for Benefits Computations (2010 dollars)" http://www.nhtsa.gov/staticfiles/rulemaking/pdf/cafe/FRIA_2017-2025.pdf Values are inflated from 2010 dollars to 2017 dollars using the GDP deflator.
Carbon dioxide (CO ₂)	**	
Volatile Organic Compounds (VOCs)	\$1,905	
Nitrogen oxides (NO _x)	\$7,508	
Particulate matter (PM)	\$343,442	
Sulfur dioxide (SO ₂)	\$44,373	

Maintenance

The maintenance costs for an intersection included electricity costs and regular retiming for signals, and pavement maintenance costs based on life and expected needs. The roundabout maintenance costs included additional signing, additional pavement marking, and regular pavement maintenance. The signal electricity and retiming were estimated at \$8,500 per year on average, while the additional signing and marking maintenance for a roundabout were estimated at \$1,500 per year. Pavement maintenance areas were assumed to have the same boundaries for the turn lane widening as the area that would be reconstructed as part of a roundabout. The pavement maintenance costs for the signal alternatives are expected to be higher than for the roundabout alternatives because the roundabouts would include entirely new pavement (accounted for in initial construction costs) while the signals would only include the new pavement for the widening and necessary patching. Other portions of the corridor between intersections were not included as it would be the same pavement maintenance over time for either option. The pavement maintenance costs were estimated at \$3,750 to \$7,500 per year over the 20-year design life for the signal alternative and \$1,000 per year for the roundabout alternative.

Results

In order to create comparative annual costs of total economic impacts of the signal and roundabout alternatives the estimated construction costs were annualized based on the 20-year design life and combined with the life cycle costs. **Table 5** and **Figure 2** show the results of the life cycle analysis. They show that the signals and turn lanes have a lower initial construction cost, but the lower life cycle costs (including societal costs) of the roundabouts reduce their total lower than the signals. The categories other than initial construction cost that produce the largest difference between the signals and the roundabouts are the value of time and crashes.

Table 5. Life Cycle Cost Analysis Results

Intersection-Scenario	Construction Cost	Annualized Construction Cost	Other Annual Costs					Total
			Safety	TT Cost	Fuel Cost	Emissions Cost	Maintenance	
Hudson-Sig *	\$1,180,200	\$59,010	\$76,280	\$450,943	\$124,254	\$18,270	\$13,500	\$742,257
Hudson-Rbt **	\$2,500,000	\$125,000	\$36,466	\$180,773	\$100,074	\$15,348	\$2,500	\$460,161
Algonquin-Sig	\$977,950	\$48,898	\$2,442	\$146,359	\$107,562	\$18,037	\$12,250	\$335,548
Algonquin-Rbt	\$1,800,000	\$90,000	\$1,776	\$123,020	\$92,742	\$15,003	\$2,500	\$325,041
S Main-Sig	\$1,099,850	\$54,993	\$48,800	\$473,886	\$81,822	\$9,093	\$13,500	\$682,094
S Main-Rbt	\$2,833,750	\$141,688	\$25,960	\$172,466	\$60,372	\$6,506	\$2,500	\$409,492
Prairie Pkwy-Sig	\$1,163,400	\$58,170	\$8,264	\$258,303	\$108,186	\$13,275	\$12,250	\$458,448
Prairie Pkwy-Rbt	\$2,059,400	\$102,970	\$5,262	\$109,967	\$88,842	\$10,234	\$2,500	\$319,775
Oster Pkwy-Sig	\$697,350	\$34,868	\$15,128	\$267,006	\$68,640	\$8,394	\$12,250	\$406,286
Oster Pkwy-Rbt	\$1,800,000	\$90,000	\$9,284	\$72,388	\$61,620	\$7,753	\$2,500	\$243,545
Rownd-Sig	\$1,020,250	\$51,013	\$99,760	\$359,568	\$51,168	\$4,546	\$13,500	\$579,555
Rownd-Rbt	\$1,800,000	\$90,000	\$45,572	\$73,179	\$34,320	\$3,318	\$2,500	\$248,889
Cedar Hts-Sig	\$756,700	\$37,835	\$49,900	\$435,912	\$97,656	\$12,139	\$16,000	\$649,442
Cedar Hts-Rbt	\$2,543,650	\$127,183	\$21,905	\$248,019	\$80,262	\$9,615	\$2,500	\$489,484

*Sig = Traffic Signal & turn lanes as needed

**Rbt = Roundabout

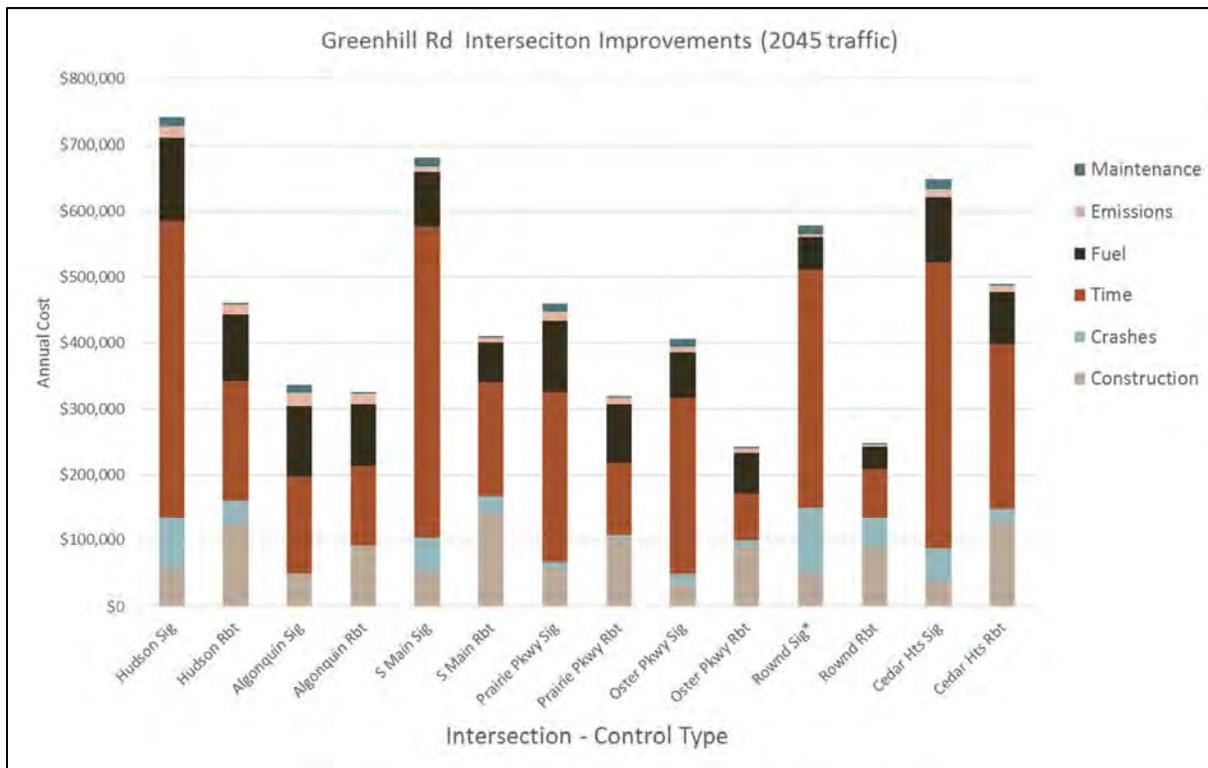


Figure 2. Life Cycle Cost Analysis Results

Appendix

- Crash cost calculations
- Delay, fuel, and emissions cost calculations
- SimTraffic 10 reports

Intersection	Existing Configuration	Signals + Widening Configuration	Roundabouts + Widening Configuration	Crash Category	Existing Crashes	Signals + Widening Crashes	Roundabouts + Widening Crashes	Existing Annual Cost	Signals + Widening Annual Cost	Roundabouts + Widening Annual Cost	Signal Improvement	Roundabout Improvement	Notes
Hudson Rd	Signal	Signal (similar)	Roundabout	Major	0	0	0	\$76,280	\$76,280	\$36,466	\$0	\$39,814	
				Minor	3	3	1.05						
				Possible/Unknown	3	3	1.05						
				PDO	11	11	10.45						
Algonquin Dr	TWSC	TWSC (lefts)	TWSC (lefts)	Major	0	0	0	\$7,400	\$5,550	\$5,550	\$1,850	\$1,850	
				Minor	0	0	0						
				Possible/Unknown	0	0	0						
				PDO	5	3.75	3.75						
Ashworth Dr	TWSC	Signal (lefts)	Roundabout	Major	0	0	0	\$4,440	\$2,442	\$1,776	\$1,998	\$2,664	- Either Algonquin or Ashworth could require add'l traffic control, depending on Hospital and other development
				Minor	0	0	0						
				Possible/Unknown	0	0	0						
				PDO	3	1.65	1.2						
S Main St	Signal	Signal (similar)	Roundabout	Major	0	0	0	\$48,800	\$48,800	\$25,960	\$0	\$22,840	
				Minor	1	1	0.35						
				Possible/Unknown	3	3	1.05						
				PDO	10	10	9.5						
Estate Dr	TWSC	TWSC (lefts)	TWSC (lefts)	Major	0	0	0	\$1,480	\$1,110	\$1,110	\$370	\$370	- Will likely see an increase in left turn conflict with Kwik Star and Pinnacle Prairie development
				Minor	0	0	0						
				Possible/Unknown	0	0	0						
				PDO	1	0.75	0.75						
Prairie Pkwy	Signal	Signal (lefts)	Roundabout	Major	0	0	0	\$9,960	\$8,264	\$5,262	\$1,696	\$4,698	- Will likely see an increase in left turn conflict with Pinnacle Prairie development
				Minor	0	0	0						
				Possible/Unknown	1	0.8	0.35						
				PDO	2	1.8	1.9						
Orchard Hill Rd	TWSC	TWSC (lefts)	TWSC (lefts)	Major	0	0	0	\$36,960	\$27,720	\$27,720	\$9,240	\$9,240	
				Minor	1	0.75	0.75						
				Possible/Unknown	3	2.25	2.25						
				PDO	2	1.5	1.5						
Oster Pkwy	TWSC	Signal (lefts)	Roundabout	Major	0	0	0	\$29,960	\$15,128	\$9,284	\$14,832	\$20,676	- Will likely see an increase in left turn conflict with connection to Viking Rd and Pinnacle Prairie development. Add'l traffic control possible, but not guaranteed.
				Minor	1	0.5	0.3						
				Possible/Unknown	2	1	0.6						
				PDO	2	1.1	0.8						
Rownd St	Signal	Signal (similar)	Roundabout	Major	1	1	0.35	\$99,760	\$99,760	\$45,572	\$0	\$54,188	- Existing crashes from prior to introduction of left turn lanes late 2017. No crashes since (as of Sept 2018). Assumed 50% reduction of left turn crashes to existing.
				Minor	0.5	0.5	0.175						
				Possible/Unknown	1.5	1.5	0.525						
				PDO	12	12	11.4						
Green Creek Rd	TWSC	TWSC (same)	TWSC (same)	Major	0	0	0	\$0	\$0	\$0	\$0	\$0	
				Minor	0	0	0						
				Possible/Unknown	0	0	0						
				PDO	0	0	0						
Cedar Heights Dr	Signal	Signal (similar)	Roundabout	Major	0	0	0	\$49,900	\$49,900	\$21,905	\$0	\$27,995	- Large peak in 2017 crashes (10 compared to 0 to 3 previous 4 years). 2017 omitted as an outlier.
				Minor	1	1	0.35						
				Possible/Unknown	3	3	1.05						
				PDO	4	4	3.8						

Assumptions

Improvement	CRF (all)	CRF (inj)
Add turn lanes at TWSC	25	-
TWSC to Signal w/ lefts	45	50
TWSC to Roundabout	60	70
Signal to Signal w/ lefts	10	20
Signal to Roundabout	5	65

Crash Severity	Cost
Major	\$325,000
Minor	\$65,000
Possible/Unknown	\$35,000
PDO	\$7,400

	Existing Cost	Signals + Widening Cost	Roundabouts + Widening Cost	Signal Improvement	Roundabout Improvement
Annual Totals	\$364,940	\$334,954	\$180,605	\$29,986	\$184,335
20 Year Totals	\$7,298,800	\$6,699,080	\$3,612,100	\$599,720	\$3,686,700

Simtraffic Results and Emissions - average of 5 runs

		PM PEAK			
		Scenario			
Intersection	Measure	2018 PM Peak - Existing	2045 PM Peak - Existing	2045 PM Peak - All Signals	2045 PM Peak - All Roundabouts
Hudson	Total Travel Time (hr)	28.3	75.2	35.9	24.8
	Total Delay (hr)	15.2	57.2	19.2	9.7
	Fuel Consumed (gal)	16.6	30.6	20.1	15.5
	CO Emissions (kg)	7.158	10.344	8.952	7.254
	NOx Emissions (kg)	0.685	0.902	0.773	0.694
	VOC Emissions (kg)	0.193	0.303	0.229	0.206
	CO2 Emissions (kg) - based on delay	21.47	80.81	27.12	13.70
Algonquin*	Total Travel Time (hr)	6.3	25.7	16.7	14.4
	Total Delay (hr)	0.8	14.8	5.8	4.7
	Fuel Consumed (gal)	9.1	18.6	17.9	14.5
	CO Emissions (kg)	6.97	12.248	12.766	10.318
	NOx Emissions (kg)	0.549	0.921	0.952	0.77
	VOC Emissions (kg)	0.161	0.285	0.282	0.239
	CO2 Emissions (kg) - based on delay	1.13	20.91	8.19	6.64
S Main St	Total Travel Time (hr)	20.2	136.6	43.6	24.4
	Total Delay (hr)	13	79.6	31	13.6
	Fuel Consumed (gal)	8.4	37.9	17.3	11.4
	CO Emissions (kg)	2.044	4.828	4.29	3.251
	NOx Emissions (kg)	0.193	0.343	0.392	0.343
	VOC Emissions (kg)	0.062	0.141	0.127	0.107
	CO2 Emissions (kg) - based on delay	18.36	112.45	43.79	19.21
Prairie Pkwy	Total Travel Time (hr)	12.7	91.8	27.7	19.2
	Total Delay (hr)	3.8	39.1	12.5	5
	Fuel Consumed (gal)	10	32.1	17.5	14.3
	CO Emissions (kg)	3.803	8.257	5.884	5.257
	NOx Emissions (kg)	0.367	0.581	0.555	0.519
	VOC Emissions (kg)	0.08	0.159	0.127	0.121
	CO2 Emissions (kg) - based on delay	5.37	55.24	17.66	7.06
Oster Pkwy	Total Travel Time (hr)	5.9	9.9	18.8	11.1
	Total Delay (hr)	0.5	1.9	9.9	2.7
	Fuel Consumed (gal)	7.3	11.2	11.2	9.4
	CO Emissions (kg)	3.755	6.259	4.165	4.732
	NOx Emissions (kg)	0.353	0.492	0.373	0.389
	VOC Emissions (kg)	0.08	0.117	0.095	0.102
	CO2 Emissions (kg) - based on delay	0.71	2.68	13.99	3.81
Rownd St	Total Travel Time (hr)	10.3	23	23.2	9.7
	Total Delay (hr)	5.3	15.5	15.3	2.9
	Fuel Consumed (gal)	10.3	9.1	9.2	5.6
	CO Emissions (kg)	0.953	1.435	1.696	1.181
	NOx Emissions (kg)	0.108	0.164	0.169	0.164
	VOC Emissions (kg)	0.032	0.046	0.048	0.043
	CO2 Emissions (kg) - based on delay	7.49	21.90	21.61	4.10
Cedar Heights Dr	Total Travel Time (hr)	37.5	187.2	31.4	40.9
	Total Delay (hr)	28	65.1	17.8	26.7
	Fuel Consumed (gal)	15.3	51.3	16	16.5
	CO Emissions (kg)	4.834	7.248	6.318	5.243
	NOx Emissions (kg)	0.364	0.451	0.486	0.379
	VOC Emissions (kg)	0.108	0.166	0.137	0.113
	CO2 Emissions (kg) - based on delay	39.55	91.97	25.15	37.72
Totals	Total Travel Time (hr)	121.2	549.4	197.3	144.5
	Total Delay (hr)	66.6	273.2	111.5	65.3
	Fuel Consumed (gal)	77	190.8	109.2	87.2
	CO Emissions (kg)	29.517	50.619	44.071	37.236
	NOx Emissions (kg)	2.619	3.854	3.7	3.258
	VOC Emissions (kg)	0.716	1.217	1.045	0.931
	CO2 Emissions (kg) - based on delay	94.08	385.94	157.51	92.25

* These results represent Ashworth Dr in the model

DAYTIME OFFPEAK

Intersection	Measure	Scenario			
		2018 PM Peak - Existing	2045 PM Peak - Existing	2045 PM Peak - All Signals	2045 PM Peak - All Roundabouts
Hudson	Total Travel Time (hr)	12.6	21.9	17.6	11.9
	Total Delay (hr)	5	10.9	7.9	3
	Fuel Consumed (gal)	9	13.8	11.6	9.4
	CO Emissions (kg)	4.246	6.526	6.05	4.785
	NOx Emissions (kg)	0.419	0.609	0.53	0.471
	VOC Emissions (kg)	0.11	0.171	0.152	0.131
	CO2 Emissions (kg) - based on delay	7.06	15.40	11.16	4.24
Algonquin*	Total Travel Time (hr)	3.6	8.2	9.1	7.9
	Total Delay (hr)	0.4	1.8	2.6	2.2
	Fuel Consumed (gal)	5.2	10.1	10	8.7
	CO Emissions (kg)	3.881	7.694	7.382	6.397
	NOx Emissions (kg)	0.304	0.569	0.549	0.457
	VOC Emissions (kg)	0.087	0.171	0.164	0.141
	CO2 Emissions (kg) - based on delay	0.57	2.54	3.67	3.11
S Main St	Total Travel Time (hr)	8.1	20.7	14.7	8.8
	Total Delay (hr)	3.7	13.5	7.4	2.5
	Fuel Consumed (gal)	4.1	8.7	7.3	5.5
	CO Emissions (kg)	1.217	2.162	2.409	1.544
	NOx Emissions (kg)	0.118	0.207	0.225	0.181
	VOC Emissions (kg)	0.037	0.67	0.073	0.053
	CO2 Emissions (kg) - based on delay	5.23	19.07	10.45	3.53
Prairie Pkwy	Total Travel Time (hr)	6.8	13.1	13.3	10.2
	Total Delay (hr)	1.5	4.3	4.4	1.9
	Fuel Consumed (gal)	5.6	9.7	10.1	8.3
	CO Emissions (kg)	1.837	3.727	3.562	2.772
	NOx Emissions (kg)	0.209	0.362	0.392	0.316
	VOC Emissions (kg)	0.041	0.084	0.131	0.069
	CO2 Emissions (kg) - based on delay	2.12	6.07	6.22	2.68
Oster Pkwy	Total Travel Time (hr)	3.4	5.7	10.1	6.3
	Total Delay (hr)	0.2	0.5	4.8	1.3
	Fuel Consumed (gal)	4.1	6.6	6.4	5.8
	CO Emissions (kg)	1.772	3.375	2.398	2.901
	NOx Emissions (kg)	0.194	0.326	0.236	0.239
	VOC Emissions (kg)	0.039	0.077	0.058	0.061
	CO2 Emissions (kg) - based on delay	0.28	0.71	6.78	1.84
Rownd St	Total Travel Time (hr)	4.8	9.5	11	5.4
	Total Delay (hr)	1.8	4.8	6.3	1.3
	Fuel Consumed (gal)	2.5	4.3	4.7	3.2
	CO Emissions (kg)	0.544	0.935	1.008	0.701
	NOx Emissions (kg)	0.053	0.107	0.098	0.096
	VOC Emissions (kg)	0.014	0.033	0.029	0.026
	CO2 Emissions (kg) - based on delay	2.54	6.78	8.90	1.84
Cedar Heights Dr	Total Travel Time (hr)	12.5	21	15.7	10.1
	Total Delay (hr)	6.9	13.2	7.7	3
	Fuel Consumed (gal)	7	10.2	9.1	7.2
	CO Emissions (kg)	2.973	4.065	3.99	3.357
	NOx Emissions (kg)	0.23	0.315	0.336	0.281
	VOC Emissions (kg)	0.06	0.089	0.092	0.075
	CO2 Emissions (kg) - based on delay	9.75	18.65	10.88	4.24
Totals	Total Travel Time (hr)	51.8	100.1	91.5	60.6
	Total Delay (hr)	19.5	49	41.1	15.2
	Fuel Consumed (gal)	37.5	63.4	59.2	48.1
	CO Emissions (kg)	16.47	28.484	26.799	22.457
	NOx Emissions (kg)	1.527	2.495	2.366	2.041
	VOC Emissions (kg)	0.388	1.295	0.699	0.556
	CO2 Emissions (kg) - based on delay	27.55	69.22	58.06	21.47

* These results represent Ashworth Dr in the model

Assumptions	Value	Unit	Notes
Value of time	15.21	\$/hr	Weighted average from Federal Guidance for BUILD grants
Value of gas	3.00	\$/gal	Currently \$2.81 (http://www.iowastategasprices.com/Waterloo/index.aspx), expected to increase 15% over the next 20 years. Average start and end price
Value of NOx	7508	\$/ton	From Federal Guidance for BUILD grants
Value of VOCs	1905	\$/ton	From Federal Guidance for BUILD grants
Value of CO2	39	\$/ton	From reference used in Federal Guidance for BUILD grants

Intersection	Category	Item	Scenario - Annual Totals				Notes
			2018 Existing	2045 Existing	2045 Signals	2045 Roundabouts	
Hudson Rd	Personal Savings	Time (hr)	19552	48880	29640	11882	Based on delay
		Gas (gal)	32396	51012	41418	33358	
	Societal Benefit	Nox (ton)	1.64	2.35	2.04	1.82	
		VOC (ton)	0.43	0.67	0.59	0.51	
		CO2 (ton)	30.45	76.12	46.16	18.50	
Algonquin Dr*	Personal Savings	Time (hr)	1456	9464	9620	8086	Based on delay
		Gas (gal)	18590	36348	35854	30914	
	Societal Benefit	Nox (ton)	1.20	2.22	2.16	1.79	
		VOC (ton)	0.35	0.67	0.64	0.55	
		CO2 (ton)	2.27	14.74	14.98	12.59	
S Main St	Personal Savings	Time (hr)	14924	62816	31148	11336	Based on delay
		Gas (gal)	14976	36998	27274	20124	
	Societal Benefit	Nox (ton)	0.46	0.81	0.89	0.72	
		VOC (ton)	0.15	2.34	0.29	0.21	
		CO2 (ton)	23.24	97.82	48.50	17.65	
Prairie Pkwy	Personal Savings	Time (hr)	5668	23582	16978	7228	Based on delay
		Gas (gal)	20072	38610	36062	29614	
	Societal Benefit	Nox (ton)	0.82	1.41	1.51	1.24	
		VOC (ton)	0.16	0.33	0.49	0.27	
		CO2 (ton)	8.83	36.72	26.44	11.26	
Oster Pkwy	Personal Savings	Time (hr)	754	2054	17550	4758	Based on delay
		Gas (gal)	14690	23504	22880	20540	
	Societal Benefit	Nox (ton)	0.77	1.26	0.92	0.93	
		VOC (ton)	0.16	0.30	0.23	0.24	
		CO2 (ton)	1.17	3.20	27.33	7.41	
Rownd St	Personal Savings	Time (hr)	6994	19006	23634	4810	Based on delay
		Gas (gal)	10478	15782	17056	11440	
	Societal Benefit	Nox (ton)	0.21	0.41	0.39	0.38	
		VOC (ton)	0.06	0.13	0.11	0.10	
		CO2 (ton)	10.89	29.60	36.80	7.49	
Cedar Heights Dr	Personal Savings	Time (hr)	28808	58110	28652	16302	Based on delay
		Gas (gal)	25818	45162	32552	26754	
	Societal Benefit	Nox (ton)	0.90	1.21	1.29	1.08	
		VOC (ton)	0.24	0.35	0.36	0.29	
		CO2 (ton)	44.86	90.49	44.62	25.39	
Total	Personal Savings	Time (hr)	78156	223912	157222	64402	Based on delay
		Gas (gal)	137020	247416	213096	172744	
	Societal Benefit	Nox (ton)	6.00	9.69	9.20	7.95	
		VOC (ton)	1.54	4.80	2.70	2.18	
		CO2 (ton)	121.71	348.68	244.83	100.29	

* These results represent Ashworth Dr in the model

Intersection	Category	Item	Scenario - Monetary Values				Notes
			2018 Existing	2045 Existing	2045 Signals	2045 Roundabouts	
Hudson Rd	Personal Savings	Time	\$297,464	\$743,660	\$450,943	\$180,773	Based on delay
		Gas	\$97,188	\$153,036	\$124,254	\$100,074	
	Societal Benefit	NOx	\$12,293	\$17,666	\$15,349	\$13,655	
		VOC	\$826	\$1,286	\$1,121	\$971	
		CO2	\$1,187	\$2,969	\$1,800	\$722	
Algonquin Dr*	Personal Savings	Time	\$22,152	\$143,985	\$146,359	\$123,020	Based on delay
		Gas	\$55,770	\$109,044	\$107,562	\$92,742	
	Societal Benefit	NOx	\$9,031	\$16,674	\$16,225	\$13,457	
		VOC	\$658	\$1,276	\$1,228	\$1,054	
		CO2	\$88	\$575	\$584	\$491	
S Main St	Personal Savings	Time	\$227,054	\$955,683	\$473,886	\$172,466	Based on delay
		Gas	\$44,928	\$110,994	\$81,822	\$60,372	
	Societal Benefit	NOx	\$3,462	\$6,083	\$6,653	\$5,412	
		VOC	\$276	\$4,467	\$548	\$406	
		CO2	\$906	\$3,815	\$1,892	\$688	
Prairie Pkwy	Personal Savings	Time	\$86,233	\$358,777	\$258,303	\$109,967	Based on delay
		Gas	\$60,216	\$115,830	\$108,186	\$88,842	
	Societal Benefit	NOx	\$6,186	\$10,598	\$11,316	\$9,276	
		VOC	\$312	\$637	\$928	\$518	
		CO2	\$344	\$1,432	\$1,031	\$439	
Oster Pkwy	Personal Savings	Time	\$11,471	\$31,250	\$267,006	\$72,388	Based on delay
		Gas	\$44,070	\$70,512	\$68,640	\$61,620	
	Societal Benefit	NOx	\$5,769	\$9,477	\$6,897	\$7,008	
		VOC	\$299	\$568	\$432	\$455	
		CO2	\$46	\$125	\$1,066	\$289	
Rownd St	Personal Savings	Time	\$106,407	\$289,157	\$359,568	\$73,179	Based on delay
		Gas	\$31,434	\$47,346	\$51,168	\$34,320	
	Societal Benefit	NOx	\$1,601	\$3,116	\$2,894	\$2,832	
		VOC	\$109	\$241	\$216	\$194	
		CO2	\$425	\$1,154	\$1,435	\$292	
Cedar Heights Dr	Personal Savings	Time	\$438,285	\$884,086	\$435,912	\$248,019	Based on delay
		Gas	\$77,454	\$135,486	\$97,656	\$80,262	
	Societal Benefit	NOx	\$6,722	\$9,104	\$9,722	\$8,071	
		VOC	\$452	\$674	\$678	\$553	
		CO2	\$1,750	\$3,529	\$1,740	\$990	
Total	Personal Savings	Time	\$1,189,065	\$3,406,597	\$2,391,976	\$979,812	Based on delay
		Gas	\$411,060	\$742,248	\$639,288	\$518,232	
	Societal Benefit	NOx	\$45,065	\$72,718	\$69,056	\$59,712	
		VOC	\$2,933	\$9,149	\$5,150	\$4,151	
		CO2	\$4,746	\$13,598	\$9,548	\$3,911	

* These results represent Ashworth Dr in the model

Note: Costs represent annual costs

Calculation = (Peak measurement+12*Offpeak measurement)*(unit conversions if necessary)*260 wklys per yr*(value of item)

3: Hudson Rd & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.2	0.2	0.2	0.2	0.2	0.2
Total Delay (hr)	14.3	14.6	16.7	14.7	15.6	15.2
Travel Time (hr)	27.3	27.6	30.0	27.7	28.9	28.3
Fuel Used (gal)	16.4	16.4	16.9	16.5	16.7	16.6
HC Emissions (g)	199	212	166	196	192	193
CO Emissions (g)	7341	7471	6692	7217	7068	7158
NOx Emissions (g)	697	729	613	700	686	685

4: Algonquin Dr & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.6	0.5	0.6	0.6	0.5	0.5
Travel Time (hr)	5.4	5.2	5.7	5.4	5.3	5.4
Fuel Used (gal)	7.4	7.2	7.9	7.2	7.5	7.4
HC Emissions (g)	142	148	148	155	167	152
CO Emissions (g)	5969	5809	6230	5982	6518	6102
NOx Emissions (g)	468	487	488	499	529	494

5: Ashworth Dr & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.8	0.8	0.9	0.8	0.9	0.8
Travel Time (hr)	6.2	6.1	6.6	6.2	6.6	6.3
Fuel Used (gal)	8.9	8.8	9.5	8.8	9.3	9.1
HC Emissions (g)	151	182	146	158	168	161
CO Emissions (g)	6708	7302	6975	6685	7182	6970
NOx Emissions (g)	523	590	518	540	572	549

6: IA 58 & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.6	0.6	0.6	0.6	0.7	0.6
Total Delay (hr)	23.4	23.0	22.5	21.6	24.0	22.9
Travel Time (hr)	41.3	40.5	40.8	39.0	41.8	40.7
Fuel Used (gal)	25.5	25.0	25.7	24.6	25.5	25.3
HC Emissions (g)	431	447	478	427	400	437
CO Emissions (g)	16394	16384	17285	15860	15713	16327
NOx Emissions (g)	1287	1314	1399	1286	1208	1299

13: S Main St & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.1	0.1	0.1	0.1	0.1	0.1
Total Delay (hr)	13.9	13.0	13.1	11.8	13.3	13.0
Travel Time (hr)	21.4	20.1	20.4	19.1	20.3	20.2
Fuel Used (gal)	8.8	8.3	8.6	8.1	8.4	8.4
HC Emissions (g)	52	62	63	59	72	62
CO Emissions (g)	1899	2036	2097	1984	2205	2044
NOx Emissions (g)	174	187	198	186	219	193

16: Coneflower Pkwy/Estate Dr & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.7	0.7	0.7	0.8	0.8	0.7
Travel Time (hr)	4.8	4.9	4.9	5.0	4.9	4.9
Fuel Used (gal)	6.7	7.1	7.2	6.9	6.9	6.9
HC Emissions (g)	66	76	80	76	87	77
CO Emissions (g)	4182	4627	4712	4311	4576	4482
NOx Emissions (g)	279	305	320	309	330	309

19: Prairie Pkwy & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	3.8	3.8	4.1	3.7	3.7	3.8
Travel Time (hr)	12.7	12.5	13.2	12.7	12.5	12.7
Fuel Used (gal)	9.8	9.8	10.2	10.2	10.0	10.0
HC Emissions (g)	70	72	86	82	91	80
CO Emissions (g)	3462	3580	3871	3980	4120	3803
NOx Emissions (g)	340	343	385	374	391	367

21: Orchard Hill Rd & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.9	0.8	0.9	1.0	0.9	0.9
Travel Time (hr)	8.8	8.3	9.1	9.1	8.6	8.8
Fuel Used (gal)	10.9	10.2	11.2	11.1	10.7	10.8
HC Emissions (g)	97	110	118	105	121	110
CO Emissions (g)	5300	5234	5830	5564	5679	5521
NOx Emissions (g)	462	484	520	486	522	495

24: Oster Pkwy & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.5	0.5	0.5	0.5	0.5	0.5
Travel Time (hr)	6.1	5.5	6.0	6.0	5.7	5.9
Fuel Used (gal)	7.5	6.9	7.5	7.5	7.2	7.3
HC Emissions (g)	77	84	73	74	89	80
CO Emissions (g)	3744	3709	3691	3780	3851	3755
NOx Emissions (g)	348	358	341	343	375	353

27: Rownd St & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.1	0.1	0.1	0.1	0.1	0.1
Total Delay (hr)	5.6	5.0	5.1	5.5	5.5	5.3
Travel Time (hr)	10.5	10.0	10.2	10.4	10.2	10.3
Fuel Used (gal)	4.8	4.6	4.6	4.7	4.6	4.6
HC Emissions (g)	28	37	25	28	42	32
CO Emissions (g)	898	998	839	910	1121	953
NOx Emissions (g)	101	118	94	100	128	108

30: Green Greek Rd & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.8	0.6	0.7	0.6	0.7	0.7
Travel Time (hr)	6.4	6.0	6.2	6.2	6.2	6.2
Fuel Used (gal)	9.2	8.9	9.3	9.4	9.4	9.2
HC Emissions (g)	106	116	113	119	146	120
CO Emissions (g)	5761	6069	5956	6149	6578	6103
NOx Emissions (g)	427	451	449	469	531	466

32: Cedar Heights Dr & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.4	0.4	0.4	0.6	0.4	0.4
Total Delay (hr)	28.5	20.8	29.0	37.7	24.0	28.0
Travel Time (hr)	38.0	30.1	38.6	47.4	33.3	37.5
Fuel Used (gal)	15.6	13.1	15.7	17.7	14.2	15.3
HC Emissions (g)	110	92	120	115	105	108
CO Emissions (g)	5042	4534	4999	4743	4850	4834
NOx Emissions (g)	365	326	396	379	355	364

Total Network Performance By Run

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	1.5	1.5	1.5	1.7	1.5	1.5
Total Delay (hr)	102.8	93.0	104.1	108.0	99.7	101.5
Travel Time (hr)	258.2	244.9	261.4	262.3	253.3	256.0
Fuel Used (gal)	240.7	234.0	245.0	240.1	238.6	239.7
HC Emissions (g)	3194	3418	3415	3272	3410	3342
CO Emissions (g)	146799	149773	152344	146344	150169	149086
NOx Emissions (g)	11358	11849	11965	11594	11913	11736

Arterial Level of Service: EB Greenhill Rd

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Hudson Rd	3	56.4	66.2	0.1	6
Algonquin Dr	4	4.0	21.2	0.2	38
Ashworth Dr	5	0.6	15.4	0.2	43
IA 58	6	37.5	55.6	0.2	15
	35	5.1	26.8	0.3	36
S Main St	13	17.7	24.2	0.1	13
	36	3.1	10.6	0.1	31
Coneflower Pkwy	16	0.5	5.3	0.1	43
Prairie Pkwy	19	7.1	24.9	0.2	33
Orchard Hill Rd	21	4.0	31.1	0.3	40
Oster Pkwy	24	1.7	24.1	0.3	42
	37	1.6	17.1	0.2	40
Rownd St	27	8.8	13.7	0.1	16
	39	2.3	7.6	0.1	32
Green Greek Rd	30	0.6	20.7	0.3	44
Cedar Heights Dr	32	39.8	54.4	0.2	12
Total		190.8	418.9	2.9	25

Arterial Level of Service: WB Greenhill Rd

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Cedar Heights Dr	32	36.8	54.1	0.2	15
Green Greek Rd	30	5.9	20.6	0.2	32
	39	3.8	24.0	0.3	38
Rownd St	27	19.7	25.0	0.1	10
	37	3.9	8.9	0.1	25
Oster Pkwy	24	0.7	15.7	0.2	43
Orchard Hill Rd	21	1.1	23.5	0.3	43
Prairie Pkwy	19	8.3	34.4	0.3	36
Estate Dr	16	4.0	21.9	0.2	38
	36	1.3	6.5	0.1	35
S Main St	13	34.0	41.3	0.1	8
	35	4.3	11.1	0.1	27
IA 58	6	37.0	58.2	0.3	17
Ashworth Dr	5	6.6	25.9	0.2	33
Algonquin Dr	4	1.4	16.1	0.2	41
Hudson Rd	3	50.6	68.1	0.2	12
Total		219.4	455.3	3.0	24

3: Hudson Rd & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.1	0.1	0.1	0.1	0.1	0.1
Total Delay (hr)	5.1	5.2	5.2	4.8	4.7	5.0
Travel Time (hr)	12.8	13.2	12.6	12.4	12.1	12.6
Fuel Used (gal)	9.2	9.4	8.9	9.0	8.7	9.0
HC Emissions (g)	105	127	101	113	104	110
CO Emissions (g)	4165	4693	4048	4227	4095	4246
NOx Emissions (g)	408	464	391	427	403	419

4: Algonquin Dr & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.2	0.2	0.2	0.2	0.2	0.2
Travel Time (hr)	3.0	3.2	3.1	2.9	3.0	3.0
Fuel Used (gal)	4.2	4.5	4.3	4.1	4.1	4.3
HC Emissions (g)	78	95	78	94	77	84
CO Emissions (g)	3205	3700	3203	3450	3172	3346
NOx Emissions (g)	264	309	265	303	261	280

5: Ashworth Dr & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.3	0.4	0.4	0.4	0.3	0.4
Travel Time (hr)	3.5	3.8	3.7	3.5	3.4	3.6
Fuel Used (gal)	5.2	5.5	5.3	5.1	5.0	5.2
HC Emissions (g)	76	85	91	97	83	87
CO Emissions (g)	3657	3952	4076	4010	3712	3881
NOx Emissions (g)	281	308	311	327	291	304

6: IA 58 & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.4	0.4	0.4	0.4	0.4	0.4
Total Delay (hr)	8.1	8.5	8.4	8.4	8.3	8.3
Travel Time (hr)	18.8	19.2	18.8	18.7	18.7	18.8
Fuel Used (gal)	15.4	15.3	15.3	15.0	15.1	15.2
HC Emissions (g)	302	307	289	287	270	291
CO Emissions (g)	11805	11669	11630	11290	10950	11469
NOx Emissions (g)	927	937	891	883	852	898

13: S Main St & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.1	0.1	0.1	0.1	0.1	0.1
Total Delay (hr)	3.8	4.0	3.7	3.5	3.6	3.7
Travel Time (hr)	8.1	8.7	8.1	7.8	7.9	8.1
Fuel Used (gal)	4.1	4.4	4.1	4.1	4.0	4.1
HC Emissions (g)	33	36	33	36	45	37
CO Emissions (g)	1168	1227	1163	1201	1326	1217
NOx Emissions (g)	109	120	106	117	141	118

16: Coneflower Pkwy/Estate Dr & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.3	0.3	0.3	0.2	0.3	0.3
Travel Time (hr)	2.8	2.7	2.7	2.6	2.9	2.7
Fuel Used (gal)	4.0	3.9	3.8	3.7	4.3	3.9
HC Emissions (g)	43	43	35	37	49	41
CO Emissions (g)	2552	2390	2283	2136	2904	2453
NOx Emissions (g)	177	178	155	160	196	173

19: Prairie Pkwy & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	1.5	1.4	1.6	1.5	1.7	1.5
Travel Time (hr)	6.8	6.8	6.7	6.8	7.0	6.8
Fuel Used (gal)	5.6	5.8	5.5	5.6	5.7	5.6
HC Emissions (g)	40	48	38	36	41	41
CO Emissions (g)	1827	1986	1802	1747	1823	1837
NOx Emissions (g)	207	232	201	195	212	209

21: Orchard Hill Rd & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.3	0.3	0.3	0.4	0.3	0.3
Travel Time (hr)	4.9	5.2	4.8	5.2	5.0	5.0
Fuel Used (gal)	6.0	6.3	5.9	6.5	5.9	6.2
HC Emissions (g)	53	55	47	63	45	52
CO Emissions (g)	2642	2684	2561	3077	2308	2654
NOx Emissions (g)	268	280	250	300	248	269

24: Oster Pkwy & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.2	0.2	0.2	0.2	0.2	0.2
Travel Time (hr)	3.3	3.5	3.3	3.5	3.3	3.4
Fuel Used (gal)	3.9	4.3	4.0	4.3	4.1	4.1
HC Emissions (g)	35	48	34	42	37	39
CO Emissions (g)	1533	2052	1632	1912	1732	1772
NOx Emissions (g)	181	219	177	209	186	194

27: Rownd St & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.1	0.1	0.1	0.0	0.0	0.1
Total Delay (hr)	1.6	2.0	1.8	1.8	1.8	1.8
Travel Time (hr)	4.5	5.3	4.8	4.7	4.7	4.8
Fuel Used (gal)	2.4	2.7	2.4	2.3	2.4	2.5
HC Emissions (g)	14	19	11	11	12	14
CO Emissions (g)	572	622	501	486	536	544
NOx Emissions (g)	55	68	47	46	51	53

30: Green Greek Rd & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.2	0.3	0.3	0.2	0.3	0.3
Travel Time (hr)	3.5	3.8	3.6	3.5	3.6	3.6
Fuel Used (gal)	5.3	5.8	5.5	5.3	5.5	5.5
HC Emissions (g)	58	65	59	63	57	60
CO Emissions (g)	3324	3617	3441	3401	3335	3424
NOx Emissions (g)	242	268	250	258	245	252

32: Cedar Heights Dr & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.2	0.2	0.2	0.2	0.2	0.2
Total Delay (hr)	6.4	7.4	7.3	6.5	7.0	6.9
Travel Time (hr)	11.8	13.2	13.0	11.8	12.6	12.5
Fuel Used (gal)	6.7	7.2	7.1	6.6	7.2	7.0
HC Emissions (g)	62	71	63	52	54	60
CO Emissions (g)	2950	3216	3043	2711	2947	2973
NOx Emissions (g)	232	257	238	207	217	230

Total Network Performance By Run

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.9	0.9	0.9	0.8	0.8	0.8
Total Delay (hr)	32.1	34.5	33.7	32.2	32.5	33.0
Travel Time (hr)	123.5	129.4	124.8	122.7	123.6	124.8
Fuel Used (gal)	135.7	140.7	135.8	134.8	134.8	136.4
HC Emissions (g)	1954	2113	1900	1941	1824	1946
CO Emissions (g)	88664	92768	87743	87459	85181	88363
NOx Emissions (g)	6993	7442	6818	6945	6670	6974

Arterial Level of Service
 2018 Daytime Offpeak - Existing Geom (adj for Viking const)

10/05/2018

Arterial Level of Service: EB Greenhill Rd

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Hudson Rd	3	31.9	41.2	0.1	10
Algonquin Dr	4	3.6	19.6	0.2	41
Ashworth Dr	5	0.4	15.2	0.2	44
IA 58	6	20.9	39.0	0.2	22
	35	3.9	25.7	0.3	38
S Main St	13	10.1	16.6	0.1	18
	36	2.4	9.9	0.1	34
Coneflower Pkwy	16	0.2	5.0	0.1	46
Prairie Pkwy	19	4.6	22.5	0.2	37
Orchard Hill Rd	21	2.4	29.2	0.3	42
Oster Pkwy	24	0.9	23.3	0.3	44
	37	0.9	16.4	0.2	42
Rownd St	27	5.5	10.5	0.1	21
	39	1.8	7.1	0.1	34
Green Greek Rd	30	0.4	20.5	0.3	44
Cedar Heights Dr	32	22.6	37.1	0.2	18
Total		112.4	338.6	2.9	31

Arterial Level of Service: WB Greenhill Rd

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Cedar Heights Dr	32	23.0	40.0	0.2	20
Green Greek Rd	30	3.7	18.5	0.2	35
	39	1.6	21.9	0.3	42
Rownd St	27	10.7	16.0	0.1	15
	37	3.0	8.0	0.1	27
Oster Pkwy	24	0.4	15.5	0.2	44
Orchard Hill Rd	21	0.6	23.2	0.3	44
Prairie Pkwy	19	5.3	31.3	0.3	39
Estate Dr	16	2.5	20.4	0.2	40
	36	0.4	5.6	0.1	41
S Main St	13	17.2	24.6	0.1	14
	35	3.5	10.3	0.1	29
IA 58	6	22.4	43.2	0.3	23
Ashworth Dr	5	4.7	23.8	0.2	36
Algonquin Dr	4	0.6	15.4	0.2	43
Hudson Rd	3	21.8	38.0	0.2	21
Total		121.5	355.7	3.0	30

3: Hudson Rd & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.3	0.4	0.3	0.3	0.3	0.3
Total Delay (hr)	58.7	57.2	56.9	58.0	55.4	57.2
Travel Time (hr)	76.3	75.5	74.8	76.1	73.2	75.2
Fuel Used (gal)	30.7	31.0	30.3	30.6	30.3	30.6
HC Emissions (g)	332	304	269	291	319	303
CO Emissions (g)	10831	10440	9698	10027	10723	10344
NOx Emissions (g)	951	911	830	868	948	902

4: Algonquin Dr & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	5.0	0.1	0.1	0.1	0.9	1.2
Total Delay (hr)	27.0	4.3	3.1	8.7	11.9	11.0
Travel Time (hr)	39.3	11.6	10.7	16.4	20.1	19.6
Fuel Used (gal)	18.5	12.6	12.7	14.1	14.3	14.5
HC Emissions (g)	317	228	235	259	252	259
CO Emissions (g)	11638	10248	10606	11068	10666	10846
NOx Emissions (g)	867	714	739	789	747	771

5: Ashworth Dr & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	2.5	0.9	0.3	1.5	0.3	1.1
Total Delay (hr)	17.6	15.8	13.9	19.2	7.4	14.8
Travel Time (hr)	29.9	26.5	24.5	30.6	17.2	25.7
Fuel Used (gal)	19.6	18.5	19.1	19.5	16.2	18.6
HC Emissions (g)	299	275	304	298	249	285
CO Emissions (g)	12541	11839	13074	12391	11394	12248
NOx Emissions (g)	962	889	985	939	829	921

6: IA 58 & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	1.0	0.9	1.0	3.6	0.9	1.5
Total Delay (hr)	73.1	59.1	54.1	79.1	60.8	65.3
Travel Time (hr)	98.6	84.3	79.7	107.0	85.8	91.1
Fuel Used (gal)	44.8	40.9	39.8	46.9	40.9	42.7
HC Emissions (g)	582	569	591	566	539	569
CO Emissions (g)	19954	20433	20958	19741	19358	20089
NOx Emissions (g)	1674	1632	1683	1648	1575	1642

13: S Main St & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	51.8	47.5	27.8	68.6	38.3	46.8
Total Delay (hr)	80.0	78.1	73.9	83.6	82.2	79.6
Travel Time (hr)	141.9	135.9	111.7	162.6	130.7	136.6
Fuel Used (gal)	39.0	37.8	32.2	44.1	36.6	37.9
HC Emissions (g)	179	110	170	139	107	141
CO Emissions (g)	5340	4316	5028	5136	4319	4828
NOx Emissions (g)	381	300	387	348	301	343

16: Coneflower Pkwy/Estate Dr & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.0	0.7	0.0	0.1	0.5	0.3
Total Delay (hr)	62.4	75.9	63.1	57.2	51.8	62.1
Travel Time (hr)	68.0	82.6	68.8	63.1	58.2	68.1
Fuel Used (gal)	21.8	25.9	22.3	21.1	20.3	22.3
HC Emissions (g)	73	91	89	90	70	82
CO Emissions (g)	3917	4456	4433	4696	4529	4406
NOx Emissions (g)	324	359	352	367	327	346

19: Prairie Pkwy & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	62.0	38.1	39.9	34.2	23.1	39.5
Total Delay (hr)	49.9	35.1	41.8	32.5	36.3	39.1
Travel Time (hr)	124.6	86.5	94.7	79.9	73.1	91.8
Fuel Used (gal)	39.0	31.4	32.5	29.2	28.3	32.1
HC Emissions (g)	140	176	192	151	137	159
CO Emissions (g)	7984	8806	8609	7867	8018	8257
NOx Emissions (g)	544	614	610	578	559	581

21: Orchard Hill Rd & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	2.0	2.5	2.2	2.1	2.3	2.2
Travel Time (hr)	12.6	13.9	13.1	13.0	13.8	13.3
Fuel Used (gal)	16.0	17.5	16.3	16.5	17.5	16.8
HC Emissions (g)	164	184	194	190	160	178
CO Emissions (g)	9031	10313	9759	9810	9809	9745
NOx Emissions (g)	708	768	778	767	717	748

24: Oster Pkwy & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	1.6	1.9	1.9	2.0	2.2	1.9
Travel Time (hr)	9.4	10.0	9.8	9.9	10.5	9.9
Fuel Used (gal)	10.7	11.6	11.1	11.0	11.7	11.2
HC Emissions (g)	123	124	112	124	102	117
CO Emissions (g)	6100	6603	6190	6237	6164	6259
NOx Emissions (g)	499	514	480	508	462	492

27: Rownd St & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.2	0.2	0.1	0.1	0.2	0.1
Total Delay (hr)	17.1	17.0	12.8	15.8	14.6	15.5
Travel Time (hr)	25.0	24.5	20.3	23.2	22.1	23.0
Fuel Used (gal)	9.8	9.6	8.3	9.1	8.8	9.1
HC Emissions (g)	53	46	51	39	42	46
CO Emissions (g)	1576	1436	1477	1286	1398	1435
NOx Emissions (g)	183	163	172	147	155	164

30: Green Greek Rd & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	1.3	1.3	1.5	1.3	1.2	1.3
Travel Time (hr)	8.5	8.9	8.8	8.9	8.5	8.7
Fuel Used (gal)	12.5	12.8	12.5	12.9	12.1	12.6
HC Emissions (g)	153	159	158	164	154	158
CO Emissions (g)	8127	8339	8093	8370	7798	8145
NOx Emissions (g)	605	617	617	639	603	616

32: Cedar Heights Dr & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	110.2	128.6	107.1	124.7	84.5	111.0
Total Delay (hr)	66.3	64.8	65.6	66.0	62.9	65.1
Travel Time (hr)	187.5	204.3	183.8	202.0	158.3	187.2
Fuel Used (gal)	51.3	55.1	50.7	54.9	44.3	51.3
HC Emissions (g)	141	182	124	231	151	166
CO Emissions (g)	6901	7618	6715	8423	6582	7248
NOx Emissions (g)	418	471	400	536	430	451

Total Network Performance By Run

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	233.0	217.4	176.8	233.3	149.1	201.9
Total Delay (hr)	485.3	443.5	417.8	453.8	415.4	443.1
Travel Time (hr)	932.2	877.8	810.7	904.3	781.1	861.2
Fuel Used (gal)	464.6	456.0	439.6	462.3	431.5	450.8
HC Emissions (g)	4906	4699	4841	4812	4565	4765
CO Emissions (g)	211980	210447	213075	212173	206934	210922
NOx Emissions (g)	16302	15942	16260	16133	15709	16069

Arterial Level of Service
 2045 PM Peak - Existing Geom and New Accesses

10/05/2018

Arterial Level of Service: EB Greenhill Rd

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Hudson Rd	3	58.7	68.0	0.1	6
Algonquin Dr	4	4.7	21.1	0.2	38
Ashworth Dr	5	1.6	16.5	0.2	41
IA 58	6	43.6	61.7	0.2	14
	35	8.7	30.3	0.3	32
S Main St	13	26.8	33.4	0.1	9
	36	5.9	13.5	0.1	25
Coneflower Pkwy	16	10.1	15.0	0.1	15
Prairie Pkwy	19	14.6	32.6	0.2	25
Orchard Hill Rd	21	7.0	35.0	0.3	35
Oster Pkwy	24	3.0	25.4	0.3	40
	37	4.3	19.8	0.2	35
Rownd St	27	22.0	27.0	0.1	8
	39	3.6	8.9	0.1	27
Green Greek Rd	30	0.6	20.8	0.3	44
Cedar Heights Dr	32	43.0	57.5	0.2	11
Total		258.4	486.3	2.9	21

Arterial Level of Service: WB Greenhill Rd

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Cedar Heights Dr	32	40.7	57.9	0.2	14
Green Greek Rd	30	7.8	22.6	0.2	29
	39	16.0	36.2	0.3	25
Rownd St	27	40.8	46.2	0.1	5
	37	4.3	9.3	0.1	24
Oster Pkwy	24	1.1	16.2	0.2	42
Orchard Hill Rd	21	1.5	24.0	0.3	42
Prairie Pkwy	19	71.4	98.4	0.3	13
Estate Dr	16	234.9	251.9	0.2	3
	36	54.8	59.9	0.1	4
S Main St	13	102.1	111.2	0.1	3
	35	4.7	11.5	0.1	26
IA 58	6	48.7	69.6	0.3	14
	5	12.5	31.4	0.2	27
	4	27.7	42.4	0.2	16
Hudson Rd	3	280.8	297.6	0.2	3
Total		950.0	1186.3	3.0	9

3: Hudson Rd & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.2	0.2	0.2	0.2	0.2	0.2
Total Delay (hr)	9.7	11.3	10.8	11.1	11.5	10.9
Travel Time (hr)	20.4	22.3	22.0	21.9	22.6	21.9
Fuel Used (gal)	13.3	14.1	14.0	13.7	14.0	13.8
HC Emissions (g)	166	169	144	210	164	171
CO Emissions (g)	6365	6701	6097	7092	6377	6526
NOx Emissions (g)	600	607	548	695	595	609

4: Algonquin Dr & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.1	0.1	0.0	0.0	0.0	0.0
Total Delay (hr)	0.6	0.7	0.7	0.7	0.7	0.7
Travel Time (hr)	5.1	5.5	5.4	5.4	5.2	5.3
Fuel Used (gal)	6.9	7.4	7.4	7.3	7.1	7.2
HC Emissions (g)	124	140	126	187	142	144
CO Emissions (g)	5563	5997	5828	6759	5901	6009
NOx Emissions (g)	412	456	422	569	458	463

5: Ashworth Dr & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.1	0.1	0.1	0.1	0.1	0.1
Total Delay (hr)	2.0	1.6	1.8	2.0	1.5	1.8
Travel Time (hr)	8.3	8.1	8.2	8.4	7.8	8.2
Fuel Used (gal)	9.8	10.3	10.1	10.2	9.8	10.1
HC Emissions (g)	147	174	152	206	176	171
CO Emissions (g)	7108	7996	7311	8465	7590	7694
NOx Emissions (g)	510	579	524	656	577	569

6: IA 58 & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.5	0.6	0.5	0.5	0.6	0.5
Total Delay (hr)	18.4	16.4	17.1	18.3	16.9	17.4
Travel Time (hr)	34.0	32.0	32.3	34.0	32.4	32.9
Fuel Used (gal)	23.3	22.4	22.7	22.8	22.6	22.8
HC Emissions (g)	393	378	378	421	404	395
CO Emissions (g)	16041	15673	15539	16159	15938	15870
NOx Emissions (g)	1189	1137	1164	1248	1209	1189

13: S Main St & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.1	0.2	0.1	0.1	0.1	0.1
Total Delay (hr)	12.9	14.7	14.4	13.6	11.8	13.5
Travel Time (hr)	20.1	22.1	21.7	20.9	18.6	20.7
Fuel Used (gal)	8.4	8.9	9.0	8.8	8.1	8.7
HC Emissions (g)	60	59	63	82	70	67
CO Emissions (g)	2022	1958	2129	2486	2213	2162
NOx Emissions (g)	194	189	197	242	215	207

16: Coneflower Pkwy/Estate Dr & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.8	0.9	0.9	0.9	0.9	0.9
Travel Time (hr)	4.9	5.3	5.3	5.4	5.2	5.2
Fuel Used (gal)	6.5	7.0	7.3	7.4	7.0	7.0
HC Emissions (g)	57	77	83	110	86	83
CO Emissions (g)	3845	4516	4880	5288	4694	4645
NOx Emissions (g)	250	304	325	393	325	320

19: Prairie Pkwy & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	3.5	4.4	4.8	4.8	3.9	4.3
Travel Time (hr)	11.9	13.3	13.7	14.2	12.6	13.1
Fuel Used (gal)	9.1	9.7	9.8	10.4	9.5	9.7
HC Emissions (g)	64	80	82	103	89	84
CO Emissions (g)	3252	3569	3704	4291	3820	3727
NOx Emissions (g)	309	355	356	421	366	362

21: Orchard Hill Rd & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.7	0.7	0.7	0.8	0.7	0.7
Travel Time (hr)	7.6	7.9	7.8	8.2	7.8	7.9
Fuel Used (gal)	9.9	10.4	10.3	10.7	10.1	10.3
HC Emissions (g)	90	130	114	122	132	118
CO Emissions (g)	5130	6037	5726	5924	5945	5752
NOx Emissions (g)	427	533	492	522	527	500

24: Oster Pkwy & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.4	0.5	0.6	0.6	0.5	0.5
Travel Time (hr)	5.3	5.9	5.9	5.8	5.7	5.7
Fuel Used (gal)	6.0	6.8	6.7	6.7	6.5	6.6
HC Emissions (g)	55	89	77	83	82	77
CO Emissions (g)	2720	3706	3416	3584	3447	3375
NOx Emissions (g)	266	359	326	342	337	326

27: Rownd St & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.1	0.1	0.1	0.1	0.1	0.1
Total Delay (hr)	4.0	5.1	5.3	4.7	4.9	4.8
Travel Time (hr)	8.5	9.8	10.2	9.5	9.7	9.5
Fuel Used (gal)	3.9	4.4	4.5	4.4	4.3	4.3
HC Emissions (g)	25	36	29	42	30	33
CO Emissions (g)	781	1015	897	1101	883	935
NOx Emissions (g)	87	114	101	131	100	107

30: Green Greek Rd & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.4	0.6	0.6	0.5	0.5	0.5
Travel Time (hr)	5.2	5.6	5.6	5.2	5.2	5.4
Fuel Used (gal)	7.8	8.6	8.4	7.9	7.7	8.1
HC Emissions (g)	100	114	105	108	126	111
CO Emissions (g)	5290	5936	5490	5398	5573	5537
NOx Emissions (g)	392	432	416	414	451	421

32: Cedar Heights Dr & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.3	0.3	0.3	0.3	0.3	0.3
Total Delay (hr)	12.8	13.9	13.9	12.8	12.8	13.2
Travel Time (hr)	20.5	21.8	21.7	20.5	20.5	21.0
Fuel Used (gal)	10.2	10.6	10.3	10.0	10.1	10.2
HC Emissions (g)	84	84	83	85	110	89
CO Emissions (g)	4035	4072	3916	3914	4388	4065
NOx Emissions (g)	305	307	301	303	361	315

Total Network Performance By Run

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	1.4	1.5	1.5	1.5	1.5	1.5
Total Delay (hr)	73.3	77.9	78.6	77.8	73.6	76.2
Travel Time (hr)	211.8	220.4	221.3	220.3	213.5	217.4
Fuel Used (gal)	208.9	214.9	215.6	215.4	210.8	213.1
HC Emissions (g)	2828	3014	2915	3391	3191	3068
CO Emissions (g)	131595	137261	135344	143281	138170	137130
NOx Emissions (g)	10039	10516	10319	11457	10895	10645

Arterial Level of Service
 2045 Daytime Offpeak - Existing Geom and New Accesses

10/05/2018

Arterial Level of Service: EB Greenhill Rd

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Hudson Rd	3	44.8	54.4	0.1	8
Algonquin Dr	4	3.9	20.8	0.2	38
Ashworth Dr	5	0.9	15.9	0.2	42
IA 58	6	26.6	44.5	0.2	19
	35	4.7	26.7	0.3	36
S Main St	13	20.2	26.7	0.1	11
	36	3.3	10.8	0.1	31
Coneflower Pkwy	16	0.6	5.4	0.1	43
Prairie Pkwy	19	8.4	26.5	0.2	31
Orchard Hill Rd	21	4.0	31.5	0.3	39
Oster Pkwy	24	1.6	24.0	0.3	42
	37	1.9	17.3	0.2	39
Rownd St	27	14.4	19.4	0.1	11
	39	3.0	8.4	0.1	29
Green Greek Rd	30	0.5	20.6	0.3	44
Cedar Heights Dr	32	35.0	49.5	0.2	13
Total		173.6	402.3	2.9	26

Arterial Level of Service: WB Greenhill Rd

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Cedar Heights Dr	32	30.5	47.5	0.2	17
Green Greek Rd	30	4.8	19.4	0.2	34
	39	2.7	22.8	0.3	40
Rownd St	27	17.6	22.9	0.1	11
	37	3.5	8.5	0.1	26
Oster Pkwy	24	0.7	15.8	0.2	43
Orchard Hill Rd	21	0.9	23.3	0.3	43
Prairie Pkwy	19	10.4	37.5	0.3	33
Estate Dr	16	4.9	23.3	0.2	35
	36	1.6	6.7	0.1	34
S Main St	13	36.0	43.3	0.1	8
	35	4.2	11.1	0.1	27
IA 58	6	32.4	53.4	0.3	18
	5	8.0	27.1	0.2	31
	4	1.9	16.6	0.2	40
Hudson Rd	3	34.3	51.6	0.2	16
Total		194.5	430.7	3.0	25

3: Hudson Rd & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.6	0.7	0.6	0.6	0.6	0.6
Total Delay (hr)	19.5	20.2	18.2	19.1	19.2	19.2
Travel Time (hr)	36.3	37.6	34.5	35.7	35.5	35.9
Fuel Used (gal)	20.2	20.8	19.6	19.8	19.8	20.1
HC Emissions (g)	207	261	245	230	201	229
CO Emissions (g)	8625	9555	9221	8793	8566	8952
NOx Emissions (g)	724	851	810	776	706	773

4: Algonquin Dr & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.2	0.2	0.2	0.2	0.2	0.2
Total Delay (hr)	1.4	1.6	1.7	1.8	1.5	1.6
Travel Time (hr)	7.6	8.0	8.0	8.0	7.6	7.8
Fuel Used (gal)	7.8	8.4	8.3	7.8	8.0	8.1
HC Emissions (g)	137	161	192	159	133	156
CO Emissions (g)	5188	5971	6420	5536	5364	5696
NOx Emissions (g)	473	532	607	518	459	518

5: Ashworth Dr & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.2	0.2	0.2	0.2	0.2	0.2
Total Delay (hr)	5.9	5.9	5.8	5.4	6.0	5.8
Travel Time (hr)	16.9	17.2	16.7	15.9	16.8	16.7
Fuel Used (gal)	18.1	18.4	18.2	17.2	17.7	17.9
HC Emissions (g)	287	283	335	270	237	282
CO Emissions (g)	12807	13134	13739	12218	11935	12766
NOx Emissions (g)	972	951	1089	915	832	952

6: IA 58 & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	1.1	1.1	0.9	1.0	0.9	1.0
Total Delay (hr)	77.2	60.7	42.7	51.5	44.4	55.3
Travel Time (hr)	104.3	87.7	68.9	78.1	70.3	81.9
Fuel Used (gal)	46.6	42.7	37.4	40.0	38.1	41.0
HC Emissions (g)	587	645	571	576	539	584
CO Emissions (g)	21873	22470	21343	20954	20890	21506
NOx Emissions (g)	1686	1780	1646	1676	1580	1674

13: S Main St & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.5	0.5	0.4	0.4	0.4	0.4
Total Delay (hr)	33.2	29.4	25.7	30.6	35.8	31.0
Travel Time (hr)	45.8	42.2	38.6	43.1	48.2	43.6
Fuel Used (gal)	17.8	16.9	16.1	17.0	18.5	17.3
HC Emissions (g)	124	132	131	141	108	127
CO Emissions (g)	4366	4304	4309	4401	4070	4290
NOx Emissions (g)	381	394	407	419	360	392

16: Coneflower Pkwy/Estate Dr & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	1.5	1.8	1.8	1.6	2.9	1.9
Travel Time (hr)	9.1	9.4	9.4	9.1	10.5	9.5
Fuel Used (gal)	12.0	12.0	12.1	11.6	12.1	11.9
HC Emissions (g)	143	138	130	146	129	137
CO Emissions (g)	7947	7714	7667	7706	7783	7763
NOx Emissions (g)	550	534	518	547	499	530

19: Prairie Pkwy & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.1	0.0	0.1	0.1	0.1	0.1
Total Delay (hr)	13.0	11.7	12.4	13.1	12.4	12.5
Travel Time (hr)	28.6	26.6	27.6	28.4	27.1	27.7
Fuel Used (gal)	17.8	17.5	17.5	17.8	17.1	17.5
HC Emissions (g)	122	126	126	137	122	127
CO Emissions (g)	5829	5952	5819	6094	5724	5884
NOx Emissions (g)	542	557	557	583	535	555

21: Orchard Hill Rd & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	3.0	3.1	3.1	3.1	2.6	3.0
Travel Time (hr)	15.9	15.5	15.9	15.8	14.2	15.4
Fuel Used (gal)	22.2	22.2	22.3	22.1	20.5	21.9
HC Emissions (g)	244	249	252	225	236	241
CO Emissions (g)	13447	13767	13686	13219	12917	13407
NOx Emissions (g)	1014	1013	1030	962	962	996

24: Oster Pkwy & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	9.9	10.0	10.2	10.1	9.6	9.9
Travel Time (hr)	18.9	18.6	19.3	19.2	18.1	18.8
Fuel Used (gal)	11.4	11.1	11.5	11.4	10.6	11.2
HC Emissions (g)	95	98	104	88	91	95
CO Emissions (g)	4243	4138	4514	3999	3928	4165
NOx Emissions (g)	381	374	393	364	354	373

27: Rownd St & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.2	0.2	0.2	0.2	0.2	0.2
Total Delay (hr)	14.2	14.8	17.3	15.8	14.5	15.3
Travel Time (hr)	22.6	22.7	24.8	23.6	22.2	23.2
Fuel Used (gal)	9.2	9.1	9.4	9.4	9.0	9.2
HC Emissions (g)	51	47	45	44	51	48
CO Emissions (g)	1832	1645	1575	1661	1766	1696
NOx Emissions (g)	178	170	160	163	176	169

30: Green Greek Rd & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.9	1.0	1.0	1.2	0.9	1.0
Travel Time (hr)	9.1	8.8	9.1	9.7	8.9	9.1
Fuel Used (gal)	13.6	13.5	14.2	14.6	13.4	13.9
HC Emissions (g)	188	170	171	162	168	172
CO Emissions (g)	9309	9021	9515	9423	8961	9246
NOx Emissions (g)	716	659	671	657	660	672

32: Cedar Heights Dr & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.8	0.8	0.8	0.8	0.8	0.8
Total Delay (hr)	17.9	16.4	18.5	18.8	17.4	17.8
Travel Time (hr)	31.4	29.9	32.2	32.5	31.0	31.4
Fuel Used (gal)	15.8	15.7	16.3	16.4	15.7	16.0
HC Emissions (g)	150	133	126	141	135	137
CO Emissions (g)	6481	6219	6259	6545	6084	6318
NOx Emissions (g)	517	476	463	496	481	486

Total Network Performance By Run

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	3.8	3.7	3.5	3.5	3.4	3.6
Total Delay (hr)	213.2	192.1	173.4	188.2	186.3	190.6
Travel Time (hr)	458.2	435.9	414.3	430.7	422.7	432.4
Fuel Used (gal)	386.0	382.6	373.0	377.6	370.9	378.0
HC Emissions (g)	4995	5317	5103	5062	4743	5044
CO Emissions (g)	229754	235576	230777	229088	222852	229609
NOx Emissions (g)	17473	18164	17626	17640	16716	17524

Arterial Level of Service: EB Greenhill Rd

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Hudson Rd	3	38.3	47.8	0.1	9
	9	4.2	11.0	0.1	28
Algonquin Dr	4	0.9	12.0	0.1	41
Ashworth Dr	5	4.6	19.4	0.2	34
IA 58	6	44.6	63.0	0.2	13
	35	7.3	29.1	0.3	33
S Main St	13	10.8	17.3	0.1	18
	36	2.8	10.4	0.1	32
Coneflower Pkwy	16	0.5	5.3	0.1	43
Prairie Pkwy	19	24.5	42.5	0.2	19
Orchard Hill Rd	21	6.5	34.1	0.3	36
Oster Pkwy	24	28.7	51.1	0.3	20
	37	6.5	22.1	0.2	31
Rownd St	27	34.2	39.1	0.1	6
	39	3.2	8.7	0.1	28
Green Greek Rd	30	1.3	21.3	0.3	43
Cedar Heights Dr	32	21.9	36.4	0.2	18
Total		240.7	470.4	2.9	22

Arterial Level of Service: WB Greenhill Rd

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Cedar Heights Dr	32	21.9	39.3	0.2	20
Green Greek Rd	30	4.3	19.0	0.2	34
	39	2.3	22.5	0.3	40
Rownd St	27	27.4	32.6	0.1	7
	37	3.4	8.4	0.1	26
Oster Pkwy	24	17.0	32.0	0.2	21
Orchard Hill Rd	21	5.3	27.9	0.3	36
Prairie Pkwy	19	7.5	34.6	0.3	36
Estate Dr	16	3.4	22.0	0.2	37
	36	4.5	9.5	0.1	24
S Main St	13	36.0	43.3	0.1	8
	35	4.1	10.9	0.1	28
IA 58	6	60.2	81.5	0.3	12
	5	8.8	27.8	0.2	31
	4	2.0	16.7	0.2	40
	9	1.0	12.1	0.1	41
Hudson Rd	3	13.3	19.7	0.1	16
Total		222.4	459.9	3.0	23

3: Hudson Rd & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.4	0.4	0.4	0.4	0.4	0.4
Total Delay (hr)	7.6	8.2	7.5	8.0	8.0	7.9
Travel Time (hr)	17.3	18.5	17.1	17.7	17.6	17.6
Fuel Used (gal)	11.6	12.2	11.3	11.8	11.3	11.6
HC Emissions (g)	151	168	159	137	144	152
CO Emissions (g)	6016	6558	5986	5982	5707	6050
NOx Emissions (g)	534	575	542	495	502	530

4: Algonquin Dr & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.1	0.1	0.1	0.1	0.1	0.1
Total Delay (hr)	0.5	0.7	0.5	0.5	0.5	0.5
Travel Time (hr)	4.1	4.7	3.8	4.2	4.3	4.2
Fuel Used (gal)	4.3	4.9	4.1	4.5	4.5	4.5
HC Emissions (g)	90	101	82	88	75	87
CO Emissions (g)	2997	3391	2808	3007	2740	2989
NOx Emissions (g)	303	334	277	301	270	297

5: Ashworth Dr & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.1	0.1	0.1	0.1	0.1	0.1
Total Delay (hr)	2.6	2.6	2.7	2.5	2.8	2.6
Travel Time (hr)	8.9	9.3	8.7	9.1	9.2	9.1
Fuel Used (gal)	9.9	10.7	9.5	10.1	10.0	10.0
HC Emissions (g)	151	181	170	167	151	164
CO Emissions (g)	7022	7942	7170	7557	7219	7382
NOx Emissions (g)	518	605	555	555	510	549

6: IA 58 & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.5	0.6	0.5	0.6	0.5	0.5
Total Delay (hr)	16.3	14.6	14.8	16.1	14.9	15.4
Travel Time (hr)	32.0	30.3	30.1	32.1	30.4	31.0
Fuel Used (gal)	23.6	23.3	22.7	23.4	22.9	23.2
HC Emissions (g)	395	411	412	428	381	405
CO Emissions (g)	16895	17201	16897	17228	16451	16934
NOx Emissions (g)	1195	1247	1236	1280	1165	1225

13: S Main St & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.2	0.3	0.2	0.2	0.2	0.2
Total Delay (hr)	7.3	8.3	6.9	7.3	7.3	7.4
Travel Time (hr)	14.3	16.0	14.1	14.7	14.4	14.7
Fuel Used (gal)	7.1	7.8	7.2	7.3	7.3	7.3
HC Emissions (g)	67	82	63	74	78	73
CO Emissions (g)	2276	2548	2280	2435	2508	2409
NOx Emissions (g)	207	246	205	229	239	225

16: Coneflower Pkwy/Estate Dr & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.4	0.6	0.5	0.5	0.4	0.5
Travel Time (hr)	4.7	5.2	4.8	4.9	4.8	4.9
Fuel Used (gal)	6.3	6.8	6.3	6.4	6.4	6.5
HC Emissions (g)	89	74	67	78	74	77
CO Emissions (g)	4009	3989	3746	3964	3829	3907
NOx Emissions (g)	340	308	280	310	301	308

19: Prairie Pkwy & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	4.4	4.9	3.7	4.4	4.4	4.4
Travel Time (hr)	13.3	14.2	12.3	13.7	13.2	13.3
Fuel Used (gal)	10.0	10.6	9.6	10.3	9.9	10.1
HC Emissions (g)	96	95	72	82	88	87
CO Emissions (g)	3639	3844	3350	3459	3521	3562
NOx Emissions (g)	420	418	349	381	393	392

21: Orchard Hill Rd & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	1.0	0.9	1.0	1.1	1.0	1.0
Travel Time (hr)	8.2	8.4	7.9	9.0	8.5	8.4
Fuel Used (gal)	11.7	12.0	11.3	12.8	12.3	12.0
HC Emissions (g)	140	142	113	123	135	131
CO Emissions (g)	7121	7294	6666	7335	7462	7175
NOx Emissions (g)	575	587	500	549	569	556

24: Oster Pkwy & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	4.8	4.7	4.7	4.9	5.0	4.8
Travel Time (hr)	9.9	10.1	9.7	10.4	10.4	10.1
Fuel Used (gal)	6.1	6.5	5.9	6.8	6.5	6.4
HC Emissions (g)	72	65	47	51	55	58
CO Emissions (g)	2541	2618	2146	2336	2349	2398
NOx Emissions (g)	262	258	203	228	230	236

27: Rownd St & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.1	0.1	0.1	0.1	0.1	0.1
Total Delay (hr)	5.7	6.0	6.7	7.0	6.0	6.3
Travel Time (hr)	10.2	10.7	11.2	11.8	11.1	11.0
Fuel Used (gal)	4.4	4.7	4.5	4.8	4.9	4.7
HC Emissions (g)	36	35	24	21	30	29
CO Emissions (g)	1081	1109	873	852	1125	1008
NOx Emissions (g)	111	112	85	78	103	98

30: Green Greek Rd & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.4	0.4	0.4	0.4	0.4	0.4
Travel Time (hr)	5.3	5.5	5.0	5.4	5.5	5.3
Fuel Used (gal)	8.1	8.5	7.7	8.0	8.3	8.1
HC Emissions (g)	106	116	92	96	116	105
CO Emissions (g)	5392	5745	5045	5158	5585	5385
NOx Emissions (g)	407	445	369	385	442	410

32: Cedar Heights Dr & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.5	0.5	0.5	0.5	0.5	0.5
Total Delay (hr)	8.7	8.4	7.1	7.0	7.3	7.7
Travel Time (hr)	16.9	16.7	14.8	14.8	15.5	15.7
Fuel Used (gal)	9.3	9.4	8.6	8.8	9.2	9.1
HC Emissions (g)	91	94	101	80	92	92
CO Emissions (g)	3935	4121	4053	3762	4079	3990
NOx Emissions (g)	334	345	352	307	341	336

Total Network Performance By Run

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	2.0	2.1	2.0	2.1	2.0	2.0
Total Delay (hr)	66.7	67.5	63.4	67.0	64.9	65.9
Travel Time (hr)	208.7	214.5	201.7	212.1	208.0	209.0
Fuel Used (gal)	214.1	220.9	207.9	217.6	214.5	215.0
HC Emissions (g)	3153	3295	3041	3057	3048	3119
CO Emissions (g)	140886	145889	137351	141100	139794	141004
NOx Emissions (g)	10919	11395	10533	10743	10676	10853

Arterial Level of Service
 2045 Daytime Offpeak - Signals and Widening

10/05/2018

Arterial Level of Service: EB Greenhill Rd

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Hudson Rd	3	18.9	28.3	0.1	15
	9	3.1	10.1	0.1	30
Algonquin Dr	4	0.6	11.7	0.1	42
Ashworth Dr	5	3.3	18.3	0.2	37
IA 58	6	23.8	41.9	0.2	20
	35	4.6	26.6	0.3	37
S Main St	13	9.3	15.8	0.1	19
	36	2.9	10.5	0.1	32
Coneflower Pkwy	16	0.3	5.1	0.1	45
Prairie Pkwy	19	6.8	24.8	0.2	33
Orchard Hill Rd	21	2.7	30.2	0.3	41
Oster Pkwy	24	23.6	45.8	0.3	22
	37	4.5	20.0	0.2	34
Rownd St	27	23.3	28.1	0.1	8
	39	2.7	8.1	0.1	30
Green Greek Rd	30	0.7	20.9	0.3	44
Cedar Heights Dr	32	16.1	30.5	0.2	21
Total		147.3	376.6	2.9	28

Arterial Level of Service: WB Greenhill Rd

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Cedar Heights Dr	32	12.5	29.8	0.2	27
Green Greek Rd	30	3.1	17.8	0.2	37
	39	1.1	21.3	0.3	43
Rownd St	27	21.7	26.9	0.1	9
	37	3.4	8.4	0.1	26
Oster Pkwy	24	14.3	29.4	0.2	23
Orchard Hill Rd	21	4.4	26.9	0.3	38
Prairie Pkwy	19	3.8	31.1	0.3	40
Estate Dr	16	1.5	19.9	0.2	41
	36	0.3	5.4	0.1	43
S Main St	13	14.0	21.3	0.1	16
	35	2.9	9.7	0.1	31
IA 58	6	23.4	44.6	0.3	22
	5	7.1	26.1	0.2	33
	4	1.5	16.3	0.2	41
	9	0.5	11.7	0.1	42
Hudson Rd	3	8.8	15.1	0.1	20
Total		124.3	361.8	3.0	30

3: Hudson Rd & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.1	0.2	0.2	0.1	0.2	0.2
Total Delay (hr)	9.4	10.8	9.3	8.8	10.4	9.7
Travel Time (hr)	24.8	25.9	24.3	23.7	25.5	24.8
Fuel Used (gal)	15.5	15.8	15.5	15.2	15.7	15.5
HC Emissions (g)	192	198	218	220	201	206
CO Emissions (g)	6952	7134	7543	7470	7169	7254
NOx Emissions (g)	665	673	720	726	683	694

4: Algonquin Dr & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.2	0.1	0.1	0.2	0.2	0.2
Total Delay (hr)	1.5	1.3	1.3	1.9	1.6	1.5
Travel Time (hr)	9.1	8.8	8.8	9.7	9.3	9.1
Fuel Used (gal)	10.7	10.7	10.6	11.2	10.9	10.8
HC Emissions (g)	202	212	204	222	234	215
CO Emissions (g)	8996	9170	8879	9526	9645	9243
NOx Emissions (g)	624	648	630	675	701	656

5: Ashworth Dr & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	4.7	4.5	4.7	4.6	4.9	4.7
Travel Time (hr)	14.4	14.2	14.4	14.3	14.7	14.4
Fuel Used (gal)	14.3	14.5	14.5	14.9	14.6	14.5
HC Emissions (g)	221	236	232	246	261	239
CO Emissions (g)	9891	10343	10128	10552	10676	10318
NOx Emissions (g)	725	760	752	791	820	770

6: IA 58 & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	1.0	1.0	1.0	1.2	1.3	1.1
Total Delay (hr)	112.2	89.7	82.7	90.0	132.5	101.4
Travel Time (hr)	140.7	118.0	110.7	118.6	161.3	129.9
Fuel Used (gal)	57.2	51.3	49.6	51.6	62.4	54.4
HC Emissions (g)	637	632	645	696	697	662
CO Emissions (g)	25452	24529	25171	25851	25764	25353
NOx Emissions (g)	1784	1739	1795	1882	1911	1822

13: S Main St & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.1	0.1	0.1	0.1	0.1	0.1
Total Delay (hr)	11.7	12.0	12.2	12.8	19.6	13.6
Travel Time (hr)	22.3	22.5	23.0	23.5	30.5	24.4
Fuel Used (gal)	10.9	10.9	11.0	11.2	13.0	11.4
HC Emissions (g)	96	96	106	120	118	107
CO Emissions (g)	3029	2994	3147	3409	3674	3251
NOx Emissions (g)	322	312	341	373	366	343

16: Coneflower Pkwy/Estate Dr & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	1.3	1.6	1.4	2.1	1.6	1.6
Travel Time (hr)	11.0	11.1	11.5	11.8	11.4	11.3
Fuel Used (gal)	14.7	14.6	15.4	15.1	14.9	14.9
HC Emissions (g)	173	161	179	187	164	173
CO Emissions (g)	10675	10358	11076	10966	10568	10729
NOx Emissions (g)	621	586	642	659	598	621

19: Prairie Pkwy & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	4.7	4.9	5.4	5.2	5.0	5.0
Travel Time (hr)	18.6	19.0	19.8	19.3	19.0	19.2
Fuel Used (gal)	13.8	14.4	14.5	14.6	14.3	14.3
HC Emissions (g)	118	123	124	132	110	121
CO Emissions (g)	4908	5281	5247	5642	5208	5257
NOx Emissions (g)	512	523	532	542	487	519

21: Orchard Hill Rd & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.1	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	1.6	1.5	1.3	1.5	1.2	1.4
Travel Time (hr)	16.8	17.1	16.6	17.4	16.3	16.8
Fuel Used (gal)	22.9	23.6	22.8	23.9	22.5	23.1
HC Emissions (g)	247	255	265	289	230	257
CO Emissions (g)	15699	16296	15826	16894	15361	16015
NOx Emissions (g)	946	966	980	1056	891	968

24: Oster Pkwy & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	2.7	2.7	2.7	2.8	2.6	2.7
Travel Time (hr)	11.3	11.0	10.9	11.5	10.9	11.1
Fuel Used (gal)	9.5	9.4	9.2	9.8	9.1	9.4
HC Emissions (g)	99	99	102	114	98	102
CO Emissions (g)	4691	4730	4601	5108	4533	4732
NOx Emissions (g)	378	378	382	419	372	386

27: Rownd St & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	2.9	3.0	2.8	2.9	2.9	2.9
Travel Time (hr)	9.8	9.7	9.6	9.5	9.7	9.7
Fuel Used (gal)	5.7	5.6	5.5	5.5	5.6	5.6
HC Emissions (g)	52	38	38	47	40	43
CO Emissions (g)	1330	1084	1105	1254	1134	1181
NOx Emissions (g)	187	150	154	173	156	164

30: Green Greek Rd & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.8	0.7	0.8	0.9	0.7	0.8
Travel Time (hr)	10.8	10.4	10.8	11.3	10.8	10.8
Fuel Used (gal)	16.1	15.4	16.0	16.7	15.8	16.0
HC Emissions (g)	209	171	192	207	181	192
CO Emissions (g)	11479	10473	11272	11721	10806	11150
NOx Emissions (g)	763	663	721	767	691	721

32: Cedar Heights Dr & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	6.3	0.3	0.3	0.3	5.7	2.6
Total Delay (hr)	37.2	20.3	19.0	24.0	32.9	26.7
Travel Time (hr)	55.2	31.9	30.9	36.3	50.1	40.9
Fuel Used (gal)	20.2	14.1	14.0	15.6	18.7	16.5
HC Emissions (g)	116	109	122	118	101	113
CO Emissions (g)	5415	5100	5353	5475	4872	5243
NOx Emissions (g)	381	373	397	396	351	379

Total Network Performance By Run

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	7.9	1.8	1.8	2.0	7.6	4.2
Total Delay (hr)	202.3	164.3	155.2	169.1	228.6	183.9
Travel Time (hr)	471.6	425.2	417.5	433.5	496.8	448.9
Fuel Used (gal)	394.4	381.5	380.2	387.9	400.4	388.9
HC Emissions (g)	5136	5007	5286	5597	5280	5261
CO Emissions (g)	245816	241958	245868	253938	246710	246858
NOx Emissions (g)	17255	16859	17589	18363	17557	17524

Arterial Level of Service

2045 PM Peak - Roundabouts

10/05/2018

Arterial Level of Service: EB Greenhill Rd

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Hudson Rd	3	16.6	24.5	0.1	17
	9	2.1	17.7	0.1	17
Algonquin Dr	4	1.0	12.1	0.1	41
Ashworth Dr	5	7.1	20.9	0.2	32
IA 58	6	35.4	62.1	0.2	14
	35	7.3	29.1	0.3	33
S Main St	13	8.3	13.9	0.1	22
	36	1.1	17.7	0.1	19
Coneflower Pkwy	16	0.5	5.3	0.1	43
Prairie Pkwy	19	7.8	25.4	0.2	32
Orchard Hill Rd	21	1.3	37.5	0.3	33
Oster Pkwy	24	6.8	28.4	0.3	36
	37	1.6	25.7	0.2	27
Rownd St	27	5.3	9.1	0.1	24
	39	0.4	14.6	0.1	16
Green Greek Rd	30	0.5	20.8	0.3	44
Cedar Heights Dr	32	7.2	20.7	0.2	32
Total		110.1	385.6	2.9	27

Arterial Level of Service: WB Greenhill Rd

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Cedar Heights Dr	32	16.4	32.9	0.2	24
Green Greek Rd	30	1.8	24.6	0.2	27
	39	1.7	21.9	0.3	41
Rownd St	27	5.8	10.1	0.1	24
	37	0.5	14.2	0.1	15
Oster Pkwy	24	6.1	20.6	0.2	33
Orchard Hill Rd	21	1.1	32.3	0.3	31
Prairie Pkwy	19	8.0	34.6	0.3	36
Estate Dr	16	1.4	28.8	0.2	29
	36	0.8	5.8	0.1	39
S Main St	13	8.1	14.4	0.1	23
	35	2.2	17.9	0.1	17
IA 58	6	246.8	267.2	0.3	4
	5	13.8	31.7	0.2	27
	4	1.3	24.7	0.2	27
	9	1.6	12.8	0.1	39
Hudson Rd	3	21.4	27.2	0.1	11
Total		338.7	621.7	3.0	17

3: Hudson Rd & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.1	0.1	0.1	0.1	0.1	0.1
Total Delay (hr)	3.1	3.0	2.8	3.0	2.9	3.0
Travel Time (hr)	12.1	12.0	11.6	12.0	11.9	11.9
Fuel Used (gal)	9.4	9.4	9.3	9.3	9.7	9.4
HC Emissions (g)	117	135	120	154	128	131
CO Emissions (g)	4566	4809	4478	5083	4989	4785
NOx Emissions (g)	438	483	445	527	464	471

4: Algonquin Dr & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.1	0.1	0.1	0.1	0.1	0.1
Total Delay (hr)	0.4	0.4	0.4	0.4	0.5	0.4
Travel Time (hr)	5.1	4.8	5.0	5.2	5.0	5.0
Fuel Used (gal)	6.6	6.1	6.4	6.7	6.3	6.4
HC Emissions (g)	122	126	118	142	123	126
CO Emissions (g)	5569	5457	5381	5934	5407	5550
NOx Emissions (g)	381	381	363	430	380	387

5: Ashworth Dr & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	2.2	2.0	2.2	2.4	2.2	2.2
Travel Time (hr)	7.9	7.4	8.1	8.2	7.9	7.9
Fuel Used (gal)	8.8	8.2	9.1	8.8	8.5	8.7
HC Emissions (g)	139	136	134	146	148	141
CO Emissions (g)	6405	6103	6596	6427	6453	6397
NOx Emissions (g)	454	439	444	473	476	457

6: IA 58 & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.5	0.5	0.5	0.5	0.5	0.5
Total Delay (hr)	15.9	14.7	15.1	15.5	14.6	15.2
Travel Time (hr)	32.6	30.8	31.2	32.1	31.0	31.5
Fuel Used (gal)	24.9	23.9	24.2	24.5	24.0	24.3
HC Emissions (g)	410	436	462	409	406	424
CO Emissions (g)	18371	18277	19018	18279	17843	18358
NOx Emissions (g)	1239	1299	1352	1240	1235	1273

13: S Main St & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	2.7	2.3	2.3	2.4	2.7	2.5
Travel Time (hr)	9.0	8.6	8.4	8.6	9.2	8.8
Fuel Used (gal)	5.6	5.5	5.3	5.5	5.7	5.5
HC Emissions (g)	51	43	50	47	74	53
CO Emissions (g)	1560	1402	1428	1416	1917	1544
NOx Emissions (g)	177	157	169	165	237	181

16: Coneflower Pkwy/Estate Dr & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.4	0.4	0.4	0.4	0.4	0.4
Travel Time (hr)	6.1	6.0	6.1	6.1	6.3	6.1
Fuel Used (gal)	8.7	8.2	8.5	8.6	8.8	8.6
HC Emissions (g)	104	93	101	100	101	100
CO Emissions (g)	6404	5973	6319	6230	6489	6283
NOx Emissions (g)	367	335	361	361	368	358

19: Prairie Pkwy & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	2.0	1.9	1.8	1.9	2.0	1.9
Travel Time (hr)	10.1	10.0	10.1	10.4	10.5	10.2
Fuel Used (gal)	8.1	8.1	8.3	8.5	8.4	8.3
HC Emissions (g)	64	63	77	73	69	69
CO Emissions (g)	2566	2620	2958	2957	2759	2772
NOx Emissions (g)	304	295	338	325	319	316

21: Orchard Hill Rd & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.4	0.3	0.4	0.5	0.3	0.4
Travel Time (hr)	9.5	9.2	9.6	10.1	9.8	9.6
Fuel Used (gal)	13.5	13.2	13.5	14.2	14.0	13.7
HC Emissions (g)	151	148	159	140	165	153
CO Emissions (g)	9418	9131	9400	9486	9845	9456
NOx Emissions (g)	573	560	586	552	614	577

24: Oster Pkwy & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	1.3	1.3	1.2	1.3	1.3	1.3
Travel Time (hr)	6.4	6.3	6.1	6.5	6.4	6.3
Fuel Used (gal)	5.7	5.6	5.7	5.9	5.8	5.8
HC Emissions (g)	58	58	70	55	64	61
CO Emissions (g)	2862	2757	3055	2862	2968	2901
NOx Emissions (g)	232	233	260	224	248	239

27: Rownd St & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	1.4	1.3	1.3	1.3	1.3	1.3
Travel Time (hr)	5.2	5.0	5.4	5.8	5.5	5.4
Fuel Used (gal)	3.1	3.0	3.3	3.5	3.3	3.2
HC Emissions (g)	18	17	34	32	28	26
CO Emissions (g)	564	560	827	799	753	701
NOx Emissions (g)	75	74	114	110	104	96

30: Green Greek Rd & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.2	0.2	0.2	0.2	0.2	0.2
Travel Time (hr)	6.5	6.1	6.1	6.3	6.5	6.3
Fuel Used (gal)	9.8	9.3	9.1	9.5	9.9	9.5
HC Emissions (g)	98	108	128	129	121	117
CO Emissions (g)	6623	6544	6755	6920	7051	6779
NOx Emissions (g)	392	407	452	459	451	432

32: Cedar Heights Dr & Greenhill Rd Performance by run number

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.1	0.1	0.1	0.1	0.1	0.1
Total Delay (hr)	2.8	3.4	2.8	2.8	3.3	3.0
Travel Time (hr)	9.9	10.5	9.7	9.6	10.7	10.1
Fuel Used (gal)	7.3	7.3	6.9	7.0	7.6	7.2
HC Emissions (g)	63	72	84	82	73	75
CO Emissions (g)	3269	3318	3398	3353	3445	3357
NOx Emissions (g)	257	274	301	296	277	281

Total Network Performance By Run

Run Number	1	2	3	4	5	Avg
Denied Delay (hr)	0.9	0.9	0.9	0.9	0.9	0.9
Total Delay (hr)	37.0	35.1	35.0	36.1	35.7	35.8
Travel Time (hr)	194.0	188.8	189.4	193.8	194.1	192.0
Fuel Used (gal)	218.9	213.2	214.9	218.6	219.7	217.0
HC Emissions (g)	3016	3093	3311	3131	3225	3155
CO Emissions (g)	149526	147873	152234	150906	152985	150705
NOx Emissions (g)	10337	10421	10967	10593	10879	10639

Arterial Level of Service

2045 Daytime Offpeak - Roundabouts

10/05/2018

Arterial Level of Service: EB Greenhill Rd

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Hudson Rd	3	7.7	15.7	0.1	27
	9	1.1	16.9	0.1	18
Algonquin Dr	4	0.5	11.7	0.1	43
Ashworth Dr	5	5.5	19.5	0.2	34
IA 58	6	26.0	52.7	0.2	16
	35	5.2	27.2	0.3	36
S Main St	13	5.8	11.4	0.1	27
	36	0.5	17.2	0.1	20
Coneflower Pkwy	16	0.3	5.1	0.1	45
Prairie Pkwy	19	5.8	23.5	0.2	35
Orchard Hill Rd	21	0.7	37.2	0.3	33
Oster Pkwy	24	5.6	27.2	0.3	37
	37	1.0	25.1	0.2	27
Rownd St	27	4.6	8.5	0.1	26
	39	0.2	14.5	0.1	17
Green Greek Rd	30	0.3	20.6	0.3	44
Cedar Heights Dr	32	5.4	19.0	0.2	34
Total		76.1	352.7	2.9	29

Arterial Level of Service: WB Greenhill Rd

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Cedar Heights Dr	32	8.3	24.6	0.2	33
Green Greek Rd	30	1.0	23.7	0.2	28
	39	1.0	21.2	0.3	43
Rownd St	27	4.9	9.2	0.1	26
	37	0.2	13.9	0.1	16
Oster Pkwy	24	5.1	19.6	0.2	35
Orchard Hill Rd	21	0.6	31.7	0.3	32
Prairie Pkwy	19	6.0	32.4	0.3	38
Estate Dr	16	0.7	28.2	0.2	29
	36	0.4	5.4	0.1	43
S Main St	13	5.5	11.9	0.1	28
	35	0.4	16.1	0.1	19
IA 58	6	33.3	54.5	0.3	18
	5	11.3	29.3	0.2	29
	4	0.8	24.1	0.2	28
	9	0.8	11.9	0.1	42
Hudson Rd	3	8.3	13.9	0.1	22
Total		88.5	371.7	3.0	29

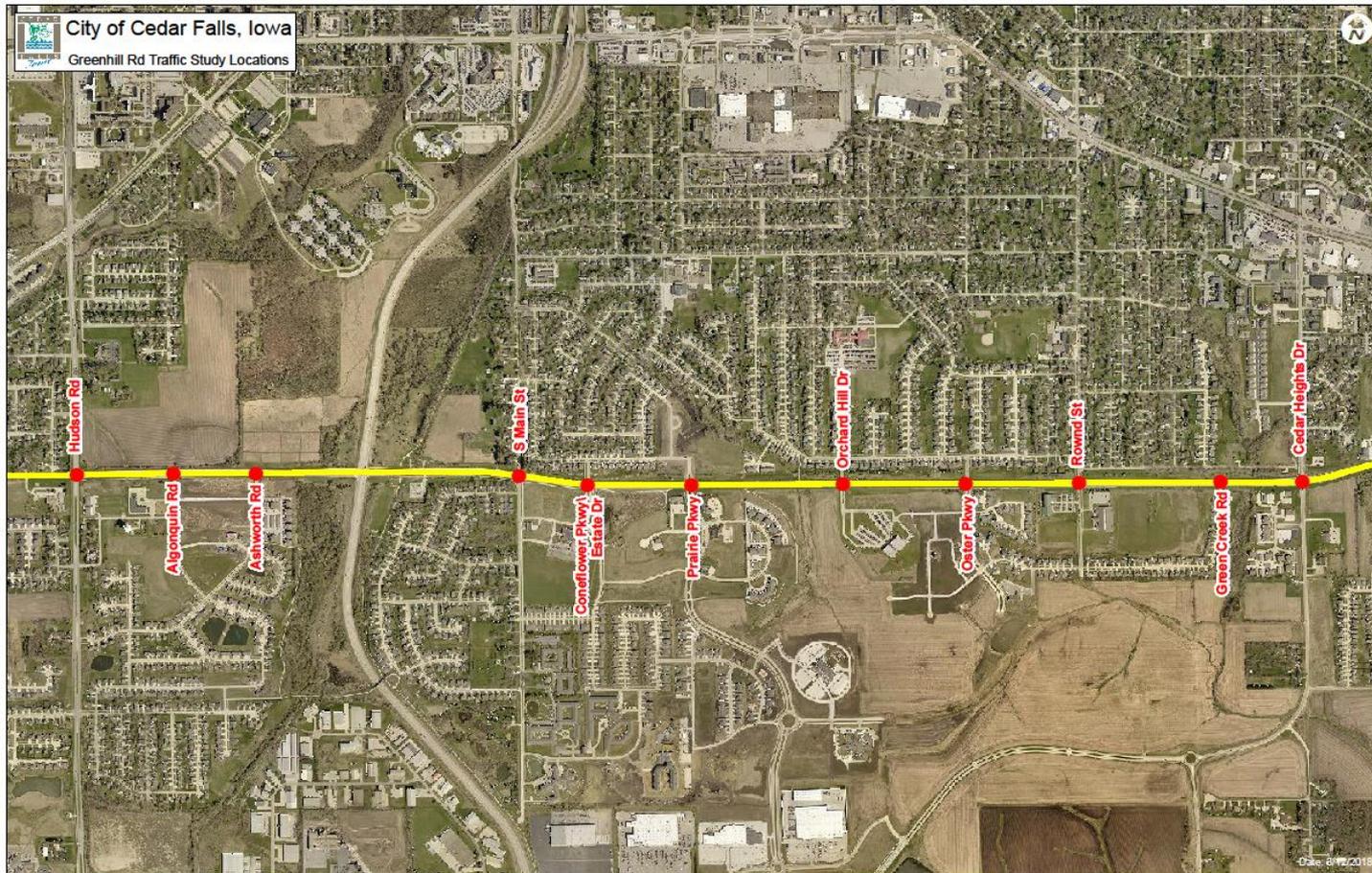


GREENHILL RD CORRIDOR TRAFFIC STUDY

COMMITTEE OF THE WHOLE

Corridor Study

Hudson Rd to Cedar Heights Dr / 11 Intersections



Study Goals

- Corridor
 - Traffic forecasts/demand
 - Safety/operations
 - Development considerations
- Pedestrians/Bicyclists
- Corridor Intersections
 - Lanes & traffic control – stop, signal, roundabout
 - Short term needs – improvements/costs
 - Long term needs – improvements/costs
- Public Input – 3 meetings & comment submittals
- Recommendations to Council
 - Future planning & budgeting improvement projects

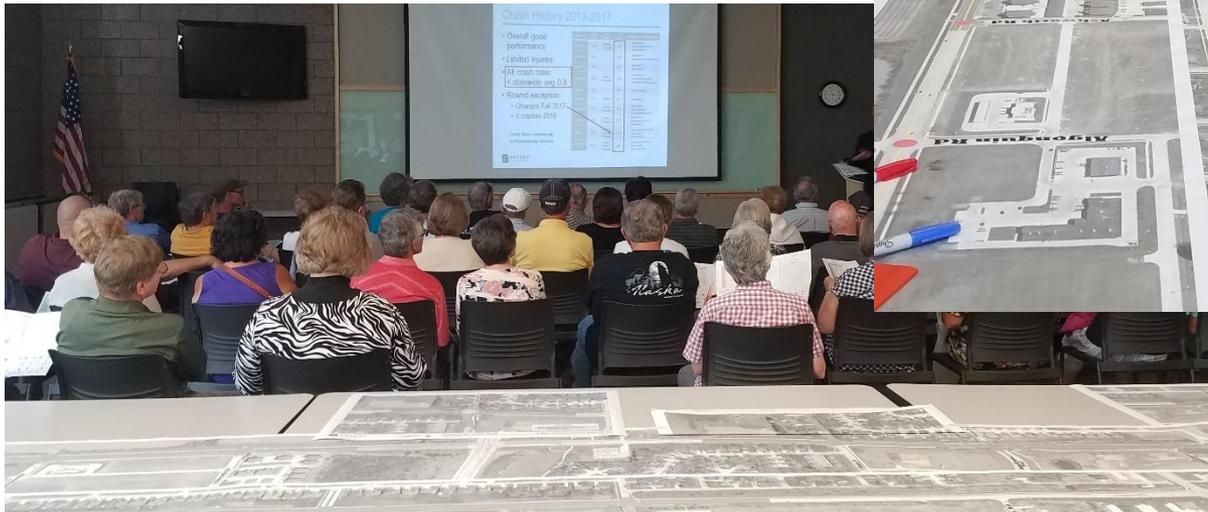
Why?

- Community Growth
- Land Use Changes
- Traffic Growth
- Safety
- Operations
- Bicyclists
- Pedestrians
- Planning for needs
- Budgeting / Funding



Public Input Process

- 3 Public Input Meetings
- Presentations & open discussion
- Comments
 - At meetings
 - Following



Public Input – most commented

Intersections

- S Main St (51)
- Overall Corridor (25)
- Estate/Coneflower (8)
- Prairie Parkway (8)
- Orchard (4)
- Hudson (4)
- Rownd (3)
- Oster (1)
- Algonquin (1)

Comment subject

- Roundabout positive (17)
- Turn lanes (11)
- Pedestrian related (9)
- Safety concerns (9)
- Capacity/delay (7)
- Left turn signals (7)
- Roundabout negative (4)
- Right-of-way (4)
- Ped signal timings (4)
- Emergency vehicles (3)
- Sufficient gaps (3)
- Sunday Traffic (3)

Study Work

- Crash History
 - injuries, frequency, types, causes
- Traffic Counts
 - historic, existing
- Traffic Forecasts
 - Land use
 - Trip generation
- Operations
 - Travel Time, speed
 - Corridor demand & function
 - Capacity of intersections – delay



7 Tech Memos

Crash History 2013-2017

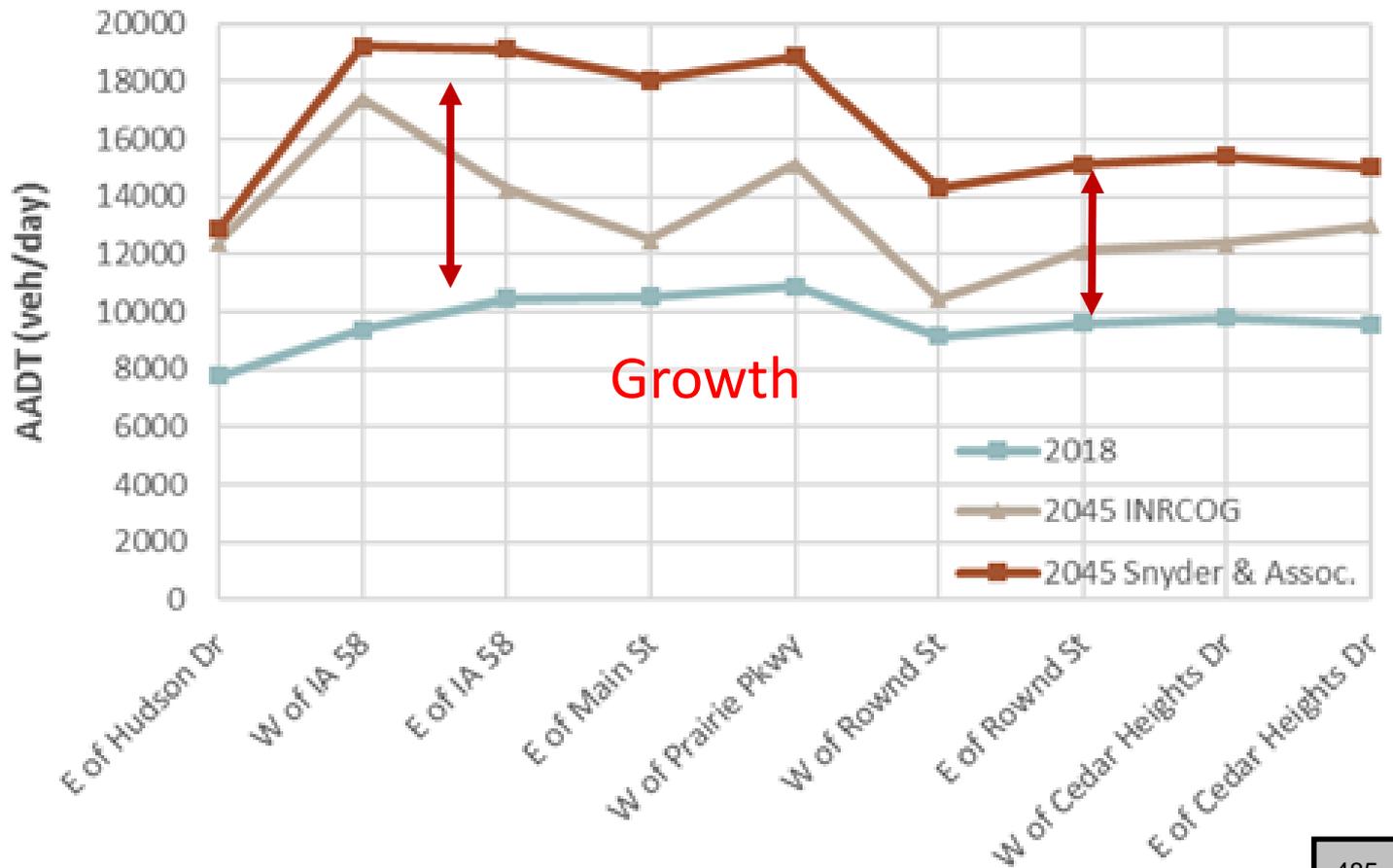
- Overall good performance
- Limited injuries
- All crash rates < statewide avg 0.8
- Rownd exception
 - Changes Fall 2017
 - 0 crashes 2018

Crash Rate = crashes per million entering vehicles

Intersection	Crashes (Injury)	Crash Severity	Crash Rate*	Predominant Crash Types (Crashes)
Hudson Rd	17 (6)	3 Minor 3 Possible	0.47	Rear-end (7) Oncoming Left Turn (2) Non-collision (2)
Algonquin Dr	5 (0)		0.32	Rear-end (4) Sideswipe, Same Direction (1)
Ashworth Dr	3 (0)		0.17	Rear-end (1) Broadside (1)
S Main St	14 (4)	1 Minor 3 Possible	0.48	Rear-end (6) Oncoming Left Turn (6) Sideswipe, Same Direction (1)
Estate Dr	1 (0)		0.05	Non-collision (1)
Prairie Pkwy	3 (1)	1 Minor	0.12	Rear-end (3)
Orchard Hill Dr	6 (4)	1 Minor 3 Possible	0.31	Rear-end (3) Non-collision (2) Oncoming Left Turn (1)
Oster Pkwy	5 (3)	1 Minor 2 Possible	0.28	Rear-end (2) Oncoming Left Turn (1) Broadside (1)
Rownd St	23 (5)	2 Major 1 Minor 2 Possible	1.01	Oncoming Left Turn (16) Rear-end (5) Broadside (2)
Cedar Heights Dr	18 (7)	1 Major 2 Minor 4 Possible	0.56	Oncoming Left Turn (6) Rear-end (6) Non-collision (3)

Traffic Forecasts

Forecasted Daily Traffic on Greenhill Rd

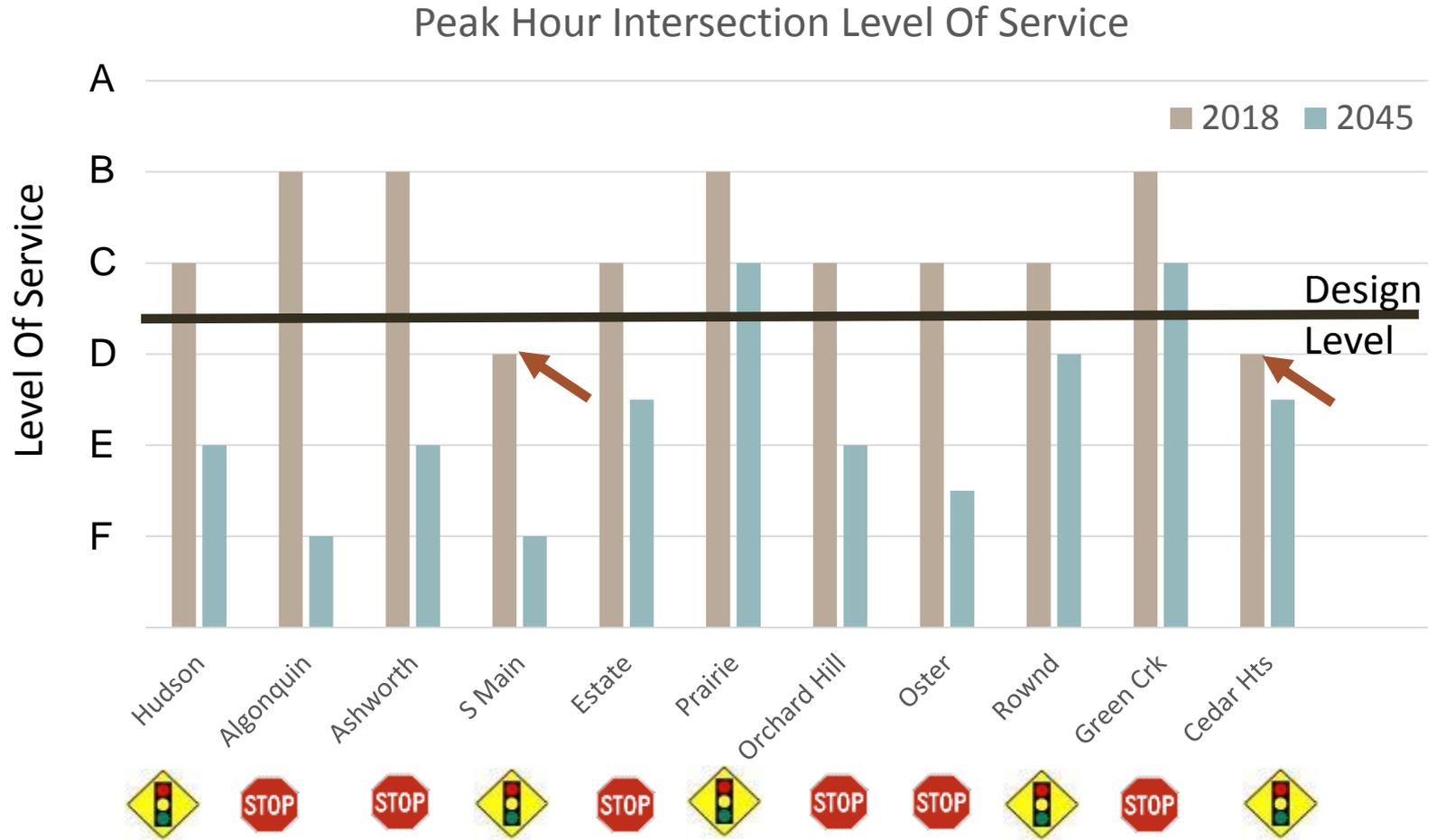


Improvement Considerations

- Safety
- Traffic Operations – peak & non peak
- Complete Streets Policy
- Constructability
- Right of Way Impacts
- Costs – initial / maintenance / societal
- Other Environmental Impacts – fuel/emissions
- Timing of Needs

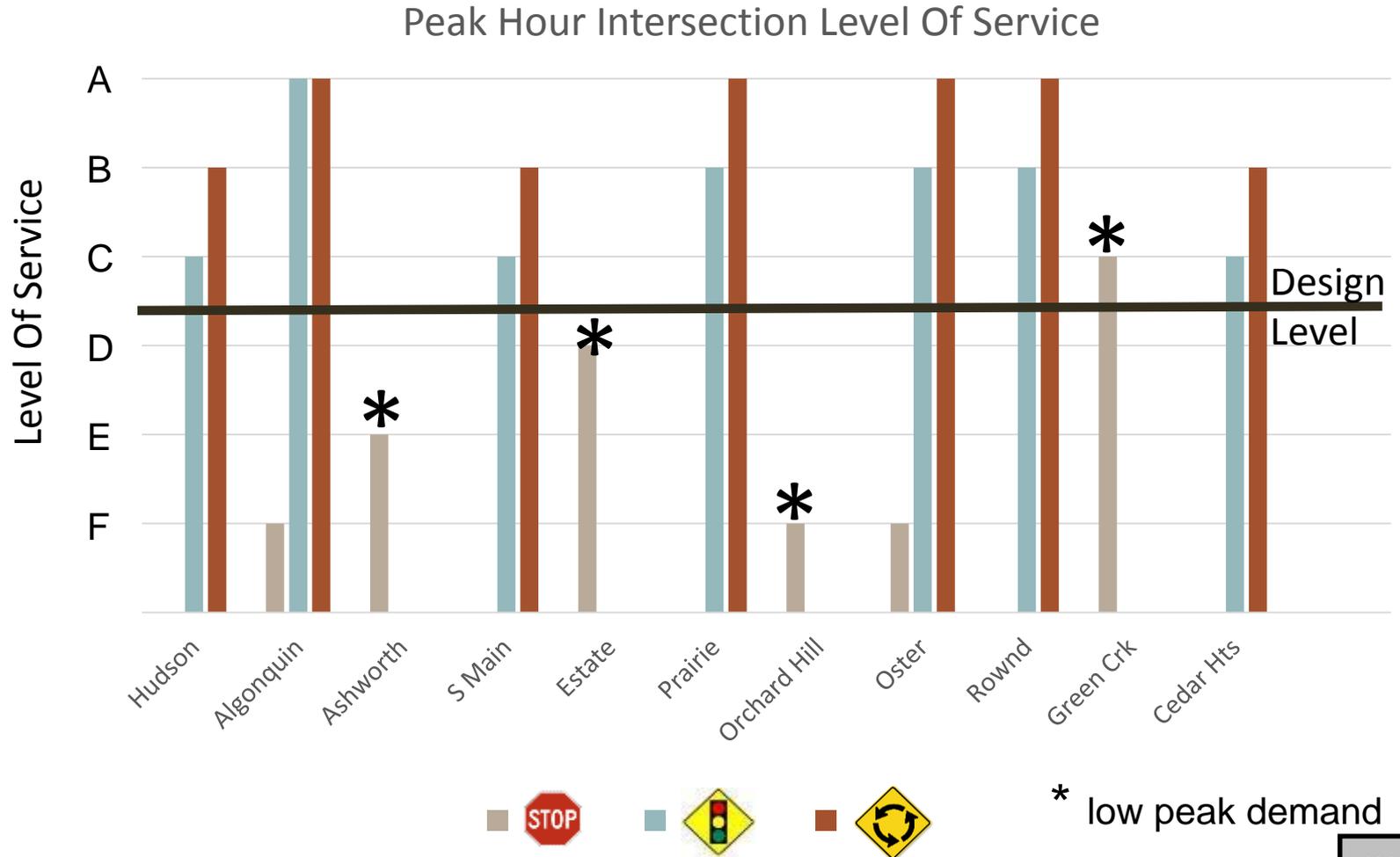
Corridor Operations

Existing/Future Traffic – No Improvements



Corridor Operations

Future Traffic (2045) – Improvement Alternatives

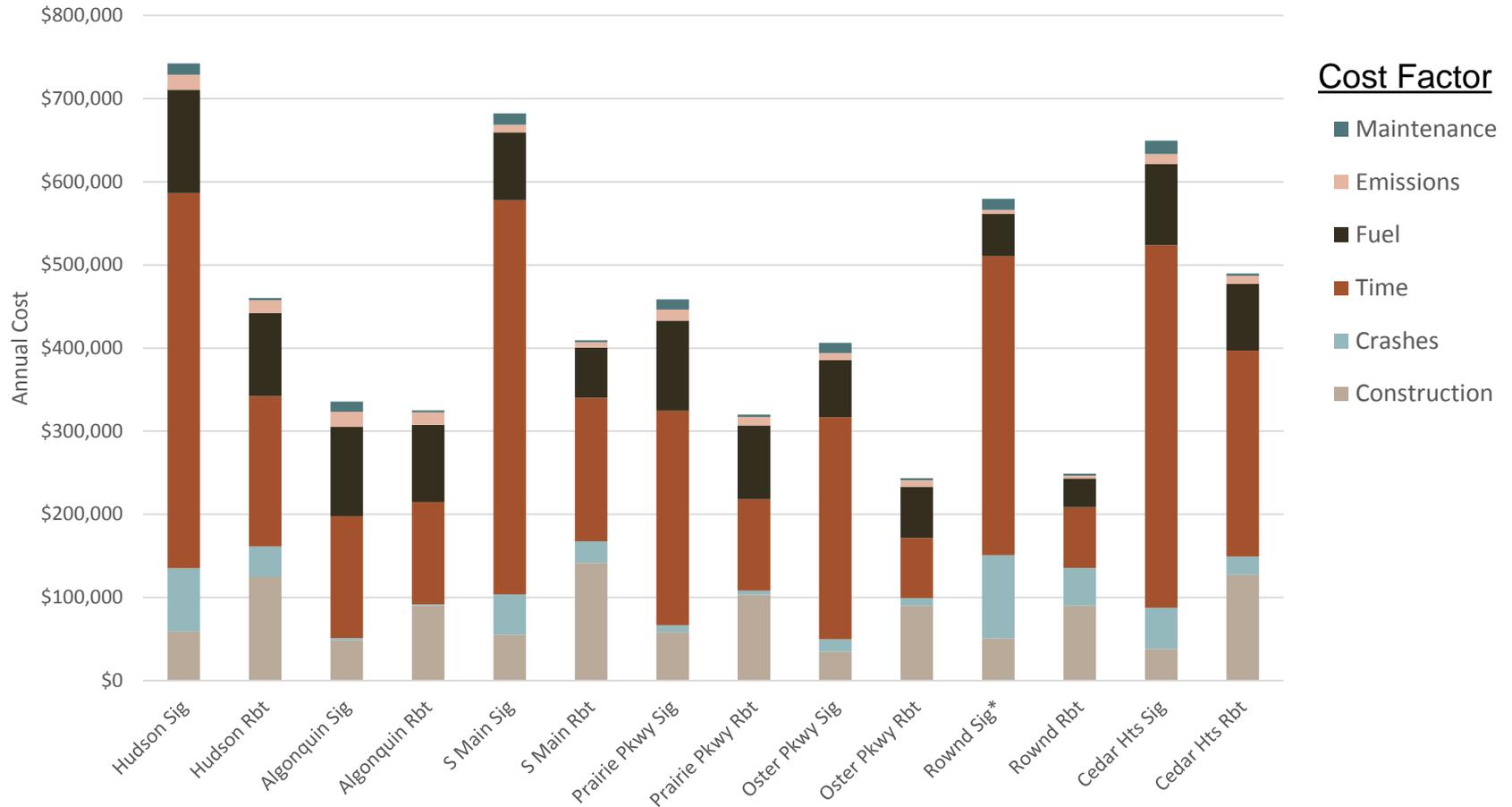


Alternative Benefits / Costs

- Construction Costs (assume 20 yr life)
- Safety Considerations
 - Likely crash patterns – property damage or injuries
- User Operating Costs (*per U.S. DOT, FHWA, NHTSA*)
 - Travel time / delay value
 - Fuel Consumption
 - Emissions while delayed or idling
- Maintenance Costs
 - Pavement life/rehabilitation
 - Signals, lighting, signing, markings

Present Value Life Cycle Annual Cost

Greenhill Rd Intersection Improvements (2045 traffic)

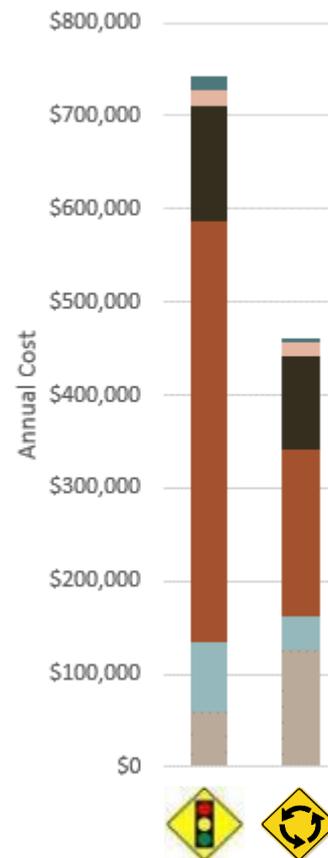


Intersection - Control Type

Sig = signal & turn lanes
Rbt = Roundabout

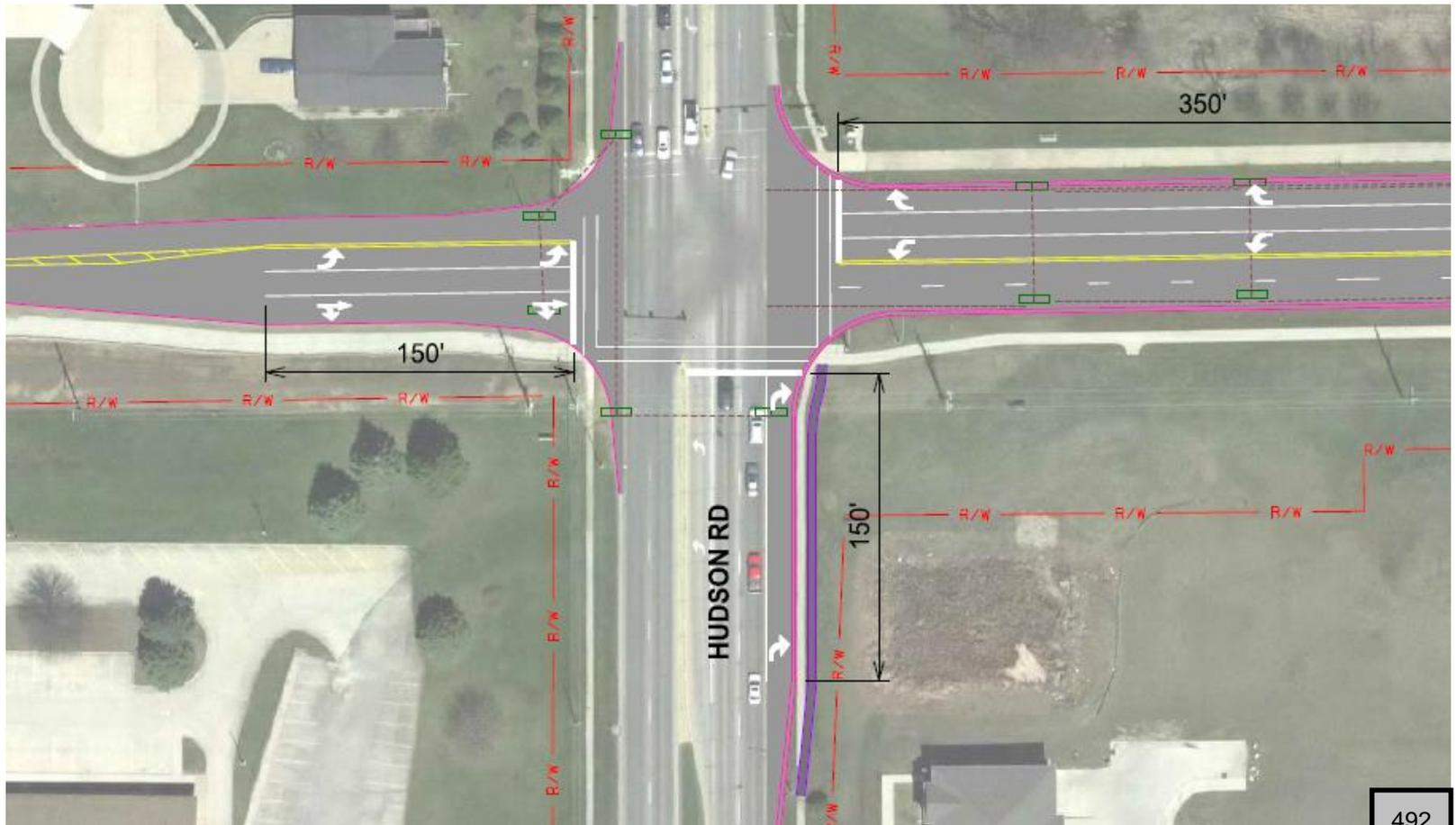
Hudson Rd

- Needs: Future Safety & Capacity
- Recommendation:
 - Widen for northbound right turn lane
 - Widen for westbound left turn lane
 - Widen for eastbound turn lane alignment
- Time Frame:
 - 5-10 Years (hospital, growth south/west)
- Constructability: no major conflicts
- Right of Way:
 - within current limits & not anticipated
 - some slope/grading issues behind trail in southwest
- Considerations:
 - special event traffic UNI
 - signalized corridor consistency on Hudson
 - Truck traffic - Hudson to Greenhill / IA 58



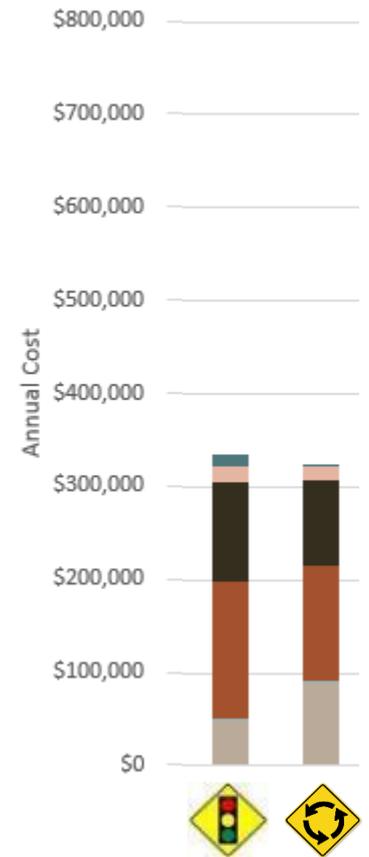
Hudson Rd

Const Cost Est. \$1.2M



Algonquin Dr

- Needs: Future Safety & Capacity
- Recommendation:
 - Widen for left turn lanes east /west
 - Signalize if warranted
- Time Frame:
 - 5-10 Years / development driven (hospital)
- Constructability: no major conflicts
- Right of Way: within current limits
- Considerations:
 - Incorporate improvements w/ hospital design
 - Emergency Vehicles Access to/from

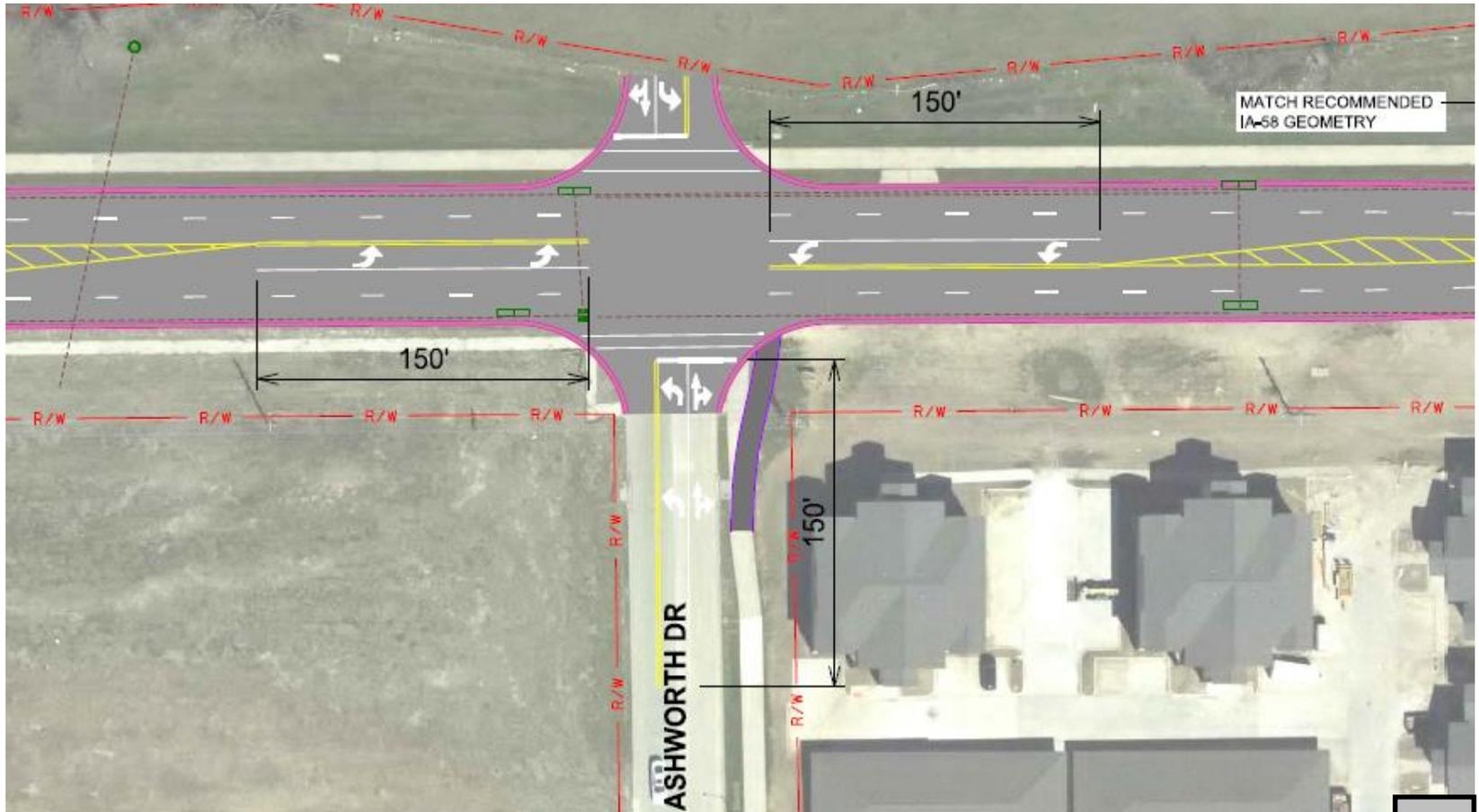


Ashworth Dr

- Needs: Future Safety & Capacity
- Recommendation:
 - Widen for left turn lanes east /west
- Time Frame:
 - development driven (hospital / other to north)
- Constructability: no major conflicts
- Right of Way: within current limits
- Considerations:
 - Incorporate improvements w/ development to north

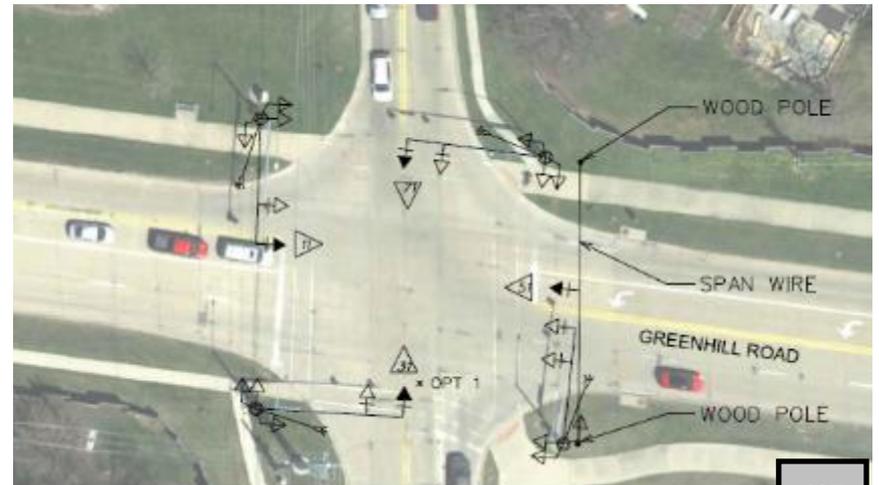
Ashworth Dr

Const Cost Est. \$800K



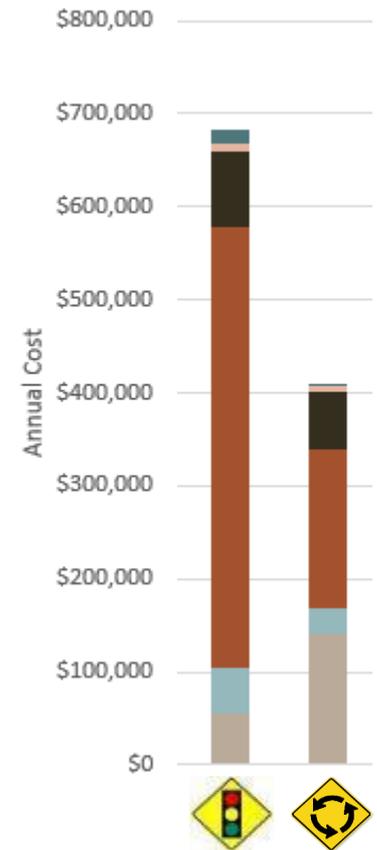
S Main St – Interim work

- Traffic Signal upgrade
 - EB/WB Left turn arrows
 - NB Left turn arrow
- Completed by City 6/27/18
- Responds to issues:
 - Safety
 - Left turn delay
- Timing adjustments made
- Lack of capacity westbound & southbound



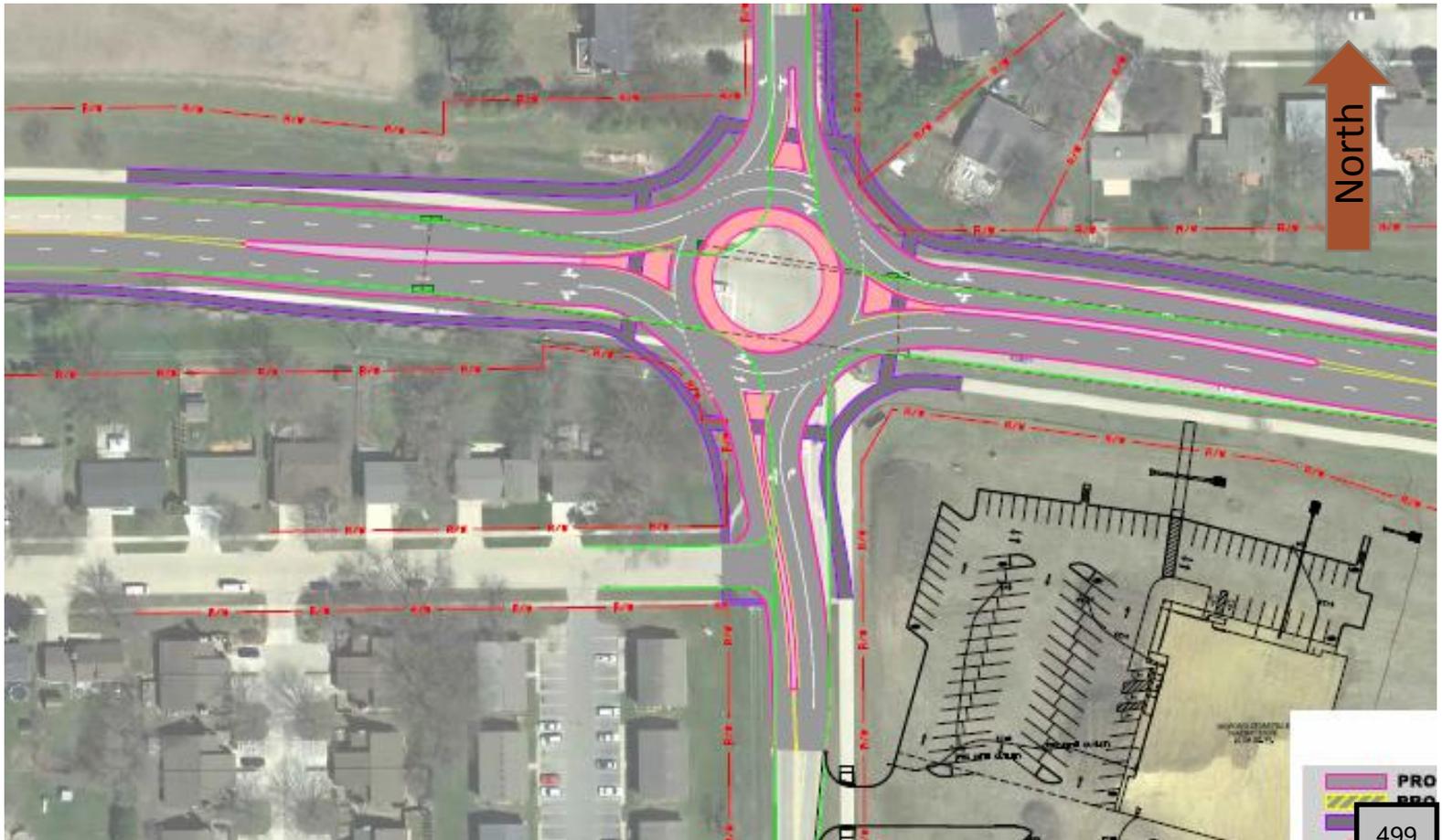
S. Main St

- Needs: Safety & Capacity
- Recommendation:
 - Reconstruct as roundabout
 - Balboa right in/right out – if safety issues change
- Time Frame:
 - <5 Years (current CIP design 2020 / construct 2021)
- Constructability:
 - Major utility conflicts – Elec, Gas, Fiber Comm
- Right of Way:
 - Roundabout - add'l space SW, NE, potential NW
- Considerations:
 - Utilities, ROW, NE/SW corner slopes



S. Main St

Const Cost Est.: \$2.8M

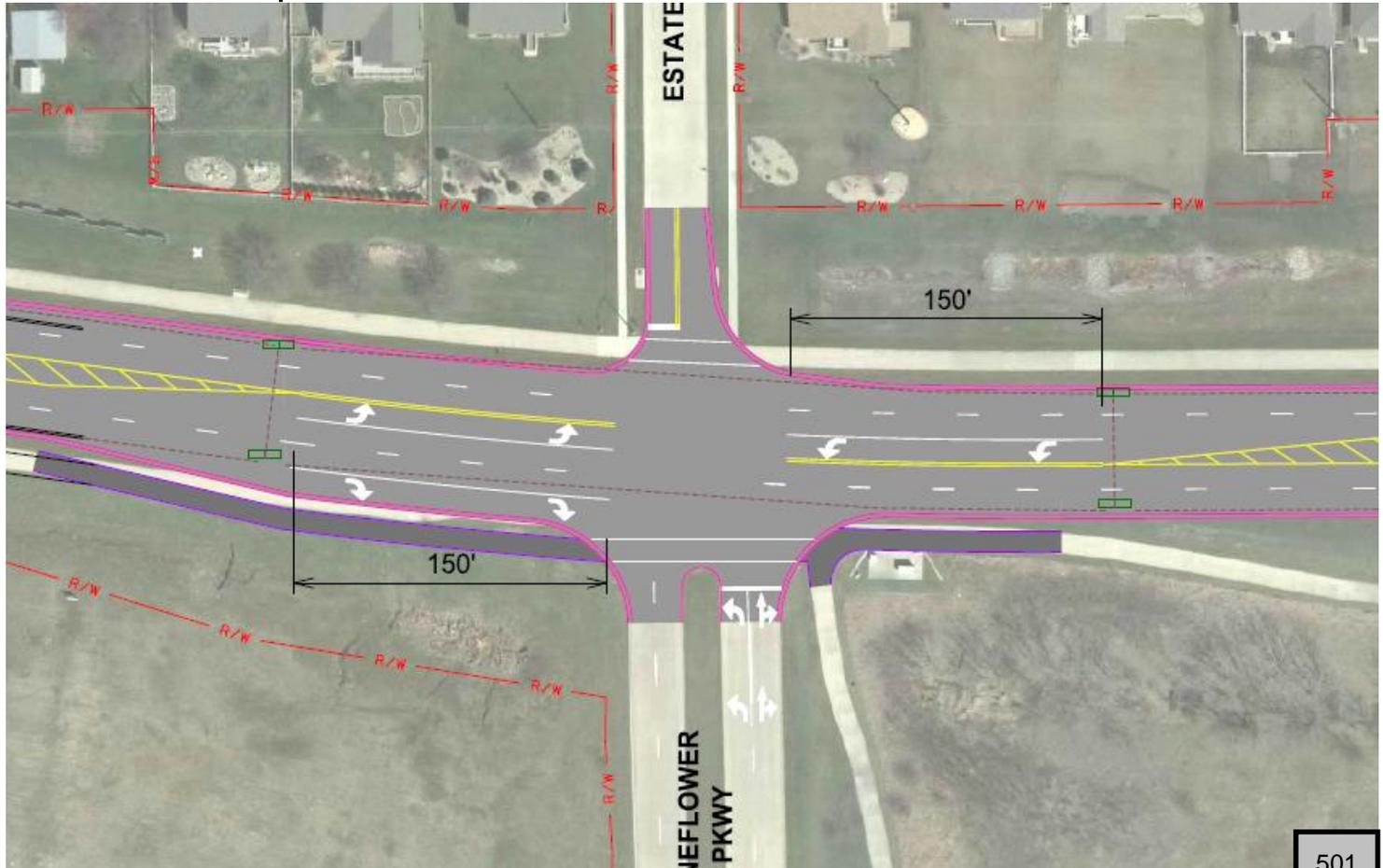


Estate/Coneflower

- Needs: Future Safety
- Recommendation:
 - Widen for left turn lanes east /west
 - Widen for right turn lane eastbound (Kwik Star)
 - Remain STOP control
- Time Frame:
 - 5-10 Years
- Constructability: no major conflicts
- Right of Way: within current limits

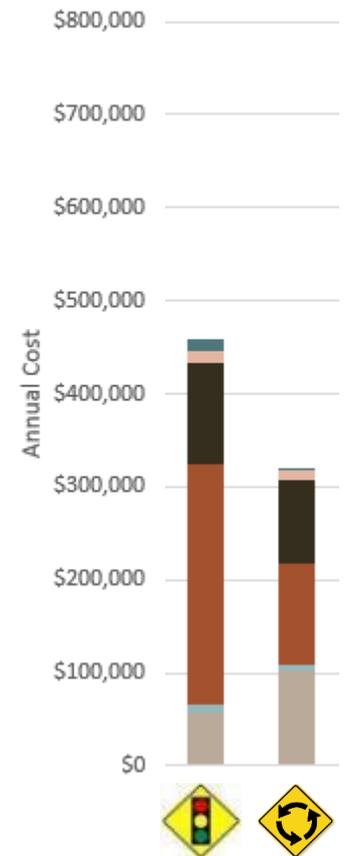
Estate/Coneflower

Const Cost Est. \$725K



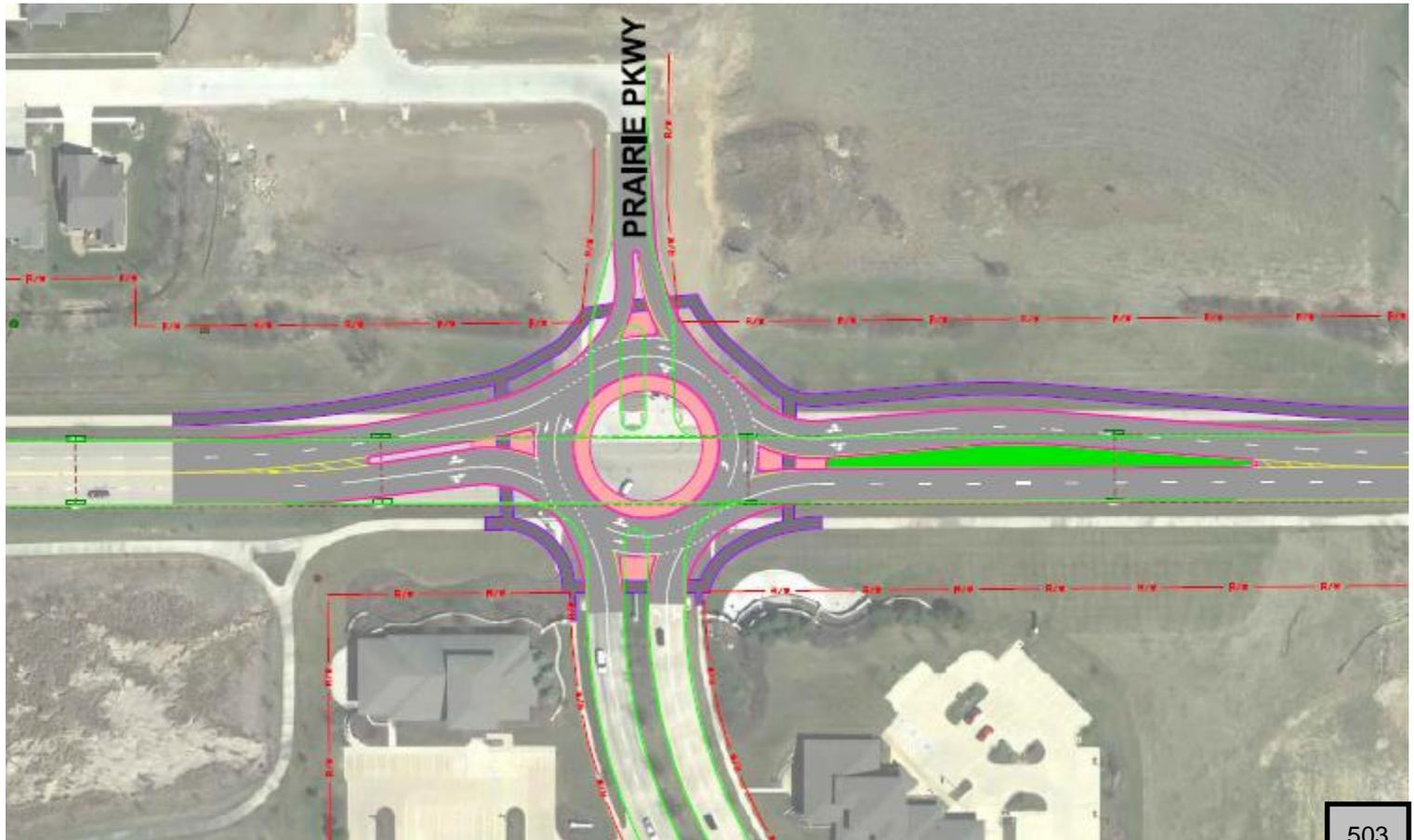
Prairie Parkway

- Needs: Future Safety & Capacity
- Recommendation:
 - Interim – add WB leading left turn signal (<\$75k)
 - Reconstruct as roundabout (long term)
- Time Frame:
 - 10 Years
 - Or development driven sooner
- Constructability: no major conflicts
- Right of Way: within current limits
- Considerations:
 - Efficiency per peak/imbalance traffic
 - Creates pedestrian crossing point



Prairie Parkway

Const Cost Est. \$2.1M

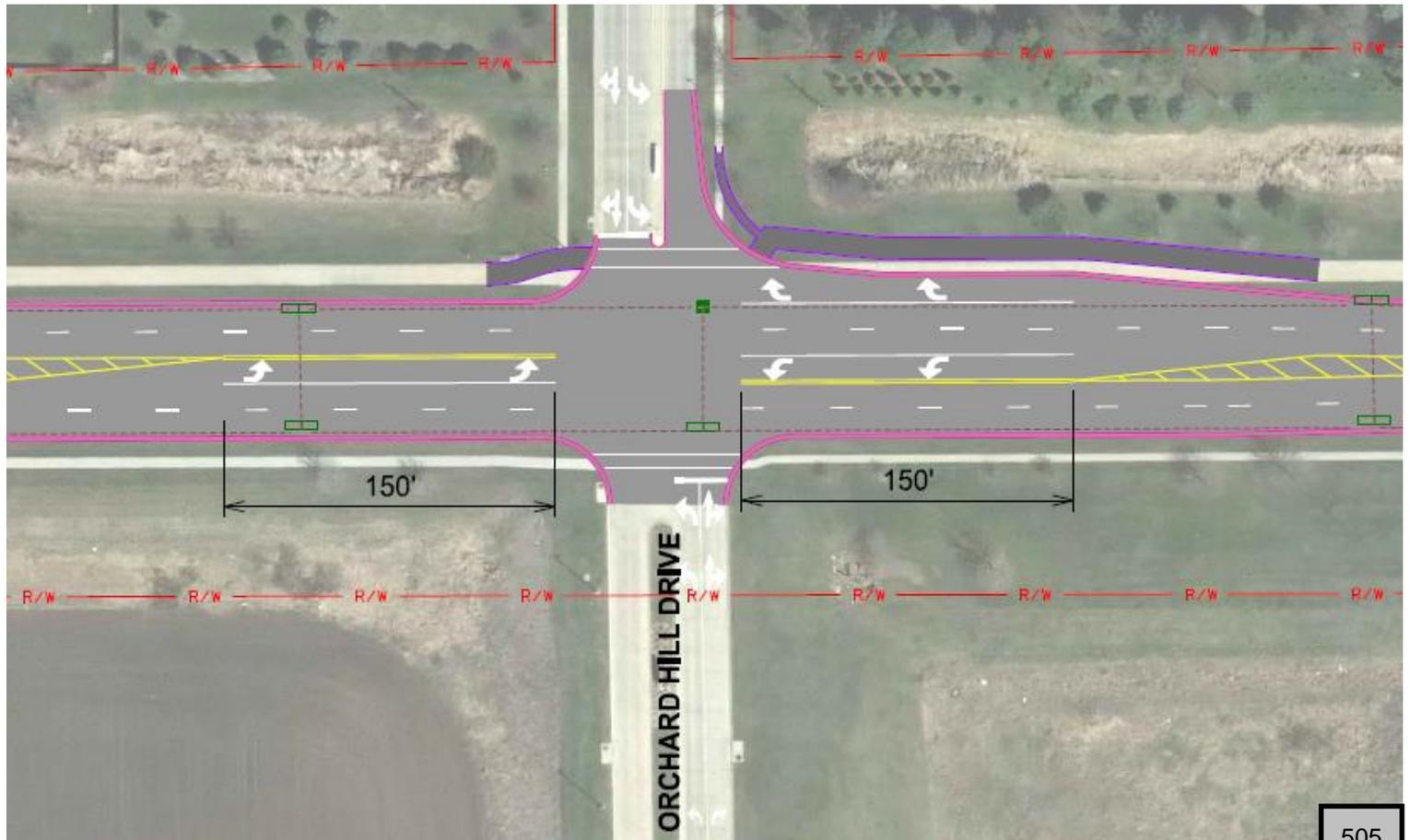


Orchard Hill

- Needs: Future Safety
- Recommendation:
 - Widen for left turn lanes east /west
 - Potential eastbound right turn lane
 - Remain two-way STOP control
- Time Frame:
 - >10 Years
- Constructability: no major conflicts
- Right of Way: within current limits
- Considerations:
 - Peak Sunday morning demands
 - Lack of connectivity to south

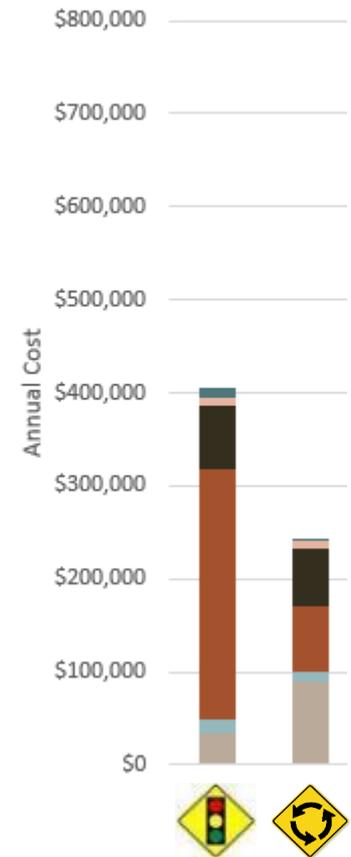
Orchard Hill

Const Cost Est. \$700K



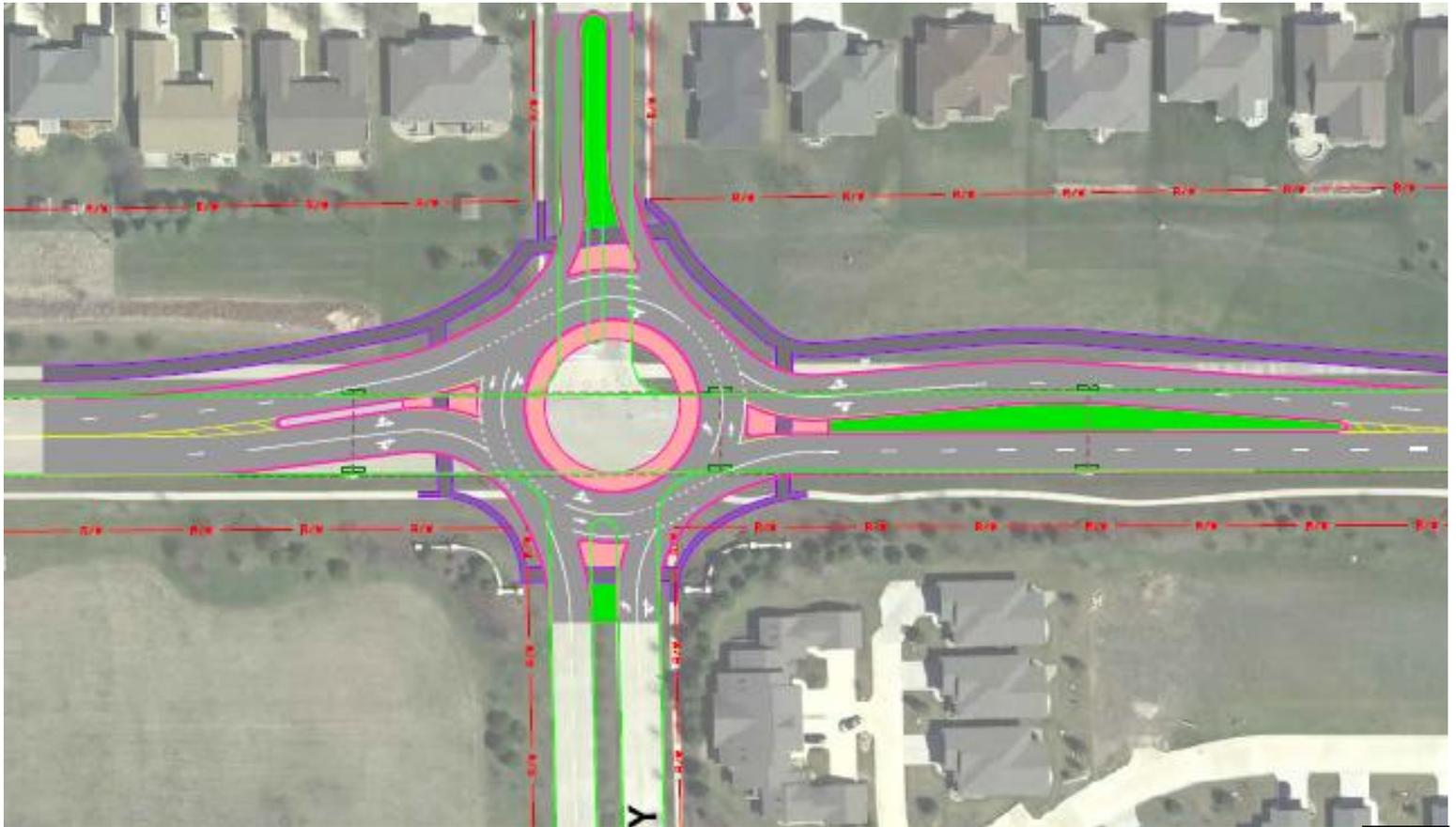
Oster Parkway

- Needs: Future Safety
- Recommendation:
 - Monitor delay/left turn crashes
 - Reconstruct as roundabout if safety/signalization warrant met
- Time Frame:
 - >10 Years / development driven
- Constructability: no major conflicts
- Right of Way: within current limits
- Considerations:
 - Connectivity south to Viking
 - Creates improved pedestrian crossing point



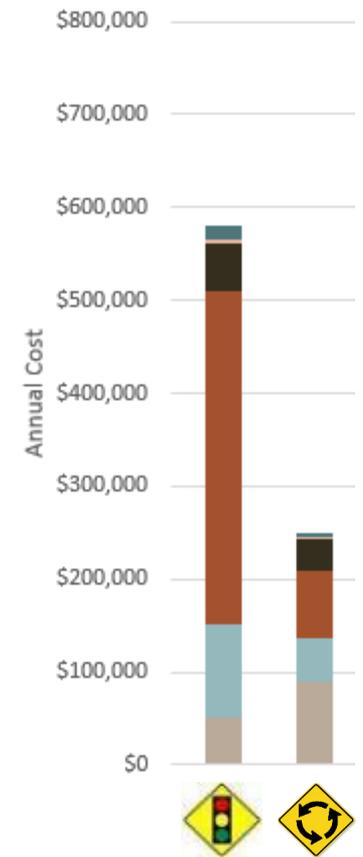
Oster Parkway

Const Cost Est. \$1.8M



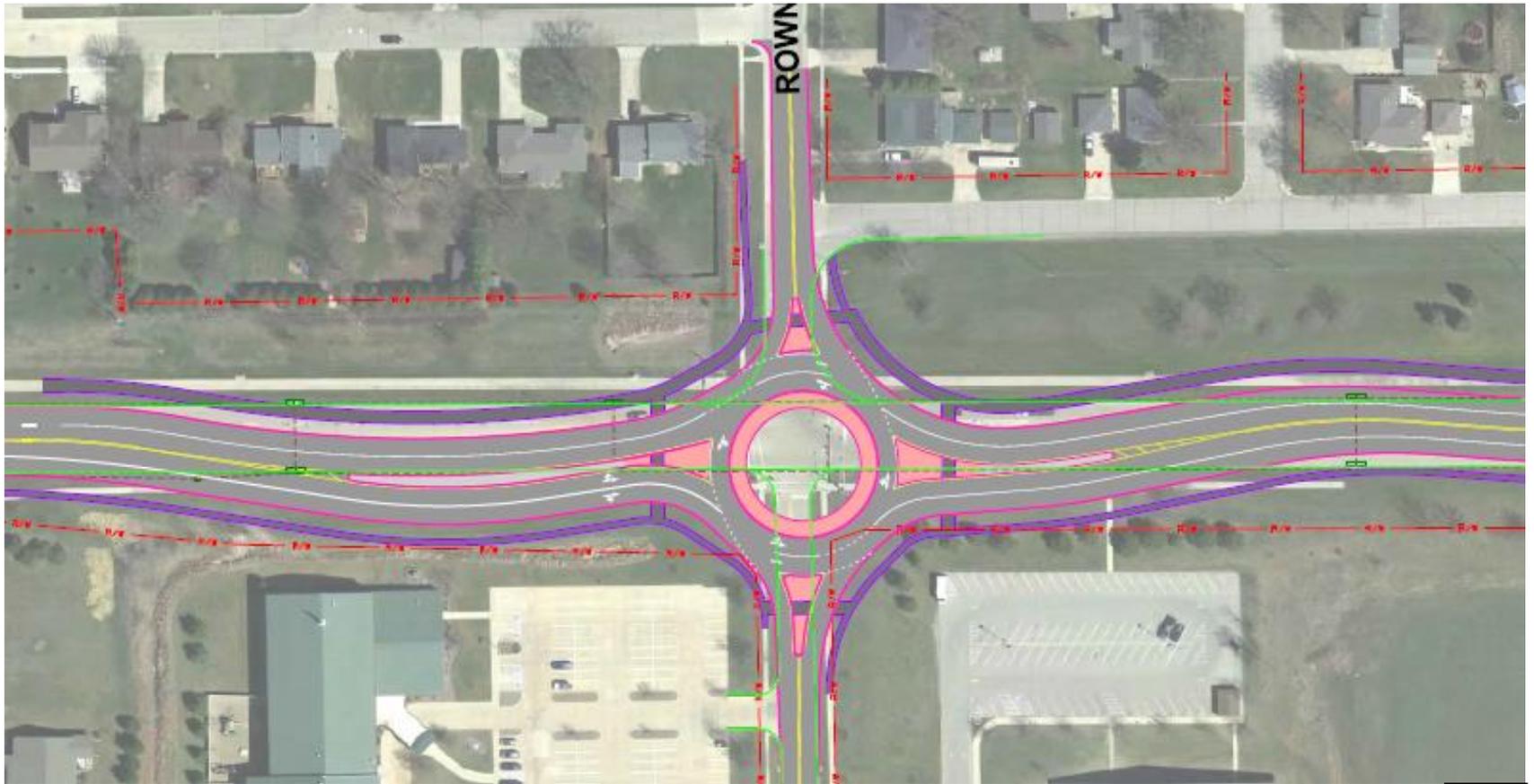
Rownd St

- Needs: Future Safety & Capacity
- Recommendation:
 - Monitor delay/Greenhill sideswipe crashes
 - Reconstruct as roundabout (long term)
- Time Frame:
 - >10 Years / development driven
- Constructability: no major conflicts
- Right of Way: within current limits
- Considerations:
 - Connectivity south to Viking
 - Creates improved pedestrian crossing point
 - Close proximity of Greenhill Drive to north



Rownd St

Const Cost Est. \$1.8M



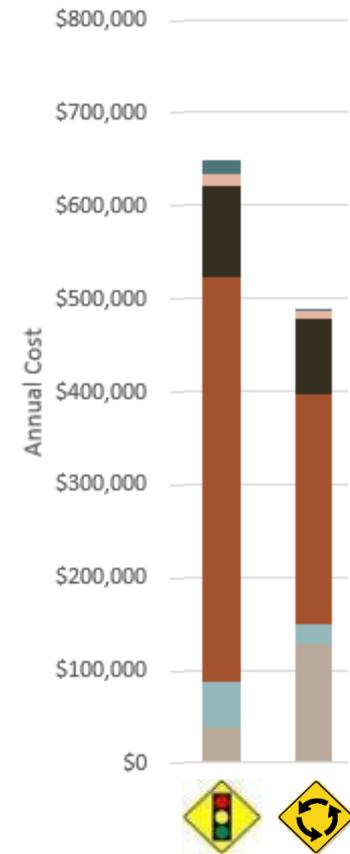
Green Creek Rd

- Needs: Future Safety
- Recommendation:
 - Widen for left turn lane westbound
 - Remain STOP control
- Time Frame:
 - Monitor for safety issues
- Constructability: no major conflicts
- Right of Way: within current limits
- Const Cost Est. \$600k



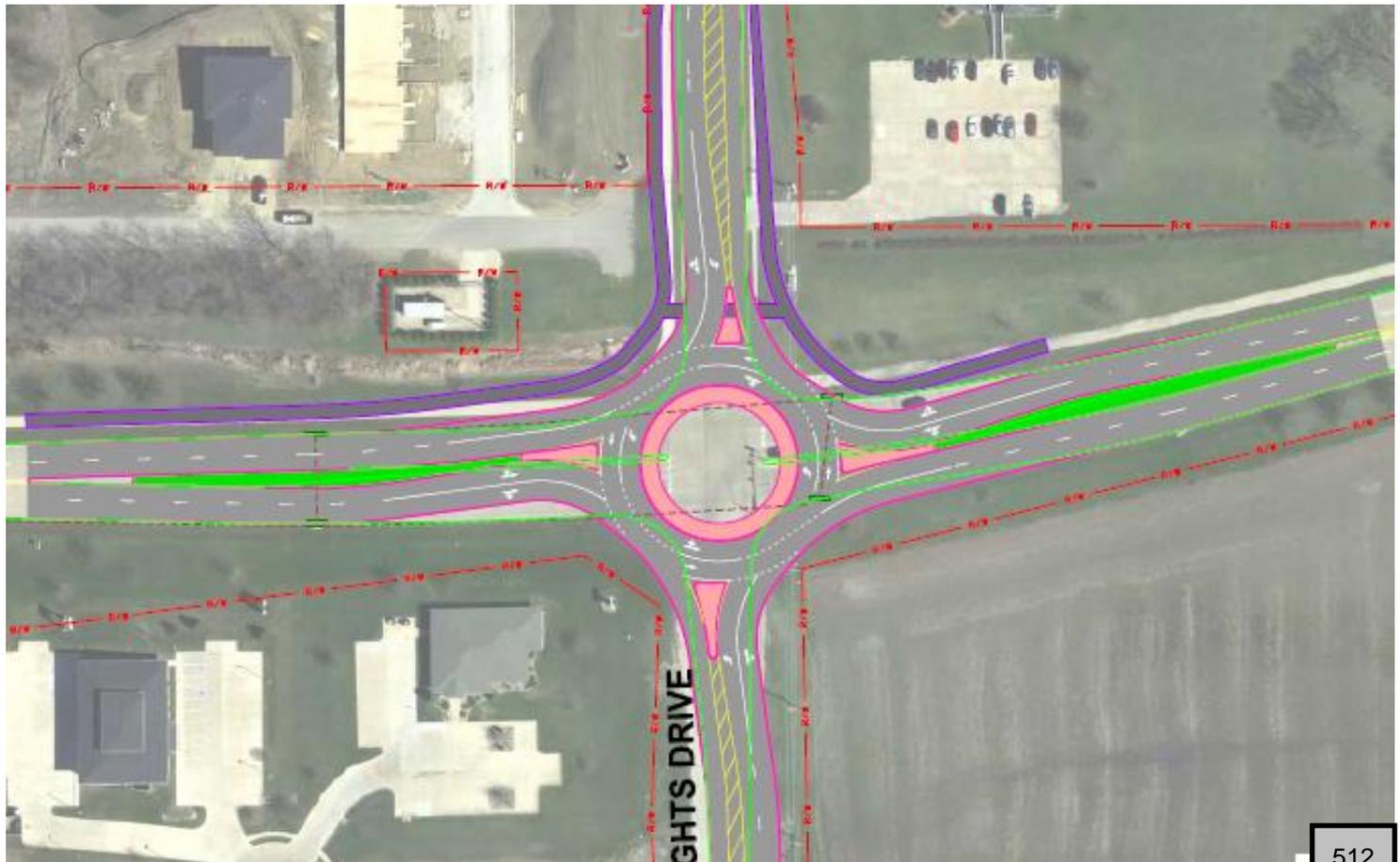
Cedar Heights Dr

- Needs: Safety, Capacity/Delay, Maintenance
- Recommendation:
 - Remove split phase signal
 - Reconstruct as roundabout
- Time Frame:
 - current CIP design 2019 / construct 2020
- Constructability:
 - Incorporate with reconstruction to south
- Right of Way:
 - Most w/in current limits, possible need SW/SE corners
- Considerations:
 - Church NE - possible driveway relocation to north
 - Pavement poor condition / requiring more rehab
 - Improve trails crossing



Cedar Heights Dr

Const Cost Est. \$2.5M



Pedestrians/Bicyclists

- Review of crash history
 - 3 total bike, 1 ped north side of Greenhill/trail
 - Vehicle right turn / conflict w/ bicycle
- Review existing
 - Sidewalk / Trail connectivity few gaps
 - Ramps – continued upgrades through maintenance
- Signals
 - Updated Pushbuttons, signal displays, countdown timers, instructional signs
 - Timing Updates – Walk/Don't Walk

Final Action

- Engineering is concluding the discussion
- Recommend Council approve study
- Resolution brought forward at future Council Meeting

Questions?

for Committee of
the Whole packet
inclusion
Dec 17th

use:
Greenhill Corridor
Traffic Study

----- Forwarded message -----

From: **Brian Kalina** <brian.kalina@gmail.com>

Date: Thu, Nov 29, 2018 at 1:35 PM

Subject: Following up on Greenhill / South Main proposals

To: Stephanie Sheetz <Stephanie.Sheetz@cedarfalls.com>

Cc: Lilly Sesma <lisesma@cfu.net>, Armando Sesma <nando2449@gmail.com>

Hi Stephanie,

I hope you had a nice Thanksgiving. My mother, stepdad, and I have had some opportunity to do some more thinking on current Greenhill and South Main intersection proposals, and I wanted to share latest thoughts. As for which is best for drivers' needs, that remains unclear to me. Some simulations would appear to show that the roundabout option manages traffic better, but I personally know of more people who express feeling less safe negotiating them. Which better represents reality? I'm not expect on judging this kind of thing, so when it comes to drivers' needs I am willing to trust the city to make the best decision. Of course, as someone who does simulations engineering for a living, I know first hand that simulation results are only as valid as their assumptions, inputs, and sub-models. My hope is that all simulation results will not merely be taken at face value, but rather, will be analyzed to understand how the simulations work and how they account for some of the more complex variables like human behavior.

Given that I can't form any conclusive opinion on drivers' needs, I'm brought back to what I know will bring about a most certain impact: if and how much private property Cedar Falls residents are being asked to give up. My mother, stepdad, and I all agree that our strong preference is to not have to give up any property. Our yard is an important part of our lives, and to lose part of it is to lose part of who we are. In this, we would ask that the city either pursue a signaled intersection option which does not add an eastbound right turn lane to the south of existing pavement, or that the city pursue a roundabout option which is offset far enough to not require that any property be taken from private residences. If future analysis proves that these options absolutely cannot work, then yes, we are open to discuss parting with portions of yard we care less about, so long as amounts remain small. Our opposition to the current roundabout proposal is that we feel we cannot accept parting with as much yard as what appears to be called for, especially when this very proposal appears to be taking no land from our neighbors to the northwest of the intersection or from the Fareway site to the southeast. As we see it, a more fair alternative would be to have the Fareway site provide most, if not all, of any land requirement. I say this because the addition of large businesses such as Fareway, an addition we personally never wanted, is arguably more responsible than anything else for the need to upgrade this intersection.

I understand that adding an eastbound right turn lane is still off the table. This gives me some relief, but so long as the intersection remains signaled, I'm not sure I'll ever be able to fully discount it as a future possibility. The trouble with an eastbound right turn lane, even though it would take less land than the roundabout, is that it would take land my family and I are more attached to. In effect, the addition of an eastbound right turn lane to the south of the existing pavement would probably be our least desired option.

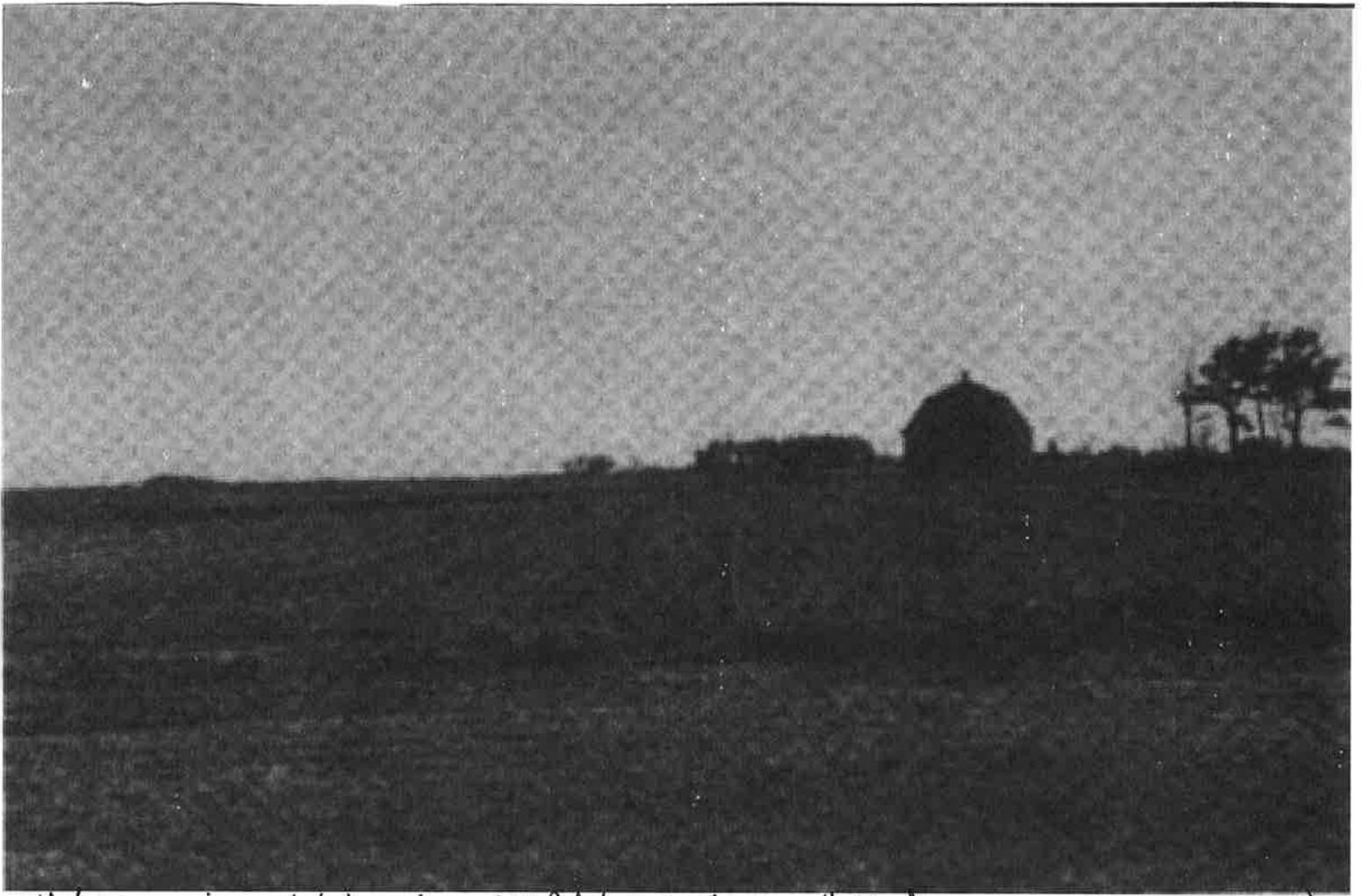
No doubt, there is quite a bit to process here, and thank you very much for all you continue doing to help ensure a good outcome. My mother, stepdad, and I do feel very strongly about keeping our property in its present condition. Having to give up property and quality of life to Greenhill Road when it was first built back in the 1990s was honestly already a greater loss than we would like to have endured, and we really don't feel the best about possibly being asked to do it again. Still, as with all things, we recognize a need to work alongside the needs of others who also call Cedar Falls home. My hope is that something can be arrived at which treats all sides fairly.

Keep me in the loop on any developments, and thanks again for being available for discussion.

Best regards,
Brian Kalina
(and Lilly Sesma, and Armando Sesma)

East facing view of future Greenhill Rd. from future intersection of Greenhill & Hwy 58 (1985)





South facing view of future Greenhill Rd from Spruce Hills Dr.

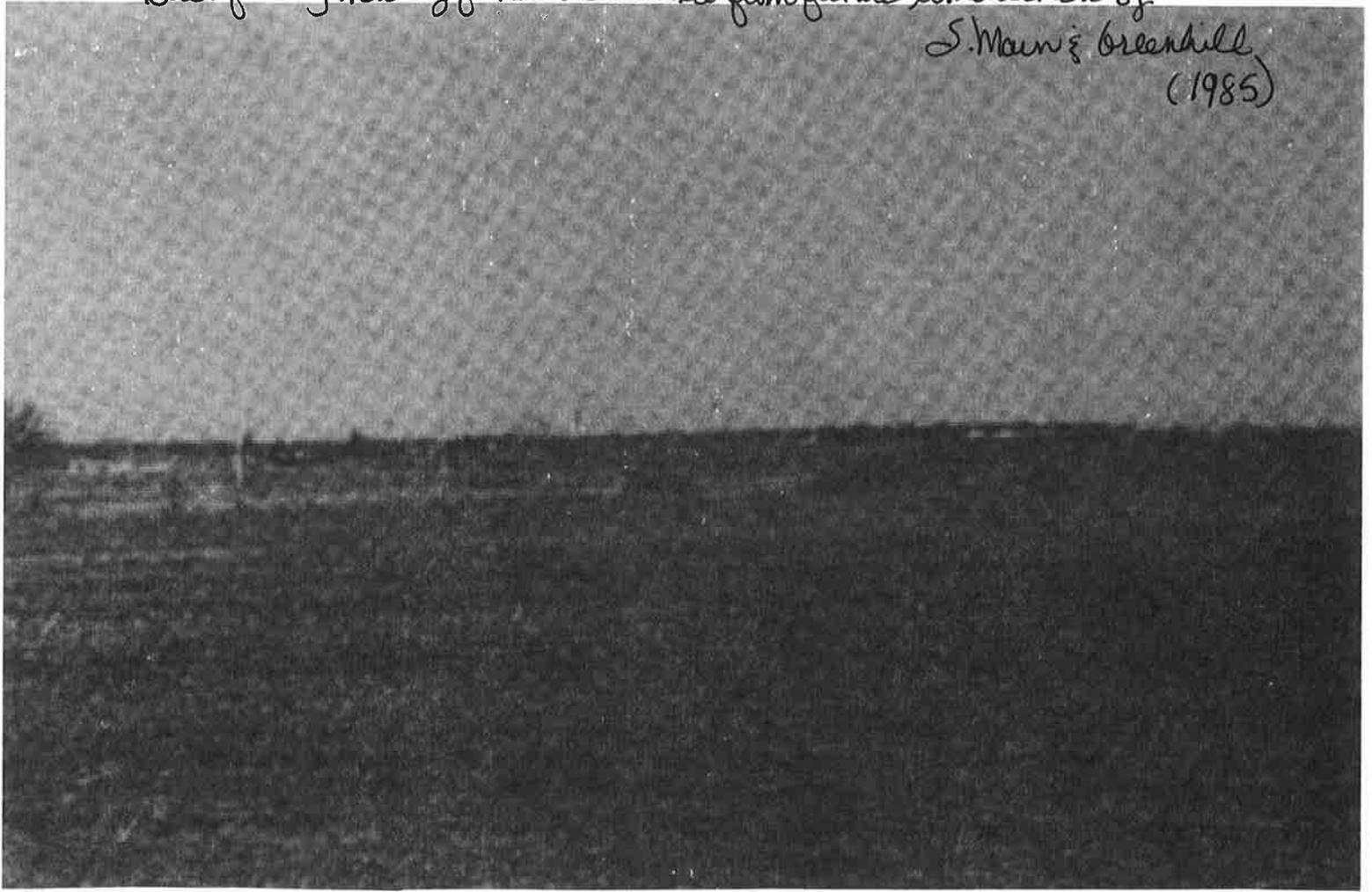
(1985)



East facing view of El Dorado Hts. neighborhood West of Dry Run Creek

(1985)

East facing view of future Greenhill Rd from future intersection of
S. Main & Greenhill
(1985)



Council Member David Wieland,

Thank you for your service to the citizens of Cedar Falls.

I am unable to attend the council meeting on December 17th. Therefore I would like to express my comments on the proposed roundabouts at the intersections of Greenhill and South Main and Greenhill and Cedar Heights.

I have attended all three public meetings concerning the Greenhill Road corridor. There was an adequate representation by the citizen. Unfortunately only three council members attended at least one of the meetings.

At the first two meetings the format included a power point presentation with handouts showing potentially six roundabouts between Hudson Road and Cedar Heights Drive. A public Q&A was not afforded to those in attendance. However, we were invited to experience an aerial view of this corridor mounted on tables and ask questions of individuals stationed at the tables. I observed long lines at each table waiting to speak to someone qualified to answer questions. This format did not allow for everyone to experience a public interaction time.

I did have an opportunity, after waiting in line for some time, to express concern about the flow of traffic at the Greenhill and South Main intersection. A suggestion to modify the signals by alternating right and left turn traffic on South Main was implemented. This has made a welcome change for this intersection.

We were told numerous times at these meetings that the flow of traffic and the wait-time was a strong consideration for roundabouts. My observation as I travel on the numerous roundabouts has been that traffic entering on streets in close proximity to the roundabouts is backed up due to the continuous flow of traffic from the roundabouts. A signalized intersection allows for breaks in the flow, which accommodates those entering near those intersections.

Examples of this congestion would be at the intersection of Brandilynn Blvd. and Winterberry Dr. and the far east intersection of Walmart in Cedar Falls. Traffic backs up due to the constant flow of cars from the roundabout on Prairie Parkway. Even though commercial intersections differ from residential intersections, the intersection at Greenhill and S. Main will be impacted by increased traffic at Coneflower Parkway from new and future multiuse development in that area.

At all three of these meetings citizens were encouraged to write down their comments and told they would be taken into consideration. Unfortunately they were never shared with the citizens at future meetings. This procedure reminded me of the meeting the public attended concerning the University Avenue roundabouts where we were encouraged to write down our comments and 15 minutes later it was announced that roundabouts would be constructed on University Avenue.

An article in the November 30 issue of the WCF Courier contained the following: The roundabout at Greenhill Road and South Mail Street would be estimated to cost \$2.6 million. And one at Cedar Heights Drive could cost \$2.5 million. It did not give the lesser-signalized amount of \$1.1 million for Greenhill and South Main; and no mention that there would be no cost at Cedar Heights if the roundabouts are not constructed. It did say, "Both signals and a roundabout will function well. When you do an analysis of cost and you factor in travel time and initial construction cost and maintenance cost and you factor all that in, the round about is the cheapest." And we know what happened when the Tiger Grant was not approved for the roundabouts on University Avenue – the cost to the city and the taxpayers when up.

It also stated, "The west side of Highway 58 on Greenhill functions better with signals and east of 58 works better with roundabouts." Really. If roundabouts work better than signalized intersections, then why not a roundabout at that intersection? There was no mention of the possible construction of a new hospital, additional businesses and apartments. Or new home construction as well as the new elementary school and a future high school. We straight answers, not deception by confusion.

Then there is the consideration for all the utilities located at the intersection of Greenhill and S. Main. And then this quote: "But probably a little more cost (to relocate utilities) with a roundabout." The article also read, "The city received a lot of comments about the possible initiatives in the area during the three public meetings. There's a significant portion of the population out there now that is in favor of roundabouts seeing how University turned out. We did receive a lot more positive feedback through this corridor study on roundabouts than doing a signal."

I take issue with this last statement. At the last meeting we were informed that 14 people had submitted comments in favor of roundabouts at this intersection. I don't consider 14 to be a significant amount, and no mention of either negative comments or suggestions for improvement.

I live two blocks from the intersection of Greenhill and S. Main. I have experienced the increase in traffic at this intersection; not only during the reconstruction of University, but this has not changed since University was completed. Orchard Drive has also been impacted an increase flow of traffic. And now that Fareway is soon to be opened and the PSO site will be completed next year along with the proposed Kwik Star and the Sands Residential Development in the works, I would hope that the council would look at the impact a roundabout will have on the thousands of residents of this area. I am not opposed to roundabouts. They have a positive impact when strategically implemented in areas of a community. However, Greenhill and S. Main, I believe is not one of them. I hope that after you have had the opportunity to review this proposal, you will realize, as I have, that a signalized intersection for both South Main, with lane modifications, and Cedar Heights are not candidates for roundabouts.

Again, thank you for your service to the citizens of Cedar Falls.

Gill Fisher - 203 Cordolia

Council Member Rob Green,

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Again, thank you for your service to the citizens of Cedar Falls.

Jill Fisher - 303 Cordolia

Council Member Frank Darrah,

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Examples of this congestion would be at the intersection of Brandilynn Blvd. and Winterberry Dr. and the far east intersection of Walmart in Cedar Falls. Traffic backs up due to the constant flow of cars from the roundabout on Prairie Parkway. Even though commercial intersections differ from residential intersections, the intersection at Greenhill and S. Main will be impacted by increased traffic at Coneflower Parkway from new and future multiuse development in that area.

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Jill Fisher - 303 Cordelia

Council Member Tom Blandford,

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Jill Fisher - 703 Cordoba

Council Member Daryl Kruse,

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Council Member Susan deBuhr,

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Council Member Mark Miller,

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DEPARTMENT OF COMMUNITY DEVELOPMENT

City of Cedar Falls
220 Clay Street
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Phone: 319-268-5161
Fax: 319-268-5197
www.cedarfalls.com

MEMORANDUM
Engineering Division

TO: Stephanie Sheets, AICP, Community Development Director

FROM: Jon Resler, PE, City Engineer

DATE: December 12, 2018

SUBJECT: South Main and Greenhill Corridor Neighborhood Association Meeting Summary

On December 10, 2018, the South Main and Greenhill Neighborhood Association held a meeting where Mayor Jim Brown presented on Council priorities and recent City development. Several Council members attended including Frank Darrah, Susan deBuhr, Rob Green, Daryl Kruse, and David Wieland. The City Engineer, Jon Resler, was also invited to answer questions on the Greenhill Corridor Traffic Study. Below is a summary of topics discussed related to the study:

- **Sound wall**
The City Engineer explained repair/replacement of the sound wall was in the CIP, which is awaiting approval by City Council. There was a question from the audience about material for the wall and Engineering is not sure about material, yet. That would likely be part of the design process including if the wall would be repaired or reconstructed.
- **Cost Analysis**
The City Engineer explained that a traffic signal at Main and Greenhill had cheaper construction costs vs. a roundabout but when all costs were considered like travel time, safety, emissions, fuel consumption, the long term costs of a traffic signal were shown to be higher than a roundabout in this case.
- **Right-of-way**
The City Engineer explained that Engineering always tries to minimize any right-of-way needed. What is shown on the conceptual drawings for right-of-way will be looked at in more detail in the design phase. The concept is attempting to balance right-of-way but it doesn't necessarily take into account every design constraint. When factoring in all constraints like utility conflicts, geometry, sight distance, elevation, and others, the exact right-of-way needed may vary and is determined during the design phase.

- **Emergency preemption**
 An audience member was concerned about emergency vehicles using a roundabout vs. a traffic signal with emergency preemption. The City Engineer explained that emergency vehicles using a roundabout would be no different than any stretch of road. Drivers are taught to pull over and make room for emergency vehicles. Emergency vehicle operators are taught how to drive in these situations. Also emergency vehicle preemption doesn't guarantee people will stop so emergency vehicles must still be cautious.
- **Sight distance**
 An audience member had concern that there may not be enough sight distance at a roundabout at Main and Greenhill and should Engineering know it will be adequate before a roundabout is recommended? The City Engineer explained that sight distance will definitely be part of the detailed design process but having reviewed the site; Engineering did not feel there were any significant sight distance issues that could not be overcome.
- **Sidewalks/trails**
 To make it easier for the neighborhood to cross Main, an audience member requested that the trail extends south to Bluebell with a pedestrian crossing.
- **Proposed median on S Main at Balboa**
 The City Engineer explained a hard median was proposed on the south approach of S Main and that Balboa would only be a right-in/right-out regardless of the intersection improvements selected. An audience member suggested that two lanes be provided for southbound traffic on the south approach of Main to better protect vehicles accessing and coming out of Balboa. The City Engineer explained that would be something looked at during the design phase.
- **Fareway access onto S Main**
 Fareway's access onto S Main was suggested by an audience member to be limited to a right-in/right-out like the proposal for Balboa. The City Engineer explained the history of that access going back to a proposed Casey's convenience store. Casey's wanted an access aligned with Balboa. Engineering objected because the access was too close to Greenhill and created a safety issue. The access would have been allowed if it were pushed south towards Bluebell. As a result, Casey's decided on another location for the business. The same constraints were put on Fareway and they agreed to an access farther to the south. The City Engineer did not anticipate the access would be limited but it would be evaluated during the design process.
- **Traffic Signal Preference**
 An audience member residing at the Western Homes facility wanted to express his preference for a traffic signal which was shared immediately after the meeting ended. The City Engineer indicated his preference would be noted.



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MEMORANDUM

Planning & Community Services Division

TO: Honorable Mayor James P. Brown and City Council
FROM: David Sturch, Planner III *DS*
DATE: December 13, 2018
SUBJECT: Middle Cedar Watershed Management Plan

In 2010, Iowa lawmakers passed legislation authorizing the creation of Watershed Management Authorities (WMA). A WMA is a mechanism for cities, counties, Soil and Water Conservation Districts (SCWD) and stakeholders to cooperatively engage in watershed planning and management.

The Middle Cedar Watershed Management Authority was formed by an intergovernmental 28E agreement by cities, counties, SWCD within the watershed in the spring of 2016. This watershed is approximately 1 million acres that includes all or a part of Franklin, Butler, Hardin, Grundy, Black Hawk, Buchanan, Tama, Benton and Linn counties. A WMA may carry out the following activities:

- Assess and reduce flood risk
- Assess and improve water quality
- Monitor federal flood risk planning and activities
- Educate residents of the watershed
- Allocate moneys made available to the WMA for purposes of water quality and flood mitigation

There are several benefits of WMA. First, the WMA provides a means of communication and cooperation to support on-the-ground water quality and flood damage reduction in both urban and rural areas. Partnering through a WMA allows cities and counties to pool resources and provide leverage for additional funding through state and federal sources. In addition, WMAs work directly through communities and SWCDs to identify partners and collectively develop an action plan for addressing watershed concerns. Finally, a WMA may not acquire land through eminent domain and do not have a taxing authority.

Over the past year, the Middle Cedar WMA was been working with an environmental consultant on the preparation of a watershed management plan. The presentation at the City Council Committee on December 17, 2018 will provide a status update on the plan.

If you have any questions, please feel free to contact me at this office.

xc: Stephanie Sheetz, Director
Karen Howard, Planning and Community Services Manager



Watershed Management Plan



Middle Cedar Watershed Management Plan Presentation to Cedar Falls & Waterloo 12/17/2018

Larry Weber, IIHR
Pat Conrad, EOR

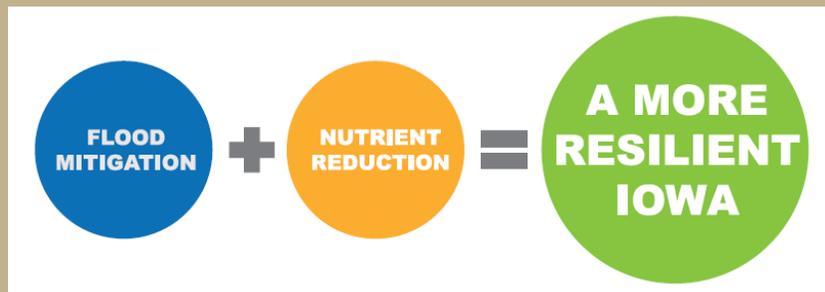


Watershed Management Plan



**Iowa Award — HUD Disaster Resilience Grant:
Reducing Flooding and Advancing Water Quality**

Iowa Grant Award: \$96,787,177





Watershed Management Plan



Iowa Watershed Approach Partners



Watershed Management Plan



Iowa Watershed Approach Recipients

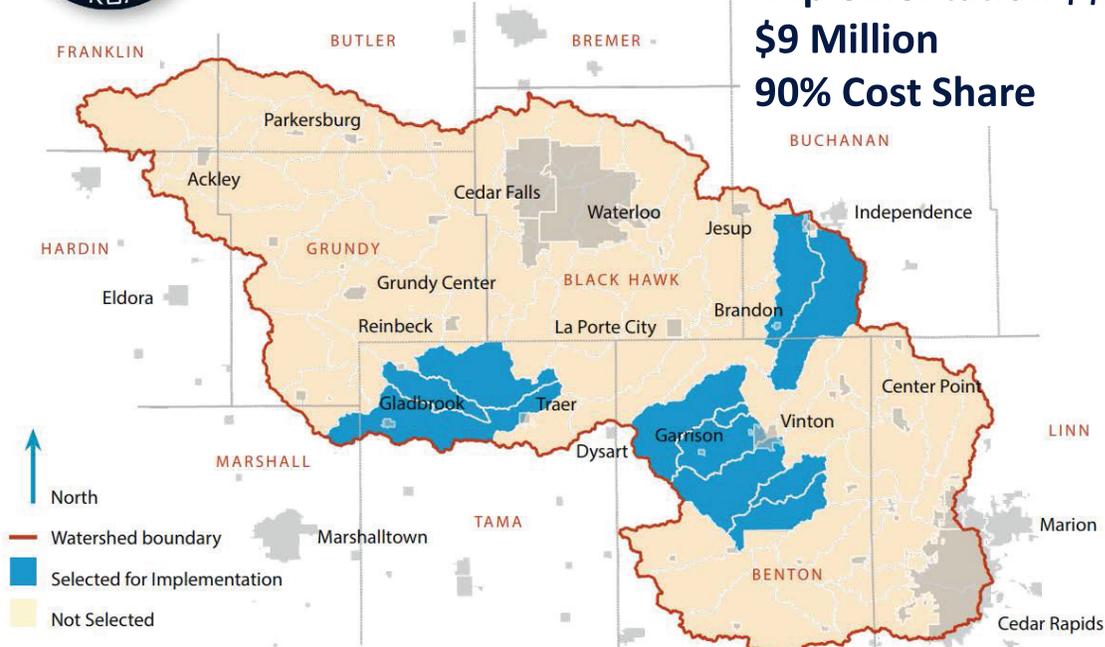




The Iowa Watershed Approach

A Vision for Iowa's Future

**Implementation \$\$\$
\$9 Million
90% Cost Share**



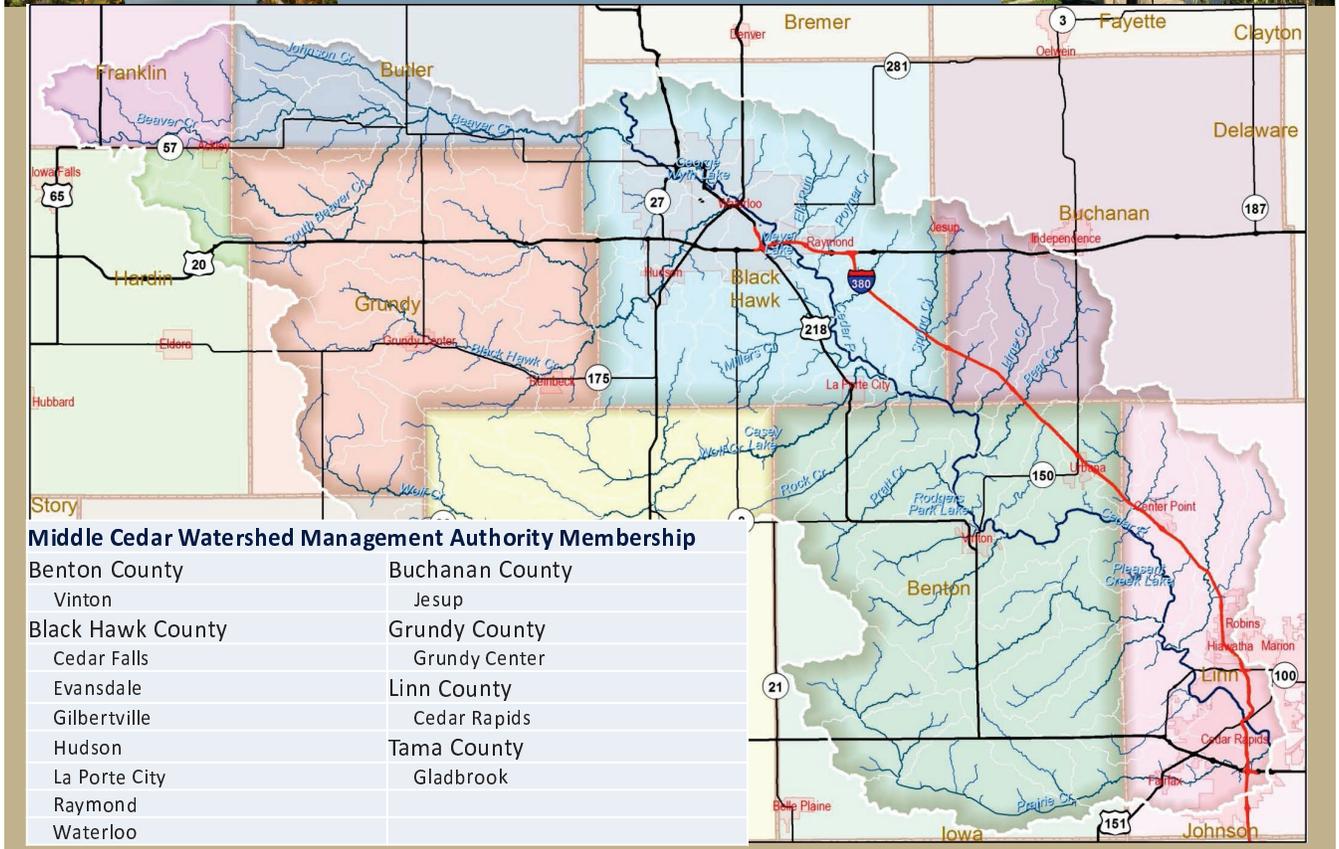
Iowa Watershed Approach Components

Watershed Planning!





Watershed Management Plan



Watershed Management Plan



Watershed Management Planning Phases

Phases of Planning:



Issues Identification
 important resources
 + problems & local values
 = prioritized resources and issues



Establishment of Goals
 vision for the future
 + local support
 = achievable goals for resources



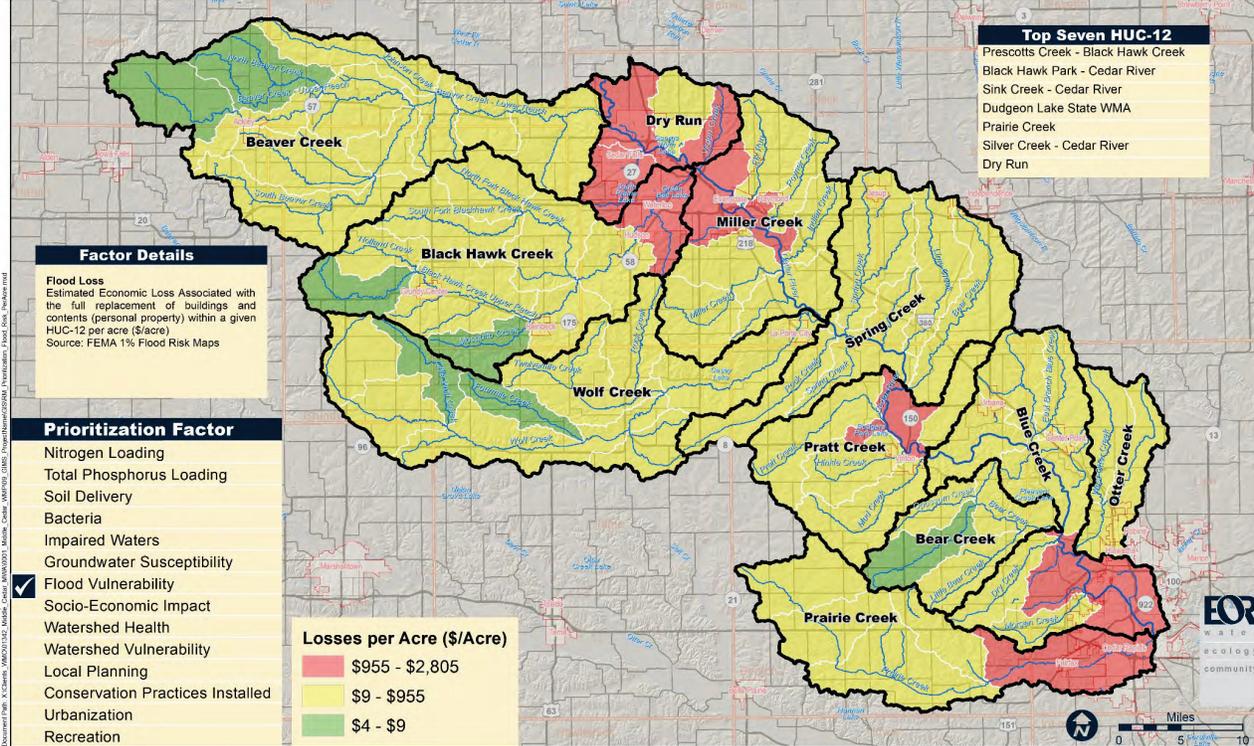
Implementation Plan
 in field management
 + edge of field practices
 + urban stormwater BMPs
 = improved water quality and flood resiliency

Phase I: Issues Identification

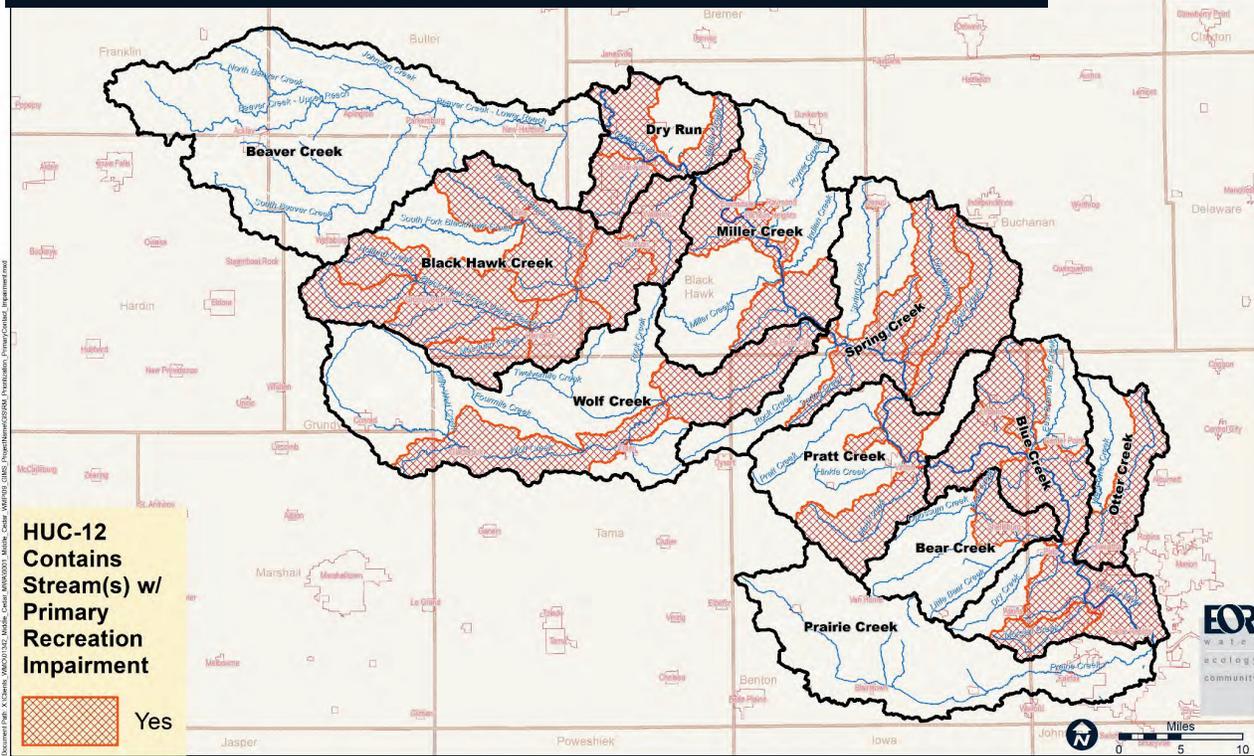




Watershed Assessment - Flooding

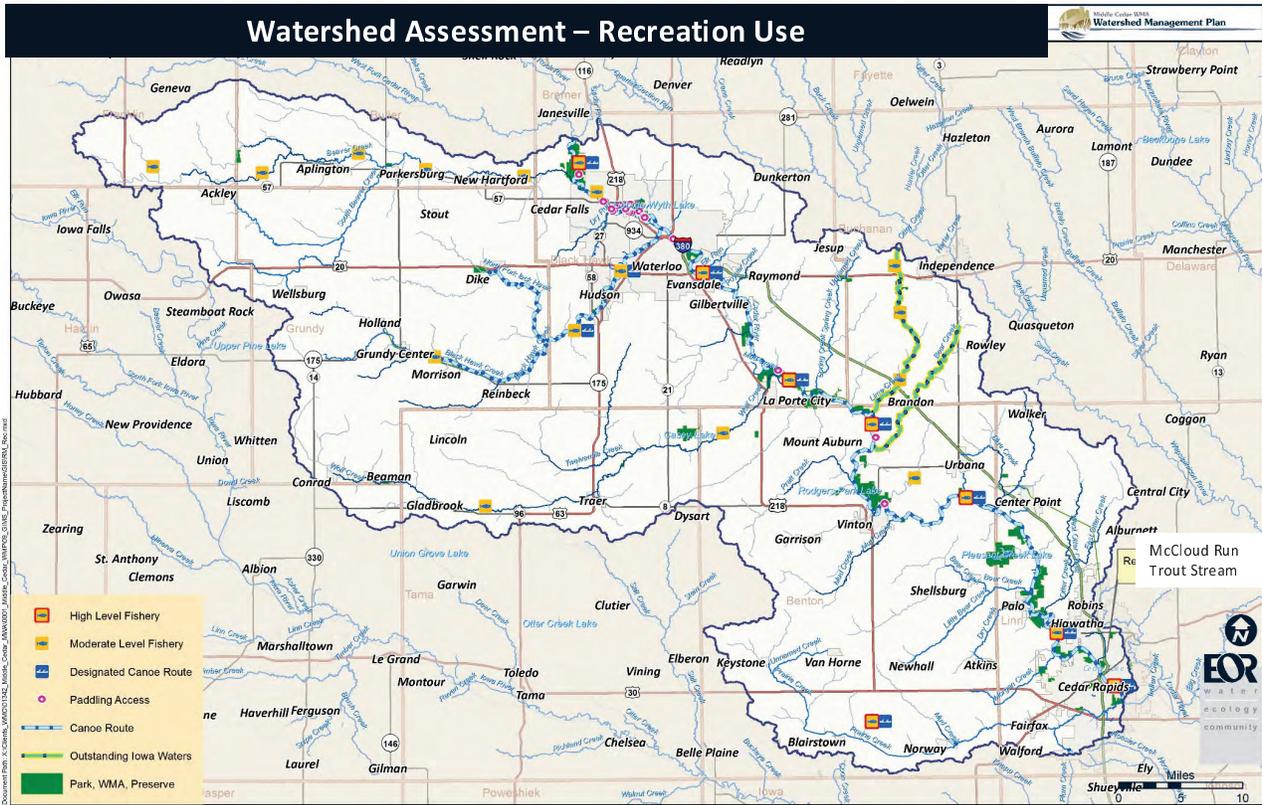


Watershed Assessment – Health Risk-Recreation





Watershed Management Plan



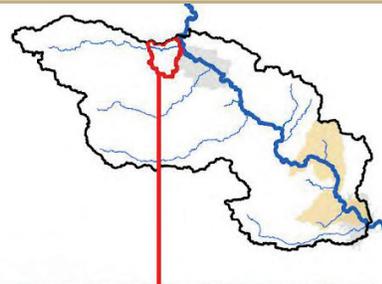
Watershed Management Plan



Hammers Creek – Beaver Creek



Subwatershed: Hammers Creek-Beaver Creek
Subwatershed ID: 070802050304
Counties: Butler, Black Hawk, Grundy
Cities: Cedar Falls, New Hartford
MS4 Permittees: Cedar Falls
Population (2010): 1,768
Social Vulnerability: Low





Hammers Creek – Beaver Creek

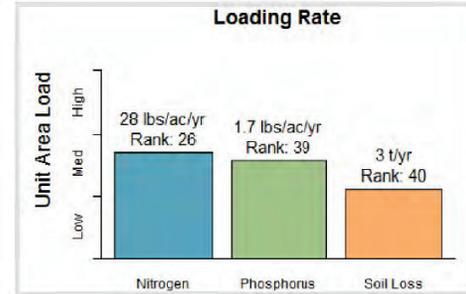
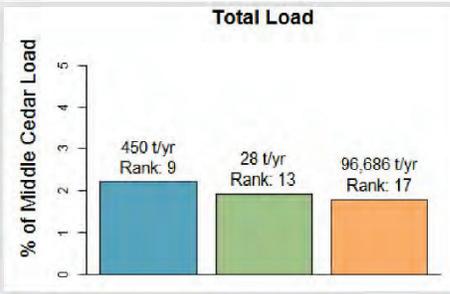
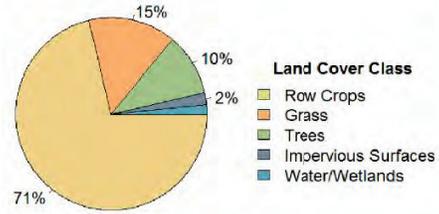
Beaver Creek

Key Water Resources:
Hammers Creek, Beaver Creek

Flood Risk:
\$20,664,900 financial impact, 100-year flood event; Flood Risk Report (FEMA, 2015).
Middle Cedar Rank: 6 out of 68

Impairments in Subwatershed:
Beaver Creek: Bacteria

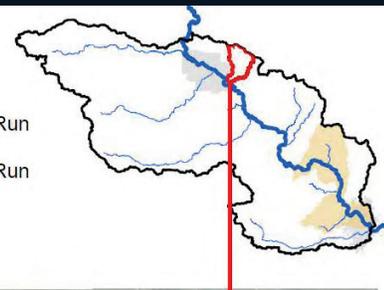
Downstream TMDLs
Cedar River Nitrate: Cedar River Bacteria



Elk Run



Subwatershed: Elk Run
Subwatershed ID: 070802050901
Counties: Black Hawk
Cities: Waterloo, Raymond, Evansdale, Elk Run
MS4 Permittees: Heights
Population (2010): Waterloo, Raymond, Evansdale, Elk Run
Social Vulnerability: Heights





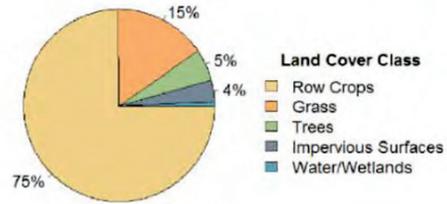
Elk Run

Key Water Resources:
Elk Run

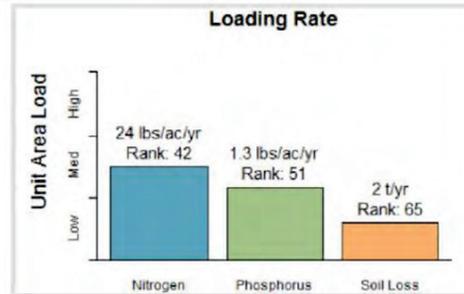
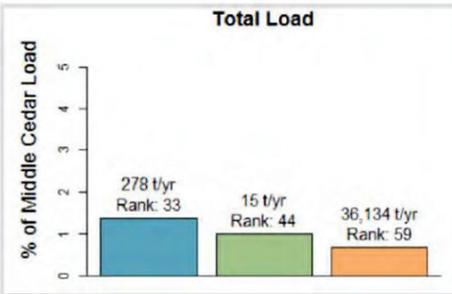
Flood Risk:
\$8,632,100 financial impact, 100-year flood event; Flood Risk Report (FEMA, 2015).
Middle Cedar Rank: 11 out of 68

Impairments in Subwatershed:
N/A

Downstream TMDLs
Cedar River Nitrate; Cedar River Bacteria



Miller Creek

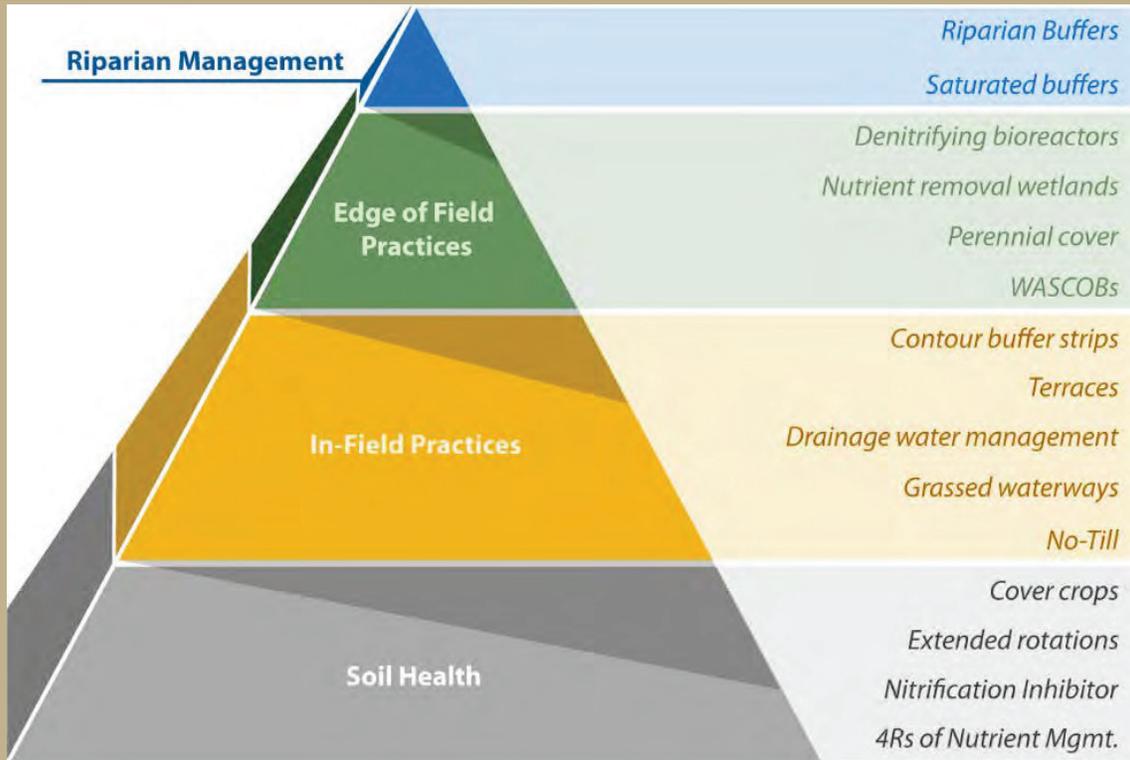


Identification of Issues

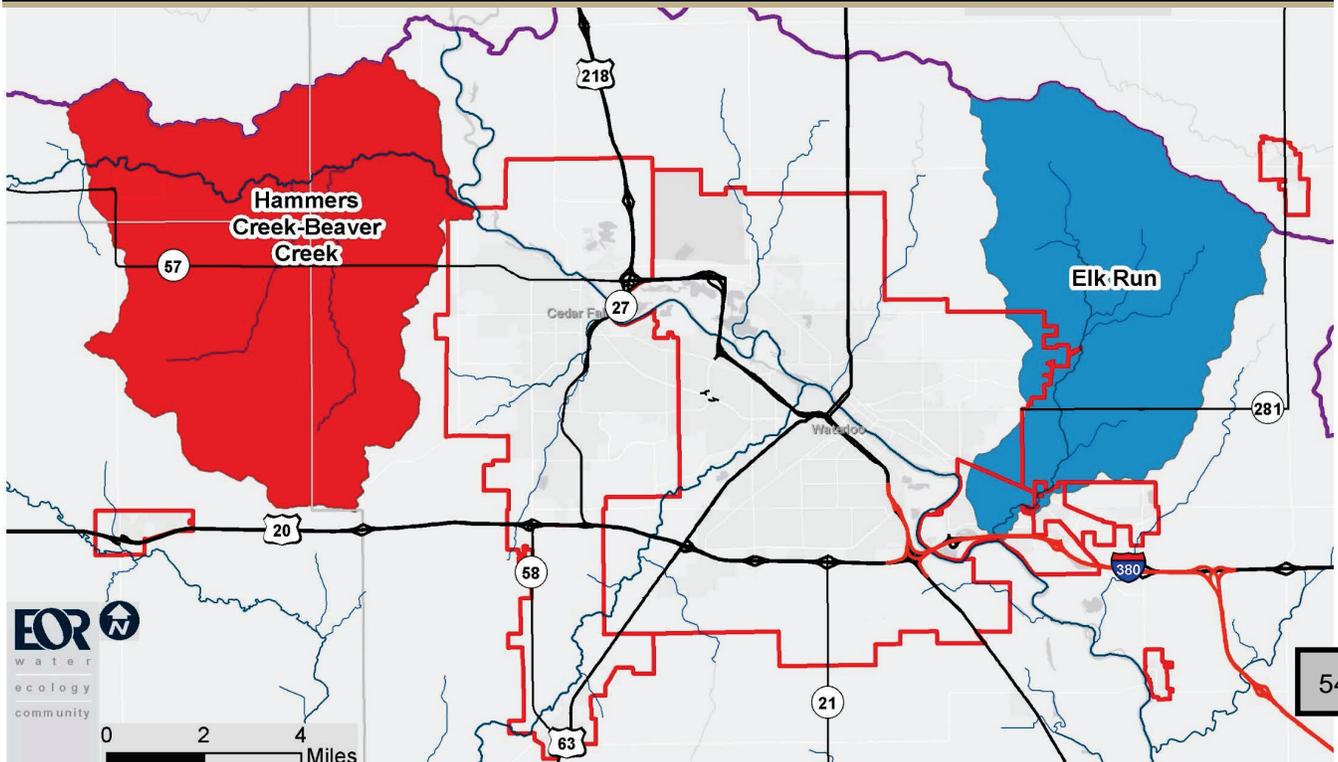




Conservation Implementation



Prioritizing Implementation Mechanisms





Hammers Creek – Beaver Creek Implementation Plan

Nutrient Reduction Strategy Goal	41%	29%	20-year Annual Cost	Expenses	Savings
% of Goal	100%	100%	\$933,017	\$2,231,521	\$1,298,517

	BMP Name	Existing Adoption (%)	Target Adoption (%)	Quantity
Soil Health Management	Cover crops	2%	55%	11,872 acres
	Extended rotations	1%	2%	224 acres
	Nitrogen management: nitrification inhibitor	50%	90%	8,960 acres
	Nitrogen management: rate control	10%	20%	2,240 acres
	Nitrogen management: source control	18%	36%	4,032 acres
	Nitrogen management: timing control	26%	51%	5,712 acres
	Phosphorus management: placement control	50%	51%	224 acres
	Phosphorus management: rate control	50%	51%	224 acres
In-Field Management	Phosphorus management: source control	18%	20%	448 acres
	Contour buffer strips	0%	1%	1 miles
	Terraces	100%	100%	0 miles
	Drainage water management	0%	50%	29 fields
	Grassed waterways	35%	75%	87 miles
Edge-of-Field Management	No-Till	20%	21%	224 acres
	Denitrifying bioreactors	0%	25%	31 reactors
	Nutrient removal wetlands	0%	40%	23 wetlands
	Perennial cover	1%	2%	229 acres
Riparian Management	WASCOBs	83%	84%	1 basins
	Riparian buffer: Critical zone buffer	79%	100%	1 miles
	Riparian buffer: Deep-rooted vegetation buffer	81%	100%	9 miles
	Riparian buffer: Multi-species buffer	77%	100%	3 miles
	Riparian buffer: Stiff stem grass buffer	84%	85%	0 miles
	Riparian buffer: Stream stabilization buffer	80%	80%	0 miles
Urban BMPs	Saturated buffers	0%	50%	10 miles
	Commercial	0%	5%	2 acres
	Public	0%	25%	0 acres
	Right-of-Way	0%	25%	2 acres
	Residential	0%	10%	0 acres



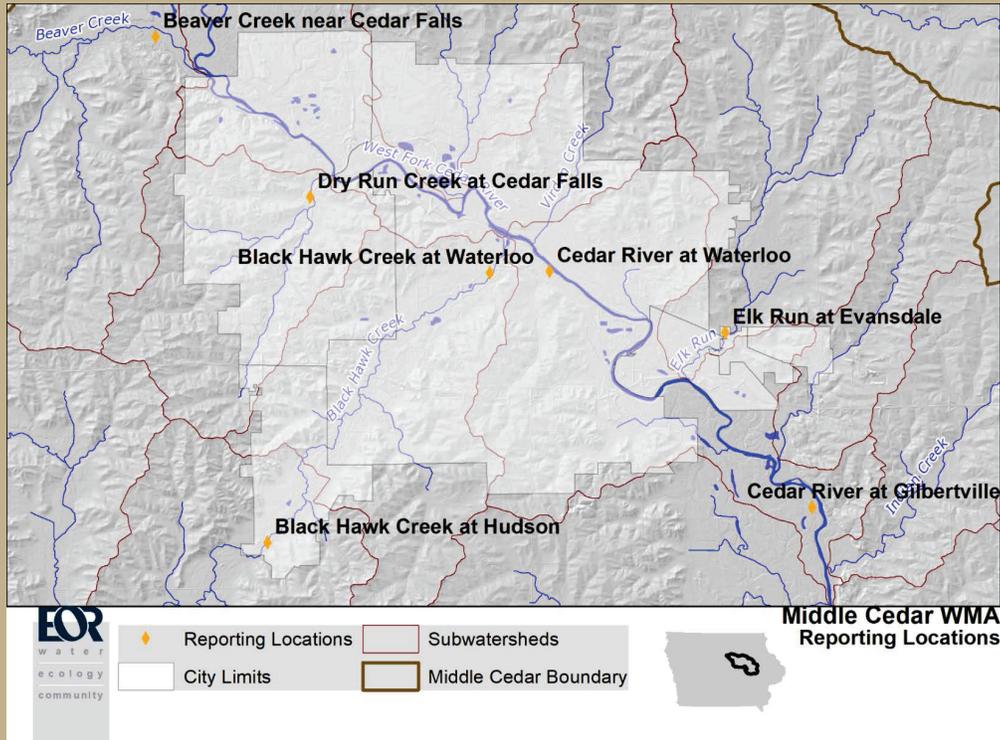
Elk Run Implementation Plan

Nutrient Reduction Strategy Goal	41%	29%	20-year Annual Cost	Expenses	Savings
% of Goal	100%	100%	\$803,733	\$1,767,534	-\$963,807

	BMP Name	Existing Adoption (%)	Target Adoption (%)	Quantity
Soil Health Management	Cover crops	2%	68%	10,974 acres
	Extended rotations	1%	2%	166 acres
	Nitrogen management: nitrification inhibitor	50%	90%	6,651 acres
	Nitrogen management: rate control	10%	20%	1,663 acres
	Nitrogen management: source control	18%	36%	2,993 acres
	Nitrogen management: timing control	26%	51%	4,240 acres
	Phosphorus management: placement control	50%	51%	166 acres
	Phosphorus management: rate control	50%	51%	166 acres
In-Field Management	Phosphorus management: source control	18%	20%	333 acres
	Contour buffer strips	0%	1%	1 miles
	Terraces	84%	84%	0 miles
	Drainage water management	0%	50%	22 fields
	Grassed waterways	42%	75%	74 miles
Edge-of-Field Management	No-Till	20%	21%	166 acres
	Denitrifying bioreactors	0%	25%	31 reactors
	Nutrient removal wetlands	0%	40%	11 wetlands
	Perennial cover	1%	2%	170 acres
Riparian Management	WASCOBs	35%	35%	0 basins
	Riparian buffer: Critical zone buffer	89%	100%	0 miles
	Riparian buffer: Deep-rooted vegetation buffer	89%	100%	3 miles
	Riparian buffer: Multi-species buffer	86%	100%	2 miles
	Riparian buffer: Stiff stem grass buffer	82%	83%	0 miles
	Riparian buffer: Stream stabilization buffer	89%	90%	0 miles
Urban BMPs	Saturated buffers	0%	50%	9 miles
	Commercial	0%	5%	9 acres
	Public	0%	25%	47 acres
	Right-of-Way	0%	25%	63 acres
	Residential	0%	10%	45 acres



Flood Reduction Benefits



Flood Reduction Benefits

Hammers Creek – Beaver Creek

Estimated flood benefits for the 06/24/2013 event for Beaver Creek near Cedar Falls*	\$2,610,000 in reduced losses 0.3 ft flood stage reduction
Estimated annual reduced flood losses**	\$850,000

Elk Run

Estimated flood benefits for the 07/07/2010 event for Elk Run at Evansdale*	\$734,000 in reduced losses 0.5 ft flood stage reduction
Estimated annual reduced flood losses**	\$108,000

*Assumes all areas upstream of the reporting location adopt the same level of BMP implementation. For Cedar River reporting locations, this includes implementation in the Upper Cedar watershed.

**Calculated from the results of a 15-year simulation



Next Steps

Finalization of Watershed Management Plan: March 2019

City Adoption: Spring 2019

Iowa Watershed Approach sunsets in 2020

WMA – Implementation of Plan!



Daily Invoices for Council Meeting 12/17/18

PREPARED 12/13/2018, 11:58:50
 PROGRAM GM360L
 CITY OF CEDAR FALLS

ACCOUNT ACTIVITY LISTING

PAGE 1
 ACCOUNTING PERIOD 05/2019

GROUP	PO	ACCTG	---TRANSACTION---		DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE	POST DT
NBR	NBR	PER.	CD	DATE	NUMBER				
FUND 101 GENERAL FUND									
101-1008-441.64-02 INSURANCE / HEALTH INS. REIMBURSEMENT									
786		05/19 AP		11/23/18	0004122	6.79			12/03/18
					HEALTH INS. REIMBURSEMENT				
786		05/19 AP		11/16/18	0004121	54.10			12/03/18
					ADVANTAGE ADMIN-SECT.105				
					HEALTH INS. REIMBURSEMENT				
					ACCOUNT TOTAL	60.89	.00	60.89	
101-1008-441.72-99 OPERATING SUPPLIES / POSTAGE									
920		06/19 AP		12/02/18	0392060	42.07			12/07/18
					CMRS-POC				
					POC#8031880-REPL.POSTAGE				09/06/18-12/02/18
					ACCOUNT TOTAL	42.07	.00	42.07	
101-1028-441.64-02 INSURANCE / HEALTH INS. REIMBURSEMENT									
786		05/19 AP		11/23/18	0004122	15.87			12/03/18
					HEALTH INS. REIMBURSEMENT				
786		05/19 AP		11/23/18	0004122	43.09			12/03/18
					ADVANTAGE ADMIN-SECT.105				
					HEALTH INS. REIMBURSEMENT				
					ACCOUNT TOTAL	58.96	.00	58.96	
101-1028-441.72-99 OPERATING SUPPLIES / POSTAGE									
920		06/19 AP		12/02/18	0392060	135.69			12/07/18
					CMRS-POC				
					POC#8031880-REPL.POSTAGE				09/06/18-12/02/18
920		06/19 AP		12/02/18	0392060	193.62			12/07/18
					CMRS-POC				
					POC#8031880-REPL.POSTAGE				09/06/18-12/02/18
					ACCOUNT TOTAL	329.31	.00	329.31	
101-1028-441.89-17 MISCELLANEOUS SERVICES / BANK SERVICE CHARGES									
786		05/19 AP		11/30/18	0004131	20.00			12/03/18
					FARMERS STATE BANK				
					BANK IOWA OUTGOING WIRE				
786		05/19 AP		11/19/18	0004130	20.00			12/03/18
					FARMERS STATE BANK				
					VOYA OUTGOING WIRE				11/21/18 PAYROLL
786		05/19 AP		11/07/18	0004129	20.00			12/03/18
					FARMERS STATE BANK				
					VOYA OUTGOING WIRE				11/09/18 PAYROLL
					ACCOUNT TOTAL	60.00	.00	60.00	
101-1048-441.71-01 OFFICE SUPPLIES / OFFICE SUPPLIES									
920		06/19 AP		12/02/18	0392060	20.73			12/07/18
					CMRS-POC				
					POC#8031880-REPL.POSTAGE				09/06/18-12/02/18
					ACCOUNT TOTAL	20.73	.00	20.73	

GROUP NBR	PO NBR	ACCTG PER.	CD	DATE	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE	POST DT
FUND 101 GENERAL FUND									
101-1060-423.64-02		INSURANCE / HEALTH			INS. REIMBURSEMENT				
786		05/19 AP 11/30/18 0004123			ADVANTAGE ADMIN-SECT.105	70.44			12/03/18
		HEALTH INS. REIMBURSEMENT							
786		05/19 AP 11/23/18 0004122			ADVANTAGE ADMIN-SECT.105	186.67			12/03/18
		HEALTH INS. REIMBURSEMENT							
786		05/19 AP 11/23/18 0004122			ADVANTAGE ADMIN-SECT.105	156.56			12/03/18
		HEALTH INS. REIMBURSEMENT							
786		05/19 AP 11/16/18 0004121			ADVANTAGE ADMIN-SECT.105	20.00			12/03/18
		HEALTH INS. REIMBURSEMENT							
		ACCOUNT TOTAL				433.67	.00	433.67	
101-1060-423.72-19 OPERATING SUPPLIES / PRINTING									
855		06/19 AP 11/16/18 0392033			CENTRAL RIVERS AREA EDUCATION	5.45			11/30/18
		TRUSTEES HANDBOOK							
		ACCOUNT TOTAL				5.45	.00	5.45	
101-1060-423.72-75 OPERATING SUPPLIES / DISPLAY									
855		06/19 AP 10/31/18 0392024			ASI	115.00			11/30/18
		NAME PLAQUES							
		ACCOUNT TOTAL				115.00	.00	115.00	
101-1060-423.72-76 OPERATING SUPPLIES / PUBLIC RELATIONS									
855		06/19 AP 11/01/18 0392044			MOVIE LICENSING USA	810.00			11/30/18
		MOVIE LICENSE			12/01/18-11/30/19				
		ACCOUNT TOTAL				810.00	.00	810.00	
101-1060-423.72-99 OPERATING SUPPLIES / POSTAGE									
920		06/19 AP 12/02/18 0392060			CMRS-POC	41.48			12/07/18
		POC#8031880-REPL.POSTAGE			09/06/18-12/02/18				
855		06/19 AP 11/04/18 0392048			PURCHASE POWER	503.50			11/30/18
		POSTAGE							
		ACCOUNT TOTAL				544.98	.00	544.98	
101-1060-423.83-05 TRANSPORTATION&EDUCATION / TRAVEL (FOOD/MILEAGE/LOD)									
855		06/19 AP 10/31/18 0392042			KABEL, MARY	48.29			11/30/18
		KABEL MILEAGE			8/1/18-10/31/18				
		ACCOUNT TOTAL				48.29	.00	48.29	

GROUP	PO	ACCTG	---TRANSACTION---						
NBR	NBR	PER.	CD	DATE	NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE
									POST DT
FUND 101 GENERAL FUND									
101-1060-423.85-01 UTILITIES / UTILITIES									
855		06/19	AP	11/05/18	0392030	CEDAR FALLS UTILITIES	4,103.74		11/30/18
						LIBRARY UTILITIES			
						ACCOUNT TOTAL	4,103.74	.00	4,103.74
101-1060-423.86-01 REPAIR & MAINTENANCE / REPAIR & MAINTENANCE									
786		05/19	AP	11/16/18	0004145	PROFESSIONAL SOLUTIONS	89.78		12/03/18
						OCTOBER CREDIT CARD FEES			
855		06/19	AP	11/09/18	0392022	ADVANCED SYSTEMS, INC.	460.50		11/30/18
						COPIER CONTRACT 009-1337373-000			
855		06/19	AP	10/30/18	0392031	CEDAR VALLEY MOBILITY	75.00		11/30/18
						SCOOTER SERVICE			
855		06/19	AP	08/31/18	0392050	RECYCLE RITE, INC.	330.00		11/30/18
						CURBSIDE RECYCLING			
						ACCOUNT TOTAL	955.28	.00	955.28
101-1060-423.89-20 MISCELLANEOUS SERVICES / ADULT BOOKS									
854		06/19	AP	11/19/18	0392026	BAKER & TAYLOR BOOKS	14.56		11/30/18
						ADULT MEM BOOK CALEY			
854		06/19	AP	11/16/18	0392026	BAKER & TAYLOR BOOKS	8.97		11/30/18
						ADULT MEM BOOK CALEY			
854		06/19	AP	11/05/18	0392026	BAKER & TAYLOR BOOKS	15.65		11/30/18
						ADULT MEM BOOK CALEY			
854		06/19	AP	10/30/18	0392026	BAKER & TAYLOR BOOKS	32.48		11/30/18
						ADULT MEM BOOK CALEY			
						ACCOUNT TOTAL	71.66	.00	71.66
101-1060-423.89-23 MISCELLANEOUS SERVICES / LARGE PRINT BOOKS									
855		06/19	AP	11/16/18	0392039	GALE/CENGAGE LEARNING	21.70		11/30/18
						LARGE PRINT MEM BK:CALEY			
855		06/19	AP	11/07/18	0392039	GALE/CENGAGE LEARNING	213.42		11/30/18
						LARGE PRINT MEM BK:CALEY			
855		06/19	AP	11/01/18	0392032	CENTER POINT LARGE PRINT	46.74		11/30/18
						LRG PRINT BOOKS MEM CALEY			
						ACCOUNT TOTAL	281.86	.00	281.86
101-1060-423.89-33 MISCELLANEOUS SERVICES / FRIENDS SUPPORTED PROGRAM									
855		06/19	AP	11/02/18	0392038	FRIENDS OF THE GRIMES PUBLIC	225.00		11/30/18
						TIXKEEPER SOFTWARE FOTL TO RMB:YTH			
855		06/19	AP	11/02/18	0392049	RECORDED BOOKS, LLC.	86.98		11/30/18
						YA GAMING FOTL TO RMB:YA			
855		06/19	AP	10/31/18	0392049	RECORDED BOOKS, LLC.	260.95		11/30/18

GROUP NBR	PO NBR	ACCTG PER.	CD	TRANSACTION DATE	DESCRIPTION NUMBER	DEBITS	CREDITS	CURRENT BALANCE	POST DT
FUND 101 GENERAL FUND									
101-1060-423.89-33 MISCELLANEOUS SERVICES / FRIENDS SUPPORTED PROGRAM YA GAMING						continued			
ACCOUNT TOTAL						572.93	.00	572.93	
101-1060-423.89-34 MISCELLANEOUS SERVICES / ENDOWMENT SUPPORTED PROG.									
855		06/19 AP		11/23/18 0392043	MIDWEST TAPE, LLC ADVANCE DIGITAL PAYMENT BERG TO RMB	10,000.00			11/30/18
855		06/19 AP		11/19/18 0392040	HUFF CONTRACTING INC 2025-LIBRARY REMOD-CO LAB	39,966.50			11/30/18
PROJECT#:				032025					
855		06/19 AP		11/14/18 0392028	BOOKS IN COMMON STIEFVATER, M. HONORARIUM RAY\$ TO RMB LITCON '19	4,000.00			11/30/18
855		06/19 AP		10/31/18 0392040	HUFF CONTRACTING INC 2025-LIBRARY REMOD-CO LAB	31,072.60			11/30/18
PROJECT#:				032025					
855		06/19 AP		10/31/18 0392041	I & S GROUP INC CONST ADMINISTRATION BERG \$ TO RMB: COLAB	1,750.00			11/30/18
PROJECT#:				032025					
ACCOUNT TOTAL						86,789.10	.00	86,789.10	
101-1060-423.93-01 EQUIPMENT / EQUIPMENT									
855		06/19 AP		10/29/18 0392029	CDW GOVERNMENT, INC. COMPUTER LAB SUPPLIES SWITCHES & EXTEN. CORDS	144.19			11/30/18
ACCOUNT TOTAL						144.19	.00	144.19	
101-1061-423.71-11 OFFICE SUPPLIES / TECHNICAL PROCESSING SUPP									
854		06/19 AP		11/20/18 0392026	BAKER & TAYLOR BOOKS BOOK COVERS	13.39			11/30/18
855		06/19 AP		11/20/18 0392035	DEMCO, INC BOOK TAPE, LABELS	177.45			11/30/18
854		06/19 AP		11/16/18 0392026	BAKER & TAYLOR BOOKS BOOK COVERS	18.14			11/30/18
855		06/19 AP		11/09/18 0392046	ON-LINE-LABELS.COM MAGAZINE LABELS	59.50			11/30/18
855		06/19 AP		11/09/18 0392052	STOREY KENWORTHY PACKAGING TAPE	101.40			11/30/18
854		06/19 AP		11/07/18 0392026	BAKER & TAYLOR BOOKS BOOK COVERS	10.53			11/30/18
854		06/19 AP		10/31/18 0392026	BAKER & TAYLOR BOOKS BOOK COVERS	8.11			11/30/18
854		06/19 AP		10/31/18 0392026	BAKER & TAYLOR BOOKS BOOK COVERS	6.40			11/30/18
854		06/19 AP		10/30/18 0392026	BAKER & TAYLOR BOOKS BOOK COVERS	16.99			11/30/18

GROUP	PO	ACCTG	-----TRANSACTION-----						CURRENT
NBR	NBR	PER.	CD	DATE	NUMBER	DESCRIPTION	DEBITS	CREDITS	BALANCE
									POST DT
FUND 101 GENERAL FUND									
101-1061-423.71-11 OFFICE SUPPLIES / TECHNICAL PROCESSING SUPP									
						continued			
ACCOUNT TOTAL							411.91	.00	411.91
101-1061-423.89-20 MISCELLANEOUS SERVICES / ADULT BOOKS									
854		06/19	AP	11/21/18	0392026	BAKER & TAYLOR BOOKS	78.94		11/30/18
ADULT BOOKS									
854		06/19	AP	11/21/18	0392026	BAKER & TAYLOR BOOKS	296.38		11/30/18
ADULT BOOKS									
854		06/19	AP	11/20/18	0392026	BAKER & TAYLOR BOOKS	252.91		11/30/18
ADULT BOOKS									
854		06/19	AP	11/19/18	0392026	BAKER & TAYLOR BOOKS	124.44		11/30/18
ADULT BOOKS									
854		06/19	AP	11/16/18	0392026	BAKER & TAYLOR BOOKS	143.59		11/30/18
ADULT BOOKS									
854		06/19	AP	11/16/18	0392026	BAKER & TAYLOR BOOKS	423.23		11/30/18
ADULT BOOKS									
854		06/19	AP	11/12/18	0392026	BAKER & TAYLOR BOOKS	128.66		11/30/18
ADULT BOOKS									
854		06/19	AP	11/09/18	0392026	BAKER & TAYLOR BOOKS	186.23		11/30/18
ADULT BOOKS									
854		06/19	AP	11/08/18	0392026	BAKER & TAYLOR BOOKS	15.12		11/30/18
ADULT BOOKS									
854		06/19	AP	11/07/18	0392026	BAKER & TAYLOR BOOKS	221.48		11/30/18
ADULT BOOKS									
854		06/19	AP	11/07/18	0392026	BAKER & TAYLOR BOOKS	353.24		11/30/18
ADULT BOOKS									
854		06/19	AP	11/07/18	0392026	BAKER & TAYLOR BOOKS	57.12		11/30/18
ADULT BOOKS									
854		06/19	AP	11/06/18	0392026	BAKER & TAYLOR BOOKS	15.65		11/30/18
ADULT BOOKS									
854		06/19	AP	11/05/18	0392026	BAKER & TAYLOR BOOKS	321.91		11/30/18
ADULT BOOKS									
854		06/19	AP	11/01/18	0392026	BAKER & TAYLOR BOOKS	147.95		11/30/18
ADULT BOOKS									
854		06/19	AP	10/31/18	0392026	BAKER & TAYLOR BOOKS	160.37		11/30/18
ADULT BOOKS									
854		06/19	AP	10/31/18	0392026	BAKER & TAYLOR BOOKS	109.53		11/30/18
ADULT BOOKS									
854		06/19	AP	10/30/18	0392026	BAKER & TAYLOR BOOKS	335.41		11/30/18
ADULT BOOKS									
854		06/19	AP	10/30/18	0392026	BAKER & TAYLOR BOOKS	211.67		11/30/18
ADULT BOOKS									
854		06/19	AP	10/29/18	0392026	BAKER & TAYLOR BOOKS	395.73		11/30/18
ADULT BOOKS									
854		06/19	AP	10/11/18	0392026	BAKER & TAYLOR BOOKS	333.68		11/30/18
ADULT BOOKS									
ACCOUNT TOTAL							4,313.24	.00	4,313.24

GROUP NBR	PO NBR	ACCTG PER.	CD	-----TRANSACTION----- DATE	NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE	POST DT
FUND 101 GENERAL FUND										
101-1061-423.89-21 MISCELLANEOUS SERVICES / YOUNG ADULT BOOKS										
854		06/19 AP		11/21/18	0392026	BAKER & TAYLOR BOOKS	658.26			11/30/18
						YOUNG ADULT BOOKS				
854		06/19 AP		11/21/18	0392026	BAKER & TAYLOR BOOKS	10.63			11/30/18
						YOUNG ADULT BOOKS				
854		06/19 AP		11/21/18	0392026	BAKER & TAYLOR BOOKS	36.92			11/30/18
						YOUNG ADULT BOOKS				
854		06/19 AP		11/16/18	0392026	BAKER & TAYLOR BOOKS	30.19			11/30/18
						YOUNG ADULT BOOKS				
854		06/19 AP		11/12/18	0392026	BAKER & TAYLOR BOOKS	20.86			11/30/18
						YOUNG ADULT BOOKS				
854		06/19 AP		11/09/18	0392026	BAKER & TAYLOR BOOKS	21.46			11/30/18
						YOUNG ADULT BOOKS				
854		06/19 AP		11/07/18	0392026	BAKER & TAYLOR BOOKS	25.27			11/30/18
						YOUNG ADULT BOOKS				
854		06/19 AP		11/06/18	0392026	BAKER & TAYLOR BOOKS	374.45			11/30/18
						YOUNG ADULT BOOKS				
854		06/19 AP		11/05/18	0392026	BAKER & TAYLOR BOOKS	86.68			11/30/18
						YOUNG ADULT BOOKS				
854		06/19 AP		10/30/18	0392026	BAKER & TAYLOR BOOKS	20.86			11/30/18
						YOUNG ADULT BOOKS				
854		06/19 AP		10/29/18	0392026	BAKER & TAYLOR BOOKS	615.11			11/30/18
						YOUNG ADULT BOOKS				
854		06/19 AP		10/11/18	0392026	BAKER & TAYLOR BOOKS	99.65			11/30/18
						YOUNG ADULT BOOKS				
						ACCOUNT TOTAL	2,000.34	.00	2,000.34	
101-1061-423.89-22 MISCELLANEOUS SERVICES / YOUTH BOOKS										
854		06/19 AP		11/21/18	0392026	BAKER & TAYLOR BOOKS	12.73			11/30/18
						YOUTH BOOKS				
854		06/19 AP		11/19/18	0392026	BAKER & TAYLOR BOOKS	37.69			11/30/18
						YOUTH BOOKS				
854		06/19 AP		11/16/18	0392026	BAKER & TAYLOR BOOKS	188.33			11/30/18
						YOUTH BOOKS				
854		06/19 AP		11/12/18	0392026	BAKER & TAYLOR BOOKS	53.91			11/30/18
						YOUTH BOOKS				
854		06/19 AP		11/09/18	0392026	BAKER & TAYLOR BOOKS	156.53			11/30/18
						YOUTH BOOKS				
854		06/19 AP		11/08/18	0392026	BAKER & TAYLOR BOOKS	555.54			11/30/18
						YOUTH BOOKS				
854		06/19 AP		11/08/18	0392026	BAKER & TAYLOR BOOKS	104.87			11/30/18
						YOUTH BOOKS				
854		06/19 AP		11/07/18	0392026	BAKER & TAYLOR BOOKS	15.15			11/30/18
						YOUTH BOOKS				
854		06/19 AP		11/06/18	0392026	BAKER & TAYLOR BOOKS	803.93			11/30/18
						YOUTH BOOKS				
854		06/19 AP		11/05/18	0392026	BAKER & TAYLOR BOOKS	10.61			11/30/18
						YOUTH BOOKS				

GROUP NBR	PO NBR	ACCTG PER.	CD	DATE	TRANSACTION NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE	POST DT
FUND 101 GENERAL FUND										
101-1061-423.89-22 MISCELLANEOUS SERVICES / YOUTH BOOKS						continued				
854		06/19 AP		10/30/18	0392026	BAKER & TAYLOR BOOKS YOUTH BOOKS	25.97			11/30/18
854		06/19 AP		10/29/18	0392026	BAKER & TAYLOR BOOKS YOUTH BOOKS	138.72			11/30/18
854		06/19 AP		10/11/18	0392026	BAKER & TAYLOR BOOKS YOUTH BOOKS	490.25			11/30/18
ACCOUNT TOTAL							2,594.23	.00		2,594.23
101-1061-423.89-24 MISCELLANEOUS SERVICES / ADULT AUDIO										
854		06/19 AP		11/21/18	0392026	BAKER & TAYLOR BOOKS ADULT CDBOOK	22.00			11/30/18
854		06/19 AP		11/19/18	0392026	BAKER & TAYLOR BOOKS ADULT CDBOOK	21.99			11/30/18
854		06/19 AP		11/16/18	0392026	BAKER & TAYLOR BOOKS ADULT CDBOOK	19.24			11/30/18
855		06/19 AP		11/15/18	0392049	RECORDED BOOKS, LLC. ADULT CDBOOK	31.49			11/30/18
855		06/19 AP		11/13/18	0392049	RECORDED BOOKS, LLC. ADULT CDBOOK	27.80			11/30/18
855		06/19 AP		11/13/18	0392049	RECORDED BOOKS, LLC. ADULT CDBOOK	58.50			11/30/18
854		06/19 AP		11/12/18	0392026	BAKER & TAYLOR BOOKS ADULT CDBOOK	13.74			11/30/18
854		06/19 AP		11/07/18	0392027	BAKER & TAYLOR ENTERTAINMENT ADULT CDMUSIC	26.30			11/30/18
854		06/19 AP		11/07/18	0392026	BAKER & TAYLOR BOOKS ADULT CDBOOK	90.72			11/30/18
854		06/19 AP		11/06/18	0392027	BAKER & TAYLOR ENTERTAINMENT ADULT CDMUSIC	32.35			11/30/18
854		06/19 AP		11/05/18	0392027	BAKER & TAYLOR ENTERTAINMENT ADULT CDMUSIC	149.75			11/30/18
854		06/19 AP		11/05/18	0392026	BAKER & TAYLOR BOOKS ADULT CDBOOK	75.79			11/30/18
855		06/19 AP		11/05/18	0392037	FINDAWAY WORLD LLC ADULT PLAYAWAY AUDIO	63.74			11/30/18
855		06/19 AP		11/02/18	0392047	OVERDRIVE, INC. ADULT EBK	341.96			11/30/18
855		06/19 AP		10/31/18	0392047	OVERDRIVE, INC. ADULT EBK	142.00			11/30/18
854		06/19 AP		10/30/18	0392027	BAKER & TAYLOR ENTERTAINMENT ADULT CDMUSIC	8.81			11/30/18
854		06/19 AP		10/30/18	0392026	BAKER & TAYLOR BOOKS ADULT CDBOOK	46.75			11/30/18
854		06/19 AP		10/29/18	0392026	BAKER & TAYLOR BOOKS ADULT CDBOOK	22.00			11/30/18
854		06/19 AP		10/11/18	0392026	BAKER & TAYLOR BOOKS ADULT CDBOOK	22.00			11/30/18

GROUP NBR	PO NBR	ACCTG PER.	CD	DATE	TRANSACTION NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE	POST DT
FUND 101 GENERAL FUND										
101-1061-423.89-24 MISCELLANEOUS SERVICES / ADULT AUDIO							continued			
ACCOUNT TOTAL							1,216.93	.00	1,216.93	
101-1061-423.89-25 MISCELLANEOUS SERVICES / ADULT VIDEO										
854		06/19 AP		11/20/18	0392027	BAKER & TAYLOR ENTERTAINMENT ADULT VIDEO	51.46			11/30/18
854		06/19 AP		11/15/18	0392027	BAKER & TAYLOR ENTERTAINMENT ADULT VIDEO	21.74			11/30/18
854		06/19 AP		11/13/18	0392027	BAKER & TAYLOR ENTERTAINMENT ADULT VIDEO	208.51			11/30/18
854		06/19 AP		11/12/18	0392027	BAKER & TAYLOR ENTERTAINMENT ADULT VIDEO	11.64			11/30/18
854		06/19 AP		11/09/18	0392027	BAKER & TAYLOR ENTERTAINMENT ADULT VIDEO	43.48			11/30/18
854		06/19 AP		11/07/18	0392027	BAKER & TAYLOR ENTERTAINMENT ADULT VIDEO	14.49			11/30/18
854		06/19 AP		11/06/18	0392027	BAKER & TAYLOR ENTERTAINMENT ADULT VIDEO	328.19			11/30/18
854		06/19 AP		11/05/18	0392027	BAKER & TAYLOR ENTERTAINMENT ADULT VIDEO	124.53			11/30/18
854		06/19 AP		11/05/18	0392027	BAKER & TAYLOR ENTERTAINMENT ADULT VIDEO	25.37			11/30/18
854		06/19 AP		10/30/18	0392027	BAKER & TAYLOR ENTERTAINMENT ADULT VIDEO	105.78			11/30/18
854		06/19 AP		10/30/18	0392027	BAKER & TAYLOR ENTERTAINMENT ADULT VIDEO	423.91			11/30/18
ACCOUNT TOTAL							1,359.10	.00	1,359.10	
101-1061-423.89-26 MISCELLANEOUS SERVICES / NON-PRINT RESOURCES										
855		06/19 AP		11/14/18	0392049	RECORDED BOOKS, LLC. YA GAMING	126.98			11/30/18
855		06/19 AP		11/12/18	0392049	RECORDED BOOKS, LLC. GAMING	240.96			11/30/18
855		06/19 AP		11/09/18	0392049	RECORDED BOOKS, LLC. YA GAMING	120.47			11/30/18
855		06/19 AP		11/09/18	0392049	RECORDED BOOKS, LLC. GAMING	120.48			11/30/18
855		06/19 AP		11/07/18	0392049	RECORDED BOOKS, LLC. YA GAMING	66.99			11/30/18
ACCOUNT TOTAL							675.88	.00	675.88	
101-1061-423.89-29 MISCELLANEOUS SERVICES / NEWSPAPERS										
855		06/19 AP		11/20/18	0392034	COURIER COMMUNICATIONS SUBSCRIPTION:UP TO 52 WKS	437.00			11/30/18

GROUP	PO	ACCTG	-----TRANSACTION-----						CURRENT
NBR	NBR	PER.	CD	DATE	NUMBER	DESCRIPTION	DEBITS	CREDITS	BALANCE
									POST DT
FUND 101 GENERAL FUND									
101-1061-423.89-29 MISCELLANEOUS SERVICES / NEWSPAPERS									
							continued		
ACCOUNT TOTAL							437.00	.00	437.00
101-1061-423.89-31 MISCELLANEOUS SERVICES / PERIODICALS									
855		06/19 AP		11/02/18	0392036	EBSCO INFORMATION SERVICES	3,913.61		11/30/18
MAGAZINES									
855		06/19 AP		10/25/18	0392023	AMERICAN LIBRARY ASSOCIATION	70.00		11/30/18
SUBSCRIPTION RENEWAL 1 YR							12/31/18 TO 12/31/19		
855		06/19 AP		10/16/18	0392054	VOYA SUBSCRIPTIONS	62.00		11/30/18
MAGAZINE SUB FY19							JAN19-DEC19		
855		06/19 AP		07/13/18	0392036	EBSCO INFORMATION SERVICES		15.00	11/30/18
MAGAZINE CREDIT									
ACCOUNT TOTAL							4,045.61	15.00	4,030.61
101-1061-423.89-35 MISCELLANEOUS SERVICES / YOUTH AUDIO									
855		06/19 AP		11/16/18	0392037	FINDAWAY WORLD LLC	44.44		11/30/18
YOUTH PLAYAWAY AUDIO									
854		06/19 AP		11/08/18	0392027	BAKER & TAYLOR ENTERTAINMENT	13.95		11/30/18
YOUTH CDMUSIC									
854		06/19 AP		11/08/18	0392026	BAKER & TAYLOR BOOKS	5.49		11/30/18
YOUTH CDBOOK									
ACCOUNT TOTAL							63.88	.00	63.88
101-1061-423.89-36 MISCELLANEOUS SERVICES / YOUTH VIDEO									
854		06/19 AP		11/13/18	0392027	BAKER & TAYLOR ENTERTAINMENT	32.52		11/30/18
YOUTH VIDEO									
854		06/19 AP		11/08/18	0392027	BAKER & TAYLOR ENTERTAINMENT	21.70		11/30/18
YOUTH VIDEO									
854		06/19 AP		11/08/18	0392027	BAKER & TAYLOR ENTERTAINMENT	52.29		11/30/18
YOUTH VIDEO									
854		06/19 AP		11/05/18	0392027	BAKER & TAYLOR ENTERTAINMENT	25.32		11/30/18
YOUTH VIDEO									
854		06/19 AP		11/02/18	0392027	BAKER & TAYLOR ENTERTAINMENT	68.77		11/30/18
YOUTH VIDEO									
854		06/19 AP		11/02/18	0392027	BAKER & TAYLOR ENTERTAINMENT	130.44		11/30/18
YOUTH VIDEO									
854		06/19 AP		11/01/18	0392027	BAKER & TAYLOR ENTERTAINMENT	10.87		11/30/18
YOUTH VIDEO									
ACCOUNT TOTAL							341.91	.00	341.91
101-1061-423.89-37 MISCELLANEOUS SERVICES / YOUNG ADULT AUDIO									
854		06/19 AP		11/19/18	0392026	BAKER & TAYLOR BOOKS	22.39		11/30/18

GROUP NBR	PO NBR	ACCTG PER.	CD	---TRANSACTION--- DATE	NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE	POST DT
FUND 101 GENERAL FUND										
101-1061-423.89-37 MISCELLANEOUS SERVICES / YOUNG ADULT AUDIO						continued				
	854	06/19 AP		11/16/18	0392026	BAKER & TAYLOR BOOKS	22.39			11/30/18
						YOUNG ADULT CDBOOK				
	854	06/19 AP		11/06/18	0392026	BAKER & TAYLOR BOOKS	76.98			11/30/18
						YOUNG ADULT CDBOOK				
	854	06/19 AP		10/29/18	0392026	BAKER & TAYLOR BOOKS	46.73			11/30/18
						YOUNG ADULT CDBOOK				
						ACCOUNT TOTAL	168.49	.00	168.49	
101-1061-423.89-38 MISCELLANEOUS SERVICES / YOUNG ADULT VIDEO										
	854	06/19 AP		10/25/18	0392027	BAKER & TAYLOR ENTERTAINMENT	188.35			11/30/18
						YOUNG ADULT VIDEO				
						ACCOUNT TOTAL	188.35	.00	188.35	
101-1118-441.72-99 OPERATING SUPPLIES / POSTAGE										
	920	06/19 AP		12/02/18	0392060	CMRS-POC	.47			12/07/18
						POC#8031880-REPL.POSTAGE				09/06/18-12/02/18
						ACCOUNT TOTAL	.47	.00	.47	
101-1158-441.71-01 OFFICE SUPPLIES / OFFICE SUPPLIES										
	920	06/19 AP		12/02/18	0392060	CMRS-POC	19.10			12/07/18
						POC#8031880-REPL.POSTAGE				09/06/18-12/02/18
						ACCOUNT TOTAL	19.10	.00	19.10	
101-1199-411.32-64 COMM PROTECTION GRANTS / FIRE EQUIPMENT GRANT										
	920	06/19 AP		12/05/18	0392056	BEYOND PINK TEAM	2,809.39			12/07/18
						PINK RIBBON CAMPAIGN'18				
						ACCOUNT TOTAL	2,809.39	.00	2,809.39	
101-1199-421.31-10 HUMAN DEVELOPMENT GRANTS / GRANTS - CULTURAL SERVICE										
	920	06/19 AP		12/02/18	0392060	CMRS-POC	86.20			12/07/18
						POC#8031880-REPL.POSTAGE				09/06/18-12/02/18
	953	06/19 AP		11/27/18	0392082	SCHWARZ, DEAN LESTER	14.00			12/13/18
						RMB: POTTERY SOLD				
	953	06/19 AP		11/07/18	0392077	KERNS, JAMES	6.30			12/13/18
						RMB: CERAMIC MUG SOLD				
						ACCOUNT TOTAL	106.50	.00	106.50	

GROUP NBR	PO NBR	ACCTG PER.	CD	DATE	TRANSACTION NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE	POST DT
FUND 101 GENERAL FUND										
101-1199-441.81-07						PROFESSIONAL SERVICES / CF COMMUNITY FOUNDATION				
920		06/19 AP		12/02/18	0392060	CMRS-POC	52.64			12/07/18
					POC#8031880-REPL.POSTAGE	09/06/18-12/02/18				
					ACCOUNT TOTAL		52.64	.00	52.64	
101-1199-441.81-09						PROFESSIONAL SERVICES / HUMAN RIGHTS COMMISSION				
920		06/19 AP		12/02/18	0392060	CMRS-POC	2.25			12/07/18
					POC#8031880-REPL.POSTAGE	09/06/18-12/02/18				
					ACCOUNT TOTAL		2.25	.00	2.25	
101-1199-441.89-13						MISCELLANEOUS SERVICES / CONTINGENCY				
920		06/19 AP		12/02/18	0392060	CMRS-POC	.94			12/07/18
					POC#8031880-REPL.POSTAGE	09/06/18-12/02/18				
895		06/19 AP		11/13/18	0392005	CEDAR FALLS UTILITIES	457.26			12/05/18
					UTILITIES THRU 11/13/18					
786		05/19 AP		11/12/18	0004148	PROFESSIONAL SOLUTIONS	140.22			12/03/18
					OCTOBER CREDIT CARD FEES					
					ACCOUNT TOTAL		598.42	.00	598.42	
101-1199-441.89-14						MISCELLANEOUS SERVICES / REFUNDS				
881		06/19 AP		12/03/18	0391997	DARREN YODER	26.42			12/03/18
					REFUND-PUBLIC RECORD REQ.					
					ACCOUNT TOTAL		26.42	.00	26.42	
101-2205-432.72-99						OPERATING SUPPLIES / POSTAGE				
920		06/19 AP		12/02/18	0392060	CMRS-POC	52.77			12/07/18
					POC#8031880-REPL.POSTAGE	09/06/18-12/02/18				
					ACCOUNT TOTAL		52.77	.00	52.77	
101-2225-432.72-99						OPERATING SUPPLIES / POSTAGE				
920		06/19 AP		12/02/18	0392060	CMRS-POC	496.82			12/07/18
					POC#8031880-REPL.POSTAGE	09/06/18-12/02/18				
					ACCOUNT TOTAL		496.82	.00	496.82	
101-2225-432.81-44						PROFESSIONAL SERVICES / USGS RIVER GAUGE				
953		06/19 AP		12/01/18	0392076	CENTURYLINK	41.06			12/13/18
					CEDAR RIVER GAUGE-NOV'18					
					ACCOUNT TOTAL		41.06	.00	41.06	

GROUP NBR	PO NBR	ACCTG PER.	CD	DATE	TRANSACTION NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE	
									POST DT	
FUND 101 GENERAL FUND										
101-2225-432.83-06 TRANSPORTATION&EDUCATION / EDUCATION										
895	06/19 AP	11/29/18		0392010	IOWA DEPT-TRANSPORTATION		120.00		12/05/18	
					AGGREG.TECH.RECERT.-T.RAY	CEDAR RAPIDS				
895	06/19 AP	11/29/18		0392010	IOWA DEPT-TRANSPORTATION		120.00		12/05/18	
					PCC 1 RECERT.-TERRA RAY	CEDAR RAPIDS				
895	06/19 AP	11/29/18		0392010	IOWA DEPT-TRANSPORTATION		120.00		12/05/18	
					PCC 2 RECERT.-TERRA RAY	CEDAR RAPIDS				
ACCOUNT TOTAL							360.00	.00	360.00	
101-2235-412.72-99 OPERATING SUPPLIES / POSTAGE										
920	06/19 AP	12/02/18		0392060	CMRS-POC		317.94		12/07/18	
					POC#8031880-REPL.POSTAGE	09/06/18-12/02/18				
ACCOUNT TOTAL							317.94	.00	317.94	
101-2235-412.89-15 MISCELLANEOUS SERVICES / CREDIT CARD CHARGES										
786	05/19 AP	11/12/18		0004142	PROFESSIONAL SOLUTIONS		621.74		12/03/18	
					OCTOBER CREDIT CARD FEES					
786	05/19 AP	11/12/18		0004143	PROFESSIONAL SOLUTIONS		713.05		12/03/18	
					OCTOBER CREDIT CARD FEES					
ACCOUNT TOTAL							1,334.79	.00	1,334.79	
101-2245-442.72-99 OPERATING SUPPLIES / POSTAGE										
920	06/19 AP	12/02/18		0392060	CMRS-POC		.68		12/07/18	
					POC#8031880-REPL.POSTAGE	09/06/18-12/02/18				
920	06/19 AP	12/02/18		0392060	CMRS-POC		323.09		12/07/18	
					POC#8031880-REPL.POSTAGE	09/06/18-12/02/18				
ACCOUNT TOTAL							323.77	.00	323.77	
101-4511-414.64-02 INSURANCE / HEALTH INS. REIMBURSEMENT										
786	05/19 AP	11/30/18		0004123	ADVANTAGE ADMIN-SECT.105		11.10		12/03/18	
					HEALTH INS. REIMBURSEMENT					
786	05/19 AP	11/23/18		0004122	ADVANTAGE ADMIN-SECT.105		110.75		12/03/18	
					HEALTH INS. REIMBURSEMENT					
786	05/19 AP	11/16/18		0004121	ADVANTAGE ADMIN-SECT.105		40.02		12/03/18	
					HEALTH INS. REIMBURSEMENT					
786	05/19 AP	11/09/18		0004120	ADVANTAGE ADMIN-SECT.105		78.10		12/03/18	
					HEALTH INS. REIMBURSEMENT					
786	05/19 AP	11/09/18		0004120	ADVANTAGE ADMIN-SECT.105		214.55		12/03/18	
					HEALTH INS. REIMBURSEMENT					
786	05/19 AP	11/09/18		0004120	ADVANTAGE ADMIN-SECT.105		72.50		12/03/18	
					HEALTH INS. REIMBURSEMENT					
786	05/19 AP	11/02/18		0004119	ADVANTAGE ADMIN-SECT.105		1.17		12/03/18	

GROUP	PO	ACCTG	-----TRANSACTION-----						CURRENT	
NBR	NBR	PER.	CD	DATE	NUMBER	DESCRIPTION	DEBITS	CREDITS	BALANCE	
									POST DT	
FUND 101 GENERAL FUND										
101-4511-414.64-02						INSURANCE / HEALTH INS. REIMBURSEMENT				continued
786		05/19 AP		11/02/18	0004119	ADVANTAGE ADMIN-SECT.105	16.30			12/03/18
						HEALTH INS. REIMBURSEMENT				
						HEALTH INS. REIMBURSEMENT				
						ACCOUNT TOTAL	544.49	.00	544.49	
101-4511-414.72-99						OPERATING SUPPLIES / POSTAGE				
920		06/19 AP		12/02/18	0392060	CMRS-POC	429.75			12/07/18
						POC#8031880-REPL.POSTAGE				
						09/06/18-12/02/18				
						ACCOUNT TOTAL	429.75	.00	429.75	
101-4511-414.85-01						UTILITIES / UTILITIES				
895		06/19 AP		11/13/18	0392005	CEDAR FALLS UTILITIES	308.72			12/05/18
						UTILITIES THRU 11/13/18				
						ACCOUNT TOTAL	308.72	.00	308.72	
101-4511-414.89-14						MISCELLANEOUS SERVICES / REFUNDS				
881		06/19 AP		11/27/18	0391998	LAURENTIU DOBRILA	125.00			12/03/18
						REF:RENT.PERMIT-211 7TH				
						211 E. 7TH STREET				
						ACCOUNT TOTAL	125.00	.00	125.00	
101-5521-415.64-02						INSURANCE / HEALTH INS. REIMBURSEMENT				
786		05/19 AP		11/30/18	0004123	ADVANTAGE ADMIN-SECT.105	141.16			12/03/18
						HEALTH INS. REIMBURSEMENT				
786		05/19 AP		11/16/18	0004121	ADVANTAGE ADMIN-SECT.105	20.00			12/03/18
						HEALTH INS. REIMBURSEMENT				
						ACCOUNT TOTAL	161.16	.00	161.16	
101-5521-415.71-07						OFFICE SUPPLIES / CODE ENFORCEMENT SUPPLIES				
920		06/19 AP		12/02/18	0392060	CMRS-POC	115.35			12/07/18
						POC#8031880-REPL.POSTAGE				
						09/06/18-12/02/18				
						ACCOUNT TOTAL	115.35	.00	115.35	
101-5521-415.72-01						OPERATING SUPPLIES / OPERATING SUPPLIES				
895		06/19 AP		11/13/18	0392005	CEDAR FALLS UTILITIES	142.34			12/05/18
						UTILITIES THRU 11/13/18				
786		05/19 AP		11/12/18	0004147	PROFESSIONAL SOLUTIONS	12.60			12/03/18
						OCTOBER CREDIT CARD FEES				

GROUP	PO	ACCTG	---TRANSACTION---						
NBR	NBR	PER.	CD	DATE	NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE POST DT
FUND 101 GENERAL FUND									
101-7733-423.72-01 OPERATING SUPPLIES / OPERATING SUPPLIES continued									
ACCOUNT TOTAL							84.77	.00	84.77
101-7733-423.85-01 UTILITIES / UTILITIES									
895		06/19 AP		11/13/18	0392005	CEDAR FALLS UTILITIES UTILITIES THRU 11/13/18	1,032.41		12/05/18
ACCOUNT TOTAL							1,032.41	.00	1,032.41
101-7753-423.71-01 OFFICE SUPPLIES / OFFICE SUPPLIES									
920		06/19 AP		12/02/18	0392060	CMRS-POC POC#8031880-REPL.POSTAGE 09/06/18-12/02/18	93.27		12/07/18
ACCOUNT TOTAL							93.27	.00	93.27
101-7753-423.81-01 PROFESSIONAL SERVICES / PROFESSIONAL SERVICES									
895		06/19 AP		12/03/18	0392007	CLARK, ZACH	57.00		12/05/18
895		06/19 AP		12/03/18	0392015	BASKETBALL OFFICIAL-12/3 MCCARRON, SEAN	72.00		12/05/18
895		06/19 AP		12/03/18	0392008	BASKETBALL OFFICIAL-12/3 DEAN, RANDOLPH	66.00		12/05/18
895		06/19 AP		12/03/18	0392001	BASKETBALL OFFICIAL-12/3 ANDERSON, FLETCHER	31.50		12/05/18
ACCOUNT TOTAL							226.50	.00	226.50
101-7753-423.85-01 UTILITIES / UTILITIES									
895		06/19 AP		11/13/18	0392005	CEDAR FALLS UTILITIES UTILITIES THRU 11/13/18	6,780.34		12/05/18
ACCOUNT TOTAL							6,780.34	.00	6,780.34
101-7753-423.85-05 UTILITIES / POOL UTILITIES									
895		06/19 AP		11/13/18	0392005	CEDAR FALLS UTILITIES UTILITIES THRU 11/13/18	769.98		12/05/18
ACCOUNT TOTAL							769.98	.00	769.98
101-7753-423.89-04 MISCELLANEOUS SERVICES / SALES TAX									
786		05/19 AP		11/20/18	0004135	IOWA DEPT.OF REVENUE SEMI MONTHLY SALES TAX RECREATION	1,818.46		12/03/18
786		05/19 AP		11/07/18	0004133	IOWA DEPT.OF REVENUE	999.94		12/03/18

GROUP	PO	ACCTG	----TRANSACTION----				DEBITS	CREDITS	CURRENT	
NBR	NBR	PER.	CD	DATE	NUMBER	DESCRIPTION			BALANCE	
									POST DT	
FUND 101 GENERAL FUND										
101-7753-423.89-04						MISCELLANEOUS SERVICES / SALES TAX				
						SEMI MONTHLY SALES TAX				
						RECREATION				
						ACCOUNT TOTAL	2,818.40	.00	2,818.40	
101-7753-423.89-15 MISCELLANEOUS SERVICES / CREDIT CARD CHARGES										
786		05/19	AP	11/16/18	0004146	PROFESSIONAL SOLUTIONS	688.00			12/03/18
						OCTOBER CREDIT CARD FEES				
786		05/19	AP	11/06/18	0004126	COMMUNITY BANKERS MERCHANT SV	35.75			12/03/18
						OCTOBER CREDIT CARD FEES				
786		05/19	AP	11/06/18	0004151	VANTIV INTEGRATED PAYMENT SOL	50.00			12/03/18
						GATEWAY FEES				10/1-10/31/18
						ACCOUNT TOTAL	773.75	.00	773.75	
101-7780-423.72-70 OPERATING SUPPLIES / CLASSROOM SUPPLIES										
953		06/19	AP	09/04/18	0392081	PETTY CASH	4.06			12/13/18
						RMB:BOARD-CLASS SUPPLIES				
						ACCOUNT TOTAL	4.06	.00	4.06	
101-7780-423.72-72 OPERATING SUPPLIES / PRODUCTS FOR RESALE										
953		06/19	AP	09/19/18	0392081	PETTY CASH	8.00			12/13/18
						RMB:BOOKS-SELL IN SHOP				
						ACCOUNT TOTAL	8.00	.00	8.00	
101-7780-423.72-99 OPERATING SUPPLIES / POSTAGE										
920		06/19	AP	12/02/18	0392060	CMRS-POC	43.92			12/07/18
						POC#8031880-REPL.POSTAGE				09/06/18-12/02/18
953		06/19	AP	11/29/18	0392081	PETTY CASH	10.00			12/13/18
						RMB:POSTAGE DUE-RET.MAIL				
953		06/19	AP	11/28/18	0392081	PETTY CASH	27.50			12/13/18
						RMB:POSTAGE DUE-RET.MAIL				
						ACCOUNT TOTAL	81.42	.00	81.42	
101-7780-423.85-01 UTILITIES / UTILITIES										
895		06/19	AP	11/13/18	0392005	CEDAR FALLS UTILITIES	776.86			12/05/18
						UTILITIES THRU 11/13/18				
						ACCOUNT TOTAL	776.86	.00	776.86	
101-7780-423.89-15 MISCELLANEOUS SERVICES / CREDIT CARD CHARGES										

GROUP NBR	PO NBR	ACCTG PER.	CD	DATE	---TRANSACTION--- NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE	POST DT
FUND 101 GENERAL FUND										
101-7780-423.89-15						MISCELLANEOUS SERVICES / CREDIT CARD CHARGES				continued
786		05/19 AP		11/16/18	0004140	PROFESSIONAL SOLUTIONS	61.76			12/03/18
						OCTOBER CREDIT CARD FEES				
786		05/19 AP		11/06/18	0004126	COMMUNITY BANKERS MERCHANT SV	8.98			12/03/18
						OCTOBER CREDIT CARD FEES				
						ACCOUNT TOTAL	70.74	.00	70.74	
						FUND TOTAL	142,046.13	15.00	142,031.13	
FUND 203 TAX INCREMENT FINANCING										
FUND 206 STREET CONSTRUCTION FUND										
206-7737-436.64-02						INSURANCE / HEALTH INS. REIMBURSEMENT				
786		05/19 AP		11/02/18	0004119	ADVANTAGE ADMIN-SECT.105	204.62			12/03/18
						HEALTH INS. REIMBURSEMENT				
						ACCOUNT TOTAL	204.62	.00	204.62	
206-7737-436.72-56						OPERATING SUPPLIES / FLOOD CONTROL				
895		06/19 AP		11/13/18	0392005	CEDAR FALLS UTILITIES	108.71			12/05/18
						UTILITIES THRU 11/13/18				
						ACCOUNT TOTAL	108.71	.00	108.71	
206-7737-436.72-99						OPERATING SUPPLIES / POSTAGE				
920		06/19 AP		12/02/18	0392060	CMRS-POC	17.39			12/07/18
						POC#8031880-REPL.POSTAGE				09/06/18-12/02/18
						ACCOUNT TOTAL	17.39	.00	17.39	
206-7737-436.85-01						UTILITIES / UTILITIES				
895		06/19 AP		11/13/18	0392005	CEDAR FALLS UTILITIES	39.37			12/05/18
						UTILITIES THRU 11/13/18				
						ACCOUNT TOTAL	39.37	.00	39.37	
206-7747-436.71-01						OFFICE SUPPLIES / OFFICE SUPPLIES				
920		06/19 AP		12/02/18	0392060	CMRS-POC	4.23			12/07/18
						POC#8031880-REPL.POSTAGE				09/06/18-12/02/18
						ACCOUNT TOTAL	4.23	.00	4.23	
206-7747-436.85-01						UTILITIES / UTILITIES				

GROUP NBR	PO NBR	ACCTG PER.	CD	DATE	TRANSACTION NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE	POST DT
FUND 206 STREET CONSTRUCTION FUND										
206-7747-436.85-01 UTILITIES / UTILITIES										
895		06/19 AP		11/13/18	0392005	CEDAR FALLS UTILITIES	1,077.05			12/05/18
						UTILITIES THRU 11/13/18				
						ACCOUNT TOTAL	1,077.05	.00	1,077.05	
						FUND TOTAL	1,451.37	.00	1,451.37	
FUND 215 HOSPITAL FUND										
FUND 216 POLICE BLOCK GRANT FUND										
FUND 217 SECTION 8 HOUSING FUND										
217-2214-432.72-99 OPERATING SUPPLIES / POSTAGE										
920		06/19 AP		12/02/18	0035479	CMRS-POC	401.73			12/07/18
						POC#8031880-REPL.POSTAGE				
						09/06/18-12/02/18				
						ACCOUNT TOTAL	401.73	.00	401.73	
217-2214-432.89-61 MISCELLANEOUS SERVICES / HOUS.ASSIST PMTS-OCCUPIED										
870		06/19 AP		12/01/18	0035421	COOK CO.HOUSING AUTHORITY	768.00			11/30/18
						HAP_Goldstein K 122018				
870		06/19 AP		12/01/18	0035418	CEDAR RAPIDS HOUSING SERV.,CI	340.00			11/30/18
						HAP_Johnson D 122018				
870		06/19 AP		12/01/18	0035414	BAUCH, JAMES C	374.00			11/30/18
						HAP_Cochran C 122018				
870		06/19 AP		12/01/18	0035414	BAUCH, JAMES C	771.00			11/30/18
						HAP_Prior D 122018				
870		06/19 AP		12/01/18	0035467	SMITH, LOUIS R.	515.00			11/30/18
						HAP_Cody I 122018				
870		06/19 AP		12/01/18	0035467	SMITH, LOUIS R.	227.00			11/30/18
						HAP_MOFFETT J 122018				
870		06/19 AP		12/01/18	0035467	SMITH, LOUIS R.	545.00			11/30/18
						HAP_McCalister R 122018				
870		06/19 AP		12/01/18	0035463	RINNELS, DOUGLAS G.	635.00			11/30/18
						HAP_Leiss L 122018				
870		06/19 AP		12/01/18	0035463	RINNELS, DOUGLAS G.	285.00			11/30/18
						HAP_Woock J 122018				
870		06/19 AP		12/01/18	0035477	WEVERINK, TOM	365.00			11/30/18
						HAP_Stewart J 122018				
870		06/19 AP		12/01/18	0035456	OLSON & ESTATES LLC	370.00			11/30/18
						HAP_Halterman A 122018				
870		06/19 AP		12/01/18	0035456	OLSON & ESTATES LLC	189.00			11/30/18
						HAP_Stevens B 122018				
870		06/19 AP		12/01/18	0035456	OLSON & ESTATES LLC	347.00			11/30/18
						HAP_Hepker D 122018				
870		06/19 AP		12/01/18	0035456	OLSON & ESTATES LLC	364.00			11/30/18
						HAP_Graves D 122018				
870		06/19 AP		12/01/18	0035456	OLSON & ESTATES LLC	370.00			11/30/18

GROUP	PO	ACCTG	-----TRANSACTION-----					CURRENT	
NBR	NBR	PER.	CD	DATE	NUMBER	DESCRIPTION	DEBITS	CREDITS	BALANCE
								POST DT	
FUND 217 SECTION 8 HOUSING FUND									
217-2214-432.89-61 MISCELLANEOUS SERVICES / HOUS.ASSIST PMTS-OCCUPIED									
870		06/19	AP	12/01/18	0035412	BARTELT PROPERTIES L.C.	478.00		11/30/18
						HAP_Woodward C 122018			
870		06/19	AP	12/01/18	0035412	BARTELT PROPERTIES L.C.	1,001.00		11/30/18
						HAP_Avino R 122018			
870		06/19	AP	12/01/18	0035412	BARTELT PROPERTIES L.C.	160.00		11/30/18
						HAP_Cobb R 122018			
870		06/19	AP	12/01/18	0035412	BARTELT PROPERTIES L.C.	1,022.00		11/30/18
						HAP_Avino G 122018			
870		06/19	AP	12/01/18	0035462	RBR HOLDINGS LLC	419.00		11/30/18
						HAP_Lohr K 122018			
870		06/19	AP	12/01/18	0035473	TAYLOR, MICHAEL J.	922.00		11/30/18
						HAP_Hunt M 122018			
870		06/19	AP	12/01/18	0035428	EDGE MANAGEMENT GROUP, LLC	8.00		11/30/18
						HAP_Smith L 122018			
870		06/19	AP	12/01/18	0035428	EDGE MANAGEMENT GROUP, LLC	916.00		11/30/18
						HAP_Gibson T 122018			
870		06/19	AP	12/01/18	0035428	EDGE MANAGEMENT GROUP, LLC	344.00		11/30/18
						HAP_Boateng Y 122018			
870		06/19	AP	12/01/18	0035428	EDGE MANAGEMENT GROUP, LLC	850.00		11/30/18
						HAP_Young C 122018			
870		06/19	AP	12/01/18	0035443	J C ENTERPRISES, INC.	326.00		11/30/18
						HAP_Abben B 122018			
870		06/19	AP	12/01/18	0035464	RIVERVIEW CONFERENCE CENTER	527.00		11/30/18
						HAP_Veatch Y 122018			
870		06/19	AP	12/01/18	0035478	WILKEN, HEATH	274.00		11/30/18
						HAP_Norton J 122018			
870		06/19	AP	12/01/18	0035460	PURDY PROPERTIES, LLC	888.00		11/30/18
						HAP_Cummings A 122018			
870		06/19	AP	12/01/18	0035460	PURDY PROPERTIES, LLC	580.00		11/30/18
						HAP_Schmidt D 122018			
870		06/19	AP	12/01/18	0035425	D & J PROPERTIES	410.00		11/30/18
						HAP_Dawson K 122018			
870		06/19	AP	12/01/18	0035425	D & J PROPERTIES	323.00		11/30/18
						HAP_Grant F 122018			
870		06/19	AP	12/01/18	0035425	D & J PROPERTIES	411.00		11/30/18
						HAP_Terry M 122018			
870		06/19	AP	12/01/18	0035426	DOBRILA, LAURENTIU	113.00		11/30/18
						HAP_Sanders S 122018			
870		06/19	AP	12/01/18	0035430	EMAAD, LLC	600.00		11/30/18
						HAP_Delauney C 122018			
870		06/19	AP	12/01/18	0035468	SMITH, MICHAEL A.	153.00		11/30/18
						HAP_Hamilton T 122018			
870		06/19	AP	12/01/18	0035424	CV PROPERTIES, LLC	170.00		11/30/18
						HAP_Barr G 122018			
870		06/19	AP	12/01/18	0035469	STANDARD FAMILY ASSIST.LIVING	146.00		11/30/18
						HAP_REFSHAUGE T 122018			
870		06/19	AP	12/01/18	0035416	CEDAR APARTMENTS LLC	65.00		11/30/18
						HAP_Becerra C 122018			
870		06/19	AP	12/01/18	0035441	HAUS TO HOME INVESTMENTS	715.00		11/30/18

GROUP NBR	PO NBR	ACCTG PER.	CD	DATE	TRANSACTION NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE	POST DT
FUND 217 SECTION 8 HOUSING FUND										
217-2214-432.89-61 MISCELLANEOUS SERVICES / HOUS.ASSIST PMTS-OCCUPIED										
										continued
						HAP Lehr B 122018				
870				06/19	AP 12/01/18 0035448	KYLER, DEBRA K.	549.00			11/30/18
						HAP Mussman C 122018				
870				06/19	AP 12/01/18 0035466	SCHUERMAN PROPERTIES, LLC	520.00			11/30/18
						HAP Brown S 122018				
870				06/19	AP 12/01/18 0035466	SCHUERMAN PROPERTIES, LLC	823.00			11/30/18
						HAP Jurries P 122018				
870				06/19	AP 12/01/18 0035471	SWEETING, LARRY	941.00			11/30/18
						HAP Schumacher D 122018				
870				06/19	AP 12/01/18 0035474	THUNDER RIDGE SR.APARTMENTS L	93.00			11/30/18
						HAP Martin S 122018				
870				06/19	AP 12/01/18 0035474	THUNDER RIDGE SR.APARTMENTS L	338.00			11/30/18
						HAP Turner S 122018				
870				06/19	AP 12/01/18 0035474	THUNDER RIDGE SR.APARTMENTS L	233.00			11/30/18
						HAP Lebahn B 122018				
870				06/19	AP 12/01/18 0035474	THUNDER RIDGE SR.APARTMENTS L	310.00			11/30/18
						HAP Strickland L 122018				
870				06/19	AP 12/01/18 0035474	THUNDER RIDGE SR.APARTMENTS L	165.00			11/30/18
						HAP Matthias L 122018				
870				06/19	AP 12/01/18 0035474	THUNDER RIDGE SR.APARTMENTS L	321.00			11/30/18
						HAP Collver L 122018				
870				06/19	AP 12/01/18 0035474	THUNDER RIDGE SR.APARTMENTS L	279.00			11/30/18
						HAP Hayden J 122018				
870				06/19	AP 12/01/18 0035474	THUNDER RIDGE SR.APARTMENTS L	270.00			11/30/18
						HAP Tiller R 122018				
870				06/19	AP 12/01/18 0035474	THUNDER RIDGE SR.APARTMENTS L	365.00			11/30/18
						HAP Howe J 122018				
870				06/19	AP 12/01/18 0035474	THUNDER RIDGE SR.APARTMENTS L	199.00			11/30/18
						HAP Youngberg L 122018				
870				06/19	AP 12/01/18 0035474	THUNDER RIDGE SR.APARTMENTS L	254.00			11/30/18
						HAP Barney B 122018				
870				06/19	AP 12/01/18 0035474	THUNDER RIDGE SR.APARTMENTS L	72.00			11/30/18
						HAP Garvis C 122018				
870				06/19	AP 12/01/18 0035474	THUNDER RIDGE SR.APARTMENTS L	305.00			11/30/18
						HAP Davis S 122018				
870				06/19	AP 12/01/18 0035474	THUNDER RIDGE SR.APARTMENTS L	147.00			11/30/18
						HAP Adams T 122018				
870				06/19	AP 12/01/18 0035474	THUNDER RIDGE SR.APARTMENTS L	365.00			11/30/18
						HAP Price C 122018				
870				06/19	AP 12/01/18 0035474	THUNDER RIDGE SR.APARTMENTS L	125.00			11/30/18
						HAP Vognsen P 122018				
870				06/19	AP 12/01/18 0035474	THUNDER RIDGE SR.APARTMENTS L	182.00			11/30/18
						HAP Martin H 122018				
870				06/19	AP 12/01/18 0035474	THUNDER RIDGE SR.APARTMENTS L	252.00			11/30/18
						HAP Gruver S 122018				
870				06/19	AP 12/01/18 0035474	THUNDER RIDGE SR.APARTMENTS L	385.00			11/30/18
						HAP Good S 122018				
870				06/19	AP 12/01/18 0035474	THUNDER RIDGE SR.APARTMENTS L	88.00			11/30/18
						HAP Derifield S 122018				

GROUP NBR	PO NBR	ACCTG PER.	CD	DATE	TRANSACTION NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE	POST DT
FUND 217 SECTION 8 HOUSING FUND										
217-2214-432.89-61 MISCELLANEOUS SERVICES / HOUS.ASSIST PMTS-OCCUPIED										
870		06/19 AP		12/01/18	0035474	THUNDER RIDGE SR.APARTMENTS L	120.00			11/30/18
HAP_Schleuter J 122018										
870		06/19 AP		12/01/18	0035474	THUNDER RIDGE SR.APARTMENTS L	295.00			11/30/18
HAP_Ford M 122018										
870		06/19 AP		12/01/18	0035474	THUNDER RIDGE SR.APARTMENTS L	408.00			11/30/18
HAP_Toms L 122018										
870		06/19 AP		12/01/18	0035474	THUNDER RIDGE SR.APARTMENTS L	467.00			11/30/18
HAP_Henning S 122018										
870		06/19 AP		12/01/18	0035436	GLENN, MATTHEW	192.00			11/30/18
HAP_Clayton R 122018										
870		06/19 AP		12/01/18	0035475	VILLAGE I AT NINE23 APARTMENT	193.00			11/30/18
HAP_Porter J 122018										
870		06/19 AP		12/01/18	0035475	VILLAGE I AT NINE23 APARTMENT	209.00			11/30/18
HAP_Aswegan J 122018										
870		06/19 AP		12/01/18	0035475	VILLAGE I AT NINE23 APARTMENT	345.00			11/30/18
HAP_Mosley L 122018										
870		06/19 AP		12/01/18	0035475	VILLAGE I AT NINE23 APARTMENT	371.00			11/30/18
HAP_Camerer S 122018										
870		06/19 AP		12/01/18	0035475	VILLAGE I AT NINE23 APARTMENT	369.00			11/30/18
HAP_Gordon Jr. T 122018										
870		06/19 AP		12/01/18	0035475	VILLAGE I AT NINE23 APARTMENT	199.00			11/30/18
HAP_Vaughn S 122018										
870		06/19 AP		12/01/18	0035475	VILLAGE I AT NINE23 APARTMENT	266.00			11/30/18
HAP_Mace T 122018										
870		06/19 AP		12/01/18	0035475	VILLAGE I AT NINE23 APARTMENT	586.00			11/30/18
HAP_Henderson D 122018										
870		06/19 AP		12/01/18	0035475	VILLAGE I AT NINE23 APARTMENT	368.00			11/30/18
HAP_Redd A 122018										
870		06/19 AP		12/01/18	0035475	VILLAGE I AT NINE23 APARTMENT	650.00			11/30/18
HAP_Ambrose A 122018										
870		06/19 AP		12/01/18	0035475	VILLAGE I AT NINE23 APARTMENT	338.00			11/30/18
HAP_Temple S 122018										
870		06/19 AP		12/01/18	0035475	VILLAGE I AT NINE23 APARTMENT	198.00			11/30/18
HAP_Holub T 122018										
870		06/19 AP		12/01/18	0035475	VILLAGE I AT NINE23 APARTMENT	360.00			11/30/18
HAP_Prior L 122018										
870		06/19 AP		12/01/18	0035475	VILLAGE I AT NINE23 APARTMENT	344.00			11/30/18
HAP_Aswegan S 122018										
870		06/19 AP		12/01/18	0035475	VILLAGE I AT NINE23 APARTMENT	478.00			11/30/18
HAP_Swartley J 122018										
870		06/19 AP		12/01/18	0035475	VILLAGE I AT NINE23 APARTMENT	69.00			11/30/18
HAP_Dixon S 122018										
870		06/19 AP		12/01/18	0035475	VILLAGE I AT NINE23 APARTMENT	365.00			11/30/18
HAP_Smith W 122018										
870		06/19 AP		12/01/18	0035475	VILLAGE I AT NINE23 APARTMENT	140.00			11/30/18
HAP_Brunson B 122018										
870		06/19 AP		12/01/18	0035475	VILLAGE I AT NINE23 APARTMENT	534.00			11/30/18
HAP_Fry S 122018										
870		06/19 AP		12/01/18	0035475	VILLAGE I AT NINE23 APARTMENT	223.00			11/30/18

GROUP NBR	PO NBR	ACCTG PER.	CD	DATE	TRANSACTION NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE	POST DT
FUND 217 SECTION 8 HOUSING FUND										
217-2214-432.89-61 MISCELLANEOUS SERVICES / HOUS.ASSIST PMTS-OCCUPIED										
						continued				
870				06/19 AP 12/01/18	0035475	VILLAGE I AT NINE23 APARTMENT	279.00			11/30/18
870				06/19 AP 12/01/18	0035475	VILLAGE I AT NINE23 APARTMENT	414.00			11/30/18
870				06/19 AP 12/01/18	0035475	VILLAGE I AT NINE23 APARTMENT	410.00			11/30/18
870				06/19 AP 12/01/18	0035475	VILLAGE I AT NINE23 APARTMENT	675.00			11/30/18
870				06/19 AP 12/01/18	0035475	VILLAGE I AT NINE23 APARTMENT	414.00			11/30/18
870				06/19 AP 12/01/18	0035475	VILLAGE I AT NINE23 APARTMENT	102.00			11/30/18
870				06/19 AP 12/01/18	0035475	VILLAGE I AT NINE23 APARTMENT	371.00			11/30/18
870				06/19 AP 12/01/18	0035475	VILLAGE I AT NINE23 APARTMENT	320.00			11/30/18
870				06/19 AP 12/01/18	0035475	VILLAGE I AT NINE23 APARTMENT	675.00			11/30/18
870				06/19 AP 12/01/18	0035475	VILLAGE I AT NINE23 APARTMENT	170.00			11/30/18
870				06/19 AP 12/01/18	0035475	VILLAGE I AT NINE23 APARTMENT	425.00			11/30/18
870				06/19 AP 12/01/18	0035475	VILLAGE I AT NINE23 APARTMENT	209.00			11/30/18
870				06/19 AP 12/01/18	0035475	VILLAGE I AT NINE23 APARTMENT	285.00			11/30/18
870				06/19 AP 12/01/18	0035455	NORTHROP, CHASTITY M.	1,100.00			11/30/18
870				06/19 AP 12/01/18	0035417	CEDAR FALLS UTILITIES-SEC.8	91.00			11/30/18
870				06/19 AP 12/01/18	0035417	CEDAR FALLS UTILITIES-SEC.8	101.00			11/30/18
870				06/19 AP 12/01/18	0035417	CEDAR FALLS UTILITIES-SEC.8	75.00			11/30/18
870				06/19 AP 12/01/18	0035417	CEDAR FALLS UTILITIES-SEC.8	7.00			11/30/18
870				06/19 AP 12/01/18	0035417	CEDAR FALLS UTILITIES-SEC.8	5.00			11/30/18
870				06/19 AP 12/01/18	0035417	CEDAR FALLS UTILITIES-SEC.8	72.00			11/30/18
870				06/19 AP 12/01/18	0035417	CEDAR FALLS UTILITIES-SEC.8	11.00			11/30/18
870				06/19 AP 12/01/18	0035417	CEDAR FALLS UTILITIES-SEC.8	5.00			11/30/18
870				06/19 AP 12/01/18	0035417	CEDAR FALLS UTILITIES-SEC.8	217.00			11/30/18
870				06/19 AP 12/01/18	0035417	CEDAR FALLS UTILITIES-SEC.8	104.00			11/30/18

GROUP NBR	PO NBR	ACCTG PER.	CD	DATE	TRANSACTION NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE	POST DT
FUND 217 SECTION 8 HOUSING FUND										
217-2214-432.89-61 MISCELLANEOUS SERVICES / HOUS.ASSIST PMTS-OCCUPIED										
870		06/19 AP		12/01/18	0035417	CEDAR FALLS UTILITIES-SEC.8	79.00			11/30/18
Sawyers 1023615267							continued			
870		06/19 AP		12/01/18	0035417	CEDAR FALLS UTILITIES-SEC.8	133.00			11/30/18
Delauney										
870		06/19 AP		12/01/18	0035417	CEDAR FALLS UTILITIES-SEC.8	164.00			11/30/18
Hunt 488238030										
870		06/19 AP		12/01/18	0035417	CEDAR FALLS UTILITIES-SEC.8	1.00			11/30/18
Young 1995063175										
870		06/19 AP		12/01/18	0035444	KEW, BRANDON	972.00			11/30/18
HAP_Janssen M 122018										
870		06/19 AP		12/01/18	0035419	CHRISTOPHERSON RENTALS	344.00			11/30/18
HAP_Davis D 122018										
870		06/19 AP		12/01/18	0035419	CHRISTOPHERSON RENTALS	333.00			11/30/18
HAP_Hodge G 122018										
870		06/19 AP		12/01/18	0035419	CHRISTOPHERSON RENTALS	530.00			11/30/18
HAP_Ricks F 122018										
870		06/19 AP		12/01/18	0035419	CHRISTOPHERSON RENTALS	650.00			11/30/18
HAP_Grisby C 122018										
870		06/19 AP		12/01/18	0035419	CHRISTOPHERSON RENTALS	349.00			11/30/18
HAP_Young C 122018										
870		06/19 AP		12/01/18	0035419	CHRISTOPHERSON RENTALS	394.00			11/30/18
HAP_Carlyle T 122018										
870		06/19 AP		12/01/18	0035419	CHRISTOPHERSON RENTALS	274.00			11/30/18
HAP_Schwaab A 122018										
870		06/19 AP		12/01/18	0035419	CHRISTOPHERSON RENTALS	567.00			11/30/18
HAP_Hoffert J 122018										
870		06/19 AP		12/01/18	0035419	CHRISTOPHERSON RENTALS	177.00			11/30/18
HAP_Lenox J 122018										
870		06/19 AP		12/01/18	0035453	MELICK, KENT L.	489.00			11/30/18
HAP_Drewelow D 122018										
870		06/19 AP		12/01/18	0035454	MHP 2216 LINCOLN STREET, LLC	495.00			11/30/18
HAP_Rule S 122018										
870		06/19 AP		12/01/18	0035454	MHP 2216 LINCOLN STREET, LLC	371.00			11/30/18
HAP_Cochran S 122018										
870		06/19 AP		12/01/18	0035454	MHP 2216 LINCOLN STREET, LLC	371.00			11/30/18
HAP_Malone S 122018										
870		06/19 AP		12/01/18	0035454	MHP 2216 LINCOLN STREET, LLC	403.00			11/30/18
HAP_Jones T 122018										
870		06/19 AP		12/01/18	0035454	MHP 2216 LINCOLN STREET, LLC	537.00			11/30/18
HAP_Purdy T 122018										
870		06/19 AP		12/01/18	0035454	MHP 2216 LINCOLN STREET, LLC	372.00			11/30/18
HAP_Wilder S 122018										
870		06/19 AP		12/01/18	0035454	MHP 2216 LINCOLN STREET, LLC	456.00			11/30/18
HAP_Sherwood D 122018										
870		06/19 AP		12/01/18	0035454	MHP 2216 LINCOLN STREET, LLC	349.00			11/30/18
HAP_Sherwood J 122018										
870		06/19 AP		12/01/18	0035461	RAISTY RENTALS LLC	836.00			11/30/18
HAP_Martinez L 122018										
870		06/19 AP		12/01/18	0035431	EPM IOWA	839.00			11/30/18

GROUP NBR	PO NBR	ACCTG PER.	CD	TRANSACTION DATE	NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE	POST DT
FUND 217 SECTION 8 HOUSING FUND										
217-2214-432.89-61 MISCELLANEOUS SERVICES / HOUS.ASSIST PMTS-OCCUPIED										
						continued				
870				06/19 AP 12/01/18	0035431	EPM IOWA	349.00			11/30/18
HAP_Nicholson K 122018										
870				06/19 AP 12/01/18	0035431	EPM IOWA	349.00			11/30/18
HAP_Matt M 122018										
870				06/19 AP 12/01/18	0035431	EPM IOWA	1,208.00			11/30/18
HAP_Santiago-Lebro 122018										
870				06/19 AP 12/01/18	0035431	EPM IOWA	548.00			11/30/18
HAP_Lewis H 122018										
870				06/19 AP 12/01/18	0035431	EPM IOWA	694.00			11/30/18
HAP_Sauer M 122018										
870				06/19 AP 12/01/18	0035431	EPM IOWA	841.00			11/30/18
HAP_Albright C 122018										
870				06/19 AP 12/01/18	0035431	EPM IOWA	579.00			11/30/18
HAP_Thompson T 122018										
870				06/19 AP 12/01/18	0035431	EPM IOWA	271.00			11/30/18
HAP_Gordon A 122018										
870				06/19 AP 12/01/18	0035431	EPM IOWA	267.00			11/30/18
HAP_Frisch K 122018										
870				06/19 AP 12/01/18	0035423	CV COMMERCIAL, LLC	855.00			11/30/18
HAP_Davis C 122018										
870				06/19 AP 12/01/18	0035465	SCHLOBOHM, JEFFREY D.	394.00			11/30/18
HAP_Carter C 122018										
870				06/19 AP 12/01/18	0035422	CTV MANAGER, LLC	410.00			11/30/18
HAP_Anderson B 122018										
870				06/19 AP 12/01/18	0035447	KROEMER, KRAIG	319.00			11/30/18
HAP_Currie L 122018										
870				06/19 AP 12/01/18	0035458	PARRISH PROPERTIES	674.00			11/30/18
HAP_Jefferson S 122018										
870				06/19 AP 12/01/18	0035440	HARRINGTON, TODD	324.00			11/30/18
HAP_Larronda E 122018										
870				06/19 AP 12/01/18	0035450	LINS, ERIC	793.00			11/30/18
HAP_Seavey H 122018										
870				06/19 AP 12/01/18	0035449	LEGACY RESIDENTIAL	345.00			11/30/18
HAP_JORDAN L 122018										
870				06/19 AP 12/01/18	0035411	ARENDS INVESTMENTS	1,100.00			11/30/18
HAP_Wortham W 122018										
870				06/19 AP 12/01/18	0035445	KOEHN, DENNIS	593.00			11/30/18
HAP_Krutsinger D 122018										
870				06/19 AP 12/01/18	0035457	OWL INVESTMENTS, LLC	705.00			11/30/18
HAP_Schroeder S 122018										
870				06/19 AP 12/01/18	0035470	SUMX, LLC	872.00			11/30/18
HAP_Seaberry M 122018										
870				06/19 AP 12/01/18	0035439	HARBAUGH, DENNIS	654.00			11/30/18
HAP_Howard J 122018										
870				06/19 AP 12/01/18	0035476	VILLAGE II AT NINE23 APARTMEN	197.00			11/30/18
HAP_Havlik C 122018										
870				06/19 AP 12/01/18	0035476	VILLAGE II AT NINE23 APARTMEN	499.00			11/30/18
HAP_Forehand J 122018										

GROUP NBR	PO NBR	ACCTG PER.	CD	DATE	TRANSACTION NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE	POST DT
FUND 217 SECTION 8 HOUSING FUND										
217-2214-432.89-61 MISCELLANEOUS SERVICES / HOUS.ASSIST PMTS-OCCUPIED										
870		06/19 AP		12/01/18	0035476	VILLAGE II AT NINE23 APARTMEN	371.00			11/30/18
HAP Harken G 122018							continued			
870		06/19 AP		12/01/18	0035476	VILLAGE II AT NINE23 APARTMEN	365.00			11/30/18
HAP Haug K 122018										
870		06/19 AP		12/01/18	0035476	VILLAGE II AT NINE23 APARTMEN	310.00			11/30/18
HAP Wilson J 122018										
870		06/19 AP		12/01/18	0035476	VILLAGE II AT NINE23 APARTMEN	151.00			11/30/18
HAP Kodama D 122018										
870		06/19 AP		12/01/18	0035476	VILLAGE II AT NINE23 APARTMEN	398.00			11/30/18
HAP Forney A 122018										
870		06/19 AP		12/01/18	0035476	VILLAGE II AT NINE23 APARTMEN	276.00			11/30/18
HAP Sommerfelt C 122018										
870		06/19 AP		12/01/18	0035476	VILLAGE II AT NINE23 APARTMEN	207.00			11/30/18
HAP King D 122018										
870		06/19 AP		12/01/18	0035476	VILLAGE II AT NINE23 APARTMEN	490.00			11/30/18
HAP Humphrey J 122018										
870		06/19 AP		12/01/18	0035476	VILLAGE II AT NINE23 APARTMEN	106.00			11/30/18
HAP Rogers E 122018										
870		06/19 AP		12/01/18	0035476	VILLAGE II AT NINE23 APARTMEN	365.00			11/30/18
HAP Billman D 122018										
870		06/19 AP		12/01/18	0035476	VILLAGE II AT NINE23 APARTMEN	365.00			11/30/18
HAP Lam K 122018										
870		06/19 AP		12/01/18	0035476	VILLAGE II AT NINE23 APARTMEN	296.00			11/30/18
HAP Alessi S 122018										
870		06/19 AP		12/01/18	0035476	VILLAGE II AT NINE23 APARTMEN	98.00			11/30/18
HAP Hoodjer S 122018										
870		06/19 AP		12/01/18	0035476	VILLAGE II AT NINE23 APARTMEN	351.00			11/30/18
HAP Frazier T 122018										
870		06/19 AP		12/01/18	0035476	VILLAGE II AT NINE23 APARTMEN	586.00			11/30/18
HAP Miller K 122018										
870		06/19 AP		12/01/18	0035476	VILLAGE II AT NINE23 APARTMEN	655.00			11/30/18
HAP Wilson Q 122018										
870		06/19 AP		12/01/18	0035476	VILLAGE II AT NINE23 APARTMEN	274.00			11/30/18
HAP O'dell J 122018										
870		06/19 AP		12/01/18	0035476	VILLAGE II AT NINE23 APARTMEN	222.00			11/30/18
HAP Baker A 122018										
870		06/19 AP		12/01/18	0035476	VILLAGE II AT NINE23 APARTMEN	109.00			11/30/18
HAP Redd S 122018										
870		06/19 AP		12/01/18	0035476	VILLAGE II AT NINE23 APARTMEN	377.00			11/30/18
HAP Humphrey E 122018										
870		06/19 AP		12/01/18	0035476	VILLAGE II AT NINE23 APARTMEN	390.00			11/30/18
HAP Harrenstein G 122018										
870		06/19 AP		12/01/18	0035476	VILLAGE II AT NINE23 APARTMEN	414.00			11/30/18
HAP Cooper M 122018										
870		06/19 AP		12/01/18	0035476	VILLAGE II AT NINE23 APARTMEN	503.00			11/30/18
HAP Nielsen J 122018										
870		06/19 AP		12/01/18	0035476	VILLAGE II AT NINE23 APARTMEN	202.00			11/30/18
HAP BALM D 112018										
870		06/19 AP		12/01/18	0035476	VILLAGE II AT NINE23 APARTMEN	276.00			11/30/18

GROUP NBR	PO NBR	ACCTG PER.	CD	DATE	TRANSACTION NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE	POST DT
FUND 217 SECTION 8 HOUSING FUND										
217-2214-432.89-61 MISCELLANEOUS SERVICES / HOUS.ASSIST PMTS-OCCUPIED										
						continued				
870				06/19	AP 12/01/18 0035459	PAULSON, JAMES	360.00			11/30/18
870				06/19	AP 12/01/18 0035429	ELMCREST ESTATES, L.C.	177.00			11/30/18
870				06/19	AP 12/01/18 0035429	ELMCREST ESTATES, L.C.	536.00			11/30/18
870				06/19	AP 12/01/18 0035452	MCKERNAN, JAMES M.	512.00			11/30/18
870				06/19	AP 12/01/18 0035433	G P MANAGEMENT LLC	365.00			11/30/18
870				06/19	AP 12/01/18 0035472	T.J.J.C. L.L.C.	149.00			11/30/18
870				06/19	AP 12/01/18 0035472	T.J.J.C. L.L.C.	191.00			11/30/18
870				06/19	AP 12/01/18 0035472	T.J.J.C. L.L.C.	575.00			11/30/18
870				06/19	AP 12/01/18 0035472	T.J.J.C. L.L.C.	567.00			11/30/18
870				06/19	AP 12/01/18 0035435	GERDES III, BENJAMIN P.	601.00			11/30/18
870				06/19	AP 12/01/18 0035435	GERDES III, BENJAMIN P.	347.00			11/30/18
870				06/19	AP 12/01/18 0035435	GERDES III, BENJAMIN P.	698.00			11/30/18
870				06/19	AP 12/01/18 0035442	J & A PROPERTIES	371.00			11/30/18
870				06/19	AP 12/01/18 0035413	BARTELT RENTALS L.C.	371.00			11/30/18
870				06/19	AP 12/01/18 0035413	BARTELT RENTALS L.C.	400.00			11/30/18
870				06/19	AP 12/01/18 0035413	BARTELT RENTALS L.C.	476.00			11/30/18
870				06/19	AP 12/01/18 0035413	BARTELT RENTALS L.C.	214.00			11/30/18
870				06/19	AP 12/01/18 0035415	C & H HOLDINGS LLC	670.00			11/30/18
ACCOUNT TOTAL							88,797.00	.00	88,797.00	
217-2214-432.89-65 MISCELLANEOUS SERVICES / ADMIN FEE DUE OTHERS										
870				06/19	AP 12/01/18 0035421	COOK CO.HOUSING AUTHORITY	42.76			11/30/18
870				06/19	AP 12/01/18 0035418	CEDAR RAPIDS HOUSING SERV.,CI	42.76			11/30/18
ACCOUNT TOTAL							85.52	.00	85.52	

GROUP NBR	PO NBR	ACCTG PER.	CD	---TRANSACTION--- DATE	NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE	POST DT
FUND 217 SECTION 8 HOUSING FUND										
FUND TOTAL							89,284.25	.00	89,284.25	
FUND 223 COMMUNITY BLOCK GRANT										
223-2224-432.72-99				OPERATING SUPPLIES / POSTAGE						
920		06/19 AP		12/02/18	0004480	CMRS-POC	16.47			12/07/18
				POC#8031880-REPL.POSTAGE		09/06/18-12/02/18				
ACCOUNT TOTAL							16.47	.00	16.47	
FUND TOTAL							16.47	.00	16.47	
FUND 224 TRUST & AGENCY										
FUND 242 STREET REPAIR FUND										
FUND 254 CABLE TV FUND										
254-1088-431.72-01				OPERATING SUPPLIES / OPERATING SUPPLIES						
920		06/19 AP		12/02/18	0392060	CMRS-POC	40.33			12/07/18
				POC#8031880-REPL.POSTAGE		09/06/18-12/02/18				
ACCOUNT TOTAL							40.33	.00	40.33	
254-1088-431.89-18 MISCELLANEOUS SERVICES / COMMUNITY PROGRAMMING										
938		06/19 AP		12/08/18	0392068	LONGNECKER, JEREMIAH	120.00			12/11/18
				CF BOYS BB-SUMMIT CHRIST.		ANNOUNCER				
PROJECT#:				759						
938		06/19 AP		12/08/18	0392067	KORTE, JAMES L.	100.00			12/11/18
				CF BOYS BB-SUMMIT CHRIST.		ANNOUNCER				
PROJECT#:				759						
938		06/19 AP		12/08/18	0392073	SURMA, JOSEPH EDWARD	80.00			12/11/18
				CF BOYS BB-SUMMIT CHRIST.		CAMERA OPERATOR				
PROJECT#:				759						
938		06/19 AP		12/08/18	0392064	DEWITT, JASON	80.00			12/11/18
				CF BOYS BB-SUMMIT CHRIST.		CAMERA OPERATOR				
PROJECT#:				759						
938		06/19 AP		12/07/18	0392071	SIMPSON, MARK	120.00			12/11/18
				CF GIRLS BB-W'LOO WEST		ANNOUNCER				
PROJECT#:				759						
938		06/19 AP		12/07/18	0392066	JOACHIM, JOHN D	120.00			12/11/18
				CF GIRLS BB-W'LOO WEST		ANNOUNCER				
PROJECT#:				759						
938		06/19 AP		12/07/18	0392073	SURMA, JOSEPH EDWARD	80.00			12/11/18
				CF GIRLS BB-W'LOO WEST		CAMERA OPERATOR				
PROJECT#:				759						
938		06/19 AP		12/07/18	0392064	DEWITT, JASON	80.00			12/11/18
				CF GIRLS BB-W'LOO WEST		CAMERA OPERATOR				
PROJECT#:				759						
938		06/19 AP		12/07/18	0392074	WHEELER, EVAN	75.00			12/11/18

GROUP NBR	FO NBR	ACCTG PER.	CD	DATE	TRANSACTION NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE	POST DT
FUND 254 CABLE TV FUND										
254-1088-431.89-18 MISCELLANEOUS SERVICES / COMMUNITY PROGRAMMING										
CF GIRLS BB-W'LOO WEST CAMERA OPERATOR continued										
PROJECT#:		759								
938		06/19 AP		12/07/18	0392074	WHEELER, EVAN	75.00			12/11/18
						CAMERA OPERATOR				
PROJECT#:		759								
938		06/19 AP		12/07/18	0392073	SURMA, JOSEPH EDWARD	80.00			12/11/18
						CAMERA OPERATOR				
PROJECT#:		759								
938		06/19 AP		12/07/18	0392064	DEWITT, JASON	80.00			12/11/18
						CAMERA OPERATOR				
PROJECT#:		759								
938		06/19 AP		12/07/18	0392071	SIMPSON, MARK	120.00			12/11/18
						ANNOUNCER				
PROJECT#:		759								
938		06/19 AP		12/07/18	0392068	LONGNECKER, JEREMIAH	120.00			12/11/18
						ANNOUNCER				
PROJECT#:		759								
895		06/19 AP		11/30/18	0392020	SIMPSON, MARK	100.00			12/05/18
						ANNOUNCER				
PROJECT#:		759								
895		06/19 AP		11/30/18	0392020	SIMPSON, MARK	120.00			12/05/18
						ANNOUNCER				
PROJECT#:		759								
ACCOUNT TOTAL							1,550.00	.00	1,550.00	
FUND TOTAL							1,590.33	.00	1,590.33	
FUND 258 PARKING FUND										
258-5531-435.72-01 OPERATING SUPPLIES / OPERATING SUPPLIES										
786		05/19 AP		11/12/18	0004147	PROFESSIONAL SOLUTIONS	17.83			12/03/18
						OCTOBER CREDIT CARD FEES				
786		05/19 AP		11/12/18	0004148	PROFESSIONAL SOLUTIONS	45.23			12/03/18
						OCTOBER CREDIT CARD FEES				
ACCOUNT TOTAL							63.06	.00	63.06	
258-5531-435.72-99 OPERATING SUPPLIES / POSTAGE										
920		06/19 AP		12/02/18	0392060	CMRS-POC	60.08			12/07/18
						POC#8031880-REPL.POSTAGE				
						09/06/18-12/02/18				
ACCOUNT TOTAL							60.08	.00	60.08	
FUND TOTAL							123.14	.00	123.14	

ACCOUNT ACTIVITY LISTING

GROUP NBR	PO NBR	ACCTG PER.	CD	DATE	---TRANSACTION--- NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE	POST DT
FUND 261 TOURISM & VISITORS										
261-7791-423.72-99						OPERATING SUPPLIES / POSTAGE				
920		06/19 AP		12/02/18	0392060	CMRS-POC	348.56			12/07/18
					POC#8031880-REPL.	POSTAGE				09/06/18-12/02/18
					ACCOUNT TOTAL		348.56	.00	348.56	
261-7791-423.73-57 OTHER SUPPLIES / GIFT SHOP										
786		05/19 AP		11/02/18	0004141	PROFESSIONAL SOLUTIONS	28.09			12/03/18
						OCTOBER CREDIT CARD FEES				
					ACCOUNT TOTAL		28.09	.00	28.09	
261-7791-423.83-06 TRANSPORTATION&EDUCATION / EDUCATION										
953		06/19 AP		11/07/18	0392078	MANNING, KIM	20.00			12/13/18
						RMB:REG.EITA MEMB. MTG.				IOWA CITY
					PROJECT#:	032424				
					ACCOUNT TOTAL		20.00	.00	20.00	
261-7791-423.85-01 UTILITIES / UTILITIES										
895		06/19 AP		11/13/18	0392005	CEDAR FALLS UTILITIES	63.95			12/05/18
						UTILITIES THRU 11/13/18				
					ACCOUNT TOTAL		63.95	.00	63.95	
261-7791-423.89-04 MISCELLANEOUS SERVICES / SALES TAX										
786		05/19 AP		11/07/18	0004133	IOWA DEPT.OF REVENUE	31.52			12/03/18
						SEMI MONTHLY SALES TAX				VISITOR & TOURISM
					ACCOUNT TOTAL		31.52	.00	31.52	
					FUND TOTAL		492.12	.00	492.12	
FUND 262 SENIOR SERVICES & COMM CT										
262-1092-423.72-99						OPERATING SUPPLIES / POSTAGE				
920		06/19 AP		12/02/18	0392060	CMRS-POC	3.76			12/07/18
					POC#8031880-REPL.	POSTAGE				09/06/18-12/02/18
					ACCOUNT TOTAL		3.76	.00	3.76	
262-1092-423.85-01 UTILITIES / UTILITIES										
862		06/19 AP		11/05/18	0392030	CEDAR FALLS UTILITIES	781.66			11/30/18
						CCTR UTILITIES				

GROUP NBR	PO NBR	ACCTG PER.	CD	DATE	TRANSACTION NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE	POST DT
FUND 262 SENIOR SERVICES & COMM CT										
262-1092-423.85-01 UTILITIES / UTILITIES										
							continued			
ACCOUNT TOTAL							781.66	.00	781.66	
262-1092-423.86-01 REPAIR & MAINTENANCE / REPAIR & MAINTENANCE										
862		06/19 AP		11/09/18	0392051	RICOH USA, INC.	34.46			11/30/18
							COPIER CONTRACT-COMM.CTR			
862		06/19 AP		10/30/18	0392055	WILSON RESTAURANT SUPPLY, INC	149.92			11/30/18
							ICE MACHINE MAINTENANCE			
ACCOUNT TOTAL							184.38	.00	184.38	
FUND TOTAL							969.80	.00	969.80	
FUND 291 POLICE FORFEITURE FUND										
FUND 292 POLICE RETIREMENT FUND										
FUND 293 FIRE RETIREMENT FUND										
FUND 294 LIBRARY RESERVE										
FUND 295 SOFTBALL PLAYER CAPITAL										
FUND 296 GOLF CAPITAL										
FUND 297 REC FACILITIES CAPITAL										
FUND 298 HEARST CAPITAL										
FUND 311 DEBT SERVICE FUND										
FUND 402 WASHINGTON PARK FUND										
FUND 404 FEMA										
FUND 405 FLOOD RESERVE FUND										
FUND 407 VISION IOWA PROJECT										
FUND 408 STREET IMPROVEMENT FUND										
FUND 430 2004 TIF BOND										
FUND 431 2014 BOND										
FUND 432 2003 BOND										
FUND 433 2001 TIF										
FUND 434 2000 BOND										
FUND 435 1999 TIF										
FUND 436 2012 BOND										
436-1220-431.94-83 CAPITAL PROJECTS / WEST 1ST STREET										
953		06/19 AP		12/12/18	0392079	MNN ENTERPRISES, INC.	39,000.00			12/13/18
							3118-W.1ST ST. RECONST.			
							PROJECT#: 023118 PARCEL#71-PURCHASE AGRMT.			
953		06/19 AP		12/12/18	0392080	MNN ENTERPRISES, INC.	100.00			12/13/18
							3118-W.1ST ST. RECONST.			
							PROJECT#: 023118 PARCEL#71-TENANT AGRMT.			
938		06/19 AP		12/10/18	0392065	J & M BODENSTEINER LLC	73,866.70			12/11/18
							3118-W.1ST ST. RECONST.			
							PROJECT#: 023118 PARCEL#49-PURCHASE AGRMT.			
938		06/19 AP		12/10/18	0392062	BLACK HAWK CO.TREASURER	2,132.92			12/11/18
							3118-W.1ST ST. RECONST.			
							PROJECT#: 023118 PARCEL#49-PROPERTY TAXES			

GROUP NBR	PO NBR	ACCTG PER.	CD	---TRANSACTION--- DATE	NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE	POST DT
FUND 436 2012 BOND										
436-1220-431.94-83 CAPITAL PROJECTS / WEST 1ST STREET										
PROJECT#: 023118 continued										
	920	06/19 AP		12/07/18	0392059	BLACK HAWK CO.TREASURER PARCEL#49-PROPERTY TAXES	2,311.07			12/07/18
	920	06/19 AP		12/07/18	0392061	J & M BODENSTEINER LLC PARCEL#49-PURCHASE AGRMT.	73,688.55			12/07/18
	895	06/19 AP		12/04/18	0392003	BODENSTEINER, JASON AND MARY KEEP VAC.AGRMT.-714 1ST	1,600.00			12/05/18
	895	06/19 AP		12/04/18	0392019	SHATEK, MARK KEEP VAC.AGRMT.-810 1ST	975.00			12/05/18
	895	06/19 AP		12/04/18	0392014	MARILYN I. ANDERSEN PARCEL#69-PURCHASE AGRMT.	6,745.00			12/05/18
	895	06/19 AP		12/04/18	0392009	ERIC M. & ALLISON B. OVERMANN PARCEL#17-PURCHASE AGRMT.	10,925.00			12/05/18
	895	06/19 AP		12/04/18	0392017	SANDRA K. NEUMAN PARCEL#18-PURCHASE AGRMT.	10,975.00			12/05/18
	895	06/19 AP		12/04/18	0392021	WOLTER PROPERTIES LC PARCEL#72-PURCHASE AGRMT.	42,500.00			12/05/18
	895	06/19 AP		12/04/18	0392016	PJ IOWA LC PARCEL#72-TENANT AGRMT.	100.00			12/05/18
	895	06/19 AP		12/04/18	0392012	JOSEPH W. & PATRICIA M. TURNE PARCEL#14-PURCHASE AGRMT.	8,635.00			12/05/18
	895	06/19 AP		12/04/18	0392018	SARA SMITH PARCEL#14-TENANT AGRMT.	100.00			12/05/18
	895	06/19 AP		12/04/18	0392013	KASEY ANDERSON PARCEL#10-TENANT AGRMT.	100.00			12/05/18
	895	06/19 AP		12/04/18	0392004	BONNIE J. ANDERSON PARCEL#10-PURCHASE AGRMT.	7,760.00			12/05/18
						ACCOUNT TOTAL	281,514.24	0.00	281,514.24	
						FUND TOTAL	281,514.24	0.00	281,514.24	

GROUP NBR	PO NBR	ACCTG PER.	CD	DATE	TRANSACTION NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE	POST DT
FUND 437 2018 BOND										
FUND 438 2006 BOND FUND										
FUND 439 2008 BOND FUND										
FUND 443 CAPITAL PROJECTS										
443-1220-431.92-90						STRUCTURE IMPROV & BLDGS / CENTER ST SIDEWALK & DRAIN				
920		06/19 AP		12/05/18	0392058	BLACK HAWK CO.RECORDER	22.00			12/07/18
		3107-CENTER ST.REC.TRAIL				WARRANTY DEED-EILERS/NAME				
PROJECT#: 023107										
ACCOUNT TOTAL							22.00	.00	22.00	
443-1220-431.94-33 CAPITAL PROJECTS / PROPERTY ACQUISITION										
895		06/19 AP		11/13/18	0392005	CEDAR FALLS UTILITIES	84.41			12/05/18
UTILITIES THRU 11/13/18										
ACCOUNT TOTAL							84.41	.00	84.41	
FUND TOTAL							106.41	.00	106.41	
FUND 472 PARKADE RENOVATION										
FUND 473 SIDEWALK ASSESSMENT										
FUND 483 ECONOMIC DEVELOPMENT										
FUND 484 ECONOMIC DEVELOPMENT LAND										
FUND 541 2018 STORM WATER BONDS										
FUND 544 2008 SEWER BONDS										
FUND 545 2006 SEWER BONDS										
FUND 546 SEWER IMPROVEMENT FUND										
FUND 547 SEWER RESERVE FUND										
FUND 548 1997 SEWER BOND FUND										
FUND 549 1992 SEWER BOND FUND										
FUND 550 2000 SEWER BOND FUND										
FUND 551 REFUSE FUND										
551-0000-213.00-00						CURRENT LIABILITY / SALES TAX PAYABLE				
786		05/19 AP		11/07/18	0004133	IOWA DEPT.OF REVENUE	216.86			12/03/18
		SEMI MONTHLY SALES TAX				COMMERCIAL GARBAGE A/R				
ACCOUNT TOTAL							216.86	.00	216.86	
551-7775-436.72-99 OPERATING SUPPLIES / POSTAGE										
920		06/19 AP		12/02/18	0392060	CMRS-POC	64.09			12/07/18
		POC#8031880-REPL.POSTAGE				09/06/18-12/02/18				
ACCOUNT TOTAL							64.09	.00	64.09	
551-7785-436.72-01 OPERATING SUPPLIES / OPERATING SUPPLIES										
786		05/19 AP		11/12/18	0004144	PROFESSIONAL SOLUTIONS	258.64			12/03/18

ACCOUNT ACTIVITY LISTING

GROUP NBR	PO NBR	ACCTG PER.	CD	---TRANSACTION--- DATE	NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE	POST DT
FUND 551 REFUSE FUND										
551-7785-436.72-01 OPERATING SUPPLIES / OPERATING SUPPLIES							continued			
786				05/19 AP 11/12/18	0004148	PROFESSIONAL SOLUTIONS	20.27			12/03/18
				OCTOBER CREDIT CARD FEES						
				OCTOBER CREDIT CARD FEES						
				ACCOUNT TOTAL			278.91	.00	278.91	
551-7785-436.72-99 OPERATING SUPPLIES / POSTAGE										
920				06/19 AP 12/02/18	0392060	CMRS-POC	105.49			12/07/18
				POC#8031880-REPL.POSTAGE		09/06/18-12/02/18				
				ACCOUNT TOTAL			105.49	.00	105.49	
551-7785-436.85-01 UTILITIES / UTILITIES										
895				06/19 AP 11/13/18	0392005	CEDAR FALLS UTILITIES	885.48			12/05/18
				UTILITIES THRU 11/13/18						
				ACCOUNT TOTAL			885.48	.00	885.48	
551-7785-436.87-02 RENTALS / MATERIAL DISPOSAL/HANDLIN										
920				06/19 AP 11/30/18	0392057	BLACK HAWK CO.LANDFILL	19,754.70			12/07/18
				LANDFILL SRV:11/16-11/30		11/16-11/30/18				
				ACCOUNT TOTAL			19,754.70	.00	19,754.70	
551-7785-436.89-04 MISCELLANEOUS SERVICES / SALES TAX										
786				05/19 AP 11/20/18	0004135	IOWA DEPT.OF REVENUE	79.14			12/03/18
				SEMI MONTHLY SALES TAX		COMMERCIAL GARBAGE				
786				05/19 AP 11/07/18	0004133	IOWA DEPT.OF REVENUE	78.50			12/03/18
				SEMI MONTHLY SALES TAX		COMMERCIAL GARBAGE				
				ACCOUNT TOTAL			157.64	.00	157.64	
				FUND TOTAL			21,463.17	.00	21,463.17	
FUND 552 SEWER RENTAL FUND										
552-2265-436.64-02 INSURANCE / HEALTH INS. REIMBURSEMENT										
786				05/19 AP 11/09/18	0004120	ADVANTAGE ADMIN-SECT.105	296.11			12/03/18
				HEALTH INS. REIMBURSEMENT						
				ACCOUNT TOTAL			296.11	.00	296.11	
552-2265-436.72-99 OPERATING SUPPLIES / POSTAGE										

ACCOUNT ACTIVITY LISTING

GROUP NBR	PO NBR	ACCTG PER.	CD	DATE	TRANSACTION NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE	POST DT
FUND 552 SEWER RENTAL FUND										
552-2265-436.72-99						OPERATING SUPPLIES / POSTAGE				
920		06/19 AP		12/02/18	0392060	CMRS-POC	50.32			12/07/18
						POC#8031880-REPL.POSTAGE				
						09/06/18-12/02/18				
ACCOUNT TOTAL							50.32	.00	50.32	
552-2265-436.86-33 REPAIR & MAINTENANCE / SLUDGE REMOVAL										
920		06/19 AP		11/30/18	0392057	BLACK HAWK CO.LANDFILL	125.18			12/07/18
						LANDFILL SRV:11/16-11/30				
						11/16-11/30/18				
ACCOUNT TOTAL							125.18	.00	125.18	
552-2265-436.89-04 MISCELLANEOUS SERVICES / SALES TAX										
786		05/19 AP		11/20/18	0004135	IOWA DEPT.OF REVENUE	1,275.09			12/03/18
						SEMI MONTHLY SALES TAX				
786		05/19 AP		11/07/18	0004133	IOWA DEPT.OF REVENUE	6,027.35			12/03/18
						SEMI MONTHLY SALES TAX				
ACCOUNT TOTAL							7,302.44	.00	7,302.44	
552-7755-436.72-99 OPERATING SUPPLIES / POSTAGE										
920		06/19 AP		12/02/18	0392060	CMRS-POC	15.51			12/07/18
						POC#8031880-REPL.POSTAGE				
						09/06/18-12/02/18				
ACCOUNT TOTAL							15.51	.00	15.51	
552-7755-436.85-01 UTILITIES / UTILITIES										
895		06/19 AP		11/13/18	0392005	CEDAR FALLS UTILITIES	10,733.36			12/05/18
						UTILITIES THRU 11/13/18				
ACCOUNT TOTAL							10,733.36	.00	10,733.36	
FUND TOTAL							18,522.92	.00	18,522.92	
FUND 553 2004 SEWER BOND										
FUND 555 STORM WATER UTILITY										
555-2230-432.72-01						OPERATING SUPPLIES / OPERATING SUPPLIES				
920		06/19 AP		12/02/18	0392060	CMRS-POC	2.82			12/07/18
						POC#8031880-REPL.POSTAGE				
						09/06/18-12/02/18				
ACCOUNT TOTAL							2.82	.00	2.82	
FUND TOTAL							2.82	.00	2.82	

ACCOUNT ACTIVITY LISTING

GROUP NBR	PO NBR	ACCTG PER.	CD	DATE	---TRANSACTION--- NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE POST DT
FUND 570 SEWER ASSESSMENT									
FUND 606 DATA PROCESSING FUND									
606-1078-441.72-01						OPERATING SUPPLIES / OPERATING SUPPLIES			
920	06/19 AP	12/02/18		0392060		CMRS-POC	89.25		12/07/18
						POC#8031880-REPL.POSTAGE			
						09/06/18-12/02/18			
						ACCOUNT TOTAL	89.25	.00	89.25
606-1078-441.81-43 PROFESSIONAL SERVICES / LIBRARY COMPUTER SERVICES									
855	06/19 AP	11/21/18		0392053		TRAC SYSTEMS, INC	1,979.00		11/30/18
						UNIPRINT MAINT/SUPPORT			
						01/23/19-01/23/20			
855	06/19 AP	10/31/18		0392045		OCLC, INC.	702.91		11/30/18
						LIBRARY CATALOG			
						ACCOUNT TOTAL	2,681.91	.00	2,681.91
606-1078-441.82-10 COMMUNICATION / TELEPHONE HOLDING ACCOUNT									
881	06/19 AP	11/19/18		0391999		VERIZON WIRELESS	840.25		12/03/18
						WIRELESS SRV:11/20-12/19			
						11/20-12/19/18			
						ACCOUNT TOTAL	840.25	.00	840.25
606-1078-441.82-30 COMMUNICATION / FIBER OPTICS									
895	06/19 AP	11/10/18		0392006		CEDAR FALLS UTILITIES	3,320.00		12/05/18
						FIBER POINT:10/11-11/10			
						10/11-11/10/18			
						ACCOUNT TOTAL	3,320.00	.00	3,320.00
						FUND TOTAL	6,931.41	.00	6,931.41
FUND 680 HEALTH INSURANCE FUND									
680-1902-457.51-01						INSURANCE / HEALTH INSURANCE			
786	05/19 AP	11/30/18		0004163		WELLMARK IOWA	32,098.91		12/03/18
						HEALTH CLAIMS PROCESSING			
786	05/19 AP	11/23/18		0004162		WELLMARK IOWA	66,766.49		12/03/18
						HEALTH CLAIMS PROCESSING			
786	05/19 AP	11/23/18		0004128		EXPRESS SCRIPTS, INC.	31,324.15		12/03/18
						RX CLAIMS PROCESSING			
786	05/19 AP	11/16/18		0004161		WELLMARK IOWA	32,144.25		12/03/18
						HEALTH CLAIMS PROCESSING			
786	05/19 AP	11/09/18		0004160		WELLMARK IOWA	59,356.16		12/03/18
						HEALTH CLAIMS PROCESSING			
786	05/19 AP	11/07/18		0004127		EXPRESS SCRIPTS, INC.	43,716.63		12/03/18
						RX CLAIMS PROCESSING			
786	05/19 AP	11/02/18		0004159		WELLMARK IOWA	47,985.95		12/03/18
						HEALTH CLAIMS PROCESSING			

ACCOUNT ACTIVITY LISTING

GROUP NBR	PO NBR	ACCTG PER.	CD	DATE	TRANSACTION NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE	POST DT
FUND 680 HEALTH INSURANCE FUND										
680-1902-457.51-01 INSURANCE / HEALTH INSURANCE										
786		05/19 AP		11/01/18	0004154	WELLMARK IOWA HEALTH CLAIMS PROCESSING	26,795.22			12/03/18
ACCOUNT TOTAL							340,187.76	.00	340,187.76	
680-1902-457.51-06 INSURANCE / DENTAL INSURANCE										
786		05/19 AP		11/02/18	0004155	WELLMARK IOWA NOVEMBER 2018 DENTAL POLICE UNION	662.00			12/03/18
786		05/19 AP		11/02/18	0004156	WELLMARK IOWA NOVEMBER 2018 DENTAL FIRE UNION	359.26			12/03/18
786		05/19 AP		11/02/18	0004157	WELLMARK IOWA NOVEMBER 2018 DENTAL NON-UNION	2,265.27			12/03/18
786		05/19 AP		11/02/18	0004158	WELLMARK IOWA NOVEMBER 2018 DENTAL PUBLIC WORKS/PARKS UNION	1,100.90			12/03/18
ACCOUNT TOTAL							4,387.43	.00	4,387.43	
FUND TOTAL							344,575.19	.00	344,575.19	
FUND 681 HEALTH SEVERANCE										
681-1902-457.51-10 INSURANCE / HEALTH SEVERANCE PAYMENTS										
953		06/19 AP		12/11/18	0392075	ANDERSON, ALETA L. RMB:NOV.2018 HEALTH SEV. MEDICARE	134.00			12/13/18
938		06/19 AP		12/07/18	0392070	RYAN, MARTIN RMB:JAN-DEC'19 HEALTH SEV. PRESCRIPTION PREMIUM	388.80			12/11/18
938		06/19 AP		12/07/18	0392070	RYAN, MARTIN RMB:NOV-JAN'19 HEALTH SEV. MEDICARE	402.00			12/11/18
938		06/19 AP		12/07/18	0392070	RYAN, MARTIN RMB:OCT-DEC'18 HEALTH SEV. MEDICARE SUPPLEMENT	440.10			12/11/18
ACCOUNT TOTAL							1,364.90	.00	1,364.90	
FUND TOTAL							1,364.90	.00	1,364.90	
FUND 682 HEALTH INSURANCE - FIRE										
FUND 685 VEHICLE MAINTENANCE FUND										
FUND 686 PAYROLL FUND										
686-0000-222.01-00 PAYROLL LIABILITY / FEDERAL TAXES										
786		05/19 AP		11/23/18	0004150	UNITED STATES TREASURY FEDERAL WITHHOLDING TAX	55,808.61			12/03/18
786		05/19 AP		11/13/18	0004149	UNITED STATES TREASURY FEDERAL WITHHOLDING TAX	60,351.45			12/03/18
ACCOUNT TOTAL							116,160.06	.00	116,160.06	

GROUP NBR	PO NBR	ACCTG PER.	CD	DATE	---TRANSACTION--- NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE POST DT
FUND 686 PAYROLL FUND									
686-0000-222.02-00 PAYROLL LIABILITY / STATE WITHHOLDING									
786		05/19 AP		11/21/18	0004136	IOWA DEPT.OF REVENUE	28,127.68		12/03/18
						STATE WITHHOLDING TAX			
786		05/19 AP		11/09/18	0004134	IOWA DEPT.OF REVENUE	29,502.35		12/03/18
						STATE WITHHOLDING TAX			
						11/21/18 PAYROLL			
						11/09/18 PAYROLL			
						ACCOUNT TOTAL	57,630.03	.00	57,630.03
686-0000-222.03-00 PAYROLL LIABILITY / FICA									
786		05/19 AP		11/23/18	0004150	UNITED STATES TREASURY	62,700.64		12/03/18
						SS & MQGE/MEDICARE TAX			
786		05/19 AP		11/13/18	0004149	UNITED STATES TREASURY	63,716.78		12/03/18
						SS & MQGE/MEDICARE TAX			
						11/21/18 PAYROLL			
						11/09/18 PAYROLL			
						ACCOUNT TOTAL	126,417.42	.00	126,417.42
686-0000-222.04-00 PAYROLL LIABILITY / IPERS									
786		05/19 AP		11/27/18	0004132	I.P.E.R.S.	118,159.34		12/03/18
						IPERS NOVEMBER 2018			
						ACCOUNT TOTAL	118,159.34	.00	118,159.34
686-0000-222.05-00 PAYROLL LIABILITY / OTHER DEDUCTIONS PAYABLE									
899		06/19 AP		12/05/18	0392000	ADVANTAGE ADMINISTRATORS	7,162.38		12/05/18
						CAFETERIA PLAN:12/07/18			
899		06/19 AP		12/05/18	0392002	BLACK HAWK CO.SHERIFF	486.47		12/05/18
						GARNISHMENT #SCSC008196			
899		06/19 AP		12/05/18	0392011	IOWA DISTRICT COURT	11.32		12/05/18
						WAGE ASSIGNMT.#SRCR221682			
786		05/19 AP		11/26/18	0004125	COLLECTION SERVICES CENTER	1,410.39		12/03/18
						CHILD SUPPORT PAYMENTS			
786		05/19 AP		11/13/18	0004124	COLLECTION SERVICES CENTER	1,384.52		12/03/18
						CHILD SUPPORT PAYMENTS			
786		05/19 AP		11/13/18	0004153	VOYA FINANCIAL	8,009.60		12/03/18
						EMPLOYEE 457 CONTRIBUTION			
786		05/19 AP		11/07/18	0004152	VOYA FINANCIAL	8,009.60		12/03/18
						EMPLOYEE 457 CONTRIBUTION			
						11/21/18 PAYROLL			
						11/09/18 PAYROLL			
						ACCOUNT TOTAL	26,474.28	.00	26,474.28
686-0000-222.14-00 PAYROLL LIABILITY / POLICE & FIRE RETIREMENT									
786		05/19 AP		11/28/18	0004139	MUNICIPAL FIRE & POLICE RETIR	109,942.45		12/03/18
						POLICE RETIREMENT			
786		05/19 AP		11/28/18	0004139	MUNICIPAL FIRE & POLICE RETIR	42,428.50		12/03/18
						FIRE RETIREMENT			
786		05/19 AP		11/02/18	0004138	MUNICIPAL FIRE & POLICE RETIR	107,172.98		12/03/18

ACCOUNT ACTIVITY LISTING

GROUP NBR	PO NBR	ACCTG PER.	CD	---TRANSACTION--- DATE	NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE	POST DT
FUND 686 PAYROLL FUND										
686-0000-222.14-00 PAYROLL LIABILITY / POLICE & FIRE RETIREMENT							continued			
POLICE RETIREMENT										
786		05/19 AP		11/02/18	0004138	MUNICIPAL FIRE & POLICE RETIR	47,251.57			12/03/18
FIRE RETIREMENT										
ACCOUNT TOTAL							306,795.50	.00	306,795.50	
686-1902-457.89-05 MISCELLANEOUS SERVICES / UNEMPLOYMENT TAXES										
786		05/19 AP		11/15/18	0004137	IOWA WORKFORCE DEVELOPMENT	435.87			12/03/18
RMB:BENEFITS THRU 9/30/18										
ACCOUNT TOTAL							435.87	.00	435.87	
FUND TOTAL							752,072.50	.00	752,072.50	
FUND 687 WORKERS COMPENSATION FUND										
FUND 688 LTD INSURANCE FUND										
688-1902-457.51-03 INSURANCE / LTD INSURANCE										
938		06/19 AP		12/01/18	0392069	MADISON NATIONAL LIFE INS.CO.	3,360.06			12/11/18
LTD - DECEMBER 2018										
ACCOUNT TOTAL							3,360.06	.00	3,360.06	
688-1902-457.51-04 INSURANCE / LIFE INSURANCE										
938		06/19 AP		12/01/18	0392072	STANDARD INSURANCE COMPANY	3,121.34			12/11/18
GROUP LIFE AD/D-DEC'18										
ACCOUNT TOTAL							3,121.34	.00	3,121.34	
FUND TOTAL							6,481.40	.00	6,481.40	
FUND 689 LIABILITY INSURANCE FUND										
FUND 724 TRUST & AGENCY										
724-0000-487.50-03 TRANSFERS OUT / TRANSFERS - SSMID										
938		06/19 AP		12/10/18	0392063	COMMUNITY MAIN STREET	29,442.39			12/11/18
PROPERTY TAX PAYMENT										
ACCOUNT TOTAL							29,442.39	.00	29,442.39	
FUND TOTAL							29,442.39	.00	29,442.39	

PREPARED 12/13/2018, 11:58:50
PROGRAM GM360L
CITY OF CEDAR FALLS

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GROUP NBR	PO NBR	ACCTG PER.	---TRANSACTION---				DEBITS	CREDITS	CURRENT BALANCE
			CD	DATE	NUMBER	DESCRIPTION			POST DT
FUND 727		GREENWOOD CEMETERY				P-CARE			
FUND 728		FAIRVIEW CEMETERY				P-CARE			
FUND 729		HILLSIDE CEMETERY				P-CARE			
FUND 790		FLOOD LEVY							
GRAND TOTAL							1,698,450.96	15.00	1,698,435.96

Council Invoices for Council Meeting 12/17/18

PREPARED 12/13/2018, 12:19:56
 PROGRAM GM360L
 CITY OF CEDAR FALLS

ACCOUNT ACTIVITY LISTING

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GROUP NBR	PO NBR	ACCTG PER.	CD	----TRANSACTION----	DATE	NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE	POST DT	
FUND 101 GENERAL FUND												
101-1008-441.71-01 OFFICE SUPPLIES / OFFICE SUPPLIES												
931		06/19 AP			12/11/18	0000000	PARKADE PRINTER, INC.	52.49			12/13/18	
		#9 WINDOW ENVELOPES										
900		06/19 AP			11/27/18	0000000	STOREY KENWORTHY	19.18			12/13/18	
		COPY PAPER										
900		06/19 AP			11/27/18	0000000	STOREY KENWORTHY	.79			12/13/18	
		POST IT NOTES										
900		06/19 AP			11/16/18	0000000	STOREY KENWORTHY	5.82			12/13/18	
		COPY PAPER 8.5 X 14										
900		06/19 AP			11/16/18	0000000	STOREY KENWORTHY	2.23			12/13/18	
		LEGAL PADS										
900		06/19 AP			11/09/18	0000000	STOREY KENWORTHY	19.18			12/13/18	
		COPY PAPER										
		ACCOUNT TOTAL							99.69	.00		99.69
101-1008-441.86-01 REPAIR & MAINTENANCE / REPAIR & MAINTENANCE												
929		06/19 AP			11/30/18	0000000	ON-SITE INFORMATION DESTRUCTI	45.00			12/13/18	
		ON-SITE DOC. DESTRUCTION										
		TICKET #283907										
		ACCOUNT TOTAL							45.00	.00		45.00
101-1028-441.71-01 OFFICE SUPPLIES / OFFICE SUPPLIES												
931		06/19 AP			12/11/18	0000000	PARKADE PRINTER, INC.	104.95			12/13/18	
		#9 WINDOW ENVELOPES										
900		06/19 AP			11/27/18	0000000	STOREY KENWORTHY	134.09			12/13/18	
		CALCULATOR										
900		06/19 AP			11/27/18	0000000	STOREY KENWORTHY	46.57			12/13/18	
		COPY PAPER										
900		06/19 AP			11/27/18	0000000	STOREY KENWORTHY	22.46			12/13/18	
		POST IT NOTES, PLANNER										
900		06/19 AP			11/16/18	0000000	STOREY KENWORTHY	14.21			12/13/18	
		COPY PAPER 8.5 X 14										
900		06/19 AP			11/16/18	0000000	STOREY KENWORTHY	7.04			12/13/18	
		LEGAL PADS, MECH. PENCIL										
900		06/19 AP			11/09/18	0000000	STOREY KENWORTHY	46.57			12/13/18	
		COPY PAPER										
900		06/19 AP			11/05/18	0000000	STOREY KENWORTHY	21.40			12/13/18	
		SELF INKING STAMP										
		PRELIMINARY-RED INK										
		ACCOUNT TOTAL							397.29	.00		397.29
101-1028-441.81-53 PROFESSIONAL SERVICES / JOB NOTICES												
931		06/19 AP			12/02/18	0000000	COURIER COMMUNICATIONS	5.00			12/13/18	
		PAPER STATEMENT FEE										
931		06/19 AP			12/02/18	0000000	COURIER COMMUNICATIONS	511.43			12/13/18	
		JOB AD:PUBLIC WORKS										
		CLASSIFIED PACKAGE										

GROUP NBR	PO NBR	ACCTG PER.	CD	DATE	TRANSACTION NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE	POST DT
FUND 101 GENERAL FUND										
101-1028-441.81-53 PROFESSIONAL SERVICES / JOB NOTICES						continued				
931		06/19 AP		12/02/18	0000000	COURIER COMMUNICATIONS CLASSIFIED PACKAGE	508.94			12/13/18
931		06/19 AP		12/02/18	0000000	COURIER COMMUNICATIONS CLASSIFIED PACKAGE	386.01			12/13/18
931		06/19 AP		12/02/18	0000000	COURIER COMMUNICATIONS ONLINE	347.00			12/13/18
931		06/19 AP		11/30/18	0000000	COURIER COMMUNICATIONS ONLINE	330.00			12/13/18
931		06/19 AP		11/27/18	0000000	COURIER COMMUNICATIONS SEARCH BOOST	39.00			12/13/18
931		06/19 AP		11/27/18	0000000	COURIER COMMUNICATIONS CLASSIFIED PACKAGE	252.36			12/13/18
931		06/19 AP		11/27/18	0000000	COURIER COMMUNICATIONS CLASSIFIED PACKAGE	333.52			12/13/18
931		06/19 AP		11/20/18	0000000	COURIER COMMUNICATIONS CLASSIFIED PACKAGE	665.53			12/13/18
889		06/19 AP		11/16/18	0129711	US BANK	100.00			12/06/18
889		06/19 AP		11/06/18	0129711	US BANK JOB AD:PLANNING MGR	325.00			12/06/18
889		06/19 AP		11/06/18	0129711	US BANK JOB AD:ENGINEER	420.00			12/06/18
889		06/19 AP		10/24/18	0129711	US BANK JOB AD:ENGINEER	350.00			12/06/18
889		06/19 AP		10/23/18	0129711	US BANK JOB AD:LIBRARY DIRECTOR	325.00			12/06/18
						ACCOUNT TOTAL	4,898.79	.00		4,898.79
101-1028-441.81-56 PROFESSIONAL SERVICES / EMPLOYEE WELLNESS PROG										
900		06/19 AP		12/04/18	0000000	CINTAS FIRST AID & SAFETY	71.25			12/13/18
889		06/19 AP		11/07/18	0129711	US BANK WELLNESS GIFT CARD	25.00			12/06/18
889		06/19 AP		11/06/18	0129711	US BANK WELLNESS GIFT CARDS (70)	1,750.00			12/06/18
						ACCOUNT TOTAL	1,846.25	.00		1,846.25
101-1028-441.83-04 TRANSPORTATION&EDUCATION / DUES & MEMBERSHIPS										
900		06/19 AP		12/05/18	0000000	CEDAR VALLEY SHRM	90.00			12/13/18
						2019 MEMBERSHIP-K KELLY				
						ACCOUNT TOTAL	90.00	.00		90.00
101-1028-441.83-06 TRANSPORTATION&EDUCATION / EDUCATION										

GROUP NBR	PO NBR	ACCTG PER.	CD	DATE	TRANSACTION NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE	POST DT
FUND 101 GENERAL FUND										
101-1028-441.83-06						TRANSPORTATION&EDUCATION / EDUCATION				
889		06/19 AP		11/20/18	0129711	US BANK	85.00			12/06/18
						GOVERNMENT FINANCE OFFIC				
						REG:WEBINAR NOTE DISCL.				
						ACCOUNT TOTAL	85.00	.00	85.00	
101-1048-441.71-01 OFFICE SUPPLIES / OFFICE SUPPLIES										
931		06/19 AP		12/11/18	0000000	PARKADE PRINTER, INC.	17.50			12/13/18
						#9 WINDOW ENVELOPES				
900		06/19 AP		11/27/18	0000000	STOREY KENWORTHY	3.42			12/13/18
						COPY PAPER				
900		06/19 AP		11/27/18	0000000	STOREY KENWORTHY	.14			12/13/18
						POST IT NOTES				
900		06/19 AP		11/16/18	0000000	STOREY KENWORTHY	1.05			12/13/18
						COPY PAPER 8.5 X 14				
900		06/19 AP		11/16/18	0000000	STOREY KENWORTHY	.37			12/13/18
						LEGAL PADS				
900		06/19 AP		11/09/18	0000000	STOREY KENWORTHY	3.42			12/13/18
						COPY PAPER				
900		06/19 AP		11/01/18	0000000	STOREY KENWORTHY	38.49			12/13/18
						PENS,PLANNER, LEGAL PADS				
						ACCOUNT TOTAL	64.39	.00	64.39	
101-1048-441.72-11 OPERATING SUPPLIES / DUES, BOOKS, MAGAZINES										
931		06/19 AP		12/01/18	0000000	THOMSON REUTERS - WEST	535.00			12/13/18
						WESTLAW INFORMATION				
						11/1/18-11/30/18				
						ACCOUNT TOTAL	535.00	.00	535.00	
101-1048-441.81-29 PROFESSIONAL SERVICES / LEGAL CONSULTANTS										
931		06/19 AP		11/21/18	0000000	AHLERS AND COONEY, P.C.	136.25			12/13/18
						LGL:LABOR RELATIONS				
						10/21/18-11/16/18				
						ACCOUNT TOTAL	136.25	.00	136.25	
101-1048-441.81-30 PROFESSIONAL SERVICES / LEGAL-CODE ENFORCEMENT										
931		06/19 AP		12/03/18	0000000	SWISHER & COHRT, P.L.C.	30.00			12/13/18
						LGL:MISC.& APPEALS				
						09/05/18				
						ACCOUNT TOTAL	30.00	.00	30.00	
101-1048-441.81-99 PROFESSIONAL SERVICES / CIVIL SERVICE COMMISSION										
929		06/19 AP		11/29/18	0000000	STANARD & ASSOCIATES,INC.	145.00			12/13/18
						POLICE APPLICANT TESTING				

GROUP NBR	PO NBR	ACCTG PER.	CD	DATE	TRANSACTION NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE	POST DT
FUND 101 GENERAL FUND										
101-1048-441.81-99 PROFESSIONAL SERVICES / CIVIL SERVICE COMMISSION						continued				
ACCOUNT TOTAL							145.00	.00	145.00	
101-1060-423.71-01 OFFICE SUPPLIES / OFFICE SUPPLIES										
890		06/19 AP		11/14/18	0129711	US BANK	13.99			12/06/18
		AMZN MKTP			US*M88K85SF2	BATTERIES				
890		06/19 AP		10/31/18	0129711	US BANK	103.74			12/06/18
		AMZN MKTP			US*M84GQ9P62	LABL MAKR,LABLS,STOR BOX				
890		06/19 AP		10/29/18	0129711	US BANK	74.54			12/06/18
		WAL-MART			#0753	MOP AND REFILLS				
ACCOUNT TOTAL							192.27	.00	192.27	
101-1060-423.89-20 MISCELLANEOUS SERVICES / ADULT BOOKS										
890		06/19 AP		11/19/18	0129711	US BANK	14.99			12/06/18
		AMZN MKTP			US*M83UX5YC1	ADLT BOOKS CALEY MEM				
890		06/19 AP		11/05/18	0129711	US BANK	118.94			12/06/18
		AMAZON.COM			*M80XN0GZ1	ADULT BOOKS CALEY MEM				
ACCOUNT TOTAL							133.93	.00	133.93	
101-1060-423.89-23 MISCELLANEOUS SERVICES / LARGE PRINT BOOKS										
941		05/19 AP		10/12/18	0129484	US BANK		5.00		12/11/18
		ACCOUNT CORRECTION				FAREWAY STORES #974				
941		05/19 AP		10/08/18	0129484	US BANK		89.93		12/11/18
		ACCOUNT CORRECTION				AMZN MKTP US*MT7G766RO				
ACCOUNT TOTAL							.00	94.93	94.93-	
101-1060-423.89-24 MISCELLANEOUS SERVICES / ADULT AUDIO										
890		06/19 AP		11/08/18	0129711	US BANK	22.42			12/06/18
		AMZN MKTP			US*M84II7800	ADULT AUDIO MEMORIA				
ACCOUNT TOTAL							22.42	.00	22.42	
101-1060-423.89-33 MISCELLANEOUS SERVICES / FRIENDS SUPPORTED PROGRAM										
890		06/19 AP		11/19/18	0129711	US BANK	38.49			12/06/18
		LULU				ANTHOLOGY FOTL TO RMB				
890		06/19 AP		11/19/18	0129711	US BANK	25.00			12/06/18
		WM SUPERCENTER			#1496	PS4 NETWORK CARD FOTL RMB				
890		06/19 AP		11/19/18	0129711	US BANK	50.85			12/06/18
		OTC BRANDS				TREE TRIM YTH FOTL 2 RMB				
890		06/19 AP		11/12/18	0129711	US BANK	8.98			12/06/18
		CASEYS GEN STORE			3045	COOKIES ADULT FOTL 2 RMB				

GROUP NBR	PO NBR	ACCTG PER.	CD	DATE	---TRANSACTION--- NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE POST DT	
FUND 101 GENERAL FUND										
101-1060-423.89-33						MISCELLANEOUS SERVICES / FRIENDS SUPPORTED PROGRAM			continued	
890		06/19 AP		11/09/18	0129711	US BANK	5.00		12/06/18	
		FAREWAY STORES #974				COOKIES FOTL 2 RMB				
890		06/19 AP		11/07/18	0129711	US BANK	49.00		12/06/18	
		PAYPAL *MYINTENT				MAKER KIT YTH FOTL 2 RMB				
890		06/19 AP		11/05/18	0129711	US BANK	8.49		12/06/18	
		HY VEE 1052				DRNKS ADLT PRG FOTL 2 RMB				
890		06/19 AP		11/05/18	0129711	US BANK	6.00		12/06/18	
		DOLLAR TREE				PLT GLASS ADLT FOTL 2 RMB				
890		06/19 AP		11/05/18	0129711	US BANK	7.95		12/06/18	
		AMAZON.COM*M84G71X12				KNIVES YTH PRG FOTL 2 RMB				
890		06/19 AP		10/30/18	0129711	US BANK	31.88		12/06/18	
		WAL-MART #1496				BUNK BARREL FOTL 2 RMB				
890		06/19 AP		10/29/18	0129711	US BANK	17.69		12/06/18	
		O DONNELL ACE HARDWARE				PLIERS YTH FOTL 2 RMB				
890		06/19 AP		10/25/18	0129711	US BANK	37.73		12/06/18	
		HY VEE 1052				DRNKS ADLT PRG FOTL 2 RMB				
941		05/19 AP		10/12/18	0129484	US BANK	5.00		12/11/18	
		FAREWAY STORES #974				SNACK DEVICE ADV FOTL RMB				
941		05/19 AP		10/08/18	0129484	US BANK	89.93		12/11/18	
		AMZN MKTP US*MT7G766RO				PRIZES TRIVA FOTL RMB				
		ACCOUNT TOTAL						381.99	.00	381.99
101-1060-423.89-34 MISCELLANEOUS SERVICES / ENDOWMENT SUPPORTED PROG.										
890		06/19 AP		11/12/18	0129711	US BANK	63.20		12/06/18	
		GODFATHERS PIZZA				PIZZA LIT CON RAY				
890		06/19 AP		11/06/18	0129711	US BANK	181.86		12/06/18	
		4IMPRINT				CUPS LITCON RAY				
890		06/19 AP		11/02/18	0129711	US BANK	39.59		12/06/18	
		WAL-MART #0753				CNDLE, PLATES-LITCON RAY				
890		06/19 AP		11/02/18	0129711	US BANK	48.89		12/06/18	
		MICHAELS STORES 1246				SKLTON GLASS CNDY DSH RAY				
890		06/19 AP		11/01/18	0129711	US BANK	75.05		12/06/18	
		FACEBK WTYQMH6QT2				ADVERTISING LITCON RAY				
890		06/19 AP		11/01/18	0129711	US BANK	152.32		12/06/18	
		WAL-MART #0753				POP, CREAM, BTR-LITCON RAY				
890		06/19 AP		10/31/18	0129711	US BANK	51.63		12/06/18	
		WM SUPERCENTER #753				POP, UTENSILS LITCON RAY				
890		06/19 AP		10/29/18	0129711	US BANK	25.32		12/06/18	
		AMZN MKTP US*M80PR7E62				NAP, COVR, STRAW-LITCON RAY				
890		06/19 AP		10/26/18	0129711	US BANK	91.25		12/06/18	
		VISTAPR*VISTAPRINT.COM				BANNERS LITCON RAY				
890		06/19 AP		10/24/18	0129711	US BANK	55.08		12/06/18	
		OFFICEMAX/DEPOT 6869				FOAM BOARD LITCON RAY				
		ACCOUNT TOTAL						784.19	.00	784.19

GROUP NBR	PO NBR	ACCTG PER.	CD	DATE	---TRANSACTION--- NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE	POST DT
FUND 101 GENERAL FUND										
101-1060-423.93-01						EQUIPMENT / EQUIPMENT				
890		06/19 AP		10/31/18	0129711	US BANK	28.66			12/06/18
						WM SUPERCENTER #753				
890		06/19 AP		10/31/18	0129711	US BANK	8.99			12/06/18
						AMZN MKTP US*M875U6110				
						SOCKET CONNECTOR EQUIP				
						ACCOUNT TOTAL	37.65	.00		37.65
101-1061-423.89-20						MISCELLANEOUS SERVICES / ADULT BOOKS				
890		06/19 AP		11/19/18	0129711	US BANK	14.28			12/06/18
						AMZN MKTP US*M83UX5YC1				
890		06/19 AP		11/12/18	0129711	US BANK	12.00			12/06/18
						AMAZON.COM*M853K3SP0				
						ADULT BOOKS				
						ACCOUNT TOTAL	26.28	.00		26.28
101-1061-423.89-22						MISCELLANEOUS SERVICES / YOUTH BOOKS				
890		06/19 AP		11/13/18	0129711	US BANK	21.26			12/06/18
						AMZN MKTP US*M84ON2240				
890		06/19 AP		11/13/18	0129711	US BANK	13.98			12/06/18
						AMZN MKTP US*M80CV92F0				
890		06/19 AP		11/12/18	0129711	US BANK	5.14			12/06/18
						AMAZON.COM*M84DQ8SN0				
890		06/19 AP		11/12/18	0129711	US BANK	20.00			12/06/18
						AMAZON.COM*M84TX0SS2				
890		06/19 AP		11/12/18	0129711	US BANK	6.99			12/06/18
						AMAZON.COM*M83BY6D62				
890		06/19 AP		11/12/18	0129711	US BANK	35.09			12/06/18
						AMAZON.COM*M85B09DT2				
890		06/19 AP		11/12/18	0129711	US BANK	32.88			12/06/18
						AMZN MKTP US*M83GJ0SQ1				
						YOUTH BOOKS				
						ACCOUNT TOTAL	135.34	.00		135.34
101-1061-423.89-25						MISCELLANEOUS SERVICES / ADULT VIDEO				
890		06/19 AP		11/16/18	0129711	US BANK	59.79			12/06/18
						AMZN MKTP US*M808U8U91				
890		06/19 AP		10/26/18	0129711	US BANK	39.20			12/06/18
						AMZN MKTP US*M87KX2TQ2				
						ADULT VIDEO				
						ACCOUNT TOTAL	98.99	.00		98.99
101-1061-423.89-26						MISCELLANEOUS SERVICES / NON-PRINT RESOURCES				
890		06/19 AP		10/29/18	0129711	US BANK	18.73			12/06/18
						AMZN MKTP US*M82226AU2				
						YA VIDEO GAME				
						ACCOUNT TOTAL	18.73	.00		18.73

GROUP NBR	PO NBR	ACCTG PER.	CD	DATE	---TRANSACTION--- NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE	POST DT	
FUND 101 GENERAL FUND											
101-1061-423.89-36	MISCELLANEOUS SERVICES / YOUTH VIDEO										
890	06/19	AP	11/13/18	0129711	US BANK		9.96		12/06/18		
	AMZN MKTP	US*M80CV92F0	YOUTH VIDEO								
890	06/19	AP	11/13/18	0129711	US BANK		27.96		12/06/18		
	AMAZON.COM*M86EV9D02	YOUTH VIDEO									
890	06/19	AP	11/12/18	0129711	US BANK		14.99		12/06/18		
	AMAZON.COM*M81DQ4SN0	YOUTH VIDEO									
890	06/19	AP	11/12/18	0129711	US BANK		60.00		12/06/18		
	AMZN MKTP	US*M87GI1SQ1	YOUTH VIDEO								
890	06/19	AP	11/05/18	0129711	US BANK		39.99		12/06/18		
	AMZN MKTP	US*M86V17MM2	YOUTH VIDEO								
	ACCOUNT TOTAL						152.90	.00	152.90		
101-1118-441.71-01 OFFICE SUPPLIES / OFFICE SUPPLIES											
931	06/19	AP	12/11/18	0000000	PARKADE PRINTER, INC.		8.75		12/13/18		
	#9 WINDOW ENVELOPES										
900	06/19	AP	11/27/18	0000000	STOREY KENWORTHY		3.42		12/13/18		
	COPY PAPER										
900	06/19	AP	11/27/18	0000000	STOREY KENWORTHY		.14		12/13/18		
	POST IT NOTES										
900	06/19	AP	11/16/18	0000000	STOREY KENWORTHY		1.05		12/13/18		
	COPY PAPER 8.5 X 14										
900	06/19	AP	11/16/18	0000000	STOREY KENWORTHY		.37		12/13/18		
	LEGAL PADS										
900	06/19	AP	11/09/18	0000000	STOREY KENWORTHY		3.42		12/13/18		
	COPY PAPER										
	ACCOUNT TOTAL						17.15	.00	17.15		
101-1158-441.71-01 OFFICE SUPPLIES / OFFICE SUPPLIES											
931	06/19	AP	12/11/18	0000000	PARKADE PRINTER, INC.		8.75		12/13/18		
	#9 WINDOW ENVELOPES										
900	06/19	AP	11/27/18	0000000	STOREY KENWORTHY		3.42		12/13/18		
	COPY PAPER										
900	06/19	AP	11/27/18	0000000	STOREY KENWORTHY		.14		12/13/18		
	POST IT NOTES										
900	06/19	AP	11/16/18	0000000	STOREY KENWORTHY		1.05		12/13/18		
	COPY PAPER 8.5 X 14										
900	06/19	AP	11/16/18	0000000	STOREY KENWORTHY		.37		12/13/18		
	LEGAL PADS										
900	06/19	AP	11/09/18	0000000	STOREY KENWORTHY		3.42		12/13/18		
	COPY PAPER										
	ACCOUNT TOTAL						17.15	.00	17.15		
101-1199-421.31-10 HUMAN DEVELOPMENT GRANTS / GRANTS - CULTURAL SERVICE											

GROUP NBR	PO NBR	ACCTG PER.	CD	DATE	---TRANSACTION--- NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE POST DT
FUND 101 GENERAL FUND									
101-1199-421.31-10 HUMAN DEVELOPMENT GRANTS / GRANTS - CULTURAL SERVICE						continued			
944		06/19 AP		12/21/18	0000000	TRANSPORT CONSULTANTS INTERNA	1,540.00		12/13/18
						RESISTANCE/RESCUE RETURN			
944		06/19 AP		11/19/18	0000000	SHIPPING-PD BY UNI CHAS			12/13/18
						PARKADE PRINTER, INC.	644.78		
						ANNUAL APPEAL PRINTING			
944		06/19 AP		11/19/18	0000000	ENVELOPES			12/13/18
						PARKADE PRINTER, INC.	191.55		
						ANNUAL APPEAL PRINTING			
						COLLATE, SORT & MAILING			
944		06/19 AP		11/16/18	0000000	PARKADE PRINTER, INC.	676.20		12/13/18
						ANNUAL APPEAL PRINTING			
						BUCK CARDS/LETTER/REPRINT			
						ACCOUNT TOTAL	3,052.53	.00	3,052.53
101-1199-421.31-40 HUMAN DEVELOPMENT GRANTS / GRANTS - PARKS									
939		06/19 AP		12/10/18	0000000	STETSON BUILDING PRODUCTS LLC	178.78		12/13/18
						REBAR,EPOXY-VETS PRK SIGN			
907		06/19 AP		11/29/18	0000000	BENTON'S READY MIX CONCRETE,	1,144.88		12/13/18
						CONCRETE-VETS PARK SIGN			
						ACCOUNT TOTAL	1,323.66	.00	1,323.66
101-1199-441.72-19 OPERATING SUPPLIES / PRINTING									
931		06/19 AP		12/03/18	0000000	COURIER LEGAL COMMUNICATIONS	468.80		12/13/18
						11/19/18 CC MTG.MINS/BILL			
900		06/19 AP		11/26/18	0000000	COURIER LEGAL COMMUNICATIONS	47.97		12/13/18
						ORD.2934-REZONE A1 TO R1			
						LAKESHORE			
						ACCOUNT TOTAL	516.77	.00	516.77
101-1199-441.81-09 PROFESSIONAL SERVICES / HUMAN RIGHTS COMMISSION									
931		06/19 AP		12/11/18	0000000	PARKADE PRINTER, INC.	8.75		12/13/18
						#9 WINDOW ENVELOPES			
900		06/19 AP		11/27/18	0000000	STOREY KENWORTHY	2.74		12/13/18
						COPY PAPER			
900		06/19 AP		11/27/18	0000000	STOREY KENWORTHY	.07		12/13/18
						POST IT NOTES			
900		06/19 AP		11/16/18	0000000	STOREY KENWORTHY	.84		12/13/18
						COPY PAPER 8.5 X 14			
900		06/19 AP		11/16/18	0000000	STOREY KENWORTHY	.19		12/13/18
						LEGAL PADS			
900		06/19 AP		11/09/18	0000000	STOREY KENWORTHY	2.74		12/13/18
						COPY PAPER			
						ACCOUNT TOTAL	15.33	.00	15.33
101-2205-432.71-01 OFFICE SUPPLIES / OFFICE SUPPLIES									
912		06/19 AP		11/30/18	0000000	STOREY KENWORTHY	3.22		12/13/18

ACCOUNT ACTIVITY LISTING

GROUP NBR	PO NBR	ACCTG PER.	CD	DATE	---TRANSACTION--- NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE	POST DT
FUND 101 GENERAL FUND										
101-2205-432.71-01 OFFICE SUPPLIES / OFFICE SUPPLIES						continued				
						PINK PAPER				
912		06/19 AP		11/29/18	0000000	STOREY KENWORTHY	5.30		12/13/18	
						LEGAL PADS, PINK PAPER				
912		06/19 AP		11/08/18	0000000	STOREY KENWORTHY	1.24		12/13/18	
						BINDER CLIPS				
912		06/19 AP		11/08/18	0000000	STOREY KENWORTHY	4.78		12/13/18	
						DRY ERASE MARKERS				
						ACCOUNT TOTAL	14.54	.00	14.54	
101-2205-432.72-19 OPERATING SUPPLIES / PRINTING										
931		06/19 AP		12/11/18	0000000	PARKADE PRINTER, INC.	17.50		12/13/18	
						#9 WINDOW ENVELOPES				
900		06/19 AP		11/27/18	0000000	STOREY KENWORTHY	6.85		12/13/18	
						COPY PAPER				
900		06/19 AP		11/16/18	0000000	STOREY KENWORTHY	2.09		12/13/18	
						COPY PAPER 8.5 X 14				
900		06/19 AP		11/09/18	0000000	STOREY KENWORTHY	6.85		12/13/18	
						COPY PAPER				
						ACCOUNT TOTAL	33.29	.00	33.29	
101-2225-432.71-01 OFFICE SUPPLIES / OFFICE SUPPLIES										
912		06/19 AP		11/29/18	0000000	STOREY KENWORTHY	2.31		12/13/18	
						LEGAL PADS				
912		06/19 AP		11/16/18	0000000	STOREY KENWORTHY	24.37		12/13/18	
						BATTERIES, POST IT NOTES				
912		06/19 AP		11/06/18	0000000	STOREY KENWORTHY	20.67		12/13/18	
						COPY PAPER, WALL CLOCK				
						ACCOUNT TOTAL	47.35	.00	47.35	
101-2225-432.72-11 OPERATING SUPPLIES / DUES, BOOKS, MAGAZINES										
889		06/19 AP		10/25/18	0129711	US BANK	418.99		12/06/18	
						AMAZON.COM*M86WP3JCO				
						PE CIVIL PRACTICE BOOKS				
						ACCOUNT TOTAL	418.99	.00	418.99	
101-2225-432.72-18 OPERATING SUPPLIES / SURVEYING										
912		06/19 AP		11/19/18	0000000	STAR EQUIPMENT, LTD.	655.00		12/13/18	
						RL-H5A LASER, TRIPOD, ROD				
						ACCOUNT TOTAL	655.00	.00	655.00	

ACCOUNT ACTIVITY LISTING

GROUP NBR	PO NBR	ACCTG PER.	CD	DATE	---TRANSACTION--- NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE	POST DT
FUND 101 GENERAL FUND										
101-2225-432.72-60						OPERATING SUPPLIES / SAFETY SUPPLIES				
900		06/19 AP		12/04/18	0000000	CINTAS FIRST AID & SAFETY	37.41			12/13/18
						RESTOCK FIRST AID CABINET				
						ACCOUNT TOTAL	37.41	.00	37.41	
101-2225-432.81-01 PROFESSIONAL SERVICES / PROFESSIONAL SERVICES										
912		06/19 AP		11/27/18	0000000	CLAPSADDLE-GARBER ASSOCIATES,	5,851.25			12/13/18
						3134-PR.WINDS 4TH ADD.				
						SERVICES THRU 11/17/18				
						PROJECT#: 023134				
912		06/19 AP		11/27/18	0000000	CLAPSADDLE-GARBER ASSOCIATES,	4,428.50			12/13/18
						1904-GATEWAY BUS. PARK'18				
						SERVICES THRU 11/17/18				
						PROJECT#: 021904				
912		06/19 AP		11/27/18	0000000	CLAPSADDLE-GARBER ASSOCIATES,	2,806.95			12/13/18
						3138-SANDS ADDITION				
						SERVICES THRU 11/17/18				
						PROJECT#: 023138				
						ACCOUNT TOTAL	13,086.70	.00	13,086.70	
101-2225-432.83-06 TRANSPORTATION&EDUCATION / EDUCATION										
912		06/19 AP		11/28/18	0000000	IOWA DEPT-TRANSPORTATION	120.00			12/13/18
						SOILS RECERT.-N.ERICKSON				
889		06/19 AP		10/31/18	0129711	US BANK	65.00			12/06/18
						ISU CPM				
						REG:MUN.ST.SEMINAR-TOLAN				
						ACCOUNT TOTAL	185.00	.00	185.00	
101-2235-412.71-01 OFFICE SUPPLIES / OFFICE SUPPLIES										
912		06/19 AP		11/29/18	0000000	STOREY KENWORTHY	2.31			12/13/18
						LEGAL PADS				
912		06/19 AP		11/16/18	0000000	STOREY KENWORTHY	24.37			12/13/18
						BATTERIES, POST IT NOTES				
912		06/19 AP		11/06/18	0000000	STOREY KENWORTHY	40.96			12/13/18
						COPY PAPER, CALCULATOR,				
						WALL CLOCK				
						ACCOUNT TOTAL	67.64	.00	67.64	
101-2235-412.72-16 OPERATING SUPPLIES / TOOLS										
889		06/19 AP		11/16/18	0129711	US BANK	158.78			12/06/18
						SHUBEES				
						SHOE COVERS				
						ACCOUNT TOTAL	158.78	.00	158.78	
101-2235-412.72-19 OPERATING SUPPLIES / PRINTING										
912		06/19 AP		11/30/18	0000000	PARKADE PRINTER, INC.	80.50			12/13/18

GROUP NBR	PO NBR	ACCTG PER.	CD	DATE	---TRANSACTION--- NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE POST DT
FUND 101 GENERAL FUND									
101-2235-412.72-19 OPERATING SUPPLIES / PRINTING						continued			
101-2235-412.72-19 OPERATING SUPPLIES / PRINTING						STOPPED BY NOTICE HANGERS			
ACCOUNT TOTAL							80.50	.00	80.50
101-2235-412.72-60 OPERATING SUPPLIES / SAFETY SUPPLIES									
900		06/19 AP		12/04/18	0000000	CINTAS FIRST AID & SAFETY	37.41		12/13/18
						RESTOCK FIRST AID CABINET			
912		06/19 AP		11/30/18	0000000	O'DONNELL ACE HARDWARE	21.38		12/13/18
						ICE SCRAPER/BRUSH			
ACCOUNT TOTAL							58.79	.00	58.79
101-2235-412.83-04 TRANSPORTATION&EDUCATION / DUES & MEMBERSHIPS									
889		06/19 AP		10/29/18	0129711	US BANK	50.00		12/06/18
						PAYPAL *IOWAASSOCIA			IABO MEMBERSHIP-J CASTLE
ACCOUNT TOTAL							50.00	.00	50.00
101-2235-412.83-05 TRANSPORTATION&EDUCATION / TRAVEL (FOOD/MILEAGE/LOD)									
889		06/19 AP		10/26/18	0129711	US BANK	540.45		12/06/18
						MARRIOTT RICHMOND			HOTEL-ICC CONF.J CASTLE
889		06/19 AP		10/25/18	0129711	US BANK	34.50		12/06/18
						SQ *BLACK TAXI			TAXI/ICC CONF/J CASTLE
889		06/19 AP		10/25/18	0129711	US BANK	16.67		12/06/18
						MARRIOTT RICHMOND F&B			DINNER/ICC CONF/J CASTLE
889		06/19 AP		10/25/18	0129711	US BANK	12.94		12/06/18
						MARRIOTT RICHMOND F&B			BREAKFAST/ICC CONF/CASTLE
889		06/19 AP		10/24/18	0129711	US BANK	8.34		12/06/18
						SUBWAY 03192440			LUNCH/ICC CONF/J CASTLE
889		06/19 AP		10/24/18	0129711	US BANK	19.00		12/06/18
						MARRIOTT RICHMOND F&B			BREAKFAST/ICC CONF/CASTLE
889		06/19 AP		10/23/18	0129711	US BANK	20.93		12/06/18
						MARRIOTT RICHMOND F&B			DINNER/ICC CONF/J CASTLE
ACCOUNT TOTAL							652.83	.00	652.83
101-2245-442.71-01 OFFICE SUPPLIES / OFFICE SUPPLIES									
912		06/19 AP		11/30/18	0000000	STOREY KENWORTHY	3.58		12/13/18
						PINK PAPER			
912		06/19 AP		11/29/18	0000000	STOREY KENWORTHY	5.89		12/13/18
						LEGAL PADS, PINK PAPER			
912		06/19 AP		11/08/18	0000000	STOREY KENWORTHY	1.38		12/13/18
						BINDER CLIPS			
912		06/19 AP		11/08/18	0000000	STOREY KENWORTHY	5.32		12/13/18
						DRY ERASE MARKERS			

GROUP NBR	PO NBR	ACCTG PER.	CD	DATE	---TRANSACTION--- NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE	POST DT	
FUND 101 GENERAL FUND											
101-2245-442.71-01 OFFICE SUPPLIES / OFFICE SUPPLIES											
							continued				
ACCOUNT TOTAL							16.17	.00	16.17		
101-2245-442.72-19 OPERATING SUPPLIES / PRINTING											
931		06/19 AP		12/11/18	0000000	PARKADE PRINTER, INC.	34.99			12/13/18	
#9 WINDOW ENVELOPES											
900		06/19 AP		11/27/18	0000000	STOREY KENWORTHY	13.70			12/13/18	
COPY PAPER											
900		06/19 AP		11/16/18	0000000	STOREY KENWORTHY	4.18			12/13/18	
COPY PAPER 8.5 X 14											
900		06/19 AP		11/09/18	0000000	STOREY KENWORTHY	13.70			12/13/18	
COPY PAPER											
ACCOUNT TOTAL							66.57	.00	66.57		
101-4511-414.71-01 OFFICE SUPPLIES / OFFICE SUPPLIES											
931		06/19 AP		12/11/18	0000000	PARKADE PRINTER, INC.	17.50			12/13/18	
#9 WINDOW ENVELOPES											
900		06/19 AP		11/27/18	0000000	STOREY KENWORTHY	6.85			12/13/18	
COPY PAPER											
900		06/19 AP		11/27/18	0000000	STOREY KENWORTHY	.27			12/13/18	
POST IT NOTES											
900		06/19 AP		11/16/18	0000000	STOREY KENWORTHY	2.09			12/13/18	
COPY PAPER 8.5 X 14											
900		06/19 AP		11/16/18	0000000	STOREY KENWORTHY	.74			12/13/18	
LEGAL PADS											
900		06/19 AP		11/09/18	0000000	STOREY KENWORTHY	6.85			12/13/18	
COPY PAPER											
889		06/19 AP		11/05/18	0129711	US BANK	116.48			12/06/18	
TCE*HRDIRECT/GNEIL											
ATTENDANCE CALENDARS											
ACCOUNT TOTAL							150.78	.00	150.78		
101-4511-414.72-02 OPERATING SUPPLIES / LAUNDRY											
930		06/19 AP		12/03/18	0000000	ARAMARK	5.90			12/13/18	
MOPS;TOWELS-STATION #1											
ACCOUNT TOTAL							5.90	.00	5.90		
101-4511-414.72-04 OPERATING SUPPLIES / SCBA SUPPLIES											
930		06/19 AP		11/21/18	0000000	SANDRY FIRE SUPPLY, L.L.C.	662.45			12/13/18	
SCBA REPL.STRAPS & GAUGES											
ACCOUNT TOTAL							662.45	.00	662.45		

GROUP NBR	PO NBR	ACCTG PER.	CD	DATE	---TRANSACTION--- NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE	POST DT
FUND 101 GENERAL FUND										
101-4511-414.72-09						OPERATING SUPPLIES / EQUIPMENT REPAIR				
889		06/19 AP		11/14/18	0129711	US BANK	198.00			12/06/18
						FARM & FLT OF CEDAR FLS BATTERIES FOR TOOLS				
						ACCOUNT TOTAL	198.00	.00	198.00	
101-4511-414.73-06						OTHER SUPPLIES / BUILDING REPAIR				
889		06/19 AP		11/19/18	0129711	US BANK	49.36			12/06/18
						O DONNELL ACE HARDWARE GREASE GUN;GREASE;HOSE;				
						ACCOUNT TOTAL	49.36	.00	49.36	
101-4511-414.73-10						OTHER SUPPLIES / HEADQUARTER SUPPLIES				
929		06/19 AP		11/30/18	0000000	ON-SITE INFORMATION DESTRUCTI	45.00			12/13/18
						TICKET #283904				
889		06/19 AP		11/05/18	0129711	US BANK	55.63			12/06/18
						WM SUPERCENTER #753 CLOSET ORG.;WATER;LAUNDRY				
889		06/19 AP		11/02/18	0129711	US BANK	18.34			12/06/18
						WAL-MART #0753 PAPER TOWELS-STATION #1				
889		06/19 AP		10/25/18	0129711	US BANK	15.66			12/06/18
						O DONNELL ACE HARDWARE MOUSE TRAPS;TWINE				
						ACCOUNT TOTAL	134.63	.00	134.63	
101-4511-414.81-01						PROFESSIONAL SERVICES / PROFESSIONAL SERVICES				
889		06/19 AP		11/19/18	0129711	US BANK	12.50			12/06/18
						FACEBK *X7BDAJJHV2 PUBLIC SAFETY AD				
889		06/19 AP		11/19/18	0129711	US BANK	12.50			12/06/18
						FACEBK *B6K4ZH6HV2 PUBLIC SAFETY AD				
889		06/19 AP		11/19/18	0129711	US BANK	12.50			12/06/18
						FACEBK *56CGGHHV2 PUBLIC SAFETY AD				
889		06/19 AP		11/19/18	0129711	US BANK	17.50			12/06/18
						FACEBK *NWH6JJWGV2 PUBLIC SAFETY AD				
889		06/19 AP		11/19/18	0129711	US BANK	25.00			12/06/18
						FACEBK *4RAEZH6HV2 PUBLIC SAFETY AD				
						ACCOUNT TOTAL	80.00	.00	80.00	
101-4511-414.81-46						PROFESSIONAL SERVICES / EMERGENCY MANAGEMENT				
950		06/19 AP		12/10/18	0000000	BLACK HAWK CO.EMERGENCY MGMT.	28,873.50			12/13/18
						2ND HALF FY19 EMA BUDGET				
						ACCOUNT TOTAL	28,873.50	.00	28,873.50	
101-4511-414.83-05						TRANSPORTATION&EDUCATION / TRAVEL (FOOD/MILEAGE/LOD)				

GROUP NBR	PO NBR	ACCTG PER.	CD	DATE	---TRANSACTION--- NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE POST DT
FUND 101 GENERAL FUND									
101-4511-414.83-05						TRANSPORTATION&EDUCATION / TRAVEL (FOOD/MILEAGE/LOD)			continued
889		06/19 AP		11/09/18	0129711	US BANK	16.93		12/06/18
						BUZZARD BILLYS MEAL-ITEMSA CONFERENCE			
						ACCOUNT TOTAL	16.93	.00	16.93
101-4511-414.86-01						REPAIR & MAINTENANCE / REPAIR & MAINTENANCE			
930		06/19 AP		12/05/18	0000000	O'DONNELL ACE HARDWARE	10.69		12/13/18
						VALVE-563 REPAIR			
930		06/19 AP		12/05/18	0000000	ARNOLD MOTOR SUPPLY	49.41		12/13/18
						LABOR/SUPPLIES-563 REPAIR			
930		06/19 AP		12/03/18	0000000	OUTDOOR & MORE	206.73		12/13/18
						HIGH OCTANE FUEL-STAT.#1			
889		06/19 AP		10/30/18	0129711	US BANK	41.46		12/06/18
						O DONNELL ACE HARDWARE EXT.CORD;GRND.CONNECTOR;			
						ACCOUNT TOTAL	308.29	.00	308.29
101-4511-414.89-40						MISCELLANEOUS SERVICES / UNIFORM ALLOWANCE			
930		06/19 AP		12/03/18	0000000	COVER-ALL EMBROIDERY, INC.	467.00		12/13/18
						EMBROIDER CAPS/VISORS			
930		06/19 AP		11/29/18	0000000	FELD EQUIPMENT CO., ED M.	535.00		12/13/18
						BOOTS-BUHROW/SCHMIDT 2 YEARS			
889		06/19 AP		11/08/18	0129711	US BANK	450.00		12/06/18
						J HARLEN CO INC 20-BEANIES			
930		06/19 AP		10/24/18	0000000	WERTJES UNIFORMS	239.99		12/13/18
						UNIF.ALLOW.-BOOTS;PANTS TROY PURDY			
						ACCOUNT TOTAL	1,691.99	.00	1,691.99
101-4511-414.93-01						EQUIPMENT / EQUIPMENT			
930		06/19 AP		11/21/18	0000000	SANDRY FIRE SUPPLY, L.L.C.	1,588.15		12/13/18
						TURNOUT GEAR-GLOVES			
889		06/19 AP		11/05/18	0129711	US BANK	115.06		12/06/18
						ZORO TOOLS INC RED REFL.TAPE-KNOX BOX			
889		06/19 AP		11/05/18	0129711	US BANK	119.98		12/06/18
						LA POLICE GEAR INC FLASHLIGHTS-561 & 561			
889		06/19 AP		11/02/18	0129711	US BANK	215.00		12/06/18
						THE KNOX COMPANY DECALS-KNOX BOX PROGRAM			
						ACCOUNT TOTAL	2,038.19	.00	2,038.19
101-5521-415.71-01						OFFICE SUPPLIES / OFFICE SUPPLIES			
931		06/19 AP		12/11/18	0000000	PARKADE PRINTER, INC.	17.50		12/13/18
						#9 WINDOW ENVELOPES			
929		06/19 AP		11/29/18	0000000	STOREY KENWORTHY	321.82		12/13/18

GROUP NBR	PO NBR	ACCTG PER.	CD	DATE	---TRANSACTION--- NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE	POST DT
FUND 101 GENERAL FUND										
101-5521-415.71-01						OFFICE SUPPLIES / OFFICE SUPPLIES				
						PENS;BINDER;DESK CALENDAR				
						POST-IT NOTES				
900		06/19 AP		11/27/18	0000000	STOREY KENWORTHY	6.85			12/13/18
						COPY PAPER				
900		06/19 AP		11/16/18	0000000	STOREY KENWORTHY	2.09			12/13/18
						COPY PAPER 8.5 X 14				
900		06/19 AP		11/09/18	0000000	STOREY KENWORTHY	6.85			12/13/18
						COPY PAPER				
929		06/19 AP		11/07/18	0000000	STOREY KENWORTHY		86.10		12/13/18
						CREDIT-STORAGE BOXES				
929		06/19 AP		11/02/18	0000000	STOREY KENWORTHY	145.44			12/13/18
						BINDERS;CORRECTION TAPE				
						ACCOUNT TOTAL	500.55	86.10		414.45
101-5521-415.72-01						OPERATING SUPPLIES / OPERATING SUPPLIES				
929		06/19 AP		12/05/18	0000000	DES MOINES STAMP MFG. CO.	32.40			12/13/18
						NOTARY STAMP-CHRIS COPP				
929		06/19 AP		12/04/18	0000000	CINTAS FIRST AID & SAFETY	91.00			12/13/18
						RESTOCK PD FIRST AID KIT				
929		06/19 AP		12/03/18	0000000	L & M TRANSMISSION	35.00			12/13/18
						RELOCATION-FORD FUSION				
						FARMERS STATE BANK				
929		06/19 AP		12/01/18	0000000	THOMSON REUTERS - WEST	269.25			12/13/18
						INVESTIGATIVE SOFTWARE				
						11/01/18-11/30/18				
929		06/19 AP		12/01/18	0000000	MIRACLE CAR WASH, INC.	156.30			12/13/18
						14 PD CAR WASHES				
929		06/19 AP		12/01/18	0000000	PRIMARY SYSTEMS	192.00			12/13/18
						ALARM MONITORING FEES-'19				
						1500 BLUFF STREET				
929		06/19 AP		11/30/18	0000000	ON-SITE INFORMATION DESTRUCTI	54.72			12/13/18
						TICKET #285138				
929		06/19 AP		11/27/18	0000000	ABC EMBROIDERY, INC.	21.50			12/13/18
						NAME TAGS-CLINT FERGUSON				
889		06/19 AP		11/08/18	0129711	US BANK	75.00			12/06/18
						NU CTR PUBLIC SAFETY 1				
889		06/19 AP		11/05/18	0129711	US BANK	199.96			12/06/18
						FILMTOOLS				
						DVD CASES-800				
889		06/19 AP		10/29/18	0129711	US BANK	202.70			12/06/18
						DASH MEDICAL GLOVES				
						3 CS. BLACK MAXX GLOVES				
						ACCOUNT TOTAL	1,329.83	.00		1,329.83
101-5521-415.72-08						OPERATING SUPPLIES / CAMERA & PHOTO EQUIPMENT				
889		06/19 AP		11/01/18	0129711	US BANK	276.55			12/06/18
						AMZN MKTP US*M893F5P40				
						REPL.OF DAMAGED LAB EQUIP				
889		06/19 AP		10/30/18	0129711	US BANK	104.58			12/06/18
						SIRCHIE FINGER PRINT LABO				
						FINGERPRINT STATION;EVID.				
						ACCOUNT TOTAL	381.13	.00		381.13

GROUP NBR	PO NBR	ACCTG PER.	CD	DATE	-----TRANSACTION----- NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE	POST DT
FUND 101 GENERAL FUND										
101-5521-415.72-19						OPERATING SUPPLIES / PRINTING				
929		06/19 AP		11/30/18	0000000	PARKADE PRINTER, INC.	146.72			12/13/18
						CFPD OVERTIME FORMS				
889		06/19 AP		10/24/18	0129711	US BANK	72.45			12/06/18
						PLANET LABEL				
						GREEN STICKER PAPER				
						ACCOUNT TOTAL	219.17	.00	219.17	
101-5521-415.72-29 OPERATING SUPPLIES / MIRT EQUIPMENT										
929		06/19 AP		11/26/18	0000000	O'DONNELL ACE HARDWARE	9.99			12/13/18
						PADLOCK FOR MIRT VAN				
						ACCOUNT TOTAL	9.99	.00	9.99	
101-5521-415.72-99 OPERATING SUPPLIES / POSTAGE										
889		06/19 AP		11/14/18	0129711	US BANK	12.94			12/06/18
						USPS PO 1814940913				
						RETURN EVIDENCE-VICTIMS				
889		06/19 AP		11/14/18	0129711	US BANK	19.65			12/06/18
						USPS PO 1814940913				
						RETURN EVIDENCE-VICTIMS				
889		06/19 AP		11/14/18	0129711	US BANK	48.28			12/06/18
						THE UPS STORE #5617				
						SHIP EXAMS-TESTING AGENCY				
						ACCOUNT TOTAL	80.87	.00	80.87	
101-5521-415.81-01 PROFESSIONAL SERVICES / PROFESSIONAL SERVICES										
889		06/19 AP		11/19/18	0129711	US BANK	12.50			12/06/18
						FACEBK *X7BDAJJHV2				
						PUBLIC SAFETY AD				
889		06/19 AP		11/19/18	0129711	US BANK	12.50			12/06/18
						FACEBK *B6K4ZH6HV2				
						PUBLIC SAFETY AD				
889		06/19 AP		11/19/18	0129711	US BANK	12.50			12/06/18
						FACEBK *56CGGHWHV2				
						PUBLIC SAFETY AD				
889		06/19 AP		11/19/18	0129711	US BANK	17.50			12/06/18
						FACEBK *NWH6JJWGV2				
						PUBLIC SAFETY AD				
889		06/19 AP		11/19/18	0129711	US BANK	25.00			12/06/18
						FACEBK *4RAEZH6HV2				
						PUBLIC SAFETY AD				
						ACCOUNT TOTAL	80.00	.00	80.00	
101-5521-415.81-58 PROFESSIONAL SERVICES / WITNESS FEES/SUBPOENAS										
931		06/19 AP		12/03/18	0000000	SWISHER & COHRT, P.L.C.	140.90			12/13/18
						LGL:TRAFFIC CASES				
						09/07/18-11/30/18				
						ACCOUNT TOTAL	140.90	.00	140.90	
101-5521-415.83-05 TRANSPORTATION&EDUCATION / TRAVEL (FOOD/MILEAGE/LOD)										

GROUP NBR	PO NBR	ACCTG PER.	CD	DATE	TRANSACTION NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE	POST DT
FUND 101 GENERAL FUND										
101-5521-415.83-05						TRANSPORTATION&EDUCATION / TRAVEL (FOOD/MILEAGE/LOD)				continued
889		06/19 AP		11/13/18	0129711	US BANK	452.13			12/06/18
						DOUBLETREE OAKBROOK				
889		06/19 AP		11/12/18	0129711	US BANK	176.96			12/06/18
						SCI DES MOINES				
889		06/19 AP		11/12/18	0129711	US BANK	144.91			12/06/18
						SUBWAY 00356345				
889		06/19 AP		11/12/18	0129711	US BANK	108.61			12/06/18
						THE OTHER PLACE				
889		06/19 AP		11/07/18	0129711	US BANK	186.62			12/06/18
						SUBWAY 00356345				
889		06/19 AP		11/05/18	0129711	US BANK	6.00			12/06/18
						BP#9328246THE MILL BP				
889		06/19 AP		11/05/18	0129711	US BANK	10.46			12/06/18
						CASEYS GEN STORE 3224				
889		06/19 AP		11/02/18	0129711	US BANK	16.44			12/06/18
						ARBYS 7365				
889		06/19 AP		11/01/18	0129711	US BANK	319.56			12/06/18
						THE OTHER PLACE				
889		06/19 AP		10/29/18	0129711	US BANK	610.40			12/06/18
						HOMWOOD SUITES AURORA NA				
889		06/19 AP		10/29/18	0129711	US BANK	18.52			12/06/18
						BP#9734104EOLA BP				
889		06/19 AP		10/29/18	0129711	US BANK	7.47			12/06/18
						BURGER KING #25397				
889		06/19 AP		10/29/18	0129711	US BANK	23.67			12/06/18
						CHILI S GRILL & BAR 417				
889		06/19 AP		10/25/18	0129711	US BANK	39.65			12/06/18
						BIAGGIS NPV				
889		06/19 AP		10/24/18	0129711	US BANK	30.75			12/06/18
						EXXONMOBIL 97476196				
889		06/19 AP		10/24/18	0129711	US BANK	28.83			12/06/18
						TGI FRIDAY'S 2674				
889		06/19 AP		10/24/18	0129711	US BANK	19.83			12/06/18
						JERSEY MIKES 27005				
						ACCOUNT TOTAL	2,200.81	.00	2,200.81	
101-5521-415.83-06 TRANSPORTATION&EDUCATION / EDUCATION										
889		06/19 AP		11/06/18	0129711	US BANK	8.99			12/06/18
						PARTY CITY 5191				
889		06/19 AP		11/05/18	0129711	US BANK	20.99			12/06/18
						TARGET 00025262				
						ACCOUNT TOTAL	29.98	.00	29.98	
101-5521-415.86-06 REPAIR & MAINTENANCE / WEAPONS MAINTENANCE										
929		06/19 AP		11/27/18	0000000	BROWNELLS, INC.	374.96			12/13/18

GROUP NBR	PO NBR	ACCTG PER.	CD	DATE	TRANSACTION NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE	POST DT
FUND 101 GENERAL FUND										
101-5521-415.86-06 REPAIR & MAINTENANCE / WEAPONS MAINTENANCE						continued				
	929			06/19	AP 11/26/18 0000000	SUPPLIES-FIREARM REPAIR & MAINTENANCE O'DONNELL ACE HARDWARE	32.07			12/13/18
						BATTERIES-WEAPONS OPTICS				
						ACCOUNT TOTAL	407.03	.00	407.03	
101-5521-415.89-40 MISCELLANEOUS SERVICES / UNIFORM ALLOWANCE										
	889			06/19	AP 11/15/18 0129711	US BANK	29.25			12/06/18
						NU CPS PRODUCT SALES 2 UNIFORM PINS-NU GRAD.				
						ACCOUNT TOTAL	29.25	.00	29.25	
101-5521-425.81-20 PROFESSIONAL SERVICES / HUMANE SOCIETY										
	929			06/19	AP 12/07/18 0000000	CEDAR BEND HUMANE SOCIETY	3,171.75			12/13/18
						NOV'18 ANIMAL SURRENDER				
						ACCOUNT TOTAL	3,171.75	.00	3,171.75	
101-7713-433.72-01 OPERATING SUPPLIES / OPERATING SUPPLIES										
	939			06/19	AP 12/04/18 0000000	GREENS KEEPER LAWN SERVICE LL	3,156.50			12/13/18
						CHEMICAL APPLICATION				
	883			06/19	AP 11/28/18 0000000	STOKES WELDING	90.64			12/13/18
						STRING TRIMMER PARTS				
	889			06/19	AP 11/02/18 0129711	US BANK	8.98			12/06/18
						TRACTOR-SUPPLY-CO #0146 MOLE KILLER				
						ACCOUNT TOTAL	3,256.12	.00	3,256.12	
101-7716-446.72-01 OPERATING SUPPLIES / OPERATING SUPPLIES										
	907			06/19	AP 11/30/18 0000000	MARTIN BROS.DISTRIBUTING	147.46			12/13/18
						LINERS,TOWELS,TISSUE				
	PROJECT#:				062501					
	907			06/19	AP 11/30/18 0000000	MARTIN BROS.DISTRIBUTING	162.02			12/13/18
						LINERS,TOWELS,TISSUE				
	PROJECT#:				062503					
	907			06/19	AP 11/30/18 0000000	MARTIN BROS.DISTRIBUTING	39.91			12/13/18
						LINERS,TOWELS,TISSUE				
	PROJECT#:				062505					
	907			06/19	AP 11/30/18 0000000	MARTIN BROS.DISTRIBUTING	151.36			12/13/18
						LINERS,TOWELS,TISSUE				
	PROJECT#:				062507					
	907			06/19	AP 11/30/18 0000000	MARTIN BROS.DISTRIBUTING	74.08			12/13/18
						LINERS,TOWELS,TISSUE				
	PROJECT#:				062510					
	907			06/19	AP 11/28/18 0000000	ECHO GROUP, INC.	116.20			12/13/18

GROUP NBR	PO NBR	ACCTG PER.	CD	DATE	---TRANSACTION--- NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE POST DT
FUND 101 GENERAL FUND									
101-7716-446.72-01 OPERATING SUPPLIES / OPERATING SUPPLIES						continued			
BATTERIES, BULBS									
PROJECT#:		062507							
907		06/19 AP		11/28/18	0000000	JOHNSTONE SUPPLY OF WATERLOO FILTERS	50.28		12/13/18
PROJECT#:		062516							
ACCOUNT TOTAL							741.31	.00	741.31
101-7716-446.73-05 OTHER SUPPLIES / OPERATING EQUIPMENT									
889		06/19 AP		11/13/18	0129711	US BANK DRAIN AUGER	36.09		12/06/18
PROJECT#:		062506							
ACCOUNT TOTAL							36.09	.00	36.09
101-7716-446.73-06 OTHER SUPPLIES / BUILDING REPAIR									
939		06/19 AP		12/04/18	0000000	JOHNSTONE SUPPLY OF WATERLOO WATER VALVE ACTUATOR	336.15		12/13/18
PROJECT#:		062507							
939		06/19 AP		12/04/18	0000000	O'DONNELL ACE HARDWARE WATER HEATER REPAIR	12.38		12/13/18
PROJECT#:		062516							
907		06/19 AP		11/30/18	0000000	O'DONNELL ACE HARDWARE ELBOWS,PVC CEMENT	27.36		12/13/18
PROJECT#:		062507							
907		06/19 AP		11/29/18	0000000	JOHNSTONE SUPPLY OF WATERLOO FLASHLIGHT	38.31		12/13/18
PROJECT#:		062507							
907		06/19 AP		11/27/18	0000000	ECHO GROUP, INC. LIGHTING REPAIRS	220.32		12/13/18
PROJECT#:		062506							
889		06/19 AP		11/16/18	0129711	US BANK HANKS SPECIALTIES INC GROUT,SPONGE,FLOATS	171.70		12/06/18
PROJECT#:		062507							
ACCOUNT TOTAL							806.22	.00	806.22
101-7716-446.81-08 PROFESSIONAL SERVICES / PEST CONTROL									
907		06/19 AP		11/01/18	0000000	PLUNKETT'S PEST CONTROL, INC PEST CONTROL SERVICE	42.50		12/13/18
PROJECT#:		062506							
ACCOUNT TOTAL							42.50	.00	42.50
101-7716-446.86-02 REPAIR & MAINTENANCE / BUILDINGS & GROUNDS									

GROUP NBR	PO NBR	ACCTG PER.	CD	DATE	---TRANSACTION--- NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE	POST DT	
FUND 101 GENERAL FUND											
101-7716-446.86-02						REPAIR & MAINTENANCE / BUILDINGS & GROUNDS					
907		06/19 AP		12/04/18	0000000	ARAMARK	119.00			12/13/18	
		MAT SERVICE -PUBLIC WORKS									
		PROJECT#: 062506									
907		06/19 AP		12/03/18	0000000	T&C CLEANING, INC.	1,600.00			12/13/18	
		JANITORIAL SERV PUB WORKS									
		PROJECT#: 062506									
907		06/19 AP		12/03/18	0000000	T&C CLEANING, INC.	600.00			12/13/18	
		JANITORIAL SERV V & T CTR									
		PROJECT#: 062509									
907		06/19 AP		12/03/18	0000000	T&C CLEANING, INC.	4,500.00			12/13/18	
		JANITORIAL SERV CITY HALL									
		PROJECT#: 062501									
907		06/19 AP		12/03/18	0000000	T&C CLEANING, INC.	3,142.16			12/13/18	
		JANITORIAL SERV LIBRARY									
		PROJECT#: 062503									
907		06/19 AP		12/03/18	0000000	T&C CLEANING, INC.	742.76			12/13/18	
		JANITORIAL SERV COMM.CTR									
		PROJECT#: 062508									
907		06/19 AP		12/03/18	0000000	T&C CLEANING, INC.	1,200.00			12/13/18	
		JANITORIAL SERV HEARST									
		PROJECT#: 062505									
907		06/19 AP		12/03/18	0000000	T&C CLEANING, INC.	6,800.00			12/13/18	
		JANITORIAL SERV REC CTR									
		PROJECT#: 062507									
907		06/19 AP		12/03/18	0000000	T&C CLEANING, INC.	125.00			12/13/18	
		JANITORIAL SERV REC CTR									
		PROJECT#: 062507									
907		06/19 AP		12/03/18	0000000	T&C CLEANING, INC.	90.00			12/13/18	
		CARPET CLEANING LIBRARY									
		PROJECT#: 062503									
907		06/19 AP		11/28/18	0000000	ARAMARK	62.50			12/13/18	
		MAT SERVICE -CITY HALL									
		PROJECT#: 062501									
		ACCOUNT TOTAL						18,981.42	.00	18,981.42	
101-7723-423.86-01						REPAIR & MAINTENANCE / REPAIR & MAINTENANCE					
898		05/19 AP		10/25/18	0129507	CAHOY PUMP SERVICE INC.		26,780.00		12/06/18	
		ACCOUNT CORRECTION									
		IRRIGATION WELL-WALTER'S									
898		05/19 AP		09/28/18	0129208	CAHOY PUMP SERVICE INC.		5,750.00		12/06/18	
		ACCOUNT CORRECTION									
		WELL MAINTENANCE-GOLF									
898		05/19 AP		07/05/18	0128513	CAHOY PUMP SERVICE INC.		1,150.00		12/06/18	
		ACCOUNT CORRECTION									
		PUMP TEST-WALTER'S RIDGE									
		ACCOUNT TOTAL						.00	33,680.00	33,680.00-	
101-7733-423.72-01 OPERATING SUPPLIES / OPERATING SUPPLIES											

GROUP NBR	PO NBR	ACCTG PER.	CD	DATE	TRANSACTION NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE POST DT
FUND 101 GENERAL FUND									
101-7733-423.72-01						OPERATING SUPPLIES / OPERATING SUPPLIES			continued
939		06/19 AP		12/07/18	0000000	BLACK HAWK RENTAL	1,038.40		12/13/18
						SINGLE STAGE SNOWBLOWERS			
939		06/19 AP		12/06/18	0000000	RITLAND & KUIPER LANDSCAPE AR	3,500.00		12/13/18
						SERVICES BY ARCHITECT			
907		06/19 AP		12/04/18	0000000	BUILDERS SELECT LLC	79.95		12/13/18
						DRYWALL SCREWS			
900		06/19 AP		12/04/18	0000000	THOMPSON SHOES	160.00		12/13/18
						SAFETY SHOES-G MILLER			
900		06/19 AP		12/04/18	0000000	THOMPSON SHOES	153.00		12/13/18
						SAFETY SHOES-B MORRIS			
939		06/19 AP		12/04/18	0000000	GREENS KEEPER LAWN SERVICE LL	4,572.60		12/13/18
						CHEMICAL APPLICATION			
939		06/19 AP		12/01/18	0000000	LOCATION TECHNOLOGIES, INC.	288.00		12/13/18
						AVL 10 UNITS			
883		06/19 AP		11/30/18	0000000	C & C WELDING & SANDBLASTING	175.00		12/13/18
						BIO CELL SIGN BASE			
883		06/19 AP		11/30/18	0000000	SERVICEWEAR APPAREL, INC.	61.05		12/13/18
						UNIFORMS J MURRAY			
883		06/19 AP		11/29/18	0000000	O'DONNELL ACE HARDWARE	37.53		12/13/18
						PVC ELBOW,HOOK & EYE,			
939		06/19 AP		11/06/18	0000000	DALTON PLBG,HEATING & COOLING	1,675.00		12/13/18
						FURNACE-PFEIFFER PARK			
						ACCOUNT TOTAL	11,740.53	.00	11,740.53
101-7733-423.85-01 UTILITIES / UTILITIES									
898		05/19 AP		10/15/18	0129350	CEDAR FALLS UTILITIES	27.19		12/06/18
						9/6/18-10/5/18 LIGHTING			
898		05/19 AP		09/15/18	0129092	CEDAR FALLS UTILITIES	27.19		12/06/18
						8/2/18-9/5/18 LIGHTING			
						ACCOUNT TOTAL	54.38	.00	54.38
101-7733-423.86-01 REPAIR & MAINTENANCE / REPAIR & MAINTENANCE									
939		06/19 AP		11/27/18	0000000	OUTDOOR & MORE	153.50		12/13/18
						CHAIN SHARPENING			
939		06/19 AP		11/23/18	0000000	COOLEY PUMPING, LLC	105.00		12/13/18
						DROP TOILET-GREENHILL PRK			
939		06/19 AP		11/23/18	0000000	COOLEY PUMPING, LLC	105.00		12/13/18
						DROP TOILET-ELDORADO PARK			
						ACCOUNT TOTAL	363.50	.00	363.50
101-7753-423.71-01 OFFICE SUPPLIES / OFFICE SUPPLIES									
889		06/19 AP		11/19/18	0129711	US BANK	48.60		12/06/18
						SANDEE'S			
						STAMP PADS			

GROUP NBR	PO NBR	ACCTG PER.	CD	DATE	TRANSACTION NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE	POST DT
FUND 101 GENERAL FUND										
101-7753-423.71-01 OFFICE SUPPLIES / OFFICE SUPPLIES						continued				
935		06/19 AP		11/14/18	0000000	STOREY KENWORTHY MARKERS, LEAD, PLANNER	24.17			12/13/18
ACCOUNT TOTAL							72.77	.00	72.77	
101-7753-423.72-30 OPERATING SUPPLIES / DROP IN EQUIP & SUPPLIES										
935		06/19 AP		11/28/18	0000000	ARAMARK	46.00			12/13/18
889		06/19 AP		11/20/18	0129711	MATS US BANK	24.68			12/06/18
889		06/19 AP		11/15/18	0129711	O DONNELL ACE HARDWARE SNOWBRUSHES	350.00			12/06/18
889		06/19 AP		11/05/18	0129711	JESUP GYM 2 1500# BARS	9.95			12/06/18
889		06/19 AP		11/01/18	0129711	O DONNELL ACE HARDWARE INFLATING NEEDLES	20.07			12/06/18
						O DONNELL ACE HARDWARE BATTERIES-DAYLIGHT SAVING				
ACCOUNT TOTAL							450.70	.00	450.70	
101-7753-423.72-31 OPERATING SUPPLIES / YOUTH SPORTS/ACTIVE EQUIP										
889		06/19 AP		11/07/18	0129711	US BANK	32.00			12/06/18
						SCHEELS CEDAR FALLS BASKETBALL				
ACCOUNT TOTAL							32.00	.00	32.00	
101-7753-423.72-32 OPERATING SUPPLIES / ADULT SPORTS SUPPLIES										
935		06/19 AP		11/14/18	0000000	XPRESSIONS	63.20			12/13/18
						DODGEBALL AWARD TSHIRTS				
ACCOUNT TOTAL							63.20	.00	63.20	
101-7753-423.72-38 OPERATING SUPPLIES / STAFF SHIRTS										
935		06/19 AP		12/06/18	0000000	XPRESSIONS	277.50			12/13/18
						FRONT DESK STAFF TSHIRTS				
ACCOUNT TOTAL							277.50	.00	277.50	
101-7753-423.72-42 OPERATING SUPPLIES / SWIM LESSON SUPPLIES										
935		06/19 AP		11/12/18	0000000	THE LIFEGUARD STORE, INC.	756.00			12/13/18
						RED RESCUE TUBES				
ACCOUNT TOTAL							756.00	.00	756.00	

GROUP NBR	PO NBR	ACCTG PER.	CD	DATE	---TRANSACTION--- NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE	POST DT
FUND 101 GENERAL FUND										
101-7753-423.72-44					OPERATING SUPPLIES /	EQUIPMENT REPAIRS				
889		06/19 AP		11/16/18	0129711	US BANK		50.00	12/06/18	
						REFUND-CORE DEPOSIT				
889		06/19 AP		11/15/18	0129711	US BANK	29.19		12/06/18	
						UPS*1ZDT48F80306963222				
889		06/19 AP		11/06/18	0129711	US BANK	488.57		12/06/18	
						NOVO/HD HANDLEBAR				
						ACCOUNT TOTAL	517.76	50.00	467.76	
101-7753-423.72-47 OPERATING SUPPLIES / ADULT EXERCISE EQUIP										
889		06/19 AP		11/02/18	0129711	US BANK	156.48		12/06/18	
						INNOVATIVE XERCISE SOLUTI				
						ACTIVMOTION GLIMPSE BARS				
						ACCOUNT TOTAL	156.48	0.00	156.48	
101-7753-423.72-50 OPERATING SUPPLIES / SPECIAL EVENT SUPPLIES										
889		06/19 AP		11/12/18	0129711	US BANK	55.97		12/06/18	
						HY VEE 1052				
						BIRTHDAY PARTY SUPPLIES				
889		06/19 AP		11/12/18	0129711	US BANK	55.96		12/06/18	
						HY VEE 1052				
						BIRTHDAY PARTY SUPPLIES				
889		06/19 AP		11/12/18	0129711	US BANK	8.60		12/06/18	
						HY VEE 1052				
						BIRTHDAY PARTY SUPPLIES				
889		06/19 AP		11/12/18	0129711	US BANK	79.98		12/06/18	
						HY VEE 1052				
						BIRTHDAY PARTY SUPPLIES				
889		06/19 AP		11/12/18	0129711	US BANK	79.98		12/06/18	
						HY VEE 1052				
						BIRTHDAY PARTY SUPPLIES				
889		06/19 AP		11/12/18	0129711	US BANK	35.97		12/06/18	
						HY VEE 1052				
						BIRTHDAY PARTY SUPPLIES				
889		06/19 AP		11/12/18	0129711	US BANK	124.07		12/06/18	
						HY VEE 1052				
						BIRTHDAY PARTY SUPPLIES				
889		06/19 AP		11/07/18	0129711	US BANK	62.13		12/06/18	
						WM SUPERCENTER #753				
						BIRTHDAY PARTY SUPPLIES				
889		06/19 AP		11/05/18	0129711	US BANK	6.00		12/06/18	
						DOLLAR TREE				
						BIRTHDAY PARTY SUPPLIES				
889		06/19 AP		11/05/18	0129711	US BANK		102.88	12/06/18	
						HY VEE 1052				
						RETURN-BIRTHDAY PARTY				
889		06/19 AP		11/05/18	0129711	US BANK	102.88		12/06/18	
						HY VEE 1052				
						BIRTHDAY PARTY SUPPLIES				
889		06/19 AP		11/05/18	0129711	US BANK	98.96		12/06/18	
						HY VEE 1052				
						BIRTHDAY PARTY SUPPLIES				
						ACCOUNT TOTAL	710.50	102.88	607.62	
101-7753-423.86-30 REPAIR & MAINTENANCE / MAINTENANCE & UPKEEP										
935		06/19 AP		12/01/18	0000000	IOWA WATER MANAGEMENT CORP. (58.00		12/13/18	
						WATER MANAGEMENT SYSTEM				

GROUP NBR	PO NBR	ACCTG PER.	CD	DATE	-----TRANSACTION----- NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE POST DT
FUND 101 GENERAL FUND									
101-7753-423.86-30						REPAIR & MAINTENANCE / MAINTENANCE & UPKEEP			continued
935		06/19 AP		11/30/18	0000000	PLUMB TECH INC.	1,848.67		12/13/18
						VALVE INSTALLATION			
935		06/19 AP		11/07/18	0000000	AIRE SERV.OF THE CEDAR VALLEY DRAFT MOTOR REPLACEMENT	1,264.51		12/13/18
						SEMI ANNUAL MAINTENANCE			
						ACCOUNT TOTAL	3,171.18	.00	3,171.18
101-7753-423.86-31						REPAIR & MAINTENANCE / SWIM POOL REPAIR & MAINT.			
935		06/19 AP		11/20/18	0000000	VAN METER, INC.	2,032.39		12/13/18
						AQUATIC CENTER FANS			
889		06/19 AP		11/07/18	0129711	US BANK	46.00		12/06/18
						AMERICAN LOCKER SECURITY			
889		06/19 AP		11/02/18	0129711	US BANK	64.25		12/06/18
						FOSTER S INC WATERLOO			
889		06/19 AP		11/01/18	0129711	US BANK	513.00		12/06/18
						AMERICAN LOCKER SECURITY			
						LOCK REPAIR			
						ACCOUNT TOTAL	2,655.64	.00	2,655.64
101-7753-423.92-01						STRUCTURE IMPROV & BLDGS / STRUCTURE IMPROV & BLDGS			
935		06/19 AP		11/27/18	0000000	SHIMP CONSTRUCTION, LLC	4,650.00		12/13/18
						REWORK DUGOUTS-PFEIFFER			
						PARK			
						ACCOUNT TOTAL	4,650.00	.00	4,650.00
101-7780-423.71-01						OFFICE SUPPLIES / OFFICE SUPPLIES			
889		06/19 AP		11/02/18	0129711	US BANK		2.86	12/06/18
						AMZN MKTP US			
						RETURN CREDIT-PROTECTION			
						ACCOUNT TOTAL	.00	2.86	2.86-
101-7780-423.72-70						OPERATING SUPPLIES / CLASSROOM SUPPLIES			
889		06/19 AP		11/16/18	0129711	US BANK	20.40		12/06/18
						WM SUPERCENTER #753			
889		06/19 AP		11/09/18	0129711	US BANK	74.49		12/06/18
						GLUE, GLITTER. PLATES &			
889		06/19 AP		10/26/18	0129711	US BANK	116.33		12/06/18
						WAL-MART #0753			
889		06/19 AP		10/26/18	0129711	US BANK	29.02		12/06/18
						HY VEE 1052			
889		06/19 AP		10/24/18	0129711	US BANK	19.25		12/06/18
						WAL-MART #0753			
						CUPS, CREPE PAPER, LEMONADE			
						ACCOUNT TOTAL	259.49	.00	259.49

GROUP NBR	PO NBR	ACCTG PER.	CD	DATE	-----TRANSACTION----- NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE	POST DT
FUND 101 GENERAL FUND										
101-7780-423.72-71						OPERATING SUPPLIES / GALLERY SUPPLIES				
944		06/19 AP		11/29/18	0000000	SIGNS & DESIGNS, INC. & MARGUERITE WILDENHAIN	350.00			12/13/18
						EXHIBIT VINYL-RECENT ACQ				
						ACCOUNT TOTAL	350.00	.00	350.00	
101-7780-423.72-72						OPERATING SUPPLIES / PRODUCTS FOR RESALE				
889		06/19 AP		11/14/18	0129711	US BANK WILDENHAIN POSTCARD SETS	117.60			12/06/18
						MODERN POSTCARD				
						ACCOUNT TOTAL	117.60	.00	117.60	
101-7780-423.72-74						OPERATING SUPPLIES / SERVICE/VOLUNTEER SUPP:				
889		06/19 AP		11/12/18	0129711	US BANK	11.99			12/06/18
						AMZN MKTP US*M84NS76P0				
889		06/19 AP		11/08/18	0129711	US BANK	4.56			12/06/18
						HY VEE 1052				
						ACCOUNT TOTAL	16.55	.00	16.55	
101-7780-423.81-01						PROFESSIONAL SERVICES / PROFESSIONAL SERVICES				
889		06/19 AP		11/09/18	0129711	US BANK	386.82			12/06/18
						PANERA BREAD #203210				
						BEHRENS TALK BOX LUNCHES				
						ACCOUNT TOTAL	386.82	.00	386.82	
101-7780-423.81-12						PROFESSIONAL SERVICES / COMPUTER SERVICES				
889		06/19 AP		11/07/18	0129711	US BANK	69.49			12/06/18
						AMAZON.COM*M86LD9B42				
						ADAPTERS FOR MAE LATTA				
						ACCOUNT TOTAL	69.49	.00	69.49	
101-7780-423.81-61						PROFESSIONAL SERVICES / PROMOTIONS				
889		06/19 AP		11/05/18	0129711	US BANK	55.00			12/06/18
						FACEBK 4YUCCJ6ZN2				
						FACEBOOK ADS FOR DAZZLE				
						ACCOUNT TOTAL	55.00	.00	55.00	
101-7780-423.92-01						STRUCTURE IMPROV & BLDGS / STRUCTURE IMPROV & BLDGS				
898		05/19 AP		09/11/18	0129323	AECOM TECHNICAL SERVICES, INC		505.59		12/06/18
						ACCOUNT CORRECTION				
						DT LEVEE-ART FOOTING				
						ACCOUNT TOTAL	.00	505.59	505.59-	

GROUP NBR	PO NBR	ACCTG PER.	CD	DATE	TRANSACTION NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE	POST DT
FUND 101 GENERAL FUND										
FUND TOTAL							124,511.53	34,522.36	89,989.17	
FUND 203 TAX INCREMENT FINANCING										
FUND 206 STREET CONSTRUCTION FUND										
206-7737-436.72-16 OPERATING SUPPLIES / TOOLS										
939		06/19 AP		12/03/18	0000000	MENARDS-CEDAR FALLS CUT OFF BLADE, STEP LADDER	74.66			12/13/18
ACCOUNT TOTAL							74.66	.00	74.66	
206-7737-436.72-17 OPERATING SUPPLIES / UNIFORMS										
883		06/19 AP		11/30/18	0000000	SERVICEWEAR APPAREL, INC. UNIFORMS B, HEATH	58.95			12/13/18
ACCOUNT TOTAL							58.95	.00	58.95	
206-7737-436.72-57 OPERATING SUPPLIES / ICE CONTROL										
907		06/19 AP		11/27/18	0000000	MENARDS-WATERLOO	383.52			12/13/18
883		06/19 AP		11/20/18	0000000	SNOW FENCE-WOOD LATH BUILDERS SELECT LLC	96.30			12/13/18
883		06/19 AP		11/20/18	0000000	WOOD LATH - T POSTS MENARDS-CEDAR FALLS	272.62			12/13/18
883		06/19 AP		11/12/18	0000000	SNOW FENCE STETSON BUILDING PRODUCTS LLC	59.19			12/13/18
ACCOUNT TOTAL							811.63	.00	811.63	
206-7737-436.72-58 OPERATING SUPPLIES / DUST CONTROL										
883		06/19 AP		11/20/18	0000000	MENARDS-CEDAR FALLS T POST AND SNOWFENCE	669.96			12/13/18
ACCOUNT TOTAL							669.96	.00	669.96	
206-7737-436.72-60 OPERATING SUPPLIES / SAFETY SUPPLIES										
900		06/19 AP		12/04/18	0000000	THOMPSON SHOES SAFETY SHOES-K GAEDE P.O. 56299	160.00			12/13/18
ACCOUNT TOTAL							160.00	.00	160.00	
206-7737-436.72-61 OPERATING SUPPLIES / WEATHER SCAN PROGRAM										
883		06/19 AP		11/21/18	0000000	DTN, LLC WEATHER SUBSCRIPTION	1,452.00			12/13/18
ACCOUNT TOTAL							1,452.00	.00	1,452.00	

GROUP NBR	PO NBR	ACCTG PER.	CD	DATE	TRANSACTION NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE	POST DT
FUND 206 STREET CONSTRUCTION FUND										
206-7737-436.73-05 OTHER SUPPLIES / OPERATING EQUIPMENT										
907		06/19 AP		12/04/18	0000000	O'DONNELL ACE HARDWARE	4.68			12/13/18
						PVC ADAPTER, BUSHING				
939		06/19 AP		12/03/18	0000000	TRACTOR SUPPLY CO.	9.99			12/13/18
						GATE WHEEL				
ACCOUNT TOTAL							14.67	.00	14.67	
206-7737-436.73-06 OTHER SUPPLIES / BUILDING REPAIR										
907		06/19 AP		11/29/18	0000000	MENARDS-CEDAR FALLS	4.98			12/13/18
						ADHESIVE				
907		06/19 AP		10/09/18	0000000	FASTENAL COMPANY	2.56			12/13/18
						3/4 BOLT				
ACCOUNT TOTAL							7.54	.00	7.54	
206-7737-436.73-32 OTHER SUPPLIES / STREETS										
939		06/19 AP		11/30/18	0000000	ASPRO, INC.	2,085.72			12/13/18
						CSS-1H TACK OIL				
883		06/19 AP		11/26/18	0000000	O'DONNELL ACE HARDWARE	20.99			12/13/18
						7" SCRAPER				
883		06/19 AP		11/24/18	0000000	ASPRO, INC.	3,295.95			12/13/18
						CSS-1H TACK OIL				
883		06/19 AP		11/20/18	0000000	MENARDS-CEDAR FALLS	4.13			12/13/18
						2" MALE COUPLER				
883		06/19 AP		11/20/18	0000000	TRACTOR SUPPLY CO.	15.99			12/13/18
						1 1/2" QUICK COUPLER				
883		06/19 AP		11/17/18	0000000	ASPRO, INC.	167.28			12/13/18
						HOT MIX ASPHALT				
883		06/19 AP		11/15/18	0000000	BITUMINOUS MATERIALS & SUPPLY	1,498.63			12/13/18
						CRS-2 TACK OIL				
889		06/19 AP		11/14/18	0129711	US BANK	112.33			12/06/18
						FARM & FLT OF CEDAR FLS				
						3" FITTINGS				
ACCOUNT TOTAL							7,201.02	.00	7,201.02	
206-7737-436.81-70 PROFESSIONAL SERVICES / CONTRACT SERVICES										
939		06/19 AP		12/01/18	0000000	LOCATION TECHNOLOGIES, INC.	806.40			12/13/18
						AVL 28 UNITS				
ACCOUNT TOTAL							806.40	.00	806.40	
206-7747-436.72-01 OPERATING SUPPLIES / OPERATING SUPPLIES										
883		06/19 AP		11/27/18	0000000	MENARDS-CEDAR FALLS	5.99			12/13/18
						MOUSE POISON				
ACCOUNT TOTAL							5.99	.00	5.99	

GROUP NBR	PO NBR	ACCTG PER.	CD	DATE	-----TRANSACTION----- NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE	POST DT
FUND 206 STREET CONSTRUCTION FUND										
206-7747-436	92-01	STRUCTURE IMPROV & BLDGS / STRUCTURE IMPROV & BLDGS								
939	06/19	AP		11/30/18	0000000	ECHO GROUP, INC.	112.44			12/13/18
						OUTDOOR RECEPTICLES				
939	06/19	AP		11/28/18	0000000	MOBOTREX, INC	1,716.00			12/13/18
						PARTS FOR RADAR TERMINAT.				
883	06/19	AP		11/20/18	0000000	ECHO GROUP, INC.	72.74			12/13/18
						ELECTRICAL PARTS				
						ACCOUNT TOTAL	1,901.18	.00	1,901.18	
						FUND TOTAL	13,164.00	.00	13,164.00	
FUND 215 HOSPITAL FUND										
FUND 216 POLICE BLOCK GRANT FUND										
FUND 217 SECTION 8 HOUSING FUND										
217-2214-432	71-01	OFFICE SUPPLIES / OFFICE SUPPLIES								
912	06/19	AP		11/08/18	0000000	STOREY KENWORTHY	34.24			12/13/18
						COPY PAPER				
						ACCOUNT TOTAL	34.24	.00	34.24	
217-2214-432	72-01	OPERATING SUPPLIES / OPERATING SUPPLIES								
931	06/19	AP		12/11/18	0000000	PARKADE PRINTER, INC.	17.50			12/13/18
						#9 WINDOW ENVELOPES				
						ACCOUNT TOTAL	17.50	.00	17.50	
217-2214-432	72-11	OPERATING SUPPLIES / DUES, BOOKS, MAGAZINES								
912	06/19	AP		12/04/18	0000000	IOWA NAHRO	100.00			12/13/18
						MEMBERSHIP-2019-CITY				
						ACCOUNT TOTAL	100.00	.00	100.00	
						FUND TOTAL	151.74	.00	151.74	
FUND 223 COMMUNITY BLOCK GRANT										
223-2224-432	72-19	OPERATING SUPPLIES / PRINTING								
931	06/19	AP		12/11/18	0000000	PARKADE PRINTER, INC.	8.75			12/13/18
						#9 WINDOW ENVELOPES				
900	06/19	AP		11/27/18	0000000	STOREY KENWORTHY	3.42			12/13/18
						COPY PAPER				
900	06/19	AP		11/16/18	0000000	STOREY KENWORTHY	1.05			12/13/18
						COPY PAPER 8.5 X 14				
900	06/19	AP		11/09/18	0000000	STOREY KENWORTHY	3.42			12/13/18

GROUP NBR	PO NBR	ACCTG PER.	CD	DATE	TRANSACTION NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE	POST DT
FUND 223 COMMUNITY BLOCK GRANT										
223-2224-432.72-19 OPERATING SUPPLIES / PRINTING										
COPY PAPER										
ACCOUNT TOTAL							16.64	.00	16.64	
FUND TOTAL							16.64	.00	16.64	
FUND 224 TRUST & AGENCY										
FUND 242 STREET REPAIR FUND										
242-1240-431.92-67 STRUCTURE IMPROV & BLDGS / WEST 20TH ST. BOX CULVERT										
912		06/19 AP		11/27/18	0000000	IIW, P.C.	2,412.86			12/13/18
						3117-W.20TH BRIDGE REPL.				10/21/18-11/17/18
PROJECT#: 023117										
ACCOUNT TOTAL							2,412.86	.00	2,412.86	
FUND TOTAL							2,412.86	.00	2,412.86	
FUND 254 CABLE TV FUND										
254-1088-431.72-01 OPERATING SUPPLIES / OPERATING SUPPLIES										
931		06/19 AP		12/11/18	0000000	PARKADE PRINTER, INC.	8.75			12/13/18
						#9 WINDOW ENVELOPES				
900		06/19 AP		11/27/18	0000000	FILMTOOLS	351.48			12/13/18
						PRINTABLE BLU-RAYS/CASES				
900		06/19 AP		11/27/18	0000000	STOREY KENWORTHY	6.85			12/13/18
						COPY PAPER				
900		06/19 AP		11/27/18	0000000	STOREY KENWORTHY	.14			12/13/18
						POST IT NOTES				
889		06/19 AP		11/16/18	0129711	US BANK	34.00			12/06/18
						AMAZON.COM*M89OK4U01				
900		06/19 AP		11/16/18	0000000	STOREY KENWORTHY	2.09			12/13/18
						COPY PAPER 8.5 X 14				
900		06/19 AP		11/16/18	0000000	STOREY KENWORTHY	.37			12/13/18
						LEGAL PADS				
900		06/19 AP		11/09/18	0000000	STOREY KENWORTHY	6.85			12/13/18
						COPY PAPER				
889		06/19 AP		10/30/18	0129711	US BANK	22.00			12/06/18
						ENVATOMARKET44144953				
889		06/19 AP		10/25/18	0129711	US BANK	377.95			12/06/18
						B&H PHOTO 800-606-6969				
						BATTERY PACK,LED LIGHT				
ACCOUNT TOTAL							810.48	.00	810.48	
254-1088-431.73-01 OTHER SUPPLIES / REPAIR & MAINT. SUPPLIES										
889		06/19 AP		11/05/18	0129711	US BANK	701.71			12/06/18

GROUP NBR	PO NBR	ACCTG PER.	CD	DATE	TRANSACTION NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE	POST DT
FUND 254 CABLE TV FUND										
254-1088-431.73-01 OTHER SUPPLIES / REPAIR & MAINT. SUPPLIES							continued			
VITEC VIDEOCOM INC										
ACCOUNT TOTAL							701.71	.00	701.71	
254-1088-431.83-05 TRANSPORTATION&EDUCATION / TRAVEL (FOOD/MILEAGE/LOD)										
889		06/19 AP		11/12/18	0129711	US BANK	32.70			12/06/18
		SUBWAY			03365152	MEALS:STATE VOLLEYBALL				
889		06/19 AP		11/12/18	0129711	US BANK	9.98			12/06/18
		KWIK STAR			73200007328	MEALS:STATE VOLLEYBALL				
889		06/19 AP		11/12/18	0129711	US BANK	35.48			12/06/18
		SUBWAY			03365152	MEALS: STATE VOLLEYBALL				
889		06/19 AP		11/12/18	0129711	US BANK	24.12			12/06/18
		MCDONALD'S			F29632	MEALS:STATE VOLLEYBALL				
889		06/19 AP		11/07/18	0129711	US BANK	63.98			12/06/18
		HAPPY JOES PIZZA -			27	MEALS: STATE VOLLEYBALL				
889		06/19 AP		10/29/18	0129711	US BANK	14.97			12/06/18
		CASEYS GEN STORE			3045	MEALS FOR 2-CF FB				
ACCOUNT TOTAL							181.23	.00	181.23	
254-1088-431.89-18 MISCELLANEOUS SERVICES / COMMUNITY PROGRAMMING										
889		06/19 AP		11/12/18	0129711	US BANK	99.95			12/06/18
		DIGITAL JUICE				YEARLY SUBSCRIPTION				
ACCOUNT TOTAL							99.95	.00	99.95	
254-1088-431.92-01 STRUCTURE IMPROV & BLDGS / STRUCTURE IMPROV & BLDGS										
889		06/19 AP		10/31/18	0129711	US BANK	27.00			12/06/18
		SQ *RICHARD M. FOLE				SHIPPING FOR SCOREBRIDGE				
ACCOUNT TOTAL							27.00	.00	27.00	
FUND TOTAL							1,820.37	.00	1,820.37	
FUND 258 PARKING FUND										
258-5531-435.71-01 OFFICE SUPPLIES / OFFICE SUPPLIES										
931		06/19 AP		12/11/18	0000000	PARKADE PRINTER, INC.	17.50			12/13/18
		#9 WINDOW ENVELOPES								
900		06/19 AP		11/27/18	0000000	STOREY KENWORTHY	6.85			12/13/18
		COPY PAPER								
900		06/19 AP		11/16/18	0000000	STOREY KENWORTHY	2.09			12/13/18
		COPY PAPER 8.5 X 14								
900		06/19 AP		11/09/18	0000000	STOREY KENWORTHY	6.85			12/13/18
		COPY PAPER								

GROUP NBR	PO NBR	ACCTG PER.	CD	DATE	---TRANSACTION--- NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE POST DT
FUND 258 PARKING FUND									
258-5531-435.71-01 OFFICE SUPPLIES / OFFICE SUPPLIES						continued			
ACCOUNT TOTAL							33.29	.00	33.29
258-5531-435.86-01 REPAIR & MAINTENANCE / REPAIR & MAINTENANCE									
900		06/19 AP		11/19/18	0000000	FASTENAL COMPANY	37.59		12/13/18
SPRINGS-PARK.METER REPAIR									
ACCOUNT TOTAL							37.59	.00	37.59
FUND TOTAL							70.88	.00	70.88
FUND 261 TOURISM & VISITORS									
261-7791-423.71-01 OFFICE SUPPLIES / OFFICE SUPPLIES									
889		06/19 AP		11/15/18	0129711	US BANK	10.44		12/06/18
WM SUPERCENTER #753 BATTERIES/GOO GONE									
ACCOUNT TOTAL							10.44	.00	10.44
261-7791-423.72-01 OPERATING SUPPLIES / OPERATING SUPPLIES									
889		06/19 AP		10/23/18	0129711	US BANK	3.15		12/06/18
MARTIN BROTHERS CEDAR FAL GUEST COFFEE SUPPLIES									
ACCOUNT TOTAL							3.15	.00	3.15
261-7791-423.72-99 OPERATING SUPPLIES / POSTAGE									
932		06/19 AP		12/06/18	0000000	WOOLVERTON PRINTING CO.	198.97		12/13/18
VG MAILING FROM MAGAZINE 159 REQUESTS									
PROJECT#: 032432									
932		06/19 AP		11/30/18	0000000	WOOLVERTON PRINTING CO.	770.42		12/13/18
ANNUAL CALENDAR MAILING TO 1,157 TOUR PLANNERS									
PROJECT#: 032422									
889		06/19 AP		10/24/18	0129711	US BANK	19.32		12/06/18
HY VEE 1052 SHIP VISITOR GUIDES 2BX									
ACCOUNT TOTAL							988.71	.00	988.71
261-7791-423.73-52 OTHER SUPPLIES / BROCHURES & PUBLICATIONS									
932		06/19 AP		11/28/18	0000000	WOOLVERTON PRINTING CO.	302.25		12/13/18
5,000 CALENDAR OF EVENTS JAN-MAY 2019									
940		06/19 AP		11/16/18	0000000	STOREY KENWORTHY	46.32		12/13/18
PAPER-GROUP TOUR LETTER									
ACCOUNT TOTAL							348.57	.00	348.57

ACCOUNT ACTIVITY LISTING

GROUP NBR	PO NBR	ACCTG PER.	CD	DATE	---TRANSACTION--- NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE	POST DT
FUND 261 TOURISM & VISITORS										
261-7791-423.73-54						OTHER SUPPLIES / PROMOTIONAL ITEMS				
932		06/19 AP		11/30/18	0000000	4IMPRINT, INC. 250 Moleskin Notebooks	1,788.22			12/13/18
ACCOUNT TOTAL							1,788.22	.00	1,788.22	
261-7791-423.73-55 OTHER SUPPLIES / MEDIA										
940		06/19 AP		11/30/18	0000000	ZLR IGNITION	297.50			12/13/18
940		06/19 AP		11/30/18	0000000	CLIENT ADMIN/MEDIA MGMT ZLR IGNITION	1,027.50			12/13/18
940		06/19 AP		11/30/18	0000000	FB/INSTAGRAM CAROUSEL ADS ZLR IGNITION	114.87			12/13/18
940		06/19 AP		11/30/18	0000000	FACEBOOK - HOLIDAY HOOPLA ZLR IGNITION	608.00			12/13/18
940		06/19 AP		11/30/18	0000000	GOOGLE - PAID SEARCH IOWA PUBLIC RADIO, INC.	23.20			12/13/18
932		06/19 AP		11/29/18	0000000	1 WEEK SPOT IN NOVEMBER HAVE FUN BIKING	2,400.00			12/13/18
889		06/19 AP		11/01/18	0129711	2019 COM GUIDE MAP AD US BANK	59.98			12/06/18
ACCOUNT TOTAL							4,531.05	.00	4,531.05	
261-7791-423.73-57 OTHER SUPPLIES / GIFT SHOP										
932		06/19 AP		12/01/18	0000000	BARN HAPPY-KRISTIN L. BOETTGE 2 VALLEYOPOLY GAMES FOR GIFT SHOP	40.00			12/13/18
ACCOUNT TOTAL							40.00	.00	40.00	
261-7791-423.83-05 TRANSPORTATION&EDUCATION / TRAVEL (FOOD/MILEAGE/LOD)										
889		06/19 AP		11/16/18	0129711	US BANK	6.57			12/06/18
PROJECT#:					032426	CHICK-FIL-A #03589 IDMA - MEAL-K MANNING				
889		06/19 AP		11/16/18	0129711	US BANK	110.88			12/06/18
PROJECT#:					032426	RADISSON HOTEL AMES IDMA PLANNING SESSION -				
889		06/19 AP		10/31/18	0129711	US BANK	5.56			12/06/18
PROJECT#:					032422	SUBWAY 00344432 BOOMERS IN GROUPS-MEAL				
889		06/19 AP		10/31/18	0129711	US BANK	43.55			12/06/18
PROJECT#:					032422	SHELL OIL 12477297001 BOOMERS IN GROUPS-FUEL				
889		06/19 AP		10/30/18	0129711	US BANK	24.54			12/06/18
PROJECT#:					032422	HUCK'S FOOD & FUEL STO BOOMERS IN GROUPS-FUEL				
889		06/19 AP		10/30/18	0129711	US BANK	427.14			12/06/18

GROUP NBR	PO NBR	ACCTG PER.	CD	DATE	----TRANSACTION---- NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE POST DT
FUND 261 TOURISM & VISITORS									
261-7791-423.83-05 TRANSPORTATION&EDUCATION / TRAVEL (FOOD/MILEAGE/LOD) continued									
FRENCH LICK FD BOOMERS IN GROUPS-HOTEL									
PROJECT#:	032422								
889	06/19	AP	10/29/18	0129711	US BANK	44.27			12/06/18
PHILLIPS 66 - VILLAGE PAN BOOMERS IN GROUPS-FUEL									
PROJECT#:	032422								
ACCOUNT TOTAL							662.51	.00	662.51
261-7791-423.83-07 TRANSPORTATION&EDUCATION / REGISTRATIONS									
889	06/19	AP	11/13/18	0129711	US BANK	275.00			12/06/18
SQ *IOWA BICYCLING IA BIKE EXPO BOOTH 012619									
PROJECT#:	032420								
ACCOUNT TOTAL							275.00	.00	275.00
261-7791-423.85-50 UTILITIES / COMMUNITY AWARENESS									
889	06/19	AP	11/07/18	0129711	US BANK	9.99			12/06/18
FLOWERAMA #427 GET WELL PLANT-SID MORRIS									
ACCOUNT TOTAL							9.99	.00	9.99
261-7791-423.85-52 UTILITIES / TOURISM MARKETING GRANTS									
932	06/19	AP	11/06/18	0000000	UNIVERSITY OF NORTHERN IOWA	1,000.00			12/13/18
GRANT:PANTHER E-SPORTS EVENT NOV 10-11, 2018									
ACCOUNT TOTAL							1,000.00	.00	1,000.00
261-7791-423.88-43 OUTSIDE AGENCIES / COMMUNITY BETTERMENT GRTS									
940	06/19	AP	12/05/18	0000000	CEDAR FALLS HISTORICAL SOCIET	2,000.00			12/13/18
GRANT:TERRACE FURNITURE FY19 CB									
ACCOUNT TOTAL							2,000.00	.00	2,000.00
261-7791-423.88-47 OUTSIDE AGENCIES / ECONOMIC DEVEL GRANTS									
900	06/19	AP	12/04/18	0000000	GREATER CEDAR VALLEY ALLIANCE	11,750.00			12/13/18
1ST 1/2 PAYMENT FOR FY19									
ACCOUNT TOTAL							11,750.00	.00	11,750.00
261-7791-423.93-01 EQUIPMENT / EQUIPMENT									
889	06/19	AP	11/19/18	0129711	US BANK	119.88			12/06/18
SAMSCLUB #6514 MICROPHONE									
ACCOUNT TOTAL							119.88	.00	119.88

GROUP	PO	ACCTG	----TRANSACTION----				DEBITS	CREDITS	CURRENT
NBR	NBR	PER.	CD	DATE	NUMBER	DESCRIPTION			BALANCE
									POST DT
FUND 261	TOURISM & VISITORS								
	FUND TOTAL						23,527.52	.00	23,527.52
FUND 262	SENIOR SERVICES & COMM CT								
FUND 291	POLICE FORFEITURE FUND								
FUND 292	POLICE RETIREMENT FUND								
FUND 293	FIRE RETIREMENT FUND								
FUND 294	LIBRARY RESERVE								
FUND 295	SOFTBALL PLAYER CAPITAL								
FUND 296	GOLF CAPITAL								
296-7723-423.92-01	STRUCTURE IMPROV & BLDGS / STRUCTURE IMPROV & BLDGS								
898		05/19	AP	10/25/18	0129507	CAHOY PUMP SERVICE INC.	26,780.00		12/06/18
						IRRIGATION WELL-WALTER'S			
						RIDGE MTE			
898		05/19	AP	09/28/18	0129208	CAHOY PUMP SERVICE INC.	5,750.00		12/06/18
						WELL MAINTENANCE-GOLF			
						PHEASANT RIDGE			
898		05/19	AP	07/05/18	0128513	CAHOY PUMP SERVICE INC.	1,150.00		12/06/18
						PUMP TEST-WALTER'S RIDGE			
						IRRIGATION			
	ACCOUNT TOTAL						33,680.00	.00	33,680.00
	FUND TOTAL						33,680.00	.00	33,680.00
FUND 297	REC FACILITIES CAPITAL								
FUND 298	HEARST CAPITAL								
FUND 311	DEBT SERVICE FUND								
FUND 402	WASHINGTON PARK FUND								
FUND 404	FEMA								
FUND 405	FLOOD RESERVE FUND								
FUND 407	VISION IOWA PROJECT								
FUND 408	STREET IMPROVEMENT FUND								
408-1240-431.92-63	STRUCTURE IMPROV & BLDGS / UNIV AVE RECONSTRUCTION								
912		06/19	AP	12/06/18	0000000	PETERSON CONTRACTORS	61,989.43		12/13/18
						3114-UNIV.AVE.RECON.PH.II			
						PROJECT#:			
						023114			
912		06/19	AP	12/04/18	0000000	PETERSON CONTRACTORS	3,290.61		12/13/18
						3140-UNIV.AV.RECON.PH.III			
						PROJECT#:			
						023140			
912		06/19	AP	11/21/18	0000000	AHLERS AND COONEY, P.C.	6,783.00		12/13/18
						3114-UNIV.AVE.RECON.PH.II			
						LAND ACQST/EMINENT DOMAIN			
						PROJECT#:			
						023114			
912		06/19	AP	09/21/18	0000000	SIGNS & DESIGNS, INC.	1,970.00		12/13/18
						1996-UNIV.AVE.RECONSTRUCT			
						PARK SIGNAGE-GAMING			
						PROJECT#:			
						021996			
	ACCOUNT TOTAL						74,033.04	.00	74,033.04
	FUND TOTAL						74,033.04	.00	74,033.04

GROUP NBR	PO NBR	ACCTG PER.	CD	DATE	TRANSACTION NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE	POST DT
FUND 430	2004	TIF BOND								
FUND 431	2014	BOND								
FUND 432	2003	BOND								
FUND 433	2001	TIF								
FUND 434	2000	BOND								
FUND 435	1999	TIF								
FUND 436	2012	BOND								
436-1220-431.94-83		CAPITAL PROJECTS / WEST 1ST STREET								
912		06/19 AP 12/06/18 0000000				BLACK HAWK CO.ABSTRACT	75.00			12/13/18
		3118-W.1ST ST. RECONST.				REPORT UPDATE-714 W. 1ST				
PROJECT#:		023118								
912		06/19 AP 12/05/18 0000000				SWISHER & COHRT, P.L.C.	57.00			12/13/18
		3118-W.1ST. ST. RECONST.				LAND ACQ.-1115 W 1ST				
PROJECT#:		023118								
912		06/19 AP 11/28/18 0000000				BLACK HAWK CO.ABSTRACT	75.00			12/13/18
		3118-W.1ST ST. RECONST.				REPORT UPDATE-1123 W. 1ST				
PROJECT#:		023118								
912		06/19 AP 11/28/18 0000000				BLACK HAWK CO.ABSTRACT	75.00			12/13/18
		3118-W.1ST ST. RECONST.				REPORT UPDATE-1013 W. 1ST				
PROJECT#:		023118								
912		06/19 AP 11/28/18 0000000				BLACK HAWK CO.ABSTRACT	75.00			12/13/18
		3118-W.1ST ST. RECONST.				REPORT UPDATE-1009 W. 1ST				
PROJECT#:		023118								
912		06/19 AP 11/28/18 0000000				BLACK HAWK CO.ABSTRACT	75.00			12/13/18
		3118-W.1ST ST. RECONST.				REPORT UPDATE-1002 W. 1ST				
PROJECT#:		023118								
912		06/19 AP 11/27/18 0000000				BLACK HAWK CO.ABSTRACT	75.00			12/13/18
		3118-W.1ST ST. RECONST.				REPORT UPDATE-1421 W. 1ST				
PROJECT#:		023118								
912		06/19 AP 11/27/18 0000000				BLACK HAWK CO.ABSTRACT	75.00			12/13/18
		3118-W.1ST ST. RECONST.				REPORT UPDATE-1409 W. 1ST				
PROJECT#:		023118								
912		06/19 AP 11/27/18 0000000				BLACK HAWK CO.ABSTRACT	75.00			12/13/18
		3118-W.1ST ST. RECONST.				RPRT UPDT-1311-1315 W.1ST				
PROJECT#:		023118								
912		06/19 AP 11/27/18 0000000				BLACK HAWK CO.ABSTRACT	75.00			12/13/18
		3118-W.1ST ST. RECONST.				REPORT UPDATE-1301 W. 1ST				
PROJECT#:		023118								
912		06/19 AP 11/27/18 0000000				BLACK HAWK CO.ABSTRACT	75.00			12/13/18
		3118-W.1ST ST. RECONST.				REPORT UPDATE-815 W. 1ST				
PROJECT#:		023118								
912		06/19 AP 11/27/18 0000000				BLACK HAWK CO.ABSTRACT	75.00			12/13/18
		3118-W.1ST ST. RECONST.				REPORT UPDATE-816 W. 1ST				
PROJECT#:		023118								
912		06/19 AP 11/27/18 0000000				BLACK HAWK CO.ABSTRACT	75.00			12/13/18
		3118-W.1ST ST. RECONST.				RPRT UPDT-103 CATHERINE				
PROJECT#:		023118								
912		06/19 AP 11/27/18 0000000				BLACK HAWK CO.ABSTRACT	75.00			12/13/18
		3118-W.1ST ST. RECONST.				REPORT UPDATE-1304 W. 1ST				
PROJECT#:		023118								
912		06/19 AP 11/27/18 0000000				BLACK HAWK CO.ABSTRACT	75.00			12/13/18

GROUP NBR	PO NBR	ACCTG PER.	CD	---TRANSACTION--- DATE	NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE POST DT
FUND 436 2012 BOND									
436-1220-431.94-83						CAPITAL PROJECTS / WEST 1ST STREET			continued
						3118-W.1ST ST. RECONST.			
						REPORT UPDATE-1408 W. 1ST			
PROJECT#:						023118			
912		06/19 AP		11/27/18	0000000	BLACK HAWK CO.ABSTRACT	75.00		12/13/18
						3118-W.1ST ST. RECONST.			
						REPORT UPDATE-1420 W. 1ST			
PROJECT#:						023118			
912		06/19 AP		11/27/18	0000000	BLACK HAWK CO.ABSTRACT	75.00		12/13/18
						3118-W.1ST ST. RECONST.			
						REPORT UPDATE-1612 W. 1ST			
PROJECT#:						023118			
912		06/19 AP		11/27/18	0000000	BLACK HAWK CO.ABSTRACT	75.00		12/13/18
						3118-W.1ST ST. RECONST.			
						RPRT UPDT-1704-1710 W.1ST			
PROJECT#:						023118			
912		06/19 AP		11/26/18	0000000	BLACK HAWK CO.ABSTRACT	75.00		12/13/18
						3118-W.1ST ST. RECONST.			
						RPRT UPDT-909-911 W. 1ST			
PROJECT#:						023118			
912		06/19 AP		11/26/18	0000000	BLACK HAWK CO.ABSTRACT	75.00		12/13/18
						3118-W.1ST ST. RECONST.			
						REPORT UPDATE-1222 W. 1ST			
PROJECT#:						023118			
912		06/19 AP		11/26/18	0000000	BLACK HAWK CO.ABSTRACT	75.00		12/13/18
						3118-W.1ST ST. RECONST.			
						REPORT UPDATE-923 W. 1ST			
PROJECT#:						023118			
912		06/19 AP		11/26/18	0000000	BLACK HAWK CO.ABSTRACT	75.00		12/13/18
						3118-W.1ST ST. RECONST.			
						REPORT UPDATE-1120 W. 1ST			
PROJECT#:						023118			
912		06/19 AP		11/26/18	0000000	BLACK HAWK CO.ABSTRACT	75.00		12/13/18
						3118-W.1ST ST. RECONST.			
						REPORT UPDATE-724 W. 1ST			
PROJECT#:						023118			
912		06/19 AP		11/16/18	0000000	BLACK HAWK CO.ABSTRACT	75.00		12/13/18
						3118-W.1ST ST. RECONST.			
						REPORT UPDATE-1215 W. 1ST			
PROJECT#:						023118			
912		06/19 AP		11/16/18	0000000	BLACK HAWK CO.ABSTRACT	75.00		12/13/18
						3118-W.1ST ST. RECONST.			
						REPORT UPDATE-1115 W. 1ST			
PROJECT#:						023118			
912		06/19 AP		11/16/18	0000000	BLACK HAWK CO.ABSTRACT	75.00		12/13/18
						3118-W.1ST ST. RECONST.			
						REPORT UPDATE-1322 W. 1ST			
PROJECT#:						023118			
						ACCOUNT TOTAL	1,932.00	.00	1,932.00
436-1220-431.95-12 BOND FUND PROJECTS / GREENHILL ROAD EXTENSION									
912		06/19 AP		12/04/18	0000000	PETERSON CONTRACTORS	12,700.77		12/13/18
						1824-GREENHILL RD. EXTEN.			
PROJECT#:						021824			
						ACCOUNT TOTAL	12,700.77	.00	12,700.77
436-1220-431.95-65 BOND FUND PROJECTS / HWY 58 PEDESTRIAN BRIDGE									
912		06/19 AP		11/30/18	0000000	AECOM TECHNICAL SERVICES, INC	3,766.66		12/13/18

GROUP NBR	PO NBR	ACCTG PER.	CD	---TRANSACTION--- DATE	NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE	POST DT
FUND 436 2012 BOND										
436-1220-431.95-65						BOND FUND PROJECTS / HWY 58 PEDESTRIAN BRIDGE				continued
						1930-HWY.58 TRAIL SAF.IMP				12/09/17-11/23/18
						PROJECT#: 021930				
						ACCOUNT TOTAL	3,766.66	.00	3,766.66	
436-1220-431.98-26 CAPITAL PROJECTS / DOWNTOWN LEVEE IMPROVEMNT										
912		06/19 AP		12/06/18	0000000	IOWA BRIDGE & CULVERT, LC	475,131.47			12/13/18
						1975-DOWNTN.LEVEE IMPROV.				
						PROJECT#: 021975				
912		06/19 AP		11/27/18	0000000	SNYDER & ASSOCIATES, INC.	26,777.81			12/13/18
						1975-DOWNTN.LEVEE IMPROV.				
						SERVICES THRU 10/31/18				
						PROJECT#: 021975				
898		05/19 AP		10/15/18	0129350	CEDAR FALLS UTILITIES		27.19		12/06/18
						ACCOUNT CORRECTION				
						1975-DOWNTN.LEVEE IMPROV.				
						PROJECT#: 021975				
898		05/19 AP		09/15/18	0129092	CEDAR FALLS UTILITIES		27.19		12/06/18
						ACCOUNT CORRECTION				
						1975 DOWNTN.LEVEE IMPROV.				
						PROJECT#: 021975				
898		05/19 AP		09/11/18	0129323	AECOM TECHNICAL SERVICES, INC	505.59			12/06/18
						1975:DOWTN.LEVEE IMPROV.				
						07/07/18-08/31/18				
						PROJECT#: 021975				
						ACCOUNT TOTAL	502,414.87	54.38	502,360.49	
436-1220-431.98-60 CAPITAL PROJECTS / DAM SAFETY IMPROVEMENTS										
912		06/19 AP		12/01/18	0000000	RIVERWISE ENGINEERING, LLC	18,648.90			12/13/18
						3088-CDR.RV.LOW HEAD DAM				
						PROJECT#: 023088				
						ACCOUNT TOTAL	18,648.90	.00	18,648.90	
						FUND TOTAL	539,463.20	54.38	539,408.82	
FUND 437 2018 BOND										
437-1220-431.98-81						CAPITAL PROJECTS / PICKLE BALL COURTS				
883		06/19 AP		11/20/18	0000000	KAY PARK REC CORP.	3,677.60			12/13/18
						BENCHES				
						PROJECT#: 062520				
						ACCOUNT TOTAL	3,677.60	.00	3,677.60	
						FUND TOTAL	3,677.60	.00	3,677.60	

GROUP NBR	PO NBR	ACCTG PER.	CD	DATE	TRANSACTION NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE	POST DT
FUND 438 2006 BOND FUND										
FUND 439 2008 BOND FUND										
FUND 443 CAPITAL PROJECTS										
443-1220-431.92-90						STRUCTURE IMPROV & BLDGS / CENTER ST SIDEWLK & DRAIN				
912		06/19 AP		12/04/18	0000000	CUNNINGHAM CONSTRUCTION CO.,	39,293.79			12/13/18
						3107-CENTER ST. REC TRAIL				
PROJECT#:					023107					
912		06/19 AP		11/27/18	0000000	CLAPSADDLE-GARBER ASSOCIATES,	500.00			12/13/18
						3107-CENTER ST.REC. TRAIL				
PROJECT#:					023107	SERVICES THRU 11/17/18				
ACCOUNT TOTAL							39,793.79	.00	39,793.79	
443-1220-431.98-40 CAPITAL PROJECTS / PUBLIC SAFETY BUILDING										
912		06/19 AP		11/30/18	0000000	PETERS CONSTRUCTION CORP.	561,553.48			12/13/18
						3069-PUBLIC SAFETY BLDG.				
PROJECT#:					023069					
912		06/19 AP		11/27/18	0000000	INVISION ARCHITECTURE	8,642.81			12/13/18
						3069-PUBLIC SAFETY BLDG.				
PROJECT#:					023069					
ACCOUNT TOTAL							570,196.29	.00	570,196.29	
443-1220-431.98-73 CAPITAL PROJECTS / INCLUSIVE PARK										
939		06/19 AP		12/10/18	0000000	BUILDERS SELECT LLC	55.30			12/13/18
						2X4 BRACING MATERIAL -				
939		06/19 AP		12/06/18	0000000	RITLAND & KUIPER LANDSCAPE AR	6,250.00			12/13/18
						SERVICES BY ARCHITECT				
PROJECT#:					062518	PLACE TO PLAY PARK				
907		06/19 AP		12/04/18	0000000	UTILITY EQUIPMENT COMPANY	824.73			12/13/18
						PLACE TO PLAY-WATER LINE				
939		06/19 AP		12/04/18	0000000	MENARDS-CEDAR FALLS	209.88			12/13/18
						2X12 LUMBER-PLACE TO PLAY				
939		06/19 AP		12/03/18	0000000	MENARDS-CEDAR FALLS	179.35			12/13/18
						FOUNDATION MATERIAL-PLACE				
						TO PLAY PARK				
ACCOUNT TOTAL							7,519.26	.00	7,519.26	
FUND TOTAL							617,509.34	.00	617,509.34	
FUND 472 PARKADE RENOVATION										
FUND 473 SIDEWALK ASSESSMENT										

GROUP NBR	PO NBR	ACCTG PER.	CD	DATE	TRANSACTION NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE	POST DT
FUND 483 ECONOMIC DEVELOPMENT										
FUND 484 ECONOMIC DEVELOPMENT LAND										
484-2245-432.91-10 LAND / INDUSTRIAL PARK LAND ACQ										
	912	06/19 AP		11/27/18	0000000	BLACK HAWK CO.ABSTRACT	60.00			12/13/18
						3177-RIEGER FARM LAND ACQ				
						PROJECT#: 023177				
						CONT-6815 STREETER RD				
						ACCOUNT TOTAL	60.00	.00	60.00	
						FUND TOTAL	60.00	.00	60.00	
FUND 541 2018 STORM WATER BONDS										
FUND 544 2008 SEWER BONDS										
FUND 545 2006 SEWER BONDS										
FUND 546 SEWER IMPROVEMENT FUND										
FUND 547 SEWER RESERVE FUND										
FUND 548 1997 SEWER BOND FUND										
FUND 549 1992 SEWER BOND FUND										
FUND 550 2000 SEWER BOND FUND										
FUND 551 REFUSE FUND										
551-7775-436.71-01 OFFICE SUPPLIES / OFFICE SUPPLIES										
	939	06/19 AP		11/30/18	0000000	STOREY KENWORTHY	121.37			12/13/18
						TAPE, POP UP NOTES,LINERS				
	939	06/19 AP		11/08/18	0000000	STOREY KENWORTHY	89.68			12/13/18
						MARKERS, ERASERS, STORAGE				
	939	06/19 AP		11/08/18	0000000	STOREY KENWORTHY	34.62			12/13/18
						CARTRIDGE TAPE				
						ACCOUNT TOTAL	245.67	.00	245.67	
551-7785-436.71-01 OFFICE SUPPLIES / OFFICE SUPPLIES										
	939	06/19 AP		11/13/18	0000000	STOREY KENWORTHY	17.82			12/13/18
						FRAME				
						ACCOUNT TOTAL	17.82	.00	17.82	
551-7785-436.72-19 OPERATING SUPPLIES / PRINTING										
	907	06/19 AP		12/03/18	0000000	SIGNS BY TOMORROW	199.00			12/13/18
						SIGNS-RECYCLING ORCHARD H				
						ACCOUNT TOTAL	199.00	.00	199.00	
551-7785-436.72-54 OPERATING SUPPLIES / BUILDING SUPPLIES										
	883	06/19 AP		11/30/18	0000000	CULLIGAN WATER CONDITIONING	12.50			12/13/18
						BOTTLED WATER				
						ACCOUNT TOTAL	12.50	.00	12.50	

GROUP	PO	ACCTG	----TRANSACTION----				DEBITS	CREDITS	CURRENT	
NBR	NBR	PER.	CD	DATE	NUMBER	DESCRIPTION			BALANCE	
									POST DT	
FUND 551 REFUSE FUND										
551-7785-436.72-60						OPERATING SUPPLIES / SAFETY SUPPLIES				
900		06/19 AP		12/04/18	0000000	THOMPSON SHOES	160.00			12/13/18
						SAFETY SHOES-C KOGER P.O. 56305				
ACCOUNT TOTAL							160.00	.00	160.00	
551-7785-436.73-05 OTHER SUPPLIES / OPERATING EQUIPMENT										
883		06/19 AP		11/23/18	0000000	L.J.'S WELDING & FABRICATION	531.39			12/13/18
						RECYCLING ROLLOFF REMODEL FOR OHC				
883		06/19 AP		11/21/18	0000000	CEDAR FALLS UTILITIES	852.57			12/13/18
						POLE INSTALL-COMPOST SITE				
ACCOUNT TOTAL							1,383.96	.00	1,383.96	
551-7785-436.73-06 OTHER SUPPLIES / BUILDING REPAIR										
939		06/19 AP		11/27/18	0000000	CHRISTIE DOOR COMPANY	294.00			12/13/18
						DOOR REPAIR-RECYCLING CTR				
ACCOUNT TOTAL							294.00	.00	294.00	
551-7785-436.83-05 TRANSPORTATION&EDUCATION / TRAVEL (FOOD/MILEAGE/LOD)										
941		05/19 AP		10/12/18	0129484	US BANK	260.50			12/11/18
						HILTON GARDEN INN ROOM 2 NIGHTS BRIAN HEATH				
ACCOUNT TOTAL							260.50	.00	260.50	
551-7785-436.86-05 REPAIR & MAINTENANCE / EQUIPMENT REPAIRS										
941		05/19 AP		10/12/18	0129484	US BANK		260.50		12/11/18
						ACCOUNT CORRECTION HILTON GARDEN INN				
ACCOUNT TOTAL							.00	260.50	260.50-	
551-7785-436.86-37 REPAIR & MAINTENANCE / REFUSE CART TRACKING SW										
939		06/19 AP		12/01/18	0000000	LOCATION TECHNOLOGIES, INC.	259.20			12/13/18
						AVL 9 UNITS				
883		06/19 AP		11/27/18	0000000	SIEBER CONSULTING	147.74			12/13/18
						REPAIRS MOBILE DATA TER-MINALS				
ACCOUNT TOTAL							406.94	.00	406.94	
551-7785-436.87-02 RENTALS / MATERIAL DISPOSAL/HANDLIN										
939		06/19 AP		12/07/18	0000000	WEIKERT IRON AND METAL	1,736.00			12/13/18
						APPLIANCE RECYCLING				
907		06/19 AP		11/30/18	0000000	MIDWEST ELECTRONIC RECOVERY	803.05			12/13/18

GROUP NBR	PO NBR	ACCTG PER.	CD	DATE	TRANSACTION NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE	POST DT
FUND 551 REFUSE FUND										
551-7785-436.87-02 RENTALS / MATERIAL DISPOSAL/HANDLIN						continued				
ELECTRONIC RECYCLING										
ACCOUNT TOTAL							2,539.05	.00	2,539.05	
FUND TOTAL							5,519.44	260.50	5,258.94	
FUND 552 SEWER RENTAL FUND										
552-2265-436.71-01 OFFICE SUPPLIES / OFFICE SUPPLIES										
900		06/19 AP		11/27/18	0000000	STOREY KENWORTHY	3.42			12/13/18
						COPY PAPER				
900		06/19 AP		11/16/18	0000000	STOREY KENWORTHY	1.05			12/13/18
						COPY PAPER 8.5 X 14				
900		06/19 AP		11/09/18	0000000	STOREY KENWORTHY	3.42			12/13/18
						COPY PAPER				
ACCOUNT TOTAL							7.89	.00	7.89	
552-2265-436.72-16 OPERATING SUPPLIES / TOOLS										
889		06/19 AP		11/19/18	0129711	US BANK	14.99			12/06/18
						ARNOLD MOTOR SUPPLY - LOC				TOOLS
ACCOUNT TOTAL							14.99	.00	14.99	
552-2265-436.72-26 OPERATING SUPPLIES / TESTING & LAB										
943		06/19 AP		11/16/18	0000000	MIDLAND SCIENTIFIC, INC.	193.55			12/13/18
						LAB CHEMICALS				
ACCOUNT TOTAL							193.55	.00	193.55	
552-2265-436.73-05 OTHER SUPPLIES / OPERATING EQUIPMENT										
943		06/19 AP		12/04/18	0000000	O'DONNELL ACE HARDWARE	97.96			12/13/18
						PLUMBING PARTS				
943		06/19 AP		12/04/18	0000000	O'DONNELL ACE HARDWARE	7.99			12/13/18
						PUMP PARTS				
943		06/19 AP		11/28/18	0000000	HUBER TECHNOLOGY, INC.	3,652.50			12/13/18
						GRIT CLASSIFIER PARTS				
943		06/19 AP		11/27/18	0000000	ELECTRIC PUMP	3,361.07			12/13/18
						ROTOR PUMP REPAIR PARTS				
943		06/19 AP		11/20/18	0000000	WASTECORP.PUMPS LLC.	541.31			12/13/18
						SLUDGE PUMP PARTS				
889		06/19 AP		11/19/18	0129711	US BANK	99.98			12/06/18
						O DONNELL ACE HARDWARE				EXTENSION CORDS
943		06/19 AP		11/16/18	0000000	SIEMENS INDUSTRY, INC.	2,197.00			12/13/18
						FLOW METER PARTS				

GROUP NBR	PO NBR	ACCTG PER.	CD	DATE	---TRANSACTION--- NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE	POST DT
FUND 552 SEWER RENTAL FUND										
552-2265-436.73-05 OTHER SUPPLIES / OPERATING EQUIPMENT						continued				
943		06/19 AP		11/15/18	0000000	SUEZ TREATMENT SOLUTIONS INC.	3,621.09			12/13/18
						UV SYSTEM PARTS				
889		06/19 AP		11/08/18	0129711	US BANK	53.96			12/06/18
						MENARDS CEDAR FALLS IA CLEANER/SUPPLIES				
ACCOUNT TOTAL							13,632.86	.00	13,632.86	
552-2265-436.73-06 OTHER SUPPLIES / BUILDING REPAIR										
943		06/19 AP		11/20/18	0000000	GRAINGER PARTS	52.00			12/13/18
						EMERGENCY LIGHT BATTERIES				
943		06/19 AP		11/14/18	0000000	CRESCENT ELECTRIC	41.02			12/13/18
						EMERGENCY LIGHTS				
ACCOUNT TOTAL							93.02	.00	93.02	
552-2265-436.73-36 OTHER SUPPLIES / SAN. LIFT STATION SUPP.										
943		06/19 AP		12/05/18	0000000	O'DONNELL ACE HARDWARE	32.99			12/13/18
						TORCH KIT-CH				
943		06/19 AP		12/05/18	0000000	SHERWIN-WILLIAMS COMPANY	123.14			12/13/18
						PAINT-LIFT STATION				
943		06/19 AP		12/04/18	0000000	SHERWIN-WILLIAMS COMPANY	58.74			12/13/18
						PAINT-LIFT STATION				
943		06/19 AP		11/30/18	0000000	GROSSE STEEL CO., INC.	520.20			12/13/18
						LS PUMP SUPPORTS				
943		06/19 AP		11/28/18	0000000	NUSCO	821.00			12/13/18
						CITRA-LIFT DEGREASER				
943		06/19 AP		11/27/18	0000000	O'DONNELL ACE HARDWARE	38.67			12/13/18
						RESPIRATOR, DROP CLOTH WIRE BRUSH				
943		06/19 AP		11/21/18	0000000	ELECTRICAL ENGINEERING & EQUI	808.33			12/13/18
						SOFT START VPD PART-LS				
943		06/19 AP		11/16/18	0000000	CRESCENT ELECTRIC	176.08			12/13/18
						ELECTRICAL PARTS-LS				
943		06/19 AP		10/18/18	0000000	BDI-BEARING SERVICE COMPANY	15.50			12/13/18
						LIFT STATION REPAIR PARTS				
943		06/19 AP		10/18/18	0000000	BDI-BEARING SERVICE COMPANY	11.16			12/13/18
						LIFT STATION REPAIR PARTS				
943		06/19 AP		10/16/18	0000000	BDI-BEARING SERVICE COMPANY	24.10			12/13/18
						BEARING CUP/SEALS-CHLS				
943		06/19 AP		10/09/18	0000000	BDI-BEARING SERVICE COMPANY	97.44			12/13/18
						SEALS & BEARINGS-CHLS				
943		06/19 AP		10/09/18	0000000	BDI-BEARING SERVICE COMPANY	72.38			12/13/18
						BEARINGS-CHLS				
ACCOUNT TOTAL							2,799.73	.00	2,799.73	
552-2265-436.86-12 REPAIR & MAINTENANCE / TOWELS										

GROUP NBR	PO NBR	ACCTG PER.	CD	DATE	----TRANSACTION---- NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE POST DT
FUND 552 SEWER RENTAL FUND									
552-2265-436.86-12						REPAIR & MAINTENANCE / TOWELS			continued
943		06/19 AP		12/05/18	0000000	ARAMARK	12.30		12/13/18
						FLOOR MATS/MOPS-WATER REC			
						ACCOUNT TOTAL	12.30	.00	12.30
552-2265-436.86-29 REPAIR & MAINTENANCE / LAB & TESTING									
943		06/19 AP		11/30/18	0000000	STATE HYGIENIC LABORATORY	459.50		12/13/18
						TOXICITY TESTING			
943		06/19 AP		11/26/18	0000000	TESTAMERICA LABORATORIES, INC	127.50		12/13/18
						LAB TESTS			
						ACCOUNT TOTAL	587.00	.00	587.00
552-7755-436.71-01 OFFICE SUPPLIES / OFFICE SUPPLIES									
912		06/19 AP		11/30/18	0000000	STOREY KENWORTHY	.36		12/13/18
						PINK PAPER			
912		06/19 AP		11/29/18	0000000	STOREY KENWORTHY	.59		12/13/18
						LEGAL PADS, PINK PAPER			
912		06/19 AP		11/08/18	0000000	STOREY KENWORTHY	.14		12/13/18
						BINDER CLIPS			
912		06/19 AP		11/08/18	0000000	STOREY KENWORTHY	.53		12/13/18
						DRY ERASE MARKERS			
						ACCOUNT TOTAL	1.62	.00	1.62
552-7755-436.72-60 OPERATING SUPPLIES / SAFETY SUPPLIES									
943		06/19 AP		11/27/18	0000000	CAMPBELL SUPPLY WATERLOO	403.37		12/13/18
						THERMAL GLOVES, GLASSES			
						ACCOUNT TOTAL	403.37	.00	403.37
552-7755-436.73-06 OTHER SUPPLIES / BUILDING REPAIR									
943		06/19 AP		11/19/18	0000000	CRESCENT ELECTRIC	234.59		12/13/18
						EMERGENCY EXIT SIGNS			
						ACCOUNT TOTAL	234.59	.00	234.59
552-7755-436.86-12 REPAIR & MAINTENANCE / TOWELS									
943		06/19 AP		12/05/18	0000000	ARAMARK	13.28		12/13/18
						FLOOR MATS/MOPS-SEWER			
						ACCOUNT TOTAL	13.28	.00	13.28

GROUP NBR	PO NBR	ACCTG PER.	CD	DATE	---TRANSACTION--- NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE	POST DT
FUND 552 SEWER RENTAL FUND										
FUND TOTAL							17,994.20	.00	17,994.20	
FUND 553 2004 SEWER BOND										
FUND 555 STORM WATER UTILITY										
555-2230-432.73-34 OTHER SUPPLIES / STORM SEWERS										
907		06/19 AP		11/19/18	0000000	FASTENAL COMPANY	46.76			12/13/18
PROJECT#: 90 WEDGE ANCHORS										
907		06/19 AP		10/11/18	0000000	FASTENAL COMPANY	44.61			12/13/18
PROJECT#: 90 WEDGE ANCHORS										
ACCOUNT TOTAL							91.37	.00	91.37	
555-2230-432.92-01 STRUCTURE IMPROV & BLDGS / STRUCTURE IMPROV & BLDGS										
912		06/19 AP		12/01/18	0000000	ROBINSON ENGINEERING COMPANY	4,086.28			12/13/18
PROJECT#: 3157-CSTL.HILS.SUBWTRSHD. ASSESSEMENT-THRU 11/30/18										
ACCOUNT TOTAL							4,086.28	.00	4,086.28	
FUND TOTAL							4,177.65	.00	4,177.65	
FUND 570 SEWER ASSESSMENT										
FUND 606 DATA PROCESSING FUND										
606-1078-441.71-01 OFFICE SUPPLIES / OFFICE SUPPLIES										
931		06/19 AP		12/11/18	0000000	PARKADE PRINTER, INC.	8.75			12/13/18
PROJECT#: 90 #9 WINDOW ENVELOPES										
900		06/19 AP		11/29/18	0000000	STOREY KENWORTHY	938.33			12/13/18
PROJECT#: 90 HP COLOR TONER										
900		06/19 AP		11/27/18	0000000	STOREY KENWORTHY	3.42			12/13/18
PROJECT#: 90 COPY PAPER										
900		06/19 AP		11/16/18	0000000	STOREY KENWORTHY	1.05			12/13/18
PROJECT#: 90 COPY PAPER 8.5 X 14										
900		06/19 AP		11/09/18	0000000	STOREY KENWORTHY	3.42			12/13/18
PROJECT#: 90 COPY PAPER										
900		06/19 AP		11/09/18	0000000	STOREY KENWORTHY	385.05			12/13/18
PROJECT#: 889 BLUE BAR PAPER										
889		06/19 AP		10/29/18	0129711	US BANK	24.98			12/06/18
PROJECT#: AMZN MKTP US*M813V0ET1 IPAD CASE-JACQUE										
ACCOUNT TOTAL							1,365.00	.00	1,365.00	
606-1078-441.72-01 OPERATING SUPPLIES / OPERATING SUPPLIES										
889		06/19 AP		11/19/18	0129711	US BANK	99.00			12/06/18

GROUP NBR	PO NBR	ACCTG PER.	CD	DATE	---TRANSACTION--- NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE POST DT
FUND 606 DATA PROCESSING FUND									
606-1078-441.72-01 OPERATING SUPPLIES / OPERATING SUPPLIES						continued			
						STK*BIGSTOCKPHOTO.COM			
889		06/19 AP		11/15/18	0129711	US BANK ONLINE IMAGE SUBSCRIPTION	21.98		12/06/18
						MENARDS CEDAR FALLS IA BATTERIES			
ACCOUNT TOTAL							120.98	.00	120.98
606-1078-441.81-41 PROFESSIONAL SERVICES / E-GOVERNMENT									
931		06/19 AP		12/05/18	0000000	MUNICIPAL CODE CORPORATION	700.00		12/13/18
						ANNUAL CODE ONLINE FEE			
931		06/19 AP		11/29/18	0000000	CIVICPLUS	6,697.14		12/13/18
						MOBILE APP SETUP & MAINT.			
ACCOUNT TOTAL							7,397.14	.00	7,397.14
606-1078-441.81-43 PROFESSIONAL SERVICES / LIBRARY COMPUTER SERVICES									
890		06/19 AP		11/12/18	0129711	US BANK	299.00		12/06/18
						PROPAY INC- FEE@PROPAY.CO			
890		06/19 AP		11/12/18	0129711	US BANK	60.00		12/06/18
						INTUIT *QB ONLINE			
890		06/19 AP		10/30/18	0129711	US BANK	21.57		12/06/18
						WWW.1AND1.COM			
ACCOUNT TOTAL							380.57	.00	380.57
606-1078-441.81-70 PROFESSIONAL SERVICES / CONTRACT SERVICES									
931		06/19 AP		11/30/18	0000000	IP PATHWAYS, LLC	595.00		12/13/18
						SUPPORT-BILLABLE HOURS			
						11/26/18-11/30/18			
ACCOUNT TOTAL							595.00	.00	595.00
606-1078-441.86-10 REPAIR & MAINTENANCE / SOFTWARE SUPPORT AGREEMTS									
931		06/19 AP		12/10/18	0000000	DLT SOLUTIONS, LLC	8,255.60		12/13/18
						AUTOCAD SUBSC. SUPPORT			
931		06/19 AP		12/05/18	0000000	IP PATHWAYS, LLC	7,246.00		12/13/18
						SOPHOS SOFTWARE RENEWAL			
931		06/19 AP		12/03/18	0000000	THE DAVENPORT GROUP USA, LTD	21,332.00		12/13/18
						ANNUAL LAMA MAINTENANCE			
ACCOUNT TOTAL							36,833.60	.00	36,833.60
606-1078-441.93-01 EQUIPMENT / EQUIPMENT									
889		06/19 AP		11/15/18	0129711	US BANK	52.70		12/06/18
						MENARDS CEDAR FALLS IA			
						KEYBOARDS,MICE			
889		06/19 AP		11/09/18	0129711	US BANK	292.24		12/06/18

GROUP NBR	PO NBR	ACCTG PER.	CD	DATE	---TRANSACTION--- NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE POST DT
FUND 606 DATA PROCESSING FUND									
606-1078-441.93-01 EQUIPMENT / EQUIPMENT						continued			
					WWW.NEWEGG.COM	(4) LAPTOP MEMORY			
889		06/19 AP		11/07/18	0129711	US BANK	679.96		12/06/18
					WWW.NEWEGG.COM	(4) ZOTAC MINI PC'S			
889		06/19 AP		11/01/18	0129711	US BANK	1,107.94		12/06/18
					B&H PHOTO 800-606-6969	POINT TO POINT WIRELESS			
					ACCOUNT TOTAL		2,132.84	.00	2,132.84
					FUND TOTAL		48,825.13	.00	48,825.13
FUND 680 HEALTH INSURANCE FUND									
FUND 681 HEALTH SEVERANCE									
FUND 682 HEALTH INSURANCE - FIRE									
FUND 685 VEHICLE MAINTENANCE FUND									
685-7798-446.71-01 OFFICE SUPPLIES / OFFICE SUPPLIES									
939		06/19 AP		11/08/18	0000000	STOREY KENWORTHY	20.07		12/13/18
						CARTRIDGE TAPE			
					ACCOUNT TOTAL		20.07	.00	20.07
685-7798-446.72-05 OPERATING SUPPLIES / GAS & OIL									
939		06/19 AP		12/06/18	0000000	HARTLAND FUEL PRODUCTS, LLC	6,590.92		12/13/18
						DIESEL FUEL - TECHNOLOGY			
939		06/19 AP		12/06/18	0000000	HARTLAND FUEL PRODUCTS, LLC		6,634.12	12/13/18
						FUEL CREDIT-WRONG AMOUNT			
939		06/19 AP		11/30/18	0000000	HARTLAND FUEL PRODUCTS, LLC	9,282.75		12/13/18
						COLD FLOW DIESEL-BLUFF ST			
939		06/19 AP		11/30/18	0000000	HARTLAND FUEL PRODUCTS, LLC	6,634.12		12/13/18
						COLD FLOW DIESEL-TECHNOLO			
883		06/19 AP		11/27/18	0000000	HARTLAND FUEL PRODUCTS, LLC	16,413.37		12/13/18
						GASOHOL, 2200 TECHNOLOGY			
					ACCOUNT TOTAL		38,921.16	6,634.12	32,287.04
685-7798-446.72-60 OPERATING SUPPLIES / SAFETY SUPPLIES									
900		06/19 AP		12/04/18	0000000	THOMPSON SHOES	131.75		12/13/18
						SAFETY SHOES-C RICE			
						P.O. 56291			
					ACCOUNT TOTAL		131.75	.00	131.75
685-7798-446.73-04 OTHER SUPPLIES / VEHICLE SUPPLIES									
939		06/19 AP		12/06/18	0000000	C & C WELDING & SANDBLASTING	195.03		12/13/18
						WESTERN PLOW HARNESS			
						#2123			
939		06/19 AP		12/06/18	0000000	GENERAL SHEET METAL WORK	278.38		12/13/18

GROUP NBR	PO NBR	ACCTG PER.	CD	TRANSACTION DATE	NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE	POST DT
FUND 685 VEHICLE MAINTENANCE FUND										
685-7798-446.73-04 OTHER SUPPLIES / VEHICLE SUPPLIES							continued			
						MISC STEEL				
939		06/19 AP		12/03/18	0000000	KNM SERVICES, INC.	225.10			12/13/18
						HINKER PLOW VALVES #2101				
889		06/19 AP		10/30/18	0129711	US BANK	112.73			12/06/18
						TIRE BARN #11100011189				
						REPLACE TIRE WHILE TRAVEL				
						ACCOUNT TOTAL	811.24	.00		811.24
685-7798-446.86-12 REPAIR & MAINTENANCE / TOWELS										
907		06/19 AP		12/04/18	0000000	ARAMARK	40.55			12/13/18
						SHOP TOWELS				
883		06/19 AP		11/27/18	0000000	ARAMARK	38.10			12/13/18
						SHOP TOWELS				
						ACCOUNT TOTAL	78.65	.00		78.65
685-7798-446.87-08 RENTALS / WORK BY OUTSIDE AGENCY										
939		06/19 AP		11/30/18	0000000	PLUMB TECH INC.	108.00			12/13/18
						CV02 HEAT PUP INSPECTION				
939		06/19 AP		11/26/18	0000000	HARRISON TRUCK CENTERS, INC.	4,865.01			12/13/18
						EGR ACTUATOR AND WIRING #372				
						ACCOUNT TOTAL	4,973.01	.00		4,973.01
685-7798-446.93-04 EQUIPMENT / REFURBISH VEHICLES										
883		06/19 AP		11/28/18	0000000	C & C WELDING & SANDBLASTING	1,330.75			12/13/18
						#240 BOX REPAIRS				
						ACCOUNT TOTAL	1,330.75	.00		1,330.75
						FUND TOTAL	46,266.63	6,634.12		39,632.51
FUND 686 PAYROLL FUND										
FUND 687 WORKERS COMPENSATION FUND										
FUND 688 LTD INSURANCE FUND										
FUND 689 LIABILITY INSURANCE FUND										
689-1902-457.51-05 INSURANCE / LIABILITY INSURANCE										
931		06/19 AP		12/05/18	0000000	SWISHER & COHRT, P.L.C.	3,166.36			12/13/18
						LIAB:MALLAVARAPU				
						11/02/18-11/29/18				
931		06/19 AP		11/21/18	0000000	FRIEDEMANN GOLDBERG LLP	27.50			12/13/18
						LGL: J BALIK				
						10/18/18				
						ACCOUNT TOTAL	3,193.86	.00		3,193.86

GROUP NBR	PO NBR	ACCTG PER.	CD	DATE	---TRANSACTION--- NUMBER	DESCRIPTION	DEBITS	CREDITS	CURRENT BALANCE	POST DT
FUND 689						LIABILITY INSURANCE FUND				
						FUND TOTAL	3,193.86	.00	3,193.86	
FUND 724						TRUST & AGENCY				
FUND 727						GREENWOOD CEMETERY P-CARE				
FUND 728						FAIRVIEW CEMETERY P-CARE				
FUND 729						HILLSIDE CEMETERY P-CARE				
FUND 790						FLOOD LEVY				
						GRAND TOTAL	1,560,075.63	41,471.36	1,518,604.27	