

**ROAD SAFETY STUDY**

**ACKMAN ROAD**  
**Haligus Road to Randall Road**

**September 2019**

Prepared For:

McHenry County Division of Transportation



Prepared By:



1475 East Woodfield Road - Suite 600  
Schaumburg, IL 60173-5440

## Table of Contents

Introduction .....	1
Study Corridor.....	1
Data Collection.....	2
Crash History.....	2
Field Observations .....	2
Traffic Counts.....	2
Safety Concerns and Observations .....	5
General/Corridor-wide Observations .....	5
Lakewood Road & Ackman Road .....	5
Redtail Drive to Huntley Road.....	6
Golf Course Road & Ackman Road.....	6
Westport Ridge & Ackman Road .....	6
Crash Analysis .....	7
Locations .....	7
<b>Crash Data Summary - Overall Corridor</b> .....	9
Exhibits 4, 4A and 4B: Overall Corridor - Ackman Road: Haligus Road to Randall Road (139 crashes)....	9
<b>Crash Data Summary – Intersections (High Crash Locations)</b> .....	9
Exhibit 5: Intersection - Lakewood Road & Ackman Road (10 crashes) .....	9
Exhibit 6: Intersection - Redtail Drive & Ackman Road (6 crashes) .....	9
Exhibit 7: Intersection - Swanson Road & Ackman Road (5 crashes) .....	9
Exhibit 8: Intersection – Huntley Road & Ackman Road (4 crashes) .....	10
Exhibit 10: Intersection - Westport Ridge & Ackman Road (4 crashes).....	10
Exhibit 11: Intersection – Skyridge Drive & Ackman Road (2 crashes).....	10
Exhibit 12: Intersection - Randall Road & Ackman Road (41 crashes).....	11
<b>Crash Data Summary – Segments (High Crash Locations)</b> .....	11
Exhibit 13: Segment - Ackman Road: Albrecht Drive to Redtail Drive (4 crashes) .....	11
Exhibit 14: Segment - Ackman Road: Swanson Road to Huntley Road (3 crashes).....	11
Exhibit 15: Segment - Ackman Road: Amberwood Drive to Manchester Drive (3 crashes).....	11
Exhibit 16: Segment - Ackman Road: Golf Course Road to Westport Ridge (14 crashes) .....	11
Exhibit 17: Segment - Ackman Road: Skyridge Drive to Randall Road (1 crashe).....	11
Recommendations .....	12
Potential Low-Cost, Short-Term Improvements .....	12
Potential High-Cost, Long-Term Improvements .....	13

Additional Traffic Calming Solutions and Considerations..... 14

**EXHIBITS**

- Exhibit 1. Study Area Map
- Exhibit 2. Existing Traffic Volumes – ADT & Peak Hours
- Exhibit 3. Crash Severity Rankings by Location
- Exhibit 4. Crash Data Summary – Segments & Intersections – Overall Study Limits
- Exhibit 4A. Crash Data Summary – Intersections – Overall Study Limits
- Exhibit 4B. Crash Data Summary – Segments – Overall Study Limits
- Exhibit 5. Crash Data Summary – Intersection: Lakewood Road & Ackman Road
- Exhibit 6. Crash Data Summary – Intersection: Redtail Drive & Ackman Road
- Exhibit 7. Crash Data Summary – Intersection: Swanson Road & Ackman Road
- Exhibit 8. Crash Data Summary – Intersection: Huntley Road & Ackman Road
- Exhibit 9. Crash Data Summary – Intersection: Golf Course Road & Ackman Road
- Exhibit 10. Crash Data Summary – Intersection: Westport Ridge & Ackman Road
- Exhibit 11. Crash Data Summary – Intersection: Skyridge Drive & Ackman Road
- Exhibit 12. Crash Data Summary – Intersection: Randall Road & Ackman Road
- Exhibit 13. Crash Data Summary – Segment: Ackman Road - Albrecht Drive to Redtail Dr
- Exhibit 14. Crash Data Summary – Segment: Ackman Road - Swanson Road to Huntley Road
- Exhibit 15. Crash Data Summary – Segment: Ackman Road - Amberwood Drive to Manchester Dr
- Exhibit 16. Crash Data Summary – Segment: Ackman Road - Golf Course Road to Westport Ridge
- Exhibit 17. Crash Data Summary – Segment: Ackman Road – Skyridge Drive to Randall Road

**APPENDICES**

- Appendix A. Road Safety Field Observations
- Appendix B. Field Visit Photo Log
- Appendix C. Safety Review Checksheets

## **Introduction**

McHenry County Division of Transportation (MCDOT) has contracted TranSystems to complete a Feasibility Study to address capacity and safety concerns for a 3.2-mile segment of Ackman Road, from Haligus Road at the west limit to Randall Road at the east limit. The purpose of this study is to evaluate the traffic safety for all roadway users within these project limits, identify safety concerns and make recommendations for short and long-term improvements.

The study accomplishes this goal by using a two-pronged approach. First, by conducting a field visit to review safety issues, roadside hazards, and unsafe traffic operations; and second by compiling and examining the crash history of this corridor to determine recurrent crash patterns and contributing factors. Findings from both of these processes are combined to obtain a comprehensive understanding of the roadway safety issues.

## **Study Corridor**

The study corridor extends along Ackman Road for over 3 miles, from Haligus Road to Randall Road. Within these limits, the corridor characteristics vary considerably in terms of geometrics, traffic control, and vehicular volumes. The roadway varies from a three to two lane cross-section, with most of the corridor providing gravel or paved shoulders with painted median, but a section with barrier median and curbs is also present. Traffic control at intersections includes signals, all-way stop-control, two-way stop-control, and Rectangular Rapid Flashing Beacons (RRFB). Under peak hour conditions, traffic operations for Ackman Road also vary significantly from free flow to very congested, depending on the location.

Exhibit 1 shows the study area and the surrounding street network. Ackman Road is classified as a major collector from Haligus Road to Lakewood Road and a minor arterial from Lakewood Road to Randall Road. It carries an Average Daily Traffic (ADT) ranging from approximately 4,000 vehicles per day (vpd) at the west project limits at Haligus Road to 18,000 vpd at its east terminus at Randall Road.

The study corridor is primarily a three-lane roadway, with one travel lane in each direction and a painted median or left-turn lane. Right turn lanes are present at Ronan Drive (EB), Albrecht Road (EB), Huntley Road (WB), Amberwood Drive (WB), Manchester Drive (WB), Westport Ridge (EB/WB), and Crimson Drive (WB). This three-lane roadway narrows down to a two-lane cross-section from east of Albrecht Road to west of Huntley Road. The segment between Haligus Road and Lakewood Road is also a two-lane roadway as it does not contain any access driveways that would require turn lanes.

There are 14 intersections along the corridor, including both Randall Road and Haligus Road at the termini. Of the 14 intersections, two are signalized (Randall Road and Golf Course Road), one is an all-way stop (Lakewood Road), and the remaining are stop controlled along the minor side street (Skyridge Drive, Crimson Drive, Westport Ridge, Manchester Drive, Amberwood Drive, Huntley Road, Swanson Road, Redtail Drive, Albrecht Road, Ronan Drive, and Haligus Road). All intersections are full access except for Skyridge Drive which is right in/right out.

Between the stop control at Lakewood Road and traffic signal at Golf Course Road, Ackman Road traffic has open roadway conditions (no stop signs or signal control) with a rolling terrain. The posted speed limit on Ackman Road is 50 mph west of Lakewood Road, and 40 mph east of it. The corridor

provides a rural cross-section with shoulders and ditches except for the far-east end of the project near Randall Road which is an urban cross section with curb, gutter and raised median.

Existing facilities for pedestrians and bicyclists include a sidewalk on the north side of Ackman Road between Randall Road and Amberwood Drive, and a multi-use path along the south side of Ackman Road between Skyridge Drive and Golf Course Road. West of these limits, these paths deviate away from the Ackman Road Alignment. Marked crosswalks across Ackman Road are provided at Golf Course Road and Westport Ridge. Dedicated bike lanes are provided on Golf Course Road, and also on Lakewood Road north of Ackman Road.

The land use within the study limits is primarily residential. Multiple schools are located in the vicinity with Crystal Lake South High School and Woods Creek Elementary being the closest. The corridor is also adjacent to recreational land uses, including Redtail Golf Club, Willow's Edge Park, Woods Creek Park, and Fretzner Park. There are also two commercial complexes between Redtail Drive and Lakewood Road.

## **Data Collection**

### Crash History

MCDOT provided crash data for the study corridor in the form of police crash reports and an electronic spreadsheet database. The database included a geocoded list of these crashes and summarized the crash characteristics noted in the police reports. This crash data covered a three year period, from January 1, 2014 to December 31, 2016. Within this period, there were a total of 139 recorded crashes along the study corridor. A discussion of the crash locations, patterns and safety issues identified from this data is provided under the 'Crash Analysis' section.

### Field Observations

A field review attended by MCDOT and TranSystems staff was conducted on April 9, 2019 from 7 am to 5 pm to help identify safety issues along the corridor. The field review was conducted on foot along both the north and south side of Ackman Road. Most corridor segments and intersections were visited at multiple times of the day as the review team travelled east and west. Observed deficiencies were documented with the help of photographs, field notes, and check sheets. Appendices A, B and C provide a summary of these observations in the form of plan exhibits, photo log, and intersection safety check sheets, respectively.

### Traffic Counts

24-hour turning movement counts for nine major intersections within the study area were conducted by MCDOT's consultant in December 2018. This data was used to estimate daily and peak hour traffic at various segments and intersections along the corridor. The Average Daily Traffic (ADT) provides context to the crash analysis by providing an estimate of the traffic exposure. The peak hour volumes help identify potential capacity, operational and queuing issues that can result in safety concerns. Exhibit 2 provides a summary of this data.



PLAN	SURVEYED	BY	DATE
NOTE BOOK NO.	PLOTTED		
	CHECKED		
	ALIGNED		
	FILE NAME		

PROFILE	SURVEYED	BY	DATE
NOTE BOOK NO.	GRADES CHECKED		
	STRUCTURE NOTATIONS CHKD		

**TranSystems**  
 1475 EAST WOODFIELD ROAD, SUITE 600  
 SCHAMBURG, ILLINOIS 60173  
 (847) 605-9600

FILE NAME =	USER NAME = *USER*	DESIGNED -	REVISED -
		DRAWN -	REVISED -
*MODELNAME*	PLOT SCALE = *SCALE*	CHECKED -	REVISED -
	PLOT DATE = *DATE*	DATE -	REVISED -

**McHENRY COUNTY**  
**DIVISION OF TRANSPORTATION**

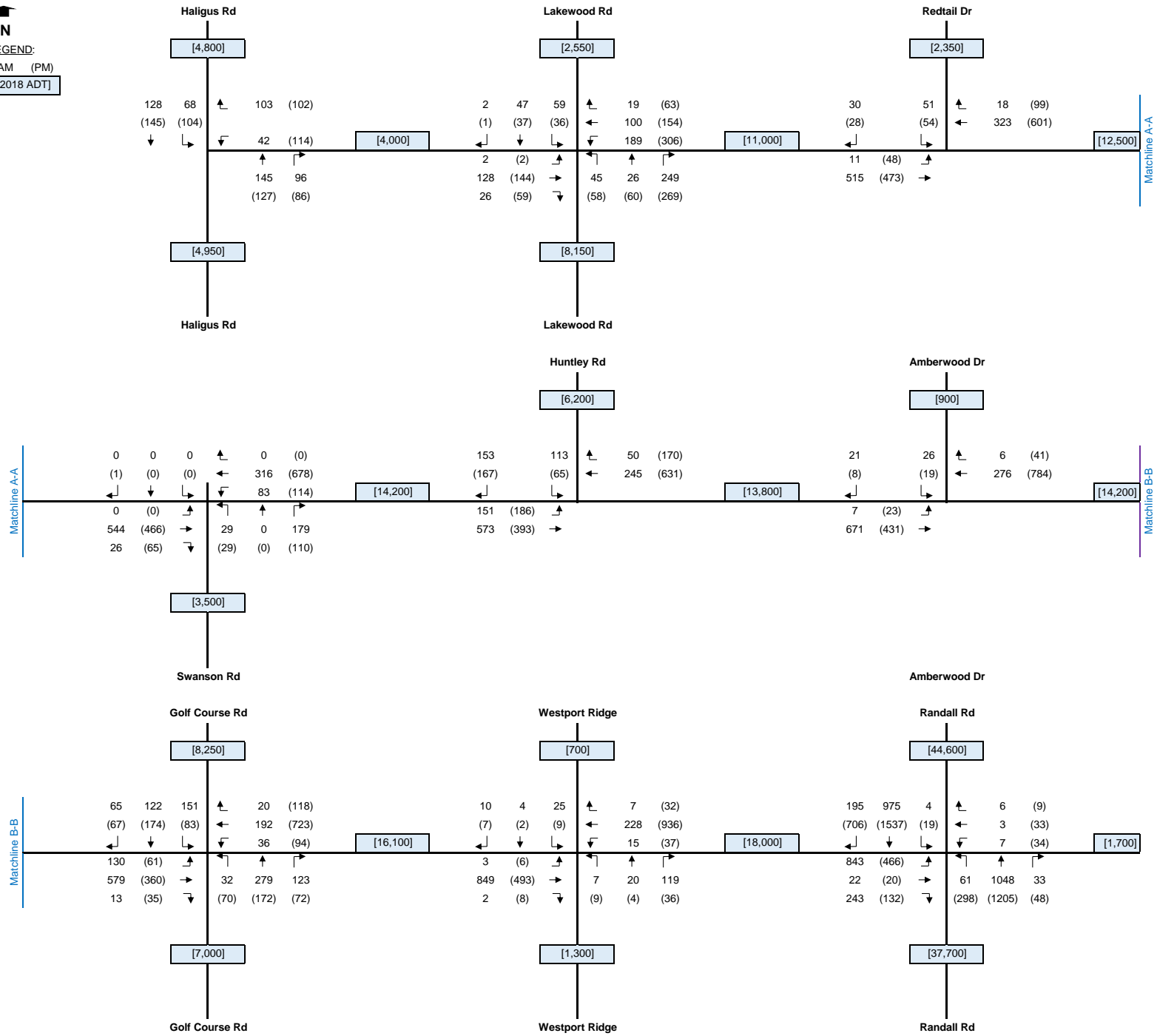
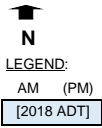


**EXHIBIT 1**  
**ACKMAN ROAD ROADWAY SAFETY STUDY**  
**STUDY AREA MAP**

SCALE: 1"=50'      SHEET      OF      SHEETS      STA.      TO      STA.

F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
3873	18-00492-00-ES	MCHENRY		
CONTRACT NO.				

ILLINOIS FED. AID PROJECT



**EXHIBIT 2**  
**EXISTING (2018) TRAFFIC VOLUMES**  
 AM (PM) Peak Hour and 24-Hour Counts

## Safety Concerns and Observations

A field review of the Ackman Road corridor was performed to identify issues related to roadway safety. Observations from this field review are summarized under the plan exhibits in Appendix A. Some of the key corridor-wide and location-specific observations are listed below.

### General/Corridor-wide Observations

- High speeds and unsafe gaps<sup>1</sup> were observed on Ackman Road during off-peak hours, mostly within roadway segments that operate under open roadway conditions (no stop signs or signal control).
- There are various unprotected, non-traversable hazards on the roadside within the clear zone. Mostly these are culvert end-sections without approved grates, utility poles, light poles and trees.
- Auxiliary deceleration lanes, for either left or right turns, are not provided for Ackman Road at several intersections. Some of the locations that provide these storage lanes, do not meet the current IDOT criteria for safe deceleration outside through travel lanes at the current posted speed limit (BDE 36-3.02, BLRS 34-3.02).
- Congestion and queuing issues were observed under AM and PM peaks at Golf Course Road, Randall Road, and the section from Redtail Drive to Huntley Road. These capacity issues create safety challenges due to stopped traffic on a generally open roadway, stop-and-go traffic conditions, lack of auxiliary turn lanes, and inadequate gaps for turning traffic.
- The roadway edge-of-pavement is damaged at various locations along Ackman Road and at the corner radii at most of the intersections. As expected this occurs almost exclusively in areas with gravel shoulders and indicates areas where vehicles tend to leave the roadway. These sections of broken pavement can also result in loss of control for vehicles traveling close to the pavement edge. Tire ruts caused by these vehicles leaving the pavement have left depressions in the unpaved shoulders which collect and hold rainwater.
- Occasional pedestrians were observed along Ackman Road on the shoulders, in areas where there is no existing sidewalk. Occasional bicyclists were also observed sharing the standard 12 ft wide travel lane with vehicular traffic on Ackman Road.

### Lakewood Road & Ackman Road

- A stop-sign violation by an eastbound vehicle was observed in the afternoon, despite the presence of solar powered LED flashing lights and 'Stop Ahead' warning signs. The vehicle continued through the intersection at moderate speed without slowing or stopping.
- Intersection sight triangle in the southwest corner is obstructed by vegetation. This is not an issue if traffic adheres to the stop control signs. However, field observations and crash reports indicate that violations are common.

---

<sup>1</sup> Gap is a measure of the time that elapses between the departure of a vehicle at a point on the roadway and the arrival of the following vehicle at the same point.



#### Redtail Drive to Huntley Road

- This roadway segment of Ackman Road has a two-lane rural cross-section with no left or right turn lanes, some sections with steep side slopes, and roadside hazards.
- Excessive delays and queues were observed in the PM peak in this area.
  - At the intersections of Redtail Drive and Swanson Road, the minor cross-street traffic does not have adequate gaps to turn on to Ackman Road. The excessive delays on the minor street approach can lead to riskier gap acceptance (that is, traffic from Swanson Road and Redtail Drive turn in to Ackman Road even in the absence of an adequate gap, due to the extended wait times on these minor street approaches). Single traffic lanes on these approaches also mean that the left-turning traffic queues block the right-turning movement.
  - There are no turn lanes on Ackman Road at either Redtail Drive or Swanson Road. Left-turning traffic therefore has to wait for a gap in the opposing traffic in the through lane, and blocks Ackman Road through traffic. Resulting stoppages can create an extended and unsafe queues on Ackman Road.
  - An eastbound through vehicle was observed to stop and yield to a westbound left-turn vehicle at the Swanson Road intersection. Unexpected operations like these can be hazardous as they create a sudden stoppage for the eastbound vehicle platoon.
- Ackman Road crosses Kishwaukee Creek over a culvert protected by guardrail on both sides. However, the guardrail terminals do not meet current standards and do not provide adequate length of need to protect the culvert and the non-recoverable foreslopes on both eastbound and westbound approaches.

#### Golf Course Road & Ackman Road

Long traffic queues during peak hour operations create safety concerns on both Ackman Road and Golf Course Road. Pavement condition at this intersection is also poor and there is potential for standing water and drainage issues.

#### Westport Ridge & Ackman Road

A pedestrian/bicycle crossing equipped with solar powered Rectangular Rapid Flashing Beacon (RRFB) is provided on the east leg of this intersection. However, field observations indicate poor compliance by motorists even after the flashing beacons have been activated. During the early morning period (approximately 7 am), excessive glare from the sun was evident for the eastbound traffic, as a result the W11-2 pedestrian sign and the flashing beacons are not as visible as desired.

The east-west orientation of Ackman Road indicates that glare from the sun during sunrise and sunset is expected to be an issue through the corridor during certain months of the year.

## **Crash Analysis**

### Locations

The study limits for Ackman Road corridor includes 13 of the 14 intersections (Crimson Drive intersection was not analyzed as it had no crash data) and 10 roadway segments that had crash experience during the three year period from 2014 to 2016. Locations with relatively high crash occurrence were selected based on the number and severity of crashes. Crash unit costs based on injury severity were obtained from FHWA publication 'Crash Costs for Highway Safety Analysis' (January 2018). Exhibit 3 summarizes the cumulative crash costs for each intersection and roadway segment over the study period. Locations with relatively high crash costs are highlighted.

The crash patterns were analyzed for the overall corridor and each of the high crash locations. The data is arranged based on collision types, injury severity, wet pavement and low light conditions to identify underlying patterns and contributing factors. Exhibits 4 through 17 summarize the crash patterns for the overall corridor, high crash intersections, and high crash segments.

**EXHIBIT 3**  
**Crash Severity Ranking by Location**  
**(2014-2016)**  
**Ackman Road - Haligus Road to Randall Road**

Crash Unit Cost	\$11,295,400	\$655,000	\$198,500	\$125,600	\$11,900		
Intesection	Number of Fatalities	Number of Type A Injuries	Number of Type B Injuries	Number of Type C Injuries	Number of PDO	Total	Crash Cost by Location
Intersection: Haligus Rd & Ackman Rd	0	0	0	0	2	2	\$23,800
Intersection: Lakewood Rd & Ackman Rd	0	2	4	5	19	30	\$2,958,100
Intersection: Ronan Dr & Ackman Rd	0	0	0	0	2	2	\$23,800
Intersection: Albrecht Rd & Ackman Rd	0	0	0	0	2	2	\$23,800
Intersection: Redtail Dr & Ackman Rd	0	0	0	2	11	13	\$382,100
Intersection: Swanson Rd & Ackman Rd	0	0	0	1	10	11	\$244,600
Intersection: Huntley Rd & Ackman Rd	0	0	0	0	9	9	\$107,100
Intersection: Amberwood Dr & Ackman Rd	0	0	0	0	2	2	\$23,800
Intersection: Manchester Dr & Ackman Rd	0	0	0	0	1	1	\$11,900
Intersection: Golf Course Rd & Ackman Rd	0	1	0	6	57	64	\$2,086,900
Intersection: Westport Ridge & Ackman Rd	0	1	0	0	7	8	\$738,300
Intersection: Skyridge Dr & Ackman Rd	0	0	0	1	5	6	\$185,100
Intersection: Randall Rd & Ackman Rd	0	0	4	9	84	97	\$2,924,000

Crash Unit Cost	\$11,295,400	\$655,000	\$198,500	\$125,600	\$11,900		
Roadway Segment	Number of Fatalities	Number of Type A Injuries	Number of Type B Injuries	Number of Type C Injuries	Number of PDO	Total	Crash Cost by Location
Segment: Ackman Rd - Haligus Rd to Lakewood Rd	0	0	0	0	1	1	\$11,900
Segment: Ackman Rd - Albrecht Dr to Redtail Dr	0	0	1	0	4	5	\$246,100
Segment: Ackman Rd - Redtail Dr to Swanson Rd	0	0	0	0	1	1	\$11,900
Segment: Ackman Rd - Swanson Rd to Huntley Rd	1	0	0	0	4	5	\$11,343,000
Segment: Ackman Rd - Huntley Rd to Amberwood Dr	0	0	0	0	6	6	\$71,400
Segment: Ackman Rd - Amberwood Dr to Manchester Dr	0	0	1	1	4	6	\$371,700
Segment: Ackman Rd - Manchester Dr to Golf Course Rd	0	0	0	0	5	5	\$59,500
Segment: Ackman Rd - Golf Course Rd to Westport Ridge	0	0	2	2	31	35	\$1,017,100
Segment: Ackman Rd - Westport Ridge to Skyridge Dr	0	0	0	0	2	2	\$23,800
Segment: Ackman Rd - Skyridge Dr to Randall Rd	0	0	1	0	1	2	\$210,400

**Table 34. Recommended national KABCO comprehensive crash unit costs for the FHWA BCA Guide and Tool (2016 dollars).**

Severity	Comprehensive Crash Unit Costs
K	\$11,295,400
A	\$655,000
B	\$198,500
C	\$125,600
O	\$11,900

Source: FHWA, Crash Cost for Highway Safety Analysis, 2018

### **Crash Data Summary - Overall Corridor**

#### Exhibits 4, 4A and 4B: Overall Corridor - Ackman Road: Haligus Road to Randall Road (139 crashes)

- Rear ends are the predominant collision type, contributing to half of all the crashes within the study area. This trend is supported by observations of high speeds, unsafe headways, and stopped/queued traffic during the safety review field visit. For 77 of the total 139 crashes, aggressive driving behavior (speeding or following too closely) was listed as a contributing factor.
- Based on the combination of crashes and injury severity, the most critical crashes were Rear-Ends, Turning and Angle. Fixed object crashes also rank high under this criteria as the high unit cost of one fixed object fatal crash raises the total crash cost of this category (see discussion for segment 12).
- Most crashes are intersection related (106) compared to segments (33). However, injury rates are similar at both kinds of locations, with 25% of crashes at both intersections and segments resulting in injuries.
- A large proportion of the fixed object crashes occurred during low-light conditions.

### **Crash Data Summary – Intersections (High Crash Locations)**

#### Exhibit 5: Intersection - Lakewood Road & Ackman Road (10 crashes)

- This intersection has a high proportion of angle crashes, which also accounted for all of the Type A and B injury crashes. Most of the crashes at this location were caused by vehicles disregarding the stop sign, which was the primary cause for 7 of the 10 crashes at this intersection.

#### Exhibit 6: Intersection - Redtail Drive & Ackman Road (6 crashes)

- As noted under the field observations, there are no turn lanes provided at this intersection, which result in stopped or slowing vehicles in the Ackman Road through lanes. This has been a contributing cause at the two rear-end crashes at this intersection.
- The long delays and inadequate number of acceptable gaps for minor street traffic also appears to be the underlying factor for the three turning crashes.
- An animal-related crash is reported at this intersection and is very similar to some of the crashes involving deer that are recorded for the roadway segment immediately west of Redtail Drive (see discussion for roadway segment 11: Albrecht Drive to Redtail Drive).

#### Exhibit 7: Intersection - Swanson Road & Ackman Road (5 crashes)

- Rear-end crashes constitute majority of crashes at this location. The crash recorded as a same-direction sideswipe also appears to be a likely rear-end crash based on the description provided in the crash report.
- Lack of turn lanes on Ackman Road and Swanson Road, as noted under the field observations, is also the major concern at this intersection; and appears to be the major contributing factor at most of the crashes at this intersection.

Exhibit 8: Intersection – Huntley Road & Ackman Road (4 crashes)

- Turning crashes made up three of the four crashes at this intersection; involving either a southbound left-turn or eastbound left-turn maneuver that conflicted with westbound through traffic.
- Failure of left-turning vehicles to yield to the westbound through traffic is believed to be the primary cause of these crashes. Crashes occurred on weekends and off-peak hours, so traffic congestion is not believed to be the underlying factor.
- The rear-end crash caused by icy conditions on southbound Huntley Road involved multiple vehicles. The turning crashes also reported multiple instances of property damage. However, no Type A, B or C injuries were reported in any of the crashes.

Exhibit 9: Intersection - Golf Course Road & Ackman Road (28 crashes)

- Rear ends are the predominant collision type at this intersection, accounting for nearly three-quarters of the crashes.
  - The primary cause for majority of these collisions is traffic queued due to congestion or stopped at the signal.
  - A majority of these collisions (14 of 19 rear-end crashes) occur on the eastbound approach. A possible reason for this pattern is that Golf Course Road is the first traffic control on Ackman Road after a long stretch of open roadway conditions for eastbound traffic.
  - Traffic queued in the westbound direction also results in significant number of rear-end crashes in the roadway segment east of this intersection (see discussion under Exhibit 14: Segment - Ackman Road: Golf Course Road to Westport Ridge).
- Glare from the sun was reported as an underlying cause for one crash at this location.

Exhibit 10: Intersection - Westport Ridge & Ackman Road (4 crashes)

- Although the total number of crashes at this intersection is low, it includes one Type A injury crash. This crash involved a crossing bicyclist and an eastbound vehicle, and occurred in April 2014, prior to installation of the marked crosswalk and RRFB equipment (date of installation between June 2015 and June 2016 per aerial views).
- Almost all crashes at this intersection are influenced by pedestrian activity, and involved vehicles stopped or slowing down for crossing pedestrians that were rear-ended by following traffic. One of these incidents also claimed sun glare as a factor.

Exhibit 11: Intersection – Skyridge Drive & Ackman Road (2 crashes)

- Collisions at this intersection involved turning crashes, where northbound right-turning vehicles failed to yield to eastbound through vehicles before entering Ackman Road. Both crashes occurred within or near the AM peak, when this section of Ackman Road experiences traffic congestion in the eastbound direction. Icy/wet pavement conditions on Ackman Road was also a contributing factor for one of the crashes.

Exhibit 12: Intersection - Randall Road & Ackman Road (41 crashes)

- Rear-end collisions are also the predominant collision type, constituting half the crashes at this intersection. These crashes primarily involved vehicles stopped at the signal, mostly on the eastbound and northbound approaches.
- Six of the crashes were caused by vehicles failing to obey the signal indication.
- Some of the crashes consisted of vehicles using the dual left-turn lanes and sideswiping each other during the turn.

**Crash Data Summary – Segments (High Crash Locations)**

Exhibit 13: Segment - Ackman Road: Albrecht Drive to Redtail Drive (4 crashes)

- Two of the four crashes in this segment are nearly identical with an eastbound vehicle colliding with a southbound deer crossing Ackman Road. Icy pavement conditions on
- An additional crash reported as a fixed-object collision is also animal related, where the vehicle swerved off-road to avoid a deer.
- All three of these animal-related crashes appeared to have occurred immediately west of the Redtail Road intersection, which also reports a deer related crash.

Exhibit 14: Segment - Ackman Road: Swanson Road to Huntley Road (3 crashes)

- This roadway segment contains the only recorded Type K (fatal) crash within the study limits. This crash involved a vehicle leaving the roadway under unknown circumstances and colliding with multiple fixed objects; including two trees, one utility pole and several shrubs on the roadside. The crash report indicates that it is not clear whether the fatality was a result of the crash or if a medical incident happened prior to the crash.

Exhibit 15: Segment - Ackman Road: Amberwood Drive to Manchester Drive (3 crashes)

- Two of the three crashes occurred at the same location. Both involved eastbound vehicles leaving the roadway and impacting the same fire hydrant. One was a result of icy pavement conditions and the other was caused by a distracted driver.

Exhibit 16: Segment - Ackman Road: Golf Course Road to Westport Ridge (14 crashes)

- Notably, all 14 crashes within this segment are rear-end. With 12 of these crashes occurring in the westbound direction.
- Congested traffic conditions appear to be the underlying factor for most of these crashes, as they were caused either by stop-and-go traffic or by moving vehicles failing to stop in time and impacting the back of the traffic queued at the Golf Course Road intersection (see discussion under Exhibit 8: Intersection - Golf Course Road & Ackman Road).
- There are two events at this segment where one crash led to another. Incidents on April 17, 2014 and December 30, 2014 resulted in two crashes each.

Exhibit 17: Segment - Ackman Road: Skyridge Drive to Randall Road (1 crash)

- The fixed object crash in this segment was reported to be the result of a vehicle being operated at high speed under the influence of alcohol/drugs, and resulted in a Type B injury. Vehicle failed to maintain control while making a right-turn from southbound Randall Road to westbound Ackman Road, and ended up in the parking lot for Hope Church.

## Recommendations

The following recommendations are developed based on the observations during the road safety field review and findings from the analysis of the crash patterns. Additional location specific recommendations and details are also included in Appendix A.

Based on the incidence and severity of crashes in the corridor over the three year period from 2014 to 2016, the most critical locations are the intersections at Lakewood Road, Golf Course Road and Randall Road, and the segment from Golf Course Road to Westport Ridge. The roadway segment from Swanson Road to Huntley Road also ranks high in crash severity, primarily due to a single fatal crash in this segment. However, from the crash report this crash it is not evident if this crash was the result of a design deficiency.

### Potential Low-Cost, Short-Term Improvements

- Provide consistent warning signs on approaches to intersections (see Appendix A) and refresh pavement marking. Install W4-4P (Cross Traffic Does Not Stop) signs under all minor street stop signs.
- Speed Control: Provide radar speed signs. Coordinate with the local police departments to enhance speed enforcement.
  - Reducing the posted speed limit between Haligus Road and Lakewood Road from 50 mph to 40 mph should be considered to provide a consistent speed limit for the corridor. This segment should be investigated in accordance with the County's Policy for the Establishment and Posting of Speed Limits to determine if a speed limit reduction is warranted.
- Replace and extend the guardrail at Kishwaukee Creek to meet current standards and to provide protection for non-recoverable slopes adjacent to the culvert.
- Install traversable grates for roadside culvert end-sections within the clear zone.
- Trim vegetation to improve intersection sight distance at the following locations:
  - Southwest quadrant of Westport Ridge and Ackman Road.
  - Southwest quadrant of Lakewood Road and Ackman Road.
- Install a W3-4 (Be Prepared to Stop) sign with flashing beacon on the eastbound and westbound approach to Westport Ridge. Consider reducing the posted speed limit between Randall Road and Golf Course Road, with the goal of reducing speeds at the Westport Ridge pedestrian crossing.
- Install W8-5aP (Slippery When Wet - Ice) signs on the segment between Amberwood Drive and Manchester Drive.
- Provide signal ahead warning signs in advance of Golf Course Road intersection. Verify that signal clearance times (yellow and all-red phase) are correct for the design speed.
- Install rumble strips on the eastbound and westbound approaches to the Lakewood intersections to alert the drivers to the upcoming all-way stop intersection. Public opinion on this safety measure should be considered prior to implementation, as it may face some opposition from local residents and stakeholders.
- Provide spot repairs for pavement surface, broken edge of pavement and pavement areas with poor drainage where noted (see Appendix A).
- Reducing lane widths for Ackman Road, either by means of pavement marking or physical elements such as midblock medians or chokers, can help prevent excessive speeds. Curb medians and chokers can also provide pedestrian refuge and shorten crossing distances. (Lane

width reduction at intersections is discussed separately under the section for ‘Additional Traffic Calming Solutions and Considerations’.)

#### Potential High-Cost, Long-Term Improvements

- To reduce crashes involving vehicles leaving the roadway, provide a combination of edge line rumble strips, FHWA safety edge, or post mounted reflective delineators. Replace gravel shoulders with asphalt.
- Provide left-turn and right-turn auxiliary lanes for Ackman Road traffic at Redtail Drive and Swanson Road. Provide separate left and right turn lanes with adequate storage on these minor streets.
- At Redtail Road, Swanson Road and Huntley Road, install traffic signals with protected turn phase if intersections meet signal warrants; or explore alternate intersection configurations such as roundabouts. A signal installation, if warranted, can also help alleviate right-angle crashes at the Lakewood Road intersection.
- Under the Alternatives Analysis, roundabout design options should be explored at various intersections along the corridor due to their safety benefits, traffic calming effects and improvements to pedestrian/bike safety and access. Particularly the Intersections identified as high crash locations, such as Lakewood Rd, Redtail Drive, and Swanson Road can be expected to see significantly improved safety performance under a roundabout design.
- Realigning the roadways at Redtail Drive and Swanson Road to combine the two T-intersections into a single four-legged intersection should be investigated under the Alternative Analysis, to improve traffic flow and safety. A roundabout at this four-legged intersection would further enhance safety by reducing the number of conflict points.
- A concentration of deer related crashes are observed on the Ackman Road segment from Albrecht Road to Huntley Road. Countermeasures to address these crashes include speed control (such as by roundabouts), installation of roadway lighting, or clearing vegetation from near the roadway.
- Provide right-turn auxiliary lanes on eastbound and westbound Ackman Road at the intersection with Golf Course Road.
- Extend auxiliary turn lane storage and tapers to meet IDOT standards (BDE 36-3.02, BLRS 34-3.02).
- Crashes under low-light conditions constitute a significant portion of the corridor crash experience. Implementation of roadway lighting along the corridor is recommended.
- Improve traction and skid resistance with pavement overlay.
- Perform a roadside barrier warrant analysis for the whole corridor to identify non-recoverable and critical slopes and unsafe ditch sections. Fix grading to provide a traversable and recoverable roadside slopes within the clear zone, or provide guardrail protection where need is identified.
- Pedestrian and Bike Safety
  - As noted under the Study Corridor section, the corridor currently provides only intermittent pedestrian and bicycle facilities, primarily at the east end of the study corridor. As a result bicyclists and pedestrians were observed using travel lanes or shoulders in areas where no dedicated facilities are provided for non-motorized roadway users. ADA compliant sidewalks and/or multi-use paths on one or both sides of the Ackman Road should be provided through the study limits to improve safety and connectivity for these users.



- Designated access points for pedestrians and bicyclists to cross Ackman Road are also limited under current conditions. Marked crosswalks should be included at all future intersection improvements. Signal installations should include pedestrian actuation and signal phasing. Roundabouts should be designed to incorporate safe access for all non-motorized users.

#### Additional Traffic Calming Solutions and Considerations

As noted in this report, field observations and crash patterns indicate that high traffic speed is a major safety concern on the Ackman Road corridor. Traffic calming countermeasures are an evident solution to this issue, but their safety benefits will need to be assessed against the mobility and design requirements of an arterial roadway. Some common traffic calming treatments and their advantages, drawbacks and feasibility on this corridor are discussed below.

- Horizontal deflection treatments:
  - Lateral shifts in roadway alignment can be an effective traffic calming solution for an arterial, where high speeds preclude other types of horizontal deflection treatments, but an appropriate curvature and taper must be provided to match the speed profile of the roadway. The current posted speed limit of 40 mph on Ackman Road is towards the high end of what is considered feasible for implementing this treatment.
  - Additional horizontal deflection countermeasures, such as chicanes, realigned intersections, and traffic circles are generally only appropriate for local roads and collectors with lower speeds and volumes, and smaller design vehicle requirements.
  - Roundabouts are an effective means of reducing travel speed on the approach and through an intersection on an arterial. As noted under the recommendations section, roundabout intersection control is a viable option for addressing some of the safety issues at many of the intersections along this corridor, and should be evaluated further under the preliminary alternatives analyses. A properly designed roundabout will incorporate lateral shifts in the approaching roadway alignments to provide the necessary speed reduction.
- Vertical deflection treatments:
  - Some of the common variations of vertical deflection treatments for speed management include speed humps, speed cushions, speed tables, raised crosswalks and raised intersections. However, none of these are well suited for a high speed, high volume thoroughfare such as Ackman Road. These treatments are generally limited to local residential streets with posted speed of less than 30 mph and daily traffic volumes of under 4,000 vpd.
  - Most of these countermeasures also hinder the movement of emergency vehicles. Speed cushions and offset speed humps/tables can provide better access for emergency vehicles, but still retain all of the other drawbacks.
  - Generally, these treatments are not popular with the travelling public.
- Street Width Reduction:
  - Providing speed reduction at a midblock locations by narrowing available lane widths is a viable option for Ackman Road, as noted under the 'Potential Low-Cost, Short-Term Improvements' section.
  - Reducing the corner radii or providing curb extensions/bulbouts at intersections can help slow down the right-turning traffic, where it can pose a risk to pedestrians on

adjacent crosswalks, and also reduce pedestrian crossing distances. Curb extensions can also provide speed control for through traffic by providing a pinch point.

- However, at two-way stop-control intersections, the slower right-turn maneuver from minor street on to Ackman Road can increase the gap requirement for this traffic movement and increase the risk of rear ends and angle crashes.
- Access Control/Routing Restrictions:
  - A range of traffic calming countermeasures such as diagonal diverters, full/half closures, and median barriers use routing restrictions and access control at intersections to reduce speed by preventing through traffic movement. These treatments are not suitable for traffic on a thoroughfare such as at Ackman Rd.
  - Access control measures that prevent turns into or out of a minor street can be used to remove selected conflict points at high risk locations, but are likely to face some opposition from the local residents.
- Providing streetscaping or landscaping can alter the driver behavior and encourage non-motorists by altering the roadway environment from an open roadway to a more urban or residential corridor. However, sight distance requirements should be followed strictly and hazardous fixed objects within the clear zone should be avoided when providing these elements.

---

## APPENDICES

- A. Road Safety Field Observations
- B. Field Visit Photo Log
- C. Safety Review Checksheets

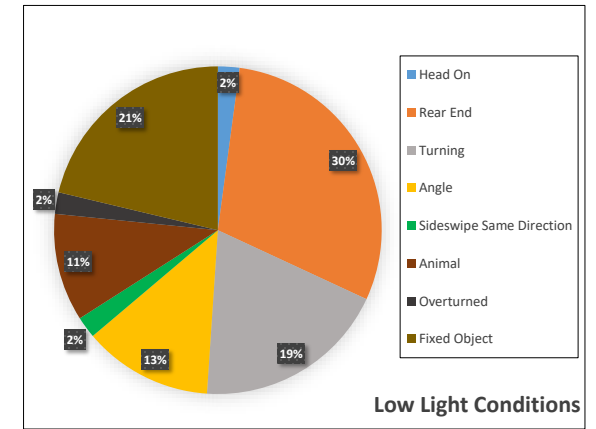
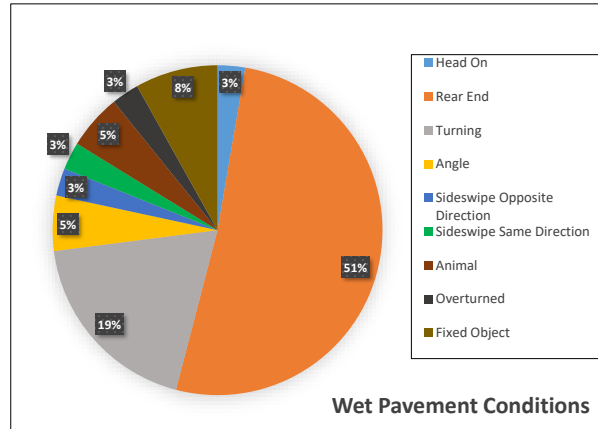
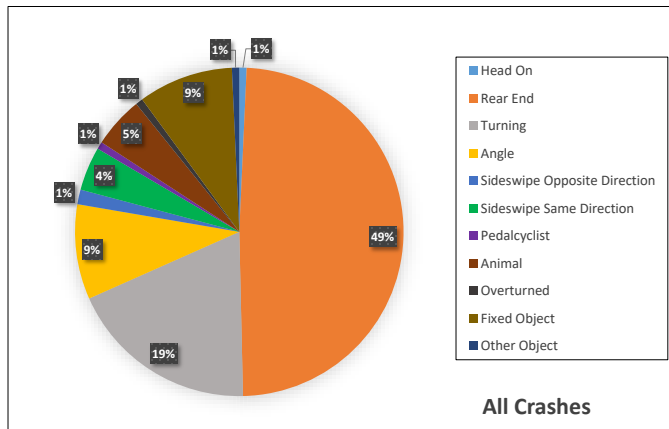
**Crash Data Summary  
(2014-2016)  
EXHIBIT 4**

**Segment & Intersection Crashes: Ackman Rd - Haligus Rd to Randall Rd**

Number of Crashes						
All Crashes						
Crash Type	Fatal	A Injury	B Injury	C Injury	PDO	Total
Head On					1	1
Rear End		1	3	9	55	68
Turning			2	6	18	26
Angle		2	2	2	7	13
Sideswipe Opposite Direction			1		1	2
Sideswipe Same Direction				1	5	6
Pedalcyclist		1				1
Animal			1		6	7
Overturned					1	1
Fixed Object	1		2		10	13
Other Object					1	1
<b>Total</b>	<b>1</b>	<b>4</b>	<b>11</b>	<b>18</b>	<b>105</b>	<b>139</b>

Number of Crashes						
Wet Pavement Conditions						
Crash Type	Fatal	A Injury	B Injury	C Injury	PDO	Total
Head On					1	1
Rear End				4	15	19
Turning			1	1	5	7
Angle					2	2
Sideswipe Opposite Direction					1	1
Sideswipe Same Direction					1	1
Animal					2	2
Overturned					1	1
Fixed Object					3	3
<b>Total</b>			<b>1</b>	<b>5</b>	<b>31</b>	<b>37</b>

Number of Crashes						
Low Light Conditions						
Crash Type	Fatal	A Injury	B Injury	C Injury	PDO	Total
Head On					1	1
Rear End			1	3	10	14
Turning			1	3	5	9
Angle				1	5	6
Sideswipe Same Direction					1	1
Animal				1	4	5
Overturned					1	1
Fixed Object			2		8	10
<b>Total</b>			<b>6</b>	<b>6</b>	<b>35</b>	<b>47</b>

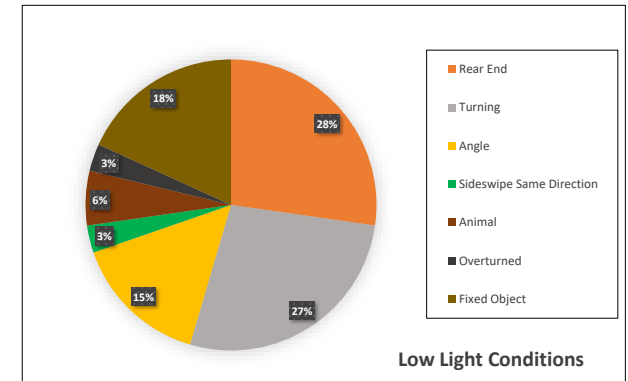
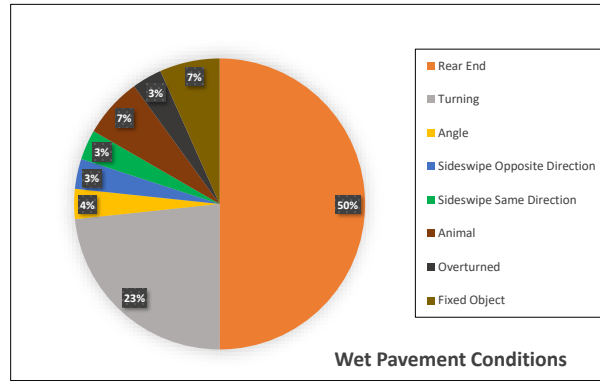
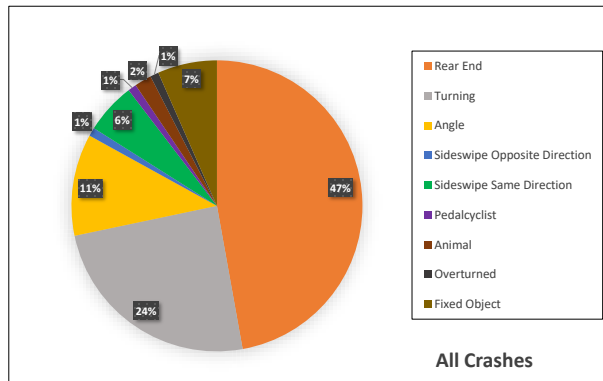


**Crash Data Summary  
(2014-2016)  
EXHIBIT 4A  
Intersection Crashes: Ackman Rd - Haligus Rd to Randall Rd**

Number of Crashes All Crashes						
Crash Type	Fatal	A Injury	B Injury	C Injury	PDO	Total
Rear End		1	1	7	41	50
Turning			2	6	18	26
Angle		2	2	2	6	12
Sideswipe Opposite Direction					1	1
Sideswipe Same Direction				1	5	6
Pedalcyclist		1				1
Animal					2	2
Overturned					1	1
Fixed Object			1		6	7
<b>Total</b>		<b>4</b>	<b>6</b>	<b>16</b>	<b>80</b>	<b>106</b>

Number of Crashes Wet Pavement Conditions						
Crash Type	Fatal	A Injury	B Injury	C Injury	PDO	Total
Rear End				3	12	15
Turning			1	1	5	7
Angle				1	1	1
Sideswipe Opposite Direction					1	1
Sideswipe Same Direction					1	1
Animal				2	2	2
Overturned				1	1	1
Fixed Object				2	2	2
<b>Total</b>			<b>1</b>	<b>4</b>	<b>25</b>	<b>30</b>

Number of Crashes Low Light Conditions						
Crash Type	Fatal	A Injury	B Injury	C Injury	PDO	Total
Rear End				2	7	9
Turning			1	3	5	9
Angle			1		4	5
Sideswipe Same Direction					1	1
Animal					2	2
Overturned					1	1
Fixed Object			1		5	6
<b>Total</b>			<b>3</b>	<b>5</b>	<b>25</b>	<b>33</b>



**Crash Data Summary  
(2014-2016)  
EXHIBIT 4B  
Segment Crashes: Ackman Rd - Haligus Rd to Randall Rd**

Number of Crashes All Crashes						
Crash Type	Fatal	A Injury	B Injury	C Injury	PDO	Total
Head On					1	1
Rear End			2	2	14	18
Angle					1	1
Sideswipe Opposite Direction			1			1
Animal			1		4	5
Fixed Object	1		1		4	6
Other Object					1	1
<b>Total</b>	<b>1</b>		<b>5</b>	<b>2</b>	<b>25</b>	<b>33</b>

Number of Crashes Wet Pavement Conditions						
Crash Type	Fatal	A Injury	B Injury	C Injury	PDO	Total
Head On					1	1
Rear End				1	3	4
Angle					1	1
Fixed Object					1	1
<b>Total</b>				<b>1</b>	<b>6</b>	<b>7</b>

Number of Crashes Low Light Conditions						
Crash Type	Fatal	A Injury	B Injury	C Injury	PDO	Total
Head On					1	1
Rear End			1	1	3	5
Angle					1	1
Animal			1		2	3
Fixed Object			1		3	4
<b>Total</b>			<b>3</b>	<b>1</b>	<b>10</b>	<b>14</b>

