Traffic Impact Study

Aurora RV Storage

Aurora, Colorado

Prepared for:

MacRitchie, Inc.

Kimley»Horn

T R A F F I C   I M P A C T   S T U D Y

Aurora RV Storage

Aurora, Colorado

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1.0 EXECUTIVE SUMMARY

Aurora RV Storage is proposed to be located along the east side of Rome Way, south of Jewell Avenue in Aurora, Colorado. The site is anticipated to include approximately 850 parking units for vehicle storage. It is expected that the project will be completed within the next couple of years; therefore, analysis was conducted for the 2022 short term and 2040 long-term horizons per City of Aurora requirements.

The purpose of this traffic study is to identify project traffic generation characteristics and potential project traffic related impacts on the local street system, as well as to develop mitigation measures required for identified impacts. The intersection of Jewell Avenue and Rome Way was incorporated into this traffic study in accordance with the City of Aurora standards and requirements.

Regional access will be provided by Jewell Avenue and E-470. Primary access to the site will be provided by Rome Way. The Aurora RV Storage development proposes to gain access from the southern terminal point of Rome Way, south of Jewell Avenue.

The Aurora RV Storage site is expected to generate approximately 154 weekday daily trips with 12 of these trips occurring during the morning peak hour and 16 trips occurring during the afternoon peak hour.

Distribution of site traffic on the street system was based on the area street system characteristics, existing traffic patterns, anticipated surrounding development in the area, and the proposed access system for the project. Assignment of project traffic was based upon the trip generation described previously and the distributions developed.

Based on the analysis presented in this report, Kimley-Horn believes the proposed Aurora RV Storage development will be successfully incorporated into the existing roadway network. No offsite roadway improvements are anticipated to be needed at the studied key intersection of Jewell Avenue and Rome Way to accommodate project traffic in the 2022 near term buildout horizon. A cul-de-sac is proposed to be constructed at the southern terminus of Rome Way at the project site. If future traffic volumes materialize by 2040, a westbound left turn lane with a length of 275 feet with a 160-foot taper may be needed at the intersection. The City of Aurora's 2018 Aurora Northeast Area Transportation Study Refresh (NEATS Refresh) identifies Jewell Avenue as a six-lane roadway by 2030, with which it is anticipated left turn lanes will be provided at key intersections. As such, the intersection of Jewell Avenue and Rome Way was also evaluated with three through lanes in each direction along Jewell Avenue and a westbound left turn lane in the 2040 horizon. Any on-site and off-site signing and striping improvements should be incorporated into the Civil Drawings and conform to City of Aurora Standards as well as the Manual on Uniform Traffic Control Devices – 2009 Edition (MUTCD).

2.0 INTRODUCTION

Kimley-Horn and Associates, Inc. has prepared this report to document the results of a Traffic Impact Study of future traffic conditions associated with the proposed Aurora RV Storage to be located along the east side of Rome Way, south of Jewell Avenue in Aurora, Colorado. A vicinity map illustrating the project location is shown in **Figure 1**. The site is anticipated to include approximately 850 storage units for vehicle storage. A conceptual site plan illustrating the development is shown in **Appendix E**. It is expected that the project will be completed within the next couple of years; therefore, analysis was conducted for the 2022 short term and 2040 long-term horizons per City of Aurora requirements.

The purpose of this traffic study is to identify project traffic generation characteristics and potential project traffic related impacts on the local street system, as well as to develop mitigation measures required for identified impacts. The intersection of Jewell Avenue and Rome Way was incorporated into this traffic study in accordance with the City of Aurora standards and requirements.

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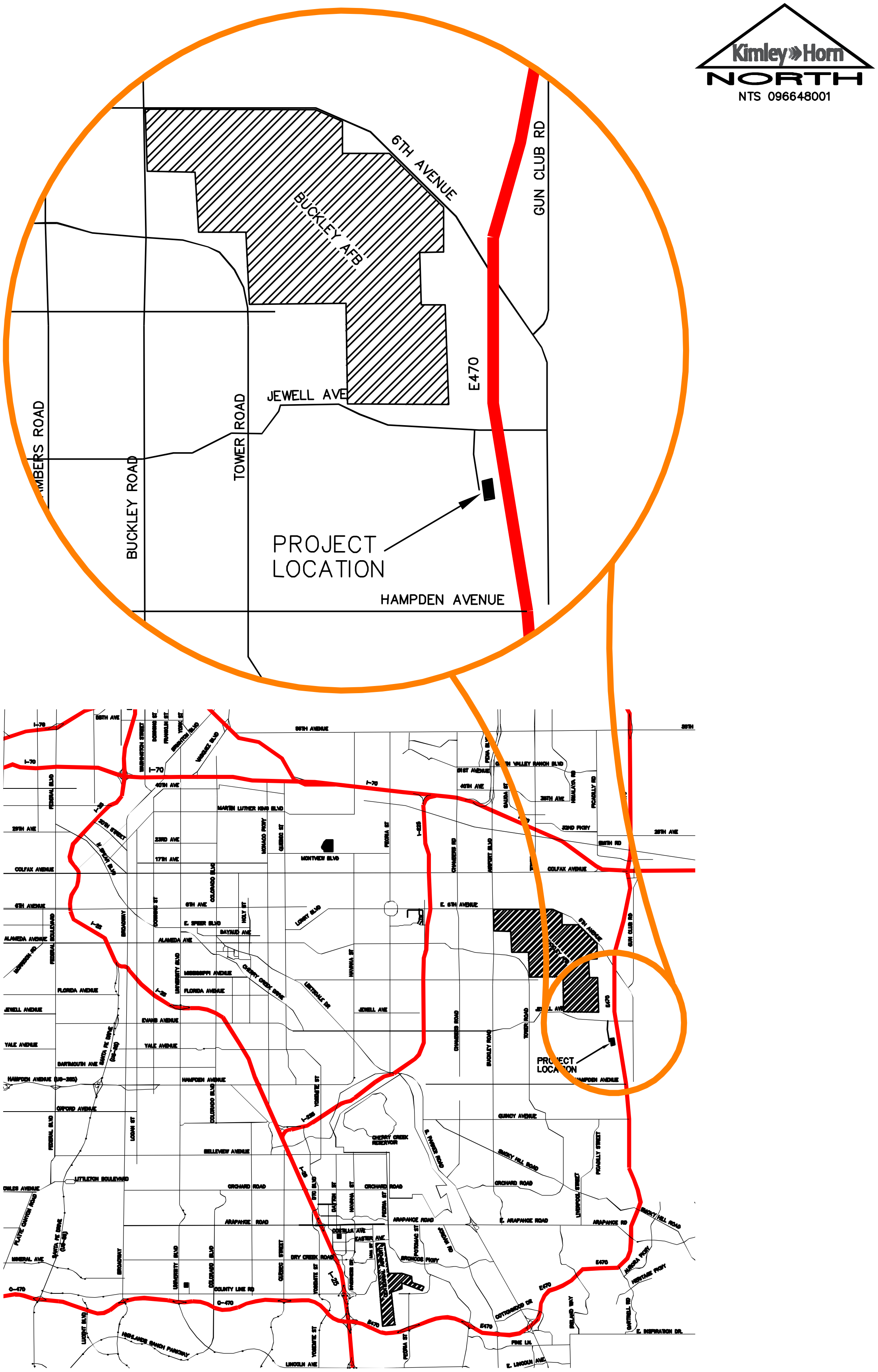

AURORA RV STORAGE
VICINITY MAP

FIGURE 1

3.0 EXISTING AND FUTURE CONDITIONS

3.1 Existing Study Area

The existing site is comprised of vacant land. To the northwest of the existing site, along the west side of Rome Way, are two other RV and boat storage facilities. The extended area mainly consists of vacant parcels. The land uses and roadway network surrounding the site within the study area are shown within the aerial of **Figure 2**.

3.2 Existing Roadway Network

Jewell Avenue provides one through lane of travel eastbound and westbound with a posted speed limit of 45 miles per hour through the study area. Rome Way does not provide pavement lane markings but provides a width for one through lane of travel northbound and southbound. The posted speed limit is 30 miles per hour through the study area.

The existing T-intersection of Rome Way and Jewell Avenue operates with stop control along the northbound Rome Way approach. All approaches of this intersection provide a single lane for shared movements. Rome Way extends approximate 3,500 feet south of the intersection of Jewell Avenue to the proposed project site and then terminates. The intersection lane configuration and control for the existing study area key intersections are shown in **Figure 3**.

3.3 Existing Traffic Volumes

Existing peak hour through volume counts along Jewell Avenue at Rome Way were obtained from a previous traffic signal warrant study performed by Kimley-Horn for the E-470 and Jewell Avenue interchange ramps. These previous counts conducted in 2019 were used due to the COVID-19 pandemic impacting regular traffic volumes when the traffic study was performed. The eastbound and westbound through movements at the intersection of Jewell Avenue and Rome Way were derived from the traffic counts performed at the Jewell Avenue and E-470 Southbound Ramps intersection on Wednesday, April 3, 2019 and Thursday, April 4, 2019. The turning movements at the intersection of Jewell Avenue and Rome Way were derived from the trip generation potential for the existing developments along Rome Way. The collected and derived turning movements counts for 2019 are shown in **Figure 4** with count sheets provided in **Appendix A**.

NORTH
NTS 096648001

AURORA RV STORAGE
SURROUNDING SITE AREA

FIGURE 2

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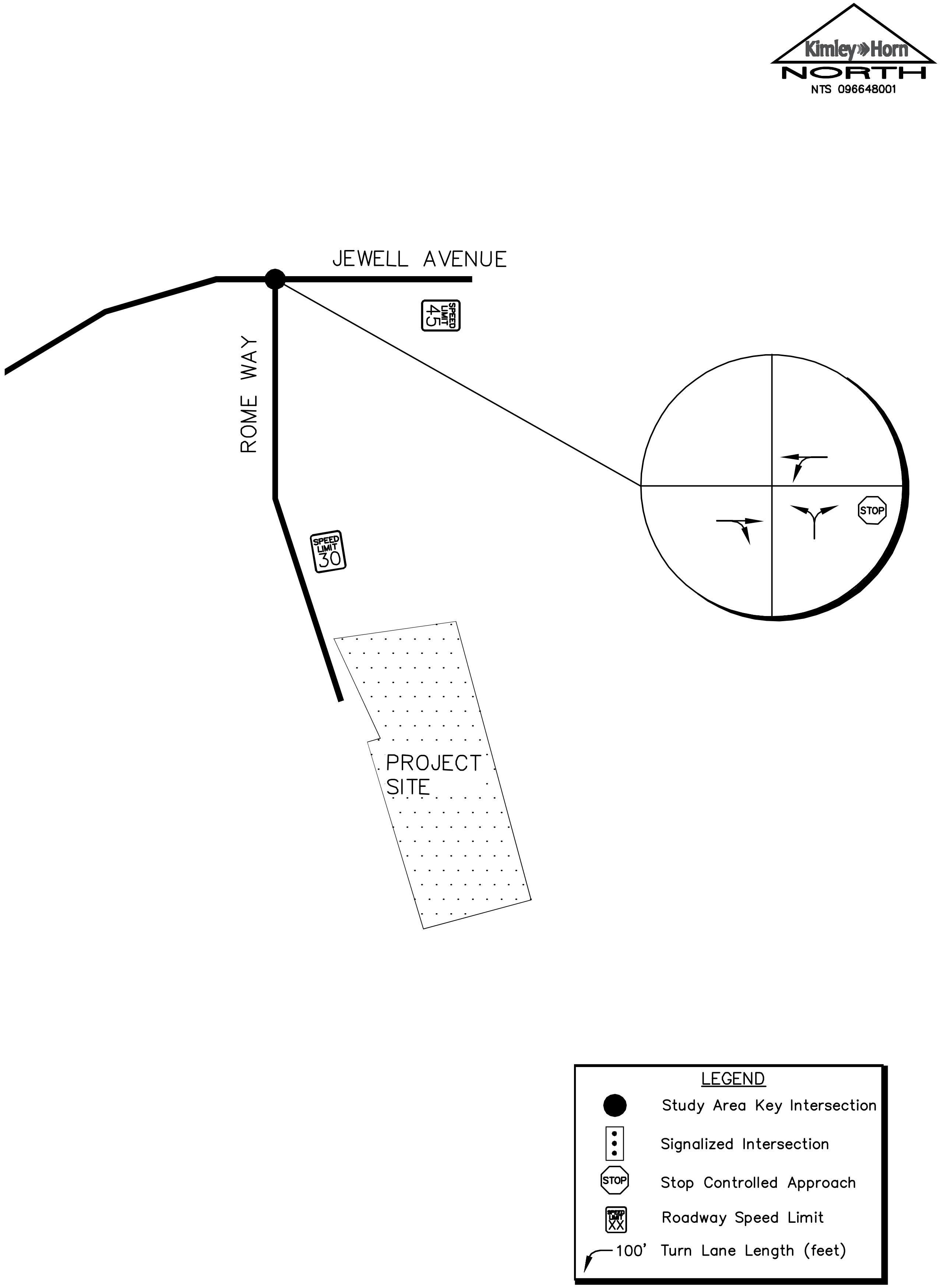

AURORA RV STORAGE
EXISTING LANE CONFIGURATIONS

FIGURE 3

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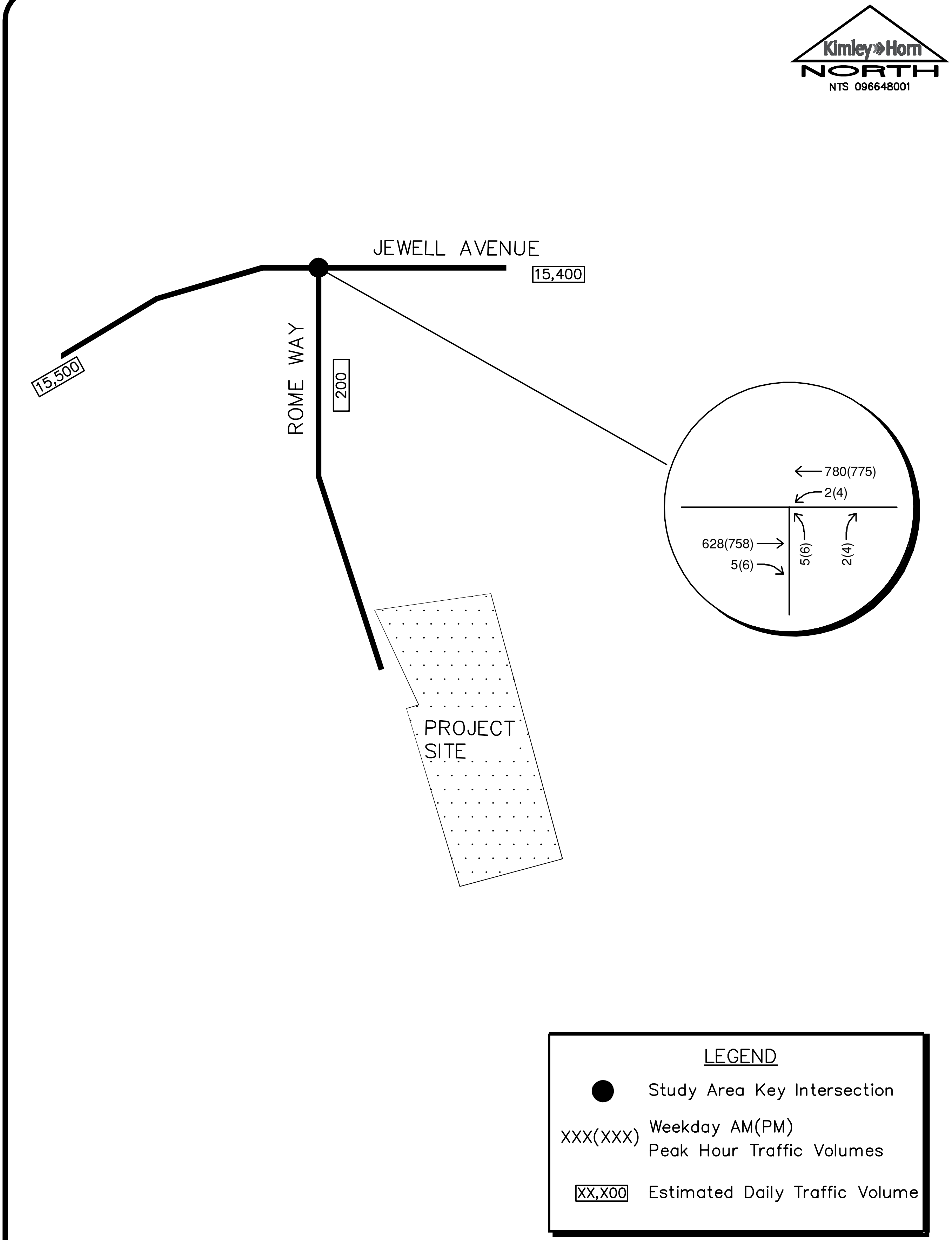

AURORA RV STORAGE
2019 EXISTING TRAFFIC VOLUMES

FIGURE 4

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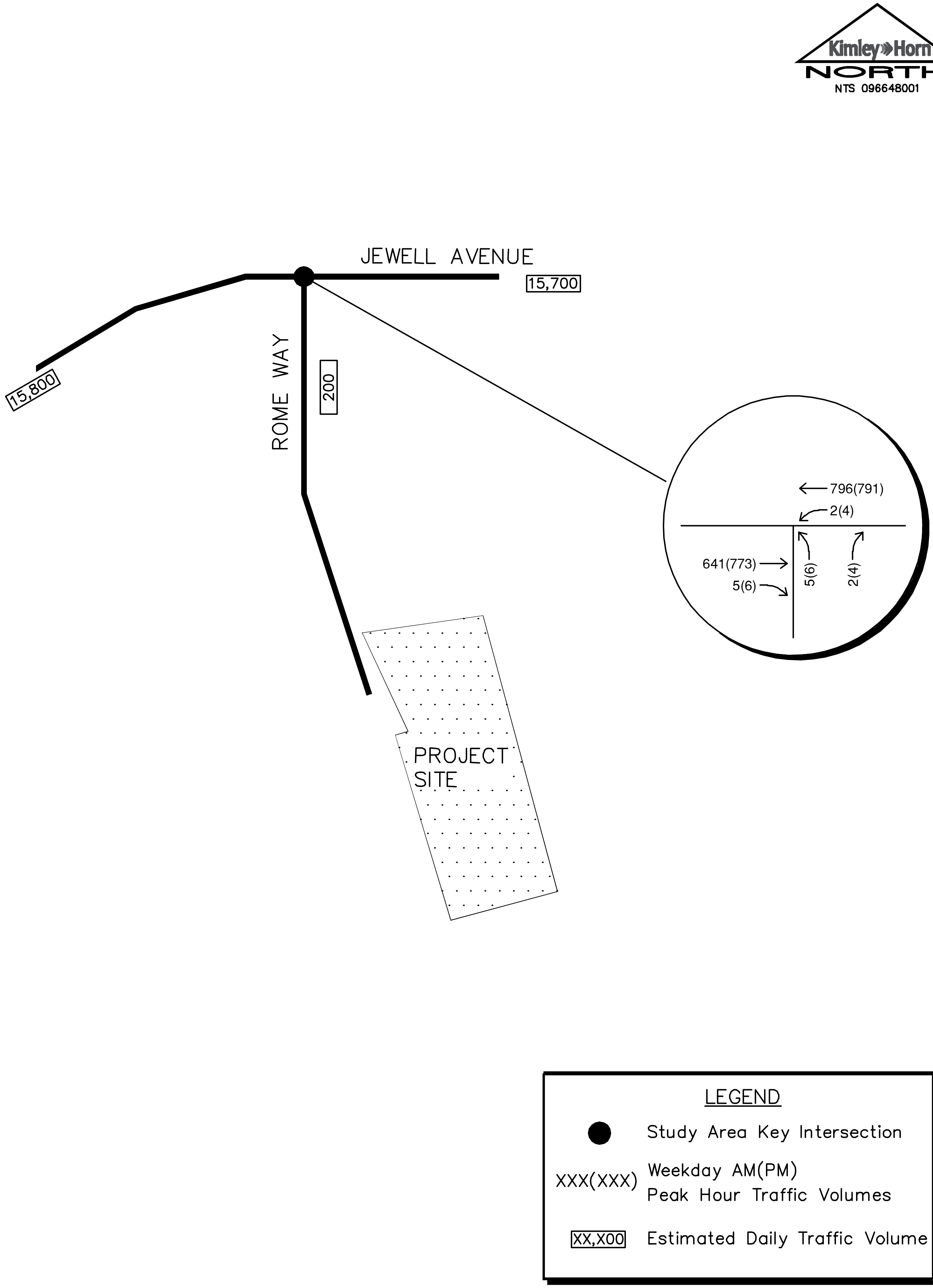
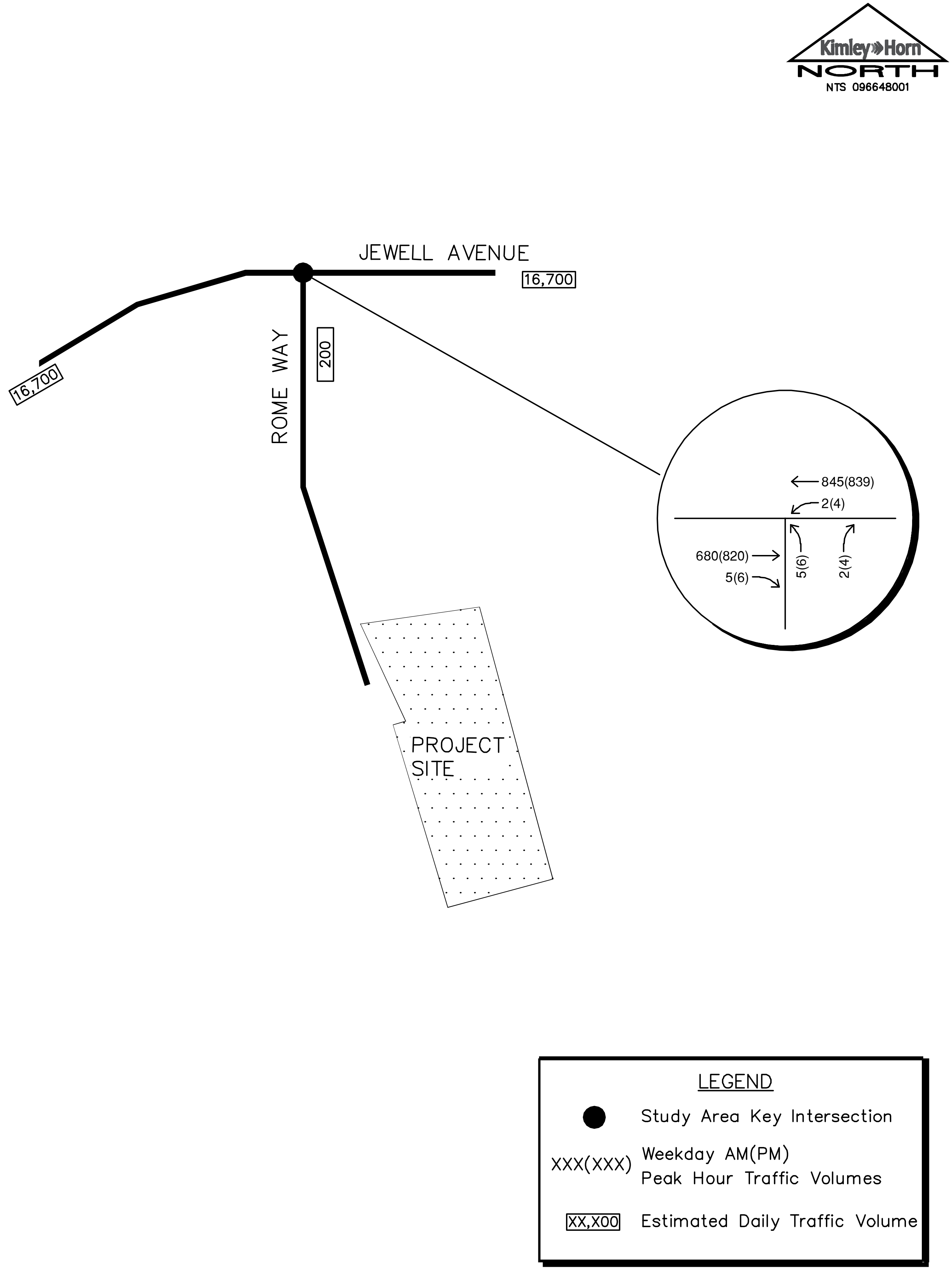
3.4 Unspecified Development Traffic Growth

A two percent annual growth rate was used to estimate future traffic volume conditions to be consistent with the City of Aurora Traffic Impact Study Guidelines. This annual growth rate of two percent was used to estimated short term 2022 and long term 2040 traffic volumes at the key intersection. Existing 2019 traffic counts were grown to year 2020 and are shown in **Figure 5**. Background traffic volumes for 2022 and 2040 are shown in **Figure 6** and **Figure 7**, respectively.



AURORA RV STORAGE
2020 ADJUSTED EXISTING TRAFFIC

FIGURE 5



AURORA RV STORAGE
2022 BACKGROUND TRAFFIC VOLUMES

FIGURE 6

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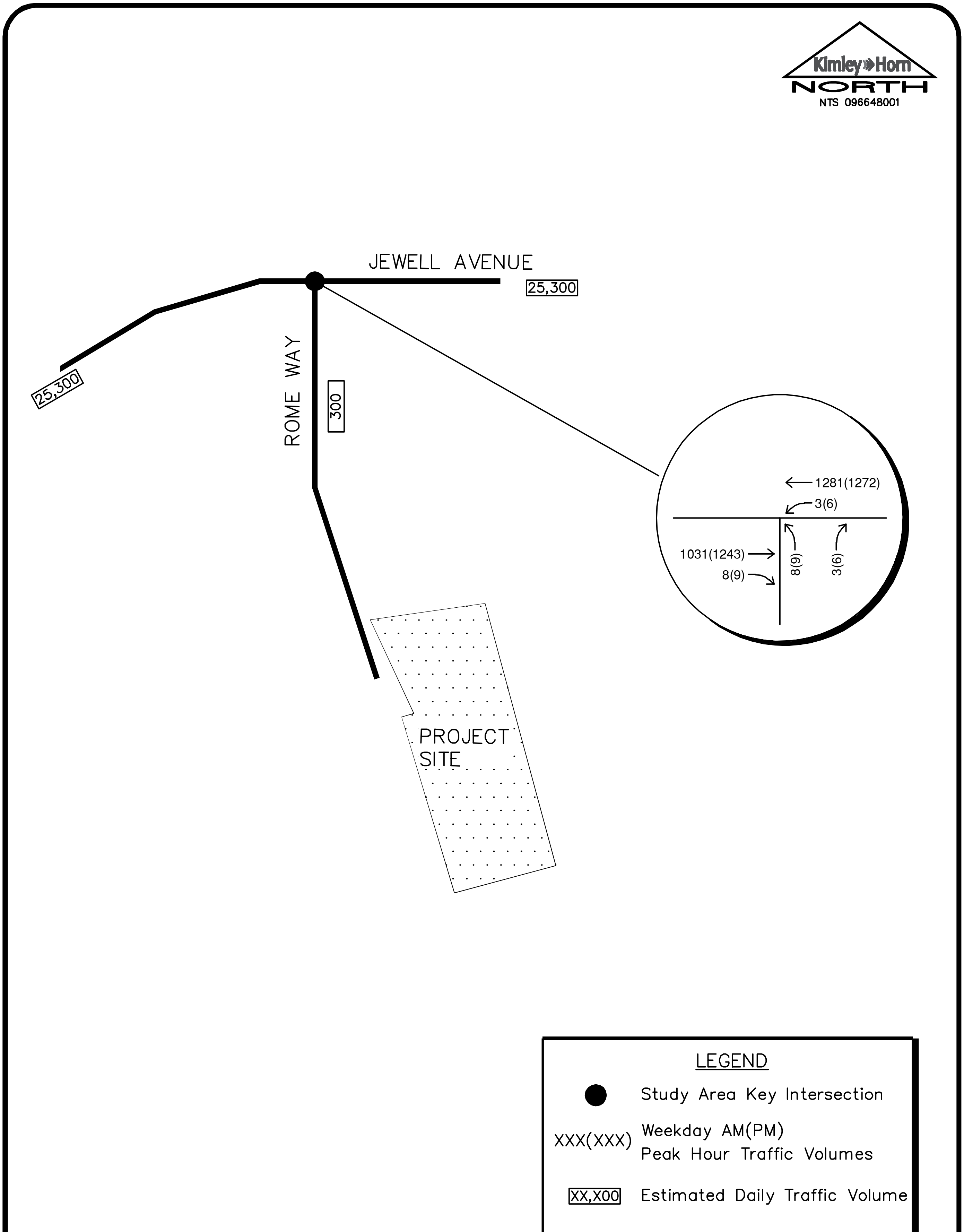


AURORA RV STORAGE
2040 BACKGROUND TRAFFIC VOLUMES

FIGURE 7

4.0 PROJECT TRAFFIC CHARACTERISTICS

4.1 Trip Generation

Site-generated traffic estimates are determined through a process known as trip generation. Rates and equations are applied to the proposed land uses to estimate traffic generated by the development during a specific time interval. The acknowledged source for trip generation rates is the *Trip Generation Manual*[1] published by the Institute of Transportation Engineers (ITE). ITE has established trip rates in nationwide studies of similar land uses. For this study, Kimley-Horn used the ITE Trip Generation average rates that apply to Mini Warehouse (ITE Code 151) for traffic associated with the development, as it is believed that this is most appropriate use code for this use since specific RV Storage data is not available.

The Aurora RV Storage site is expected to generate approximately 154 weekday daily trips with 12 of these trips occurring during the morning peak hour and 16 trips occurring during the afternoon peak hour. **Table 1** summarizes the estimated trip generation for the proposed development with the calculation worksheet included in **Appendix B**.

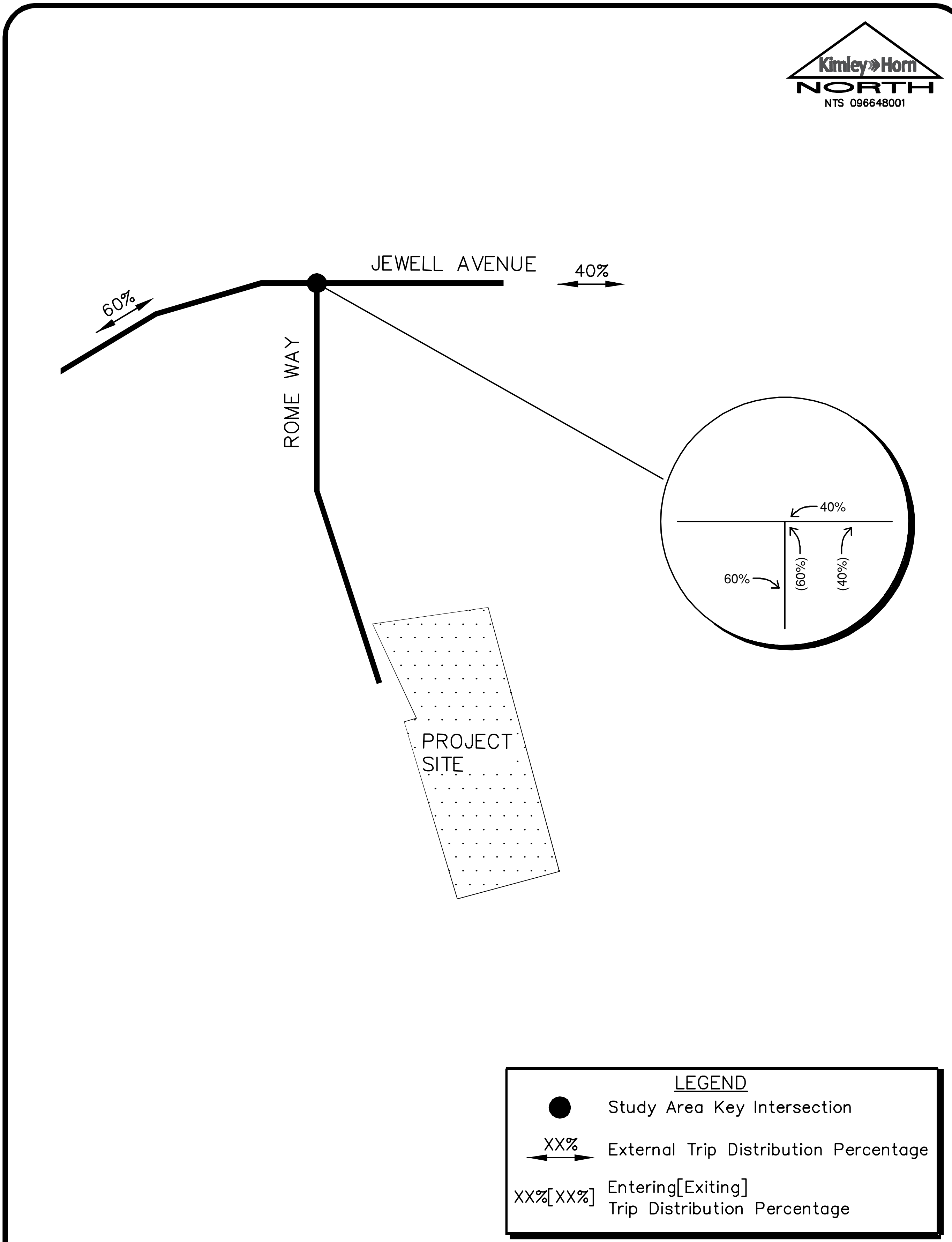
Table 1 – Aurora RV Storage Project Traffic Generation

Land Use and Size	Weekday Vehicle Trips						
	Daily	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Mini Warehouse (ITE 151) – 850 Units	154	6	6	12	8	8	16

4.2 Trip Distribution

Distribution of site traffic on the street system was based on the area street system characteristics, existing traffic patterns, existing and anticipated surrounding demographic information, and the proposed access system for the project. The directional distribution of traffic is a means to quantify the percentage of site-generated traffic that approaches the site from a given direction and departs the site back to the original source. The project trip distribution is illustrated in **Figure 8**.

[1] Institute of Transportation Engineers, *Trip Generation Manual*, Tenth Edition, Washington DC, 2017.



AURORA RV STORAGE
PROJECT TRIP DISTRIBUTION

FIGURE 8

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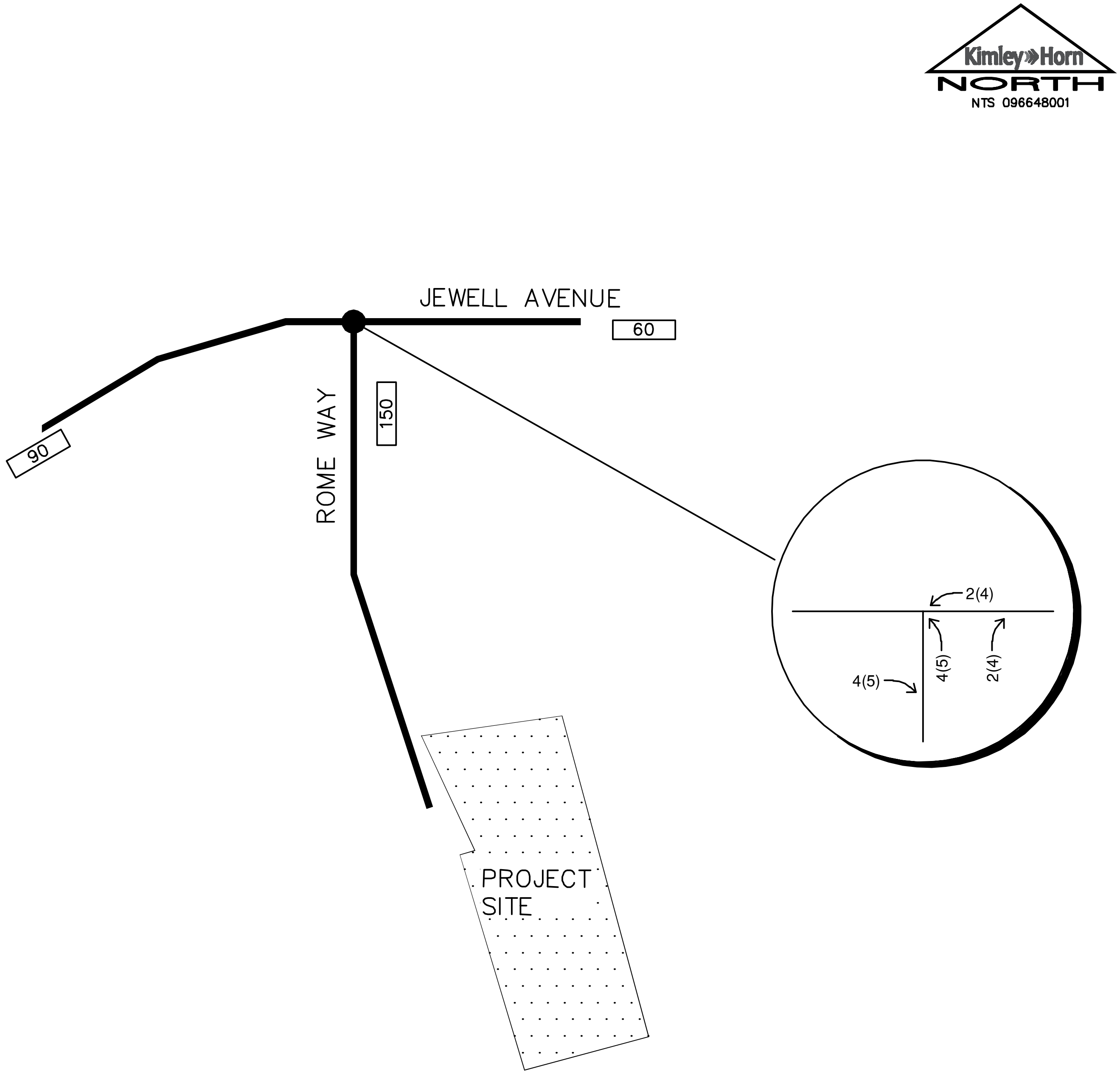
4.3 Traffic Assignment

Traffic assignment was obtained by applying the project trip distribution to the estimated traffic generation of the development shown in **Table 1**. Site traffic assignment is shown in **Figure 9.**

4.4 Total (Background Plus Project) Traffic

Site generated traffic volumes were added to the background volumes to represent estimated traffic conditions for the short term 2022 horizon and long term 2040 horizon. These total traffic volumes for the site are illustrated for the 2022 and 2040 horizon years in **Figures 10** and **11**, respectively.

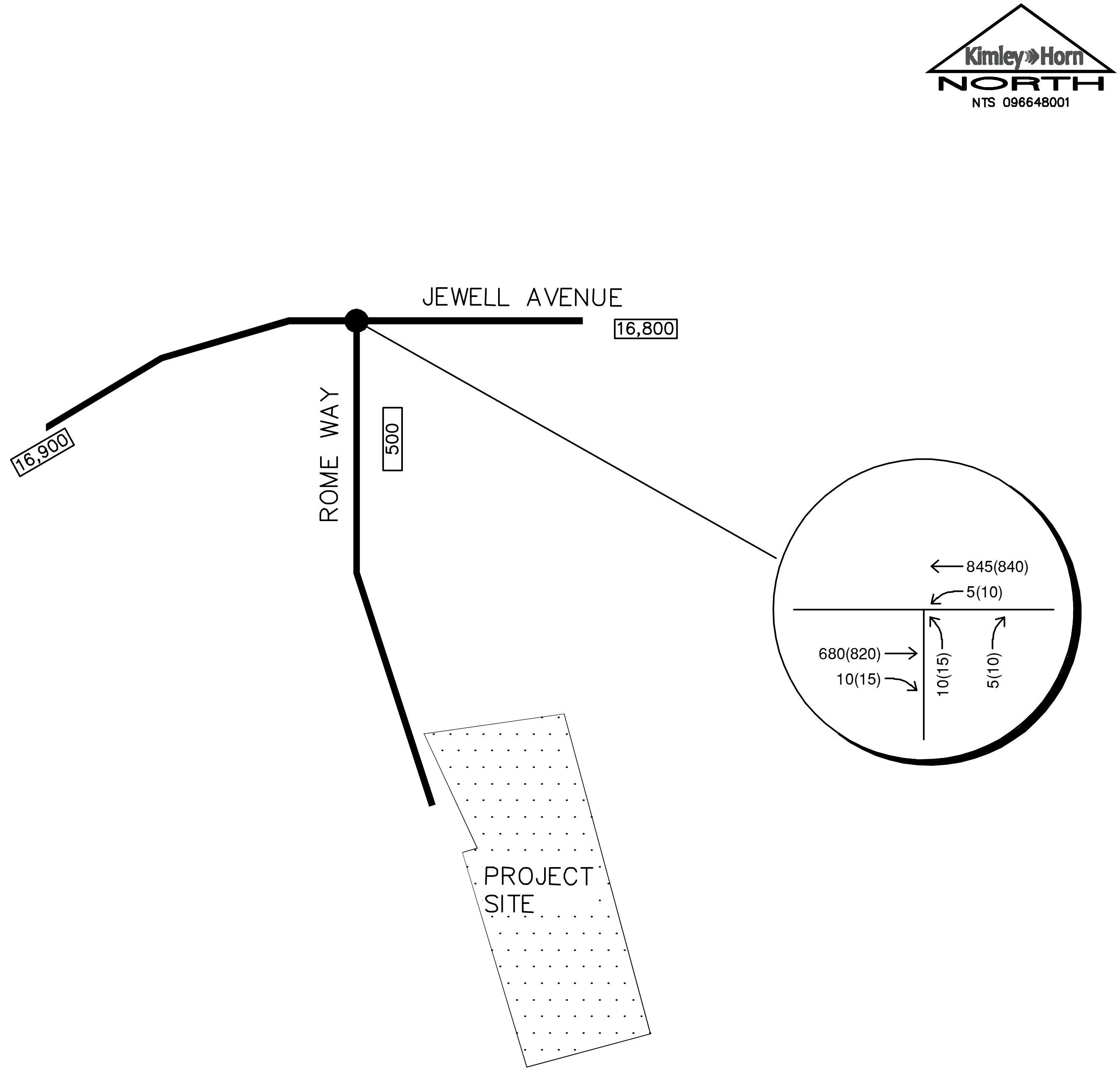


LEGEND

●	Study Area Key Intersection
XXX(XXX)	Weekday AM(PM) Peak Hour Traffic Volumes
XX,X00	Estimated Daily Traffic Volume

AURORA RV STORAGE
PROJECT TRAFFIC ASSIGNMENT

FIGURE 9



LEGEND

● Study Area Key Intersection

XXX(XXX) Weekday AM(PM) Peak Hour Traffic Volumes

XX,X00 Estimated Daily Traffic Volume

AURORA RV STORAGE
2022 BACKGROUND PLUS PROJECT TRAFFIC VOLUMES

FIGURE 10

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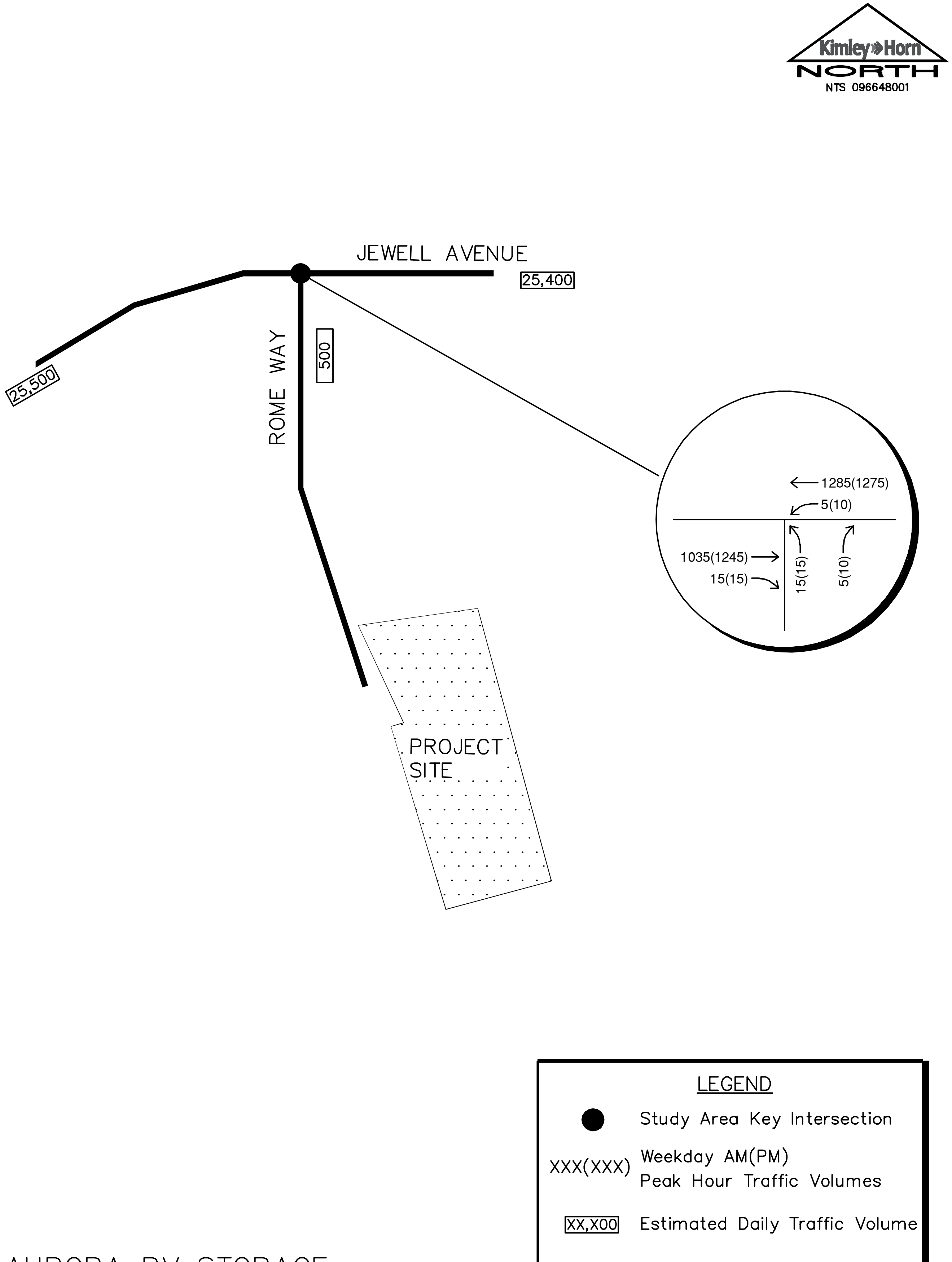

AURORA RV STORAGE
2040 BACKGROUND PLUS
PROJECT TRAFFIC VOLUMES

FIGURE 11

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5.0 TRAFFIC OPERATIONS ANALYSIS

Kimley-Horn's analysis of traffic operations in the site vicinity was conducted to determine potential capacity deficiencies in the 2022 and 2040 development horizons at the identified key intersections and access driveways. The acknowledged source for determining overall capacity is the current edition of the *Highway Capacity Manual (HCM)*[2].

5.1 Analysis Methodology

Capacity analysis results are listed in terms of Level of Service (LOS). LOS is a qualitative term describing operating conditions a driver will experience while traveling on a particular street or highway during a specific time interval. It ranges from A (very little delay) to F (long delays and congestion). Typical standard traffic engineering practice recommends intersection LOS D for signalized intersections and LOS E for movements or approaches of unsignalized intersections as the minimum threshold for acceptable operations. **Table 2** shows the definition of level of service for signalized and unsignalized intersections.

Table 2 – Level of Service Definitions

Level of Service	Signalized Intersection Average Total Delay (sec/veh)	Unsignalized Intersection Average Total Delay (sec/veh)
A	≤ 10	≤ 10
B	> 10 and ≤ 20	> 10 and ≤ 15
C	> 20 and ≤ 35	> 15 and ≤ 25
D	> 35 and ≤ 55	> 25 and ≤ 35
E	> 55 and ≤ 80	> 35 and ≤ 50
F	> 80	> 50

Definitions provided from the Highway Capacity Manual, Sixth Edition, Transportation Research Board, 2016.

Study area intersections were analyzed based on average total delay analysis for signalized and unsignalized intersections. Under the unsignalized analysis, the LOS for a two-way stop-controlled intersection is determined by the computed or measured control delay and is defined for each minor movement. LOS for a two-way stop-controlled intersection is not defined for the intersection as a whole. LOS for a signalized and all-way stop controlled intersection is defined for each approach and for the overall intersection.

[2] Transportation Research Board, *Highway Capacity Manual*, Sixth Edition, Washington DC, 2016.

5.2 Key Intersection Operational Analysis

Calculations for the level of service at the key intersections for the study area are provided in **Appendix C**. The existing year analysis is based on the lane geometry and intersection control shown in **Figure 3**. Synchro 10 traffic analysis software was used to analyze the study area intersections. The Synchro Highway Capacity Manual (HCM) methodology reports were used to analyze intersection delay and level of service. The heavy vehicle percent was determined to be 5% for the eastbound and westbound through movements and 15% for the eastbound right, westbound left, and northbound movements due to the surrounding land uses. The heavy vehicle percentage for the movements onto and out of Rome Way during the peak hours are anticipated to have fewer heavy vehicles.

Jewell Avenue and Rome Way

The T-intersection of Jewell Avenue and Rome Way currently operates with stop control along the northbound Rome Way approach. With this control and the existing lane configurations, all movements are expected to operate at LOS E or better during the morning and afternoon peak hours in 2022.

By 2040, if future traffic volumes materialize, an exclusive westbound left turn lane may be needed in order for this intersection to operate acceptably during the peak hours. In addition, an acceleration lane has the potential to benefit this intersection for northbound left turn vehicles to be able to turn into and merge into westbound through traffic. This westbound receiving lane would create a High T or Continuous Green T intersection configuration to allow two-stage left turn movements. Based on CDOT State Highway Access Code, Jewell Avenue is classified as a Non-Rural Arterial (NR-B); therefore, the acceleration lane would be constructed with a length of 390 feet plus a 160-foot taper and the westbound left turn lane would be constructed with a length of 275 feet plus a 160-foot taper. With these improvements, the intersection movements are expected to operate at LOS E or better during the peak hours in 2040. In addition, the City of Aurora's 2018 Aurora Northeast Area Transportation Study Refresh (NEATS Refresh) identifies Jewell Avenue as a six-lane roadway by 2030. As such, this intersection was also evaluated with three through lanes in each direction in the 2040 horizon. With Jewell Avenue improved to a six-lane facility, all movements at this intersection are expected to operate acceptably with LOS D or better during the peak hours in 2040. **Table 3** provides the results of the level of service at this intersection.

Table 3 – Jewell Avenue and Rome Way LOS Results

Scenario	AM Peak Hour Delay (sec/veh)	AM Peak Hour LOS	PM Peak Hour Delay (sec/veh)	PM Peak Hour LOS
2020 Existing				
Northbound Approach	31.6	D	35.5	D
Westbound Left	9.3	A	9.9	A
2022 Background				
Northbound Approach	35.4	E	40.2	E
Westbound Left	9.5	A	10.1	B
2022 Background Plus Project				
Northbound Approach	36.6	E	49.2	E
Westbound Left	9.5	A	10.2	B
2040 Background				
Northbound Approach	148.4	F	233.4	F
Westbound Left	11.3	B	12.9	B
2040 Background #				
Northbound Approach	32.5	D	37.5	E
Westbound Left	11.3	B	12.9	B
2040 Background Plus Project #				
Northbound Approach	35.6	D	41.3	E
Westbound Left	11.4	B	13.0	B
2040 Background Plus Project ##				
Northbound Approach	27.3	D	33.8	D
Westbound Left	17.2	C	21.5	C

= Addition of a westbound left turn lane;
= Three through lanes in each direction along Jewell Avenue

Also, the City of Aurora requested that a traffic signal warrant evaluation be performed for this Jewell Avenue and Rome Way intersection. The northbound minor street Rome Way approach traffic volume is so low, that it isn't anticipated to meet warrants with the existing developments and this project throughout 2040. The four-hour traffic volume signal warrant figure is shown in **Appendix D**.

5.3 Turn Bay Vehicle Queuing Analysis

A vehicle queuing analysis was completed for the intersection of Jewell Avenue and Rome Way per City of Aurora standards and requirements. The queuing analysis was performed using the Synchro analysis software presenting the results of the 95th percentile queue length. Queue length calculations for the unsignalized intersection are provided within the level of service operational sheets provided in **Appendix C**. Results of the vehicle queuing analysis and recommendations are shown in the following **Table 4**. It was assumed if the 95^{th} percentile queue was less than one vehicle then the queue length was noted as 50 feet to account for the average length of vehicles using the turn lane.

Table 4 – Turn Lane Length Analysis Results

Intersection Turn Lane	Existing Turn Lane Length (feet)	2022 Total Queue Length (feet)	2022 Recommended Turn Lane Length (feet)	2040 Total Queue Length (feet)	2040 Recommended Turn Lane Length (feet)
Jewell Ave & Rome Way					
Northbound Approach	C	50’	C	50’	C
Westbound Left	DNE	DNE	DNE	50’	**275’**

C = Continuous lane

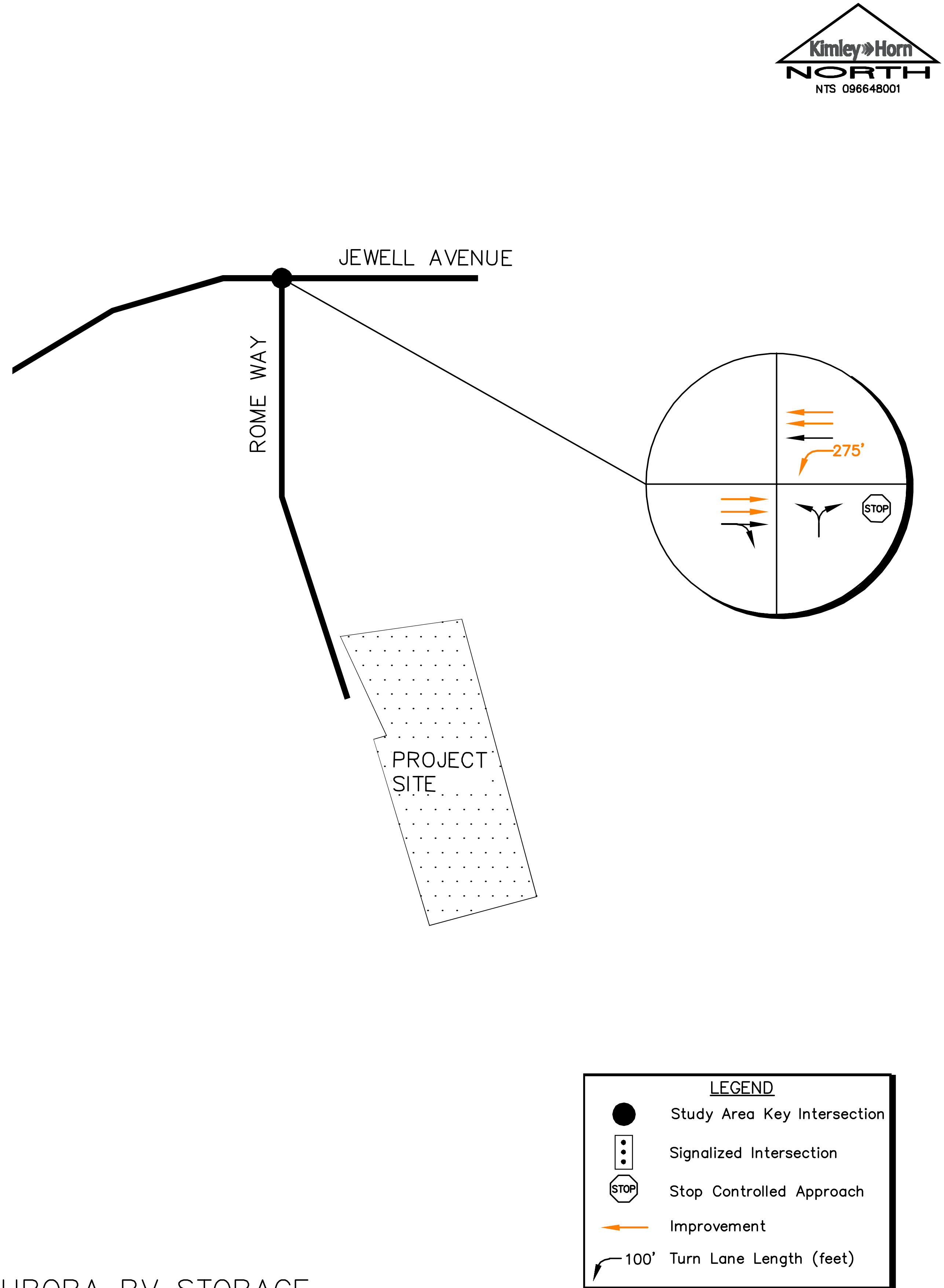
As shown in the table representing the queuing results, all anticipated vehicle queues are accommodated or managed within existing or proposed turn lanes at the intersection of Jewell Avenue and Rome Way. If future traffic volumes materialize by 2040, a westbound left turn with 275 feet of length and 160-foot taper should be provided at the intersection of Jewell Avenue and Rome Way.

5.4 Auxiliary Turn Lane Requirement Analysis

The City of Aurora has directed Kimley-Horn to use the Colorado Department of Transportation (CDOT) State Highway Access Code (SHAC) guidelines to determine if designated turn lanes are warranted for the intersection of Jewell Avenue and Rome Way. CDOT classifies their state highways based on roadway types. The Non-Rural Arterial Category NR-C (low to moderate travel speeds and moderate volumes) was assigned to Jewell Avenue based on matching the characteristics of the CDOT roadways. According to the State Highway Access Code for category NR-C roadways, a left turn lane with storage length plus taper is required for any access with a projected peak hour left ingress volume greater than 25 vehicles per hour. Right turn lanes with storage length plus taper are required for any access with a projected peak hour right ingress turning volume greater than 50 vehicles per hour. If the posted speed limit is greater than 40 miles per hour, a left turn lane is warranted if the left turn ingress volume is greater than 10 vehicles per hour, and a right turn lane deceleration lane and taper is required for any access with a project peak hour right ingress turning volume greater than 25 vehicles per hour. Jewell Avenue currently has a posted speed limit of 45 miles per hour within the project limits. Based on the current speed limits and 2040 traffic volume projections, turn lane requirements at the intersection of Jewell Avenue and Rome Way are as follows:

- A westbound left turn lane **is not** warranted for at the Jewell Avenue and Rome Way intersection based on projected 2022 background plus project traffic volumes being 10 westbound left turns during the peak hour and the threshold being greater than 10 vehicles per hour.
- An eastbound right turn lane **is not** warranted for at the Jewell Avenue and Rome Way intersection based on projected 2022 background plus project traffic volumes being 15 eastbound right turns during the peak hour and the threshold being greater than 25 vehicles per hour.

The recommended lane configurations and control of the study key intersection for year 2022 are the same as existing. The year 2040 recommendations are shown in **Figure 12**.



AURORA RV STORAGE
2040 RECOMMENDED LANE
CONFIGURATIONS AND CONTROL

FIGURE 12

Kimley»Horn

6.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the analysis presented in this report, Kimley-Horn believes the proposed Aurora RV Storage development will be successfully incorporated into the existing roadway network. No offsite roadway improvements are anticipated to be needed at the studied key intersection of Jewell Avenue and Rome Way to accommodate project traffic in the 2022 near term buildout horizon. A cul-de-sac is proposed to be constructed at the southern terminus of Rome Way at the project site. If future traffic volumes materialize by 2040, a westbound left turn lane with a length of 275 feet with a 160-foot taper may be needed at the intersection. The City of Aurora's 2018 Aurora Northeast Area Transportation Study Refresh (NEATS Refresh) identifies Jewell Avenue as a six-lane roadway by 2030, with which it is anticipated left turn lanes will be provided at key intersections. As such, the intersection of Jewell Avenue and Rome Way was also evaluated with three through lanes in each direction along Jewell Avenue and a westbound left turn lane in the 2040 horizon. Any on-site and off-site signing and striping improvements should be incorporated into the Civil Drawings and conform to City of Aurora Standards as well as the Manual on Uniform Traffic Control Devices – 2009 Edition (MUTCD).

APPENDICES

APPENDIX A

Intersection Count Sheets

Daily Vehicle Volume Report

Study Date: Thursday, 04/04/2019 / Friday, 04/05/2019

Unit ID: RDC 0

Location: Jewell Ave and E-470

Comments: Southbound Ramp

	Southbound Rights Volume	Southbound Thru/Left Volume	Total Volume
03:00 - 03:59	2	9	**11**
04:00 - 04:59	7	26	**33**
05:00 - 05:59	26	28	**54**
06:00 - 06:59	70	48	**118**
07:00 - 07:59	131	32	**163**
08:00 - 08:59	99	50	**149**
09:00 - 09:59	60	49	**109**
10:00 - 10:59	50	47	**97**
11:00 - 11:59	45	41	**86**
12:00 - 12:59	50	68	**118**
13:00 - 13:59	50	51	**101**
14:00 - 14:59	78	35	**113**
15:00 - 15:59	140	47	**187**
16:00 - 16:59	226	56	**282**
17:00 - 17:59	237	14	**251**
18:00 - 18:59	109	30	**139**
19:00 - 19:59	62	11	**73**
20:00 - 20:59	32	9	**41**
21:00 - 21:59	20	6	**26**
22:00 - 22:59	19	6	**25**
23:00 - 23:59	16	8	**24**
00:00 - 00:59	16	4	**20**
01:00 - 01:59	3	8	**11**
02:00 - 02:59	4	6	**10**
Totals	**1552**	**689**	**2241**
AM Peak Time	**07:18 - 08:17**	**09:43 - 10:42**	**07:18 - 08:17**
AM Peak Volume	**145**	**60**	**179**
PM Peak Time	**16:31 - 17:30**	**12:00 - 12:59**	**16:13 - 17:12**
PM Peak Volume	**273**	**68**	**315**

Daily Vehicle Volume Report

Study Date: Thursday, 04/04/2019 / Friday, 04/05/2019

Unit ID: RDC 8

Location: Jewell Ave and E-470

Comments: Eastbound Approaching SB Ramp

	Eastbound Volume
03:00 - 03:59	19
04:00 - 04:59	37
05:00 - 05:59	148
06:00 - 06:59	420
07:00 - 07:59	628
08:00 - 08:59	448
09:00 - 09:59	315
10:00 - 10:59	297
11:00 - 11:59	306
12:00 - 12:59	297
13:00 - 13:59	330
14:00 - 14:59	453
15:00 - 15:59	549
16:00 - 16:59	737
17:00 - 17:59	758
18:00 - 18:59	564
19:00 - 19:59	333
20:00 - 20:59	280
21:00 - 21:59	205
22:00 - 22:59	121
23:00 - 23:59	76
00:00 - 00:59	28
01:00 - 01:59	26
02:00 - 02:59	16
Totals	**7391**
AM Peak Time	**07:00 - 07:59**
AM Peak Volume	**628**
PM Peak Time	**16:42 - 17:41**
PM Peak Volume	**806**

Daily Vehicle Volume Report

Study Date: Wednesday, 04/03/2019 / Thursday, 04/04/2019

Unit ID: RDC 14

Location: Jewell Ave and E-470

Comments: Westbound Approaching SB Ramp

	Westbound Volume
03:00 - 03:59	15
04:00 - 04:59	70
05:00 - 05:59	210
06:00 - 06:59	473
07:00 - 07:59	812
08:00 - 08:59	513
09:00 - 09:59	360
10:00 - 10:59	245
11:00 - 11:59	299
12:00 - 12:59	288
13:00 - 13:59	300
14:00 - 14:59	398
15:00 - 15:59	557
16:00 - 16:59	682
17:00 - 17:59	677
18:00 - 18:59	415
19:00 - 19:59	254
20:00 - 20:59	185
21:00 - 21:59	109
22:00 - 22:59	81
23:00 - 23:59	46
00:00 - 00:59	15
01:00 - 01:59	13
02:00 - 02:59	8
Totals	**7025**
AM Peak Time	**06:58 - 07:57**
AM Peak Volume	**817**
PM Peak Time	**16:46 - 17:45**
PM Peak Volume	**715**

Daily Vehicle Volume Report

Study Date: Thursday, 04/04/2019 / Friday, 04/05/2019

Unit ID: RDC 14

Location: Jewell Ave and E-470

Comments: Westbound Approaching SB Ramp

	Westbound Volume
03:00 - 03:59	22
04:00 - 04:59	68
05:00 - 05:59	207
06:00 - 06:59	495
07:00 - 07:59	786
08:00 - 08:59	579
09:00 - 09:59	353
10:00 - 10:59	266
11:00 - 11:59	267
12:00 - 12:59	308
13:00 - 13:59	299
14:00 - 14:59	373
15:00 - 15:59	541
16:00 - 16:59	688
17:00 - 17:59	682
18:00 - 18:59	465
19:00 - 19:59	308
20:00 - 20:59	206
21:00 - 21:59	120
22:00 - 22:59	91
23:00 - 23:59	49
00:00 - 00:59	28
01:00 - 01:59	18
02:00 - 02:59	16
Totals	**7235**
AM Peak Time	**07:04 - 08:03**
AM Peak Volume	**806**
PM Peak Time	**16:48 - 17:47**
PM Peak Volume	**745**

APPENDIX B

Trip Generation Worksheet

Kimley»Horn

Project	Aurora RV Storage - Proposed Traffic				
Subject	Trip Generation for Mini Warehouse				
Designed by	MAG	*Date*	May 11, 2020	*Job No.*	096648001
Checked by		*Date*		*Sheet No.*	1 *of* 1

TRIP GENERATION MANUAL TECHNIQUES

ITE Trip Generation Manual 10th Edition, Average Rate Equations

Land Use Code - Mini-Warehouse (151)

Independant Variable - 100 Storage Units (X)
Storage Units = 850
X = 8.5
T = Average Vehicle Trip Ends

Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m. (100 Series Page 84)

Directional Distribution: 51% ent. 49% exit.

T = 1.39 (X) — T = 12 Average Vehicle Trip Ends

T = 1.39 * 8.50 — 6 entering 6 exiting

6 + 6 = 12

Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m. (100 Series Page 85)

Directional Distribution: 50% ent. 50% exit.

T = 1.95 (X) — T = 16 Average Vehicle Trip Ends

T = 1.95 * 8.5 — 8 entering 8 exiting

8 + 8 = 16

Weekday (100 Series Page 83)

Directional Distribution: 50% entering, 50% exiting

T = 17.96 (X) — T = 154 Average Vehicle Trip Ends

T = 17.96 * 8.5 — 77 entering 77 exiting

77 + 77 = 154

APPENDIX C

Intersection Analysis Worksheets

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	641	5	2	796	5	2
Future Vol, veh/h	641	5	2	796	5	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	15	15	5	15	15
Mvmt Flow	697	5	2	865	5	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	702	0	1569	700
Stage 1	-	-	-	-	700	-
Stage 2	-	-	-	-	869	-
Critical Hdwy	-	-	4.25	-	6.55	6.35
Critical Hdwy Stg 1	-	-	-	-	5.55	-
Critical Hdwy Stg 2	-	-	-	-	5.55	-
Follow-up Hdwy	-	-	2.335	-	3.635	3.435
Pot Cap-1 Maneuver	-	-	838	-	114	418
Stage 1	-	-	-	-	469	-
Stage 2	-	-	-	-	390	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	838	-	113	418
Mov Cap-2 Maneuver	-	-	-	-	113	-
Stage 1	-	-	-	-	469	-
Stage 2	-	-	-	-	388	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	31.6
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	143	-	-	838	-
HCM Lane V/C Ratio	0.053	-	-	0.003	-
HCM Control Delay (s)	31.6	-	-	9.3	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	773	6	4	791	6	4
Future Vol, veh/h	773	6	4	791	6	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	15	15	5	15	15
Mvmt Flow	840	7	4	860	7	4

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	847	0	1712	844
Stage 1	-	-	-	-	844	-
Stage 2	-	-	-	-	868	-
Critical Hdwy	-	-	4.25	-	6.55	6.35
Critical Hdwy Stg 1	-	-	-	-	5.55	-
Critical Hdwy Stg 2	-	-	-	-	5.55	-
Follow-up Hdwy	-	-	2.335	-	3.635	3.435
Pot Cap-1 Maneuver	-	-	737	-	92	344
Stage 1	-	-	-	-	401	-
Stage 2	-	-	-	-	390	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	737	-	91	344
Mov Cap-2 Maneuver	-	-	-	-	91	-
Stage 1	-	-	-	-	401	-
Stage 2	-	-	-	-	386	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	35.5
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	129	-	-	737	-
HCM Lane V/C Ratio	0.084	-	-	0.006	-
HCM Control Delay (s)	35.5	-	-	9.9	0
HCM Lane LOS	E	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	680	5	2	845	5	2
Future Vol, veh/h	680	5	2	845	5	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	15	15	5	15	15
Mvmt Flow	739	5	2	918	5	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	744	0	1664	742
Stage 1	-	-	-	-	742	-
Stage 2	-	-	-	-	922	-
Critical Hdwy	-	-	4.25	-	6.55	6.35
Critical Hdwy Stg 1	-	-	-	-	5.55	-
Critical Hdwy Stg 2	-	-	-	-	5.55	-
Follow-up Hdwy	-	-	2.335	-	3.635	3.435
Pot Cap-1 Maneuver	-	-	807	-	99	395
Stage 1	-	-	-	-	448	-
Stage 2	-	-	-	-	367	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	807	-	99	395
Mov Cap-2 Maneuver	-	-	-	-	99	-
Stage 1	-	-	-	-	448	-
Stage 2	-	-	-	-	365	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	35.4
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	126	-	-	807	-
HCM Lane V/C Ratio	0.06	-	-	0.003	-
HCM Control Delay (s)	35.4	-	-	9.5	0
HCM Lane LOS	E	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	820	6	4	839	6	4
Future Vol, veh/h	820	6	4	839	6	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	15	15	5	15	15
Mvmt Flow	891	7	4	912	7	4

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	898	0	1815	895
Stage 1	-	-	-	-	895	-
Stage 2	-	-	-	-	920	-
Critical Hdwy	-	-	4.25	-	6.55	6.35
Critical Hdwy Stg 1	-	-	-	-	5.55	-
Critical Hdwy Stg 2	-	-	-	-	5.55	-
Follow-up Hdwy	-	-	2.335	-	3.635	3.435
Pot Cap-1 Maneuver	-	-	705	-	80	321
Stage 1	-	-	-	-	379	-
Stage 2	-	-	-	-	368	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	705	-	79	321
Mov Cap-2 Maneuver	-	-	-	-	79	-
Stage 1	-	-	-	-	379	-
Stage 2	-	-	-	-	364	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	40.2
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	113	-	-	705	-
HCM Lane V/C Ratio	0.096	-	-	0.006	-
HCM Control Delay (s)	40.2	-	-	10.1	0
HCM Lane LOS	E	-	-	B	A
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	680	10	5	845	10	5
Future Vol, veh/h	680	10	5	845	10	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	15	15	5	15	15
Mvmt Flow	739	11	5	918	11	5

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	750	0	1673	745
Stage 1	-	-	-	-	745	-
Stage 2	-	-	-	-	928	-
Critical Hdwy	-	-	4.25	-	6.55	6.35
Critical Hdwy Stg 1	-	-	-	-	5.55	-
Critical Hdwy Stg 2	-	-	-	-	5.55	-
Follow-up Hdwy	-	-	2.335	-	3.635	3.435
Pot Cap-1 Maneuver	-	-	803	-	98	393
Stage 1	-	-	-	-	447	-
Stage 2	-	-	-	-	365	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	803	-	97	393
Mov Cap-2 Maneuver	-	-	-	-	97	-
Stage 1	-	-	-	-	447	-
Stage 2	-	-	-	-	360	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	36.6
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	130	-	-	803	-
HCM Lane V/C Ratio	0.125	-	-	0.007	-
HCM Control Delay (s)	36.6	-	-	9.5	0
HCM Lane LOS	E	-	-	A	A
HCM 95th %tile Q(veh)	0.4	-	-	0	-

Intersection	
Int Delay, s/veh	0.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	820	15	10	840	15	10
Future Vol, veh/h	820	15	10	840	15	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	15	15	5	15	15
Mvmt Flow	891	16	11	913	16	11

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	907	0	1834	899
Stage 1	-	-	-	-	899	-
Stage 2	-	-	-	-	935	-
Critical Hdwy	-	-	4.25	-	6.55	6.35
Critical Hdwy Stg 1	-	-	-	-	5.55	-
Critical Hdwy Stg 2	-	-	-	-	5.55	-
Follow-up Hdwy	-	-	2.335	-	3.635	3.435
Pot Cap-1 Maneuver	-	-	699	-	77	320
Stage 1	-	-	-	-	377	-
Stage 2	-	-	-	-	362	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	699	-	75	320
Mov Cap-2 Maneuver	-	-	-	-	75	-
Stage 1	-	-	-	-	377	-
Stage 2	-	-	-	-	350	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	49.2
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	108	-	-	699	-
HCM Lane V/C Ratio	0.252	-	-	0.016	-
HCM Control Delay (s)	49.2	-	-	10.2	0
HCM Lane LOS	E	-	-	B	A
HCM 95th %tile Q(veh)	0.9	-	-	0	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1031	8	3	1281	8	3
Future Vol, veh/h	1031	8	3	1281	8	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	15	15	5	15	15
Mvmt Flow	1121	9	3	1392	9	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1130	0	2524	1126
Stage 1	-	-	-	-	1126	-
Stage 2	-	-	-	-	1398	-
Critical Hdwy	-	-	4.25	-	6.55	6.35
Critical Hdwy Stg 1	-	-	-	-	5.55	-
Critical Hdwy Stg 2	-	-	-	-	5.55	-
Follow-up Hdwy	-	-	2.335	-	3.635	3.435
Pot Cap-1 Maneuver	-	-	573	-	28	235
Stage 1	-	-	-	-	292	-
Stage 2	-	-	-	-	214	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	573	-	27	235
Mov Cap-2 Maneuver	-	-	-	-	27	-
Stage 1	-	-	-	-	292	-
Stage 2	-	-	-	-	209	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	148.4
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	36	-	-	573	-
HCM Lane V/C Ratio	0.332	-	-	0.006	-
HCM Control Delay (s)	148.4	-	-	11.3	0
HCM Lane LOS	F	-	-	B	A
HCM 95th %tile Q(veh)	1.1	-	-	0	-

Intersection	
Int Delay, s/veh	1.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1243	9	6	1272	9	6
Future Vol, veh/h	1243	9	6	1272	9	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	15	15	5	15	15
Mvmt Flow	1351	10	7	1383	10	7

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1361	0	2753	1356
Stage 1	-	-	-	-	1356	-
Stage 2	-	-	-	-	1397	-
Critical Hdwy	-	-	4.25	-	6.55	6.35
Critical Hdwy Stg 1	-	-	-	-	5.55	-
Critical Hdwy Stg 2	-	-	-	-	5.55	-
Follow-up Hdwy	-	-	2.335	-	3.635	3.435
Pot Cap-1 Maneuver	-	-	465	-	20	171
Stage 1	-	-	-	-	225	-
Stage 2	-	-	-	-	214	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	465	-	19	171
Mov Cap-2 Maneuver	-	-	-	-	19	-
Stage 1	-	-	-	-	225	-
Stage 2	-	-	-	-	200	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	233.4
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	29	-	-	465	-
HCM Lane V/C Ratio	0.562	-	-	0.014	-
HCM Control Delay (s)	233.4	-	-	12.9	0
HCM Lane LOS	F	-	-	B	A
HCM 95th %tile Q(veh)	1.8	-	-	0	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1031	8	3	1281	8	3
Future Vol, veh/h	1031	8	3	1281	8	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	0	-	0	-
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	15	15	5	15	15
Mvmt Flow	1121	9	3	1392	9	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1130	0	2524	1126
Stage 1	-	-	-	-	1126	-
Stage 2	-	-	-	-	1398	-
Critical Hdwy	-	-	4.25	-	6.55	6.35
Critical Hdwy Stg 1	-	-	-	-	5.55	-
Critical Hdwy Stg 2	-	-	-	-	5.55	-
Follow-up Hdwy	-	-	2.335	-	3.635	3.435
Pot Cap-1 Maneuver	-	-	573	-	28	235
Stage 1	-	-	-	-	292	-
Stage 2	-	-	-	-	214	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	573	-	28	235
Mov Cap-2 Maneuver	-	-	-	-	125	-
Stage 1	-	-	-	-	292	-
Stage 2	-	-	-	-	213	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	32.5
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	143	-	-	573	-
HCM Lane V/C Ratio	0.084	-	-	0.006	-
HCM Control Delay (s)	32.5	-	-	11.3	-
HCM Lane LOS	D	-	-	B	-
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1243	9	6	1272	9	6
Future Vol, veh/h	1243	9	6	1272	9	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	0	-	0	-
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	15	15	5	15	15
Mvmt Flow	1351	10	7	1383	10	7

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1361	0	2753	1356
Stage 1	-	-	-	-	1356	-
Stage 2	-	-	-	-	1397	-
Critical Hdwy	-	-	4.25	-	6.55	6.35
Critical Hdwy Stg 1	-	-	-	-	5.55	-
Critical Hdwy Stg 2	-	-	-	-	5.55	-
Follow-up Hdwy	-	-	2.335	-	3.635	3.435
Pot Cap-1 Maneuver	-	-	465	-	20	171
Stage 1	-	-	-	-	225	-
Stage 2	-	-	-	-	214	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	465	-	20	171
Mov Cap-2 Maneuver	-	-	-	-	109	-
Stage 1	-	-	-	-	225	-
Stage 2	-	-	-	-	211	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	37.5
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	127	-	-	465	-
HCM Lane V/C Ratio	0.128	-	-	0.014	-
HCM Control Delay (s)	37.5	-	-	12.9	-
HCM Lane LOS	E	-	-	B	-
HCM 95th %tile Q(veh)	0.4	-	-	0	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1035	15	5	1285	15	5
Future Vol, veh/h	1035	15	5	1285	15	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	0	-	0	-
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	15	15	5	15	15
Mvmt Flow	1125	16	5	1397	16	5

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1141	0	2540	1133
Stage 1	-	-	-	-	1133	-
Stage 2	-	-	-	-	1407	-
Critical Hdwy	-	-	4.25	-	6.55	6.35
Critical Hdwy Stg 1	-	-	-	-	5.55	-
Critical Hdwy Stg 2	-	-	-	-	5.55	-
Follow-up Hdwy	-	-	2.335	-	3.635	3.435
Pot Cap-1 Maneuver	-	-	567	-	27	232
Stage 1	-	-	-	-	290	-
Stage 2	-	-	-	-	212	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	567	-	27	232
Mov Cap-2 Maneuver	-	-	-	-	123	-
Stage 1	-	-	-	-	290	-
Stage 2	-	-	-	-	210	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	35.6
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	139	-	-	567	-
HCM Lane V/C Ratio	0.156	-	-	0.01	-
HCM Control Delay (s)	35.6	-	-	11.4	-
HCM Lane LOS	E	-	-	B	-
HCM 95th %tile Q(veh)	0.5	-	-	0	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1245	15	10	1275	15	10
Future Vol, veh/h	1245	15	10	1275	15	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	0	-	0	-
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	15	15	5	15	15
Mvmt Flow	1353	16	11	1386	16	11

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1369	0	2769	1361
Stage 1	-	-	-	-	1361	-
Stage 2	-	-	-	-	1408	-
Critical Hdwy	-	-	4.25	-	6.55	6.35
Critical Hdwy Stg 1	-	-	-	-	5.55	-
Critical Hdwy Stg 2	-	-	-	-	5.55	-
Follow-up Hdwy	-	-	2.335	-	3.635	3.435
Pot Cap-1 Maneuver	-	-	462	-	19	170
Stage 1	-	-	-	-	224	-
Stage 2	-	-	-	-	212	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	462	-	19	170
Mov Cap-2 Maneuver	-	-	-	-	107	-
Stage 1	-	-	-	-	224	-
Stage 2	-	-	-	-	207	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	41.3
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	126	-	-	462	-
HCM Lane V/C Ratio	0.216	-	-	0.024	-
HCM Control Delay (s)	41.3	-	-	13	-
HCM Lane LOS	E	-	-	B	-
HCM 95th %tile Q(veh)	0.8	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1035	15	5	1285	15	5
Future Vol, veh/h	1035	15	5	1285	15	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	150	-	0	-
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	15	15	5	15	15
Mvmt Flow	1125	16	5	1397	16	5

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1141	0	1702	571
Stage 1	-	-	-	-	1133	-
Stage 2	-	-	-	-	569	-
Critical Hdwy	-	-	5.6	-	6	7.4
Critical Hdwy Stg 1	-	-	-	-	6.9	-
Critical Hdwy Stg 2	-	-	-	-	6.3	-
Follow-up Hdwy	-	-	3.25	-	3.95	4.05
Pot Cap-1 Maneuver	-	-	301	-	118	373
Stage 1	-	-	-	-	182	-
Stage 2	-	-	-	-	453	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	301	-	116	373
Mov Cap-2 Maneuver	-	-	-	-	156	-
Stage 1	-	-	-	-	182	-
Stage 2	-	-	-	-	445	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	27.3
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	183	-	-	301	-
HCM Lane V/C Ratio	0.119	-	-	0.018	-
HCM Control Delay (s)	27.3	-	-	17.2	-
HCM Lane LOS	D	-	-	C	-
HCM 95th %tile Q(veh)	0.4	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1245	15	10	1275	15	10
Future Vol, veh/h	1245	15	10	1275	15	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	150	-	0	-
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	15	15	5	15	15
Mvmt Flow	1353	16	11	1386	16	11

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1369	0	1937	685
Stage 1	-	-	-	-	1361	-
Stage 2	-	-	-	-	576	-
Critical Hdwy	-	-	5.6	-	6	7.4
Critical Hdwy Stg 1	-	-	-	-	6.9	-
Critical Hdwy Stg 2	-	-	-	-	6.3	-
Follow-up Hdwy	-	-	3.25	-	3.95	4.05
Pot Cap-1 Maneuver	-	-	229	-	87	312
Stage 1	-	-	-	-	129	-
Stage 2	-	-	-	-	449	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	229	-	83	312
Mov Cap-2 Maneuver	-	-	-	-	113	-
Stage 1	-	-	-	-	129	-
Stage 2	-	-	-	-	427	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	33.8
HCM LOS			D

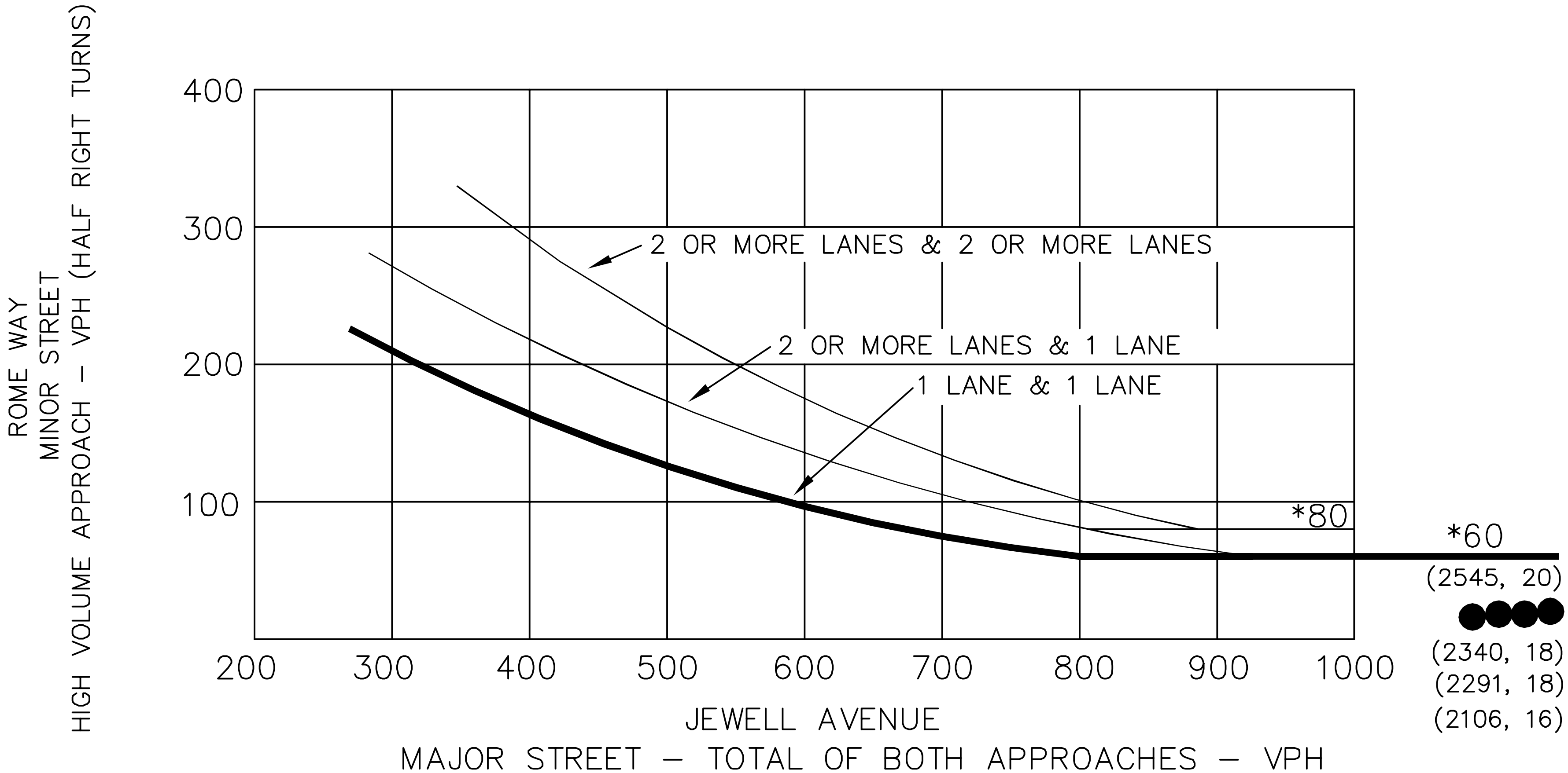
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	152	-	-	229	-
HCM Lane V/C Ratio	0.179	-	-	0.047	-
HCM Control Delay (s)	33.8	-	-	21.5	-
HCM Lane LOS	D	-	-	C	-
HCM 95th %tile Q(veh)	0.6	-	-	0.1	-

APPENDIX D

Traffic Signal Warrant Figure

WARRANT 2 - FOUR HOUR VEHICULAR VOLUME (70% FACTOR)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)



* NOTE: 80 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 60 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

AURORA RV STORAGE
JEWELL AVE & ROME WAY
FOUR HOUR VOLUME WARRANT

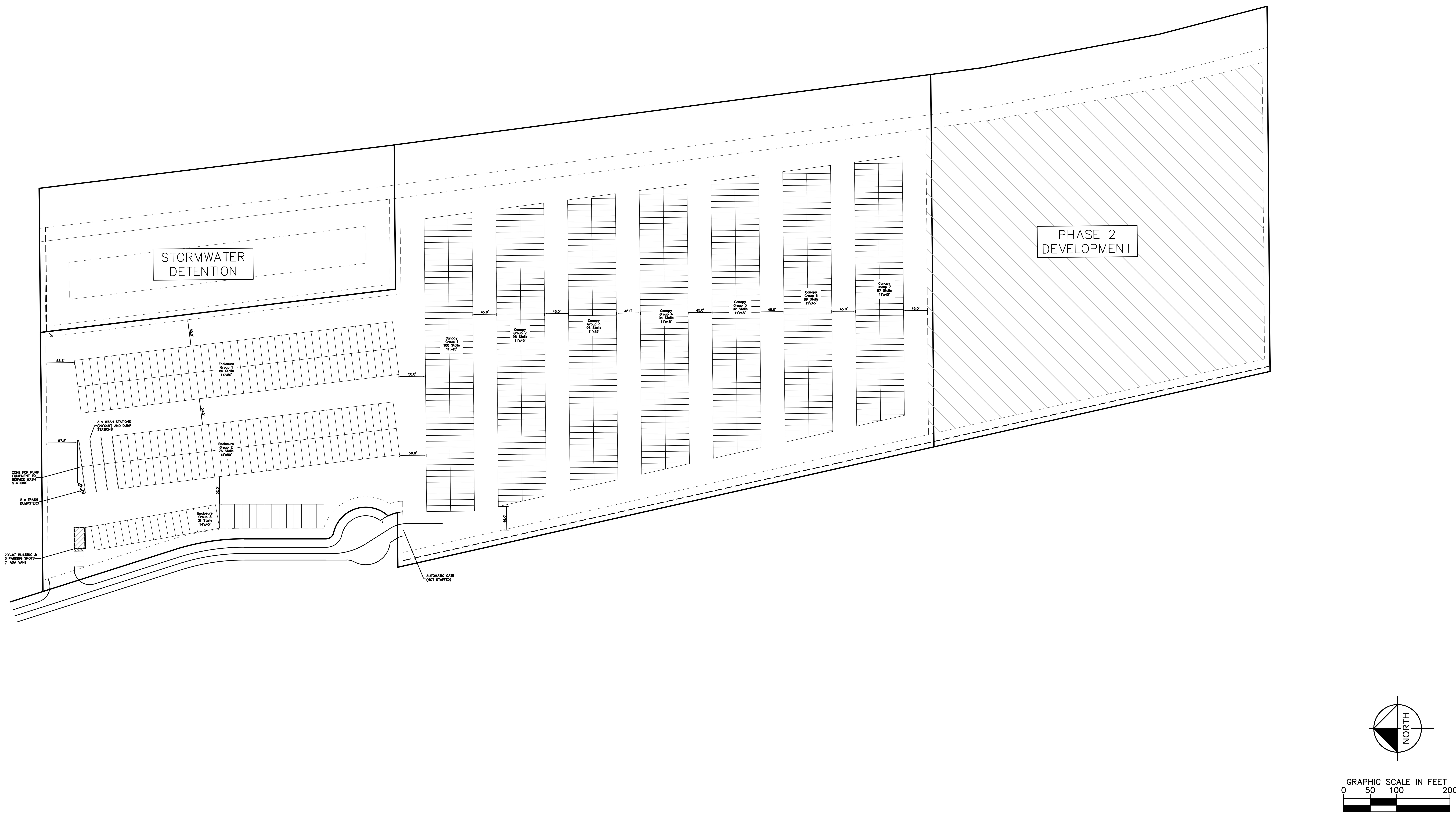
● 2040 PM Peak Hour Traffic Volume Projections

Source: Manual of Uniform Traffic Control Devices 2009

Kimley»Horn

APPENDIX E

Conceptual Site Plan



MARCH 30, 2020

E470 JEWELL STORAGE - CONCEPTUAL SITE PLAN
7 CANOPIES: 656 SPOTS; 3 ENCLOSURES: 193 SPOTS

Kimley»Horn