



TRAFFIC ANALYSIS REPORT

UPPER HARBOR TERMINAL MINNEAPOLIS, MINNESOTA

DECEMBER 2020

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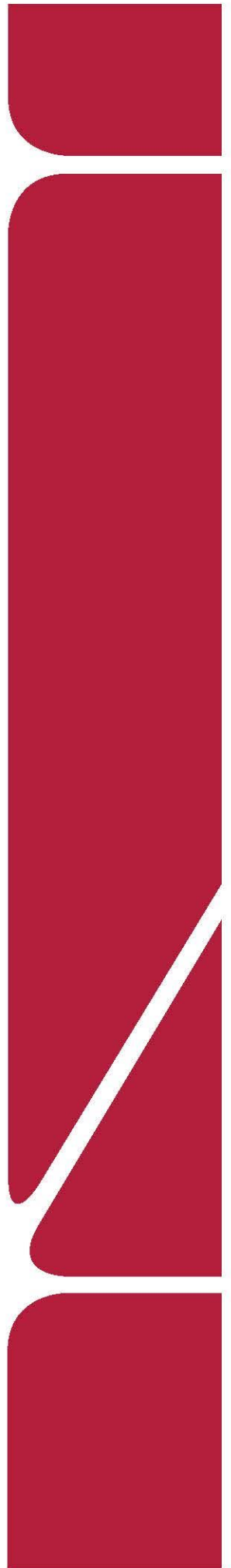


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INTRODUCTION

United Properties is preparing an Areawide Urban Alternative Review (AUAR) for the development of the Upper Harbor Terminal in Minneapolis, which is generally bounded by Dowling Avenue N and Lowry Avenue N to the north and south, and Interstate 94 and the Mississippi River to the west and east.

There are two development scenarios that are being considered for the Upper Harbor Terminal site. The first is the Coordinated Plan which was developed in consultation with the community. The second is the Comprehensive Plan that is based on the maximum build-out allowed by the Minneapolis 2040 Comprehensive Plan. Both the Comprehensive Plan and the Coordinated Plan are analyzed as part of the AUAR. **Table 1** shows the land uses with their densities for the two development scenarios.

Table 1: Development Scenarios

Land Use	Coordinated Plan	Comprehensive Plan
Residential	522 Units	890 Units
Retail and Public Market	15,300 Square Feet	26,300 Square Feet
Restaurant	15,000 Square Feet	15,000 Square Feet
Office	31,000 Square Feet	62,000 Square Feet
Industrial	203,000 Square Feet	406,000 Square Feet
Event Hall	3,000 Square Feet	6,000 Square Feet
Community Garden	9,600 Square Feet	9,600 Square Feet
Music Venue	10,000-person capacity	10,000-person capacity
Public Park	19.5 Acres	19.5 Acres
Child Care	2,200 Square Feet	2,200 Square Feet
Health & Wellness	20,000 Square Feet	40,000 Square Feet
Youth Sports	40,000 Square Feet	80,000 Square Feet
Clinic	4,700 Square Feet	4,700 Square Feet
Flexible Community Space	6,000 Square Feet	12,000 Square Feet
Training Center	15,000 Square Feet	30,000 Square Feet

The site is currently industrial land uses with some parcels undeveloped. The site is anticipated to be constructed by 2024. **Figure 1** shows the proposed project location. All figures are included in **Appendix A**.

EXISTING CONDITIONS

The proposed development is located east of I-94 along Washington Avenue N and the proposed Parkway Street in Minneapolis, Minnesota. East of the proposed site is the Mississippi River. The site is currently industrial land use. The following existing intersections will be included in the traffic capacity analysis:

- Lyndale Avenue N & Dowling Avenue N
- West I-94 Ramp & Dowling Avenue N
- East I-94 Ramp & Dowling Avenue N
- Washington Avenue N & Dowling Avenue N
- Washington Avenue N & 2nd Street N & 36th Street N
- 2nd Street N & 33rd Avenue N
- Washington Avenue N & 33rd Avenue N
- Lowry Avenue N & Washington Avenue N
- Lowry Avenue N & 2nd Street N

The existing study intersections listed above are shown in **Figure 1**. Figure 1 also shows two additional intersections (10 and 11) and site access locations that are included in the Build conditions. The site accesses were assumed for the purposes of the traffic analysis and the final access locations and configurations will be determined through the City of Minneapolis site plan review process.

EXISTING ROADWAYS

The following provides a detailed description of existing roadways near the proposed site.

Dowling Avenue N (Municipal State Aid (MSA) 169) is an east-west two-lane undivided roadway that connects Victory Memorial Drive from the west to I-94 in the east and continues east to the site. In the vicinity of the site, there are left turn lanes at the signalized intersections. There is a bike lane in each direction on Dowling Avenue N. The MnDOT Functional Classification System Map identifies Dowling Avenue N as a Major Collector. The MnDOT Traffic Mapping Application reports an annual average daily traffic (AADT) of 9,500 vehicles per day (vpd) in 2017 near the site. The 2017 AADT on Dowling Avenue N between the I-94 Ramps and Lyndale Avenue N was 16,700 vpd and was 10,300 vpd west of Lyndale Avenue N. The posted speed limit on Dowling Avenue N is 25 mph.

Lyndale Avenue (MSA 342) is a north-south roadway that begins near the I-94/I-694 interchange in Brooklyn Center in the north and runs south to Bloomington. Near the study area, Lyndale Avenue is a two-lane undivided roadway and is classified as an A-Minor Reliever by the MnDOT Functional Classification System Map. The reported AADT on the MnDOT Traffic Mapping Application was 9,000 vpd north of Dowling Avenue N and 8,000 vpd south of Dowling Avenue N. On-street parking is permitted on the west side of Lyndale Avenue both north and south of Dowling Avenue N. The posted speed limit on Lyndale Avenue is 25 mph.

Washington Avenue N (County State Aid Highway (CSAH) 152) is a Hennepin County roadway that runs primarily north-south from the University of Minnesota East Bank campus through downtown Minneapolis to just north of Dowling Avenue N. Near the study area, Washington Avenue N is a two-lane undivided roadway with bike lanes in each direction. It is classified as a Major Collector according to the MnDOT Functional Classification System Map. The MnDOT Traffic Mapping Application reports an AADT of 5,900 vpd on Washington Avenue N north of its intersection with 2nd Street N and 3,550 vpd south of the intersection with 2nd Street N. The speed limit on Washington Avenue N is 30 mph.

2nd Street N (MSA 215) is a primarily north-south roadway that runs from downtown Minneapolis until the intersection with Washington Avenue N near the site. Near the site, it is a two-lane undivided roadway with bike lanes in both directions. It is classified as a major collector in the MnDOT Functional Classification System Map. The MnDOT Traffic Mapping Application reports an AADT of 6,800 vehicles per day (vpd) in 2017 on 2nd Street N north of Lowry Avenue N. The posted speed limit on 2nd Street N is 25 mph.

Lowry Avenue N (CSAH 153) is a Hennepin County roadway that runs east-west and is located south of the site. Lowry Avenue N begins in the west near Bottineau Boulevard/Broadway Avenue and runs east to Stinson Parkway. In the site area, Lowry Avenue N is a four-lane undivided roadway. It is classified as an A-Minor Augmentor in the MnDOT Functional Classification System Map. The MnDOT Traffic Mapping Application reports an AADT of 15,000 vpd in 2017 on Lowry Avenue N east of Washington Avenue N and an AADT of 13,700 vpd in 2017 west of Washington Avenue N. The speed limit on Lowry Avenue N is 30 mph.

33rd Avenue N is an east-west local roadway that is located along the south end of the site. It is a two-lane undivided roadway with on-street parking on both sides of the road. Near the site, 33rd Avenue N connects Washington Avenue N and 2nd Street N and is bounded by I-94 and the Mississippi River. There is no AADT information available for 33rd Avenue N on the MnDOT Traffic Mapping Application. The speed limit on 33rd Avenue N is proposed to change to 20 mph in fall 2020.

Figure 2 provides the existing intersection geometry and intersection control for the study intersections.

EXISTING TRANSIT SERVICE

There are currently no transit routes that directly serve the development site. The closest bus stops that could be accessed from the development are located at Dowling Avenue & 6th Street, Dowling Avenue & Lyndale Avenue, and on Lowry Avenue between Washington Avenue and 2nd Street.

The following routes operate at these bus stops:

Route 22 is a local bus route from the VA Medical Center south of Minneapolis to the Brooklyn Center Transit Center. This route operates seven days a week with 10-20 minute headways during weekday peak periods and 20-30 minute headways during off-peak hours and weekends. Route 22 operates on Lyndale Avenue near the project site, with the closest stops on Lyndale Avenue at Dowling Avenue.

Route 721 is a local bus route from downtown Minneapolis to Hennepin Technical College in Brooklyn Park. This route operates seven days a week with 30-60 minute headways. Route 721 exits I-94 and then runs to the west on Dowling Avenue, with the closest stops to the project site on Dowling Avenue at 6th Street and at Lyndale Avenue.

Route 32 is a local bus route from the Robbinsdale Transit Center to the Rosedale Transit Center. This route operates seven days a week with 30 minute headways. Route 32 operates on Lowry Avenue near the project site, with stops on Lowry Avenue between Washington Avenue and 2nd Street.

EXISTING TRAFFIC VOLUMES

To analyze the traffic operations at the study intersection, weekday peak period turning movement counts were collected on Thursday March 22, 2018 for the intersections along Dowling Avenue N and on Tuesday March 17, 2020 at the four study intersections on Lowry Avenue and 33rd Avenue. At the time the March 2020 counts were collected, traffic volumes were affected due to COVID-19 related business and school

closures. Historic counts on Lowry Avenue were compared to the 2020 counts and adjustment factors were identified by intersection approach to normalize the volumes. **Table 2** shows the adjustment factors used for each roadway for both the AM and PM peak hours.

Table 2: March 2020 Volume Adjustment Factors

Approach	AM Peak Hour		PM Peak Hour	
	2020 Traffic Volumes (% of Historic Vol.)	Volume Adjustment	2020 Traffic Volumes (% of Historic Vol.)	Volumes Adjustment
EB Lowry Avenue	75%-104%	+25%	96-127%	0%
WB Lowry Avenue	83-94%	+20%	88-122%	+5%
NB 2 nd Street	80-112%	+25%	59-84%	+60%
SB 2 nd Street	65-93%	+55%	89-119%	+10%
NB Washington Avenue	79-112%	+15%	42-64%	+100%
SB Washington Avenue	22-74%	+110%	53-85%	+60%

The percentage of historic volumes on Lowry Avenue and 2nd Street were generally consistent with reports by INRIX and other big data companies regarding the reduction in traffic volumes in mid-March 2020 due to COVID-19.¹ Approaches with low traffic volumes tended to have larger percentage differences in traffic, since a reduction of a few vehicles made up a relatively larger percentage of the overall traffic on that approach.

The 2018 intersection counts were also adjusted based on an annual growth rate of 0.25 percent per year to get the Existing Year (2020) volumes.

For the study, existing and no-build volumes were rounded to the nearest 5 vehicles and were balanced between the intersections where it was appropriate. **Figure 3** provides a summary of the weekday AM and PM peak hour turning traffic volumes.

The network peak hours and peak hour factors were used for the analysis. The network AM peak hour was determined to be 7:15 AM to 8:15 AM and the network PM peak hour was determined to be 4:30 PM to 5:30 PM. The network peak hour factors were determined to be 0.91 for the AM peak hour and 0.96 for the PM peak hour.

EXISTING CONDITIONS CAPACITY ANALYSIS

A capacity analysis was performed to quantify the delay and level of service at the study intersections during the weekday AM and PM peak hours. The capacity analysis was performed using Synchro/SimTraffic. The City of Minneapolis provided the existing signal timings.

The capacity of an intersection quantifies its ability to accommodate traffic volumes and is measured in average delay per vehicle. It is expressed in terms of level of service (LOS) which ranges from A to F, with LOS A as the highest (best traffic flow and least delay), LOS E as saturated or at-capacity conditions, and LOS F as the lowest (oversaturated conditions). The LOS grades shown below, which are provided in the Transportation Research Board's Highway Capacity Manual (HCM) 6th Edition, quantify and categorize

¹ INRIX U.S. National Traffic Volume Synopsis, March 14-20, 2020. <https://inrix.com/blog/2020/03/covid19-us-traffic-volume-synopsis/>

drivers' experience as a result of intersection control and the resulting traffic queuing. A detailed description of each LOS rating and the corresponding average delays are shown in **Table 3**. Because signalized intersections are expected to carry a larger volume of vehicles and stopping is required during red time, higher delays are tolerated for the corresponding LOS ratings.

Table 3 – Level of Service Information

Level of Service	Average Control Delay (seconds/vehicle)		Description
	Unsignalized	Signalized	
A	0-10	0-10	Minimal control delay; traffic operates at primarily free-flow conditions; unimpeded movement within traffic stream.
B	>10-15	>10-20	Minor control delay at signalized intersections; traffic operates at a fairly unimpeded level with slightly restricted movement within traffic stream.
C	>15-25	>20-35	Moderate control delay; movement within traffic stream more restricted than at LOS B; formation of queues contributes to lower average travel speeds.
D	>25-35	>35-55	Considerable control delay that may be substantially increased by small increases in flow; average travel speeds continue to decrease.
E	>35-50	>55-80	High control delay; average travel speed no more than 33 percent of free flow speed.
F	>50	>80	Extremely high control delay; extensive queuing and high volumes create exceedingly restricted traffic flow.

The traffic volumes shown in **Figure 3** in **Appendix A** were used in the Existing Year (2020) analysis. **Table 4** shows the overall intersection LOS and delay for the study intersections under Existing Year (2020) conditions during the AM and PM peak hours.

Based on the analysis, the study intersections are currently operating at LOS D or better during the AM and PM peak hours with the following exception:

- In the PM peak hour, Lyndale Avenue & Dowling Avenue operates at LOS E. The northbound and southbound approaches at the intersection experiences excessive delays.
- Washington Avenue & Dowling Avenue operates at LOS F in the PM peak hour, the northbound leg has excessive delay and queuing as there are a substantial amount of northbound left turns with only a single lane approach and no turn lanes. The signal at the intersection currently operates with split phasing on the east and west approaches due to the offset intersection, which leads to higher delays at the intersection.

The movement LOS results at the study intersections are summarized in **Appendix C**.

Table 4 – Existing Year (2020) Intersection Analysis

Intersection	Traffic Control	AM Peak Hour		PM Peak Hour	
		Delay (s/veh)	LOS	Delay (s/veh)	LOS
Dowling Avenue & Lyndale Avenue	Signalized	49.6	D	55.6	E
Dowling Avenue & East I-94 Ramps	Signalized	13.2	B	13.9	B
Dowling Avenue & West I-94 Ramps	Signalized	16.5	B	20.9	C
Dowling Avenue & Washington Avenue	Signalized	29.3	C	81.4	F
Washington Avenue & 36th Avenue & 2nd Street	Side Street Stop	0.8	A	4.8	A
Washington Avenue & 33rd Avenue	Side Street Stop	0.5	A	1.2	A
2nd Street & 33rd Avenue	Side Street Stop	1.1	A	1.7	A
Lowry Avenue & Washington Avenue	Signalized	10.8	B	27.7	C
Lowry Avenue & 2nd Street	Signalized	14.8	B	32.3	C

The average and 95th percentile queues are summarized in **Table 5** for the I-94 ramps and the signalized approaches that are within 1/8 mile of another signalized intersection. The queuing was evaluated for these movements because of the potential safety and operations impacts at these locations if the queues regularly exceed the available storage. In the Existing Conditions, the 95th percentile queues of several movements on Dowling Avenue and Lowry Avenue exceed the storage distance in the AM and PM peak hours. The average queues for these movements are all less than the available storage distance and significantly less than the 95th percentile queues, which indicates that the 95th percentile queue lengths would be expected to occur only a few times in the peak hour.

Table 5 – Existing Year (2020) Queue Summary

Intersection	Approach	Movement	Storage Length (feet)	AM Peak Hour		PM Peak Hour		
				Average Queue (feet)	95th Percentile Queue (feet)	Average Queue (feet)	95th Percentile Queue (feet)	
Dowling Avenue & Lyndale Avenue	Westbound	LT	150	50	92	56	148	
		TH/RT	570	122	213	170	310	
Dowling Avenue & East I-94 Ramps	Southbound	LT	450	104	185	102	183	
		TH/RT	1,355	83	179	138	303	
	Eastbound	TH	570	95	169	74	140	
		Westbound	LT	150	24	63	36	79
			TH	400	26	67	28	74
Dowling Avenue & West I-94 Ramps	Northbound	LT/TH	1,750	129	228	267	438	
		RT	540	35	94	52	154	
	Eastbound	LT	165	106	201	88	169	
		TH	410	84	162	54	121	
	Westbound	TH/RT	185	80	198	125	203	
		LT	120	82	154	100	160	
Dowling Avenue & Washington Avenue	Eastbound	TH/RT	185	119	229	88	218	
		LT/TH	215	73	145	160	228	
Lowry Avenue & Washington Avenue	Westbound	LT/TH	215	73	145	160	228	
Lowry Avenue & 2nd Street	Eastbound	LT/TH	215	43	97	134	228	

FUTURE NO-BUILD CONDITIONS CAPACITY ANALYSIS

BACKGROUND GROWTH

No-Build traffic volumes were calculated by applying a 0.25 percent annual growth rate. This growth rate percentage was determined based on historic AADTs in the vicinity of the site, knowledge of the area, and discussions with the City of Minneapolis. This growth rate is appropriate due to the fully developed nature of the surrounding areas and no known source of significant background growth that will impact the traffic volumes on the roadways surrounding the site. The No-Build scenario volumes assumed the same peak hours and peak hour factors as the Existing Conditions.

OPENING YEAR NO-BUILD CAPACITY ANALYSIS

A capacity analysis was performed for Opening Year No-Build (2024) conditions in order to develop baseline operating conditions for the opening year. All signal cycles remained the same as the Existing Conditions (2020) but some splits were slightly adjusted. With a 0.25 percent annual background growth rate, there is not a significant change in traffic volumes between the Existing Year (2020) and the Opening Year No-Build (2024) conditions. **Figure 4** shows the Opening Year No-Build (2024) turning movement volumes.

The results of the analysis are provided in **Table 6** for the Opening Year No-Build weekday AM and PM peak hours. Based on the capacity analysis, the study intersections are expected to operate at the same LOS as the Existing Conditions in the AM and PM peak hours with the following exceptions:

- Dowling Avenue & Lyndale Avenue - This intersection operated at LOS D in the Existing Condition AM peak hour and is expected to operate at LOS E in the Opening Year No-Build AM peak hour.

The movement LOS results for the study intersections are summarized in **Appendix C**.

Table 6 – Opening Year No-Build (2024) Intersection Analysis

Intersection	Traffic Control	AM Peak Hour		PM Peak Hour	
		Delay (s/veh)	LOS	Delay (s/veh)	LOS
Dowling Avenue & Lyndale Avenue	Signalized	57.1	E	58.2	E
Dowling Avenue & East I-94 Ramps	Signalized	13.3	B	13.9	B
Dowling Avenue & West I-94 Ramps	Signalized	17.7	B	21.4	C
Dowling Avenue & Washington Avenue	Signalized	28.8	C	88.9	F
Washington Avenue & 36th Avenue & 2nd Street	Side Street Stop	0.8	A	12.0	B
Washington Avenue & 33rd Avenue	Side Street Stop	0.5	A	1.2	A
2nd Street & 33rd Avenue	Side Street Stop	1.2	A	1.7	A
Lowry Avenue & Washington Avenue	Signalized	10.4	B	24.9	C
Lowry Avenue & 2nd Street	Signalized	15.7	B	28.9	C

The average and 95th percentile queues are summarized in **Table 7**. In the Opening Year No-Build Conditions, the 95th percentile queues of several movements on Dowling Avenue and Lowry Avenue exceed the storage distance in the AM and PM peak hours. The 95th percentile queues that exceed the storage are generally the same as the Existing Conditions. The 95th percentile queue of the westbound left-turn movement at Dowling Avenue & Lyndale Avenue exceeded the available storage, which was not

identified in the Existing Conditions. However the 95th percentile queue increased by only 6 feet in the PM Peak hour.

Of the movements where the 95th percentile queue exceeds the storage distance, the average queues are all less than the available storage distance and significantly less than the 95th percentile queues, which indicates that the 95th percentile queue lengths would be expected to occur only a few times in the peak hour.

Table 7 – Opening Year No-Build (2024) Queue Summary

Intersection	Approach	Movement	Storage Length (feet)	AM Peak Hour		PM Peak Hour	
				Average Queue (feet)	95 th Percentile Queue (feet)	Average Queue (feet)	95 th Percentile Queue (feet)
Dowling Avenue & Lyndale Avenue	Westbound	LT	150	52	111	54	154
		TH/RT	570	132	217	174	358
Dowling Avenue & East I-94 Ramps	Southbound	LT	450	100	189	108	208
		TH/RT	1,355	81	165	129	305
	Eastbound	TH	570	93	172	74	135
	Westbound	LT	150	25	70	37	83
		TH	400	28	69	28	73
Dowling Avenue & West I-94 Ramps	Northbound	LT/TH	1,750	131	230	259	431
		RT	540	36	105	62	181
	Eastbound	LT	165	117	229	96	185
		TH	410	104	257	61	151
	Westbound	TH/RT	185	81	191	124	193
		LT	120	85	158	99	161
Dowling Avenue & Washington Avenue	Eastbound	TH/RT	185	112	225	90	222
		LT/TH	215	63	132	154	225
Lowry Avenue & Washington Avenue	Westbound	LT/TH	215	63	132	154	225
Lowry Avenue & 2 nd Street	Eastbound	LT/TH	215	48	111	136	236

HORIZON YEAR NO-BUILD CAPACITY ANALYSIS

A capacity analysis was performed for Horizon Year No-Build (2040) conditions in order to develop baseline operating conditions for the horizon year. The signal timing cycle lengths remained the same as the Existing Conditions, however, the phase splits were optimized. **Figure 5** shows the Horizon Year No-Build (2040) turning movement volumes. With a 0.25 percent annual growth rate, there is not a substantial change in traffic volumes between the Existing Year (2020) and the Horizon Year No-Build (2040) conditions.

The results of the Horizon Year No-Build (2040) analysis are provided in **Table 8** for the weekday AM and PM peak hours. Based on the capacity analysis, the study intersections are expected to operate at the same LOS as the Opening Year No Build (2024) conditions with the following exceptions:

- During the PM peak hour, Lyndale Avenue & Dowling Avenue is anticipated operate at LOS E however the delays are near the LOS F threshold.

The movement LOS results at the study intersections are summarized in **Appendix C**.

Table 8 – Horizon Year No-Build (2040) Intersection Analysis

Intersection	Traffic Control	AM Peak Hour		PM Peak Hour	
		Delay (s/veh)	LOS	Delay (s/veh)	LOS
Dowling Avenue & Lyndale Avenue	Signalized	67.6	E	77.5	E
Dowling Avenue & East I-94 Ramps	Signalized	13.6	B	13.4	B
Dowling Avenue & West I-94 Ramps	Signalized	16.2	B	21.8	C
Dowling Avenue & Washington Avenue	Signalized	28.7	C	84.5	F
Washington Avenue & 36th Avenue & 2nd Street	Side Street Stop	0.8	A	14.6	B
Washington Avenue & 33rd Avenue	Side Street Stop	0.5	A	1.2	A
2nd Street & 33rd Avenue	Side Street Stop	1.1	A	1.7	A
Lowry Avenue & Washington Avenue	Signalized	10.7	B	38.4	D
Lowry Avenue & 2nd Street	Signalized	15.6	B	35.6	D

The average and 95th percentile queues are summarized in **Table 9**. The 95th percentile queues that exceed the available storage are generally the same as the Opening Year No-Build Conditions. The average queues for these movements are all less than the available storage distance and significantly less than the 95th percentile queues, which indicates that the 95th percentile queue lengths would be expected to occur only a few times in the peak hour. The 95th percentile queue of the westbound through/right-turn movement at Dowling Avenue & West I-94 Ramps did not exceed the available storage, which was previously identified in the Opening Year No-Build Conditions. However the 95th percentile queue decreased by only 14 feet in the AM Peak hour.

Table 9 – Horizon Year No-Build (2040) Queue Summary

Intersection	Approach	Movement	Storage Length (feet)	AM Peak Hour		PM Peak Hour	
				Average Queue (feet)	95 th Percentile Queue (feet)	Average Queue (feet)	95 th Percentile Queue (feet)
Dowling Avenue & Lyndale Avenue	Westbound	LT	150	55	117	59	154
		TH/RT	570	131	216	194	371
Dowling Avenue & East I-94 Ramps	Southbound	LT	450	117	203	111	196
		TH/RT	1,355	87	212	131	275
	Eastbound	TH	570	97	165	80	137
		Westbound	LT	150	25	65	36
Dowling Avenue & West I-94 Ramps	Northbound	LT/TH	1,750	136	251	272	443
		RT	540	34	93	73	218
	Eastbound	LT	165	123	238	91	172
		TH	410	97	212	67	150
	Westbound	TH/RT	185	79	177	127	202
		Eastbound	LT	120	93	158	106
Dowling Avenue & Washington Avenue	Eastbound	TH/RT	185	123	233	104	239
Lowry Avenue & Washington Avenue	Westbound	LT/TH	215	70	135	164	237
Lowry Avenue & 2 nd Street	Eastbound	LT/TH	215	50	113	137	235

PROPOSED DEVELOPMENT

Two development scenarios are being considered for the Upper Harbor Terminal site – the Coordinated Plan and the Comprehensive Plan. The Coordinated Plan was developed in consultation with the community and the Comprehensive Plan is based on the maximum development densities allowed by the Minneapolis 2040 Comprehensive Plan.

The Upper Harbor Terminal site has been divided into seven different parcels as shown on the site plan in **Appendix B**. A new roadway is planned to be constructed as a part of the project, under either development scenario. The new roadway would be a parkway under the jurisdiction of the Minneapolis Park and Recreation Board and would run north-south just west of the Mississippi River from just north of Dowling Avenue to 33rd Avenue. The parkway is identified as Parkway Drive the figures in **Appendix A**. The parkway provides access to several of the parcels located within the development.

The trip-generating potential of the proposed development was calculated using the Institute of Transportation Engineers (ITE) *Trip Generation Manual, Tenth Edition*. Standard ITE trip rates were used to calculate the total trips generated by each parcel based on each land use code (LUC). **Table 10** provides the planned land uses of the development and the assumed ITE LUC.

Table 10: Development Land Uses and Assumed ITE Land Use Codes

Development Land Use	Assumed ITE LUC
Residential	Multifamily Housing (Mid-Rise): LUC 221
Retail and Public Market	Shopping Center: LUC 820
Restaurant	High-Turnover (Sit-Down) Restaurant: LUC 932
Office	General Office Building: LUC 710
Industrial	General Light Industrial: LUC 110
Event Hall	Not analyzed for peak hour trip generation
Community Garden	Assumed to be 100 percent internal site capture
Music Venue	Not analyzed for peak hour trip generation
Parkland	Public Park: LUC 411
Child Care	Day Care Center: LUC 565
Health & Wellness	Recreational Community Center: LUC 495
Youth Sports	Recreational Community Center: LUC 495
Health Clinic	Clinic: LUC 630
Flexible Community Space	Recreational Community Center: LUC 495
Training Center	General Office Building: LUC 710

The average peak hour trip generation rates for LUC 495 were reduced for the purposes of this study based on the anticipated peak hour activity at the sites proposed in this development.

Internal capture accounts for trips between the land uses on the site and was calculated based on the National Cooperative Highway Research Program (NCHRP) Report 684 *Enhancing Internal Trip Capture Estimation for Mixed-Use Developments*. A mode split reduction of 7% was applied to account for non-motorized modes of transportation. This mode split reduction was applied to the trip generation of all parcels on the site.

The trip generation calculated for each parcel was distributed to the adjacent roadways based on current traffic patterns in the area and a general assessment of the major regional roadways surrounding the study area.

The parcels were grouped together for trip generation as well as trip distribution based on similar land uses and similar access locations:

- Parcel 1A and Parcel 1B
- Parcel 2 and Parcel 6B
- Parcel 3, Parcel 4, and Parcel 5
- Parcel 6A, Parcel 7A, and Parcel 7B

The following sections detail the trip generation and the trip distribution by parcel groups for both the Coordinated Plan and the Comprehensive Plan.

Traffic associated with the Event Hall (Parcel 1b) and the Music Venue were not included in the peak hour traffic analysis because these land uses are not expected to generate traffic during a typical weekday peak hour. Traffic impacts and mitigations associated with event traffic are discussed further in the Mitigation Plan section of this report.

COORDINATED PLAN SITE TRIP GENERATION

A summary of the trip generation for the Coordinated Plan is provided for each parcel grouping and for the total site.

PARCEL 1A AND PARCEL 1B

The land uses, development intensity, and associated land use codes for Parcel 1A and Parcel 1B are as follows:

- Residential, 168 units: ITE LUC 221
- Child Care, 2,200 square feet: ITE LUC 565
- Office, 1,500 square feet: ITE LUC 710
- Restaurant, 15,000 square feet: ITE LUC 932
- Event Hall, 3,000 square feet: Not analyzed for AM and PM peak hours

The average rate for each ITE LUC was used to calculate the expected trip generation of the parcels. **Table 11** provides a summary of the number of trips anticipated to be generated during the weekday AM and PM peak hours for Parcel 1A and Parcel 1B of the Coordinated Plan.

Table 11 – Coordinated Plan: Parcel 1A and Parcel 1B Trip Generation

Land Use Code and Description		Intensity	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
221	Multifamily Housing (Mid-Rise)	168 Dwelling Units	16	44	60	45	29	74
565	Day Care Center	2,200 S.F.	12	12	24	11	13	24
710	General Office Building	1,500 S.F.	2	0	2	0	2	2
932	High-Turnover (Sit-Down) Restaurant	15,000 S.F.	16	44	60	45	29	74
Total Trips			112	123	235	147	100	247
Internal Site Capture			-39	-37	-76	-32	-34	-66
Mode Split Reduction – 7% Non-Auto			-8	-8	-16	-10	-7	-17
Total External Vehicle Trips			65	78	143	105	59	164

PARCEL 2 AND PARCEL 6B

The land uses, development intensity, and associated land use codes for Parcel 2 and Parcel 6B are as follows:

- Parkland, 19.504 acres: ITE LUC 411
- Youth Sports, 40,000 square feet: ITE LUC 495
- Health and Wellness, 20, 000 square feet: ITE LUC 495

The average rate for the Public Park LUC was used to calculate the expected trip generation of the parcel. The Recreational Center LUC used a reduced peak hour trip generation rate, as stated previously in this report. **Table 12** provides a summary of the number of trips anticipated to be generated during the weekday AM and PM peak hours for Parcel 2 and Parcel 6B of the Coordinated Plan.

Table 12 – Coordinated Plan: Parcel 2 and Parcel 6B Trip Generation

Land Use Code and Description		Intensity	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
411	Public Park	19.504 Acres	0	0	0	13	11	24
495	Recreational Community Center	60,000 S.F.	35	18	53	33	36	69
Total Trips			35	18	53	46	47	93
Internal Site Capture			0	0	0	-5	-8	-13
Mode Split Reduction – 7% Non-Auto			-2	-2	-4	-3	-4	-7
Total External Vehicle Trips			33	16	49	38	35	73

PARCEL 3, PARCEL 4, AND PARCEL 5

The land uses, development intensity, and associated land use codes for Parcel 3, Parcel 4, and Parcel 5 are as follows:

- Industrial, 203,000 square feet: ITE LUC 110
- Office, 22,000 square feet: ITE LUC 710
- Retail, 4,300 square feet: ITE LUC 820
- Music Venue, 10,000-person capacity: Not analyzed for AM and PM peak hours
- Community Garden, 9,600 square feet: Assumed to be 100 percent internal site capture

The average rate for each ITE LUC was used to calculate the expected trip generation of the parcels. **Table 13** provides a summary of the number of trips anticipated to be generated during the weekday AM and PM peak hours for Parcel 3, Parcel 4, and Parcel 5 of the Coordinated Plan.

Table 13 – Coordinated Plan: Parcel 3, Parcel 4, and Parcel 5 Trip Generation

Land Use Code and Description		Intensity	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
110	General Light Industrial	203,000 S.F.	125	17	142	17	111	128
710	General Office Building	22,000 S.F.	22	4	26	4	21	25
820	Shopping Center	4,300 S.F.	2	2	4	8	8	16
Total Trips			149	23	172	29	140	169
Internal Site Capture			-20	-12	-32	-9	-10	-19
Mode Split Reduction – 7% Non-Auto			-10	-2	-12	-2	-10	-12
Total External Vehicle Trips			119	9	128	18	120	138

PARCEL 6A, PARCEL 7A, AND PARCEL 7B

The land uses, development intensity, and associated ITE land use codes for Parcel 2 and Parcel 6B are as follows:

- Residential, 354 units: ITE LUC 221
- Flexible Community Space, 6,000 square feet: ITE LUC 495
- Health Clinic, 4,700 square feet: ITE LUC 630
- Training Center, 15,000 square feet: ITE LUC 710
- Office, 7,500 square feet: ITE LUC 710
- Public Market, 11,000 square feet: ITE LUC 820

The average rates for the Multifamily Housing, Clinic, Office, and Retail ITE LUC were used to calculate the expected trip generation of the parcels. The Recreational Center LUC used a reduced peak hour trip generation rate, as stated previously in this report. **Table 14** provides a summary of the number of trips anticipated to be generated during the weekday AM and PM peak hours for Parcel 6A, Parcel 7A, and Parcel 7B of the Coordinated Plan.

Table 14 – Coordinated Plan: Parcel 6A, Parcel 7A, and Parcel 7B Trip Generation

Land Use Code and Description		Intensity	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
221	Multifamily Housing (Mid-Rise)	354 Dwelling Units	33	95	128	95	61	156
495	Recreational Community Center	6,000 S.F.	3	2	5	3	4	7
630	Clinic	4,700 S.F.	13	4	17	4	11	15
710	General Office Building	22,500 S.F.	22	3	25	4	22	26
820	Shopping Center	11,000 S.F.	7	3	10	20	22	42
Total Trips			78	107	185	126	120	246
Internal Site Capture			-11	-20	-31	-31	-26	-57
Mode Split Reduction – 7% Non-Auto			-5	-8	-13	-9	-8	-17
Total External Vehicle Trips			62	79	141	86	86	172

COORDINATED PLAN TOTAL SITE TRIP GENERATION

Table 15 provides a summary of the total number of trips expected to be generated for all parcels and land uses during the weekday AM and PM peak hours for the Coordinated Plan.

Table 15 – Coordinated Plan: Total Site Trip Generation

Land Use Code and Description		Intensity	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
110	General Light Industrial	203,000 S.F.	125	17	142	17	111	128
221	Multifamily Housing (Mid-Rise)	522 Dwelling Units	49	139	188	140	90	230
411	Public Park	19.504 Acres	0	0	0	13	11	24
495	Recreational Community Center	66,000 S.F.	38	20	58	36	40	76
565	Day Care Center	2,200 S.F.	12	12	24	11	13	24
630	Clinic	4,700 S.F.	13	4	17	4	11	15
710	General Office Building	46,000 S.F.	46	7	53	8	45	53
820	Shopping Center	15,300 S.F.	9	5	14	28	30	58
932	High-Turnover (Sit-Down) Restaurant	15,000 S.F.	82	67	149	91	56	147
Total Site Trips			374	271	645	348	407	755
Internal Site Capture			-70	-69	-139	-77	-78	-155
Mode Split Reduction – 7% Non-Auto			-25	-20	-45	-24	-29	-53
Total External Vehicle Trips			279	182	461	247	300	547

COMPREHENSIVE PLAN SITE TRIP GENERATION

A summary of the trip generation for the Comprehensive Plan is shown below for each parcel grouping and for the total site. The same land uses are assumed for each parcel, but with increased development intensity compared to the Coordinated Plan.

PARCEL 1A AND PARCEL 1B

The average rate for each ITE LUC was used to calculate the expected trip generation of the parcels. **Table 16** provides a summary of the number of trips anticipated to be generated during the weekday AM and PM peak hours for Parcel 1A and Parcel 1B of the Comprehensive Plan.

Table 16 – Comprehensive Plan: Parcel 1A and Parcel 1B Trip Generation

Land Use Code and Description		Intensity	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
221	Multifamily Housing (Mid-Rise)	283 Dwelling Units	27	75	102	76	49	125
565	Day Care Center	2,200 S.F.	12	12	24	11	13	24
710	General Office Building	3,000 S.F.	3	0	3	0	3	3
932	High-Turnover (Sit-Down) Restaurant	15,000 S.F.	82	67	149	91	56	147
Total Trips			124	154	278	178	121	299
Internal Site Capture			-38	-36	-74	-42	-44	-86
Mode Split Reduction – 7% Non-Auto			-9	-10	-19	-12	-9	-21
Total External Vehicle Trips			77	108	185	124	68	192

PARCEL 2 AND PARCEL 6B

The average rate for the Public Park LUC was used to calculate the expected trip generation of the parcel. The Recreational Center LUC used a reduced peak hour trip generation rate, as stated previously in this report. **Table 17** provides a summary of the number of trips anticipated to be generated during the weekday AM and PM peak hours for Parcel 2 and Parcel 6B of the Comprehensive Plan.

Table 17 – Comprehensive Plan: Parcel 2 and Parcel 6B Trip Generation

Land Use Code and Description		Intensity	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
411	Public Park	19.504 Acres	0	0	0	13	11	24
495	Recreational Community Center	120,000 S.F.	70	35	105	64	74	138
Total Trips			70	35	105	77	85	162
Internal Site Capture			0	0	0	-6	-13	-19
Mode Split Reduction – 7% Non-Auto			-5	-2	-7	-5	-6	-11
Total External Vehicle Trips			65	33	98	66	66	132

The trip generation of the public park represents a typical weekday. The park could draw additional regional trips on weekends, but this scenario is not included as part of the traffic analysis since it would have lower traffic volumes than the weekday AM and PM peak hours. The park could also potentially host events, which would attract regional trips. This scenario is addressed in the Event Transportation Management Plan section of this report.

PARCEL 3, PARCEL 4, AND PARCEL 5

The average rate for each ITE LUC was used to calculate the expected trip generation of the parcels. **Table 18** provides a summary of the number of trips anticipated to be generated during the weekday AM and PM peak hours for Parcel 3, Parcel 4, and Parcel 5 of the Comprehensive Plan.

Table 18 – Comprehensive Plan: Parcel 3, Parcel 4, and Parcel 5 Trip Generation

Land Use Description		Intensity	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
110	General Light Industrial	406,000 S.F.	250	34	284	33	223	256
710	General Office Building	44,000 S.F.	44	7	51	8	43	51
820	Shopping Center	4,300 S.F.	2	2	4	8	8	16
Total Trips			296	43	339	49	274	323
Internal Site Capture			-24	-17	-41	-11	-13	-24
Mode Split Reduction – 7% Non-Auto			-21	-3	-24	-3	-20	-23
Total External Vehicle Trips			251	23	274	35	241	276

PARCEL 6A, PARCEL 7A, AND PARCEL 7B

The average rates for the Multifamily Housing, Clinic, Office, and Retail ITE LUC were used to calculate the expected trip generation of the parcels. The Recreational Center LUC used a reduced peak hour trip generation rate, as stated previously in this report. **Table 19** provides a summary of the number of trips anticipated to be generated during the weekday AM and PM peak hours for Parcel 6A, Parcel 7A, and Parcel 7B of the Comprehensive Plan.

Table 19 – Comprehensive Plan: Parcel 6A, Parcel 7A, and Parcel 7B Trip Generation

Land Use Description		Intensity	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
221	Multifamily Housing (Mid-Rise)	607 Dwelling Units	56	162	218	163	104	267
495	Recreational Community Center	12,000 S.F.	7	4	11	7	7	14
630	Clinic	4,700 S.F.	13	4	17	4	11	15
710	General Office Building	45,000 S.F.	45	8	53	9	43	52
820	Shopping Center	22,000 S.F.	14	7	21	40	44	84
Total Trips			135	185	320	223	209	432
Internal Site Capture			-15	-24	-39	-54	-43	-97
Mode Split Reduction – 7% Non-Auto			-9	-13	-22	-16	-14	-30
Total External Vehicle Trips			111	148	259	153	152	305

COMPREHENSIVE PLAN TOTAL SITE TRIP GENERATION

In addition to determining the trip generation for each parcel group, the overall site trip generation potential was also calculated. **Table 20** provides a summary of the number of trips anticipated to be generated for all parcels and land uses during the weekday AM and PM peak hours for the Comprehensive Plan.

Table 20 – Comprehensive Plan: Total Site Trip Generation

Land Use Description		Intensity	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
110	General Light Industrial	406,000 S.F.	250	34	284	33	223	256
221	Multifamily Housing (Mid-Rise)	890 Dwelling Units	83	237	320	239	153	392
411	Public Park	19.504 Acres	0	0	0	13	11	24
495	Recreational Community	132,000 S.F.	77	39	116	71	81	152
565	Day Care Center	2,200 S.F.	12	12	24	11	13	24
630	Clinic	4,700 S.F.	13	4	17	4	11	15
710	General Office Building	92,000 S.F.	92	15	107	17	89	106
820	Shopping Center	26,300 S.F.	16	9	25	48	52	100
932	High-Turnover (Sit-Down) Restaurant	15,000 S.F.	82	67	149	91	56	147
Total Site Trips			625	417	1,042	527	689	1,216
Internal Site Capture			-77	-77	-154	-113	-113	-226
Mode Split Reduction – 7% Non-Auto			-44	-28	-72	-36	-49	-85
Total External Vehicle Trips			504	312	816	378	527	905

SITE TRIP DISTRIBUTION AND ASSIGNMENT

The site trips for each parcel group were distributed to the adjacent roadways based on the current traffic patterns in the area and the major regional roadway network surrounding the study area. A separate distribution was determined for each parcel group and was used for both the Coordinated Plan and Comprehensive Plan.

Note that the site access locations shown in Figures 6-9 were assumed for the purposes of the traffic analysis. The final access locations and configurations will be determined through the City of Minneapolis site plan review process.

PARCEL 1A AND PARCEL 1B

Parcel 1A and Parcel 1B are located in the northeast quadrant of the proposed site along the Mississippi River. Access to the parcels would be provided on Parkway Drive. The following trip distribution was assumed for the parcel group:

- 25% to/from the north on I-94
- 20% to/from the north on Washington Avenue
- 20% to/from the south on Washington Avenue and 2nd Street
- 25% from the south on I-94
- 10% to/from the west on Dowling Avenue

The trip distribution for Parcel 1A and Parcel 1B is shown in **Figure 6**.

PARCEL 2 AND PARCEL 6B

Parcel 2 and Parcel 6B are generally located in the central and eastern portions of the site. The two parcels are divided by Parkway Drive. Access would be provided to Parcel 2 on Parkway Drive, and access to Parcel 6B would be provided on Washington Avenue N. For typical weekdays with no event, these parcels were assumed to attract local neighborhood traffic rather than regional traffic, and therefore it was assumed that no trips access the site to/from I-94. The park could draw additional regional trips on weekends, but this scenario is not included as part of the traffic analysis since it would have lower traffic volumes than the weekday AM and PM peak hours. The park could also potentially host events, which would attract regional trips. This scenario is addressed in the Event Transportation Management Plan section of this report.

The following trip distribution was assumed for the parcel group:

- 30% to/from the north on Washington Avenue
- 50% to/from the south on Washington Avenue and 2nd Street
- 20% to/from the west on Dowling Avenue

The trip distribution for Parcel 2 and Parcel 6b is shown in **Figure 7**.

PARCEL 3, PARCEL 4, AND PARCEL 5

Parcel 3, Parcel 4, and Parcel 5 are located in the southeast quadrant of the site along the Mississippi River. Access is planned to be provided to all parcels on Parkway Drive, and a private road would provide additional access to Parcel 4 and Parcel 5. The following trip distribution was assumed for the parcel group:

- 25% to/from the north on I-94
- 10% to/from the north on Washington Avenue
- 30% to/from the south on Washington Avenue and 2nd Street
- 25% from the south on I-94
- 10% to/from the west on Dowling Avenue

The trip distribution for Parcel 3, Parcel 4, and Parcel 5 is shown in **Figure 8**.

PARCEL 6A, PARCEL 7A AND PARCEL 7B

Parcel 6A, Parcel 7A, and Parcel 7B are generally located in the central and western portions of the site. Access to all parcels is planned to be provided along Washington Avenue. The following trip distribution was assumed for the parcel group:

- 25% to/from the north on I-94
- 10% to/from the north on Washington Avenue N
- 30% to/from the south on Washington Avenue N and 2nd Street N
- 25% from the south on I-94
- 10% to/from the west on Dowling Avenue N

The trip distribution for Parcel 6A, Parcel 7A, and Parcel 7B is shown in **Figure 9**.

TOTAL SITE TRIP DISTRIBUTION

The total external vehicle trips calculated from the site trip generation were assigned to the network based on the trip distributions developed for each parcel group. The total site trip assignment for the Coordinated Plan is shown in **Figure 10** and the Comprehensive Plan total site trip assignment is shown in **Figure 11**.

OPENING YEAR BUILD CAPACITY ANALYSIS

OPENING YEAR COORDINATED PLAN BUILD

Opening Year Coordinated Plan Build (2024) conditions were analyzed to determine the traffic impacts from the addition of the site traffic. Opening Year Coordinated Plan Build (2024) turning movement volumes were developed by adding the Coordinated Plan site trips to the Opening Year No-Build (2024) turning movement volumes in **Figure 4**. The Opening Year Coordinated Plan Build (2024) turning movement volumes are shown in **Figure 12**. The signal timing cycle lengths were assumed to remain the same as the Existing Conditions, however, the splits were optimized. As part of the development, the Dowling Avenue & Washington Avenue intersection was assumed to be realigned to allow the signal to operate with east/west concurrent phasing, rather than split phasing as in the Existing and No Build conditions. The results of the analysis are provided in **Table 21** for the weekday AM and PM peak hours. The movement LOS results at the study intersections are summarized in **Appendix C**.

Based on the Opening Year Coordinated Plan Build (2024) capacity analysis for the AM and PM peak hours, the study intersections are anticipated to operate at LOS D or better except for the following:

- Dowling Avenue & Lyndale Avenue – Anticipated to operate at LOS F in the AM and PM peak hours compared to LOS E in the Opening Year No-Build Conditions. The operations at this intersection were already at capacity in the No-Build conditions and the increase in traffic exacerbated the issues.
- Dowling Avenue & Washington Avenue – The model outputs show the intersection operating at LOS D in the AM and PM peak hours, however some of the approaches operate at LOS F and the overall intersection delay does not fully represent the delay of vehicles that queue beyond adjacent upstream intersections and access points. The Dowling Avenue & Washington Avenue intersection had insufficient capacity to accommodate the Opening Year Coordinated Plan Build Condition traffic in the PM peak hour.

Table 21 – Opening Year Coordinated Plan Build (2024) Intersection Analysis

Intersection	Traffic Control	AM Peak Hour		PM Peak Hour	
		Delay (s/veh)	LOS	Delay (s/veh)	LOS
Dowling Avenue & Lyndale Avenue	Signalized	91.9	F	89.0	F
Dowling Avenue & East I-94 Ramps	Signalized	30.1	C	50.6	D
Dowling Avenue & West I-94 Ramps	Signalized	34.0	C	45.2	D
Dowling Avenue & Washington Avenue	Signalized	37.9	D	40.4	D
Washington Avenue & 36th Avenue & 2nd Street	Side Street Stop	1.2	A	7.4	A
Washington Avenue & 33rd Avenue	Side Street Stop	1.0	A	1.6	A
2nd Street & 33rd Avenue	Side Street Stop	2.3	A	2.6	A
Lowry Avenue & Washington Avenue	Signalized	18.0	B	32.3	C
Lowry Avenue & 2nd Street	Signalized	21.4	C	33.3	C
Parkway Drive & Dowling Avenue	Side Street Stop	3.4	A	3.5	A
33rd Avenue/Parkway Drive & Parcel 4 & Parcel 5	Side Street Stop	1.1	A	1.2	A
Parkway Drive & Parcel 1a Access	Side Street Stop	2.0	A	1.9	A
Parkway Drive & Parcel 1b Access	Side Street Stop	1.6	A	1.8	A
Parkway Drive & Parcel 2 Access	Side Street Stop	0.3	A	0.3	A
Parkway Drive & Parcel 3 Access	Side Street Stop	0.2	A	0.6	A
Parkway Drive & Parcel 4 Access	Side Street Stop	0.4	A	1.6	A
Parkway Drive & Parcel 5 Access	Side Street Stop	0.4	A	1.2	A
Washington Ave & Parcel 7a & 6a Access	Side Street Stop	2.9	A	28.1	D
Washington Ave & Parcel 7b & 6b Access	Side Street Stop	1.1	A	12.8	B

The average and 95th percentile queues are summarized in **Table 22**. In the Opening Year Coordinated Plan Build Conditions, the average and 95th percentile queues of multiple movements on Dowling Avenue and Lowry Avenue exceed the storage distance in the AM and PM peak hours. The queuing issues involve multiple movements not identified in the Opening Year No-Build Conditions and the average queue lengths for several movements exceed the available storage, indicating that the queues would be expected to exceed the storage for most or all of the peak hour.

Table 22 – Opening Year Coordinated Plan Build (2024) Queue Summary

Intersection	Approach	Movement	Storage Length (feet)	AM Peak Hour		PM Peak Hour	
				Average Queue (feet)	95 th Percentile Queue (feet)	Average Queue (feet)	95 th Percentile Queue (feet)
Dowling Avenue & Lyndale Avenue	Westbound	LT	150	62	153	128	302
		TH/RT	570	175	306	412	650
Dowling Avenue & East I-94 Ramps	Southbound	LT	450	284	475	364	670
		TH/RT	1,355	137	329	288	610
	Eastbound	TH	570	154	417	203	497
		LT	150	39	88	114	237
	Westbound	TH	400	43	122	210	429
		LT	150	39	88	114	237
Dowling Avenue & West I-94 Ramps	Northbound	LT/TH	1,750	143	286	320	578
		RT	540	169	451	253	587
	Eastbound	LT	165	145	293	178	338
		TH	410	206	471	266	553
	Westbound	TH/RT	185	74	176	135	250
		LT	120	97	183	134	174
Dowling Avenue & Washington Avenue	Eastbound	TH/RT	185	216	294	228	287
		LT	120	97	183	134	174
Lowry Avenue & Washington Avenue	Westbound	LT/TH	215	117	187	165	242
Lowry Avenue & 2 nd Street	Eastbound	LT/TH	215	124	202	131	224

OPENING YEAR COMPREHENSIVE PLAN BUILD

Opening Year Comprehensive Plan Build (2024) conditions were analyzed to determine the traffic impacts from the addition of the site traffic. Opening Year Comprehensive Plan Build (2024) turning movement volumes were developed by adding the Comprehensive Plan site trips to the Opening Year No-Build (2024) turning movement volumes in **Figure 4**. The Opening Year Comprehensive Plan Build (2024) turning movement volumes are shown in **Figure 13**. The signal timing cycle lengths were assumed to remain the same as the Existing Conditions (2020), however, the splits were optimized. As part of the development, the Dowling Avenue & Washington Avenue intersection was assumed to be realigned to allow the signal to operate with east/west concurrent phasing, rather than split phasing as in the Existing and No Build conditions. The results of the analysis are provided in **Table 23** for the weekday AM and PM peak hours. The movement LOS results at the study intersections are summarized in **Appendix C**.

Based on the Opening Year Comprehensive Plan Build (2024) capacity analysis for the AM and PM peak hours, the study intersections are anticipated to operate at LOS D or better except for the following:

- Dowling Avenue & Lyndale Avenue – Anticipated to operate at LOS F in the AM and PM peak hours compared to LOS E in the Opening Year No-Build Conditions. The operations at this intersection were already at capacity and the increase in traffic exacerbated the issues.
- Dowling Avenue & East I-94 Ramps – Anticipated to operate at LOS E in the AM peak compared to LOS B in the Opening Year No-Build Conditions. The change in LOS is due to the southbound left turn movement not having adequate space to turn onto Dowling Avenue due to eastbound spillback on Dowling Avenue from the Washington Ave intersection.

- Dowling Avenue & Washington Avenue – The model outputs show the intersection operating at LOS D in the AM and PM peak hours, however some of the approaches operate at LOS F and the overall intersection delay does not fully represent the delay of vehicles that queue beyond adjacent upstream intersections and access points. The Dowling Avenue & Washington Avenue intersection had insufficient capacity to accommodate the Opening Year Comprehensive Plan Build Condition traffic in the PM peak hour.
- Washington Avenue & Parcel 7a/6a Access – The intersection operated at LOS F in the PM peak hour as a result of northbound queues on Washington Avenue from the Dowling Avenue intersection.
- Washington Avenue & Parcel 7b/6b Access – The intersection operated at LOS E in the PM peak hour as a result of northbound queues on Washington Avenue from the Dowling Avenue intersection.

Table 23 – Opening Year Comprehensive Plan Build (2024) Intersection Analysis

Intersection	Traffic Control	AM Peak Hour		PM Peak Hour	
		Delay (s/veh)	LOS	Delay (s/veh)	LOS
Dowling Avenue & Lyndale Avenue	Signalized	100+	F	83.9	F
Dowling Avenue & East I-94 Ramps	Signalized	76.9	E	45.6	D
Dowling Avenue & West I-94 Ramps	Signalized	43.0	D	32.5	C
Dowling Avenue & Washington Avenue	Signalized	48.8	D	43.8	D
Washington Avenue & 36th Avenue & 2nd Street	Side Street Stop	5.0	A	21.7	C
Washington Avenue & 33rd Avenue	Side Street Stop	1.1	A	1.9	A
2nd Street & 33rd Avenue	Side Street Stop	2.7	A	3.3	A
Lowry Avenue & Washington Avenue	Signalized	18.9	B	51.1	D
Lowry Avenue & 2nd Street	Signalized	21.7	C	40.5	D
Parkway Drive & Dowling Avenue	Side Street Stop	3.8	A	3.8	A
33rd Avenue/Parkway Drive & Parcel 4 & Parcel 5	Side Street Stop	1.4	A	1.6	A
Parkway Drive & Parcel 1a Access	Side Street Stop	2.0	A	1.9	A
Parkway Drive & Parcel 1b Access	Side Street Stop	1.7	A	1.8	A
Parkway Drive & Parcel 2 Access	Side Street Stop	0.4	A	0.5	A
Parkway Drive & Parcel 3 Access	Side Street Stop	0.5	A	0.5	A
Parkway Drive & Parcel 4 Access	Side Street Stop	0.8	A	1.6	A
Parkway Drive & Parcel 5 Access	Side Street Stop	0.8	A	2.2	A
Washington Ave & Parcel 7a & 6a Access	Side Street Stop	33.0	D	51.0	F
Washington Ave & Parcel 7b & 6b Access	Side Street Stop	16.2	C	43.9	E

The average and 95th percentile queues are summarized in **Table 24**. In the Opening Year Comprehensive Plan Build Conditions, the average and 95th percentile queues of multiple movements on Dowling Avenue and Lowry Avenue exceed the storage distance in the AM and PM peak hours. The queuing issues involve multiple movements not identified in the Opening Year No-Build Conditions and the average queue lengths for several movements exceed the available storage, indicating that the queues would be expected to exceed the storage for most or all of the peak hour. The queues on the East I-94 exit ramp are expected to extend to mainline I-94 during the AM and PM peak hours.

Table 24 – Opening Year Comprehensive Plan Build (2024) Queue Summary

Intersection	Approach	Movement	Storage Length (feet)	AM Peak Hour		PM Peak Hour	
				Average Queue (feet)	95 th Percentile Queue (feet)	Average Queue (feet)	95 th Percentile Queue (feet)
Dowling Avenue & Lyndale Avenue	Westbound	LT	150	51	130	106	270
		TH/RT	570	179	319	360	594
Dowling Avenue & East I-94 Ramps	Southbound	LT	450	626	1,357	662	1,335
		TH/RT	1,355	363	1,166	533	1,249
	Eastbound	TH	570	325	684	265	611
		LT	150	62	130	122	243
	Westbound	TH	400	85	196	193	386
		LT/TH	1,750	150	275	266	454
Dowling Avenue & West I-94 Ramps	Northbound	RT	540	157	336	317	720
		LT	165	227	364	178	346
	Eastbound	TH	410	368	567	326	587
		TH/RT	185	56	154	139	263
	Westbound	LT	120	94	192	132	180
		TH/RT	185	236	263	228	276
Dowling Avenue & Washington Avenue	Eastbound	LT/TH	215	110	178	169	244
Lowry Avenue & Washington Avenue	Westbound	LT/TH	215	134	219	150	256
Lowry Avenue & 2 nd Street	Eastbound	LT/TH	215	134	219	150	256

HORIZON YEAR BUILD

Due to the traffic operations issues identified in the Opening Year Build scenarios, the Horizon Year Build scenarios without mitigation were not analyzed. These scenarios would be expected to demonstrate increasingly poor traffic operations as background traffic grows. Therefore, the Horizon Year Build scenarios were only analyzed with mitigation, as documented in the next section.

MITIGATION PLAN

The analysis of the Opening Year Build conditions demonstrated that the existing transportation network would be expected to have operational issues as a result of the development vehicle traffic. The City of Minneapolis' policy guidance provides direction on the type and scope of mitigation measures that should be considered for this development. The city's draft Transportation Action Plan (TAP) identifies a mode shift goal of 3 of every 5 trips being made by walking, biking, or transit by 2030. Both the TAP and the Vision Zero Action Plan promote narrower roadways that prioritize pedestrian and bicycle access, comfort and safety.

As a result, the Mitigation Plan for this development seeks to balance the need for vehicle mobility with the city's desire to expand non-motorized transportation. The mitigation measures identified in this plan address key issues such as queuing onto mainline I-94 without overbuilding the roadway capacity, which would serve to encourage growth in vehicle traffic as well as facilitating higher vehicle speeds.

The Mitigation Plan for vehicle traffic is identified in two phases that implement traffic improvements only as they are needed based on development intensity and vehicle traffic levels.

- Phase A – Development intensity generates less than 6,000 trips per day and forecast daily vehicle volumes on Dowling Avenue at Washington Avenue (with development traffic) are less than 15,000 vehicles per day. This mitigation is expected to be applicable to both development scenarios:
 - Coordinated Plan Phase 1 and Phase 2 Development
 - Comprehensive Plan Phase 1 Development
- Phase B – Development intensity generates 6,000 trips per day or more and forecast daily vehicle volumes on Dowling Avenue at Washington Avenue (with development traffic) are 15,000 vehicles per day or more. This mitigation is expected to be applicable only to the Comprehensive Plan development.
 - Comprehensive Plan Phase 2 Development

PHASE A MITIGATION PLAN

The Phase A Mitigation Plan consists of measures to reduce vehicle traffic demand of the development as well as to manage vehicle traffic operations.

1. Develop robust travel demand management plans (TDMP) with each phase or sub-phase of the development. The TDMPs should be completed in parallel with the city's site plan review process and should detail comprehensive strategies to encourage the use of alternative modes of travel, enhance the pedestrian environment, reduce parking demand, and create a balance between all users of the local transportation system.
2. Work with Metro Transit to bring convenient and frequent transit service closer to the site. This is consistent with the city's modal transportation goals and will reduce the reliance on motor vehicles.
3. Develop a comprehensive event transportation management plan (TMP) for the music venue and the park. The parameters for the event TMP are detailed in a later section of this report.
4. Improve the bikeway on Dowling Avenue from on-street bicycle lanes to a protected bikeway to make bicycling a safer and more comfortable option for users of all ages and abilities.
5. Construct a westbound right-turn lane at the Dowling Avenue & West I-94 Ramps intersection. The

turn lane should extend the full distance between the West I-94 Ramps and Washington Avenue due to the short distance between these intersections. There is no existing turn lane, and the recommended turn lane length is 190 feet.

6. Extend the eastbound left-turn lane at the Dowling Avenue & Washington Avenue intersection to the full distance between Washington Avenue and the West I-94 Ramps due to the short distance between these intersections. The existing left-turn lane is approximately 90 feet long and the recommended turn lane length is 190 feet.
7. Construct a northbound left-turn lane at the Dowling Avenue & Washington Avenue intersection. There is no existing turn lane, and the recommended turn lane length is 300 feet based on the existing and projected left-turn volumes.
8. Install protected/permissive left-turn signal phasing for all left-turn movements at the Dowling Avenue & Washington Avenue intersection.
9. Install protected/permissive left-turn phasing for the eastbound left-turn movement at the Lowry Avenue & Washington Avenue intersection. The left-turn phase should operate as a leading phase only because a left-turn lane is not proposed to be constructed.
10. Install protected/permissive left-turn phasing for the eastbound left-turn movement at the Lowry Avenue & 2nd Street intersection. The left-turn phase should operate as a leading phase only because a left-turn lane is not proposed to be constructed.

Roundabouts were considered for the intersections on Dowling Avenue but were not included in the mitigation plan based on the following:

- Roundabouts sized to accommodate the projected traffic volumes could encompass a large land expanse, impacting developable area.
- The City of Minneapolis has concerns with the priority of pedestrians and bicycles at a roundabout.
- A roundabout or system of roundabouts could conflict with the pedestrian- and neighborhood-focused environment the City endeavors to create in this portion of the City.

The geometric and traffic signal improvements included in the Phase A mitigation plan are shown in **Figure 14**. The traffic analysis results of the Opening Year Coordinated Plan Build, Opening Year Comprehensive Plan Build, and Horizon Year Coordinated Plan Build with the Phase A mitigations are detailed in the following sections.

OPENING YEAR COORDINATED PLAN BUILD WITH PHASE A MITIGATION

Opening Year Coordinated Plan Build (2024) with Phase A Mitigation conditions were analyzed to determine the traffic impacts from the addition of the Coordinated Plan site traffic with the Phase A mitigation measures. The signal timing cycle lengths were assumed to remain the same as the Existing Conditions (2020), however, the splits were optimized. The signal timing on Dowling Avenue was set to favor the traffic on the I-94 ramps and avoid queues onto mainline I-94. The results of the analysis are provided in **Table 25** for the weekday AM and PM peak hours. The movement LOS results at the study intersections are summarized in **Appendix C**.

Based on the Opening Year Coordinated Plan Build (2024) with Phase A Mitigation capacity analysis for the AM and PM peak hours, the study intersections are anticipated to operate at LOS D or better except for the following:

- Dowling Avenue & Lyndale Avenue – Anticipated to operate at LOS E in the AM peak, which is the same as the Opening Year No Build Conditions, and LOS F in the PM peak which is worse than LOS E reported for the Opening Year No Build Conditions. The operations at this intersection improve slightly with mitigation due to the reduced queuing on Dowling Avenue.

Table 25 – Opening Year Coordinated Plan Build (2024) with Phase A Mitigation Intersection Analysis

Intersection	Traffic Control	AM Peak Hour		PM Peak Hour	
		Delay (s/veh)	LOS	Delay (s/veh)	LOS
Dowling Avenue & Lyndale Avenue	Signalized	62.4	E	80.2	F
Dowling Avenue & East I-94 Ramps	Signalized	22.7	C	41.2	D
Dowling Avenue & West I-94 Ramps	Signalized	23.2	C	51.6	D
Dowling Avenue & Washington Avenue	Signalized	23.5	C	29.8	C
Washington Avenue & 36th Avenue & 2nd Street	Side Street Stop	1.1	A	2.4	A
Washington Avenue & 33rd Avenue	Side Street Stop	1.1	A	1.6	A
2nd Street & 33rd Avenue	Side Street Stop	2.3	A	2.5	A
Lowry Avenue & Washington Avenue	Signalized	18.0	B	37.2	D
Lowry Avenue & 2nd Street	Signalized	20.2	C	30.1	C
Parkway Drive & Dowling Avenue	Side Street Stop	3.1	A	3.4	A
33rd Avenue/Parkway Drive & Parcel 4 & Parcel 5	Side Street Stop	1.2	A	1.3	A
Parkway Drive & Parcel 1a Access	Side Street Stop	1.9	A	1.9	A
Parkway Drive & Parcel 1b Access	Side Street Stop	1.6	A	1.7	A
Parkway Drive & Parcel 2 Access	Side Street Stop	0.3	A	0.3	A
Parkway Drive & Parcel 3 Access	Side Street Stop	0.2	A	0.6	A
Parkway Drive & Parcel 4 Access	Side Street Stop	0.4	A	1.5	A
Parkway Drive & Parcel 5 Access	Side Street Stop	0.4	A	1.7	A
Washington Ave & Parcel 7a & 6a Access	Side Street Stop	1.4	A	2.7	A
Washington Ave & Parcel 7b & 6b Access	Side Street Stop	0.9	A	1.7	A

The average and 95th percentile queues are summarized in **Table 26**. In the Opening Year Coordinated Plan Build Conditions with Phase A Mitigation, the 95th percentile queues of several movements on Dowling Avenue and Lowry Avenue exceed the storage distance in the AM and PM peak hours. The 95th percentile queues that exceed the storage are generally the same as the Opening Year Coordinated Plan Build Conditions without mitigation in the PM peak hour. However, there are fewer 95th percentile queue issues in the AM peak hour, and none of the average queues exceed the available storage distance. The average queues being less than the available storage distance and significantly less than the 95th percentile queues, which indicates that the 95th percentile queue lengths would be expected to occur only a few times in the peak hour. The queues on the I-94 ramps are not expected to reach mainline I-94. The geometric improvements significantly reduced the northbound queuing on Washington Avenue at Dowling Avenue and queues no longer blocked the site accesses for parcels 6 and 7.

The City of Minneapolis prioritizes non-auto movements and safety. The intersections continue to function for vehicle traffic with the queues identified during peak hours, therefore improvements to increase vehicle capacity and address these queues are not being considered for the Opening Year Build scenario.

Table 26 – Opening Year Coordinated Plan Build (2024) with Phase A Mitigation Queue Summary

Intersection	Approach	Movement	Storage Length (feet)	AM Peak Hour		PM Peak Hour	
				Average Queue (feet)	95 th Percentile Queue (feet)	Average Queue (feet)	95 th Percentile Queue (feet)
Dowling Avenue & Lyndale Avenue	Westbound	LT	150	58	163	143	318
		TH/RT	570	182	318	466	709
Dowling Avenue & East I-94 Ramps	Southbound	LT	450	238	374	265	483
		TH/RT	1,355	133	289	209	372
	Eastbound	TH	570	95	225	141	341
		LT	150	42	88	117	256
	Westbound	TH	400	32	105	235	500
		LT/TH	1,750	146	264	324	719
Dowling Avenue & West I-94 Ramps	Northbound	RT	540	160	454	324	910
		LT	200	91	191	145	288
	Eastbound	TH	410	91	240	177	448
		TH	160	30	86	100	192
	Westbound	LT	160	57	129	135	210
		TH/RT	160	139	185	128	207
Dowling Avenue & Washington Avenue	Eastbound	LT/TH	215	119	192	164	243
Lowry Avenue & Washington Avenue	Westbound	LT/TH	215	113	192	137	236
Lowry Avenue & 2 nd Street	Eastbound	LT/TH	215	113	192	137	236

OPENING YEAR COMPREHENSIVE PLAN BUILD WITH PHASE A MITIGATION

Opening Year Comprehensive Plan Build (2024) with Phase A Mitigation conditions were analyzed to determine the traffic impacts from the addition of the Comprehensive Plan site traffic with the Phase A mitigation measures. The signal timing cycle lengths were assumed to remain the same as the Existing Conditions (2020), however, the splits were optimized. The signal timing on Dowling Avenue was set to favor the traffic on the I-94 ramps and avoid queues onto mainline I-94.

The results of the analysis are provided in **Table 27** for the weekday AM and PM peak hours. The movement LOS results at the study intersections are summarized in **Appendix C**.

Based on the Opening Year Comprehensive Plan Build (2024) with Phase A mitigation capacity analysis for the AM peak hour, the study intersections are anticipated to operate at LOS D or better except for the following:

- Dowling Avenue & Lyndale Avenue – Anticipated to operate at LOS E in the AM peak, which is the same as the Opening Year No Build Conditions, and LOS F in the PM peak which is worse than LOS E reported for the Opening Year No Build Conditions. The operations at this intersection improve slightly with mitigation due to the reduced queuing on Dowling Avenue.

Table 27 – Opening Year Comprehensive Plan Build (2024) with Phase A Mitigation Intersection Analysis

Intersection	Traffic Control	AM Peak Hour		PM Peak Hour	
		Delay (s/veh)	LOS	Delay (s/veh)	LOS
Dowling Avenue & Lyndale Avenue	Signalized	72.6	E	87.2	F
Dowling Avenue & East I-94 Ramps	Signalized	32.4	C	40.5	D
Dowling Avenue & West I-94 Ramps	Signalized	53.0	D	47.5	C
Dowling Avenue & Washington Avenue	Signalized	27.3	C	35.0	C
Washington Avenue & 36th Avenue & 2nd Street	Side Street Stop	1.4	A	3.6	A
Washington Avenue & 33rd Avenue	Side Street Stop	1.3	A	1.8	A
2nd Street & 33rd Avenue	Side Street Stop	2.9	A	3.1	A
Lowry Avenue & Washington Avenue	Signalized	18.2	B	38.2	D
Lowry Avenue & 2nd Street	Signalized	20.2	C	39.0	D
Parkway Drive & Dowling Avenue	Side Street Stop	3.7	A	3.8	A
33rd Avenue/Parkway Drive & Parcel 4 & Parcel 5	Side Street Stop	1.5	A	1.6	A
Parkway Drive & Parcel 1a Access	Side Street Stop	2.0	A	1.9	A
Parkway Drive & Parcel 1b Access	Side Street Stop	1.7	A	1.8	A
Parkway Drive & Parcel 2 Access	Side Street Stop	0.4	A	0.5	A
Parkway Drive & Parcel 3 Access	Side Street Stop	0.2	A	0.6	A
Parkway Drive & Parcel 4 Access	Side Street Stop	0.7	A	1.8	A
Parkway Drive & Parcel 5 Access	Side Street Stop	0.8	A	2.1	A
Washington Ave & Parcel 7a & 6a Access	Side Street Stop	2.3	A	13.0	B
Washington Ave & Parcel 7b & 6b Access	Side Street Stop	1.7	A	10.4	B

The average and 95th percentile queues are summarized in **Table 28**. In the Opening Year Comprehensive Plan Build Conditions with Phase A Mitigation, the 95th percentile queues of several movements on Dowling Avenue and Lowry Avenue exceed the storage distance in the AM and PM peak hours. The 95th percentile queues that exceed the storage are generally the same as the Opening Year Comprehensive Plan Build Conditions without mitigation in the PM peak hour. However, only one movement has an average queue that exceeds the available storage distance. The average queues being less than the available storage distance and significantly less than the 95th percentile queues indicates that the 95th percentile queue lengths would be expected to occur only a few times in the peak hour. The queues on the I-94 ramps are not expected to reach mainline I-94 but the queues in the PM peak hour are expected to reach over 1,000 feet at times. Similar to the Opening Year Coordinated Plan Build with Phase A Mitigation, the geometric improvements significantly reduced the northbound queuing on Washington Avenue at Dowling Avenue. Queues are still anticipated to block the site accesses for parcels 6 and 7 for a brief period during the PM peak hour.

The City of Minneapolis prioritizes non-auto movements and safety. The intersections continue to function for vehicle traffic with the queues identified during peak hours, therefore improvements to increase vehicle capacity and address these queues are not being considered for the Opening Year Build scenario.

Table 28 – Opening Year Comprehensive Build (2024) with Phase A Mitigation Queue Summary

Intersection	Approach	Movement	Storage Length (feet)	AM Peak Hour		PM Peak Hour	
				Average Queue (feet)	95 th Percentile Queue (feet)	Average Queue (feet)	95 th Percentile Queue (feet)
Dowling Avenue & Lyndale Avenue	Westbound	LT	150	61	167	150	328
		TH/RT	570	197	336	504	672
Dowling Avenue & East I-94 Ramps	Southbound	LT	450	351	672	326	715
		TH/RT	1,355	138	307	207	416
	Eastbound	TH	570	167	380	152	387
		LT	150	54	112	128	260
	Westbound	TH	400	39	105	233	473
		LT	150	54	112	128	260
Dowling Avenue & West I-94 Ramps	Northbound	LT/TH	1,750	171	390	424	1,093
		RT	540	420	997	370	1,095
	Eastbound	LT	200	154	313	144	287
		TH	410	247	494	196	470
	Westbound	TH/RT	160	57	139	115	218
		LT	160	52	115	139	208
Dowling Avenue & Washington Avenue	Eastbound	TH/RT	160	178	194	145	216
		LT	160	52	115	139	208
Lowry Avenue & Washington Avenue	Westbound	LT/TH	215	114	189	172	246
Lowry Avenue & 2 nd Street	Eastbound	LT/TH	215	113	201	154	251

HORIZON YEAR COORDINATED PLAN BUILD WITH PHASE A MITIGATION

Horizon Year Coordinated Plan Build (2040) with Phase A Mitigation conditions were analyzed to determine the traffic impacts from the addition of the Coordinated Plan site traffic with the Phase A mitigation measures. Horizon Year Coordinated Plan Build (2040) turning movement volumes were developed by adding the Coordinated Plan site trips to the Horizon Year No-Build (2040) turning movement volumes in **Figure 5**. The Horizon Year Coordinated Plan Build (2040) turning movement volumes are shown in **Figure 15**. The signal timing cycle lengths were assumed to remain the same as the Existing Conditions (2020), however, the splits were optimized. The results of the analysis are provided in **Table 29** for the weekday AM and PM peak hours. The movement LOS results at the study intersections are summarized in **Appendix C**.

Based on the Opening Year Coordinated Plan Build (2040) with Phase A Mitigation capacity analysis for the AM and PM peak hours, the study intersections are anticipated to operate at LOS D or better except for the following:

- Dowling Avenue & Lyndale Avenue – Anticipated to operate at LOS E in the AM peak hour, which is the same as the Horizon Year No Build Conditions, and LOS F in the PM peak which is slightly worse than the LOS E reported for the Horizon Year No Build Conditions.

Table 29 – Horizon Year Coordinated Plan Build (2040) with Phase A Mitigation Intersection Analysis

Intersection	Traffic Control	AM Peak Hour		PM Peak Hour	
		Delay (s/veh)	LOS	Delay (s/veh)	LOS
Dowling Avenue & Lyndale Avenue	Signalized	68.4	E	77.0	F
Dowling Avenue & East I-94 Ramps	Signalized	23.8	C	34.5	C
Dowling Avenue & West I-94 Ramps	Signalized	30.2	C	52.8	D
Dowling Avenue & Washington Avenue	Signalized	23.9	C	31.2	D
Washington Avenue & 36th Avenue & 2nd Street	Side Street Stop	1.1	A	2.3	A
Washington Avenue & 33rd Avenue	Side Street Stop	1.1	A	1.6	A
2nd Street & 33rd Avenue	Side Street Stop	2.4	A	2.4	A
Lowry Avenue & Washington Avenue	Signalized	18.0	B	26.7	C
Lowry Avenue & 2nd Street	Signalized	20.5	C	40.0	D
Parkway Drive & Dowling Avenue	Side Street Stop	3.4	A	3.5	A
33rd Avenue/Parkway Drive & Parcel 4 & Parcel 5	Side Street Stop	1.2	A	1.3	A
Parkway Drive & Parcel 1a Access	Side Street Stop	2.0	A	1.9	A
Parkway Drive & Parcel 1b Access	Side Street Stop	1.7	A	1.7	A
Parkway Drive & Parcel 2 Access	Side Street Stop	0.3	A	0.3	A
Parkway Drive & Parcel 3 Access	Side Street Stop	0.2	A	0.6	A
Parkway Drive & Parcel 4 Access	Side Street Stop	0.5	A	1.7	A
Parkway Drive & Parcel 5 Access	Side Street Stop	0.4	A	1.8	A
Washington Ave & Parcel 7a & 6a Access	Side Street Stop	1.5	A	3.5	A
Washington Ave & Parcel 7b & 6b Access	Side Street Stop	1.1	A	1.8	A

The average and 95th percentile queues are summarized in **Table 30**. In the Horizon Year Coordinated Plan Build Conditions with Phase A Mitigation, the 95th percentile queues of several movements on Dowling Avenue and Lowry Avenue exceed the storage distance in the AM and PM peak hours. The 95th percentile queues that exceed the storage are the same as the Opening Year Coordinated Plan Build Conditions with Phase A Mitigation. The average queues for these movements are all less than the available storage distance and significantly less than the 95th percentile queues, which indicates that the 95th percentile queue lengths would be expected to occur only a few times in the peak hour. Queues along Dowling Avenue will still extend through multiple intersections. Queues along Washington Avenue are expected to stay within their storage capacity with the 95th percentile queues briefly extending to the Parcel 7a & 6a site access. Queues on the I-94 ramps are anticipated to stay within the ramp capacity and not extend onto mainline I-94.

The City of Minneapolis prioritizes non-auto movements and safety. The intersections continue to function for vehicle traffic with the queues identified during peak hours. However, if traffic volumes exceed 15,000 vehicles per day on Dowling Avenue at Washington Avenue or the traffic congestion causes broader operational or safety issues, then the City may consider the Phase B mitigation measures.

Table 30 – Horizon Year Coordinated Plan Build (2040) with Phase A Mitigation Queue Summary

Intersection	Approach	Movement	Storage Length (feet)	AM Peak Hour		PM Peak Hour	
				Average Queue (feet)	95 th Percentile Queue (feet)	Average Queue (feet)	95 th Percentile Queue (feet)
Dowling Avenue & Lyndale Avenue	Westbound	LT	150	80	208	139	313
		TH/RT	570	209	357	463	683
Dowling Avenue & East I-94 Ramps	Southbound	LT	450	251	422	279	584
		TH/RT	1,355	145	312	205	364
	Eastbound	TH	570	118	246	113	258
	Westbound	LT	150	46	92	106	243
		TH	400	41	111	202	464
	Dowling Avenue & West I-94 Ramps	Northbound	LT/TH	1,750	173	382	357
RT			540	244	724	412	1,109
Eastbound		LT	200	101	198	148	298
		TH	410	108	265	180	448
Westbound		TH	160	33	90	86	186
Dowling Avenue & Washington Avenue		Eastbound	LT	160	58	129	140
	TH/RT		160	144	186	128	211
Lowry Avenue & Washington Avenue	Westbound	LT/TH	215	113	182	103	167
Lowry Avenue & 2 nd Street	Eastbound	LT/TH	215	109	190	87	154

PHASE B MITIGATION PLAN

The operations of the Horizon Year Comprehensive Plan Build conditions with Phase A mitigation showed significant remaining operational issues and queues that would extend the length of Dowling Avenue and the I-94 Ramps. If development intensity and traffic volumes reach these levels, additional measures would be needed to mitigate the impacts of the development vehicle traffic. Along with the implementation of the mitigation measures identified in Phase A, the following additional mitigation measures are identified for Phase B:

1. Extend the eastbound left-turn lane at the Dowling Avenue & West I-94 Ramps intersection to the full distance between the West I-94 Ramps and the East I-94 Ramps. The existing left-turn lane is approximately 145 feet long and the recommended turn lane length is 380 feet.
2. Extend the westbound left-turn lane at the Dowling Avenue & East I-94 Ramps intersection to the full distance between the East I-94 Ramps and Washington Avenue. The lane would be designated as an additional westbound through lane at the West I-94 Ramps intersection. The existing left-turn lane is approximately 125 feet long and the recommended turn lane length is 600 feet.
3. Construct an eastbound right-turn lane at the Dowling Avenue & Washington Avenue intersection to the full distance between Washington Avenue and the West I-94 Ramps. There is no existing turn lane and the recommended turn lane length is 190 feet.

The combination of Phase B mitigation measures 1 and 2, in addition to the Phase A mitigation, will require either widening of the Dowling Avenue bridge over I-94 or removal of the bicycle facility on the existing bridge.

The geometric improvements included in the Phase B mitigation plan are shown in **Figure 14**. The traffic analysis results of the Horizon Year Comprehensive Plan Build with the Phase B mitigations are detailed in the following section.

HORIZON YEAR COMPREHENSIVE PLAN BUILD WITH PHASE B MITIGATION

Horizon Year Comprehensive Plan Build (2040) with Phase B Mitigation conditions were analyzed to determine the traffic impacts from the addition of the site traffic. Horizon Year Comprehensive Plan Build (2040) turning movement volumes were developed by adding the Comprehensive Plan site trips to the Horizon Year No-Build (2040) turning movement volumes in **Figure 5**. The Horizon Year Comprehensive Plan Build (2040) turning movement volumes are shown in **Figure 16**. The signal timing cycle lengths were assumed to remain the same as the Existing Conditions (2020), however, the splits were optimized. The results of the analysis are provided in **Table 31** for the weekday AM and PM peak hours. The movement LOS results at the study intersections are summarized in **Appendix C**.

Based on the Horizon Year Comprehensive Plan Build (2040) with Phase B Mitigation capacity analysis for the AM and PM peak hours, the study intersections are anticipated to operate at LOS D or better except for the following:

- Dowling Avenue & Lyndale Avenue – Anticipated to operate at the LOS E/F threshold in the AM peak hour and LOS F in the PM peak hour, compared with LOS E in the Horizon Year No-Build Conditions.

Table 31 – Horizon Year Comprehensive Plan Build (2040) with Phase B Mitigation Intersection Analysis

Intersection	Traffic Control	AM Peak Hour		PM Peak Hour	
		Delay (s/veh)	LOS	Delay (s/veh)	LOS
Dowling Avenue & Lyndale Avenue	Signalized	76.0	E	76.5	E
Dowling Avenue & East I-94 Ramps	Signalized	23.0	C	32.6	C
Dowling Avenue & West I-94 Ramps	Signalized	15.0	B	30.3	C
Dowling Avenue & Washington Avenue	Signalized	24.3	C	40.4	D
Washington Avenue & 36th Avenue & 2nd Street	Side Street Stop	1.3	A	3.0	A
Washington Avenue & 33rd Avenue	Side Street Stop	1.2	A	1.8	A
2nd Street & 33rd Avenue	Side Street Stop	3.0	A	3.3	A
Lowry Avenue & Washington Avenue	Signalized	18.2	B	48.3	D
Lowry Avenue & 2nd Street	Signalized	22.6	C	48.8	D
Parkway Drive & Dowling Avenue	Side Street Stop	3.8	A	4.1	A
33rd Avenue/Parkway Drive & Parcel 4 & Parcel 5	Side Street Stop	1.5	A	1.5	A
Parkway Drive & Parcel 1a Access	Side Street Stop	2.1	A	2.0	A
Parkway Drive & Parcel 1b Access	Side Street Stop	1.7	A	1.9	A
Parkway Drive & Parcel 2 Access	Side Street Stop	0.5	A	0.4	A
Parkway Drive & Parcel 3 Access	Side Street Stop	0.6	A	0.8	A
Parkway Drive & Parcel 4 Access	Side Street Stop	0.8	A	1.8	A
Parkway Drive & Parcel 5 Access	Side Street Stop	0.8	A	2.3	A
Washington Ave & Parcel 7a & 6a Access	Side Street Stop	2.2	A	10.2	B
Washington Ave & Parcel 7b & 6b Access	Side Street Stop	1.5	A	7.5	A

The average and 95th percentile queues are summarized in **Table 32**. In the Horizon Year Comprehensive Plan Build Conditions with Phase B Mitigation, the 95th percentile queues of several movements on Dowling Avenue and Lowry Avenue exceed the storage distance in the AM and PM peak hours. Fewer movements

have 95th percentile queues that exceed their storage compared to the Opening Year Comprehensive Build Conditions with Phase A Mitigation and the queuing is similar to the Horizon Year Coordinated Build Conditions with Phase A Mitigation. The additional mitigation measures for the Comprehensive Plan development in the horizon year does not eliminate all the queuing along Dowling Avenue. However, the additional lanes provide the stacking distance to avoid excessive queuing that would result in gridlocked intersections or impacts to mainline I-94. Queues along Washington Avenue are expected to stay within their storage capacity with the 95th percentile queues briefly extending to the Parcel 7a & 6a site access. With the Phase B mitigation, queues on the I-94 ramps are anticipated to stay within the ramp storage distance and not extend onto I-94.

Table 32 – Horizon Year Comprehensive Build (2040) with Phase B Mitigation Queue Summary

Intersection	Approach	Movement	Storage Length (feet)	AM Peak Hour		PM Peak Hour	
				Average Queue (feet)	95 th Percentile Queue (feet)	Average Queue (feet)	95 th Percentile Queue (feet)
Dowling Avenue & Lyndale Avenue	Westbound	LT	150	65	173	136	307
		TH/RT	570	203	362	414	684
Dowling Avenue & East I-94 Ramps	Southbound	LT	450	280	424	298	585
		TH/RT	1,355	118	238	248	514
	Eastbound	TH	570	128	267	71	237
	Westbound	LT	150	53	107	105	223
		TH	400	52	133	157	354
Dowling Avenue & West I-94 Ramps	Northbound	LT/TH	1,750	156	280	258	459
		RT	540	114	296	207	600
	Eastbound	LT	200	92	172	155	286
		TH	410	52	134	164	406
	Westbound	TH/RT	160	33	92	78	179
		LT	160	77	149	133	211
Dowling Avenue & Washington Avenue	Eastbound	TH/RT	160	111	190	53	121
		LT/TH	215	112	179	89	179
Lowry Avenue & Washington Avenue	Westbound	LT/TH	215	110	199	123	224
Lowry Avenue & 2 nd Street	Eastbound	LT/TH	215	110	199	123	224

EVENT TRANSPORTATION MANAGEMENT PLAN

The development of a comprehensive event transportation management plan (TMP) is an identified mitigation measure for the music venue that is proposed on parcel 3 of the development and the public park that is proposed on parcel 2 of the development. The event TMP needs to define and address the range of events that would be expected to occur at the site, which could include:

- Weekend evening capacity event at music venue or park
- Weekend day capacity event at music venue or park
- Weekend non-capacity event at music venue or park
- Weekend capacity events at both the music venue and the park
- Weekday evening capacity event at music venue or park, which includes overlap and interaction with PM peak traffic

- Weekday non-capacity event at music venue or park, which includes overlap and interaction with PM peak traffic
- Weekday evening capacity events at both the music venue and the park, which includes overlap and interaction with PM peak traffic

The event transportation management plan will address the following transportation topics, at a minimum:

- Estimated trip generation, including automobile vehicle occupancy
- Identified goals for event mode shares
- Site area access and controls including loading and deliveries
- Communications plan to event attendees
- Transit plan including staging areas and bus stops for regular route transit and shuttles
- Parking plan including on-street vehicle parking, on-site vehicle and bicycle parking, neighborhood vehicle parking, and remote vehicle parking
- Traffic management plan including taxi and ride share areas, pick-up and drop-off zones for persons with mobility needs, and management strategies such as street closures, traffic control agents, and traffic signal timing
- Evaluation plan for event operations

APPENDIX

- A. Figures**
- B. Site Layout and Phasing**
- C. Intersection Delay and LOS**