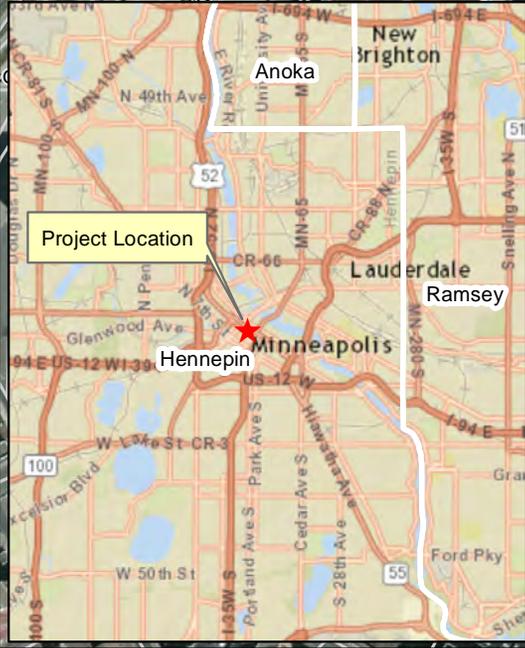
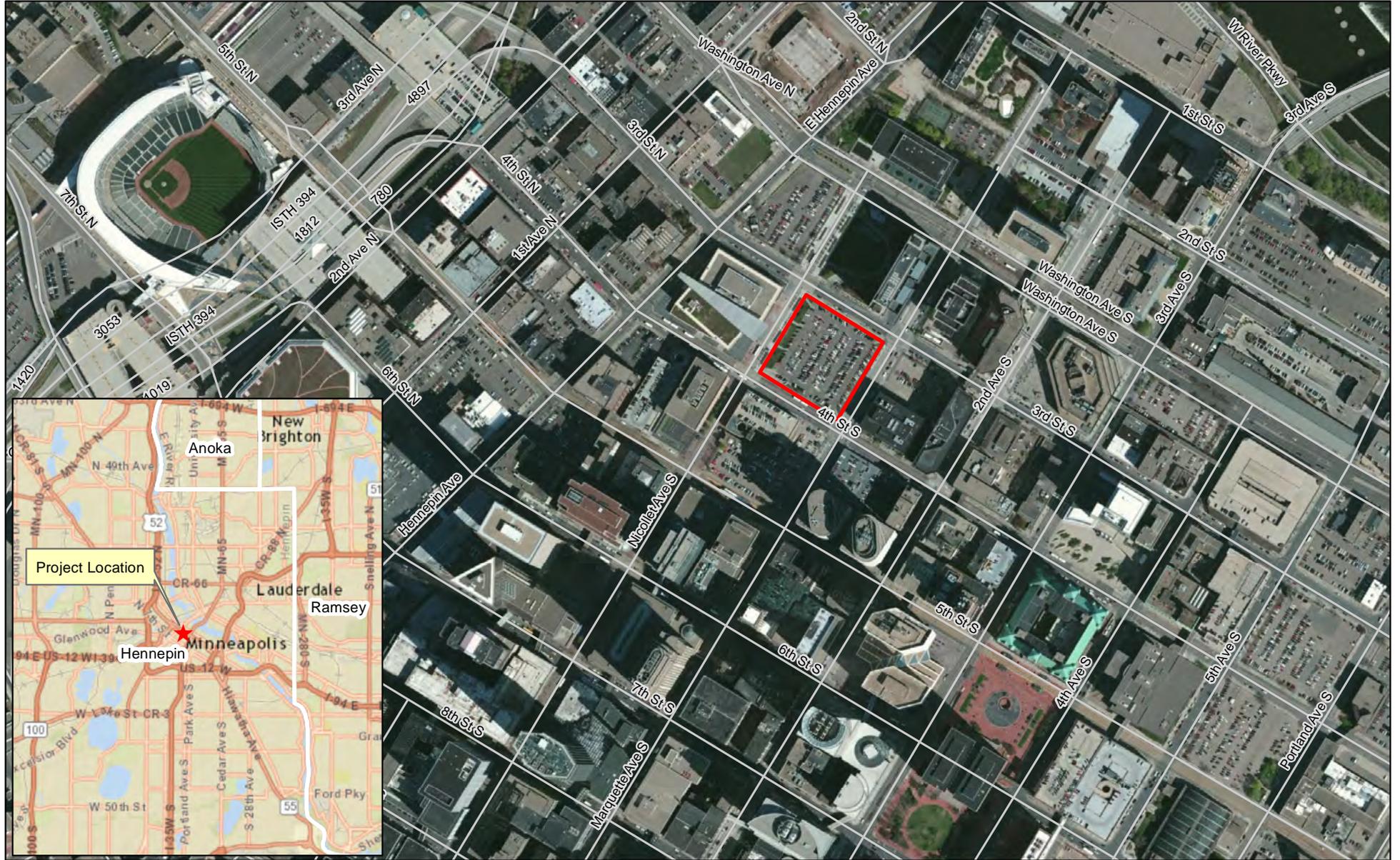


Exhibits 1 - 10

Ritz Block Development EAW, Minneapolis
Hennepin County, Minnesota



Data Source(s): Westwood (2014), MNDOT 2010, ESRI World Imagery and Streets Basemaps (accessed 2014)



Westwood Professional Services, Inc.
 7699 Anagram Drive
 Eden Prairie, MN 55344

PHONE 952-937-5150
 FAX 952-937-5822
 TOLL FREE 1-888-937-5150

www.westwoodps.com



Legend

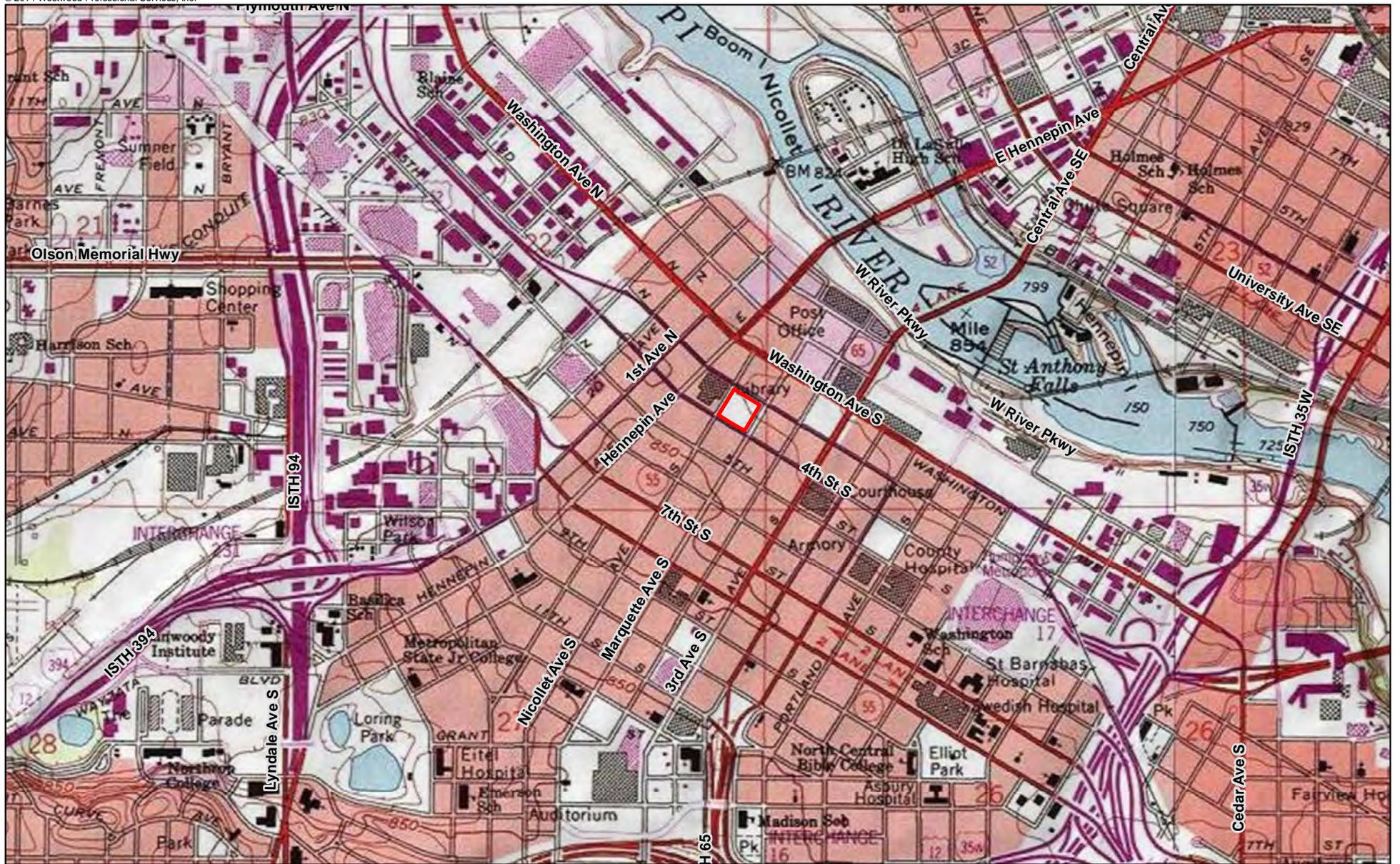
- Project Boundary
- county
- Roads

Ritz Block Property

Minneapolis, Minnesota

Site Location

EXHIBIT 1



Data Source(s): Westwood (2014), MNDOT 2010, ESRI USGS topography basemap (accessed 2014)

Ritz Block Property

Minneapolis, Minnesota

USGS Topography

EXHIBIT 2



Westwood Professional Services, Inc.
 7699 Anagram Drive
 Eden Prairie, MN 55344

PHONE 952-937-5150
 FAX 952-937-5822
 TOLL FREE 1-888-937-5150

www.westwoodps.com



Legend

 Project Boundary

PRIMARY ZONING DISTRICTS

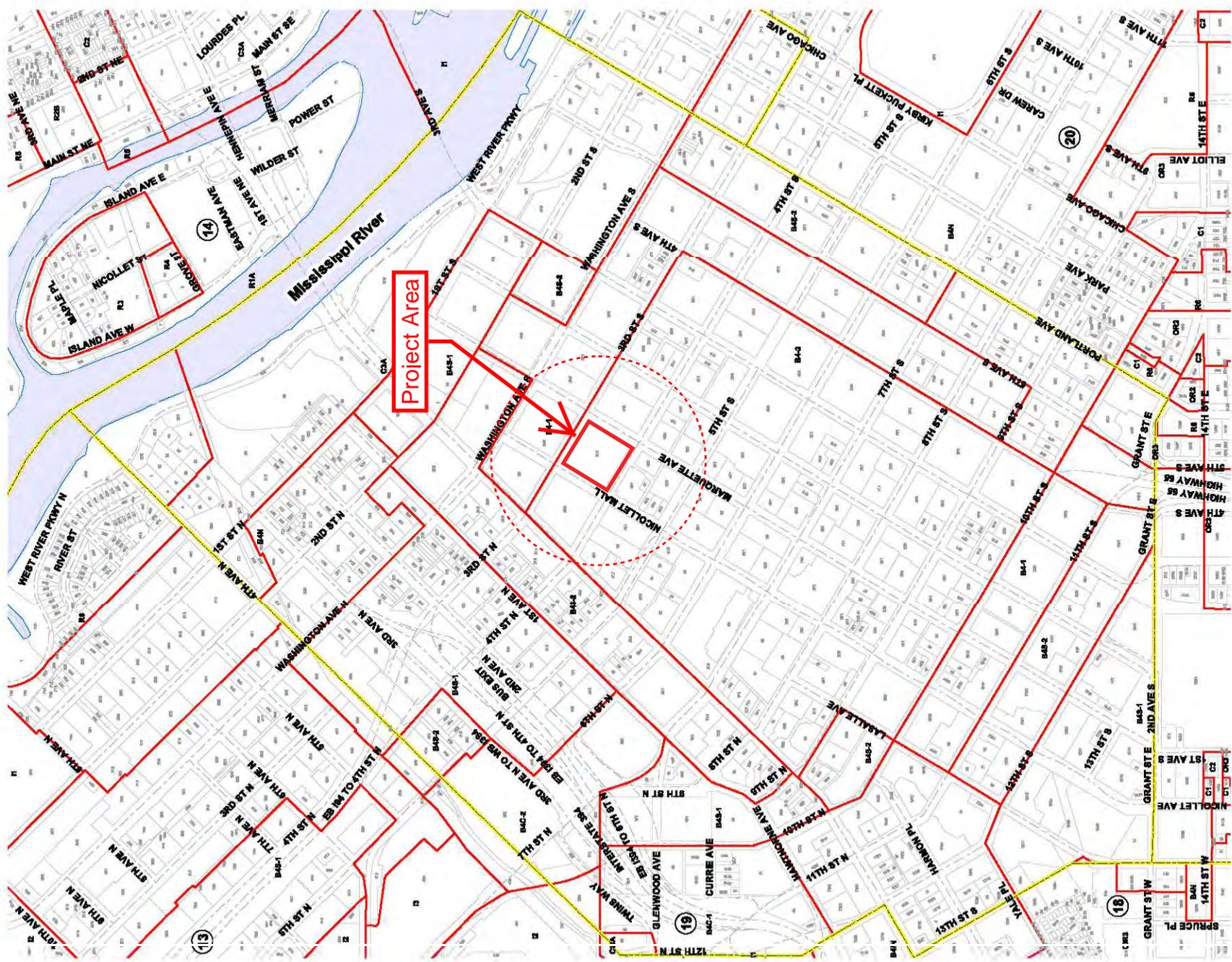


Exhibit 3



- | | | | |
|--|--|--|--|
| RESIDENCE DISTRICT'S
LOW DENSITY
R1A
R2A
R2B
R2C
R2D
R2E
R2F
R2G
R2H
R2I
R2J
R2K
R2L
R2M
R2N
R2O
R2P
R2Q
R2R
R2S
R2T
R2U
R2V
R2W
R2X
R2Y
R2Z | OFFICE RESIDENCE DISTRICTS
OR1
OR2
OR3 | DOWNTOWN DISTRICTS
B4
B4C
B4S | INDUSTRIAL DISTRICTS
I1
I2
I3 |
| MEDIUM DENSITY DISTRICTS
M1
M2
M3
M4
M5
M6
M7
M8
M9
M10
M11
M12
M13
M14
M15
M16
M17
M18
M19
M20
M21
M22
M23
M24
M25
M26
M27
M28
M29
M30
M31
M32
M33
M34
M35
M36
M37
M38
M39
M40
M41
M42
M43
M44
M45
M46
M47
M48
M49
M50
M51
M52
M53
M54
M55
M56
M57
M58
M59
M60
M61
M62
M63
M64
M65
M66
M67
M68
M69
M70
M71
M72
M73
M74
M75
M76
M77
M78
M79
M80
M81
M82
M83
M84
M85
M86
M87
M88
M89
M90
M91
M92
M93
M94
M95
M96
M97
M98
M99
M100 | COMMERCIAL DISTRICTS
C1
C2
C3
C4
C5
C6
C7
C8
C9
C10
C11
C12
C13
C14
C15
C16
C17
C18
C19
C20
C21
C22
C23
C24
C25
C26
C27
C28
C29
C30
C31
C32
C33
C34
C35
C36
C37
C38
C39
C40
C41
C42
C43
C44
C45
C46
C47
C48
C49
C50
C51
C52
C53
C54
C55
C56
C57
C58
C59
C60
C61
C62
C63
C64
C65
C66
C67
C68
C69
C70
C71
C72
C73
C74
C75
C76
C77
C78
C79
C80
C81
C82
C83
C84
C85
C86
C87
C88
C89
C90
C91
C92
C93
C94
C95
C96
C97
C98
C99
C100 | | |

12 PLATE NUMBER

Last Amended : July 22, 2011

MINNEAPOLIS ZONING PLATE 19

OVERLAY ZONING DISTRICTS



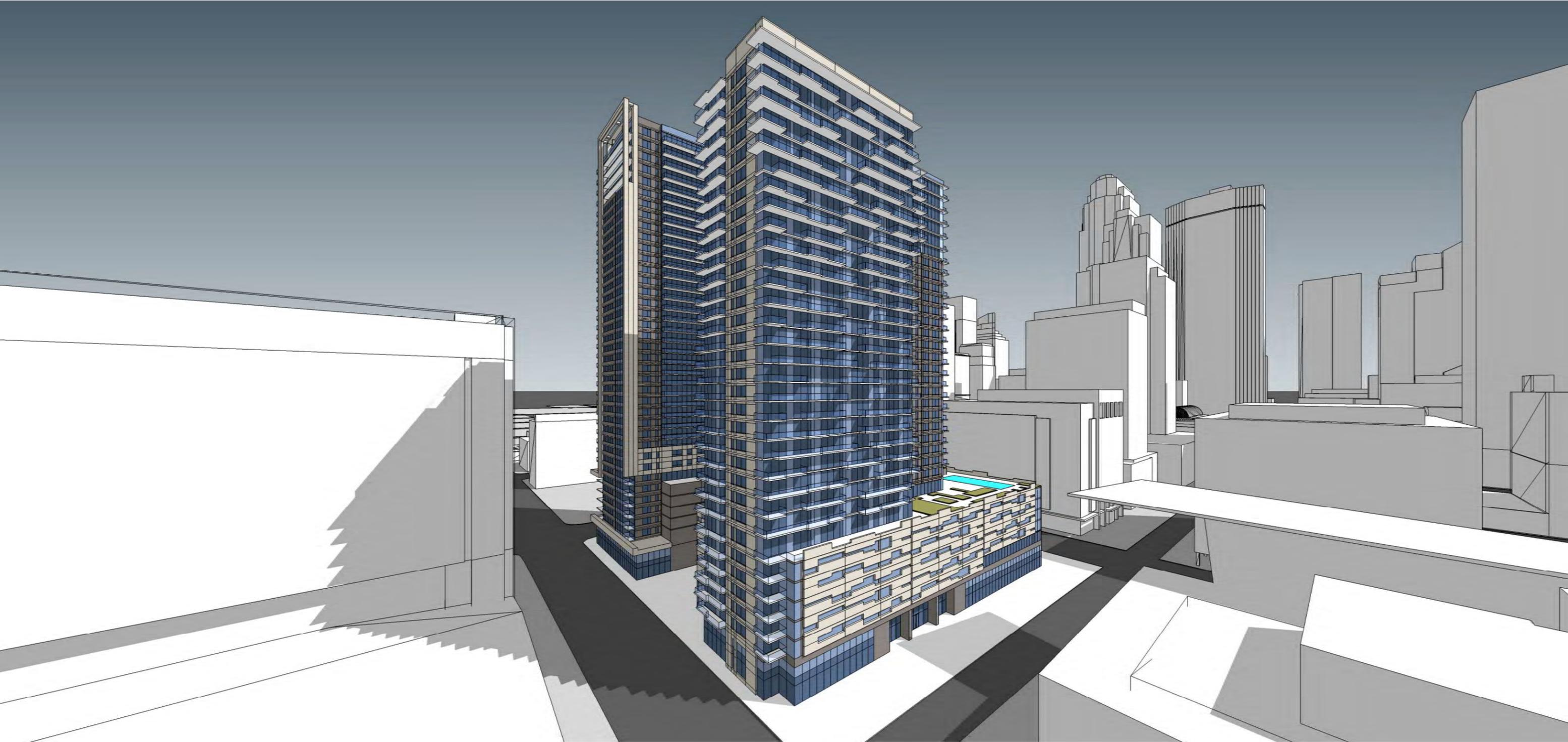
Project Area

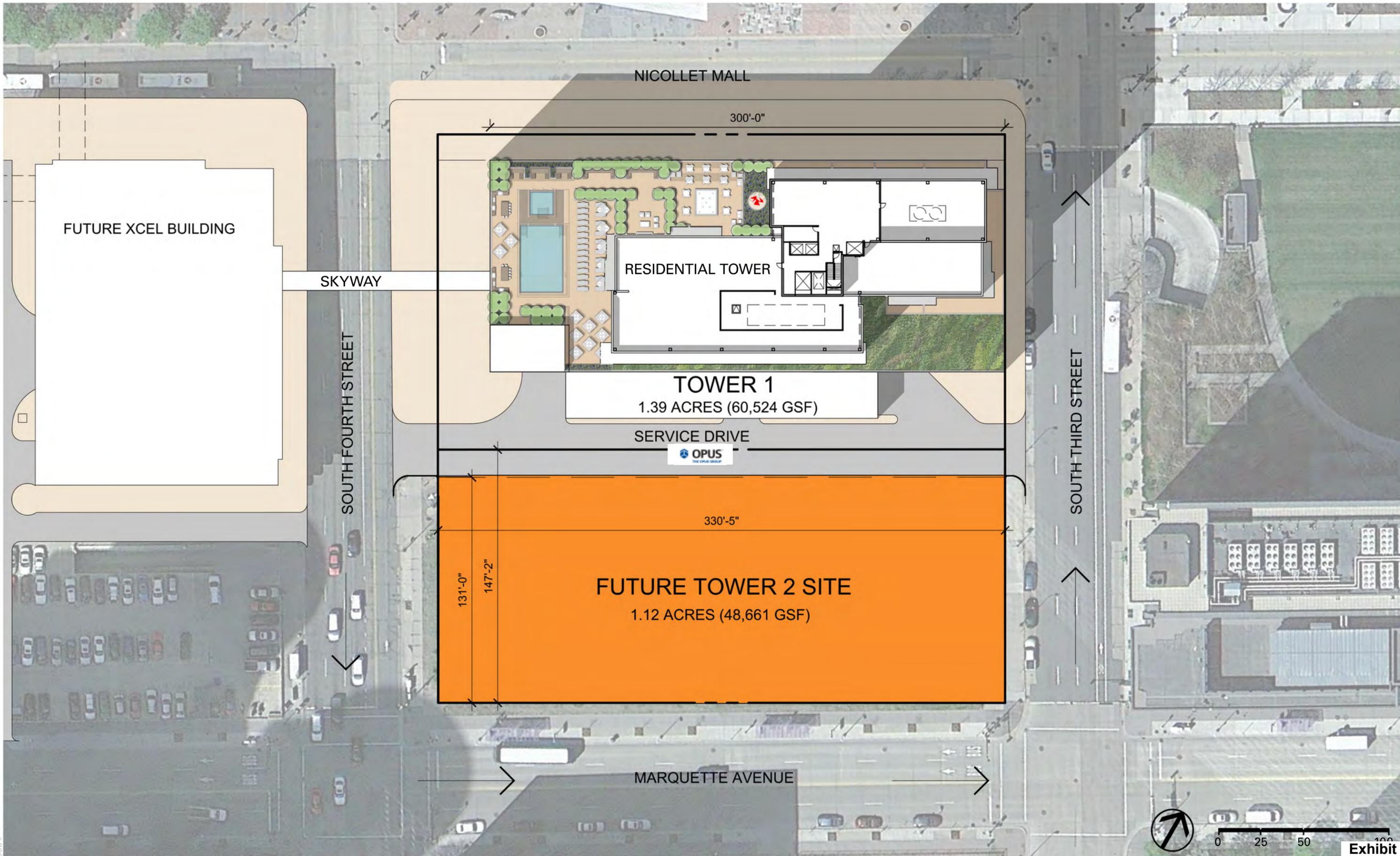
- Overlay Districts**
- Airport
 - Downtown Housing
 - Downtown Height
 - Downtown Parking
 - Downtown Shelter
 - Harmon Area
 - Industrial Living
 - Linden Hills
 - Nicollet Mall
 - North Phillips
 - Pedestrian Oriented
 - Transitional Parking
 - University Area
 - West Broadway
 - Shoreland
 - Floodplain
 - Mississippi River Critical Area

Exhibit 4

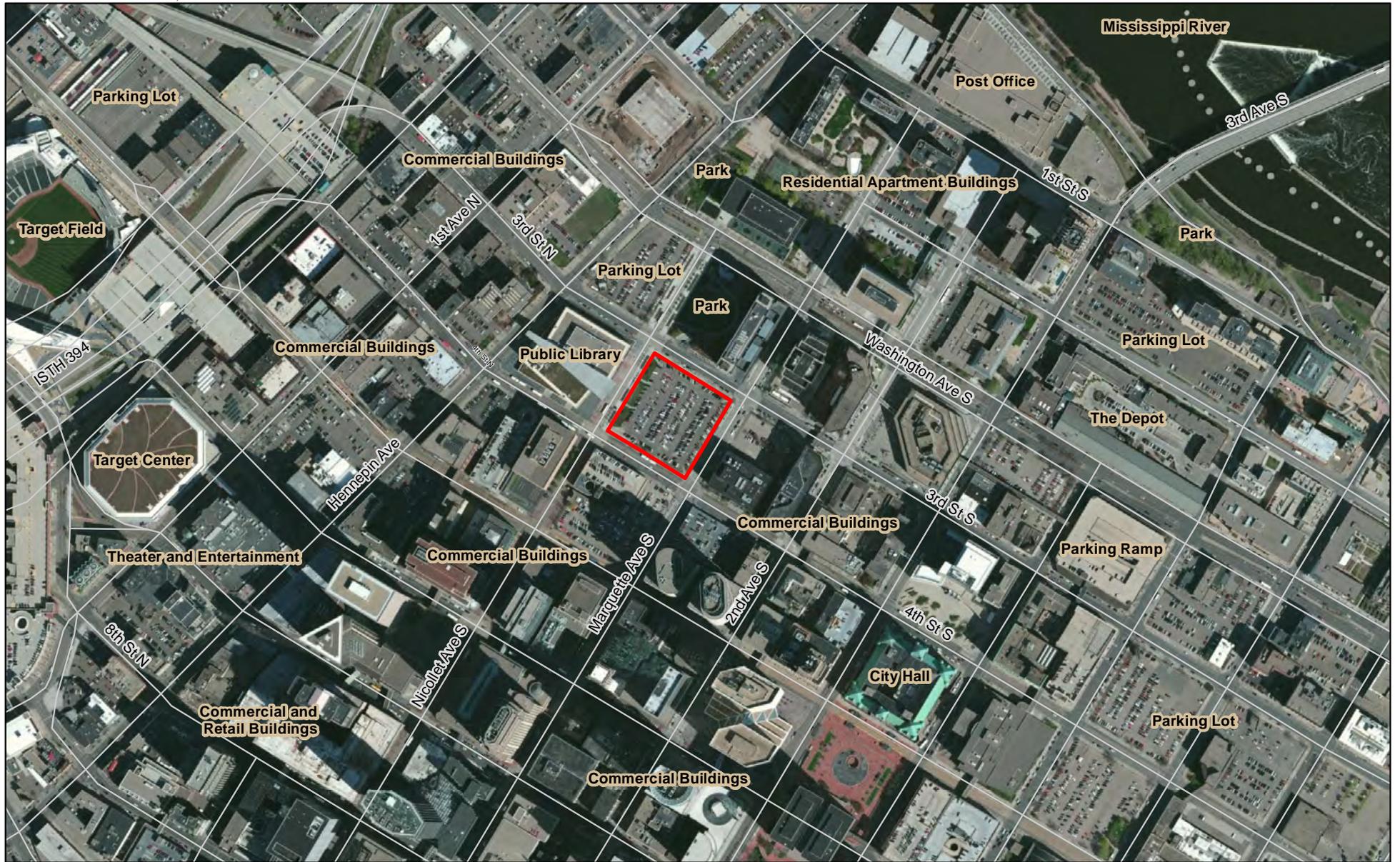


12 ADJOINING PLATE NUMBER
 Last Amended : July 22, 2011





JOB #



Data Source(s): Westwood (2014), MNDOT 2010, USGS (2011), ESRI World Imagery (accessed 2014)



Westwood Professional Services, Inc.
 7699 Anagram Drive
 Eden Prairie, MN 55344

PHONE 952-937-5150
 FAX 952-937-5822
 TOLL FREE 1-888-937-5150

www.westwoodps.com



Legend

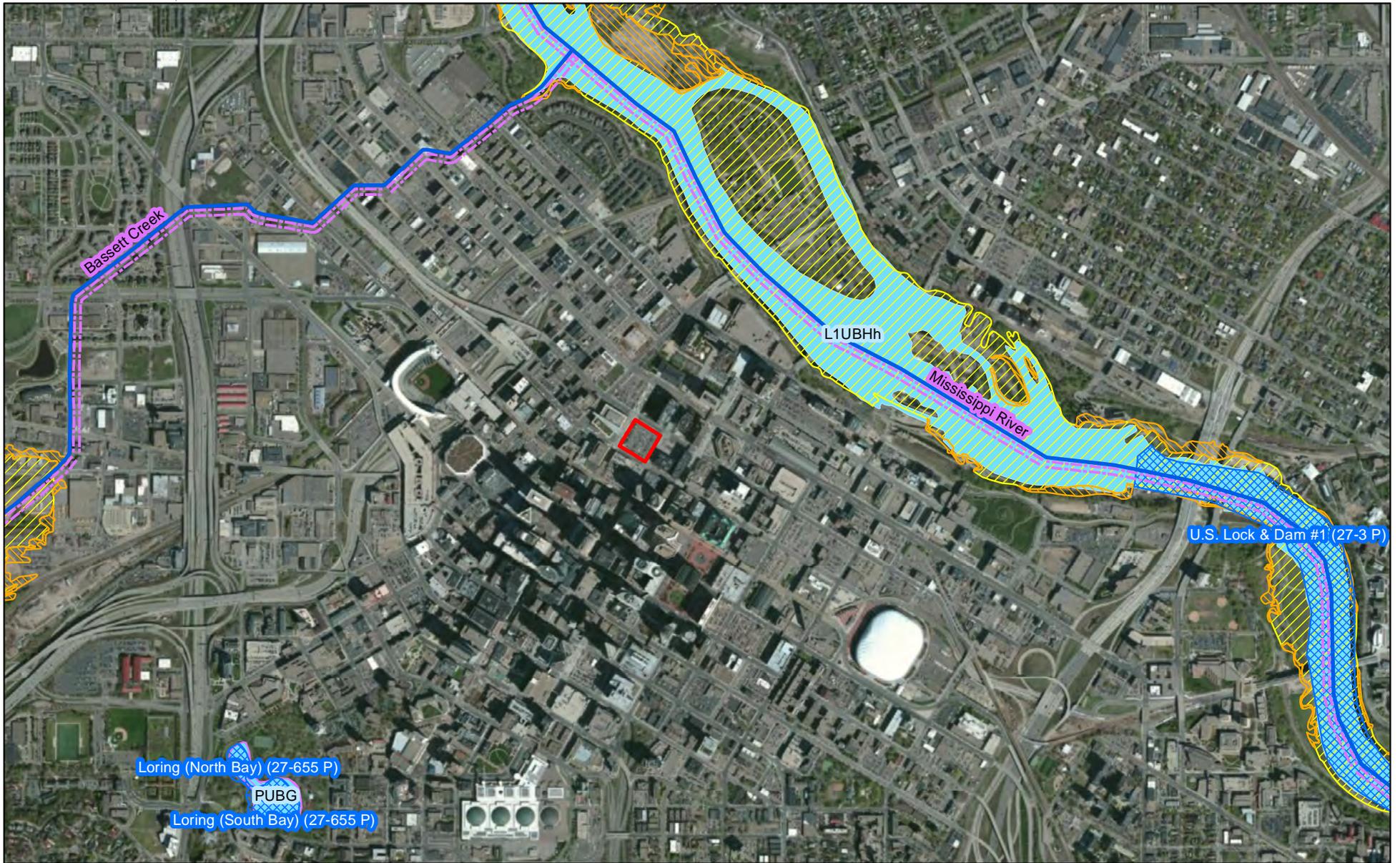
- Project Boundary
- Roads

Ritz Block Property

Minneapolis, Minnesota

Land Use and Land Cover

EXHIBIT 7



Data Source(s): Westwood (2014), MnDNR (2008), U.S. Fish and Wildlife Service (2013), USGS NHD Dataset (2013), ESRI World Imagery Basemap (accessed 2014)

Legend

- Project Boundary
- NHD Flowline
- NHD Waterbody
- MN DNR PWI Watercourse
- MN DNR PWI Waterbody
- NWI
- 100 yr. Flood
- 500 yr. Flood
- Roads

Ritz Block Property

Minneapolis, Minnesota

Water Resources

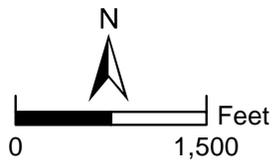
EXHIBIT 8



Westwood Professional Services, Inc.
7699 Anagram Drive
Eden Prairie, MN 55344

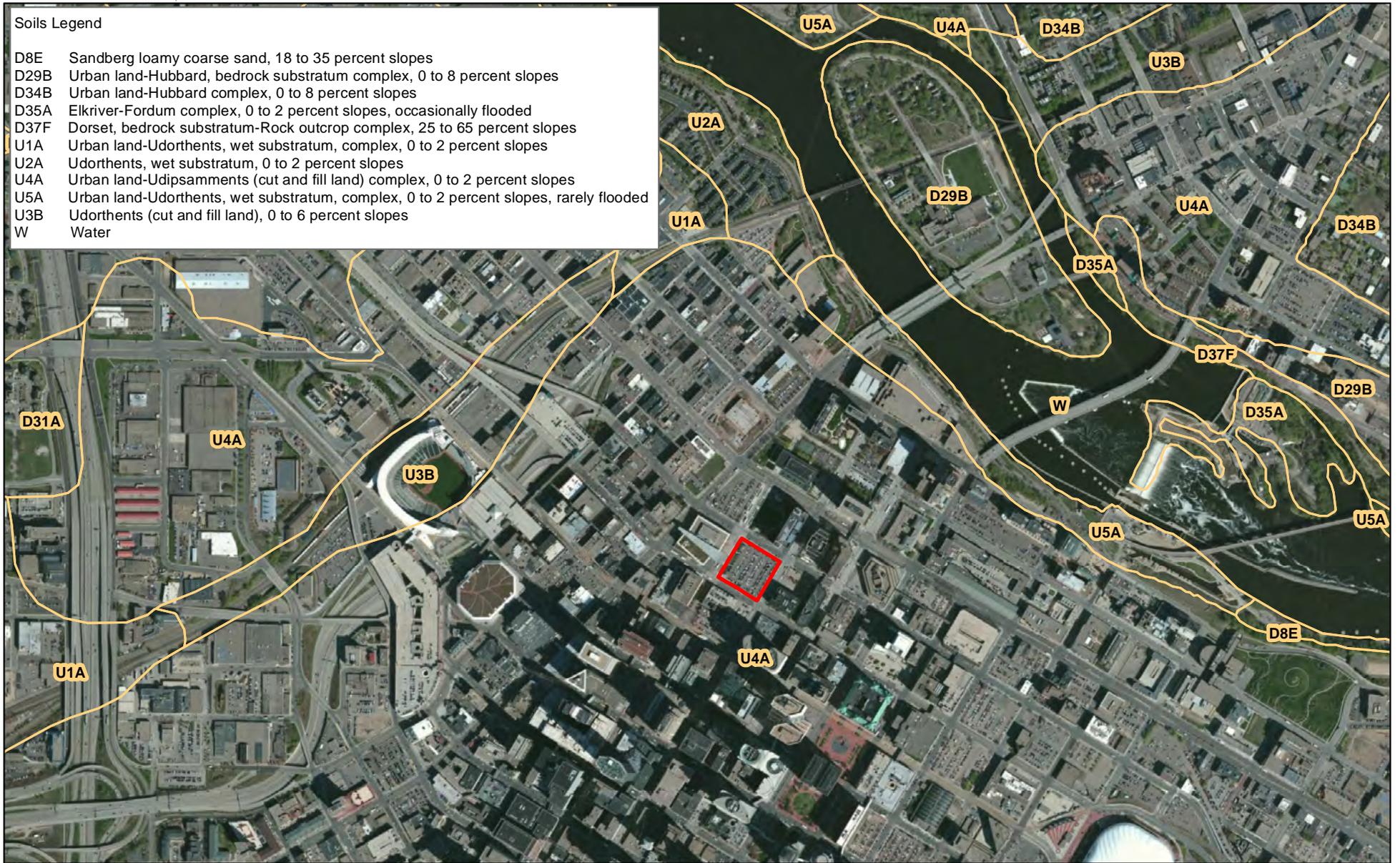
PHONE 952-937-5150
FAX 952-937-5822
TOLL FREE 1-888-937-5150

www.westwoodps.com



Soils Legend

- D8E Sandberg loamy coarse sand, 18 to 35 percent slopes
- D29B Urban land-Hubbard, bedrock substratum complex, 0 to 8 percent slopes
- D34B Urban land-Hubbard complex, 0 to 8 percent slopes
- D35A Elkriver-Fordum complex, 0 to 2 percent slopes, occasionally flooded
- D37F Dorset, bedrock substratum-Rock outcrop complex, 25 to 65 percent slopes
- U1A Urban land-Udorthents, wet substratum, complex, 0 to 2 percent slopes
- U2A Udorthents, wet substratum, 0 to 2 percent slopes
- U4A Urban land-Udipsamments (cut and fill land) complex, 0 to 2 percent slopes
- U5A Urban land-Udorthents, wet substratum, complex, 0 to 2 percent slopes, rarely flooded
- U3B Udorthents (cut and fill land), 0 to 6 percent slopes
- W Water



Data Source(s): Westwood (2014), USDA and NRCS (2010), ESRI World Imagery Basemap (accessed 2014)



Westwood Professional Services, Inc.
 7699 Anagram Drive
 Eden Prairie, MN 55344

PHONE 952-937-5150
 FAX 952-937-5822
 TOLL FREE 1-888-937-5150

www.westwoodps.com



Legend

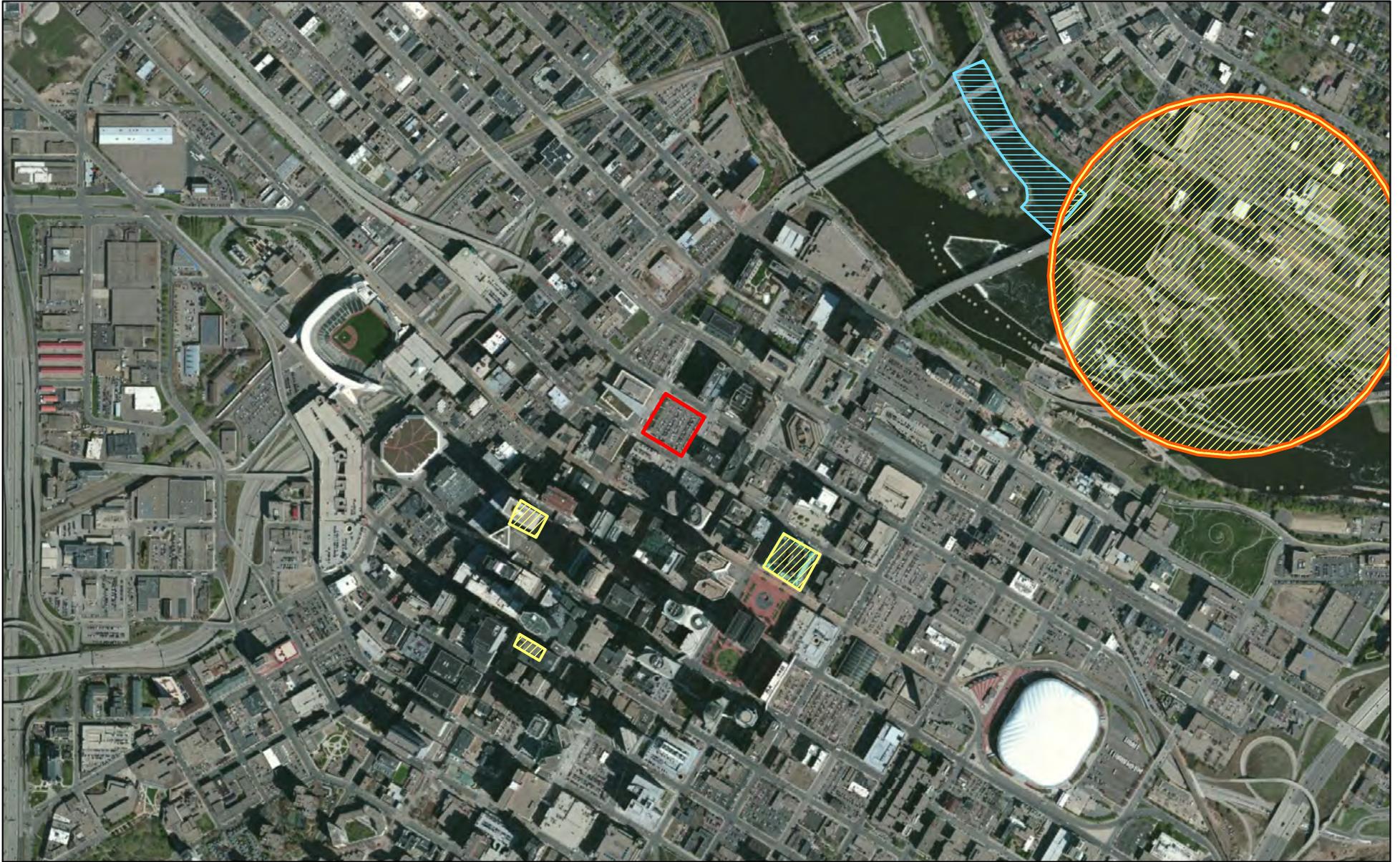
- Project Boundary
- NRCS Soils

Ritz Block Property

Minneapolis, Minnesota

NRCS Soils

EXHIBIT 9



Data Source(s): Westwood (2014), MNDOT 2010, Copyright 2014 State of Minnesota, Department of Natural Resources.
 *NHIS data included here were provided by the Division of Ecological Resources, Minnesota Department of Natural Resources (DNR), and were current as of April 2014.
 These data are not based on an exhaustive inventory of the state.
 The lack of data for any geographic area shall not be construed to mean that no significant features are present.*
 ESRI World Imagery Basemaps (accessed 2014)

Legend

 Project Boundary	 Invertebrate Animal
 Animal Assemblage	 Vertebrate Animal

Ritz Block Property

Minneapolis, Minnesota

MN DNR NHIS Database

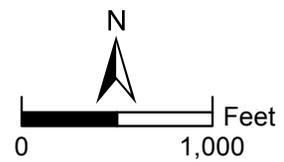
EXHIBIT 10



Westwood Professional Services, Inc.
 7699 Anagram Drive
 Eden Prairie, MN 55344

PHONE 952-937-5150
 FAX 952-937-5822
 TOLL FREE 1-888-937-5150

www.westwoodps.com

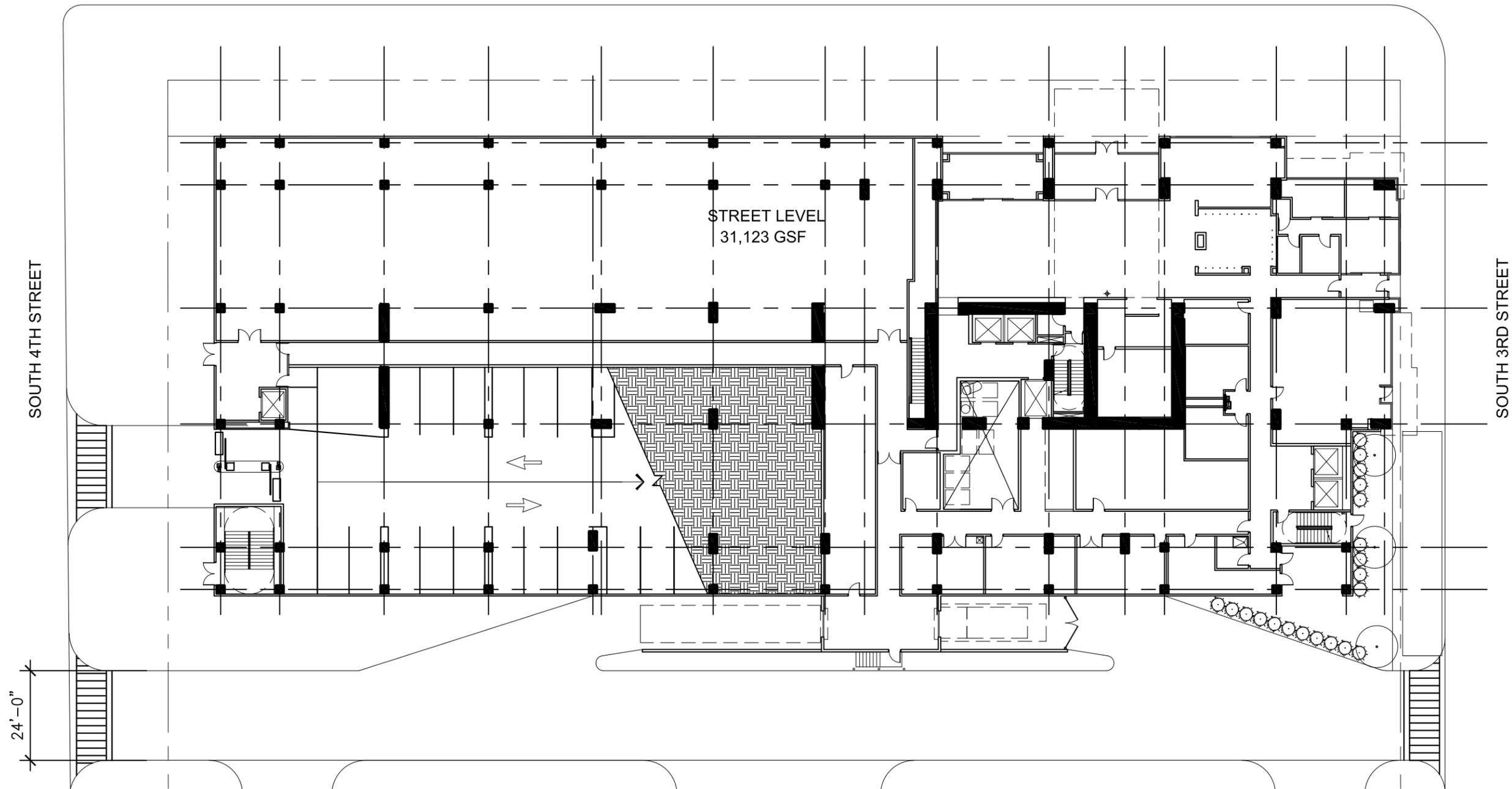


Appendix A

Typical Building Floor Plans

Ritz Block Development EAW, Minneapolis
Hennepin County, Minnesota

NICOLLET MALL



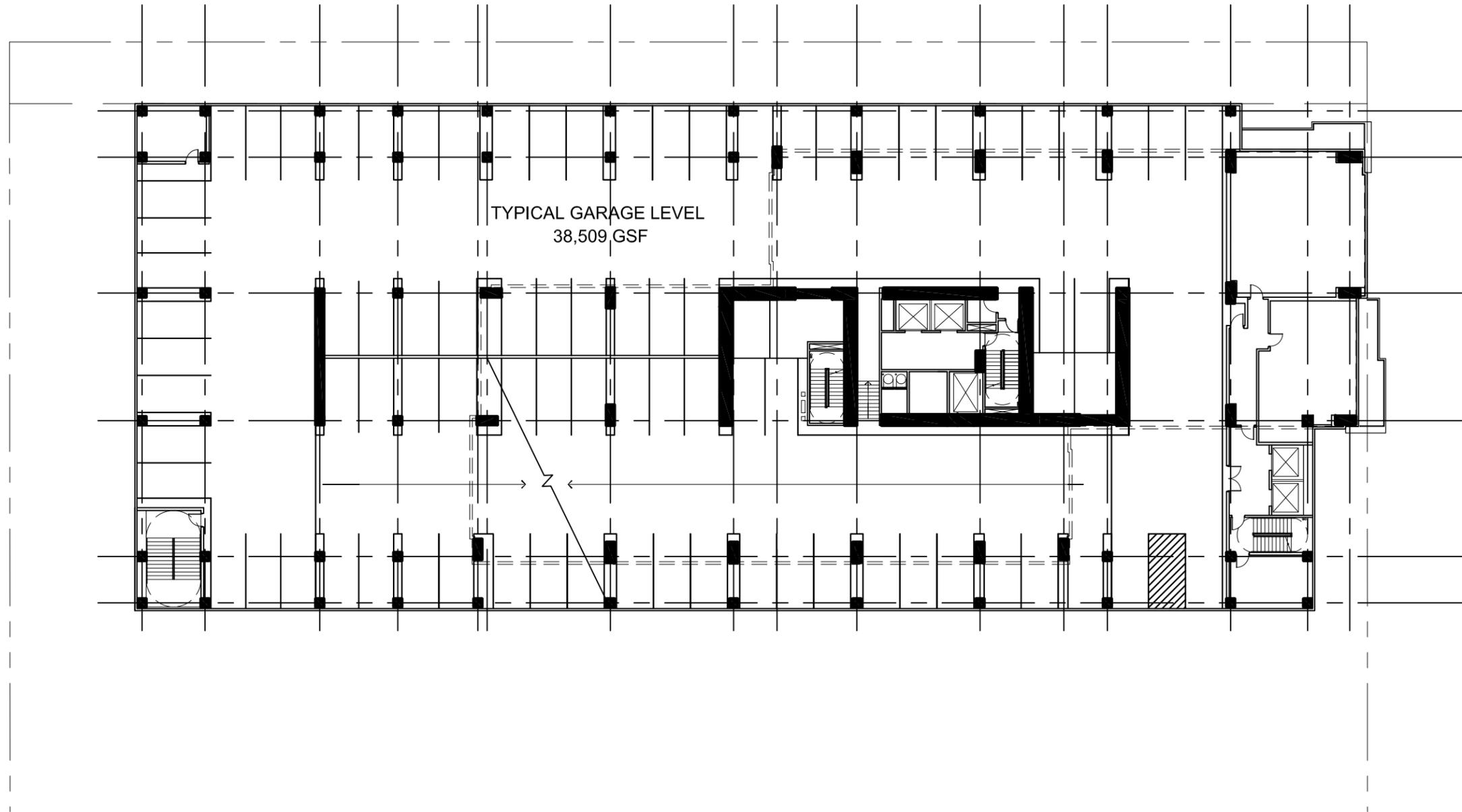
SOUTH 4TH STREET

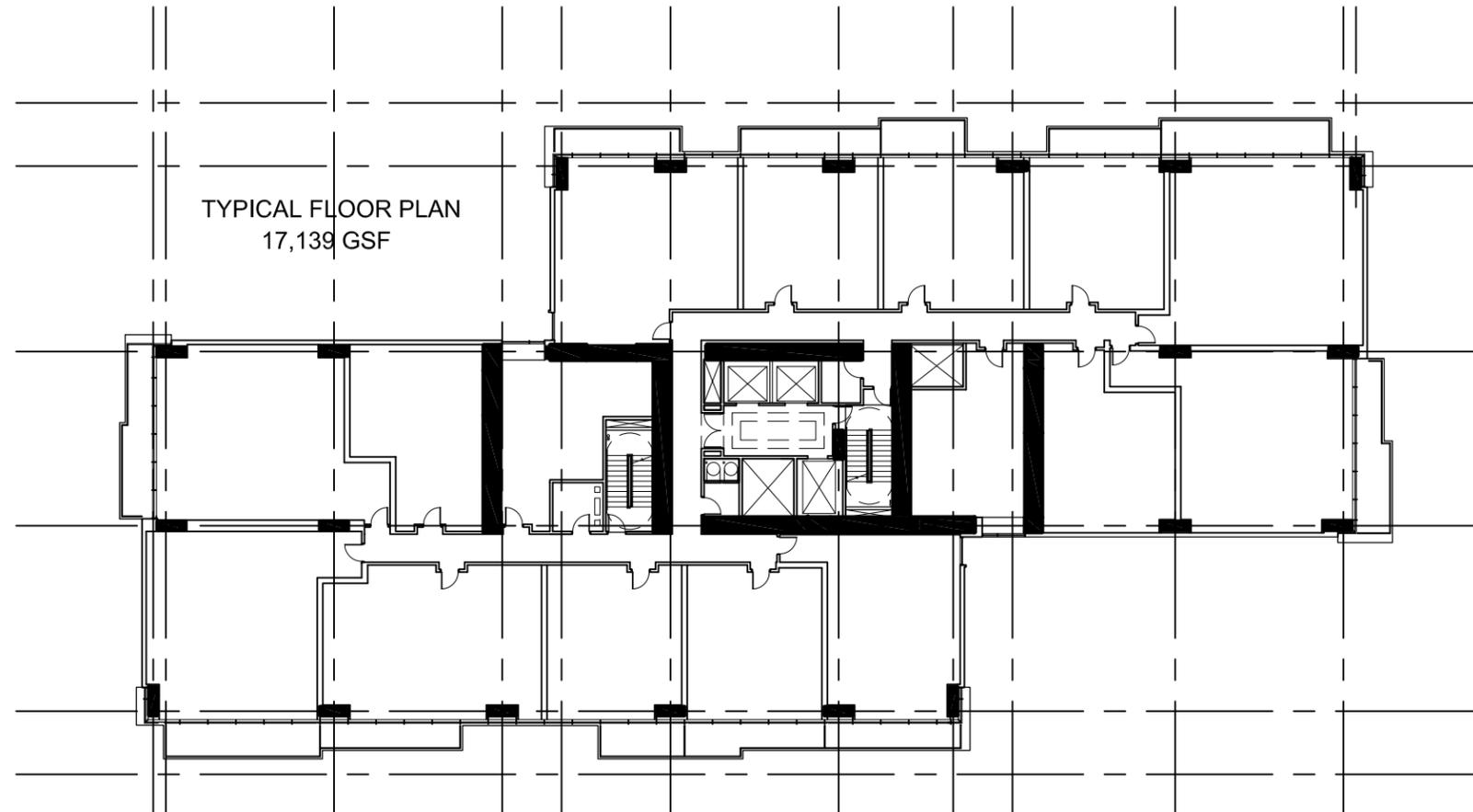
SOUTH 3RD STREET

STREET LEVEL
31,123 GSF

24'-0"







TYPICAL FLOOR PLAN
17,139 GSF



Appendix B

Tower Metrics Tables

Ritz Block Development EAW, Minneapolis
Hennepin County, Minnesota

Ritz Block Tower Metrics Tables:

Ritz Block – Tower 1 Metrics – Residential						
Levels	Total GSF	Total GFA ¹	Retail GSF	Residential Units	Parking Stalls	Bike Parking Spaces (1 Per 2 Units)
32	637,804	455,653	12,000	364	430	182

¹ GSF minus parking and loading dock area.

Ritz Block – Tower 2 Metrics – Residential Option					
Levels	Total GSF	Total GFA ¹	Residential Units	Parking Stalls	Bike Parking Spaces (1 Per 2 Units)
32	663,386	450,388	364	479	182

¹ GSF minus parking and loading dock area.

Ritz Block – Tower 2 Metrics – Office Option					
Levels	Total GSF	Total GFA ¹	Office GSF	Parking Stalls	Bike Parking Spaces (1 Per 15,000 S.F. of GFA)
20	522,980	457,680	365,606	146	31

¹ GSF minus parking and loading dock area.

Appendix C

County Well Index Well Log

Ritz Block Development EAW, Minneapolis
Hennepin County, Minnesota

Minnesota Unique Well No.

506896

County Hennepin
 Quad Minneapolis South
 Quad ID 104A

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING RECORD

Entry Date 04/21/2014
 Update Date
 Received Date

Minnesota Statutes Chapter 103I

<p>Well Name PZ #25 Township Range Dir Section Subsections Elevation 843.6 ft. 29 24 W 22 DDABCA Elevation Method LiDAR 1m DEM (MNDNR)</p> <p>Well Address NICOLLET MALL & 4 ST. SO. MINNEAPOLIS MN</p> <table border="0" style="width:100%;"> <tr> <td style="width:25%;">Geological Material</td> <td style="width:15%;">Color</td> <td style="width:15%;">Hardness</td> <td style="width:10%;">From</td> <td style="width:10%;">To</td> </tr> <tr> <td>FILL-SILTY SAND & SAND</td> <td>BROWN</td> <td></td> <td>0</td> <td>13</td> </tr> <tr> <td>DENSE MEDIUM SAND</td> <td>LT. BRN</td> <td></td> <td>13</td> <td>20</td> </tr> <tr> <td>DENSE SAND WITH SILT</td> <td>LT. BRN</td> <td>MEDIUM</td> <td>20</td> <td>23</td> </tr> <tr> <td>DENSE FINE SAND</td> <td>BROWN</td> <td></td> <td>23</td> <td>36</td> </tr> <tr> <td>WEATHERED LIMESTONE</td> <td></td> <td></td> <td>36</td> <td>37</td> </tr> <tr> <td>LIMESTONE</td> <td>LT. GRY</td> <td>HARD</td> <td>37</td> <td>46</td> </tr> <tr> <td>SHALE</td> <td>GRY/GRN</td> <td></td> <td>46</td> <td>50</td> </tr> <tr> <td>SANDSTONE</td> <td>VARIED</td> <td></td> <td>50</td> <td>102</td> </tr> </table>	Geological Material	Color	Hardness	From	To	FILL-SILTY SAND & SAND	BROWN		0	13	DENSE MEDIUM SAND	LT. BRN		13	20	DENSE SAND WITH SILT	LT. BRN	MEDIUM	20	23	DENSE FINE SAND	BROWN		23	36	WEATHERED LIMESTONE			36	37	LIMESTONE	LT. GRY	HARD	37	46	SHALE	GRY/GRN		46	50	SANDSTONE	VARIED		50	102	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:33%;">Well Depth 102 ft.</td> <td style="width:33%;">Depth Completed 100 ft.</td> <td style="width:33%;">Date Well Completed 01/19/1989</td> </tr> <tr> <td colspan="3">Drilling Method Multiple methods used</td> </tr> <tr> <td>Drilling Fluid Bentonite</td> <td colspan="2">Well Hydrofractured? <input type="checkbox"/> Yes <input type="checkbox"/> No From Ft. to Ft.</td> </tr> <tr> <td colspan="3">Use Monitor well</td> </tr> <tr> <td colspan="3">Casing Type Galvanized Joint Threaded Drive Shoe? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Above/Below 2 ft.</td> </tr> <tr> <td>Casing Diameter 2 in. to 90 ft.</td> <td>Weight lbs./ft.</td> <td>Hole Diameter 6 in. to 102 ft.</td> </tr> <tr> <td colspan="3">Open Hole from ft. to ft.</td> </tr> <tr> <td colspan="3">Screen YES Make JOHNSON Type galvanized</td> </tr> <tr> <td>Diameter 2</td> <td>Slot/Gauze 10</td> <td>Length 10</td> </tr> <tr> <td colspan="3">Set Between 90 ft. and 100 ft.</td> </tr> <tr> <td colspan="3">Static Water Level 46.7 ft. from Land surface Date Measured 01/19/1989</td> </tr> <tr> <td colspan="3">PUMPING LEVEL (below land surface) ft. after hrs. pumping g.p.m.</td> </tr> <tr> <td colspan="3">Well Head Completion Pitless adapter manufacturer Model <input type="checkbox"/> Casing Protection <input checked="" type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)</td> </tr> <tr> <td colspan="3">Grouting Information Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Specified Grout Material: Neat Cement from to 53 ft.</td> </tr> <tr> <td colspan="3">Nearest Known Source of Contamination _feet _direction _type Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No</td> </tr> <tr> <td colspan="3">Pump <input type="checkbox"/> Not Installed Date Installed Manufacturer's name Model number __ HP Volts Length of drop Pipe ft. Capacity g.p.m. Type Material</td> </tr> <tr> <td colspan="3">Abandoned Wells Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input type="checkbox"/> No</td> </tr> <tr> <td colspan="3">Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No</td> </tr> <tr> <td colspan="3">Well Contractor Certification Gislason, John M0070 MISHLER, R. License Business Name Lic. Or Reg. No. Name of Driller</td> </tr> </table>	Well Depth 102 ft.	Depth Completed 100 ft.	Date Well Completed 01/19/1989	Drilling Method Multiple methods used			Drilling Fluid Bentonite	Well Hydrofractured? <input type="checkbox"/> Yes <input type="checkbox"/> No From Ft. to Ft.		Use Monitor well			Casing Type Galvanized Joint Threaded Drive Shoe? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Above/Below 2 ft.			Casing Diameter 2 in. to 90 ft.	Weight lbs./ft.	Hole Diameter 6 in. to 102 ft.	Open Hole from ft. to ft.			Screen YES Make JOHNSON Type galvanized			Diameter 2	Slot/Gauze 10	Length 10	Set Between 90 ft. and 100 ft.			Static Water Level 46.7 ft. from Land surface Date Measured 01/19/1989			PUMPING LEVEL (below land surface) ft. after hrs. pumping g.p.m.			Well Head Completion Pitless adapter manufacturer Model <input type="checkbox"/> Casing Protection <input checked="" type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)			Grouting Information Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Specified Grout Material: Neat Cement from to 53 ft.			Nearest Known Source of Contamination _feet _direction _type Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No			Pump <input type="checkbox"/> Not Installed Date Installed Manufacturer's name Model number __ HP Volts Length of drop Pipe ft. Capacity g.p.m. Type Material			Abandoned Wells Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input type="checkbox"/> No			Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No			Well Contractor Certification Gislason, John M0070 MISHLER, R. License Business Name Lic. Or Reg. No. Name of Driller		
Geological Material	Color	Hardness	From	To																																																																																																			
FILL-SILTY SAND & SAND	BROWN		0	13																																																																																																			
DENSE MEDIUM SAND	LT. BRN		13	20																																																																																																			
DENSE SAND WITH SILT	LT. BRN	MEDIUM	20	23																																																																																																			
DENSE FINE SAND	BROWN		23	36																																																																																																			
WEATHERED LIMESTONE			36	37																																																																																																			
LIMESTONE	LT. GRY	HARD	37	46																																																																																																			
SHALE	GRY/GRN		46	50																																																																																																			
SANDSTONE	VARIED		50	102																																																																																																			
Well Depth 102 ft.	Depth Completed 100 ft.	Date Well Completed 01/19/1989																																																																																																					
Drilling Method Multiple methods used																																																																																																							
Drilling Fluid Bentonite	Well Hydrofractured? <input type="checkbox"/> Yes <input type="checkbox"/> No From Ft. to Ft.																																																																																																						
Use Monitor well																																																																																																							
Casing Type Galvanized Joint Threaded Drive Shoe? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Above/Below 2 ft.																																																																																																							
Casing Diameter 2 in. to 90 ft.	Weight lbs./ft.	Hole Diameter 6 in. to 102 ft.																																																																																																					
Open Hole from ft. to ft.																																																																																																							
Screen YES Make JOHNSON Type galvanized																																																																																																							
Diameter 2	Slot/Gauze 10	Length 10																																																																																																					
Set Between 90 ft. and 100 ft.																																																																																																							
Static Water Level 46.7 ft. from Land surface Date Measured 01/19/1989																																																																																																							
PUMPING LEVEL (below land surface) ft. after hrs. pumping g.p.m.																																																																																																							
Well Head Completion Pitless adapter manufacturer Model <input type="checkbox"/> Casing Protection <input checked="" type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)																																																																																																							
Grouting Information Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Specified Grout Material: Neat Cement from to 53 ft.																																																																																																							
Nearest Known Source of Contamination _feet _direction _type Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No																																																																																																							
Pump <input type="checkbox"/> Not Installed Date Installed Manufacturer's name Model number __ HP Volts Length of drop Pipe ft. Capacity g.p.m. Type Material																																																																																																							
Abandoned Wells Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input type="checkbox"/> No																																																																																																							
Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No																																																																																																							
Well Contractor Certification Gislason, John M0070 MISHLER, R. License Business Name Lic. Or Reg. No. Name of Driller																																																																																																							
<p>NO REMARKS</p> <p>Located by: Minnesota Geological Survey Method: Digitization (Screen) - Map (1:12,000) Unique Number Verification: Site Plan Input Date: 04/21/2014 System: UTM - Nad83, Zone15, Meters X: 478749 Y: 4980758</p>	<p>First Bedrock Last Strat</p> <p>Aquifer Depth to Bedrock ft.</p>																																																																																																						
<p>County Well Index Online Report</p>		<p>506896</p>	<p>Printed 12/12/2014 HE-01205-07</p>																																																																																																				

Appendix D

Current Use As-Built Survey

Ritz Block Development EAW, Minneapolis
Hennepin County, Minnesota

LEGEND

- MANHOLE
- MANHOLE (NOT FIELD LOCATED)
- ⊠ CATCH BASIN
- STEEL GRATE
- ⋄ HYDRANT
- ⋄ GATE VALVE
- ⊠ ELECTRIC BOX
- ⊠ TELEPHONE BOX
- ⊠ SEMAPHORE
- ⋄ LIGHT POLE
- ⋄ POWER POLE
- ⊠ PARKING METER
- HOLE
- GUARD POST
- ⋄ FLAG POLE
- SIGN
- STEEL PLATE
- PLANTER
- TREE
- CONCRETE

scale: 1" = 20'

SURVEY FOR: MINNEAPOLIS RITZ ASSOCIATES AND OPUS INVESTMENTS, INC.

DESCRIPTION: (As contained in Title Insurance Company of Minnesota Application No. H 641940 C Supplement No. 1):

Tract A:

Lots 56 through 76 inclusive; together with all of the adjoining vacated northerly, southeasterly alley lying between the northerly extensions across it of the northwest line of Lot 76 and the southeast line of Lot 71;

together with all of the adjoining vacated northerly, southwesterly alley lying between the southeasterly extensions across it of the northeast line of Lot 75 and the southwest line of Lot 74;

together with all of the adjoining vacated northerly, southwesterly alley lying between the southeasterly extensions across it of the northeast and southwest lines of Lot 63;

All in Auditor's Subdivision No. 152, according to the plat thereof on file and of record in the Hennepin County Recorder's Office and in the office of the Registrar of Titles.

Part of the above land being registered property as is evidenced by Certificate of Title No. 705898, and more particularly described as follows:

Lot 59;

Lot 60, also the northerly one half of adjoining vacated alley lying between the extensions across it of the northwesterly and southeasterly lines of said Lot 60. (see Document No. 670862)

Lot 62 and 63, also the northerly one half of the vacated alley adjoining said lots to the southwest lying between extensions across it of the northwesterly line of Lot 62 and the southeasterly line of Lot 63. (see order Document No. 670862)

Lot 64;

Lot 72, and that part of the southeasterly one half of the vacated alley lying between extensions northwesterly across said alley of the southwesterly and northerly lines of said Lot 72, the size of which lot varies from the platted dimensions thereof, in that both the rear and front lines of said lot are 22.2 feet in length;

Lots 74 and 75, also that part of the northwesterly one half of the vacated alley adjoining the southeasterly lines of said Lots 74 and 75, (see order Document No. 665251); also the southwesterly one half of the adjoining vacated alley to the northeast lying between extensions across it of the northwesterly line of said Lot 75 and the center line of the alley adjoining the southeasterly line of Lot 75. (see order Document No. 670862)

All in Auditor's Subdivision Number 152, according to the recorded plat thereof.

Tract B:

All of Auditor's Subdivision No. 83, according to the plat thereof on file and of record in the Hennepin County Recorder's Office.

Abstract
Torrens Certificate Number: 705898
Hennepin County, Minnesota

I hereby certify to Minneapolis Ritz Associates and Opus Investments, Inc., and Title Insurance Company of Minnesota, that the survey on which this map or plat is based was actually made on the ground on June 18, 1991, by me or under my direct supervision; that this map or plat and the survey on which it is based were made in accordance with the "Minimum Standard Detail Requirements for ALTA/ACSM Land Title Surveys" jointly established by ALTA and ACSM in 1988, and meet the accuracy requirements of a Class A Survey as defined therein; and that to the best of my professional knowledge, information and belief:

- a) this map or plat correctly represents the facts found at the time of the survey;
- b) except as shown, there are no discrepancies between the boundary lines of the subject property as shown on this map or plat and as described in the legal description of record;
- c) the boundary line dimensions as shown on this map or plat form a mathematically closed figure with in + 0.01 foot;
- d) the boundary lines of the subject property are contiguous with the boundary lines of all adjoining parcels, roads, highways, streets or alleys as described in their most recent respective legal descriptions of record; and
- e) the subject property has uncontrolled access to and egress from Third Street and Fourth Street as shown on this map or plat, which are a paved and publicly dedicated and accepted streets maintained by the City of Minneapolis, and the distances from the nearest intersection streets are as shown.

J. Bolke
Jack Bolke
Registered Land Surveyor No. 20281
11-26-91
Date

- NOTES:
1. The orientation of this bearing system is based on the easterly line of NICOLLET AVENUE, which is assumed to have a bearing of North 30 degrees 25 minutes 00 seconds East.
 2. Total area is 109,175 square feet or 2.5063 acres.
 3. Gateway Center Urban Renewal Plan states structures must be set back five feet or more from at least one street frontage.
 4. There are no minimum setbacks as per Minneapolis Zoning Ordinance (all buildings may be built to property lines).
 5. Size location and elevation of sanitary sewer, storm sewer and water mains were obtained from records of the City of Minneapolis.
 6. Size and location of gas mains were obtained from Minnegasco.
 7. Location of electric lines were obtained from Northern States Power Company.
 8. Location of telephone lines were obtained from Northwestern Bell Telephone Company.
 9. This survey shows only those improvements visible during the field survey. Some structures, improvements and utilities covered or underground may not be shown.
 10. According to the City of Minneapolis the property is currently Zoned B4-1.

EGAN, FIELD & NOWAK INC.

Appendix E

NHIS Database Response Letter

Ritz Block Development EAW, Minneapolis
Hennepin County, Minnesota



Minnesota Department of Natural Resources

Division of Ecological and Water Resources, Box 25

500 Lafayette Road

St. Paul, Minnesota 55155-4025

Phone: (651) 259-5109 E-mail: lisa.joyal@state.mn.us

December 15, 2014

Correspondence # ERDB

20150164

Ms. Kristine Maurer
Westwood Professional Services, Inc.
7699 Anagram Drive
Eden Prairie, MN 55344

RE: Natural Heritage Review of the proposed Ritz Block Project;
T29N R24W Section 22; Hennepin County

Dear Ms. Maurer,

As requested, the above project has been reviewed for potential effects to known occurrences of rare features. A search of the Minnesota Natural Heritage Information System did identify rare features within an approximate one-mile radius of the proposed project, but these records did not include any federally listed species and were either historical or not of concern given the project details that were provided with the data request form. As such, I do not believe the proposed project will adversely affect any known occurrences of rare features.

The Natural Heritage Information System (NHIS), a collection of databases that contains information about Minnesota's rare natural features, is maintained by the Division of Ecological and Water Resources, Department of Natural Resources. The NHIS is continually updated as new information becomes available, and is the most complete source of data on Minnesota's rare or otherwise significant species, native plant communities, and other natural features. However, the NHIS is not an exhaustive inventory and thus does not represent all of the occurrences of rare features within the state. Therefore, ecologically significant features for which we have no records may exist within the project area.

For environmental review purposes, the results of this Natural Heritage Review are valid for one year; the results are only valid for the project location (noted above) and project description provided on the NHIS Data Request Form. Please contact me if project details change or if an updated review is needed.

Furthermore, the Natural Heritage Review does not constitute review or approval by the Department of Natural Resources as a whole. Instead, it identifies issues regarding known occurrences of rare features and potential effects to these rare features. Additional rare features for which we have no data may be present in the project area, or there may be other natural resource concerns associated with the proposed project. For these concerns, please contact your DNR Regional Environmental Assessment Ecologist (contact information available at http://www.dnr.state.mn.us/eco/ereview/erp_regioncontacts.html). Please be aware that additional site assessments or review may be required.

Thank you for consulting us on this matter, and for your interest in preserving Minnesota's rare natural resources. An invoice will be mailed to you under separate cover.

Sincerely,

Samantha Bump
Natural Heritage Review Specialist

Appendix F

TDMP & Traffic Impact Study

Ritz Block Development EAW, Minneapolis
Hennepin County, Minnesota

TRAVEL DEMAND MANAGEMENT PLAN

The Ritz Block

Minneapolis, Minnesota

January 30, 2015



Prepared For:



Prepared By:



TRAVEL DEMAND MANAGEMENT PLAN

“The Ritz Block”

Minneapolis, MN

January 30, 2015

Prepared For:



Opus Development Company, LLC
Minnetonka, MN

Prepared By:



Westwood Project R0005045

TRAVEL DEMAND MANAGEMENT PLAN

The Ritz Block

Minneapolis, MN

January 30, 2015

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Print Name: Stephen J. Manhart

Signature:  _____

Date: January 30, 2015 License # 22428

TABLE OF CONTENTS

I. INTRODUCTION and SUMMARY 1

II. PEDESTRIAN, BICYCLE AND TRANSIT CONSIDERATIONS 5

III. PARKING CONSIDERATIONS 13

IV. TRAFFIC CONSIDERATIONS 19

V. TRAVEL DEMAND MANAGEMENT STRATEGIES..... 21

SIGNATURE PAGE 26

APPENDIX A - BUS ROUTES SERVING RITZ BLOCK SITE (WITHIN ONE BLOCK) 27

LIST OF FIGURES

Figure 1 – Site Location 2

Figure 2 – Concept Site Plan 3

Figure 3 – Existing Transit Service..... 6

Figure 4 – Bicyclist Estimated Daily Traffic (EDT)..... 8

Figure 5 -- Existing Bike Routes 9

Figure 6 -- Pedestrian Estimated Daily Traffic (EDT)..... 11

Figure 7 – Existing Skyway System 12

Figure 8 – Existing Off-Street Parking 14

LIST OF TABLES

Table 1 – Land Use Changes with Proposed Redevelopment..... 1

Table 2 – A.M. and P.M. Parking Availability in Lots and Ramps near Ritz Block 13

Table 3 – Estimated Parking Requirements per City Code 16

Table 4 -- Estimated Parking Requirements per ITE 17

Table 5 – Bicycle Parking Requirements per City Code 18

Table 6 – Trip Generation Estimates for Proposed Land Use (Towers 1 & 2)..... 19

Table 7 – Trip Generation Estimates with Modal Share – Proposed Land Use 19

Table 8 – Mode Split Goals 23

I. INTRODUCTION and SUMMARY

Opus Development Company, LLC, (“Opus”) proposes to redevelop the property located at 315 Nicollet Mall in downtown Minneapolis. This city block is the former site of the Sheraton-Ritz Hotel (see Figure 1). Currently, the property is occupied with a 315-stall surface parking lot.



The Opus proposal is to redevelop the site into two towers separated by an internal service drive. The first is proposed to house a 364-unit, 32-story residential tower. The second is proposed as either a 20-story office building housing 365,606 square feet of office space, or as a 32-story, 364-unit residential tower. Table 1 summarizes the previous and proposed land uses.

**Table 1
Land Use Changes with Proposed Redevelopment**

Existing Land Uses	Proposed Land Uses
Surface Parking Lot – 315 stalls	<u>Tower 1</u> -- Apartments (364 Units); Retail (12,000 GSF); 430 parking stalls (414 residential; 8 visitor; 8 retail); 182 bike stalls
	<u>Tower 2</u> (Office Concept) – 365,606 GSF <u>Tower 2</u> (Office Concept) – 146 parking stalls; 31 bike stalls -or- <u>Tower 2</u> (Residential Concept) – Apartments (364 Units) <u>Tower 2</u> (Residential Concept) – 479 parking stalls (471 residential; 8 visitor); 182 bike stalls

The development lies completely within the B4-2 Downtown Business Zoning District. The site also lies within two overlay districts – the Nicollet Mall Overlay District and the Downtown Parking Overlay District.

The site is highly transit-oriented. The BLUE and GREEN Line Light Rail Transit’s Nicollet Mall Station exists one block to the west. The bus- and taxi-only Nicollet Mall is to the northwest. The MARQ2 Bus Lanes are to the southeast. Metro Transit bus service exists along both 3rd and 4th Streets South. The City is also planning a streetcar line with a station at the corner of South 3rd Street and Nicollet Mall.

The site is also highly pedestrian-oriented, with walk-up retail and service uses along the Nicollet Mall frontage. There will also be provisions for future skyway connections on the second level crossing South 4th Street and crossing the service drive.



SITE
LOCATION



Date: 12/19/2014



Westwood Professional Services, Inc.
 7699 Anagram Drive
 Eden Prairie, MN 55344

PHONE 952-937-5150
 FAX 952-937-5822
 TOLL FREE 1-888-937-5150

www.westwoodps.com

Client: _____
 Checked: _____
 Drawn: _____
 Record Drawing by/date: _____

The Ritz Block

Minneapolis, MN

Site Location

Figure 1



Date: 12/19/2014

The Ritz Block

Concept Site Plan

Figure 2

Savage, MN

Prepared for:

Client: _____
 Checkbook _____
 Drawings _____
 Record Drawings, by/dates _____

Westwood Professional Services, Inc.
 7889 Anagram Drive
 Eden Prairie, MN 55344
 PHONE 952-337-6110
 FAX 952-337-6822
 TOLLFREE 1-888-337-5150
 www.westwoodps.com



Opus

Minnetonka, MN

Opus will propose TDM strategies similar to those identified in other recent plans in downtown Minneapolis. The added dimension of downtown location combined with the numerous adjacent transit and pedestrian facilities will serve to reduce traffic demand to and from this development.

This TDMP will identify the alternative transportation options in the vicinity of the site, will discuss the change in parking and site generated traffic, and will include strategies to encourage the use of these alternative modes.

It is the intent of this TDMP to provide analysis and mitigation strategies for the entire development site; however, while more definitive plans are set for Tower 1 and less definitive plans are known for Tower 2, it is assumed that this TDMP will focus on Tower 1. General parking and access rules will be presented for Tower 2, but it is assumed that when Tower 2 plans are imminent, an update will be presented to the City that specifies Tower 2 uses, parking and mitigation strategies.

2.0 PEDESTRIAN, BICYCLE AND TRANSIT CONSIDERATIONS

The proposed development's location between 3rd and 4th Streets South and between the Nicollet Mall and Marquette Avenue affords the future residents and office employees with many opportunities for the use of alternative transportation modes.

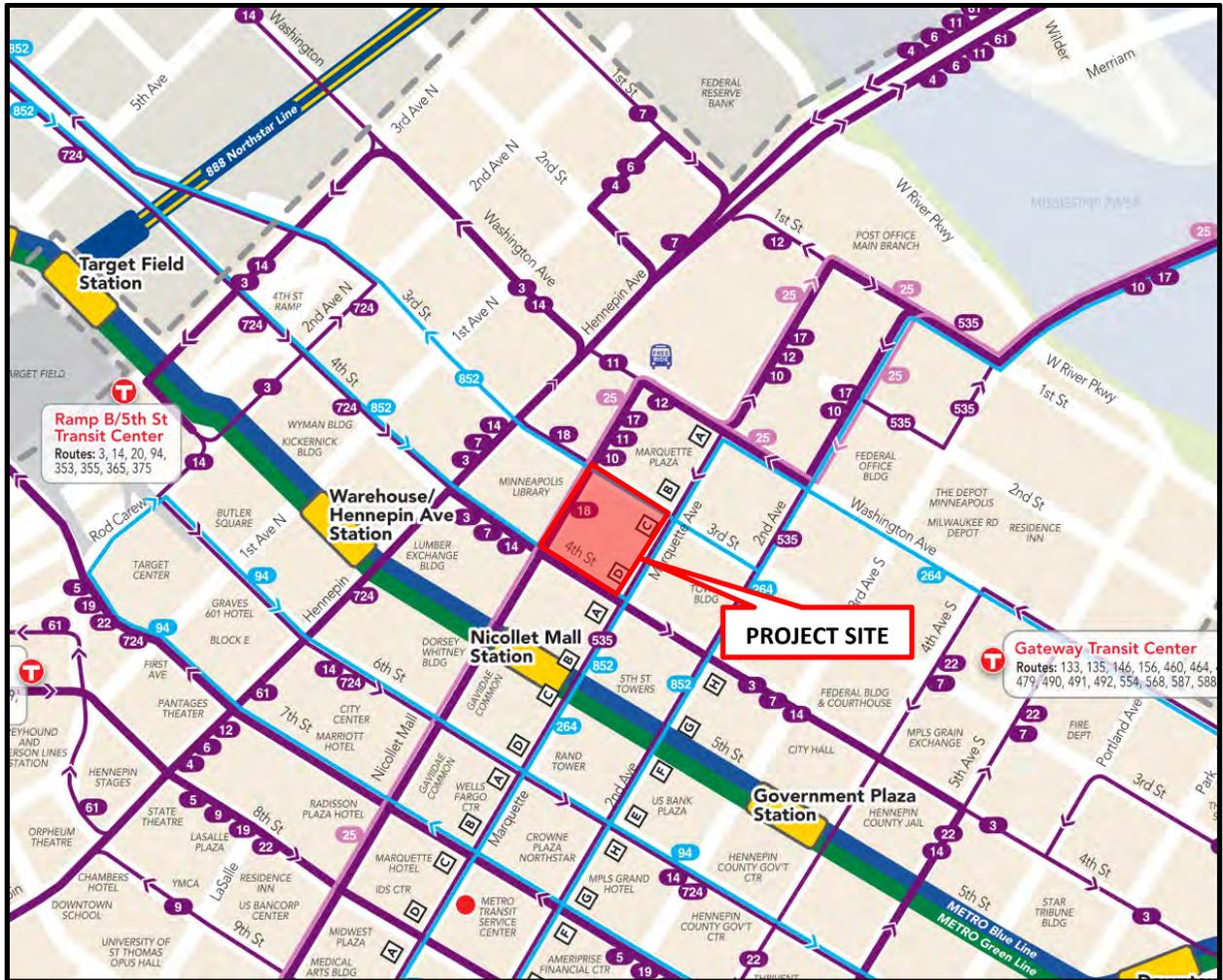
Transit

There are numerous transit opportunities around this site (see Figure 3).

- Marquette Avenue is part of the MARQ2 Transit Project. In the last several years, both Marquette and Second Avenue South were reconstructed to have two bus lanes and two traffic lanes (in opposing directions), wider sidewalks, new transit shelters, and additional streetscaping. The street has two traffic lanes northbound and two designated bus lanes southbound. For the segment of Marquette between Fourth and Fifth Streets South, the bus lanes are on the near side of this development, and the general traffic lanes are located on the far side of this development. There are bus stops on the west side of Marquette that serve many routes, which are listed in Appendix A.
- Nicollet Mall located on the north side of this development has long been designed as a bus and taxi only route. In addition, bicyclists and pedestrians use this route to access many commercial and office uses in downtown Minneapolis. Metro Transit operates "Free Ride" buses along the Nicollet Mall seven days a week from 5 a.m. to 1 a.m. The "Free Ride" buses operate between the Convention Center and Washington Avenue. In addition, riders pay just fifty cents to ride within the Downtown Zone on any other bus along the Nicollet Mall. Bus stops exist along the Nicollet Mall just south of S. 5th Street, and on the far side of Nicollet Mall just north of S. 5th Street. Routes serving the Nicollet Mall in this area are found in Appendix A.
- South Fourth Street has bus stops located between the Nicollet Mall and Marquette Avenue. Likewise, routes serving these bus stops along South Fourth Street are listed in Appendix A.
- Light Rail Transit is provided via the BLUE Line which runs along South 5th Street. Passengers may board and depart at the Nicollet Mall Station between the hours of 4:30 a.m. and 1:30 a.m. Service runs between the Target Field Station and the Mall of America Transit Center. This transit amenity also serves the Minneapolis Saint Paul Airport (MSP). Headway service varies between 7 and 15 minutes for weekdays and weekends.

The GREEN Line Light Rail Transit was placed into operation earlier this year and also serves the Nicollet Mall station. The GREEN line provides transit service between the Target Field Station and the Union Depot Station in downtown Saint Paul. Headway service varies between 10 and 15 minutes for weekdays and weekends.

Figure 3 – Existing Transit Service



Downtown Map Legend

	Downtown Zone Limit Ride in the Downtown Zone for 50¢ (transfers not available). Board any bus or train going the direction you want to go.		METRO Green Line Trains stop at all stations shown.
	Frequent Local Buses Serve all stops and operate at least every 30 min. during middays on weekdays, more often during rush hours.		Northstar Commuter Rail Operates primarily during rush hours.
	All-Day Local Buses Serve all stops and operate throughout the day but may offer less frequent service.		Rail Platform
	All-Day Express Buses Limited-stop or non-stop service that operates throughout the day on weekdays but may offer less frequent service.		Transit Center/Station
	METRO Blue Line Trains stop at all stations shown.		Transit Service Center Get passes, route information and other transit help.
			Lettered Stop Express buses serve these stops on Marquette and 2nd avenues.
			Free Rides on Nicollet Mall Look for buses marked "Free Ride" between the Convention Center and Washington Avenue in Minneapolis.

SOURCE: Metro Transit Website, 2015.

These Light Rail lines also provide access to the Northstar Commuter Rail line, which runs northwesterly to the communities of Elk River and Big Lake. There are proposed connections at Becker and Saint Cloud.

- On October 4, 2013, the Minneapolis City Council approved a resolution recommending that the locally preferred alternative for the Nicollet-Central Transit Corridor be modern streetcar running between Lake Street and at least 5th Street NE on Nicollet Avenue, Nicollet Mall and Hennepin/1st Avenues, using the Hennepin Avenue Bridge to cross the Mississippi River. A streetcar stop is proposed just west of 3rd Street South along the Nicollet Mall. Currently, the City of Minneapolis and the Metropolitan Council are working together to do further planning on the project, including the completion of the Environmental Assessment for the project.

Bike Routes

Downtown Minneapolis is heavily traveled by bicyclists. Figure 4 shows the estimated trips per day by bicyclists in this area, as reported by the Minneapolis Public Works Department.¹ As can be seen in Figure 4, the streets surrounding the Ritz Block see hundreds of bicycle trips per day.

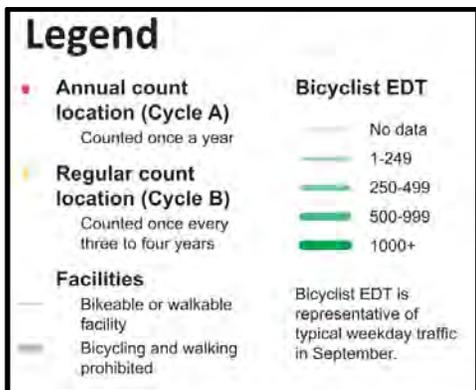
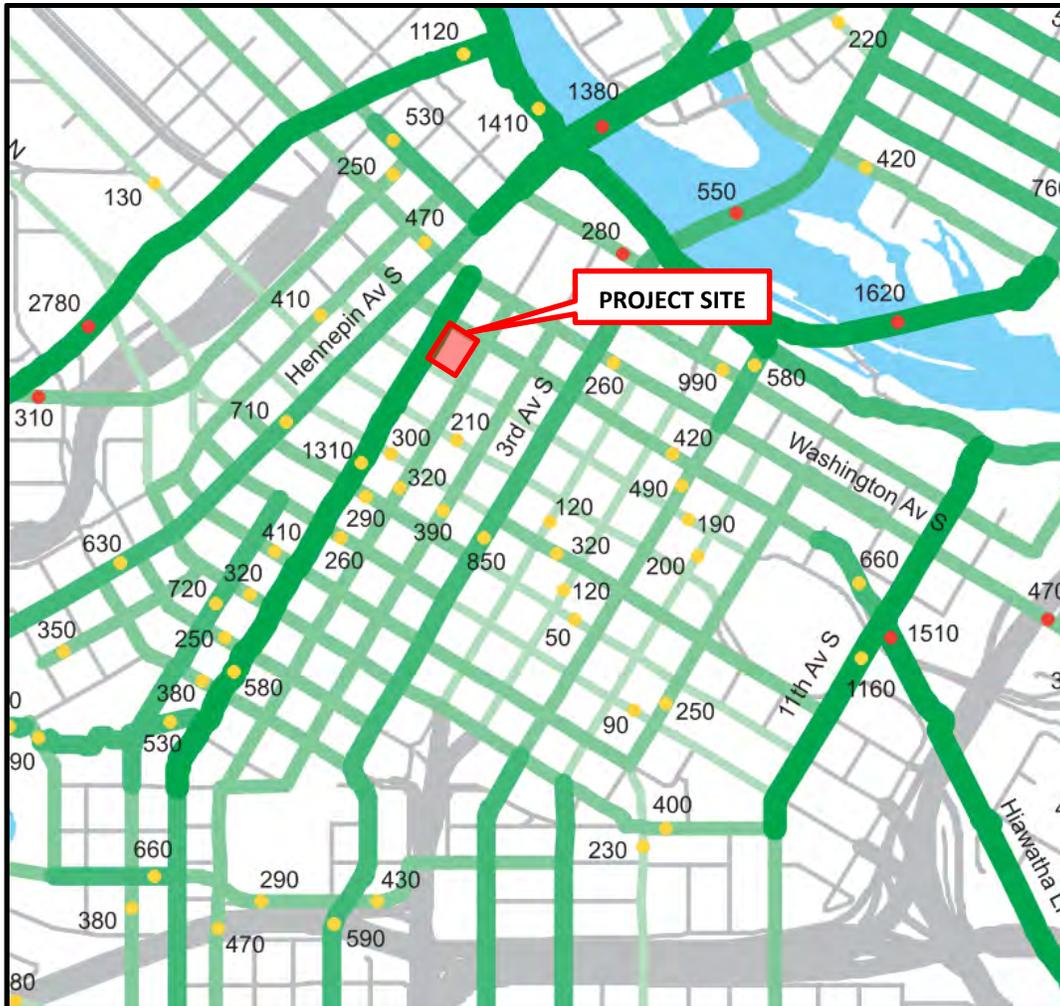
- As shown on Figure 5, there are designated bike routes along both Hennepin Avenue and Fourth Street South that tie into the elaborate bike trail system of Minneapolis. This system would enable potential residents to easily travel to other downtown locations such as the Viking Stadium, the central business district and Nicollet Mall, as well as venture to the east across the Mississippi River into Northeast Minneapolis, Dinkytown and the University of Minnesota area.
- There are four NiceRide Minnesota stations within two blocks of the site – one along the Nicollet Mall side of the Ritz Block property, one northwest of the site at S. Fourth Street and Hennepin Avenue, one along Washington Avenue to the southeast of Marquette, and the other to the southeast near Second Avenue South and Third Street South. Nice Ride Minnesota is a non-profit bike sharing program being deployed throughout the Twin Cities, and is an available strategy to reduce trips.

Car-Sharing

Another non-traditional transportation option is HOURCAR, which provides an hourly rental of fuel-efficient vehicles. There is a hub for HOURCAR located four blocks to the southeast of the site. development and/or walking distance would be a positive amenity when a personal vehicle is needed on a temporary basis. Other shared vehicle providers, such as Car2Go (<https://www.car2go.com/en/minneapolis/>) and Zipcar (<http://www.zipcar.com/minneapolis/find-cars>) offer vehicles at sites throughout Minneapolis.

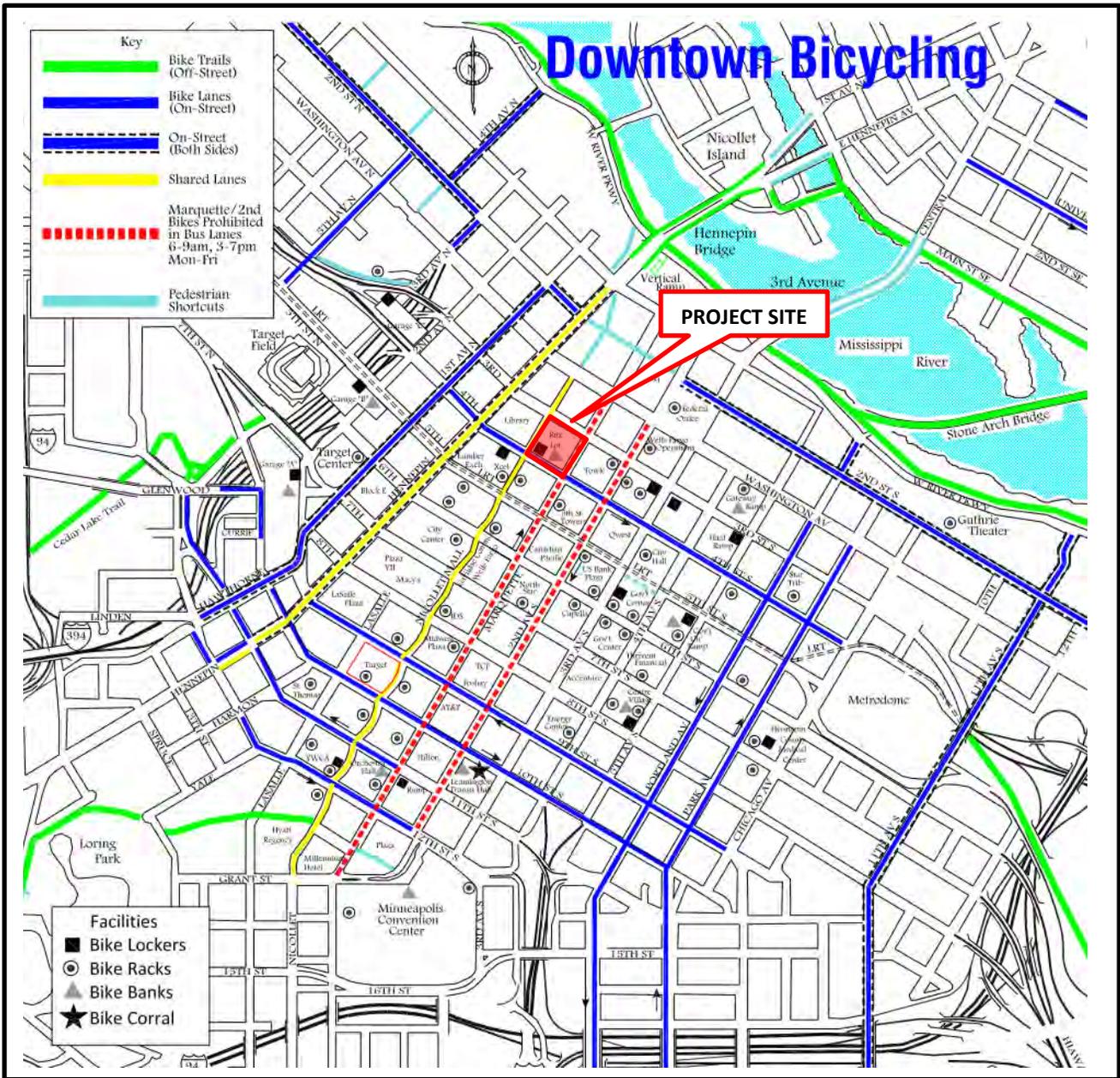
¹ Minneapolis Bicyclist & Pedestrian Count Report 2014, published by the Minneapolis Public Works Department, December 22, 2014.

Figure 4 – Bicyclist Estimated Daily Traffic (EDT)



SOURCE: [Minneapolis Bicyclist & Pedestrian Count Report 2014](#), published by the Minneapolis Public Works Department, December 22, 2014.

Figure 5 – Existing Bike Routes



SOURCE: Downtown Bicycling Map, Department of Public Works, Traffic and Parking Services, City of Minneapolis www.minneapolis.org, January 2013.

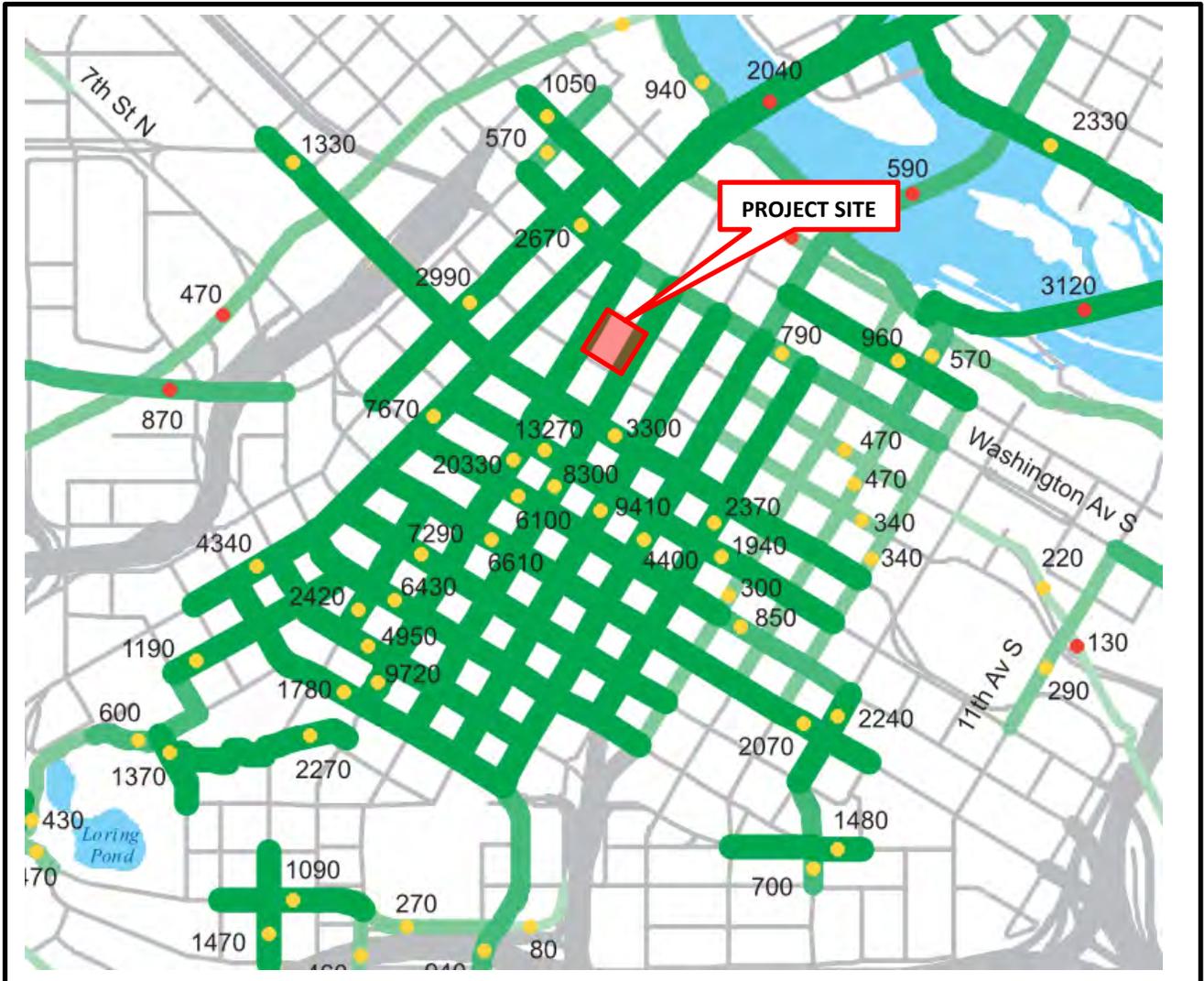
Pedestrian Routes

Pedestrian activity is quite heavy in downtown Minneapolis. Figure 6 shows the estimated trips per day by pedestrians in this area, as reported by the Minneapolis Public Works Department.² As can be seen in Figure 6, streets such as Nicollet Mall and Marquette see thousands of pedestrian trips per day.

- Sidewalks exist along the public streets that are adjacent to the project site. The Nicollet Mall, while serving bus and taxi traffic as well as future streetcar service, also provides a pedestrian-friendly means to walk to office and commercial uses in the downtown area. These sidewalks provide pedestrian access to the robust sidewalk and pedestrian trail network in this area of Minneapolis.
- Downtown Minneapolis has an eight-mile skyway system that provides climate-controlled pedestrian access between buildings (see Figure 7). While no “skyway-ready” connections exist to the Ritz Block, current connections to the skyway system are within one-half block of the site. Opus is proposing a future skyway connection over South Fourth Street and a connection over the service drive between the two Ritz towers.

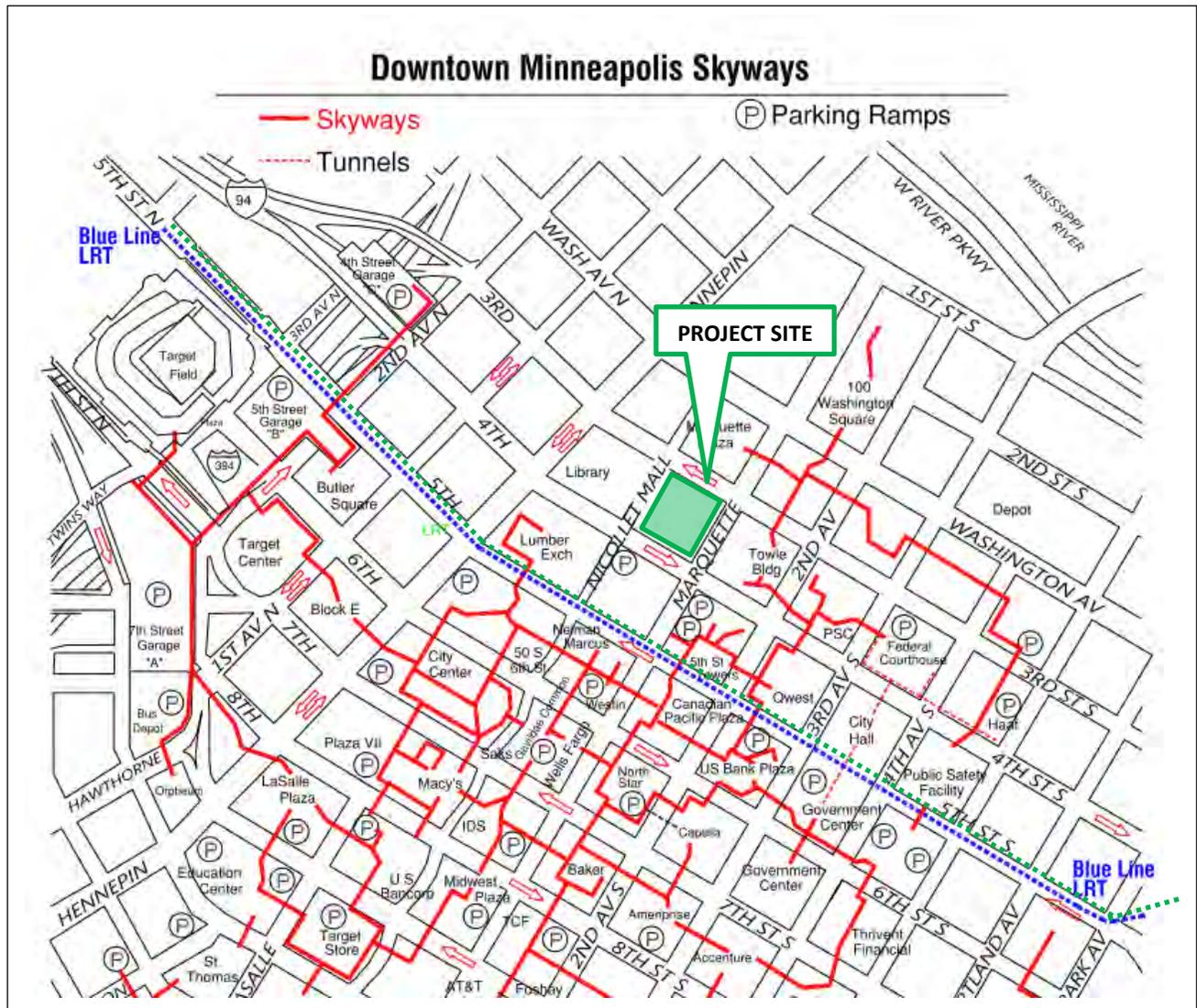
² Minneapolis Bicyclist & Pedestrian Count Report 2014, published by the Minneapolis Public Works Department, December 22, 2014.

Figure 6 – Pedestrian Estimated Daily Traffic (EDT)



SOURCE: [Minneapolis Bicyclist & Pedestrian Count Report 2014](#), published by the Minneapolis Public Works Department, December 22, 2014.

Figure 7 – Existing Skyway System



SOURCE: Downtown Minneapolis Skyways Map, Department of Public Works, Traffic and Parking Services, City of Minneapolis, www.minneapolis.org, 01/13.

3.0 PARKING CONSIDERATIONS

Displaced Parking

The Ritz Block development will displace surface parking for up to 315 vehicles. There exist several public and private surface lots and parking ramps around the Ritz Block site (See Figure 6). A survey was taken to review parking availability at these lots and ramps during an average weekday morning and afternoon (See Table 2).

**Table 2
A.M. and P.M. Parking Availability in Lots and Ramps near Ritz Block**

Parking Ramp or Surface lot	Parking Capacity	A.M. Weekday Parking Availability¹	P.M. Weekday Parking Availability²
Midtown Parking Ramp	527 stalls	N/A*	34 vacant stalls
Minneapolis Central Library Parking Ramp	221 stalls	22 vacant stalls	48 vacant stalls
Ritz Parking Lot	315 stalls**	N/A*	3 vacant stalls**
Marquette Plaza Parking Ramp	232 stalls	11 vacant stalls	16 vacant stalls
409 Marquette Parking Ramp	461 stalls	64 vacant stalls	59 vacant stalls
401 Hennepin Parking Lot	51 stalls**	0 vacant stalls**	1 vacant stall**
North Terminal Lot	196 stalls	30 vacant stalls	46 vacant stalls
Total Stalls (including Ritz Lot)	2003 stalls	127 vacant stalls	207 vacant stalls

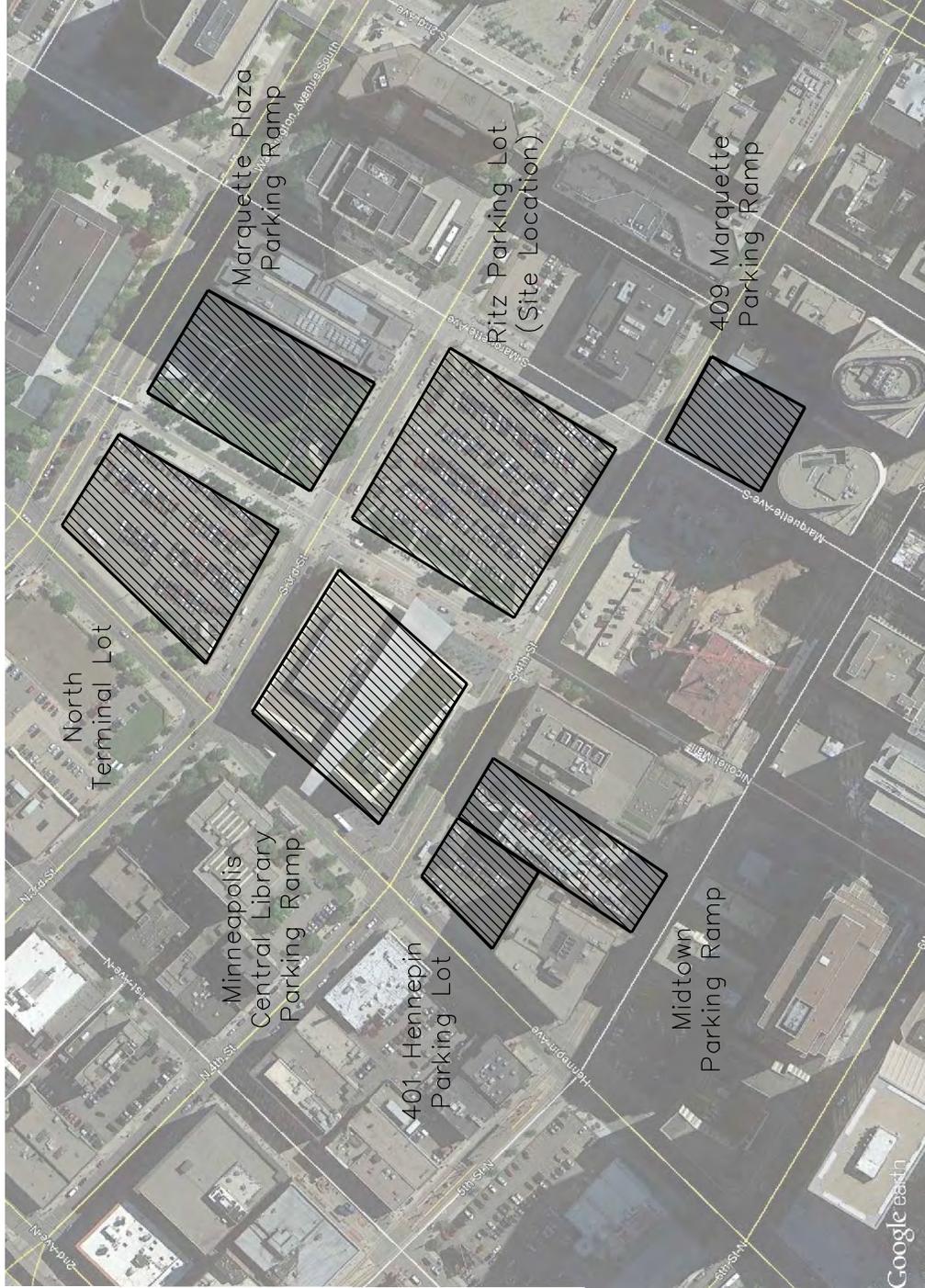
¹ A.M. Weekday Parking Survey taken approx. 10:00 a.m. on a Tuesday in November, 2014.

² P.M. Weekday Parking Survey taken approx. 2:00 p.m. on a Monday in November, 2014.

* Denotes period when access to lot for occupancy count was not allowed

** Denotes lot occupancy count impacted by snow storage

When the Ritz Block development displaces parking for up to 315 vehicles, the above analysis indicates that there may be a shortage of parking availability in both the AM and PM periods. It should be noted that Westwood only surveyed the ramps and lots that are directly adjacent to the site. Other ramps, such as Municipal Ramp C with its 1,518 stall capacity, lie within three blocks of the Ritz Block.



Parking Ramp or Surface lot	Parking Capacity
Midtown Parking Ramp	527 stalls
Minneapolis Central Library Parking Ramp	221 stalls
Ritz Parking Lot	315 stalls
Marquette Plaza Parking Ramp	232 stalls
409 Marquette Parking Ramp	461 stalls
401 Hennepin Parking Lot	51 stalls
North Terminal Lot	196 stalls
Total Stalls	2003 stalls

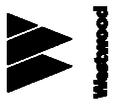


Date: 1/30/2015

Prepared for:

- _____
- _____
- _____
- _____

Westwood Professional Services, Inc.
 7889 Arden Drive
 Eden Prairie, MN 55344
 PHONE 952.937-5100
 FAX 952.937-5622
 TOLL FREE 1-888-937-5100
www.westwoodps.com



OPUS
 Minneapolis, MN

The Ritz Block
 Existing Off-Street Parking
 Figure 8

Minneapolis, MN

On-Site Parking

The dual towers of the Ritz Block development will provide structured off-street tenant and employee parking. Tower 1 is primarily residential use, and will provide 430 parking stalls comprising 414 stalls for residential use, 8 stalls for visitor parking and 8 stalls for retail parking. The anticipated rate of parking for the residential use is 1.1 stalls per unit.

Tower 2 is being proposed with two scenarios at this time – the Office Concept with 146 parking stalls for approximately 500,000 sq. ft. of office use; and the Residential Concept with 479 parking stalls serving 364 units. (Note: The anticipated rate of parking for the residential use in Tower 2 is 1.3 stalls per unit.)

Parking Requirements – Tower 1

In Tower 1, there are 430 parking spaces planned – 18 spaces on ground level and 412 spaces in the ramp which is contained on the 2nd through 6th floors of the building. The Downtown Parking Overlay District restricts creation of surface parking but does not regulate required parking in downtown districts. There is no minimum parking requirement for residential use in the B4 Downtown Zoning District.

The residential parking (414 stalls, 1:1.1 parking ratio) will be secured by a door which can be opened with a fob; they will not be accessible by the general public or commercial tenants. A minimum of 8 residential visitor spaces are required by the zoning ordinance (1 stall/50 units). The 8 visitor spaces will be designated in the ground level parking area.

The proposed retail space is 12,000 sq. ft. on the ground floor. There is no minimum parking requirement for retail in downtown Minneapolis, although 8 stalls will be provided.

There will be two handicapped van accessible stalls provided on the ground level.

All access to both tenant and guest/visitor/employee parking will be achieved via the service drive between the two buildings.

Parking Requirements – Tower 2

Tower 2 land uses are yet to be finalized. It is proposed that Tower 2 will comprise either a 20-story office building encompassing a multi-purpose ground floor, two levels of parking (146 stalls) and 17 levels of office use; or a 38-story residential building encompassing a multi-purpose ground floor, five levels of parking (479 stalls) and 31 levels of high-rise apartments.

In either case, the tenant or office employee parking area will be secured by a door which will be opened with a fob, and will not be accessible by the general public or commercial tenants.

There is no minimum parking requirement for office use in downtown Minneapolis. There is a maximum parking requirement of 1 space for every 1,000 sq. ft. GFA, which translates to 366 stalls. The developer proposes a rate of 1 space per 2,500 sq. ft. GFA, or 146 stalls. Under the

office scenario for Tower 2, there will be approximately 6 stalls for visitor/guest use on the ground floor.

For the residential scenario for Tower 2, a minimum of 10 residential visitor spaces are required by the zoning ordinance (1 stall/50 units). In total, there will be 23 ground-level stalls to serve the multi-purpose ground floor uses and visitor/guest/retail demand. The retail parking requirement is 1 stall for every 500 sq. ft. GFA. The proposed retail space is undisclosed at this time. Thus, the remaining 13 stalls will be available for the retail demand.

Though only in conceptual phase at this time, access to either the residential or office versions of Tower 2 are projected to come from both 3rd and 4th Streets South via separate driveways. At this time, it appears that Tower 2 will achieve parking and loading access from the Service Drive that separates the towers, however no loading dock or access location is yet specified.

Table 3 outlines the off-street parking requirements and parking provided by this development. The development complies with the off-street parking requirements as set forth by the City of Minneapolis. The proposed 430 stalls for Tower 1 is fewer than the 578 maximum number of stalls allowed for this size of development. Similarly, the number of stalls for Tower 2 is less than the maximum number of stalls allowed for each land use.

While it is hoped and anticipated that many residents will rely on alternative modes for daily commuting, it is the developer's experience that they still own cars for other travel purposes and that parking demand will still range between 1.1 and 1.3 to 1.

**Table 3
Estimated Parking Requirements per City Code**

Land Use	Units	Number of Stalls Proposed	Minimum Off-Street Parking Requirement	Maximum Off-Street Parking Requirement	% Stalls Provided vs. Max Parking Allowed
TOWER 1					
Apartments	364 units	414 stalls (1.1:1)	No minimum	546	76%
Visitors/Guests	364 units	8 stalls on ground level	8	8	100%
Commercial	12,000 sq. ft.	8 stalls on ground level	No minimum	24	33%
TOTAL		430 Stalls		578 stalls	74%
TOWER 2 - OFFICE					
Office	522,980 sq.ft.	146	No minimum	523	28%
TOTAL		146 Stalls		523 stalls	28%
TOWER 2 - RESIDENTIAL					
Apartments	364 units	471 stalls (1.3:1)	No minimum	546	86%
Visitors/Guests	364 units	8 stalls on ground level	8	8	100%
TOTAL		479 Stalls		557 stalls	86%

Source: Minneapolis Municipal Code of Ordinances.

Comparison with ITE Parking Generation Rates

The Institute of Transportation Engineers publication Parking Generation, 4th Edition, provides parking rates and equations for peak parking demand based on land use. Table 4 below lists the parking generation that was calculated based on the types and densities of land uses proposed for each tower in the Ritz Block.

**Table 4
Estimated Parking Requirements per ITE**

Land Use	ITE Code	Size	ITE Parking Rate or Equation	Weekday Peak Period Parking Demand
Tower 1				
High-Rise Apartment	222	364 Units	Equation	509
Shopping Center	820	12,000 GSF	Rate	56
Office Concept Total				565
Tower 2 - Office				
Office	701-Urban	365,606 GSF	Equation	856
Office Concept Total				856
Tower 2 - Residential				
High-Rise Apartment	222	364 Units	Equation	509
Residential Concept Total				509

SOURCE: ITE Trip Generation, 4th Edition, Washington, DC, 2010

The parking proposed by Opus for each tower of the Ritz Block is less than the weekday peak period parking demand projected using the ITE rates and equations.

Bicycle Parking

Table 5 outlines the minimum bicycle parking required for this development by the City of Minneapolis and the amount of bicycle parking being provided by the development.

Section 541.180(c) of the Municipal Code states, “[d]evelopments with five hundred thousand (500,000) square feet of new or additional gross floor area in downtown districts shall provide bicycle parking and bicycle facilities as required by Chapter 549, Downtown Districts. All other developments in the downtown districts shall provide one (1) secure bicycle parking space for every twenty (20) automobile spaces provided, but in no case shall fewer than four (4) or more than thirty (30) bicycle parking spaces be required. For the purposes of this section, a secure bicycle parking space shall include a bicycle rack which permits the locking of the bicycle frame and one (1) wheel to the rack, and which supports the bicycle in a stable position without damage to wheels, frame or components. Residential uses in the downtown districts are subject to the requirements of Table 541-3, Bicycle Parking Requirements” (as shown below in Table 5).

**Table 5
Bicycle Parking Requirements per City Code**

Land Use	Units	Requirement	Required Spaces from Table 541-3 - Bicycle Parking Requirements	Number of Bicycle Stalls Being Provided by this Development
TOWER 1				
Apartment	364 units	1 space per 2 dwelling units	182 (164 long-term, 18 short term)	182 (164 long-term, 18 short term)
Commercial	12,000 sq. ft.	No fewer than 4	4 (secure)	15 (secure)
TOTAL			186 (164 long-term, 18 short-term, 4 secure)	185 (164 long-term, 18 short-term, 3 secure)
TOWER 2 - OFFICE				
Office	365,606 GSF (excl. pkg)	1 secure space per 20 auto stalls (no less than 4/no more than 30)	8 secure	8 secure
TOTAL			8 secure	8 secure
TOWER 1 - RESIDENTIAL				
Apartment	364 units	1 space per 2 dwelling units	182 (164 long-term, 18 short term)	182 (164 long-term, 18 short term)
TOTAL			186 (164 long-term, 18 short-term, 4 secure)	186 (164 long-term, 18 short-term, 4 secure)

Source: Minneapolis Municipal Code of Ordinances.

As illustrated in Table 5, the development will provide sufficient bicycle parking on-site to meet the City standards. In Tower 1, the primary location for residential bicycle parking will be in a bike storage room on the ground floor that has capacity for 185 bikes. Additional bike racks will be installed on the wall in front of a resident's vehicular parking space if the storage room capacity is insufficient to meet the demand. There will be secure bike racks provided on the street level of each building.

Loading Space

There is a City requirement of two small spaces or one large space for multiple-family dwellings of more than 250 units. For commercial uses occupying less than 20,000 square feet of gross floor area, no loading space is required. Two loading docks are planned for Tower 1.

City Code specifies office uses located in the downtown districts shall provide one (1) large off-street loading facilities accessory to office uses with thirty thousand (30,000) to one hundred thousand (100,000) sq. ft. of gross floor area, plus one (1) large loading space for each additional one hundred thousand (100,000) sq. ft. of gross floor area up to five hundred thousand (500,000) sq. ft.. Tower 2 when projected as an Office Use, shall provide five large loading spaces.

As with Tower 1, if Tower 2 is configured as a residential tower with 364 units, two loading docks will be required. It is anticipated that the service drive between the buildings will be used as loading access to Tower 2.

4.0 TRAFFIC CONSIDERATIONS

Table 6 illustrates the estimated trip generation calculated for the proposed conditions using the Institute of Transportation Engineers' (ITE's) Trip Generation Manual, Ninth Edition. Because the final uses in Tower 2 are not yet determined, it is known that office use will generate more trips than the residential use. Therefore, Tower 2 has been modeled as the office use only to reflect a worst case for traffic operational analysis. The numbers shown do not reflect a reduction for shared trips, nor do they reflect any pass-by reduction, in order to provide a conservative comparison.

Table 6 – Trip Generation Estimates for Proposed Land Use (Towers 1 & 2[Office])

Land Use	ITE Code ¹	Equation or Rate ¹	Size	Weekday Enter	Weekday Exit	AM Enter	AM Exit	PM Enter	PM Exit
High-Rise Apartment	222	Rate	364 units	764	764	27	82	78	50
Specialty Retail	814	Rate	12,000 sq. ft.	384	384	23	23	41	41
Office	710	Equation	365,606 sq. ft.	1,758	1,758	475	65	83	405
Subtotal				2,906	2,906	525	170	202	496
Total				5,812		695		698	

¹ Rates and equations based on ITE Trip Generation Manual, Ninth Edition, 2012.

Based on the alternative transportation opportunities related to busses, LRT, streetcar, bicycle, car share as documented in previous TDM Plans in the area, and based on the types of proposed land uses, the following mode split goals for the project have been identified: Auto trips will have a mode split goal of 40%; Transit trips will have a mode split goal of 50%; and, pedestrian & bicycle trips will have a mode split goal of 10%. Therefore, by applying this modal share, the trip generation found in Table 6 will be reduced. The results of this reduction appear in Table 7, and were used in the traffic analysis.

**Table 7
Trip Generation Estimates with Modal Share – Proposed Land Use (Towers 1 & 2[Office])**

Land Use	ITE Code ¹	Equation or Rate ¹	Size	Weekday Enter	Weekday Exit	AM Enter	AM Exit	PM Enter	PM Exit
High-Rise Apartment	222	Rate	364 units	306	306	11	33	31	20
Specialty Retail	814	Rate	12,000 sq. ft.	154	154	9	9	16	16
Office	710	Equation	365,606 sq. ft.	703	703	190	26	33	162
Subtotal				1,163	1,163	205	68	80	198
Total				2,326		273		278	

¹ Rates and equations based on ITE Trip Generation Manual, Ninth Edition, 2012.

Westwood Professional Services analyzed several intersections around the Nicollet Residences site, and assessed for traffic operational performance. Intersections analyzed included:

- South 3rd Street and Hennepin Avenue
- South 3rd Street and Nicollet Mall
- South 3rd Street and Marquette Avenue South
- South 4th Street and Hennepin Avenue
- South 4th Street and Nicollet Mall
- South 4th Street and Marquette Avenue South

A full traffic operation report is provided in the Traffic Impact Study prepared in conjunction with the plan. Briefly, the operational analysis from that study indicates that the access intersections will operate at LOS-D or better.

In the 2017 Build condition, there are a few times during the AM and the PM peak hours when each scenario will have extended queues. Nevertheless, there is only one time when the queues on 3rd or 4th Streets extend far enough to block the service drive(s) at the Ritz Towers. In the 2017 Build Condition with dual access points, a 95th percentile queue length does extend 183 feet in the P.M. Peak Hour period. The total length of the block between Marquette and Nicollet Mall is approximately 330 feet. Half that distance is 165 feet. Therefore, the 95th percentile queue may block the service drive access by 18 feet (approx. one car length) for a short time.

In a similar manner, 2030 Build models were developed and tested for the single access and dual access conditions. Overall, the 2030 Build levels of service at each study intersection are acceptable. There remain a few lane groups at individual intersections that have unacceptable levels of service. One is in the 2030 PM Peak Hour for the dual drives, where the service drive exit onto 4th Street South shows a 49 second delay, but is only reflecting a 10-foot queue. As with many driveways from buildings in an urban area, exiting traffic may have to wait for other traffic to clear before drivers are able to exit onto the intersecting street.

Under each scenario of the 2030 P.M. Peak Hour, the service drive onto 4th Street South will be blocked by 95th Percentile Queues along 4th Street South. The 4th Street South queue will extend 25-30 feet past the driveway (or two car lengths). It does not appear that in either case the queue on 4th Street South will extend beyond the parking ramp access from Tower 1.

In conclusion, results of the operational analyses indicate that under the No-Build and Build scenarios, vehicular traffic operation performs at roughly the same levels of service. The high modal share from this development significantly reduces the single-occupant traffic impact of the site, and does not significantly burden surrounding intersection congestion levels beyond their existing or No-Build conditions. There will be some queuing on 4th Street South in the future Build conditions that extends to and slightly beyond the service drive, but these incidences are short-lived, and are typical within a downtown traffic environment.

5. TRAVEL DEMAND MANAGEMENT STRATEGIES

A. City of Minneapolis Transportation Goals

The City of Minneapolis has developed a Ten-Year Transportation Action Plan that provides a vision of the future that states, “Minneapolis will build, maintain and enhance access to multi-modal transportation options for residents and business through a balanced system of transportation modes that supports the city’s land use vision, reduces adverse transportation impacts, decreases the overall dependency on automobiles, and reflects the city’s pivotal role as the center of the regional transportation network.” – The Minneapolis Plan for Sustainable Growth, (2008).

From this has emerged their “Transportation Vision for Minneapolis”:

- Transportation is important to the economic viability of the city, the region and the state. *Access Minneapolis* will lay the transportation groundwork for achieving the long-range vision of Minneapolis as a vital and thriving metropolitan urban center that is a great place to live, work, play, visit and conduct business.
- The city must remain livable and walkable to maintain its regional and national competitiveness. In most cases, it is not feasible or desirable to increase the curb-to-curb width of roadways in the city. However, there are many opportunities for improving the operational capacity of the transportation system without street widening. *Access Minneapolis* will result in a city that is livable and walkable while optimizing the operational capacity of the transportation system.
- *Access Minneapolis* will result in a citywide transportation system that is multi-modal (pedestrian, bicycle, transit, automobile, freight), providing good transportation choices to people, including people with disabilities.
- *Access Minneapolis* will result in a citywide transportation system that serves anticipated employment and residential growth and optimizes access to destinations by all modes (pedestrian, bicycle, transit, automobile, freight) throughout the city, between neighborhoods, to/from and within downtown.
- Although all modes of transportation are important, transit is critical for maximizing the people carrying capacity of the transportation system. *Access Minneapolis* will result in a transit system that operates efficiently and effectively in downtown and throughout the city. Transit will become the mode of choice for Minneapolis residents, workers and visitors.

With this vision in mind, the City of Minneapolis has developed Transportation Policies from “The Minneapolis Plan for Sustainable Growth” (2008). Key goals of this include:

- Building the City through multi-modalism;
- Developing modal priorities in a neighborhood context;
- Creating a walkable city;
- Making transit more effective;

- Creating a bicycle-friendly city;
- Managing vehicle traffic;
- Managing freight movement;
- Managing Parking;
- Developing funding and pricing strategies; and
- Supporting a vibrant multi-modal Downtown.

B. City of Minneapolis Transportation Policy Points

The following policy points for transportation are included in Chapter 2 of the Minneapolis Plan for Sustainable Growth³:

- Policy 1: Encourage growth and reinvestment by sustaining the development of a multi-modal transportation system.
- Policy 2: Support successful streets and communities by balancing the needs of all modes of transportation with land use policy.
- Policy 3: Encourage walking throughout the city by ensuring that routes are safe, comfortable, pleasant, and accessible.
- Policy 4: Make transit a more attractive option for both new and existing riders.
- Policy 5: Ensure that bicycling throughout the city is safe, comfortable and pleasant.
- Policy 6: Manage the role and impact of automobiles in a multi-modal transportation system.
- Policy 7: Ensure that freight movement and facilities throughout the city meet the needs of the local and regional economy while remaining sensitive to impacts on surrounding land uses.
- Policy 8: Balance the demand for parking with objectives for improving the environment for transit, walking and bicycling, while supporting the city's business community.
- Policy 9: Promote reliable funding and pricing strategies to manage transportation demand and improve alternative modes.
- Policy 10: Support the development of a multi-modal Downtown transportation system that encourages an increasingly dense and vibrant regional center.
- Policy 11: Minneapolis recognizes the economic value of Minneapolis-St. Paul International Airport and encourages its healthy competition to reach global markets in an environmentally responsible manner.

³ http://www.ci.minneapolis.mn.us/cped/docs/02_Transportation_100209.pdf

C. Goal of the Travel Demand Management Plan

To succeed, this Travel Demand Management (TDM) plan must assist the City of Minneapolis to achieve their transportation goals. Based on previous TDM Plans in the area and the types of proposed land uses, the following mode split goals for the project have been identified by the developer:

**Table 8
Mode Split Goals**

Mode Split	Goal
Auto	40%
Transit	50%
Bike/Walk	10%

The owners and/or TDM Liaison will work to achieve a mode share goal percentage of 50% non-single-occupant-vehicles for the residential development, as identified by the City of Minneapolis.

D. Specific Travel Demand Management Strategies

This section outlines specific Travel Demand Management strategies to be implemented by the owner/end user/property manager/etc. of this site. The strategies detail the responsibilities of the site's responsible party in addressing the issues regarding transportation cited above. Opus Development Corporation, or their successors, by accepting the responsibility of implementing the items below, desire to help Minneapolis to achieve their goals of enhancing the local transportation system. Implementation of the items noted will help to encourage use of alternate modes of travel, enhance pedestrian friendliness, and achieve a balance in the needs of all users of the transportation system. Opus Development Corporation, or their successors specifically commits to the implementation of the following measures:

General

1. The owners and/or property managers of the development will appoint designated TDM Liaisons to coordinate the various TDM strategies that require ongoing attention. The responsibilities of the TDM Liaison would include upkeep of transit information and other communications, carpool program coordination, and administration of a shared car program.
2. The owner/TDM Liaison of the apartment building will maintain commuter information in the common area for residents/guests. Information should include items such as transit schedules, Metro Transit commuter/carpool program information (Rideshare and the Guaranteed Ride Home), and bicycle/pedestrian commuter information or maps.
3. Assemble and disseminate a move-in package for all new residents. The move-in package will include all the pertinent information available at no cost on travel information such as parking, alternate modes of travel, bus routes and bike routes.
4. Each resident will also be provided a link to the Downtown Minneapolis Transportation Management Organization's Commuter Connection webpage, <http://www.commuter->

connection.org/, that provides a host of links to transit, biking, LRT, rideshare and walking opportunities in Downtown Minneapolis.

Transit/Carpool

1. The Developer commits to purchasing and maintaining a shared car on-site that will be accessible to the public. The "HOURCAR" program, detailed at www.hourcar.org, is an example of such a program that will be available for tenant use. The property manager/TDM liaison for the apartment building will manage the building's involvement in the program and will distribute current program information to the residents. Such a program is valuable to those residents who may not have a personal vehicle, and who from time to time need to use a personal vehicle, and who are used to walking.
2. This development is transit-oriented. The property manager/TDM liaison for the apartment building will manage the building's involvement in distributing current transit information to the residents. Wayfinding signs will be included in the building and arcade design to lead transit riders to the LRT, Nicollet Mall busses, and the MARQ2 bus lanes.
3. Residents will be informed of Met Transit's "Go-Card" passes for hassle-free transit. The link <http://www.metrotransit.org/passes-go-to-cards.aspx> will be provided to residents at move-in.

Bicycles

1. At least 150 long-term bicycle stalls will be provided within the building for use by residents, with 14 secure spaces available for customer, employee or visitor use.

Deliveries

1. Owners/property managers shall develop and maintain a policy that encourages truck and service deliveries to occur outside of peak traffic times. This would not include FedEx/UPS-type deliveries.

Parking

1. Residential garage parking will be secure with access controlled through fob technology or similar measures.
2. Parking will not be free. Residents will not be required to lease parking, but those who chose to do so will have reserved spaces in the ramp. The parking ratio for the development's apartment uses will be 1.1 spaces per apartment. The parking fee will be market rate for downtown residential parking and is anticipated to begin at \$200 to \$250 per month for apartment residents (via lease contract separate from apartment lease).
3. Approximately five pay stalls will be designated for residential visitors in the ground level parking area.
4. Commercial/retail tenants, customers, additional residential guests/visitors and delivery services will have access to approximately 45 pay stalls in the 2nd floor of the ramp and at grade. Tenants may lease some of these stalls (via lease contract separate from commercial building lease). Tenant parking leases will be at market rate as determined by owner/manager.
5. Except as noted above, the owners, property managers, resident association or others will not lease or sell any parking stalls to any person other than a resident or tenant of the building.

Resident Surveys and TDMP Plan Status Reports

1. With the assistance of Commuter Connection, conduct a baseline resident commuting survey within the first 6 months after 50% occupancy of the site. Continue to conduct this survey every two years after that, for ten years or until the TDM Plan mode split goals are achieved.

**TRAVEL DEMAND MANAGEMENT PLAN
RITZ BLOCK**

MINNEAPOLIS, MN

PLAN APPROVAL

Opus Development Company, LLC

By: _____ Dated: _____

Pete Carlson
Senior Vice President, Real Estate Development
Opus Development Company, LLC
10350 Bren Road West
Minnetonka, MN 55343

Minneapolis Community and Economic Development Department

By: _____ Dated: _____

CPED Development Services Director

Printed Name and Title

Minneapolis Public Works Department

By: _____ Dated: _____

Traffic Operations Engineer

Printed Name and Title

APPENDIX A - BUS ROUTES SERVING RITZ BLOCK SITE (WITHIN ONE BLOCK) from Metro Transit website

ROUTE #	TYPE OF SERVICE	DESTINATIONS	WEEKDAY	MIDDAY SERVICE w/≤ 30 MIN HEADWAYS	SATURDAY	SUNDAY
3	Local	U of M - Como Ave. - Energy Park Dr. - Maryland Ave.	5:00 a.m. - 1:30 a.m.	Yes	5:00 a.m. - 1:30 a.m.	6:00 a.m. - 12:00 a.m.
4	Local	New Brighton - Johnson St. - Bryant Ave. - Southtown	5:00 a.m. - 1:00 a.m.	Yes	5:00 a.m. - 1:00 a.m.	5:00 a.m. - 1:00 a.m.
6	Local	U of M - Hennepin Ave. - Xerxes - France - Southdale	5:00 a.m. - 2:00 a.m.	Yes	5:00 a.m. - 2:00 a.m.	6:00 a.m. - 1:00 a.m.
7	Local	Plymouth - 27th Ave. - Midtown - 46th St. LRT - 34th Ave S.	5:00 a.m. - 1:00 a.m.	Yes	5:00 a.m. - 1:00 a.m.	5:00 a.m. - 1:00 a.m.
12	Local	Uptown – Excelsior Blvd. – Hopkins – Opus	6:00 a.m. – 7:00 p.m.	No	N/A	N/A
10	Local	Central Ave. – University Ave. - Northtown	5:00 a.m. - 2:15 a.m.	Yes	5:00 a.m. - 2:15 a.m.	5:00 a.m. - 2:15 a.m.
11	Local	Columbia Heights – 2 nd St. NE – 4 th Ave. S	5:00 a.m. - 1:00 a.m.	Yes	5:00 a.m. - 1:00 a.m.	5:00 a.m. - 1:30 a.m.
14	Local	Robbinsdale - West Broadway Ave. - Bloomington Ave.	5:00 a.m. - 1:00 a.m.	Yes	5:00 a.m. - 1:00 a.m.	6:00 a.m. - 12:00 a.m.
16	Local	U of M - University Ave. - Midway	24 hr Service	Yes	24 hr Service	24 hr Service
17	Local	Minnetonka Blvd. – Uptown – Washington St. NE	5:00 a.m. - 1:00 a.m.	Yes	6:00 a.m. - 1:00 a.m.	6:00 a.m. - 1:00 a.m.
18	Local	Nicollet Ave. – South Bloomington	5:00 a.m. - 2:00 a.m.	Yes	5:00 a.m. - 2:00 a.m.	5:00 a.m. - 2:00 a.m.
25	Local	Northtown – Silver Lake – Stinson – Lake of the Isles	6:00 a.m. – 7:00 p.m.	No	9:00 a.m. – 6:30 p.m.	N/A
50	Limited	U of M - University Ave. - Midway	6:00 a.m. - 7:00 p.m.	Yes	N/A	N/A
BLUE (55)	Light Rail	BLUE LRT – Mpls. – Airport - MOA	4:00 a.m. – 4:00 a.m.	Yes	4:00 a.m. – 4:00 a.m.	4:00 a.m. – 4:00 a.m.
59	Limited	Blaine – Hwy. 65 – Central – Mpls.	6:30 a.m. - 8:30 a.m.; 3:30 p.m. - 6:00 p.m.	No	N/A	N/A
61	Local	E Hennepin Ave - Larpenteur Ave - Arcade St.	5:00 a.m. - 10:30 p.m.	Yes	7:00 a.m. - 8:00 p.m.	N/A
94	Express	Minneapolis - St. Paul	5:00 a.m. - 1:00 a.m.	Yes	6:00 a.m. - 1:00 a.m.	8:00 a.m. - 12 Midnight
133	Limited	Bloomington Ave. – Chicago Ave. – Mpls.	7:30 a.m. - 8:30 a.m.; 4:00 p.m. - 5:30 p.m.	No	N/A	N/A
135	Limited	Grand Ave. S – 35 th St. – 36 th St. – Mpls.	7:00 a.m. - 9:00 a.m.; 4:00 p.m. - 5:30 p.m.	No	N/A	N/A
141	Limited	New Brighton - Johnson St. - Minneapolis	6:30 a.m. - 9:00 a.m.; 3:30 p.m. - 6:00 p.m.	No	N/A	N/A
146	Limited	Vernon Ave. – 50 th St. – Mpls.	6:30 a.m. - 9:00 a.m.; 7:00 p.m. - 9:00 p.m.	No	N/A	N/A
156	Express	58 th St. – 56 th St. – Diamond Lake – Mpls.	6:30 a.m. - 8:30 a.m.; 3:30 p.m. - 5:30 p.m.	No	N/A	N/A
250	Express	St. Josephs P&R – 95 Ave. P&R – Mpls.	6:00a.m. - 7:30 p.m.	No	N/A	N/A
260	Express	Rosedale – Co. Rd. B2 – Mpls.	6:00a.m. - 9:30 p.m.	No	N/A	N/A
261	Express	Shoreview – Roseville – Mpls.	6:30 a.m. - 8:30 a.m.; 3:30 p.m. - 5:00 p.m.	No	N/A	N/A
264	Express	Co. Rd. C Park and Ride – Roseville	6:00 a.m. - 6:00 p.m.	No	N/A	N/A
270	Express	Mahtomedi – Maplewood – Minneapolis	6:30 a.m. - 9:00 a.m.; 3:30 p.m. - 6:30 p.m.	No	N/A	N/A
288	Express	Forest Lake – Mpls.	7:00 a.m. - 9:00 a.m.; 3:30 p.m. - 6:00 p.m.	No	N/A	N/A

440 South	Local	MVTA – MOA – Blackhawk P&R – MN Zoo – Apple Valley	9:00 a.m. – 10:30 a.m.	No	N/A	N/A
452	Express	West St. Paul – Mpls.	7:30 a.m. - 8:30 a.m.; 4:30 p.m. - 5:30 p.m.	No	N/A	N/A
460 South	Express	MVTA – Burnsville – Mpls. – U of M	2:00 p.m. - 6:00 p.m.	No	N/A	N/A
464	Express	MVTA – Burnsville – Savage – Mpls.	6:30 a.m. - 9:00 a.m.; 3:00 p.m. - 6:00 p.m.	No	N/A	N/A
465 South	Express	MVTA – Burnsville – Apple Valley – U of M	6:30 a.m. - 9:30 p.m.	No	N/A	N/A
467	Express	Lakeville – Minneapolis	6:30 a.m. - 8:30 a.m.; 3:30 p.m. - 6:00 p.m.	No	N/A	N/A
470 South	Express	MVTA – Eagan – Blackhawk P&R – Mpls.	3:00 p.m. - 6:30 p.m.	No	N/A	N/A
472 South	Express	MVTA – Eagan – Blackhawk P&R – Mpls.	2:00 p.m. - 5:30 p.m.	No	N/A	N/A
475 South	Express	MVTA – U of M	12:30 p.m. - 2:30 p.m.	No	N/A	N/A
476 South	Express	MVTA – Palomino – 132 nd St. – Gardenview	3:30 p.m. - 5:30 p.m.	No	N/A	N/A
477 South	Express	MVTA – Apple Valley – Mpls.	2:00 p.m. - 6:30 p.m.	No	N/A	N/A
478 South	Express	MVTA – Rosemount P&R	4:30 p.m. & 5:00 p.m.	No	N/A	N/A
479 South	Express	MVTA – Rosemount – 157 th St. – Mpls.	4:00 p.m. & 4:30 p.m.	No	N/A	N/A
490 South	Express	Shakopee – Prior Lake – Mpls.	1:00 p.m. - 6:30 p.m.	No	N/A	N/A
535	Limited	South Bloomington – Richfield – Mpls.	6:00 a.m. - 11:00 p.m.	Yes	N/A	N/A
552	Express	12 th Ave – Bloomington Ave. – Mpls.	7:00 a.m. - 8:30 a.m.; 4:00 p.m. - 5:30 p.m.	No	N/A	N/A
553	Express	Bloomington – Portland Ave. – Mpls.	7:00 a.m. - 8:30 a.m.; 3:30 p.m. - 5:30 p.m.	No	N/A	N/A
554	Express	Bloomington – Nicollet Ave. – Mpls.	7:00 a.m. - 9:00 a.m.; 3:30 p.m. - 5:30 p.m.	No	N/A	N/A
558	Express	Southtown – Lyndale Ave. – Penn Ave. – Mpls.	6:30 a.m. - 8:30 a.m.; 4:00 p.m. - 6:00 p.m.	No	N/A	N/A
568	One bus each peak	Nicollet Ave. – 50 th St. – Opportunity Partners	8:00 a.m. & 5:00 p.m.	No	N/A	N/A
578	Express	Edina – Southdale – Mpls.	7:00 a.m. – 6:00 p.m.	No	N/A	N/A
587	Express	Edina – Valley View Rd. – Mpls.	6:30 a.m. - 8:30 a.m.; 4:00 p.m. - 6:00 p.m.	No	N/A	N/A
589	Express	West Bloomington – Mpls	6:30 a.m. - 6:00 p.m.	No	N/A	N/A
597	Express	West Bloomington – Mpls.	6:00 a.m. - 6:00 p.m.	No	N/A	N/A
643 East	Limited	Cedar Lake Rd. – Mpls.	3:30 p.m. - 6:30 p.m.	No	N/A	N/A
663 East	Express	Cedar Lake Rd. – Mpls.	7:00 a.m. - 9:30 a.m.	No	N/A	N/A
664	Express	Co. Rd. 3 – Excelsior Blvd. – Mpls.	6:30 a.m. - 8:00 a.m.; 3:30 p.m. - 6:00 p.m.	No	N/A	N/A
665	Express	Opportunity Partners – 11 th Ave. – Mpls.	6:30 a.m. - 8:00 a.m.; 4:00 p.m. - 5:30 p.m.	No	N/A	N/A
667	Express	Minnetonka – St. Louis Park – Mpls.	6:00 a.m. - 10:00 a.m.; 3:00 p.m. - 6:30 p.m.	No	N/A	N/A
668	Express	Hopkins – St. Louis Park – Mpls.	7:00 a.m. - 9:00 a.m.; 5:00 p.m. - 6:00 p.m.	No	N/A	N/A
670	Express	Co. Rd. 19 – Hwy. 7 – Mpls.	7:00 a.m. - 8:00 a.m.; 4:30 p.m. - 5:30 p.m.	No	N/A	N/A
671	Express	Excelsior - Deephaven - Minneapolis	7:00 a.m. - 8:30 a.m.; 4:00 p.m. - 5:00 p.m.	No	N/A	N/A
672	Express	Wayzata - Minnetonka - Minneapolis	6:00 a.m. - 9:00 a.m.; 3:00 p.m. - 6:30 p.m.	No	N/A	N/A
673	Express	Co. Rd. 73 P&R – Mpls.	6:00 a.m. - 9:00 a.m.; 3:30 p.m. - 6:30 p.m.	No	N/A	N/A

674	Express	Orono - Long Lake - Wayzata – Mpls.	7:00 a.m. - 8:30 a.m.; 4:00 p.m. - 5:30 p.m.	No	N/A	N/A
675	Express	Mound – Wayzata – Ridgedale – Mpls.	5:00a.m. - 11:00 p.m.	No	6:00a.m. - 10:00 p.m.	9:00a.m. - 8:00 p.m.
677	Express	Mound – Orono – Plymouth Rd. – Mpls.	6:30 a.m. - 8:30 a.m.; 4:30 p.m. - 5:30 p.m.	No	N/A	N/A
680 West	Express	Eden Prairie – Mpls.	4:30 p.m. - 6:00 p.m.	No	N/A	N/A
684 West	Express	Eden Prairie – Southdale	6:30 a.m. & 7:30 a.m.	No	N/A	N/A
690 West	Express	Eden Prairie – Mpls. – U of M	4:00 p.m. - 6:00 p.m.	No	N/A	N/A
691 West	Express (one trip)	Eden Prairie – Mpls.	5:30 p.m.	No	N/A	N/A
692 West	Express	Eden Prairie	4:00 p.m. - 5:00 p.m.	No	N/A	N/A
697 West	Express (one trip)	Chaska – Chanhassen – Mpls.	4:30 p.m.	No	N/A	N/A
698 West	Express	Chaska – Chanhassen – Mpls.	6:30 a.m. - 9:30 p.m.	No	N/A	N/A
699 West	Express	East Creek – U of M	3:30 p.m. - 5:30 p.m.	No	N/A	N/A
721 South	Limited	Brooklyn Center – New Hope – Mpls.	7:00 a.m. - 5:30 p.m.	No	N/A	N/A
724 South	Limited	Target Campus – Starlite – Brooklyn Center	8:30 a.m. - 4:00 p.m.	No	N/A	N/A
742	Express	Plymouth – Bass Lake Rd.	6:30 a.m. - 8:30 a.m.; 4:00 p.m. - 7:00 p.m.	No	N/A	N/A
747	Express	Plymouth – Station 73 – Mpls.	5:00 a.m. - 7:30 a.m.; 4:00 p.m. - 6:00 p.m.	No	N/A	N/A
756	Express	Hwy. 55 – Mendelssohn Rd. – Boone Ave.	7:30 a.m. - 8:30 a.m.; 4:00 p.m. - 5:00 p.m.	No	N/A	N/A
758 South	Express	63 rd Ave. P&R – Douglas – Noble – Mpls.	6:30 a.m. - 8:30 a.m.	No	N/A	N/A
760	Express	Zane Ave. – 63 rd Ave. – 65 th Ave. P&R – Mpls.	6:00 a.m. - 8:30 a.m.; 3:30 p.m. - 6:30 p.m.	No	N/A	N/A
761	Express	Brooklyn Park – Xerxes – 49 th Ave. – Mpls.	6:30 a.m. - 8:00 a.m.; 3:30 p.m. - 6:00 p.m.	No	N/A	N/A
762	Limited	Brooklyn Ctr. – North Mpls. – Mpls.	7:00 a.m. & 8:00 a.m.; 4:00 p.m. & 4:30 p.m.	No	N/A	N/A
763	Express	85 th Ave. – Brookdale Dr. – Humboldt – Mpls.	6:30 a.m. - 9:00 a.m.; 4:00 p.m. - 5:00 p.m.	No	N/A	N/A
764 South	Express	Winnetka Ave. – 42 nd Ave. – Mpls.	7:30 a.m. - 8:30 a.m.	No	N/A	N/A
765	Express	Target – Hwy. 252 and 73 rd Ave. P&R – Mpls.	6:30 a.m. - 8:00 a.m.; 4:00 p.m. - 5:30 p.m.	No	N/A	N/A
766	Express	Champlin – Noble P&R – West River Rd.	5:30 a.m. – 7:30 p.m.	No	N/A	N/A
767	Express	63 rd Ave. P&R – 65 th Ave. P&R – Mpls.	5:30 a.m. - 8:00 a.m.; 3:30 p.m. - 5:30 p.m.	No	N/A	N/A
772	Express	Plymouth – Station 73	6:30 a.m. - 8:30 a.m.; 3:30 p.m. - 6:00 p.m.	No	N/A	N/A
774 West	Two Stops	Plymouth – Station 73	6:00 p.m. & 7:00 p.m.	No	N/A	N/A
776	Express	Plymouth – Southwest Plymouth	6:30 a.m. - 9:00 a.m.; 3:30 p.m. - 6:00 p.m.	No	N/A	N/A
777	Express	Plymouth – NW Plymouth – Station 73	6:30 a.m. - 8:30 a.m.; 3:30 p.m. - 6:00 p.m.	No	N/A	N/A
780	Express	Maple Grove – Shepherd of the Grove P&R	6:30 a.m. - 8:00 a.m.; 3:30 p.m. - 5:30 p.m.	No	N/A	N/A
781	Express	Maple Grove – Maple Grove Station	6:00 a.m. - 6:30 p.m.	No	N/A	N/A
782	Express	Maple Grove- Zachary and 96 th Ave. P&R	6:30 a.m. - 8:30 a.m.; 3:30 p.m. - 5:30 p.m.	No	N/A	N/A
783	Express	Maple Grove – Crosswinds Church P&R	6:30 a.m. - 9:00 a.m.; 4:00 p.m. - 6:00 p.m.	No	N/A	N/A
785	Express	Maple Grove – Parkway Station	6:00 a.m. - 9:00 a.m.; 3:30 p.m. - 6:00 p.m.	No	N/A	N/A
790	Express	Plymouth – Cub Foods – Four Seasons	7:00 a.m. - 9:00 a.m.; 3:30 p.m. - 6:00 p.m.	No	N/A	N/A

793	Express	Plymouth – Cub Foods – Four Seasons	7:00 a.m. & 7:30 a.m.; 4:30 p.m. - 7:00 p.m.	No	N/A	N/A
795 West	Two Stops	Plymouth – Midday – NE Plymouth	12:00 p.m. & 2:00 p.m.	No	N/A	N/A
824	Limited	Northtown – Monroe – University – Mpls.	6:30 a.m. - 7:30 a.m.; 4:00 p.m. - 5:00 p.m.	No	N/A	N/A
825	Limited	Northtown – St. Anthony – Mpls.	6:30 a.m. - 8:30 a.m.; 4:00 p.m. - 6:00 p.m.	No	N/A	N/A
850	Express	Riverdale P&R – Foley P&R – Mpls. (Anoka to downtown Mpls.)	5:30 a.m. - 9:00 a.m.; 3:00 p.m. - 6:30 p.m.	No	N/A	N/A
852	Express	Anoka – Coon Rapids – Northtown – Mpls	3:30 a.m. - 9:30 p.m.	No	8:00 a.m. - 7:00 p.m.	N/A
854	Express	Paul Pkwy – Northdale – Northtown – Mpls.	6:30 a.m. - 8:30 a.m.; 4:00 p.m. - 6:30 p.m.	No	N/A	N/A
GREEN	LRT	Target Station – U of M – St. Paul Union Station	4:00 a.m. – 4:00 a.m.	Yes	4:00 a.m. – 4:00 a.m.	4:00 a.m. – 4:00 a.m.

APPENDIX

TRAFFIC IMPACT STUDY – THE RITZ BLOCK

TRAFFIC IMPACT STUDY

“The Ritz Block”

Minneapolis, MN

January 30, 2015

Prepared For:



Opus Development Company, LLC
Minnetonka, MN

Prepared By:



Westwood Professional Services
7699 Anagram Drive
Eden Prairie, MN 55344

PHONE 952-937-5150
FAX 952-937-5822
TOLL FREE 1-888-937-5150

www.westwoodps.com

Westwood Project R0005045

TRAFFIC IMPACT STUDY

The Ritz Block

Minneapolis, MN

January 30, 2015

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Print Name: Stephen J. Manhart

Signature:  _____

Date: 01/30/2015 License # 22428

TABLE OF CONTENTS

I. INTRODUCTION and SUMMARY 1

II. EXISTING TRAFFIC CONDITIONS 4

 A. Data Collection 4

 B. Existing Traffic Restrictions 4

 C. Operational Analysis Methodology..... 4

III. NO-BUILD ALTERNATIVE 7

 A. Background Growth 7

 C. Anticipated Improvements for 2017 and 2030 No-Build Conditions 7

 D. Results of Analysis; 2017 and 2030 No-Build Scenario 7

IV. BUILD ALTERNATIVE 12

 A. Site-Generated Traffic..... 12

 B. Trip Distribution and Assignment 13

 C. Results of Analysis: 2017 Build Scenario..... 20

 D. Results of Analysis: 2030 Build Scenario..... 22

VI. CONCLUSIONS..... 27

VII. RECOMMENDATIONS..... 28

APPENDIX..... 29

LIST OF FIGURES

Figure 1 – Vicinity Map 2

Figure 2 – Concept Site Plan 3

Figure 3 – 2014 Traffic Volumes 5

Figure 4a – 2017 No-Build Traffic Volumes..... 8

Figure 4b -- 2030 No-Build Traffic Volumes..... 9

Figure 5 -- Trip Distribution..... 15

Figure 6a -- 2017 Build Trip Assignment -- 4th Street Access Only..... 16

Figure 6b -- 2017 Build Trip Assgnment -- 3rd Street and 4th Street Accesses 17

Figure 7a -- 2017 Build Trip Volumes -- 4th Street Access Only..... 18

Figure 7b – 2017 Build Trip Vilumes – 3rd Street and 4th Street Accesses 19

Figure 8a -- 2030 Build Trip Volumes -- 4th Street Access Only..... 23

Figure 8b – 2030 Build Trip Vilumes – 3rd Street and 4th Street Accesses 24

LIST OF TABLES

Table 1 – Land Use Changes with Proposed Redevelopment 1
Table 2 – Results of Year 2014 Existing Analysis – AM & PM Peak Hours 6
Table 3a – Results of Year 2017 No-Build Analysis – AM & PM Peak Hours 10
Table 3b -- Results of Year 2030 No-Build Analysis -- AM & PM Peak Hours 11
Table 4a – Trip Generation Estimates for Proposed Land Use (Towers 1 & 2 [Office])..... 12
Table 4b – Trip Generation Estimates for Proposed Land Use (Towers 1 & 2 [Residential]) 12
Table 5 -- Mode Share Goals..... 13
Table 6 – Trip Generation Estimates with Modal Share – Proposed Land Use (Towers 1 & 2[Office])..... 13
Table 7a – Results of Year 2017 Build Analysis – AM & PM Peak Hour (1 service drive access points) 20
Table 7b – Results of Year 2017 Build Analysis – AM & PM Peak Hour (2 service drive access points)..... 21
Table 8a – Results of Year 2030 Build Analysis – AM & PM Peak Hour (1 service drive access point)..... 22
Table 8b – Results of Year 2030 Build Analysis – AM & PM Peak Hour (2 service drive access points)..... 25

I. INTRODUCTION and SUMMARY

Opus Development Company, LLC, (“Opus”) proposes to redevelop the property located at 315 Nicollet Mall in downtown Minneapolis. This city block is the former site of the Sheraton-Ritz Hotel (see Figure 1). Currently, the property is occupied with a 315-stall surface parking lot.



The Opus proposal is to redevelop the site into two towers separated by an internal service drive. The first is proposed to house a 364-unit, 32-story residential tower. The second is proposed as either a 20-story office building housing 365,606 square feet of office space, or as a 32-story, 364-unit residential tower. Table 1 summarizes the previous and proposed land uses.

**Table 1
Land Use Changes with Proposed Redevelopment**

Existing Land Uses	Proposed Land Uses
Surface Parking Lot – 315 stalls	<u>Tower 1</u> -- Apartments (364 Units); Retail (12,000 GSF); 430 parking stalls (414 residential; 8 visitor; 8 retail); 182 bike stalls
	<u>Tower 2</u> (Office Concept) – 365,606 GSF <u>Tower 2</u> (Office Concept) – 146 parking stalls; 31 bike stalls -or- <u>Tower 2</u> (Residential Concept) – Apartments (364 Units) <u>Tower 2</u> (Residential Concept) – 479 parking stalls (471 residential; 8 visitor); 182 bike stalls

The development lies completely within the B4-2 Downtown Business Zoning District. The site also lies within two overlay districts – the Nicollet Mall Overlay District and the Downtown Parking Overlay District.

The site is highly transit-oriented. The BLUE and GREEN Line Light Rail Transit’s Nicollet Mall Station exists one block to the west. The bus- and taxi-only Nicollet Mall is to the northwest. The MARQ2 Bus Lanes are to the southeast. Metro Transit bus service exists along both 3rd and 4th Streets South. The City is also planning a streetcar line with a station at the corner of South 3rd Street and Nicollet Mall

The site is also highly pedestrian-oriented, with walk-up retail and service uses along the Nicollet Mall frontage. There will also be provisions for future skyway connections on the second level crossing South 4th Street and crossing the service drive.



SITE
LOCATION



Date: 12/19/2014



Westwood Professional Services, Inc.
 7699 Anagram Drive
 Eden Prairie, MN 55344

PHONE 952-937-5150
 FAX 952-937-5822
 TOLL FREE 1-888-937-5150

www.westwoodps.com

Client: _____
 Checked: _____
 Drawn: _____
 Record Drawing by/date: _____

The Ritz Block

Minneapolis, MN

Site Location

Figure 1



Date: 12/19/2014

The Ritz Block

Concept Site Plan

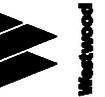
Figure 2

Savage, MN

Prepared for:

Client: _____
 Checkbook _____
 Drawings _____
 Record Drawing: by/date _____

Westwood Professional Services, Inc.
 7899 Anagram Drive
 Eden Prairie, MN 55344
 PHONE 952-337-6110
 FAX 952-337-6822
 TOLLFREE 1-888-357-5150
 www.westwoodps.com



Opus

Minnetonka, MN

II. EXISTING TRAFFIC CONDITIONS

A. Data Collection

Traffic volumes were analyzed at the following intersections that influence the Ritz Block development:

- South 5th Street and Nicollet Mall
- South 5th Street and Marquette Avenue South
- South 5th Street and Second Avenue South
- South 4th Street and Nicollet Mall
- South 4th Street and Marquette Avenue South
- South 4th Street and Second Avenue South

Turning movement counts were provided by the City of Minneapolis from their Traffic Count Management System (see Figure 3). The City Traffic Engineering staff allowed the use of these counts for this analysis. These counts were taken between April 2011 and July 2013. In addition, Westwood received the current signal timings from the City of Minneapolis Traffic Division for use in this analysis.

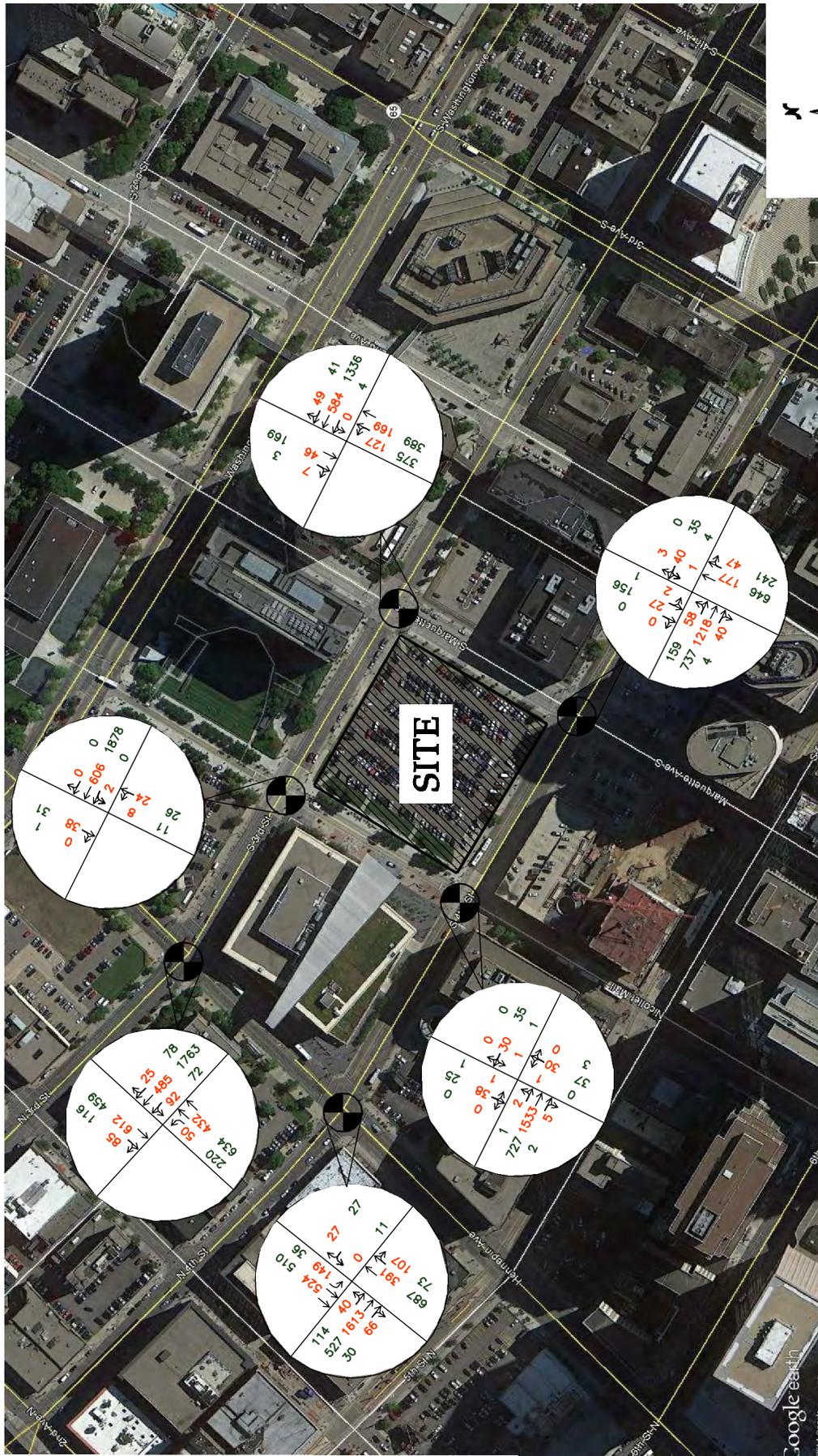
B. Existing Traffic Restrictions

Currently, vehicular traffic is limited by direction and mode on all four sides of the Ritz Block. It is noted that 3rd Street South has one-way operation northwest bound. Conversely, 4th Street South has one-way operation southeast bound (except for buses and authorized vehicles). Marquette Avenue is part of the MARQ2 express bus system, and restricts travel to bus only in the two southwest bound lanes from 6 a.m. to 9:00 a.m. and from 3 p.m. to 7 p.m. weekdays.

The Nicollet Mall is primarily a pedestrian and transit street in this area. Aside from wide sidewalks and pedestrian amenities, the narrow travel lanes currently accommodate buses and taxis only. A future modern streetcar line is being planned to run along the Nicollet Mall in front of the Ritz Block, and serve ridership from Northeast Minneapolis to Lake Street in Uptown .

C. Operational Analysis Methodology

Traffic operations for the AM and PM peak hour conditions within the study area were analyzed using the industry-standard *Synchro/SimTraffic Version 9* software package, which uses the data and methodology contained in the 2010 Highway Capacity Manual, published by the Transportation Research Board (See Appendix). The software model was calibrated to replicate existing conditions as accurately as possible before being used to assess future conditions.



Date: 12/19/2014

The Ritz Block

Minneapolis, MN

Existing Traffic Volumes
Figure 3

Prepared for:

OPUS

Minnetonka, MN

Client	_____
Checklist	_____
Drawings	_____
Record Drawing	____/____/____

Westwood Professional Services, Inc.
7889 Bangor Drive
Eden Prairie, MN 55344
PHONE 952.937-5100
FAX 952.937-5822
TOLL FREE 1-888-937-5100
www.westwoodps.com



For the Ritz Block study, all corner intersections within the study area are signalized. Westwood utilized the City-provided turning movement counts and signal timings to assess the traffic operation on the street network around the Ritz Block.

It is noted that the City’s traffic counts included pedestrian movements at the intersections, which have been included in this analysis. Because downtown pedestrian signal timings are not push-button actuated, but rather are fixed as part of the overall timing plans, all pedestrian movements are assumed to be accommodated. This assumption is carried into the future analyses as well.

Results of the *Synchro* traffic operational analysis for the Existing A.M. and P.M. Peak Hours appear in Table 3. Ninety-fifth percentile vehicular queue lengths were calculated using the *SimTraffic* simulation program after five independently seeded runs.

Results of the analysis contained in Table 2 indicate that the study area intersections operate at acceptable overall LOS for 2014 existing peak hours. It should be noted that 95th percentile queue lengths for certain critical approaches extend beyond 300 feet, but these are along streets that do not block potential access points for the Ritz Block.

Table 2
Results of Year 2014 Existing Analysis – AM & PM Peak Hours

Intersection	Intersection		Critical Approach			
	Intersection Control Delay	Overall Intersection LOS	Approach	Lane Group Delay	Lane Group LOS	95th Percentile Queue Length
A.M. Peak Hour						
Marquette Ave & S 3rd St	20.3 sec	LOS-C	WB Thru (3rd)	22.9 sec	LOS-C	204 ft
Nicollet Mall & S 3rd St	9.6 sec	LOS-A	NB Left (Nicollet)	26.1 sec	LOS-C	75 ft
Marquette Ave & S 4th St	4.7 sec	LOS-A	WB Right (4th)	39.5 sec	LOS-D	127 ft
Nicollet Mall & S 4th St	8.5 sec	LOS-A	NB Thru (Nicollet)	18.1 sec	LOS-B	78 ft
Hennepin Ave & S 3rd St	14.1 sec	LOS-B	WB Left (3rd)	29.6 sec	LOS-C	228 ft
Hennepin Ave & S 4th St	21.3 sec	LOS-C	EB Left (4th)	27.0 sec	LOS-C	321 ft
P.M. Peak Hour						
Marquette Ave & S 3rd St	24.0 sec	LOS-C	WB Left (3rd)	43.2 sec	LOS-D	366 ft
Nicollet Mall & S 3rd St	12.3 sec	LOS-B	SB Right (Nicollet)	42.5 sec	LOS-D	87 ft
Marquette Ave & S 4th St	16.3 sec	LOS-B	WB Thru (4th)	21.3 sec	LOS-C	86 ft
Nicollet Mall & S 4th St	18.2 sec	LOS-B	NB Thru (Nicollet)	23.4 sec	LOS-C	110 ft
Hennepin Ave & S 3rd St	22.6 sec	LOS-C	NB Left (Hennepin)	51.2 sec	LOS-D	177 ft
Hennepin Ave & S 4th St	10.5 sec	LOS-B	SB Left (Hennepin)	32.5 sec	LOS-C	58 ft

1. Overall LOS reported from Synchro.
2. 95th percentile queues are a result from an average of 5 SimTraffic simulations.

III. NO-BUILD ALTERNATIVE

To address the impacts of a development on the surrounding roadway system, it is necessary to first analyze traffic conditions that would be present on the roadway system without the inclusion of the proposed development. The anticipated construction completion date for this development is 2016; thus the year 2017 was selected for analysis so as to compare traffic conditions after initial traffic patterns to and from the Ritz Block site have become established. Therefore, the 2017 No-Build scenario will serve as a basis with which to compare the 2017 Build scenario.

A long-term analysis was also conducted, using 2030 as a design year.

A. Background Growth

To remain consistent with other studies in the area, an annual background growth rate of one-half percent (0.5%) was used for this study. The 0.5% annual rate of growth assumed for background traffic as well as the site-generated traffic from any other area projects was applied to City-supplied traffic volumes to arrive at the estimates for the 2017 No-Build and 2030 No-Build peak hour traffic volumes (shown on Figure 4a and 4b, respectively).

B. Anticipated Improvements for 2017 and 2030 No-Build Conditions

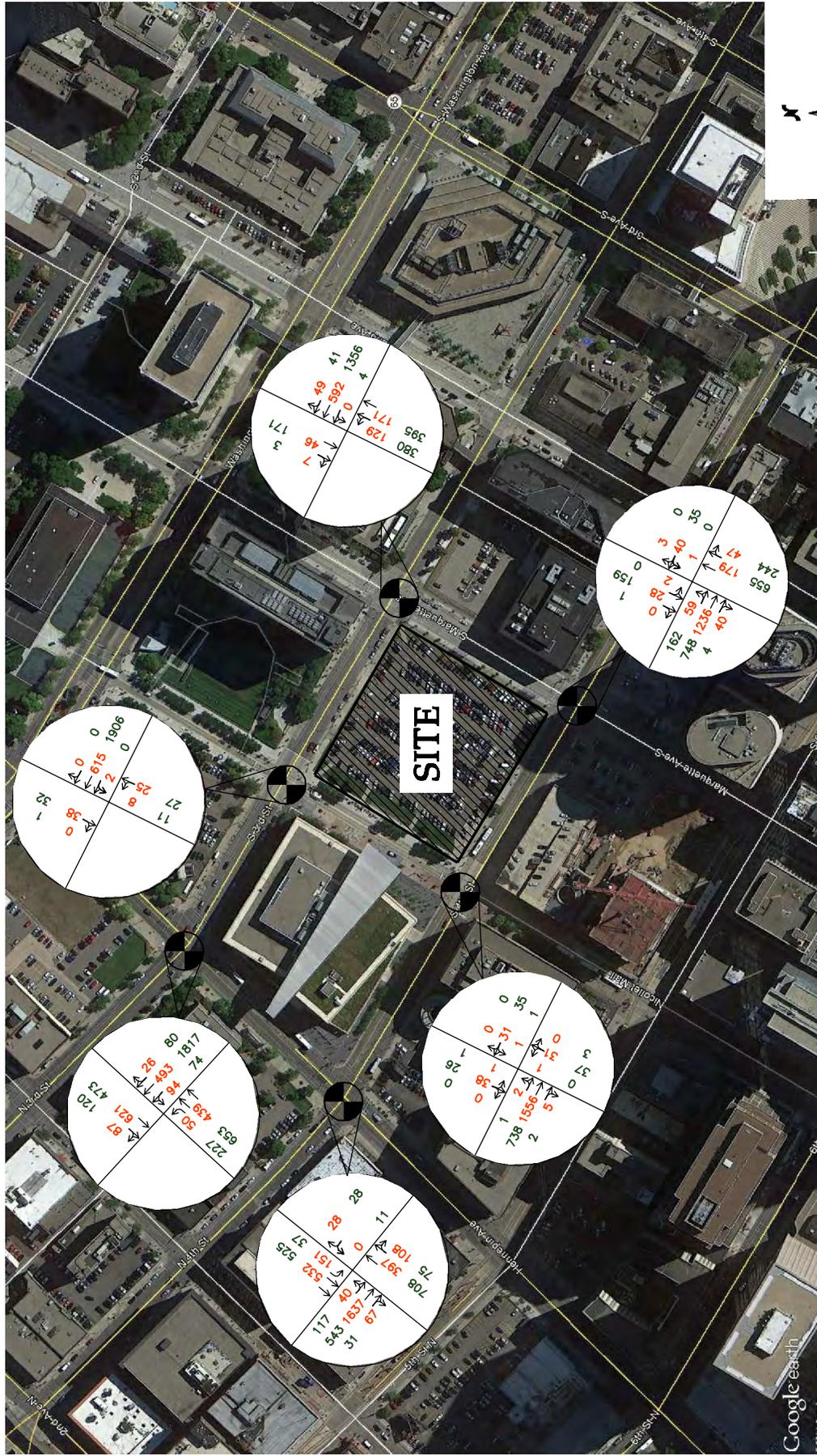
The City of Minneapolis optimized downtown signal timing plans along corridors in 2012. Therefore, optimized signal timing plans used in this study were based on these existing signal timings, and incorporated into the 2017 No-Build conditions. Similarly, optimized signal timing plans were generated and incorporated into the 2030 No-Build conditions.

A streetcar line is proposed along Nicollet Mall. When constructed, the streetcar system will need to be interconnected with the existing signal system at each of the cross streets. This study analysis assumed the streetcar operation would not unduly increase Nicollet Mall green times or impact overall intersection Levels of Service for 3rd or 4th Street South intersections.

C. Results of Analysis; 2017 and 2030 No-Build Scenario

In general, the existing roadway infrastructure, in terms of roadway cross sections, mode restrictions and intersection control, has the capacity to support the area through the 2017 design year.

Table 4a, which summarizes the results of the 2017 No-Build operational analysis, includes the LOS for each study area intersection. It is noted that the original signal timings were first incorporated into the No-Build analysis, and then optimized. The complete operational analysis output is available upon request.



Date: 12/19/2014

Legend

- LANE DESIGNATION
- AM PEAK HOUR VOLUME
- PM PEAK HOUR VOLUME
- SIGNALIZED INTERSECTION
- UN SIGNALIZED INTERSECTION

The Ritz Block
 Minneapolis, MN

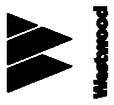
OPUS
 Minneapolis, MN

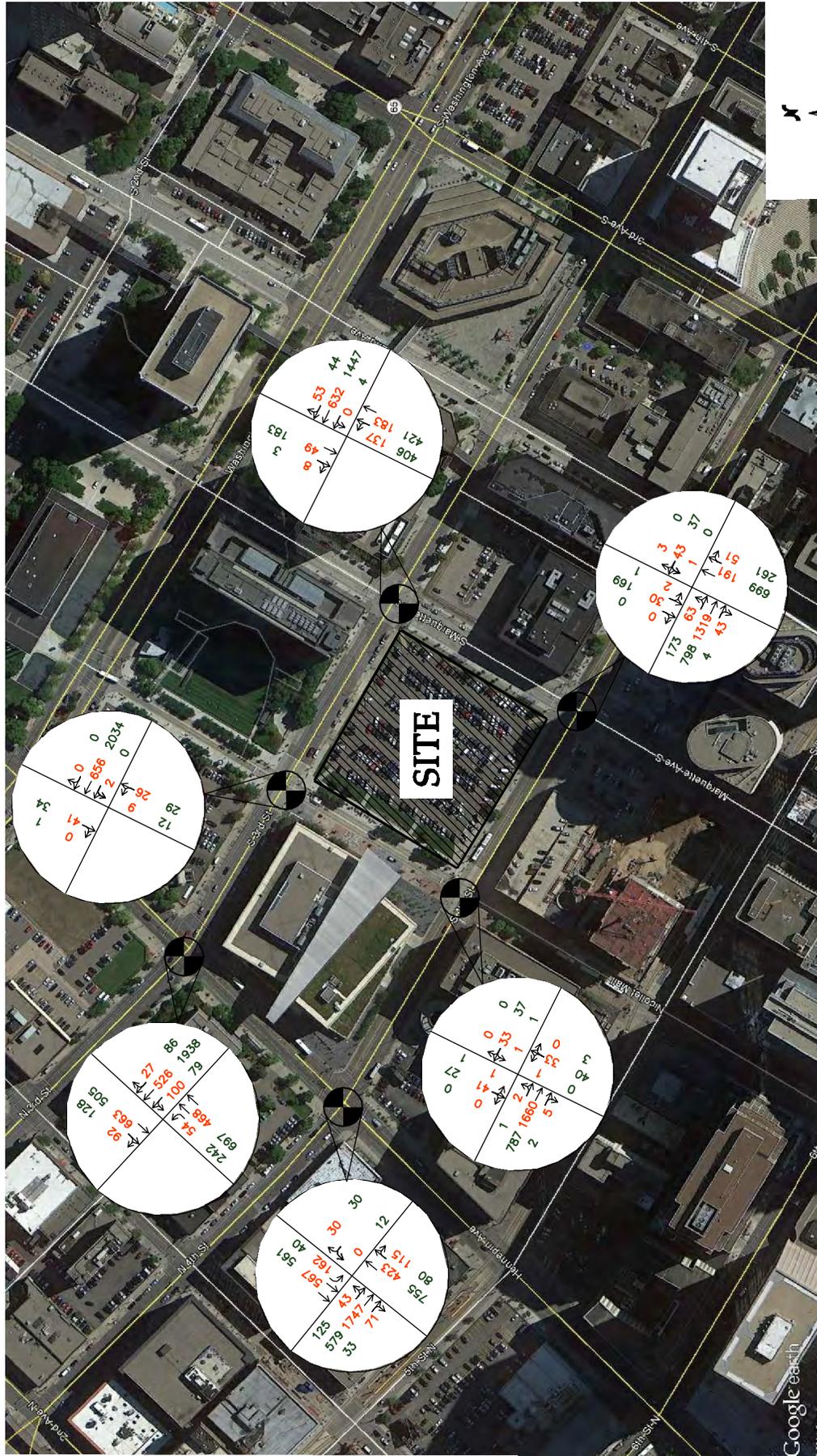
2017 No Build Traffic Volumes
 Figure 4a

Prepared for:

Client	
Checklist	
Drawings	
Record Drawing	

Westwood Professional Services, Inc.
 7809 Arundell Drive
 Eden Prairie, MN 55344
 PHONE 952.937-5100
 FAX 952.937-5822
 TOLL FREE 1-888-937-5100
www.westwoodps.com





Legend

- LANE DESIGNATION
- AM PEAK HOUR VOLUME
- PM PEAK HOUR VOLUME
- SIGNALIZED INTERSECTION
- UNSIGNALIZED INTERSECTION



Westwood Professional Services, Inc.
 7889 Grandview Drive
 Eden Prairie, MN 55344
 PHONE 952.937-5150
 FAX 952.937-5622
 TOLL FREE 1-888-937-5150
www.westwoodps.com



Prepared for:

Client _____
 Checkmark _____
 Drawn _____
 Record Drawing by/Date _____

OPUS

Minnetonka, MN

The Ritz Block

Minneapolis, MN

**2030 No Build
 Traffic Volumes**
 Figure 4b

Date: 12/19/2014



Table 3a
Results of Year 2017 No-Build Analysis – AM & PM Peak Hours

Intersection	Intersection		Approach	Critical Approach		95th Percentile Queue Length
	Intersection Control Delay	Overall Intersection LOS		Lane Group Delay	Lane Group LOS	
A.M. Peak Hour						
Marquette Ave & S 3rd St	18.8 sec	LOS-B	WB Thru (3rd)	22.9 sec	LOS-C	253 ft
Nicollet Mall & S 3rd St	10.2 sec	LOS-B	SB Thru (Nicollet)	13.0 sec	LOS-B	90 ft
Marquette Ave & S 4th St	5.0 sec	LOS-A	NB Thru (Marquette)	18.6 sec	LOS-B	145 ft
Nicollet Mall & S 4th St	7.9 sec	LOS-A	NB Thru (Nicollet)	19.2 sec	LOS-B	81 ft
Hennepin Ave & S 3rd St	17.1 sec	LOS-B	WB Thru (3rd)	37.9 sec	LOS-D	241 ft
Hennepin Ave & S 4th St	22.1 sec	LOS-C	EB Left (4th)	30.7 sec	LOS-C	308 ft
P.M. Peak Hour						
Marquette Ave & S 3rd St	24.7 sec	LOS-C	NB Left (Marquette)	29.6 sec	LOS-C	339 ft
Nicollet Mall & S 3rd St	8.1 sec	LOS-A	SB Thru (Nicollet)	26.6 sec	LOS-C	91 ft
Marquette Ave & S 4th St	13.4 sec	LOS-B	WB Thru (4th)	17.9 sec	LOS-B	112 ft
Nicollet Mall & S 4th St	25.0 sec	LOS-C	EB Thru	25.8 sec	LOS-C	254 ft
Hennepin Ave & S 3rd St	22.6 sec	LOS-C	SB Thru (Hennepin)	42.4 sec	LOS-D	279 ft
Hennepin Ave & S 4th St	23.5 sec	LOS-C	WB Left (4th)	55.9 sec	LOS-E	54 ft

1. Overall LOS reported from Synchro.
2. 95th percentile queues are a result from an average of 5 SimTraffic simulations.

Results of the analysis contained in table above indicate that most study area intersections will operate at roughly the same levels of service. One critical approach is projected to operate at an unacceptable level – Westbound left approach of 4th Street South at Hennepin Avenue, which is projected at LOS-E despite having only a 54-foot queue length. This may be a factor of lack of adequate gaps for the queue to be cleared. This critical approach does not block site driveways or accesses.

Year 2030 No-Build analysis is shown in Figure 4b. All study intersections operation at acceptable levels of service. As with the 2017 No-Build scenario, one critical approach is projected to operate at an unacceptable level – Westbound left approach of 4th Street South at Hennepin Avenue, which is projected at LOS-E despite having only a 57-foot queue length. This may be a factor of lack of adequate gaps for the queue to be cleared. This critical approach does not block site driveways or accesses.

**Table 4b
Results of Year 2030 No-Build Analysis – AM & PM Peak Hours**

Intersection	Intersection		Approach	Critical Approach		95th Percentile Queue Length
	Intersection Control Delay	Overall Intersection LOS		Lane Group Delay	Lane Group LOS	
A.M. Peak Hour						
Marquette Ave & S 3rd St	19.9 sec	LOS-B	NB Left (Marquette)	23.3 sec	LOS-C	158 ft
Nicollet Mall & S 3rd St	10.9 sec	LOS-B	NB Left (Nicollet)	15.8 sec	LOS-B	52 ft
Marquette Ave & S 4th St	5.9 sec	LOS-A	SB Left (Marquette)	20.0 sec	LOS-B	88 ft
Nicollet Mall & S 4th St	8.6 sec	LOS-A	SB Left (Nicollet)	19.1 sec	LOS-B	40 ft
Hennepin Ave & S 3rd St	18.9 sec	LOS-B	WB Thru (3rd)	42.7 sec	LOS-D	301 ft
Hennepin Ave & S 4th St	22.0 sec	LOS-C	NB Thru (Hennepin)	27.3 sec	LOS-C	256 ft
P.M. Peak Hour						
Marquette Ave & S 3rd St	25.8 sec	LOS-C	WB Left (3rd)	38.5 sec	LOS-D	358 ft
Nicollet Mall & S 3rd St	9.2 sec	LOS-A	NB Left (Nicollet)	23.3 sec	LOS-C	74 ft
Marquette Ave & S 4th St	14.7 sec	LOS-B	NB Thru (Marquette)	22.1 sec	LOS-C	358 ft
Nicollet Mall & S 4th St	24.4 sec	LOS-C	EB Thru (4th)	26.6 sec	LOS-C	266 ft
Hennepin Ave & S 3rd St	21.9 sec	LOS-C	NB Left (Hennepin)	39.9 sec	LOS-D	246 ft
Hennepin Ave & S 4th St	18.9 sec	LOS-B	WB Left (4th)	51.1 sec	LOS-E	57 ft

1. Overall LOS reported from Synchro. .
2. 95th percentile queues are a result from an average of 5 SimTraffic simulations.

IV. BUILD ALTERNATIVE

A. Site-Generated Traffic

Final lane uses for Tower 2 are yet to be determined. Table 4a illustrates the trip generation estimate calculated for the proposed conditions using rates and equations from the Institute of Transportation Engineers' (ITE's) Trip Generation Manual, Ninth Edition. Because the final uses in Tower 2 are not yet determined, it is known that office use will generate more trips than the residential use. Therefore, Tower 2 has been modeled as the office use only to reflect a worst case for traffic operational analysis. The numbers shown do not reflect a reduction for shared trips, nor do they reflect any pass-by reduction, in order to provide a conservative comparison.

Table 4a – Trip Generation Estimates for Proposed Land Use (Towers 1 & 2 [Office])

Land Use	ITE Code ¹	Equation or Rate ¹	Size	Weekday Enter	Weekday Exit	AM Enter	AM Exit	PM Enter	PM Exit
High-Rise Apartment	222	Rate	364 units	764	764	27	82	78	50
Specialty Retail	814	Rate	12,000 sq. ft.	384	384	23	23	41	41
Office	710	Equation	365,606 sq. ft.	1,758	1,758	475	65	83	405
Subtotal				2,906	2,906	525	170	202	496
Total				5,812		695		698	

¹ Rates and equations based on ITE Trip Generation Manual, Ninth Edition, 2012.

Additionally, the trip generation has also been run for the proposed land uses assuming Tower 2 is developed as a high-rise apartment building. Table 4b shows the results of this scenario. The trip generation potential of the overall development with Tower 2 as residential use is between one-quarter to one-half as great as the overall development with Tower 2 as the office use.

Table 4b – Trip Generation Estimates for Proposed Land Use (Towers 1 & 2 [Residential])

Land Use	ITE Code ¹	Equation or Rate ¹	Size	Weekday Enter	Weekday Exit	AM Enter	AM Exit	PM Enter	PM Exit
Tower 1 High-Rise Apartment	222	Rate	364 units	764	764	27	82	78	50
Specialty Retail	814	Rate	12,000 sq. ft.	384	384	23	23	41	41
Tower 2 High-Rise Apartment	222	Rate	364 units	764	764	27	82	78	50
Subtotal				1,912	1,912	77	77	197	141
Total				3,824		154		338	

¹ Rates and equations based on ITE Trip Generation Manual, Ninth Edition, 2012.

To assess the traffic impact of the more critical scenario, Westwood has analyzed the Ritz Block with Tower 2 as Office Use.

Based on the alternative transportation opportunities related to busses, LRT, streetcar, bicycle, car share as documented in previous TDM Plans in the area, and based on the types of proposed land uses, the following mode split goals for the project have been identified:

**Table 5
Mode Split Goals**

Mode Split	Goal
Auto	40%
Transit	50%
Bike/Walk	10%

Therefore, by applying this modal share, the trip generation found in Table 5a will be reduced. The results of this reduction appear in Table 6, and were used in the traffic analysis.

**Table 6
Trip Generation Estimates with Modal Share – Proposed Land Use (Towers 1 & 2[Office])**

Land Use	ITE Code ¹	Equation or Rate ¹	Size	Weekday Enter	Weekday Exit	AM Enter	AM Exit	PM Enter	PM Exit
High-Rise Apartment	222	Rate	364 units	306	306	11	33	31	20
Specialty Retail	814	Rate	12,000 sq. ft.	154	154	9	9	16	16
Office	710	Equation	365,606 sq. ft.	703	703	190	26	33	162
Subtotal				1,163	1,163	205	68	80	198
Total				2,326		273		278	

¹ Rates and equations based on ITE Trip Generation Manual, Ninth Edition, 2012.

B. Trip Distribution and Assignment

The distribution of site-generated auto traffic from and to the adjacent street system was based on distribution patterns identified in the traffic impact study for The Nic on Fifth development completed in 2012, and on existing traffic patterns. This distribution pattern is pictured on Figure 5, Trip Distribution. Using the initial distribution assumptions, the proposed trips were assigned across the study area roadway network.

Distribution patterns differed depending on the location of access to and from the Ritz Block site. There is a service drive shown on street level floor plans and conceptual renderings to bisect the property between the two towers. While it is assumed this service drive will exist, Westwood has analyzed trips to and from the site differently based on the amount of side street access allowed.

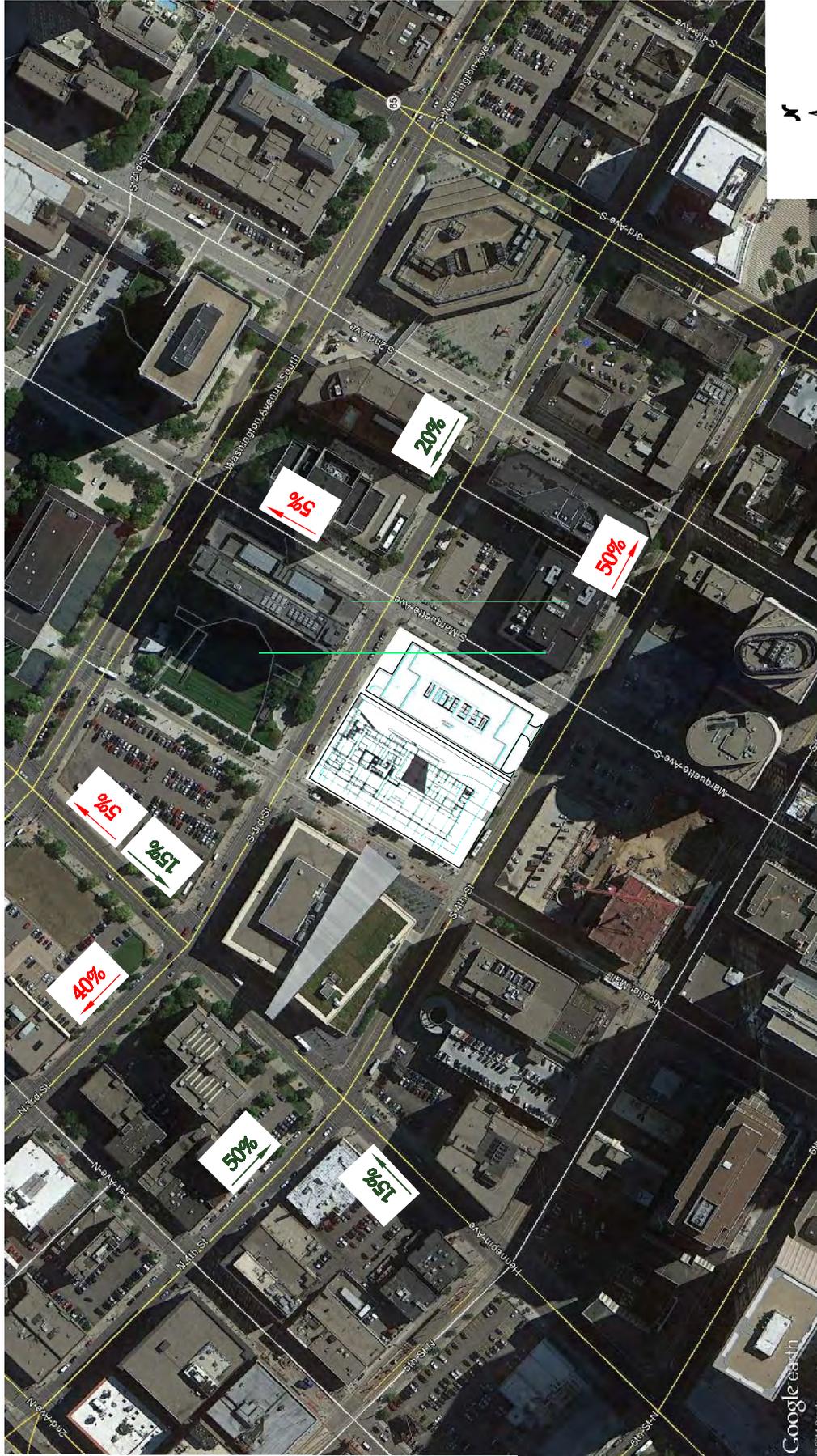
4th Street South Access Only –

- Under this scenario, a service drive will access 4th Street South at the midpoint between Nicollet Mall and Marquette.
- It is assumed the service drive does not go through to 3rd Street South.
- Access to Tower 1 tenant and employee parking would be via a driveway onto 4th Street South just to the northwest of the service drive.
- The service drive is intended primarily for Tower 1 loading zone access and for Tower 2 parking and loading access.
- 100% of inbound and outbound auto traffic accesses site on 4th Street South.

3rd & 4th Streets South Access –

- Under this scenario, a service drive will bisect the site and provide access to both 3rd & 4th Streets South at the midpoint between Nicollet Mall and Marquette.
- Two way access is provided along the service drive.
- Access to Tower 1 tenant and employee parking would be via a driveway onto 4th Street South just to the northwest of the service drive.
- The service drive is intended primarily for Tower 1 loading zone access and for Tower 2 parking and loading access.
- Assumed 50% of auto traffic accesses site at 3rd Street South; 50% of traffic accesses site at 4th Street South.

Figures 6a and 7a illustrate the 2017 Build Assignment and 2017 Build Volumes for this single access scenario, respectively. Figures 6b and 7b illustrate the 2017 Build trip assignment and 2017 Build vehicular volumes for this scenario respectively.



Legend

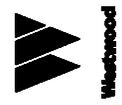
- TRIP DISTRIBUTION ENTERING XX
- TRIP DISTRIBUTION EXITING XX

Date 12/19/2014

Prepared for:

Client	_____
Checklist	_____
Drawings	_____
Record Drawing	_____/Date

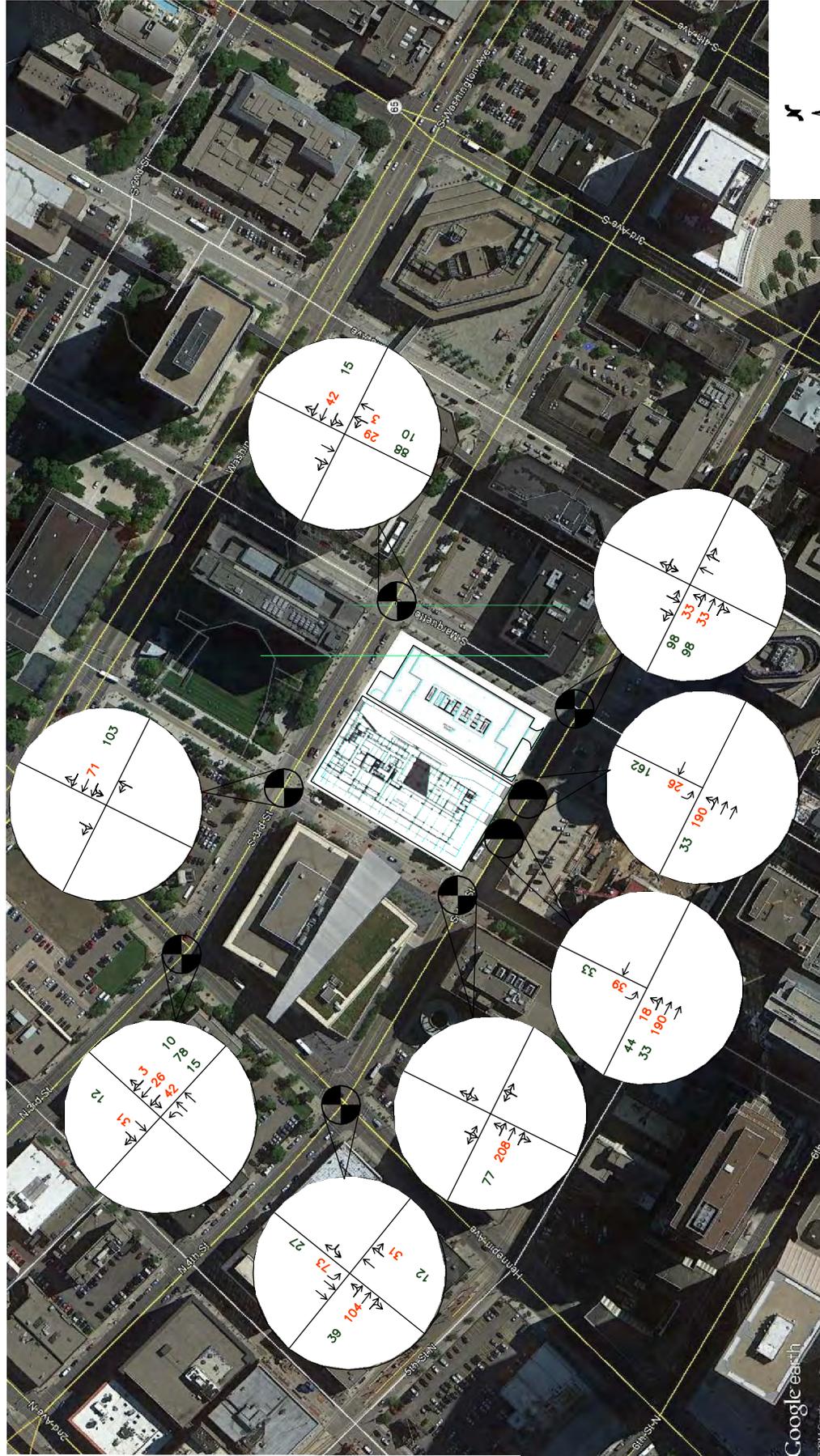
Westwood Professional Services, Inc.
 7889 Grandview Drive
 Eden Prairie, MN 55344
 PHONE 952.937-5100
 FAX 952.937-5622
 TOLL FREE 1-888-937-5100
www.westwoodps.com



OPUS
 Minneapolis, MN

The Ritz Block
 Minneapolis, MN

Trip Distribution
 Figure 5



Legend

- LANE DESIGNATION
- AM PEAK HOUR VOLUME
- PM PEAK HOUR VOLUME
- SIGNALIZED INTERSECTION
- UNSIGNALIZED INTERSECTION



Date: 12/19/2014

Trip Assignment
With Access
on 4th St
Figure 6A

The Ritz Block

Minneapolis, MN

Prepared for:

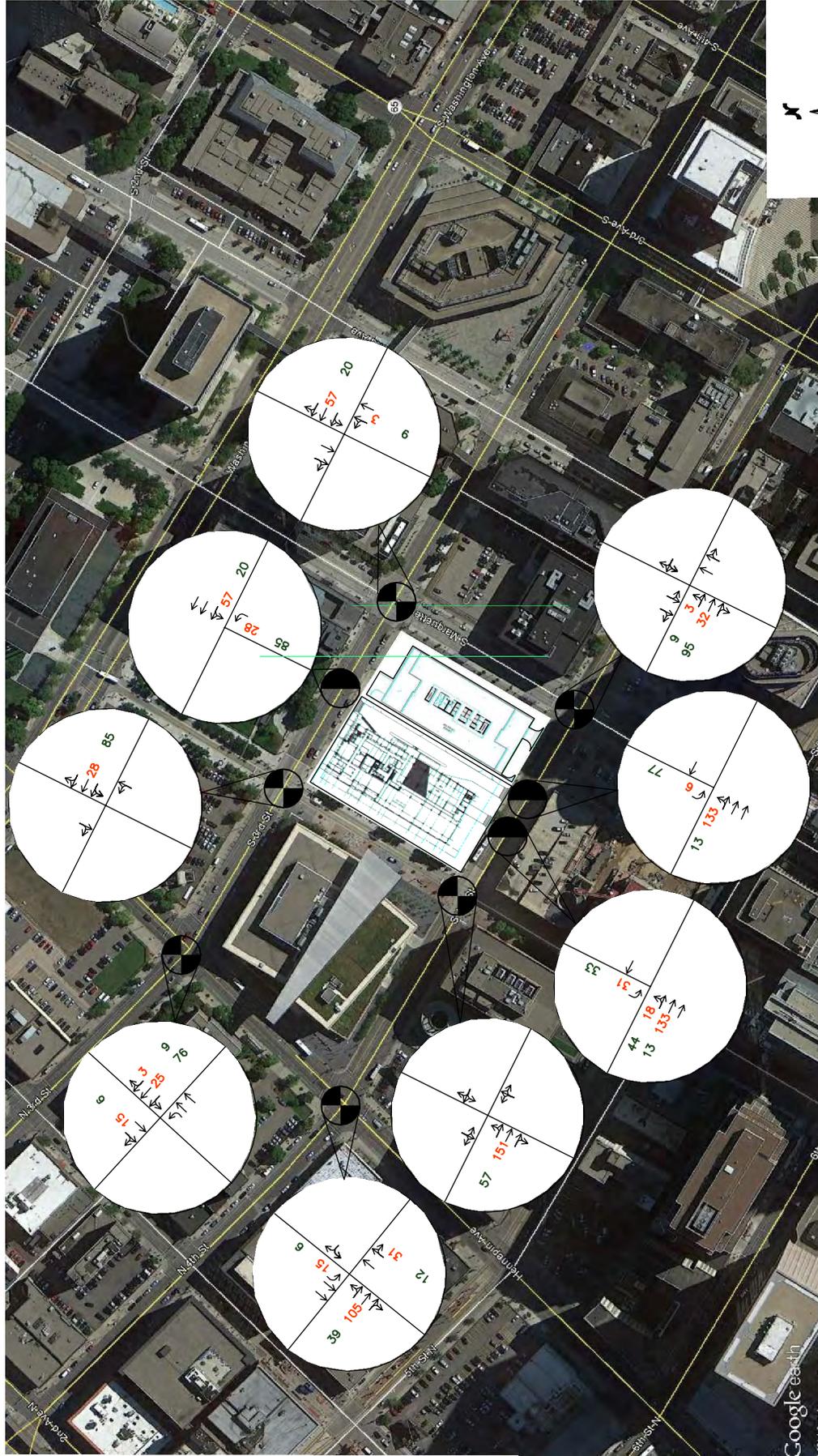
Client	
Checklist	
Drawings	
Record Drawing	

Westwood Professional Services, Inc.
7809 Argonne Drive
Edin Prairie, MN 55544
PHONE 952.937-5100
FAX 952.937-5622
TOLL FREE 1-888-937-5100
www.westwoodps.com



OPUS

Minnetonka, MN



Legend

- LANE DESIGNATION
- AM PEAK HOUR VOLUME
- PM PEAK HOUR VOLUME
- SIGNALIZED INTERSECTION
- UNSIGNALIZED INTERSECTION



Date: 12/19/2014

Trip Assignment
With Access on 4th St
& 3rd St
Figure 6B

The Ritz Block

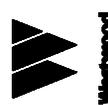
Minneapolis, MN

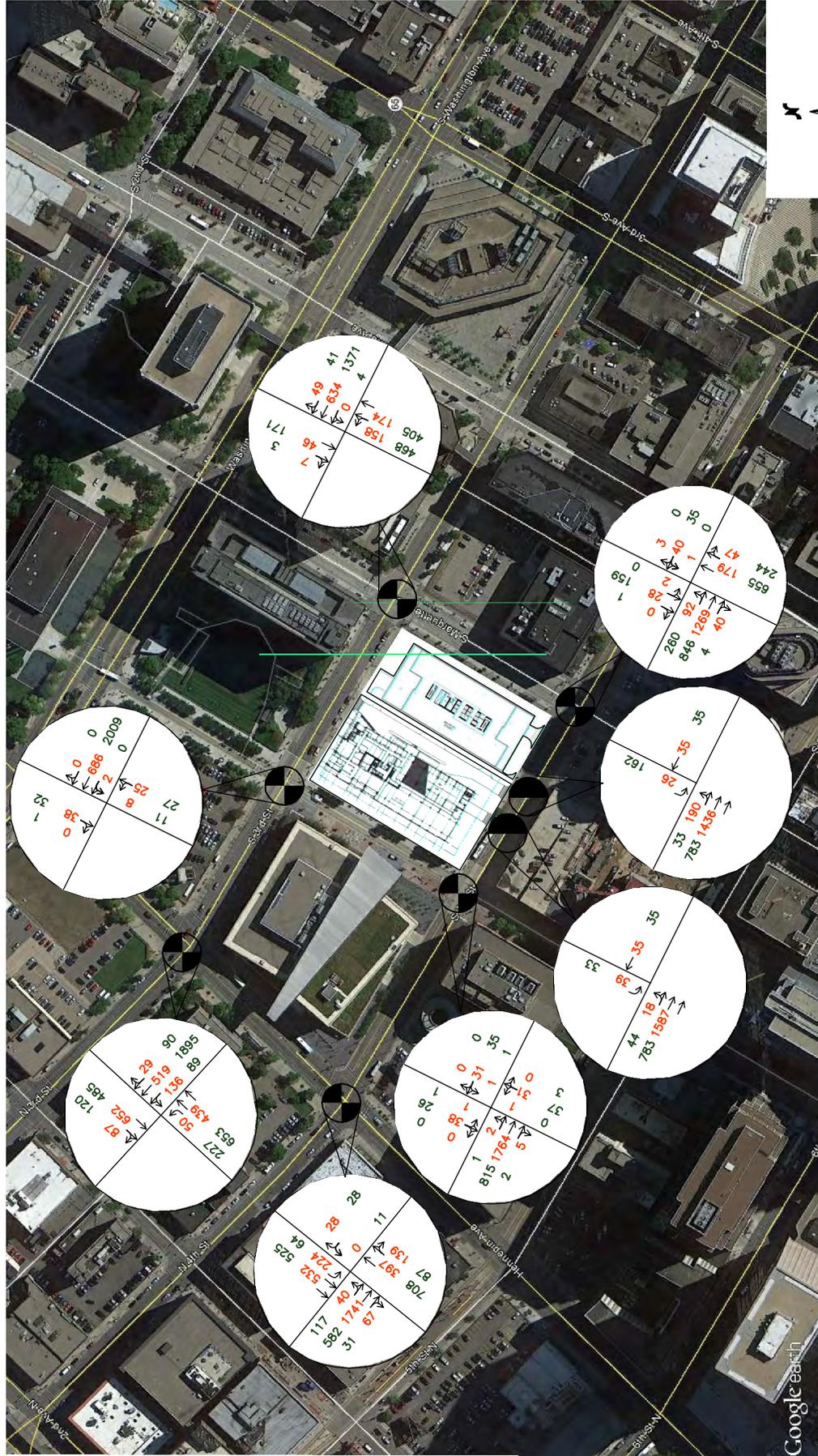
Prepared for:

OPUS
Minnetonka, MN

Client	
Checklist	
Drawings	
Record Drawing	

Westwood Professional Services, Inc.
7889 Grandin Drive
Eden Prairie, MN 55344
PHONE 952.937-5100
FAX 952.937-5622
TOLL FREE 1-888-937-5100
www.westwoodps.com





Legend

- LANE DESIGNATION
- AM PEAK HOUR VOLUME
- PM PEAK HOUR VOLUME
- SIGNALIZED INTERSECTION
- UNSIGNALIZED INTERSECTION



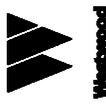
UNSIGNALIZED INTERSECTION

Client	_____
Checklist	_____
Drawings	_____
Record Drawing	_____

Prepared for:

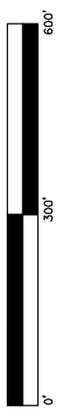
OPUS
Minnetonka, MN

Westwood Professional Services, Inc.
7889 Ardenway Drive
Eden Prairie, MN 55344
PHONE 952.937-5100
FAX 952.937-5622
TOLL FREE 1-888-937-5100
www.westwoodps.com



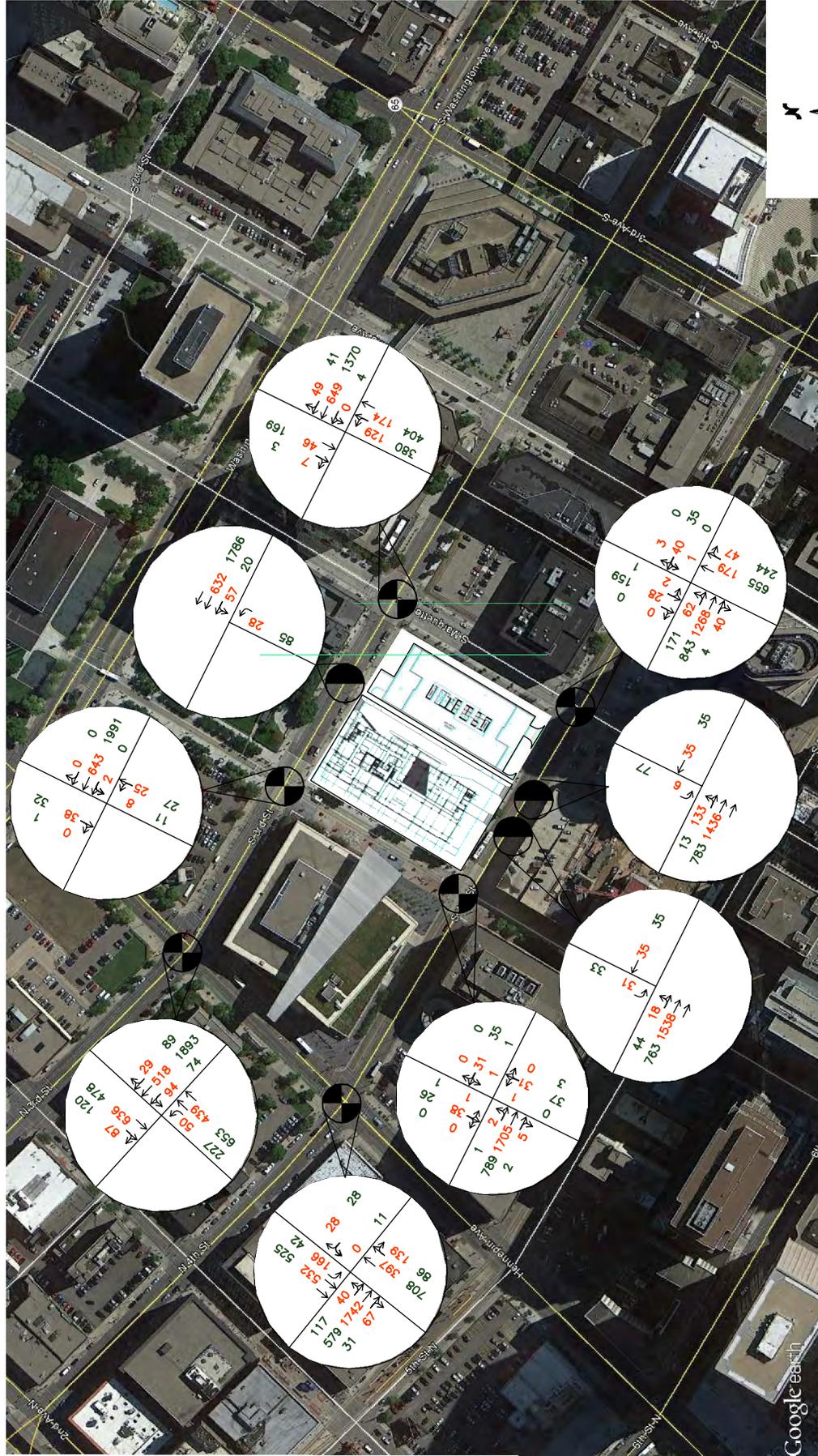
Date: 12/19/2014

2017 Build with
Access on 4th St
Traffic Volumes
Figure 7a



The Ritz Block

Minneapolis, MN



Legend

- LANE DESIGNATION
- AM PEAK HOUR VOLUME
- PM PEAK HOUR VOLUME
- SIGNALIZED INTERSECTION
- UNSIGNALIZED INTERSECTION

Date: 12/19/2014

2017 Build with Access
on 4th St & 3rd St
Traffic Volumes
Figure 7b

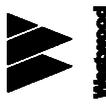
The Ritz Block

Minneapolis, MN

Prepared for:
OPUS
Minnetonka, MN

Client	_____
Checked	_____
Drawn	_____
Record Drawing by/Date	_____

Westwood Professional Services, Inc.
7809 Anglin Drive
Eden Prairie, MN 55344
PHONE 952.937-5100
FAX 952.937-5622
TOLL FREE 1-888-937-5100
www.westwoodps.com



C. Results of Analysis: 2017 Build Scenario

This section contains the results of the intersection operational analyses. Table 8a shows auto traffic operation if the service drive were to have access only onto 4th Street South. Table 8b shows the vehicular traffic operation with service drive access points at both 3rd Street south and 4th Street South.

It is noted that the existing signal timing plans were initially utilized in the Build analysis. It is assumed that the City would periodically update signal timing plans to reflect future traffic volumes changes. To that end, the signal timings assumed in *Synchro* runs were optimized prior to assessing levels of service and queue lengths.

A summary of the results for the proposed plan is provided in Tables 7a and 7b below. The tables show vehicular traffic operation assuming the more intense Office use for Tower 2 along with the proposed Residential use for Tower 1.

Table 7a
Results of Year 2017 Build Analysis – AM & PM Peak Hour (1 service drive access point)

Intersection	Intersection		Critical Approach			
	Intersection Control Delay	Overall Intersection LOS	Approach	Lane Group Delay	Lane Group LOS	95th Percentile Queue Length
A.M. Peak Hour						
Marquette Ave & S 3rd St	22.9 sec	LOS-C	NB Left (Marquette)	26.3 sec	LOS-C	170 ft
Nicollet Mall & S 3rd St	11.7 sec	LOS-B	NB Left (Nicollet)	19.6 sec	LOS-B	68 ft
Marquette Ave & S 4th St	6.3 sec	LOS-A	SB Left (Marquette)	19.2 sec	LOS-B	102 ft
Nicollet Mall & S 4th St	11.1 sec	LOS-B	NB Left (Nicollet)	30.9 sec	LOS-C	101 ft
Hennepin Ave & S 3rd St	13.7 sec	LOS-B	WB Left (3rd)	24.3 sec	LOS-C	122 ft
Hennepin Ave & S 4th St	22.7 sec	LOS-C	NB Thru (Hennepin)	33.5 sec	LOS-C	217 ft
Service Drive Access & S 4th St	0.8 sec	LOS-A	SB Left (Service Dr)	4.0 sec	LOS-A	24 ft
Tower 1 Parking Access & S 4th St	1.2 sec	LOS-A	SB Left (Parking)	9.0 sec	LOS-A	46 ft
P.M. Peak Hour						
Marquette Ave & S 3rd St	29.3 sec	LOS-C	NB Left (Marquette)	44.0 sec	LOS-D	352 ft
Nicollet Mall & S 3rd St	11.0 sec	LOS-B	NB Left (Nicollet)	34.6 sec	LOS-C	63 ft
Marquette Ave & S 4th St	18.0 sec	LOS-B	EB Left (4th St)	28.2 sec	LOS-C	134 ft
Nicollet Mall & S 4th St	13.1 sec	LOS-B	NB Thru (Nicollet)	17.9 sec	LOS-B	102 ft
Hennepin Ave & S 3rd St	25.4 sec	LOS-C	NB Left (Hennepin)	51.5 sec	LOS-D	220 ft
Hennepin Ave & S 4th St	24.6 sec	LOS-C	NB Thru (Hennepin)	40.2 sec	LOS-D	418 ft
Service Drive Access & S 4th St	2.7 sec	LOS-A	SB Left (Service Dr)	6.3 sec	LOS-A	87 ft
Tower 1 Parking Access & S 4th St	2.0 sec	LOS-A	SB Left (Parking)	2.0 sec	LOS-A	24 ft

1. Overall LOS reported from Synchro. .
2. 95th percentile queues are a result from an average of 5 SimTraffic simulations.

Table 7b
Results of Year 2017 Build Analysis – AM & PM Peak Hour (2 service drive access points)

Intersection	Intersection		Approach	Critical Approach		95th Percentile Queue Length
	Intersection Control Delay	Overall Intersection LOS		Lane Group Delay	Lane Group LOS	
A.M. Peak Hour						
Marquette Ave & S 3rd St	19.7 sec	LOS-B	NB Left (Marquette)	26.1 sec	LOS-C	167 ft
Nicollet Mall & S 3rd St	11.4 sec	LOS-B	NB Left (Nicollet)	26.0 sec	LOS-C	71 ft
Marquette Ave & S 4th St	5.2 sec	LOS-A	NB Thru (Marquette)	14.5 sec	LOS-B	107 ft
Nicollet Mall & S 4th St	10.7 sec	LOS-B	EB Thru (4th)	10.9 sec	LOS-B	153 ft
Hennepin Ave & S 3rd St	13.8 sec	LOS-B	WB Left (Hennepin)	28.5 sec	LOS-C	127 ft
Hennepin Ave & S 4th St	22.5 sec	LOS-C	NB Thru (Hennepin)	30.5 sec	LOS-C	258 ft
Service Drive Access & S 4th St	0.8 sec	LOS-A	SB Left (Service Dr.)	4.9 sec	LOS-A	14 ft
Tower 1 Parking Access & S 4th St	1.1 sec	LOS-A	SB Left (Parking)	18.2 sec	LOS-C	48 ft
Service Drive Access & S 3rd St	1.7 sec	LOS-A	NB Left (Service Dr.)	2.5 sec	LOS-A	25 ft
P.M. Peak Hour						
Marquette Ave & S 3rd St	24.8 sec	LOS-C	NB Left (Marquette)	32.5 sec	LOS-C	277 ft
Nicollet Mall & S 3rd St	8.3 sec	LOS-A	SB Thru (Nicollet)	21.2 sec	LOS-C	109 ft
Marquette Ave & S 4th St	16.7 sec	LOS-B	EB Left (4th)	20.3 sec	LOS-C	183 ft
Nicollet Mall & S 4th St	12.6 sec	LOS-B	NB Thru (Nicollet)	19.7sec	LOS-B	118 ft
Hennepin Ave & S 3rd St	23.3 sec	LOS-C	SB Through (Hennepin)	52.5 sec	LOS-D	332 ft
Hennepin Ave & S 4th St	21.2 sec	LOS-C	NB Thru (Hennepin)	32.5 sec	LOS-C	337 ft
Service Drive Access & S 4th St	1.3 sec	LOS-A	SB Left (Service Dr.)	7.0 sec	LOS-A	61 ft
Tower 1 Parking Access & S 4th St	1.3 sec	LOS-A	SB Left (Parking)	6.7 sec	LOS-A	42 ft
Service Drive Access & S 3rd St	2.3 sec	LOS-A	NB Left (Service Dr.)	10.6 sec	LOS-B	57 ft

1. Overall LOS reported from Synchro. .
2. 95th percentile queues are a result from an average of 5 SimTraffic simulations.

It is evident that there are a few times during the AM and the PM peak hours when each scenario will have extended queues. Nevertheless, there is only one time when the queues on 3rd or 4th Streets extend far enough to block the service drive(s) at the Ritz Towers. In the 2017 Build Condition with dual access points, a 95th percentile queue length does extend 183 feet in the P.M. Peak Hour period. The total length of the block between Marquette and Nicollet Mall is approximately 330 feet. Half that distance is 165 feet. Therefore, the 95th percentile queue may block the service drive access by 18 feet (approx. one car length) for a short time.

D. Results of Analysis: 2030 Build Scenario

In a similar manner, 2030 Build models were developed and tested for the single access and dual access conditions. Westwood tested the study area under 2030 conditions assuming a continual background growth of 0.5% annually.

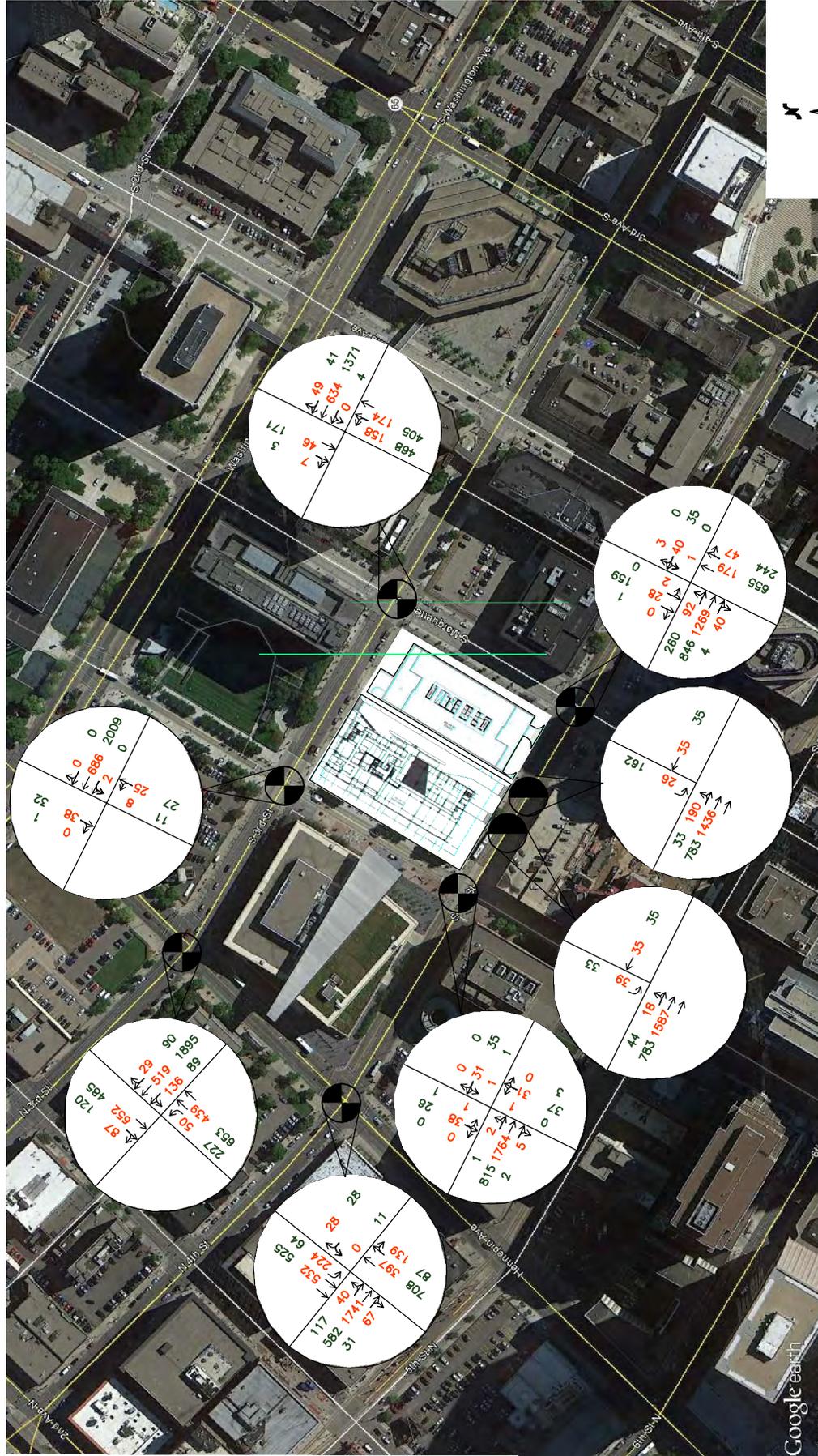
As with the 2017 Build condition, it was assumed that the City would monitor and update the signal timings periodically to reflect changing traffic patterns. Therefore, to model traffic signal timings for the 2030 condition, *Synchro* software's signal optimization feature was used based on vehicular traffic flows.

The resulting Levels of Service and critical queue lengths for 2030 appear on Figures 9a and 9b respectively. Table 8a shows traffic operation if the service drive were to have access only onto 4th Street South. Table 8b shows the traffic operation with service drive access points at both 3rd Street south and 4th Street South.

Table 8a
Results of Year 2030 Build Analysis – AM & PM Peak Hour (1 service drive access point)

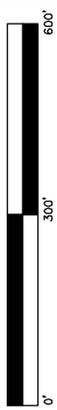
Intersection	Intersection		Critical Approach			
	Intersection Control Delay	Overall Intersection LOS	Approach	Lane Group Delay	Lane Group LOS	95th Percentile Queue Length
A.M. Peak Hour						
Marquette Ave & S 3rd St	19.2 sec	LOS-B	WB Thru (3rd)	24.4 sec	LOS-C	275 ft
Nicollet Mall & S 3rd St	11.1 sec	LOS-B	WB Thru (3rd)	11.1 sec	LOS-B	102 ft
Marquette Ave & S 4th St	7.3 sec	LOS-A	EB Left (4th)	6.6 sec	LOS-A	134 ft
Nicollet Mall & S 4th St	13.4 sec	LOS-B	NB Thru (Nicollet)	22.8 sec	LOS-C	91 ft
Hennepin Ave & S 3rd St	12.7 sec	LOS-B	WB Left (3rd)	25.1 sec	LOS-C	158 ft
Hennepin Ave & S 4th St	27.5 sec	LOS-C	NB Thru (Hennepin)	45.6 sec	LOS-D	268 ft
Service Drive Access & S 4th St	1.2 sec	LOS-A	SB Left (Service Dr)	7.0 sec	LOS-A	38 ft
Tower 1 Parking Access & S 4th St	1.3 sec	LOS-A	SB Left (Parking)	11.9 sec	LOS-B	54 ft
P.M. Peak Hour						
Marquette Ave & S 3rd St	32.1 sec	LOS-C	NB Left (Marquette)	42.7 sec	LOS-D	352 ft
Nicollet Mall & S 3rd St	15.0 sec	LOS-B	WB Thru (3rd)	14.9 sec	LOS-B	205 ft
Marquette Ave & S 4th St	20.4 sec	LOS-C	EB Left (4th)	36.7 sec	LOS-D	190 ft
Nicollet Mall & S 4th St	23.6 sec	LOS-C	EB Thru (4th)	26.1 sec	LOS-C	319 ft
Hennepin Ave & S 3rd St	25.9 sec	LOS-C	NB Left (Hennepin)	51.0 sec	LOS-D	214 ft
Hennepin Ave & S 4th St	23.9 sec	LOS-C	WB Left (4th)	44.9 sec	LOS-D	68 ft
Service Drive Access & S 4th St	5.2 sec	LOS-A	SB Left (Service Dr)	13.8 sec	LOS-B	137 ft
Tower 1 Parking Access & S 4th St	4.0 sec	LOS-A	SB Left (Parking)	3.7 sec	LOS-A	25 ft

1. Overall LOS reported from Synchro.
2. 95th percentile queues are a result from an average of 5 SimTraffic simulations.



Legend

- LANE DESIGNATION
- AM PEAK HOUR VOLUME
- PM PEAK HOUR VOLUME
- SIGNALIZED INTERSECTION
- UNSIGNALIZED INTERSECTION



Date: 12/19/2014

2030 Build with
Access on 4th St
Traffic Volumes
Figure 8a

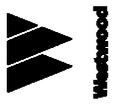
The Ritz Block

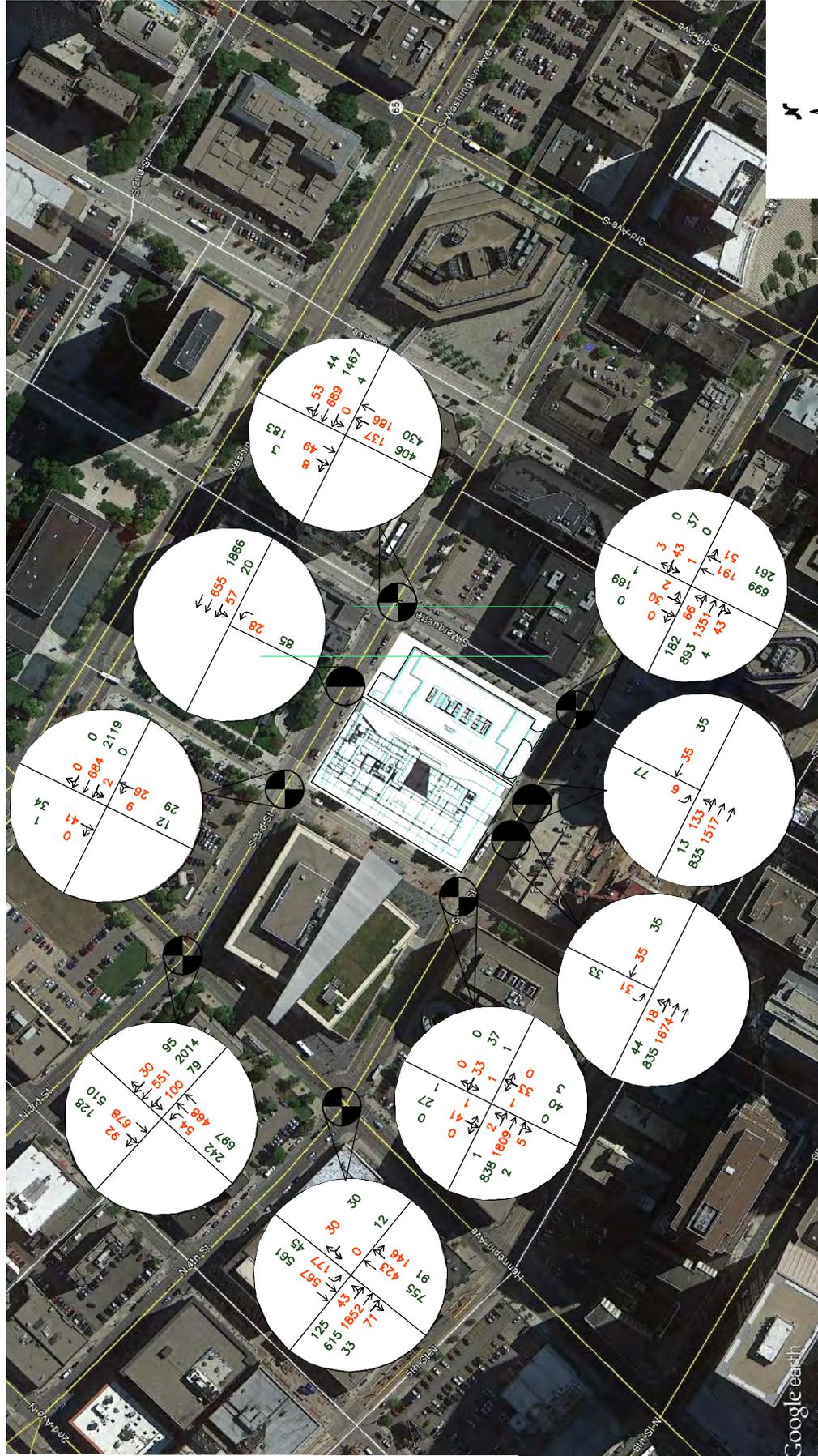
Minneapolis, MN

Prepared for:
OPUS
Minnetonka, MN

Client	
Checklist	
Drawings	
Record Drawing	

Westwood Professional Services, Inc.
7889 Ardenway Drive
Eden Prairie, MN 55344
PHONE 952.937-5100
FAX 952.937-5622
TOLL FREE 1-888-937-5100
www.westwoodps.com





Legend

- LANE DESIGNATION
- AM PEAK HOUR VOLUME
- PM PEAK HOUR VOLUME
- SIGNALIZED INTERSECTION
- UNSIGNALIZED INTERSECTION



Date: 12/19/2014

2030 Build with Access
on 4th St & 3rd St
Traffic Volumes
Figure 8b

The Ritz Block

Minneapolis, MN

Prepared for:
OPUS
Minnetonka, MN

Client	
Checklist	
Drawings	
Record Drawing	by/Date

Westwood Professional Services, Inc.
7889 Franklin Drive
Eden Prairie, MN 55344
PHONE 952.937-5100
FAX 952.937-5622
TOLL FREE 1-888-937-5100
www.westwoodps.com

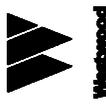


Table 8b
Results of Year 2030 Build Analysis – AM & PM Peak Hour (2 service drive access points)

Intersection	Intersection		Approach	Critical Approach		
	Intersection Control Delay	Overall Intersection LOS		Lane Group Delay	Lane Group LOS	95th Percentile Queue Length
A.M. Peak Hour						
Marquette Ave & S 3rd St	22.0 sec	LOS-C	NB Left (Marquette)	28.7 sec	LOS-C	167 ft
Nicollet Mall & S 3rd St	11.8 sec	LOS-B	NB Thru (Nicollet)	13.9 sec	LOS-B	70 ft
Marquette Ave & S 4th St	4.7 sec	LOS-A	EB Left (4th)	7.9 sec	LOS-A	87 ft
Nicollet Mall & S 4th St	11.9 sec	LOS-B	SB Left (Nicollet)	27.1 sec	LOS-C	114 ft
Hennepin Ave & S 3rd St	13.8 sec	LOS-B	WB Left (3rd)	28.1 sec	LOS-C	111 ft
Hennepin Ave & S 4th St	25.3 sec	LOS-C	NB Thru (Hennepin)	36.1 sec	LOS-D	274 ft
Service Drive Access & S 4th St	0.8 sec	LOS-A	SB Left (Service Dr.)	49.0 sec	LOS-E	10 ft
Tower 1 Parking Access & S 4th St	1.4 sec	LOS-A	SB Left (Parking)	20.0 sec	LOS-C	51 ft
Service Drive Access & S 3rd St	1.8 sec	LOS-A	NB Left (Service Dr.)	5.0 sec	LOS-A	39 ft
P.M. Peak Hour						
Marquette Ave & S 3rd St	25.7 sec	LOS-C	NB Left (Marquette)	34.4 sec	LOS-C	295 ft
Nicollet Mall & S 3rd St	9.4 sec	LOS-A	SB Through (Nicollet)	22.8 sec	LOS-C	99 ft
Marquette Ave & S 4th St	17.1 sec	LOS-B	EB Left (4th)	19.8 sec	LOS-B	196 ft
Nicollet Mall & S 4th St	11.2 sec	LOS-B	EB Through	11.5 sec	LOS-B	155 ft
Hennepin Ave & S 3rd St	26.5 sec	LOS-C	SB Through	58.1 sec	LOS-E	347 ft
Hennepin Ave & S 4th St	21.0 sec	LOS-C	NB Through	33.3 sec	LOS-C	349 ft
Service Drive Access & S 4th St	2.4 sec	LOS-A	SB Left (Service Dr.)	9.6 sec	LOS-A	71 ft
Tower 1 Parking Access & S 4th St	2.0 sec	LOS-A	SB Left (Parking)	2.0 sec	LOS-A	52 ft
Service Drive Access & S 3rd St	2.8 sec	LOS-A	NB Left (Service Dr.)	8.3 sec	LOS-A	66 ft

1. Overall LOS reported from Synchro.
2. 95th percentile queues are a result from an average of 5 SimTraffic simulations.

Overall, the 2030 Build levels of service at each study intersection are acceptable. There remain a few lane groups at individual intersections that have unacceptable levels of service. One is in the 2030 PM Peak Hour for the dual drives, where the service drive exit onto 4th Street South shows a 49 second delay, but is only reflecting a 10-foot queue. As with many driveways from buildings in an urban area, exiting traffic may have to wait for other traffic to clear before drivers are able to exit onto the intersecting street.

Under each scenario of the P.M. Peak Hour, the service drive onto 4th Street South will be blocked by 95th Percentile Queues along 4th Street South. The 4th Street South queue will extend 25-30 feet past the driveway (or two car lengths). It does not appear that in either case the queue on 4th Street South will extend beyond the parking ramp access from Tower 1.

V. ACCESS CIRCULATION

The proposed site plan has been reviewed to assess the operational effectiveness of the proposed ingress and egress points. Figure 2 schematically depicts site access. Ingress to and egress from the site's off-street parking ramp will be via a service drive that bisects the block between the towers. This service drive was assessed as having either a single access (onto 4th Street South) or having dual access points (onto both 3rd and 4th Streets South). In each case, it is assumed that access to and from parking for Tower 1 will occur from 4th Street South, while access to Tower 2 parking and loading areas will occur via the service drive.

Because of the directional restrictions around the Ritz Block, traffic entering and exiting the parking access and service drive will require wayfinding signage in order to maneuver to and from the site.

VI. CONCLUSIONS

The preceding analysis has evaluated the potential traffic impacts of the proposed development at the Ritz Block on the operations of the study area intersections surrounding the site in downtown Minneapolis.

Two scenarios, a No-Build and a Build scenario were analyzed and compared to assess the development's impact of vehicular traffic to the roadway system. Two design years were chosen – 2017 corresponding to the year after build-out of the site; and the long-term design year of 2030.

The Proposed Plan consists of two towers – Tower 1 is proposed as a high-rise residential use with a small retail component on the ground floor. Tower 2 has two possible development tracks – either as high-rise office or high-rise residential. Above ground parking will be provided for the residential and office tenants of both towers.

If Tower 2 develops as an Office use, the overall Ritz Block development is expected to generate 5,812 trips per average weekday. AM Peak Hour Trips were estimated at 695, and PM peak hour trips were estimated at 698.

If Tower 2 develops as a Residential use, the overall Ritz Block development is expected to generate 3,824 trips per average weekday. AM Peak Hour Trips were estimated at 154, and PM peak hour trips were estimated at 338.

Applying the City's modal shift goals to the trips reduced the overall auto traffic to 2,326 vehicular trips generated per weekday under the Tower 2 – Office scenario. This relates to 273 vehicular trips in the AM and 278 vehicular trips in the PM peak hour. These totals reflect a goal of 40% auto traffic. The other 60% of these trips would be served by other modes (– e.g., pedestrian, bus, LRT, streetcar, bike, etc.), all of which have excellent proximity to this development (as will be noted in travel demand management plans prepared for each tower).

Results of the operational analyses indicate that under the No-Build and Build scenarios, vehicular traffic operation performs at roughly the same levels of service. The high modal share from this development significantly reduces the single-occupant traffic impact of the site, and does not significantly burden surrounding intersection congestion levels beyond their existing or No-Build conditions. There will be some queuing on 4th Street South in the future Build conditions that extends to and slightly beyond the service drive, but these incidences are short-lived, and are typical within a downtown traffic environment.

VII. RECOMMENDATIONS

Recommendations include the following:

- Provide access to/from the service drive to both 3rd Avenue South and 4th Avenue South.
- Provide wayfinding signage from parking and loading access to and from both tower.
- Provide systematic signal timing updates to reflect changing traffic conditions.
- Initiate and follow through with travel demand management strategies for tenants, residents, employees and guests that will encourage the use of alternate forms of transportation to and from the Ritz Block site. (NOTE: Overall strategies are presented in the Travel Demand Management Plan; however, specific TDM strategies for Tower 2 will be developed when the land uses are more clearly defined and development plans are imminent.)

APPENDIX

- I. Operational Analysis Methodology
- II. SYNCHRO & SimTraffic Control Delay and Queuing Reports
 - A. Existing A.M. & P.M.
 - B. 2017 No-Build A.M. & P.M.
 - C. 2017 Build (One Access for Service Drive) A.M. & P.M.
 - D. 2017 Build (Dual Accesses for Service Drive) A.M. & P.M.
 - E. 2030 Build (One Access for Service Drive) A.M. & P.M.
 - F. 2030 Build (Dual Accesses for Service Drive) A.M. & P.M.

APPENDIX I.

Operational Analysis Methodology

Traffic operations for the AM and PM peak hour conditions within the study area were analyzed using the industry-standard *Synchro/SimTraffic Version 9* software package, which uses the data and methodology contained in the 2010 Highway Capacity Manual, published by the Transportation Research Board. The software model was calibrated to replicate existing conditions as accurately as possible before being used to assess future conditions.

The operating conditions of transportation facilities, such as traffic signals, stop-controlled intersections and roundabouts, are evaluated based on the relationship of the theoretical capacity of a facility to the actual traffic volumes on that facility. Various factors affect capacity, including travel speed, roadway geometry, grade, number and width of travel lanes, and intersection control. The current standards for evaluating capacity and operating conditions are contained in the 2010 Highway Capacity Manual (HCM). The procedures describe operating conditions in terms of a Level of Service (LOS). Facilities are given letter designations from A, representing the best operating conditions, to F, representing the worst. Generally, Level of Service D (LOS-D) represents the threshold for acceptable overall intersection operating conditions during a peak hour.

At intersections, Levels of Service are assigned differently for signalized or unsignalized intersections (which include Two-Way Stop Control [TWSC], All-way Stop Control [AWSC] and roundabouts). For signalized intersections, Level of Service is calculated by taking the total Intersection Delay and converting it to a letter grade as shown in the left side of Table 2. For an unsignalized intersection, Level of Service is calculated by taking the Intersection Delay and converting it to a letter grade, as shown in the right side of Table 2. While similar, the signalized control delay totals are higher than that of unsignalized intersections. In any condition, when the LOS by Volume to Capacity Ratio exceeds 1.0, the LOS is always F.

Table 2: Level of Service vs. Control Delay - Signalized and Unsignalized Intersections (TWSC, AWSC & Roundabouts)

<u>TWSC, AWSC & Roundabouts</u>		<u>Signalized Intersections</u>	
LOS by Volume to Capacity Ratio (≤ 1)*	Control Delay per Vehicle (Seconds)	LOS by Volume to Capacity Ratio (≤ 1)*	Control Delay per Vehicle (Seconds)
A	≤ 10	A	≤ 10
B	>10 and ≤ 15	B	>10 and ≤ 20
C	>15 and ≤ 25	C	>20 and ≤ 35
D	>25 and ≤ 35	D	>35 and ≤ 55
E	>35 and ≤ 50	E	>55 and ≤ 80
F	>50	F	>80

Per the 2010 Highway Capacity Manual, published by the Transportation Research Board.

* NOTE: When LOS by Volume to Capacity Ratio >1.00 , LOS is F.

Under the 2010 HCM, common movements are included into lane groups. Control Delay is then determined for each lane group and Levels of Service are based on this Control Delay. For each lane group, Control Delay is quantified by number of seconds. Control Delay is measured by comparison with the uncontrolled condition. It is the difference between the travel time that would have occurred in the absence of the intersection control, and the travel time that results because of the presence of the intersection control. Levels of Service are then based on the control delay per vehicle.

The acceptable Level of Service threshold for a particular movement at an intersection depends on both the priority assigned to that movement and its traffic volume. In general, the higher the priority and the higher the traffic volume, the more stringent the acceptable threshold will be. For example, the acceptable threshold for a high-priority/high-volume rural movement might be C, while LOS F on a low-priority/low-volume urban movement might be appropriate.

For two-way stop-controlled intersections, a key measure of operational effectiveness is the side street LOS. Since the mainline does not have to stop, the majority of delay is attributed to the side-street/minor approaches. Long delays and poor LOS can sometimes result on the side street, even if the overall intersection is functioning well, making it a valuable design criterion. As the side-street/minor approach delay approaches and exceeds 60 seconds per vehicle, drivers may divert to another route or become impatient and accept gaps in the mainline traffic that are less than acceptable/safe gaps resulting in the potential for traffic safety concerns. Therefore, depending on priority and traffic volume, acceptable side-street LOS can range from D to F. Side streets can operate at LOS F without the intersection warranting a change in traffic control.

A final fundamental component of operational analyses is a study of vehicular queuing, or the line of vehicles waiting to pass through an intersection. An intersection can operate with an acceptable Level of Service, but if queues from the intersection extend back to block entrances to turn lanes or accesses to adjacent land uses, unsafe operating conditions could result.

In reporting Levels of Service, the information from the signalized intersection analysis comes directly from the *Synchro 9* and *SimTraffic 9* reports (found in the Appendix). Intersection Levels of Service are reported based on the Control Delay calculated for the overall intersection and for each critical movement as determined by *SimTraffic 9*.

For queuing, *SimTraffic* reports found in the Appendix list the Mean Queue, the 95th Percentile and the Maximum Queue Lengths that are generated after five runs. In this report, the 95th Percentile Queue Length is used to discern adequate lengths of turn lanes. The 95th Percentile Queue Length refers to that length of queue that has only a five-percent probability of being exceeded during an analysis period. This is the standard factor used to determine optimal turn lane lengths.

APPENDIX II.

SYNCHRO & SimTraffic Control Delay and Queuing Reports

- A. Existing A.M. & P.M.
- B. 2017 No-Build A.M. & P.M.
- C. 2017 Build (One Access for Service Drive) A.M. & P.M.
- D. 2017 Build (Dual Accesses for Service Drive) A.M. & P.M.
- E. 2030 Build (One Access for Service Drive) A.M. & P.M.
- F. 2030 Build (Dual Accesses for Service Drive) A.M. & P.M.

5: S Marquette Ave & S 3rd St Performance by movement

Movement	WBT	WBR	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.1	0.1	0.1	0.0	0.1	0.1	0.1
Total Del/Veh (s)	22.9	10.2	22.8	14.6	15.0	2.3	20.3

6: Nicollet Mall & S 3rd St Performance by movement

Movement	WBL	WBT	NBL	NBT	SBT	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.2	0.0
Total Del/Veh (s)	2.0	9.3	26.1	10.4	11.0	9.6

9: S Marquette Ave & S 4th St Performance by movement

Movement	EBL	EBT	EBR	WBT	WBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0
Total Del/Veh (s)	4.0	2.4	3.6	21.9	39.5	16.3	10.7	33.4	8.4	4.7

10: Nicollet Mall & S 4th St Performance by movement

Movement	EBL	EBT	EBR	WBT	NBL	NBT	SBT	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.1	0.2	0.0	0.0
Total Del/Veh (s)	6.6	8.5	3.5	7.5	2.0	18.1	4.2	8.5

12: Hennepin Ave & S 3rd St Performance by movement

Movement	WBL	WBT	WBR	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.0	0.2	0.2	0.1
Total Del/Veh (s)	29.6	29.5	10.0	6.9	3.5	8.7	3.8	14.1

17: Hennepin Ave & S 4th St Performance by movement

Movement	EBL	EBT	EBR	WBT	WBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	0.9	0.5	1.3	0.0	0.1	0.2	0.2	0.0	0.0	0.4
Total Del/Veh (s)	27.0	25.3	18.4	0.8	2.6	24.9	11.5	20.6	12.0	21.3

Total Network Performance

Denied Del/Veh (s)	0.3
Total Del/Veh (s)	35.1

Queuing and Blocking Report
Baseline

12/18/2014

Intersection: 5: S Marquette Ave & S 3rd St

Movement	WB	WB	WB	NB	NB	SB	SB
Directions Served	LT	T	TR	LT	T	T	TR
Maximum Queue (ft)	273	210	126	161	123	107	77
Average Queue (ft)	175	110	44	83	23	34	9
95th Queue (ft)	243	204	93	140	85	87	45
Link Distance (ft)	314	314	314	339	339	374	374
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 6: Nicollet Mall & S 3rd St

Movement	WB	WB	WB	NB	SB
Directions Served	LT	T	TR	LT	TR
Maximum Queue (ft)	96	107	92	141	95
Average Queue (ft)	53	44	26	15	34
95th Queue (ft)	86	80	69	75	85
Link Distance (ft)	340	340	340	343	318
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 9: S Marquette Ave & S 4th St

Movement	EB	EB	EB	WB	NB	NB	SB	SB
Directions Served	LT	T	TR	LTR	T	TR	LT	TR
Maximum Queue (ft)	54	30	96	166	160	74	95	54
Average Queue (ft)	11	3	19	53	68	26	32	4
95th Queue (ft)	35	17	61	127	119	57	89	25
Link Distance (ft)	346	346	346	317	359	359	339	339
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)								
Storage Blk Time (%)								
Queuing Penalty (veh)								

Queuing and Blocking Report

Baseline

12/18/2014

Intersection: 10: Nicollet Mall & S 4th St

Movement	EB	EB	EB	WB	NB	SB
Directions Served	LT	T	TR	LTR	LTR	LTR
Maximum Queue (ft)	96	144	141	68	90	54
Average Queue (ft)	57	65	78	9	28	9
95th Queue (ft)	96	114	133	42	78	40
Link Distance (ft)	354	354	354	346	347	343
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 12: Hennepin Ave & S 3rd St

Movement	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	LT	T	TR	L	T	T	T	TR
Maximum Queue (ft)	304	245	210	52	52	53	254	193
Average Queue (ft)	95	74	53	17	18	13	125	67
95th Queue (ft)	228	205	160	43	49	42	233	166
Link Distance (ft)	337	337	337		361	361	353	353
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)				150				
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 17: Hennepin Ave & S 4th St

Movement	EB	EB	EB	WB	NB	NB	SB	SB	SB
Directions Served	LT	T	TR	LTR	T	TR	L	T	T
Maximum Queue (ft)	339	295	295	54	245	219	131	186	144
Average Queue (ft)	294	276	209	13	151	86	59	68	57
95th Queue (ft)	321	318	334	40	246	172	102	127	124
Link Distance (ft)	280	280	280	354	230	230		361	361
Upstream Blk Time (%)	25	10	4		2	0			
Queuing Penalty (veh)	0	0	0		0	0			
Storage Bay Dist (ft)							150		
Storage Blk Time (%)							0	1	
Queuing Penalty (veh)							0	1	

Network Summary

Network wide Queuing Penalty: 1

5: S Marquette Ave & S 3rd St Performance by movement

Movement	WBL	WBT	WBR	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.1	0.2	0.3	0.0	0.0	0.1	0.1	0.1
Total Del/Veh (s)	43.2	26.0	14.4	34.0	12.7	17.2	0.1	24.0

6: Nicollet Mall & S 3rd St Performance by movement

Movement	WBT	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	1.4	0.0
Total Del/Veh (s)	12.1	24.0	8.1	23.5	42.5	12.3

9: S Marquette Ave & S 4th St Performance by movement

Movement	EBL	EBT	EBR	WBT	NBT	NBR	SBT	All
Denied Del/Veh (s)	0.1	0.0	0.0	0.1	0.3	0.3	0.0	0.2
Total Del/Veh (s)	17.5	14.9	7.1	21.3	20.2	16.8	3.4	16.3

10: Nicollet Mall & S 4th St Performance by movement

Movement	EBT	EBR	WBT	NBT	NBR	SBT	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.1	0.0	0.0
Total Del/Veh (s)	19.2	5.0	3.7	23.4	0.0	2.8	18.2

12: Hennepin Ave & S 3rd St Performance by movement

Movement	WBL	WBT	WBR	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)	1.2	0.1	0.0	0.2	0.0	0.2	0.3	0.1
Total Del/Veh (s)	26.7	27.4	23.2	51.2	10.5	11.0	7.7	22.6

17: Hennepin Ave & S 4th St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	0.4	0.2	0.1	0.1	0.0	0.1	0.2	0.3	0.3	0.0	0.2
Total Del/Veh (s)	11.2	10.8	3.4	28.8	0.2	6.4	11.2	3.2	32.5	9.6	10.5

Total Network Performance

Denied Del/Veh (s)	0.3
Total Del/Veh (s)	45.2

Queuing and Blocking Report
Baseline

12/18/2014

Intersection: 5: S Marquette Ave & S 3rd St

Movement	WB	WB	WB	NB	NB	SB	SB
Directions Served	LT	T	TR	LT	T	T	TR
Maximum Queue (ft)	366	329	329	339	316	299	240
Average Queue (ft)	309	245	154	204	121	125	33
95th Queue (ft)	371	324	270	314	240	228	138
Link Distance (ft)	314	314	314	339	339	374	374
Upstream Blk Time (%)	11	1	0	0			
Queuing Penalty (veh)	0	0	0	1			
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 6: Nicollet Mall & S 3rd St

Movement	WB	WB	WB	NB	SB
Directions Served	LT	T	TR	LT	TR
Maximum Queue (ft)	241	234	231	68	138
Average Queue (ft)	142	134	112	14	34
95th Queue (ft)	219	199	189	51	87
Link Distance (ft)	340	340	340	343	318
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 9: S Marquette Ave & S 4th St

Movement	EB	EB	EB	WB	NB	NB	SB
Directions Served	LT	T	TR	LTR	T	TR	LT
Maximum Queue (ft)	210	202	81	108	374	332	50
Average Queue (ft)	128	90	26	31	218	168	6
95th Queue (ft)	195	177	68	86	320	268	31
Link Distance (ft)	346	346	346	317	359	359	339
Upstream Blk Time (%)					0		
Queuing Penalty (veh)					0		
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Queuing and Blocking Report

Baseline

12/18/2014

Intersection: 10: Nicollet Mall & S 4th St

Movement	EB	EB	EB	WB	NB
Directions Served	LT	T	TR	LTR	LTR
Maximum Queue (ft)	270	213	179	35	118
Average Queue (ft)	156	120	69	1	51
95th Queue (ft)	233	194	145	12	110
Link Distance (ft)	354	354	354	346	347
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 12: Hennepin Ave & S 3rd St

Movement	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	LT	T	TR	L	T	T	T	TR
Maximum Queue (ft)	353	367	344	199	321	287	157	147
Average Queue (ft)	290	286	265	111	84	67	93	58
95th Queue (ft)	363	366	364	177	160	135	139	114
Link Distance (ft)	337	337	337		361	361	353	353
Upstream Blk Time (%)	1	2	0					
Queuing Penalty (veh)	9	10	3					
Storage Bay Dist (ft)				150				
Storage Blk Time (%)				10	0			
Queuing Penalty (veh)				32	0			

Intersection: 17: Hennepin Ave & S 4th St

Movement	EB	EB	EB	WB	NB	NB	SB	SB	SB
Directions Served	LT	T	TR	LTR	T	TR	L	T	T
Maximum Queue (ft)	199	123	92	52	245	162	65	110	98
Average Queue (ft)	113	33	21	24	125	53	22	59	36
95th Queue (ft)	168	82	59	54	195	102	58	88	76
Link Distance (ft)	280	280	280	354	230	230		361	361
Upstream Blk Time (%)					0				
Queuing Penalty (veh)					0				
Storage Bay Dist (ft)							150		
Storage Blk Time (%)									
Queuing Penalty (veh)									

Network Summary

Network wide Queuing Penalty: 56

5: S Marquette Ave & S 3rd St Performance by movement

Movement	WBT	WBR	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.1	0.1	0.1	0.0	0.1	0.1	0.1
Total Del/Veh (s)	22.9	4.3	18.7	12.1	11.6	0.9	18.8

6: Nicollet Mall & S 3rd St Performance by movement

Movement	WBL	WBT	NBL	NBT	SBT	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.1	0.0
Total Del/Veh (s)	4.2	10.1	11.7	8.9	13.0	10.2

9: S Marquette Ave & S 4th St Performance by movement

Movement	EBL	EBT	EBR	WBT	WBR	NBT	NBR	SBT	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.2	0.1	0.1	0.1	0.0	0.0
Total Del/Veh (s)	4.0	2.6	2.8	17.3	3.3	18.6	11.3	7.8	5.0

10: Nicollet Mall & S 4th St Performance by movement

Movement	EBT	EBR	WBT	NBT	SBT	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.0	0.0
Total Del/Veh (s)	7.7	6.0	15.1	19.2	4.5	7.9

12: Hennepin Ave & S 3rd St Performance by movement

Movement	WBL	WBT	WBR	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.0	0.2	0.2	0.1
Total Del/Veh (s)	35.6	37.9	26.1	6.8	3.5	8.5	2.9	17.1

17: Hennepin Ave & S 4th St Performance by movement

Movement	EBL	EBT	EBR	WBT	WBR	NBL	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	2.0	0.7	0.8	0.0	0.1	0.1	0.2	0.3	0.0	0.0	0.5
Total Del/Veh (s)	30.7	25.3	15.4	1.2	2.1	2.0	27.5	15.0	22.4	12.4	22.1

Total Network Performance

Denied Del/Veh (s)	0.4
Total Del/Veh (s)	36.6

Queuing and Blocking Report
Baseline

12/18/2014

Intersection: 5: S Marquette Ave & S 3rd St

Movement	WB	WB	WB	NB	NB	SB	SB
Directions Served	LT	T	TR	LT	T	T	TR
Maximum Queue (ft)	268	192	96	184	147	90	51
Average Queue (ft)	194	125	33	81	25	35	3
95th Queue (ft)	253	205	72	143	88	83	24
Link Distance (ft)	314	314	314	339	339	374	374
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 6: Nicollet Mall & S 3rd St

Movement	WB	WB	WB	NB	SB
Directions Served	LT	T	TR	LT	TR
Maximum Queue (ft)	114	114	92	55	136
Average Queue (ft)	65	47	29	6	30
95th Queue (ft)	108	84	74	33	90
Link Distance (ft)	340	340	340	343	318
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 9: S Marquette Ave & S 4th St

Movement	EB	EB	EB	WB	NB	NB	SB	SB
Directions Served	LT	T	TR	LTR	T	TR	LT	TR
Maximum Queue (ft)	91	68	74	137	181	120	93	50
Average Queue (ft)	24	2	14	39	73	37	25	7
95th Queue (ft)	66	18	45	103	145	79	72	35
Link Distance (ft)	346	346	346	317	359	359	339	339
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)								
Storage Blk Time (%)								
Queuing Penalty (veh)								

Queuing and Blocking Report

Baseline

12/18/2014

Intersection: 10: Nicollet Mall & S 4th St

Movement	EB	EB	EB	WB	NB	SB
Directions Served	LT	T	TR	LTR	LTR	LTR
Maximum Queue (ft)	82	136	135	190	100	92
Average Queue (ft)	51	48	68	24	30	9
95th Queue (ft)	88	98	121	103	81	46
Link Distance (ft)	354	354	354	346	347	343
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 12: Hennepin Ave & S 3rd St

Movement	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	LT	T	TR	L	T	T	T	TR
Maximum Queue (ft)	272	228	249	52	72	52	292	151
Average Queue (ft)	139	127	98	15	22	12	97	45
95th Queue (ft)	241	237	213	44	62	42	230	128
Link Distance (ft)	337	337	337		362	362	353	353
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)				150				
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 17: Hennepin Ave & S 4th St

Movement	EB	EB	EB	WB	NB	NB	SB	SB	SB
Directions Served	LT	T	TR	LTR	LT	TR	L	T	T
Maximum Queue (ft)	319	295	295	30	245	231	145	137	156
Average Queue (ft)	297	275	192	12	164	108	64	87	78
95th Queue (ft)	308	326	291	35	256	195	108	137	139
Link Distance (ft)	280	280	280	354	230	230		362	362
Upstream Blk Time (%)	29	7	2		3	0			
Queuing Penalty (veh)	0	0	0		0	0			
Storage Bay Dist (ft)							150		
Storage Blk Time (%)							1	0	
Queuing Penalty (veh)							2	0	

Network Summary

Network wide Queuing Penalty: 2

5: S Marquette Ave & S 3rd St Performance by movement

Movement	WBL	WBT	WBR	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.8	0.3	0.3	0.0	0.0	0.1	0.1	0.2
Total Del/Veh (s)	17.8	25.0	21.8	37.6	16.8	19.2	8.6	25.1

6: Nicollet Mall & S 3rd St Performance by movement

Movement	WBT	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.2	0.1	0.0
Total Del/Veh (s)	8.1	5.4	13.7	18.8	7.1	8.3

9: S Marquette Ave & S 4th St Performance by movement

Movement	EBL	EBT	EBR	WBT	NBT	NBR	SBT	All
Denied Del/Veh (s)	0.1	0.0	0.0	0.2	0.5	0.5	0.0	0.2
Total Del/Veh (s)	13.2	10.4	4.5	24.0	21.2	13.4	2.3	13.9

10: Nicollet Mall & S 4th St Performance by movement

Movement	EBL	EBT	EBR	WBT	NBT	SBT	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Total Del/Veh (s)	26.7	25.8	18.0	8.5	18.2	2.7	24.2

12: Hennepin Ave & S 3rd St Performance by movement

Movement	WBL	WBT	WBR	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.1	0.0	0.0	0.2	0.0	0.1	0.2	0.1
Total Del/Veh (s)	13.6	9.5	4.9	40.2	34.6	42.4	22.6	21.0

17: Hennepin Ave & S 4th St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	0.5	0.2	0.1	0.1	0.0	0.1	0.3	0.3	0.0	0.0	0.2
Total Del/Veh (s)	38.6	32.9	6.3	55.9	0.9	8.1	12.2	2.5	25.8	12.4	18.7

Total Network Performance

Denied Del/Veh (s)	0.3
Total Del/Veh (s)	45.9

Queuing and Blocking Report
Baseline

12/18/2014

Intersection: 5: S Marquette Ave & S 3rd St

Movement	WB	WB	WB	NB	NB	SB	SB
Directions Served	LT	T	TR	LT	T	T	TR
Maximum Queue (ft)	344	329	329	346	339	212	180
Average Queue (ft)	309	252	156	194	124	131	41
95th Queue (ft)	364	343	260	328	273	236	129
Link Distance (ft)	314	314	314	339	339	374	374
Upstream Blk Time (%)	11	2	0	0	0		
Queuing Penalty (veh)	0	0	0	2	0		
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 6: Nicollet Mall & S 3rd St

Movement	WB	WB	WB	NB	SB
Directions Served	LT	T	TR	LT	TR
Maximum Queue (ft)	163	174	160	55	98
Average Queue (ft)	106	107	88	9	39
95th Queue (ft)	152	160	145	40	91
Link Distance (ft)	340	340	340	343	318
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 9: S Marquette Ave & S 4th St

Movement	EB	EB	EB	WB	NB	NB
Directions Served	LT	T	TR	LTR	T	TR
Maximum Queue (ft)	222	229	270	136	393	374
Average Queue (ft)	103	51	19	41	217	160
95th Queue (ft)	182	144	102	112	341	304
Link Distance (ft)	346	346	346	317	359	359
Upstream Blk Time (%)					2	1
Queuing Penalty (veh)					0	0
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Queuing and Blocking Report

Baseline

12/18/2014

Intersection: 10: Nicollet Mall & S 4th St

Movement	EB	EB	EB	WB	NB
Directions Served	LT	T	TR	LTR	LTR
Maximum Queue (ft)	329	319	214	67	118
Average Queue (ft)	220	179	125	6	32
95th Queue (ft)	299	254	183	35	96
Link Distance (ft)	354	354	354	346	347
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 12: Hennepin Ave & S 3rd St

Movement	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	LT	T	TR	L	T	T	T	TR
Maximum Queue (ft)	219	152	146	200	377	344	305	255
Average Queue (ft)	96	87	67	165	254	212	217	172
95th Queue (ft)	159	136	121	244	379	319	279	232
Link Distance (ft)	337	337	337		361	361	353	353
Upstream Blk Time (%)					1	0		
Queuing Penalty (veh)					5	0		
Storage Bay Dist (ft)				150				
Storage Blk Time (%)				11	24			
Queuing Penalty (veh)				36	54			

Intersection: 17: Hennepin Ave & S 4th St

Movement	EB	EB	EB	WB	NB	NB	SB	SB	SB
Directions Served	LT	T	TR	LTR	T	TR	L	T	T
Maximum Queue (ft)	295	289	144	74	264	187	48	214	216
Average Queue (ft)	254	180	41	20	178	80	19	99	107
95th Queue (ft)	324	275	102	54	250	164	48	201	195
Link Distance (ft)	280	280	280	354	230	230		361	361
Upstream Blk Time (%)	7	0			3				
Queuing Penalty (veh)	0	0			0				
Storage Bay Dist (ft)							150		
Storage Blk Time (%)								2	
Queuing Penalty (veh)								1	

Network Summary

Network wide Queuing Penalty: 97

5: S Marquette Ave & S 3rd St Performance by movement

Movement	WBT	WBR	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.1	0.1	0.1	0.0	0.1	0.1	0.1
Total Del/Veh (s)	23.3	9.4	21.3	13.2	14.3	3.4	20.1

6: Nicollet Mall & S 3rd St Performance by movement

Movement	WBL	WBT	NBL	NBT	SBT	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.1	0.0
Total Del/Veh (s)	10.7	9.6	7.6	4.6	13.5	9.7

9: S Marquette Ave & S 4th St Performance by movement

Movement	EBL	EBT	EBR	WBT	WBR	NBT	NBR	SBT	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.0	0.0
Total Del/Veh (s)	5.1	2.7	4.5	17.1	19.0	17.2	10.8	6.5	4.9

10: Nicollet Mall & S 4th St Performance by movement

Movement	EBL	EBT	EBR	WBT	NBT	SBT	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.2	0.0	0.0
Total Del/Veh (s)	4.3	9.4	6.2	11.4	13.6	4.3	9.4

12: Hennepin Ave & S 3rd St Performance by movement

Movement	WBL	WBT	WBR	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.2	0.0	0.2	0.3	0.1
Total Del/Veh (s)	28.3	27.7	29.3	11.3	3.4	11.5	6.9	15.1

17: Hennepin Ave & S 4th St Performance by movement

Movement	EBL	EBT	EBR	WBT	WBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	3.6	2.4	2.8	0.0	0.1	0.2	0.2	0.0	0.0	1.5
Total Del/Veh (s)	23.2	26.4	16.0	1.1	2.9	27.3	16.8	23.4	11.3	22.6

Total Network Performance

Denied Del/Veh (s)	1.2
Total Del/Veh (s)	37.2

Queuing and Blocking Report
Baseline

12/18/2014

Intersection: 5: S Marquette Ave & S 3rd St

Movement	WB	WB	WB	NB	NB	SB	SB
Directions Served	LT	T	TR	LT	T	T	TR
Maximum Queue (ft)	270	249	136	160	125	155	146
Average Queue (ft)	206	137	49	89	28	38	17
95th Queue (ft)	267	238	108	148	97	102	72
Link Distance (ft)	314	314	314	339	339	374	374
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 6: Nicollet Mall & S 3rd St

Movement	WB	WB	WB	NB	SB
Directions Served	LT	T	TR	LT	TR
Maximum Queue (ft)	112	94	111	50	130
Average Queue (ft)	60	47	37	5	32
95th Queue (ft)	95	83	86	30	89
Link Distance (ft)	340	340	340	343	318
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 9: S Marquette Ave & S 4th St

Movement	EB	EB	EB	WB	NB	NB	SB	SB
Directions Served	LT	T	TR	LTR	T	TR	LT	TR
Maximum Queue (ft)	54	31	73	154	138	129	79	55
Average Queue (ft)	21	3	16	37	78	32	24	4
95th Queue (ft)	52	16	50	97	135	83	70	25
Link Distance (ft)	346	346	346	317	359	359	339	339
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)								
Storage Blk Time (%)								
Queuing Penalty (veh)								

Queuing and Blocking Report

Baseline

12/18/2014

Intersection: 10: Nicollet Mall & S 4th St

Movement	EB	EB	EB	WB	NB	SB
Directions Served	LT	T	TR	LTR	LTR	LTR
Maximum Queue (ft)	112	211	208	90	118	54
Average Queue (ft)	62	76	94	17	31	4
95th Queue (ft)	105	153	156	60	89	25
Link Distance (ft)	354	354	354	346	347	343
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 12: Hennepin Ave & S 3rd St

Movement	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	LT	T	TR	L	T	T	T	TR
Maximum Queue (ft)	285	349	328	75	72	52	326	246
Average Queue (ft)	108	98	83	31	19	14	148	110
95th Queue (ft)	254	277	249	64	54	44	304	243
Link Distance (ft)	337	337	337		361	361	353	353
Upstream Blk Time (%)		0	0					
Queuing Penalty (veh)		0	0					
Storage Bay Dist (ft)				150				
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 17: Hennepin Ave & S 4th St

Movement	EB	EB	EB	WB	NB	NB	SB	SB	SB
Directions Served	LT	T	TR	LTR	T	TR	L	T	T
Maximum Queue (ft)	319	343	307	30	282	195	194	236	159
Average Queue (ft)	296	285	239	12	174	105	72	73	56
95th Queue (ft)	303	343	350	35	256	185	148	152	120
Link Distance (ft)	280	280	280	354	230	230		361	361
Upstream Blk Time (%)	31	13	7		2				
Queuing Penalty (veh)	0	0	0		0				
Storage Bay Dist (ft)							150		
Storage Blk Time (%)							1	1	
Queuing Penalty (veh)							2	1	

Network Summary

Network wide Queuing Penalty: 4

5: S Marquette Ave & S 3rd St Performance by movement

Movement	WBL	WBT	WBR	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)	1.2	0.2	0.4	0.0	0.0	0.1	0.1	0.1
Total Del/Veh (s)	31.0	27.8	21.5	50.5	17.1	15.4	3.4	28.6

6: Nicollet Mall & S 3rd St Performance by movement

Movement	WBT	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.1	0.0
Total Del/Veh (s)	7.8	15.9	14.1	28.2	14.4	8.3

9: S Marquette Ave & S 4th St Performance by movement

Movement	EBL	EBT	EBR	WBT	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	0.2	0.0	0.4	0.1	0.3	0.5	0.0	0.0	0.2
Total Del/Veh (s)	17.9	11.6	17.8	24.3	23.5	15.5	65.6	2.4	15.8

10: Nicollet Mall & S 4th St Performance by movement

Movement	EBT	EBR	WBT	NBT	NBR	SBT	All
Denied Del/Veh (s)	0.1	0.0	0.0	0.2	0.1	0.0	0.1
Total Del/Veh (s)	25.4	3.9	5.2	18.2	5.1	3.5	23.4

12: Hennepin Ave & S 3rd St Performance by movement

Movement	WBL	WBT	WBR	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.2	0.0	0.1	0.5	0.1	0.2	0.3	0.1
Total Del/Veh (s)	11.9	11.7	6.8	43.1	33.7	48.8	32.1	23.6

17: Hennepin Ave & S 4th St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	0.9	0.3	0.2	0.2	0.0	0.1	0.5	0.4	0.1	0.0	0.3
Total Del/Veh (s)	33.7	29.7	4.6	51.1	0.4	14.7	14.2	5.9	32.5	13.9	19.0

Total Network Performance

Denied Del/Veh (s)	0.4
Total Del/Veh (s)	50.2

Queuing and Blocking Report
Baseline

12/18/2014

Intersection: 5: S Marquette Ave & S 3rd St

Movement	WB	WB	WB	NB	NB	SB	SB
Directions Served	LT	T	TR	LT	T	T	TR
Maximum Queue (ft)	329	329	301	356	348	247	172
Average Queue (ft)	313	253	163	253	187	128	41
95th Queue (ft)	368	343	265	409	349	220	121
Link Distance (ft)	314	314	314	339	339	374	374
Upstream Blk Time (%)	16	2	0	2	0		
Queuing Penalty (veh)	0	0	0	10	1		
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 6: Nicollet Mall & S 3rd St

Movement	WB	WB	WB	NB	SB
Directions Served	LT	T	TR	LT	TR
Maximum Queue (ft)	166	182	162	68	137
Average Queue (ft)	105	104	93	18	47
95th Queue (ft)	148	155	145	57	114
Link Distance (ft)	340	340	340	343	318
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 9: S Marquette Ave & S 4th St

Movement	EB	EB	EB	WB	NB	NB	SB
Directions Served	LT	T	TR	LTR	T	TR	LT
Maximum Queue (ft)	246	270	159	108	374	374	90
Average Queue (ft)	120	60	39	38	245	192	3
95th Queue (ft)	221	187	116	96	375	344	30
Link Distance (ft)	346	346	346	317	359	359	339
Upstream Blk Time (%)					2	1	
Queuing Penalty (veh)					0	0	
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Queuing and Blocking Report

Baseline

12/18/2014

Intersection: 10: Nicollet Mall & S 4th St

Movement	EB	EB	EB	WB	NB
Directions Served	LT	T	TR	LTR	LTR
Maximum Queue (ft)	321	272	227	50	154
Average Queue (ft)	222	194	119	2	48
95th Queue (ft)	289	264	189	17	102
Link Distance (ft)	354	354	354	346	347
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 12: Hennepin Ave & S 3rd St

Movement	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	LT	T	TR	L	T	T	T	TR
Maximum Queue (ft)	142	174	149	200	381	340	368	308
Average Queue (ft)	108	99	77	181	287	226	232	182
95th Queue (ft)	141	149	143	235	408	318	322	255
Link Distance (ft)	337	337	337		361	361	353	353
Upstream Blk Time (%)					2		1	
Queuing Penalty (veh)					10		0	
Storage Bay Dist (ft)				150				
Storage Blk Time (%)				14	24			
Queuing Penalty (veh)				48	59			

Intersection: 17: Hennepin Ave & S 4th St

Movement	EB	EB	EB	WB	NB	NB	SB	SB	SB
Directions Served	LT	T	TR	LTR	T	TR	L	T	T
Maximum Queue (ft)	310	286	168	56	245	211	102	244	215
Average Queue (ft)	267	170	31	29	203	99	30	123	124
95th Queue (ft)	327	265	93	57	277	198	73	220	215
Link Distance (ft)	280	280	280	354	230	230		361	361
Upstream Blk Time (%)	6	0			6	0			
Queuing Penalty (veh)	0	0			0	0			
Storage Bay Dist (ft)							150		
Storage Blk Time (%)								3	
Queuing Penalty (veh)								1	

Network Summary

Network wide Queuing Penalty: 129

5: S Marquette Ave & S 3rd St Performance by movement

Movement	WBT	WBR	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.2	0.2	0.0	0.0	0.1	0.1	0.1
Total Del/Veh (s)	24.5	8.9	26.3	19.9	20.7	1.6	22.9

6: Nicollet Mall & S 3rd St Performance by movement

Movement	WBL	WBT	NBL	NBT	SBT	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.1	0.0
Total Del/Veh (s)	5.3	11.6	19.6	11.2	12.9	11.7

7: S 4th St & tower 1 Access Performance by movement

Movement	EBL	EBT	WBT	SBL	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.2	0.0
Total Del/Veh (s)	2.0	1.0	0.4	9.0	1.2

9: S Marquette Ave & S 4th St Performance by movement

Movement	EBL	EBT	EBR	WBT	WBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.1	0.2	0.1	0.0	0.0	0.0
Total Del/Veh (s)	4.3	4.3	2.1	15.2	4.3	16.2	11.9	19.2	17.0	6.3

10: Nicollet Mall & S 4th St Performance by movement

Movement	EBT	EBR	WBT	NBL	NBT	SBL	SBT	All
Denied Del/Veh (s)	0.0	0.0	0.3	1.0	0.1	0.0	0.0	0.0
Total Del/Veh (s)	11.1	13.6	7.7	30.9	16.0	27.0	9.0	11.1

12: Hennepin Ave & S 3rd St Performance by movement

Movement	WBL	WBT	WBR	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.3	0.2	0.1
Total Del/Veh (s)	24.3	17.6	4.6	18.9	7.8	13.4	5.1	13.7

14: S 4th St & Service access Performance by movement

Movement	EBL	EBT	WBT	SBL	All
Denied Del/Veh (s)	0.0	0.0	0.1	0.1	0.0
Total Del/Veh (s)	1.3	0.7	1.5	4.0	0.8

17: Hennepin Ave & S 4th St Performance by movement

Movement	EBL	EBT	EBR	WBT	WBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	0.7	0.3	0.3	0.0	0.1	0.2	0.3	0.0	0.0	0.2
Total Del/Veh (s)	21.3	24.4	13.8	3.1	3.0	33.5	16.1	21.8	15.2	22.7

Total Network Performance

Denied Del/Veh (s)	0.2
Total Del/Veh (s)	39.0

Queuing and Blocking Report
Baseline

12/18/2014

Intersection: 5: S Marquette Ave & S 3rd St

Movement	WB	WB	WB	NB	NB	SB	SB
Directions Served	LT	T	TR	LT	T	T	TR
Maximum Queue (ft)	249	236	96	227	127	123	67
Average Queue (ft)	191	128	43	106	42	48	6
95th Queue (ft)	256	222	80	170	105	106	34
Link Distance (ft)	314	314	314	339	339	374	374
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 6: Nicollet Mall & S 3rd St

Movement	WB	WB	WB	NB	SB
Directions Served	LT	T	TR	LT	TR
Maximum Queue (ft)	158	98	79	79	107
Average Queue (ft)	71	49	26	22	26
95th Queue (ft)	122	89	67	68	82
Link Distance (ft)	340	340	340	343	318
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 7: S 4th St & tower 1 Access

Movement	EB	SB
Directions Served	LT	L
Maximum Queue (ft)	74	52
Average Queue (ft)	7	14
95th Queue (ft)	39	46
Link Distance (ft)	58	228
Upstream Blk Time (%)	0	
Queuing Penalty (veh)	1	
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Queuing and Blocking Report
Baseline

12/18/2014

Intersection: 9: S Marquette Ave & S 4th St

Movement	EB	EB	EB	WB	NB	NB	SB	SB
Directions Served	LT	T	TR	LTR	T	TR	LT	TR
Maximum Queue (ft)	75	100	138	124	116	74	125	114
Average Queue (ft)	39	30	25	49	63	24	42	17
95th Queue (ft)	68	72	82	116	105	54	102	67
Link Distance (ft)	134	134	134	317	359	359	339	339
Upstream Blk Time (%)			0					
Queuing Penalty (veh)			0					
Storage Bay Dist (ft)								
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 10: Nicollet Mall & S 4th St

Movement	EB	EB	EB	WB	NB	SB
Directions Served	LT	T	TR	LTR	LTR	LTR
Maximum Queue (ft)	160	138	140	113	116	110
Average Queue (ft)	110	89	92	26	34	34
95th Queue (ft)	161	128	136	83	101	96
Link Distance (ft)	354	354	354	58	347	343
Upstream Blk Time (%)				4		
Queuing Penalty (veh)				1		
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 12: Hennepin Ave & S 3rd St

Movement	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	LT	T	TR	L	T	T	T	TR
Maximum Queue (ft)	153	120	77	88	98	84	285	212
Average Queue (ft)	72	56	14	28	46	39	165	86
95th Queue (ft)	122	109	53	63	94	86	257	184
Link Distance (ft)	337	337	337		361	361	353	353
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)				150				
Storage Blk Time (%)								
Queuing Penalty (veh)								

Queuing and Blocking Report
Baseline

12/18/2014

Intersection: 14: S 4th St & Service access

Movement	EB	WB	SB
Directions Served	LT	T	L
Maximum Queue (ft)	56	28	31
Average Queue (ft)	13	1	6
95th Queue (ft)	43	9	24
Link Distance (ft)	39	134	268
Upstream Blk Time (%)	0		
Queuing Penalty (veh)	2		
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 17: Hennepin Ave & S 4th St

Movement	EB	EB	EB	WB	NB	NB	SB	SB	SB
Directions Served	LT	T	TR	LTR	T	TR	L	T	T
Maximum Queue (ft)	438	419	280	30	228	194	166	174	193
Average Queue (ft)	373	308	180	10	154	113	85	86	88
95th Queue (ft)	477	420	276	33	217	190	146	154	161
Link Distance (ft)	404	404	404	354	479	479		361	361
Upstream Blk Time (%)	7	1							
Queuing Penalty (veh)	0	0							
Storage Bay Dist (ft)							150		
Storage Blk Time (%)							0	1	
Queuing Penalty (veh)							1	1	

Network Summary

Network wide Queuing Penalty: 7

5: S Marquette Ave & S 3rd St Performance by movement

Movement	WBL	WBT	WBR	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.2	0.3	0.4	0.0	0.0	0.1	0.1	0.2
Total Del/Veh (s)	32.5	29.7	25.8	44.0	18.1	15.1	1.3	29.3

6: Nicollet Mall & S 3rd St Performance by movement

Movement	WBT	NBL	NBT	SBT	All
Denied Del/Veh (s)	0.1	0.0	0.0	0.1	0.1
Total Del/Veh (s)	10.7	34.6	16.1	26.5	11.0

7: S 4th St & Tower 1 Access Performance by movement

Movement	EBL	EBT	WBT	SBL	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.2	0.0
Total Del/Veh (s)	1.9	2.1	0.8	2.0	2.0

9: S Marquette Ave & S 4th St Performance by movement

Movement	EBL	EBT	EBR	WBT	NBT	NBR	SBT	All
Denied Del/Veh (s)	5.2	2.2	0.0	0.1	0.4	0.4	0.0	1.6
Total Del/Veh (s)	28.2	17.8	8.3	20.9	18.9	14.7	2.7	18.0

10: Nicollet Mall & S 4th St Performance by movement

Movement	EBL	EBT	EBR	WBT	NBT	NBR	SBT	All
Denied Del/Veh (s)	0.0	0.0	0.0	2.0	0.2	0.1	0.0	0.2
Total Del/Veh (s)	3.7	13.3	2.9	12.5	17.9	2.3	3.0	13.1

12: Hennepin Ave & S 3rd St Performance by movement

Movement	WBL	WBT	WBR	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.1	0.1	0.0	0.2	0.4	0.1
Total Del/Veh (s)	14.9	14.6	15.5	51.5	27.3	50.4	45.0	25.4

14: S 4th St & Service Access Performance by movement

Movement	EBL	EBT	WBT	SBL	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.2	0.0
Total Del/Veh (s)	2.8	2.0	2.0	6.3	2.7

17: Hennepin Ave & S 4th St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	0.7	0.3	0.2	0.1	0.0	0.2	0.4	0.4	0.1	0.0	0.3
Total Del/Veh (s)	21.2	19.3	9.1	28.7	3.8	4.7	40.2	26.6	34.8	11.9	24.6

Total Network Performance

Denied Del/Veh (s)	0.9
Total Del/Veh (s)	54.1

Queuing and Blocking Report
Baseline

12/18/2014

Intersection: 5: S Marquette Ave & S 3rd St

Movement	WB	WB	WB	NB	NB	SB	SB
Directions Served	LT	T	TR	LT	T	T	TR
Maximum Queue (ft)	366	329	329	358	328	189	90
Average Queue (ft)	312	259	173	264	147	98	14
95th Queue (ft)	366	328	265	352	256	168	57
Link Distance (ft)	314	314	314	339	339	374	374
Upstream Blk Time (%)	14	2	1	3	0		
Queuing Penalty (veh)	0	0	0	12	0		
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 6: Nicollet Mall & S 3rd St

Movement	WB	WB	WB	NB	SB
Directions Served	LT	T	TR	LT	TR
Maximum Queue (ft)	228	222	235	95	154
Average Queue (ft)	133	124	122	20	38
95th Queue (ft)	200	188	198	63	121
Link Distance (ft)	340	340	340	343	318
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 7: S 4th St & Tower 1 Access

Movement	EB	EB	EB	SB
Directions Served	LT	T	T	L
Maximum Queue (ft)	74	76	75	40
Average Queue (ft)	37	7	3	5
95th Queue (ft)	75	36	25	24
Link Distance (ft)	54	54	54	220
Upstream Blk Time (%)	8	0	0	
Queuing Penalty (veh)	22	1	1	
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Queuing and Blocking Report
Baseline

12/18/2014

Intersection: 9: S Marquette Ave & S 4th St

Movement	EB	EB	EB	WB	NB	NB
Directions Served	LT	T	TR	LTR	T	TR
Maximum Queue (ft)	183	156	186	195	315	254
Average Queue (ft)	138	108	77	42	192	140
95th Queue (ft)	175	156	151	124	294	235
Link Distance (ft)	134	134	134	317	359	359
Upstream Blk Time (%)	19	2	2			
Queuing Penalty (veh)	59	6	6			
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 10: Nicollet Mall & S 4th St

Movement	EB	EB	EB	WB	NB
Directions Served	LT	T	TR	LTR	LTR
Maximum Queue (ft)	197	122	96	110	118
Average Queue (ft)	110	45	49	32	37
95th Queue (ft)	172	88	85	88	102
Link Distance (ft)	354	354	354	54	347
Upstream Blk Time (%)				16	
Queuing Penalty (veh)				6	
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 12: Hennepin Ave & S 3rd St

Movement	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	LT	T	TR	L	T	T	T	TR
Maximum Queue (ft)	271	248	279	200	291	286	366	341
Average Queue (ft)	119	128	115	151	145	131	234	193
95th Queue (ft)	208	227	224	220	234	222	336	277
Link Distance (ft)	337	337	337		361	361	353	353
Upstream Blk Time (%)							1	0
Queuing Penalty (veh)							0	0
Storage Bay Dist (ft)				150				
Storage Blk Time (%)				20	5			
Queuing Penalty (veh)				65	11			

Queuing and Blocking Report
Baseline

12/18/2014

Intersection: 14: S 4th St & Service Access

Movement	EB	EB	EB	WB	SB
Directions Served	LT	T	T	T	L
Maximum Queue (ft)	98	54	23	30	116
Average Queue (ft)	44	4	1	4	40
95th Queue (ft)	81	27	8	19	87
Link Distance (ft)	43	43	43	134	268
Upstream Blk Time (%)	10	0			
Queuing Penalty (veh)	27	1			
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 17: Hennepin Ave & S 4th St

Movement	EB	EB	EB	WB	NB	NB	SB	SB	SB
Directions Served	LT	T	TR	LTR	T	TR	L	T	T
Maximum Queue (ft)	296	245	74	57	494	391	89	109	101
Average Queue (ft)	223	128	25	13	283	226	35	41	38
95th Queue (ft)	319	250	59	42	418	356	74	84	85
Link Distance (ft)	280	280	280	354	479	479		361	361
Upstream Blk Time (%)	3				1				
Queuing Penalty (veh)	0				0				
Storage Bay Dist (ft)							150		
Storage Blk Time (%)									
Queuing Penalty (veh)									

Network Summary

Network wide Queuing Penalty: 216

5: S Marquette Ave & S 3rd St Performance by movement

Movement	WBT	WBR	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.2	0.2	0.1	0.0	0.1	0.1	0.1
Total Del/Veh (s)	21.3	6.8	26.1	18.3	8.8	3.3	19.7

6: Nicollet Mall & S 3rd St Performance by movement

Movement	WBL	WBT	NBL	NBT	SBT	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.1	0.0
Total Del/Veh (s)	24.2	11.2	26.0	13.3	9.7	11.4

7: S 4th St & Tower 1 Access Performance by movement

Movement	EBL	EBT	WBT	SBL	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.2	0.0
Total Del/Veh (s)	1.3	0.8	0.3	18.2	1.1

9: S Marquette Ave & S 4th St Performance by movement

Movement	EBL	EBT	EBR	WBT	WBR	NBT	NBR	SBT	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.0	0.0
Total Del/Veh (s)	3.7	3.6	3.5	14.9	2.2	14.5	10.7	6.6	5.2

10: Nicollet Mall & S 4th St Performance by movement

Movement	EBL	EBT	EBR	WBT	NBL	NBT	SBT	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.4	0.1	0.1	0.0	0.0
Total Del/Veh (s)	4.5	10.9	5.7	2.8	72.8	15.6	10.5	10.7

12: Hennepin Ave & S 3rd St Performance by movement

Movement	WBL	WBT	WBR	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.0	0.3	0.3	0.1
Total Del/Veh (s)	28.5	19.7	8.2	19.7	8.0	11.2	6.5	13.8

13: Service Access & S 3rd St Performance by movement

Movement	WBL	WBT	NBL	All
Denied Del/Veh (s)	0.0	0.0	0.1	0.0
Total Del/Veh (s)	2.4	1.6	2.5	1.7

14: S 4th St & Service Access Performance by movement

Movement	EBL	EBT	WBT	SBL	All
Denied Del/Veh (s)	0.0	0.0	0.1	0.1	0.0
Total Del/Veh (s)	1.2	0.7	1.5	4.9	0.8

17: Hennepin Ave & S 4th St Performance by movement

Movement	EBL	EBT	EBR	WBT	WBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	0.9	0.3	0.5	0.0	0.1	0.2	0.3	0.0	0.0	0.2
Total Del/Veh (s)	23.6	22.7	11.9	2.9	4.2	32.1	18.9	22.2	16.1	21.9

Total Network Performance

Denied Del/Veh (s)	0.3
Total Del/Veh (s)	36.6

Queuing and Blocking Report
Baseline

12/18/2014

Intersection: 5: S Marquette Ave & S 3rd St

Movement	WB	WB	WB	NB	NB	SB	SB
Directions Served	LT	T	TR	LT	T	T	TR
Maximum Queue (ft)	310	270	154	180	125	108	90
Average Queue (ft)	195	127	48	100	29	24	20
95th Queue (ft)	264	238	112	167	92	76	67
Link Distance (ft)	314	314	314	339	339	374	374
Upstream Blk Time (%)	0						
Queuing Penalty (veh)	0						
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 6: Nicollet Mall & S 3rd St

Movement	WB	WB	WB	NB	SB
Directions Served	LT	T	TR	LT	TR
Maximum Queue (ft)	96	75	117	93	141
Average Queue (ft)	60	37	41	22	18
95th Queue (ft)	94	69	88	71	76
Link Distance (ft)	136	136	136	343	318
Upstream Blk Time (%)			0		
Queuing Penalty (veh)			0		
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 7: S 4th St & Tower 1 Access

Movement	SB
Directions Served	L
Maximum Queue (ft)	56
Average Queue (ft)	17
95th Queue (ft)	49
Link Distance (ft)	154
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Queuing and Blocking Report
Baseline

12/18/2014

Intersection: 9: S Marquette Ave & S 4th St

Movement	EB	EB	EB	WB	NB	NB	SB
Directions Served	LT	T	TR	LTR	T	TR	LT
Maximum Queue (ft)	73	163	96	220	140	126	108
Average Queue (ft)	29	24	28	51	58	28	24
95th Queue (ft)	62	76	88	125	107	74	78
Link Distance (ft)	133	133	133	317	359	359	339
Upstream Blk Time (%)	0						
Queuing Penalty (veh)	0						
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 10: Nicollet Mall & S 4th St

Movement	EB	EB	EB	WB	NB	SB
Directions Served	LT	T	TR	LTR	LTR	LTR
Maximum Queue (ft)	164	147	182	77	89	227
Average Queue (ft)	99	93	103	15	30	37
95th Queue (ft)	147	138	153	55	75	137
Link Distance (ft)	354	354	354	48	347	343
Upstream Blk Time (%)	5					
Queuing Penalty (veh)	2					
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 12: Hennepin Ave & S 3rd St

Movement	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	LT	T	TR	L	T	T	T	TR
Maximum Queue (ft)	136	117	100	116	114	99	299	264
Average Queue (ft)	77	65	34	39	51	37	139	70
95th Queue (ft)	127	116	85	81	99	81	233	157
Link Distance (ft)	337	337	337		361	361	353	353
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	150							
Storage Blk Time (%)								
Queuing Penalty (veh)								

Queuing and Blocking Report Baseline

12/18/2014

Intersection: 13: Service Access & S 3rd St

Movement	WB	NB
Directions Served	T	L
Maximum Queue (ft)	24	30
Average Queue (ft)	1	6
95th Queue (ft)	8	25
Link Distance (ft)	146	80
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 14: S 4th St & Service Access

Movement	EB	SB
Directions Served	LT	L
Maximum Queue (ft)	29	31
Average Queue (ft)	1	2
95th Queue (ft)	10	14
Link Distance (ft)	51	100
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 17: Hennepin Ave & S 4th St

Movement	EB	EB	EB	WB	NB	NB	SB	SB	SB
Directions Served	LT	T	TR	LTR	T	TR	L	T	T
Maximum Queue (ft)	438	408	313	51	271	231	199	220	208
Average Queue (ft)	377	302	162	12	169	125	74	91	85
95th Queue (ft)	458	402	278	38	258	212	130	175	152
Link Distance (ft)	404	404	404	354	479	479		361	361
Upstream Blk Time (%)	7	0							
Queuing Penalty (veh)	0	0							
Storage Bay Dist (ft)							150		
Storage Blk Time (%)								1	
Queuing Penalty (veh)								2	

Network Summary

Network wide Queuing Penalty: 4

5: S Marquette Ave & S 3rd St Performance by movement

Movement	WBL	WBT	WBR	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.1	0.2	0.3	0.0	0.0	0.1	0.1	0.1
Total Del/Veh (s)	18.6	26.9	20.5	32.5	15.5	17.9	3.6	24.8

6: Nicollet Mall & S 3rd St Performance by movement

Movement	WBT	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.2	0.0	0.0	0.2	0.1	0.2
Total Del/Veh (s)	7.9	10.3	21.9	21.2	22.8	8.3

7: Service Access & S 3rd St Performance by movement

Movement	WBL	WBT	NBL	All
Denied Del/Veh (s)	0.4	0.0	0.2	0.0
Total Del/Veh (s)	2.0	2.0	10.6	2.3

9: S Marquette Ave & S 4th St Performance by movement

Movement	EBL	EBT	EBR	WBT	NBT	NBR	SBT	All
Denied Del/Veh (s)	4.2	0.6	0.0	0.1	0.4	0.5	0.0	0.8
Total Del/Veh (s)	20.3	17.2	12.4	8.7	19.5	16.7	2.8	16.7

10: Nicollet Mall & S 4th St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	NBT	NBR	SBT	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	3.2	0.1	0.7	0.0	0.2
Total Del/Veh (s)	3.3	12.6	0.0	57.9	11.5	19.7	1.0	4.1	12.6

12: Hennepin Ave & S 3rd St Performance by movement

Movement	WBL	WBT	WBR	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.2	0.0	0.2	0.1	0.0	0.2	0.2	0.1
Total Del/Veh (s)	13.6	12.1	10.7	48.8	25.7	52.5	32.5	23.3

14: S 4th St & Service Access Performance by movement

Movement	EBL	EBT	WBT	SBL	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.0
Total Del/Veh (s)	1.1	0.8	1.2	7.0	1.3

16: S 4th St & Tower 1 Access Performance by movement

Movement	EBL	EBT	WBT	SBL	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.2	0.0
Total Del/Veh (s)	1.5	1.0	0.5	6.7	1.3

17: Hennepin Ave & S 4th St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	0.6	0.2	0.2	0.1	0.0	0.1	0.2	0.2	0.2	0.0	0.2
Total Del/Veh (s)	22.8	17.9	4.4	31.2	2.7	7.7	32.5	23.3	24.9	10.8	21.2

Total Network Performance

Denied Del/Veh (s)	0.6
Total Del/Veh (s)	46.8

Queuing and Blocking Report
Baseline

12/18/2014

Intersection: 5: S Marquette Ave & S 3rd St

Movement	WB	WB	WB	NB	NB	SB	SB
Directions Served	LT	T	TR	LT	T	T	TR
Maximum Queue (ft)	329	329	253	287	263	237	222
Average Queue (ft)	301	233	143	180	113	113	35
95th Queue (ft)	378	326	240	277	221	197	128
Link Distance (ft)	314	314	314	339	339	374	374
Upstream Blk Time (%)	12	1					
Queuing Penalty (veh)	0	0					
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 6: Nicollet Mall & S 3rd St

Movement	WB	WB	WB	NB	SB
Directions Served	LT	T	TR	LT	TR
Maximum Queue (ft)	143	160	160	90	196
Average Queue (ft)	120	110	103	29	39
95th Queue (ft)	153	155	148	78	109
Link Distance (ft)	137	137	137	343	318
Upstream Blk Time (%)	3	2	2		
Queuing Penalty (veh)	21	15	10		
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 7: Service Access & S 3rd St

Movement	WB	WB	WB	NB
Directions Served	LT	T	T	L
Maximum Queue (ft)	88	31	31	55
Average Queue (ft)	8	1	1	28
95th Queue (ft)	39	10	10	57
Link Distance (ft)	146	146	146	129
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Queuing and Blocking Report
Baseline

12/18/2014

Intersection: 9: S Marquette Ave & S 4th St

Movement	EB	EB	EB	WB	NB	NB
Directions Served	LT	T	TR	LTR	T	TR
Maximum Queue (ft)	205	149	133	108	374	374
Average Queue (ft)	126	100	58	15	202	164
95th Queue (ft)	183	138	106	61	329	290
Link Distance (ft)	134	134	134	317	359	359
Upstream Blk Time (%)	11	0	0		1	0
Queuing Penalty (veh)	31	1	0		0	0
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 10: Nicollet Mall & S 4th St

Movement	EB	EB	EB	WB	NB
Directions Served	LT	T	TR	LTR	LTR
Maximum Queue (ft)	154	116	110	91	159
Average Queue (ft)	95	52	50	29	44
95th Queue (ft)	160	105	96	78	118
Link Distance (ft)	354	354	354	59	347
Upstream Blk Time (%)				7	
Queuing Penalty (veh)				2	
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 12: Hennepin Ave & S 3rd St

Movement	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	LT	T	TR	L	T	T	T	TR
Maximum Queue (ft)	227	241	254	199	246	180	366	285
Average Queue (ft)	103	96	76	134	123	117	219	178
95th Queue (ft)	187	195	167	207	192	176	332	282
Link Distance (ft)	337	337	337		361	361	353	353
Upstream Blk Time (%)							1	
Queuing Penalty (veh)							0	
Storage Bay Dist (ft)				150				
Storage Blk Time (%)				14	4			
Queuing Penalty (veh)				46	8			

Queuing and Blocking Report Baseline

12/18/2014

Intersection: 14: S 4th St & Service Access

Movement	EB	SB
Directions Served	LT	L
Maximum Queue (ft)	54	74
Average Queue (ft)	3	24
95th Queue (ft)	20	61
Link Distance (ft)	39	122
Upstream Blk Time (%)	0	
Queuing Penalty (veh)	1	
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 16: S 4th St & Tower 1 Access

Movement	EB	SB
Directions Served	LT	L
Maximum Queue (ft)	29	54
Average Queue (ft)	1	13
95th Queue (ft)	10	42
Link Distance (ft)	59	178
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 17: Hennepin Ave & S 4th St

Movement	EB	EB	EB	WB	NB	NB	SB	SB	SB
Directions Served	LT	T	TR	LTR	T	TR	L	T	T
Maximum Queue (ft)	299	188	75	52	366	328	86	87	80
Average Queue (ft)	211	101	18	21	249	200	25	36	30
95th Queue (ft)	307	198	52	50	337	301	56	65	59
Link Distance (ft)	280	280	280	354	479	479		361	361
Upstream Blk Time (%)	1								
Queuing Penalty (veh)	0								
Storage Bay Dist (ft)							150		
Storage Blk Time (%)									
Queuing Penalty (veh)									

Network Summary

Network wide Queuing Penalty: 137

5: S Marquette Ave & S 3rd St Performance by movement

Movement	WBT	WBR	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.2	0.2	0.1	0.0	0.1	0.1	0.1
Total Del/Veh (s)	24.4	10.8	14.1	11.1	13.3	2.2	19.2

6: Nicollet Mall & S 3rd St Performance by movement

Movement	WBL	WBT	NBL	NBT	SBT	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.2	0.0
Total Del/Veh (s)	9.7	11.1	12.6	11.8	11.0	11.1

7: S 4th St & Tower 1 Access Performance by movement

Movement	EBL	EBT	WBT	SBL	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.0
Total Del/Veh (s)	1.6	1.0	0.3	11.9	1.3

9: S Marquette Ave & S 4th St Performance by movement

Movement	EBL	EBT	EBR	WBT	WBR	NBT	NBR	SBT	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.2	0.1	0.2	0.2	0.0	0.0
Total Del/Veh (s)	6.6	5.5	7.7	23.1	2.5	17.6	12.9	7.4	7.3

10: Nicollet Mall & S 4th St Performance by movement

Movement	EBL	EBT	EBR	WBT	NBT	SBL	SBT	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0
Total Del/Veh (s)	27.1	13.6	4.9	6.5	22.8	1.6	7.2	13.4

12: Hennepin Ave & S 3rd St Performance by movement

Movement	WBL	WBT	WBR	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.4	0.0	0.3	0.3	0.1
Total Del/Veh (s)	25.1	18.6	3.2	17.6	6.0	11.3	5.3	12.7

14: S 4th St & Service Access Performance by movement

Movement	EBL	EBT	WBT	SBL	All
Denied Del/Veh (s)	0.0	0.0	0.1	0.1	0.0
Total Del/Veh (s)	1.5	1.0	1.9	7.0	1.2

17: Hennepin Ave & S 4th St Performance by movement

Movement	EBL	EBT	EBR	WBT	WBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	0.9	0.6	0.7	0.0	0.1	0.2	0.3	0.0	0.0	0.4
Total Del/Veh (s)	31.1	26.5	13.4	3.3	2.6	45.6	29.8	36.4	17.2	27.5

Total Network Performance

Denied Del/Veh (s)	0.4
Total Del/Veh (s)	43.0

Queuing and Blocking Report
Baseline

12/18/2014

Intersection: 5: S Marquette Ave & S 3rd St

Movement	WB	WB	WB	NB	NB	SB	SB
Directions Served	LT	T	TR	LT	T	T	TR
Maximum Queue (ft)	288	217	105	201	147	135	52
Average Queue (ft)	206	145	41	78	21	47	5
95th Queue (ft)	275	232	86	138	80	113	29
Link Distance (ft)	314	314	314	339	339	374	374
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 6: Nicollet Mall & S 3rd St

Movement	WB	WB	WB	NB	SB
Directions Served	LT	T	TR	LT	TR
Maximum Queue (ft)	115	120	101	119	155
Average Queue (ft)	69	59	33	13	31
95th Queue (ft)	97	102	84	64	92
Link Distance (ft)	340	340	340	343	318
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 7: S 4th St & Tower 1 Access

Movement	EB	SB
Directions Served	LT	L
Maximum Queue (ft)	53	90
Average Queue (ft)	3	18
95th Queue (ft)	21	54
Link Distance (ft)	45	168
Upstream Blk Time (%)	0	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Queuing and Blocking Report
Baseline

12/18/2014

Intersection: 9: S Marquette Ave & S 4th St

Movement	EB	EB	EB	WB	NB	NB	SB	SB
Directions Served	LT	T	TR	LTR	T	TR	LT	TR
Maximum Queue (ft)	157	127	205	188	136	89	113	96
Average Queue (ft)	60	40	46	48	75	31	25	11
95th Queue (ft)	112	100	120	119	129	63	77	56
Link Distance (ft)	134	134	134	317	359	359	339	339
Upstream Blk Time (%)	0	0	0					
Queuing Penalty (veh)	1	1	2					
Storage Bay Dist (ft)								
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 10: Nicollet Mall & S 4th St

Movement	EB	EB	EB	WB	NB	SB
Directions Served	LT	T	TR	LTR	LTR	LTR
Maximum Queue (ft)	255	190	182	77	125	95
Average Queue (ft)	145	125	129	22	29	32
95th Queue (ft)	200	175	185	66	91	88
Link Distance (ft)	354	354	354	45	347	343
Upstream Blk Time (%)				9		
Queuing Penalty (veh)				3		
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 12: Hennepin Ave & S 3rd St

Movement	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	LT	T	TR	L	T	T	T	TR
Maximum Queue (ft)	168	100	143	111	74	91	330	228
Average Queue (ft)	87	52	30	31	29	31	161	83
95th Queue (ft)	158	109	89	74	65	69	272	191
Link Distance (ft)	337	337	337		361	361	353	353
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)				150				
Storage Blk Time (%)								
Queuing Penalty (veh)								

Queuing and Blocking Report
Baseline

12/18/2014

Intersection: 14: S 4th St & Service Access

Movement	EB	EB	SB
Directions Served	LT	T	L
Maximum Queue (ft)	75	92	74
Average Queue (ft)	11	3	9
95th Queue (ft)	43	31	38
Link Distance (ft)	52	52	268
Upstream Blk Time (%)	0	0	
Queuing Penalty (veh)	2	2	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 17: Hennepin Ave & S 4th St

Movement	EB	EB	EB	WB	NB	NB	SB	SB	SB
Directions Served	LT	T	TR	LTR	T	TR	L	T	T
Maximum Queue (ft)	467	419	419	30	327	250	199	301	259
Average Queue (ft)	398	334	251	12	180	155	108	109	98
95th Queue (ft)	474	460	400	37	268	258	196	221	173
Link Distance (ft)	404	404	404	354	479	479		361	361
Upstream Blk Time (%)	17	3	0						
Queuing Penalty (veh)	0	0	0						
Storage Bay Dist (ft)							150		
Storage Blk Time (%)							8	0	
Queuing Penalty (veh)							22	1	

Network Summary

Network wide Queuing Penalty: 34

5: S Marquette Ave & S 3rd St Performance by movement

Movement	WBL	WBT	WBR	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)	1.4	0.5	1.2	0.0	0.0	0.1	0.1	0.3
Total Del/Veh (s)	18.6	33.1	18.4	42.7	17.2	35.0	3.3	32.1

6: Nicollet Mall & S 3rd St Performance by movement

Movement	WBT	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.1	0.0	0.0	0.2	0.1	0.1
Total Del/Veh (s)	14.9	31.9	16.7	15.9	27.1	15.0

7: S 4th St & Tower 1 Access Performance by movement

Movement	EBL	EBT	WBT	SBL	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.0
Total Del/Veh (s)	3.6	4.2	0.8	3.7	4.0

9: S Marquette Ave & S 4th St Performance by movement

Movement	EBL	EBT	EBR	WBT	NBT	NBR	SBT	All
Denied Del/Veh (s)	4.5	1.9	0.0	0.1	0.7	0.7	0.0	1.5
Total Del/Veh (s)	36.7	18.3	1.8	22.7	22.0	16.7	3.2	20.4

10: Nicollet Mall & S 4th St Performance by movement

Movement	EBT	EBR	WBL	WBT	NBT	NBR	SBT	All
Denied Del/Veh (s)	0.1	0.0	0.8	1.6	0.2	0.1	0.0	0.3
Total Del/Veh (s)	26.1	0.0	2.0	8.0	21.2	7.7	3.0	23.6

12: Hennepin Ave & S 3rd St Performance by movement

Movement	WBL	WBT	WBR	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.4	0.1	0.0	0.2	0.3	0.1
Total Del/Veh (s)	17.7	15.7	14.6	51.0	27.2	52.4	41.2	25.9

14: S 4th St & Service Access Performance by movement

Movement	EBL	EBT	WBT	SBL	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.3	0.0
Total Del/Veh (s)	2.6	3.5	5.0	13.8	5.2

17: Hennepin Ave & S 4th St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	0.4	0.2	0.1	0.1	0.0	0.1	0.4	0.3	0.0	0.0	0.2
Total Del/Veh (s)	23.8	18.1	5.9	44.9	3.1	12.3	37.5	23.8	33.4	14.1	23.9

Total Network Performance

Denied Del/Veh (s)	1.0
Total Del/Veh (s)	60.5

Queuing and Blocking Report
Baseline

12/18/2014

Intersection: 5: S Marquette Ave & S 3rd St

Movement	WB	WB	WB	NB	NB	SB	SB
Directions Served	LT	T	TR	LT	T	T	TR
Maximum Queue (ft)	353	329	329	352	334	401	342
Average Queue (ft)	328	287	222	288	184	171	84
95th Queue (ft)	342	358	359	408	321	324	221
Link Distance (ft)	314	314	314	339	339	374	374
Upstream Blk Time (%)	24	6	3	6	0	0	
Queuing Penalty (veh)	0	0	0	30	0	0	
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 6: Nicollet Mall & S 3rd St

Movement	WB	WB	WB	NB	SB
Directions Served	LT	T	TR	LT	TR
Maximum Queue (ft)	201	225	244	142	136
Average Queue (ft)	159	160	154	31	34
95th Queue (ft)	205	214	202	101	96
Link Distance (ft)	340	340	340	343	318
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 7: S 4th St & Tower 1 Access

Movement	EB	EB	EB	SB
Directions Served	LT	T	T	L
Maximum Queue (ft)	77	96	74	30
Average Queue (ft)	53	16	9	8
95th Queue (ft)	91	64	48	25
Link Distance (ft)	60	60	60	203
Upstream Blk Time (%)	13	2	1	
Queuing Penalty (veh)	38	5	3	
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Queuing and Blocking Report
Baseline

12/18/2014

Intersection: 9: S Marquette Ave & S 4th St

Movement	EB	EB	EB	WB	NB	NB
Directions Served	LT	T	TR	LTR	T	TR
Maximum Queue (ft)	190	168	145	169	374	374
Average Queue (ft)	152	113	84	41	232	180
95th Queue (ft)	198	168	144	107	349	314
Link Distance (ft)	134	134	134	317	359	359
Upstream Blk Time (%)	37	6	3		1	1
Queuing Penalty (veh)	126	22	10		0	0
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 10: Nicollet Mall & S 4th St

Movement	EB	EB	EB	WB	NB
Directions Served	LT	T	TR	LTR	LTR
Maximum Queue (ft)	368	354	159	94	118
Average Queue (ft)	160	120	64	32	52
95th Queue (ft)	319	293	131	84	113
Link Distance (ft)	354	354	354	60	347
Upstream Blk Time (%)	0	0		8	
Queuing Penalty (veh)	1	0		3	
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 12: Hennepin Ave & S 3rd St

Movement	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	LT	T	TR	L	T	T	T	TR
Maximum Queue (ft)	280	300	295	199	333	319	368	298
Average Queue (ft)	131	136	135	143	149	142	259	211
95th Queue (ft)	219	220	232	214	256	239	350	289
Link Distance (ft)	337	337	337		361	361	353	353
Upstream Blk Time (%)							2	
Queuing Penalty (veh)							0	
Storage Bay Dist (ft)				150				
Storage Blk Time (%)				17	8			
Queuing Penalty (veh)				59	18			

Queuing and Blocking Report Baseline

12/18/2014

Intersection: 14: S 4th St & Service Access

Movement	EB	EB	EB	WB	SB
Directions Served	LT	T	T	T	L
Maximum Queue (ft)	72	50	50	52	170
Average Queue (ft)	39	8	6	9	53
95th Queue (ft)	68	34	29	35	137
Link Distance (ft)	37	37	37	134	268
Upstream Blk Time (%)	23	2	1		
Queuing Penalty (veh)	66	6	4		
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 17: Hennepin Ave & S 4th St

Movement	EB	EB	EB	WB	NB	NB	SB	SB	SB
Directions Served	LT	T	TR	LTR	T	TR	L	T	T
Maximum Queue (ft)	296	288	74	90	448	407	89	108	104
Average Queue (ft)	211	126	26	31	290	227	38	51	51
95th Queue (ft)	312	249	60	68	429	363	80	88	98
Link Distance (ft)	280	280	280	354	479	479		361	361
Upstream Blk Time (%)	1	0							
Queuing Penalty (veh)	0	0							
Storage Bay Dist (ft)							150		
Storage Blk Time (%)									
Queuing Penalty (veh)									

Network Summary

Network wide Queuing Penalty: 392

5: S Marquette Ave & S 3rd St Performance by movement

Movement	WBT	WBR	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.2	0.1	0.1	0.0	0.1	0.1	0.1
Total Del/Veh (s)	24.6	7.4	28.7	15.9	16.0	3.7	22.0

6: Nicollet Mall & S 3rd St Performance by movement

Movement	WBL	WBT	NBL	NBT	SBT	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.1	0.0
Total Del/Veh (s)	8.4	11.7	13.3	13.9	12.2	11.8

7: S 4th St & Tower 1 Access Performance by movement

Movement	EBL	EBT	WBT	SBL	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.0
Total Del/Veh (s)	1.4	1.1	0.3	20.0	1.4

9: S Marquette Ave & S 4th St Performance by movement

Movement	EBL	EBT	EBR	WBT	WBR	NBT	NBR	SBT	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	1.0	0.1	0.2	0.0	0.0
Total Del/Veh (s)	7.9	4.0	3.9	20.8	30.5	15.6	10.7	10.1	6.0

10: Nicollet Mall & S 4th St Performance by movement

Movement	EBT	EBR	WBT	NBT	SBL	SBT	All
Denied Del/Veh (s)	0.0	0.0	0.5	0.1	0.0	0.0	0.0
Total Del/Veh (s)	12.1	10.0	7.5	14.7	27.1	8.7	11.9

12: Hennepin Ave & S 3rd St Performance by movement

Movement	WBL	WBT	WBR	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.0	0.2	0.3	0.1
Total Del/Veh (s)	28.1	18.3	7.3	20.1	8.9	11.8	9.2	13.8

13: Service Access & S 3rd St Performance by movement

Movement	WBL	WBT	NBL	All
Denied Del/Veh (s)	0.0	0.0	0.2	0.0
Total Del/Veh (s)	2.7	1.7	5.0	1.8

14: S 4th St & Service Access Performance by movement

Movement	EBL	EBT	WBT	SBL	All
Denied Del/Veh (s)	0.0	0.0	0.1	0.1	0.0
Total Del/Veh (s)	1.0	0.7	2.1	49.0	0.8

17: Hennepin Ave & S 4th St Performance by movement

Movement	EBL	EBT	EBR	WBT	WBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	1.1	0.6	0.9	0.0	0.2	0.2	0.3	0.0	0.0	0.4
Total Del/Veh (s)	35.7	26.1	16.9	2.8	2.6	36.1	29.0	20.5	17.0	25.3

Total Network Performance

Denied Del/Veh (s)	0.4
Total Del/Veh (s)	40.8

Queuing and Blocking Report
Baseline

12/18/2014

Intersection: 5: S Marquette Ave & S 3rd St

Movement	WB	WB	WB	NB	NB	SB	SB
Directions Served	LT	T	TR	LT	T	T	TR
Maximum Queue (ft)	329	227	157	202	169	113	118
Average Queue (ft)	220	155	54	104	38	37	37
95th Queue (ft)	311	238	121	167	115	99	87
Link Distance (ft)	314	314	314	339	339	374	374
Upstream Blk Time (%)	1						
Queuing Penalty (veh)	0						
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 6: Nicollet Mall & S 3rd St

Movement	WB	WB	WB	NB	SB
Directions Served	LT	T	TR	LT	TR
Maximum Queue (ft)	118	97	109	111	119
Average Queue (ft)	71	53	45	20	40
95th Queue (ft)	112	97	92	70	100
Link Distance (ft)	136	136	136	343	318
Upstream Blk Time (%)	0				
Queuing Penalty (veh)	0				
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 7: S 4th St & Tower 1 Access

Movement	SB
Directions Served	L
Maximum Queue (ft)	52
Average Queue (ft)	18
95th Queue (ft)	51
Link Distance (ft)	155
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Queuing and Blocking Report
Baseline

12/18/2014

Intersection: 9: S Marquette Ave & S 4th St

Movement	EB	EB	EB	WB	NB	NB	SB	SB
Directions Served	LT	T	TR	LTR	T	TR	LT	TR
Maximum Queue (ft)	114	120	118	109	160	113	100	55
Average Queue (ft)	46	21	30	50	69	31	29	6
95th Queue (ft)	87	68	82	104	132	69	84	34
Link Distance (ft)	133	133	133	317	359	359	339	339
Upstream Blk Time (%)	0	0	0					
Queuing Penalty (veh)	0	0	0					
Storage Bay Dist (ft)								
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 10: Nicollet Mall & S 4th St

Movement	EB	EB	EB	WB	NB	SB
Directions Served	LT	T	TR	LTR	LTR	LTR
Maximum Queue (ft)	236	214	241	95	165	159
Average Queue (ft)	117	103	105	23	27	47
95th Queue (ft)	190	172	192	70	91	114
Link Distance (ft)	354	354	354	69	347	343
Upstream Blk Time (%)				2		
Queuing Penalty (veh)				1		
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 12: Hennepin Ave & S 3rd St

Movement	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	LT	T	TR	L	T	T	T	TR
Maximum Queue (ft)	153	119	139	75	174	146	350	296
Average Queue (ft)	72	56	30	27	55	44	164	92
95th Queue (ft)	111	98	89	62	104	101	275	200
Link Distance (ft)	337	337	337		361	361	353	353
Upstream Blk Time (%)							0	
Queuing Penalty (veh)							0	
Storage Bay Dist (ft)				150				
Storage Blk Time (%)					0			
Queuing Penalty (veh)					0			

Queuing and Blocking Report Baseline

12/18/2014

Intersection: 13: Service Access & S 3rd St

Movement	NB
Directions Served	L
Maximum Queue (ft)	54
Average Queue (ft)	10
95th Queue (ft)	39
Link Distance (ft)	80
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 14: S 4th St & Service Access

Movement	EB	WB	SB
Directions Served	LT	T	L
Maximum Queue (ft)	29	30	31
Average Queue (ft)	1	1	1
95th Queue (ft)	10	10	10
Link Distance (ft)	29	133	100
Upstream Blk Time (%)	0		
Queuing Penalty (veh)	0		
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 17: Hennepin Ave & S 4th St

Movement	EB	EB	EB	WB	NB	NB	SB	SB	SB
Directions Served	LT	T	TR	LTR	T	TR	L	T	T
Maximum Queue (ft)	419	419	419	55	365	283	151	220	215
Average Queue (ft)	396	331	229	8	175	137	71	106	99
95th Queue (ft)	478	453	365	32	274	225	127	180	175
Link Distance (ft)	404	404	404	354	479	479		361	361
Upstream Blk Time (%)	13	2	1						
Queuing Penalty (veh)	0	0	0						
Storage Bay Dist (ft)							150		
Storage Blk Time (%)							0	2	
Queuing Penalty (veh)							0	3	

Network Summary

Network wide Queuing Penalty: 4

5: S Marquette Ave & S 3rd St Performance by movement

Movement	WBL	WBT	WBR	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)	2.2	0.4	0.8	0.0	0.0	0.1	0.2	0.3
Total Del/Veh (s)	20.2	27.6	16.3	34.4	17.9	18.1	14.0	25.7

6: Nicollet Mall & S 3rd St Performance by movement

Movement	WBT	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.3	0.0	0.0	0.2	0.1	0.3
Total Del/Veh (s)	9.1	6.1	17.1	22.8	0.0	9.4

7: Service Access & S 3rd St Performance by movement

Movement	WBL	WBT	NBL	All
Denied Del/Veh (s)	0.1	0.0	0.2	0.0
Total Del/Veh (s)	2.9	2.5	8.3	2.8

9: S Marquette Ave & S 4th St Performance by movement

Movement	EBL	EBT	EBR	WBT	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	3.6	0.8	0.0	0.1	0.4	0.5	0.0	0.0	0.8
Total Del/Veh (s)	19.8	16.9	0.4	21.8	21.0	15.4	15.5	2.8	17.1

10: Nicollet Mall & S 4th St Performance by movement

Movement	EBL	EBT	EBR	WBT	NBT	NBR	SBT	All
Denied Del/Veh (s)	0.0	0.0	0.0	1.6	0.1	0.6	0.0	0.1
Total Del/Veh (s)	3.8	11.5	4.7	8.3	21.3	12.7	2.8	11.2

12: Hennepin Ave & S 3rd St Performance by movement

Movement	WBL	WBT	WBR	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.2	0.0	0.0	0.1	0.0	0.2	0.3	0.1
Total Del/Veh (s)	17.3	14.5	8.8	53.8	27.8	58.1	54.6	26.5

14: S 4th St & Service Access Performance by movement

Movement	EBL	EBT	WBT	SBL	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.2	0.0
Total Del/Veh (s)	1.1	0.7	2.0	8.4	1.4

16: S 4th St & Tower 1 Access Performance by movement

Movement	EBL	EBT	WBT	SBL	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.0
Total Del/Veh (s)	1.5	1.0	0.7	9.0	1.3

17: Hennepin Ave & S 4th St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	0.6	0.2	0.2	0.1	0.0	0.1	0.3	0.5	0.0	0.0	0.2
Total Del/Veh (s)	19.0	16.6	6.7	23.6	2.7	6.7	33.3	22.4	29.1	11.3	21.0

Total Network Performance

Denied Del/Veh (s)	0.7
Total Del/Veh (s)	49.2

Queuing and Blocking Report
Baseline

12/18/2014

Intersection: 5: S Marquette Ave & S 3rd St

Movement	WB	WB	WB	NB	NB	SB	SB
Directions Served	LT	T	TR	LT	T	T	TR
Maximum Queue (ft)	353	329	329	339	328	285	247
Average Queue (ft)	318	266	173	193	125	134	62
95th Queue (ft)	374	351	272	295	238	247	172
Link Distance (ft)	314	314	314	339	339	374	374
Upstream Blk Time (%)	18	3	1	0	0		
Queuing Penalty (veh)	0	0	0	0	0		
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 6: Nicollet Mall & S 3rd St

Movement	WB	WB	WB	NB	SB
Directions Served	LT	T	TR	LT	TR
Maximum Queue (ft)	160	162	172	126	134
Average Queue (ft)	119	125	115	13	40
95th Queue (ft)	156	160	173	62	99
Link Distance (ft)	137	137	137	343	318
Upstream Blk Time (%)	5	6	5		
Queuing Penalty (veh)	36	42	30		
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 7: Service Access & S 3rd St

Movement	WB	WB	WB	NB
Directions Served	LT	T	T	L
Maximum Queue (ft)	111	76	77	74
Average Queue (ft)	18	14	9	29
95th Queue (ft)	62	51	42	66
Link Distance (ft)	146	146	146	129
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Queuing and Blocking Report
Baseline

12/18/2014

Intersection: 9: S Marquette Ave & S 4th St

Movement	EB	EB	EB	WB	NB	NB	SB
Directions Served	LT	T	TR	LTR	T	TR	LT
Maximum Queue (ft)	205	139	123	154	374	374	136
Average Queue (ft)	130	94	56	49	227	164	5
95th Queue (ft)	196	144	113	120	335	291	46
Link Distance (ft)	134	134	134	317	359	359	339
Upstream Blk Time (%)	8	1	0		1	0	
Queuing Penalty (veh)	25	3	0		0	0	
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 10: Nicollet Mall & S 4th St

Movement	EB	EB	EB	WB	NB
Directions Served	LT	T	TR	LTR	LTR
Maximum Queue (ft)	174	110	116	71	148
Average Queue (ft)	93	49	48	28	38
95th Queue (ft)	155	104	94	80	95
Link Distance (ft)	354	354	354	62	347
Upstream Blk Time (%)				5	
Queuing Penalty (veh)				2	
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 12: Hennepin Ave & S 3rd St

Movement	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	LT	T	TR	L	T	T	T	TR
Maximum Queue (ft)	351	327	337	199	309	275	365	322
Average Queue (ft)	127	120	95	147	147	138	254	204
95th Queue (ft)	216	214	204	211	240	206	347	299
Link Distance (ft)	337	337	337		361	361	353	353
Upstream Blk Time (%)	0	0	0				1	
Queuing Penalty (veh)	1	0	1				0	
Storage Bay Dist (ft)				150				
Storage Blk Time (%)				14	6			
Queuing Penalty (veh)				49	15			

Queuing and Blocking Report Baseline

12/18/2014

Intersection: 14: S 4th St & Service Access

Movement	EB	SB
Directions Served	LT	L
Maximum Queue (ft)	55	93
Average Queue (ft)	6	30
95th Queue (ft)	30	71
Link Distance (ft)	35	122
Upstream Blk Time (%)	0	
Queuing Penalty (veh)	1	
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 16: S 4th St & Tower 1 Access

Movement	EB	EB	WB	SB
Directions Served	LT	T	T	L
Maximum Queue (ft)	62	43	31	54
Average Queue (ft)	9	1	1	19
95th Queue (ft)	39	14	10	52
Link Distance (ft)	62	62	35	135
Upstream Blk Time (%)	0	0	0	
Queuing Penalty (veh)	0	0	0	
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 17: Hennepin Ave & S 4th St

Movement	EB	EB	EB	WB	NB	NB	SB	SB	SB
Directions Served	LT	T	TR	LTR	T	TR	L	T	T
Maximum Queue (ft)	296	230	92	52	377	306	52	86	90
Average Queue (ft)	192	113	28	22	253	208	25	46	33
95th Queue (ft)	284	230	64	47	349	292	44	84	81
Link Distance (ft)	280	280	280	354	479	479		361	361
Upstream Blk Time (%)	1								
Queuing Penalty (veh)	0								
Storage Bay Dist (ft)							150		
Storage Blk Time (%)									
Queuing Penalty (veh)									

Network Summary

Network wide Queuing Penalty: 207

