Draft Memorandum

SRF No. 02215657

To: Josh Nyquist, Executive Director of Building Operations
PACT CHARTER SCHOOL

From: Jeff Bednar, TOPS, Senior Traffic Engineering Specialist
Tom Sachi, PE, Project Manager | Traffic Studies

Date: April 28, 2022

Subject: PACT Charter School | Traffic Impact Study | City of Ramsey, Minnesota

Introduction

This traffic impact study (TIS) has been completed for the proposed PACT Charter School development in the City of Ramsey to be located at 7633 161st Avenue NW (see Figure 1). The proposed education facility development will accommodate grades six (6) through grade twelve (12) with up to 734 students and 100 fulltime faculty and staff on a school weekday. The school's existing campus will then become home to kindergarten (K) through grade five (5). The City of Ramsey has also requested the adjacent future proposed St. Katharine Drexel Church be incorporated into this TIS. The St. Katharine Drexel Church on the 6.5 acres east of the proposed school site will accommodate up to 400 parishioners and 250 seats, primarily on weekends and mostly on Sunday.

The primary objectives of the study are; to review existing traffic operations, evaluate trip generation, access, and circulation within the site and recommend improvements to ensure safe and efficient operations. A summary of the traffic impact study findings, conclusions and recommendations can be found on page 19 of this memorandum.

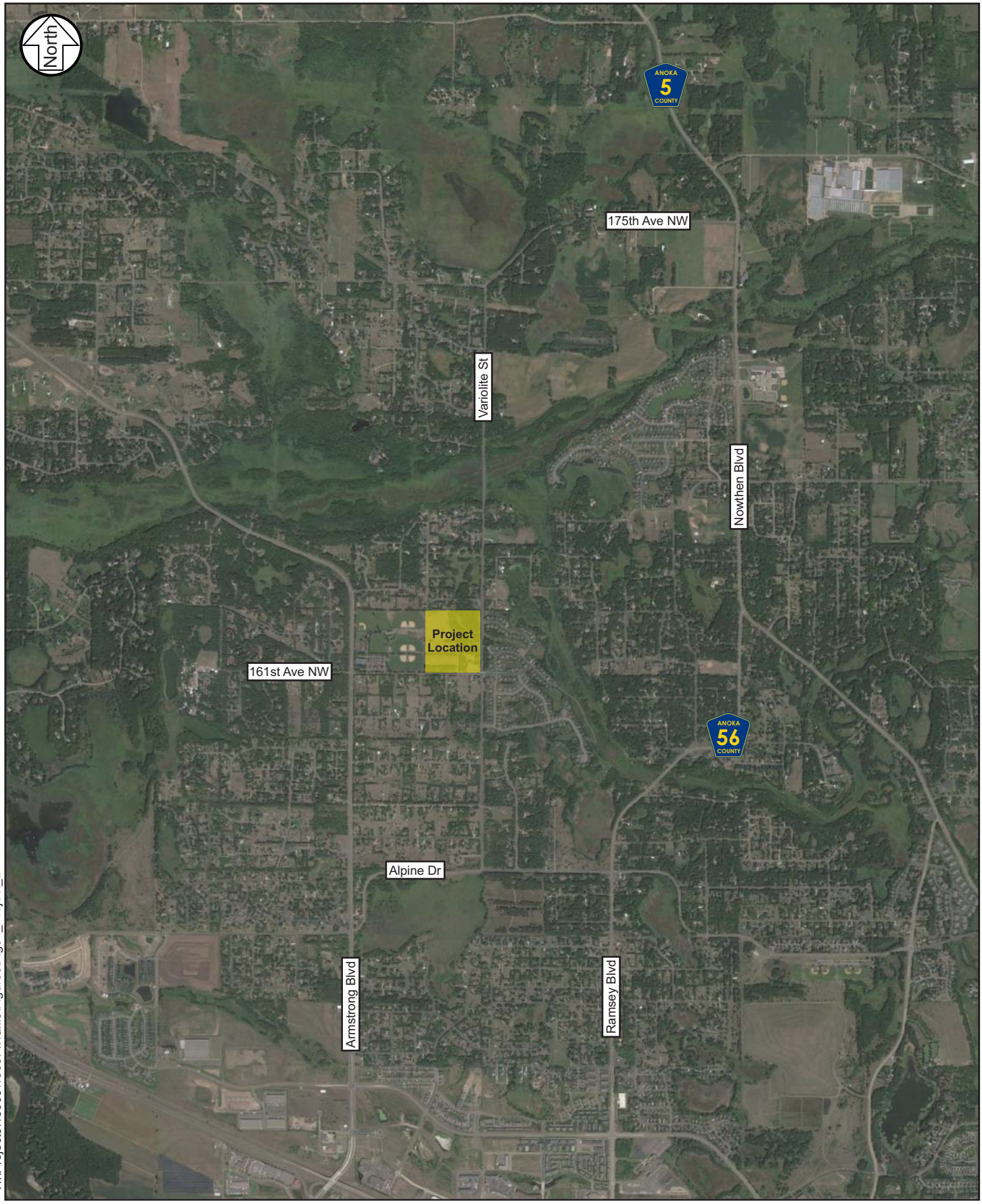
Existing Conditions

The existing conditions were reviewed to establish a baseline to identify any future impacts associated with the proposed development. The evaluation of existing conditions includes data collection efforts and intersection capacity analyses. The following information summarizes the existing conditions.

Traffic Data Collection

Collect new vehicular, pedestrian and bicycle volume counts during the weekday a.m. commuter/school arrival peak period (7-9 a.m.), p.m. school dismissal peak period (2:00-4:00 p.m.), p.m. commuter peak period (4:00-6:00 p.m.) and Sunday a.m. church peak period (9:30-11:30 a.m.) at the following seven study intersections:

- Variolite Street/161st Avenue
- Armstrong Boulevard/161st Avenue
- Ramsey Boulevard/Alpine Drive
- 175th Avenue/Nowthen Boulevard
- Variolite Street/Alpine Drive
- Armstrong Boulevard/Alpine Drive
- 173rd Avenue/Variolite Street



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Project Location

PACT Charter School Traffic Impact Study
Ramsey, MN

Figure 1

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Roadway Characteristics

A field assessment was completed to identify various roadway characteristics within the study area transportation system, such as functional classification, general configuration, and posted speed limit. A summary of these roadway characteristics is shown in Table 1. Note that these are general characteristics and that there are some deviations within portions of roadway segments.

Table 1. Existing Study Area Roadway Characteristics

Roadway	Functional Classification (1)	General Configuration	Posted Speed Limit (mph)
Armstrong Boulevard	Minor Arterial	Two-lane undivided	55
Ramsey Boulevard	Minor Arterial	Two-lane undivided	50
Variolite Street	Major Collector	Two-lane undivided	50
161st Avenue	Local Street	Two-lane undivided	30

(1) Functional Classification based on the City of Ramsey 2040 Transportation Plan Update.

The segment of 161st Avenue between Armstrong Boulevard and Variolite Street has been identified to be improved/reconstructed as part of the City of Ramsey Capital Improvements Plan for year 2024. Design of this future 161st Avenue improvement/reconstruction is currently under consideration. It has been suggested that it may be possible to reschedule this 161st Avenue improvement and/or reconstruction to coincide with the proposed PACT Charter School project.

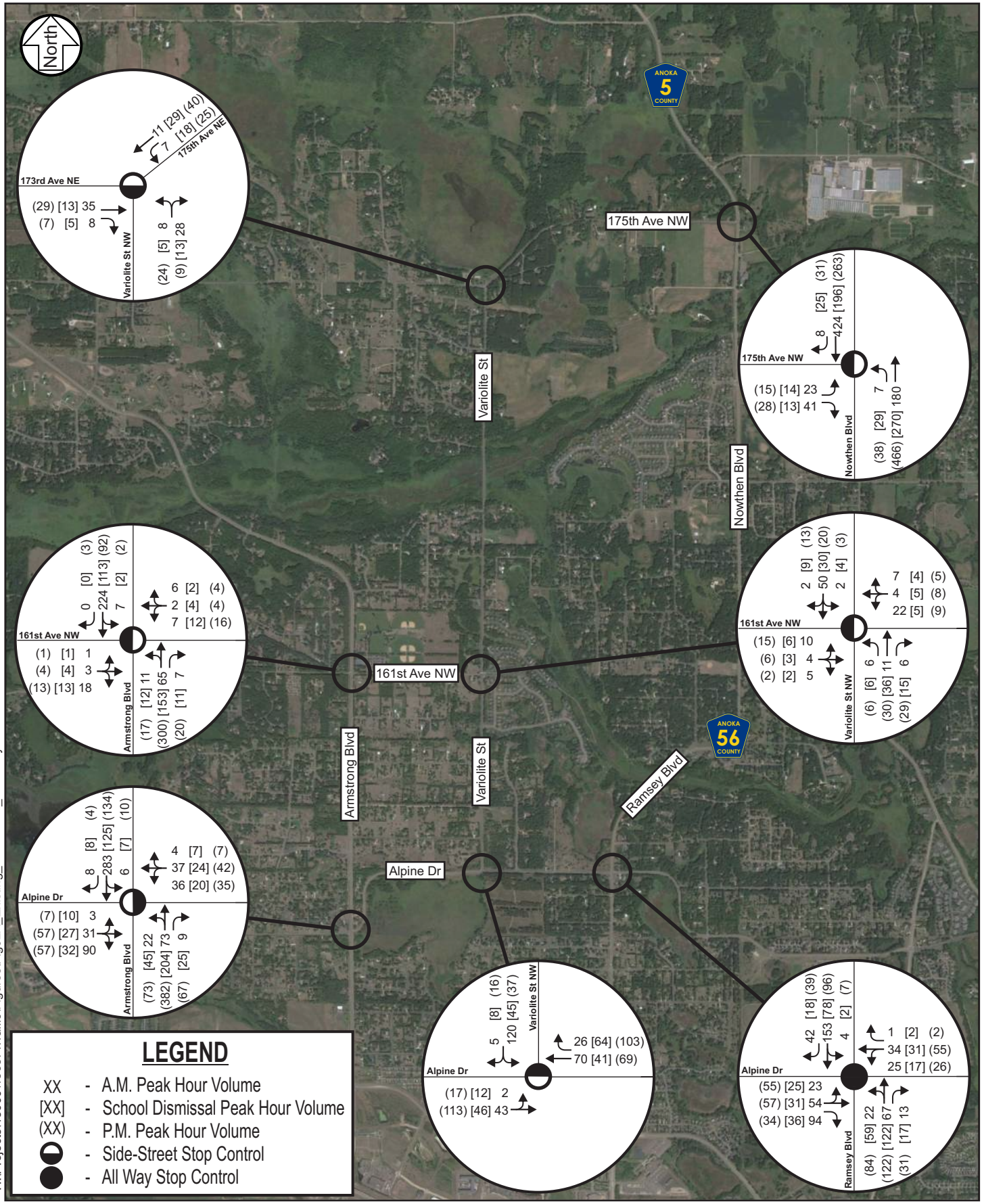
Existing geometrics, traffic control, and traffic volumes in the study area are shown in Figure 2.

Existing Intersection Traffic Operations/Capacity Analysis

An existing intersection traffic operations/capacity analysis was completed to establish baseline conditions to which future traffic operations can be compared. The capacity analysis was completed for the a.m. and p.m. peak hours at the study intersections using the Synchro/SimTraffic computer traffic simulation model.

Capacity analysis results identify a Level of Service (LOS) which indicates the quality of traffic flow through an intersection. Intersections are given a ranking from LOS A through LOS F. The LOS results are based on average delay per vehicle, which correspond to the delay threshold values shown in Table 2. LOS A indicates the best traffic operation, with vehicles experiencing minimal delays. LOS F indicates an intersection where demand exceeds capacity, or a breakdown of traffic flow. Overall intersection LOS A through D are generally considered acceptable by drivers in the Twin Cities Metropolitan Area.

For side-street stop-controlled intersections, special emphasis is given to providing an estimate for the level of service of the side-street approach. Traffic operations at an unsignalized intersection with side-street stop control can be described in two ways. First, consideration is given to the overall intersection level of service. This considers the total number of vehicles entering the intersection and the capability of the intersection to support these volumes.



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Existing Conditions - Weekday

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Figure 2A

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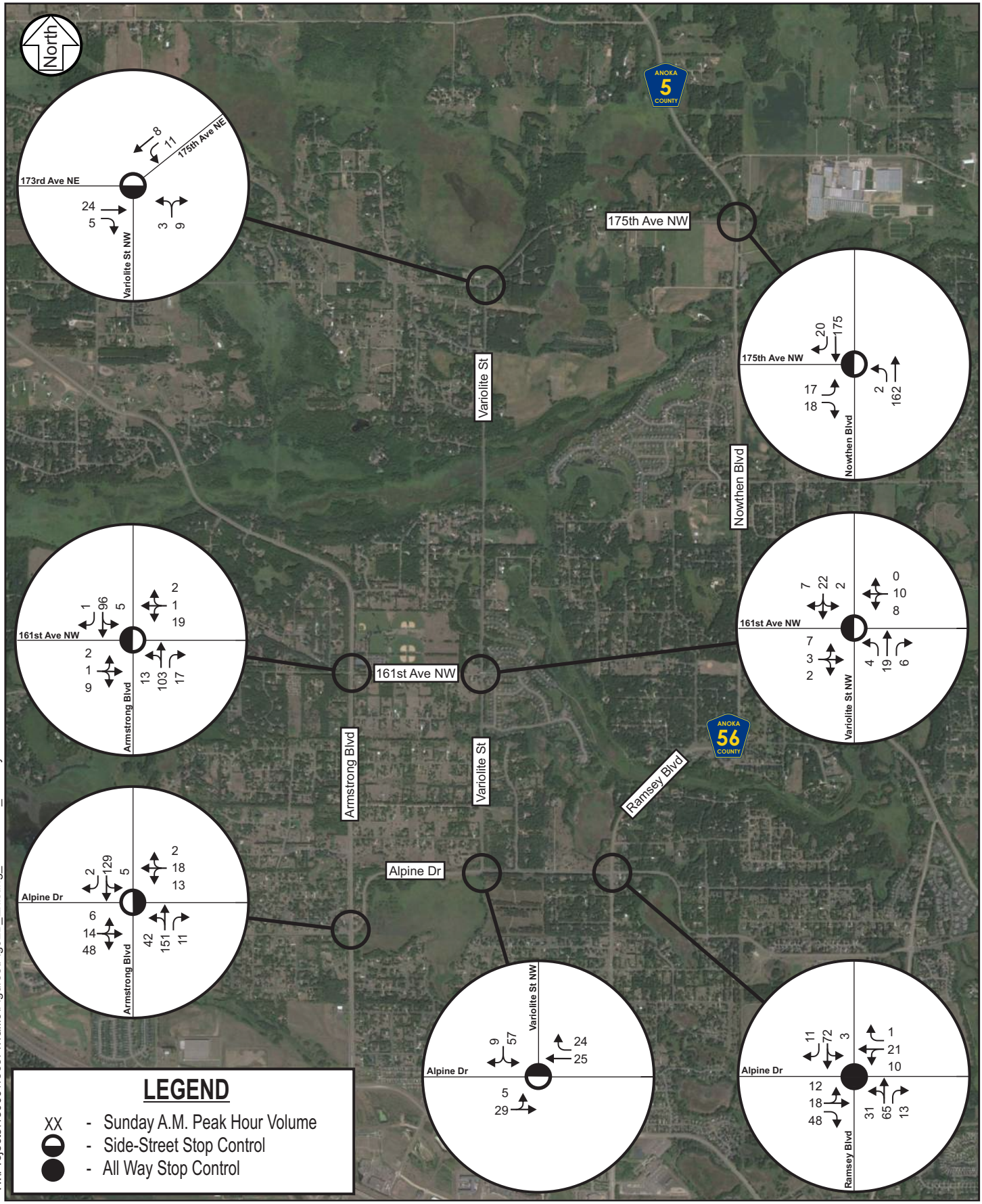

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Existing Conditions - Sunday

PACT Charter School Traffic Impact Study

City of Ramsey

Figure 2B

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Second, it is important to consider delay on the minor approach. Since mainline traffic does not stop, most of the delay is attributed to the side-street approaches. It is typical of intersections with higher mainline traffic volumes to experience high levels of delay (i.e. poor levels of service) on the side-street approaches, but an acceptable overall intersection level of service during peak hour conditions.

Table 2. Level of Service Criteria for Signalized and Unsignalized Intersections

LOS Designation	Signalized Intersection Average Delay/Vehicle (seconds)	Unsignalized Intersection Average Delay/Vehicle (seconds)
A	≤ 10	≤ 10
B	> 10 - 20	> 10 - 15
C	> 20 - 35	> 15 - 25
D	> 35 - 55	> 25 - 35
E	**> 55 – 80**	**> 35 – 50**
F	**> 80**	**> 50**

Results of the existing weekday traffic operations analysis, shown in Table 3, indicate that all study intersections currently operate at an acceptable overall LOS B or better during the a.m. commuter (school arrival) peak hour (7:30-8:30 a.m.), school dismissal peak hour (2:30-3:30 p.m.) and p.m. commuter peak hour (4:00-5:00 p.m.), under existing traffic control and intersection geometrics. No significant queuing or delay issues were identified, except for the Armstrong Boulevard/Alpine Drive intersection where the westbound approach is operating at a LOS E during the p.m. peak hour.

Table 3. Existing Weekday Conditions Peak Hour Traffic Operations/Capacity Analysis

Study Intersection	A.M. Peak Hour			Dismissal Peak Hour			P.M. Peak Hour		
	LOS	Delay	Queue	LOS	Delay	Queue	LOS	Delay	Queue
Variolite Street/173rd Avenue (1)	A/A	9 sec.	NB/1	A/A	9 sec.	NB/1	A/A	10 sec.	NB/1
Variolite Street/161st Avenue (1)	A/A	10 sec.	WB/1	A/A	10 sec.	EB/1	A/A	10 sec.	EB/1
Variolite Street/Alpine Drive (1)	A/B	11 sec.	SB/1	A/A	10 sec.	SB/1	A/B	11 sec.	SB/1
Armstrong Boulevard/161st Avenue (1)	A/B	11 sec.	EB/1	A/B	12 sec.	WB/1	A/B	15 sec.	WB/1
Armstrong Boulevard/Alpine Drive (1)	A/C	18 sec.	WB/2	A/C	16 sec.	WB/2	A/**E**	**45 sec.**	WB/4
Ramsey Boulevard/Alpine Drive (2)	B/B	12 sec.	SB/2	A/B	11 sec.	NB/1	B/B	13 sec.	NB/2
175th Avenue/Nowthen Boulevard (1)	A/B	13 sec.	EB/1	A/B	12 sec.	EB/1	A/B	13 sec.	EB/1

(1) Indicates a side-street stop-controlled intersection, where the overall LOS is shown followed by the worst approach LOS. The delay shown represents the worst side-street approach average delay per vehicle. The queue shown is the 95th percentile queue (in vehicles) for the worst approach at the intersection. The 95th percentile queues shown in **red bold font** spill back to and beyond the adjacent upstream intersection.

(2) Indicates an all-way stop-controlled intersection, where the overall LOS and average delay per vehicle are shown. The queue shown is the 95th percentile queue (in vehicles) for the worst side-street approach at the intersection. The 95th percentile queues shown in **red bold font** spill back to and beyond the adjacent upstream intersection.

The existing Sunday a.m. church peak hour traffic operations analysis related to the adjacent future proposed St. Katharine Drexel Church will be combined with year 2028 No-Build and Build scenario Sunday a.m. church peak hour traffic operations analyses later in this memorandum.

Year 2028 No-Build Conditions

To understand how the existing transportation system and general background growth are expected to impact the study intersections, year 2028 no-build conditions were reviewed (no proposed PACT Charter School site-generated traffic is included in this scenario). Note that year 2028 represents the year where the PACT Charter School can be assumed to be completed with full occupancy of the proposed development and includes all phases of the proposed PACT Charter School project plus completion of the adjacent future proposed St. Katharine Drexel Church.

Background Growth

To account for general background traffic growth within the study area, a conservative annual growth rate of one (1) percent was applied to the existing peak hour volumes to develop year 2028 background traffic forecasts.

Intersection Capacity Analysis

To determine how the adjacent roadway network will accommodate the year 2028 no-build traffic volumes, an intersection capacity analysis was completed using Synchro/SimTraffic Software. Year 2028 no-build traffic forecasts, which include general background growth, are shown in Figure 3.

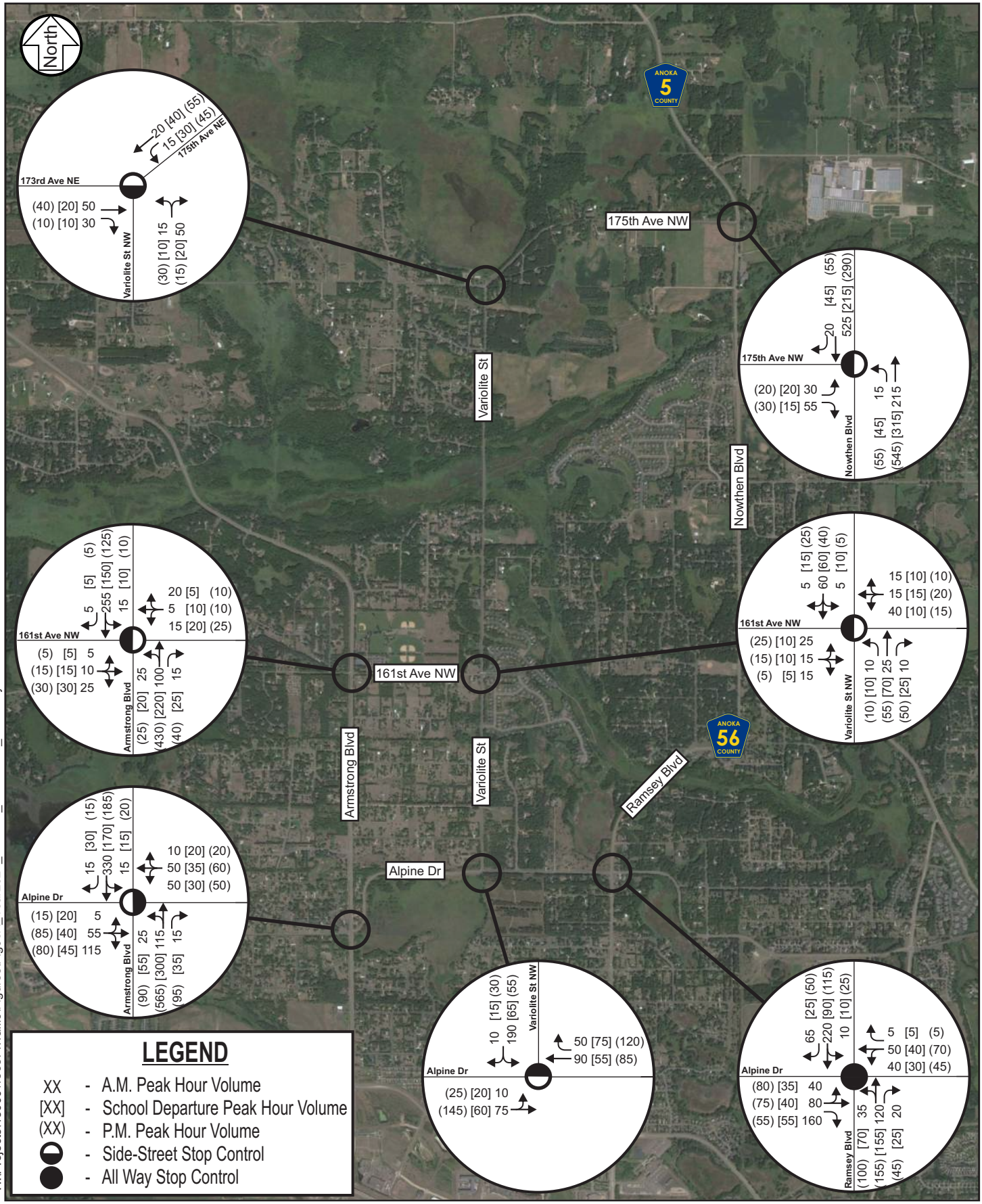
Results of the year 2028 no-build intersection capacity analysis shown in Table 4, indicate that all study intersections are expected to continue to operate at an acceptable overall LOS B or better during the peak hours under existing traffic control and intersection geometrics. No significant queuing or delay issues were identified, except for the Armstrong Boulevard/Alpine Drive intersection where the westbound approach would now operate at a LOS F during the p.m. peak hour (note: no proposed PACT Charter School site-generated traffic is included in this scenario).

Table 4. Year 2028 Weekday No-Build Conditions Peak Hour Traffic Operations/Capacity Analysis

Study Intersection	A.M. Peak Hour			Dismissal Peak Hour			P.M. Peak Hour		
	LOS	Delay	Queue	LOS	Delay	Queue	LOS	Delay	Queue
Variolite Street/173rd Avenue (1)	A/A	9 sec.	NB/1	A/A	9 sec.	NB/1	A/A	10 sec.	NB/1
Variolite Street/161st Avenue (1)	A/A	10 sec.	WB/1	A/A	10 sec.	EB/1	A/A	10 sec.	EB/1
Variolite Street/Alpine Drive (1)	A/B	11 sec.	SB/1	A/A	10 sec.	SB/1	A/B	11 sec.	SB/1
Armstrong Boulevard/161st Avenue (1)	A/B	11 sec.	EB/1	A/B	13 sec.	WB/1	A/B	15 sec.	WB/1
Armstrong Boulevard/Alpine Drive (1)	A/C	19 sec.	WB/2	A/C	17 sec.	WB/2	A/**F**	**60 sec.**	WB/6
Ramsey Boulevard/Alpine Drive (2)	B/B	12 sec.	SB/2	A/B	11 sec.	NB/2	B/B	13 sec.	NB/2
175th Avenue/Nowthen Boulevard (1)	A/B	14 sec.	EB/1	A/B	12 sec.	EB/1	A/B	14 sec.	EB/1

(1) Indicates a side-street stop-controlled intersection, where the overall LOS is shown followed by the worst approach LOS. The delay shown represents the worst side-street approach average delay per vehicle. The queue shown is the 95th percentile queue (in vehicles) for the worst approach at the intersection. The 95th percentile queues shown in **red bold font** spill back to and beyond the adjacent upstream intersection.

(2) Indicates an all-way stop-controlled intersection, where the overall LOS and average delay per vehicle are shown. The queue shown is the 95th percentile queue (in vehicles) for the worst side-street approach at the intersection. The 95th percentile queues shown in **red bold font** spill back to and beyond the adjacent upstream intersection.



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Year 2028 No Build Conditions - Weekday

PACT Charter School Traffic Impact Study
Ramsey, MN

Figure 3A

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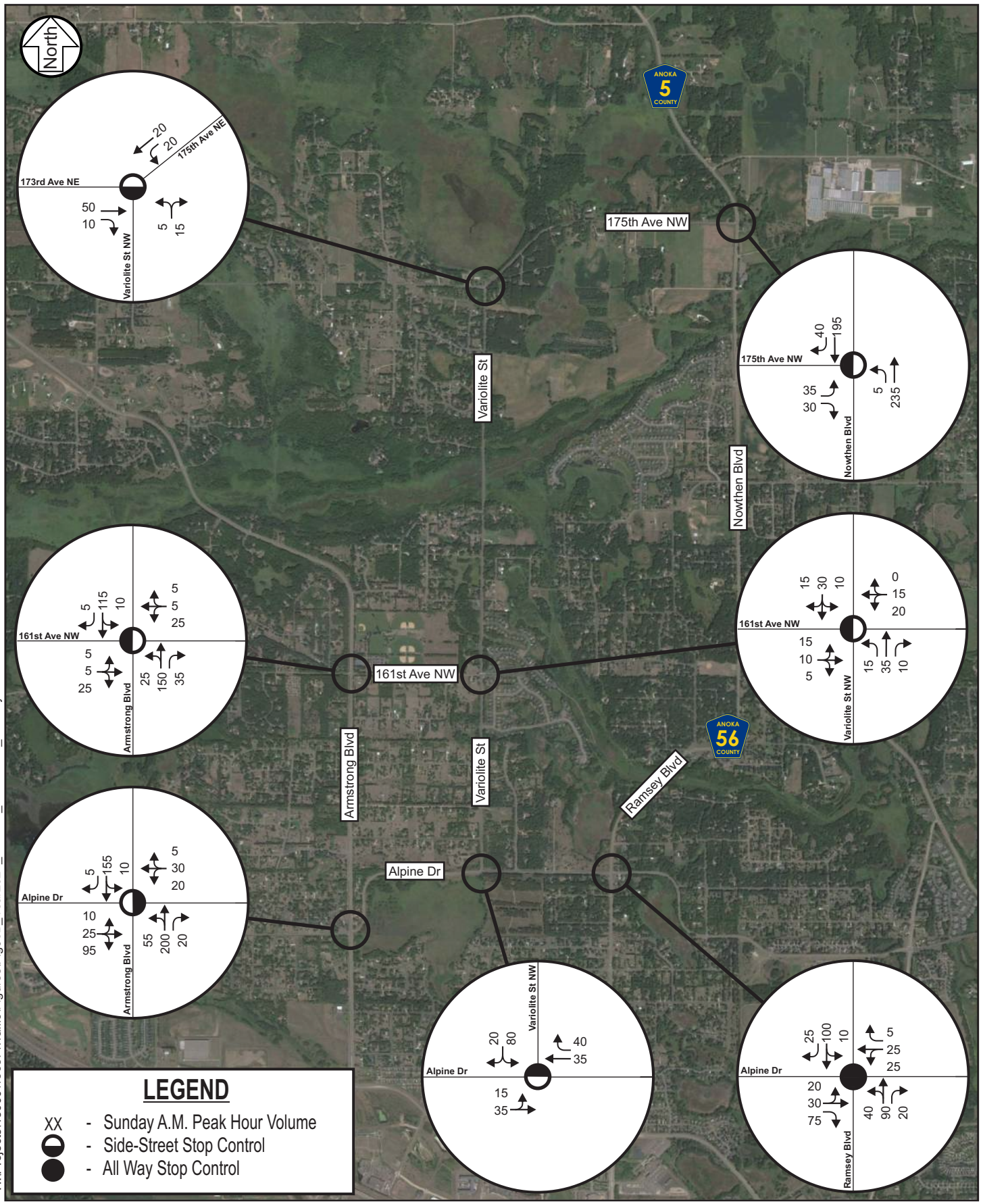

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Year 2028 No Build Conditions - Sunday

PACT Charter School Traffic Impact Study
Ramsey, MN

Figure 3B

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Proposed Development

The site of the proposed PACT Charter School development is generally located north of 161st Avenue and roughly 0.25 miles east of Armstrong Boulevard (see Figure 1). It was assumed that the construction of the proposed development would be completed and fully occupied by year 2028. Access to the proposed site would be provided at two site access locations on 161st Street: a primary (west) site access approximately 600 feet west of Variolite Street (buses, pick-up/drop-off, staff) and a secondary (east) site access approximately 1,150 feet west of Variolite Street (buses, student drivers).

PACT Charter School is proposing to acquire approximately 18 acres of a larger 33-acre vacant land parcel located at 7633 161st Avenue NW in the City of Ramsey, with the intent to build a new charter school facility, approximately 115,000 square feet in size. This new facility will be designed to accommodate grades six through twelve. The schools existing campus will then be home to kindergarten through fifth grades. Minor interior renovations are being planned at their existing building to better accommodate these lower grade levels. The seller is the Church of St. Katharine Drexel and they plan to retain the remaining approximately 15 acres for a future church development.

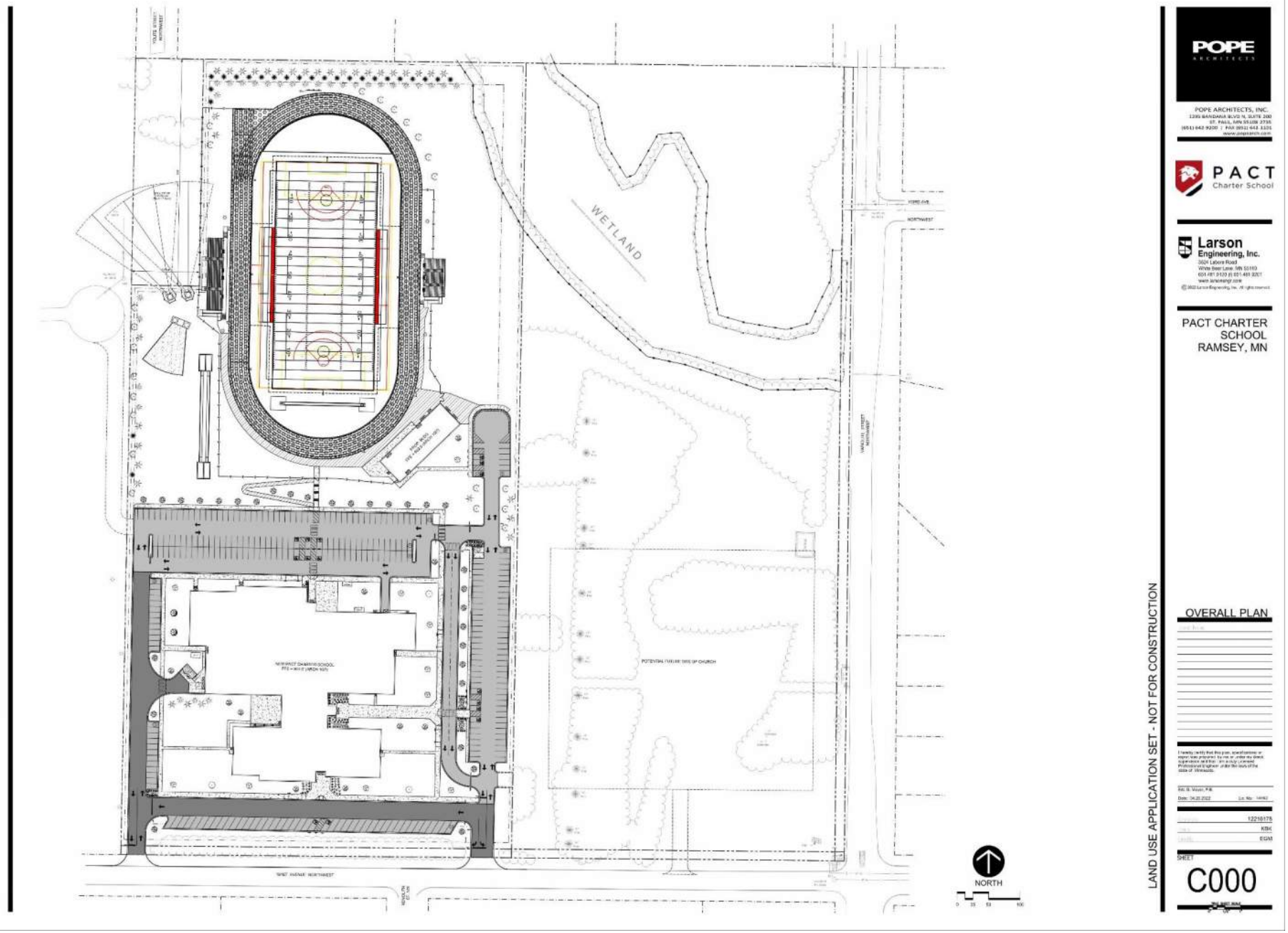
The proposed development (see Figure 4) consists of the PACT Charter School, a public school for grades six through twelve (6-12) to be developed in five student enrollment phases as follows:

Phase One: School Year 2022-2023 - 392 Grade 6-12 students enrolled
Phase Two: School Year 2023-2024 - 517 Grade 6-12 students enrolled
Phase Three: School Year 2024-2025 - 596 (potential increase to 637) Grade 6-12 students enrolled
Phase Four: School Year 2025-2026 - 675 (potential increase to 728) Grade 6-12 students enrolled
Phase Five: School Year 2026-2027 - 734 (potential increase to 790) Grade 6-12 students enrolled

PACT Charter School anticipates most of its student population will use provided school bus transportation. PACT anticipates 60 percent of the students will utilize 12-14 traditional, yellow, full-size and short buses for school transit at this time. PACT anticipates 25 percent will be parent drop-off/pick-up and the remaining 15 percent will be student drivers. PACT operations will include a 9-month academic calendar from August 31st to May 27th with hours of operations between 7:30AM to 4:00PM. Student drop-off/pick-up periods will be between the hours of 7:30AM to 8:00AM and 3:05PM to 3:35PM, respectively. The first 15-minutes of each period is the peak demand window.

The PACT Charter School may also generate special event related trips associated with the athletic facilities and diverse academic activities. It should be noted that the number of these special event trips may range widely depending on the event and that these trips are not regularly occurring trips. Therefore, these special event trips were not considered normal weekday activity and were not included in the traffic forecasts and analysis for the PACT Charter School development.

The proposed development also includes the Church of St. Katharine Drexel - 6.5 acres on southeast corner, approx. 400 parishioners (current facility seats 250 and only reaches capacity on Christmas and Easter), Weekend and mostly on Sunday, The City has requested the church use to be incorporated in the traffic impact study. Access to the church site would be provided at the shared primary site (west) access. The Church's plans are preliminary and subject to change.



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Proposed Site Plan

PACT Charter School | Traffic Impact Study
City of Ramsey

Figure 4

Trip Generation Estimates

Trip generation estimates for the weekday a.m. combined (commuter and school) peak hour, school dismissal peak hour and p.m. commuter peak hour plus daily trips were made for the proposed development and were developed based on the average rates contained in the *Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition*. The a.m. combined peak hour and p.m. commuter peak hour trips were estimated based on ITE peak hour of adjacent street data.

Results of the weekday vehicle trip generation estimate shown in Table 5 indicate that the proposed PACT Charter School and St. Katharine Drexel Church projects development is expected to generate a total of 627 a.m. combined peak hour trips, 547 school dismissal peak hour trips, 187 p.m. commuter peak hour trips, and 2,498 daily trip ends (50 percent in/50 percent out).

Table 5. Weekday Vehicle Trip Generation Estimates – Proposed Development Full Occupancy (Year 2028)

Land Use (ITE Land Use Code)	Independent Variable	A.M. Combined		School Dismissal		PM Commuter		Daily Trips
		In	Out	In	Out	In	Out	
PACT Charter School (6-12) (1) (538)	734 (1)	358	251	220	316	78	84	2,273
Parent Drop-Off/Pick-Up (25% of Students)	*184*	*152*	*152*	*134*	*134*	*36*	*36*	*965*
High School Students Driving (15% of Students)	*110*	*92*	*14*	*12*	*80*	*4*	*21*	*698*
School Buses (60% of Students)	*440*	*14*	*14*	*14*	*14*	*1*	*1*	*58*
Faculty/Staff/Visitors/Service	-	*100*	*71*	*60*	*88*	*37*	*26*	*552*
St. Katharine Drexel Church (2) (560)	250 (2)	11	7	5	6	11	14	225
Project Development Totals		369	258	225	322	89	98	2,498

(1) The proposed PACT Charter School was assumed as a Public Charter School (Grades 6-12). Independent variable is "Students".
(2) The proposed St. Katharine Drexel Church independent variable is "Seats".

Trip generation estimates for the Sunday a.m. peak hour plus Sunday daily trips were made for the proposed St. Katharine Drexel Church development and were based on the average rates contained in the *Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition*. Results of the Sunday vehicle trip generation estimate shown in Table 6 indicate that the proposed St. Katharine Drexel Church projects development is expected to generate a total of 128 a.m. combined peak hour trips and 523 daily trip ends (50 percent in/50 percent out). It was assumed that there would be no PACT Charter School concurrent events held on Sunday.

Table 6. Sunday Vehicle Trip Generation Estimates – Proposed Development Full Occupancy (Year 2028)

Land Use (ITE Land Use Code)	Independent Variable	A.M. Peak Hour Trips (9:30-10:30 a.m.)		Sunday Daily Trip Ends
		In	Out	
St. Katharine Drexel Church (560) (1)	250 (1)	62	66	523

(1) The proposed St. Katharine Drexel Church independent variable is "Seats".

Site-Generated Trip Directional Distribution and Peak Hour Volumes

The directional trip distribution and peak hour volumes for the proposed development (see Figure 5) were developed based on the regional distribution of households and employment, existing/future study area travel patterns, and engineering judgment. Based on this directional distribution, new trips generated by the proposed PACT Charter School development were assigned to the background traffic on the study area roadways for the Year 2028 Development Build Conditions (see Figure 6).

Development Build Conditions

Intersection Traffic Operations/Capacity Analysis

The year 2028 Build Development Conditions intersection traffic operations/capacity analysis was completed to determine future traffic operations and development-generated traffic impacts. The capacity analysis was completed for the a.m., dismissal and p.m. peak hours at the study intersections using Synchro/SimTraffic model. Results of the Development Build Conditions traffic operations analysis are shown in Table 7.

Year 2028 Weekday Development Build Conditions

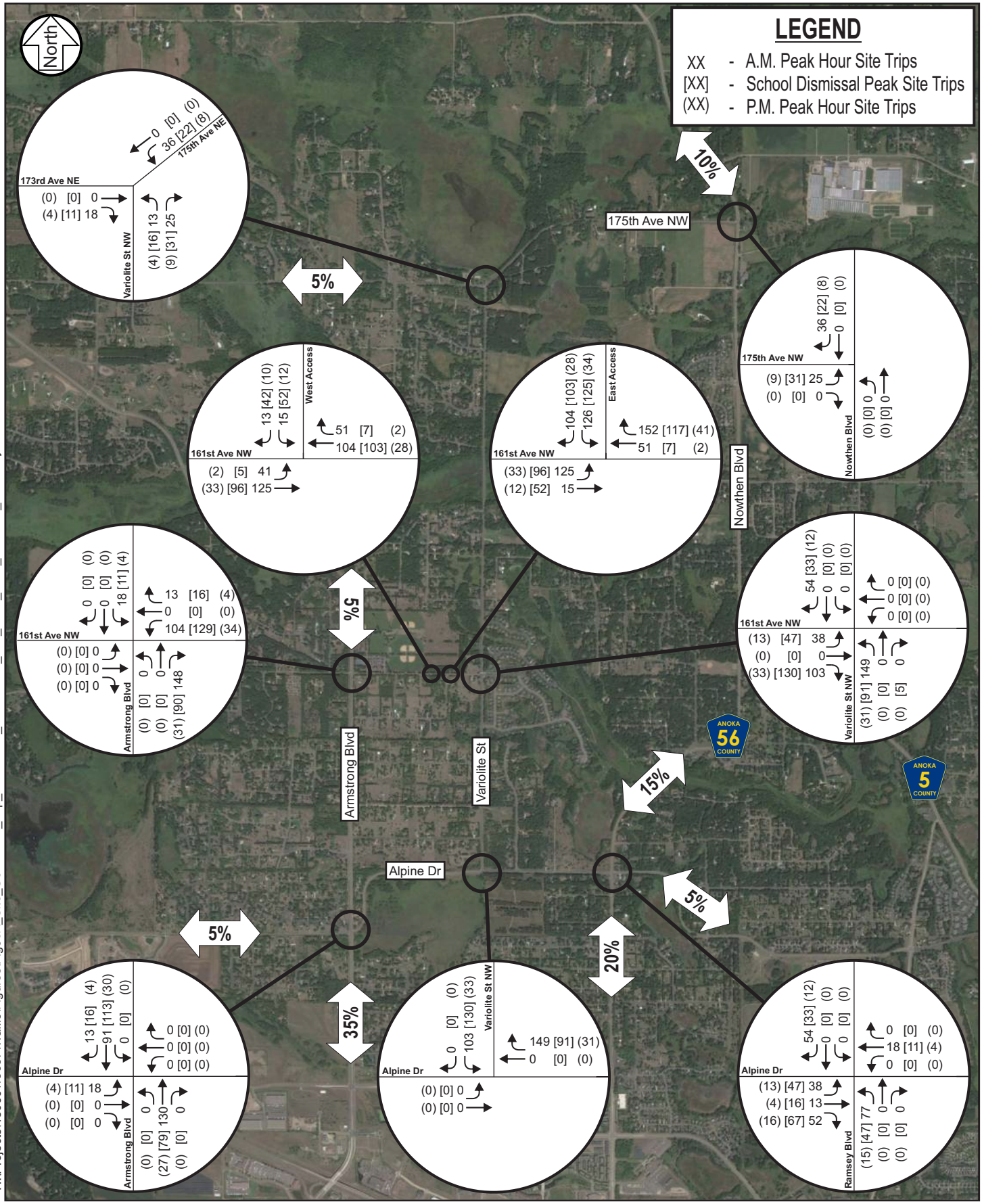
Results of the year 2028 Build Conditions intersection capacity analysis shown in Table 7, indicate that all study intersections are expected to continue to operate at an acceptable overall LOS B or better during the peak hours under existing traffic control and intersection geometrics. No significant queuing or delay issues were identified, except for the Armstrong Boulevard/Alpine Drive intersection where the westbound approach would continue to operate at a LOS F during the p.m. peak hour (note: no PACT Charter School traffic was assigned to this westbound Alpine Drive approach).

Table 7. Year 2028 Weekday Build Conditions Peak Hour Traffic Operations/Capacity Analysis

Study Intersection	A.M. Peak Hour			Dismissal Peak Hour			P.M. Peak Hour		
	LOS	Delay	Queue	LOS	Delay	Queue	LOS	Delay	Queue
Variolite Street/173rd Avenue (1)	A/A	9 sec.	NB/1	A/A	9 sec.	NB/1	A/A	10 sec.	NB/1
Variolite Street/161st Avenue (1)	A/C	16 sec.	WB/1	A/B	12 sec.	EB/2	A/B	11 sec.	EB/1
Variolite Street/Alpine Drive (1)	A/B	13 sec.	SB/1	A/B	11 sec.	SB/2	A/B	11 sec.	SB/1
Armstrong Boulevard/161st Avenue (1)	A/C	16 sec.	WB/1	A/C	17 sec.	WB/2	A/C	17 sec.	WB/1
Armstrong Boulevard/Alpine Drive (1)	A/D	29 sec.	WB/2	A/C	22 sec.	WB/2	A/**F**	**77 sec.**	WB/6
161st Ave/Primary (West) Site Access (1)	A/B	13 sec.	SB/2	A/B	12 sec.	SB/1	A/A	10 sec.	SB/1
161st Ave/Secondary (East) Site Access (1)	A/B	11 sec.	SB/1	A/B	11 sec.	SB/1	A/A	10 sec.	SB/1
Ramsey Boulevard/Alpine Drive (2)	B/B	14 sec.	SB/2	B/B	14 sec.	NB/3	B/B	14 sec.	NB/3
175th Avenue/Nowthen Boulevard (1)	A/B	15 sec.	EB/1	A/B	14 sec.	EB/1	A/B	15 sec.	EB/1

(1) Indicates a side-street stop-controlled intersection, where the overall LOS is shown followed by the worst approach LOS. The delay shown represents the worst side-street approach average delay per vehicle. The queue shown is the 95th percentile queue (in vehicles) for the worst approach at the intersection. The 95th percentile queues shown in **red bold font** spill back to and beyond the adjacent upstream intersection.

(2) Indicates an all-way stop-controlled intersection, where the overall LOS and average delay per vehicle are shown. The queue shown is the 95th percentile queue (in vehicles) for the worst side-street approach at the intersection. The 95th percentile queues shown in **red bold font** spill back to and beyond the adjacent upstream intersection.



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Peak Hour Site Generated Trip Directional Distribution - Weekday

PACT Charter School Traffic Impact Study
Ramsey, MN

Figure 5A

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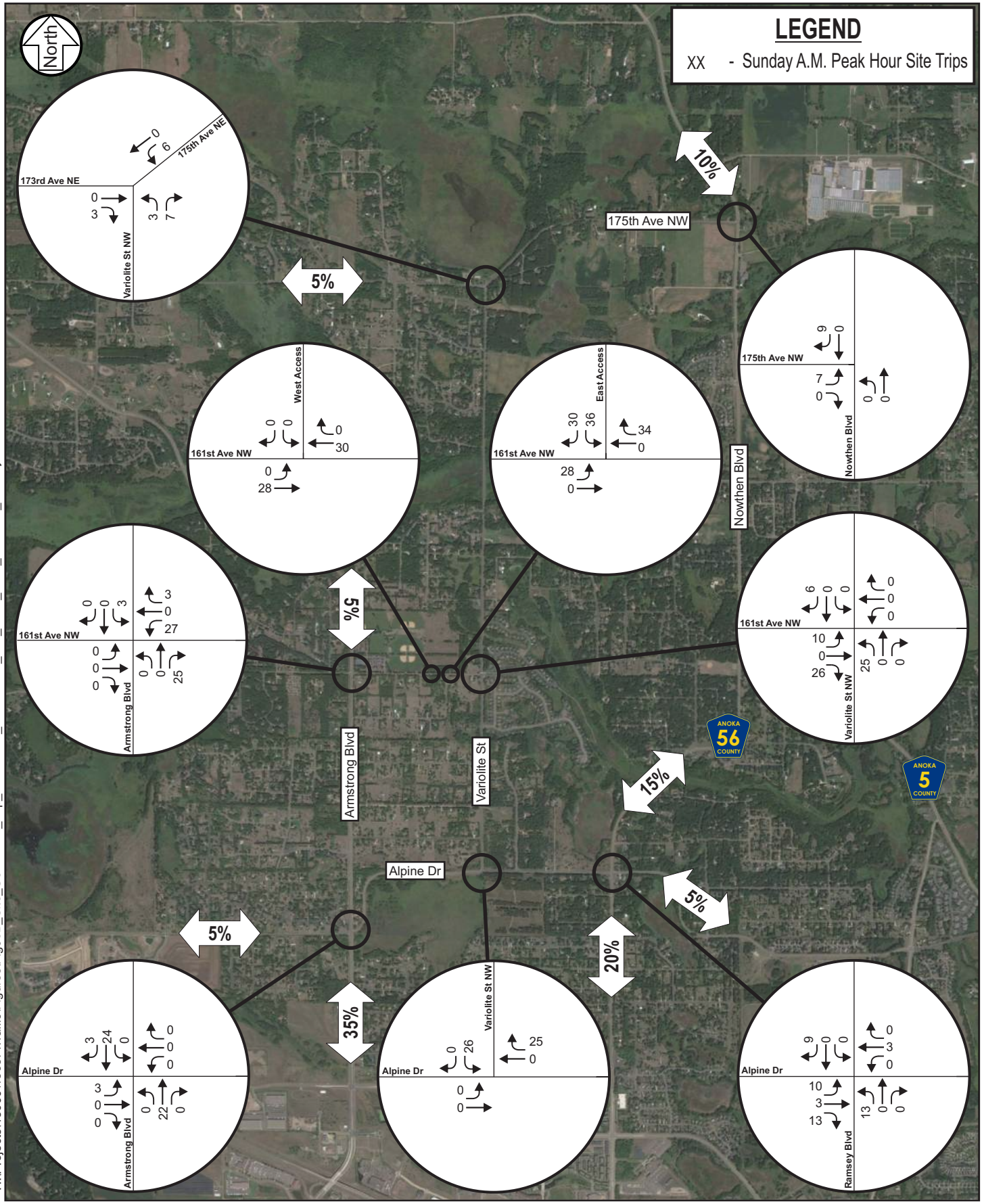

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Peak Hour Site Generated Trip Directional Distribution - Sunday

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Ramsey, MN

Figure 5B

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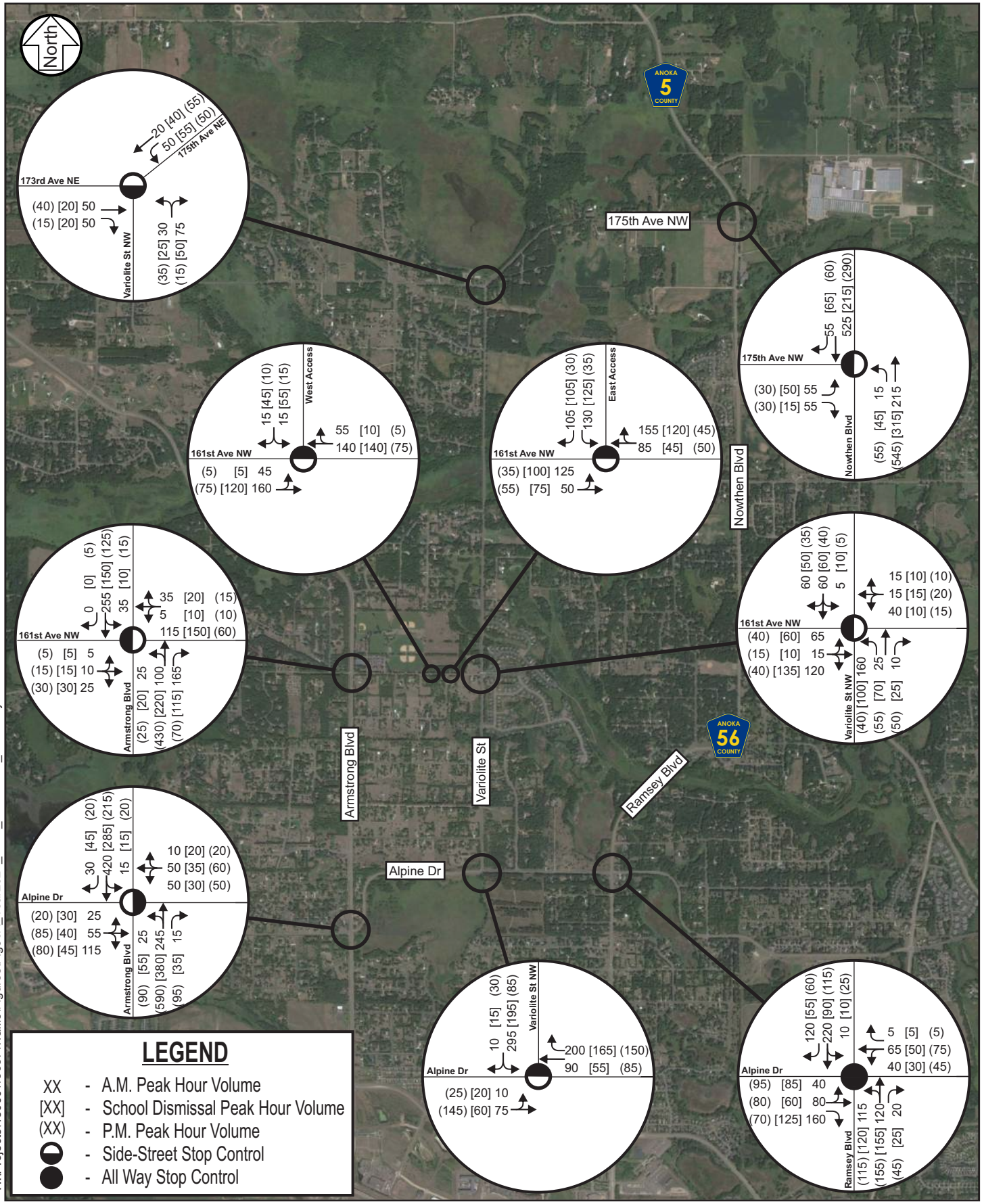

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Year 2028 Development Build Conditions - Weekday

PACT Charter School Traffic Impact Study
Ramsey, MN

Figure 6A

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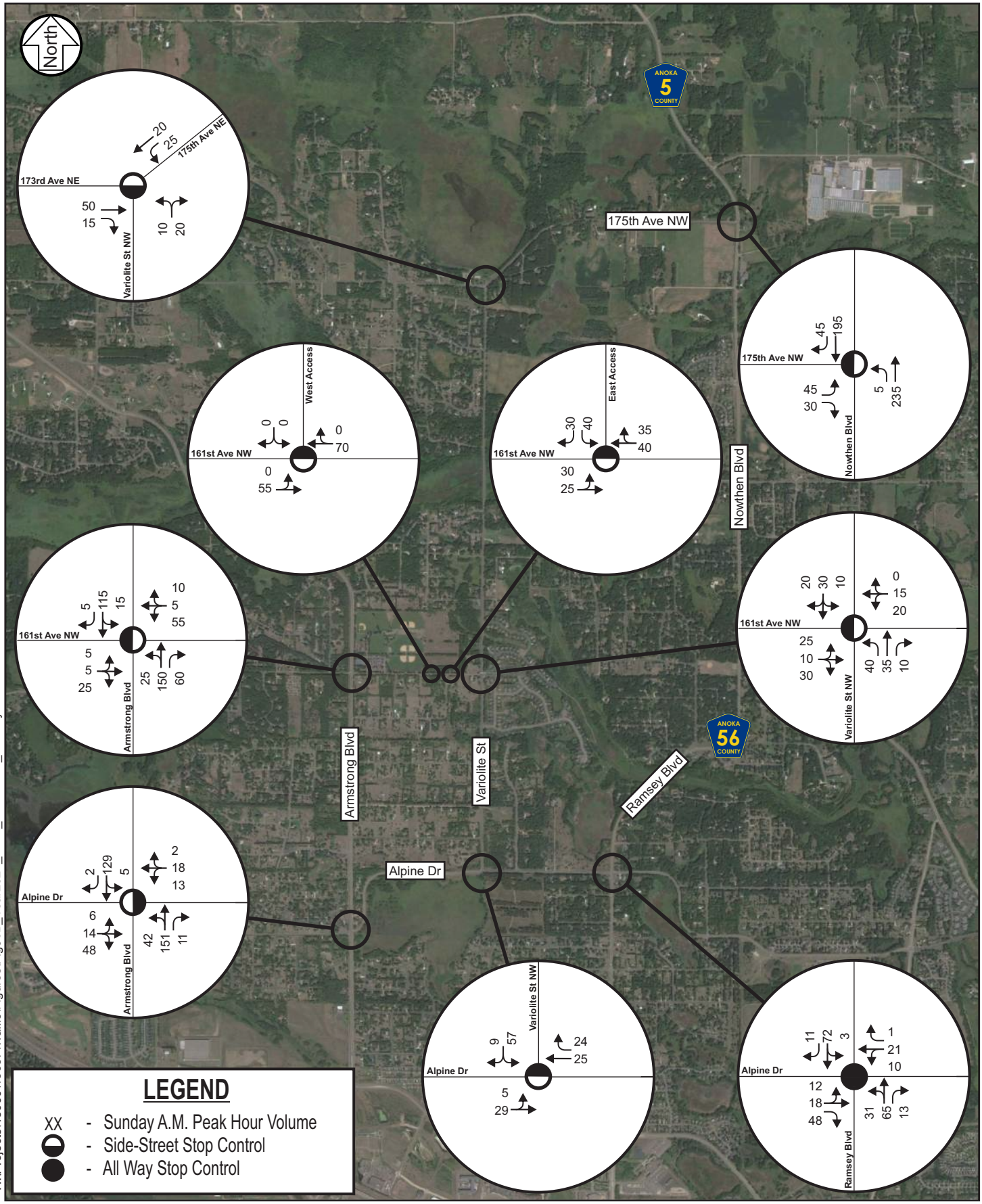

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Year 2028 Build Conditions - Sunday

PACT Charter School Traffic Impact Study
Ramsey, MN

Figure 6B

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Combined Sunday A.M. St. Katharine Drexel Church Development Conditions

The Sunday a.m. church related existing geometrics, traffic control, and traffic volumes and traffic operations analysis related to the adjacent future proposed St. Katharine Drexel Church have been combined with year 2028 No-Build and Build scenario Sunday a.m. church peak hour (9:30-10:30 a.m.) traffic operations analyses. Results of the combined Sunday a.m. church peak hour traffic operations analysis (shown in Table 7) indicate that all study intersections are expected to operate at an acceptable overall LOS A during the peak hour under existing traffic control and intersection geometrics. No significant queuing or delay issues were identified in this analysis.

Table 8. Sunday A.M. St. Katharine Drexel Church Combined Conditions Peak Hour Traffic Analysis

Study Intersection	Existing Sunday A.M. Peak Hour			2028 No-Build Sunday A.M. Peak Hour			2028 Build Sunday A.M. Peak Hour		
	LOS	Delay	Queue	LOS	Delay	Queue	LOS	Delay	Queue
Variolite Street/173rd Avenue (1)	A/A	9 sec.	NB/1	A/A	9 sec.	NB/1	A/A	9 sec.	NB/1
Variolite Street/161st Avenue (1)	A/A	10 sec.	WB/1	A/A	10 sec.	WB/1	A/B	11 sec.	WB/1
Variolite Street/Alpine Drive (1)	A/A	10 sec.	SB/1	A/A	10 sec.	SB/1	A/A	10 sec.	SB/1
Armstrong Boulevard/161st Avenue (1)	A/B	12 sec.	WB/1	A/B	12 sec.	WB/1	A/B	12 sec.	WB/1
Armstrong Boulevard/Alpine Drive (1)	A/B	14 sec.	WB/1	A/B	15 sec.	WB/1	A/C	16 sec.	WB/1
161st Ave/Primary Site (West) Access (1)	-	-	-	-	-	-	A/A	10 sec.	SB/1
161st Ave/Secondary Site (East) Access (1)	-	-	-	-	-	-	-	-	-
Ramsey Boulevard/Alpine Drive (2)	A/A	10 sec.	SB/1	A/A	10 sec.	NB/1	A/A	10 sec.	NB/1
175th Avenue/Nowthen Boulevard (1)	A/B	11 sec.	EB/1	A/B	11 sec.	EB/1	A/B	11 sec.	EB/1

(1) Indicates a side-street stop-controlled intersection, where the overall LOS is shown followed by the worst approach LOS. The delay shown represents the worst side-street approach average delay per vehicle. The queue shown is the 95th percentile queue (in vehicles) for the worst approach at the intersection. The 95th percentile queues shown in **red bold font** spill back to and beyond the adjacent upstream intersection.

(2) Indicates an all-way stop-controlled intersection, where the overall LOS and average delay per vehicle are shown. The queue shown is the 95th percentile queue (in vehicles) for the worst side-street approach at the intersection. The 95th percentile queues shown in **red bold font** spill back to and beyond the adjacent upstream intersection.

Proposed Site Access/Circulation Review

A review of the proposed PACT Charter School development site plan (see Figure 4) was completed to identify issues specific to the site plan configuration, site access and circulation and recommend potential improvements if needed. Vehicular access to/from the proposed site is planned at two locations on 161st Street: a primary (west) site access approximately 600 feet west of Variolite Street and a secondary (east) site access approximately 1,150 feet west of Variolite Street.

Based on field observations, engineering judgement and applicable standards, there is adequate sight distance at the proposed site access locations to clearly identify approaching vehicles. Consideration should be made to limit any sight distance impacts from future onsite structures, landscaping and signing. The proposed site plan is generally well configured and the proposed site access locations do not appear to represent any significant traffic safety or operations concerns.

Summary of Findings, Conclusions and Recommendations

Based on this proposed PACT Charter School development traffic impact study and analysis, the following summary of findings, conclusions and recommendations is offered for your consideration:

1. Results of the existing weekday traffic operations analysis indicate that all study intersections currently operate at acceptable overall LOS B or better during the a.m. commuter (school arrival) peak hour (7:30-8:30 a.m.), school dismissal peak hour (2:30-3:30 p.m.) and p.m. commuter peak hour (4:00-5:00 p.m.), under existing traffic control and intersection geometrics. No significant queuing or delay issues were identified, except at the Armstrong Boulevard/Alpine Drive intersection where the westbound approach is operating at a LOS E during the p.m. peak hour.
2. The segment of 161st Avenue between Armstrong Boulevard and Variolite Street has been identified to be improved/reconstructed as part of the City of Ramsey Capital Improvements Plan for year 2024. Design of this future 161st Avenue improvement/reconstruction is currently under consideration. It has been suggested that it may be possible to reschedule this 161st Avenue improvement and/or reconstruction to coincide with the proposed PACT Charter School project.
3. An annual growth rate of one percent was applied to the existing peak hour traffic volumes to develop year 2028 background traffic forecasts (no proposed PACT Charter School site-generated traffic is included in this scenario). Note that year 2028 represents the year where the PACT Charter School can be assumed to be completed with full occupancy of the proposed development and includes all phases of the proposed PACT Charter School project plus completion of the adjacent future proposed St. Katharine Drexel Church.
4. Results of the year 2028 no-build intersection capacity analysis indicate that all study intersections are expected to continue to operate at an acceptable overall LOS B or better during the peak hours under existing traffic control and intersection geometrics. No significant queuing or delay issues were identified, except for the Armstrong Boulevard/Alpine Drive intersection where the westbound approach would now operate at a LOS F during the p.m. peak hour (note: no proposed PACT Charter School site-generated traffic is included in this scenario).
5. Results of the weekday vehicle trip generation estimate indicate that the proposed PACT Charter School and St. Katharine Drexel Church development is expected to generate a total of 627 a.m. combined peak hour trips, 547 school dismissal peak hour trips, 187 p.m. commuter peak hour trips, and 2,498 daily trip ends (50 percent in/50 percent out).
6. Results of the Sunday vehicle trip generation estimate indicate that the proposed St. Katharine Drexel Church development is expected to generate a total of 128 a.m. combined peak hour trips and 523 daily trip ends (50 percent in/50 percent out). It was assumed that there would be no PACT Charter School concurrent events held on Sunday.

7. The PACT Charter School may also generate special event related trips associated with the athletic facilities and diverse academic activities. Note that the number of these special event trips may range widely depending on the event and that these trips are not regularly occurring trips. Therefore, these special event trips were not considered normal weekday activity and were not included in the traffic forecasts and analysis for the proposed PACT Charter School development.

8. Results of the year 2028 Build Conditions intersection capacity analysis indicate that all study intersections are expected to continue to operate at an acceptable overall LOS B or better during the peak hours under existing traffic control and intersection geometrics. No significant queuing or delay issues were identified, except for the Armstrong Boulevard/Alpine Drive intersection where the westbound approach would continue to operate at a LOS F during the p.m. peak hour (note: no PACT Charter School traffic was assigned to this westbound Alpine Drive approach).

9. The existing already poor operation of the westbound approach to the Armstrong Boulevard/Alpine Drive intersection is due to higher traffic volumes and uninterrupted flow on Armstrong Boulevard and limited Alpine Drive approach capacity. It should be noted that no PACT Charter School site-generated traffic was assigned to the westbound Alpine Drive approach. It is recommended that conditions at this intersection be monitored and should traffic operations issues or traffic safety concerns arise; further study of this intersection be considered.

10. Results of the combined Sunday a.m. church peak hour traffic operations analysis indicate that all study intersections are expected to operate at an acceptable overall LOS A during existing, 2028 No-Build and 2028 Build conditions for the Sunday a.m. peak hour under existing traffic control and intersection geometrics. No significant queuing or delay issues were identified in this analysis.

11. Vehicular access to/from the proposed site is planned at two locations on 161st Street: a primary (west) site access (serves bus entry, pick-up/drop-off and staff traffic) approximately 600 feet west of Variolite Street and a secondary (east) site access (serves bus exit, student driver traffic) approximately 1,150 feet west of Variolite Street.

12. The proposed site plan is generally well configured and based on field observations, engineering judgement and applicable standards, there is adequate sight distance at the proposed site access locations to clearly identify approaching vehicles. Consideration should be made to limit any sight distance impacts from future onsite structures, landscaping and signing.

13. Based on this proposed PACT Charter School traffic impact study it is concluded that there is more than adequate roadway and intersection reserve capacity to accommodate the proposed PACT Charter School site-generated traffic as forecast.

14. Based on the findings of this PACT Charter School traffic impact study, it is concluded that the City of Ramsey may consider the proposed PACT Charter School development, without concern that it would represent a significant negative traffic impact to the supporting area roadway system.