

# CITY OF RICHLAND CENTER, WISCONSIN

## US 14 Traffic Study



November 2023



Prepared for:  
City of Richland Center





# **US 14 Traffic Study**

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**City of Richland Center  
Richland County, Wisconsin  
November 2023**

DRAFT

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# US 14 Traffic Study City of Richland Center

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## CHAPTER 1 – INTRODUCTION & BACKGROUND

### 1.1 INTRODUCTION

The city of Richland Center (City) contracted with MSA Professional Services, Inc. (MSA) to review access, operations, safety, and future development prospects along US 14, from approximately Peebles Drive to WIS 58. The City requested specific operational and safety focus on the portion of US 14 from Starlight Lane to Jelland Drive, with special attention to the intersections of US 14 with:

1. Starlight Lane
2. County O
3. Pleasant Valley Drive
4. Jelland Drive

Interest was also projected to the area surrounding the proposed new hospital development, southwest of the Jelland Drive intersection. As discussed in more detail later in this report, MSA coordinated with the hospital project's stakeholders for the latest development information to be included as part of the corridor study.

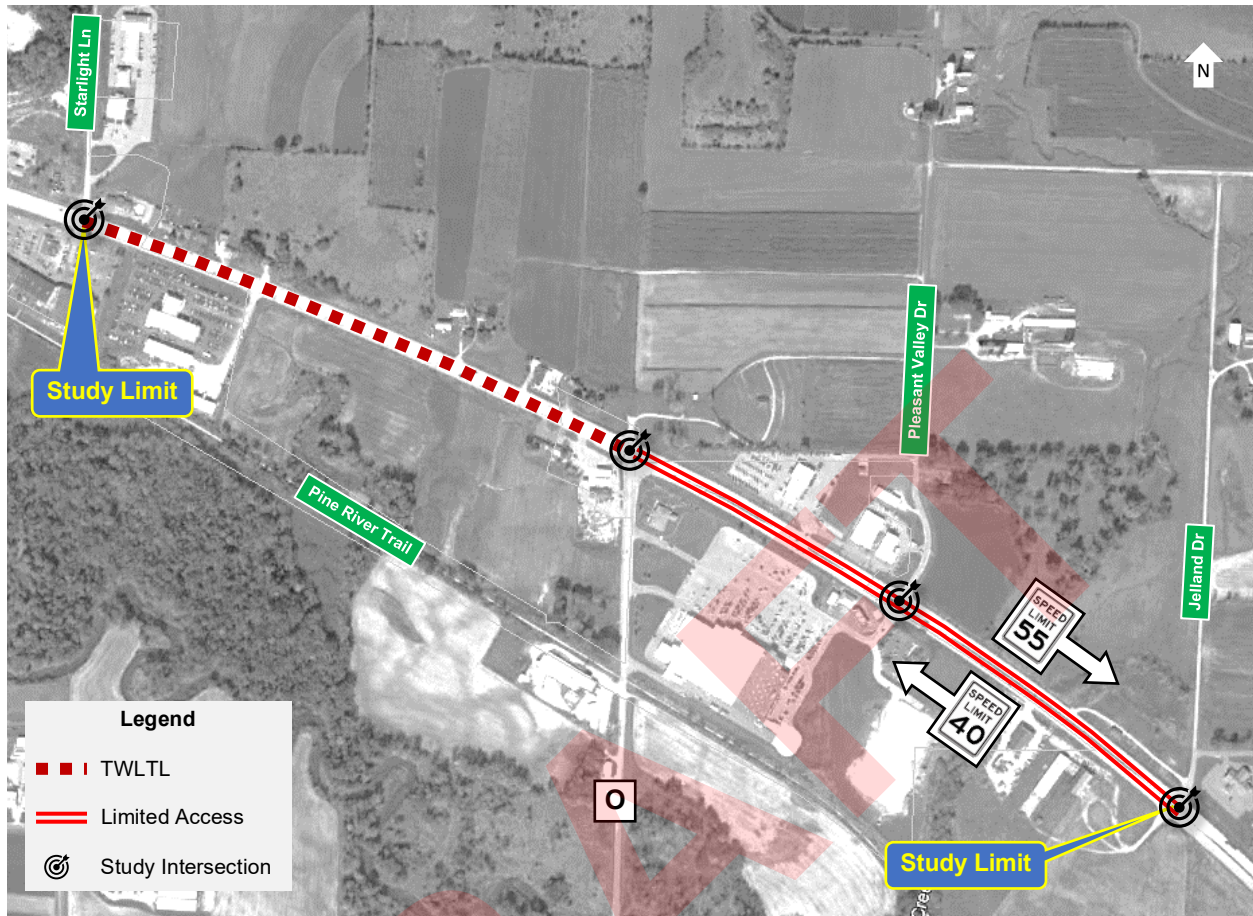
The following report summarizes the findings and recommendations derived from a review of safety, operation, and development data, providing a summary of overall next steps to be used as guidance as development occurs along the corridor.

### 1.2 BACKGROUND & EXISTING CONDITIONS

The focus of the US 14 corridor study is approximately 1.1-miles long, from the intersection with Starlight Lane to the intersection with Jelland Drive. The corridor is constrained by rolling terrain north of US 14 and the Pine River Trail south of US 14. Connectivity to points south of US 14 is limited to County O; roadways north of US 14 within the study area do not have any outlets to other regional roadways due to the terrain.

As noted above, four intersections with public roadways are contained within the study corridor. Of those all but the County O intersection are side-street stop controlled; the County O intersection is controlled by a traffic signal (the northbound right turn bypass lane is controlled by a stop sign). Noteworthy is that the northbound approach at the Starlight Lane and Jelland Drive intersections and the southbound approach at the County O intersection are private driveways.

The entire study corridor is divided and four-lanes wide. West of County O, US 14 is separated by a two-way left turn lane (TWLTL) with a posted speed limit of 40 mph. East of County O, a raised median separates the east and westbound lanes. East of Pleasant Valley Drive, US 14 has a posted speed limit of 55 mph. This is summarized in Figure 1-1.



**Figure 1-1, US 14 Study Limits and Characteristics**

Exclusive left turn lanes are provided for the intersections with public roadways within the study corridor. With the exception of the Ford dealership driveway (between County O and Pleasant Valley Drive), full access is not provided to private developments within the raised median segment of the corridor.

Multimodal facilities, either sidewalks or shared-use paths are not present along US 14 within the study corridor. Topography or drainage facilities limit available space for off-roadway accommodations. Paved shoulders wide enough for bicycle use are present in segments along the corridor, but are not continuous, disappearing when exclusive right turn lanes are present and or curb and gutter. A review of the Richland County Bicycle Map (courtesy of the Wisconsin Department of Transportation (WisDOT)) reveals the segment is generally not advised for regular bicycle use due to the high motor vehicle volumes. However, the Pine River Trail roughly parallels the corridor several hundred feet south of US 14. This trail is open to pedestrians, bicycles, and snowmobiling activities between the city of Richland Center and the village of Lone Rock.

Within the study area, street lighting is generally limited to public intersections only. The County O intersection has the most substantial lighting, with light fixtures on all but the southbound approach. Pleasant Valley Drive has a single fixture on the southeast corner. A private fixture is



on the northbound approach to the Starlight Lane intersection, and no lighting is present at the Jelland Drive intersection.

### 1.2.1 SAFETY ANALYSIS

A review of available reported crashes for the period of January 2018 through December 2022 was completed. Over that period, the study corridor experienced:

- 42 total crashes
    - 40 mph segment
      - A corridor crash rate of 270.32<sup>1</sup> (the statewide average is 429.44<sup>1</sup> for a similar corridor)
      - A corridor injury crash rate of 67.58<sup>1</sup> (the statewide average is 55.89<sup>1</sup> for a similar corridor)\*
- \* The injury crash rate is greater than the statewide average for a similar corridor; however, the threshold for considering mitigation is 75.32<sup>1</sup>.
- 55 mph segment
    - A corridor crash rate of 19.52<sup>1</sup> (the statewide average is 199.07<sup>1</sup> for a similar corridor)
    - A corridor injury crash rate of 9.76<sup>1</sup> (the statewide average is 42.82<sup>1</sup> for a similar corridor)
  - No fatalities were recorded during the period
  - The majority of crashes were of property damage only severity (non-injury) and tended to be clustered near public intersections
  - Crashes not near intersections tended to be sideswipe or single-vehicle crash events
  - The majority of crashes occurred during daylight hours and weather was generally not considered to be a factor
  - No crashes were reported to have involved pedestrians or bicyclists

An overview of corridor crash locations is provided in Exhibit 1-1. Table 1-1 provides a summary of crash events that occurred at the study intersections. Exhibits 1-2 through 1-5 detail the approximate crash location, injury severity, and weather and roadway conditions at the time of the event.

**Table 1-1, Summary of Intersection Crash Data**

Intersection	Crash Rate <sup>1</sup>	Total Crashes	Crash Severity					Crash Type					
			Fatal	A	B	C	PDO	Angle	Head-On	Rear-End	Backing	Sideswipe	Single Vehicle
Starlight Ln	0.41	9	0	1	2	1	5	1	0	0	0	3	5

<sup>1</sup> Crashes per 100 million vehicle miles traveled

Intersection	Crash Rate <sup>1</sup>	Total Crashes	Crash Severity					Crash Type					
			Fatal	A	B	C	PDO	Angle	Head-On	Rear-End	Backing	Sideswipe	Single Vehicle
County O	0.53	11	0	0	0	3	8	3	0	5	1	1	1
Pleasant Valley Dr	0.50	9	0	1	2	2	4	7	0	1	0	0	1
Richardson St	0.07	1	0	0	0	0	1	0	0	0	0	1	0

At the study intersections, the most common crash type was angle, with turning vehicles at the Pleasant Valley Drive intersection having the largest number of occurrences. While there is a slight horizontal curve east of the intersection, the grade is relatively flat with few sight obstructions. Available crash data reported “Looked But Did Not See” and “No Contributing Action” as the contributing motorists’ error. This could be caused by momentary driver inattention or temporary vision impairment caused by features of the motor vehicle, such as the A or B pillars.

The second-most prevalent crash type is a tie between rear-end and single vehicle. The most significant number of rear-end crashes occurred at the County O intersection. This can be a common occurrence at signalized intersections like County O when signals are not visible enough for the motorist or signal timing adjustments are necessary. As discussed later in this report, WisDOT will be making improvements to the traffic signals at this location, currently programmed for 2026. Single vehicle crashes are more difficult to prevent, as they can be caused by driver inattention, mechanical failure, or driver impairment. No clear preventable patterns were observed for this crash type.

Additional crash details are provided in Appendix A.

### 1.2.2 PREVIOUS CORRIDOR STUDIES

Two studies related to the corridor were completed by WisDOT in 2008 and 2009. One study (2008) focused on the US 14 intersections with Peebles Drive, Starlight Drive, and County O, within the city of Richland Center. The other study (2009) was a comprehensive access management study, which encompassed US 14 from WIS 80 in Richland Center to WIS 78 in Mazomanie.

The 2008 study which focused on the three City intersections reviewed traffic signal warrants for the Peebles Drive and Starlight intersections with US 14 using 2008 and projected 2032 volumes. Neither intersection accounted for substantial additional development adjacent to the intersections and considered background highway traffic only. Signal warrants were not projected to be met in either case.

An operational comparison to roundabouts was also completed utilizing *Highway Capacity Manual (HCM)* methodologies. This type of analysis assigns a level of service (LOS) to each movement. LOS is a quantitative measure that refers to the overall quality of flow at an intersection

ranging from very good, LOS “A,” to very poor, LOS “F”. The delay is measured in seconds per vehicle, which can be used to determine the level of service for the intersection. Table 1-2 represents the delay criteria used for determining the LOS at an intersection.

**Table 1-2, Highway Capacity Manual Level of Service**

LOS		Unsignalized Average Control Delay (seconds/vehicle)	Signalized Average Control Delay (seconds/vehicle)	Delay Type
A	“Best”	0 – 10	0 – 10	Short
B		>10 – 15	>10 – 20	
C		>15 – 25	>20 – 35	
D	Improvement Threshold	>25 – 35	>35 – 55	Moderate
E		>35 – 50	>55 – 80	
F	“Worst”	>50	>80	Long

The report projected LOS A operations when roundabouts were used, versus LOS C when traffic signals were used.

The 2009 study was a more comprehensive access management and corridor operational needs study of the approximately 37-mile corridor of US 14. The study noted the general lack of multimodal accommodations along US 14, but references the presence of the Pine River Trail. Two pedestrian crossing facilities are discussed (Bohmann Drive and Sextonville Road), but neither fall within the study limits of the current MSA study.

Overall references to the current MSA study corridor are limited in the 2009 report. It is worth noting that the 2009 study projected background traffic growth rates of 1.1 – 1.5% per year. The report also indicated a crash rate of 1.69 at the County O intersection. This rate has dropped to 0.53 as of the latest crash data.

From an operations perspective, the 2009 study does not anticipate unacceptable operations (below LOS D) at the County O intersection that cannot be resolved by timing/signal phasing adjustments. It also indicated that the HCM-based analyses tend to be more conservative, as they assume maximum signal cycles every time, when the traffic signals are fully actuated and respond to varying traffic demands. It also mentioned that the few signalized intersections are not coordinated together.

One of the other goals of the comprehensive study was to highlight the importance of access consolidation when possible. Any new access requests would need to meet WisDOT spacing requirements at a minimum. Overall, the goal is to reduce the number of direct access points to US 14 as practical, funneling traffic to public intersections via shared driveways and frontage/backage roads instead of direct individual private driveways. The motivation behind the policy is that every access point creates several locations where conflicting traffic crosses paths (conflict points). The greater the number of conflict points results in an increased risk of traffic crashes. The closer access points are placed, the risk for crashes grows larger yet. Subsequently, as speed increases, the risk of more severe injury crashes increases as well.

With this goal in mind, WisDOT would like to reduce the number of direct access points to US 14 as allowed by state law. Any proposed new accesses would need to be approved. Existing accesses would be allowed to remain, but consolidation between properties or migration to new frontage/backage roads would be preferable when the opportunity presents itself or the existing access becomes a significant safety hazard.

WisDOT-provided corridor study information is included in Appendix B

### 1.2.3 PLANNED CORRIDOR IMPROVEMENTS

WisDOT is planning improvements for US 14, from Bohmann Drive to County O to occur in 2026. Current plans include replacement of the existing concrete pavement, updated curb ramps, replacement of the traffic signals at the Bohmann Drive and County O intersections with US 14, modifications to the TWLTLs at Peebles Drive and Starlight Drive, in addition to spot guardrail replacement.

The updates to the traffic signals are expected to address some of the crash patterns discussed earlier in this report. No capacity or additional turn lane modifications are included as part of the planned WisDOT project. Proposed WisDOT improvements are included in Appendix B.

## 1.3 TRAFFIC FORECASTS

The 2026 WisDOT US 14 corridor project plans utilized a projected growth rate of 0.65%. WisDOT's rate from that project was reused for the purpose of calculating background traffic growth for this corridor study. Note that this latest growth rate is significantly lower than that used in the 2009 comprehensive study. This coincides with the overall decreasing trend noted from an annual average daily traffic (AADT) count location located within the study corridor, as shown in Figure 1-2.

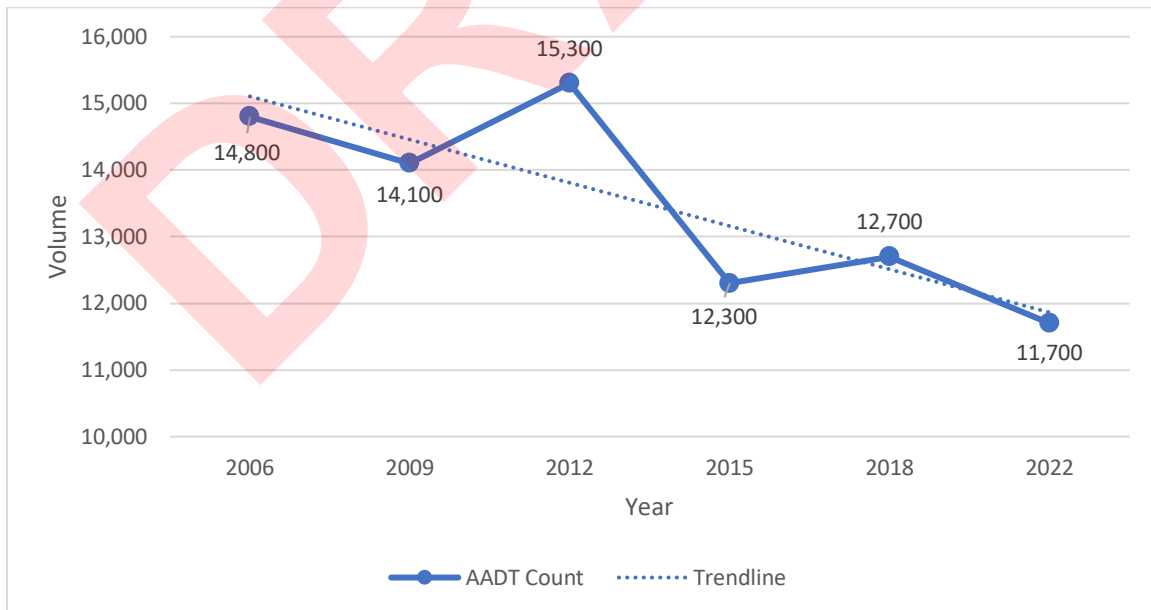


Figure 1-2, US 14 AADT

### 1.3.1 BACKGROUND TRAFFIC VOLUMES & OPERATIONS

Peak hour turn movement count data was collected at the study intersections on Thursday September 21 and Saturday September 23, 2023. A summary of this data is shown in Exhibit 1-6. Full traffic count data is included in Appendix C.

The 0.65% growth rate previously described, was applied linearly to the traffic counts collected in 2023, in order to forecast corridor background traffic growth for the 2024 base and 2044 horizon years. A summary of these volumes is shown in Exhibit 1-7 and 1-8 respectively.

The calculated 2024 and 2044 volumes were used to complete an operational and capacity analysis for the study intersections using Synchro 11, utilizing *HCM 6<sup>th</sup> Edition* methodologies and WisDOT adjustments for the forecasted 2024 base and 2044 background conditions. Results of these analyses are shown in Table 1-3 and Table 1-4 respectively.

**Table 1-3, 2024 Expected Background Traffic Intersection Approach Operations**

Peak	Intersection	USH 14 at Starlight Ln				USH 14 at CTH O				USH 14 at Pleasant Valley Dr				USH 14 at Jelland Dr			
	Control Type	TWSC				Signal				TWSC				TWSC			
	Approach	EB →	WB ←	NB ↑	SB ↓	EB →	WB ←	NB ↑	SB ↓	EB →	WB ←	NB ↑	SB ↓	EB →	WB ←	NB ↑	SB ↓
AM	LOS	A	A	B	B	A	A	B	A	A	A	B	B	A	A	A	B
	Delay (s)	0.2	0.1	13.0	12.4	9.2	5.3	14.4	--	0.3	1.2	12.9	10.1	0.0	0.0	--	10.9
PM	LOS	A	A	B	C	B	A	B	A	A	A	C	B	A	A	A	B
	Delay (s)	0.2	0.2	14.0	15.0	10.7	6.2	14.3	--	0.4	1.5	19.4	14.7	0.2	0.0	--	13.0
SAT	LOS	A	A	B	B	B	A	B	A	A	A	C	C	A	A	A	B
	Delay (s)	0.4	0.2	13.8	13.1	11.0	6.3	14.5	--	0.4	1.4	20.7	19.2	0.1	0.0	--	10.4

LOS based on HCM 6th Edition thresholds

-- No volume utilizing the approach during the peak hour results in zero delay

TWSC = Two-way stop control

**Table 1-4, 2024 Expected Background Traffic Intersection Approach Operations**

Peak	Intersection	USH 14 at Starlight Ln				USH 14 at CTH O				USH 14 at Pleasant Valley Dr				USH 14 at Jelland Dr			
	Control Type	TWSC				Signal				TWSC				TWSC			
	Approach	EB →	WB ←	NB ↑	SB ↓	EB →	WB ←	NB ↑	SB ↓	EB →	WB ←	NB ↑	SB ↓	EB →	WB ←	NB ↑	SB ↓
AM	LOS	A	A	B	B	A	A	B	A	A	A	B	B	A	A	A	B
	Delay (s)	0.2	0.1	13.7	13.0	9.7	5.5	14.4	--	0.3	1.2	14.2	10.3	0.0	0.0	--	11.4
PM	LOS	A	A	C	C	B	A	B	A	A	A	D	C	A	A	A	B
	Delay (s)	0.2	0.2	15.1	16.3	11.2	6.4	14.4	--	0.4	1.6	26.3	16.0	0.2	0.0	--	13.7
SAT	LOS	A	A	B	B	B	A	B	A	A	A	D	C	A	A	A	B
	Delay (s)	0.4	0.2	14.6	13.7	11.5	6.4	14.8	--	0.5	1.5	29.7	23.1	0.1	0.0	--	10.8

LOS based on HCM 6th Edition thresholds

-- No volume utilizing the approach during the peak hour results in zero delay

TWSC = Two-way stop control

Operations are expected to remain at acceptable levels (LOS D or better) through the 2044 horizon year without making any capacity/lane or traffic control improvements.

At the request of the City, the funeral home operation on the northeast corner of the Jelland Drive intersection was interviewed regarding highway impacts on their business's operation or other concerns they have with traffic safety at their location. From the discussion with their staff, no significant current concerns were mentioned. Their business typically has approximately one service per week, which generally occurs outside of the US 14 peak travel times. Larger services have resulted in overflow parking along their private access road to the north, but nothing that has

been impacted by the operations of US 14. Any processions typically have an escort, so traffic control is generally not an issue.

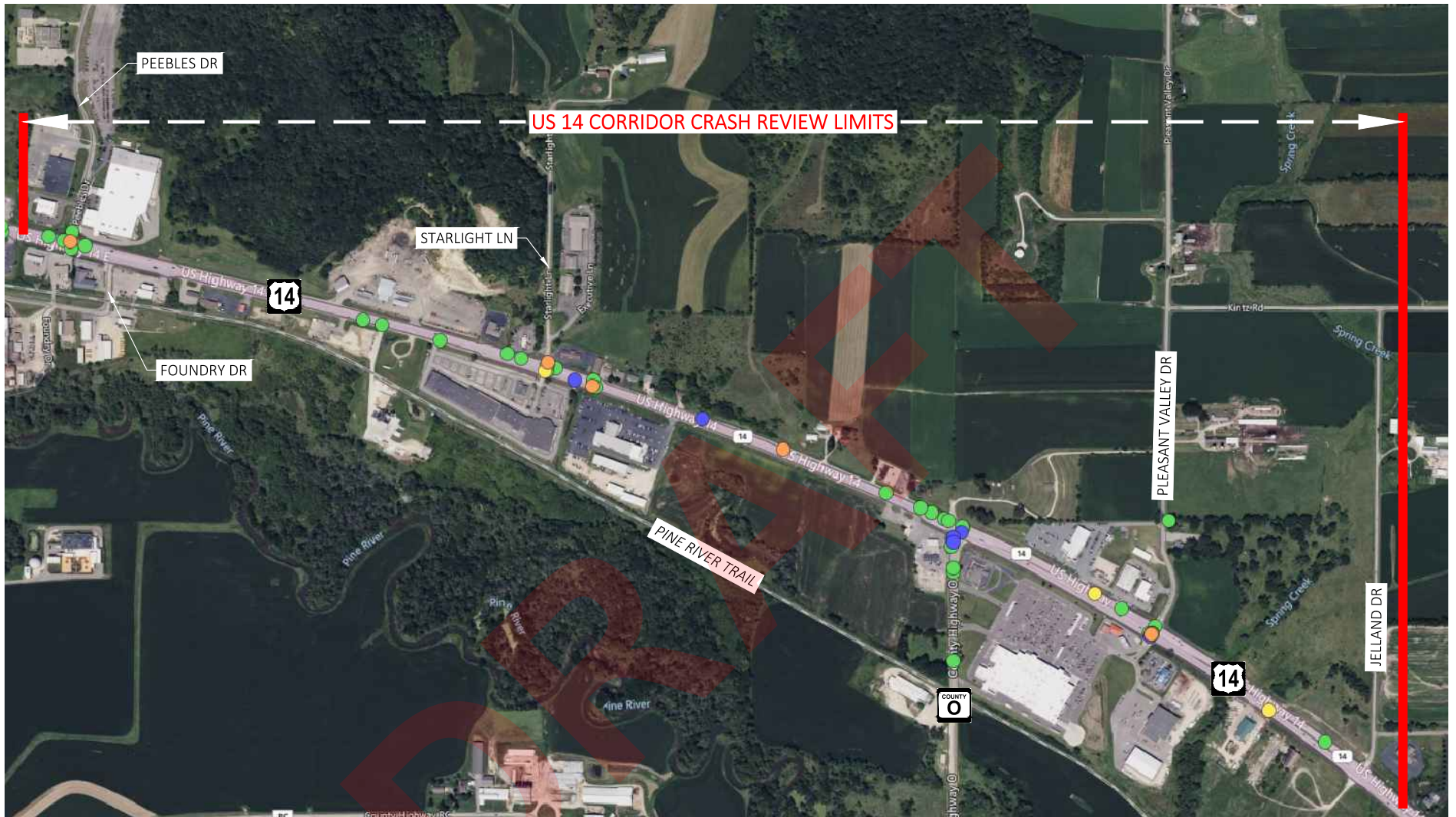
Full operational analysis results are provided in Appendix D.

## 1.4 RECOMMENDATIONS

The corridor should be monitored for safety issues and more substantial crash patterns as development occurs. Similar to the 2009 study, warrants supporting the installation of new traffic signals are not expected to be met. Operational analysis projects that existing stop controls should adequately handle the background traffic growth.

Since visibility of conflicting traffic was cited in several crashes, improved intersection lighting at Starlight Lane, Pleasant Valley Drive, and Jelland Drive should be considered.

DRAFT



**CORRIDOR CRASH SUMMARY**

0	FATAL
5	SUSPECTED SERIOUS INJURY
6	SUSPECTED MINOR INJURY
5	POSSIBLE INJURY
26	PROPERTY DAMAGE ONLY
<b>42</b>	<b>TOTAL CRASHES</b>

**LEGEND**

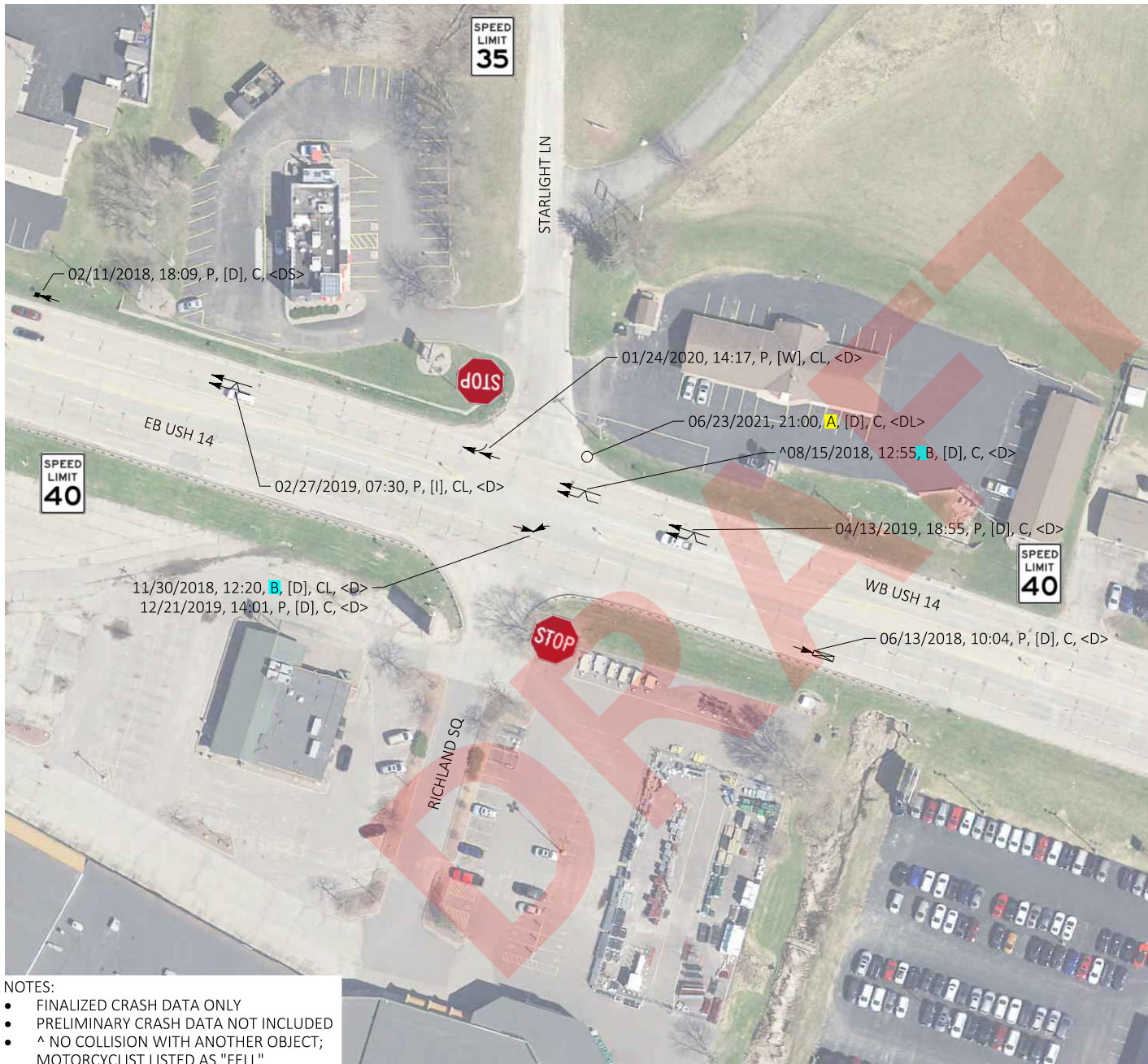
<span style="color: red;">■</span>	FATALITY
<span style="color: orange;">■</span>	SUSPECTED SERIOUS INJURY
<span style="color: yellow;">■</span>	SUSPECTED MINOR INJURY
<span style="color: blue;">■</span>	POSSIBLE INJURY
<span style="color: green;">■</span>	PROPERTY DAMAGE ONLY

CRASH DATA PERIOD: JAN 2018 - DEC 2022

- NOTES:
- FINALIZED CRASH DATA ONLY
  - PRELIMINARY CRASH DATA NOT INCLUDED
  - NOT TO SCALE



Exhibit 1-1, Crash Locations, US 14 Study Corridor  
 US 14 CORRIDOR STUDY  
 CITY OF RICHLAND CENTER



### LEGEND

- FRONT-TO-REAR, (REAR-END)
- FRONT-TO-FRONT, (HEAD-ON)
- FRONT-TO-FRONT, (HEAD-ON), TURNING RT
- FRONT-TO-FRONT, (HEAD-ON), TURNING LT
- REAR-TO-SIDE (BACKING)
- REAR-TO-REAR (BACKING)
- REAR-TO-FRONT (BACKING)
- SIDESWIPE, OPPOSITE DIRECTIONS
- SIDESWIPE, SAME DIRECTION
- FRONT-TO-SIDE (ANGLE)
- FRONT-TO-SIDE (ANGLE), TURNING RIGHT
- FRONT-TO-SIDE (ANGLE), TURNING LEFT
- OVERTAKE
- FIXED OBJECT
- PARKED VEHICLE
- OUT OF CONTROL
- OVERTURN
- BICYCLE / PEDESTRIAN INVOLVED
- \* UNDER THE INFLUENCE
- CONSTRUCTION ZONE

### INJURY SEVERITY

- FATALITY
- SUSPECTED SERIOUS INJURY
- SUSPECTED MINOR INJURY
- POSSIBLE INJURY
- PROPERTY DAMAGE ONLY

ROADWAY CONDITIONS	WEATHER CONDITIONS
[D] DRY	C CLEAR
[W] WET	CL CLOUDY
[S] SNOW	R RAIN
[SL] SLUSH	S SNOW
[I] ICE	BS BLOWING SNOW
[SW] STANDING WATER	FR FREEZING RAIN
[G] GRAVEL	F FOG
[O] OIL	SM SMOG/SMOKE
[U] OTHER/UNKNOWN	SH SLEET/HAIL
	W WINDY
	BD BLOWING DEBRIS
	U OTHER/UNKNOWN

### TIME OF DAY/LIGHTING

- <D> DAY
- <DA> DAWN
- <DS> DUSK
- <DL> DARK, LIGHTED
- <DU> DARK, UNLIT
- <D?> DARK, UNKNOWN

**01/2018 - 12/2022  
9 CRASHES**

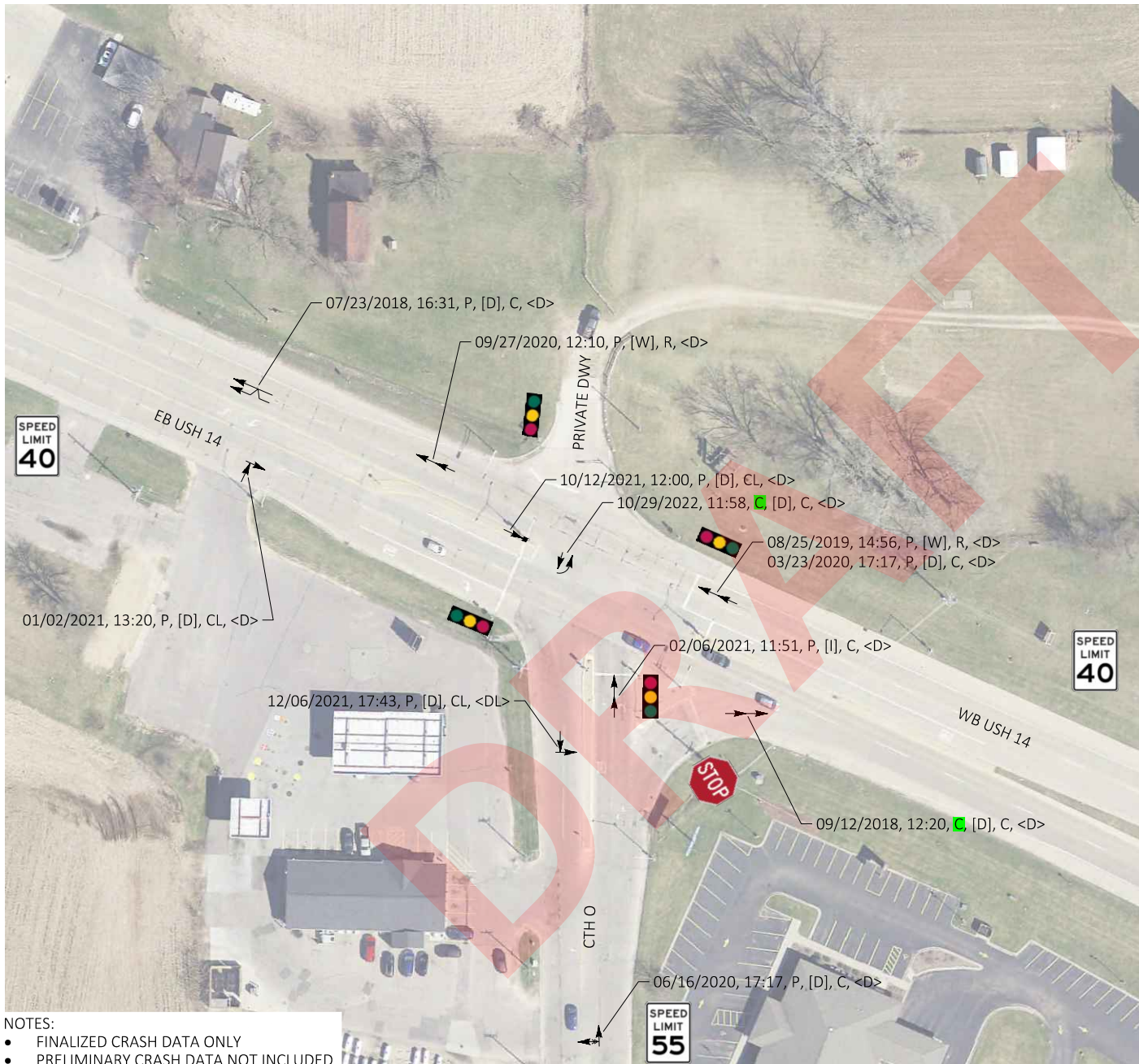
NOTES:

- FINALIZED CRASH DATA ONLY
- PRELIMINARY CRASH DATA NOT INCLUDED
- ^ NO COLLISION WITH ANOTHER OBJECT; MOTORCYCLIST LISTED AS "FELL"

**Exhibit 1-2, Crash Diagram, Starlight Lane Intersection**  
US 14 CORRIDOR STUDY  
CITY OF RICHLAND CENTER







### LEGEND

- → FRONT-TO-REAR, (REAR-END)
- → FRONT-TO-FRONT, (HEAD-ON)
- ↘ ↘ FRONT-TO-FRONT, (HEAD-ON), TURNING RT
- ↙ ↙ FRONT-TO-FRONT, (HEAD-ON), TURNING LT
- ↖ ↖ REAR-TO-SIDE (BACKING)
- ← ← REAR-TO-REAR (BACKING)
- → REAR-TO-FRONT (BACKING)
- ↔ ↔ SIDESWIPE, OPPOSITE DIRECTIONS
- ↔ ↔ SIDESWIPE, SAME DIRECTION
- ↓ ↓ FRONT-TO-SIDE (ANGLE)
- ↘ ↘ FRONT-TO-SIDE (ANGLE), TURNING RIGHT
- ↙ ↙ FRONT-TO-SIDE (ANGLE), TURNING LEFT
- ↔ ↔ OVERTAKE
- → FIXED OBJECT
- → PARKED VEHICLE
- ∞ ∞ OUT OF CONTROL
- ○ OVERTURN
- 🚲 / 🚶 BICYCLE / PEDESTRIAN INVOLVED
- \*
- 🚧 CONSTRUCTION ZONE

### INJURY SEVERITY

- FATALITY
- ▲ SUSPECTED SERIOUS INJURY
- SUSPECTED MINOR INJURY
- POSSIBLE INJURY
- P PROPERTY DAMAGE ONLY

ROADWAY CONDITIONS	WEATHER CONDITIONS
[D] DRY	C CLEAR
[W] WET	CL CLOUDY
[S] SNOW	R RAIN
[SL] SLUSH	S SNOW
[I] ICE	BS BLOWING SNOW
[SW] STANDING WATER	FR FREEZING RAIN
[G] GRAVEL	F FOG
[O] OIL	SM SMOG/SMOKE
[U] OTHER/UNKNOWN	SH SLEET/HAIL
	W WINDY
	BD BLOWING DEBRIS
	U OTHER/UNKNOWN

### TIME OF DAY/LIGHTING

- <D> DAY
- <DA> DAWN
- <DS> DUSK
- <DL> DARK, LIGHTED
- <DU> DARK, UNLIT
- <D?> DARK, UNKNOWN

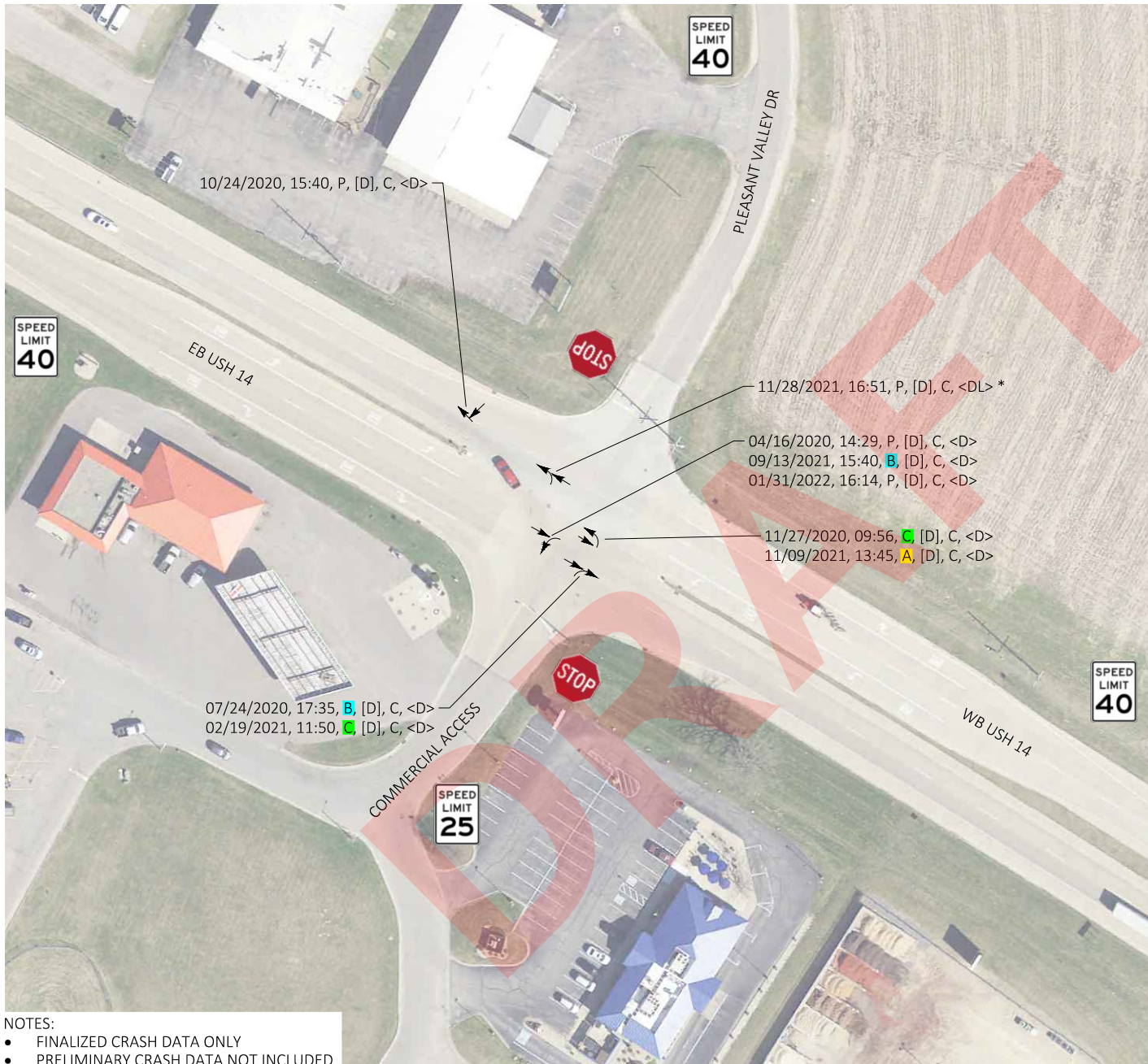
**01/2018 - 12/2022**  
**11 CRASHES**

NOTES:

- FINALIZED CRASH DATA ONLY
- PRELIMINARY CRASH DATA NOT INCLUDED



**Exhibit 1-3, Crash Diagram, County O Intersection**  
US 14 CORRIDOR STUDY  
CITY OF RICHLAND CENTER



NOTES:  
 • FINALIZED CRASH DATA ONLY  
 • PRELIMINARY CRASH DATA NOT INCLUDED

### LEGEND

- → FRONT-TO-REAR, (REAR-END)
- → FRONT-TO-FRONT, (HEAD-ON)
- ↘ ↘ FRONT-TO-FRONT, (HEAD-ON), TURNING RT
- ↙ ↙ FRONT-TO-FRONT, (HEAD-ON), TURNING LT
- ↖ ↖ REAR-TO-SIDE (BACKING)
- ← ← REAR-TO-REAR (BACKING)
- → REAR-TO-FRONT (BACKING)
- ↔ ↔ SIDESWIPE, OPPOSITE DIRECTIONS
- ↔ ↔ SIDESWIPE, SAME DIRECTION
- ↓ ↓ FRONT-TO-SIDE (ANGLE)
- ↘ ↘ FRONT-TO-SIDE (ANGLE), TURNING RIGHT
- ↙ ↙ FRONT-TO-SIDE (ANGLE), TURNING LEFT
- ↔ ↔ OVERTAKE
- → FIXED OBJECT
- → PARKED VEHICLE
- → OUT OF CONTROL
- → OVERTURN
- 🚲 / 👤 BICYCLE / PEDESTRIAN INVOLVED
- \* UNDER THE INFLUENCE
- 🚧 CONSTRUCTION ZONE

### INJURY SEVERITY

- FATALITY
- ▲ SUSPECTED SERIOUS INJURY
- SUSPECTED MINOR INJURY
- POSSIBLE INJURY
- P PROPERTY DAMAGE ONLY

ROADWAY CONDITIONS	WEATHER CONDITIONS
[D] DRY	C CLEAR
[W] WET	CL CLOUDY
[S] SNOW	R RAIN
[SL] SLUSH	S SNOW
[I] ICE	BS BLOWING SNOW
[SW] STANDING WATER	FR FREEZING RAIN
[G] GRAVEL	F FOG
[O] OIL	SM SMOG/SMOKE
[U] OTHER/UNKNOWN	SH SLEET/HAIL
	W WINDY
	BD BLOWING DEBRIS
	U OTHER/UNKNOWN

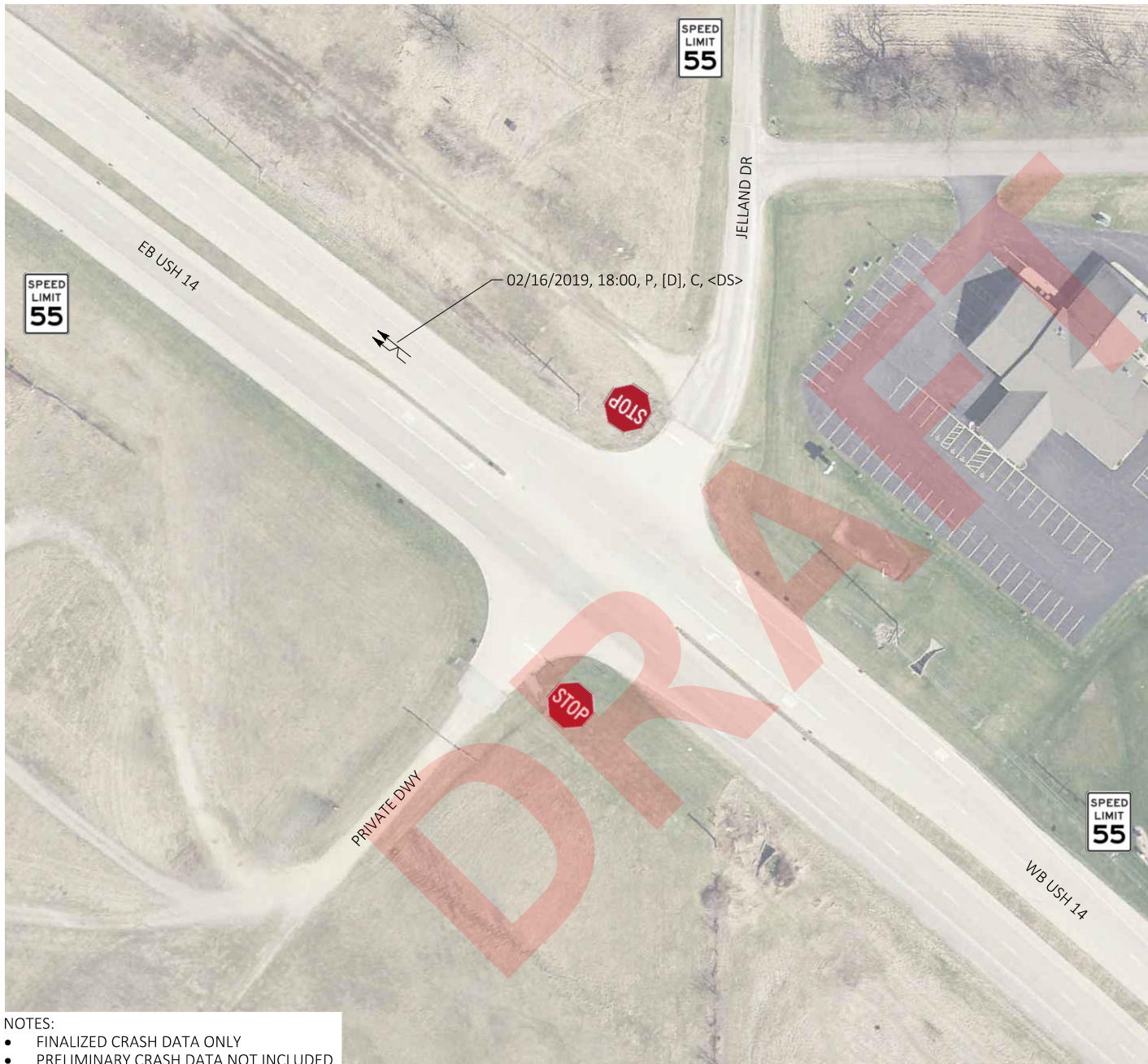
### TIME OF DAY/LIGHTING

- <D> DAY
- <DA> DAWN
- <DS> DUSK
- <DL> DARK, LIGHTED
- <DU> DARK, UNLIT
- <D?> DARK, UNKNOWN

**01/2018 - 12/2022**  
**9 CRASHES**

Exhibit 1-4, Crash Diagram, Pleasant Valley Drive Intersection  
 US 14 CORRIDOR STUDY  
 CITY OF RICHLAND CENTER





### LEGEND

- FRONT-TO-REAR, (REAR-END)
- FRONT-TO-FRONT, (HEAD-ON)
- FRONT-TO-FRONT, (HEAD-ON), TURNING RT
- FRONT-TO-FRONT, (HEAD-ON), TURNING LT
- REAR-TO-SIDE (BACKING)
- REAR-TO-REAR (BACKING)
- REAR-TO-FRONT (BACKING)
- SIDESWIPE, OPPOSITE DIRECTIONS
- SIDESWIPE, SAME DIRECTION
- FRONT-TO-SIDE (ANGLE)
- FRONT-TO-SIDE (ANGLE), TURNING RIGHT
- FRONT-TO-SIDE (ANGLE), TURNING LEFT
- OVERTAKE
- FIXED OBJECT
- PARKED VEHICLE
- OUT OF CONTROL
- OVERTURN
- BICYCLE / PEDESTRIAN INVOLVED
- \* UNDER THE INFLUENCE
- CONSTRUCTION ZONE

### INJURY SEVERITY

- FATALITY
- SUSPECTED SERIOUS INJURY
- SUSPECTED MINOR INJURY
- POSSIBLE INJURY
- PROPERTY DAMAGE ONLY

ROADWAY CONDITIONS	WEATHER CONDITIONS
[D] DRY	C CLEAR
[W] WET	CL CLOUDY
[S] SNOW	R RAIN
[SL] SLUSH	S SNOW
[I] ICE	BS BLOWING SNOW
[SW] STANDING WATER	FR FREEZING RAIN
[G] GRAVEL	F FOG
[O] OIL	SM SMOG/SMOKE
[U] OTHER/UNKNOWN	SH SLEET/HAIL
	W WINDY
	BD BLOWING DEBRIS
	U OTHER/UNKNOWN

### TIME OF DAY/LIGHTING

- <D> DAY
- <DA> DAWN
- <DS> DUSK
- <DL> DARK, LIGHTED
- <DU> DARK, UNLIT
- <D?> DARK, UNKNOWN

**01/2018 - 12/2022**  
**1 CRASH**

NOTES:

- FINALIZED CRASH DATA ONLY
- PRELIMINARY CRASH DATA NOT INCLUDED



Exhibit 1-5, Crash Diagram, Jelland Drive Intersection  
US 14 CORRIDOR STUDY  
CITY OF RICHLAND CENTER

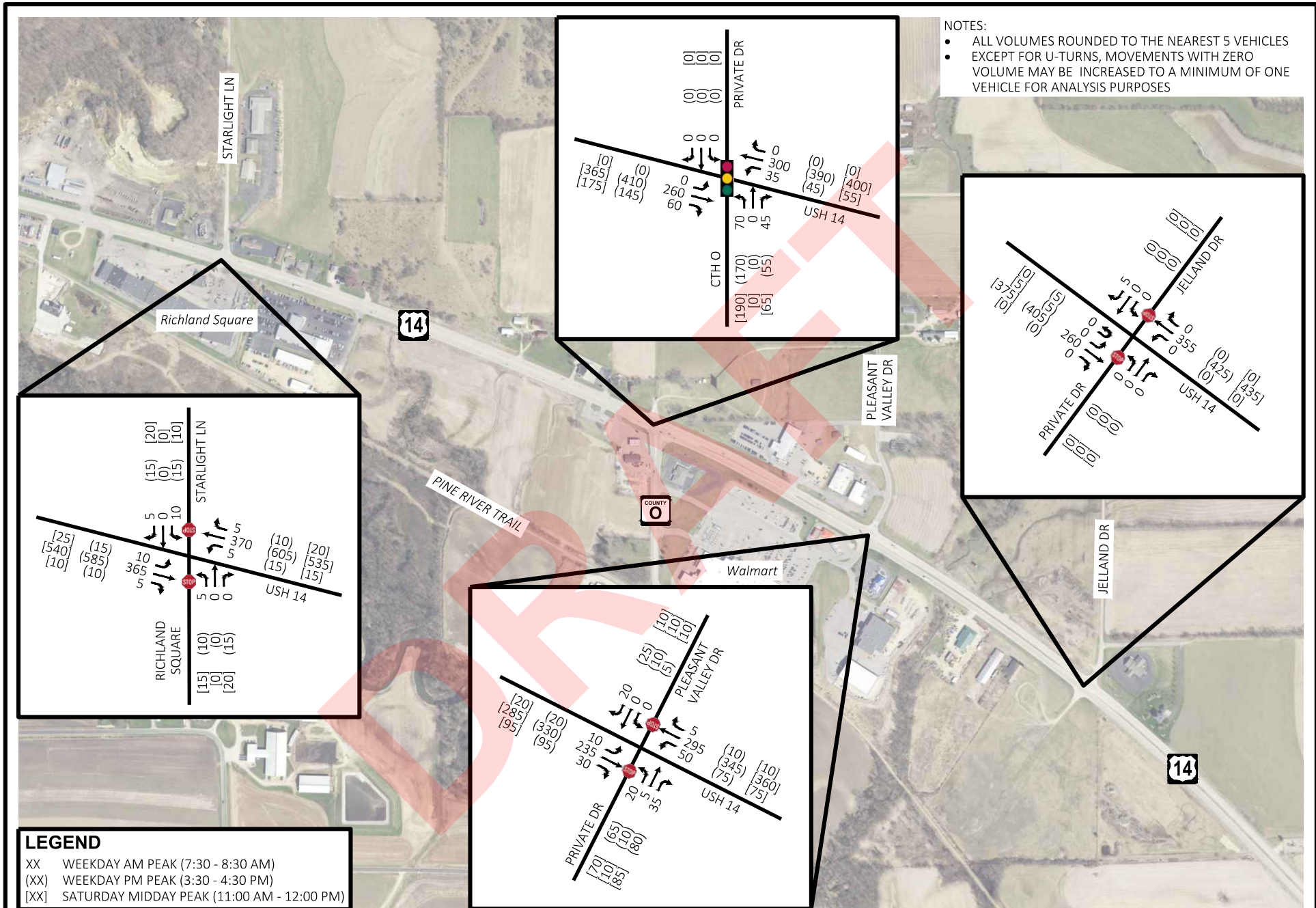
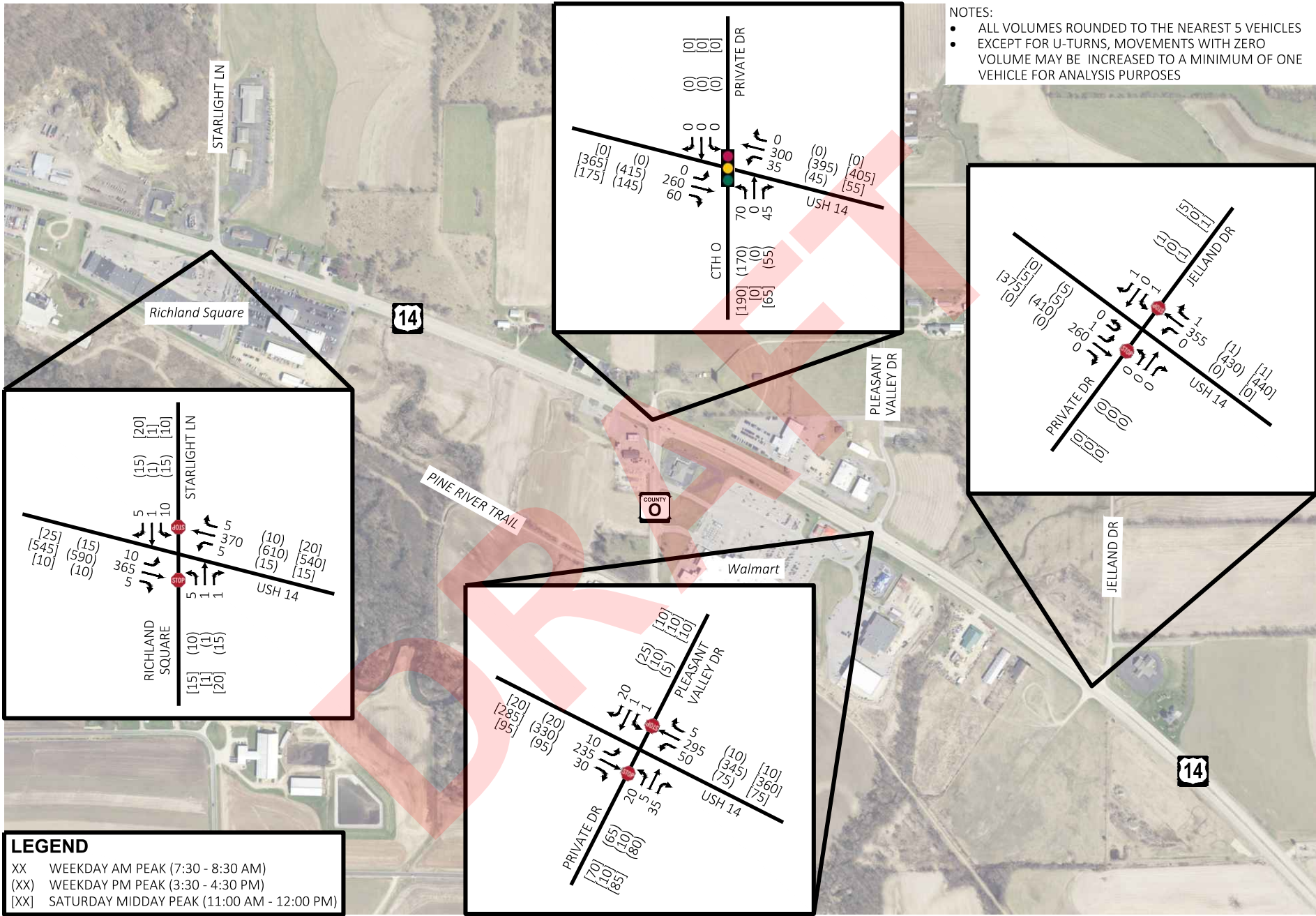


Exhibit 1-6, Traffic Volumes, 2023 Count Data  
 US 14 CORRIDOR STUDY  
 CITY OF RICHLAND CENTER



NOTES:

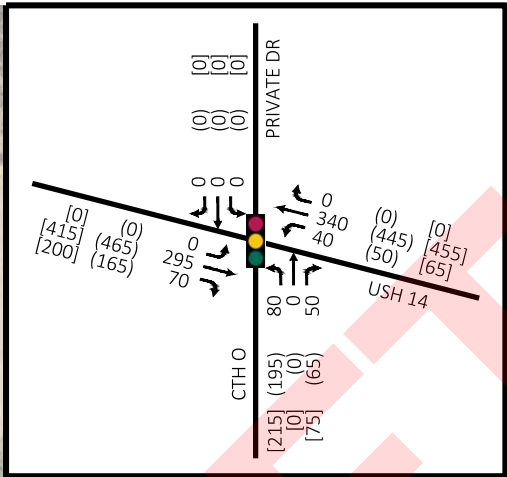
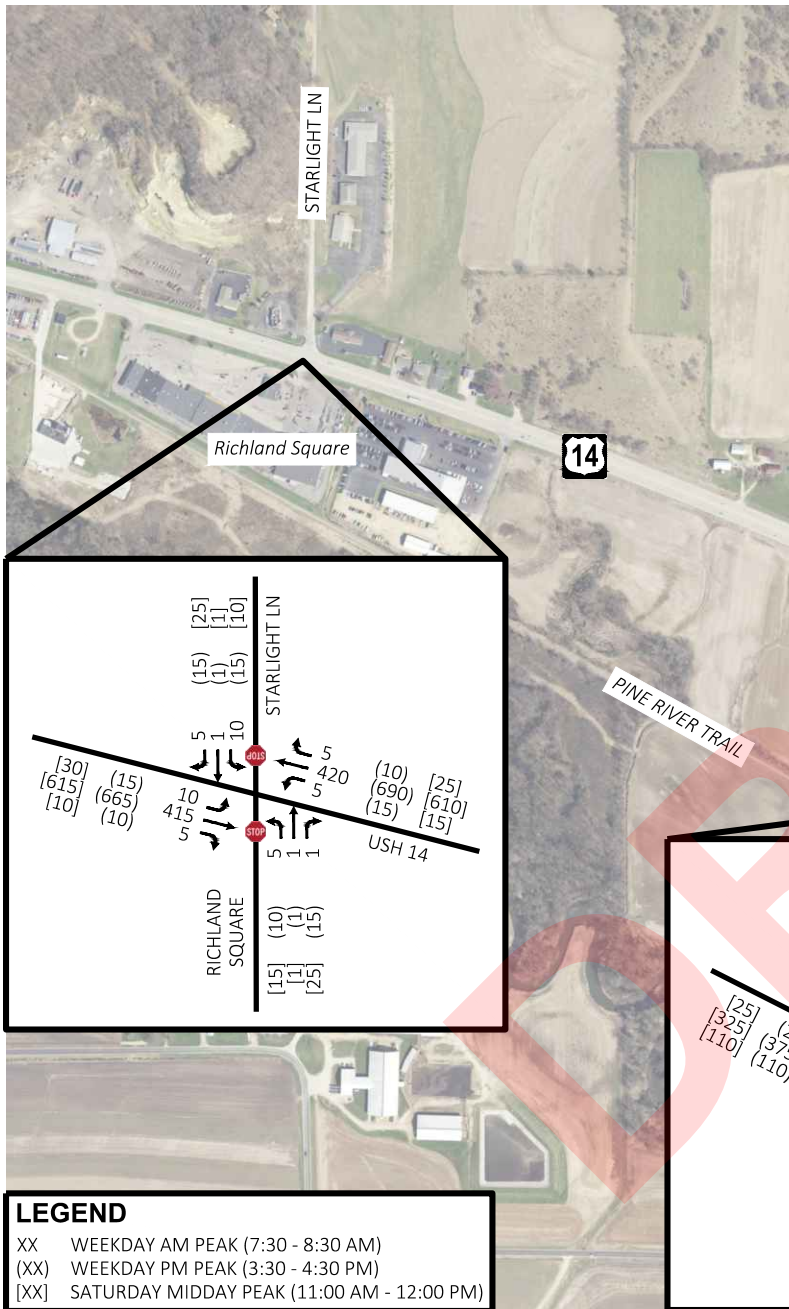
- ALL VOLUMES ROUNDED TO THE NEAREST 5 VEHICLES
- EXCEPT FOR U-TURNS, MOVEMENTS WITH ZERO VOLUME MAY BE INCREASED TO A MINIMUM OF ONE VEHICLE FOR ANALYSIS PURPOSES

**LEGEND**

XX WEEKDAY AM PEAK (7:30 - 8:30 AM)  
 (XX) WEEKDAY PM PEAK (3:30 - 4:30 PM)  
 [XX] SATURDAY MIDDAY PEAK (11:00 AM - 12:00 PM)

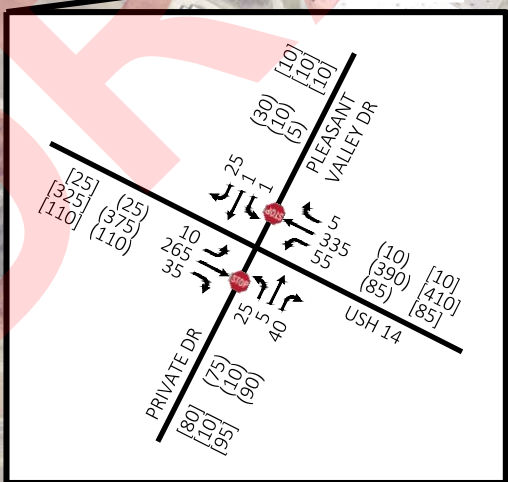
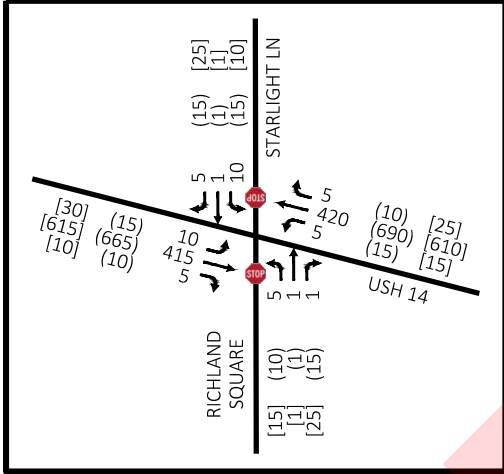
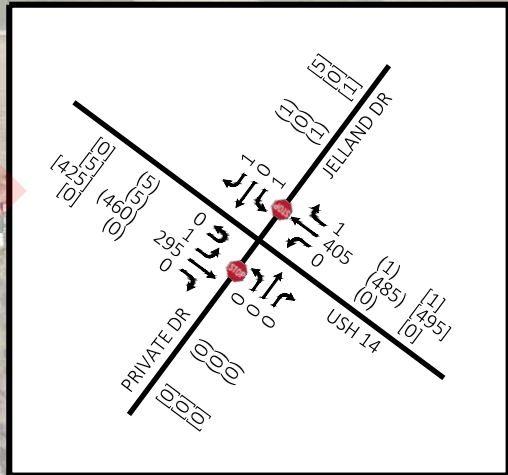
Exhibit 1-7, Traffic Volumes, 2024 Background  
 US 14 CORRIDOR STUDY  
 CITY OF RICHLAND CENTER





NOTES:

- ALL VOLUMES ROUNDED TO THE NEAREST 5 VEHICLES
- EXCEPT FOR U-TURNS, MOVEMENTS WITH ZERO VOLUME MAY BE INCREASED TO A MINIMUM OF ONE VEHICLE FOR ANALYSIS PURPOSES



**LEGEND**

XX WEEKDAY AM PEAK (7:30 - 8:30 AM)  
 (XX) WEEKDAY PM PEAK (3:30 - 4:30 PM)  
 [XX] SATURDAY MIDDAY PEAK (11:00 AM - 12:00 PM)

Exhibit 1-8, Traffic Volumes, 2044 Background  
 US 14 CORRIDOR STUDY  
 CITY OF RICHLAND CENTER



## CHAPTER 2 – CORRIDOR DEVELOPMENT

### 2.1 NEW HOSPITAL DEVELOPMENT

As noted earlier in this report, a new hospital is planned south of US 14 at Jelland Drive. The facility is expected to break ground in 2024. A base analysis year of 2024 was selected based on initial construction information; however, such timelines commonly fluctuate. Given the less than 1% background growth rate, the impact of sliding the schedule a few years will be minimal from a traffic volume calculation perspective, due to rounding that is included as part of the forecasting calculations.

From data provided by the developer, the proposed new hospital is expected to be 145,000-square-feet, with approximately 21 inpatient beds, an emergency department, and an urgent care clinic. The facility is also projected to include lab and imaging services, outpatient rehab, primary and specialty clinic space, a UW Outreach clinic, and a small retail pharmacy.

A separate WisDOT-based Traffic Impact Analysis (TIA) is currently being completed by KL Engineering, for the hospital site. The TIA was not far enough along for reuse of their study's values; therefore, traffic impacts were calculated independently as part of this corridor study. Based on a review of prior work, methodologies should be similar (industry standard-based) and should produce similar results.

#### 2.1.1 HOSPITAL TRIP GENERATION

Based on the supplied gross floor area, the *Institute of Transportation Engineers (ITE) Trip Generation Manual, 11<sup>th</sup> Edition* was utilized to calculate the number of expected trips generated by the new hospital development for the weekday AM and PM, and Saturday peak hours. The results of these calculations is shown in Table 2-1.

**Table 2-1, Hospital Development Trip Generation**

ITE Land Use	Weekday	Total Trip Generation		Saturday Peak Hour
		AM Peak Hour	PM Peak Hour	
Hospital Parcel 1	1,560	120	125	125

Full trip generation details are provided in Appendix E.

#### 2.1.2 TRAFFIC OPERATIONAL ANALYSIS

Count volumes shown in Exhibit 1-6 were utilized to calculate directional distributions of existing traffic. A summary of the distributions is shown in Exhibit 2-1. Trip generation values shown in Table 2-1 were applied to the distribution rates to estimate the new traffic volumes at the study intersections. The new traffic volumes account for background traffic and new hospital traffic. A summary of these volumes is shown in Exhibit 2-2.

The combined background and development volumes were used to complete an operational and capacity analysis for the study intersections using Synchro 11, utilizing HCM 6<sup>th</sup> Edition methodologies and WisDOT adjustments. Results of these analyses are shown in Table 2-2.

**Table 2-2, 2024 Expected Background + Hospital Traffic Intersection Approach Operations**

Peak	Intersection	USH 14 at Starlight Ln				USH 14 at CTH O				USH 14 at Pleasant Valley Dr				USH 14 at Jelland Dr			
	Control Type	TWSC				Signal				TWSC				TWSC			
	Approach	EB →	WB ←	NB ↑	SB ↓	EB →	WB ←	NB ↑	SB ↓	EB →	WB ←	NB ↑	SB ↓	EB →	WB ←	NB ↑	SB ↓
AM	LOS	A	A	B	B	A	A	B	A	A	A	B	B	A	A	B	B
	Delay (s)	0.2	0.1	13.5	12.7	9.6	5.4	14.5	--	0.3	1.1	13.9	10.4	0.0	0.6	11.9	11.4
PM	LOS	A	A	B	C	B	A	B	A	A	A	C	C	A	A	B	B
	Delay (s)	0.2	0.2	14.4	15.5	11.1	6.3	14.4	--	0.4	1.4	21.5	15.8	0.2	0.4	13.6	13.5
SAT	LOS	A	A	B	B	B	A	B	A	A	A	C	C	A	A	B	B
	Delay (s)	0.4	0.2	14.2	13.5	11.2	6.3	14.7	--	0.4	1.3	23.3	21.2	0.1	0.4	13.6	10.6

LOS based on HCM 6th Edition thresholds

-- No volume utilizing the approach during the peak hour results in zero delay

TWSC = Two-way stop control

Operations are expected to remain at acceptable levels (LOS D or better) without making any capacity/lane or traffic control improvements.

Full operational analysis results are provided in Appendix D.

## 2.2 CORRIDOR DEVELOPMENT

As part of the corridor study, the City wished to investigate the possible impacts more extensive residential and commercial development would have on the US 14 corridor and its potential impact on the associated study intersections. Utilizing future land use projections contained in the City's 2022 – 2032 Comprehensive Plan document<sup>2</sup> and input from City staff, MSA land use planners assembled possible land uses for the development parcels based on the community characteristics and experience from other similar communities. Land uses were tied to options available in the *ITE Trip Generation Manual* so potential traffic impacts could be calculated. Planners also used available wetland delineation map data provided by the Wisconsin Department of Natural Resources (DNR), to assess what parcels may not be developable due to wetland or topographic restrictions. The remaining development area was used to help determine building sizes for the corridor development. A summary of the proposed additional development and land uses is shown in Exhibit 2-3.

*Note that the development prospects are conceptual only and are likely to fluctuate with market conditions. As development occurs, there may also be changes to zoning, depending on the future needs of the community which cannot be accurately predicted.*

### 2.2.1 CORRIDOR DEVELOPMENT TRIP GENERATION

Development trip generation is based on land use types and sizes as described previously. Utilizing the *ITE Trip Generation Manual, 11th Edition* and procedures found in WisDOT's Wisconsin Specific Trip Generation Rates – Convenience Store/Gas Station Land Use, trip

<sup>2</sup>

[https://www.richlandcenterwi.gov/sites/default/files/fileattachments/about\\_richland\\_center/page/2287/2022-2032\\_richland\\_center\\_compplan\\_lr.pdf](https://www.richlandcenterwi.gov/sites/default/files/fileattachments/about_richland_center/page/2287/2022-2032_richland_center_compplan_lr.pdf)



generation rates were applied for the proposed land uses for weekday AM and PM, and Saturday peak hour periods. A summary of the trip generation calculations is shown in Table 2-3.

**Table 2-3, Additional Corridor Development Trip Generation**

ITE Land Use	Weekday	Total Trip Generation		Saturday Peak Hour
		AM Peak Hour	PM Peak Hour	
Supermarket <i>Parcel 2</i>	1,875	45	175	240
Single-Family Attached Housing <i>Parcel 3</i>	590	40	45	50
Shopping Plaza (40-150k) <i>Parcel 4</i>	9,135	340	865	895
Single-Family Attached Housing <i>Parcel 5</i>	780	55	60	60
Strip Retail Plaza (<40k) <i>Parcel 6</i>	1,890	80	190	230
Single-Family Detached Housing <i>Parcel 7</i>	1,365	100	135	130
Convenience Store/Gas Station <i>Parcel 8</i>	3,950	265	285	345
Shopping Plaza (40-150k) <i>Parcel 9</i>	6,915	260	680	680
Nursing Home <i>Parcel 10a</i>	635	50	55	55
Clinic <i>Parcel 10b</i>	1,505	110	150	150
Medical-Dental Office Building <i>Parcel 10c</i>	900	70	100	75
Multifamily Housing (Low-Rise) <i>Parcel 11</i>	510	45	50	50
Multifamily Housing (Low-Rise) <i>Parcel 12</i>	680	50	65	65
Shopping Plaza (40-150k) <i>Parcel 13</i>	6,710	250	665	655

Full trip generation details are provided in Appendix E.

Since this is a high-level analysis with conceptual development selections, no linked or pass-by trip modifications were applied. Linked trips occur when patrons visit more than one land use without leaving the overall development site, (e.g., a person refuels their vehicle after having a meal at an adjacent restaurant). Pass-by trips are vehicles that are traveling in one direction, stop at the site, and then continue to their original destination. Application of linked and pass-by trips will likely result in some trip (development traffic) reductions; however, they are too difficult to accurately project at this time, given the speculative nature of the proposed land uses.

High-level discussion has occurred regarding redevelopment of the existing Richland Square development, located across US 14 from Starlight Lane. Preliminary redevelopment thoughts

suggest similar retail and restaurant uses would replace the existing development, with the potential addition of a small hotel. As such, additional traffic was also included in the analysis based on potential redevelopment at the current Richland Square site. The related summary of additional trip generation is shown in Table 2-4.

**Table 2-4, Richland Square Redevelopment Trip Generation**

ITE Land Use	Total Trip Generation			
	Weekday	AM Peak Hour	PM Peak Hour	Saturday Peak Hour
Hotel	350	15	5	30

Additional details on the Richland Square site are discussed in Chapter 3. Full trip generation details are provided in Appendix E.

As shown in Exhibit 2-3, an additional US 14 public roadway connection was indicated as desirable by City staff. This connection is located based on WisDOT access spacing guidelines, approximately 2,000-feet east of Jelland Drive. This new intersection was utilized in development trip distribution calculations, but was not included in operational analysis. If the city would like to pursue the additional intersection along US 14, further coordination with WisDOT would need to be completed, including permitting and intersection control selection.

**2.2.2 DEVELOPMENT-BASED OPERATIONAL ANALYSIS**

The combined background and development volumes (including the new hospital development) were used to complete an operational and capacity analysis for the study intersections using Synchro 11, utilizing HCM 6<sup>th</sup> Edition methodologies and WisDOT adjustments. Results of these analyses are shown in Table 2-5.

**Table 2-5, 2044 Expected Background + Development Traffic Intersection Approach Operations**

Peak	Intersection	USH 14 at Starlight Ln				USH 14 at CTH O				USH 14 at Pleasant Valley Dr				USH 14 at Jelland Dr			
	Control Type	TWSC				Signal				TWSC				TWSC			
	Approach	EB →	WB ←	NB ↑	SB ↓	EB →	WB ←	NB ↑	SB ↓	EB →	WB ←	NB ↑	SB ↓	EB →	WB ←	NB ↑	SB ↓
AM	LOS	A	A	C	E	C	B	C	C	A	A	F	F	A	A	D	F
	Delay (s)	1.1	0.1	24.9	46.4	27.1	14.7	23.3	26.3	1.0	0.7	53.8	165.1	2.5	0.4	23.8	102.9
PM	LOS	A	A	F	F	F	C	C	F	A	A	F	F	A	A	F	F
	Delay (s)	2.8	0.2	5.4	2673.7	105.4	20.3	27.5	259.9	1.5	0.8	2676.9	7262.5	3.4	0.2	74.6	1802.3
SAT	LOS	A	A	D	F	F	C	C	F	A	A	F	A	A	A	F	F
	Delay (s)	3.0	0.2	27.5	2777.1	119.1	23.3	29.2	321.9	2.0	0.8	10750.1	0.0	4.2	0.2	129.8	1927.0

LOS based on HCM 6th Edition thresholds  
 -- No volume utilizing the approach during the peak hour results in zero delay  
 TWSC = Two-way stop control

Operations are expected fall below acceptable levels (LOS D or better) without making any capacity/lane or traffic control improvements at all study intersections. With the exception of the County O intersection, unacceptable delays are observed for the side road approaches to US 14. Capacity issues are predicted for the eastbound US 14 approach to County O. This issue is not expected to be mitigated with signal timing adjustments alone. When the southbound approach is upgraded to a full public roadway, the existing split phasing traffic signal operations will need

to be reconfigured. Reassignment of the northbound approach lanes will need to be evaluated to remove the less-efficient split phasing operations.

Full operational analysis results are provided in Appendix D.

### 2.3 FRONTAGE/BACKAGE ROAD OPTIONS

To coincide with WisDOT access management guides, the potential for frontage or backage road to provide access to individual land uses was investigated within the study corridor. Concept level locations are shown in Exhibit 2-5. The creation of the frontage or backage roads would allow for access consolidation along US 14 as development occurs. This would increase safety as the potential for high-speed collisions to be reduced as private access would be relocated to the lower-speed facilities. The addition of the frontage/backage roads would also promote more efficient through travel along the corridor by reducing the amount of traffic slowing to negotiate access points between the public roadways.

Substantial existing development, the location of the Pine River Trail, and potential wetlands limit the options for new frontage or backage roads from being implemented west of Jelland Drive. The new hospital development south of US 14 at Jelland Drive provides an opportunity to construct a frontage road that could create a cul de sac access on the east side of The Homesteader's Store property, and set up for a continuation southeastward.

On the north side of US 14, topographical constraints prohibit the placement of a frontage road west of County O. Any connectivity would be best located on the north side of any new development as an extension of Kintz Road (item "A" in Exhibit 2-5).

The southbound approach to the County O intersection with US 14 could be converted into a backage road between the existing outdoor theater and car dealership, connecting to Pleasant Valley Drive (item "B" in Exhibit 2-5). Between Pleasant Valley Drive and Jelland Drive, a frontage or a backage road could be possible. A frontage road connection (item "C" in Exhibit 2-5) would need to be offset from US 14 based on WisDOT queue sizing requirements, which vary based on the amount of traffic expected. Ideally, its connection would be directly across from another roadway or driveway to minimize the number of conflict points. Alternatively, a backage roadway could be considered (item "D" in Exhibit 2-5), as an extension of the backage roadway to the west and separation between proposed land uses. The frontage road alternative would likely encounter wetland impacts which may not be able to be mitigated. Additional study would be necessary to confirm.

A backage road would continue southeastward, generally providing separation between proposed land uses, and ultimately connecting to a new proposed public intersection with US 14, east of Jelland Drive (item "E" in Exhibit 2-5). South of US 14, the roadway could connect with the frontage road included in the hospital site plan (item "F" in Exhibit 2-5). Further connectivity in the direction of WIS 58 would require additional study, considering the rolling topography and desirable alternative uses for the land. Development this far east of Richland Center exceeds the land use planning contained in the 2023 – 2033 Comprehensive Plan document and likely the 2044 horizon year contained in this study.

As the frontage/backage roads are constructed, existing US 14 access would be relocated to the new local system. New intersections would be required with the frontage/backage roads as they

intersect Pleasant Valley Drive or Jelland Drive. Additional study would be needed to determine the appropriate traffic control and geometric configuration of the new intersections.

## 2.4 RECOMMENDATIONS

The results of the hospital TIA and feedback from WisDOT will determine what improvements, if any, will be required for the Jelland Drive intersection. Based on the preliminary operational analyses contained in this report, a change in traffic control is not expected. Extension of the exclusive westbound left turn lane and the installation of an exclusive eastbound right turn lane are possible.

Further corridor development, as conceptually envisioned through 2044 indicate that improvements will be necessary at all four study intersections at some point through the period if development assumptions come to fruition. Given the very speculative nature of the corridor development, exact impacts are not able to be determined at this time. Trip generation calculations were intended to err on the higher side; however, actual trip generation may change when formal development plans are brought forward. Any intersection modifications should be based on formal development plans to avoid unnecessary costs associated with overbuilding improvements. Based on a high-level review, roundabouts or traffic signals (pending signal warrants being met) could be considered for any of the study locations.

Traffic signals, if properly coordinated, have the opportunity to create efficient motorized movement through the corridor. Within their timing parameters, they can adjust to meet the demands of slight variations in side street demands with proper vehicle detection. However, they do require regular maintenance as signals require replacement and controller components can malfunction. They also do not eliminate the potential for serious angle (also known as T-bone) crashes. The higher the approach speeds, the more severe injuries these crashes can cause. As time goes on and traffic patterns shift, retiming of the phases is also required.

Roundabouts help keep traffic moving from all directions. Traffic queues can form from time to time, but typically resolve themselves rapidly. They help regulate corridor speeds by requiring motorists to slow down in order to navigate the intersection. Their geometric design nearly eliminates the potential for serious injury crashes while also providing opportunities for motorists to complete U-turns. Roundabouts also generally have a low regular maintenance cost, as there are no controllers to fail or need recalibration. They are also better equipped to handle off-peak periods, as there is nearly no delay as a vehicle approaches when no conflicting traffic is present. While traffic signal detection technology is continuously improving, vehicles approaching a traffic signal typically have to wait for the light to change before being able to proceed. Roundabouts, especially multilane roundabouts (like those which would be required along this corridor), can be more challenging for large vehicles to navigate. While all new roundabouts are designed for large vehicles to fit, other vehicles may not provide them the space they need. Multilane roundabout approaches are more challenging for pedestrians to cross, as they need to wait for both lanes to stop before they can proceed to the median. However, pedestrians only need to encounter one direction at a time. Depending on final lane requirements, placing a roundabout at the Starlight Lane or Pleasant Valley Drive locations may be difficult, given the tight topographic and right of way constraints. Additional right of way should be secured at the study intersections prior to any new development on the north side of US 14 to allow for minimal design impacts. Based on the preliminary analysis, securing space for up to four lanes would be recommended (a separate left, through, and right turn lane inbound, and one outbound lane).

Since this portion of the US 14 corridor is under WisDOT jurisdiction, any new developments which are ultimately served by the US 14 corridor will likely be required to have a TIA completed prior to approval and construction. As part of the TIA process, WisDOT will likely require an Intersection Control Evaluation (ICE) to be completed, which will help determine the proper intersection control for the location. Due to the spacing, any TIA should review the operational impacts to the immediate upstream and downstream intersections along US 14 at a minimum, in order to establish the development's impact to the corridor. Any capacity or intersection control changes would need to be approved by WisDOT. For proposed developments further offset from US 14, a TIA should be required, to get a better understanding of impacts to the corridor.

DRAFT

NOTES:  
DUE TO LACK OF OUTLETS FOR ROADWAYS NORTH OF USH 14 WITHIN THE STUDY AREA, DISTRIBUTIONS TO THE NORTH ARE CONSIDERED NEGLIGIBLE FOR THE PURPOSES OF THIS STUDY

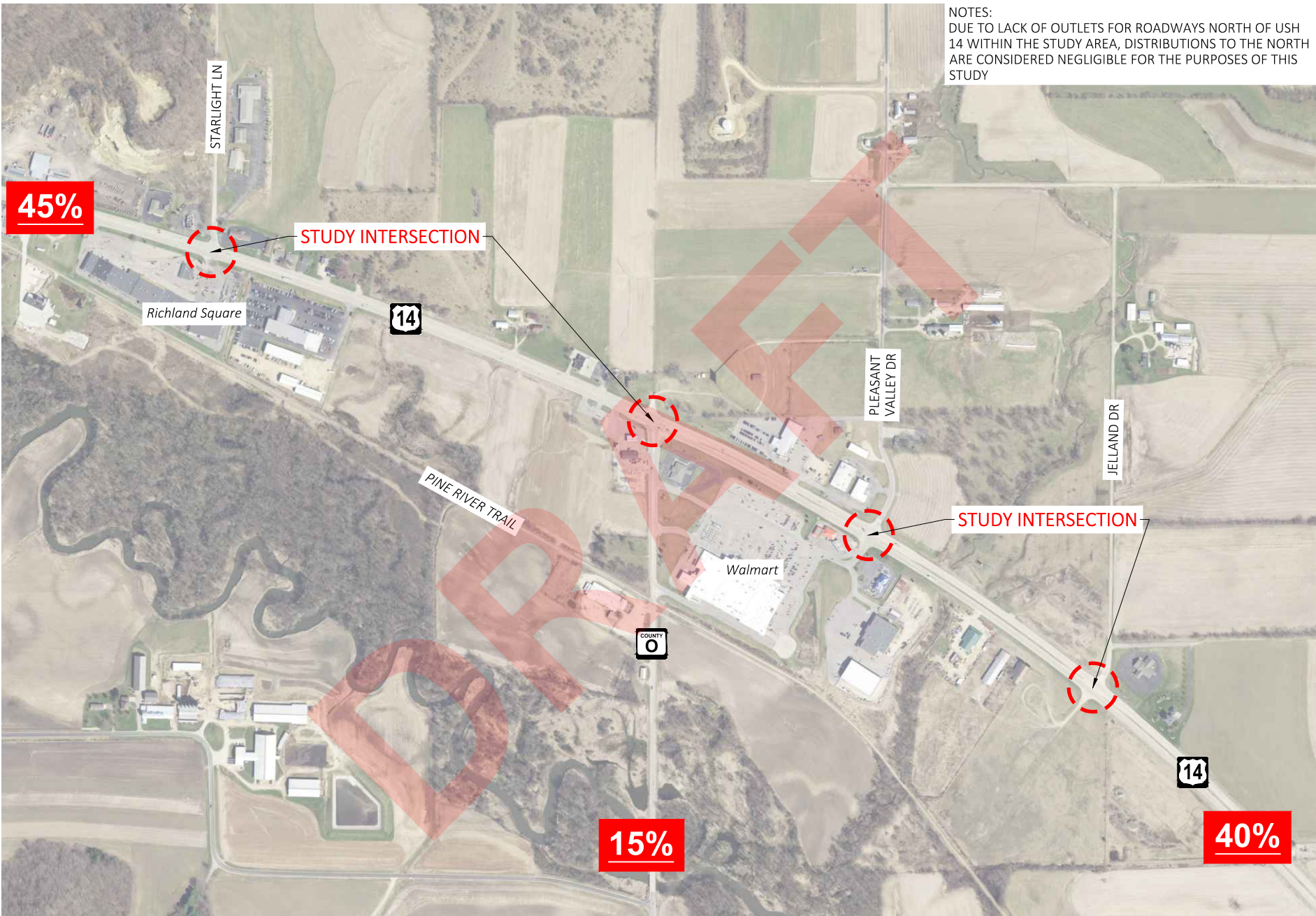
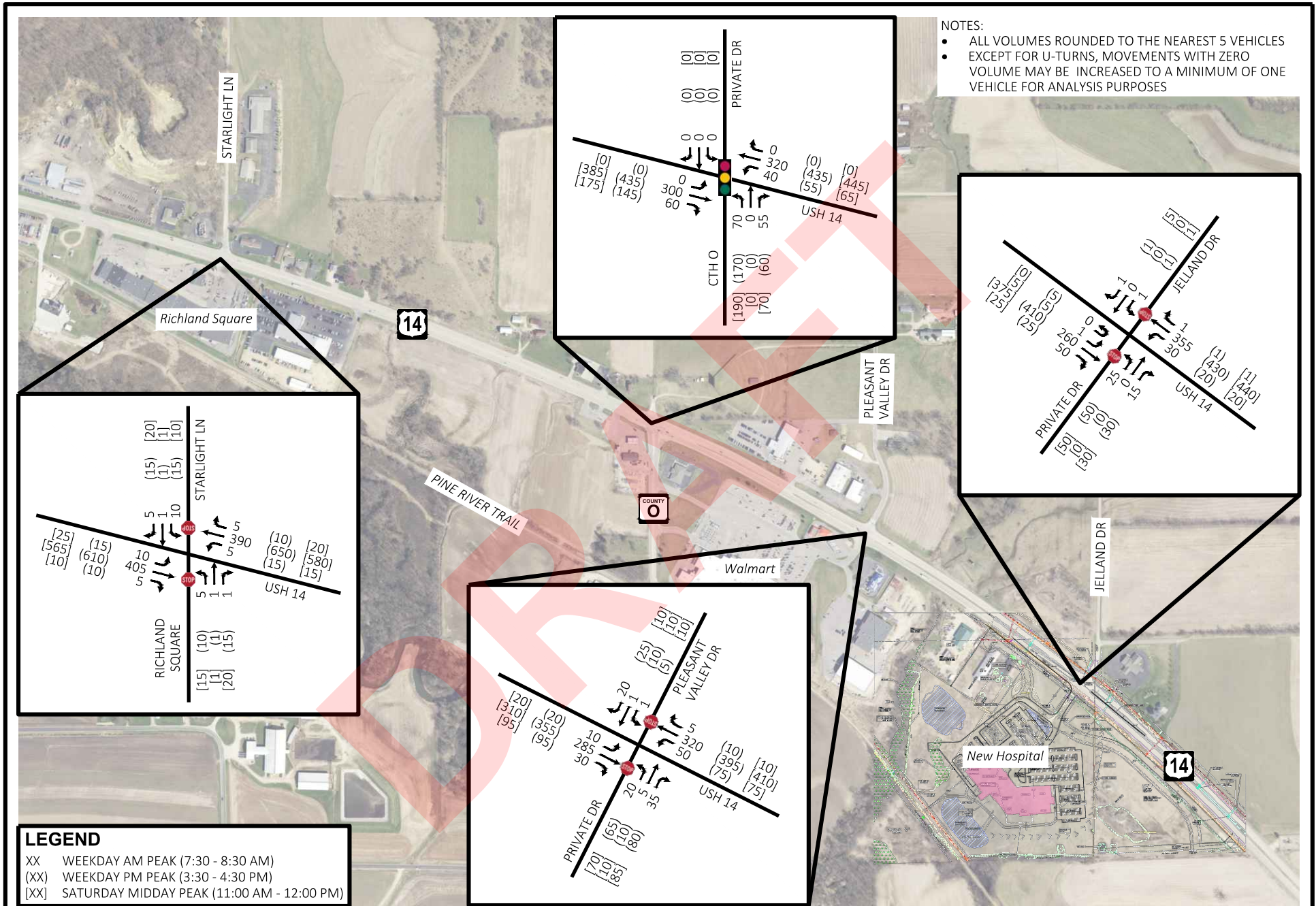


Exhibit 2-1, Traffic Distributions  
US 14 CORRIDOR STUDY  
CITY OF RICHLAND CENTER



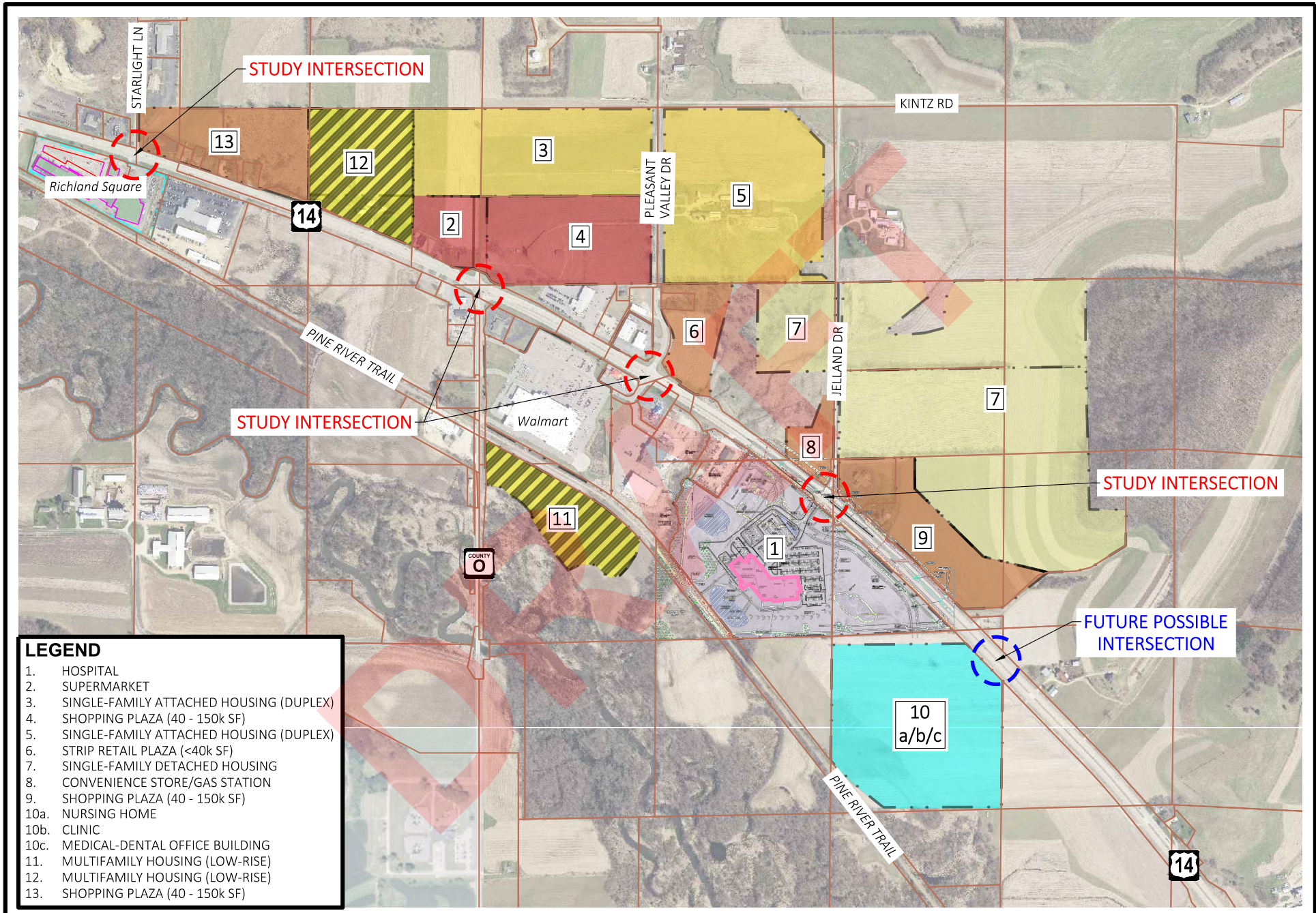
- NOTES:
- ALL VOLUMES ROUNDED TO THE NEAREST 5 VEHICLES
  - EXCEPT FOR U-TURNS, MOVEMENTS WITH ZERO VOLUME MAY BE INCREASED TO A MINIMUM OF ONE VEHICLE FOR ANALYSIS PURPOSES

**LEGEND**

- XX WEEKDAY AM PEAK (7:30 - 8:30 AM)
- (XX) WEEKDAY PM PEAK (3:30 - 4:30 PM)
- [XX] SATURDAY MIDDAY PEAK (11:00 AM - 12:00 PM)



Exhibit 2-2, Traffic Volumes, 2024 Background + Hospital Development  
 US 14 CORRIDOR STUDY  
 CITY OF RICHLAND CENTER



**LEGEND**

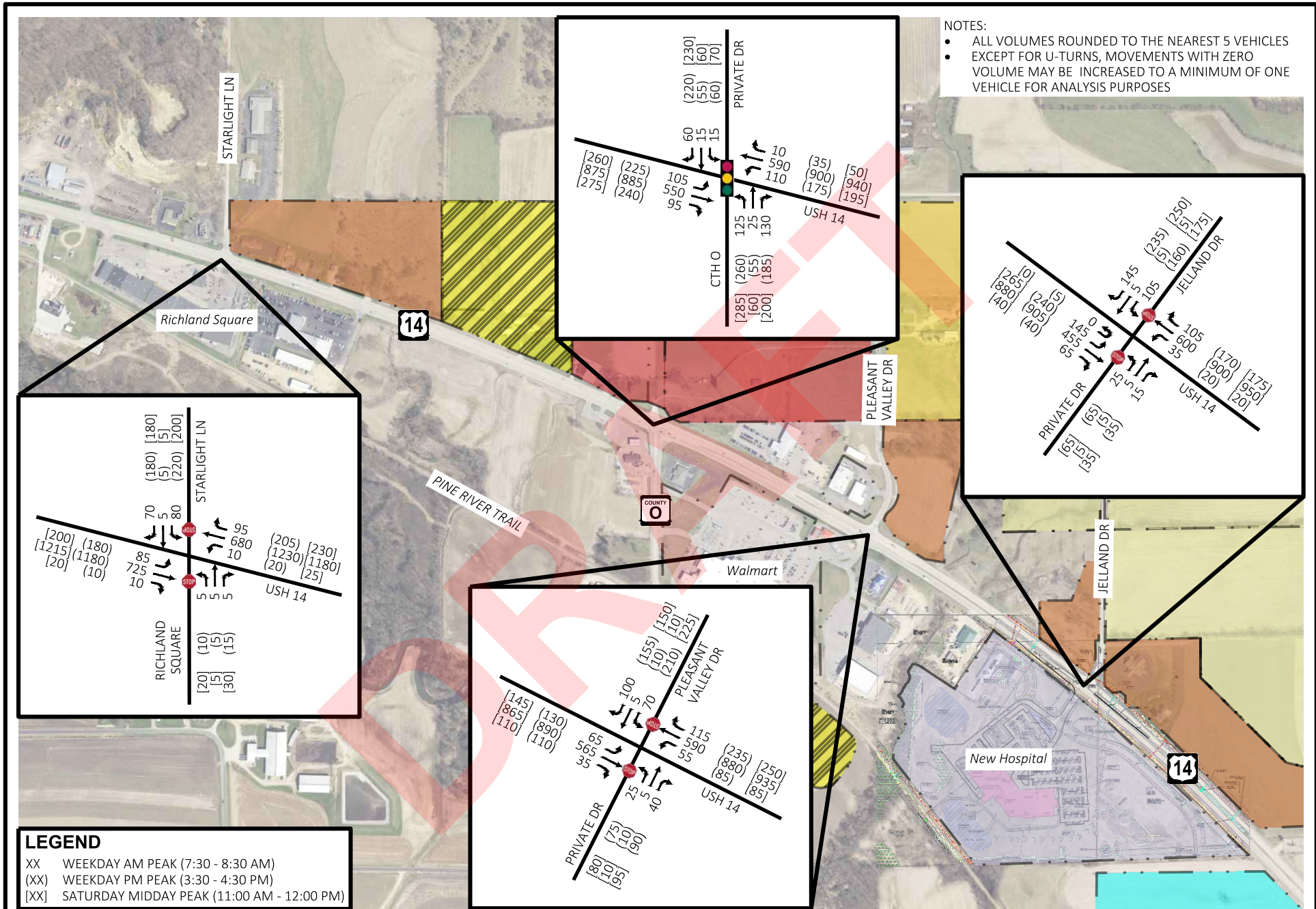
- 1. HOSPITAL
- 2. SUPERMARKET
- 3. SINGLE-FAMILY ATTACHED HOUSING (DUPLEX)
- 4. SHOPPING PLAZA (40 - 150k SF)
- 5. SINGLE-FAMILY ATTACHED HOUSING (DUPLEX)
- 6. STRIP RETAIL PLAZA (<40k SF)
- 7. SINGLE-FAMILY DETACHED HOUSING
- 8. CONVENIENCE STORE/GAS STATION
- 9. SHOPPING PLAZA (40 - 150k SF)
- 10a. NURSING HOME
- 10b. CLINIC
- 10c. MEDICAL-DENTAL OFFICE BUILDING
- 11. MULTIFAMILY HOUSING (LOW-RISE)
- 12. MULTIFAMILY HOUSING (LOW-RISE)
- 13. SHOPPING PLAZA (40 - 150k SF)



Exhibit 2-3, Estimated Additional Corridor Development Through 2044

US 14 CORRIDOR STUDY  
CITY OF RICHLAND CENTER





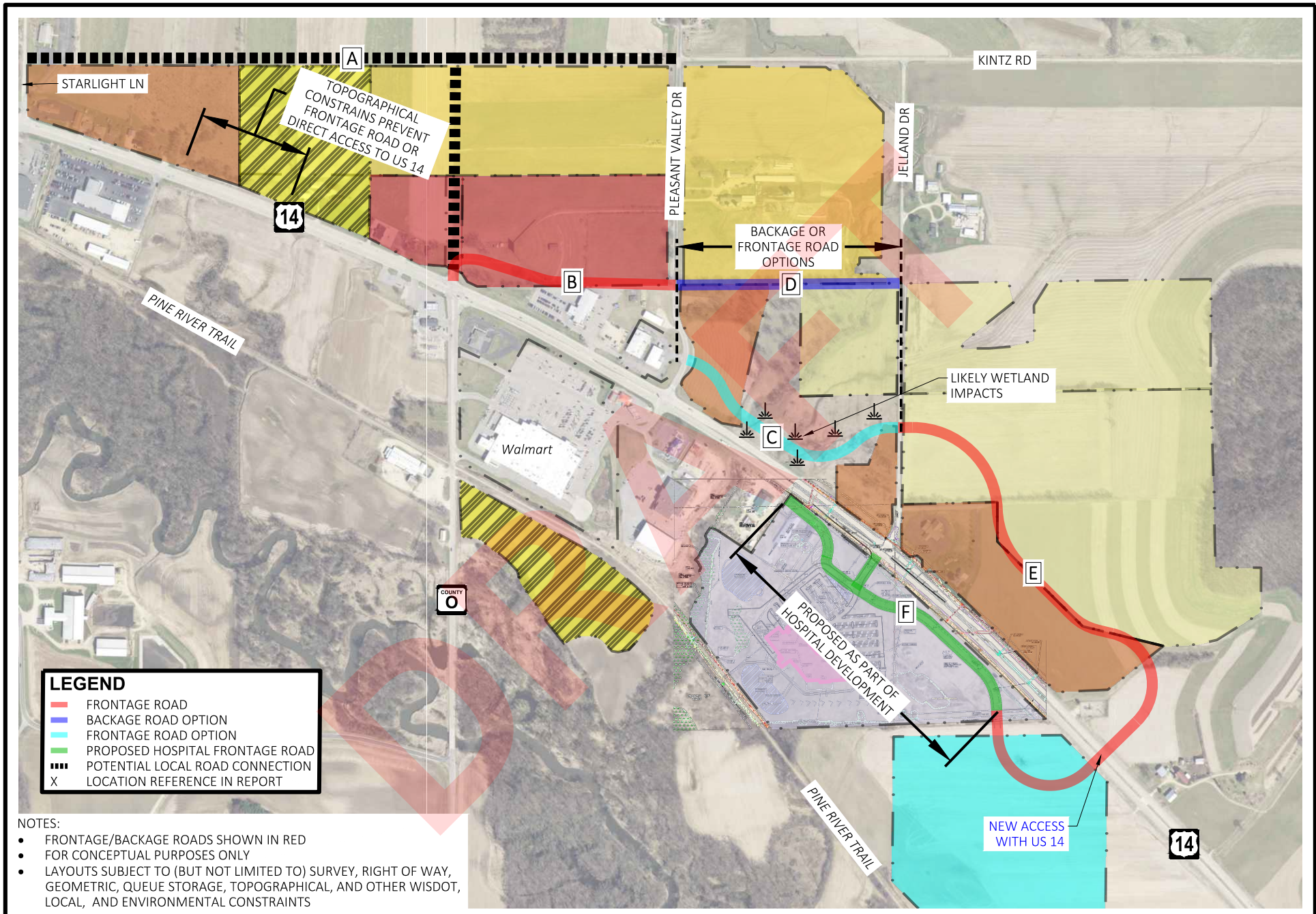


Exhibit 2-5, Conceptual Frontage/Backage Roads  
 US 14 CORRIDOR STUDY  
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## CHAPTER 3 – RICHLAND SQUARE REDEVELOPMENT

### 3.1 EXISTING LAND USE

The existing Richland Square development contains approximately 120,600 gross square-feet of commercial retail and restaurant space. According to county records, the strip mall component of the development sits on approximately 9-acres of land and the restaurant development sits on approximately 0.74-acres, for a combined area of approximately 9.7-acres of land. Two private driveways serve to connect the parcel to US 14, one directly across from Starlight Lane and one approximately 725-feet to the west. Both are stop controlled. The entire site sits below the elevation of US 14, sloping towards the south, as highlighted in Figure 3-1.



Figure 3-1, Richland Square Site Elevation, Looking Eastbound Along US 14

The Pine River Trail serves as a southern boundary to the parcel, and provides the only continuous, designated connection for pedestrians and bicyclists. The current development is shown in Figure 3-2.



Figure 3-2, Existing Richland Square Development

The strip mall is currently operating at approximately 50% capacity, with the outlet restaurant currently closed. The current site is not able to accommodate any additional development in its current configuration, with parking lots occupying the remaining developable space.

### 3.2 POTENTIAL REDEVELOPMENT

No official redevelopment plans have been presented for the parcel; however, the City has requested input on potential improvements to the site. Given the constraints for the site bordered by existing development on the east and west, US 14 to the north, and the Pine River Trail to the south, options are limited.

As part of the corridor development work completed by MSA's planning staff mentioned previously in this report, potential redevelopment of this site was also investigated. Preliminary estimates expect any redevelopment of this parcel would likely contain a similar mix of retail and restaurant uses, with the potential addition of a small hotel, (trip generation shown in Table 2-3), with an effort to include more green space and multimodal accommodations to the nearby trail. As such, a significant change in traffic to/from the site is not anticipated. The 2026 WisDOT US 14 project is expected to have minimal changes to access to the site.

### 3.3 RECOMMENDATIONS

Short-term improvements should look into improving street lighting at the access points from US 14. Until more extensive development occurs along US 14, a change in traffic control at Starlight Lane is not anticipated.

Any redevelopment of the parcel should include multimodal accommodations, with sidewalks directly connecting the entire parcel to the Pine River Trail. Consideration should be given to removing the cross-lot aisles that parallel US 14 approximately 50-feet to the south, to allow for increased queueing distance and to mitigate additional conflict points. The existing access across from Starlight Lane is shown in Figure 3-3.



**Figure 3-3, Main Richland Square Access, Looking Northbound**

Any redevelopment which seeks a greater change in land use, such as incorporating additional fast-casual restaurants or other higher-volume commercial developments should complete a TIA as part of the redevelopment process, to ensure the appropriate traffic control and intersection capacities are met.

## CHAPTER 4 – FOUNDRY DRIVE MULTIMODAL REVIEW

### 4.1 EXISTING CONDITIONS

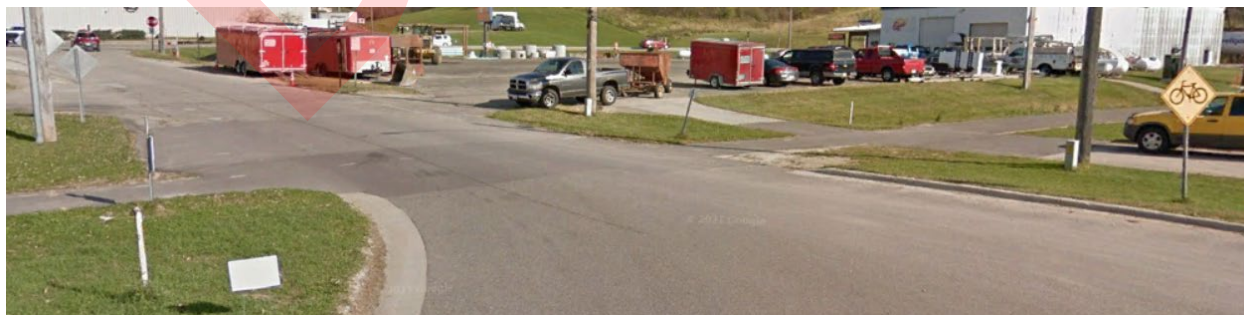
Foundry Drive is a dead-end industrial roadway, approximately 2,900-feet west of Starlight Lane. No sidewalk, shared-use paths, or bike lanes are present along Foundry Drive. Other than the Pine River Trail, there is no other east-west multimodal connectivity to the roadway. Sidewalk along US 14 ends at Bohmann Drive, approximately 2,300-feet west of Foundry Drive. Previous studies indicated a small number of pedestrians observed near Peebles Drive (approximately 285-feet west of Foundry Drive), but generally no further to the east.

The Pine River Trail crosses Foundry Drive approximately 245-feet south of US 14. Stop (R1-1) signs face trail users as they approach the crossing of Foundry Drive, as shown in Figure 4-1.



**Figure 4-1, Pine River Trail, Looking Westbound At Foundry Drive**

Motorists approaching the Pine River Trail from Foundry Drive encounter Bicycle Crossing (W11-1) warning signs approximately 35-feet from the trail crossing, as shown in Figure 4-2.



**Figure 4-2, Foundry Drive Northbound, Approaching The Pine River Trail**

Proposed work as part of WisDOT's US 14 corridor work in 2026 does not propose to make any multimodal changes that would impact connectivity between US 14 and the Pine River Trail along Foundry Drive. No plans are in place to extend sidewalk or a shared-use path eastward beyond Bohmann Drive.

A survey of available crash data extending ten years back does not reveal any reported crashes between trail uses and motor vehicles at this trail crossing location.

## 4.2 RECOMMENDATIONS

Signage at the Pine River Trail crossing should be brought up to current standards, incorporating 18-inch x 18-inch Stop (R1-1) signs facing the trail crossing and Trail Crossing assemblies (W11-15, W16-7P) facing motorists at the trail crossing.



**Figure 4-3, Current MUTCD-Standard Trail Crossing Assembly**

Pavement markings should be installed to indicate the trail crossing location, marked using a high-visibility pattern, as shown in Figure 4-4.



**Figure 4-4, High-Visibility Crosswalk Marking**

Current traffic volumes along Foundry Drive, in addition to historical crash patterns, types of development along Foundry Drive, and available space do not indicate nor allow for other multimodal accommodations along Foundry Drive. Consideration could be given to encouraging a sidewalk connection between the hotel on the southwest corner of US 14 at Foundry Drive to encourage a safer alternative for pedestrians and other non-motorized users. However, given the existing right of way, this would be an entirely private access. Other businesses could be encouraged to make sidewalk connections to the Pine River Trail as well to enhance connectivity and promote additional usage of the trail.

## CHAPTER 5 – CONCLUSIONS & NEXT STEPS

### 5.1 CONCLUSIONS

Given the amount of traffic currently using US 14, the corridor is a relatively safe segment, with crash rates below statewide averages for similar facility types. Adequate capacity is present at the existing intersections to serve current and projected 20-year background traffic growth. Crash records indicate that lighting could be improved at the US 14 intersections with Starlight Lane, Pleasant Valley Drive, and Jelland Drive. Proposed WisDOT project work should address signal visibility issues at the County O intersection.

The construction of a new hospital at the intersection of US 14 at Jelland Drive is not expected to create any new operational issues at the Jelland Drive intersection or along the study corridor. Adequate capacity should be available to accommodate this growth. Frontage/service roads proposed as part of the hospital site should be encouraged, to further WisDOT's goals of increasing safety along the US 14 corridor, by removing access points as feasible.

Significant additional development along the US 14 corridor is likely to require intersection improvements at the study intersections. The magnitude of improvements will be determined by the proposed scope of development. Note that proposed development/land uses considered as part of this study were intended to be robust; however, actual development proposals will fluctuate with market trends. The introduction of a public roadway on the north side of the County O intersection is expected to require the existing split phasing signal timing and lane configuration to be re-evaluated. Additional traffic signals can be considered along the corridor if signal warrants are met. Roundabouts should also be considered; however, topography and right of way may impact feasibility. Traffic signals have the opportunity to create smooth flow if the signals operate in a coordinated system, but will require regular maintenance. Severe injury crashes are still likely to occur. Roundabouts will help maintain lower speeds along the corridor and prevent serious injury crashes. They will have the lowest vehicle delay during off-peak periods, but may have a slight negative impact with larger vehicles. Any new developments that will utilize US 14 to access the development should include a TIA as part of the development process. Coordination with WisDOT staff will be needed at that time.

Frontage and backage roads should be planned for with developments directly adjacent to US 14 to help improve safety by reducing the number of direct access points with US 14. Wetland and topographical constraints will need to be investigated further prior to any formal design work. Operational analysis and coordination with WisDOT will be necessary to determine offsets from US 14 and required storage lanes.

Redevelopment of Richland Square is challenging due to the parcel's constraints. Based on the site's constraints, a significant increase in traffic caused by redevelopment is not anticipated. Redevelopment should include more green space and encourage connectivity to the Pine River Trail south of the property. Conflict points should be reduced by encouraging the closure of the cross-aisle connections immediately south of the main access from US 14, across from Starlight Lane. This will remove conflicting vehicle paths and create additional storage space for vehicles queued at the Stop sign.

While no crashes have been reported in the last ten years at the Pine River Trail crossings with public roadways, roadway crossings should include updated warning signage and pavement



markings to increase user safety. Adjacent developments should be encouraged to make multimodal connections between their businesses at the trail to promote usage of the trail.

## 5.2 NEXT STEPS

The following is a recommended guide for City staff, divided into short-term and long-term project considerations for the US 14 corridor.

### 5.2.1 SHORT-TERM

- Improve lighting at the Starlight Lane, Pleasant View Drive, and Jelland Drive intersections
- Upgrade signage and pavement markings at the Pine River Trail crossing
- Encourage construction of the frontage road as part of the hospital development. Switch The Homesteader's Store access to the frontage road.
- Continue to monitor the corridor for crash pattern changes

### 5.2.2 LONG-TERM

- Require new developments along US 14 to complete a Traffic Impact Analysis
- Reserve additional right of way at intersections as development is proposed to accommodate future intersection improvements
- Implement frontage/backage roads as development allows on the north side of US 14. Plan for future connectivity with the frontage/backage roads.
- Encourage development connectivity to the Pine River Trail
- Recommend redevelopment of existing parcels to meet WisDOT queue storage specifications to minimize the number of on-site vehicular conflict points
- Consider multimodal connectivity along public roadways between the Pine River Trail, US 14, and new development on the north side of US 14
- Consider full corridor street lighting as the segment develops