

AGENDA
CITY OF ROELAND PARK, KANSAS
CITY COUNCIL MEETING
ROELAND PARK
Roeland Park City Hall, 4600 W 51st Street
April 3, 2023 6:00 PM

- Michael Poppa, Mayor
- Trisha Brauer, Council Member
- Benjamin Dickens, Council Member
- Jan Faidley, Council Member
- Jennifer Hill, Council Member

- Miel Castagna-Herrera, Council Member
- Tom Madigan, Council Member
- Kate Raglow, Council Member
- Michael Rebne, Council Member

- Keith Moody, City Administrator
- Open, Asst. Admin.
- Kelley Nielsen, City Clerk
- John Morris, Police Chief
- Donnie Scharff, Public Works Director

Admin

Dickens

Rebne

Finance

Hill

Castagna-Herrera

Safety

Madigan

Brauer

Public Works

Faidley

Raglow

Pledge of Allegiance

A. Instructions on Logging into Meeting Remotely

Roll Call

Modification of Agenda

I. Public Comments

Members of the public are welcome to use this time to make comments about City matters that do not appear on the agenda, or about items that will be considered as part of the consent agenda. Comments about items that appear on the agenda will be taken as each item is considered. Citizens Are Requested To Keep Their Comments Under 5 Minutes. If a large number of people wish to speak, this time may be shortened by the Mayor (Chair) so that the number of persons wishing to speak may be accommodated within the time available. Please turn all cellular telephones and other noise-making devices off or to "silent mode" before the meeting begins.

II. Consent Agenda

Consent agenda items have been studied by the Governing Body and will be acted on in a single motion. If a Council member requests a separate discussion on an item, it can be removed from the consent agenda and placed on new business for further consideration.

A. Appropriations Ordinance #1017

B. City Council Meeting Minutes March 20, 2023

III. Business From the Floor

A. Applications / Presentations

IV. Mayor's Report

A. Arbor Day Proclamation

B. National Volunteer Service Proclamation

C. Fair Housing Proclamation

V. Workshop and Committee Reports

VI. Reports of City Liaisons

A. Parks Committee

B. Arts Committee

VII. Unfinished Business

VIII. New Business

A. Approve Final Development Plan The Rocks (15 min)

B. Approve Agreement for Compensation Study with McGrath (10 min)

C. Reappoint Macrina Abdouch to the Planning Commission

IX. Ordinances and Resolutions:

A. Ordinance 1044 Allowing Alcohol at R Park for Special Events

X. Workshop Items:

XI. Reports of City Officials:

Welcome to this meeting of the City Council of Roeland Park. Below are the Procedural Rules of Council

The City Council encourages citizen participation in local governance processes. To that end, and in compliance with the Kansas Open meetings Act (KSA 45-215), you are invited to participate in this meeting. The following rules have been established to facilitate the transaction of business during the meeting. Please take a moment to review these rules before the meeting begins.

A. Audience Decorum. Members of the audience shall not engage in disorderly or boisterous conduct, including but not limited to; the utterance of loud, obnoxious, threatening, or abusive language; clapping; cheering; whistling; stomping; or any other acts that disrupt, impede, or otherwise render the orderly conduct of the City Council meeting unfeasible. Any member(s) of the audience engaging in such conduct shall, at the discretion of the Mayor (Chair) or a majority of the Council Members, be declared out of order and shall be subject to reprimand and/or removal

from that meeting. Please turn all cellular telephones and other noise-making devices off or to "silent mode" before the meeting begins.

- B. **Public Comment Request to Speak Form.** The request form's purpose is to have a record for the City Clerk. Members of the public may address the City Council during Public Comments and/or before consideration of any agenda item; however, no person shall address the Council without first being recognized by the Mayor (Chair). Any person wishing to speak, whether during Public Comments or on an agenda item, shall first complete a Public Comment or Request to Speak form and submit this form to the City Clerk before the Mayor (Chair) calls for Public Comments or calls the particular agenda item
1. **Public Comment on Non-Agenda Items.** The Agenda shall provide for public comment about matters that are within the jurisdiction of the City but are not specifically listed on the Agenda. A member of the public who wishes to speak under Public Comments must fill out a Public Comment Request to Speak form and submit it to the City Clerk before the Mayor (Chair) calls for Public Comments.
 2. **Public Comment on Agenda Items.** Public comment will be accepted on Agenda items. A member of the public, who wishes to speak on an Agenda item, including items on the Consent Agenda, must fill out a Request to Speak form and submit it to the City Clerk before the Mayor (Chair) calls the Agenda item.
- C. **Purpose.** The purpose of addressing the City Council is to communicate formally with the Council regarding matters that relate to Council business or citizen concerns within the subject matter jurisdiction of the City Council. Persons addressing the City Council on an agenda item shall confine their remarks to the matter under consideration by the Council.
- D. **Speaker Decorum.** Each person addressing the City Council, shall do so in an orderly, respectful, dignified manner and shall not engage in conduct or language that disturbs, or otherwise impedes the orderly conduct of the Council meeting. Any person, who so disrupts the meeting shall, at the discretion of the Mayor (Chair) or a majority of the Council Members present, be subject to removal from that meeting.
- E. **Time Limit.** In the interest of fairness to other persons wishing to speak and to other individuals or groups having business before the City Council, each speaker shall limit comments to five minutes. If a large number of people wish to speak, this time may be shortened by the Mayor (Chair) so that the number of persons wishing to speak may be

accommodated within the time available.

- F. **Speak Only Once.** Second opportunities for the public to speak on the same issue will not be permitted unless mandated by state or local law. No speaker will be allowed to yield part or all of his/her time to another, and no speaker will be credited with time requested but not used by another.
- G. **Addressing the Council.** Comment and testimony are to be directed to the Mayor (Chair). Dialogue between and inquiries from citizens at the lectern and individual Council Members, members of staff, or the seated audience is not permitted. Council Members seeking to clarify testimony or gain additional information should direct their questions through the Mayor (Chair). Always speak from the microphone to ensure that all remarks are accurately and properly recorded. Only one speaker should be at the microphone at a time. Speakers are requested to state their full name, address and group affiliation, if any, before delivering any remarks.
- H. Agendas and minutes can be accessed at www.roelandpark.org or by contacting the City Clerk

The City Council welcomes your participation and appreciates your cooperation. If you would like additional information about the City Council or its proceedings, please contact the City Clerk at (913) 722.2600.

Item Number: Pledge of Allegiance- -A.
Committee 4/3/2023
Meeting Date:



City of Roeland Park
Action Item Summary

Date:

Submitted By:

Committee/Department:

Title: **Instructions on Logging into Meeting Remotely**

Item Type:

Recommendation:

See instructions to log in below.

Details:

The City Council Meeting will be held remotely. Below are instructions for joining the meeting by phone, online or both.

Kelley Nielsen is inviting you to a scheduled Zoom meeting.

Topic: City Council and Governing Body Workshop Meeting

Time: This is a recurring meeting Meet anytime

Join Zoom Meeting

<https://zoom.us/j/97767592270?pwd=VWNXbjNkejlVb0JBaStWMDF5WXpoZz09>

Meeting ID: 977 6759 2270

Passcode: council

One tap mobile

+16699006833,,97767592270# US (San Jose)

+12532158782,,97767592270# US (Tacoma)

Dial by your location

+1 669 900 6833 US (San Jose)

+1 253 215 8782 US (Tacoma)

+1 346 248 7799 US (Houston)

+1 929 205 6099 US (New York)

+1 301 715 8592 US (Washington DC)

+1 312 626 6799 US (Chicago)

Meeting ID: 977 6759 2270

Find your local number: <https://zoom.us/j/97767592270>

Financial Impact

Amount of Request:	
Budgeted Item?	Budgeted Amount:
Line Item Code/Description:	

Additional Information

What are the racial equity implications of the objective?

How does item benefit Community for all Ages?

Item Number: Consent Agenda- II.-A.
Committee 4/3/2023
Meeting Date:



City of Roeland Park
Action Item Summary

Date:
Submitted By:
Committee/Department:
Title: **Appropriations Ordinance #1017**
Item Type:

Recommendation:

Details:

Financial Impact

Amount of Request:	
Budgeted Item?	Budgeted Amount:
Line Item Code/Description:	

Additional Information

What are the racial equity implications of the objective?

How does item benefit Community for all Ages?

ATTACHMENTS:

Description	Type
□ Appropriations Ordinance #1017	Cover Memo

Appropriation Ordinance - 4/3/2023 - #1017

4600 West Fifty-First Street

Roeland Park, Kansas 66205

City Hall (913) 722-2600 – Fax (913) 722-3713

Thursday, March 30, 2023

Appropriation Ordinance - 4/3/2023 - #1017

An Ordinance making Appropriation for the payment of certain claims. Be it ordained by the Governing Body of the City of Roeland Park, Kansas:

Section 1: That in order to pay the claims hereinafter stated which have been properly audited and approved, there is hereby appropriated out of the respective funds in the City Treasury the sum required for each claim.

Section 2: This Ordinance shall take effect and be in force from and after its passage. Passed and approved this April 3, 2023.

Attest:

City Clerk

Mayor

Total Appropriation Ordinance

\$

229,070.03

Appropriation Ordinance - 4/3/2023 - #1017

Vendor	Dept	Acct #	Description	Invoice Description	Check /EFT Date	Amount	Chk #	Check Amount
Vendor	Dept	Account	Account Description	Reference	Date	Distribution Amount	Check #	Check Amount
ADP, Inc.	101	5214.101	Other Contracted Services	629559019	03/29/23	234.44	74797	234.44
All City Management Services, Inc.	102	5214.102	Other Contracted Services	84132	03/29/23	439.38	74798	439.38
All Copy Products Inc.	102	5214.102	Other Contracted Services	AR3870743	03/29/23	151.24	74799	251.82
All Copy Products Inc.	105	5214.105	Other Contracted Services	AR3870743	03/29/23	100.58		
American Fidelity Assurance	101	2052.101	Supplemental Insurance Payable	D570779	03/29/23	666.98	74800	666.98
Aquila Industries	220	5442.220	Building Improvement	App 3 3/31/23	03/29/23	94,772.00	74801	144,887.13
Aquila Industries	300	5476.300	Community Center Improvement	App 3 3/31/23	03/29/23	50,115.13		
Shawnee Mission Tree Service, Inc	106	5263.106	Tree Maintenance	97693	03/29/23	6,950.00	74802	6,950.00
Arrowhead Forensics	102	5301.102	Office Supplies	157217	03/29/23	159.39	74803	159.39
Balls Food Stores	101	5253.101	Public Relations	42731/56542	03/29/23	19.45	74804	1,694.45
Balls Food Stores	101	5267.101	Employee Related Expenses	RP031623	03/29/23	1,675.00		
Breeden Holdings, LLC	102	5260.102	Vehicle Maintenance	1077984	03/29/23	2,325.33	74805	6,219.90
Breeden Holdings, LLC	102	5260.102	Vehicle Maintenance	1078109	03/29/23	942.90		
Breeden Holdings, LLC	102	5260.102	Vehicle Maintenance	1078259	03/29/23	2,338.24		
Breeden Holdings, LLC	106	5260.106	Vehicle Maintenance	1078154	03/29/23	613.43		
C&G - Justrite Stamps	101	5301.101	Office Supplies	144184	03/29/23	60.00	74806	60.00
ConvergeOne, Inc.	101	5218.101	IT & Communication	IE551277	03/29/23	363.71	74807	363.71
CS Carey Inc.	110	5262.110	Grounds Maintenance	U57387	03/29/23	264.00	74808	1,144.00
CS Carey Inc.	110	5262.110	Grounds Maintenance	U57392	03/29/23	352.00		
CS Carey Inc.	110	5262.110	Grounds Maintenance	U57408	03/29/23	352.00		
CS Carey Inc.	110	5262.110	Grounds Maintenance	U57416	03/29/23	176.00		
Foley Industries	106	5240.106	Equipment Rental	L2477101	03/29/23	1,414.90	74809	1,414.90
Heartland Traffic Services Inc.	370	5457.370	CARS 2020 - Roe	230111001	03/29/23	2,000.00	74810	2,000.00
Keller Fire & Safety	290	5210.290	Maintenace And Repair Building	312933	03/29/23	727.89	74811	727.89
Key Equipment & Supply	106	5211.106	Maintenace & Repair Equipment	KC207706	03/29/23	136.70	74812	136.70
Kansas Gas Service	101	5289.101	Natural Gas	3/14/23 Multi	03/22/23	507.04	74788	2,582.93
Kansas Gas Service	106	5289.106	Natural Gas	3/14/23 Multi	03/22/23	1,237.74		
Kansas Gas Service	106	5289.106	Natural Gas	7027 3/31/23	03/22/23	636.94		
Kansas Gas Service	220	5289.220	Natural Gas	2518 3/24/23	03/22/23	201.21		
Kansas Alcohol Beverage Control	101	4245.101	Cereal Malt Beverage License	4/1/23 CMB Lic	03/29/23	25.00	74813	25.00
Lamp, Ryneearson & Assoc., Inc.	270	5209.270	Professional Services	32200110000001	03/29/23	5,005.00	74814	35,021.55
Lamp, Ryneearson & Assoc., Inc.	270	5209.270	Professional Services	32300101000002	03/29/23	3,000.90		
Lamp, Ryneearson & Assoc., Inc.	300	5421.300	Street Maintenance	32200109000002	03/29/23	1,670.00		
Lamp, Ryneearson & Assoc., Inc.	510	5428.510	Roe Parkway Extension & Maintena	321001040000016	03/29/23	792.00		
Lamp, Ryneearson & Assoc., Inc.	270	5430.270	Residential Street Reconstruction	32200104000009	03/29/23	12,780.05		
Lamp, Ryneearson & Assoc., Inc.	360	5442.360	Building Improvement	32301201000002	03/29/23	10,248.30		
Lamp, Ryneearson & Assoc., Inc.	270	5466.270	2023 CARS - 48th from Roe Lane to	32200105000006	03/29/23	1,273.30		
Lamp, Ryneearson & Assoc., Inc.	300	5476.300	Community Center Improvement	32200108000002	03/29/23	252.00		

League of Kansas Municipalities	101	5203.101	Printing & Advertising	6370	03/29/23	200.00	74815	207.50
League of Kansas Municipalities	101	5305.101	Dues, Subscriptions, & Books	6324	03/29/23	7.50		
Lippert Mechanical Service Corp	101	5210.101	Maintenance & Repair Building	SI2101541	03/29/23	814.00	74816	814.00
Missouri Organic	300	5470.300	Park Maint/Infrastructure	3/23/23	03/29/23	1,374.79	74817	1,374.79
Principal Life Insurance Co.	107	5130.107	City Paid Life/ST Disability	10001 3/17/23	03/29/23	1,380.44	74818	1,380.44
Purchase Power	101	5205.101	Postage & Mailing Permits	7903 3/20/23	03/29/23	201.00	74819	201.00
Rejis Commission	102	5214.102	Other Contracted Services	504553	03/29/23	238.88	74820	238.88
Rebekah Riedford	101	4250.101	Animal Licenses	3/12/23 Refund	03/22/23	20.00	74789	20.00
Smitty's Lawn & Garden Equipment	106	5318.106	Tools	73610	03/29/23	60.00	74821	60.00
Staples	101	5301.101	Office Supplies	8069461217	03/29/23	245.70	74822	477.01
Staples	101	5301.101	Office Supplies	8069537556	03/29/23	93.23		
Staples	101	5304.101	Janitorial Supplies	8069461217	03/29/23	138.08		
Vance Brothers	106	5421.106	Street Maintenance	IG00018910	03/29/23	101.50	74823	101.50
Witt O'Brien's LLC	550	5209.550	Professional Services	507004915	03/29/23	175.00	74824	175.00
The Work Zone, Inc.	106	5259.106	Traffic Control Signs	64862	03/29/23	46.76	74825	46.76
Evergy	101	5201.101	Electric	3/27/23 Multi	03/27/23	1,204.35	EFT	1,204.35
Evergy	106	5201.106	Electric	3/27/23 Multi	03/27/23	508.04	EFT	508.04
Evergy	220	5201.220	Electric	3/27/23 Multi	03/27/23	199.53	EFT	199.53
Evergy	101	5222.101	Traffic Signal Expense	3/27/23 Multi	03/27/23	100.43	EFT	100.43
KPERS	101	2040.101	KPERS Accrued Employee	3/16/23 PR	03/22/23	5,761.28	EFT	5,761.28
KP&F	101	2045.101	KP&F Employee Withholding Payab	3/16/23 PR	03/22/23	8,856.35	EFT	8,856.35
Miller Management Systems, LLC	101	5214.101	Other Contracted Services	Recurring EFT	03/20/23	2,363.00	EFT	2,363.00
						\$	229,070.03	

Item Number: Consent Agenda- II.-B.
Committee 4/3/2023
Meeting Date:



City of Roeland Park
Action Item Summary

Date:
Submitted By:
Committee/Department:
Title: **City Council Meeting Minutes March 20, 2023**
Item Type:

Recommendation:

Details:

Financial Impact

Amount of Request:	
Budgeted Item?	Budgeted Amount:
Line Item Code/Description:	

Additional Information

What are the racial equity implications of the objective?

How does item benefit Community for all Ages?

ATTACHMENTS:

Description	Type
☐ City Council Meeting Minutes March 20, 2023	Cover Memo

CITY OF ROELAND PARK, KANSAS
CITY COUNCIL MEETING MINUTES
Roeland Park City Hall
4600 W 51st Street, Roeland Park, KS 66205
Monday, March 20, 2023, 6:00 P.M.

- | | | |
|---|--|--|
| <ul style="list-style-type: none">○ Michael Poppa, Mayor○ Trisha Brauer, Council Member○ Benjamin Dickens, Council Member○ Jan Faidley, Council Member○ Jennifer Hill, Council Member | <ul style="list-style-type: none">○ Tom Madigan, Council Member○ Castagna-Herrera, Council Member○ Michael Rebne, Council Member○ Kate Raglow, Council Member | <ul style="list-style-type: none">○ Keith Moody, City Administrator○ <i>Open</i>, Asst. City Administrator○ Kelley Nielsen, City Clerk○ John Morris, Police Chief○ Donnie Scharff, Public Works Director |
|---|--|--|

Admin
Dickens
Rebne

Finance
Hill
Castagna-Herrera

Safety
Madigan
Brauer

Public Works
Faidley
Raglow

(Roeland Park Council Meeting Called to Order at 6:00 p.m.)

Pledge of Allegiance

Mayor Poppa called the City Council meeting to order and led everyone in the Pledge of Allegiance.

Roll Call

City Clerk Nielsen called the roll. All Governing Body members were present with CMBRS Madigan and Brauer appearing virtually. Staff members present were City Administrator Moody, City Attorney Walker, Public Works Director Scharff, Police Chief Morris, Building Official Jacobson, and City Clerk Nielsen.

Modification of Agenda

There were no modifications to the agenda.

I. PUBLIC COMMENTS

There were no public comments.

II. Consent Agenda

- A. Appropriations Ordinance #1016**
- B. Council Minutes March 6, 2023**
- C. Approve 2023 Super Pass Agreement**

MOTION: CMBR FAIDLEY MOVED AND CMBR DICKENS SECONDED TO APPROVE THE CONSENT AGENDA ITEMS AS PRESENTED. (MOTION CARRIED 8-0.)

III. Business from the Floor - Proclamations/Applications/Presentations

- A. Senator Ethan Corson**

Mayor Poppa introduced State Senator Corson who provided a legislative update to the Governing Body. Senator Corson thanked the Governing Body for the work they are doing at the community level.

Senator Corson said one of the issues of concern for Johnson County that they have worked on is HB 2376, a bill to help get rid of restrictive deed covenants. The bill did pass the House 121-0. Currently it is sitting in the senate and is not scheduled at present for a hearing. He said he is doubtful that they will be seeing action on the senate side of the legislature. Because the bill has passed the house, it is able to be worked as part of a conference committee process, so the bill is not dead. He does wish it would be considered by the senate. They hope to get to the conference process at the end of the month get it in before they adjourn. Senator Corson has spoken with Chairman Thompson who has indicated they want to prioritize other pieces of legislation.

The biggest impact on legislation for the Roeland Park community is the food sales tax. The bill has been passed that will eliminate state sales tax on groceries and food ingredients, but would include the local portion as well. For Roeland Park this would be a \$2.15 million hit. He understands the local food sales tax is a dedicated funding stream for local government and funds public safety, public works, and many things needed to make a thriving community. The House is not keen on eliminating the local sales tax. SB309 has been proposed that would set up a fund that localities could apply to cover lost revenues. It would be \$220 million from the budget to make certain they matching grant monies from the bipartisan infrastructure fund supported by the governor. The senate would like to see this put into a fund that localities could apply to if they could show a revenue loss by not collecting the grocery sales tax. There is also a move to do away with the local ad valorem fund as it is not fully funded.

There are also bills in the house and senate that would have transferred the Shawnee Indian Mission to the Shawnee tribe, which is primarily located in Oklahoma. Neither of those bills have moved forward and will not be considered by the legislation at this session. Senator Corson, in his view, is reticent about conveying the mission to one particular tribe because when it was in operation there were 22 different tribes there. He feels this is a better solution for the state historical society, the City of Fairway, and representation of a greater number of tribes to discuss what they want the mission to be. He said they want to be as historically accurate as possible and with more input they will do a better job in conveying the mission's history.

Senator Corson also spoke to public education and vouchers and said that he feels good about where they are in terms of sustaining the governor's veto. They have a strong bipartisan coalition who want to maintain the school system.

CMBR Rebne thanked Senator Corson for supporting public education and being a strong, consistent supporter. Regarding his comments around the mission, he wondered if there is a way that these groups can come together that demonstrates good faith and an honest extension of trying to learn and understand. Senator Corson responded that he has met with the various stakeholders. One message he has shared is they need to get everyone together, noting that the issue is sensitive and challenging. The ultimate solution to accurately tell the story is by bringing everyone together. He has also heard from other tribes in addition to the Shawnee who are willing to work with the historical society and the state.

CMBR Faidley said she appreciates the importance of accurately telling its history, but it cannot be accurate if not all voices are heard. She also asked Senator Corson to address the funding for

maintaining the structures and land by the historical society. She said it has been put forth by the tribes that the site is not being adequately maintained. Senator Corson said that granted the state does not put in a lot of resources, but he also do not believe the site is in as bad of shape as has been represented. He further stated the state is in a strong fiscal position with a \$2.3 billion surplus, and that it is appropriate to look at additional funding for the site. CMBR Faidley said that is a sign of good faith and a first step in bringing people together.

B. Roeland Park Community Garden Update - Anne O'Leary

Ms. O'Leary has been involved with the Community Garden since 2008, which is located on the grounds between the dome and the swimming pool. The garden began as a help to provide fresh produce to those who live in the community. The produce is harvested twice weekly and taken to food pantries in the area. She said that they are able to get their seeds from Kansas City Community Gardens. Last year they donated 900 pounds of food. That total does not include what neighbors helped themselves to or what the birds got. She also thanked the Governing Body for the help they continue to give to the garden.

The garden is a completely volunteer endeavor and Ms. O'Leary asked for volunteers. Those wishing to help can contact CMBR Faidley directly or Judy Parker at parker-j@att.net.

IV. Mayor's Report

A. Appoint Jeffrey Stocks to the Board of Zoning Appeals

Mayor Poppa recommended the appointment of Jeffrey Stocks, a Ward 4 resident, to fill the at-large position on the Board of Zoning Appeals. There is still a Ward 2 position that remains open and applications can be filled out on the City's website.

Mr. Stocks introduced himself to the Governing Body. He moved to Roeland Park in 2020 and had reached out to the Mayor for ways to help. He is a 16-year veteran working with government in social service policy, and has worked with public policy and regulation. He said he is excited to assist the City in any way needed.

CMBR Faidley asked the City Attorney about any potential conflicts of interest due to Mr. Stocks' work for the federal government. Attorney Walker said that they do not anticipate there being any conflict. Mayor Poppa added that Mr. Stocks is working with his employer to get the clearance to participate on the board. Mr. Stocks added that he will go through an extensive ethics review and will step aside if there are any issues.

MOTION: CMBR HILL MOVED AND CMBR REBNE SECONDED TO APPROVE THE APPOINTMENT OF JEFFREY STOCKS TO THE BOARD OF ZONING APPEALS. (MOTION CARRIED 8-0.)

V. Report of City Liaisons and Committees

A. MARC - Bike & Pedestrian

CMBR Faidley's report is included in the agenda packet. She added that their most recent meeting was taken up with the Flint Hill Trails extension near Council Grove and west. She encouraged hikers and bikers to check it out as it looked beautiful. She said that when they were working on the trail, they

consulted on amenities with the Kaw Nation in the areas of Council Grove. Restrooms and facilities have been added to enable people to go longer distances.

B. Board of Zoning Appeals

John Jacobson, the City's Building Official, gave the BZA report. He said the committee has been down three members, but that one spot was filled this evening. He also said that they have had two meetings this year.

CMBR Faidley asked what items were covered in those two meetings. Mr. Jacobson said the first was a variance request for a side yard setback, requesting the minimum of 20 feet be reduced to 9 feet. It was for a corner lot property located on W. 48th Street. He added that a lot of properties in the area have that reduction and it goes along with the character of the neighborhood which is why it was approved.

The second variance request for a front yard height requirement on a fence. The property owner wanted to install a 48-inch chain link, deviating from the 30-inch regulation. It was deemed to be a unique condition due to the location of the residence on the lot and the variance was granted.

CMBR Dickens asked that outside of the meetings, how much time could someone be expected to donate should they join the BZA. Mr. Jacobson said the meetings last about an hour and occur two or three times a year, and that is all that is required.

CMBR Madigan said as a former BZA member, he took the time to drive by the properties to be discussed to see what they would be talking about. He added when he was first appointed, they went a year without a meeting. You just never know when there will be one.

VI. Unfinished Business

There was no Unfinished Business presented.

VII. New Business

A. Review Gateway Art Proposals and Provide Direction to the art Committee on the Preferred Concept

Art Committee Co-Chairs Marek Gliniecki and Mary Schulteis and Art Gallery Director Lynda Leonard were present to discuss the Gateway proposals.

Ms. Schulteis asked if everyone on the Governing Body had a chance to review the maquette. She said that of the three top choices they considered, Nathan Pierce had the most votes and is, therefore, recommending approval by the Governing Body for his proposal.

Mr. Gliniecki added it was a close vote. There was no frontrunner stating that it was a tough decision since they were excellent, strong proposals. He reviewed the three top submissions. It was noted that Mr. Pierce's art would be about 20 feet tall and is shaped acrylic and stainless steel supports. His piece did not include lighting, but is recommending illuminating the sculpture from below. The other two submissions had lighting incorporated into their design. Mr. Gliniecki also reviewed the criteria the artists were asked to meet.

CMBR Faidley said that the committee felt that the Nathan Pierce art piece would be the easiest to maintain and could be most appreciated by travelers driving past as there is no pedestrian access to the site. It also has the benefit of durability.

Mr. Gliniecki said that the panels on Hasna Salam's piece "Ascension" are amazing. He said that the panels would be larger than what is depicted in the photo and would make them easier to read. He noted that as people drive by frequently they will see them more in depth each time they pass. The art piece also included lighting.

The third finalist, Amie Jacobsen, currently has artwork outside of City Hall. Her submission is glass and metal construction with a lighting effect. There was a question of whether the images were readable by drivers going back and forth, and that it might not have the impact of the other two.

CMBR Faidley noted that her sculpture was only 12 feet in height. Mr. Gliniecki said that the impact is more mass where the other pieces are more open.

Mayor Poppa thanked the Arts Committee for spearheading this project, recognizing there was a lot of time and effort put into this.

CMBR Dickens said he does like Mr. Pierce's work, but his first choice would be Ms. Jacobsen's. Her sculpture is a tree and they are a Tree City. Mr. Pierce's sculpture strikes him as more of a fountain which is representative of Kansas City and not Roeland Park.

CMBR Raglow questioned the lighting for Mr. Pierce's sculpture and whether it would have the impact being lighted from below and would that require more maintenance. Mr. Gliniecki said that all options would have similar lighting maintenance and one would not be more difficult to maintain than the other.

CMBR Rebne also asked about the perspective of lighting. Mr. Gliniecki said that without lighting at nighttime there would be no impact, and that proper lighting would show it as a dynamic piece.

CMBR Castagna-Herrera said that Mr. Pierce's design feels more generic than the other two, which are more dynamic color-wise. She asked if any of the artists that applied were local. Mr. Gliniecki said that Amie Jacobsen is local and used to live in Roeland Park before moving to Independence for studio piece. Hasna Salam has a studio nearby and works at the Rock Cottage Glassworks. Mr. Pierce is also from Missouri.

CMBR Faidley asked if the artists understood the budget is \$100,000. Mr. Gliniecki said the funds are from monies they've received from the one percent for art requirement on construction projects. Also, the Art and Parks Committees have set aside part of their budget allocation for the past two years. He added that of the three, Mr. Pierce is the only one that did not include lighting as part of their budget. He also added that it is critical to get the base right and they will test for wind load.

CMBR Faidley said the committee's focus was an art piece that would last for about 20 years and be low maintenance.

Gallery Director Leonard said this has been an incredible journey and is an amazing event for the City. She said that all of the images are wonderful. She said the reason she is drawn to Nathan Pierce's sculpture is that Roeland Park is the heart or center of the Metropolitan Kansas City area. The circle is symbolic of that core/center that they are. The angular part of the structure picks up on the roads as you come in and out of the whole metro. It is an energy exchange that brings community, commerce, education, et cetera to the piece. It is so simple it is almost miss-able, but that is what makes it strong.

CMBR Faidley said it is remarkable the diverse group of submissions they received.

CMBR Raglow said she appreciates the perspective that this is a piece of art that is driven by and not walked up to. She really liked all three, But she was drawn to the color of Hasna and Amie's sculptures. But when thinking of where and how the art will be viewed, Nathan's piece is simple and everyone will be able to see the whole thing without being distracted by the details.

CMBR Rebne said he appreciates the context of movement and a dynamic nature. He did state the colors seem to blend in with the background and thinks Ms. Jacobsen's submission would be the statement piece. He also like that it lights up at night as well as Hasna's, and that Mr. Pierce would be his third choice.

CMBR Madigan said he too is drawn to Amie's piece and the color. Ms. Jacobsen also made a note that it is not distracting from the side, which is important when driving by. That would be his first choice as it is dynamic. He said that Mr. Pierces sculpture seems to be the same thing as is other works, and they are looking for a signature piece that is different from the artist's other works.

Mayor Poppa agreed that all three finalist submissions are beautiful and it is a hard choice to make one recommendation. He said it's a shame they couldn't find a place for all three in the City. But after hearing Ms. Leonard's description, the Pierce sculpture makes sense to him. It is beautiful and striking yet not so big and colorful as to be distracting.

MOTION: CMBR RAGLOW MOVED AND CMBR DICKENS SECONDED TO INTEGRATE LIGHTING INTO THE GATEWAY SCULPTURE. (THE MOTION CARRIED 8-0.)

MOTION: CMBR HILL MOVED AND CMBR FAIDLEY SECONDED TO APPROVE TO THE NATHAN PIERCE SCULPTURE "ORIGIN" WITH INTEGRATED LIGHTING OR AN APPROPRIATE PROPOSAL FOR A LIGHTING ALTERNATIVE. (MOTION CARRIED 5-3 WITH CMBRS MADIGAN, CASTAGNA-HERRERA, AND REBNE VOTING NO.)

B. Stormwater BMP Cost Share Agreement with Johnson County

Public Works Director Scharff said this agreement for Best Management Practices is a cost share program with Johnson County for 2023. It is a 50 percent reimbursement to homeowners for planting rain gardens, native plants and trees, etc.

CMBR Madigan asked of the \$3,000 available how much was reimbursed last year. Public Works Director Scharff said they refunded almost \$1,750. CMBR Madigan asked how they can better advertise this program. Public Works Director Scharff said they put it out on social media, the City website, and it's in the newsletter.

CMBR Faidley believed they can do a better job getting folks to know about this program and also how it could help to replace an older tree that is taken down.

MOTION: CMBR HILL MOVED AND CMBR FAIDLEY SECONDED TO APPROVE THE STORMWATER BMP COST SHARE AGREEMENT WITH JOHNSON COUNTY. (MOTION CARRIED 8-0.)

C. Approve On-Call Planning Services Agreement with Confluence

Mayor Poppa said that Mr. Jacobson would be leaving the City at the end of the month. City Administrator Moody said that Confluence does have familiarity with their development standards and were the lead consultant on their Comprehensive Plan update. He said their experience was beneficial when going through that review process.

MOTION: CMBR FAIDLEY MOVED AND CMBR DICKENS SECONDED TO APPROVE THE ON-CALL PLANNING SERVICES AGREEMENT WITH CONFLUENCE. (MOTION CARRIED 8-0.)

D. Approve On-Call Building Services Agreement with IBTS

CMBR Faidley said as they get into the project at The Rocks, the individual tasked with inspections is going to be very busy. She asked if there would be any issue about IBTS being able to meet the demand in a timely fashion to keep the project moving.

City Administrator Moody said that IBTS has multiple staff members who are certified inspectors and certified plan reviewers, which gives them greater flexibility. Construction at The Rocks is likely to begin this year and they want to be able to rely on someone with the certification until they are able to get someone on staff. This is a sophisticated project and they want someone to rely on with that high level of experience. Wade Holtkamp, City Code Officer, has expressed interest in training opportunities for a way to gain knowledge for building inspections.

MOTION: CMBR REBNE MOVED AND CMBR RAGLOW SECONDED TO APPROVE THE ON-CALL BUILDING SERVICES AGREEMENT WITH IBTS. (MOTION CARRIED 8-0.)

VIII. Ordinances and Resolutions

There were no ordinances or resolutions presented.

IX. Reports of City Officials

City Administrator Moody wanted to wish Mr. Jacobson the best as he moves on and said he was a great addition to the City. He said they all have to wear a lot of hats in a smaller agency and he thanked him for his service. He has a great opportunity close by and it is a big job as the Community Development Director for Leavenworth. Mr. Moody said that he is proud of him and happy as well. Mr. Moody said he does have some concerns in their being able to bring someone on board, but that Mr. Holtkamp is willing to learn and that is very much appreciated.

Adjourn:

MOTION: CMBR MADIGAN MOVED AND CMBR DICKEN SECONDED TO ADJOURN. (MOTION CARRIED 8-0.)

(Roeland Park City Council Meeting Adjourned at 7:16 p.m.)

Kelley Nielsen, City Clerk

Michael Poppa, Mayor

Item Number: Mayor's Report- IV.-A.
Committee 4/3/2023
Meeting Date:



City of Roeland Park
Action Item Summary

Date:
Submitted By:
Committee/Department:
Title: Arbor Day Proclamation
Item Type:

Recommendation:

Details:

Financial Impact

Amount of Request:	
Budgeted Item?	Budgeted Amount:
Line Item Code/Description:	

Additional Information

What are the racial equity implications of the objective?

How does item benefit Community for all Ages?

ATTACHMENTS:

Description	Type
Arbor Day Proclamation	Cover Memo



Proclamation

Arbor Day 2023

Whereas, In 1872 J. Sterling Morton proposed to the Nebraska Board of Agriculture that a special day be set aside for the planting of trees, and

Whereas, this holiday, called Arbor Day, was first observed with the planting of more than a million trees in Nebraska, and

Whereas, trees can reduce the erosion of our precious topsoil by wind and water, cut heating and cooling costs, moderate the temperature, clean the air, produce life-giving oxygen, and provide habitat for wildlife, and

Whereas, trees are a renewable resource giving us paper, wood for our homes, fuel for our fires, and beautify our community, and

Whereas, trees in our city increase property values, enhance the economic vitality of business areas, and

Whereas, trees, wherever they are planted, are a source of joy and spiritual renewal.

Now, Therefore, I, Michael Poppa, Mayor of the City of Roeland Park, therefore do hereby proclaim April 28, 2023 as Arbor Day in the City of Roeland Park, and I urge all citizens to celebrate Arbor Day and to support efforts to protect our trees and woodlands, and

Further, I urge all citizens to plant trees to gladden the heart and promote the well-being of this and future generations.

In testimony whereof, I have hereunto set my hand and caused to be affixed the Seal of the City of Roeland Park, this 3rd day of April, 2023.

MICHAEL POPPA
Mayor

Item Number: Mayor's Report- IV.-B.
Committee 4/3/2023
Meeting Date:



City of Roeland Park
Action Item Summary

Date:
Submitted By:
Committee/Department:
Title: National Volunteer Service Proclamation
Item Type:

Recommendation:

Details:

Financial Impact

Amount of Request:	
Budgeted Item?	Budgeted Amount:
Line Item Code/Description:	

Additional Information

What are the racial equity implications of the objective?

How does item benefit Community for all Ages?

ATTACHMENTS:

Description	Type
☐ National Volunteer Service Proclamation	Cover Memo



Proclamation

National Volunteer Month 2023

WHEREAS, volunteers can connect with local community service opportunities through hundreds of community service organizations; and

WHEREAS, individuals and communities are at the center of social change, discovering their power to make a difference; and

WHEREAS, during this month, all over the nation service projects will be performed and volunteers recognized for their commitment to service and

WHEREAS, our country's volunteer and national service member force of more than 63 million is a great treasure; and

WHEREAS, April is a month for volunteers, with the occurrence of National Service Recognition Day, Earth Day, and United Way's National Volunteer Month; and

WHEREAS, volunteers are vital to our future as a caring and productive nation.

Now, therefore, I, Michael Poppa, Mayor of the City of Roeland Park, do hereby proclaim the month of April, 2023 as

"National Volunteer Month"

in the City of Roeland Park and urge my fellow citizens to volunteer in their community. By volunteering and recognizing those who serve, we can come together to make a difference.

In testimony whereof, I have hereunto set my hand and caused to be affixed the Seal of the City of Roeland Park, this 3rd day of April, 2023.

MICHAEL POPPA
Mayor

Item Number: Mayor's Report- IV.-C.
Committee 4/3/2023
Meeting Date:



City of Roeland Park
Action Item Summary

Date:
Submitted By:
Committee/Department:
Title: Fair Housing Proclamation
Item Type:

Recommendation:

Details:

Financial Impact

Amount of Request:	
Budgeted Item?	Budgeted Amount:
Line Item Code/Description:	

Additional Information

What are the racial equity implications of the objective?

How does item benefit Community for all Ages?

ATTACHMENTS:

Description	Type
☐ Fair Housing Proclamation	Cover Memo



Proclamation

Fair Housing Month May 2023

WHEREAS, the Congress of the United States passed the Civil Rights Act of 1968, of which Title VIII declared that the law of the land would now guarantee the rights of equal housing opportunity; and

WHEREAS, the City of Roeland Park is committed to the mission and intent of Congress to provide fair and equal housing opportunities for all, and today, many realty companies and associations support fair housing laws; and

WHEREAS, the Fair Housing groups and the U.S. Department of Housing and Urban Development have, over the years, received thousands of complaints of alleged illegal housing discrimination and found too many that have proved, upon investigation, to be in violation of the fair housing laws; and

WHEREAS, equal housing opportunity is a condition of life in our City that can and should be achieved;

Therefore, be it resolved that Mayor Michael Poppa on behalf of its citizens of Roeland Park, proclaims the month of May

Fair Housing Month May 2023

And expresses the hope that this year's observance will promote fair housing practices throughout the City

Dated this 3rd day of April, 2023.

MICHAEL POPPA
Mayor

Item Number: Reports of City Liaisons- VI.-A.
Committee 4/3/2023
Meeting Date:



City of Roeland Park
Action Item Summary

Date: 3/27/2023
Submitted By: Parks Committee
Committee/Department: Parks Committee
Title: **Parks Committee**
Item Type:

Recommendation:

Informational only. Laura Savidge to provide update.

Details:

Financial Impact

Amount of Request:	
Budgeted Item?	Budgeted Amount:
Line Item Code/Description:	

Additional Information

What are the racial equity implications of the objective?

How does item benefit Community for all Ages?

Item Number: Reports of City Liaisons- VI.-B.
Committee 4/3/2023
Meeting Date:



City of Roeland Park
Action Item Summary

Date: 3/28/2023
Submitted By: Arts Committee
Committee/Department: Arts Committee
Title: **Arts Committee**
Item Type: Report

Recommendation:

Informational only. Mary Schulteis and Marek Gliniecki to provide update.

Details:

Financial Impact

Amount of Request:	
Budgeted Item?	Budgeted Amount:
Line Item Code/Description:	

Additional Information

What are the racial equity implications of the objective?

How does item benefit Community for all Ages?

ATTACHMENTS:

Description	Type
☐ Eucalyptus	Cover Memo
☐ Ballet Mechanique	Cover Memo







Item Number: New Business- VIII.-A.
Committee 4/3/2023
Meeting Date:



City of Roeland Park

Action Item Summary

Date: 3/30/2023
Submitted By: John Jacobson
Committee/Department: Neighborhood Resources
Title: **Approve Final Development Plan The Rocks (15 min)**
Item Type: Agreement

Recommendation:

Approved the Final Development Plan for the Rocks Mixed Use Development.

Details:

The Final Development Plan is in substantial compliance with the Preliminary Development Plan. The Landscape and screening requirements are in line with original submittal and compliant with the MXD designation, as are setbacks and parking provisions.

Comments from Staff and the City Engineer have been addressed in the Final Development Plans.

City Council has authority over the architectural design and finishes of the building according to the land sale agreement and development agreement. Feedback from Council concerning the architecture and finishes was provided to EPC following the Planning Commission meeting on 3/21/23. The elevation plans included as part of the Final Development Plan submittal reflect changes based upon that feedback. Council will need to determine if these changes result in a building that meets their expectations.

A lack of screening for the east elevation of the parking structure is an item that was brought up during the Planning Commission's review. EPC has incorporated a screening element; this is an architectural element that Council has approval authority over. This east garage elevation is also one of the potential public art exhibit locations identified by EPC.

3 locations for public art are reflected in the plan. EPC has not finalized their 1% for art elements. When they have finalized these elements, they will present them to the Council for review and approval. EPC may ask for exception to the 1% amount and/or request to make payment in lieu of

public art at that time.

A dedicated right turn lane on Roe Parkway at 48th Street is a public improvement that the developer will be responsible for completing based upon the traffic study for the development. It is intended that this work will be included with the Roe Parkway improvements planned by the City (for 2024 or 2025) and the developer will pay for the cost of the lane addition.

Financial Impact

Amount of Request: NA	
Budgeted Item?	Budgeted Amount: NA
Line Item Code/Description: NA	

Additional Information

Confirmation has been received from water, wastewater, gas and electric providers indicating they have the capacity to serve the development.

What are the racial equity implications of the objective?

The multifamily use adds diversity in housing options in Roeland Park. This additional housing option will likely attract some of the existing single-family homeowners and renters out of that market freeing up single family home options that may have been occupied by long term residents who have been looking for a housing option like this in Roeland Park. In addition, 5% of the living units included in the development will be offered at an attainable rate per the development agreement provisions. The development expands housing options available to residents with physical disabilities.

How does item benefit Community for all Ages?

The development expands housing options available to seniors who are looking for easier access to their residence and to residents who are looking for a more social setting, additional security or added fire prevention.

ATTACHMENTS:

Description	Type
❑ EPC Final Development Plan Submittal	Cover Memo
❑ Storm Drainage Study	Cover Memo
❑ Traffic Study	Cover Memo
❑ FDP Application	Cover Memo

ROELAND PARK

MIXED-USE DEVELOPMENT
EPC REAL ESTATE GROUP
FINAL DEVELOPMENT PLAN

03.10.2023

REVISED
03.30.2023



NOT FOR
CONSTRUCTION

ROELAND PARK MIXED-USE PROJECT
EPC REAL ESTATE GROUP, LLC
ROE AVE AND W 48TH ST
ROELAND PARK, KS 66205

FINAL
DEVELOPMENT
PLAN
03/10/2023

12-22109-00

COVER SHEET

A0.0



DEVELOPER
EPC REAL ESTATE GROUP
8001 METCALF AVE. SUITE #300
OVERLAND PARK, KS 66204
913-722-2600

ARCHITECT
DLR GROUP
7290 W. 133RD ST
OVERLAND PARK, KS 66213
913-897-7811

MEP ENGINEER
SMITH & BOUCHER, INC.
25618 W 103RD ST
OLATHE, KS 66061
913-345-2127

CIVIL ENGINEER
KIMLEY HORN
805 PENNSYLVANIA AVENUE,
SUITE 150
KANSAS CITY, MO 64105
816-652-0350

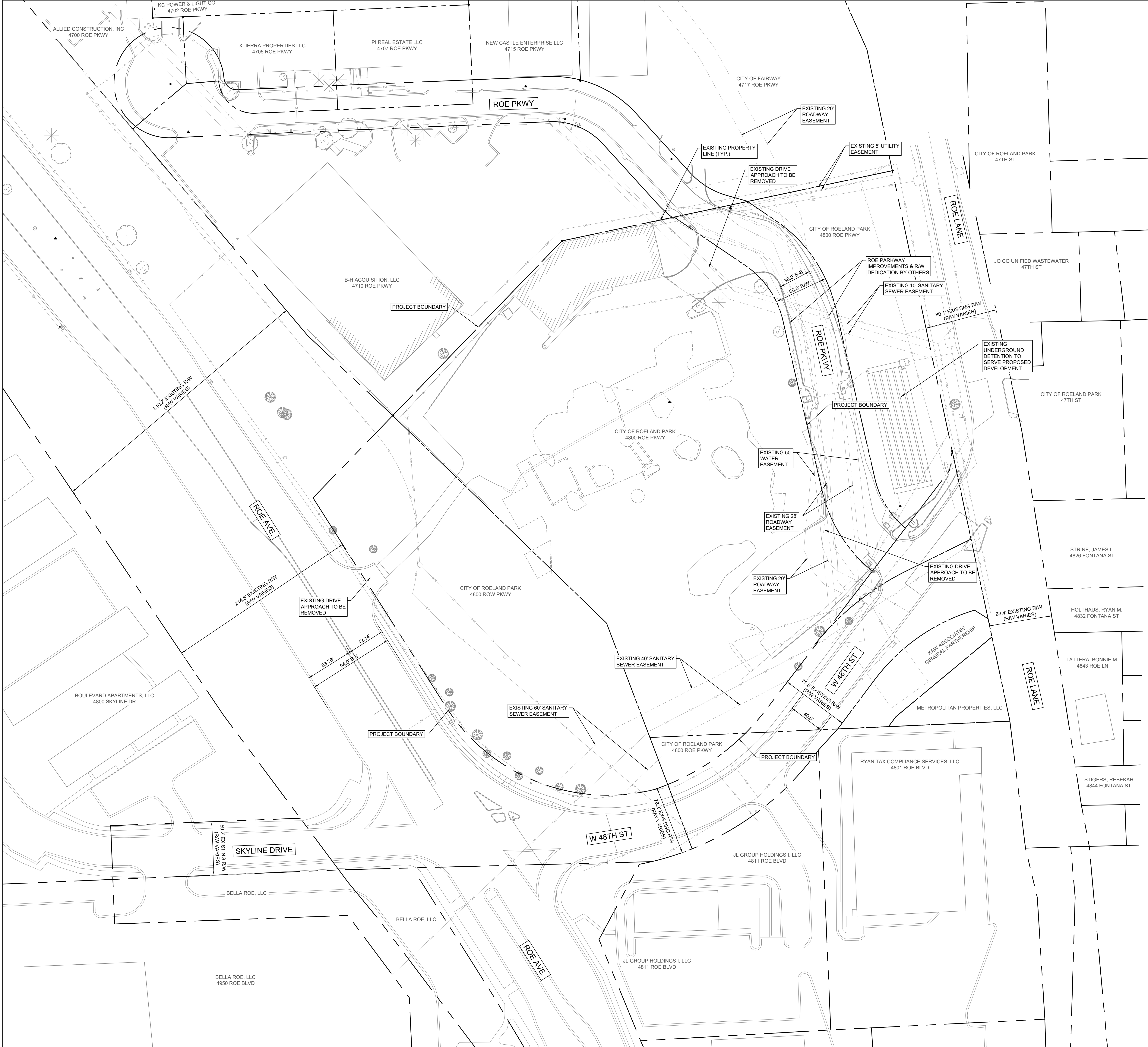
LANDSCAPE ARCHITECT
RICHARD CLAYTON BARRETT
913-522-4259

KEY MAP



SHEET LIST

C1	EXISTING CONDITIONS	A1.5	ARCHITECTURAL FLOOR PLANS
C2	SITE PLAN	A1.6	ARCHITECTURAL FLOOR PLANS
C3	GRADING PLAN	A1.7	ARCHITECTURAL FLOOR PLANS
L1.0	LANDSCAPE PLAN	A1.8	ARCHITECTURAL FLOOR PLANS
ME2.0P	PHOTOMETRIC PLAN	A1.9	ROOF PLAN
EX1	FIRE TRUCK TURNING EXHIBIT		
A1.0	ARCHITECTURAL FLOOR PLANS	A4.1	ARCHITECTURAL ELEVATIONS
A1.1	ARCHITECTURAL FLOOR PLANS	A4.2	ARCHITECTURAL ELEVATIONS
A1.2	ARCHITECTURAL FLOOR PLANS	A4.3	ARCHITECTURAL ELEVATIONS
A1.3	ARCHITECTURAL FLOOR PLANS	A4.4	ARCHITECTURAL ELEVATIONS
A1.4	ARCHITECTURAL FLOOR PLANS	A4.5	ARCHITECTURAL RENDERINGS
		A5.1	BUILDING SECTIONS



LEGAL DESCRIPTION

PER FIRST AMERICAN TITLE INSURANCE COMPANY, LLC.
COMMITMENT NUMBER: NCS-1107019-OMHA
EFFECTIVE DATE: JANUARY 04, 2022, AT 8:00 A.M.

TRACT 1:

ALL THAT PART OF THE NORTHWEST ¼ OF THE NORTHEAST ¼ AND THAT PART OF THE NORTHEAST ¼ OF THE NORTHWEST ¼ OF SECTION 4, TOWNSHIP 12, RANGE 25, JOHNSON COUNTY, KANSAS, DESCRIBED AS FOLLOWS:

BEGINNING AT THE SOUTHEAST CORNER OF THE NORTHEAST ¼ OF THE NORTHWEST ¼ OF SAID SECTION 4, THENCE NORTH 18° 09' 30" WEST ALONG THE KANSAS HIGHWAY RIGHT-OF-WAY, A DISTANCE OF 155.52 FEET TO THE TRUE POINT OF BEGINNING OF THE TRACT HEREIN TO BE DESCRIBED; THENCE NORTH 18° 09' 30" WEST ALONG SAID RIGHT-OF-WAY, A DISTANCE OF 135.46 FEET; THENCE NORTH 43° 15' 30" WEST ALONG SAID RIGHT-OF-WAY, A DISTANCE OF 330 FEET; THENCE NORTH 45° 42' 10" EAST, A DISTANCE OF 269.38 FEET; THENCE NORTH 80° 36' EAST, A DISTANCE OF 374 FEET TO A POINT IN THE WESTERLY RIGHT-OF-WAY OF ROE BOULEVARD AS SAID BOULEVARD NOW EXISTS; THENCE SOUTH 08° 28' EAST, ALONG SAID RIGHT-OF-WAY, A DISTANCE OF 623.37 FEET; THENCE DUE WEST AND PARALLEL TO THE SOUTH LINE OF THE NORTHWEST ¼ OF THE NORTHEAST ¼ OF SAID SECTION 4, A DISTANCE OF 399.19 FEET TO THE POINT OF BEGINNING, EXCEPT THAT PART IN STREETS AND ROADS, AND EXCEPT:

A PARCEL OF GROUND SITUATED IN THE NORTHWEST ¼ OF THE NORTHEAST ¼ OF SECTION 4, TOWNSHIP 12 SOUTH, RANGE 25 EAST, IN JOHNSON COUNTY, KANSAS, DESCRIBED AS FOLLOWS: COMMENCING AT THE SOUTHWEST CORNER OF SAID QUARTER QUARTER SECTION; THENCE NORTH 17° 31' 31" 08" WEST, ALONG THE EASTERLY RIGHT-OF-WAY OF 18TH STREET EXPRESSWAY, AS ESTABLISHED AUGUST 31, 1956, BY A DEED FOR STREET AND HIGHWAY PURPOSES, FILED IN THE JOHNSON COUNTY REGISTER OF DEEDS OFFICE IN BOOK 389, PAGES 335-342, A DISTANCE OF 155.52 FEET; THENCE SOUTH 89° 21' 39" EAST AND PARALLEL WITH THE SOUTH LINE OF SAID QUARTER QUARTER SECTION, A DISTANCE OF 208.33 FEET, TO THE TRUE POINT OF BEGINNING OF THE TRACT HEREIN DESCRIBED; THENCE NORTH 40° 05' 53" EAST, A DISTANCE OF 68.07 FEET; THENCE ON A CURVE TO THE RIGHT, TANGENT TO THE LAST DESCRIBED COURSE, HAVING A RADIUS OF 215.00 FEET, AN ARC DISTANCE OF 137.05 FEET; THENCE SOUTH 54° 46' 51" EAST, A DISTANCE OF 17.73 FEET, TO A POINT ON THE WESTERLY RIGHT-OF-WAY OF ROE BOULEVARD AS SAID BOULEVARD NOW EXISTS; THENCE SOUTH 08° 49' 38" EAST, ALONG SAID RIGHT-OF-WAY, A DISTANCE OF 20.86 FEET; THENCE SOUTH 53° 31' 37" WEST, A DISTANCE OF 138.20 FEET; THENCE SOUTH 40° 01' 22" WEST, A DISTANCE OF 13.83 FEET; THENCE NORTH 89° 21' 39" WEST, AND PARALLEL WITH THE SOUTH LINE OF SAID QUARTER QUARTER SECTION, A DISTANCE OF 56.18 FEET, TO THE TRUE POINT OF BEGINNING, AND EXCEPT:

A PARCEL OF GROUND SITUATED IN THE NORTHWEST ¼ OF THE NORTHEAST ¼ OF SECTION 4, TOWNSHIP 12 SOUTH, RANGE 25 EAST, IN JOHNSON COUNTY, KANSAS, DESCRIBED AS FOLLOWS: COMMENCING AT THE SOUTHWEST CORNER OF SAID QUARTER QUARTER SECTION; THENCE NORTH 17° 31' 08" WEST, ALONG THE EASTERLY RIGHT-OF-WAY OF 18TH STREET EXPRESSWAY, AS ESTABLISHED AUGUST 31, 1956, BY A DEED FOR STREET AND HIGHWAY PURPOSES, FILED IN THE JOHNSON COUNTY REGISTER OF DEEDS OFFICE IN BOOK 389, PAGES 335-342, A DISTANCE OF 155.52 FEET; THENCE SOUTH 89° 21' 39" EAST, AND PARALLEL WITH THE SOUTH LINE OF SAID QUARTER QUARTER SECTION, A DISTANCE OF 204.51 FEET, TO THE TRUE POINT OF BEGINNING OF THE TRACT HEREIN DESCRIBED; THENCE NORTH 40° 01' 22" EAST, A DISTANCE OF 13.83 FEET; THENCE NORTH 53° 31' 37" EAST, A DISTANCE OF 138.20 FEET TO A POINT ON THE WESTERLY RIGHT-OF-WAY OF ROE BOULEVARD AS SAID BOULEVARD NOW EXISTS; THENCE SOUTH 08° 49' 38" EAST ALONG SAID RIGHT-OF-WAY, A DISTANCE OF 95.38 FEET; THENCE NORTH 89° 21' 39" WEST AND PARALLEL TO THE SOUTH LINE OF THE NORTHWEST ¼ OF THE NORTHEAST ¼ OF SAID SECTION 4, A DISTANCE OF 134.68 FEET TO THE TRUE POINT OF BEGINNING, EXCEPT ANY PART USED OR DEDICATED FOR STREETS, ROADS OR PUBLIC RIGHT OF WAY.

TRACT 2:

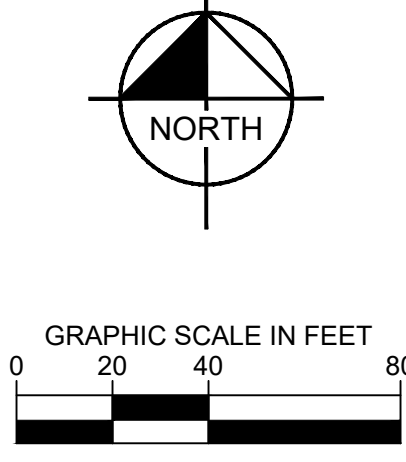
A TRACT OF LAND IN THE NORTH ONE-HALF (N ½) OF THE NORTH ONE-HALF (N ½) OF SECTION 4, TOWNSHIP 12 SOUTH (T12S), RANGE 25 EAST (R25E), CITY OF ROELAND PARK, JOHNSON COUNTY, KANSAS, MORE PARTICULARLY DESCRIBED AS FOLLOWS:

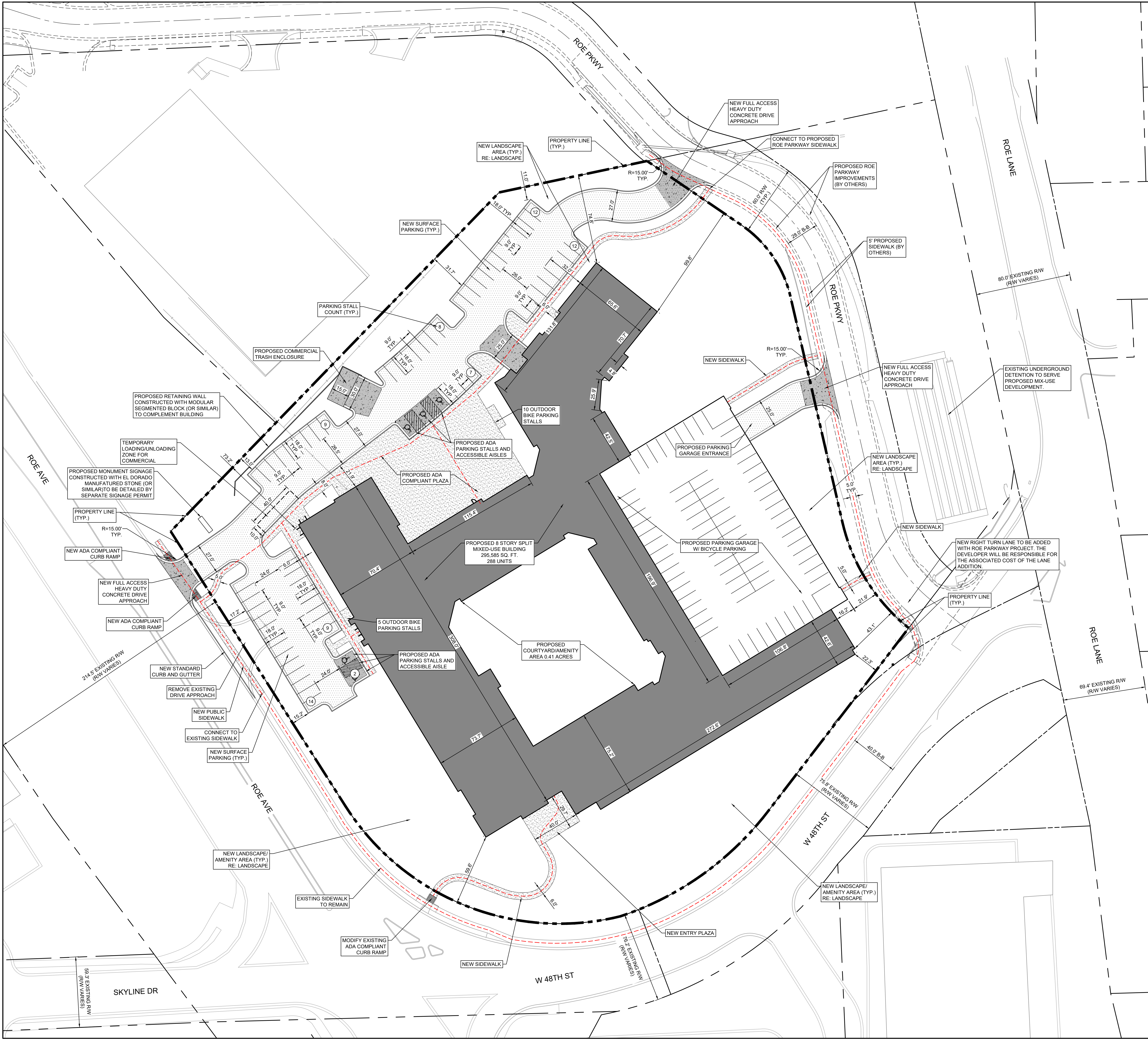
COMMENCING AT THE SOUTHWEST CORNER OF THE NORTHWEST ONE-QUARTER (NW ¼) OF THE NORTHEAST ONE-QUARTER (NE ¼) OF SECTION 4, TOWNSHIP 12 SOUTH (T12S), RANGE 25 EAST (R25E), CITY OF ROELAND PARK, JOHNSON COUNTY, KANSAS; THENCE NORTH 18 DEGREES 09 MINUTES 30 SECONDS WEST ON THE EASTERLY RIGHT-OF-WAY-LINE OF THE 18TH STREET EXPRESSWAY, AS NOW ESTABLISHED, 36.86 FEET TO THE TRUE POINT OF BEGINNING; THENCE CONTINUING NORTH 18 DEGREES 09 MINUTES 30 SECONDS WEST ON SAID RIGHT-OF-WAY LINE, 119.59 FEET TO A POINT; THENCE SOUTH 89 DEGREES 01 MINUTES 38 SECONDS EAST ON A LINE PARALLEL TO THE SOUTH LINE OF SAID NORTHWEST ONE-QUARTER (NW ¼) OF THE NORTHEAST ONE-QUARTER (NE ¼) OF SECTION 4, TOWNSHIP 12 SOUTH (T12S), RANGE 25 EAST (R25E), 134.68 FEET TO A POINT; THENCE SOUTH 40 DEGREES 20 MINUTES 06 SECONDS WEST, 107.31 FEET TO A POINT OF CURVATURE; THENCE SOUTHWESTERLY ON A CURVE TO THE RIGHT HAVING A RADIUS OF 394.89 FEET, 40.61 FEET TO THE TRUE POINT OF BEGINNING.

EXCEPT THAT PART DEDICATED FOR PUBLIC STREET BY BOOK 4140 AT PAGE 334.

AND EXCEPT ANY OTHER PART USED OR DEDICATED FOR STREETS, ROADS AND PUBLIC RIGHTS OF WAY.

THE ABOVE TRACTS TO BE PLATTED AS THE ROCKS, A SUBDIVISION IN THE CITY OF ROELAND PARK, JOHNSON COUNTY, KANSAS.





SITE PLAN LEGEND

STANDARD DUTY ASPHALT PAVEMENT

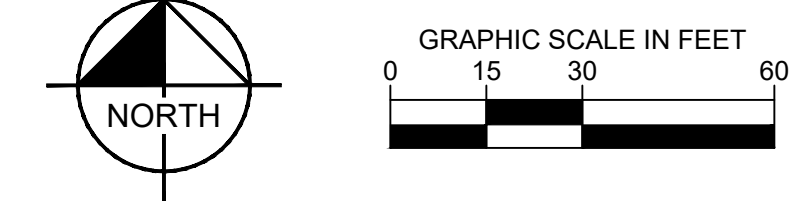
HEAVY DUTY CONCRETE PAVEMENT

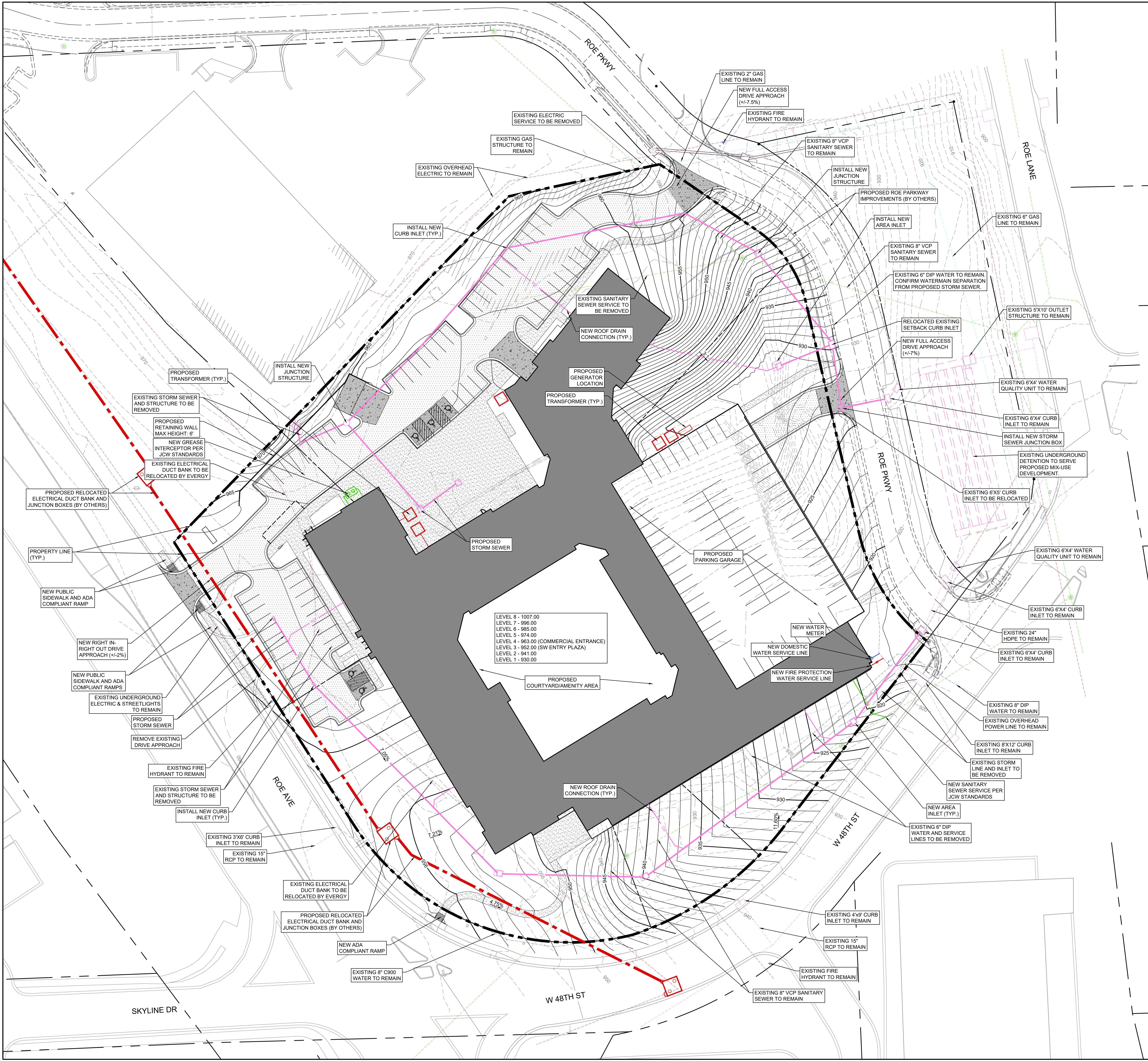
CONCRETE SIDEWALK

STANDARD CURB & GUTTER

PEDESTRIAN NETWORK ROUTE

Development Summary Table		
A	Zoning	
	Existing	MXD
B	Total Land Area	
	Existing	5.79 Acres
C	Right-of-way	
	Existing	0.00 Acres
D	Net Land Area	
	Existing	5.79 Acres
E	Proposed Uses	
	Mixed-Use (Multi-Family, Commercial, & Amenity)	
F	Structure Height & # of floors	
	Number of Floors	8
G	Gross Floor Area & # of Units	
	Total Building Count	1
H	Vehicle Parking	
	Parking Stalls Required*	338
I	Bike Parking	
	Stalls Required*	33
J	Timeline	
	Estimated Start Date	10/31/2023
K	Requested Deviations	
	1. Request to Allow Parking Between Structure and Roe Avenue Right-Of-Way	
L	*Parking Notes:	
	Multi-Family: 1.0 Stall/ 1 Bed Dwelling Unit	
M		
	Commercial: 6 Stall/ 1000 SF	
N		
	Bike Parking: 1 Stall/ 10 Required Parking Stalls	
O		
	Accessible Parking: See 2010 ADA Standards for Accessible Design.	

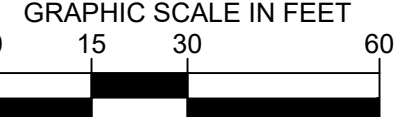
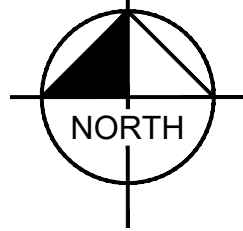




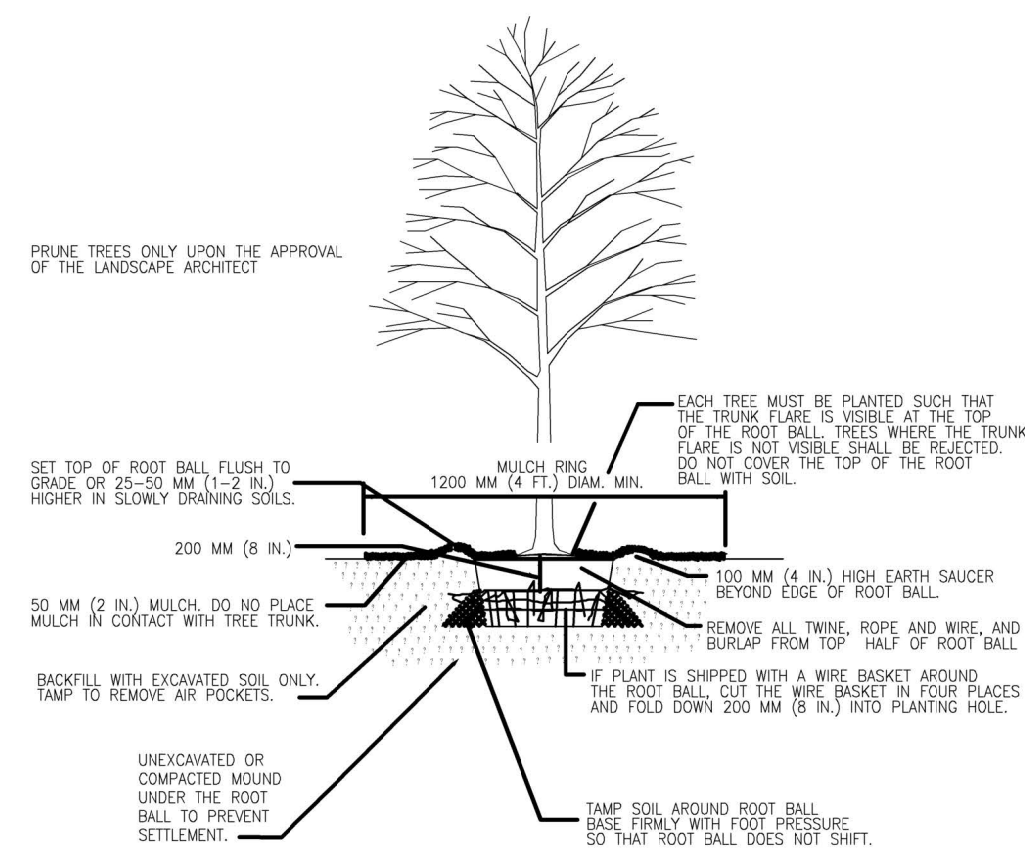
LEGEND

	EXISTING CONTOUR
	PROPOSED CONTOUR
	EXISTING STORM SEWER
	EXISTING SANITARY SEWER
	EXISTING WATER LINE
	EXISTING ELECTRIC LINE
	EXISTING COMMUNICATION LINE
	EXISTING GAS LINE
	EXISTING STORM STRUCTURE
	PROPOSED STORM SEWER
	PROPOSED SANITARY SEWER
	PROPOSED WATER SERVICE LINE
	PROPOSED FIRE PROTECTION LINE
	PROPOSED EVERGY DUCT BANK (BY OTHERS)
	PROPOSED STORM SEWER STRUCTURE
	PROPOSED WATER METER
	PROPOSED SANITARY MANHOLE
	PROPOSED GREASE INTERCEPTOR
	PROPOSED TRANSFORMER

NOTE:
NO PARTS OF THE SUBJECT PROPERTY FALL WITHIN THE 100-YEAR FLOOD PLAIN.

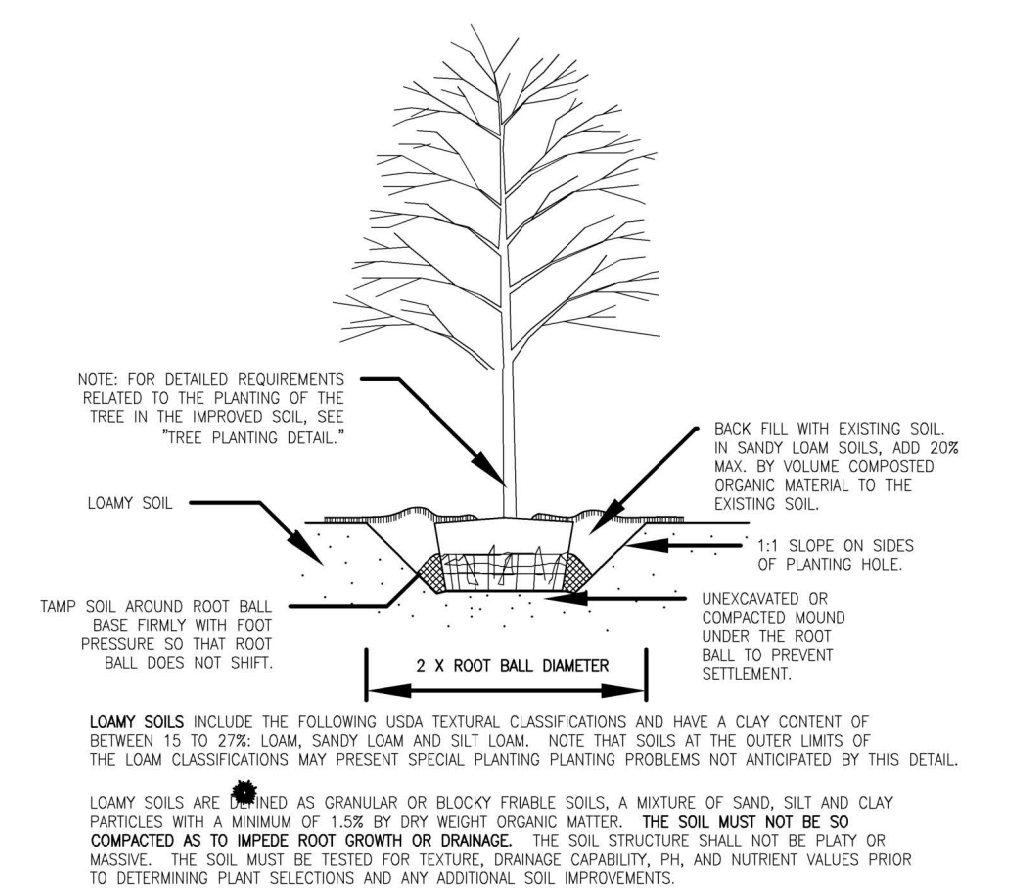


TREES	QTY	BOTANICAL NAME	COMMON NAME	SIZE	CONTAINER
	23	Acer saccharum 'Autumn Splendor'	Autumn Splendor Sugar Maple	2" Cal.	B&B
	9	Amelanchier x grandiflora 'Autumn Brilliance'	Aut. Brill. Serviceberry	1.5" Cal.	B&B
	17	Cercis canadensis	Eastern Redbud	6"	B&B
	9	Gymnocladus dioica 'Espresso'	Kentucky Coffeetree	2" Cal.	B&B
	26	Juniperus virginiana	Eastern Red Cedar	5-6"	B&B
	8	Picea glauca densata	Black Hills Spruce	5-6"	B&B
	5	Quercus alba	White Oak	2" Cal.	B&B
SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	CONTAINER
	10	Buxus x 'Green Velvet'	G.V. Boxwood	#5	Pot
	81	Calamagrostis x acutiflora 'Karl Foerster'	Feather Reed Grass	#3	Pot
	26	Hydrangea arborescens	Native Hydrangea	#3	Pot
	9	Hydrangea quercifolia 'Snow Queen'	Oakleaf Hydrangea	#5	Pot
	19	Taxus x media 'Hicksii'	Hicks Yew	4' Ht.	B&B



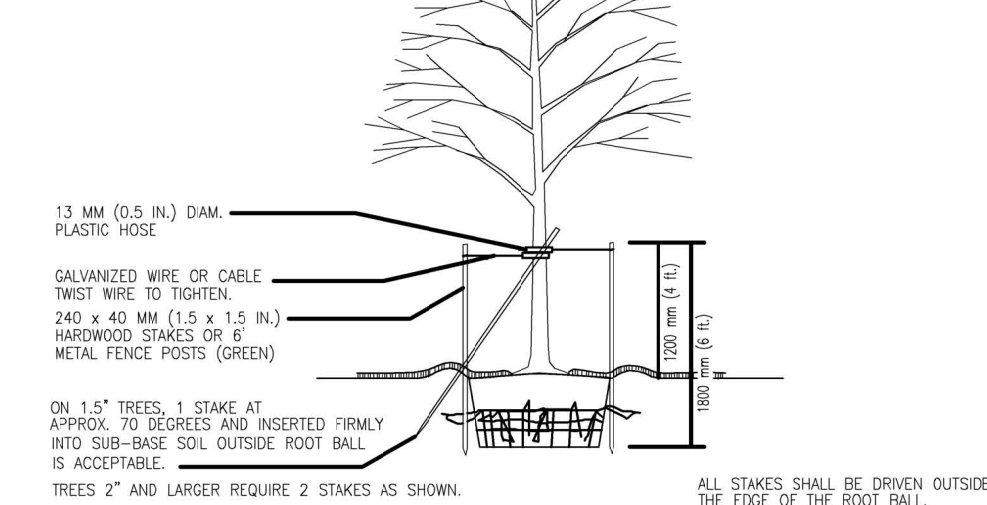
TREE PLANTING DETAIL - B&B TREES

NO SCALE



SOIL IMPROVEMENT DETAIL - TREES PLANTED IN NON RESTRICTED SOIL CONDITIONS.

TUCK ANY LOOSE ENDS OF THE WIRE OR CABLE INTO THE WIRE WRAP SO THAT NO SHARP WIRE ENDS ARE EXPOSED.



REMOVE ALL STAKING AS SOON AS THE TREE HAS GROWN SUFFICIENT ROOTS TO OVERCOME THE PROBLEM THAT REQUIRED THE TREE TO BE STAKED. STAKES SHALL BE REMOVED NO LATER THE END OF THE FIRST GROWING SEASON AFTER PLANTING.

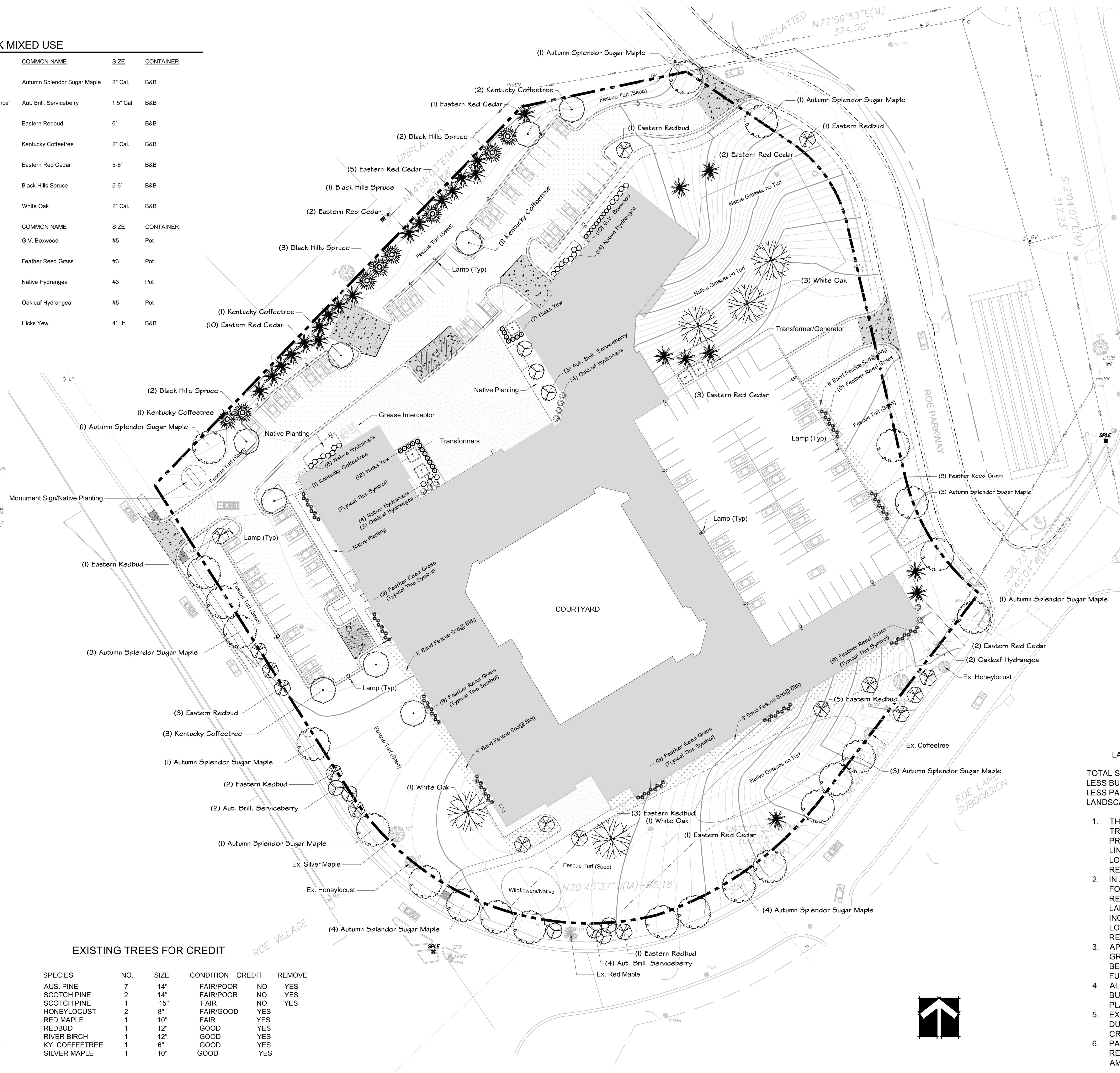
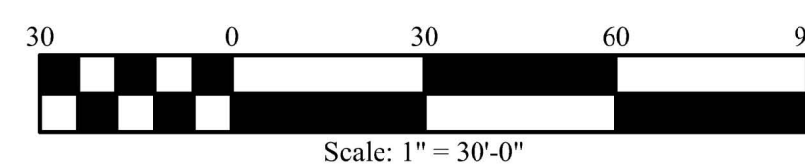
THE FOLLOWING ARE REASONS WHY TREES DO NOT REMAIN STRAIGHT.

- o TREES WITH POOR - QUALITY ROOT BALLS OR ROOT BALLS THAT HAVE BEEN CRACKED OR DAMAGED. REJECT RATHER THAN STAKE.
- o TREES LOCATED IN A PLACE OF EXTREMELY WINDY CONDITIONS, STAKING ADVISABLE.
- o PLANTING PROCEDURES THAT DO NOT ADEQUATELY TAMP SOILS AROUND THE ROOT BALL. CORRECT THE PLANTING PROCEDURE.

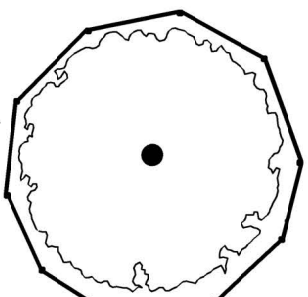
TREE STAKING DETAIL - TREES UP TO 3 INCH CALIPER

NO SCALE

SPECIES	NO.	SIZE	CONDITION	CREDIT	REMOVE
AUS. PINE	7	14"	FAIR/POOR	NO	YES
SCOTCH PINE	2	14"	FAIR/POOR	NO	YES
1/2 PINE	1	15"	FAIR	NO	YES
HONEYLOCUST	2	8"	FAIR/GOOD	YES	
RED MAPLE	1	10"	FAIR	YES	
REDBUD	1	12"	GOOD	YES	
RIVER BIRCH	1	12"	GOOD	YES	
KY. COFFEETREE	1	6"	GOOD	YES	
SILVER MAPLE	1	10"	GOOD	YES	



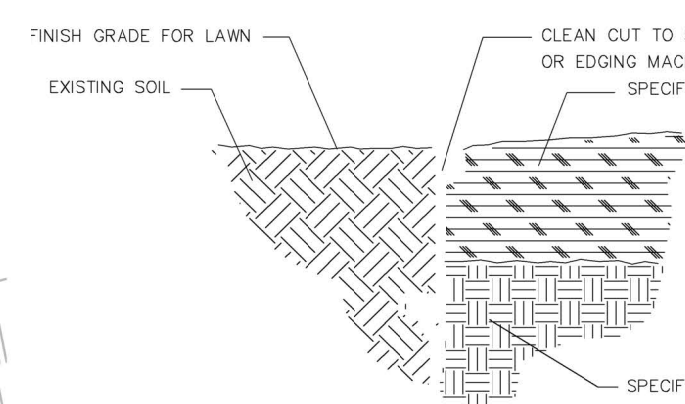
2" X 2" X 4' WOOD STAKES OR ORANGE
BARRICADE FENCING TO FORM A
CONTINUOUS BORDER OUTSIDE DRIP LINE
OF TREE OR SHRUB. IF MINIMUM 10'
RADIUS OR ENTIRE DRIPLINE CANNOT
BE PROTECTED CONSULT LANDSCAPE
ARCHITECT FOR BEST COURSE OF ACTION.



PROTECT FROM ALL CONSTRUCTION ACTIVITIES INCLUDING EARTHWORK, MOVEMENT & STORAGE OF MATERIALS, VEHICULAR PARKING. MAINTAIN THROUGHOUT CONSTRUCTION PERIOD. WHERE PORTIONS OF THE DRIPLINE ARE NOT FENCED OFF, A LAYER OF MULCH SHALL BE PROVIDED TO PROTECT THE ROOT SYSTEM FROM EQUIPMENT DAMAGE. THE MULCH LAYER SHALL BE 6" DEEP.

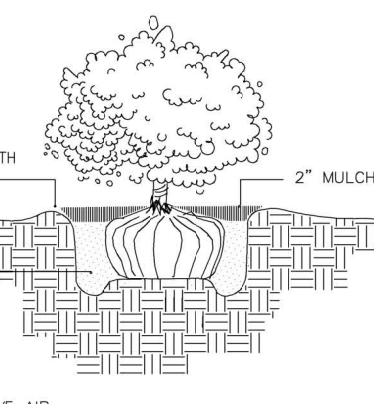
TREE PROTECTION DETAIL

No Scale



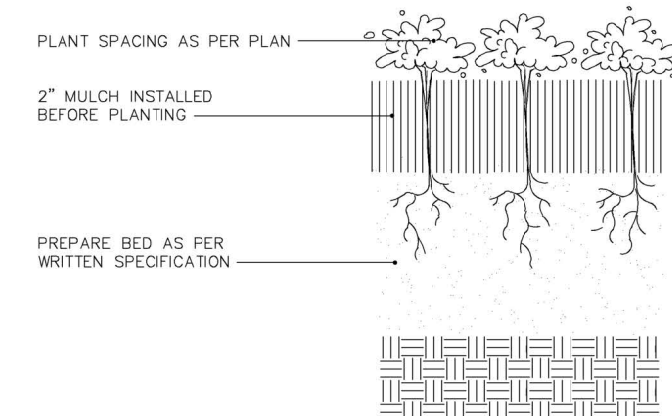
GARDEN OR NATURAL BED EDGE

No Scale



SHRUB PLANTING

NO SCALE



GROUNDCOVER OR PERENNIAL PLANTING DETAIL

NO SCALE

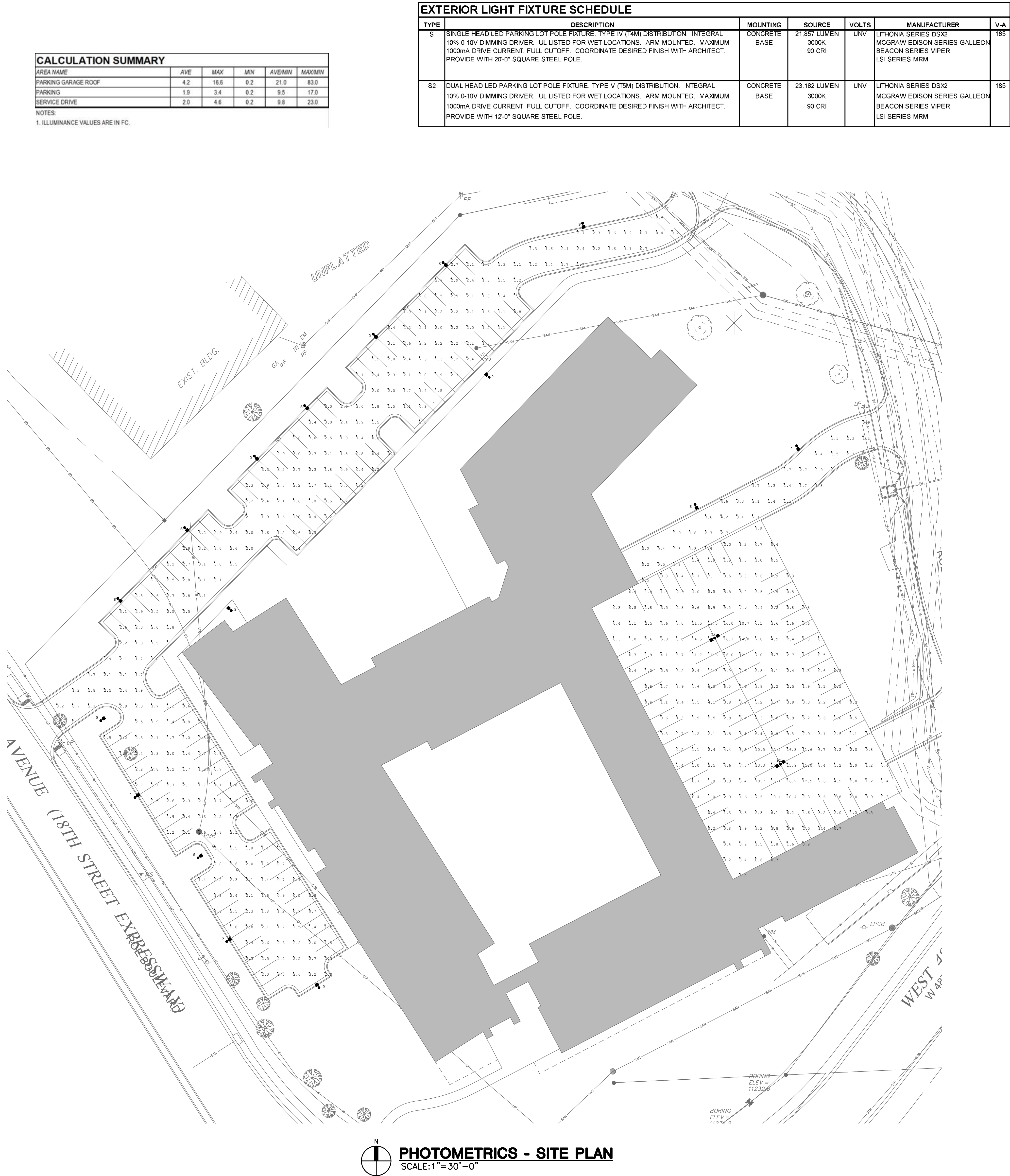
TOTAL SITE;	252, 213 Sq. Ft.
LESS BUILDING;	65,173 Sq. Ft.
LESS PARKING, WALKS	79,446 Sq. Ft.
LANDSCAPE OPEN SPACE	107,594 Sq. Ft.

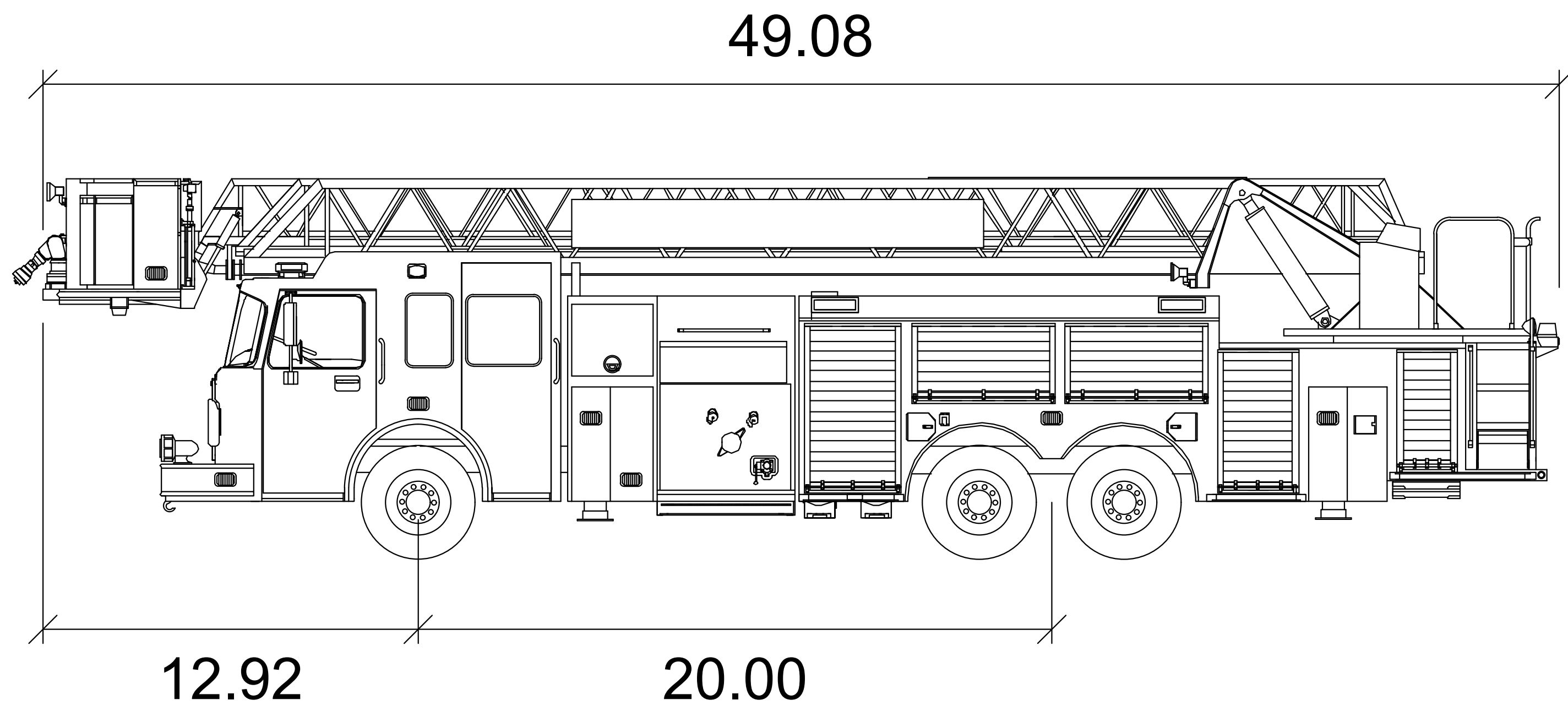
1. THE ROELAND PARK UDO REQUIRES ONE TREE FOR EVERY 40' OF PUBLIC OR PRIVATE STREET FRONTAGE. 1496 LINEAL FEET REQUIRES 37 TREES LOCATED WITHIN THE SETBACK. REQUIREMENT MET
2. IN ADDITION TO THE REQUIRED TREES FOR STREET FRONTAGE, 1 TREE IS REQUIRED FOR EVERY 4000 SQ. FT. OF LANDSCAPE OPEN SPACE, WHICH MAY INCLUDE TREES REQUIRED IN PARKING LOTS. 27 TREES REQUIRED. REQUIREMENT MET
3. APPROPRIATE NUMBERS OF SHRUBS, GROUND COVER AND TURF SHALL ALSO BE INCLUDED TO FULFILL LANDSCAPE FUNCTION.
4. ALL LAND AREAS NOT COVERED BY BUILDING OR HARDSCAPE SHALL BE PLANTED WITH TURF OR NATIVE GRASS.
5. EXISTING TREES ON THE SITE SAVED DURING CONSTRUCTION CAN BE CREDITED TOWARD THE REQUIREMENTS.
6. PARKING AND VEHICULAR USE AREAS REQUIRE PRIMARILY TREES TO LOWER AMBIENT PARKING LOT TEMPERATURES.

15 0 15 30 45 75
feet
scale: 1" = 30'-0"

Roeland Park Mixed-Use Development
22259 Z2259 (22259)
Monday, October 3, 2022 3:24:43 PM
Alex Cybulski

PROJECT NAME:
LOCATION:
LAST CORRECTION BY: DATE • TIME
PLOTED BY: DATE • TIME

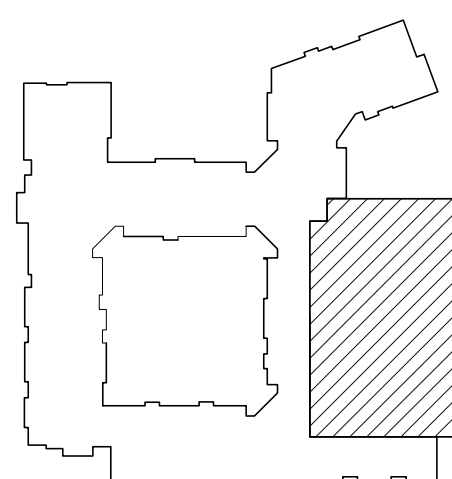
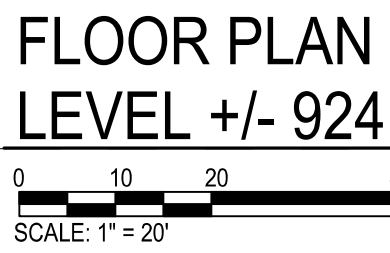




Smeal Platform RM 100ft

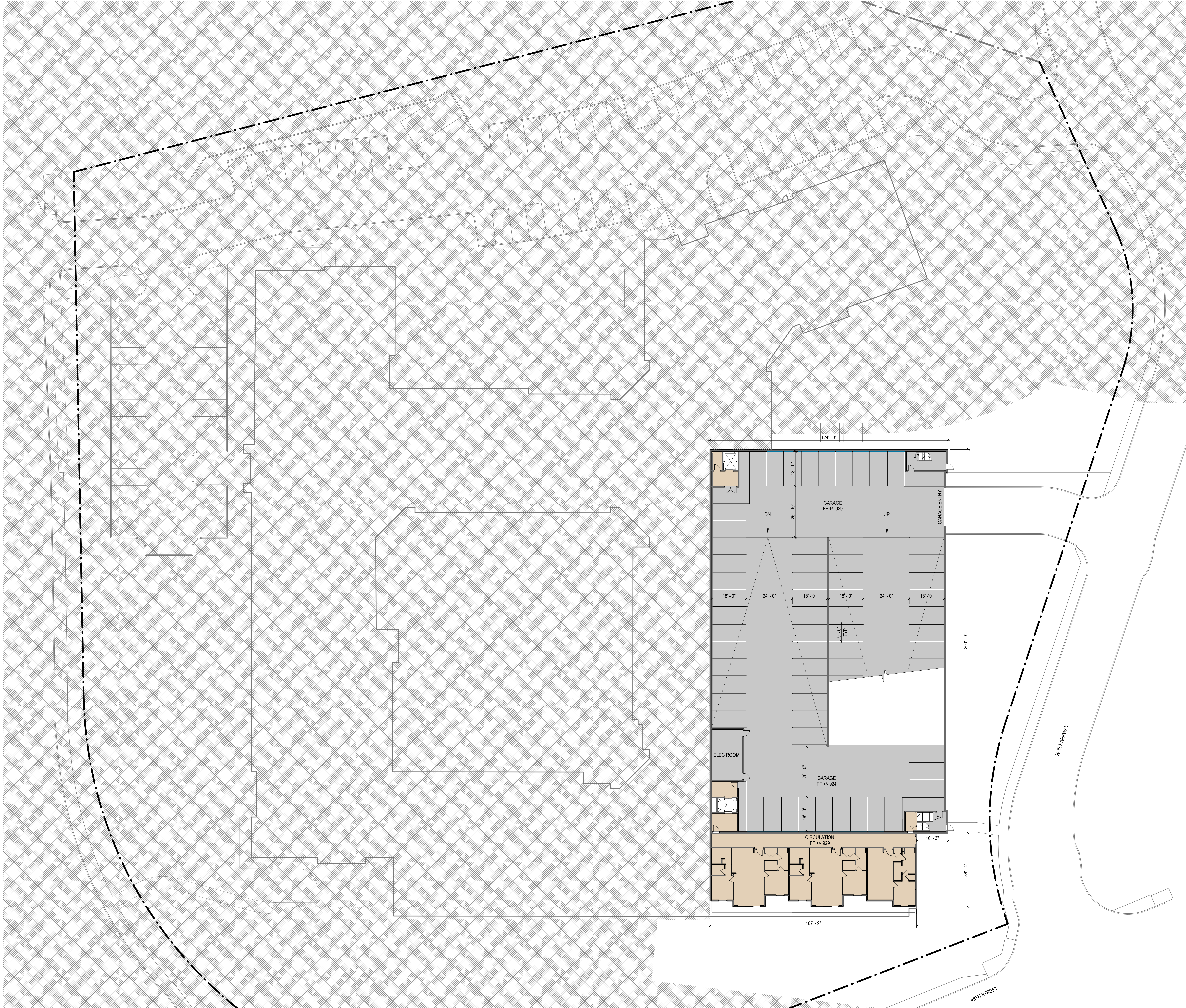
	feet
Width	: 8.33
Track	: 7.83
Lock to Lock Time	: 6.0
Steering Angle	: 48.0



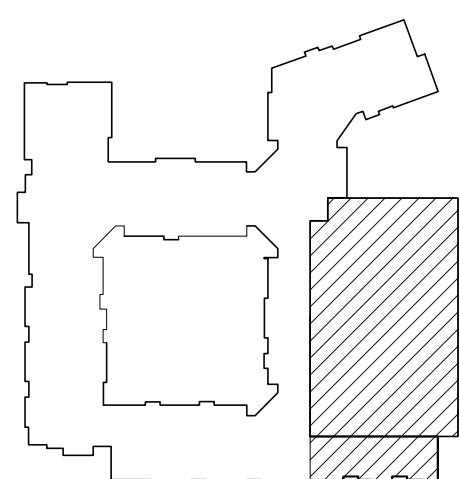
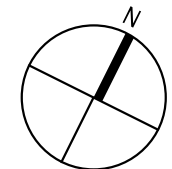


A1.0

Autodesk Docs/12-22109-00 Roeland Park - Mixed Use/12-22109-00_Roeland Park - Mixed Use_A1.1_2022.rvt
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FLOOR PLAN
LEVEL +/- 929
SCALE: 1" = 20'



KEY PLAN

ROELAND PARK MIXED-USE PROJECT

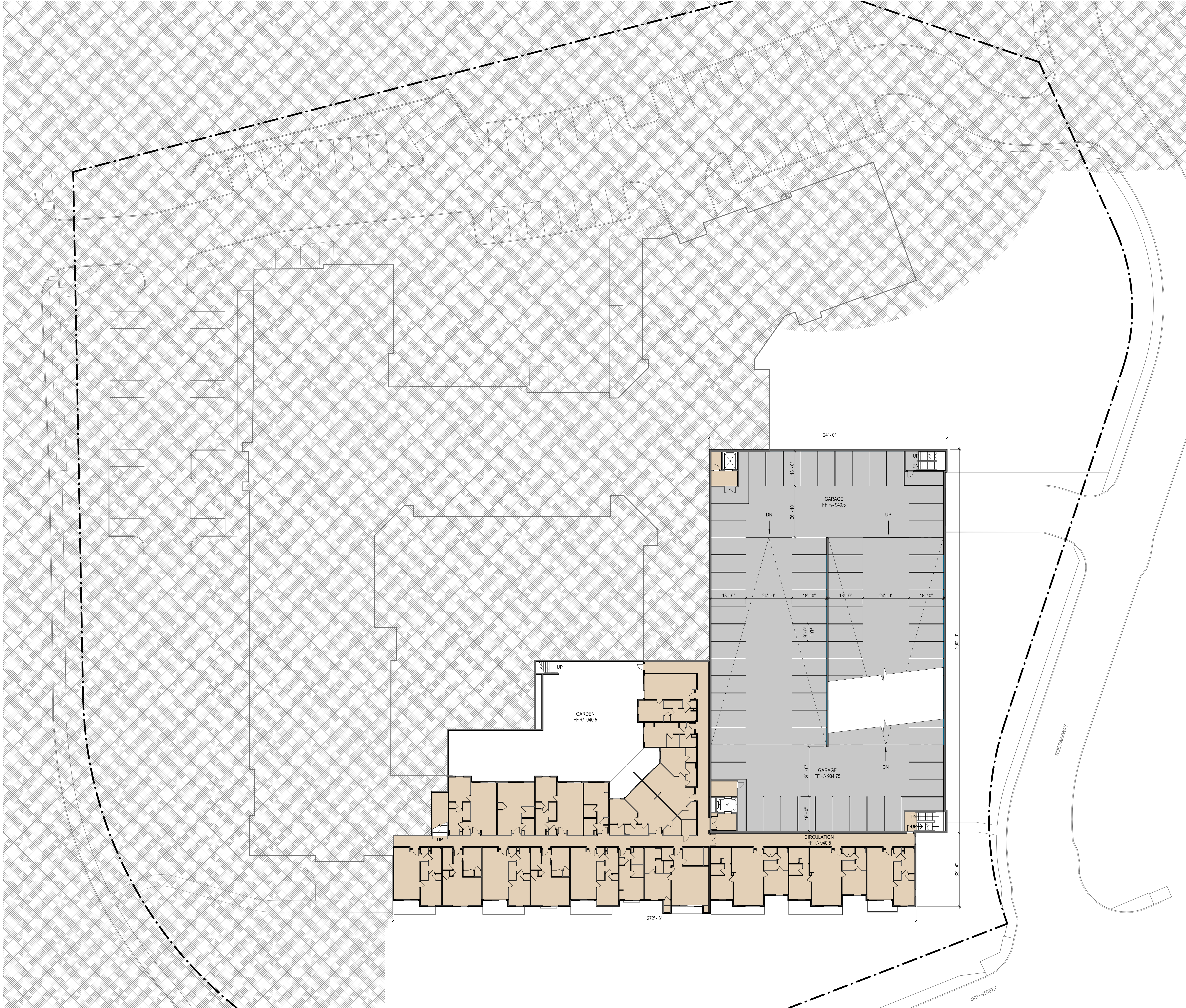
EPC REAL ESTATE GROUP, LLC
ROE AVE AND W 48TH ST
ROELAND PARK, KS 66205

FINAL
DEVELOPMENT
PLAN
03/10/2023
REVISIONS

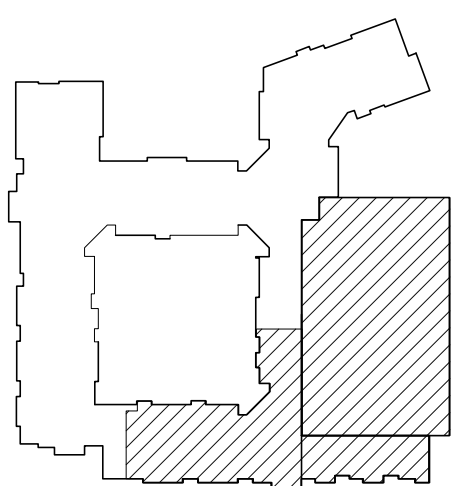
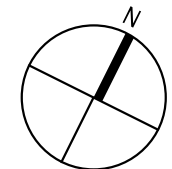
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ARCHITECTURAL
FLOOR PLANS

NOT FOR
CONSTRUCTION

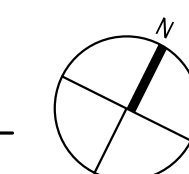
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FLOOR PLAN
LEVEL +/- 940
SCALE: 1" = 20'

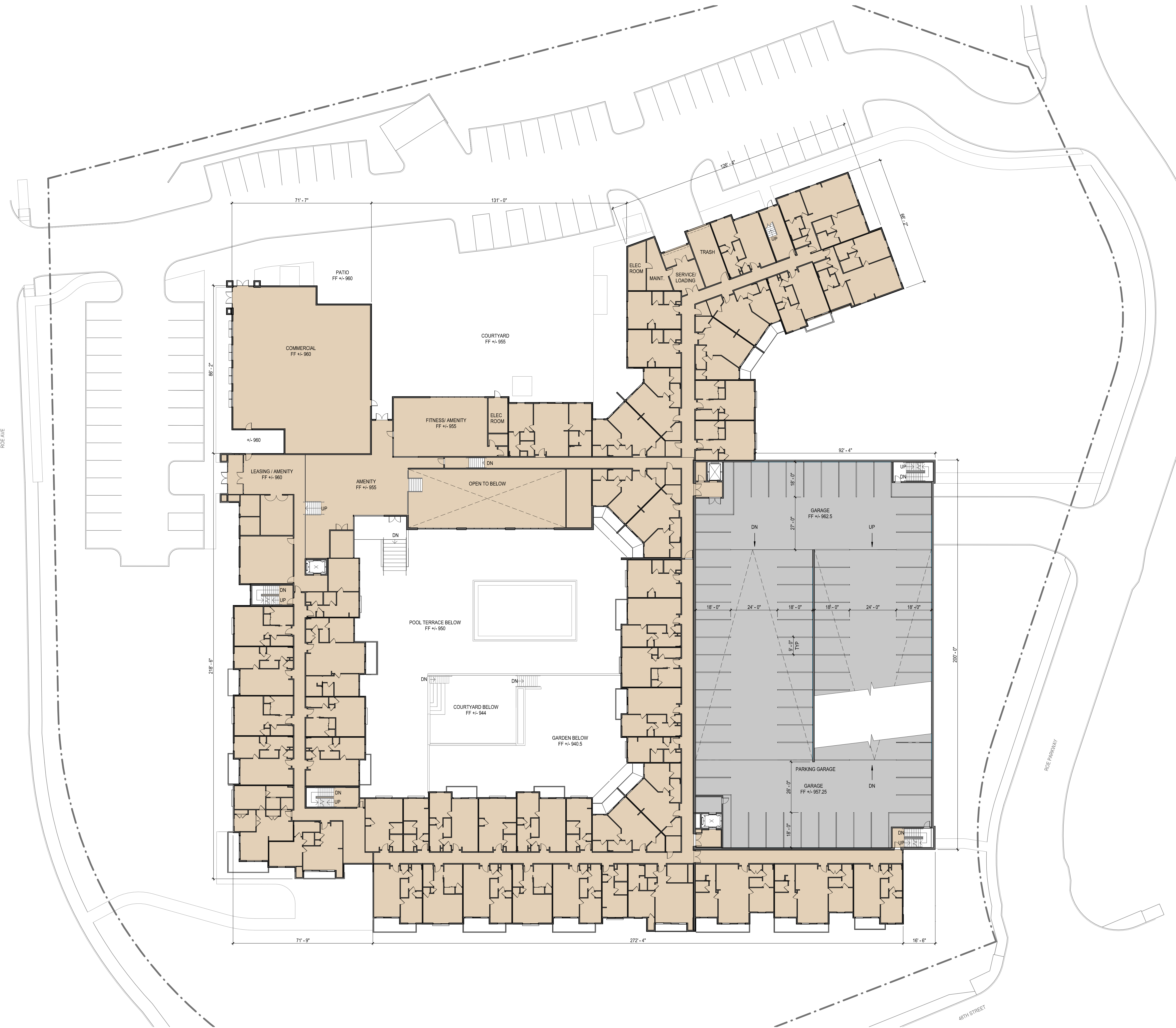


KEY PLAN



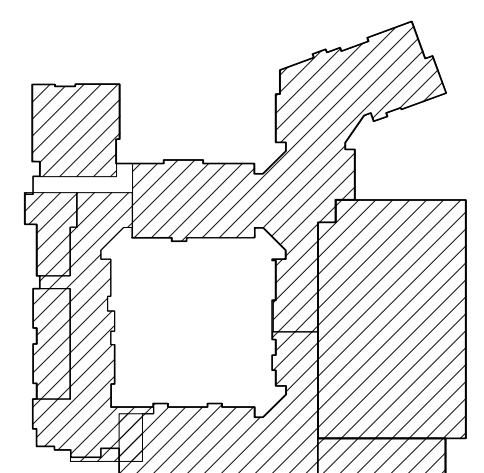
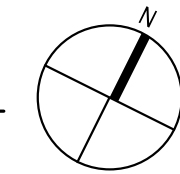
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RCE AVE



FLOOR PLAN
LEVEL +/- 962

SCALE: 1" = 20'



KEY PLAN

ROELAND PARK MIXED-USE PROJECT

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ROE AVE AND W 48TH ST
ROELAND PARK, KS 66205

FINAL
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03/10/2023
REVISIONS

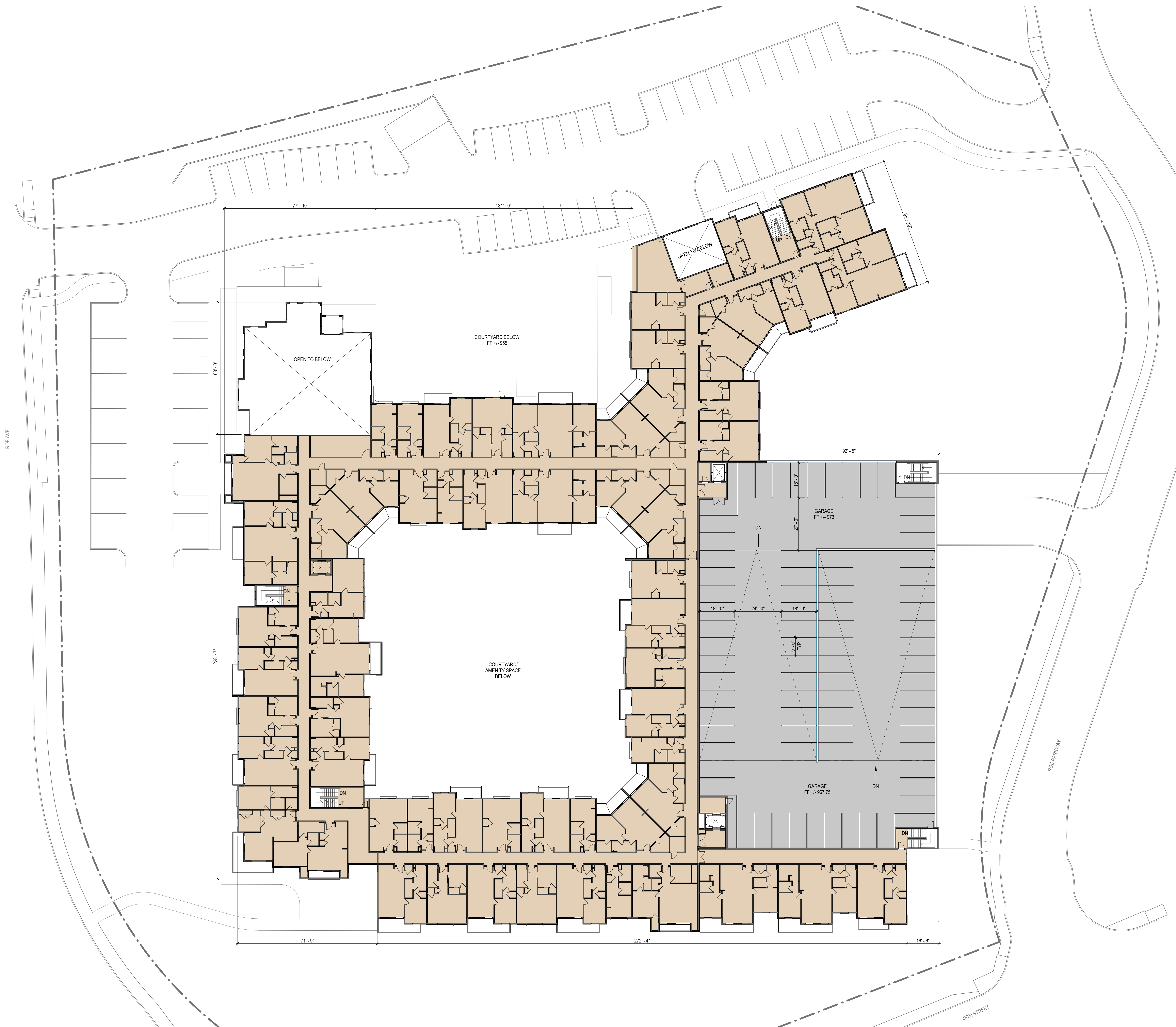
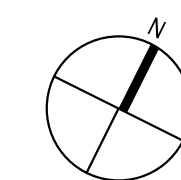
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ARCHITECTURAL
FLOOR PLANS

A1.4



NOT FOR
CONSTRUCTION



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RCE AVE

295'-7"

71'-9"

165'-5"

85'-11"

COURTYARD BELOW
FF +/- 855

COURTYARD/
AMENITY SPACE
BELOW

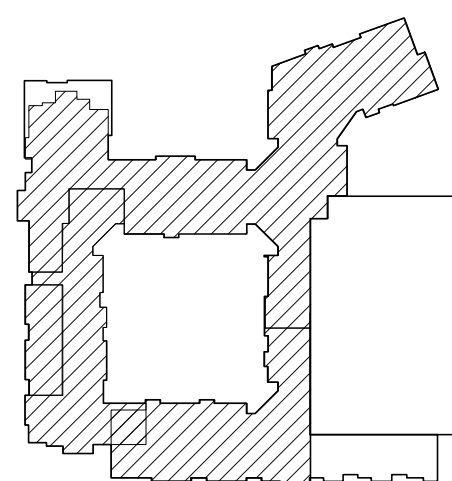
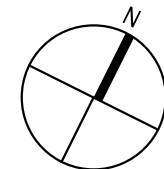
GARAGE BELOW

ROOF BELOW

RCE PARKWAY

48TH STREET

FLOOR PLAN
LEVEL +/- 984
SCALE: 1" = 20'



KEY PLAN

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RCE AVE

296'-5"

57'-0"

COURTYARD BELOW
FF +/- 955

COURTYARD/
AMENITY SPACE
BELOW

ROOF BELOW

ROOF BELOW

ROOF BELOW

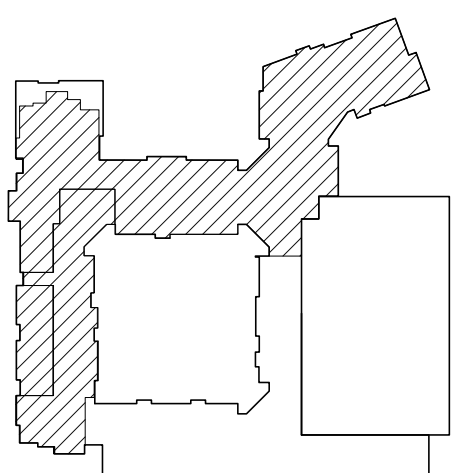
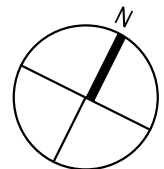
GARAGE BELOW

65'-11"

48TH STREET

RCE PARKWAY

FLOOR PLAN
LEVEL +/- 995
SCALE: 1" = 20'



KEY PLAN

ROELAND PARK MIXED-USE PROJECT

EPC REAL ESTATE GROUP, LLC

ROE AVE AND W 48TH ST
ROELAND PARK, KS 66205

FINAL
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ARCHITECTURAL
FLOOR PLANS

A1.7

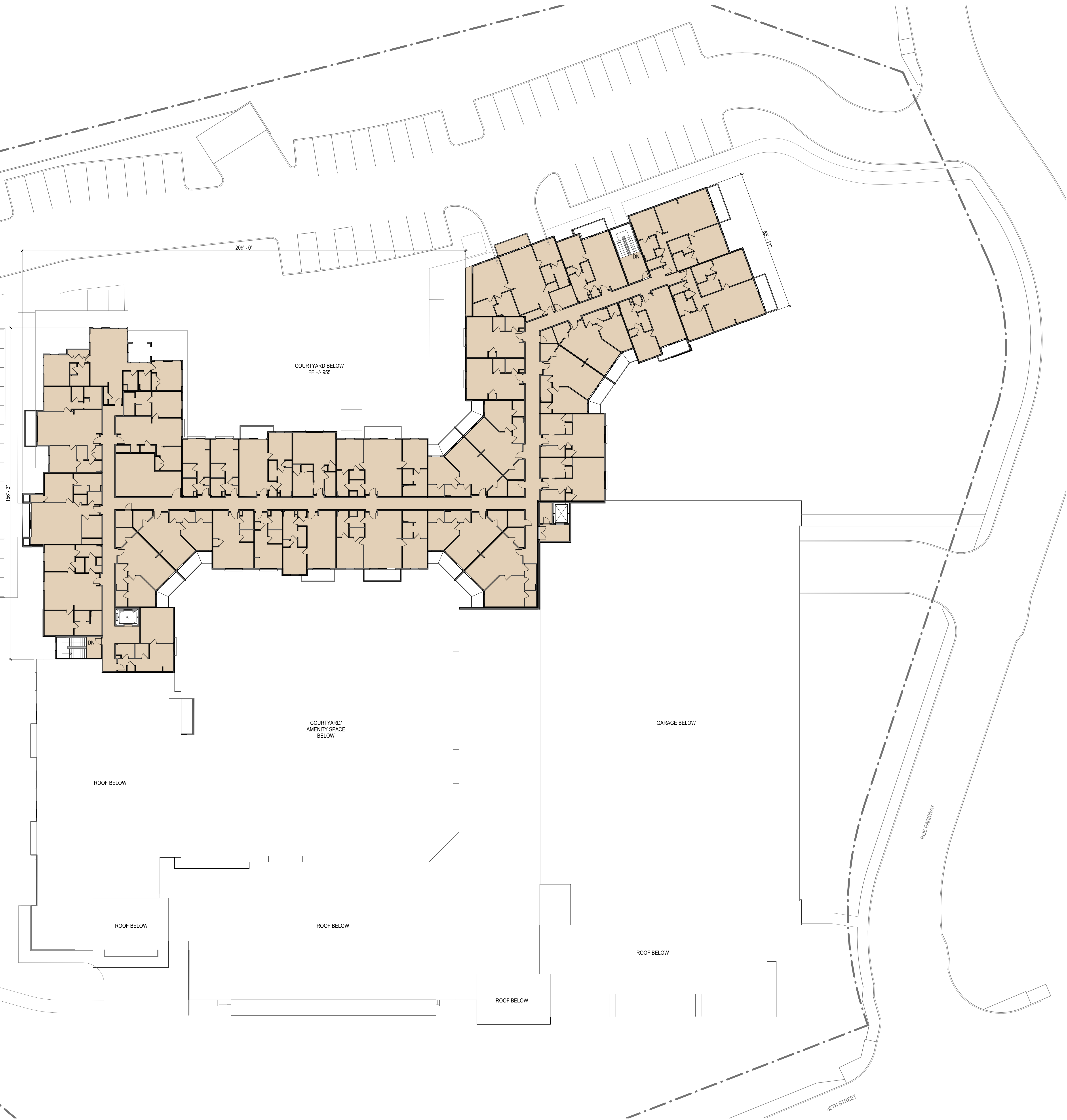
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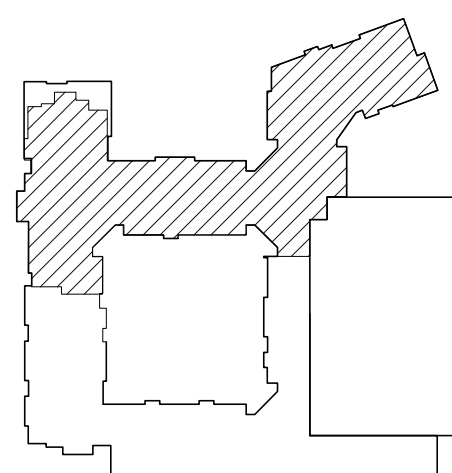
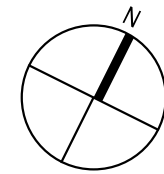
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ROE AVE



FLOOR PLAN
LEVEL +/- 1006
SCALE: 1" = 20'



KEY PLAN

ROELAND PARK MIXED-USE PROJECT

EPC REAL ESTATE GROUP, LLC
ROE AVE AND W 48TH ST
ROELAND PARK, KS 66205

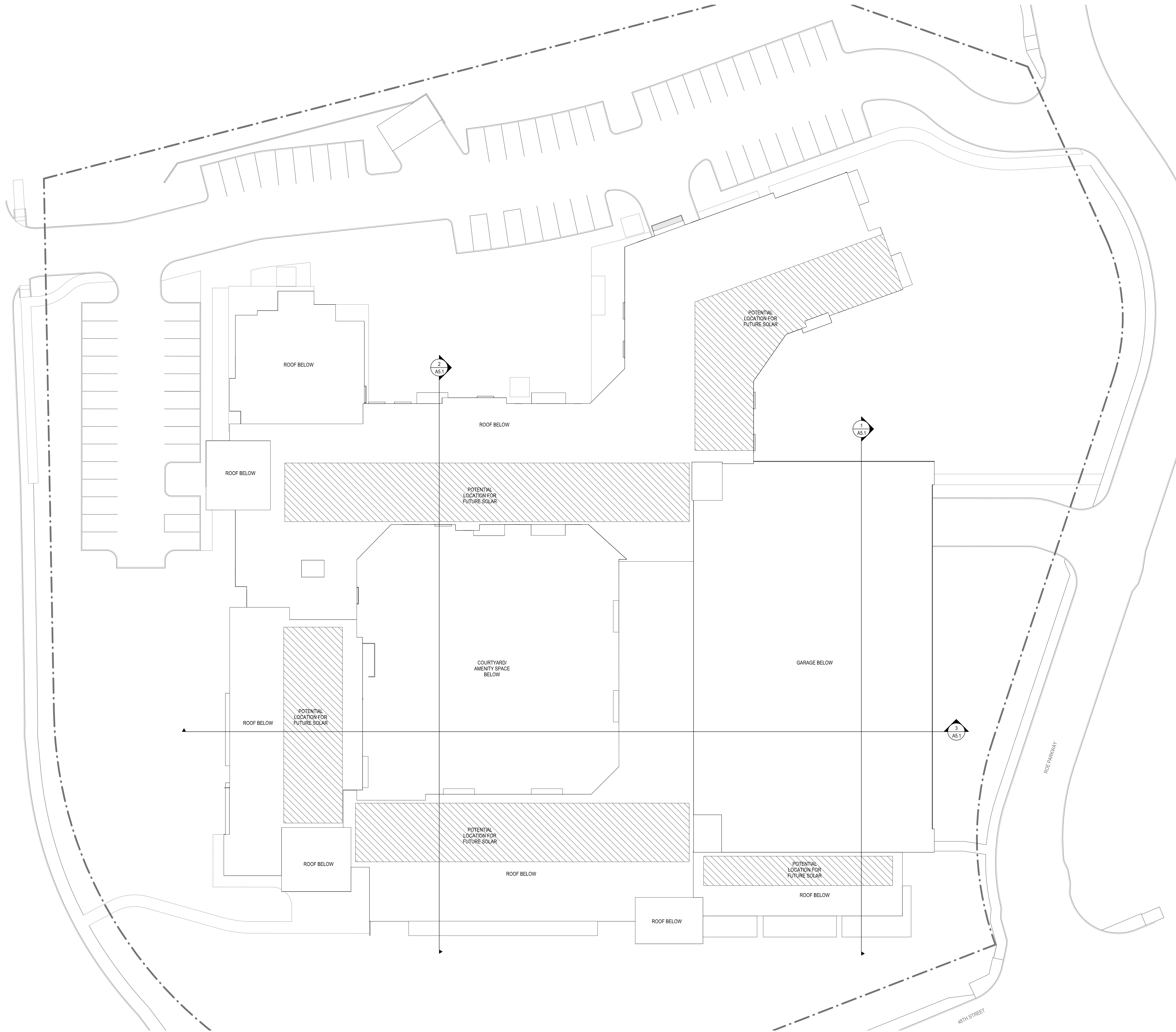
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DEVELOPMENT
PLAN
03/10/2023
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12-22109-00
ARCHITECTURAL
FLOOR PLANS

NOT FOR
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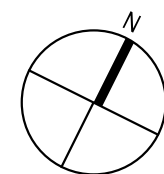
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3/30/2023 10:22:39 AM

ROE AVE



ROOF PLAN

0 10 20 40
SCALE: 1" = 20'



*THE PROJECT WILL CONFORM WITH THE ROELAND PARK SOLARD READY ORDINANCE (SECTION 4-1403). AREAS SHOWN ON THIS PLAN ARE CONCEPTUAL IN NATURE AND WILL BE FINALIZED FOR REVIEW WITH THE BUILDING PERMIT SUBMISSION.

ROELAND PARK MIXED-USE PROJECT

EPC REAL ESTATE GROUP, LLC
ROE AVE AND W 48TH ST
ROELAND PARK, KS 66205

FINAL DEVELOPMENT PLAN
03/10/2023
REVISIONS

12-22109-00
ROOF PLAN



SOUTH ELEVATION
SCALE: 1" = 20'-0"

0' 5' 10' 20' 40'



WEST ELEVATION
SCALE: 1" = 20'-0"

0' 5' 10' 20' 40'

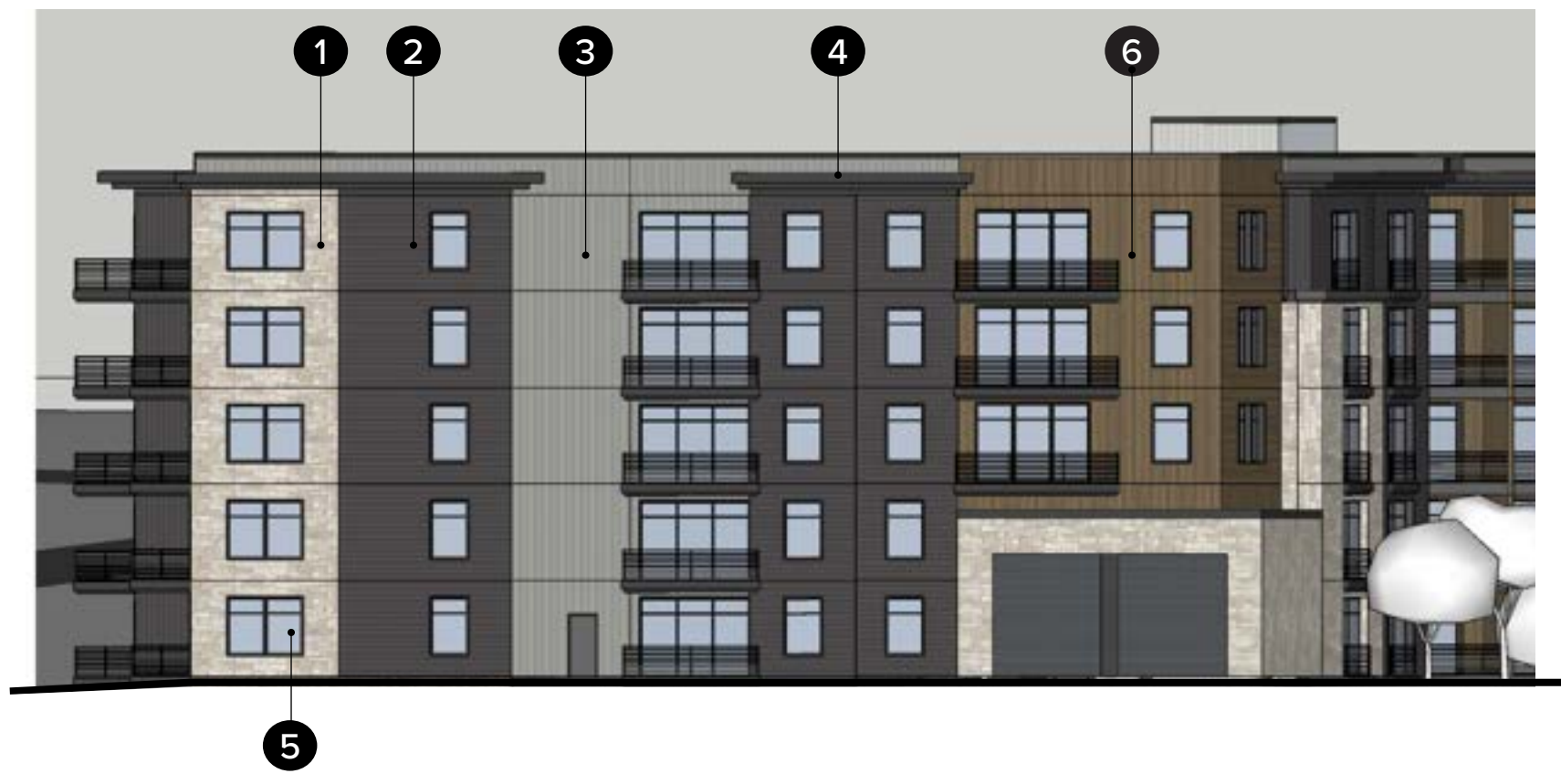


EAST ELEVATION
SCALE: 1" = 20'-0"

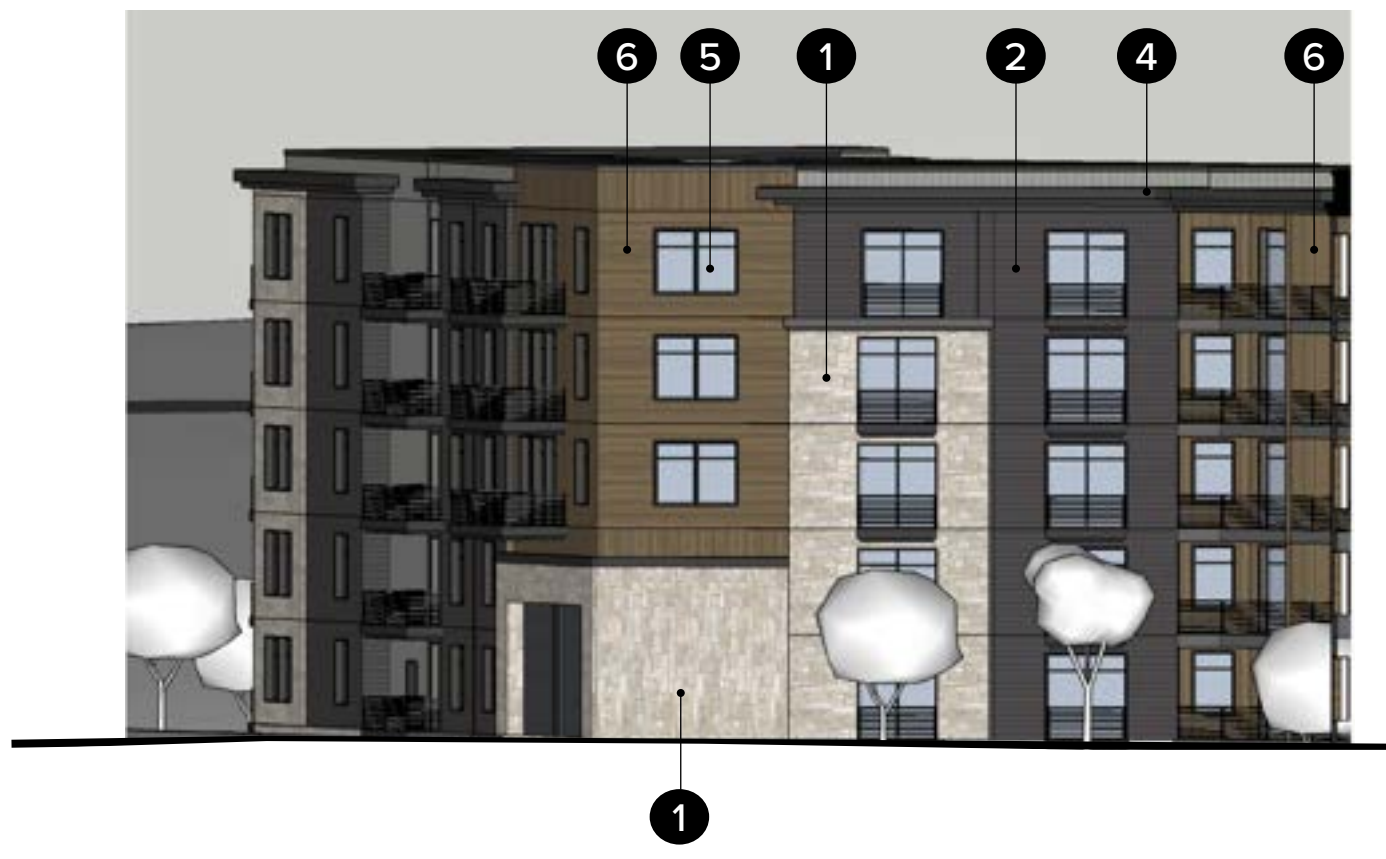
0' 5' 10' 20' 40'

MATERIAL LEGEND

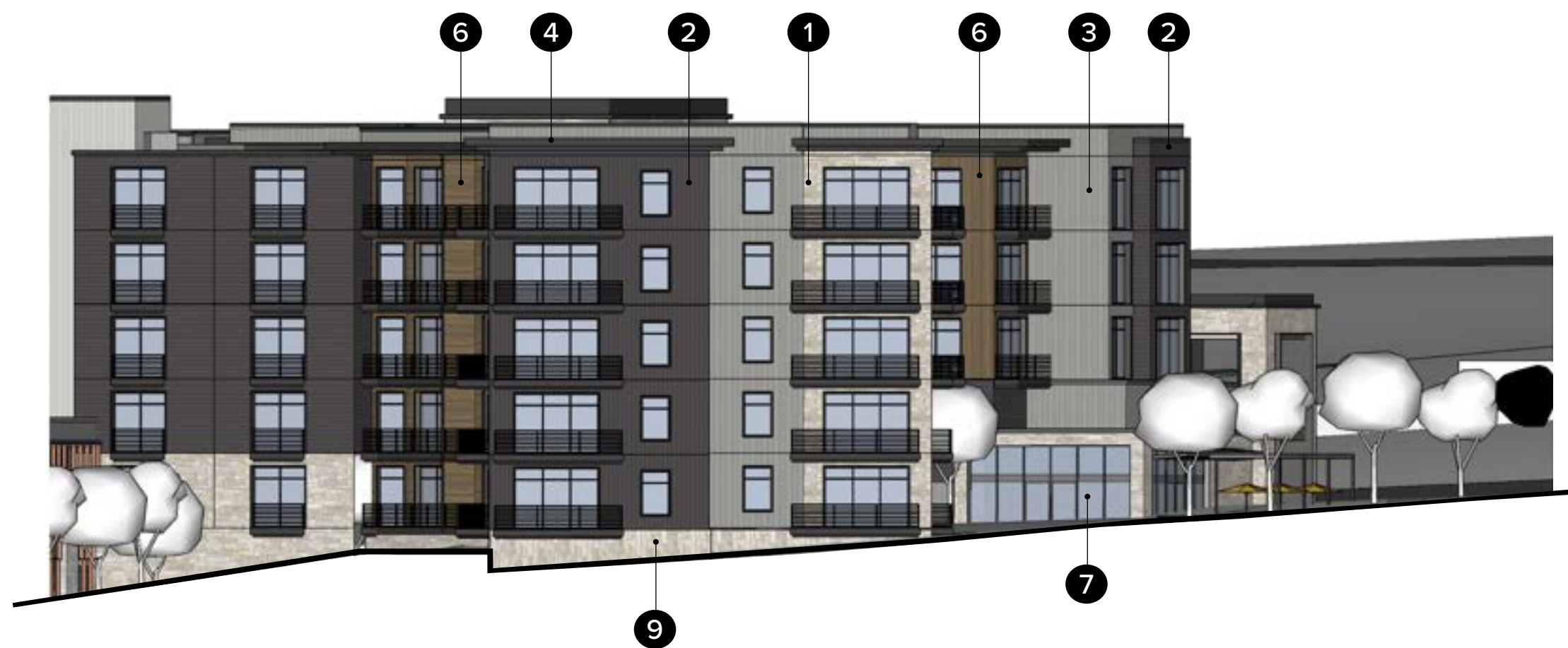
- 1 EL DORADO CULTURED STONE**
COLOR: WHITEBARK OR SIMILAR
TEXTURE: CLIFFSTONE
- 2 HARDIE BOARD LAP SIDING**
COLOR: TIMBER BARK OR SIMILAR
TEXTURE: CEDAR MILL
- 3 HARDIE BOARD + BATTEN SIDING**
COLOR: STONE BEACH OR SIMILAR
TEXTURE: SMOOTH
- 4 METAL FASCIA AND SOFFIT**
COLOR: SPARTAN BRONZE OR SIMILAR
- 5 ALUMINUM OR VINYL WINDOWS**
COLOR: DARK BRONZE OR SIMILAR
- 6 HARDIE BOARD + BATTEN SIDING**
COLOR: JUTE BROWN OR SIMILAR
TEXTURE: CEDAR MILL
- 7 ALUMINUM STOREFRONT FRAMING**
COLOR: DARK BRONZE OR SIMILAR
- 8 PAINTED ALUMINUM OR WOOD BATTENS**
COLOR: HAZELNUT MICA OR SIMILAR
- 9 SPLIT FACE CONCRETE BLOCK**
COLOR: WHITE BARK OR SIMILAR
(TO MATCH CULTURED STONE)
- 10 PRECAST CONCRETE**
COLOR: STONE BEACH OR SIMILAR
TEXTURE: SMOOTH



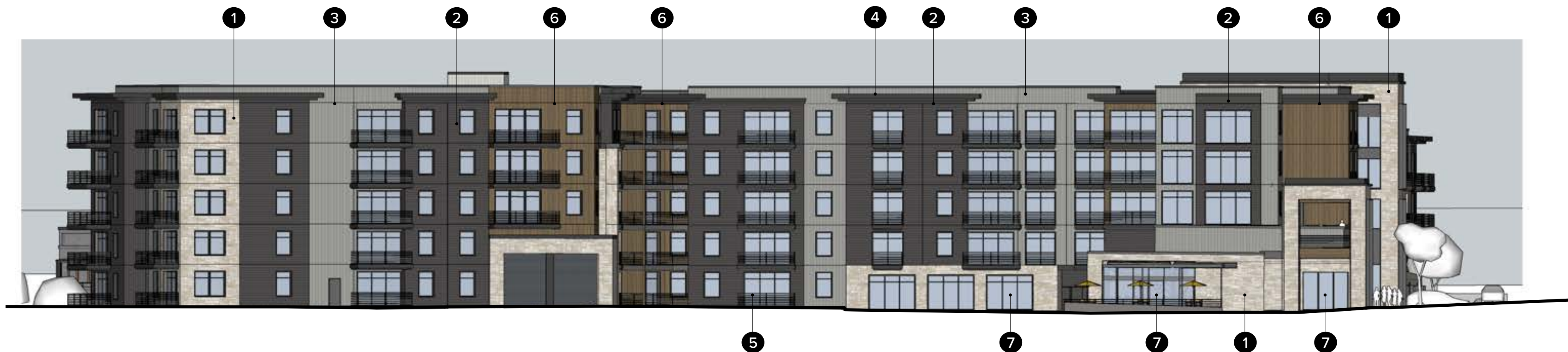
PARTIAL NORTH ELEVATION
SCALE: 1" = 20'-0"



PARTIAL WEST ELEVATION
SCALE: 1" = 20'-0"



PARTIAL EAST ELEVATION
SCALE: 1" = 20'-0"



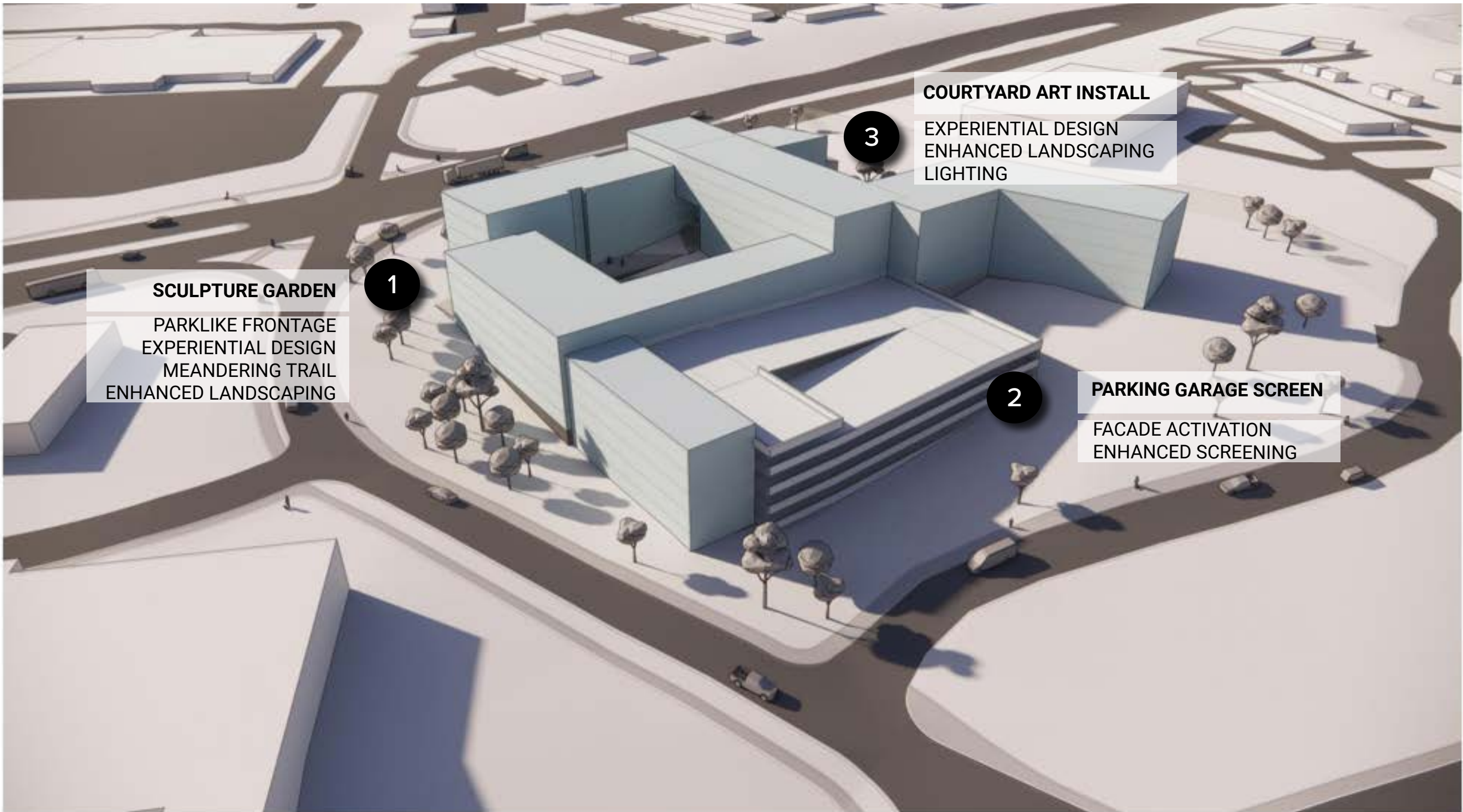
NORTH ELEVATION
SCALE: 1" = 20'-0"

MATERIAL LEGEND

- 1 EL DORADO CULTURED STONE
COLOR: WHITEBARK OR SIMILAR
TEXTURE: CLIFFSTONE
- 2 HARDIE BOARD LAP SIDING
COLOR: TIMBER BARK OR SIMILAR
TEXTURE: CEDAR MILL
- 3 HARDIE BOARD + BATTEN SIDING
COLOR: STONE BEACH OR SIMILAR
TEXTURE: SMOOTH
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COLOR: HAZELNUT MICA OR SIMILAR
- 9 SPLIT FACE CONCRETE BLOCK
COLOR: WHITE BARK OR SIMILAR
(TO MATCH CULTURED STONE)
- 10 PRECAST CONCRETE
COLOR: STONE BEACH OR SIMILAR
TEXTURE: SMOOTH



VIEW OF CORNER FROM ROE BLVD & 48TH STREET

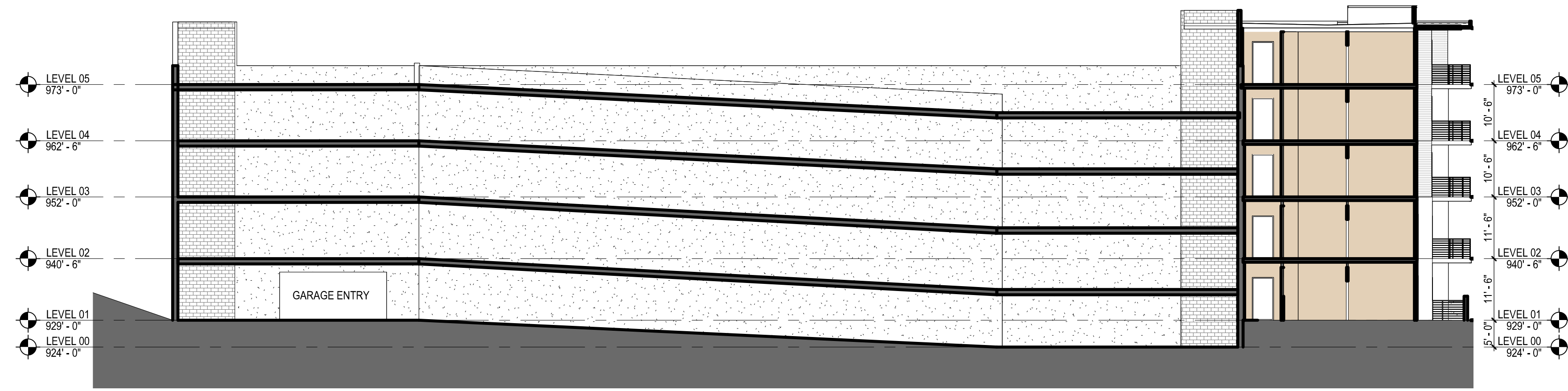


PROPOSED PUBLIC ART LOCATIONS
(COULD BE ONE OR MORE OF THESE BASED ON FURTHER COLLABORATION WITH OWNERSHIP AND ARTIST)

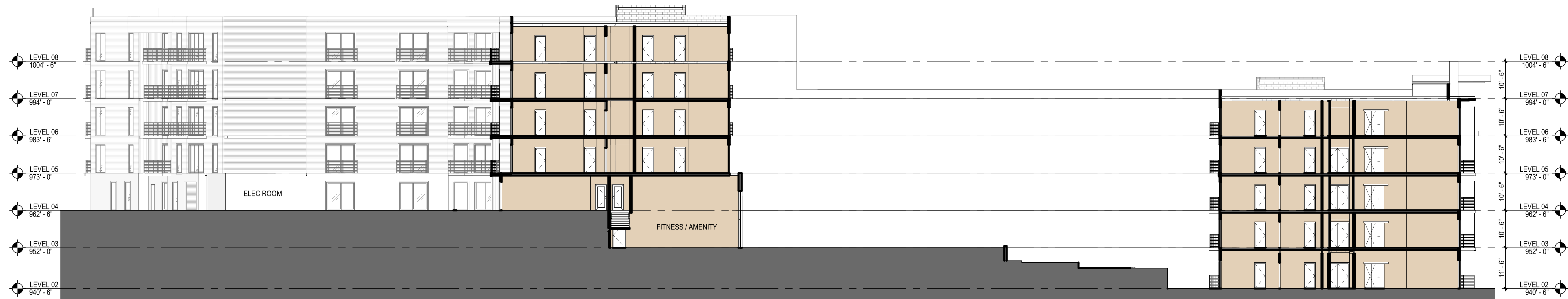


VIEW OF COMMERCIAL SPACE FROM NORTHWEST VEHICULAR ACCESS

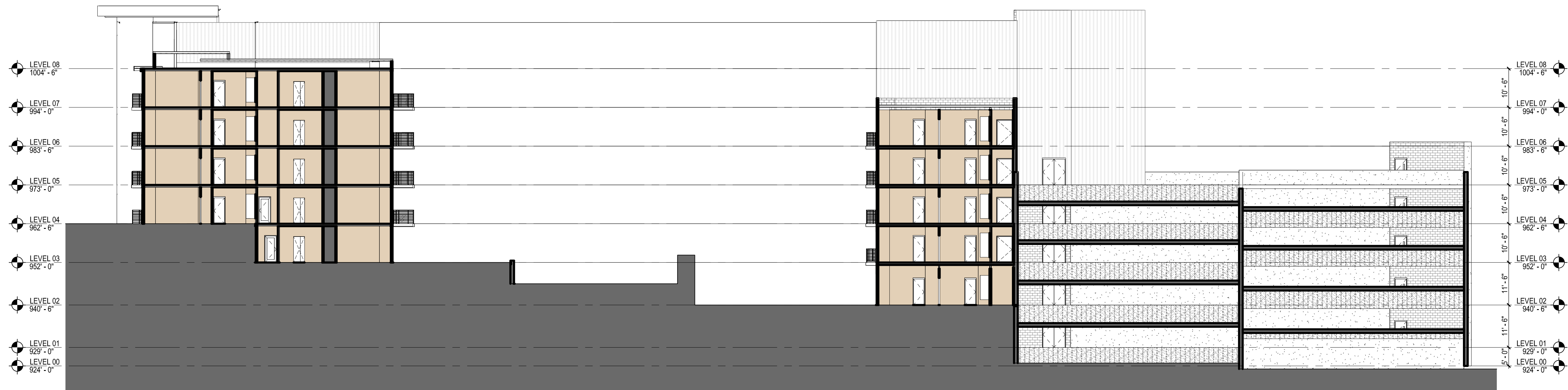
Autodesk Docs\\12-22109-00 Roland Park - Mixed Use\\12-22109-00_Roland Park - Mixed Use_A5_2022.rvt
3/30/2023 10:22:49 AM



SECTION THROUGH PARKING GARAGE LOOKING EAST



SECTION THROUGH COURTYARD LOOKING EAST



SECTION THROUGH COURTYARD LOOKING NORTH

DRAINAGE MEMORANDUM

March 10th, 2023

SUBJECT:

Roeland Park Mixed-Use
4800 Roe Parkway
Roeland Park, KS 66205
Johnson County, KS
Kansas Uniform Parcel #: 0460620401006002000

PROJECT AREA: 5.79 Acres

INTRODUCTION:

This drainage memorandum (memo) provides a summary of the existing and proposed conditions, related to the development of the site located at 4800 Roe Parkway in Roeland Park, Kansas. The project is anticipated to include multi-family units, a restaurant, a structured parking garage, as well as surface parking. Additionally, it will include private access drives, storm sewer, erosion control, sanitary sewer, and waterline. The site will be served by an underground detention facility which was constructed by the city to account for the future development of this site. The detention facility is located to the east of Roe Parkway. The overall project site is approximately 5.79 acres, and the project limits (disturbed area) will be approximately the same.

EXISTING CONDITIONS:

The site is located on the northeast corner of Roe Avenue and West 48th Street. The existing drainage areas can be found in the calculations section below. The site generally drains northwest to southeast, collecting at a low point in the southeast corner of the site and then entering an existing storm sewer system through curb inlets found along Roe Parkway. The storm sewer system connects to the existing underground detention that was designed to serve future development, as well as, a portion of the existing development directly north of the site along 18th Street Expressway. The underground detention consists of 6 rows of 60-inch perforated HDPE pipe placed on a suitable foundation and surrounded by clean stone wrapped in a geotextile fabric. The water is detained within the perforated pipes and allowed to slowly release into the surrounding fill. It is then routed through the system's underdrains to a flow control structure, which ensures peak flows during the 2-,10-, and 100-year storms in the post-development condition will be at or below the peak flows in the pre-development condition. Prior to entering the underground detention system, the drainage is filtered through a debris-separating baffle box. The baffle box promotes water quality by routing a treatment flow (typically the first-flush volume) through a non-clogging screen and hydrodynamic separator to capture sediments and other pollutants. The sediment and other undesirable materials are filtered out of the runoff and removed during regular maintenance.

PROPOSED CONDITIONS:

The proposed development and associated site improvements will maintain the existing drainage patterns. Runoff will generally drain from west to east across the site. The water will be routed through new catch basins and private storm sewer system toward the existing storm inlets along Roe Parkway and into the existing detention facility. The volume and intensity of flow of the runoff from the proposed mixed-use development is adequately detained and released by the existing underground detention system. This is achieved by keeping the impervious area in the “actual” proposed development at or below the impervious area the underground detention facility was designed to treat from the “expected” proposed development. The runoff coefficient for the actual proposed development is **0.63**, while the runoff coefficient that the detention facility was designed for is **0.78**. Furthermore, the underground detention facility design accounts for water quality treatment by providing upstream baffle boxes and infiltration. Thus, additional water quality treatment measures are not necessary and are not provided as part of our design. The proposed area breakdowns for the proposed site can be found in the calculations section below.

CALCULATIONS:

	Existing		Proposed	
Parameter	Area (SF)	Area (AC)	Area (SF)	Area (AC)
Impervious Area	48,776	1.12	46,704	1.07
Building	9,867	0.23	91,344	2.10
Pervious Area	193,551	4.44	114,146	2.62
Total	252,194	5.79	252,194	5.79
Runoff Coefficient "C"	0.44		0.63	

CLOSURE

As discussed above, the site impacts due to the proposed project are within the scope of what was planned during the design of the underground detention facility. The amount of impervious surface area for the proposed development is lower than what was expected, resulting in reduced stormwater peak flow rates and volume that were expected to be exiting the site. The existing storm sewer and adjacent underground detention provide sufficient water quality treatment for the site; thus, no additional water quality treatment measures are provided as part of the proposed design. Because impervious surface area is not increasing compared to expected development, and drainage patterns as a whole remain unchanged, no additional stormwater management facilities or improvements are being proposed.

KIMLEY-HORN AND ASSOCIATES, INC.



Matthew Kist, P.E.

March 3, 2023

Mr. Brian Crawford, AIA, NCARB
DRL Group
7290 West 133rd Street
Overland Park, KS 66213

Re: Traffic Review of Updated Site Plan
Roeland Park Mixed-Use development

Dear: Mr. Crawford:

Kimley-Horn is updating plans for the Roeland Park Mixed-Use development, located at the northeast corner of the 48th Street & Roe Boulevard intersection in Roeland Park, Kansas. A traffic impact study was prepared for the development on December 16, 2022. The study found that the proposed development is projected to generate 1,675 daily trips, 148 trips in the AM peak hour, and 141 trips in the PM peak hour. The study identified a short southbound right-turn lane on Roe Parkway at the intersection with 48th Street to mitigate the addition of development traffic.

As the design process has continued some changes have been made to the site plan since the traffic impact study was completed. The revised site plan is attached to this letter. The garage access driveway has been moved to the north and will intersect Roe Parkway roughly 230 feet north of 48th Street. This provides greater spacing from the 48th Street intersection. The service driveway along Roe Parkway has been removed. A service driveway will instead be provided along the north side of the proposed building and will be accessible from the north driveway. These changes will improve access management along Roe Parkway when compared to the previous site plan.

Originally, 280 residential units were included in the previous site plan. The number of residential units is expected to increase by eight or nine units in the revised plan. This is a minor change as it is only a three-percent increase in the number of units. This minor change will have a negligible impact on capacity analysis results presented in the traffic impact study. Therefore, the analysis presented in the traffic study is representative of conditions with the revised site plan as well.

We appreciate the opportunity to be of service to you. Please contact me if you have any questions.

Sincerely,

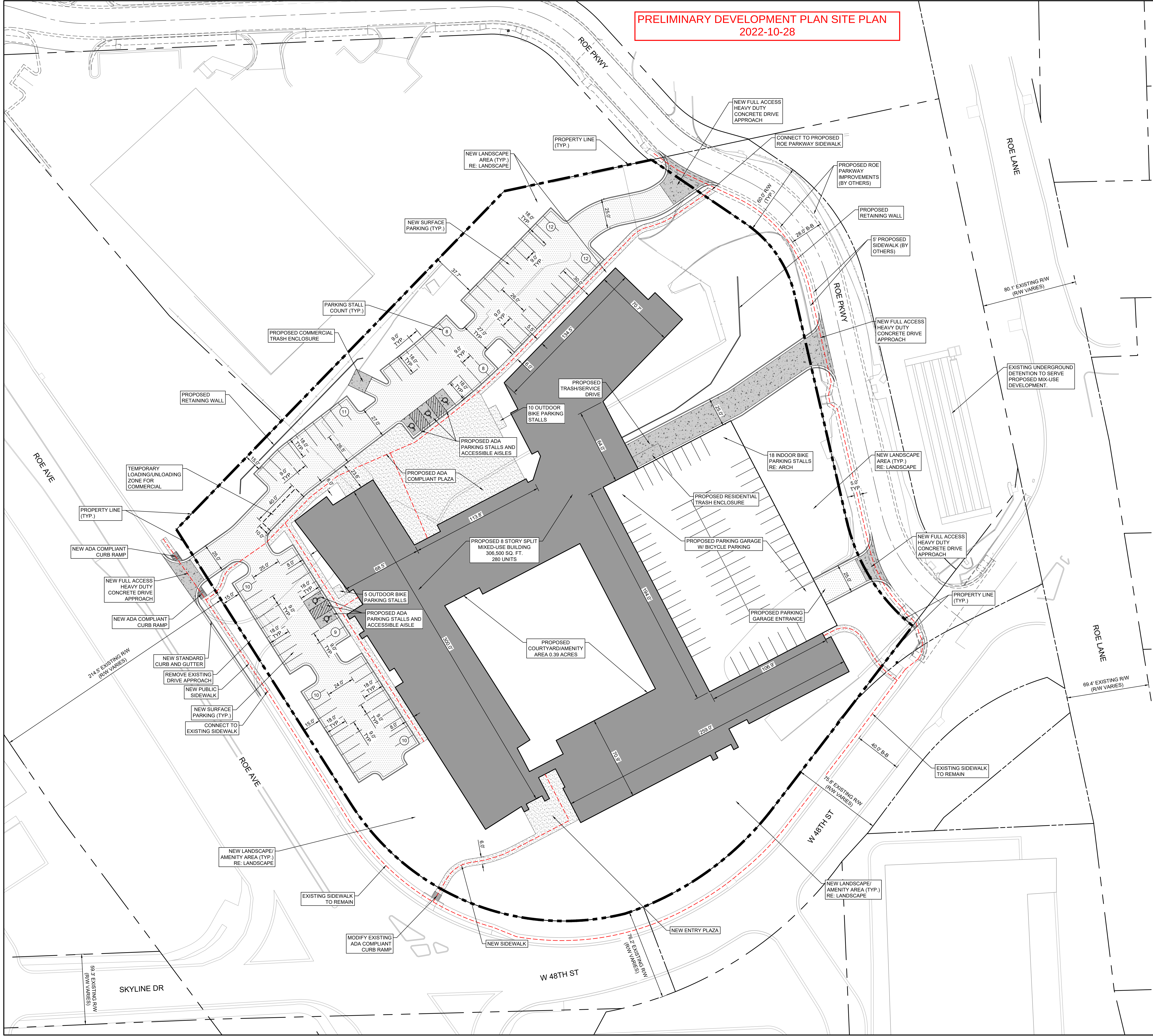
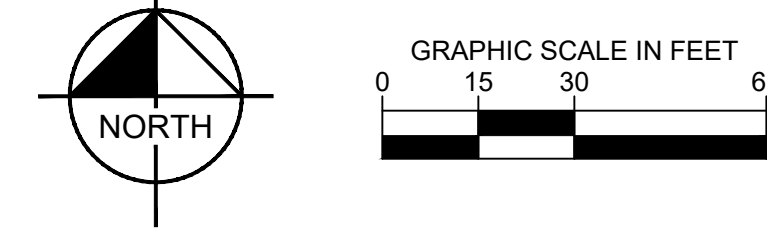


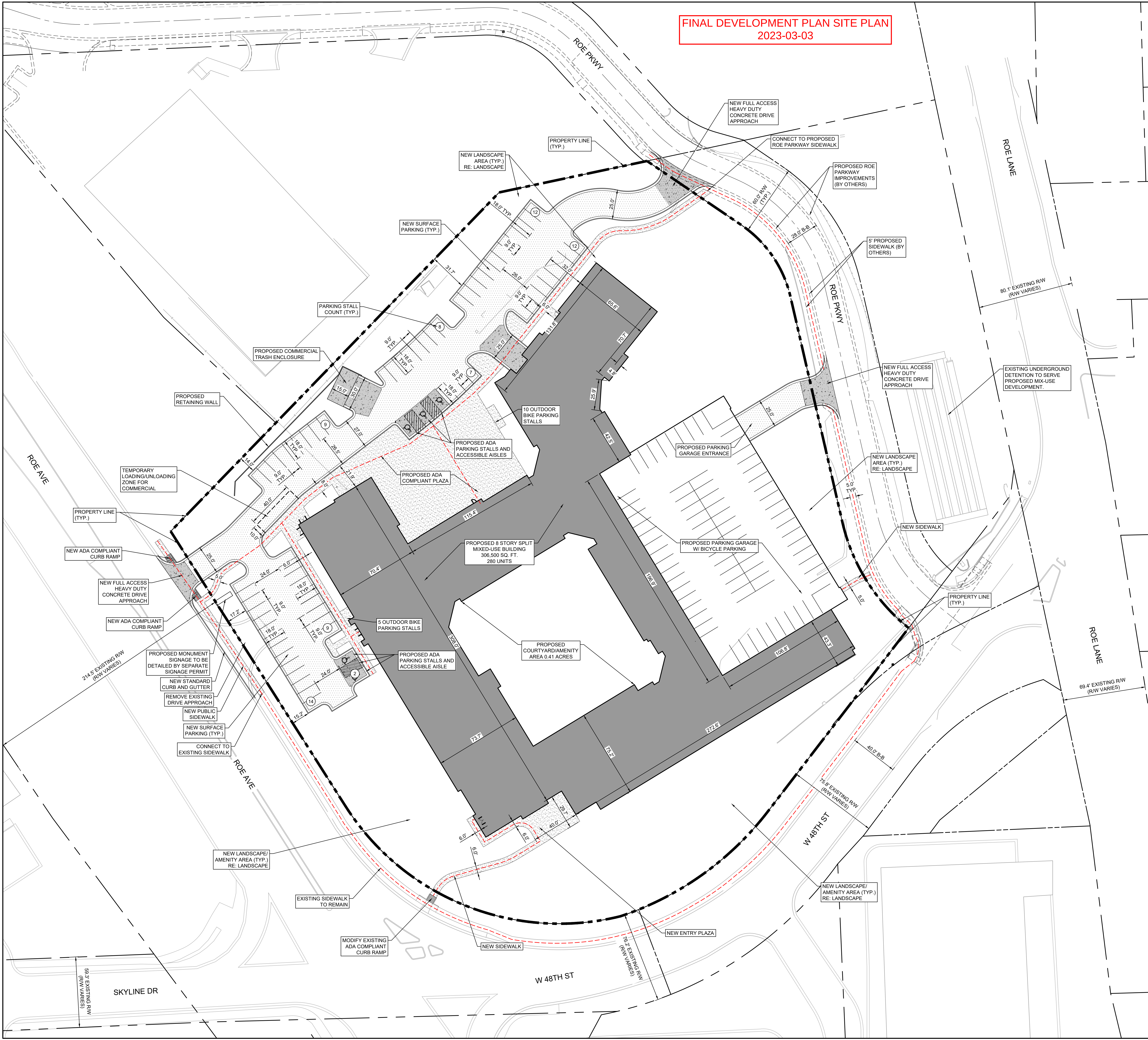
Jeffrey J. Wilke, PE, PTOE

PRELIMINARY DEVELOPMENT PLAN SITE PLAN
2022-10-28

SITE PLAN LEGEND	
	STANDARD DUTY ASPHALT PAVEMENT
	HEAVY DUTY CONCRETE PAVEMENT
	CONCRETE SIDEWALK
	STANDARD CURB & GUTTER
	PEDESTRIAN NETWORK ROUTE

Development Summary Table		
A	Zoning	
	Existing	CP-2
B	Proposed	MXD
	Total Land Area	
C	Existing	5.79 Acres
	Right-of-way	
	Existing	0.00 Acres
D	Proposed	0.00 Acres
	Net Land Area	
	Existing	5.79 Acres
E	Proposed	5.79 Acres
	Proposed Uses	
F	Mixed-Use (Multi-Family, Restaurant, & Amenity)	
	Structure Height & # of floors	
	Number of Floors	8
G	Structure Height	95 ft
	Gross Floor Area & # of Units	
	Total Building Count	1
H	Total Gross Floor Area (SF)	306,500
	Total Unit Count	280
	Vehicle Parking	
I	Parking Stalls Required*	330
	Private Garage Stalls Provided	300
	Public Surface Stalls Provided	90
	ADA Parking Stalls Required	5
	ADA Parking Stalls Provided	5
	Total Parking Stalls Provided	390
J	Bike Parking	
	Stalls Required*	33
K	Stalls Provided	33
	Timeline	
	Estimated Start Date	6/1/2023
L	Estimated Completion Date	12/1/2024
	Requested Deviations	
M	1. Request to Allow Parking Between Structure and Roe Avenue Right-Of-Way	
	*Parking Notes:	
N	Multi-Family: 1.0 Stall/ 1 Bed Dwelling Unit	
	1.5 Stall/ 2 Bed Dwelling Unit	
	Restaurants: 6 Stall/ 1000 SF	
	Bike Parking: 1 Stall/ 10 Required Parking Stalls	
O	Handicap Parking: 1 Stall/ 25 Stalls Rounded Up	



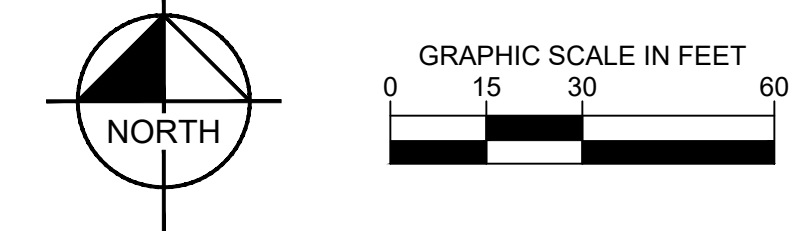


FINAL DEVELOPMENT PLAN SITE PLAN
2023-03-03

SITE PLAN LEGEND

- STANDARD DUTY ASPHALT PAVEMENT
- HEAVY DUTY CONCRETE PAVEMENT
- CONCRETE SIDEWALK
- STANDARD CURB & GUTTER
- PEDESTRIAN NETWORK ROUTE

Development Summary Table		
A	Zoning	
	Existing	MXD
B	Proposed	MXD
	Total Land Area	
C	Existing	5.79 Acres
	Right-of-way	
D	Existing	0.00 Acres
	Proposed	0.00 Acres
E	Net Land Area	
	Existing	5.79 Acres
F	Proposed	5.79 Acres
	Proposed Uses	
G	Mixed-Use (Multi-Family, Restaurant, & Amenity)	
	Structure Height & # of floors	
H	Number of Floors	8
	Structure Height	95 ft
I	Gross Floor Area & # of Units	
	Total Building Count	1
J	Total Gross Floor Area (SF)	306,500
	Total Unit Count	288
K	Vehicle Parking	
	Parking Stalls Required*	338
L	Private Garage Stalls Provided	300
	Public Surface Stalls Provided	73
M	ADA Parking Stalls Required	5
	ADA Parking Stalls Provided	5
N	Total Parking Stalls Provided	373
	Bike Parking	
O	Stalls Required*	33
	Stalls Provided	33
P	Timeline	
	Estimated Start Date	6/1/2023
Q	Estimated Completion Date	12/1/2024
	Requested Deviations	
R	1. Request to Allow Parking Between Structure and Roe Avenue Right-Of-Way	
	*Parking Notes:	
S	Multi-Family: 1.0 Stall/ 1 Bed Dwelling Unit	
	1.5 Stall/ 2 Bed Dwelling Unit	
T	Restaurants: 6 Stall/ 1000 SF	
	Bike Parking: 1 Stall/ 10 Required Parking Stalls	
U	Handicap Parking: 1 Stall/ 25 Stalls Rounded Up	



Traffic Impact Study

Roeland Park Mixed Use



ROELAND PARK, KANSAS

DECEMBER 2022



Prepared By:

12/16/2022

Kimley»Horn

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EXHIBITS (SEE APPENDIX A)

- EXHIBIT 1: PROJECT SITE LOCATION AND STUDY AREA
- EXHIBIT 2: EXISTING PEAK HOUR TRAFFIC VOLUMES
- EXHIBIT 3: EXISTING GEOMETRY AND INTERSECTION CONTROL
- EXHIBIT 4: SITE TRIP DISTRIBUTION
- EXHIBIT 5: PROJECT TRAFFIC
- EXHIBIT 6: EXISTING + DEVELOPMENT PEAK HOUR TRAFFIC PROJECTIONS
- EXHIBIT 7: ALTERNATE EXISTING + DEVELOPMENT PEAK HOUR TRAFFIC PROJECTIONS

1.0 INTRODUCTION

This report serves as the traffic analysis for the Roeland Park Mixed Use development, located at the northeast corner of the 48th Street & Roe Boulevard intersection in Roeland Park, Kansas. The location of the proposed development is shown on **Exhibit 1** in **Appendix A**.

The following traffic analysis focused on analysis of Existing Year (2022) to serve as the baseline for analysis in this study.

1.1 REPORT PURPOSE AND OBJECTIVES

The purpose of this study is to address traffic and transportation impacts of the proposed development on surrounding streets and intersections. This traffic impact study was prepared based on criteria set forth by the City's on-call engineering consultant. The following information is provided:

- A description and map of the existing and proposed street network to be affected by the proposed development. This information includes existing and proposed roadway characteristics as well as existing year (2022).
- Trip generation calculations based on the Institute of Traffic Engineers (ITE) Trip Generation Manual, 11th Edition, for the proposed development. In addition, projected trip distributions onto the street network are provided.
- Analysis of impacts of the traffic generated by the proposed development on the street network, including analysis of peak period levels of service (LOS), delay times, and queuing at study area intersections.
- Discussion of potential improvements and traffic management measures identified to mitigate operational concerns.

In summary, the study is to determine the trip generation of the Roeland Park Mixed Use development, assign new development trips to the street network, analyze various scenarios to determine the impacts of proposed site traffic, and identify potential mitigation measures needed to achieve acceptable operations at the study intersections.

2.0 EXISTING CONDITIONS

2.1 STUDY AREA

The proposed development site is located near the northern city limit of Roeland Park. The 5.8-acre site is bounded by Roe Boulevard, 48th Street, Roe Parkway, and an existing business park. The majority of the site is currently undeveloped. The maintenance facility for the Roeland Park Public Works department is located on the northern portion of the site. The existing building is to be demolished to clear the site for the proposed development.

The site is surrounded primarily by commercial land uses. To the north of the site is an existing business park that is accessed from Roe Parkway. To the east of the site, there are single-family homes to the south of 47th Street, and apartments to the north of 47th Street. South of 48th Street, there is a fast-food restaurant, grocery store, and a gas station with a convenience store. West of Roe Boulevard there is a shopping center south of 48th Street and apartments to the north of 48th Street.

Through discussion with City's on-call engineering consultant, the following intersections were included within the study area for the traffic analysis. The list provides the existing intersection control for each of the study intersections.

- 48th Street & Roe Boulevard (Traffic Signal)
- 48th Street & Roe Parkway (Side Street Stop)
- 48th Street & Roe Lane (Traffic Signal)

2.2 STREET NETWORK

The existing street network within the study area includes Roe Boulevard, Roe Parkway, Roe Lane, 48th Street, and 47th Street. Each of these roadways are part of one or more of the study intersections. The following provides a summary of the characteristics of the existing streets within the study area:

Roe Boulevard is a four-lane divided north/south arterial street that runs along the west edge of the development site. Roughly one-half mile north of the site, Roe Boulevard provides access to the regional highway system at an interchange with I-35. To the south of the intersection with 48th Street, Roe Boulevard is the main commercial corridor in Roeland Park. To the south of 48th Street there is a sidewalk along the east side of the street and a shared-use path along the west side of the street. To the north of 48th Street the sidewalk ends. The posted speed limit is 35 miles per hour (mph).

48th Street is a two-lane east/west collector type street running along the south edge of the development site. To the east of the intersection with Roe Lane, there are several horizontal curves, and the street name changes to 47th Street. Within the study area, there are generally sidewalks along each side of 47th and 48th Streets. The posted speed limit is 30 mph.

Roe Parkway is a two-lane north/south local street that runs north of 48th Street, along the east edge of the development site. The street is a cul-de-sac that provides access to the Roeland Business Park. Currently the section of the street adjacent to the development site does not have curbs and the width of the asphalt pavement varies. The street has a steep uphill grade when traveling from south to north, and there are some horizontal curves with small radii. There is no posted speed limit on Roe Parkway.

Roe Lane is a two-lane north/south collector type street that runs to the east of the development site. To the south of 48th Street, Roe Lane curves to the west and intersects Roe Boulevard. There are sidewalks

along both sides of the street to the south of 48th Street. To the north of 48th Street, there is a section of sidewalk along the east side of the road that is not continuous. There are sections of bike lanes on Roe Lane to the north and south of the turn lanes at the 48th Street intersection. The posted speed limit is 30 mph.

2.5 DATA COLLECTION

Turning Movement Counts (TMCs) were collected at the study intersections on Tuesday, November 15, 2022. The turning movement count data is included in **Appendix B**. The AM peak hour occurred between 7:30 AM and 8:30 AM, and the PM peak hour occurred between 4:30 PM and 5:30 PM. The existing conditions peak hour turning movement volumes are shown on **Exhibit 2**. The existing geometry with lane configurations and intersection control at the study intersections is shown on **Exhibit 3**.

3.0 PROPOSED DEVELOPMENT

3.1 SITE DESCRIPTION

The proposed development includes a new multi-story building with 280 apartment units. A 5,000 square foot restaurant will also be located at ground level in the northwest corner of the building. The new building will have a courtyard in the center of the building and a parking garage along the east side. There will be surface parking lots on the north and west sides of the building.

The site plan for the proposed development is included in **Appendix C** for reference.

3.2 SITE CIRCULATION

Access to the site is proposed via four driveways, one on Roe Boulevard and three driveways on Roe Parkway. The right-in/right-out (RIRO) access on Roe Boulevard is to be located roughly 400 feet north of 48th Street. The RIRO access on Roe Boulevard will provide access to the surface parking lot on the northwest side of the site which serves the restaurant, leasing office, and apartment guests. The three driveways on Roe Parkway will all provide full access. The south driveway is located approximately 70 feet north of 48th Street and will provide access to the parking garage. The middle driveway will be a service driveway, located approximately 260 feet north of 48th Street. The service driveway will be used by trash trucks, moving trucks, and maintenance vehicles. The north driveway will connect to the surface parking lot on the north side of the site and is located approximately 460 feet north of 48th Street.

3.3 TRIP GENERATION

Trip generation estimates were prepared using the ITE *Trip Generation Manual*, 11th Edition. **Table 1** shows the expected trips to be generated by the proposed development. The total trip generation is anticipated to be 1,675 daily trips, 148 trips during the AM peak hour (46 entering and 102 exiting), and 141 trips during the PM peak hour (87 entering and 54 exiting).

TABLE 1: TRIP GENERATION

Land Use Description	ITE LUC	Intensity / Units	Daily	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Multifamily Housing (Mid-Rise)	221	280 DU	1,289	26	86	112	67	43	110
High Turnover (Sit Down) Restaurant	932	5,000 SF	536	26	22	48	27	18	45
Total Trip Generation			1,825	52	108	160	94	61	155
Internal Capture Reduction			-150	-6	-6	-12	-7	-7	-14
Net Trip Generation			1,675	46	102	148	87	54	141

The trip generation estimates in Table 1 include trip reductions for internal capture. Internal capture is the portion of trips that stay within a mixed-use development without using the external street system. For the proposed development, internal capture would account for residents of the multifamily units that visit the restaurants or retail uses within the development. The procedure for estimating internal capture is included in ITE's Trip Generation Handbook from NCHRP Report 684.

Appendix D provides the data from the *ITE Trip Generation Manual* that were used to determine the trip generation for the proposed development.

3.4 PROJECT TRIP DISTRIBUTION AND ASSIGNMENT

The estimated trips generated by the proposed development were assigned to the street network based on the trip distribution summarized in **Table 2**. This distribution is based on existing traffic patterns, the existing street network, area demographics, and engineering judgment. The detailed distribution patterns through the study intersections are shown on **Exhibit 4**.

TABLE 2: TRIP DISTRIBUTION

Direction To/From	Percentage
North on Roe Boulevard	45%
South on Roe Boulevard	35%
North on Roe Lane	5%
East on 47 th Street	15%
Total	100%

Exhibit 5 shows the development trip assignment. The limited access driveway at Roe Boulevard will affect how drivers access the site. A large percentage of site traffic is expected to be traveling to/from I-35. Because of the RIRO access restriction at Roe Boulevard and the location of the parking garage access, most site traffic is anticipated to access the development via Roe Parkway. Northbound traffic on Roe Boulevard may enter the site at the RIRO driveway if they are destined for the restaurant or surface parking. When exiting the site, drivers may use the RIRO access to travel north on Roe Boulevard to I-35. Traffic exiting the site to travel south on Roe Boulevard will follow Roe Parkway to 48th Street.

The proposed development trip assignments were added to the Existing Conditions traffic volumes.

Exhibit 6 illustrates the Existing plus Proposed Development peak hour traffic volumes.

4.0 PLANNED IMPROVEMENTS

The City of Roeland Park has several improvements planned for Roe Parkway. Plans are currently being prepared to improve Roe Parkway adjacent to the site. The improvements include reconstructing the section of the street adjacent to the site and adding curbs and gutters on both sides of the street. The street will then have a consistent width of 28, measured between the backs of curbs. A sidewalk will also be constructed along the west side of the street. These improvements are anticipated to be constructed by the time the proposed development is completed.

Within the next five years, the city is planning to connect the north end of Roe Parkway to Roe Boulevard. With this connection, Roe Parkway would no longer be a cul-de-sac street, and the Roeland Business Park would have a second access point. The new intersection with Roe Boulevard would provide three-quarter access to Roe Parkway, which would allow for a southbound left-turn, northbound right-turn, and westbound right-turn movements. Roe Parkway would be stop sign controlled at the new intersection, while Roe Parkway would be allowed uninterrupted flow.

Connecting Roe Parkway to Roe Boulevard will have an impact on how drivers access the proposed development site. It is anticipated that site trips traveling to/from the north on Roe Boulevard will use the new Roe Parkway connection to access the site. Most of the existing traffic traveling to and from the Roeland Business Park would also be expected to use this new connection.

Exhibit 7 illustrates the Existing plus Development peak hour traffic volumes with the new Roe Parkway connection. This includes assigning site trips to/from the north to the new Roe Parkway connection. Adjustments to the existing volumes were also made to account for existing traffic diverting to the new street connection.

5.0 SIGHT DISTANCE

Sight distances is the length of a roadway that is visible to a driver. Sufficient sight distances should be provided to allow drivers to control their vehicles and avoid collisions. There are several aspects of sight distances that are applicable to the study intersections. First, stopping sight distance is the length to enable a driver to react and stop their vehicle before reaching an object in its path. Second, intersection sight distance is provided to allow the drivers of stopped vehicles to depart from their intersection approach and enter or cross the uncontrolled street. Intersections sight distances are generous, allowing enough distance for the stopped driver to complete their turning or crossing maneuver without requiring through traffic on the uncontrolled street to reduce their speed.

Sight distances were measured from the site plan and are provided in **Table 3**. The measured sight distances were compared to the recommended stopping and intersection sight distances from *A Policy on Geometric Design of Highways and Streets* (7th Edition), also referred to as the AASHTO Green Book published by the American Association of State Highway and Transportation Officials (AASHTO). There is no posted speed limit on Roe Parkway. It is assumed that the speed limit is 25 mph to be consistent with other local streets in Roeland Park. The horizontal curves on Roe Parkway have radii that only allow for speeds of 15 mph. Therefore, it is likely that vehicles on Roe Parkway are traveling at speeds closer to 15 mph.

TABLE 3: SIGHT DISTANCES

Intersection	Direction Looking	Sight Distance Measurement	Intersection Sight Distance (feet)		Stopping Sight Distance (feet)	
			25 mph	15 mph	25 mph	15 mph
Roe Parkway & Garage Access Drive	North	> 300	240	145	155	80
	South	N/A *	280	170	155	80
Roe Parkway & Service Access Drive	North	145	240	145	155	80
	South	> 300	280	170	155	80
Roe Parkway & North Access Drive	North	190	240	145	155	80
	South	140	280	170	155	80

*Sight distance is available to the end of Roe Parkway at the intersection with 48th Street

The sight distances in **Table 3** indicate that sight distances are limited at the service access drive and at the north access drive. The horizontal curves and grades limit sight lines. It is worth noting that all sight distances are greater than the stopping sight distance for 15 mph, therefore drivers on Roe Parkway will have enough sight distance to avoid collisions with turning traffic at the access drives. Due to the horizontal curves and sight distance limitations, Winding Road warning signs with 15 mph Advisory Speed plaques should be installed for each direction of travel on Roe Parkway. The signs should be installed in advance of the first curve that drivers encounter.

At this time of this study, the final site design and grading have not been completed. The final design will have an impact on sight distances. Therefore, sight distance should be evaluated in conjunction with the final site design to ensure adequate sight distances are provided.

6.0 INTERSECTION CAPACITY ANALYSIS

6.1 LEVEL OF SERVICE OVERVIEW

Intersection capacity analysis was performed at the study intersections for the following scenarios:

- Existing Conditions
- Existing plus Development
- Alternate Existing plus Development

The capacity analysis was performed for the weekday AM and PM peak hours using Synchro traffic modeling software to determine intersection delay and level of service (LOS). Calculations were performed based on the methodologies outlined in the *Highway Capacity Manual* (HCM). The 6th Edition of the HCM was used for analysis.

LOS is a quantitative measure used by traffic engineers to describe the operations of an intersection. It ranges from A to F, with A being the best and F being the worst level of operation. LOS A conditions are characterized by minimal vehicle delay and free-flow conditions, while LOS F is characterized by long vehicle delay – usually when demand exceeds available roadway capacity. **Table 4** shows the definition of LOS for unsignalized and signalized intersections.

TABLE 4: LEVEL OF SERVICE

Level of Service	Average Control Delay (seconds/vehicle) at:	
	Unsignalized Intersections	Signalized Intersections
A	0 – 10	0 – 10
B	> 10 – 15	> 10 – 20
C	> 15 – 25	> 20 – 35
D	> 25 – 35	> 35 – 55
E	> 35 – 50	> 55 – 80
F	> 50	> 80

Levels of service are evaluated based on the movement groupings which are required to yield to other traffic. Typically, these are left turns off the major street and the side street approaches for two-way stop-controlled intersections. For signalized intersections each movement grouping is evaluated, and LOS is evaluated for the intersection as a whole. All study intersections are side street stop controlled.

Although LOS E is defined as at-capacity, LOS D is generally considered the minimum acceptable level of operation at an intersection. At unsignalized intersections LOS E, or even F are often considered acceptable for low to moderate traffic volumes where the installation of a traffic signal is not warranted by the conditions at the intersection, or the location has been deemed undesirable for signalization.

The volume-to-capacity (v/c) ratio is a secondary measure of intersection performance. The v/c ratio represents the sufficiency of an intersection to accommodate the vehicular demand. A v/c ratio less than 0.85 generally indicates that adequate capacity is available, and vehicles are not expected to experience significant queues and delays. As the v/c ratio approaches 1.0, traffic flow may become unstable, and delay and queuing conditions may occur. Once the demand exceeds the capacity (a v/c ratio greater than 1.0), traffic flow is unstable and excessive delay and queuing is expected. The v/c ratio is important in

understanding low-volume movements that, due to their nature, may experience relatively high delays yet operate well under capacity.

Traffic queues were also evaluated as part of the analyses. Long traffic queues which extend beyond the amount of storage available, either between intersections or within turn lanes, can have significant impacts on operations. The 95th percentile vehicular queues were analyzed to ensure the analyses are reflective of the physical constraints of the study intersections and to identify if additional storage is needed for turn lanes. The 95th percentile queue represents the queue length that has only a 5% chance of being exceeded during the analysis period.

6.2 EXISTING CONDITIONS LEVEL OF SERVICE ANALYSIS

Capacity analysis was conducted for Existing traffic conditions at the study intersections to determine baseline conditions for the existing analysis year and to calibrate the models. The analysis was performed for weekday AM and PM peak hours and is based on the lane configurations, traffic controls, and traffic volumes shown on **Exhibits 2 and 3**.

Table 5 provides a summary of the capacity analysis at the study intersections. The Synchro reports are provided in **Appendix E**.

TABLE 5: EXISTING PEAK HOUR CONDITIONS

Intersection	Control	Movement	Operational Analysis Results							
			AM Peak Hour				PM Peak Hour			
			Delay (sec/veh)	LOS	v/c	95% Queue	Delay (sec/veh)	LOS	v/c	95% Queue
48 th Street & Roe Boulevard	Traffic Signal	EBL	23.5	C	0.31	77'	25.5	C	0.49	129'
		EB	29.2	C	0.57	80'	31.1	C	0.53	97'
		WBL	23.8	C	0.27	90'	26.1	C	0.39	99'
		WBT	27.3	C	0.32	170'	33.9	C	0.59	306'
		NBL	14.2	B	0.06	< 50'	15.4	B	0.20	56'
		NBT	20.0	B	0.71	327'	23.1	C	0.60	462'
		SBL	13.9	B	0.67	277'	16.6	B	0.72	364'
		SBT	12.7	B	0.46	266'	17.1	B	0.61	406'
		Overall	17.4	B	--	--	21.1	C	--	--
48 th Street & Roe Parkway	Side Street Stop	EBL	8.5	A	0.02	>50'	8.3	A	0.01	< 50'
		SB	12.5	B	0.05	>50'	11.9	B	0.08	< 50'
48 th Street & Roe Lane	Traffic Signal	EBL	13.1	B	0.08	>50'	12.7	B	0.22	< 50'
		EBT	17.0	B	0.62	229'	16.0	B	0.54	186'
		WBL	12.5	B	0.13	< 50'	12.5	B	0.12	< 50'
		WBT	17.6	B	0.73	242'	18.7	B	0.72	244'
		NBL	16.3	B	0.19	< 50'	17.1	B	0.13	< 50'
		NB	19.7	B	0.50	71'	22.5	C	0.62	89'
		SBL	16.7	B	0.10	< 50'	17.1	B	0.13	< 50'
		SB	21.8	C	0.60	80'	22.1	C	0.60	95'
		Overall	17.8	B	--	--	18.2	B	--	--

The results in **Table 5** indicate that all movements at each study intersection currently operate within acceptable levels of service during the peak hours. There are several longer queues that are worth noting. The 95th percentile queue of 364 feet for the southbound left-turn movement at 48th Street & Roe Boulevard exceeds the 300-foot storage capacity of the turn lane during the PM peak hour. Observations made during the counts indicate that long queues of southbound left-turn and through traffic do form at times. The long

queues generally clear during each cycle of the signal. At the 48th Street & Roe Lane intersection, the 95th percentile queues for the eastbound through movement block the 48th Street & Roe Parkway intersection. The Roe Parkway intersection is located roughly 100 feet west of the stop line for eastbound through traffic at the Roe Lane intersection. Observations made during the counts indicated that queues did block the intersection at times, but these queues cleared with each cycle of the signal.

6.3 EXISTING + DEVELOPMENT LEVEL OF SERVICE ANALYSIS

Capacity analysis was conducted for Existing plus Development traffic conditions at the study intersections to reflect conditions with the addition of traffic from the proposed development. The analysis was performed for weekday AM and PM peak hours and is based on the traffic volumes shown on **Exhibit 6**.

The site driveways intersections were evaluated as a single-lane approaches. The driveways were assumed to stop sign controlled, while the intersecting streets were assumed to be uncontrolled.

Table 6 provides a summary of the capacity analysis at the study intersections. The Synchro reports are provided in **Appendix E**.

TABLE 6: EXISTING + DEVELOPMENT PEAK HOUR CONDITIONS

Intersection	Control	Movement	Operational Analysis Results							
			AM Peak Hour				PM Peak Hour			
			Delay (sec/veh)	LOS	v/c	95% Queue	Delay (sec/veh)	LOS	v/c	95% Queue
48 th Street & Roe Boulevard	Traffic Signal	EBL	24.4	C	0.30	76'	26.5	C	0.50	130'
		EB	31.5	C	0.60	82'	34.3	C	0.60	99'
		WBL	24.4	C	0.38	85'	26.9	C	0.45	112'
		WBT	27.3	C	0.26	179'	35.3	D	0.60	321'
		NBL	15.2	B	0.06	< 50'	15.9	B	0.19	56'
		NBT	21.4	C	0.72	339'	24.3	C	0.77	472'
		SBL	15.1	B	0.72	334'	19.2	B	0.78	440'
		SBT	13.2	B	0.46	276'	16.8	B	0.59	406'
		Overall	18.5	B	--	--	22.0	C	--	--
48 th Street & Roe Parkway	Side Street Stop	EBL	8.6	A	0.06	>50'	8.6	A	0.08	< 50'
		SB	15.3	B	0.26	>50'	13.9	B	0.18	< 50'
48 th Street & Roe Lane	Traffic Signal	EBL	13.1	B	0.11	>50'	12.8	B	0.22	< 50'
		EBT	17.5	B	0.67	229'	15.9	B	0.54	191'
		WBL	12.6	B	0.14	< 50'	12.4	B	0.12	< 50'
		WBT	18.7	B	0.77	240'	18.8	B	0.72	256'
		NBL	16.2	B	0.19	< 50'	17.4	B	0.13	< 50'
		NB	19.6	B	0.51	56'	22.9	C	0.62	90'
		SBL	16.5	B	0.10	< 50'	17.4	B	0.13	< 50'
		SB	22.0	C	0.62	58'	22.8	C	0.60	98'
		Overall	18.2	B	--	--	18.3	B	--	--
Roe Parkway & Garage Access	Side Street Stop	NBL	7.4	A	0.02	< 50'	7.4	A	0.04	< 50'
		EB	8.8	A	0.07	< 50'	8.7	A	0.03	< 50'
Roe Parkway & North Access	Side Street Stop	NBL	7.3	A	0.01	< 50'	7.3	A	0.02	< 50'
		EB	8.5	A	0.02	< 50'	8.5	A	0.01	< 50'
Roe Boulevard & North Access	Side Street Stop	WBR	14.1	B	0.06	< 50'	14.2	B	0.03	< 50'

As shown in the table, all movements at each study intersection are projected to operate within acceptable levels of service during the peak hours with the addition of development traffic. Several queues at the 48th Street & Roe Boulevard intersection are projected to increase. In particular, the 95th percentile queue for the southbound left-turn movement is projected to increase in length by 20% during both peak hours. These queues will exceed the storage length of the turn lane during both peak hours. Optimization of signal timings could reduce the queue length for this movement.

Eastbound queues at the 48th Street & Roe Lane intersection are projected to block the 48th Street & Roe Parkway intersection at times, as they do in the Existing Conditions scenario. When the intersection is blocked, it could lead to longer delays for southbound drivers at the 48th Street & Roe Parkway intersection. For this reason, a short southbound right-turn lane with 50 feet of storage plus an appropriate taper is recommended on Roe Parkway at the intersection with 48th Street. The right-turn lane will allow southbound right-turn drivers to bypass southbound left-turn vehicles that are queued at the intersection.

The parking garage driveway is in close proximity to the 48th Street & Roe Parkway intersection. However southbound queues at the intersection are projected to be less than 50 feet in length, which will not block the Roe Parkway & garage driveway intersection.

6.4 ALTERNATE EXISTING + DEVELOPMENT LEVEL OF SERVICE ANALYSIS

Capacity analysis was conducted for an alternate scenario that includes the planned connection of Roe Parkway to Roe Boulevard. The Alternate Existing plus Development traffic conditions at the study intersections reflect conditions with the addition of traffic from the proposed development with existing and site traffic redistributed to account for the planned street connection. The analysis was performed for weekday AM and PM peak hours and is based on the traffic volumes shown on **Exhibit 7**.

Table 7 provides a summary of the capacity analysis at the study intersections. The Synchro reports are provided in **Appendix E**.

The results in **Table 7** indicate that all movements at each study intersection are projected to operate within acceptable levels of service during the peak hours with the alternate access scenario. The Roe Boulevard & Roe Parkway intersection is projected to operate acceptably with stop control for the side street. The queues for the southbound left-turn movement at 48th Street & Roe Boulevard are projected to be very similar to the Existing Conditions scenario. All other queues are projected to be similar to the Existing plus Development scenario.

TABLE 7: ALTERNATE EXISTING + DEVELOPMENT PEAK HOUR CONDITIONS

Intersection	Control	Movement	Operational Analysis Results							
			AM Peak Hour				PM Peak Hour			
			Delay (sec/veh)	LOS	v/c	95% Queue	Delay (sec/veh)	LOS	v/c	95% Queue
48 th Street & Roe Boulevard	Traffic Signal	EBL	23.9	C	0.29	77'	25.6	C	0.50	129'
		EB	30.9	C	0.59	83'	33.1	C	0.60	99'
		WBL	23.9	C	0.38	86'	26.0	C	0.45	112'
		WBT	26.7	C	0.26	169'	34.1	C	0.60	297'
		NBL	14.7	B	0.06	< 50'	15.3	B	0.19	56'
		NBT	20.8	C	0.72	334'	23.6	C	0.77	475'
		SBL	14.6	B	0.68	268'	16.7	B	0.78	359'
		SBT	13.3	B	0.47	266'	17.0	B	0.59	406'
		Overall	18.3	B	--	--	21.3	C	--	--
48 th Street & Roe Parkway	Side Street Stop	EBL	8.5	A	0.02	>50'	8.5	A	0.03	< 50'
		SB	14.3	B	0.18	>50'	13.2	B	0.12	< 50'
48 th Street & Roe Lane	Traffic Signal	EBL	13.1	B	0.11	>50'	12.8	B	0.22	< 50'
		EBT	17.5	B	0.67	229'	15.9	B	0.54	191'
		WBL	12.6	B	0.14	< 50'	12.4	B	0.12	< 50'
		WBT	18.7	B	0.77	240'	18.8	B	0.72	256'
		NBL	16.2	B	0.19	< 50'	17.4	B	0.13	< 50'
		NB	19.6	B	0.51	56'	22.9	C	0.62	90'
		SBL	16.5	B	0.10	< 50'	17.4	B	0.13	< 50'
		SB	22.0	C	0.62	58'	22.8	C	0.60	98'
		Overall	18.2	B	--	--	18.3	B	--	--
Roe Parkway & Garage Access	Side Street Stop	NBL	7.3	A	0.01	< 50'	7.4	A	0.02	< 50'
		EB	9.0	A	0.07	< 50'	8.9	A	0.04	< 50'
Roe Parkway & North Access	Side Street Stop	NBL	7.3	A	0.01	< 50'	7.4	A	0.01	< 50'
		EB	8.5	A	0.02	< 50'	8.6	A	0.01	< 50'
Roe Boulevard & North Access	Side Street Stop	WBR	14.0	B	0.06	< 50'	14.0	B	0.03	< 50'
Roe Boulevard & Roe Parkway	Side Street Stop	WBR	14.3	B	0.08	< 50'	14.4	B	0.07	< 50'
		SBL	12.0	B	0.06	< 50'	12.5	B	0.09	< 50'

7.0 CONCLUSIONS AND RECOMMENDATIONS

A traffic impact study for the proposed Roeland Park Mixed Use development has been prepared by Kimley-Horn. The proposed development site is located at the northeast corner of the 48th Street & Roe Boulevard intersection in Roeland Park, Kansas. The purpose of this study was to assess the impact of the proposed development on the surrounding transportation system.

The proposed development consists of a multi-story building with 280 apartment units and a 5,000 square foot restaurant. The site will have three access drives. One right-in/right out driveway is proposed on Roe Boulevard and three full access driveways are proposed on Roe Parkway. The horizontal curves and grades on Roe Parkway limit sight distance at the accesses. Therefore, Winding Road warning signs with 15 mph Advisory Speed plaques should be installed for each direction of travel on Roe Parkway. Sight distance should be evaluated in conjunction with the final site design to ensure adequate sight distances are provided.

The following provides a summary of the analysis. Intersection capacity analysis was performed at the study intersections for the following scenarios:

- Existing Conditions
- Existing plus Development
- Alternate Existing plus Development

Analysis of existing conditions found that all movements at each study intersection currently operate within acceptable levels of service during the peak hours. However, there are several longer queues that are worth noting. The queue for the southbound left-turn movement at 48th Street & Roe Boulevard exceeds the length of the turn lane during the PM peak hour. At the 48th Street & Roe Lane intersection, the queue for the eastbound through movement block the 48th Street & Roe Parkway intersection.

The proposed development is projected to generate 1,675 daily trips, 148 trips in the AM peak hour, and 141 trips in the PM peak hour. The site trips were added to the street network for the Existing plus Development analysis. All intersections are projected to operate acceptably with the addition of development traffic. The queue for the southbound left-turn movement is projected to increase in length by 20% during both peak hours, which will exceed the length of the turn lane. Optimization of signal timings could reduce the queue length for this movement.

Eastbound queues at the 48th Street & Roe Lane intersection are projected to block the 48th Street & Roe Parkway intersection at times, as they do in the Existing Conditions scenario. A short southbound right-turn lane with 50 feet of storage plus an appropriate taper is recommended on Roe Parkway at the intersection with 48th Street.

The city is planning a project to connect the north end of Roe Parkway to Roe Boulevard. This connection will have an impact on how drivers access the proposed development site. Existing plus Development conditions were also analyzed with this alternate access, and all intersections were found to operate acceptably.

APPENDIX

Appendix A: EXHIBITS

Appendix B: TRAFFIC COUNT DATA

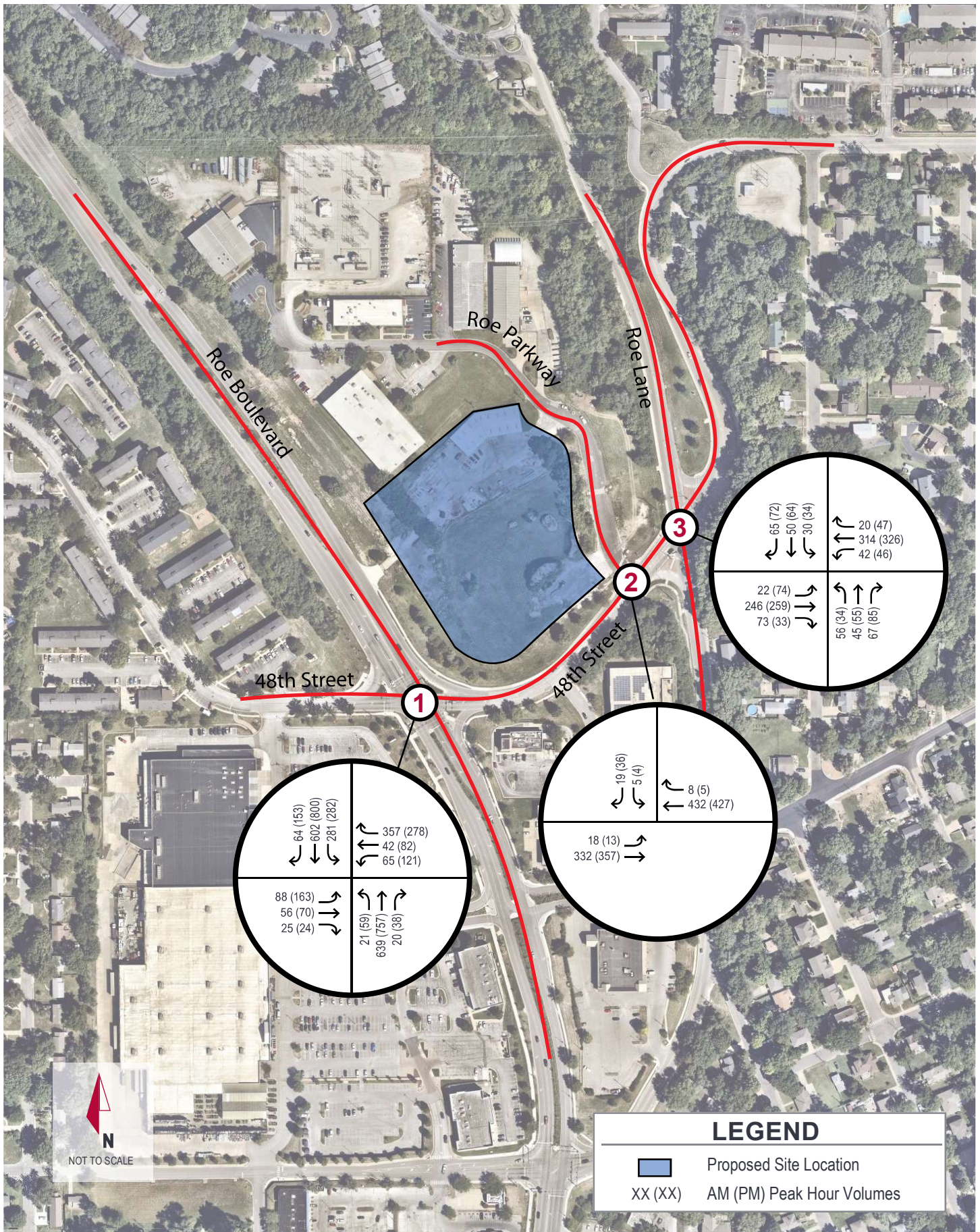
Appendix C: SITE PLAN

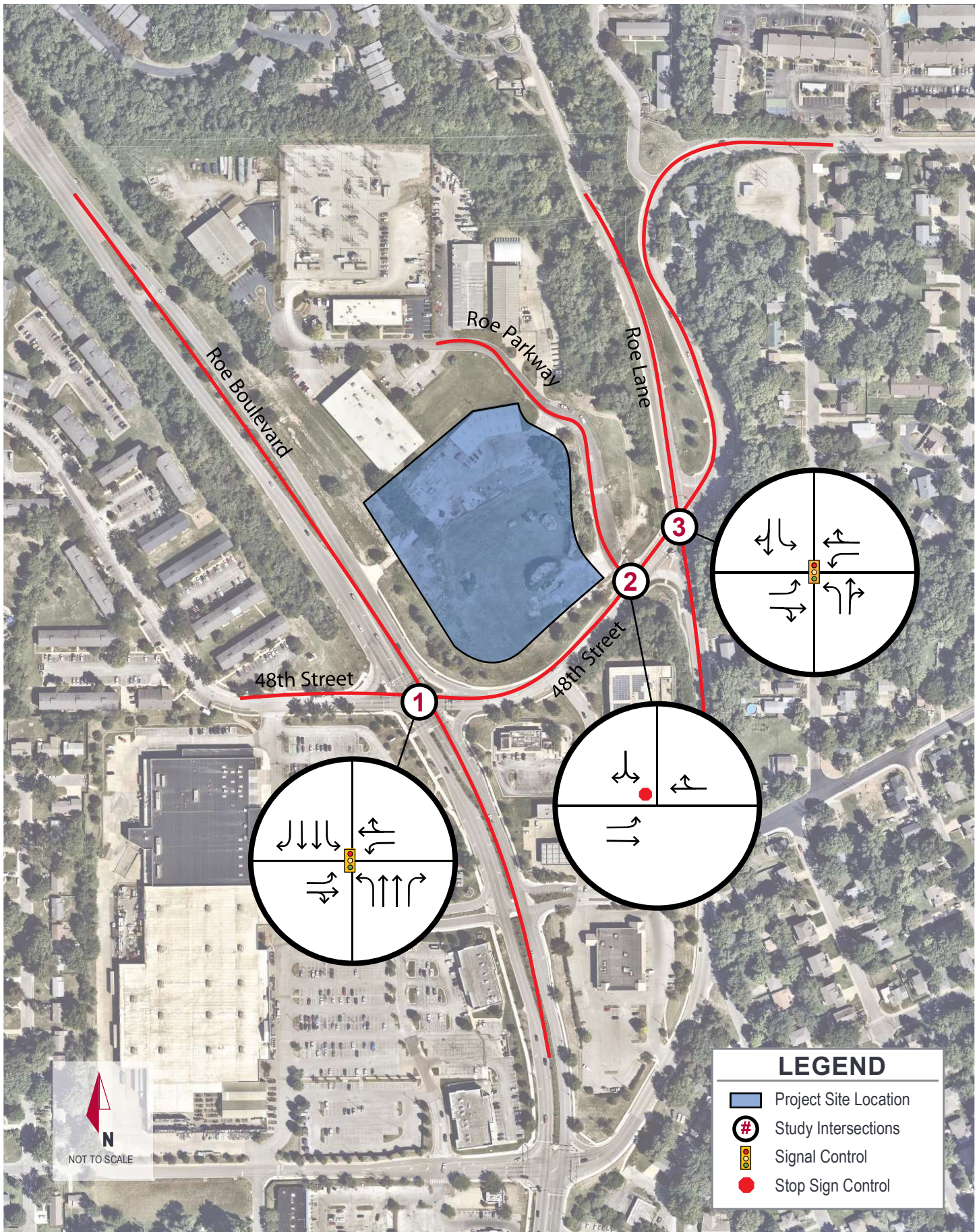
Appendix D: ITE TRIP GENERATION

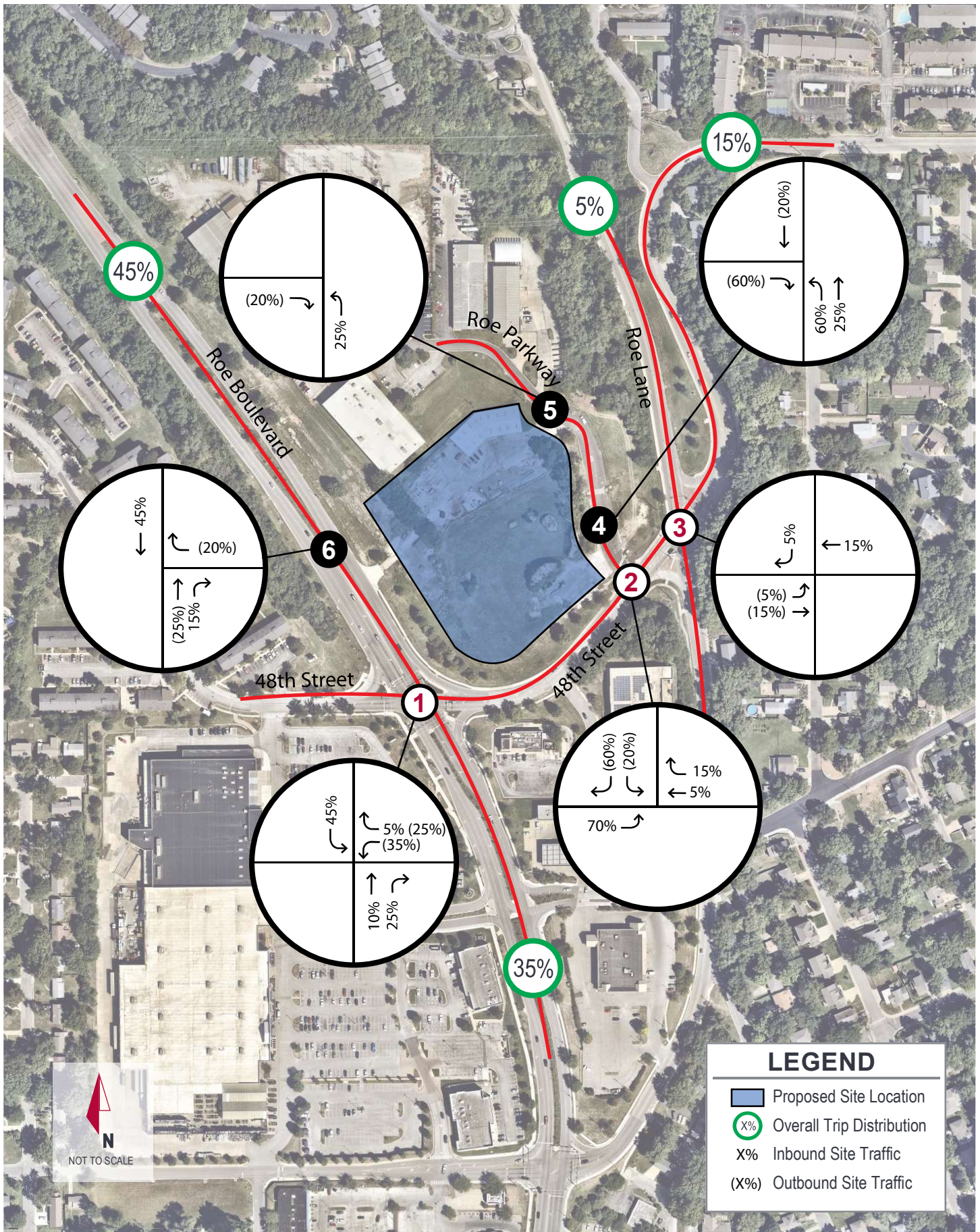
Appendix E: SYNCHRO REPORTS

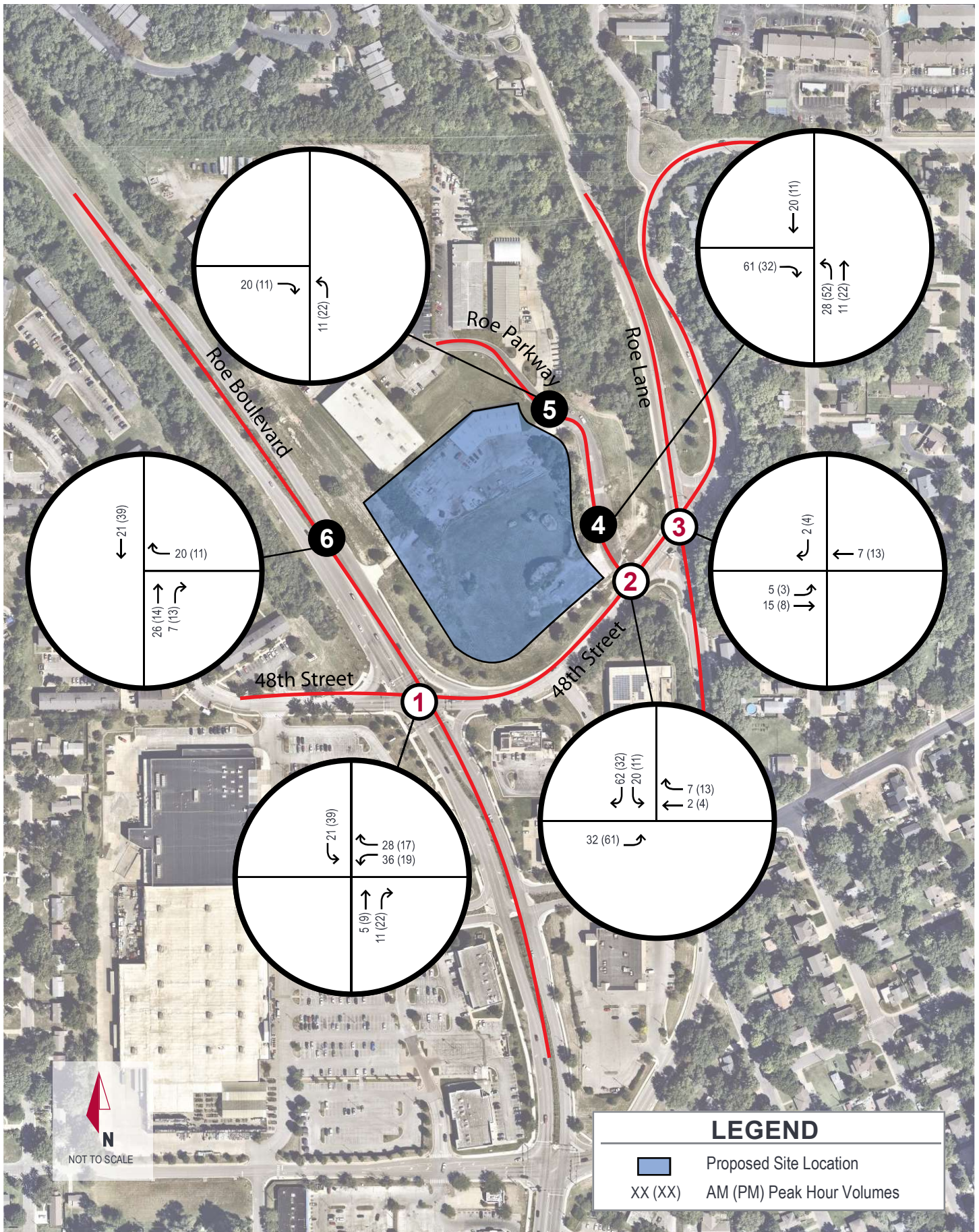
Appendix A: Exhibits

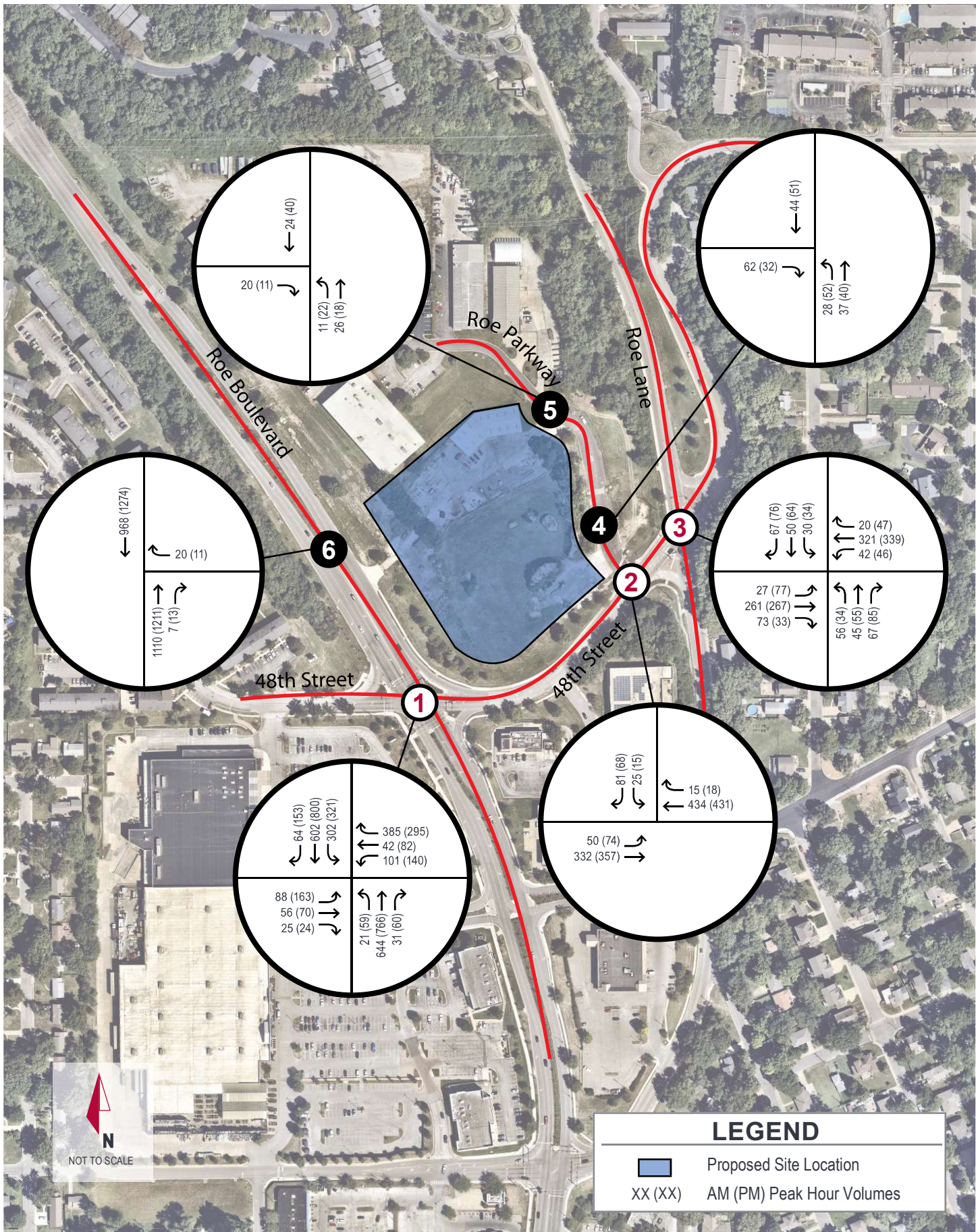


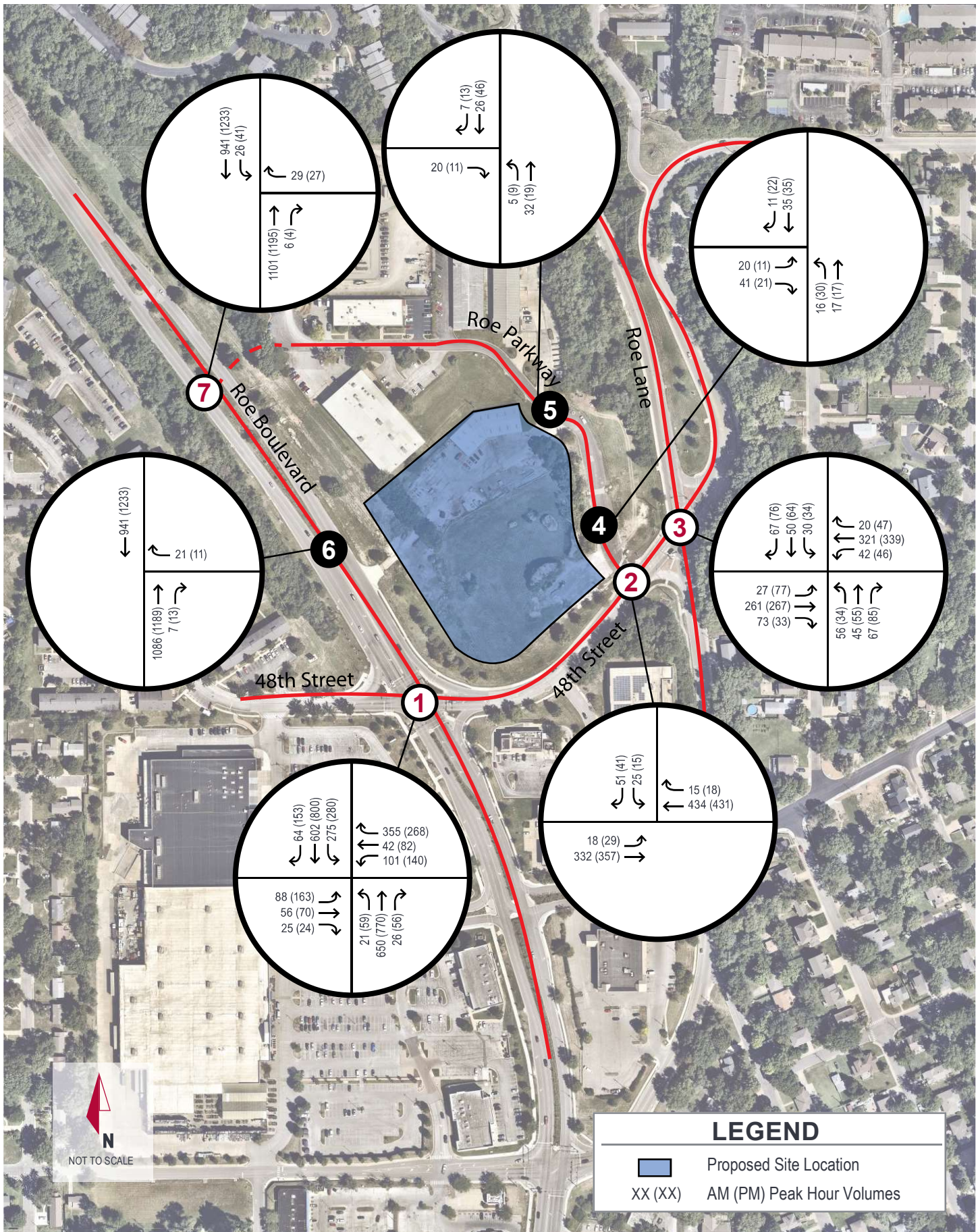












Appendix B: Traffic Count Data

48th & Roe Blvd. - TMC

Tue Nov 15, 2022

Full Length (7 AM-9 AM, 4 PM-6 PM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 1012104, Location: 39.040547, -94.640694



Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US

Leg Direction	48th Eastbound					48th Westbound					Roe Northbound					Roe Southbound					
Time	L	T	R	U	App	L	T	R	U	App	L	T	R	U	App	L	T	R	U	App	Int
2022-11-15 7:00AM	17	2	6	0	25	8	4	62	0	74	3	107	3	0	113	29	86	15	0	130	342
7:15AM	18	3	5	0	26	9	3	80	0	92	5	149	5	0	159	34	143	17	0	194	471
7:30AM	22	9	7	0	38	7	12	98	0	117	4	164	4	0	172	69	182	12	0	263	590
7:45AM	19	22	7	0	48	21	11	93	0	125	7	150	7	0	164	97	160	18	0	275	612
Hourly Total	76	36	25	0	137	45	30	333	0	408	19	570	19	0	608	229	571	62	0	862	2015
8:00AM	31	15	5	0	51	20	12	92	0	124	6	167	5	1	179	74	139	17	0	230	584
8:15AM	16	10	6	0	32	17	7	74	0	98	4	158	4	0	166	41	121	17	0	179	475
8:30AM	26	8	5	0	39	12	2	72	0	86	7	151	6	0	164	31	121	16	0	168	457
8:45AM	26	8	4	0	38	8	4	47	0	59	7	135	8	0	150	48	121	24	0	193	440
Hourly Total	99	41	20	0	160	57	25	285	0	367	24	611	23	1	659	194	502	74	0	770	1956
4:00PM	35	25	8	0	68	27	22	73	0	122	15	186	5	0	206	64	170	44	0	278	674
4:15PM	44	14	11	0	69	17	15	83	0	115	12	159	13	2	186	75	187	28	0	290	660
4:30PM	51	17	7	0	75	32	26	72	0	130	9	169	9	0	187	64	189	33	0	286	678
4:45PM	40	21	10	0	71	21	18	64	0	103	11	190	10	1	212	79	203	34	0	316	702
Hourly Total	170	77	36	0	283	97	81	292	0	470	47	704	37	3	791	282	749	139	0	1170	2714
5:00PM	37	16	0	0	53	31	19	75	0	125	21	219	7	0	247	61	196	48	0	305	730
5:15PM	35	16	7	0	58	37	19	67	0	123	18	179	12	0	209	78	212	38	0	328	718
5:30PM	38	23	6	0	67	25	10	55	0	90	9	178	10	0	197	59	180	43	0	282	636
5:45PM	34	19	3	0	56	26	5	51	0	82	15	139	9	0	163	57	186	39	0	282	583
Hourly Total	144	74	16	0	234	119	53	248	0	420	63	715	38	0	816	255	774	168	0	1197	2667
Total	489	228	97	0	814	318	189	1158	0	1665	153	2600	117	4	2874	960	2596	443	0	3999	9352
% Approach	60.1%	28.0%	11.9%	0%	-	19.1%	11.4%	69.5%	0%	-	5.3%	90.5%	4.1%	0.1%	-	24.0%	64.9%	11.1%	0%	-	-
% Total	5.2%	2.4%	1.0%	0%	8.7%	3.4%	2.0%	12.4%	0%	17.8%	1.6%	27.8%	1.3%	0%	30.7%	10.3%	27.8%	4.7%	0%	42.8%	-
Lights	482	224	96	0	802	307	187	1135	0	1629	149	2560	107	4	2820	946	2555	438	0	3939	9190
% Lights	98.6%	98.2%	99.0%	0%	98.5%	96.5%	98.9%	98.0%	0%	97.8%	97.4%	98.5%	91.5%	100%	98.1%	98.5%	98.4%	98.9%	0%	98.5%	98.3%
Articulated Trucks	2	0	0	0	2	3	0	2	0	5	0	4	3	0	7	4	4	1	0	9	23
% Articulated Trucks	0.4%	0%	0%	0%	0.2%	0.9%	0%	0.2%	0%	0.3%	0%	0.2%	2.6%	0%	0.2%	0.4%	0.2%	0.2%	0%	0.2%	0.2%
Buses and Single-Unit Trucks	5	4	1	0	10	8	2	21	0	31	4	36	7	0	47	10	37	4	0	51	139
% Buses and Single-Unit Trucks	1.0%	1.8%	1.0%	0%	1.2%	2.5%	1.1%	1.8%	0%	1.9%	2.6%	1.4%	6.0%	0%	1.6%	1.0%	1.4%	0.9%	0%	1.3%	1.5%

* L: Left, R: Right, T: Thru, U: U-Turn

48th & Roe Blvd. - TMC

Tue Nov 15, 2022

Full Length (7 AM-9 AM, 4 PM-6 PM)

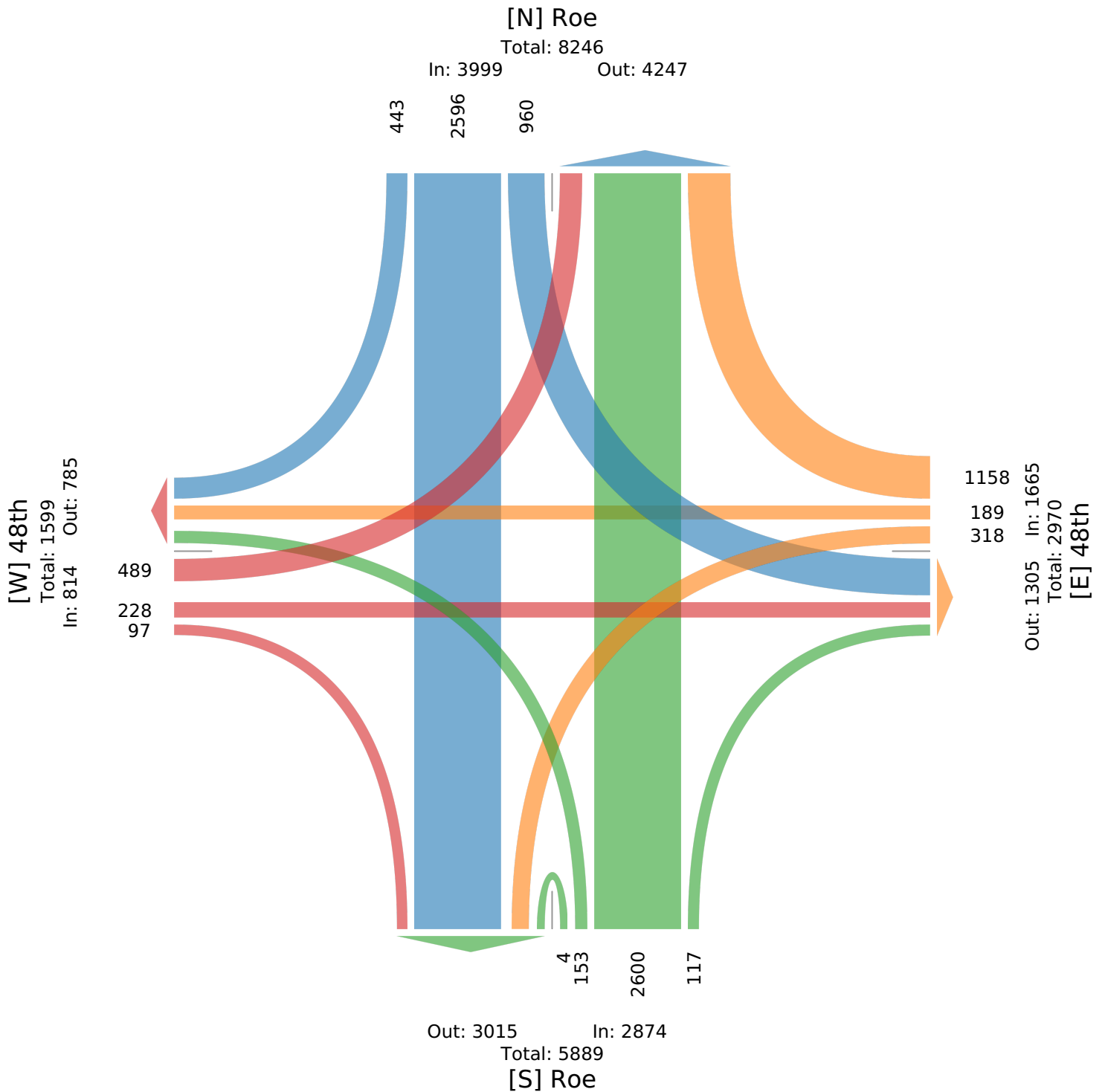
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 1012104, Location: 39.040547, -94.640694



Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US



48th & Roe Blvd. - TMC

Tue Nov 15, 2022

AM Peak (7:30 AM - 8:30 AM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 1012104, Location: 39.040547, -94.640694

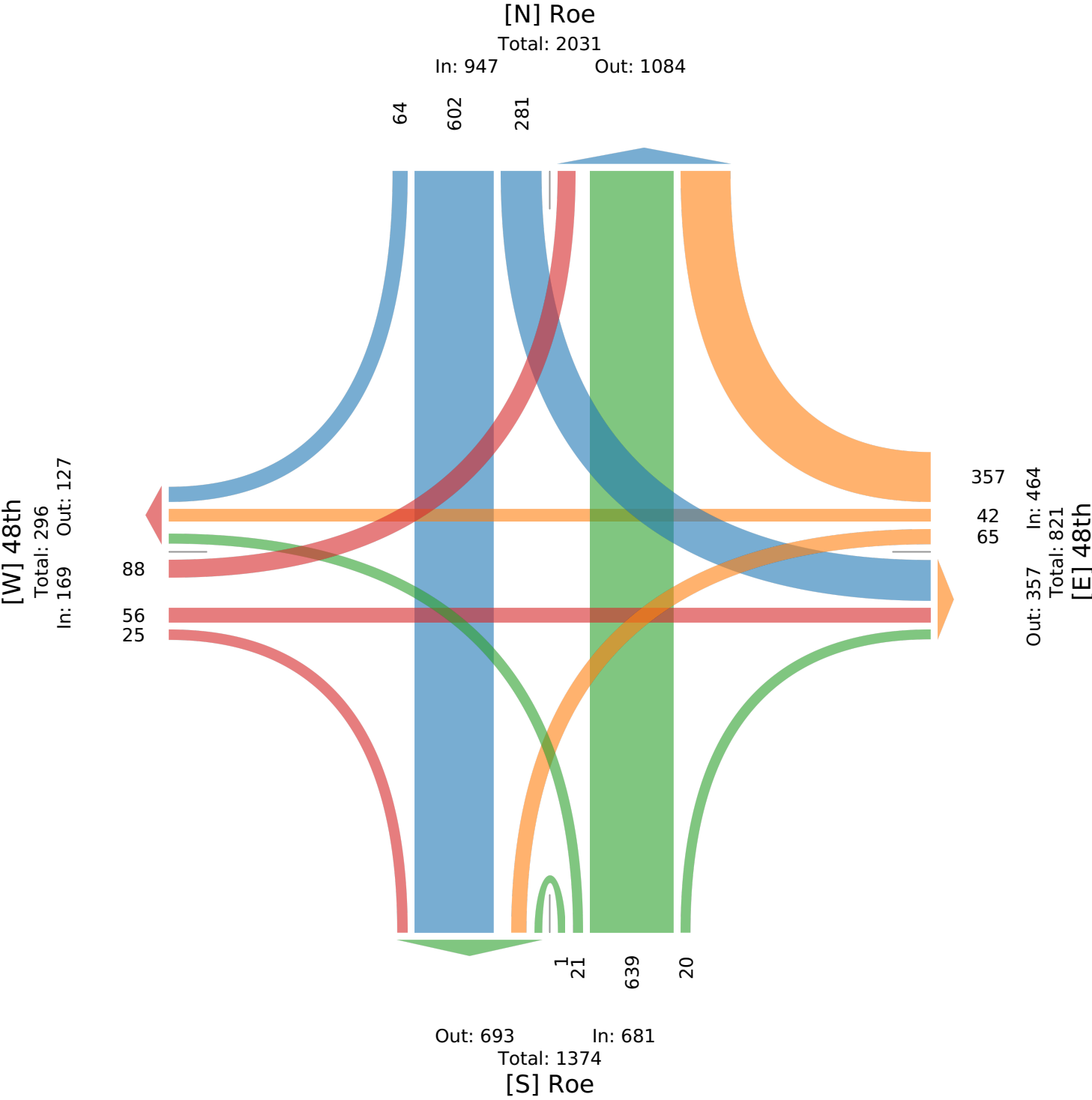


Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US

Leg Direction	48th Eastbound					48th Westbound					Roe Northbound					Roe Southbound					
Time	L	T	R	U	App	L	T	R	U	App	L	T	R	U	App	L	T	R	U	App	Int
2022-11-15 7:30AM	22	9	7	0	38	7	12	98	0	117	4	164	4	0	172	69	182	12	0	263	590
7:45AM	19	22	7	0	48	21	11	93	0	125	7	150	7	0	164	97	160	18	0	275	612
8:00AM	31	15	5	0	51	20	12	92	0	124	6	167	5	1	179	74	139	17	0	230	584
8:15AM	16	10	6	0	32	17	7	74	0	98	4	158	4	0	166	41	121	17	0	179	475
Total	88	56	25	0	169	65	42	357	0	464	21	639	20	1	681	281	602	64	0	947	2261
% Approach	52.1%	33.1%	14.8%	0%	-	14.0%	9.1%	76.9%	0%	-	3.1%	93.8%	2.9%	0.1%	-	29.7%	63.6%	6.8%	0%	-	-
% Total	3.9%	2.5%	1.1%	0%	7.5%	2.9%	1.9%	15.8%	0%	20.5%	0.9%	28.3%	0.9%	0%	30.1%	12.4%	26.6%	2.8%	0%	41.9%	-
PHF	0.710	0.636	0.893	-	0.828	0.774	0.875	0.911	-	0.928	0.750	0.957	0.714	0.250	0.951	0.724	0.827	0.889	-	0.861	0.924
Lights	85	53	24	0	162	59	40	346	0	445	18	632	18	1	669	277	592	64	0	933	2209
% Lights	96.6%	94.6%	96.0%	0%	95.9%	90.8%	95.2%	96.9%	0%	95.9%	85.7%	98.9%	90.0%	100%	98.2%	98.6%	98.3%	100%	0%	98.5%	97.7%
Articulated Trucks	2	0	0	0	2	1	0	1	0	2	0	1	0	0	1	1	0	0	0	1	6
% Articulated Trucks	2.3%	0%	0%	0%	1.2%	1.5%	0%	0.3%	0%	0.4%	0%	0.2%	0%	0%	0.1%	0.4%	0%	0%	0%	0.1%	0.3%
Buses and Single-Unit Trucks	1	3	1	0	5	5	2	10	0	17	3	6	2	0	11	3	10	0	0	13	46
% Buses and Single-Unit Trucks	1.1%	5.4%	4.0%	0%	3.0%	7.7%	4.8%	2.8%	0%	3.7%	14.3%	0.9%	10.0%	0%	1.6%	1.1%	1.7%	0%	0%	1.4%	2.0%

* L: Left, R: Right, T: Thru, U: U-Turn

48th & Roe Blvd. - TMC
Tue Nov 15, 2022
AM Peak (7:30 AM - 8:30 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1012104, Location: 39.040547, -94.640694



48th & Roe Blvd. - TMC

Tue Nov 15, 2022

PM Peak (4:30 PM - 5:30 PM) - Overall Peak Hour

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 1012104, Location: 39.040547, -94.640694



Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US

Leg Direction	48th Eastbound					48th Westbound					Roe Northbound					Roe Southbound					
Time	L	T	R	U	App	L	T	R	U	App	L	T	R	U	App	L	T	R	U	App	Int
2022-11-15 4:30PM	51	17	7	0	75	32	26	72	0	130	9	169	9	0	187	64	189	33	0	286	678
4:45PM	40	21	10	0	71	21	18	64	0	103	11	190	10	1	212	79	203	34	0	316	702
5:00PM	37	16	0	0	53	31	19	75	0	125	21	219	7	0	247	61	196	48	0	305	730
5:15PM	35	16	7	0	58	37	19	67	0	123	18	179	12	0	209	78	212	38	0	328	718
Total	163	70	24	0	257	121	82	278	0	481	59	757	38	1	855	282	800	153	0	1235	2828
% Approach	63.4%	27.2%	9.3%	0%	-	25.2%	17.0%	57.8%	0%	-	6.9%	88.5%	4.4%	0.1%	-	22.8%	64.8%	12.4%	0%	-	-
% Total	5.8%	2.5%	0.8%	0%	9.1%	4.3%	2.9%	9.8%	0%	17.0%	2.1%	26.8%	1.3%	0%	30.2%	10.0%	28.3%	5.4%	0%	43.7%	-
PHF	0.799	0.833	0.600	-	0.857	0.818	0.788	0.927	-	0.925	0.702	0.864	0.792	0.250	0.865	0.892	0.943	0.797	-	0.941	0.968
Lights	162	70	24	0	256	119	82	274	0	475	59	741	33	1	834	282	787	153	0	1222	2787
% Lights	99.4%	100%	100%	0%	99.6%	98.3%	100%	98.6%	0%	98.8%	100%	97.9%	86.8%	100%	97.5%	100%	98.4%	100%	0%	98.9%	98.6%
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	2	0	0	2	4
% Articulated Trucks	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5.3%	0%	0.2%	0%	0.3%	0%	0%	0.2%	0.1%
Buses and Single-Unit Trucks	1	0	0	0	1	2	0	4	0	6	0	16	3	0	19	0	11	0	0	11	37
% Buses and Single-Unit Trucks	0.6%	0%	0%	0%	0.4%	1.7%	0%	1.4%	0%	1.2%	0%	2.1%	7.9%	0%	2.2%	0%	1.4%	0%	0%	0.9%	1.3%

* L: Left, R: Right, T: Thru, U: U-Turn

48th & Roe Blvd. - TMC

Tue Nov 15, 2022

PM Peak (4:30 PM - 5:30 PM) - Overall Peak Hour

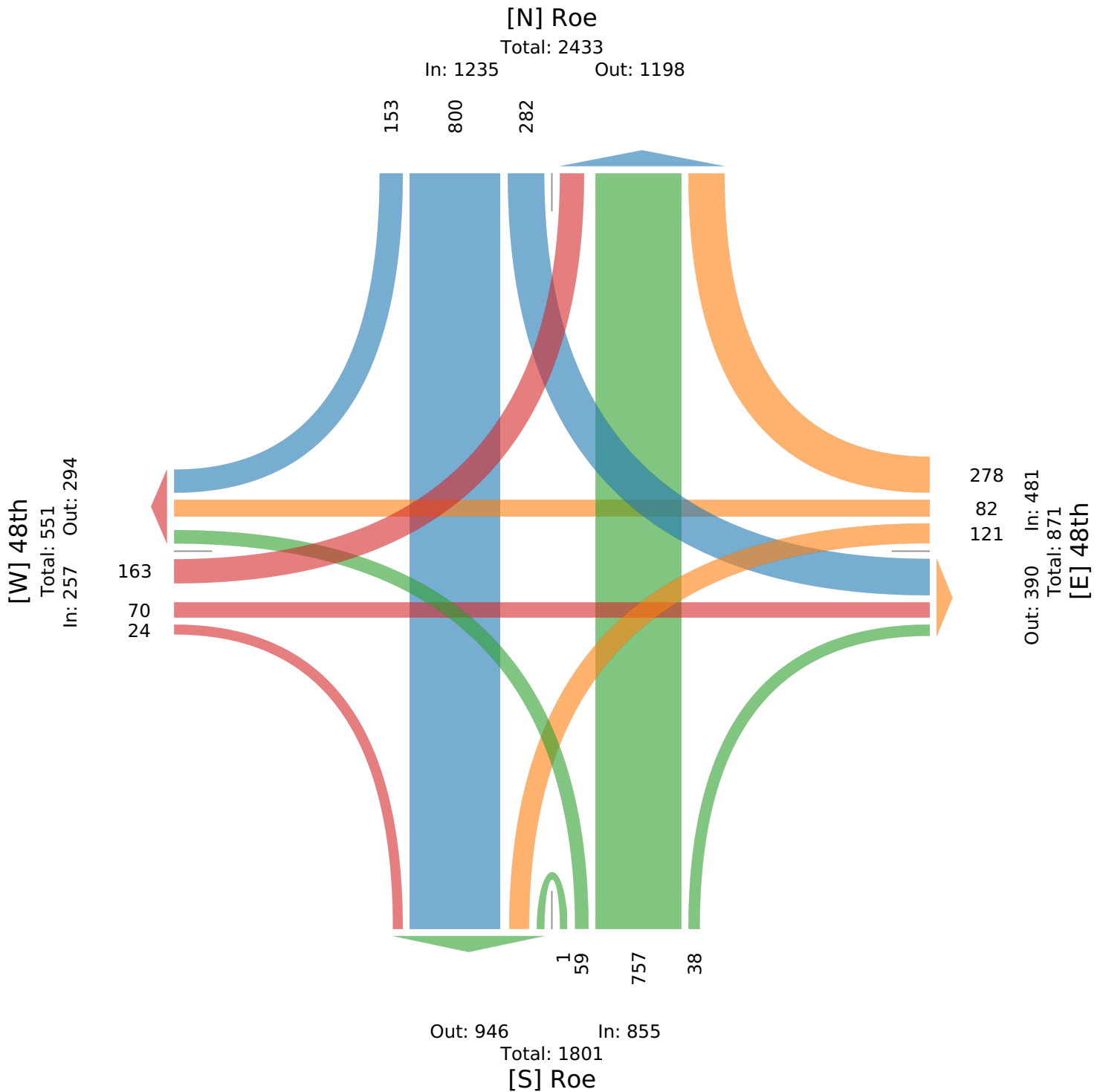
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 1012104, Location: 39.040547, -94.640694



Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US



48th & Roe Pkwy - TMC

Tue Nov 15, 2022

Full Length (7 AM-9 AM, 4 PM-6 PM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 1012105, Location: 39.041338, -94.639008



Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US

Leg Direction	48th Eastbound				48th Westbound				Roe Southbound				
Time	L	T	U	App	T	R	U	App	L	R	U	App	Int
2022-11-15 7:00AM	7	27	0	34	78	2	0	80	0	0	0	0	114
7:15AM	2	43	0	45	90	1	0	91	1	4	0	5	141
7:30AM	2	78	0	80	108	3	0	111	1	5	0	6	197
7:45AM	10	114	0	124	122	0	0	122	1	6	0	7	253
Hourly Total	21	262	0	283	398	6	0	404	3	15	0	18	705
8:00AM	1	95	0	96	111	3	0	114	1	6	0	7	217
8:15AM	5	45	0	50	91	2	0	93	2	2	0	4	147
8:30AM	7	32	0	39	87	6	0	93	4	4	0	8	140
8:45AM	2	54	0	56	56	2	0	58	3	2	0	5	119
Hourly Total	15	226	0	241	345	13	0	358	10	14	0	24	623
4:00PM	1	87	0	88	110	2	0	112	1	5	0	6	206
4:15PM	3	96	0	99	105	0	0	105	1	5	0	6	210
4:30PM	1	74	0	75	114	2	0	116	1	9	0	10	201
4:45PM	9	95	0	104	88	3	0	91	0	4	0	4	199
Hourly Total	14	352	0	366	417	7	0	424	3	23	0	26	816
5:00PM	3	87	0	90	121	0	0	121	2	19	0	21	232
5:15PM	0	101	0	101	104	0	0	104	1	4	0	5	210
5:30PM	0	94	0	94	98	0	0	98	0	1	0	1	193
5:45PM	1	89	0	90	82	0	0	82	1	2	0	3	175
Hourly Total	4	371	0	375	405	0	0	405	4	26	0	30	810
Total	54	1211	0	1265	1565	26	0	1591	20	78	0	98	2954
% Approach	4.3%	95.7%	0%	-	98.4%	1.6%	0%	-	20.4%	79.6%	0%	-	-
% Total	1.8%	41.0%	0%	42.8%	53.0%	0.9%	0%	53.9%	0.7%	2.6%	0%	3.3%	-
Lights	44	1189	0	1233	1539	21	0	1560	19	62	0	81	2874
% Lights	81.5%	98.2%	0%	97.5%	98.3%	80.8%	0%	98.1%	95.0%	79.5%	0%	82.7%	97.3%
Articulated Trucks	1	1	0	2	0	0	0	0	0	1	0	1	3
% Articulated Trucks	1.9%	0.1%	0%	0.2%	0%	0%	0%	0%	0%	1.3%	0%	1.0%	0.1%
Buses and Single-Unit Trucks	9	21	0	30	26	5	0	31	1	15	0	16	77
% Buses and Single-Unit Trucks	16.7%	1.7%	0%	2.4%	1.7%	19.2%	0%	1.9%	5.0%	19.2%	0%	16.3%	2.6%

*L: Left, R: Right, T: Thru, U: U-Turn

48th & Roe Pkwy - TMC

Tue Nov 15, 2022

Full Length (7 AM-9 AM, 4 PM-6 PM)

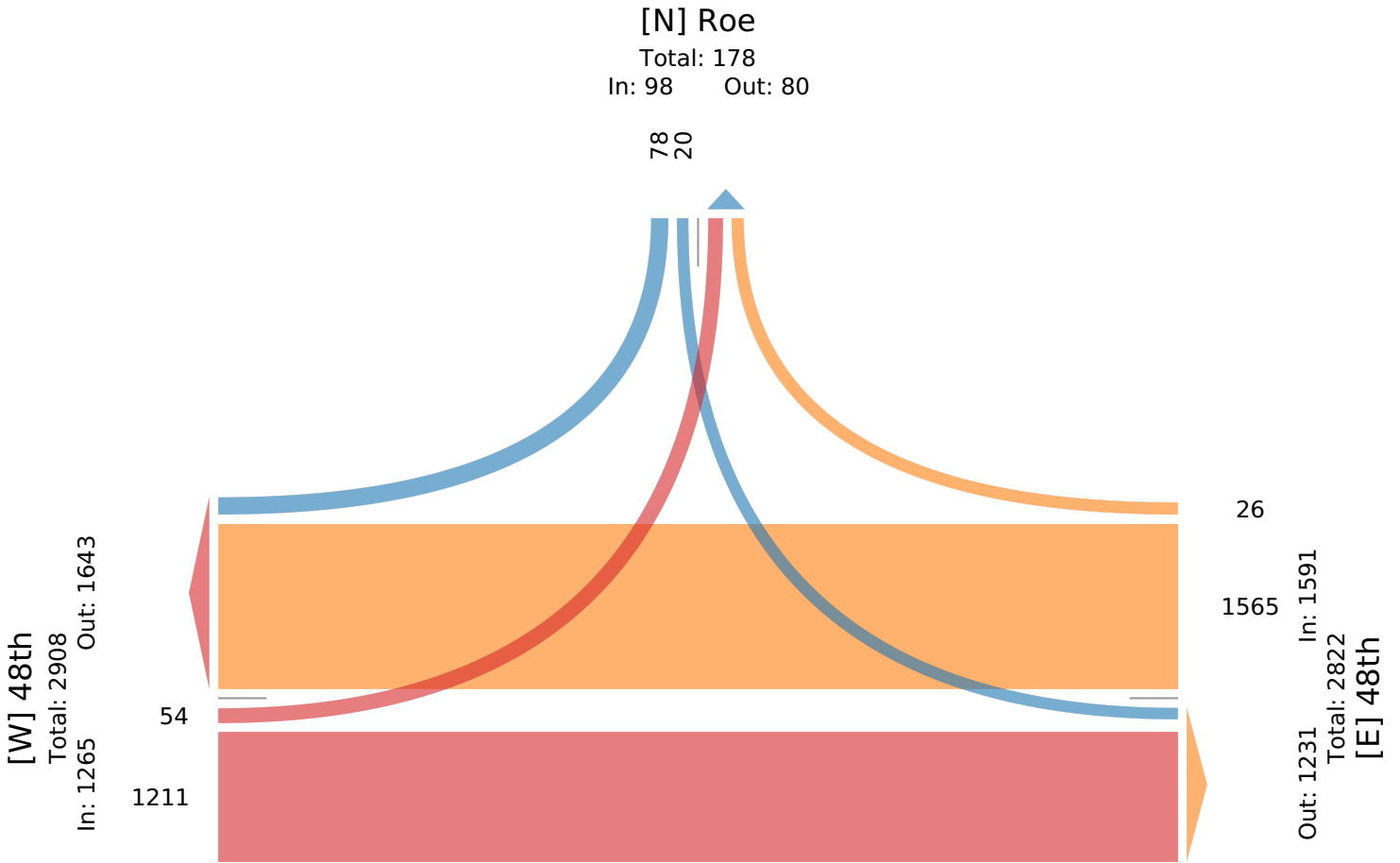
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 1012105, Location: 39.041338, -94.639008



Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US



48th & Roe Pkwy - TMC

Tue Nov 15, 2022

AM Peak (7:30 AM - 8:30 AM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 1012105, Location: 39.041338, -94.639008



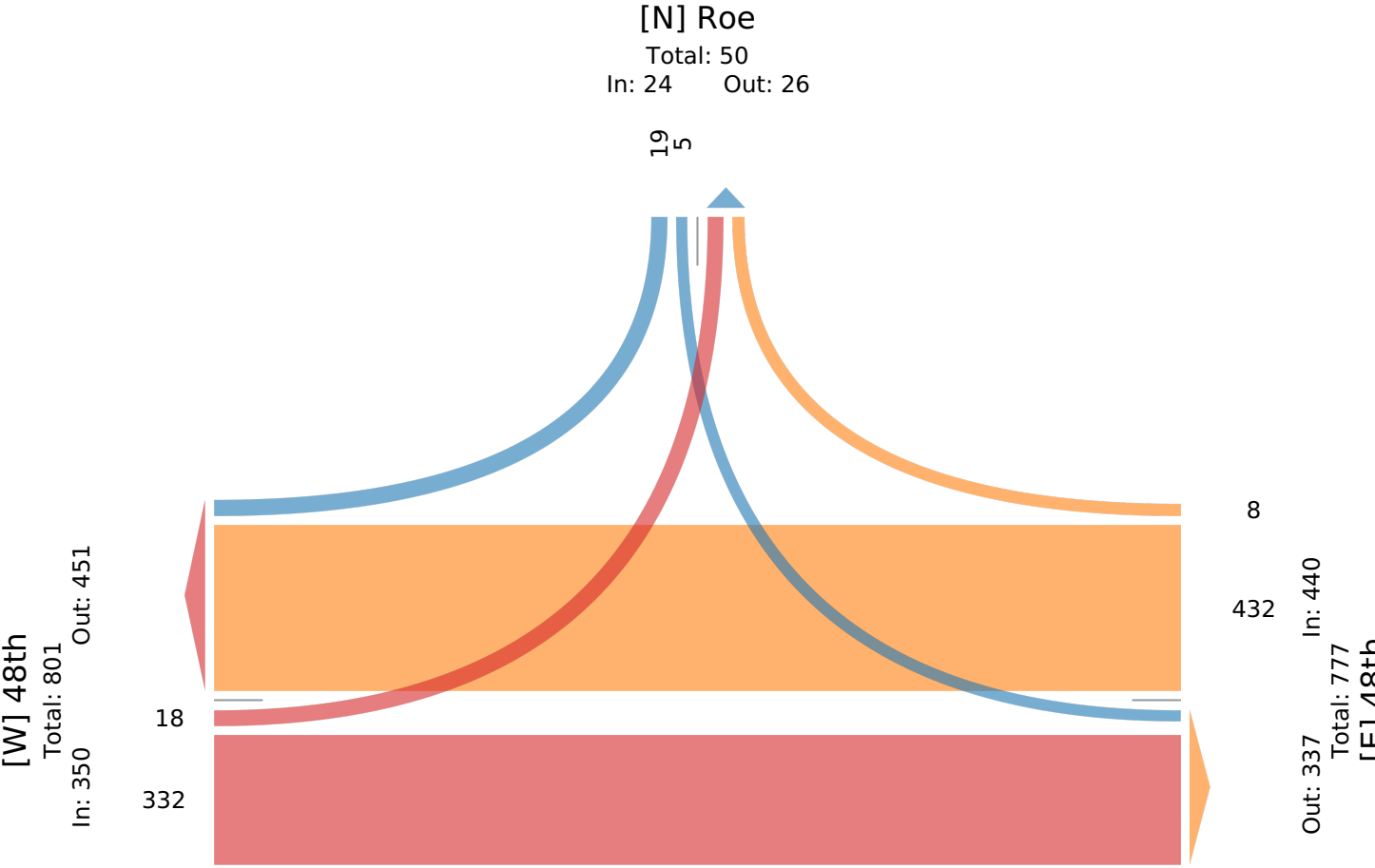
Provided by: Gewalt Hamilton Associates Inc.

625 Forest Edge Drive, Vernon Hills, IL, 60061, US

Leg Direction	48th Eastbound				48th Westbound				Roe Southbound				
Time	L	T	U	App	T	R	U	App	L	R	U	App	Int
2022-11-15 7:30AM	2	78	0	80	108	3	0	111	1	5	0	6	197
7:45AM	10	114	0	124	122	0	0	122	1	6	0	7	253
8:00AM	1	95	0	96	111	3	0	114	1	6	0	7	217
8:15AM	5	45	0	50	91	2	0	93	2	2	0	4	147
Total	18	332	0	350	432	8	0	440	5	19	0	24	814
% Approach	5.1%	94.9%	0%	-	98.2%	1.8%	0%	-	20.8%	79.2%	0%	-	-
% Total	2.2%	40.8%	0%	43.0%	53.1%	1.0%	0%	54.1%	0.6%	2.3%	0%	2.9%	-
PHF	0.450	0.728	-	0.706	0.885	0.667	-	0.902	0.625	0.792	-	0.857	0.804
Lights	18	322	0	340	419	7	0	426	5	9	0	14	780
% Lights	100%	97.0%	0%	97.1%	97.0%	87.5%	0%	96.8%	100%	47.4%	0%	58.3%	95.8%
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
% Articulated Trucks	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Buses and Single-Unit Trucks	0	10	0	10	13	1	0	14	0	10	0	10	34
% Buses and Single-Unit Trucks	0%	3.0%	0%	2.9%	3.0%	12.5%	0%	3.2%	0%	52.6%	0%	41.7%	4.2%

* L: Left, R: Right, T: Thru, U: U-Turn

48th & Roe Pkwy - TMC
Tue Nov 15, 2022
AM Peak (7:30 AM - 8:30 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1012105, Location: 39.041338, -94.639008



48th & Roe Pkwy - TMC

Tue Nov 15, 2022

PM Peak (4:15 PM - 5:15 PM) - Overall Peak Hour

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 1012105, Location: 39.041338, -94.639008

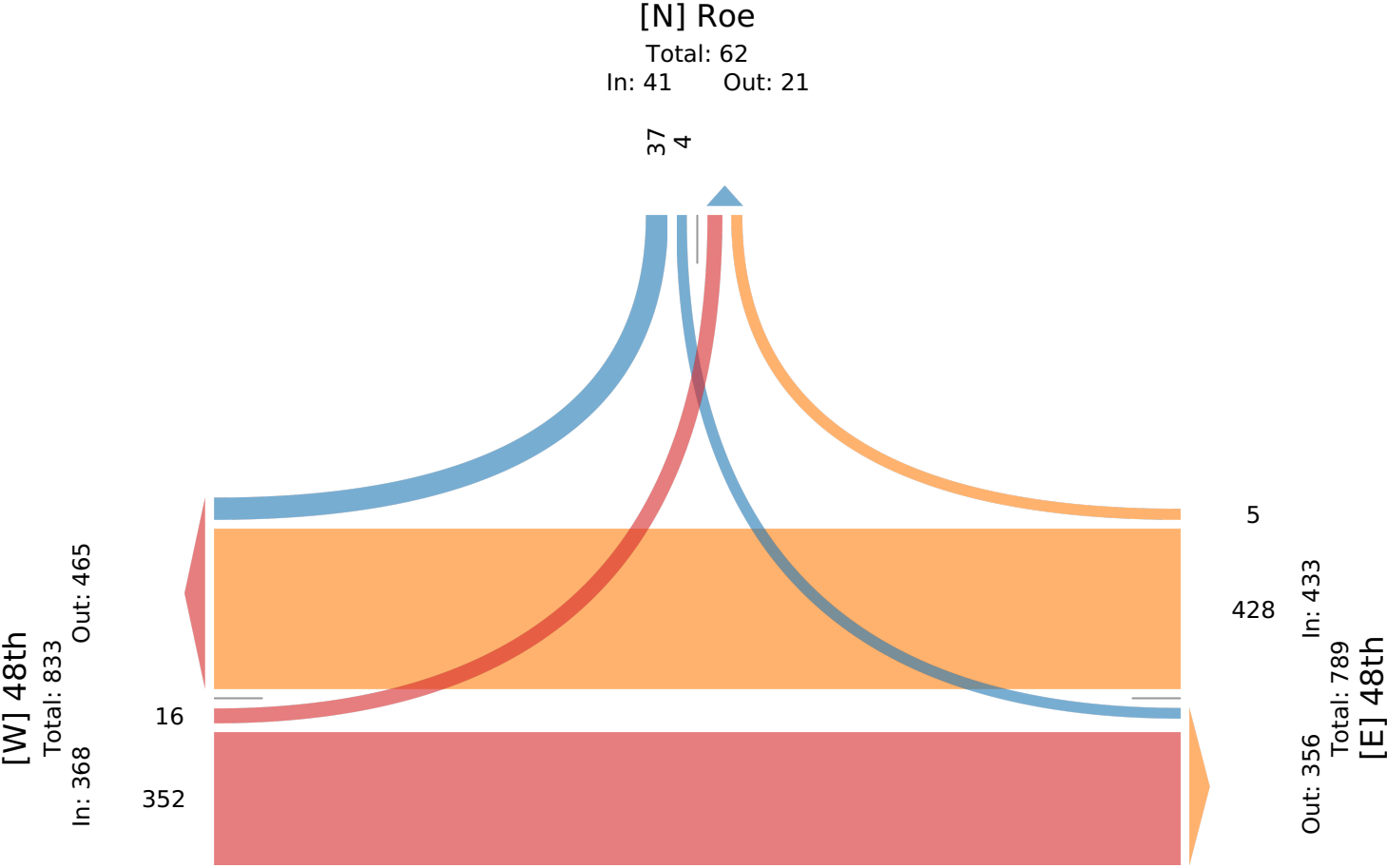


Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US

Leg Direction	48th Eastbound				48th Westbound				Roe Southbound				
Time	L	T	U	App	T	R	U	App	L	R	U	App	Int
2022-11-15 4:15PM	3	96	0	99	105	0	0	105	1	5	0	6	210
4:30PM	1	74	0	75	114	2	0	116	1	9	0	10	201
4:45PM	9	95	0	104	88	3	0	91	0	4	0	4	199
5:00PM	3	87	0	90	121	0	0	121	2	19	0	21	232
Total	16	352	0	368	428	5	0	433	4	37	0	41	842
% Approach	4.3%	95.7%	0%	-	98.8%	1.2%	0%	-	9.8%	90.2%	0%	-	-
% Total	1.9%	41.8%	0%	43.7%	50.8%	0.6%	0%	51.4%	0.5%	4.4%	0%	4.9%	-
PHF	0.444	0.917	-	0.885	0.884	0.417	-	0.895	0.500	0.487	-	0.488	0.907
Lights	7	351	0	358	425	2	0	427	4	36	0	40	825
% Lights	43.8%	99.7%	0%	97.3%	99.3%	40.0%	0%	98.6%	100%	97.3%	0%	97.6%	98.0%
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
% Articulated Trucks	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Buses and Single-Unit Trucks	9	1	0	10	3	3	0	6	0	1	0	1	17
% Buses and Single-Unit Trucks	56.3%	0.3%	0%	2.7%	0.7%	60.0%	0%	1.4%	0%	2.7%	0%	2.4%	2.0%

* L: Left, R: Right, T: Thru, U: U-Turn

48th & Roe Pkwy - TMC
Tue Nov 15, 2022
PM Peak (4:15 PM - 5:15 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1012105, Location: 39.041338, -94.639008



48th & Roe Lane - TMC

Tue Nov 15, 2022

Full Length (7 AM-9 AM, 4 PM-6 PM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 1012106, Location: 39.041627, -94.638631



Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US

Leg Direction	47th Eastbound					48th Westbound					Roe Northbound					Roe Southbound					
Time	L	T	R	U	App	L	T	R	U	App	L	T	R	U	App	L	T	R	U	App	Int
2022-11-15 7:00AM	5	18	2	0	25	3	51	8	0	62	15	9	7	0	31	2	10	14	0	26	144
7:15AM	2	36	7	0	45	9	63	2	0	74	11	6	10	0	27	6	10	17	0	33	179
7:30AM	3	55	20	0	78	9	75	5	0	89	9	14	16	0	39	4	9	24	0	37	243
7:45AM	3	88	26	0	117	10	88	6	0	104	24	11	20	0	55	11	14	12	0	37	313
Hourly Total	13	197	55	0	265	31	277	21	0	329	59	40	53	0	152	23	43	67	0	133	879
8:00AM	8	72	19	0	99	11	80	5	0	96	15	7	19	0	41	6	18	15	0	39	275
8:15AM	8	31	8	0	47	12	71	4	0	87	8	13	12	0	33	9	9	14	0	32	199
8:30AM	2	28	6	0	36	7	64	5	0	76	10	5	13	0	28	4	14	19	0	37	177
8:45AM	4	44	7	0	55	5	48	2	0	55	3	10	10	0	23	5	7	9	0	21	154
Hourly Total	22	175	40	0	237	35	263	16	0	314	36	35	54	0	125	24	48	57	0	129	805
4:00PM	12	66	8	0	86	11	93	8	0	112	9	11	19	0	39	3	18	11	0	32	269
4:15PM	18	69	12	0	99	8	77	6	0	91	14	19	23	0	56	2	16	15	0	33	279
4:30PM	19	55	3	0	77	10	90	13	0	113	11	13	17	0	41	6	17	16	0	39	270
4:45PM	12	75	10	0	97	9	70	13	1	93	6	12	26	0	44	9	11	16	0	36	270
Hourly Total	61	265	33	0	359	38	330	40	1	409	40	55	85	0	180	20	62	58	0	140	1088
5:00PM	22	59	10	0	91	15	86	6	0	107	13	14	21	0	48	7	15	21	0	43	289
5:15PM	21	70	10	0	101	12	80	15	0	107	4	16	21	0	41	12	21	19	0	52	301
5:30PM	17	64	8	0	89	13	70	12	0	95	12	16	19	0	47	4	17	16	0	37	268
5:45PM	18	68	6	0	92	11	63	10	0	84	3	15	11	0	29	6	8	15	0	29	234
Hourly Total	78	261	34	0	373	51	299	43	0	393	32	61	72	0	165	29	61	71	0	161	1092
Total	174	898	162	0	1234	155	1169	120	1	1445	167	191	264	0	622	96	214	253	0	563	3864
% Approach	14.1%	72.8%	13.1%	0%	-	10.7%	80.9%	8.3%	0.1%	-	26.8%	30.7%	42.4%	0%	-	17.1%	38.0%	44.9%	0%	-	-
% Total	4.5%	23.2%	4.2%	0%	31.9%	4.0%	30.3%	3.1%	0%	37.4%	4.3%	4.9%	6.8%	0%	16.1%	2.5%	5.5%	6.5%	0%	14.6%	-
Lights	171	881	157	0	1209	153	1149	119	1	1422	163	185	259	0	607	96	213	246	0	555	3793
% Lights	98.3%	98.1%	96.9%	0%	98.0%	98.7%	98.3%	99.2%	100%	98.4%	97.6%	96.9%	98.1%	0%	97.6%	100%	99.5%	97.2%	0%	98.6%	98.2%
Articulated Trucks	0	2	0	0	2	0	0	0	0	0	1	0	0	0	1	0	0	1	0	1	4
% Articulated Trucks	0%	0.2%	0%	0%	0.2%	0%	0%	0%	0%	0%	0.6%	0%	0%	0%	0.2%	0%	0%	0.4%	0%	0.2%	0.1%
Buses and Single-Unit Trucks	3	15	5	0	23	2	20	1	0	23	3	6	5	0	14	0	1	6	0	7	67
% Buses and Single-Unit Trucks	1.7%	1.7%	3.1%	0%	1.9%	1.3%	1.7%	0.8%	0%	1.6%	1.8%	3.1%	1.9%	0%	2.3%	0%	0.5%	2.4%	0%	1.2%	1.7%

* L: Left, R: Right, T: Thru, U: U-Turn

48th & Roe Lane - TMC

Tue Nov 15, 2022

Full Length (7 AM-9 AM, 4 PM-6 PM)

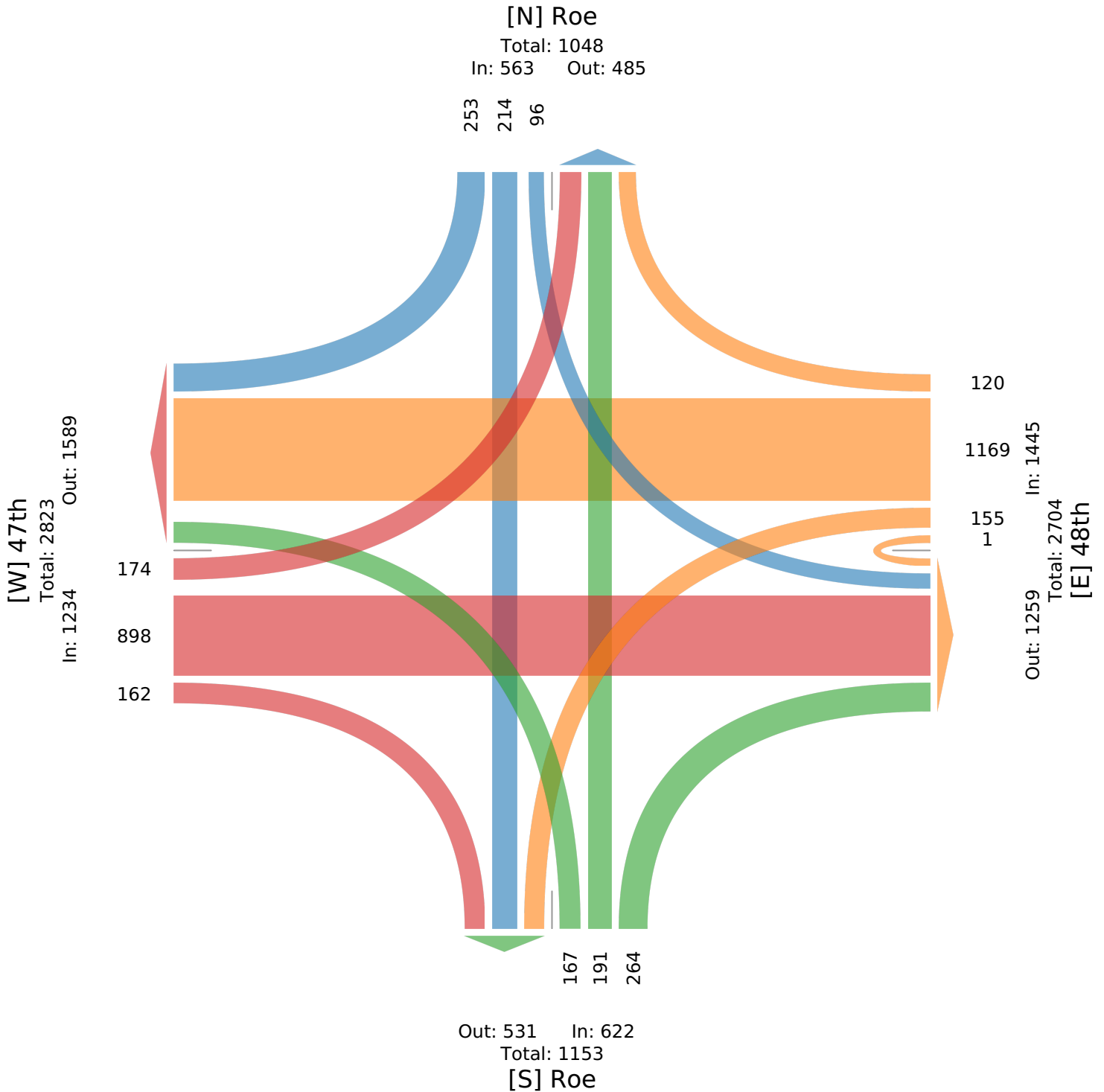
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 1012106, Location: 39.041627, -94.638631



Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US



48th & Roe Lane - TMC

Tue Nov 15, 2022

AM Peak (7:30 AM - 8:30 AM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 1012106, Location: 39.041627, -94.638631



Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US

Leg Direction	47th Eastbound					48th Westbound					Roe Northbound					Roe Southbound					
Time	L	T	R	U	App	L	T	R	U	App	L	T	R	U	App	L	T	R	U	App	Int
2022-11-15 7:30AM	3	55	20	0	78	9	75	5	0	89	9	14	16	0	39	4	9	24	0	37	243
7:45AM	3	88	26	0	117	10	88	6	0	104	24	11	20	0	55	11	14	12	0	37	313
8:00AM	8	72	19	0	99	11	80	5	0	96	15	7	19	0	41	6	18	15	0	39	275
8:15AM	8	31	8	0	47	12	71	4	0	87	8	13	12	0	33	9	9	14	0	32	199
Total	22	246	73	0	341	42	314	20	0	376	56	45	67	0	168	30	50	65	0	145	1030
% Approach	6.5%	72.1%	21.4%	0%	-	11.2%	83.5%	5.3%	0%	-	33.3%	26.8%	39.9%	0%	-	20.7%	34.5%	44.8%	0%	-	-
% Total	2.1%	23.9%	7.1%	0%	33.1%	4.1%	30.5%	1.9%	0%	36.5%	5.4%	4.4%	6.5%	0%	16.3%	2.9%	4.9%	6.3%	0%	14.1%	-
PHF	0.688	0.699	0.702	-	0.729	0.875	0.892	0.833	-	0.904	0.583	0.804	0.838	-	0.764	0.682	0.694	0.677	-	0.929	0.823
Lights	21	240	69	0	330	41	304	20	0	365	56	45	64	0	165	30	49	61	0	140	1000
% Lights	95.5%	97.6%	94.5%	0%	96.8%	97.6%	96.8%	100%	0%	97.1%	100%	100%	95.5%	0%	98.2%	100%	98.0%	93.8%	0%	96.6%	97.1%
Articulated Trucks	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
% Articulated Trucks	0%	0.4%	0%	0%	0.3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1.5%	0%	0.7%	0.2%
Buses and Single-Unit Trucks	1	5	4	0	10	1	10	0	0	11	0	0	3	0	3	0	1	3	0	4	28
% Buses and Single-Unit Trucks	4.5%	2.0%	5.5%	0%	2.9%	2.4%	3.2%	0%	0%	2.9%	0%	0%	4.5%	0%	1.8%	0%	2.0%	4.6%	0%	2.8%	2.7%

* L: Left, R: Right, T: Thru, U: U-Turn

48th & Roe Lane - TMC

Tue Nov 15, 2022

AM Peak (7:30 AM - 8:30 AM)

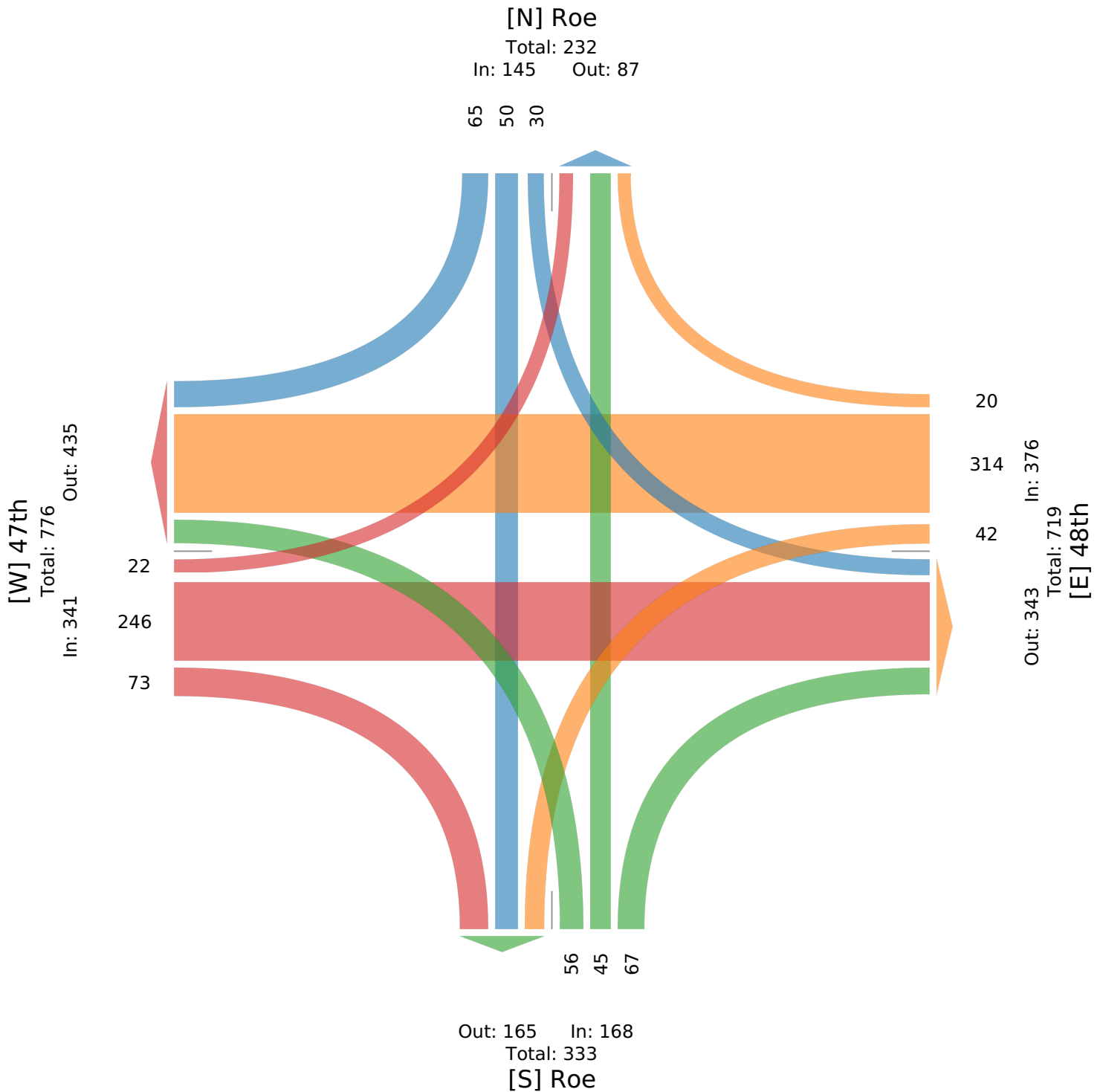
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 1012106, Location: 39.041627, -94.638631



Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US



48th & Roe Lane - TMC

Tue Nov 15, 2022

PM Peak (4:30 PM - 5:30 PM) - Overall Peak Hour

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 1012106, Location: 39.041627, -94.638631



Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US

Leg Direction	47th Eastbound					48th Westbound					Roe Northbound					Roe Southbound					
Time	L	T	R	U	App	L	T	R	U	App	L	T	R	U	App	L	T	R	U	App	Int
2022-11-15 4:30PM	19	55	3	0	77	10	90	13	0	113	11	13	17	0	41	6	17	16	0	39	270
4:45PM	12	75	10	0	97	9	70	13	1	93	6	12	26	0	44	9	11	16	0	36	270
5:00PM	22	59	10	0	91	15	86	6	0	107	13	14	21	0	48	7	15	21	0	43	289
5:15PM	21	70	10	0	101	12	80	15	0	107	4	16	21	0	41	12	21	19	0	52	301
Total	74	259	33	0	366	46	326	47	1	420	34	55	85	0	174	34	64	72	0	170	1130
% Approach	20.2%	70.8%	9.0%	0%	-	11.0%	77.6%	11.2%	0.2%	-	19.5%	31.6%	48.9%	0%	-	20.0%	37.6%	42.4%	0%	-	-
% Total	6.5%	22.9%	2.9%	0%	32.4%	4.1%	28.8%	4.2%	0.1%	37.2%	3.0%	4.9%	7.5%	0%	15.4%	3.0%	5.7%	6.4%	0%	15.0%	-
PHF	0.841	0.863	0.825	-	0.906	0.767	0.906	0.783	0.250	0.929	0.654	0.859	0.817	-	0.906	0.708	0.762	0.857	-	0.817	0.939
Lights	74	258	33	0	365	46	322	47	1	416	31	55	84	0	170	34	64	71	0	169	1120
% Lights	100%	99.6%	100%	0%	99.7%	100%	98.8%	100%	100%	99.0%	91.2%	100%	98.8%	0%	97.7%	100%	100%	98.6%	0%	99.4%	99.1%
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1
% Articulated Trucks	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2.9%	0%	0%	0%	0.6%	0%	0%	0%	0%	0%	0.1%
Buses and Single-Unit Trucks	0	1	0	0	1	0	4	0	0	4	2	0	1	0	3	0	0	1	0	1	9
% Buses and Single-Unit Trucks	0%	0.4%	0%	0%	0.3%	0%	1.2%	0%	0%	1.0%	5.9%	0%	1.2%	0%	1.7%	0%	0%	1.4%	0%	0.6%	0.8%

* L: Left, R: Right, T: Thru, U: U-Turn

48th & Roe Lane - TMC

Tue Nov 15, 2022

PM Peak (4:30 PM - 5:30 PM) - Overall Peak Hour

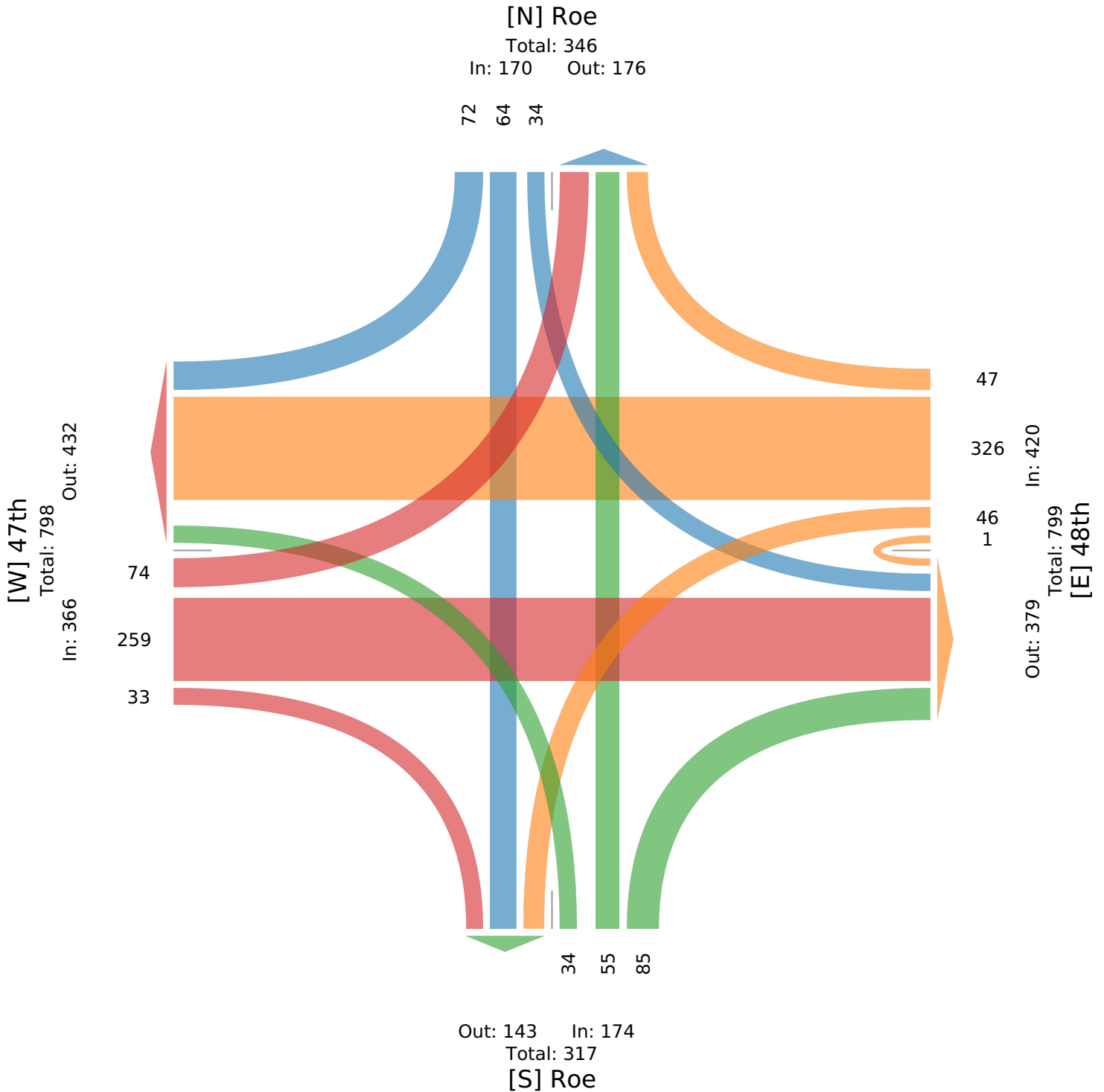
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

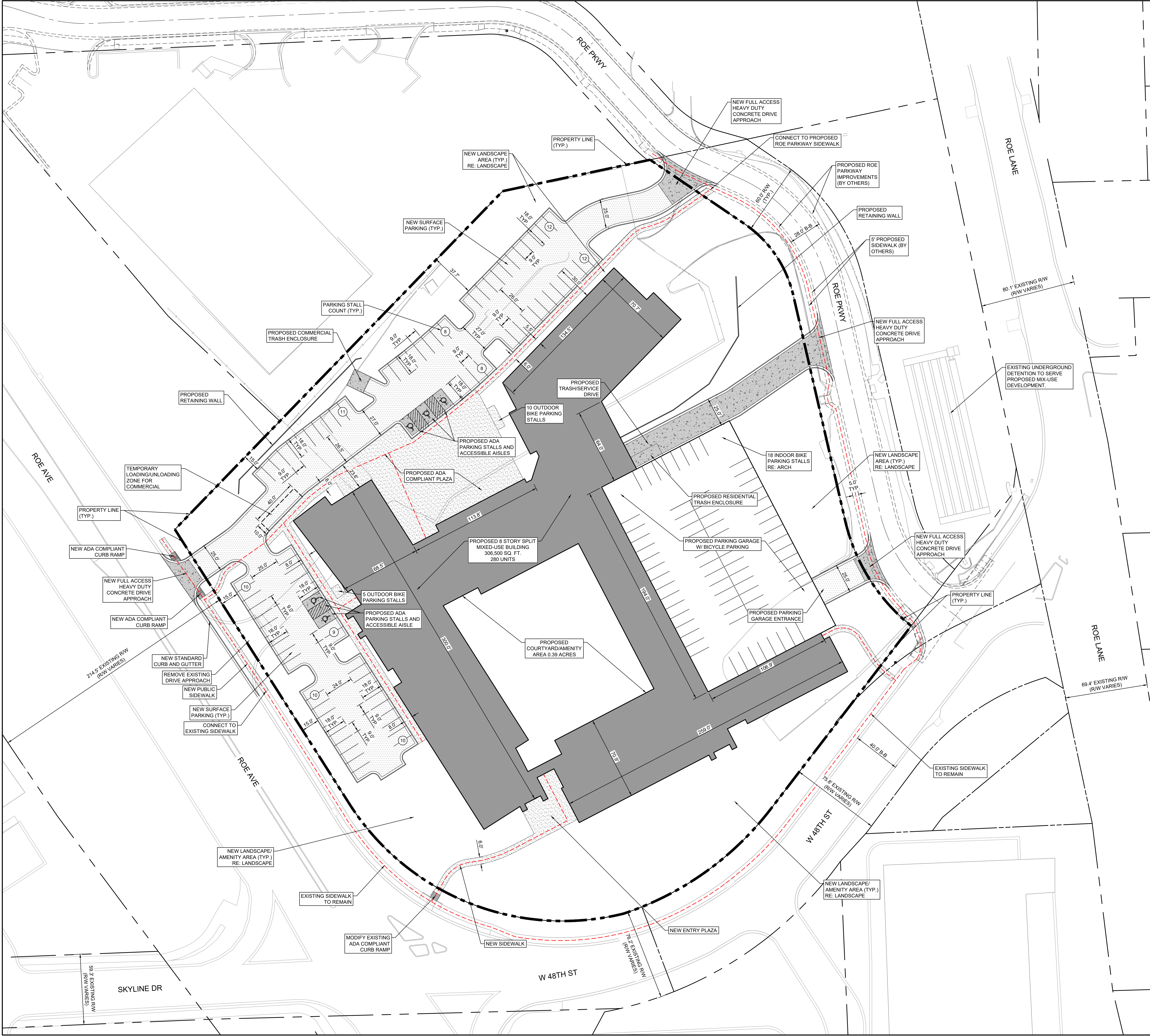
ID: 1012106, Location: 39.041627, -94.638631



Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US



Appendix C: Site Plan

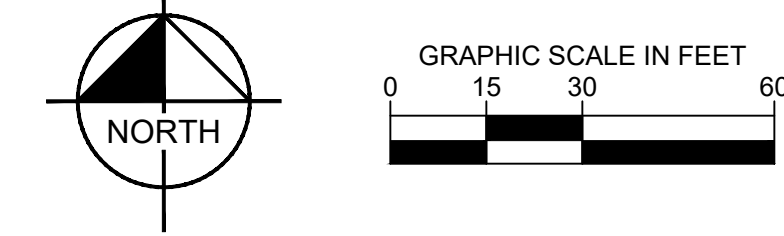


SITE PLAN LEGEND

STANDARD DUTY ASPHALT PAVEMENT

HEAVY DUTY CONCRETE PAVEMENT

Development Summary Table		
A	Zoning	
	Existing	CP-2
B	Proposed	MXD
	Total Land Area	
C	Existing	5.79 Acres
	Right-of-way	
	Existing	0.00 Acres
D	Proposed	0.00 Acres
	Net Land Area	
E	Existing	5.79 Acres
	Proposed	5.79 Acres
	Proposed Uses	
F	Mixed-Use (Multi-Family, Restaurant, & Amenity)	
	Structure Height & # of floors	
	Number of Floors	8
G	Structure Height	95 ft
	Gross Floor Area & # of Units	
	Total Building Count	1
H	Total Gross Floor Area (SF)	306,500
	Total Unit Count	280
	Vehicle Parking	
I	Parking Stalls Required*	330
	Private Garage Stalls Provided	300
	Public Surface Stalls Provided	90
	ADA Parking Stalls Required	5
	ADA Parking Stalls Provided	5
	Total Parking Stalls Provided	390
J	Bike Parking	
	Stalls Required*	33
	Stalls Provided	33
K	Timeline	
	Estimated Start Date	6/1/2023
	Estimated Completion Date	12/1/2024
L	Requested Deviations	
	1. Request to Allow Parking Between Structure and Roe Avenue Right-Of-Way	
M	*Parking Notes:	
	Multi-Family: 1.0 Stall/ 1 Bed Dwelling Unit	
	1.5 Stall/ 2 Bed Dwelling Unit	
	Restaurants: 6 Stall/ 1000 SF	
	Bike Parking: 1 Stall/ 10 Required Parking Stalls	
	Handicap Parking: 1 Stall/ 25 Stalls Rounded Up	



DLRGROUP

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NOT FOR CONSTRUCTION

Kimley»Horn

800 PRINCETON AVENUE, SUITE 100
KANSAS CITY, MO 64105
WWW.KIMLEY-HORN.COM
PROJECT #201921
EXPIRES 12/31/21

ROELAND PARK MIXED-USE PROJECT

EPC REAL ESTATE GROUP, LLC

PRELIMINARY DEVELOPMENT PLAN
10/04/22

12-22109-00

SITE PLAN

C2

Appendix D: ITE Trip Generation

Multifamily Housing (Mid-Rise) Not Close to Rail Transit (221)

Vehicle Trip Ends vs: Dwelling Units

On a: Weekday,

Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban

Number of Studies: 30

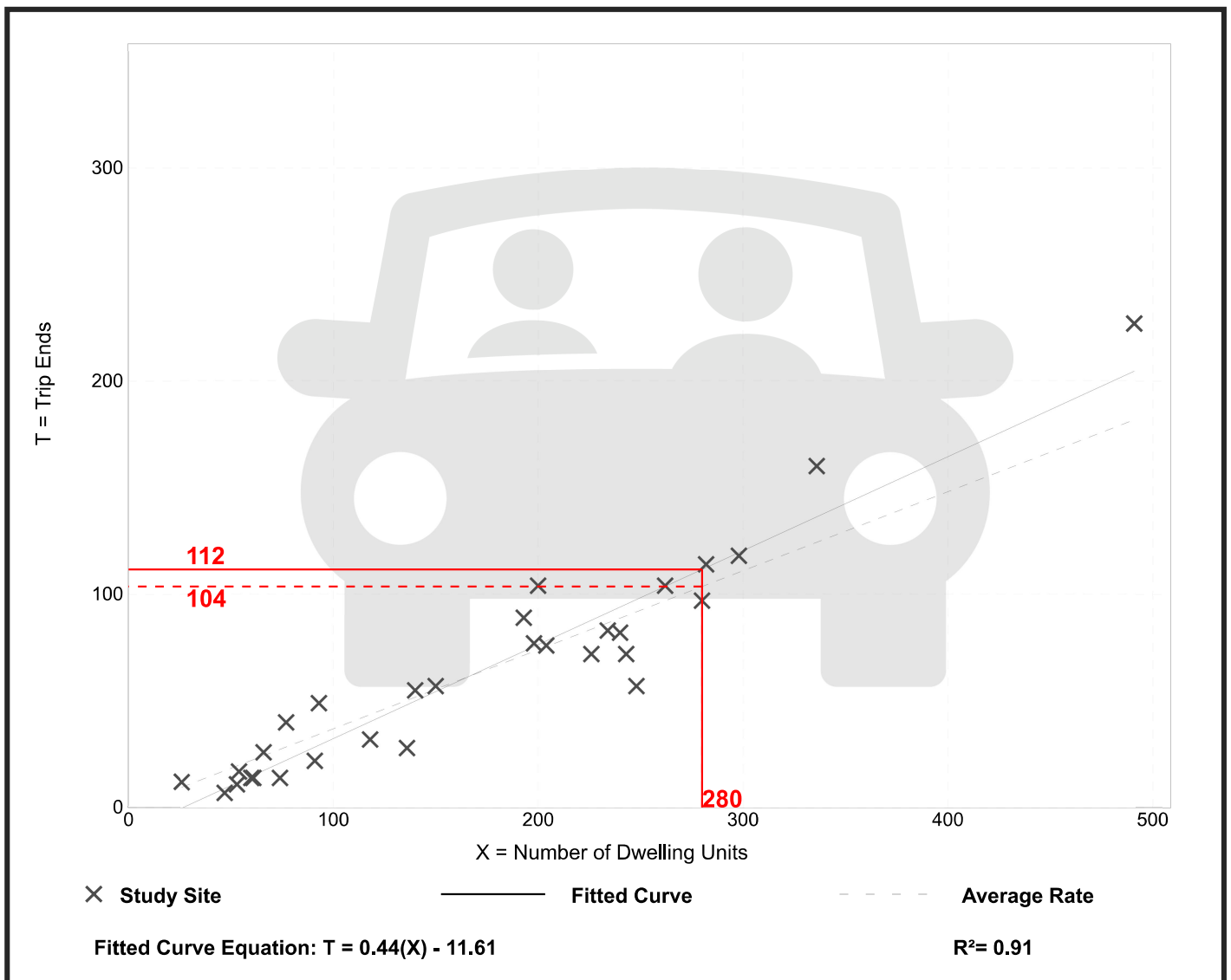
Avg. Num. of Dwelling Units: 173

Directional Distribution: 23% entering, 77% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.37	0.15 - 0.53	0.09

Data Plot and Equation



Multifamily Housing (Mid-Rise)

Not Close to Rail Transit (221)

Vehicle Trip Ends vs: Dwelling Units

On a: Weekday,

Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

Setting/Location: General Urban/Suburban

Number of Studies: 31

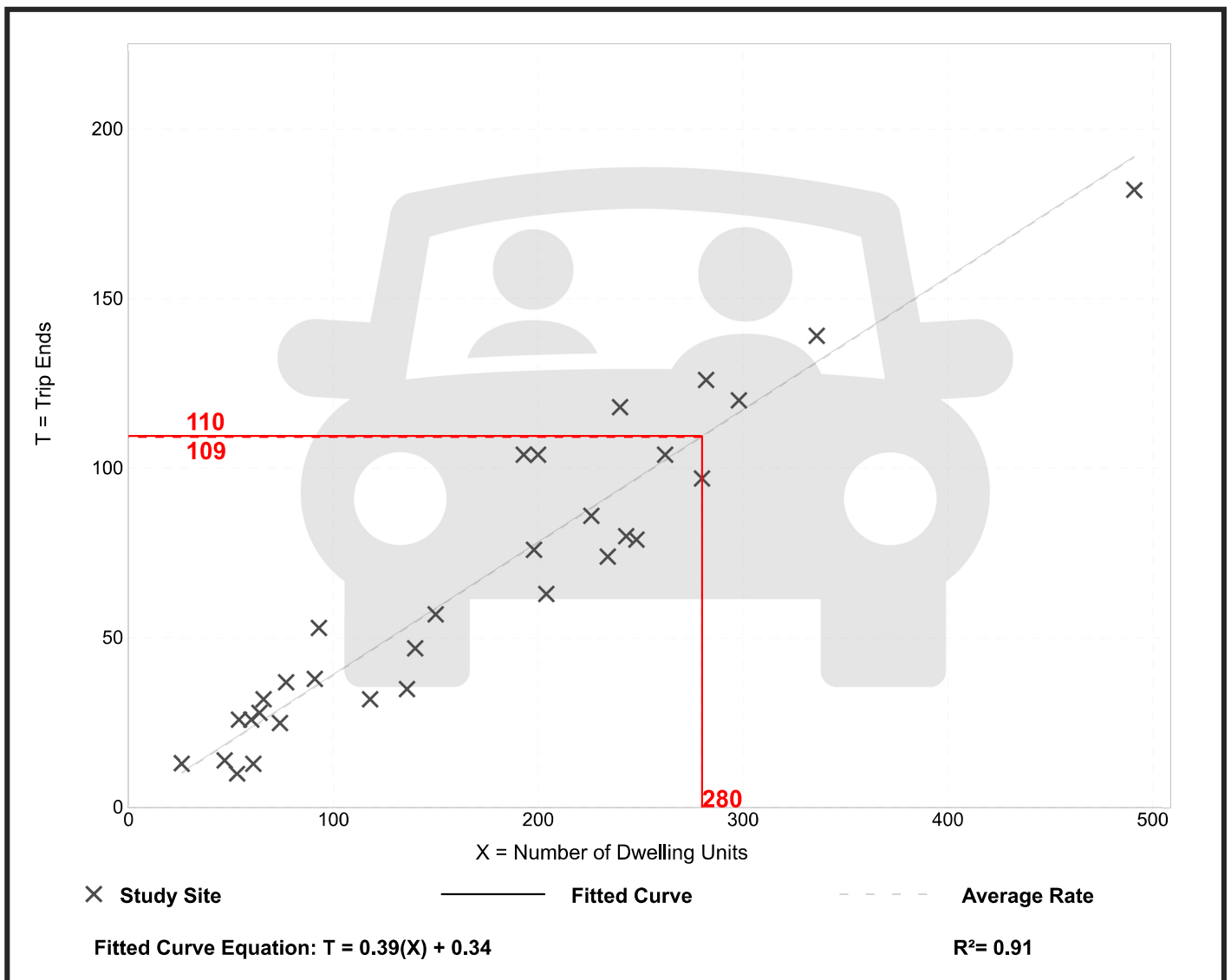
Avg. Num. of Dwelling Units: 169

Directional Distribution: 61% entering, 39% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.39	0.19 - 0.57	0.08

Data Plot and Equation



Multifamily Housing (Mid-Rise)

Not Close to Rail Transit (221)

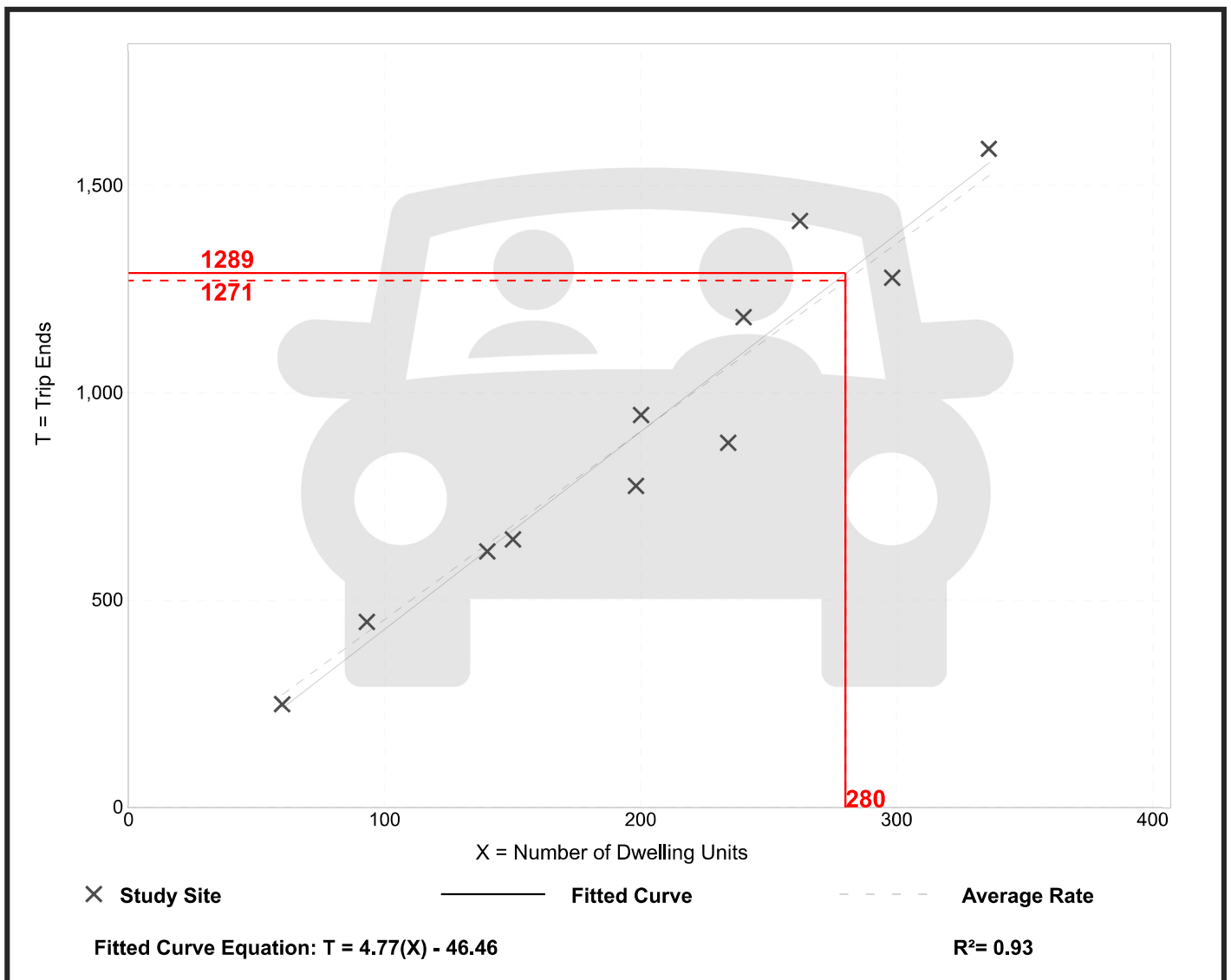
Vehicle Trip Ends vs: Dwelling Units
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 11
Avg. Num. of Dwelling Units: 201
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
4.54	3.76 - 5.40	0.51

Data Plot and Equation



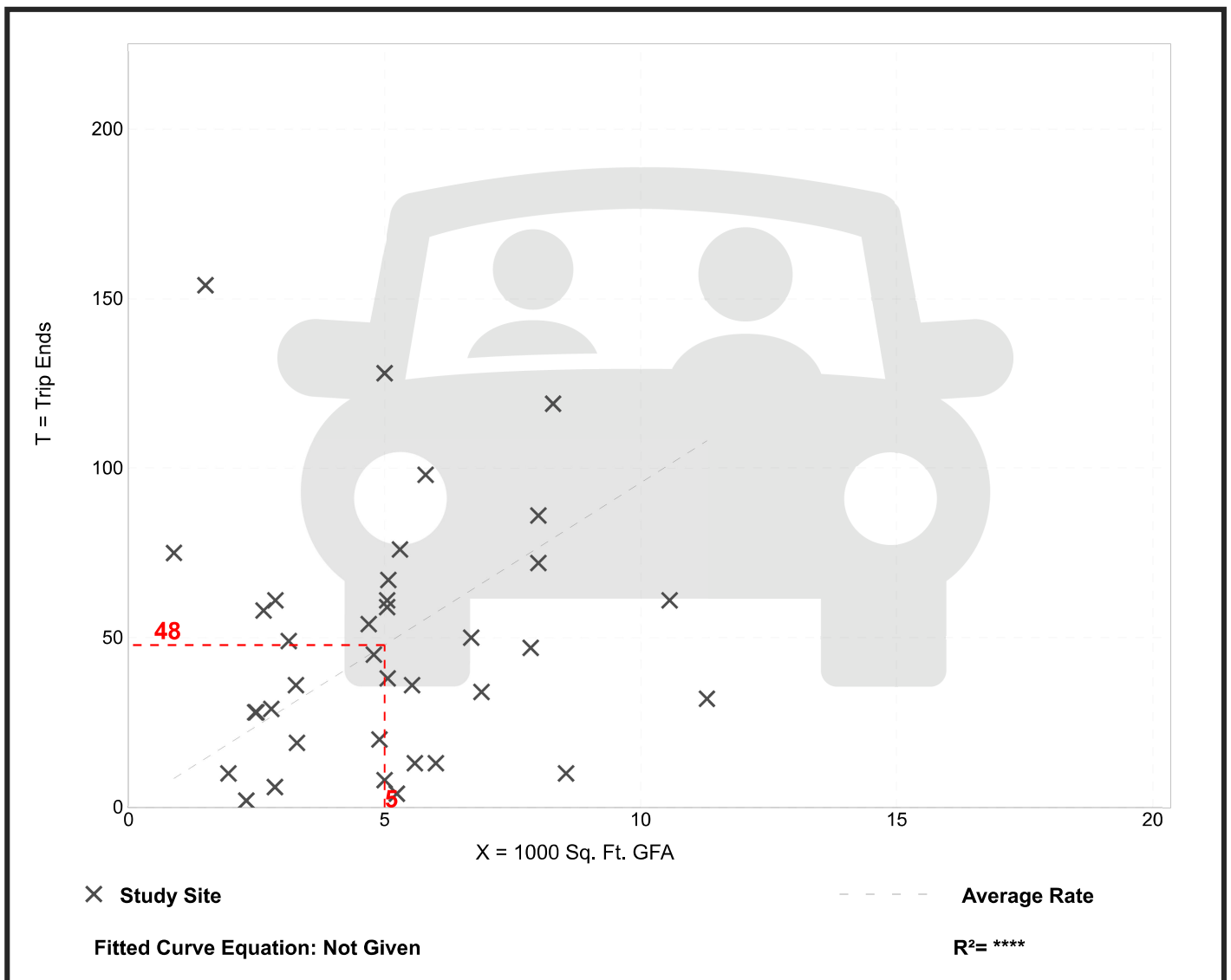
High-Turnover (Sit-Down) Restaurant (932)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
 On a: Weekday,
 Peak Hour of Adjacent Street Traffic,
 One Hour Between 7 and 9 a.m.
 Setting/Location: General Urban/Suburban
 Number of Studies: 37
 Avg. 1000 Sq. Ft. GFA: 5
 Directional Distribution: 55% entering, 45% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
9.57	0.76 - 102.39	11.61

Data Plot and Equation



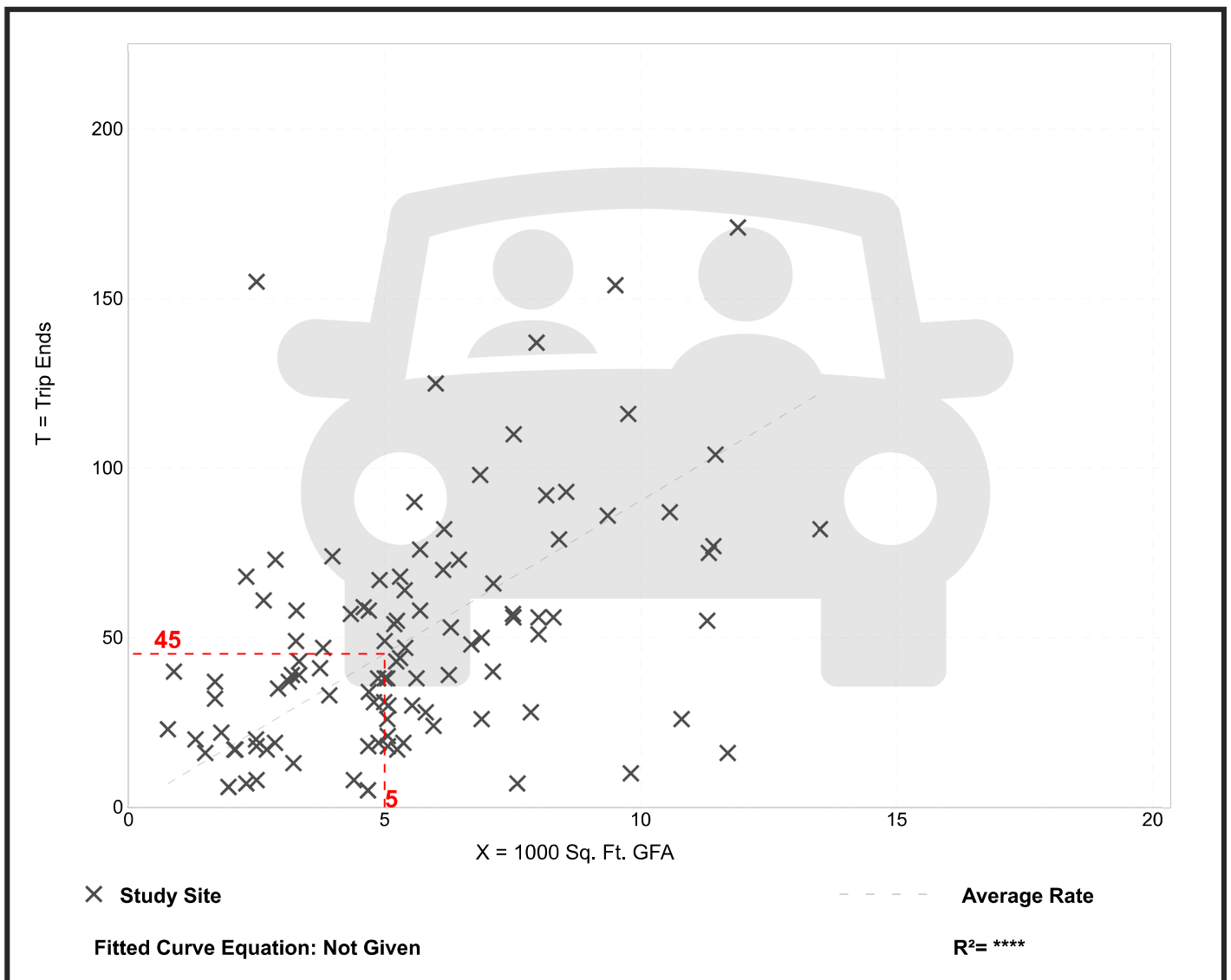
High-Turnover (Sit-Down) Restaurant (932)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
 On a: Weekday,
 Peak Hour of Adjacent Street Traffic,
 One Hour Between 4 and 6 p.m.
 Setting/Location: General Urban/Suburban
 Number of Studies: 104
 Avg. 1000 Sq. Ft. GFA: 6
 Directional Distribution: 61% entering, 39% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
9.05	0.92 - 62.00	6.18

Data Plot and Equation



High-Turnover (Sit-Down) Restaurant (932)

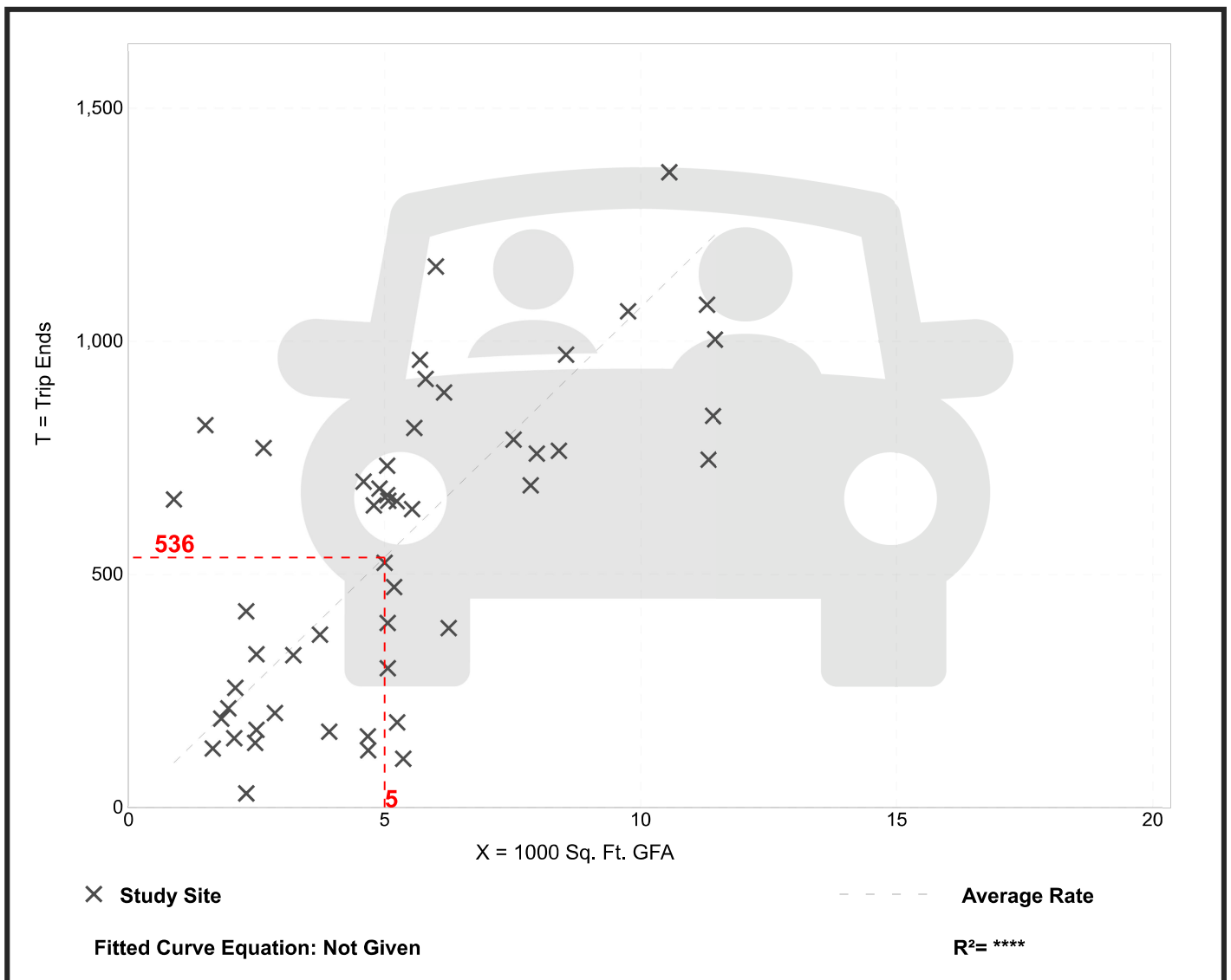
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 50
Avg. 1000 Sq. Ft. GFA: 5
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
107.20	13.04 - 742.41	66.72

Data Plot and Equation



Internal Capture Reduction Calculations

Methodology for A.M. Peak Hour and P.M. Peak Hour
based on the *Trip Generation Handbook* , 3rd Edition, published by the Institute of Transportation Engineers

Methodology for Daily
based on the average of the Unconstrained Rates for the A.M. Peak Hour and P.M. Peak Hour

SUMMARY

GROSS TRIP GENERATION

INPUT	Land Use	Daily		A.M. Peak Hour		P.M. Peak Hour	
		Enter	Exit	Enter	Exit	Enter	Exit
	Office						
	Retail						
	Restaurant	268	268	26	22	27	18
	Cinema/Entertainment						
	Residential	645	644	26	86	67	43
	Hotel						
		913	912	52	108	94	61

INTERNAL TRIPS

OUTPUT	Land Use	Daily		A.M. Peak Hour		P.M. Peak Hour	
		Enter	Exit	Enter	Exit	Enter	Exit
	Office	0	0	0	0	0	0
	Retail	0	0	0	0	0	0
	Restaurant	46	29	5	1	4	3
	Cinema/Entertainment	0	0	0	0	0	0
	Residential	29	46	1	5	3	4
	Hotel	0	0	0	0	0	0
		75	75	6	6	7	7
	% Reduction	8.2%		7.5%		9.0%	

EXTERNAL TRIPS

OUTPUT	Land Use	Daily		A.M. Peak Hour		P.M. Peak Hour	
		Enter	Exit	Enter	Exit	Enter	Exit
	Office	0	0	0	0	0	0
	Retail	0	0	0	0	0	0
	Restaurant	222	239	21	21	23	15
	Cinema/Entertainment	0	0	0	0	0	0
	Residential	616	598	25	81	64	39
	Hotel	0	0	0	0	0	0
		838	837	46	102	87	54

Appendix E: Synchro Reports

Lanes, Volumes, Timings
1: Roe Blvd. & 48th Street

Existing Conditions

AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	88	56	25	65	42	357	21	639	20	281	602	64
Future Volume (vph)	88	56	25	65	42	357	21	639	20	281	602	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	120		0	180		0	120		150	300		300
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt		0.953			0.866				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1775	0	1770	1613	0	1770	3539	1583	1770	3539	1583
Flt Permitted	0.252			0.697			0.389			0.183		
Satd. Flow (perm)	469	1775	0	1298	1613	0	725	3539	1583	341	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		18			346				136			136
Link Speed (mph)		30			30			35			35	
Link Distance (ft)		484			607			1051			334	
Travel Time (s)		11.0			13.8			20.5			6.5	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	101	64	29	75	48	410	24	734	23	323	692	74
Shared Lane Traffic (%)												
Lane Group Flow (vph)	101	93	0	75	458	0	24	734	23	323	692	74
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6

Lanes, Volumes, Timings
1: Roe Blvd. & 48th Street

Existing Conditions
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.0	24.0		11.0	24.0		11.0	24.0	24.0	11.0	24.0	24.0
Total Split (s)	24.0	37.0		24.0	37.0		24.0	35.0	35.0	24.0	35.0	35.0
Total Split (%)	20.0%	30.8%		20.0%	30.8%		20.0%	29.2%	29.2%	20.0%	29.2%	29.2%
Maximum Green (s)	18.0	31.0		18.0	31.0		18.0	29.0	29.0	18.0	29.0	29.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		None	Min	Min	None	None	None
Walk Time (s)		7.0			7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0			11.0			11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0			0			0	0		0	0
Act Effect Green (s)	24.2	15.9		20.9	14.3		31.2	24.7	24.7	49.9	45.6	45.6
Actuated g/C Ratio	0.27	0.18		0.23	0.16		0.35	0.28	0.28	0.56	0.51	0.51
v/c Ratio	0.37	0.28		0.22	0.84		0.07	0.75	0.04	0.66	0.38	0.08
Control Delay	25.4	29.4		22.9	24.4		15.6	37.2	0.1	23.9	19.0	0.2
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.4	29.4		22.9	24.4		15.6	37.2	0.1	23.9	19.0	0.2
LOS	C	C		C	C		B	D	A	C	B	A
Approach Delay		27.3			24.2			35.5			19.2	
Approach LOS		C			C			D			B	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 89.4

Natural Cycle: 75

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 25.7

Intersection LOS: C

Intersection Capacity Utilization 82.4%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 1: Roe Blvd. & 48th Street

 Ø1	 Ø2	 Ø3	 Ø4
24 s	35 s	24 s	37 s
 Ø5	 Ø6	 Ø7	 Ø8
24 s	35 s	24 s	37 s

Queues

1: Roe Blvd. & 48th Street

Existing Conditions

AM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	101	93	75	458	24	734	23	323	692	74
v/c Ratio	0.37	0.28	0.22	0.84	0.07	0.75	0.04	0.66	0.38	0.08
Control Delay	25.4	29.4	22.9	24.4	15.6	37.2	0.1	23.9	19.0	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.4	29.4	22.9	24.4	15.6	37.2	0.1	23.9	19.0	0.2
Queue Length 50th (ft)	42	38	30	60	6	201	0	97	111	0
Queue Length 95th (ft)	77	80	60	170	24	327	0	#277	266	0
Internal Link Dist (ft)		404		527		971			254	
Turn Bay Length (ft)	120		180		120		150	300		300
Base Capacity (vph)	436	664	538	809	575	1209	630	493	1805	874
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.14	0.14	0.57	0.04	0.61	0.04	0.66	0.38	0.08

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM 6th Signalized Intersection Summary

1: Roe Blvd. & 48th Street

Existing Conditions

AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	88	56	25	65	42	357	21	639	20	281	602	64
Future Volume (veh/h)	88	56	25	65	42	357	21	639	20	281	602	64
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	101	64	29	75	48	0	24	734	0	323	692	0
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	323	113	51	280	151		381	1035		479	1500	
Arrive On Green	0.07	0.09	0.09	0.06	0.08	0.00	0.03	0.29	0.00	0.16	0.42	0.00
Sat Flow, veh/h	1781	1219	552	1781	1870	0	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	101	0	93	75	48	0	24	734	0	323	692	0
Grp Sat Flow(s),veh/h/ln	1781	0	1771	1781	1870	0	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	3.1	0.0	3.0	2.3	1.5	0.0	0.6	11.1	0.0	6.9	8.4	0.0
Cycle Q Clear(g_c), s	3.1	0.0	3.0	2.3	1.5	0.0	0.6	11.1	0.0	6.9	8.4	0.0
Prop In Lane	1.00		0.31	1.00		0.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	323	0	164	280	151		381	1035		479	1500	
V/C Ratio(X)	0.31	0.00	0.57	0.27	0.32		0.06	0.71		0.67	0.46	
Avail Cap(c_a), veh/h	729	0	912	707	963		864	1712		729	1712	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	23.0	0.0	26.2	23.3	26.1	0.0	14.2	19.1	0.0	12.2	12.5	0.0
Incr Delay (d2), s/veh	0.5	0.0	3.1	0.5	1.2	0.0	0.1	0.9	0.0	1.7	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.0	1.3	0.9	0.7	0.0	0.2	4.2	0.0	2.4	2.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.5	0.0	29.2	23.8	27.3	0.0	14.2	20.0	0.0	13.9	12.7	0.0
LnGrp LOS	C	A	C	C	C		B	B		B	B	
Approach Vol, veh/h		194			123	A		758	A		1015	A
Approach Delay, s/veh		26.3			25.2			19.8			13.1	
Approach LOS		C			C			B			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.5	23.5	9.6	11.6	7.7	31.4	10.3	10.9				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	18.0	29.0	18.0	31.0	18.0	29.0	18.0	31.0				
Max Q Clear Time (g_c+l1), s	8.9	13.1	4.3	5.0	2.6	10.4	5.1	3.5				
Green Ext Time (p_c), s	0.7	4.4	0.1	0.5	0.0	4.4	0.2	0.2				

Intersection Summary

HCM 6th Ctrl Delay 17.4

HCM 6th LOS B

Notes

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th TWSC
2: 48th Street & Roe Pkwy.

Existing Conditions
AM Peak Hour

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	18	332	432	8	5	19
Future Vol, veh/h	18	332	432	8	5	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	75	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	21	382	497	9	6	22
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	506	0	-	0	735	502
Stage 1	-	-	-	-	502	-
Stage 2	-	-	-	-	233	-
Critical Hdwy	4.13	-	-	-	6.63	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.83	-
Follow-up Hdwy	2.219	-	-	-	3.519	3.319
Pot Cap-1 Maneuver	1057	-	-	-	370	568
Stage 1	-	-	-	-	607	-
Stage 2	-	-	-	-	784	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1057	-	-	-	361	568
Mov Cap-2 Maneuver	-	-	-	-	361	-
Stage 1	-	-	-	-	592	-
Stage 2	-	-	-	-	784	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.5	0		12.5		
HCM LOS	B					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1057	-	-	-	507	
HCM Lane V/C Ratio	0.02	-	-	-	0.054	
HCM Control Delay (s)	8.5	0.1	-	-	12.5	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2	

Lanes, Volumes, Timings
3: Roe Lane & 48th Street/47th Street

Existing Conditions

AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	246	73	42	314	20	56	45	67	30	50	65
Future Volume (vph)	22	246	73	42	314	20	56	45	67	30	50	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	200		0	180		0	150		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.966			0.991			0.910			0.915	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1799	0	1770	1846	0	1770	1695	0	1770	1704	0
Flt Permitted	0.469			0.432			0.546			0.674		
Satd. Flow (perm)	874	1799	0	805	1846	0	1017	1695	0	1255	1704	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		14			3			69			62	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		165			565			616			471	
Travel Time (s)		3.8			12.8			14.0			10.7	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	25	283	84	48	361	23	64	52	77	34	57	75
Shared Lane Traffic (%)												
Lane Group Flow (vph)	25	367	0	48	384	0	64	129	0	34	132	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		

Lanes, Volumes, Timings
3: Roe Lane & 48th Street/47th Street

Existing Conditions

AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	11.0	24.0		11.0	24.0		11.0	24.0		11.0	24.0	
Total Split (s)	16.0	39.0		16.0	39.0		16.0	39.0		16.0	39.0	
Total Split (%)	14.5%	35.5%		14.5%	35.5%		14.5%	35.5%		14.5%	35.5%	
Maximum Green (s)	10.0	33.0		10.0	33.0		10.0	33.0		10.0	33.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	Min		None	Min		None	None		None	None	
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effect Green (s)	27.3	26.6		28.7	28.9		15.0	12.3		12.7	9.4	
Actuated g/C Ratio	0.48	0.47		0.51	0.51		0.27	0.22		0.23	0.17	
v/c Ratio	0.05	0.43		0.09	0.41		0.17	0.30		0.10	0.40	
Control Delay	10.5	19.9		10.5	17.8		17.6	15.9		17.5	20.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	10.5	19.9		10.5	17.8		17.6	15.9		17.5	20.7	
LOS	B	B		B	B		B	B		B	C	
Approach Delay		19.3			17.0			16.5			20.0	
Approach LOS		B			B			B			C	

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 56.4

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.43

Intersection Signal Delay: 18.1

Intersection LOS: B

Intersection Capacity Utilization 46.7%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 3: Roe Lane & 48th Street/47th Street

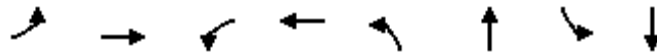
 Ø1	 Ø2	 Ø3	 Ø4
16 s	39 s	16 s	39 s
 Ø5	 Ø6	 Ø7	 Ø8
16 s	39 s	16 s	39 s

Queues

3: Roe Lane & 48th Street/47th Street

Existing Conditions

AM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	25	367	48	384	64	129	34	132
v/c Ratio	0.05	0.43	0.09	0.41	0.17	0.30	0.10	0.40
Control Delay	10.5	19.9	10.5	17.8	17.6	15.9	17.5	20.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.5	19.9	10.5	17.8	17.6	15.9	17.5	20.7
Queue Length 50th (ft)	5	125	10	95	17	16	9	25
Queue Length 95th (ft)	18	229	28	242	48	71	30	80
Internal Link Dist (ft)		85		485		536		391
Turn Bay Length (ft)			200		180		150	
Base Capacity (vph)	638	1211	625	1239	485	1159	485	1163
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.30	0.08	0.31	0.13	0.11	0.07	0.11
Intersection Summary								

HCM 6th Signalized Intersection Summary

3: Roe Lane & 48th Street/47th Street

Existing Conditions
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	246	73	42	314	20	56	45	67	30	50	65
Future Volume (veh/h)	22	246	73	42	314	20	56	45	67	30	50	65
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	25	283	0	48	361	0	64	52	77	34	57	75
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	299	459		365	497		333	103	153	325	95	125
Arrive On Green	0.03	0.25	0.00	0.05	0.27	0.00	0.06	0.15	0.15	0.04	0.13	0.13
Sat Flow, veh/h	1781	1870	0	1781	1870	0	1781	681	1008	1781	733	964
Grp Volume(v), veh/h	25	283	0	48	361	0	64	0	129	34	0	132
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1781	1870	0	1781	0	1689	1781	0	1697
Q Serve(g_s), s	0.5	6.3	0.0	0.9	8.2	0.0	1.4	0.0	3.3	0.8	0.0	3.4
Cycle Q Clear(g_c), s	0.5	6.3	0.0	0.9	8.2	0.0	1.4	0.0	3.3	0.8	0.0	3.4
Prop In Lane	1.00		0.00	1.00		0.00	1.00		0.60	1.00		0.57
Lane Grp Cap(c), veh/h	299	459		365	497		333	0	256	325	0	220
V/C Ratio(X)	0.08	0.62		0.13	0.73		0.19	0.00	0.50	0.10	0.00	0.60
Avail Cap(c_a), veh/h	628	1324		658	1324		607	0	1196	639	0	1201
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.0	15.6	0.0	12.3	15.6	0.0	16.0	0.0	18.2	16.5	0.0	19.2
Incr Delay (d2), s/veh	0.1	1.3	0.0	0.2	2.0	0.0	0.3	0.0	1.5	0.1	0.0	2.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	2.5	0.0	0.3	3.3	0.0	0.5	0.0	1.2	0.3	0.0	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.1	17.0	0.0	12.5	17.6	0.0	16.3	0.0	19.7	16.7	0.0	21.8
LnGrp LOS	B	B		B	B		B	A	B	B	A	C
Approach Vol, veh/h	308		A	409		A	193				166	
Approach Delay, s/veh	16.7			17.0			18.6				20.7	
Approach LOS	B			B			B				C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.8	13.1	8.3	17.4	8.8	12.0	7.4	18.4				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	10.0	33.0	10.0	33.0	10.0	33.0	10.0	33.0				
Max Q Clear Time (g_c+l1), s	2.8	5.3	2.9	8.3	3.4	5.4	2.5	10.2				
Green Ext Time (p_c), s	0.0	0.7	0.0	1.7	0.1	0.7	0.0	2.2				

Intersection Summary

HCM 6th Ctrl Delay	17.8
HCM 6th LOS	B

Notes

Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Lanes, Volumes, Timings
1: Roe Blvd. & 48th Street

Existing Conditions
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	163	70	24	121	82	278	59	757	38	282	800	153
Future Volume (vph)	163	70	24	121	82	278	59	757	38	282	800	153
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	120		0	180		0	120		150	300		300
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt		0.962			0.884				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1792	0	1770	1647	0	1770	3539	1583	1770	3539	1583
Flt Permitted	0.157			0.691			0.267			0.112		
Satd. Flow (perm)	292	1792	0	1287	1647	0	497	3539	1583	209	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		14			137				136			166
Link Speed (mph)		30			30			35			35	
Link Distance (ft)		484			607			1051			334	
Travel Time (s)		11.0			13.8			20.5			6.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	177	76	26	132	89	302	64	823	41	307	870	166
Shared Lane Traffic (%)												
Lane Group Flow (vph)	177	102	0	132	391	0	64	823	41	307	870	166
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6

Lanes, Volumes, Timings
1: Roe Blvd. & 48th Street

Existing Conditions
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.0	24.0		11.0	24.0		11.0	24.0	24.0	11.0	24.0	24.0
Total Split (s)	24.0	37.0		24.0	37.0		24.0	35.0	35.0	24.0	35.0	35.0
Total Split (%)	20.0%	30.8%		20.0%	30.8%		20.0%	29.2%	29.2%	20.0%	29.2%	29.2%
Maximum Green (s)	18.0	31.0		18.0	31.0		18.0	29.0	29.0	18.0	29.0	29.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		None	Min	Min	None	None	None
Walk Time (s)		7.0			7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0			11.0			11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0			0			0	0		0	0
Act Effect Green (s)	39.4	25.4		32.6	22.0		35.9	28.3	28.3	51.7	40.9	40.9
Actuated g/C Ratio	0.37	0.24		0.31	0.21		0.34	0.27	0.27	0.49	0.39	0.39
v/c Ratio	0.58	0.23		0.30	0.87		0.25	0.87	0.08	0.86	0.64	0.23
Control Delay	29.3	29.2		22.7	46.4		20.8	50.0	0.3	51.5	32.4	5.5
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.3	29.2		22.7	46.4		20.8	50.0	0.3	51.5	32.4	5.5
LOS	C	C		C	D		C	D	A	D	C	A
Approach Delay		29.2			40.4			45.8			33.4	
Approach LOS		C			D			D			C	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 106

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.87

Intersection Signal Delay: 38.0

Intersection LOS: D

Intersection Capacity Utilization 87.0%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 1: Roe Blvd. & 48th Street

 Ø1	 Ø2	 Ø3	 Ø4
24 s	35 s	24 s	37 s
 Ø5	 Ø6	 Ø7	 Ø8
24 s	35 s	24 s	37 s

Queues

1: Roe Blvd. & 48th Street

Existing Conditions

PM Peak Hour

										
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	177	102	132	391	64	823	41	307	870	166
v/c Ratio	0.58	0.23	0.30	0.87	0.25	0.87	0.08	0.86	0.64	0.23
Control Delay	29.3	29.2	22.7	46.4	20.8	50.0	0.3	51.5	32.4	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.3	29.2	22.7	46.4	20.8	50.0	0.3	51.5	32.4	5.5
Queue Length 50th (ft)	81	49	58	176	23	287	0	157	265	0
Queue Length 95th (ft)	129	97	99	306	56	#462	0	#364	406	50
Internal Link Dist (ft)		404		527		971			254	
Turn Bay Length (ft)	120		180		120		150	300		300
Base Capacity (vph)	369	560	563	585	437	983	538	371	1366	713
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.18	0.23	0.67	0.15	0.84	0.08	0.83	0.64	0.23

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM 6th Signalized Intersection Summary

1: Roe Blvd. & 48th Street

Existing Conditions

PM Peak Hour

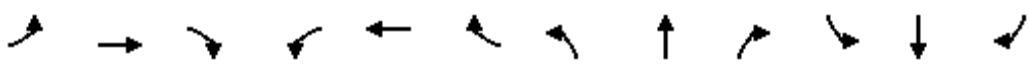
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	163	70	24	121	82	278	59	757	38	282	800	153
Future Volume (veh/h)	163	70	24	121	82	278	59	757	38	282	800	153
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	177	76	26	132	89	0	64	823	0	307	870	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	361	144	49	337	151		327	1082		428	1418	
Arrive On Green	0.12	0.11	0.11	0.09	0.08	0.00	0.05	0.30	0.00	0.15	0.40	0.00
Sat Flow, veh/h	1781	1332	456	1781	1870	0	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	177	0	102	132	89	0	64	823	0	307	870	0
Grp Sat Flow(s),veh/h/ln	1781	0	1788	1781	1870	0	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	6.0	0.0	3.7	4.5	3.1	0.0	1.6	14.4	0.0	7.4	13.3	0.0
Cycle Q Clear(g_c), s	6.0	0.0	3.7	4.5	3.1	0.0	1.6	14.4	0.0	7.4	13.3	0.0
Prop In Lane	1.00		0.25	1.00		0.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	361	0	193	337	151		327	1082		428	1418	
V/C Ratio(X)	0.49	0.00	0.53	0.39	0.59		0.20	0.76		0.72	0.61	
Avail Cap(c_a), veh/h	619	0	810	644	847		703	1506		637	1506	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	24.5	0.0	28.9	25.4	30.3	0.0	15.1	21.6	0.0	14.3	16.4	0.0
Incr Delay (d2), s/veh	1.0	0.0	2.2	0.7	3.6	0.0	0.3	1.5	0.0	2.3	0.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	0.0	1.6	1.9	1.5	0.0	0.6	5.7	0.0	2.8	4.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.5	0.0	31.1	26.1	33.9	0.0	15.4	23.1	0.0	16.6	17.1	0.0
LnGrp LOS	C	A	C	C	C		B	C		B	B	
Approach Vol, veh/h	279			221			A			887		
Approach Delay, s/veh	27.5			29.3			22.5			16.9		
Approach LOS	C			C			C			B		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	16.0	26.8	12.2	13.4	9.5	33.3	14.1	11.5				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	18.0	29.0	18.0	31.0	18.0	29.0	18.0	31.0				
Max Q Clear Time (g_c+l1), s	9.4	16.4	6.5	5.7	3.6	15.3	8.0	5.1				
Green Ext Time (p_c), s	0.6	4.5	0.2	0.5	0.1	5.0	0.3	0.4				
Intersection Summary												
HCM 6th Ctrl Delay	21.1											
HCM 6th LOS	C											

Intersection						
Int Delay, s/veh	0.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	13	357	427	5	4	36
Future Vol, veh/h	13	357	427	5	4	36
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	75	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	14	388	464	5	4	39
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	469	0	-	0	689	467
Stage 1	-	-	-	-	467	-
Stage 2	-	-	-	-	222	-
Critical Hdwy	4.13	-	-	-	6.63	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.83	-
Follow-up Hdwy	2.219	-	-	-	3.519	3.319
Pot Cap-1 Maneuver	1091	-	-	-	395	595
Stage 1	-	-	-	-	630	-
Stage 2	-	-	-	-	794	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1091	-	-	-	389	595
Mov Cap-2 Maneuver	-	-	-	-	389	-
Stage 1	-	-	-	-	620	-
Stage 2	-	-	-	-	794	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.4	0		11.9		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1091	-	-	-	565	
HCM Lane V/C Ratio	0.013	-	-	-	0.077	
HCM Control Delay (s)	8.3	0.1	-	-	11.9	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0	-	-	-	0.2	

Lanes, Volumes, Timings

3: Roe Lane & 48th Street/47th Street

Existing Conditions
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	74	259	33	46	326	47	34	55	85	34	64	72
Future Volume (vph)	74	259	33	46	326	47	34	55	85	34	64	72
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	200		0	180		0	150		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.983			0.981			0.909			0.921	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1831	0	1770	1827	0	1770	1693	0	1770	1716	0
Flt Permitted	0.358			0.534			0.663			0.660		
Satd. Flow (perm)	667	1831	0	995	1827	0	1235	1693	0	1229	1716	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			6			62			45	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		165			565			616			471	
Travel Time (s)		3.8			12.8			14.0			10.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	80	282	36	50	354	51	37	60	92	37	70	78
Shared Lane Traffic (%)												
Lane Group Flow (vph)	80	318	0	50	405	0	37	152	0	37	148	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		

Lanes, Volumes, Timings
3: Roe Lane & 48th Street/47th Street

Existing Conditions
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	11.0	24.0		11.0	24.0		11.0	24.0		11.0	24.0	
Total Split (s)	11.0	60.5		11.0	60.5		11.0	59.5		11.0	59.5	
Total Split (%)	7.7%	42.6%		7.7%	42.6%		7.7%	41.9%		7.7%	41.9%	
Maximum Green (s)	5.0	54.5		5.0	54.5		5.0	53.5		5.0	53.5	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	Min		None	Min		None	None		None	None	
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effect Green (s)	24.6	22.1		23.1	19.4		12.9	10.4		12.9	10.4	
Actuated g/C Ratio	0.43	0.39		0.41	0.34		0.23	0.18		0.23	0.18	
v/c Ratio	0.20	0.45		0.10	0.64		0.11	0.42		0.11	0.42	
Control Delay	10.7	18.4		9.9	23.4		17.3	20.2		17.3	22.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	10.7	18.4		9.9	23.4		17.3	20.2		17.3	22.6	
LOS	B	B		A	C		B	C		B	C	
Approach Delay		16.8			22.0			19.6			21.5	
Approach LOS		B			C			B			C	

Intersection Summary

Area Type: Other

Cycle Length: 142

Actuated Cycle Length: 56.9

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.64

Intersection Signal Delay: 19.9

Intersection LOS: B

Intersection Capacity Utilization 56.4%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 3: Roe Lane & 48th Street/47th Street

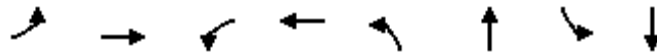
 Ø1	 Ø2	 Ø3	 Ø4
11 s	59.5 s	11 s	60.5 s
 Ø5	 Ø6	 Ø7	 Ø8
11 s	59.5 s	11 s	60.5 s

Queues

3: Roe Lane & 48th Street/47th Street

Existing Conditions

PM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	80	318	50	405	37	152	37	148
v/c Ratio	0.20	0.45	0.10	0.64	0.11	0.42	0.11	0.42
Control Delay	10.7	18.4	9.9	23.4	17.3	20.2	17.3	22.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.7	18.4	9.9	23.4	17.3	20.2	17.3	22.6
Queue Length 50th (ft)	16	100	10	135	9	31	9	36
Queue Length 95th (ft)	40	186	28	244	32	89	32	95
Internal Link Dist (ft)		85		485		536		391
Turn Bay Length (ft)			200		180		150	
Base Capacity (vph)	397	1603	480	1600	332	1475	331	1493
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.20	0.10	0.25	0.11	0.10	0.11	0.10

Intersection Summary

HCM 6th Signalized Intersection Summary

3: Roe Lane & 48th Street/47th Street

Existing Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	74	259	33	46	326	47	34	55	85	34	64	72
Future Volume (veh/h)	74	259	33	46	326	47	34	55	85	34	64	72
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	80	282	0	50	354	0	37	60	92	37	70	78
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	358	521		401	489		296	96	147	291	117	130
Arrive On Green	0.07	0.28	0.00	0.05	0.26	0.00	0.04	0.14	0.14	0.04	0.14	0.14
Sat Flow, veh/h	1781	1870	0	1781	1870	0	1781	666	1021	1781	808	900
Grp Volume(v), veh/h	80	282	0	50	354	0	37	0	152	37	0	148
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1781	1870	0	1781	0	1687	1781	0	1708
Q Serve(g_s), s	1.6	6.3	0.0	1.0	8.5	0.0	0.9	0.0	4.2	0.9	0.0	4.0
Cycle Q Clear(g_c), s	1.6	6.3	0.0	1.0	8.5	0.0	0.9	0.0	4.2	0.9	0.0	4.0
Prop In Lane	1.00		0.00	1.00		0.00	1.00		0.61	1.00		0.53
Lane Grp Cap(c), veh/h	358	521		401	489		296	0	243	291	0	246
V/C Ratio(X)	0.22	0.54		0.12	0.72		0.13	0.00	0.62	0.13	0.00	0.60
Avail Cap(c_a), veh/h	418	2067		492	2067		405	0	1830	400	0	1853
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.4	15.1	0.0	12.3	16.6	0.0	16.9	0.0	19.8	16.9	0.0	19.8
Incr Delay (d2), s/veh	0.3	0.9	0.0	0.1	2.1	0.0	0.2	0.0	2.6	0.2	0.0	2.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	2.4	0.0	0.4	3.4	0.0	0.3	0.0	1.7	0.3	0.0	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.7	16.0	0.0	12.5	18.7	0.0	17.1	0.0	22.5	17.1	0.0	22.1
LnGrp LOS	B	B		B	B		B	A	C	B	A	C
Approach Vol, veh/h	362		A	404		A	189		185			
Approach Delay, s/veh	15.3			17.9			21.4		21.1			
Approach LOS	B			B			C		C			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.0	13.1	8.5	19.7	8.0	13.1	9.3	18.9				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	5.0	53.5	5.0	54.5	5.0	53.5	5.0	54.5				
Max Q Clear Time (g_c+I1), s	2.9	6.2	3.0	8.3	2.9	6.0	3.6	10.5				
Green Ext Time (p_c), s	0.0	1.0	0.0	1.8	0.0	1.0	0.0	2.4				
Intersection Summary												
HCM 6th Ctrl Delay	18.2											
HCM 6th LOS	B											

Lanes, Volumes, Timings
1: Roe Blvd. & 48th Street

Existing+Development
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	88	56	25	101	42	385	21	644	31	302	602	64
Future Volume (vph)	88	56	25	101	42	385	21	644	31	302	602	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	120		0	180		0	120		150	300		300
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt		0.953			0.865				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1775	0	1770	1611	0	1770	3539	1583	1770	3539	1583
Flt Permitted	0.258			0.697			0.389			0.178		
Satd. Flow (perm)	481	1775	0	1298	1611	0	725	3539	1583	332	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		18			373				136			136
Link Speed (mph)		30			30			35			35	
Link Distance (ft)		484			607			1051			334	
Travel Time (s)		11.0			13.8			20.5			6.5	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	101	64	29	116	48	443	24	740	36	347	692	74
Shared Lane Traffic (%)												
Lane Group Flow (vph)	101	93	0	116	491	0	24	740	36	347	692	74
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6

Lanes, Volumes, Timings
1: Roe Blvd. & 48th Street

Existing+Development
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.0	24.0		11.0	24.0		11.0	24.0	24.0	11.0	24.0	24.0
Total Split (s)	24.0	37.0		24.0	37.0		24.0	35.0	35.0	24.0	35.0	35.0
Total Split (%)	20.0%	30.8%		20.0%	30.8%		20.0%	29.2%	29.2%	20.0%	29.2%	29.2%
Maximum Green (s)	18.0	31.0		18.0	31.0		18.0	29.0	29.0	18.0	29.0	29.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		None	Min	Min	None	None	None
Walk Time (s)		7.0			7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0			11.0			11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0			0			0	0		0	0
Act Effect Green (s)	23.8	15.5		23.4	15.3		31.5	25.0	25.0	50.4	46.1	46.1
Actuated g/C Ratio	0.26	0.17		0.26	0.17		0.35	0.28	0.28	0.55	0.51	0.51
v/c Ratio	0.38	0.29		0.30	0.85		0.07	0.76	0.07	0.72	0.39	0.09
Control Delay	25.4	30.6		23.7	24.2		16.2	38.2	0.3	28.0	19.7	0.2
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.4	30.6		23.7	24.2		16.2	38.2	0.3	28.0	19.7	0.2
LOS	C	C		C	C		B	D	A	C	B	A
Approach Delay		27.9			24.1			35.9			21.0	
Approach LOS		C			C			D			C	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 90.9

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 26.6

Intersection LOS: C

Intersection Capacity Utilization 85.4%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 1: Roe Blvd. & 48th Street

 Ø1	 Ø2	 Ø3	 Ø4
24 s	35 s	24 s	37 s
 Ø5	 Ø6	 Ø7	 Ø8
24 s	35 s	24 s	37 s

Queues

1: Roe Blvd. & 48th Street

Existing+Development

AM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	101	93	116	491	24	740	36	347	692	74
v/c Ratio	0.38	0.29	0.30	0.85	0.07	0.76	0.07	0.72	0.39	0.09
Control Delay	25.4	30.6	23.7	24.2	16.2	38.2	0.3	28.0	19.7	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.4	30.6	23.7	24.2	16.2	38.2	0.3	28.0	19.7	0.2
Queue Length 50th (ft)	42	40	49	64	6	208	0	115	116	0
Queue Length 95th (ft)	76	82	85	179	25	339	0	#334	273	0
Internal Link Dist (ft)		404		527		971			254	
Turn Bay Length (ft)	120		180		120		150	300		300
Base Capacity (vph)	435	654	543	818	569	1191	623	484	1792	869
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.14	0.21	0.60	0.04	0.62	0.06	0.72	0.39	0.09

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM 6th Signalized Intersection Summary

1: Roe Blvd. & 48th Street

Existing+Development

AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	88	56	25	101	42	385	21	644	31	302	602	64
Future Volume (veh/h)	88	56	25	101	42	385	21	644	31	302	602	64
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	101	64	29	116	48	0	24	740	0	347	692	0
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	340	107	49	306	183		378	1022		482	1516	
Arrive On Green	0.07	0.09	0.09	0.08	0.10	0.00	0.03	0.29	0.00	0.17	0.43	0.00
Sat Flow, veh/h	1781	1219	552	1781	1870	0	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	101	0	93	116	48	0	24	740	0	347	692	0
Grp Sat Flow(s),veh/h/ln	1781	0	1771	1781	1870	0	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	3.2	0.0	3.2	3.7	1.5	0.0	0.6	11.9	0.0	7.9	8.8	0.0
Cycle Q Clear(g_c), s	3.2	0.0	3.2	3.7	1.5	0.0	0.6	11.9	0.0	7.9	8.8	0.0
Prop In Lane	1.00		0.31	1.00		0.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	340	0	156	306	183		378	1022		482	1516	
V/C Ratio(X)	0.30	0.00	0.60	0.38	0.26		0.06	0.72		0.72	0.46	
Avail Cap(c_a), veh/h	718	0	864	666	912		834	1621		690	1621	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	23.9	0.0	27.9	23.6	26.5	0.0	15.1	20.4	0.0	13.0	13.0	0.0
Incr Delay (d2), s/veh	0.5	0.0	3.6	0.8	0.7	0.0	0.1	1.0	0.0	2.1	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.0	1.5	1.5	0.7	0.0	0.2	4.6	0.0	2.8	3.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.4	0.0	31.5	24.4	27.3	0.0	15.2	21.4	0.0	15.1	13.2	0.0
LnGrp LOS	C	A	C	C	C		B	C		B	B	
Approach Vol, veh/h		194			164	A		764	A		1039	A
Approach Delay, s/veh		27.8			25.2			21.2			13.8	
Approach LOS		C			C			C			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	16.6	24.3	11.1	11.6	7.7	33.1	10.5	12.2				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	18.0	29.0	18.0	31.0	18.0	29.0	18.0	31.0				
Max Q Clear Time (g_c+l1), s	9.9	13.9	5.7	5.2	2.6	10.8	5.2	3.5				
Green Ext Time (p_c), s	0.7	4.4	0.2	0.5	0.0	4.4	0.2	0.2				

Intersection Summary

HCM 6th Ctrl Delay 18.5

HCM 6th LOS B

Notes

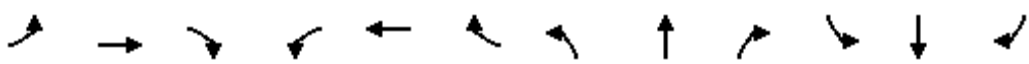
Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection						
Int Delay, s/veh	2.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	50	332	434	15	25	81
Future Vol, veh/h	50	332	434	15	25	81
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	75	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	57	382	499	17	29	93
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	516	0	-	0	813	508
Stage 1	-	-	-	-	508	-
Stage 2	-	-	-	-	305	-
Critical Hdwy	4.13	-	-	-	6.63	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.83	-
Follow-up Hdwy	2.219	-	-	-	3.519	3.319
Pot Cap-1 Maneuver	1048	-	-	-	332	564
Stage 1	-	-	-	-	603	-
Stage 2	-	-	-	-	722	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1048	-	-	-	309	564
Mov Cap-2 Maneuver	-	-	-	-	309	-
Stage 1	-	-	-	-	561	-
Stage 2	-	-	-	-	722	-
Approach	EB	WB		SB		
HCM Control Delay, s	1.3	0		15.3		
HCM LOS				C		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1048	-	-	-	472	
HCM Lane V/C Ratio	0.055	-	-	-	0.258	
HCM Control Delay (s)	8.6	0.2	-	-	15.3	
HCM Lane LOS	A	A	-	-	C	
HCM 95th %tile Q(veh)	0.2	-	-	-	1	

Lanes, Volumes, Timings
3: Roe Lane & 48th Street/47th Street

Existing+Development

AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	261	73	42	321	20	56	45	67	30	50	67
Future Volume (vph)	27	261	73	42	321	20	56	45	67	30	50	67
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	200		0	180		0	150		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.967			0.991			0.910			0.914	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1801	0	1770	1846	0	1770	1695	0	1770	1703	0
Flt Permitted	0.454			0.422			0.606			0.674		
Satd. Flow (perm)	846	1801	0	786	1846	0	1129	1695	0	1255	1703	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		19			4			77			77	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		165			565			616			471	
Travel Time (s)		3.8			12.8			14.0			10.7	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	31	300	84	48	369	23	64	52	77	34	57	77
Shared Lane Traffic (%)												
Lane Group Flow (vph)	31	384	0	48	392	0	64	129	0	34	134	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		

Lanes, Volumes, Timings
3: Roe Lane & 48th Street/47th Street

Existing+Development

AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	11.0	24.0		11.0	24.0		11.0	24.0		11.0	24.0	
Total Split (s)	11.0	24.0		11.0	24.0		11.0	24.0		11.0	24.0	
Total Split (%)	15.7%	34.3%		15.7%	34.3%		15.7%	34.3%		15.7%	34.3%	
Maximum Green (s)	5.0	18.0		5.0	18.0		5.0	18.0		5.0	18.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	Min		None	Min		None	None		None	None	
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effect Green (s)	22.5	22.0		23.5	23.9		11.3	9.9		10.3	8.1	
Actuated g/C Ratio	0.46	0.45		0.48	0.49		0.23	0.20		0.21	0.17	
v/c Ratio	0.06	0.47		0.10	0.43		0.19	0.32		0.10	0.39	
Control Delay	9.6	19.0		9.7	17.6		15.6	13.3		14.9	15.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	9.6	19.0		9.7	17.6		15.6	13.3		14.9	15.5	
LOS	A	B		A	B		B	B		B	B	
Approach Delay		18.3			16.8			14.0			15.4	
Approach LOS		B			B			B			B	

Intersection Summary

Area Type: Other

Cycle Length: 70

Actuated Cycle Length: 48.7

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.47

Intersection Signal Delay: 16.7

Intersection LOS: B

Intersection Capacity Utilization 47.1%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 3: Roe Lane & 48th Street/47th Street

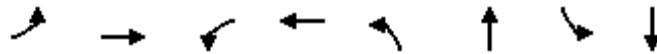
 Ø1	 Ø2	 Ø3	 Ø4
11 s	24 s	11 s	24 s
 Ø5	 Ø6	 Ø7	 Ø8
11 s	24 s	11 s	24 s

Queues

Existing+Development

3: Roe Lane & 48th Street/47th Street

AM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	31	384	48	392	64	129	34	134
v/c Ratio	0.06	0.47	0.10	0.43	0.19	0.32	0.10	0.39
Control Delay	9.6	19.0	9.7	17.6	15.6	13.3	14.9	15.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.6	19.0	9.7	17.6	15.6	13.3	14.9	15.5
Queue Length 50th (ft)	5	113	8	83	16	13	8	19
Queue Length 95th (ft)	18	#229	25	#240	38	56	24	58
Internal Link Dist (ft)		85		485		536		391
Turn Bay Length (ft)			200		180		150	
Base Capacity (vph)	499	913	494	996	336	755	325	756
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.42	0.10	0.39	0.19	0.17	0.10	0.18

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM 6th Signalized Intersection Summary

3: Roe Lane & 48th Street/47th Street

Existing+Development

AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	27	261	73	42	321	20	56	45	67	30	50	67
Future Volume (veh/h)	27	261	73	42	321	20	56	45	67	30	50	67
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	31	300	0	48	369	0	64	52	77	34	57	77
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	293	450		349	477		330	102	150	324	91	123
Arrive On Green	0.04	0.24	0.00	0.05	0.25	0.00	0.06	0.15	0.15	0.04	0.13	0.13
Sat Flow, veh/h	1781	1870	0	1781	1870	0	1781	681	1008	1781	721	974
Grp Volume(v), veh/h	31	300	0	48	369	0	64	0	129	34	0	134
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1781	1870	0	1781	0	1689	1781	0	1695
Q Serve(g_s), s	0.6	6.7	0.0	0.9	8.4	0.0	1.4	0.0	3.2	0.7	0.0	3.4
Cycle Q Clear(g_c), s	0.6	6.7	0.0	0.9	8.4	0.0	1.4	0.0	3.2	0.7	0.0	3.4
Prop In Lane	1.00		0.00	1.00		0.00	1.00		0.60	1.00		0.57
Lane Grp Cap(c), veh/h	293	450		349	477		330	0	252	324	0	215
V/C Ratio(X)	0.11	0.67		0.14	0.77		0.19	0.00	0.51	0.10	0.00	0.62
Avail Cap(c_a), veh/h	423	732		454	732		415	0	661	450	0	664
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.9	15.8	0.0	12.4	15.9	0.0	15.9	0.0	18.0	16.4	0.0	19.0
Incr Delay (d2), s/veh	0.2	1.7	0.0	0.2	2.8	0.0	0.3	0.0	1.6	0.1	0.0	3.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	2.6	0.0	0.3	3.4	0.0	0.5	0.0	1.2	0.3	0.0	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.1	17.5	0.0	12.6	18.7	0.0	16.2	0.0	19.6	16.5	0.0	22.0
LnGrp LOS	B	B		B	B		B	A	B	B	A	C
Approach Vol, veh/h	331		A	417		A	193				168	
Approach Delay, s/veh	17.1			18.0			18.5				20.9	
Approach LOS	B			B			B				C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.8	12.9	8.3	17.1	8.8	11.8	7.6	17.7				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	5.0	18.0	5.0	18.0	5.0	18.0	5.0	18.0				
Max Q Clear Time (g_c+l1), s	2.7	5.2	2.9	8.7	3.4	5.4	2.6	10.4				
Green Ext Time (p_c), s	0.0	0.5	0.0	1.1	0.0	0.5	0.0	1.3				

Intersection Summary

HCM 6th Ctrl Delay 18.2

HCM 6th LOS B

Notes

Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th TWSC
4: Roe Pkwy. & Garage Access

Existing+Development
AM Peak Hour

Intersection						
Int Delay, s/veh	4.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	62	28	37	44	0
Future Vol, veh/h	0	62	28	37	44	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	71	32	43	51	0
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	158	51	51	0	-	0
Stage 1	51	-	-	-	-	-
Stage 2	107	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	833	1017	1555	-	-	-
Stage 1	971	-	-	-	-	-
Stage 2	917	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	816	1017	1555	-	-	-
Mov Cap-2 Maneuver	816	-	-	-	-	-
Stage 1	951	-	-	-	-	-
Stage 2	917	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	8.8	3.2		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1555	-	1017	-	-	
HCM Lane V/C Ratio	0.021	-	0.07	-	-	
HCM Control Delay (s)	7.4	0	8.8	-	-	
HCM Lane LOS	A	A	A	-	-	
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-	

HCM 6th TWSC
5: Roe Pkwy. & North Access

Existing+Development
AM Peak Hour

Intersection						
Int Delay, s/veh	3.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	20	11	26	24	0
Future Vol, veh/h	0	20	11	26	24	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	23	13	30	28	0
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	84	28	28	0	-	0
Stage 1	28	-	-	-	-	-
Stage 2	56	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	918	1047	1585	-	-	-
Stage 1	995	-	-	-	-	-
Stage 2	967	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	911	1047	1585	-	-	-
Mov Cap-2 Maneuver	911	-	-	-	-	-
Stage 1	987	-	-	-	-	-
Stage 2	967	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	8.5	2.2		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1585	-	1047	-	-	
HCM Lane V/C Ratio	0.008	-	0.022	-	-	
HCM Control Delay (s)	7.3	0	8.5	-	-	
HCM Lane LOS	A	A	A	-	-	
HCM 95th %tile Q(veh)	0	-	0.1	-	-	

Intersection						
Int Delay, s/veh	0.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	20	1110	7	0	968
Future Vol, veh/h	0	20	1110	7	0	968
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	23	1276	8	0	1113
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	-	642	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	417	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	417	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	14.1	0		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1		SBT		
Capacity (veh/h)	-	417		-		
HCM Lane V/C Ratio	-	0.055		-		
HCM Control Delay (s)	-	14.1		-		
HCM Lane LOS	-	B		-		
HCM 95th %tile Q(veh)	-	0.2		-		

Lanes, Volumes, Timings
1: Roe Blvd. & 48th Street

Existing+Development
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	163	70	24	140	82	295	59	766	60	321	800	153
Future Volume (vph)	163	70	24	140	82	295	59	766	60	321	800	153
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	120		0	180		0	120		150	300		300
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt		0.962			0.883				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1792	0	1770	1645	0	1770	3539	1583	1770	3539	1583
Flt Permitted	0.156			0.691			0.270			0.111		
Satd. Flow (perm)	291	1792	0	1287	1645	0	503	3539	1583	207	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		14			146				136			166
Link Speed (mph)		30			30			35			35	
Link Distance (ft)		484			607			1051			334	
Travel Time (s)		11.0			13.8			20.5			6.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	177	76	26	152	89	321	64	833	65	349	870	166
Shared Lane Traffic (%)												
Lane Group Flow (vph)	177	102	0	152	410	0	64	833	65	349	870	166
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6

Lanes, Volumes, Timings
1: Roe Blvd. & 48th Street

Existing+Development

PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.0	24.0		11.0	24.0		11.0	24.0	24.0	11.0	24.0	24.0
Total Split (s)	24.0	37.0		24.0	37.0		24.0	35.0	35.0	24.0	35.0	35.0
Total Split (%)	20.0%	30.8%		20.0%	30.8%		20.0%	29.2%	29.2%	20.0%	29.2%	29.2%
Maximum Green (s)	18.0	31.0		18.0	31.0		18.0	29.0	29.0	18.0	29.0	29.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		None	Min	Min	None	None	None
Walk Time (s)		7.0			7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0			11.0			11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0			0			0	0		0	0
Act Effect Green (s)	39.6	25.6		34.6	23.1		36.2	28.5	28.5	52.8	41.8	41.8
Actuated g/C Ratio	0.37	0.24		0.32	0.21		0.33	0.26	0.26	0.49	0.39	0.39
v/c Ratio	0.59	0.23		0.33	0.88		0.25	0.89	0.13	0.96	0.64	0.23
Control Delay	30.1	29.7		23.0	47.2		21.3	52.7	0.5	69.6	32.8	5.5
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.1	29.7		23.0	47.2		21.3	52.7	0.5	69.6	32.8	5.5
LOS	C	C		C	D		C	D	A	E	C	A
Approach Delay		29.9			40.7			47.1			38.8	
Approach LOS		C			D			D			D	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 108.1

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.96

Intersection Signal Delay: 40.9

Intersection LOS: D

Intersection Capacity Utilization 90.5%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 1: Roe Blvd. & 48th Street

 Ø1	 Ø2	 Ø3	 Ø4
24 s	35 s	24 s	37 s
 Ø5	 Ø6	 Ø7	 Ø8
24 s	35 s	24 s	37 s

Queues

1: Roe Blvd. & 48th Street

Existing+Development

PM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	177	102	152	410	64	833	65	349	870	166
v/c Ratio	0.59	0.23	0.33	0.88	0.25	0.89	0.13	0.96	0.64	0.23
Control Delay	30.1	29.7	23.0	47.2	21.3	52.7	0.5	69.6	32.8	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.1	29.7	23.0	47.2	21.3	52.7	0.5	69.6	32.8	5.5
Queue Length 50th (ft)	81	49	68	186	23	297	0	197	271	0
Queue Length 95th (ft)	130	99	112	321	56	#472	0	#440	406	50
Internal Link Dist (ft)		404		527		971			254	
Turn Bay Length (ft)	120		180		120		150	300		300
Base Capacity (vph)	363	546	564	580	431	959	528	364	1369	714
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.19	0.27	0.71	0.15	0.87	0.12	0.96	0.64	0.23

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM 6th Signalized Intersection Summary

1: Roe Blvd. & 48th Street

Existing+Development

PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	163	70	24	140	82	295	59	766	60	321	800	153
Future Volume (veh/h)	163	70	24	140	82	295	59	766	60	321	800	153
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	177	76	26	152	89	0	64	833	0	349	870	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	355	126	43	336	149		334	1078		447	1470	
Arrive On Green	0.12	0.09	0.09	0.10	0.08	0.00	0.05	0.30	0.00	0.16	0.41	0.00
Sat Flow, veh/h	1781	1332	456	1781	1870	0	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	177	0	102	152	89	0	64	833	0	349	870	0
Grp Sat Flow(s),veh/h/ln	1781	0	1788	1781	1870	0	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	6.3	0.0	3.9	5.4	3.3	0.0	1.7	15.1	0.0	8.8	13.5	0.0
Cycle Q Clear(g_c), s	6.3	0.0	3.9	5.4	3.3	0.0	1.7	15.1	0.0	8.8	13.5	0.0
Prop In Lane	1.00		0.25	1.00		0.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	355	0	169	336	149		334	1078		447	1470	
V/C Ratio(X)	0.50	0.00	0.60	0.45	0.60		0.19	0.77		0.78	0.59	
Avail Cap(c_a), veh/h	598	0	782	605	818		696	1453		613	1470	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	25.4	0.0	30.8	26.0	31.5	0.0	15.6	22.5	0.0	14.7	16.1	0.0
Incr Delay (d2), s/veh	1.1	0.0	3.4	1.0	3.8	0.0	0.3	1.8	0.0	4.4	0.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	0.0	1.8	2.3	1.6	0.0	0.7	6.1	0.0	3.5	5.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.5	0.0	34.3	26.9	35.3	0.0	15.9	24.3	0.0	19.2	16.8	0.0
LnGrp LOS	C	A	C	C	D		B	C		B	B	
Approach Vol, veh/h	279			241			A			897		
Approach Delay, s/veh	29.3			30.0			23.7			17.5		
Approach LOS	C			C			C			B		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	17.4	27.5	13.3	12.7	9.6	35.3	14.3	11.7				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	18.0	29.0	18.0	31.0	18.0	29.0	18.0	31.0				
Max Q Clear Time (g_c+l1), s	10.8	17.1	7.4	5.9	3.7	15.5	8.3	5.3				
Green Ext Time (p_c), s	0.6	4.4	0.3	0.5	0.1	4.9	0.3	0.4				
Intersection Summary												
HCM 6th Ctrl Delay	22.0											
HCM 6th LOS	C											

Intersection						
Int Delay, s/veh	2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	74	357	431	18	15	68
Future Vol, veh/h	74	357	431	18	15	68
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	75	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	80	388	468	20	16	74
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	488	0	-	0	832	478
Stage 1	-	-	-	-	478	-
Stage 2	-	-	-	-	354	-
Critical Hdwy	4.13	-	-	-	6.63	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.83	-
Follow-up Hdwy	2.219	-	-	-	3.519	3.319
Pot Cap-1 Maneuver	1073	-	-	-	323	586
Stage 1	-	-	-	-	623	-
Stage 2	-	-	-	-	682	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1073	-	-	-	292	586
Mov Cap-2 Maneuver	-	-	-	-	292	-
Stage 1	-	-	-	-	564	-
Stage 2	-	-	-	-	682	-
Approach	EB	WB		SB		
HCM Control Delay, s	1.7	0		13.9		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1073	-	-	-	496	
HCM Lane V/C Ratio	0.075	-	-	-	0.182	
HCM Control Delay (s)	8.6	0.3	-	-	13.9	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0.2	-	-	-	0.7	

Lanes, Volumes, Timings
3: Roe Lane & 48th Street/47th Street

Existing+Development
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	77	267	33	46	339	47	34	55	85	34	64	76
Future Volume (vph)	77	267	33	46	339	47	34	55	85	34	64	76
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	200		0	180		0	150		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.983			0.982			0.909			0.919	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1831	0	1770	1829	0	1770	1693	0	1770	1712	0
Flt Permitted	0.346			0.523			0.660			0.660		
Satd. Flow (perm)	645	1831	0	974	1829	0	1229	1693	0	1229	1712	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			6			62			48	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		165			565			616			471	
Travel Time (s)		3.8			12.8			14.0			10.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	84	290	36	50	368	51	37	60	92	37	70	83
Shared Lane Traffic (%)												
Lane Group Flow (vph)	84	326	0	50	419	0	37	152	0	37	153	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		

Lanes, Volumes, Timings
3: Roe Lane & 48th Street/47th Street

Existing+Development

PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	11.0	24.0		11.0	24.0		11.0	24.0		11.0	24.0	
Total Split (s)	11.0	60.5		11.0	60.5		11.0	59.5		11.0	59.5	
Total Split (%)	7.7%	42.6%		7.7%	42.6%		7.7%	41.9%		7.7%	41.9%	
Maximum Green (s)	5.0	54.5		5.0	54.5		5.0	53.5		5.0	53.5	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	Min		None	Min		None	None		None	None	
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effect Green (s)	25.4	22.9		24.0	20.3		13.1	10.6		13.1	10.6	
Actuated g/C Ratio	0.44	0.39		0.41	0.35		0.23	0.18		0.23	0.18	
v/c Ratio	0.21	0.45		0.10	0.65		0.11	0.42		0.11	0.44	
Control Delay	10.8	18.3		9.9	23.5		17.7	20.5		17.7	22.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	10.8	18.3		9.9	23.5		17.7	20.5		17.7	22.8	
LOS	B	B		A	C		B	C		B	C	
Approach Delay		16.8			22.0			19.9			21.8	
Approach LOS		B			C			B			C	

Intersection Summary

Area Type: Other

Cycle Length: 142

Actuated Cycle Length: 58

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.65

Intersection Signal Delay: 20.0

Intersection LOS: B

Intersection Capacity Utilization 57.2%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 3: Roe Lane & 48th Street/47th Street

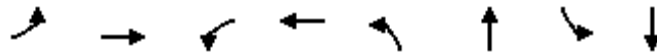
			
11 s	59.5 s	11 s	60.5 s
			
11 s	59.5 s	11 s	60.5 s

Queues

3: Roe Lane & 48th Street/47th Street

Existing+Development

PM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	84	326	50	419	37	152	37	153
v/c Ratio	0.21	0.45	0.10	0.65	0.11	0.42	0.11	0.44
Control Delay	10.8	18.3	9.9	23.5	17.7	20.5	17.7	22.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.8	18.3	9.9	23.5	17.7	20.5	17.7	22.8
Queue Length 50th (ft)	17	103	10	142	10	31	10	37
Queue Length 95th (ft)	42	191	28	256	32	90	32	98
Internal Link Dist (ft)		85		485		536		391
Turn Bay Length (ft)			200		180		150	
Base Capacity (vph)	392	1586	480	1584	329	1460	329	1474
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.21	0.10	0.26	0.11	0.10	0.11	0.10
Intersection Summary								

HCM 6th Signalized Intersection Summary

3: Roe Lane & 48th Street/47th Street

Existing+Development

PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	77	267	33	46	339	47	34	55	85	34	64	76
Future Volume (veh/h)	77	267	33	46	339	47	34	55	85	34	64	76
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	84	290	0	50	368	0	37	60	92	37	70	83
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	357	538		404	503		288	96	147	288	112	133
Arrive On Green	0.07	0.29	0.00	0.05	0.27	0.00	0.04	0.14	0.14	0.04	0.14	0.14
Sat Flow, veh/h	1781	1870	0	1781	1870	0	1781	666	1021	1781	780	924
Grp Volume(v), veh/h	84	290	0	50	368	0	37	0	152	37	0	153
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1781	1870	0	1781	0	1687	1781	0	1704
Q Serve(g_s), s	1.6	6.6	0.0	1.0	9.0	0.0	0.9	0.0	4.3	0.9	0.0	4.2
Cycle Q Clear(g_c), s	1.6	6.6	0.0	1.0	9.0	0.0	0.9	0.0	4.3	0.9	0.0	4.2
Prop In Lane	1.00		0.00	1.00		0.00	1.00		0.61	1.00		0.54
Lane Grp Cap(c), veh/h	357	538		404	503		288	0	242	288	0	245
V/C Ratio(X)	0.24	0.54		0.12	0.73		0.13	0.00	0.63	0.13	0.00	0.63
Avail Cap(c_a), veh/h	412	2033		492	2033		394	0	1800	394	0	1819
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.4	15.1	0.0	12.3	16.7	0.0	17.2	0.0	20.2	17.2	0.0	20.2
Incr Delay (d2), s/veh	0.3	0.8	0.0	0.1	2.1	0.0	0.2	0.0	2.7	0.2	0.0	2.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	2.5	0.0	0.4	3.6	0.0	0.3	0.0	1.7	0.3	0.0	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.8	15.9	0.0	12.4	18.8	0.0	17.4	0.0	22.9	17.4	0.0	22.8
LnGrp LOS	B	B		B	B		B	A	C	B	A	C
Approach Vol, veh/h	374		A	418		A	189		190			
Approach Delay, s/veh	15.2			18.0			21.8		21.8			
Approach LOS	B			B			C		C			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.0	13.2	8.5	20.4	8.0	13.2	9.4	19.5				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	5.0	53.5	5.0	54.5	5.0	53.5	5.0	54.5				
Max Q Clear Time (g_c+I1), s	2.9	6.3	3.0	8.6	2.9	6.2	3.6	11.0				
Green Ext Time (p_c), s	0.0	1.0	0.0	1.9	0.0	1.0	0.0	2.5				

Intersection Summary

HCM 6th Ctrl Delay 18.3

HCM 6th LOS B

Notes

Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th TWSC
4: Roe Pkwy. & Garage Access

Existing+Development
PM Peak Hour

Intersection						
Int Delay, s/veh	3.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	32	52	40	51	0
Future Vol, veh/h	0	32	52	40	51	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	35	57	43	55	0
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	212	55	55	0	-	0
Stage 1	55	-	-	-	-	-
Stage 2	157	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	776	1012	1550	-	-	-
Stage 1	968	-	-	-	-	-
Stage 2	871	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	747	1012	1550	-	-	-
Mov Cap-2 Maneuver	747	-	-	-	-	-
Stage 1	931	-	-	-	-	-
Stage 2	871	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	8.7	4.2		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1550	-	1012	-	-	
HCM Lane V/C Ratio	0.036	-	0.034	-	-	
HCM Control Delay (s)	7.4	0	8.7	-	-	
HCM Lane LOS	A	A	A	-	-	
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-	

HCM 6th TWSC
5: Roe Pkwy. & North Access

Existing+Development
PM Peak Hour

Intersection						
Int Delay, s/veh	2.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	11	22	18	40	0
Future Vol, veh/h	0	11	22	18	40	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	12	24	20	43	0
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	111	43	43	0	-	0
Stage 1	43	-	-	-	-	-
Stage 2	68	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	886	1027	1566	-	-	-
Stage 1	979	-	-	-	-	-
Stage 2	955	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	873	1027	1566	-	-	-
Mov Cap-2 Maneuver	873	-	-	-	-	-
Stage 1	964	-	-	-	-	-
Stage 2	955	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	8.5	4		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1566	-	1027	-	-	
HCM Lane V/C Ratio	0.015	-	0.012	-	-	
HCM Control Delay (s)	7.3	0	8.5	-	-	
HCM Lane LOS	A	A	A	-	-	
HCM 95th %tile Q(veh)	0	-	0	-	-	

Intersection						
Int Delay, s/veh	0.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	11	1211	13	0	1274
Future Vol, veh/h	0	11	1211	13	0	1274
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	12	1316	14	0	1385
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	-	665	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	403	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	403	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	14.2	0		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1		SBT		
Capacity (veh/h)	-	403		-		
HCM Lane V/C Ratio	-	0.03		-		
HCM Control Delay (s)	-	14.2		-		
HCM Lane LOS	-	B		-		
HCM 95th %tile Q(veh)	-	0.1		-		

Lanes, Volumes, Timings
1: Roe Blvd. & 48th Street

Alternate Existing+Dev
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	88	56	25	101	42	355	21	650	26	275	602	64
Future Volume (vph)	88	56	25	101	42	355	21	650	26	275	602	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	120		0	180		0	120		150	300		300
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt		0.953			0.866				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1775	0	1770	1613	0	1770	3539	1583	1770	3539	1583
Flt Permitted	0.276			0.697			0.389			0.181		
Satd. Flow (perm)	514	1775	0	1298	1613	0	725	3539	1583	337	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		18			344				136			136
Link Speed (mph)		30			30			35			35	
Link Distance (ft)		484			607			1051			334	
Travel Time (s)		11.0			13.8			20.5			6.5	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	101	64	29	116	48	408	24	747	30	316	692	74
Shared Lane Traffic (%)												
Lane Group Flow (vph)	101	93	0	116	456	0	24	747	30	316	692	74
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6

Lanes, Volumes, Timings
1: Roe Blvd. & 48th Street

Alternate Existing+Dev
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.0	24.0		11.0	24.0		11.0	24.0	24.0	11.0	24.0	24.0
Total Split (s)	24.0	37.0		24.0	37.0		24.0	35.0	35.0	24.0	35.0	35.0
Total Split (%)	20.0%	30.8%		20.0%	30.8%		20.0%	29.2%	29.2%	20.0%	29.2%	29.2%
Maximum Green (s)	18.0	31.0		18.0	31.0		18.0	29.0	29.0	18.0	29.0	29.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		None	Min	Min	None	None	None
Walk Time (s)		7.0			7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0			11.0			11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0			0			0	0		0	0
Act Effect Green (s)	22.8	14.5		22.4	14.3		31.6	25.2	25.2	49.7	45.4	45.4
Actuated g/C Ratio	0.26	0.16		0.25	0.16		0.35	0.28	0.28	0.56	0.51	0.51
v/c Ratio	0.37	0.31		0.31	0.83		0.07	0.75	0.06	0.66	0.38	0.08
Control Delay	25.5	31.3		24.1	24.3		15.6	36.9	0.2	24.0	19.0	0.2
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.5	31.3		24.1	24.3		15.6	36.9	0.2	24.0	19.0	0.2
LOS	C	C		C	C		B	D	A	C	B	A
Approach Delay		28.3			24.2			34.9			19.2	
Approach LOS		C			C			C			B	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 89.2

Natural Cycle: 75

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 25.7

Intersection LOS: C

Intersection Capacity Utilization 82.2%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 1: Roe Blvd. & 48th Street

 Ø1	 Ø2	 Ø3	 Ø4
24 s	35 s	24 s	37 s
 Ø5	 Ø6	 Ø7	 Ø8
24 s	35 s	24 s	37 s

Queues

1: Roe Blvd. & 48th Street

Alternate Existing+Dev

AM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	101	93	116	456	24	747	30	316	692	74
v/c Ratio	0.37	0.31	0.31	0.83	0.07	0.75	0.06	0.66	0.38	0.08
Control Delay	25.5	31.3	24.1	24.3	15.6	36.9	0.2	24.0	19.0	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.5	31.3	24.1	24.3	15.6	36.9	0.2	24.0	19.0	0.2
Queue Length 50th (ft)	42	39	49	60	6	204	0	94	111	0
Queue Length 95th (ft)	77	83	86	169	24	334	0	#268	266	0
Internal Link Dist (ft)		404		527		971			254	
Turn Bay Length (ft)	120		180		120		150	300		300
Base Capacity (vph)	444	665	540	811	583	1219	634	494	1799	871
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.14	0.21	0.56	0.04	0.61	0.05	0.64	0.38	0.08

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM 6th Signalized Intersection Summary

1: Roe Blvd. & 48th Street

Alternate Existing+Dev

AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	88	56	25	101	42	355	21	650	26	275	602	64
Future Volume (veh/h)	88	56	25	101	42	355	21	650	26	275	602	64
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	101	64	29	116	48	0	24	747	0	316	692	0
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	343	108	49	309	185		373	1037		464	1488	
Arrive On Green	0.07	0.09	0.09	0.08	0.10	0.00	0.03	0.29	0.00	0.15	0.42	0.00
Sat Flow, veh/h	1781	1219	552	1781	1870	0	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	101	0	93	116	48	0	24	747	0	316	692	0
Grp Sat Flow(s),veh/h/ln	1781	0	1771	1781	1870	0	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	3.2	0.0	3.2	3.6	1.5	0.0	0.6	11.8	0.0	7.0	8.8	0.0
Cycle Q Clear(g_c), s	3.2	0.0	3.2	3.6	1.5	0.0	0.6	11.8	0.0	7.0	8.8	0.0
Prop In Lane	1.00		0.31	1.00		0.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	343	0	157	309	185		373	1037		464	1488	
V/C Ratio(X)	0.29	0.00	0.59	0.38	0.26		0.06	0.72		0.68	0.47	
Avail Cap(c_a), veh/h	731	0	880	679	930		839	1652		703	1652	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	23.4	0.0	27.3	23.1	26.0	0.0	14.7	19.8	0.0	12.8	13.1	0.0
Incr Delay (d2), s/veh	0.5	0.0	3.5	0.8	0.7	0.0	0.1	1.0	0.0	1.8	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.0	1.4	1.5	0.7	0.0	0.2	4.5	0.0	2.5	3.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.9	0.0	30.9	23.9	26.7	0.0	14.7	20.8	0.0	14.6	13.3	0.0
LnGrp LOS	C	A	C	C	C		B	C		B	B	
Approach Vol, veh/h		194			164	A		771	A		1008	A
Approach Delay, s/veh		27.2			24.7			20.6			13.7	
Approach LOS		C			C			C			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.6	24.2	11.0	11.5	7.7	32.1	10.4	12.2				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	18.0	29.0	18.0	31.0	18.0	29.0	18.0	31.0				
Max Q Clear Time (g_c+l1), s	9.0	13.8	5.6	5.2	2.6	10.8	5.2	3.5				
Green Ext Time (p_c), s	0.6	4.4	0.2	0.5	0.0	4.4	0.2	0.2				

Intersection Summary

HCM 6th Ctrl Delay 18.3

HCM 6th LOS B

Notes

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection						
Int Delay, s/veh	1.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	18	332	434	15	25	51
Future Vol, veh/h	18	332	434	15	25	51
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	75	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	21	382	499	17	29	59
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	516	0	-	0	741	508
Stage 1	-	-	-	-	508	-
Stage 2	-	-	-	-	233	-
Critical Hdwy	4.13	-	-	-	6.63	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.83	-
Follow-up Hdwy	2.219	-	-	-	3.519	3.319
Pot Cap-1 Maneuver	1048	-	-	-	367	564
Stage 1	-	-	-	-	603	-
Stage 2	-	-	-	-	784	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1048	-	-	-	358	564
Mov Cap-2 Maneuver	-	-	-	-	358	-
Stage 1	-	-	-	-	588	-
Stage 2	-	-	-	-	784	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.5	0		14.3		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1048	-	-	-	474	
HCM Lane V/C Ratio	0.02	-	-	-	0.184	
HCM Control Delay (s)	8.5	0.1	-	-	14.3	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0.1	-	-	-	0.7	

Lanes, Volumes, Timings
3: Roe Lane & 48th Street/47th Street

Alternate Existing+Dev
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	261	73	42	321	20	56	45	67	30	50	67
Future Volume (vph)	27	261	73	42	321	20	56	45	67	30	50	67
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	200		0	180		0	150		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.967			0.991			0.910			0.914	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1801	0	1770	1846	0	1770	1695	0	1770	1703	0
Flt Permitted	0.454			0.422			0.606			0.674		
Satd. Flow (perm)	846	1801	0	786	1846	0	1129	1695	0	1255	1703	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		19			4			77			77	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		165			565			616			471	
Travel Time (s)		3.8			12.8			14.0			10.7	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	31	300	84	48	369	23	64	52	77	34	57	77
Shared Lane Traffic (%)												
Lane Group Flow (vph)	31	384	0	48	392	0	64	129	0	34	134	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		

Lanes, Volumes, Timings
3: Roe Lane & 48th Street/47th Street

Alternate Existing+Dev

AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	11.0	24.0		11.0	24.0		11.0	24.0		11.0	24.0	
Total Split (s)	11.0	24.0		11.0	24.0		11.0	24.0		11.0	24.0	
Total Split (%)	15.7%	34.3%		15.7%	34.3%		15.7%	34.3%		15.7%	34.3%	
Maximum Green (s)	5.0	18.0		5.0	18.0		5.0	18.0		5.0	18.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	Min		None	Min		None	None		None	None	
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effect Green (s)	22.5	22.0		23.5	23.9		11.3	9.9		10.3	8.1	
Actuated g/C Ratio	0.46	0.45		0.48	0.49		0.23	0.20		0.21	0.17	
v/c Ratio	0.06	0.47		0.10	0.43		0.19	0.32		0.10	0.39	
Control Delay	9.6	19.0		9.7	17.6		15.6	13.3		14.9	15.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	9.6	19.0		9.7	17.6		15.6	13.3		14.9	15.5	
LOS	A	B		A	B		B	B		B	B	
Approach Delay		18.3			16.8			14.0			15.4	
Approach LOS		B			B			B			B	

Intersection Summary

Area Type: Other

Cycle Length: 70

Actuated Cycle Length: 48.7

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.47

Intersection Signal Delay: 16.7

Intersection LOS: B

Intersection Capacity Utilization 47.1%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 3: Roe Lane & 48th Street/47th Street

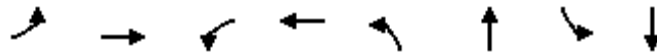
 Ø1	 Ø2	 Ø3	 Ø4
11 s	24 s	11 s	24 s
 Ø5	 Ø6	 Ø7	 Ø8
11 s	24 s	11 s	24 s

Queues

3: Roe Lane & 48th Street/47th Street

Alternate Existing+Dev

AM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	31	384	48	392	64	129	34	134
v/c Ratio	0.06	0.47	0.10	0.43	0.19	0.32	0.10	0.39
Control Delay	9.6	19.0	9.7	17.6	15.6	13.3	14.9	15.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.6	19.0	9.7	17.6	15.6	13.3	14.9	15.5
Queue Length 50th (ft)	5	113	8	83	16	13	8	19
Queue Length 95th (ft)	18	#229	25	#240	38	56	24	58
Internal Link Dist (ft)		85		485		536		391
Turn Bay Length (ft)			200		180		150	
Base Capacity (vph)	499	913	494	996	336	755	325	756
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.42	0.10	0.39	0.19	0.17	0.10	0.18

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM 6th Signalized Intersection Summary

3: Roe Lane & 48th Street/47th Street

Alternate Existing+Dev

AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	27	261	73	42	321	20	56	45	67	30	50	67
Future Volume (veh/h)	27	261	73	42	321	20	56	45	67	30	50	67
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	31	300	0	48	369	0	64	52	77	34	57	77
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	293	450		349	477		330	102	150	324	91	123
Arrive On Green	0.04	0.24	0.00	0.05	0.25	0.00	0.06	0.15	0.15	0.04	0.13	0.13
Sat Flow, veh/h	1781	1870	0	1781	1870	0	1781	681	1008	1781	721	974
Grp Volume(v), veh/h	31	300	0	48	369	0	64	0	129	34	0	134
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1781	1870	0	1781	0	1689	1781	0	1695
Q Serve(g_s), s	0.6	6.7	0.0	0.9	8.4	0.0	1.4	0.0	3.2	0.7	0.0	3.4
Cycle Q Clear(g_c), s	0.6	6.7	0.0	0.9	8.4	0.0	1.4	0.0	3.2	0.7	0.0	3.4
Prop In Lane	1.00		0.00	1.00		0.00	1.00		0.60	1.00		0.57
Lane Grp Cap(c), veh/h	293	450		349	477		330	0	252	324	0	215
V/C Ratio(X)	0.11	0.67		0.14	0.77		0.19	0.00	0.51	0.10	0.00	0.62
Avail Cap(c_a), veh/h	423	732		454	732		415	0	661	450	0	664
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.9	15.8	0.0	12.4	15.9	0.0	15.9	0.0	18.0	16.4	0.0	19.0
Incr Delay (d2), s/veh	0.2	1.7	0.0	0.2	2.8	0.0	0.3	0.0	1.6	0.1	0.0	3.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	2.6	0.0	0.3	3.4	0.0	0.5	0.0	1.2	0.3	0.0	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.1	17.5	0.0	12.6	18.7	0.0	16.2	0.0	19.6	16.5	0.0	22.0
LnGrp LOS	B	B		B	B		B	A	B	B	A	C
Approach Vol, veh/h	331		A	417		A	193		168			
Approach Delay, s/veh	17.1			18.0			18.5		20.9			
Approach LOS	B			B			B		C			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.8	12.9	8.3	17.1	8.8	11.8	7.6	17.7				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	5.0	18.0	5.0	18.0	5.0	18.0	5.0	18.0				
Max Q Clear Time (g_c+l1), s	2.7	5.2	2.9	8.7	3.4	5.4	2.6	10.4				
Green Ext Time (p_c), s	0.0	0.5	0.0	1.1	0.0	0.5	0.0	1.3				

Intersection Summary

HCM 6th Ctrl Delay 18.2

HCM 6th LOS B

Notes

Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th TWSC
4: Roe Pkwy. & Garage Access

Alternate Existing+Dev
AM Peak Hour

Intersection						
Int Delay, s/veh	4.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	20	41	16	17	35	11
Future Vol, veh/h	20	41	16	17	35	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	23	47	18	20	40	13
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	103	47	53	0	-	0
Stage 1	47	-	-	-	-	-
Stage 2	56	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	895	1022	1553	-	-	-
Stage 1	975	-	-	-	-	-
Stage 2	967	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	884	1022	1553	-	-	-
Mov Cap-2 Maneuver	884	-	-	-	-	-
Stage 1	963	-	-	-	-	-
Stage 2	967	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	9	3.6		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1553	-	972	-	-	
HCM Lane V/C Ratio	0.012	-	0.072	-	-	
HCM Control Delay (s)	7.3	0	9	-	-	
HCM Lane LOS	A	A	A	-	-	
HCM 95th %tile Q(veh)	0	-	0.2	-	-	

HCM 6th TWSC
5: Roe Pkwy. & North Access

Alternate Existing+Dev
AM Peak Hour

Intersection						
Int Delay, s/veh	2.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	20	5	32	26	7
Future Vol, veh/h	0	20	5	32	26	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	23	6	37	30	8
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	83	34	38	0	-	0
Stage 1	34	-	-	-	-	-
Stage 2	49	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	919	1039	1572	-	-	-
Stage 1	988	-	-	-	-	-
Stage 2	973	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	915	1039	1572	-	-	-
Mov Cap-2 Maneuver	915	-	-	-	-	-
Stage 1	984	-	-	-	-	-
Stage 2	973	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	8.5	1		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1572	-	1039	-	-	
HCM Lane V/C Ratio	0.004	-	0.022	-	-	
HCM Control Delay (s)	7.3	0	8.5	-	-	
HCM Lane LOS	A	A	A	-	-	
HCM 95th %tile Q(veh)	0	-	0.1	-	-	

Intersection						
Int Delay, s/veh	0.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↕			↕
Traffic Vol, veh/h	0	21	1086	7	0	941
Future Vol, veh/h	0	21	1086	7	0	941
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	24	1248	8	0	1082

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	-	628	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	6.94	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	3.32	-
Pot Cap-1 Maneuver	0	426	-
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	426	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBT
Capacity (veh/h)	-	-	426
HCM Lane V/C Ratio	-	-	0.057
HCM Control Delay (s)	-	-	14
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.2

Intersection						
Int Delay, s/veh	0.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↗↗		↘	↗↗
Traffic Vol, veh/h	0	29	1101	6	26	941
Future Vol, veh/h	0	29	1101	6	26	941
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	250	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	33	1266	7	30	1082
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	-	637	0	0	1273	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	4.14	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	0	420	-	-	541	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	420	-	-	541	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	14.3	0		0.3		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	420	541	-	
HCM Lane V/C Ratio	-	-	0.079	0.055	-	
HCM Control Delay (s)	-	-	14.3	12	-	
HCM Lane LOS	-	-	B	B	-	
HCM 95th %tile Q(veh)	-	-	0.3	0.2	-	

Lanes, Volumes, Timings
1: Roe Blvd. & 48th Street

Alternate Existing+Dev
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	163	70	24	140	82	268	59	770	56	280	800	153
Future Volume (vph)	163	70	24	140	82	268	59	770	56	280	800	153
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	120		0	180		0	120		150	300		300
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt		0.962			0.885				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1792	0	1770	1649	0	1770	3539	1583	1770	3539	1583
Flt Permitted	0.167			0.691			0.267			0.110		
Satd. Flow (perm)	311	1792	0	1287	1649	0	497	3539	1583	205	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		14			132				136			166
Link Speed (mph)		30			30			35			35	
Link Distance (ft)		484			607			1051			334	
Travel Time (s)		11.0			13.8			20.5			6.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	177	76	26	152	89	291	64	837	61	304	870	166
Shared Lane Traffic (%)												
Lane Group Flow (vph)	177	102	0	152	380	0	64	837	61	304	870	166
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6

Lanes, Volumes, Timings
1: Roe Blvd. & 48th Street

Alternate Existing+Dev
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.0	24.0		11.0	24.0		11.0	24.0	24.0	11.0	24.0	24.0
Total Split (s)	24.0	37.0		24.0	37.0		24.0	35.0	35.0	24.0	35.0	35.0
Total Split (%)	20.0%	30.8%		20.0%	30.8%		20.0%	29.2%	29.2%	20.0%	29.2%	29.2%
Maximum Green (s)	18.0	31.0		18.0	31.0		18.0	29.0	29.0	18.0	29.0	29.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		None	Min	Min	None	None	None
Walk Time (s)		7.0			7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0			11.0			11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0			0			0	0		0	0
Act Effect Green (s)	37.8	24.0		33.0	21.6		36.4	28.7	28.7	51.9	41.1	41.1
Actuated g/C Ratio	0.36	0.23		0.31	0.20		0.34	0.27	0.27	0.49	0.39	0.39
v/c Ratio	0.59	0.24		0.33	0.86		0.24	0.87	0.12	0.86	0.63	0.23
Control Delay	29.5	30.2		23.2	46.0		20.6	49.4	0.4	51.4	32.0	5.4
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.5	30.2		23.2	46.0		20.6	49.4	0.4	51.4	32.0	5.4
LOS	C	C		C	D		C	D	A	D	C	A
Approach Delay		29.8			39.5			44.3			33.1	
Approach LOS		C			D			D			C	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 105.6

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.87

Intersection Signal Delay: 37.4

Intersection LOS: D

Intersection Capacity Utilization 86.6%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 1: Roe Blvd. & 48th Street

 Ø1	 Ø2	 Ø3	 Ø4
24 s	35 s	24 s	37 s
 Ø5	 Ø6	 Ø7	 Ø8
24 s	35 s	24 s	37 s

Queues

1: Roe Blvd. & 48th Street

Alternate Existing+Dev

PM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	177	102	152	380	64	837	61	304	870	166
v/c Ratio	0.59	0.24	0.33	0.86	0.24	0.87	0.12	0.86	0.63	0.23
Control Delay	29.5	30.2	23.2	46.0	20.6	49.4	0.4	51.4	32.0	5.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.5	30.2	23.2	46.0	20.6	49.4	0.4	51.4	32.0	5.4
Queue Length 50th (ft)	81	49	68	170	22	291	0	153	262	0
Queue Length 95th (ft)	129	99	112	297	56	#475	0	#359	406	50
Internal Link Dist (ft)		404		527		971			254	
Turn Bay Length (ft)	120		180		120		150	300		300
Base Capacity (vph)	372	552	559	584	441	986	539	371	1376	717
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.18	0.27	0.65	0.15	0.85	0.11	0.82	0.63	0.23

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM 6th Signalized Intersection Summary

1: Roe Blvd. & 48th Street

Alternate Existing+Dev

PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	163	70	24	140	82	268	59	770	56	280	800	153
Future Volume (veh/h)	163	70	24	140	82	268	59	770	56	280	800	153
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	177	76	26	152	89	0	64	837	0	304	870	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	361	128	44	342	151		327	1094		424	1424	
Arrive On Green	0.12	0.10	0.10	0.10	0.08	0.00	0.05	0.31	0.00	0.14	0.40	0.00
Sat Flow, veh/h	1781	1332	456	1781	1870	0	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	177	0	102	152	89	0	64	837	0	304	870	0
Grp Sat Flow(s),veh/h/ln	1781	0	1788	1781	1870	0	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	6.1	0.0	3.8	5.2	3.2	0.0	1.6	14.7	0.0	7.3	13.4	0.0
Cycle Q Clear(g_c), s	6.1	0.0	3.8	5.2	3.2	0.0	1.6	14.7	0.0	7.3	13.4	0.0
Prop In Lane	1.00		0.25	1.00		0.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	361	0	171	342	151		327	1094		424	1424	
V/C Ratio(X)	0.49	0.00	0.60	0.44	0.59		0.20	0.77		0.72	0.61	
Avail Cap(c_a), veh/h	617	0	806	624	843		703	1499		633	1499	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	24.6	0.0	29.8	25.1	30.5	0.0	15.0	21.5	0.0	14.4	16.3	0.0
Incr Delay (d2), s/veh	1.0	0.0	3.3	0.9	3.6	0.0	0.3	1.6	0.0	2.3	0.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	0.0	1.7	2.2	1.5	0.0	0.6	5.8	0.0	2.8	4.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.6	0.0	33.1	26.0	34.1	0.0	15.3	23.2	0.0	16.7	17.0	0.0
LnGrp LOS	C	A	C	C	C		B	C		B	B	
Approach Vol, veh/h		279			241	A		901	A		1174	A
Approach Delay, s/veh		28.3			29.0			22.6			16.9	
Approach LOS		C			C			C			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.9	27.2	13.1	12.6	9.5	33.5	14.1	11.6				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	18.0	29.0	18.0	31.0	18.0	29.0	18.0	31.0				
Max Q Clear Time (g_c+l1), s	9.3	16.7	7.2	5.8	3.6	15.4	8.1	5.2				
Green Ext Time (p_c), s	0.6	4.5	0.3	0.5	0.1	5.0	0.3	0.4				

Intersection Summary

HCM 6th Ctrl Delay 21.3

HCM 6th LOS C

Notes

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection						
Int Delay, s/veh	1.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	29	357	431	18	15	41
Future Vol, veh/h	29	357	431	18	15	41
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	75	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	32	388	468	20	16	45
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	488	0	-	0	736	478
Stage 1	-	-	-	-	478	-
Stage 2	-	-	-	-	258	-
Critical Hdwy	4.13	-	-	-	6.63	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.83	-
Follow-up Hdwy	2.219	-	-	-	3.519	3.319
Pot Cap-1 Maneuver	1073	-	-	-	370	586
Stage 1	-	-	-	-	623	-
Stage 2	-	-	-	-	762	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1073	-	-	-	356	586
Mov Cap-2 Maneuver	-	-	-	-	356	-
Stage 1	-	-	-	-	599	-
Stage 2	-	-	-	-	762	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.7	0		13.2		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1073	-	-	-	500	
HCM Lane V/C Ratio	0.029	-	-	-	0.122	
HCM Control Delay (s)	8.5	0.1	-	-	13.2	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0.1	-	-	-	0.4	

Lanes, Volumes, Timings
3: Roe Lane & 48th Street/47th Street

Alternate Existing+Dev
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	77	267	33	46	339	47	34	55	85	34	64	76
Future Volume (vph)	77	267	33	46	339	47	34	55	85	34	64	76
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	200		0	180		0	150		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.983			0.982			0.909			0.919	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1831	0	1770	1829	0	1770	1693	0	1770	1712	0
Flt Permitted	0.346			0.523			0.660			0.660		
Satd. Flow (perm)	645	1831	0	974	1829	0	1229	1693	0	1229	1712	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			6			62			48	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		165			565			616			471	
Travel Time (s)		3.8			12.8			14.0			10.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	84	290	36	50	368	51	37	60	92	37	70	83
Shared Lane Traffic (%)												
Lane Group Flow (vph)	84	326	0	50	419	0	37	152	0	37	153	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		

Lanes, Volumes, Timings
3: Roe Lane & 48th Street/47th Street

Alternate Existing+Dev

PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	11.0	24.0		11.0	24.0		11.0	24.0		11.0	24.0	
Total Split (s)	11.0	60.5		11.0	60.5		11.0	59.5		11.0	59.5	
Total Split (%)	7.7%	42.6%		7.7%	42.6%		7.7%	41.9%		7.7%	41.9%	
Maximum Green (s)	5.0	54.5		5.0	54.5		5.0	53.5		5.0	53.5	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	Min		None	Min		None	None		None	None	
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effect Green (s)	25.4	22.9		24.0	20.3		13.1	10.6		13.1	10.6	
Actuated g/C Ratio	0.44	0.39		0.41	0.35		0.23	0.18		0.23	0.18	
v/c Ratio	0.21	0.45		0.10	0.65		0.11	0.42		0.11	0.44	
Control Delay	10.8	18.3		9.9	23.5		17.7	20.5		17.7	22.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	10.8	18.3		9.9	23.5		17.7	20.5		17.7	22.8	
LOS	B	B		A	C		B	C		B	C	
Approach Delay		16.8			22.0			19.9			21.8	
Approach LOS		B			C			B			C	

Intersection Summary

Area Type: Other

Cycle Length: 142

Actuated Cycle Length: 58

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.65

Intersection Signal Delay: 20.0

Intersection LOS: B

Intersection Capacity Utilization 57.2%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 3: Roe Lane & 48th Street/47th Street

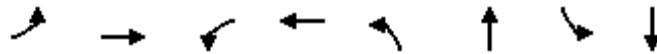
 Ø1	 Ø2		 Ø3	 Ø4	
11 s	59.5 s		11 s	60.5 s	
 Ø5	 Ø6		 Ø7	 Ø8	
11 s	59.5 s		11 s	60.5 s	

Queues

3: Roe Lane & 48th Street/47th Street

Alternate Existing+Dev

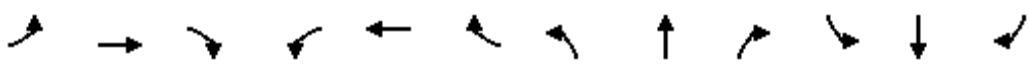
PM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	84	326	50	419	37	152	37	153
v/c Ratio	0.21	0.45	0.10	0.65	0.11	0.42	0.11	0.44
Control Delay	10.8	18.3	9.9	23.5	17.7	20.5	17.7	22.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.8	18.3	9.9	23.5	17.7	20.5	17.7	22.8
Queue Length 50th (ft)	17	103	10	142	10	31	10	37
Queue Length 95th (ft)	42	191	28	256	32	90	32	98
Internal Link Dist (ft)		85		485		536		391
Turn Bay Length (ft)			200		180		150	
Base Capacity (vph)	392	1586	480	1584	329	1460	329	1474
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.21	0.10	0.26	0.11	0.10	0.11	0.10
Intersection Summary								

HCM 6th Signalized Intersection Summary 3: Roe Lane & 48th Street/47th Street

Alternate Existing+Dev
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	77	267	33	46	339	47	34	55	85	34	64	76
Future Volume (veh/h)	77	267	33	46	339	47	34	55	85	34	64	76
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No				No				No			
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	84	290	0	50	368	0	37	60	92	37	70	83
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	357	538		404	503		288	96	147	288	112	133
Arrive On Green	0.07	0.29	0.00	0.05	0.27	0.00	0.04	0.14	0.14	0.04	0.14	0.14
Sat Flow, veh/h	1781	1870	0	1781	1870	0	1781	666	1021	1781	780	924
Grp Volume(v), veh/h	84	290	0	50	368	0	37	0	152	37	0	153
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1781	1870	0	1781	0	1687	1781	0	1704
Q Serve(g_s), s	1.6	6.6	0.0	1.0	9.0	0.0	0.9	0.0	4.3	0.9	0.0	4.2
Cycle Q Clear(g_c), s	1.6	6.6	0.0	1.0	9.0	0.0	0.9	0.0	4.3	0.9	0.0	4.2
Prop In Lane	1.00		0.00	1.00		0.00	1.00		0.61	1.00		0.54
Lane Grp Cap(c), veh/h	357	538		404	503		288	0	242	288	0	245
V/C Ratio(X)	0.24	0.54		0.12	0.73		0.13	0.00	0.63	0.13	0.00	0.63
Avail Cap(c_a), veh/h	412	2033		492	2033		394	0	1800	394	0	1819
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.4	15.1	0.0	12.3	16.7	0.0	17.2	0.0	20.2	17.2	0.0	20.2
Incr Delay (d2), s/veh	0.3	0.8	0.0	0.1	2.1	0.0	0.2	0.0	2.7	0.2	0.0	2.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	2.5	0.0	0.4	3.6	0.0	0.3	0.0	1.7	0.3	0.0	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.8	15.9	0.0	12.4	18.8	0.0	17.4	0.0	22.9	17.4	0.0	22.8
LnGrp LOS	B	B		B	B		B	A	C	B	A	C
Approach Vol, veh/h	374		A	418		A	189		190			
Approach Delay, s/veh	15.2			18.0			21.8		21.8			
Approach LOS	B			B			C		C			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.0	13.2	8.5	20.4	8.0	13.2	9.4	19.5				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	5.0	53.5	5.0	54.5	5.0	53.5	5.0	54.5				
Max Q Clear Time (g_c+l1), s	2.9	6.3	3.0	8.6	2.9	6.2	3.6	11.0				
Green Ext Time (p_c), s	0.0	1.0	0.0	1.9	0.0	1.0	0.0	2.5				

Intersection Summary

HCM 6th Ctrl Delay 18.3

HCM 6th LOS B

Notes

Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th TWSC
4: Roe Pkwy. & Garage Access

Alternate Existing+Dev
PM Peak Hour

Intersection						
Int Delay, s/veh	3.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	11	21	30	17	35	22
Future Vol, veh/h	11	21	30	17	35	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	23	33	18	38	24
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	134	50	62	0	-	0
Stage 1	50	-	-	-	-	-
Stage 2	84	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	860	1018	1541	-	-	-
Stage 1	972	-	-	-	-	-
Stage 2	939	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	841	1018	1541	-	-	-
Mov Cap-2 Maneuver	841	-	-	-	-	-
Stage 1	951	-	-	-	-	-
Stage 2	939	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	8.9	4.7		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1541	-	949	-	-	
HCM Lane V/C Ratio	0.021	-	0.037	-	-	
HCM Control Delay (s)	7.4	0	8.9	-	-	
HCM Lane LOS	A	A	A	-	-	
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-	

HCM 6th TWSC
5: Roe Pkwy. & North Access

Alternate Existing+Dev
PM Peak Hour

Intersection						
Int Delay, s/veh	1.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	11	9	19	46	13
Future Vol, veh/h	0	11	9	19	46	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	12	10	21	50	14
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	98	57	64	0	-	0
Stage 1	57	-	-	-	-	-
Stage 2	41	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	901	1009	1538	-	-	-
Stage 1	966	-	-	-	-	-
Stage 2	981	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	895	1009	1538	-	-	-
Mov Cap-2 Maneuver	895	-	-	-	-	-
Stage 1	959	-	-	-	-	-
Stage 2	981	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	8.6	2.4		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1538	-	1009	-	-	
HCM Lane V/C Ratio	0.006	-	0.012	-	-	
HCM Control Delay (s)	7.4	0	8.6	-	-	
HCM Lane LOS	A	A	A	-	-	
HCM 95th %tile Q(veh)	0	-	0	-	-	

HCM 6th TWSC
6: Roe Blvd. & North Access

Alternate Existing+Dev
PM Peak Hour

Intersection						
Int Delay, s/veh	0.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	11	1189	13	0	1233
Future Vol, veh/h	0	11	1189	13	0	1233
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	12	1292	14	0	1340
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	-	653	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	410	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	410	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	14	0		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1		SBT		
Capacity (veh/h)	-	410		-		
HCM Lane V/C Ratio	-	0.029		-		
HCM Control Delay (s)	-	14		-		
HCM Lane LOS	-	B		-		
HCM 95th %tile Q(veh)	-	0.1		-		

Intersection						
Int Delay, s/veh	0.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↗↘		↗	↗↘
Traffic Vol, veh/h	0	27	1195	4	41	1233
Future Vol, veh/h	0	27	1195	4	41	1233
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	250	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	29	1299	4	45	1340
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	-	652	0	0	1303	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	4.14	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	0	411	-	-	527	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	411	-	-	527	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	14.4	0	0.4			
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	411	527	-	
HCM Lane V/C Ratio	-	-	0.071	0.085	-	
HCM Control Delay (s)	-	-	14.4	12.5	-	
HCM Lane LOS	-	-	B	B	-	
HCM 95th %tile Q(veh)	-	-	0.2	0.3	-	

Fee: _____
 Rec'd By: _____
 Date Paid: _____

**APPLICATION FOR
 DEVELOPMENT PLAN APPROVAL**
City of Roeland Park, Kansas
 PLEASE PRINT

Case No.: _____
 Planning Commission
 Date: _____

Requested Action:

- | | <u>Fee</u> |
|--|------------|
| ☐ Preliminary Development Plan | \$400.00 |
| ☐ Revised Preliminary Development Plan | \$400.00 |
| ☒ Final Development Plan | \$650.00 |
| ☐ Revised Final Development Plan | \$650.00 |
| ☒ Landscaping Plan | \$125.00 |
| ☐ Site Plan (non-residential development in residential district) | \$150.00 |

Name of Development: ROELAND PARK MIXED-USE

Location: GENERALLY LOCATED AT NE CORNER OF ROE AVE & W. 48TH STREET

Range 25E Township 12S Section: 4 Quadrant NW

Existing Zoning: MXD

Present use of Property: ROELAND PARK PUBLIC WORKS DEPT

Is Property subject to rezoning? Yes ☐ No ☒

Is Property subject to Special Use Permit? Yes ☐ No ☒

Applicant: EPC REAL ESTATE GROUP

Address: 8001 METCALF AVE. SUITE #300

Phone: 913-558-1014

City: OVERLAND PARK

State: KS

Zip: 66204

Property Owner: CITY OF ROELAND PARK

Address: 4600 W. 51ST STREET

Phone: 913-722-2600

City: ROELAND PARK

State: KS

Zip: 66205

Engineer/Surveyor/Architect: DLR GROUP

Address: 7290 W. 133RD STREET

Phone: 913-897-7811

City: OVERLAND PARK

State: KS

Zip: 66213

Applicant signature _____

Date 3/7/23

To be completed by the City:

Fee Paid \$ _____

Date _____

Received by: _____

Proof of ownership and/or authorization of agent affidavit(s) submitted. Date: _____

☐ Rezoning Case No. _____

☐ Special Use Permit No. _____

☐ Previous Plan Approval: _____

☐ City Engineer review and comment submitted

Technical studies required? ☐ Yes ☐ No If yes, what type and when submitted? _____

Assurances of adequate public facilities received. ☐ Yes ☐ No If yes, date received _____

Supporting materials required: _____

Date Submitted: _____

Date application deemed complete: _____

Surrounding property owners notified: _____

Date of publication: _____

Sign Posted _____

Date notices sent: _____

Public Hearing date: _____

Planning Commission recommendation: _____

Date: _____

City Council Action: _____

Date: _____

FINAL DEVELOPMENT PLANS CHECKLIST [CODE 16-327]Date Submitted 3/10/2023Name of Project ROELAND PARK MIXED-USE

Case # _____

Description/Type of Project: NEW MIXED-USE BUILDING WITH 288 RESIDENTIAL UNITS & 5K SF RESTAURANT

I, Josh Doss, (Contact Person's Name - Printed), hereby certify the attached and completed application contains the information as specified in accordance with the Roeland Park City Code, I understand the submission of incomplete or inaccurate information may result in a delay in processing and action on this application.



Signature of Contact Person

3/9/2023

Date

NOTE: Some plans, because of their scale and complexity may require additional information not indicated on this checklist. You are encouraged to work closely with the Staff in advance of your actual application submittal. Please submit **ONLY THOSE DRAWINGS** necessary to provide information required by this checklist. Submission of construction drawing's or other nonessential drawings may delay the review process. Please check appropriate boxes (I = Included or N/I = Not Included) as the form is completed.

☒ I ☐ N/I

1. Application form.
2. Eight copies of the preliminary site development plan to be drawn to a standard engineer's scale. The actual scale used will depend on the development and shall be subject to the approval of the city engineer. The plans must include the following information:

☒ I ☐ N/I**GENERAL INFORMATION**

- a. North arrow;
- b. Scale;
- c. Date of plan preparation;
- d. Name and address of landowner;
- e. A small key map indicating the location of the property within the City.

☒ I ☐ N/I**SITE DEVELOPMENT**

- a. All existing and proposed adjacent public street right-of-way with centerline location;
- b. All existing and proposed adjacent public street and public drive locations, widths, curb cuts and radii;
- c. Location, width and limits of all existing and proposed sidewalks;
- d. Location, size and radii of all existing and proposed median breaks and turning lanes;
- e. Distance between all buildings. between buildings and property lines and between all parking areas and property lines;
- f. Location of all required building. and parking setbacks;
- g. Location, dimensions, number of stories and area in square feet of all proposed buildings;
- h. Area of land on site plan in square feet or acres.

☒ I ☐ N/I**PARKING**

- a. Location and dimensions of all driveways;
- b. Location and dimensions of all parking lots;
- c. Location and dimensions of all parking stalls and aisles;
- d. Location and dimensions of all loading and service areas and docks;
- e. Location, height, candle power and type of outside lighting fixtures for parking lots.

☒ I ☐ N/I**LANDSCAPE AND SCREENING**

- a. Location, size and materials to be used for all screening, including screening of outside trash enclosure areas.

☒ I ☐ N/I**GRADING AND DRAINAGE DESIGN PLAN**

- a. Finished grades or contours for the entire site at 2 foot contour intervals;
- b. Limits, location, size and material to be used in all proposed retaining walls;

☒ I ☐ N/I**ADDITIONAL INFORMATION**

- a. Location, height, candle power and type of outside lighting fixtures for buildings;
- b. Location, size, type of material and message of all proposed monument or detached signs;
- c. Pertinent peripheral information to include adjacent developments, alignment and location of public and private driveways and streets, medians, public and semi-public easements

☒ I ☐ N/I

One copy of the proposed site plan and one copy of the proposed building elevations shall be reduced onto 8-1/2

1. inch by 11 inch bond paper.
2. Assurances of adequate public facilities as required by section 16-305.
3. Proof of filing of the statement required by section 16-325 (a).
4. Deeds of dedication for all rights-of-way or easements required as a result of preliminary development plan approval if conveyance thereof is not to be made by plat or by the filing of the final development plan pursuant to Section 16-329.
5. A copy of all covenants and restrictions applicable to the development, if required by the terms of the preliminary development plan.
6. Evidence of the establishment of the agency for the ownership and maintenance of any common open space and all assurances of the financial and administrative ability of such agency required pursuant to approval of the preliminary development plan, if required by the terms of the approved preliminary development plan.
7. Evidence of satisfaction of any stipulations of the preliminary development plan approval which were conditions precedent to consideration of the final development plan.

PROOF OF OWNERSHIP AFFIDAVIT

STATE OF Kansas)
COUNTY OF Johnson) SS

Austin Beatty

, being first duly sworn upon his/her oath deposes and states as follows:

(1) [FILL IN ONLY IF APPLICATION SUBMITTED ON BEHALF OF THE LEGAL OWNER]

That

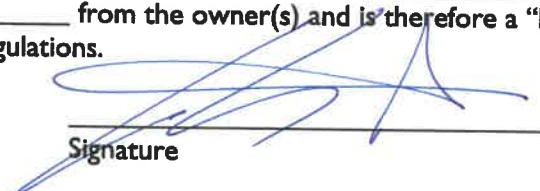
(Name of owner signing Affidavit; if owner is a corporation or business, name of individual signing Affidavit, capacity and exact name and legal status of said corporation or business) is/are the legal owner/authorized official of the legal owner of the property that is the subject of Rezoning No. _____/Special Use Permit No. _____/(Other) _____. (ALL OWNERS OF RECORD MUST FILE AN AFFIDAVIT).

(2) [FILL IN ONLY IF APPLICATION SUBMITTED ON BEHALF OF A CONTRACT PURCHASER]

That

LEE RAIN ESTATE GROUP, LLC

(Name of contract purchaser signing Affidavit; if a corporation or business, exact name and legal status of said corporation or business) is the holder of a contract to purchase the property that is the subject of Rezoning No. _____/Special Use Permit No. _____/(Other) _____ from the owner(s) and is therefore a "landowner" within the meaning of the Zoning Regulations.


Signature

Subscribed and sworn to before me this 7 day of may, 20023.

Gina Johnson
Notary Public

My commission expires:

1/27/2026



Item Number: New Business- VIII.-B.
Committee 4/3/2023
Meeting Date:



City of Roeland Park

Action Item Summary

Date: 3/30/2023
Submitted By: Keith Moody
Committee/Department: Administrative Committee
Title: **Approve Agreement for Compensation Study with McGrath (10 min)**
Item Type: Agreement

Recommendation:

The Administrative Committee recommends entering into a compensation survey service agreement with McGrath.

Details:

Per direction of Council proposals were solicited for compensation survey services. The Administrative Committee reviewed and scored proposals received from 3 firms which specialize in performing compensation services. The Committee interviewed the two firms with the highest composite score from the committee, Lockton (80.3 points) and McGrath (83 points). The Committee (consisting of Council Persons Raglow and Dickens and staff Moody, Morris, Scharff and Nielsen) was unanimous in preferring McGrath. McGrath's process was easy to comprehend, and they have recent experience with communities in the KC region of similar size and complexity (Prairie Village, Raymore, North Kansas City, Smithville, Pleasant Valley, Lawrence, Lancing, Merriam). Their firm specializes in compensation studies for local governments.

The attached proposal and service agreement for McGrath reflects including benefits as well as pay in the compensation study along with leading a review and analysis of the potential to employ remote work as a benefit in Roeland Park. Their proposal reflects some on site meetings, but most will occur virtually. A not to exceed price of \$44,200 is reflected. As noted at the onset of this discussion, the 2023 budget does not reflect funding for this project. An original cost estimate of \$20k to \$30k was shared with Council, but that was prior to the remote work element being added (for McGrath that is a \$12,800 cost). Staff will reflect the cost of this service agreement in the Projected 2023 Budget if Council moves forward with approving an agreement.

We should have preliminary data in time to reflect fiscal impacts of compensation changes in the Projected (Amended) 2023 Budget and Proposed 2024 Budget. We may have to push back

adoption of these budgets a month however (September, we will see).

Financial Impact

Amount of Request: \$44,200	
Budgeted Item?	Budgeted Amount: \$44,200 Will be added to Projected 2023 Budget
Line Item Code/Description: 5267-101 Employee Related Expenses	

Additional Information

How does item relate to Strategic Plan?

Completing a compensation survey and analyzing remote work are timely efforts due to the significant change in the work environment brought on by the pandemic. Ensuring Roeland Park is remaining competitive in our market for total compensation will ensure we retain and attract quality staff. Consistent employees build institutional knowledge and are more productive, which contributes to a high performing organization. The Strategic Plan has numerous high performing organization goals. Our staff is key component to achieving these goals.

How does item benefit Community for all Ages?

ATTACHMENTS:

Description	Type
☐ Composite RFP Score Sheet	Cover Memo
☐ McGrath Proposal Submittal	Cover Memo
☐ Lockton Proposal Submittal	Cover Memo
☐ McGrath Service Agreement	Cover Memo



Compensation Survey Proposal Scoring

March 23, 2023

Reviewer: Composite

Company Name:		Mcgrath	Gallagher	Lockton
Evaluation Criteria	Maximum Points	Score	Score	Score
Approach, Philosophy, Procedure and Methodology <i>Does the proposed approach appear to be logical and realistic? Has the contractor demonstrated that they have a good understanding of the proposed type of project? Does the procedure and methodology appear to compliment the needs of the City?</i>	20	18.5	16.2	17.3
Key Personnel <i>Consider the availability, experience and expertise of key personnel assigned to the project.</i>	20	17.0	16.5	15.8
Experience with Similar Projects for Similar Agencies within the KC Market <i>Evaluate the the company's experience with similar projects in the KC Market.</i>	20	17.2	15.7	14.8
Schedule <i>Consider the contractors ability to meet the City's June 2023 completion schedule. Do they employ reasonable approaches/solutions for phasing and critical path items that require greater lead-time?</i>	15	13.3	12.7	13.3
Cost <i>How does their cost compare to the \$20k to \$30k estimated for the project?</i>	25	17.0	15.8	19.0
TOTAL	100	83.0	76.8	80.3
Notes: After interviewing McGrath and Lockton the committee discussed the presentations and was unanimous in their preference for McGrath. McGrath's process was easy to comprehend, and they have recent experience with communities in the KC region of similar size and complexity. They specialize in studies for local government.				

Scoring Guidelines	10 point question	15 point question	25 point question	30 point question
Outstanding	9-10	13-15	21-25	25-30
Exceeds Acceptable	7-8	10-12	16-20	19-24
Acceptable	5-6	7-9	11-15	13-18
Marginal	0-4	0-6	0-10	0-12

Professional Proposal Prepared for

The City of Roeland Park, Kansas



Compensation and Benefits Study

Submitted By:
McGrath Human Resources Group

Corporate Office
PO Box 865
Jamestown, TN 38556

Dr. Victoria McGrath, CEO
victoriaphd@mcgrathconsulting.com
815.728.9111



December 30, 2022
February 12, 2023 Revised



February 12, 2023

Keith Moody
City Administrator
4600 W 51st Street
Roeland Park, KS 66205

Dear Keith Moody:

Thank you for the opportunity to submit our qualifications to become your compensation business partner and perform a Compensation and Benefits Study for the City of Roeland Park, Kansas.

Developing and maintaining a competitive classification and compensation plan in today's current environment is extremely challenging, yet essential to attract, motivate, engage, and retain a qualified workforce. McGrath Human Resources Group understands the issues public sector entities are facing as our firm provides human resources consulting services primarily for the public sector, with emphasis on compensation, including within the State of Kansas. We offer a transparent, engaging, and collaborative approach to develop a compensation solution built specifically for each client, which aligns with your compensation philosophy and strategy to attract and retain competent professionals, conform to all legal requirements, and fit within the City's fiscal reality.

Detailed information regarding our firm, consulting team, scope of work, work plan, methodology and process, proposed work schedule, project fees, and other information are presented within this proposal. All conditions contained in the attached proposal are valid for a minimum of 90 days from February 12, 2023. I am the authorized individual to contractually bind the Firm.

Based upon an email, we have added a section on remote work.

As you review the proposal, if you have any questions or require additional information, please do not hesitate to ask. We look forward to the opportunity to work with the City of Roeland Park and its employees on this important project.

Sincerely,

A handwritten signature in blue ink that reads "Victoria J. McGrath".

Victoria J. McGrath, Ph.D., CEO
PO Box 865
Jamestown, TN 38556
victoriaphd@mcgrathconsulting.com

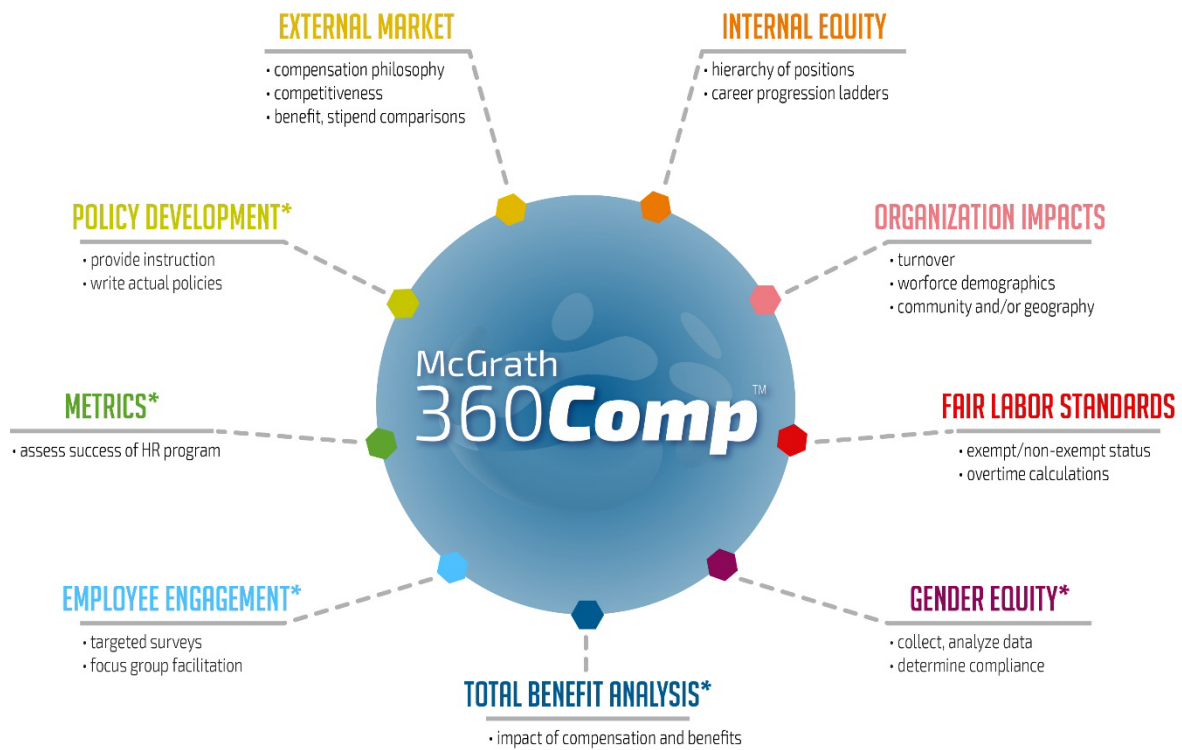
815.728.9111 (office)
931.214.2262 (direct)
815.331.0215 (fax)



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Experience and Qualifications

McGrath Consulting Group, Inc.

was started in 2000, specializing in public sector consulting in the fields of human resource management and public safety (fire, EMS, police, and communications). Our Firm has over 20 professional consultants who are assigned to projects based upon their professional background and skillset they bring to each client.

McGrath Human Resources Group

is the Human Resources Division overseen by Dr. Victoria McGrath. Since 2000, McGrath has conducted hundreds of comprehensive compensation and classification studies nationwide, including Kansas.

The Human Resources

consulting team is comprised of

experienced human resources practitioners from both the private sector and local city and county government in Kansas and have been part of this human resources consulting team between 8-22 years.

Company Name	McGrath Human Resources Group
Parent Organization	McGrath Consulting Group, Inc.
Established	May 1, 2000
Years of Service	21
Type of Firm	Private Corporation
Company Mailing Address	P.O. Box 865 Jamestown, TN 38556
Responsible Party and Project Administrator	Dr. Victoria McGrath, Ph.D., SPHR CEO
Email Address	victoriaphd@mcgrathconsulting.com
Phone Number	(815) 728-9111
Fax Number	(815) 331-0215
Insurance	Erie Insurance: Auto, General Liability, and Workers Compensation Mount Vernon: Professional Liability Chubb: Cyber Security Liability
Office Locations	Chippewa Falls, WI Jamestown, TN Junction City, KS Strongsville, OH

We do not offer an off-the-shelf work product, but rather, we approach each client with the goal to understand your organization, culture, current and future needs, and fiscal reality to develop total compensation solutions that are developed uniquely for you, align with your compensation philosophy and strategy, while using a collaborative and transparent process.

Our Firm also provides related human resources consulting which includes but is not limited to benefit analysis, job description development, HR Audits, performance management program development, training, policy development, operational studies, and staffing studies. Our Human Resources team is also involved in organizational studies related to public safety.

Why Choose McGrath Human Resources Group?

We do not ask you to adapt to an off-the-shelf solution.

- ❖ Even in municipalities that appear to be similar, each entity has unique qualities, culture and needs.



- ❖ We work hard to understand your goals, fiscal realities, and compensation history so we can offer practical and sustainable options for a compensation solution that addresses your needs while holding to best practices that maintain validity and compliance in the system.

We specialize in and understand public employment and local municipalities.

- ❖ We specialize in public sector consulting; thus, we are in a unique position to understand and work with your stakeholders to make a sound investment that will benefit the City.
- ❖ Our consulting team is comprised of individuals with previous local Kansas government city and county work experience.
- ❖ An investment in your employee's compensation plan is an investment in your community, and we recognize the investment you are making is with taxpayer dollars.

Our long history brings a unique breadth of experience.

- ❖ We have experience with the development of innovative or traditional approaches, with the knowledge of climates where those approaches usually succeed to help us tailor the best solutions for you.
- ❖ We wish to foster a partnership with our clients by pursuing a depth of understanding of your philosophy, culture, challenges, and successes so the synergy outcome provides a compensation system that makes sense philosophically and fiscally for your organization.

We are successful.

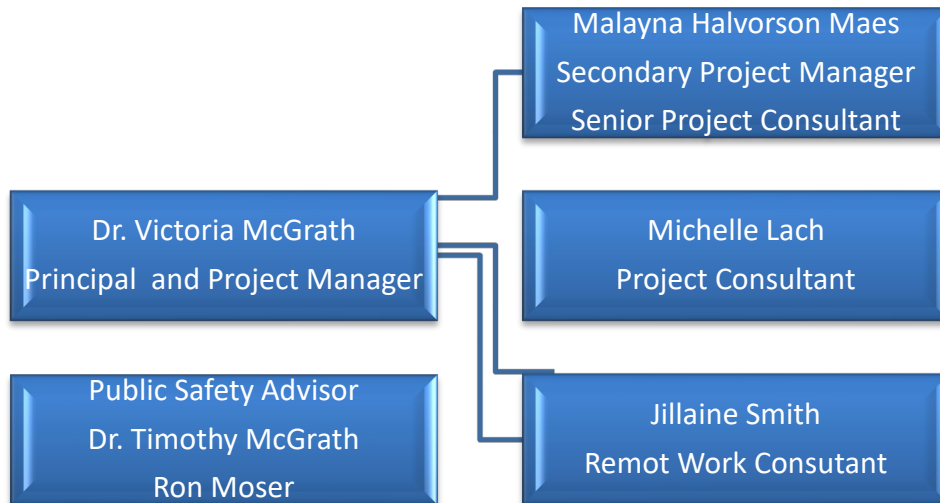
- ❖ In our 22nd year in business, with over 400 clients in 40 states, we are proud that 99% of our projects have been fully adopted and implemented.
- ❖ Our success stems from sound principles and best practices throughout our work and the relationships we build through collaboration and transparency with the project.



Consulting Team

All consultants are McGrath consultants, and there is no subcontracting.

The Consultants were selected for this project based upon their areas of expertise, specialties, related project experience. We operate under the philosophy of total team involvement and each team member has experience in all facets of project work and will work together to meet the goals of your project. Further, we have the flexibility to involve other consultants with our organization to bring their unique perspective and expertise as needed. Primary members of the team for the City of Roeland Park and an overview of their project responsibilities are provided.



Principal: A principal of the company is actively involved in every project and is accountable for the project. This position will have authority over the contract and to bind the Firm.

Project Manager: This role has project oversight, will coordinate all work with the consulting team, will have direct routine communication with the City's project designee, and will be hands on in all aspects of the project's activities, leads the consulting team on targeted project activities, and performs duties of a project consultant. A secondary manager is also assigned as a backup to the project manager to coordinate the work of the consulting team.

Project Consultant: This role works on various project activities, which will include communication documents/tools, interviews, position questionnaire analysis, job description review, market data collection and analysis, pay plan review, compensation system development, costing, and drafting reports.

Advisor: This role has specific subject matter expertise that may be called upon for additional consultation for the consulting team for public safety positions, as needed.



Victoria McGrath, Ph.D., SPHR
Chief Executive Officer and Principal

Dr. Victoria McGrath has an extensive background in the field of human resources, predominately in the public sector; but she also has a number of years in the private sector having worked in health care, banking, and education. She brings over 19 years as an HR practitioner in Wisconsin in all phases of human resources prior to her years as a consultant.

Her professional experience includes the City of Brookfield, WI, which had over 500 employees, including five (5) labor unions; the Elmbrook School District, WI – the 2nd largest school district in Wisconsin, also with 5 labor unions; and Citicorp Banks. She has dealt with labor/employee relations; policy, procedure and labor compliance; benefits and compensation; recruitment and staff development. Dr. McGrath's local government experience touched all local services including police/sheriff, fire, public works/highway, engineering, library, health department, administration, courts, jail, and more.

Dr. McGrath has provided management assistance to more than 200 local government clients on a variety of management issues. In addition to working with government, she has been a speaker for a number of professional organizations and worked with two (2) organizations in developing courses in human resource management to current and upcoming supervisors. Further, she is an adjunct professor – teaching in areas such as human resources, organizational development, management, and research – at Northwestern University (Master's in Public Policy Administration Program).

Dr. McGrath's doctoral dissertation dealt with Government as a Learning Organization. Her research dealt with government efficiency in providing services and how governmental services can become more effective.

YEARS WITH FIRM: 22

EDUCATION

- ♦ Ph.D. – Municipal Government as a Learning Organization, University of Wisconsin – Milwaukee, WI
- ♦ Master of Science – Management, Cardinal Stritch College, WI
- ♦ Bachelor of Science – Industrial Relations & Finance, University of Wisconsin – Milwaukee, WI

PROFESSIONAL AFFILIATIONS

- ♦ Society for Human Resources Management
- ♦ Illinois Public Employer Labor Relations Association
- ♦ National Public Employer Labor Relations Association
- ♦ International City/County Manager Association

SAMPLE PROJECT EXPERIENCE

<i>Barron County, WI</i>	<i>City of Kechi, KS</i>	<i>Marion County, KS</i>
<i>Bluffton Township Fire District, SC</i>	<i>City of Kirkwood, MO</i>	<i>Older People's Commission (OPC), MI</i>
<i>Burnett County, WI</i>	<i>City of Lake Geneva, WI</i>	<i>Patton Township, PA</i>
<i>CAS, Medicare Ambulance, OH</i>	<i>City of Lansing, KS</i>	<i>Portage County, WI</i>



<i>Centre Region of Government, PA</i>	<i>City of Lawrence, KS</i>	<i>Riley County Police Department, KS</i>
<i>Centre Region Solid Waste Authority, PA</i>	<i>City of Manhattan, KS</i>	<i>Riley County, KS</i>
<i>Chippewa County, WI</i>	<i>City of Mexico, MO</i>	<i>Rochester Avon Recreation Authority, MI</i>
<i>City of Alamosa, CO</i>	<i>City of New Berlin, WI</i>	<i>Somerset School District, WI</i>
<i>City of Alcoa, TN</i>	<i>City of Northfield, MN</i>	<i>South Lyons Township Sanitary District, IL</i>
<i>City of Arlington, WA</i>	<i>City of O’Fallon, IL</i>	<i>South Snohomish County F&R Authority, WA</i>
<i>City of Ashland, WI</i>	<i>City of Oak Harbor, WA</i>	<i>Spring Benner Walker Joint Authority, PA</i>
<i>City of Aspen, CO</i>	<i>City of Oak Ridge, TN</i>	<i>St Croix County, WI</i>
<i>City of Beloit, WI</i>	<i>City of Paducah, KY</i>	<i>St Croix Indians, WI</i>
<i>City of Bloomington, MN</i>	<i>City of Park Ridge, IL</i>	<i>Sumner County, TN</i>
<i>City of Burlington, WA</i>	<i>City of Platte, MO</i>	<i>Town of Avon, IN</i>
<i>City of Carthage, MO</i>	<i>City of Rochester Hills, MI</i>	<i>Town of Berwyn Heights, MD</i>
<i>City of Chanhassen, MN</i>	<i>City of West Bend, WI</i>	<i>Town of Greeneville, TN</i>
<i>City of Clayton, MO</i>	<i>Dodge County, WI</i>	<i>Town of Riverdale Park, MD</i>
<i>City of Clearfield City, UT</i>	<i>Douglas County, WI</i>	<i>Town of Syracuse, IN</i>
<i>City of Countryside, IL</i>	<i>Eau Claire County, WI</i>	<i>Unified City of Yorkville, IL</i>
<i>City of Des Peres, MO</i>	<i>Everett Roehl Marshfield Public Library, WI</i>	<i>Utah County, UT</i>
<i>City of Dodge City, KS</i>	<i>Ferguson Township, PA</i>	<i>Vernon County, WI</i>
<i>City of Durango, CO</i>	<i>Fox River Water Reclamation District, IL</i>	<i>Village of Bedford Park, IL</i>
<i>City of Eau Claire, WI</i>	<i>Franklin School District, WI</i>	<i>Village of Cary, IL</i>
<i>City of Edwardsville, KS</i>	<i>Geary County, KS</i>	<i>Village of Glen Ellyn, IL</i>
<i>City of Fayetteville, NC</i>	<i>Greene County EMS, TN</i>	<i>Village of Lake in the Hills, IL</i>
<i>City of Flint, MI</i>	<i>Harris Township, PA</i>	<i>Village of Mount Pleasant, WI</i>
<i>City of Gallatin, TN</i>	<i>Kansas Sentencing Commission, KS</i>	<i>Village of North Aurora, IL</i>
<i>City of Hamilton, OH</i>	<i>Kent County, MI</i>	<i>Village of Oak Park, IL</i>
<i>City of Huntington, WV</i>	<i>Maine Township, IL</i>	<i>Village of Parkridge, IL</i>
<i>City of Huntsville, TX</i>	<i>Manhattan Library, KS</i>	<i>Village of Riverside, IL</i>



Malayna Halvorson Maes
Senior Consultant

Malayna Halvorson Maes has served as a human resource professional in both the private and public sectors for over 20 years. She worked previously in health care human resources, then as the Human Resources Director and senior advisor for a large county in northwestern Wisconsin. Thus, she has direct experience with the many challenges facing municipal employers.

During her time in county government, Ms. Maes advised the organization through the significant changes at the State level (referred to as Act-10) that resulted in a reduction from five (5) collective bargaining units to one (1) unit, due to reduced legal authority of organized labor in the public sector. As a change agent, she facilitated the development of significant policy changes for the organization. This included conducting a complete evaluation of the compensation system for the county which included implementation of a pay for performance evaluation system. This system was created through the work of a combined employee – manager committee and included the implementation of a performance management software system to streamline the 360-evaluation process. She brings a practical understanding to the development and implementation of complex compensation systems.

As a former Wisconsin Human Resources Director, she is knowledgeable of all facets of local government, including police, public works, engineering, health services, and more. She has been active in a number of professional organizations including SHRM, Chippewa Valley Society of Human Resource Management; WIPFLI Senior HR Forum; Wisconsin Association of County Personnel Directors, and the National Public Employer Labor Relations Association. In addition, she served on the WACPD training Committee, Chair of the Legislative Affairs Committee, a Board of Director member as well as a member of the Services Committee for WPELRA; thus, she takes an active role in defining the profession.

YEARS WITH FIRM: 8

EDUCATION

- ♦ Bachelor of Arts– Psychology, Luther College, Decorah, IA

PROFESSIONAL AFFILIATIONS

- ♦ Society for Human Resources Management
- ♦ National Public Employer Labor Relations Association
- ♦ World at Work, Total Rewards Association

CERTIFICATION

- ♦ Certified Compensation Professional (in process)

SAMPLE PROJECT EXPERIENCE

<i>Adams County, WI</i>	<i>City of Kirkwood, MO</i>	<i>Eau Claire County, WI</i>
<i>Barron County, WI</i>	<i>City of La Pine, OR</i>	<i>Everett Roehl Marshfield Public Library, WI</i>
<i>Burnett County, WI</i>	<i>City of Lawrence, KS</i>	<i>Kent County, MI</i>
<i>Chippewa County, WI</i>	<i>City of Marshfield, WI</i>	<i>Marathon County, WI</i>
<i>City of Alamosa, CO</i>	<i>City of Marysville, WA</i>	<i>Marion County, KS</i>
<i>City of Alcoa, TN</i>	<i>City of McPherson, KS</i>	<i>Monroe County, WI</i>



<i>City of Arlington, WA</i>	<i>City of Northfield, MN</i>	<i>Older People's Commission (OPC), MI</i>
<i>City of Bloomington, MN</i>	<i>City of Oak Harbor, WA</i>	<i>Portage County, WI</i>
<i>City of Burlington, WA</i>	<i>City of Oak Ridge, TN</i>	<i>Pueblo City-County Library District, CO</i>
<i>City of Clayton, MO</i>	<i>City of Pleasant Valley, MO</i>	<i>Riley County Police Department, KS</i>
<i>City of Columbus, KS</i>	<i>City of Park Ridge, IL</i>	<i>Riley County, KS</i>
<i>City of Crossville, TN</i>	<i>City of Smithville, MO</i>	<i>Rochester Avon Recreation Authority, MI</i>
<i>City of Denison, TX</i>	<i>City of Stayton, OR</i>	<i>Somerset School District, WI</i>
<i>City of Dodge City, KS</i>	<i>City of Watertown, SD</i>	<i>St Croix County, WI</i>
<i>City of Durango, CO</i>	<i>City of West Bend, WI</i>	<i>St Croix Indians, WI</i>
<i>City of Durant, OK</i>	<i>City of Woodstock, IL</i>	<i>Town of Berwyn Heights, MD</i>
<i>City of Eau Claire Library, WI</i>	<i>Codington County, SD</i>	<i>Town of Greeneville, TN</i>
<i>City of Eau Claire, WI</i>	<i>County of Delaware, PA</i>	<i>Town of Holly Springs, NC</i>
<i>City of Edwardsville, KS</i>	<i>Cypress Creek EMS, TX</i>	<i>Vernon County, WI</i>
<i>City of Excelsior Springs, MO</i>	<i>Daniel Boone Regional Library, MO</i>	<i>Village of Glen Ellyn, IL</i>
<i>City of Fayetteville, NC</i>	<i>Delaware County, PA</i>	<i>Village of Lake in the Hills, IL</i>
<i>City of Fulshear, TX</i>	<i>Dodge County, WI</i>	<i>Village of Mount Pleasant, WI</i>
<i>City of Gallatin, TN</i>	<i>Douglas County, WI</i>	<i>Village of Parkridge, IL</i>
<i>City of Garden City, KS</i>	<i>City of Rochester Hills, MI</i>	<i>Winnebago County, WI</i>
<i>City of Huber Heights, OH</i>	<i>City of Sherwood, OR</i>	<i>Wisconsin Employee Trust Funds, WI</i>



Michelle Lach
Project Consultant - Data

Ms. Lach provides critical research and analytical skills to our compensation and benefits studies. Ms. Lach had nine (9) years of professional human resources experience prior to her time with the Firm. Her experience with the Firm includes the development of employee handbooks and job descriptions, but now works exclusively with compensation and benefit survey designs and execution, and market research. These critical responsibilities include obtaining, compiling, and analyzing complex data and other information for projects, and supporting the project manager as needed. She has been with the Firm for 17 years.

YEARS WITH FIRM: 17

EDUCATION

- ♦ Bachelor of Arts– Communication and Organizational Development
Bowling Green State University, KY

SAMPLE PROJECT EXPERIENCE

<i>Barron County, WI</i>	<i>City of Lawrence, KS</i>	<i>Older People's Commission (OPC), MI</i>
<i>Bluffton Township Fire District, SC</i>	<i>City of Manhattan, KS</i>	<i>Patton Township, PA</i>
<i>Burnett County, WI</i>	<i>City of Marshfield, WI</i>	<i>Pitkin County, CO</i>
<i>Chippewa County, WI</i>	<i>City of Marysville, WA</i>	<i>Portage County, WI</i>
<i>City of Alamosa, CO</i>	<i>City of McPherson, KS</i>	<i>Pueblo City-County Library District, CO</i>
<i>City of Alcoa, TN</i>	<i>City of Northfield, MN</i>	<i>Riley County Police Department, KS</i>
<i>City of Arlington, WA</i>	<i>City of O'Fallon, IL</i>	<i>Riley County, KS</i>
<i>City of Ashland, WI</i>	<i>City of Oak Harbor, WA</i>	<i>Rochester Avon Recreation Authority, MI</i>
<i>City of Aspen, CO</i>	<i>City of Oak Ridge, TN</i>	<i>Somerset School District, WI</i>
<i>City of Bloomington, MN</i>	<i>City of Paducah, KY</i>	<i>St Croix County, WI</i>
<i>City of Burlington, WA</i>	<i>City of Park Ridge, IL</i>	<i>St Croix Indians, WI</i>
<i>City of Carthage, MO</i>	<i>City of Platte, MP</i>	<i>Sumner County, TN</i>
<i>City of Clayton, MO</i>	<i>City of Rochester Hills, MI</i>	<i>Town of Avon, IN</i>
<i>City of Clearfield City, UT</i>	<i>City of Salina, KS</i>	<i>Town of Greeneville, TN</i>
<i>City of Crossville, TN</i>	<i>City of Sheridan, WY</i>	<i>Utah County, UT</i>
<i>City of Denison, TX</i>	<i>City of Sherwood, OR</i>	<i>Vernon County, WI</i>
<i>City of Des Peres, MO</i>	<i>City of St Charles, MO</i>	<i>Village of Bedford Park, IL</i>
<i>City of Dodge City, KS</i>	<i>City of Stayton, OR</i>	<i>Village of Cary, IL</i>
<i>City of Durango, CO</i>	<i>City of Watertown, SD</i>	<i>Village of Lake in the Hills, IL</i>
<i>City of Durant, OK</i>	<i>City of Woodstock, IL</i>	<i>Village of Mount Pleasant, WI</i>
<i>City of Eau Claire Library, WI</i>	<i>Codington County, SD</i>	<i>Village of North Aurora, IL</i>
<i>City of Eau Claire, WI</i>	<i>Coffey County, KS</i>	<i>Village of Oak Park, IL</i>
<i>City of Edwardsville, KS</i>	<i>Cypress Creek EMS, TX</i>	<i>Village of Parkridge, IL</i>
<i>City of Fayetteville, NC</i>	<i>Dodge County, WI</i>	<i>Village of Riverside, IL</i>
<i>City of Fulshear, TX</i>	<i>Douglas County, WI</i>	<i>Village of South Elgin, IL</i>
<i>City of Gallatin, TN</i>	<i>Eau Claire County, WI</i>	<i>Village of Theresa, WI</i>



<i>City of Garden City, KS</i>	<i>Everett Roehl Marshfield Public Library, WI</i>	<i>Village of Vernon Hills, IL</i>
<i>City of Hamilton, OH</i>	<i>Geary County, KS</i>	<i>Village of West Milwaukee, WI</i>
<i>City of Huber Heights, OH</i>	<i>Greene County EMS, TN</i>	<i>Village of Wilmette, IL</i>
<i>City of Huntington, WV</i>	<i>Kent County, MI</i>	<i>Village of Winfield, IL</i>
<i>City of Kechi, KS</i>	<i>Maine Township, IL</i>	<i>Winnebago County, WI</i>
<i>City of Kirkwood, MO</i>	<i>Manhattan Library, KS</i>	<i>Wisconsin Employee Trust Funds, WI</i>

ADVISORS

McGrath Human Resources will partner with the parent company – McGrath Consulting Group in the areas of public safety, as needed.

- Dr. Tim McGrath has over 30 years of experience in fire, EMS, communications and emergency management and currently heads the Fire Division, performing operational studies throughout the United States. He served as Chief of fire departments in Gurnee, Illinois and Brookfield, Wisconsin. Dr. McGrath has been an independent consultant since 1997 and is a speaker well-known for his motivational presentations in the United States and internationally. He earned a doctorate in management, a dual master's degree in public administration and management, a bachelor's degree in industrial education, and an associate degree in fire science management.
- Ron Moser has over 30 years of experience in law enforcement serving six municipalities in three states. Serving as Chief for departments within a metropolitan area. Mr. Moser also served as Director of Emergency Management and Village Manager for Hanover Park, Illinois, a municipality of Cook County. He currently heads the law enforcement division performing operational studies throughout the United States. Mr. Moser has two master's degrees in Criminal Justice and Corrections and Law Enforcement Administration.
- Jillaine Smith's experience comes from a variety of backgrounds to include healthcare, higher education, municipal league, and manufacturing. Working in the municipal league Ms. Smith was able to implement policies and procedures, a wage study, revamped job descriptions, and other proficiencies for a smoother running headquarters. Jillaine worked extensively with the fire union, police union, and AFSCME union, as well as non-represented employees to make sure innovative thinking, leadership, and guidance was provided to all. In addition, Ms. Smith consults with key executive individuals responsible for corporate performance and development to help provide experience-based strategies in-house that are designed to enhance and reinforce organizational development in an on-going manner. Jillaine's trailblazing tactics have won her awards and got her recognition inside the state municipal league and state SHRM association. Ms. Smith's background is unique as she is a certified social worker.



References

McGrath Consulting is proud to list over 400 clients in 38 states. Below are a few compensation studies either within the region and/or are similar to your project ***Additional client names, projects and locations are viewable on our website at www.mcgrathhumanresources.com*** and their contact information will be provided upon request.

Client Name	Description
City of Prairie Village, KS Contact: Cindy Volanti Title: Human Resources Manager Phone: 913-385-4664 Email: cvolanti@pvkansas.com	Conducted a comprehensive compensation and benefit study for all positions within the City. Worked with elected officials to establish an above average compensation philosophy.
City of Lansing, KS Contact: Beth Sanford Title: Finance Director Phone: 913-77-2487 Email: bsanford@lansingks.org	Conducted a compensation study for police position in 2021. Rehired in 2022 to conduct a compensation and benefits study for all other positions within the organization.
City of North Kansas City, MO Contact: Casey Campbell Title: Human Resources Manager Phone: 816-412-7809 Email: ccampbell@nkc.org	Comprehensive compensation and classification analysis was completed with development of new salary schedule for implementation in January 2023.
City of Merriam, KS Contact: Stephanie Thompson Title: Human Resources Manager Phone: 913-322-5502 Email: sthompson@merriam.org	Comprehensive compensation, classification, and benefits analysis was completed with development of new salary schedule for implementation in January 2023.
City of Smithville, MO Contact: Cynthia Wagner Title: City Administrator Phone: 816-532-3897 Email: cwagner@smithvillemo.org	Comprehensive compensation, classification, and benefits analysis was completed with development of new salary schedule for implementation in 2022.
City of Excelsior Springs, MO Contact: Molly McGovern Title: City Manager Phone: 816-630-0752 Email: mmcGovern@excelsiorsprings.gov	Comprehensive compensation, classification, and benefits analysis was completed with development of new salary schedule for non-union and union for implementation in 2022. Performance Management project scheduled for 2022.
City of West Bend, WI Contact: Michelle Hoey Title: HR Director Phone: 262-335-5107 Email: hoeym@ci.west-bend.wi.us	Comprehensive compensation schedule was developed in 2022.
Dodge County, WI Contact: Tonia Mindemann Title: Assistant Human Resources Director Phone: 920-386-3691 Email: tmindemann@co.dodge.wi.us	Comprehensive compensation schedule was developed with benefit recommendations for 250+ non-union job classifications, inclusive of a skilled nursing facility. Implementation in 2021 due to COVID delays. Project also



	included job description updates and performance evaluation process. Services ongoing.
Barron County, WI Contact: Rachel Richie Title: Human Resources Director Phone: 715-537-6825 Email: rachael.richie@co.barron.wi.us	Conducted Performance Evaluation training for supervisors in 2016. Rehired in 2017 to develop new compensation system for approximately 300 job titles. Rehired in 2019 to complete job description updates and develop point factoring process. Services ongoing.
Burnett County, WI Contact: Nathan Ehalt Title: County Administrator Phone: 715-349-2181 Email: nehalt@burnettcounty.org	Comprehensive compensation schedule was updated in 2019 based upon market updates and implemented new internal comparability indicators into existing Schedule. Adoption of updates occurred in 2020. Market update occurred in 2022. Services ongoing.
Village of Mount Pleasant, WI Contact: Maureen Murphy Title: Village Administrator Phone: 262-664-7838 Email: mmurphy@mtpleasant.wi.gov	Comprehensive compensation schedule was updated in 2019 based upon market updates and organizational restructuring resulting in significant position adjustments. Job Descriptions were also developed in 2019. Market update occurred in 2022. Services ongoing.
City of Northfield, MN Contact: Michelle Mahowald Title: Human Resources Director Phone: 507-645-3012 Email: michelle.mahowald@ci.northfield.mn.us	A comprehensive compensation schedule of union and non-union positions was developed into one (1) classification system, and job descriptions were updated. This Compensation system had to be compliant with the State of Minnesota's Pay Equity Act. <i>Northfield is in the Minneapolis-St. Paul metropolitan area.</i> A market update occurred in 2022.
City of Watertown, SD Contact: Kristen Bobzien Title: Finance Officer Phone: 605-753-3563 Email: kbobzien@watertownsd.us	Conducted comprehensive compensation analysis of all union and non-union positions within the City ~120 positions in 2019. Included the development of separate salary schedules for police, fire, AFSCME, and non-union – however, keeping internal equity and compression issues in line. Updated job descriptions in 2020. Services ongoing.
City of Crossville, TN Contact: Leah Crockett Title: Human Resources Manager Phone: 931-456-5681 Email: leahcrockett@crossvilletn.gov	Comprehensive compensation schedule for all City positions was developed in 2019.
City of Fulshear, TX Contact: Kristi Brashear Title: Human Resources Director Phone: 281.346.8875 Email: kbrashear@fulsheartexas.gov	Comprehensive compensation schedule for all City positions was developed in 2021.
City of Alamosa, CO Contact: Jolene Webb Title: Human Resources Manager Phone: 719-587-2029 Email: jwebb@ci.alamosa.co.us	Conducted comprehensive market analysis and position analysis of all positions and developed new compensation system in 2021.



Public Sector Project History

McGrath primarily works with public-sector organizations including counties, cities, villages, townships, districts, and even State agencies. The following is a portion of our prior government project experience, which highlights Kansas projects past and present and Missouri projects in the Kansas City region.

Barron County, WI	Clearfield City, UT
Bluffton Township Fire District, SC	Codington County, SD
Burnett County, WI	College Township, PA
Centre Region of Government, PA	County of Delaware, PA
Centre Region Solid Waste Authority, PA	Cowley County, KS
Chippewa County, WI	Cy Fair Volunteer Fire Department, TX
City of Alcoa, TN	Daniel Boone Regional Library, MO
City of Arlington, WA	Davison County, SD
City of Aspen, CO	Dodge County, WI
City of Beloit, WI	Douglas County, WI
City of Burlington, WA	Eau Claire County, WI
City of Carthage, MO	Everett Roehl Marshfield Public Library, WI
City of Chanhassen, MN	Ferguson Township, PA
City of Clayton, MO	Fox River Water Reclamation District, IL
City of Crossville, TN	Franklin School District, WI
City of Denison, TX	Geary County, KS
City of Dodge City, KS	Greene County EMS, TN
City of Duvall, WA	Harris Township, PA
City of Durango, CO	Harvey County, KS
City of Durant, OK	Kansas Sentencing Commission, KS
City of Eau Claire Library, WI	Kent County, MI
City of Eau Claire, WI	Manhattan Library, KS
City of Edwardsville, KS	Marathon County, WI
City of Excelsior Springs, MO	Marion County, KS
City of Fayetteville, NC	Monroe County, WI
City of Flint, MI	Older People's Commission, MI
City of Fulshear, TX	Patton Township, PA
City of Gallatin, TN	Pitkin County, CO
City of Garden City, KS	Portage County, WI
City of Hamilton, OH	Pueblo City-County Library District, CO
City of Huber Heights, OH	Reno County, KS
City of Huntington, WV	Riley County Police Department, KS
City of Huntsville, TX	Riley County, KS
City of Kechi, KS	Rochester Avon Recreation Authority, MI
City of Kirkwood, MO	Rock County, WI
City of La Crosse, WI	Sedgwick County, KS



City of Lansing, KS	Somerset School District, WI
City of La Pine, OR	South Lyons Township Sanitary District, IL
City of Lake Geneva, WI	South Snohomish County Fire & Rescue Authority, WA
City of Lawrence, KS	Spring Benner Walker Joint Authority, PA
City of Marshfield, WI	St. Croix County, WI
City of Marysville, WA	Sumner County, TN
City of McPherson, KS	Tooele County, UT
City of Merriam, KS	Town of Avon, IN
City of Mexico, MO	Town of Blacksburg, VA
City of New Berlin, WI	Town of Delavan, IL
City of Northfield, MN	Town of Greeneville, TN
City of North Kansas City, MO	Town of Holly Springs, NC
City of Oak Harbor, WA	Town of Riverdale Park, MD
City of Oak Ridge, TN	Town of Syracuse, IN
City of Paducah, KY	Utah County, UT
City of Park Ridge, IL	Vernon County, WI
City of Platte, MO	Village of Cary, IL
City of Pleasant Valley, MO	Village of Glen Ellyn, IL
City of Richmond, MO	Village of Lake in the Hills, IL
City of Rochester Hills, MI	Village of Mount Pleasant, WI
City of Salina, KS	Village of North Aurora, IL
City of Sheridan, WY	Village of Oak Park, IL
City of Sherwood, OR	Village of Parkridge, IL
City of Smithville, MO	Village of Riverside, IL
City of St. Charles, MO	Village of South Elgin, IL
City of Stayton, OR	Village of Theresa, WI
City of Topeka, KS	Village of Vernon Hills, IL
City of Watertown, SD	Village of Wilmette, IL
City of West Bend, WI	Village of Winfield, IL
City of Woodstock, IL	Winnebago County, WI



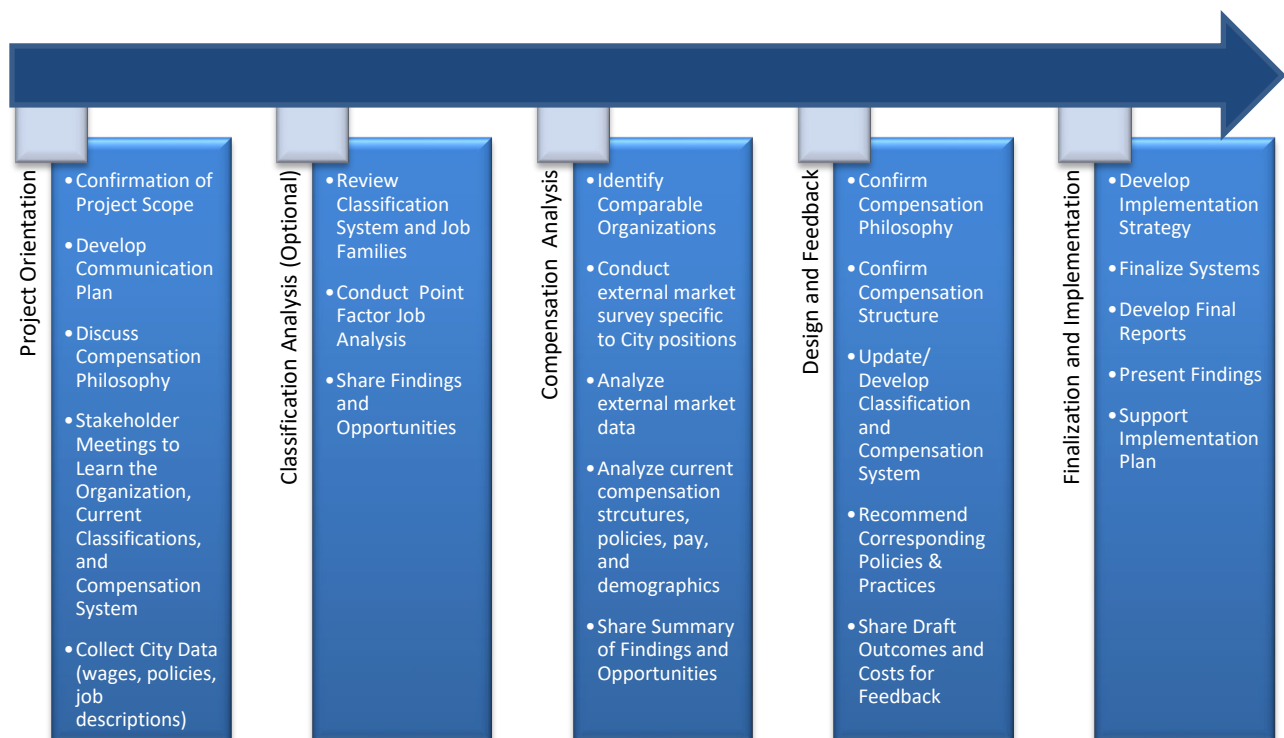
Project Approach and Methodology

Proposed Approach

In any governmental organization, salaries and benefits are typically the largest budget item. An investment in your employee's compensation plan is an investment in your community, and we recognize the investment you are making is with tax dollars. We also understand a competitive compensation system is an important element for the City's ability to hire, cultivate, and retain employees who provide service and value to all City stakeholders, regardless of the organization's size.

Similarly, internal equity, proper classification, career opportunities and addressing of any compression issues serves to enhance the employee's feeling of value and willingness to actively engage in their work for the organization. Therefore, it is important for the City to have a system that promotes the active engagement of employees, is non-discriminatory, is legally defensible, is efficient to manage, and can accommodate organizational growth and change. Thus, we tailor our services to meet the needs and unique structure and culture of the City.

Our methodology and approach are characterized by a systematic, logical series of tasks aimed at assuring thoroughness, consistency, and objectivity. After conducting a needs assessment with the City, confirming the City's compensation philosophy with City leaders, and analyzing the current System in place, our Firm utilizes Best Practices throughout the process, which includes salary data and job content data from multiple City sources and its mutually identified comparables. Data analysis is then utilized to put this information into a meaningful summary format which is shared with the City. A visual summary of the project plan is provided. A detailed methodology and work plan follows.



Methodology and Work Plan

We tailor our projects to meet the needs and unique structure and culture of your organization, with the principles of collaboration, communication and transparency in mind while developing a sound work plan with identified deliverables. The proposal steps can be discussed and adjusted to meet the projects needs for the City.

1. Project Orientation

- ❖ Communicate with the City's project designee to:
 - Provide a list of documents and data needed to begin the project.
 - Discuss project expectations and milestones.
 - Begin developing a communication plan.
 - Schedule initial meetings.

Our philosophy is to tailor each project to meet the needs, unique structure, and culture of your organization, with the principles of collaboration, communication and transparency in mind while developing a sound work plan with identified deliverables.

We develop a communication plan at the onset of the project so the Firm can provide routine updates on progress as well as discuss any issues that may result in a delay or a challenge within the project. Our Project Manager coordinates meetings, data sharing, and ensures the work plan is progressing according to the designed work plan so the deliverables are met within the scope and timeline of the project.

2. Project Initiation and Assessment

The consultants will conduct the first visit to meet with City leaders, Compensation Project Team, and all Department Directors/Managers to:

- ❖ Explore your organization's current compensation system, compensation philosophy and strategy.
- ❖ Gain an understanding of the goals, values and structure of the overall organization.
- ❖ Gather information for each individual department including any unique responsibilities associated with positions, strengths and weaknesses of the current system, or issues with recruitment/retention.
- ❖ Identify future needs.
- ❖ Review provided documents and data.
- ❖ Finalize project communication expectations and strategies, project timeline, and identifiable milestones.

Our philosophy is to have direct conversations with management and administration to identify challenges and concerns with the current system and future needs; so we may develop comprehensive recommendations to best address those needs.

Other Introductory communications are recommended:

- ❖ Conduct introductory meetings with elected officials to discuss elements of compensation philosophy and expectations.
- ❖ Introductory employee communications and/or meetings to explain the process of a compensation study, introduce the consulting team, expected assistance, describe the general outcome of the Study, and other related topics as desired by the City. This can be done in-person or virtually.

Communication with elected officials and/or employees during the project allows engagement and offers factual information.



3. Compensation Philosophy

From first site visit, the consulting team will identify:

- ❖ The strengths of the current compensation system.
- ❖ Areas that need to be addressed or are concerns to the current programs.
- ❖ Current compensation program success and challenges.
- ❖ Other characteristics about the City which may impact compensation.

It is our belief that identifying and establishing a compensation philosophy allows for the development of strategic recommendations, such as placement in the market.

An analysis of this data as well as external data collection will be the basis of confirming the compensation philosophy that will guide the design and complexity of the City's compensation program. A consistent philosophy is a strong existing foundation for the City.

4. Classification Analysis (Job Analysis)

A **job analysis** objectively evaluates the duties, responsibilities, tasks, and authority level of each City position and identifies hierarchy, career progression opportunities, **and internal equity**.

*Our philosophy is that job analysis is critical not only for internal equity, but also the establishment of a standardized classification system which will be used to establish **pay equity** between positions.*

The job analysis would include completion of a Position Questionnaire (PQ), which is a standardized tool used to analyze each position on identified factors. The **McGrath 360Comp™** PQ has been developed **specifically for use in public sector** organizations. This Questionnaire is recommended to be completed on all job titles for purposes of:

- ❖ Expounding upon information provided in job descriptions.
- ❖ Evaluating position responsibilities regarding necessary competencies, experience, education, finances, judgement, decision-making and other expectations which provide value to the City.
- ❖ Clarifying instances where statements in the existing job descriptions are vague or absent.
- ❖ Updating and aligning classification changes.
- ❖ Identifying career progression opportunities.

The **McGrath 360Comp™** point factor process used to complete the job analysis goes beyond the typical "Knowledge, Skills and Abilities" (KSA's) and explores factors that are unique to public sector positions including the following aspects of a job:

- ❖ Records, Reports and Programs
- ❖ Impact of Decisions and Consequents of Errors
- ❖ Contact with Others (both inside and outside the organization)
- ❖ Equipment, Machines and Tools
- ❖ Budget, Financial, and Cash Handling
- ❖ Education, Experience, Licensure/Certifications
- ❖ Complexity and Judgment
- ❖ Confidential Data
- ❖ Stress (degree of mental or emotional fatigue or stress inherent to the job)
- ❖ Technology
- ❖ Leadership and Supervisory Responsibilities
- ❖ Work Environment and Physical Requirements



Supervisory Review/Verification. Each incumbent’s supervisor or Department Head will be given time to review the completed PQ for content and accuracy, and to comment in a designated area of the document. They will sign off on their review prior to submission to the Consultants. If needed, the consulting team may speak with Department Heads, Supervisors, and Human Resources for additional position clarification.

From this process, the current classification system will be updated, as needed.

5. Compensation Analysis

A Compensation analysis determines the organization’s relative position in the comparable labor market. This analysis allows City leaders to understand the organization’s compensation as a whole and by position, allowing them to make sound compensation decisions. Compensation Analysis will consist of the following:

A market survey is developed specific to the City’s positions. We believe that collecting fresh market data establishes a more accurate look of the current market. We do not utilize third-party market surveys unless requested or discussed with the client in advance.

- ❖ ***The City and consulting team will cooperatively identify Comparable Organizations, both public (and private, if desired), as the labor market. The City will have input into the list and must approve the list of comparables prior to starting the external market survey.***
- ❖ McGrath consultants will prepare and conduct a tailored compensation survey specific to the City’s positions to ***collect external market data*** in real-time.
- ❖ The consultants will ***analyze salary data***. The market survey collects minimum, midpoint, maximum, and incumbent salary information for each benchmark position; and other data points as needed. A statistical analysis is conducted on each dataset to ensure consistent and objective analysis. The outcome is then calculated into a ratio between the market and the City to measure the City’s alignment against the market.
- ❖ The consultants will examine the status of your current compensation systems including ***structural analysis, special pay analysis, compression analysis, and incumbent pay analysis*** to give guidance to the consultants for compensation and implementation recommendations and will also provide information to the City regarding overtime, promotional and retention opportunities, internal equity, and how multiple pay plans (including plans excluded from the Study) are working together.
- ❖ The consultants will ***review your compensation-related policies*** for compliance and best practices. We will make recommendations for policy updates or considerations that impact the City.



The consultants will also gather and analyze external and internal demographic data and workforce metrics to define:

- Employee's tenure within the organization as well as tenure in current position.
- Turnover rate for the organization.
- Local geographic and economic factors impacting the attraction and retention of employees.

Understanding your employee demographics and external challenges allows for the development of strategic recommendations.

The outcome of this portion of the project is very important because it identifies current trends and future predictors. This information guides the consulting team in developing strategy options and recommendations for the City's current and future needs.

6. Benefits and Rewards Analysis (Optional Add-on)

When data is received through the benefits and Rewards survey to the identified labor market, the Consultants will analyze the findings and identify any trends and/or areas of concern regarding the City as compared with the Market. The analysis includes the option of:

- ❖ A **Benefits and Reward Analysis** identifies the City's position in the market for the offering of insurance, retirement, paid leave, holiday, and other benefits and rewards identified in a Total Rewards Inventory conducted with the City.
- ❖ A **Total Compensation Analysis** calculates the monetary value.

Wages alone do not make up total compensation. A review of benefits in conjunction with wages allows the organization to see the total compensation picture.

7. McGrath 360Comp™ Integration

Upon completion of the compensation analysis and job analysis, etc. the consultants will engage the City to:

- ❖ Confirm the recommended compensation philosophy.
- ❖ Discuss the data obtained and share summary findings and trends found in the analysis as it compares to the current Compensation System.
- ❖ Discuss the tie between the compensation system, performance, and tenure, and provide recommendations to strengthen the City's desired compensation model.

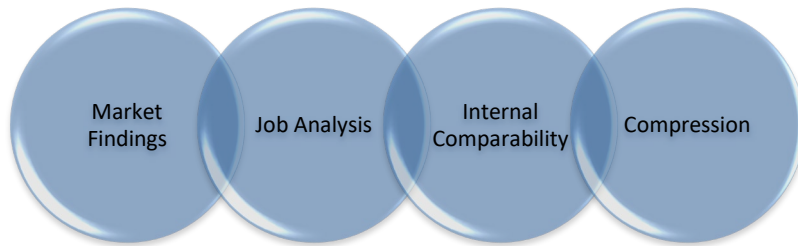
Our philosophy is to help the City understand the full picture between the job analysis, compensation analysis, and summary market findings, which allows the City and consulting team to have a meaningful dialogue to confirm the desired place in the market, desired compensation system model, and other compensation solutions identified.

Upon completion of the analysis phases, providing the oversight committees with a project update would also be appropriate.



8. Systems Update and Review

The Compensation System(s) will be updated with the following information:



Allowing City leaders and department directors the opportunity to review our recommendations in advance of finalization provides an opportunity for dialogue and sound quality control.

The consultants will develop a **detailed fiscal impact** of the Compensation System(s) and will present implementation strategy options that fit the fiscal needs, culture, and compensation strategy of the City. While some entities can fully implement the compensation system immediately, some clients have utilized a phased approach. We will work with the City to assure that any phased approach fits with best practices and your fiscal realities.

Once the System is updated, the consultants will meet with appropriate City personnel to **review the draft Compensation System(s)**. This visit will include meetings with the City's project designee and each Department Director to review placements to identify any concerns prior to finalization. This provides an opportunity to discuss any concerns in placement in the current system and/or ensure proper placement if the System(s) are redesigned.

9. Finalization

A **Compensation Policy/Procedure Manual** will be developed for Administration/Human Resources. This report details:

- a. Study methodology and summary findings.
- b. Recommended compensation structure modifications.
- c. Recommended position title, classification specification or career progression changes.
- d. Fiscal impact and implementation strategies.
- e. Policies and procedure modifications or to adopt to administer and maintain the system in-house going forward.

The City will receive the Compensation and Classification documents and cost estimates in editable format for the City to maintain/integrate.

An **Executive Summary Report** for governing body and public distribution will also be provided as appropriate.

These reports will first be provided to City Administration in draft form to allow for feedback before the reports are placed into final form and provided electronically.



10. Presentation and Communication

The Study includes a ***presentation to the City Council and employees.***

We stand behind our methodology and process, and recommendations. We are available to present findings.

The consulting team will also be available to introduce the recommendations to employee groups to the depth, and in the manner, you prefer and offer suggestions and recommendations on how to best communicate this information. We prepare correspondence and notices tailored to our client, whether for written, verbal or electronic presentation.

11. Ongoing Support and Training

McGrath Human Resources Consultants will continue to work with your organization to ***support implementation*** of the compensation system at no additional cost.

We will continue to assist the City through implementation and beyond.

The City may also consider its future needs as follows:

- ❖ McGrath Human Resources believes in providing our clients with the tools to be able to manage their Compensation System independently, if the client desires.
- ❖ Alternatively, some clients prefer that McGrath Human Resources set current and future pay grade placements, position changes, and job description development rather than completing that in-house. This can be done for a nominal fee depending upon the time involved in the placement.

Proposal Timeline

The timeliness of the market data collection is heavily dependent upon the workload and staffing of the comparable organizations we are asking to participate, so additional time is built into the schedule for better survey participation/timely responses to capture current data. We are prepared to start the project in March 2023, and planning meetings can be scheduled in February.

We recommend the following schedule:

Activity	Month 1				Month 2				Month 3				Month 4				Month 5			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Task 1 - Project orientation/planning																				
Task 2 and 3- Project Kickoff meetings with identified stakeholders for information meetings																				
Task 4 –Position Questionnaire distribution/ collection and Job Analysis																				
Task 5 and 6- Market Data collection and analysis; and internal analysis																				
Task 7 - Review Findings with City																				
Task 8 – Develop/Update Compensation and Classification Systems																				



Activity	Month 1				Month 2				Month 3				Month 4				Month 5			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Task 8 - Review Recommendations and Cost with City																				
Task 9 -Finalize changes. Provide Draft Reports for City review. Finalize Reports.																				
Task 10 - Presentations																				

This timeline will be adjusted based on the agreed upon Project Initiation date. There are factors that impact this schedule that may be out of the control of the consultants. The proposed time frame is contingent upon timely receipt of data from the City, timely participation from external comparable organizations; and timely receipt of information and/or feedback from the City. This is monitored by the consulting team and communicated with the City on an ongoing basis.

Project Progress Communication

Since we work closely with our clients, open communication and collaboration between the consulting team and project designee is critical for the project to be most successful. Because of that, we will develop a communication plan at the onset of the project so the Firm can provide routine updates on progress as well as discuss any issues that may result in a delay or a challenge within the project. Our designated project manager coordinates meetings, data sharing, and ensures the work plan is progressing according to the designed work plan so the deliverables are met within the scope and timeline of the project.

Remote Work Facilitation

Two consultants will work with a committee of the City to strategies the strengths and weaknesses of remote work. Based on the discussion, identify positions eligible for, alternative work schedules for positions that do not align with remote work, and develop draft policies based upon the recommendation of the committee.

This process will include at least one (1) site visit in which two (2) consultants will meet with the committee. Subsequent meetings will be either virtually or on-site, as appropriate. One (1) site visit is included in the cost and subsequent approved site visits will be billed for expenses (airfare, car rental, hotel, and dinner) for a maximum of two (2) consultants.

Cost Proposal

McGrath Human Resources does not identify, or bill based on the number of hours needed to complete a project, as the Firm will work the project based on the scope of work. Instead, McGrath sets project fees based on the total project, which ensures the project comes in at the budgeted amount. Therefore, the fees listed below include all consulting professional fees, and administrative costs, excluding travel.

Compensation Study	\$23,897
Benefits Add-on	\$ 4,500
Travel - Not to exceed based upon actual expenses*	\$ 3,000



Project Not to Exceed Amount

\$31,397

*Travel: In-person site visits may not be needed nor desired. Travel expenses will be billed only if incurred and based on actual expenses, not to exceed the price listed. This would be limited to airfare, mileage/car rental, hotel and dinner for the consulting team. All in person site visits will be determined with the City in advance and based upon the needs of the project.

Terms of Payment

Payment will be made in three (3) installments (\$23,897):

\$ 5,000 upon completion of the signed contract;

\$ 15,897 upon submission of the draft report; and

\$ 3,000 plus actual travel (not to exceed \$3,000) upon submission of the final report.

Payments will be adjusted if the benefits add on is contracted.

Remote Facilitation

\$12,789

*Includes one (1) site visit

Payment will be added to the three (3) payment distribution. It would be beneficial to have the Remote Facilitation added at the start of the compensation project in order to discuss the topic with departments directors.

All invoices are due within 30 days of receipt. Proposal cost is good for a minimum of 90 days from February 12, 2023. Dr. Victoria McGrath is the individual with the authority to negotiate and contractually bind McGrath Human Resources in any type of negotiations and contracts.

Optional Services

In most compensation studies, there are areas that must be addressed that are not planned for. In the 22 years McGrath Consulting Group, Inc., has been in business, it has never increased the agreed upon price and will address these areas. In the event the work is so beyond the scope of the original project, the Consultant will work with the City to either bill the service at an hourly rate, plus travel fees; or determine a fixed price. However, no work will begin until an agreement with the City has been approved.



Compensation Consulting Proposal

City of Roeland Park

2/17/2023

Joe Meyer, Sr. Compensation Consultant
314.812.3121



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Executive summary

The City of Roeland Park ("the City") is seeking the services of a qualified, responsive consulting firm to conduct compensation consulting services related to salary management, sales compensation, executive compensation and an overall Total Rewards strategy, including but not limited to benefits, paid time off, retirement, wellness, and recognition. Lockton is excited about the prospect of working with the City on this engagement and appreciates the opportunity to submit our proposal for compensation consulting services. Lockton believes the **major objectives** could include:

- Provide an updated Range Analysis file for current/upcoming Fiscal Year
- Survey the market utilizing published survey sources to include all components of base and total cash compensation at the 25th, 50th, 75th percentiles and target incentive
- Survey the market via a custom survey developed with assistance from the City data to augment published survey sources. Survey to include all components rewards components, including: health and welfare benefits, retirement, paid time off, etc.
- Revise/update salary structures based on the City's total compensation strategy
- Assist the City with a method for internal value consideration and for slotting all positions into the new salary structure, including newly identified positions/titles as they arise
- Update cost analysis for a one time pay adjustment, if necessary, to alleviate pay compression and bring employees closer to the market commensurate with their performance and time in job and new compensation philosophy.
- If desired, establish a remote work policy for the City which outlines necessary criteria to approve and manage remote work arrangement

Salary management methodology

Our team understands the City's objectives and project deliverables and will approach this engagement utilizing the following methodology.

Step 1: Project planning

Lockton requests a **project planning** meeting with the City at the beginning of the engagement to develop and introduce the project team; rearticulate project goals, deliverables, and timelines; and gain insight into historical compensation and organizational practices and objectives. Additionally, we identify, discuss, and/or review the following information, including but not limited to:

- The City's structure and benchmark job profiles
- Market and peers
- Lockton survey resources
- Geographic vs. national data scoping requirements
- Current salary structures

Lockton also submits a data request to collect and review a wide range of documentation pertaining to the City's current salary management system (e.g., current salary ranges, past compensation survey data, job evaluation/classification system, salary administration documents, organizational charts, incentive plans, etc.). This review provides us the necessary background information and a firm foundation for addressing the City's needs.

Step 2: Comparative market analysis

Lockton will do the following to develop and analyze the market values of the City's benchmark jobs.

To develop comparison compensation values for the City's identified benchmark jobs, Lockton will invite identified local and regional peers to participate in a custom compensation survey developed and administered by Lockton using our online survey tool. We will develop the survey instrument, submit it to the peer group, download the peer organization data into a summary report with statistical comparisons to the City's compensation practices. All survey participants will receive a free copy of the report in aggregate for participating. If selected as a finalist, Lockton will provide a detailed description of our custom survey methodology, process and timeline at that time.

Lockton will supplement the custom survey data using published survey resources from our reference library of over 200 different survey sources. Published survey data will be used for those positions not included in the custom survey or in cases where the custom survey data points were insufficient to provide meaningful statistical data. Comparative benchmark data from both custom survey and published sources will be analyzed at the 25th, 50th and 75th percentiles for base salary and total cash compensation.

After computing the comparative compensation values for the benchmark jobs, Lockton will compute incumbents' competitiveness ratios (i.e., ratios of the employees' current compensation to the market values for their jobs), as well as the average competitiveness ratio, and variance in that average ratio, for each job, each department, and the City.

Step 3: Salary structure design

Based on the defined compensation strategy and external competitiveness review, Lockton develops a recommended salary structure(s), guidelines for placement of jobs within the structure, and methodology for increasing salary levels in future years which is consistent throughout the organization. Specifically, the following steps are taken:

- Benchmark jobs utilized for the external competitiveness review are grouped by assigned grade
- An average competitive salary is determined for each grade based on assigned benchmark jobs
- Salary range midpoints are established for each grade based on:
 - Average and/or median competitive salaries associated with each grade
 - The philosophy that relative consistency should exist in the percentage spread between midpoints
- Salary range minimums and maximums will be established based on midpoints and the salary structure will be adjusted further to better reflect the City's compensation strategy and priorities

Assign jobs to grades in the base salary structure

Lockton performs the following:

- Assign benchmark jobs to the grades in a recommended compensation structure that best reflects the job's market values
- Meet with the project management team to review the jobs' recommended grade assignments
- Amend the job grade assignments, as appropriate, to reflect internal value considerations that may not have been adequately captured by the labor market
- With assistance from the City and the project management team, slot any positions that were not priced due to insufficient market data using the market pricing grade assignments as anchor points

Lockton will facilitate a discussion with the Project Management Team to amend the job grade assignments, as appropriate, to reflect internal value considerations that may not have been adequately captured by the labor market.

Step 4: Cost and range penetration analysis

Cost analysis

After the jobs are assigned to "approved" salary grades in the base salary structure(s), Lockton compares incumbents' pay to the minimum, midpoint, and maximum geographic values of their assigned grades, and calculate the amount of pay that is not "captured" by the minimum and maximum values of the incumbents' grades.

Range penetration analysis

Based on the City's defined compensation strategy, Lockton requests the following information to calculate a one-time adjustment of employees' placement into the range to alleviate compression issues:

- Performance scores for the last three years, if applicable
- Employee time in job/years to proficiency
- Tenure

Lockton then calculates the correct placement of an incumbent into the range based on these two weighted control points.

The results of the calculations from these analyses are listed for each employee and for each agreed-upon department within the City. After these calculations are complete, Lockton meets with the project management team to review the results and discuss both budgetary and policy implications. Finally, Lockton develops a tool in Microsoft Excel that the City can use to create a variety of "budget scenarios" for pay adjustments.

Timing

An estimated timetable, using the methodology described in this proposal, is approximately 12-16 weeks. This timing assumes the efficient scheduling of project meetings, delivery of necessary background information, and the ability of the City's project manager to maintain open communication with Lockton.

Fees

Lockton provides the compensation consulting services described in this proposal on a fixed fee basis. Invoices are issued on a monthly basis. The professional fees to provide the consulting services described in this proposal are detailed below. Travel expenses related to presentation of project results will be billed at cost to the City and are not included in below fees.

[illegible]

Lockton compensation team

The City can turn to Lockton for a full array of compensation and total rewards services. Our Compensation and Total Rewards Practice is organized around our clients' needs.

					
Mary Mosqueda SVP, Compensation Practice Leader 314.812.3201 mmosqueda@lockton.com	Angela Miller, CCP VP, TL, Sr. Compensation Consultant 314.812.3170 amiller@lockton.com	Joe Meyer, CCP, SPHR VP, TL, Sr. Compensation Consultant 314.812.3121 jpmeyer@lockton.com	Lauren Hoggatt VP, TL, Sr. Total Rewards Consultant 314.812.3202 lhoggatt@lockton.com		
					
Angie Bellers Compensation Consultant 314.812.3160 abellers@lockton.com	Ann Curl Compensation Consultant 314.812.3276 ann.curl@lockton.com	Sean McHugh Compensation Consultant 314.812.3824 sean.mchugh@lockton.com	Katie Moore Compensation Consultant 314.812.3123 katie.moore@lockton.com	Aaron Schlipman Compensation Consultant 314.812.3807 aschlipman@lockton.com	Marissa Sherman Total Rewards Consultant 816.751.2226 msherman@lockton.com
					
Jessica Healey Compensation Project Manager 314.983.4353 jessica.healey@lockton.com	Dave Orban, CISR, MOS Compensation Project Manager 314.812.3288 dorban@lockton.com	Mitch Dawdy Associate Compensation Consultant 314.812.3879 mitchell.dawdy@lockton.com	Kimberly Meyer Associate Compensation Consultant 314.812.3192 kimberly.meyer@lockton.com	Sydney Stellern Associate Compensation Consultant 314.812.3243 sydney.stellern@lockton.com	
					
	Christine Blazevic Compensation Analyst cblazevic@lockton.com	Michelle Donegan Compensation Analyst 314.812.3109 michelle.donegan@lockton.com	Cassie Callahan Associate Total Rewards Consultant 314.824.5104 cassandra.callahan@lockton.com		

Your assigned team is led by talented seasoned professionals with extensive technical and creative design experience. The biographies of Team Lead, Joe Meyer and Project Manager, David Orban are attached for your review, as well as that of Practice Leader, Mary Mosqueda.



Joe Meyer

CCP, SPHR
Vice President, Team Lead,
Senior Compensation Consultant
jpmeyer@lockton.com

Compensation and Total Rewards

Joined Lockton in 2012

Prior Experience

Rackspace Hosting
United Stationers, Inc.
UniSource Energy Corporation

EXPERTISE

Joe Meyer is a team lead and senior compensation consultant for Lockton Companies Compensation Consulting Practice. He has over 18 years of compensation experience in technology, wholesale, and utilities industries.

Joe has extensive experience in all aspects of salary administration, including performance management, incentive plan design, sales compensation, and total rewards. Employee engagement and custom survey development are also areas of specialty. He is committed to helping Lockton's clients achieve their rewards goals, oftentimes applying creative solutions to complex environments. Joe supports the daily servicing of Lockton's clients and works toward complete client satisfaction.

EDUCATION

BS, Finance | University of Arizona

PROFESSIONAL AFFILIATIONS

WorldatWork
Society for Human Resource Management (SHRM)



Dave Orban

Compensation Project Manager
dorban@lockton.com

Compensation and Total Rewards

Joined Lockton in 2007

Prior Experience

CompUSA Training

EXPERTISE

Dave Orban is a project manager with Lockton's Compensation Consulting Practice, performing research, analytics, technical oversight, and project coordination in support of Lockton's compensation clients.

Dave has over 15 years of industry experience, all of it spent with Lockton. Former positions within Lockton include senior graphic technician with Midwest Design Services and team lead, Technical Services Unit. He has developed courseware and led classes in Microsoft Excel and other applications while initiating use of and developing internal best practices for various applications including ProofHQ, Brainshark, CompAnalyst, and Qualtrics.

Prior to joining Lockton, Dave was a technology instructor with CompUSA, developing courseware and leading classes on Microsoft and Adobe products as well as preparatory classes for IT designation exams.

PROFESSIONAL CERTIFICATIONS

Microsoft Office Specialist | Master



Mary Mosqueda

Senior Vice President,
Compensation Practice Leader
mmosqueda@lockton.com

Compensation and Total Rewards

Joined Lockton in 2007

Prior Experience

Wachovia Employer Solutions Group

EXPERTISE

Mary Mosqueda is the practice leader for Lockton Companies Compensation Global Consulting Practice located in St. Louis, Missouri. With over two decades of experience in compensation, human resources, and work/life programs, she has been a key contributor in the strategic development and design of public and private sector executive compensation and total rewards programs.

Mary has extensive expertise in managing and designing competitive broad-based total rewards programs that attract and retain top talent. She assists clients with strategy, design, funding, administration, and communication of total rewards programs, incentive compensation plans, including annual and sales programs, executive and board compensation negotiation, total remuneration for international and expatriate compensation, pay-for-performance systems, and work/life programs.

Mary has performed numerous presentations across the nation for several human resource associations on topics such as designing and developing a total rewards program and current executive compensation trends in a downshifting economy.

EDUCATION

BA, Business Communication, emphasis in Public Speaking | Rockhurst University — Kansas City

PROFESSIONAL AFFILIATIONS

Alliance for Work/Life Professionals
Employee Benefits Association of St. Louis
WorldatWork Compensation Advisory Board | Member



-
- RISK MANAGEMENT
 - EMPLOYEE BENEFITS
 - RETIREMENT SERVICES



LOCKTON.COM

**AGREEMENT BETWEEN THE CITY OF ROELAND PARK
AND MCGRATH HUMAN RESOURCES GROUP FOR A
COMPENSATION AND CLASSIFICATION STUDY**

THIS AGREEMENT ("Agreement") made the by and between McGrath Human Resources, hereinafter "Consultant", and the City of Roeland Park, Kansas, hereinafter "City". City and Consultation shall be collectively referred to as the "Parties".

WHEREAS, the Consultant submitted a proposal dated December 2022, and a revised proposal on in February 2023, to the City to conduct a compensation and classification survey, with a total compensation and remote work analysis.

WHEREAS, City selected the Consultant to perform this study.

NOW, THEREFORE, the Parties do mutually agree to the following:

City shall engage the Consultant to perform the work described in its proposal provided in February 2023 hereinafter referred to as the "Project", which is incorporated herein by reference.

The Project shall be undertaken in such sequence as to assure expeditious completion and optimal success. The Project will begin in May 2023.

The Consultant agrees to complete the Project on or before September 30, 2023. City agrees to pay Consultant total compensation of Forty-one Thousand One Hundred Ninety-six Dollars (\$41,196.00). City agrees to pay Consultant as follows:

- a. Eight Thousand Dollars (\$8,000.00) upon receipt of the signed Agreement;
- b. Twenty-five Thousand One Hundred Eighty-six Dollars (\$25,186.00) upon submission of the draft report;
- c. The balance of \$8,000 upon submission of the final report;
- d. Travel expenses will be billed separately and are not to exceed an aggregate of Three Thousand Dollars (\$3,000.00). City shall remit payment within thirty (30) days of receipt of an itemized invoice for said travel expenses.

City agrees to:

- a. Assure reasonable access to the members of the organization, i.e., City Managers, selected supervisors, and other appropriate employees; and
- b. Afford prompt decisions on matters affecting the progress of the Project.

GENERAL CONSIDERATIONS

1. **City Ownership and Proprietary Information** - The Parties expressly agree that all data, documents, records, studies, or other information generated, created, found or otherwise completed by Consultant in the performance of Consultant's duties under the terms of this Agreement shall at all times remain the proprietary information of and under the ownership of City. All data, documents, records, studies, or other information generated, referred to above, with the exception of the market raw data, shall be provided to City by Consultant upon request so long as City is not in default under other terms of this Agreement.
2. **Nondiscrimination** –The Parties hereto for themselves, their agents, officials, employees, and servants agree not to discriminate in any manner on the basis of race, color, creed, or national origin with respect to the performance of this Agreement.
3. **Termination and Suspension**
 - a. This Agreement will continue in full force and effect until completion of the Project as described in the February 2023 proposal unless it is terminated for nonperformance as outlined below.
 - b. If either party fails to perform as required by this Agreement, the other party may terminate it by giving written notice of such failure to perform and the intent to terminate ("Right to Cure"). If the party receiving such notice does not cure its failure to perform with twenty (20) days of such notice, the party issuing such notice may then terminate the Agreement by giving written notice of termination to the other party ("Termination Notice").
 - c. In the event of termination, the Consultant will be paid by the City for all services actually, timely, and faithfully rendered up to the date of the Termination Notice. The Consultant will provide all work documents developed up to the time of termination upon final payment for service.

4. **Successors and Assigns**- The Parties each bind the other and assigns, in all respects, to all of the terms, conditions, covenants, and provisions of this Agreement. Any assignment or transfer by the Consultant of its interest in this Agreement without the prior written consent of City shall be void.
5. **Compliance with Law** –Consultant will comply with any and all applicable federal, state, and local laws as the same exist and may be amended from time to time.
6. **Amendment of Agreement** – This Agreement shall not be altered, changed or amended except by mutual written agreement of the Parties.
7. **Indemnification Clause** –For purposes of this section, work performed is described as the preparation of studies and recommendations pertaining to the scope of services contained in this Agreement, as presented to the City for review and approval. Notwithstanding anything herein to the contrary, to the maximum extent permitted by law, the Consultant shall not be liable for consequential damages or for actions resulting from working as an agent of the City in evaluating the capability of the aforementioned corporation.

Any confidential information provided to or developed by Consultant in the performance of the Agreement shall be kept confidential and not made available to any individual or organization by Consultant without the prior written approval and consent of the City.

8. **Whole Agreement** – This Agreement constitutes the entire agreement between City and Consultant. This Agreement incorporates all the agreements, covenants, and understanding between the Parties concerning the subject matter hereof, and all such covenants, agreements, and understandings have been merged into this Agreement.
9. **Independent Contractors** –Consultant and its agents and employees are independent contractors performing professional services for City and are not employees of the City. Nothing herein shall be construed as incurring for the City any liability for Worker's Compensation, FICA, withholding tax, unemployment compensation, or any other payment, which would be required to be paid by City if City and Consultant were standing in an employer/employee relationship. Consultant hereby agrees to assume and pay any and all such liabilities.

10. **Subcontract** –Consultant shall not subcontract any portion of the services to be performed under this Agreement without the prior written prior approval of City.

11. **Governing Law and Venue** – This Agreement is governed by the laws of the State of Kansas. Any suit between the parties arising under this Agreement shall be brought in the District Court of Johnson County, Kansas.

The Parties have executed this Agreement, the day and year first above written.

Approved By:

By:

City of Roeland Park, KS

Victoria J. McGrath
Victoria McGrath, CEO
McGrath Human Resources Group

Date

March 30, 2023
Date

Item Number: New Business- VIII.-C.
Committee 4/3/2023
Meeting Date:



City of Roeland Park
Action Item Summary

Date: 3/27/2023
Submitted By: Mayor Poppa
Committee/Department: Admin.
Title: **Reappoint Macrina Abdouch to the Planning Commission**
Item Type:

Recommendation:

To reappoint Macrina Abdouch to the planning commission.

Details:

Financial Impact

Amount of Request:	
Budgeted Item?	Budgeted Amount:
Line Item Code/Description:	

Additional Information

What are the racial equity implications of the objective?

How does item benefit Community for all Ages?

ATTACHMENTS:

Description	Type
Macrina Abdouch	Cover Memo

Online Form Submittal: Committee Volunteer Form

noreply@civicplus.com <noreply@civicplus.com>

Mon 4/25/2022 6:30 PM

To: Nielsen, Kelley <knielsen@roelandpark.org>;RP Intern <intern@roelandpark.org>;Erin Winn <EWinn@roelandpark.org>

Committee Volunteer Form

Date	4/25/2022
First Name	Macrina
Last Name	Abdouch
Address	5320 Ash St
City	Roeland Park
State	KS
Zip	66205
Email	
Phone	
Place of Employment	HOK
How long have you been a resident of Roeland Park?	5 Years
How much time do you have to devote per month?	<i>Field not completed.</i>
Board & Committee Interest	I am interested in getting involved as a Planning Commission volunteer. Having seen the updates that have occurred over the past few years throughout Roeland Park has greatly benefitted the city. I am employed as an architect currently with interest in the planning of the community that I live it. I would like to volunteer my time to assist the Planning Commission to support built environment of Roeland Park.
Select a Board or Committee	Ad-Hoc Development Committee
Are you a high school student between the ages of 14 and 18?	No
Additional Comments	<i>Field not completed.</i>
Resume	<u>2022 Resume- Macrina Abdouch.pdf</u>

Email not displaying correctly? [View it in your browser.](#)

Item Number: Ordinances and Resolutions:- IX.-
 A.
Committee 4/3/2023
Meeting Date:



City of Roeland Park
Action Item Summary

Date: 3/28/2023
Submitted By: Staff
Committee/Department: Admin.
Title: **Ordinance 1044 Allowing Alcohol at R Park for Special Events**
Item Type:

Recommendation:

To approve ordinance 1044 allowing alcohol at R Park for Summer Concert series.

Details:

Financial Impact

Amount of Request:	
Budgeted Item?	Budgeted Amount:
Line Item Code/Description:	

Additional Information

What are the racial equity implications of the objective?

How does item benefit Community for all Ages?

ATTACHMENTS:

Description	Type
☐ Ordinance 1044 Allowing Alcohol at R Park for Special Events	Cover Memo

ORDINANCE NO 1044

AN ORDINANCE ALLOWING CONSUMPTION OF ALCOHOL ON CERTAIN PUBLIC PROPERTY FOR A LIMITED TIME AND PURPOSE, PURSUANT TO K.S.A. 2013 SUPP. 41-719(d).

BE IT ORDAINED BY THE GOVERNING BODY OF THE CITY OF ROELAND PARK, KANSAS:

SECTION 1. Purpose. The purpose of this ordinance is to allow for consumption of alcoholic liquor at the City of Roeland Park's "R Park" (located at 5535 Juniper) for Neighbors for a Better Roeland Park Concert Benefit June 3, 2023, with a rain date of June 10, 2023, July 8, 2023, with a rain date of July 29, 2023, August 19, 2023, with a rain date of September 30, 2023, September 16, 2023.

SECTION 2. Exemption of City Property. Pursuant to K.S.A. 2013 Supp. 41-719(d), the City hereby exempts for a limited time and purpose the following property ("Exempted Property"), title of which is vested in the City, from K.S.A. 2013 Supp. 41-719(c), which prohibits the drinking or consumption of alcoholic liquor by any person on public property:

A tract of land in the Northwest Quarter of Section 9, Township 12, Range 25, in the City of Roeland Park, Johnson County, Kansas, described as follows:

Beginning at a point which is 906.14 feet West and 215 feet South of the Northeast corner of said Northwest Quarter, thence West 510; thence South 512.7 feet to the North line of 56th Street; thence Northeasterly along the North line of 56th Street to a point which is 465.54 feet South of the point of beginning; thence North 465.54 feet to the point of beginning, except that part in any road.

The exemption of the foregoing property from the provisions of K.S.A. 2013 Supp. 41-719(c) shall be limited to June 3, 2023, with a rain date of June 10, 2023, July 8, 2023, with a rain date of July 29, 2023, August 19, 2023, with a rain date of September 30, 2023, September 16, 2023 and thereafter, the exemption and all other sections of this ordinance shall be of no force or effect.

SECTION 3. Limited Suspension of Certain City Ordinances Pertaining to Alcoholic Liquor. Notwithstanding any provisions in the Code of the City of Roeland Park, Kansas to the contrary, including but not limited to Sections 3-102 and 12-108 of the Code, the City may allow the possession, drinking and consumption of alcoholic liquor by persons twenty-one (21) years of age or older on Neighbors for a Better Roeland Park Concert Benefit June 3, 2023, with a rain date of June 10, 2023, July 8, 2023, with a rain date of July 29, 2023, August 19, 2023, with a rain date of September 30, 2023, September 16, 2023 for residents; provided that nothing contained in this ordinance shall constitute a suspension of any ordinances prohibiting drunkenness, disturbing the peace, or disorderly conduct on the Exempted Property.

SECTION 4. Take Effect. This ordinance shall take effect and be in force from and after its publication in the official City newspaper.

PASSED by the City Council the 3rd day of April 2023. APPROVED by the Mayor.

Michael Poppa, Mayor

ATTEST:

Kelley Nielsen, City Clerk

APPROVED AS TO FORM:

Steve Mauer, City Attorney